Construction HUEHS Standard Tools

Main Standard Summary

PRE-CONSTRUCTION PHASE

Supplemental Exhibits

All contractors are responsible to review the supplemental exhibits to the Standard (i.e. scaffolding, excavations, fall protection, etc.) and determine those that apply based on the specific scope of the project.

Contractor Safety Assessment Program (CSAP)

All tiers of contractors must be enrolled in the program. Enrollment must be completed prior to submission of a proposal/bid. The General Contractor will have access to the program to verify enrollment and evaluate subcontractor safety performance during the bid process.

Project Hazard Analysis (PHA)

General Contractor is required to submit a PHA to the Harvard Project Manager prior to the commencement of any work. The PHA identifies the major hazards anticipated based on the scope of work, methods that will be employed to manage/mitigate/abate/reduce the hazards, and the responsibility for each.

A job hazard analysis process, to be followed by all subcontractors, must be developed and implemented on the project to identify task-specific hazards and control measures for the duration of construction. The process must identify the frequency with which hazards will be reviewed, identified, and communicated to the workforce. The process must be documented throughout the construction phase and should be outlined in the project hazard analysis (PHA).

Pre-Construction Safety Meetings

The General Contractor is responsible to coordinate and chair a pre-construction safety meeting for each Contractor (of all tiers) working on the project. The meeting is to be held prior to commencement of work by the contractor and is intended to communicate project-specific safety requirements and expectations to subcontractor project management **AND** site supervision and to review the elements of the PHA. The meeting must be documented.

Competent Persons

Each contractor working on the project is required to identify in writing the name of the competent person for specific activities (i.e. scaffolding, ladders, etc.). The competent person documentation/form must be used to conduct a toolbox talk explaining the roles and responsibilities of the competent person to the work crew.

CONSTRUCTION PHASE

Employee Orientations

Each employee entering a project must undergo a project-specific safety orientation. The orientation must address the major hazards associated with the project as defined by the PHA, project-specific safety requirements and expectations, and emergency response procedures at a minimum. An orientation log must be maintained that includes the company name, employee's name, signature, date, and trainer's name.

Contractor Inspections

Documented safety inspections must be conducted at specific frequencies as follows:

GC Project Manager – One per month

GC Project and Area Superintendent(s) – One per week

Project Safety Manager – One per day (>$25,000,000 contract value), One per week (<$25,000,000 contract value)

Subcontractor Safety Representative – One per week

Life-threatening or high-hazard observations require that corrective action be documented by the non-compliant contractor.

High Hazard Planning

Prior to commencement of high hazard activities the GC is responsible to coordinate and chair a high hazard planning meeting addressing the policies, procedures, coordination, communication, and training that will be required or employed during the activity. The meeting must be documented.

Accountability Plan

An accountability plan, including escalating disciplinary procedures where compliance is not met, must be developed for the project. Elements of the accountability plan should be included in the PHA.

Fall Protection Requirements

Fall prevention and protection systems are required for all project personnel that are potentially exposed to falls **equal to or greater than six (6) feet.** Safety monitoring systems are not allowed for fall protection purposes on roofs or in any other location.

Emergency Notifications

Communication protocols for emergency notifications are included in the Standard. Emergency phone numbers must be posted on the project. General Contractor must provide emergency contact information to the Harvard Project Manager, Harvard Mitigation Manager, Operations Center, Harvard Police Department, and HUEHS. Emergency contact information must be maintained and updated as necessary during the course of the project.

PROJECT REPORTING

Accident/Incident Reporting

Accidents/incidents must be reported immediately to the Harvard PM and HUEHS. Contractor is responsible for compiling and preparing all reports associated with incidents or injuries on or related to the project. Reports must be distributed to the Harvard Project Manager and HUEHS.

Monthly Reporting

All projects are required to submit monthly safety reports. The reports are due by the 10th of the month for the previous month's activities. Items reported include a summary of any accidents/incidents, the number of man-hours worked broken down by contractor, and a summary of any accountability actions taken on the project. Reports are submitted through the Contractor Safety Assessment Program.

Post-Incident Report

Following an incident a post-incident report must be generated to identify chronology of events, contributing factors, root cause, and corrective action/communication of same. This report is generally the result of a post-incident review meeting with the contractors involved. The report must be provided to the HUPM. The Harvard PM and HUEHS should be invited to participate in any post-incident review meetings.

SUBSTANCE ABUSE PREVENTION PROGRAM (SAPP)

The General Contractor is required to monitor compliance with the substance abuse prevention program. All employees working on site must undergo a pre-employment drug screening. The GC must establish the project for testing with Med-e-Screen by providing information about the project. Med-e-Screen will provide the GC with "passports" that employees must bring to the testing facility in order to be tested. The Substance Abuse Prevention Program fact sheet will be provided to the GC. Any employee injured on the job requiring off-site medical care must be referred for a post-accident test.

Note: *This document is intended to be used as a reference tool identifying and highlighting some of the specific requirements contained within the Standard and the supplemental exhibits. All contractors are responsible to review the Standard in its entirety and to review and understand all of the requirements of the supplemental exhibits that apply to their scope of work.* *Full Standard and Supplemental Exhibits*

Confined Space Entry

Applicable to Project: (circle one) Yes No

1. The standard requires that all confined spaces are initially classified as permit-required. Confined spaces can only be downgraded to non-permit required after a documented review by a competent person indicating that no additional serious hazards are present in the space and that no additional hazards will be introduced to the space based on the work being performed. Compliance with OSHA's permit-required confined space entry procedures is required.

2. Entry into existing confined spaces requires notification to HU facility manager.

3. Confined space entry permits issued by the Project Safety Manager.

Control of Hazardous Energy

Applicable to Project: (circle one) Yes No

1. Requires equipment to be serviced in a zero energy state.

2. Requires lock-out/tag-out of all hazardous energy sources.

3. Requires compliance with a specific procedure (minimum standard) for lock-out/tag-out.

Cranes and Hoisting Equipment

Applicable to Project: (circle one) Yes No

1. Requires a written plan for tower/gantry crane erection/jumping/dismantling.

2. Requires NCCCO certification for crane operators of cranes on the project for 5 days or greater.

3. Requires 3rd party inspection of lattice-boom, tower, and gantry cranes after the crane's erection. Accommodations shall be made so that crane parts/pieces can be inspected at ground level by the 3rd party inspector.

4. Requires that a Crane Hoist Plan be completed and submitted to the GC for all hoisting operations.

5. Requires that a Critical Lift Plan be completed and submitted to the GC for any hoisting operation exceeding 75% of the crane's capacity, hoisting over occupied structure, two lifting devices are used in tandem, where non-standard rigging practices are used, or is in the presence of special hazards. Critical lifts require high hazard planning meetings prior to commencement of the lift.

6. Hoisting below the lifting eye with excavators requires a documented review by the contractor or operator confirming that the lift is being performed within the capacity of the machine based on configuration (i.e. over blade/blade down, over side/blade up, etc.), lift point height and maximum radius, and that proper rigging equipment is used, rigging is in good condition, and a signalperson is identified. Site conditions, including inspection for the presence of overhead power lines, shall be included in the review.

7. Requires that a documented post-set up inspection be conducted by the operator prior to the initial lift, before each shift, and after any malfunction.

8. Documentation of training for signalperson and riggers must be provided to the GC with the crane hoist plan/critical lift plan.

9. Requires that a formal, documented rigging inspection and inventory be conducted by the competent person at least weekly.

10. Requires that custom-designed or shop-fabricated lifting devices or rigging equipment, including scale pans and hoisting buckets, be designed by a Massachusetts registered PE and be proof-tested to at least 150% of its rated capacity. Rated capacity must be permanently affixed to the device.

11. Requires that cribbing be provided under outrigger pads in all instances. Cribbing must be at least three times the size of the outrigger pads and must consist of solid members with no gaps or voids between or beneath.

Demolition

Applicable to Project: (circle one) Yes No

1. Structural demolition requires the completion of a pre-demolition engineering survey. Minimum items to be addressed in the survey are detailed in the Standard.

2. Structural demolition is considered a high hazard activity. A high hazard planning meeting must be coordinated by the GC prior to commencement of the work.

3. Requires completion of a pre-demolition inspection and checklist. Identifies the required attendees for a pre-demolition walkthrough.

4. Requires that all employees and subcontractors have a minimum of two hour Asbestos Awareness training should their work be around asbestos containing materials or presumed asbestos containing materials.

5. Documentation of hazardous material abatement or survey indicating no hazardous materials may be required prior to receiving a demolition permit from the City.

6. Requires documented hazard analysis that identifies the specific personal protective equipment to be worn during demolition activities.

Electrical Safety

Applicable to Project: (circle one) Yes No

1. Requires compliance with NFPA 70-E including prohibition of working on energized electrical systems, except where continuity of service is essential to life and health. **No live work.**

2. Requires coordination with and authorization from the building owner and/or facility manager for all shutdowns and disruptions to building operating systems. Coordination and authorization must be documented.

3. Requires the placement of illuminated exit signs for all below-grade exit stairs/ladders.

4. Requires type-O High Intensity Discharge lamps.

5. Disallows assured equipment grounding programs for cords and outlets.

6. Requires monthly <u>documented</u> inspections of all GFCI-protected outlets.

7. Requires specific protection for temporary underground services. Underground temporary power feeds must be in conduit, and the conduit must be protected by either encasement in a concrete ductbank or other equally protective means. Detectable warning tape must be placed above. Underground temporary power feeds to be surveyed after installation and shown on a site plan or project utility drawing.

Indoor Air Quality

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to submit an indoor air quality (IAQ) plan.

2. Contains specific requirements for identification of the potential for worker exposure to contaminants and documentation of negative exposure assessments for potential contaminants that have been identified.

Air Emissions

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to submit EPA certifications for workers and equipment related to CFCs and documentation of CFC leaks.

2. GC is required to consider all potential construction-related emissions, including odors (from chemical use and/or natural sources), and the potential impact to sensitive populations (whether property neighbors or occupied spaces adjacent to construction).

Hazardous Materials and Hazardous Waste Management

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to review and understand the project-specific hazardous material survey prior to the commencement of any renovation/demolition work.

2. The General Contractor is required to submit a Hazardous Waste Plan.

Dust Control

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to submit a Wheel Washing Plan.

Soils Management

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to submit documentation on the source of all off-site borrow material brought on site.

2. The Contractor will be required to test soil prior to its acceptance and import to the site in accordance with the HUEHS standard specification Earthwork 312000 Section 1.06C.

3. Soils being shipped for off-site disposal must go to **ONLY** Harvard-approved facilities.

Spill Prevention, Control, and Response

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to have the appropriate spill equipment and training to prevent and contain spills of oil and hazardous chemicals.

Stormwater Management

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to prepare and submit a Stormwater Pollution Prevention Plan (SWPPP), and subsequent SWPPP inspection reports, for the site.

Solid Waste Management

Applicable to Project: (circle one) Yes No

1. The General Contractor is required to develop and implement a Waste Management Plan that sets forth requirements regarding debris/waste generation, disposal, and recycling.

Motorized Equipment

Applicable to Project: (circle one) Yes No

1. Each piece of motorized equipment must be inspected by the owner or renter of the equipment (not only the rental company) prior to entry on the project.

2. Fall protection is required for all maintenance/set-up activities where employees are exposed to falls equal to or greater than six feet.

Aerial Lifts

Applicable to Project: (circle one) Yes No

1. Require daily documented inspections. Documentation must be maintained on lift.

2. Operators and occupants of aerial lifts must carry documentation of training on their person. Training must be specific to the type of lift in use.

Elevators and Personnel Hoists

Applicable to Project: (circle one) Yes No

1. Engineering review by MA PE required prior to installation of a personnel hoist. Review to include foundation requirements and structural connection details.

2. Erection, dismantling, and inspection plan must be submitted to GC before commencing. Plan to include procedures for erecting/dismantling/inspecting, list of qualified individuals who will perform the work, hoist plan, and fall protection procedures to be employed.

3. Requires falling object protection system for permanent elevator construction. A minimum of ¾" thick plywood and 2" framing must be installed above the car and must extend at least to the perimeter of the floor.

Hand and Power Tools

Applicable to Project: (circle one) Yes No

1. Daily inspection of all tools and equipment must be conducted by operator at a minimum. Any tools found to be damaged or defective must be removed from service immediately.
2. If manufacturer specified guards must be removed on table saws, the documented hazard analysis must specifically address the requirements for employee protection (e.g. use of a 'push stick').
3. Requires the use of auxiliary handles for tools when required or recommended by the manufacturer. (hand-held grinders, band saws, demo saws, etc.)
4. Prohibits the use of hand-held grinders equipped with toggle-type on/off switches. Hand-held grinders must be equipped with constant pressure on-demand switches.

5. Requires that stationary power tools (cement mixers, table saws, masonry saws, etc.) be equipped with an emergency shut-off switch (push-stop or equivalent) and a magnetic drop-out switch that prevents the tool from automatically re-starting after a power loss.

Heavy Equipment

Applicable to Project: (circle one) Yes No

1. Operators are required to wear seat belts at all times on equipment provided with such.

Ladder Safety

Applicable to Project: (circle one) Yes No

1. Only type 1A portable ladders (300 lb. rating) are approved for use on Harvard Projects.

2. Aluminum or metal ladders are not allowed except where the ladder is a fixed ladder or part of a scaffold system. Use of aluminum extension ladders is allowed only for exterior work (e.g. painting or other similar short-term activity) on existing structures where the competent person can demonstrate that no potential for electrical hazards exist, and the use of scaffolding or aerial lifts is not feasible as an alternative.

3. Straight/Extension and job-made ladders shall be secured at the top and base when used to access higher or lower levels.

4. Ladders must be inspected each shift prior to use.

Motor Vehicles and Jobsite Transportation Rules

Applicable to Project: (circle one) Yes No

1. All operators and passengers must wear seat belts at all times.

2. Maximum speed limit on Harvard Projects is five (5) mph.

Powder-Actuated Tools

Applicable to Project: (circle one) Yes No

1. The area on the opposite side of the substrate being fastened to must be cordoned off to prevent entry when the substrate is any material other than steel or concrete. Danger signs must be posted warning personnel of the specific hazard.

2. Documentation of training on the specific type of tool in use must be carried on the operator's person.

3. Operators of powder-actuated tools must wear, at a minimum, safety glasses and a face shield or tight-fitting protective goggles and hearing protection.

4. Prior to operating the tools, the operator must yell "FIRE" or "FIRING" in a loud voice.

5. Spent of misfired shots/caps shall be placed in a container of water as they are generated and shall be disposed of properly at the end of the shift. Spent or misfired shots/caps must not be thrown or placed on the floor.

Rotating and Non-Rotating Laser Use

Applicable to Project: (circle one) Yes No

1. Documentation of training/qualifications for laser use must be carried on the laser user.

2. Where Class II or more powerful lasers are used appropriate warning placards must be placed on the laser and in the area the beam affects.

3. When certain models/classes of lasers are in use that require specific eye protection to protect against direct or reflected laser light, the operation must be conducted only in an area restricted only to the user or must be done off-hours.

Excavation and Trenching

Applicable to Project: (circle one) Yes No

1. Requires guardrails and fall protection when excavations are six (6) feet or greater in depth.

2. Requires the placement of detectable warning tape (or contact-specific markings) atop all utilities including any existing utilities that are uncovered if tape is not present or is damaged.

3. Requires documented inspection of the excavation as it progresses by the competent person, at least once per shift for previously opened excavations, after each rain or severe weather event, and when existing conditions around the excavation change.

4. Requires the contractor to maintain a drawing of all utilities, shutoffs, and contacts.

5. Requires specific protection around unattended excavations equal to or greater than 3' in depth including six-foot high continuous barriers around the excavation or covers consisting of ¾" steel plates or equivalent. Gaps between or beneath barriers must not exceed 4".

6. Hoisting below the lifting eye with excavators requires a documented review by the contractor or operator confirming that the lift is being performed within the capacity of the machine based on configuration (i.e. over blade/blade down, over side/blade up, etc.), lift point height and maximum radius, and that proper rigging equipment is used, rigging is in good condition, and a signalperson is identified. Site conditions, including inspection for the presence of overhead power lines, shall be included in the review.

Fall Protection

Applicable to Project: (circle one) Yes No

1. Requires fall protection for ***all trades*** working at or above six (6) feet. (6 Foot Rule)

2. Requires that a permit, issued by the Project Safety Manager, be completed for removal of guardrails.

3. Requires protection of depressions or projections in the walking surface causing an elevation change equal to or greater than ¼" in the floor in areas accessible to the public.

4. Requires fall protection for portable ladder use when:
   - Employee is working from ladder with feet at or above ten (10) feet.
   - The ladder is erected closer than fifteen (15) feet from an open edge, window, hole or shaft, regardless of the presence or non-presence of guardrails.

5. Requires horizontal lifeline systems to be of the manufactured type or designed by a PE.

6. Requires manufactured type vertical lifelines. Knots are not allowed to secure lifelines to anchor point.

7. Requires fall protection for roofing operations (no safety monitor systems), steel erection, scaffold use/erection/dismantling.

8. Crossbraces on scaffolds are not considered a top or mid-rail regardless of the height of intersection.

Fire Prevention and Protection

Applicable to Project: (circle one) Yes No

1. Requires that the General Contractor develops and implements a project-specific fire prevention and protection program.

2. Requires the use of ONLY fire-retardant tarping and poly sheeting. Materials used for temporary protection of floors, walls, finishes, elevators, etc. shall be flame-retardant or shall have a minimum one-hour fire resistance rating.

3. Requires daily removal of combustible debris and flammable/combustible liquids and gases from the building.

4. Dictates specific storage and containment requirements for flammable/combustible liquids and gases, and non-flammable compressed gases.
   - Compressed gases and flammable/combustible liquids must be stored in cages and storage cabinets no closer than 25' from the building and adjacent buildings.
   - 20 lb. fire extinguishers must be provided/mounted at each storage area.

- Secondary containment in the form of spill control, diking, and drainage control must be provided at each flammable/combustible liquid storage area. The containment must be sized to contain the amount of liquid stored in the storage area.

5. All hot work operations require a daily Hot Work Permit issued by the Project Safety Manager to the contractor performing the hot work. Hot work operations require a 20 lb. fire extinguisher dedicated to the hot work area. LPG tanks and Acetylene "b" cylinders must be secured in the upright position in a cart, case, or placed into a milk crate to prevent tipping when in use. Hot work includes:

- Welding, torch cutting, brazing, soldering
- Any operation that produces sparks (cutting metal studs, spark-producing grinding, etc.)
- Any operation that produces significant heat (temporary heating, hawk heating, etc.)

The hot work permit shall not be issued until the work area has been inspected and all conditions required by the hot work permit have been met.

6. Hot work requires a dedicated fire watch, with exceptions.

7. Requires the use of flashback arrestors at both the gauge and torch end of burning equipment.

8. Requires air monitoring for temporary heating operations.

Housekeeping and Material Storage

Applicable to Project: (circle one) Yes No

1. Requires each Contractor to coordinate material deliveries and storage locations for project equipment and materials with the General Contractor including:

- Expected date of delivery
- Type/Quantity of material/equipment to be delivered
- Proposed storage location of materials/equipment

2. Emphasizes planning and coordination to limit the amount of material/equipment delivered to the project at any one time, keeping materials off the floor, and storing materials in an orderly manner so as not to create slip/trip/fall hazards, obstruct walkways or egress routes, or result in unsafe work conditions. Emphasizes the use of moveable storage racks for pipe, conduit, and similar materials.

Personal Protective Equipment

Applicable to Project: (circle one) Yes No

1. Requires 100% eye protection at all times.

- Face shields in addition to safety glasses required for the use of chain saws, grinders, demolition saws, powder-actuated tools (tight-fitting goggles acceptable), and other operations creating flying objects/fragments.
- Tight-fitting goggles required for tasks requiring employees to look in an upward direction, including drilling, cutting, etc. for protection against falling debris (face shield and safety glasses acceptable).

2. Hand protection is required at all times except where the hands are not used or exposed to hazards (i.e. walking, standing, writing).

- Exception: The use of hand protection while using certain rotating or reciprocating equipment may cause a hazard of the glove becoming entangled in the equipment. This hazard must be assessed by the competent person. Suitable alternative protection or guarding and/or increased levels of training may be required.
- Appropriate hand protection for the task must be determined during hazard analysis development.

3. Non-conductive hard hats must be worn at all times.

4. Employers must assess each operation that presents potential respiratory hazards. This must be done through either an initial or negative exposure assessment to determine if administrative or engineering controls are sufficient to limit the exposure and eliminate the need for respiratory protection.

Public Protection

Applicable to Project: (circle one) Yes No

1. Requires the development of a Traffic Control Plan when either vehicular or pedestrian traffic may be impacted, interrupted, or re-routed. Minimum elements to be included in traffic control plan are contained in the Standard.

2. Traffic control plan must be submitted to Harvard Project Manager and Mitigation Manager. In Cambridge the plan must be submitted to the Cambridge Dept. of Public Works. In Boston the plan must be submitted to Boston Transportation Department.

3. Requires specific public protection devices including guardrails, canopies, temporary fence, etc.

4. Where work must be performed above building entrances and exits canopies must be installed and enclosed so as to fully protect pedestrians from falling objects.

5. Where work must be performed adjacent to public walkways or travelways canopies must be installed and enclosed so as to fully protect pedestrians and vehicles from falling objects.

6. Canopies must be capable of withstanding the maximum forces that could be applied from potential falling objects, considering the maximum fall distance from the elevated work area to the canopy.

7. Requires that steel road plates be provided with a non-skid surface in areas with significant pedestrian and bicycle traffic.

Scaffolding

Applicable to Project: (circle one) Yes No

1. Requires that mast-climbing scaffold tiebacks/connections and base are reviewed by a P.E. with a report submitted to the GC, scaffold erector, and project structural engineer.

2. Fall protection is required for scaffold erection and dismantling activities above six (6) feet. Scaffold erection and dismantling is considered a high hazard activity. A high hazard planning meeting shall be held before erection and dismantling activities begin.

3. Requires that the erector/dismantler of mast-climbing scaffolds develop an Erection/Dismantling Plan. Plan must include at a minimum:

- The procedures required to erect/dismantle/inspect the scaffold. Dismantling procedure to specifically identify sequence for removal of tiebacks/connections.
- A list of individuals qualified to perform the work.
- A crane hoist plan.
- Fall protection procedures to be employed.

4. Requires the use of a scaffold inspection and tag system, managed by the General Contractor. Daily documented inspections of scaffold must be conducted.

5. Requires full guardrails on mobile scaffolds (i.e. rolling scaffolds/baker staging) when the platform height meets or exceeds four (4) feet.

6. Disallows the use of step-up type "mini" (perry) scaffolds as work platforms.

7. Requires that the scaffold erector conduct thorough inspections once per month for scaffolds erected and in use for more than 30 days.

8. Where scaffold platforms of any height are erected within 15' of an open edge, window, hole, or shaft, regardless of the presence or non-presence of guardrails, the platform must be equipped with guardrails or a personal fall arrest system must be used.

9. Any scaffold is to be placed on other than solid ground or basement reinforced concrete floors should first be investigated by a PE to determine if the load capacity of the exterior surface or interior floor can support the proposed scaffold and any additional weight of materials and equipment it will carry. The evaluation must contain a PE stamped approval. Existing prior documentation of PE stamped floor load capacities of the proposed scaffold site can be used in lieu of a new PE evaluation.

Steel Erection

Applicable to Project: (circle one) Yes No

1. The steel erector, in conjunction with the General Contractor, is required to prepare a site-specific erection plan in accordance with 29CFR Part 1926.750 Appendix A.

2. Fall prevention and protection systems are required for all project employees and trades exposed to falls equal to or greater than six (6) feet. Competent person is responsible to confirm that adequate fall clearance is maintained during all phases of steel erection.

3. Control lines for controlled decking zones (CDZ's) must be set no closer than fifteen (15) feet from the leading edge. Danger signs indicating that fall protection is required must be placed along the entire length of the control at 10-foot intervals.