

SAFETY MANUAL



Construction & IT Solutions



SIT Arabian

Contracting Company Limited

SAFETY MANUAL

DEPTT SIT ARABIAN	Job Description: <u>ELECTRICAL/MECHANICAL/CIVIL</u>	Date:06 SEP 2021
Personal Protective Equipment Required: Safety helmet, safety shoes, safety spectacles,	Check One New Safety Manual Revised F18	Sign:

ELECTRICITY

- ❖ Do not monkey with electricity if you do not know, call an electrician.
- ❖ Check for defective cables, plugs & sockets.
- ❖ Never overload equipment / sockets.
- ❖ Use the correct fuses.
- ❖ Switch off before making repairs or adjustments.
- ❖ Keep loose cables off the floor to avoid tripping hazards/ damage to cables.
- ❖ Do not use lighting circuits for portable tools.
- ❖ Disconnect appliances when not in use but do not withdraw a plug from a socket by pulling the cable.
- ❖ Keep all electrical equipment dry & clean.
- ❖ Do not use appliances that are worn.
- ❖ Avoid standing on wet floor when making adjustments.
- ❖ Start artificial respiration immediately after collapse from electric shock.
- ❖ Provide earthlings/ GFCI wherever necessary.

HAND TOOLS

Hand tools are used by almost everyone on either jobs or at home or in the work place, and if properly used and cared for, they can help you to complete your work safely and efficiently, but unsafe use or improper care can lead to minor accidents serious injuries or even death. To protect yourself and your colleagues use hand tools safely.

- ❖ Before using hand tools inspect them to ensure their good conditions.
- ❖ Remove the damaged hand tools – tag them send them to store for replacement.
- ❖ Prepare & use the correct tools for the job right size spanner to fit the nut.
- ❖ Keep tools in boxes when not in use.
- ❖ Protect sharp edges of tools that are to be stored or carried.
- ❖ Keep your tools clean & properly maintained.
- ❖ Do not leave hand tools where they can be a trip hazard or damage by being trop upon.
- ❖ Do not leave hand tools where they might fall on some one.
- ❖ When using electrical tools ensure that they are electrically safe and carried a valid safety sticker.
- ❖ Carry hand tools in bags/boxes not in pockets.
- ❖ Remember tools will help you in your work but they do not protect you.
- ❖ Only trained personnel's must be electrical hand tools.
- ❖ Only authorized person should carry out any maintenance for electrical tools.

Power must be disconnected before replacing any part.

EXCAVATION

Before commencing any excavation with hand tools or power equipment, ensure the following points are checked.

- ❖ You have the proper drawing for the area to be excavated
- ❖ All the necessary permits required for the job are issued, valid and displayed on the job location.
- ❖ The area is safe to dig and no electrical hazards (live cables underground) if present, to place a safety warning sign, to indicate the presence of underground live cables and exact voltages, of any underground pipe line is there to communicate their location before starting excavation .
- ❖ Barricade the excavated area, place the safety warning signs” DANGER DEEPEXCAVATION “
- ❖ Ensure safe means of access and egress is provided to and from excavated area. Stairway, ladder, ram within 25 feet laterally
- ❖ Excavated material and mechanical equipment shall be placed at a minimum distance of 1.0 meter from the edge of excavation if it is more than 1.2 meter deep.
- ❖ All excavation shall be inspected entry is made at the start of :
 - a) . Each shift.
 - b) After Rain if job is carried out during rainy season.
 - c) After any condition that can change the integrity if the soil.
- ❖ Water shall not be allowed to accumulate in the excavation, de-watering system shall be installed and water removed constantly.
- ❖ Excavator and hand power tools shall not be used within 0.5 meter of the indicated power line or process line, only hand digging shall be employed.
- ❖ Ensure the stability of the adjacent structure before starting an excavation and shall be monitored.
- ❖ Ensure that back filling is carried out correctly and in a planned sequence and maintained.

- ❖ Ensure guardrails are provided to the walkways or bridges crossing over excavation.
- ❖ For all excavations more than 1.2 meter, requires a confined space entry permit.
- ❖ Excavations deeper than 1.2 meter shall be sloped to avoid cave insns.
- ❖ Shoring shall be done for excavations closer heavy traffic.
- ❖ Underground utilities like pipelines, electrical cables, sewer line, etc. shall be take great care.

FIRE PREVENTION

PURPOSE:-

- ❖ The purpose of this procedure is to provide guidance for the protection of personnel, equipment and facilities from fires and for the prevention of fires. Prevention measures on the project shall include policies and procedures for house keeping, storage and handling of flammables and combustibles, welding, cutting and hot works.

DEFINATION OF FIRE: - Fire as chain reaction of three things.

- ❖ Fuel: Any burning material like wood, rubber, paper, oil, grease, gasses.
- ❖ Heat: Heat or temperature required burning or igniting fire, which depends upon the flash point of that material.
- ❖ Oxygen: It is present in the air and aids in ignition of fire. If these three things combine in certain proportions there will be a Fire.

FACTORS, WHICH GOVERN THE IGNITAION OF FIRE:-

- ❖ Fuel, heat and Oxygen are three factors, which govern fire if any one of these factors are removed or isolated the fire will be extinguished.
- ❖ Heat: Removal of heat by the application of water/ any other cooling agent likes CO2 gas to cool down the burning material.
- ❖ Oxygen: Reduction or exclusion of oxygen by smothering of burning material, Foam, Dry Powder, Carbon Dioxide, Halon and Fire Blanket.
- ❖ Never use water for any fire involving flammable liquid, water will react violently with the burning liquid and may well cause an explosion.
- ❖ Never use water for electric fire as the water in good conductor of electricity it will cause an electric shock.

SOURCE OF IGNITION:-

- ❖ Hot Work.
- ❖ Abrasive wheels
- ❖ Heaters
- ❖ Electrical apparatus
- ❖ Direct fire (Lighter, matches)

CLASSIFICATION OF FIRE:-

Fires are classified as Class A, B, C, D or special depending upon the types of materials involved. These classifications are defined as follows:-

- ❖ **Class A Fire:** Fires in ordinary combustible materials such as wood, cloth, paper, trash, rubber and plastic.
- ❖ **Class B Fire:** Fires in flammable liquid, oil grease, tar, oil-base paint, lacquer, and flammable gas.
- ❖ **Class C Fire:** Fires involving energized electrical equipment or systems resulting in the extinguishing media conducting electricity. When electrical equipment or systems are de-energized, extinguishers for Class A or B fires can be used safely.
- ❖ **Class D Fire:** Fire in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium.
- ❖ **Special Fires:** Fires in certain reactive chemicals that fall outside the other four classifications and that, in some cases, require special extinguishing agents or techniques.

FIRE EXTINGUISHER TYPES:-

EXTINGUISHING AGENTS EFFECTIVE ON EACH CLASS OF FIRE

	A	B	C	D
WATER	4	SOME TIME		
FOAM	4	4		
ABC DRY CHEMICAL	4	4	4	
BC DRY CHEMICAL		4	4	
CO2		4	4	
HALON	4	4	4	

HOW TO OPERTE FIRE EXTINGUISHER:-

SYMBOL	DESCRIPTION
P	Pull the pin
A	Aim low at the base of the fire
S	Squeeze the handle to release the agent
S	Sweep from side to side fire from spreading

Note:

Fire extinguisher is used for small fire only because they have a limited range and amount of extinguishing agent.

- ❖ Using improper fire extinguisher are eliminated for the fire will make it worst.
- ❖ Using multi fire extinguisher are eliminated choosing wrong extinguisher for the fire and effective against fire that have more than one fuel involved.

PERSONNEL PROTECTIVE EQUIPMENT

All personnel working at sites are required to abide by safety rules and the following PPE are the minimum requirement to be worn all the times at a site which consists of:-

- ❖ Coverall (company uniform), Helmet (hard hat), Safety glasses with side shields, Safety shoes, Gloves.
- ❖ Work permits will define any additional PPE required according to nature of work and area involved; i.e., safety harness, respirator, breathing apparatus, Chemical suit, rubber boots, face shield, goggles, ear plugs; etc.
- ❖ Head Protection: Helmet or Hardhat shall be worn during the work site to protect head against impact from falling objects.
- ❖ Eye & Face: Safety gales/ goggles shall be worn to protect eyes from flying particles. Face shield shall be used to protect face from splinters and sparks due to grinding/cutting jobs and protection from chemical splashing.
- ❖ Foot Protection: Safety shoes shall be worn to protect feet against slipping, rolling, falling, and sharp objects and general safety from foot injury/ hazards.
- ❖ Hearing Protection: To protect hands against injuries from sharp objects, hot surfaces, and chemicals gloves shall be worn.
- ❖ Coverall: workers at project/ site jobs shall wear coverall with company logo.

MANUAL HANDLING

- ❖ When & where required, gloves should be worn to protect against cuts, scratches, punctures and contaminations.
- ❖ Wear safety boots or shoes to protect toes from falling loads.
- ❖ Size up the load & if necessary, make a trail lift.
- ❖ Do not attempt to lift by yourself alone any load that is too heavy, too large or awkward.
- ❖ See that there are no obstructions in the direction you will be going.
- ❖ Take up position; feet hip width apart, one foot slightly advanced pointing in the direction it is intended to move.
- ❖ Bend the knees and back muscles should be relaxed.
- ❖ Get a secure grip of the load.
- ❖ Lift, keeping the back straight, arms close to body, leg muscles taking the strain.
- ❖ Step off in direction advanced foot is pointing, load held close to body.
- ❖ Do not carry a load, which obscures the vision.
- ❖ When lifting from the floor, do it in two stages or use suitable lifting equipment.

SAFE USE OF LADDER

- ❖ See that the ladder cannot slip.
- ❖ Ensure ladder is tied near the top.
- ❖ Keep rungs and foot wear clean.
- ❖ Use both hands and footwear clean to climb.
- ❖ Ladders stacked to prevent slipping outwards and sideways.
- ❖ Set ladder at the correct angle at 75 degree centigrade, for every 4 meter up 1 meter out.
- ❖ Always check ladders before and after use. Report any defects immediately.
- ❖ Never use a make-shift ladder.
- ❖ Do not use ladders with cracked or broken rungs or with other defects.
- ❖ Do not over reach from a ladder – always move it.
- ❖ Do not over reach from a ladder – always move it.
- ❖ Do not stand a ladder on a drum, or box, or other unsteady bases.
- ❖ Never overload a ladder or support it on its bottom rungs on a plank.
- ❖ Do not use ladders that are too short.
- ❖ Never carry tools/ material while climbing a ladder.
- ❖ Only one person at one time should use a ladder to climb up and down
- ❖ Top end of ladder must extend one meter above the platform.

SCAFFOLDING

- ❖ Each person working on a height not less than 1.8 meters and above shall be protected from falling by a fall protection system, which includes complete scaffolding, man-basket, ladder, full body harnesses with lanyard attached to life line or other substantial objects shall be used, if the use of these is impractical, safety nets shall be used.
- ❖ A complete scaffolding platform, which includes guardrails, mid rails, toe boards, shall be erected for all elevated works.
- ❖ Where a complete guardrail system is not possible every individual shall use a full body harness with double shock absorbing lanyard to allow 100% tie-off all the times in accordance to OSHA requirement and regulations.
- ❖ Red tag – shall be put on the scaffolding while it is being erected, modified or dismantled, it reflects that scaffold is incomplete – danger do not use. Any other person who is confident that the scaffold is unsafe for use can also put it.
- ❖ Green tag – It reflects scaffold is safe for use. Any one may remove the green or yellow tag if he considers scaffold is unsafe for use, improperly modified, damaged or missing components.
- ❖ Only trained persons to erect/ modify the scaffolds. Damaged parts shall not be used.
- ❖ Never store tools or materials on platforms.
- ❖ Do not throw materials up & down, use ropes.
- ❖ Do not alter any parts of scaffold or remove tags.

COMPRESSED GAS CYLINDERS

- ❖ Treat every cylinder as full and handle carefully.
- ❖ Always use a carrier and secure the cylinder to it.
- ❖ Always secure acetylene cylinders in an upright position both in use and in storage.
- ❖ Store ALL cylinders in a correct way so that they cannot fall.
- ❖ Keep them away from the sun, artificial heat, flammable materials, corrosive chemicals & fumes.
- ❖ Avoid damage to valves and fittings. Do not use them for lifting or carrying.
- ❖ Keep valves & fittings of oxygen cylinders free from oil & grease.
- ❖ Open cylinder valves slowly, & close sufficiently to shut off gas, NEVER USE FORCE.
- ❖ Always lift cylinders from trucks – DO NOT DROP THEM OR SLIDE THEM.
- ❖ Keep hose lines clear of traffic lanes.
- ❖ REMEMBER – handling cylinders is a two-man job.
- ❖ Full & empty cylinders shall be clearly marked.
- ❖ Flammable gases & other gases shall be stored separately by at least 20 feet.
- ❖ “NO SMOKING” signs shall be posted at cylinder storage areas.
- ❖ Anti flash back arrestors and check valves shall be installed on all oxygen & acetylene cutting gear, the anti flash – back at the regulator & valve at the cutting torch end.
- ❖ Fire extinguisher shall be provided near the storage area.

WELDING

To ensure that the following steps are carried out before you start the job.

- ❖ The permit is issued and valid.
- ❖ Work area is cleaned from all combustible materials.
- ❖ Work area is screened by fire blanket to prevent sparks from flying outside the welding area.
- ❖ Fire extinguisher is available at the work site and is in a good condition.
- ❖ Persons/personnel involved for the work are wearing their PPE according to the job requirement.
- ❖ Welding equipment and work pieces are properly earthed tire watch man shall be attendance and wearing a red reflected vest while welding, cutting and grinding in progress.
- ❖ To keep cylinder away from any spark this is generated during welding, cutting, and grinding.
- ❖ To ensure that when job is completed or suspended the power and gas cylinders are isolated.
- ❖ Grounding shall be provided near to welding point.

CRANES

- ❖ Only authorized persons are allowed to operate a crane.
- ❖ Verify the crane has valid test/ inspection certificate and inspected by AL-BAYRONI safety representative and the inspection sticker pasted on the front left side of the wind screen before use.
- ❖ To ensure the ground is capable of taking the load
- ❖ There is adequate protection from any over head electric lines.
- ❖ There is a safe distance kept from open excavation.
- ❖ Outriggers shall be fully extended & pads shall be used underneath the outriggers.
- ❖ Qualified riggers wearing green reflective vest shall be assigned to give signals to crane operator.
- ❖ Lifting area shall be barricaded and safety warning signs “Danger lifting in progress” are placed.
- ❖ Tag lines shall be used to control the load to the direction.
- ❖ The load shall be lifted carefully and remain within the safe radius in accordance with the crane duty chart.

SLINGS

- ❖ Use the right kind of slings for the job.
- ❖ Do not use fiber rope or wire sling for heavy structural loads.
- ❖ Check the safe working load marked on the sling.
- ❖ Check the safe working load against the load to be lifted.
- ❖ See that the slings are in good condition-splices, rings, and thimble.
- ❖ See that there are no broken ends in wires and, no chafe on fiber ropes.
- ❖ Be sure that the chains have been annealed and examined.
- ❖ Do not stand under load.
- ❖ See the slings are properly adjusted on the load.
- ❖ Safe guard your fellow workers & correct signals.
- ❖ Return the sling to stores after use.
- ❖ When using two or more slings use a shackle, don't directly put slings to crane hook

SHACKLES

- ❖ Use the right type of shackle for the job in hand.
- ❖ Check the safe working load of the shackle before use.
- ❖ Do not use any shackle, which is not marked with the safe working load.
- ❖ Examine bow pin for excessive wear, Destroy when wear is 1/10th or more of original diameter,
- ❖ Make sure pin is free, but not loose, in tapped hole.
- ❖ Thread should not be damaged and without flats or appreciable wear.
- ❖ Check alignment of holes. The untapped holes should not be too large or worn.
- ❖ When using a shackle with “nut & bolt” pin, the pin should be free to rotate when nut is tight.
- ❖ Good shackles should have a clear ring. To test, suspend and tap lightly with a hammer.
- ❖ To prevent pins unscrewing, secure with a split pin if possible. Alternatively, mouse with spun yarn.
- ❖ Do not use shackle where the pin can unscrew by rolling under the load,
- ❖ Do not overload any shackle.

WARNING SIGNS AND BARRICADES

- ❖ Signs, Signals, Barricades and lights shall be maintained visible at all times where a hazard exists,
- ❖ All barricades/ obstructions to be illuminated by means of warning lights from sunset to sunrise.
- ❖ All barricades, signs, lights and other protective devices shall be maintained in good condition all the times,
- ❖ All floor openings, open trenches and other excavations shall be protected with suitable covers,
- ❖ Respect and maintain all barricades and warnings signs.
- ❖ Warning signs and barricades shall be removed when not required

CONFINED SPACE

- ❖ Place which is difficult to enter and the working conditions inside are different from normal site is known as confined space, few examples are vessels, columns, tanks, excavation deeper than 1.2 meters, etc. While working in confined space following precautions are mandatory.
- ❖ Ensure valid entry permit prior to entry into a confined space.
- ❖ Gas test is mandatory for all confined spaces prior to entry & on regular intervals.
- ❖ Employees shall wear all the PPE specified on the permit.
- ❖ Ensure availability of stand by man for every entry to log in & out the names of persons.
- ❖ Ensure adequate lighting .all electric lighting shall be explosion proof & shall be of 24 volts or lesser.
- ❖ Ensure adequate ventilation by confirming that there is sufficient natural draft or by installing mechanical air movers.
- ❖ All the access & egress shall be kept clear to a confined space.

GENERAL LOSS PREVENTION RULES AT SITE

- ❖ Always wear the basic safety equipment for the job, which includes hardhat, safety glasses, goggles, safety shoes, and company uniform at all, times except in offices, control room or vehicles
- ❖ Avoid hurrying .Before starting any job, thoroughly understand it and get permission from area in-charges.
- ❖ Understand safety boards installed at sites and follow the messages and instruction displayed.
- ❖ Incase of fire or emergency alarm, do not be panic and follow emergency evacuation procedure.
- ❖ Beware of emergency assembly points and escape routes.
- ❖ Locate SBG-PMC site dispensary and immediately get first aid in case of any injury.
- ❖ Report promptly all accidents to your in-charge and safety Representative Never hide facts.
- ❖ Keep nearby colleague and in-charge well informed if there is need to work all alone.
- ❖ During night shifts never work in darkness or dim light. Always have sufficient light.
- ❖ Waste materials and garbage must be collected and removed from work area and put in waste drums or skip and remove from site on regular basis to maintain the required level of house keeping.
- ❖ Do not forget Good housekeeping prevents accidents. Always clean your area during and after completing the job.
- ❖ Do not remove Barricading rather ensure its presence at work places when job is completed remove it immediately.
- ❖ Never monkey with electric cables and appliances. Never insert direct cables into sockets, rather use proper plugs.
- ❖ Work at heights is strictly prohibited without safety harness. Ensure Presence of strong side railing and toe boards at platforms.

- ❖ Don't carry any tools or material while climbing up or down through scaffolding ladders. Use tool bags for this purpose.
- ❖ Do not smoke or produce naked flame in No Smoking area.
- ❖ Keep all gangways and aisles clear and clean at work sites.
- ❖ Park vehicles at parking areas only .Never travels at standing or hanging position in any vehicle.
- ❖ Slow down vehicles in site areas, Follow speed limit. Driving is not allowed without valid license.
- ❖ Boarding or getting off vehicles in motion is prohibited. Do not use dark glasses at dark time.
- ❖ Vehicles are strictly forbidden to enter plants areas without a proper permit.
- ❖ Vehicles must not be refilled whilst engine is running
- ❖ Use the right tool for the job, report any defective tools, do not use them, remove them from the site and hand over to the store man.
- ❖ Know the location of the eye wash station and how to use it.
- ❖ Barricade open excavations, cover manholes and check warning signs are in Place before leaving the job.
- ❖ All material which are not in use, collect and remove from work areas and arrange in safe place.(Scaffold material –hoses –cables-pipes-valves etc.)
- ❖ Gambling on site is strictly prohibited
- ❖ Each extinguisher shall have an inspection tag to show the inspection date and the signature of safety officer, who inspected the Fire Extinguisher, to ensure that it is in good condition and ready to be used in case of fire,
- ❖ Smoking is permitted only at designated smoke points.
- ❖ Matches and lighters are prohibited at site and shall not be carried inside the plant.
- ❖ Smokers ensure that cigarette butts are extinguished properly before leaving their designated smoking points.
- ❖ Burning of rubbish or any other material at site is strictly forbidden.

- ❖ Do not obstruct access to fire extinguishers or other fire fighting equipment.
- ❖ Ensure a safe access to all work areas is maintained.
- ❖ Do not allow paper, oily rags or any rubbish to accumulate at your working area, must be collected and placed in waste drum / skip and removed from site on a regular basis.
- ❖ Do not use fire hydrants or fire hoses authorized by fire department.

EMERGENCY EVACUATION

Each and every person from SBG-PCM working at site/s shall attend the safety orientation course and be fully aware with emergency evacuation procedure.

The following steps shall be carried out immediately upon hearing the emergency fire or gas alarm in the area:

- ❖ Stop the assigned job immediately, turn off equipment and proceed to emergency assembly area.
- ❖ Discontinue the use of ignition sources in the area.
- ❖ If you are driving a vehicle, stop at a side of the road, switch off engine, and vacate the vacate the vehicle leaving the key In the ignition and walk to Emergency assembly area.
- ❖ Walk across wind direction to the designated Emergency assembly area in case Gas Alarm.