

**PROJECT NAME**

**ACTIVITY– LV Power cables and wires installation**

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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>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)

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3.	Transportation of cable drum 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>• 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>• Barrication 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> <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> <li>• Operators and rigger must worn high level of reflecting vest and adequate PPE ( Shoe, helmet, leather gloves, goggles, over all )</li> </ul> </li> <li>• Vehicle routes kept free of obstructions (with spillages being cleaned up promptly)</li> <li>• <b>Keep drums in a leveled area.</b></li> <li>• <b>Provide wooden chokes to avoid rolling.</b></li> </ul>	M (ALARP)

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							<ul style="list-style-type: none"> <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>	
4.	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 of materials</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>All materials shall be stored below 2 meter height.</li> <li>Drums should be stored well drained or concrete surfaces</li> <li>If the material is too heavy, use hydraulic trolley to shift the material.</li> <li>Do not stored on the flat side. ie., with flanges horizontal.</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 worn at all time during the activity. (Helmet, shoe, vest, overall, gloves, goggles, mask.)</li> </ul>	Low (ALARP)
5.	Cable pulling	<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> <li>Damaged to cables</li> </ul>	3	C	M	<ul style="list-style-type: none"> <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> </ul>	Low (ALARP)

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							<ul style="list-style-type: none"> <li>• Use rubber sheets to protect the cable from getting damaged at the edge of the cable ducts / cable support</li> <li>• Proper cable rollers shall be used</li> <li>• PPE to be worn ( Gloves, helmet, shoe, overall)</li> </ul>	
6.	Cable laying , glanding and termination	<ul style="list-style-type: none"> <li>• Untrained, unauthorized Workers</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>• Authorized personnel to undertake the job</li> <li>• Daily safety inspection should be carried and eliminate the hazard</li> <li>• Close supervision to be done at all times</li> <li>• Tools &amp; cables <b>should not</b> be kept in Walkways, edge of the opening.</li> <li>• Deploy enough number of personnel for cable 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 cables 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>	Low (ALARP)
7.	Working with Hand tools (Cutter, Knife Crimping type )	<ul style="list-style-type: none"> <li>• Slip, trip and fall</li> <li>• Damaged worn out hand tools</li> </ul>	<ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Trigger finger</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• Defective tools should not be issued or used to perform the task, to be checked by store keeper</li> </ul>	Low (ALARP)

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				Severity	Probability	Initial Risk		
		<ul style="list-style-type: none"> <li>Flying objects</li> <li>Mushroom Heads</li> <li>Using incorrect type</li> </ul>	<ul style="list-style-type: none"> <li>Cuts and abrasions</li> </ul>				<ul style="list-style-type: none"> <li>Don't extend the spanner by using a pipe as an extension bar</li> <li>Hand tools shall be free from oil, grease&amp;etc.</li> <li>Chisel's head shall have safety cap to avoid finger injury.</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>	
8.	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>Injury to the person</li> </ul>	3	C	M	<ul style="list-style-type: none"> <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 and maintenance to be registered and recorded by the store keeper</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)

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9.	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>• 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 trained scaffolders shall be involved in erection &amp; dismantling activities.</li> <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>	Low (ALARP)
10.	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>• Electrocutation</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>• Trained person only to do the megger testing</li> <li>• PTW to be applied and obtained prior to start work</li> <li>• Ensure that the circuit is not live before using the megger.</li> <li>• Calibrated / certified instrument only shall be used.</li> <li>• Warning boards should be provided and Barricaded</li> </ul>	Low (ALARP)

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11.	Traffic and road management	<ul style="list-style-type: none"> <li>• Vehicle/ pedestrian accident</li> <li>• Poor identification</li> <li>• Unauthorized/ untrained Operator/ driver, banks men</li> <li>• Poor access for vehicle</li> <li>• Public movement</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Property damage</li> <li>• Fracture</li> <li>• Penalty/ compensation</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• Prior to start obtain all relevant approval from traffic department in connection to the use of road.</li> <li>• PTW to be approved from Company/Contractor prior to start the activity.</li> <li>• Trained and experienced operator/ driver and banks men to be appoint for the activity.</li> <li>• Restricted to unauthorized and public to enter the area.</li> <li>• Public vehicles and transport to be restrict to enter the work area and proper alternative way to be provided.</li> <li>• Warning sign boards to be placed and area to be well barricaded.</li> <li>• High visibility vest to be provided to flagman to increase visibility.</li> <li>• Flagman to be positioned to the areas wherever required.</li> <li>• Close supervision to be done at all times.</li> </ul>	Low (ALARP)
12.	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>• 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)

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13.	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)
14.	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)
15.	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)

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**CONSULTANT 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	<b>Medium Risk (ALARP)</b>	<b>High Risk</b>			
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>Low Risk</b>				

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