



**Kingdom of Bahrain  
Electricity & Water Authority (EWA)**

**Auction No.: PT/CSD/2023/BK01**

**AUCTION FOR PURCHASE, DECONSTRUCTION, DISMANTLING,  
DEMOLITION & REMOVAL OF SITRA POWER & WATER STATION  
AND PURCHASE OF THE STATION SPARE PARTS**

**SECTION - 2  
HSE SPECIFICATIONS**

**AUCTION FOR PURCHASE, DECONSTRUCTION, DISMANTLING,  
DEMOLITION & REMOVAL OF SITRA POWER & WATER STATION  
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## **1. Introduction**

The purpose of this demolition and disposal plan is to establish methods and procedures for Demolition contractor to follow during the safe and resourceful demolition of Sitra Power and Water Station (SPWS). All demolition and work procedures will follow applicable Electricity and Water Authority (EWA), SPWS & other international standards.

The hazards of these sites can be environmental, or they may present a danger to human health and safety. Contaminated sites can be of variable size and complexity, and for a successful decontamination process, proper evaluation, assessment and management will be required. Appropriate means to protect demolition employees and the general public must be implemented.

## **2. Objective**

The primary objective of this document is to lay out a preliminary plan with a set of activities to be carried out by various parties (Electricity and Water Authority Coordinating Directorates, Contractors, and Consultants etc.). This document tries to capture all requirements from various interested parties and lay out roles and responsibilities for all involved parties. Another primary objective is to ensure compliance with all pertinent regulations (Safety, Environment, Internal Electricity and Water Authority requirements etc.)

## **3. Background**

The station is planned to be decommissioned and demolished as per current plans. The plant consists of 3 phases which are SPWS Phase I, Phase II & Phase III and they have been in operation since 1975, 1984 and 1985, respectively. It is expected that the condition of the plant in some areas have deteriorated. Accordingly, safety issues are expected during demolition. Further, environmental contamination (known and unknown may exist). Hence this demolition plan provides a guideline for carrying out the planned demolition.

## **4. Building Description**

The project includes demolishing the civil structures of all distillers civil & steel structures, steam turbine & gas turbine halls civil structures, buildings of seachlor houses, demin plant houses, emergency diesel fire pump house, and all control rooms and all other civil & steel structures inside the station as defined in the Scope of Work Document.

## 5. References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

### **AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)**

ASME B30.3 (2020)	Tower Cranes
ASME B30.5 (2021)	Mobile and Locomotive Cranes
ASME B30.7 (2021)	Winches
ASME B30.9 (2018)	Slings
ASME B30.20 (2018)	Below-the-Hook Lifting Devices
ASME B30.22 (2016)	Articulating Boom Cranes
ASME B30.23 (2022)	Personnel Lifting Systems Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings
ASME B30.26 (2015; R 2020)	Rigging Hardware

### **AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)**

ASSP A10.22 (2007; R 2017)	Safety Requirements for Rope-Guided and Non- Guided Workers' Hoists
ASSP A10.34 (2021)	Protection of the Public on or Adjacent to Construction Sites
ASSP A10.44 (2020)	Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations Arrest
ASSP Z244.1 (2016)	The Control of Hazardous Energy Lockout, Tagout and Alternative Methods
ASSP Z359.0 (2018)	Definitions and Nomenclature Used for Fall Protection and Fall Arrest
ASSP Z359.1 (2020)	The Fall Protection Code
ASSP Z359.2 (2017)	Minimum Requirements for a Comprehensive Managed Fall Protection Program
ASSP Z359.3 (2019)	Safety Requirements for Lanyards and Positioning Lanyards
ASSP Z359.4 (2013)	Safety Requirements for Assisted-Rescue and Self- Rescue Systems, Subsystems and Components
ASSP Z359.6 (2016)	Specifications and Design Requirements for Active Fall Protection Systems
ASSP Z359.7 (2019)	Qualification and Verification Testing of Fall Protection Products

ASSP Z359.11 (2014)	Safety Requirements for Full Body Harnesses
ASSP Z359.12 (2019)	Connecting Components for Personal Fall Arrest Systems
ASSP Z359.13 (2013)	Personal Energy Absorbers and Energy Absorbing Lanyards
ASSP Z359.14 (2014)	Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
ASSP Z359.15 (2014)	Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
ASSP Z359.18 (2017)	Safety Requirements for Anchorage Connectors for Active Fall Protection Systems
ASSP Z490.1 (2016)	Criteria for Accepted Practices in Safety, Health, and Environmental Training

#### **ASTM INTERNATIONAL (ASTM)**

ASTM F855 (2019)	Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment
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#### **INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)**

IEEE 1048 (2016)	Guide for Protective Grounding of Power Lines
IEEE C2 (2023)	National Electrical Safety Code
EWA SOP	EWA Standard Operating Procedures
SPWS SSOs	Sitra Power & Water Station – Station Standing Orders

#### **NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)**

NFPA 10 (2022)	Standard for Portable Fire Extinguishers
NFPA 51B (2019)	Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70 (2020)	National Electrical Code
NFPA 70E (2021)	Standard for Electrical Safety in the Workplace
NFPA 241 (2022)	Standard for Safeguarding Construction, Alteration, and Demolition Operations

#### **OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION**

29 CFR 1910	Occupational Safety and Health Standards for General Industry
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910.147	The Control of Hazardous Energy (Lock Out/Tag Out)

29 CFR 1910.333	Selection and Use of Work Practices
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.16	Rules of Construction
29 CFR 1926.450	Scaffolds
29 CFR 1926.500	Fall Protection
29 CFR 1926.552	Material Hoists, Personal Hoists, and Elevators
29 CFR 1926.1400	Cranes and Derricks in Construction
29 CFR 1910.146	Permit-Required Confined Spaces (PRCS) Standards

OSHA construction health and safety regulations are provided in 29 CFR Section 1926 are applicable, such as -

- General safety and health provisions (Subpart C);
- Occupational health and environmental controls (Subpart D);
- Personal protective and lifesaving equipment (Subpart E);
- Fire protection and prevention (Subpart F);
- Material handling, storage, use, and disposal (Subpart H);
- Tools – hand and power (Subpart I);
- Welding and cutting activities (Subpart J);
- Electrical work (Subpart K);
- Scaffolding (Subpart L);
- Fall protection (Subpart M);
- Cranes, derricks, hoists, elevators, and conveyors (Subpart N);
- Motor vehicles and mechanized equipment (Subpart O);
- Excavations (Subpart P);
- Demolition (Subpart T);
- Blasting and the use of explosives (Subpart U);
- Power transmission and distribution (Subpart V);
- Rollover protection structures and overhead protection (Subpart W);
- Stairways and ladders (Subpart X);
- Toxic and hazardous substances (Subpart Z);
- Confined spaces in construction (Subpart AA) and
- Cranes and derricks in construction

## 6. Demolition guideline

- The Demolition contractor will coordinate and acquire all necessary permits to perform this work. Once permits are obtained they should be posted on-site.
- The demolition contractor should have an authorized person to receive safety and permit related documents after duly appearing and successfully passing the authorization test to be conducted by the station / EWA representatives before carrying out demolition works.
- The station / EWA representative must be notified prior to commencement of any work.
- Prior to demolition the contractor should perform an engineering survey of the structure to determine structural hazards. The survey should be conducted by a registered Professional Engineer, who should be approved by the Council for Regulating the Practice of Engineering Professions (CRPEP) issued by the Kingdom of Bahrain or equivalent. The survey results to be provided to the station / EWA representative for Approval.
- Prior to demolition, the contractor should submit a checklist for performing an environmental survey of the structure and the same should be approved by the station / EWA representative. Results of environmental survey should also be provided to the station / EWA representative. This will include asbestos and lead based paint.
- Prior to demolition, the demolition contractor will disconnect all utility lines (including electrical, gas, water, telephone/communication lines and sewer) at property line and remove universal waste stream (i.e. light bulbs and ballast). Utility lines will be capped at the property line. Any overhead power lines will be de-energized or protected according to EWA safety procedures. The contractor shall arrange for power, water etc. required during demolition. EWA shall not in any way be responsible for these.
- Pre-demolition meeting including all concerned parties should be held onsite. A safe work program shall be established following the meeting.
- Access to the demolition site must be restricted to authorized personnel only and patrolled by a contracted security guard after hours. After hours and on weekends, access points to the site must be locked with a key and key log should be maintained.
- All demolition activities must be conducted with minimal disruption to the community. Dust will be controlled by wet demo methods. The Contractor is responsible of supplying whatever water needed to execute this project. Noise will be controlled by working within the allowed hours of operations.



- Structural demolition will be performed systematically from top of building to bottom. If a structure to be demolished has been damaged by fire or other causes, appropriate measures shall be taken to protect life and property prior to commencing the demolition work.
- A determination shall be made by a qualified person if any type of hazardous chemicals, gases, flammable materials, radioactive materials or devices containing radioactive materials or similarly dangerous substances have been used in the structure or any pipes, tanks or other equipment on the property. When the presence of any such substance is apparent or suspected, testing and purging shall be performed by qualified persons and other hazard eliminated prior to starting the demolition operation. Safety Data Sheet shall be consulted to identify the actions to be taken prior to demolition operation. Disposal of hazardous material shall be in accordance with applicable standards.
- The structure to be demolished shall be checked throughout for materials containing asbestos, with particular attention paid to fire protection and HVAC duct work. If asbestos is present, it shall be removed according to applicable safety & environmental standards and regulations. SCE personnel shall be notified if any asbestos is identified, and work shall be carried out with appropriate permit / clearance from SCE.
- The structure to be demolished shall also be checked for PCBs, lead based paints, mercury containing devices, biological hazards and other hazardous materials. If identified, these materials shall be removed according to applicable standards and regulations. SCE shall be notified prior to removal and work shall be carried out with appropriate permit / clearance from SCE.
- When a hazard exists from fragmentation of glass, all glazed openings shall be removed.
- The site will be cleaned and cleared before departing each day to the approval of the station / EWA representatives. If at any time materials cannot be hauled off site before departing for the day, materials will be neatly stored and secured.
- The demolition contractor should prepare a strategy to handle vehicle traffic inside the plant for handling the demolition activities. Traffic controls will be conducted during loading and unloading of equipment and haul trucks or at times when traffic will be impacted due to demolition activities. Wearing of High visible vest must be made mandatory for all employees and site visitors to work or access the jobsite.
- The fire and evacuation plan must coordinate activities in the event of fire with local emergency service (Civil Defense) and EWA System Control Center & ISSD Control Room (Insert Contact Numbers). The contractor shall make all necessary arrangements for fire

emergencies including provision of fire alarms etc. EWA shall not be responsible for responding to any emergencies on site.

- During demolition, inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, walls, other structures or loosened material. No worker shall be permitted to work where such hazards exist until they are corrected by shoring, bracing or other effective means as determined by qualified person. Access controls shall be established to prevent unauthorized entry into the work zone.
- Only those employees necessary for the performance of the operations shall be permitted in the work area when demolition operations are being performed. Workers shall be made aware of any debris that could fall from above as well as locations of all floor openings used for debris removal.
- All employees shall wear necessary personal protective equipment (PPE) for the protection of the head, eyes, ears, respiratory system, hands, feet and other parts of the body set forth in ANSI / ASTM F2412, ANSI / ISEA Z87.1, ANSI / ASSE Z88.2 and ANSI / ISEA Z89.1. Equipment shall be used in accordance with ASSE Z88.2 in operations that produce harmful respiratory hazards.
- In operation of cranes and derricks, a standard signal system shall be used in accordance with ANSI / ASME B30.2, ANSI / ASME B30.5a and ANSI / ASME B30.6. All personnel assigned to such operations shall be fully instructed in and knowledgeable of these signals and be required to use and observe them.
- All oxygen, flame cutting and related operations shall be in accordance with OSHA 1926 requirements / ANSI A10.6.
- Scaffolds, mechanical lifts and aerial platforms shall be provided for employees engaged in work that cannot be safely performed from the ground or other solid work areas, in accordance with ANSI / ASSE A10.8
- Cranes used to support work platforms shall be equipped with worm gears, automatic braking systems that can prevent the boom hoist and load lines from being placed in a freewheeling or neutral position. Further, work platforms will not be lifted by means of a jib-attachment and max load will not exceed the crane capacity in any boom configuration. The crane will be rigged to support 4 times the maximum work platform loading, and the load line will be equipped with a blocking device to prevent the hook block from being pulled into the boom head. Compliance to ANSI / ASSE A10.28 is a must in such cases.

- Contractor shall ensure that the use of equipment and storage of materials and debris on any floor shall not exceed the allowable floor loads.
- Fall protection including safety harnesses, lanyards, lifelines or nets shall be in accordance with applicable ANSI / ASSE / ASTM standards and regulations, whichever is stricter.
- Debris generated as a result of demolition activities shall be removed from work areas as promptly as practicable to reduce tripping and fall hazards for personnel in and adjacent to work area.
- Dust Control including but not limited to water misting shall be performed to control potentially harmful levels of dust in accordance with OSHA standards.
- Removal of Materials:
  - Catch Platforms and Scaffolding to hold debris shall be compliant to ANSI / ASSE A10.6. These shall be cleared at least daily or more frequently if required.
  - Any openings cut in a floor for removal of materials shall be no larger than 25% of the aggregate of the total floor area. Floors weakened or otherwise made unsafe by demolition operations shall be shored to carry the original design loads with the original factor of safety.
  - Openings in the demolition floor shall be protected by planking, barricades or guard rails conforming to ANSI / ASSE A10.18.
- Removal of Chimneys: Should it be necessary to demolish a stack or chimney manually, safe access to the top shall be provided to prevent the workers from falling during the climb to and from and while working on top of the chimney or stack. A scaffold that conforms to ANSI / ASSE A 10.8 shall be provided. Use of safety harnesses, lifelines or safety nets shall be mandatory in case erection of scaffold is not possible.
- Appropriate danger signs of effective design, ample size and illuminated when necessary shall be conspicuously posted around the perimeter of the affected area in accordance with ANSI Z535.1.
- During hours of darkness, appropriate warning lights shall be securely placed on or about all barricades as needed.
- Proper perimeter protection shall be provided. A security guard and appropriate alarm service should be provided when work is not in progress to prevent and control fires and prevent unauthorized persons from entering the area.

- The contractor shall follow applicable EWA Standard Operating Procedures (SOP) and applicable Station Standing Order (SSO).
- A decontamination plan should be developed by contractor as part of Safe Work Method Statement (SWMS) as already mentioned previously in the code of practice and set up before any personnel or equipment may enter areas where the potential for exposure to hazardous substances exists. The decontamination plan should contain the following:
  - Determine the number and layout of decontamination equipments.
  - Determine the decontamination equipment needed.
  - Determine appropriate decontamination methods.
- Contractor should ensure that all the residues extracted for disposal should be stored safely in suitable containers environmental safely.
- Contractor should ensure that all the hazardous wastes must be disposed at a Supreme Council for Environment (SCE) approved site.
- The contractor should submit official document for disposing the hazardous waste and the equipment is decontaminated.

## 7. HSE Requirements

### A. DEFINITIONS:

Competent Person: one who can identify existing and predictable hazards in the working environment or working conditions that are dangerous to personnel and who has authorization to take prompt corrective measures to eliminate them.

Competent Person, Confined Space: A person with thorough knowledge of OSHA's Confined Space Standard, 29 CFR 1910.146, designated in writing by the employer to be responsible for the immediate supervision, implementation and monitoring of the confined space program, who through training, knowledge and experience in confined space entry is capable of identifying, evaluating and addressing existing and potential confined space hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

**Competent Person, Cranes and Rigging:** A person meeting the competent person requirements as defined in 29 CFR Part 1926 who has been designated in writing by the employer to be responsible for the immediate supervision, implementation and monitoring of the Crane and Rigging Program, who through training, knowledge and experience in crane and rigging is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

**Competent Person, Excavation/Trenching:** A person meeting the competent person requirements as defined in 29 CFR Part 1926 who has been designated in writing by the employer to be responsible for the immediate supervision, implementation and monitoring of the excavation/trenching program, who through training, knowledge and experience in excavation/trenching is capable of identifying, evaluating and addressing existing and potential hazards and, who has the authority to take prompt corrective measures with regard to such hazards

**Competent Person, Fall Protection:** A person designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the fall protection program, who through training, knowledge and experience in fall protection and rescue systems and equipment, is capable of identifying, evaluating and addressing existing and potential fall hazards and, who has the authority to take prompt corrective measures with regard to such hazards.

**Competent Person, Scaffolding:** a person, designated in writing by the employer to be responsible for immediate supervising, implementing and monitoring of the scaffolding program. The CP for Scaffolding has enough training, knowledge AND experience in scaffolding to correctly identify, evaluate and address existing and potential hazards and also has the authority to take prompt corrective measures regarding these hazards.

CP qualifications must be documented and shall include training - a minimum of 8-hours of scaffold training, to include training on the specific type of scaffold being used (e.g., mast climbing, adjustable, tubular frame, etc.) and experience on specific scaffolding systems/types, assessment of the base material the scaffold will be erected upon, load calculations for materials and personnel, erection and dismantling.

**Competent Person Trainer:** An individual who by training, knowledge and experience is capable of conducting competent person training.

**Competent Rescuer:** An individual designated by the employer who by training, knowledge, and experience is capable of the implementation, supervision, and monitoring of the employer's fall protection rescue program.

**Competent Rescuer Trainer:** An individual who by training, knowledge and experience specific to fall protection rescue is capable of conducting rescue training.

**High Risk Activities:** High Risk Activities are activities that involve work at heights, crane and rigging, excavations and trenching, scaffolding, electrical work, and confined space entry.

**High Visibility Accident:** A High Visibility Accident is any mishap which may generate publicity or high visibility.

**Load Handling Equipment (LHE):** LHE is a term used to describe cranes, hoists and all other hoisting equipment (hoisting equipment means equipment, including crane, derricks, hoists and power operated equipment used with rigging to raise, lower or horizontally move a load).

**Medical Treatment:** Medical Treatment is treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even when provided by physician or registered personnel.

**Near Miss:** A Near Miss is a mishap resulting in no personal injury and zero property damage, but given a shift in time or position, damage or injury may have occurred (e.g., a worker falls off a scaffold and is not injured; a crane swings around to move the load and narrowly misses a parked vehicle).

**Operating Envelope:** The Operating Envelope is the area surrounding any crane or load handling equipment. Inside this "envelope" is the crane, the operator, riggers and crane walkers, other personnel involved in the operation, rigging gear between the hook, the load, the crane's supporting structure (i.e. ground or rail), the load's rigging path, the lift and rigging procedure.

**Qualified Person (QP):** The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

**Qualified Person, Fall Protection (QP for FP):** A QP for FP is a person meeting the definition requirements of ASSP Z359.2 standard, having a recognized degree or professional certificate and with extensive knowledge, training and experience in the fall protection and rescue field who is capable of designing, analyzing, and evaluating and specifying fall protection and rescue systems.

**Recordable Injuries or Illnesses:** Recordable Injuries or Illnesses are any work-related injury or illness that results in:

- a. Death, regardless of the time between the injury and death, or the length of the illness;
- b. Days away from work (any time lost after day of injury/illness onset);
- c. Restricted work;
- d. Transfer to another job;
- e. Medical treatment beyond first aid;
- f. Loss of consciousness; or
- g. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (a) through (f) above

**Load Handling Equipment (LHE) Accident or Load Handling Equipment Mishap:** A LHE accident occurs when any one or more of the eight elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; overload; or collision, including unplanned contact between the load, crane, or other objects. A dropped load, overload and collision are considered accidents, even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, or roll over).

## **B. SUBMITTALS:**

### **Pre-Demolition Submittals**

- Demolition Plan
- Accident Prevention Plan (APP)

### **Test Reports**

- Monthly Exposure Reports
- Notifications and Reports
- Accident Reports;
- LHE Inspection Reports

### **Certificates**

- Contractor Safety Self-Evaluation Checklist
- Crane Operators/Riggers
- Standard Lift Plan;
- Critical Lift Plan;

### **Activity Hazard Analysis (AHA)**

#### **Permits**

- Confined Space Entry Permit
- Hot Work Permit
- Excavation Permit

#### **Certificate of Compliance**

- Third Party Certification of Mobile Cranes

#### **License Certificates**

- Machinery & Mechanized Equipment Certification & Licenses

### **MONTHLY EXPOSURE REPORTS**

Provide a Monthly Exposure Report with a compilation of employee hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the voucher.

### **CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST**

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-demolition meeting. Complete the checklist monthly and submit to the Contracting Officer.

An acceptable score of 90 out 100 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90 out 100 may result in penalties.

### **REGULATORY REQUIREMENTS - LEGAL REGISTER**

In addition to the detailed requirements included in the provisions of this document, comply with the most recent edition of EWA SOPs, SSOs, and the local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the Contracting Officer for resolution before starting work. Where the requirements of this document, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern. Contractor shall maintain a legal register identifying all legal requirements and shall demonstrate compliance with all applicable regulatory requirements.



## **Subcontractor Safety Requirements**

For this Contract, neither Contractor nor any subcontractor may enter into Contract with any subcontractor that fails to meet the following requirements. The subcontractor shall meet all the requirements applicable to the prime contractor.

1. Total Recordable Injury Rate (TRIR) in line with industry standards.
2. OSHA Days Away from Work, Restricted Duty, or Job Transfer (DART) Rate: Subcontractors on this Contract must have a DART rate, calculated from the most recent, complete calendar year, less than or equal to 3.4 when entering into a subcontract agreement with the Prime Contractor or a subcontractor at any tier. The OSHA Dart Rate is calculated using the following formula:

$$(N/EH) \times 200,000$$

where:

N = number of injuries and illnesses with days away, restricted work, or job transfer

EH = total hours worked by all employees during most recent, complete calendar year

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year)

The Prime Contractor may submit a written request for additional consideration to the Contracting Officer where the specified acceptable OSHA Dart rate range cannot be achieved for a particular subcontractor.

Relaxation of the OSHA DART rate range will only be considered for approval on a case-by-case basis for special conditions and must not be anticipated as tacit approval. Contractor's Site Safety and Health Officer (SSHO) must collect and maintain self-certified OSHA DART rates for all subcontractors on the project and make them available to the EWA on request.

In case TRIR / DART rates are not available local equivalent metrics can be provided upon approval by Contracting Officer.

## **C. SITE QUALIFICATIONS, DUTIES, AND MEETINGS**

### **Personnel Qualifications**

**Site Safety and Health Officer (SSHO):** Provide an SSHO that meets the requirements of 29 CFR 1926 or NEBOSH / OSHA certified. Provide a Safety oversight team that includes a minimum of two persons at the project site to function as the Site Safety and Health Officer (SSHO). The SSHO or an equally qualified Alternate SSHO must be at the work site at all times to implement and administer the Contractor's safety program and EWA-accepted Accident Prevention Plan. The

SSHO and Alternate SSHO must have the required training, experience, and qualifications (NEBOSH / OSHA certification). The SSHO shall have at least 5 years of experience in the construction / demolition industry.

If the SSHO is off-site for a period longer than 24 hours, an equally-qualified alternate SSHO must be provided and must fulfill the same roles and responsibilities as the primary SSHO.

Adequate number of Competent Persons shall be available as defined in this document for applicable high-risk activities.

#### Additional Site Safety and Health Officer (SSHO) Requirements and Duties

The SSHO must have completed a 30-hour OSHA course based on the content required by OSHA and instructed in accordance with the guidelines of ASSP Z490.1, by a trainer meeting the qualifications of paragraph QUALIFIED TRAINER REQUIREMENTS. If the SSHO does not have a current certification, certification must be obtained within 10 working days, maximum, of Contract award.

#### **Competent Person Qualifications**

Provide Competent Persons in accordance with OSHA 29CFR 1926 and herein. Competent Persons for high risk activities include confined space, cranes and rigging, excavation/trenching, fall protection, welding / cutting, hot work and electrical work. The CP for these activities must be designated in writing, and meet the requirements for the specific activity (i.e. Competent person, fall protection etc.).

The Competent Person identified in the Contractor's Safety and Health Program and accepted Accident Prevention Plan, must be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed. Provide the credentials of the Competent Persons(s) to the Contracting Officer for information in consultation with the Safety Office.

#### **Competent Person for Confined Space Entry**

Provide a Confined Space (CP) Competent Person who meets the requirements of 29 CFR 1926, and herein. The CP for Confined Space Entry must supervise the entry into each confined space.

Since this work may involve operations that handle combustible or hazardous materials, this person must have the ability to understand and follow through on the air sampling, Personal Protective Equipment (PPE), and instructions of authorized persons, or Certified Industrial Hygienist (3<sup>rd</sup> party can be acceptable). Confined space and enclosed space work must comply with NFPA 306, OSHA 29 CFR 1910.146 for general industry.

### **Competent Person for Scaffolding**

Provide a Competent Person for Scaffolding who meets the requirements of OSHA 29 CFR 1926 and herein.

### **Competent Person for Fall Protection**

Provide a Competent Person for Fall Protection who meets the requirements of OSHA 29 CFR 1296 and herein.

### **Qualified Trainer Requirements**

Individuals qualified to instruct the safety awareness course, or portions thereof, must meet the definition of a Competent Person Trainer, and, at a minimum, possess a working knowledge of the following subject areas: Electrical Standards, Lockout/Tagout, Fall Protection, Confined Space Entry for Construction; Welding / Cutting, Excavation, Trenching and Soil Mechanics, and Scaffolds in accordance with 29 CFR 1926.450, Subpart L.

Instructors are required to:

- a. Prepare class presentations that cover demolition / construction-related safety requirements and includes topics covered in the above paragraph.
- b. Ensure that all attendees attend all sessions by using a class roster signed daily by each attendee. Maintain copies of the roster for at least five years. This is a certification class and must be attended 100 percent. In cases of emergency where an attendee cannot make it to a session, the attendee can make it up in another class session for the same subject.
- c. Update training course materials whenever an update of the standards becomes available.
- d. Provide a written exam of at least 50 questions. Students are required to answer 80 percent correctly to pass.
- e. Request, review and incorporate student feedback into a continuous course improvement program.

### **PERSONNEL DUTIES**

#### **Duties of the Site Safety and Health Officer (SSHO)**

The SSHO must:

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily report.
- b. Conduct mishap investigations and complete required accident reports. Report mishaps and near misses.

- c. Use and maintain a log of work-related injuries and illnesses occurring on the project site for Prime Contractors and subcontractors, and make available to the Contracting Officer upon request.
- d. Maintain applicable safety reference material on the job site.
- e. Attend the pre-demolition meeting conference, pre-work meetings including preparatory meetings, and periodic in-progress meetings.
- f. Review the APP and AHAs, and approve, sign, implement and enforce them.
- g. Establish a Safety and Occupational Health (SOH) Deficiency Tracking System that lists and monitors outstanding deficiencies until resolution.
- h. Ensure subcontractor compliance with safety and health requirements.
- i. Maintain a list of hazardous chemicals on site and their material Safety Data Sheets (SDS).
- j. Maintain a weekly list of high hazard activities involving energy, equipment, excavation, entry into confined space, and elevation, and be prepared to discuss details during Meetings.
- k. Provide and keep a record of site safety orientation and indoctrination for Contractor employees, subcontractor employees, and site visitors.
- l. Superintendent and SSHO are subject to dismissal if the above or any other required duties are not being effectively carried out. If either the Superintendent, or SSHO are dismissed, the work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out.

## **MEETINGS**

### a. Pre-construction/Demolition Meeting conference

- Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the pre-demolition meeting conference. This includes the project superintendent, Site Safety and Occupational Health Officer, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).
- Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and EWA review of AHAs to preclude project delays.
- Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

### b. Safety Meetings

- Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA, establish safe working procedures for

anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, foremen must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting.

- Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

#### **D. ACCIDENT PREVENTION PLAN (APP)**

A qualified person must prepare the written site-specific APP. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and health program referenced in the APP in the applicable APP element and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. EWA considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one job from interfering with or creating hazardous working conditions for other jobs, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed by an officer of the firm (Prime Contractor senior person), the individual preparing the APP, the on-site superintendent, the designated SSHO, the Contractor Manager, and any designated Certified Safety Professional (CSP) or Certified Health Physicist (CIH) or equivalent. The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the pre-demolition meeting conference for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Project Manager. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e. imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary

action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSP A10.34), and the environment.

### **Names and Qualifications**

Provide plans in accordance with the following requirements:

- a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.
- b. Qualifications of competent and of qualified persons. As a minimum, designate and submit qualifications of competent persons for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance.

### **PLANS**

Provide plans in the APP in accordance with the following requirements:

#### **Site Demolition / Deconstruction / Dismantling Plan & Demolition Environmental Management Plan**

These plans shall be in accordance to all relevant standards listed in this document. DEMP shall be submitted to SCE and their approvals / permits are required prior to start of work. Contractor shall approach SCE regarding any permits / reports required by SCE at least 30 days prior to start of work.

#### **Confined Space Entry Plan**

Develop a confined or enclosed space entry plan in accordance with applicable OSHA standards 29 CFR 1910, and 29 CFR 1926, OSHA Directive CPL 2.100, and any other local regulatory requirements (Also refer to EWA SOPs & SPWS SSOs). Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by Contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

#### **Standard Lift Plan (SLP)**

Plan lifts to avoid situations where the operator cannot maintain safe control of the lift. Prepare a written SLP for every lift or series of lifts (if routine lifts are being performed). The SLP must be developed, reviewed and accepted by all personnel involved in the lift in conjunction with the associated AHA. Signature on the AHA constitutes acceptance of the plan.

Maintain the SLP on the LHE for the current lift(s) being made. Maintain historical SLPs for a minimum of three months.

### **Critical Lift Plan** - Crane or Load Handling Equipment

Provide a Critical Lift Plans are required for the following:

- a. When working around energized power lines where the work will get closer than the minimum clearance distance.
- b. For lifts with anticipated binding conditions.
- c. When erecting cranes.

### **Critical Lift Plan Planning and Schedule**

Critical lifts require detailed planning and additional or unusual safety precautions. Develop and submit a critical lift plan to the Contracting Officer 30 calendar days prior to critical lift. Comply with load testing requirements.

### **Lifts of Personnel**

For lifts of personnel, demonstrate compliance with the requirements of 29 CFR 1926.1400.

### **Fall Protection and Prevention (FP&P) Plan**

The plan must be in accordance with the requirements of ASSP Z359.2, be site specific, and address all fall hazards in the work place and during different phases of demolition. Address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m 6 feet. A competent person or qualified person for fall protection must prepare and sign the plan documentation. Include fall protection and prevention systems, equipment and methods employed for every phase of work, roles and responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Review and revise, as necessary, the Fall Protection and Prevention Plan documentation as conditions change, but at a minimum every six months, for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. Keep and maintain the accepted Fall Protection and Prevention Plan documentation at the job site for the duration of the project. Include the Fall Protection and Prevention Plan documentation in the Accident Prevention Plan (APP).

### **Rescue and Evacuation Plan**

Provide a Rescue and Evacuation Plan in accordance with ASSP Z359.2, and include in the FP&P Plan and as part of the APP. Include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the

rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility.

#### **Hazardous Energy Control Program (HECP)**

Develop a HECP in accordance 29 CFR 1910.147, 29 CFR 1910.333, 29 CFR 1915.89, ASSP Z244.1, and ASSP A10.44. Submit this HECP as part of the Accident Prevention Plan (APP). Conduct a preparatory meeting and inspection with all effected personnel to coordinate all HECP activities. Document this meeting and inspection. Ensure that each employee is familiar with and complies with these procedures.

#### **Lead, Cadmium, and Chromium Compliance Plan**

Identify the safety and health aspects of work involving lead, cadmium and chromium, and prepare in accordance with SCE Requirements for LEAD REMEDIATION.

#### **Asbestos Hazard Abatement Plan**

Identify the safety and health aspects of asbestos work, and prepare in accordance with SCE requirements for ASBESTOS REMEDIATION.

#### **Polychlorinated Biphenyls (PCB) Plan**

Identify the safety and health aspects of Polychlorinated Biphenyls work, and prepare in accordance with SCE / OSHA / EPA requirements REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs) and REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS.

#### **Demolition Injury and Illness Prevention Plan (IIPP)**

The demolition contractor will provide a Demolition IIPP. The Demolition IIPP will meet OSHA Injury and Illness Prevention Program requirements.

#### **Demolition Personal Protective Equipment (PPE) Program**

The demolition contractor will perform demolition related activities in accordance with its PPE Program. The Demolition PPE Program will meet OSHA PPE Program requirements.

#### **Demolition Exposure Monitoring Program (EMP)**

The demolition contractor's Safety and Health Plan will address regulated exposures that maybe encountered during demolition and site clean-up. If an Environmental Impact Assessment is required by SCE, the contractor would be expected to use an SCE approved consultant in order to do the assessment.

#### **Demolition Heat Stress Protection Program (HSPP)**

The demolition contractors heat stress protection program to be used during demolition shall be provided.



### **Demolition Emergency Action Program (EAP)**

The demolition contractor will provide an EAP. The Demolition EAP will include regulatory requirements such as emergency procedures for the protection of personnel, equipment, the environment, and materials during demolition, an update of the fire and emergency reporting procedures, and response actions for accidents involving personnel and/or property.

### **Environmental Site Assessment**

ESA Phase I & II (if required by SCE) shall be carried out by SCE approved consultant.

### **Asbestos & Lead Site Survey:**

Asbestos and Lead Site Survey in line with ASTM / ANSI requirements shall be carried out by SCE approved consultants.

## **E. ACTIVITY HAZARD ANALYSIS (AHA)**

Before beginning each activity, task or work involving a type of work presenting hazards, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA.

AHAs must be developed by the Prime Contractor, Subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, Manager and the subcontractor Foreman performing the work.

Submit the AHA for review at least 10 working days prior to the start of each activity task, or work. EWA reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

### **AHA Management**

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

### **AHA Signature Log**

Each employee performing work as part of an activity, task or work must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that

activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

**Preliminary Hazard Analysis**

Workers may be exposed to hazards during dismantling and demolition of the Plant. Implementation of appropriate engineering and administrative controls and use of personal protective equipment can minimize impacts to workers. Existing health and safety programs designed to mitigate hazards and comply with applicable laws & regulations pertaining to the Project Scope shall be covered by an approved Demolition Safety and Health Program provided by the demolition contractor. This Program will be implemented to protect worker health and safety during decommissioning and demolition, including demolition and site cleaning activities.

A hazard analysis of the expected activities during demolition and site clean-up is summarized in Table below. This table lists work activities and associated hazards and shows programs designed to reduce the occurrence of each exposure, work place, or occupational hazard. In order to ensure that the types of work activities, associated hazards and hazard control approaches are appropriate for demolition and site clean-up activities, the demolition contractor will update the analyses of hazards and the specifics of control strategies as the demolition and site clean-up proceeds.

**Demolition Hazard Analysis:**

<b>ACTIVITY</b>	<b>HAZARD</b>	<b>CONTROL/MITIGATION</b>
Construction Vehicles	Collisions resulting in injury and/or equipment damage.	Demolition contractor will implement a Heavy Equipment Safety Program.
Industrial Trucks	Similar to motor vehicle and heavy equipment use.	Demolition contractor will implement a Forklift Operator Training Program.
Elevated Heights	Injury due to falls from elevated heights or struck by falling objects.	Demolition contractor will implement a Fall Protection Program and Scaffolding Safety Program.
Trenching and Excavation	Injury and/or property damage from unsafe trenches and excavations.	Demolition contractor will implement a Trenching and Excavation Safety Program and Confined Space Permit Program.

Use of Cranes or Derricks	Equipment and property damage from falling loads and injuries to workers.	Demolition contractor will implement Crane Permits per OSHA requirements and Hoisting and Rigging Safety Program.
Plant Systems and General Decommissioning Activities	Injury and property damage from contact with hazardous energy sources (e.g., heat sources, electrical, tools, and mechanical equipment)	Demolition contractor will implement procedures to control energy sources (e.g., Lockout/Tag out Program and Hot Work Permits)
Flammable and Combustible Liquids	Danger of fire or explosion resulting in damage to property and injury to workers.	Demolition contractor will implement a Hazardous Materials Handling Program; Fire Prevention Program; and Proper Housekeeping Program.
Hot Work	Injury and/or property damage due to a fire. Employee exposure to toxic fumes and eye injury due to exposure to ultraviolet and infrared radiation during cutting and welding.	Demolition contractor will implement a Respiratory Protection Program, Hot Work Program, Exposure Monitoring Program, and Proper Housekeeping Program.
Electrical Equipment and Systems	Injury and equipment damage from flashovers or contact with electrical sources.	Demolition contractor will implement an Electrical Safety Program, Personal Protective Equipment Program, and Hazardous Energy Control Program.
Hand Tools	Injury from hand and portable power tools.	Demolition contractor will implement a Hand and Portable Power Tool Safety Program, Personal Protective Equipment Program, and Tool Inspection Program.
Confined Spaces	Injury from working in spaces with poor ventilation or oxygen depleted atmosphere.	Demolition contractor will implement a Confined Space Entry Program.

Ingress and Egress	Injury and/or property damage from inadequate walking and working surfaces.	Demolition contractor will implement a Proper Housekeeping Program.
Hearing Conservation	Injury from overexposure or inadequate hearing protection.	Demolition contractor will implement a Hearing Conservation Program and a Personal Protective Equipment Program.
Lifting	Injury from improper carrying or lifting of materials and equipment.	Demolition contractor will implement a Safe Lifting Program and Personal Protective Equipment Program.
Industrial Hygiene	Injury due to exposure or overexposure to hazardous gases, vapors, dusts, and fumes.	Demolition contractor will implement a Hazard Communication Program, Respiratory Protection Program, Personal Protective Equipment Program, and Exposure Monitoring Program.
High Pressure Systems	Injury and/or property damage from sudden or unexpected release of high pressure steam or air.	Demolition contractor will implement a Relief Valve Testing Plan and Lockout/Tag out Program.

**F. DISPLAY OF SAFETY INFORMATION**

**Safety Bulletin Board**

Prior to commencement of work, erect a safety bulletin board at the job site. Where size, duration, or logistics of project do not facilitate a bulletin board, an alternative method, acceptable to the Contracting Officer, that is accessible and includes all mandatory information for employee and visitor review, may be deemed as meeting the requirement for a bulletin board. The Contractor shall erect and maintain a bulletin board in a commonly accessed area in clear view of the on-site workers. The bulletin board shall be continually maintained and updated and placed in a location that is protected against the elements and unauthorized removal. It shall contain, at minimum, the following information:

- a. A map denoting the route to the nearest emergency care facility;
- b. Emergency phone numbers;

- c. A copy of the most current Accident Prevention Plan (APP) mounted on/adjacent to the bulletin board, or a notice on the bulletin board stating the location of the Plan. The location of the Plan shall be accessible on the site by all workers;
- d. The Summary of Work Related Injuries and Illnesses, posted in accordance with OSHA requirements. It shall be mounted on/adjacent to the bulletin board, accessible on the site by all workers;
- e. A copy of the deficiency tracking log mounted on/adjacent to the bulletin board or a notice on the bulletin board shall state the location where it may be accessed by all workers upon request;
- f. SOH promotional posters;
- g. Date of last lost workday injury and date of last OSHA recordable injury;
- h. OSHA Safety and Health Poster;
- i. A copy of the hazardous material inventory, identification of use, approximate quantities and site map detailing location of storage & use.

Additional items required to be posted include:

- a. Confined space entry permit/certificate.
- b. Hot work permit/certificate.
- c. Excavation Permits
- d. Any other permits issued by EWA or any regulatory authority pertaining to the project.

### **G. Safety and Occupational Health (SOH) Deficiency Tracking System**

Establish a SOH deficiency tracking system that lists and monitors the status of SOH deficiencies in chronological order. Use the tracking system to evaluate the effectiveness of the APP. A monthly evaluation of the data must be discussed in the SOH meeting with everyone on the project. The list must be posted on the project bulletin board and updated daily, and provide the following information:

- a. Date deficiency identified;
- b. Description of deficiency;
- c. Name of person responsible for correcting deficiency;
- d. Projected resolution date;
- e. Date actually resolved.

## **H. SITE SAFETY REFERENCE MATERIALS**

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

## **I. EMERGENCY MEDICAL TREATMENT**

Contractors must arrange for their own emergency medical treatment in accordance with OSHA requirements and local legal requirements. EWA has no responsibility to provide emergency medical treatment.

## **J. NOTIFICATIONS & REPORTS**

### **Incident Notification**

Notify the Contracting Officer as soon as practical, but no more than twenty-four hours, after any mishaps, including recordable accidents, incidents, and near misses, as defined in OSHA and in this document, any report of injury, illness, or any property damage. For LHE or rigging incidents, notify the Contracting Officer as soon as practical but not more than four hours after mishap.

The Contractor is responsible for obtaining appropriate medical and emergency assistance and for notifying fire, law enforcement, and regulatory agencies. Immediate reporting is required for electrical incidents, to include Arc Flash; shock; uncontrolled release of hazardous energy (includes electrical and non-electrical); load handling equipment or rigging; fall from height (any level other than same surface); and underwater diving. These mishaps must be investigated in depth to identify all causes and to recommend hazard control measures. Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the EWA investigation team arrives on-site and the investigation is conducted. Assist and cooperate fully with the EWA's investigation(s) of any incident. The contractor shall submit an incident report within 5 days of the incident.

### **Accident Reports**

- a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses, to establish the root cause(s) of the accident. Accidents must include a written report submitted using the following outline: (1) Mishap summary description to include process, findings and outcomes; (2) Root Cause; (3) Direct Factors; (4) Indirect and Contributing Factors; (5) Corrective Actions; and (6) Recommendations. Complete the applicable Provide the report to the Contracting Officer within 5 calendar days of the accident. The Contracting Officer will provide copies of any required or special forms.

- b. Near Misses: All near misses shall be reported within 24 hrs. The Contracting Officer will provide the Contractor the required forms. Near miss reports are considered positive and proactive Contractor safety management actions.
- c. Conduct an accident investigation for any load handling equipment accident (including rigging accidents) to establish the root cause(s) of the accident. Complete a LHE Accident Report and provide the report to the Contracting Officer within 30 calendar days of the accident. Do not proceed with crane operations until cause is determined and corrective actions have been implemented to the satisfaction of the Contracting Officer.

**LHE Inspection Reports**

Submit LHE inspection reports required in accordance with manufacturer requirements and as specified in Daily Reports of Inspections.

Certificate of Compliance and Pre-Lift Plan/Checklist for LHE and Rigging

Provide a Certificate of Compliance for LHE entering an activity under this Contract. Post certifications on the crane.

Develop a Standard Lift Plan (SLP) for each lift planned. Submit SLP to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

Third Party Certification of All Cranes

**Training Requirements**

<b>TRAINING REQUIREMENT</b>	<b>TARGET EMPLOYEES</b>
Demolition Injury and Illness Prevention Training	All
Demolition Emergency Action Plan Training	All
Demolition PPE Program Training	All
Heavy Equipment Safety Training	Employees working on, near, or with heavy equipment.
Forklift Operation Training	Employees working with forklifts.
Excavation and Trenching Safety Training	Employees involved with trenching or excavation operations.
Fall Protection Training	All

### Training Requirements

Scaffolding and Ladder Safety Training	Employees required to erect or to use scaffolding and employees using ladders.
Hoist and Rigging Program	Employees and supervisors responsible for conducting hoists and rigging operations.
Crane Safety Training	Employees supervising, crane operators, and employees involved in crane operations.
Demolition Fire Protection and Prevention Training	All
Confined Space Entry Program	All
Hazard Communication Training	All
Electrical Safety Training	Employees performing work with electrical systems, equipment, or electrical extension cords. Additionally, employees working with lock out/ tag out activities.
Hand and Portable Power Tool Safety Training	All
Heat Stress Safety Training	All
Hearing Conservation Training	All
Back Injury Prevention Training	All
Safe Driving Training	All
Pressure Vessel and Pipeline Safety Training	Employees supervising or working on pressurized vessels, pipes, or equipment.
Respiratory Protection Training	All employees required to wear respiratory protection equipment.
Hot Work Training	All employees working with welding, heating, or other equipment that generates ignition sources.



## **8. EXECUTION**

### **A. DEMOLITION AND OTHER WORK**

Comply with NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, OSHA regulations, and other related submittals and local fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

- a. Hard Hat
- b. Long Pants
- c. Appropriate Safety Shoes
- d. Appropriate Class Reflective Vests

#### **Worksite Communication**

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. Develop an employee check-in/check-out communication procedure to ensure employee safety.

#### **Hazardous Material Use**

Each hazardous material must receive approval from the Contracting Office or their designated representative prior to being brought onto the job site or prior to any other use in connection with this Contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Relevant chemical permits from SCE is required for use on this project.

#### **Hazardous Material Exclusions**

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval.

### **Unforeseen Hazardous Material**

Materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e. 29 CFR Part 1910.1000) could be present on site and the contractor is required to conduct a survey prior to start of the demolition phase to identify these materials. If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Contracting Officer immediately. If material is not hazardous or poses no danger, the EWA will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Contractor will have to modify their work method statements and AHAs and coordinate with relevant authorities (e.g. SCE, MoL etc.) and take all necessary precautions prior to restarting the work.

### **B. CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)**

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with 29 CFR 1910.333, 29 CFR 1915.89, ASSP A10.44, NFPA 70E.

#### **Safety Preparatory Inspection Coordination Meeting with the EWA**

For electrical equipment that is to be operated by EWA, the Prime Contractor and the subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative.

The meeting will occur immediately preceding the start of work. The safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

#### **Lockout/Tagout Isolation**

Where EWA performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and EWA must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EWA SOP / SSO. Install protective grounds as necessary, with tags in accordance with EWA SOP.

#### **Lockout/Tagout Removal**

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP. In accordance with EWA SOP, each lock and tag must be removed from each energy isolating device by the authorized individual who applied the device. Provide formal notification to EWA, confirming that steps of de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. EWA locks and tags used to support the Contractor's work will not be removed until the authorized EWA employee receives the formal notification.

## **C. FALL PROTECTION PROGRAM**

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with ASSP Z359.2.

### **Training**

Institute a fall protection training program. As part of the Fall Protection Program, provide training for each employee who might be exposed to fall hazards and using personal fall protection equipment. Provide training by a competent person for fall protection. Document training and practical application of the competent person in accordance with ASSP Z359.2 in the AHA

### **Fall Protection Equipment and Systems**

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from all fall hazards.

Provide personal fall protection equipment, systems, subsystems, and components that comply with 29 CFR 1926.500 Subpart M, ASSP Z359.0, ASSP Z359.1, ASSP Z359.2, ASSP Z359.3, ASSP Z359.4, ASSP Z359.6, ASSP Z359.7, ASSP Z359.11, ASSP Z359.12, ASSP Z359.13, ASSP Z359.14, ASSP Z359.15, ASSP Z359.16 and ASSP Z359.18.

### **Additional Personal Fall Protection Measures**

Personal fall protection systems and equipment are required when working from an articulating or extendible boom, or suspended platform. In addition, personal fall protection systems are required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

### **Personal Fall Protection Equipment**

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 1633 kg / 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 1.8 m / 6 feet, unless the proper energy absorbing lanyard is used.

Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance.

### **Horizontal Lifelines (HLL)**

Commercially manufactured horizontal lifelines (HLL) must be designed, installed, certified and used, under the supervision of a qualified person, for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500). The competent person for fall protection may (if deemed appropriate by the qualified person) supervise the assembly, disassembly, use and inspection of the HLL system under the direction of the qualified person. Locally manufactured HLLs are not acceptable unless they are custom designed for limited or site specific applications by a Registered Professional Engineer who is qualified in designing HLL systems.

### **Guardrails and Safety Nets**

Design, install and use guardrails and safety nets in accordance with 29 CFR 1926 Subpart M.

### **Rescue and Evacuation Plan and Procedures**

When personal fall arrest systems are used, ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue or assisted-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP). The plan must be in accordance with the requirements of ASSP Z359.2, and ASSP Z359.4.

## **D. WORK PLATFORMS**

### **Scaffolding**

Provide employees with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Comply with the following requirements:

- a. Scaffold platforms greater than 6 m / 20 feet in height must be accessed by use of a scaffold stair system.
- b. Ladders commonly provided by scaffold system manufacturers are prohibited for accessing scaffold platforms greater than 6 m / 20 feet maximum in height.
- c. An adequate gate is required.
- d. Employees performing scaffold erection and dismantling must be qualified.
- e. Scaffold must be capable of supporting at least four times the maximum intended load, and provide appropriate fall protection as delineated in the accepted fall protection and prevention plan.

- f. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.
- g. Special care must be given to ensure scaffold systems are not overloaded.
- h. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited. The first tie-in must be at the height equal to 4 times the width of the smallest dimension of the scaffold base.
- i. Scaffolding other than suspended types must bear on base plates upon wood / metal mud-sills (51 mm x 254 mm x 203 mm / 2 in x 10 in x 8 in minimum) or other adequate firm foundation.
- j. Scaffold or work platform erectors must have fall protection during the erection and dismantling of scaffolding or work platforms that are more than 1.83 meters / 6 feet.
- k. Delineate fall protection requirements when working above 1.83 meters / 6 feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

#### **Elevated Aerial Work Platforms (AWPs)**

Workers must be anchored to the basket or bucket in accordance with manufacturer's specifications and instructions (anchoring to the boom may only be used when allowed by the manufacturer and permitted by the CP). Lanyards used must be sufficiently short to prohibit worker from climbing out of basket. The climbing on rails is prohibited. Lanyards with built-in shock absorbers are acceptable. Self-retracting devices are not acceptable. Tying off to an adjacent pole or structure is not permitted unless a safe device for 100 percent tie-off is used for the transfer.

Use of AWP's must be operated, inspected, and maintained as specified in the operating manual for the equipment and delineated in the AHA. Operators of AWP's must be designated as qualified operators by the Prime Contractor. Maintain proof of qualifications on site for review and include in the AHA.

### **E. EQUIPMENT**

#### **Material Handling Equipment (MHE)**

- a. Material handling equipment such as forklifts must not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions. Material handling equipment fitted with personnel work platform attachments are prohibited from traveling or positioning while personnel are working on the platform.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions. Material Handling Equipment Operators must be trained in accordance with OSHA 29 CFR 1910, Subpart N.
- c. Operators of forklifts or power industrial trucks must be licensed in accordance with OSHA / MoL requirements.

### **Load Handling Equipment (LHE)**

The following requirements apply. In exception, these requirements do not apply to commercial truck mounted and articulating boom cranes used solely to deliver material and supplies where the lift consists of moving materials and supplies from a truck or trailer to the ground. However, LHE accidents occurring during such operations must be reported.

- a. Equip cranes and derricks as specified in relevant ASME / ANSI standards.
- b. Notify the Contracting Officer 15 working days in advance of any LHE entering the activity, so that necessary quality assurance spot checks can be coordinated. Contractor's operator must remain with the crane during the spot check. Rigging gear must be in accordance with OSHA, ASME B30.9 Standards and MoL safety standards. Third party certification and checklist shall be provided by the contractor.
- c. Comply with the LHE manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. If required, perform erection under the supervision of a designated person (as defined in ASME B30.5). Perform all testing in accordance with the manufacturer's recommended procedures. Third party test certificates and checklists shall be provided by the contractors.
- d. Comply with ASME B30.5 for mobile cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for tower cranes, ASME B30.8 for floating cranes and floating derricks, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices and ASME B30.26 for rigging hardware.
- e. When operating in the vicinity of overhead transmission lines, operators and riggers must be alert to this special hazard and follow the requirements of ASME B30.5 or ASME B30.22 as applicable.
- f. Do not use crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane. Additionally, submit a specific AHA for this work to the Contracting Officer. Ensure the activity and AHA are thoroughly reviewed by all involved personnel.
- g. Inspect, maintain, and recharge portable fire extinguishers as specified in NFPA 10, Standard for Portable Fire Extinguishers.
- h. All employees must keep clear of loads about to be lifted and of suspended loads, except for employees required to handle the load.
- i. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- j. A physical barricade must be positioned to prevent personnel access where accessible areas of the LHE's rotating superstructure poses a risk of striking, pinching or crushing personnel.
- k. Maintain inspection records including shift, monthly, and annual inspections, the signature of the person performing the inspection, and the serial number or other identifier of the LHE that was inspected. Records must be available for review by the Contracting Officer.

- l. Maintain written reports of operational and load testing, listing the load test procedures used along with any repairs or alterations performed on the LHE. Reports must be available for review by the Contracting Officer.
- m. Certify that all LHE operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- n. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. At wind speeds greater than 9 m/s 20 mph, the operator, rigger and lift supervisor must cease all crane operations, evaluate conditions and determine if the lift may proceed. Base the determination to proceed or not on wind calculations per the manufacturer and a reduction in LHE rated capacity if applicable. Include this maximum wind speed determination as part of the activity hazard analysis plan for that operation.
- o. On mobile cranes, lifts where the load weight is greater than 90 percent of the equipment's capacity are prohibited.

#### **Machinery and Mechanized Equipment**

- a. Proof of qualifications for operator must be kept on the project site for review.
- b. Manufacture specifications or owner's manual for the equipment must be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA. Incorporate such additional safety precautions or requirements into the AHAs.
- c. Submit a Machinery & Mechanized Equipment Certification to the Contracting Officer prior to being placed into use.

#### **F. EXCAVATIONS**

Soil classification must be performed by a competent person in accordance with 29 CFR 1926.

#### **Utility Locations**

Provide a third party, independent, private utility locating company to positively identify underground utilities in the work area in addition to any station locating service coordinated with SPWS / ETD / DPS.

#### **Utility Location Verification**

Physically verify underground utility locations, including utility depth, by hand digging using wood or fiberglass handled tools when any adjacent demolition work is expected to come within one meter / 3 feet of the underground system.

#### **Utilities Within and Under Concrete, Bituminous Asphalt, and Other Impervious Surfaces**

Utilities located within and under concrete slabs or pier / shore structures, parking areas, and the like, are extremely difficult to identify. Whenever Contract work involves chipping, saw cutting, or core drilling through concrete, bituminous asphalt or other impervious surfaces, the existing utility location must be coordinated with station in addition to location and depth verification by a third party, independent, locating company. The third party, independent, private locating

company must locate utility depth by use of Ground Penetrating Radar (GPR), X-ray, bore scope, or ultrasound prior to the start of demolition if required by the Contracting Officer. Outages to isolate cables / other utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

## **G. ELECTRICAL**

The Station will be isolated by EWA and all cables will be de-energized. Existing 400 kV and fiber optic lines will be marked. Precautions provided by Damage Prevention Section (DPS) / Electricity Transmission Directorate (ETD) to be adhered for protection of these cables. These instructions will be provided during pre-demolition meeting.

Conduct of Electrical Work - Electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. (EWA will de-energize all electric cables under the scope of this contract to the extent possible.) In those cases, obtain a work permit by coordinating with the Contracting Officer. The permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

### **Qualifications**

Electrical work must be performed by QP with verifiable credentials who are familiar with applicable code / SOP / SSO requirements. Verifiable credentials consist of Certifications or Licenses that a QP may hold, depending on the nature of work being performed, and must be identified in the appropriate AHA. Competency / Qualifications shall be approved by EWA Contracting Officer.

### **Arc Flash**

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E. All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.



## **Grounding**

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by Competent / Qualified / EWA Authorized Person.

Check grounding circuits to ensure that the circuit between the ground and a grounded power conductor has a resistance low enough to permit sufficient current flow to allow the fuse or circuit breaker to interrupt the current.

## **Testing**

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

## **H. HOT WORK**

### **Permit and Personnel Requirements**

EWA SOP / SSO to be used as a guide for developing the contractors permit program.

Prime Contractor shall issue a written permit prior to performing "Hot Work" (i.e. welding or cutting) or operating other flame-producing/spark producing devices. CONTRACTORS ARE REQUIRED TO MEET ALL REQUIRED CRITERIA BEFORE A PERMIT IS ISSUED. Provide suitable fire extinguishers as approved by Civil Defense / ISSD - Fire Section. The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of two hours after completion of the task or as specified on the hot work permit / certificate.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone number. REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE & ISSD CONTROL ROOM IMMEDIATELY. Contractor is required to make all arrangements for emergency response and EWA shall not provide support in the event of a fire.

### **Work Around Flammable Materials**

Contractor shall issue a permit by a NFPA Certified Competent Person for "HOT WORK" within or around flammable materials (such as fuel systems or welding/cutting on fuel pipes) or confined spaces (such as condensate tanks, or sewers etc.) that have the potential for flammable or explosive atmospheres. When the pyrophoric material in the GRS is removed, appropriate precautions as listed in the SPWS SSO shall be followed. Alternate precautions from NFPA or equivalent organizations shall be followed too.

## **I. CONFINED SPACE ENTRY REQUIREMENTS**

Confined space entry must comply with OSHA 29 CFR 1926, OSHA 29 CFR 1910, OSHA 29 CFR 1910.146, and OSHA Directive CPL 2.100. Any potential for a hazard in the confined space requires a permit system to be used.

### **Entry Procedures**

Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person appointed by the Prime Contractor has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. Refer to EWA SOP / SSO for minimum requirements for entry procedures, especially for working in condensate tanks etc. (Please note that the necessary hot work and confined space entry permits are to be issued by the Prime Contractor). Hazards pertaining to the space must be reviewed with each employee during review of the AHA.

### **Forced Air Ventilation**

Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its action level.

### **Sewers**

Sewer chambers require continuous atmosphere monitoring with audible alarm for toxic gas detection.

### **Rescue Procedures and Coordination with Local Emergency Responders**

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

### **Gas Protection**

Provide one or more employees, properly trained and experienced in operation and calibration of gas testing equipment and formally qualified as gas inspectors, on duty during times workers are in confined spaces. Their primary functions are to test for gas and operate testing equipment. Unless equipment of constant supervisory type with automatic alarm is employed, provide gas tests at least every hour, or more often when experience indicates gas may be encountered. After an idle period exceeding one-half hour, perform a gas test before permitting workers to enter the excavation.

### **Gas Test Readings Record**

Permanently record readings daily; indicate the concentration of gas, point of test, and time of test. Submit copies of the gas test readings to the Contracting Officer at the end of each work day.

### **Special Requirements**

Special requirements, coordination, and precautions will apply to areas that contain a hazardous atmosphere or, by virtue of their use or physical character, may be oxygen deficient. A check by a qualified third party is required prior to entering confined space. Surveillance and monitoring are required in these types of work spaces by both Contractor and third party personnel. Refer to SPWS SSO for working on Condensate Tanks / Gas Reducing Stations as special precautions are delineated for related hazards.

### **Confined Space Signage**

Provide permanent signs integral to or securely attached to access covers for permit-required confined spaces. Signs for confined spaces must comply with NEMA Z535.2. Provide signs with wording: " DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" in bold letters a minimum of 25 mm one inch in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" must be red and readable from 1520 mm 5 feet.

## **J. Gas Pipeline Decommissioning**

Gas Pipeline decommissioning is the termination of gas transport through a pipeline at the end of its economic life or at the conclusion of gas supply in the areas it serves. Decommissioning of gas pipelines requires adequate planning, manpower, and resources in line with local land use and environmental regulations.

The gas pipeline decommissioning process could be either pipeline removal or abandonment.

### **Gas Pipeline Decommissioning Procedure:**

Gas pipeline Decommissioning at onshore locations involves retiring land-based gas pipelines above or below the earth surface. The gas pipeline is divided into over ground and underground pipelines

#### **Overground Pipelines**

- For over ground Pipelines the contractor should take all safety precautions and consider all safety issues.
- The contractor shall follow all EWA Standard Operating Procedures (SOP) and all Station Standing Order (SSO).

Note: For Purging refer to Appendix II and for hot work refer to section 4 / EWA Standard Operating Procedures S001 and S003

#### **Underground Pipelines**

The underground pipelines were decommissioned. The decommission process typically involves the following steps:

- Cleaning any remaining hydrocarbon sludge inside the gas pipeline by flushing process or pigging process.
- Isolating the gas pipeline and purging with 5 bar Nitrogen.
- Physical separation of the pipeline from the supply (source of supply).
- In-place abandonment (leaving the gas pipeline as it is).

Oil and gas pigs can be used to flush the interior of gas pipelines prior to decommissioning. The pig is a cylindrical or spherical device propelled through a pipeline by the force of the fluid in motion or pulled with a string.

## **K. Debris and Waste Handling**

Debris waste and other materials shall not be thrown, tipped or shot down from a height where they are liable to cause injury to any person on or near the site.

Existing lift shaft, light well and openings on floor may be used to convey debris down the building floors. Areas adjacent to the openings of these features used as a chute shall be barricaded when they are not in use. Warning signs shall be posted to prevent workers from entering the area. As an option, plastic chutes may be used inside the floor openings and lift wells to minimize noise and confine the falling debris.

### **Dust Minimization**

To prevent dust generation during the debris hauling, water spraying shall be applied during the hauling process. However, the demolition Contractor shall ensure proper control of water supply and floor drainage system in order to avoid flooding which is a nuisance and may cause overloading of floors.

### **Debris Accumulation**

In general, the debris accumulation on the floors is not allowed. Debris shall not accumulate against the hoarding or external wall. Excessive accumulation of debris may cause overloading condition and may induce lateral loading on the walls and shall be avoided.

### **Debris Disposal and Management System**

To avoid accumulation of debris and to make sure that they are disposed of promptly, the Contractor personnel should ensure that a debris disposal and management system is prepared and implemented by the demolition Contractor. The debris disposal and management system should clearly lay down the following details:

- a. Method of handling demolished building debris;
- b. The routing and movement of debris from each area to other area prior to leaving the site;
- c. Means of transportation of debris off site;
- d. Time and frequency of debris disposal off site;
- e. Record scheme on the tonnage of each truck load, truck license plate, driver's name, trip tickets and location of dump site; and
- f. The site supervisory personnel responsible for the debris management system.

## **L. Waste Management**

On-site sorting of demolition material is strongly recommended so that inert material can be disposed of at public filling areas as far as practicable, and the remaining Demolition waste disposed of at landfills. The demolition contractor should have a valid license issued by the local government to carry out this work.

**Construction / Demolition Waste Management (CWM) Plan:**

A document that describes the intended actions to manage discarded materials based on consideration of the type and volume of materials, region, infrastructure available, and life-cycle analysis (when available) and tracks the materials to be managed.

Tracked material pathways may include landfills, combustion facilities, reuse, repurposing, manufacturer reclamation, composting, recycling, and other methods.

The following documentation shall be provided, retained, and submitted to the designated Contracting Officer on request. These include, but are not limited to:

**Progress Material Diversion Reports**

Weight tickets and receipts from designated recyclers, purchasing agreements, and receipts for materials sold to recyclers (see Figure below for sample report):

**Execution Documents**

Project executive summary, detailed material estimates, source separation procedures, comingling procedures, waste removal schedule, and handling and transportation procedures, including designated container locations and labeling; and

**Quality Assurance Requirements**

Name and contact information of the specific project manager responsible for the on-site coordination, documentation, periodic reports, and the contract execution of the Waste Management plan; training, meetings, and communication plan; weekly / monthly reporting and troubleshooting instruction and complete contact information (name, company, phone number(s), and e-mail) for all parties to the CWM plan inclusive of the project manager, general contractor, individual trade subcontractors, waste management subcontractor, hauling subcontractors, waste facilities, and recycling contractors.

**Expected Project Waste Disposal / Recycling / Reuse Data to be submitted by the Contractor:**

MATERIAL TYPE	UNIT OF MEASURE	MATERIAL RETAINED ON-SITE	QUANTITY OF MATERIAL REMOVED FROM PROJECT	QUANTITY OF MATERIAL RECYCLED OR REUSED	QUANTITY OF MATERIAL COMPOSTED	QUANTITY OF MATERIAL DISPOSED (LANDFILL/INCINERATION)	RECYCLING/SALVAGE COMPANY (NAME, ADDRESS, AND PHONE NUMBER)	DATE MATERIAL WAS REMOVED FROM SITE	DATE MATERIAL ACCEPTED BY RECIPIENT	TRANSPORT DOCUMENTS RECEIVED & ATTACHED (YES/NO)

**NOTE**—This table can be modified as necessary to fit the specific needs of the project.

**SUMMARY**—Project expected C&D materials and diversion rate:

Total CW	x
Total diverted	y
Diversion rate, %	$(y/x) \times 100 \%$

x = Total waste expected to be generated in demolition and construction.

y = Materials to be diverted from landfills via salvage, reuse, and recycling.

y/x = Percentage of project waste expected to be diverted from landfill.

**NOTE**—Total CW (x) and total diverted (y) may be measured in weight or volume but shall be the same unit of measure.

**M. TRANSPORTATION AND DISPOSAL OF HAZARDOUS Wastes**

**Hazardous Waste**

A waste which meets criteria established by SCE or specified by the EPA or which has been designated as hazardous by an authority / agency in the country.

**HAZARDOUS WASTE MANAGEMENT PLAN**

Prepare a Hazardous Waste Management Plan detailing the manner in which hazardous wastes will be managed and describing the types and volumes of hazardous wastes anticipated to be managed. The plan must address both onsite and offsite hazardous waste management. Describe the methods to be used to ensure accurate piece counts or weights of shipments; describe waste



minimization methods; identify and describe facilities to be used for treatment, storage, and disposal; identify areas onsite where hazardous wastes are to be handled; and identify how the wastes will be tracked to ultimate disposal. Submit the plan to the Contracting Officer for approval prior to start of work. Submit written documentation of weekly hazardous waste inspections on a monthly basis.

The contractor shall liaise with SCE for sampling and disposal of hazardous wastes generated during this project. The Contracting Officer shall be notified on all stages of hazardous waste management.

The contractor shall submit the following to the Contracting Officer:

- Hazardous Waste Manifests;
- Sampling & Test Reports of Hazardous Wastes;
- Hazardous Waste Disposal Schedule;
- Packaging Notifications;
- Hazardous Waste Management Plan;
- Onsite Hazardous Waste Management;
- Notices of Non-Compliance and Notices of Violation

#### **Reports**

- Recordkeeping;
- Exception Report;
- Spill Response

#### **Certificates**

- Transportation and Disposal Coordinator Certification;
- Training;
- Certification of Hazardous Waste Transportation Vehicles;
- Shipping Documents and Packagings Certification;
- Security Plan;
- Certificates of Disposal;
- Waste Minimization

### **Laws and Regulations Requirements**

Comply with Supreme Council for Environment and international regulations which are applicable. These requirements are amended frequently and compliance with amendments is required as they become effective. Notify the Contracting Officer immediately if compliance exceeds the scope of work or conflicts with specific requirements of the contract.

### **MATERIALS**

Provide all the materials required for the packaging, labeling, marking, placarding and transportation of hazardous wastes and hazardous materials in conformance with Ministry of Transportation & SCE standards and applicable international standards pertaining to shipping of dangerous goods. Contractor shall be responsible for identifying the applicable codes/regulations applicable for cross boundary transportation of dangerous goods. Details in this specification must not be construed as establishing the limits of the Contractor's responsibility.

### **Packagings**

Provide bulk and non-bulk containers for packaging hazardous materials/wastes consistent with the SCE & Ministry of Transportation requirements and applicable international regulations.

### **Markings**

Provide markings for each hazardous waste package, containers, and transport vehicle consistent with the international and local regulations as applicable. Markings must withstand a 180-day exposure to conditions reasonably expected to be encountered during container storage and transportation, without deterioration or substantial color change.

### **Spill Response Materials**

Provide spill response materials including, but not limited to, containers, adsorbent, shovels, and personal protective equipment. Spill response materials must be available at all times when hazardous wastes are being handled or transported. Spill response materials must be compatible with the type of material being handled.

### **EQUIPMENT AND TOOLS**

Provide miscellaneous equipment and tools necessary to handle hazardous hazardous wastes in a safe and environmentally sound manner.

### **The Cleaning and Disposal of Hazardous Residues in Tanks**

The improper removal of hydrocarbon or chemical waste in a tank can result in a serious accident and/or pollution incident. Therefore, it is necessary to consider all potential safety and environmental hazards and subsequently, adopt appropriate precautionary measures.

The Electricity and Water Authority (EWA) Safety Regulations stipulate that a suitable and sufficient risk assessment must be completed to decide what measures need to be taken to

ensure the safety of personnel is not put at risk. This means identifying the hazards present, assessing the risk and determining what precautions to take, including the provision of suitable personal protective equipment (PPE).

Examples of the types of work where a prior risk assessment is likely to be necessary include, but are not limited to: isolation of the hydrocarbon/chemical tank; removal of residual liquids from the tank; cleaning and purging; entering confined spaces; and, hot works.

### **Decontamination Guidelines**

- Contractor should develop a decontamination procedure and submit to EWA representative.
- Contractor should follow all the relevant EWA safety rules during the execution of decontamination work.
- While handling the Gas Reducing Station (GRS) equipments such as swinney gas filters, extreme precautions should be taken to avoid fire incident as these could be pyrophoric.
- Contractor should ensure that all the residues extracted for disposal should be stored safely in suitable containers.
- Ensure that the storage take is cleaned, purged before dismantling and transportations.
- Contractor should ensure that all the hazardous wastes must be disposed at a Supreme Council for Environment (SCE) approved site.
- The contractor should ensure that, all the liquid waste (oily water, flushing water etc.) should be disposed environmental friendly.
- Contractor must be authorized to handle and disposed the hazardous waste by SCE.
- Finally, the contractor should submit official document for disposing the hazardous waste and the equipment is decontaminated.
- The contractor should follow all the necessary safety procedures during the execution of the work.

## **Appendix I - Attachments**

## Attachment 1: Demolition Hazards

Hazards	Risks	Control Measures
Concrete structures	Personal Injury	<ul style="list-style-type: none"> <li>Concrete structures should be examined for signs of damage due to reinforcing corrosion or concrete damage.</li> <li>Special buildings include (but are not limited to): pre-cast concrete tilt slab structures, frame structures of pre-cast concrete, concrete beam slab construction.</li> <li>Carry out a full investigation to determine the type of structural framework before demolition begins.</li> <li>Follow the advice of a registered engineer, and develop a demolition methodology or demolition plan.</li> </ul>
Inadequate pre-demolition checks	Inhalation of toxic materials Electrocution Fire Explosion	Every demolition work must be planned, the hazards identified and the precautions to be taken considered
Public services	Electrocution Fire Explosion	<ul style="list-style-type: none"> <li>Prior to work commencing, all services either underground or above, e.g. gas, water, electricity, drains, telephone cables etc. should be located and clearly identified for workers onsite.</li> <li>Ensure all services are either disconnected or diverted at the site boundary or suitably protected.</li> </ul>

Roofs	Falls from heights	<ul style="list-style-type: none"> <li>• Check the condition of roof trusses and identify and mark any bracing that is essential for stability. Check the nature and condition of roof cladding. If it is brittle, special precautions must be taken to prevent workers from falling through the roof. All roofs should be treated as brittle because: <ul style="list-style-type: none"> <li>- Translucent and brittle roofing</li> <li>- Materials may have weathered to become almost indistinguishable from their surroundings</li> <li>- Brittle areas may have been painted to match the rest of the roof</li> <li>- Corrosion may have occurred because of the age or chemicals in the building have impaired the roofing material.</li> </ul> </li> <li>• The following factors of the roof are also important to consider: <ul style="list-style-type: none"> <li>- Thickness of the material</li> <li>- The span between the supports</li> <li>- Sheet profile</li> <li>- The design of the supporting structure</li> <li>- The age of the material</li> </ul> </li> <li>• Any person required to be on a roof covered with fragile roofing materials should use walkways and crawl boards.</li> <li>• Cover or guard all brittle and dangerous areas.</li> </ul>
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<p>Mobile plant and equipment</p>	<p>Crushing Machinery tipping/rolling Noise Poor visibility Trips /slips /falls Fumes</p>	<ul style="list-style-type: none"> <li>• Before approaching any mobile plant and equipment, ensure the operator is aware of your presence and has signaled that it is safe to approach.</li> <li>• All people onsite working for demolition should wear high-visibility vests, shirts or jackets to increase visibility.</li> <li>• Only trained and competent people should operate mobile plant and equipment.</li> <li>• Excavators should be fitted with ROPS/FOPS protection.</li> <li>• Operators should wear seat belts so that they are confined within the structure and not thrown out in the event of a roll-over.</li> <li>• Never leave unattended mobile plant running.</li> <li>• Passengers are not allowed on mobile plant</li> <li>• Lower the bucket/boom when the excavator is not in use</li> <li>• To avoid ankle injuries, dismount by climbing down, not jumping down.</li> <li>• Use the provided foot and hand holds.</li> <li>• Avoid using petrol or diesel operated plant in confined spaces or poorly ventilated spaces.</li> </ul>
<p>Contact with electricity</p>	<p>Electrocution</p>	<p>The following precautions should be taken when cranes and mechanical plant is working near overhead power lines:</p> <ul style="list-style-type: none"> <li>• All lines should be treated as live</li> <li>• A minimum clear distance of 4M must be maintained from the lines</li> <li>• Efforts should be made to contact ETD to determine if electrical lines can be disconnected, isolated, diverted, raised or otherwise protected throughout the duration of the works.</li> </ul>

<p>Demolition operators</p>	<p>Inhalation Falling objects Fire Explosion</p>	<p>General work:</p> <ul style="list-style-type: none"> <li>• Structures must not be left in a condition in which they could be brought down by a moderate earthquake, windstorm or vibration from plant or traffic.</li> <li>• Ensure debris (including loaded vehicles, chutes, floors, stairways and other places) is watered down frequently to prevent dust becoming a nuisance or health hazard.</li> <li>• Demolished materials should be control-lowered to the ground, and debris sent down in skips or enclosed in chutes.</li> <li>• Material should only be dropped when adequate precautions have been taken for the safety of workers, the public and adjacent property.</li> <li>• Debris should not be burned onsite</li> <li>• When loading trucks or trailers, care must be taken not to tip debris over the far side of the truck or trailer.</li> <li>• Portable fire extinguishers should be kept in working areas and maintained in an operable condition.</li> <li>• The site should be checked at the end of each work day to ensure No soldering material is left that could start a fire.</li> </ul>
<p>Welding or cutting work</p>	<p>Fire Explosion</p>	<ul style="list-style-type: none"> <li>• All hot work to be conducted using a hot work permit with conditions of the permit satisfied before starting of work.</li> <li>• When carrying out any cutting or welding work, remove any combustible material to a safe place.</li> <li>• Fire extinguisher equipment must be readily available and workers trained in its correct use.</li> <li>• Standpipes and hoses should be set up prior to cutting.</li> <li>• Soldering debris that cannot be removed should be thoroughly wetted down.</li> <li>• Ensure that compressed air cylinders are not left free-standing.</li> </ul>



<p>Demolition operations : people</p>	<p>Falling objects Falls from heights Hearing injury/loss</p>	<ul style="list-style-type: none"> <li>• A trained and experienced person should be constantly in charge during demolition work.</li> <li>• Personal protective equipment: Employees should be provided with and use the following PPE as appropriate: <ul style="list-style-type: none"> <li>- Safety helmets and safety footwear must be worn at all times on demolition sites.</li> <li>- Hearing protection ( earmuffs, earplugs etc.).</li> <li>- Safety gloves.</li> <li>- High visibility vest, shirts or jackets.</li> <li>- Appropriate respirators for dust and chemicals.</li> </ul> </li> <li>• Public safety: <ul style="list-style-type: none"> <li>- Where there is a possibility of falling debris, a gantry or protective screen of sufficient strength should be provided over the footpath adjacent to the building.</li> <li>- Where there is no danger of falling debris, but there is dust, water, sparks or other demolition hazards, a hoarding or fence erected on the boundaries of the site may be sufficient to protect the public and should be at least two meters in height from ground level.</li> <li>- Hoardings should be constructed using continuous sturdy cladding.</li> <li>- Signage should be placed at several points around the site to inform the public that demolition is in progress and that danger exists.</li> <li>- Traffic controllers should be positioned at truck entrance and exit points when trucks are operating.</li> <li>- During the hours of darkness, warning lights should be used to warn of barricades and debris. Holes which present a hazard must be covered.</li> <li>- Road kerbs and storm water drains should be kept clear of material to prevent flooding.</li> </ul> </li> </ul>
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<p>Demolition operations : structures</p>	<p>Slips /trips /falls Crushing Cuts /lacerations</p>	<p><b>Buildings:</b></p> <ul style="list-style-type: none"> <li>• Remove all glass from windows before demolition begins.</li> <li>• Window openings on street frontages or adjacent to access ways should be blocked off.</li> <li>• Openings in walls, floors, roofs and stairwells should be boarded up or provided with a guard rail to prevent falls.</li> <li>• Areas where flooring has been removed should be barricaded off and notices erected to warn of the danger at each point of entry.</li> <li>• All stairs or installed ladders should be checked prior to use. Never assume they are sound.</li> <li>• When dismantling pitched roof trussed, the last frame should be guyed before the second to last truss is removed because stability depends on the support of adjacent members.</li> <li>• As supports and buttresses are removed, bracing should be provided to stabilize the remaining structure.</li> <li>• Never leave isolated walls or potentially unstable structures unpropped, unless they are stable against wind and other forces likely to affect them.</li> <li>• When demolishing a reinforced concrete floor, it may be necessary to remove a small section first, in order to determine the direction of the main steel.</li> <li>• Provide support for beams before cutting or weakening the base, so that their fall is controlled.</li> <li>• Clear openings should be made in floors to allow debris to pass through.</li> </ul>
<p>Exposure to noise</p>	<p>Hearing loss/Injury</p>	<p><b>Excessive noise can be reduced by:</b></p> <ul style="list-style-type: none"> <li>• Putting silencers on jackhammers, or using compressors insulated against noise.</li> <li>• Maximum acceptable noise levels are 85dB (A) averaged over an Eight-hour work exposure period and 140dB for peak noise.</li> </ul>

Health hazards	Inhalation Ingestion	<p><b>The main hazards to health during demolition are:</b></p> <ul style="list-style-type: none"> <li>• Exposure to asbestos dust, chiefly from insulation materials, fire protective cladding and lagging to steam and chemical plant.</li> <li>• Lead poisoning from inhaling fumes during flame cutting of Steelwork coated with lead paint.</li> <li>• Exposure to silica dust during demolition operations.</li> <li>• Exposure to polychlorinated biphenyls (PCBs) when dismantling electrical capacitors and transformers.</li> <li>• Ensure there is sufficient ventilation when using mechanical plant in confined or enclosed areas due to the danger of exhaust fumes.</li> <li>• Ensure all machinery is maintained to a high standard.</li> <li>• Replace worn-out exhaust systems.</li> <li>• Replace damaged manifolds.</li> <li>• Do not allow exhaust products to blow back onto the operator.</li> <li>• Mobile plant and machinery should be fitted with carbon monoxide inhibitors to reduce emissions.</li> </ul>
Unauthorized access to site	Personal injury	<ul style="list-style-type: none"> <li>• Barriers and fencing must be installed to prevent unauthorized entry onto the worksite by people, including children.</li> <li>• Where people are permitted to remove or purchase materials from the demolition site, safe access should be ensured.</li> </ul>
Concrete structures	Personal injury	<ul style="list-style-type: none"> <li>• Concrete structures should be examined for signs of damage due to reinforcement corrosion and concrete damage.</li> <li>• Carry out a full investigation to determine the type of structural framework before demolition begins.</li> </ul>
Dangerous structures	Personal injury	<p>If there are indications that the structure is dangerous, check with the appropriate authority, as they may have records about the type of construction and the possible damage or cause of weakness .</p>

<p>Inadequate structural inspections</p>	<p>Falls Overloading Unplanned structural collapse</p>	<p><b>Building plans:</b></p> <ul style="list-style-type: none"> <li>• Ensure that all available plans of the structure or structures where necessary have been examined. Be aware that the original drawings may not be an accurate record of what was built.</li> <li>• When the nature of the construction is uncertain, a special investigation should be carried out using the advice of a registered engineer.</li> <li>• If heavy plant and machinery is planned to be used on the roofs and floors, or where it is intended to load debris on roofs or floors, the SWLs must be determined by a registered engineer, as propping or strengthening may be required.</li> <li>• "NOGO" areas for plant and machinery should be fenced off to avoid confusion by operators as to where is safe and where is not.</li> </ul> <p><b>Roofs:</b></p> <ul style="list-style-type: none"> <li>• Check the condition of roof trusses and identify and mark any bracing that is essential for stability.</li> <li>• Check the nature and condition of roof cladding. If it is brittle, special precautions must be taken to prevent employees from falling through the roof. In particular, care must be taken with corrugated plastic and asbestos cement sheeting.</li> </ul> <p><b>Cantilevered structures:</b></p> <ul style="list-style-type: none"> <li>• The stability of cantilevered structures such as staircases, balconies and cornices, which are fixed to a building, is likely to be affected when adjoining structural members in the building are removed.</li> </ul>
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<p>Lack of demolition plan</p>	<p>Personal injury Fire Electrocution Inhalation of toxic material Explosion</p>	<ul style="list-style-type: none"> <li>• A written demolition plan must be available and contain the following points: <ul style="list-style-type: none"> <li>- The extent of the work.</li> <li>- The type of plant to be used.</li> <li>- The proposed method of removing each part of the structure including roof, walls, floor and foundations.</li> <li>- The plan should outline precautions for the safety of employees on site and people in the vicinity, and include emergency procedures.</li> <li>- The plan should cover dust and noise controls and safety for the public.</li> <li>- Before work starts, a task analysis / hazard identification / job safety analysis should be completed and updated regularly throughout the job.</li> </ul> </li> </ul>
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## Attachment 2: Hot Work Certificate (HWC)

 <b>ELECTRICITY &amp; WATER AUTHORITY</b> Special HSE Measures		<b>HOT WORK CERTIFICATE (HWC)</b> (For regulations refer EWA Safety Rules SOP S001) (Mechanical Safety Rules - Hot Work & Special HSE Measures)	
Directorate / Station / Section	Associated <input type="checkbox"/> EPTW <input type="checkbox"/> MPTW <input type="checkbox"/> LOA * No.	HWC No.	
(*Tick as applicable)			
<b>1.0 ISSUE :</b> To ..... Employed by ..... HOT WORK / LOCATION ..... The following is the WORK to be carried out .....			
<b>2.0 VALIDITY:</b> FROM: Date: ..... TO: Date: ..... Time: ..... Time: .....			
<b>3.0 Special Safety Precautions: ( Tick as applicable )</b> <div style="display: flex; justify-content: space-between;"> <span><input type="checkbox"/> 1</span> <span><input type="checkbox"/> 2</span> <span><input type="checkbox"/> 3</span> <span><input type="checkbox"/> 4</span> <span><input type="checkbox"/> 5</span> <span><input type="checkbox"/> 6</span> <span><input type="checkbox"/> 7</span> <span><input type="checkbox"/> 8</span> <span><input type="checkbox"/> 9</span> <span><input type="checkbox"/> 10</span> </div> (See reverse for details) <div style="display: flex; justify-content: space-between;"> <span><input type="checkbox"/> 11</span> <span><input type="checkbox"/> 12</span> <span><input type="checkbox"/> 13</span> <span><input type="checkbox"/> 14</span> <span><input type="checkbox"/> 15</span> <span><input type="checkbox"/> 16</span> <span><input type="checkbox"/> 17</span> </div>			
<b>REMARKS</b> Gas Test results etc. ....			
<b>4.0 AUTHORIZATION:</b> I verify that the above location has been examined by me and found to be acceptable for hot work. I have discussed the terms of this HWC including the required precautions with the receiving authority responsible for the work and now issue it. being <b>Senior Authorized/Authorized Person</b> possessing authority to issue this HWC. Signed ..... Time ..... Date .....			
<b>5.0 RECEIPT:</b> I hereby declare I accept responsibility for carrying out the <b>HOT WORK</b> with all the precautions as mentioned in this HWC and associated PTW/LOA mentioned in this HWC and that no attempt will be made by me or by the persons under my supervision to carry out any other work being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....			
<b>6.0 VALIDITY EXTENSION:</b> Extended up to ..... Date ..... Time ..... Extension Requested ..... Signed ..... (Receiver) Extension Given ..... Signed ..... (Issuer)			
<b>7.0 CLEARANCE:</b> I hereby declare that the work specified above is now suspended* / completed*, and that all persons under my supervision have left the worksite and that all tools & material have been removed & there is no evidence of fire in the area, confirmed by fire watch for the last one hour after work completion. *Delete word not applicable. being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....			
<b>8.0 CANCELLATION:</b> This Hot-Work- Certificate is hereby cancelled, the area has been checked and there is no evidence of fire. being the <b>Senior Authorized/Authorized Person</b> in charge of the work. Signed ..... Time ..... Date .....			

Note: -HWC has to be issued in conjunction with Permit to Work/LOA.

## HOT WORK CERTIFICATE LIST OF PRECAUTIONS

1. Inform Area Supervisor before work starts.
2. Ensure that work area is free from flammable material.
3. Combustible material, including materials of construction to be removed, or protected from heat, flames and sparks.
4. Permit To Work or Limitation Of Access to be issued.
5. Standby fire protection to be provided.
6. Fire watcher to be standing by.
7. Telephone or other means of fire warning to be indicated to all men under your control.
8. Any electrical tools or equipment used, or that are capable of producing static electricity to be properly bonded to earth.
9. Initial testing for dangerous gases or vapours required.
10. Initial testing for Oxygen deficiency required.
11. Continuous testing for dangerous gases or vapours required.
12. Continuous testing for Oxygen deficiency required.
13. Safety Harness / Lifeline to be used.
14. Respirator or breathing apparatus to be available.
15. Respirator or breathing apparatus to be worn.
16. Barricades or warning tapes and signs to be used to restrict access to work area.
17. OTHER ( specify ) .....

### Attachment 3: Pre - Demolition Checklist

SI No	Check	Yes	No	N/A	Comments
1	Specs/plans for building provided				
	Service plans available				
	Job Notifiable				
2	General				
	Asbestos-containing material onsite				
	PCBs onsite				
	Hazardous substances				
	Flammable substances				
	Biological matter				
3	Services				
	Electricity				
	Gas				
	Telecommunications				
	Water				
	Storm Water				
	Sewer				
4	Dangerous structures				
	Leaning				
	Cracking				
	Burnt out				
	Damaged				
	Deteriorated				



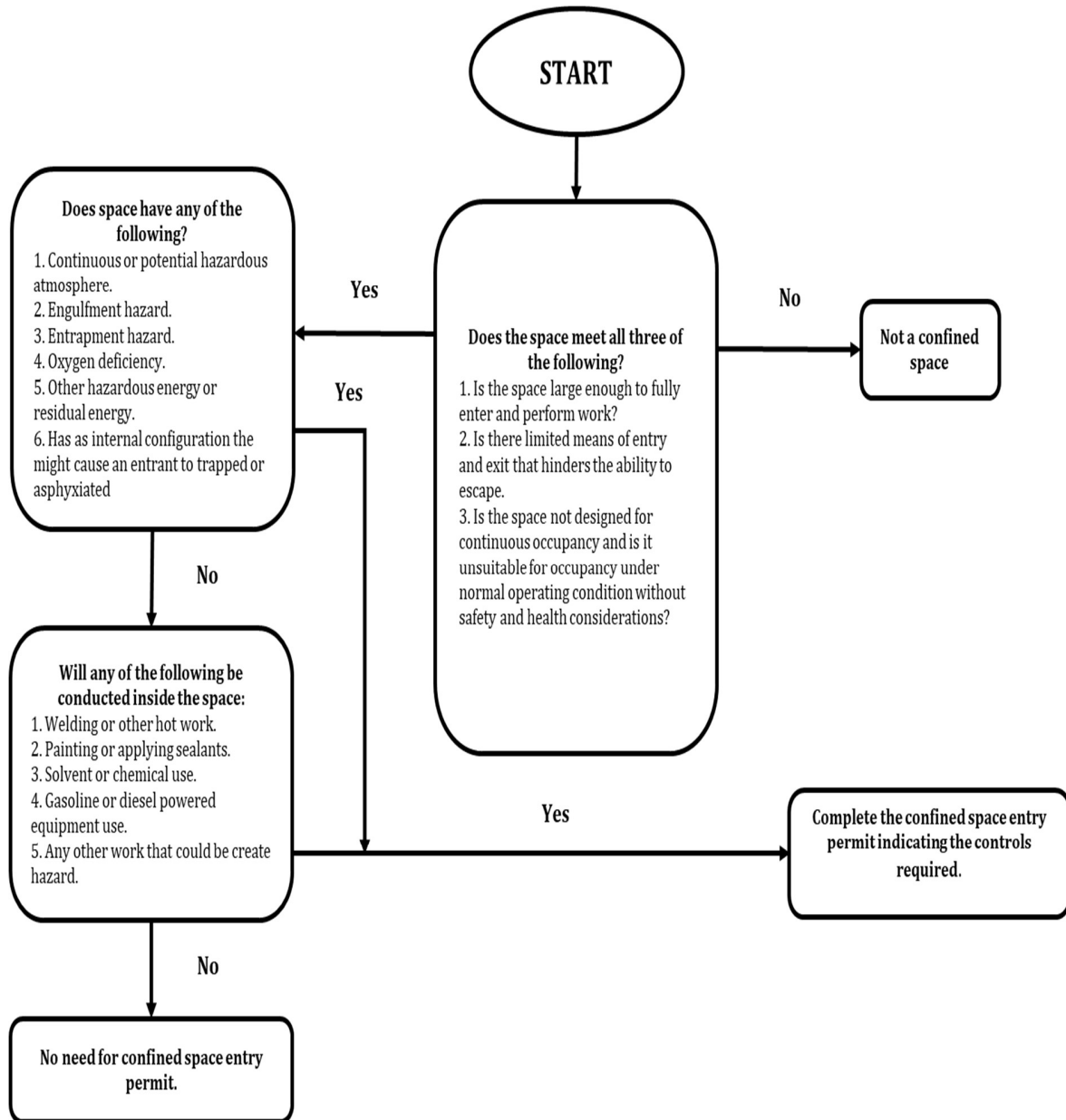
5	Cantilevered Structures				
	Any cantilevered structures onsite				
6	Basements				
	Any basement s, cellars or vault s onsite				
7	Tunnels				
	Any tunnels, sumps or trenches onsite				
8	Wells and Underground Storage Tanks				
	Any wells or underground storage tanks onsite				
9	Special Structures				
	Any pre-cast /pre-stressed concrete slabs/panels				

#### Attachment 4: Demolition Safety Checklist


SI No	Requirement	Yes	No
1	Has a competent supervisor, experienced in demolition work, been appointed?		
2	Are all onsite employees sufficiently trained and competent to complete their tasks and duties safely?		
3	Is on-going hazard management being conducted onsite, and communicated through to employees and contractors effectively?		
4	Are all site personnel wearing the correct personal protective clothing and equipment for the work at all times, and is the clothing/equipment being maintained effectively?		
5	Is the site properly enclosed and are protective screens erected?		
6	Have danger notices been erected? Is all access to the site by the public barred?		
7	If required, is there sufficient propping to prevent premature structural collapse or damage to adjacent property?		
8	Are all ladders and other equipment in good order?		
9	Are any floors in danger of being overloaded?		
10	If a crane is in use:		
	(a) are all non-essential personnel (except the crane operator and dogman) clear of the danger area when the crane is being used?		
	(b) are all crane windows properly protected, and does the crane require a FOPS canopy fitted?		
11	Are pedestrians adequately protected?		
12	Is sufficient watering taking place to keep down dust ?		
13	Are there sufficient fire extinguishers or other fire-fighting equipment onsite, and are they readily accessible?		

14	Are good housekeeping practices being maintained, for example: are floors and access pathways clear of unnecessary debris and materials/equipment ?		
15	Does all electrical equipment have current test certification and tagging to verify safety for use?		
16	Do plant and equipment being used onsite have daily checks conducted by the operator(s) to ensure proper running conditions and safety for use?		
17	Do all onsite elevated work platforms and cranes have current certification to verify safety for use?		

## Attachment 5: Evaluate the Confined Space Flow Chart



## Attachment 6: Confined Space Entry Certificate (CSEC)

 <b>ELECTRICITY &amp; WATER AUTHORITY</b> Special HSE Measures				<b>CONFINED SPACE ENTRY CERTIFICATE (CSEC)</b> (For regulations refer EWA Safety Rules SOP S001) (Mechanical Safety Rules - Confined Space & Special HSE Measures)			
Directorate / Station / Section .....		Associated <input type="checkbox"/> MPTW <input type="checkbox"/> LOA * No. <input type="checkbox"/>		CSEC No. ....			
1.0 ISSUE : To ..... Employed by ..... CONFINED SPACE /AREA ..... The following is the WORK to be carried out .....							
2.0 VALIDITY: FROM: Date: ..... TO: Date: ..... Time: ..... Time: .....							
3.0 ATMOSPHERE & GAS TEST RESULTS:							
Gas Test Results		Limit (Without BA)	Reading	Carried out by (Name/Signature)			
Explosivity		10 % LEL					
Carbon Monoxide CO		50 ppm Max.					
Oxygen O2		19.5 – 21 %					
Others (H2S)		10 ppm Max.					
4.0 Special Safety Precautions: (Tick as applicable)							
<input type="checkbox"/> Continuous gas monitoring	<input type="checkbox"/> Standby / Security guard	<input type="checkbox"/> Explosion tests required	<input type="checkbox"/> Extraction fan(s) working				
<input type="checkbox"/> Respirators to be worn	<input type="checkbox"/> Harness and lifeline provided	<input type="checkbox"/> Non-sparking tools	<input type="checkbox"/> Ventilation Fan(s) working				
<input type="checkbox"/> Breathing apparatus to be worn	<input type="checkbox"/> Communications	<input type="checkbox"/> Safety extra low voltage	<input type="checkbox"/> Miscellaneous & Others				
<input type="checkbox"/> Fire extinguisher's at hand	<input type="checkbox"/> Electrical tools grounded	<input type="checkbox"/> Protective disconnect	<input type="checkbox"/> Escape routes to be provided and kept clear				
Additional Safety Precautions: ..... Attendance record at the back of this CSEC.							
5.0 AUTHORIZATION: I hereby declare that permission is granted to enter the mentioned confined space to carry out the work specified in this CSEC & the above mentioned MPTW/LOA, being <b>Senior Authorized/Authorized Person</b> possessing authority to issue this CSEC. Signed ..... Time ..... Date .....							
6.0 RECEIPT: I hereby declare I accept responsibility for entering the above mentioned confined space and carrying out the work detailed in this CSEC and associated MPTW/LOA mentioned in this CSEC and that no attempt will be made by me or by the persons under my supervision to carry out any other work, being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....							
7.0 VALIDITY EXTENSION: Extended up to ..... Date ..... Time ..... Extension Requested ..... Signed ..... (Receiver) Extension Given ..... Signed ..... (Issuer)							
8.0 CLEARANCE: I hereby declare that the work for which this CSEC was issued is now suspended* / completed*, and that all persons under my supervision have been withdrawn and warned that it is no longer permitted to enter the above confined space to carry out the work specified in this CSEC. *Delete word not applicable. being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....							
9.0 CANCELLATION: This Confined Space Entry Certificate is hereby cancelled, being the <b>Senior Authorized/Authorized Person</b> in charge of the work. Signed ..... Time ..... Date .....							

Note: -CSEC has to be issued in conjunction with Mechanical Permit/LOA.

## ATTENDANCE RECORD & ENTRY LOG

<b>Confined Space Location :</b>	<b>Date:</b>
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ENTRANT NAME	TIME				Signature
	IN	OUT	IN	OUT	

<b>Name &amp; Signature of Entry attendant :</b>	<b>Date:</b>
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## Attachment 7: Limitation of Access

Directorate/Station/Section		Key Safe No. / Safety Lock No.	LOA No.	Reference No.
		Key No. Received with LOA		
<b>1. ISSUE:</b> To ..... I hereby declare that permission is granted to WORK on the following apparatus or in the following areas and Danger Notices are posted: The apparatus is <b>ISOLATED</b> at the following points: (If Applicable) ..... Special HSE Measures See attached HSE Form No. .... <input type="checkbox"/> Confined Space (CSEC) <input type="checkbox"/> Excavation (EWC) <input type="checkbox"/> Radiography (RWC) <input type="checkbox"/> Hot Work Certificate (HWC)		Employed By ..... ..... ..... .....		
Remarks (Safety precautions & state if apparatus LIVE). <p style="text-align: center;"><b>ALL OTHER APPARATUS IS DANGEROUS</b></p> The following is the WORK to be carried out: ..... ..... .....		being an <b>Authorized Person</b> possessing authority to issue this Limitation Of Access and I have informed the following ..... Control Engineer ..... (Name) Time ..... Date ..... Signed ..... <b>Valid until Date ..... Time .....</b>		
<b>2. RECEIPT:</b> I hereby declare that I accept responsibility for carrying out the work detailed in this Limitation Of Access and that no attempt will be made by me or by the persons under my supervision to carry out any other work. being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....		<b>3. VALIDITY EXTENSION:</b> Extended up to ..... Date ..... Time ..... Extension Requested Signed ..... (Receiver) Extension Given Signed ..... (Issuer)		
<b>4. CLEARANCE:</b> I hereby declare that the work for which this Limitation Of Access was issued is now suspended* / completed*, and that all persons under my supervision have been withdrawn and warned that it is no longer permitted to carry out the work specified in this Limitation Of Access. * Delets word not applicable. being the <b>Competent Person</b> in charge of the work. Signed ..... Time ..... Date .....		<b>5. CANCELLATION:</b> This Limitation Of Access is hereby cancelled. being an <b>Authorized Person</b> possessing authority to cancel this Limitation Of Access and I have informed the following ..... Control Engineer ..... (Name) Signed ..... Time ..... Date .....		

**Attachment 8: Mechanical Permit to Work**



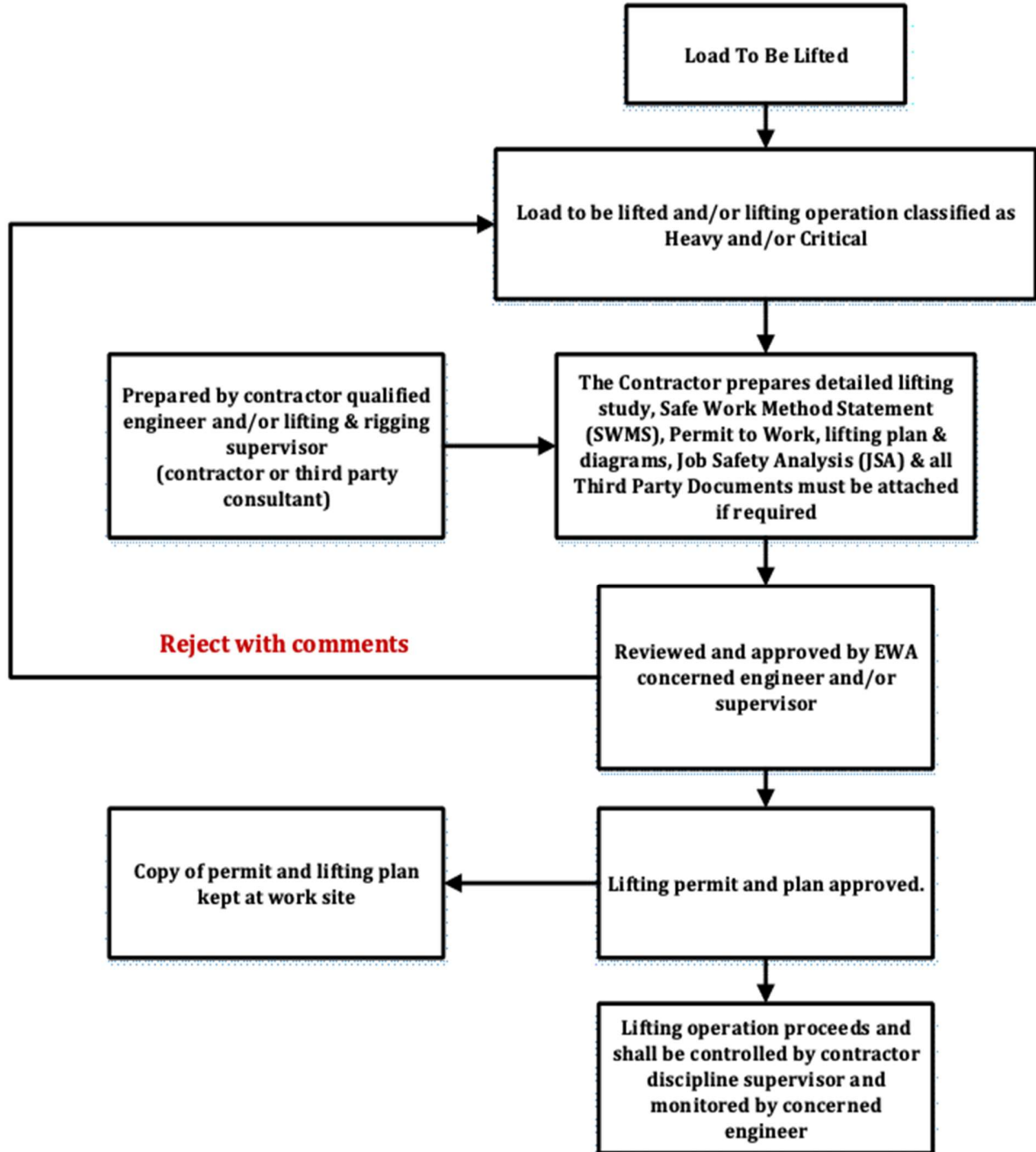
**MECHANICAL PERMIT TO WORK**  
 (For regulations refer EWA Safety Rules SOP S001)  
 (Mechanical Safety Rules & Special HSE Measures)

**ELECTRICITY & WATER AUTHORITY**

Directorate/Station/Section	Key Safe No. / Safety Lock No.	PTW No.	Reference No.
	Key No. Received with PTW		
<b>1. ISSUE:</b> To ..... I hereby declare that it is <b>SAFE TO WORK</b> on the following apparatus which is isolated, locked off and Caution Notices posted:		Employed By .....	
The apparatus is <b>ISOLATED</b> at the following points:			
Special HSE Measures See attached HSE Form No. ....			
<input type="checkbox"/> Confined Space (CSEC)			
<input type="checkbox"/> Excavation (EWC)			
<input type="checkbox"/> Radiography (RWC)			
<input type="checkbox"/> Hot Work Certificate (HWC)			
Special precautions :			
<b>ALL OTHER APPARATUS IS DANGEROUS</b>			
The following is the WORK to be carried out on the above apparatus:			
Signed .....		being a <b>Senior Authorized Person</b> possessing authority to issue this Mechanical Permit To Work. Time ..... Date ..... <b>Valid until</b> Date ..... Time .....	
<b>2. RECEIPT:</b> I hereby declare that I accept responsibility for carrying out the work on the apparatus detailed in this Permit and that no attempt will be made by me or by the persons under my supervision to carry out work on any other apparatus.			
Signed .....		Time ..... Date .....	
<b>3. VALIDITY EXTENSION:</b> Extended up to Date ..... Time ..... Extension Requested Signed ..... (Receiver) Extension Given Signed ..... (Issuer)			
<b>4. CLEARANCE:</b> I hereby declare that the work for which this Permit was issued is now suspended* / completed*, and that all persons under my supervision have been withdrawn and warned that it is no longer safe to work on the apparatus specified in this Permit and that all tools & materials have been removed and all safety guards have been reinstated.			
Signed .....		Time ..... Date .....	
<b>5. CANCELLATION:</b> This Mechanical Permit To Work is hereby cancelled.			
Signed .....		Time ..... Date .....	



## Attachment 9: Lifting Flow Chart



## Attachment 10: Scaffold Inspection Checklist

SI No	Inspection Items	Yes	No	N/A
<b>1.0</b>	<b>GENERAL REQUIREMENTS</b>			
<b>1.1</b>	Scaffold designed by a qualified person?			
<b>1.2</b>	Conform to the 4 to 1 base to height ratio requirement?			
<b>1.3</b>	If not conforming, secured to a fixed structure by use of ties?			
<b>1.4</b>	Scaffold components of the same make / fit together without force?			
<b>1.5</b>	Scaffold materials in good condition, no visible defects?			
<b>1.6</b>	Are barricades or signs present to prevent the scaffold from being struck by vehicles and moving traffic?			
<b>1.7</b>	Minimum Power line clearance (10 feet)			
<b>1.8</b>	Unstable objects such as blocks ,bricks, buckets etc. are not used as work platforms or to support scaffolds			
<b>1.9</b>	Has this work location has been examined before the start of the work operations and have all the appropriate precautions been taken? (e.g. checking for :overhead objects, falling or tripping hazards , uneven ground or opening on to a door)			
<b>1.10</b>	Is it prohibited to cover wood platforms on scaffolds with opaque finishes?			
<b>2.0</b>	<b>FOUNDATIONS, BASE PLATES, SOLE PLATES AND CASTERS</b>			
<b>2.1</b>	Adequate and firm footing / anchorage?			
<b>2.2</b>	Stable base plate and with screw jack			
<b>2.3</b>	Proper sole plates on loose ground. Extended under two uprights?			
<b>3.0</b>	<b>STANDARDS (VERTICAL TUBES/UPRIGHTS/COLUMNS/POSTS)</b>			
<b>3.1</b>	Plumb and braced?			
<b>3.2</b>	Joints not in the same lift. Arranged near ledgers as possible?			
<b>3.3</b>	Sound materials. No visible bents or defects?			
<b>4.0</b>	<b>LEDGERS (RUNNERS) AND BEARERS</b>			
<b>4.1</b>	Securely fixed to standards with proper couplers?			
<b>4.2</b>	Horizontally levelled?			

4.3	Staggered joints and not occurring in the same bay?			
4.4	Sound materials. No visible bents or defects?			
4.5	Are runners interlocked and coupled to each post (standards)?			
4.6	Are the bearers attached to both posts and does the inboard coupler rest on the runner coupler?			
4.7	Do the ends of the bearer tube have full contact with the clamp?			
5.0	<b>BRACINGS</b>			
5.1	Does the longitudinal bracing extend from the first (left hand) post to the extreme top of the scaffold?			
5.2	If the scaffold is longer than five posts (verticals), is a new line of bracing begun at every fifth post?			
5.3	Is bracing installed as close as possible to the node point?			
6.0	<b>TIES</b>			
6.1	Has the tie been installed at a horizontal member that supports the inner and outer legs?			
6.2	Has the vertical tie been installed at a height less than 4 times the minimum base dimension?			
7.0	<b>COUPLERS AND FITTINGS</b>			
7.1	Proper and right couplers/fittings used?			
7.2	Couplers / fittings in good condition?			
8.0	<b>DECKINGS (BOARDS / PLANKS)</b>			
8.1	Platforms fully planked with less than 2.54 cm. (1") between planks?			
8.2	All working platforms at least 60 cm. (3 planks) wide?			
8.3	Platform's open sides less than 35.6 cm (14") from the face of the work?			
8.4	Platforms extending their end supports (overhang) no more than 25 cm (10")?			
8.5	Where planks are overlapped are they lapped over the supports?			
8.6	Are planks that rest on the bearer at other than a 90 degrees angle laid first?			
8.7	Are tools, materials, and debris removed from scaffold to prevent an accumulation?			

<b>9.0</b>	<b>ACCESS</b>			
<b>9.1</b>	Safe access been provided for all scaffold platforms?			
<b>9.2</b>	Rest platform provided every 9 meters (30 feet) of scaffold height?			
<b>9.3</b>	Ladders are clamped and positioned so as not to tip the scaffold?			
<b>9.4</b>	Ladders are of industrial type, in good condition, no bents / defects?			
<b>9.5</b>	Do rungs and steps of ladders line up vertically between the rest decks?			
<b>9.6</b>	Is the rung spacing uniform and no more than 43 cm (16 3/4")?			
<b>9.7</b>	Ladder first rung is not more than 24" above the ground			
<b>9.8</b>	Cross braces are not used for climbing up or down from the scaffold			
<b>10.0</b>	<b>GUARDRAILS</b>			
<b>10.1</b>	Are guardrails (top and mid rails) installed on all open sides?			
<b>10.2</b>	Are top guardrails installed between 91 cm. to 115 cm.?			
<b>10.3</b>	Guardrails are fitted to the inside of standards (uprights)?			
<b>10.4</b>	Guardrails firmly clamped and secured?			
<b>11.0</b>	<b>TOEBOARDS</b>			
<b>11.1</b>	Have toe boards been installed to prevent falling objects?			
<b>11.2</b>	Are toe boards at least 15 cm. (6 inches)?			
<b>11.3</b>	Toe boards are secured properly by a clamp / clip?			
<b>11.4</b>	Toe boards are fitted to the inside of standards?			

**Scaffold Erected by Name:**

**Date and location of scaffolding & permit no:**


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**Name of the Contracting Company:**

**Signature of Scaffold Supervisor:**

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**Attachment 11: Electrical Permit to Work**



**ELECTRICITY & WATER AUTHORITY**

**ELECTRICAL PERMIT TO WORK**  
 (For regulations refer EWA Safety Rules SOP S001)  
 (Electrical Safety Rules & Special HSE Measures)

Directorate/Station/Section	Key Safe No. / Safety Lock No.	PTW No.	Consent No.						
	Key No. Received with PTW								
<p><b>1. ISSUE:</b></p> <p>To .....</p> <p>I hereby declare that it is <b>SAFE TO WORK</b> on the following apparatus which is dead, isolated, connected to earth and caution notices posted:</p> <p>The apparatus is <b>ISOLATED</b> at the following points:</p> <p>The apparatus is efficiently <b>EARTHED</b> at the following points:</p> <p style="text-align: center;"><b>ALL OTHER APPARATUS IS DANGEROUS</b></p> <p>The following is the <b>WORK</b> to be carried out on the above apparatus:</p> <p>Issued with the <b>CONSENT</b> of ..... being the ..... <b>Control Engineer</b> being a <b>Senior Authorized Person</b> possessing authority to issue this <b>Electrical Permit To Work</b>.</p> <p>Signed ..... Time ..... Date ..... Valid until Date ..... Time .....</p>									
<p><b>2. RECEIPT:</b></p> <p>I hereby declare that I accept responsibility for carrying out the work on the apparatus detailed in this Permit and that no attempt will be made by me or by the persons under my supervision to carry out work on any other apparatus. .... being the <b>Competent Person</b> in charge of the work.</p> <p>Signed ..... Time ..... Date .....</p>									
<p><b>3. VALIDITY EXTENSION:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Extended up to</td> <td style="width: 50%;">Date .....</td> </tr> <tr> <td>Extension Requested</td> <td>Signed ..... (Receiver)</td> </tr> <tr> <td>Extension Given</td> <td>Signed ..... (Issuer)</td> </tr> </table>				Extended up to	Date .....	Extension Requested	Signed ..... (Receiver)	Extension Given	Signed ..... (Issuer)
Extended up to	Date .....								
Extension Requested	Signed ..... (Receiver)								
Extension Given	Signed ..... (Issuer)								
<p><b>4. CLEARANCE:</b></p> <p>I hereby declare that the work for which this Permit was issued is now suspended* / completed*, and that all persons under my supervision have been withdrawn and warned that it is no longer safe to work on the apparatus specified in this Permit and that all tools and additional earthing connections are clear.</p> <p>Remarks ..... * Delete word not applicable.</p> <p>..... being the <b>Competent Person</b> in charge of the work.</p> <p>Signed ..... Time ..... Date .....</p>									
<p><b>5. CANCELLATION:</b> This Permit To Work is hereby cancelled, and I have informed the following ..... <b>Control Engineer</b> ..... (Name) being a <b>Senior Authorized Person</b> possessing authority to cancel this <b>Electrical Permit To Work</b>.</p> <p>Signed ..... Time ..... Date .....</p>									

## ADDITIONAL EARTHS

( This does not form part of the

**PERMIT TO WORK**

It is for record purposes only )

Position of Additional Earths	Time / Date Applied	Signed	Time / Date Removed	Signed