

**RAA-ONE**
G R O U P**RAA-ONE CONSTRUCTION & ENGINEERING PTE LTD**

Reg no: 201027290W, 280 Woodlands Industrial Park E5, #10-08 Harvest @ Woodlands, Singapore – 757322

Web: www.raaonegroup.com Mail: nraja@raaonegroup.com Tel : 65389517**INVENTORY OF WORK ACTIVITIES FORM****PIPING AND ELECTRICAL WORKS****Company: RAA-ONE CONSTRUCTION & ENGINEERING PTE LTD****Date: 07/01/23**

Ref	Location	Process	Work Activity	Remark
	CHANGI CARGO AREA	Electrical and Pipe Work	Mobilize manpower to site	
			Delivery of materials at site.	
			Storage of Materials and Acetylene and Oxygen Cylinders	
			Marking and Installation of Pipe	
			Setting out of pipe routing & installation of bracket	
			Manual lifting of equipment & materials.	
			Cutting, grinding, drilling using electrical tools.	
			Welding / cutting of pipes.	
			Pressure testing	
			Insulation of pipe work	
			Housekeeping	
			Covid-19	
			Emergency Evacuation	

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Company:	Raa-one construction & Engineering Pte Ltd	RM Leader / Signature:	NAGARAJAN RAJAMANICKAM	Approved by: (Signature)										
Process:	Pipe and Electrical works	RM Member 1 / Signature:	Ramesh Kumar/Site supervisor											
Process/ Activity Location:	Electrical and Pipe Works	RM Member 2 / Signature	Sampath Pandiyan											
Original Assessment Date:	07.01.23	RM Member 3/ Signature		Name: NAGARAJAN RAJAMANICKAM										
Last review Date:	07.01.2023			Designation: RM Leader										
Next Review Date:	07.01.2025			Date: 07.01.23										
S/No	Description of Work Activity	Hazards Identified	Risk	Existing Control Measures	Initial Risk Index			Additional Control Measures	Residual Risk Index			Risk Owner (Action Officer)		
					S	L	R		S	L	R	Name	Designation	Follow-up Period
1	Mobilize manpower to site	Worker / property hit by transportation lorry due to lack of communication (machinery hazard)	Injury to persons working on site. Multiple injuries to body parts	1. Lorry driver should be inducted on the in- house safety rules & regulation. 2. Driver should alight and board the worker at the designated place. 3.Driver should Maintained the speed limit stipulated at site.	4	2	8	Provide banks man to guide the vehicle inside the project site	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Non inducted workers enter the work place due to negligence. Failure to comply regulations.	Injury to themselves due to un- familiarization of site	1.Only worker that have relevant and valid work permits and gone through site induction may enter the site	3	2	6	Safety /Site Supervisor to check all particulars of personnel that will be sent to site.	3	1	3	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Untrained personnel driving the lorry crane.(Machinery hazard)	Injury to themselves and injury to others working on site multiple injuries to body parts.	1. Only workers who have attended the safety orientation course and with valid SOC will be allowed to work on site. 2. Driver must be valid equipment operating competency.	4	2	8	Worker will have to attend safety induction course / SWMS briefing conducted by subcon. Representative before entering / starts any work.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
2	Delivery of materials at site.	Delivery vehicle topple with materials on site due to un-even ground.	Worker might get serious injury as a result of unauthorized entry to the vehicle movement area. Hit by machinery	Ensure ground is stable before start mobilization / entering site. Vehicle should be escorted by banks man. Driver / operator should be inducted on the in-house safety regulation.	4	2	8	If ground condition is bad, firm-up the ground to level with hardcore. Speed limit should be maintained. Continuous brief of SWMS tool box meeting is vital. Driver and banks man had to check the condition of the access and the place of un-loading	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		During off-loading materials might hit onto workers due to unauthorized entry	Serious injury to worker	Task supervisor and banks man to be deployed to provide signal to operator. Check all lifting gear certificates are valid. Lifting supervisor, rigger / signalman shall check the condition of lifting equipment's prior to any lifting	4	2	8	Work area to be cordon off to prevent unauthorized worker entry to the work zone if necessary. Only qualified operator is allowed to operate the machine proper exclusion zone and warning sign shall be in place at all times.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works



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		Blind spot at the site entrance causing accident due to lack of awareness to both the driver and the workers.(Machinery hazard)	Damaged property and injury to workers / Member of public.	Traffic controller to ensure the road is clear of oncoming vehicle before vehicle is allowed to exit site or enter	3	3	9	To put up signage VEHICLE TURNING AHEAD and a Worker to guide off all on- coming traffic.	3	2	6	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Loose parts dropping / falling off during transportation to site due to un secure of materials. (Hit by material hazard)	Damage onto property / injury to 3rd party.	Proper securing of loose items and briefing.	3	2	6	Put all loose items into box container and for the machinery parts to secure it properly with sling belts before transport to the destination.	3	1	3	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Dust and pollution of road after vehicle is out of site. Due to driver fails to wash the lorry at wash bay	Environmental pollution can cause lungs problems.	Assigned workers to wash the vehicle thoroughly band maintain proper washing bay.	3	2	6	Workers to remove any earth spill / debris drop on road / public area.	3	1	3	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
3	Storage of Materials.	Tripping hazard to human and obstruction to traffic & vehicular movement due to poor storage.	Fatality / property damage	Designated storage place should be maintained and do proper housekeeping is required barricade and put warning sign. Workers should wear proper PPE always at site.	4	2	8	Not Feasible	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
				Enclose storage with proper ventilation Acetylene and oxygen shall place at least 6m apart or wrapped individually with fire blanket when placing near Avoid putting combustible material and Designated area only storage the cylinder.	4	2	8	Not Feasible	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Toppling of materials	Bodily injury due to toppling of materials	Don't stack material above 1.5 m in height stack neatly on rack to prevent toppling. Rack to be at a firm ground. Display contact person detail at storage area. Always places material at the lower height and don't stack high.	4	2	8	Site supervisor to ensure compliance -Display the warning singe.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
4	Marking and Installation of Pipe	Toppling of scaffold		Only qualify erector to allowed erection of mobile scaffolds -EHS personnel to ensure that scaffold electors are trained and erection is carried out under the supervision of an approved scaffold supervisor -Scaffold supervisor to ensure that scaffold materials must have type approved from MOM	4	3	12	Scaffold supervisor to ensure monitoring closely FPP to follow Instruct workers to hook their safety harness at strong anchoring point	4	2	8	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works



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		Falling from height during erecting scaffold		Scaffold supervisor to ensure that a Work at Height Permit is applied & approved before starting works Work personnel to inspect their fall protection devices daily -Scaffold supervisor to ensure that all scaffold erectors are anchored off to	4	2	8	Scaffold supervisor to ensure monitoring closely. FPP to follow -Instruct workers to hook their safety harness at strong anchoring point -Display the erection in progress singe.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
5	Setting out of pipe routing & installation of bracket	Injuries to upper body	Injuries to upper body to worker due to toppling of mobile scaffold where there is uneven surface	Make sure the mobile scaffold is on an even or stable surface and the wheel should be tock at all times when working	4	2	8	The worker on the working platform has to come down before moving the mobile	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Injuries to eyes	Injury to eyes due to dust created during drilling of holes for bracket support	Instruct the workers to install a circular cup with the drilling machine so that the dust will be collected inside. Wear goggles during drilling operation.	4	3	12	The workers face should took down when the drilling begin.to barricade the area of work and put up a proper signage.	4	2	8	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Fire hazard	Cause fire due the spark generated from cutting the bracket with fiber cutter.	Barricade the area & provide proper signage. To stand by fire extinguisher and fire blanket.	4	2	8	Clean up the work area in order to minimize the cause of fire.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Bodily injury	Bodily injury due to accidentally on the fiber cutter machine	Turn off the power and wait for the fiber cutter to be in a full stop before leaving it unattended	3	2	6	Ensure the guard on the fiber cutter is in place.	3	1	3	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
6	Manual lifting of equipment & materials.	Back aches/ finger injury	Back aches / finger injuries I serious injury to spinal cord of the worker due to improper lifting position	Workers are not allowed to carry weight not more than 15kg/person (use buddy system) workers are to be briefed on the correct posture of manual lifting by the safety supervisor	4	2	8	Periodical check & brief to workers by safety supervisor	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
7	Cutting, grinding, drilling using electrical tools.	Serious injury to face / bodily injury	Serious injury to face/bodily injury due to hit & cut by flying fragments/ broken cutting disc/ particles from grinding.	Ensure the high speed electrical tools like grinder and cutter are equipped with proper guards the workers are protected with safety goggles, hand gloves and long sleeve clothing.	4	2	8	Periodically check to be done on the machine fitness.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Electrical shocks / bums due to short circuit.	Electrical shocks / bum due to short circuit.	Electrical tools are to be checked monthly by LEW and sign on the sticker on the tools do not allow any cables to lie on the floor/ground. It has to be hanged at high level through an insulated hook and run on an insulated cable stand.	4	2	8	Brief workers to wear proper safety goggles, hand gloves and long sleeve clothing.	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Cuts to fingers , hands , and legs	Cuts to fingers, hands and leg due to accidental activation of power to electrical tools	Make sure the electrical tools are disconnected from the power source when it is not in use. including goggles / face shield, N95 respirator, tong sleeves loose fitting clothing, gloves, etc. when handling or cutting insulation materials	3	3	9	Additional check to be done by the safety supervisor.	3	2	6	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works



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8	Welding / cutting of pipes.	Burn to the body or explosion.	Burn to the body or explosion due to faulty regulator. loose connection of hose.	Ensure to keep the gas cylinder to be in upright position. Barricade the work area and put up warning signage. Check gas hose connection with soap to ensure no leakage before start work. Flash back arrestors are fitted to the all pipe line outlet.	3	3	9	Carry out regular briefing to remind (welding) operators on safe work practices and in-house safety rules and regulations. Put on appropriate PPE (e.g. leather hand-gloves, welding shield / goggle) wear long sleeve shirt / overall that is fire resistant / retardant. Provide fire extinguisher near hot work zone.	3	2	6	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
9	Insulation of Piping	Exposure to insulation materials	Skin / eye irritation Ingestion	Training of workers on handling insulation materials Provision of sufficient ventilation at work areas SDS to be available in case of emergency Workers to wash hands clean before eating, drinking or using toilet facilities Wearing of PPE including goggles / face shield, N95 respirator, long sleeves loose fitting clothing, gloves, etc. when handling or cutting insulation materials	3	3	9	Daily checks on protective equipment for any damages before start of work Highlight hazards in daily toolbox meetings prior to start work	3	2	6	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
10	Pressure testing of Pipes	Pressure drop and water leaking on the floor	Damage to property slipping and fall down.	Pressure gauge to be calibrated and to use hose designed for such pressure all drain air vent point and exterminated connections are fully closed and or plugged off inspect all pipe joints / drain/air vent point during filling water stand by mop the floor if water drop on the floor	3	3	9	Display signage indicating pressure testing for pipe underway.	3	2	6	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
11	Housekeeping	Tripping, hazard, access blocked to vehicles, due to housekeeping.	Injury cause by tripping	Briefing workers on the proper house keeping during task briefing.	2	3	6	Barricade the area with warning signs.	2	2	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
12	Covid-19	Spread of Covid-19 Coronavirus due to unauthorized entry , not maintain social distance and not wear mask	fever, dry cough sore throat, nasal congestion, they may even die due to Spread of Covid-19 Coronavirus	Managers or appointed 'covid marshals' shall check to ensure that appropriate procedures(safe entry, temp monitor, all time wear mask, check status on trace together) are being followed and that facilities provided are maintained.	4	3	12	Regular reminders to be issued to staff on symptoms and the actions to take.	4	2	8	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
		Spread of Covid-19 Coronavirus Due to Shared Equipment	fever, dry cough sore throat, nasal congestion, they may even die due to Spread of Covid-19 Coronavirus	Where possible equipment (Tools /Pallet Trucks/ Forklift trucks) will be used only by one person. Where his is not possible, cleaning materials will be provided and must be used between each change of user.	4	3	12	Signs to be put on equipment to remind users to clean them before and after use.	4	2	8	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works

		Persons with symptoms of Covid-19 at work	fever, dry cough sore throat, nasal congestion, they may even die due to Spread of Covid-19 Coronavirus	If anyone becomes unwell with a new continuous cough, loss of taste or smell or a high temperature in the workplace they will be sent clinic and advised swab test and to follow the stay at home guidance.	4	3	12	If advised that a member of staff or public has developed Covid-19 and were recently on your premises (or where a member of staff has visited other work place premises or domestic premises), the management team of the workplace should contact the Public Health Authority to discuss the case, identify people who have been in contact with them and will take advice on any actions	4	2	8	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works
13	Emergency Evacuation	Personnel not knowing that the alarm is sounded	Personnel left out alone exposed to other danger	Stop all activities. Return to assembly area	4	2	8	Switch-off all engines and leave your tools behind	4	1	4	Ramesh Kumar Sampath Pandian	Site Supervisor Safety Supervisor	Prior to start works

Likelihood Description for use with Risk Matrix		
Level	Likelihood	Description
5	Almost Certain	Continual or repeating experience.
4	Frequent	Common occurrence.
3	Occasional	Possible or known to occur.
2	Remote	Not likely to occur under normal circumstances.
1	Rare	Not expected to occur but still possible.

Severity Description for use with Risk Matrix		
Level	Severity	Description
5	Catastrophic	Death, fatal diseases or multiple major injuries.
4	Major	Serious injuries or life-threatening occupational diseases (includes amputations, major fractures, multiple injuries, occupational cancers, acute poisoning, disabilities and deafness).
3	Moderate	Injury or ill-health requiring medical treatment (includes lacerations, burns, sprains, minor fractures, dermatitis and work-related upper limb disorders).
2	Minor	Injury or ill-health requiring first aid only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort).
1	Negligible	Negligible injury.

Risk Level	Acceptability of Risk	Recommended Actions
Low Risk (1-3)	Acceptable	- No additional risk control measures may be needed. - Regular review is required to ensure risk level assigned is accurate and does not increase over time.
Medium Risk (4-12)	Moderately Acceptable	- Should reduce to low risk as soon as possible - Implement interim control measure, such as administrative controls - Management attention required
High Risk (13-15)	Not Acceptable	- Reduce to at least medium risk before work commences - Immediately management intervention required - Effective risk control measure required - Control should not be overly dependent on PPE

Likelihood \ Severity	Rare (1)	Remote (2)	Occasional (3)	Frequent (4)	Almost Certain (5)
Catastrophic (5)	5	10	15	20	25
Major (4)	4	8	12	16	20
Moderate (3)	3	6	9	12	15
Minor (2)	2	4	6	8	10
Negligible (1)	1	2	3	4	5