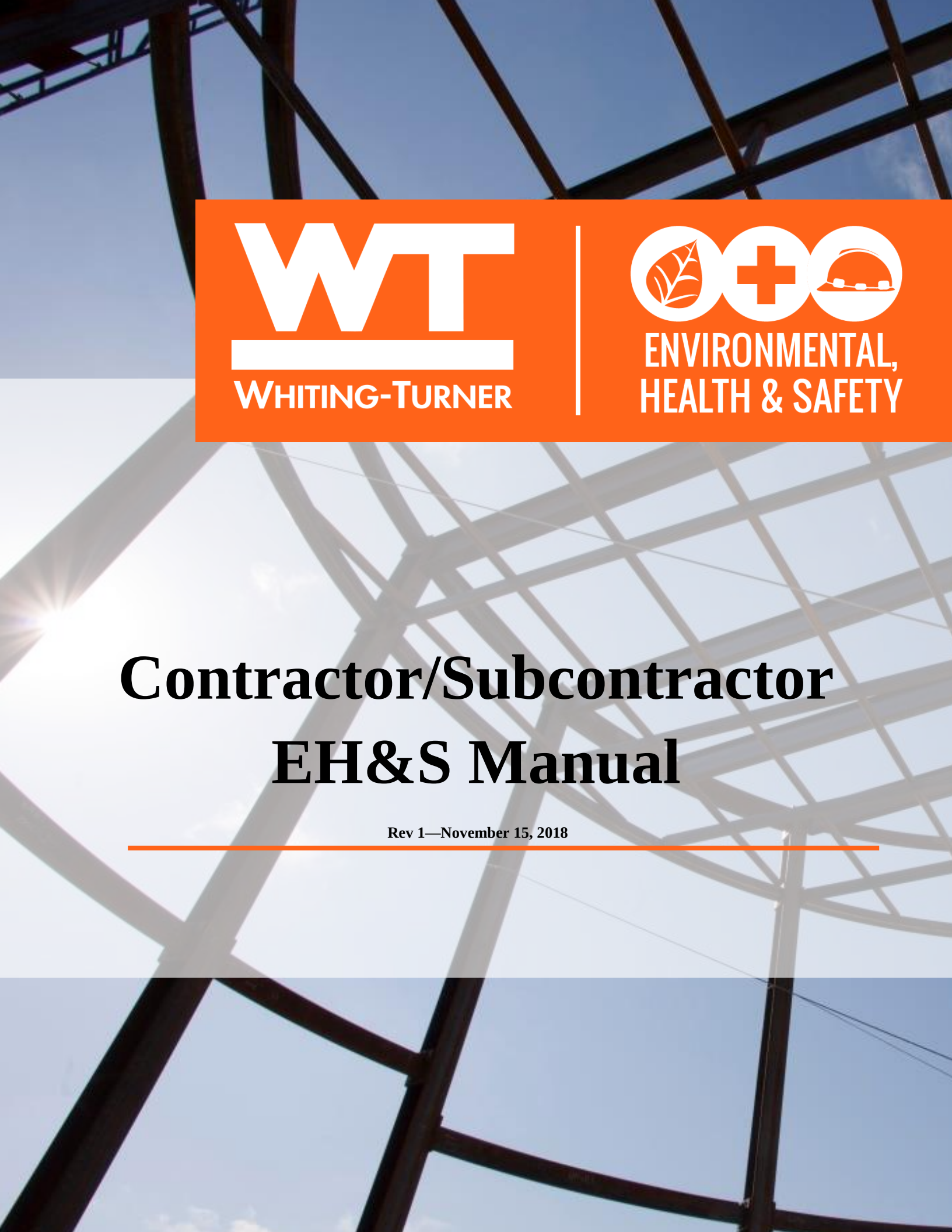

Contractor/Subcontractor EH&S Manual

Rev 1—November 15, 2018

Table of Contents

Table of Contents

DISCLAIMER: The information contained in this Manual is not intended to serve as a substitute for the exercise of good engineering judgment by the engineers nor as a substitute for determinations made by contractors/subcontractors of appropriate manner and methods of operations and safety aspects of work under their control. This Manual is also not intended to be all inclusive or replace a contractor's or subcontractor's corporate or site-specific safety program and is not intended to, nor shall it, supersede any more stringent federal, state, local and other applicable laws, codes, rules, regulations, and/or practices. All contractor's and subcontractor's site-specific safety programs must meet or exceed the requirements of the Whiting-Turner EH&S program, the contract documents and all federal, state, local and other applicable laws, codes, rules, regulations, and/or practices. In the event of any conflicts between the material contained therein and any more stringent laws, codes, rules, regulations, and/or practices, the more stringent laws, codes, rules, regulations, and/or practices shall govern.

This Manual and all information contained therein is confidential and intended for the sole use of contractors and subcontractors on Whiting-Turner projects. Contractors/subcontractors are prohibited from distributing this information to any third parties. The Whiting-Turner Contracting Company expressly disclaims warranties for the information contained in this Manual and makes no representations to third parties regarding the reliability, suitability, correctness, or completeness of such information. Whiting-Turner assumes no responsibility or liability and shall not be responsible and/or liable for damages or losses of any kind, including but not limited to direct, indirect, incidental, exemplary, special or consequential damages or losses, arising from, attributable to and/or resulting from the use of such information by third parties however caused and on any theory of liability, whether in contract, strict liability or tort.

1. Contractor/Subcontractor EH&S Requirements

Policy Statement

The following establishes Whiting-Turner's minimal EH&S requirements for all contractors/ subcontractors on a Whiting-Turner project. This Manual is not meant to be all inclusive and it does not, in any way, excuse the contractor/subcontractor from adhering to the entirety of the Owner's requirements and OSHA's 29 CFR 1926 Safety and Health Guidelines for Construction nor is it a substitute for the contractor/subcontractor's own site-specific safety program. The contractor/subcontractor's own site-specific safety program must meet or exceed the requirements of the Whiting-Turner Contractor/Subcontractor EH&S Manual, the Contract documents and the most current federal, state, local or other applicable codes and regulations.

General Requirements

1. Each contractor/subcontractor must identify and submit the qualifications of a safety representative/competent person to Whiting-Turner as the primary, on-site contact for safety related issues.
    a. The safety representative may be a supervisor and they shall have, at a minimum, the OSHA 30-hour Outreach Training Program for Construction.
    b. The contractor/subcontractor will provide a first aid/CPR trained person when one or more of the contractor/subcontractor's employees are working

2. The contractor/subcontractor's supervisor(s) and safety representative must make frequent and regular inspections of their work areas and activities.
    a. Hazards identified that are under their control must be corrected immediately and all other identified hazards must be reported to the Whiting-Turner Project Superintendent.
    b. One documented inspection shall be conducted each week and made available at Whiting-Turner's request.

3. The contractor/subcontractor's on-site supervisor and the contractor/subcontractor's designated on-site safety representative must schedule and attend a pre-construction safety meeting with the Whiting-Turner Superintendent and Site Safety Manager to discuss the contractor/subcontractor safety requirements.
    a. The pre-construction safety meeting should take place at least five (5) working days before startup to allow for review of required documentation.

4. The contractor/subcontractor shall provide a translator whenever there are non-English speaking workers on site. Subcontractor supervisors must be able to communicate in English.

5. Contractor/subcontractors, who in turn contract out parts of their work, have sole responsibility to see that their lower tier contractors comply with project safety requirements. Additionally, Whiting-Turner's Project Manager and/or Whiting-Turner's Superintendent shall be notified that the lower tier contractors are arriving at least five (5)

days before work starts. The Contractor/subcontractors will be held directly accountable for all lower tier contractors. Contractors/subcontractors must provide a competent person onsite fulltime to oversee and direct lower tier contractors' while actively performing work.

6. The contractor/subcontractor's superintendent(s) and/or designated safety representative must attend the weekly coordination meeting where safety issues will be addressed. Emergencies should be handled through the Whiting-Turner Field Office according to the posted Emergency Action Plan.

7. All work-related injuries, regardless of severity, must be reported to Whiting-Turner immediately. An accident/incident investigation report must be completed by the appropriate contractor/subcontractor supervisor and submitted to the Whiting-Turner project team within 24 hours of the incident. Further, all work-related injuries will be recorded on the injury log. A completed injury log will be submitted to the Whiting-Turner project team by the 5th of the month for the previous month.

8. Incidents involving the general public, regardless of severity, must be reported to Whiting-Turner immediately. An accident/incident investigation report must be completed by the appropriate contractor/subcontractor supervisor and submitted to the Whiting-Turner project team within 24 hours of the incident.

9. Each contractor/subcontractor with chemicals on site shall have a spill kit on the project with the appropriate materials for adequate and prompt clean-up. In addition, their site-specific safety plan shall address spill prevention and containment measures.

10. Only communication radios are permitted on Whiting-Turner projects.

Activity Hazard Analysis (AHA) and Pre-task Planning (PTP)

Activity Hazard Analysis.

For each phase or major type of work/definable feature of work an AHA will be completed to identify the following:

- Health and safety considerations
- Description of steps to be performed
- Hazards associated with each step
- Required action to eliminate or control the hazard
- Focus four hazards and controls
- Contractor/subcontractor supervision sign-off

The AHA is required to be submitted to the Whiting-Turner project team ten (10) days prior to start of the task. The contractor/subcontractor shall not be released to work until the AHA is received by the Whiting-Turner Superintendent or their designee.

Contractors/subcontractors involved in abatement, demolition, steel erection, confined space, and lockout/tagout operations must submit their site-specific safety plan for review by the Whiting-Turner Superintendent or Area EH&S Manager prior to the start of work.

Pre-task Planning.

This daily plan is designed to take place at the start of each work shift. Contractor/subcontractor supervisors are encouraged to meet with their crews to discuss the tasks to be accomplished and the steps that need to take place to work safely. All tradespersons should review and sign the relevant PTP for their assigned work. The main components of the Pre-task Plan will include the following:

- Evaluating the work area
- Potential hazard checklist
- Required actions to eliminate or control the hazard
- Crew sign-off

A copy of the PTP, if used, shall be kept near the work location.

The information the supervisors are relaying to the tradespersons is the same that was developed in the AHA however, the PTP will greater define the plan for that phase of work as it applies to each crew performing the work.

Aerial and Scissor Lifts

Fall protection is required in all aerial on Whiting-Turner projects. Contractor/subcontractor employees shall comply with their company's or project requirements for fall protection when working from a scissor lift. Climbing above the platform of any lift is prohibited; workers observed committing this unsafe act will be removed from the project for a minimum of 3 days—prior to returning to work they must be retrained by their employer. Manufacturer instructions must be followed for movement of any lift.

Chemicals and Other Potentially Hazardous Materials

A copy of the contractor/subcontractor's site-specific Chemical Inventory List and site specific SDS must be submitted to the Whiting-Turner project team and updated as applicable. The chemical inventory list shall be reviewed on a monthly basis by a qualified person. A Project Hazcom Station [containing a hard copy all safety data sheets applicable to the site] will be established and maintained in the Whiting-Turner Project Office. The Whiting-Turner Hazcom Station does not eliminate the need or requirement for the Contractor/subcontractor to establish and maintain a site-specific chemical inventory.

In the event unknown and/or potentially hazardous materials are encountered during construction, that portion of the work will stop, and Whiting-Turner will be notified immediately. Work will not resume until the Whiting-Turner Project Manager, Superintendent, EH&S Manager or third-party administrator authorizes it.

Communication and Compliance

Contractor/subcontractor management personnel is responsible for ensuring that all EH&S principles, policies and procedures are clearly communicated and understood by their respective employees. Managers and supervisors are expected to enforce all requirements uniformly.

All persons working on a Whiting-Turner project are responsible for using safe work practices. In addition, it is expected that each person follows all procedural safeguards and assists in maintaining a safe work environment.

Disciplinary Action

When safety policies and procedural safeguards are violated or frequent involvement in accidents or infractions is revealed, disciplinary action must be considered. The intent of any disciplinary action taken is to convey the severity or potential severity of the infraction and bring about desired safe work practices.

When a person is observed committing an unsafe act, they must be informed by means of a written safety notice and he/she must attend the next scheduled jobsite safety orientation. In addition, employees observed committing unsafe acts while performing a task that exposes them to fall, electrical, caught-in/between or struck-by hazards must be retrained by their employer prior to attending the jobsite orientation and returning to work. At the discretion of Whiting-Turner management, depending on the severity of the violation by a contractor/subcontractor employee, the person may be suspended from the project for an allotted time or removed from the project permanently.

When a contractor/subcontractor implements their own company procedures for safety infractions committed by their employees on a Whiting-Turner job site, the contractor/subcontractor shall notify Whiting-Turner and provide a copy of the notice of infraction and related disciplinary actions to Whiting-Turner.

Drug & Alcohol Testing
All contractors/subcontractors are required to perform testing as required to comply with all owner requirements and Whiting-Turner's policy for a drug free workplace.

Employee Safety Training
A site-specific safety orientation shall be conducted prior to allowing any workers access to the field. All employees completing the orientation will be issued a numbered orientation sticker or badge to be displayed on their person.

- Additional OSHA Construction Standards that require specific training include, but are not limited to:
    - Hazard Communication Training - 29 CFR 1926.1200.
    - Stairway and Ladder Safety Training - 29 CFR 1926.1050.
    - Fall Protection Training - 29 CFR 1926. 503
    - Personal Protective Equipment - 29 CFR 1926.95
    - Scaffold Training - 29 CFR 1926.450

Contractors/subcontractors are responsible for ensuring their employees receive proper training before authorizing them to work on site.

Weekly Safety Meetings

Project workers must attend at least one safety meeting each week. Copies of meeting minutes must be submitted to the Whiting-Turner project team with the Contractor/subcontractor Daily Progress Report for the day the meeting is held. Meeting minutes must indicate the name of the Contractor/subcontractor and date of the meeting. The supervisor(s) and the attendees must sign minutes.

1.1. Bloodborne Pathogen Exposure Prevention

Introduction

This baseline expectation applies to all contractor/subcontractor employees who could be *reasonably anticipated*, as a result of performing job duties, to come in contact with blood and other potentially infectious bodily fluids. Whiting-Turner employees trained and certified in first aid and cardio pulmonary resuscitation (CPR), who might be *reasonably anticipated* to come in contact with bodily fluids also must follow the guidelines set forth in this section.

Procedures

- When dealing with blood or other bodily fluids, Whiting-Turner and contractor/subcontractor employees are required to follow universal precautions. Accordingly, all human blood and other human body fluids are treated as if known to be contaminated with bloodborne infectious diseases.

- Contractors/subcontractors must provide their employees with disposable latex free gloves and one-way resuscitation masks for use in the event of an emergency.

- All certified first aid providers are required to wear disposable latex free gloves and eye protection while performing first aid on an injured individual. If rescue breathing or CPR is performed, a one-way resuscitation mask shall be provided for the protection of the injured and the provider.

- All blood spills shall be immediately contained and cleaned with an anti-viral solution, or by a solution of 5:1 water to bleach. In the event of a serious accident, the Whiting-Turner project team shall contract an outside biohazardous materials firm.

- Any material saturated with blood or other bodily fluid must be considered regulated waste. Discarded band-aids and gauze containing small amounts of blood products are not considered regulated waste. Disposal of all regulated waste must be conducted by an outside biohazardous waste firm or emergency medical personnel.

1.2. Carbon Monoxide Exposure Prevention

Introduction

Carbon monoxide (CO) is a highly-toxic, flammable, non-irritating, tasteless, odorless gas that is slightly lighter than air. CO is one of the most common asphyxiants encountered in the construction industry. CO is produced in copious amounts by internal combustion engines such as automobiles, diesel powered compressors, welding machines, concrete mixers, and forklifts. Some of the common symptoms of carbon monoxide poisoning are shortness of breath, headache, dizziness, muscular weakness, and nausea.

Procedures

- The use of fuel powered engines and tools—which could potentially increase the likelihood of carbon monoxide exposures beyond the permissible exposure limit—are prohibited in poorly ventilated areas on Whiting-Turner projects.

- In enclosed or poorly ventilated spaces tools and equipment shall be powered by electricity, batteries, or compressed air.

- When using fuel powered generators and compressors, place them outside away from air intakes to ensure that the exhaust is not being drawn back indoors.

- All fuel driven equipment being used indoors or in partially enclosed spaces—that does not meet the Final Tier 4 engine requirements—must have scrubbers where carbon monoxide exposure exists.

- Equipment meeting the Final Tier 4 emissions standards are permitted—continuous air monitoring for the concentration of CO is required.

- Where the potential for exposure beyond the permissible exposure limit is probable—using any device that discharges the products of combustion into a work area—the following testing requirements shall be followed:
    - Monitor the work area continuously for the concentration of carbon monoxide,
    - Monitor several different points within the area at the working/breathing heights of employees.
    - Remove the employees from the area when the concentration of carbon monoxide reaches 35 PPM. Supplemental ventilation and reduction or elimination of the source shall be provided to reduce the concentration below 35 PPM before the employees are allowed to resume work in the area.

1.3. Concrete and Masonry

Introduction

Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart Q – Concrete and Masonry Construction in addition to the following guidelines.

Procedures

General requirements.

- No construction load may be placed on a concrete structure unless a qualified person, knowledgeable in structural design, determines that the structure is capable of supporting the load.
- Protruding reinforced steel—and similar protrusions—onto or into which employees could fall, must be protected and maintained by the creating contractor to eliminate the hazard of impalement.
- Contractors/subcontractors whose work involves working at heights 6 feet or above a lower level must submit a fall protection and rescue procedures to Whiting-Turner, including the name and qualifications of the designated competent person.
- Eyewash stations and washing facilities must be provided per 29 CFR 1926.50(g) and 29 CFR 1926.51(f)(1), respectively.
- Ensure that proper concrete washout stations are provided and maintained to prevent runoff of liquids and to consolidate solids for disposal.

Equipment and tool requirements.

- Powered and rotating concrete troweling machines must have a "dead man" switch that automatically shuts off power whenever the hands of the operator are removed from the machine.
- Masonry saws must be provided with a semi-circular guard.
- Machines and equipment must be locked and tagged out of service before employees can perform any maintenance or repair work.

Cast-in-place concrete requirements.

- Formwork must be designed, fabricated, erected, supported, braced, and maintained so it can support all anticipated lateral and vertical loads.
- All shoring equipment must be inspected prior to erection to determine if it meets the requirements specified in the formwork drawings.
- Erected shoring equipment must be inspected immediately prior to, during, and after concrete placement.
- Wherever single post shores are used on top of one another a qualified designer must prepare the design of the shoring and an engineer qualified in structural design must inspect the erected shoring prior to concrete placement. Written documentation must be provided to Whiting-Turner prior to the start of the pour.
- Forms and shores shall not be removed until the employer determines that the concrete has gained sufficient strength.

- Fall protection shall be maintained while employees are climbing rebar including point to point movement anytime they are exposed to falls six (6) feet or greater.
- Fall protection is required on all decks where gaps or voids exist in the decking 10" or greater. At the building's perimeter where the decking steps down to allow for a beam pour, the height of the rails shall be increased accordingly to ensure that guardrail protection remains adequate for persons working on the deck.
- Areas where form stripping is to be performed must be properly barricaded with tape or fence and signage must be posted on all sides. This should include areas below stripping.
- Protruding nails in stripped lumber shall be removed or bent immediately.
- Outrigger platforms used for material movement in and out of the building via a crane or forklift must be designed by an engineer and incorporate 100% fall protection systems. Workers using the platform must utilize PFAS if any guardrail is removed.

Concrete forms, falsework, and vertical shoring.

- The concrete contractor/subcontractor shall install guardrails along all perimeter edges and interior floor openings.
    - The installation of the perimeter guardrail system must progress as the leading-edge progresses forward.
    - Proper guardrail heights shall be maintained during the formwork phase and again after the concrete has been placed; the proper top-rail height is between 39"-45" above the walking/working surface and the mid-rail is half that distance.
    - If at any time a worker breaches the height of a guardrail system, that worker shall be protected by a personal fall arrest system or a tiered guardrail system that provides adequate protection.
        1. If the distance from a person's walking/working surface and the top-rail is less than 39 inches, that person has breached the fall protection system and another method of protection must be employed.
        2. Likewise, if the distance from a person's walking/working surface and the top-rail exceeds 45 inches, that person is considered to have inadequate protection and another method of protection must be employed.

Masonry requirements.

- A limited access zone must be established prior to the start of any masonry work.
- The zone must be equal to the height of the wall, plus four feet.
- Employees that are working at heights greater than six (6) feet and are reaching more than 10 inches below the level of the walking / working surface on which they are working, must be protected from falling by personal fall arrest systems.
- For overhand bricklaying from a scaffold, fall protection is required if the working side of the scaffold has a gap greater than 14" between the scaffold and structure.

1.4. Confined Spaces

Introduction

No Whiting-Turner or contractor/subcontractor employee shall enter into any type of confined space until it has been identified and labeled by their respective employer's competent person and all applicable safety requirements contained in 29 CFR 1926 Subpart AA – Confined Spaces in Construction and this section have been met. All contractors/subcontractors involved in confined space activities shall submit a program—which meets or exceeds all federal, state and local regulations as well as the directives contained herein—to Whiting-Turner prior to the commencement of work in said spaces.

Procedures

General.

All confined spaces, regardless of classification, shall have continuous multi-gas/4-gas air monitoring while the space is occupied by tradespersons. Atmospheric testing shall also be performed prior to persons entering the space.

Pre-entry assessment.

Prior to confined space entry, each employer must ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work, identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing.

It is Whiting-Turner's position that all confined spaces are permit required until proven otherwise [in writing] by the contractor/subcontractor's competent person. Depending upon the type of confined space identified, specific criteria must be satisfied before entry.

Signage.

All confined spaces shall be labeled. If the workplace contains permit spaces, the entry supervisor shall inform employees by posting danger signs at all entrances of confined spaces. The signs will be legible in English and in the predominant language of non-English reading workers. At a minimum, the following information will be included:

DANGER
PERMIT-REQUIRED CONFINED SPACE
DO NOT ENTER

Authorized entry.

If permit spaces exist in the workplace, only authorized employees may enter the spaces. The entry supervisor shall take effective measures to prevent unauthorized employees from entering into permit spaces. No work will be permitted in confined spaces until the contractor/subcontractor has initiated, maintained, completed, and posted a permit accepted by a designated Whiting-Turner employee.

Modification of non-permit spaces.

If non-permit spaces are modified, or experience any change that causes an increased hazard to entrants, the supervisor of the exposed employees, shall ensure that the space is reevaluated by the competent person.

Permit required spaces.

If permit spaces are identified, the following program elements, at a minimum, must be addressed in a written project specific confined space procedure.

- Environmental Controls – to ensure that pre-entry precautions (i.e. hazard evaluations, operating procedures, isolation methods, safety equipment, etc.) have been implemented.
- Atmospheric Testing – for oxygen content, explosive vapors, toxic substances and carbon monoxide to ensure that acceptable entry conditions exist.
- Assigned Duties – of each participant must be established and clearly communicated.
- Rescue Equipment and Emergency Services – develop and implement procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees and for preventing unauthorized personnel from attempting a rescue.
- Entry Permit System – used to record critical data and serve as official entry authorization must be implemented and managed accordingly following the completion of permit space work.
- Training – of employees expected to enter permit required confined spaces must be provided to ensure that understanding of assigned duties and the requirements of 29 CFR 1926.1207.
- Medical Surveillance Program – for all employees who must enter permit spaces shall be established to ensure that they have been medically evaluated and cleared to work in such spaces.

1.5. Cranes and Derricks

Introduction

Each contractor working on a Whiting-Turner project will comply with 29 CFR 1926 Subpart CC – Cranes & Derricks in Construction in addition to the following guidelines.

Procedures

General requirements.

- No crane or hoist shall be placed in service on a Whiting-Turner project until an annual, third party inspection and supplemental reports are submitted to the Whiting-Turner project team indicating that the crane or hoist meets the manufacturer's inspection criteria.
- If the manufacturer's inspection criterion does not exist, a structural engineer, familiar with crane or hoist's design and dynamics, may develop or use existing inspection criteria.
- Whiting-Turner requires all crane operators to be certified or qualified in accordance with the requirements of Subpart CC.
    - Copies of all certifications shall be submitted to the Whiting-Turner project team prior to the start of work.
    - A certified operator license must be provided where state or local ordinances require additional certifications.
- Mobile crane movement on site must be in accordance with manufacturer's recommendations.
- The swing radius of cranes must be properly barricaded at all times while working on site.
- Wire rope, its attachments, fittings, sheaves, and safety devices must be inspected according to the manufacturer's recommendations. Copies of the inspections must be submitted to the Whiting-Turner project team.
- Wedge sockets and fittings must be the proper size to match the wire rope and must not move when holding the wire rope under load. The dead end must be terminated according to ANSI B30.5 and must not be attached, in any manner, to the live side of the load line.
- An anti-two-block or warning device is required on all cranes except those engaged in driving piles.
- A qualified rigger must inspect the rigging prior to each lift.
- All windows in cabs must be safety glass that produces no visible distortion that will interfere with the safe operation of the machine.
- Outriggers shall be fully extended unless proven to be a hindrance to the safe operation of the crane or infeasible by the operator. In all cases, the use intermediate outriggers may only be considered if it is permitted by the manufacturer.
- Whiting-Turner's crane checklist shall be completed prior to each initial lift.

Lift plans.

- All pick & place lifts—excluding standard deliveries—requires a formal lift plan.
  - This plan must be submitted to the Whiting-Turner project team for record and review prior to the commencement of the lift.
  - Whiting-Turner personnel shall not approve lift plans; however, Whiting-Turner reserves the right to reject lift plans or require additional information if deemed necessary.
- All completed documentation with reference to the lift—including Whiting-Turner Crane Authorization Form—shall be onsite prior to beginning and for the duration of the activity.

Ground conditions.

- Unless otherwise agreed upon, the Whiting-Turner Superintendent must ensure that appropriate ground preparations are provided—firm, drained and graded.
- The agreement of acceptable ground conditions and notification of known underground hazards shall be considered completed once the competent persons have signed the Whiting-Turner Crane Authorization Form.

Controlling loads.

- All loads to be lifted at Whiting-Turner project sites shall have a tag line attached.
  - The competent person shall determine the size, rope materials, and length of the tag line.
  - The line shall be attached in a way that maintains control of the load to reduce the risk of caught-in/-between and struck-by hazards to employees and surroundings during any lift.
  - Where encroachment precautions are required, taglines must be of nonconductive material.

Assembly/disassembly.

- Manufacturer
  - When assembling or disassembling equipment (or attachments), the contractor shall comply with all applicable manufacturer exclusions and procedures for assembly or disassembly.
- General Requirements
  - Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons.

Power line safety. (Up to 350 kV)

- Equipment Operations
  - Before beginning equipment operations, the employer must identify the work zone.
  - If during the operations any part of the equipment will get closer than 20 feet to a power line, the employer must ensure that (a) The power line is de-energized and visibly grounded at the worksite, (b) No part of the equipment gets closer

than 20 feet to the power line; or (c) A table in the standard is used to determine the minimum safe distance based on the line's voltage.

Inspections.

- Copies of all required inspections completed shall be submitted to the Whiting-Turner project team after completion of the inspection for record at the project site.
- Inspections are required during the following intervals and specifications
    - Modified equipment – Modified equipment must be inspected by a qualified person after the modifications have been completed, but prior to initial use.
    - Repaired and Adjusted Equipment – Repaired and adjusted equipment must be inspected by a qualified person after the repairs or adjustments have been completed, but prior to initial use.
    - Post Assembly – Upon completion of assembly, a qualified person must inspect the equipment to assure that it is configured in accordance with manufacturer equipment criteria.
    - Post Assembly – a post assembly inspection is required for all Crawlers and Tower Cranes by a person properly trained and qualified to inspect such equipment.
    - Each Shift – A competent person must begin a visual inspection prior to each shift the equipment will be used, which must be completed before or during that shift.
    - Monthly – Each month that the equipment is in service it must be inspected in accordance with the criteria established in the standard.
    - Annual Comprehensive – At least every 12 months the equipment must be inspected by a qualified person in accordance with the criteria established in the standard.
    - Severe Service – When the equipment is used enough that there is a reasonable possibility of damage or excessive wear the employer must stop using the equipment and have it inspected by a qualified person using the inspection criteria established in the standard.
    - Equipment Not in Regular Use – Equipment that has been idle for three (3) months or more must be inspected by a qualified person using the inspection criteria established in the standard.
- Any crane with a deficiency that could potentially affect the safe operation of the equipment shall be taken out of service immediately and remain so until documented repairs have been made.

Safety devices.

- The following safety devices are required on all equipment unless otherwise specified in 29 CFR 1926 Subpart CC:
    - Crane level indicator
    - Boom stops (except for derricks and hydraulic booms)
    - Jib stops (if jib is attached)
    - Locks on equipment with foot pedal brakes

- Integral holding device/check valves on hydraulic outrigger jacks and hydraulic stabilizer jacks
- Rail clamps and rail stops on equipment on rails (except for portal cranes)
- Horn
- Boom-tip anemometer or equivalent device

Operations.

- Contractors must comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.

Authority to stop operation.

- Whenever there is a concern about safety, the operator has the authority to stop and refuse to handle loads until a qualified person has determined that the safety concern has been resolved.

Signals.

- A signal person must be provided in each of the following situations:
  - When the point of operation is not in full view of the operator
  - When the view in the direction of travel is obstructed when the equipment is traveling
  - When site specific safety concerns are an issue because either the operator or the person handling the load determines that it is necessary.
- Types of Signals
  - Signals to operators must be by hand, voice, audible, or new signals.
  - Whiting-Turner prohibits the use of cell phones for signaling of cranes and equipment
- Suitability – The signals used and means of transmitting them must be appropriate for the site conditions.
- During Operations – During the operations the ability to transmit signals must be maintained. If that ability is interrupted the operator must safely stop all operations until the ability to transmit is re-established and a proper signal is given and understood.
- Safety Problems - If the operator becomes aware of a safety problem and needs to communicate with the signal person, the operator must safely stop all operations.
- The operations must not resume until the operator and signal person agree that the problem has been resolved.
- Only One Signaler - Only one person may give signals to a crane or derrick at a time, except for those giving the emergency stop signal.
- Safety Problems Alert - Anyone who becomes aware of a safety problem must alert the operator or signal person by giving the stop or emergency stop signal.
- Communication with Multiple Cranes/Derricks - Where a signal person is in communication with more than one crane/derrick, a system must be used for identifying the crane/derrick each signal is for as follows:
  - For each signal, prior to giving the function/direction, the signal person must identify the crane/derrick the signal is for or must use an equally effective method of identifying which crane/derrick for which the signal is intended.

- Testing Signal Transmission Devices - The devices used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.
- Dedicated Channels - Signal transmission must be through a dedicated channel, except:
    - Multiple cranes/derricks or more than one signal person may share a dedicated channel for coordinating operations; and
    - Where a crane is being operated on or adjacent to railroad tracks, and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same/or adjacent tracks.
- Language - The operator, signal person and lift director (if applicable), must be able to effectively communicate in the language used.

Work area control.

- Swing radius hazards – Workers must be protected from foreseeable risks of being struck by and/or pinched or crushed by the equipment's rotating superstructure.
- Training – Affected tradespersons must be trained to recognize struck by and pinch/crush hazard areas posed by the rotating superstructure.
- Barriers – Control lines, warning lines, railings or similar barriers must be erected to mark the boundaries of the hazardous areas. All barriers must be equipped with a warning sign (such as “danger-swing/crush zone”).
- Protecting tradespersons in the hazard area – Before a worker goes to a location in the hazard area that is out of the view of the operator, the worker (or someone instructed by the worker) must ensure that the operator is informed that he/she is going to that location.

Keeping clear of the load.

- Hoisting routes - Where available, hoisting routes that minimize the exposure of tradespersons to hoisted loads must be used.
- Workers in fall zone - While the operator is not moving a suspended load, no worker must be within the fall zone except for the following:
    - Workers engaged in hooking, unhooking, or guiding a load
    - Workers engaged in the initial attachment of the load to a component or structure
    - Workers operating a concrete hopper or concrete bucket

Safety criteria for tradespersons in fall zone.

When affected tradespersons must be in the fall zone the following criteria must be met:

- The materials being hoisted must be rigged to prevent unintentional displacement.
- Hooks with self-closing latches or its equivalent must be used.
- A qualified rigger must do the rigging.

Safety criteria for lifting over occupied buildings.

Every reasonable effort should be made to avoid lifting over an occupied building. In cases where the competent person for this operation has determined that a lift over an occupied building is necessary and other options are infeasible, the following criteria must be met:

- Prior to the lift, the area of the top two floors that is within the fall zone shall be evacuated
  - If the contractor's/subcontractor's qualified, competent person determines it—after a thorough hazard assessment—that evacuation is not necessary, this decision shall be submitted to the Whiting-Turner project team be in writing. In addition, the contractor's/subcontractor's competent person must ensure that the critical lift protocols are followed.
- All affected paths of access and egress must be barricaded to prevent access to the restricted area or fall zone
- Signage notifying occupants of the activity and their new path of travel shall be conspicuously posted.

Safety criteria for receiving a load.

Only tradespersons receiving the load can be within the fall zone when the load is being landed.

Safety criteria for tilt up or tilt down operations.

During tilt up or tilt down operations the following criteria apply:

- No worker may be directly under the load.
- Only tradespersons essential to the operation can be in the fall zone but may not be directly under the load.

Workers essential to the operation.

Workers are essential to the operation only if the following apply:

- It is infeasible for the worker to perform the operation from outside the fall zone and;
- The worker is physically guiding the load; or
- The worker is closely monitoring and giving instructions regarding the loads movement; or
- The worker must detach the load or initially attach the load to another component or structure.

Operator qualification and certification.

- Qualification or certification - The employer must ensure that the operator is qualified or certified in accordance with the standard. Employer options for getting affected operators qualified or certified follow:
  - Certification by an accredited crane operator testing organization;
  - Qualification by an audited employer program;
  - Qualification by the U.S. military; or
  - Licensing by a government entity.
- Exceptions to qualification and certification requirements - Operators of derricks, side-boom cranes, or equipment with a maximum manufacturer-rated hoisting/lifting capacity of 2,000 pounds or less are exempt from qualification and certification requirements.

Signal person qualifications.

- Qualification Requirements - The employer must ensure that signal persons meet the following qualification requirements before giving any signals to operators:
    - Obtain documentation from a third party qualified evaluator showing that the signal person meets the qualification requirements established in the standard; or
    - Obtain documentation from the employer's qualified evaluator (not a third party) showing that the signal person meets the qualification requirements established in the standard.
- Documentation Availability - The employer must make signaler qualification documentation available at the site where the signal person is employed.
- Knowledge Requirements - Each signal person must demonstrate the following:
    - Knowledge and understanding of the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals;
    - Competence in the application of the types of signals used;
    - Basic understanding of the equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads;
    - Knowledge and understanding of the relevant requirements of the standard covered in the sections on Signals-General Requirements, Signals - Hand Signal Chart, and Signal Person Qualifications; and
    - That he or she meets the qualification requirements through successful completion of an oral or written test and a practical test.

Qualifications of maintenance & repair employees.

- Maintenance, inspection, and repair personnel are permitted to operate the equipment only where specified requirements are met as established in the standard.

Hoisting personnel.

- Personnel hoisting requirements - The use of equipment to hoist personnel is prohibited unless the employer can demonstrate that other methods would be more hazardous and is able to comply with the personnel hoisting requirements that are established in the standard.
- Hoisting personnel on Whiting-Turner project sites shall be done only after review of the plan and deemed feasible by Vice President and the Area EH&S Manager assigned to the project.
- Hoisting personnel on Whiting-Turner projects shall be considered a critical lift or activity, and therefore shall meet all requirements of a critical lift before the lift may begin.

1.5.1 Critical Lifts

Introduction

The goal of this section is to assure that crane lifts which meet the criteria stated below are done with understanding of the regulatory requirements as well stated guidelines contained herein.

The Whiting-Turner Contracting Company identifies a critical or special lift as

- any lift where the total weight of the load and the deductions for the equipment combined exceeds 75% of the capacity of the crane capacity chart at the specific boom length and radius of the load,
- any lift where there will be more than one (1) crane or piece of load handling equipment attached to the load at a time;
- any lift that involves the lifting of personnel;
- any lift where the contents of the lift are considered hazardous to health or environment, and an accidental release could result harm to either;
- any lift where encroachments precautions are required for power lines.

Lift Plan Development

The load.

- Identify loads weight, center of gravity, and dimensions, and the sources of that information.
- Identify any components that could shift during the lift and develop a method to secure any items identified if required.
- Identify load attachment points and assure they are suitable for the load to be handled, while maintaining load integrity.
- Identify the requirements to be met for the loads orientation and securement prior to the release of the load handling equipment and rigging.

Load handling equipment.

- Identify the load handling equipment and the anticipated configuration(s).
- Assure the load handling equipment can handle the total anticipated load, including the rigging, accessories, and attachments in the intended configuration(s).
- Ensure the load handling equipment is in compliance with the requirements of the site, the manufacturer or qualified person, industry-recognized standard, local, state, and federal regulations.
- Establish the process to setup, erect, or install, and dismantle the load handling equipment using the information provided by the following:
    - The manufacturer
    - A qualified person
    - Site specific recommendations
    - Applicable regulatory requirements
- Identify all required inspections and tests on the load handling equipment that need to be performed. Additional inspections may be necessary for repetitive critical lifts.

Rigging.

- Establish rigging method that will support and secure the load and is suitable for the activity.
- Ensure that the rigging method and the equipment have the capacity to support the load in the configuration or geometry required by considering the following:
  - Dynamic Effects
  - Adverse environmental conditions, temperature, wind, lightning etc.
  - Position of the center of gravity relative to rigging support points
  - D/d ratio
- Identify the weight of the rigging, accessories, and attachments, as well the sources of that information
- Establish the process to ensure that rigging equipment meets the manufacturer's specifications, regulations, and industry-recognized standards (e.g. ASME B30.9, B30.20, and B30.26) and onsite requirements.
- Identify all necessary inspections and tests for the rigging equipment and that they are carried out prior to the lift
- For repetitive lifts ensure a more frequent inspection process is in place.
- Establish the process to install and disassemble the rigging equipment using the manufacturers' information and other applicable standards.
- Ensure that the rigging will be protected from damage during the activity.

The travel path.

- Identify the path of travel for the load and the load handling equipment
- Establish a process to minimize the exposure to overhead loads by way of barricades, spotters, or lookouts to ensure only authorized personnel are allowed into the fall zone
- Ensure the load and the load handling equipment has adequate clearance to prevent contact with site-specific hazards or obstructions during the activity
- Ensure a tagline of proper type and length is obtained for load control
- Ensure that the path taken if pick and carry operation is instituted that level and substantial support are established.

Personnel.

- Identify the tasks to be completed prior to, during, and after the load handling activity, and the personnel required to complete each task.
- Identify the specialized training required for these tasks and ensure copies of these training completion documents are attached to the plan.

Site, services, and ancillary equipment.

- Identify the equipment necessary to assist the load handling operation, (high reach, personnel lift, boom lift etc.)
- Identify and ensure specialized training is completed and copies of the completion are attached to the lift plan if required.
- Ensure that ground conditions for equipment support and that proper all underground hazards and placement have been identified and marked for adequate clearance.

- Ensure that all equipment is used and operated in accordance with manufacturer, regulatory and industry standards.

Communication system.

- Identify the suitable communication system to be used during the activity. Acceptable methods for Whiting-Turner project sites are:
    - Voice or radio signals
    - Hand signals
    - Other methods of signals are available but would require review prior to being permitted in respect to effectiveness and applicability.
- Identify back up system to be used in the event of interruption from initial communication system plans

Site control.

- Identify vehicular and pedestrian access and traffic controls to be used.
- Ensure the plan addresses the following:
    - Vehicular and pedestrian traffic in and around the site that could potentially be affected by the load handling activity
    - Potential interference for other site activities and the controls to used
    - Location of barricades or other measures which may be put in place to restrict traffic or prohibit interference during the load handling activity

Contingency considerations.

- The plan should address, at minimum, the following potential events that could cause deviation from the original lift plan:
    - Equipment malfunction or loss of power (e.g. loss of power, fouled rigging, radio communication failure etc.)
    - Adverse changes to the environment (weather, visibility)
    - Deviation from the planned load characteristics identified
    - Adverse changes to the site conditions (surrounding activities, change in ground conditions, and unauthorized entry to the fall zone).

Emergency action plan.

- Review the existing Emergency Action Plan and coordinate modifications created by the load handling activity if applicable.

Pre-lift meeting.

The lift director shall conduct the meeting and the Whiting-Turner supervisor in charge of the operation or other designated person from Whiting-Turner shall attend the meeting along with all associated personnel to the lift.

- At a minimum, the following elements should be reviewed with all load handling activity personnel:
    - Overview of the load handling activity
    - LHE, rigging, and other equipment involved in the load handling activity

  - The sequence of events and step-by-step procedures for the entire load handling activity
  - Safety measures, as required (e.g. work task plan action items)
  - Load handling activity personnel assignments, addressing
    1. Individual responsibilities (e.g. location, time, task)
    2. Work location hazards (e.g. pinch points)
    3. Communication methods
    4. Personal protective equipment requirements
    5. Qualification(s) of assigned personnel
- Concern raised during this meeting shall be addressed prior to proceeding with the load handling activity
- At the completion of the pre-lift meeting, the lift director should confirm that the attendees understand the plan and respective roles and responsibilities during the load handling activity
- For repetitive lifts, the lift director should decide the frequency of pre-lift meetings. Pre-lift meetings are not required prior to each repetition of the load handling activity.

Executing the critical lift plan.

- Preparation for the load handling activity - the lift director should confirm that all setup and preparation requirements of the plan are in place and all required inspections and tests on the LHE(s) and rigging equipment have been completed.
- Initiating the Load Handling Activity - immediately prior to performing the load handling activity, the lift director should ensure that either:
  - All requirements of the plan continue to be met and no conditions exist that would preclude implementation of the plan; or
  - If a deviation exists, the load handling activity is not initiated until the deviation is addressed by a qualified person or the lift director determines that conditions are acceptable to allow the activity to begin.
- During the Load Handling Activity - the lift director should ensure that the load handling activity continues to comply with the plan.
  - If the operation deviates from the plan, the load handling activity should be stopped and evaluated to determine if
    1. The load handling activity can resume according to plan;
    2. The contingency measures can be implemented
    3. The plan can be readily modified at the site to accommodate an unexpected condition or event; or
    4. The load handling activity can no longer be implemented a planned, requiring a modified plan to be prepared. In such case, the load and the LHE shall be secured, if possible, until a new plan can be developed
    5. Changes or modifications to the plan should be communicated to all affected load handling personnel prior to initiating the change.
    6. If the load handling activity is stopped for any reason, only the lift director may initiate restart.
- After the completion of the load handling activity, the lift director should

  - Review the development, planning, and execution of the load handling activity with the load handling personnel. Items for review should include, but not be limited to, the requirements of all previous sections.
  - Identify potential measures to improve future load handling activity
  - Communicate any recommendations identified during the activity to the appropriate personnel for future considerations
- For repetitive lifts, decide the frequency of post-lift reviews and evaluation of the lift plan. Post-lift reviews may not be required after each repetitions of the load handling activity.

1.5.2 Tower Cranes

Introduction

Certain projects, due to size and scope, require the use of tower cranes. The quantity and location of towers cranes will vary from project to project. In some cases, due to project requirements, multiple tower cranes may be in a manner resulting in an overlapping operating zone (i.e. area where the operating zone or radius of working jib intersects the operating zone of another tower crane). While this will increase the hook access across the working deck and enhance the effectiveness of each crane, it brings with it significant safety concerns. For that reason, Whiting-Turner has established the following guidelines. In addition, notice to the Federal Aviation Administration (FAA) guidelines set forth in 14 CFR—Aeronautics and Space, Part 77—Safe, Efficient Use, and Preservation of Navigable Airspace, must be adhered to.

Procedures

Employers using tower cranes must comply with specific provisions in the standard that cover the following subjects:

- Erecting, Climbing and Dismantling
- Signs
- Safety Devices
- Operational Aids
- Inspections

Overlapping operating zones.

Multiple tower cranes operating with an overlapping operating zone have the potential to come into contact with each other. Such an occurrence has the potential to cause damage to the crane and/or its components; cause the crane or cranes to fail and topple; and/or cause severe injury and even death to tradespersons and/or the public. The safe operation of multiple tower cranes with an overlapping operating zone is determined by the communication and coordination of experienced and skilled operators. Nevertheless, by taking a proactive approach to safety and risk management, there is an opportunity to promote safe crane operations and minimize the potential for crane related accidents resulting from overlapping operating zones.

Written operating procedures must be developed and implemented to coordinate lifting tasks in the overlapping operating zone to prevent contact, collision, or interference between a component or suspended load of one crane with a component or suspended load of another crane. The following safety procedures / protocols should be considered if a project has multiple tower cranes with an overlapping operating zone to minimize, if not eliminate, the potential for contact/collision between cranes.

- Establish a means and protocol for communicating between the crane operators when a crane operates in the overlapping zone. Communicating protocols may include the following:
    - Crane operators must have the ability to communicate to each other (via radio - same channel)

    - Reduce distracting background noise on radios by ensuring crane operators, monitor, and limited riggers have separate radio channels
- Include protocols that all crane operators must follow before entering another crane's operating zone. Consider including the following:
    - Visually ensure it is safe to enter the other crane's operating zone
    - Communicate entry intent into that zone to the other operator
    - Receive an acknowledgement response from the other operator. If the entering operator does not receive acknowledgement from the other operator than the entering operator must not proceed with entering the other operator's operating zone
- Standardize the language used for all communication between crane operators (English)
- Consider limiting the number of individuals that can communicate directly with the operators (i.e. individuals on the working deck or other requesting use or support of the crane, etc.)
- Establish clearance requirements for loads passing over or near another tower crane
- Proximity alarms must be utilized to decrease the potential for tower crane contact/collision. Various zone protection and boundary protection safety systems exist in the marketplace (e.g. TAC-3000 Tower Crane Collision / Accident Avoidance Safety System)
- Consider creating a 'right-of-way' procedure giving one crane priority for working in the overlapping operating zone.
- Consider assigning a monitor to observe / supervise all crane activity and provide that monitor with the ability to stop all crane activity should violations of protocol occur, or potentially hazardous situations be observed. The following elements / activities should be considered related to use of said monitor:
    - Monitor shall be equipped with radio to communicate with all crane operators
    - Demonstrate bright, highly visible outerwear unique to the monitor so to be easily distinguishable to the operators and other tradespersons (e.g. bright colored vest and/or hardhat, etc.).
    - Monitor shall be solely dedicated to its role as monitor and shall not participate in any other activities on the project while acting as monitor
    - Monitor shall observe crane activity to ensure that proper protocol is followed
    - Monitor shall listen to communication between operators to ensure that protocol is followed:
    - If operators fail to communicate with each other as protocol requires, the monitor shall issue a reminder to the operators requiring compliance to protocol
    - Monitor shall record instances when operators fail to comply with protocol and inquire why the violation took place
    - Violations in protocol should be copied to the appropriate supervisor / Superintendent and safety personnel of the responsible trade. Documentation shall also be made available to Whiting-Turner
    - Monitor should have the ability to stop crane activity if required to maintain safe crane operations. Methods for delivering an "ALL STOP" directive may include the following:

1. Outfit monitor with air horn to be used to alert a stop directive to operators. Test procedure in field to identify most effective method for communicating signal to operators.
2. Outfit monitor and operators with a separate and dedicated radio to deliver the stop directive. The separate radio is reserved for stop directive between monitor and operators only and would ensure that operators receive directive.

- Monitor shall be a competent person and subject to Whiting-Turner approval

- Help to better identify the counter deck of the lower crane by installing bright flags or other markings on the back of the counter deck.
- Identify counter deck radius of lower crane on the current working deck by means of flags, cones, or other clear delineators to be conspicuously visible. Confirm that delineators are clearly visible to operators and other crane related personnel.
- Formal overlapping operating zone plan shall be distributed to and acknowledged by the responsible contractor's Superintendents, foremen, operators, monitor(s), and safety personnel – at a minimum.
- Disciplinary procedures to address violations in protocol, etc. should be included.
    - Appropriate disciplinary procedures should be identified and implemented on the responsible party if crane contact or associated accident, etc. takes place (e.g. removal of operator or responsible party from the project).
    - Responsible trade shall identify how it will determine who the responsible party is should an occurrence take place requiring disciplinary action.
    - Whiting-Turner shall be copied on all recorded non-conformances with protocol as well as related disciplinary procedures/actions.
- If it is determined that only one tower crane is needed for a given activity or shift of work, the overlapping work zone plan must address the crane that is not in use to avoid interference with the working crane. Procedures for this situation may include the following:
    - If the non-working crane is the higher crane it can be allowed to weathervane and the working crane (lower) can work unobstructed.
    - If the non-working crane is the lower crane:
        1. Non-working crane shall be operated, but not used, to keep non-working crane from *weathervaning* or movement of the non-working crane into the working crane's operating zone.
        2. Investigate to determine whether the non-working crane is outfitted with a locking mechanism to keep the crane from *weathervaning* except under extreme weather conditions. If this is the case, the non-working crane can be locked to prevent *weathervaning* into the working crane's operating zone. At certain wind speeds (determined by crane manufacturer) the lockdown function will be overridden, and the non-working crane will be allowed to weathervane. Weather conditions and wind speed causing this override will require all crane activity to stop in this scenario.

1.6. Demolition

Introduction

Each contractor/subcontractor performing demolition on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart T – Demolition, in addition to the following guidelines.

Procedure

Preparatory operations.

- Prior to initiating demolition activities, a competent person must make an engineering survey of the building to determine the condition of the structure and identify areas subject to unplanned collapse. A copy of this inspection must remain on site.
- All utilities must be shut off, capped, or locked out of service beyond the building line before demolition work is initiated.
- Prior to the start of work, a hazard assessment must be performed to identify any hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances that may have been used on the property.
- Where employees are exposed to fall hazards, guardrail and personal fall arrest systems must be used. All hole covers must be identified and secured against accidental displacement.
- Any openings cut in a floor for the disposal of materials can be no larger than 25% of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place.
- Contractor/subcontractor shall verify that all local ordinances and permitting issues have been addressed as they relate to demolition.
- Safety data sheets for known demolished material must be provided by the demolition contractor.
- Task lighting—which meets or exceeds the requirements of the standard—shall be provided by the demolition contractor/subcontractor.

Stairs, passageways, and ladders.

- Access to a structure being demolished shall be restricted; tradespersons shall be rerouted to designated stairways, passageways, and ladders. All other points of access shall remain closed.
- All designated access points shall clearly be marked, inspected periodically, and maintained in a clean, safe condition.

Chutes.

- No material may be dropped to a point outside the building unless that area is delineated with a protective barricade and the distance to any point does not exceed 20 feet.
- All chutes must be entirely enclosed except for openings equipped with enclosures at or slightly above the floor level for the insertion of materials.
- At all stories below the top floor chute openings shall remain closed.

- A substantial gate must be installed in each chute at or near the discharge end. A competent person must be assigned to control the operation of the gate and the backing and loading of trucks.
- Chutes must be designed and constructed of such strength as to eliminate failure due to the impact of material and debris loaded into them.
- Fall protection may be required where chute opening may create a fall exposure

Removal of walls, masonry sections and chimneys.

- Masonry walls, including sections of walls, will not be permitted to fall onto the floor of the building under demolition unless an engineer has determined that the floor can withstand the imposed load.
- No wall section, more than one story in height, will be permitted to stand alone without lateral bracing unless it was designed to stand alone.
- Structural or load-supporting members of any floor will not be cut or removed until all stories above such a floor have been demolished or removed.

Removal of walls, floors, and material with equipment.

- Mechanical equipment will not be used on floors unless the floors are of sufficient strength to safely support the equipment.
- Mechanical equipment will only be used for its intended purpose according to the manufacturer's recommendations.
- Curbs or stop logs must be installed and maintained by the demo subcontractor where a possibility exists for equipment going over the edge.

Removal of steel construction.

- Steel construction will be dismantled column length by column length, tier by tier.
- When floors have been removed planking—18" wide by 2" thick—must be used by employees engaged in razing the steel framing.

Mechanical demolition.

- No employees will be permitted in an area where "ball" or "clam" work is being performed. Only employees necessary for the performance of the operation may be permitted in this area.
- The area must be identified with warning barricades and signs.
- During this operation continuous observations, by the competent person, must be made to identifying potential areas of failure.

1.7. Electrical Hazards Prevention

Introduction

Use of electricity on the jobsite poses serious hazards, with employees potentially becoming exposed to such dangers as electric shock, electrocution, fires, and explosions. All Whiting-Turner employees and contractors/subcontractors working on a Whiting-Turner project will comply with NFPA 70E Electrical Safety Practices and 29 CFR 1926, Construction Industry Regulations, Subpart K – Electrical, in addition to the following guidelines.

Procedures

Working on or near exposed energized parts.

- It is Whiting-Turner's policy that no one works on live electrical circuits. If a situation arises where it is impossible to perform a task with the circuit de-energized, the Whiting-Turner Superintendent or Project Manager shall contact the Vice President and submit a formal request detailing why the circuits cannot be deenergized with a live electrical work plan prior to performing the work. An Area EH&S Manager must review the plan. A formal pre-construction meeting shall occur prior to any such work occurring.
- Only qualified electricians may work on electric circuit parts that have not been de-energized under the procedures of 1910.333.
- Such persons must be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials and insulated tools.
- All work must be completed with strict compliance to NFPA 70-E requirements and guidelines.
- The contractor/subcontractor shall provide proof of training for all tradespersons when requested by Whiting-Turner.
- Light switches and receptacles must be protected by permanent or temporary cover plates prior to energizing the circuit.

Ground fault circuit interrupters.

- All 120-volt, single-phase 15 and 20 ampere receptacle outlets which are not part of the permanent wiring of the structure and which are in use by employees shall have approved GFCI's.
- Whiting-Turner requires that all projects are 100% GFCI compliant. An Assured Equipment Grounding Conductor Program may be used in addition to—but not in lieu of—the GFCI program. If permanent power outlets are to be utilized portable GFCI units shall be provided and utilized.
- All GFCI receptacles and circuit breakers shall be tested monthly to ensure the GFCI is properly functioning and protecting the worker. It is the responsibility of the electrical contractor/subcontractor to perform inspection and testing. The documentation shall be made available upon request.

Electric tools.

- All portable electric tools such as saws, hammers, drills, vibrators, and float machines must bear the label of a Certified Testing Agency, such as Underwriters Laboratories, CSA, ETL, or the like.

Extension cords.

- Only round, heavy-duty (type S, SJO, SJTW, ST, SO, STD) are acceptable for use on a construction site; at least 12 gauges or larger.
- Cords must be maintained in their original design configuration.
- Any cord which is damaged or has the grounding pin removed shall be removed from service, including power tools.
- Whenever an extension cord is plugged into permanent power, a GFCI is required between the extension cord and the receptacle.
- All electrical cords shall be out of the hallway, corridor, aisle, stairway, doorways, and exit areas where a tripping hazard may occur.
- All electrical cords shall be protected from damage by equipment, carts, trucks, and other rolling objects.
- Where possible, all extension cords will be suspended (8') above the floor or working surface.
- Extension cords shall not be fastened with staples, hung from nails, suspended with non-insulated wire, or hang from fire sprinklers.
- Extension cords shall not be run thru or laid over sharp metal objects that could subject the cord to cuts and possible unintentional energization.

Temporary wiring.

- All temporary wiring and lighting must meet current NEC codes.
- Temporary lighting must never be put on the same circuit as temporary receptacles.
- All temporary lighting circuits must originate from GFCI protected breakers.
- Temporary wiring must be rated for all conditions to which it may be subjected and installed per the requirements of NEC, OSHA, NFPA, and other authorities having jurisdiction.

Temporary lighting.

- The minimum illumination level 5 foot-candles; this shall be maintained by the electrical contractor at all times.
- Installation of temporary lighting must be per manufacturer's specifications and in compliance with OSHA, NFPA, NEC and local codes.

Fish tapes.

- Fish tapes or lines made of metal or any other conductive material are prohibited when the potential for contact with energized circuits exist; non-conductive tapes and lines will be used instead.

1.8. Energy Control Policy

Introduction

The intent and purpose of this procedure is to reduce or eliminate the danger of the unexpected release of stored or residual energy that could cause injury or death to the employee or to the public. Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR §1926.417, "Locking and Tagging of Circuits", in addition to 29 CFR §1910.147, "The Control of Hazardous Energy" along with the following guidelines.

Procedures

- Lockout/tagout (LOTO) shall not be considered for use until all other avenues of attaining a "zero-energy state" (all potential sources of any type including re-energization or stored) have been exhausted.

- All contractors/subcontractors working with electrical systems are required to have a written lockout/tagout procedure. A competent person shall be responsible to control all aspects of the LOTO procedure. They will ensure coordination with the appropriate tradesmen.

- If a system can be locked out through design or by other means, this will be the preferred method.

- The lockout device shall be substantial enough to prevent removal.

- The lock shall be a separately keyed lock for use only with the lockout system.

- The lockout device must be tagged with the name of the employee and their company. There shall be one lock for each employee (including Whiting-Turner) exposed to the system.

- If working in a multi-shift environment each worker shall remove their respective locks at the end of their shift. If work on the system is to continue, the next shift worker shall be present to install his lock immediately following removal of the lock from the previous shift. The creating contractor shall have a system in place to ensure that exposure is eliminated by controlling the potential hazardous energy by means of LOTO.

- Workers shall not leave locks on after the completion of their task. This does not apply to the competent person or supervisor. The use of 100% LOTO must be maintained by the responsible contractor/subcontractor until the completion of the task. Verification by all competent persons in charge of the LOTO shall be completed prior to re-energizing the system.

- If the energy isolation device cannot be locked out and a tag must be used, authorization from the Area EH&S Manager and Vice President is required prior to start of work.

- Tag out devices, including the means of attachment, shall be substantial enough to prevent accidental removal.

- The tag shall warn against energizing the tagged-out system such as: do not start, do not open, do not close, do not energize, do not operate, etc.

- The name of each employee shall be displayed on respective tags.

- The competent person shall be responsible for removing the tag and activating the system after all exposed employees have removed their tags.

- In the event an employee is discovered tampering with or violating the LOTO procedure, the employee will be removed from the project indefinitely.

Training and Documentation

- Each employer utilizing LOTO must establish a program and utilize procedures for affixing appropriate lockout or tagout devices to energy isolating devices, and to otherwise disable machines, piping, or equipment to prevent unexpected release of stored or residual energy to prevent injury to employees.

- Each employee affected by the LOTO procedure shall be trained in the procedure. Records of training will be kept on site and be made available to Whiting-Turner upon request.

- Each contractor/subcontractor involved in LOTO procedures shall maintain a log on site that identifies the following:
    - Date of usage
    - Number of locks and tags used
    - Persons involved
    - Time of LOTO initiation
    - Time of LOTO removal
    - Designated competent persons
    - Location of LOTO Devices

- Electrical or piping and instrumentation drawings identifying specific locations of the LOTO devices shall accompany the log.

- Locks shall only be removed by the person who applied the lock. In extreme circumstances, after "all reasonable means" to contact the employee who was responsible for the lock were exhausted, the Whiting-Turner Superintendent shall request a meeting with the Area EH&S Manager and contractor's/subcontractor's competent person. This process is to ensure that the contractor's/subcontractor's competent person has considered and documented all the necessary steps to keep the workforce safe prior to removing the lock. The decision to remove a lock rests solely with the contractor's/subcontractor's

competent person. However, the decision to remove a lock may be overridden by the Area EH&S Manager, if deemed necessary.

1.9. Excavations Policy

Introduction

The intent of this policy is to limit and/or eliminate the dangers associated with excavation and trenching operations that could expose tradespersons to the possibility of severe injury or death. Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart P – Excavations, in addition to the following guidelines.

Procedures

Prior to the commencement of excavation activities where the excavation will be greater than three (3) feet in depth, a pre-excavation checklist must be completed by the contractor's/subcontractor's competent person and submitted to the Whiting-Turner project team.

Specific excavation requirements.

- Subcontractors whose employees will be entering trenches or excavations must ensure that a comprehensive training program in the recognition, identification, evaluation, and control of excavation hazards must be provided to all tradespersons prior to working in an excavation or trenching operation. This must also include a review of the geo-technical report.
- Underground utility installations must be identified and marked prior to beginning any excavation. To prevent unintentional contact, all necessary measures must be employed to locate underground utilities prior to excavating. Acceptable methods include but are not limited to the following: test pitting, ground penetrating radar (GPR), use of as-built drawings and any other obtainable information.
- When an excavation is performed within 3 feet of any utility line, a non-damaging method of excavation shall be used. The non-damaging method shall be hand digging with nonconductive tools. Other non-damaging methods, such as soft digging, vacuum digging, pneumatic hand tools, may be considered subject to approval by the competent person.
- A competent person must be identified on Whiting-Turner's competent person acknowledgment form and their qualifications submitted to the Whiting-Turner project team prior to the start of work.
- The competent person will be on-site during all excavation work to determine the soil type and its stability by performing one visual and one manual test in accordance with 29 CFR 1926, Subpart P Appendix A.
- Inspections must be conducted daily and after every rainstorm or other hazard-increasing occurrence. Daily inspection reports must be submitted to the Whiting-Turner project team upon request.
- All trenches, unless otherwise specified, shall be protected by snow fence, at a minimum.

Requirements for protective systems.

- Excavations greater than 5 feet in depth must be protected by one or more of the following systems as determined by the subcontractor's competent person:
    - Sloping / benching of sides to allowable configurations and slopes as per soil type.
    - Shielding (i.e. trench boxes) or shoring which shall have the manufacturer's tabulated data and specifications—or a professional engineer stamp—and current annual inspection documentation; all the aforementioned must be on site.
    - Using a slope or shield system designed by a registered professional engineer. Refer to 29 CFR Subpart P, Appendix B.
- Temporary and permanent spoils shall not exceed the angle of repose and shall be kept back at least two feet from the edge of an excavation.
- A registered professional engineer must design sloping or benching systems for excavations greater than 20 feet in depth.

Requirements for fall protection.

- Persons walking or working adjacent to a trench with vertical/shear walls that is equal to or greater than six (6) feet in depth must be protected from fall hazards unless it has been determined by the contractor's/subcontractor's competent person that it is infeasible or creates a greater hazard.
- Person crossing an excavation that is equal to or greater than six (6) feet in depth must be protected from fall hazards by means of a guardrail system.

Training Requirements

- Subcontractors whose employees will be entering a trench or excavation must have received training on recognizing and avoiding hazardous atmospheres, caught-in/between hazards due to cave-in/collapse, entrapment due to access & egress hazards, struck-by falling objects and equipment and falls into excavations.
- Atmospheric monitoring, if deemed necessary by the competent person or other competent party, must be documented, and conducted by someone trained in the use of atmospheric monitoring equipment.

1.10. Fall Protection and Prevention Policy

Introduction

Falls continue to be the leading cause of fatalities in the construction industry; in consequence, Whiting-Turner has zero tolerance for failure to comply with all provisions of our fall protection and prevention policy. Any tradespersons found violating said policy must be retrained. In addition, at the discretion of Whiting-Turner personnel, violators may be permanently removed from the project. Any contractor/subcontractor with any fall exposure must submit to Whiting-Turner the resume of their competent person trained in fall protection techniques. All Whiting-Turner employees and all contractor/subcontractor employees working on a Whiting-Turner project shall comply with 29 CFR 1926, Construction Industry Regulations, Subpart M - Fall Protection, in addition to the following guidelines.

Procedures

General fall protection requirements.

- Each contractor/subcontractor, with employees exposed to a fall 6' or greater to a lower level must ensure that effective fall protection measures and rescue procedures are addressed in their company activity hazard analysis (AHA) prior to beginning work on site. This is to include the name and qualifications of the designated competent person.
    - Exception: The provisions of this part do not apply when inspectors and competent persons are briefly inspecting, investigating, or assessing workplace conditions.
    - Exception: Fall protection policy includes any surface, except ladders, vehicles, or trailers.
    - Under the terms of 1926.500, fall protection is not required for employees who are on vehicles and trailers when the employee must be on the vehicle or trailer to perform his or her duties. For example, if the employee must climb on the tractor trailer rigs to connect the rigging for loading and unloading materials and equipment, the employer will utilize the sound judgement of their competent person for Fall Protection activities to determine how to best proceed.

- If at any time during work at heights, it is observed that the means as stated in the subcontractor's AHA for protecting the workers from falls are perceived as ineffective, work will be suspended until the subcontractor's competent person assesses the situation and makes necessary corrections. If corrections determined by the competent person involve modified work practices listed in the subcontractor's AHA, then these changes must be completed, and any necessary retraining must be provided to affected workers prior to allowing the continuation of the subcontractor's work at heights.
- At no time shall a safety monitor system be used as a sole means of fall protection.
- The use of controlled access zones (CAZ) and controlled decking zones (CDZ) as a means of fall protection are prohibited on Whiting-Turner projects.
- A Personal Fall Arrest System (PFAS) [comprised of a full body harness, double lanyards, anchorage point and anchorage connector], a personal fall restraint system

(PFRS) [comprised of a full body harness, lanyard, anchorage point and anchorage connector], a guardrail, or safety net system must be in place to protect all trade persons from exposure to falls working at or above 6 feet.

- Employees must be protected from falling objects by the installation of toe boards, barricades, or canopy structures.
- Employees working on ladders must be at least one and a half times the height of the ladder away from any perimeter, shaft, stairway, and opening where the fall distance exceeds 6'. If that distance is not feasible, a conventional fall protection method must be employed.
- Stilts are only permitted in broom swept areas, where there is no change in elevation.
- Non-roofing activities – contractors/subcontractors other than roofers who must perform work on roofs must develop a written/drawn plan showing the roof area where work is planned to take place to protect their workers from potential exposure to falls. The plan must be provided to the Whiting-Turner team for review by Whiting-Turner's Superintendent and EH&S Manager.

Floor and wall holes and openings.

- Prior to creating a hole or opening in any elevated work surfaces, contractors/subcontractors must submit an elevated work surface modification permit.
- All floor and roof openings into which persons can accidentally walk or fall through shall be guarded by a physical barrier or covered.
- All floor and roof holes through which equipment, materials, or debris can fall shall be covered.
- All floor holes greater than 12" x 12" must have a Whiting-Turner floor hole cover sign in place. Smaller holes shall be labeled "hole" in accordance with the OSHA standard.
- Coverings for floor and roof openings shall be of sufficient strength to support two times the maximum intended load that may be imposed and shall be secured in place to prevent accidental removal or displacement.
- Conduits, trenches, and manhole covers and their supports, when exposed to vehicles or equipment, shall be designed to carry a truck rear axle load of two times the maximum anticipated load.
- Particle board, medium density fiber board (MDF) or similar material is prohibited from being used as floor hole covers on Whiting-Turner projects.
- Wall openings 18" or greater in width from which there is a drop of 6' feet or greater and the bottom of the opening is less than 39" above the working surface, shall be guarded with a top rail or a top rail and intermediate rail or a standard guardrail. A toe board or enclosing screen shall be provided where the bottom of the wall opening, regardless of width, is less than 3 ½ inches above the working surface.
- Wall opening protection shall meet one of the following requirements:
    - Barriers of such construction and mounting that, when in place at the opening, the barrier can withstand a load of at least 200 pounds applied in any direction (except upward) with a minimum of deflection at any point on the top rail or corresponding member.

- A hinged floor-opening cover shall guard every hatchway and chute floor opening. Or the opening shall be barricaded with railings to leave only one exposed side. The exposed side shall be provided either with a swinging gate or so offset that a person cannot walk into the opening.
- An extension platform outside a wall opening onto which materials can be hoisted for handling shall have a standard railing that meets handrail standards. However, the inside of an extension platform may have removable railings to facilitate handling materials. Workers removing guardrails must utilize personal fall prevention equipment to tie off while working on or near platforms that are not 100% protected by guardrail.

Fall protection systems.

- Guardrail Systems
    - The top rail height of a guardrail system must be 42", + or – 3". Midrail heights must be half of that distance.
    - Perimeter cable shall not be less than 3/8" steel cable.
    - Corner uprights must be braced so that the required tension may be maintained.
    - The cable must be terminated with three U-bolt wire rope clips that maintain an efficiency rating of at least 80% of the wire rope's breaking strength as proven through product documentation (e.g. Crosby clips).
    - The U-bolt clips must have the U-bolt section on the dead or short end of the rope and the saddle on the live or running end of the rope.
    - The use of any combination of hook turnbuckles as part of the perimeter cable system is prohibited.
    - A Personal Fall Arrest System (PFAS) must not be attached to a guardrail system unless a registered professional engineer designs the system to accommodate the PFAS; documentation of that design must be maintained on site.
    - The top rail of guardrail systems must be able to withstand a force of 200 lbs. in all directions, without failure, and must be smooth surfaced to prevent hand injuries.
    - The contractor/subcontractor installing the perimeter cable guardrail system shall submit a design with details on how the system will be installed and maintained.
    - All guardrail systems [with the exception of scaffolds systems or where it can be proven to create a greater hazard] must be equipped with orange perimeter screening or mesh to prevent the ability to breach the system by climbing through rails. The installation of the screening must be compliant with Whiting-Turner's orange perimeter screening guidelines. The orange perimeter screening policy satisfies the requirement of flagging a wire rope guardrail system every 6' for high visibility.

- Personal Fall Arrest Systems and Fall Restraint Systems

- A PFAS must be used when working from suspended scaffolds, when breaching any guardrail systems, and when working near unprotected floor openings and perimeter edges.
- A fall restraint system must be employed when working from articulating boom man lifts.
- A competent person must assure that fall distance calculations have been evaluated in each circumstance where a PFAS is used.
- A PFAS is not required when climbing up or down a ladder. Fall protection shall be considered by the competent person if employees work from a ladder 6' or more above a lower level and are exposed to a fall.
- Employees must use positive fall protection devices when working in proximity to any leading edge.
- Retractable lanyards must incorporate either a 3/16" steel wire cable or a nylon strap with a minimum width of 1".
- All anchorage points utilized in a personal fall arrest system must be capable of supporting a load of no less than 5000 lbs.
- Steel erectors and metal decking installers shall utilize 100% fall protection devices at all times when working at 6' or above.
- Horizontal lifelines must be designed by a registered engineer and installed under the supervision of a qualified person. A safety factor of two must be maintained.
- Adequate fall protection devices must be provided, installed, and used at all loading platforms by the contractor/subcontractor wishing to remove existing perimeter protection prior to its removal.
- Rescue procedures must be provided in writing when using a personal fall arrest system.

Training Requirements

- Each employee exposed to a fall hazard must be trained by a competent person in the recognition and avoidance of such a hazard. Proof of training shall be made available to Whiting-Turner upon request.

- Specific training includes, but is not limited to the following:
  - The type of fall exposures expected
  - The correct procedures for erecting, maintaining, dismantling, and inspecting of any fall protection system used by the employee

- When employee lacks the understanding and demonstrative skill required for the proper application of fall protection systems, the employer shall provide retraining of such employee(s).

- Retraining documentation—to include instructor's name and qualifications, training literature and sign-in sheet—must be submitted to the Whiting-Turner project team on subcontractor's letterhead.

1.11. Fire Protection and Prevention

Introduction

Each contractor/subcontractor working on a Whiting-Turner project must comply with 29 CFR 1926, Construction Industry Regulations, Subpart F – Fire Protection and Prevention, in addition to the following guidelines.

Procedures

General requirements.

- Contractor/subcontractors involved in any spark producing activity must plan to provide adequate fire extinguishers no less than 10' from their work.
- Contractor/subcontractor fire watch personnel must be trained in the use and limitations of fire extinguishers.
- Client requirements permit procedures, fire watches, shields and blankets must be considered when developing site-specific fire prevention procedures.
- All firefighting equipment must be clearly visible and access to the equipment must be maintained at all times.
- Travel distance to a fire extinguisher shall not exceed 100 feet.
- Each portable fire extinguisher shall undergo an annual certification & have an inspection tag affixed. These services shall be performed by qualified, authorized, certified and actively licensed fire extinguisher companies.
- Portable fire extinguishers must be inspected monthly. The documentation must be a weather resistant tag attached to the extinguisher. A fire extinguisher log is recommended for back-up.

Fire prevention.

- Temporary offices or trailers, when located inside of a building under construction, must be constructed of fire retardant materials.
- Combustible materials, such as cardboard, wooden pallets, etc., must be removed from the work area immediately.

Flammable liquids.

- All storage, handling or use of flammable liquids shall be under the supervision of qualified persons.
- All sources of ignition shall be prohibited in areas where flammable liquids are stored, handled, and processed. Suitable NO SMOKING OR OPEN FLAMES signs shall be posted in all such areas.
- Contractor/subcontractor must provide and mount a 20lb ABC fire extinguisher between 25'-75' from flammable storage.
- Flammable liquids shall not be stored in areas used for exits, stairways or used for safe passage of people.
- Dispensing systems shall be electrically bonded and grounded.

- Above ground storage tanks shall be double-walled or provided with a secondary means of containment. Secondary containment shall have a capacity at least equal in volume to that of the largest tank plus 10 percent of all other tanks enclosed. Provision shall be made for draining off accumulations of ground or rainwater or spills. Drain plugs shall remain in place except when draining.
- A metal cabinet meeting the requirements of NFPA 30, Flammable and Combustible Liquids, shall be provided for the storage of more than a total of 25 gallons of flammable liquids and greases in buildings used for other than storage or processing. Not more than a total of 60 gallons shall be stored in any one cabinet. Individual containers must be metal, kept tightly closed, and shall not exceed five (5) gallons capacity.
- Smoking or open flames within 50 feet of where flammables are being used or transferred or where equipment is being fueled is prohibited.
- Areas in which flammable liquids are transferred, in quantities greater than 5 gallons from one tank or container to another tank or container, shall be separated from other operations by 20 feet or by a five-foot partition, having a fire resistance of at least one hour. Drainage or other means shall be provided to control spills, Natural or mechanical ventilation shall be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.
- Workers shall be required to guard carefully against any part of their clothing becoming contaminated with flammable liquids. They shall not be allowed to continue work when their clothing becomes contaminated and must remove or wet down the clothing as soon as possible.
- Equipment using flammable liquid fuel shall be shut down during refueling, servicing or maintenance.
- Where an automatic extinguishing system is provided, the system shall be designed and installed in accordance with NFPA recommendations.
- In every inside storage room there shall be one clear aisle maintained at least three feet wide.
- Outdoor portable tanks shall be at least 20 feet from buildings. Individual tanks shall be at least 5 feet apart.
- The dispensing units shall be protected against collision damage.
- Handling of all flammable liquids by hand shall be in safety containers with flame arresters. This requirement shall not apply to those flammable liquid materials that are extremely hard to pour, that may be handled in original shipping containers. For quantities of one gallon or less, only the original container or approved metal safety cans shall be used for storage, use and handling of flammable liquids.
- Storage of flammable/combustible liquids on or inside of buildings under construction shall be no more than one-day supply.

Paints and painting.

- Paints, varnishes, lacquers, thinners, or other volatile painting materials and containers shall be kept tightly closed when not in use and shall be stored in accordance with NFPA recommendations.

- Unopened containers of paint, varnishes, lacquers, thinners, and other flammable paint materials shall be kept in a well-ventilated location, free of excessive heat, smoke, sparks, flame, or direct rays of the sun.
- Paint-soiled clothing and drop cloths, when not in use, shall not be stored on site.
- Paint scraping, and paint-saturated debris shall be removed daily from the premises.
- Ventilation adequate to prevent the accumulation of flammable vapors to hazardous levels shall be provided in all areas where painting is done, or paints are mixed.

Liquid petroleum gases.

- Storage, handling, installation and use of liquefied petroleum gases and systems shall be in accordance with NFPA 58. LP gas shall not be stored indoors.
- Liquefied petroleum gas containers and equipment shall not be used in unventilated spaces below grade in pits, below decks and other such spaces where dangerous accumulations of heavier-than-air gas may accumulate due to leaks or equipment failure.
- Equipment using liquefied petroleum gas shall be shut down during refueling operations.
- Filling of fuel containers for motor vehicles from bulk storage containers shall be performed not less than 10 feet from the nearest masonry-walled building, or not less than 25 feet from the nearest building or other construction and, in any event, not less than 25 feet from any building opening.
- Filling of portable containers or containers mounted on skids from storage containers shall be performed no less than 50 feet from the nearest building.

Gasoline power.

- Fire
    - Only approved containers are allowed for the storage of flammable liquids. An approved container is one which is constructed of metal, has a spring-loaded top that allows venting of fumes and contains a flash arresting screen and spout cover.
    - Provide a 20-pound ABC dry chemical type extinguisher between 25’-75’ from area where flammable liquids are being handled
    - “No Smoking” and “No Open Flame” signs must be conspicuously posted in service, refueling, or flammable liquid storage areas.
    - All drums shall be properly labeled in accordance with 29 CFR 1910.1200 Hazard Communication.
- Fumes
    - Gas engines exhaust carbon dioxide and carbon monoxide. Dioxide is heavier than air; monoxide slightly lighter. A mixture of the gases usually is heavier than air although heat may cause it to rise. Both are without color, taste or smell. Light concentrations cause headache and nausea. Death is swift in heavy concentrations. A few minutes may be too long. Do not discount this hazard. If anyone exhibits symptoms, do not attempt rescue without proper personal protection equipment.
    - Do not run gas engines in pits, manholes or confined spaces.

- If gas engines are to be used inside buildings, excavations, crawl spaces under basement floors, hoist engineers' shanties, then the following must be done:
  1. Ventilation shall be required
  2. Testing the space for carbon monoxide shall be done before starting the engines
  3. Continuous monitoring

Temporary heating devices.

- Fresh air must be supplied in quantities sufficient to maintain the health and safety of all employees. If a competent person deems natural airflow inadequate, then mechanical ventilation must be provided.
- Heaters used in the vicinity of tarpaulins, canvas or similar coverings must be located at least 10' from the covering and be secured to prevent ignition due to wind.
- Open fires are not allowed on Whiting-Turner projects.
- All gas piping shall be labeled and flagged or painted; shutoff valves shall remain in place.
- Whiting-Turner permits the use of direct fired and indirect fired heaters for temporary power. Clearance from combustibles shall be maintained per the manufacturer's requirements. Direct fired temporary heaters must be equipped with the following:
  - High temperature limit switch—monitors operating temperature of equipment; provides automatic shutdown.
  - Air proving control—continuously monitors operating airflow, provides automatic shutdown.
  - Low voltage reset—provides protection for insufficient incoming power.
  - Redundant solenoids—dual gas valves as required, for redundant gas flow protection.
  - Electronic ignition sequence—flam safety start-up with continuous electronic monitoring of equipment in firing mode of operation.

Note: Housekeeping is the best defense against fires. All trash and debris shall be placed in proper containers.

1.12. Hand and Power Tools Policy

Introduction

All Whiting-Turner Employees and Contractors/subcontractors working on a Whiting-Turner project must comply with 29 CFR 1926, Construction Industry Regulations, Subpart I – Tools – Hand and Power, the manufacturer's safety recommendations, and the following guidelines.

Procedures

General requirements.

- Hand and power tools must be maintained in a safe condition, per manufacturer's guidelines.
- If the tool is designed to accommodate a guard, the guard must be in place while the tool is being used.
- Tools manufactured with a handle shall be used with the handle in place.
- All two-handed tools must be used with two hands.
- Additional personal protective equipment (PPE), such as a face shield or hearing protection, may be required while operating a tool. If so, they must be in use.
- Any person found making a tool guard inoperable will be immediately removed from the site.

Hand tools.

- Drift pins, wedges, chisels, and other impact tools must be kept free of mushroomed heads.
- Wrenches must not be issued or used when the jaws are sprung, and slippage is probable.

Electric powered tools.

- All power tools must be double insulated or provided with a three wire, grounded connection.

Pneumatic power tools.

- Each connection on a pneumatic tool and air hose must be secured with a "whip-check" or similar device.
- All air hoses, with an inside diameter exceeding ½ inch, must have a flow reduction device (OSHA valve) at the supply source to reduce pressure in case of hose failure.
- Compressed air must not be used for cleaning unless the pressure is reduced to less than 30 psi and appropriate guarding and PPE are in place.

Fuel powered tools.

- Fuel powered tools must be stopped and turned off while being refueled, serviced, or maintained.

Powder-actuated tools.

- Users of powder actuated tools must be properly trained and certified to operate the equipment. Certification must always be kept on the user's person while the tool is in use.
- The manufacturer, or a representative thereof, must train workers in the safe use of powder-actuated tools.
- The tool must be tested each day, according to manufacturer's recommendations, before loading to see that safety devices are in proper working condition.
- Tools must not be loaded until just prior to the intended firing time.
- Loaded tools must not be left unattended.
- All tools must be used with the correct shield, guard or attachment recommended by the manufacturer.
- Unspent shots must be disposed of according to the manufacturer's recommendation and must be removed from the site by the user each day.

Abrasive wheels and tools.

- The RPM rating on all grinding machine motors must not exceed the speed rating of the grinding wheel attachment.
- The grinding wheel shall be compatible with the grinder for which it is being used (i.e. proper size and type).
- All abrasive wheels must be closely inspected, and ring tested before mounting to ensure they are free from cracks or defects.

Woodworking tools.

- All portable, power driven circular saws must be equipped with guards above and below the base plate or shoe.
- When the tool is withdrawn from the wood, the lower guard must automatically and instantly return to the covering position.
- Any worker found disabling a blade guard will be immediately removed from the site.
- Saws must have the electrical cord unplugged when making blade adjustments or changing blades.

1.13. Hearing Conservation

Introduction

Whiting-Turner recognizes that excessive noise can cause permanent hearing loss if appropriate administrative or engineering controls or personal protective equipment is not used. Limiting exposure to excessive noise through engineering controls is Whiting-Turner's preferred method of control.

Procedures

Permissible Noise Exposures

Duration per day, hours	Sound level dba, slow response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

- Protection against the effects of noise exposure must be provided when the sound levels exceed those shown in the table above. The measurement must be observed on the A-scale of a sound level meter at slow response.

- When employees are subjected to sound levels exceeding those shown above, feasible administrative or engineering controls must be utilized.

- If such controls fail to reduce sound levels within the levels shown above, personal protective equipment must be provided and used to reduce the noise exposure.

- In all cases where the sound levels exceed the values shown in the table above, a continuing, effective hearing conservation program must be administered.

- If the noise levels are determined to cause an 8-hour TWA exposure greater than 85 dba, the contractor/subcontractor must provide a comprehensive hearing conservation program before continuing work. At a minimum this program shall include:
    - Noise survey data for typical work they perform.
    - Noise dosimetry data for typical exposures from the work they perform.
    - Training records for employees working on the Whiting-Turner Project.

1.14. Hexavalent Chromium

Introduction

Hexavalent chromium (Cr(VI)) compounds are widely used in the chemical industry as ingredients and catalysts in pigments, metal plating and chemical synthesis. Hexavalent chromium can also be found in the construction industry through welding on stainless steel or on hexavalent chromium painted surfaces. The major health effects include lung cancer, nasal septum, skin ulcerations, and contact dermatitis. The purpose of this policy is to prevent employee exposure to hexavalent chromium compounds during construction activity. Each contractor working on a Whiting-Turner project must comply with 29 CFR §1926.1126, Chromium (VI), in addition to the following guidelines.

Procedures

Permissible exposure limit.

- Since this construction activity is limited to specialty work, Whiting-Turner will direct the Contractor/subcontractor to provide specific Activity Hazard Analysis (AHA) meetings to address potential exposure.
- The Employer must ensure that no employee is exposed to an airborne concentration Cr(VI) in excess of 5 micrograms per cubic meter of air (5 ug/m^3) calculated as an 8-hour time-weighted average (TWA).
- Engineering controls are the preferred method to achieve the Permissible Exposure Limit (PEL).

Exposure determination.

- The contractor/subcontractor must determine the 8-hour TWA exposure for each employee exposed to Cr(VI). This may be accomplished using two options; scheduled or performance-oriented monitoring.
- Scheduled Monitoring
    - The contractor/subcontractor must perform initial monitoring to determine the 8-hour TWA for each employee based on a sufficient number of personal breathing zone samples.
    - If the contractor/subcontractor does representative sampling, it must be conducted on the employee(s) expected to receive the highest exposure.
    - If the monitoring indicates that employee exposures are below the action level (1/2 the PEL or 2.5 ug/m3), the employee may discontinue monitoring.
    - If the monitoring indicates that employee exposures are at or above the action level, the contractor/subcontractor must perform periodic monitoring at least every six months.
- Performance-Oriented Monitoring
    - If this option is chosen, the contractor/subcontractor must determine the 8-hour TWA for each employee based on any combination of air monitoring, historical data, or objective data sufficient to accurately characterize employee exposure to Cr(VI).

Methods of compliance.

- As stated previously, engineering and work practice controls must be used to reduce and maintain employee exposure to Cr(VI) to or below the PEL.
- If feasible engineering and work practice controls are insufficient to reduce exposure below the PEL, then respiratory protection must be used.
- The contractor/subcontractor will not be allowed to rotate employees to different jobs to achieve compliance with the PEL.

Respiratory protection.

- Respiratory protection use must comply with OSHA's Respiratory Protection requirements.
- The contractor/subcontractor must provide respiratory protection in the following circumstances:
    - Periods necessary to install or implement feasible engineering or work practice controls.
    - Work operations where an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce the PEL.
    - Emergencies

Protective work clothing and equipment.

- Where there may be a hazard to the skin or eyes from exposure to Cr(VI) the contractor/subcontractor must provide protective clothing or equipment to the employee.
- The contractor/subcontractor must ensure that the employees remove all clothing and equipment that may be contaminated with Cr(VI) when the work is complete or at the end of the shift.
- The contractor/subcontractor must ensure that chromium-contaminated clothing is not removed from the workplace.
- When contaminated protective clothing or equipment is removed for laundering or cleaning, the contractor/subcontractor must ensure that it is stored and transported in impermeable bags or containers.
- The contractor/subcontractor must inform any person who launders or cleans clothing or equipment of the potential effects of exposure to Cr(VI) and that the clothing or equipment should be laundered or cleaned in a manner that minimizes skin or eye contact.

Hygiene areas and practices.

- Where protective clothing and equipment is required, the contractor/subcontractor must provide change rooms that comply with 29 CFR 1926.51.
- Where skin contact may occur, the contractor/subcontractor must provide hand-washing facilities that comply with the previously noted standard.

Medical surveillance.

- The contractor/subcontractor must make medical surveillance available, at no cost, to employees who meet the following criteria:
    - Those who are or may be occupationally exposed to Cr(VI) at or above the action level for 30 or more days a year
    - Those who are experiencing signs or symptoms of adverse health effects associated with Cr(VI) exposure
    - Those exposed in an emergency

Communication.

- Must follow the same communication of hazardous chemicals highlighted in Whiting-Turner's Hazard Communication Program.

Recordkeeping.

- The contractor/subcontractor must maintain the following data records:
    - Air monitoring
    - Historical monitoring
    - Objective data
    - Medical surveillance

1.15. Housekeeping

Introduction

These requirements apply to all work performed by Whiting-Turner employees, contractors/subcontractors, and vendors. Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart C – General Safety and Health Provisions

Procedures

- Work areas and paths of ingress/egress must be kept clear and free of obstructions by material/debris.
    - Clean-as-you-go practices are required.
    - Require contractors/subcontractors to sort and organize material, sweep daily, and standardize activities to aid in the elimination of storage of excess/unused material in active work areas
    - Materials shall not be stored in a manner that will block, restrict, impede, or prevent access to an egress path or emergency equipment, such as fire extinguishers, emergency eyewash or shower, emergency shutoff buttons or emergency disconnect devices.
    - Work that may temporarily block emergency exits, safety showers, elevators, corridors, and hallways will require prior Whiting-Turner approval.

- Power Cord Management:
    - All cords must be inspected before use.
    - At no time shall cords be strung across exits or in front of emergency equipment.
    - Run cords overhead in a supported fashion with nonconductive material, when feasible.
    - Run cords around perimeters, when feasible.
    - Tape cords down or use cord covers if they present a tripping hazard.
    - Support all cords that run through floors or ceilings with appropriate means.
    - All cords must be stored and put away after use. (i.e. not coiled up on floor).
    - All extension cords must be equipped with GFCI protection or be plugged into an outlet equipped with GFCI protection.
    - If the above listed safety requirements cannot be met, temporary wiring must be installed to facilitate proper cord management.

- Material Storage:
    - Materials stored near the area where work is performed should be limited to only those materials that will be used in the same shift.
    - Any material stored in a work area longer than 24 hours must be approved by Whiting-Turner.
    - Store all items neatly in cabinets or on shelves.
    - Gang boxes, toolboxes, and sea containers/conex boxes shall not have materials stored on top of them.

- If more storage area is needed, contact Whiting-Turner Superintendent.

- Chemical Storage:
  - All chemicals brought on site must have been specified for use on the project.
  - The user of the chemical must provide Whiting-Turner an SDS prior to bringing the substance on site.
  - All chemicals and equipment containing chemicals must be stored in approved areas (i.e. chemical cabinet).
  - Contractors are responsible for removing all unused chemicals from the Whiting-Turner project site at the completion of their contract.
  - All chemical containers must be properly labeled.
  - Chemical/gas cylinders (welding, purging, leak detection cylinders, etc.) must be secured at all times.
  - All dedicated chemical storage areas must have safety data sheets (SDS) available at the storage location.

- Material/Waste Disposal:
  - Waste disposal methods shall be specified within each contract/subcontractor's Activity Hazard Analysis (AHA) and Work task Plan (PTP).
  - All hazardous waste must be disposed of in accordance with Federal, State, and Local regulations and shall comply with applicable Whiting-Turner hazardous waste programs.
  - All hazardous waste must be properly labeled.
  - Hazardous waste materials must be discarded into proper disposal containers
  - Non-hazardous waste must be disposed of into appropriate recycle or disposal containers.

1.16. Materials Handling and Rigging Policy

Introduction

Material handling and rigging incidents account for many tradespersons compensation claims annually. Each contractor working on a Whiting-Turner project must comply with 29 CFR 1926, Construction Industry Regulations, Subpart H – Materials Handling, Storage, Use and Disposal, in addition to the following guidelines.

Procedures

General material storage.

- Aisles and passageways shall be kept clear at all times for the safe movement of material handling equipment and employees.
- Materials shall not be stored within 6' of any hoist way or interior floor opening.
- Materials shall not be stored within 10' of an exterior wall which does not extend above the material.

Rigging.

- General Requirements
  - Before each use rigging equipment, including its fastenings and attachments, must be inspected by a competent person/qualified rigger.
  - Inspections must also be conducted during use and where additional service conditions warrant.
  - Defective or damaged slings must be removed from service immediately and destroyed or tagged out of service.
  - Taglines shall be utilized to minimize worker exposure to falling and swinging loads.

- Lifting Chains
  - Alloy steel lifting chains must have a permanently affixed, durable identification tag stating size, grade, rated capacity, and sling manufacturer.
  - Attachments, including, but not limited to hooks, rings, oblong links, pear-shaped links or other welded or mechanical links, must have a rated capacity at least equal to the lifting chain.
  - Job made shop hooks or links, makeshift fasteners formed from rebar or bolts or other such attachments are not allowed on Whiting-Turner projects.
  - Additional lifting chain inspection criteria is based upon the frequency of use, the severity of the service conditions, the nature of the lifts being made, and the experience gained on the service life of slings used in similar circumstances.
  - Lifting chains shall be inspected, prior to each use.

- Wire Rope Slings
  - The manufacturer's safe working loads must be followed at all times.

- Wire rope must not be used if, in any length of eight diameters, the total number of visible broken wires exceeds 10% of the total number of wires.
- Wire rope must not be used if it shows signs of excessive wear, corrosion, or defects.
- Slings shall not be shortened with knots, bolts, or other makeshift devices.
- Slings must be protected from sharp edges with padding, softeners, or similar devices.
- Shock loading of a sling is prohibited, and slings must not be pulled from under a load when the load is resting on the sling.

- Synthetic Slings
  - Each synthetic sling must be identified with the name of the manufacturer, rated capacities, and type of material.
  - Synthetic slings must be immediately removed from service if any of the following conditions are present; acid or caustic burns, melting or charring of any of the sling surface, snag, puncture, tear or cut, broken, or worn stitches or distorted fittings.
  - Slings must be protected from sharp edges with padding, softeners, or similar devices.

1.17. Medical Services Staffing Policy

Introduction

Each contractor/subcontractor must have one person on site with a valid certificate in first aid and cardio pulmonary resuscitation (CPR) while actively engaged in work activities. The Whiting-Turner Contracting Company will have, at all times, an individual on site with a valid certificate in first aid and cardio pulmonary resuscitation (CPR).

Procedures

- In addition to the first aid kit Whiting-Turner supplies, each contractor's/subcontractor's first aid kit must be in compliance with Whiting-Turner's Bloodborne Pathogen Policy.
- The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item and must be inspected at least weekly.
- Emergency telephone numbers shall be conspicuously posted.
- Where the eyes or body of any person may be exposed to injurious corrosive materials (e.g. during concrete placement), suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use.

1.18. Mobile Elevated Work Platforms

Introduction

Each contractor/subcontractor using an aerial lift on a Whiting-Turner project must comply with 29 CFR §1926.453, in addition to the following guidelines.

Procedures

- Only authorized and trained individuals may operate aerial lifts. Companies will make verification of training available to Whiting-Turner upon request.
- Aerial lifts shall be inspected by the trained operator each day prior to use, in accordance with the manufacturer's requirements.
- All aerial and scissor lifts shall be tagged according to Whiting-Turner's scaffold tagging policy
- Fall protection requirements for aerial lift use shall comply with the manufacturer's recommendations.
- Worker must use personal fall arrest systems (PFAS) or personal fall restraint systems (PFRS)—whichever the manufacturer requires—when working from articulating boom platforms.
- Workers must keep both feet on the floor of the basket; use of guardrails or toe boards to gain additional height is prohibited on Whiting-Turner projects. Persons observed committing this unsafe act will be removed from site for a minimum of 3 days; their employer must retrain them prior to their return to the site.
- Where aerial and scissor lifts are used on concrete slabs, any floor depressions or grade changes are required to be barricaded to restrict travel onto that area.
- The area(s) below the basket or platform of aerial lifts shall be cordoned off using reinforced danger tape—or something of equivalent or greater tensile strength—and by using signage to identify the overhead hazard if/when the possibility of falling objects exist.
- Field modifications are not allowed on aerial lifts. Aerial lifts shall not be used to hoist, raise, or position material outside of the platform or basket unless manufactured to do so.

1.19. Motor Vehicles, Mechanized Equipment, and Marine Operations Policy

Introduction

Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart O – Motor Vehicles, Mechanized Equipment, and Marine Operations in addition to the following guidelines.

Procedures

- All operations requiring the use of heavy equipment will require a pre-planning meeting, contractors/subcontractors must include strategies to prevent injuries to tradespersons and the public.

- All fuel driven equipment being used indoors or in partially enclosed spaces—that does not meet the Final Tier 4 engine requirements—must have scrubbers where the potential for carbon monoxide overexposure exists.

- Equipment meeting the Final Tier 4 emissions standards are permitted—continuous air monitoring for the concentration of CO is required.

- Keys are to be removed at the end of the shift and cab doors locked.

- All material handling equipment, with an obstructed view to the rear, must have a back-up alarm that is functional and distinctly audible.

- A “spotter”, wearing an ANSI approved high visibility traffic vest, may be used in lieu of an alarm, but only if such devices are not routinely supplied on such a vehicle. Vehicles must never back “blind” on a Whiting-Turner project.

- If the competent person determines that the back-up alarm is not sufficient, a spotter must be present to help facilitate the rear operation of the equipment.

- Equipment and dump trucks equipped with faulty back-up alarms shall be repaired within 24hrs or taken out of service until back-up alarms are repaired. During that 24hr period, to remain in service, a spotter must be present to help facilitate the rear operation of the equipment.

- Forklift operator training records must be submitted to the Whiting-Turner project team prior to site use.

- A seatbelt must be provided and used when operating equipment on a Whiting-Turner project.

- All windows must be in full working condition. Any equipment with broken glass of any size, including mirrors will be taken out of service.

- Equipment without a rollover protective structure (ROPS) or seatbelt is not allowed on any Whiting-Turner project unless it was manufactured in such a way and determined to be more hazardous with such protections.

- Use of cell phones and radios are not permitted while operating machinery.

- No one may work within 20' of motorized equipment like an excavator, backhoe, loader etc. unless that person's presence is fundamental to the operation underway and the operator can observe the person at all times.

- All equipment with a rotating superstructure shall have swing radius protection or a designated spotter.

Hoisting personnel.

- Personnel hoisting requirements - The use of load handling equipment to hoist personnel is prohibited unless the employer can demonstrate that other methods would be more hazardous and is able to comply with the personnel hoisting requirements that are established in the standard.
- Hoisting personnel on Whiting-Turner project sites shall be done only after review of the plan and deemed feasible by Vice President and the Area EH&S Manager assigned to the project.
- Hoisting personnel on Whiting-Turner projects shall be considered a critical lift or activity, and therefore shall meet all requirements of a critical lift before the lift may begin.

1.20. Personal Protective Equipment

Introduction

All Whiting-Turner and contractor/subcontractor employees on Whiting-Turner projects must wear all the personal protective equipment necessary to complete their jobs safely. Mandatory personal protective equipment required on the project site includes, but is not limited to, hardhat, safety glasses, high visibility vests, and sturdy leather work boots. A competent person onsite will determine additional necessary equipment. Each contractor/subcontractor working on a Whiting-Turner project site will comply with 29 CFR 1926, Construction Industry Regulations, Subpart E – Personal Protective and Lifesaving Equipment; in addition to the following guidelines.

Procedures

- All Whiting-Turner employees, contractor/subcontractor employees and visitors to project sites are required to wear safety glasses that comply with ANSI Z87.1.
    - Dark lenses are not to be worn inside of buildings, in enclosed areas, or at night.
    - Tinted lenses must be worn on light colored membrane roofs.
    - Prescription eyeglasses and sunglasses that do not comply with ANSI Z87.1 are prohibited.
    - A full-face shield is required while grinding concrete.
    - Face shields are required for: welding, burning, and cutting; using abrasive wheels; chop saws; portable grinders or files, chippings concrete, stone, or metal; drilling or working under dusty conditions; using explosive actuated fastening or nailing tools; overhead work; work with hazardous liquids or gases.
    - Face shields must be compatible with a hard hat.

- All Whiting-Turner employees, contractor/subcontractor employees and visitors to project sites are required to wear hardhats that comply with ANSI Z89.1.
    - Aluminum hardhats, and bump caps are not permitted on Whiting-Turner projects.
    - For security and identification purposes, all hardhats shall display the contractor/subcontractor name and/or decal indicating for whom the employee works as well as the employee's name.
    - Employees exposed to electrical voltages of 600V or greater shall wear hardhats that meet the requirements of ANSI Z89.2 type hardhats.

- All Whiting-Turner employees, contractor/subcontractor employees and visitors to project sites are required to wear substantial leather work boots.
    - Employees working with jackhammers, tampers and similar equipment are required to utilize metatarsal guards over their work boots.

- Where necessary, each employee shall use equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation.

- Hand protection is required when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, cuts or lacerations, abrasions, punctures, chemical burns, thermal burns, and harmful temperature extremes.

- Workers exposed to roofing tar must wear long sleeved shirts and gloves. Workers who are directly exposed to hot tar must also wear a full apron and face shield.

- Personal protective equipment labeled "WT" or Whiting-Turner" is reserved for the use of Whiting-Turner employees only.

Roles and Responsibilities

Contractor/subcontractor management shall
- provide necessary PPE and training,
- monitor use of PPE,
- provide replacement PPE when needed,
- identify any new hazards that would require the use of PPE; and
- be responsible for the assurances of PPE adequacy, maintenance, and sanitation.

Contractor/subcontractor employees shall
- properly use and care for assigned PPE and
- immediately inform supervisor if PPE is damaged or not effective.

1.21. Respiratory Protection

Any contractor/subcontractor with employees who are required to wear respiratory protection must submit their company's respiratory protection program prior to start of work. Compliance with this requirement applies to filtering face-piece respirators (N95 Respirators) as well.

All programs shall meet or exceed Whiting-Turner policies as well as the most current federal, state, and local regulatory requirements.

1.22. Sanitation Guidelines

Introduction

Each contractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart D - Occupational Health and Environmental Controls; employers shall establish and maintain basic sanitation provisions for all employees in all places of employment as specified in the following paragraphs.

Procedures

Drinking water supply.

- An adequate supply of drinking water shall be provided; cool water shall be provided during hot weather.
- Only approved potable water systems shall be used for the distribution of drinking water.
- Portable drinking water dispensers shall be designed, constructed, and serviced to ensure sanitary conditions; shall be capable of being closed, and shall have a tap.
- Containers shall be clearly marked as "drinking water" and shall not be used for other purposes.
- Workers shall use cups when drinking from portable water coolers/containers.
- Unused disposable cups shall be kept in sanitary containers and a waste receptacle shall be provided for used cups.

Non-potable water.

- On outlets dispensing non-potable water, signs cautioning that the water is unsafe for drinking, washing, or cooking will be conspicuously posted

Toilets.

- When sanitary sewers are not available, one of the following facilities, unless prohibited by local codes, shall be provided: chemical toilets, recirculating toilets, or other toilet systems as approved by state/local governments.
- Each toilet facility shall be equipped with a toilet seat and toilet seat cover. Each toilet facility - except those specifically designed and designated for females - shall be equipped with a metal, plastic, or porcelain urinal trough. All shall be provided with an adequate supply of toilet paper and a holder for each seat.
- Toilet facilities shall be so constructed that the occupants shall be protected against weather and falling objects; all cracks shall be sealed, and the door shall be tight-fitting, self-closing, and capable of being latched.
- One toilet facility shall be provided for every ten (10) persons on site.
- Separate toilet facilities shall be provided for each sex.
- Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation.

Washing facilities.

- Washing facilities shall be provided at toilet facilities and as needed to maintain healthful and sanitary conditions.
- Each washing facility shall be maintained in a sanitary condition and provided with water (either hot and cold running water or tepid running water), soap, and individual means of drying. However, where it is not practical to provide running water, hand sanitizers may be used as a substitute.
- Whenever employees are required by a standard to wear protective clothing, change rooms with storage facilities for street clothes and separate storage facilities for protective clothing shall be provided.

Vermin control.

- Enclosed workplaces shall be constructed and maintained, as far as practical, to prevent the entrance or harborage of rodents, insects, and other vermin. An effective extermination program shall be instituted where the presence of such vermin is detected.

1.23. Scaffolds

Introduction

Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart L – Scaffolds, in addition to the following guidelines.

Procedures

- Scaffolds are required to be designed, erected, and inspected by a competent person in accordance with OSHA 1926 – Subpart L Scaffolding Standards.

- Contractors/subcontractors erecting scaffolding must submit a scaffold erection plan/drawing to the Whiting-Turner team showing a section view of necessary components including ties/braces, platforms and means of access.

- Employees erecting or dismantling a scaffold are required to utilize appropriate fall protection at heights six (6) feet or above unless proven to be infeasible or more hazardous as determined by their company's competent person.

- Base plates/screw jacks and mudsills or other adequate firm foundation are required to be used as part of a complete support scaffold.

- All scaffolds, including carpenters' bracket scaffolds, over six (6) feet in height shall have guardrails on all open sides, unless otherwise specified by the manufacturer. If guardrails cannot be used on a walking/working platform, contractors/subcontractors are required to use another means to protect employees from a fall.

- Cross-braces are not considered to be an adequate guardrail (fall protection) system and shall not be used as a top or mid rail on Whiting-Turner projects.

- Contractors shall comply with Whiting-Turner's scaffold tagging policy. The scaffold tag system shall be color coded and visible. The competent person shall inspect the scaffolding system before each work shift. The competent person shall sign and date the scaffold tag.
    - Green tags are reserved for complete systems
    - Red tags are reserved for erection/dismantling activities and for scaffolds with deficiencies in the system
    - Yellow tags are reserved for systems that require the use of both PFAS and guardrail systems for incomplete scaffold systems or platforms.

- Scaffold tags are required at each entry point of the scaffold system.

- Each contractor/subcontractor using the scaffold system shall have its competent person place a tag at each point of entry for their employees.

  - In the case of stair towers, the responsible party's competent person shall put the tags in place and inspect the stair towers daily.

- Fall protection is required when walking/working at six (6) feet or above.

- The scaffold erection competent person will consider/determine if a horizontal, diagonal brace shall be in place to prevent the scaffold from wracking.

- Scaffold working platforms are required to have a fully planked deck (5 planks). Walking platforms for use during the erection/dismantling of a scaffold are required to be at least two (2) planks wide.

- Walking/working surfaces are required to be made of scaffold grade planks. Planking is to be inspected by the competent person erecting the scaffold prior to installation during the scaffold erection. Damaged planks found during the initial inspection and all concurrent inspections are to be immediately removed from service and replaced.

- Walking/working surfaces are required to comply with the following.
  - Planking that does not extend at least six (6) inches past the bearing surface are required to be secured in such a manner to prevent accidental displacement.
  - Planking that is less than ten (10) feet in length is not to extend more than twelve (12) inches past the bearing surface and planking greater than ten (10) feet in length is not to extend past the bearing surface more than eighteen (18) inches without adequate barricades to prevent employees from stepping on the cantilevered end. Al planking must rest on bearers.

- Contractors/subcontractors are to provide a proper and safe access/egress for employees working on a scaffold. Only approved built-in scaffold stairs or ladders are to be used for access and egress while working on scaffolds.

- Contractors/subcontractors are required to load materials (brick, block, stone, etc.) as close to the load bearing surface as possible. Loading in the center of the scaffold bay is not permitted. Scaffolds shall be designed to support 4x the intended load; load capacity ratings shall not be exceeded.

- Contractors/subcontractors performing work on scaffolding are required to complete a daily scaffold inspection prior to allowing their employees on the scaffold. The above-mentioned inspection is required to be completed by an employee competent in scaffold safety.

- Contractors/subcontractors are responsible for training their employees and must submit the training documentation to Whiting-Turner upon request.

- Rolling/mobile scaffold systems 30" or less in width (baker-type scaffolds) are required to have guardrails on all sides unless otherwise specified by manufacturer or local jurisdiction having authority; all wheels are required to be locked when an employee is on the working

platform. Outriggers are required when the height of scaffold exceeds 3x the base width or according to the manufacturer's recommendation, whichever is more stringent. Self-propelling/skateboarding is not permitted.

- Suspended scaffolds shall be designed, constructed, operated, inspected, tested, and maintained as specified in the operating manual for the device; all operating instructions and design specification shall be submitted to the Whiting-Turner project team prior to installation and a copy shall remain on the jobsite.

1.24. Signs, Signals and Barricades

Introduction

All employees of the Whiting-Turner and its contractors/subcontractors will comply with 29 CFR 1926, Construction Industry Regulations, Subpart G, Signs, Signals and Barricades.

Procedures

- Signs must be posted to warn others that a temporary hazard exist in the area where the subcontractor is working.

- Barricades must be utilized to deter the passage of persons or vehicles when necessary.

- Required signs will comply with the OSHA standards described in 1926.200.

- Where areas may require additional awareness or present unique danger, the use of warning tape may be necessary.
    - For areas that require additional caution, (e.g. uneven surfaces, wet surfaces) yellow caution tape should be used. Caution tape does not prohibit access.
    - For areas where entry and travel are prohibited, (e.g. areas where fall protection is being erected or areas with overhead work being performed) red danger tape should be used. Danger tape is intended to prohibit access.
    - Caution/danger tape has limitations; therefore, it shall not be used in lieu of physical barricades when an occurrence calls for a physical barricade.
    - The intent of the warning tape is to notify of hazards that may arise during construction activities. Every effort must be made to correct these situations with permanent solutions in a timely fashion.
    - All caution and danger tape used on Whiting-Turner project sites shall be of the reinforced type and shall be supplemented with a tag/label affixed with the responsible party's name, company, contact number, and potential hazard.

- All flagmen shall be trained on appropriate procedures before controlling traffic, as required by the Manual on Uniform Traffic Control Devices (MUTCD) and any municipal or state guidelines.

- All flagmen shall utilize sign paddles and shall be outfitted with high visibility garments, as required by current ANSI standards. All PPE and traffic control equipment shall be outfitted with reflectorized material for night work as required by current ANSI standards.

- All crane and hoist signals shall comply with applicable ANSI standards.

- All traffic control devices shall comply with the MUTCD and any applicable Municipal or State guidelines.

- All signs shall be secured in such a way that would allow venting in the event of high winds.

1.25. Silica Exposure Control Plan

Exposure to silica can lead to silicosis, a serious and sometimes fatal respiratory disease. Silicosis develops from being exposed to and breathing in silica dust. Excessive amounts of silica dust may be generated during activities such as, but not limited to: sandblasting, rock drilling, roof bolting, foundry work, stonecutting, drilling, quarrying, brick/block/concrete cutting, gunite operations, lead-based paint encapsulate applications, asphalt paving, cement products manufacturing, demolition operations, hammering, and chipping and sweeping concrete or masonry, drywall sanding and concrete saw cutting.

Any contractor/subcontractor whose work potentially exposes their workers to silica above allowable limits is required to submit their company's Silica Exposure Control Plan to Whiting-Turner prior to start of work. The contractor's/subcontractor's plan must be in compliance with the requirements set forth in 29 CFR 1926.1153.

Releases of plumes of silica laden dust are prohibited on Whiting-Turner projects. Observation of such activities will require cessation of the task and a meeting with the creating contractor/subcontractor to determine what engineering or work practices need to be put in place to ensure these releases are reduced and/or eliminated as prescribed in their silica exposure control plan.

1.26. Stairways and Ladders

Introduction

Each contractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart X – Stairways and Ladders, in addition to the following guidelines.

Procedures

General requirements.

- A stairway or ladder must be provided at all personnel points of access where there is a break in elevation of 19” or more.
- A double-cleated ladder or two or more separate ladders must be used when ladders are the only means of egress from a working area with 25 or more employees.
- All aluminum and commercially manufactured wooden ladders shall not be used on Whiting-Turner projects.

Stairways.

- When doors from an office or storage trailer open directly onto a stairway, a platform must be provided, and the swing of the door must allow an additional 20” to prevent the door from striking an employee.
- Workers are not allowed to use metal pan stairs unless they have been fitted with wooden filler blocks or poured with concrete.
- Incomplete/unsafe stairways must be physically blocked off to prevent unauthorized use; barricade tape would be an insufficient restrictive method.
- Stairways with four or more risers or rising more than 30”, whichever is less, must have a handrail and a stair rail along each unprotected side or edge.

Ladders.

- All hazards must be evaluated by a competent person when employees are engaged in work from a ladder 6’ or more above an adjacent surface.
- Fall protection shall be considered by the competent person if employees work from a ladder 6’ or more above a lower level and are exposed to a fall.
- Employees working on ladders must be at least one and a half times the height of the ladder away from any perimeter, shaft, stairway, and opening where the fall distance exceeds 6’ without employing additional means of fall protection.
- Contractors/subcontractors shall provide ladders with duty ratings that meet the needs of their employees.
- Workers are required to select ladders that are capable of safely supporting their weight and the weight of their tools.
- When employees ascend or descend a ladder, they must maintain three-points of contact (e.g. two hands and a foot or two feet and a hand).
- Pull ropes should be placed at all access ladders so employees can safely lift tools or equipment to upper levels.

- Stepladders must be opened fully and set level when in use.
- When ladders are used to access upper landings, the side rails must extend at least 3 feet above the landing and secured from displacement at the bottom and top.
- When ladders are used to access upper landings, a guardrail system/corral shall be placed around the opening through which the ladder is protruding.
- All ladders must be used for the purpose for which they were designed.
- The base of an extension and or straight ladder is to be placed 1 foot horizontal from the face of the surface for every 4 feet vertical.

Job made ladder requirements.

- Job made wooden ladders must meet ANSI ASC A.14.4-2009 specifications.

Training.

- Each worker involved in stair and ladder use must be trained by their company's competent person in the recognition and avoidance of stair and ladder hazards.

1.27. Steel Erection

Introduction

Each contractor/subcontractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart R – Steel Erection. In addition to the items listed in this section, all contractors are to comply with all federal, state, and local requirements and codes including those in other sections of this Manual, and those imposed by the owner. All contactors shall be required to comply with all parts of these requirements based on their scope of work.

Procedures

This section set forth requirements to protect tradespersons from hazards associated with steel erection activities involved in construction.

When floors are ready for turn over the steel erection contractor must notify Whiting-Turner. Whiting-Turner will evaluate the installation and condition of the guardrail cable system provided by the steel erector and decide to accept custody of the system or to have the system removed.

The steel erection contractor has a responsibility to inspect and control fall protection in their work areas based on their scope of work.

Structure steel design.

- Column anchorage
  - All columns shall be anchored by a minimum of four (4) anchor bolts.
  - When two structural members on opposite sides of a column web, or a beam web over a column, are connected sharing common connection holes, at least one bolt with its wrench-tight nut shall remain connected to the first member unless a shop-attached or field-attached seat or equivalent connection device is supplied with the member to secure the first member and prevent the column from being displaced. If a seat or equivalent device is used, the seat (or device) shall be designed to support the load during the double connection process. It shall be bolted or welded to both a supporting member and the first member before the nuts on the shared bolts are removed to make the double connection.
  - The perimeter columns have holes or other devices in or attached to perimeter columns at 42-45 inches above the finished floor and the midpoint between the finished floor and the top cable to permit installation of perimeter safety cables. Welded nuts are not permitted as part of the perimeter safety fall protection system.

General requirements.

- Pre-Steel Construction Meeting
  - A pre-steel construction meeting shall be held prior to beginning steel erections on our projects. This meeting will be held with all parties involved in steel erection activities including but not limited to the following: steel erector, steel

fabricator, owner and/or owner representative and architect and/or structure engineer.

- This pre-construction meeting will address issues and items relating to all activities to steel erection including but not limited to the following:
  1. Adequate access roads shall be provided into and through the site for the safe delivery and movement of derricks, cranes, trucks, other necessary equipment, and the material to be erected and means and methods for pedestrian and vehicular control.
  2. A firm, properly graded, drained area, readily accessible to the work with adequate space for the safe storage of materials and the safe operation of the erector's equipment shall also be provided.
  3. The Steel Erector must be prepared to notify Whiting-Turner of the compaction requirements necessary to adequately support the crane at 360° capacities.
  4. Written notification that the concrete in footings, piers and walls and the mortar in the masonry piers and walls has attained 75 percent of the intended minimum compressive design strength, based on the appropriate ASTM standard test methods performed by Whiting-Turner's 3rd party testing agency. The steel erection contractor shall not erect steel until it has received the written notification.
  5. Pre-planning steel erection actives to ensure hoisting of structure steel avoid hazards associated with overhead operation.

- Site specific erection plans are to be posted and must including the following topics:
  - Material deliveries, material staging and storage
  - Coordination with other trades and construction activities.
  - Path for overhead loads
  - Critical lifts, including rigging supplies and equipment.
  - A description of steel erection activities and procedures
  - Stability considerations requiring temporary bracing and guying
  - Erection bridging terminus point
  - Columns and beams connections
  - Decking installation
  - Ornamental and miscellaneous iron.
  - Procedures that will be used to comply with protection from falling objects.
  - Special procedures required for hazardous non-routine tasks.

Repairs and/or modifications.

- Prior to the erection of a column, Whiting-Turner shall provide written notification to the steel erector if there has been any repair, replacement, or modification of the anchor bolts of that column.
- Anchor bolts shall not be repaired, replaced or field-modified without the approval of the project structural engineer of record.
- Columns shall be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads.

Fall protection.

- Fall Protection shall be installed and/or used along all edges of structure that are six (6) feet or more in height and shall remain in the area where the steel erection activity has been completed for Whiting-Turner to decide to accept custody or direct removal.
- All tradespersons, including connectors, engaged in steel erection activities on a walking/working surface with an unprotected side or edge more than six (6) feet above a lower level shall be protected from fall hazards by a conventional fall protection method.
- All hoisting operations in steel erection shall be pre-planned to ensure that the project requirements are met for employee protection.
- Other construction processes below steel erection are prohibited unless overhead protection for the employees below is provided.
- Full body harnesses are required for fall arrest and these harnesses require daily inspections of this equipment.
- Fall protection is required in baskets of aerial lifts.
- Roof penetrations are to be made only when equipment is ready to be installed. Later removal of the decking will require the use of an elevated surface modification permit.
- On multi-story structures, perimeter safety cables shall be installed at the final interior and exterior perimeters of the floors as soon as the metal decking has been installed.
- All materials, equipment, and tools, which are not in use while aloft, shall be secured against accidental displacement.

Cranes.

- Each contractor is responsible for complying and providing documentation based on the following requirements and providing a description of the crane selection and placement procedures.
- All operators shall submit to documentation showing that they meet the requirements to operate the crane provided.
- A description of the crane and placement procedures shall be submitted in writing to Whiting-Turner prior to delivery of this equipment.
- Each crane shall have a current annual inspection conducted by a third party and document shall be submitted to the Whiting-Turner project team.
- Cranes are to have the following in cab areas; load charts, manufacture manual, fire extinguisher and hand signal poster.
- Operator shall perform daily inspections on the crane that they will operate.
- The operator shall not operate the crane until the counter weight is properly barricaded as per OSHA standards.
- Each contractor is required to inspect the rigging equipment that will be used before each lift, and prior to placing that equipment in service, such as; grab hooks, spreader bars, extension devices, slings, and wire ropes, etc.

Structural steel erection.

- Beams and columns

- During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with at least two bolts per connection, of the same size and strength as shown in the erection drawings, drawn up wrench-tight as specified by the project structural engineer of record.
- A competent person shall determine if more than two bolts are necessary to ensure the stability of cantilevered members; if additional bolts are needed, they shall be installed.
- Solid web structural members used as diagonal bracing shall be secured by at least one bolt per connection drawn up wrench-tight or the equivalent as specified by the project structural engineer of record.

- Hoisting and rigging
  - The steel erection contractor shall ensure that all the following provisions are complied with as applicable to hoisting and rigging.
  - A competent person shall visually inspect cranes being used in steel erection activities prior to each shift; the inspection shall include observation for deficiencies during operation. At a minimum this inspection shall include the following:
    1. All control mechanisms for maladjustments
    2. Control and drive mechanism for excessive wear of components and contamination by lubricants, water, or other foreign matter.
    3. Safety devices, including but not limited to boom angle indicators, boom stops, boom kick out devices, anti-two block devices, and load moment indicators where required.
    4. Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those that flex in normal operation.
    5. Hooks and latches for deformation, chemical damage, cracks, or wear.
    6. Wire rope reeving for compliance with hoisting equipment manufacturer's specifications.
    7. Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, or moisture accumulation.
    8. Hydraulic system for proper fluid level
    9. Ground conditions around the hoisting equipment for proper support, including ground settling under and around outriggers, ground water accumulation, or similar conditions.
    10. The hoisting equipment for level position; and the hoisting equipment for level position after each move and setup.
  - If any deficiency is identified, the competent person shall make an immediate determination as to whether the deficiency constitutes a hazard.
  - If the deficiency is determined to constitute a hazard, the hoisting equipment shall be removed from service until the deficiency has been corrected.
  - The operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.

- A qualified rigger (a rigger who is also a qualified person) shall inspect the rigging prior to each lift.
- The headache ball, hook or load shall not be used to transport personnel except unless all the OSHA standards are being met to hoist employees on a personnel platform and written approval has been granted by executive management (See Cranes).
- Safety latches on hooks shall not be deactivated or made inoperable.

- Working under loads

  Routes for suspended loads shall be pre-planned to ensure that no employee is required to work directly below a suspended load except for:
  - Employees engaged in the initial connection of the steel; or
  - Employees necessary for the hooking or unhooking of the load.
  - When working under suspended loads, the following criteria shall be met:
    1. Materials being hoisted shall be rigged to prevent unintentional displacement;
    2. Hooks with self-closing safety latches or their equivalent shall be used to prevent components from slipping out of the hook; and
    3. A qualified rigger shall rig all loads

- Structural steel assembly
  - Structural stability shall be maintained during the erection process.
  - The following additional requirements shall apply for multi-story structures:
    1. The permanent floors shall be installed as the erection of structural members progress, and there shall be not more than eight stories between the erection floor and the upper-most permanent floor, except where the structural integrity is maintained because of the design.
    2. At no time shall there be more than four floors or 48 feet, whichever is less, of unfinished bolting or welding above the foundation or uppermost permanently secured floor, except where the structural integrity is maintained because of the design.
    3. A fully planked or decked floor or nets shall be maintained within two stories or 30 feet, whichever is less, directly under any erection work being performed.

- Plumbing-up
  - The steel erector shall evaluate to determine whether guying or bracing is needed; if guying or bracing is needed and if determined, it shall be installed.
  - When deemed necessary by a competent person, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure.
  - When used, plumbing-up equipment shall be in place and properly installed before the structure is loaded with construction material such as loads of joists, bundles of decking or bundles of bridging.

- Plumbing-up equipment shall be removed only with the approval of a competent person.
- Hoisting, landing, and placing of metal decking bundles.
- Bundle packaging and strapping shall not be used for hoisting unless specifically designed for that purpose.
- If loose items such as dunnage, flashing, or other materials are placed on the top of metal decking bundles to be hoisted, such items shall be secured to the bundles.
- Bundles of metal decking on joists shall be landed in accordance with OSHA standards.
- Metal decking bundles shall be landed on framing members so that enough support is provided to allow removal of banding without dislodging the bundles from the supports.
- At the end of the shift or when environmental or jobsite conditions require, metal decking shall be secured against displacement.

- Roof and floor holes and opening
  - Metal decking at roof and floor holes and openings shall be installed as follows:
    1. Metal deck openings shall have structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructability.
    2. Roof and floor holes and openings shall be decked over. Where large size, configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stair wells, etc.) employees shall be protected in accordance with OSHA standards.
    3. Metal decking holes and openings shall not be cut until immediately prior to being permanently filled with the equipment or structure needed or intended to fulfill its specific use and which meets the strength requirements of this section policy or shall be immediately covered.

- Covering roof and floor openings
  - Covers for roof and floor openings shall be capable of supporting, without failure, twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.
  - All covers shall be secured when installed to prevent accidental displacement by the wind, equipment, or employees.
  - All floor holes greater than 12” x 12” must have a Whiting-Turner floor hole cover sign in place. Smaller holes shall be labeled “hole” in accordance with the OSHA standard.
  - Particle board, medium density fiber board (MDF) or similar material is prohibited from being used as floor hole covers on Whiting-Turner projects.
  - Smoke dome or skylight fixtures that have been installed are not considered covers for the purpose of this section unless they meet the strength requirements.

- Decking gaps around columns
  - Wire mesh, exterior plywood, or equivalent, shall be installed around columns where planks or metal decking do not fit tightly.
  - The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

- Installation of metal decking
  - Metal decking shall be laid tightly and immediately secured upon placement to prevent accidental movement or displacement.
  - During initial placement, metal decking panels shall be placed to ensure full support by structural members.

- Erection of steel joists
  - Both sides of the seat of one end of each steel joist that requires bridging under OSHA requirements shall meet those requirements set forth in Tables A and B shall be attached to the support structure before hoisting cables are released.
  - For joists over 60 feet, both ends of the joist shall be attached as specified in the OSHA regulations before the hoisting cables are released.
  - Connections shall be drawn up, wrench tight with 2 bolts minimum before releasing the load.
  - On steel joists that do not require erection bridging under Tables A and B, only one employee shall not be allowed on the joist until all bridging is installed and anchored.
  - Employees shall not be allowed on steel joists where the span of the steel joist is equal to or greater than the span shown in Tables A and B of subpart R.
  - When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide stability.
  - Bar joists unless specified by the engineer of record shall not be used as fall protection anchorage points.

- Training

  The requirements in this section are mandatory and the contractor shall provide certification for each employee who has received training for performing steel erection operations based upon OSHA standards.

- Competent person

  Each contractor shall list the qualified and competent persons based on OSHA definition and the steel erector shall have a competent person knowledgeable of current OSHA standards with an OSHA 30-hour certification. This person shall remain on site during the completion of their work activities. If the contractor/subcontractor uses lower tier steel erectors to erect steel onsite the contractor/subcontractor with whom Whiting-Turner holds the contract must provide an onsite competent person to direct their lower tier contractor.

- Fall hazard training

The contractor shall provide a training program for all employees exposed to fall hazards. The program shall include but not limited to the following training and instructions in the following areas:

- The recognition and identification of fall hazards in the work area;
- The use and operation of guardrail systems (including perimeter safety cable systems), personal fall arrest systems, positioning device systems, fall restraint systems, safety net systems, and other protection to be used;
- The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;
- The procedures to be followed to prevent falls to lower levels and through or into holes and openings in walking/working surfaces and walls; and
- The fall protection requirements of this subpart.

- Additional training requirements

  In addition to the training requirements above in this section, the contractor shall provide special training to employees engaged in the following activities.

  - Multiple Lift Rigging Procedure - The contractor shall ensure that each employee who performs multiple lift rigging has been provided training in the following areas:
    1. The nature of the hazards associated with multiple lifts; and
    2. The proper procedures and equipment to perform multiple lifts.
    3. Multiple lifts must utilize a multiple lift rigging assembly and meet all other criteria as listed in OSHA standards regarding multiple lifts.
  - Connector Procedures - The contractor shall ensure that each connector has been provided training in the following areas:
    1. The nature of the hazards associated with connecting; and
    2. The establishment, access, proper connecting techniques and work practices.

1.28. Temporary Facilities

Introduction

Contractor/subcontractor providing temporary construction buildings, facilities, fencing, and access routes and anchoring systems for temporary structures shall be submitted to the Whiting-Turner project team for review.

Procedures

- The design and construction of temporary structures shall consider the following loadings:
  - Dead and live loads
  - Soil and hydrostatic pressures
  - Wind loads
  - Rain and snow loads
  - Seismic forces

- Trailers and other temporary structures used as field offices, to house personnel, or for storage shall be anchored with rods and cables or by steel straps to ground anchors. The anchor system shall be designed to withstand winds and must meet applicable State or local standards for anchoring mobile trailer homes.

- Fencing and warning signs
  - Temporary project fencing shall be installed per Whiting-Turner's fencing policy particularly on all projects located in areas of active use by members of the public. More careful consideration will also be given to those areas proximate to family housing areas and/or school facilities.
  - Signs warning of the presence of construction hazards and requiring unauthorized persons to keep out of the construction area shall be posted on the fencing. At the minimum, posting shall be on all fenced sides of the project and spaced one sign every 100 feet.

1.29. Underground Construction, Caissons, Cofferdams and Compressed Air Policy

Introduction

Each contractor working on a Whiting-Turner project will comply with 29 CFR 1926, Construction Industry Regulations, Subpart S – Underground Construction, Caissons, Cofferdams and Compressed Air, in addition to the following guidelines.

Procedures

- The employer must control access to all openings to prevent unauthorized entry underground.
- Unused chutes, manways, or other openings must be tightly covered, bulk headed, or fenced off and must be posted with warning signs stating, "Keep Out", or similar language.
- The employer must assign and submit the qualifications of the competent person responsible for monitoring the air quality during underground construction.
- The atmosphere in all underground work must be tested as often as necessary to assure that the atmosphere contains at least 19.5% oxygen, but no more than 23.5% oxygen. These tests must be conducted before testing for air contaminants.
- The atmosphere in all underground work must also be tested quantitatively for hazardous materials such as carbon monoxide, nitrogen dioxide, hydrogen sulfide, and other toxic gases, dusts, vapors, mists, and fumes.
- If an IDLH (Immediately Dangerous to Life and Health) atmosphere is present, the caisson then becomes a permit required confined space and exposed/controlling contractor's Confined Space Entry program is implemented.
- The competent person must keep a daily record of all air quality test results and submit those results to Whiting-Turner, upon request.
- Casing or bracing must support the full depth of the shaft.
- The casing or bracing must extend 42" + or – 3" above ground level. This height may be reduced to 12", provided a standard railing is installed, the ground surrounding the shaft is sloped away from the shaft and effective barriers are in place to prevent mobile equipment from jumping over the 12" barrier.

1.30. Welding and Cutting Policy

Introduction

All Whiting-Turner employees and all contractor/subcontractor employees working on a Whiting-Turner project must comply with 29 CFR 1926, Construction Industry Regulations, Subpart J – Welding and Cutting, in addition to the following guidelines.

Procedure

- The contractor/subcontractor will assure that adequate precautionary measures have been taken to protect all personnel and property from contact with flash or contact with falling slag and sparks.

- Welders, cutters, and their supervisor shall be trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection.

- All contractors performing welding, burning/cutting operations shall submit an AHA to the Superintendent prior to the commencement of work.

- Contractors/subcontractors are required to use welding shields between the welding operation and the public/other trades for protection against arc flash.

- All welding lead connection lugs are required to have non-conductive boot covers installed.

- A Hot Work Permit must be completed daily by each contractor/subcontractor performing all welding, burning/cutting operations.
    - The hot work permit will designate the location of the operation, date of the operation, type of work to be done and the time commenced and completed.
    - A hot work permit is required to be submitted by the contractor/subcontractor prior to beginning the hot work activity.
    - The hot work permit shall be conspicuously located near the area where the activity is taking place.
    - Contractors/subcontractors are responsible for providing a charged, 20lb ABC dry chemical fire extinguisher for each welding and burning activity.
    - Other hot work activities besides welding and burning may require the use of a fire watch, as designated by Whiting-Turner.
    - Whiting-Turner life safety fire extinguishers shall not be used for fire watch duties.
    - A fire watch is to be positioned at each location where sparks/slag and/or molten metal can fall/drop/strike combustible material, potentially resulting in a fire.
    - A fire watch is required to remain in place at all times during the hot work activity and for a minimum of one half (1/2) hour after the welding or burning operation has been completed or longer periods of time as determined by the project-specific rules.

  - The fire watch is to be replaced by another fire watch if the person needs to leave the area for any reason.
  - Additional permits may be required by the local Fire Department and will be at the contractor's/subcontractor's expense.
  - Copies of these additional permits are to be submitted to the Whiting-Turner project team upon request.
  - Upon completion of the work, the completed hot work permit must be returned to Whiting-Turner for file retention.

- Local fire department fire details may be required, and all costs associated with the detail will be the responsibility of the contractor/subcontractor doing the hot work requiring the detail.

- Contractors/subcontractors may be required to provide adequate engineering controls (ventilation and/or smoke eaters) for welding and burning operations.

- Contractors/subcontractors performing welding and/or burning operations may be required to provide air monitoring in areas with adequate ventilation.

- All employees engaged in hot work activities shall wear the appropriate personal protective equipment (PPE); shields shall be compatible with a hardhat.

- Oxy-fuel gas welding shall have hoses that are readily distinguishable.

- Welding and cutting systems using cylinder-hose-torch shall have a reverse-flow check valve and a flash arrestor.

- Oxygen cylinders in storage shall be separated from fuel gas cylinders or combustible material by 20 feet or by a non-combustible barrier at least five (5) feet high having a fire-resistance rating of at least ½ hour.

- All cylinders shall be considered in storage at the end of each shift; cylinders must have gauges removed and caps in place.

- All compressed gas cylinders shall be secured against displacement by cinch straps or chains.

2. Premobilization Safety Submittals and Ongoing Safety Management

- Each contractor/subcontractor must identify (on the competent person acknowledgement form) and submit the qualifications of a competent person to Whiting-Turner prior to the start of work.

- Contractor/subcontractor shall submit a site-specific safety plan (SSSP) prior to start of work.
    - Activity hazard analyses (AHA) for major phases of work, submitted with company safety program may be accepted in lieu of SSSP—at the discretion of the Whiting-Turner project team.
    - Contractor/subcontractor supervisor is responsible to maintain a copy of these plans at the worksite and review with their employees for each new task or phase.

- Site specific safety data sheets (SDS) and chemical inventories are to be provided to Whiting-Turner prior to start of work.
    - SDS must be submitted for all hazardous chemicals/products to be used on the project.
    - Contractor/subcontractor supervisor is responsible to maintain copies of SDS and chemical inventory at the worksite.
    - Contractor/subcontractor supervisor is responsible for updating Whiting-Turner each time a new chemical is brought on site; the update must be reflected in their SDS binder and chemical inventory list.

- Each contractor/subcontractor is required to designate a site safety representative (SSR). SSR shall be on site at all times and shall have the knowledge and authority of the competent person. SSR shall be able to conduct site walks with Whiting-Turner personnel to ensure the safety of contractor's/subcontractor's workers on the project. Manpower totals below include all tiered contractor/subcontractor employees. Proof of training must be submitted prior to mobilization or at orientation. The qualifications for the SSR are as follows:
    - Minimum requirement proof of OSHA 30 hour submitted
    - Contractors/subcontractors with (30) or more workers on site will be evaluated by the Whiting-Turner's management team along with Whiting-Turner's EH&S Manager regarding the contractor's/subcontractor's site-specific safety performance. If the contractor's/subcontractor's past or current site safety performance indicates improved safe work practices and conditions are needed to help ensure the safety of the contractor/subcontractor crews and others, Whiting-Turner at its discretion, may require the contractor/subcontractor to provide a fulltime Site Safety Representative to be present onsite with no other collateral duties.

- Certification for operators of powered industrial trucks and cranes is required to be submitted to the Whiting-Turner project team prior to the operation of said equipment.

- All on site personnel, (contractor/subcontractors, tiered contractors/subcontractors, and their employees) are required to participate in a mandatory safety orientation session prior to commencing with any work on site. Contractor/subcontractor shall provide a translator for any non-English speaking employees during orientation and any job wide meetings/stand-downs. Employees may be asked to attend orientation again for repeat violations or deficiencies.

- Contractor/subcontractor shall conduct weekly safety meetings for all workers (employed or contracted). Whiting-Turner Superintendent and/or other Whiting-Turner personnel may attend this safety meeting.
    - Provide a legible sign-in sheet and meeting agenda to the Whiting-Turner field office at the conclusion of the meeting.
    - Contractor/subcontractor is also required to submit daily work reports to the Superintendent, on Whiting-Turner's form.

- In coordination with the contractor's/subcontractor's AHA, complete a Pre-task Plan (PTP) at least once per day, per crew/task.
    - PTPs shall be updated as hazards or conditions change. If necessary, a new PTP may be completed and reviews with the crew.
    - Copies of PTP(s) must be submitted to the Whiting-Turner project team upon request.
    - Tasks should be reviewed in the area where work is to be performed, and crew members should be involved in the development of the plan (safety "huddle").

- Documented pre-shift inspections are to be completed for mobile equipment, heavy equipment, and cranes.
    - Equipment is to be taken out of service for deficiencies noted.
    - These inspections are to be maintained in the work area for review.

3. Compliance Enforcement and Incentive Guidelines

Enforcement Guidelines.

Introduction:
In an effort to ensure compliance with this program and all other established OSHA standards, the Whiting-Turner Contracting Company has established this procedure of compliance enforcement for all contractors/subcontractors. This is established to promote safety excellence and eliminate offenders. This program may be used or may be superseded with more severe discipline based on the degree of the infraction(s). In any case, Whiting-Turner has sole authority in what type of discipline is issued relating to the project, up to and including removal from the project. Contractor/subcontractors are required to provide Whiting-Turner with any written disciplinary notices issued to site employees by their management.

To assist in our efforts to provide a safe work place, the following disciplinary plan shall be used on each Whiting-Turner project.

- 1st infraction: written warning; coach the employee.

- 2nd infraction: written warning and a meeting must be held between the employee, his/her supervisor and the Whiting-Turner Superintendent—or their designee.
    - A copy of the written warning is sent to the employee's company's office.
    - A written warning requires the contractor/subcontractor's supervisor to assure the employee has satisfactorily completed an appropriate training session related to the safety policy violated.
        1. This training must be completed within five (5) working days from issuance of the written warning. Until that training has occurred the employees shall not resume the same work activity.
        2. Proof of training or retraining shall be provided to Whiting-Turner.

- 3rd infraction the worker is removed from the project, indefinitely.

- If repeat occurrences with other crewmembers are found the supervisor of said crewmembers shall be subject to removal from the project.

- All warnings, verbal or otherwise, shall be documented in a log to be used as a reference point by the project team to track unsafe trends and to act as a tool to enhance safety.

It is the discretion of the Whiting-Turner project team to issue a monetary fine for safety violations. Violation fines may decrease or increase based on severity.

All fines collected shall be added to the project safety incentive program. Fines will be assessed to the employee's company. In addition to the above, Monthly Payment Applications/Invoices will be reduced for any fines resulting in these violations.

Fine Schedule

Failure to wear hard-hat, safety glasses, or another required PPE	$50 per occurrence
No protective system installed for trenching / excavation operations 5’ and deeper	$1000 per occurrence
Removal of safety barricade, guardrail, or other protection and leaving area unattended	$1000 per occurrence
Removal of or failure to provide floor opening protection and/or leaving area unattended (includes manholes)	$1000 per occurrence
Employees not using proper or no fall protection	$1000 per occurrence
Unprotected energized electrical panel	$1000 per occurrence
Failure to protect from impalement hazards	$100 per occurrence
Failure to provide adequate or sufficient employee safety training	$200 per occurrence
Failure to properly store, secure or cap compressed gas cylinders	$500 per occurrence
Fire extinguisher and/or watch not provided for welding or cutting operations	$250 per occurrence
Improper access provided to scaffolding work platform.	$250 per occurrence
Inadequate housekeeping.	$250 per occurrence
Unsafe or damaged tools and/or power cords.	$250/Immediate Removal
All “non-communication music type” radios on the project.	$250/Immediate Removal
Metal ladders on the project.	$250/Immediate Removal
Failure to safely or properly use scissor and aerial lifts.	$500 per occurrence
Failure to properly use and/or set up ladders.	$250 per occurrence
Failure to provide ground fault circuit interrupters (GFCI)	$500 per occurrence
Observed littering on the jobsite	$100 per occurrence
Failure to prevent arc welding flash from the public and other trades.	$500 per occurrence
Any non-compliance of Whiting-Turner, federal or state OSHA Standards, and applicable NFPA, ANSI, ASME codes.	Up to $1000 per occurrence

Safety Incentive Program Guidelines.

Introduction:

The implementation of a project safety incentive program is at the discretion the Whiting-Turner project team. The project's safety awards and incentives will be based primarily upon the data collected during safety observations. All superintendents, project managers and safety managers are required to perform inspections.

There are two important aspects of safety award programs that need to be kept in mind:

1. Provide safety awards for safe behavior and for activities related to maintaining a safe work environment.
2. Make safety awards and incentives significant enough to support compliance but not significant enough to generate false reporting of safety data.


WT
WHITING-TURNER