ITEM 683.96100305 – POWER DISTRIBUTION UNIT

1. DESCRIPTION:
   1.1 Under this item the Contractor shall furnish, test and install a Power Distribution Unit (PDU) as per the contract documents and or as directed by the Engineer.

2. MATERIALS:
   2.1 Mechanical Requirements;
      2.1.1 The Contractor shall provide all components, peripheral equipment, interfacing apparatus (hardware and software), system wiring and networking, mounting hardware, and any other materials necessary to complete the installation as described in the contract documents as being included in the work under this section.
      2.1.2 The Contractor shall supply make and model of PDU as described in the contract documents, or approved equal.
      2.1.3 All materials supplied shall bear the manufacturer’s identifying markings in order to positively identify products approved for use.
      2.1.4 The person performing the installation and configuration activities shall have the following certifications and experience;
         2.1.4.1 Five years of established experience in the installation and configuration of similar electrical and network devices, and shall have gained such experience working on a minimum of three projects of equal or greater size as this project.
         2.1.4.2 Certification of competency from the equipment manufacturer.

   2.2 Material Acceptance Requirements;
      2.2.1 The contractor shall submit to the Engineer, manufacturer’s specification sheets with the model specified and manufacturer’s certification that the material supplied meets the requirements stated in the contract documents.
      2.2.2 At the time of delivery to the job site, the contractor shall bench test all capabilities of each PDU in the presence of the Engineer and the Regional ITS Coordinator for proof of supplied operability.
      2.2.3 The contractor shall submit the manual for the PDU and a list of PDU serial numbers and corresponding installation locations to the engineer prior to bench testing the equipment.
      2.2.4 The contractor shall label all materials with the installation location, and then perform a visual inspection of all material for Engineer approval.
      2.2.5 The contractor shall provide to the engineer all required experience and certification documentation for the personnel who will be performing installation and configuration activities.
      2.2.6 The contractor may propose, for approval by the Regional ITS Coordinator, materials equal to the materials specified in the contract documents. If equal materials are proposed, the contractor shall provide
the following materials, documentation, and labor at no cost to the State, for review, testing, and approval;

2.2.6.1 Two fully functional demonstration models of the same configuration and capabilities of the proposed material, for a period of not less than 60 days, for the purposes of bench top and live testing. The State shall not be liable for any damage to the materials during the testing period.

2.2.6.2 Manufacturer’s documentation stating the functional capabilities and configuration of the proposed material, installation manuals, warranty information, any diagnostic software or tools required to maintain the materials.

2.2.6.3 Manufacturer’s certification that the proposed materials meet or exceed the specifications for the proposed material.

2.2.6.4 Full and direct manufacturer and contractor support, during the testing period. This includes, but is not limited to, demonstration tests, training, documentation, use of contractor or manufacturer owned peripheral equipment or facilities required for testing.

2.2.7 Any failure of the proposed material to satisfactorily equal the model described in the contract documents, either in functional testing or by documented characteristic shall constitute a disapproval of the proposed material.

2.2.8 The contractor has the option of repairing or altering materials which have been disapproved and resubmitting the material for re-testing.

2.2.9 Any proposal to substitute materials in place of the materials stated in the contract documents made by the contractor, and subsequent supply of materials, testing, and review by the State as a result of that proposal shall not constitute a justification for extension of time or payment of additional work.

3. CONSTRUCTION DETAILS:

3.1 Construction Installation;

3.1.1 All materials shall be installed in the locations specified in the contract documents and in accordance with the manufacturer’s recommended installation procedures, and the contract documents.

3.1.2 The contractor shall install each PDU in a consistent location in each like cabinet, and connect communications cables to each port as specified in the contract documents.

3.1.3 The PDU and all cables, shall be neatly installed, coiled, and secured in accordance with the manufacturer’s recommended installation procedures.
3.1.4 The PDU shall be installed in a manner to prevent communications cable tangling, pinch points, abrasion, micro-bending, tension, compression, or snagging during maintenance operations.

3.1.5 The contractor shall protect all port adaptors from foreign material at all times and shall maintain dust caps on all adaptors except when removal is required to complete connections.

3.1.6 The contractor shall install the PDU with the exact configurations tested as part of the materials acceptance requirements. Any changes to the configurations during installation shall be approved by the Regional ITS Coordinator, and documented by the contractor.

3.2 Construction Acceptance Requirements;

3.2.1 Once installed, the Contractor, in the presence of the Engineer, shall inspect attached cabling, mounting, and PDU for mechanical operability, secure mounting, safe cable routing, and any signs of physical damage. Any sign of installation not consistent with the contract documents shall be repaired or replaced to the Engineer’s satisfaction prior to construction acceptance.

3.2.2 Once installed, the Contractor, in the presence of the Engineer, shall confirm the setting of each configuration documented in the material acceptance requirements and record any changes made.

3.2.3 The contractor shall then test the communications link and power distribution and interruption functions of the PDU from a central network switch as directed by the Engineer to the PDU though the PDU manufacturer’s utility.

3.2.4 Any network functional value, measured below the value specified as a minimum by the PDU manufacturer, which is attributable to the PDU being tested, shall be considered non-compliant with this specification and shall be repaired or replaced to the Engineer’s satisfaction prior to construction acceptance.
4. METHOD OF MEASUREMENT:

4.1 The unit price bid for each unit shall include procurement, storage, installation, electrical wiring connected to the unit, configuration, support, labeling, and all testing required to complete the work as per the contract documents. All units shall be measured as one each regardless of installation, wiring, configuration, or support required by the contract documents or site conditions.

5. BASIS OF PAYMENT:

5.1 The price bid for each item shall include the cost of furnishing all equipment, associated materials, incidentals, labor, tools, testing equipment, integration support, and testing required for completion of the work described in the contract documents.

5.2 Payment for each item will be made on a partial payment staged basis as follows:

<table>
<thead>
<tr>
<th>Milestone No.</th>
<th>Description</th>
<th>Payment Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Construction Acceptance</td>
<td>60%</td>
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