		Number: EA CRAD EA-32-10 Revision: 0 Effective Date: July 13, 2021
Construction Safety Criteria and Review Approach Document		
Authorization and Approval	Charles C. Kreager Digitally signed by Charles C. Kreager Date: 2021.07.13 11:37:53 -04'00' Charles C. Kreager, Director Office of Worker Safety and Health Assessments Date: July 13, 2021	David Olah Digitally signed by David Olah Date: 2021.07.13 11:31:23 -04'00' Lead, David Olah Occupational Safety and Health Manager, Office of Worker Safety and Health Assessments Date: July 13, 2021

1.0 PURPOSE

The mission of the U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments (EA-30) is to assess the effectiveness of safety and emergency management systems and practices used by line and contractor organizations and to provide clear, concise, rigorous, and independent evaluation reports of performance in protecting workers, the public, and the environment from the hazards associated with DOE activities.

In addition to the general independent oversight requirements and responsibilities specified in DOE Order (O) 227.1A, *Independent Oversight Program*, this criteria and review approach document (CRAD), in part, fulfills the responsibility assigned to EA in DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, and DOE O 440.1B, *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*, to ensure contractors implement the requirements of 10 CFR 851, *Worker Safety and Health Program*, and DOE Policy 450.4A, *Integrated Safety Management Policy*.

The CRADs are available to DOE line and contractor assessment personnel to aid them in developing effective DOE oversight, contractor self-assessment, and corrective action processes. The current revision of EA's CRADs are available at http://www.energy.gov/ea/criteria-and-review-approach-documents.

2.0 APPLICABILITY

The following CRAD is approved for use by the Office of Worker Safety and Health Assessments.

3.0 FEEDBACK

Comments and suggestions for improvements on this CRAD can be directed to the Director, Office of Environment, Safety and Health Assessments.

4.0 CRITERIA AND REVIEW APPROACH

The review of Construction Safety assesses the effectiveness of programs and processes for ensuring the safety and health of workers during construction work[1]. The Integrated Safety Management Policy, DOE P 450.4A, establishes the Department's policy for work to be conducted safely and efficiently and in a manner that ensures protection of workers, the public, and the environment. To achieve this, implementation of Integrated Safety Management (ISM) requirements are established through directives, and for contractor organizations through contract clauses. This includes identification of existing and potential workplace hazards and assessment of risk, development and implementation of hazard controls, assurance that work is performed within established hazard controls, and implementation of a formal mechanism and process to gather feedback and implement continual improvement by the site contractor.

Additionally, assessments can include an evaluation of the DOE field element's process to assess the adequacy of procedures and implementation of the contractor's construction safety program. The DOE field element, DOE construction contractors, and all construction subcontractors are required to implement and manage a program that assures compliance with worker protection requirements that are applicable to the hazards at the facility or project site. (see DOE O 440.1B Chg 3 (LtdChg), Section 4.m.(1), (5) and Attachment 1, Paragraph 1. Construction *Safety*; 10 CFR 851 *Worker Safety and Health Program*)

The review will also evaluate the effectiveness of flowing down DOE regulatory and contract requirements from prime DOE contractors to all levels of sub tier contractors and the effectiveness of implementation of requirements by all levels of sub tier contractors.

The objectives and lines of inquiry are supported by the following regulations and orders:

- 10 C.F.R. § 851 Worker Safety and Health Program

OSHA Standards

- 29 C.F.R. 1903.3 Posting of Notices: availability of the Act, regulations and applicable standards
- 29 C.F.R. 1910.134 Respiratory Protection
- 29 C.F.R. 1926.21 Safety Training and Education
- 29 C.F.R. 1926 Subpart E Personal Protective and Life Saving Equipment
- 29 C.F.R. 1926 Subpart H Materials Handling, Storage, Use and Disposal
- 29 C.F.R. 1926.417 Lockout and Tagging of Circuits
- 29 C.F.R. 1926 Subpart L - Scaffolds
- 29 C.F.R. 1926 Subpart M - Fall Protection
- 29 C.F.R. 1926 Subpart P Excavations

[1] "Construction work" means combination of erection, installation, assembly, demolition, or fabrication activities involved to create a new facility or to alter, add to, rehabilitate, dismantle, or remove an existing facility. It also includes the alteration and repair (including dredging, excavating, and painting) of buildings, structures, or other real property, as well as any construction, demolition, and excavation activities conducted as part of environmental restoration or remediation efforts.

- 29 C.F.R. 1926 Subpart R – Steel Erection
- 29 C.F.R. 1926 Subpart S – Under Ground Construction, Caissons, Cofferdams and Compressed Air
- 29 C.F.R. 1926 Subpart T Demolition
- 29 C.F.R. 1926 Subpart U - Blasting and Use of Explosives
- 29 C.F.R. 1926.953 Electric Power Transmission and Distribution, Enclosed Spaces
- 29 C.F.R. 1926.958 Material Handling and Storage Near Energized Lines or Equipment
- 29 C.F.R. 1926.961 Deenergizing Lines and Equipment for Employee Protection
- 29 C.F.R. 1926.965 Underground Electrical Installations
- 29 C.F.R 1926 Subpart Z Toxic and Hazardous Substances
- 29 C.F.R. 1926 Subpart AA Confined Spaces in Construction
- 29 C.F.R. 1926 Subpart CC Cranes and Derricks in Construction
- 48 C.F.R. § 970.5223-1 Integration of Environment, Safety, and Health into Work Planning and Execution
- DOE O 226.1B Implementation of Department of Energy Oversight Policy
- DOE O 231.1B Chg 1 Environmental Safety and Health Reporting
- DOE 232.2A Chg 1 (MinChg) Occurrence Reporting and Processing of Operations Information
- DOE O 413.3B Chg 5 Program and Project Management for Requisition of Capital Assets
- DOE O 440.1B, Chg 3 (LtdChg) Worker Protection Program for DOE (including the National Nuclear Security Administration) Federal Employees
- DOE O 442.1B Department of Energy Employee Concerns Program
- DOE P 450.4A Integrated Safety Management Policy
- DOE STD 1066-2016 Fire Protection
- DOE STD 1212-2012 Explosives Safety
- IEEE C2-2017 National Electric Safety Code (NESC)
- NFPA 70-2017 National Electric Code (NEC)
- NFPA 70E-2015 Standard for Electrical Safety in the Workplace

OBJECTIVES

The following objectives are designed as stand-alone sections to be used in any combination based on the need of the specific assessment.

Construction Safety (CS)

CS.1: Contracts for construction work (including capital asset projects to construct new facilities) include appropriate DOE safety and health requirements. (10 CFR 851.11, 48 CFR 970.5223-1, DOE O 440.1B, Chg 3 (LtdChg), Section 4, DOE O 413.3B, Chg 5, CRD Section 12)

Criteria:

1. For contractors working at sites under DOE regulatory/enforcement jurisdiction for worker safety and health, contracts clearly convey that DOE is the regulatory and enforcement authority and that 10 CFR 851, *Worker Safety and Health Program*, as well as the DOE-approved contractor Worker Safety and Health Program (WSHP), provides the regulatory requirements for construction work contractors to follow.

2. For contractors working at sites[2] under the Occupational Safety and Health Administration (OSHA) regulatory jurisdiction, contracts clearly convey that OSHA is the regulatory and enforcement authority and that OSHA standards along with other safety requirements specified in the contract, provide the full set of requirements for construction work contractors to follow.

3. DOE prime contracts include appropriate safety and health related requirements, to include but not limited to:
   - 10 CFR 707, *Workplace Substance Abuse Programs at DOE Sites*
   - 10 CFR 708, *DOE Contractor Employee Protection Program*
   - 10 CFR 850, *Chronic Beryllium Disease Prevention Program*
   - 10 CFR 851, *Worker Safety and Health Program*
   - 29 CFR 24, *Procedures for the Handling of Retaliation Complaints*
   - 48 CFR 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution*
   - DOE O 231.1B, Chg 1, *Environment, Safety and Health Reporting*
   - DOE O 232.2A, Chg 1, *Occurrence Reporting and Processing of Operations Information*
   - DOE O 413.3B, Chg 5, *Program and Project Management for the Acquisition of Capital Assets*
   - DOE O 442.1B, *Department of Energy Employee Concerns Program*
   - DOE P 450.2, Chg 1, *Integrated Safety Management Policy*
   - Executive Order 13513, *Federal Leadership on Reducing Text Messaging While Driving*

CS.2: The contractor flowed down the construction contract safety requirements to subcontracts at any tier to the extent necessary to ensure the contractor's compliance with the requirements. (10 CFR 851, 48 CFR 970.5223-1(h), DOE O 231.1B, Contractor Requirements Document (CRD), DOE O 232.2A, CRD, DOE O 442.1B, Attachment 1)

Criteria:

1. Each sub tier contract contains all the prime contract construction safety requirements and/or clearly describes how each sub tier contractor will assure regulatory or prime contract requirements are implemented for work performed by sub tier contractors.

2. Construction work contracts adequately include requirements to implement Integrated Safety Management System (ISMS) descriptions and 10 CFR 851 Worker Safety and Health Programs (WSHP), e.g.:
   - Sub tier contractor implements prime contractor's DOE approved ISMS description and WSHP.
   - Sub tier contractor develops their own, for DOE approval (or by prime if allowed by DOE field element), ISMS description and WSHP.
   - If the prime M&O contractor issues the contract for a DOE capital asset construction work project or other construction work, the construction work contract specifies which M&O contractor ISMS description and WSHP implementing procedures are to be flowed to sub tier contractors to be implemented for construction work.

[2] Per memorandum of understandings between DOE and OSHA, certain DOE sites are under OSHA regulatory/enforcement authority while DOE has the responsibility for managing and overseeing safety at the sites. These sites include: Power Marketing Administrations; National Energy Technology Laboratory; Strategic Petroleum Reserves; National Petroleum Technology Office; Albany Research Center; Naval Petroleum Reserves and Oil Shale Reserves; and certain land parcels transferred from the East Tennessee Technology Park in Oak Ridge, Tennessee, to the Community Reuse Organization of East Tennessee. For detailed information on DOE-OSHA jurisdictional issues, see https://www.osha.gov/dts/doe/index.html.

CS.3: Construction contractors that are a DOE-prime contractor have developed and implemented a DOE-approved WSHP and ISMS description appropriate to their project. (10 CFR 851.11, 48 CFR 970.5223-1(e), DOE O 440.1B, Section 5.b.(1) and DOE P 450.4A)

Criteria:

1. The construction contractor satisfactorily uses the five ISM core functions for work planning and control.

2. The construction contractor prepared a satisfactory written construction project safety and health plan which covers each separately definable construction activity (see 10 CFR851, Appendix A, Functional Area 1(d)) prior to commencement of any work covered by the plan.

3. The construction contractor has a designated representative on the construction worksite who is knowledgeable of the project's hazards and has full authority to act on behalf of the construction contractor. This person makes regular inspections of the project's safety and health requirements.

4. The construction contractor identifies competent persons required for workplace inspections of the construction activity, when required by OSHA standards.

5. The construction contractor has prepared and had approved by the construction manager an activity hazard analysis prior to commencement of affected work.

6. A pre-work safety meeting is conducted with the construction contractor to review project safety and health requirements.

7. Construction workers are aware of foreseeable hazards and the protective measures described within the activity hazard analysis prior to beginning work on the affected activity. This can be done through pre-job/task briefings, tailgate or toolbox meetings. Workers are required to acknowledge being informed of the hazards and protective measures associated with assigned work activities.

8. Construction workers are instructed to report to the construction contractor's designated representative hazards not previously identified or evaluated. If immediate corrective action is not possible or the hazard falls outside of project scope, the construction contractor immediately notifies affected workers, post appropriate warning signs, implement needed interim control measures, and notify the construction manager of the action taken. The contractor or the designated representative must stop work in the affected area until appropriate protective measures are established.

CS.4: Contractors must provide a place of employment free of recognized hazards and ensure that all work performed is compliant with the worker safety and health program. (10 CFR 851.10)

Criteria:

1. Construction workers are informed of their safety and health rights and responsibility by appropriate means, including posting the appropriate poster(s) in the workplace where it is accessible to all workers. (10 CFR 851.20(a)(10) for sites under DOE jurisdiction and 29 CFR 1903.2 for sites under OSHA jurisdiction; DOE O 442.1B, CRD Section 2)

2. Construction workers are provided and use personal protective equipment (PPE). (See https://www.osha.gov/SLTC/personalprotectiveequipment/construction.html for OSHA PPE standards for construction work.)

3. Contractors satisfactorily develop and implement a worker safety and health training and information program to ensure that all workers exposed to or potentially exposed to hazards are provided with the training and information on that hazard in order to perform their duties in a safe and healthful manner. (10 CFR 851.25)

4. Contractors effectively identify, monitor and develop controls for industrial hygiene (IH) hazards. (10 CFR 851, Appendix A.6, *Industrial Hygiene,* 29 CFR 1910.134(d)(1)(iii), 29 CFR 1926 subpart Z)
   - The contractor and/or sub tier contractors have or have access to a qualified industrial hygienist to manage and oversee IH activities at the construction site. (10 CFR 851.20(a)(2))
   - IH hazards are satisfactorily identified during work planning hazard analyses and exposure assessment strategies are used to assess risk and assign adequate hierarchy of controls. (10 CFR 851.21)
   - Occupational exposure assessments are documented and available for review. (10 CFR 851.26(a)(1))
   - The contractor's occupational medicine provider establishes periodic, hazard-based medical monitoring or qualification-based fitness for duty evaluations based on potential/actual occupational exposures. (10 CFR 851, Appendix A.8, *Occupational Medicine*).

CS.5: Contractors adequately implement requirements to control typical construction hazards.

Objectives and criteria for each construction hazards are at:
- Attachment A: Excavation and Ground Penetrations
- Attachment B: Hoisting and Rigging
- Attachment C: Crane Safety
- Attachment D: Fall Protection
- Attachment E: Confined Space Entry
- Attachment F: Material Handling
- Attachment G: Working Around Power Lines
- Attachment H: Lockout/Tagout
- Attachment I: Steel Erection
- Attachment J: Underground Construction
- Attachment K: Demolition
- Attachment L: Explosives

Federal Oversight of Construction Safety (FO)

FO.1: DOE Field Element Line Management implement risk-informed, performance-based contractor oversight. (DOE O 226.1B)

Criteria:

1. Oversight processes are tailored according to the effectiveness of contractor assurance systems, the hazards at the site/activity, and the degree of risk, giving additional emphasis to potentially high consequence activities. (DOE O 226.1B, Criterion 4(b)(5))
   - DOE oversight is based upon the size and complexity of the construction activity.
     i. A Federal Project Director is assigned to capital line-item construction projects. (DOE O 413.3)

ii. Oversight of minor construction projects (General Plant Project) as defined by DOE O 413.3B or smaller construction activities is appropriate for the hazards involved.

2. DOE Field Element Line Management Oversight Program includes written plans and schedules for planned assessments, focus areas for operational oversight, and reviews of the contractor's self-assessment of processes and systems. (DOE O 226.1B, Criterion 4(b)(2))
    - Assessments and operational awareness oversight are planned, scheduled, conducted and documented for construction safety, and identify areas for needed improvement.

3. DOE Field Element line management has in place effective processes for communicating oversight results up the line management chain and to the contractor as appropriate and has an issues management system for follow-up. (DOE O 226.1B, Criterion 4(d))

4. DOE Field Element line management has sufficient qualified personnel to implement oversight processes. (DOE O 226.1B, Criterion, 4(a)(2), DOE O 413.3B, and DOE O 426.1B, Criterion 4(c))
    - If Federal Project Directors are assigned, they must be certified to the appropriate level as described in Project Management Career Development Program. (DOE O 413.3B, Appendix C)
    - If an Integrated Project Team is established, it must have appropriate safety and health representation. (DOE O 413.3B, Appendix B, 15(m)
    - Oversight for other construction safety activities is performed by Subject Matter Experts, program managers and/or Facility Representatives.

5. Oversight includes determining that the work is performed in accordance with the approved WSHP and ISMS description documents, that hazards are recognized and controlled, and that workers are appropriately protected for the job site hazards.

FO.2: For construction work that is performed by DOE Federal employees, DOE has established sufficient support to ensure that construction work is performed safely for construction projects that are above the monetary threshold established by the Davis-Bacon Act. (DOE O 440.1B, Attachment 1, Section 1, *Construction Safety*)

Criteria:

1. For construction work that is performed by Federal employees, the Heads of Field elements shall:
    - Designate a project manager for each construction project.
    - Ensure that project managers have sufficient training, resources and technical support to perform assigned duties.
    - Develop formal written agreements/implementing procedures as needed to delineate the respective construction safety responsibilities/duties of DOE project management and assigned technical support staffs.
    - Use the five ISM core functions for work planning and control.
    - Adequately implement requirements to control typical construction hazards. (See objective CS.5)

REVIEW APPROACH

Record Review:

- Construction contracts (DOE prime or M&O construction contract; contracts for each sub tiered contractor working under the prime contracts)
- Capital asset project acquisition documents
- ISMS description
- 10 CFR 851 WSHP
- Project Construction Safety and Health Plan(s) (if 10 CFR 851, Appendix A.1 is not covered in overall WSHP)
- Activity hazard analyses for observed construction work
- Contractor's corporate safety and health plans when used to comply with contract
- Pre-construction safety meeting records
- Construction safety assessments (walk throughs; inspections; corrective actions)
- DOE oversight records of construction projects (assessment schedules; assessments; operational awareness; performance trending; corrective actions and issues management; contract actions for poor performance)
- Construction-related permits
  - Excavation
  - Electrical/Minimum approach distances/Arc flash calculations for PPE
  - Lockout/Tagout (LOTO)
  - Fire/Flame/Heat
  - Critical lifts
  - Confined space
  - Fall protection
- Industrial hygiene monitoring results
  - Noise
  - Silica
  - Welding and cutting
  - Lighting
- Drawings and/or other documentation of protective measures for which applicable OSHA standards require preparation by a Professional Engineer or other qualified professional
- Listing of competent persons required for workplace inspections of the construction activity, where required by OSHA standards (See https://www.osha.gov/SLTC/competentperson/standards.html for OSHA list of standards requiring competent person actions)

- Construction worker training records:
  - Pre-job briefing/toolbox/tailgate records for construction work activity hazards
  - Noise
  - Crane operation
  - Mobile equipment
  - Hazard Communications (HAZCOM)
  - Hazardous Waste Operations (HAZWOPER)
  - Asbestos – this is required to be an authorized third-party certification
  - Personal Protective Equipment (PPE)
  - Permit-required confined spaces
  - Lockout/Tagout (LOTO)
  - Logging – employers need to certify each employee in first aid and CPR
  - Powered platforms
  - Electric power generation, transmission, and distribution
  - Powered industrial trucks (forklifts)
  - Fall protection
  - Cadmium
  - Ladder safety

Interviews:

- DOE Project Manager
- DOE Federal Project Director
- DOE Program Manager
- DOE Construction Safety Subject Matter Expert
- DOE Facility Representatives
- DOE Contracting Officer/Contracting Officer's Representative
- Contractor Project Manager
- Contractor Construction Manager
- Construction Superintendent
- Subcontractor Superintendent/Foreman/Manager
- Subcontract Technical Representative
- Designated Competent Personnel
- Industrial Hygienist
- Corporate Safety and Health Professionals
- Worker and Trade Personnel

Observations:

- Selectively walk down construction site and observe active work.

ATTACHMENT A
Excavation and Ground Penetrations on Construction Sites

References:
29 C.F.R. 1926 Subpart P – Excavations

Additional Resources:
OSHA Instruction CPL 2.87 Inspection Procedures for Enforcing the Excavation Standard, 29 CFR 1926, Subpart P

Applicability:
The OSHA standard applies when excavations and ground penetrations are five feet deep or greater (1926.652(b)(ii)). A trench has a depth that is greater than its width, but the width, measured at the bottom is less than 15 feet. Excavation means any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal. All trenches are excavations, not all excavations are trenches, but if either is five feet deep or greater, the requirements of Subpart P must be followed.

Lines of Inquiry:	YES	NO	N/A	Comments
General requirements: Are all surface encumbrances that may create a hazard removed or supported as necessary to safeguard employees? 1926.651(a)				
Have all underground utility installations been located? 1926.651(b)(1), (2), and (3)				
In trenches more than four feet deep, are stairways, ladders, or ramps located so that travel to them is no more than 25 feet? 1926.651(c)(2)				
Are walkways provided where employees or equipment cross over excavations? Are guardrails in compliance with §1926.502(b) provided on walkways at six feet above lower levels? 1926.651(l)				
Are employees exposed to vehicular traffic wearing warning vests made of reflectorized or high visibility material? 1926.651(d)				
Is a warning system such as barricades, hand or mechanical signals or stop logs used when mobile equipment approaches the edge of the excavation? 1926.651(f)				

Are testing and controls used to prevent exposure to hazardous atmospheres where they could reasonably be expected to exist, such as landfills or where hazardous substances are stored nearby? 1926.651(g)				
Are excavation or other materials kept at least two feet from the edge of the excavations? 1926.651(j)(2)				
Is the excavation inspected daily and after any hazard increasing occurrence by a competent person? 1926.651(k)(1)				
Can the competent person describe/demonstrate how to appropriately classify soil in order to verify that the selected protective system is appropriate for the excavation in accordance with Subpart P Appendix A – Soil Classification?				
Requirements for protective systems: Are employees in an excavation five feet deep or more, or with the potential for cave in, protected by an adequate protective system? 1926.652(a)(1) *Note: See Appendices A, B, C, D, E, and F to this standard*				

ATTACHMENT B
Hoisting and Rigging in Construction

References:
ASME B30.9-2016 Slings
ASME B30.10-2016 Hooks
ASME B30.20-2016 Below the Hook Lifting Devices
ASME B30-26-2016 Rigging Hardware
DOE-STD-1090-2020 Hoisting and Rigging
29 C.F.R. 1926.251 Rigging Equipment for Material Handling
29 C.F.R. 1926 Subpart CC Cranes and Derricks in Construction
29 C.F.R. 1926 Subpart R Steel Erection

Definitions:
Critical lift means a lift that (1) exceeds 75% of the rated capacity of the crane or derrick, or (2) requires the use of more than one crane or derrick.

Lines of Inquiry:	**YES**	**NO**	**N/A**	**Comments**
Are special custom-made grabs, hooks, clamps or accessories for such items as modular panels marked to indicate the safe working loads and have they been proof tested to 125% of their rated load? 1926.251(a)(4)				
Is rigging equipment for material handling inspected by a competent person prior to use on each shift and whenever necessary to ensure it is safe? Is defective rigging removed from service? 1926.251 (a)(6)				
Alloy Steel Chains				
Do welded alloy steel chains have permanently affixed durable identification stating size, grade, rated capacity, and sling manufacturer? 1926.251(b)(1)				
Do hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments, that are used with alloy steel chains, have a rated capacity at least equal to that of the chain? 1926.251(b)(2)				
Are there records of thorough periodic (annual) inspections or more frequent inspections based on use of each alloy steel chain sling in use? (Such inspections shall in no event be at intervals greater than once every 12 months.) 1926.251(b)(6)(i) and (ii)				

Wire Rope				
Are all wire rope and wire-rope slings used within the working load limits indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer stating size, rated capacity for the type(s) of hitch(es) used and the angle upon which it is based, and the number of legs if more than one? 1926.251(c)(1), 1926.251(c)(16)				
Are wire ropes inspected for the following conditions: • Do eye splices made in any wire rope have at least three full tucks? 1926.251(c)(4)(i) • Do each wire rope used in hoisting or lowering, or in pulling loads, consist of one continuous piece without knot or splice? 1926.251(c)(4)(ii) • Are wire rope clips and knots prohibited when creating eyes in wire rope bridles, slings, or bull rigging? 1926.251(c)(4)(iii) • Is wire rope removed from service when the total number of visible broken wires exceeds 10 percent of the total number of wires in any length of eight diameters, or if the rope shows other signs of excessive wear, corrosion, or defect? 1926.251(c)(4)(iv)				
Natural Rope and Synthetic Fiber				
Are all natural and synthetic-fiber rope slings used within the working load limits indicated on the sling by permanently affixed and legible identification markings listing the manufacturer, rated capacities for the type of hitch, and the type of material the sling is made of? 1926.251(d)(1), 1926.251(d)(7), 1926.251(e)(1)(i) – (iii)				
Are manila rope eye splices made of at least three full tucks, and short splices made of at least six full tucks, three on each side of the splice center line? 1926.251(d)(4)(i)				
Are synthetic fiber rope eye splices made of at least four full tucks, and short splices made of at least eight full tucks, four on each side of the center line? 1926.251(d)(4)(ii)				
Are knots prohibited in lieu of splices? 1926.251(d)(4)(v)				
Are natural and synthetic fiber rope slings immediately removed from service if any of the following conditions are present: Abnormal wear, powdered fiber between strands, broken or cut fibers, variations in the size or roundness of strands, discoloration or rotting, distortion of hardware in the sling? 1926.251(d)(6)				

Steel Erection Subpart R				
Are pre-shift visual inspections of cranes conducted for: 753(c)(1)(i)(A) – (L) • All crane control mechanisms for maladjustments • Crane control and drive mechanism for excessive wear of components and contamination by lubricants, water, or other foreign matter • 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 • Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation • Hooks and latches for deformation, chemical damage, cracks, or wear • Wire rope reeving for compliance with hoisting equipment manufacturer's specifications • Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, or moisture accumulation • Hydraulic system for proper fluid level • Tires for proper inflation and condition • Ground conditions around the hoisting equipment for proper support, including ground settling under and around outriggers, ground water accumulation, or similar conditions • The hoisting equipment for level position • The hoisting equipment for level position after each move and setup				
Has a qualified rigger (a rigger who is also a qualified person) inspected the rigging prior to each shift in accordance with § 1926.251?				
Does the contractor prohibit the transport of employees on the headache ball, hook, or load? 1926.1431				
Are all safety latches on hooks operable? 1926.753(c)(5)				
Are safety latches non operable only under these exceptions: • When a qualified rigger has determined that the hoisting and placing of purlins and single joists can be performed more safely by doing so • When equivalent protection is provided in a site-specific erection plan 1926.753(c)(5)(i) – (ii)				

ATTACHMENT C Crane Safety in Construction				
References: 29 C.F.R. 1926 Subpart CC Cranes and Derricks in Construction **Additional Resources:** OSHA Instruction CPL 02-01-057 Compliance Directive for Cranes and Derricks in Construction Standard				
Lines of Inquiry	**YES**	**NO**	**N/A**	**Comments**
General Requirements: Are manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks complied with? 1926.1417(a)				
Are rated load capacities, recommended operating speeds, and special hazard warnings posted on all equipment and visible from operator's station? 1926.1417(c)				
Is equipment inspected by a competent person before each use? 1926.1412(d)				
Are thorough annual inspections made on hoisting machinery and records of the dates and results of inspection maintained by employer? 1926.1412(f)				
Are accessible areas within the swing radius of the rear rotating superstructure of the crane barricaded? 1926.1424				
Are employees working within 10 feet of powerlines? 1926.1407				
Before leaving crane unattended, is the boom securely fastened? 1926.1417(e) ANSI B30.5-1968 Chapter 5-3				

Are booms which are being assembled or disassembled on the ground, with or without support of the boom harness, securely blocked to prevent dropping of the boom and boom sections? 1926.1403-1406 ANSI B30.5-1968 Chapter 5-3				
Are cranes or derricks only used to hoist employees on a personnel platform when conventional means are more hazardous or impossible? Section 1431				
If a personnel platform is being used, are all operation criteria required by this standard being followed? 1926.1431				
Does the crane or derrick used with a personnel platform have a boom angle indicator (if equipped with a variable angle boom), a device to indicate boom length (if equipped with telescoping boom), and an anti-two blocking device or two block damage prevention features? 1926.1431				
Does the personnel platform meet all design criteria and platform specifications required by this standard? 1926.1431(e)				

ATTACHMENT D
Fall Protection in Construction

References:
29 C.F.R. 1926 Subpart L - Scaffolds
29 C.F.R. 1926 Subpart M - Fall Protection
29 C.F.R. 1926 Subpart R – Steel Erection

Applicability:
Scaffolds - Fall protection is required on scaffolds more than **ten (10) feet** above a lower level, measured from the walking surface. (1926.451(g))

Scissor lifts - Mobile Elevating Work Platforms (MEWP) Group A – Are considered scaffolds. A personal fall arrest harness may not be required as long as the perimeter guard rail is intact. Check with site safety plan for more rigorous requirements.

Boom lifts - Mobile Elevating Work Platforms (MEWP) Group B self-propelled boom lifts, truck mounted boom lifts and similar machines require the use of a personal fall restraint or personal fall arrest system in addition to the complete guard rail system.

Unprotected sides and edges, holes, hoist areas, excavations and roofing work **- Six (6) feet** or more above a lower level requires fall protection. 1926 – subpart M

Steel Erection - Fall protection is required in areas with unprotected sides and edges **fifteen (15) feet** above lower levels. Employees engaged in connecting are required to use fall protection at heights above two stories or **over 30 feet** above a lower level. Employees in a controlled decking zone are required to use fall protection at heights above two stories or **over 30 feet** whichever is less. 1926.700

Definitions:

Connector – (Steel Erection) means an employee who, working with hoisting equipment, is placing and connecting structural members and/or components.
Overhand bricklaying and related work means the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.
Roofing Work means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
Low-slope Roof means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
Steep-slope Roof means a roof having a slope greater than 4 in 12 (vertical to horizontal).

Lines of Inquiry	YES	NO	N/A	Comments
Construction Activity Fall Protection Requirements – Subpart M				
Is the walking/working surface strong enough to support employees and the work to be done? 1926.501(a)(2)				
Are employees on walking/working surfaces with unprotected sides and edges protected by guardrails, safety nets or personal fall arrest systems? 1926.501(b)(1)				
Are employees who are constructing leading edges protected by guardrails, safety nets or personal fall arrest systems if feasible? (If not feasible, requirements of paragraph (k) of 1926.502 must be met) 1926.501(b)(2)(i)				
Is each employee in a hoist area protected by either guardrails or personal fall arrest system? Where guardrails are used and guardrails are removed to facilitate landing of material and the employee must lean out over the edge or through the access opening, is *that* employee protected by a fall arrest system? 1926.501(b)(3)				
Are employees exposed to falling through holes (including skylights) protected by fall arrest systems, guardrails or covers? 1926.501(b)(4)(i)				
Are exposed employees working on the face of form work or reinforcing steel protected by fall arrest systems, safety nets, or positioning device systems? 1926.501(b)(5)				
Are exposed employees working on ramps, runways or other walkways protected by guardrail systems? 1926.501(b)(6)				
When excavations, wells, shafts, pits, are not readily seen (shrubs, plants, etc.) are employees protected by guardrails, fences, or barricades? 1926.501(b)(7)(i) and (ii)				
Is each employee performing overhand bricklaying operations protected from falling from all open sides except at the side next to the wall being laid, by the use of a personal fall arrest system, safety net or guardrail system or controlled access one? 1926.501(b)(9)				
Is each employee engaged in roofing work on a low slope roof protected by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and				

personal fall arrest system, or warning line system and safety monitoring system? Or, on roofs 50-feet or less in width, the use of a safety monitoring system alone? 1926.501(b)(10)				
Is use of a safety monitoring system restricted to roofing work only?				
Is each employee engaged in roofing work on a steep slope roof protected by guardrail systems, safety net systems, personal fall arrest systems? 1926.501(b)(11)				
Is each employee working on, at, above, or near wall openings (including those with chutes attached) where the inside bottom edge of the wall opening is less than 39 inches (1.0 m) above the walking/working surface, protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system?				
Has each worker been trained to recognize the hazards of falling and the procedures to be followed in order to minimize those hazards? 1926.503(a)				
Has a certificate of training been prepared for each worker by their employer which includes: the name or identity of the person trained, the date of the training, the signature of the person who provided the training or the signature of the employer? 1926.503(b)(1)				
Scaffolding Fall Protection Requirements - Subpart L				
Do workers use portable ladders, hook-on ladders, attachable ladders, stair towers, ladder stands, ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface when scaffold platforms are more than two feet above or below a point of access? 1926.451(e)(1)				
Are workers prohibited from climbing cross braces as a means of access onto scaffold structures? 1926.451(e)(1)				
Is each employee on a scaffold more than 10 feet above a lower level protected from falling to that lower level? 1926.451(g)(1) Note: Paragraphs 451(g)(1)(i) through (vii) establish the types of fall protection to be provided to the employees on each type of scaffold. Paragraph (g)(2) of this section addresses fall protection for scaffold erectors and dismantlers.				

Are workers who are assigned erecting and dismantling duties on supported scaffolds provided with fall protection if it is feasible and does not create a greater hazard as determined by a competent person? 1926.451(g)(2)				
Is each employee performing overhand bricklaying operations from a supported scaffold protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system, safety net or guardrail system or controlled access one? 1926(b)(9) and 1926.451(g)(1)(vi)				
Is each worker trained to recognize hazards associated with the scaffold in use and to understand the procedures to control or minimize those hazards, including electrical hazards? 1926.454(a)				
Fixed Ladders				
Are new fixed ladders that extend more than 24 feet above a lower level, installed after November 19, 2018, equipped with a personal fall arrest system or a ladder safety system? 1910.28(b)(9)(i)(B)				
Is a personal fall arrest system or ladder safety system installed when replacement fixed ladders, cages or wells, or any portion or a section thereof replaced? 1910.28(b)(9)(i)(C)				
On and after November 18, 2036, all fixed ladders more than 24 feet above a lower level are equipped with a personal fall arrest system or a ladder safety system. 1910.28(b)(9)(i)(D) Has a plan been developed to ensure compliance with this requirement?				
Scissor Lifts - Mobile Elevating Work Platforms (MEWP) Group A				
Are workers that are operating scissor lifts with the platform floor at or above 10 feet above a lower level protected with a complete guardrail system around the perimeter of the platform? Are swing gates operational and latched closed? Are all chains provided at entry point, which serve as a mid-rail, fastened securely in place with a snap latch? 1926.451(g)				
Boom Lifts - Mobile Elevating Work Platforms (MEWP) Group B				
Are workers prohibited from tying off to an adjacent pole, structure, or equipment while working from an aerial lift? 1926.453(b)(2)(iii)				

Are workers instructed to always stand firmly on the floor of the basket, and not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position? 1926.453(b)(2)(iv)				
Are workers required to use a personal fall arrest system with a lanyard or personal fall restrained system attached to the boom or basket when working from an aerial lift? *Note: Body belts are not acceptable as part of a personal fall arrest system. The use of a body belt in a tethering system or in a restraint system is acceptable and is regulated under 1926.502(e). 1926.453(b)(2)(v)*				
Steel Erection – Subpart R				
Are workers engaged in steel erection, who are on a walking/working surface with an unprotected side or edge more than 15 feet above a lower level, protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems? 1926.760(a)(1)				
Are workers who are engaged in the activity of connecting protected from fall hazards of more than two stories or 30 feet above a lower level, whichever is less, by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, or fall restraint systems? 1926.760(b)(1)				
Have workers who are engaged in the activity of connecting, completed connector training? 1926.760(b)(2)				
Are workers who are engaged in the activity of decking, protected from fall from fall hazards of more than two stories or 30 feet above a lower level, whichever is less by the establishment of a controlled decking zone (CDZ)? 1926.760(c)				
Have workers who are engaged in the activity of decking, completed controlled decking zone (CDZ) training? 1926.760(c)(4)				

ATTACHMENT E
Construction Confined Space Entry

References:
10 C.F.R. 851.25 Training and Information
29 C.F.R. 1926.953 Electric Power Transmission and Distribution, Enclosed Spaces
29 C.F.R. 1926.961 De-energizing Lines and Equipment for Employee Protection
29 C.F.R. 1926.965 Underground Electrical Installations
29 C.F.R. 1926 Subpart AA Confined Spaces in Construction
48 C.F.R. 970.5223-1 Integration of Environment, Safety, and Health into Work Planning and Execution.
NFPA 70E-2015 Standard for Electrical Safety in the Workplace

Applicability:
For more detailed lines of inquiry refer to CRAD EA-32-10 Confined Space Entry Criteria and Review Approach Document

Lines of Inquiry	YES	NO	N/A	Comments
Has a documented confined space entry program been established and implemented that addresses the risk associated with hazards and potential hazards in confined or enclosed spaces? 1926.1203(d)				
Does the confined space entry program contain the requirements for monitoring the space to identify oxygen content, combustible gasses/vapors, toxic air contaminants, in that order, along with the methods to abate or control the hazards including ventilation or monitoring? 29 C.F.R. 1926.1203(e)(2)(iii) and 1204(e)(3)				
Does the documented program classify confined spaces as permit required or non-permit required, based on the identified hazards or potential hazards? 29 C.F.R. 1926.1203				
Are the identified hazards and potential hazards, related to confined or enclosed space entry, communicated to management and all affected workers? 29 C.F.R. 1926.1203(b)				

Do confined space entry programs and procedures include hazard controls that are appropriate for all identified hazards or potential hazards, including the implementation of the hierarchy of controls? (48 C.F.R. § 970.5223-1(b); 10 C.F.R. § 851.22; 29 C.F.R. § 1910.146(d); and 1926.1204)				
Have confined space entry training programs been developed and implemented to ensure that all entry supervisors, entrants, and attendants are provided the required training on the procedures and hazards in order to perform their duties in a safe and healthful manner? 10 C.F.R. § 851.25; 29 C.F.R. § 1926.953(c) and 1926.1207 through 1210				
Are complete and accurate records of all permit-required confined spaces information, hazard assessments, audits, employee training, and hazard exposure controls been established and maintained current? (10 C.F.R. 851.26(a)(1); 29 C.F.R. 1926.1203(e)(1)(v), (g)(3), .1205(a), .1206, .1207(d), and .1213)				
Has a personal protective equipment (PPE) program been developed, implemented, and certified based on identified hazards associated with confined or enclosed space entry and employees have been trained in the proper use of such equipment? 29 C.F.R. § 926.1204(c)(7), (d)(4), 1926.1206(n)				
Has a rescue and emergency services program been established and implemented based on identified hazards associated with confined or enclosed space entry and have employees been trained in the proper use and procedures for such equipment? 29 C.F.R. § 1926.1211(b)(1); and 1926.953(c) and (d))				

ATTACHMENT F
Material Handling in Construction

References:
10 CFR 851.25 Training and Information
29 CFR 1926 Subpart H Materials Handling, Storage, Use, and Disposal.
29 CFR 1926.958 Material Handling and Storage Near Energized Lines or Equipment
29 CFR 1926.1408 Power Line Safety (up to 350 kV – equipment operations)

Applicability:
See ATTACHMENT G for material handling around power lines

Lines of Inquiry	YES	NO	N/A	Comments
General requirements: Subpart H - 29 CFR 1926.250 Are all materials stored in tiers, stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse? 1926.250(a)(1)				
Are materials stored inside buildings under construction prohibited within six feet of any hoist way or inside floor openings, or within 10 feet of an exterior wall which does not extend above the top of the material stored? 1926.250(b)(1)				
Are bricks prohibited from being stacked more than seven feet high? Are loose bricks stacked over four feet high, tapered back two inches to every foot in height above the 4-foot level? 1926.250(b)(6)				
Are masonry blocks that are stacked above six feet high, tapered back one-half block per tier above the 6-foot level? 1926.250(b)(7)				
Are structural steel, poles, pipes, bar stock and other cylindrical materials, racked, stacked, or blocked to prevent spreading or rolling? 1926.250(b)(9)				

Forklift/Power industrial Truck (PIT)				
Are operators trained to operate powered industrial trucks? 10 C.F.R. 851.25				
Are operators certified to operate powered industrial trucks?				
Are load charts available in the cab of powered industrial trucks for the attachment being used? Do operators know how to use load charts?				
Do rough terrain forklifts travel with forks as low to the ground as possible to avoid tipping over on uneven surfaces?				
Are powered industrial trucks equipped with seatbelts? Are operators required to use seat belts?				

ATTACHMENT G
Working Around Power Lines on a Construction Site

References:
10 CFR 851, 29 CFR 1926.959 and .960, NFPA 70E-2015

Applicability:
Applies to people or equipment capable of encroaching on the minimum approach distance of energized conductors.

Definitions:
Deenergized - Free from any electrical connection to a source of potential difference and from electric charge; not having a potential that is different from the potential of the earth.

Energized (alive, live) - Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

Lines of Inquiry	YES	NO	N/A	Comments
Are procedures developed and used for work involving the use of portable ladders and platforms when work is performed near energized overhead power lines? (10 CFR 851.10, .24, Appendix A.1 and A.9; 29 CFR 1926.955)				
Are procedures developed and used for work involving cranes and other boom type equipment when working near energized overhead power lines? (10 CFR 851.10, .24, Appendix A.1 and A.9; 29 CFR 1926.959 and .960; 1926.1408; 1926.1410; NFPA 70E-2015 Section 130.8)				
Are procedures developed and used for work involving aerial lift devices operating near energized overhead power lines? (10 CFR 851.10, .24, Appendix A.1 and A.9; 29 CFR 1926.959 and .960; NFPA 70E-2015 Section 130.8; ANSI/SAIA A92.3 Sections 7.10(6) and (7); ANSI/SAIA A92.5 Sections 7.10(6) and (7); ANSI/SAIA A92.6 Sections 6.1, 7.1, 7.10(7) (refers to 29 CFR 1910.333(c) for MAD), 8.1 and 8.10(7) (refers to 29 CFR 1910.333(c) for MAD); ANSI/SAIA A92.22 Sections 4.1, 4.2, 6, 6.1.2.3, 6.8.9 and 6.8.12)				

Are procedures developed and used that specify the requirements for a qualified registered professional engineer or owner/operator to determine the minimum clearance/approach distance for energized overhead power lines? (10 CFR 851.10, .24, Appendix A.1 and A.9; 29 CFR 1926.1410(c)(1))				
Are all workers who have exposure to the hazards of working near energized overhead power lines trained in the hazards, work practices, and minimum approach distances (MAD) associated with this work? (10 CFR 851.25; 29 CFR 1926.453(b)(2)(ii), 1926.950(b), 1926.1408(g), 1926.1427 and 1926.1430; ANSI/SAIA A92.2 Sections 8.12, 9.3 and 9.12; ANSI/SAIA A92.3 Sections 6.11, 7.6 and 8.5; ANSI/SAIA A92.5 Sections 6.11.1, 7.6 and 7.7; ANSI/SAIA A92.24)				

ATTACHMENT H
Lockout/Tagout

References:
10 C.F.R. 851.25 Training and Information
10 C.F.R. 851.27(e)(2) - Materials Incorporated by Reference (NFPA 70E 2015 edition has been incorporated by reference)
29 C.F.R. 1926.417 Lockout and Tagging of Circuits
NFPA 70E Standard for Electrical Safety in the Workplace, Article 120 Establishing an Electrically Safe Work Condition

Applicability:
The requirements for lockout/tagout (LOTO) in construction (29 CFR 1926.417) are substantially less than the commonly understood requirements in general industry. (29 CFR 1910.147) Construction activity is specifically not covered by OSHA's general industry LOTO regulation 1910.147 which covers the servicing and maintenance of machines and equipment in which the unexpected energization or startup could injure a worker. Contractors performing construction activities typically must isolate electrical circuits to an active construction site in order to protect workers who may be directly or indirectly exposed to electrical hazards on the site. The lines of inquiry are developed from the NFPA 70E Article 120 which has been incorporated by reference in accordance with 10 CFR 851.27(e)(2).

Definitions:
Simple Lockout/Tagout Procedure – A lockout/tagout procedure involving only a qualified person(s) deenergizing one set of conductors or circuit part source for the purpose of safeguarding employees from exposure to electrical hazards. A written procedure is not required.

Complex Lockout/Tagout Procedure – A lockout involving (1) multiple energy Sources (2) Multiple Crews (3) Multiple Crafts (4) Multiple Locations (5) Multiple Employers (6) Multiple Disconnecting Means (7) Particular sequences (8) Job or task that continues for more than one work period.

Lines of Inquiry	YES	NO	N/A	Comments
Do authorized employees confirm by voltage test (or equivalent means) that isolation and de-energizing have been accomplished before starting work? NFPA 70E 120.1(5)				
Has a lockout/tagout plan for all complex lockout/tagout procedures been identified, documented, and implemented to safeguard employees from exposure to electrical hazards? NFPA 70E 120.2				

Is each person who could be directly or indirectly exposed to electrical energy involved in the lockout process? NFPA 70E 120.2(B)(1)				
Do exposed or affected workers have appropriate training to understand the established procedure and its execution? 10 CFR 851.25; NFPA 70E 120.2(B)(2)				
Is the training documented with the content of the training, each employee's name, and the dates of the training? NFPA 70E 120.2(B)(4)				
Are lockout tagout devices unique and readily identifiable as lockout tagout devices? NFPA 70E 120(B)(7)				
Is an audit conducted annually of at least one lockout/tagout in progress which is designed to correct deficiencies in the established electrical lockout/tagout procedure or in worker understanding? NFPA 70E 120.2(C)(3)				
Is a written plan prepared for complex lockout tagout procedures? NFPA 70E 120.2(D)(2)				
Are all disconnects installed after January 2, 1990 capable of accepting a lock? NFPA 70E 120.2(E)(1)				
Do lockout devices include a method of identifying the individual who installed the device? NFPA 70E 120.2(E)(3)(b)				
Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited? NFPA 70E 120.2(E)(6)				

ATTACHMENT I
Steel Erection

References:
10 C.F.R. 851.25 Training and Information
29 C.F.R. 1926 Subpart R – Steel Erection

Additional Resources:
OSHA Instruction CPL 2-1.34 Inspection Policy and Procedures for OSHA's Steel Erection Standards for Construction
29 C.F.R. 1926 Subpart R, Appendix G Fall Protection Systems Criteria and Practices

Applicability:
The Critical Review and Approach Document (CRAD) is intended to be used to evaluate workplaces where hazards associated with steel erection activities are involved, including the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. This CRAD does not cover electrical transmission towers, communication and broadcast towers, or tanks.
For rigging lines of inquiry see Attachment B of this CRAD.

Definitions:
Steel Erection Activities include hoisting, laying out, placing, connecting, welding, burning, guying, bracing, bolting, plumbing, and rigging structural steel, steel joists, and metal buildings; installing metal decking, curtain walls, window walls, siding systems, miscellaneous metals, ornamental iron, and similar materials; and moving point-to-point while performing these activities.

Connector means an employee who, working with hoisting equipment, is placing and connecting structural members and/or components.

Controlled Decking Zone (CDZ) means an area in which certain work (for example, initial installation and placement of metal decking) may take place without the use of guardrail systems, personal fall arrest systems, fall restraint systems, or safety net systems and where access to the zone is controlled.

Critical Lift means a lift that (1) exceeds 75 percent of the rated capacity of the crane or derrick, or (2) requires the use of more than one crane or derrick.

Lines of Inquiry	YES	NO	N/A	Comments
Has the controlling contractor provided written notifications to the steel erector that concrete in the footings, piers, and walls and the mortar in the masonry piers and walls has attained, on the basis of an appropriate American Society for (ASTM) standard test method of field-cured samples, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection and that any repairs, replacements or modifications to anchor bolts were conducted in accordance with 1926.755(b)? 1926.752(a)				
Are lifts pre-planned to avoid any employee who is not involved in connecting or disconnecting the load? 1926.753(d)				
Is metal decking secured against displacement at the end of the shift or when environmental or jobsite conditions require? 1926.754(e)(1)(v)				
Are roof and floor holes and openings decked over or if they are large, are they provided with guard rails? 1926.754(e)(2)(ii)				
Are all columns anchored by a minimum of 4 anchor bolts or rods and is each column anchor rod (anchor bolt) assembly, including the column-to-base plate weld and the column foundation, designed to resist a minimum eccentric gravity load of 300 pounds (136.2 kg) and located 18 inches (.46m) from the extreme outer face of the column in each direction at the top of the column shaft? 1926.755(a)(1); 1926.755(a)(2)				
Are beams and columns secured with at least two bolts per connection before the hoisting line is removed? 29 C.F.R. 1926.756(a)(1), 10 C.F.R. 851.25				
Are workers trained in the following topics: fall hazards, multiple lift rigging procedures, connector procedures, controlled decking zone procedures? 1926.761				

ATTACHMENT J
Underground Construction

References:
10 C.F.R. 851.25 Training and Information
29 C.F.R. 1926 Subpart S – Underground Construction, Caissons, Cofferdams and Compressed Air
DOE-STD-1066-2016 Appendix D, Fire Protection

Applicability:
This Critical Review and Approach Document (CRAD) applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section and covered in such a manner as to create conditions characteristic of underground construction.

Definitions:
Designated person - At least one designated person shall be on duty above ground whenever any employee is working underground. This designated person shall be responsible for securing immediate aid and keeping an accurate count of employees underground in case of emergency. The designated person must not be so busy with other responsibilities that the counting function is encumbered.

Lines of Inquiry	YES	NO	N/A	Comments
Is there a check-in/check-out procedure that will ensure that above-ground personnel can determine an accurate count of the number of persons underground in the event of an emergency? 1926.800(c)				
Have all employees been instructed in the recognition and avoidance of hazards associated with underground construction activities including, where appropriate, the following subjects? 1926.800(d) ▪ Air monitoring ▪ Ventilation ▪ Illumination ▪ Communications ▪ Flood control ▪ Mechanical equipment ▪ Personal protective equipment ▪ Explosives ▪ Fire prevention and protection ▪ Emergency procedures, including evacuation plans and check-in/check-out systems				

Do powered communication systems between the work face, the bottom of the shaft and the surface, operate on an independent power supply, and are they installed so that the use of or disruption of any one phone or signal location will not disrupt the operation of the system from any other location? 1926.800(f)(3)				
When a shaft is used as a means of egress, has the employer made advance arrangements for power-assisted hoisting capability to be readily available in an emergency, unless the regular hoisting means can continue to function in the event of an electrical power failure at the jobsite? Such hoisting means shall be designed so that the load hoist drum is powered in both directions of rotation and so that the brake is automatically applied upon power release or failure. 1926.800(g)(1)				
Are self-rescuers provided by the employer? 1926.800(g)(2)				
Has the employer ensured the availability of qualified rescue teams? 1926.800(g)(5) • At least one 5-person rescue team, either on the jobsite or within one-half hour travel time from the entry point where **less than 25** employees work underground at one time. • At least two 5-person rescue teams, one on the jobsite or within one-half hour travel time from the entry point, and the other within 2 hours travel time where **25 or more** employees work underground at one time.				
Has the employer assigned a competent person to perform all required air monitoring? 1926.800(j)(1)(i)(A)				
Is fresh air supplied to all underground work areas in sufficient quantities to prevent dangerous or harmful accumulation of dusts, fumes, mists, vapors, or gases? 1926.800(k)(1)(i)				
Are records of air quality tests available for review? 1926.800 (j)(3)				
Is a competent person assigned to inspect the roof, face, and walls of the work area at the start of each shift and as often as necessary to determine ground stability? 1926.800(o)(3)(i)(A)				
Are hoists which lift personnel equipped with limit switches to prevent overtravel at the top and bottom of the hoist way? 1926.800(t)(3)(xii)				

Is a competent person assigned to visually check all hoisting machinery, equipment, anchorages, and hoisting rope at the beginning of each shift and during hoist use, as necessary? 1926.800(t)(3)(xix)				
Is each safety device checked by a competent person at least weekly during hoist use to ensure suitable operation and safe condition? 1926.800(t)(3)(xx)				
Are hoist drum systems equipped with at least two means of stopping the load, each of which shall be capable of stopping and holding 150 percent of the hoist's rated line pull? (A broken-rope safety, safety catch, or arrestment device is not a permissible means of stopping.) 1926.800(t)(4)(i)				
Do new subterranean facilities and major modifications comply with DOE-STD-1066-2016 Appendix D, Fire Protection?				

ATTACHMENT K Demolition				
References: 10 C.F.R. 851.25 Training and Information 29 C.F.R. 1926 Subpart T Demolition				
Lines of Inquiry	**YES**	**NO**	**N/A**	**Comments**
Has an engineering survey been made by a competent person of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure? Is there evidence in writing that the survey has been completed? 1926.850(a)				
Have all electric, gas, water, steam, sewer, and other service lines been shut off, capped, or otherwise controlled, outside the building line before demolition work is started? 1926.850(c)				
Has testing and purging been performed, and the hazard eliminated for all hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances in any pipes, tanks, or other equipment on the property before demolition is started? 1926.850(e)				
Are material drop zones identified, barricaded, and posted with adequate signs? 1926.850(h)				
Are floor holes covered with material substantial enough to support expected loads? 1926.850(i)				
Are debris chutes provided with gates at the discharge end and is a competent person assigned to monitor the backing and loading of trucks? Are the top of chutes protected with guardrails and toe-boards four inches thick and six inches tall at the top? 1926.852				
Does demolition proceed from upper floors down and are structural members kept in place until all stories above have been demolished and removed? 1926.854				