



شركة تطوير التقنية للمقاولات
Technical Development for Contracting

HSE PLAN

Prepared and Issued by
**TECHNICAL DEVELOPMENT COMPANY FOR
CONTRACTING**

King Fahd road, Al- Muhammadiyah District, Riyadh

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1. GENERAL

The intent of this Safety procedure is to establish safe working practices and standard, which shall be employed on the SITE and to detail the organizational requirements and obligations of AL-JOUDAH CO. works there at.

The purpose of this Project Health, Safety and Environment (HSE) Plan is to provide maximum safety of personnel and property, and to avoid any adverse impact on the environment.

2. REFERENCE:

- Al-Joudah Co Safety manual
- OSHAS 1910 – Occupational Health & Safety Standards.
- British standards international

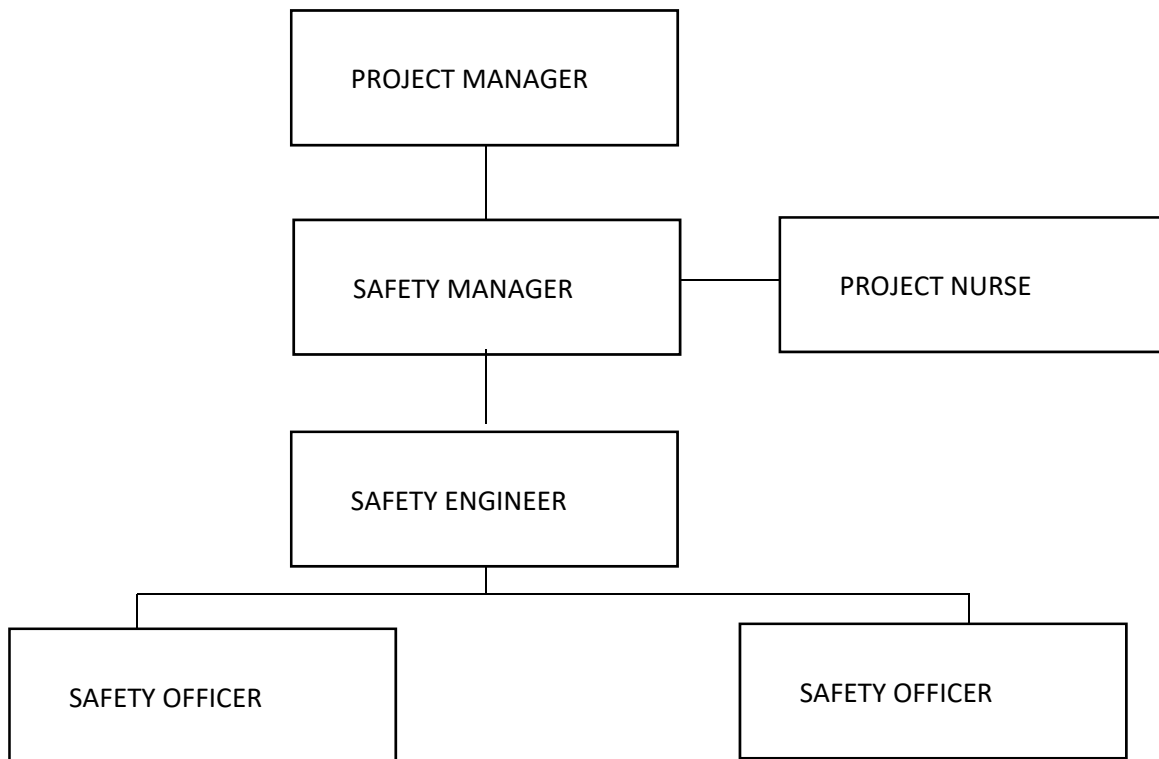
3. ROLES AND RESPONSIBILITIES

Management accepts the responsibility for impressing upon all employees that safety and injury prevention have a high priority at AL-JOUDAH CO. and that all rules and policies will be followed.

- Provides leadership and guidance to middle management for the acceptance, maintenance and enforcement of the Loss Prevention Program.
- Provides resources for training and monitoring the Loss Prevention Program.
- Periodically reviews the safety records and reporting functions.
- Promotes and attends safety functionalities.
- Maintains open lines of communication between employees, supervisors and management relative to the free exchange of safety suggestions and information.
- Monitors the follow-up on recommendations made to improve performance and prevent accidents.

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4.1.1 HSE Organizational Chart



4.1.2 Key responsibilities

4.1.2.1 Project Manager

- Shall assist in the evaluation of approved subcontractors.
- Shall ensure that subcontractors agree with the HSE standards and requirements of Al-Joudah.
- shall comply with the Al-Joudah Safety Manual, legal requirement as per Saudi labor law.
- Shall ensure that disciplinary actions are implemented on non- compliance to safety, safety interactions and violations or refusal to comply.

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4.1.2.2 Construction Manager

- Have the overall accountability for construction SITE health and safety.
- Be accountable for achieving safety goals.
- Be responsible for ensuring that SUBCONTRACTORS implement, administer, plan, train, and enforce the health and safety plan.
- Set up SITE HSE and Security Plan and be responsible for their implementation before starting site activities.
- Use only competent personnel to work on SITE.
- Issue the written instructions setting out the method of healthy and safe work in accordance with the policy on high-risk activities where necessary.
- Plan and maintain housekeeping to high standards.
- Inform the management of Al-Joudah including OWNER's Representative of any accidents, incidents, and mishaps with the potential of injury and illness consequences immediately.
- Cease all activities in the area of an identified health and safety problem until it is resolved.
- Immediately remove from the SITE any people (staff, SUBCONTRACTORS, or third parties) who are not willing to comply with the health and safety requirements.
- Provide health and safety training opportunity to all employees.
- Perform corrective actions for any identified unsafe conditions.
- Be responsible for setting up appropriate training including Refresher training, as needed, to enable managers and workers to assess hazards, and to familiarize themselves with the relevant requirements (legislation, regulation and company standards).
- Determine the supervisor/work force ratio in respect to the competence of the workers.

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4.1.2.3 Safety Manager

- Assist the Construction Manager in the management and execution of health and safety plan.
- Conduct regular SITE inspections and prepare reports for Construction Manager for corrective actions.
- Check and advice on each work plan or procedures for health and safety prior to work commencement.
- Coordinate with health and safety section on matters regarding health and safety.
- Liaise with SUBCONTRACTORS Safety Manager on matters regarding the health and safety of all workers under SUBCONTRACTORS.
- Act in the capacity of secretary to Health and Safety Committee.
- Provide advice, guidance such as may be needed in accident prevention.
- Establish and maintain proper health and safety administrative system.
- Investigate all incidents and accidents and submit reports complete with remedial actions to Safety team of head office through Construction Manager for corrective action.
- Ensure that Safety Supervisor conducts their safety activities
- If safety violations are determined high risk, then stop the work as necessary.

4.1.2.4 Safety Supervisor

- Assist Safety Manager and perform the safety activities under the direction of Safety Manager
- Check each Subcontractor's work plan or work procedures from the view of safety point and report to Safety Manager
- Advise the supervisory personnel of each function for safety activities
- Patrol the construction site daily to check that all subcontractor's works are executed in accordance with the Safety Construction Procedures.

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- Report immediately to the safety manager any violations that may require work to be stopped.

4.1.2.5 Nurse

- Be on duty at job site with full time (except when on emergency calls)
- Care for an injured or sick person and keep the record.
- Plan and execute the hygiene activity program for all workers at work-site.

4.1.2.6 Employee (Worker)

- Comply with safety rules and regulations.
- Work safely and shall not do anything that can cause injury to himself.
- Ensure work tools, apparatus, appliances, materials, and/or equipment including Personal Protective Equipment (PPE) are used correctly and maintained in good serviceable conditions.
- Report any unusual occurrences and all defects of plant and equipment to your immediate supervisor.
- Attend all Tool Box Meetings, other meetings and/or training relating the safety.
- Observe all written and verbal safety instructions issued from time to time by Safety Manager and/or Safety Supervisor.
- Observe and obey all safety signs/notices.
- Develop a personal concern.
- Keep work place clean and tidy.
- Seek medical assistance for all injuries
- Report to the medical Centre

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5. SAFETY CONTROL

5.1. Training Program

5.1.1 Orientation/Induction course

Each (group of) employee(s) of AL-JOUDAH CO. will be given an orientation/induction course under direction of their SM/SE/SO prior to start of any work. The employee shall not be deployed on the job unless introductory briefing from PMC's SM/SE/SO so as to locate project facilities, channels of communication relating to accident prevention & reporting, fire prevention & fire fighting, personal responsibilities, etc. is given.

5.1.2 Toolbox talk

Tool box talk will be conducted periodically in a group of workers of by respective SM/SE/SO's for specific work as required to reach the required level of competencies. During this meeting the hazards involved in the activity and preventive measures will be highlighted. All topics in connection with SITE activities will be covered in the meeting to create awareness among the workers regarding safe practices. It will be done as per job/specific SITE requirement.

5.1.3 Training

Al-Joudah shall arrange training program for their employees to reach the required level of competency in:

- HSE requirements
- Use of PPE's
- Permit System
- Heavy plant & equipment operations
- Fire Fighting & Control
- Emergency Procedures

In addition to the above, training in Electrical Safety, Scaffolding, First Aid, Material handling etc. will also be given to the employees.

5.2. Safety meeting

Objectives of the safety meeting to be conducted by the SM/SE/SO is

- To Ensure application of Safety norms, Rules & Regulation.

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- To Zero down the risk factors to avoid the accidents.
- Enforce to wear the Personal Protective Equipment by all employees work force.
- To meet the emergency AS AND WHEN arises at SITE.
- To carry out periodically safety inspection, discuss the shortcomings & action to set it right.
- To carry out investigation of all the accidents, review & recommend preventive measures to avoid such recurrence and ensure the implementation of the same.
- To discuss & resolve safety observations at SITE.

Records of Safety Meetings and Training Program shall be maintained

5.3. Safety Inspections, Patrol and Audit

In order to monitor effective implementation of HSE requirements at SITE the following periodic inspections, audits and review shall be carried out.

- **Daily site inspection**

Inspections of SITE shall be carried out regularly, prior to the commencement of daily activity, while executing a new activity or during any time of the day by the SITE Engineers/ supervisors, safety officers and all other SITE management personnel. The high potential HSE deficiencies shall be recorded and forwarded to the CM for immediate action.

- **Weekly Site safety patrol**

Weekly SITE safety patrolling shall be carried out by AL-JOUDAH CO.'s SM/SE/. PM and CM can join depending upon the requirement/SITE situation. The findings will be recorded and forwarded to all concerned for remedial action.

- **Site safety audit procedure**

Safety audit is a detailed and organized process. It could be time consuming and requires money but it is more beneficial at the long run. It also helps improve the overall health and safety performance and safety culture.

The audit procedures follow five (5) simple steps:

- **Prefer for audit:** Here you will determine who will do the audit, the scope/objective of

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the audit, review applicable standards, and the result of previous audit.

- Conduct audit: As highlighted in the audit technique above.
- Create an audit report with recommendations: The report should highlight the findings. The findings should be both positives and negatives. The summary of the audit report should include recommended actions and areas that need improvement pointed out.
- Set priorities for corrective action: Recommended actions should be prioritized and execution time attached to it. Some may need immediate action while others may not.
- Publish the audit result: The recommendations and corrections should be adequately communicated. This will help everyone understand the necessary changes and how the change could affect them and their work.

Safety audit will be carried out by Al-Joudah's SM/SE/SO on monthly basis. The comprehensive report of audit will be prepared with action plan and given to all concerned for compliance.

5.4. Work Permit System

Required work permit shall be obtained by AL-JOUDAH CO. from Contractor for specific work as required in the document of client. Concerned employees at SITE will be made aware regarding the basic acquirement of the work permit system.

The permit shall be kept at work SITE during the execution of work. The following are the permits, which shall be obtained as per the standard rules and job requirement.

- Hot Work Permit

A hot work permit is required to carry out any work involving the use of a local source of ignition capable of igniting flammable of gases, liquids or any other materials in a restricted hazardous area. Example: Welding, burning, grinding, blasting, soldering, open fire, opening up of electrical equipment in gaseous area

- Height work permit

Height work permit is required to work at the height above 1.8 meters.

- Electrical Permit

An electrical permit is required for any work on energized electrical system

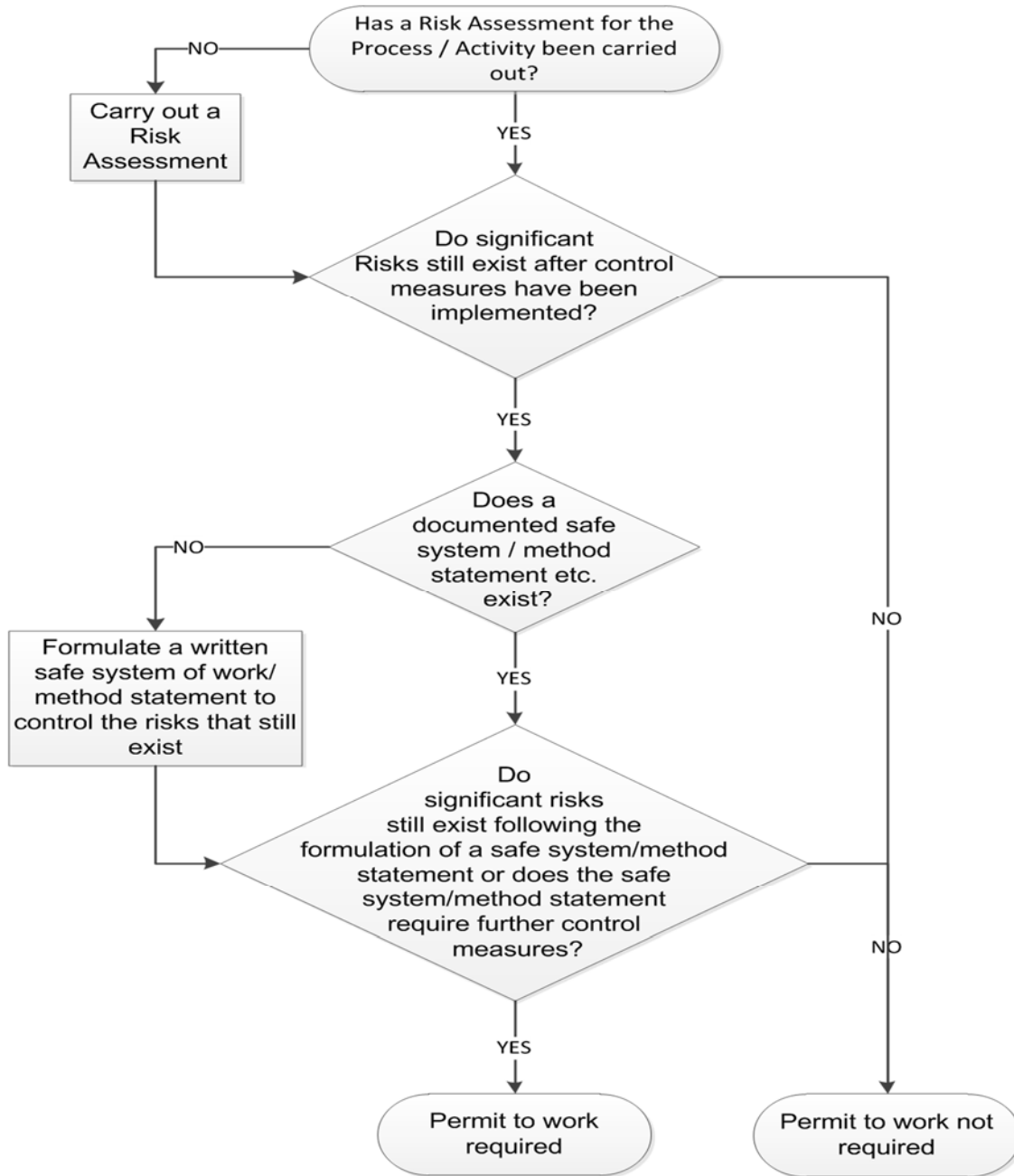
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- Excavation Permit

Within the restricted area excavation authorization is required for all excavations regardless of depth. In addition to that other appropriate work permits shall be obtained prior to start of excavation.



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5.5. Health

Medical and First Aid

AL-JOUDAH CO. shall maintain adequate number of First Aid Kit in a weatherproof metal or plastic box for initial medical care. Al-Joudah SM/SE/SO will check dressings, splints, & cold packs once a month to ensure the expired items are replaced. Al-Joudah. should report all accidents and near misses to Consultant 's SM/SE/SO.

First aid is medical attention that is typically administered immediately after an injury or illness occurs. It usually consists of one-time, short-term treatment, such as cleaning minor cuts, treating minor burns, applying bandages, and using non-prescription medicine. The overall goals of first aid are:

- Keep the victim alive.
- Prevent the victim's condition from worsening.
- Give first aid until help arrives.
- Ensure that the victim receives needed medical care.

5.6. Drinking Water, Welfare and Sanitation

Water Supply and Toilets

Suitable potable water supply shall be provided for drinking purposes. Al-Joudah will provide sufficient numbers of for their personnel. All such facilities will be needed to be maintained in clean and hygienic conditions.

5.7. Vehicle and Road safety

Al-Joudah SM/SE/SO shall take care that all their vehicles entering the project SITE should have necessary documents & register the necessary details at the security gate record at the SITE.

Al-Joudah SM/SE/SO shall stipulate SITE traffic regulations:

- Displayed speed limits must be complied with all rimes.
- The speed Limits for all vehicles within Project Area shall be 20 km/hour or as specified
- Specified routes must be adhered to – under no circumstances may a vehicle

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leave the hard top road surface.

- The number of passengers in a vehicle may not exceed the seating capacity of the vehicle.
- Vehicle should park side to side in car parks and not nose to tail. This will reduce injuries caused by vehicle maneuvering.
- A vehicle may not be loaded beyond its load capacity.
- Overhanging loads shall not be carried without authorization. Such loads shall be marked by red flags during daylight and by light at night.
- The gross weight of a vehicle using a bridge must not exceed the stipulated maximum permissible load.
- Park vehicles only at designated places so that it doesn't create hindrance to other vehicles.
- The body of the tripper lorry should always be lowered before driving vehicle off.
- Drivers must possess license while driving.
- Al-Joudah will ensure that trucks & trailers will not be used for transportation of personnel at SITE.

Note:

- A vehicle and trailer are to be considered as one vehicle
- Vehicles may not be refueled within restricted areas
- Driver to his superior must report all injuries however minor immediately.
- Seat belts must be worn at all times.

6. HOUSE KEEPING

1. Good housekeeping will be practiced by Al-Joudah personnel at all times while within the construction site. During and after completion of the work, they are to ensure that their work area is kept clean and tidy. Flammable materials shall not be scattered over and shall be collected and disposed of in sufficient frequency
2. Wooden planks with protruding nails, sharp object rising above ground should be removed immediately from the Work area where people are likely to step on them.
3. Temporary electrical cables shall be so installed as not to cause a tripping hazard to personnel, nor be liable to Mechanical damage by equipment.

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4. Elevated cables shall be installed at such height as to allow unrestricted movement of construction, Equipments and Vehicles.
5. Particular emphasis shall be placed on maintaining platforms, scaffolding, stairways or other elevated places free of Construction debris.
6. Shuttering materials, platforms or scaffolding segments should be kept in orderly manner before use as well as after dismantling so that they do not cause hindrance to the movement of man and materials.
7. Equipments or materials stored at SITE shall not obstruct to essential facilities and / or Equipments such as fire Extinguisher, fire hydrants, valves gauges, emergency exits etc.
8. Separate manpower will be provided by Al-Joudah for daily housekeeping at SITE.

7. SECURITY INTRODUCTION

Construction sites are easy targets for the opportunist thief; the high value of plant and equipment can lead to quick and easy profit for the successful thief. Depending on locality, each site will have its own issues of concern. Construction sites are subject to a number of threats, against which security should be applied by the site operator. These include theft, vandalism and deliberate damage and terrorism.

The high value of construction plant and materials and the nature of a construction site, with its constant change and movement make this crime tempting for the opportunistic, as well as the carefully planned crime.

Control of Visitor:

1. Policy Statement

The Construction Site Access Policy is designed to help ensure a safe and productive work environment in the Master Plan area of construction

2. Reason for Policy

The personal safety of our employees and the public, is of the highest priority. Accident prevention shall be considered of primary importance in all phases of operations and administration. It is the site management intent to always maintain effective standards that will guard against injuries and illnesses occurring on the job. The prevention of occupationally induced injuries and illnesses is of such consequence that it will be given precedence over operational productivity whenever necessary. A safe work site requires open communication between management and employees on matters pertaining to safety. All employees are encouraged to express their

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concerns or suggestions to help promote safe work practices and conditions

Who Needs to Know This Policy?

The policy is for distribution to all employees, sub-contractors (if any) and visitors that will be entering the Master Plan active construction site.

3. Safety Training is Required employees and contract staff are required to be trained prior to entering the active construction site.
4. Visitor Access Procedures
 - All visitors must report to project field office upon entering the project site.
 - Access to the site shall be denied to any individual who does not have justifiable business on the job site.
 - Any project site visitor who is permitted site access but has no official on-site business shall sign the release before being authorized to proceed beyond the project office.

8. ACCIDENT AND INCIDENT

All accidents causing injury and/or property damage will be thoroughly investigated by the Supervisor and SM/SE/SO of Al-Joudah or of the work place of the property damage, with the assistance of the Contractors SM/SE/SO and report on the standard accident investigation forms." Near misses" will also be investigated and reported on the same form.

The main purpose of these investigations and reports is to determine the underlying causes of the accident or near-miss and to provide for corrective measures in order to avoid recurrence as well as occurrence of a similar incident elsewhere on the project SITE. An additional purpose is to determine the responsibility for the incident and disciplinary measure to be taken if required.

8.1 PROCEDURE:

- Injured person or the first-aider to report accident to Safety personnel giving all relevant details.
- Safety personnel to enter the detail in the accident book taking care to ascertain exactly what occurred.
- Injuries which require the first aider to refer the injured person to hospital or to their doctor should be immediately notified to the Safety Supervisor on site and notified to the company office by telephone.

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- In such cases the Safety Supervisor, accompanied by a representative of the employees, must investigate all the circumstances of how the injury was sustained and a company accident investigation report completed.
- The findings of the investigation will be examined by the Safety Manager and the chief executive with the objective of identifying measures to avoid a repetition.
- These control measures will be introduced after consultation by the Safety Manager on site.
- Injuries or incidents at work leading to ill health which result in an absence from work of more than 3 days must be notified to the Health and Safety Executive immediately.
- Injuries or incidents leading to ill health which are more serious than those mentioned above (including injuries leading to death) must be notified to the Safety Department immediately by the quickest possible means (i.e. by telephone). This call must be followed by a written report within seven days. The chief executive must also be notified as soon as possible.
- The accident location should be barricaded off pending an investigation into the circumstances of the incident, which led to the injuries. This investigation should include statements from all witnesses and any plant or equipment involved in the incident should not be touched nor moved until the investigation has been concluded.
- The investigators will discuss their findings with the chief executive to identify measures needed to avoid a repetition. These measures will be introduced as soon as possible after consultation with the construction workers.

8.2 INVESTIGATION & ANALYSIS

Accidents must be investigated and analyzed from three different points of view

A. Direct cause of injury:

A harmful transfer of energy that produces injury or illness.

Example: The worker suffered two broken legs when the truck crashed into the wall.

B. Surface causes of accident:

Specific unsafe conditions or unsafe behaviors that result in an accident.

Example: The truck crashed into the wall because the brakes failed.

C. Root causes of the accident:

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Common conditions and behaviors that ultimately result in an accident.

Example: The company did not have a maintenance program for its vehicles.

8.3 ANALYSING METHOD

- When did the accident occur?
- Where did it occur?
- Who was injured or what was damaged?
- What caused the accident (immediate and contributory)?
- Why did it occur?
- How were the employees injured?

8.4 Actions to be in case of Accident

- Whoever first notice that an incident has occurred shall immediately notify Al-Joudah's SM/SE/SO of the occurrence of the incident.
- Al-Joudah's SM/SE/SO shall determine whether the area of the accident remains hazardous and if so take immediate steps to evacuate all personnel and remove the injured person to a safe place. The SM/SE/SO through the Al-Joudah's SITE representative/CM shall immediately notify the Contractor's SM/SE/SO of the incident.
- The SM/SE/SO shall determine the extent of the victim's injuries. If an individual cannot walk, move unaided or is unconscious, do not attempt to relocate him without first taking medical advice.
- The SM/SE/SO shall make necessary arrangements for medical assistance to immediately attend the location to determine the seriousness of the inquiries and advice further required treatment.
- The SM/SE/SO shall immediately halt all works in the particular area until such times as adequate investigations have been concluded
- The SM/SE/SO shall make such arrangement of calling ambulances or alternative transport.
- The SM/SE/SO shall submit report to his CM for the cause of accident. The CM shall analyze the problem and try to implement the way so as to avoid reoccurrence.

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8.5 Actions taken in case of Incident like fire

- Whoever first notices a fire at the SITE shall immediately notify the Al-Joudah SM/SE/SO of the occurrence. It shall be immediately informed to Contractor.
- The Al-Joudah's SM/SE/SO shall, under instruction of their SITE representative/CM, contact the firefighting organization and engage to firefighting action.
- If necessary, the SITE representative shall contact the local fire station and request them to send their fire-fighting Organization.
- Al-Joudah shall fully investigate the causes and results of the fire, and shall submit detailed reports to the SITE representative and the contractor for their review.

9. SAFE WORKING PRACTICES

A Safe working practices should be followed by all Al-Joudah at the SITE and Al-Joudah SM/SE/SO shall strictly observe the safe working procedures detailed below. A job safety analysis (JSA) shall be made of each (major) method of (construction) procedure prior to commence its operation activity in order to arrive at the safe working procedure. Such JSA may be incorporated into the Work Method Statement.

9.1. Personal Protective Equipment (PPE)

All employees shall wear Personal Protective Equipment (PPE) at the project SITE, except inside offices, rest-room and accommodation buildings.

Al-Joudah shall arrange appropriate Personal Protection Equipment for their individual employees that include helmets, safety shoes, and safety belts with full body harness (For height Job) as minimum. All other PPE's like goggle, ear plug, hand gloves etc. shall be provided as per specific job requirement as mentioned in table 1.

Head protection (Safety helmet) and foot protection (safety shoes/gum boots) shall be worn by all the employees while working at SITE. Safety belt with full body harness shall be used while working at height >1.8 m. Safety belt shall be anchored at shoulder or above height.

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Table 1 : Personal Protective Equipments

S.NO	WORK ACTIVITIES	SUITABLE PPE
A.	Excavators, breakers, chippers, drillers.	Protective goggles, hand gloves, Safety helmets and Safety shoes.
B.	Mixing cement, concrete, lime mortar, asphalt material, refractory material.	Safety goggles, gloves and protective foot wears.
C.	Electricians	Insulated tools, Rubber hand gloves and electrical resistant shoes, mat.
D.	Grinders	Protective goggles and leather hand gloves
E.	Gas cutters ,welders helper	Colored goggles, leather hand gloves.
F.	Welders	Welding screen, safety shoes with rubber sole, Leather hand gloves.
G.	Workers engaged in insulation	Dust mask ,hand gloves
H.	Workers working at height	Full body harness, Safety net, lifeline. Fall arrestor if required.
I.	High noise level area i.e. D.G operator working, near piling work, compressor operator etc.	Ear plug / ear muff
J.	Working in dusty atmosphere	Dust mask, Safety goggles.

***Safety Helmet with chin strap and Safety Shoes are compulsory at SITE.**

9.2. Working at height and Scaffolding

1. Site Engineer will obtain the permit for working at height duly approved by competent authority. For any work that has to be carried out over water or at height of greater than (1.8m) above ground, well designed scaffolding of adequate strength shall be used as a safe means of access. Al-Joudah shall provide Safety net. It will be mandatory for every person working at SITE to wear Safety Belt with full body harness before commencement of job at height more

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than 1.8 mts. Scaffolding to be certified by Al-Joudah's SM/SE/SO.

2. During erection and dismantling, either scaffolding components or tools shall never be allowed to be thrown up or down. Slippery conditions on scaffolds must be eliminated as soon as they occur.
3. The working platform shall be:
 - (a) Closely boarded
 - (b) At least (0.7m) wide if used only as a footing
 - (c) If used to store materials in addition, at least the width of the materials plus (0.7m)
 - (d) Provided with toe-boards of minimum (0.15m) in height
 - (e) Provided with handrails not greater than (0.85m) above the toe-board
 - (f) Constructed as close to the structure or building as possible
4. Boards to be used on the platform shall be:
 - (a) Of a suitable thickness, in due consideration of the spacing of supports beneath
 - (b) Supported by at least three (3) transom (or cross-supports)
 - (c) Not projecting beyond the last support by more than twice their thickness
 - (d) Be adequately fastened to prevent slippage or movement during use
 - (e) Wherever possible, not overlap another board
 - (f) Be free from cracks, twists, holes or other defects which may affect the load bearing strength
 - (g) Protected from weathering by means of a preservative. Boards shall never be painted as this disguises defects
5. Scaffolding shall be properly designed and erected, with its intended use in mind. Where additional, unanticipated loads are to be applied, the structure shall be redesigned and modified accordingly.
6. The distance between the inside edge of the scaffold and the face/wall of structure should not exceed 20 cm at any point.
7. Scaffold Tag System must be "Red: Unsafe for Use" & "Green: Safe for Use"

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9.3. Fire Protection and Prevention

9.3.1 Oxygen and Acetylene Cylinders Storage Area

1. The storage of oxygen and acetylene in cylinders/bottles must be in a sheltered/sun-roofed area, but never inside any building. This storage place shall be located at least 6m from any building, the diesel (fuel) storage (tank) - and gasoline storage area.
2. Oxygen and acetylene cylinders must be stored in separate compartments and always in upright position as well as secured to avoid tipping over. Use Trolleys for oxygen and gas cylinders and chain them.
3. The area shall be fenced all around and each compartment shall have its own gate. The gates shall be locked and only authorized/designated personnel shall unlock them and enter the compartment(s) for handling cylinders. Follow color coding for cylinders and their hoses.
4. "Oxygen" and "Acetylene" storage signs, "No Smoking" and "Authorized Personnel Only" signs shall be placed against the outside of the fence all around. Beside each gate one fire extinguisher (for Class B fire) shall be placed at the outside.

9.3.2 Material, storage & Handling

1. All materials should be maintained in neat stockpiles with well-laid aisles and walkways for ease of access and retrieval. There shall not be any projections in the walkways.
2. Do not store wet or oily materials and materials like jute, cotton gunny bags etc. together. They can ignite spontaneously.
3. Store chemicals and other goods in stable racks, properly labeled. Mutually reactive chemicals should be kept away from each other. Display procedures to be followed in the event of spillage / leakage.
4. Goods at high temperatures must be arranged so as to allow safe cooling and should not come in contact with combustible material.
5. Tools, which are returned back after use, must be kept at the earlier marked place.
6. Storage place should have proper ventilation.

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7. "No smoking" boards should be displayed in the store.
8. All containers (full or empty) shall carry tags / labels for quick identification.
9. Drip trays should be provided at all drum-filling locations, including diesel, petrol and oil filling points.
10. Electrical switchboards should be properly secured.
11. No other work such as repair of machinery, testing of grinding machine should be done at SITE- store.

9.3.3 9.3.3 Welding and Gas Cutting

Frames of electric welding machines operated from a power circuit shall effectively Grounded. The electrode & the ground cables should be completely insulated. Electrodes should be removed from holders when not in use. Holder should be protected so that it cannot make electrical contact. Welders and their helpers should be given necessary PPE during welding. For gas cutting job, the torch should be equipped with flash back arrestor. Appropriate PPE should be given to the person for doing job. Gas cylinders should be kept away from source of heat and should be securely held in upright position. Valve protection caps should be fitted on the cylinders when not in use. Acetylene and Oxygen hoses should be distinguishable and care should be taken that hoses are not interchanged. Welding / Cutting / Hot jobs should not be not permitted in areas where flammable gas mixture, heavy dust concentration is very apparent. Welding or Cutting / burning of metals having toxic significance such as Zinc, Lead, Calcium and Chromium should be done in open air and welder should wear a fitter type respirator.

9.3.4 Electrical Plant & Equipment

A diesel driven power generator, if any, will be covered by a sunroof, whilst its "hot" terminal (or that of the "public power supply company") must be covered for protection against direct sunlight. The power generator must (obviously) be grounded/earthed. The area needs to be fenced all around. The exhaust outlet of the engine shall be away from combustibles/flammables and working area. "High Voltage", "No Smoking"- and "Authorized Personnel Only" signs shall be placed all around against the fence. Fire extinguishers shall be hung on the fence posts at the outside: at least one for Class B fire at the diesel engine & refueling side of the power generator and one for Class C fire at the generator side.

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Stationary (diesel driven) WELDING GENERATORS and - TRANSFORMERS, if any, shall be grounded / earthed. Engine exhausts shall be away from combustibles/ flammables. Underneath each diesel driven generator a tray for catching oil - & fuel spillage needs to be placed. Electrical circuits shall be properly fused. Disconnect switches (switchboards) need to be labeled and easily & freely accessible, whilst ground fault protection shall be installed. A "High Voltage" sign shall be provided at an appropriate place.

9.3.5 Fire Fighting Training & Control

An adequate number of Al-Joudah's employee shall be trained as to properly use the fire fighting equipment and to control fire hazards by their respective SM/SE/SO. These training courses shall be being arranged Al-Joudah's SM/SE/SO and shall be conducted periodically. Fire protection/prevention shall be a subject of attention during safety meetings and be included in employee's induction course.

9.3.6 Fire Extinguishers

An adequate numbers of hand fire extinguishers of adequate type (Generally ABC type) and size shall be placed by Al-Joudah in their workplace and facilities as per:

The fire extinguishers shall be numbered and recorded in a logbook stating date of delivery, date & precise location installed, date of inspection by manufacturer/ distributor and other relevant particulars for each extinguisher. Once in a *Quarter* the fire extinguishers shall be inspected by the manufacturer or distributor on proper operating conditions and records shall be maintained.

"No Smoking", "No Mobile" signs should be displayed at particular locations where and when necessary.

9.3.7 Electrical Safety

- Al-Joudah shall ensure that all temporary electrical installations comply with local rules and regulation and procedure followed is as follows
- A Safe Clearance Procedure needs to be established during the installation period and the provisions for tagging; lock out and capping of controls shall be followed during the operation and maintenance of the electrical equipment & outfit.
- All Electrical Distribution Boards will be provided with earthing; all power tools will be connected through ELCB.

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- All Electrical panel shall be installed at 50 cm height from the ground and the panel shall be covered by plastic shelter.
- Guards shall be provided to avoid accidental breakage to protect lamps. Emergency lighting should be provided for person working in night shifts for standby.
- An experienced electrician should make temporary electrical wiring only and the wiring should be checked regularly for damages insulation, exposed wires, loose joints, overheating of the cable.
- Temporary and extension cords shall be 3-wire type, protected against damage. These should be kept clear of walkways and other locations where they may be exposed to damage or create tripping hazard. Splices in cords are provided with soldered wire connections with insulations to retain the mechanical and electrical capacity of the original cable.
- Underground cables are provided within protective ramps when located at a traffic crossing of motor vehicles or Construction plant & equipment
- Switches, Fuses are enclosed in cases, properly marked, grounded and installed minimizing the danger of accidental operation. Weather proof enclosures / cabinets are provided in wet locations.

9.4. Plant, Tools and Equipment

9.4.1. Hand tools

Accidents arising out of hand tools can be attributed to any of the following reasons:

- Using the wrong tools
- Using the tools which are in poor condition
- Using the tool in a wrong way or ignorance on part of user of particular tools
- Keeping tools in unsafe places

If the above four conditions are taken care of, we can eliminate all the hand tool accidents.

Using the wrong tools

The weight, size and type of tool should be selected to suit the job being carried out. Using pliers or wrenches as hammer, using screw drivers as chisels, using screw

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spanners in place of ring spanners, using pipe wrenches as spanners are a few examples of using wrong tools.

Using tools in poor condition

- Tools provided with wooden handle should always be used with the handles intact. The handles should be tightened with wedges whenever necessary. Split or broken handles should be replaced immediately. Pipes or rods shall not be used as handles.
- Sharp tools improve accuracy and are safer than dull tools. Accumulated dirt or grease should be wiped off immediately to avoid slippage. Shovel and pick handles should be free from splinters, splints and cracks. Insulated and non-conducting tools should be tested frequently for their electrical resistance. Mushroomed chisel is a serious source of hazard.

Using tools in wrong ways

- Wrench should always be placed on nuts with jaw opening facing the direction in which the wrench is to be rotated. Wrench should not be pushed but be pulled.
- Chisels should be held with steady but relaxed grip. Chisels being stuck by others should be held by tongs or other holding devices. Always chip away from yourself and protect others by screening. Use goggles while chipping. While using screwdriver, the object should not be held in hand or thigh.
- Blades of hack saw should always point forward and the entire length of the blade should be used in the forward cutting stroke. The stroke should be steady and firm to avoid jumping of blade.

Keeping tools in work places

Hand tools should not be allowed to lie on workbenches, scaffoldings etc. where they can be tipped down. They should be stored properly after the work is over. Sharp tools like screwdriver, etc. should not be kept in pockets. Hand tools shall not be held in hand while climbing up or down through a ladder. Tools should never be thrown up or down. Tools should be cleaned properly after the work and before start of the work.

Jacks

- Select jacks heavy enough to raise and hold the load safely. Jacks should rest on firm level foundation adequate to support the load. Jacks of same capacity and type should be used while using the number of jacks. Simultaneously be sure that

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the jack cannot tip and is in line with vertical movement of load. Wooden block should be given over the jack also to avoid metal-to-metal contact. Load must rest on firm packing before releasing the jack or before allowing persons to work below the raised load.

- Inspect frequently and use only the proper grade and clean oil. It is advisable to shore up any load that must remain in a raised position for any length of time.

Portable electric tools

- Maintenance of electric tools should be systematic
- Safety guards provided in the tools should not be tampered.
- The operator should wear gloves, safety shoes, goggles etc. wherever necessary.
- Only experienced and authorized personnel should be permitted to operate power tools.
- For all electric power tools, a running earth must be maintained and the supply cable should be handled carefully.
- Electric supply should be disconnected before attempting any repair or servicing. Even a change of wheel in the grinding machine requires the supply to be disconnected.

Drilling machine

- A prick punch or pilot hole should be provided to guide the drill bit.
- Suitable drill bit should be selected for the material being drilled.
- If bit is long enough to pass through the object, care should be taken to avoid damage or injury on the far side.
- If the object is small, it should be secured to prevent spinning.
- Care should be taken to prevent sleeves and other clothing from being wound around the grill

Portable grinder

- Hood guard provided in the machine should be maintained in place always
- Wheels of proper rpm rating should be used. Date of expiry of wheels should always be checked before mounting. If in doubt, a tap test may be conducted to check the minor cracks and the machine be allowed to run under no load in a safe place for some time.

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- The grinding wheel shall be stored and handled properly. It shall never be allowed to be dropped and stored in damp place.
- Mounting blotter should be used when provided on the machine. The spindle nut should not be over tightened.
- Only experienced and skilled grinders shall be engaged.
- The grinding machine shall not be allowed to be kept on the ground when the wheel is in rotating condition.
- The face shield, safety goggles and hand gloves should be used.

Bench grinder

- It should be provided with a proper earthing.
- Eye shield and hood guard should be provided and maintained.
- Wheels of proper rpm should be used and they should be carefully inspected to check for cracks. The object should not be forced on the grinding wheel.
- Tools rest should be in place adjusted to a maximum gap of 3 mm from the wheel.

Pneumatic tools

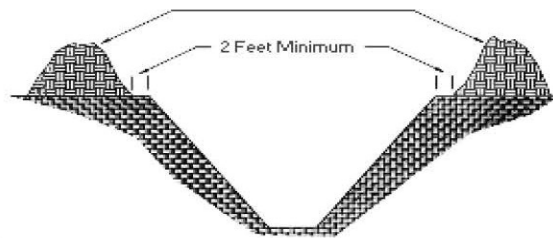
- Air hoses of pneumatic tools should be protected against whipping. They should also be protected against damage by vehicles.
- The air lines should be de-Pressurized before opening any joint.
- Compressed air should not be directed against self or others. It should not be used for removing dirt from the clothes etc.
- Air hoses taken overhead or vertically should be sufficiently supported.

10. Excavation

- Prior to excavation, drawings shall be checked by contractor/sub-contractor to determine if there are any underground installations pipes, cables exist. These shall be protected against damage.
- Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock.
- As far as possible, excavated material should not be placed within 1 m from the edge of excavation or depth of excavation whichever is greater.

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- Drainage system shall be provided to control storm water entering the excavation. Ground water running into the excavated area is controlled. Dewatering Pumps shall be kept ready in case of emergency.
- Barricades, warning lights shall be erected at 1 m from the edge of excavation adjacent to pedestrian or vehicular traffic.
- Two safe access / exits shall be provided by means of ladders, stairs ramps for excavation beyond 1.5m.
- Where vehicles or Equipments operate near excavations, the side of the excavation is made to withstand the forces exerted by the superimposed load.
- Each excavation is checked daily. If there is any cave-in or slide, all the work in the excavation is stopped forthwith.
- Don't allow vehicles to operate too close to excavated area. Maintain at least 2m distance from edge of excavation.



Types of Soil:

Rock Soil

- Solid soil with edges 900 with base withstand its strength all the excavation period
e.g. granite rocks

Soil Type A

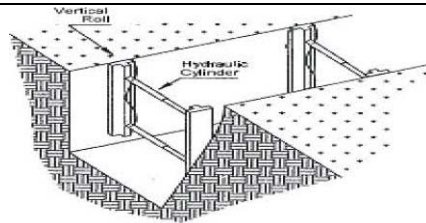
- Soil that withstand pressure of more than 1.5 ton per ft e.g. clay soil

Soil Type B

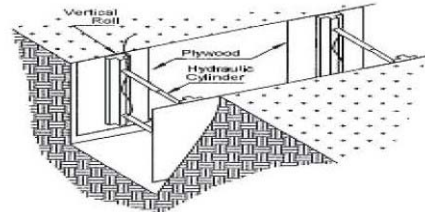
- Soil that withstand pressure of 0.5 ton per ft. e.g. cotton soil

Soil Type C

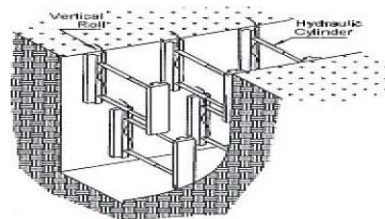
- Soil that withstand pressure of less than 1.5 ton per ft. e.g. sand soil



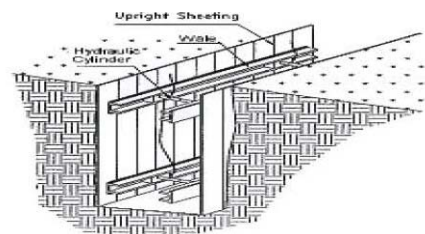
Vertical Aluminum Hydraulic Shoring (Spot Bracing)



Vertical Aluminum Hydraulic Shoring (With Plywood)



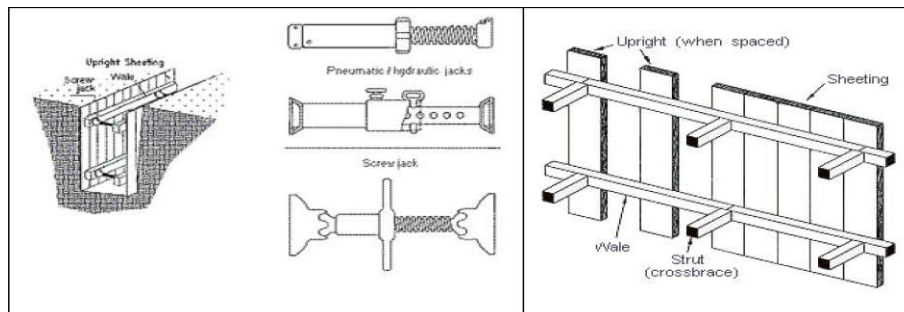
Vertical Aluminum Hydraulic Shoring (Stacked)



Aluminum Hydraulic Shoring Wall System (Typical)

Ways to avoid Cave-ins:

- Slope or bench the sides of the excavation.
- Support the excavation.
- Place a shield between side of the excavation and work area.
- Place spoils so rain water runs away from the excavation.
- Grade soil away from excavation.
- Fence or barricade trenches left overnight.



11. Fall protection:

In construction accidents due to fall constitutes the highest rate. Consequently OSHA confirms full resolution for fall accident from a height of 6 feet (1.8 meters) or more for

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which the following are required:

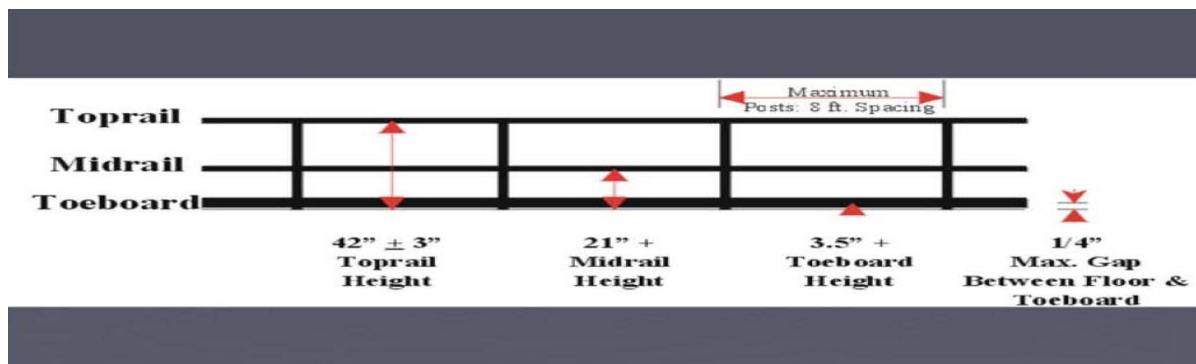
The employer shall make assurance that roof or scaffolds are strong enough to with stand the loads.

The employer should provide the followings:

- Guardrail Systems
- Personal Fall Arrest
- Positioning Device Systems
- Safety Monitoring Systems
- Safety Net Systems
- Warning Line Systems

Guard Rail Systems:

- The diameter of the pipes or thickness of materials making the guardrail should not be less than 6 centimeters.
- The heights of top rail or mid rail from platform should be 42 inches 1.1 meter and 21 inches 0.53 meter respectively.
- Top rail should withstand vertical pressure of at least 200 lbs. at both sides while mid rails should withstand at least pressure of 150 lbs on both sides.
- Distance between two guardrail supports should not exceed 8 feet's (2.5m) _All guardrail materials should be flushes without any sharp edges that render injuries to passers.



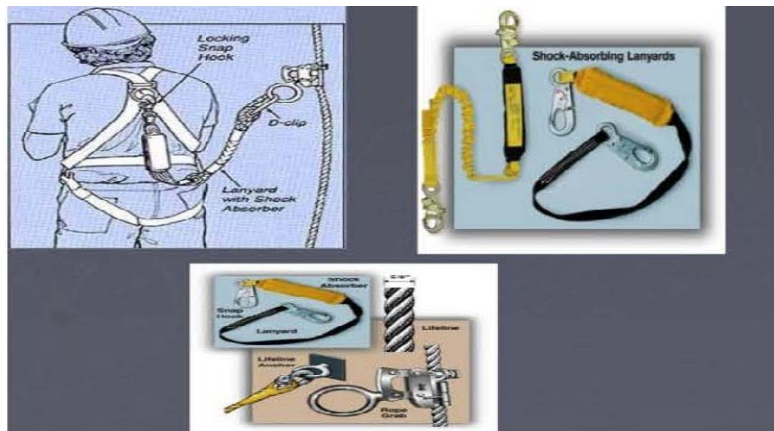


Personal Fall Arrest Systems:

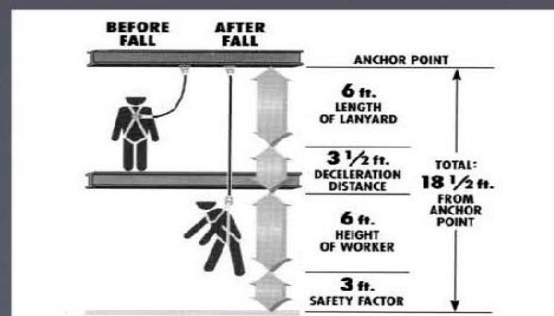
This system consists of anchoring point, communication, lifelines, and safety belts to be designed so that persons should not fall for a distance more than 6 fts (1.8 m) and should not collide with any obstacle while falling down.

All elements of fall arrest system should be thoroughly inspected and defective parts are to be replaced by new ones.

The fall arrest system is to be designed so that it stops totally at a height 3.5 feet (1.07m) from the ground level i.e. (no collision with the ground) so all Rings, Snap — Hooks Anchoring point each should withstand carrying capacity of not less than 5000 lbs.



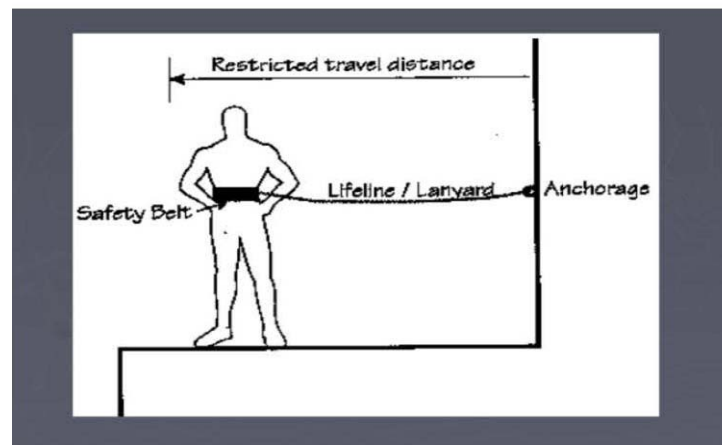
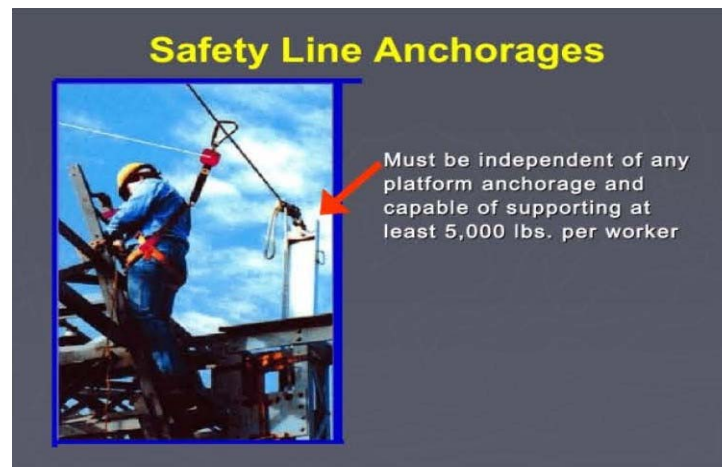
Fall Clearance (not a sale!)



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Positioning Device Systems:

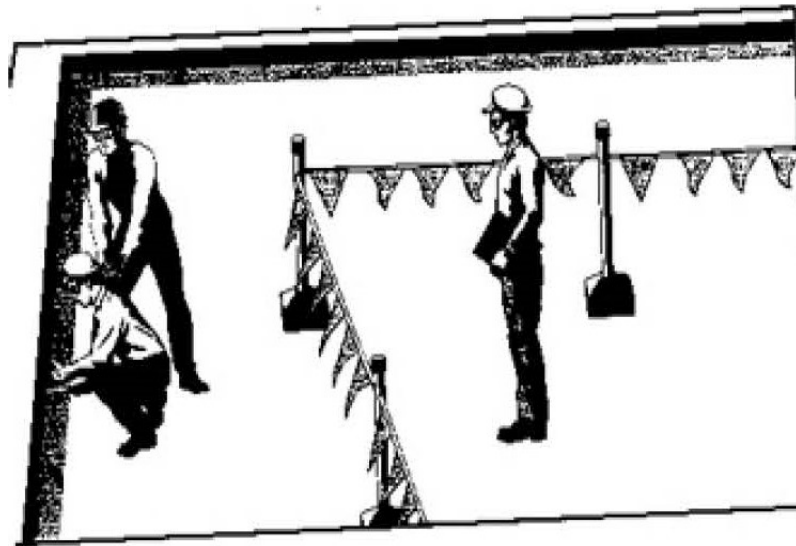
- No fall more than 2 feet's (60cms) from ground level.
- The life line should be tightened to a tie point that withstands at least twice the impact load or 3000 lbs which one is greater.
- The length of the Life line should be made not to reach the roof or ground levels.



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Safety Monitoring Systems:

- In case of fall protective system, the site should be guarded by an experienced safety man who should warn the attachments against any unsafe act or situation.
- In this case the site manager should ensure that the safety guards to meet the following conditions:
- He is well experienced to locate the dangerous places.
- He is able to warn others against fall or dangerous works.
- He is always available at work site and can see all workers.
- Can speak directly to any worker and fully dedicated to the safety supervision.
- The safety supervisors area should be free from any storage of material nor should be allocated to mechanical equipment.



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Safety Net Systems:

The safety net should be installed near the working roof not more than 30 feet(9.1m)



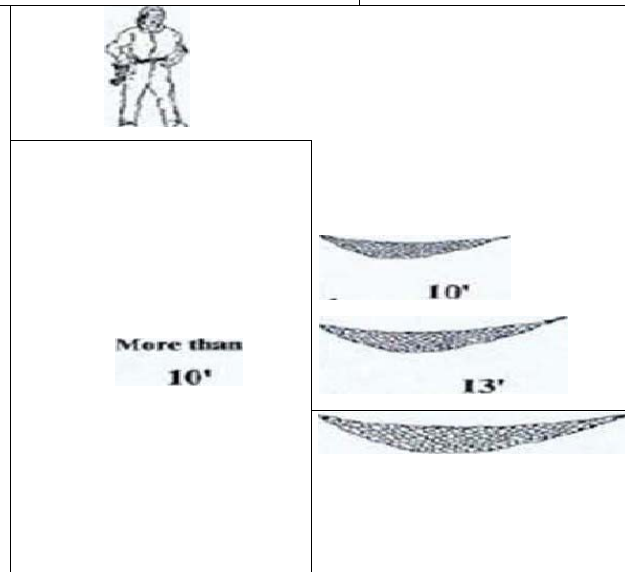
Nets must be installed in a manner that should an individual fall, they will not strike any object below the net (picture courtesy of DBI/Sala).

- The safety net should conform with standards and in an excellent condition.
- The safety net should be inspected weekly to insure its soundness.
- The maximum size of an opening in a safety net should not be more than 36 Square inch i.e. of 6 inches' length.
- The openings margin should be strengthened so as not a low more openings.
- The strength of the net ropes should be at least 5000 pounds.
- The distance below the net should be free of any obstacle to collide with the falling object.

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- The net should be extended from all sides of the work level as per OSHA requirements in the following manner.
- No intruders are allowed to stay in the safety supervision area except the safety supervisor.

Distance between work level and the net	Distance of extension outside the work level
Up to 5 ft (1.5m)	8ft (2.4m)
More than 5ft to 10ft	10ft (3m)
More than 10ft	13ft (3.9m)



Safety Net Extension

- The safety net should withstand a collision impact of a falling sand pack of weight 400lbs (180kg) and diameter of 30 inches (76cm) from the working level. The following distance should not be less than 42 inches (1.1m).
- All falling objects on the net should be cleared out before the next work shift starts.
- Falling object tests should be done on the net on commissioning followed by an elapse of 6 months and after dismantling installation to ensure its validation.

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Warning Line System:

This system consists of ropes-wires-chain and anchoring parts of the following manner:

- Warning sign should be placed clearly and picture of 6ft (1.8m)
- They should be fixed at 0.9m height and 1m height from lower and upper levels of working platform
- Warning signs posts each should withstand a horizontal pull not less than 16 lb before failure.
- Ropes, wires, and chain should withstand each carrying load of at least 500lb.
- Warning tapes should be fixed all around the working level,
- Warning tapes should be at a distance of 6ft (1.8m) from the periphery of platform or working roof.



Protection from Falling Objects and Materials:

- When using guardrails for protection from falling objects, the distance of opening in the guardrails should be small so as not to allow objects falling from upper to lower levels.
- When working on roofs and platforms storage of material is forbidden at a distance less than 6ft (1.8m) from the roof periphery.
- When using catch platforms for protection from falling bodies, these catch platforms should be strong enough to withstand falling bodies.
- When using toe boards these should be of 4 inches' height.
- Withstand pressure of 50lb on all sides and have no space of width more than 1 inch When require to store more materials of height more than 4 inches on the roof, then install safety net above toe boards until mid-rails of the guard

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rails.

General Requirements when working at a Height:

- Workers should wear personal protective equipment (PPE).
- Use metallic scaffolds.
- The scaffolds should comply with standards and provided with access ladders. – The work place should be guarded properly by strong guard rails, fences and canopies to protect against fall.
- All care should be taken not to drop materials from height to lower level.
- Falling objects should not be left behind on scaffolds after working hours.
- All roof openings should be closed or barricaded to prevent fall.

Training:

- On the job training should be provided to all workers at site.

12. LIFTING OPERATIONS

A lifting operation is an operation concerned with the lifting and lowering of a load. A load is the item or items being lifted which could include a person or people. A lifting operation may be performed manually or using lifting equipment. Manual lifting, holding, putting down, carrying or moving is often referred to as ‘manual handling of loads’.

Lifting operations in construction occur during transportation of material from the storage place to the place where it is being processed, and during the processing of materials. A load includes any material or people that are lifted or lowered by lifting equipment.

Heavy Equipment and operators

All works involving use of crane should be planned and rigging study should be carried out to ensure that:

A. Precautions to be taken during

- Overturning of the crane
- Falling objects

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- Breaking the boom sling
- Touching overhead power lines
- Collision with obstacles

B. The capacity of the crane should be ascertained before using. following factors shall be considered:

- Weights and dimensions of loads
- Height of lift and distances/areas of movement of loads
- Number and frequency of lifts
- Period of time for the lifting operation
- Ground conditions
- Other factors

C. Operation Points

- The mobile crane shall only be operated on a firm, level ground that adequately supports the weight of the crane and loads.
- Before lifting, fully extend outriggers and ensure their stability on the ground.
- The weight of the load shall not exceed the Safe Working Load.
- Never abruptly swing or stop the crane
- Loads shall not be dragged on the ground.
- Move the load at a safe speed - use low speeds within several meters of the load's destination.
- Adjust the boom length to ensure the crane is operating within the extent of the safe operation radius.
- When moving uphill or downhill, the boom angle shall be adjusted to the safe working condition.

D. Precautions to be followed while using tower crane

- Ensure that the automatic safe load indicator is installed.
- Provide safe means of access and egress.
- Ensure that the lifting routes do not collide with any object.

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- Lifting routes shall not come across any building or pass over any person.
- Travel speed shall be as slow as possible, to ensure the load's stability.
- Be aware of the height of lifting, the length of the crane's trolley and refer to the load chart.
- When the tower crane is not in operation, the crane's trolley must be positioned near the tower at minimum radius, with the hook raised to its highest position

E. Method

- Plan a suitable lifting route, to avoid collision with any persons, objects or overhead power lines.
- Do not drag loads.
- Move the loads as near to the ground level as possible.
- Stop people from standing in the lifting area.
- Do not ride on a load that is being lifted.
- When the crane is in operation, it must maintain a distance of at least 600 mm from any barriers or buildings.
- When visibility is blocked, the signal man shall render assistance.
- Lifting the load at a low speed so that the sling tightens slowly and maintains a balanced position.
- Nobody should stand below the boom or load.
- The operator should be able to see the hook and the load throughout the hoisting period.
- During storm, the hook block should be anchored firmly and swing lock be released.
- When an extended boom is used on the crane, the operator must use extreme care in lowering the load to the ground. An extended boom should never be lowered to one side of the chassis, for the stability of the crane is usually reduced in that position and the crane will get upset.
- The crane has to be traveled on heavy timber mat whenever there is instability of soil.
- The use of any make shift methods to increase the capacity of crane such

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as timbers, with blocking or adding counter-weight, should not be permitted.

- Before leaving the crane at the end of workday, the crane operator should remove the load from the hook and raise the hook to maximum height.
- The crane operator should keep the deck clean of any oil, mud and grease. Operator should always keep the windshield clear, in order to prevent the accident. Crane/Equipment Inspection checklist to be maintained

F. The following actions should be carried out to ensure:

- Brakes should be checked while lifting critical load and adjusted if needed.
- Crane should never be overloaded. The Safe Working Load (SWL) for operating the crane shall be specified according to the results of test and examination certificates, and such loads must not be exceeded during the lifting operation
- Mobile cranes should be parked on hard soil or strong base. They should not be placed near the edge of the pit or excavation.
- Safe working load of any mobile crane depends on:
 - Operator's skill
 - Condition of the ground
 - Boom length
 - Radius of rotation while lifting the load, inclination of boom to the vertical
 - Outtrigger blocked / free
- The load is the total load hung from the rope sheaves of the boom including weight of hook block, ropes/ slings etc.
- Standard signaling code should be followed by the operator and trained signal man should be used. The crane operator shall respond to signals only from the appointed signaler but shall obey stop signal at any time no matter who gives it.
- Tag lines should be used while hoisting heavy and bulky materials.
- The brakes, boom, Wire rope slings, Wire rope slings - cable clip, Chain slings, Shackles, Eye bolts, Hooks, Spreader beams should be checked periodically by maintenance person to ensure the crane's safe operation.
- The load being lifted should not touch the boom.
- The boom or any part of the crane should not come near any live electric line /

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service line.

- Swinging of the load should be done smoothly.
- Proper quality of packing should be used and the outrigger should rest tightly on the packing.

13. CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH)

It is a law that requires employers to control substances that are hazardous to health. You can prevent or reduce worker's exposure to hazardous substances by:

- Finding out what the health hazards are;
- Deciding how to prevent harm to health
- Providing control measures to reduce harm to health;
- Making sure they are used;
- Keeping all control measures in good working order;
- Providing information, instruction and training for employees and others;
- Providing monitoring and health surveillance in appropriate cases;
- Planning for emergencies.

13.1. Chemical

Write the full chemical name as identified on the Material Safety Data Sheet (MSDS). Include CAS number if likely to be confused with other chemicals. If a commercial product, write commercial name followed by chemical constituents. If relevant to the hazard, list concentration of chemical (e.g. an acid may be corrosive, irritant or non-hazardous depending upon concentration).

13.2. Hazard

Use the risk phrases from the MSDS e.g. Irritating to eyes, respiratory system and skin. Ecological information (e.g. toxic to aquatic organisms) need not be included but will inform your choice of disposal.

13.3. Biological hazards

Use scientific name of organism/agent wherever possible, together with common or commercial name if appropriate. For biological hazards, list ACDP hazard category. Other hazards may include information on e.g. flammability, radiation safety, heat, cold and sharps.

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13.4. Workplace exposure limits

Workplace Exposure Limits (WELs) are occupational exposure limits designed to help protect the health of workers. WELs are concentrations of hazardous substances in the air, averaged over a specified period of time referred to as a time-weighted average. Two time periods are used: long-term (8 hours) and short-term (15 minutes). Short-term exposure limits are designed to reduce effects such as eye irritation that may occur following exposure for a few minutes.

13.5. Control measures

When controlling exposure to a hazardous substance consider whether:

- The process can be changed to eliminate the need for the substance,
- The substance can be replaced with a safer alternative,
- The substance can be used in a safer form e.g. pellets instead of powder, readymade buffers or gels etc.

If prevention is not reasonably practicable, you must adequately control exposure e.g. by one or more of the following:

- Totally enclose the process (e.g. glove box),
- Partially enclose the process (e.g. fume cupboard),
- Improve general ventilation,
- Use systems of work that minimize the chances of spillage etc.,
- Reduce the number of persons exposed.

List all engineering measures appropriate for the control of exposure to the hazard. This should be indicated by the MSDS and the risk phrase (e.g. if toxic by inhalation then use in a fume cupboard). Fume cupboard, glove box, safety cabinet (for biological) and local exhaust ventilation are examples.

14. Emergency Evacuation Procedure:

Emergency Planning:

In the event of a large emergency where the site has to be evacuated the following procedures shall be followed:

- On hearing the continuous sound of the alarm, site personnel will be required to assemble at the Emergency Assembly Point. The persons responsible for

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administering the site daily shall simultaneously account for the visitors on the site.

- In these manners a reasonably accurate forecast can be ascertained of the number of site staff and visitors still being in the building or missing.
- A manually operated alarm system, comprising a loud siren and located on the contractors site offices, shall be set up. This alarm will constitute the signal to evacuate the site.
- In the event of the alarm sounding, site staff will be instructed to act as follows:
- Switch-off/disconnect any equipment currently in use (Except those which constitute a means of escape)
- Ensure that all personnel in their vicinity are aware of the alarm
- Do not search for personnel possession that has been brought on site, but not currently with them.
- Move, calmly, to the designated assembly place (or other designated areas)
- Verify all gas cylinders area closed.
- Check all fitting equipment has boom, forks lowered.
- Remain in the designated areas until such time as a head count shall have been completed.
- On hearing the discontinues sound of the alarm, resume your work place.

Fire Emergency Responses:

Upon discovery of a fire, raise the alarm. Any outbreak of fire must be reported immediately to the safety officer, The Construction Manager or any responsible person on site. The persons having discovered the outbreak of the fire will give details of location and nature of the fire.

Fire Emergency Control:

One person of staff level must be directed to the site entrance gate to inform the fire brigade of the location of the fire and to indicate the easiest access routes to the concerned area.

Supervisory Staffs must be posted to access areas at the perimeter of the affected area in order to prevent accidental or unauthorized access to the dangerous area by site personnel.

Fire Emergency Procedure:

- Raise alarm and sound siren immediately when you see a 'Fire', 'Fire', 'Fire' at the top of your voice to alert the people .

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- Try to attract others attention as far as possible on your way and request that access is prevented to the area of the fire.
- It is responsibility of the persons who discover any outbreak of fire to inform the safety officer or his site supervisor immediately, and to give full details of location, type of fire etc
- Switch off all electrical equipment and fuel power powered engines.
- Close all gas cylinders
- Clear the passage and/or road for easy access for the fire Brigade.
- In case of small fires, try to identify the type of the fire and use suitable fire extinguisher.
- Escape through the shortest possible route.
- Assemble at designated place.
- All supervisors shall count their workforce and ensure nobody is missing e
- Time-Keeper shall provide the list of persons on duty.
- Nobody is allowed to return to their job site until the affected areas is declared safe.

Alarms:

Subcontractors shall insure that their employees are fully aware of and conversant with the respective alarms associated with the emergency procedures on the job site, and with the measures to be taken in the event of an alarm being sounded.

Evacuation Plan:

subcontractors shall insure that their employees are fully aware of and conversant with the plan for evacuation of the job site should the occasion arise.

Fire Precautions:

In the event of the Safety Officer shall ensure the civil defense Authorities have knowledge of the location of the fire to ensure that no one attempts to enter effected parts of the site. All site facilities/offices and working areas will be regularly inspected by the Safety Officer.

- No burning of rubbish or debris will be permitted on the job site.
- "Danger" and "No Smoking" signs will be placed visible at all required places.
- A procedure for dealing with all fires and alarms shall be displayed an all offices and mess rooms.
- Establish Assembly Point on the site for all emergencies to meet in case of emergencies.

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- Until the arrival of the Civil Defense, the Safety Officer has full authority for firefighting, evacuation and emergency procedures and should be obeyed by all without any questions.

15. ENVIRONMENT PROTECTION AND WASTE MANAGEMENT

- During execution of the project different types of solid, liquid or gaseous waste is generated at site, which may be hazardous or non-hazardous in nature
- Dust generated at SITE shall be controlled by spraying water.
- Septic tanks shall be cleaned periodically.
- All waste generated shall be disposed of properly as per the laid procedures and at designated location of the client. This shall be done regularly to maintain hygienic conditions at site. For effective waste management following steps shall be taken:
- Waste bins shall be provided at site, fabrication yard and at storage yard
- Waste shall be collected separately like metallic/non-metallic, oily and disposed at different waste bins with blue, green, red and yellow colour
- All employees at site shall be informed and make aware of the waste disposal system.
- Environment protection is prime responsibility of all employees at site including client, Contractor, Sub-Contractor to avoid any adverse effect on environment.
- Al-Joudah is responsible for the environmental control specified for the job site including all equipment and machines used.

The following steps are taken to avoid pollution and to protect environment -

- Do not dispose of used oil or liquid waste direct to the ground, pit or storm drain.
- Dispose of these materials only in properly labeled containers.
- Whenever possible, insulation materials scraps, shaving, etc., should be wetted and put into polythene bags in order to eliminate airborne activity.
- It is the responsibility of all levels of management to conduct operations in line with applicable laws and regulations, including those relating to the health of employees, the environment, and the use of toxic or hazardous substances.

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16. SAFE WORK METHOD STATEMENT-(High risk construction work)

This Safe Work Method Statement details how specific risks associated with working at heights are to be managed. It outlines the common risks and dangers associated with this work and how to best control them. The control measures listed in this SWMS must be implemented on site. The Key Safety messages provide a summary of the essential control measures. If other hazards are identified that are not identified in this SWMS a risk assessment for the new hazard must be completed.

KEY SAFETY MESSAGES:

- 'Working at Heights' means working in circumstances where there is a risk of a fall from one level to another and as a consequence of which it is reasonably likely that an injury could occur.
- No employee or other persons on worksites must work at heights alone.
- All use of fall arrest and fall protection systems must comply with relevant regulations and manufacturer's instructions.
- Ladders should only be used for accessing a work level and not used for conducting actual work.
- If ladders are the only option, ensure that the procedures as described are followed.
- Wear the correct Personal Protective Equipment (PPE) for the task.

HAZARD ANALYSIS AND CONTROL MEASURES		
Task/Activity	Hazard/Risk	Control Measures
Planning the job and conducting pre-start checks	Unsafe work site	1. Before the work on worksites commences, ensure that • Each hazard is identified that may result in: i. Employees or other persons falling. ii. Objects falling from height and hitting employees or other persons. • All risks are assessed. • Control measures are planned and implemented. 2. The control measures must prevent an employee or other persons on worksites from falling, or, if prevention is not reasonably practicable, arrest the fall to prevent the risk of death or injury to the employee or other person.

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		3. One or more of the following control measures must be in place before the work proceeds: • Fall arrest harness system. • Edge protection. • Fall protection cover. • Travel restraint system. • Industrial safety net(s).
Arrival on site	Unsafe worksite.	1. Record details of hazards and control measures that are implemented. 2. Ensure that all appropriate equipment is available to carry out the job before commencing. 3. Check training records of employees and verify training records of other persons on worksites and ensure that all equipment has service tags. 4. Do not use equipment if the service tag shows servicing is not up to date. 5. Do not allow untrained employees or untrained other persons on worksites to use equipment and fall prevention or fall arrest equipment. 6. Visually inspect all aspects of the fall prevention or fall arrest system prior to use. 7. Do not use equipment if it shows signs of wear. Tag the equipment as out-of-service. 8. No employee or other person on a worksite must work at heights alone. 9. Control measures must be put in place to ensure that: a. The platform has an unobstructed surface b. The platform is wide enough for employees and other persons on worksites to perform the task. c. Protection is put in place to prevent employees and other persons on worksites from falling from one level to another.
Accessing heights, working at heights	Unsafe work site. Falling. Falling Objects.	1. Wear appropriate PPE for the work tasks: a. Hard hat, with brim if working in the sun b. Standard uniform of high visibility UV rated long-sleeve shirts and long pants c. Steel cap safety boots d. Other fall prevention or fall arrest equipment as relevant to the control measure used for working at heights. Where

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		possible use a scissor lift for lifting or an elevated work platform for accessing a height. e. A licensed operator must be in control of the elevated work platform used for accessing heights (if over 11 meters) f. Ladders should be used for access only, unless it has a designated work platform. g. Maintain good housekeeping at all times when working at height to prevent objects falling on any person below. h. If fall protection cover is used it must be able to withstand the impact of a fall on to it and be fixed in place to prevent it being moved or removed accidentally.
Use of ladder	Fall from ladder Falling object	1. Ensure the ladder: a. Is an industrial rated ladder and in good working order? b. Is on firm, stable and level ground c. Is the correct height for the task to avoid reaching or stretching? d. Is not too close or too far from the support structure. The ratio must be 4:1. For example, the distance between the ladder base and the supporting structure should be approximately one metre out for every four metres of working ladder height e. Is secured against slipping or sliding, and/or there is another person holding the base of the ladder f. Has all the locking devices on the ladder secured into position g. Is extended a minimum of 1m past the access point, where accessing the roof or platform from a ladder 2. Ensure materials or tools are not carried while climbing the ladder. Tools should be carried in a tool belt or side pouch 3. . Ladders are not to be used

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		a. in access areas or next to doors unless steps are implemented to manage the risks of pedestrians entering through the door or past ladder b. on scaffolding or an elevating work platform to get extra height in very wet or windy conditions c. next to traffic areas unless the working area is barricaded
Use of step ladders and platform ladders	Fall from ladder Falling object	1. Workers must not: a. stand on or above the second tread below the top plate of a step ladder b. over reach from the ladder c. use the ladder near open floor, penetration or beside any railing d. use tools that require a high degree of leverage force which, if released, may cause the worker to over balance and fall from the ladder e. face away from the ladder when going up or down, or when working from the ladder.
Use of Elevated Work Platform (EWP) Includes: • Scissor lifts (SL) • Cherry Pickers • Boom Lifts • Travel Towers	• Fall from EWP • Overturning of EWP • Ejected from EWP	1. Operator of a boom-type EWP must hold a High Risk Work Licence where the EWP has the capacity to reach over 11 metres 2. All workers in a boom-type EWP must wear their harness and have it connected to the EWP anchor point 3. EWP should be located close to the work area to prevent the worker from needing to reach from the EWP to undertake the work 4. Where outriggers are used, the outrigger pads must be sufficient to provide the needed stability for EWP 5. Ensure the EWP is operated on consolidated level ground 6. Workers must not stand on the handrails of the EWP

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		7. Work must be performed from within the EWP
Work shall be performed in accordance to Safe work method statement is SWMS 17. WEATHER - HOT Outdoor workers who are exposed to hot and humid conditions are at risk of heat-related illness. The risk of heat-related illness becomes greater as the weather gets hotter and more humid. This situation is particularly serious when hot weather arrives suddenly early in the season, before workers have had a chance to adapt to warm weather. For people working outdoors in hot weather, both air temperature and humidity affect how hot they feel. The "heat index" is a single value that takes both temperature and humidity into account. The higher the heat index, the hotter the weather feels, since sweat does not readily evaporate and cool the skin. The heat index is a better measure than air temperature alone for estimating the risk to workers from environmental heat source Training Workers Train workers before hot outdoor work begins. Tailor the training topic outline to cover employer-specific policies and worksite-specific conditions. A single worksite may have some job tasks that are low risk for heat-related illness and others that are high risk. Training will be more effective if it is matched to job tasks and conditions, and is reviewed and reinforced throughout hot weather conditions. The following training topics may be addressed in one session or in a series of shorter sessions. Training Topics: • Risk factors for heat-related illness. • Different types of heat-related illness, including how to recognize common signs and symptoms. • Heat-related illness prevention procedures. • Importance of drinking small quantities of water often. • Importance of acclimatization, how it is developed, and how your worksite procedures address it. • Importance of immediately reporting signs or symptoms of heat-related illness to the supervisor. • Procedures for responding to possible heat-related illness. • Procedures to follow when contacting emergency medical services.		

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- Procedures to ensure that clear and precise directions to the work site will be provided to emergency medical services.

SAFETY TIPS

- **Stay hydrated.** Drink plenty of fluids; drink about 16 ounces before starting and 5 to 7 ounces every 15 or 20 minutes.
- **Avoid dehydrating liquids.** Alcohol, coffee, tea and caffeinated soft drinks can hurt more than help.
- **Wear protective clothing.** Lightweight, light-colored and loose-fitting clothing helps protect against heat. Change clothing if it gets completely saturated.
- **Pace yourself.** Slow down and work at an even pace. Know your own limits and ability to work safely in heat.
- **Schedule frequent breaks.** Take time for rest periods and water breaks in a shaded or air conditioned area.
- **Use a damp rag.** Wipe your face or put it around your neck.
- **Avoid getting sunburn.** Use sunscreen and wear a hat if working outside.
- **Be alert to signs of heat-related illness.** Know what to look for and check on other workers that might be at high risk.
- **Avoid direct sun.** Find shade or block out the sun if possible.
- **Eat smaller meals.** Eat fruits high in fiber and natural juice. Avoid high protein foods

