

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 1 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
1.	Prepare work area	<ul style="list-style-type: none"> <li>Unauthorized, untrained workers</li> </ul>	<ul style="list-style-type: none"> <li>Cuts</li> <li>Abrasions</li> </ul>	2	A	L	<ul style="list-style-type: none"> <li>TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>Task specific safety training to be provided</li> <li>Authorized personnel to undertake the job</li> <li>Daily safety inspection should be carried and eliminate the hazard.</li> </ul>	Low (ALARP)
2.	Manual Handling	<ul style="list-style-type: none"> <li>Incorrect lifting of loads</li> <li>Sharp edges.</li> <li>Placing the object while fingers underneath.</li> <li>Slip/trip/fall ( same level )</li> <li>Unsafe posture</li> </ul>	<ul style="list-style-type: none"> <li>Back Injuries</li> <li>Cut to finger</li> <li>Strain</li> <li>Musculoskeletal Injuries</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>Task specific safety training to be provided</li> <li>Any lifting tasks shall be carried out by persons physically capable to do so</li> <li>No employee should be asked to carry loads above his capacity and in any case no load shall exceed 30kg per man.</li> <li>Mass of the load is more then to be equally shared</li> <li>Deploy enough number of personnel for lifting shall be appointed to the task depending upon the type of load to be lifted.</li> <li>Use easy mode of transport like trolley etc.</li> <li>Load not to be lifted above your shoulder Height</li> <li>Keep your fingers away from pinch point While placing the load</li> <li>Area to be illuminated with adequate lighting.</li> <li>Proper personal protective equipments to be used while manual handling of materials and loads.</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 2 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
3	Handling and storing of Inergen Cylinders	<ul style="list-style-type: none"> <li>• High pressure cylinder</li> <li>• Damaged valve</li> <li>• Collision</li> <li>• Fall of cylinders and Fall of materials into the valve</li> <li>• Unauthorized, untrained workers</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Eye damage</li> <li>• Skin damage</li> <li>• Inhalation</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Cylinders to be handled by trained and qualified person.</li> <li>• Cylinder should be <b>stored</b> in vertical position only</li> <li>• Ensure the cylinders are transported in pallets with tightly secured by straps or in approved cylinder cages.</li> <li>• Manual unloading of Inergen cylinders are not allowed.</li> <li>• Ensure the cylinder valves are protected at all times.</li> <li>• Cylinder stored area to be barricaded and no materials to be stored in that place.</li> <li>• Warning boards and signage to be placed in the storage area.</li> <li>• Always keep the cylinders secured to pallets until it is permanently fixed to the wall bracket.</li> <li>• If the cylinders are stored in open area, provide adequate overhead protection from falling materials.</li> <li>• Close supervision to be done at all times.</li> <li>• Appropriate PPE to be worn while handling the cylinders ( Helmet, shoe, vest, overall, Leather gloves, goggles, respirator.</li> </ul>	Low (ALARP)
4.	Handling chemicals (For pipe coating paint Sigma cover 380,410)	<ul style="list-style-type: none"> <li>• Unauthorized, untrained workers</li> <li>• Spillage</li> <li>• Poor ventilation</li> </ul>	<ul style="list-style-type: none"> <li>• Skin injury</li> <li>• Ingestion</li> <li>• Eye injury</li> <li>• Environment affect</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman prior to work commencement</li> <li>• Task specific safety training to be provided</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 3 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
		<ul style="list-style-type: none"> <li>• Fire</li> <li>• Health hazards ( External / Internal</li> </ul>	<ul style="list-style-type: none"> <li>• Property damage</li> <li>• Occupational health</li> </ul>				<ul style="list-style-type: none"> <li>• Ensure the chemicals are stored as per the manufacturer recommendation and identification.</li> <li>• Adequate lighting and ventilation to be provided</li> <li>• MSDS to be referred prior and to follow the manufacturer instruction</li> <li>• Trained and authorized person to do the job</li> <li>• Only required quantity to take for the work</li> <li>• Do not store chemicals at non designated areas.</li> <li>• Old/ empty container return to store for proper Dispose</li> <li>• Container should check for leakage before Handling</li> <li>• Prevent materials from entering drains and water ways.</li> <li>• Clean with detergents, avoid solvents, contain and collect the spillage with noncombustible absorbent materials and place in container for disposal.</li> <li>• Personnel hygiene to be maintained while <b>and</b> after use of chemicals.</li> <li>• Suitable fire extinguisher ( foam ) placed in the storage area.</li> <li>• Rubber gloves, overall, helmet, vest, shoe, Goggles, mask to be worn while during the activity</li> </ul>	
5.	Pipe preparation and painting	<ul style="list-style-type: none"> <li>• Untrained, unauthorized Workers</li> <li>• Poor lighting and ventilation</li> <li>• Slip, trip and fall</li> <li>• Use of undesignated area</li> <li>• Health hazard ( External/ internal )</li> </ul>	<ul style="list-style-type: none"> <li>• Skin injury</li> <li>• Ingestion</li> <li>• Eye injury</li> <li>• Occupational health</li> <li>• Property damage</li> <li>• Cut and abrasions</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Trained and authorized person to do the job</li> <li>• Polythene sheet to be placed in the base level where the pipe painting work is carried out.</li> <li>• <b>Hot work shall not be allowed in the vicinity.</b></li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 4 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
		<ul style="list-style-type: none"> <li>• Fire</li> </ul>	<ul style="list-style-type: none"> <li>• Burn</li> <li>• Damage to property</li> </ul>				<ul style="list-style-type: none"> <li>• Close supervision to be done at all times.</li> <li>• Barricade and warning board to be placed in around the area.</li> <li>• Flammable paint usage to be controlled by the supervisor and left over to be returned to store on daily basis.</li> <li>• <b>Keep fire extinguisher near the working area/ storage area.</b></li> <li>• <b>Paint tins or other material should be stacked in required quantity only.</b></li> <li>• Personnel hygiene to be maintained while and after use of painting.</li> <li>• Area to be <b>provided with</b> adequate lighting and ventilation</li> <li>• Cover exposed skin while during the activity.</li> <li>• Maintain a good housekeeping policy.</li> <li>• PPE to be worn at all times. ( helmet, shoe, overall, vest, gloves, goggles, mask)</li> </ul>	
6.	Transportation of materials to site using with trailer, pickup, fork lift and crane	<ul style="list-style-type: none"> <li>• Unauthorized, Untrained Workers</li> <li>• Lifting failure.</li> <li>• Unsafe lifting.</li> <li>• Swinging of material</li> <li>• Damaged sling/wire rope or a chain</li> <li>• Poor maintenance of vehicle</li> <li>• Speedy operation</li> <li>• Over turn</li> <li>• Over load</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Fractures</li> <li>• Property damage</li> <li>• Injury to personal</li> <li>• Sprain and strain</li> </ul>	4	C	H	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Ensure the crane and forklift engaged is tested and having valid license and the operator has valid license and approved 3<sup>rd</sup> party certificate.</li> <li>• Engage trained and certified banks man.</li> <li>• Barricade and warning signs in to the area where lifting operation is carried out and restrict the entry.</li> <li>• Check list should be carried out to their vehicles by the operator prior to start any work</li> <li>• Use tagline for control of swing and alignment.</li> </ul>	M (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 5 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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							<ul style="list-style-type: none"> <li>• The crane must be stopped when the wind speed exceeds 38km/hr.</li> <li>• SWL should be clearly marked on the crane and should be check that is functioning.</li> <li>• The crane and trucks shall be periodically maintained and a periodical check has been done by the maintenance team.</li> <li>• Vehicle not to be left unattended at site (ie,to be switch off mode if required and keys removed)               <ul style="list-style-type: none"> <li>• Safe working load should be carry by crane and trucks and Secure the load before it is travelling.</li> </ul> </li> <li>• Operators and rigger must worn high level of reflecting vest and adequate PPE ( Shoe, helmet, leather gloves, goggles, over all )</li> <li>• Vehicle routes kept free of obstructions (with spillages being cleaned up promptly)</li> <li>• Any reversing that is necessary should be overseen by a trained flagman / Banks man.</li> <li>• Operator should follow the site speed limit and obey the traffic rules.</li> <li>• Colour coded system to be implemented to all lifting equipments as per the month.</li> </ul>	
7.	Hooking up cylinders by chain blocks and lifting gears	<ul style="list-style-type: none"> <li>• Unauthorized, Untrained Workers</li> <li>• Damaged chain blocks lifting gears</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Fractures</li> <li>• Eye damage</li> <li>• Skin damage</li> <li>• Inhalation</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman prior to work commencement</li> <li>• Authorized personnel to undertake the job</li> <li>• 3<sup>rd</sup> party certified chain blocks to be used and to follow the colour code.</li> <li>• <b>Chain pulley block's hook shall have safety Latch.</b></li> <li>• <b>Visual inspection shall be carried out prior to use of chain block &amp; lifting gears.</b></li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 6 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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		<ul style="list-style-type: none"> <li>• Slip, trip and fall</li> <li>• Damaged valve</li> <li>• Collision</li> </ul>					<ul style="list-style-type: none"> <li>• Ensure the Inergen cylinders are tightly secured to wall brackets before starting the hooking up activity.</li> <li>• Never over tight the connections on cylinder valve.</li> <li>• Ensure the protective stands are installed on cylinder valves after installation.</li> <li>• Warning signs and barrication to be provide around the area to restrict the other workers of the hazards.</li> <li>• Maintain a good housekeeping policy to prevent slip, trip, fall hazards</li> <li>• Close supervision to be done at all times.</li> <li>• Proper communication to be maintained between the workers while doing the activity</li> <li>• Appropriate PPE to be worn while handling the cylinders ( Helmet, shoe, vest, overall, Leather gloves, goggles and if required to wear organic vapor gas cartridge.</li> </ul>	
8.	Working with Hand tools ( Hammer, spanner, file, lever, screw driver, cutting plier )	<ul style="list-style-type: none"> <li>• Slip, trip and fall</li> <li>• Damaged warn out hand tools</li> <li>• Flying objects</li> <li>• Mushroom Heads</li> <li>• Using incorrect type</li> </ul>	<ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Trigger finger</li> <li>• Cuts and abrasions</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Defective tools should not be issued or used to perform the task, to be checked by store keeper</li> <li>• Don't extend the spanner by using a pipe as an extension bar</li> <li>• Never use a file as a lever</li> <li>• Never use a screw driver as a chisel</li> <li>• Don't work with oily or greased hands</li> <li>• Use eye/ face protection when there is flying materials hazard, wear gloves while required to protect the hands</li> <li>• Use right tools for the job</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 7 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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9.	Working with power tools ( Drill machine, Grinding )	<ul style="list-style-type: none"> <li>• Defective equipment</li> <li>• Electricity</li> <li>• Improper use of equipment</li> <li>• Poor maintenance</li> <li>• Untrained workers</li> <li>• Flying object</li> <li>• Noise and vibration</li> <li>• Fire</li> <li>• Dust</li> </ul>	<ul style="list-style-type: none"> <li>• Hearing losses</li> <li>• Eye injury</li> <li>• Crushing</li> <li>• Back injury</li> <li>• Burns</li> <li>• Electric shock</li> <li>• Ringing in the ear / Deafness</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Job related training to be provided</li> <li>• PTW to be applied and obtained prior to start, If spark producing activity is performed</li> <li>• Defective tools should not be issued or used to perform a task.</li> <li>• Monthly inspection should be carried out by the electrician and record to be kept at the store</li> <li>• All portable power tools should be fitted with adequate fuse protection either in the tool body or in its electrical plug.</li> <li>• The disk used to be more than the rated capacity of the power tools and it should be checked by store keeper/ operator prior to start the activity</li> <li>• The weight, size and type of tool should be selected to suit the job being carried out.</li> <li>• Don't lay the cables around the access way, it should be proper routing</li> <li>• Industrial distribution board and socket only to be used at site</li> <li>• No joints shall be made in electrical cable.</li> <li>• Electrical connection shall be routed through ELCB only.</li> <li>• Correct rate of ELCB should be used ( Ex:- 30ma only acceptable)</li> <li>• Only those persons who have been adequately trained and experienced in the use of the tool should be allowed to use the same.</li> <li>• Power tools shall have inspection sticker.</li> </ul>	M (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 8 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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							<ul style="list-style-type: none"> <li>•Tools should be stored and maintained in good working condition.</li> <li>• Appropriate PPE Should use ( Goggles, Mask, Ear plug, Gloves, Shoe, Helmet, Overall, Vest )</li> </ul>	
10.	Operating with Thread Machine	<ul style="list-style-type: none"> <li>•Defective Machine</li> <li>•Improper use of Machine</li> <li>•Poor maintenance</li> <li>•Untrained, Unauthorized Workers</li> <li>• Slip, trip and fall</li> <li>• Spillage</li> </ul>	<ul style="list-style-type: none"> <li>• Cuts</li> <li>• Crush</li> <li>• Skin Effect</li> <li>• Entanglement</li> <li>• Eye, finger injury</li> <li>• Fracture</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Polythene sheets to be laid and drip trays to be placed below the machine to prevent spillages.</li> <li>• Defective machine should not be used to perform a task.</li> <li>• Only those persons who have been adequately trained and experienced in the use of the machine should be allowed to use the same.</li> <li>• Machine should be maintained in good working Condition.</li> <li>• All spillages must be clean immediately</li> <li>• Waste oil should be disposed in an approved manner</li> <li>• Operator should check the machine condition prior to start the work.</li> <li>• Adequate lighting and ventilation to be Provided.</li> <li>• Don't lay the cables around the access way, it should be proper routing</li> <li>• Industrial distribution board and socket only to be used at site</li> <li>• No joints shall be made in electrical cable.</li> <li>• Electrical connection shall be routed through ELCB only and should be used ( Ex:-30ma only acceptable)</li> <li>• Fire extinguisher to be provided</li> <li>• Area to be barricade and provide signage.</li> </ul>	M (ALARP)



**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 9 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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							<ul style="list-style-type: none"> <li>• Good housekeeping should be maintained.</li> <li>• Personnel protective equipment to be worn ( helmet, shoe, overall, vest, gloves, goggles, mask)</li> </ul>	
11.	Working with ladder	<ul style="list-style-type: none"> <li>• Fall from height</li> <li>• Over reaching</li> <li>• Over loading</li> <li>• Obstructing the access way</li> <li>• Slippery or uneven surface</li> </ul>	<ul style="list-style-type: none"> <li>• Sprain and strain</li> <li>• Fracture</li> <li>• Spinal cord damage</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/ DSTI and Visual inspection to be done before using the ladder</li> <li>• Jobs specify training to be provide</li> <li>• The ladder should extend minimum one meter from the top for safe movement</li> <li>• Heavy materials should not be carried</li> <li>• Do not erect in slippery, uneven surface</li> <li>• Should be set up with a 4 vertical to 1 horizontal slope ( 4:1 )</li> <li>• Inspection carried out by competent person on a regular basis</li> <li>• Step ladder must fully open and lock and the devices to be as per manufacturer</li> <li>• Defective ladder should not be used and report it immediately</li> <li>• Do not work from the top of two rungs</li> <li>• Remember the 3 point contact</li> <li>• Do not work in front of the door. If work is carried then locked the door or blocked off</li> <li>• Ladder to be used for short duration works only limited to 15 min.</li> <li>• Colour coded system to be implemented</li> </ul>	Low (ALARP)
12.	Working on mobile scaffold	<ul style="list-style-type: none"> <li>• Uneven surface</li> <li>• Overhead structure and cable</li> <li>• Materials and worker fall from height</li> <li>• Untrained, unauthorized Workers</li> <li>• Collapse of scaffold</li> </ul>	<ul style="list-style-type: none"> <li>• Sprain and strain</li> <li>• Fracture</li> <li>• Spinal cord damage</li> <li>• Musculoskeletal Injury</li> <li>• Fatality</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/ DSTI to be provide prior to start work</li> <li>• Jobs specify training to be provide</li> <li>• Do not stack materials on to the scaffold</li> <li>• Visual inspection should carry before use</li> <li>• Out rigger fitted and breaks are locked on</li> <li>• Only certified erection person do the alteration and Modify</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 10 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
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							<ul style="list-style-type: none"> <li>• No person to be on the scaffold while it is being moved</li> <li>• Scaffold only use in on level and surface area</li> <li>• Safety harness to be used above 2mtr height and anchored in above shoulder height at all time</li> <li>• Tagging system to be implemented ( i.e., all safe scaffolds shall be provided with green tags and unsafe scaffolds with red tag )</li> <li>• Keep walkways free of obstacles, tools and Equipment</li> <li>• Never stand and sit on the hand rails</li> <li>• Mobile scaffold height should be restricted to 3.5 to 4 times the shortest base width, If height of scaffold exceeds raker support or it should be tied to the structure properly.</li> </ul>	
13.	Working in near floor openings	<ul style="list-style-type: none"> <li>• Material/equipment fall from height</li> <li>• Slip/trip/fall</li> </ul>	<ul style="list-style-type: none"> <li>•Fatality</li> <li>•Property Damage</li> <li>• Fracture</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• PTW to be applied and obtained prior to start work</li> <li>• Rigid barrication to be provided to all external Edges and where a fall can occur.</li> <li>•Warning signboards to be provided in those areas.</li> <li>• PPE to be used at all times ( Helmet, Shoes, Vest, Overall, Harness )</li> </ul>	Low (ALARP)
14.	Stacking and Storing	<ul style="list-style-type: none"> <li>• Unauthorized, untrained workers</li> <li>• Material fall from height</li> <li>• Improper stacking</li> <li>• Collapse</li> </ul>	<ul style="list-style-type: none"> <li>• Crush</li> <li>• Cut and abrasion</li> <li>• Damage to property</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• All materials shall be stored below 2 meter height.</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 11 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
							<ul style="list-style-type: none"> <li>• If the material is too heavy, use hydraulic trolley to shift the material.</li> <li>• No storage of materials to be done in the work place, only required quantity to be taken for the job.</li> <li>• Personnel protective equipment must wear at all time during the activity. (Helmet, shoe, vest, overall, gloves, goggles, mask.)</li> </ul>	
15.	Pipe Joining Work With use of Grooving machine	<ul style="list-style-type: none"> <li>• Fire</li> <li>• Untrained, Unauthorized Worker</li> <li>• Electricity</li> <li>• Hot surface</li> <li>• Lighting and ventilation</li> <li>• Improper identification</li> </ul>	<ul style="list-style-type: none"> <li>• Burns</li> <li>• Property damage</li> <li>• Electrical shock</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Authorized personnel to undertake the job</li> <li>• Warning boards should be provided and Barricaded</li> <li>• Proper lighting and ventilation to be provided</li> <li>• Appropriate fire extinguisher should be placed in to the work area ( Dry powder, CO2, Fire blanket )</li> <li>• All Flammable /combustible materials should be removed from the area</li> <li>• Appropriate PPE Should use ( Goggles, Gloves, Shoe, Helmet, Overall, Vest )</li> </ul>	Low (ALARP)
16.	Working with Concrete Cutter	<ul style="list-style-type: none"> <li>• defective equipment</li> <li>• Electricity</li> <li>• Improper use of equipment/ disk</li> <li>• Poor maintenance</li> <li>• Untrained workers</li> <li>• Flying object</li> </ul>	<ul style="list-style-type: none"> <li>• ringing in the ear/ deafness</li> <li>• Eye injury</li> <li>• Crushing</li> <li>• Back injury</li> <li>• Burns</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Job related training to be provided</li> <li>• PTW to be applied and obtained prior to start, If spark producing activity is performed</li> <li>• Defective tools should not be issued or used to perform a task.</li> </ul>	M (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 12 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
		<ul style="list-style-type: none"> <li>Noise, vibration and dust</li> </ul>	<ul style="list-style-type: none"> <li>Breathing Difficulties</li> <li>Cut and abrasions</li> </ul>				<ul style="list-style-type: none"> <li>Monthly inspection should be carried out by the electrician and record to be kept at the store</li> <li>The disk used to be more than the rated capacity of the power tools and it should be checked by store keeper/ operator prior to start the activity</li> <li>Cutting tools should be fitted with adequate fuse protection either in the tool body or in its electrical plug.</li> <li>The weight, size and type of tool should be selected to suit the job being carried out.</li> <li>Don't lay the cables around the access way, it should be proper routing</li> <li>Industrial distribution board and socket only to be used at site</li> <li>Correct rate of breaker should be used ( Ex:- 30ma only acceptable)</li> <li>Only those persons who have been adequately trained and experienced in the use of the tool should be allowed to use the same.</li> <li>Tools should be stored and maintained in good working condition.</li> <li>Appropriate PPE Should use ( Ear plug, Dust mask, Goggles, Gloves, Shoe, Helmet, Overall, Vest )</li> </ul>	
17.	Installation of pipes, manifolds, conduits and fittings	<ul style="list-style-type: none"> <li>Untrained, unauthorized Workers</li> <li>Material Fall</li> <li>Sharp edges</li> <li>Unsafe posture</li> <li>Slip, trip and fall</li> </ul>	<ul style="list-style-type: none"> <li>Cut and abrasion</li> <li>Back Injuries</li> <li>Fatigue</li> <li>Musculoskeletal Injuries</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>Task specific safety training to be provided</li> <li>Authorized personnel to undertake the job</li> <li>Daily safety inspection should be carried and eliminate the hazard</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 13 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
							<ul style="list-style-type: none"> <li>• Close supervision to be done at all times</li> <li>• Materials should not kept in walkways, edge of the opening.</li> <li>• Deploy enough number of personnel for material lifting shall be appointed to the task depending upon the distance</li> <li>• Proper communication to be maintained between the workers while doing the installation</li> <li>• Avoid over reaching the pipes to reduce from strain and pain.</li> <li>• Maintain a good housekeeping policy to prevent from slip, trip, and fall hazards.</li> <li>• Two level works to the openings and edges not to be performed.</li> <li>• PPE to be worn at all times( Gloves, goggles, mask, helmet, shoe, vest, overall)</li> </ul>	
18.	Cable pulling and laying into the conduits	<ul style="list-style-type: none"> <li>• Sharp edges</li> <li>• Slip, trip and fall</li> <li>• Unauthorized, untrained Workers</li> <li>• Over reaching</li> <li>• Poor posture</li> <li>• Poor communication</li> </ul>	<ul style="list-style-type: none"> <li>• Back Injuries</li> <li>• Cut to finger</li> <li>• Strain</li> <li>• Musculoskeletal Injuries</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specific safety training to be provided</li> <li>• Deploy enough number of personnel for cable pulling shall be appointed to the task depending upon the distance</li> <li>• Avoid over reaching the cable to reduce from strain and pain.</li> <li>• Be informed and communicated well with their co-worker</li> <li>• Close supervision to be done at all times</li> <li>• PPE to be worn ( Gloves, helmet, shoe, overall)</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY- INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 14 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
19.	Integrity testing	<ul style="list-style-type: none"> <li>• Untrained, unauthorized Workers</li> <li>• Faulty equipments</li> <li>• Poor lighting</li> <li>• Improper identification</li> </ul>	<ul style="list-style-type: none"> <li>• Property damage</li> <li>• Full body injury</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specify safety training to be provided</li> <li>• PTW to be applied and obtained prior to start work</li> <li>• Damaged equipment should not be used</li> <li>• Close supervision to be done at all times</li> <li>• Proper lighting to be provided in around the working area</li> <li>• Warning signs and boards should be provided and area to be well barricaded</li> </ul>	Low (ALARP)
20.	Flushing, pressure and leakage testing	<ul style="list-style-type: none"> <li>• Untrained, unauthorized Workers</li> <li>• Faulty pressure gauge</li> <li>• Poor lighting</li> <li>• Improper identification</li> <li>• <b>Bursting of pipes</b></li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Property damage</li> <li>• Fractures</li> <li>• Full body injury</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>• Task specify safety training to be provided</li> <li>• PTW to be applied and obtained prior to start work</li> <li>• Calibrated pressure gauge only to be used for pressure testing</li> <li>• <b>Never pressure test the system/ pipe above its designed pressure.</b></li> <li>• <b>Never do hot work on a pressurized system ( always de-pressurize )</b></li> <li>• Air compressor should be check prior to start the work and authorized person only to operate the compressor.</li> <li>• Close supervision to be done at all times</li> <li>• Proper lighting to be provided in around the working area.</li> <li>• Warning signs and boards should be provided And area to be well barricaded</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 15 of 16

Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
21.	Cable and earth testing used with multi meter and megger	<ul style="list-style-type: none"> <li>Unauthorized/ untrained Person</li> <li>Faulty Instrument</li> <li>Improper identification</li> <li>Electrocution</li> </ul>	<ul style="list-style-type: none"> <li>Electric shock and Burns</li> <li>Cut and abrasion</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>TBT/DSTI to be conducted by the foreman/ safety officer prior to work commencement</li> <li>Trained person only to do the megger testing</li> <li>PTW to be applied and obtained prior to start work</li> <li><b>Ensure that the circuit is not live before using the megger.</b></li> <li><b>Calibrated / certified megger only shall be used.</b></li> <li>Warning boards should be provided and Barricaded</li> </ul>	Low (ALARP)
22.	While working at night shift	<ul style="list-style-type: none"> <li>Poor illumination</li> <li>Slip/trip/fall</li> </ul>	<ul style="list-style-type: none"> <li>Fatality</li> <li>Cuts</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>Proper illumination to be provided</li> <li>light post to be secured from fall</li> <li>Proper cable management system to be Followed</li> <li>All materials to be staged in proper manner without obstacles</li> </ul>	Low (ALARP)
23.	Working in hot weather	<ul style="list-style-type: none"> <li>Heat</li> </ul>	<ul style="list-style-type: none"> <li>Dehydration</li> <li>Sunburn</li> <li>Skin Cancer</li> </ul>	2	B	M	<ul style="list-style-type: none"> <li>Drink plenty of water</li> <li>Proper awareness of heat stress symptoms</li> <li>Avoid highly physical tasks during the hottest part of the day</li> <li>Isotonic drinks to be provided</li> </ul>	Low (ALARP)
24.	Work Completion	<ul style="list-style-type: none"> <li>Poor housekeeping</li> <li>Slip/trip/fall</li> </ul>	<ul style="list-style-type: none"> <li>Fire</li> </ul>	2	A	L	<ul style="list-style-type: none"> <li>General housekeeping, Remove all surface, unwanted waste materials from the building</li> <li>All necessary precautions will be adopted to prevent fire</li> </ul>	Low (ALARP)

**PROJECT NAME**

**ACTIVITY– INSTALLATION, TESTING & COMMISSIONING OF CLEAN AGENT SYSTEM**

Ref No:  
Rev.No:0  
Page 16 of 16

**RISK MATRIX**

					Probability				
					A	B	C	D	E
Severity	People	Assets	Environment	Reputation	Improbable 1 in 100,000 Years	Remote 1 in 10,000 Years	Occasional 1 in 1000 years	Probable 1 in 100 years	Frequent 1 in 10 years
5-Catstrophic	Multiple fatalities or permanent total disabilities	Extensive damage	Massive effect	International impact	<p align="center"><b>High Risk</b></p> <p align="center"><b>Medium Risk (ALARP)</b></p> <p align="center"><b>Low Risk</b></p>				
4-Severe	Single fatalities or permanent total disabilities	Major damage	Major effect	National impact					
3-critical	Major injury or health effects	Local damage	Localised effect	Considerable impact					
2-Marginal	Minor injury or health effects	Minor damage	Minor effect	Minor impact					
1-Negligible	Slight injury or health effects	Slight Damage	Slight effect	Slight impact					

<b>HIGH</b>	<p><b>3-E</b></p> <p><b>4-C,D,E</b></p> <p><b>5-B,C,D,E</b></p>
<b>MEDIUM</b>	<p><b>1-D,E</b></p> <p><b>2-B,C,D,E</b></p> <p><b>3-A,B,C,D</b></p> <p><b>4-A,B</b></p> <p><b>5-A</b></p>
<b>LOW</b>	<p><b>1-A,B,C</b></p> <p><b>2A</b></p>