

**Paycor Stadium Southeast & Southwest VT Escalator Towers
Bid Package 2: Steel, Demo & Concrete
ITB#033-26
Addendum 5**

May 11, 2026

To All Registered Vendors:

NOTE:

Add the following:

Specifications

Drawings

A-503: Detail 09/A503 Revised

Attachments

Clarifications

1. TC03 Structural Steel to provide all Pipe & Tube Railings at stairs, landings, perimeters, etc.

Questions & Answers

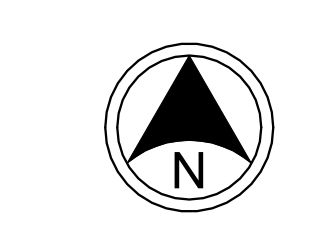
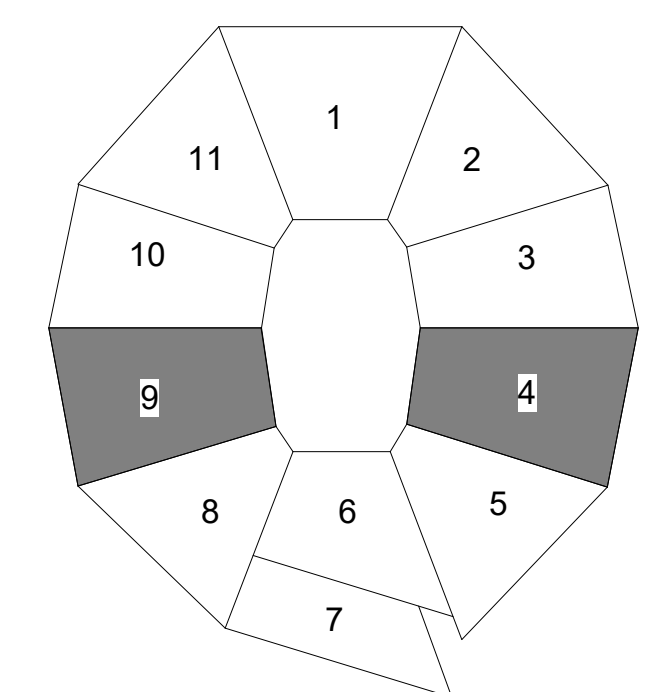
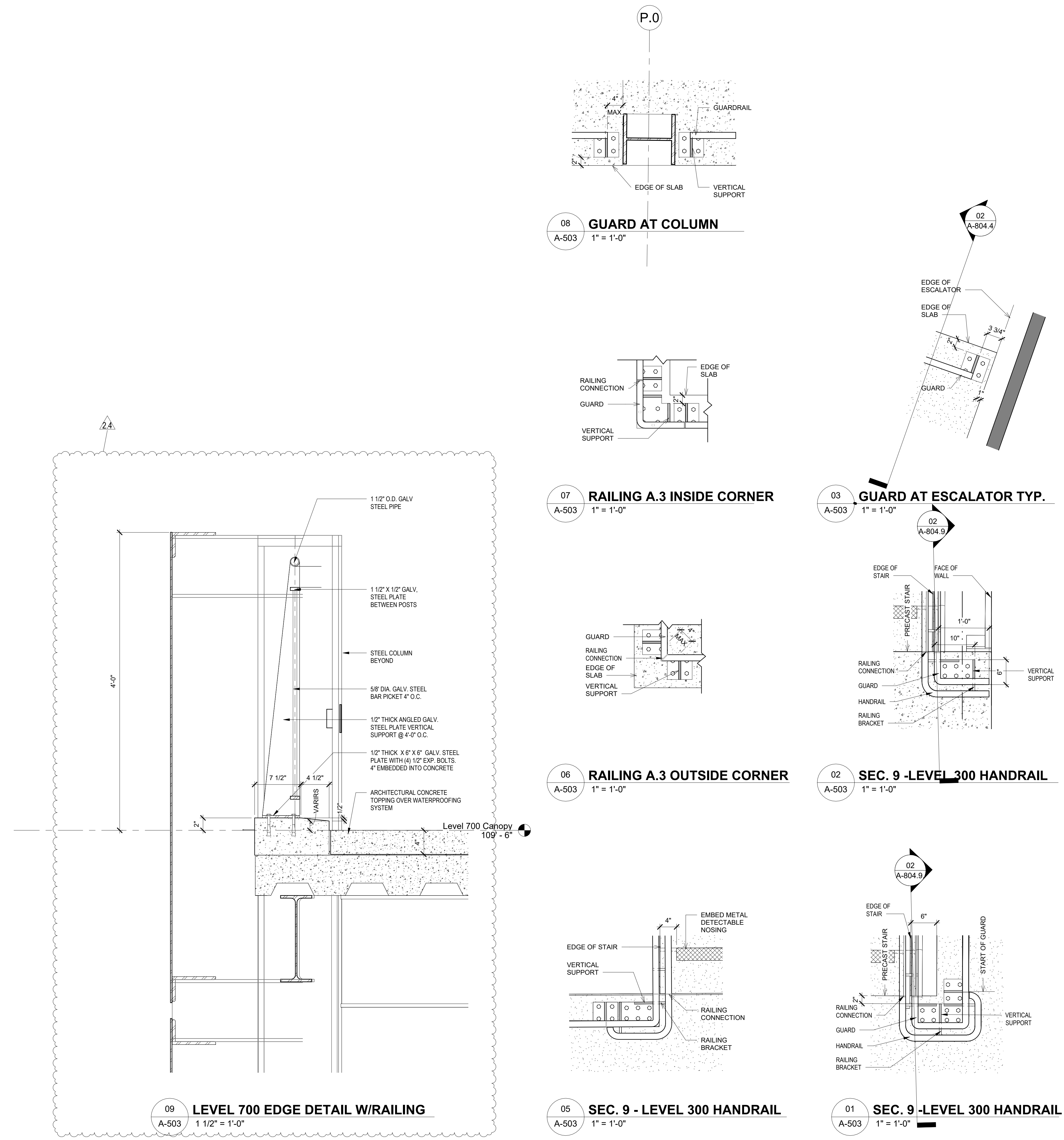
1. Please provide a clear, dimensioned detail with reinforcing, for the 1'-6" tall curbs (A19) at the Head House structures on level 700.
 - a. **THP: Curb detail provided in 58/S-204 added in addendum 2**
2. Is there to be A19 concrete curb along Q.0 (Sector 4) and Q (Sector 9)? See details 01 / A-213.4 and 2 / A-213.9. There is no slab at these locations.
 - a. **THP: Per section 79/S-205 added in addendum 2 there is a HSS member supporting the headhouse curtain wall system along lines Q.0 and Q. Coordinate slab with Arch.**
3. Please confirm TC-03 provides all stair nosing's cast into SOMD landings and the dowel connections of precast stairs to CIP landings.
 - a. **TC03 will provide landing nosing's to TC04 and TC04 will install.**
 - b. **TC03 to provide dowel bar replacement in precast stairs. TC04 will provide rebar connecting cast in place slab to top stair tread. Refer to 7/S201.**
4. What is the extent of curb 22/S202 at Level 700? Structural and Architectural sections do not show it.
 - a. **THP: Provide curb as shown in detail 22/S202 along line Q and Q.0 at slab edge on 700 level both west and east ramps.**

5. Clarify Structural Keynote 26 about reinforced concrete walls at stair landing. Landing on S-106 with section cut 73/S-205 shows CMU walls.
 - a. **THP: The landing on S-106 is to be supported by CMU walls as shown in 73/S-205.**
6. Is there to be new slab on Level 200, Sector 9, between lines L to P and 40 to 41? Note E2 shows existing plank and topping but ADD # 1 adds section 1/S-201.
 - a. **THP: There is no new slab at this location. The intent of section 1/S-201 is to show the connection of the new steel beam to the existing concrete wall.**

Sincerely,

Jill Williams

Jill Williams
Purchasing Director



SECTION 00 73 19 - HEALTH & SAFETY REQUIREMENTS

PART 1 - GENERAL

- 1.1 The following provides a summary of Contractor's Safety Program requirements regarding worker safety and/or project safety.
- 1.2 This summary should in no way be construed as being all-inclusive. It is issued as a guide to aid each Subcontractor in their understanding of the safety expectations on this project.
- 1.3 Subcontractors must abide by the Messer Safety, Health and Environmental Requirements, latest revision.

PART 2 - SITE SPECIFIC SAFETY PLAN AND PRECONSTRUCTION SAFETY MEETING

- 2.1 A project specific safety plan will be developed by the Contractor and provided to Subcontractors that will reference, more directly, site safety requirements and provide the Emergency Action Plan, Site Requirements and General Requirements.
- 2.2 All Subcontractors will be required to provide, to Contractor, a site specific safety plan for review and approval before any work is to begin on site. This plan must be completed using the provided template and describe the means and methods that the Subcontractor will be using to safely perform all work on site, and comply with all federal, state and local safety requirements. This site specific plan will be provide to the Contractor for review and approval before any work activities are to begin onsite.
- 2.3 As part of this plan, Subcontractors will provide all SDS sheets (safety data sheets) for any and all chemicals that will be used on site, to be stored at the project operations office in a predetermined place, to ensure access for all.
- 2.4 Prior to beginning work onsite, the site-specific safety plan and associated documentation must be reviewed and discussed with Messer project management and safety personnel in a scheduled Preconstruction Safety Meeting. Site specific safety requirements and processes will also be reviewed in this meeting. Subcontractor attendees must include, at a minimum: Project Manager, site-based leader (Foreman and/or Superintendent) and Safety Representative.

PART 3 - NEW WORKER SAFETY ORIENTATION

- 3.1 All workers (craft, management, etc.) are required to attend a jobsite safety orientation prior to the start of work. This orientation will address safety, risk analysis, and infection control requirements on this project. It is anticipated that this orientation will take approximately one hour to complete.

PART 4 - SPECIFIC SAFETY REQUIREMENTS

- 4.1 Hard hats are required to be worn at all times.
- 4.2 Every Subcontractor, including lower tier subcontractors, shall provide, and require its employees to utilize, eye protection at all times on this project. This requirement applies to all employees at all times while on site except during scheduled breaks away from potential eye hazards or while in a trailer performing office functions.



- 4.3 Gloves are required for anyone entering or working on the jobsite. Every Subcontractor, including lower tier subcontractors, is required to provide appropriate hand protection for their employees with glove selection based on task hazards presented for work performed.
- 4.4 High-visibility vests or clothing is required at all times. In addition, any persons directing traffic along roadways are to have reflective signage to direct traffic in addition to the other PPE requirements.
- 4.5 100% fall protection at or above 6' for all personnel is required.
- 4.6 Guardrails are required on the perimeter all rooftops until final finish components need to be install at the perimeter.
- 4.7 Any barricade or safety device removed by a Subcontractor's employee(s) in order to perform the work shall be immediately re-erected as soon as that work activity is complete. Temporary barricades and controlled access zones must be established while the barricade is down. If the Subcontractor does not perform this in a timely manner, Contractor or designee will perform and back charge the Subcontractor.
- 4.8 Use of platform style step ladders are required on this project. Regular step ladders will not be permitted.
- 4.9 100% tie-off is required while using all forms of lifts, including scissors lifts.
- 4.10 All Subcontractors performing any hot work (grinding, welding, burning, etc.) are required to provide a fire watch person. Fire blankets are also required where necessary.
- 4.11 All Subcontractors performing any overhead work will have approved plan to protect entire site from overhead hazards or falling objects before work is to begin.
- 4.12 Weekly Safety Meetings with all employees of this Subcontractor, documented by attendance sheets, typed safety topics (Tool Box Talks), a copy of the agenda, and minutes. This documentation is to be filed with Contractor on a weekly basis.
- 4.13 Weekly Safety Walk-Through of the jobsite by each Subcontractor's Superintendent and Contractor's onsite personnel documented by a listing of deficient items found, methods of correction, and date of correction. This documentation is to be filed with Contractor on a weekly basis.
- 4.14 Subcontractors will be required to complete a job safety analysis (JSA) for each work activity that they will perform. This documentation is to be filed with Contractor on a daily basis. Each Subcontractor employee shall attend the site wide morning huddle every morning at the location determined by the project team. After the site wide huddle, each Subcontractor shall conduct a huddle meeting prior to every work shift to discuss the activities of the shift, review JSA(s) and to establish a safe plan of action to accomplish the work. This meeting shall be conducted with all employees working on site by the on-site leader for each Subcontractor. Any changes to the established plan shall be communicated throughout the shift to affected employees.
- 4.15 Subcontractors will be required to address any site safety issues noted through FieldView or the current Messer safety tracking application within 24 hours after the issue has been noted.

PART 5 - MESSER SAFETY 4-SITE PROGRAM

- 5.1 The Messer Safety4Site Program (the "Program") has been established by Messer with the objective of reducing unsafe conditions which could cause accidents on Messer projects. It is applicable to all Messer employees; and subcontractors, sub tier contractors and material suppliers of all tiers (all of the foregoing being referred to in this document as "Subcontractors") in addition to the obligation of all Subcontractors, under the Subcontract Documents, to comply with all applicable federal, state, and local occupational safety and health laws including, but not limited to, standards, regulations, and requirements under the Occupational Safety and Health Act

("OSHA"). The Program does not create a Messer duty or assurance of safety to any Subcontractor or Subcontractor's employee (see Additional Terms, below).

Each Subcontractor and Messer employee shall be subject to specific remedies set forth below in case of violation of the OSHA Focus 4 Hazards (falls, electrical, struck by, caught in/between) by its employees. Messer reserves the right to escalate directly to higher level consequences for egregious fall protection violations. Egregious violations are defined as an exceptionally severe circumstance where there is an immediate and substantial risk of a person falling from an elevated position, leading to grave injury or loss of life. These include, but are not limited to, the examples outlined in the Non-Negotiable Behavior chart.

For covered violations (either actions or omissions) related to the OSHA Focus 4 Hazards, the following shall apply:

A. First Violation by an Employee or Subcontractor

1. Upon investigation and notification by Messer of the violation, Subcontractor shall remove the employee or Messer shall remove its employee from the site for the remainder of that working day (and for the next working day also if removal occurs in the second half of the employee's shift). If the employee is a supervisor or if Subcontractor's supervisor is not readily available, Messer may direct the employee to leave the site and the incident shall be reported to Subcontractor's management.

2. Immediately following S4S event, Messer Safety Manager and Project Manager or other designated person shall meet with employee and supervisor to review S4S incident and define immediate corrective actions

For fall protection violations - determination will be made at this time if the violation is egregious. Messer Safety Department leadership will be involved in the determination. Egregious fall protection violations will result in the following:

a. **Subcontractor employee:** escalation to Second Violation level consequences as outlined in the following section of this program, including removal from Messer projects for a period of one year.

Messer employee: suspension, without pay, for a minimum of 5 days and completion of fall protection retraining prior to returning onsite.

3. The Senior Project Executive (SPE) or other designated Messer manager will notify Subcontractor executive management of the S4S violation. Notification will request that Subcontractor contact SPE to define how future S4S violations will be prevented.

4. Upon return, the Subcontractor (or Messer if a Messer employee is involved) shall give the employee a one-page handout on the Focus 4 Hazards. Employee must read, sign and date. Subcontractor or Messer must discuss the violation and corrective actions taken at the next huddle meeting.

5. S4S Incident will be reviewed at the following days Site Wide Morning Huddles and/or Plan of the Day (POD) meeting (or other) to reinforce actions and requirements.

B. Second Violation by the same Employee

This section applies in case of violation by an employee (of a subcontractor or Messer) of the same Focus 4 Hazard within one year, or a different Focus 4 hazard within a three month timeframe, or any egregious fall protection violation by a subcontractor; otherwise a subsequent violation by the same employee is treated as a First Violation by that individual.

1. Initial actions will Follow Steps 1-3 above

2. A subcontractor employee will not be permitted to work on any Messer project for a period of one year. Prior to return to work on Messer projects, the employee must complete the 10-hour OSHA training program and Subcontractor must provide an action plan to Messer project management for approval prior to employee return.
3. A Messer employee will be terminated and will not be eligible for re-hire for 30 days and the employee must complete a 30-hour OSHA training program, retraining on the subject matter relative to the violation(s) as determined by the Safety and Craftforce Development, whether previously taken or not.
4. Subcontractor or Messer must discuss the violation and actions taken at the next Site Wide Morning Huddle meeting and/or Plan of the Day (POD) meeting.
5. Messer Safety Department will ensure that tracking of these individuals is documented and available to project sites.

C. Second and/or Multiple Violations by a Subcontractor

This section applies in cases of a second violation by a Subcontractor's employees on a specific project or multiple violations on a project (whether the same or different employees are involved in the two incidents). or if a Subcontractor incurs a total of three or more covered violations on any other Messer projects collectively, during any 12-month period. This section also applies to first violations of any fall protection category violation if it is determined to be egregious.

1. Upon second violation at the specific project site or multiple violations at any Messer site over a 12-month period, Messer will require the following actions be taken before any work will continue:
 - a. Subcontractor Executive Management will meet with Messer to determine future remedial actions to be taken to prevent further violation.
 - b. Subcontractor shall provide a written corrective/remediation action plan. This plan must be approved by Messer Safety Department and any necessary resources, or requirements needed must be put in place prior to resumption of work activities.
2. Upon second (or multiple) violation, Messer Safety Department will determine requirement for a full-time and qualified safety representative to the project to supervise the communication and the work activities of the Subcontractor. The safety representative must be approved by Messer Safety department and provided at no additional cost to the Owner or to Messer. If required, this safety person must be on site whenever the Subcontractor is performing work on the project, until such time that Subcontractor has demonstrated to Messer's satisfaction that a significant improvement with the Subcontractor's safety performance has occurred.
3. If the Subcontractor has a direct contract with Messer, Messer may terminate those contracts for cause without further notice or opportunity to cure, and thereafter pursue all other available remedies for such default. If the Subcontractor does not have a direct contract with Messer, Messer may direct the Subcontractor under which the violating Subcontractor is working to remove the violating Subcontractor permanently from the project; in that event, the higher-tier Subcontractor has the responsibility of fulfilling the violating Subcontractor's work by other means at no additional cost to the Owner or Messer. If Messer elects not to terminate, Messer may impose other reasonable sanctions including additional safety assurance requirements.

D. Additional Terms

1. This Program is subject to change by Messer from time to time with notice to Subcontractor; however, Subcontractor is not required to accept material increases in its obligations or liability under the Program without its consent.

2. It is the intention of the Program to cover violations related to Focus 4 Hazards which are of a significant nature. Messer's good faith determination as to whether it is a covered violation or not shall be final. Every identified violation will be reviewed by the supervisor of the site manager to ensure consistency of interpretation of a violation of the Focus Four Non-negotiables.
3. In Messer's discretion, a group of related individual violations may be treated as a single violation at the Subcontractor level. For example, if several Subcontractor employees engaged in related work are failing to use required fall protection, each such employee will be charged with an individual violation when the situation is discovered by Messer but if Subcontractor has no previous violations on this project, Messer may treat the incident as a single violation for Subcontractor and not impose Second Violation or Multiple Violation sanctions on Subcontractor.
4. For purposes of Multiple Sanctions, "Messer projects" include all projects in which Subcontractor is a subcontractor or material supplier of any tier under Messer, and all projects in which Messer provides construction management services covering Subcontractor pursuant to an agreement with the Owner.
5. It is not Messer's intention to interfere in Subcontractor's relationship with its employees. When feasible, significant actions under the Program such as excluding an employee from the project site will be notified by Messer to a supervisory employee of the Subcontractor for the Subcontractor to put into effect immediately, but Messer reserves the right to take immediate action to rectify unsafe situations, and to direct a Subcontractor employee to leave the site if Subcontractor management personnel are not on site. If Subcontractor is directed to remove an employee from the site, the disposition of the employee after leaving the site and any resulting compensation issues for the employee are solely between the Subcontractor and the employee, and the Program does not require that the Subcontractor withhold pay from the employee for the time that the employee is barred from the site, but there shall be no additional cost to the Owner or Messer for the Work as a result of exclusion of an employee or any other action taken pursuant to the Program.
6. Messer and the Owner do not assume any responsibility whatsoever to Subcontractor, to its employees, or to third parties, for supervising or monitoring the safety precautions or compliance of the Subcontractor and its employees; Subcontractor remains solely responsible for these matters and shall defend and fully indemnify the Owner and Messer, as provided in the Subcontract Documents, against any claims or damages resulting from safety violations or other negligence of Subcontractor employees. Messer assumes no duty to anyone to detect and require correction of violations. Messer may, but is not required to, make periodic inspections of the project site. By establishing the Program and conducting other safety-related activities on the project, Messer is not undertaking any duty to Subcontractor, to Subcontractor's employees, or to third parties concerning safety on the project and any such duty is expressly disclaimed.
7. Sanctions provided under the Program for individuals and the Subcontractor are not exclusive and Messer reserves all other remedies provided under the Subcontract Documents or by law.
8. The Owner and Messer shall have no liability whatsoever to any Subcontractor or Subcontractor's employee or any third party for actions taken by Messer pursuant to the Program in good faith, even if it is later determined that such action was factually or legally unjustified.
9. A Subcontractor is not charged with a violation under the Program for any violation committed by an employee of a Lower tier subcontractor or material supplier to that Subcontractor, as long as the Subcontractor's supervisory personnel had communicated the program requirements and did not direct the activities leading to the violation being

observed by Messer. Each Subcontractor must take all necessary actions to make the Program binding on its lower tiers and to cooperate with Messer in implementing any applicable sanctions against its lower tiers. Lower tier subcontractors shall be entities with written agreements that include similar terms and conditions as those of Subcontractors with direct contracts with Messer. In the absence of such written agreements, Lower tier subcontractor employees and representatives shall be treated as employees of the Subcontractor.

Rev. March 1, 2024

**Safety4Site
 Non-Negotiable Behavior**

Falls	Struck-By	Caught-In-Between	Electrical / Utility
<p>Working 6 feet or greater with no fall protection (100% fall protection at 6 feet or greater).</p> <p>Exposed holes large enough for a human to pass through, and is 6 feet or greater in depth, left unprotected or improperly protected.</p> <p>Blatant, clear and/or intentional misuse of fall protection equipment or fall protection systems including:</p> <ul style="list-style-type: none"> 1. Altering removing or disabling any component of a fall protection system. May include but not limited to: taking down a guardrail or warning line and not replacing it; altering someone's PFAS without permission. 	<p>Disregard or crossing of designated controlled access zones without prior authorization from the controlling/installing contractor.</p> <p>Exposing workers to overhead struck-by hazards - Failure to properly plan and execute overhead work that potentially exposes person(s) below (e.g. masonry work, roofing, welding, demolition, steel erection, formwork, deck penetrations, etc.).</p> <p>Dropping debris off building without proper chutes or alternate procedures approved by Messer.</p> <p>Riding on equipment not designed for multiple passengers or open back pickup trucks (catching a ride).</p>	<p>Entering an unprotected trench or excavation 5 ft deep or greater, without proper cave-in protection – shoring, sloping/benching, trench box</p> <p>Entry into a confined space without proper training, permits, equipment or safety processes in place</p> <p>Failure by operator to barricade/protect potential crush or pinch point hazards between equipment being operated and adjacent structures or other equipment.</p> <p>Failure by operator to barricade/protect the swing radius of stationary equipment (e.g. cranes).</p> <p>Exposing oneself to a caught-between hazard by disregarding barricading/protection without prior authorization from the controlling/installing contractor.</p> <p>Operator exposing employee(s) to an overhead load while working in an excavation. This may include but not limited to: loaded excavator bucket; empty excavator bucket; load that is strapped to an excavator bucket, etc.</p>	<p>Operating equipment or working within 10 feet from overhead power lines. (Equipment, ladders, scaffolding, tools, etc.)</p> <p>Note: In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50KV.</p> <p>Exposing oneself or others to live bare electrical conductors (i.e. open electrical panels, junction boxes, missing knock outs, etc.) greater than 50 volts.</p> <p>Working on live electric without the proper planning/approval, PPE and procedures.</p> <p>All live work must be discussed with Messer prior to the work being performed.</p> <p>The unauthorized altering, by-passing or removing any guards, locks, tags, or any other safety device protecting persons from live electric.</p> <p>Failure by competent person or operator to survey for utilities, before digging, core drilling, cutting or demolition</p> <p>Failure by competent person or operator to follow established protocols for re-marking, hand digging, pot-holing, etc. within established tolerance zones</p>
<p>Improper use of ladders. (e.g) 1. Standing on very top cap 2. Straddling or sitting on top of ladder.</p> <p>Egregious fall protection violations will result in higher level accountability as outlined in the program language. These are defined as an exceptionally severe circumstance where there is an immediate and substantial risk of a person falling from an elevated position, leading to grave injury or loss of life.</p> <p>Examples include, but are not limited to:</p> <ul style="list-style-type: none"> - Working within reach of an open edge, with no fall protection - Standing on the top rails of a MEWP without any PFAS - Standing on the top rail of a platform ladder - Working on a wall, column or other vertical surface without any fall protection 	<p>Using damaged equipment that may inadvertently fire (i.e. nail guns, etc.). Altering the equipment where the safety is by-passed. This may include but not limited to: disabling a guard on a chop saw; removing the guard on a hand grinder; disabling the safety muzzle of a pneumatic nailer or powder actuated tool; etc.</p> <p>Rigging without proper training or blatant, clear and/or intentional misuse of rigging equipment.</p>	<p>Reckless operation of equipment (i.e. horseplay, operation within 2' of a trench, exceeding the limitations of the machine, bypassing any safety devices, etc.). Operating in tight confines with out a spotters or operating without proper training</p>	

PART 6 – SUBCONTRACTOR FOREMAN ROLES AND RESPONSIBILITIES

- A. The above items are required for each project and the expectation is that each Subcontractor Foreman carry out these commitments and fulfill each requirement to the fullest extent. In summary, each Foreman is responsible for the following:
1. Completion and/or Execution of their Site Specific Safety Plan
 - a. The Site Specific Safety Plan shall be reviewed periodically as the project changes to ensure new hazards are being identified and a plan put in place to prevent.
 - b. Updates to the Site Specific Safety Plan shall be provided to Messer in a timely manner.
 2. Completion, submission, and review of their JSA's on a daily basis.
 3. Completion, submission, and implementation of a 5S Plan that follows the guidelines of Messer's 5S program. Each topic is to be addressed in this plan and that plan shall be executed by the Foreman and their crew.
 - a. Sort: Just-in-time deliveries
 - b. Straighten: Organized material and equipment storage
 - c. Shine: Continuous Daily Clean-Up
 - d. Standardize: Color Coded Delivery
 - e. Sustain: Composite Clean-Up Crews (Messer has the right to invite Foreman to participate in the composite clean-up crew)
 4. Hold their crew accountable for wearing proper PPE and provide their crew with proper PPE.
 5. Complete Messer permits and turn them in prior to starting work.
 6. Identify competent people for each hazard and hold them accountable to their role.
 7. Identify certified riggers/signal person(s) and hold them accountable to their role.
 8. Identify hazards and formulate a plan to eliminate or avoid those hazards.

PART 7 – DROPPED OBJECT PREVENTION AND OVERHEAD PROTECTION

- A. Overhead risks and controls shall be identified for key scopes of work and addressed in the Subcontractor Site-Specific Safety Plan. Daily JSA's shall be used to identify area-specific risks and controls for each day's work activities. Controls identified on the daily JSA must be in accordance with minimum controls identified within the following requirements, Messer's risk assessment and site-specific safety plan and the subcontractor's approved site-specific safety plan.
1. Primary control measures shall be the preferred method of protection. Secondary control measures must be utilized where the primary control measures for dropped object prevention are not feasible or will not provide complete protection. Most overhead work activities will require a combination of primary and secondary controls.
 - a. Primary Control (Dropped Object Prevention) measures are focused on preventing an object from falling. These measures may include; tool lanyards/tethers, rated tool bags with closure, guardrails with netting, sloped roof protection, material storage and securement/tethering.
 - b. Secondary Control (Dropped Object Protection/Overhead Protection) measures are focused on preventing a dropped object from causing injury to persons or damage to property, but do not prevent an object from falling. These measures may include; protective canopies, horizontal debris nets, and controlled access zones.

- B. Mesh or netting is required on all perimeter guardrails installed at heights above 10' as well as on rail systems around elevator shafts, mechanical chases, stairwells or similar openings inside buildings where employees will perform work.
- C. Sloped roofs shall have slide guards, debris netting or other means of primary dropped object prevention in place at all times when employees, tools or materials are present on the roof. If not feasible for the activity, an alternate plan for protection must be submitted and approved.
- D. All buildings with exterior elevated work ongoing shall have designated, protected access/egress points from the building. This may be accomplished by walk through scaffolding, connex boxes, canopy structures or other equivalent means. Additionally, measures must be put in place to restrict use of non-designated access/egress points. Emergency egress needs must be taken into consideration when planning.
- E. Controlled access zones (CAZ) shall be established for all overhead work activities where there is potential for unauthorized individuals to enter the area below. Barricades should be sized such that a dropped object will not deflect and bounce beyond the barricade. If barricades cannot be sized to fully contain deflected objects, primary protection measures must be used in addition to controlled access zones. Additionally, primary protection measures must be used when authorized ground personnel are potentially exposed to overhead hazards in the barricaded area.
 - 1. Danger or caution tape (including reinforced tapes) shall not be used for overhead protection CAZs. Only hard barricade material may be used (e.g., snow fence, cones and bones, jersey barriers). Flagged rope or chain may be utilized for short-term barricades.
 - 2. Barricades must have signage or tags indicating the risk and ownership of the barricade.
- F. Material storage and waste/debris containment and disposal shall be managed per Messer's 5S program to limit potential falling or windborne objects. No materials shall be stacked/stored higher than guardrail protection if stored adjacent to perimeter or shaft guardrails. Sheet goods (including plywood, metal decking, insulation board, etc.) and other loose materials stored on open decks or roofs shall be positively secured when not actively being used and at the end of each shift. Acceptable securement may include straps, banding, pallet wrap, etc.
- G. Failure to implement these procedures or use required drop prevention systems/overhead protection will be considered a violation of Messer's Safety4Site program and will result in removal from the project site.

PART 8 – FALL PROTECTION PLANNING

- A. Guardrail systems shall be the preferred choice of protection for all elevated work activities. If the contractor/supplier can prove that guardrails are infeasible or create a greater hazard, as defined in Subpart M of the OSHA Construction Standards, it may, where permitted by a Messer Safety Leadership, implement the following alternative systems in response to the fall hazards:
 - 1. Personal fall arrest systems;
 - 2. Warning lines;
 - a. Required to be a minimum of 15 feet back from leading edges for all trades, excluding roofers.
 - 3. Controlled access zones;

4. Safety net systems
 5. Safety monitoring systems will not be permitted.
- B. These alternative systems may be utilized, with approval, in controlled work environments provided the following is established:
1. Explanation in writing is submitted to the Messer Safety Department as to why the use of guardrail systems is infeasible or creates a greater hazard/harm to the individuals involved.
 2. Development of a written fall protection plan, utilizing the Messer Fall Protection Plan template, which outlines all elements involved with the usage of personal fall arrest systems, warning lines, controlled access zones, and
 3. Orientation process, which communicates this information to the individuals involved with the work activity, prior to beginning work.
- C. The purpose of this extensive pre-planning is to ensure that the most effective and appropriate fall protection systems are used whenever possible. It is also designed to ensure that those individuals involved with the usage of personal fall arrest systems, warning lines and controlled access zones truly understand the detail and organization required. Finally, the pre-planning will also highlight who is permitted (due in part to thorough training and communication) to work with these systems.

END OF SECTION 00 73 19



Safety Requirements

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1.0 Introduction, Purpose and Scope

1.1 CEO Statement

- 1.1.1 Messer's safety goal is zero injuries on our projects. Our core safety values are:
 - 1.1.1.1 We believe no job, task or schedule is more important than the health and safety of people on or near our jobsites
 - 1.1.1.2 We are responsible for and take action to ensure our own safety and the safety of those around us
 - 1.1.1.3 We will return every person home to their families safely each day
- 1.1.2 When our decisions and actions are guided by these core values, accidents will be nonexistent.
- 1.1.3 We are a company of builders who respect not only each other but our business partners. We have a strong passion to keep everyone safe and are committed to building a zero injury culture.
- 1.1.4 Creating and maintaining a culture of zero injuries takes every person working together to positively influence safety and health decisions, processes and policies. The continued growth of that safety culture will be greatly influenced by example. So, it is expected that Messer leaders, senior managers and our business partner's leadership model the safety behavior expected. However, it is imperative that all employees and workers on our sites make solid safety decisions, as well as hold all levels of management accountable for making safety a component of their leadership and supervision.
- 1.1.5 All contractor, temporary and/or full-time employees have the authority to suspend a work task or group orientation when the control of safety or environmental risk is not clearly established or understood.
- 1.1.6 Stop Work Authority is in place to ensure the right thing is done the right way.
- 1.1.7 This program manages risk and protects personnel, the environment and various assets. Any intervention will be supported by the Company Management and there will be no repercussions for using the Stop Work Authority.
- 1.1.8 This commitment will keep our construction sites and all of our work environments accident free.

1.2 Purpose

- 1.2.1 The purpose of this Safety Requirements is to define minimum safety requirements for all Messer projects, Employees, Subcontractors, and other companies engaged in services on a Messer project. The requirements identify key points of Messer's Safety, Health and Environmental Management Plan to be undertaken during all construction activities.
- 1.2.2 These requirements are built upon Messer's philosophy that every incident is preventable. This forms the basis for our safety processes, procedures, and requirements that will be implemented on all Messer projects. The aim of this program is to provide personnel with the required information and knowledge to do the right things, the right way, every time to achieve our goal of Zero Injuries on our projects.

1.3 Scope

- 1.3.1 This plan applies to all personnel associated with any Messer project and any other location or task associated with a Messer project, including corporate headquarters, regional offices and the Rental Division.
- 1.3.2 All Messer employees, sub-contractors and visitors shall comply with the requirements specified in this document as part of the contract conditions during execution of the service. Exceptions are only allowed upon approval by Messer via formal requests. If any conflicts are found the more stringent requirement shall apply. This document sets out the requirements to verify that safe work practices are established, appropriately supervised, with proper training and management so as to help prevent incidents such as personal injury, injury to others, environmental damage/impacts, or property damage.

2.0 General Requirements

2.1 Safety and Health Program

- 2.1.1 Each contractor (and supplier when applicable) shall submit a copy of its site-specific safety program to Messer before its work begins. This plan must include the criteria and topics outlined in the Messer Subcontractor Site-Specific Safety Plan template. The contractor/supplier shall ensure that their plan meets or exceeds the safety requirements for the project.
- 2.1.2 The contractor/supplier is required to submit its fall protection plan (if applicable), any applicable training certification such as crane operator training, and any other site-specific paperwork associated with the project, before work begins.
- 2.1.3 Prior to beginning work onsite, the site-specific safety plan and associated documentation must be reviewed and discussed with Messer project management and/or safety personnel in a Preconstruction Safety Meeting.
- 2.1.4 Each contractor/supplier shall maintain an effective Company safety and health program, which will provide systematic policies, procedures and practices that are adequate to identify and protect their employees from occupational safety and health hazards. The contractor/supplier safety and health program shall, at a minimum, include:
 - 2.1.4.1 Management commitment and employee involvement;
 - 2.1.4.2 Documented work site analysis and hazard assessment;
 - 2.1.4.3 Hazard prevention and control procedures; and
 - 2.1.4.4 Safety and health training.

2.2 Reporting

- 2.2.1 The contractor/supplier shall notify the Messer representative immediately in the event of an injury, first aid case, near miss, property damage, or environmental incident, such as a spill or release of hazardous material.
- 2.2.2 The contractor/supplier shall submit a completed Messer accident/incident report to the Messer representative within 24 hours of the occurrence of the injury, incident, etc.
 - 2.2.2.1 The report shall include, as a minimum, the nature and extent of the injury, first aid case, near miss or incident, causes of the injury etc., and corrective actions needed to prevent a recurrence.
 - 2.2.2.2 Any follow-up information on personal injuries (doctor's reports, insurance or worker's compensation reports etc.) shall be forwarded to the Messer representative as soon as it becomes available.
- 2.2.3 As required by federal, state, or local laws or ordinances, the contractor/supplier shall report certain injuries, illnesses, or environmental incidents to the appropriate agencies.
- 2.2.4 The contractor/supplier shall be knowledgeable of these reporting requirements, and shall inform and copy Messer when any such report is necessary or is made.

2.3 Potential Hazards and Emergencies

- 2.3.1 The contractor/supplier shall inform its employees of potential hazards, take appropriate steps to reduce exposure to potential hazards, and be prepared to respond to emergency situations.
- 2.3.2 The contractor/supplier shall provide emergency response procedures for the jobsite, and shall communicate such procedures to its employees. Emergency response procedures shall include the identification of any emergency alarms and warning systems, a list of emergency phone numbers, identification of emergency evacuation assembly areas, placement and use of emergency equipment and procedures for notification of local authorities, agencies, and the Messer representative.

- 2.3.3 Each contractor/supplier shall have at least one certified person trained in first aid and CPR available on site. The contractor/supplier shall have readily available the names and locations of off-site medical personnel to handle major occurrences. Adequate first aid and emergency medical equipment shall be provided as necessary. The name(s), contact number(s) and copies of the first aid and CPR cards must be submitted upon request.
- 2.3.4 The contractor/supplier shall obtain Safety Data Sheets (SDS) and other appropriate information, and shall inform its employees and Messer of any potentially hazardous materials they may be exposed to while in performance of the work. At the contractor's/supplier's request, Messer shall provide this information for products or materials that are supplied by Messer or are under the control of Messer.
- 2.3.5 The contractor/supplier shall immediately rectify any situation or condition occurring as a result of the work, that could result in injury or illness to personnel at the site, or that could cause an environmental hazard. If such a condition cannot be corrected immediately, the contractor/supplier shall provide temporary barricades and appropriate warning signs and devices necessary for the protection of people, equipment, and property.

2.4 Employee Qualifications and Conduct

- 2.4.1 The contractor/supplier shall employ or cause to be employed only persons who are fit, qualified, and skilled in the work to be performed. They shall also ensure that employees receive and successfully complete the necessary safety training, and are capable of performing work activities in a safe manner. Documentation of such training shall be available upon request. Additional training may be required when individuals are considered competent personnel on the jobsite. It is the responsibility of the employer to ensure that these individuals receive this training.
- 2.4.2 Contractor/supplier personnel shall confine their activities to the assigned work areas.
- 2.4.3 Contractor/supplier personnel shall use only facilities designated by Messer for non-work activities such as smoking, eating, or using the restroom.
- 2.4.4 Prior to commencing work, the contractor/supplier shall designate a competent person or persons who is capable of identifying existing and potential hazards in the surroundings or working conditions and have the authority to correct any deficiencies. Upon request, the contractor shall provide documented training identifying why this person has been deemed competent. The competent person must be on the jobsite at all times. The Messer representative must be notified of any changes in the competent person status.
- 2.4.5 If employees are not proficient in English, the Contractor must, at all times provide an interpreter to effectively communicate safety requirements including, but not limited to verbal commands, written notices, signage, alarms and loudspeaker announcements. The interpreter, when necessary, shall ensure that employees understand rules, regulations, and procedures issued by Messer for the jobsite. If it is determined that any Contractor employees are in violation of these requirements, Contractor and its employees may be removed from the jobsite.
- 2.4.6 The contractor/supplier shall ensure that no firearms, weapons, controlled or illegal substances, or alcoholic beverages are brought onto the jobsite by contractor employees, except as specifically authorized by the Messer representative.
- 2.4.7 No contractor/supplier employee shall report to work or shall work impaired by any substance, drug, or alcohol, lawful or unlawful. "Impaired" means under the influence of a substance such that the employee's motor senses (i.e., sight, hearing, balance, reaction, reflex), or judgment either are or may be reasonably assumed to be affected. Any violation of this policy may result in removal from the jobsite.
- 2.4.8 Contractor/supplier employees taking prescription medication that warns against driving or operating machinery shall inform their foremen or safety representative of such.

- 2.4.9 When vehicles of contractor/supplier employees are on the client's premises or any area associated with the jobsite, the contractor/supplier shall enforce the rules for safe vehicle operation. Drivers shall obey all signs and posted speed limits. Drivers and passengers in vehicles shall wear seat belts.
- 2.4.10 Employees shall not restrict their ability to hear alarm notifications or other work taking place in the area that may be hazardous, i.e. whistles for crane loads overhead etc., by use of ear buds or headphones.
- 2.4.11 Threatening, intimidating, coercive, or other unsafe or disruptive behavior such as fighting and horseplay is prohibited.
- 2.4.12 Sleeping and gambling on Messer jobsites are prohibited.
- 2.4.13 Contractor/Supplier employees shall confine their activities to areas expressly authorized to them for such use. Activities include: entering the work site premises, parking vehicles, taking breaks, eating, drinking, smoking, and using lavatory facilities. Under no circumstances shall contractor/supplier personnel be allowed to enter, walk through, or loiter in occupied areas or other areas not authorized for their use or entry.

2.5 Safety Processes

- 2.5.1 All employees working onsite are required to attend the site-specific orientation prior to accessing the site. Project-specific hardhat stickers shall be required for all personnel onsite, and will be issued once their site-specific safety orientation has been completed. The contractor/supplier shall not permit visitors on the jobsite unless they have checked in at the Messer project office and have been given express permission to be present. They are to be accompanied at all times by an authorized contractor/supplier representative.
- 2.5.2 The contractor/supplier shall orient all authorized visitors to the jobsite concerning safety rules and site hazards. Requirements associated with personal protective equipment and all rules of conduct shall pertain to all visitors.
- 2.5.3 Site safety inspections shall be conducted by the Messer representative on a regular basis and deficiencies will be logged in Autodesk. Immediate on-the-spot corrections of safety deficiencies shall be performed as necessary. The contractor shall be responsible for conducting their own daily safety inspections of its work activities.
- 2.5.4 The contractor/supplier shall complete a documented Job Safety Analysis (JSA) for each activity. The JSAs shall be submitted to Messer as required.
- 2.5.5 Each contractor employee shall attend the site wide morning huddle every morning at the location determined by the project team. After the site wide huddle, each contractor shall conduct a huddle meeting prior to every work shift to discuss the activities of the shift, review JSA(s) and to establish a safe plan of action to accomplish the work. This meeting shall be conducted with all employees working on site by the onsite leader for each contractor. Any changes to the established plan shall be communicated throughout the shift to affected employees.
- 2.5.6 The contractor/supplier (if on site more than sporadically) shall conduct weekly "tool box" safety meetings with its personnel. The topics for the meeting shall be relevant to the work activity and/or jobsite conditions. It shall provide copies of all such documentation to the Messer representative immediately after the meeting. Everyone on site must attend any scheduled project-wide safety meetings.
- 2.5.7 The contractor/supplier shall attend a scheduled Preconstruction Safety Meeting before the contractor's/supplier's work begins on the jobsite. Messer reserves the right to require sub-tier contractors/suppliers to participate in this orientation activity. Prior to this meeting the contractor/supplier shall develop a Site-specific Safety Plan detailing the hazards and preventative measures associated with their scope of work. This plan will be reviewed with all necessary parties during the Preconstruction Safety Meeting.

- 2.5.8 The contractor/supplier shall contact the Messer representative immediately when an OSHA compliance officer arrives at the jobsite. The contractor/supplier shall inform the Messer representative of any employee complaint, incident, etc. that results in or may result in an OSHA inspection.
- 2.5.9 The contractor/supplier and its employees shall direct all public media inquiries to the Messer representative. At no time shall the contractor/supplier or its sub-tier contractors/suppliers allow or permit media to enter the jobsite without expressed authorization from the Messer representative.

2.6 Housekeeping and Sanitation

- 2.6.1 **Sort – Just in time Deliveries:** Materials are only allowed to be delivered to the site if they will be installed within a one week time period of delivery. Any materials that will not be installed must be removed from the site.
- 2.6.2 **Straighten – Organized Material and Equipment Storage:** Materials and equipment must be stored in designated laydown areas. Walking and working spaces must be kept organized at all times. No material or equipment is allowed to be stored in egress/access paths. Storage requirements for exterior and interior spaces are as follows:
 - 2.6.2.1 Exterior: Materials and equipment must be stored on dunnage, pallets or carts.
 - 2.6.2.2 Interior: Materials and equipment must be stored on pallets, carts or racks and easily moveable on wheels.
- 2.6.3 **Shine – Continuous Daily Cleanup:** Requirements for continuous cleanup for exterior and interior spaces area as follows:
 - 2.6.3.1 Exterior
 - a) Each Subcontractor shall immediately pick up all of their debris and deposit it into mobile trash carts/hoppers (provided by respective Subcontractor). Each Subcontractor is responsible for emptying these containers into a dumpster provided by the Contractor.
 - b) Every Subcontractor is required at the end of each and every workday to cleanup and organize equipment, materials and debris from that day's work activities and clean their work area.
 - 2.6.3.2 Interior: Nothing Hits the Floor – Daily cleanup:
 - a) Every work crew has a cart with necessary cleaning tools. Each Subcontractor shall immediately deposit their debris into mobile trash carts (provide by respective Subcontractor). Each Subcontractor is responsible to remove these carts from the building daily and empty them into a dumpster provided by the Contractor.
 - b) Every Subcontractor is required at the end of every workday to cleanup and organize equipment, materials, and debris from that day's work activities and sweep their work area.
 - c) Electrical cords, welding leads, temporary heat, and temporary water lines are to be off the floor 100% of the time and suspended using non-conductive materials
- 2.6.4 **Standardize – Color Coded Delivery Process:** Each Subcontractor will be designated a specific paint or sticker color (designated by the Contractor and provided by respective Subcontractor) to mark all deliverables to the project. All materials, including but not limited to, pallets, packaging, boxes, buckets, etc., must be marked with their respective paint color. All items that are not marked upon arrival at the project site, will be rejected.

2.6.5 Sustain – Composite Broom Crew: Every week, or at Contractor’s request, each Subcontractor shall provide personnel to participate in cleaning all unidentified debris and broom sweeping for a full work shift or until complete. This polishing effort is in addition to normal daily cleaning.

2.6.5.1 Each Subcontractor shall provide (1) person for every (10) people working on site for respective company (including subcontractors) to participate in composite crew.

a) Minimum participation by each Subcontractor is (1) person, regardless of number of people Subcontractor has on site up to (10).

b) Participation requirement applies for each week the Subcontractor has personnel on the project site.

2.6.5.2 Each Subcontractor shall furnish all equipment, including but not limited to, brooms, shovels, and dump carts, to complete this activity.

2.6.5.3 Contractor will determine the location and scope of the composite cleaning crew each week as dictated by the project conditions. It is understood that this may include “exterior Subcontractors” need to work inside the building and vice versa as project conditions require to maintain the best possible project conditions.

2.7 Full Time Safety Manager Requirements

- 2.7.1 When a subcontractor is required to provide full-time safety regarding our CCIP or Safety4Site requirements, the following criteria shall be followed:
- 2.7.2 Selection Requirements for Full-time Safety Professional
 - 2.7.2.1 A qualified safety professional shall be provided to maintain safety standards on Messer projects. If the subcontractor cannot provide a qualified safety professional they are to provide Messer safety department with a plan of who they propose to be the alternative person.
 - 2.7.2.2 An alternative person providing safety oversight must be at a Superintendent or Project Manager level, with a minimum of OSHA 30-hour and at least five years' experience in their role.
 - 2.7.2.3 As part of the approval process:
 - a) Provide a resume of the proposed safety professional or alternative.
 - b) Determine safety manager experience in conjunction with scope of work.
 - c) Request references if subcontractor proposes a safety professional from a third party consulting company and is not an employee of the subcontractor.
 - d) Request and hold an onsite interview to sit down with the safety professional the subcontractor is proposing.
- 2.7.3 Responsibilities of the Full-time Safety Professional
 - 2.7.3.1 Take full responsibility for all subcontractor workers and their safety performance.
 - 2.7.3.2 Be responsible for subcontractor's actions; ensuring they have the tools, skills and knowledge to do the task/job correctly.
 - 2.7.3.3 Know, understand and follow all OSHA, Messer, owner and CCIP compliance requirements, policies and procedures.
 - 2.7.3.4 Ensure responsibilities for lower tier subcontractors that come onsite to perform tasks for the subcontractor—e.g., concrete coring/cutting, scaffolding, etc.
 - 2.7.3.5 Ensure all injuries and incidents—Safety4Sites, near misses, property damage, etc.—are reported immediately and supported with accident investigation and root cause analysis if required.
- 2.7.4 Roles of the Full-time Safety Professional
 - 2.7.4.1 **Daily**
 - a) Attend all morning huddle meetings.
 - b) Attend POD and Weekly Work Plan Meetings (be prepared and bring up safety concerns).
 - c) Review your crews' JSA's for quality of information and that there is one for every task.
 - d) Review daily permits (if applicable) are filled out and reviewed with Messer project team.
 - e) Ensure crews plan for and have the correct resources and tools.
 - f) Ensure that all aspects of the 5S process is being followed.
 - g) Utilize Messer's Stop Work Authority program when tasks or conditions change, or when unknown hazards arise. Ensure work stops and the work crews revise and review the JSA's to reflect all changes.
 - h) Complete daily safety walks of your work areas and crews.
 - i) Documented comprehensive safety walks three times a week.

2.7.5 Communicate Safety

- a) Communicate all risks and hazards with the work crews.
- b) Listen and respond to safety concerns from Messer or other subcontractors.
- c) Lead weekly Toolbox Talks and Safety Alert information (provide Messer signed copies).
- d) Respond to any safety observations that have been recorded, close out the safety observations.

3.0 Safety Requirements

3.1 Personal Protective Equipment (PPE)

- 3.1.1 Hardhats meeting American National Standards Institute (ANSI) Z89.1 specifications shall be worn at all times by all personnel at the work site. Hard hats shall be worn with the brim facing forward, unless a welding shield (or other device, which prevents such) is in use. This requirement specifically includes all work completed during the finish stages of the project.
- 3.1.2 Safety glasses (including safety prescription eyewear) with attached side shields meeting the American National Standards Institute (ANSI) Standard Z87.1, latest issue or over the glass protection shall be worn at all times on Messer projects through the finish stages. The only exceptions will be during scheduled breaks away from potential eye hazards, while in a trailer performing office functions or in a fully enclosed cab of a truck/equipment.
 - 3.1.2.1 Appropriate shaded/filter lenses shall be required to protect against radiant energy such as during welding. Suitable laser safety glasses shall be used as required, to protect against the specific wavelength of the laser and be of optical density adequate for the energy being used.
 - 3.1.2.2 Tinted safety glasses are not permitted for general use indoors.
 - 3.1.2.3 Safety goggles and/or tight-fitting safety glasses should be worn for work activities where hazards dictate (e.g. dusty environments, overhead demolition work, etc.).
- 3.1.3 Face protection is required in addition to safety glasses when potential exposure exists to particulate matter generated by hammering; chipping; welding; grinding; cutting; heating; burning; insulation handling; overhead activities; or where there is possible exposure to hazardous chemicals. Examples include, but are not limited to:
 - 3.1.3.1 Any time one is cutting or grinding with an abrasive wheel. This includes, but is not limited to target saws, chop saws, angle grinders, etc.
 - 3.1.3.2 When pouring concrete, operating the pump truck hose and using the vibrator.
- 3.1.4 When handling acids, caustics, and chemicals with corrosive or toxic properties, suitable protection, such as acid suits or chemical resistant aprons and gloves, shall be worn to prevent accidental contact with the substance.
- 3.1.5 Personnel shall wear personal clothing and footwear that is safe and proper for the work and any jobsite exposures. At a minimum, full-length trousers and shirts with a minimum 4- inch sleeve are required.
- 3.1.6 High visibility clothing (shirt, vest, or jacket) shall be worn at all times on the project and must be the outer-most garment. Acceptable colors include fluorescent yellow/green and fluorescent orange/red. Messer will provide notification if and/or when this requirement does not apply to a particular project.
- 3.1.7 High-visibility clothing with retro-reflective striping shall be utilized when working in or around roadways, heavy equipment and if lighting conditions are poor. Clothing must meet the ANSI Class applicable to the work being performed.
- 3.1.8 Work boots (covering over the ankle) are required for all contractor personnel on site. They are also required for suppliers when they are exposed to hazards affecting the feet. Tennis shoes or work shoes are not acceptable, regardless of steel/composite toe or other safety ratings. Contractor/supplier personnel shall wear boots that are commensurate with the hazards of the work and the work site area. This includes rubber boots when working in or near damaging liquids or concrete, safety-toe boots when moving or rigging heavy objects and metatarsal protection when jackhammering or tamping activities.

- 3.1.9 100% hand protection is required on all Messer projects. Gloves shall be worn by all personnel on the project site at all times, including supervisory personnel. Gloves must be task appropriate and meet ANSI/ISEA 105-2016 American National Standard for Hand Protection Classification.
 - 3.1.9.1 If hand protection is considered infeasible or creates a greater hazard for a particular task, a written safe plan of action outlining the reason for the variance must be approved through Messer prior to beginning the activity.
- 3.1.10 Cut resistant sleeves shall be worn during demolition or other activities where puncture, laceration and/or burn hazards to the arms are present.
- 3.1.11 The contractor/supplier shall familiarize itself with and comply with more rigorous personal protective equipment standards as required on specific projects.

3.2 Elevated Work and Fall Protection

- 3.2.1 100% fall protection is required on Messer jobsites, for activities, which involve work at elevations of 6 feet or higher. 100% fall protection is also required at lower heights if the individuals are working above dangerous equipment. 100% fall protection is required for all crafts, trades, including steel erection and activities associated with these types of elevations. The use of ladders and the construction of scaffolding may not be applicable in section 3.2, and are addressed in section 3.3 and 3.4 in this program.
- 3.2.2 Prior to the start of work, contractor/supplier representatives involved with elevated work shall meet with Messer representatives to review the scope of work, especially as it pertains to fall protection requirements and needs. As part of the Contractor Preconstruction Safety Meeting, an evaluation should be made of the possible fall hazards and effective safety responses to such.
- 3.2.3 Guardrail systems shall be the preferred choice of protection for all elevated work activities. If the contractor/supplier can prove that guardrails are infeasible or create a greater hazard, as defined in Subpart M of the OSHA Construction Standards, it may, where permitted by a Messer Safety Leadership, implement the following alternative systems in response to the fall hazards:
 - 3.2.4 Personal fall arrest systems;
 - 3.2.4.1 Warning lines; a) Required to be a minimum of 15 feet back from leading edges for all trades, excluding roofers.
 - 3.2.4.2 Controlled access zones;
 - 3.2.4.3 Safety net systems
 - 3.2.4.4 Safety monitoring systems will not be permitted.
- 3.2.5 These alternative systems may be utilized, with approval, in controlled work environments provided the following is established:
 - 3.2.5.1 Explanation in writing is submitted to the Messer Safety Department as to why the use of guardrail systems is infeasible or creates a greater hazard/harm to the individuals involved.
 - 3.2.5.2 Development of a written fall protection plan, utilizing the Messer Fall Protection Template which outlines all elements involved with the usage of personal fall arrest systems, warning lines, controlled access zones, or safety monitoring systems; and
 - 3.2.5.3 Orientation process, which communicates this information to the individuals involved with the work activity, prior to beginning work.

- 3.2.6 The purpose of this extensive pre-planning is to ensure that the most effective and appropriate fall protection systems are used whenever possible. It is also designed to ensure that those individuals involved with the usage of personal fall arrest systems, warning lines and controlled access zones truly understand the detail and organization required. Finally, the pre-planning will also highlight who is permitted (due in part to thorough training and communication) to work with these systems.
 - 3.2.6.1 Horizontal systems must be attached to a fixed anchorage and may not be linked together.
- 3.2.7 Cable guardrail systems shall be a minimum 3/8 inch cable and shall be equipped with turnbuckles for tightening where necessary. A minimum of 3 clamps at each turn back is required.
- 3.2.8 The procedures developed in response to the identified fall hazards shall be reviewed with all individuals exposed to the hazards. Feedback should be encouraged so as to ensure that the most effective systems are utilized.
- 3.2.9 Contractors/suppliers shall be responsible for ensuring that their employees using fall protection systems have been adequately trained. Communication on the following shall be included in the training:
 - 3.2.9.1 Fall hazards associated with the elevated work;
 - 3.2.9.2 Elements of the fall protection systems utilized;
 - 3.2.9.3 Fall protection equipment used;
 - 3.2.9.4 Elements of a fall protection plan, if applicable; and
 - 3.2.9.5 Proper inspection techniques of fall protection equipment.
- 3.2.10 An inspection process of fall protection systems shall be established. Individuals shall visually inspect the fall protection equipment before each use. Some equipment requires documented inspections by its manufacturer on a routine basis. This equipment shall have evidence of the inspection and re-certification process on it. This information shall be reviewed before the equipment is used.
- 3.2.11 Any fall protection equipment that is defective, damaged, or has been subjected to an impact shall be identified and removed from service immediately. Fall protection equipment must be used for fall protection purposes only. Rigging items are not to be used for fall protection, if an item is used for rigging it can never be used as a fall protection device.
- 3.2.12 The contractor/supplier retains all responsibility for the effective implementation of fall protection programs as well as all other safety programs, regardless of any review by Messer.

3.3 Scaffolding and Mobile Elevating Work Platforms

- 3.3.1 Each part of supported scaffolding shall be capable of supporting at least 4 times its intended load. All work platforms shall be fully decked between guardrails. All scaffold planks shall be overlapped to a minimum of 12 inches or secured as with cleats to prevent movement.
- 3.3.2 Footings shall be sound and rigid. Concrete blocks, bricks, barrels or similar items shall not be used for supports. Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates. Base plates shall bear on mudsills or other adequate firm foundation.
- 3.3.3 Supported scaffold towers with a height-to-base width ratio greater than 4:1 shall be restrained from tipping by tying, guying or other equivalent bracing. Ties shall be rigid and designed to prevent the scaffold system from tipping into or away from the structure. Supported scaffold more than 3 feet wide shall be secured against displacement every 26 feet vertically and every 30 feet horizontally.
- 3.3.4 All manufacturers' bracings, couplings, or stacking and vertical locking pins shall be installed.
- 3.3.5 Guardrails and toe boards must be provided on all sides and ends of scaffolds 6 feet or more in height. Open-sided ends shall be guarded.

- 3.3.6 If the scaffold platform is less than 45 inches wide, as with Perry and Baker type utility scaffolds, guardrails shall be installed at heights of 4 feet or higher. Additionally, these scaffold systems shall have appropriately installed outriggers or otherwise be restrained from tipping if the working platform is at a height-to-base width ratio greater than 3:1.
- 3.3.7 Scaffolds shall be provided with an access ladder or another equally safe access method. Vertical ladders or ladder frames shall not be used where the total length of a climb equals or exceeds 24 feet, unless an approved fall protection device is installed and used while climbing.
- 3.3.8 Rolling scaffolds shall have their wheels locked when in use. No scaffold shall be moved while occupied, or while tools or equipment is on it.
- 3.3.9 Contractors/suppliers must have a competent person involved with the erection, dismantling, and inspection of scaffolding. Anyone erecting or dismantling scaffolding must be trained and be able to provide proof of training.
- 3.3.10 The contractor/supplier shall inspect all elevated work platforms each day. Inspections shall be documented on an inspection log or through a tagging system. Scaffolding that is incomplete or unsuitable for use shall be tagged as such at or near the access point. Defects shall be corrected prior to use.
- 3.3.11 Appropriate protection shall be provided for individuals working in the area of scaffolding, or for those who are exposed to overhead hazards while working on scaffolding.
- 3.3.12 Contractor/supplier shall have a competent person determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Employers are required to provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.
- 3.3.13 Mobile Elevated Work Platforms shall be inspected and controls tested daily to verify that the equipment and all its components are in a safe operating condition. Do not operate any mobile elevated work platform if any components are defective until it is repaired by a qualified person.
- 3.3.14 Only properly trained and authorized persons shall operate mobile elevated work platforms. Refer to occupant training requirements.
- 3.3.15 All mobile elevated work platforms, including scissors lifts, require the use of a full body harnesses with either a 4 foot lanyard or retractable in any elevated position.
- 3.3.16 Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders or other devices for a work position.
- 3.3.17 Work areas and travel paths shall be inspected to ensure that any hazards that may cause the mobile elevated work platform to become unstable or roll over are eliminated.

3.4 Ladders

- 3.4.1 All contractors/suppliers shall use ladders which are Type 1 or better; approved for industrial usage.
- 3.4.2 Metal stepladders and step stools are prohibited. Metal straight ladders and extension ladders must not be used where possible exposure to electrical hazards exists.
- 3.4.3 Job-made ladders shall be built for their intended use. Double cleats shall be used if more than 25 workers are using the ladder, or two-way traffic is expected.
 - 3.4.3.1 Single cleat ladders shall not be more than 30 feet between the base and the top landing; double cleat ladders shall not be more than 24 feet.
- 3.4.4 Ladders shall not be used as platforms or scaffold planks.

- 3.4.5 Ladders shall be kept free of grease and oil. Personnel going up or down shall face toward the ladder and grip the side rails with both hands. Tools or other objects shall be hoisted up as necessary, or carried in a tool pouch and not carried by hand up or down the ladder.
- 3.4.6 Extension and straight ladders must be set at an angle of 1 foot horizontal for every 4 feet of working ladder length. Extension and straight ladders shall be tied off at the top and/or bottom when in use. Until secured, a second person shall be used to keep the ladder from slipping. Only one person shall be allowed on a ladder at a time.
- 3.4.7 Ladders shall not block doorways, passages, high traffic areas, etc. unless the area is barricaded. Warning signs shall be posted, or a spotter shall be involved.
- 3.4.8 Platform or podium type stepladders shall be used in lieu of traditional stepladders. They must be fully open with spreaders locked when in use. Traditional stepladders shall not be used.
- 3.4.9 Damaged ladders shall be taken out of service. Ladders shall not be painted, except for stenciling for identification purposes. Ladders shall be inspected daily prior to use.

3.5 Electrical Safety

- 3.5.1 All electrical equipment, including main feeder lines, branch circuits, and grounding systems shall be installed in accordance with the National Electrical Code as a minimum requirement.
- 3.5.2 A minimum of 3 feet of clearance shall be maintained around energized electrical parts.
- 3.5.3 Cabinets, boxes, fittings, or other forms of enclosures shall be used when energized parts of 50 volts or greater are exposed. Entrances to rooms containing energized electrical parts shall be marked with warning signs and access shall be controlled by the exposing contractor. Covers shall be approved. Cardboard and magnetic covers are not approved as temporary covers. All electrical equipment shall be labeled in accordance with the requirements of NFPA 70e.
- 3.5.4 The metal parts of portable and/or plug connected equipment shall be protected through 3 wire cords and plugs or shall be double insulated.
- 3.5.5 All power tools and equipment connected by cord and plug, and all extension cords must be visually inspected. GFCI devices must be inspected and tested prior to each use.
- 3.5.6 Extension cords must be of the three-wire grounded type S, SE, SO, ST and rated for hard service and a minimum 14 gauge in size. No flat cords are allowed. Cords shall not be spliced or taped. Damaged cords shall be removed from service and tagged as defective, or rendered unusable by removing the male plug end. All cords should be checked for proper polarity.
- 3.5.7 Cords shall be protected from traffic, sharp edges and corners. Extension cords and cables passing through high traffic areas shall be elevated or covered for protection. Extension cords shall not be fastened with staples, hung from nails or suspended with wire. Extension cords shall be arranged to eliminate any tripping hazards.
- 3.5.8 All electrically powered equipment, including motors, transformers, generators, welders, and other machinery, shall be properly grounded, and insulated.
- 3.5.9 GFCI protection is required on construction sites for all 120-volt, single-phase, 15- and 20-ampere receptacle outlets that are not a part of the permanent wiring of the structure and are in use by employees. GFCI protection is specifically required when using temporary electric or when extension cords are used.
- 3.5.10 Secondary external GFCI protection (pigtailed) are required on all generator power including, welding machines, mobile light towers, etc. This is in addition to any GFCI protection built into the outlet.

- 3.5.11 Electrical equipment shall be periodically inspected and repaired as necessary. The electrical contractor shall inspect the temporary power, including the GFCI devices and lights, on a weekly basis. All temporary power receptacles shall be numbered and labeled to confirm a weekly inspection has been completed. Results of these inspections will be documented, and provided to Site Management.
- 3.5.12 Work on live or energized systems is generally not permitted. If such work is unavoidable, an energized work plan in compliance with NFPA 70e must be developed, reviewed and accepted by Messer prior to commencement of work.
- 3.5.13 When energized parts are exposed barriers, guards and signage shall be used to prevent the area involved in electrical work from becoming an access point.
- 3.5.14 All contractor/supplier personnel trained and authorized to work on, or around energized electrical systems shall be required to have all required PPE and arch flash protection required by NFPA 70e.
- 3.5.15 Construction/temporary lighting shall meet NEC and OSHA requirements as well as maintaining a minimum of five-foot candles and/or more where the standards require it. Each room shall have at least one active temporary lamp until such times that the permanent lighting systems are activated.
- 3.5.16 Temporary lighting bulbs shall be protected from breakage. Metal case sockets shall be grounded. Do not suspend temporary lights by their electrical cords unless it has been designed for this use. GFCI protection is required when lighting is located in wet or conductive locations. Temporary lighting must be on a dedicated circuit.
- 3.5.17 Temporary task lighting shall be mounted to a stand or secured to a base. Temporary task lighting shall meet all other applicable standards associated with temporary lighting as indicated in NEC and OSHA.

3.6 Lockout, Isolation, and Tag out of Equipment

- 3.6.1 Equipment that could present a hazard to personnel if accidentally activated during the performance of installation, repair, alteration, cleaning, or inspection work shall be made inoperable and free of stored energy and/or materials prior to the start of work. Such equipment shall be secured where possible by locking and tagging methods.
- 3.6.2 Where equipment is subject to unexpected movement such as rotating, turning, dropping, falling, rolling, sliding, etc., mechanical and/or structural constraints shall be applied to prevent such movement.
- 3.6.3 The use of tags without locks shall be permitted only when the use of locks is physically impossible. Strict controls and supplemental protective measures such as physical separation, blocking, removing fuses, or positioning an attendant by the tagged equipment shall also be utilized.
- 3.6.4 Where safety locks are used for locking out or isolating equipment, the lock shall be specially identified and easily recognized as a safety lock. All such locks shall be individually keyed with the key(s) in the control of the authorized individual. The use of a master key to open any safety locks is prohibited.
- 3.6.5 Where more than one person is assigned to work on a piece of equipment or system, each person shall be responsible for applying their own individually keyed lock to each lockout device. When this is not possible, a group/complex lockout/tag out procedure is acceptable, provided that a plan is developed and communicated to the Messer representative before lockout takes place.
- 3.6.6 Controls that must be de-energized during the course of work shall be locked and tagged accordingly. De-energized equipment and circuits shall be rendered inoperative, and tagged at points where the equipment can be energized. The contractor/supplier shall provide a written lockout/tag out program.

3.7 Tools

- 3.7.1 All tools shall be used in accordance with the manufacturer requirements and recommendations. Guards must remain in place and operational at all times.

- 3.7.2 General/Hand Tools
 - 3.7.2.1 Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.
 - 3.7.2.2 Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired.
 - 3.7.2.3 Personal protective equipment shall be in accordance with [3.1 Personal Protective Equipment \(PPE\)](#) of these requirements and manufacturer recommendations.
 - 3.7.2.4 All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer. Angle grinders must have guard and side handle in place.
- 3.7.3 Electric Tools
 - 3.7.3.1 Electric power operated tools shall either be double-insulated type or grounded.
 - 3.7.3.2 The use of electric cords for hoisting or lowering tools shall not be permitted.
- 3.7.4 Pneumatic Tools
 - 3.7.4.1 Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.
 - 3.7.4.2 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.
 - 3.7.4.3 All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi pressure at the tool, shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
- 3.7.5 Powder Actuated Tools
 - 3.7.5.1 Only employees who have proof of training, in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.
 - 3.7.5.2 The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.
 - 3.7.5.3 Warning signs shall be posted at access points to areas where powder-actuated tools are being used. This signage shall include at minimum "CAUTION POWDER- ACTUATED TOOL IN USE."
 - 3.7.5.4 Loaded tools shall not be left unattended.
 - 3.7.5.5 Storage of powder cartridges and disposal of expended or unexpended cartridges shall comply with the manufacturer's recommendations.

3.8 Confined Space Entry

- 3.8.1 All confined space activities must be reviewed with the project management team prior to commencement of the related work activities. Confined space entry permits are required as part of the entry process.
- 3.8.2 Confined spaces, including tanks, manholes, vessels, containers, pits, bins, vaults, tunnels, shafts, trenches, ventilation ducts, or other enclosures where known or potential hazards may exist, shall not be entered without strictly adhering to a confined space entry policy, which meets the requirements of 29 CFR 1926 Subpart AA.
- 3.8.3 Prior to entering the confined space, the area shall be completely isolated to prevent the entry of any unauthorized individuals, hazardous substances, or materials, which threaten the safety of the entrants and the stability of the space. All energy sources, including stored or residual energy, shall be isolated and/or blanked, and locked out.

- 3.8.4 The atmosphere shall be tested before entry and monitored to determine if it is safe. Acceptable limits are:
 - 3.8.4.1 Oxygen: 19.5% lower – 23.5% upper;
 - 3.8.4.2 Flammable Gas: Not to exceed 10% of Lower Flammable Limit (LFL);
 - 3.8.4.3 Toxic Contaminants: Not to exceed the Permissible Exposure Level (PEL).
 - 3.8.4.4 Airborne Combustible Dust: Not to exceed its Lower Flammable Limit (LFL)
- 3.8.5 Continuous atmospheric monitoring shall take place throughout the entry. Monitoring results shall be documented on the entry permit, with the initials of the individual conducting the testing.
- 3.8.6 Contractors/suppliers shall complete a confined space entry permit before permitting workers to enter the space. This document shall be reviewed and approved via a signature by the entry supervisor. The contents of the completed permit shall be reviewed with the entrants before entering the space.
- 3.8.7 The confined space shall have an attendant monitoring the activities within the space. This individual shall be in constant communication with the entrants inside the space. At all times, the attendant shall know who is inside the space. The attendant shall not have any other responsibilities than monitoring the space. He/she may not enter the space to perform rescue unless relieved of his/her duties as an attendant.
- 3.8.8 Adequate ventilation shall be provided to establish and maintain a stable atmospheric environment. Ventilation systems shall be designed for use in confined spaces.
- 3.8.9 Non-entry rescue systems shall be designed for the retrieval of humans, and shall not be used for equipment purposes. Entrants inside the space shall wear full body harnesses, and shall be connected to the retrieval system.
- 3.8.10 Rescue procedures for all confined spaces shall be established prior to entry. If a space is classified as permit-required, contractors/suppliers shall ensure proper rescue provisions are provided, including a trained entry/rescue team when required.
- 3.8.11 All individuals involved in confined space activities shall have extensive training, including hands-on experience with the safety equipment involved. Documentation of required training shall be submitted to Messer prior to the start of any confined space work activities.
- 3.8.12 Once the confined space work has been completed, the entry permit shall be canceled. A copy of the canceled permit shall be given to the Messer representative.

3.9 Excavation and Trenching

- 3.9.1 All underground and overhead utilities within the Excavation/Trenching or Penetration work area shall be surveyed and positively identified before excavation work commences. It is the responsibility of every subcontractor performing an excavation to call the 811 Utility Protection Service in their state to obtain an individual reference/dig number. No subcontractor shall work under another subcontractor's ticket number, including the Contractor's.
- 3.9.2 Since 811 will only mark utilities in the Right-of-Way, a private locating service must also be used to locate any utilities not located by 811 inside the project/excavation area. Obtain as built drawings showing the location of all known/found utilities with in the excavation site and reference the Contract Documents to verify there are no utilities that were not marked by the Locating Service.

- 3.9.3** 811 Procedures:
 - 3.9.3.1** Assess the area to be excavated, gather all the information that will needed to complete the locate work order form.
 - 3.9.3.2** Pre-mark the location where the excavations will occur in white paint, flags or both.
 - 3.9.3.3** Contact 811 and provide details of the excavation.
 - 3.9.3.4** Obtain reference/ticket number, record the number on the Excavation Permit and keep it for the duration of the excavation or longer is necessary.
 - 3.9.3.5** Utility owners will mark any existing utilities around the excavation site.
 - 3.9.3.6** Wait the required amount of time before commencing excavation.
 - 3.9.3.7** Advance notice needed to inform 811 of excavation.
 - a) IN – 2 working days.
 - b) OH – 2 working days
 - c) KY – 2 working days
 - d) TN – 3 working days
 - e) NC – 3 working days
 - f) SC – 3 working days
- 3.9.4** Protect and preserve the markings of tolerance zones of underground utility facilities until those markings are no longer required for proper and safe excavations. If markings are destroyed or lost do not repaint the markings, contact 811 to remark the found/known utilities.
 - 3.9.4.1** Markings are only valid for the following amount of time before 811 has to be notified again of the excavation.
 - a) IN – 20 days
 - b) OH – as long visible
 - c) KY – 21 days
 - d) TN – 15 calendar days
 - e) NC – 15 days
 - f) SC – 15 days
- 3.9.5** Private Property Locating:
 - 3.9.5.1** ALL excavations/borings/mass excavations/ground penetrating activities must be coordinated with the Contractor and the Owner to have a 3rd Party Locating Service survey the areas of excavation that are not in the right-of-way.
 - 3.9.5.2** The subcontractor must coordinate with the Contractor and contact the designated 3rd Party Locating Service prior to any ground penetrating activities to have the service locate the area where the activities occur.
 - 3.9.5.3** Prior to arrival of the 3rd Party Locating Service, the area that needs surveyed should be painted or marked with flags.
 - 3.9.5.4** The 3rd Party Locating Service shall mark all found utilities with paint or flags.
 - 3.9.5.5** All markings must be protected and preserved so the location of the utility is known at all times.
 - 3.9.5.6** Take pictures and keep records of the survey to include with the Excavation Permit

- 3.9.6** Ground Penetrations:
- 3.9.6.1** Prior to any excavation beginning, the scope of work must be reviewed with the Contractor's project management team to discuss the process and hazards related to task.
 - 3.9.6.2** Daily, all contractors must complete the Messer Excavation Permit and it be signed by the Contractor's project representative.
 - 3.9.6.3** Protect and preserve the markings of utilities until those markings are no longer required for proper and safe excavations.
 - 3.9.6.4** The exact location and depth of any known/found utilities within 24 inches of the excavation must be identified by one of the following means:
 - a) Hand digging
 - b) Pot holing
 - c) Hydro/Vacuum excavation
 - 3.9.6.5** Maintain a minimum of 24 inches (tolerance zone) between the utility and the cutting edge or point of powered equipment.
 - 3.9.6.6** When approaching and excavating within the tolerance zone of underground utility facilities with powered equipment, the subcontract must provide a spotter to visually monitor the excavation activity for any indication of the underground utility.
- 3.9.7** A competent person shall perform daily documented inspections of excavations and shall be responsible for soil classification. All excavation documents shall be maintained on site and shall be available for review by Messer. Inspections shall occur before the work begins, and as needed throughout the shift. Inspections shall also occur after rain, snow, thaw or other hazardous conditions affect the excavation. If evidence of a hazardous condition is apparent, all work in the excavation shall cease until necessary corrections have been made by the competent person.
- 3.9.8** Benching, sloping, shielding or shoring shall be used in all excavations 5 feet or more in depth except when excavating in stable rock. Shoring of excavations less than 5 feet deep may be required if examination by a competent person reveals ground movement or evidence of a possible cave in.
- 3.9.9** Excavations below the footings of foundations, retaining walls, or structures themselves shall not be permitted, except in stable rock or if the wall is underpinned and steps have been taken to ensure stability of the structure. Support systems shall be planned and designed by a qualified person – usually a professional engineer.
- 3.9.10** If forms or other structures are installed or constructed in an excavation so as to reduce the dimension (measured from the forms/structure to the sides of the excavation) to 15 feet or less (measured at the bottom of the excavation), a trench inside of an excavation has been created. This may affect the access and egress associated with the excavation, as well as with the trench.
- 3.9.11** Water shall not be permitted to accumulate in an occupied excavation. Existing or flowing water shall be removed prior to and during entry into the excavation.
- 3.9.12** Support systems shall be planned and designed by a qualified person (generally a professional engineer) when the excavation is in excess of 20 feet deep, adjacent to structures, or subject to water or vibration. All shoring systems shall be designed by a qualified person, or built in accordance with OSHA Subpart P.
- 3.9.13** Excavations 4 feet or more in depth and occupied by personnel shall be provided with ladders or other effective means of exit. In trenches, these access points must be located within 25 feet of the area in which the individuals are working.
- 3.9.14** Adequate barrier protection for excavations shall be provided around all excavations that are 6 feet or greater in depth. This shall consist of snow fence or hard physical barriers placed at minimum 4 feet from the excavation.
- 3.9.15** If the vertical wall of an excavation is 6 feet or greater, fall protection is required.

- 3.9.16 When an atmospheric condition may exist and/or develop in an excavation, atmospheric monitoring of the excavation shall take place before and during entry. Ventilation shall be provided when the monitoring indicates the necessity of such.
- 3.9.17 Excavated earth or other materials shall be placed at least 2 feet from the edge of the excavation.
- 3.9.18 At no time shall equipment (not directly associated with the excavation work) be operated within 2 feet of any excavation. If it is necessary to operate heavy equipment on a level above and near an excavation, the sides of the excavation shall be sheet-piled, shored, and braced as necessary to resist additional pressure. Barricades or stop logs shall be used around an excavation when mobile equipment is used near an excavation.
- 3.9.19 Backfilling and removal of trench supports shall progress from the bottom of the trench. Ropes shall be used to pull out the jacks after all workers have cleared the trench.
- 3.9.20 Caisson entry shall be performed in accordance with Associated Drilled Shaft Contractors' (ADSC) Recommended Procedures for Entry of Drilled Shaft Foundation Excavations. Where access and egress is restricted and/or atmospheric conditions could be expected to present a hazard, this work activity should be performed following the permit-required confined space process.

3.10 Mobile/Heavy Equipment

- 3.10.1 The design capacity of any piece of equipment shall not be exceeded, nor shall the equipment be modified in any manner that alters the original safety or capacity factor.
- 3.10.2 Mobile equipment shall be fitted with suitable alarms and motion sensing devices. If no backup alarm is present, a designated spotter shall be provided whenever the equipment is backing.
- 3.10.3 Employees operating mobile/heavy equipment shall not be permitted to use cellular phones while equipment is operating or in transit.
- 3.10.4 A safety observer shall be assigned to watch the movement of heavy mobile equipment where such movement may cause a hazard to other personnel, or where equipment could hit overhead lines or structures. The observer shall also ensure that people are kept out of the way or path of suspended loads, and clear of the mobile equipment.
- 3.10.5 Equipment shall be inspected by the contractor/supplier using and/or controlling such equipment prior to its use on the job, and periodically thereafter to ensure that it is in safe working order. Defective equipment shall be removed from service immediately, and a warning tag attached. Equipment with exposed gears, belts, couplings, etc. must be provided with proper guards.
- 3.10.6 Under no circumstances shall any piece of equipment or a load come within 10 feet of any energized overhead power line.
- 3.10.7 Only trained, qualified, and authorized personnel shall operate mobile equipment. Documentation of training shall be available upon request. Contractor personnel shall not operate Messer equipment unless written authorization is provided by the Messer representative.
- 3.10.8 Loads shall not be suspended from the forks of a forklift or other material handling equipment. An appropriate, manufacturer approved attachment including a locking latch or shackle shall be used to handle suspended loads.
- 3.10.9 Equipment with an elevated load or left running shall not be left unattended for any period of time. Loads must be grounded, the machine must be turned off, and parking brake set when machine is unattended. Equipment is considered unattended when the operator is more than 25 feet away from the equipment or any time the operator is not in view of the equipment. This does not include road vehicles such as: trucks, cars or tractor trailers.

- 3.10.10 Only trained and qualified persons shall perform maintenance on mobile/heavy equipment. A safe plan of action must be written and communicated anytime the equipment must be serviced while left running.

3.11 Cranes and Rigging

- 3.11.1 All crane operations must be in accordance with the requirements in 1926 Subpart CC—Cranes and Derricks in Construction.
- 3.11.2 The contractor/supplier shall be required to attend any scheduled pre-construction meetings focusing on crane signaling and/or other specific safety issues whenever its work involves or is associated with cranes or whenever the Messer representative deems is necessary.
- 3.11.3 Contractors/suppliers shall ensure that all crane operators are certified/licensed to operate the equipment safely and are trained and evaluated before operating the equipment. The contractor shall provide Messer with documentation of all qualified operator training at the time the individual arrives on the jobsite.
- 3.11.4 Pre-lift meeting needed each shift. The crane operator/project team to ensure these occur.
 - 3.11.4.1 The operator shall hold a daily pre-lift safety meeting at the lift site with all personnel taking part in the lift.
 - 3.11.4.2 The meeting shall include a review of the scope of lift logistics and identification of qualified riggers and verification that rigging is inspected and these personnel understand their respective roles.
 - 3.11.4.3 The pre-lift meeting shall cover the following minimum requirements
 - a) Qualified rigger identification
 - b) Lift logistics, safety requirements, materials, equipment
 - c) Follow the 1926.1404 where applicable
 - 3.11.4.4 Pre-lift meeting will be documented and signed by the operator and qualified riggers, to indicate they fully understand the scope of the lift.
- 3.11.5 Contractors/suppliers shall ensure that crane inspections are performed as required by a qualified inspector. Special attention shall be given to such items as cables, hoses, guards, booms, blocks, hooks, and safety devices. Prior to operation, current, annual and monthly inspection documentation must be provided to Messer and made available on the piece of equipment. Additionally, shift inspection documentation must be recorded and submitted to Messer at a minimum weekly and/or upon request.
- 3.11.6 A/D director and qualified riggers shall be used for all hoisting operations associated with assembly and disassembly work.
- 3.11.7 Pre-lift equipment inspection—applies to all rigging:
 - 3.11.7.1 All rigging and equipment shall be inspected by qualified personnel prior to each shift and as necessary during use. Defective rigging equipment shall be removed from services
 - 3.11.7.2 Inspection will be documented and subcontractor shall submit signed inspection to Messer for approval prior to lift.
- 3.11.8 Employees engaged in hoisting and rigging activities shall be trained and qualified in the activities they are performing and shall be identified with a Blue Vest. This includes qualified riggers, signal persons and personnel landing/receiving the load.
 - 3.11.8.1 All qualified Messer riggers shall be verified by the Craft Department and provided a blue rigger vest.
 - 3.11.8.2 Subcontractor management shall be required to provide mandatory proof of operator and rigger training—to verify and validate the training and qualifications of their operators/riggers and furnish a blue rigger vest to only those riggers meeting qualification.
 - 3.11.8.3 Qualified riggers are accountable for and must wear the blue vest at all times.

- 3.11.9 All contractors must ensure that rigging equipment:
 - 3.11.9.1 Has permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load and
 - 3.11.9.2 Selection of rigging equipment is applicable to the load to be carried
 - 3.11.9.3 Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and
 - 3.11.9.4 Not be used without affixed, legible identification markings.
 - 3.11.9.5 Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.
- 3.11.10 A qualified signal person shall always be used during operation and travel of the crane load.
- 3.11.11 Tagline must be used on all loads to prevent rotation of the load. Taglines must be at least 6ft long or longer as necessary to safely control the load without having to stand directly under the load.
- 3.11.12 Whistles shall be used to notify workers in the area that a load that is being moved and a hazard exists.
- 3.11.13 If any part of the equipment, load line or load (if operated up to the equipment's maximum working radius in the work zone) could get closer than 20 feet to a power line the requirements of Option 1, 2, or 3 of 1926.1408 shall be met.
- 3.11.14 Operators shall not be engaged in activities that distract their attention while operating.
- 3.11.15 Generally, cranes shall not be left unattended while running. However, when crane operation is frequently interrupted during a shift and the operator must leave the crane, the engine may remain running and the following conditions shall apply:
 - 3.11.15.1 Land any load, bucket, lifting magnet, or other device;
 - 3.11.15.2 Disengage the master clutch;
 - 3.11.15.3 Set travel, swing, boom brakes, and other locking devices;
 - 3.11.15.4 Put controls in the off or neutral position
 - 3.11.15.5 Secure the crane against accidental travel;
 - 3.11.15.6 The operator shall be situated where unauthorized entry of the crane can be observed; and
 - 3.11.15.7 The crane shall be located within an area protected from unauthorized entry.
- 3.11.16 The swing radius of the crane counterweights must be barricaded.
- 3.11.17 Working or riding on crane loads suspended, lowered, or hoisted is prohibited except as permitted by, 1926.1431, focusing on crane suspended personnel platforms.
- 3.11.18 Winch trucks shall not have a load suspended from the hook while traveling. The load shall be secured on the bed of the truck. The hook of a winch truck must be tied down or secured in some manner, and not allowed to dangle freely when traveling.

3.12 Welding and Cutting

- 3.12.1 In areas where welding or other hot work is conducted. In addition to any permanently placed units, a minimum of one 10 lb. ABC dry chemical extinguisher shall be immediately available in the work area. A fire watch and/or hot work permit may also be necessary.
- 3.12.2 Adequate ventilation shall be provided to maintain acceptable atmospheric conditions when welding, cutting, grinding, or heating. Where adequate ventilation cannot be maintained, respirators or air hoods shall be used.
- 3.12.3 Compressed gas cylinders shall be secured in an upright position at all times. Cylinder valves shall be closed when work is interrupted or finished, and when cylinders are empty or being moved.

- 3.12.4 When cylinders are lifted by hoisting equipment, a basket, cradle, or a similar handling device shall be used. Electromagnet, hooks, ropes, or slings shall not be used to lift cylinders, and cylinders shall not be lifted by their caps.
- 3.12.5 Oxygen cylinders shall not be stored close to cylinders of acetylene or other fuel gases, and they must be kept clear of fuel oils, grease, etc. Cylinders stored in the open shall be protected from accumulation of ice and snow, and shielded from direct sun when temperatures are high. Compressed gas cylinders shall be stored so as to avoid possible destruction or obliteration of labels or other means of identifying the contents. Oil or other hydrocarbon contamination shall be avoided on all cylinder gauge connections and regulator devices.
- 3.12.6 Electric arc welding machines shall be disconnected when moved, and turned off when not in use. They shall be disconnected from the primary supply at the end of the workday.
- 3.12.7 Welding cables shall be positioned so they will not be damaged or present a trip hazard.
- 3.12.8 The ground return electrode shall be attached directly to the work to prevent current flow through structures and equipment. All welding cables and connections shall be first quality industrial material, and shall be in good repair.
- 3.12.9 Welding equipment powered by hydrocarbon fuels shall not be used unless proper exhaust venting is provided.
- 3.12.10 All arc welding and cutting operations shall be shielded by non-combustible or flameproof screen, which will protect employees and other persons working in the vicinity from the direct rays of the arc.

3.13 Lasers

- 3.13.1 Only employees who are trained and qualified for laser use shall be allowed to use laser equipment. Those employees who are authorized to operate laser equipment shall have proof of such training/authorization in their possession at all times while equipment is in use.
- 3.13.2 Standard laser warning signs shall be posted at access points to areas where lasers are being used.

3.14 Fire Protection and Prevention

- 3.14.1 The contractor's/supplier's emergency response procedures shall contain provisions for fires or explosions. Contractor/supplier employees shall know the location of and shall be familiar with the fire control equipment. The phone number of the nearest local fire department shall be readily accessible.
- 3.14.2 An adequate number of fire extinguishers of the proper type for the materials exposed and the work performed shall be placed in accessible locations based on the work taking place. Individuals who may use these devices shall be trained in their use. Contractors/suppliers should provide their own extinguishers, especially for activities that require them in the direct vicinity of their work.
- 3.14.3 Extinguishers shall be checked monthly for usage and service condition, and shall be in good operating conditions at all times. Owner extinguishers should only be used in an emergency. Messer representatives shall be notified if an individual discharges an extinguisher other than their own.
- 3.14.4 Equipment and materials shall be stored so as not to block access to fire control and emergency equipment such as fire hydrants, extinguishers, hose racks, alarm boxes, safety showers, self-contained breathing apparatus, etc. A minimum of 15 feet of clearance shall be maintained around fire hydrants.
- 3.14.5 Likewise, materials and equipment shall not block or compromise the integrity of smoke/fire walls and doors. Messer representatives must approve any activity affecting the operation of these devices. The same is true when fire exits may be blocked.

- 3.14.6 Only approved containers shall be used for the storage, transport, and use of flammable substances. Portable containers used for transporting and transferring gasoline or other flammable liquids shall be approved (metal) safety cans equipped with flash arrestors and self-closing lids. All such containers shall be clearly labeled as to its contents. When transferring flammable liquids from one container to another, a bonding wire shall connect the containers.
- 3.14.7 Secondary containment is required for all above ground fuel storage tanks. Double wall storage tanks are also acceptable. In addition, such tanks must be protected from collision damage. Drip pan must be used to prevent any spillage from the dispense nozzle.
- 3.14.8 Areas around welding or flame cutting operations shall be kept free of flammable or combustible materials. Welding, cutting, or any ignition source is not permitted within 50 feet of any refueling, spray painting, or storage of flammable liquids.
- 3.14.9 For mixing and spray application of flammable and combustible materials, only equipment which is approved for that specific use shall be employed.
- 3.14.10 Adequate ventilation to prevent an accumulation of flammable vapors shall be provided where solvents or volatile cleaning agents are used. Extra precaution is needed when solvents are used in the presence of hot surfaces, or where high heat and ultra-violet rays from welding may present an additional hazard from toxic vapors.
- 3.14.11 Fuel fired heating devices shall not be used in confined or unventilated spaces.
- 3.14.12 Open flame heating sources shall not be used in areas where combustibles are stored.
- 3.14.13 No more than 25 gallons of flammable or combustible liquid shall be stored in a room outside of an approved storage cabinet. A maximum of 60 gallons of flammable liquid or 120 gallons of combustible liquid shall be stored in a storage cabinet. Quantities in excess shall be stored in a storage room.
- 3.14.14 Warning signs shall be posted where flammable or combustible materials (solid, liquid, and gas) are stored. "No Smoking" signs shall be posted in areas of possible fire hazards. Contractors/suppliers shall abide by no smoking policies required on specific sites.
- 3.14.15 Liquid Petroleum Gas shall never be stored in a building.
- 3.14.16 An individual designated as a "fire watch" shall be provided by the contractor/supplier when required for hot work activities and shall be trained in the proper operation of fire extinguishers and understand general "fire" protocol.
- 3.14.17 It is the responsibility of each individual to become familiar with the location of the exits that could be used in case of a fire or other evacuation emergencies.
- 3.14.18 Hot Work Permits maybe required as per jobsite specific rules. Work activities which produce: spark, slag or open flame may be required to have a Hot Work Permit.

3.15 Demolition

- 3.15.1 Prior to permitting employees to start demolition operations, an engineering survey shall be 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. Any adjacent structure where employees may be exposed shall also be similarly checked. Employer shall document the survey.
- 3.15.2 When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced as directed by a PE.
- 3.15.3 No material shall be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected. Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, an enclosed chute shall be used.
- 3.15.4 When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs, warning of the hazard of falling materials, shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.
- 3.15.5 All material chutes, or sections thereof, at any angle of more than 45 degrees from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings shall be kept closed when not in use.

3.16 Use of Vehicles

- 3.16.1 Access to the jobsite shall be according to local regulations. Adequate traffic control signs shall be enforced. Access roadways shall be clearly marked, and shall be used.
- 3.16.2 Contractor/supplier vehicles shall be kept in safe operating condition, and contractor/supplier personnel shall comply with local and site regulations regarding the operation of such vehicles.
- 3.16.3 Contractors/suppliers shall not use or operate Messer vehicles, mobile equipment, or employee vehicles without the specific authorization from the Messer representative.
- 3.16.4 Contractor/supplier employees shall park in designated areas. They shall not park on roadways or service drives, or near doorways, loading bays, dumpster boxes, or access to fire hydrants or hoses. Contractor/supplier personnel shall always check carefully before backing up.
- 3.16.5 Fuel tanks on vehicles shall not be filled while the engine is running. The driver shall stay with the vehicle. Smoking is prohibited during refueling.
- 3.16.6 Vehicle accidents on Messer jobsites shall be reported to the Messer representative immediately.
- 3.16.7 All cargo shall be secured. Material hanging over the sides or ends of a truck shall be flagged.
- 3.16.8 Transporting employees on equipment not designed for that specific purpose is prohibited. This includes riding while hanging onto the exterior of a vehicle or mobile equipment. Seatbelt use is mandatory for drivers/operators and passengers in all vehicles and equipment. No one is permitted to ride in the beds of trucks.

3.17 Construction Signage Use

- 3.17.1 Contractors shall install appropriate and effective warning and/or caution signs identifying hazards associated with work being completed.
- 3.17.2 Signs warning of high voltage shall be posted where unauthorized workers might come into contact with live parts such as overhead power lines and electrical closets.
- 3.17.3 Contractors shall ensure Caution-Overhead Work placards/signs are posted where other work activities are taking place near elevated work areas.

3.18 Concrete and Masonry

- 3.18.1 All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement.
- 3.18.2 A limited access zone shall be established whenever a masonry wall is to be constructed. The limited access zone shall conform to the following:
 - 3.18.2.1 The limited access zone shall be established prior to the start of construction of the wall;
 - 3.18.2.2 Be equal to the height of the wall to be constructed plus four feet, and shall run the entire length of the wall;
 - 3.18.2.3 Be established on the side of the wall, which will not contain a scaffold;
 - 3.18.2.4 Be restricted to entry by employees actively engaged in constructing the wall. No other employees shall be permitted to enter the zone;
 - 3.18.2.5 Remain in place until the wall is adequately supported to prevent overturning and to prevent collapse.
- 3.18.3 All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.
- 3.18.4 When overhand brick laying work is performed from scaffolding, the working side of the scaffold shall be protected from falls by guardrails or three courses of material with an effective height of no less than 24 inches above the work platform.
- 3.18.5 Dust control methods must be used when cutting, chipping, grinding, sand blasting or any other process involving concrete, block or brick. Wet methods must be used as first means of dust control. If not feasible, alternative methods must be in compliance with OSHA Repairable Crystalline Silica Standards.
- 3.18.6 Adequate eyewash facilities must be readily available for all employees working with uncured concrete, mortar, grout or acidic cleaning solutions.
- 3.18.7 Workers placing concrete from a chute, concrete bucket or hose shall wear adequate eye and face protection.

3.19 Dropped Object Prevention and Overhead Protection

- 3.19.1** Overhead risks and controls shall be identified for key scopes of work and addressed in the Subcontractor Site-Specific Safety Plan. Daily JSA's shall be used to identify area-specific risks and controls for each day's work activities. Controls identified on the daily JSA must be in accordance with minimum controls identified within the following requirements, Messer's risk assessment and site-specific safety plan and the subcontractor's approved site-specific safety plan.
- 3.19.1.1** Primary control measures shall be the preferred method of protection. Secondary control measures must be utilized where the primary control measures for dropped object prevention are not feasible or will not provide complete protection. Most overhead work activities will require a combination of primary and secondary controls.
- a)** Primary Control (Dropped Object Prevention) measures are focused on preventing an object from falling. These measures may include tool lanyards/tethers; rated tool bags with closure; guardrails with netting; sloped roof protection; material storage; and securement/tethering.
 - b)** Secondary Control (Dropped Object Protection/Overhead Protection) measures are focused on preventing a dropped object from causing injury to persons or damage to property, but do not prevent an object from falling. These measures may include protective canopies; horizontal debris nets; and controlled access zones.
- 3.19.2** Mesh or netting is required on all perimeter guardrails installed at heights above 10' as well as on rail systems around elevator shafts, mechanical chases, stairwells or similar openings inside buildings where employees will perform work.
- 3.19.3** Sloped roofs shall have slide guards, debris netting or other means of primary dropped object prevention in place at all times when employees, tools or materials are present on the roof. If not feasible for the activity, an alternate plan for protection must be submitted and approved.
- 3.19.4** All buildings with exterior elevated work ongoing shall have designated, protected access/egress points from the building. This may be accomplished by walk through scaffolding, Connex boxes, canopy structures or other equivalent means. Additionally, measures must be put in place to restrict use of non-designated access/egress points. Emergency egress needs must be taken into consideration when planning.
- 3.19.4.1** Controlled access zones (CAZ) shall be established for all overhead work activities where there is potential for unauthorized individuals to enter the area below. Barricades should be sized such that a dropped object will not deflect and bounce beyond the barricade. If barricades cannot be sized to fully contain deflected objects, primary protection measures must be used in addition to controlled access zones. Additionally, primary protection measures must be used when authorized ground personnel are potentially exposed to overhead hazards in the barricaded area.
- 3.19.4.2** Danger or caution tape (including reinforced tapes) shall not be used for overhead protection CAZ. Only hard barricade material may be used (e.g., snow fence, cones and bones, jersey barriers). Flagged rope or chain may be utilized for short-term barricades.

- 3.19.5** Barricades must have signage or tags indicating the risk and ownership of the barricade.
- 3.19.6** Material storage and waste/debris containment and disposal shall be managed per Messer's 5S program to limit potential falling or wind-borne objects. No materials shall be stacked/stored higher than guardrail protection if stored adjacent to perimeter or shaft guardrails. Sheet goods (including plywood, metal decking, insulation board, etc.) and other loose materials stored on open decks or roofs shall be positively secured when not actively being used and at the end of each shift. Acceptable securement may include straps, banding, pallet wrap, etc.
- 3.19.7** Failure to implement these procedures or use required drop prevention systems/overhead protection will be considered a violation of Messer's Safety4Site program and will result in removal from the project site.

4.0 Health Requirements

4.1 Hazardous/Toxic Substances

- 4.1.1 The contractor/supplier shall develop and maintain a written Hazard Communication Program as required by 29 CFR 1926.59. The written program shall be submitted to the Messer representative prior to beginning work. Contractor/supplier employees and appropriate regulatory officials shall have access to the program. Contractor/supplier shall be responsible for ensuring that sub-tier contractors/suppliers have copies of their Hazard Communication programs on the jobsites.
- 4.1.2 The written program requirements include a current list of hazardous chemicals present at the site, a labeling system for containers of chemicals at the work site including dispensing/transfer containers, and corresponding Safety Data Sheets (SDS).
- 4.1.3 The contractor/supplier shall submit copies of all relevant SDSs to the Messer representative before the materials are brought on site.
- 4.1.4 Safety Data Sheets (SDS) shall be requested / obtained from the vendor for all hazardous chemicals or materials brought on site by the contractor. Container labels or warning systems for hazardous chemicals/materials shall include the name of the chemical/material the hazard is associated with, its use and exposure, and any necessary precautions.
- 4.1.5 Contact or exposure to hazardous chemicals/materials exceeding Permissible Exposure Levels (PEL) shall be avoided, preferably through the implementation of engineering or administrative controls. Where such controls are infeasible, appropriate personal protective equipment such as chemical resistant clothing, gloves, aprons, goggles and respirators shall be used. Unnecessary contact with any hazardous materials shall be avoided.
- 4.1.6 Messer representatives shall be notified immediately of a spill or release of a hazardous material. Messer representatives shall inform the owner of the occurrence.
- 4.1.7 Hazardous and/or toxic materials such as solvents, coatings, or thinners shall be stored in approved containers. Original shipping containers that satisfy local safety regulations are considered approved containers for transporting and storing these materials. All hazardous or toxic materials shall be returned to the designated storage area at the end of each shift. Hazardous, toxic or flammable materials shall not be stored in occupied buildings.
- 4.1.8 The contractor/supplier shall train its employees about the contractor's/ supplier's obligations under the law, and hazards and protective measures of chemicals to which they may be exposed. The contractor/supplier shall train its employees on the meaning of any labels, symbols, colors or other codes that might be used at the work site by the contractor, Messer employees, or other contractors/suppliers, to warn of particular worksite hazards. All such training shall be documented and retained by the contractor/supplier, with a copy provided to the Messer representative upon request.
- 4.1.9 Contractors/suppliers engaged in renovation or demolition projects shall ensure employees are trained in the potential environmental health hazards of such work. This includes a minimum of awareness level training in asbestos, lead and mold. Training shall be documented and available to Messer upon request.
- 4.1.10 Contractors/suppliers whose work creates excessive dust or fumes shall provide adequate engineering controls such as an exhaust or ventilation system, and/or conduct work at "off hours", as approved by the Messer representative. Exhaust and/or ventilation systems must be reviewed with the Messer representative prior to implementation.
- 4.1.11 All equipment with combustion engines used indoors shall be fueled with LP gas, exhausted to the exterior, or be fitted with oxy-cat mufflers. The areas shall also be monitored for carbon monoxide.

4.2 Respiratory Protection

- 4.2.1 The contractor/supplier shall protect personnel and the public from exposures to dust, fumes, vapors, mists or gases in excess of Permissible Exposure Limits (PEL) or Short Term Exposure Limits (STEL), as referenced by the Occupational Safety and Health Administration (OSHA), American Conference of Governmental and Industrial Hygienist (ACGIH).
- 4.2.2 Where exposure is unavoidable, and engineering or administrative controls such as isolation of the hazardous materials, ventilation or limiting exposure periods may not provide adequate protection, use of approved respirators shall be required.
- 4.2.3 Personnel shall wear appropriate respiratory protection when applying toxic or hazardous materials inside tanks, rooms, or other areas where adequate ventilation does not exist.
- 4.2.4 Personnel required to wear respiratory protection shall be trained, fit tested, and medically qualified to wear such devices. Documentation shall be made available upon request. Contractors/suppliers shall ensure that sub-tier contractors/suppliers have this information available for review.
- 4.2.5 The contractor/supplier shall implement a respiratory program, which includes proper maintenance and care of the respirators and any related equipment.

4.3 Medical Surveillance

- 4.3.1 Individuals, depending upon the type of work and qualifications, may be required to be medically qualified prior to doing certain types of work, or where exposure to certain hazardous materials exists.
- 4.3.2 The contractor/supplier shall provide post exposure surveillance when deemed necessary.

4.4 Hearing Conservation and Noise Control

- 4.4.1 Hearing protection is required in all posted high noise level areas of Messer projects. Hearing protection may also be required where excess noise exposure exists even on a temporary basis. This would include situations where equipment such as jackhammers, saws, drills, grinders, or heavy equipment is being utilized, and the 90-decibel level is exceeded. The contractor shall implement the necessary hearing protection to respond to these noise hazards.
- 4.4.2 Areas where noise levels exceed the 90-decibel standard on a routine shall require adequate hearing protection, and this requirement shall be effectively communicated to those affected. Employees shall also wear adequate PPE when working in areas where noise levels exceed the 90-decibel standard on a temporary and/or intermittent basis. This protection could include muffs, plugs, or a combination thereof. Individuals required to wear such hearing protection shall be properly fitted and trained.
- 4.4.3 Where routine exposure to noise in excess of the 85 TWA (Time Weighted Average, 8-hour Workday) decibel level occurs, the contractor personnel are subject to the provisions of the OSHA Hearing Conservation Standard. This includes audiometric testing, employee training and any other applicable requirements.

4.5 Asbestos Containing Materials

- 4.5.1 If asbestos is suspected or materials containing asbestos are discovered on site, Messer representatives shall be notified immediately. All work in and around the suspected materials shall cease until a determination is made by a qualified third party, and any necessary abatement is completed.
- 4.5.2 Individuals involved with the handling, removal, demolition, and/or disposal of materials containing asbestos shall comply with OSHA, EPA, and other state and/or local standards governing this activity.
- 4.5.3 The OSHA Asbestos Standard requires that personnel working with asbestos shall be properly trained, monitored for exposure, and medically surveyed where necessary. Engineering controls and personal protective equipment shall be utilized to prevent exposures in excess of the Permissible Exposure Limit (PEL).

- 4.5.4 Individuals shall comply with Environmental Protection Agency (EPA) removal requirements for asbestos including: written notification prior to removal, utilization of emission controls, and special handling and disposal procedures.
- 4.5.5 All individuals hired to perform asbestos abatement work shall be properly bonded, insured, and licensed by the appropriate governing agencies.
- 4.5.6 All individuals hired to perform lead abatement shall be properly bonded, licensed, and insured, as required by the appropriate governing agencies.
- 4.5.7 The employer handling abatement work shall confirm or deny materials contaminated with asbestos through the necessary documented testing/surveying resources. This testing may be conducted through an established third party testing agency.

4.6 Lead Containing Materials

- 4.6.1 If lead is suspected or materials containing lead are discovered on site, Messer representatives shall be notified immediately. All work in and around the suspected materials shall cease until a determination is made by a qualified third party and any necessary actions take place.
- 4.6.2 All individuals hired to perform lead abatement and/or disturbing lead-containing surfaces shall be properly bonded, licensed, and insured, as required by the appropriate governing agencies.
- 4.6.3 Individuals involved with the handling, removal, demolition, and/or disposal of materials containing lead shall comply with, EPA, and other state and/or local standards governing this activity. Individuals shall specifically comply with the OSHA Construction Standard, 1926.62.
- 4.6.4 Unless sampling results verify zero concentrations of lead, all existing painted surfaces that will be disturbed shall be assumed to be lead-containing.
- 4.6.5 An exposure assessment/air monitoring shall be conducted to determine the anticipated exposure levels of individuals disturbing the lead-containing surfaces, and the type of protection needed when doing such.
- 4.6.6 All employees performing this type of work shall be trained on the hazards of lead exposure, participate in a medical surveillance program, when necessary and shall be trained on and shall use the appropriate protective equipment.

4.7 Silica

- 4.7.1 Any contractor/suppliers performing potential silica-related work shall submit a written silica exposure control plan prior to beginning work and must identify a competent person for the project. The silica exposure control plan shall include task-specific controls that are in compliance with OSHA Table 1 or documentation of appropriate protection must be provided for alternate controls.
- 4.7.2 Contractor/suppliers shall identify a competent person for the project and shall ensure workers are trained on operations that could result in exposure to silica and proper control measures in compliance with the OSHA standard.
- 4.7.3 Dry sweeping without dust compounds and use of compressed air for cleaning of silica containing dust is strictly prohibited. Dust containing silica shall be wet swept, swept using appropriate sweeping compound or vacuumed using an approved HEPA vacuum and filter.

4.8 Industrial Hygiene and Exposure Standards

- 4.8.1 The contractor/supplier shall be responsible for determining potential job-related health risk exposures as well as the applicable Permissible Exposure Level (PEL) or standard.
- 4.8.2 Where the potential exists for employee exposure to occupational health risk(s) at the jobsite, the contractor/supplier shall identify and evaluate those risk(s) relevant to its work activity, through various means including medical surveillance, monitoring of health complaints, incident reports and workers' compensation claims, and industrial hygiene sampling and personnel exposure monitoring methods.

- 4.8.3 For industrial hygiene sampling/exposure monitoring, the contractor/supplier shall be responsible for providing the necessary equipment and expertise to do the work. Samples/monitoring results shall be sent to a NIOSH-approved laboratory for evaluation. Results from sampling/monitoring shall be communicated to affected employees with a written record submitted to the Messer representative upon request.

4.9 Moisture Intrusion and Mold

- 4.9.1 While mold may not be completely eliminated during construction activities, Messer requires the following steps to be taken to control mold and minimize any adverse effects:
 - 4.9.2 Notify the Messer management team immediately following a water intrusion or the identification of mold;
 - 4.9.3 Dry water-damaged areas and materials as soon as possible, within 24 hours and not later than 48 hours after the water intrusion event;
 - 4.9.4 Replace porous materials as they cannot be cleaned effectively. Clean non-porous surfaces with detergent and water, and dry them completely.
 - 4.9.5 Contractors can often clean a small outbreak of mold. However, if mold growth is extensive, consult a professional with experience. When using disinfectants or biocides, always ventilate the area, using outside air if possible, and exhaust the air to the outdoors. During cleanup employees shall wear long-sleeve shirts and pants that can be washed or discarded after the work. Gloves and eye protection shall be worn as well. And when using cleaning materials such as biocides or disinfectants, follow the manufacturer's directions and wear recommended personal protective equipment, which may include respiratory protection.

4.10 Hexavalent Chromium

- 4.10.1 The contractor is required to meet all applicable requirements under section 1926.1126 and/or Appendix C-1: Portland Cement Inspection Procedures. Implementation will include but not limited to air sampling, employee training, medical surveillance, protective equipment, and suitable hand washing facilities.

5.0 Environmental Requirements

5.1 Protection of the Environment

- 5.1.1 The contractor/supplier shall be knowledgeable of and comply with all federal, state, and local environmental regulations for materials, including hazardous substances or wastes, under its control. The contractor/supplier shall not dump, release, or otherwise discharge or dispose of any such materials without the express authorization of the Messer representative.
- 5.1.2 Any release of a hazardous substance to the environment, whether into the air, water, or ground, must be reported to the Messer representative immediately.
- 5.1.3 If a release resulting from contractor actions occur, the contractor/supplier shall take proper measures to counter any known environmental or health hazards associated with such a release. These would include remedial procedures such as spill control, containment, and disposal. Documentation of proper disposal shall be provided to Messer. The contractor/supplier shall also provide notification to the proper authorities.

5.2 Air Pollution

- 5.2.1 The contractor/supplier, depending on the type and quantity of materials, may be required to have an emergency response plan for any releases of materials to the atmosphere. The contractor/supplier shall also be aware of local ordinances affecting air pollution.

5.3 Water Pollution

- 5.3.1 Where materials under contractor/supplier control could be discharged to the ground or to the water, the contractor/supplier shall be aware of and comply with local sewer ordinances or other requirements, which may prohibit the discharge of certain materials into the sewer system.
- 5.3.2 The contractor/supplier shall obtain any necessary permits for materials under its control. These permits include, but are not limited to, National Pollutant Discharge Elimination System (NPDES) permits, Public Owned Treatment Works (POTW) contracts, Storm Water Control Permits, and Spill Prevention Control and Countermeasure (SPCC) plans, as well as any local or regional requirements relating to such.