

ROAD COMMISSION FOR OAKLAND COUNTY
SPECIAL PROVISION
FOR
ANTENNA AND CELLULAR ROUTER - DELIVERED

RCOC/TOC

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RCOC20SP820000

ORG:04-24-24

REV: 12-01-25

a. Description

This work shall be done in accordance with sections 204, 818, 819, 820, 918, and 921 of the Standard Specifications for Construction, except as herein provided.

1. The communications antenna and cellular router with associated hardware and cables are installed inside a new or existing traffic signal cabinet.
2. The work will consist of:
 - A. The contractor furnishing the materials and delivering materials to the Road Commission for Oakland County (RCOC). The RCOC Maintenance Department will install the materials in the cabinet. This work is specified in the pay item and as called out in the plans.

b. Materials

All work must be in accordance with the contract documents.

All materials must meet the requirements of this specification or Engineer approved equal.

1. General

- A. Furnish all equipment and required components, including antenna and router necessary to provide full and complete functionality in all respects, without additional expense to the agency responsible.
- B. All cellular data service will be provided by the Road Commission for Oakland County (RCOC) cellular data service provider agreement.
- C. The RCOC cellular data service provider is presently AT&T. The contractor may request an update on the current provider during the bidding process and prior to submittals.
- D. Furnish new materials.
- E. All materials shall be compatible with existing RCOC materials.
- F. Compatible with *National Electrical Manufacturers Association* (NEMA) TS1 and TS2 traffic signal cabinet.
- G. As necessary, existing material sizes, material types/brands/manufacturers must be measured and determined by the contractor prior to ordering materials.
- H. Label new and affected wires and cables to indicate the source and use of each one.

- I. Provide proposed material properties to match the existing material properties in place at other intersections within Oakland County, and in accordance with the requirements of this special provision.

If the materials selected by the contractor do not match all the existing material properties in place, alternate models shall require extensive testing by RCOC (RCOC Traffic Operations Center, RCOC Maintenance Department, and RCOC Traffic Safety Director), the supplier, and the contractor at the RCOC TOC building in Pontiac. The materials will require field testing. RCOC may consider information from the MDOT New Traffic Signal Device Product Review Guidelines. The testing should be expected to take several months. This testing will not be paid extra and any requests to use an alternate material/model will not be justification for an extension of time, delay to the project, and/or additional cost to the project. The RCOC Engineer will provide the final determination, and the outcome cannot be appealed.

- J. Prior to ordering materials – contact RCOC for latest antenna and cellular router model used at RCOC.

2. Communications Antenna

- A. Provide all material properties to match existing:

GNSS Multi-Band Antenna, Multi-Port 4G LTE and 802.11ac MIMO Connectivity type, cabinet mount antenna, dome, permanent mount, PCTEL GL7X1-IOTCM-5FT as manufactured by PCTEL, Inc. (SKU 76002097)

- B. Mounting - Ensure all mounting hardware, mounting brackets, fittings and, supplies for the antenna on the traffic cabinet are supplied with device.
- C. 70/30 Isopropyl rubbing alcohol – Required for installation
- D. Antenna cable and wiring included with the antenna
- E. Silicone sealant

3. Cellular router

- A. Provide all material properties to match existing intersections within Oakland County:

Cellular router - DIGI TX54-A246

B. Rugged Mobile Access Router:

Dual LTE-A Cat 12 (US - FirstNet Ready) / Single Wi-Fi w/(4) Gigabit RJ45, (1) DB9M RS232, (1) USB 3.0, 9-36VDC power input & (4) SIMs

C. Digi Single Output Power Supply:

DOT Kit TX54 (24 VDC, 75W, AC Adapter, DIN Rail, SKU 76002096)

Shall be supplied directly from Digi. (Alternates not accepted unless alternate request submitted in writing to RCOC Field Operations Engineer at preconstruction meeting)

D. FirstNet Ready model

E. Cellular router cable, grounding wire, and wiring.

F. Shielded CAT5E patch cable - 6 foot

- (1) One (1) each to controller
- (2) Two (2) each to CCTV (if present)
- (3) Two (2) each to hemispherical camera (if present)
- (4) Two (2) each to Radar Vehicle Presence Stop-Bar Detector System (if present)

(5) Category 5E (CAT5E) Cable shall have the following properties:

600V, 24 AWG, drain wire, solid core, shielded, industrial grade sunlight and oil-resistant PVC jacket, outdoor, burial grade, UV rated.

Shielded plugs per manufacturers recommendations.

G. Mounting brackets

H. Hardware and fittings

I. Power supply – provide din rail mounting parts

J. Digi Remote Manager

SKU	DIGI-RM-PRM-3YR
Description	Digi Remote Manager 3YR
Quantity	Match the # of Routers ordered

Submittal:

Purchase Order or Sales Order to have the licenses applied to the RCOC Digi Account

4. Delivery

A. For pay items specified as delivered:

- (1) The pay item shall include the cost of delivery to:
Road Commission for Oakland County (RCOC)
1200 N. Telegraph, West 49
Pontiac, MI 48341
Attention: Steve Wheeler
(Note – these items are delivered directly to the TOC Operations Building)

B. Packing and Marking. Ensure each item is packed separately in such a manner that there will be no injury or defacement to the item during transportation to the point of destination, unless otherwise specified in the contract. Ensure each carton is legibly marked with the item description, purchase order number, and vendor's name.

C. The Contractor must provide a minimum of seven (7) calendar days' notice prior to delivery or picking up from RCOC. Coordinate logistics of pick-up with RCOC: Mr. Steve Wheeler (248) 858-7250.

5. Acceptance

Provide General Certification per the *MDOT's Materials Quality Assurance Procedures Manual* to the Engineer that the materials meet the requirements specified herein.

Router and antenna shall be accepted when the connection is made to the RCOC TOC building, and the materials are fully functional and being operated by the RCOC Operations Engineer.

c. Construction

Complete this work in accordance with sections 204, 818, 820, and 918 of the Standard Specifications for Construction, as shown on the plans, and as directed by the Engineer.

Dispose of surplus material in accordance with section 204 of the Standard Specifications for Construction.

1. Submittals / Working Drawings

- A. Submit a detailed dimensional drawing of all equipment, material specification list which shows the materials to be used, equipment to be furnished, and assembly/installation method.
- B. Submit a complete detailed cut sheet showing all materials. All cut sheets must include manuals, installation and operation guides and preventative maintenance schedules.

2. Communications Antenna

The communications (cellular) antenna will be installed on the top outside of the Traffic Signal Controller Cabinet. The antenna will be installed at a location directed by the Engineer and per the antenna manufacturer's installation directions.

All excess cable and wiring shall be neatly formed by the contractor after installation in the field, coiled (with tie-wraps), and placed on the cable hooks inside the traffic signal cabinet as directed by the Engineer.

The Contractor shall coordinate this work with RCOC. The coordination shall not be paid for separately and shall be included in other items of work.

3. Cellular Router

- A. Contractor shall deliver the cellular router to the RCOC.
- B. RCOC will setup the cellular router at the Traffic Operations Center (TOC) building.
- C. All excess cable and wiring shall be neatly formed by the contractor after installation in the field, coiled (with tie-wraps), and placed on the cable hooks inside the traffic signal cabinet as directed by the Engineer.

4. Warranty and Guarantee.

- A. Cellular Router - Provide cellular router with a standard manufacturer’s warranty, transferable to RCOC. The cellular router must carry a warranty (parts, software, and labor) of 2 years from the date of project final acceptance. Ensure all warranties are transferred to RCOC upon written final acceptance. If requested by the Engineer, supply manufacturer’s warranty and guarantee documents.
- B. Antenna - Provide antenna with a standard manufacturer’s warranty, transferable to RCOC. The antenna must carry a warranty (parts, software, and labor) of 2 years from the date of project final acceptance. Ensure all warranties are transferred to RCOC upon written final acceptance. If requested by the Engineer, supply manufacturer’s warranty and guarantee documents.

5. Samples

- A. If required, a complete sample must be delivered within seven (7) working days after the request is submitted.

Special consideration shall be given to workmanship, materials and superior features demonstrated by the sample.

6. Special Tools.

- A. No special tools shall be required for long-term RCOC maintenance.

d. Measurement and Payment

The completed work, as described, will be measured and paid for at the contract unit price using the following pay item(s):

Pay Item	Pay Unit
Antenna, Delivered, RCOC.....	Each
Cellular Router, 4/5G, Delivered, RCOC.....	Each

Antenna, Delivered, RCOC (Each) will be measured as a unit to provide a complete and operating job as specified herein. The contractor shall deliver the material to RCOC for set-up/installation as specified herein. RCOC Maintenance Department will perform the installation on the cabinet.

Cellular Router, 4/5G, Delivered, RCOC (Each) will be measured as a unit to provide a complete and operating job as specified herein. The contractor shall deliver the material to RCOC for set-up/installation as specified herein. RCOC Maintenance Department will perform the installation inside the cabinet.