

SECTION 01521 – CONSTRUCTION SAFETY AND OCCUPATIONAL HEALTH

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Other general provisions of the Contract, including FAR clauses by reference or as amended in Contract Sections B through J, and other Division 1 sections of these Contract Specifications apply to requirements of this Section; this Section in turn applies to the Contract Drawings and to Specification Divisions 2 through 16 to be developed by the Contractor.
- B. Refer to Section 01501, *Temporary Facilities and Controls*, for information on materials, equipment, and electrical power related to temporary facilities.
- C. Regulations and Standards. Governing regulations and specific technical safety and health requirements for work performed at Project Site and incorporated into this construction safety and occupational health program include the following:
  - 1. Latest edition of U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM 385-1-1; this document is available at U.S. Government Printing Office, Washington D.C.
  - 2. DOS Foreign Affairs Manual (FAM), Vol. 6, Subchapter 610 "Safety Health and Environmental Management Program" shall apply when and where construction activity impacts on U.S. diplomatic missions and the public.
  - 3. NFPA Code 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
  - 4. ANSI A10 series standards for Safety Requirements for Construction and Demolition.
  - 5. NFPA Code 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.
  - 6. NFPA 10, Standard for Portable Fire Extinguishers.
  - 7. Rigging, by James Headley, Crane Institute of America Publishing Company, Maitland Florida, 2001.
  - 8. 2001 Food Code, Food and Drug Administration, National Technical Information Service Publication PD2002-100819, or latest edition.

1.2 SUMMARY

- A. The purpose of this Section is to indicate the nature and scope of Contractor responsibilities for:
  - 1. Construction safety and occupational health for all persons and property at the Project Site.
  - 2. Developing a Construction Accident Prevention Plan (CAPP) for management procedures, operations, training, inspections, assessments and reporting of safety and health matters on site.

### 1.3 DEFINITIONS

Refer to Contract Glossary for definitions of all safety-related terms, and specifically, Designated Authority, Hazard, Activity Hazard Analysis, Job Hazard Analysis, Qualified Person, and Confined Space.

### 1.4 SUBMITTALS

#### A. Construction Accident Prevention Plan (CAPP).

1. See Attachment "A", *Guidelines for Preparation of the Construction Accident Prevention Plan*. The Construction Accident Prevention Plan (CAPP) is a safety and health policy and program management document. The CAPP shall be job-specific, and shall address unusual or unique aspects of the Project. The CAPP is based upon USACE EM 385-1-1, where it is referred to as "Accident Prevention Plan (APP)".
2. Before beginning work at the Project Site, submit to Project Director/COR for acceptance, a detailed CAPP indicating means which will be provided to ensure: safe access to work areas, protection/safety/health of persons authorized to be at Project Site, and protection of property on and adjacent to Project Site during all phases of construction. Include in the text of CAPP a certified statement executed by Contractor's representative having broad corporate authority indicating full commitment to accepted CAPP, and level of authority in assignment of responsibilities for implementation at the Project Site. Include specific details for meetings, inspections, and training/instruction of Contractor, subcontractor, and separate contractor employees.

#### B. Activity and Job Hazard Analysis. Prior to proceeding with performance of work involving unusual construction operations, work practices, or work involving hazardous materials, prepare and submit written analysis to Project Director/COR. Do not proceed with work that has been identified as being potentially hazardous until Project Director/COR has expressed and recorded "no objection" to proposed methods and procedures.

#### C. Hazardous Materials. Contractor shall bring to immediate attention of Project Director/COR any material suspected of being hazardous which is encountered in demolition or excavation or used during execution of the work. A determination will be made by Project Director/COR as to whether to have tests performed to ascertain whether the material is hazardous; do not proceed with that part of the work until directed by Project Director/COR.

#### D. Hazardous Work Permits. Contractors and subcontractors shall submit written requests to Project Director/COR for all Hazardous Work Permits. Permits are required whenever construction operations include the following:

1. Hot Work. Includes all work that results in open flame such as welding, cutting, brazing, and burning. The Contractor shall provide effective fire protection and prevention at all times during such operations.
2. Confined Space Entry. As defined above, includes work in enclosed areas such as storage tanks, bins, sewers, in-ground vaults, boilers, vessels, tunnels, manholes, pits, etc.
3. Internal Combustion Engines. The use of trucks, forklifts, pumps, or generators powered by petroleum-based fuel when used inside a building, structure, or

- confined space.
4. Explosive Actuated Tools. These include powder charged tools manufactured by Hilti, Remington, Ram Set, and others used for fastening purposes.
  5. Explosives. Follow all applicable US and local government regulations. In all cases close coordination with controlling officials shall be effected.
- E. Material Safety Data Sheets (MSDS). Refer to the requirements USACE EM 385-1-1.
- F. Minutes of Meetings. Record and submit to Project Director/COR minutes of safety related meetings, including weekly tool box safety meetings and meetings of the Joint Safety and Health Committee as described below.
- G. Records of Inspection. All records of inspection shall be made available to the Project Director/COR. Records of inspection shall include documentation of safety, health, and housekeeping inspections and corrective actions and timetables associated with any deficiencies encountered. Documentation shall also be made available for verification that corrective actions were implemented.
- H. Accident Investigation and Reporting. Investigate and submit separate accident report on each accident resulting in lost time, disabling/fatal injuries, or damage to vehicles, property, materials, supplies, or to furniture, fixtures, and equipment.
1. Prepare reports on forms supplied by and in accordance with instructions of Project Director/COR. Include in each report Contractor's recommendations and statement of actions taken to prevent recurrence of accident. Submit report of each accident with 24 hours of accident or mishap, except as otherwise indicated by requirements or governing regulations.
  2. Except as may be otherwise requested by Project Director/COR during time of contract, report major accidents and mishaps on Form (3-92) DS-1663, related instruction sheet available from the Project Director/COR.

## 1.5 PROJECT CONDITIONS

- A. General. Continue management and implementation of safety and health program through time of construction. Comply with conditions existing and developing at Project Site, and with requests of Project Director/COR. Acceptance by Project Director/COR will not relieve the Contractor of overall responsibility for compliance with the strict interpretation of all safety and health requirements of the Contract.
- B. The Project Director/COR reserves the right to suspend work when and where the Contractor's safety and health program is considered to be operating in an inadequate manner, has severe shortcomings, or is not in compliance. This shall include failures to complete required submittals within the time periods specified.
- C.

## PART 2 – PRODUCTS

### 2.1 MATERIALS AND EQUIPMENT

Materials, equipment, and workmanship for temporary facilities described in this Section shall be provided and performed in accordance with requirements in Section 01501, *Temporary Facilities and Controls*.

PART 3 - EXECUTION

3.1 IMPLEMENTATION OF CONSTRUCTION ACCIDENT PREVENTION PLAN

- A. Management and Corporate Commitment. Implementation and management of accepted CAPP shall have full cooperation and support of management at the broad, corporate level. Full cooperation and support shall be expressed by written statement executed by a senior officer of the construction contracting firm/corporation, included with the CAPP as described in this Section.
- B. Safety and Health Rules. The Contractor shall establish and enforce clearly written, definitive rules to be followed by employees of Contractor, subcontractors, and separate contractors at Project Site, applicable for performance of each unit of work. Prominently post notices in English, the host national language, and third country languages, if appropriate, stating that failure to comply with safety and health rules may cause immediate termination of employment. Post safety and health rules at the Project Site and provide a copy to each subcontractor prior to the commencement of work.
- C. Emergency Resources. The Contractor shall establish, jointly with OBO, a listing of telephone numbers and location of ambulance, physician, hospital, fire, police, and other sources of emergency assistance. This information shall be conspicuously posted in several locations on Project Site.
- D. Emergency Communication. Wireless telephone service shall be the preferred method of emergency communications. Emergency communication access shall be available to site medical personnel and nearby medical clinic or hospital.
- E. Emergency Plans. The Contractor shall establish, jointly with the Project Director/COR and OBO Site Security Manager, plans to ensure safety of all persons at Project Site in the event of fire or other emergency, and review with all effected employees. Emergency plans shall be tested quarterly using drills to ascertain and ensure their effectiveness. Testing of emergency plans shall be conducted jointly by USG and Contractor staff.
  - 1. Plans shall include: Escape procedures and routes, method of accounting for employees following emergency evacuation, identification of source and location for rescue and medical assistance, means of reporting emergencies, and persons to be contacted for information or clarification.
  - 2. Planning for Project shall include total system response capabilities to minimize consequences of accidents, natural disasters, or other emergencies.
  - 3. On-site emergency planning shall be integrated with off-site emergency support.
  - 4. The number of persons permitted in any location shall be limited to rescue and escape capability, as determined by Contractor and in concurrence with Project Director/COR.
- F. Emergency alert systems shall be identified, selected, installed, and tested to alert all persons likely to be affected by existing or imminent disaster conditions, and to alert and summon personnel and equipment comprising emergency response capability.
- G. General Orientation. Contractor to provide orientation for new employees regarding safety and health policies, and work rules.
- H. Specific Training.
  - 1. Provide specific training to supervisory personnel and all craft workers of the Contractor and subcontractors in proper use and care of specific personal

- protective gear, equipment, and clothing.
2. Contractor and subcontractor employees shall be trained and supervised by qualified persons to perform, safely and confidently, recognized hazardous work operations and work performed with hazardous conditions to which they have been assigned.
- I. Safety and Health Program Manager (SHPM).
1. Assign to the Project Site a full-time SHPM whose duties shall be the effective implementation, coordination, and enforcement of the CAPP. Provide support to the SHPM for the duration of the Contract. Notices posted at Project Site shall name the SHPM and describe the authority held by the position.
  2. Qualification. The SHPM shall be a qualified, experienced construction industry professional having ability and authority to manage CAPP. The SHPM shall be qualified to anticipate, identify, evaluate, and implement corrective action in relation to potential safety and health hazards and dangerous exposures.
- J. Joint Safety and Health Committee. Establish for the project, a functioning Joint Safety and Health Committee. Membership to include management or supervisory personnel of the Contractor and subcontractors and OBO representatives as may be needed. The Joint Safety and Health Committee, chaired by the SHPM, shall meet at regularly scheduled times and at other times as determined by the Project Director/COR. The committee shall:
1. Coordinate the management of safety and health activities and actions for effective protection.
  2. Determine implementation of new safety and health measures related to forthcoming construction activities.
  3. Anticipate and analyze potentially hazardous conditions, and implement safe and healthy solutions.
  4. Perform Activity and Job Hazard Analysis for work activities involving unusual construction operations, work practices, or work involving hazardous materials. Develop methods and procedures to reduce identified hazards to greatest extent possible.
- K. Inspections.
1. Frequent safety, health, and housekeeping inspections shall be conducted by qualified persons of temporary structures, fabrication shops, material, machinery and equipment at the Project Site. All inspections shall be documented by qualified persons. Documentation shall include any deficiencies encountered along with details and timetable for corrective actions.
  2. The SHPM shall be responsible to identify and coordinate all safety, health, and housekeeping inspections.
  3. The SHPM shall be responsible to verify, document, and ensure that all corrective actions have been implemented.
- L. Tool Box Meetings. Contractor shall hold "tool box" safety meetings once each week. Require attendance by all tradespersons, laborers, foremen, and supervisors at Project Site; include those of separate contractors. Discuss current construction operations, analyze hazards, and communicate solutions.

### 3.2 TOOLS, EQUIPMENT, AND MACHINERY

- A. **Quality.** Hand tools, power tools, equipment, machinery, materials, and personal protective apparatus shall be of manufacturer listed by U.S. or internationally recognized testing laboratory for specific application for which they are to be used. They shall be quality products recognized for professional construction use, applications, and work practices.
- B. **Safe Clearance Procedure.** Prior to initial use, and periodically thereafter at times of continued use, provide inspections of construction tools, equipment, and machinery. Do not permit continued use of tools, equipment, and machinery that are not in satisfactory working condition. Immediately upon identification of damage or malfunction, tag and remove from Project Site. Do not allow return of items until repaired or reprocessed in compliance with industry practice. Engage qualified persons to make such inspections and repair. Prepare written records, including recommendations for corrections of defects and misapplication.
- C. **Machinery and Mechanized Equipment.**
  - 1. Prior to being placed in use, all machinery and mechanized equipment shall be inspected and tested by qualified personnel and certified to be in safe operating condition. Records of tests and inspections shall be maintained at the site by the Contractor and shall become part of the official project file.
  - 2. Tower cranes, crawler cranes, truck and wheel mounted cranes and material hoists shall be erected, tested, maintained, and repaired in accordance with the manufacturer's recommendations. All actions shall be documented.
    - a) Tower cranes shall be inspected quarterly for operation and structural integrity in accordance with manufacturer's recommendations.
  - 3. **Hoisting Equipment.** Provide general-use manufactured apparatus for hoisting and material handling equipment, suitable for Project configuration, that is, for the number of stories and similar considerations and for the suitable handling of materials, fabrications, tools, equipment, work platforms, and, where applicable, for the transportation of craftspersons between grade and floor levels.
- D. **Walking and Working Surfaces.**
  - 1. Scaffolding shall be a standard, medium- to heavy-duty welded tubular frame or a project-designed steel tube and clamp system. All components shall be manufactured and tested according to international standards. All types of manufactured scaffolding systems shall include the scaffold manufacturer's integrated access stairway sections, handrails, and walking platforms.
  - 2. For all cast-in-place concrete installations of walls, columns, beams and slabs, provide manufacturer's standard access scaffolding and work platforms which are an integral part of a pre-engineered, reusable, factory built concrete forming/shoring system consisting of pre-fabricated modular metal framed plywood or all metal panels.
  - 3. Protect openings in floor slabs of more than 0.03 square meters (46 square inches) in area. Provide guardrails at floor slab edges that are not yet permanently walled off, where located more than 1.25 meters (4 feet) above grade or adjoining floor/deck surface.
- E. **Access to Construction Operations.** Provide ramps, stairs, ladders, and similar devices for craftsperson, inspector, authorized visitor, and USG personnel access and egress.

- F. Noise Reduction. Minimize the generation of noises through the efficient and shielded use of materials, tools, processes and procedures. Restrict the use of noise or impact-producing tools to necessary prosecution of the work. These actions shall seek to minimize complaints from nearby occupancies, and comply with requests of local authorities.

### 3.3 SITE MAINTENANCE, PROTECTION, AND SANITATION

- A. General. Provide indirect, work-related, temporary support facilities and services as described below in conjunction with performance of work at Project Site.
  - 1. Comply with Host Country governing regulations as enforced by authorities; including building codes, requirements of utility companies, health/safety regulations by police/rescue/fire departments, environmental protection regulations, and similar applicable regulations.
  - 2. Inspections. Arrange for required inspections, certifications, and permits, for installation and use of each temporary facility, prior to use; as may be required by governing authorities and franchised service vendors.
  - 3. Maintain temporary facilities in clean, sanitary, and safe operating conditions; and do not allow conditions of use to become inefficient, overloaded, hazardous, or otherwise deleterious to the USG's interests; comply with the Project Director's/COR's requests.
- B. Fire Protection. Except as otherwise indicated, and in every instance, expedite/complete and place into service permanent fire protection system and equipment. Prior to the time permanent facilities are placed into service, provide temporary fire protection facilities, as will be adequate for conditions at the Project Site. Where possible, arrange jointly with Project Director/COR and local fire department to respond to calls for assistance and service in cases of fire emergency. Provide temporary portable fire extinguishers, complying with applicable provisions of NFPA 10, Standard for Portable Fire Extinguishers, and UL rated; multi-purpose dry chemical type, 5.0 kg size, UL-rated "4-A:60-B:C." Maintain unobstructed access to fire extinguishers and locate at each prime point of access to each story of construction, and at each principal office, lunch room, fabrication shop, storage enclosure, gate/guard house, and similar temporary facility at Project Site. Prohibit smoking, except in designated areas of relatively low fire hazard. During welding, cutting, and burning, comply with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, in fire-hazardous areas of exposure, provide stand-by fire-protection personnel and adequate supervision of operations.
- C. First Aid. At project sites on which more than 99 and less than 300 persons are employed (greatest number being the total number of employees on a shift), establish and equip, as directed by a licensed physician, a first aid station staffed full time with a professional nurse trained in emergency response. If medical clinics or hospitals are accessible within five minutes of the project site, the facilities may be approved by a licensed physician for use, in lieu of a first aid station.
- D. Barricades, Closures, and Traffic Control. Provide substantial barricade-type closures and rails at locations where encroachment of a physically hazardous condition in construction is possible, for equipment, tradespersons, and others at or adjoining the Project Site. Provide sidewalk bridge type protective structure where traffic, vehicular and pedestrian, cannot be excluded from hazardous areas under and nearby overhead

work in progress. Provide appropriate warning signs, flashing-type warning lights, and adequate general lighting at principal barricades which are not intended to be crash-proof. Maintain barricades through periods of exposure to hazardous conditions.

- E. Roadways and Walkways. Establish safe roadways and walkways in and around Project Site, and connecting with adjoining public thoroughfares. Provide signage and other markings; including traffic control signage and signals, as may be necessary and useful in controlling traffic and in restricting traffic from passing through other areas. Cooperate with local officials in the establishment and/or adjustment of street entrance/exiting signals and signs. Do not allow established traffic ways to become encumbered or obstructed with work activities, materials, parked vehicles, equipment, and similar elements. In particular, keep established entrance-and-exit passages clear for medical emergencies, escape, fire fighting, and other emergency access and egress.
- F. Environmental Protection. Provide facilities and services as may be required by governing authorities to protect the environment; as it may be affected by performance of the work at the Project Site, and elsewhere, wherever work is in progress. Minimize the generation of wastes and avoid the pollution of every element of the environment. Prohibit the discharging and accidental loss of substances from the construction process that could possibly contaminate the atmosphere, surface or ground water, soil or subsoil.
- G. Demolition.
  - 1. The Contractor, before commencement of any part of demolition, shall give any notices required to be given to adjoining parties. Contractor shall initiate all necessary protective provisions prior to demolition of any improvement.
  - 2. Before demolition, Contractor shall examine structural condition of all adjacent structures or infrastructure. Based on examination, where there is reason to believe planned demolition will cause damage or unsafe conditions to adjacent structures or infrastructure, demolition operations shall not be performed until means have been provided to insure stability and prevent damage of adjacent structures or infrastructure. Such means shall consist of bracing, cover, relocation, removal or equivalent.
  - 3. Other protective provisions shall include, at a minimum, temporary protective coverings or enclosures of adjoining work, warning signs, and similar provisions.
- H. Dust Control. Where and when applicable, implement a suitable program for dust control in and around the Project Site, designed to reduce dust generation/ distribution to reasonable level. Coordinate with environmental protection program.
- I. Construction Site Sanitation and Health Facilities.
  - 1. Toilets Facilities and Restrooms.
    - a) Contractor may use on site Toilet Rooms, Drinking Fountains and Lavatories. Maintain in clean condition. Do not use for construction cleanup.
- J. Waste Handling and Janitorial Services.
  - 1. General. Provide proper and adequate segregated waste containers for the collection and removal of waste materials in different categories. These include, but are not limited to: hazardous wastes, flammable wastes, sanitary and health-care wastes, garbage, wastes for recycling as required by local authorities, inert and dry wastes, and incidental debris from the construction process. Dispose of

general non-organic wastes at seven (7) day intervals. Dispose of organic, garbage, and similar temperature-sensitive wastes at three (3) day intervals when the average outdoors-daily maximum temperature can be expected to be above 18°C. Clean waste containers regularly and adequately. Dispose of wastes in a lawful manner.

- a) Contractor may develop and implement a waste management plan that quantifies material diversion goals and methods of salvage and recycling in order to earn LEED points as described in Contract Section C.
2. On a daily basis the Contractor shall keep the Project and Construction Site clean and clear of accumulated wastes, including surplus materials, trimmings, incidental demolished work, and construction debris. Clean completed elements and portions of work, and maintain in "broom clean" condition, except as otherwise indicated by the Project Director/COR.
3. On a daily basis, provide janitorial services, including the restocking of disposable products, for the maintenance of temporary offices, security spaces, toilets, first-aid rooms, lunchrooms, shower/locker rooms, and similar facilities. Scrub toilet and first-aid room fixtures and floors daily, and scrub floors and walls of shower rooms daily. Provide weekly cleaning, damp mopping, or vacuuming, as may be appropriate, for other floors. Provide monthly washing of windows and cleaning of other walls, ceilings, light fixtures, and similar facility surfaces. Comply with the Project Director's/COR's specific requests to maintain facilities in a reasonably clean and sanitary condition at all times. Extend janitorial services to include permanent facilities as may be authorized for use as temporary facilities.

END OF SECTION 01521







