



# **Positive Electric Co. Job Hazard Analysis**

**Project:  
Middlesex Solar Job**

**Address:  
100 Middlesex Blvd.  
South Brunswick, NJ 08831**

## JOB HAZARD ANALYSIS

<b>Project:</b>	Middlesex Solar Project	<b>Location:</b>	South Brunswick, NJ
<b>Date Analysis Completed:</b>	5/19/23	<b>Reviewed</b>	
<b>Company</b>	Positive Electric Co.		
<b>Job Description:</b>		<b>Electrical &amp; Solar Work</b>	

<b>Job site rules</b>	<ul style="list-style-type: none"> <li>All personnel on site must wear the following PPE: Hard hat, eye protection, long pants, shirts with sleeves, safety footwear for construction, high visibility safety vest when around moving equipment.</li> <li>No alcohol or drugs are permitted on property.</li> <li>No horseplay, harassment, or bullying is permitted.</li> <li>Cell phones are never to be used while operating equipment or while working from heights. Before using the cell phone look at your surroundings and get to a spot out of the way of potential danger. Do not stand in areas of travel, especially equipment travel.</li> </ul>
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Sequence of Work	Potential Hazards	Eliminate or Control Method
<b>Mobilization</b>	Exposure to vehicular and worker traffic Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>Perform delivery and mobilization work inside the construction area. If not, spotters must be used.</li> <li>Maintain good housekeeping. Implement the policy “clean as you go” to prevent slip, trip and fall hazards. Maintain clear paths of travel inside the construction area.</li> </ul>
<b>Installation and Working off Scaffolding</b>	Untrained Personnel  Falls, Scaffold Collapse	<ul style="list-style-type: none"> <li>Only competent persons in scaffold erection may erect scaffolding. While erecting or dismantling set up a “NO ACCESS ZONE with “DO NOT ENTER” red tape a safe distance back from the scaffold and allow no unauthorized personnel in the zone.</li> <li>Only a competent person may inspect the scaffold daily and approve its use.</li> <li>Only trained scaffold users may access the scaffolding.</li> <li>Signage to be placed on the scaffolding as follows:                             <ul style="list-style-type: none"> <li>During erection and dismantling of scaffolding a sign stating “Do not Use – Scaffolding Incomplete” or similar is to be posted at all access stairways / ladder.</li> <li>In addition, a scaffold red tag/green tag system is to be used and placed at all access stairways/ladders. The scaffold is to be inspected every day prior to use by a competent person and a green tag initialed and displayed if the scaffold is safe. If unsafe, the red tag is to be placed and no one is to use the scaffold.</li> </ul> </li> <li>Scaffold platforms must be fully planed with no more than a 1” gap between planks. They are not to be removed.</li> </ul>

		<ul style="list-style-type: none"> <li>• Guardrails are to be on all open sides of the scaffold working levels above 6'. Top railing to be 42" +/- 3". A mid-rail to be half the height of top rail.</li> <li>• Scaffold to be on a firm foundation per OSHA standards. If on sills, they must be 2"x10"x10" nominal with baseplates secured to the sills.</li> <li>• Scaffolding to be secured to the building per OSHA standards if the scaffold height exceeds 4x's the width of the base.</li> <li>• Also ensure there is no way for a person to exit the building into the scaffold area.</li> </ul>
<b>Access to Roof</b>	Falls, scaffold collapse	<ul style="list-style-type: none"> <li>• A scaffold stairway is to be used for roof access. All scaffolding items noted in the section above are to be followed.</li> </ul>
<b>Lifting materials to roof (Use of Powered Industrial Truck - Telehandler/Lull)</b>	Struck by, falls, equipment tip over	<ul style="list-style-type: none"> <li>• Only a trained and certified operator may operate the lift.</li> <li>• Ensure the lift has the capacity to lift the load to the roof. Follow the load chart and ensure there is no potential for lift tip over.</li> <li>• Ensure loads are secure.</li> <li>• If equipped with outriggers, use them.</li> <li>• Create a "NO ACCESS ZONE" with red "DO NOT ENTER" tape for the loading area. Use hard barricades if needed and/or a spotter if needed. Also ensure there is no way for a person to exit the building into the loading area.</li> <li>• A spotter to be used while raising and lowering loads</li> </ul>
	Striking Overhead Power Lines	<ul style="list-style-type: none"> <li>• Keep all parts of the lift at least 10' away from high voltage power lines of 50kv or less. If there are lines over 50kv, consult the OSHA standard for the necessary distance.</li> <li>• Use a spotter if the equipment can reach within the distances noted above.</li> </ul>
<b>Work at the roof (Including installation of solar panels)</b>	Falls	<p>In areas where the parapet wall is not at least 39" high, a combination of a warning line system and personal fall systems will be used. A warning line system is to comply with the following:</p> <ul style="list-style-type: none"> <li>• The warning line will be erected around all sides of the roof work area at least 6' back from the edge/parapet wall.</li> <li>• Warning lines will consist of ropes, wires, or chains, and supporting stanchions erected as follows:</li> <li>• The rope, wire, or chain will be flagged at not more than 6-foot intervals with high visibility material.</li> <li>• The rope, wire, or chain will be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the walking/working surface and its highest point is no more than 39 inches from the walking/working surface.</li> <li>• After being erected, with the rope, wire, or chain attached, stanchions will be capable of resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion, 30</li> </ul>

		<p>inches above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge.</p> <ul style="list-style-type: none"> <li>• The rope, wire, or chain will have a minimum tensile strength of 500 pounds and after being attached to the stanchions, will be capable of supporting, without breaking.</li> <li>• The line will be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.</li> <li>• No employee will be allowed in the area between a roof edge and a warning line unless the employee is authorized to do so and has a means of personal fall protection. This includes when receiving loads from the telehandler.</li> <li>• A competent person is to inspect the warning line daily prior to work on the roof, and ensure it is maintained in place throughout the day.</li> <li>• When using a personal fall system (Anchor, connecting device, harness) worker must be trained in their use. Proper selection and placement of anchors are needed to ensure it is rated for 5,000 pound and placed so that fall distance is limited to a maximum of 6'. (Fall restraint setup preferred)</li> <li>• Only trained personnel in fall protection may use personal fall protection and should be on the roof.</li> <li>• A meeting is to be held with all workers on the roof explaining the warning line and personal fall system set up for work on the roof.</li> <li>• Ensure there are no interior openings on the roof. Otherwise, additional fall protection measures need to be taken.</li> </ul>
<p><b>(Cont'd) Work at the roof (Including installation of solar panels)</b></p>	<p>Electrical shock Struck by Injury from lifting</p>	<ul style="list-style-type: none"> <li>• Use proper lifting techniques when lifting panels. Get help when needed for safe lifting</li> <li>• Keep all materials at least 6' away from the roof edge and do not store any materials on the parapet</li> <li>• Follow lockout procedures</li> <li>• <b>Ensure proper protection is taken to prevent electrical shock. NOTE: The manufacturer's instructions for the specific panels being installed should be attached to this JHA and reviewed in a training session with all workers prior to work beginning.</b> This will establish what PPE needs to be worn, how to recognize when DC electrical energy is generated, what to do with broken panels, how to correctly install the modules, and more.</li> <li>• While deferring to the manufacturer instructions, the following are basic principles of safe work with PV modules: <ul style="list-style-type: none"> <li>○ Always wear protective head gear, insulating gloves and safety shoes (with rubber soles).</li> <li>○ Keep the PV module packed in the carton until installation.</li> <li>○ Do not touch the PV module unnecessarily during installation. The glass surface and the frame may be hot. There is a risk of burns and electric shock.</li> <li>○ Do not work in rain, snow, or windy conditions.</li> <li>○ Due to the risk of electrical shock, do not perform any work if the terminals of the PV module are wet.</li> <li>○ Use insulated tools and do not use wet tools.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ When installing PV modules, do not drop any objects (e.g., PV modules or tools).</li> <li>○ Make sure flammable gasses are not generated or present near the installation site.</li> <li>○ Insert module connectors fully and correctly.</li> <li>○ Ensure all lockout tagout procedures are followed.</li> <li>○ Do not touch the junction box and the end of the interconnect cables (connectors) with bare hands during installation or under sunlight, regardless of if the PV module is connected to or disconnected from the system.</li> <li>○ Do not expose the PV module to excessive loads on the surface of the PV module or twist the frame.</li> <li>○ Do not hit or put excessive load on the glass or back sheet, this may break the cells or cause microcracks.</li> </ul>
<p><b>Installing and wiring inverters, Panelboards, Combiners, Running Wire</b></p>	<p>Lacerations, falls, pinch points, shock</p>	<p>Follow lockout procedures</p> <p><b>Hand and power tools – general</b></p> <ul style="list-style-type: none"> <li>● Only use a tool if you are trained how to use it.</li> <li>● Read and understand the manufacturer instructions. Only use the tool for its designated purpose.</li> <li>● Inspect the tool before use. Ensure it is clean and in good repair.</li> <li>● Wear PPE including eye protection and hearing protection</li> <li>● Keep hands free of pinch points</li> <li>● Keep safety guards in place.</li> <li>● Inspect the electrical cord to ensure it is in safe condition.</li> <li>● Ensure extension cords are in good condition, are of construction grade and are of proper gauge for the work to be done. Do not overload circuits.</li> <li>● Remove any damaged or unsafe tools from service and notify your supervisor. Mark it “Defective”.</li> <li>● Do not leave power tools unattended.</li> </ul> <p><b>Ladders</b></p> <ul style="list-style-type: none"> <li>● Only use non-conductive ladders</li> <li>● Use only type 1, 1A, or 1AA ladders and ensure they will support the intended weight capacity. Only use non-conductive ladders</li> <li>● Inspect the ladders prior to use. If defective, tag them out and remove from the site.</li> <li>● When using step ladders, they must be set up as designed, including being fully opened.</li> <li>● Do not place ladders in passageways, doorways, drives, or any locations where they may be displaced by any other work unless protected by barricades or guards.</li> </ul>

		<ul style="list-style-type: none"> <li>• Three points of contact must always be maintained when ascending or descending ladders. Only use ladders for their intended purpose and manufacturer's recommendations.</li> <li>• Ladders must not be climbed by more than one person at a time.</li> <li>• Never stand on the top two steps of a ladder and do not overreach while using the ladder.</li> </ul>
<b>Tying into existing building service</b>	Electric shock, arc flash	<p>A meeting is to be held with the team who will tie into the building service. Meeting should discuss:</p> <ul style="list-style-type: none"> <li>• Power shutdown and lockout procedures</li> <li>• Arc Flash rated equipment needed and approach distances</li> <li>• Any other necessary items related to the shutdown.</li> </ul>
<b>Name of Preparer: Todd Blanchard 5/19/23</b>		

This plan will be reviewed with each employee prior to work on the project:

Name	Signature	Company	Date