



شركة مستورة للمقاولات المحدودة
MASTOURA CONTRACTING CO. LTD.

JOB SAFETY ANALYSIS RECORD SHEET

أرامكو السعودية
Saudi Aramco



MTCC JSA-03	√	New Revised	Revision-1	Date: 13-03-23	BI Contract: 6511091839 Contractor name: Mastoura Contracting Company
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	Name	Badge	Position	Sign
Prepared By _____	Ezaganie Malcampo	8836751	HSE Manager	
Approved by _____	Abdulelah Alhejaili	811526	Maintenance Engineer	

Description of Work and Location:

Electrical Works

GI-0002.100 Work Permit System, GI-0002.709, Gas Testing Procedure SAES-A-114 Excavation and Backfill
SAES-Q-006 Asphalt Concrete Paving
SAES-A-105 Noise Control

General Note:

- 1-This JSA must be discussed with all involved personnel prior to job execution. Pre-job planning and daily toolbox should be held on site prior to starting Daily, work to discuss relevant issues, technical procedures and assignment during job execution.
- 2- Prior to the start of each activity, all required permit shall be requested by contractor work permit receiver from the Aramco Permit Issuer for the facilities
- 3- Prior to the start of any activity, all heavy requirement, concrete pump, contractor shall present all the required documents such as certification SAG to handle such equipment ,3rd party inspection certificate or the equipment, Saudi, Arabian Government license.
Shall be required to wear appropriate minimum PPEs e.g. safety goggles, safety helmet, safety shoes Rubber, flame resistant clothing
- 4-Workers shall be required to wear appropriate minimum PPEs e.g. safety goggles, safety helmet, safety shoes Rubber, flame resistant clothing Disposable Coverall.
- 5-Flag man will be assigned to control the traffic. Concrete Pump area will be barricade with proper signs.
- They will need to carry out the risk assessment for each identified hazard if it is high, medium or low.

Job Step No.	SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS (See Note)	RISK			REQ. HAZARD CONTROLS/SAFE WORK PROCEDURES	Action By:
			Probability/Likelihood	Severity	Rating		
1.	Application of Work Permit as per GI 2.100	1.1 Miscommunication/ Misunderstanding	3	C	3C	1.1.1 Issuer and Receiver shall conduct joint site inspection 1.1.2 Obtain necessary approval of work permit.	Work permit issuer and receiver
		1.2 Incorrect Work Permit	3	C	3C	1.2.1 Work permit issuer and receiver should conduct site inspection to evaluate the hazard and to issue the correct work permit 1.2.2 Work permit receiver must understand and familiar with the GI 2.100 (Work Permit System) Job description and equipment used will be clearly stated on work permit.	
2.	Asphalt Cutting and Breaking	2.1 Back Pain due to improper Manual handling of equipment	3	C	3C	2.1.1 Ensure that the workers/helper undergoes Manual Handling Awareness Training to prevent back pain. 2.1.2 Work with buddy system to get easy.	Safety Officer/Site Supervisor/Site Engineer
		2.2 Injury of hand and feet	3	C	3C	2.2.1 Provide and use proper protective equipment such as metatarsal shoes, anti-vibration gloves, safety goggles, safety helmet and FRC uniform.	
		2.3 Fire/Explosion	3	C	3C	2.3.1 Ensure Proper fire extinguisher in adequate No's. (UL type) and certified fire watch must be present on site 2.3.2 Provide fire hose to be connected on fire hydrant (if needed)	
		2.4 Harmful Dust	3	C	3C	2.4.1 Provide and use dust mask to all workers (3M or N70 dust mask) 2.4.2 Spray water around the area for dust control	
		2.5 Vibrator Fatigue	3	C	3C	2.5.1 Take regular breaks from cutting or switch with another worker to relieve arm fatigue. 2.5.2 Use anti vibrator gloves	
		2.6 High noise levels	4	C	4C	2.6.1 Ensure all workers doing the job are wearing ear plug or ear muff. 2.6.2 Assess noise level with sound level meter if	

						possibility exists that level may exceed 85Dba	
		2.7 Power Tools Malfunction	3	C	3C	<p>2.7.1 Inspect and test tools prior to use and must be monthly color coded</p> <p>2.7.2 Make sure all manufacturer's protective devices (Guards) are in place and operational</p> <p>2.7.3 Ensure whip lash arrestors are provided in all hoses connections</p> <p>2.7.4 Ensure hose has no any defect or cut.</p> <p>2.7.5 Compressor must have emergency switch button installed.</p> <p>2.7.6 Air compressor should have body grounding installed</p>	
		2.8 Constant contact with sharp objects, blades and other tools	4	C	4C	<p>2.8.1 Use approved PPE in rebar works and ANSI approved hand protection to prevent cuts or hand injuries.</p> <p>2.8.2 Supervisor will ensure that competent persons will supervise full time in assigned to task.</p> <p>2.8.3 Provide appropriate & ANSI approved PPE (e.g. safety shoe, Etc.) to avoid injury.</p> <p>2.8.4 Permit Procedure shall be followed, hazards must be properly identified prior to start the activities.</p> <p>2.8.5 All hand tools are inspected and color coded.</p> <p>2.8.6 Machine guard must be installed in the rotating part of machine</p>	
3.	Excavation Works (Manual Excavation using shovel)	3.1 Damaging the underground utilities (Fiber optic cable, Telephone line, etc.)	4	A	4A	<p>3.1.1 Work permit shall be obtained as required before excavation work is started.</p> <p>3.1.2 Survey and check the area for any existing underground utilities using cable and metal detectors.</p> <p>3.1.3 Secure drawing and utilities layout if required from client.</p> <p>3.1.4 Perform trial pit / explorative digging before deep excavation.</p> <p>3.1.5 Use of non-conductive hand tool (plastic shovel) to prevent damage of underground cables.</p>	Safety Officer/Site Supervisor/Site Engineer

					<p>3.1.6 Supervisor / Foreman to provide proper and good conditioned hand tools to each crew prior to the start of the activities.</p> <p>3.1.7 Supervisor shall closely monitor the activity and he shall remain in the area until completion of the task.</p> <p>3.1.8 Approved and competent person must be available during excavation.</p>		
		3.2 Dust from the excavated soil	3	C	3C	<p>3.2.1 Keep spoil soil 0.6 meters (2feet) from the edge of excavation.</p> <p>3.2.2 All involved workers shall be use rated N90 dust mask.</p> <p>3.2.3 Dust control-spraying water on soil.</p>	
		3.3 Defective tools and equipment	3	C	3C	<p>3.3.1 The store man will ensure that all hand tools and equipment that is issued is in good working condition, has been inspected by a competent person, and has a valid color code sticker and tag.</p> <p>3.3.2 The workers will do inspection their tools and equipment to ensure that it is in good conditioned tools prior to start of the activity and damaged or defective tools will be immediately report to their supervisor and returned to the store man.</p> <p>3.3.3 All personnel required to use hand and power tools will be internally trained.</p> <p>3.3.4 Supervisor will provide sufficient number of personnel to ensure that the task can be performed safely.</p> <p>3.3.5 All defective tools will immediately return to store for repair or disposal.</p>	
		3.4 Laceration and Eye injuries cause by the sharp objects or pointed parts	4	A	4A	<p>3.4.1 Supervisor will ensure that the workers have been issued with the correct type of gloves and that they are used while performing the assigned task.</p> <p>3.4.2 Supervisor will ensure that all workers have been issued with ANSI approved eye protection.</p> <p>3.4.3 Conduct TBT and explain the hazards associated</p>	

						<p>while handling the materials.</p> <p>3.4.4 Trained First Aider with a maintained first aid box will be onsite at all times when activity is taking place.</p> <p>3.4.5 Safety orientation will include the protocols to follow in the event of an incident/injury.</p>	
		3.5 Body fatigue / Back injuries	3	C	3C	<p>3.5.1 The supervisor will minimize manual lifting where possible by utilizing equipment.</p> <p>3.5.2 Wheel barrow will be used where possible to transport tools and materials.</p> <p>3.5.3 All personnel will be trained in the correct method of manual handling and lifting.</p> <p>3.5.4 Supervisor will provide sufficient number of personnel to ensure that the task can be performed safely.</p>	
4.	Installation of PVC Conduit	4.1 Slip, trip and Fall	3	C	3C	<p>4.1.1 Ensure the proper stacking / arrangement of materials</p> <p>4.1.2 Horse Playing shall be strictly prohibited.</p> <p>4.1.3 Clear walkways, Work areas of equipment, tools, construction debris and other materials</p> <p>4.1.4 Properly maintain the good housekeeping at work place</p>	Safety Officer/Site Supervisor/Site Engineer
		4.2 Power tools rotating parts	3	C	3C	<p>4.2.1 Competent workers shall be engaging to work with power tools especially when working with grinders</p> <p>4.2.2 Prior to start work all power tools must be inspected for the condition</p> <p>4.2.3 All power tools should have valid inspection with monthly color coded.</p> <p>4.2.4 Site supervisor shall monitor work activity very closely</p>	
		4.3 Flying particles hazard	3	C	3C	<p>4.3.1 Workers shall wear double eye protection when performing grinding and cutting work</p> <p>4.3.2 Correct PPE shall be worn by workers in accordance to SACSM Procedures</p>	

						4.3.3 Restrict work area entry to authorized 4.3.4 Barricade or enclose the work area	
5.	Installation on cable drum on cable drum stands. (Using Boom truck)	5.1 Extreme weather condition (high speed wind, sandstorm)	3	C	3C	5.1.1 Do not perform equipment lifting at wind speed above 32 km/h (20 mph) unless otherwise specified by the manufacturer. 5.1.2 Work Permit Receiver and the safety officer will monitor the weather and Stop the Work if develops into a IDLH condition. 5.1.3 Heat index will be closely monitored and a rest shelter with drinking water available near work area.	Safety Officer/Site Supervisor/Site Engineer
		5.2 Improper inserting of shafting pin to the cable drum	3	C	3C	5.2.1 Supervisor to ensure that shafting pin was lifted properly and secure with clamp to prevent from slip off. 5.2.2 Inserting of shafting pin into the cable drum will be lift by crane and assisted by the workers. 5.2.3 Worker will secure his position when attaching of the shafting pin clamp to avoid pinch point. 5.2.4 Workers will be used the cable drum access to detach the shafting pin clamp.	
		5.3 Incorrect set up of cable drum into the stands	3	C	3C	5.3.1 Certified crane operator and rigger will be used to lift the cable drum and stands. 5.3.2 Supervisor and safety officer will ensure pre-briefing to the involved workers regarding the activity have done and only involved workers will be on the barricaded area. 5.3.3 Use tag lines to control the load when it is setting up. 5.3.4 Supervisor to ensure that the drum stand has indicated a SWL as per the manufacturer. 5.3.5 Supervisor to ensure the ground is level and compacted. 5.3.6 Ensure the cable drum is placed at the center of gravity of the shaft.	

						5.3.7 Cable stands will be place at least 2-meter distance from the edge of excavation. 5.3.8 Supervisor will ensure that good housekeeping is maintained.	
6.	Cable Laying/ Pulling	6.1 Improper handling of material.	3	C	3C	6.1.1 Proper lifting technique by the use knees and not the back. 6.1.2 Proper lifting technique to avoid back injuries. 6.1.3 Use of carriers when transporting of materials.	Safety Officer/Site Supervisor/Site Engineer
		6.2 Improper use of Lifting Equipment's	4	A	4A	6.2.1 The Boom truck operator should have a valid SAG driving license and SA certification	
		6.3 Equipment failure	3	C	3C	6.3.1 Complete daily equipment checklist 6.3.2 Familiarize the operator manufacturer manual 6.3.3 Equipment should be inspected by approve SA third party with valid certificate	
		6.4 Tripping hazard	3	C	3C	6.4.1 Properly maintain the good housekeeping at work place 6.4.2 Clear walkways, work areas of equipment, tools, construction debris and other materials 6.4.3 Mark, identify, or barricade other obstructions	
7.	Cable Splicing Cable Termination and Torqueing	7.1 Unsafe using of hand and power tools	3	C	3C	7.1.1 Supervisor will ensure that personal are have received training for the hand they will be required to use. 7.1.2 The project electrician will inspect, and color provide color code, tag the tools to ensure that it is good condition tools prior to start the activity. 7.1.3 Supervisor will ensure that Line of Fire is kept clear to avoid injury and all persons involved with be trained in the dangers of Line of Fire. 7.1.4 Defective tools shall not be used and shall be immediately removed from the job site. 7.1.5 Supervisor will ensure the working area is provided with enough cool drinking water. 7.1.6 Supervisor will ensure that good housekeeping is	Safety Officer/Site Supervisor/Site Engineer

						maintained.	
		7.2 Hand injury/ Cut from knife while peeling the cable/Cut from the cable armor while handling.	3	C	3C	<p>7.2.1 Supervisor will ensure that all workers are been issued with the correct type of glove to complete their assigned task.</p> <p>7.2.2 Gloves shall be the proper size to fit the wearers hand to ensure proper grip.</p> <p>7.2.3 Ensure that the workers have used abrasion gloves.</p> <p>7.2.4 Care shall be taken while the Cable sheath is peeled off.</p> <p>7.2.5 Use Proper Tools & Techniques For Stripping Cables.</p>	
		7.3 Slip and tripping hazards	3	C	3C	<p>7.3.1 Good housekeeping shall be maintained to help prevent slips, trips and falls.</p> <p>7.3.2 Working surfaces shall not be obstructed.</p> <p>7.3.3 Proper access shall be provided at the area of activity.</p>	
		7.4 Uncertified Electrician	3	C	3C	<p>7.4.1 Electrician will have a valid third-party certification.</p> <p>7.4.2 Ensure the Isolation, Lockout and Use of Hold Tags are implemented for the activity.</p> <p>7.4.3 Only qualified personnel for the type of electrical work shall be in the involved activity.</p> <p>7.4.4 Personnel shall not wear metallic objects while working within electrical equipment.</p>	
		7.5 Electrocution	4	A	4A	<p>7.5.1 Ground-fault circuit interrupters or ground-fault isolation systems shall be implemented for the electrical device.</p> <p>7.5.2 Signage will be posted at the area to notify the other parties.</p> <p>7.5.3 Supervisor will ensure the persons are wearing electrical arc flash clothing.</p> <p>7.5.4 Electrical gloves to be used for the persons involved for the activity.</p>	
		7.6 Shock while				7.6.1 Before termination of the Cable, ensure that the	

		termination	4	A	4A	<p>power supply is cut off.</p> <p>7.6.2 Uses of LOTO (lock out-tag out) in all permanent, temporary and portable electrical sources for use with portable, electrical hand tools.</p> <p>7.6.3 Only qualified electricians shall maintain temporary and permanent electrical supply sources, cords, electrical connections, wiring, and all repair work to electrical equipment components</p> <p>7.6.4 Before beginning work on live equipment, required PPE that is rated for the electrical service shall be worn.</p> <p>7.6.5 Leather (mechanical) protectors shall always be worn over high voltage rubber.</p> <p>7.6.6 Electrical switchboard shall be kept in good conditions with the suitable protections, in accordance with low voltage regulations.</p> <p>7.6.7 Metal ladders shall not be used when working on or near energized electrical equipment or conductors.</p> <p>7.6.8 Grounding (Ground Fault Circuit Interrupter (GFCI) compliant to NEC.) shall be provided on all equipment for the safe working protection of the workers. Make sure all tools and machinery have double insulating protection.</p>	
8.	Installation of new breaker	8.1 Slip, Trip	3	C	3C	<p>8.1.1 Conduct TBT and explain the hazards prior to start the activity.</p> <p>8.1.2 Working area shall properly barricaded with warning sign</p>	Safety Officer/Site Supervisor/Site Engineer
		8.2 Laceration cause by the sharp objects or pointed parts	4	A	4A	8.2.1 Wear proper hand protection (Leather gloves) while handling materials.	
		8.3 Homemade / Improvised hand tools	3	C	3C	<p>8.3.1 All defective and homemade hand tools shall not be in use and removed at work site immediately.</p> <p>8.3.2 Hand tools must be in good conditioned with</p>	

						monthly color code.	
9.	Installation of temporary and New equipment (UPS, generators, panel boards, cables, transformers, automatic transfer switch and A/C split	9.1 Insufficient/improper scaffolding resulting to Fall from Height	4	A	4A	9.1.1 Fall arrest system shall be used if the working height is greater than 1.8 m (6ft) all the time from floor or working platform as per CSM II-5 and Include the ANSI Z359.1 in the references of personal protective equipment. 9.1.2 All scaffold work shall meet the requirements of this General Instruction GI 8.001 and the Saudi Aramco Construction Safety Manual CMS II-2.	Safety Officer/Site Supervisor/Site Engineer
		9.2 Electrocution	4	A	4A	9.2.1 Secure work permit and conduct toolbox talk prior to start the activity. 9.2.2 Area supervisor always available in the area while conducting temporary equipment's (UPS). 9.2.3 Electrical works will be carried out by trained and competent persons. 9.2.4 Follow the procedure for Lockout/Tag out" as required.	
		9.3 Electric shock	4	A	4A	9.3.1 Confirm electrical isolations through proper tools 9.3.2 Insulated tools will be used in order to carry out electrical work and to prevent electrical shock. 9.3.3 Follow the procedure for Lockout/Tag out" as required. 9.3.4 GFCI protection shall be required when utilizing cord and plug type of temporary UPS installation.	
		9.4 Burns	3	C	3C	9.4.1 Wear proper hand protection (High voltage leather gloves) while performing electrical works.	
		9.5 Pinch Point	3	C	3C	9.5.1 Use proper personal protective equipment such as rubber cotton gloves and high voltage leather gloves if required 9.5.2 Ensure hand tools are inspected with color coded	
10.	Testing and Commissioning of new	10.1 Faulty electrical wires, live equipment resulting to Electrical	3	C	3C	10.1.1 Only qualified personnel utilizing appropriate electrical safety-related work practices and PPE shall perform work on electrical systems and	Safety Officer/Site

	equipment (UPS, Panel Boards, transformers)	Burns/Shock/ Electrocution				<p>equipment</p> <p>10.1.2 Insulated/insulating protective equipment (e.g., rubber gloves and blankets) and hot sticks shall be periodically tested and tagged by a qualified testing laboratory, as per the manufacturer's recommendations</p> <p>10.1.3 Certification requirements for electrical technicians (i.e. Contractor employees who conduct electrical work on electrical equipment operated at higher than 240 volts, must possess a valid Saudi Aramco Electrical Hazards Recognition (HER Certificates)</p>	Supervisor/Site Engineer
		10.2 Faulty electrical wires, substandard materials, malpractice resulting to Fire / Damage to Equipment/Electrical Infrastructure	3	C	3C	<p>10.1.4 All new electrical installations shall be performed with components that meet NEC standards.</p> <p>10.1.5 Electrical testing equipment (e.g., voltage meters) shall be periodically calibrated and tagged by a testing laboratory as per the manufacturer's recommendations.</p>	

Probability		Risk Level					
5	Very High	Medium (5A)	Medium (5B)				
4	High	Medium (4A)	Medium (4B)	Medium (4C)			
3	Medium			Medium (3B)	Medium (3C)	Medium (3D)	
2	Low				Medium (2C)	Medium (2D)	Medium (2E)
1	Very Low					Medium (1D)	Medium (1D)
Hazard Severity Consequence**		Very Low A	Low B	Medium C	High D	Very High E	