



<b>CONTRACTOR SITE SAFETY PROGRAM</b>				Document ID :	
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				Contractor Reference : 661000283	
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<b>AMIRAL PROJECT</b>

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<b>CONTRACTOR SITE SAFETY PROGRAM</b>
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# SECTION 1

## GENERAL

### 1 GENERAL

#### 1.1. DEFINITIONS

COMPANY : ARAMCO OVERSEAS COMPANY B.V. & SAUDI ARABIA  
OIL COMPANY ("SAUDI ARAMCO")  
CONTRACT : 6601000283 (IK) and 6600051434 (OOK)  
IK : IN KINGDOM of SAUDI ARABIA  
CONTRACTOR : HYUNDAI Engineering & Construction Co., Ltd ("HDEC")  
HYUNDAI Engineering Co., Ltd ("HEC")

#### 1.2. ABBREVIATION

HSE : Health, Safety and Environment  
G.I. : COMPANY General Instruction  
CSM : COMPANY Construction Safety Manual  
CSMH : COMPANY Construction Safety Manual Handbook  
CSAR : COMPANY Contractor Safety Administrative Requirements  
EHC : COMPANY Environmental Health Code  
SAPO : Saudi Aramco Proponent Organization

#### 1.3. REFERENCE DOCUMENTS

COMPANY Construction Safety Manual  
COMPANY General Instructions

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## SECTION 2

### (CONTRACTOR SITE SAFETY PROGRAM (CSSP))

## 2 SCOPE OF WORK PROGRAM

This CONTRACTOR SITE SAFETY PROGRAM (CSSP) has been prepared as required by Saudi Labor Law, Schedule “D” of Contract, COMPANY’s Construction Safety Manual, COMPANY’s General Instructions and to outline the methods, uniform approach for implementing the project site’s Health, Safety & Environmental requirements and to give guidance on the core processes to be followed during the construction period.

### 2.1. GENERAL DESCRIPTION OF WORK

#### 2.1.1. Civil Works:

##### Foundations and Floor Slabs

CONTRACTOR shall supply and install all required foundations and floor slabs including for equipment, buildings, and structures – including all required: excavation; shoring; dewatering; blinding; waterproofing; reinforcement; formwork; concrete placement; anchor bolts and embedded items; coating and protection; backfill and compaction; grouting and disposal of excavated material.

CONTRACTOR shall consider proximity of adjacent excavations and foundations and ensure suitable safe access and working area is provided in CONTRACTOR Construction methodology, using suitable profile / shoring techniques for all excavations.

##### Underground Systems

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CONTRACTOR shall supply and install all required underground systems including pressurized / process and non-pressurized piping and drainage systems, and underground cabling – including all required: excavation; shoring; dewatering; concrete works, including lined trenches, covers, ducting, culverts, sumps, drains, basins, chambers, and manholes; bedding materials; piping installation; cable laying; warning tapes; covers and tiles; backfill and compaction; and testing and Pre-Commissioning to support RFC (Ready For Commissioning)

#### Concrete Works

CONTRACTOR shall supply and install all required concrete works including concrete structures, pipe tracks, pipe supports, plinths, minor foundations, walls, steps, kerbs, channels and ditches, and other miscellaneous concrete items – including all required: excavation; shoring; dewatering; blinding; waterproofing; reinforcement; formwork; concrete placement; anchor bolts and embedded items; coating; backfill and compaction; and grouting.

#### Roads and Paving

CONTRACTOR shall supply and install all required roads and paving including surface drainage systems, berms, bunds, kerbs, and any landscaping as required – including all required: earthworks; fill; compaction; lining; sub-base and base layer preparation; asphalt and concrete placement; concrete work; and painting, coating and finishing.

#### Fencing and Infrastructure

CONTRACTOR shall supply and install all required fencing and infrastructure including fencing and physical safety and security measures: including gates, barriers, and locks; and street furniture including safety barriers, lighting and sign posts, and signage.

#### Equipment Emergency Maintenance

CONTRACTOR shall and install all required equipment maintenance provide maintenance services on specified equipment. The contractor agrees to regularly inspect and repair the equipment according to manufacturer guidelines, respond to

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emergency repairs within a set number of hours, and ensure services are performed by properly trained employees.

### 2.1.2. Building Works:

CONTRACTOR shall supply and install all required buildings including all required: concrete work; structural steel erection; cladding; blockwork; brickwork; windows; piping; cabling; internal walls, floors and ceilings; power and lighting systems; fire and security systems; plumbing and drainage systems; telecommunication systems; HVAC; control systems; painting; fixtures, fittings, and finishes, testing and Pre-Commissioning to support Mechanical Completion including any temporary utilities and services.

### 2.1.3. Steel Structure Works:

CONTRACTOR shall supply and install all required pipe racks and other steel structures – including all required: fabrication and erection of structural steel, platforms, ladders, stairs, **checkered plate, gratings** and handrails; levelling, shimming, and alignment; grouting; surface preparation, painting, coating, and galvanising; safety features; installation and testing of runway beams and hoists etc.; and fabrication and erection of supports, brackets, stands, and other miscellaneous steelwork.

CONTRACTOR shall evaluate fireproofing requirements to piperacks and other structures as per fire hazard classification and shall supply and install fireproofing where necessary in accordance with AMIES-B-006 where required

### 2.1.4. Mechanical Works:

CONTRACTOR shall supply and install all required mechanical, static, rotating, and packaged equipment – including all required: erection, placement, and hook-up; levelling, shimming, and alignment; grouting; internals installation; preservation; completion of any associated steelwork, piping, electrical, instrumentation, control, paint / coating, and insulation; first fill; testing and pre-commissioning to support Mechanical Completion; and vendor inspection and installation, testing, and Pre-Commissioning support.



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### 2.1.5. Piping Works:

#### Above Ground Piping Installation

CONTRACTOR shall be responsible for the supply, fabrication and erection of all required pipe and pipe spools, fittings, flanges, valves, supports, in-line components, and steam tracing – including all required: erection; alignment and fitting; welding and jointing; testing, cleaning, drying and Pre-Commissioning to support Mechanical Completion.

#### Insulation

CONTRACTOR shall supply and install all required hot, cold, personnel protection, acoustic, and other insulation; for piping, equipment, buildings, or other items as required – including all required: fabrication and installation of all cladding, fixings and metalwork; installation of all insulating materials; and jointing and sealing.

#### Paint and Coatings

CONTRACTOR is responsible for the supply of all painting / coating materials, and all painting and / or coating of: concrete and civil items; buildings; structural steel items; equipment items; piping items; and other items such as architectural finishes, signs, and identification marks.

#### Welding Control, Testing and Non-Destructive Examination (NDE)

CONTRACTOR shall refer to the Contract document Schedule B and Schedule Q for full welding requirements. CONTRACTOR shall submit all welding / NDT procedures to COMPANY for approval.

All Welder tests shall be witnessed by an independent third party appointed by the CONTRACTOR at its own cost and approved by COMPANY.

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A proper record system of welder performances shall be maintained by CONTRACTOR and shall include welder performance reports, rejection notes, persistent faults, etc.

CONTRACTOR shall utilize a Welding Control Database for the control of all welding at Site.

#### **2.1.6. Electrical and Instrument Works:**

##### Electrical Equipment

CONTRACTOR shall supply and install all required: transformers; switchgear; cabinets; distribution boards; control panels; relays; switches; junction boxes; power management and protection; junction boxes; earthing; cathodic protection; heat tracing; light fittings; power outlets; supports; and labelling and marking, performing all required testing and Pre-Commissioning to support Mechanical Completion.

##### Electrical Cabling

CONTRACTOR shall supply and install all required: cable, cable tray, supports, and conduit – including: cable pulling; glanding, dressing and clipping; terminations; labelling and marking; and testing and Pre-Commissioning to support Mechanical Completion.

##### Electrical Small Power and Lighting

CONTRACTOR shall supply and install all electrical small power and light circuits, including distribution cabinets, junction boxes, cable tray, ladder rack, conduit, Unistrut, the pulling, glanding and terminations, clipping and ID marking of cable on tray, ladder rack, conduit, raceway, Unistrut, underground, in duct, directly clipped to any surface, receptacles, outlet, light fittings, flood lights, the support to any light fitting from street light poles to simple brackets and any other activity, which is required to complete this construction installation.

#### **2.1.7. Instrumentation and Control:**

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### Instrumentation and Control Equipment

CONTRACTOR shall supply and install all required: control systems equipment; instruments; transmitters; instrument air sub-headers and small-bore piping; tubing and supports; control valves, positioners, and actuators; control panels and remote terminal units; junction boxes; switches; supports; and labelling and marking, performing all required testing and Pre-Commissioning to support Mechanical Completion.

### Instrumentation and Control Cabling

CONTRACTOR shall supply and install all required: cable, cable tray, supports, and conduit – including: cable pulling; glanding, dressing and clipping; terminations; labelling and marking; and testing and Pre-Commissioning to support Mechanical Completion.

#### **2.1.8. Telecommunication and Security:**

CONTRACTOR shall supply and install all required: telecommunication equipment; cabling and associated infrastructure; cabinets; panels; racks; security equipment; public address systems; cameras; access control systems; and labelling and marking, performing all required testing and Pre-Commissioning to support Mechanical Completion.

#### **2.1.9. Loss Prevention:**

CONTRACTOR shall supply and install all required: fire and gas protection and detection systems; safety equipment; signs; lights; alarms; and labelling and marking, and testing and Pre-Commissioning to support Mechanical Completion.

#### **2.1.10. Access:**

CONTRACTOR shall supply, erect, maintain and dismantle sufficient elevated access by means of tube / clip scaffold and powered equipment e.g. motorized elevated work

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platforms (MEWPs), scissor lifts etc. taking due account of means of access, ground conditions, work being undertaken, loading, congestion.

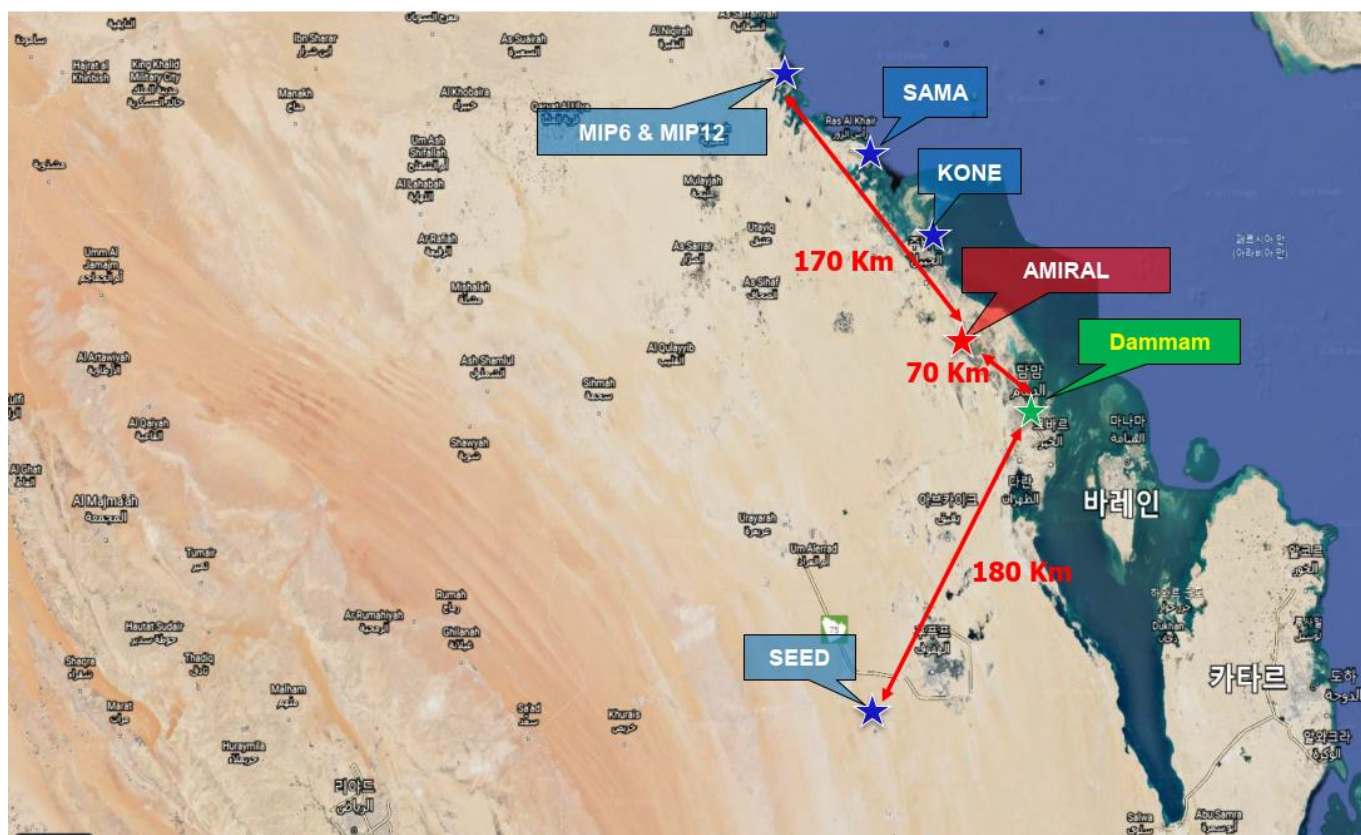
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## SECTION 3

### SITE LOCATION MAP

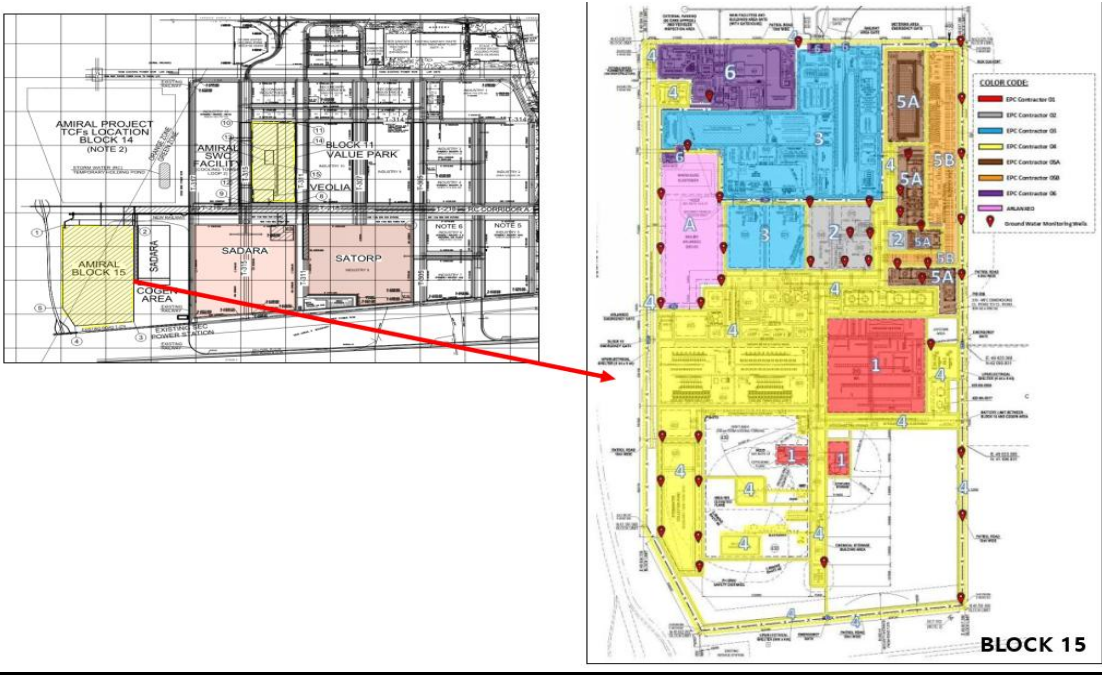
### 3 PROPOSED FACILITIES LOCATION

Satellite image of the plant location, proximity from existing COMPANY facilities, and other landmarks.



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**PKG (4) AMIRAL – Utilities, Flares and Interconnecting system LOCATION**



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## SECTION 4

### CONTRACTOR'S HSE POLICY

#### 4 CONTRACTOR'S HSE POLICY

CONTRACTOR recognizes the health & welfare of personnel, safety of operations and environmental protection as the highest corporate priorities, and as a determinant to sustainable development.

As such, it is the policy of the CONTRACTOR that no employees of the COMPANY or CONTRACTOR and the public will be put at risk under any circumstances. CONTRACTOR will obey the core value of both Company HSE Regulation, and Contractor HSE Regulations.

It is emphasized that the content of this manual is a basic part of COMPANY policy, and the application of its provisions are mandatory. Supervision at all levels will be held responsible for the proper implementation and observance of the procedures and standards herein prescribed.

##### 4.1. STATEMENT OF POLICY

The Safety, Health and well-being of its employees are of paramount consideration to the CONTRACTOR in all its undertakings. CONTRACTOR's Management sets a high standard of protection for its employees in Safety, Health and Welfare. In recognition of this precept, CONTRACTOR will constantly work towards:

- The maintenance of safe and healthy working conditions.
- Consistent adherence to safe operating practices and procedures to minimize accidents and illness.



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- c. Thorough observance of all COMPANY/CONTRACTOR's requirements as stipulated in Schedule "D" of Contract and the HSE regulations of Saudi Arabia Labor Law.

## 4.2. HSE POLICY & OBJECTIVES

『PLANT』

Health·Safety·Environment  
Policy & Objectives

Plant Division prioritizes the value of health, safety and environment under the philosophy of humanism, faithful fulfillment of social responsibilities & roles, and does its best to promote the well-being and happy life of all stakeholders.

### ZERO Accident

Fatality & Environment

- 1 Faithful to Basic Regulations & Standards
- 2 Establishment of Advanced HSE System
- 3 Cascading Safety Culture

All employees shall fully understand and faithfully comply with the policy above.

January 2024

  
 Seong-An Ryu  
 COO & President Plant Division



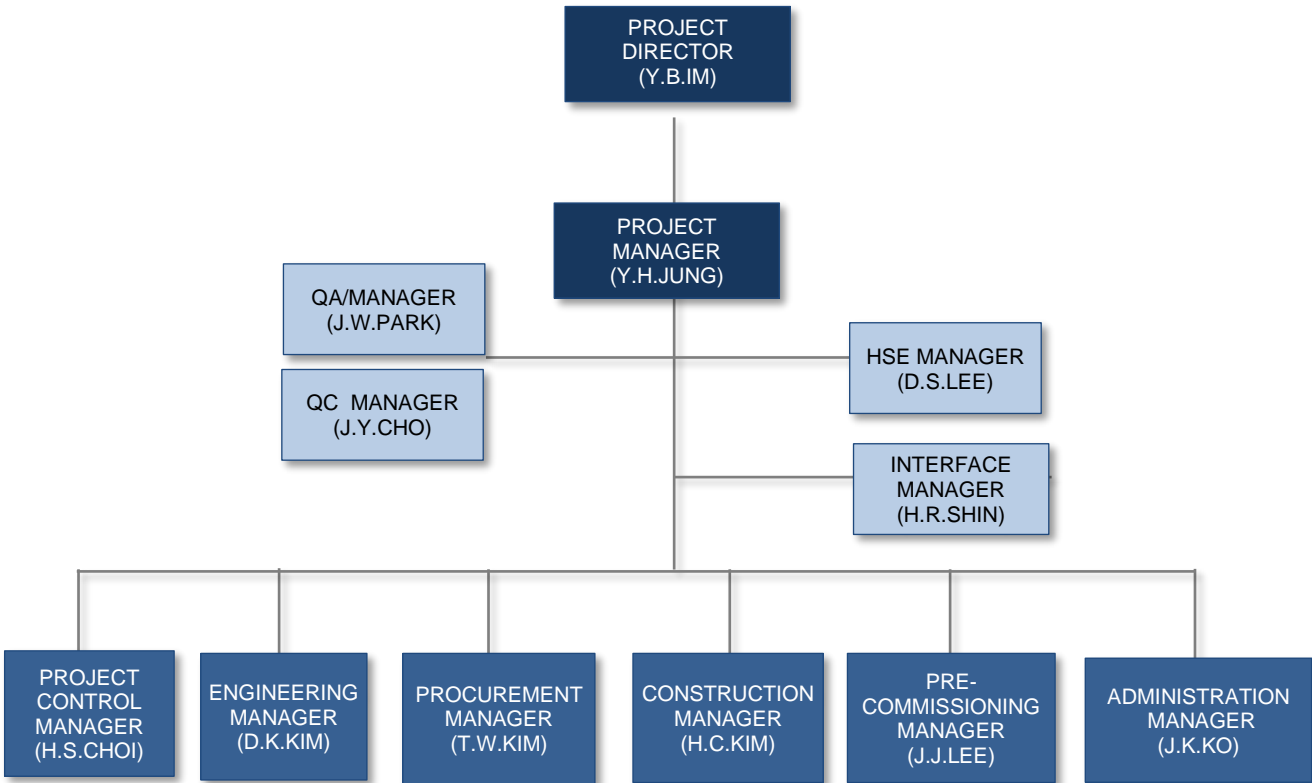


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SECTION 5

CONTRACTOR’S ORGANIZATIONAL CHART

5 CONTRACTOR’S ORGANIZATIONAL CHART

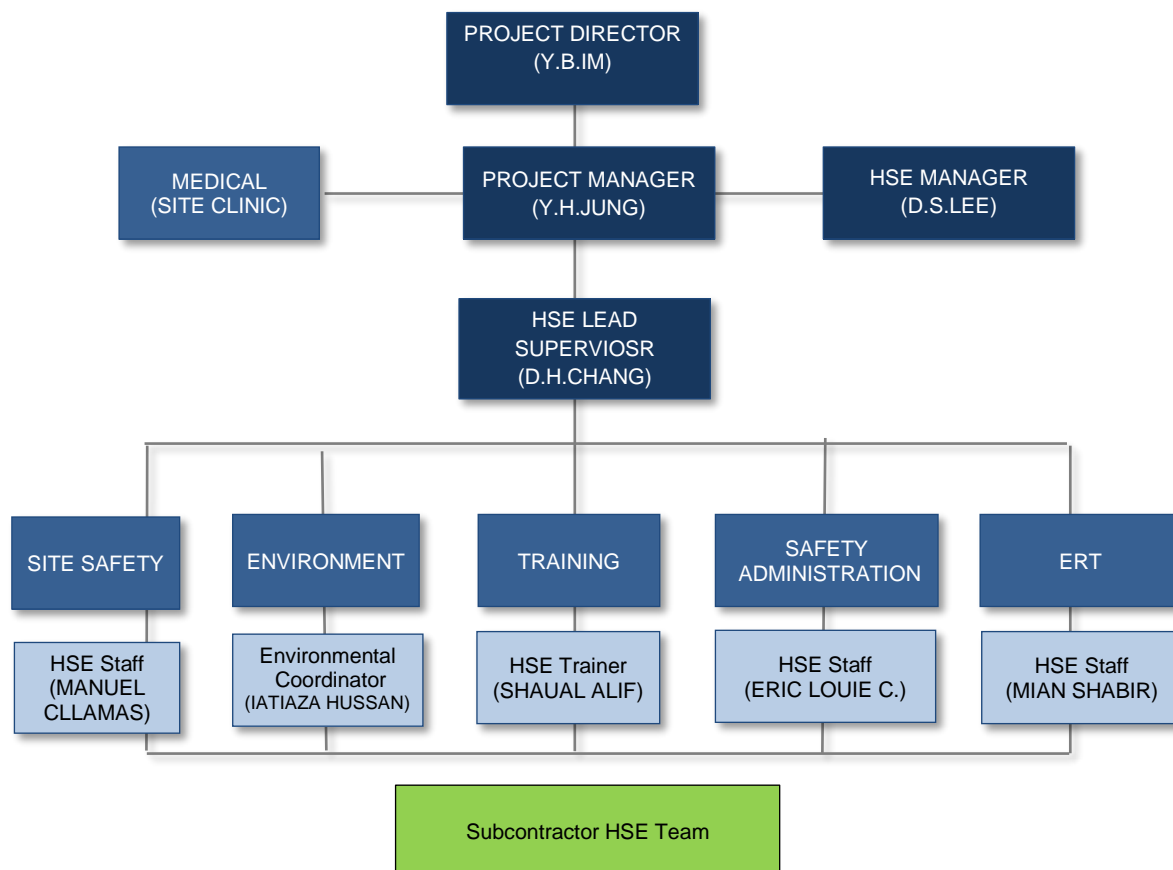


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## SECTION 6

# CONTRACTOR'S SITE HSE ORGANIZATIONAL CHART

### 6 CONTRACTOR'S SITE HSE ORGANIZATIONAL CHART



#### NOTE:

- ❖ Subcontractor HSE Team shall work with Contractor HSE Team for the implementation of Contractor CSSP
- All position to be filled up (CV's to be submitted for SA approval)
- The process for approving all contractor HSE personnel, including subcontractors, rentals

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reviewing CVs, conducting interviews with SAPO, and administering a written test.

## SECTION 7

# ASSIGNMENT OF RESPONSIBILITIES

## 7 ASSIGNMENT OF RESPONSIBILITIES

Contractor's workers, personnel and management are organized and held responsible for the initiation, administration, implementation and maintenance of the **CONTRACTOR SITE SAFETY PROGRAM** as outlined below:

1. Project Director
2. Project Manager
3. Construction Manager
4. Discipline Managers
5. HSE Manager
6. HSE Supervisors (Engineers/Supervisor/Officers)
7. Engineer / Supervisor
8. Foreman
9. Workers

Please refer to "the Project & HSE Organization Chart" and see below mentioned details of responsibilities.

### 7.1. PROJECT DIRECTOR

1. Initiate CONTRACTOR SITE SAFETY PROGRAM (CSSP) and ensure that adequate financial provisions are made for its implementations.

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2. Committed to ensure Amiral HSE requirements are implemented throughout the project activities.
3. Appoint HSE personnel to administer the CONTRACTOR SITE SAFETY PROGRAM (CSSP), Schedules "D" of Contract, COMPANY's construction regulations and Saudi Arabian Labor Law provisions.
4. Ensure that all levels of staff are aware of their personal commitment to Safe working practices.
5. Set a personal example of best HSE Compliance and drive safety culture throughout the project lifecycle.

## 7.2. PROJECT MANAGER

1. Committed to support of the CONTRACTOR SITE SAFETY PROGRAM (CSSP), Schedule "D" of Contract, COMPANY's construction regulations and Saudi Arabian Labor Law provisions.
2. Ensure that adequate finance is made for facilities and equipment to avoid risk of injury to personnel, damage to and wastage of equipment and materials.
3. Ensure the management staffs are aware of the CONTRACTOR SITE SAFETY PROGRAM (CSSP), Schedule "D" of Contract, COMPANY's construction regulation, and the requirements of Saudi Arabian Labor Law, and of serious financial consequences by their non-observance.
4. Reprimand any member of supervisory staff for failing to discharge satisfactorily the responsibilities allocated to him.
5. Institute a proper system for reporting, investigating and estimating the cost of injury, damage and fire. Promote action to prevent recurrence and initiate analysis to discover accident causes and trends.
6. Make sure that in tendering, at planning stages, and throughout the contract, allowance is made for suitable and sufficient safety equipment to enable the job to be done with minimum risk.

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### 7.3. CONSTRUCTION MANAGER

1. Understand the COMPANY/CONTRACTORS's policy and appreciate the responsibility allocated to each grade of supervision.
2. Know the requirements of the CONTRACTOR SITE SAFETY PROGRAM, Schedule "D" of Contract, COMPANY's construction regulation and relevant parts of Saudi Arabian Government Workmen's Regulation and ensure they are observed.
3. Ensure that tenders are adequate to cover sound working methods and reasonable welfare facilities.
4. Determine at the planning stage:
  - a. The most appropriate order and methods of working.
  - b. Storage areas, access, etc.
  - c. Hazards which might arise from overhead or underground services.
  - d. Facilities for welfare, first-aid, and sanitation.
  - e. Work permits procedures and requirements.
  - f. Basic fire precautions.
  - g. House Keeping.
5. Provide written instructions to establish work methods, to explain the sequence of operations, to outline potential hazards at each stage, and to indicate precautions to be adopted.
6. Personally implement the recommendations of the HSE Supervisors.
7. Ensure that all supervisory grades reporting to him are aware of and carry out, the requirements stipulated in Schedule "D" of Contract and Saudi Arabian Labor Law.
8. Organize the site so that work is carried out with the minimum risk of injury to men, damage to and loss of materials and equipment.
9. Release staff for HSE training session when required.
10. Set a personal example on site by wearing appropriate protective clothing and equipment at all times and drive HSE compliance and safety culture throughout

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the project lifecycle.

#### 7.4. DISCIPLINE MANAGERS

1. Understand the COMPANY/CONTRACTOR's policy and appreciate the responsibility allocated to each grade of supervision.
2. Know the requirements of the CONTRACTOR SITE SAFETY PROGRAM, Schedule "D" of Contract, COMPANY's construction regulation and relevant parts of Saudi Arabian Government Workmen's Regulation and ensure they are observed.
3. Ensure that Contractor has adequate means to cover sound working methods and reasonable welfare facilities.
4. Provide written instructions to establish work methods, to explain the sequence of operations, to outline potential hazards at each stage, and to indicate precautions to be adopted.
5. Personally implement the recommendations of the HSE Supervisors.
6. Ensure that all supervisory grades reporting to him are aware of and carry out, the requirements stipulated in this CONTRACTOR SITE SAFETY PROGRAM (CSSP), Schedule "D" and Saudi Arabian Labor Law.
7. Organize the site so that work is carried out with the minimum risk of injury to men, damage to & loss of materials and equipment, including damage to environment.
8. Set a personal example on site by supporting and following site safety rules, wearing appropriate protective clothing and equipment at all times.
9. Discipline manager must also support HSE initiative, compliance and safety culture throughout the project lifecycle.

#### 7.5. HSE MANAGER (HSEM)

1. Provide guidance and advice on management of the following:

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- a. Ways to prevent injury to personnel, damage to plant and/or equipment and fire
  - b. Ways to improve existing work conditions
  - c. Legal and contractual requirement affecting Safety, Health and welfare
  - d. Provision and use of protective clothing and equipment
  - e. Potential hazards on site before work starts and on the HSE organization and fire precautions required
  - f. Changes in HSE requirement
2. Monitors the carrying out of site surveys to ensure that only safe work methods are in operation, that health and Safety requirements are being observed, and welfare & first aid facilities are adequate and properly maintained.
  3. Determine the cause of any accident (or dangerous occurrence), and recommend means of preventing recurrence of such an incident.
  4. Monitor and oversees the recording and analysis of information on injuries, damage and production loss. Assess accident trends and review overall HSE performance.
  5. Keep updated with latest codes of practice and HSE literature. Initiate the circulation of information applicable to each level of employees
  6. Foster within the project site an understanding that injury prevention and damage control are an integral part of business and operational efficiency.
  7. The site safety manager shall be fluent in spoken and written English and shall have at least 10 years of safety experience specific to the contract's scope of work- CSAR Section 4.5 B
  8. Weekly management walkthrough shall be cascaded to the top management and action taken are done and recorded.
  9. Be fully familiar with the Amiral policies, especially in the field construction to maintain the highest standards of safety, security, health and environmental protection.

## 7.6. HSE SUPERVISORS (ENGINEERS/SUPERVISOR)

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1. The HSE Supervisor is delegated by the HSE Manager and has the responsibility to provide advice, guidance and such aid as may be needed by the field supervisors in preventing accidents and having full authority to stop unsafe job (unsafe conditions / unsafe acts) until the deficiencies have been corrected, authority to order HSE supplies & equipment as needed., including the conduct of:
  - a. HSE Induction of new employees.
  - b. Re-issuance of protective equipment
  - c. HSE meeting-planning and assistance.
  - d. Supply of information and educational materials for meetings.
  - e. Accident investigation follow-up.
  - f. Statistical reporting.
  - g. General publicity-posters, management reports, memos, letters, notices, etc.
  - h. Arranging periodic HSE Inspections for the project
  - i. Scheduling HSE trainings and other special instructions.
  - j. Weekly and Monthly man hour report submission to relevant parties
  - k. Arrange HSE Signs & Statistical Sign Boards at their site.
1. Prepare and keep adequate records of all accidents, and from these records prepare such chart that will best show the way to highlight problem areas so appropriate action can be taken to reduce and eliminate accidents.
2. Keep updated with new developments in accident prevention, personal protective equipment and first-aid equipment,
3. Ensure that any equipment brought on site is suitable and has the necessary valid certificate; and to draw site management's attention to any defects or deficiencies.
4. Investigate any injury to personnel, loss or damage to equipment, near-misses and accidents, and the corrective action taken on the recommendations made in the hazard report.
5. Carry out regular site checks, in addition to the official weekly inspections, of all sites for which he is responsible.



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6. Encourage all position grades to HSE consciousness during HSE meeting and to recommend ways of Improving HSE and preventing loss and damage to equipment and materials.
7. Attend job progress meeting where HSE is an item on the agenda. Report on job HSE performance. Take part in discussions on injury, damage, and loss control.
8. Keep record of weekly HSE meeting, subject and attendance.
9. Set a personal example.
10. Site safety supervisor(s) shall be fluent in spoken and written English and shall have at least seven years of safety experience specific to the contract's scope of work.

**Note:** Safety officers with less than five years of safety experience, as well as clerical, fire watch, confined space standby men, hazardous materials handlers, etc., shall be excluded from the numbers of safety staff in Table 4.1. Contractor is advised that additional safety officers may be necessary based on the risk of the activities to be performed and as requested by the SAPO

The contractor shall provide the safety manager and each safety supervisor with a personal means of communication (e.g., mobile phone) and a dedicated motor vehicle equipped for the travel environment that may be encountered during the course of his work.

The safety manager/supervisor and field safety officer positions shall be filled prior to commencement of on-site work and shall remain filled until completion of work.

Contractor safety staff personnel shall not be assigned dual roles (e.g., Not a site safety officer and the scaffold inspector)

## 7.7. SAFETY OFFICERS

Safety officer plays a critical role in ensuring adherence to safety regulations and protocols to protect personnel, property, and the environment. They oversee the implementation of safety procedures, conduct regular inspections, and provide

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necessary spot training and guidance to workers to mitigate potential hazards and maintain a safe working environment. Additionally, they are responsible for coordinating for with relevant officials to address any safety concerns and facilitate continuous improvement in safety practices.

All field safety officers (whose job title could be also safety inspector, site safety engineer, safety advisor, safety representative or similar position) shall be fluent in spoken and written English and have at least five years of safety experience specific to the contracts scope of work.

## 7.8. ENGINEERS / SUPERVISORS

1. Understand and fully support & comply the CONTRACTOR SITE SAFETY PROGRAM, Schedule "D" of Contract, COMPANY's construction regulations, and the requirements of Saudi Arabian Labor Law.
2. Responsible for maintaining Safe working conditions and practices and for the HSE of all men under his supervision.
3. Plan and provide for good housekeeping. Nowhere is the quality of supervision is more apparent than in housekeeping. Good housekeeping is not only essential for HSE but is also indicative of efficient supervision.
4. Each supervisor is responsible for the proper training of the employees reporting to him. Job hazards and safe procedures shall be fully explained to each employee before commencing work.
5. It is also the supervisor's responsibility to see that all needed Personal Protective Equipment (PPE) meets Company Standards and is used in accordance with HSE Rules & Practices.
6. Encourage employee's suggestions and gives them immediate considerations.
7. Be familiar with Work Permit Procedures of COMPANY
8. Give precise Instructions on responsibilities for correct and implement the same work methods.
9. Coordinate with Sub-CONTRACTOR's and other CONTRACTOR's on site to avoid any confusion about areas of responsibilities.
10. Check that equipment and tools, both power and hand tools, are maintained in

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good condition.

11. Ensure that verbal instructions are fully understood and follow-through to see that they are carried out as Intended.
12. Make sure that all men know the emergency procedures to be undertaken in case of accident.
13. Make sure that all required Personal Protective Equipment (PPE) meets COMPANY's Standards and is used.
14. Release supervisors and men when necessary for HSE and fire training.
15. Sets an example and wears all required PPE.
16. The contractor's project engineer (project superintendent or equivalent position) shall immediately notify the contractor's site management and the SAPO of the following:
  - Injury or death of personnel, damage to equipment, loss of process or damage to the environment.
  - Safety infractions noted during site inspections, etc.

## 7.9. FOREMEN

1. Understand and fully support & comply the CONTRACTOR SITE SAFETY PROGRAM.
2. Personally conduct HSE meetings with workers at least once a week.
3. Enforce all general and department HSE rules and regulations.
4. Ensure that all accidents & near misses are reported immediately and that first-aid is rendered in case of injured.
5. Investigate all accidents and near-misses and prepared reports of accident.
6. Ensure that all workers, especially new ones, take all necessary precautions (including the wearing personal protective equipment) and are restrained from taking risk.
7. Report any defects in plant and equipment to the construction superintendent. Do

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not allow defective or dangerous equipment to be used.

8. Correct unsafe acts, such as horseplay and the taking of unnecessary risks.
9. Set a personal example.
10. Be familiar with Work Permit procedures.
11. Wears all required PPE and comply.
12. Be qualified, proficient in both verbal and written English, provide direct and effective on-site supervision and be continuously present onsite
13. Be empowered in writing by their management to stop their own work and work related to the contract that they deem to be unsafe and to take immediate corrective actions as needed.-CSAR Section 7.7

## 7.10. WORKERS

1. Understand and fully support & comply the CONTRACTOR SITE SAFETY PROGRAM.
2. Use the correct tools and equipment for the job. Use the protective clothing and equipment provided.
3. Do nothing to endanger him-self or work mates.
4. Keep tools in good condition.
5. Refrain from horseplay and abuse of Safety devices equipment and welfare facilities.
6. Work HSE and follow HSE instructions from immediate superior.
7. Report all accidents & near misses to direct supervisor and HSE Dept.
8. Clean the work area before you leave job site at the end of the day.
9. Properly use required Personal Protective Equipment (PPE) at all times.
10. Be empowered in writing by their management to stop their own work and work related to the contract that they deem to be unsafe (without fear of retribution)-CSAR Section 7.9

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## SECTION 8

# HSE ORIENTATION AND TRAINING

### 8 HSE ORIENTATION AND TRAINING

Training is a key factor in the prevention of accident and pollution during construction phase. The primary aim of HSE training is for all CONTRACTOR's employees and its subcontractors to:

- Develop HSE awareness and establish safety as a permanent and important part of work.
- Become educated and skillful to recognize all potential hazards of their work and their work environment,
- Know how to correctly and safely use plant, equipment or handle substances,
- Be familiar and compliant with safe work practices required by specific tasks associated with their work.
- Achieve an appropriate level of competency to enable them to do their job safely and influence others to do the same
- Be aware of their responsibilities when performing their task and supervising other staff or workers.

All employees, regardless of position, shall attend a General Orientation given by the site HSE staff. This Orientation shall take place as soon as practicable after arrival, but in any case before starting work.

#### 8.1. GENERAL ORIENTATION (INDUCTION TRAINING)

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Orientation Training is a mandatory training for all site personnel and in particular new worker, transferred or new to his trade/assignment before commencing work. A typical project safety orientation training should include as a minimum the following subjects:

- HSE Policy and objectives,
- COMPANY site specific HSE rules and regulations,
- CONTRACTOR's site HSE rules and instructions,
- Awareness to typical construction HSE hazards and precaution,
- Occupational health and general health issues such as Smoking and Substance abuse (Drug and Alcohol),
- Reporting of accidents and incidences such as near-misses, potential hazards, unsafe conditions and unsafe acts.
- Compliance to relevant legal requirements, local and regulatory bodies such as occupational safety, environmental and social concerns,
- First-aid and emergency response procedures
- Housekeeping and the management & control of construction waste,
- Observation and compliance with Danger and warning notices,
- Disciplinary Actions

The topic of HSE Orientation will be up-dated and educated to the employees in according to the change of project circumstance.

Following successful completion of the General Orientation, which shall be linked to the issue of HSE Orientation Sticker and Contractor Identification Card, new arrivals shall be given a Specific Orientation from their direct supervisor or appointed representative.

The contractor's safety orientation program shall include an overview of relevant requirements in the SA Safety Handbook and Construction Safety Manual (CSM). The contractor's safety orientation program shall include, but not be limited to, the applicable topics shown in Table 8.1

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## 8.2. SPECIAL TRAINING COURSES

Any person carrying out specific activities must be experienced, competent, and trained accordingly before commencing such duties.

The Specific Training shall serve as an opportunity for the employer to show the employee a genuine commitment to his or her health, Safety and welfare, and shall include more in-depth information on hazards associated with direct work they will be expected to perform, and familiarization with work colleagues and workplace.

Specific Training Courses shall be given to personnel at all levels of the organization according to the Training Needs Analysis Matrix. This matrix shall form the basis of the training needs standard (who, what, when).

Many specific training courses may be given and recorded by the site HSE team. However, for specialized activities such as scaffolding, electrical systems, health surveillance etc., CONTRACTOR may consider to bring in and engage the services of dedicated and trained personnel when necessary.

A database shall be maintained that will serve to notify who requires what training, if they have completed such training, and when refresher training is required. This will enable preparations for further training courses to be made in good time.

## 8.3. REFRESHER TRAINING

All employees, after a specific period and/or as prescribed by the HSE Manager or when a project conditions has changed or a new HSE procedure is introduced, shall undergo a refresher training so as to maintain their level of HSE awareness at the highest level possible.

Refresher training shall be required annually as a minimum, or when major changes will occur, or have occurred, on site or to procedures.

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Refresher safety training shall be Conducted at a frequency not less than that established by Saudi Arab Government regulations or SA requirements (note: in the event that refresher safety training is not covered by Saudi Arabian Government regulations or SA requirements, the SAPO or contractor shall document the refresher safety training frequency). -CSAR Section 8.5

#### 8.4. JOB SPECIFIC TRAINING ANALYSIS

Training is one of the most important responsibilities of management and, accordingly, there will be a continuing effort to help our supervisory personnel in carrying out their management function. In order to accomplish this, our key-men shall be continuously trained to become competent supervisors.

The training are for all of CONTRACTOR and Subcontractor's Construction Managers, HSE Managers, Discipline Managers, Site/Field Engineers, Supervisor/Foremen, Safety personnel and other designated personnel. These trainings shall be implemented immediately upon arrival at the project site.

CONTRACTOR nominate/designated persons / 3<sup>rd</sup> party training subcontractor shall deliver part or all training courses.

Contractor shall ensure that all their site supervision and safety staff receive formal safety training, including a 24-hour (min.) OSHA, NEBOSH, NSC or other SAPO-approved equivalent safety training program. This training shall include a review of typical site hazards and safe work practices.

Contractor's site supervision and safety staff shall be trained in, but not be limited to, the following:

- The job-specific JSA and HIP.
- The contract's safety requirements.
- Specific hazards and safe work practices associated with the job.
- Relevant sections of the SA Safety Handbook and the SA Construction Safety Manual (CSM).



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- Injury/incident reporting and investigation.
- Applicable emergency response procedures.
- First aid and basic life support (BLS). Note: They shall have valid first

#### **8.4.1. A Minimum required training;**

- Confined spaces awareness
- Working at height
- Heat stress prevention
- Fire safety awareness
- Emergency response
- H2S awareness
- Environmental safety awareness training

#### **8.4.2. Management Training:**

The following items shall be covered during the Management's Training:

- Local labor laws, regulatory rules and other HSE legal requirements
- Policy and Administration
- Risk Assessment
- Permit to Work System
- Environmental Safety Awareness
- Emergency Preparedness, Response and Procedure
- Incident, Accident Reporting and Principles of Accident Prevention
- HSE Culture and Behavior Based Safety
- Communications
- Comprehensive training on Job-specific CSSP & HIP

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- Contractor Safety Requirement training
- Identification and mitigation strategies for specific hazards & safe work practice
- Training based on Safety Hand book and Saudi Aramco CSM
- Proficiency in injury/incident reporting and investigation techniques
- Competency in administering First Aid & Basic Life Support (BLS) (with valid certificates)
- ERP (Emergency Response Plan) training for ERT members based on the roles and responsibilities addressed to the work site, Project facilities and Camp.
- Provision training at various location (worksite, project support facilities, and camp)
- Practical scenarios and hands-on exercises to enhance preparedness and effectiveness during emergencies.
- Regular provision of training sessions and periodic refresher courses for personnel engaged in work at heights, including their supervisors, to ensure adherence to safety protocols and best practices.

#### **8.4.3. Site Engineers Training:**

The following items shall be covered during the Site Engineer's Training:

- Permit To Work
- The Law and HSE
- Policy and Administration
- HSE and the Supervisor' safety responsibilities
- Principles of Accident Prevention
- Site Inspection
- Human Behavior

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- Site Tidiness
- Health
- Personal Protective Equipment
- Electricity / LOTO
- Oxygen and Acetylene Equipment
- Equipment
- Transportation
- Excavation
- Working Places, Ladders, and Scaffolding
- Cranes and Other Lifting Machines
- Lifting Tackle
- Fire Protection and Control
- Communications
- Confined spaces awareness
- Working at height
- Heat stress prevention
- Fire safety awareness
- Emergency Response
- H2S Hazard awareness
- JSA /Risk assessment

#### **8.4.4. Foreman Training**

The following items shall be covered during the foremen's training:

- Permit To work
- Accident Prevention Organization
- Personal Protection

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- Scaffolding and ladders
- Housekeeping, Sanitary and First-Aid
- Welding and Cutting
- Flammable Gases and Liquids
- Excavation and Shoring
- Concrete Construction/Steel Erection
- Hoist and Cranes
- Traffic Control
- Heavy Equipment, Motor Truck, Garages and Repair Shops
- Demolition
- Hand Tools, Power Tools
- Radiation Safety
- Emergency Response
- Confined spaces awareness
- Working at height
- Heat stress prevention
- Fire safety awareness
- H2S Hazard awareness

#### **8.4.5. Emergency Response Team Training**

The following subjects shall be discussed in the emergency response team training

- Emergency Procedures
- Communication Protocols
- First Aid/CPR
- Fire Safety
- Evacuation Planning

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- Search and Rescue Techniques
- Hazardous Material Handling
- Emergency Equipment Operation
- Security Awareness
- Debriefing and Aftercare
- Scenario-based Training

#### **8.4.6. Employee (Craft) Training**

The following subjects shall be discussed in the employee's HSE Induction training.

- Hazards on the jobsite.
- Necessary HSE precautions against the above hazards
- Personal Protective Equipment.
- Ladders and Scaffoldings.
- Housekeeping and sanitation
- Lifting devices and material handling
- First-aid and emergency facilities
- Fire protection, prevention and control
- Emergency procedures.
- Reporting of Injuries and unsafe conditions.
- HSE rules and regulations and discipline.
- Responsibilities in HSE.
- Confined spaces awareness
- Working at height
- Heat stress prevention
- Fire safety awareness
- H2S Hazard awareness

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In addition to the above topics, the following procedural guide shall be emphasized to workers.

- Work Permits
- Welding and Cutting Equipment
- Hand and portable power tools
- Hand operated tools.
- Ladders and scaffoldings.
- Electrical installations and equipment's
- Cranes and rigging equipment and practices.
- Mechanical Equipment
- Excavation, trenching and shoring
- Transportation
- Ionizing Radiation
- Formworks
- Government regulations
- Confined spaces awareness
- Working at height
- Heat stress prevention
- Fire safety awareness
- H2S Hazard awareness

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8.5. HSE TRAINING MATRIX

		In charge		Team Leader		PD	

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## SECTION 9

### JOBS REQUIRING SA APPROVED CERTIFICATIONS

#### 9 TRADE CERTIFICATIONS / LICENSES

##### 9.1. LIST OF JOB TRADE REQUIRING SA CERTIFICATION

No.	Job Trade	Remarks
1	Work Permit Receiver	
2	Scaffold Inspector	"
3	Scaffolding Supervisor	"
4	Crane Operators	"
5	Rigger	"
6	Slinger	"
7	Welders	"
8	Heavy Equipment Operators	"
9	Abrasive Blasting Operators	"
10	Radiation Protection Officer (RPO)	"
11	Radiographic Technicians (NDT)	"



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## SECTION 10

### LIST OF SUBCONTRACTORS

#### 10 LIST OF SUBCONTRACTORS

No.	Subcontractor's Name	Remarks
1	HDEC - TCF	
2	GUSAN	
3	AFAC	
4	SENDAN	
5	HDEC - Construction	
6	GRP	
7	HDEC-UG	
8	UCTC	

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## SECTION 11

### PROJECT SPECIFIC PLAN / PROGRAM

#### 11 PROJECT SPECIFIC PROGRAM

##### 11.1. TRAFFIC CONTROL PLAN

###### 11.1.1. Introduction (general provisions)

###### a. Purpose

This plan has been developed to outline the logistical requirement for Road and Traffic Safety related to PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project and to ensure that all practicable precautions are taken on PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project to enable the site transportation to be operated and maintained in a safe manner. The principal aims of this plan are to highlight the needs to reduce the level of risk associated to transportation by prevention of unnecessary journey, provision for adequate maintenance, selection of experienced and qualified drivers supported by relevant regular training and various communication exercises.

The Contractor Project Manager will ensure that this document is regularly reviewed at site and keep it updated with the current site conditions.

All parties will be informed of subsequent revisions.

Contractor, subcontractors, suppliers and vendors vehicles and personnel will fully comply with the existing rules in place when using the established routes inside the PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project (please refer to the Attachment No.1 Contractor Policy – Driving Rules).

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## b. Scope of application

- 1) This plan is to be used by members of PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project Management Team, Supervisors and Subcontractors personnel responsible for all roads or off road transportation applicable to the requirement of the Project
- 2) This plan also provides assistance to enable vehicle routes to be suitably planned and information for the development of Risk Assessments for transport activities and key points to be included during HSE Training for the maintenance and operation of vehicles on site.

## c. Definitions

- 1) Heavy Goods Vehicles: Normally seating a driver plus 1 or 2 passengers plus an area / trailer.
- 2) Specialist Vehicle: Vehicles used for special purposes, normally forklift trucks, cranes and man lift vehicles.
- 3) Light Vehicle: Car, pick-up, 4 wheel drive vehicle, weighting less than 2.5 tones, normally seating a driver plus 1 to 4 passengers.
- 4) Bus: Personnel transportation vehicles normally seating a driver plus up to 41 passengers.
- 5) Mini Bus: Personnel transportation vehicles normally seating a driver plus 8 to 12 passengers.
- 6) Hazardous Load : Soil and rock spoil, pipes for piling, structural steel components, lubrication oil, hydraulic system oil, cement, batteries
- 7) Mobile Plant-Construction Vehicles: All excavators, mobile cranes, dump trucks, loaders, drills, **Manlift, different types of compactor, dumpers**, tractors and any equipment used directly in construction activities.
- 8) Professional Drivers : Personnel who are employed specifically to drive.
- 9) Occasional Drivers : Personnel who are not employed as Professional drivers.

## d. Responsibilities

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### **Project Manager (PM)**

- 1) Project Manager is responsible for the overall safety and implementation of the Traffic Control Plan.
- 2) Specific responsibilities have been assigned to other personnel as described below.

### **Construction Manager (CM)**

- 1) To develop, in conjunction with HSE Manager (HSEM) and Administration Manager (AM), Site Plans to safely control the use of all transport activities on the Project.
- 2) To develop, in conjunction with HSE Manager and Administration Manager, Risk Assessments for all transport activities on site including vehicle arrival and departure, as well as loading and unloading, to enable the introduction of control measures to identify hazards and reduce risks. These include:
  - ① Provisions of one way traffic routes
  - ② Avoidance of underground / overhead services
  - ③ Segregation of pedestrians and vehicles
  - ④ Loading and unloading areas
  - ⑤ Speed control measures
  - ⑥ Warning notices
  - ⑦ Elimination or maximum reduction on vehicle reversing operations
  - ⑧ Avoid or restrict unnecessary movement of vehicles at site.
- 3) To make arrangements to ensure that HSE Manager and Administration Manager are kept fully informed of any new activities or change of activities that could affect safety of transportation and pedestrians on site

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- 4) To ensure that Sub-contractors are made aware of all plans and arrangements for vehicle movements and they submit for approval of their detail work activities to be changed for vehicle routes

### **Administration Manager (AM)**

- 1) To give overall direction and take responsibility for the application of this plan.
- 2) To assist Construction Manager (CM) in the development of 'Site Plans' to safely control the use of all transport activities on the Project
- 3) In conjunction with CM and HSEM, to approve Sub-contractors modifications / diversions plans prior to commencement of activities.
- 4) To inform transportation/delivery companies of any restrictions on delivery of equipment, etc. to site, i.e. timings, road closures, diversion routes etc.
- 5) To inform Sub-contractors and transport companies that all transport drivers must be adequately trained, competent and possess SAUDI ARABIAN Government (SAG) Driving licenses to operate vehicles on site.
- 6) To ensure that the journeys to be undertaken are absolutely necessary.
- 7) To check and ensure that the vehicle to be used is suitable and appropriate to the type of work to be performed.
- 8) To ensure that the driver has undertaken his daily checks and reported any defects.
- 9) To check the distances involved and timing to ensure that the driver is not working outside his hours of work.
- 10) To ensure that the driver knows and understands the actions to be taken in an emergency.
- 11) To discuss the journey plan with the driver by way of a toolbox talk.
- 12) To maintain a site-based register that details the driver, purpose of the journey, route of travel, mileage involved, destination and timing, and that will also be used for maintenance of statistical records
- 13) To notify at the point of departure when a driver arrives on the site/place of travel.

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- 14) To initiate emergency procedure when vehicles become overdue, by contacting and coordinating with the HSE Manager (HSEM) and other relevant parties.

### **HSE Manager (HSEM)**

HSEM shall report to the PM and is responsible for reviewing this document for compliance with Contractor and Aramco requirements and monitoring the execution of the Traffic Control Plan for compliance.

Non-compliance with the Traffic Control Plan shall be reported regularly along with the action taken to;

- 1) Ensure that site conditions and traffic control meets the requirements outlined in this plan and that any deficiencies are reported to the PM.
- 2) Provide oversight of subcontractors transportation plans to ensure that the required safety equipment standards are applied on all subcontractors vehicles operating on the project.
- 3) Ensure that all damages, incidents, near misses or potential incidents involving vehicles and equipment are reported, investigated and that preventative measures are communicated and implemented.
- 4) Ensure that Minimum Vehicle Safety Equipment such as fire extinguishers and first aid kit, etc. are fitted in cars, trucks etc. and maintained in good conditions. (Please refer to the Attachment No.2 Minimum Vehicle Safety Equipment Standards)
- 5) Assist the Construction Managers in the development of 'Site Plans' to safely control the use of all transport activities on the Project
- 6) Assist the Construction Managers in the development of 'Risk Assessments' and control measures for all transport activities
- 7) Monitor the safe movement, use and maintenance of vehicles on the Project
- 8) Ensure that all Sub-contractors arrange suitable HSE Training from their vehicle operators and those operators are adequately trained and certified to drive such vehicles

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- 9) In conjunction, with Construction Manager and Administration Manager, approve Sub-Contractors modifications/diversions plans prior to commencement of the activities
- 10) Make arrangements for other Sub-contractors to be timely informed of the changes in vehicle routes, new speed limits and other traffic control measures
- 11) Check the records at least once a month to verify that the system is working
- 12) Communicate with other package contractors for ensuring that the interface points are addressed and agreed upon before closing or opening routes

### **Sub-contractors**

All subcontractors shall conduct their activities in line with this document.

- 1) Responsible for arranging transport for their personnel to and from accommodation camp to work site.
- 2) Employ strict controls for safely transporting their personnel from accommodation camp to work site.
- 3) Responsible for the safe movement of equipment, material and pedestrian traffic within construction works area in compliance with this plan.
- 4) Subcontractors, including their sub-contractors, are wholly responsible for ensuring that the rules and arrangements in place on the site are being followed and adhered to.
- 5) Assign responsibility within their organization for the control of vehicles and pedestrians.
- 6) With assistance from this plan, to develop a 'site transport' risk assessment featuring all practicable steps to safely control vehicle and pedestrian movements
- 7) Timely to submit for approval to Construction Manager via a plot plan, information on their activities which may affect in anyway the safe movement of vehicles and pedestrians i.e. road crossings – excavations – diversions necessary during craneage work etc.

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- 8) To ensure that all vehicle operators are trained, competent and possess SAG driving licenses to operate their vehicles
- 9) To provide copies of such licenses to CONTRACTOR Administration or HSE Manager

### Drivers/Operators

A driver is responsible for safely operating the vehicle and Heavy Equipment assigned to him at all times in the construction site.

Drivers will comply with the following requirements:

- 1) Possess valid Saudi ARAMCO Certificate, **Local Provider**, SAG license and SAG Public driver's license as follows.

EQUIPMENT TYPE	ALLOWABLE CERTIFICATION			HEAVY SAG LICENSE	SAG PUBLIC DRIVER'S LICENSE
	SAUDI ARAMCO	LOCAL PROVIDER	INTERNATIONAL INSTITUTION		
Backhoe	Yes	+(EnergyTech/ NITI )		Yes	No
Boom Truck – Articulating	Yes			No	Yes
Boom Truck – Telescoping	Yes			No	Yes
Bulldozer	Yes	EnergyTech/ NITI		Yes	No
Crane – Mobile	Yes			Yes	No
Crane – Pedestal	Yes			No	No
Crane – Tower	Yes			No	No
Forklift	Yes	EnergyTech/ NITI		Yes	No
Gradall	Yes	EnergyTech/ NITI		Yes	No
Grader	Yes	EnergyTech/ NITI		Yes	No
Loader – Skid (Bobcat)	Yes	EnergyTech/ NITI		Yes	No
Loader – Wheel /Pipelader	Yes	EnergyTech/ NITI		Yes	No
Manlift – Hydraulic	Yes		++(IPAF)	No	No
Manlift – Scissor	Yes		IPAF	No	No
Manlift -Telescoping	Yes		IPAF	No	No
Sideboom – Pipelayer	Yes	EnergyTech/ NITI		Yes	No
Straddle Carrier	Yes	EnergyTech/ NITI		No	No
Telehandler	Yes	EnergyTech/ NITI		Yes	No
Tractor - Scraper	Yes	EnergyTech/ NITI		Yes	No
Traxcavator	Yes	EnergyTech/ NITI		Yes	No
Bucket Truck Driver	Yes		IPAF	No	Yes
Bucket Truck Technician (bucket operator)	Yes		IPAF	No	No



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- 2) Be physically capable of performing the job function.
- 3) Ensure that a daily check is performed on his vehicle at the beginning of each shift (a checklist shall be prepared by the HSEM for this purpose, please refer to the Attachment No.6 Daily Vehicle Inspection Checklist)
- 4) Report any defect, abnormality or excessive wear and tear immediately to his supervisor, who shall book the vehicle into the maintenance workshop for rectification.
- 5) Each vehicle must be fitted with a suitable and operational fire extinguisher (2 kg chemical dry powder type is considered suitable). In addition, a fully equipped first aid kit and 2 hazard warning triangles for use in a breakdown situation must be available on each vehicle.
- 6) Wear a seat belt at all times during operations.
- 7) Possess suitable and sufficient PPE for offloading the vehicle on site, including tie-off lanyards if working at height on the back of the vehicle.
- 8) Ensure that all passengers wear seat belts during travel.
- 9) Follow defensive driving principles
- 10) Never drive under the influence of alcohol or drugs.
- 11) Do not smoke inside the vehicle/equipment
- 12) Report all damages, accidents, near misses and potential incidents and any vehicle damage or defects to his supervisor.
- 13) Is expected to reduce his vehicle's speed under adverse weather or hazardous road conditions.
- 14) Not carry contraband or other prohibited items.
- 15) Follow all road signs and driving instructions (must not exceed the posted speed limit).
- 16) Do not use mobile phone while driving.

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- 17) Avoid other activities that have the potential to distract and reduce drivers reaction time while driving, i.e. eating, drinking, adjusting the radio, etc.

The only exception to this is the use of two-way radios as part of radio-controlled traffic management, convoy management or for use during emergency situations. Radio use in these circumstances should be kept to the minimum necessary to communicate and control the hazards and risk of the journey being undertaken. Radio use guidance should be developed and implemented in accordance with the ARAMCO Construction Safety Manual and other relevant regulations.

All Professional drivers shall:

- 1) Hold a valid SAG driving license appropriate to the type of vehicle being driven.
- 2) Be over 21 years of age and have at least one (1) year relevant experience of driving for light vehicles. For drivers of all other vehicles, a minimum of two (2) year's relevant experience is required.
- 3) Undergo periodic medical checks to monitor and ensure their continuing fitness to drive professionally.
- 4) Be aware of the impact of other activities on their ability to drive (eg. lack of sleep, drugs, alcohol) and, where they are not fit to drive, should be reported as unfit for duty and shall be replaced.

All Occasional drivers are required to have a valid SAG driving license, obey the Saudi Arabia Traffic Rules and to comply with the requirements of this document.

The driver is responsible for transporting materials properly and ensuring that a load does not exceed the manufacturer design load capacity and the vehicle/ equipment load capacity.

All loads must be properly packed, balanced, secured and tied down. Materials should not extend over the sides of the truck. Loads extending beyond the front or rear shall be marked with a red flag. Also such loads must be equipped with visible brake and tail lights at their rear end points for conditions of poor visibility and during the hour of darkness.

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Drivers shall not transport unauthorized persons in Contractor/or subcontractor vehicles. Drivers have full authority to refuse to transport any passenger who refuses to use seat belts.

All drivers shall be familiar with what the Contractor considers as unsafe driving practices, and avoid them at all times.

In the event of vehicle breakdown or accident the driver shall:

- Ensure the vehicle does not present a hazard to other road users
- Place a hazard warning triangle 100 meters from the vehicle in the direction of oncoming traffic:
- Notify his supervisor of the breakdown, location of the vehicle and that assistance is required
- Stay clear of the vehicle

All drivers and mobile plant operators will be subjected to eye sight examination prior to their commencement of work on site and every six months after that.

Records of eye test will be maintained and shall be provided to Contractor on request.

## **Passengers**

Passengers will:

- 1) Ride only in authorized vehicles
- 2) Wear seat belts and other required PPE
- 3) Ride only in the vehicle's provided seats (standing will not be allowed)
- 4) Not interfere with the driver or distract the driver's attention except where necessary to bring to the driver's attention any potential risk and unsafe conditions.
- 5) Know and obey emergency procedure
- 6) Not smoke

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#### e. Reference Documents

- Amiral Construction Safety Manual
- Contract Schedule “D” – Safety, Health & Environmental Requirements
- MOC-Chapter 5 (Ministry of Communication Chapter 5)
- G.I. 5.005 Sign Posting to Saudi Aramco Facilities
- G.I. 6.030 Traffic and Vehicle Safety
- G.I. 7.025 Heavy Equipment operator and Certification
- G.I. 1010.007 Towing of Equipment
- G.I. 1021.000 Street and Road Closure: Excavation, Reinstatement and Traffic Controls

### 11.1.2. Traffic Management

#### a. Locations & Site Traffic Route / Flow

##### Locations

There are three major controlled areas for which Contractor has full responsibility and will enforce this work procedure ensuring that all personnel conform to its rules and regulations.

The Major areas are:

- ① Construction Works Area (Laydown area, Fabrication Area and Warehouse etc.)
- ② The Temporary Site Offices
- ③ The Accommodation Camps

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Construction Works Area: all Vehicles and Mobile Plant will access using the existing road and complying with the regulations that apply to PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project

Vehicles and Mobile Plant being maintained or operating within these areas will be equipped with reverse alarms and cranes shall also have a revolving warning light.

In addition to these measures, a competent banksman will be assigned to manage traffic movement when Mobile Plant and Heavy Vehicles are in operation.

Vehicle expected to enter this area include: Dump Trucks, Trailers, Mobile Cranes, Forklift, Roller, Pickup Trucks, Light Vehicles, Bus and Minibus.

Trained banksman will be provided with reflective jacket and whistle to alert driver in case of emergency situations.

The speed limit on these areas will be restricted to 20 Km/h and appropriate indicative speed limit signs and barriers will be erected on gates, on fence, at regular intervals on the roads inside the construction area and at all road intersections. Speed breaking humps shall be provided to control speed as appropriate at different locations based upon the risk assessment.

Parking area will be provided at site to avoid unnecessary movement of vehicles around the working area.

Temporary Site Offices: all Vehicles entering in this area will access using the existing road and complying with the regulations that apply to PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project.

Paved sidewalk will be presented adjacent to the main office block to serve and segregate pedestrians from vehicles.

Vehicles expected to enter this area include: Pickup Trucks and Light Vehicles

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Parking area will be provided at site to avoid unnecessary movement of vehicles around the working area.

The speed limit on this area will be restricted to 20 Km/h and appropriate indicative speed limit signs and barriers will be erected on gates and fence.

Accommodation Camps: all Vehicles entering the Accommodations Camps will be restricted to a speed limit of 20 Km/h (speed limit signs will be present at all gates and at regular intervals on the roads inside the camps).

Stop signs will be erected at all road intersections.

Vehicles expected to enter this area include: Pickup Trucks, Light Vehicles, Bus and Minibus.

Parking area will be provided at site to avoid unnecessary movement of vehicles around the working area.

### **Site Traffic Route / Flow**

The estimated total number of people and vehicles at peak times during the execution of the PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project is as follows;

<b>Estimated Total No. at Peak Times</b>		
<b>Manpower</b>	<b>Vehicle</b>	
	<b>Bus*</b>	<b>Light Vehicle*</b>
TBA	TBA	TBA

To avoid and minimize any traffic jam during travel from / to camp, site to / from site, camp, in the road which is being used by other contractors, Contractor should use another traffic route after identifying and assessment of traffic flow (Please refer to the Attachment No.3 Proposed Traffic Route and Flow).

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The detailed safe traffic route and pedestrians for PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project will be finalized at site in consideration of road conditions and other factors.

#### **b. Layout**

A safe site-layout will be provided on site before work commences by Contractor and all subcontractors, based on an assessment of the following:

- Pedestrian and vehicle routes
- Personnel loading / unloading
- Laydown areas
- Traffic control
- Site entrance / exit
- Parking

A road access route map shall be issued by subcontractors to each driver to clearly define traffic routes on site.

#### **c. Hazard Identification and Control Measures**

To reduce the number of Traffic accidents, hazard identification must be carried out on all major loads or critical transport activities on site. Control measures can be introduced to reduce the risks.

The detailed Hazard Identification and Control Measures for Traffic Safety will be developed at site in consideration of site conditions and other circumstances.

#### **d. Hazard and Control Measures for Transportation of Heavy / Large Equipment or Materials**

<b>ACTIVITY</b>
TRANSPORTATION OF HEAVY / LARGE EQUIPMENTS OR MATERIALS

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### HAZARDS

- A) Defective equipment.
- B) Overloading of vehicles.
- C) Load swing hitting adjacent objects/overhead power lines.
- D) Unstable pick up.
- E) Unsecured load
- F) Health hazard due to dust / Poor visibility
- G) Insufficient road compaction

### CONTROL MEASURES

- 1) Method Statement for the Transport of very large/heavy equipment" shall be prepared and submitted by concerned parties for COMPANY approval
- 2) JSA (Job Safety Analysis) shall be developed and submitted for COMPANY approval.
- 3) Appropriate supervision / escort shall be provided by Contractor to control the flow of traffic during transporting of heavy/large equipment or material from the point of origin to the point of destination.
- 4) Heavy Load Transportation Checklist should be checked by transportation contractor and submitted to Contractor and PMT before transporting the load to ensure that all precautions for Heavy load Transportation Activity have been taken to protect public safety.
- 5) Only approved equipment will be used to transport heavy loads.
- 6) Equipment used will be maintained in a good condition and have appropriate certification.
- 7) Licensed and experienced operators only will be used to carry out this activity.
- 8) Loading will be closely supervised with a trained Rigger in attendance.
- 9) Rigging/Crane studies will be undertaken (if required) to ensure the lifting operation is carried out in a controlled and effective manner utilizing any existing lifting points provided.
- 10) The weight of the load and Center of gravity will be determined and reviewed to ensure that unbalance loading and overloading is prevented.
- 11) Banksman/Riggers shall wear visible jackets or other means of personal identification.
- 12) Loading area shall be barricaded and controlled to prevent unauthorized access.

### e. Hazard and Control Measures for Site Transport



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<b>ACTIVITY</b>
SITE TRANSPORT
<b>HAZARDS</b>
A) Vehicle/Pedestrian Interface. B) Site Conditions. C) Contact with structures/overhead lines. D) Vehicle Defects. E) Falls into excavations.
<b>CONTROL MEASURES</b>
1) Existing site conditions will be taken into account in the selection of vehicle/equipment. Drivers will be aware of the limitations of their machines and shall be knowledgeable in its safe operating procedures. 2) Vehicles will be maintained in excellent condition, in efficient working order and in good repair. Basic maintenance will be carried out by the driver/operator on a daily/weekly basis. Defects found will be repaired before the vehicle is put into service. Periodic servicing of vehicles will be carried out in accordance with the manufacturer's instruction. 3) Speed limits will be established and clearly displayed for traveling on site haul roads. 4) Personnel working adjacent to haul roads will wear high visibility jackets and suitable warnings will be displayed where people can easily see them. 5) Walkways for workers will be separated from haul roads for worker's safety. 6) The possibility of vehicles coming into contact with overhead structures or power lines will be reduced by erecting height measuring devices of good post-type, constructed from non-conducting material, distinctively marked with red and white stripes or bunting. 7) Drivers will be instructed not to leave vehicles with their engine running. 8) Drivers will be instructed not to carry unauthorized passengers. 9) Vehicles will not be overloaded, and the loads will be evenly distributed, secured, and not projecting beyond the sites or back of the vehicle. If some projection is unavoidable then the load will be properly marked in order to ensure that the projection is clearly visible. 10) Drivers will not remain on a vehicle being loaded unless a suitable overhead protective canopy is provided. Personnel should stand well clear of loading operations.

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- 11) The loading and unloading of Tipper Lorries will be attended by a competent banks man. Tipper Lorries will not be allowed to move off until the body has been lowered.
- 12) Dumpers will not be allowed to travel with the body in a raised position unless inching forward to discharge the load.
- 13) Connections between trailers and towing units will be securely fixed using the correct towing pin, and the trailer parking brakes applied before disconnection from the towing vehicle.
- 14) Human / Machine interface control during heavy equipment operation
  - Vehicle and machines shall be installed a back-alarm.
  - Pedestrian and vehicle only zones are shall be dedicated.
  - Contractor shall identify low-visibility areas.
  - Install stopper
  - Vehicle and machine shall be installed proximity detectors.
  - Vehicle shall be installed blind spot cameras.
  - Vehicle shall be installed blind spot cameras.

#### **f. Vehicles and Pedestrians**

All Professional drivers shall always report to his supervisor before travelling around the site.

All sites shall be designed so that pedestrians and site vehicles or plant are segregated and where this is not reasonably practical, necessary precautions shall be taken in the forms of barriers and signs to prioritize for the safety of pedestrians.

Suitable signs shall be erected and placed accordingly to warn road users and pedestrians about site access roads and to enforce speed limits.

For Heavy Vehicles and Mobile Plant, a traffic banksman shall be suitably assigned to manage all traffic movements.

The sites transport rules shall be communicated to all persons working on the project via the "Project HSE Orientation and Induction" and regular toolbox talks.

Any person who does not comply with the site transport rules will be removed from the project and reported to the site authorities.

#### **Vehicle Routes**

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All vehicle routes will be designed to avoid pedestrian routes to the extent reasonably possible.

Primary vehicle routes will be set up to handle the most common vehicle movements, such as deliveries and the movement of heavy equipment to and from the work areas / site.

Vehicle-only areas / routes will also be established where space is limited or traffic is heavy.

Control measures will be utilized where risks are high due to the volume and types of vehicles operating in a specific area / route.

Vehicle routes will:

- Provide separation from pedestrians
- Minimize the need for reversing operations through use of one-way systems and turning points
- Have firm surfaces, adequate drainage and appropriate profiles to allow for safe movement.
- Have low gradients without tight bends where practical.
- Be clearly signed with hazard warnings to pedestrians, drivers and reminders of safe work practices and directions to secure routes – including cross road and junction priority signs, etc.
- Indicate speed limits and speed control measures specific to site conditions

Where vehicle routes cannot avoid proximity to hazardous conditions and construction vehicle operations, measures should be taken to reduce and control the risks.

## **Pedestrian Routes**

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Pedestrian routes will be established on site to provide safe access to and from parking, laydown and working area for employees.

Pedestrian-only areas, from which vehicles are completely excluded, will be established where necessary and to the extent reasonably possible.

These pedestrian routes should:

- Be located to a reasonable distance away from areas of vehicle activity.
- Be clearly separated from vehicle routes with fencing, temporary barricades, or other suitable means.
- Be wide enough to safely accommodate the volume of employees likely to use them during peak times.
- Be free from obstructions and have safe and even footing.
- Be clearly marked and clearly signed.
- Include traffic control measures where a large number of pedestrians cross busy vehicle routes such as designated crossing points, signal person / banksman to control vehicles, light signals, or a crossing guard with appropriate attire.
- Be installed proper lighting.
- Be barricade with proper lighting around the excavated area and obstructions at night.
- Pedestrians including visitors shall wear high visibility clothing with reflectorized strips in addition to minimum basic PPE

#### **g. Transport of Heavy/Large Equipment or Materials**

The arrival of exceptionally large or heavy loads like pipes for piling and structural steel components, etc. shall be arranged prior to its arrival and an appropriate route and method shall be designed in advance.

Road compaction will be ensured based on the heavy equipment weight prior to transportation.

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In this case, a “Method Statement and JSA for the Transport of very large/heavy equipment” shall be prepared and submitted by concerned parties for COMPANY approval.

Appropriate supervision / escort shall be provided by Contractor to control the flow of traffic during transporting of heavy/large equipment or material from the point of origin to the point of destination.

Heavy Load Transportation Checklist (Please refer to the Attachment No.4) should be checked by transportation contractor and submitted to Contractor and PMT before transporting the load to ensure that all precautions for Heavy load Transportation Activity have been taken to protect public safety.

#### **h. Personnel Loading / Unloading**

The following guidelines shall be applied to all locations where personnel will be loaded or unloaded, including accommodation camps.

Personnel loading and unloading areas will be clearly designated / numbered on the plan and the actual location at the various sites.

Loading and unloading areas should comprise designated areas of clear hard standing, sufficient for the number of buses and personnel designated to the area.

The most forward point of each area shall have a manually operated traffic barrier.

It is anticipated that at peak manning levels some loading and unloading areas will be required for the Contractor and subcontractors working areas.

All buses shall be uniquely numbered and all personnel will be allocated to a specific bus number, a simple disc or tally will be issued to personnel indicating their bus number.

All doors shall be closed before buses are allowed to depart.

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No bus shall be allowed to move forward or backwards while other buses are still unloading passengers.

### **Personnel Loading**

Buses shall be parked, in sequence “nose to tail”, in the loading areas at least 10 minutes before the designated departure time.

Once the most forward bus, Leading Bus, is in position the manually operated traffic barrier shall be lowered into position by the Bus Marshal.

Each bus will have an appointed Bus Marshal who will be responsible for conducting an ID check, headcount and ensure that all personnel have engaged their seat belts prior to the bus departing.

All Bus Marshals shall be in the loading areas at least 10 minutes before the designated departure time.

When each bus is fully loaded, each Bus Marshal will advise the Leading Bus Marshal.

All doors shall be closed before buses are allowed to depart.

When all buses are fully loaded the Leading Bus Marshal will raise the traffic barrier to allow the group of buses to depart.

Depending on the project manning levels and the numbers of loading areas in use, there will be a series of loading areas in one line.

In this case the Leading Bus Marshal may not raise the traffic barrier until such time that bus group immediately in front of his group has departed.

### **Personnel Unloading**

Buses shall arrive in the unloading areas, in sequence “nose to tail”

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Once the most forward bus, Leading Bus, is in position the traffic barrier shall be lowered into position by the Bus Marshal.

No bus shall be allowed to move forward or backwards while other buses are still unloading passengers.

When each bus is fully unloaded, each Bus Marshal will advise the Leading Bus Marshal.

When all buses are fully unloaded, the Leading Bus Marshal will raise the traffic barrier to allow the group of buses to depart to the designated bus parking area if required.

Depending on the project manning levels and the numbers of unloading areas in use, there will be a series of unloading areas in one line.

In this case the Leading Bus Marshal may not raise the traffic barrier until such time that bus group immediately in front of his group has departed.

All bus drivers shall engage the handbrake and switch off the engine as soon as they are in position at the assigned loading or unloading area.

Engines may only be restarted once the traffic barrier has been raised to allow buses to depart.

Buses are not allowed to overtake each other, they must maintain their designated sequence from point of loading to point of unloading.

In the event of a vehicle breakdown appropriate diversions and warning signs shall be utilized.

Bus routes shall be planned such that buses do not make multiple stops on their journeys, i.e. a journey consists of travelling between from a single point of loading to single point of unloading.

Each Leading Bus Marshal will be issued with a radio in order that he may contact the subcontractor HSE Manager in the event of a problem within his group.

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#### **i. Laydown Areas**

Construction activities should be planned to minimize vehicle operations and to avoid unnecessary deliveries and double handling of materials.

The location of laydown areas should be carefully considered.

Laydown areas should:

- Be located away from pedestrian-only areas and main pedestrian routes
- Exclude pedestrians so far as reasonably practicable
- Have one-way systems and safe entrance / exit points
- Have sufficient space for vehicle movements
- Have adequate lighting if operating at night or in adverse weather, clear signs and appropriate visibility aids for drivers

#### **j. Traffic controls and site entrance / exit**

Traffic controls will include the use of traffic signage, crossing guards or banksman, or security-controlled access.

The site entrance / exits will be a controlled access point and will be in line with the Contractor Security Plan.

#### **k. Parking**

Parking will be addressed during site layout to meet the following requirements:

- General parking will be situated away from the operation of heavy equipment and construction activity
- Parking locations will provide easy access to the site and safe passage for vehicles and pedestrians travelling to and from the site parking areas



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- Designated parking areas will be established at suitable locations adjacent to construction activity and congested work areas
- Parking is done head-on. If it is impossible to park head-on, reverse parking
- Parking area shall be sign posted
- The parking of construction vehicles on walkways, and double parking is prohibited.
- Standard Signs shall be provided according to G.I. 1021.000 and Ministry of Communication

The following parking control in order of preference will be used at sites;

- Head to tail parking (1 preference) This involves trucks along straight single line parallel to a “pulling out lane” in a designated “one way” barricaded lay by area off the road with each vehicle driving behind the other and the “head” (front) of each vehicle facing the “tail” (back) of the vehicle in front.
- Diagonal Drive Through Parking (2nd preference) This involves parking by driving into a designated parking bay from one side and driving straight out of the opposite side without the need to reverse.
- Reverse parking (3rd preference) This involves parking by driving forward in a turning motion and then reversing into designated parking bays with vehicle stops.

## **I. Maintenance of Roadways**

Contractor and all subcontractors shall ensure that:

- All access roads are free from debris and dust and to ensure that no vehicle or other items of equipment leaving the construction area deposit soil, debris or rock on access roads and public highways.
- Measures will be implemented to ensure that the transport of debris and dust from the site onto public highways and roads is limited. Such measures will be developed in consultation with PMT and may include cleaning and maintaining project site temporary and permanent roads and removal of

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debris from public roads.

### m. Road Closure

In case of the road closure for construction work at the existing load and temporary access load, contractor and subcontractors shall ensure that:

- Contractor shall notice to COMPANY and Government FSF (Facility Security Force) and all the project related prior to 72 hours.
- Time schedule shall be noticed and displayed at the closure location.
- Detour or alternative load shall be ensured, if it needed, temporary access load shall be constructed.
- Banks man shall be assigned.

### 11.1.3. Instructions

#### a. General Instruction

Contractor will implement Traffic Control Plan as per the all related documents.

#### a-1. Internal Guidelines

- 1) It is fact that roads are statistically one of more hazardous areas in which we normally operate. It is beyond doubt that the 'Journey' is the agency that has the highest contribution to accidents both in frequency and severity. Accordingly, it is the policy of CONTRACTOR to reduce as far as possible unacceptable risks to their own employees, Subcontractors and other persons who could be affected during its transportation activities, by maintaining an efficient Road Safety Management System complete with a program of continuous control measures, maintenance and training.
- 2) Danger is inherent in situations where vehicle drivers are intended to do their particular job and preoccupied pedestrians are simultaneously moving in the same limited space at the same time.

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- 3) Root causes of most site transport accidents are human error, bad driving behavior, carelessness when reversing or ignoring during work with special hazards (i.e. excavations, overhead services/obstructions), carrying of unauthorized passengers, poor maintenance of vehicles, overloading or incorrect loading.
- 4) All personnel who intend to drive must hold an appropriate and valid SAG driving license for the vehicles, plant or equipment to be driven.
- 5) At stopped vehicle engine must be switched off, geared in neutral/parked position with handbrake-on.
- 6) As an additional precaution on sloping ground, wheels should be chocked.
- 7) Passengers will be carried only in the passenger compartment of a vehicle. Driver shall not carry passenger in open vehicles (e.g., in the bed of pickup trucks), No worker allowed to be transported at the back of the pickup trucks
- 8) When travelling downhill, vehicle and equipment should be kept in low gear.
- 9) Before tipping loads into an excavation area, a proper stop shall be considered and arranged.
- 10) All vehicles must be identified by specific sticker based on the requirement of the contract (schedule B). The identification sticker shall be installed on 3 side of the vehicle (Left hand side, right hand side and at the rear section of the vehicle. The sticker shall have a unique number for the specific vehicle.

## **a-2. Vehicle Register Requirements**

All major vehicle movement with stating vehicle type, registration number, driver's name, number of passengers, route details and planned stops shall be recorded in the register. (Please refer to the Attachment No.5 Vehicle Movement Register)

## **b. Driver Requirements**

Contractor and subcontractors will employ only qualified personnel as drivers of motor vehicles and ensure that all drivers are in possession of a valid Saudi Arabian Government (SAG) License.

### **b-1. Driver Induction**

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- All drivers must be adequately trained, competent and authorized to operate site transport.
- All drivers must attend an induction course before being allowed to operate or drive on company business.
- The general content of driver induction shall include:
  - ① Local driving conditions and attitude to driving
  - ② Traffic regulations, site speed limits, road signs and markings
  - ③ COMPANY restrictions
  - ④ Risks of driving and common causes of accidents
  - ⑤ Accident black spots / Blind spot" to be included
  - ⑥ Precautions to be taken when backfilling and performing other site preparation activities
  - ⑦ Defensive driving
  - ⑧ Journey management systems
  - ⑨ Fatigue and the effects of tiredness
  - ⑩ Medication/drugs
  - ⑪ Safety features
  - ⑫ Cargo security and the transportation
  - ⑬ Responsibility for the care and maintenance of the vehicle.
  - ⑭ Emergency procedures and accident reporting, etc.

## **b-2. Do's and Don'ts.**

- 1) Drivers must seek assistance from banksmen before reversing their vehicles.
- 2) Drivers must make sure that the vehicle is not overloaded and the load is secured.
- 3) No driver shall be allowed to drive or operate any equipment that is not assigned to him unless authorized to do so by an authorized and responsible person.

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- 4) All drivers / operators shall be in possession of their driving license and COMPANY authorization certificate at all times and shall show them when requested to do so.
- 5) No vehicle shall be driven at a speed greater than posted speed limit.
  - *Speed Limit at common road in PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project: 40 Km/h (maximum)*
  - *Speed Limit at PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project Construction Area: 20 Km/h*
  - *Speed Limit at Public Road: Follow local traffic regulations*
- 6) Vehicle defects shall be reported to their immediate supervisor and do not operate any unsafe vehicles.
- 7) Never mount or dismount from a moving vehicle or jump from a high cab, instead use the steps or wheel rims provided.
- 8) Drivers must not leave the vehicle engines running.
- 9) Drivers shall not allow unauthorized passengers in or on their vehicle.
- 10) Do not reverse their vehicles if their rear view is obstructed.
- 11) Drivers are not allowed to smoke while refueling and must turn off the engine.

#### **c. Vehicle Accident Reporting**

All Motor Vehicle Accidents (MVAs), regardless of location, on or off site, on or off road must be reported immediately by the driver to his supervisor and to the HSEM, in accordance with G.I 6.029 "Reporting and Recording of Motor Vehicle Accidents" using Saudi Aramco SAP EH&S or Form 1193, "Motor Vehicle Accident Report." Finally, it must be reported to PMT HSE Department by HSE Manager (HSEM).

Accident should be reported to their supervisor by telephone and / or radio (or by sending a message with a passing driver).

A full list of emergency contact phone numbers shall be prepared and communicated throughout the project.

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SAG law states that a driver shall not leave the scene of an accident or move his vehicle after an accident unless he needs to take an injured person to a hospital. If a damaged vehicle is blocking traffic or is stopped on the highway, driver shall use the reflective triangle to warn approaching traffic of the vehicle's presence.

#### **d. Vehicle Regulation**

Project Manager (PM) shall ensure that all drivers are advised of, become familiar with, and abide by SAG traffic regulations.

The number of passengers in a vehicle shall not exceed the seating capacity of the vehicle.

Vehicle shall not be refueled within restricted areas.

All vehicles shall be parked correctly and / or in a designated parking area.

Parked vehicles shall not obstruct roadway, access ways for other emergency vehicles like an ambulance, Fire trucks etc.

#### **e. Vehicle Condition**

The driver is responsible for inspecting the vehicle and heavy equipment before operating it to determine if the following are present and in a satisfactory condition.

Vehicle Inspection List:

- The vehicle number, Contractor and subcontractors name, license plate (front and back) must be in place.
- Two reflective warning triangles should be in each vehicle.
- Windows and windshield must be clean and free of cracks or any other damage.
- The glass must be in good condition. The windows must open and close properly.
- All lights (high and low beam headlights, taillights, dash lights, stop lights,

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turn signals and the rear license plate light) must be in working order. When fog lights and clearance lights have been installed, they must be in good working order.

- All brakes (foot and hand brakes) must be in good working order. Check the foot and hand brake mechanism for correct operation.
- The automatic transmission must be in good operating condition, and should shift into the parking position correctly.
- Springs and shock absorbers must be in good condition with no alignment or control problems.
- There should be no excessive movement of the steering wheel and no signs of damage. Steering knots and loose coverings are prohibited.
- Tires should have no breaks in the casing or exposed fabric and must be inflated to correct air pressure based on the vehicle/equipment manual or as specified by the Transportation Department.
- Check the wheels for rim damage. Make sure the wheels are not blocked or out of alignment and wheel lug nuts are in place, and secure on the rim.
- If the vehicle is fitted with a trailer, the coupling must be intact and working correctly. The trailer should have a safety coupling chain, rear brake lights, turn signals, taillights and rear license plate lights.
- Make sure that the inside and outside rear view mirrors are clean, adjusted, secured and undamaged.
- Check that the windshield wiper blades are in good condition and operate properly. Inspect the rear window wiper, if fitted.
- The windshield washer should work properly and there should be water in the washer container.
- The speedometer should be in good working order.
- Test the exhaust system by starting the engine of the vehicle, listening for sounds and spotting any leaks associated with it.
- Check to see if the tail pipe extends at least three inches from the body of the vehicle. The tail pipe emissions should be released from a point where

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they do not directly come into contact with the driver of the vehicle or its occupants, thereby causing any adverse health effects to any of them.

- A properly inflated spare tire with a jack and tire wrench must be provided. The tire wrench should be the correct size to fit the wheel nuts of the vehicle.
- Check the following fluids for leaks and proper levels, especially in hot weather:
  - Radiator coolant
  - Oil
  - Brake fluid
  - Transmission Oil
  - Distilled water for the battery

Note: the driver should check the radiator coolant level, only when the engine is cool. Fluid should be added to the level mark on the overflow expansion tank only.

- The vehicle's horn must be operational.
- Each driver must conduct a vehicle inspection whenever taking charge of a vehicle. (Please refer to the Attachment No. 6 Daily Vehicle Inspection Checklist)
- Each vehicle must be carefully inspected and maintained in the Work Shop on a monthly basis to ensure all systems are operating properly and there is no damage. The following Form (Please refer to the Attachment No.7 Monthly Vehicle Inspection Report) will be used for inspection.
- In addition, Work Shop Manager have to fill up the Vehicle Assignment and Safety Equipment Verification Log (Please refer to the Attachment No.8) during the monthly vehicle inspection and submit one copy to General Affairs Section and HSE Department.
- Loose materials are to be kept out of the driving compartment. Do not place materials (hard hats, boxes etc.) on rear window shelf.

#### **f. Driving Condition**



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**Driving in Fog or Reduced Visibility:** the acceptable visibility for driving in fog or conditions of reduced visibility is 100 meters of clear vision

When fog or reduced visibility is encountered during travel, speed should be reduced to allow a safe braking distance to be maintained.

Light should also be switched on, especially front and rear high intensity lights. Do not use the full beam, as the light will be reflected from the fog droplets resulting in further diminished visibility.

Do not use hazard warning lights unless stationary.

When visibility is less than 100 meters, drivers should park at the nearest safe location and wait for conditions and visibility to improve before resuming travel.

**Driving in rain:** if rain is encountered then speed should be reduced.

Braking distances are significantly increased by wet surfaces and therefore the distance between vehicles must be increased to allow a safe braking distance.

Lights should be switched on and overtaking should be avoided.

**Sand on the road:** drivers may encounter a build-up of wind-blown sand on some roads and they must stay alert to these conditions.

Speed must be reduced to prevent potential loss of control and to give more time to take safe reaction.

**Driving in the desert:** only persons who have successfully undertaken a desert-driving course shall be allowed to drives in the desert.

Desert Driving Checklist (Attachment No.9) & Survival Desert Driving Checklist (Attachment No.10) should be checked for

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The supervisor must be advised when the journey is starting and when the destination is reached.

The supervisor will initiate a search if the driver has not reached his destination and after three (3) hours have elapsed since the last contact.

Travel in the desert should be avoided when the sun is directly overhead.

The sand is softest at this time of day and potential hazards are more difficult to see because of the lack of shadows.

If tire pressures have been adjusted for desert driving, make sure they are re-adjusted when returning to a hard surface road.

**Driving at night:** driving during hours of darkness is permitted provided the journey takes place on hard top (asphalt) roads.

Travel during hours of darkness off-road is not permitted unless there is an emergency or specifically requested by line management.

#### **g. Hazardous Loads**

Hazardous loads shall be carried in accordance with the appropriate site and local regulations and any necessary signs etc., are to be in accordance with relevant statutory requirements.

The appropriate documents shall be available in the vehicle's cab.

Loads on vehicles shall be adequately secured and covered (if, necessary as required) and the vehicle shall not be overloaded at any time.

#### **h. Reversing**

Heavy Vehicles and Mobile Plant shall not be allowed to reverse on sites unless under the guidance of a competent Traffic Banksman.

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All reversing near to any public access shall also be under the guidance of a Traffic Banksman at all times.

All heavy equipment and trucks must have PWAS and reverse alarms installed, and they need to undergo pre-inspection and approval by both the contractor and SAPO.

Heavy equipment (dump truck, crane, etc.) must be fitted with reverse alarm and blind spot camera.

#### **i. Seatbelts**

All occupants of any vehicle shall use seatbelts at all times.

All vehicles (owned, contracted or leased) must be fitted with seatbelts for each occupant.

#### **j. Driver's Working Hours**

To prevent fatigue while driving and potential traffic accidents, the following restrictions will apply to all drivers:

- Not working more than 12 hours on any day
- Not to spend more than 9 hours driving in any 12 hour period
- Take a minimum of 45 minutes rest at the end of any journey that exceeds 4.5 hours
- Take a minimum of 8 hours rest between 12 hour work periods
- Not to work more than 6 consecutive days
- Resting under a vehicle or trailer to obtain shade is not permitted
- When taking a rest break the vehicle shall be parked off road and / or in a safe place.

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## **k. Mobile Phones**

Drivers are not allowed to make outgoing calls using mobile phones while operating a vehicle under any circumstances.

Drivers are not allowed to answer incoming calls using mobile phones while operating a vehicle, even when the phone is connected to a 'hands free' device.

If circumstances warrants the need for cellphone use, the driver must first yield to the side and stop in a safe area before making or answering a call.

Mobile phones should be switched off during supplying vehicles with fuel.

## **l. Training for Drivers**

All Professional drivers must attend a safe (defensive) driving training course and successfully complete the course provided by HSE Department before being allowed to operate or drive on the project.

Professional drivers will have to demonstrate a higher standard of proficiency than Occasional drivers.

The course will cover at a minimum topic listed in the Attachment No.11 Training Requirements.

All drivers, whether professional or occasional, who are required to drive off-road in the desert, must undergo specific training that covers driving skills and survival techniques.

Subcontractor's traffic control plan will meet these minimum requirements and be subject to periodic audit to assess driver qualification and training programs.

## **m. Bicycles**

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Personnel who are required to ride bicycles in the course of their duties must make sure that the following are available:

- Working brakes, front and rear
- Handlebar grips
- A bell
- A secure saddle in good condition
- A rear reflector
- A purpose built carrier or basket if transporting tools or equipment
- Pedals which have a good foot grip
- Chain guard
- Front and rear lights, if being used during hours of darkness
- See mirrors

**Bicycle riders must:**

- Obey traffic signs and stay on the right hand side of the road
- Bicycles must receive SAPO approval along with a detailed JSA before being permitted for use on site.
- Check the condition of the bicycle before/after use and arrange repairs when necessary
- Wear a safety or cycle helmet with a strap fitted below the chin
- Wear clothing that will not get tangled in the bicycle wheels or chain
- Wear a reflective vest during at all times.
- Only carry tools and equipment in the carrier or basket provided for that purpose
- Do not carry passengers
- Do not take a bicycle into a restricted area if the bicycle is fitted with lights

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or non-intrinsically safe equipment

- Park the bicycle in the designated parking area and proceed to the working area
- Do not ride bicycle in the cover of darkness

#### **n. Incentives Program**

The incentives program for safe driving shall:

- Be applied in conjunction with the project disciplinary programme
- Take account of the social, cultural and economic needs and values of the drivers force.

To maintain best interest, awards shall be made regularly or when milestones are reached.

Every drivers or operators working under PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project are eligible to be recommended for the monthly incentive program.

The prize & merit certificate will be presented to awardees. Individual awards in the form of pens, mugs and towels for example, though low in cost items are much appreciated and should be considered.

A high quality certificate of recognition carrying the individual's names and signature of the PM or HSEM is also well received.

The perceived importance of the award will be heightened by formal ceremonies involving the Contractor Management.

Group photographs should be taken for publicity purposes.

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Photographs of individuals and small groups may be given for them to keep, and are well received.

Contractors Project Manager (PM) and head of departments shall support the incentives program and be part of its administration, for example by participating in the evaluation process and award ceremonies.

#### **o. Driving Discipline**

Discipline action will be followed as per Contractor internal penalty system for HSE violations.

Disciplinary action will be taken to employees who violate traffic rule and regulation.

The purpose of disciplinary action is to ensure that all drivers and operators are aware of the required standard of safe driving / operating and the consequences of violating Contractor and Aramco Traffic rules and procedure.

#### **o-1. Categorization of Traffic Violations**

Traffic violations shall be generally categorized into minor and major violations depending upon the “potential risk” of the violation committed.

#### **o-2. Classification of Traffic Violations**

It is very difficult to list all the traffic violations. Following are a few examples covered in different types of violations for guidance and will not be a limiting factor in deciding violations. HSE Manager (HSEM) or his approved deputy can be consulted for any ambiguity in deciding violations

#### **Minor Violations**

- More than 3 people in front seat (also requires seat belt violation)
- Use of PEDs under conditions prohibited in G.I.

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- Failure to yield to pedestrians at a crosswalk or intersection
- Driving with an unsecured load or without panels in place
- Following too closely (tailgating)
- Turning or switching lanes without signaling
- Failure to yield the right-of-way
- Driving the wrong way in a Parking lot
- Parking in a posted Handicapped Parking area without authorization
- Parking on the wrong side of the street (against the traffic flow)
- Parking in an unauthorized space or area
- Misuse of company vehicles

### **Major Violations**

- Reckless driving
- Driving a vehicle in excess of the stipulated/posted speed limits
- Driving without authorization, license or insurance
- Major traffic violations (over-speeding, over-taking, etc.)
- Driving on the wrong side of a divided roadway
- Passing in a "No Passing" zone
- Failure to obey a traffic signal or stop sign
- Not using seat belts (drivers or passengers)
- Passengers in back of open pickup truck
- Turning from the wrong lane
- Driving under influence of medications or intoxicants
- Riding a motorcycle without a helmet
- Driving during night time without headlights



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- Failure to stop when directed by Industrial Security
- Parking in an emergency route or emergency vehicle space
- Receive any violation information or Letter from AMIRAL regarding Traffic Violation committed by company personnel etc.

### **o-3. Penalties**

The level of action to be imposed is within the sole discretion of the company management. In determining the appropriate action, facts such as the degree of seriousness of the incident, all surrounding facts and circumstances, risk involved, including ARAMCO best interests, and the employee's record, including prior penalty shall be considered.

Traffic violations will be issued warning notice to all drivers and operators who violate the AMIRAL and company traffic regulations / procedures / instructions (Please refer to the Attachment No.12 Warning Notice).

#### **Stages of Penalty**

1. Verbal Warning
2. First Warning Letter and 3 day Suspension
3. Final Warning Letter and 5 days Suspension
4. Dismissal / Termination

#### **Stage 1 – Verbal Warning**

Where informal action has failed to resolve a matter where it is considered that an offense warrants formal disciplinary action, a verbal warning may be issued by the SAFETY Department (Please refer to the Attachment No.12 Warning Notice).

A verbal warning will remain **live** for disciplinary purposes on an employee's personnel file for a period of **6 months** from the date the warning was issued.

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## Stage 2 – First Written Warning and 3 day Suspension

If a verbal warning does not correct the situation or if the case warrants it, or a further offence is committed requiring disciplinary action. A First Written Warning and 3 day suspension may be issued by the SAFETY Department and to be informed to Manpower Section and their Section.

A first warning will remain **live** for disciplinary purposes on an employee's personal file for a period of **12 months** from the date the warning was issued.

## Stage 3 – Final Written Warning and 5 days suspension

If the employee's conduct still does not complying from the rules and procedure required by the SAFETY Department and the AMIRAL, or if the case warrants it or a further offense is committed requiring disciplinary action, a final Written Warning and 5 days suspension (without pay) may be issued by the SAFETY Department and to be informed to Manpower Section and their Section.

A final Written Warning will remain **live** for disciplinary purposes on an employee's personal file for a period of **12 months** from the date of warning was issued.

## Stage 4 – Dismissal / Termination

If the employees continuous to fail to comply with AMIRAL and company traffic rules and regulation or have committed two major violations which may cause of any loss of life or property, the case warrants its dismissal / termination will be serve.

## o-4. Recording

HSE Department will issue the warning notice to individual for Traffic violation. And a file of records will be kept in HSE Office and Administration Dept. at all the times (Please refer to the Attachment No.13 Traffic Violations Register).

HSE Department will report to Management all about the disciplinary actions determined as per above mentioned penalty stage.

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## p. Assessments

The Traffic Control Plan will be reviewed throughout the duration of the project with both formal and informal assessments.

The HSEM shall be the lead for these assessments.

All lessons learned through the assessment process should be shared with Contractor Management and all other appropriate personnel.

The assessments will be conducted by the Contractor Superintendent and HSEM, in order to evaluate the implementation and effectiveness of this document.

This assessments will occur at least once every 6 months, or unless otherwise required by the PM and HSEM.

Proactive measures taken to resolve driver vehicle safety concerns identified through the project driving observations will be evaluated as part of the formal audit process.

Lessons identified in the assessments will be shared across the project as a whole.

### 11.1.4. Audit and Monitoring

HSE Manager (HSEM) is responsible for the monitoring and auditing the implementation level of this plan.

HSEM shall also assist Project Manager (PM) in the implementation of this plan and provide the necessary HSE advice to ensure compliance.

Periodic audit is conducted by HSEM or person nominated by him to:

- Assess the driver qualification and training
- Check the Traffic Plan is implemented and followed strictly
- Verify the records of eye test conducted for the drivers on a half yearly basis

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- Verify the license of drivers
- Inspect the vehicle documents

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>

## Attachment No.1 - CONTRACTOR Policy – Driving Rules

- Drivers shall operate vehicles in accordance with local laws and regulations.
- Vehicle / safety equipment will be inspected prior to each shift by an HSE representative and shall meet the minimum requirements as define in this plan.
- Drivers are responsible to ensure that lights, signals, horn and brakes are in proper working order.
- Driver shall check the daily vehicle checklist. which shall include Emergency equipment.
- Drivers must observe designated speed limits at all times while driving on or off the project.
- Drivers must maintain a safe distance between vehicles: a safe distance means having enough time and distance between vehicles to allow for emergency braking to avoid an accident.
- Drivers must obey traffic signs, signals and other signage at all times.
- Passing moving vehicles is prohibited while driving on projects: never pass a stopped bus or multi passenger vehicle.
- Drivers must operate vehicles with dipped headlights on at all times.
- Drivers shall not operate any type of two-way communication device, whether for personnel or company business, while operating any vehicle. For the purpose of this plan, “two-way communications device” shall include, but is not limited to:
  - Mobile phones
    1. Two-way radios (including vehicle-installed, handheld radios and walkie-talkies)
    2. Pagers
    3. Personal Data Assistants or “PDAs” (including Palm Pilots and other hand-held computers).
- Drivers must not leave the vehicle while the engine is running.
- Drivers must shut-off motor to refuel: no smoking or operating mobile phones while refueling.
- Drivers must yield to pedestrians at designated crossings and other areas indicated by signs.
- Driving under the influence of alcohol or controlled substances is strictly prohibited.
- Drivers and passengers shall wear seat belts while vehicle is in motion
- Vehicles must come to a complete stop to load and unload passengers
- Drivers must park only in designated areas

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- Drivers must set parking brakes when leaving a vehicle unattended.
- Drivers should not park in heavily congested areas or where heavy equipment is in operation
- Drivers must not consume food or drink while the vehicle is in motion
- Drivers must not read maps or any other materials while the vehicle is in motion.

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

## Attachment No.2 - Minimum Vehicle Safety Equipment Standards

- Appropriate rear-view mirrors (internal and external – both sides)
- Lights (head and rear, stop, turn signal and emergency warning)
- Reflective warning triangle (Potable emergency warning)
- Signage (Bus and other similar vehicles only):
  1. Maximum number of passengers
  2. Maximum allowable speeds – on site – on public roads – on open highway
- Reflective Strips
- Daytime running lights
- Quality of sunglasses
- Reversing alarms
- Emergency Exit (bus and other similar vehicles only)
- Fire extinguishers
- Drinking water supply
- First aid kits
- Reflective jackets
- Danger triangles for road side emergency warning
- Torchlight
- For lights
- Vehicle (bus, vans, etc.), which transport multiple individuals, shall have seat belts installed and maintained in serviceable condition e.g. Sedans, Pickups, SUV's and Minivans have seat belts for each passenger, passenger buses shall have seat belts for all personnel
- Desert survival kit (for desert driving)
- Communication device for use in emergencies and / or to report accident / incidents

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Attachment No.3 - Traffic Layout Plan to be updated



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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

#### Attachment No.4 - Heavy Load Transportation Checklist

HEAVY LOAD TRANSPORTATION CHECKLIST				
DATE:		POINT OF ORIGIN:		
		POINT OF DESTINATION:		
Transportation Contractor:				
Equipment/Material being Transported:				
Load Weight:				
ITEM	YES	NO	N/A	Remarks
Road Use Permit: not required when load under 50 tons and within specified dimensions				
Valid SAG Driver's License				
Pilot Vehicles				
Equipment Rated load				
Load Properly Secured				
Wide load Flashing Lights				
Visual Condition of Transporting Equipment is acceptable				
Glass				
- Windshield				
- Side Mirror Left				
- Side Mirror Right				
- Rear Mirror				
- Rear Windows				
Tires				
Light				
- Headlight				
- Signal Light Left				
- Signal Light Right				
- Hazard Light				
- Brake Light				
- Reverse Light				
Fire Extinguisher				
Vehicle Condition				
Comments				
Recommendation				
Inspected By				
This checklist is for the sole purpose of verifying for AMIRAL that some of the most basic precautions have been taken to protect public safety. It is not intended to release the transporting contractor from full responsibilities to deliver the load to Project safely.				

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Vender Reference : N/A			System / Subsystem: NN		Equipment Type: N/A

Attachment No.5 - Vehicle Movement Register

VEHICLE MOVEMENT REGISTER

Date:

NO.	TYPE OF VEHICLE	VEHICLE LIC. PLATE NUMBER	NAME OF DRIVER	NO. OF PASSENGERS	DESTINATION	TIME		REMARKS
						OUT	IN	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

Attachment No.6 - Daily Vehicle Inspection Checklist

## PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project

### DAILY VEHICLE INSPECTION CHECK LIST

Contractor: \_\_\_\_\_ Driver: \_\_\_\_\_ License #: \_\_\_\_\_

Make: \_\_\_\_\_ Model: \_\_\_\_\_ Year: \_\_\_\_\_

Color: \_\_\_\_\_ Lic. #: \_\_\_\_\_ Chassis #: \_\_\_\_\_

#### Inspection List (Check one)

	Pass	Fail	Comments
1. Tires have sufficient tread?	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Headlights work?	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Horns operative?	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Tail lights work?	<input type="checkbox"/>	<input type="checkbox"/>	_____
5. Brake lights work?	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Turn indicator lights working? (Front and Rear)	<input type="checkbox"/>	<input type="checkbox"/>	_____
7. Windscreen free of damage which obstructs driver's view?	<input type="checkbox"/>	<input type="checkbox"/>	_____
8. Exhaust System in working order?	<input type="checkbox"/>	<input type="checkbox"/>	_____
9. Seats safely secured to floor?	<input type="checkbox"/>	<input type="checkbox"/>	_____
10. Steering wheel play acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. Brakes in good order? (Include parking brake)	<input type="checkbox"/>	<input type="checkbox"/>	_____
12. Gas tank in good order and equipped with gas tank cap?	<input type="checkbox"/>	<input type="checkbox"/>	_____
13. Fuel lines in good order and without leaks?	<input type="checkbox"/>	<input type="checkbox"/>	_____
14. Rear view mirror functional?	<input type="checkbox"/>	<input type="checkbox"/>	_____
15. Battery secure?	<input type="checkbox"/>	<input type="checkbox"/>	_____

#### Safety Gear (Equipment)

16. Safety Triangle?	<input type="checkbox"/>	<input type="checkbox"/>	_____
17. First Aid Kit?	<input type="checkbox"/>	<input type="checkbox"/>	_____
18. Spare Tire?	<input type="checkbox"/>	<input type="checkbox"/>	_____
19. Jumper Cables?	<input type="checkbox"/>	<input type="checkbox"/>	_____
20. Tire Jack?	<input type="checkbox"/>	<input type="checkbox"/>	_____
21. Tire Pump?	<input type="checkbox"/>	<input type="checkbox"/>	_____
22. Fire Extinguisher?	<input type="checkbox"/>	<input type="checkbox"/>	_____
23. Gloves?	<input type="checkbox"/>	<input type="checkbox"/>	_____
24. Flash Light?	<input type="checkbox"/>	<input type="checkbox"/>	_____

#### Over-All Safety Inspection

Pass Fail Comments

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Driver:

Badge #:

Signature

Date:

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

Attachment No.7 - Monthly Vehicle Inspection Report

<div>INSPECTION REPORT</div> <div>AUTOMOTIVE, TRUCKS, AND TRAILERS</div>												
EQUIPMENT NUMBER:						DATE:						
MAKE:			MODEL:			S/N						
ENGINE:			MODEL:			S/N						
HOUR METER						ODOMETER:						
(S) INSPECTED AND SATISFACTORY	S	R	X	(R) REPAIRED OR ADJUSTED	S	R	X	(X) REQUIRES REPAIRS	S	R	X	
ENGINE				DRIVE TRAIN (continued)				GENERAL (continued)				
PRE HEATERS				LEFT FRONT AXLE				DECKING				
INJECTORS				RIGHT FRONT AXLE				OPERATOR CONTROLS				
COMPRESSION				BRAKES				WINCH				
FUEL PUMP				RING GEAR REAR				STEERING				
FUEL FILTER				PINION OIL SEAL				HEATER				
OIL FILTER				LEFT REAR AXLE				WIPER BLADES				
HYDRAULIC FILTER				RIGHT REAR AXLE				FIFTH WHEEL				
AIR CLEANER				FOUR WHEEL DRIVE				AIR SYSTEM				
RADIATOR				TRANSMISSION								
BATTERY				CLUTCH				ELECTRICAL				
SPARK PLUGS				POWER TAKE OFF (PTO)				ELECTRICAL SYSTEM				
DISTRIBUTION POINTS				AUX. TRANSMISSION				CHARGING SYSTEM				
CARBURETOR								BATTERIES				
MUFFLER				SAFETY				LIGHTS				
EX. PIPES				FIRE EXTINGUISHER				IGNITION				
AIR CONDITIONING				MACHINERY GUARDS				WIPER SYSTEM				
								GAUGES				
LUBRICATION CHECK				MANUALS								
ENGINE				PARTS				BODY				
DRIVE TRAIN				SERVICE				SHEET METAL				
CHASSIS				ENGINE				GLASS				
LINKAGE				OPERATOR'S				FRAME				
								SEATS				
DRIVE TRAIN				GENERAL				INTERIOR				
RING GEAR FRONT				HYDRAULIC CYLINDERS				PAINT				
PINION GEAR FRONT				LANDING GEAR				TAIL GATE				
PINION OIL SEAL				DUMP BODY								
<b>COMMENTS:</b> Use additional Pages if necessary to describe findings indicated in "X" and/or "R" check boxes												
<div> <div>TIRES</div> <div>SIZE:</div> <div>PLY:</div> <div>TYPE:</div> </div>												
<b>Condition</b> *(mark letter in appropriate tire area): <b>G</b> =good <b>A</b> =average <b>W</b> =worn												
<div>Trailer</div> <div></div> <div></div>												

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FRONT	<div></div>	<div></div>	<div></div>	<div></div>
REAR	<div></div>	<div></div>	<div></div>	<div></div>
			Left	Right
Mech Rep.		Job Site Rep.		

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

Attachment No.8 - Vehicle Assignment and Safety Equipment Verification Log

**VEHICLE ASSIGNMENT AND SAFETY EQUIPMENT VERIFICATION LOG**

Model							Safety Equipment									
No	Vehicle Number	Type	Year	Brand/Manufacturer	Reg. No.	Plant Sticker #	Primary Driver	Safety Triangle	First Aid Kit	Spare Tire	Jumper Cables	Car Jack	Tire Pump	Fire Ext.	Gloves	Flash Light
1																
2																
3																
4																
5																
6																
7																
8																
9																

Inspector in charge

Date

W/Shop Manager

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## Attachment No.9 - Desert Driving Checklist

### DESERT DRIVING CHECKLIST

Description of item to be checked (Each item must be confirmed using either 'yes' or 'no' in the boxes provided, by <u>both</u> supervisor and driver).	Confirmed by Supervisor	Confirmed by Driver
Brief the individual to carefully plan the trip, allowing rest time prior to departure and every 2 hours en-route. The person should not drive more than 10 hours in any 24-hour period. Ensure the driver plans the trip expecting delays associated with traffic, weather, highway construction, etc.		
Agree on an estimated time of arrival at destination.		
Verify the person to call on arrival at destination.		
Ensure the driver has an operational mobile phone on board.		
Ensure the driver has an operational radio, with spare (charged) battery on board.		
Ensure the driver has a list of emergency contacts on board		
Ensure the vehicle has all emergency equipment on board (i.e. area map, first-aid kit, drinking water, concentrated food, blankets, flashlights, warning triangles, tarpaulin, dry matches, spray bottle etc.).		
The vehicle must have been inspected by the mechanical workshop prior to departure.		
Ensure the correct tires are fitted. (Plus spare, tools, and all tires pressurized correctly).		
Remind the driver that many traffic fatalities are caused from speeding, fatigue, and non-use of safety belts. Many accidents can be prevented if we practice what we are trained.		
Check all lights are in working order.		
Check windscreen wipers and washers are in working order.		
Stress the requirement of utilizing safety restraint devices		
Discourage driving at night, unless absolutely necessary.		
Remind the driver to check the weather forecast along the route of travel. If adverse weather conditions are expected, stress the importance of driving hazards (i.e. wind, sandstorm, rain, etc.).		
Ensure the driver has a copy of the Procedure for Desert Driving and Survival Checklist.		



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#### Attachment No.10 - Survival Desert Driving Checklist

- Rest every 2 hours.
- Contact base every 2 hours.
- Extra drinking water.
- Extra food (concentrated).
- Dry matches.
- Shovel.
- Jack.
- Tool kit.
- First Aid kit.
- Warning triangle.
- Tarpaulin.
- Blankets.
- Work gloves.
- Hand axe.
- Tow chain.
- Flashlight (plus spare battery).
- Flares.
- Compass.
- Radio (and spare battery).
- Mobile phone.
- Signal mirror.
- Rope.
- Sand mats (metal mesh or stiff canvas).
- Sheath knife.
- Plastic spray bottle.

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## Attachment No.11 - Training Requirements

- Project driving rules and regulations
  - Saudi Arabia warnings and precautions
  - Defensive driving
  - Specific driving hazards
1. Night driving
  2. 4-wheel / off-road driving
  3. Bicycle usage
  4. Driving in dust
  5. Bad weather
    - Causes of accidents
  1. Speed
  2. Fatigue and drowsiness
  3. Aggressive driving
  4. Substance abuse
  5. Driving too close – minimum distance
  6. Common at-risk driver behaviors
  7. Driving while distracted / preoccupied
  8. Mobile phones, etc.
    - Risk awareness
    - Vehicle familiarization and operations
    - Vehicle inspection and maintenance
    - Road accidents and vehicle damage
    - Reporting procedure in case of accident
    - Review of the basic vehicle safety equipment
    - Applicable restrictions (per local laws) on use of mobile / cell phones

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(personal as well as company-owned phones and other two-way communication devices while driving any vehicle

- Communications
- Use of seat belts
- Use of parking area

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

Attachment No.12 - Traffic Violation Ticket

## **WARNING NOTICE**

Ref No.:

Name:	Job No.:
Trade:	Section:
Location:	Type of violation:
Date & Time:	Vehicle No.:
Supervisor Name:	Penalty:
Detail of Violation:	

**Penalty Stage: -**

- **Stage 1 – Verbal warning**
- **Stage 2 – Written Warning and 3 day suspension**
- **Stage 3 – Final Written Warning and 5 days suspension**
- **Dismissal / Termination**

- Termination is depend on the seriousness of violation and will be determined by CONTRACTOR HSE Manager

-----  
Safety Officer / HSE Engineer

-----  
Defendant

-----  
Section Manager / Sub-Contractor PM

-----  
HSE Manager

**You are strongly warned that any repetition of HSE violations will invoke the full penalty of the contractor's disciplinary action.**

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Attachment No.13 - Traffic Violations Register

TRAFFIC VIOLATIONS REGISTER

NO .	DATE & TIME	NAME	JOB No.	SECTION	TYPE OF VEHICLE	PLATE OR BODY No.	TYPE OF VIOLATION	PENALTY STAGE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

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## 11.2. STOP WORK POLICY

The over-all SAFETY of the project site do not depend in one individual, group or party, instead it is a shared responsibility of all people engaged or rendering work in the site irrespective of his/her employing entity.

As such, the CONTRACTOR encourage and enable its personnel to exercise its HSE leadership and commitment to a safe work environment. The CONTRACTOR'S personnel can stop the work when an unsafe acts or conditions that will render the work unsafe and could endanger the safety and life of an individual, group or other parties.

Additionally, the CONTRACTORS personnel are advised to immediately inform those involved (individual/party) or those with Operational Control of the work area, of any HSE violations whether involving the CONTRACTOR workers, Sub-contractors or any other individual.

Areas where imminent dangers are found shall be immediately stopped until the situation has been corrected. Representatives from all relevant disciplines will be informed, the situation shall be discussed and remedial action agreed.

Work will not resume until the HSE Manager or his designated representative is satisfied with the corrections that have been made and the area declared safe to resume work.

In all situations where the work has been stopped, only authorized and trained employees will be allowed to work in the area to correct the safety deficiencies in order to make the area safe for the work to continue.

Construction sites present many hazards to employees when they are performing work-related activities. The purpose of Stop Work Authority (abbreviated as SWA) Program is to provide employees and contract workers with the responsibility and obligation to stop work when a perceived unsafe condition or behavior may result in an unwanted event. No activity to be so urgent or important that its standards for environmental protection, safety, or health may be compromised.

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Employees have the right and responsibility not to perform tasks or activities they feel pose undue risk to themselves, co-workers, or the environment. Stop work actions take precedence over all other priorities and procedures.

1. Employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of health and safety risk exist.
2. No work will resume until all Stop Work issues and concerns have been adequately addressed.
3. Any form of retribution or intimidation directed at any employee for exercising their authority to stop work will not be tolerated.

#### **11.2.1. Situations That May Require a Stop Work Action**

SWA should be initiated for conditions or behaviors that threaten danger or imminent danger to person(s), equipment or the environment. Situations that warrant a SWA may include, but are not limited to the following:

1. Change - A modification or alteration that deviates from the way the job task is normally performed may cause unsafe work actions or conditions. For example, using a different tool, altering a standard procedure to meet new job task requirements, making a change to the work plan, or observing parameters that are outside the standard procedures.
2. Unscheduled event - An unplanned event that distracts employees from the job task being performed may cause unsafe work actions or conditions. For example, inclement weather, simultaneous work occurring nearby, or a community or property owner activity following an accident or spill.
3. Observation with safety impact - Whenever an employee observes a condition or situation that has an impact on safety. For example, a hose lying across a walkway, a spill that has not been cleaned up, a loose handrail or a damaged tool.
4. Incomplete understanding - Whenever an employee or coworker does not completely understand instructions, procedures or ongoing activities. For example,

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making assumptions about job task steps, uncertainty over the order that job steps are performed, or differing opinions about how a job task is performed.

5. Observing new hazards - Whenever an employee encounters risks that have not been addressed during previous job safety analysis or risk assessments. For example, new PPE requirements based on job task demands previously unidentified.
6. Need to ask for help - Whenever a job requires additional people, or the experience level of the person performing the job task requires support, an unsafe work action or condition may occur. For example, working to meet production demands and performing a two-person procedure alone, an inexperienced employee who does not ask for help, not asking for help with a heavy lift, or needing help with reading a drawing or sketch.

If an imminent danger stop work is necessary, worker(s) must safely stop their work and notify their supervisor(s).

For non-imminent danger stop work, normal supervisory procedures, staff communication, as appropriate, should be used. The condition that caused a stop work to be initiated must be evaluated to determine if the controls that are in place will adequately protect people and the environment. If it is unclear as to whether the controls are adequate or if the scope changes, workers must contact their supervisor to discuss the situation and have their work re-authorized as appropriate. It may also be necessary to secure another release.

### 11.2.2. Stop Work Authority Roles and Responsibilities

#### Senior Management

Creates a culture that promotes SWA, allows it to be exercised freely, establishes clear expectations and responsibilities, resolves SWA conflicts when they arise and hold accountable anyone who chooses not to comply with established SWA policies.

Demonstrates support for using SWA without the potential for retribution. Holds employees and contractors accountable for full compliance with the SWA program. All Stop Work reports will be reviewed by Senior Management.



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## Managers and Supervisors

Promotes a culture where SWA is freely exercised, SWA requests are honored and resolved before resuming operations, works to resolve issues before operations resume, and recognizes proactive participation.

Ensures necessary stop work follow-up is completed.

All Stop Work reports will be reviewed by a manager / supervisor.

## Safety Personnel

Provides, support, and maintain associated documentation and monitors compliance of the SWA program.

All SWA's will be documented by the Safety Supervisor to assess trends and to share lessons learned.

## Company employees and contractors

Initiate stop work (in good faith) and support stop work initiated by others. All employees have the authority to stop work when the control of the HSE risk is not clearly established or understood.

Employees will not be reprimanded for issuing a SWA.

Employees must support the intervention of others and properly report all SWA.

### 11.2.3. Stop Work Authority Procedure

Stop Work Authority is a several step process - STOP, NOTIFY & INVESTIGATE, CORRECT, COMMUNICATE, RE-EVALUATE and RESUME.

1. Stop - When a person identifies a perceived unsafe condition, act, error, omission, or lack of understanding, a SWA shall be immediately initiated with the person(s)

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observing and/or those who are potentially at risk. If the supervisor is readily available and the affected person(s), equipment or environment is not in imminent danger, coordinate the stop work action through the supervisor. The stop work action should be clearly identify as a stop work action and initiated in a non-combative manner directly with those at risk. Stop Work interventions should be initiated in a positive manner by briefly introducing yourself and starting a conversation with the phrase "I am using my Stop Work authority because." Using this phrase will clarify the user's intent and set expectations as detailed in this procedure.

2. Notify & Investigate - Notify affected personnel and supervision of the stop work action. If necessary, stop work activities that are associated with the work area in question. Make the area(s) as safe as possible by removing personnel and stabilizing the situation. Affected personnel will discuss the situation and come to an agreement on the stop work action. If all parties come to an agreement the condition or behavior is safe to proceed without modifications, the affected persons should show appreciation to the SWA initiator for their concern and then resume work. The SWA is complete at this point and no further steps are needed. Investigate the source of stoppage and records the associated hazard and/or risk. If incident occurs prepare the documents and report to HSE Supervisor.
3. Correct - The affected area(s) will be inspected to verify completeness of the modifications and to verify all safety issues have been properly resolved. Proceed with the job task safely and implement any recommendations in the Job Safety Analysis, Method Statement and Permit To Work, as necessary. Develop temporary procedures or revise existing procedures to accurately, safely perform the job task. Confirm that everyone understands the job task as it is about to be performed. Confirm that proper tools, materials, spill prevention / remediation equipment or personnel, etc. are available. Confirm that the appropriate and trained workforce is available. Determine if there is enough time to perform the job task safely. Confirm that the communication is appropriate (spotters, hand signals, signage, language barriers, etc. If the Stop Work issue cannot be resolved immediately, work shall be suspended until proper resolution is achieved. When opinions differ regarding the validity of the Stop Work issue or adequacy of the resolution actions, the Person in Charge shall make the final determination. Details

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- regarding differences of opinion and resolution actions should be included in the documented report.
4. Communicate - Conduct brief tool box regarding the stoppage of work and communicate to all involve personnel and nearby workers. Communicate with work permit issuer together with receiver for cancellation of permits. At this time, revision of job safety analysis is important as along as changes with methods statement with one goal to proceed with safety precautionary and conditions.
  5. Re-Evaluate - Once the corrective actions and preparations are in place reevaluation to be made, a joint site inspection with the work permit issuer, receiver, engineers and supervisor will inspect the location, condition, and required PPE and procedure to be follows are clearly written and available. Issuance of work permit will be made upon the approval of both parties.
  6. Resume - The affected area(s) will be reopened for work by personnel with restart authority. All affected employees and contractors will be notified of what corrective actions were implemented and that work will recommence. No work will resume until all issues and concerns have been addressed. In the event an employee still believes it is unsafe, they will be assigned to another job with absolutely no retribution. All Stop Work interventions and associated detail shall be documented and reported to the Safety Supervisor.

Incident Investigation and Reporting if stop of work activity includes incident whether minor or major incident proper investigation to be conduct and reporting should follows.

Site Supervisors will provide the root cause analysis to the stop work action and identify any potential opportunities for improvement. The Safety Manager will publish the incident details regarding the stop work action to all Section Managers and employees outlining the issue, corrective action and lessons learned. Although most issues can be adequately resolved in a timely fashion at the job site, occasionally additional investigation and corrective actions may be required to identify and address root causes.

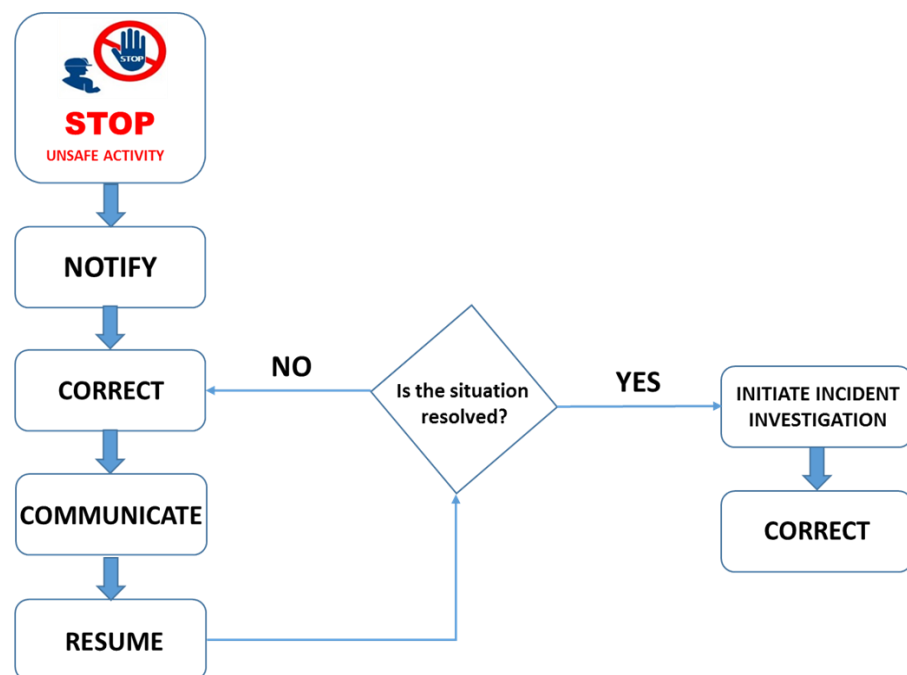
Stop Work interventions that required additional investigation or follow-up will be handled utilizing existing protocols and procedures for incident investigation and follow

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up. If anyone in the process believes that the restart authorization or release is not justified, or that modifications imposed as a precondition to the operation's restart are inadequate, appeal the resume decision to the Safety Manager.

#### 11.2.4. Stop Work Flow Chart

## STOP WORK AUTHORITY PROCEDURE IMPLEMENTATION FLOW CHART



Stop work signage, as defined further below, shall be mounted in clearly visible locations at worksites. Contractors shall ensure that signage language is translated into the additional language(s) of their workforce.

#### 11.2.5. Training

Training regarding this SWA Program shall be conducted as part of all new employee and contractor orientations.

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At a minimum, employees will be trained in:

1. The importance of Stop Work Authority.
2. The benefits of Stop Work Authority.
3. The contents of this program and are expected to adhere to the provisions contained within.

### 11.3. SHORT SERVICE EMPLOYEE (SSE) PROGRAM

Contractor shall establish a short service employee (SSE) program. This program shall include identification of new or inexperienced personnel so others may take extra care in their presence and provide additional assistance.

“Short Service Employee” (SSE), means any new and inexperience personnel with less than six (6) months experience in the industry or less than six (6) months in the same trade/craft or workers returning to work in their trade/craft after a break in service in the industry for a period of more than one (1) year.”

The CONTRACTOR shall ensure that all of its workers are adequately knowledgeable, trained and competent to render their assigned work.

The CONTRACTOR shall identify “Short Service Employees” (inexperienced workers), for which is necessary to provide an adequate level of guidance, training, support, and general control that, in general, will help prevent accidents in the workplace, such as injury to the workers, or causing them to injure other persons, or to damage the environment and property.

Contractor to review workers qualification and experience to determine workers capability and fitness to the assigned job position.

In case an employee has been identified and classified as SSE, he shall be assigned a mentor for a predetermined period (1 month duration), and shall be under the constant supervision of a competent supervisor and shall not be allowed to work alone.

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### 13.3.1. Mentorship

CONTRACTOR shall provide SSE by a mentor directed to assist SSE on the activities supervision, as well as his professional development.

A mentor may be assigned to only one SSE if team is less than five (5) or two (2) SSE if team is more than five (5) from the same team. In this case, for monitoring the work of SSE mentor should always be on the site, next to the SSE.

SSE shall be monitored and required to complete the predetermined period (1 month duration), of continued safe working and must display complete compliance with the project site safety rules and regulations with no record of any safety violations within the prescribed period.

Supervisors shall observe their SSE's work performance until they are satisfied that the employee can perform his job in a safe and effective manner.

The SSE shall be provided with additional training as necessary when requested by the supervisor.

	Period of SSE (Mentorship)		Remarks
	6 months	3 months	
1	New worker with less than 6 months in industry / trade / craft	Returning worker in industry / trade / craft after 1 year	Supervisor to recommend removal from SSE

### 13.3.2. Work zones of risk

Under no circumstances, the SSE cannot be allowed to perform work in process areas of high risk.

### 13.3.3. Visual Identification of SSE

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All SSE's shall continuously wear a visual identifier while at the job site (e.g., orange hard hat). The SSE visual identifier to be used shall be approved beforehand by the COMPANY.

The CONTRACTOR may consider the use of other form of visual identifier provided the used shall be first approved by the COMPANY.



#### 13.3.4. Composition of team structure

Before work commences, CONTRACTOR and its Subcontractors shall inform the COMPANY of the maximum ratio of SSE's to experienced workers that will be present at the job site at any given time. The COMPANY reserves the right to require an alternate maximum ratio of SSE's.

- If the work can be done by one person, it will not be SSE (new or an inexperienced) worker.
- In team or group of workers less than five, workers cannot be more than one inexperienced worker (SSE).
- Teams which is of 20% or more consisting of inexperienced workers (SSE) may be allowed to perform task or work only on activities that will not expose

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the SSE to serious injury or life-threatening activities (e.g. housekeeping, material handling, etc.) this shall be signed with approval of both the Construction manager or supervisor who fills in the form under Section 11.3.3 – Notification team structure) - Form of notice on work permission for SSE with the concurrence of the COMPANY's authorized representative. The COMPANY reserves the right to reject the composition or require an alternate maximum ratio of SSE's.

### 13.3.5. Notification of team structure

Information about the formation of the proposed team/group should be shown in **"Notification of Team Structure"** notice of permission to work for CONTRACTOR's SSE.

Prior to the mobilization for work performance, Supervising Engineer or in-charge supervisor has to complete and submit this form to the Project Coordinator, its contact person or site manager on all works, where SSE will be involved.

If SSE on site is without prior approval or relevant permission, COMPANY has the right to refuse the services of SSE,

- The COMPANY, on behalf of its authorized representative approves and saves a copy of the original form in the project documentation.

## 11.4. FAILURE TO COMPLY POLICY

Contractor shall implement "Failure to comply policy". The policy shall describe the action of the contractor to comply from its contractual commitment.

Under this policy the contractor will;

Upon receiving notification from the COMPANY of failure to comply with the requirements of the contract and any actions needed to prevent the injury or death of personnel, damage to equipment, loss of process or damage to the environment during



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performance of work, the CONTRACTOR shall immediately take all necessary actions including, but not limited to, action requested by the COMPANY.

If CONTRACTOR fails to take prompt corrective action, the COMPANY may direct the contractor to suspend all or part of the work until satisfactory corrective action has been taken.

Costs incurred of such work suspension as a result of CONTRACTOR's failure to comply shall be solely the CONTRACTOR's responsibility.

Whereas, if CONTRACTOR fails to take prompt corrective action for reasons beyond the CONTRACTOR's control, the costs incurred of such work suspension shall not be on the CONTRACTOR's responsibility. This shall be further reconsidered, discussed and agreed by both the COMPANY and the CONTRACTOR.

Disputes involving safety shall be elevated to the contractor's higher management for resolution before work can proceed.

## 11.5. MEDICAL PROGRAM

Contractor shall provide for medical care of its employees according to requirements established by the Saudi Arabian Government Ministry of Health (MOH) and Saudi Arabian labor law, GI 150.002, the SA Minimum Medical Standards Requirements (MMSR) Manual and in accordance with this section (CSAR 9.0)

### 11.5.1. Pre Job-Medical Screening

Pre-job medical screening at an onsite clinic is a prudent step for ensuring the health and safety of employees. Here's a breakdown of what typically happens during such screenings:

- Measuring blood pressure helps identify individuals with hypertension, which could pose risks in certain job roles, especially those involving physical exertion or high-stress environments.
- Screening for blood sugar levels is essential, especially in industries where

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employees may be exposed to factors that could increase the risk of diabetes due to poor dietary habits. Elevated blood sugar levels can indicate potential diabetes or pre-diabetes.

- A thorough physical examination may include checking vital signs, assessing overall health, and identifying any visible health issues or concerns.

If the employee passes all the health checks, they are declared fit to work and can proceed with the induction training. If an employee fails any of the health checks, they are given a grace period to improve their health. During this time, they are provided with resources, support, and guidance to address any health issues identified during the screening.

Based on the final assessment, if the employee's health has improved to meet the required standards, they are declared fit to work and can proceed with the induction training. However, if the employee remains in the same health condition and is unable to meet the required standards, they are declared unfit to work

### 11.5.2. Health Insurance

CONTRACTOR and all its subcontractors shall to provide all their employees with health insurance coverage for emergency and inpatient care.

### 11.5.3. First Aid and Medical Facility Services

The category of a work site medical facility (clinic) shall be in accordance the Initial Category/Level Evaluation Form (Section 2) in the MMSR manual, which is based on the following criteria:

- Number of personnel at the work site.
- Remoteness of the work site and access to definitive medical care (e.g., hospital).
- Potential risk factors at the work location.
- Specialized services required (medical procedures, diagnostics or otherwise)-CSAR Section 9.3 C and MMSR Manual Category / Level of Medical Facilities

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### First Aid Facilities

CONTRACTOR shall provide and maintain an adequate size of first-aid facilities complete with standard equipment and supplies. Such facilities shall be readily accessible to all employees.

### First Aid and Medical Personnel Nurse

A full time male nurse is assigned to the project. The CONTRACTOR Male Nurse on duty (for non-emergency cases) shall not treat any injured worker without the medical slip from his Supervisor or Foreman. The Male Nurse on site is only for First-Aid. The emergency cases will be transferred to the hospital for Doctor's treatment

### Physician

Contractor shall ensure that for all matters pertaining to clinic operation, all registered nurses (RN) are under the direct supervision of senior RN or Physician.

### Emergency Transportation

A job site ambulance is available as immediate means of transportation to the nearest hospital.

One four-wheel drive vehicle equipped with a well-stocked first aid kit for each crew shall be available for personnel performing pipeline or powerline work, or who are working in remote areas. These vehicles shall be marked to indicate they carry a first aid kit. A minimum of one person in every remote area crew shall have a valid first aid/BLS certificate-See CSAR Section 9.2 E, Section 9.5 and MMSR Manual

Contractor shall provide Automated External Defibrillators (AEDs) as required by GI 150.002 and the MMSR manual. At each site with an AED contractor shall provide an

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adequate number of personnel who are trained in AED operation CONTRACTOR will also notify and request the assistance of the following in case of emergency.

#### COMPANY

Name : Lomso Dyasi  
Position : PKG4 FCC Lead  
Mobile No. : 053-707-9080

#### CONTRACTOR

Name : DAE SEONG LEE  
Position : HSE Manager  
Mobile No. : 053-542-7043

#### SUB-CONTRACTORS – **HDEC TCF**

Name : Md Shahidul Islam  
Position : HSE Supervisor  
Mob # : 058-381-5633

#### SUB-CONTRACTORS – **Gusan**

Name : Hafeez Ur Rahman  
Position : HSE Manager  
Mob # : 059-096-2390

#### SUB-CONTRACTORS – **UCTC**

Name : Muhammad Waqas Younas  
Position : HSE Officer  
Mob # : 058-274-6745

#### SUB-CONTRACTORS – **Sendan**

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Name : Tausif Ahmad  
Position : HSE Supervisor  
Mob # : 054-656-6532

#### SUB-CONTRACTORS – **HDEC BLDG**

Name : Touseef Yousef  
Position : HSE Supervisor  
Mob # : 059-167-6341

#### SUB-CONTRACTORS – **AFAC**

Name : Shabeer Ahmed  
Position : HSE Supervisor  
Mob # : 055-408-3283

#### SUB-CONTRACTORS – **HDEC SMP**

Name : Ghulamullahh  
Position : HSE Supervisor  
Mob # : 059-701-1451

#### SUB-CONTRACTORS – **HDEC UG**

Name : Linson Davis  
Position : HSE Supervisor  
. Mob # : 053-487-7250

**It will be updated continuously**



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#### 11.5.4. Medevac Plan

This document details how a medical emergency shall be managed during the PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project.

A MEDEVAC is a sum of the medical evacuation activities made in order to prevent death or to diminish the serious damage that might occur to a person due either to illness or injury, especially those where a risk of life is emphasized.

The plan foresees:

- Assessment of the patient, and first aid treatment at the location of the accident;
- Transport the patient to the Site Clinic (Medical Office) or the nearest hospital (Primary Evacuation – PE) to stabilize his condition;
- Further evacuation, if the case requires it, to the hospital where definitive care will be provided (Secondary Evacuation – SE)

The plan has been issued to give the necessary instructions to all involved, about how to act should a MEDEVAC become necessary.

Contractor shall ensure that needed Medevac procedures are incorporated into their emergency response procedures as a part of their CSSP. Procedures to initiate a Medevac are in GI 1321.015.

#### 11.5.5. Responsibilities

CONTRACTOR shall;

- Ensure adequate resources are available at all times to properly implement this Plan.
- Ensure distribution of this Plan to construction personnel, and that they are familiar with its contents;

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- Ensure proper emergency equipment is available and properly maintained on site.
- Ensure the site clinic is fully equipped and properly staffed and maintained.
- Ensure periodical emergency drills are performed and recorded.
- Ensure that a proper communication system is available;
- Ensure the medical emergency plan is reviewed at least quarterly, or as often as necessary to reflect evolving site conditions.
- Ensure that COMPANY and Saudi Arabian Government (SAG) requirements are complied with.

#### **11.5.6. Medical Personnel, Structure and Equipment**

##### Qualification of Medical Personnel, Structure and Equipment

Medical staff shall possess AMIRAL recognized qualifications, and be deemed competent to perform the work required of them. Contractor shall comply fully with requirements of Minimum medical standard requirements (MMSR). Medical personnel, supplies and equipment shall be provided by SA approved medical service provider and medical facility shall follow the outline of MMSR and shall be inspected by concerned organization for approval as per CSAR 9.0

They shall be fully conversant with and experienced in primary care, trauma and emergency management, and prevention and treatment of infectious and vector borne disease.

Furthermore, they will to be skilled in:

- Site Clinic management and record keeping;
- First aid training and health education;
- Monitoring of general hygiene, food and environmental issues;
- Health surveillance;



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- Communication with local medical community, and with Client's representatives.

Medical personnel, familiar with above-mentioned skills, will be chosen from emotionally stable and physically fit candidates, following review of their past experience and related certification.

COMPANY shall review and finally approve all medical staff in advance.

First Aid Providers and their adequate numbers, qualification and deployment, shall be established using the following criteria:

- The number of workers employed for the Project;
- The area over which the operations will be carried out;
- The local health care capabilities;
- The time/distance involve for medical evacuation;
- The health risks associated with the particular occupational and environmental hazards at the specific location.

This is all in order to guarantee the optimal health care to the personnel involved in Project activities.

### Medical Arrangements

During normal working hours a Doctor or professional Nurse will be present and reachable twenty-four hours a day.

The Site Clinic shall conform to all relevant local legislation and/or Project specific requirements.

Dependent upon construction activities, hazards, manpower and distance from the site clinic, a certain numbers of First Aid Kits shall be distributed / located.

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Adequacy and availability of medical equipment, and Medicine expiry dates shall be reported in a dedicated log which will be periodically updated by the site medical personnel.

For hospital treatment, diagnostic procedures and more complex laboratory exams, special agreement will be established locally with the available Medical centers.

#### **11.5.7. Medical Drill**

Site Medical Drills shall be performed on a quarterly basis. Joint drills with COMPANY shall be conducted at least annually. These drills will serve to instruct and refresh personnel on the procedures, and also to identify any shortcomings that can then be rectified, ensuring continual improvement.

The site Medical Staff, in conjunction with the site HSE Staff, shall be responsible for reviewing the Plan and initiating any necessary changes or improvements.

The Project Manager shall be responsible for ensuring all necessary changes or improvements are implemented.

Evaluation of a medical drill shall include the following as a minimum:

Sequence of events with times

- Accident time;
- If and when the work was stopped;
- How many times the accident was reported;
- Attendance time of the medical staff at the injury location;
- Initial evaluation of the situation;
- Was stabilization of the patient required;
- How long the ambulance took to reach hospital.

Possible failures in the system (Practical Critique)

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- Communication (radio, telephone, etc.);
- Failure in event notification (to Nurse);
- Failure in injury description (from Nurse);
- Transportation (driver / ambulance);
- Evaluation and stabilization;
- Final destination;
- Local medical facilities;

#### Non-compliances (Management Critiques)

- Information flow;
- Site Accident Procedures;
- Acting the Primary Evacuation;
- Acting the Secondary Evacuation;
- Medical Personnel awareness and training;
- Medical Structures and Equipment;
- Local medical facilities;
- Lines of communications;
- COMPANY and Government requirements;
- Plan updating and review.

### 11.5.8. Medical Care

#### General

The general facility (or facilities) shall be kept in a sanitary condition at all times. First Aid (FA) supplies shall be kept readily available in a cabinet designated for those supplies only.

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Dedicated emergency vehicle(s), properly and adequately equipped and with dedicated drivers, shall be available at site whenever work is in progress.

Notices indicating the following data shall be visibly posted in the main areas:

- The name of the person who is in charge of the first aid Clinic (Medical Office);
- Any injured person who requires hospital treatment is to be sent.
- All ambulance drivers shall have a familiarization/practice drive to all Hospitals;
- The telephone number of First Aid Attendant employed by CONTRACTOR or its SUB-CONTRACTORS;
- The Emergency Telephone numbers to be called for assistance;
- The Emergency Telephone numbers (directory) including management home telephone numbers shall be posted at Site Office, Site Clinic (Medical Office) doorways and on board of the key personnel vehicles.

Medical Care activities are made in order to prevent death or to diminish the serious damage that might occur to a person due either to illness or injury, especially those where a risk of life is emphasized.

The procedure foresees:

- Assessment of the patient, and first aid treatment at the location of the accident;
- Accompanied by the Site Nurse (SN), transport the patient to the Site Clinic (Medical Office) or the nearest hospital (Primary Evacuation – PE) to stabilize his condition;
- Further evacuation, if the case requires it, to the hospital where definitive care will be provided (Secondary Evacuation – SE);

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#### 11.5.9. Site Accident Procedure (Top 10)

In the event of a serious accident or medical emergency:

- Shutdown equipment / machinery;
- Notify Foreman / Supervisor;
- Notify site medical staff (Medical Office);
- Give first aid if possible until the arrival of medical staff;
- Do not move the injured person unless he or she is in immediate danger (fire, moving vehicles etc.);
- Do not disturb the accident scene;
- Transport of Site Clinic – Medical Office (PE) or Hospital (SE) as required;
- Begin accident investigation;
- Hold HSE meeting (e.g. lessons learnt);
- Return to work if safe to do so.

If the needs of the casualty is beyond the capability of the site medical staff (Medical Office), or necessitates some diagnostic procedures or hospitalization, the ambulance will proceed to immediately transfer the casualty to the hospital or other appropriate clinic.

#### 11.5.10. Primary Evacuation (PE)

In the case of an extreme emergency, where the patient is in a life threatening condition, (i.e. cardiac arrest, severe shock etc.) the patient will be transported immediately to the nearest medical facility.

Site Doctor will evaluate the medical needs of each situation. Should there be any question he is to call COMPANY Emergency Medical “HOLD” for any assistance he may require.

#### 11.5.11. Secondary Evacuation (SE)

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Should the Primary Evacuation hospital be unable to cope, for example in the case of multiple casualties, a Secondary Evacuation hospital will be used.

#### **11.5.12. Local medical facilities**

The primary evacuation hospital (PE) and Secondary Evacuation (SE) will be determined, and all necessary formalities will be concluded before the start of the project.

Relevant contact information and telephone numbers will be collated and communicated to all personnel by way of meetings, memos, notice boards, tool box talks etc.

#### **11.5.13. Lines of communications**

The Project Manager (PM) / Construction Manager (CM) / HSE Manager (HSEM) and his office are in charge for the logistic support of the emergency case management.

They help the Site Nurse (SN) in passing the information to medical transportation company, providing the assistance regarding personal documents and certificates, other medical, if required.

Through their communication line they will inform the Administrative Manager (AM) about the accident and ensure that the patient's family is informed.

Note: Medical personnel must remain with the injured person until responsibility for care is formally transferred to the hospital.

COMPANY must be informed as soon as possible/practicable.

#### **What to communicate?**

In order to enable the quickness and the most adequate response to the medical emergency the caller should, while alerting the persons in charge, give the following information as calmly as possible.

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- Exact location of the accident;
- Nature of the accident;
- Number of persons involved;
- Short description of their condition;
- If there may be need for special medical equipment;
- Other relevant information.

It is essential that when the initial message is given, caller should try to be calm and collected.

Repeat the message clearly and accurately, giving as much relevant information as possible.

Both caller and receiver have a very important part to play in initiating the medical response to an emergency, and anything other than calmness will only result in delay to the injured person receiving proper medical attention.

Below is a sample Emergency Reporting Instruction sheet.

The exact contact numbers must be inserted into the form prior to it being distributed.

Sample:

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<p align="center"><b>EMERGENCY NUMBER “to be announced later”</b></p> <p align="center"><b>Emergency Reporting Instructions</b></p> <p>TELEPHONE: “HOLD” (FROM INTERNAL PHONE ONLY, if busy see below)</p> <p>I have an emergency to report:  I am calling from _____  My name is _____ My badge number is _____  There are _____ (no.) of people hurt and requiring medical assistance.</p> <p><b>DO NOT HANG UP, LET THE OPERATOR TERMINATE THE CALL  ENSURE THAT YOU HAVE A RESPONSE THEN IF NECESSARY  REPEATS THE ABOVE INFORMATION AND ANSWER QUESTIONS.</b></p> <p>If the number is busy or unavailable, try the following in the order listed:</p> <ol style="list-style-type: none"> <li>1. Telephone <b>On Hold</b> (Main Control Room);</li> <li>2. Telephone <b>On Hold</b> (Plant Division Manager)</li> </ol> <p><b>After the message has been given successfully, the reporting individual should stand by the telephone if safe to do so. Persons knowledgeable of the emergency should help direct emergency crews and vehicles to the scene of the emergency if HSE to do so.</b></p>
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## EMERGENCY CONTACT NUMBER

<b>SAUDI ARABIAN GOVERNMENT (SAG)</b>	
Police	999
Fire Dept.	998
Ambulance	997

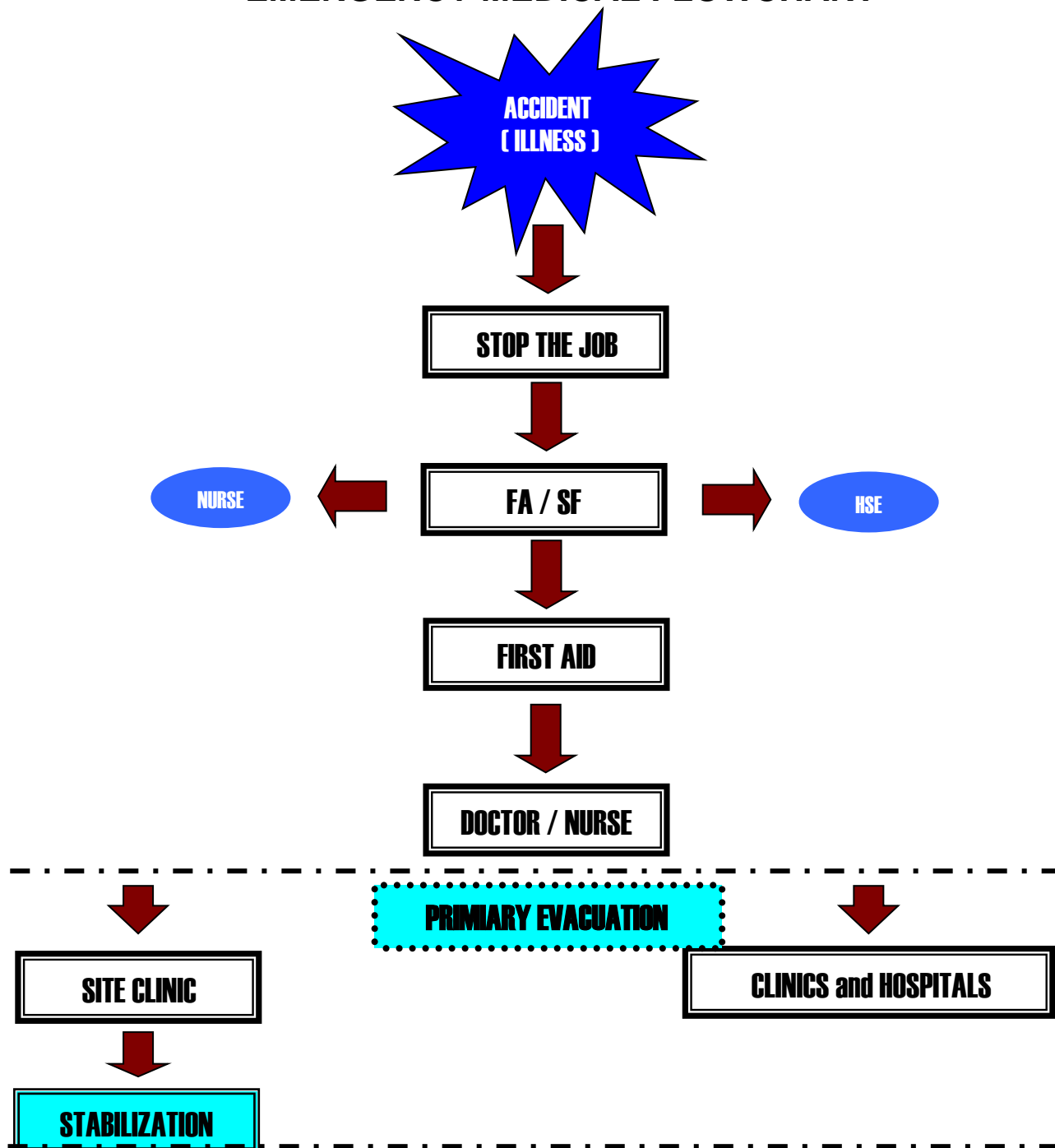
<b>PKG (4) AMIRAL PROJECTS DEPARTMENT</b>	
AMIRAL Emergency	050-295-0800
AMIRAL Emergency (via mobile)	050-295-0800
PKG (4) AMIRAL PMT	
PKG (4) AMIRAL HSE Team	053-707-9080

<b>CONTRACTOR</b>	
CONTRACTOR HSE OFFICE	TBA
CONTRACTOR CLINIC	TBA

\* The detailed Emergency Contact Number for PKG (4) AMIRAL Project will be concreted at site later on.

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## EMERGENCY MEDICAL FLOWCHART



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## MAP OF THE AREA AND HOSPITAL LOCATIONS

(To be determined and verified at a later stage)

### Medical Checklists

The below mentioned checklist (medicines, consumables, equipment and first aid kit) shall be increased time by time by the appointed Doctor/Nurse, in accordance with the number of workers employed and the relevant medical needs.

MEDICINE CHECKLIST	
ADHESIVE PLATER	IMMODIUM CAPSULE
SWAB	MOXAL LIQUID
ALGESAL CREAM	MOXAL TABLET PKT
AMOXIL CAP 500 MG.	MUCOLYTIC SYRUP
AMOXYDAR FORTE	NUFEN 400 TABLET
AMPIDAR CAP 500 MG.	PANADOL EXTRA
ASPIRIN TABLET	PANADOL TABLET
BAND AID STRIP	PARAFON CAPSULE
BETADINE SOLUTION	PRIMPERAN TABLET
BRUFEN TAB 400 MG	PYRALVEX SOLUTION
BUSCOPAN TABLET	WAXOL EAR DROPS
BUTTERFLY SCALP VEIN SET	REPARIL GEL
FLU TAB	VOLTREX TABLET
CORN CAB	PEDIALYTE LIQUID
COTTON BUDS	SILOMAT SYRUP
DAKTACORT CREAM	STERILIZATION POUCH
VOLTREX TABLET	STREPSILS LOZENGES
DISPOSABLE FACE MASK	TRIANGULAR BANDAGE
DISPOSABLE GLOVES MEDIUM	VITAMIN C
DISTILLED WATER x 50	WOODEN TOUNGE DEPRESSOR
DIZINIL TABLET	THERMOMETER (ORAL)
DULCOLAX TAB	CALCIUM SANDOZ W/VIT. C
ELASTIC BANDAGE 4"	COTTON ROLLS
EYE PADS	GAUZE PAD STERILE
NUFEN TABLET 400 MG.	GLOVES SURGICAL STERILE
FLAMMAZINE CREAM	GLOVES EXAMINATION LATEX
FUCIDIN OINTMENT	DUPHALAC SYRUP
GAUZE PAD 2x2	IMMODIUM CAPSULE
HYDROGEN PEROXIDE	REFRESH EYE DROPS

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I.V. INFUSION SET	KAFOSSED SYRUP
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## 11.6. EMERGENCY RESPONSE PROCEDURES

Please refer to the Emergency Response Plan (SA-AMI-000-HDAI-000000) for more details.

## 11.7. HEAT STRESS MANAGEMENT PROGRAM

The CONTRACTOR will establish the minimum safety requirements and guidance to prevent and protect its personnel from injury and suffering from the effects of heat-related illnesses at the worksite.

Contractor management is responsible for managing their employees' work so as to avoid and prevent heat-related illnesses. Contractor shall ensure the requirements in Chapter I-13, Heat Stress, of the CSM are fully implemented at the work site.

### 11.7.1. Heat Stress Management

Prior to performing work during hot weather, the contractor shall conduct a thorough heat stress evaluation to identify tasks and conditions that present a potential heat stress hazard. This evaluation shall include observations, discussions with workers and supervisors, review of any previously reported heat-related illnesses and shall be based on the U.S. Occupational Safety and Health Administration (OSHA) Technical Manual TED 01-00015, Section III: Chapter 4,—Heat Stress and/or the National Institute for Occupational Safety and Health (NIOSH) Occupational Exposure to Hot Environments.

The contractor shall develop and implement a written heat stress management program based on the results of the heat stress evaluation, as well as SA's heat stress requirements. The contractor shall provide proper resources to support implementation of the plan, including but not limited to procurement and provision of materials and supplies. The contractor's heat stress management program shall be submitted to the SAPO for review and concurrence prior to the start of work during hot weather (i.e., prior to April 1).

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Contractor shall provide training to site management and supervision on the heat stress management program, including recognition of, prevention of and response to heat-related illness, with emphasis on their responsibilities for ensuring safe working conditions (particularly suitable work/rest rotations for workers).

Contractor shall provide training and guidance to their employees in the recognition of, prevention of and response to heat-related illness.

Heat stress is usually the result of work being performed at elevated temperatures. Contributory factors may also include a decrease of natural body ventilation by protective clothing e.g. chemical & impervious suits.

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to fatal. Because heat stress is one of the most common and potentially serious illnesses that construction workers encounter, in areas where high temperatures are normally encountered, regular monitoring and other preventative measures are vital.

The purpose of this procedure is to reduce the exposure to heat related injury/illness from working in high heat environments.

### Common Hazards

Your body operates in a narrow temperature range. When the environment is too cold or too hot the body will cease to function properly if steps to control the exposure are not taken. Extremes in body temperature elevation can be life threatening. There are many factors that affect body temperature. Some of these that can cause elevated body temperature are listed below:

1. Lack of proper fluid replacement.
2. Electrolyte imbalance
3. Extreme air temperature.
4. Lack of air movement – oven effect.

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5. Reflected heat or sunrays.
6. Being in the direct sun (can raise temperature by as much as 15 degrees).
7. Convection of heat through walls or steel.
8. Prolonged or strenuous activities.
9. High humidity.
10. Medications, diet, excess salt intake.
11. Physical fitness (lack of, weight, acclimatization).
12. Excessive or layered clothing.

#### 11.7.2. New Employees

The first step in managing heat stress is to determine if the new employee is used to working in heat. A person who is not used to working in high heat conditions cannot be expected to perform, as an acclimatized employee would be able to perform. The new employee must be introduced to the new environment carefully. The tasks assigned must take into account the persons, abilities, strength, and acclimatization. Prolonged strenuous activity or exposure to extreme heat must be limited by rotating employees until all are accustomed to the new extreme heat must be limited by rotating employees until all are accustomed to the new environment. Deliberate acclimatization shall be used to expose new employees to work in a hot environment for progressively longer periods. New employees in jobs where heat levels may produce heat stress shall be exposed to 20% of normal exposure on day one, with a 20% increase in exposure each additional day.

The supervisor is the essential person to provide an acceptable acclimatization period with appropriate tasks to ensure the Safety of the new employee. Several factors will give a supervisor clues as to whether a new employee will acclimatize quickly or not.

**Physical Fitness** – A fit person will generally have a higher heat tolerance and acclimatize sooner.

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Previous Experience – Someone who has worked in a high heat environment either will be acclimatized or will have a better knowledge of how to acclimatize himself.

Fluid Intake/Breaks – A person who works steady with regular breaks will acclimatize quicker than someone who takes sporadic and more frequent breaks.

Attitude – A new employee who is eager and not worried about working in the heat will acclimatize more quickly than someone who is anxious when working in hot environments will. Care must be taken with the eager employee because he may push himself too much and too quickly.

### **11.7.3. Current Employees**

This group is generally more susceptible to heat stress than some of the new employees. These employees are already acclimatized and feel that they are able to “handle the heat” or they are introduced to the heat for the first time of the season, and feel that they are fine, in fact, they are not. Mostly they feel that they can do more than they are really able to do, or they are trying to complete a task before taking their break. Sometimes the experienced employee is trying to show to the new employee “how to do it” and is caught doing more than he should. Awareness and education is the tool to keep the current employee out of trouble.

### **11.7.4. Identification of Heat Stress Symptoms**

Many heat stress management programs focus on the identification of heat illnesses. While the ability to identify the particular heat stress problem is important, it is far more important to never reach the need to identify which particular heat related problem is being experienced. There are many publications, which we all should have, available to identify the various levels of heat stress symptoms. This procedure will focus on the prevention of heat related illnesses. The following information targets identification of Initial symptoms of heat stress before problems occur.

#### **Types of Heat Stress**

#### **Heat Stroke**



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Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of the heat regulating mechanisms of the body, e.g. a breakdown of the employee's temperature control system that causes sweating.

Body temperature rises so high that brain damage and death will result if the person is not cooled quickly.

#### *Symptoms*

Red, hot, dry skin, although the person may have been sweating earlier, nausea, dizziness, confusion extremely high blood pressure, rapid respiratory and pulse rate, unconsciousness or coma.

#### *Actions*

Casualty must be cooled down and Medical Aid sought immediately with the person transported to the site medical facilities.

### **Heat Exhaustion**

Heat exhaustion is a state of very definite weakness or exhaustion caused by the loss of fluids from the body.

The condition is much less dangerous than heat stroke, but must be treated early on to prevent eventual deterioration to heat stroke.

#### *Symptoms*

Pale, clammy, moist skin, profuse perspiration, and extreme weakness.  
Body temperature is normal, pulse is weak and rapid, breathing is shallow.  
The person may have a headache, may vomit, may be dizzy.

### **Heat Cramps**

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Heat cramps are caused by perspiration that is not balanced by adequate fluid intake. Heat cramps are often the first sign of condition that can lead to heat stroke.

#### *Symptoms*

Acute painful spasms of voluntary muscles; e.g., abdomen and extremities.

#### **Heat Rash**

Heat rash is caused by continuous to heat and humid air and aggravated by chafing cloths. The condition decreases ability to tolerate heat.

#### *Symptoms*

Mild red rash, especially in areas of the body in contact with protective gear.

An alert supervisor will know his employees faces. Heat stress shows early in the face as being tired, very profuse sweating, off-color, and sometimes confusion.

Employees that are found with any of these symptoms should be taken to a cool location before a problem occurs.

#### **11.7.5. Protective Measures against Heat Stress**

The best measures to take to prevent heat stress are to address it before it ever becomes a problem. Anticipate high heat days through weather forecasts and prepare for them with proactive measures.

The following shall be implemented to aid in the prevention of heat related problems:

- Begin drinking fluids early in the day – waiting until the hottest portion of the day to replenish body fluids is too late. Avoid caffeine and alcohol the night before and during the day.
- Schedule the most strenuous work during the coolest times of the day

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- (e.g., early morning and evening/night).
- Monitor employees for symptoms of heat-related illness.
- Dress for the conditions. Lightweight, loose clothing is best. Avoid layering clothing underneath coveralls.
- A well balanced diet will help. Heavy, fatty foods do not support the body well in high heat conditions. Fruits, vegetables, proteins, and starches work best.
- Provide continuous supply of drinking water in water stations (e.g., coolers with chilled or ice water) for workers and remind them to drink plenty of water even if not thirsty.
- Electrolyte solutions help to maintain energy levels. Do not drink more electrolyte solution than water. Avoid taking salt tablets unless directed to do so by your physician.
- Use sunscreen and cover your face and neck from the sun.
- Provide sun shade and local ventilation when working in direct sunlight is required.
- Provide shaded areas for mini-breaks, with water stations, as much as possible when there is no existing shaded structures to recovery from minor heat-related illness. Where possible, these areas are to be air conditioned.
- Strongly encourage short (1-2 minutes) water breaks every 20-30 minutes during high heat conditions.
- Provide specially marked water barrels containing ice and water for soaking neck towels, arms, sleeves, bandannas, etc.
- Provide specific areas for employees to go to on a scheduled basis and cool off when working in full sun areas. These would be considered mandatory breaks (In addition to the short water breaks). This should be done every 1 to 1 ½ hours. Fans and sitting areas should be provided so those employees can sit with their coveralls unzipped and cool down. This break should 10-20 minutes in length.
- Monitor work areas for ambient temperatures. Use the heat index chart to determine the apparent temperature. Areas with apparent temperatures

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over 95 degrees should be monitored for personnel problems. Begin providing extra measures for the workers.

- Most importantly, do not let schedule or productivity influence awareness or caution in high heat weather. Pressure from foremen or self-induced pressure is the most dangerous hazard.
- Conduct regular (e.g., weekly) safety meetings/talks during hot weather to discuss “heat stress hazards and precautions”, with added emphasis on the risk during Ramadan if it occurs in summertime.
- Ensure training for heat stress for new workers and retraining for workers returning from vacation to acclimatize at a progressive, controlled rate to the change in environmental conditions.
- Monitor the effectiveness of any engineering/administrative controls and personal protective equipment (PPE) being used.
- Be aware and alert to be able to recognize early signs and symptoms of heat-related illness and take appropriate action to prevent serious heat illness.
- Be ready to attend to any heat-related illness.
- Be knowledgeable of emergency reporting and response procedures, including the location of the nearest medical facility

This program has to be supported from the Project Manager down through every level.

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### 11.7.6. Heat Index Table

Heat Index		Relative Humidity								
		10%	20%	30%	40%	50%	60%	70%	80%	90%
Air Temp °C	>50	**	**	**	**	**	**	**	**	**
	50	48	**	**	**	**	**	**	**	**
	49	47	**	**	**	**	**	**	**	**
	48	45	53**	**	**	**	**	**	**	**
	47	44	51	**	**	**	**	**	**	**
	46	43	49	**	**	**	**	**	**	**
	45	42	47	**	**	**	**	**	**	**
	44	41	46	52**	**	**	**	**	**	**
	43	40	44	49	**	**	**	**	**	**
	42	39	42	47	54**	**	**	**	**	**
	41	38	41	45	51	**	**	**	**	**
	40	37	39	43	48	**	**	**	**	**
	39	36	38	41	46	52**	**	**	**	**
	38	35	37	39	43	49	55**	**	**	**
	37	34	35	38	41	46	51	**	**	**
	36	33	34	36	39	43	48	54**	**	**
	35	32	33	35	37	41	45	50	**	**
	34	31	32	33	35	38	42	47	52**	**
	33	31	31	32	34	36	40	44	48	54**
	32	30	30	31	32	34	37	40	44	49
	31	29	29	30	31	33	35	38	41	45
	30	28	28	29	30	31	33	35	38	41
	29	27	27	28	29	30	31	33	35	37
	28	27	27	27	28	28	29	31	32	34
	27	26	26	26	27	27	28	29	30	31
	26	25	25	26	26	27	27	27	28	28

Note: This table is adapted from "Heat Stress: Improving Safety in the Arabian Gulf Oil and Gas Industry" from *Professional Safety: Journal of the American Society of Safety Engineers*, August 2008, pages 31-36.

### 11.7.7. Fixed Weather Station

- The heat index shall be monitored through the use of real time monitoring weather station equipment.
- The heat index readings from the weather station shall be disseminated to all safety officers on site by means of radio or mobile phone (SMS text messaging)
- All heat index readings will be recorded using the Heat Index Monitoring Form and shall be kept at the Contractor Safety Office

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#### 11.7.8. Flagging System

The level of risk is communicated to all workforce by means of colored flag. The flagging system shall be as per the heat index in Section 11.7.6.

If the heat index changes, heat stress flag color shall also be changed

FLAG	COLOR	WORK : REST	WATER
	RED	20 : 10	1 cup every 10 minutes
	ORANGE	30 : 10	1 cup every 15 minutes
	YELLOW	50 : 10	1 cup every 20 minutes
	GREEN	NORMAL	1 cup every 20 minutes

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### 11.7.9. Work / Rest Period

Heat Index				
Danger Category	Heat Index	Heat Stress Illness/Symptoms	Work:Rest (min.) Periods	Min. Water Needed *
IV. Extreme Danger **	≥ 52	Heat stroke imminent.	20:10	1 cup every 10 minutes
III. Danger	39–51	Heat cramps, heat exhaustion or heat stroke <i>likely</i> with prolonged exposure and physical activity.	30:10	1 cup every 15 minutes
II. Extreme Caution	30–38	Heat cramps, heat exhaustion or heat stroke <i>possible</i> with prolonged exposure and physical activity.	50:10	1 cup every 20 minutes
I. Caution	25–29	Fatigue possible with prolonged exposure and/or physical activity.	Normal / Scheduled	1 cup every 20 minutes
* 1 cup = 250 ml			** See Section 13.4.2(F) for precautions	

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## 11.8. CONTRACTOR'S CAMP SANITATION AND HSE

CONTRACTOR's camp shall comprise of communal living facilities for the basic health needs of each individual housed therein. CONTRACTOR ensures workers health requirements necessary to the maintenance of hygienic, safe camps and communal living facilities.

Contractor shall prepare comprehensive plans for all contractor camps and project support facilities that incorporate the requirements from the above planning and are in accordance with Section 11.0. These plans shall address, at a minimum, the following as applicable to the contract: CSAR Section 10.3 A

Plot plans and building layouts, which for contractor camp facilities shall show the camp site layout including medical, dining, recreation and toilet/shower facilities.

- Interior building layout/space utilization, which shall show site offices, conference rooms, prayer rooms, open office space for clerks, partitioned office spaces, kitchens, storage areas, etc. For contractor camps, interior building layouts shall show dormitory room planned occupancy and furniture layout.
- Building architectural/structural design features, including materials of construction.
- Building fire protection and alarm systems.
- Blast resistance features (if located within a blast hazard zone as per AMIES-B-014).
- Building air-conditioning, heating and ventilation distribution systems, including temperature control and equipment sizing calculations.
- Electrical power distribution systems.
- Electrical outlets per room (number and location shall be sufficient to safely accommodate personal electronics needs, such as TVs, mobile phone chargers, radios, etc.).
- Building and area lighting.



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- Communications systems, data cabling and equipment.
- First aid, ambulance and medical services/clinics.
- Fire prevention and fire fighting provisions.
- Raw water treatment and drinking water supply.
- Sewage/waste water collection, treatment and disposal.
- Sanitation plan, including refuse handling requirements and waste management facilities.

Contractor shall submit three copies of all contractor camp and project support facility plans to the SAPO for review within fifteen (15) working days of contract execution. Construction shall not start on the contractor camp or project support facility until the plans have been reviewed and approved per GI 298.010

#### **11.8.1. Inspection Requirements**

CONTRACTOR's Camp In-charge shall inspect all communal living facilities on a bi-weekly basis to ensure compliance with the COMPANY Sanitary Code. All inspections shall be recorded and such records shall be made available to COMPANY/CONTRACTOR HSE Team upon request.

#### **11.8.2. General Considerations**

CONTRACTOR's Camp In-charge shall be made responsible for maintenance of entire camp facilities in a clean condition. Persons shall be appointed to ensure that proper cleaning is being done. A master cleaning schedule-identifying areas to be cleaned, persons responsible and materials and equipment to be used shall be developed and implemented. A checklist and system for monitoring the efficiency of the cleaning schedule shall be developed and used.

CONTRACTOR's camp has been located in a well-drained area.

CONTRACTOR ensures that all areas shall be kept free of health and safety hazards.

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Live animals, including those intended for slaughter, shall be excluded from the premises.

CONTRACTOR shall provide Driveways, parking areas and access walkways to portables and link ways between portables and common facilities shall be suitably paved and drained to provide an all-weather surface.

CONTRACTOR's camp facilities shall meet the following general construction requirements:

- Ventilation and lighting.
- The floors of Ablution blocks constructed in cement concrete sloped to properly trapped floor drains and the junctions between the floors and walls covered and sealed.

Utility service lines and pipes shall not be exposed on floors.

Floor mats and duckboards shall not be provided in wet areas, e.g. kitchens, laundry rooms, shower rooms, toilet rooms, utility rooms and hand washing facilities.

#### Walls and Ceilings

Walls and ceilings are constructed of durable materials and shall have light Colored, smooth, easily cleanable surfaces.

#### Doors and Windows

All openings to the outside are provided with solid doors/glazed windows that shall be kept tightly closed when not in use (excludes passageways between rooms within an enclosed building).

Internal windows sills are sloped downward and away from the window to prevent accumulation of filth, eliminate resting sites for insects and rodents and to discourage personnel from using sills as shelving.

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Doors, windows and appurtenances thereto, are designed and constructed to avoid accumulation of dirt and shall be finished such that they are smooth, nonabsorbent and easily cleanable. Doors, windows, as well as appurtenances thereto, shall be kept clean and maintained in good repair.

#### Ventilation and Air Conditioning

Adequate ventilation and air conditioning are provided for the entire camp facilities.

#### Illumination

The illumination whether from natural or artificial sources are provided in all cases, light shall be evenly distributed and of sufficient intensity to avoid discoloration, shadows and strong glare.

CONTRACTOR shall ensure the following communal living facilities in camp:

#### **11.8.3. Potable Water**

Water is obtained, conveyed, treated, stored and distributed in a closed system. Design, construction, maintenance and operational standards, as well as quality criteria, shall comply with standards equivalent to those outlined in Section SAEHC-S-17 of COMPANY Environmental Health Code and standards referenced in COMPANY Engineering Standards.

Adequate potable water treated for the needs are provided.

CONTRACTOR will comply with all requirements as per SAEHC and other COMPANY/CONTRACTOR Regulations for camp & office facilities i.e. Fire Prevention, Traffic, etc.

All water not provided directly by pipe to the communal living facility from the source shall be transported in a bulk water transport system that is used for no other purpose. At the time water is obtained from the approved source, enough chlorine shall be added to the water in the bulk water transport system to create a 0.5 to 1.5 milligrams per liter (0.5 to 1.5 parts per million) free chlorine residual. Hauled water shall be

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delivered directly to the closed water system at the communal living facility. The bulk water transport system shall comply with requirements outlined in Section SAEHC-S-17 of COMPANY Environmental Health Code.

Water storage tanks shall be enclosed from the filling inlet to the discharge outlet. Tanks shall be designed with openings that permit visual inspection of the tank and provide access for cleaning and disinfection. All openings shall be covered. Covers shall overlap openings, be sloped so they are self-draining and shall be provided with gaskets and devices for securing them in place. All openings in the top of the tank shall be flanged upward to form a curb that prevents surface water from entering openings. Vents and overflows shall terminate in a downward direction and shall be screened to prevent entry by birds and other animals. All water storage tanks shall be provided with a sample tap.

Hot and cold potable water shall be provided to all hand washbasins, showers, ware washing facilities and laundry facilities.

Water treatment equipment, devices, filters, or any other water treatment or conditioning apparatus, shall be made of safe materials, shall be designed to be disassembled for periodic replacement of active elements/media, cleaning and service, shall be operated, inspected and serviced according to the manufacturer's instructions and specifications, and shall not be operated beyond their rated capacity. All such equipment shall be maintained in a clean and sanitary condition and, if necessary, shall be sanitized by application of a chlorine solution or by other approved means.

#### **11.8.4. Drinking Water Fountains**

Drinking fountains shall be approved angle-jet type and shall be provided with an adequate supply of water under pressure.

Spillage, overflow, drainage or wastewater from drinking fountains and faucets shall be discharged to the sewerage system through approved drains to prevent impoundment of water, creation of mud holes or other nuisance conditions.

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Open containers from which water must be dipped or poured such as barrels, pails or tanks, whether or not they are fitted with a cover, are prohibited.

Where single service paper cups are provided, cups shall be dispensed from a sanitary device designed for this purpose and a waste receptacle shall be provided for disposal of used cups.

The common drinking cup is prohibited.

#### **11.8.5. Sewage**

Sewage shall be collected, treated and disposed of in accordance with standards equivalent to those specified in Section SAEHC-S-02 of COMPANY Environmental Health Code and those outlined in the COMPANY Engineering Standards. Where a public sewer system is available, all plumbing fixtures and building sewers shall be connected to it. In no case shall sewage or liquid waste of any well, cave, open ditch or reservoir until it has been properly treated and the disposal method has been approved by the COMPANY/CONTRACTOR Preventive Medicine Services. Pit latrines, outhouses and other non-water-carried sewage disposal methods are prohibited.

Floor drains and sewer pipe shall be large enough to carry off all wastewater and sanitary sewage. Sufficient clean-out places shall be provided in sewer drain pipes.

Grease traps, shall be located so they are easily accessible for cleaning.

All sewer pipes or drains through which rodents may pass shall be closed with a properly secured, perforated metal or iron cover. Perforations shall not admit a cylinder 13 millimeters (0.5 inches) in diameter.

Defective sewer pipes, traps, drains and vents shall be repaired or replaced promptly and professionally. Crude repairs with wood, tape or metal strips are unsatisfactory.

#### **11.8.6. Dormitories**

##### **General**

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All outside premises, floors, hallways, carpets on floors, walls, ceilings and appurtenances are maintained in a sanitary condition at all times. Each room is completely cleaned after each change of occupancy. Common areas are cleaned at least once daily.

No cooking is undertaken in any room of a habitable structure unless such room was specifically designed for this purpose.

Noise levels in habitable rooms conform to the standards outlined in SAES-A-105, COMPANY Engineering Standards.

Hallways, entrances to fire escapes and stairways are kept free of obstructions.

Floor space in sleeping rooms are allocated at a rate of not less than 4.6 square meters (50 square feet) per occupant, preferably 6.5 square meters (70 square feet) per occupant.

#### Toilet Rooms, Shower Rooms, Hand-washing (General)

Toilets, urinals, showers, hand washbasins and utility sinks are designed to be easily cleanable. They shall be cleaned at least once daily, shall be kept free of objectionable odors and shall be maintained in good repair.

Toilet and shower are conveniently located at a distance of not more than 61 meters (200 feet) from the farthest habitable room and are accessible at all times.

Shower rooms, toilet rooms, laundry rooms, hand-washing facilities and other such service areas are separated from food preparation and sleeping rooms by a self-closing, tight-fitting door. The storage of food, equipment, utensils or personal articles in such areas is prohibited.

Toilets, hand washbasins and showers shall be separately installed to be individually accessible and to permit simultaneous use.

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Hand washbasins and other sinks, faucets and hydrants not specifically designed and approved or such use, are not used for cleaning or preparing food or for washing dishes or utensils.

Legible signs made of durable materials directing all users to wash their hands after using the toilet/urinal are conspicuously posted in every toilet room (in Arabic; English and other appropriate languages).

#### Toilet Rooms and Toilets

Toilets rooms are completely enclosed to ensure that an individual's need for privacy does not interfere with his commitment to personal hygiene.

The entrance to a toilet room is provided with a door.

Urinals are provided according to requirements outlined in SAEHC-S-07 p. 180 ~ 181.

Toilet bowls are set entirely free and open from all enclosing structures and are installed that the space around the fixture can be easily cleaned. This does not prohibit the use of wall-hung toilets.

Every western-type toilet is having a hinged, open-front seat made of substantial material having a smooth, nonabsorbent, easily cleanable finish. A holder supplied with toilet tissue is provided in each toilet compartment.

Every eastern-type toilet is made of substantial material having a smooth, nonabsorbent, easily cleanable finish. Each toilet is provided with a water tap for washing. Water taps provided for eastern-type toilets are fitted with appropriate backflow prevention devices designed to protect the water distribution system from contamination.

#### Hand-washing Facilities

Hand washing facilities are conveniently located adjacent to toilet facilities.

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Tempered running water is provided to each hand washbasin. Water is tempered by means of a mixing valve or combination faucet.

A refuse container lined with a disposable plastic bag is provided next to hand washing facility. The refuse container need not be covered.

### Shower Rooms

Shower rooms are completely enclosed. Each shower fixture occupy a separate compartment. The compartment is composed of a cubical with bench and a clothes hook and separated shower stall. The visual privacy of the bather is maintained. Privacy curtains shall be of easily cleanable material and kept clean.

Showers are designed and constructed to be self-draining and to preclude the flow of water into the dressing area space.

Shower floors are skid-resistant.

Showers are supplied with water through thermostatic, tempering or mixing valves at a temperature of at least 37°C (98.6°F), but not more than 50°C (122°F) at a rate of at least 11.4 liters (3 gallons) per minute.

### Laundry Rooms

Laundry Rooms are provided for CONTRACTOR personnel to launder personal items of clothing and bedding. All laundering is undertaken in a separate room designated for this purpose.

All laundry equipment installed, operated and maintained according to the manufacturer's instruction. Sorting tables, storage racks and other surfaces that contact linen are made of substantial material having a smooth, nonabsorbent, easily cleanable finish. All equipment and facilities are kept clean and in good repair.

### **11.8.7. Garbage and Refuse**



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### Garbage and refuse storage facilities

Garbage and other refuse are stored in a way that makes it inaccessible to insects, rodents and other vermin. Outside storage of garbage or refuse in open piles or in any container other than an approved garbage or refuse container are avoided, e.g. storage in paper bags or cardboard boxes. Inside storage of waste in open piles on the floor of the garbage/refuse storage room are avoided. Heavy duty plastic bags are stacked on the floor of a properly designed and constructed refuse storage room, contained therein is satisfactorily sealed in the bag, i.e. the bag does not represent an "open pile".

The floor of an outside garbage/refuse storage area constructed of a smooth, easily cleanable, nonabsorbent material, such as sealed concrete or machine laid asphalt; and is large enough to accommodate the garbage/refuse containers that accumulate between disposal periods.

Facilities are provided for cleaning garbage/refuse container, lugger boxes and compactor systems after they are emptied.

### Garbage and Refuse Containers

Approved garbage and refuse containers shall include standard 115 liters (30 gallons) steel garbage cans, modified 210 liters (55 gallons) steel drums, purpose-built lugger boxes and compactor systems. All such containers are made of durable, nonabsorbent, easily cleanable materials that are impervious to attack by insects, rodents and other vermin. They are designed and constructed so that they do not leak. Drain plugs, where required, are in place at all times except during cleaning.

Refuse equipment and containers are provided with tight-fitting lids, door covers. The lids, doors or covers of outside refuse equipment and containers are kept in the closed position when not in immediate use.

Refuse containers that are being actively used in the facility need not be covered. Refuse containers are covered when not being actively used. Filled refuse containers are covered and removed from the facility to the refuse storage facility.

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The cover and the outside surface of the 210 liters (55 gallons), 115 liters (30 gallons) and smaller containers are labeled with the word “GARBAGE” or “REFUSE”. Once used as a garbage or refuse container, the lid and container is not used for any other purpose, especially food preparation or storage.

The 210 liters (55 gallons), 115 liters (30 gallons) and smaller containers are lined with heavy-duty plastic bags to minimize cleaning requirements and facilitate removal of refuse.

Refuse containers are provided where refuse is generated. There are a sufficient number of approved containers to hold all the garbage and refuse produced and to accommodate the total amount accumulated in the refuse holding facility between disposal periods.

Fortnightly, each container is thoroughly washed with hot water and detergent on the inside and outside in a way that does not contaminate water, food or the environment.

Refuse equipment and containers are not, by their location or installation, create a nuisance or prevent cleaning of adjacent space.

#### Garbage and Refuse Disposal

Refuse is disposed of often enough to prevent the development of odors and the attraction of insects and rodents on daily basis.

Waste is removed to the disposal facility in a purpose-built refuse transport vehicle.

All refuse shall be disposed of in a municipal or approved sanitary landfill. Open dumps and burn-pits are prohibited.

#### 11.8.8. Insect and Rodent Control

The camp facility shall be designed, constructed, equipped, maintained and operated to prevent the entry and harborage of insects, rodents, animals, birds and other vermin,

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as well as environmental contaminants, such as smoke and dust. Effective measures, such as excluding, inspecting and exterminating, are used to minimize the entry, presence and propagation of vermin, both inside and outside of the camp facility.

All buildings, structures and associated facilities are insect-and rodent-proofed, free of vermin before occupancy and are maintained in an insect and rodent free condition.

All sewer or drain openings are closed with a properly secured, perforated metal cover.

There are no openings in exterior walls, foundations, basements, and roofs that admit insects, rodents or other vermin. Openings for pipes, conduits and other utility services in foundations or exterior walls, floors or roofs are closed solidly by metal holes around pipes, conduits and ducts, it shall extend at least 7.6 centimeters (3 inches) beyond all sides of the opening.

No one shall place, leave, dump or permit to accumulate any garbage or trash in any building, or on any premises or open lot, in a manner that will afford food and harborage for insects and rodents.

No one shall accumulate, or permit the accumulation of, any lumber, pipes, boxes, barrels, bricks, stones or construction material on any premise or open lot unless such material is stored on racks 30 centimeters (1 foot) above the ground.

The pest control program shall encompass all areas outside and inside the communal living facility. Areas along fences, around buildings, under stored materials, in and around refuse facilities, as well as floors, walls and ceilings in buildings, are inspected frequently to detect the presence of insects, rodents and other vermin. Preventive control measures are preferable to eradication campaigns.

Insects, rodents and other vermin are controlled by elimination of breeding and harborage sources, proper sanitary practices, vermin proofing of buildings and structures proper storage of materials, extermination, and by other approved control methods.

Pesticides are dispensed and handled by authorized, properly trained personnel. Restricted use pesticides are applied by a qualified pest control operator.

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Pesticides will be applied in the camp on a monthly basis.

Pesticides shall not be applied in areas where food handling, ware washing or other such operations are in progress or in a way that contaminates food equipment, utensils or other food contact surfaces.

#### **11.8.9. Kitchens and Food Facilities**

All meals are prepared in kitchen which meets the design, construction and materials of structures and equipment, as well as the general operating methods and procedures used to store, handle and protect food, equipment and utensils, as specified in Section SAEHC-S-04 of COMPANY Environmental Health Code.

The oven area is protected with fire suppression system.

Where self-catering kitchens are provided and used, the design, construction and installation of equipment shall comply with standards equivalent to those specified in SAEHC-S-04 of COMPANY Environmental Health Code

#### **11.8.10. Inspection Requirements**

CONTRACTOR's camp in-charge shall inspect all communal living facilities on a weekly basis to ensure compliance with the Sanitary Code. All inspections shall be recorded and such records shall be made available to COMPANY/CONTRACTOR's upon request.

#### **11.8.11. Fire Prevention**

Fire prevention will be given the highest priority by CONTRACTOR on the project. CONTRACTOR will conform to CONTRACTOR Procedure and COMPANY GI 1781.001 for the proper use, inspection and maintenance of firefighting / protection equipment and comply with the Section of I chapter 11.0 "Fire Prevention" of COMPANY/CONTRACTOR Construction Safety Manual.

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All firefighting system will be designed and provide in conformity with SAES-B-017 and AMIES-B-019.

Contractor shall provide firefighting equipment (e.g., fire extinguishers, hydrants, hoses, sprinklers, alarms) as specified in AMIES-M-100, or if applicable, SAES-B-019. See Section 11.6 for fire water system requirements, as applicable.

Fire extinguishers, hydrants, hoses and other firefighting equipment shall be regularly inspected (i.e., per GI 1781.001) and maintained. Contractor shall provide fire equipment inspection and maintenance records to the SAPO upon request.

#### **11.8.12. Fire Prevention Guidelines**

The following general instruction shall be followed and adhered to:

- Materials and equipment shall be maintained in an orderly manner that reduces or prevents the possibility of fire spread.
- Materials shall not be stored in manner that obstructs fire points, sprinkler heads, alarms, emergency exits, electrical panels and walkways.
- Materials will not be stored close to, or in a manner that conceals, floor openings or hoist ways.
- Consideration shall be given to the fire loading imposed in an area of the placement of materials.
- Doors provided for emergency escape will open outwards in the direction of travel.
- Equipment will not be fuelled while the engine is running.
- Workshops are maintained in a neat and tidy manner and that waste oil, rags and other flammable materials are removed at the end of each shift or as necessary.
- That maintenance personnel are instructed on the use of fire extinguishers, raising alarm and fire hazards in the work place.
- Battery recharging will be conducted in well ventilated areas, with no

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smoking signs and fire extinguishers in place.

- Use of open coil hot plates is prohibited. Cooking is only allowed in approved kitchen facilities. No cooking is permitted on the job.
- Areas around pedestal grinder and other hot work type activities, that no fire combustibles are stored and placed.
- Welding and burning shall be screened and controlled to prevent fire risk and exposure to personnel.
- That flammable liquids such as gasoline, diesel etc. are not used for cleaning purposes.
- Provision of adequate storage areas that are located in places where exits, passageways and stairways are not adversely affected.
- Incompatible materials will not be stored in proximity to each other.
- Designated site personnel shall be trained in the use of the various types of firefighting equipment on-site. See Chapter I-7, Fire Prevention, of the CSM for further details.

### Smoking

All of people are strongly prohibited to bring a lighter. Smoking restriction as dictated by CONTRACTOR will be strictly observed. That a “NO SMOKING” policy applies in the bedroom areas. Smoking is prohibited whilst refueling activities are taking place.

Smoking shall be permitted only in designated areas

## **11.8.13. Camps Emergency Procedure**

### Introduction

Any emergency occurring at a Camp may cause serious injuries, loss of life, and extensive damage to property. These situations may demand adequate rescue and relief measures to handle such events quickly and effectively. The objective of this

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procedure is to reduce the severity of loss and handle the situation in the best possible ways.

It is therefore necessary to ensure that all Camp residents know what they have to do in the event of an emergency. Through this procedure the responsibilities and duties of the key personnel and of every individual shall be made clear. Practical training and a program of regular drills and exercises will carry out testing of the system. The Procedure shall describe the duties and responsibilities of the key personnel and individuals.

The contractor shall develop an emergency disaster plan for the camp/accommodation with contingencies for handling a major emergency and assigning sufficient resources to provide all necessary support to residents, including relocation/re-housing of residents to an off-site location should it be necessary, based on credible scenarios; and submit the plan to the concerned proponent organization for review; for PMCCs, to PMT and where there is a contractual requirement for a healthcare facility in the camp, also submit the plan to JHAH

The contractor shall also ensure that contractor Camp Supervisor, camp/accommodation key personnel and other participants/maintenance Support staff receive training in emergency disaster planning and hold at least two (2) emergency disaster drills per year minimum.

The contractor Camp Supervisor shall ensure that fire drills/emergency evacuation drills are held at the camp/accommodation, four (4) times per year minimum.

### Planning

The basic and essential feature of any emergency procedure is to analyze and plan for the potential risks. This includes:

- Establish and maintain effective communications.
- Assessment of the risk by analyzing the size and nature of the hazards foreseen and the probability of their occurrence. The events can be;
- Fire hazard causing serious burns to the personnel or resulting in collapse of structures.

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- Gas leakage causing toxic and fire hazards.
- Electrical or electrical shocks.
- Medical emergency
  - Liaison with local emergency services and authorities.
  - Procedures
- Raising the alarm
- Communication both within and outside
  - Appointment of key personnel each key person shall have a listed replacement specifying their duties and responsibility;
- HSE Manager.
- Fire fighting team
- Sub-contractors HSE supervisor and officers (HSE Team)
- First-Aiders
- Training and Rehearsal
- Review and updating

#### Raising the alarm and communication:

Communication is a critical factor in handling an emergency. To control the situation by the earliest possible action, any employee must be able to act and raise an emergency alarm.

The camp/accommodation must be provided with at least two (2) operable telephones for use in emergencies, with access 24/7 to all residents, and emergency contact numbers posted adjacent for fire, ambulance/medical assistance and police/security

The Hand operated sirens provided at different locations shall be used to raise the alarm.

At least two Hand operated sirens will be installed in the camp area, the first, should be located in proximate of the area of the messes, the second in the site facilities area.



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The assembly points shall be cleared indicated in the accommodation areas with fire instructions and plot plants.

- On hearing an alarm all personnel shall vacate the room or work place. Before leaving, each person shall ensure that the area is as safe as possible by switching off welding machines, gas cylinders, running machines, gas burners or any electrical light or appliances in the rooms.

All personnel shall assemble at the assembly point according to the plot plan of his accommodation. The designed members of the HSE team shall provide guidance and assistance for mustering at the correct assembly point.

While responding to a fire alarm, kitchen staff shall ensure that all burners and other fire hazards have been turned off. Similarly other personnel in residence shall ensure that they leave everything in their in safe condition.

- The HSE team members shall take directions from the HSE Manager.

### Fire fighting

The operation and maintenance of fire detection and alarm systems, fixed and portable fire protection equipment, shall comply with Attachments A & B and NFPA 72 (National Fire Alarm and Signaling Code), NFPA 25 (Standard for the Inspection, Testing, and Maintenance of WaterBased Fire Protection Systems), NFPA 17A (Standard for Wet Chemical Extinguishing Systems), and NFPA 10 (Standard for Portable Fire Extinguishers) respectively

Fire Safety shall be in accordance with standards equivalent to those specified in Inspection, Testing and Maintenance of Fire Protection Equipment (G.I. 1781.00), Saudi Aramco Loss Prevention Department Safety Management Guide 07-005-20XX (Application of Saudi Aramco Building Code to Contractor Camp and Project Support Building), version posted by LPD during the time of design for new construction, additions or renovations and the Saudi Aramco Construction Safety Manual (Vol 1: CSAR)

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## Duties and Responsibilities

### Camp Manager

The camp Manager and/or his substitute shall support this procedure in the following manner:

- Provide adequate resources in terms of personnel, time and finance for implementation of the requirements for providing an emergency response service on site.
- Active participation in the scheduling and enactment of drills and exercises.
- Shall monitor the arrangements through the HSE Manager to satisfy themselves that the services are satisfactory and adequate for the needs of the project.
- The contractor Camp Supervisor shall ensure that fire drills/emergency evacuation drills are held at the camp/accommodation, four (4) times per year minimum

### HSE Manager

HSEM and/or his substitute is responsible for ensuring at site that provisions are in place for emergency response, including:

- Muster points.
- Arrangements, through site management for the resources for conducting head counts.
- Identification and Mobilization of the Fire Fighting Team.
- Training of Fire Fighting Team.
- Setting up drilling and exercises.

In the event of any emergency, a member of the HSE team shall take the following actions:

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- Shall attend the site of the incident, assess the situation and issue direction to the concerned parties and to the Fire Fighting Team.
- Ensure that messages have been communicated to CONTRACTOR/COMPANY representative, and if necessary, to the outside local authorities.
- Evaluate the scale of the incident and decide whether additional resources are required to adequately deal with it.
- Liaise with site supervision for the mobilization of any plant and equipment necessary for dealing with the emergency.
- Make safe the area by sitting barriers or other means of preventing unauthorized access.
- Coordinate the complete operation and returning of the services to their normal operation on completion of required action for emergency.
- Prepare a full report.

### Fire Fighting Team

Fire Fighting Team will be established and trained to deal with most eventualities.

HSEM shall appoint a Fire Team Leader (and its substitute) who will give direction to personnel under his control. Personnel appointed will have had some training and where possible previous experience in emergency response actions.

All the members of the fire team shall report to the Fire Team Leader and shall work according to his direction. For the fire extinction operations training shall be given at regular intervals.

An Electrician or Instrument Specialist who also included as a member of the fire squad with responsibility for the isolation of electrical power if necessary.

The maintenance of firefighting appliances shall be the responsible of a designated member of the HSE Team who shall make arrangement to recharge the used fire extinguisher or other equipment.

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### First-Aid Team

The First-Aid team shall assist the Nurse on duty in rendering medical aid to injured parties.

### Fire Classification

See fire classification identified in 16.4.2 Fire Classification

### Fire Extinguisher

The HSE Manager (HSEM) shall ensure that work-site and office, Camp area and the facilities construction area are provided with adequate fire extinguishers, maintained and readily available.

The HSE Manager (HSEM) shall be consulted for advice on selection of equipment.

These are the classes of fire extinguisher use normally and found on work sites.

- Water
- Carbon dioxide (CO2)
- Chemical dry powder

### Fire fighting

Fire wardens shall check at beginning of each shift that the work groups in their area of responsibility are fully aware of location and use of fire-fighting equipment.

Should there be any question regarding the use of the equipment that the project is required to have on hand, the HSE Manager (HSEM) should be contacted.

He can assist in training employee in the use of equipment.

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The HSE Manager (HSEM) will ensure that all the necessary firefighting equipment is located in the correct position and shall be checked once every month to keep it in a good condition.

The HSE Manager (HSEM) will keep a record of all firefighting equipment and also a register of the monthly inspection of the equipment.

The portable firefighting equipment will be checked at least once a month.

If a fire extinguisher has been discharged, the extinguisher will be removed from site or camp and it is responsibility of the Supervisor of the section / area in which the extinguisher was placed to notify the HSE Department thru the HSE Manager (HSEM) or his designate.

The HSE Supervisor (CONTRACTOR and Sub-con) will ensure that the extinguisher is replaced and that the discharged unit is refilled.

CO2 extinguishers will only be used indoors and not exposed to direct sunlight.

#### Reporting a fire

Every fire will be reported by the Supervisor to:

- The Project Director (PD)
- The Project Manager (PM)
- The Construction Manager (CM)
- The HSE Manager (HSEM)

The available of local fire authorities shall be established and defined at mobilization stage.

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## SECTION 12

# BEHAVIORAL OBSERVATIONS, JOB SITE HSE INSPECTIONS, REPORTING AND INVESTIGATION

## 12 PROCEDURES FOR BEHAVIORAL OBSERVATIONS, SAFETY MEETINGS, JOB SITE HSE INSPECTIONS, REPORTING AND INVESTIGATION

### 12.1. SAFETY MEETINGS

#### General

The CONTRACTOR will establish safety meetings to ensure that effective HSE communication and coordination procedures are established to monitor implementation of the site HSE plan and programs in line with all the HSE contractual requirement of the COMPANY as detailed in Schedule D and SA Construction Safety Manual (CSM).

In addition to making safety an agenda item at regular internal contractor company management meetings (e.g., project progress meetings), contractor site management (e.g., project manager, construction managers, site superintendents) shall conduct a separate meeting, at least monthly, to discuss safety, health and environmental issues. Minutes of these meetings shall be documented. Action items and needed corrective actions shall be documented and tracked until closed. Copies of these documents shall be provided to the SAPO upon request. Attendees shall include senior site supervision, the safety manager/supervisor(s), safety officers, key field personnel and, if requested, representatives from the SAPO and other applicable SA organizations.

#### 12.1.1. Responsibilities

##### Site Manger

- Ensure that scheduled commitments are made to hold HSE meetings and

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that these meetings take place.

- Arrange in conjunction with the HSE Manager suitable resources to enable all HSE meetings to function in a professional manner.
- Attends HSE Committee Meeting
- Ensure that Line Management and Supervisors participate, contribute actively and exercise leadership in their respective individual and collective Site HSE Meetings.
- Ensure that HSE matters are a regular agenda item at Site Management Meetings.
- Where possible, participate in Site HSE Meetings.

#### HSE Manager

- Ensure that scheduled HSE meetings are being held and attended by the relevant parties.
- Ensure the effectiveness of all HSE meetings, provide recommendations for improvement as necessary.
- Provide support to the Supervisors and Foremen's HSE Meetings format and content as necessary.
- Chair the weekly HSE meeting.
- Maintain a monthly log of meetings scheduled, meetings held, topics and attendance and submit report to the Site Manager.
- Provide suitable resources to enable all HSE meetings to function in a professional manner.
- Provide copies to concerned parties of the minutes of the CONTRACTOR'S Weekly Site HSE Meeting.
- Attends HSE meetings of the SA COMPANY.

#### Line Management and Supervisors (Discipline Managers and Supervisors)

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- Ensure to conduct the regular HSE meetings under their control.
- Ensure that all members of the workforce under their control attend, participate and contribute actively at their respective HSE meetings.
- Conduct unscheduled HSE meetings as necessary at their own discretion or as requested by the HSE Manager.
- As requested by the Site Manager or the HSE Manager attends the periodic HSE Committee Meeting and the Weekly HSE Meeting

#### Subcontractors Project Managers

Subcontractor's Project Managers or representatives with their designated HSE Personnel will attend and participate in the following HSE Meetings;

- Contractor – Subcontractor Pre bid HSE Meeting
- Monthly HSE Committee Meeting
- Weekly HSE Meeting
- Any extraordinary HSE Meetings to discuss any urgent HSE business as requested by the CONTRACTOR'S Site Manager or the HSE Manager or his representative.

Subcontractors shall conduct their own internal HSE Meetings as follows:

- Weekly HSE Meeting with their Senior Representatives, Safety Personnel and Site Supervisors

#### **12.1.2. Definitions**

##### HSE Committee

A group of persons appointed from CONTRACTOR and their Subcontractors and approved by SA COMPANY, delegated to perform a function, such as review of accident/incident investigation and managing relevant HSE issues.

The HSE Committee shall be composed of the following but not limited to;



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- CONTRACTOR Site Manager
- CONTRACTOR HSE Manager
- Discipline Managers
- Employee Representative(s)
- Subcontractor Site Manager
- Subcontractor HSE Manager
- Other specialist person as necessary (e.g. Doctor, HSE Consultant, Technical Specialist, etc.)

#### Weekly CONTRACTOR'S HSE Meeting

These meetings shall be held on a weekly basis and shall be attended by CONTRACTORS and Subcontractors Site Management Team, Subcontractor's HSE Manager or HSE Supervisors and shall review weekly HSE performances. This will be presided by the CONTRACTOR'S HSE Manager and will discuss issues regarding the update for corrective actions (CA) for HSE inspections during the previous week and the other current observations and issues. Review of incidences and near misses that occurred, note any HSE deficiencies and establish necessary corrective measures.

Special announcement of HSE activities, campaigns and site work activity to be done in the future shall be discussed in terms of hazards, risk assessment, plan mitigation controls, protective devices and training needs such as critical work activities (e.g. critical crane lifting, radiography, etc.)

Attendance and minutes of this meeting shall be documented, filed, maintained and copies distributed to all concerned parties.

#### Tool Box Meeting (TBM)

The Tool Box Meeting shall be held weekly, preferably on Saturdays to discuss, but not be limited to, work hazards and related job procedures. TBM is mandatory and all are required to attend. (Attendee: Contractor's and subcontractor's site personnel)

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Topics may consist of but not limited to;

- General work activities,
- Details of work and the safe way of performing the work
- Potential hazards involved and control measures provided
- Over-all PPE check
- others

#### Site Coordination Meeting (Interface)

These meeting shall be conducted as necessary between all involve craft/trade work team to coordinate the work between two or more work team working in a particular work area or location.

This shall be arrange and conducted by the Site Area Manager of the work area to coordinate all work/activity interface.

This shall specifically discuss the details of the plan work activity of each craft/trade work, machines or equipment to be use, materials involve, and additional specialized PPE needed, the hazards and control. Including all the necessary preparations, inspections and safety instructions needed so that all the work team that is exposed to the hazards and risk of the other work team shall be aware and informed and to be able to arrange, provide additional protection & control to work safely during simultaneous working.

#### Pre-job safety meeting (Craft/Trade Meetings)

These meeting shall be conducted daily exclusively between work team and shall be conducted by the Foreman or supervisor in-charge of the work/activity. It is also required to conduct a pre-job safety meeting when shifting to a different work on the same day.

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This shall specifically discuss the details of the plan work activity of the craft/trade work, the specific work procedures, machines or equipment to be use, materials involve, any additional and specialized PPE needed, the hazards and control including all the necessary work permit preparations, accomplish checklist inspections, conduct of gas testing and safety instructions needed before the work starts.

## 12.2. JOB SITE HSE INSPECTIONS

The contractor shall implement behavioral observation and site inspection programs to detect and correct unsafe acts and conditions. Observations and inspections shall be frequently (e.g., weekly) conducted by contractor site management (e.g., project manager, construction manager, site superintendent), safety staff, supervisors and employees, who shall be properly trained.

Unsafe acts and conditions shall be immediately reported to the relevant supervisor for correction as soon as practical. Life threatening hazards shall be corrected immediately. Corrective actions for unsafe conditions shall be identified and tracked until completion, with follow-up to verify proper implementation.

Contractor shall perform trending and analysis of behavioral observations and site safety inspections to identify negative trends and mitigate safety problems.

### 12.2.1. Requirement

CONTRACTOR shall ensure that inspection of the work-site shall be conducted and list of violations, hazards, unsafe conditions or actions, and improper housekeeping noted and corrected. Thus upgrade the COMPANY's job HSE evaluation. The COMPANY shall conduct weekly inspections with the CONTRACTOR/COMPANY Representative or HSE Supervisor when required. HSE reports and corrective actions shall be a topic at the weekly job site meeting. The inspection check sheet will be submitted to CONTRACTOR/ COMPANY as per the weekly job site progress meetings and all inspection reports shall be kept on file and made available to COMPANY/CONTRACTOR upon request.

### 12.2.2. Objective

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Perform inspection of the work site at regular intervals and correct any hazard and unsafe condition to maintain a safe working environment, and to develop a high standard of HSE practices.

### 12.2.3. Applications

In recognition of the general precept of the Loss Prevention Requirements, CONTRACTOR will work constantly towards maintaining a safe and healthy environment. To ensure that these requirements are met, CONTRACTOR will conduct inspections of all facilities, equipment, job sites and camp sites including the following:

- House Keeping
- Fire Fighting Facilities
- Scaffolding work/cross over ramps/inspection tags
- Barriers/Warning signs & lights.
- Hold Tags, Lock out device.
- Smoking area.
- Toilet facilities and Sanitation.
- Precautionary Measures for the use of power tools, machinery & equipment
- Trench Excavation and other excavation activities.

Including Shoring/Trench box (Sloping/Benching, cross over ramps, spoil clearance, Ingress/Egress, Excavation plan, Work permit/Gas testing, Thrust boring, Pile driving , etc.) Included Cutting and Brazing (Acetylene), ON/OFF Wrenches, Condition of gauges, Hoses Off/Bed, Flash back arrestors, Cylinders secured, Transportation Carts, Welding Machines/ GFCIs, Electrode Holder/Ground clamp, Machine grounded, cable condition, Operator/Helper PPE, Spark Igniter, Ventilation, Fire Extinguisher, Welder Certified, etc.)

- Gas and Electric Welding Works

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- Compressed Gas
- Air Compressor
- Heavy Equipment
- Concrete Formwork
- Health and Welfare of Workers
- Transportation of Workers
- Site HSE Administration
- Crane and Lifting Devices
- Rigging equipment and Hardware
- Temporary Electric Power
- Material Transportation
- First Aid Facilities
- Program of Heavy and Critical Lifts
- Handling and Disposal of Waste
- Work Site Hygiene
- Eye Wash Station

#### **12.2.4. Site HSE Inspection and Audit**

SITE Health, Safety, Environment (HSE) Inspection

The HSE Manager shall conduct HSE inspections on a weekly basis and a summary report shall be included in the monthly meeting.

HSE Manager shall submit to COMPANY/CONTRACTOR representative a monthly report providing the following information:

- A list of all HSE inspections and related activities performed during the previous workday;

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- A list of HSE violations observed including the name of COMPANY ID numbers of all CONTRACTOR employees involved with each violations.
- Descriptions of corrective actions taken to prevent a recurrence of all HSE violations observed.

A site HSE logbook will be kept in each HSE Site Office and will be monitored to ensure all entries are abided or addressed. Summaries of logbook entries will be provided to COMPANY/CONTRACTOR representative on a monthly basis.

The HSE Manager shall respond to all entries in the CONTRACTOR's HSE logbook on a daily basis and record what action has been taken and when.

Other location of HSE inspections are being conducted and recorded on a regular basis:

<b>Location</b>	<b>Responsible Person</b>
1. Monthly Fire Extinguisher Inspection	HSE Supervisor
2. Daily Fire Prevention Inspections	HSE Supervisor
3. Weekly Site Inspections	HSE Manager, Area Manager
4. Monthly Site Inspection	COMPANY/CONTRACTOR Representative, HSE Manager, Construction Manager
5. Equipment Inspections	Equipment Foreman
6. Rigging Equipment	Transport Foreman, Warehouseman, HSE Supervisor
7. Daily HSE of Personnel on Site	Area Manager, Supervisors and Foreman, HSE(S) Staff
8. Electric Equipment and Tools	Electrical Supervisor, Electrical Foreman

### **12.2.5. Monthly Equipment Inspections**

#### General

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CONTRACTOR shall ensure that only competent persons conduct inspections of all equipment, in particular electrical and lifting equipment.

Mechanical and heavy equipment shall be inspected on a regular basis by a competent heavy equipment inspector or mechanic as per the manufacturer's recommendations. In addition, equipment covered under GI 7.030 shall have a valid inspection sticker issued by SA or an SA-approved third-party inspection agency-*CSM II-2 Mechanical & Heavy Equipment*

The formal monthly inspection does not relieve the equipment user of his duty and responsibility of visually checking the equipment each day and to report defects to a supervisor for immediate corrective action. Bad working equipment has not to be used and has to be marked.

All inspections require the completion of the appropriate CONTRACTOR's inspection register. The register must identify the equipment by serial number, conditions noted during the inspection, corrective action, and date of inspection and signature of the competent person. An essential part of the electrical inspection is a continuity test of the grounding conductor, where applicable.

Each equipment has its own competent person who shall be responsible in inspecting the specific equipment such as;

Crane – SA Certified Operator (to check the equipment on daily basis prior to its use)

Boom Truck – SA Certified Operator

Manlifts – SA Certified Operator

Forklift – SA Certified Operators

All Other Heavy Equipment – SA Certified Operators

#### 12.2.6. Quarterly Color Code:

##### COLOUR



**Green**

##### MONTHS

January, May, September

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<b>Red</b>	February, June, October
<b>Blue</b>	March, July, November
<b>Yellow</b>	April, August, December

#### 12.2.7. Equipment to be inspected

- Lifting tackle (slings, chain hoists, come-a-longs, etc.)
- Gas cutting apparatus (regulators, gauges, torches, flash-back arrestors, etc.)
- All portable electrical tools, extension cords and other such equipment (fixed panels, pumps, machinery, Ground Fault Circuit Interrupters (GFCIs) on welding machines, etc.)
- Emergency equipment (fire extinguishers, hose cabinets/reels, water barrels, rescue equipment, breathing apparatus, etc.)
- All portable pneumatic tools and equipment (air compressors and receivers, hoses, abrasive blasting and paint apparatus, air winches, etc.)
- All cartridge-operated tools (nail gun, hilti-gun, etc.)
- Other equipment as deemed necessary by Project Management.

#### 12.2.8. Job Site Inspections

##### Daily Inspection by Foreman

Foreman will conduct daily work inspections in his respective areas as part of their daily activities, and will initiate prompt corrective actions as to noted deficiencies, unsafe conditions or practices.

##### Pre-Job Inspection

All CONTRACTOR workers will inspect their tools, equipment and personal protection prior to commencement of work (included after particular events potentially causing



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any risk change). Items to be inspected include, but shall not be limited to, the following:

1. Hand tools
2. Electrical power tools
3. Body harnesses
4. Ladders and scaffoldings
5. Slings and rigging equipment etc.
6. Cranes and Motor vehicles
7. Excavations
8. Local Fire Extinguisher is full

Area Supervisors and Foremen shall ensure that the work area, including access to and egress from such, are maintained in a safe and healthy conditions at all times.

#### Post Job Inspection (End-Of-Shift-Checks)

Area supervisors and foremen shall ensure that work areas are left in a safe and healthy condition after certain jobs are completed (especially hot work), and at the end of every shift.

#### Site Visit

Every 2 weeks, HSE Manager (HSEM) will conduct a site visit with all HSE Officers and Managers. The aim is to highlight the critical situations to be immediately resolved and discussed during the Foreman HSE meetings.

#### HSE Walkthrough

Weekly the CONTRACTOR Project Manager, with HSEM, Managers and Foremen will conduct a site evaluation to identify the situation to be improved. Due to the site dimensions, the group could be divided to better cover the entire site. At the end of the

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walk-through, in turns one of the participant, will record the results. Within the next day the record will be delivered to HSEM, he will action, store and analysis the results.

Contractor shall adopt the HSE Competition Program among its subcontractors. The basis for this program as stipulated on the SA Construction Safety Manual.

#### **12.2.9. Inspections Reports and Follow-Up**

An inspection report shall be prepared and issued highlighting the inspection findings and the relevant remedial actions. Major sections of the report shall be (a) the identification of the facility or equipment inspected, (b) the description of the substandard condition or practices found and (c) remedial action to prevent reoccurrences and relevant losses.

The follow-up system shall easily reveal what work has been completed and what work is still in progress or in pending. A brief memo with the date and action taken below the description of the finding shall be a minimum record.

All reports / forms shall be developed at site and shall be project specific.

#### **12.2.10. Site HSE Audit**

Senior HSE(S) staff (Home Office) shall conduct external site audits on a half yearly basis scheduled intervals and in conjunction with the Project Manager.

HSE(S) site staff shall conduct internal audits at quarterly intervals.  
Standard checklists shall be used to perform Audits.

Audits shall be used as a tool for continual improvement. External audits shall focus on the organization as a whole, including both management systems and physical site conditions. Internal audits shall focus mainly on site physical conditions. Audit results shall include good points, corrective action requests and recommendations, and shall be reported to Senior Management in a timely fashion.

Auditing activities shall be carried out in accordance with CONTRACTOR "Monitoring and Audit" methodologies.

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AMIRAL Approved Project Safety Index practice shall be used in auditing the contractors.

CONTRACTOR shall have safety audits performed by an independent third party six (6) months after starting WORK, and at least every nine (9) months thereafter, to verify proper implementation of the CSSP at the WORK Site and make recommendations to improve CONTRACTOR's safety programs and execution, per AMIRAL Safety Management Guide for Independent Third Party Contractor Site Safety Program (CSSP) Reviews.

A list of approved independent third parties may be requested from the Company Representative. CONTRACTOR may use any other independent third party to conduct such safety audits only after securing the advance written approval from the Company Representative.

CONTRACTOR shall promptly provide copies of all audit reports to the Company Representative.

#### **12.2.11. HSE Reports and Records**

The Site Construction Manager, HSE Manager will be responsible in reporting immediately all accidents to COMPANY/ CONTRACTOR. Immediate reports will be made to the Proponent in cases of all as per COMPANY General Instructions 6.001 Notifications Requirements for Incident, 6.007 Reporting contractor on Job injuries / Illness and 7.026 Crane and Heavy Equipment Accident Reporting.

HSE Logbook shall be made available at site. All HSE incidences and corrective measures taken shall be reported to COMPANY / CONTRACTOR HSE Representative from time to time.

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## Attachment 1. CONTRACTOR MONTHLY HSE REPORT

PROJECT TITLE: \_\_\_\_\_ LOCATION: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

BUDGET ITEM No.: \_\_\_\_\_ CONTRACT No.: \_\_\_\_\_ JOB No: \_\_\_\_\_

1. Work Injuries:
2. Fires:
3. Incidents Or Property Damage:
4. Motor Vehicle Accidents:
5. Incidents Or Property Damage to COMPANY/CONTRACTOR Equipment:
6. Crane, Heavy Equipment & Manlift Accidents:
7. HSE Meeting:
(A) Topics Discussed:
1.
2.
3.
(B) Attendance:
(C) Instructor(s):

Prepared By: \_\_\_\_\_

CONTRACTOR HSE Supervisor: \_\_\_\_\_

CONTRACTOR Representative: \_\_\_\_\_

Date: \_\_\_\_\_

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

## Attachment 2 Weekly Inspection Checklist.

CONTRACTOR HSE

### WEEKLY INSPECTION CHECKLIST

NAME OF CONTRACTOR: CONTRACTOR	INSPECTION DATE:	TOTAL NUMBER OF EMPLOYEES ON SITE:	
CONTRACTOR'S HSE REP	CONTRACTORS COMPANY PHONE NUMBER:	JOB TITLE	NUMBER
CONTRACTOR /COMPANY SITE:	PHONE NUMBER:	COMPANY/CONTRACTOR DEPT:	

HSE ASSESSMENT		HSE ASSESSMENT	
1. FIRE PREVENTION		2. HOUSEKEEPING	
Adequate Fire Extinguishers		Site Access Roads	
Proper Type Extinguishers		Security Fences/Gates	
Fire Extinguisher Training		Site Access Signs	
Tags/Inspected Fire Extinguishers		Trash Containers/Lids	
Adequate Water Barrels/Buckets		Daily Clean-up/Removal of Trash	
Fire Hose Tested		Materials Stacking	
Fire Hydrants/Hose/Nozzle/Wrench		Aisle Ways	
Emergency Telephone Numbers Posted		Old Timber Detailed	
Fire Watches (If required)		Overall Condition	
Open Flame Operations		Lights	
Storage of Flammable/Combustibles		Other Comments	
Test Smoke Detectors			
Other Comments		4. GRITBLASTING	
		Operator's Hood (Air Supplied)	
3. SCAFFOLD/MOBILE TOWERS		Air Filters (Cool Air to Hood)	
Base and Sole Plates		Air Intake Location	
Condition of Frame Members		Dead Man Controls	
Plumb and Level		Hoses Properly Grounded	
Proper Couplers		Operator's Protective Clothing	
Ties/Outriggers		Helper's Protective Clothing	
Planking		Remote Area/Warning Signs	
Toe Boards/Guard Rails		Condition of Air Purity	
Proper Castors Condition/Locks		Other Comments:	
Scaffold Access			
Proper Loading		6. POWER TOOLS/MACH. & EQUIPT.	
Other Comments		Properly Guarded	
		Tool Rest	
5. CATRIDGE OEPRATED TOOLS		Overall Condition	

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Proper Cartridge Strength		Correct Grinder Disc. Speeds	
Penetration to Safe Zone		Cable/Hose Connections	
Low Velocity Tool		Operator's Protected Equipment	
Control/Storage Records		Damaged Hand Tools	
Proper Maintenance of Tool		Shut Off Switch	
Certified Protective		Other Comments	
Operator Protective Equipment			
Other Comments:			

CONTRACTOR HSE **WEEKLY INSPECTION CHECKLIST**

NAME OF CONTRACTOR:	INSPECTION DATE:	TOTAL NUMBER OF EMPLOYEES ON SITE:	
CONTRACTOR'S HSE REP	CONTRACTORS COMPANY PHONE NUMBER:	JOB TITLE	NUMBER
COMPANY/CONTRACTOR SITE:	PHONE NUMBER:	COMPANY/CONTRACTOR DEPT:	

HSE ASSESSMENT		HSE ASSESSMENT	
7. EXCAVATIONS & SHORING		8. HEAVY EQUIPMENT	
Shoring/Trench Box/Sloping		Roll Over Protection	
Blower		Back-up Alarms	
Spoil Clearance		Overall Conditions	
Barriers/Warning Signs/Lights		Licensed Operators	
Access/Egress (Ladders)		COMPANY Certification	
Cross Overs		Other Comments:	
Void Space Procedures			
Air Tests		10. CONCRETE FORMWORK	
Rescue Equipment		Timber/Adequate Strength	
Other Comments		Supports Plumb & Level	
		Protective Clothing & Equipment	
9 GAS/ELECTRIC WELDING:		Firm footings for Supports	
Proper Acetylene Pressure		Side Slope Bracing	
Acetylene On/Off Wrench		Shoring Layout on Site	
Gauges/Hoses Condition		Truck Spotter	
Operator's Protective Equipment		Work Platforms	
Cable Cord-No Splice 10' of Holder		Other Comments:	
Elec. Holder/Ground Clamp Condition			
Ventilation		12. HEALTH & WELFARE	
Other Comments		Medical Facilities/Supplies	
		Designated Smoking Areas	
11. COMPRESSED GAS		Washing Facilities	
Cylinder Secured		Drinking Water & Cups	
Proper Storage (Shade/Separation)		Toilet Facilities/Sanitation	

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Protective Caps in Place		Ventilation	
Condition of Cylinders/Connections		Eating Facilities	
Proper Handling		Other Comments:	
Proper Colour Coding			
Other Comments		14. TRANSPORTATION	
		Buses / Pick-up / Brakes / Signals / Etc.	
13. AIR COMPRESSORS		Use of Seat Belts	
Pressure Relief Valves Operational		Licensed Operators	
Air Pressure Gauges		Overall Operating Condition	
Hose and Connections		Tires/Lights/Brakes/Signals/Etc.	
Coupling Safety Wired		Fire-X	
General Condition		Other Comments:	
Guards			
Drain			
Other Comments:			

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CONTRACTOR HSE

### **WEEKLY INSPECTION CHECKLIST**

NAME OF CONTRACTOR: CONTRACTOR	INSPECTION DATE:	TOTAL NUMBER OF EMPLOYEES ON SITE:	
CONTRACTOR'S HSE REP	CONTRACTOR COMPANY PHONE NUMBER:	JOB TITLE	NUMBER
COMPANY/CONTRACTOR SITE:	PHONE NUMBER:	COMPANY/CONTRACTOR DEPT:	

<b>HSE ASSESSMENT</b>		<b>HSE ASSESSMENT</b>	
15. SITE HSE ADMINISTRATION		16. TEMPORARY ELECTRICS	
Personnel Protective Equipment Worn		Correct Voltage	
Accident Reports		Ground Fault Interrupters Used	
HSE Coordinator		Circuit 3-Wire Ground	
Fire/HSE Inspection Log		Receptacles/Plugs	
Site HSE Prog./Eng. Specs on Site		Services Panel Fused	
Construction Safety Manual on Site		Overall Condition	
First Aid Station/Kit		Warning Signs	
Emergency Tel. Number Posted		Hazardous Locations	
Work Permit Requirements		Other Comments:	
Other Comments			
17 CRANES & LIFTING DEVICES			
Current Inspection Sticker		18. CHEMICAL STORAGE	
Saudi Arab Licensed Operator		Isolated Storage	
COMPANY Certification		Chemical Data Sheet on Site	
Load Radius Indicator		Warning Signs	
Safety Latches (Hook)		Scott Air Pak	
Condition of Wire Ropes		Area Locked	
Safe Load Charts (Arabic/English)		Labels	
Lattice/Boom Damage		Other Comments:	
Two Blocked			
Man Lift Operation		19. SPECIAL ITEMS & COMMENTS	
Proper Use of Outrigger			
Tag Line Used			
Signalman Used			
Upper Limit Switch			
Other Comments:			

Weekly Inspection Checklist shall be introduced and be adopted on a weekly basis, and all HSE deviations noted as indicated on the checklist shall be monitored and followed-up to ensure that those previous deviations has been fully complied.

### **12.3. INJURY & DAMAGE REPORTING SYSTEM**



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All Reports are required by COMPANY/CONTRACTOR as per Schedule “D” of Contract.

CONTRACTOR shall ensure that an immediate report is made to the COMPANY/CONTRACTOR Representative. A preliminary report shall be submitted within 24 hours followed by a detailed return report submitted within 3 days to the COMPANY/CONTRACTOR Representative. Fatal injuries also shall be included in the accident report.

Refer to GI 6.001, Notification Requirements for Incidents (Including Fires), GI 6.004, Near Miss Reporting Process, GI 6.007, Reporting of Contractor On-Job Injuries/Occupational Illnesses, GI 6.029, Reporting and Recording of Motor Vehicle Accidents GI 7.026, Crane and Heavy Equipment Incident Reporting Procedures and GI 6.003, Incident Investigation.

### **12.3.1. Objective**

To establish a procedure for reporting a work connected injury and/or property damage for the purpose of evaluating the cause as well as the preventive measures to avoid recurrence of similar incidents in the future. Investigation shall be conducted in a manner, which will provide facts rather than faults.

### **12.3.2. Coverage**

All accidents that produce personal injury and damage to equipment/material shall be investigated, including “near-misses” so that appropriate action can be taken.

CONTRACTOR will utilize forms/instructions (attached) for injury and damage reporting.

- Preliminary (Field Accident Report)
- Personal Injury Accident Report
- Initial Motor Vehicle, Plant and Damage Report

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- Vehicular Accident Report
- Monthly Injury Summary
- Monthly Damage Summary
- Injury Report for Saudi Arabian Government
- HSE Report
- Instructions in case of emergency
- Night Watchman Fire Instruction.

CONTRACTOR will keep a record of all injuries and damages showing all;

- Work Injuries
- Fires
- Incidents of property damage.
- Motor Vehicles Collision
- Incidents involving damage to CONTRACTOR / COMPANY's equipment or property, crane and heavy equipment accident.

This record shall be available for inspection at all reasonable times.

### **12.3.3. Responsibilities**

#### Craftsmen / Workers

Immediately report the accidents / incidents to his immediate supervisor or foreman.

#### Foremen / Supervisor

Carry out an immediate investigation of every accident/incident, which occurs within his area of responsibility. He shall complete an incident report within twenty-four hours

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and submit it to Construction Project Engineer with a copy to the COMPANY Site Representative and one for himself.

#### HSE Engineer/Supervisor

Within two working days after receipt of the Foreman accident report, the HSE Engineer/Supervisor shall verify the findings of the Foreman and carry out an independent investigation of every serious or potentially serious occurrence.

#### Construction Project Engineer

Review all accident reports to ensure that the corrective action has been taken.

#### **12.3.4. General Procedure**

1. Whenever an employee has an accident, he shall immediately report the case to his Supervisor and secure medical slip (for non-serious cases only) before proceeding to the clinic for treatment.
2. In case of a major accident, the injured shall be brought directly by qualified rescue personnel to the clinic or hospital for emergency treatment. Extra precautions shall be exercised not to further aggravate the injury of the victim.
3. Seriously injured worker is not to be moved by anyone but by qualified rescue personnel only.
4. All workers who met an accident shall be scheduled for HSE re-orientation by the HSE Department before reporting back to work.
5. Employees who fails to report injuries suffered while on an official work duty as soon as possible shall be disciplined according to CONTRACTOR disciplinary action policy.

#### **12.3.5. Detailed Accident Reporting Procedure**

CONTRACTOR shall promptly report all accidents & injuries to the CONTRACTOR / COMPANY Representative.

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### 12.3.6. Oral Report

CONTRACTOR shall ensure that an immediate oral report is made to the COMPANY/CONTRACTOR Representative in the case of all:

- a) All fatalities, on-or off-the-job, including death by natural causes.
- b) All injuries and illnesses requiring medical treatment and/or incurring lost time. This includes off-the-job injuries and serious illnesses outside working hours.
- c) All damages to our property & equipment (i.e. crane/heavy equipment mishaps, scaffold and excavation collapse, near miss incidents, etc.).
- d) All damage, in any amount, to COMPANY/CONTRACTOR or third party property and equipment including underground/overhead utilities & communications.
- e) All fires.
- f) All work-related Motor Vehicle Accidents (MVAs) whether on or off the job site.

### 12.3.7. Preliminary Report

- a) As soon as possible, but no later than 24 hours after the oral report, CONTRACTOR's HSE Manager shall submit details of the accident on Preliminary Accident Report Form.
- b) The completed preliminary report describing the immediate steps taken to prevent recurrence shall be submitted to the COMPANY/CONTRACTOR Representative.

### 12.3.8. Follow-Up and Investigation Report

CONTRACTOR shall ensure that follow-up investigation of accident including MVAs shall be completed in accordance with Subsections 12.3.5 and 12.3.6 of this procedure

- a) CONTRACTOR shall submit a typewritten non-MVA follow-up report to the COMPANY/CONTRACTOR Representative within 3 workdays of the accident. The report shall be in a format acceptable to COMPANY/CONTRACTOR. In the case of serious accidents (Serious is defined as an injury resulting in the loss of

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one (1) day beyond the day of the accident occurrence), CONTRACTOR shall submit, a fully detailed account of circumstances, witness statements, descriptive photographs (where permitted) and accident scene diagrams. The accident investigation or report will not be delayed.

- b) The Main purposes of an accident investigation are:
  - i. To find the cause(s) so that similar accidents can be prevented.
  - ii. To determine the point at which the “unplanned” events took over from the planned sequence of events, and
  - iii. To recommend temporary and permanent corrective action to be taken.
- c) Near miss incidents shall be reported to COMPANY / CONTRACTOR.
- d) All incidents will be reported utilizing the new Contractor Safety Solution (CSS) which is currently being rolled out. CSS will negate the need to utilize Attachment 1.


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## Attachment

### 1. INCIDENT PRELIMINARY AND FINAL REPORT FORM

TRACKING NUMBER:		Page 1 - Preliminary Report			
X* Appropriate Block					
PRELIMINARY (PAGE 1):		SUBMIT WITHIN 24 HOURS		<b>PROJECT MANAGEMENT CONTRACTOR INVESTIGATION REPORT</b>	
FINAL (PAGES 1-7):		SUBMIT WITHIN 3 DAYS			
INCIDENT CATEGORY, CLASSIFICATION, BASIC INFORMATION					
INCIDENT CATEGORY: *		INCIDENT CLASSIFICATION: *			
ONSHORE/OFFSHORE: *		ONJOB/OFFJOB: *	INCIDENT DATE: *	INCIDENT TIME: * 24-hour (hh:mm)	
DAY/NIGHT: *		INCIDENT LOCATION: *			
BRIEF SUMMARY OF INCIDENT: * (ONE-LINER DESCRIPTION OF INCIDENT)					
ACTIONS TAKEN (IMMEDIATE CORRECTIVE ACTIONS): * Note: This is different from the Intermediate and Root Causes of incident identified in pages 5 and 6.					
DESCRIBE INJURY OR ILLNESS (IF ANY):					
DESCRIBE PROPERTY DAMAGE (IF ANY):					
NATURE OF INJURY: *		BODY AREA PART: *			
ACCIDENT TYPES: *					
SOURCE OF INJURIES: *					
HAZARDOUS CONDITIONS: *		201 IMPROPER ARRANGEMENT PROCEDURE, ETC. IMPROPER STORAGE OR PILING OF TOOLS OR MATERIALS			
CONTRACTOR INFORMATION					
NAME OF INVOLVED: *		ID (BADGE OR IQAMA): *	CONTACT NO.:		
JOB TITLE: *		JOB CLASSIFICATION: *	EMPLOYMENT TYPE: *		
SUPERVISOR NAME:		ID (BADGE OR IQAMA):	CONTACT NO.:		
PRIME CONTRACTOR (COMPANY NAME): *		SUB CONTRACTOR (COMPANY NAME): *			
PROJECT NAME:					
WITNESS AND OTHERS INVOLVED:		WITNESS #1 - NAME, IQAMA, AND CONTACT NO.		WITNESS #2 - NAME, IQAMA, AND CONTACT NO.	
		WITNESS #3 - NAME, IQAMA, AND CONTACT NO.		WITNESS #4 - NAME, IQAMA, AND CONTACT NO.	
CONTRACTOR COORDINATION (CONTRACTOR REPRESENTATIVE):					
PREPARED BY:		NAME:	NAME:		
		SIGNATURE:	SIGNATURE:		
		DATE (mm/dd/yyyy):	DATE (mm/dd/yyyy):		
		CONTACT NO.:	CONTACT NO.:		
SAPMT USE ONLY					
DEPARTMENT: *		DIVISION: *		DIVISION SAP ORGCODE: *	
BI NUMBER: *		CONTRACT NUMBER: *		DIVISION HEAD	
BI Number Format: XX-YYYY-ZZZZ Ex. BI-10-00019-0004		NAME:		SIGNATURE:	
PIR RECEIVED DATE:		FINAL REPORT RECEIVED DATE:		COMMENTS:	
DIVISION SAFETY COORDINATOR INITIALS:				GI 6.001 NOTIFICATIONS MADE?: Yes	
INVESTIGATION STATUS					
INCIDENT CAUSE ANALYSIS SYSTEMS USED?: *		VERIFIED BY:		DATE CLOSED:	
INVESTIGATION (ACTION) STATUS: *					

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

ACTIVITY AT THE TIME OF THE INCIDENT							
NARRATIVE OF INCIDENT/CHRONOLOGICAL SEQUENCE OF EVENTS/LOSS INFORMATION:							
TRACK INCIDENT FROM SIGNIFICANT EVENTS PRIOR TO INCIDENT THROUGH INVESTIGATION. STATE ONLY THE FACTS. DO NOT INCLUDE ASSUMPTIONS. ATTACH ADDITIONAL PAGES AS REQUIRED.							
NO. OF DAYS OFF WORK: *		DAYS RESTRICTED DUTY: *		DATE OF INJURY:		DATE RETURNED TO WORK:	
ESTIMATED AMOUNT OF PROPERTY DAMAGE (\$):*		QUANTITY OF LOST PRODUCT:		OTHER LOSES:		OTHER LOSES:	
REMARKS:*							
DOCUMENT REFERENCE:*					INCIDENT PREVENTION BULLETIN DEVELOPED?:*		
TIMELINE:*							
NARRATIVE:*							
MEDICAL FACILITY TREATED AT AND CONTACT INFORMATION:							
SUPPORTING DOCUMENTS ATTACHED (CHECK ALL THAT IS ATTACHED)							
PICTURE, DRAWINGS, ETC.:		WITNESS STATEMENT:		ROOT CAUSE CHECK LIST:		OTHER (DESCRIBE):	
TRAINING RECORDS:		WORK PERMITS:		CORRECTIVE ACTIONS LIST:		OTHER (DESCRIBE):	
PRE-JOB BRIEFING RECORDS:		JOB SAFETY ANALYSIS:		OTHER (DESCRIBE):		OTHER (DESCRIBE):	





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PHOTO INFORMATION SHEET									
PROJECT NAME:		BI NUMBER:		DATE OF INCIDENT:					
PHOTO NO.:		<div>PIN PHOTO HERE</div>							
PHOTO DATE:									
TIME OF DAY:									
LOCATION:									
PROVIDE DIRECTION OF PHOTO:									
BRIEF DESCRIPTION:									
OTHER NOTES:									
PHOTOGRAPHER:									
PHOTO NO.:						<div>PIN PHOTO HERE</div>			
PHOTO DATE:									
TIME OF DAY:									
LOCATION:									
PROVIDE DIRECTION OF PHOTO:									
BRIEF DESCRIPTION OF WHAT IS IN PHOTO:									
OTHER NOTES:									
PHOTOGRAPHER:									



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ROOT CAUSE ANALYSIS (CONTINUED)	
ROOT CAUSE(S) OF INCIDENT	

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CORRECTIVE ACTIONS						
IMMEDIATE ACTION (S)						
ACTION:						
RESPONSIBLE PARTY:				TARGET DATE:		
CORRECTIVE ACTION IMPLEMENTED:	YES:		VERIFIED BY:		DATE CLOSED:	
	NO:					
PERMANENT ACTION (S)						
ACTION:						
RESPONSIBLE PARTY:				TARGET DATE:		
CORRECTIVE ACTION IMPLEMENTED:	YES:		VERIFIED BY:		DATE CLOSED:	
	NO:					
PERMANENT ACTION (S)						
ACTION:						
RESPONSIBLE PARTY:				TARGET DATE:		
CORRECTIVE ACTION IMPLEMENTED:	YES:		VERIFIED BY:		DATE CLOSED:	
	NO:					
PERMANENT ACTION (S)						
ACTION:						
RESPONSIBLE PARTY:				TARGET DATE:		
CORRECTIVE ACTION IMPLEMENTED:	YES:		VERIFIED BY:		DATE CLOSED:	
	NO:					
INVESTIGATION STATUS						
CIDENT CAUSE ANALYSIS SYSTEMS USED?:*		▼	VERIFIED BY:		DATE CLOSED:	
INVESTIGATION (ACTION) STATUS:*		▼				

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Vender Reference : <b>N/A</b>			System / Subsystem: <b>NN</b>	Equipment Type: <b>N/A</b>	

## NEAR MISS REPORT FORM

PLEASE PRINT OR TYPE		L9.12 (08/2014)	
<b>PROJECT MANAGEMENT CONTRACTOR NEAR-MISS AT WORKSITE REPORT</b>			
Department: *	Division: *	Div. SAP Orgcode: *	
Observer's Name: *	Badge Number: *		
Contractor Company Name: *		BI Number: *	
<small>BI Number Format: XX-YYYY-ZZZZ Ex. BI-10-00019-0004</small>			
Incident Date: *	Incident Time: *	Persons: <input type="text"/>	
PPE: <input type="text"/>	Material: <input type="checkbox"/> Stacked unsafely/excessive/not protected (choose X if applicable)		
PTW (Permit to Work): <input type="text"/>	Work Procedure: <input type="text"/>		
Elevated Areas: <input type="text"/>	Electrical: <input type="text"/>		
Heavy Equipment: <input type="text"/>	Hot Work/ Welding & Cutting: <input type="text"/>		
Tool: <input type="text"/>	Trenching & Excavation: <input type="text"/>		
Vehicle: <input type="text"/>	Barricade: <input type="text"/>	Confined Space entry: <input type="text"/>	
Ground Level: <input type="text"/>	Environmental & Health Issue: <input type="text"/>		
<b>Note: - Fields with asterisk ( * ) are mandatory fields and must be filled out.</b>			
Observation Area:	<input type="text"/>		
Describe What Happened?	<input type="text"/>		
Analysis - Why did it happen?	<input type="text"/>		
Immediate Action Taken:	<input type="text"/>		
Recommended Future Corrective Action:	<input type="text"/>		
Confirmation of Corrective Action Implementation:	<input type="checkbox"/> On the spot <input type="checkbox"/> Next site visit <input type="checkbox"/> Others		
Other Issues Not Covered By The Card (Please Specify)	<input type="text"/>		
Positive Observation (Please Specify)	<input type="text"/>		
Reviewed By (Supervisor Name):	<input type="text"/>		
USERID:	<input type="text"/>		
Company:	<input type="text"/>		
Date:	<input type="text"/>	Time:	<input type="text"/>
Saudi Aramco: Company General Use			

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## 2. MOTOR VEHICLE ACCIDENT (MVA) REPORT FORM

### MOTOR VEHICLE ACCIDENT (MVA) REPORT - CONTRACTOR VEHICLES

L9.04 (01/13)

Refer to Project Management Incident Procedures

Date of Accident		Month	Day	Year	Time of Accident	<input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	For Project Management Use Only Category / Sub Category		Incident Number
Location Description						Location			
Plant #:		COORDINATES (if available): Latitude:				Longitude:			
<b>REPORT ACCIDENT TO SAPMT REPRESENTATIVE AS FOLLOWS:</b> 1) WITHIN ONE HOUR BY FAX OR PHONE. 2) WITHIN 24 HOURS, FAX PRELIMINARY ACCIDENT REPORT. 3) WITHIN 72 HOURS, DELIVER COMPLETED MVA REPORT TO SAPMT OFFICE.									
Vehicle No. 1	Name of Driver		Employee Org. Code		Valid Driver License ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Name of Driver or Pedestrian		
	Badge #							<input checked="" type="checkbox"/> Saudi Aramco <input type="checkbox"/> Contractor <input type="checkbox"/> Private Vehicle <input type="checkbox"/> Pedestrian	
	Driver's License #	Driver's License Expiration Date				Badge #		Employee Org. Code	
	Vehicle #	Lic. Plate #	Vehicle assigned to (Org. Code)				Vehicle #		Lic. Plate #
	# of Vehicles Involved		2				<input type="checkbox"/> Check if U-Drive or Replacement Vehicle		
Vehicle No. 2 / Pedestrian	Description of Damage		Cost of Repair		<input type="checkbox"/> Less than \$100 <input type="checkbox"/> \$100 to \$1000 <input type="checkbox"/> More than \$1000 <input type="checkbox"/> Total Loss		Description of Damage		Cost of Repair
									<input type="checkbox"/> Less than \$100 <input type="checkbox"/> \$100 to \$1000 <input type="checkbox"/> More than \$1000 <input type="checkbox"/> Total Loss
	Total Persons in the Vehicle						Total Persons in the Vehicle		
	Contractor Company Name						Contractor Company Name		
	Proponent Department						Proponent Department		
INJURIES	VEH #	NAME (INJURED)	BADGE #	NATURE OF INJURY *		VEH #	NAME (NON-INJURED)	BADGE #	
* NATURE OF INJURY, e.g. cut, burn, fracture, multiple injuries, fatal, etc.									
BRIEF DESCRIPTION OF ACCIDENT					INDICATE BY DIAGRAM WHAT HAPPENED				
SUPERVISOR'S ANALYSIS AND RECOMMENDATIONS									
					CONTRACTOR DRIVER TRAINING YES NO (NA if Not Applicable) <input type="checkbox"/> SAG License <input type="checkbox"/> Driver Improvement Training <input type="checkbox"/> Warning Letter <input type="checkbox"/> Contractor Authorized Driver				
Supervisor's Name		Signature		Badge #	Date	Phone #			
PROJECT MANAGER'S ACTION									
					Vehicle #1		Vehicle #2		
					<input type="checkbox"/> Preventable <input type="checkbox"/> Non-Preventable		<input type="checkbox"/> Preventable <input type="checkbox"/> Non-Preventable		
Project Manager's Signature:		Badge #		Date					
REMARKS									
					Vehicle #1		Vehicle #2		
					<input type="checkbox"/> Recordable <input type="checkbox"/> Non-Recordable		<input type="checkbox"/> Recordable <input type="checkbox"/> Non-Recordable		
SAPMT Representative		Signature		Badge #	Date	Phone No.			

Saudi Aramco: Company General Use



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MVA REPORT - CONTRACTOR VEHICLES - Reverse
19.05 (01/13)

MVA TYPE (Circle the appropriate box)

COLLISION OF MOTOR VEHICLE WITH ANOTHER VEHICLE

1. Rear End

2. Rear End

3. Left Turn

4. Left Turn

5. Right Turn

6. Right Turn

7. Head on

8. Sideswipe

9. Angle

10. Backing

RAN OFF THE ROAD

NON-COLLISION

COLLISION OF MOTOR VEHICLE WITH:

11. Right

12. Left

13. Straight

14. Over

15. Other in

16. Pedestrian

17. Parked

18. Train

19. Bicycle

20. Animal

21. Fixed

22. Other

BASIC CAUSE OF ACCIDENT (Select one only for each vehicle) To be filled by Driver's Supervisor

Veh.1

Veh.2

01 SPEED EXCESSIVE

02 DELAYED PERCEPTION

03 FAULTY EVASIVE ACTION

04 IMPROPER BACKING

05 WRONG LANE OR POSITION

06 IMPROPER PASSING

Veh.1

Veh.2

07 IMPROPER TURNING

08 FAILURE TO SIGNAL OR WRONG SIGNAL

09 SUDDEN MOVEMENT

10 FOLLOWING TOO CLOSELY

11 IMPROPER PARKING

12 TRAFFIC SIGNAL VIOLATION

Veh.1

Veh.2

13 STOP SIGN OR YIELD SIGN VIOLATION

14 MECHANICAL FAILURE

15 OTHER VEHICLE ACTION

16 UNKNOWN

17 OTHER CAUSES

SPECIFY

VEHICLE TYPE

Veh.1

Veh.2

SEDAN - SUBCOMPACT

SEDAN - INTERMEDIATE

SEDAN - STANDARD

2 X 4 PICKUP

4 X 4 PICKUP

2 X 4 CREWCAB PICKUP

Veh.1

Veh.2

4 X 4 CREWCAB PICKUP

2 X 4 STATION WAGON

4 X 4 STATION WAGON

TRUCK

TRACTOR

TRACTOR WITH TRAILER

Veh.1

Veh.2

2 X 4 CARRYALL

4 X 4 CARRYALL

BUS

MOTORCYCLE/SCOOTER/BICYCLE

MOBILE EQUIPMENT

OTHER

SPECIFY

VEHICLE MOVEMENT

Veh.1

Veh.2

01 STRAIGHT AHEAD

02 TURN RIGHT

03 TURN LEFT

04 OVERTAKING

05 SLOWING - STOPPING

Veh.1

Veh.2

06 STANDING IN TRAFFIC

07 MAKING U - TURN

08 ENTERING PARKING SPOT

09 LEAVING PARKING SPOT

10 BACKING

Veh.1

Veh.2

11 PARKED PROPERLY

12 PARKED IMPROPERLY

13 CHANGING LANES

14 OTHER

SPECIFY

SEAT BELTS

Veh.1

Veh.2

PROVIDED, NOT USED

USED

NOT PROVIDED

PROVIDED, NO INFORMATION

LIGHT CONDITION

01 DAYLIGHT

02 DARKNESS

03 DAWN

04 DUSK

WIND CONDITION

01 NO SIGNIFICANT WIND

02 STRONG WIND

03 SAND OR DUST STORM

WEATHER CONDITION

01 CLEAR

02 CLOUDY

03 RAINING

04 FOG

GENERAL LOCATION

01 INDUSTRIAL/PLANT AREAS

02 RESIDENTIAL/COMMUNITIES

03 RURAL/OPEN ROAD

04 CITY/TOWNS

05 OPEN DESERT

06 OTHER

SPECIFY

ROAD FEATURES

01 INTERSECTION

02 OPEN ROAD

03 NO REGULAR ROAD

04 DRIVEWAY - ALLEY

05 PLANT YARD

06 LOADING DOCK

07 BUILDING SERVICE ENTRY

08 PARKING AREA

09 CURVE

10 UP OR DOWN HILL

11 OTHER

SPECIFY

ROAD DEFECTS

01 LOOSE MATERIAL

02 HOLES, DEEP RUTS

03 LOW SHOULDERS

04 SOFT SHOULDERS

05 OTHER DEFECTS

06 ROAD UNDER CONSTRUCTION

07 NO DEFECTS

ROAD SURFACE

01 PAVED

02 UNPAVED

03 GRAVEL

04 DIRT OR SAND

05 OTHER

SPECIFY

ROAD CONDITION

01 DRY

02 WET

03 OILY

04 SANDY

05 MUDDY

DISTRIBUTION:

NO INJURY: Division keeps signed Original. Copy to SAPMT for jobsite files (if applicable) and copy to Contractor. Additional copies to Vice President - Project Management, Asst to VP - Project Management and Department Manager, if requested.

MVA INVOLVING INJURIES, DEATH, OR PROPERTY DAMAGE OF \$10,000 OR MORE: As above but Division sends additional copies to the following: (1) Vice President - Project Management (2) Asst to VP - Project Management (3) Department Manager.

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### 3. INJURY SUMMARY

Project: \_\_\_\_\_ Project No.: \_\_\_\_\_ Month & Year: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_ File No.: \_\_\_\_\_

Injury No.	Name of Injured	Badge Number	Craft	Date of Accident	Carry Over Yes/No	Days Lost This Month	Nature of Injury and Part of Body Affected	Brief Description of Accident: State What, Where, How, Why
Total Lost Time Injuries This Month:				Total Days Lost:			Total Man-hours Worked This Month:	

Report Prepared By: \_\_\_\_\_

Signature: \_\_\_\_\_

Title and Telephone: \_\_\_\_\_



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## SECTION 13

# SITE INCENTIVE AND DISCIPLINARY ACTION PROGRAM

### 13 SITE INCENTIVE AND DISCIPLINARY PROGRAM

This procedure and guidance has been developed to enhance the HSE culture within the organization. It aims to recognize and reward excellence in HSE performance and achievements for personnel and parties working in this project and to depict the main HSE awards and their respective criteria.

Likewise, this shall also details and give guidance on the actions that should be taken in the event of any health, safety and environmental violations and non-compliances. The disciplinary measures stated herein are there for guidance, and every instance should be carefully assessed on its own merit and the actions taken commensurate with the prevailing conditions and situation.

These two (2) distinct program are developed to both recognized exemplary and commendable work practices while the other are to penalized HSE non-compliances and violations that could lead to incidences of property damage, environmental damage, serious injury or fatality.

#### 13.1. INCENTIVE PROGRAM

CONTRACTORS and Subcontractor's personnel who strictly adhere to COMPANY and CONTRACTOR'S HSE rules and regulations may be recommended, recognized and awarded through the CONTRACTORS 'HSE Performance Incentive Program'.

This will describes the types of awards, recognition, nominations that the CONTRACTOR may give or awarded to deserving individuals or groups and shall details the selection and approval process to be applied by the CONTRACTOR.

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This aims to promote workers participation in HSE, enhance the overall HSE culture and encourage workers initiative for continual improvement and adherence to Health, Environment and personal Safety.

### 13.1.1. Responsibilities

#### Site Manager

- Support and approve the HSE Incentive Program
- Ensure that the program has sufficient resources and budgetary allocation for the implementation of the said program
- Approve all HSE rewarding schemes

#### HSE Manager

- Reviews and recommends for approval all nominees for HSE Award and Recognitions
- Prepare and manages budgetary requirement for HSE Incentive and Awards program
- Ensures the conduct of periodic HSE performance recognition and that exemplary and exceptional HSE performances are recognized and rewarded.
- Organizes and prepares for the arrangement of the awards ceremonies

### 13.1.2. Descriptions

#### Monthly HSE Award

On Monthly basis a person(s) is awarded the title of “HSE Man of The Month”. This title is given to a person who has satisfied the criteria for the title, and has maintained an incident free record.

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Each month the HSE Department will receive recommendations and will select “HSE Man of The Month” based on the following parameters;

- Near miss report

The employee will be given based on the number of submission and quality of report for every near miss reported during the current month and will be categorized under;

- Low potential near miss incident
- Medium potential near miss
- High potential near miss

- Hazard recognition/safety measure suggestion

The employee will earn points for every suggestion reported during the current month as follows:

- Good suggestion having a low impact on HSE performance
  - Very good suggestion having a medium impact on HSE performance
  - Outstanding suggestion having a high impact on HSE performance
- Outstanding safe actions
  - Prevention of a potential injury or loss of property
  - Prevention of a disaster
  - Saving a life

CONTRACTOR and subcontractor’s personnel with the MOST number and noteworthy reports will be selected HSE Man of the month. An employee can be man of the month only once in a year. The selected worker must also have no record of any safety violation or infractions committed.

Individual Safety Culture Performance Award

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The individual safety culture performance shall be awarded to individuals employed by CONTRACTOR or any of its respective Subcontractors on site during HSE site visit, surveillance, regular and surprised safety inspections.

The individual safety culture performance for the project shall be given to those individuals who have made the greatest contribution in the following fields:

- Adopting safe working practices;
- Safe preparation of conditions for work;
- Adherence to work procedures and instructions;
- Proper use of personal protection safety equipment;
- Attention to safety by keeping the work area clean and orderly;
- Other safety related items

#### Other awards and recognition

CONTRACTOR shall consider to give below awards to any team or group for their contribution to the enhancement of safety culture;

- “Best Safety Team / Group” shall be selected from amongst the construction staff.
- Award / Recognition for achieving no accidents during the target period during construction. This award is for individuals, team or group for every million hours achieved without any occurrence of an accident/incident during construction period.

#### HSE Awareness Competitions

A competition will be also be considered and held as part of continuing HSE campaign to raise the overall HSE awareness of all persons involve in the project including subcontractors. This will include HSE workshop, HSE slogans, posters, etc.

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### 13.1.3. Procedure Instructions

#### Monthly HSE Award

Nominations for the Monthly HSE Award are generally originated or channeled through Supervisors to Managers of the various departments. Each Manager are then to decide to nominate a person who have demonstrated outstanding HSE performance throughout the Month or have provided genuine HSE suggestions, thoughts, creativity, initiative, performance, workmanship, etc. that has resulted in appreciable improvement in HSE; or have been key/instrumental in preventing serious injury others were exposed to, or major incident that was imminent.

Each supervisor prepares their nomination citing and providing verifiable information why the individual or group are nominated. It will then be submitted to site HSE Manager through the HSE Department. All nominations are collected for site HSE Manager's review and short listing. The HSE Committee reviews and nominates the man of Monthly HSE Award and the Site Manager approves nomination of the award.

#### Individual Safety Culture HSE Performance Awards

Nominations for the Individual Safety Culture Performance Awards are generally originated from Supervisors or Managers of the various Departments during site visit, surveillance, witness and regular and surprised safety inspections.

Each supervisor or Managers prepares the nomination and submits to site HSE Manager. The HSE Manager may seek the assistance and recommendation of the HSE Committee to review all nominees and recommend the individuals after their review of nominations for 'Individual Safety Culture Performance Award and the Site Manager approves the nomination of the award through the HSE Manager.

#### Other awards and recognitions

"An award for Best Team", Award for achieving key milestone "No accident during the target period". Nominations for the award shall generally originates from the HSE Committee to nominate a group or subcontractors. The Site manager approves the nomination of award.

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### HSE Awareness Competitions

Nominations for the awards are prepared by the Site HSE Manager. CONTRACTOR'S HSE Department will arrange a competition periodically to raise the overall HSE awareness of all persons including subcontractors. This will include HSE workshop, HSE slogans, poster-making, etc.

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### Monthly HSE Award - Nomination Form

Employee Name	Aspects			Total
	<i>Near Miss Report</i>	<i>Hazard recognition/safety measure suggestions</i>	<i>Outstanding safe actions</i>	
	1. Low potential near miss incident 1 to 10 point 2. Medium potential near miss 11 to 15 points 3. High potential near miss 16 to 20 points	1. Good suggestion having a low impact on HSE performance 1 to 10 points 2. Very Good suggestion having a medium impact on HSE performance 11 to 15 points 3. Outstanding suggestion having a high impact on HSE performance 16 to 20 points	1. Prevention of a potential injury or loss of property 20 to 30 points 2. Prevention of a disaster 30 to 40 points 3. Saving a life 40 to 50 points	

Nominated by\_

HSE Manager: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Approved by:

Site Manager: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_

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### **Individual Safety Culture HSE Performance Awards – Nomination Form**

Employee Name	Aspects	Remark
	Ex) Adopting safe working practices Safe preparation of conditions for work Adherence to work procedures and instructions Proper use of personal protection safety equipment Attention to safety by keeping the work area clean and orderly Other safety related items	
	Achievement / Performance	

Nominated by\_

HSE Manager: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Approved by:

Site Manager: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_



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## 13.2. Disciplinary Program

CONTRACTOR will embrace a “No Blame Culture” disciplinary philosophy, to discourage the unwillingness to accept responsibility for committing mistakes because of a fear of criticism or prosecution. The “blame” coming from the top, flowing downwards i.e. from the Management to Staff/worker; generates fear, errors, and passive-aggressive responses from the bottom – with those at the bottom feeling powerless and in lack of emotional safety.

CONTRACTOR shall make all effort to develop corrective measures, (re-) educate (training), and interact with the offender to ensure he clearly understood what had happened, the consequences and what has to be done to avoid repetition of violations.

CONTRACTOR will establish a “safety disciplinary committee” composed of Management team and HSE Manager, to convene and discuss on cases where a stringent disciplinary measure (i.e. termination) deemed it necessary.

### 13.2.1. Responsibility

#### Site Manager

- Ensure that all levels of the site organization are aware of this procedure and its intent
- Ensure that all disciplinary actions are seen as fair and equably administered.
- Apply this procedure for infractions involving senior personnel on site

#### HSE Manager

- Provide workers with relevant legal requirements, safety rules and standards.
- Ensure that all disciplinary actions are issued to safety violators and non-compliant individual.
- Maintain the safety violation log book.

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### Construction Managers/Supervisors

- Monitor worksite activities under their control and remedy any serious infractions in line with the guideline established in this procedure.
- Advise personnel under their control of the rules and regulations pertaining to this procedure.
- Issue Safety Warning Letter/Disciplinary Notice and submit it to the Site HSE Manager through the HSE Department or CONTRACTOR Area HSE Supervisor.

### Employees

- All persons engaged on site must comply with all relevant legal requirements, safety rules and standards specified in SA Construction Safety Manual (CSM), Schedule D and COMPANY project site rules and regulations.

### 13.2.1. Disciplinary Procedure

#### 13.2.2.1. Categorization of Violations

Safety violations shall be generally categorized into minor and major violations depending upon the “potential risk” of the violation committed.

#### 13.2.2.2. Classification of Violations

It is very difficult to list all Safety violations. Following are the few examples covered in different types of violations for guidance and **will not be a limiting factor in deciding violations**. Safety Manager or his approved deputy can be consulted for any ambiguity in deciding violations.

#### Minor Violations

- Not possessing or wearing Contractor Identification Card

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- Working without Safety Induction Training and Safety Induction Training Sticker
- Not wearing personal protective equipment (PPE) at work site (This item shall be decided whether an infringement is minor or major according to working conditions.)
- Not wearing or taking off working Uniforms during working hours.
- Violation of Safety Regulations & Instructions (can be deemed Major Violation)
- Not showing the ID card to Safety Personnel when it is requested.
- Driving a vehicle irresponsibly
- Not observing barriers / barricades (unauthorized access into an unsafe area) or warning notices
- Interfering with any equipment intended for safety purposes
- Using unsafe tools
- Leaving the work area without a supervisors permission
- Repeated bad housekeeping (cleaning of Job site and sanitary facilities etc.)
- Smoking in the non-smoking areas like working areas (Smoking at designated area)
- Horseplay (deemed major violation if injury occurs)
- Abusive behavior ( Verbal / Cultural)
- Not discharging / handling / storing / transporting effluents / wastes as per the guidelines etc.

### **Major Violations**

- Negligence that results in an accident
- Driving a vehicle in excess of the stipulated/posted speed limits
- Driving without authorization, license or insurance

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- Major traffic violations (over-speeding, over-taking, etc.)
- Use or possession of illegal drugs or alcohol
- Use of unapproved electrical devices (heating/cooling) in camp
- Cooking in room or camp areas (permitted only in kitchen of mess hall)
- Use of homemade electrical cable, outlet etc. in camp
- Violating work permit conditions
- Working without a work permit when a work permit is required
- Energizing/de-energizing a power source without authorization
- Improper material handling
- Not responding to a site alarm
- Blocking of emergency equipment or exits
- Smoking in the restricted areas, carrying matches or lighter
- Fighting with each other in all working areas and camp
- Sleeping on the job site
- Not reporting accidents or incidents
- Use of another person's ID card / badge
- Willful property damage
- Not wearing personal protective equipment (PPE) at work site (This item shall be decided whether an infringement is minor or major according to working conditions.)
- Not wearing proper breathing apparatus if instructed
- Not providing shoring for the excavations
- Not providing fire extinguisher for hot work near combustible and flammable areas
- Found guilty negligent driving resulting in a vehicle accident
- Entering closed area or classified area without permit

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- Not complying with written instruction on the work permit
- Usage of truck/ vehicle without good condition for shifting hazardous materials
- Use of illegal Certificate, license of equipment and operator
- Receive any violation information or Letter from AMIRAL regarding SAFETY Violation committed by Contractor personnel etc.

### 13.2.2. Penalties

The level of action to be imposed is within the sole discretion of Contractor management. In determining the appropriate action, facts such as the seriousness of the incident, all surrounding facts and circumstances, risk, including Contractor best interests, and the employee's record, including prior penalty shall be considered.

SAFETY violation penalty will be imposed to all employees violate the AMIRAL and Contractor SAFETY regulations / procedures / instructions.

#### Penalty Stage

- ① Verbal Warning
- ② First Warning Letter and 3 day Suspension
- ③ Final Warning Letter and 5 days Suspension
- ④ Dismissal / Termination

Minor violation will be warrant verbal warning and major violations will be warrant the First Warning letter. .

#### **Stage 1 – Verbal Warning**

Where informal action has failed to resolve a matter where it is considered that an offense warrants formal disciplinary action, a verbal warning may be issued by the SAFETY Department.

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A verbal warning will remain live for disciplinary purposes on an employee's personnel file for a period of 6 months from the date the warning was issued.

### **Stage 2 – First Written Warning and 3 day Suspension**

If a verbal warning does not correct the situation or if the case warrants it, or a further offence is committed requiring disciplinary action. A First Written Warning and 3 day suspension (without pay) may be issued by the SAFETY Department and to be informed to Manpower Section and their Section.

A first warning will remain **live** for disciplinary purposes on an employee's personal file for a period of **12 months** from the date the warning was issued.

### **Stage 3 – Final Written Warning and 5 days suspension**

If the employee's conduct still does not complying from the rules and procedure required by the SAFETY Department and the AMIRAL, or if the case warrants it or a further offense is committed requiring disciplinary action, a final Written Warning and 5 days suspension (without pay) may be issued by the SAFETY Department and to be informed to Manpower Section and their Section.

A final Written Warning will remain live for disciplinary purposes on an employee's personal file for a period of 12 months from the date of warning was issued.

### **Stage 4 – Dismissal / Termination**

If the employees continuous to fail to comply from the SAFETY and AMIRAL rules and regulations or commit two major violations which may cause of any loss of life or property, the case warrants its dismissal / termination will be serve.

#### **13.2.3. Recording**

SAFETY Department will issue the warning notice to individual for SAFETY violation. And it will be kept in SAFETY Office and Administration at all the times. SAFETY

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Department will report it to Management about the disciplinary action determined as per above mentioned penalty stage.

#### 13.2.4. Attachment

## **WARNING NOTICE**

Ref No.:

Name:	Job No.:
Trade:	Section:
Location:	Type of violation:
Date & Time:	Vehicle No.:
Supervisor Name:	Penalty:
Detail of Violation:	

#### Penalty Stage: -

- **Stage 1 – Verbal warning**
- **Stage 2 – Written Warning and 3 day suspension**
- **Stage 3 – Final Written Warning and 5 days suspension**
- **Dismissal / Termination**

- Termination is depend on the seriousness of violation and will be determined by CONTRACTOR HSE Manager

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Safety Officer / HSE Engineer

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Defendant

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Section Manager / Sub-Contractor PM

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HSE Manager

You are strongly warned that any repetition of HSE violations will invoke the full penalty of the contractor’s disciplinary action.



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## SECTION 14

# HAZARD IDENTIFICATION PLAN (HIP)

### 14 HAZARD IDENTIFICATION PLAN (HIP)

A Hazard Identification Plan (HIP) has been prepared as a supplemented part of the Contractor Site Safety Program (CSSP) in order to identify potential hazards prior to the PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project.

Please refer to the separate plan for Section 14 Hazard Identification Plan  
Document ID : A-AMI-000-HDAI-710005 Hazard Identification Plan (HIP)

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## SECTION 15

### WASTE MANAGEMENT AND HAZARDOUS SUBSTANCE PLAN

#### 15 HAZARDOUS MATERIAL AND WASTE MANAGEMENT

Contractor shall establish a site-specific waste management plan, which shall include specific procedures for disposal of any hazardous wastes (e.g., waste oil, sewage, naturally occurring radioactive materials [NORM]), in accordance with Saudi Arabian Government regulations and SA Environmental Protection Department (EPD) requirements. Contractor shall submit their site-specific waste management plan to the SAPO for review. The SAPO reserves the right to forward a copy of the waste management plan to EPD for review.

Personal protective equipment (PPE), including respiratory protection equipment, as stipulated in the relevant Material Safety Data Sheet (MSDS) or Chemical Hazard Bulletin (CHB), shall be used when working with chemicals or hazardous substances. See Chapter I-3, Personal Protective Equipment (PPE) of SA CSM.

All CONTRACTOR employees who handle hazardous material will be trained to handle such material, and will wear all manufacturers recommended Safety Equipment. Worker camp waste will be placed in the approved CONTRACTOR & COMPANY disposal areas.

COMPANY's GI 355.003 will be followed with regards to disposal procedures for hazardous materials.

CONTRACTOR's EMP must comply with the SAUDI ARAMCO Hazardous Waste Code, the SAUDI ARAMCO Environmental Health Code (notably SAEHC-S-03, Solid Waste Management), and SAES-S-007, Solid Waste Landfill Requirements.

The specifics of the designated waste treatment facility and / or SAUDI ARAMCO approved disposal landfill for the WORK must be contained within the Waste Disposal Plan portion of

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the EMP.

CONTRACTOR must prepare, maintain and retain waste records detailing the classification, quantities of waste generated, the waste generator, details of the waste transporter and the final disposal / treatment facility.

CONTRACTOR shall, when applicable, comply with the following SAUDI ARAMCO General Instructions, Supply Chain Manual references and engineering standards for its operations involving hazardous waste storage and handling: GI 430.001, Implementing the SAUDI ARAMCO Hazardous Waste Code; GI 150.001, Asbestos Hazard Management; SAES-S-007, Solid Waste Landfill Requirements, CU-22.03, Processing and Handling of Hazardous Material; GI 2.717, Procedures and Guidelines for Handling Polychlorinated Biphenyls (PCBs); CU-22.06, Disposal of Polychlorinated Biphenyl (PCB); CU-22.01, Processing and Handling of Gas and Gas Cylinders.

Drivers shall have specialized training related to the handling and disposal of their cargo and carry on board the relevant CHBs/MSDSs. Each vehicle must carry appropriate safety and fire prevention equipment and a telephone number to contact in an emergency.

## **15.1. WASTE DISPOSAL MANAGEMENT PROCEDURES**

### Solid Waste Management & Waste Disposal System

The solid waste portion of CONTRACTOR Waste Disposal Program shall include provisions for temporary site storage, collection, transportation, and disposal practices.

### Containers and Storage

Solid, waste shall be stored such that it will not constitute a fire, health, Safety or environment hazard, or be accessible to animals and vectors. All refuse containing food waste shall be stored in covered or closed containers which are leak proof, durable and designed for safe handling and easy cleaning. Construction debris and demolition material will not be allowed to accumulate so that it presents and environmental health and Safety hazard.

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This type of waste will be disposed of at a CONTRACTOR & COMPANY approved site, separately from other types of waste. Domestic wastewater shall be disposed of at a COMPANY approved sewage disposal site. If waste originates from buildings containing asbestos, G.I.150.004 shall be followed. Portable toilets used at remote construction sites shall be emptied by the supplied vacuum trucks.

#### MSDS – Material Safety Data Sheet

Material Safety Data Sheet (MSDS) will be obtained from the manufacturer of all hazardous materials. Normally the MSDS will be in English language. Prior to bringing the material to the site the Safety engineering will receive the MSDS. The original will be kept in a separate file for hazardous material MSDS.

The HSE engineer will educate selected workers in the handling the hazardous material and regarding the personal protective equipment to be worn. The danger of the material and all the details of MSDS all the workers will be kept away from any chemical applied area for a period recommended by MSDS. The chemicals will be stored in containers that are safe for transportation and use of the materials. Containers will be labeled with appropriate hazardous label to indicate actual contents.

MSDS log will be maintained properly. All chemicals shall be stored as per specific storage recommendations for hazardous material. COMPANY chemical hazard bulletins and manufacturer provided MSDS shall be available to all personal. HSE Supervisor will review hazardous of chemical storage and handling and advise HSE precautionary measures.

CONTRACTOR will train all employees in relation to information provided in MSDS, location to find information provided by MSDS posted. Supervisors will provide worker MSDS material information as worker starts discipline activities utilizing the materials.

A complete file of hazardous material on site will be maintained by the QC, HSE Supervisor and Store-Keeper.

## **15.2. HAZARDOUS WASTE STORAGE AND HANDLING**

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All hazardous waste shall be stored in tightly closed, leak proof containers made of, or lined with, material, which is compatible with the hazardous waste to be stored. Containers shall be marked with warning labels to accurately describe their contents, and detail appropriate HSE precautions. Incompatible hazardous wastes shall not be stored in the same storage or transportation container. Hazardous chemicals shall be stored and handled in accordance with CONTRACTOR & COMPANY Chemical Hazard Bulletins (CHB) issued by Preventive Medicine Services Division, Manufacturer's Material Safety Data Sheet (MSDS) or as defined by the Company Representative. CONTRACTOR will have available all relevant CHB / MSDS's at the chemical storage area, and the location where chemicals are being used.

Vehicles transporting hazardous materials shall be suitably labeled as such and shall not be left unattended. Drivers shall have copies of the MSDS(s) and/or CHB(s) for the material(s) being transported with them at all times.

Combustible and flammable materials shall be stored in accordance with Chapter I-7, Fire Prevention.

Empty hazardous material containers shall be washed free of the material or destroyed. Liquids used to wash containers shall be properly disposed of as liquid hazardous waste in accordance with GI 430.001.

Personnel who handle, store, use or dispose of hazardous materials/waste shall receive hazard communication (HAZCOM) training. See GI 150.100.

When a contractor is required to dispose of waste determined to be hazardous, the contractor shall follow Saudi Arabian Government regulations and SA requirements in disposing of hazardous waste materials. Contractor shall provide SA with documented evidence that hazardous wastes have been properly disposed of at a licensed hazardous waste disposal facility.

### 15.3. METHOD OF COLLECTION

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CONTRACTOR shall promptly clean up all spillage and waste lost from any vehicle on route to the disposal site. Hazardous waste containers shall be collected and transported by CONTRACTOR in a manner, which minimizes environmental, fire and explosion hazard, and worker exposure. Transporting vehicles shall be properly marked and drivers shall carry the appropriate documents describing and nature of the waste transported and its degree of hazard. All vehicles and containers shall be designed to prevent the release of transported liquid and solid wastes. Drivers shall have specialized training related to the handling and disposal of their cargo and carry on board the relevant CHB / MSDS's. Safety and fire prevention equipment and a telephone number to contract in an emergency shall be provided on the vehicle.

#### 15.4. HOUSEKEEPING

During the course of Construction, all debris and Scrap material shall be kept away from the work area. Work areas shall be kept Clean.

Contractor shall provide for:

- Cleaning of the entire site, including identifying areas where each subcontractor is responsible for the cleaning.
- Collection, storage and disposal of nonhazardous and hazardous waste in accordance with GI 430.001.
- An adequate amount of trash receptacles in work areas.
- Keeping waste segregated at all times in accordance with waste handling requirements (see GI 430.001)

#### 15.5. GARBAGE & REFUSE CONTAINERS

Refuse Metal Dumpster Type containers shall be provided by CONTRACTOR for the collection and separation of waste, trash, oily and used rags and other refuse.

Trash containers shall be of durable construction and shall be located as needed throughout the work area. Trash containers shall be covered, clearly marked and

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emptied daily. Separate trash containers, with suitable disposable plastic liners, shall be provided for food scraps and other organic matter

Garbage and other waste shall be disposed of at frequent and regular intervals (daily basis) in a manner approved by the CONTRACTOR & COMPANY Project Management Team.

Refuse containers that are being actively used in the facility need not be covered. Refuse containers shall be covered when not being actively used. Filled refuse containers shall be covered and removed from the facility to the refuse Dump facility.

CONTRACTOR shall clear all combustible debris to a solid waste disposal site properly Allocated by CONTRACTOR & COMPANY Project Management Team.

CONTRACTOR shall notify COMPANY Project Management Team of any hazardous waste may be generated during performance of the work. CONTRACTOR will properly store these waste while on site and will verify to CONTRACTOR & COMPANY Project Management Team that the waste have been disposed of in a legal manner in accordance with the requirements of the Standard Environment regulations.

Material and Supplies shall be stored in locations, which will not block access-ways, and arrange to permit easy cleaning of the area.

Refuse, trash and garbage shall only be disposed of at approved sites as designated by SA or local municipality.

## 15.6. SANITATION

CONTRACTOR camp sanitation shall comply with the SAUDI ARAMCO Environmental Health Code (notably SAEHC-S-07, Camps and Communal Living Facilities)

CONTRACTOR shall provide an adequate Supply of potable water in all it working areas daily. Potable container for drinking water shall be tightly closed and equipped with a tap.

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Non-portable water outlets shall be clearly labeled as being unsafe for drinking, or washing purposes.

Toilet facilities shall be provided for employees to the ratio of one toilet per 20 at least employees. All job Site toilets shall be serviced and cleaned on a cleaned on daily basis and frequently as necessary determined by amount of use and season of the year but not less than one per day.

Portable toilets on the project shall be strategically located so as to provide adequate coverage for all active work areas.

## 15.7. FIRE PROTECTION AND CONTROL

Fire protection shall be provided in accordance with design and operating plans approved by the CONTRACTOR & COMPANY Project Management Team.

All reasonable precautions, such as segregation of flammable waste and early removal of "hot spots", shall be taken to prevent accidental ignition or spontaneous combustion of waste at a Waste disposal Container.

A supply of water provided in fire water drums equipped with appropriate buckets, a stockpile of each or other means recommended by the Fire & Rescue Leader (Contractor HSE Manager) shall be available to extinguish such fires as may occur.

CONTRACTOR shall provide and maintain in good working order suitable firefighting equipment and shall provide trained and qualified fire watch personnel for all WORK activities involving ignition sources, as per the provisions of Chapter I-7, Fire Prevention, of the CSM



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## SECTION 16

# JOB SPECIFIC AND OPERATIONAL SAFETY PROCEDURES

### 16 JOB SPECIFIC AND OPERATIONAL SAFETY

During the construction phase of grassroots projects and before a facility, or portion thereof, is certified as mechanically complete, or for any location which does not meet the criteria as defined in Section 4.3.1, the contractor shall implement an approved work permit system in line with GI 2.100 for all hazardous work, , to ensure safe execution of construction activities. The contractor's work permit system shall be subject to approval by the SA proponent organization (SAPO).

The issuer and receiver are jointly responsible for the safety of personnel and equipment at the job site. A joint site inspection shall be conducted for all work permits. Work shall not begin before the permit has been properly

Additional approvals/signatures shall be required for renewed/extended work permits (see GI 2.100 and Section 4.7 of this chapter), as well as for when certain atmospheric limits are present at the job site (see GI 2.709).

#### 16.1. WORK PERMIT

- 1) Work permit shall be issued for all of work activities carried out in the PKG (4) AMIRAL Project construction area.
- 2) Visual inspection and measurements at site are not required work permits.
- 3) All permit issued shall require minimum support documents. (i.e. J.S.A & Method statement and as specified in J.S.A)
- 4) Certified Permit Receivers shall request the proper work permit from the Permit Issuer prior to starting any job.

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- 5) Permits shall be issued for specific tasks at specific locations. Work permits shall clearly specify date and duration of the work, work to be performed and equipment to be used at the job site.
- 6) Special requirements and precautions, such as fire watches, self-contained breathing apparatus (SCBA), lifelines, and barricades shall be indicated on the permit.
- 7) The issuer or receiver shall stop work and cancel the permit if there are changes in the work activities or site conditions that could potentially create an additional hazard to personnel, damage equipment or facilities, disrupt operations, or harm the environment. If a permit is cancelled, a new permit shall be issued after the work site has been made safe.
- 8) Validity Period
  - Hot work and cold work permit shall have a maximum duration of 1 (one) day.
  - The validity of the permit is 12 hours (work permits will not be validated until further notice) and must be closed and returned to the issuer office upon completion of the job or at the end its validity.
- 9) Extension
  - The work permit may be extended if the work required to continue beyond 12 hours validity and shall not to exceed 16 hours.
- 10) On the completion of the work the work permit receiver shall check the worksite and ensure that all tools and equipment have been removed as well as housekeeping completed.
- 11) Permit issuer shall ensure that the area is acceptable prior to signing to accept the hand-over of the area.
- 12) Permit issuer will be assigned to issue permit on a specific area. Number of area will be increased as the work progresses.
- 13) Non-compliance/violations of the permit condition will result to warnings, re-training and/or cancellation of the certificates depending on the severity and number of violations.

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- 14) Heavy Equipment Control is only under Work Permit Receiver.
- 15) Signed, Approved and validated Hot Work Permit shall be shown to heavy equipment operator.
- 16) Heavy Equipment Route and Positioning shall be discussed and monitored by Overall Job Site Safety Supervisor.
- 17) Work Permit Receiver will be allowed to take multiple PTW under the following conditions
  - If he is in line of sight.
  - Close proximity of 15 meter radius.
  - Should these activities not be of high risk (Work Permit Issuer discretion).

#### 16.1.1. Cold Work Permit (Blue)

- When work permits are required, cold work permits control work activities that will not produce sufficient energy to ignite flammable atmospheres or combustible materials.
- Cold work can still involve hazards that must be evaluated during the joint site inspection. Basic precautions of conducting atmospheric gas tests, wearing personal protective equipment (PPE), use of barricades and warning signs, and any special work procedures may still be required for cold work activities.

#### 16.1.2. Hot Work Permit (Red)

- When work permits are required, hot work permits control work activities that may produce enough energy to ignite flammable atmospheres or combustible materials.
- Activities in restricted areas requiring a hot work permit include, but are not limited to:
  - Open flames, welding or torch cutting.
  - Use of spark-producing tools or equipment.

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- Abrasive blasting.
- Use of internal combustion engines.
- Work on or in close proximity to live electrical apparatus.
- Use of a device not rated for the electrical classification of the area.
  - In hydrocarbon facilities, all sewers within 23 m (75 ft) of all ignition sources must be covered or water sealed to prevent escape of flammable/combustible vapors or gases.

Hot work is not permitted if the atmosphere is above 0% LEL.


Fire protection equipment (e.g., fire extinguishers) shall be readily available.

During activities that involve cutting, welding or open flame, a fire watch shall remain in the area for no less than 30 minutes after the hot work is finished.

Combustible material around the work area shall be protected against sparks, welding slag or heat using fireproof material or by wetting.

Open fires and/or open burning of materials require an authorization obtained from the SA Fire Protection Department.

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COLD WORK PERMIT

PERMIT NO. 000001

Joint Job Site Inspection When Issuing and or Closing Out Work Permit is Required

WORK DESCRIPTION

CONTRACTOR	PTW Receiver	
Telephone number	Badge number	
Location of work	Plot plan attached Yes No	
Work description		
Job Safety Analysis Approved/Attached Yes No	Method Statement Approved/Attached Yes No	

SPECIAL PROTECTION

<input type="checkbox"/> Hard Hat <input type="checkbox"/> Gloves <input type="checkbox"/> Safety Shoes <input type="checkbox"/> Goggles <input type="checkbox"/> Face Shield <input type="checkbox"/> PRC	<input type="checkbox"/> Full Body Harness/Double Lanyard <input type="checkbox"/> Respirator <input type="checkbox"/> SCBA (used for job) <input type="checkbox"/> SCBA (stand-by) <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Barricades	<input type="checkbox"/> Breathing air line <input type="checkbox"/> GFCI/ELCB <input type="checkbox"/> Grounding <input type="checkbox"/> Air movers (exhaust/blowers) <input type="checkbox"/> Flagman (trained) <input type="checkbox"/> Elgger (certified)	<input type="checkbox"/> Warning Signs <input type="checkbox"/> High-Viz Vest <input type="checkbox"/> Access Ladder <input type="checkbox"/> No Reversing <input type="checkbox"/> Other
---	--	---	---

SUPPLEMENTARY PERMITS REQUIRED

Confined Space <input type="checkbox"/>	Isolation <input type="checkbox"/>	Permit Reference No.:
---	------------------------------------	-----------------------

ADDITIONAL APPROVALS

Department	Architecture/ Civil	Piping/ HVAC	Mechanical	Electrical	Instrument
Name					
Signature					
Date					

APPROVALS

PTW RECEIVER	Signature:	Date:
HDEC Construction Section Manager / Supervisor	Signature:	Date:
PTW ISSUER	Signature:	Date:
Permit Start Date:	Permit End Date:	

PTW REVALUATION

Day	Date	WPR	Issuer	Safety	WPR	Issuer	Safety
1							
2							
3							
4							
5							
6							
7							


EXTENSION

WPR	Issuer	Closing
WPR	Issuer	Safety

See Back for Supplementary Information – Must be Completed Before Issuance of Permit

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HOT WORK PERMIT

PERMIT NO. 000001

Joint Job Site Inspection When Issuing and or Closing Out Work Permit is Required

Work Description

CONTRACTOR

PTW Receiver

Telephone number

Badge number

Location of work

Plot plan attached Yes No

Work description

Welding ☐

Burning ☐

Grinding ☐

Other: ☐

Job Safety Analysis Approved/Attached Yes ☐ No ☐

Method Statement Approved/Attached Yes ☐ No ☐

Special Protection

☐ Hard Hat  
☐ Glove  
☐ Safety Shoes  
☐ Goggles  
☐ Face Shield  
☐ PRC

☐ Full Body Harness/Double Lanyard  
☐ Respirator  
☐ SCBA (used for Job)  
☐ SCBA (stand-by)  
☐ Hearing Protection  
☐ Barricades

☐ Breathing air line  
☐ GFCI/ELCB  
☐ Grounding  
☐ Air movers (exhaust/blower)  
☐ Flagman (trained)  
☐ Rigger (certified)

☐ Warning Signs  
☐ High-Viz Vest  
☐ Access Ladder  
☐ No Reversing  
☐ Other

Supplementary Permits

Confined Space ☐

Isolation ☐

Permit Reference No.

Fire Protection

☐ Fire Blanket

☐ Fire Extinguisher

☐ Water Hose/Nozzle

☐ Water Truck

Fire Watch

Name

Badge Number

Signature

Additional Approvals

Department

Architecture/ Civil

Piping/ HVAC

Electrical

Instrument

Name

Signature

Date

PTW RECEIVER

HDEC Construction Section Manager / Supervisor

Date:

PTW ISSUER

Date:

Permit Start Date:

Permit Finish Date:

Extension

Day

Date

WPR

Issuer

Safety

Closing

WPR

Issuer

Safety

WPR

Issuer

Safety

1

2

3

4

5

6

7

See Back for Supplementary Information – Must be Completed Before Issuance of Permit

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### 16.1.3. Confined Space Work Entry Procedure

#### 16.1.3.1. Identifying Confined Spaces

Recognition is an important aspect of making a safe entry into a confined space.

A Confined Space is any space that has the following characteristics:

- ① It is a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen).

- ② It has limited or restricted means for entry or exit.

Confined-space openings are limited primarily by size and location. Openings may be small in size and may be difficult to move through easily. However, in some cases openings may be very large; for example, open-topped spaces such as pits or excavations. Entrance and exit may be required from top, bottom, or side. In some cases, having to access the work area by a fixed ladder may constitute limited or restricted entry or exit. Size or location may make rescue efforts difficult.

- ③ It is not designed for continuous employee occupancy.

Most confined spaces are not designed for employees to enter and work on a routine basis. They may be designed to store a product, enclose materials and processes, or transport products or substances. Because they are not designed for continuous occupancy, frequently they will not have good ventilation or lighting. Therefore, occasional employee entry for inspection, maintenance, repair, cleanup, or similar tasks can be difficult and dangerous. The danger associated with entry may come from chemical or physical hazards within the space.

#### 16.1.3.2. Confined Space Entry

##### 1. Identifying All Confined Spaces

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- a. All confined spaces located within a facility or under the facility's control should be identified. Once the space has been identified as Confined, CONTRACTOR shall determine if a permit is required.
  - b. All employees shall be made aware of these confined spaces through training or instruction provided by supervisors or their designated representatives. Assistance in this training shall be provided by CONTRACTOR HSE Department.
2. Preventing Unauthorized Entry
  - a. All employees shall be instructed by supervisors or their designated representatives that entry into a confined space is prohibited without an authorized permit.
  - b. Supervisors or their designated representatives shall instruct all employees to list their names on the authorized permit before they will be allowed to enter a confined space.
3. The Permit System
  - a. When a confined space must be entered, a permit shall be completed in accordance to G.I. 2.100 and authorized by department heads, supervisors, or their designated representatives prior to entry of the confined space. This permit shall serve as certification that the space is safe for entry. The permit shall contain the date, the location of the space, and the signature of the person providing the certification.
  - b. A permit shall not be authorized until all conditions of the permit have been met.
4. Planning the Entry

The first step towards conducting a safe confined-space entry is to plan the entry. This will allow for the identification of all hazards, and for the determination of all equipment necessary, to complete the project.

- a. Gathering General Data



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- Identify the confined space. Give the name or location of the confined space.
- Give the reason for entering the confined space. Be specific. Also, identify if hot work will be done.
- Identify the contents of the confined space. This refers to any chemicals or other materials and energy that are usually present in the confined space.

b. Identifying the Hazards

**NOTE:** Atmospheric testing shall be conducted prior to entering permit-required confined spaces. CONTRACTOR shall conduct these tests. CONTRACTOR'S SA certified gas tester to conduct "Gas Test" on the confined space.

- The CONTRACTOR will determine the oxygen content and record this on the entry permit.
- The CONTRACTOR will determine flammable gas content and record this on the entry permit.
- The HSE Officer will determine levels of H2S and Carbon Monoxide and record this on the entry permit.
- If a toxic substance is determined to be in the confined space during testing by the entry supervisor, Environmental Health & Safety shall be contacted to assist in obtaining a Material Safety Data Sheet or other chemical information to determine what type of personal protective equipment is required, the potential health effects, the Permissible Exposure Limits, and any other information needed to safely conduct the work.
- CONTRACTOR will determine mechanical and physical hazards. They should list all items and energy that will require lockout/tag-out, blanking and bleeding, disconnecting, or securing. Physical hazards should also be listed.

c. Ventilation of the Confined Space

- Indicate whether mechanical or natural ventilation will be used. Describe the procedures to be used.

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**NOTE:** If mechanical ventilation is to be used, the exhaust must be pointed away from personnel or ignition sources. Also, mechanical ventilators should be bonded to the confined space.

**d. Isolating the Confined Space**

- Describe the procedures for disconnecting equipment or lockout and tag-out. All mechanical, electrical, or heat-producing equipment should be disconnected or locked and tagged out. This would also include any pumps that pull fluid from, or pump fluid into the confined space.

**e. Purging/Cleaning the Confined Space**

- If the confined space will be purged. Purging with inert gas is not recommended.
- Determine the safest type of cleaning methods to be used. If chemical cleaners are to be used. Material Safety Data Sheet (MSDS) for the chemical should be consulted prior to use.

**NOTE:** When introducing a chemical into a confined space, the Compatibility of that chemical with the contents of the confined space must be checked. If in doubt, consult HSE.

**NOTE:** If steam is to be used, the hose should be bonded to the confined space.

**f. Placement of Warning Signs**

- Indicate if warning signs or barriers will be needed to prevent unauthorized entry or to protect workers from external hazards. If the confined space will be left open and unattended for any length of time, warning signs and barriers such as barricades and/or caution tape will be required.

**g. Identifying All Personnel**

- List all employees that will be required to prepare the confined space and complete the work inside the space.

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#### h. Identifying Necessary Equipment

- List all equipment that will be necessary to complete the project.

#### 5. Conducting Pre-Entry Training

Once the entry has been planned, department heads or their designated representatives must train all employees who will be involved in the entry. The training should be conducted no earlier than one day before entry is to be made.

The following outline should be used for the training:

- a. Identify the confined space and the reason(s) for entry.
- b. Identify work detail
  - Assign each employee the job(s) he is to perform in the entry project (entrant, standby person, etc.).
  - If an employee is required to use a piece of equipment, be sure that he is capable of using the equipment properly.
  - Inform all personnel that no one is to enter the confined space unless the attendant is present at the work site.
- c. Inform entrants of all known or suspected hazards
  - Inform personnel of any access or exit problems.
  - Inform personnel of all equipment that must be locked out or tagged out.
  - Inform personnel of the contents of the confined space.
  - Inform personnel of all atmospheric levels that must be maintained before entering and while working in the confined space.

If a toxic atmosphere or substance is present or could become present, the following additional training must be completed:

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- If respiratory protection is not going to be used, inform personnel of the maximum permissible exposure level (PEL) that can exist within the confined space, and the method used to monitor PEL.
  - Inform personnel of the potential health effects of exposure to the toxic atmosphere or substance.
  - Inform personnel of the signs and symptoms of exposure to the toxic fume.
  - Inform personnel of the personal protective equipment (PPE) that they will be required to wear.
  - If entrants are unaware of the proper use of the PPE, they must be trained in the proper use of this equipment.
- NOTE: CONTRACTOR may request assistance from COMPANY in providing the above mentioned training.
- Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. A local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (annually).
- d. Isolation procedures as per G.I. 6.012
- Inform the personnel responsible for the lockout/tag-out of all equipment that must be isolated.
  - Inform the personnel responsible for performing this function of the methods to be used.
- e. Identify purging and/or ventilation procedures
- Inform all personnel responsible for performing this function of the methods to be used.
- f. Identify all equipment needed

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- Inform personnel involved in the project of all equipment that will be necessary to complete the project.
  - Make sure that all employees are capable of using their assigned equipment properly.
- g. Determine necessary personal protective equipment
- Inform personnel of all PPE that must be used to ensure their HSE.
  - Make sure that all personnel required to use PPE are trained in the proper use of the equipment.
- h. Establish communication
- Inform all entrants that they are required to maintain communication with the attendant
  - Inform attendant that he/she must maintain constant contact with all entrants.
  - Inform personnel of the type of communication they are to use.
- i. Protect from external hazards
- Inform personnel where signs and barriers will be placed to prevent unauthorized entry and protect entrants from external hazards
- j. Pre-plan rescue procedures
- The designated attendant(s) should be informed of the rescue procedures to be followed. Rescue procedures to be used are listed in this section.
  - The attendant should be informed that he can have no other duty but to maintain contact with personnel inside the confined space.
  - Inform the attendant(s) that they must not enter the confined space under any circumstances.
- k. Place the confined space back into service

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- Inform personnel of the steps to be taken to place the confined space back into service.

## 6. Preparing the Confined Space for Entry

Once the entry has been planned and personnel have been trained, the next step is to prepare the confined space for entry.

The following steps are to be followed when preparing the confined space for entry:

- a. CONTRACTOR shall provide warning signs or barriers around the confined space to prevent unauthorized entry as necessary.
- b. Place all tools, Safety Equipment, monitoring equipment, etc., near the confined space.
- c. Contractor's SA certified gas tester shall conduct the "Gas Test" on a confined space prior to the issuance of a Confined Space Entry Permit.
- d. Test the atmosphere using an appropriate gas monitor.
  - If oxygen content is less than 19.5% or greater than 21.5%, perform additional ventilation. Then shut off ventilation equipment and re-test the oxygen content.
  - If oxygen content is between 19.5% and 21.5%, continue entry preparation.
- e. Test for flammable gases.
  - If the meter reading is less than 10% of the lower explosive limit (LEL), continue entry preparations.
  - If the meter reading is above 10% of the LEL, continue ventilation of the confined space. Then shut off the ventilation and have the atmosphere re-tested.
  - If the meter reading is still above 10% of the LEL, the confined space must be cleaned before entry is permitted. If the confined space must be entered for cleaning purposes, the procedures outlined in Item 9 of this section must be followed.
- f. Test for toxics (If a toxic atmosphere is present, no person should be permitted to enter the confined space at a level exceeding the Permissible Exposure Limit

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without proper Personal Protective Equipment. Environmental Health & Safety should be called to assist in identifying proper precautions and the protective measures to be taken.

- g. Isolate all mechanical and/or electrical hazards as necessary in accordance to G.I. 6.012.
- h. Purge / ventilate the confined space as necessary.
- i. Assemble all personnel involved and review rescue procedures. CONTRACTOR will then add any needed information, then complete and sign the permit form 924-4 (Green) of G.I. 2.100.
- j. Notify the COMPANY that entry is commencing.

#### 7. Utilizing Safety Equipment

Where practical, all personnel entering a confined space should be equipped with a retrieval line secured at one end to the entrant by a full-body harness with its other end secured to a tripod lifting hoist.

#### 8. Atmospheric Testing Procedures

- All of the manufacturer's operating instructions must be followed.
- The test equipment should be tested in a known atmosphere to insure its accuracy.
- Ventilation equipment must be shut off before conducting any atmospheric tests.
- The atmosphere must be tested at the bottom, top, and middle of all confined spaces.
- The atmosphere must be continuously monitored while work is being conducted in the confined space.
- If the confined space is left for any reason, the atmosphere must be re-tested before re-entering the space.

#### 9. Confined Space Cleaning Procedures in accordance to G.I. 6.012.

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If cleaning must be conducted in a confined space to achieve acceptable atmospheric conditions, the following procedures must be followed:

- a. All entrants must be equipped with the Safety Equipment designated in Item 7.
- b. All entrants must be equipped with Self Contained Breathing Apparatus (SCBA)
- c. No spark-producing tools will be allowed for use.

#### 10. Rescue Procedures

In the event of an emergency, the attendant shall follow the Emergency Rescue Procedure.

#### 11. Contractor Isolation Procedure

A lock out and tag system compatible with the AMIRAL System shall be established.

Maintenance men shall ensure that the controls of the equipment they are working shall be properly locked and tagged in the off position before leaving.

To prevent any accident caused by mistakes, such as starting equipment on which maintenance men are currently working on or vibrations and ineffective mechanisms that can cause controls to move or valves to open, controls shall be locked in the off position.

Supervisors of operations and maintenance shall be familiarized with the rules in Saudi Arabia GI 6.012, Isolation, lock out and use of Hold Tags and shall teach their crew the lockout procedure and ensure that they are followed accordingly.

Refer to Section 16.7 – Lock Out / Tag Out, LOTO (Isolation) Procedures.

#### 16.1.3.3. Confined Space Entry Work Permit

Confined Space Entry Work Permit, Form 924-4 (Green)



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This form is require for tank cleaning, tank inspection, work in sewage or excavation of 4 feet or deeper.

All work in restricted areas must have a WORK PERMIT. Work must be performed according to the instructions and precautions specified in the work permit.

### Issuance & Approval

The authorized permit receiver must request a work permit from the work permit controller before doing any type of work in the restricted area.

If the work area falls under the responsibility and control of the COMPANY, a COMPANY Work Permit shall be applied and the CONTRACTOR'S Work Permit shall be attached and become part of the applied COMPANY Work Permit.

The issuer will grant the work permit after he has visited the site with the receiver, reviewed the hazards applicable to the particular job, and is satisfied that the work can be done safely. If the work contemplated involves any change, addition, or deletion in the facility, the work should be reviewed by an Engineer and appropriate authorization is necessary.

### Precautions

#### Checklist

Each permit contains a checklist of precautions against common hazards. Such a list cannot include precautions against all hazards. It is the duty of both the Issuer and the Receiver to review the job, anticipate what hazards might have been specified on the permit before it is signed.

#### 1. Clear Area

Once specified precautions applying to all work is to clear the area of people not required for the job to avoid their being exposed to unnecessary hazards. If people entry an area where they could be exposed to undue danger, the work should be stopped until they are cleared from the area.

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## 2. Work Stoppage

If conditions change or become unsafe during the course of work the issuer or supervisor may stop the work and cancel the permit.

The receiver has the responsibility to stop the work and advise the issuer or supervisor anytime he feels the HSE of the job does not meet the conditions of the work permit.

### Handling of Issued WORK PERMIT

A work permit is valid for only one shift, but it may be extended for one addition shift with proper approval. Exceptions in excess of 16 hours may be granted in special cases, provided certain precautions are taken (See G.I. 2.100 for details)

The receiver of the work permit must keep the permit posted at the job location at all times.

The receiver of a work permit must keep a copy in his possession or within view of the job site for the duration of the job, so that it may be presented upon request.

If the permit receiver needs to leave the job site, refer to procedure under 16.1.7 stated above.

### Closing Out & Filling the Permit

When the job is completed or at the end of the shift, each work permit must be closed out by both issuer and receiver. The only exception shall be distance and remoteness make signing impractical, and it is so stated when the work permit is issued. The work permit will be filed and kept by the issuing department for three months.

After completion of the job or when the permit's duration has expired, the issuer (or his designated representative) shall ensure a joint site inspection has been conducted with the receiver to verify that the work area has been left in a safe and secure condition before the work permit can be closed.

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Work permits shall be closed by both the issuer and receiver signing the permit form. When distance and remoteness make signing impractical, an alternative closing method must be determined and stated on the work permit when it is issued.

#### Hold Tags & Multiple Lockouts.

Hold Tags and Locks are primarily intended to protect the individual doing the work from being injured by an inadvertent start up.

Work permit issuers shall ensure that hold tags and lock outs are used so noted on the work permit. The use of hold tags/lock outs shall be strictly enforced.

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# CONFINED SPACE ENTRY PERMIT

PERMIT NO. 000001

Joint Job Site Inspection When Issuing and or Closing Out Work Permit is Required

Work Description			
CONTRACTOR		PTW Receiver	
Telephone number		Badge number	
Location of work		Plot plan attached Yes <input type="checkbox"/> No <input type="checkbox"/>	Rescue Plan Approved/Attached Yes <input type="checkbox"/> No <input type="checkbox"/>
Work description		Permit Reference No.	

Special Protection			
<input type="checkbox"/> Hard Hat <input type="checkbox"/> Gloves <input type="checkbox"/> Safety Shoes <input type="checkbox"/> Goggles <input type="checkbox"/> Face Shield <input type="checkbox"/> PRC	<input type="checkbox"/> Full Body Harness/Double Lanyard <input type="checkbox"/> Respiator <input type="checkbox"/> SCBA (used for job) <input type="checkbox"/> SCBA (stand-by) <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Barricades	<input type="checkbox"/> Breathing air-line <input type="checkbox"/> GFCI/ELCB <input type="checkbox"/> Grounding <input type="checkbox"/> Air mover (exhaust/blower) <input type="checkbox"/> Flagman (trained) <input type="checkbox"/> Rigger (certified)	<input type="checkbox"/> Warning Signs <input type="checkbox"/> High-Voltage Vest <input type="checkbox"/> Access Ladder <input type="checkbox"/> No Reversing <input type="checkbox"/> Other

Isolation and Preparation			
PEPS attached <input type="checkbox"/>	Lines Blinded / Broke <input type="checkbox"/>	Lock Out / Tag Out <input type="checkbox"/>	Purged / Cleaned <input type="checkbox"/>
Inert Complete <input type="checkbox"/>	Ventilation / Blower <input type="checkbox"/>	Safe Access <input type="checkbox"/>	Lights (low voltage with GFCI / handheld) <input type="checkbox"/>
Scaffold Approved <input type="checkbox"/>	Barricades/Warning Signs <input type="checkbox"/>	Other:	

Emergency			
Trained Stand-By Man <input type="checkbox"/>	Emergency Contact Numbers Posted Nearby <input type="checkbox"/>	Rescue Plan Attached <input type="checkbox"/>	Mechanical Hoist Rescue Equipment <input type="checkbox"/>
Two-Way Radio <input type="checkbox"/>	SCBA <input type="checkbox"/>	Rescue at Hand <input type="checkbox"/>	Battery Torch Lights <input type="checkbox"/>

Standby Man		
Name	Badge No.	Signature

PTW RECEIVER		Sign	Date:	
HDEC Construction Section Manager / Supervisor			Date:	
PTW ISSUER			Date:	
Permit Start Date:		Permit Finish Date:		

Common Activity Examples (not limited to)			
Tanks	Structural Steel Erection	Tunnels	Silos
Piping		Crawl Spaces	Machinery Cabinets

A Breathing Apparatus must be used if any of the following atmospheric condition exist:

O2 concentration is below 20.0%	Flammable or combustible mixtures are at or above 5% LEL	H2S Concentration is at or above 10 ppm	CO concentration is at or above 35 ppm
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Use and Attach Entry / Exit Log Sheet

See Back for Supplementary Information – Must be Completed Before Issuance of Permit

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## WELDING AND CUTTING

On-site welding and cutting will be required during various phases of construction. Hazards will arise from molten slag, ultraviolet rays, open flames, hot electrodes, and electric shocks. These hazards are increased if equipment is defective or improperly used.

During activities that involve cutting, welding or open flame, a fire watch shall remain in the area for no less than 30 minutes after the hot work is finished

The following actions will be implemented to minimize any welding and cutting hazards:

- 16.2.1. No grease or oil close to or applied on the oxygen cylinders .
- 16.2.2. Store, handle, and use oxygen and acetylene cylinders chained in a vertical position, whether full or empty.
- 16.2.3. Ensure COMPANY's Color-coding of cylinders is recognized by welders and other workers.
- 16.2.4. Protect equipment and personnel from temperature extremes.
- 16.2.5. Store oxidizers away from flammable cylinders.
- 16.2.6. Provide warning signs.
- 16.2.7. Examine all welding equipment immediately before use and ensure regular maintenance.
- 16.2.8. Prohibit smoking or other sources of fire near welding and cutting equipment.
- 16.2.9. Provide fire extinguisher with each welding or cutting equipment set.
- 16.2.10. Provide fire watch standby during welding or cutting operations.
- 16.2.11. Store oxygen and acetylene cylinders at least 25 ft. minimum apart or separate them by a fire proof 1.5m (5 feet) high partition for a minimum of 02 Hrs. of protection.
- 16.2.12. Install blowout protector valves on all oxygen and acetylene lines.

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- 16.2.13. Erect screens of fire retardant material or use fire retardant blanket to control hot slag, spark and UV light. Conduct an inspection at the end of workday to ensure that there is no smoldering material that shall cause a fire later.
- 16.2.14. Cylinders shall be placed in secured racks when in field use.
- 16.2.15. Use approved fabricated baskets when lifting with hoisting equipment, gauges shall be removed prior to lifting cylinders. Cylinder shall be properly secured.
- 16.2.16. Cylinders shall be so positioned as to avoid becoming part of an electrical circuit, i.e. wire to a fabrication table or to a structural steel beam.
- 16.2.17. CONTRACTOR shall comply with the provisions of SAEP-323 for all the welders and operators qualification.

## **16.2. PERSONAL PROTECTIVE EQUIPMENT (PPE)**

At a minimum, hard hats, safety glasses, and safety shoes shall be worn in SA restricted areas and project work sites. Additional PPE shall be selected and used based upon the results of a documented risk-based PPE needs analysis, which shall consider the exposure hazards, materials handled, and activities performed by personnel. Contractor's documented PPE needs analysis shall be made available to the SA proponent organization (SAPO) upon request.

Supervisors shall ensure their personnel are trained in inspection, use, maintenance, and storage of PPE according to the manufacturer's instructions and this chapter.

PPE shall meet applicable ANSI requirements or equivalent as specified in writing by the SA Loss Prevention Department.

Clothing shall be free of holes, excessive wear and other defects. Only proper work clothing (e.g., coveralls, long pants and sleeved shirt) shall be worn by personnel performing construction, maintenance and operations work (e.g., traditional loose flowing "Eastern" style clothing shall not be worn, since it presents tripping and entanglement hazards).

- 16.3.1. All employees who will be assigned to the job site are provided with the necessary protection approved for the type of hazards in the area.

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- 16.3.2. Supervisor is held responsible for seeing that his men wear the proper protection and that it is kept in good repair. He shall train his men on the proper use, maintenance and safe keeping of the equipment
- 16.3.3. The following types of protective equipment are maintained and made available on the Job site and worn by the workers where required.
- i) Hard hats.
  - ii) Gloves for specific hazards (chemical, electrical, welding).
  - iii) Safety shoes.
  - iv) Face shield for specific hazards.
  - v) Eye spectacles.
  - vi) Ear muffs.
  - vii) Welder's mask with clip-on visor.
  - viii) Goggles.
  - ix) Full Body Harness.
  - x) Respirators.
  - xi) Air supplied breathing apparatus with hood.
  - xii) Rubber boots.
  - xiii) Aprons for welders and other crafts.
  - xiv) Snug clothes.
  - xv) Other protection not listed above shall be provided where condition warrant.
- 16.3.4. All personnel working at a height of 1.8 meters or higher that is exposed to a fall equal to or greater than 1.8 meters is required to wear a full body harness and be 100% tied off at all times.

Table 1: Basic Personal Protective Equipment

The table below is a list of basic personal protective equipment. Many job classifications

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may require additional personal protective equipment depending on the work location, type of job, local hazards, conditions, etc. The Loss Prevention or Industrial Hygiene Office in the area shall be contacted for further details.

SN	PPE	Specification
1	Hard Hat	ANSI Z89.1, Type "1", Class "E" (electrical)
2	Safety Glass (Dark)	ANSI Z87.1
3	Safety Glass (Clear)	
4	Prescription Safety Glass	
5	Safety Gloves	with side shields and shatter proof lenses
6	Safety Footwear	based on materials or equipment being handled
7	Ear Plugs	ASTM F 2413-05
8	Safety Coverall	ANSI S3.19-1974
9	Respiratory Protection Equipment (RPE)	Flame Resistant Clothing (FRC), Tyvek, leather or non-permeable materials
10	Full Body Harness w/ Suspension Trauma Strap	ANSI Z88.2
11	Welding Helmet	ANSI Z359.1
12	Face Shield	with proper lens shade
		ASTM F 2178



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Notes: All personal protective equipment shall meet ANSI/OSHA or their equivalent requirements. Any work 1.8 m above ground without the protection of a guard rail system, or in a confined space, shall wear a full body harness with suspension trauma safety straps and shock absorbing lanyard. Respiratory protection shall be used for extremely dusty jobs, such as stripping off, de-lagging, demolition, or removal of old insulation.

Asbestos is not used or supplied to the PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project 6601000283 (IK) and 6600051434 (OOK).

When an oxygen deficient atmosphere could be encountered, breathing quality air shall be supplied to the worker through the use of an air fed hood or self-contained breathing apparatus.

### 16.3. TOOLS AND PORTABLE POWER TOOLS

Most hand tools accidents have been attributed to improper use and defective tools, in order to minimize hand tool accidents, the following measures shall be observed.

#### 16.4.1. Hand Tools

Appropriate personal protective equipment (PPE) shall be worn at all times when using hand tools and power tools (e.g., hard hat, safety glasses/ goggles, hearing protection, safety shoes, gloves, face shield). See Chapter I-3, Personal Protective Equipment (PPE), of CSM.

Personnel shall not operate any tools unless they are appropriately trained in their selection, use, inspection and storage. Training records shall be made available upon request

#### 1. Care of Tools

- a. Before issuing all tools shall be checked by Store Supervisor (competent person) thoroughly and the storekeeper (competent person) is to ensure that the damaged tools are not issued.

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- b. Site Supervisor is responsible to ensure that no homemade tools & improperly modified tools shall be used and allowed on site.
- c. Keep all tools clean. Wipe off accumulated grease and dirt.
- d. Keep cutting edges sharp. Sharp tools improve accuracy and are safer than dull tools.
- e. When not in use. Tools shall be stored in suitable boxes or containers or hung on racks. Cutting edges shall be protected.
- f. All damaged or worn tools are promptly and soundly repaired. Discard tools that cannot be repaired for safe use.

## 2. Using Tools Safely

- a. Use the right tool for the job. Do not substitute hammer, screw drivers for pinch bars, chisels, etc.
- b. All handles shall be tightly fitted and clean. Check for splitting and cracking.
- c. Most hand tools are conductors or electrical circuits such as cutting, grounding, brazing, welding etc.
- d. In the presence of flammable materials or explosives and vapors, use non-sparking tools.

### 16.4.2. Power Tools

#### 1. Electrical Safety

- a. Extreme caution is required whenever working with electricity, since the consequence with even low voltage can be fatal. Check for proper grounding and also ensure that ground fault circuit interrupter (GFCI) is installed at all times.

#### 2. General Precautions

- a. All electricity operated hand tools shall be rated and used at a voltage not exceeding 240 volts. Residual current devices (RCDs), including Ground Fault

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Circuit Interrupters (GFCIs) and earth leak current breakers (ELCBs) shall be used for all 110/220 volts, single phase, 15 and 20 amperes receptacle outlets on construction site for the temporary electrical system.

- b. Damaged or defective electrical tools must be returned immediately to the tool room for repair.
- c. Electricians are the only employees authorized to repair electrical equipment. Tampering with tools or equipment may result in employees being discharge.
- d. Lighting used in hazardous locations must be explosion proof and rated to operate at a maximum of 240 volts with GFCI protection. No metallic guards to be used for lighting guard.
- e. Work is not permitted on or in proximity of energized circuits of any voltage unless adequate HSE measures have been taken and the work operation has been reviewed and approved.
- f. Electrical cords must be covered or elevated. They must be kept clear of walkways and other locations where they may be exposed to damage or create tripping hazards. Only UL items be used.
- g. Hazardous areas must be barricaded and appropriate warning signs posted.
- h. Energized wiring in junction boxes, circuit breaker panels and similar places must be covered in weather tight boxes, panels etc. and placarded as to the function and the rated voltage.
- i. Electric cords are never to be handled when hands are wet or when standing in water.
- j. Electrical cord utilities boxes shall be the outdoor type, properly maintained with spring - loaded covers.
- k. Extension cords will be extended or placed at an elevation of 2.8 meters. Suspended with non-conductive materials were they may become a tripping hazards are damage by equipment movement.
- l. Portable power tools shall be equipped with properly functioning constant pressure switches or controls that will shut off the power when the pressure is released (i.e., a “dead man” switch)

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### 16.4.3. Specific Hand and Power Tools to be used in Site

HAND TOOLS	POWER TOOLS
Screwdrivers	Portable Electric Power Tools
Pliers	Portable Pneumatic Power Tools
Hacksaws	Portable Drills
Hand Saws	Portable Saws
Spanners and Wrenches	Masonry Saws
Pipe Wrenches	Grinding Tools
Hand Excavation Tools	Fixed Table Saws
Hydraulic Jacks	Chop saws/power miter saws
	Powder Actuated Fastening Tools

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<u>CARTRIDGE/TOOL ISSUANCE CONTROL</u>									
Cartridge Quantity					Received By				
Date	Issued	Returned Used	Returned Unused	Returned Un-exploded	Tool Issued (Type/MDL)	Cert No.	Name/ Signature	Issued By	Remarks

Warning: Above items can only be issued to workers with valid training certificate

Storekeeper: .....

HSE Supervisor: .....

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## LADDERS

CONTRACTOR will provide and ensure that only metal or timber ladders of COMPANY/CONTRACTOR approved types are provided to ensure a safe means of access and egress to the work place. Ladders shall conform to section II-3 Ladders and Stepladders of the SACSM requirements.

Portable ladders and stepladders shall meet applicable ANSI or European (EN) standards, including proper labeling and marking. It shall be understood that "American Standard" is not a proper label and may indicate a substandard ladder.

### 16.5.1. Selection

A ladder must be of the proper length for the job to be done. If it is to be used for access it shall rise to a height of at least 0.9 meter (3 feet) above the landing place.

Metal ladders, ladders with metal reinforced side rails, and ladders which are wet, shall not be used near electrical equipment with exposed live conductors. Such ladders shall have a warning notice attached to guard against use near electrical equipment.

Aluminum ladders shall not be used where there is a likelihood of contact with materials harmful to aluminum, such as caustic liquids, damp lime, wet cement, and seawater.

### 16.5.2. Condition

Each ladder shall be examined before use by the user. Those with split or broken side rails, missing, broken, loose, decayed or damaged rungs or cleats or with other faulty equipment shall be tagged "DO NOT USE" and removed from service.

Rungs shall be properly mortised into side rails. Cleats shall be inset by one-half inch, or filler blocks used on the side rails between the cleats. Cleats shall be uniformly spaced 30.5 centimeters (1 foot) from top to bottom.

### 16.5.3. Position

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The side rails of a ladder shall be equally supported on a firm level surface. Boxes, blocks barrels etc. shall not be used as a means of support. The area at the base of the ladder must be kept clear. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

Ladders shall not be supported on their rungs or cleats. Rungs or cleats shall not be used to support scaffold planks.

Where ever possible, ladders shall be set at an approximate angle of 75 degrees (one foot outward for every four feet upward).

Both side rails of a ladder shall be evenly supported at the upper resting-place. Side rails must be securely tied off to prevent movement. Where secure fixing is impracticable, other measures must be taken to prevent movement. Where secure fixing is impracticable, other measures must be taken to prevent movement by securing the base, using side guys, or stationing a man at the base to 'foot' the ladder. A man at the base will be unable to control a ladder more than 6 meters (20 feet) in length.

A ladder shall always be positioned so that there is space behind each rung or cleat for a proper foothold. There shall be no obstruction in the way of a man's foot, particularly at the landing platform.

Where ladders have to be suspended, both side rails shall be lashed top and bottom to provide equal support. Where long ladders are used, they shall also be lashed at the center to prevent lateral movement.

#### **16.5.4. Use**

Where an extension ladder is fully extended, the minimum overlap of section shall be four rungs. Splicing or lashing ladders together is not permitted.

Men ascending or descending ladders shall not carry tools and materials in their hands. Tools may be carried in pockets or on special belts, provided there is no risk of injury, and movement is not impaired. Material shall be lowered securely tied or in a basket.

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A man working on, or from a ladder, must have a secure handhold and, both feet, on the same rung or cleat. If the work to be done requires the use of both hands a proper working platform shall be use. Only one person shall be on a ladder at one time.

### General

Ladders shall be maintained in good condition at all times. Joints shall be tight, all hardware and fittings shall be securely attached, and movable parts shall operate freely without binding or undue play.

Ladders must not be painted.

Where a ladder is carried by one man, the front end shall be kept high enough to clear men's heads, and special care shall be taken at corners and blind spots.

### Engineer / Supervisor

Initiate short briefing with craftsmen and foremen and discuss how to avoid or minimize risk of injury to men by using the proper type and correct installation of ladder.

## **16.4. ELECTRICAL INSTALLATION AND EQUIPMENT**

All electrical works, installation and wire capacities shall be in accordance with the pertinent provision of Schedule "D" of Contract and National Electrical Code.

Installation of electrical equipment and circuits shall conform to NFPA 70, relevant SA engineering standards (e.g., P-series) and the approved design package. See Chapter I-11, Hand Tools and Power Tools, for temporary

Temporary electrical system installations shall conform to NFPA 70, National Electrical Code (NEC). Installation of temporary electrical equipment shall be performed by, or under the direction of, an authorized/certified electrician in accordance with SA requirements and the NEC

### **16.6.1. General Procedures**



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CONTRACTOR is responsible for the temporary electric supply system on the construction site. Before any electrical work starts, the following procedures shall be observed:

- Survey the area and check for possible hazards.
- Get the necessary permit or clearances duly approved by the authority.
- Advice all workers working near the area of the activities to be performed.
- Only qualified Electricians shall be allowed to work on any type of electrical system.
- Use the correct fuse or breaker ratings only.
- When approval is obtained, see to it that no overloading of existing Switchgear, fuses or other electrical devices will occur.
- The electrical supervisor is directly responsible for the overall safety of the installation.
- Before any part of the Installed system is energized, it must be thoroughly tested, tags and lock-outs provided to prevent accidental switching/throwing of the line.
- CONTRACTOR will follow Monthly Color Code System for Electrical Cords, Tools & Lifting Gear. The following Colors shall be followed for One year:

Color	Months
<b>Green</b>	January, May, September
<b>Red</b>	February, June, October
<b>Blue</b>	March, July, November
<b>Yellow</b>	April, August, December

#### 16.6.2. Electrical Tools and Lighting

- All field fittings shall be weather proof.
- Electric tools and weather proof extension lights shall be inspected each

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time they are Issued and returned. This shall be part of the tool room procedure.

- Exposed wires on portable tools shall be replaced.
- In hazardous areas or restricted areas, explosion proof light fittings shall always be used.
- Only qualified electricians shall make repairs and carry out maintenance checks.
- Ground fault circuit Interrupters shall be used for all handheld electrical tools.
- Boxes of main switches, fuses, circuit breakers, etc., shall not be left open after repairs have been made.
- Only approved tools properly insulated or grounded shall be used.
- Electricians wear the necessary protection.
- Power sources and portable electric power tools shall be of a single voltage (110 V or 220 V nominal) within a single job site or operating area. Portable electric power tools shall match the supplied power source-*CSM-I-2 Hand Tools and Power Tools*
- Residual current devices (RCDs), including ground fault circuit breakers (GFCIs) and earth leak current breakers (ELCBs), shall be used for all 110/220 V portable electric power tools
- Portable electric power tools shall be certified by an independent testing and certification service such as Underwriters' Laboratories (UL), Factory Mutual (FM) or KEMA-KEUR (or equivalent\* as specified in writing by the SA Loss Prevention Department) and shall bear the appropriate certifying agency mark- *CSM-I-2 Hand Tools and Power Tools*
- Note: CE marking is not equivalent to an independent certification by a recognized body. CE marking (Conformité Européenne) indicates only the manufacturer's declaration of conforming to the legal requirements to achieve CE marking- *CSM-I-2 Hand Tools and Power Tools*

### 16.6.3. Underground Cables

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- Normal depth of underground cables varies between 18 Inches to 3 feet.
- No mechanical excavation shall be started before test trenches have been dug manually and cable locations established.
- Exposed underground cable shall be supported and area barricaded. These are not to be repositioned or moved until certified to be "dead".
- Damage to any electrical cable exposed during excavation shall immediately be reported to COMPANY/CONTRACTOR and area barricaded.
- In case of electrical accident:
- Shut off the power
- Release the victim from the contact by using dry gloves, dry blanket, dry wood, dry clothing or insulated equipment.
- Get assistance from first-aides, a doctor and an ambulance.

## 16.5. LOCK-OUT/TAG-OUT (LOTO) - ISOLATION

### 16.7.1. Introduction

This establishes the minimum requirements for the lockout and/or tag out (LOTO) of hazardous energy isolating devices. It shall be used to ensure that the machines or equipment are isolated, locked out and/or tagged out to prevent and control unexpected release of stored and residual energy that could cause injury before the workers can perform any activities.

Isolation of energy sources shall be per GI 6.012 and CSM I-5 Isolation, Lock Out and use of Tags

### 16.7.2. Responsibilities

#### Site HSE Manager

- Ensure that all persons involved in the locked out and/or tagged out are

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competent and suitably trained in LOTO.

- Ensure adequate resources is provided for the implementation of this requirement.

#### Discipline Manager (Construction Managers)

- Ensure that the nature of the work is fully described on the PTW form.
- Ensure that proper Job Safety Analysis (JSA) is provided and has identify all the hazards associated with job.
- Ensure that all the necessary precautions are implemented, including isolations, before work begins.
- Ensure that no interaction takes place between work activities which might endanger the safety of personnel or the installation.
- Undertake the risk and hazard assessment in conjunction with the task supervisors and other persons whose specialist knowledge may be needed.
- Ensure that all necessary work permit are secured, approved and completely processed before commencing work.

#### Permit Receiver (PR) – (Site Engineer, Foremen, Supervisor)

- Apply all the necessary permit before the work starts
- Implement lock and tag out (LOTO) system procedure on machines, equipment or electrical appliances, etc.
- To maintain energy Isolation logbook.
- To care all locks and keys.
- To conduct Tool Box Meeting.

#### Isolating Authority (IA) – Site Engineer of Maintenance, Electrical / Mechanical / Instrument / Civil, etc.

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- Implement a lockout and / or tag out procedure on machines, equipment or electrical appliances, etc.
- Trained and approved as competent person.

#### Site personnel

- To comply with the unauthorized access and locked out and/or tagged out instructions.

#### 16.7.3. General Requirements

1. Whenever personnel work on machines, equipment or electrical appliances and could be injured because of energy in the system, the equipment shall be isolated from its energy sources.
  - a. For fluid systems this could require the installation of blinds, the closure and locking of valves, the removal of fluid from the system, or the physical removal of piping.
  - b. For electrical systems, appropriate isolation could include the locking or removal of switches, circuit breakers, fuses or other isolating devices, or disconnection of the power supplies. Residual energy in any system must be removed before work begins.
  - c. Proper isolation of equipment shall be characterized by the nature of the material to be protected against, the specific work to be conducted, and the piping configuration present at the job site.

2. CONTRACTOR's isolation, lock, and hold tag procedures for controlling the operations must be able to satisfy their lock and hold tag requirements.

\*Specific isolation, lock and hold tag procedures shall be developed for any complex equipment or processes and incorporated into the Operating Instruction (OI's).

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3. Operations and maintenance organizations and each department responsible for implementing the lockout procedures (per 16.8.3.2) shall train the relevant personnel in all elements of the program.
4. Operations and maintenance organizations shall provide necessary lockout equipment to employees.

#### **16.7.4. Lock, Tag, Clear and Try Electrical Isolation Instruction Procedures:**

1. Prior to commencing work, operations shall identify isolating locations and types of isolating devices required. If necessary, they shall consult with third parties, such as electrical specialists. Equipment shall then be electrically isolated and locks and tags installed by operations, the work area cleared of equipment and personnel, and the start switch(es) tried. This is a distinct step process to ensure that the equipment is properly isolated.
  - a. Isolation will have been completed only when no associated control device, such as a push button, control interlock or automatic start-up control circuit, shall have the capability of energizing equipment.
  - b. In situations where it is not possible to lock out or chain off an isolating device, isolation may be accomplished by removal of fuses, disconnection of electrical cables, or physical removal of a component of the system supplying energy to the equipment. The point of physical interruption shall be identified with a fully completed hold tag.
  - c. When isolation has been completed (or before if appropriate), operations will de-energized equipment and ensure that it contains no residual energy.
2. Other organizations or individuals working on equipment shall also install their locks and tags at locations identified by operations. Multiple lockout clips shall be used if necessary. Multiple lockout clips, locks and tags must be available in AA (see below table for SAP stock number)
3. Each lock on a piece of equipment, or on a multiple lockout clip, must be identified. A tag (Saudi Aramco Form 525) shall be installed on each lock indicating plant number or location, equipment name, date and time of lockout, name, badge

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number, organization, contact phone and signature of the individual who installed the lock and the reason for the lock's installation.

- a. Each organization issuing locks shall have a system of uniquely identifying locks. Acceptable methods include color coding, stamping or engraving locks appropriately.
  - b. Each lock shall be keyed separately, with no duplicate key, to ensure removal only by the authorized user.
4. Verification tests, in which all affected parties participate, shall be conducted by Operations on each isolating device and on each piece of equipment isolated.
- a. Each isolating device, such as a disconnect switch, shall be physically tested by moving its operating mechanism against the padlock, multiple lockout clip, or chain, to confirm that it cannot be operated.
5. When a craftsman leaves the job site temporarily, but intends to return to complete work, his locks and tags may be left installed, provided this is acceptable to controlling organizations. Operations may require craft locks and tags to be removed. Upon his return to work, the employee shall verify his locks and tags are still in place ensuring the equipment is still isolated prior to restarting his work.
6. Sometimes it is necessary for large numbers of maintenance personnel to lock and tag process equipment and/or electrical breakers, such as during a T&I or repair of a compressor. Each person must be afforded individual protection. In those cases, a "group lockout" procedure can be employed to ensure individual protection while avoiding large numbers of locks and tags on an isolation point as follows:
- a. An operations representative shall lock and tag each isolation point with single-keyed locks as per written isolation procedure described in Section 16.8.3.2.
  - b. The maintenance supervisor/foreman shall also lock and tag the isolation points.
  - c. The maintenance supervisor/foreman's key(s) to these locks are placed in a Group

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- d. Lockout box. Lockout boxes can be acquired through “AA” (see table below for SAP stock numbers).
  - e. Multiple lock clips (hasps) are then attached on the closed group lockout box.
  - f. The operations representative shall place his lock and tag on the box/hasp first and maintain possession of his key(s) until job is complete.
  - g. Each member of the maintenance crew shall then place his lock and tag on the multiple lock clip and maintain possession of his key(s) until job is complete.
7. When a craft shift change occurs and work is not complete, the oncoming shift may either:
  - a. Install their own locks and tags at locations where the previous shift had them – in which case the off-going shift shall remove their tags and locks.
  - b. Effect a transfer of keys between shifts. This transfer requires the craft foremen or supervisors to conduct a detailed review of installed locks and tags. Craft tags may be endorsed by the oncoming shift or new tags may be installed.
8. When an operations shift change occurs, the oncoming supervisor shall review locations and placement of isolated equipment, locks and tags. These operations tags and locks may be left installed and do not require endorsement at each shift change. Keys to locks shall be transferred at the time the review is made.
9. When a craftsman completes his work, or leaves the job site permanently, his tags and lockout devices shall be removed. The craft foreman or supervisor shall advise the Operations Supervisor that the craftsman has completed his work and is removing his locks and tags.
10. Operations or controlling organizations shall always be the first to install a lock and tag on a piece of equipment and the last to remove them. This lock and tag shall not be removed until operations personnel have checked and examined equipment to ensure it can be safely energized.

#### **16.7.5. Procedure for Emergency Removal of Lockout Devices:**



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1. No padlock/lockout device shall be cut or forcefully removed, without the permission of the lock owner's superintendent or the operating shift superintendent.
  - a. The operations shift superintendent will attempt to contact the individual who installed the lock, or his supervisor, to confirm that the work is complete, that the employee is safe and that the padlock can be removed.
  - b. If the individual, his supervisor, or superintendent cannot be contacted, the shift superintendent may remove the lock(s) and tag(s) only after reviewing the equipment/process to be energized, to ensure that personnel and facilities are safe from injury or damage.
  - c. The shift superintendent shall verbally advise the operations division superintendent of the action taken and record the removal of the lockout device in the operations log book.

\*He will then document the incident in a written memo to the operations division superintendent stating why the lockout device was removed, the original purpose of the lockout device, and employees involved.

#### **16.7.6. Piping and Equipment Isolation Procedures:**

There are four primary methods for isolating process lines and equipment to prevent the release of harmful energy or materials into the work area during maintenance or construction activities. Operations or controlling organizations shall ensure specific lock, tag and hold procedures are in place to protect personnel. The methods are arranged below in general order of protection provided, but the specific isolation method is determined by the task to be performed and the material/stored energy to be protected against.

These include:

1. Single block and tag.
  - a. This is the least desirable method for use in hydrocarbon service; it may be suitable for routine maintenance activities such as sock filter changes,

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temporary isolation while a blind is being installed, or cleaning of inline strainers. It is not acceptable for hot work permit activities or entry into confined spaces.

- b. The block valve shall be fully closed, locked and tagged.
- c. The fluid shall be removed from the system safely and the valve shall be tested for leakage before work begins.

## 2. Double block and bleed.

- a. This method is superior to single lock and tag. It consists of the locking and tagging of two consecutive valves on the same line that have a drain valve installed between them that shall be opened as a drain to determine if the locked valves are passing. It shall not be allowed for personnel entry into confined spaces.
- b. The drain valve shall be checked to verify that it is not clogged or plugged and be securely piped or hosed away from the work area to ensure that any fluids leaking by the closed valves do not endanger the ongoing work.

## 3. Disconnection

A less frequent method of isolation for long term maintenance activities. The act of dropping out a spool piece to form a physical disconnect in the piping, often because the piping design will not allow the insertion of a fully rated blind. Steps shall be taken to ensure no hazardous materials can leak or be discharged from the open ends of piping, e.g. blind flanging as described in 16.8.6.4 below.

## 4. Blinding

The installation of a solid metal plate between two pipe flanges or on the end of a disconnected pipe to prevent any materials from being released.

- a. A blinding procedure and sketch shall be created showing blinding locations for each piece of equipment requiring more than two isolation blinds. The blinding procedure will include precautions to complete the work safely such

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as: proper line entry, lock and tag locations, blind rating, location and size of blind, etc.

- b. The breaking of any flange containing hazardous materials shall always be done under the assumption that the line is pressurized. Appropriate personal protective equipment (PPE) will be utilized. The stud bolts will be loosened so that any leak from pressurized fluid will occur at the "5:00" position (down and away from the person doing the work).
- c. Blinds shall be fully rated for their service per ANSI/ASME B31.3 to withstand potential internal pressures. Each blind shall be stamped with the pressure rating.

\*Factory produced blinds are recommended. Facility built blinds may be used but must be approved by local engineering for service and rating and the results documented.

- d. Blinds shall be installed with matching gaskets to ensure effective isolation, with all stud bolts in place and properly tensioned.
- e. Slip blinds shall be equipped with a tail or "T"-handle drilled with a hole to attach a tag.
- f. Blinding shall be the only acceptable method of equipment isolation for entry into confined spaces.
- g. A blind list shall be prepared when more than two blinds are used to isolate equipment to ensure proper installation and removal. The list shall, at a minimum, include blind information on the following: blind number, date of installation, location, blind rating, installer name, date of removal, and remover name.
- h. Blinds shall be tagged with a unique number to ensure proper identification on the blind list.
- i. Blinds when not in use shall be properly stored to protect mating surfaces.

Table of SAP Stock Number

Item	Lock/Hold Tag	Saudi Aramco Form #525
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"AA"	Lock-out; Multiple	Sap #1000128114
	Lock	Sap #1000162049
	Group Lockout Box	Sap #1000774337
	Circuit Breaker Lockout Device	Sap #1000774338

## 16.6. SCAFFOLDING

CONTRACTOR will provide scaffolding that will comply with CONTRACTOR Company Procedure and COMPANY GI-8.001 "Safety Requirement for Scaffolding", Construction Safety Manual Section II – Chapter 9.

All scaffolds shall be designed to enable them to safely support four times the intended load, which includes the load exerted on the scaffold from men, materials, equipment and the scaffold mass (Section 6.1.8 of G.I. 8.001).

All personnel working at a height of 1.8 meters or higher that is exposed to a fall equal to or greater than 1.8 meters is required to wear a full body harness and be 100% tied off at all times.

Each scaffold must be inspected and approved by the SA Certified Scaffold Supervisor prior to use and after alteration or moving. Scaffolds will be tagged "Safe to Use" when approved by this SA Certified Scaffold Supervisor. Employees will not be permitted to work on untagged scaffold or scaffolding marked "Unsafe to Use". There is no such thing as a temporary scaffold, and all structures will be required to conform to the necessary standards. According to G.I. 8.001, depending on the height and if the scaffold is a "special scaffold", the additional inspection requirements may be required.

CONTRACTOR to provide SA Certified Scaffold Supervisor in possession of valid SA Certified Scaffold Supervisor Card to supervise erection, alteration, and dismantling of scaffold.

Scaffold will be inspected by CONTRACTOR competent and certified scaffold supervisor/inspector prior to its use and before it can be dismantled.

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Once erected and prior its use, scaffold shall be subjected to inspection and approval by CONTRACTOR representative.

The variety of scaffolds employed is large. Each has different steel, pre-formed quick assembly type and rolling scaffolds. These are the scaffold types, which will be dealt within this section. Various terms associated with scaffold can be found in paragraph of this section.

All scaffold work shall meet the requirements of this instruction and the SA CSM Chapters II-2, "Scaffolding", II-5, "Fall Protection." Formwork and formwork shoring constructed of scaffolding materials shall be per SA CSM Chapter II-6, "Concrete Construction," unless it's categorized as a "special scaffold" per Section 4.22 of G.I 8.001.

Scaffolds shall be built in accordance with the work process/decision flowchart in Supplement 8.001-1, including formal scaffold plan review, inspection and tagging. However, base-supported scaffolds less than 1.8 meters (6 feet) tall do not need to be in accordance with Supplement 8.001-1, unless located near the edge of an elevated structure with a protected or un-protected fall potential of more than 1.8 meters (6 feet).

Special scaffolds and scaffolds over 12.2 meters (40 feet) tall shall only be designed, erected, altered, inspected, and dismantled by a SA approved Specialized Scaffolding Contractor

An approved Specialized Scaffolding Contractor that is not on the GBS for Scaffolding Services (Non GBS) are only permitted to design, erect, and alter scaffolds for their own use (not for hire), using their own personnel and materials. Non-GBS Specialized Scaffolding Contractors cannot erect scaffolds for use by proponent organizations or other contractors

Falling object protection shall be in place during scaffold erection, use, alteration and dismantling. Personnel not directly involved in scaffold activities shall be kept away from the area through the use of barricade tape or fencing to prevent personnel to enter the hazard area

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### 16.8.1. Identification (Free Standing) Scaffold

The same precautions will apply whether constructed of standard tubular units or from prefabricated frames or quick assembly type.

The height of the scaffold will not exceed four times the minimum base measurement, unless the scaffold is tied in to a structure. The minimum base measurement will include outriggers if these are used.

The structure will be erected on essentially firm and level ground.

Base plate will support the standards, and a timber sole plate will be used where deemed necessary. Bricks, building blocks or other loose materials are not acceptable as base or sole plates.

Viewed from the front or side, a scaffold is a series of rectangular frames. The couples joining the tubes are not designed to prevent the rectangular frame from becoming diamond shaped and collapsing. Therefore, transverse bracing is required. This will take the form of diagonal bracing, at right angles to the structure, on the width of the scaffold, for its full length.

All bracing connections will be made with load bearing couplers.

A prefabricated frame scaffold will normally have cross bracing incorporated in the design. If this is not the case, it will be added, before any use of the scaffold, as above.

Secured access ladders will be provided for each scaffold.

### 16.8.2. Rolling Scaffold

The rules above will also apply, except the requirement for base and sole plates. In addition:

- All castor brakes will be locked when the scaffold is in use.
- No person will ride on the scaffold while it is being moved.

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- To move the scaffold, apply force at the base only.
- Observe any obstructions, holes or ramps before moving a scaffold.

### 16.8.3. Scaffolding Components

All scaffold structures shall be erected with approved metal components. Scaffold shall be stored to prevent damage and to permit easy access for use.

Aluminum tubing shall not be used where is likelihood of contact with materials harmful to aluminum such as caustic liquids, damp lime, wet cement and sea-water.

### 16.8.4. Fittings

All fittings (couplers, clamps, etc.) shall be of an approved metal type. They shall be examined regularly and care must be taken to ensure that moving parts are sound and well lubricated, and that the threads are not stripped.

### 16.8.5. Planks

Planks shall be of rough timber and in compliance with the relevant specifications and requirements.

### 16.8.6. Requirements Common to All Scaffolding

#### Foundations

A sound base is essential, therefore, the ground or floor on which a scaffold is going to stand must be carefully examined. Sand or made-up ground may need consolidating to ensure there are not cavities. Such bases as floors, roofs, etc. may need shoring from underneath.

Timber sole plates will be required to spread the load on sand, made up ground, asphalt pavement, wooden floors, and slippery surfaces. A sole plate shall extend under at least two standards.

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Where scaffolding is erected on solid bearing such as rock or concrete, small timber pads may be used in place of sole plates to prevent the base plates striking off.

Concrete blocks, barrels, and other loose or unsuitable materials shall not be used for the construction or support of scaffolding.

### Standards

Standards shall be pitched steel base plates. Joints in standards should be staggered, i.e., joints in adjacent standards should not occur in the same lift. All standard shall be vertical.

### Ledgers

Ledgers shall be securely fixed to standards with 90-degree load bearing couplers and shall be horizontal. Joints in ledgers should be staggered, i.e., joints in adjacent ledgers should not occur in the same bay. Ledgers should be secured end to end by sleeve couplers and not by joint pins.

### Transoms

Transoms shall be placed on the ledgers and secured with 90-degree load bearing couplers. These transoms must remain in position, as they are a structural part of the scaffold.

### Board Bearers

Board bearers shall be secured to the ledgers between transoms where necessary to support decking. These may be removed when no longer required to support decking.

### Bracing

Ladder bracing at right angles to the buildings or structure at alternate pairs of standards is necessary for the full height of the scaffold. These braces should be fixed to the ledgers with 90-degree load bearing couplers as close to the standards as



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possible. Where such a fixing is impracticable, swivel couplers may be used to fix the braces to the standards.

### Ties

It is essential, that all scaffolds, with the exception of certain tower and mobile scaffolds, be securely tied to the building or structure throughout their length and height to prevent movement of the scaffold, either towards or away from the building or structure. This should be done by connecting a tie tube to either ledgers or standards, and coupling this to a through tie or column box tie assembly.

Where the foregoing is impracticable, tubes may be securely wedged between opposing surfaces on the building or structure by the use of reveal pins and coupled to the tie tubes. Where reveal ties are used, they shall not exceed 50% of the total number of ties. Tow-way ties or column box ties shall be evenly distributed over the scaffold area. To ensure the security of reveal ties, it is necessary to check frequently for tightness.

### Decking

All decking shall be planked with each plank resting on at least three supports. Planks shall extend over their end supports.

Supports for scaffold planks shall be spaced with due regard to the nature of the platform and the load it will bear. Except on decking contiguous to the surface of cylindrical or spherical structure, planks shall be laid flush.

Planks shall be secured in position to prevent displacement by high winds.

Adequate space for men to pass in Safety shall be provided and maintained wherever materials are placed on decking or if any higher platform is erected thereon.

Decking shall be kept free of necessary obstructions, materials, and projecting nails.

Decking which has become slippery with oil or any other substances shall be sanded, cleaned or otherwise treated as soon as possible.

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### Guardrails and Toe-boards

Guardrails and toe boards shall be fitted at edges of decking from which men or materials could fall.

Access to working platform is best achieved by providing a separate ladder tower or a cantilevered access platform so as not to obstruct the working platform and to minimize the risk of persons falling through the gap in the guardrail or decking. Access must be provided to working platforms.

### Workmanship

Scaffolding shall be erected, altered, and dismantled by experienced men working under the direction of a competent supervisor.

Standards shall be set accurately in place and checked vertically by using a spirit level or by using horizontal lines on the building or structure.

Scaffolding couplers should be tightened with proper scaffolding spanners. The use of an ordinary spanner or tool giving leverage is apt to damage the screw threads and render the coupler unserviceable.

Scaffolding materials shall not be thrown or dropped from height.

### Inspections

All scaffolds shall be inspected daily and after weather that is likely to have affected stability.

### **16.8.7. System Scaffolding**

System scaffolding, also known as Unit Frame, Tubular Welded Frame, or Patent Scaffolding, is composed wholly or partly of prefabricated sections. There are many types of system scaffolding available, which vary in design and methods of erection, and the following matters warrant particular attention.

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To be erected, altered and dismantled by experienced men, under the direction of a competent supervisor.

Only specific manufacturers and brands of system scaffolding are permitted to be used within SA. Contact the SA Loss Prevention Department (LPD) for details. No other manufacturer or brand of system scaffolding may be used. System scaffolding shall be designed and constructed in full compliance with the system scaffolding manufacturer's information (e.g., grid size tables) for proper use of their system scaffolding within SA.

Periodic inspection shall be made of all parts and accessories. Broken, bent, altered, excessively rushed, or otherwise structurally damaged frames or accessories shall not be used.

All system scaffolding shall be constructed and erected to support four times the maximum intended loads.

Scaffold legs shall be pitched on steel base plates and on timber sole plates or pads as necessary.

Adjustable base plates shall be used to compensate for variations in ground level.

Scaffold shall be properly braced by cross braces or diagonal braces, or both, for securing vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

The frames shall be placed one on top of the other with coupling or stacking pins to ensure proper vertical alignment of the legs.

### **16.8.8. Erection of Scaffolding**

Prior to scaffold erection, the proponent representative (e.g., work permit issuer) and the Scaffold Supervisor shall survey the job site and take measures to mitigate potential hazards, such as debris, overhead power lines, electrical cables, excavations,

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roads, etc. If a scaffold plan is required, it shall be completed and properly approved per this instruction before scaffold erection commences-G.I 8.001 Section 8.0.

Any scaffold for which a scaffold plan was prepared shall be erected in accordance with the approved scaffold plan for that scaffold. Any required deviations from the scaffold plan shall be first reviewed by the ALPD and, in the case of a special scaffold, by CSD- G.I 8.001 Section 8.0.

All scaffolds shall be erected, altered, and dismantled only under the direction of an on-site Scaffold Supervisor employed by the Scaffold Erector. The Scaffold Supervisor shall be physically present at the scaffold while under erection, alternation or dismantling. He shall not just show up at the end of the job to sign the scaffold tag. Only trained and experienced scaffold craftsmen shall be used for erecting, altering, and dismantling scaffolds-.GI 8.001 Section 8.0.

Scaffolds shall be erected by workmen deemed competent to carry-out such activities.

All such competent workmen shall operate under the control of competent superior and the area interested will be closed and signaled.

Whenever possible, competent workmen erecting the scaffold will work from the minimum of a three board run. It is not acceptable for scaffolders /erectors to be perched on tubes, unless a fall arrest device is provided and secured to a suitable anchorage point at all times.

Ladders will be properly lashed throughout the vertical height of a scaffold as it progresses. Workmen, erecting the scaffold will use the ladders to gain access to the working level. The next level won't be erected until the previous one is completed in all its parts.

The verticality of the scaffolding will be controlled regularly during the erection.

Tubes or boards being used in the construction of the scaffold will be stored flat in a neat and tidy manner. The workers will wear belt fit for carrying their own equipment.

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They will not be stacked vertically against the scaffold.

Loose tubes or boards will not be left on a scaffolding after its completion.

Where men are erecting a slung or cantilevered section or crawling around on a pipe bridge or other structural steelwork they will, in all instances, where there is a possibility of falling more than 2 meters, wear a Safety belt (or harness) and life line which will be hooked off at all times.

Where a scaffold is left in an incomplete state, the bottom ladder will be removed and a notice will be secured to the lower lift stating 'Danger Incomplete Scaffold Keep Off'.

Where one section of a working platform is incomplete, access may be gained to the completed section provided that a stop end, preventing entry, is placed over the working platform at guard-rail height.

A noticed stating 'Danger Incomplete Scaffold Keep Off' will be secured to the stop end. This notice will be in the appropriate language (English / Arabic and local languages on the worksite).

Handballing will be the normal method of erecting a scaffold. Where, however, a scaffold consists of a consideration number of lifts a gin wheel may be used, provided the following requirements are met. The gin wheel is accompanied by a valid certificate stating that it has been examined by an approved Professional Engineer within the last six months.

The cantilevered tube to which the gin wheel is secured does not project more than 760mm beyond the scaffold, unless it is adequately supported.

The cantilevered tube is secured to the inside and outside standard using right angle couplers.

Both standards to be diagonally braced.

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The Fiber-rope which shall have a minimum diameter of 18mm will be checked daily by the approved Scaffolding Supervisor and discarded if unfit for use.

The maximum load to be lifted by a Gin Wheel will not exceed 50 kg.

#### **16.8.9. Scaffold Inspections**

The SA certified Scaffold Supervisor who is responsible for the scaffold shall personally inspect the scaffold at the job site as soon as possible after completion by his craftsmen, and before workers other than scaffold craftsmen use the scaffold. The Scaffold Supervisor shall complete and sign the applicable Scaffold Field Inspection Checklist during this field inspection.

Subsequent inspection of the scaffold shall occur within the two week period in order to revalidate the integrity of the scaffold.\_ GI 8.001 sec 9.0

All scaffolds will be inspected by foremen prior to use and at seven-day periods by the Scaffolding Supervisor.

All scaffold inspections shall be recorded in a register available on demand and communicated to the CONTRACTOR.

#### **16.8.10. Scaffold Users**

All personnel working at a height of 1.8 meters or higher that is exposed to a fall equal to or greater than 1.8 meters is required to wear a full body harness and be 100% tied off at all times. Refer to SA CSM II-5 for full-body harness and shock-absorbing lanyard requirements.

Scaffolds will be used for the purpose to which they have been erected.

Under no circumstances will they be overloaded.

Scaffold users will under no circumstances interfere with, modify or remove any part of a scaffold (this includes scaffold boards). Interferences with a scaffold will result in disciplinary action.

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If a scaffold requires modification it will be carried out by an approved scaffold on the instruction of the approved scaffold supervisor.

If for any reason a user considers a scaffold to be unsafe, he will immediately contact his supervisor.

The supervisor will immediately remove the scaffold tag and place barrier tape through the lower rungs of the first access ladder. The supervisor will then notify the scaffolding supervisor.

#### **16.8.11. Scaffold Terminology**

Where possible, the scaffold terminology used in this document is based on ANSI A10.8-1988: Scaffolding – Safety Requirements. A list of common ANSI scaffold terms is included, and in brackets is equivalent British Standard (BS 5973: 1990) scaffold terms, where an equivalent term exists.

##### Scaffold Terminology

Where possible, the scaffold terminology used in this document is based on COMPANY Construction Safety Manual.

1. Base Plate. A metal plate with a spigot or screw jack for distributing the load from a post or other load bearing tube.
2. Bearer (Transom). A horizontal tube across runners to form the support for a platform or to connect the outer posts to the inner posts.
3. Brace. A tube placed diagonally with respect to the vertical and horizontal members of a scaffold and fixed to them to give stability.
4. Coupler. A device for locking together component parts of tube and coupler scaffold.
5. Design Load. The maximum intended load; that is, the total of all loads including the workers(s), material and the equipment placed on the unit.

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6. Drop line. A vertical line from a fixed anchorage, which is independent of the work platform and it's rigging, and to which the lanyard is affixed.
7. Fabricated Tubular Frame Scaffold. A system of tubular frames (panels) field erected with bracing members.
8. Guardrail System. A rail system erected along open sides and ends of platforms. The rail system consists of a top rail and mid rail and their supports.
9. Lanyard. A flexible line with a positive means to secure the wearer of a body belt or harness to a drop line or a fixed anchor.
10. Load Ratings. Maximum loading for the following categories:
  - Heavy Duty. Scaffolding constructed to carry a working load of 75 lb./ft.<sup>2</sup> such as for masonry work, with storage of materials on the platform.
  - Medium Duty, Scaffolding constructed to carry a working load of 50 lb./ft.<sup>2</sup> such as for bricklayers with the weight of materials in addition to workers.
  - Light duty. Scaffolding constructed to carry a working load of 25 lb./ft.<sup>2</sup> and is intended for workers only, with no material storage other than the weight of tools.
  - Special Duty. Scaffold designed and constructed to carry specific types of objects.
11. Mobile Scaffold. A scaffold assembly supported by casters and moved along manually.
12. Mid-rail. A horizontal rail approximately midway between the top rail and platform of a guardrail system.
13. Plank. A wood board or fabricated component that is a flooring member.
14. Platform Unit. Individual work planks, fabricated planks, fabricated decks, and fabricated platform.
15. Platform. An elevated work surface composed of one or more platform units.
16. Post (Standard). Vertical scaffold tube that bears the weight of the structure.
17. Putlog (Truss). A fabricated tube upon which the platform rests, the putlog has a flattened end, to rest in or on part of the brickwork.



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18. Rated Load. The manufacturer's recommended maximum load.
19. Runner (Ledger). A horizontal scaffold tube scaffold tube that extends from post to post, that supports putlogs or bearers and that form a tie between the posts.
20. Scaffold Access. A separate, attachable or built-in means of access to and from a scaffold or work unit.
21. Scaffold Deck 'Fabricated'. A work unit equipped with end hooks that engage the scaffold bearer.
22. Scaffold. A temporary elevated or suspended work unit and its supporting structure used for supporting worker(s) or materials, or both.

## 16.7. CRANE AND RIGGING EQUIPMENT

CONTRACTOR will comply as per Company Procedure and all GI codes for using mobile crane on PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project.

### 16.9.1. General Rule for Operators and Riggers

1. The operator must be the holder of COMPANY Crane Operator Certificate for the crane he operates.
2. Certificate shall always be in his possession.
3. The Rigger must be the holder of COMPANY Rigger Certificate to at least a Level-III.
4. Equipment Supervisor must ensure that his operators are physically fit and mentally alert. If operators show any sign of illness, he must be removed from the crane.
5. The rigger is responsible for proper attaching the load to the crane and giving the correct signals to the crane operator.
6. The rigger is the only person authorized to give signals to the crane operator.
7. The Crane Operators shall inspect cranes daily using the Pre-use Daily Inspection Check Lists and maintain a copy in the Crane Cab.

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### 16.9.2. General Rule for Crane

1. All crane operators shall be properly licensed and certified by SA per GI 7.025 for the crane type/model they are using.
2. All cranes shall have a valid crane inspection sticker issued by SA or by a SA-approved third-party certifying entity.
3. No crane may be operated without COMPANY approved Third Party Inspection Sticker. The sticker will be issued after the crane has been Inspected and found serviceable by the CONTRACTOR or Third Party Inspector.
4. All cranes used for site at PKG (4) AMIRAL – Utilities, Flares and Interconnecting system Project shall be equipped with fire extinguisher, seat belts, backup alarm and spark arrestor. All mobile cranes working for CONTRACTOR shall be equipped with load moment indicators and shall be equipped with an anti-two-block device on a two block damage prevention feature for all points of two blocking i.e. Jibs, extensions, etc.
5. Cranes shall not enter a restricted area, or operate within one and a quarter boom lengths of an oil line, gas line, or overhead power line, until a work permit for that particular crane has been issued.
6. Work Permit will not be issued if the operator does not have COMPANY's Certificate.
7. Crane and lifting gear must be in good mechanical condition and assembled in accordance with the manufacturer's specifications.
8. The driving and operating cabs shall be kept free of rubbish and unnecessary materials. All broken glass shall be replaced.
9. No lifting devices, such as A-Frames, Chain hoists, Spreader bars, etc., and Man basket shall be used until they have been inspected by Company approved third party inspection agency as per G.I. 7.030.
10. All slings shall be inspected at least monthly and marked with that months Safety color tape. All slings shall be documented on a sling log book as specified by COMPANY. All slings, when not in use, shall be properly stored to prevent damaged.

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### 16.9.3. Third Party Operator / Equipment Certification

1. All crane operators shall be properly licensed and certified by SA per GI 7.025 for the crane type/model they are using
2. All cranes shall have a valid crane inspection sticker issued by SA or by a SA-approved third-party certifying entity
3. Only qualified personnel in possession of the required COMPANY Certificate shall be permitted to operate equipment. All Crane operators must be properly licensed and certified as per G.I. 7.025 for the crane type/model they are to use. Crane operators shall be qualified in a written and a practical test. Personnel must be able to read and write English to take the written test (Reminder: The COMPANY crane certification states the types of cranes that the crane operator is certified to operate. The crane operator shall not operate any cranes other than those stated on the certification. Operators shall not lift man-baskets unless COMPANY certified.)
4. Cranes must have COMPANY approved third party inspection sticker. In order for the crane to be inspected, a certified operator or certified crane mechanic for that crane shall be available.
5. Shall a crane fail examination due to major faults, and those faults cannot be rectified at the job site, it shall be removed. It shall not be allowed to remain on site.
6. Failure to comply with these requirements could result in work being stopped in that part of the operation until those deficiencies have been corrected, as stated in the contract.

### 16.9.4. Contractor's / Company Id's / Vehicles

1. All CONTRACTOR's employees shall have a Contractor ID before beginning work, in the project. Contractor's employees shall also obtain COMPANY ID if required.

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- CONTRACTOR's management ensure that no one shall use another person's ID. The ID shall be confiscated and additional penalties may be imposed for any violator. A lost ID shall be reported immediately.
- CONTRACTOR's employees shall be trained to be courteous and civil to personnel at Plant and Facility security gates.
- All CONTRACTOR's vehicles requiring access to a Restricted Area Plant or Facility shall have a Restricted Area Access Sticker valid for a maximum of six (6) months.

#### **16.9.5. Cranes and Rigging Equipment / Heavy Lift**

- CONTRACTOR ensure that all lifting equipment, including gear and others shall be in good mechanical condition, constructed from sound material, with adequate strengths, and free from any defect. The equipment will be inspected and stickered by third party or COMPANY approved crane inspection group as per Company G.I. 7.030 "Inspection and Testing Requirements for elevating/lifting materials.
- CONTRACTOR's Procedure and COMPANY G.I. 7.028 "Cranes Lifts; Types and Procedures" will be followed at all times.
- Ordinary and critical crane lifts shall not be performed in wind speeds exceeding the manufacturer's limitations. In the absence of the manufacturer's wind speed limits being specified, the above limit of 32 km/h shall be enforced.
- All chains, hooks, slings, shackles, wire ropes, and other equipment used with lifting equipment shall meet COMPANY standards. In addition, a record shall be kept on site. CONTRACTOR's Procedure / COMPANY G.I. 7.029 shall be followed that defines the requirements for carrying out the inspections, testing, and recordkeeping of slings and other commonly used rigging hardware.
- The general construction, required information markings, inspection requirements, testing, maintenance, and utilization of rigging hardware shall be as specified in ASME B30.20 and GI 7.029 Rigging Hardware Requirements.
- CONTRACTOR personnel will be made aware of the requirements of G.I. 7.026, paragraph 5, which prohibits moving any crane, elevating or heavy equipment involved in an accident, prior to investigation.

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7. All lifting equipment operators will be made aware of the general operating instructions specified in the CONTRACTOR Procedure /COMPANY regulations.
8. Lifting equipment working in an operating area must display a current inspection sticker. Operators must have a valid license, and third party certificate or COMPANY certificate for the type of lifting equipment they are operating. CONTRACTOR will provide only competent operator with valid heavy equipment license and COMPANY or third party Crane Operator certificate to operate cranes on the project as for G.I. 7.025.
9. Cranes must not enter a restricted area, or operate within ¼ boom length of an oil line, gas line overhead power line, unless the supervisor involved has issued a specify work permit. Refer to the CONTRACTOR procedure / COMPANY Construction Safety Manual for the required distance for operating a crane near power-lines.
10. Directives in COMPANY G.I. 7.027 shall be implemented, if crane suspended personal platform operations (man basket), are required.
11. The general construction, required information markings, inspection requirements, testing, maintenance, and utilization of rigging hardware shall be as specified in ASME B30.20 and this GI 7.029 RIGGING HARDWARE REQUIREMENTS.

#### **16.9.6. Cranes and Derricks**

1. CONTRACTOR will comply with the manufacturer's specifications and limitations applicable to the operation of all cranes and derricks.
2. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used with cranes shall not exceed the capacity, rating or scope recommended by the manufacturer.

#### **16.9.7. Critical Lifts**

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Critical Lifts are lifts where failure/loss of control could result in loss of life, loss of, or damage to properties, or a lift involving special or complex lift items, tools or components. Critical Lifts also include the lifting of personnel with a crane, lifts where personnel are required to work under a suspended load, and operations with special personnel and equipment safety concerns beyond normal lifting hazards.

### Requirements

#### 1. Lifting plans will be prepared for all critical lifts.

- All critical lifts require an approved Critical Lift Plan
- Loads noted in approved Critical Lift Plans shall be rigged by a rigger certified for that load category (Rigger-I, II, or III).
- The Critical Lift Plan form must be properly accomplished, signed, and approved before the lift. It shall be signed by the originator; then signed by the crane operator, rigger, and USER supervisor. It shall then be reviewed and approved by a Saudi Aramco certified Rigger-I.

Note: The Critical Lift Plan form also requires an additional signature concurrence from the Power Distribution Department for any work near energized power-lines (Refer to 16.10.8.3.c).

- The Rigger-I shall physically examine the jobsite and the equipment to be used prior to giving signature approval to the Critical Lift Plan. He shall be physically present to supervise all lifts that require a Rigger-I. (Refer to G.I. 7.028, Sec.6.4 for additional notes to rigging).
- Blanket or multiple use Critical Lift Plans intended to expedite operations where crane lifts are identical, yet performed on different dates, or where lifts will be performed continuously until the work is completed shall follow the requirements under G.I. 7.028, Sec. 6.5 for further guidance).
- Critical lifts routinely performed in high risk operating environments, such as plants, refineries, and pressurized piping areas, should have related job standards or operation procedures modified to include approved 'blanket' Critical Lift Plans that specify required rigging for repetitive jobs.

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2. Critical lifts include two primary groups of crane lifting operations.

- Crane lifts performed in high-risk work environments.
- High-risk work environments include the following examples:
- All cranes working around energized electrical lines.
- All cranes working around hydrocarbons and pressurized piping areas. Cranes working in close proximity to, or having to suspend a load over vessels, piping, an equipment containing either hydrocarbon, steam, or other pressurized liquids.

Note: Local work permit requirements shall be observed.

- All cranes working around populated/traffic areas. Cranes working in close proximity to, or having to suspend a load over: pedestrians, vehicle traffic, occupied construction equipment, and occupied buildings.
- Critical crane lifts which are hazardous by their nature and require training, rigging, and/or boom attachments.

Example of lifts include, but are not limited to:

- High level or long reach crane lift.
- Personal platforms (man baskets)
- Tandem, multiple or trailing lift.

3. Crane to be used on site shall be fitted with Safe Load Indicator (SLI)
4. A crane shall not be operated with an expired Safety inspection sticker, or a reject sticker.
5. Crane operators shall complete a daily crane inspection prior to starting the activity.
6. Load charts and range diagrams shall be displayed in crane cab.
7. Rated load capacities and recommended operating speeds, special hazards warning or instruction shall be conspicuously posted on all equipment. Instructions or warning shall be visible to the operator while he is at his control station.

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8. Hand singles to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the singles shall be posted at the job site.
9. CONTRACTOR will designate a competent person who shall inspect all machinery and equipment prior to each use and during use to make sure it is in safe operating condition. Any deficiencies shall be repaired or defective parts replaced, before continued use.
10. Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains or other reciprocating, rotating, or other moving parts or equipment shall be guarded if such parts are exposed to contact by employees, or otherwise create a hazard. Guarding shall meet the requirements of the American National Standards Institute B15.1-1958 Rev. Safety Code for Mechanical Power Transmission Apparatus.
11. Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, wither permanently or temporarily mounted, shall be barricaded in such a manner as to prevent an employee from being stuck or crushed by the crane.
12. Exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.
13. Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.
14. Windows in cabs shall be of Safety glass or equivalent that creates no visible distortion that will interfere with the safe operation of the machine.
15. Where necessary, for rigging or service requirements, a ladder, or steps shall be provided to give access to a cab roof.
16. Guardrails, handholds and steps shall be provided on cranes for easy access to the car and cab, conforming to American National Standards Institute B30.5.
17. Platforms and walkways shall have anti-skid surfaces.
18. Fuel tank filler pipe shall be located in such a position, or protected in such manner as to not allow spill or overflow to run onto the engine exhaust or electrical equipment of any machine being fueled.



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19. Cranes must have seat belts fire extinguishers, back up alarms, and spark arrestors of safe load indicators.
20. All fuels shall be transported, stored and handled to meet the policy of Section 30 of this manual.

#### **16.9.8. Use of Crane near Energized power lines**

Where the use of equipment or machines near energized power lines cannot be avoided, it shall be operated in accordance with G.I. G.I. 2.702 and must observed the following:

1. All equipment moving under energized power-lines shall maintain the proper clearances shown below.

<b>Line Voltage (kv)</b>	<b>Absolute Limit of Approach</b>
2.4, 4.6, 13.8	1.22 meters ( 4 feet )
34.5	1.53 meters ( 5 feet )
69	1.70 meters ( 5 feet 7 inches )
115	1.95 meters ( 6 feet 5 inches )
230	2.70 meters ( 8 feet 8 inches )
380	3.65 meters ( 12 feet )

2. For crane operating operation, the crane operator shall maintain proper clearances between power-lines and the crane during travel, as per the table shown in paragraph 5.1.1. If this is not possible, the proponent department shall immediately contact the PDD Power Dispatcher or ESO. Hydraulic crane booms shall be fully retracted with no load attached. "Pick and Carry" operations shall not be permitted under energized power-lines as per GI 7.028, section 6.3.1.
3. Operating cranes near energized power-lines shall be in accordance with GIs 7.027 and 7.028.
  - a) The facility proponent department shall issue a Hot Work Permit (Refer to GI 2.100) countersigned by PDD's local area Service Dispatcher or ESO. The Hot

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Work Permit shall indicate clearly that the overhead power-line is energized and that the Supervising Craftsman, Rigger-I or rigging competent person is familiar with this GI. It shall also indicate precautions to be taken to prevent power-line contact or to minimize losses if contact occurs. Where practical, the power-line crew shall be advised to cover the line conductors with protective equipment made for the purpose.

- b) When working less than 1-1/2 fully extended boom lengths from energized power-lines, a designated signalman shall ensure the following minimum distances are maintained:

Line Voltage	Absolute Limit of Approach
Up to 250,000 volts	6.10 meters ( 20 feet )
Over 250,000 volts	7.60 meters ( 25 feet )

- c) If the crane operation includes lifting near energized power-lines, it shall be considered a critical lift and requires an approved Critical Lift Plan as per GI 7.028. The Critical Lift Plan shall be prepared by a Rigger-I or rigging competent person with PDD participation and co-signed by the facility proponent department and PDD.
- d) Crane lifts near energized power-lines shall not be performed in wind speeds exceeding 32 km/h (20 mph – 17.4 knots), unless otherwise specified by the crane manufacturer. No crane lift shall be performed if the Wet Bulb humidity is above 80%.
- e) Use of a personnel platform (man-basket) near an energized power-line shall be done as a last resort and shall not to be used, unless all other options (scaffolding, man lifts, etc.) have been explored and found unacceptable. The use of a personnel platform (man-basket) shall be considered a critical lift and requires an approved Critical Lift Plan as per GI 7.028. Use shall be approved through PDD's concurrence on the work permit. (Refer to GI 7.027 and 7.028)
- f) Operation of the crane boom or personnel platform (Manbasket) over power-lines shall be approved with PDD's concurrence on the work permit.

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- g) Electrical system protective devices that automatically re-energize the circuit after a power-line contact occurrence shall be blocked or disengaged to inhibit this function.
  - h) Load control, when required, shall utilize non-conductive taglines near energized power-lines.
  - i) Non-conductive barricades shall be used during the crane lift near an energized power-line to restrict access to the crane work area for personnel other than lifting crew. All combustible and flammable materials shall be removed from the vicinity of the energized power-line.
  - j) No one shall be permitted to touch the crane or the load near energized power-lines, unless the Rigger-I or a competent person indicates it is safe to do so.
  - k) Use of a crane to move loads near an energized power-line shall be considered as a last resort and they shall not to be used unless all other options (forklifts, flatbed trucks, skids, etc.) have been explored and found unacceptable. If a crane must be used, it shall be considered a critical lift and requires an approved Critical Lift Plan, as per GI 7.028. Use shall be approved through PDD's concurrence on the work permit. (Refer to GI 7.027 and 7.028)
  - l) A person shall be designated to observe clearance of the equipment and give timely warning for all operation where it is difficult for the operator to maintain the desired clearance by visual means.
  - m) Cage-type boom guards, insulating link, or proximity warning devices may use on cranes, but the use of such devices shall not alter the requirements on any other regulation of this part even if such device is required by law or regulation.
  - n) Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
4. The following precautions shall be taken when necessary to dissipate induced voltages:
  5. The equipment shall be provided will an electrical ground directly to the upper rotating structure supporting the boom.

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6. Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charges is induced while working near energized transmitters, crews shall be provided with non-conductive poles having large alligator clips, or other similar protection, to attach the ground cable to the load.
7. Combustible and flammable materials shall be removed from the immediate area prior to operations.
8. The employer, without the manufacturer's written approval shall make no modifications or additions, which affect the capacity or safe operation of the equipment. If such modifications or changes are made, the capacity, operation and maintenance instruction plates, tags or decals, shall be changed accordingly. In no case shall the original Safety factor of the equipment be reduced.

#### **16.9.9. Use of Crane suspended personnel platform (Man-basket)**

Use of man-basket shall be only allowed to work from, or transport by, crane suspended personnel platforms (man-baskets) when conventional means of performing the work or reaching the worksite (such as personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold) would be more hazardous, or is not practical, because of structural design or worksite conditions.

The manbasket shall be inspected and certified by a certified inspector (See Paragraph 4.2; also refer to GI 7.030), before commissioning a new manbasket, periodically every six months, or when dedicated rigging has changed, or as determined by the Inspection Department (Refer to GI 7.030). All rigging hardware shall be compatible to, or exceed, specifications in ASME B30.5 and ASME B30.23. All rigging hardware to be inspected by certified rigger as per GI 7.029. Rejected manbaskets shall be tagged with a red "Rejected" sticker.

The Crane Suspended Personnel Platform (Manbasket) Permit (SA 9648) [See Attachment #1] shall be prepared by a Rigger-I or Rigger-II with the assistance of the crane operator. After completion, the crane operator and USER supervisor shall sign the Crane Suspended Personnel Platform (Manbasket) Permit before the Rigger-I gives final signature verification.

#### **1. Responsibilities**

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- a. The man-basket shall be inspected and certified by a certified inspector when dedicated rigging has changed, or as determined by the Inspection Department.
- b. All rigging hardware shall be compatible to, or exceed, specifications in ASME B30.5 and ASME B30.23. Rejected man-baskets shall be tagged with a red "Rejected" sticker.
- c. The USER of man-basket must perform proof-load test of 200% of the rated capacity at each renewal of the inspection sticker. This shall be done by floating the crane suspended man-basket and test weight approximately 31 cm (12 inches) from the ground for five (5) minutes.
- d. A certified inspector shall witness the proof-load test and inspect the physical condition of the man-basket. After completion of a successful proof-load test and inspection, a certified inspector shall attach a safety inspection sticker to the man-basket.
- e. The Crane Suspended Personnel Platform (Man-basket) Permit (SA 9648)] shall be prepared by a Rigger-I or Rigger-II with the assistance of the crane operator. After completion, the crane operator and USER supervisor shall sign the Crane Suspended Personnel Platform (Man-basket) Permit before the Rigger-I gives final signature verification.
- f. The Rigger-I or Rigger-II shall be physically present and in charge of the operation. He shall be responsible for explaining the duties of all involved personnel during the mandatory pre-lift safety meeting. The USER supervisor shall be available at the job site.
- g. Prior to the actual lift, the Rigger-I or Rigger-II in charge of the lift shall conduct a trial lift to ensure the crane is positioned properly to avoid excessive up and down boom movement (and telescoping of intermediate boom sections with hydraulic cranes) and to verify proper rigging. The trial lift shall be performed immediately prior to placing personnel in the man-basket. Any repositioning of the crane shall require a new trial lift.

## 2. Requirements

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- a. Man-baskets shall have a safe working capacity based on a minimum design safety factor of 5:1.
- b. Factory manufactured man-baskets shall meet all applicable Saudi Aramco and/or ASME fabrication specifications/requirements. A proof-load test certificate shall be provided to a certified inspector at the time of the initial certification inspection.  
  
Note: The USER may also be required to submit additional fabrication design information to the Consulting Services Department (CSD) for review and concurrence, prior to certification by a certified inspector.
- c. In-house manufactured man-baskets shall meet Saudi Aramco fabrication specifications/requirements.  
  
Note: The USER may also be required to submit additional fabrication design information to the Consulting Services Department (CSD) for review and concurrence, prior to certification by a certified inspector.
- d. An approved Critical Lift Plan (SA 9644) shall be available on site, prior to any man-basket lift.
- e. A Pre-Lift Safety Meeting is mandatory, as required by the Critical Lift Plan form and the Crane Suspended Personnel Platform (Man-basket) Permit.
- f. The crane capacity load chart shall be de-rated fifty percent (50%) when lifting a man-basket.
- g. Slings designated for man-basket use shall not be used for any other operation/lifting purpose.
- h. Man-baskets shall not be used for any purpose other than lifting personnel and their work tools.
- i. Cranes shall not travel with a suspended man-basket occupied.
- j. The crane operator shall not leave the controls at any time while a man-basket is attached to the hook.
- k. A ground observer is in attendance at all times and a personnel lift (i.e. hydraulic/scissor/telescopic man lift), capable of reaching the height of work, is in the immediate vicinity

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- l. A rescue plan has been developed and approved by the USER and is in effect prior to beginning the work, if structures limit the ability to place a personnel lift for rescue purposes (as outlined in “k” above).
- m. Load and boom hoist drum brakes, swing brakes, and locking devices shall be engaged when the occupied man-basket is in a stationary working position.
- n. Man-baskets shall have overhead protection when there is an overhead hazard. Roofing may be constructed of expanded metal to allow visibility for the workers.
- o. A designated signalman shall be used at all times during man-basket operations. Only one designated signalman shall give signals to the crane operator.
- p. Each worker inside the suspended man-basket shall wear an approved full-body harness and approved safety lanyard attached to designated locations on the man-basket. Fall protection shall allow a maximum free fall of 1.8 meters (6 feet) in the event a man-basket support fails.
- q. Suitable knot-free and defect-free tag line(s) shall be attached to the man-basket and controlled at all times, except when their use may create a greater hazard.
- r. When working less than 1-1/2 fully extended boom lengths from energized power-lines, a designated signalman shall ensure the following minimum distances are maintained:

Line Voltage	Absolute Limit of Approach
Up to 50,000 volts	3.0 meters / 10 feet
50,000 to 250,000 volts	6.1 meters / 20 feet
Over 250,000 volts	7.6 meters / 25 feet

- s. Man-basket crane lifts shall not be performed in wind speeds exceeding 25 km/h (15 mph – 13 knots – 7 meters/second) or manufacturer’s specifications, whichever is less.
- t. The crane shall not be used for other purposes while handling a suspended man-basket.

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- u. Lift areas shall be barricaded and secured. Only authorized personnel shall be permitted inside the barricaded area.
- v. When outriggers are used, they shall be extended or deployed according to the crane load rating chart specifications. The crane's tires shall be raised completely off the ground.
- w. Proper grounding shall be performed prior to welding from the man-basket. Suitable electrode holders shall be used to protect workers from contact with any conducting component of the man-basket. The electrode shall be removed from the electrode holder when welding operations are discontinued for any period of time.

### 3. Restrictions

Man-basket lifts shall not be performed if:

- a. The crane operator is not Saudi Aramco certified for man-basket crane lifts,
- b. The crane operator, USER supervisor, and/or rigger does not consider the crane operator to be physically or emotionally fit to perform the operation,
- c. The crane operator has been working for more than ten (10) continuous hours prior to the start of the lift or the lift will not be completed before the crane operator has been working for twelve (12) continuous hours;
- d. The man-basket inspection sticker has expired or the man-basket has a red "Rejected" sticker;
- e. Any crane Rated Capacity [load] Limiter (RCL) and anti-two-block device or two-block damage prevention feature for all points of two-blocking (i.e., jibs, extensions, etc.) is not working properly;
- f. Any crane safety warning device is not working; and/or
- g. The Crane Suspended Personnel Platform (Man-basket) Permit has not been properly completed and approved.

### 16.9.10. Operations



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Riggers and slingers shall have a valid rigger or slinger certificate issued by Saudi Aramco, accepted local training provider, Saudi Aramco approved international institution or a home country certification for the load weight limit and type of lift to be rigged/slung without supervision, as shown in Supplement 2, Table 2. Only a Saudi Aramco certified Rigger-I may approve Critical Lift Plans-See *G.I 7.025 TABLE #2 – Rigger and Slinger Certification Requirements*

Riggers shall carry a valid Saudi Aramco rigger certification for the appropriate classification:

Rigger I, II or III per requirement of G.I. 7.028.

#### 1. Instructions

- a. Each synthetic and natural fiber rope sling shall be permanently marked to show:
  - Name or trademark of manufacturer
  - Manufacturer's code or stock number
  - Rated loads for the types of hitches used
  - Type of natural or synthetic material
  - Date of manufacture
- b. Slings that are damaged or defective will not be used and should be removed from the jobsite.
- c. Slings will not be shortened with knots or other makeshift devices.
- d. Slings will not be loaded in excess of rated capacities.
- e. Slings used in basket hitch shall the load balanced to prevent slippage.
- f. Slings will be padded or protected from any sharp edges of their loads.
- g. Suspended loads will be kept clear of obstruction.
- h. Employees will keep clear of loads about to be lifted, and or suspended loads.

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- i. Employees will keep hands and fingers away from a sling and load when the sling is being tightened during initial lifting.
- j. Shocking loading is prohibited.
- k. A sling will not be pulled from under a load while the load weight is on the sling.
- l. An inspection of all slings will be made before any use of the sling.
- m. A tag line will be used with all loads to control the load in wind.

#### **16.9.11. Crane Operations, Heavy & Awkward Lift**

Before beginning any crane operation, the supervisor and operator should complete the preparation checklist. A lift plan required as a part of this procedure must provide the following information:

1. Crane radius
2. Boom length
3. Safe working limits of the crane (load chart)
4. Weight of the load
5. Ground and site conditions
6. Placement of the crane
7. Swing and tail clearances
8. Necessary communication to be used
9. Explanation of hand signals
10. Rigging hardware
11. Rigging sketch for critical or hazardous lifts
12. Rated capacity of rigging components
13. Sling angles
14. Strain calculations
15. Wind velocity

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16. Load moment indicator

17. Other

SA certified rigger / competent person shall be placed in charge of the lift with the responsibility of explaining in detail, the duties of all involved in the lift before the actual lift commences. The outriggers must be fully extended prior to the lift, and the rubber tires must be off the ground.

#### **16.9.12. Pre-Lift Operation Checklist**

##### 1. Operator

- Current Saudi Arabia Government(SAG) crane operators' license
- Current COMPANY operators' certificate

##### 2. Outriggers

- Fully extended
- Level ground
- Compact soil
- Heavy pad supports
- Locking pins/locks set
- No hydraulic leaks
- No damage
- Good condition
- Wheels off the ground

##### 3. Operation

- Current crane safety inspection sticker

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- b. Clear 360<sup>0</sup> visibility
- c. No shades/curtains in cab
- d. Load charts in cab
- e. Clear visibility
- f. Wind, above 20 m/h (32 km/h), no go
- g. Do not operate during storms and at night
- h. Lightning, no go
- i. Barricade crane cab swing area
- j. Tag lines in use
- k. Clear overhead power lines
- l. Clear area of personnel 1-1/2 x boom lengths
- m. No lifts over workers or critical property
- n. Trial lift, float load one meter off ground to check balance
- o. Clear view of signal man (rigger)
- p. Do not pull loads with crane
- q. Load radius indicator
- r. Man lift work permit
- s. Anti-two block operational
- t. IMI (load moment indicator) operational

#### 4. Rigging

- a. Check all rigging for damage
- b. Check sling load capacity
- c. Check block, hooks, etc. for damage
- d. Hook Safety latch in place
- e. Record weight of load

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- f. Record weight of crane gear, add crane gear weight to total weight
- g. Lift plan approved
- h. Use load weight measuring device for unknown loads

#### 5. Traveling

- a. Block secured
- b. Tires properly inflated and in good condition
- c. Brake lights, signals, mirrors, horn operational
- d. Route plan checked for firm ground, overhead and side restrictions
- e. Escort vehicles required with flashing beacon lights
- f. Speed to be maintained for safe limits (slow as possible)

#### 6. Parking

- a. Boom and hook block(s) lowered to travel position
- b. Apply swing brake and positive swing lock
- c. Tie down hook block(s)
- d. Retract stabilizers
- e. Retract outriggers
- f. Extend stabilizers and latch onto float pads
- g. Weight of chassis off the tires
- h. Let engine idle 3-5 minutes
- i. Remove all foreign material from cab(s)
- j. Close all doors, windows, skylights and compartments
- k. Turn off switches
- l. Stop engine

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### 16.9.13. Safe Working Load (SWL)

Slings and other rigging equipment must be constructed according to a recognized standard.

The safe working load of rigging equipment is the maximum load which the equipment should be subjected to; this load should never be exceeded.

Before use, all new equipment should be subjected to a proof load test by the manufacturer and certified. The safe working load and serial number shall be clearly marked on the sling and the lifting gear, either by tagging, stamping, engraving, or embossing. Riggers shall not use lifting gear unless the safe working load is clearly visible.

Slings shall not be tagged with a safe working load in the field. Approval by the Inspection Department and subsequent review by the Loss Prevention Department is required.

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WIRE ROPE SLING INSPECTION LOG

CONTRACTOR: \_\_\_\_\_ Location: \_\_\_\_\_

BI/JO Number: \_\_\_\_\_ Project Title: \_\_\_\_\_

Sling #	Diameter	Length	SWL	Date-In Service	Date-Out Service	Inspector Signature (Date)

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## Attachment: Lift Plan for Cranes (G.I.7.028)

SA 9644 (07/07)		Saudi Aramco GI 7.028		Attachment #1																																																																		
<b>Critical Lift Plan*</b> <small>(*Each Piece Of Participating Lifting Equipment Shall Have A Separate Critical Lift Plan)</small>																																																																						
Organization Name: _____		Date of Lift: _____																																																																				
Organization Code #: _____		Work Permit Required? YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																				
Facility Name: _____		Specific Work Location: _____		Contract #: _____																																																																		
<b>A) Load Description &amp; Weight (From USER):</b>		<b>B) Load Handling Devices (See "Notes" Below):</b>																																																																				
_____ lbs/kgs		<table border="1"> <thead> <tr> <th>Load Handling/Boom Attachments</th> <th>Stowed</th> <th>Erected</th> <th>N/A</th> <th>Weight: lbs/kgs</th> </tr> </thead> <tbody> <tr> <td>Swing-Away Jib:</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Other Jibs:</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Hook Block (Main):</td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Auxiliary Boom Head:</td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Headache Ball:</td> <td></td> <td></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Lifting/Spreader Beam Needed?</td> <td>YES <input type="checkbox"/> NO <input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>_____</td> </tr> <tr> <td>Does Beam Have Current Inspection Sticker?</td> <td>YES <input type="checkbox"/> NO <input type="checkbox"/></td> <td></td> <td></td> <td>_____</td> </tr> <tr> <td>Slings, Shackles, etc.:</td> <td></td> <td></td> <td></td> <td>_____</td> </tr> <tr> <td>Other:</td> <td></td> <td></td> <td></td> <td>_____</td> </tr> <tr> <td colspan="4">Weight of Load Handling Devices (Section B Above)</td> <td>_____ lbs/kgs</td> </tr> <tr> <td colspan="4">+ Weight of Load to be Lifted (Section A)</td> <td>_____ lbs/kgs</td> </tr> <tr> <td colspan="4">= <b>Total Gross Weight (Sections A + B)</b></td> <td>_____ lbs/kgs</td> </tr> </tbody> </table>				Load Handling/Boom Attachments	Stowed	Erected	N/A	Weight: lbs/kgs	Swing-Away Jib:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	Other Jibs:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	Hook Block (Main):			<input type="checkbox"/>	_____	Auxiliary Boom Head:			<input type="checkbox"/>	_____	Headache Ball:			<input type="checkbox"/>	_____	Lifting/Spreader Beam Needed?	YES <input type="checkbox"/> NO <input type="checkbox"/>		<input type="checkbox"/>	_____	Does Beam Have Current Inspection Sticker?	YES <input type="checkbox"/> NO <input type="checkbox"/>			_____	Slings, Shackles, etc.:				_____	Other:				_____	Weight of Load Handling Devices (Section B Above)				_____ lbs/kgs	+ Weight of Load to be Lifted (Section A)				_____ lbs/kgs	= <b>Total Gross Weight (Sections A + B)</b>				_____ lbs/kgs
Load Handling/Boom Attachments	Stowed	Erected	N/A	Weight: lbs/kgs																																																																		
Swing-Away Jib:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____																																																																		
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= <b>Total Gross Weight (Sections A + B)</b>				_____ lbs/kgs																																																																		
<b>C) Crane Information (See "Notes" Below):</b>																																																																						
1. SA Inspection Sticker YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																						
2. Inspection Sticker Expiry Date: _____																																																																						
3. Equipment ID #: _____																																																																						
4. Crane Model: _____																																																																						
5. Crane Type: _____																																																																						
6. Crane Rated Capacity: _____ lbs/kgs																																																																						
7. Crane Operating Code # (if applicable): _____																																																																						
8. Single Line Pull Capacity: _____ lbs/kgs																																																																						
9. # of Parts of Line: _____																																																																						
10. Total Gross Capacity Hook Block as Reeved: _____ lbs/kgs																																																																						
<b>D) Crane Configuration (See "Notes" Below):</b>		<b>E) Rigging (See "Notes" Below):</b>																																																																				
1. Required Boom Length: _____ ft/m		1. Hitch Arrangement: _____																																																																				
2. Boom Angle: _____ degrees		2. Sling Type(s): _____																																																																				
3. Required Counterweight: _____ lbs/kgs		3. Sling Size(s): _____ in/cm																																																																				
4. Operating Radius: _____ ft/m		4. Sling Length(s): _____ ft/m																																																																				
5. Lift Quadrant (Front, Rear, 360°): _____		5. Shackle Size: _____ in/cm & Capacity: _____ lbs/kgs																																																																				
		6. Capacity of Above Configuration: _____ lbs/kgs																																																																				
F) Crane Capacity in This Configuration (De-rated, if applicable): _____ lbs/kgs		Total Gross Weight ÷ Capacity = _____ %																																																																				
G) Surface Requirements Needed (Other Than Mandatory Outrigger Pads): Mats? YES <input type="checkbox"/> NO <input type="checkbox"/> Is the Ground Level? YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																						
Proper Ground Compaction? YES <input type="checkbox"/> NO <input type="checkbox"/> Excavation Hazards Controlled? YES <input type="checkbox"/> NO <input type="checkbox"/> Other _____ ? YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																						
<b>H) Wind Speed Shall Not Exceed GI 7.027 Limits for Manbaskets or GI 7.028 Limits/Manufacturer's Specifications for Loads</b>																																																																						
I) Energized Power-Lines Within Boom Radius? YES <input type="checkbox"/> NO <input type="checkbox"/> Explosion/Fire/High Heat Hazards Within Boom Radius? YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																						
J) Is This a Nighttime Crane Lift? YES <input type="checkbox"/> NO <input type="checkbox"/> If Yes, Do You Have Written Approval From Facility Manager? YES <input type="checkbox"/> NO <input type="checkbox"/>																																																																						
<b>***Attention: A Pre-Lift Safety Meeting is Mandatory</b>		<b>CAN CRANE MAKE LIFT? YES <input type="checkbox"/> NO <input type="checkbox"/></b>																																																																				
Positions:	Name (Signature)	Badge #	Certificate #	Approved by Rigger-I																																																																		
Originator:	_____	_____	_____	Name (Print): _____																																																																		
Rigger:	_____	_____	_____	Badge #: _____																																																																		
Crane Operator:	_____	_____	_____	Certificate #: _____																																																																		
USER Supervisor:	_____	_____	_____	Signature: _____																																																																		
<b>Notes:</b> <ol style="list-style-type: none"> <li>1. Attach sketch(es) of lift site, noting obstacles to movement of load, boom, or tail swing.</li> <li>2. All units of weight shall be listed in the same units of measure as Crane Load Chart.</li> <li>3. All units of measure shall be listed in the same units of measure as Crane Range Diagram.</li> <li>4. Attach copy of Crane Load Chart, Range Diagram, and Safety Notes.</li> <li>5. Certain weights may be deducted from Crane Load Chart capacities based on manufacturer's specifications.</li> </ol>																																																																						
<b>PDD Concurrence</b> <b>(when required by GI 2.702)</b>																																																																						

## 16.8. MECHANICAL EQUIPMENT

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#### 16.10.1. Safe Practices/Procedures

The following outlines precautionary measures need to be observed when operating mechanical equipment in order to prevent costly accident:

- a. The use of equipment shall be in accordance with Schedule "D" of Contract, CONTRACT / COMPANY Construction Regulations.
- b. Operators of motorized equipment shall always carry with them their Saudi Arabian License when operating motorized equipment.
- c. Only authorized, experienced and SA certified operators shall be allowed to operate/drive mechanical equipment as per Company G.I 7.025 "Heavy Equipment Operator testing and Certification.
- d. Provide guard to all exposed moving parts of machinery, i.e., gears, belts, pulleys, fans, hot parts and revolving parts.
- e. All mechanical equipment shall be inspected regularly before using and at regular Intervals thereafter. Servicing of preventive maintenance schedule shall be strictly observed.
- f. No repairs, adjustment, or replacement of parts shall be permitted on moving machinery. Always stop machine when doing repair works to avoid accidental operation.
- g. Daily, before the start of the work, operator shall check the following items: oil, water, hydraulic levels, signals and indicators system, guards, limits switches and other Safety Equipment to ensure smooth operations. Check stickers, passes/inspection tags and firefighting equipment.
- h. Mechanical equipment shall not be left unattended when running. Parking brakes shall be applied, wheels chocked and engine stopped. Hydraulic parts such as blades, scrapers, etc., must be lowered to the ground.
- i. Maintain cleanliness of all mechanical equipment
- j. While traveling or working near the highway, all signal lights shall be operated. Reflectors, barricades, signs, etc. shall be conspicuously installed.

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- k. Before moving equipment from any position, check around the unit for any obstacles, hazards etc.
- l. Report any abnormalities like noise, smell and unusual conditions whenever noticed in the equipment.
- m. Each piece of equipment shall be provided with a properly maintained fire extinguisher.
- n. Reversing Alarms. (Back-up Alarms) shall be used on all heavy equipment, dump trucks and other equipment as specified during the project.

## 16.9. MATERIAL LAYDOWN YARD

### 16.11.1. Requirements

1. The CONTRACTOR laydown yard and facilities shall include the following:
  - a. Security fence and double-width lock up gates
  - b. Buildings or connex for security of small material items
  - c. Fire equipment (fire extinguishers, water barrels w/buckets, etc.)
  - d. Proper gas cylinder storage with appropriate signs
  - e. Toilets - portable type
  - f. Trash cans with covers
  - g. Dunn age and pallets for placing materials
  - h. Storage for flammable materials
2. CONTRACTOR storage yards shall be laid out in accordance with COMPANY Standards with respect to spacing of rows, concentration within rows, and concentration of materials. Stock-piling of combustible materials shall be interspersed with non-combustible materials. Storage areas and aisles shall be delineated by markers.
3. CONTRACTOR shall submit to COMPANY Representative for review prior to implementation plan, layouts and storage areas for storing materials and

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equipment and additionally, site offices. These storage areas shall be designed and laid out as follows:

4. Adequate access road to the lay down yard and shall be kept clear and unobstructed at all times.
5. Adequate lighting to illuminate the storage yards
6. A system of security men of eight (8) hours shift shall be planned to maintain security in the absence of workers in the site.
7. CONTRACTOR storage yards have been laid out in accordance with COMPANY/CONTRACTOR Standards as indicated in CONTRACTOR Temporary Lay down Yard Drawing.
8. The perimeter fence of sound construction and design appropriate for the intended protection of the area has been provided for materials storage yards.
9. The fence shall be frequently inspected by CONTRACTOR's HSE Supervisor and Security Guard.
10. Two access gate has been provided for the storage area directly opposite to each other.
11. Materials shall be arranged with COMPANY/CONTRACTOR Standards with respect to spacing of rows, concentration within rows, and concentration of materials.
12. Stock-piling of combustible materials shall be interspersed with non-combustible materials.
13. Storage areas and aisles shall be delineated by markers.
14. The access gates are located directly opposite to each other.
15. CONTRACTOR will ensure that flammable storage facility is 3 meter away from the fence and is located in the downwind of the Laydown yard.
16. CONTRACTOR will take care that acetylene cylinders (filled or empty) are stored at least 20 feet away from oxygen materials.
17. Smoke detector plan and local type smoke detectors has been provided for offices & emergency evacuation plan.

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18. Wheeled & portable fire extinguishers has been distributed.
19. CONTRACTOR will post project sign board at the main entrance of Laydown yard.
20. CONTRACTOR will ensure that the Laydown yard has access for firefighting trucks from two sides.
21. First Aid box and arrangements for medical care has been made.
22. CONTRACTOR will take care of welfare facilities such as rest area, drinking water storage, eating area etc.
23. CONTRACTOR will provide assembly points and smoking are in temporary yard.
24. CONTRACTOR will ensure proper grounding to perimeter fence for constructing site and material storage yard.

#### **16.11.2. Material Handling and Storage**

Construction materials are handled can have a considerable effect on the efficiency of production and on the HSE record of the site. Because of the temporary nature of site work and the frequent change of the work place, it is not possible to mechanize material handling to the same extent, as it would be in a more stable operation. However, there are many areas in which Labor intensive, inefficient, costly, and frequently dangerous, manual material handing work can be replaced by the use of machines.

To have an effective material handling and storing Safety and health program, managers must take an active role in its development. First-line supervisors must be convinced of the importance of controlling hazards associated with materials handling and storing and must be held accountable for employees training. An ongoing Safety and health program should be used to motivate employees to continue to use necessary protective gear and to observe proper job procedures.

Instituting these practices, along with providing the correct materials handling equipment, can add a large measure of worker Safety and health in the area of materials handling and storing.

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CONTRACTOR will handle hazardous materials in compliance with G.I. 355.001 “Identifying, Ordering, Receiving, Storing, Issuing and Disposing of Hazardous Materials”.

Refer to the following:

- CSM I-12 Materials Handling and Adequate firefighting equipment shall be readily available and accessible in storage areas.
- CSM Chapter I-7, Fire Prevention, of this manual for further requirements concerning storage areas.

### 16.11.3. Planning

Successful mechanization of material handling requires that the correct machines be available and properly used.

The storage and movement of the various materials must be carefully arranged to make optimum use of the machines so that efficient service can be provided and ensure that all vehicle, crane and heavy equipment operators hold current SAG License and COMPANY Certification where required or third party inspections certificate.

Planning for materials handling operations begins as the production schedule is being drawn. Ensure that the layout of storage areas provides for adequate access for necessary mechanical equipment.

Selection of the storage area should be made with due consideration for drainage and protection from rain and sandstorms.

Open storage areas should be planned to minimize the reversing and maneuvering of trucks especially into and out of confined areas.

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Access ways must be wide enough to allow for the passage of fire trucks. Firefighting equipment should be located throughout the area.

Cribbing timber, racks, or pallets should be used to ensure that all materials are stored off the ground.

Protection should be provided for material such as cement, insulation, and other bulk material, which could be damaged by moisture.

All machinery equipment, and valves should be maintained fully assembled and securely closed. All machined surfaces must be covered and fully protected from exposure to the weather.

Flammable stores shall be kept separated.

Such a policy should greatly reduce losses due to pilferage or damage. Once these factors have been established, the staffing of the storage areas can then be considered.

#### **16.11.4. Potential Hazards**

Handling and storing materials involves diverse operations such as hoisting steel with a crane, driving a truck loaded with concrete blocks, manually carrying drums, barrels, kegs, lumber or loose bricks. The improper handling and storing of materials can cause costly injuries.

Workers frequently cite the weight and bulkiness of objects being lifted as major contributing factors to their injuries. The second factor frequently cited was body movement. Bending followed by twisting and turning were the more commonly cited movements that caused back injuries.

In addition, workers can be injured by falling objects, improperly stacked materials, or by various types of equipment. When manually moving materials, however, workers should be aware of potential injuries, including the following:

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Strains and sprains from improperly lifting loads, or from carrying loads that are either too large or too heavy.

Fractures and bruises caused by being struck by materials, or by being caught in pinch points.

Cuts and bruises caused by falling materials that have been improperly stored, or by incorrectly cutting ties or other securing devices.

Since numerous injuries can result from improperly handling and storing materials, it is important to be aware of accidents that may occur unsafe or improperly handled equipment and improper work practices, and to recognize the methods for eliminating, or at least minimizing, the occurrence of these accidents.

#### Method of Prevention

General HSE principles can help reduce workplace accidents. These include:

- Good work practices.
- Ergonomic principles.
- Training and education.

Whether moving materials manually or mechanically, employees should be aware of the potential hazards associated with the task at hand, and how to exercise control over their workplaces to minimize the danger.

#### **16.11.5. Moving, Handling, and Storing Materials**

When manually moving materials, employees should seek help when a load is so bulky it cannot be properly grasped or lifted, when they cannot see around or over it, or when a load cannot be safely handled.

When an employee is placing blocks under raised loads, the employee should ensure that the load is not released until his hands are clearly removed from the load.

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Blocking materials and timbers should be large and strong enough to support the load safely. Materials with evidence of cracks, rounded corners, splintered pieces, or dry rot should not be used for blocking.

Handles and holders should be attached to loads to reduce the chances of getting fingers pinched or smashed.

Workers should also use appropriate protective equipment. For loads with sharp or rough edges, wear gloves or other hand and forearm protection.

When the loads are heavy or bulky, the mover should also wear steel-toed Safety shoes or boots to prevent foot injuries if the worker slips or accidentally drops a load.

When mechanically moving materials, avoid overloading the equipment by letting the weight, size, shape of the material being moved dictate the type of equipment used for transporting it. All materials handling equipment has rated capacities that determine the maximum weight the equipment can handle and the conditions under which it can handle those weights. The equipment-rated capacities must be displayed on each piece of equipment and must not be exceeded except for load testing.

When picking up items with a powered industrial truck, the load must be centered on the forks and as close to the mast as possible to minimize the potential for the truck tipping or the load is falling.

A lift truck must never be overloaded, because it would be hard to control and easily tip over.

Extra weight must not be placed on the rear of a counterbalanced forklift to offset an overload.

The load must be at the lowest position for traveling, and the truck manufacturer's operational requirements must be followed.

All stacked loads must be correctly piled and cross-bridged, where possible.



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Stored materials must not create a hazard. Storage areas must be kept free from accumulated materials that may cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests.

When stacking and piling materials, it is important to be aware of such factors as the materials height and weight, how accessible the stored materials are to the user, and the condition of the containers where the materials are being stored.

All bound materials should be stacked, placed on racks, blocked, interlocked, or otherwise secured to prevent it from sliding, failing or collapsing.

Where applicable, load limits should be conspicuously posted in all storage areas.

When stacking materials, height limitations should be observed. For quick reference, walls or posts may be painted with stripes to indicate maximum stacking heights.

Used lumber must have all nails removed before stacking. Lumber must be stacked and leveled on solidly supporting bracing. The stacks must be stable and self-supporting.

When masonry blocks are stacked higher than 6 feet, the stacks should be tapered back one-half block for each tier above the 6-foot level.

Bags and bundles must be stacked in interlocking rows to remain secure. Bagged material must be stacked by stepping back the layers and cross-keying the bags at least every ten layers. To remove bags from the stack, start from the top row first. Boxed materials must be banded or held in place using crossties or shrink plastic fiber.

Drums and barrels must be stacked symmetrically. If stored on their sides, the bottom tires must be blocked to keep them from rolling. When stacked on end, put planks, sheets of plywood, or pallets between each tier to make a firm, flat, stacking surface. When stacking materials two or more tiers high, the bottom tier must be chocked on each side to prevent shifting in either direction.

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When stacking consider the need for availability of the material. Material that cannot be stacked due to size, shape, or fragility can be safely stored on shelves or in bins.

Structural steel, bar stock, poles, and other cylindrical materials, unless in racks, must be stacked and blocked to prevent spreading or tilting.

Pipes and bars should not be stored in racks that face main aisles; this could create a hazard to passers-by when supplies are being moved.

## 16.10. EXCAVATIONS

All excavation work shall be carried out according to COMPANY Management Safety Guide 06-002-2008 (Excavation and Shoring), COMPANY Construction Safety Manual CSM II-1 Excavation & Shoring describes minimum safety requirements for excavation and shoring activities, including trenches and OSHA requirements.

A documented inspection shall be performed by an excavation competent person before workers are allowed to initially enter an excavation or after a change in site conditions (e.g., rain storm, groundwater infiltration, sidewall deterioration, adjacent ground fissuring). For excavations greater than 2.4 m (8 ft) deep, a documented inspection by the excavation competent person shall be performed each morning before workers shall be allowed to enter the excavation.

Hard barricades (e.g., concrete or water-filled plastic “jersey” barriers, metal fencing) shall be used to keep motor vehicles, cranes and heavy equipment at the proper distance away from the excavation

### 16.12.1. General

Excavation which are not shored or supported can collapse without warning, required to be suitably shored, benched or sloped back to a safe angle of repose, depth and soil composition.

Before starting an excavation, plan shall be prepared and submitted to CONTRACTOR/ COMPANY Representative for concurrence.

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Before excavation activities begin, the following factors shall be evaluated by an excavation competent person who has the proper training and/or experience

#### **16.12.2. Procedure:**

In any excavation or trench more than 1.20 m (4') deep there is a risk of material collapsing or falling. Proper timbering, shoring or sheeting will be used to safeguard personnel. Proper sloping may also be considered where allowable work area permits access.

A standard method of protecting workers from cave-ins will be employed and will be determined by a competent person. Those methods may be any one, or a combination of the following:

For excavations greater than 2.4 m (8 ft) deep in Type B or C soil, an excavation plan (e.g., shoring design calculations and drawings) that meets the requirements of this chapter shall be developed by a degreed civil/structural engineer. See Table 1.1 of CSM II-1

For excavations greater than 6 m (20 ft) deep, regardless of soil type, an excavation plan (e.g., shoring design calculations and drawings) that meets the requirements of this chapter shall be developed by a degreed civil/structural engineer and reviewed by the SA Consulting Services Department (CSD)

#### **1. Shoring**

Hydraulic, timber or mechanical systems that support the sides of an excavation, designed to prevent cave-ins.

#### **2. Hydraulic Shoring**

A pre-engineered support system of aluminum hydraulic cylinders (cross-braces) used with vertical rods (uprights) or horizontal rods designed specifically to support side walls of an excavation to prevent cave-in.

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### 3. Benching

A standard method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal steps, with a vertical rise between steps.

### 4. Sloping

A method of excavating in which the sides of an excavation are laid back to a safe angle to prevent cave-ins. (The safe angle required vary with different types of soil, exposure to the elements and superimposed loads. There is no single angle of repose. Soil classification must be identified to select safe sloping and benching methods.)

### 5. Trench Boxes

A structure that is able to withstand the forces imposed on it by cave-ins, and in the process, protects employees inside the structure.

### 6. Inspections

Excavations and trenches will be inspected prior to the selection of a protective method and a soil classification will be determined. Inspection will be performed by Civil Foreman and certified issuer before releasing work permit. Work permit is necessary in this operation.

This categorizing of the soil and rock deposits will be placed into 3 types of stability. Those types (A, B, and C) will be decreasing order of stability. Soil type is determined by analysis of the soil's properties, and how it performs under exposure to the elements, and superimposed loads.

Thereafter, and each day, prior to the entry of personnel

AND

After any explosive charges have been fired,

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AND  
After heavy rain or flooding,  
AND  
After any collapse, failure of timber, shoring, or damage to same, an inspection will be performed prior to workers entering the excavation.

## 7. Checklist

All parts of an excavation shall be inspected every day by a competent person to ensure that there is no danger. All observations shall use an "Excavation Safety Checklist" to document initial/daily observations.

An excavation inspection checklist shall be completed and signed each day by the excavation competent person. When upon inspection an unsafe condition is discovered, workers shall not be allowed to enter the excavation until corrective measure has been provided or controlled.

A list of all excavation shall be maintained by the excavation competent person.

### 16.12.3. Excavation of 4 feet or deeper (Confined Space Entry)

Where an excavation is classified as under Confined Space, additional safety requirement shall be taken.

In order to begin excavation work with minimum risk to men, plant and equipment and to enable the work to proceed without interruption, the following must be considered well before the job starts:

- Size and purpose of the excavation
- Nature of the ground including the proximity of made-up ground
- Stability of adjacent structures
- Position of underground obstructions such as pipes, electric cables, and other utilities

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- Weather and soil vibrations (highway traffic, railroads, machinery, etc.)
- Adjacent roads and footpaths
- Method of excavation
- Excavation plan submitted to Loss Prevention.

Consideration of these factors will indicate the HSE measures which must be implemented to proceed with the job and whether the sides of the excavation can be slopped and benched to a safe angle or whether other protective system will be required. It is important to provide adequate and suitable protective systems for use whenever excavation work is carried out to a depth of 1.5 meters or more. Excavation work to a depth of less than 1.5 meters (5 feet) may require protective system.

Contractor will follow the COMPANY Management Safety Guide 06-002-2008 (Excavation and Shoring), COMPANY Construction Safety Manual and OHSA Requirements for all excavation activities.

As soon as an excavation reaches a depth of 1.2 meters (4 feet) or soil banks are greater than 1.5 meters (5 feet), suitable shoring shall be installed or the sides sloped back to a safe angle.

Contractor Confined Space Entry Procedure and Program shall be the basis for the guidelines and implementation and the contractor shall designate a competent person (Supervisor) to handle the program for strict implementation.

#### 1. Inspection

All parts of an excavation shall be inspected every day by a competent person to ensure that there is no danger of collapse and all observations shall use an "Excavation Safety Checklist" to document initial/daily observations.

#### 2. Clearance

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In order to prevent a safe footing at the edge, and prevent spoil falling into an excavation, a clear space of at least 0.6 meters (2 feet) wide shall be maintained on all sides.

### 3. Mechanical Excavator

Men shall not be permitted to work underneath loads or in places where they could be stuck by any part of the mechanical excavators.

### 4. Access and Egress

Safe means of getting into and out of an excavation shall be provided at intervals not exceeding 7.5 meters (25 feet). Ladders shall extend at least 0.9 meters (3 feet) above the stepping-off point. Ladders shall be securely fixed.

### 5. Ventilation

Where there is reason to suspect oxygen deficiency or the presence of hazardous atmosphere in an excavation, gas test must be carried out by a qualified person. Where necessary, mechanical ventilation shall be used or other appropriate precautions shall be taken before men enter.

### 6. Hazardous atmosphere

Prior to entry into exaction greater than 4 feet deep, or confined spaces, a work permit shall be issued. Gas tests shall verify that the oxygen level is 20-21%, combustible gases 0.0 level, and H2S is 0 ppm. For elevated levels of gases tested follow requirements of GI 2.100.

- Precautions shall be taken to prevent employee exposure to an atmosphere containing a concentration of any flammable gas above it lower explosive limit (LEL).
- For an atmosphere with concentration of any flammable gas below its lower explosion limit (LEL), use guidelines given in GI 2.100 (Work Permit System) as below:

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- Above 0.0 LEL – No Hot Work Permitted
- 0.05 LEL to 0.5 LEL – Breathing apparatus must be used
- Above 0.5 LEL – No Entry Permitted
- When controls are used that is intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that atmosphere remains safe.

#### 7. Emergency rescue equipment

- a. Emergency rescue equipment such as breathing apparatus, a Safety harness and line, or a basket stretcher, shall be readily available where hazardous atmosphere conditions exist or may develop during work in an excavation.
- b. Employees entering bell-bottom pier holes, or other similar deep and confined footing excavation, shall wear a harness with a life line attached to it. The lifeline shall be separate from any line use to handle materials, and shall be individually attended at all times while the employee wearing the lifeline is in excavation. Mechanical devices shall be available to lift incapacitated employees from excavation.

#### 16.12.4. HSE Rules To Be Implemented

“Spoils” shall not be closer than two (2) feet of any excavation or trench and equipment must be at least 2 meters away from the edge of excavation.

Access ladders will be placed every twenty-five feet, and extend three feet above the top of the excavation or trench. Ladders shall be placed at an angle of 75°, and extend at least 0.9 meter (3 feet) above the stepping-off point. Ladders shall be securely fixed.

All material used for timbering or shoring must be inspected before use and defective material must not be used.



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Uncontrolled ingress of water will not be permitted while persons are working within the confines of any trench or excavation.

Mechanical excavation methods shall not be used until the presence and location of underground cables, pipes or vessels has been determined.

Mechanical excavation methods will not be used directly over the heads of personnel in trenches.

#### 1. Maximum Allowable Slopes

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V) [1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP [3]
STABLE ROCK	VERTICAL (90°)
TYPE A [2]	¾:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1-1/2:1 (34°)

#### Notes:

Numbers shown in parentheses next to maximum allowable sloped are angles expressed in degrees from the horizontal. Angles have been rounded off.

A short-term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth.

Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m)

If any existing structure is likely to be affected by excavation work approved shoring or supports must be provided to prevent collapse of that structure.

Open trenches, excavations, shafts or pits will be clearly marked and barricaded. Whenever it is necessary to place, or operate power shovels, derricks, trucks materials, soil banks or other heavy objects, on a level above, and near an excavation, the side of the excavation shall be sheet-piled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads. When mobile equipment

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is utilized or allowed adjacent to excavations, substantial stop logs or barricades shall be installed. If possible, the grade shall be away from the excavation. If men or vehicles are in the vicinity after dark, fixed warning lights shall be used to mark the limits of the work.

If access for personnel is required over any open trench, excavation or pit, it will be via a bridge access fitted with secure guardrails.

All shoring data, not addressed by OSHA, must be approved by a Registered Engineer prior to installation. This included all sheet piling, timber shoring, and/or trench boxes.

## 2. Before Work Starts

In order to begin excavation work with minimum risk to men, plant and equipment and to enable the work to proceed without interruption, the following factors must be considered well before the job starts:

- Size and purpose of the excavation.
- Nature of the ground including the proximity of made-up ground.
- Stability of adjacent structures.
- Position of underground obstructions such as pipes, electric cables, and other utilities.
- Weather and soil moisture conditions, especially high water table.
- Sources of soil vibrations (highway traffic, railroads, machinery, etc.).
- Adjacent roads and footpaths.
- Method of excavation.

Consideration of these factors will indicate the HSE measures, which must be implemented, to proceed with the job, and whether the sides of the excavation can be sloped and benched to a safe angle, or whether other protective systems will be required. It is important to provide adequate and suitable protective systems for use whenever excavation work is to be carried out to a depth of 1.5 meters (5 feet) or

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more. Excavations work to a depth of less than 4 feet may also require protective systems.

### 3. Work Permit

In operating facilities, work permits must be obtained from the appropriate authority before excavation work is started. A confined Space Entry Work Permit is a second work permit and is required for trenches deeper than 1.2 meters (4 feet).

### 4. Hazardous Atmospheres And Materials

#### a. Ventilation

Where there is reason to suspect oxygen deficiency or the presence of a hazardous atmosphere in an excavation, gas tests must be carried out by a qualified person. Where necessary, mechanical ventilation shall be used, or other appropriate precautions shall be taken before men enter.

Note: Toxic, oxygen and flammable gas tests are to be conducted before entering hazardous excavations in Restricted Areas.

#### b. Hazardous Atmospheres

Prior to entry into excavations greater than four feet deep or confined spaces, a work permit shall be issued. Gas tests shall verify that the oxygen level is 20-21%, combustible gases 0.0 LEL, and H<sub>2</sub>S is 0 ppm. Corrective measures may include use of air movers, identification and isolation of sources from fuel lines, sewers, open tanks or other measures to return the breathing atmosphere to normal readings. Subsequent testing is required to monitor the area during the work so appropriate precautions can be taken as necessary.

#### c. Emergency Rescue Equipment

Emergency rescue equipment, such as breathing apparatus, a Safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may develop during work in an excavation.

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Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, will wear a harness with a lifeline attached to it. The lifeline will be separate from any line used to handle materials, and will be individually attended at all times while the employee wearing the lifeline is in the excavation. Mechanical devices shall be available to lift incapacitated employees from excavations.

#### d. Exhaust Gases

Where an internal combustion engine is used in an excavation, special precautions must be taken to ensure that exhaust gases are discharged so as not to be a hazard to men working in the excavation.

### 16.11. FIRE PREVENTION AND CONTROL

Contractor and its sub-contractor/s shall be specially instructed on how to prevent fires at job sites. Adequate firefighting equipment shall be provided at each area where work is underway, including warehouses, storage yards, and work site offices and accommodations. A diagram showing the different locations of each firefighting equipment and evacuation plan shall be posted on conspicuous locations. Firefighting appliances shall be provided in all areas, all fire escape routes and exit doors, alarm points and firefighting shall be kept clear at any obstruction at all times and maintained in good condition.

Contractor and Sub-contractor are mandated to participate and coordinate to any Saudi ARAMCO Loss Prevention Department and contractors Fire Drills, Training and or Workshops/seminars that intend to benefits both the client and the contractors, and this schedule shall form part of the CONTRACTOR SITE SAFETY PROGRAM.

#### 16.13.1. Fire Prevention

Fire prevention will be given the highest priority by CONTRACTOR on the project.

CONTRACTOR will conform to CONTRACTOR Procedure and COMPANY GI 1781.001 for the proper use, inspection and maintenance of firefighting / protection

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equipment and comply with the Section of I chapter 11.0 “Fire Prevention” of COMPANY/CONTRACTOR Construction Safety Manual.

All firefighting system will be designed and provide in conformity with AMIES-B-017 and SAES-B-019.

### **16.13.2. Fire Classification**

On this project we will be dealing with the following classifications of fire:

#### **Class A**

Fires involving solid materials such as wood, paper, textiles etc.

#### **Class B**

Fires involving flammable gases and liquids such as gasoline, oil, thinners, paint or liquefiable solids such as grease, and tar.

#### **Class C**

Energized Electrical Equipment fires, involving wiring, motors, panels, switches, generators or appliances.

#### **Class K**

Fires involving combustible cooking fluids such as oils and fats.

### **16.13.3. Types of Extinguisher**

CONTRACTOR will be using two types of cylindered fire extinguishers available on this project:

- ABC Dry Chemical Power
- Carbon Dioxide

Placement of Extinguishers. Placement of firefighting equipment on the site will be in accordance with CONTRACTOR Procedure and COMPANY G.I. 2.711.

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Work sites shall be provided with the numbers and types of fire extinguishers suitable for the hazards, and as needed to meet the requirements of NFPA 10 and SAES-B-019. Fire extinguishers and other firefighting equipment locations shall be clearly marked on site layout plans

#### **16.13.4. Servicing (Extinguisher)**

All fire extinguishers will be checked / serviced on a monthly basis. This service will include the following:

- Check extinguisher is numbered and in the correct location.
- Check for signs of having been used i.e. traces of powder, fall in pressure, Safety pin removed, broken seal. Recharge as necessary.
- Check hoses, nozzles, brackets and extinguisher for damage or misuse.
- Complete monthly inspections report form, and retain at site HSE office.
- Check hydro-test date on extinguisher. Remove from service if expired.
- Fire protection systems and equipment, whether temporary or permanent, shall be inspected and maintained in accordance with GI 1781.001

#### **16.13.5. Training**

Employee fire extinguisher training and periodic fire drills shall be conducted on a quarterly basis and documented.

Personnel and Administration Manager shall ensure the following:

- That an appropriate number of office staff are assigned with the responsibility to act as fire wardens, with the duties of marshalling and controlling the evacuation of premises. There shall be a minimum of two marshals for each muster point. They will be adequately trained.
- The office staff (in particular new status) are briefed and kept updated on fire and emergency response procedures, including muster points.

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#### **16.13.6. Fire Brigade Members**

Fire and Rescue Leader is assigned to Contractor HSE Manager

Fire Brigade Members will be organized by Contractor HSE Manager at site.

The related training and drill will be implemented on a quarterly basis to maintain their qualifications and response effectively in case of emergency events.

##### **1. Instructions**

- a. Stop working and immediately unplug all equipment in your area.
- b. Check the location of fire.
- c. Wear proper gear for body protection and proceed to the fire scene without delay. Get in touch with the brigade leader for instruction.
- d. Put out the fire using the right type of fire extinguishers.
- e. Check that all the occupant of building or premises are out except those actually engaged in the operations.
- f. Appraise the situation if fire cannot be controlled or is endangering the neighborhood. Dial (to be announced later) of COMPANY / CONTRACTOR for assistance.
- g. Help restoring displaced items after the emergency.
- h. Perform other assigned duties and responsibilities immediately.
- i. Submit investigation report to all encountered.

#### **16.13.7. Fire Safety Practices / Procedures**

##### **1. Instructions**

The following activities shall be observed to check the sources of fire danger:

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- a. Regular clean-up of scrap materials, saw dust, wood shavings, rags, oil and grease and other residue of construction operation shall be made.
- b. Frequent inspection of work area at least before the start of each shift of the following items shall be done regularly:
  - i. Electrical wiring and equipment.
  - ii. Stores of flammable liquids and materials.
  - iii. The vicinity of welding operations, especially beneath overhead welding. If a particular fire hazard exists in such a location, it shall be either continually watched during and immediately after welding or cutting, or shall be screened with canvas or other fire resistant materials.
  - iv. All places exposed to spark and heat if refuse burning could occur.
  - v. Outdoor and indoor storage areas.
  - vi. Garbage / refuse containers and pick-up point.
  - vii. Firefighting equipment and other emergency appliances locations.
- c. Training of personnel on basic firefighting procedures.
- d. Train and organize a Fire Brigade team.
- e. Enforcement of "NO SMOKING" rules and regulations including discipline.
- f. Proper maintenance of firefighting equipment including alarm system.

#### **16.13.8. Emergency Procedures In Case Of Fire**

1. All personnel to be aware of the COMPANY/CONTRACTOR Emergency Response Plan (ERP), all personnel will follow all procedures. A full course cares will be given to all workers on site through tool box meetings to know what to do in case of emergency. Personnel will initiate communication to seek assistance in case of fire/emergency as per ERP, while attempting to put off the fire, concurrently seek assistance by dialing, or by radio or by the nearest push button.
2. Please refer to the Section 11.6.5.c - Emergency Response Procedure, Action to be taken during emergency.



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### 16.13.9. Contractor Offices / Facilities

#### 1. The person detecting the fire shall:

- a. Immediately turn on the fire alarm system continuously until all the building occupants are aware of it.
- b. If the fire is small and in early stage, grab all the fire extinguisher in the area and direct it upon the fire. Be sure you are using the right type of extinguisher.
- c. If the fire is big out of control leave the area and wait for professional help from Fire Department.
- d. When fire-fighters arrive, clear the area.

#### 2. All employees upon hearing the alarm:

- a. Avoid panic and confusion.
- b. Stop working and immediately shut-off, make safe equipment.
- c. Walk fast to the fire exit, but do not shout, push or cause disorder.
- d. When fire-brigade team arrives, all without specific duties must leave the area so that emergency force can function effectively.
- e. Keep a safe distance from a building. Do not enter the premises until the "Return Work Order" is given by the Fire Fighting Department.

### 16.13.10. Smoking

All of people are strongly prohibited to bring a lighter. Smoking restriction as dictated by CONTRACTOR will be strictly observed. That a "NO SMOKING" policy applies in the bedroom areas. Smoking is prohibited whilst refueling activities are taking place.

### 16.13.11. Reporting a fire

Every fire will be reported by the Supervisor to:

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- Project Director (PD)
- Project Manager (PM)
- Construction Manager (CM)
- HSE Manager (HSEM)

The available of local fire authorities shall be established and defined at mobilization stage.

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## **ATTACHMENT**

# **NIGHT WATCHMAN'S FIRE INSTRUCTIONS**

- 1.0 USE FIRE EXTINGUISHER / WATER BARREL**
- 2.0 CALL: FIRE DEPARTMENT, EMERGENCY NO. XXX (TO BE IDENTIFIED)**
- 3.0 MR. "TO BE ANNOUNCED LATER" OR HIS APPROVED DEPUTY PROJECT MANAGER  
CONTRACTOR  
MOB NO. – "to be announced later"**
- 4.0 MR. – "TO BE ANNOUNCED LATER"  
HSE MANAGER  
CONTRACTOR  
MOB NO. – "to be announced later"**

## **NEAREST TELEPHONE**

- 1.0 CONTRACTOR SITE OFFICE : \_\_\_\_\_**
- 2.0 COMPANY SITE OFFICE : \_\_\_\_\_**
- 3.0 CONTRACTOR SITE OFFICE : \_\_\_\_\_**

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## 16.12. FORM WORK

Formwork and shoring shall be designed, erected, supported, braced and maintained so that it will safely support all vertical and lateral loads that may be imposed upon it during placement of concrete.

Formwork and shoring shall be designed, erected, supported, braced, maintained, so that it will safely support all vertical and lateral loads that may be imposed upon it during placement of concrete.

Formwork supports shall confirm to CONTRACTOR Procedures / COMPANY Construction Standards.

Personnel shall not be allowed under or in close proximity of the formwork during pour operations.

Personnel not engaged in the pour operation shall stay clear of the pour area. A clear area shall be maintained at 1.5 times the highest point of the formwork.

Drawings or plans showing the jack layout, formwork, shoring, working decks, and scaffolding, shall be available at the job site.

Stripped forms and shoring shall be removed and stockpiled promptly after stripping, in all areas in which persons are required to work or pass. Protruding nails, wire ties, and other form accessories not necessary to subsequent work shall be pulled, cut, or other means taken to eliminate the hazardous.

Imposition of any construction loads on the partially completed structure shall not be permitted unless such loading has been considered in the design and approved by the engineer-architect.

Formwork shall be designed, erected, supported, braced and maintained in accordance with SAES-Q-001, ACI 347, ACI 347.2R, ACI SP-4, ANSI/ASSE A10.9, GI 8.001, ASCE 37 and the requirements in CSM II-6 Concrete Construction.

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Drawings and plans shall be prepared for all elevated formwork. These drawings and plans shall show the needed forms, formwork shoring, jack layout, working decks, personnel access scaffolding that is integral with the formwork, etc. Formwork drawings and plans shall be reviewed and approved by a degreed structural engineer. Approved formwork drawings and plans shall be available at the job site. Formwork shall be erected in full compliance with the approved drawings and plans.

#### **16.14.1. Vertical Slip Forms**

The steel rods or pipe on which the jacks climb or by which the forms are lifted shall be specifically designed for the purpose. Such rods shall be adequately braced where not encased in concrete.

Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks.

The jacks or other lifting devices shall be provided with mechanical dogs or other automatic holding devices to provide protection in case of failure of the power supply of the lifting mechanism.

Lifting shall proceed steadily and uniformly and shall not exceed the predetermined safe rate of lift and concrete cure time.

Lateral and diagonal bracing of the forms shall be provided to prevent excessive distortion of the structure during the jacking operation.

During jacking operations, the form structure shall be maintained in line and plumb.

All vertical lift forms shall be provided with scaffolding or work platforms completely encircling the area of placement with intermittent tie breaks to ensure that superimposed loads on the scaffold/work platforms cannot pull down the entire scaffold works.

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Structural engineering design calculations shall be prepared by a degreed structural engineer for all elevated formwork. These calculations shall ensure that vertical and lateral loads to be imposed upon the formwork, including during placement of concrete, will be safely supported.

#### **16.14.2. Tube And Coupler Shoring**

Couplers (clamps) shall not be used if they are deformed, broken, or have defective or missing threads on bolts, or other defects.

The material used for the couplers (clamps) shall be of a structural type such as drop forged steel, malleable iron, or structural grade aluminum. Gray cast iron shall not be used.

When checking the erected shoring towers with the shoring layout, the spacing between posts shall not exceed that shown on the layout, and all interlocking of tubular members and tightness of couplers shall be checked.

All base plates, shore heads, extension devices, or adjustment screws shall be in firm contact with the footing sill and the form material and shall be snug against the posts.

Formwork shoring, personnel access platforms, etc., constructed of scaffolding materials (e.g., tube-and-coupler or system scaffolding components) shall comply with GI 8.001. Formwork shoring constructed of scaffolding materials and supporting an elevated concrete slab/deck more than 300 mm (12 inches) thick shall be classified as a "special scaffold" per GI 8.001.

Fabricated tubular frame scaffolding (see Chapter II-2, Scaffolding) shall not be used for formwork. Other types of metal tubular welded frames that are specifically designed for use as formwork may be used if permitted by the SAPO in consultation with the SA Consulting Services Department CSD).

Tube-and-coupler formwork shoring materials shall meet the requirements of Chapter II-2, Scaffolding. All tubing used for formwork shall be "embossed.

#### **16.14.3. Single Post Shores**

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For Stability, single post shores shall be horizontally braced in both the longitudinal and transverse directions, and diagonal bracing shall be installed. Such bracing shall be installed as the shores are being erected.

All base plates or shore heads of single post shores shall be in firm contract with the footing sill and the form materials.

Whenever single post shores are used in more than one tier, the layout shall be designed and inspected by a structural engineer. Layout shall be submitted to COMPANY for approval.

When forms works is at an angle, or sloping, or when the surface shored is sloping, the shoring shall be designed for such loading.

Adjustment of single post shores to raise formwork shall not be made after concrete is in place.

Fabricated single post shores shall not be used if heavily rusted, bent, dented, re-welded, or having broken weld elements or other defects. If they contain timber, they shall not be used if timber is split, cut, has sections removed, is rotted, or otherwise structurally damaged.

All timber and adjusting devices to be used for adjustable timber single post shores shall be inspected before erection.

Timber shall not be used if it is split, cut, has sections removed, is rotted, or otherwise structurally damaged.

Adjusting devices shall not be used if heavy rusted, bent, dented, re-welded, or having broken weld elements or other defects.

All nails used to secure bracing or adjustable timber single post shores shall be driven home.

All formwork, upon removal, shall be immediately de-nailed and stacked in a neat manner subsequent to reuse or removal.

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#### 16.14.4. Precautionary Measures

1. Coordinating closely with the execution before designing the type of form work and shoring will be needed for the job.
2. Materials to be used shall be able to support super-impose loads that are likely to be encountered.
3. Regular inspection of form work and shoring shall be made to check any change condition of the structure and the soil especially after rainfall.
4. Provide safe means of access when conducting inspection of the structures.
5. Install barricades and warning signs around the area. Jumping over the excavation shall be prohibited.
6. Stripped forms in case of lumber or timber, shall be de-nailed and stored properly away from heat.
7. Construction personnel shall be kept out from under form work when concrete is being poured.

#### 16.13. IONIZING RADIATION

Ionizing industrial radiation, such as x-rays generated by equipment or gamma rays emitted spontaneously by radioactive materials are widely used in industry for non-destructive testing, e.g., testing of welds in pipes and pressure vessels, without damaging the material. The material tested does not retain any radioactivity when testing is completed.

CONTRACTOR ensures to take protective measures against ionizing radiation by following the GI 150.003 and SAEP-1141 standard for ionizing radiation. Use of ionizing radiation equipment shall be per GI 150.003, GI 150.005, GI 150.006 and GI 150.007, as applicable.

##### 16.15.1. Methods of Protection against Radiation

Distance, time and shielding are the usual methods of reducing radiation exposure.



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### Distance

Distance is an effective method of protection because gamma and x-rays obey the inverse square law, that is, the radiation intensity decreases with the inverse square of the distance. Conversely, dose rates at close distances can be extremely high, even for low activity sources. It is essential, therefore, that unshielded sources are kept at a sufficient distance from personnel so as not to pose a health hazard to them. A minimum Distance of 50m will be sufficient to protect worker from radiation material used for pipe x-ray and present available testing methods.

### Time

Time is a useful method of protection because high dose rates can be accepted over very short periods of time. However, the cumulative dose must remain at acceptable limits.

### Shielding

To lessen harmful radiation, materials of high density, such as lead, depleted uranium, or tungsten, are used to absorb emitted radiation.

In the use of x-ray equipment, precautions against emitted radiation shall be taken until the electric power is turned off and locked out. The radioactive materials constantly emit radiation and cannot be switched off. Consequently, to absorb unwanted radiation and facilitate handling, sealed sources are housed in shielded containers or bunkers.

#### **16.15.2. Classification of Personnel and Exposure Limits**

The workers are classified as either radiation workers or non-radiation workers according to their training and need to use radiation sources. HSE procedures and adequate equipment shall be used at all times.

### Radiation Workers

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A radiation worker is an occupationally exposed person or employee whose job involves routine use of ionizing radiation and who has reasonable chance of being exposed to radiation from a radioactive source.

Radiation workers are further categorized as Competent Persons or Radiographers. Competent Persons do not normally use radiation sources, but by training and experience are capable of supervising both routine operations and emergency situations involving radiation. Radiographers are expected to safely use radiation sources in the course of their work and must be in possession of a valid "COMPANY Permit to Use Material/Equipment Producing Ionizing Radiation" before they can work with a radioactive source.

Radiographers must wear two personal dosimeters when working with radiation, a direct reading pocket dosimeter and an integrating permanent dosimeter (film badge or Thermo Luminescent Dosimeter (TLD)).

### Non-Radiation Workers

Non-radiation workers shall not receive more than prescribed dose limits.

### Exposure Limits

Radiation doses to workers shall always be kept as low as reasonably achievable (ALARA). Under no circumstances shall doses exceed prescribed limits for occupational or non-occupational people.

Over exposure shall be reported to the COMPANY/CONTRACTOR proponent, the Occupational Medicine Services Unit, and the Loss Prevention Department.

### Responsibilities for Safe Handling

The Radiation Protection Committee has full responsibility in all matters concerning the safe use, storage, and transportation of industrial sealed sources and x-ray machines used on COMPANY/CONTRACTOR property.

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CONTRACTOR shall appoint competent persons to be responsible for the immediate supervision and the enforcement of instructions and standards. Personnel involved in performing non-destructive testing shall be certified and hold a valid "Permit to Use Material/Equipment producing Ionizing Radiation".

#### Radiation Safety Officer (RSO)

Appointed by the Non-Destructive Testing (NDT) Contractor and certified by Saudi Arabian Government and approved by AMIRAL, the Radiation Safety Officer is the competent person responsible for ensuring the correct application of ALARP principles by the NDT Contractor.

#### Competent Person

Each radiographer will check at the beginning of each shift on the zeroing and recharging of dosimeters and on the condition of the equipment. A competent person familiar with all of COMPANY/CONTRACTOR radiation use requirements will make field audits and report the results of these audits to the applicable department responsible for the operation. He shall be capable of taking proper corrective action in any emergency situation involving radioactive equipment.

#### Radiographer

At the start of each shift, radiographers shall ensure that all equipment is in safe working order. All malfunctions must be reported to the supervisor or Competent Person immediately. The radiographer must also make sure that he is wearing a valid TLD or film badge and a direct-reading pocket dosimeter, which has been charged and zeroed. One radiation-monitoring instrument shall be available for each source in use. Equipment shall be transported to the work site with Safety locks in place, and not in an unassembled or open condition.

At the job site and prior to operating with any sealed source, the radiographer shall ensure that non-radiation workers are not subject to radiation levels that would exceed that which is permitted. Radiation areas shall contain radiation-warning signs and be clearly displayed around the circumference of the radiation area. In populated work areas, a rope or tape barrier shall be erected around the radiation area. The

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area will be monitored with approved survey meter to ensure safe area for non-radiation workers is maintained.

A weekly report on the condition of all equipment shall be passed to the supervisor.

### **16.15.3. Storage Areas**

Upon completion of work or at the end of each work period, every sealed source shall be returned to a storage area approved by COMPANY under supervision of Radiation Safety Officer (RSO) who is certified the Saudi Arabian Government and approved by COMPANY. Storage is usually within fenced area. All permanent or temporary storage areas (bunkers) shall be approved by COMPANY. Sources may not be stored in the back of a truck whether or not they are under lock and key. Radiation readings must be taken at the perimeter of the storage area and the radiation level must be within the acceptable limits. Radiation signs must be fixed to the barriers of all storage areas.

A log shall be maintained of radiation sources in storage, logged in or out, by source and responsible competent person in charge of source.

## **16.14. ABRASIVE BLASTING AND PAINTING/COATING**

Abrasive blasting and painting/coating operations shall comply with the requirements of G.I. 6.021 and Chapter II-11 of the COMPANY Construction Safety Manual (CSM) and CSM Chapter II-8 Abrasive Blasting.

In addition to the usual hazards with construction activities, workmen engaged in surface preparation and paint application can be exposed to the danger of fire, explosion, chemical burns, toxic fumes, dust and insufficient air. This section of the loss prevention and HSE program explains the hazards related to this work.

Abrasive blasting operators for industrial coating applications shall be tested and certified by a Certified Coatings Inspector (Level II) in accordance with SAEP-316.

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All operators of abrasive blasting equipment shall be instructed and trained in the correct use and hazards associated with abrasive blasting equipment and abrasive materials (e.g., inhalation hazards of grit).

Contractors shall establish equivalent biomonitoring programs (using non-Saudi Aramco medical facilities) for their employees who conduct abrasive blasting for Saudi Aramco. These examinations shall be repeated at least every two years

#### **16.16.1. Flammable Hazards & Precautions Of Coating Materials**

In paints, normally it is the organic solvent vapor that is a flammable and explosion hazard. Hereunder are the precautions to be taken by workers engaged in this activity:

1. No painting work shall be carried out within seventy-five (75) feet of potential ignition source like welding, flame cutting, smoking areas or sparking tools.
2. In confined areas ventilation is required to prevent solvents that tend to be heavier than air and migrate to lower levels. In such case, fresh air inlet of the ventilation system shall be located near the top of the confined space, and the discharge shall be located near the bottom, to eliminate dead air spaces. Supplementary fans may be necessary to ensure good air circulation.
3. All electrical lighting and equipment shall be explosion-proof when required in areas where solvent vapors are likely to be present and all equipment must be properly grounded and have GFCI's.
4. All electrical equipment such as switches, panel boards, electrical motors and associated equipment must be de-energized before spray painting to eliminate explosion hazards.
5. The use of storage of flammable paints and solvents shall be kept to restricted areas and these areas shall be suitably marked with the appropriate warning signs. Flammable paints shall be kept in a special building or in a sun shelter.
6. Suitable fire extinguishers shall be located at the work area.
7. Work areas shall be kept as clean as possible.

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### 16.16.2. Compressors

Air compressors supplying breathing air shall be inspected, tested, used, and maintained in accordance with Chapter III-2, Mechanical and Heavy Equipment.

Air compressors supplying breathing air shall be tested quarterly by an independent SA approved third-party testing facility to ensure that the air quality supplied by the compressor meets Compressed Gas Association Grade 'D' air quality requirements.

Breathing air compressors shall be properly placed to prevent contaminants from entering the compressor intake (e.g., upwind of any internal combustion engines).

1. Utmost care shall be taken while using compressor on this job.
2. Compressor shall not be used to dust off clothing or machinery.
3. No horseplay with compressed air.
4. When compressed air is used in special cleaning/purging tasks, one shall wear goggles and full face shield.
5. Compressors shall be inspected, tested and maintained. Relief valves shall be installed in accordance with SAES-A-004 and the air receiver shall be periodically inspected.
6. Before start-up a daily check shall be made of the compressor's pressure relief valve, fuel, oil and water levels and the air reservoir shall be drained of trapped water.

The operating manual for the particular type of compressor used shall be strictly followed.

7. When compressors supply air for breathing:
  - a. The air intake shall be located so that it does not draw in exhaust gas.
  - b. There shall be a filter to remove oil mist.
  - c. They shall be equipped with an automatic high temperature alarm.
  - d. The breathing air compressor must be certified at least every six months by a third party.

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- e. All air compressors supplying breathing air shall meet the requirements of Grade D breathing air compressors.

### 16.16.3. Prevention of Health Hazards

Many solvents and coatings contain hazardous ingredients. A copy of the appropriate Material Safety Data Sheet shall be obtained for all materials used, studied carefully, and the required precautions implemented. The following precaution shall minimize health hazards:

1. Identify and seal all toxic materials when not in use.
2. Adequately ventilate all painting areas.
3. All workmen spray painting shall wear chemical cartridge respirators or airline hoods depending upon the hazards of the paint.
4. Minimize dust during surface preparation, and dispose of coating residue.
5. Wear the appropriate personnel protective equipment for the work being carried out.
6. Avoid touching any part of the body and wear protective equipment when handling solvents that affect the skin. Personnel involved in painting shall wash thoroughly before eating and at the end of the day.
7. Use ventilation control or respirators when working with paint removers containing toxic solvents.

### 16.16.4. Procedure

This procedure provides guidance for the protection of personnel engaged in grit blasting, or other abrasive blasting operations such as sand, iron shot, copper slag etc., which involve air contaminated with high concentrations of rapidly moving abrasive particles. All operators must possess a valid COMPANY/CONTRACTOR certificate.

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General requirements for abrasive blast cleaning, outlined in GI 6.021 will also be applied.

## 1. Protective Equipment

- a. The following protective equipment will be used or worn by personnel engaged in abrasive blasting operations:
- b. An airline respirator of the continuous-flow type with a protective hood to cover the head, neck, shoulders, and chest.
- c. For breathing air equipment, a high efficiency breathing air filter and water / oil traps shall be included in the breathing air delivery system to remove moisture, oil mist and particulates.
- d. Continuous inline carbon monoxide (CO) monitoring with an audible alarm shall be provided for oil lubricating breathing air compressors, as the filter does not remove CO.
- e. A pressure regulator, with an attached gauge, if the pressure of the compressor exceeds 25 psig.
- f. A pressure relief valve if the pressure regulator shall fail.
- g. An airline hose of not more than 200 feet for each man.
- h. Abrasive blasting operators shall wear an air-supplied hood, type "CE" supplied-air respirator, approved for abrasive blasting operations by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA)
- i. Gauntlet-type leather gloves.
- j. Regular leather shoes or laced boots (Safety toes required).
- k. Clothing made of strong-fiber material to resist flying abrasive material wear or damage.
- l. Adequate hearing-protection devices.

## 2. Inspection And Care Of Protective Equipment



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- a. Interiors of masks shall be cleaned daily. If a mask is worn by other than one person, the mask will be sterilized. All valves and regulators must be checked before each use. The “pet cock” valve at the bottom of the purifier shall be opened daily to remove excess water.
- b. The air supply hood will be cleaned and stored as required for other respirators.

### 3. Air Supply Equipment

- a. The air supply hood will be a non-electrical conductor. Hose lengths will be joined by metal couplings secured to the outside of the hose to avoid erosion and weakening of the couplings.
- b. Nozzles will be attached to the hose by fittings that will prevent the nozzle from becoming disengaged. Deadman controls will be provided at the nozzle end of the hose. Nozzles shall be grounded to dissipate any build-up of static electrical charges.
- c. Safety chains or cable ¼” in diameter will be provided for, and used on, each hose connection to prevent the hose from whipping or thrashing around in case a coupling becomes disconnected.
- d. The blasting nozzles must be equipped with an automatic shut off device (Dead mans handle), which will shut off the flow if the operator loses control of, or drops the nozzle.

### 16.16.5. Work Area

1. Blasting operator clamps must be fitted on the hose, so that it will not twist during operation.
2. All equipment must be properly grounded.
3. The work area will be barricaded and posted with a signboard “NO ENTRY, GRIT BLASTING OPERATION”. Warning signs in English and Arabic will be erected.

### 16.16.6. Precautions

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1. The following precautions shall be followed during abrasive blasting and coating operations:
  - a. Only qualified and SA certified individuals shall operate abrasive blasting and coating equipment.
  - b. All personnel in the area affected by abrasive blasting and coating shall wear proper PPE and respiratory protection (e.g., ventilated hoods).
  - c. Supplied air for hoods or respirators shall be of the proper type (grade D) and the delivery system per the manufacturer's specifications.
  - d. Operators shall inspect compressors and the air delivery system on a regular basis.
  - e. Operators shall perform mechanical integrity testing (i.e., wall thickness measurement) on equipment that will undergo abrasive blasting.
  - f. Only approved abrasive blasting materials shall be used. Silica sand is prohibited as an abrasive blasting material.
  - g. Abrasive blasting and coating equipment shall be properly grounded/bonded.
  - h. A deadman's switch (automatic shut-off) is required on the abrasive blasting nozzle.
  - i. Proper Safety pins and connecting lines shall be in place at all potential disconnect points.
  - j. Fall protection is required for heights above 1.8 m (6 ft.) (e.g., proper scaffolding, work platforms and harnesses).
  - k. Abrasive blasting and coating areas shall be properly contained.
  - l. Proper barricades and warning signs shall be in place.
  - m. Air compressors used to supply breathing air shall be third party certified, quarterly by a SA recognized testing agency.

#### **16.16.7. Power Tool - Manual Cleaning**

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1. Piping work is minimal and we foresee that we will use hand and power tools cleaning on this work. The following briefly covers the HSE aspects of hand and power tools used for surface preparation:
  - a. Particular attention shall be paid to eye protection to guard against flying particles, and where necessary, ear protection shall be used to prevent long term hearing loss.
  - b. Tools shall be correctly selected for the purpose, and also operated and maintained properly.
  - c. Suitable respirators shall be used if contaminant levels exceed permissible exposure limits.
  - d. Extreme care shall be used if tools have the ability to create sparks.
  - e. Equipment such as blast guns and power tools must have automatic controls that shut off the flow of abrasive and propellant if for any reason the operator released the control switch.
  - f. Power tools shall be properly grounded to prevent electric shock.
  - g. Fire and explosion hazards always exist when using solvent, especially in confined areas. Adequate ventilation must be provided.
  - h. Solvent type (WD-40) ANSI standard will be used for cleaning and the hand-tools will be kept in storage cabinets, a record of issue shall be maintained by Storekeeper.

#### **16.16.8. Personal Protective Equipment**

Personal protective equipment is required for the majority of operations that involves surface preparation or paint applications. The amount and type of personal protective equipment depends on the work being carried out and the location. In addition all personnel on potentially hazardous areas must wear Safety shoes, a hard Safety hat and Safety spectacles. Other protective details such as gloves, face shields, overalls and hearing protections shall be addressed.

#### **16.16.9. General HSE In Paint Application**

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There are a number of hazards associated with paint application and this section is concerned with air and airless spraying, together with brush and roller painting. Hereunder are general HSE rules in paint application:

- a. All personnel involved with the application of paint to surfaces shall wear the appropriate personal protective equipment for the work being carried at a given location.
- b. All pressurized equipment shall be handled carefully. Operators and their assistants shall know how to operate and de-energize the equipment in accordance with manufacturer's recommendations.
- c. No spray gun shall be pointed at anyone or part of the user's body.
- d. The spray painting operation shall be conducted from the upwind side of the object being coated, wherever practicable.
- e. Before using airless spray equipment, all guards recommended by the manufacturer shall be in place and the system shall be in good order and correctly grounded to prevent static build-up.
- f. Proper professional medical aid shall be available to any person receiving paint injury.
- g. The area around spray painting activity shall be enclosed by hardboard fence or equivalent to project outside personnel from paint spray.
- h. No hot work shall be carried out close to the paint application area.
- i. Spray painting shall be as per COMPANY/CONTRACTOR Construction Safety Manual and SAES-H-102 Spray Painting Equipment shall be grounded.
- j. Paint fumes will be dispersed by cross ventilation or with air movers.
- k. Non-flammable paints will be used in all location in appropriate.

## 16.15. DUST CONTROL

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Dust shall be controlled by only application of non-condimental, non-salty water. The amount of water used and frequency of application shall be sufficient to present dust nuisance.

Dust masks shall be provided to employees working on site. Moreover, dust masks shall be used as PPE to protect from dust hazard.

#### **16.17.1. Dust Control**

1. The dust control will be compiled and implemented for the construction phase and the following key issues included:
  - a. Routine spraying of unpaved site roads and access roads with water or as more frequently required by the COMPANY
  - b. Limiting vehicle-entrained dust from unpaved roads through traffic control measures e.g. limiting vehicle speeds (20km/h) and restricting traffic volumes.
  - c. Covering of materials with potential to result in dust and air contamination during transportation.
  - d. Where possible, cover construction areas that generate dust with temporary shade-cloth or plastic sheeting to minimize dust generation.
2. Specific Control Actions
  - a. Material Handling
    - i. The heights from which excavated materials are dropped will be controlled to a minimum practical height to limit the fugitive dust generation from unloading.
    - ii. All stockpiles of aggregate will be enclosed or covered entirely by impervious sheeting or sprayed with water or dust suppression chemical so as to maintain the entire surface wet.
  - b. Vehicle Dust

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- i. Effective water sprays will be used on the site to dampen potential dust emission sources such as unpaved areas used by site traffic and active construction area.
- ii. Vehicles transporting materials that have the potential to generate dust will have properly fitting side and tail boards.
- iii. Materials transported by vehicles will be covered entirely by clean impervious sheeting, with the cover properly secured and extended over the edges of the side and tail boards to ensure that the materials do not leak from the vehicle.
- iv. Materials will also be dampened, if necessary, before transportation.
- v. In order to prevent earth movement from the site to outside road due to construction activity, the connected road should be monitoring regularly.
- vi. On-site vehicle speeds (20km/h) will be observed to reduce dust re-suspension and dispersion by traffic within the sites.
- vii. By using water-spraying car upon the unpaved road, fling dust can be prevented.

#### **16.17.2. Excavation**

1. The working area of any excavation or earth moving operation will be sprayed with water before and after the operation so as to maintain the entire surface wet.
2. The amount of soil exposed and the dust generation potential will be kept as low as possible, this can be accomplished by surface compaction, temporary fabric covers, minimizing the extent of exposed soil and the prompt re-vegetation of completed earthworks.

### **16.16. ERGONOMIC SAFETY AND HEALTH PRINCIPLES**

Ergonomics is defined as the study of work and is based on the principle that the job should be adapted to fit the person, rather than forcing the person to fit the job. Ergonomics focuses on the work environment and items such as design and function

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of workstations, controls, displays, Safety devices, tools, and lighting to fit the employee physical requirements and to ensure their health and well-being.

Ergonomics includes restructuring or changing workplace conditions to make the job easier and reducing stresses that cause cumulative trauma disorders and repetitive motion injuries. In the area of materials handling and storing, ergonomic principles may require controls such as reducing the size or weight of the objects lifted, installing a mechanical lifting aid, or changing the height of a pallet or shelf.

Although no approach has been found for totally eliminating back injuries resulting from lifting materials, a substantial number of lifting injuries can be prevented by implementing an effective ergonomics program and by training employees in appropriate lifting techniques.

In addition to using ergonomic controls there are some basic HSE principles that can be employed to reduce injuries resulting from handling and storing materials. These include taking general fire precautions and keeping aisles and passageways clear.

When using aisles and passageways to move materials mechanically, sufficient clearance must be allowed for aisles at loading docks, through doorways, wherever turns must be made, and in other parts of the workplace. Providing sufficient clearance for mechanically moved materials would prevent workers from being pinned between the equipment and fixtures in the workplace, such as walls, racks, posts, or other machines. Sufficient clearance will also prevent the load from striking an obstruction and falling on an employee.

All passageways used by employees should be kept clear of obstructions and tripping hazards. Materials in excess of supplies needed for immediate operations should not be stored in aisles or passageways, and permanent aisles and passageways must be marked appropriately.

## 16.17. SECURITY PROCEDURES

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The theft of equipment and materials from Construction Sites could potentially have a negative impact on the Project times Schedule and profit margin of the Contractor and should be prevented.

Stolen materials not only require replacement with additional associated costs, but could also have severe bearing on Project Completion Dates. This is due to the fact that many parts and materials are supplied to the site from other countries, thus resulting in delays on receiving the necessary replacements and affecting production schedules.

Fires on Construction Sites usually occur outside of the normal working hour (nights, weekends and holiday periods) when there are fewer people around to detect and extinguish the fire.

Effective 24-hour security with regular patrols and laydown area control will assist in preventing major fires and theft of materials and associated equipment.

#### **16.19.1. Identification of Traffic and Pedestrian Control**

##### **1. Site Admittance**

- a. Erection of temporary fences to enclose restricted areas and where applicable separate existing operational facilities from site construction activities.
- b. The plant areas will be fenced to protect from illegal intruders.
- c. No one shall be allowed to enter the site and camp areas unless they show valid identification or are properly badged.
- d. All workmen and visitors shall be issued temporary badges that must be displayed at all times in order to enter and remain on site and camp areas.
- e. The Security station will be established adjacent to main gate.
- f. Provision of adequate, continuous and effective guard force on the site perimeters, at access points and where applicable at vital and hazardous internal areas.



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## 2. Personnel Control

- a. The security supervisor shall issue to all site personnel numbered identification badges that each employee must wear upon their clothing.
- b. The security supervisor must maintain a close control of all the badges issued.
- c. The control records must include;
  - i. The Badge Number;
  - ii. Photo;
  - iii. The name of the person whom the badge is issued to;
  - iv. The date issued;
  - v. Valid period;
  - vi. Induction Course Record.
- d. A badge status list shall be maintained and status changes must be submitted to the Security Team whenever a new employee begins work or an employee is terminated.
- e. The badge system will be in line with the Induction Training Program. Personnel who pass Induction Training will be provided with badges.

## 3. Visitor's Control

- a. All visitors must report to the Security Station.
- b. The guard shall proceed according to the following;
  - i. Request identification.
  - ii. Request visitor's signature in the Visitor's Register.
  - iii. Request the name of the person that the visitor wishes to visit.
  - iv. Notify (by telephone/Radio) the person that the visitor wishes to meet to determine if that person is available.

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- v. Check current visitor listing to determine whether the visitor will be allowed on the site without escort.
  - vi. Issue visitor's badge.
  - vii. Issue Safety helmet and Safety glasses.
- c. In case visitors are not be escorted, they must wait at the security station until escort arrives.
- d. When the visitor returns to the security station to leave, the guard shall proceed followings;
  - i. Log the time out on Visitor's Register.
  - ii. Recover visitor's badge.
  - iii. Recover Safety helmet and Safety glasses if issued.
- e. At the end of the normal working day, the guard shall determine if any visitor is still on the site. If the guard is not able to find the visitor's location, he should notify the security supervisor.

#### 4. Vehicle Control

- a. For material control in and out of the gate(s) a vehicle checking system will be enforced.
- b. Maintenance of a vehicle entry / exit log to include:
  - i. Date and Vehicle Registration Number.
  - ii. Company Name.
  - iii. Number of Persons in the vehicle.
  - iv. Material shipping document and brief description of the load.
  - v. Person or department to whom the material is consigned.
  - vi. Time in and out.
  - vii. Material gate pass number for material leaving the site.
  - viii. Security guards signature.

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### 16.19.2. Security System

1. Valid identification for all employees
2. Night flood lights should be adequate for critical areas
3. Prohibition of Alcohol, drugs and other intoxication substances
4. Prohibition of taking photographs except persons approved in writing.
5. Inform to all subcontractors (if any), regarding the Security systems in force to ensure they comply with the necessary requirements.
6. Inform all persons regarding the consequences in case they violate Security arrangements.
7. Thorough patrols of the Project throughout the night, during weekends or holidays concentrating on fire prevention.
8. Security Supervisors chronological record of event by shifts.
9. Special report of Security incidents shall be given to the HSE Manager (HSEM).
10. Contractor will review with COMPANY the need for emergency plans covering sabotage, strike, terrorist activities etc. and prepare plans as necessary.
11. Immediate notify to Project Management of all thefts and security violations.

### 16.19.3. Communications

Security gates will be linked by telephone if available and/or equipped with 2-way radios of sufficient quantity to guarantee the correct services performances.

Proper communication means in case of emergencies should be established between COMPANY Security and Contractor.

### 16.19.4. Security Patrols

1. Regular and random Security Patrols will be carried out, particularly at night, for the purpose of:

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- a. Deterring acts of theft, vandalism, etc.
- b. Maintaining a fire watch.

#### **16.19.5. Security Guard General Instructions**

The security Guards will maintain an alert attitude and observe carefully, everything taking place in the assigned area.

The security Guard will report all witnessed or reported policy violations and will enforce all orders, rules and regulations as instructed in the post special orders or as directed by the Project Management.

The Security Guard will not leave his post unless properly relieved or unless required to do so in performance of assigned functions.

##### **1. Log Book**

The Security Officer will obey and enter in the post log book all orders received verbally or in writing.

##### **2. Guard Instructions**

In the event of an emergency situation the Security Guard shall follow the instructions stated in the Emergency Plan. In case of situations not covered by instruction, the Security Guard will call the Security Supervisor immediately.

##### **3. False Information**

A Security Officer, who will fully issue false information or makes false statements regarding assignments/responsibilities to follow Security Officers, Security Supervisor or Contractor/SAUDI ARMACO personnel, will be subject to termination.

##### **4. Gratuities**

Security personnel are prohibited from accepting gratuities from anyone for any purpose. Any offer of a gratuity is to be reported promptly to the Site Administration Manager.

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## 5. Statements to News Media

Security personnel are prohibited from making any statement to the press or News media. All such queries are to be referred to the Site Administration Manager.

## 6. Public/Personnel Relations

Security Guard will use discretion and care in the questioning of employee and in the handling of possible irregularities.

Under no circumstance will a Security Guards question a person except in the presence of reliable witness, i.e., under no circumstance will a Security Guard threaten, touch (except in self-defense), assault or coerce in any way, any person.

Every effort must be made by Security Guards to positively identify people who refuse to comply with normal Security instructions. All such instances must be reported immediately to the Security Supervisor.

Security Guards, at all times, must be professional and helpful in their approach to the project work force and in their dealings with the general public. It is expected that they and their work places be clean and tidy at all time, i.e., Main Guard Gate, Offices, etc.

## 7. Problem with instructions

Security Guard who experience difficulty in interpreting instructions, duties, etc., must obtain advice from COMPANY Industrial Security promptly.

## 8. Security Records

- a. The following records will be maintained:
  - i. Vehicle entry log.
  - ii. Identification badge log.
  - iii. Visitor's log.

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- iv. Material gate pass.
- v. Building key log.

## 16.18. DEMOBILIZATION

CONTRACTOR shall remove all the utilities lines both above ground and Underground and perform all excavation, back filling, compaction and importing of additional fill materials required in a safe manner following relevant sections of this CONTRACTOR SITE SAFETY PROGRAM and requirement for Demolition in the Construction Safety Manual. Additionally, CONTRACTOR Company shall remove and dispose of an asphalted road pavement to a government approved dumping area. And ensure areas is as close to original conditions as possible.

### 16.20.1. Demobilization

CONTRACTOR will demobilize, following the completion of work. In a safe manner following relevant sections, separately and in a combination of this program and requirements for demolition in the Construction Safety Manual. All temporary facilities will be removed and disposed off to the CONTRACTOR yard or, in case of unsuitable materials, to a Government approved dumpsite.

### 16.20.2. Demobilization Plan

The site is provided with portable cabins, store container, store shed, water tanks, septic tank, chain link fence etc. to facilitate site activities. The demobilization will be done as detailed below:

1. Portable Cabins :
  - a. Remove all loose materials from cabin such as Table, Chairs, Cub-board, A/C, Fans etc.
  - b. After ensuring removal of loose materials with the work permit procedure duly filled out, isolate electrical power and water connections.

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- c. Remove the wirings and piping, which have been isolated at the particular cabin.
- d. Ensure all fasteners are tight and windows, doors locked.
- e. Barricade the entire area to eliminate unauthorized entry and post red flags.
- f. Position the Trailer / Truck ready and sling the cabin with crane shift the same to the trailer.
- g. Secure the cabin with trailer to provide a safe transportation :
  - i. Ensure cabin is well sealed
  - ii. Within the Trailer
  - iii. Doors and windows closed and locked,

2. Water Tanks, Septic Tanks, Store Container:

- a. Empty the Tanks / Container
- b. Isolate the inlet and outlet connections
- c. Remove the connections and make the tank free for shifting
- d. Barricade the area
- e. Sling the Tank / Container with appropriate slings, lift by crane and place on the Trailer.
- f. Secure the tank to perform a safe transport :
  - i. Ensure Tank Lids / Manhole covers are closed and locked.
  - ii. Tanks well sealed and within the Trailer
- g. Clearance for transportation can be given.

3. Storage Shed / Car Shed / Generator Shed:

- a. Remove the materials from the shed.
- b. Isolate the shed from Electrical Connections.

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- c. Provide proper access to the Roof top.
- d. Ensure workmen for removal of Roof sheet wearing OSHA approved / ANSI standard
- e. (COMPANY) full body harness and fall arrest protection only, fastening and anchoring it to the rigid member.
- f. Barricade the area to prevent entry of men underneath & post red flags as dismantling in progress.
- g. Remove the Roof sheets and stack neatly at one place.
- h. This work shall be suspended if high wind is prevailing.
- i. Remove the pipes / frame works and stack at one place.
- j. Break the concrete Base / Floor with Jack Hammer and designated Operators.
- k. Ensure Operators / Workers wear Safety items :
  - i. Abdomen Guard
  - ii. Dust Mask
  - iii. Hand Gloves
  - iv. Safety helmet
  - v. Safety shoes
- l. Dispose the waste to the designated place.

4. Removal of Fence:

- a. Ensure all materials inside the fence are removed.
- b. Remove the gates.
- c. Remove the chain linked fence connection with the vertical post and roll it.
- d. Secure the roll tightly and load the same mechanically to the truck.
- e. Use Jack Hammer to break the concrete base of the fence post.
- f. Use proper safety elements as mentioned earlier.



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g. Dispose the waste to the demarked place.

h. Stack the pipe posts and set for transport.

5. Generator Removal:

a. Initiate the removal of underground cable, roll it and secure.

b. Initiate Shed Dismantling.

c. Isolate the Generator

d. Remove the exhaust pipes and other fittings.

e. Sling the Generator with appropriate wire ropes.

f. Lift by crane & place over the truck and secure it properly for safe transport.

## 16.19. FALL PROTECTION

SA proponent organizations (SAPOs) and contractor companies performing work at heights shall develop a fall protection plan for the specific work at heights to be performed by their personnel- See CSM II-5 Fall Protection Section 5.3.7

See CSM II-5 Fall Protection for specific requirements

- Suspension trauma safety straps (foot stirrups) shall be provided with each full-body harness.
- Fall arrest equipment shall limit the maximum arresting force on the user's body to 818 kg (1,800 lb).
- Full-body harnesses shall safely support 2,268 kg (5,000 lb) dead weight (i.e., minimum breaking strength) onal Arrest System
- D-rings and snap hooks shall be capable of sustaining a minimum tensile load of 2,268 kg (5,000 lb) and shall be proof-tested by the manufacturer to a minimum tensile load of 1,633 kg (3,600 lb) without cracking, breaking or taking permanent deformation. D-rings and snap hooks shall be compatible to prevent rollout.

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- Snap hooks and carabiners shall be self-closing and self-locking.

### 16.21.1. Purpose

Contractor is to establish means to assess work tasks performed at heights to protect personnel against falls. This can be accomplished by taking actions such as avoiding work tasks performed at heights where possible, using equipment or other controls to prevent falls and having protocols that minimizes consequences if a fall should occur. The purpose of this plan is also to assist personnel with complying with Saudi Aramco Construction Safety Manual Vol. 2 Part II-05 Fall Protection.

### 16.21.2. Overview

This plan applies to CONTRACTOR personnel and subcontractors working at heights above 1.8 meters (6 ft.) above surface for all project activities. Personnel will not be required, nor allowed to perform any duties which require getting close to an unprotected edge, opening, platform, walkway, or utilize elevated equipment unless they are properly protected from falling. Personnel working from a mobile elevated equipment (lifts) must wear a personal fall arrest system which is secured to the platform of the elevated work structure.

### 16.21.3. Definitions

**Anchorage** A secure point of attachment for lifelines, lanyards or deceleration devices.

**Competent Person** A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions associated with the work at height which are hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to solve work at height problems

### Construction Related Activities

Activities that involve building, erecting new structures or processes, relocation of equipment or processes, installation of new processes, etc. This does not include

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typical maintenance activities such as painting, changing of light bulbs or related fixtures, electrical work, preventive maintenance activities, etc.

**Guardrail System** A barrier erected to prevent employees from falling to lower levels. Design requirements must meet SA Construction Safety Manual regulations.

### **Leading Edge**

Means the edge of a floor or roof.

### **Personal Fall Arrest System**

An approved system used to arrest an employee in a fall from a working level. It consists of an anchor point, anchorage devices, connectors, full body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

**Self-Rescue** Reach the fallen employee from the structure and pull the victim back to the safety of the structure.

### **Unprotected Sides and Edges**

Any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp or runway where there is no wall or guardrail system at least 42 inches (105 cm) high.

### **16.21.4. Responsibilities**

Employees must visually inspect their entire personal fall arrest system prior to every use. The inspection will follow the manufacturer's recommendations. Any damaged components must be removed from service immediately.

### **Competent Persons:**

1. Implement all aspects of the plan for work areas under their control;
2. Act as the "competent person" for job sites under their control that contain fall hazards;
3. Evaluate fall hazards in work areas under their control; and
4. Ensure that personnel are informed, trained, and provided with the appropriate

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fall protection systems and equipment to be protected from potential fall hazards associated with job tasks.

5. Inspect the Fall Body Harness on a monthly basis and shall maintained a register of all inspected Fall Body Harness on site.

#### **Supervisors:**

1. Be aware of the requirements outlined in this plan;
2. Provide a means of fall protection (guardrails, personal fall arrest/restraint systems, or Safety monitor) for all work from elevated heights greater than 6 feet for construction work; and
3. Coordinate the correction of fall hazards brought to their attention.

#### **Employees:**

1. Be aware of the requirements outlined in this plan;
2. Use a means of fall protection (guardrails, personal fall arrest/restraint systems, or safety monitor) for all work from elevated heights greater than 6 feet for construction work; and
3. . Report incidents relating to fall hazards to their supervisor.

#### **Subcontractors:**

1. Be aware of the requirements outlined in this plan;
2. Submit site specific fall protection plan for review,
3. Provide a means of fall protection (guardrails, personal fall arrest/restraint systems, or safety monitor) for all work from elevated heights greater than 6 feet for construction work;
4. Coordinate the correction of fall hazards brought to their attention; and
5. Report incidents relating to fall hazards to CONTRACTOR.

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#### 16.21.5. Risk Assessment

All work tasks performed at elevated heights (6 ft.) shall be assessed initially and upon any changes. The risk assessment shall be completed (Attachment 1) to identify if there is a risk of a fall and the control measures to be implemented. This risk assessment can be done as part of a site-wide risk assessment for all routine tasks. For non-routine or modified tasks, the risk assessment shall be done prior to the specific task being undertaken.

#### 16.21.6. Risk Management And Control

Where a risk of a fall from work tasks performed at heights is identified, a control measure shall be determined following the hierarchy of risk control measures (in descending order) to either eliminate the risk or reduce the chance of a fall to as low as reasonably practicable. Only where it is not reasonably practical to use a higher order control may you then use a control at the next lower level:

##### 1. Elimination

Eliminate the risk of a fall completely, e.g. relocate the work to a safe working height, to the ground or existing solid construction with guardrail/walls, etc.

##### 2. Engineering or Substitution

If it is not reasonably practical to eliminate the risk of a fall, reduce the risk by the use of passive fall protection equipment e.g. guardrail, scissor lifts, elevated work platforms, scaffolds, etc. Note: work from any mobile elevated work structure, shall require the additional use of a Personal Fall Arrest System.

##### 3. Personal Fall Arrest System

If it is not reasonably practical to use the above options, the use of Personal Fall Arrest System to arrest a fall after it occurs shall be used.

Note: Body belts are not permitted for use as part of a Personal Fall Arrest System.

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#### 4. Administrative Controls

If none of the above measures are reasonably practical, when possible, the use of documented administrative controls that specify the procedures to be used to mitigate the risk e.g. Warning Line System, Fall Protection Plan, Job Safety Analysis, etc.

##### **A. Personal Fall Arrest System:**

The use of a personal fall arrest system is the required personal protective equipment for falls. A personal fall arrest system consists of a full-body harness, lanyard, and anchorage OR a full-body harness, lanyard, lifeline, anchorage, and deceleration/grabbing device. All fall protection equipment shall comply with ANSI Z359.1 (or equivalent as specified in writing by the SA Loss Prevention Department) and shall be labeled as such. Suspension trauma safety straps (foot stirrups) shall be provided with each full-body harness.

Requirements for a personal fall arrest system include but are not limited to the following:

Full-Body Harness - Only full-body harnesses shall be used.

*Note:* The use of a body belt as fall protection is prohibited.

##### **B. Connecting Device - Shock-absorbing lanyards and lifelines**

1. Lanyards and lifelines shall have a minimum breaking strength of 5000 pounds;
2. Lanyards shall not exceed six feet in length.
3. Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body harnesses shall be made from synthetic fibers;
4. Connecting assemblies shall have a minimum tensile strength of 5,000 pounds;
5. The maximum free fall distance is 1.8 m (6 ft.) for all systems;
6. The maximum deceleration distance is 1.07m (3.5 ft.);

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7. Personal fall arrest systems shall have sufficient strength to withstand twice the potential impact energy of the falling employee;

**C. Anchorage** - Anchorage point and anchorage connector

1. Anchorages used for personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and be capable of supporting at least 5,000 pounds per employee attached;
2. A qualified person shall determine all anchor points, both temporary and permanent. Permanent anchor points shall be properly marked;
3. Personal fall arrest systems shall not be attached to guardrail systems, nor shall they be attached to hoists except as specified in other regulations.

**Maintenance and Inspection**

Personal Fall Arrest Systems and associated devices/equipment shall be visually inspected prior to each use per the manufacturer's instructions for excessive wear, damage and other signs of deterioration. In addition, for general guidance refer to the Inspection and Maintenance Checklist (Attachment 2).

- Periodic inspections shall be documented.
- Defective or out of date equipment shall be immediately removed from service and tagged.
- Personal Fall Arrest Systems that are involved in a fall arrest incident must be taken out of service immediately and permanently. Retractable lifelines must be sent back to the manufacturer for repair and re-certification or destroyed.
- Harnesses, lanyards, and retractable devices must have a legible tag or data plate attached to the device or it must be taken out of service.
- Fall protection equipment must be replaced as required per the manufacturer's instructions.
- Note: Fall protection equipment must be used in accordance with the manufacturer's instructions. This includes weight and size limitations, and must not be altered in any way without the manufacturer's written authorization.

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#### 16.21.7. Rescue Procedures

ERT personnel must ensure that appropriate emergency procedures are established, documented, and communicated to all affected personnel, before any work at height is undertaken.

ERT person must ensure that emergency procedures:

- enable the rescue of personnel in the event of a fall; and
- provide first aid to personnel who have fallen

ERT person must ensure that emergency response shall commence within 15 minutes. The following are examples of emergency response that can be used:

- Self-rescue
- Assisted rescue
- Self-descent device
- High-angle rescue

#### 16.21.8. Aerial Lifts

Aerial lifts include the following types of vehicle mounted aerial devices used to elevate personnel to job sites above ground:

**Articulating boom platforms** are designed to reach up and over obstacles.

**Extensible or telescoping boom platforms** may extend over one hundred feet.

**Scissor lifts** extend into the air via a series of crisscross supports.

#### 16.21.9. Training



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Personnel performing work tasks at heights shall be trained in site-specific fall protection procedures, and any task specific procedures prior to performing any work tasks. In addition, personnel using equipment shall demonstrate an understand how to properly use the equipment. This shall be accomplished through a documented exam. The training shall be conducted by a Qualified Trainer.

Refresher training shall be provided when;

- Changes in the workplace render previous training obsolete,
- Changes in the types of Fall Protection equipment to be used render previous training obsolete,
- Workplace observations indicate that a person has not retained an understanding of the skills
- acquired through their initial training,
- Changes are made to the Fall Protection Plan, or
- A Qualified or Competent Person identifies a need.

#### **16.21.10. Plan Audit**

CONTRACTOR shall perform a documented annual evaluation of the entire Fall Protection Plan to assure its continued effectiveness at protecting personnel against falls and to assure it complies with applicable standards.

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## Attachment 1: Fall Protection Risk Assessment Form

### PART 1: Assessment Details

Site & Location of Assessment:				Date:
Person Performing Assessment:				
List Work at Height Tasks:				
Persons Who May Be Affected:				
Workers Consulted:				
Facilities Service Review and Approval:				
Part 2: Hazard Identification				
Identify Hazards	YES	NO	N/A	Comments
Does the task expose workers to a fall of 4 feet or 6 feet for construction related activities?				
Is the surface fragile, slippery or potentially unstable?				
Is task being conducted on a sloping surface which is difficult to maintain balance?				
Is the task being conducted within 15 feet (5m) of an unprotected edge?				
Is the task being conducted close to a hole, pit or trench in which a person could fall?				
Are there any other factors which increase the risk, or hazard, e.g. power lines, weather conditions, impalement hazards, work above open waters, etc.?				
Are there any existing risk control measures and are they adequate?				

### Part 2: Risk Assessment

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Task		Likelihood	Consequence	Risk	Comment	
Risk Matrix Analysis		Consequence				
		Negligible	Slight	Moderate	High	Very High
Likelihood	Very Likely					
	Highly Likely					
	Likely					
	Unlikely					
	Very Unlikely					
CONSEQUENCE AND LIKELIHOOD CRTIERIA						
Likelihood		Consequence				
<b>Very Likely</b> Expected to occur Likely to occur several times per year Likely to occur frequently		<b>Very High</b> Significant injury of employees, contractors, or the public Significant public interest, media involvement or regulatory intervention Significant impact on business reputation				
<b>Highly Likely</b> Highly probable it will occur Likely to occur several times		<b>High</b> Injury or Hospitalization of employees, contractors, or the public. Moderate public interest, media involvement or regulatory intervention Moderate impact on business reputation				
<b>Likely</b> Possibility of occurring Likely to occur frequently		<b>Moderate</b> Medical treatment of employees, contractors, or the public. Some public interest, media involvement or regulatory intervention Some impact on business reputation				
<b>Unlikely</b> Not expected to occur Possible,		<b>Slight</b> First-aid treatment of an employee, contractor, or a member of the Public				
<b>Very Unlikely</b> Not foreseeable Highly unlikely in the period of contract		<b>Negligible</b> Less than above				

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### PART 3: Risk Control Plan

Hierarchy of Risk Control	Practical?		Detail of Risk Control(s)
	Yes	No	
<b>Level 1</b> <b>Elimination</b> Eliminate the risk of a fall completely, e.g. relocate the work to a safe working height, to the ground or existing solid construction with guardrail/walls, etc.			
<b>Level 2</b> <b>Passive Fall Protection</b> If it is not reasonably practical to eliminate the risk of a fall, reduce the risk by the use of passive fall protection equipment e.g. guard-railing, scissor lifts, elevated work platforms, scaffolds, etc. Work from any mobile elevated work structure, shall require the additional use of a Personal Fall Arrest System.			
<b>Level 4*</b> <b>Personal Fall Arrest System</b> If it is not reasonably practical to use the above options, the use of Personal Fall Arrest Systems to arrest a fall after it occurs shall be used. Body belts are not permitted for use as part of a Personal Fall Arrest System.			
<b>Level 5*</b> <b>Administrative Controls</b> If none of the above measures are reasonably practical, or the risk of a fall still remains, the risk shall be reduced by the use of documented administrative controls that specify the procedures to be used to mitigate the risk, such as Warning Line System, Fall Protection Plan, Work at Heights Permit, Job Safety Analysis, etc.			
NOTE: The selection and use of either a Personal Fall Arrest System, or Administrative Controls must be approved by the Supervisor			

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## Rescue Procedure

Rescue Procedure	Type of rescue	Details
Self-Rescue		
Assisted Rescue		
Self-Descent Rescue		
High Angle Rescue		
<div>Additional Comments:</div> <div></div>		

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## Attachment 2: Inspection and Maintenance Checklist

- Warning: Always read and follow the manufacturer's instructions and warnings contained on the product and packaging before using any fall protection equipment.

**Note:** Only components that are fully compatible with one another shall be used.

- Inspection: All fall protection equipment shall be inspected prior to each use.

**Note:** All items that are found to be defective shall be removed from service.

- Maintenance and Care: Basic care of all safety equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function. Proper storage and maintenance after use are as important as cleaning the equipment of dirt, corrosives, or contaminants. Storage areas should be clean, dry and free of exposure to fumes or corrosive elements.
- Training: All workers shall be trained by a designated Trainer in the proper use of fall protection equipment.
- Regulations: Understand all SA Construction Safety Manual pertaining to fall protection before selecting and using the equipment.
- After a Fall: After a fall occurs, all components of the fall arrest system shall be tagged & removed from service.

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Attachment:

Full Body Harness and Lanyard Inspection Checklist

		MARJAN INCREMENT PROGRAM - PKG 12																		
Full Body Harness and Lanyard Inspection																				
COMPANY																				
No.	Serial No.	D – Ring Incl. Back Pad		Shoulder Strap (Body)		Chest Strap with Adjuster		Leg Strap with Adjuster		Serial No.	Shock Absorber		Line Yard (Double)		Snap Hook (Self Locking)		SUSPENSION TRAUMA STRAP		Issued To	REMARKS
		GOOD	BAD	GOOD	BAD	GOOD	BAD	GOOD	BAD		GOOD	BAD	GOOD	BAD	GOOD	BAD	GOOD	BAD		
1																				
2																				
3																				
4																				
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18																				
19																				
20																				
INSPECTED BY:		COMPETENT PERSON								I.D. No.		Signature:								

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## 16.22. REFUELLING

The accidental release of fuel during handling or dispensing may adversely affect the environment. The following protection procedures are intended to prevent a loss or escape of product and, in the event of a spill, to minimize the impact of the spill on the environment.

### 16.22.1. Hazards

The main hazards associated with fuelling of equipment are:

- Fire or explosion and resultant injury or damage to plant
- Health risks
- Fire or explosion in fuel tanker
- Slips, trips, fall
- Spill to land
- Fuelling equipment overturned / tipped over

### 16.22.2. Procedure For Storing Fuel On Construction Sites

- Where the circumstances require, fuel may be stored in an approved mobile refueling tank.
- Mobile fuelling tanks must be stored in an area where it cannot be hit by vehicles or other equipment.
- The fuel storage area also must be located away from drainage channels.
- All tanks and mobile refueling tanks are to be properly labeled in accordance with the Transportation of Dangerous Goods Regulation.
- Fire extinguishers shall be located near the fuel storage areas and be of a suitable type and size to permit the evacuation of workers during a fire.
- Any worker who may be required to use a fire extinguisher shall be trained in its use.



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- Smoking will not be permitted in the area of the fuel storage facility and "No Smoking" No signs will be posted. Smoking will not be permitted during any fuelling operation. Smoking" signs are to be maintained in good condition.
- Waste oils, lubricants, greasy and oily rags, or other materials subject to spontaneous combustion will be retained in a labeled container used for that purpose exclusively and will be properly disposed of at frequent intervals.
- Appropriate emergency spill equipment will be available in the fuel storage area.
- No "Hot Work" shall be undertaken within 3 meters of a storage zone

#### **16.22.3. Common Measures To Be Taken In All Refueling Operation**

- Fuel tankers shall be regularly inspected
- Fuelling shall not take place within 20m of any hot work activity
- Engines shall be switched off before fuelling
- No smoking shall be permitted during fuelling activities
- DCP fire extinguishers shall be available at the fuelling point
- PPE (site standard plus gloves) shall be worn
- Fueling is a critical activity in terms of safety and environment such as, the fuelling procedure shall be communicated to those concerned to via tool box talks
- Supervisors shall monitor fuelling activities that take place within their area of responsibility.
- Bonding/grounding must be done before any refueling take place.
- Maintain regular inspections of fuel systems and their components. Check for leakage, deterioration, or damage in accordance with Contractor Environmental Management Plan and/or Company Environmental Regulation

#### **16.22.4. Above Ground Storage Tanks**

- All storage tanks for combustible and flammable liquids must be built and maintained in accordance with the regulations and/or standards.

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- Where a storage tank is removed or abandoned, it is permitted to be reused for the storage of flammable liquids and combustible liquids only after having been refurbished and found to conform to acceptable standards.
- Multiple tanks must have a minimum 1m separation between them.
- Tank shall not be placed within 20m of any hot work activity.
- Access to the top of the tank meets legal safety requirements.
- The volumes of fuel are recorded through a meter system.
- Suitable type fire extinguishers must be available within work area as per quantity.
- Establish proper bonding, grounding and isolation components for protection against static charges during loading of tank vehicles when transferring flammable liquids or combustible liquids.
- Volume of the bund area shall be 110% of the volume of the largest tank or 25% of the total volume of all tanks within the bund, whichever volume is greater.
- Ensure fuel storage tank is physically protected against collisions.
- Tanks should be filled to an acceptable safe filling level corresponding to approximately 90% of capacity.
- Use automatic shut-off nozzles.
- Storage tanks must not be overfilled, and precautions must be taken to prevent overflow or spillage by providing continuous supervision of the filling operations by personnel qualified to supervise such operations.
- To help minimize spills while filling the tank, drip trays should be located around the tank.
- A spill response kit capable of containing and absorbing fuel spills must be made available and maintained.
- Signs, indicating that the ignition must be turned off, smoking is not permitted while the vehicle is being refueled, and any other fuelling procedure, must be visible to every driver approaching the dispenser.

#### **16.22.5. Fueling From Storage Tank To Equipment**

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- Identify and know how to operate emergency fuel cut off switch.
- Know location and operation of fire extinguishers.
- Switch off engines.
- Check storage tank hose for residual fuel. If there is residual fuel, handle it carefully to avoid spillage.
- Place drip trays beneath all terminal and in-line connections.
- Remove twists and small loops in the fuel delivery hose. These can cause the hose to fail or catch on bumpers as vehicles move around.
- Insert delivery hose nozzle firmly into the fill pipe of the equipment.
- Start fuel transfer pump to commence fuelling.
- The operation of moving equipment in the immediate area of a fuelling operation shall be suspended.
- Throughout fuel transfer, monitor the pump, connections and delivery pipe for any fuel leaks. If a leak is apparent, discontinue pumping, clean up the leak and recommence pumping.
- Avoid spills by not over-filling the tank.
- Upon completion of fueling, switch off the fuel transfer pump.
- Wipe-up residue and remove drip trays.
- If any spillage has occurred notify the responsible supervisor and take remedial action
- Hang the hose in place on the pump.

#### **16.22.6. Fueling From Mobile Diesel Tanker**

- The location selected for fuelling shall be safe in terms of position.
- Fuelling activities shall not take place on site main traffic access routes.
- The fuel tanker and receiving equipment shall not be parked on any environmentally sensitive surface.

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- The fuel tanker must be grounded while fueling.
- Use automatic shut-off nozzles
- Before fueling a bonding wire must be connected between the frame of the fueling truck or trailer and to the frame of the equivalent truck being fueled to prevent static build-up.
- Receiving equipment shall be parked at suitable position, as far as possible away from adjacent activity in such a way to facilitate approach of fuel tanker.
- Fuel tanker should approach receiving equipment in a safe way, preferably such that when leaving after refueling there is no need to reverse. All reversing should be made with help of one of the helpers acting as signalman.
- Switch off engines.
- Take fire extinguisher, place it in a ready position.
- Check tankers delivery hose for residual fuel from last fuelling operation. If there is residual fuel, handle the delivery hose accordingly.
- Insert delivery hose nozzle firmly into the fill pipe of the equipment.
- Start fuel transfer pump to commence fuelling.
- Throughout fuel transfer, monitor the pump, connection and delivery pipe for any fuel leaks. If a leak is apparent, discontinue pumping, clean up the leak and recommence pumping.
- Valves of the fuel truck and tanks to be locked while not in use.
- Avoid spills by not over-filling the tank.
- Upon completion of fuelling switch off the fuel transfer pump.
- Disconnect the fuel delivery hose, taking care to avoid spillage of any fuel remaining in the line.
- Stow the fuel delivery hose correctly on the fuel tanker.
- Wipe-up residue and remove drips trays.
- If any spillage has occurred notify the responsible supervisor and take remedial action.

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## STATIC ENERGY

During the refueling process or transferring fuel there is a possibility that static buildup could take place and could discharge causing an ignition source causing a fire.

Bonding and grounding are the two basic techniques to prevent the dangers of electric static discharge. This technique should be strictly followed in areas where flammable and combustible liquids are stored, dispensed, or used.

**Bonding:** Bonding is the process of joining two or more objects or containers with electrically conductive wires to neutralize the potential charge between them. Use standard type wire and connectors suitable for the purpose.

**Grounding:** Grounding is the process of connecting one or more objects or containers to the ground and is a specific form of bonding. Grounding may be achieved by attaching a wire conductor between the containers and a water pipe or long copper clad steel rod buried its full length in the ground.

Other safeguards to minimize the static electricity hazards include:

- Turn off your vehicle engine while refueling. Put your vehicle in park and/or set the emergency brake.
- Do not smoke, light matches or lighters while refueling at the pump or when using gasoline anywhere else.
- Do not over-fill or top off your vehicle tank, which can cause gasoline spillage.
- Only use approved (fit for purpose) steel fuel containers.
- Remove small containers from vehicles before dispensing fuel.
- Ground and/or bond all containers before opening and dispensing fuel.
- Physically touch the outside of containers, grounds, and bond wires to bleed excess charges off your body.
- Touch the outside of metal and plastic containers with the fill nozzle before

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opening and dispensing fuel.

- Use labeled safety containers with anti-flashback system installed.
- Do not use old or rusty containers or worn bonding and grounding clamps or worn and frayed wires.
- Turn off all engines and equipment except those used in the fuel transferring process.
- When handling fuels avoid synthetic fabrics. Wear cotton clothing and coveralls to minimize static build up.
- Avoid the use of Velcro on or around fuel dispensing and handling equipment.
- Do not use chamois to filter flammable fuels.
- Do not use radio transmission equipment around refueling system.

## SPILLS

Preventative measures are the best means of avoiding an accidental release of petroleum products. However, in the event of an accidental release, the following will occur:

- The Constructor will have appropriate response equipment available for all phase of the project area.
- Cleanup action will follow the spill contingency plan.
- All spills or suspected spills of petroleum products, on land or into the water, regardless of size, will be reported immediately to the Supervisor.
- All spills should be reported to supervision and HSE.
- The Supervisor will report the spill immediately to the CONTRACTOR Environmental Coordinator.
- All hazardous waste will be disposed of as per EPD requirements

## EMERGENCY

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- Emergency contact number must be provided to all fuel tankers.
- In the event of an emergency, the attendant or fuel truck driver will contact immediately the emergency hot line number 000-0000-000 (To be filled)

## TRAINING

- Training shall be provided to all fuel attendant and fuel truck drivers, also include spill containment and clean-up.
- All HSE training will be recorded using HSE trainings attendance sheet.

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### SIGNAGE FOR DIESEL TRUCK (Sample)



### SIGNAGE FOR DIESEL STORAGE TANK (Sample)

