

SECTION 600 GENERAL PROVISIONS FOR TRAFFIC CONTROL DEVICES

PART 1 GENERAL

1.01 DESCRIPTION

- A. These Provisions are in addition to all applicable requirements of Division 01 (General Requirements) of the DTPW Specifications, available from the Department's Capital Improvement Division, and are supplementary to requirements of the Miami-Dade County Traffic Control Equipment Standards and Specifications including all other governing standards, requirements, and specifications.
- B. All work associated with the installation, modification or repairs of traffic control devices owned, operated or maintained by Miami-Dade County must conform to the requirements of these Specifications and the current requirements of the References listed below. The Engineer of Record and the Contractor performing the work are responsible for complying with all applicable requirements. Whenever a conflict between these Specification and any other applicable requirement, Engineer will determine the manner in which the conflict is to be resolved which in most instances will be based on the more stringent of the applicable requirements.

1.02 REFERENCES

- A. Miami-Dade County Traffic Control Equipment Standards and Specifications including Division 01 (General Requirements)
- B. Miami-Dade County Traffic Signals and Signs Division's Qualified Products List (TSSQPL)
- C. FDOT Approved Product List (APL)
- D. Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Divisions II & III), Special Provisions and Supplemental Specifications
- E. FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- F. National Electrical Code, NFPA 70 (NEC)

1.03 REGULATORY REQUIREMENTS

- A. Permits.
 - 1. DTPW Permit(s) and written authorization from the DTPW Traffic Signals and Signs (TSS) Division are required before proceeding with any work pertaining to or that may potentially affect the Miami-Dade County Traffic Control System. Additional requirements regarding the performance and acceptance of the Work may be stipulated by the DTPW TSS Division.
- B. Notification.
 - 1. Provide written and verbal notification to the DTPW TSS Division:
 - a. Ten business days prior to commencement of any construction, modification or repair of any component within the Miami-Dade County traffic control system.

- b. Five business days prior to the commencement of jobs that include overhead or underground work conducted as part of construction or maintenance projects within Miami-Dade County roadways or other roadways within the County whose traffic control devices are maintained by Miami-Dade County.
 2. Notification is provided at:
Department of Transportation and Public Works
Traffic Signals and Signs Division (Attn: WRITTEN NOTIFICATION)
7100 NW 36th Street
Miami, FL 33166

Phone: 305-679-0040
 3. Provide immediate verbal notice followed by written notification to the DTPW TSS Division upon the discovery of any damage, malfunctions, or irregularities pertaining to any Miami-Dade County Traffic Control System component.
- C. Preliminary Product and Equipment Data Submittals.
 1. Prior to installation or within thirty days after the preconstruction conference, whichever comes first, submit to Engineer for approval:
 - a. A completed "Submittal Data – Traffic Control Equipment" form listing, by FDOT APL numbers, all traffic control signals, devices, and hardware that will be used on the Project. Only current FDOT APL certified items that have also been approved and currently listed in the TSSQPL may be used.
 - b. One copy of the manufacturer's descriptive literature and technical data fully describing proposed non-structural equipment or material whose category or type does not require FDOT APL certification or TSSQPL approval.
 - c. Two copies of the shop drawings signed and sealed by the Specialty Engineer. Shop drawings are required for all structural support materials and other special designs, such as non-electrical, non-mechanical, or other fabricated items, which may not be specifically detailed in the Plans.
- D. Transfer of Maintenance Responsibilities.
 1. Fully maintain all traffic control devices located within the Project limits, including any interconnect, beginning on the date of the Notice to Proceed or the date Contractor has begun any work on any portion of the Project, whichever is sooner, through and including the date of Final Acceptance by the County subject to any additional Contractor Warranty and Burn-in Period requirements. Investigate all inquiries, complaints or requests made by the County or the Public and immediately initiate all required repairs.
 2. Notify Engineer of intent to begin any physical construction work on the Project or any portion thereof. This notification must be a minimum of seven (7) working days prior to the start of construction to allow sufficient time for Contractor to conduct an inspection of the existing traffic control device installation(s). In the event any deficiencies are noted by Contractor, at the County's option, they are to be repaired by the TSS Division or documented on the "Transfer of Maintenance" form. If work is started prior to the inspection, maintenance of the traffic control device(s) will immediately be transferred to Contractor without an inspection. Contractor is then responsible for repairing or

replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic control device.

3. For new traffic control devices, partial or final acceptance and inspection must be scheduled with the County Project Manager before the traffic control device is placed in normal operational mode. Notification is also required before placing the signal in the flashing mode.

E. Emergency and Non-Emergency Repairs

1. Provide Engineer two (2) contact names and (24-hour) telephone numbers. Contractor must provide sufficient qualified personnel to respond to all notifications of malfunctions on a round-the-clock basis (24 hours a day, 7 days a week).
2. Maintain and make available to Engineer a time and date log of each response from the time of the initial report to the time of final permanent repair.
3. When a signal malfunction occurs, Contractor must respond within two hours of notification and repair the traffic signal so that it is operating in a safe manner within four hours of initial notification. Contractor is responsible for the permanent repair within 24 hours, and must notify the County immediately upon completion of the repairs. If Contractor fails to respond within two hours, the County reserves the right to either repair the malfunction or employ alternate personnel and charge all costs incurred by the County to the Contractor.
4. Authorized County personnel may, at any time, enter the controller cabinet in order to modify timing or restore any and all signal equipment to proper operation if the malfunction or non-function of such equipment poses a hazard or inconvenience to motorists or pedestrians. Such authorized entry may occur at any time within the period of the contract, and such authorized entry will in no way relieve the Contractor or manufacturer of their respective warranties.
5. Emergency Repairs
 - a. During the Transfer of Maintenance period, the following will be considered an Emergency unless otherwise identified by Engineer:
 - 1) Any hazardous condition;
 - 2) Any malfunction of a controller and its accessory equipment; or
 - 3) Any Site condition, equipment malfunctions or damage, which in the opinion of Engineer constitutes a serious hazard or inconvenience to the public.
 - b. Contractor must dispatch personnel to undertake each such repair no later than thirty (30) minutes after the County notifies Contractor of the Emergency. Personnel responding must arrive within one hour after notification and immediately proceed to make the site safe.

1.04 LICENSES AND QUALIFICATIONS

A. Qualifications

1. Contractor license requirement.
 - a. Contractor must hold either a Miami-Dade County Electrical Contractor License or a State of Florida Certified Electrical Contractor License, or both.
2. Minimum qualifications for personnel supervising or performing work involving electrical Traffic Control Devices and related components or appurtenances.

- a. All work must be performed under the direction of an employee of the Contractor who is a licensed Miami-Dade County Master Electrician, is present at the job site or able to respond within 2 hours of notification, and holds a current International Municipal Signal Association (IMSA) Traffic Signal Field Technician Level II certification or higher. The Master electrician is required to attest to the quality and accuracy of the Work and its compliance with all applicable codes, standards and specifications; and when required by Miami-Dade County, perform a final verification inspection of the Work.
- b. Minimum qualification requirements for personnel at the job site:

Work Performed	Qualification Requirements
Contractor's Superintendent	<ol style="list-style-type: none"> 1. Must meet all applicable FDOT and DTPW requirements for a work site superintendent and be at the job site at all times that work is being performed; 2. Must hold a current IMSA Traffic Signal Construction Technician Level II certification or higher; and 3. Must be present at the final inspection of the Work as directed by Miami-Dade County.
All controller cabinet work including back panel wiring terminations; programming; testing; turn on; and troubleshooting.	<ol style="list-style-type: none"> 1. Work must be performed by an employee of the Contractor that is a licensed Miami-Dade County Journeyman Electrician and that holds a current IMSA Traffic Signal Field Technician Level II certification or higher; and 2. Must be present at the final inspection of the Work as directed by Miami-Dade County.
Electrical traffic control device work including cable and wire installation and splices; signal head installation; power service installation; ground rod testing; cable and wire testing; and field wiring terminations.	<ol style="list-style-type: none"> 1. Work must be performed by or in the presence of and under the responsible charge of an employee of the Contractor that is a licensed Miami-Dade County Journeyman Electrician and that holds a current IMSA Traffic Signal Field Technician Level II certification or higher; and 2. Must be present at the final inspection of the Work as directed by Miami-Dade County.
Supervision of work that is non-electrical in nature and exclusively ancillary to the work described herein	<ol style="list-style-type: none"> 1. Must be performed by an employee of the Contractor that holds a current IMSA Traffic Signal Field Technician Level I certification or higher.

3. Training and Certifications for Temporary Traffic Control

- a. The following certifications from FDOT approved providers are required:
 - 1) Contractor's designated Worksite Traffic Supervisor must have a current FDOT MOT Advanced certification. Contractor's IMSA Traffic Signal Construction Technicians and Traffic Signal Field Technicians described in Paragraph "A.2" above, including the licensed Journeyman and Master electricians, must have a current FDOT MOT Intermediate certification or higher.

- 2) Contractor's designated Flaggers must have a current FDOT MOT Basic certification.
 4. Provide to the DTPW TSS Division for review and approval an updated list of names of all personnel assigned to perform the work along with current copies of their required licenses and certification cards, before starting any work. In addition, ensure that these personnel have copies of their licenses and certifications available at the work site and ready to make them available to DTPW personnel if requested.
- B. Qualified Technical Representative of the Control Equipment Manufacturer.
1. A qualified technical representative of the control equipment manufacturer is required to be present at the work site to assist in checking out the operation of the controller whenever:
 - a. A Contractor-furnished traffic signal controller is turned on; or
 - b. An existing Signal is revised requiring Contractor furnished control equipment.

1.05 ACCEPTANCE OF TRAFFIC CONTROL SIGNAL AND DEVICE INSTALLATIONS.

- A. Engineer will make inspection for final acceptance of traffic control signal and device installations as part of all work only after satisfactory completion of all field tests of completed installations and on the basis of a comprehensive final field inspection of all equipment installations.
- B. Submit three copies of a completed Submittal Data – Traffic Control Equipment form for each cabinet location, to Engineer. Engineer will place one copy in the cabinet at each location.
- C. Transfer warranties and guarantees on equipment to the Department in accordance with this Section.
- D. For traffic signal installations, submit three completed copies of the Final Acceptance of Traffic Signal Installation(s) and Transfer of Maintenance form.
- E. Documentation for Electronic Equipment.
1. Required Documentary Items.
 - 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
 - f. Diagram of the field installation wiring (not applicable to the detectors)
 - g. Warranty information
 2. Prior to final inspection, furnish Engineer with two copies of the aforementioned documentary items from the manufacturer for the following electronic equipment:
 - a. Controllers
 - b. Vehicle detectors
 - c. Load switches
 - d. Flasher units
 - e. Preemption units

- f. Conflict monitors
- g. Special sequence relays
- h. Cameras
- i. Dynamic message signs
- j. Any other equipment which has a logic, timing, or communications function
- k. Other equipment specified in the Contract Documents

F. As-Built Drawings.

1. As a condition precedent to acceptance, provide signed and sealed As-Built Drawings, either by a State of Florida licensed professional engineer or a professional surveyor and mapper, and prepared pursuant to Subarticle 1.06.I of Division 01 (General Requirements) of the DTPW Specifications. These drawings must show the actual location of all signal poles, mast arms, traffic control devices, signs, cabinets, service points and must clearly depict all installations including the depth and location of all conduits and conductors; and the specific product number installed.
2. Submittal Requirements:
 - a. Submit three sets of as-built plans for review by Engineer along with electronic copies consisting of a separate level/layer within the project design files. Coordinate the format of electronic as-built files with Engineer. Record all as-built information using typed text to ensure legibility.
 - b. The As-Built plans shall be neat, legible and of the correct size. Bridge projects and any road projects which include Plan, Profile and Cross-Section Sheets must be full size (22" X 36"). In general, if the job was let with full size plans, the As-Built must be full size. All revisions to the original plans must be delineated in red, located properly on the drawing, they must be legible and true to scale. Every As-Built Plan, Profile and Cross-section Sheet must be designated as such by note or stamp "As-Built" in black.
 - c. Signing and pavement marking plan sheets may be used instead of signalization plan sheets, if a substantial number of changes from the original plans must be recorded. If, in the opinion of the Engineer, the changes cannot be clearly delineated on the existing drawings, clearly delineate all changes on 11 inch by 17 inch detail sheets, enlarged 200% from the reproductions.
 - d. Submit fiber optic splicing diagrams detailing all cable splices, terminations, equipment port assignments, and optical circuits within the communication network.
 - e. As-built submittals must include an electronic file with an inventory of all traffic control signals and devices, and support structures. The inventory must include horizontal position geographic coordinate data collected using Differential Global Positioning System (DGPS) equipment. The inventory must include the manufacturer, model, and serial number for each device or completed assembly. Provide coordinate data for pull boxes as well as conduit and cable at 100 feet intervals including changes in direction.
 - f. Aerial photographs may be furnished with as-built submittals to provide supplementary information. The aerials should not include extra features such as the right of way, baseline, or roadway edges. The aerials may be used as a base for the as-built plans with mile post and offset dimensions. Make any corrections resulting from Engineer's review and resubmit three sets of the completed as-built plans as a condition precedent to acceptance of the installation.
3. Components: As a minimum, identify all traffic control devices, poles, support structures, cabinets, pull and splice boxes, hubs, access points, and power services.

- a. Conduit and Cable: Identify all conduit and cable with unique line styles for routing (overhead, conduit, saw cut, etc.) that are clearly identified in a legend on each sheet. Identify the type of cable (example - 7 conductor signal cable) and label the number of conductors, fiber strands or other identifying features of the cable. For conduit, clearly note conduit size and number of runs.
- b. Loops and Detection Zones: Identify the location of all installed loops (including the distance from the stop bar for the advance loops), the path of each loop to the pull box, the loop window and the path of the loop lead-in to the controller cabinet. Identify the device location and the approximate detection area for detection systems that are not embedded in or under pavement.
- c. Pull Boxes: Label unused and out of service pull boxes clearly. Show distances to each pull box from the nearest edgeline, stop bar, or other permanent feature. If an edgeline is not near a pull box or would not clearly identify its location; a fixed monument may be used (example - FDOT pole or structure).
- d. Poles: Identify poles from the nearest edgeline of both approaches. If an edgeline is not near a pole or would not clearly identify its location, a fixed monument may be used.
- e. Signal Heads: As-built plans must show the final location of signal heads. Each signal head shall be identified by its corresponding movement number.
- f. Cabinet: The type of cabinet, date of installation and inventory of internal components must be documented. Controller manufacturer along with the controller model number shall be provided for all traffic signal cabinets. A cabinet corner "blow up" shall be provided detailing pull box locations with all conduit and cable.

1.06 MANUFACTURERS' WARRANTY PROVISIONS

A. General.

1. Manufacturer and Contractor costs associated with transferring, providing, and delivering equipment warranties, requirements, terms, and conditions are part of the Work and are included in the overall cost of the Work or where available, in the pay item for the equipment or construction feature utilizing the equipment.
2. Secure all warranties provided by the equipment manufacturer for the specific equipment included in the Contract. Ensure that all warranties are fully transferable from the Contractor to the owner of the equipment within the project limits. Ensure that warranties cover defects for at least the duration specified in the Contract Documents from the date of Final Acceptance in accordance with the applicable Contract Provisions.
3. Transfer warranties upon Final Acceptance. Document all warranties and warranty transfers and provide a copy to Engineer.
4. Contractor's responsibility for warranty repairs, warranty replacement, troubleshooting, or other costs associated with repair or replacement of traffic control signals and devices within the Contract's project limits will terminate 90 days after Final Acceptance.

B. Terms and Conditions.

1. Ensure that the terms and conditions of warranties are documented by the manufacturer for equipment submittals on construction projects. Include terms for a specified service performance with provisions for repair parts and labor, or for replacement.
2. Ensure that warranties and guarantees are consistent with those provided as customary trade practices; or as otherwise specified in the Plans, Standard Specifications, Supplemental Specifications or Special Provisions.

3. When a warranty is available, ensure that a written warranty accompanies the manufacturer's billing invoice. Ensure warranties require the manufacturer to furnish replacements for any part or equipment found to be defective during the manufacturer's warranty period at no cost to the owner of the equipment within the project limits.
4. Ensure that manufacturer's and supplier's warranties and guarantees are transferable to the agency or user that is responsible for traffic signal maintenance, are continuous throughout their duration and state that they are subject to such transfer.
5. Ensure the manufacturer will repair any faulty equipment during this period at no charge to the Department for parts, labor or shipping to and from the factory.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS.

A. General.

1. Ensure that the traffic signal equipment, materials, and work meet the requirements of the Plans and Specifications. All equipment furnished must be new and meet the requirements of the following:
 - a. Underwriter's Laboratory Incorporated (UL)
 - b. Electronic Industries Association (EIA)
 - c. National Electric Code (NEC)
 - d. American Society of Testing and Materials (ASTM)
 - e. American National Standards Institute (ANSI)
 - f. International Municipal Signal Association (IMSA)
 - g. National Electrical Manufacturers Association (NEMA)
2. Use only compatible units of any one item of equipment, such as signal heads, detectors, controllers, cabinets, poles, signal system or interconnection equipment, etc.
3. Use only new equipment and material.
4. Provide a complete operable signal installation as specified regardless of any failure of the Department to discover or note any unsatisfactory material.
5. Traffic control signals and devices must be currently approved and listed on the FDOT APL and the DTPW TSSQPL. Contractor may seek acceptance and inclusion of new traffic control signals and devices in the TSSQPL however; doing so will not exempt Contractor from meeting all requirements of the Contract Documents including timely prosecution of the Work.

B. Hardware and Fittings Used for Installation.

1. Ensure that all assembly hardware, including nuts, bolts, external screws and locking washers less than 5/8 inch in diameter, are Type 304 or 316 passivated stainless steel. Use stainless steel bolts, screws and studs meeting the requirements of ASTM F593. Use nuts meeting the requirements of ASTM F594. Ensure all assembly hardware greater than or equal to 5/8 inch in diameter is galvanized. Use bolts, studs, and threaded rod meeting the requirements of ASTM A307. Use structural bolts meeting the requirements of ASTM A325.
2. Use high-strength steel anchor bolts and U-bolts, having a minimum yield strength of 55,000 psi and a minimum ultimate strength of 90,000 psi.

- C. Galvanizing: Meet the requirements of FDOT Section 962 when galvanizing for fittings and appurtenances for all structural steel (including steel poles).
- D. Environmental Specifications: Ensure system electronics intended for installation outdoors or within a roadside cabinet perform all required functions during and after being subjected to the environmental testing described in National Electrical Manufacturers Association (NEMA) TS2, 2.2.7, 2.2.8, and 2.2.9.

2.02 DEPARTMENT-FURNISHED EQUIPMENT INSTALLED BY CONTRACTOR.

- A. Where the Contract Documents require installation of Department-furnished equipment, the Department will turn over such equipment to Contractor when the construction progress allows or as designated in the Contract Documents.
- B. The Department will test and certify the equipment to be in proper condition and ready to use and will bear the costs of correcting any defects in the equipment prior to pick-up by Contractor. Engineer will coordinate the pick-up and installation of the equipment.
- C. Maintain the equipment in proper operational condition after pick-up at no cost to the Department, until either Final Acceptance or the equipment is returned to the Department.

PART 3 EXECUTION (NOT USED)

END OF SECTION 600