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STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION 815
SPREAD SPECTRUM RADIO

April 16, 2021

815.01 Description. This work consists of furnishing and installing spread spectrum radio equipment complete and ready for service.

815.02 General. Before furnishing and installing any radios, complete a site survey. Repeaters shall be included and incidental to this item if needed. Submit the site survey and a complete report to the Engineer before ordering and installing any radio equipment.

Furnish two copies of the instructions for hardware installation, programming and system commissioning.

815.03 Materials. Furnish materials conforming to the following:

Radios……906.01
Antennas……906.02

815.04 Installation of Antenna System. Position antennas to receive maximum signal strength by adjusting the antenna direction while monitoring signal strength through the telemetry radio. Securely fasten antenna mounts to the poles. Install antenna cable inside metal poles and conduits. External cable on poles shall not exceed 3 feet (1 m) unless approved by the Engineer. Secure approved external cable runs exceeding 3 feet (1 m) using manufacturer specified hangers at a maximum spacing of 3 feet (1 m). Terminate cable terminations in accordance with the manufacturer's recommendations. Seal connectors outside of cabinets in accordance with the manufacturer's recommendations. Deburr any holes made in metal poles and install grommets for protection. Provide drip loops between the antenna connector and the metal pole entrance or first pole clamp. Cable bends shall be in accordance with the manufacturer's specified bending radius. Antenna cable shall be continuous without splice between the antenna protector and the controller cabinet.

815.05 Testing. Perform a one week test of the system after the installation is complete. The system shall operate without a loss of communications to any controller during the test week. Testing will be done on a random basis throughout this week via direct and/or dial-up connections. A loss of communications is defined as four consecutive uploads or downloads terminating before all controller settings have been transferred. If the system fails this test, correct any installation problems which are causing the failure.

815.06 Training. Furnish eight hours of training in the operation, setup and maintenance of the spread spectrum radio system. Furnish all handouts, manuals and product information. Train on the same models of equipment furnished for the project. The maintaining agency shall furnish the facilities for the training to take place. Furnish all media and test equipment needed to present the training.

Training instructor(s) shall be manufacturer-certified, experienced in the skill of training others and have conducted a minimum of three one day trainings on Spread Spectrum Radio.

Coordinate spread spectrum radio system training with the Engineer a minimum of 30 days in advance of proposed date of training.

815.07 Method of Measurement. The Department will measure Spread Spectrum Radio by the number of each intersection shown on the plans and will include furnishing, installing and testing a complete, fully functioning wireless interconnect system.

The Department will measure Training on a lump sum basis, and will include providing the instruction materials, instructor travel expenses and test or media equipment for presenting the training material.

815.08 Basis of Payment. The Department will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
815	Each	Spread Spectrum Radio
815	Lump	Training for Spread Spectrum Radio

Designer Notes:

This item provides basic serial and/or Ethernet wireless data communications between traffic signal controllers (or similar devices such as sign flasher controllers) up to several thousand feet apart.

This item is not suitable for video transmission.

The designer must determine which interface(s) is required for operation of the interconnected signals as outlined in the project scope and include the requirement in an As-Per-Plan note.

The designer must also specify the style (e.g., Yagi, Omni) and sometimes the gain characteristics of the antennas for each location as well.

Designers must consider the terrain, buildings, signs, trees and other sources of interference in the area of application; the radio vendor will often assist with this task to help assure the radios and antennas specified will function properly when installed.

When adding to an existing interconnected signal system that already uses spread-spectrum radios, it is necessary to match the same manufacturer and similar models to assure proper operation; this generally requires the submittal of a Proprietary Bid Request.