

SECTION 671 TRAFFIC SIGNAL CONTROLLERS

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install a Caltrans Model 2070LX advanced transportation controller as required by the Contract Documents.

1.02 REFERENCES

- A. Traffic Control Equipment Specifications and Standards for Metro Traffic Control System, Miami-Dade County
- B. California Department of Transportation (Caltrans) Transportation Electrical Equipment Specifications (TEES), 2009 and Errata
- C. ATC 5201 v06.25: Advanced Transportation Controller (ATC) Standard Version 06
- D. National Transportation Communications for ITS Protocol (NTCIP) 1202: Object Definitions for Actuated Traffic Signal Controller (ASC) Units V02.19
- E. FDOT Standard Specifications for Road and Bridge Construction, Section 671 – Traffic Controllers
- F. Florida Department of Transportation Approved Products List (APL)
- G. Miami-Dade County Traffic Signals and Signs Division's Qualified Products List (TSSQPL)
- H. Caltrans' Traffic Signal Control Equipment Qualified Products List (QPL)
- I. National Electrical Manufacturers Association (NEMA) TS-2-2016

1.03 SYSTEM DESCRIPTION

A. General Requirements

1. Controllers must provide functionality that meets or exceeds operational characteristics, including NTCIP support, as described in NEMA TS-2-2016.
2. Controllers must capture all mandatory event-based data elements listed in the FDOT State Traffic Engineering and Operations Office supplemental requirements for controllers (*SR-671-2, Supplemental Traffic Controller High Resolution Data Logging Requirements*).
3. Controller software must meet or exceed the requirements of the Miami-Dade Traffic Signal Controller Local Software Specifications maintained by the Miami-Dade County Department of Transportation and Public Works (the Department).

1.04 SUBMITTALS

A. Certificates

1. The traffic controller submittal information must include certificates or other documented evidence that the 2070LX controller provided is approved and listed on the Caltrans QPL, FDOT APL, and TSSQPL.

B. Manufacturers' Instructions and Information

1. Submit or ensure that the following documentation from the manufacturer has been submitted to the Department:
 - a. Operation Manual
 - b. Troubleshooting and Service Manual
 - c. Assembly and installation instructions
 - d. Pictorial layout of components and schematics for circuit boards
 - e. Parts list
2. Electronic copies of all documentation must be provided. Electronic documentation must not require licenses, fees, or additional purchase for duplication or distribution.

1.05 DELIVERY STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading

1. If the traffic controller is not packaged and shipped as part of a traffic controller assembly, ensure it is packaged in a manufacturer provided box and handled as per manufacturer's handling, storage, and protection requirements.

1.06 WARRANTY

- A. Ensure the traffic controller has a manufacturer's warranty covering defects for three years from the date of final acceptance. Ensure the warranty includes providing replacements within 10 calendar days of notification for defective parts and equipment during the warranty period at no cost to the Department.

1.07 OWNER'S INSTRUCTIONS

- A. Manufacturers' instructions and information documentation provided must describe all controller features and operations, including all user interfaces and settings required to configure the traffic controller.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Controller must meet the latest Caltrans TEES, dated March 12, 2009, and TEES 2009 Errata requirements for a 2070LX Traffic Signal Controller unit and include, at minimum, the unit chassis, 2070-1C CPU, 2070-2E+ field I/O module, 2070-3B Front Panel, and 2070- 4A Power Supply.
- B. Controller must be approved and listed on the:
1. Caltrans' QPL as a Model 2070LX Controller Unit,

2. Florida Department of Transportation's APL, and
 3. Miami-Dade County Traffic Signals and Signs Division's TSSQPL.
- C. Ensure equipment is permanently marked with the manufacturer's name or trademark, part number, and serial number.

2.02 EXTRA MATERIALS

- A. A spare Data Key and a spare 2070-2E+ module must be provided for every ten traffic controllers supplied.
- B. A physical set of controller schematics and a repair manual must be provided for every one hundred traffic controllers supplied.

2.03 ACCESSORIES

- A. The controller must be provided with all accessories and incidental material necessary for installation and operation in a Miami-Dade traffic controller cabinet including, but not limited to, mounting hardware, power cable, data key, and interface card such that installation into the Miami-Dade cabinet does not require any additional components.

2.04 SOURCE QUALITY CONTROL

- A. Tests, Inspections
1. Provide all documentation related to manufacturer Quality Assurance/Quality Control with regards to the controller, including batch/lot information as applicable, to the Department.

PART 3 EXECUTION

3.01 PREPARATION

- A. Equipment
1. Verify the controller to be installed appears undamaged and in good working conditions prior to installation.
 2. Confirm that controller has been pre-programmed for site-specific operation and has passed all testing and verification requirements necessary for field deployment including establishing communication between the controller and central software.
 3. When replacing an existing controller, observe and document the current operational status of the intersection prior to controller replacement.
- B. Site Condition
1. Preparation for controller replacement
 - a. Allow all stacked traffic to clear side streets.
 - b. Wait until main street is on green and traffic moving.
 - c. Ensure that pedestrians and other traffic in crosswalks have safely crossed the street. Place intersection in flash.

3.02 INSTALLATION

A. General

1. Install equipment as shown in the plans and according to the manufacturer's recommendations.

B. Removal

1. After verifying Flash control at intersection, turn off controller power, remove power cord, field I/O (C1) and communication (Ethernet/Serial) from the existing Traffic Controller.
2. Remove hardware retaining the Traffic Controller in rack.
3. Carefully remove existing Traffic Controller, ensure no wires are pinched or pulled from their current location.

C. Replacement

1. Carefully install the new Traffic Controller, ensure no wires are pinched or pulled from their connection.
2. Connect power, field I/O, and communication; Verify calls from detectors.
3. Using proper hardware, secure Traffic Controller into cabinet rack. Controller assembly includes all integration by the Contractor that is necessary for the proper operation of the controller assembly in the signal system.
4. Place intersection out of Flash and back in Traffic Control.

3.03 FIELD QUALITY CONTROL

A. Site Tests, Inspection

1. Ensure the intersection is functioning properly following controller installation, including verification that all vehicle and pedestrian detectors are properly mapped and placing calls to the traffic controller, and that all signals are operating properly.

END OF SECTION 671