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# Special Specification 6135

## Computerized Transportation Management System Equipment

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### 1. DESCRIPTION

Relocate computerized transportation management system (CTMS) equipment as shown on the plans and as described in this specification.

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### 2. WORK METHODS

Before starting any work involving the existing fiber optic cable, completely identify the fiber strands currently in use and do not disconnect any active fiber without coordination with the Department's representative. Furnish the material and services necessary for disconnection and reconnection of existing equipment to the fiber optic cable as part of this bid item. Repair any damage to the existing fiber optic cable or patch panels during the reconnection of existing equipment, at no cost to the Department.

Document all changes in the fiber optic cable utilization and provide detailed fiber optic cable as-built schematics to the Engineer upon completion of the changes. Provide complete documentation for all temporary and permanent installations.

Provide fiber optic cable with refractive indexes and core alignment fully compatible with the existing glass fiber for minimum splice losses.

Provide a cable configuration that matches the existing fiber optic cable. If the work requires pulling the cable from an existing conduit and rethreading the cable for the new installation, the cable must be undamaged. No splices will be allowed between cabinets.

Splice or terminate each strand of every relocated fiber optic cable unless shown otherwise in the plans. Use splice enclosures, organizers and incidentals, and cable end preparation tools and procedures that are approved by the Engineer. Test all splices and terminations to the satisfaction of the Engineer. Return cable, buffer, and bare fiber spare lengths to their original state or better.

Use the Optical Time Domain Reflectometer (OTDR) to measure the fiber optic cable for overall attenuation (signal loss dB/km), fiber cable length, and to identify fiber cable anomalies such as breaks in the cable. Perform the four OTDR tests as follows:

- Test the existing cable before rerouting.
- Post-install test of rerouted cable.
- Documented splice loss test.
- Final end to end OTDR test.

Perform OTDR tests bi-directionally at dual windows at medium settings for each strand of the relocated cable. Record the test results on portable media, with copies of the media and paper copy delivered to the Engineer for approval. Final inspection and acceptance of the fiber optic cable will be made after the completion of the installation and testing and approval of the documentation. Provide the software necessary for viewing the test results.

All equipment will be installed by the Contractor, who, must also interconnect, test, integrate and make fully operational all the equipment and system in accordance with the National Electrical Code (NEC).

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**3. MEASUREMENT**

The Relocation of Fiber Optic Cable will be measured by the linear foot of cable furnished, installed, spliced, connected, and tested in accordance with these specifications. Removal of existing cable to be relocated is subsidiary to this Item.

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**4. PAYMENT**

The work performed and materials furnished in accordance with the Item and measured as provided under "Measurement" will be paid at the unit price bid for "CTMS Relocation (Fiber Optic Cable)." This price is full compensation for the equipment described under this Item with cables and connectors; documentation and testing; and for furnishing the labor, tools, materials, equipment, and incidentals.