**Solar Electric Technician (Level 2)**

**Module 5: Installation and assembly**

**E10: Assignment -Practice on cable routing and conduiting**

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| **E10: ASSIGNMENT MEMO** | |
| **Date** | …. |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Practice on cable routing and conduiting. |
| **What** | Perform cable routing and conduiting. |
| **Why** | To enable participants to perform cable routing and conduiting. |
| **How** | 1. Group of 2 or 4. 2. Gather the required tools/ equipment's and manuals. 3. As per the given instruction, perform cable routing and conduiting. 4. Answer the questions and discuss the results. |
| **Time** | 60’ |

**Connect the cables from the solar PV array to the battery room located at the ground floor by using conduits and cables.**

**Required tools/equipment**

* Solar PV cables (DC and AC)
* Conduits (PVC or metal)
* Conduit fittings and junction boxes
* Cable ties, saddles, clamps
* Measuring tape, cable stripper, pliers, and screwdrivers
* Marking tape or labels for cable identification
* Drill, screws, wall plugs (if needed for securing conduits to walls)
* Cable pulling tools (fish tape or cable rods)

**Instructions**

Follow each step to conclude the assignment.

**Step 1: Assess the site and plan the route for the cables from the solar panels to the inverter and any other necessary components (e.g., battery bank or combiner box).**

* Inspect the site and identify the best paths for routing cables to minimize bends and ensure ease of access for future maintenance.
* Decide whether to use an overhead or underground conduit system or follow the SLD/ working drawing.
* Mark out the cable paths and areas where conduits will be installed.

**Step 2: Measure the required length of cables and cut conduits to fit the route.**

* Measure the distance from the solar PV array to the inverter and between other key components.
* Cut cables to the appropriate length, ensuring a little extra flexibility in the connection points.
* Measure and cut conduits to fit the marked paths, ensuring smooth bends where needed.

**Step 3: Install the conduits and route the cables through them.**

* Secure the conduits along the planned route using saddles or clamps at regular intervals (e.g., every 3-4 feet).
* Pull the cables through the conduits using a cable pulling tool (fish tape or cable rods), ensuring no damage to the cable sheathing.
* Connect the conduits to junction boxes or fitting connectors where needed.
* Neatly organize the cables inside the conduits, avoiding sharp bends and unnecessary cable tension.

**Step 4: Secure and label all cables for easy identification and future maintenance.**

* Use cable ties or clamps to ensure the cables are secure within the conduits.
* Label the cables at both ends with appropriate identification (e.g., PV array, inverter input/output, battery connections).
* Ensure the cables are neatly routed without crossing over each other unnecessarily.

**Step 5: Group review and discussion (Instructor-led discussion)**

* Each group presents their cable routing setup, explaining their conduit choices and cable path decisions.
* Discuss challenges encountered during the routing process and how they were resolved.
* Emphasize safety practices followed during the exercise and the importance of meeting code requirements for cable routing and concealment.

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| **Summary of findings** |
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