

SECTION 7: SPECIAL PROVISIONS

SPECIAL PROVISIONS

SPECIAL PROVISIONS
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1. PROJECT INFORMATION

1.01 SPECIAL PROVISIONS

- A. These Special Provisions amend or supplement the Miscellaneous Construction Contract (MCC) CICC 7360-0/08, the MCC 7360 Plan, and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect. All requirements of the Contract Documents, or portions thereof, which are not specifically modified, deleted, or superseded hereby, remain in full effect.

1.02 SCOPE OF WORK

- A. Work under this contract shall include but is not limited to the following: Furnishing all supervision, labor, required materials, equipment, tools and performing all operations necessary to add/upgrade: The project consists of implementing a diagonal/scramble crosswalk at the intersection of SW 57 Avenue and SW 72 Street to allow pedestrians to cross in multiple directions and increase visibility of the crossing space. Improvements consist of reconstructing concrete ramps, installing and modifying pedestrian signals, removing, and installing signal electric service and control cabinet and signing and pavement markings. All work to be performed in accordance with the construction plans and specifications contained herein.
- B. If any changes are required due to conflict of design and or field conditions, the Engineer will make the final determination.
- C. The Contractor and all subcontractors, under this Contract, are prohibited from performing any work, other than specified in the Contract and/or directed by the Engineer, within the limits of the project site, without prior written notification to the Engineer. This includes any work for private or commercial entities.

1.03 LOCATION OF WORK

- A. The location of work to be performed under the terms of this Contract shall be as follows:
 - 1. SW 57 Ave. and SW 72 St.
- B. The exact location and limits of construction are as shown on the Plans accompanying these Contract Documents.

1.04 TIME FOR COMPLETION

- A. The Contract Times are stipulated in the Supplementary Conditions and may include applicable Milestones. The Work must be Substantially Completed within 270 days after the date when the Contract Time commences to run as provided in Subarticle 1.06 N of the General Requirements of the Specifications to the Contract Documents; and all requirements of the Contract Documents completed to the Engineer's satisfaction, including the completion of all punch list items, delivery to the Engineer of all required deliverable, and completion of any remaining Site restoration; and be ready for final payment within 330 days after the date when the Contract Time commences to run.

1.05 PLANS

- A. Engineering Drawings titled "SW 57 Ave. SW 72 St. Intersection Improvements" are included with these Contract Documents. Additional standard details are available in the Miami-Dade County Public Works Manual and the latest edition of the Florida Department of Transportation's Design Standards for Design, Construction, Maintenance and Utility Operations on The State Highway System.
- B. The County through its Engineer shall have the right to modify the details and/or sketches, to supplement the sketches with additional plans and/or with additional information as work proceeds; all of which shall be considered as plans accompanying these Specifications herein generally referred to as the "Plans." In case of disagreement between the Plans and Specifications, the Engineer shall make a final determination as to which shall govern.

2. SPECIAL CONSTRUCTION REQUIREMENTS

2.01 FIELD OFFICE

- A. A local field office is not required; however, the Contractor will be required to provide the Engineer with a local (Miami-Dade County) telephone, cellular or beeper number, where the Contractor may be contacted 24 hours a day, 7 days a week during the period for which the Contract is in force.

2.02 SCHOOL ZONE SPEED LIMIT BEACON ASSEMBLY

A. Description:

- 1. School Zone Speed Limit Beacon Assemblies meeting the physical display and operational requirements for warning or regulatory signs described in the Federal Highways Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and its companion document, the Standard Highway Signs Book (SHS), the FDOT Section 700, the FDOT Standard Plans Index 700-10 and the Miami Dade County School Zone Speed Limit Beacon Assembly Details (Sheets 1 -3).

B. Method of Measurement.

- 1. The contract unit price for School Zone Speed Limit Beacon Assemblies is for a complete functional assembly meeting all the requirements herein, furnished and installed, that includes: all static sign panels; pull box and grounding; all mounting hardware; pedestal pole and base with reinforcing collar and foundation; required cabinets, controller, flashing beacons and housing; County-approved electronic remote scheduler/time-switch; electrical connection, miscellaneous appurtenances, and labor necessary for a complete and accepted installation. Price does not include an electrical power assembly.
- 2. When a solar-powered assembly is specified in the Contract Documents, the contract price will include the solar panel, batteries, and required electronics and mounting hardware.
- 3. When an Electronic Speed Feedback Sign (ESFS) is specified in the Contract Documents, the contract price will include the ESFS display and static panel and all required system components.

2.03 TRAFFIC SIGNALIZATION AND SIGNS

- A. In order to facilitate the readiness of these Solicitation Documents, the Department is including DTPW TSS specifications as Appendices of these Special Provisions. For the latest specifications of Traffic Control equipment, please refer to Miami-Dade County Traffic Signals and Signs Website under Traffic Signals Resources at <http://www.miamidade.gov/publicworks/traffic-signals.asp> or contact the Traffic Equipment and Specifications Engineer @ (305) 679-0006.

APPENDIX "A" TO SPECIAL PROVISIONS
AUTHORIZATION AGREEMENT FOR AUTOMATIC DEPOSIT



ACH AUTHORIZATION AGREEMENT FOR AUTOMATIC DIRECT DEPOSIT OF MIAMI-DADE COUNTY WARRANTS

We hereby authorize the Finance Department to initiate credit entries and, if necessary, a debit entry in order to reverse a credit entry made in error in accordance with NACHA rules.

Original form must be received before we can process your request for ACH deposits. Please refer to page 2 for instructions. Processing of the form is approximately 15 days from receipt of completed original form. This authority is to remain in effect until revoked in writing and received by the Finance Department. Account changes must be reported at a minimum **fifteen (15) days prior to actual change.**

Section 1 (TO BE COMPLETED BY VENDOR) - ALL FIELDS ARE REQUIRED

TRANSACTION TYPE: New Change Terminate

FEDERAL IDENTIFICATION NUMBER

--	--	--	--	--	--	--	--	--	--

--	--

(AS PER CURRENT W-9) (FOR INTERNAL USE ONLY)

VENDOR NAME : _____

DBA (DOING BUSINESS AS) : _____

TELEPHONE NUMBER : _____

FISCAL OFFICER NAME AND TITLE : _____

FISCAL OFFICER'S EMAIL : _____

ACH NOTIFICATION EMAIL: _____
(This is the email where payment information will be sent)

ROUTING NUMBER

--	--	--	--	--	--	--	--	--	--	--	--

--	--

(FOR INTERNAL USE ONLY)

VENDOR'S BANK ACCOUNT NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TYPE OF ACCOUNT Checking Savings

AUTHORIZED SIGNATURE _____ DATE : _____

PRINTED NAME _____

A VOIDED CHECK OR REDACTED COPY OF A BANK STATEMENT FOR THE ACCOUNT LISTED ABOVE MUST BE PROVIDED. PLEASE REFER TO INSTRUCTIONS FOR OUR MAILING ADDRESS. SUBMISSION OF YOUR E-MAIL ADDRESS IS MANDATORY IN ORDER TO PARTICIPATE IN THIS PAYMENT OPTION.

Section 2 (TO BE COMPLETED BY FINANCIAL INSTITUTION)

FINANCIAL INSTITUTION NAME: _____

ADDRESS: _____

BANK OFFICIAL NAME (PRINTED) AND TITLE : _____

TELEPHONE NUMBER : _____ EMPLOYEE ID NO. : _____

EMAIL : _____

I have verified that the account and routing number provided above is correct and corresponds to vendor noted above.

I have also verified that the person signing is an authorized signer on the account specified.

SIGNATURE _____ DATE : _____

Section 3 (TO BE COMPLETED BY MIAMI-DADE FINANCE DEPARTMENT)

Accounts Payable Verifications	Cash Management	Input/Output
Corp. Officer Name : _____ Verified by: _____ A/P Staff: _____	Routing # verified by : _____	ACH Indicator updated by : _____
Corp. Officer Title : _____ Date: _____	Date: _____	Date of Update : _____
Bank Officer: _____ A/P Supervisor: _____ Date: _____	Verified by : _____ Verification Date: _____	Verified by : _____ Verification Date: _____



ACH AUTHORIZATION AGREEMENT FOR AUTOMATIC DIRECT DEPOSIT OF MIAMI-DADE COUNTY WARRANTS

INSTRUCTIONS

Please contact us at (305) 375-5111 or email at FIN-ACHN@miamidade.gov if you have any questions or need assistance with this form.

You may obtain blank copies of this form at : http://www.miamidade.gov/finance/library/ach_form.pdf

At our Vendor Payment Inquiry (VPI) website you can obtain payment information as well as status of invoices, payment due date and other important information. You can reach the VPI site at :

<https://w85exp.miamidade.gov/VInvoice/login.do>

Section 1

Transaction Type

- New : If vendor is currently not on ACH deposits with Miami-Dade County.
- Change : If vendor is currently on ACH deposits with Miami-Dade County and would like to make changes to their information (example : change of financial institution, account number, etc.)
- Terminate : If vendor is currently on ACH deposits with Miami-Dade County and would like to switch to either Check or AP Control disbursement type)

Federal Identification Number : Enter your Federal Employer Identification Number (FEIN) or Social Security Number (SSN) used to register you as a vendor with Miami-Dade County. Name and FEIN/SS must be exactly as provided on IRS Form W-9.

Vendor Name : Enter the name of your business or individual name used to register you as a vendor with Miami-Dade County.

DBA (Doing Business As) : If you have registered a DBA for your business or for you as an individual, please enter it here.

Fiscal Officer Name, Title and E-Mail : Name of Authorized Corporate officer, Title and E-Mail address to be contacted to. Corporate officer signing this form must be an authorized signatory in the corporate bank account listed on this form.

ACH Notification E-Mail : This is the E-Mail address where payment information will be sent to.

Section 2

This section must be completed in full and legible manner by your banking institution in order to prevent delays in processing change to ACH. Both acknowledgment statements must be checked off by Bank Official signing and dating the form.

Section 3

This section will be completed by Miami-Dade County Finance Department.

ORIGINAL FORM AND VOIDED CHECK OR REDACTED STATEMENT MUST BE MAILED TO :

Accounts Payable Manager

Miami-Dade County Finance Department

111 NW First Street, Suite 2620

Miami, Florida 33128

Terms and Conditions

Completed form should not contain any changes (scratched off /white out) or altered information; otherwise, form will not be accepted.

Processing time is approximately fifteen (15) days from receipt of complete form and voided check or redacted Bank statement.

Providing account information does not authorize Miami-Dade County to access bank account activity.

ACH deposits can be made into **only** one (1) bank account. Payments can not be split between multiple accounts.

Notification E-mail providing payment information can be sent to one (1) single E-mail address **only**.

Proper verification will be conducted by Miami-Dade County Finance Department Staff, via a telephone call to confirm the information being provided is accurate.

This authorization shall remain in effect until terminated in writing with sufficient notice to Miami-Dade County Finance Department.

Miami-Dade County will not be responsible for any loss that may arise solely by reason of error, mistake or fraud regarding information provided on this ACH Authorization Agreement Form.

APPENDIX "B" TO SPECIAL PROVISIONS
SECTION 600-GENERAL PROVISIONS FOR TRAFFIC CONTROL
DEVICES

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 and supplement the Miami-Dade County Traffic Control Equipment Standards and Specifications and 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 Provisions 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.

1.02 REFERENCES

- A. Miami-Dade County Traffic Control Equipment Standards and Specifications including Division 01 (General Requirements)
- B. FDOT Approved Product List (APL)
- C. Miami-Dade County Traffic Signals and Signs Division's Qualified Products List (TSSQPL)
- 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 DEFINITIONS

- A. Engineer, defined in Subarticle 1.01.D of Division 01 (General Requirements) Miami-Dade County DTPW Specifications, includes the duly authorized representatives of the DTPW Traffic Signals and Signs (TSS) Division. Wherever these Provisions require either notification to or action by Engineer, it is understood to include the DTPW TSS Division authorized representative in addition to any other duly authorized DTPW representatives designated for the specific project.

1.04 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: 305-679-0041
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.

1.05 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.

1.06 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 foot 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.

1.07 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

APPENDIX "C" TO SPECIAL PROVISIONS
SECTION 120: EARTHWORK AND RELATED OPERATIONS FOR LAP
(OFF-SYSTEM)

EARTHWORK AND RELATED OPERATIONS FOR LAP (OFF-SYSTEM).
(REV 1-23-12) (FA 2-27-12)

SECTION 120
EARTHWORK AND RELATED OPERATIONS FOR LAP (OFF-SYSTEM)

120-1 Description.

120-1.1 General: Perform earthwork and related operations based on the type of work specified in the Contract and the Earthwork Categories as defined below. Meet the applicable requirements for materials, equipment and construction as specified.

Earthwork and related operations consists of excavation for the construction of the roadway, excavation for structures and pipe, constructing backfill around structures and pipe, and constructing embankments as required for the roadway, ditches, and channel changes.

120-1.2 Earthwork Categories: Performance of Earthwork Operations will fall into one of the following Earthwork Categories:

120-1.2.1 Earthwork Category 1: Includes the earthwork and related operations associated with the construction of sidewalks and bike paths along with any drainage structures associated with these facilities.

120-1.2.2 Earthwork Category 2: Includes the earthwork and related operations associated with the construction of turn lanes and other non-mainline traffic lanes, widening, roadway shoulders, concrete box culverts, retaining walls, and other drainage structures on the non-mainline pavement.

120-1.2.3 Earthwork Category 3: Includes the earthwork and related operations associated with the construction of new mainline pavement, along with concrete box culverts, retaining walls, and other drainage structures on the mainline pavement.

120-2 Classes of Excavation.

120-2.1 Excavation of Unsuitable Material: Excavation of unsuitable material consists of the removal of muck, clay, rock or any other material that is unsuitable in its original position and that is excavated below the finished grading template. For stabilized bases and sand bituminous road mixes, the finished grading template is the top of the finished base, shoulders and slopes. For all other bases and rigid pavement, the finished grading template is the finished shoulder and slope lines and bottom of completed base or rigid pavement.

120-2.2 Lateral Ditch Excavation: Lateral ditch excavation consists of all excavation of inlet and outlet ditches to structures and roadway, changes in channels of streams, and ditches parallel to the roadway right-of-way. Dress lateral ditches to the grade and cross-section shown in the plans.

120-2.3 Channel Excavation: Channel excavation consists of the excavation and satisfactory disposal of all materials from the limits of the channel as shown in the plans.

120-2.4 Excavation for Structures and Pipe: Excavation for structures consists of the excavation for bridge foundations, box culverts, pipe culverts, storm sewers and all other pipe lines, retaining walls, headwalls for pipe culverts and drains, catch basins, drop inlets, manholes, and similar structures.

120-3 Excavation Requirements.

120-3.1 Excavation and Replacement of Unsuitable Materials: Where rock, muck, clay, or other material within the limits of the roadway is unsuitable in its original position, excavate such material to the cross-sections shown in the plans or indicated by the Engineer, and backfill with suitable material. Shape backfill materials to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance of plus or minus 0.2 foot in depth and plus or minus 6 inches (each side) in width.

120-3.2 Lateral Ditch Excavation: Excavate inlet and outlet ditches to structures and roadway, changes in channels of streams and ditches parallel to the roadway. Dress lateral ditches to the grade and cross-section shown in the plans.

120-3.3 Channel Excavation: Excavate and dispose of all materials from the limits of the channel as shown in the plans. Excavate for bridge foundations, box culverts, pipe culverts, storm sewers and all other pipe lines, retaining walls, headwalls for pipe culverts and drains, catch basins, drop inlets, manholes, and similar structures.

120-3.4 Excavation for Structures and Pipe.

120-3.4.1 Requirements for all Excavation: Excavate foundation pits to permit the placing of the full widths and lengths of footings shown in the plans, with full horizontal beds. Do not round or undercut corners or edges of footings. Perform all excavation to foundation materials, satisfactory to the Engineer, regardless of the elevation shown on the plans. Perform all excavation in stream beds to a depth at least 4 feet below the permanent bed of the stream, unless a firm footing can be established on solid rock before such depth is reached, and excavate to such additional depth as may be necessary to eliminate any danger of undermining. Wherever rock bottom is secured, excavate in such manner as to allow the solid rock to be exposed and prepared in horizontal beds for receiving the masonry. Remove all loose and disintegrated rock or thin strata. Have the Engineer inspect and approve all foundation excavations prior to placing masonry.

120-3.4.2 Earth Excavation:

120-3.4.2.1 Foundation Material other than the Rock: When masonry is to rest on an excavated surface other than rock, take special care to avoid disturbing the bottom of the excavation, and do not remove the final foundation material to grade until just before placing the masonry. In case the foundation material is soft or mucky, the Engineer may require excavation to a greater depth and to backfill to grade with approved material.

120-3.4.2.2 Foundation Piles: Where foundation piles are used, complete the excavation of each pit before driving the piles. After the driving is completed, remove all loose and displaced material, leaving a smooth, solid, and level bed to receive the masonry.

120-3.4.2.3 Removal of Obstructions: Remove boulders, logs, or any unforeseen obstacles encountered in excavating.

120-3.4.3 Rock Excavation: Clean all rock and other hard foundation material, remove all loose material, and cut all rock to a firm surface. Either level, step vertically and horizontally, or serrate the rock, as may be directed by the Engineer. Clean out all seams, and fill them with concrete or mortar.

120-3.4.4 Pipe Trench Excavation: Excavate trenches for pipe culverts and storm sewers to the elevation of the bottom of the pipe and to a width sufficient to provide adequate working room. Remove soil not meeting the classification specified as suitable backfill material in 120-8.3.2.2 to a depth of 4 inches below the bottom of the pipe elevation. Remove rock, boulders or other hard lumpy or unyielding material to a depth of 12 inches below the

bottom of the pipe elevation. Remove muck or other soft material to a depth necessary to establish a firm foundation. Where the soils permit, ensure that the trench sides are vertical up to at least the mid-point of the pipe.

For pipe lines placed above the natural ground line, place and compact the embankment, prior to excavation of the trench, to an elevation at least 2 feet above the top of the pipe and to a width equal to four pipe diameters, and then excavate the trench to the required grade.

120-4 Disposal of Surplus and Unsuitable Material.

120-4.1 Ownership of Excavated Materials: Dispose of surplus and excavated materials as shown in the plans or, if the plans do not indicate the method of disposal, take ownership of the materials and dispose of them outside the right-of-way.

120-4.2 Disposal of Muck on Side Slopes: As an exception to the provisions of 120-4.1, when approved by the Engineer, muck (A-8 material) may be placed on the slopes, or stored alongside the roadway, provided there is a clear distance of at least 6 feet between the roadway grading limits and the muck, and the muck is dressed to present a neat appearance. In addition, this material may also be disposed of by placing it on the slopes where, in the opinion of the Engineer, this will result in an aesthetically pleasing appearance and will have no detrimental effect on the adjacent developments. Where the Engineer permits the disposal of muck or other unsuitable material inside the right-of-way limits, do not place such material in a manner which will impede the inflow or outfall of any channel or of side ditches. The Engineer will determine the limits adjacent to channels within which such materials may be disposed.

120-4.3 Disposal of Paving Materials: Unless otherwise noted, take ownership of paving materials, such as paving brick, asphalt block, concrete slab, sidewalk, curb and gutter, etc., excavated in the removal of existing pavements, and dispose of them outside the right-of-way. If the materials are to remain the property of the Agency, place them in neat piles as directed. Existing limerock base that is removed may be incorporated in the stabilized portion of the subgrade. If the construction sequence will allow, incorporate all existing limerock base into the project as allowed by the Contract Documents.

120-4.4 Disposal Areas: Where the Contract Documents require disposal of excavated materials outside the right-of-way, and the disposal area is not indicated in the Contract Documents, furnish the disposal area without additional compensation.

Provide areas for disposal of removed paving materials out of sight of the project and at least 300 feet from the nearest roadway right-of-way line of any road. If the materials are buried, disregard the 300 foot limitation.

120-5 Materials for Embankment.

120-5.1 General Requirements for Embankment Materials: Construct embankments using suitable materials excavated from the roadway or delivered to the jobsite from authorized borrow pits.

Construct the embankment using maximum particle sizes as follows:

In top 12 inches: 3 1/2 inches (in any dimension).

12 to 24 inches: 6 inches (in any dimension).

In the depth below 24 inches: not to exceed 12 inches (in any dimension) or the compacted thickness of the layer being placed, whichever is less.

Spread all material so that the larger particles are separated from each other to minimize voids between them during compaction. Compact around these rocks in accordance with 120-7.2.

When and where approved by the Engineer, larger rocks (not to exceed 18 inches in any dimension) may be placed outside the one to two slope and at least 4 feet or more below the bottom of the base. Compact around these rocks to a firmness equal to that of the supporting soil. Where constructing embankments adjacent to bridge end bents or abutments, do not place rock larger than 3 1/2 inches in diameter within 3 feet of the location of any end-bent piling.

120-5.2 Use of Materials Excavated From the Roadway and Appurtenances: Assume responsibility for determining the suitability of excavated material for use on the project in accordance with the applicable Contract Documents. Consider the sequence of work and maintenance of traffic phasing in the determination of the availability of this material.

120-5.3 Authorization for Use of Borrow: Use borrow only when sufficient quantities of suitable material are not available from roadway and drainage excavation, to properly construct the embankment, subgrade, and shoulders, and to complete the backfilling of structures and pipe. Do not use borrow material until so ordered by the Engineer, and then only use material from approved borrow pits.

120-5.3.1 Haul Routes for Borrow Pits: Provide and maintain, at no expense to the Agency, all necessary roads for hauling the borrow material. Where borrow area haul roads or trails are used by others, do not cause such roads or trails to deteriorate in condition.

Arrange for the use of all non-public haul routes crossing the property of any railroad. Incur any expense for the use of such haul routes. Establish haul routes which will direct construction vehicles away from developed areas when feasible, and keep noise from hauling operations to a minimum. Advise the Engineer in writing of all proposed haul routes.

120-5.3.2 Borrow Material for Shoulder Build-up: When so indicated in the plans, furnish borrow material with a specific minimum bearing value, for building up of existing shoulders. Blend materials as necessary to achieve this specified minimum bearing value prior to placing the materials on the shoulders. Take samples of this borrow material at the pit or blended stockpile.

120-5.4 Materials Used at Pipes, Culverts, etc.: Construct embankments over and around pipes, culverts, and bridge foundations with selected materials.

120-6 Embankment Construction.

120-6.1 General: Construct embankments in sections of not less than 300 feet in length or for the full length of the embankment.

120-6.2 Dry Fill Method:

120-6.2.1 General: Construct embankments to meet compaction requirements in 120-7 and in accordance with the acceptance program requirements in 120-9. Restrict the compacted thickness of the last embankment lift to 6 inches maximum.

As far as practicable, distribute traffic over the work during the construction of embankments so as to cover the maximum area of the surface of each layer.

Construct embankment in the dry whenever normal dewatering equipment and methods can accomplish the needed dewatering.

120-6.2.1.1 For A-3 and A-2-4 Materials with up to 15% fines:

Construct the embankment in successive layers with lifts up to a maximum compacted thickness of 12 inches. Ensure the percentage of fines passing the No. 200 US Standard sieve in the A-2-4 material does not exceed 15%.

120-6.2.1.2 For A-1 Plastic materials (As designated in FDOT Design Standard Index 505) and A-2-4 Materials with greater than 15% fines: Construct the embankment in successive layers with lifts up to a maximum compacted thickness of 6 inches.

120-6.2.1.3 Equipment and Methods: Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, sumps and siphons.

When normal dewatering does not adequately remove the water, the Engineer may require the embankment material to be placed in the water or in low swampy ground in accordance with 120-7.2.4.

120-6.2.2 Placing in Unstable Areas: Where depositing the material in water, or in low swampy ground that will not support the weight of hauling equipment, construct the embankment by dumping successive loads in a uniformly distributed layer of a thickness not greater than necessary to support the hauling equipment while placing subsequent layers. Once sufficient material has been placed so that the hauling equipment can be supported, construct the remaining portion of the embankment in layers in accordance with the applicable provisions of 120-7.2.4 and 120-7.2.6.

120-6.2.3 Placing on Steep Slopes: When constructing an embankment on a hillside sloping more than 20 degrees from the horizontal, before starting the fill, deeply plow or cut into steps the surface of the original ground on which the embankment is to be placed.

120-6.2.4 Placing Outside Standard Minimum Slope: Where material that is unsuitable for normal embankment construction is to be used in the embankment outside the standard minimum slope (approximately one to two), place such material in layers of not more than 18 inches in thickness, measured loose. The Contractor may also place material which is suitable for normal embankment, outside such standard minimum slope, in 18 inch layers. Maintain a constant thickness for suitable material placed within and outside the standard minimum slope, unless placing in a separate operation.

120-6.3 Hydraulic Method:

120-6.3.1 Method of Placing: When the hydraulic method is used, as far as practicable, place all dredged material in its final position in the embankment by such method. Place and compact any dredged material that is re-handled, or moved and placed in its final position by any other method, as specified in 120-7.2. The Contractor may use baffles or any form of construction he may select, provided the slopes of the embankments are not steeper than indicated in the plans. Remove all timber used for temporary bulkheads or baffles from the embankment, and fill and thoroughly compact the holes thus formed. When placing fill on submerged land, construct dikes prior to beginning of dredging, and maintain the dikes throughout the dredging operation.

120-6.3.2 Excess Material: Do not use excess material placed outside the prescribed slopes, below the normal high-water level, to raise the fill. Remove only the portion of this material required for dressing the slopes.

120-6.3.3 Protection of Openings in Embankment: Leave openings in the embankments at the bridge sites. Remove any material which invades these openings or existing channels without additional compensation to provide the same depth of channel as existed before the construction of the embankment. Do not excavate or dredge any material within 200 feet of the toe of the proposed embankment.

120-7 Compaction Requirements.

120-7.1 Moisture Content: Compact the materials at a moisture content such that the specified density can be attained. If necessary to attain the specified density, add water to the material, or lower the moisture content by manipulating the material or allowing it to dry, as is appropriate.

120-7.2 Compaction of Embankments:

120-7.2.1 Earthwork Category 1 and 2 Density Requirements: The Engineer will accept a minimum density of 95% of the maximum density as determined by AASHTO T-99 Method C for all earthwork items requiring densities.

120-7.2.2 Earthwork Category 3 Density Requirements: The Engineer will accept a minimum of 100% of the maximum density as determined by AASHTO T-99 Method C for all densities required under category 3.

Except for embankments constructed by the hydraulic method as specified in 120-6.3, and for the material placed outside the standard minimum slope as specified in 120-6.2.4, and for other areas specifically excluded herein, compact each layer of the material used in the formation of embankments to the required density stated above. Uniformly compact each layer using equipment that will achieve the required density, and as compaction operations progress, shape and manipulate each layer as necessary to ensure uniform density throughout the embankment.

120-7.2.3 Compaction Over Unstable Foundations: Where the embankment material is deposited in water or on low swampy ground, and in a layer thicker than 12 inches (as provided in 120-6.2.2), compact the top 6 inches (compacted thickness) of such layer to the density as specified in 120-9.5.

120-7.2.4 Compaction Where Plastic Material Has Been Removed: Where unsuitable material is removed and the remaining surface is of the A-4, A-5, A-6, or A-7 Soil Groups, as determined by the Engineer, compact the surface of the excavated area by rolling with a sheepsfoot roller exerting a compression of at least 250 psi on the tamper feet, for the full width of the roadbed (subgrade and shoulders). Perform rolling before beginning any backfill, and continue until the roller feet do not penetrate the surface more than 1 inch. Do not perform such rolling where the remaining surface is below the normal water table and covered with water. Vary the procedure and equipment required for this operation at the discretion of the Engineer.

120-7.2.5 Compaction of Material To Be Used In Base, Pavement, or Stabilized Areas: Do not compact embankment material which will be incorporated into a pavement, base course, or stabilized subgrade, to be constructed as a part of the same Contract.

120-7.2.6 Compaction of Grassed Shoulder Areas: For the upper 6 inch layer of all shoulders which are to be grassed, since no specific density is required, compact only to the extent directed.

120-7.2.7 Compaction of Grassed Embankment Areas: For the outer layer of all embankments where plant growth will be established, do not compact. Leave this layer in a loose condition to a minimum depth of 6 inches for the subsequent seeding or planting operations.

120-7.3 Compaction of Subgrade: If the plans do not provide for stabilizing, compact the subgrade in both cuts and fills to the density specified in 120-9.5. For undisturbed soils, do not apply density requirements where constructing narrow widening strips or paved shoulders 5 feet or less in width.

Where trenches for widening strips are not of sufficient width to permit the use of standard compaction equipment, perform compaction using vibratory rollers, trench rollers, or other type compaction equipment approved by the Engineer.

Maintain the required density until the base or pavement is placed on the subgrade.

120-8 Backfilling Around Structures and Pipe.

120-8.1 Requirements for all Structures:

120-8.1.1 General: Backfill around structures and pipe in the dry whenever normal dewatering equipment and methods can accomplish the needed dewatering.

120-8.1.2 Equipment and Methods: Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps, wellpoints and header pipe and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, perforated pipe drains, sumps and siphons.

120-8.1.3 Backfill Materials: Backfill to the original ground surface or subgrade surface of openings made for structures, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure.

Do not allow heavy construction equipment to cross over culvert or storm sewer pipes until placing and compacting backfill material to the finished earthwork grade or to an elevation at least 4 feet above the crown of the pipe.

120-8.1.4 Use of A-7 Material: In the backfilling of trenches, A-7 material may be used from a point 12 inches above the top of the pipe up to the elevation shown on the FDOT Design Standards as the elevation for undercutting of A-7 material.

120-8.1.5 Time of Placing Backfill: Do not place backfill against any masonry or concrete abutment, wingwall, or culvert until the Engineer has given permission to do so, and in no case until the masonry or concrete has been in place seven days or until the specified 28-day compressive strength occurs.

120-8.1.6 Placement and Compaction: When the backfill material is deposited in water, compact per 120-8.2.5 and 120-8.3.4. Place the material in horizontal layers not exceeding 6 inches compacted thickness, in depth above water level, behind abutments, wingwalls and end bents or end rest piers, and around box culverts and all structures including pipe culverts. The Engineer may approve placing material in thicker lifts of no more than 12 inches compacted thickness above the soil envelope if a test section demonstrates the required density can be achieved. Approval will be based on five passing density tests over the test section consisting of a lift of backfill from structure to structure. The Engineer will identify the test section with the compaction effort and soil classification in the Agency Logbook. In case of a change in compaction effort or soil classification, construct a new test section. The Engineer reserves the right to terminate the Contractor's use of thick lift construction and have him revert to the 6 inch compacted lifts whenever it is determined that satisfactory results are not being obtained.

120-8.2 Additional Requirements for Structures Other than Pipe:

120-8.2.1 Density: Where the backfill material is deposited in water, obtain a 12 inch layer of comparatively dry material, thoroughly compacted by tamping, before the Engineer verifies layer and density requirements. Meet the requirements of the density Acceptance Criteria.

120-8.2.2 Box Culverts: For box culverts over which pavement is to be constructed, compact around the structure to an elevation not less than 12 inches above the top of the structure, using rapid-striking mechanical tampers.

120-8.2.3 Other Limited Areas: Compact in other limited areas using mechanical tampers or approved hand tampers, until the cover over the structure is at least 12 inches thick. When hand tampers are used, deposit the materials in layers not more than 4 inches thick using hand tampers suitable for this purpose with a face area of not more than 100 in². Take special precautions to prevent any wedging action against the masonry, and step or terrace the slope bounding the excavation for abutments and wingwalls if required by the Engineer.

120-8.2.4 Culverts and Piers: Backfill around culverts and piers on both sides simultaneously to approximately the same elevation.

120-8.2.5 Compaction Under Wet Conditions: Where wet conditions do not permit the use of mechanical tampers, compact using hand tampers. Use only A-3 material for the hand tamped portions of the backfill. When the backfill has reached an elevation and condition such as to make the use of the mechanical tampers practical, perform mechanical tamping in such manner and to such extent as to transfer the compaction force into the sections previously tamped by hand.

120-8.3 Additional Requirements for Pipe 15 Inches Inside Diameter or Greater:

120-8.3.1 General: Trenches for pipe may have up to four zones that must be backfilled.

Lowest Zone: The lowest zone is backfilled for deep undercuts up to within 4 inches of the bottom of the pipe.

Bedding Zone: The zone above the Lowest Zone is the Bedding Zone. Usually it will be the backfill which is the 4 inches of soil below the bottom of the pipe. When rock or other hard material has been removed to place the pipe, the Bedding Zone will be the 12 inches of soil below the bottom of the pipe.

Cover Zone: The next zone is backfill that is placed after the pipe has been laid and will be called the Cover Zone. This zone extends to 12 inches above the top of the pipe. The Cover Zone and the Bedding Zone are considered the Soil Envelope for the pipe.

Top Zone: The Top Zone extends from 12 inches above the top of the pipe to the base or final grade.

120-8.3.2 Material:

120-8.3.2.1 Lowest Zone: Backfill areas undercut below the Bedding Zone of a pipe with coarse sand, or other suitable granular material, obtained from the grading operations on the project, or a commercial material if no suitable material is available.

120-8.3.2.2 Soil Envelope: In both the Bedding Zone and the Cover Zone of the pipe, backfill with materials classified as A-1, A-2, or A-3. Material classified as A-4 may be used if the pipe is concrete pipe.

120-8.3.2.3 Top Zone: Backfill the area of the trench above the soil envelope of the pipe with materials allowed on Design Standard, Index No. 505.

120-8.3.3 Compaction:

120-8.3.3.1 Lowest Zone: Compact the soil in the Lowest Zone to approximately match the density of the soil in which the trench was cut.

120-8.3.3.2 Bedding Zone: If the trench was not undercut below the bottom of the pipe, loosen the soil in the bottom of the trench immediately below the approximate middle third of the outside diameter of the pipe.

If the trench was undercut, place the bedding material and leave it in a loose condition below the middle third of the outside diameter of the pipe. Compact the outer portions to meet the density requirements of the Acceptance Criteria. Place the material in lifts no greater than 6 inches (compacted thickness).

120-8.3.3.3 Cover Zone: Place the material in 6 inches layers (compacted thickness), evenly deposited on both sides of the pipe, and compact with mechanical tampers suitable for this purpose. Hand tamp material below the pipe haunch that cannot be reached by mechanical tampers. Meet the requirements of the density Acceptance Criteria.

120-8.3.3.4 Top Zone: Place the material in layers not to exceed 12 inches in compacted thickness. Meet the requirements of the density Acceptance Criteria.

120-8.3.4 Backfill Under Wet Conditions: Where wet conditions are such that dewatering by normal pumping methods would not be effective, the procedure outlined below may be used when specifically authorized by the Engineer in writing.

Granular material may be used below the elevation at which mechanical tampers would be effective, but only material classified as A-3. Place and compact the material using timbers or hand tampers until the backfill reaches an elevation such that its moisture content will permit the use of mechanical tampers. When the backfill has reached such elevation, use normally acceptable backfill material. Compact the material using mechanical tampers in such manner and to such extent as to transfer the compacting force into the material previously tamped by hand.

120-9 Acceptance Program.

120-9.1 Density over 105%: When a computed dry density results in a value greater than 105% of the applicable Proctor maximum dry density, the Engineer will perform a second density test within 5 feet. If the second density results in a value greater than 105%, investigate the compaction methods, examine the applicable Maximum Density and material description. If necessary, the Engineer will test an additional sample for acceptance in accordance with AASHTO T 99, Method C.

120-9.2 Maximum Density Determination: The Engineer will determine the maximum density and optimum moisture content by sampling and testing the material in accordance with the specified test method listed in 120-9.3.

120-9.3 Density Testing Requirements: Compliance with the requirements of 120-9.5 will be determined in accordance FM 1-T 238. The in-place moisture content will be determined for each density in accordance with FM 5-507 (Determination of Moisture Content by Means of a Calcium Carbide Gas Pressure Moisture Tester), or ASTM D 4643 (Laboratory Determination of Moisture Content of Granular Soils By Use of a Microwave Oven).

120-9.4 Soil Classification: The Engineer will perform soil classification tests in accordance with AASHTO T-88, and classify soils in accordance with AASHTO M-145 (Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes) in order to determine compliance with embankment utilization requirements.

120-9.5 Acceptance Criteria: The Engineer will accept a minimum density in accordance with 120-7.2 with the following exceptions:

- 1) embankment constructed by the hydraulic method as specified in 120-6.3;

- 2) material placed outside the standard minimum slope as specified in 120-6.2.4;
- 3) other areas specifically excluded herein.

120-9.6 Frequency: The Engineer will conduct sampling and testing at a minimum frequency listed in the table below.

Test Name	Frequency
Maximum Density	One per soil type
Density	1 per 500' RDWY (Alt Lift)
Soil Classification	One per Maximum Density

120-10 Maintenance and Protection of Work.

While construction is in progress, maintain adequate drainage for the roadbed at all times. Maintain a shoulder at least 3 feet wide adjacent to all pavement or base construction in order to provide support for the edges.

Maintain and protect all earthwork construction throughout the life of the Contract, and take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. Repair any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work. Maintain all channels excavated as a part of the Contract work against natural shoaling or other encroachments to the lines, grades, and cross-sections shown in the plans, until final acceptance of the project.

120-11 Construction.

120-11.1 Construction Tolerances: Shape the surface of the earthwork to conform to the lines, grades, and cross-sections shown in the plans. In final shaping of the surface of earthwork, maintain a tolerance of 0.3 foot above or below the plan cross-section with the following exceptions:

1. Shape the surface of shoulders to within 0.1 foot of the plan cross-section.
2. Shape the earthwork to match adjacent pavement, curb, sidewalk, structures, etc.
3. Shape the bottom of ditches so that the ditch impounds no water.
4. When the work does not include construction of base or pavement, shape the entire roadbed (shoulder point to shoulder point) to within 0.1 foot above or below the plan cross-section.

Ensure that the shoulder lines do not vary horizontally more than 0.3 foot from the true lines shown in the plans.

120-11.2 Operations Adjacent to Pavement: Carefully dress areas adjacent to pavement areas to avoid damage to such pavement. Complete grassing of shoulder areas prior to placing the final wearing course. Do not manipulate any embankment material on a pavement surface.

When shoulder dressing is underway adjacent to a pavement lane being used to maintain traffic, exercise extreme care to avoid interference with the safe movement of traffic.

120-12 Method of Measurement.

120-12.1 Excavation: Excavation will be paid for by volume, in cubic yards, calculated by the method of average end areas, unless the Engineer determines that another method of calculation will provide a more accurate result. The material will be measured in its original position by field survey or by photogrammetric means as designated by the Engineer. Measurement for payment will include the excavation of unsuitable material, lateral ditch

excavation, channel excavation, and excavation for structures and pipe. Payment will not be made for excavation or embankment beyond the limits shown in the Plans or authorized by the Engineer.

120-12.2 Embankment: Embankment will be paid for in cubic yards, as accepted by Engineer, calculated by the method of average end areas, unless Engineer determines that another method of calculation will provide a more accurate result. Embankment will be measured in its final position by field survey or by photogrammetric means as designated by Engineer.

120-12.3: The measurement will include only material actually placed and compacted above the original ground line, within the lines and grades indicated in the Plans or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment and no allowance will be made for subsidence of material below the surface of the original ground.

120-12.4: Deduct any quantity beyond the limits shown in the Plans or authorized by Engineer. No payment will be made for additional material required to obtain compaction, material placed by Contractor outside the limits of the typical cross section, or material placed to correct for settlement of the embankment. Shrinkage or swell factors are Contractor's responsibility. When shown on the plans, factors are for informational purposes only.

120-13 Basis of Payment.

120-13.1 General: Prices and payments for the work items included in this Section will be full compensation for all work described herein, including excavating, dredging, hauling, placing, and compacting; dressing the surface of the earthwork; and maintaining and protecting the complete earthwork and the Articles applicable to the items of work having awarded Contract Prices measured and approved for payment.

120-13.2 Excavation: The total quantity of all excavation specified under this Section will be paid for at the Contract unit price for Excavation. No payment will be made for the excavation of any materials which are used for purposes other than those shown in the plans or designated by the Engineer. No payment will be made for materials excavated outside the lines and grades given by the Engineer, unless specifically authorized by the Engineer.

120-13.3 Embankment: The total quantity of embankment specified in this Section will be paid for at the Contract unit price for embankment. No payment will be made for materials which are used for purposes other than those shown in the plans or designated by the Engineer. No payment will be made for materials placed outside the lines and grades given by the Engineer.

120-13.4 When No Direct Payment is Provided: When no item for Excavation or Embankment is included in the list of Contract Unit Prices, the cost of any excavation or embankment necessary for the proper construction of the Project is included in the Contract Prices for the work requiring excavation or embankment. Where the Work includes structures including pipe culvert and french drain, all earthwork costs for the installation of these items are included in their associated Contract Price.

APPENDIX "D" TO SPECIAL PROVISIONS
SECTION 334: SUPERPAVE ASPHALT FOR LAP
(OFF-SYSTEM)

**SUPERPAVE ASPHALT FOR LAP (OFF-SYSTEM).
(REV 1-26-15) (FA 1-29-15)**

**SECTION 334
SUPERPAVE ASPHALT FOR LAP (OFF-SYSTEM)**

334-1 Description.

334-1.1 General: Construct a Superpave asphalt pavement (consisting of either Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA)) based on the type of work specified in the Contract and the Asphalt Work Categories as defined below. Meet the applicable requirements for plants, equipment, and construction requirements as defined below. Use an asphalt mix, either HMA or WMA, which meets the requirements of this specification.

334-1.2 Asphalt Work Mix Categories: Construction of asphalt pavement will fall into one of the following work categories:

334-1.2.1 Asphalt Work Category 1: Includes the construction of shared use paths and miscellaneous asphalt.

334-1.2.2 Asphalt Work Category 2: Includes the construction of new asphalt turn lanes, paved shoulders and other non-mainline pavement locations.

334-1.2.3 Asphalt Work Category 3: Includes the construction of new mainline asphalt pavement lanes, milling and resurfacing.

334-1.3 Mix Types: Use the appropriate asphalt mix as shown in Table 334-1.

Table 334-1 Asphalt Mix Types			
Asphalt Work Category	Mix Types	Traffic Level	ESALs (millions)
1	Type SP-9.5	A	<0.3
2	Structural Mixes: Types SP-9.5 or SP-12.5 Friction Mixes: Types FC-9.5 or FC-12.5	B	0.3 to <3
3	Structural Mixes: Types SP-9.5 or SP-12.5 Friction Mixes: Types FC-9.5 or FC-12.5	C	≥3

A Type SP or FC mix one traffic level higher than the traffic level specified in the Contract may be substituted, at no additional cost (i.e. Traffic Level B may be substituted for Traffic Level A, etc.). Traffic levels are as defined in Section 334 of the Florida Department of Transportation's (FDOT's) Specifications.

334-1.4 Gradation Classification: The Superpave mixes are classified as fine and are defined in 334-3.2.2. The equivalent AASHTO nominal maximum aggregate size Superpave mixes are as follows:

Type SP-9.5, FC-9.5 9.5 mm

Type SP-12.5, FC-12.5 12.5 mm

334-1.5 Thickness: The total pavement thickness of the asphalt pavement will be based on a specified spread rate or plan thickness as shown in the Contract Documents. Before paving, propose a spread rate or thickness for each individual layer meeting the requirements of this specification, which when combined with other layers (as applicable) will equal the plan spread rate or thickness. When the total pavement thickness is specified as plan thickness, the plan thickness and individual layer thickness will be converted to spread rate using the following equation:

$$\text{Spread rate (lbs/yd}^2\text{)} = t \times G_{\text{mm}} \times 43.3$$

where: t = Thickness (in.) (Plan thickness or individual layer thickness)
G_{mm} = Maximum specific gravity from the mix design

For target purposes only, spread rate calculations shall be rounded to the nearest whole number.

334-1.5.1 Layer Thicknesses: Unless otherwise called for in the Contract Documents, the allowable layer thicknesses for asphalt mixtures are as follows:

Type SP-9.5, FC-9.5 3/4 to 1-1/2 inches

Type SP-12.5, FC-12.5 1-1/2 to 2-1/2 inches

334-1.5.2 Additional Requirements: The following requirements also apply to asphalt mixtures:

1. When construction includes the paving of adjacent shoulders (less than or equal to 5 feet wide), the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass, unless otherwise called for in the Contract Documents.

2. For overbuild layers, use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum allowable thickness may be reduced by 1/2 inch, and the maximum allowable thickness will be as specified below, unless called for differently in the Contract Documents.

Type SP-9.5..... 3/8 to 2 inches

Type SP-12.5..... 1/2 to 3 inches

3. Variable thickness overbuild layers may be tapered to zero thickness provided the contract documents require a minimum of 1-1/2 inches of mix placed over the variable thickness overbuild layer.

334-1.6 Weight of Mixture: The weight of the mixture shall be determined as provided in 320-3.2 of the FDOT Specifications.

334-2 Materials.

334-2.1 Superpave Asphalt Binder: Unless specified elsewhere in the Contract or in 334-2.3.3, use a PG 67-22 asphalt binder from the FDOT’s Approved Products List (APL). If the Contract calls for an alternative asphalt binder, meet the requirements of FDOT Specifications Section 336 or 916, as appropriate.

334-2.2 Aggregate: Use aggregate capable of producing a quality pavement.

For Type FC mixes, use an aggregate blend that consists of crushed granite, crushed Oolitic limestone, other crushed materials (as approved by FDOT for friction courses per Rule 14-103.005, Florida Administrative Code), or a combination of the above. Crushed

limestone from the Oolitic formation may be used if it contains a minimum of 12% silica material as determined by FDOT Test Method FM 5-510 and FDOT grants approval of the source prior to its use. As an exception, mixes that contain a minimum of 60% crushed granite may either contain:

1. Up to 40% fine aggregate from other sources; or,
2. A combination of up to 20% RAP and the remaining fine aggregate

from other sources.

A list of aggregates approved for use in friction courses may be available on the FDOT's State Materials Office website. The URL for obtaining this information, if available, is: <ftp://ftp.dot.state.fl.us/fdot/smo/website/sources/frictioncourse.pdf>.

334-2.3 Reclaimed Asphalt Pavement (RAP) Material:

334-2.3.1 General requirements: RAP may be used as a component of the asphalt mixture, provided the RAP meets the following requirements:

1. When using a PG 76-22 (PMA), or PG 76-22 (ARB) asphalt binder, limit the amount of RAP material used in the mix to a maximum of 20% by weight of total aggregate. As an exception, amounts greater than 20% RAP by weight of total aggregate can be used if no more than 20% by weight of total asphalt binder comes from the RAP material.
2. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.
3. Provide RAP material having a minimum average asphalt binder content of 4.0% by weight of RAP. As an exception, when using fractionated RAP, the minimum average asphalt binder content for the coarse portion of the RAP shall be 2.5% by weight of the coarse portion of the RAP. The coarse portion of the RAP shall be the portion of the RAP retained on the No. 4 sieve. The Engineer may sample the stockpile to verify that this requirement is met.
4. Use a grizzly or grid over the RAP cold bin, in-line roller crusher, screen, or other suitable means to prevent oversized RAP material from showing up in the completed recycle mixture. If oversized RAP material appears in the completed recycle mix, take the appropriate corrective action immediately. If the appropriate corrective actions are not immediately taken, stop plant operations.

334-2.3.2 Material Characterization: Assume responsibility for establishing the asphalt binder content, gradation, and bulk specific gravity (G_{sb}) of the RAP material based on a representative sampling of the material.

334-2.3.3 Asphalt Binder for Mixes with RAP: Select the appropriate asphalt binder grade based on Table 334-2. The Engineer reserves the right to change the asphalt binder type and grade during production based on characteristics of the RAP asphalt binder.

Table 334-2 Asphalt Binder Grade for Mixes Containing RAP	
Percent RAP	Asphalt Binder Grade
0 - 15	PG 67-22
16 - 30	PG 58-22
> 30	PG 52-28

334-3 Composition of Mixture.

334-3.1 General: Compose the asphalt mixture using a combination of aggregates, mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate fractions to meet the grading and physical properties of the mix design. Aggregates from various sources may be combined.

334-3.2 Mix Design:

334-3.2.1 General: Design the asphalt mixture in accordance with AASHTO R 35-12, except as noted herein. Submit the proposed mix design with supporting test data indicating compliance with all mix design criteria to the Engineer. Prior to the production of any asphalt mixture, obtain the Engineer's conditional approval of the mix design. If required by the Engineer, send representative samples of all component materials, including asphalt binder to a laboratory designated by the Engineer for verification. As an exception to these requirements, use a currently approved FDOT Mix Design.

Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, is:

<http://www.dot.state.fl.us/statematerialsoffice/quality/programs/warmmixasphalt/index.shtm>.

The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and at his discretion, the Engineer may no longer allow the use of the mix design.

334-3.2.2 Mixture Gradation Requirements: Combine the aggregates in proportions that will produce an asphalt mixture meeting all of the requirements defined in this specification and conform to the gradation requirements at design as defined in AASHTO M 323-12, Table 3. Aggregates from various sources may be combined.

334-3.2.2.1 Mixture Gradation Classification: Plot the combined mixture gradation on an FHWA 0.45 Power Gradation Chart. Include the Control Points from AASHTO M323-12, Table-3, as well as the Primary Control Sieve (PCS) Control Point from AASHTO M323-12, Table 4. Fine mixes are defined as having a gradation that passes above or through the primary control sieve control point.

334-3.2.3 Gyratory Compaction: Compact the design mixture in accordance with AASHTO T312-12, with the following exceptions: use the number of gyrations at N_{design} as designed in Table 334-3.

Traffic Level	N_{design} Number of Gyrations
A	50
B	65
C	75

334-3.2.4 Design Criteria: Meet the requirements for nominal maximum aggregate size as defined in AASHTO M323-12, as well as for relative density, VMA, VFA, and dust-to-binder ratio as specified in AASHTO M323-12, Table 6. N_{initial} and N_{maximum} requirements are not applicable.

334-3.2.5 Moisture Susceptibility: Test 4 inch specimens in accordance with FDOT Test Method FM 1-T 283. Provide a mixture having a retained tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 pounds per square inch. If necessary, add a liquid anti-stripping agent from the FDOT's APL or hydrated lime in order to meet these criteria.

In lieu of moisture susceptibility testing, add a liquid anti-stripping agent from the FDOT's APL. Add 0.5% liquid anti-stripping agent by weight of asphalt binder.

334-3.2.6 Additional Information: In addition to the requirements listed above, provide the following information on each mix design:

1. The design traffic level and the design number of gyrations (N_{design}).
2. The source and description of the materials to be used.
3. The FDOT source number and the FDOT product code of the aggregate components furnished from an FDOT approved source (if required).
4. The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation caused by handling and processing as necessary.
5. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly material passing the No. 200 sieve) should be accounted for and identified.
6. The bulk specific gravity (G_{sb}) value for each individual aggregate and RAP component.
7. A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
8. A target temperature for the mixture at the plant (mixing temperature) and a target temperature for the mixture at the roadway (compaction temperature). Do not exceed a target temperature of 330°F for PG 76-22 (PMA) and PG 76-22 (ARB) asphalt binders, and 315°F for unmodified asphalt binders.
9. Provide the physical properties achieved at four different asphalt binder contents. One shall be at the optimum asphalt content, and must conform to all specified physical requirements.
10. The name of the mix designer.
11. The ignition oven calibration factor.
12. The warm mix technology, if used.

334-4 Process Control.

Assume full responsibility for controlling all operations and processes such that the requirements of these Specifications are met at all times. Perform any tests necessary at the plant and roadway to control the process.

334-5 General Construction Requirements.

334-5.1 Weather Limitations: Do not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the paving operations.

334-5.2 Limitations of Paving Operations:

334-5.2.1 General: Spread the mixture only when the surface upon which it is to be placed has been previously prepared, is intact, firm, dry, clean, and the tack, with acceptable

spread rate, is properly broken. Ensure all granular base materials are properly primed and all asphalt base materials are properly tacked, prior to paving.

334-5.2.2 Air Temperature: Place the mixture only when the air temperature in the shade and away from the artificial heat meets the requirements of Table 334-4. The minimum ambient temperature requirement may be reduced by 5°F when using a warm mix technology, if mutually agreed to by both the Engineer and the Contractor. Table 334-4 Ambient Air Temperature Requirements for Paving	
Layer Thickness or Asphalt Binder Type	Minimum Temperature (°F)
≤1 inch	50
Any mixture > 1 inch containing a PG asphalt binder with a high temperature designation ≥ 76°C	45
Any mixture > 1 inch containing a PG asphalt binder with a high temperature designation < 76°C	40

334-5.3 Mix Temperature: Heat and combine the ingredients of the mix in such a manner as to produce a mixture with a temperature at the plant and at the roadway, within a range of plus or minus 30°F from the target temperature as shown on the mix design. Reject all loads outside of this range. For warm mix asphalt, the Contractor may produce the first five loads of the production day and at other times when approved by the Engineer, at a hot mix asphalt temperature not to exceed 330°F for purposes of heating the asphalt paver. For these situations, the upper tolerance of +30°F does not apply.

334-5.4 Transportation of the Mixture: Transport the mix in trucks of tight construction, which prevents the loss of material and the excessive loss of heat and previously cleaned of all foreign material. After cleaning, thinly coat the inside surface of the truck bodies with soapy water or an asphalt release agent as needed to prevent the mixture from adhering to the beds. Do not allow excess liquid to pond in the truck body. Do not use a release agent that will contaminate, degrade, or alter the characteristics of the asphalt mix or is hazardous or detrimental to the environment. Petroleum derivatives (such as diesel fuel), solvents, and any product that dissolves asphalt are prohibited. Provide each truck with a tarpaulin or other waterproof cover mounted in such a manner that it can cover the entire load when required. When in place, overlap the waterproof cover on all sides so it can be tied down. Cover each load during cool and cloudy weather and at any time it appears rain is likely during transit with a tarpaulin or waterproof cover. Cover and tie down all loads of friction course mixtures.

334-5.5 Preparation of Surfaces Prior to Paving:

334-5.5.1 Cleaning: Clean the surface of all loose and deleterious material by the use of power brooms or blowers, supplemented by hand brooming where necessary.

334-5.5.2 Patching and Leveling Courses: As shown in the plans, bring the existing surface to proper grade and cross-section by the application of patching or leveling courses.

334-5.5.3 Application over Surface Treatment: Where an asphalt mix is to be placed over a surface treatment, sweep and dispose of all loose material from the paving area.

334-5.5.4 Tack Coat: Use a rate of application as defined in Table 334-5. Control the rate of application to be within plus or minus 0.01 gallon per square yard of the target application rate. The target application rate may be adjusted by the Engineer to meet specific field conditions. Determine the rate of application as needed to control the operation. When using PG 52-28, multiply the target rate of application by 0.6.

Table 334-5 Tack Coat Application Rates		
Asphalt Mixture Type	Underlying Pavement Surface	Target Tack Rate (gal/yd ²)
Base Course, Structural Course, Dense Graded Friction Course	Newly Constructed Asphalt Layers	0.03 minimum
	Milled Surface or Oxidized and Cracked Pavement	0.06
	Concrete Pavement	0.08

334-5.6 Placing Mixture:

334-5.6.1 Alignment of Edges: With the exception of pavements placed adjacent to curb and gutter or other true edges, place all pavements by the stringline method to obtain an accurate, uniform alignment of the pavement edge. Control the unsupported pavement edge to ensure that it will not deviate more than plus or minus 1.5 inches from the stringline.

334-5.6.2 Rain and Surface Conditions: Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is water on the surface to be covered. Once the rain has stopped and water has been removed from the tacked surface to the satisfaction of the Engineer and the temperature of the mixture caught in transit still meets the requirements as specified in 334-5.3, the Contractor may then place the mixture caught in transit.

334-5.6.3 Checking Depth of Layer: Check the depth of each layer at frequent intervals to ensure a uniform spread rate that will meet the requirements of the Contract.

334-5.6.4 Hand Work: In limited areas where the use of the spreader is impossible or impracticable, spread and finish the mixture by hand.

334-5.6.5 Spreading and Finishing: Upon arrival, dump the mixture in the approved paver, and immediately spread and strike-off the mixture to the full width required, and to such loose depth for each course that, when the work is completed, the required weight of mixture per square yard, or the specified thickness, is secured. Carry a uniform amount of mixture ahead of the screed at all times.

334-5.6.6 Thickness Control: Ensure the spread rate is within 10% of the target spread rate, as indicated in the Contract. When calculating the spread rate, use, at a minimum, an average of five truckloads of mix. When the average spread rate is beyond plus or minus 10% of the target spread rate, monitor the thickness of the pavement layer closely and adjust the construction operations.

If the Contractor fails to maintain an average spread rate within plus or minus 10% of the target spread rate for two consecutive days, the Engineer may elect to stop the construction operation at any time until the issue is resolved.

When the average spread rate for the total structural or friction course pavement thickness exceeds the target spread rate by plus or minus 50 pounds per square yard for layers greater than or equal to 2.5 inches or exceeds the target spread rate by plus or minus 25 pounds per square yard for layers less than 2.5 inches, address the unacceptable pavement in accordance with 334-5.10.4, unless an alternative approach is agreed upon by the Engineer.

334-5.7 Leveling Courses:

334-5.7.1 Patching Depressions: Before spreading any leveling course, fill all depressions in the existing surface as shown in the plans.

334-5.7.2 Spreading Leveling Courses: Place all courses of leveling with an asphalt paver or by the use of two motor graders, one being equipped with a spreader box. Other types of leveling devices may be used upon approval by the Engineer.

334-5.7.3 Rate of Application: When using Type SP-9.5 for leveling, do not allow the average spread of a layer to be less than 50 pounds per square yard or more than 75 pounds per square yard. The quantity of mix for leveling shown in the plans represents the average for the entire project; however, the Contractor may vary the rate of application throughout the project as directed by the Engineer. When leveling in connection with base widening, the Engineer may require placing all the leveling mix prior to the widening operation.

334-5.8 Compaction: For each paving or leveling train in operation, furnish a separate set of rollers, with their operators.

When density testing for acceptance is required, select equipment, sequence, and coverage of rolling to meet the specified density requirement. Regardless of the rolling procedure used, complete the final rolling before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

When density testing for acceptance is not required, use a rolling pattern approved by the Engineer.

Use hand tamps or other satisfactory means to compact areas which are inaccessible to a roller, such as areas adjacent to curbs, headers, gutters, bridges, manholes, etc.

334-5.9 Joints.

334-5.9.1 Transverse Joints: Construct smooth transverse joints, which are within 3/16 inch of a true longitudinal profile when measured with a 15 foot manual straightedge meeting the requirements of FDOT Test Method FM 5-509. These requirements are waived for transverse joints at the beginning and end of the project and at the beginning and end of bridge structures, if the deficiencies are caused by factors beyond the control of the Contractor such as no milling requirement, as determined by the Engineer. When smoothness requirements are waived, construct a reasonably smooth transitional joint.

334-5.9.2 Longitudinal Joints: For all layers of pavement except the leveling course, place each layer so that longitudinal construction joints are offset 6 to 12 inches laterally between successive layers. Do not construct longitudinal joints in the wheel paths. The Engineer may waive these requirements where offsetting is not feasible due to the sequence of construction.

334-5.10 Surface Requirements: Construct a smooth pavement with good surface texture and the proper cross slope.

334-5.10.1 Texture of the Finished Surface of Paving Layers: Produce a finished surface of uniform texture and compaction with no pulled, torn, raveled, crushed or loosened portions and free of segregation, bleeding, flushing, sand streaks, sand spots, or ripples. Correct any area of the surface that does not meet the foregoing requirements in accordance with 334-5.10.4.

In areas not defined to be a density testing exception per 334-6.4.1, obtain for the Engineer, three 6 inch diameter roadway cores at locations visually identified by the Engineer to be segregated. The Engineer will determine the density of each core in accordance with FDOT

Test Method FM 1-T 166 and calculate the percent G_{mm} of the segregated area using the average G_{mb} of the roadway cores and the representative PC G_{mm} for the questionable material. If the average percent G_{mm} is less than 90.0, address the segregated area in accordance with 334-5.10.4.

334-5.10.2 Cross Slope: Construct a pavement surface with cross slopes in compliance with the requirements of the Contract Documents.

334-5.10.3 Pavement Smoothness: Construct a smooth pavement meeting the requirements of this Specification. Furnish a 15 foot manual and a 15 foot rolling straightedge meeting the requirements of FDOT Test Method FM 5-509.

334-5.10.3.1 Straightedge Testing:

334-5.10.3.1.1 Acceptance Testing: Perform straightedge testing in the outside wheel path of each lane for the final (top) layer of the pavement. Test all pavement lanes where the width is constant using a rolling straightedge and document all deficiencies on a form approved by the Engineer. Notify the Engineer of the location and time of all straightedge testing a minimum of 48 hours before beginning testing.

334-5.10.3.1.2 Final (Top) Pavement Layer: At the completion of all paving operations, straightedge the final (top) layer either behind the final roller of the paving train or as a separate operation. Address all deficiencies in excess of 3/16 inch in accordance with 334-5.10.4, unless waived by the Engineer. Retest all corrected areas.

334-5.10.3.1.3 Straightedge Exceptions: Straightedge testing will not be required in the following areas: shoulders, intersections, tapers, crossovers, sidewalks, shared use paths, parking lots and similar areas, or in the following areas when they are less than 250 feet in length: turn lanes, acceleration/deceleration lanes and side streets. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets. In the event the Engineer identifies a surface irregularity in the above areas that is determined to be objectionable, straightedge and address all deficiencies in excess of 3/8 inch in accordance with 334-5.10.4.

334-5.10.4 Correcting Unacceptable Pavement: Correct deficiencies in the pavement layer by removing and replacing the full depth of the layer, extending a minimum of 50 feet on both sides (where possible) of the defective area for the full width of the paving lane, at no additional cost.

334-6 Acceptance of the Mixture.

334-6.1 General: The asphalt mixture will be accepted based on the Asphalt Work Category as defined below:

1. Asphalt Work Category 1 – Certification by the Contractor as defined in 334-6.2.

2. Asphalt Work Category 2 – Certification and process control testing by the Contractor as defined in 334-6.3.

3. Asphalt Work Category 3 – Process control testing by the Contractor and acceptance testing by the Engineer as defined in 334-6.4.

334-6.2 Certification by the Contractor: On Asphalt Work Category 1 construction, the Engineer will accept the mix on the basis of visual inspection. Submit a Notarized Certification of Specification Compliance letter on company letterhead to the Engineer stating that all material produced and placed on the project meets the requirements of the Specifications. The Engineer may run independent tests to determine the acceptability of the material.

334-6.3 Certification and Process Control Testing by the Contractor: On Asphalt Work Category 2 construction, submit a Notarized Certification of Specification Compliance letter on company letterhead to the Engineer stating that all material produced and placed on the project meets the requirements of the Specifications, along with supporting test data documenting all process control testing as described in 334-6.3.1. If required by the Contract, utilize an Independent Laboratory as approved by the Engineer for the process control testing. The mix will also require visual acceptance by the Engineer. In addition, the Engineer may run independent tests to determine the acceptability of the material. Material failing to meet these acceptance criteria will be addressed as directed by the Engineer such as but not limited to acceptance at reduced pay, delineation testing to determine the limits of the questionable material, removal and replacement at no cost to the agency, or performing an Engineering analysis to determine the final disposition of the material.

334-6.3.1 Process Control Sampling and Testing Requirements: Perform process control testing at a frequency of once per day. Obtain the samples in accordance with FDOT Method FM 1-T 168. Test the mixture at the plant for gradation (P_{.8} and P_{.200}) and asphalt binder content (P_b). Measure the roadway density with 6 inch diameter roadway cores at a minimum frequency of once per 1,500 feet of pavement with a minimum of three cores per day.

Determine the asphalt binder content of the mixture in accordance with FDOT Method FM 5-563. Determine the gradation of the recovered aggregate in accordance with FDOT Method FM 1-T 030. Determine the roadway density in accordance with FDOT Method FM 1-T 166. The minimum roadway density will be based on the percent of the maximum specific gravity (G_{mm}) from the approved mix design. If the Contractor or Engineer suspects that the mix design G_{mm} is no longer representative of the asphalt mixture being produced, then a new G_{mm} value will be determined from plant-produced mix, in accordance with FDOT Method FM 1-T 209, with the approval of the Engineer. Roadway density testing will not be required in certain situations as described in 334-6.4.1. Assure that the asphalt binder content, gradation and density test results meet the criteria in Table 334-4.

Table 334-4 Process Control and Acceptance Values	
Characteristic	Tolerance
Asphalt Binder Content (percent)	Target ± 0.55
Passing No. 8 Sieve (percent)	Target ± 6.00
Passing No. 200 Sieve (percent)	Target ± 2.00
Roadway Density (daily average)	Minimum 90.0% of G _{mm}

334-6.4 Process Control Testing by the Contractor and Acceptance Testing by the Engineer: On Asphalt Work Category 3, perform process control testing as described in 334-6.3.1. In addition, the Engineer will accept the mixture at the plant with respect to gradation (P_{.8} and P_{.200}) and asphalt binder content (P_b). The mixture will be accepted on the roadway with respect to density. The Engineer will sample and test the material as described in 334-6.3.1. The Engineer will randomly obtain at least one set of samples per day. Assure that the asphalt content, gradation and density test results meet the criteria in Table 334-4. Material failing to meet these acceptance criteria will be addressed as directed by the Engineer such as but not limited to acceptance at reduced pay, delineation testing to determine the limits of the

questionable material, removal and replacement at no cost to the agency, or performing an Engineering analysis to determine the final disposition of the material.

334-6.4.1 Acceptance Testing Exceptions: When the total quantity of any mix type in the project is less than 500 tons, the Engineer will accept the mix on the basis of visual inspection. The Engineer may run independent tests to determine the acceptability of the material.

Density testing for acceptance will not be performed on widening strips or shoulders with a width of 5 feet or less, variable thickness overbuild courses, leveling courses, any asphalt layer placed on subgrade (regardless of type), miscellaneous asphalt pavement, shared use paths, crossovers, or any course with a specified thickness less than 1 inch or a specified spread rate less than 100 pounds per square yard. Density testing for acceptance will not be performed on asphalt courses placed on bridge decks or approach slabs; compact these courses in static mode only. In addition, density testing for acceptance will not be performed on the following areas when they are less than 1,000 feet continuous in length: turning lanes, acceleration lanes, deceleration lanes, shoulders, parallel parking lanes, or ramps. Density testing for acceptance will not be performed in intersections. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets. Compact these courses in accordance with a standard rolling procedure approved by the Engineer. In the event that the rolling procedure deviates from the approved procedure, placement of the mix will be stopped.

334-7 Method of Measurement.

For the work specified under this Section, the quantity to be paid for will be the weight of the mixture, in tons.

The bid price for the asphalt mix will include the cost of the liquid asphalt and the tack coat application as specified in 334-5.5.4. There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix.

334-8 Basis of Payment.

Prices and payments will be full compensation for all work and materials specified in this Article and the Articles applicable to the items of work having awarded Contract Prices measured and approved for payment.

APPENDIX "E" TO SPECIAL PROVISIONS
SECTION 344: CONCRETE FOR LAP
(OFF-SYSTEM)

CONCRETE FOR LAP (OFF-SYSTEM).
(REV 12-20-11) (FA 2-27-12)

SECTION 344
CONCRETE FOR LAP (OFF-SYSTEM)

344-1 Description.

344-1 General: Construct concrete based on the type of work as described in the Contract and the concrete work categories as defined below.

344-1.2 Work Categories: Construction will fall into one of the following concrete work categories:

344-1.2.1 Concrete Work Category 1: Includes the construction of sidewalks, curb and gutter, ditch and slope pavement, or other non-reinforced cast-in-place elements.

344-1.2.2 Concrete Work Category 2: Includes the construction of precast concrete including concrete barriers, traffic railing barriers, parapets, sound barriers, inlets, manholes, junction boxes, pipe culverts, storm sewers, box culverts, prestressed concrete poles, concrete bases for light poles, highway sign foundations, retaining wall systems, traffic separators or other structural precast elements.

344-1.2.3 Concrete Work Category 3: Includes the work associated with the placement and/or construction of structural cast-in-place concrete meeting the requirements of this section.

344-2 Materials.

344-2.1 General: Use concrete composed of a mixture of Portland cement, aggregates, and water, with or without chemical or mineral admixtures that meet the following requirements:

344-2.1.1 Portland Cement: Portland cements meeting the requirements of AASHTO M-85 or ASTM C-150 is required. Different brands of cement, cement of the same brand from different facilities or different types of cement shall be stored separately and shall not be mixed.

344-2.1.2 Coarse and Fine Aggregates: Aggregates shall meet ASTM C 33. Source approval by the FDOT is not required.

344-2.1.3 Water: Water shall meet the requirements of ASTM C 1602.

344-2.1.4 Chemical Admixtures: Chemical admixtures shall be listed on the FDOT Qualified Products List. Admixtures may be added at the dosage rates recommended by the manufacturer.

344-2.1.5 Pozzolans and Slag: Pozzolans and Slag shall meet the requirements of Table 344-1. Fly ash shall not include the residue resulting from the burning of municipal garbage or any other refuse with coal, or the burning of industrial or municipal garbage in incinerators.

Table 344-1		
Type or Class	Test Method	Exceptions
Class C Fly Ash	ASTM C 618	Not to be used with Types IP or IS cements.
Class F Fly Ash	ASTM C 618	Not to be used with Types IP or IS cements.
Petroleum Coke Class F	ASTM C 618	Not to be used with Types IP or IS cements.

Bark Ash Class F	ASTM C 618	Not to be used with Types IP or IS cements.
Silica Fume	ASTM C 1240	
Metakaolin	ASTM C 618	
Slag	ASTM C 989	Use only ground granulated blast-furnace slag grade 100 or 120.
Ultra Fine Fly Ash	ASTM C 618	Not to be used with Types IP or IS cements.

344-3 Production, Mixing and Delivery of Concrete.

344-3.1 Concrete Production Requirements:

344-3.1.1 Category 1: Use a concrete production facility that is certified by the National Ready Mixed Concrete Association (NRMCA) or listed on the FDOT list of non-structural concrete producers. Concrete production facilities listed on the FDOT Producers with Accepted QC Programs list for structural concrete may also be used for Category 1.

344-3.1.2 Category 2: Use a prestressed and or precast facility listed on the FDOT Producers with Accepted QC Programs for precast or prestressed concrete.

344-3.1.3 Category 3: Use a structural concrete facility listed on the FDOT Producers with Accepted QC Programs for structural concrete.

344-3.2 Classes of Concrete: Meet the requirements of Table 344-2.

Table 344-2						
Class	Minimum Strength (28 day) (psi)	Target Slump (inches)	Target Range (inches)	Air Content Range (%)	Minimum Total Cementitious Materials Content (lb/yd ³)	Maximum Water to Cementitious Material Ratio (lb/lb)
Category 1						
Class NS	2,500	N/A	N/A	N/A	N/A	N/A
Category 3						
I	3,000	3	± 1.5	1.0 to 6.0	470	0.53
I (Pavement)	3,000	2	± 1.5	1.0 to 6.0	470	0.50
II	3,400	3	± 1.5	1.0 to 6.0	470	0.53
II (Bridge Deck)	4,500	3	± 1.5	1.0 to 6.0	611	0.44
III	5,000	3	± 1.5	1.0 to 6.0	611	0.44
III (Seal)	3,000	8	± 1.5	1.0 to 6.0	611	0.53
IV	5,500	3	± 1.5	1.0 to 6.0	658	0.41
IV (Drilled Shaft)	4,000	8.5	± 1.5	0.0 to 6.0	658	0.41
V (Special)	6,000	3	± 1.5	1.0 to 6.0	752	0.37
V	6,500	3	± 1.5	1.0 to 6.0	752	0.37
VI	8,500	3	± 1.5	1.0 to 6.0	752	0.37

344-3.3 Contractors Quality Control: For Categories 1 and 2, assume full responsibility for controlling all operations and processes such that the requirements of these Specifications are met at all times.

For Category 3, furnish a Quality Control (QC) plan to identify to the Engineer how quality will be ensured at the project site. During random inspections, the Engineer will use this document to verify that the construction of the project is in agreement with the QC plan.

344-3.4 Concrete Mix Design: Before producing any Category 1 or Category 2, submit the proposed mix designs to the Engineer on a form provided by the Engineer. For Category 3, submit to the Engineer for approval, FDOT approved mix designs. Do not use concrete mix designs without prior approval of the Engineer.

Materials may be adjusted provided that the theoretical yield requirement of the approved mix design is met. Show all required original approved design mix data and batch adjustments on an Engineer approved concrete delivery ticket.

344-3.5 Delivery: For Category 3, the maximum allowable transit time of concrete is 90 minutes.

Furnish a delivery ticket on a form approved by the Engineer with each batch of concrete before unloading at the placement site. Record material quantities incorporated into the mix on the delivery ticket. Ensure that the Batchers responsible for producing the concrete signs the delivery ticket certifying that the batch was produced and delivered in accordance with these requirements. Sign the delivery ticket certifying that the concrete was placed in accordance with these requirements.

344-3.6 Placing Concrete:

344-3.6.1 Concreting in Cold Weather: Do not mix or place concrete when the air temperature at placement is below 45°F.

During the curing period, if NOAA predicts the ambient temperature to fall below 35°F for 12 hours or more or to fall below 30°F for more than 4 hours, enclose the structure in such a way that the air temperature within the enclosure can be kept above 50°F for a period of 3 days after placing the concrete or until the concrete reaches a minimum compressive strength of 1,500 psi.

Assume all risks connected with the placing and curing of concrete. Although the Engineer may give permission to place concrete, the Contractor is responsible for satisfactory results. If the placed concrete is determined to be unsatisfactory, remove, dispose of, and replace the concrete at no expense to the Agency.

344-3.6.2 Concreting in Hot Weather: For Category 3, hot weather concreting is defined as the production, placing and curing of concrete when the concrete temperature at placing exceeds 86°F but is less than 100°F.

Unless the specified hot weather concreting measures are in effect, reject concrete exceeding 86°F at the time of placement. Regardless of special measures taken, reject concrete exceeding 100°F. Predict the concrete temperatures at placement time and implement hot weather measures to avoid production shutdown.

344-3.7 Mixers: For Category 3 concrete, do not place concrete from a truck mixer that does not have a current FDOT mixer identification card.

344-3.8 Small Quantities of Concrete: With approval of the Engineer, small quantities of concrete, less than 3 cubic yards placed in one day and less than 0.5 cubic yards placed in a single placement may be accepted using a pre-bagged mixture. The Engineer may verify that the pre-bagged mixture is prepared in accordance with the manufacturer's recommendations and will meet the requirements of this Specification.

344-3.9 Sampling and Testing:

344-3.9.1 Category 1: The Engineer may sample and test the concrete to verify its quality. The minimum 28 day compressive strength requirement for this concrete is 2,500 psi.

344-3.9.2: Category 2: No sampling and testing is required for category 2.

344-3.9.3 Category 3: The Engineer will randomly select a sample from each 200 cubic yards or one day's production to determine plastic properties and to make three 4 x 8 inch cylinders for testing by the Engineer at 28 days to ensure that the design compressive strength has been met for the class of concrete as specified in Table 344-2.

344-3.10 Records: Ensure the following records are available for review for at least 3 years after final acceptance of the project:

1. Approved concrete mix designs.
2. Materials source (delivery tickets, certifications, certified mill test reports).
3. A copy of the scale company or testing agency report showing the observed deviations from quantities checked during calibration of the scales and meters.
4. A copy of the documentation certifying the admixture weighing/measuring devices.

344-4 Acceptance of the Work.

344-4.1 Category 1 Work: Category 1 work will be accepted based on certification by the batcher and contractor on the delivery ticket.

344-4.2 Category 2 Work: Certify that the precast elements were produced by a production facility on the FDOT's list of Producers with Accepted QC Programs for precast or prestressed concrete. In addition, the producer's logo shall be stamped on the element. The producer shall not use the Florida Department of Transportation QC stamp on elements used on this project. Provide a statement of certification from the manufacturer of the precast element that the element meets the requirements of this Specification.

344-4.3 Category 3 Work: Category 3 concrete will be accepted based on the Engineer's test results for plastic properties and compressive strength requirements for the class of concrete as defined in Table 344-2. In addition, a Delivery Ticket as described in 344-3.5 will be required for acceptance of the material at the project site.

344-4.4 Small Quantities of Concrete: Category 3 concrete meeting the definition of 344-3.8 will be accepted in accordance with 344-4.3 based on test results for plastic properties and compressive strength.

344-5 Method of Measurement.

The quantities to be paid for will be the concrete items having awarded Contract Prices that are completed and accepted by Engineer.

344-6 Basis of Payment.

Prices and payments will be full compensation for all work and materials specified in this Article and the Articles applicable to the items of work having awarded Contract Prices measured and approved for payment.

APPENDIX "F" TO SPECIAL PROVISIONS
SECTION 580: LANDSCAPE INSTALLATION FOR LAP
(OFF-SYSTEM)

LANDSCAPE INSTALLATION FOR LAP (OFF-SYSTEM).
(REV 4-5-11) (FA 4-15-11)

SECTION 580
LANDSCAPE INSTALLATION FOR LAP (OFF-SYSTEM)

580-1 Description.

Plant trees and shrubs of the species, size, and quality indicated in the plans.

The Engineer reserves the right to adjust the number and location of any of the designated types and species to be used at any of the locations shown, in order to provide for any unanticipated effects which might become apparent after the substantial completion of other phases of the project, or for other causes.

580-2 Materials.

580-2.1 Plants:

580-2.1.1 Authority for Nomenclature; Species, etc.: For the designated authority in the identification of all plant material, refer to two publications of L.H. Bailey: "Hortus III" and "Manual of Cultivated Plants," and ensure that all specimens are true to type, name, etc., as described therein. For the standard nomenclature, refer to the publication of the American Joint Committee on Horticultural Nomenclature, "Standardized Plant Names."

580-2.1.2 Grade Standards and Conformity with Type and Species: Only use nursery grown plant material except where specified as Collected Material. Use nursery grown plant material that complies with all required inspection, grading standards, and plant regulations in accordance with the latest edition of the Florida Department of Agriculture's "Grades and Standards for Nursery Plants".

Except where a lesser grade might be specifically specified in the plans, ensure that the minimum grade for all trees and shrubs is Florida No. 1. Ensure that all plants are the proper size and grade at the time of delivery to the site, throughout the project construction period and during any designated plant establishment period.

Ensure that plant materials are true to type and species and that any plant materials not specifically covered in Florida Department of Agriculture's "Grades and Standards for Nursery Plants" conform in type and species with the standards and designations in general acceptance by Florida nurseries.

Ensure that plant materials are shipped with tags stating the botanical and common name of the plant.

580-2.1.3 Inspection and Transporting: Move nursery stock in accordance with all Federal and State regulations therefor, and accompany each shipment with the required inspection certificates for filing with the Engineer.

580-2.2 Water: Water used in landscaping operations may be obtained from any approved source. Ensure that water is free of any substance which might be detrimental to plant growth. The use of effluent water is subject to approval and must meet all Federal, State and Local requirements.

580-3 Specific Requirements for the Various Plant Designations.

580-3.1 Balled-and-Burlapped Plants (B&B), and Wired Balled-and-Burlapped (WB & B):

580-3.1.1 General: Properly protect the root ball of these plants until planting them. The Engineer may reject any plant which shows evidence of having been mishandled.

Set the B&B and WB&B plants then remove the top 2/3 of all wire, rope, and binding surrounding the plant. Remove the burlap from the top 4 inches of the root ball. Do not disturb the root ball in any way. Bare root material is not allowed for substitution.

At least 90 days before digging out B & B and WB & B plants, root-prune those 1 1/2 inches or greater in diameter and certify such fact on accompanying invoices.

580-3.1.2 Provisions for Wiring: For plants grown in soil of a loose texture, which does not readily adhere to the root system (and especially in the case of large plants or trees), the Engineer may require WB & B plants. For WB & B plants, before removing the plant from the excavated hole, place sound hog wire around the burlapped ball, and loop and tension it until the tightened wire netting substantially packages the burlapped ball such as to prevent disturbing of the loose soil around the roots during handling.

580-3.2 Container-Grown Plants (CG): The Engineer will not accept any CG plants with roots which have become pot-bound or for which the top system is too large for the size of the container. Fully cut and open all containers in a manner that will not damage the root system. Do not remove CG plants from the container until immediately before planting to prevent damage to the root system.

580-3.3 Collected Plants (Trees and Shrubs) (C): Use C plants which have a root ball according to "Florida Grades and Standards for Nursery Plants". Do not plant any C plant before the Engineer's inspection and acceptance at the planting site.

580-3.4 Collected Plants (Herbaceous) (HC): The root mass and vegetative portions of collected herbaceous plants shall be as large as the specified container-grown equivalent. Do not plant any collected plant before inspection and acceptance by the Engineer.

580-3.5 Specimen Plants (Special Grade): When Specimen (or Special Grade) plants are required, label them as such on the plant list, and tag the plant to be furnished.

580-3.6 Palms: Wrap the roots of all plants of the palm species before transporting, except if they are CG plants and ensure that they have an adequate root ball structure and mass for healthy transplantation as defined in "Florida Grades and Standards for Nursery Plants".

The Engineer will not require burlapping if the palm is carefully dug from marl or heavy soil that adheres to the roots and retains its shape without crumbling. During transporting and after arrival, carefully protect root balls of palms from wind and exposure to the sun. Muck grown palms are not allowed. After delivery to the job site, if not planting the palm within 24 hours, cover the root ball with a moist material. Plant all palms within 48 hours of delivery to the site.

Move sabal and coconut palms in accordance with the "Florida Grades and Standards for Nursery Plants."

580-3.7 Substitution of Container-Grown (CG) Plants: With the Engineer's approval, the Contractor may substitute CG plants for any other root classification types, if he has met all other requirements of the Contract Documents.

580-4 Planting Requirements.

580-4.1 Layout: Prior to any excavation or planting, mark all planting beds and individual locations of palms, trees, large shrubs and proposed art and architectural structures, as shown in the plans, on the ground with a common bright orange colored spray paint, or with other approved methods, within the project limits. Obtain the Engineer's approval and make necessary utility clearance requests.

580-4.2 Excavation of Plant Holes: Excavate plant holes after an area around the plant three times the size of the root ball has been tilled to a depth of the root ball. Ensure that the plant hole is made in the center of the tilled area only to the depth of the plant root ball.

Where excess material has been excavated from the plant hole, use the excavated material to backfill to proper level.

580-4.3 Setting of Plants: Center plants in the hole. Lower the plant into the hole so that it rests on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth and so oriented such as to present the best appearance.

Backfill with native soil, unless otherwise specified on the plans. Firmly rod and water-in the backfill so that no air pockets remain. Apply a sufficient quantity of water immediately upon planting to thoroughly moisten all of the backfilled earth. Keep plants in a moistened condition for the duration of the planting period.

When so directed, form a water ring 6 inches in width to make a water collecting basin with an inside diameter equal to the diameter of the excavated hole. Maintain the water ring in an acceptable condition.

580-4.4 Special Bed Preparation: Where multiple or mass plantings are to be made in extended bedding areas, and the plans specify Special Bed Preparation, prepare the planting beds as follows:

Remove all vegetation from within the area of the planting bed and excavate the surface soil to a depth of 6 inches. Backfill the excavated area with peat, sand, finish soil layer material or other material to the elevation of the original surface. Till the entire area to provide a loose, friable mixture to a depth of at least 8 inches. Level the bed only slightly above the adjacent ground level. Then mulch the entire bedding area, in accordance with 580-8.

580-5 Staking and Guying.

580-5.1 General: When specified in the plans, or as directed by the Engineer, stake plants in accordance with the following.

Use wide plastic, rubber or other flexible strapping materials to support the tree to stakes or ground anchors that will give as the tree moves in any direction up to 30 degrees. Do not use rope or wire through a hose. Use guy chords, hose or any other thin bracing or anchorage material which has a minimum 12 inches length of high visibility flagging tape secured to guys, midway between the tree and stakes for safety.

Stake trees larger than 1 inch diameter and smaller than 2 inches diameter with a 2 by 2 inch stake, set at least 2 feet in the ground and extending to the crown of the plant. Firmly fasten the plant to the stake with flexible strapping materials as noted above.

580-5.2 Trees of 2 to 3 1/2 inches [50 to 90 mm] Caliper: Stake all trees, other than palm trees, larger than 2 inches caliper and smaller than 3 1/2 inches caliper with two 2 by 4 inch stakes, 8 feet long, set 2 feet in the ground. Place the tree midway between the stakes and hold it firmly in place by flexible strapping materials as noted above.

580-5.3 Large Trees: Guy all trees, other than palm trees, larger than 3 1/2 inches caliper, from at least three points, with flexible strapping materials as noted above.

Anchor flexible strapping to 2 by 4 by 24 inch stakes, driven into the ground such that the top of the stake is at least 3 inches below the finished ground.

580-5.4 Special Requirements for Palm Trees: Brace palms which are to be staked with three 2 by 4 inch wood braces, toe-nailed to cleats which are securely banded at two points to the palm, at a point one third the height of the trunk. Pad the trunk with five layers of burlap under the cleats. Place braces approximately 120 degrees apart and secure them underground by 2 by 4 by 12 inch stake pads.

580-6 Tree Protection and Root Barriers.

Install tree barricades when called for in the Contract Documents or by the Engineer to protect existing trees from damage during project construction. Place barricades at the drip line of the tree foliage or as far from the base of the tree trunk as possible. Barricades shall be able to withstand bumps by heavy equipment and trucks. Maintain barricades in good condition.

When called for in the Contract Documents, install root barriers or fabrics in accordance with the details shown.

580-7 Pruning.

Prune all broken or damaged roots and limbs in accordance with established arboriculture practices. When pruning is completed ensure that all remaining wood is alive. Do not reduce the size or quality of the plant below the minimum specified.

580-8 Mulching.

Uniformly apply mulch material, consisting of wood chips (no Cypress Mulch is allowed), pine straw, compost, or other suitable material approved by the Engineer, to a minimum loose thickness of 3 inches over the entire area of the backfilled hole or bed within two days after the planting. Maintain the mulch continuously in place until the time of final inspection.

580-9 Disposal of Surplus Materials and Debris.

Dispose of surplus excavated material from plant holes by scattering or otherwise as might be directed so that it is not readily visible or conspicuous to the passing motorist or pedestrian. Remove all debris and other objectionable material from the site and clean up the entire area and leave it in neat condition.

580-10 Contractor's Responsibility for Condition of the Plantings.

Ensure that the plants are kept watered, that the staking and guying is kept adjusted as necessary, that all planting areas and beds are kept free of weeds and undesirable plant growth and that the plants are maintained so that they are healthy, vigorous, and undamaged at the time of acceptance.

580-11 Plant Establishment Period.

If the Contract Documents designate a Plant Establishment Period, assume responsibility for the proper maintenance, survival and condition of all landscape items during such period at no additional cost.

580-12 Method of Measurement.

The quantities to be paid for will be the items shown in the plans, completed and accepted.

580-13 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section. No items for this type of work are anticipated under this contract for this Contract. Any incidental work is to be included under the related work pay item having awarded Contract Prices measured and approved.

APPENDIX "G" TO SPECIAL PROVISIONS

SECTION 630-CONDUIT

SECTION 630 CONDUIT

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install conduit for traffic control signals and devices, and other electrically powered or operated devices as shown in the Contract Documents.

B. Method of Measurement

1. Furnish and Install:
 - a. The Contract unit price per foot of conduit, furnished and installed, will include furnishing all hardware and materials and all testing as specified in this Section and the Contract Documents, and all labor, casings, removal of excavated materials and spoils, removal and disposal of drilling fluids, locate wire, trenching, boring, backfilling, flowable fill and restoration materials necessary for a complete and accepted installation.
 - b. Payment for conduit placed underground will be based on the horizontal length of the trench or bore measured in a straight line between the centers of pull boxes, cabinets, poles, etc., in linear feet, regardless of the length or number of conduits installed. No allowance will be made for sweeps or vertical distances below the ground.
 - c. Payment for conduit placed aboveground or bridge mounted will be based on the actual length of conduit installed.

C. Basis of Payment

1. Price and payment will be full compensation for all work specified in this Section.
2. Payment for conduit placed under existing turf will be made as open trench.
3. Payment for conduit placed under existing pavement (roadway, driveways, or sidewalk) will be made as directional bore. If conduit is being placed under both existing turf and existing pavement between two pull boxes, payment for the total pull box-to-pull box length will be made as directional bore. Payment for conduit placed by jack & bore will be made as jack & bore, for the total pull box to pull box length.
4. No additional payment will be made for multiple conduits in the same trench.
5. No payment adjustment will be made if Contractor chooses to use an alternative method approved by Engineer.
6. No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service, or incomplete installations.
7. Payment will be made under:

Item No.	Description	Unit
630-2-11	Conduit, F&I, Open Trench	LF
630-2-12	Conduit, F&I, Directional Bore	LF

1.02 REFERENCES

- A. Miami-Dade County Traffic Signals and Signs Division's Qualified Product List (TSSQPL)
- B. FDOT Approved Product List (APL)
- C. American Society for Testing and Materials (ASTM)
- D. American Nation Standards Institute (ANSI)
- E. National Electric Code (NEC)
- F. National Electrical Safety Code (NESC)

PART 2 PRODUCTS

2.01 MATERIALS

A. Conduit.

1. Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:
 - a. Schedule 40 and 80 Polyvinyl Chloride (PVC)¹ UL 651
 - b. Fiberglass Reinforced Epoxy² UL 2420
 - c. Rigid Galvanized Metal^{3,4} UL 6
 - d. Rigid Aluminum⁴ UL 6A
 - e. PVC Coated Intermediate Metal⁴ ASTM: A135/A135M, ASTM A513, ASTM A568/A568M; NEMA RN1-2005
 - f. Liquid Tight Flexible Metal UL 360
 - g. HDPE SDR 9-11⁵ ASTM F2160
 - h. HDPE SDR 13.5⁵ ASTM F2160, NEMA TC-7
 - i. Schedule 40 and 80 HDPE UL 651A

¹Use conduit with solvent weld slip-fit plastic couplings unless approved by the Engineer.

²Use conduit having a minimum stiffness value of 250. Ensure that each section has a duct bell with an integral gasket on one end and a duct spigot on the other end.

³Use conduit that is hot-dipped galvanized with a minimum coating of 1.24 ounces per square foot on both the inside and outside of the conduit. The weight of the zinc coating shall be determined using ASTM A90.

⁴Use conduit with both ends reamed and threaded.

⁵Can be used with preassembled cable and rope-in-conduit.

B. Locate Wire

1. Ensure that locate wire is a single copper conductor with a minimum gauge of No. 12 AWG. Ensure locate wire is insulated using a 45 mil minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

C. Locate Wire Grounding Unit

1. Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:
 - a. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.
 - b. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.
 - c. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation. Ensure that the WGU is enclosed for protection from environmental hazards and is accessible for the connection of portable locate system transmitters.
 - d. The WGU system meets the minimum standards listed in Table 1 for surge protection:

Table 1: Minimum Standards for Surge Protection	
Surge Element	3-element maximum duty fail-safe gas tube.
Rating	40,000 A surge capacity (single-cycle, 8 by 20 microsecond waveform).
Life	Minimum 1,000 surges (1000 A to ground).
Fail-Safe	Integral fail-shortened device.
Insulation Resistance	1,000 megohm minimum at 100 volts of direct current (VDC).
Clamp Voltages	a. Impulse at 100 volts per microsecond: Typically 500 volts. b. Direct Current: 300 to 500 volts.

D. Warning Tape

1. Ensure that the buried cable warning tape is flexible, elastic material 3 inches wide, 6 mil thick, intended for burial and use as an underground utility warning notice, and that the surface of the warning tape is coated and sealed to prevent deterioration caused by harsh soil elements. Ensure that the warning tape color follows the American Public Works Association color code for underground utilities and has the repeating message "CAUTION: MDC TRAFFIC CABLE," or other wording approved by the Engineer, permanently printed on its surface. Ensure that the tape material and ink colors do not change when exposed to acids, alkalis, and other destructive chemical variances commonly found in Florida soils.

E. Route Markers

1. Route markers may be either a standard route marker (SRM) type or an electronic route marker (ERM) type. Ensure the SRM is a rigid, tubular, driven post used for location and notification purposes only. Ensure the ERM is physically identical to the SRM, but also includes a termination board to provide aboveground access to locate wire buried alongside conduit and cable runs.
2. Ensure that each SRM is labeled and identified as a MDC Traffic fiber optic cable marker unless otherwise shown in the Plans. The labels must include the County's logo, contact information for the DTPW TSS Division, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.

F. Standard Route Marker (SRM)

1. Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.
2. Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.
3. Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.
4. Ensure that SRMs installed at the minimum 2 foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

G. Electronic Route Marker (ERM)

1. Ensure ERMs meet the same material and performance requirements as the SRMs with the following exceptions.
 - a. Equip each ERM with a removable, top-fitting cover that is black with white lettering.
 - b. Ensure that each ERM contains a terminal board equipped with locate wire and ground connectors.
 - c. Ensure that the terminal board is made from corrosion-resistant materials and includes terminal facilities labeled according to function and provides uniform spacing between connection points.

PART 3 EXECUTION

3.01 INSTALLATION

A. Conduit Installation Requirements

1. Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Design Standards. Consider the locations of conduit as shown in the Plans as approximate. Construct conduit runs as straight as possible, and obtain Engineer's approval for all major deviations in conduit locations from those shown in the Plans. Include buried cable warning tape with all trenched conduit. Mark the location of the conduit system with route markers as shown in the Plans and approved by Engineer. Ensure that all route markers used are new and consistent in appearance.
2. For conduit installed by directional bore, install in accordance with FDOT Specification Section 555. For conduit installed by jack and bore, install in accordance with FDOT Specification Section 556.
3. Use only rigid galvanized metal conduit, or rigid aluminum conduit for above-ground and underground electrical power service installations. Meet the requirements of FDOT Specification Section 562 for coating all field cut and threaded galvanized pipe.
4. Use Schedule 80 PVC or fiberglass reinforced epoxy conduit in structural elements in or on bridge decks.
5. Use HDPE with an SDR number less than or equal to 11, Schedule 80 PVC or Schedule 40 PVC for underground installations in earth or concrete for ITS and traffic control signal applications, except, use only HDPE with an SDR number less than or equal to 11 for blown fiber optic cable installations on limited access facilities.
6. Use HDPE with an SDR number less than or equal to 13.5, Schedule 80 PVC, or Schedule 40 PVC for underground installations of electrical conduit in earth for lighting applications and landscape irrigation applications.
7. Use HDPE with an SDR number less than or equal to 13.5, Schedule 80 PVC, Schedule 40 PVC, or rigid galvanized metal for underground installations of electrical conduit in concrete for lighting applications.
8. Do not place more than the equivalent of three quarter bends or 270 degrees of bends, including the termination bends, between the two points of termination in the conduit, without a pull box. Obtain Engineer's approval to use corrugated flexible conduits for short runs of 6 feet or less.
9. When a conduit installation changes from underground to above-ground, make the change a minimum of 6 inches below finished grade.
10. Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.
11. Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.
12. When earth backfill and tamping is required, place backfill material as per FDOT Section 120 in layers approximately 12 inches thick, and tamp each layer to a density equal to or greater than the adjacent soil.
13. When backfilling trenches in existing pavement, use a flowable fill meeting the requirements of FDOT Specification Section 121.
14. Provide a standard clearance between underground control cable and electrical service cable or another parallel underground electrical service cable that meets NESC requirements.
15. Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.

B. Fiber Optic Cable Conduit

1. Install the conduit system so the fiber optic cable maintains a minimum bend radius of 20 times the cable diameter. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Submit the conduit manufacturer's coupling method and material to Engineer for approval.

C. Conduit Sizes

1. Size the conduit to be used on all installations, unless otherwise shown in the Contract Documents. Use conduit of sufficient size to allow the conductor to be installed without any damage and meeting NEC requirements. Use conduit that is at least 2 inches in diameter, with the following exceptions:
 - a. For conduit protecting the ground wire on the side of a pole, use conduit that is at least 1/2 inch in diameter.
 - b. For ITS applications where Contractor chooses to install fiber optic cable by blowing, use conduit that is at least 1-1/4 inch in diameter.
 - c. For traffic control signal and device electrical service conduit, use the minimum conduit size required by the Department and the electrical service provider.
 - d. Where larger size conduits are required by the Miami-Dade County Traffic Control Equipment Standards and Specifications.

D. Conduit Joints

1. Make conduit joints using materials as specified by the manufacturer. When conduit crosses an expansion joint of a structure and where shown in the Plans, install an expansion or expansion/deflection fitting as specified by the manufacturer. Certify that expansion/deflection fittings are rated to accommodate a minimum rotation of 30 degrees and that both the expansion and expansion/deflection fittings are rated to accommodate the anticipated longitudinal movement (minimum of 2 inches for deflection fittings and 0.7 inches for expansion/deflection fittings). Ensure that all installed joints are waterproof. As an exception to the threaded coupling for intermediate metal conduit, at locations where it is not possible to screw the threaded coupling properly, Contractor may use a waterproof slip-joint coupling approved by Engineer. Secure the joint, and tighten threaded connections.
2. Prior to insertion into the coupling, clean, prime and coat the ends of PVC conduit with solvent-type cement as specified by the manufacturer.

E. PVC Coating

1. Apply PVC coating to exposed metal surfaces of the conduit, except for the threads, to attain a nominal thickness of 40 mils. Ensure that the coating is free of sags and drips.
 - a. Attach the coupling to the conduit prior to the application of the coating for conduit of 1 inch diameter or less.
 - b. Use a coupling with sleeve extensions on conduit larger than 1 inch. Ensure that the sleeve extensions on all threaded female openings have a length equal to the diameter of the conduit up to and including size number 53.

F. Conduit Terminations

1. Fit the terminating ends of all metal conduit and metal conduit sleeves with an appropriate bushing.

2. For conduit to be encased in concrete, wrap with tape or otherwise protect all terminations to prevent the entrance of concrete.
3. Connect new underground conduits to existing underground conduits with a pull box.
4. Install conduit terminating in a concrete strain pole through the cable entry hole and up the center of the pole to a location approximately 6 inches below the handhole.
5. Seal conduits terminating in a controller base, pole, pull box, junction box, or pedestal base with a moisture resistant sealant approved by Engineer.
6. For a controller base, pole or pedestal base, and junction boxes, terminate conduit runs into the center of the base or box at least 2 inches above the surface of the base.

G. Restoration of Trench Areas

1. Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.

H. Above Ground Installation

1. Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5 foot centers. Use galvanized metal conduit straps when installing intermediate metal conduit, fiberglass reinforced epoxy conduit, rigid galvanized conduit, rigid aluminum conduit or PVC coated intermediate metal conduit above ground.
2. Use the same PVC coating for the metal straps as the conduit, when using PVC coated intermediate metal conduit.

I. Elbows

1. The radius of curvature of the centerline of any bend shall not be less than shown below:

Size	Standard Radius
1/2 inch	4 inches
3/4 inch	4-1/2 inches
1 inch	5-1/2 inches
1-1/4 inches	7-1/4 inches
1-1/2 inches	8-1/4 inches
2 inches	9-1/2 inches
2-1/2 inches	10-1/2 inches
3 inches	13 inches
3-1/2 inches	15 inches
4 inches	16 inches

Size	Standard Radius
5 inches	24 inches
6 inches	30 inches

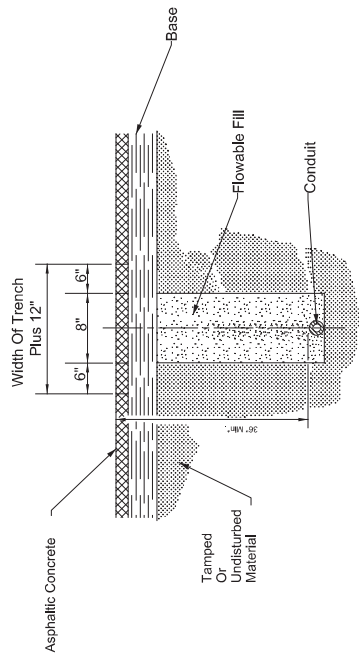
J. Fiber Optic Cable Locate Wire

1. Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. Bury locate wire along the centerline of the top outer surface of installed conduit. Do not install locate wire in a conduit with fiber optic cable.
2. Do not run locate wires into field cabinets. Terminate locate wires at the first and last pull boxes in the conduit run or as shown in the Plans. Ensure that wire termination occurs in a pull box as shown in the Miami-Dade Conduit Installation Details (N.T.S).
3. In a trenching operation, install the locate wire no more than 3 inches above the conduit. Ensure that the locate wire enters all pull and splice boxes, and that a minimum of 10 feet of slack locate wire is coiled and neatly stored in each box.
4. In a boring operation, install the locate wire in an encasement, install the conduit detection wire external to the conduit with no separation between conduit and wire, or use conduit with integral locate wire. Locate wire may also be placed in the void between the inner wall of conduit and innerducts contained within the conduit as long as no other cables are present within the void.
5. Perform continuity tests and insulation resistance tests on all locate wires and provide Engineer with all test results. Replace, or repair defective locate wire at no additional cost.
6. Make locate wire splices in a flush grade-level box. Ensure that locate wire splices are waterproof and suitable for direct burial. Ensure that locate wire splices at the pull box meet NEC requirements. Ensure that locate wire splices are constructed of and in the following order: a mechanical crimp connection with a butt sleeve, an oxide-preventing aerosol lacquer, mastic electrical splicing tape, and standard electrical tape. At the completion of the installation, provide Engineer with as-built drawings that document all splice locations.
7. Install WGUs in pull boxes and splice boxes as shown in the Plans or directed by the Engineer. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.
8. Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system.

K. Route Markers

1. Install route markers for fiber optic cable installations as detailed in FDOT Specification Section 630-3.10.

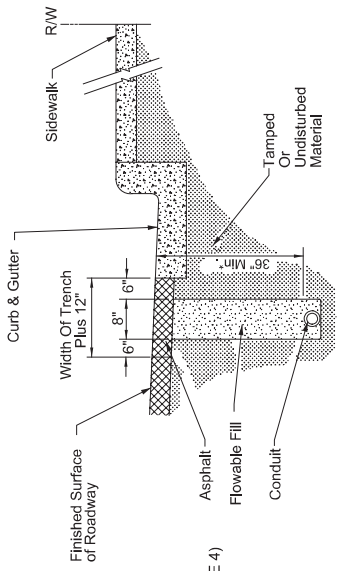
END OF SECTION 630



FOR USE IN AREAS NOT EXPOSED TO VEHICULAR TRAFFIC

FIGURE A

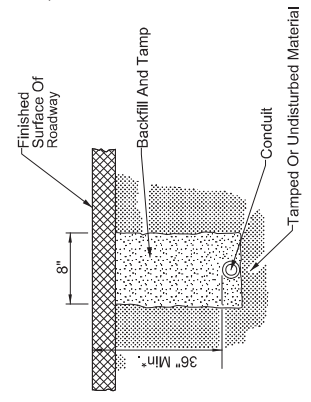
- Notes:
1. Sidewalk patches to match existing joints.
 2. Entire sidewalk slab must be replaced when specified in the plans.
 3. Backfill and tamp with material from trench backfill (See Note 4). Entire trench, including the driveway, shall be filled with Flowable Fill.
 4. Remove and replace additional pavement within 6" of trench.



FOR USE IN ASPHALT ROADWAY ADJACENT TO GUTTER WHEN PLACEMENT OUTSIDE OF THE PAVEMENT IS NOT FEASIBLE.

FIGURE B

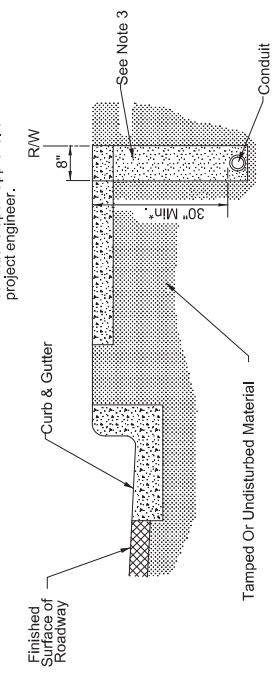
- Notes:
1. Trench not to be open more than 250' at a time when construction area is subject to vehicular or pedestrian traffic.
 2. Asphalt to be sawcut to leave neat lines at the pavement cut.



FOR USE IN INSTALLING CONDUIT UNDER EXISTING ASPHALT PAVEMENT NOT ADJACENT TO GUTTER WHEN JACKING OR DIRECT BORING IS NOT FEASIBLE

FIGURE C

- Notes:
1. Rigid conduit must be used when jacking under existing pavement at 36" minimum depth.
 2. Asphalt to be sawcut at the edges of the trench.

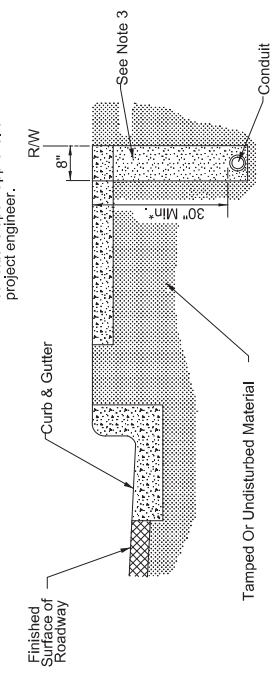


FOR USE INSTALLING CONDUIT UNDER A NEW ROADWAY PRIOR TO INSTALLATION OF BASE AND PAVEMENT

FIGURE D

- Notes:
1. Trench not to be open more than 250' at a time when construction area is subject to vehicular or pedestrian traffic.
 2. Asphalt to be sawcut to leave neat lines at the pavement cut.

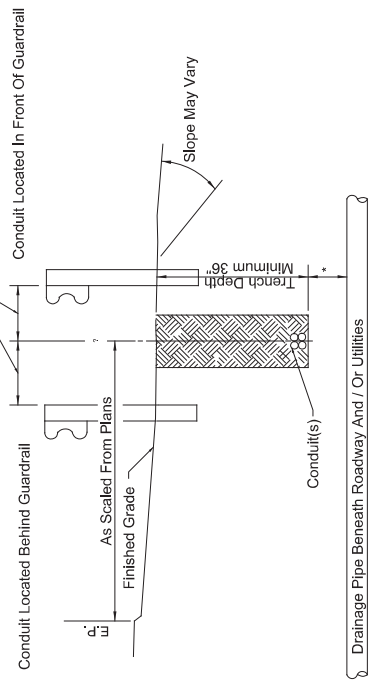
*May be adjusted due to field conditions upon approval of project engineer.



FOR USE IN INSTALLING CONDUIT UNDER SIDEWALK

FIGURE E

- Notes:
1. Rigid conduit must be used when jacking under existing pavement at 36" minimum depth.
 2. Asphalt to be sawcut at the edges of the trench.



FOR USE IN INSTALLING CONDUIT BENEATH ROADWAY AND/OR UTILITIES

FIGURE F

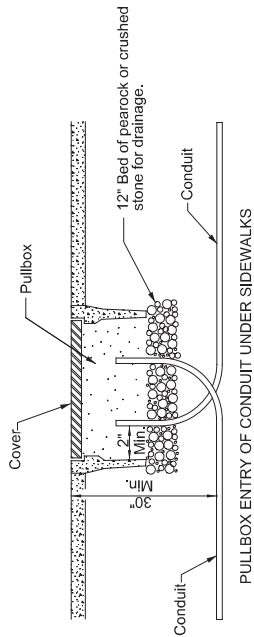
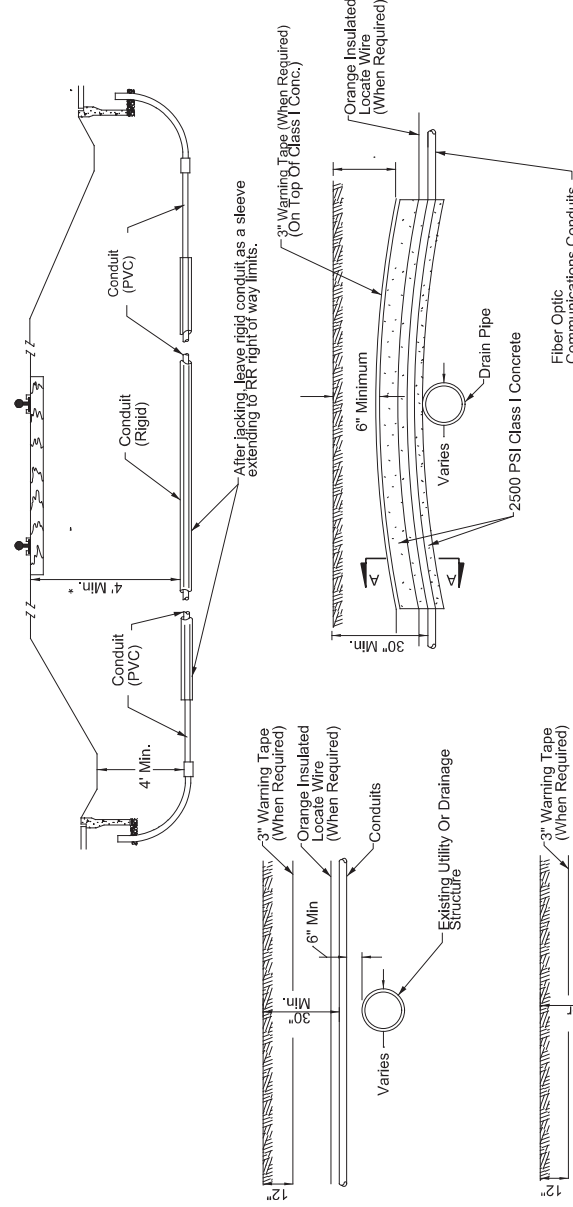


FIGURE G
PULLBOX ENTRY OF CONDUIT UNDER SIDEWALKS

Note:

Ends of conduit shall be sealed in accordance with Section 630 of the FDOT Standard Specifications for Road and Bridge Construction, and the Miami-Dade County Traffic Control Equipment Standards and Specifications.

FIGURE I
FOR USE UNDER RAILROADS



CONDUIT INSTALLATION DETAILS ACROSS EXISTING DRAIN PIPES OR UTILITIES

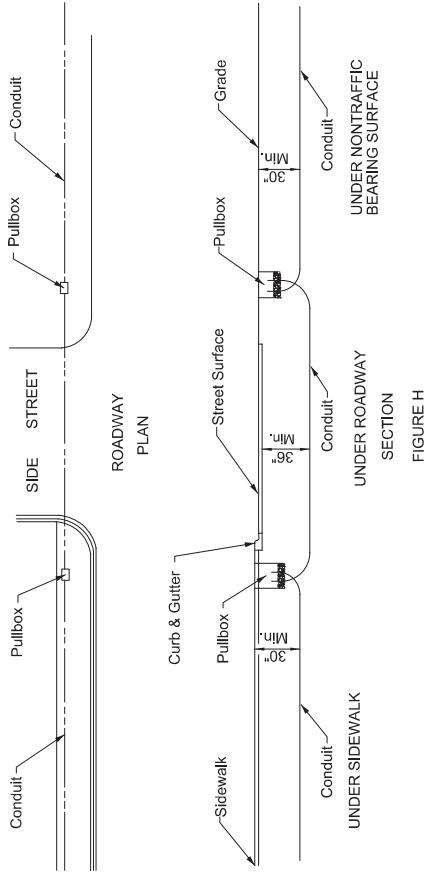
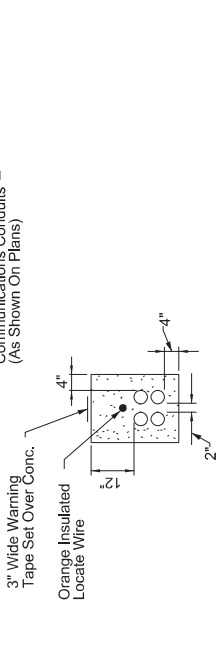


FIGURE H

GENERAL NOTES:

1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 630 (CONDUIT).
2. THE CONTRACTOR, WITH APPROVAL FROM THE ENGINEER, MAY ADJUST THE FINAL BURIAL DEPTH OF THE CONDUIT(S) IN ORDER TO TRANSVERSE NONMOVABLE OBJECT CONFLICTS.
3. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT THE SOIL UNTIL FIRM AND UNYIELDING. REMOVE ROCK AND DEBRIS FROM BACKFILL MATERIAL.
4. WHERE CONDUITS ARE TO BE INSTALLED OVER EXISTING UNDERGROUND STRUCTURES (E.G., DRAIN PIPES OR UTILITY LINES) WHICH ARE LESS THAN 30" DEEP, THE CONDUIT SHALL BE INSTALLED IN A CONDUIT IN 2500 PSI CLASS I CONCRETE FOR THE ENTIRE LENGTH OF CONDUIT THAT IS INSTALLED AT A DEPTH OF LESS THAN 30".
5. IF THE AMOUNT OF COVER OVER THE ENCASMENT IS LESS THAN 6", THE CONTRACTOR SHALL INSTALL THE CONDUIT TO PASS BELOW THE UNDERGROUND STRUCTURES (E.G., DRAIN PIPES).



SECTION AA

APPENDIX "H" TO SPECIAL PROVISIONS
SECTION 635-PULL, SPLICE, AND JUNCTION BOXES

**SECTION 635
PULL, SPLICE, AND JUNCTION BOXES**

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install pull, splice, and junction boxes as shown in the Plans.

B. Method of Measurement

1. The Contract unit price each for pull, splice, and junction box, furnished and installed, will consist of the pull, splice, and junction box including all required hardware for the type of box and location as specified in the Contract Documents, and all labor and materials necessary for a complete and accepted installation.

C. Basis of Payment

1. Price and payment will be full compensation for all work specified in this Section, except grounding.
2. No separate payment for embedded junction boxes will be made. The Contractor shall include the cost of embedded junction boxes in the Contract unit price for the concrete substructure or superstructure items.
3. No separate payment will be made for the removal of pull, splice, and junction boxes.
4. Payment will be made under:

Item No.	Description	Unit
635-2-11	Pull & Splice Box, F&I, 13" X 24" Cover Size	EA
635-2-12	Pull & Splice Box, F&I, 24" X 36" Cover Size	EA
635-3-11	Junction Boxes, F&I, Aerial	EA
635-3-12	Junction Boxes, F&I, Mounted	EA

1.02 REFERENCES

- A. Miami-Dade County Traffic Signals and Signs Division's Qualified Product List (TSSQPL)
- B. FDOT Approved Product List (APL)
- C. American Society for Testing and Materials (ASTM)
- D. American Nation Standards Institute (ANSI)

PART 2 PRODUCTS

2.01 MATERIALS

A. General.

1. Use only pull and splice boxes that meet the requirements of this Specification and are listed on the FDOT's Approved Products List (APL) and the Department's Traffic Signals and Signs Division's Qualified Products List (TSSQPL).

B. Pull and Splice Boxes

1. General

- a. Manufacturers of concrete pull and splice boxes and covers must meet the requirements of FDOT Sections 105 and be currently on the FDOT's Production Facility Listing and.
- b. Ensure box bodies and covers are free of flaws such as cracks, sharp, broken, or uneven edges, and voids.
- c. Ensure in-ground boxes have an open bottom design.

2. Marking

Ensure the following information is permanently cast into the top surface of all pull and splice box covers:

- a. Unless otherwise shown in the Plans, mark application as follows:
 - 1) "TRAFFIC SIGNAL" for signalized intersections
 - 2) "FIBER OPTIC CABLE" for fiber optic cable
 - 3) "LIGHTING" for highway lighting
 - 4) "ELECTRICAL" for other electrical applications
 - b. Manufacturer's name or logo
 - c. FDOT APL or Miami-Dade County TSSQPL approval number
 - d. TIER rating
3. Ensure the date of manufacture (month/day/year, or date code) is permanently located on the top or bottom of the cover. Ensure the interior of the box body has a permanent marking that includes the manufacturer part/model number and date of manufacture near the top of box in a location that is visible after installation when the cover is removed.
 4. Dimensions
 - a. Unless otherwise shown in the Plans, provide pull and splice boxes with the following dimensions.
 - 1) For signalized intersection and lighting applications, provide pull boxes with nominal cover dimensions of 13 inches wide by 24 inches long or larger and no less than 12 inches deep. Ensure the inside opening area is a minimum of 240 square inches and no inside dimension is less than 12 inches.
 - 2) For fiber optic cable applications, provide pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 24 inches deep.
 - 3) Provide rectangular splice boxes with nominal cover dimensions of 30 inches wide by 60 inches long or larger and no less than 36 inches deep. Provide round splice boxes with a nominal cover diameter of 36 inches or larger and no less than 36 inches deep.

5. Fabrication

- a. Provide box covers constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.
- b. Provide box covers with lifting slots and a flush-seating lockdown mechanism. Use penta-head lockdown lag bolts. Ensure lockdown bolts and lifting slots are Type 316, 304, or 302 passivated stainless steel or brass. Ensure lockdown bolt assembly is designed to prevent seizing and can be removed without damaging the cover or box body. Ensure the lockdown bolt threaded insert/nut assembly is field replaceable.

6. Testing Requirements:

For all pull and splice boxes submitted provide test data demonstrating conformance with the American National Standards Institute/Society of Cable Telecommunications Engineers (ANSI/SCTE) 77 2013 Specification for Underground Enclosure Integrity for TIER 15.

C. Junction Boxes

Fabrication.

Provide galvanized steel, aluminum or NEMA 4X non-metallic junction boxes. Ensure all attachment hardware is Type 316 or 304, passivated stainless steel.

1. Ensure the outside surface has a smooth, uniform finish. Ensure boxes are free of burrs, pits, sharp corners and dents. Ensure all welds are neatly formed and free of cracks, blow holes, and other irregularities.
 - a. Aerial Junction Boxes

Unless otherwise shown in the Plans, provide aerial junction boxes with minimum inside dimensions of 8 inches wide by 8 inches long and at least 3 inches deep.
 - b. Mounted Junction Boxes

Provide mounted junction boxes fabricated of 5052 sheet aluminum alloy with a minimum thickness of 1/8 inch. Ensure all mounted junction boxes have a hinged door and lock as specified in FDOT Specification Section 676.

Unless otherwise shown in the Plans, provide mounted junction boxes for the following installations:

 - 1) For pole and cabinet mounted installations, provide junction boxes with minimum inside dimensions of 13 inches long by 10 inches wide and at least 3 inches deep.
 - 2) For base mounted installations, provide junction boxes with minimum inside dimensions of 21 inches long by 10 inches wide and at least 8 inches deep.
 - c. Embedded Junction Boxes
 - 1) Provide weatherproof embedded junction boxes for use in concrete substructures or superstructures. Include gasketed weatherproof covers made of the same material as the box and Type 316 or 304, stainless steel, tamper resistant screws for securing the cover. Fabricate galvanized steel boxes and their covers from steel meeting the requirements of ASTM A36 and galvanized in accordance with ASTM A123.
 - 2) For embedded junction boxes not exposed to vehicular impacts, provide the following types of junction boxes.
 1. Where the structure's environmental classification is slightly or moderately aggressive, provide a galvanized steel or NEMA 4X (non-metallic) box, as approved by the Engineer.

2. Where the structure's environmental classification is extremely aggressive, provide a NEMA 4X (non-metallic) box, unless otherwise directed by the Engineer.
 - 3) For embedded junction boxes exposed to vehicular impacts, provide a galvanized steel box regardless of the structure's environmental classification.
2. Barrier Terminal Blocks
- a. Provide a barrier terminal block with a minimum of ten positions and rated at 600 V_{AC} in all aerial and mounted junction boxes. Ensure each terminal block position has two screws electrically connected by a shorting bar or other Department approved method. Ensure all terminal block positions are numbered sequentially.

PART 3 EXECUTION

3.01 INSTALLATION

A. General

1. Do not install power and communication cables in the same box unless otherwise shown in the Plans.
2. When signal or 120 volt (or greater) power is present, ground all metal covers in accordance with FDOT Specification Section 620.

B. Pull and Splice Boxes

Install pull and splice boxes in accordance with the Miami-Dade Pull Box / Fiber Optic Box Details (N.T.S), Index. Ensure pull and splice boxes are sized for the amount of cable to be placed inside. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Do not install pull or splice boxes in roadways, driveways, parking areas, ditches or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without subjecting the cable to a bend radius less than 14 times the diameter of the cable.

1. Placement and Spacing

Place pull and splice boxes as shown in the Plans and at the following locations, unless directed otherwise by Engineer:

- a. At all major fiber optic cable and conduit junctions.
- b. Approximately every 2,500 feet for fiber optic cable applications in rural areas with any continuous section of straight conduit if no fiber optic cable splice is required.
- c. At a maximum of 1,760 feet for fiber optic cable applications in metropolitan areas.
- d. At each end of a tunnel, and on each side of a river or lake crossing.
- e. On each side of an aboveground conduit installation, such as an attachment to a bridge or wall.
- f. At all turns in the conduit system.
- g. Near the base of a service pole or communication cabinet to provide:
 - 1) A transition point between the fiber optic conduits extending from the fiber backbone and the conduit feeding the communication cabinet.
 - 2) An assist point for the installation of fiber optic drop cable.
 - 3) Storage of slack fiber optic drop cable.

2. Electronic Box Marker

Equip all pull and splice boxes buried below finish grade with an electronic box marker inside the pull or splice box to mark the location. Ensure that the electronic box marker is a device specifically manufactured to electronically mark and locate underground facilities. Ensure that the electronic box marker includes circuitry and an antenna encased in a waterproof polyethylene shell. Ensure that the outer shell is impervious to minerals, chemicals, and temperature extremes normally found in underground plant environments. Ensure that the electronic box marker does not require any batteries or active components to operate. Ensure that electronic box markers used to mark fiber optic cable and general telecom applications are orange in color and operate at 101.4 kHz. Ensure that the electronic box marker's passive circuits produce an RF field when excited by a marker locator to direct the locator to the marker's position. Ensure that the electronic box marker has a minimum operating range of 5 feet from the marker locator.

C. Aerial Junction Boxes

Install aerial junction boxes in accordance with FDOT Design Standards, Index No. 17733.

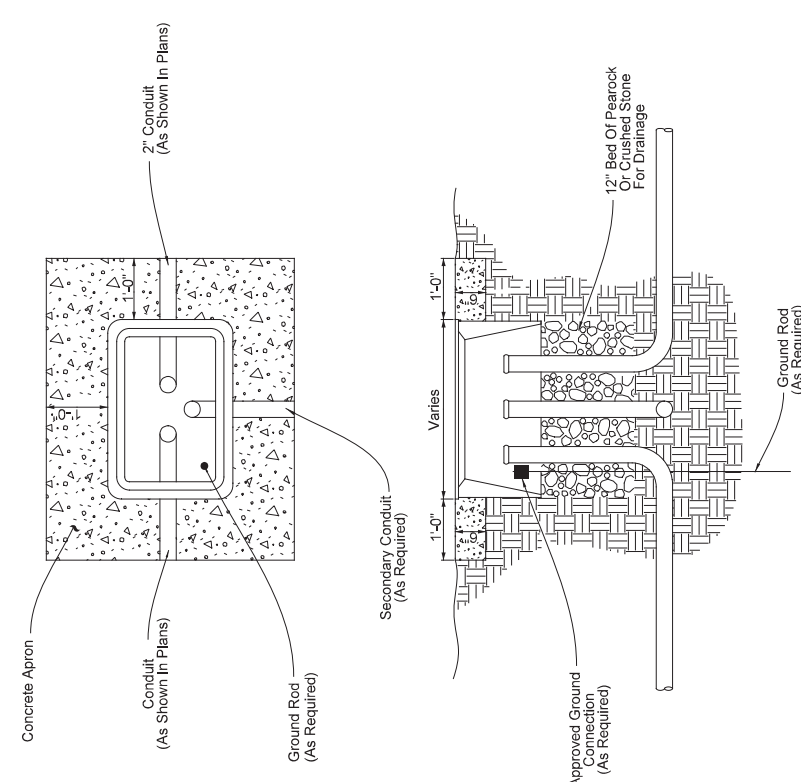
D. Mounted Junction Boxes

Ensure that the bottom surface of pole mounted junction boxes is a minimum of 4 feet above the finished grade.

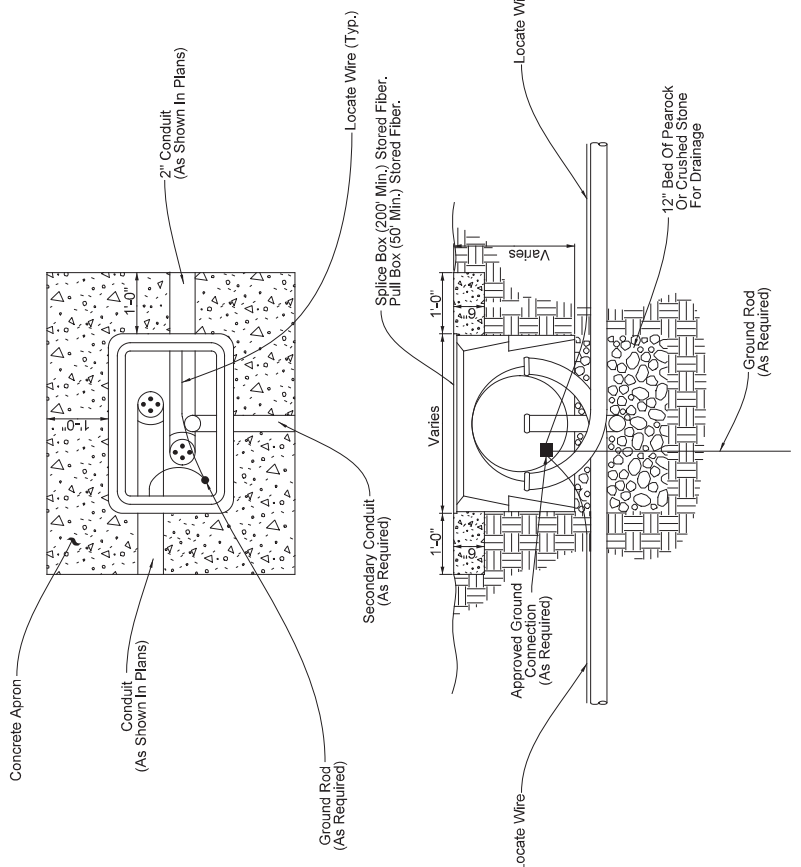
E. Cable Terminations

Make cable terminations in junction boxes in accordance with FDOT Specification Section 632. Route and form the cable to allow access to the terminal screws. Do not cover the terminal identification numbers with the cable.

END OF SECTION 635



PULL BOX



FIBER OPTIC BOX

Rectangular boxes are depicted. Round fiber optic splice boxes and lids are allowed.

GENERAL NOTES:

1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 635 (PULL, SPLICE, AND JUNCTION BOXES)
2. BOXES SHALL NOT BE INSTALLED IN ROADWAYS OR DRIVEWAYS.
3. BOXES SHALL BE ON THE FOOT APPROVED PRODUCT LIST (APL) AND THE MIAMI-DADE COUNTY QUALIFIED PRODUCT LIST (QPL)
4. BOXES SHALL BE INSTALLED FLUSH WITH THE FINISHED GRADE SURFACE.
5. FIBER OPTIC SPLICE BOXES SHALL BE PROVIDED WITH CABLE HANGER RACKS DESIGNED TO SUPPORT CABLES AND SPLICE ENCLOSURES. COST OF RACKS TO BE INCLUDED IN COST OF SPLICE BOX.
6. FIBER OPTIC BOXES SHALL CONTAIN ONLY FIBER OPTIC CABLE, CONDUIT, AND LOCATE WIRE

7. CONDUIT CENTER LINE SHALL BE ALIGNED TO TOP EDGE OF BOX TO FACILITATE CABLE PULLING.

8. CONDUIT CENTER LINE SHALL BE ALIGNED TO TOP EDGE OF BOX TO FACILITATE CABLE PULLING.

9. ALL BOXES SHALL HAVE 1'-0" WIDE (MIN.) CONCRETE APRON. CONCRETE FOR CONCRETE APRONS SHALL BE CLASS NS WITH A MINIMUM STRENGTH AT 28 DAYS OF FC=2.5 KSI. APRONS SHALL BE SLOPED AWAY FROM BOX. COST OF APRON TO BE INCLUDED IN THE COST OF EACH BOX.

10. PREVENT THE INGRESS OF WATER, DIRT, SAND AND OTHER FOREIGN MATERIALS INTO THE CONDUIT PRIOR TO DURING AND AFTER CONSTRUCTION USING A FOAM-SEALING MATERIAL, RUBBER PLUG, OR OTHER DEVICE DESIGNED FOR THIS APPLICATION.

11. WHERE MULTIPLE PULL BOXES ARE PLACED SIDE BY SIDE, MAINTAIN AT LEAST 8\"/>

LATEST REVISION	03/31/17
DESCRIPTION:	TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS



DTPW TRAFFIC SIGNALS AND SIGNS DIVISION
 1200 N.W. 11th Street
 MIAMI, FL 33136
 305-592-5900

NAME	DATE
DRAWN: TOLIVE WEEKER	16-09-16
CHECKED: MARIAN ESTANQUEZ	03-22-17
APPROVED: BRITTANY AHA, P.E.	

PULL BOX / FIBER OPTIC BOX DETAILS (N.T.S.)

APPENDIX "1" TO SPECIAL PROVISIONS
SECTION 639-ELECTRICAL POWER SERVICE ASSEMBLY

SECTION 639 ELECTRICAL POWER SERVICE ASSEMBLY

DATED: AUGUST 2015

INDEX FOR SECTION 639

SHEET NO.	SHEET DESCRIPTION
639-1	INDEX SHEET.
639-2	STANDARDS AND SPECIFICATIONS.
639-3	ELECTRICAL POWER SERVICE ASSEMBLY DETAILS



TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS
FOR MIAMI-DADE COUNTY

LATEST REVISION 08/21/15	DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	MIAMI-DADE COUNTY	PWSM TRAFFIC SIGNALS AND SIGNS DIVISION 7100 N.W. 36TH STREET MIAMI, FL 33166 305.592.3580	NAME DWAYN THOMAS DESIGNER	DATE 08-31-15	ELECTRICAL POWER SERVICE ASSEMBLY INDEX SHEET	SHEET NO. 639-1
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**SECTION 639
ELECTRICAL POWER SERVICE ASSEMBLY**

PART 1 GENERAL

1.01 SUMMARY

- A. Description
 - 1. Furnish and install Electrical Power Service Assembly in accordance with the Plans and the details provided with these Specifications including all required conduit, electrical service wire, pull boxes, meter socket, service disconnect(s), grounding, surge protective device, and miscellaneous appurtenances needed for a complete installation. Provide all labor, material and equipment necessary to make a complete and accepted installation including the coordination of service with the electrical power company and connecting to the supplied power company electrical source.
- B. Products Required But Not Supplied Under This Section
 - 1. Concrete strain pole
- C. Related Sections
 - 1. Section 562 Repair of Galvanized Surfaces
 - 2. Section 620 Grounding
 - 3. Section 630 Conduit
 - 4. Section 635 Pull and Junction Boxes
 - 5. Section 641 Concrete Strain Pole
- D. Method of Measurement
 - 1. Electrical Power Service Assembly: The Contract unit price per assembly for Electrical Power Service includes all labor, equipment, material and services for a complete and accepted installation as specified herein. Payment for conduit and electrical service wire which is vertically attached to the electrical power assembly is considered incidental and not paid for separately. Measurement and payment for concrete strain pole(s) provided under a separate Contract pay item.
 - 2. For use in maintenance and repair work:
 - a. Electrical Service Wire: The Contract unit price per foot of electrical service wire, furnished and installed, will include furnishing all materials and hardware as specified in the Contract Documents, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation. Payment for Electrical Service Wire is based upon the distance of the cable run and includes payment for all conductors used in the run.
 - b. Electrical Service Disconnect: The Contract unit price each for electrical service disconnect, furnished and installed, will include furnishing all materials and hardware as specified in the Contract Documents, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation.

E. Basis of Payment

- 1. Prices and payments will be full compensation for all work specified in this Section.
- 2. Payment will be made under:

Item No.	Description	Unit
639-1-121	Electrical Power Service, F&I, Underground, Meter Furnished By Power Company	AS
639-2-1 G	Electrical Service Wire	LF
639-3-11	Electrical Service Disconnect, F&I, Pole Mount	AS

1.02 SYSTEM DESCRIPTION

- A. Design Requirements

- 1. Provide a single concrete strain pole with service disconnect and meter socket in the right-of-way at a readily accessible location nearest the point of entrance of the conductors into the controller cabinet, typically within 15 feet of the cabinet.
- 2. Locate the electrical power company service point as close as possible to the controller cabinet at a distance not to exceed 300 feet from the cabinet. A service point location greater than 300 feet from the cabinet requires additional engineering and approval. The service point location shall be subject to additional engineering and approval. The size of the conductors and placing a second pole and disconnect near the service point. When two disconnects are required, the pole closest to the service point will support the main disconnect and the meter socket.
- 3. Voltage drop in feeder or branch circuits must not exceed three percent and the total combined voltage drop for the entire circuit must be less than five percent. When the distance from the service point and the controller is greater than 300 feet, increase the conductor size accordingly to maintain the permissible voltage drop.
- 4. Locate pull boxes so that no conduit runs exceed 250 feet in length.
- 5. Provide bonding, grounding, and lightning protection pursuant to Section 620.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Electrical Conduit: Use conduit meeting the requirements of Section 630. Meet the requirements of Section 562 for coating all field cut and threaded galvanized pipe.
 - 1. Rigid Steel Conduit: Conduit and fittings must meet the requirements of UL 6 and shall be hot dip galvanized. Each section of conduit must bear the UL label.
 - 2. Rigid Nonmetallic Conduit: Use Schedule 80 nonmetallic conduit. Conduit and fittings must be polyvinyl chloride heavy wall meeting the requirements of UL 651. Each section of conduit must bear the UL label.
- B. Electrical Service Wire:
 - 1. Grounding conductor must be type THWN, for all other conductors, use minimum No. 6 AWG stranded copper wire with XHHW (cross-linked polyethylene (XLPE) high heat-resistant, water-resistant) insulation, rated at 600 V in dry and wet condition.
 - 2. Service wire must be continuously run wire. Splices are not permitted.
- C. Meter Socket: Meter socket must be aluminum, Florida Power and Light listed Category 33a with isolated neutral, Landis & Gyr/Talon 41405-025F or approved equal.
- D. Service Disconnect:
 - 1. Enclosure (Cabinet): Use stainless steel enclosure conforming to National Electrical Manufacturers Association (NEMA) Standards for Type 4X that is approved and listed in the TSSQP. Ensure that the inside dimensions meet NEC requirements.
 - 2. Circuit Breaker: Use a manually resettable circuit breaker which has a current rating above the current rating of the circuit breaker to which electrical power is provided. Do not use less than a 40A circuit breaker.
 - 3. Surge Protective Device: Use a lightning arrester rated for a maximum permissible line to ground voltage of 175 VAC.
 - 4. Attachment Hardware: Use attachment hardware that meets the requirements of Section 600.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Meet the following requirements for the installation of individual components of the electrical power service assembly:
 - 1. Use extreme care and caution in the installation of all components of the electrical power service assembly.
 - 2. Follow installation procedures recommended by NEC and National Electrical Safety Code (NESC).

- 3. Consider the location of electrical power service point as shown in the Plans to be approximate, and coordinate with the appropriate electrical power company authority to determine the exact locations of each service point.

- B. Provide a 2 inch PVC conduit with a minimum 24 inch bonding radius between the "Electric" pull box and the power company pole to provide for their installation of the DPX cable. Stub up next to the pole at 6 inches above final grade.

- C. Conduit: Securely attach all conduits to the pole or cabinet with a maximum distance of three feet between conduit attachment hardware.

D. Electrical Service Wire:

- 1. Install the electrical service wire in a manner which will ensure that damage to the installation will not occur.
- 2. Ensure that the service wire is of sufficient length after installation in the conduit to provide for attachment to the power company service and for termination within the cabinet for which power is required.

- E. Meter Socket: Securely fasten the meter base to the pole. Install pole mounted meter bases at a minimum height of 5-12 feet above grade when measured from the center of the meter ring.

F. Service Disconnect:

- 1. Securely fasten the service disconnect to the pole, and electrically position the service disconnect between the service meter and the traffic control device cabinet to which electrical service is being supplied.
- 2. Install pole mounted service disconnects a minimum of 8 feet above grade when measured from the bottom of the disconnect.

LATEST REVISION 07/20/15

DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS



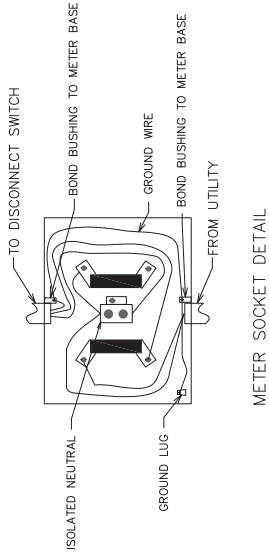
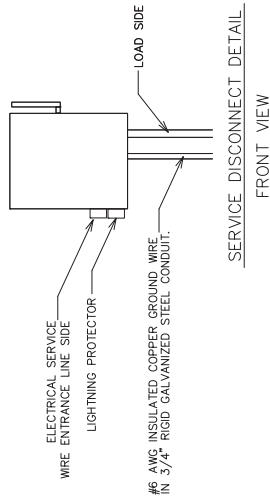
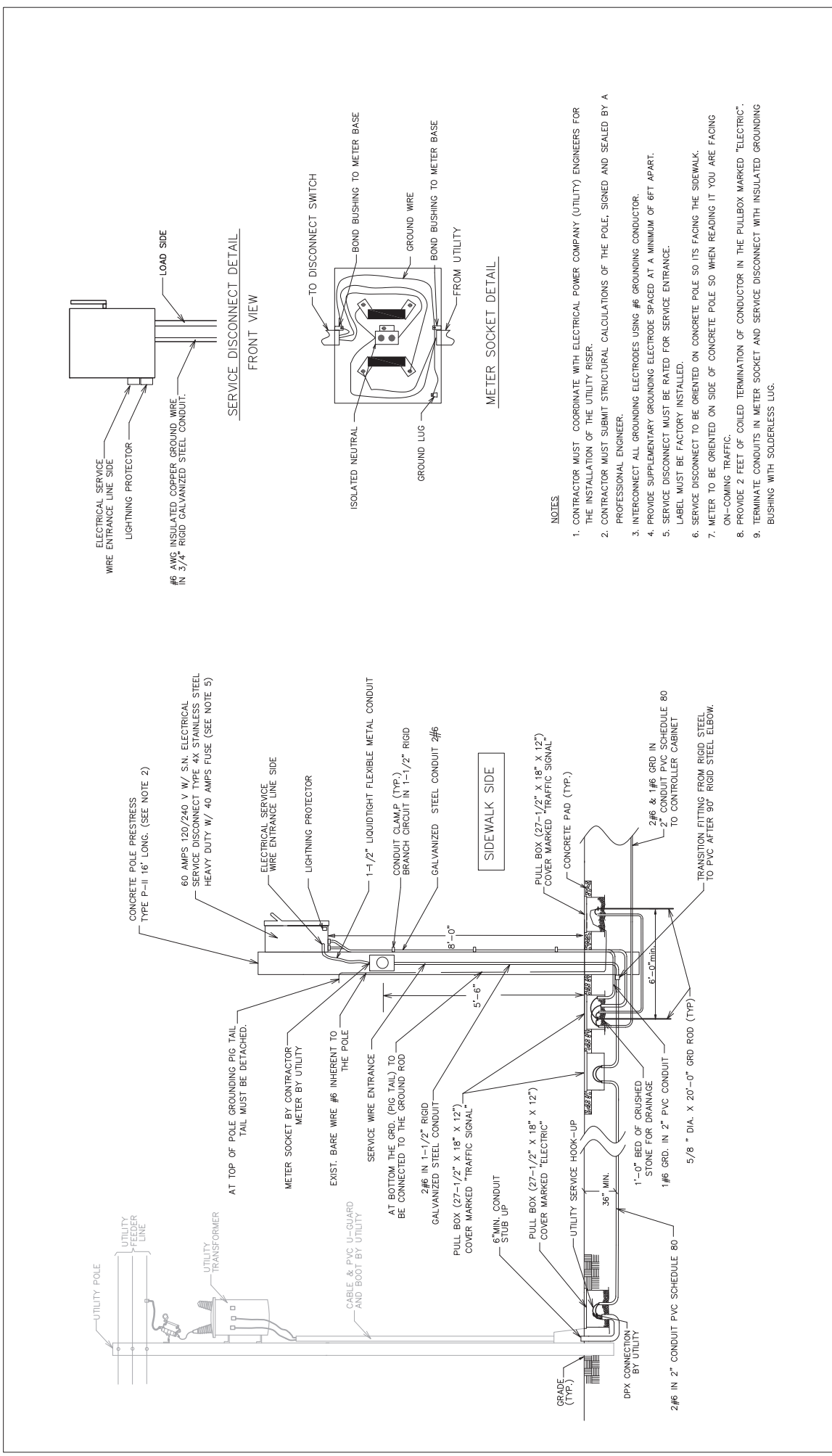
PWMM TRAFFIC SIGNALS AND SIGNS DIVISION
1100 NW 36th STREET
MIAMI, FLORIDA, 33166
305.592.3880

DATE	BY
07-20-15	DAVE OSORIO
07-20-15	WALTER FERNANDEZ

APPROVED BY: FRANK WEA, P.E.

ELECTRICAL POWER SERVICE ASSEMBLY STANDARDS AND SPECIFICATIONS

SHEET NO. 639-2



NOTES

1. CONTRACTOR MUST COORDINATE WITH ELECTRICAL POWER COMPANY (UTILITY) ENGINEERS FOR THE INSTALLATION OF THE UTILITY RISER.
2. CONTRACTOR MUST SUBMIT STRUCTURAL CALCULATIONS OF THE POLE, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER.
3. INTERCONNECT ALL GROUNDING ELECTRODES USING #6 GROUNDING CONDUCTOR.
4. PROVIDE SUPPLEMENTARY GROUNDING ELECTRODE SPACED AT A MINIMUM OF 6FT APART.
5. SERVICE DISCONNECT MUST BE RATED FOR SERVICE ENTRANCE. LABEL MUST BE FACTORY INSTALLED.
6. SERVICE DISCONNECT TO BE ORIENTED ON CONCRETE POLE SO ITS FACING THE SIDEWALK.
7. METER TO BE ORIENTED ON SIDE OF CONCRETE POLE SO WHEN READING IT YOU ARE FACING ON-COMING TRAFFIC.
8. PROVIDE 2 FEET OF COILED TERMINATION OF CONDUCTOR IN THE PULLBOX MARKED "ELECTRIC".
9. TERMINATE CONDUITS IN METER SOCKET AND SERVICE DISCONNECT WITH INSULATED GROUNDING BUSHING WITH SOLDERLESS LUG.

DATE 08/31/15	SHEET NO. 639-3	NAME DANA COUSCO INCH ENGR E	DATE 08-31-15 08-31-15
DESCRIPTION: LATEST REVISION 08/31/15		P.W.M. TRAFFIC SIGNALS AND SIGNS DIVISION 7100 N.W. 37TH STREET MIAMI, FL 33166 TEL: 305-592-2580 FAX: 305-592-2580	
TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS			
ELECTRICAL POWER SERVICE ASSEMBLY TYPICAL DETAILS (N.T.S.)			

APPENDIX "J" TO SPECIAL PROVISIONS
SECTION 641-PRESTRESSED CONCRETE POLES

**SECTION 641
PRESTRESSED CONCRETE POLES**

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install prestressed concrete poles pursuant to FDOT Specification Section 641 (Prestressed Concrete Poles) except as otherwise specified herein.

B. Related Sections

1. FDOT Specification Section 125 (Excavation for Structures and Pipe)
2. FDOT Specification Section 346 (Portland Cement Concrete)
3. FDOT Specification Section 347 (Portland Cement Concrete - Class NS)
4. FDOT Specification Section 450 (Precast Prestressed Concrete Construction)
5. FDOT Specification Section 620 (Grounding and Lightning Protection)
6. FDOT Specification Section 634 (Span Wire Assembly)
7. SECTION 639

C. Method of Measurement

1. Measurement for payment will be in accordance with the following work tasks:
 - a. Furnish and Install:
 - 1) The Contract unit price for prestressed concrete poles, furnish and install, will consist of the pole plus all labor, concrete when required for the foundation and other materials necessary for a complete and accepted installation as specified in the Contract Documents.
 - b. Pole Removal:
 - 1) Pole Removal Shallow: The quantity to be paid for will be the removal of each pole, including the foundation and all accessories and attachments, to a depth of not less than 4 feet below existing grade.
 - 2) Pole Removal Deep: The quantity to be paid for will be the complete removal of the pole, foundation and all accessories and attachments.

D. Basis of Payment

1. Price and Payment under the applicable pay item below will be full compensation for all work specified in this Section.
2. Payment will be made under:

Item No.	Description	Unit
641-2-11	Prestressed Concrete Pole, F&I, Type P-II Pedestal	EA

641-2-12M	Prestressed Concrete Pole, F&I, Type P-II Service (16 feet)	EA
641-2-60	Prestressed Concrete Pole, Complete Pole Removal- Pedestal/Service Pole	EA
641-2-70	Prestressed Concrete Pole, Shallow Pole Removal- Pole 30' and Greater	EA
641-2-80	Prestressed Concrete Pole, Complete Pole Removal- Pole 30' and Greater	EA

1.02 SUBMITTALS

A. Product Data

1. Provide pole design details and supporting calculations signed and sealed by a Florida Registered P.E. certifying that the pole meets applicable specification for intended signals application.

PART 2 PRODUCTS

2.01 POLE FOR TRAFFIC SIGNAL ELECTRICAL POWER SERVICE ASSEMBLY

- A. Each traffic signal electrical power service assembly pole must be a Type P-II Service Prestressed Concrete Pole meeting the requirements of FDOT Design Standards Index No. 17725 except that its overall length must be 16 feet (10 feet above final grade location and 6 feet below grade) and be listed on the Miami-Dade County Traffic Signals and Signs Division's Qualified Products List.

PART 3 EXECUTION

3.01 NONE

APPENDIX "K" TO SPECIAL PROVISIONS
SECTION 654- RECTANGULAR RAPID FLASHING BEACONS

**SECTION 654
RECTANGULAR RAPID FLASHING BEACONS**

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install Rectangular Rapid-Flashing Beacon (RRFB) assemblies meeting the requirements of this Specification; the accompanying RRFB Assembly Standard Details; the Federal Highway Administration (FHWA) Interim Approval for Optional Use of Pedestrian Actuated RRFB at Uncontrolled Marked Crosswalks (IA-21) dated March 20, 2018 (with correction issued 3/21/2018); and the Plans.

B. Related Sections

1. FDOT Specification Section 620 (Grounding and Lightning Protection)
2. FDOT Specification Section 676 (Controller Cabinets)
3. FDOT Specification Section 700 (Highway Signing)

C. Method of Measurement

1. General: Unless otherwise specified herein, midblock crosswalk assemblies must include all materials, equipment, and labor necessary for a complete, functional and accepted installation.
2. Rectangular Rapid Flashing Beacon Assembly: The RRFB sign assembly includes the rectangular beacons, signs, sign support structure, cabinet, electronics, conduit, pull box, wiring, grounding, pedestrian pushbutton and all necessary appurtenances needed to meet the requirements of these Specifications. In addition:
 - a. Solar powered assembly: Includes solar panels and all components for a complete solar powered installation.
 - b. AC powered assembly: Does not include the cost of the Electrical Power Service Assembly.

D. Basis of Payment

1. Price and Payment will be full compensation for all work specified in this Section.
2. Payment will be made under:

Pay Item	Description	Unit
654-2-12	Rectangular Rapid Flashing Beacon, Furnish & Install- AC Powered, Complete Assembly- Back To Back	AS
654-2-22	Rectangular Rapid Flashing Beacon, Furnish & Install - Solar Powered, Complete Assembly - Back To Back	AS

1.02 SYSTEM DESCRIPTION

- A. Design and Performance Requirements for RRFB Assembly
1. Design Wind Speed: 150 mph
 - a. Manufacturer must provide engineering certification that the RRFB assembly's major components along with the recommended attachments for mounting on a 4.5" outer diameter pole, meet the load requirements of Section 3 of AASHTO LTS-6 as modified by FDOT Structures Manual Volume 3 using a Basic Wind Speed (V) of 150 mph in the determination of the design wind pressure.
 - b. Engineer of Record must ensure that the proposed sign assemblies and foundation are designed to withstand all applicable wind loads.
 2. The duration of a predetermined period of operation of the RRFBs following each actuation should be based on the procedures provided in Section 4E.06 of the 2009 MUTCD for the timing of pedestrian clearance times for pedestrian signals. The required duration period for each crosswalk must be shown in the Plans and record documents.
 3. Meet all Conditions of FHWA Interim Approval (IA-21) as further specified below:
 - a. Unless otherwise specified herein, all RRFB sign assemblies must be double-sided and include a RRFB LED light bar on each side of the sign assembly between the bottom of the fluorescent yellow-green W11-2 (Pedestrian), S1-1 (School), or W11-15 (Trail) crossing warning sign and the top of the supplemental diagonal downward arrow (W16-7p) plaque. Double-sided sign assemblies at crosswalks located on one-way roads do not require the additional RRFB LED light bar on the side opposite the approach of traffic.
 - b. Each assembly must have an ADA compliant pedestrian pushbutton (except for an RRFB installed in advance of the crosswalk having an AHEAD plaque) that meets the requirements of IA-21 and:
 - 1) Provides a volume-controlled verbal message "Yellow Lights are Flashing" that is repeated for the duration of flashing and a locator tone that repeats every four seconds when the beacons are dark.;
 - 2) Includes a R10-25 (PUSH BUTTON TO TURN ON WARNING LIGHTS) sign mounted adjacent to or integral with each pedestrian pushbutton explaining the purpose and use of the pedestrian pushbutton detector; and is
 - 3) Positioned per the details that accompany these Specifications.
 4. Unless otherwise shown in the Plans and approved by Engineer, the RRFB assembly, its components, and signs must be U-bolt mounted on a Miami-Dade County TSSQPL approved 4-1/2 inches outer diameter (4 inch nominal) threaded aluminum pedestal pole and square aluminum break away base with a reinforcing collar assembly. Attachment hardware must meet or exceed the requirements of the Florida Department of Transportation (FDOT) Standard Plans, Index No. 700-010.
 5. Unless approved otherwise, provide a suitable surge protection device (SPD) that meet the requirements of FDOT Specification Section 620.
 6. The individual RRFB components must be replaceable independently of other components and be equipped with approved terminal strips or wire-end molded connectors.
 7. RRFB must be capable of being readily reprogrammed in the field in order to support future changes in MUTCD or FDOT requirements.
 8. Certification of Compliance from a third party accredited laboratory, certifying compliance with the required minimum Class 1 yellow peak luminous intensity, must be provided upon request.

1.03 WARRANTY**A. Special Warranty**

1. Ensure the midblock crosswalk enhancement assembly has a manufacturer's warranty covering defects for three years from the date of final acceptance in accordance with Section 600. 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.

PART 2 PRODUCTS**2.01 MATERIALS AND EQUIPMENT**

- A. RRFB assembly and components must be listed on the FDOT APL and the Miami-Dade County TSSQPL.
- B. Aluminum materials must meet the requirements of the Aluminum Association Alloy 6061-T6 (ASTM B209, B221, B308 or B429), except as noted.
- C. Cabinets, Housings, and Hardware: Cabinets used as part of the midblock crosswalk enhancement assembly must meet the applicable criteria of FDOT Section 676.
- D. All housings other than approved cabinets must be powder coat painted dull black (Federal Standard 595A-37038) with a reflectance value not exceeding 25 percent as measured by American Society for Testing and Material E1347. Cabinets and housings must prevent unauthorized access.
- E. Ensure 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. Stainless steel bolts, screws, and studs must meet ASTM F593. Stainless steel nuts must meet ASTM F594. All assembly hardware greater than or equal to 5/8 inch in diameter must be galvanized. Carbon steel bolts, studs, and threaded rod must meet ASTM A307. Structural bolts must meet ASTM A325.
- F. Electrical Specifications:
 1. Equipment must operate on solar power or a nominal voltage of 120 volts alternating current (V_{AC}). If the device requires operating voltages of less than 120 V_{AC} , supply the appropriate voltage converter.
 2. Solar powered systems must be designed to provide a minimum of 10 days of continuous operation without sunlight. Solar powered systems must automatically charge batteries and prevent overcharging and over-discharging. Solar powered systems must include a charge indicator and AC/DC battery charger.
 3. Ground and bond assemblies in accordance with the accompanying standard details and per NEC and FDOT Specification Section 620 requirements.
 4. Conduits must meet the requirements of Miami-Dade County TCESS Section 630 (Conduit).
 5. Pullboxes must meet the requirements of Miami-Dade County TCESS Section 635 (Pull, Splice, and Junction Boxes).

- 6. Electrical power assembly must meet the requirements of Miami-Dade County TCESS Section 639 (Electrical Power Service Assembly).

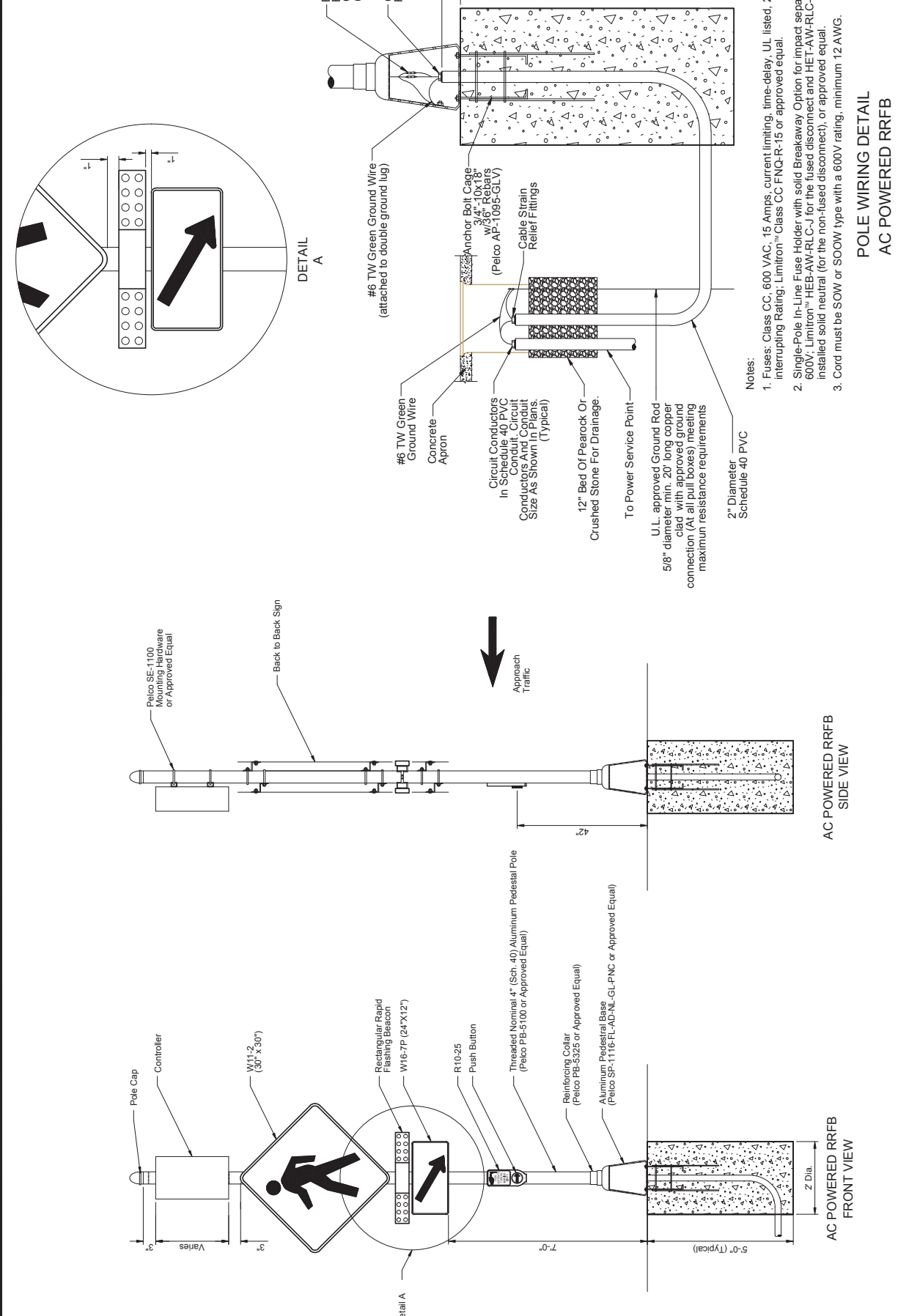
- G. Environmental Specifications: All electronic assemblies shall operate as specified during and after being subjected to the transients, temperature, voltage, humidity, vibration, and shock tests described in National Electrical Manufacturers Association (NEMA) TS2, 2.2.7, 2.2.8, and 2.2.9. Electronics must meet Federal Communications Commission (FCC) Title 47, Subpart B, Section 15.

PART 3 EXECUTION

3.01 REPAIRS/RESTORATION

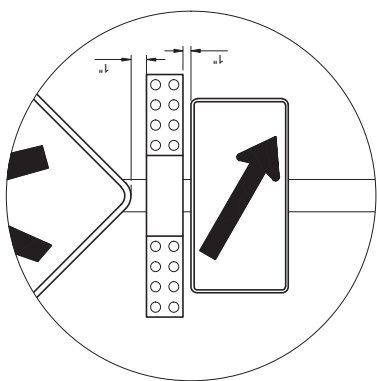
- A. Restore any areas impacted by the installation of the crosswalk enhancement assembly to original condition unless otherwise shown in the Plans. Install crosswalk enhancement assembly in accordance with the Americans with Disabilities Act Standards for Transportation Facilities.

END OF SECTION 654

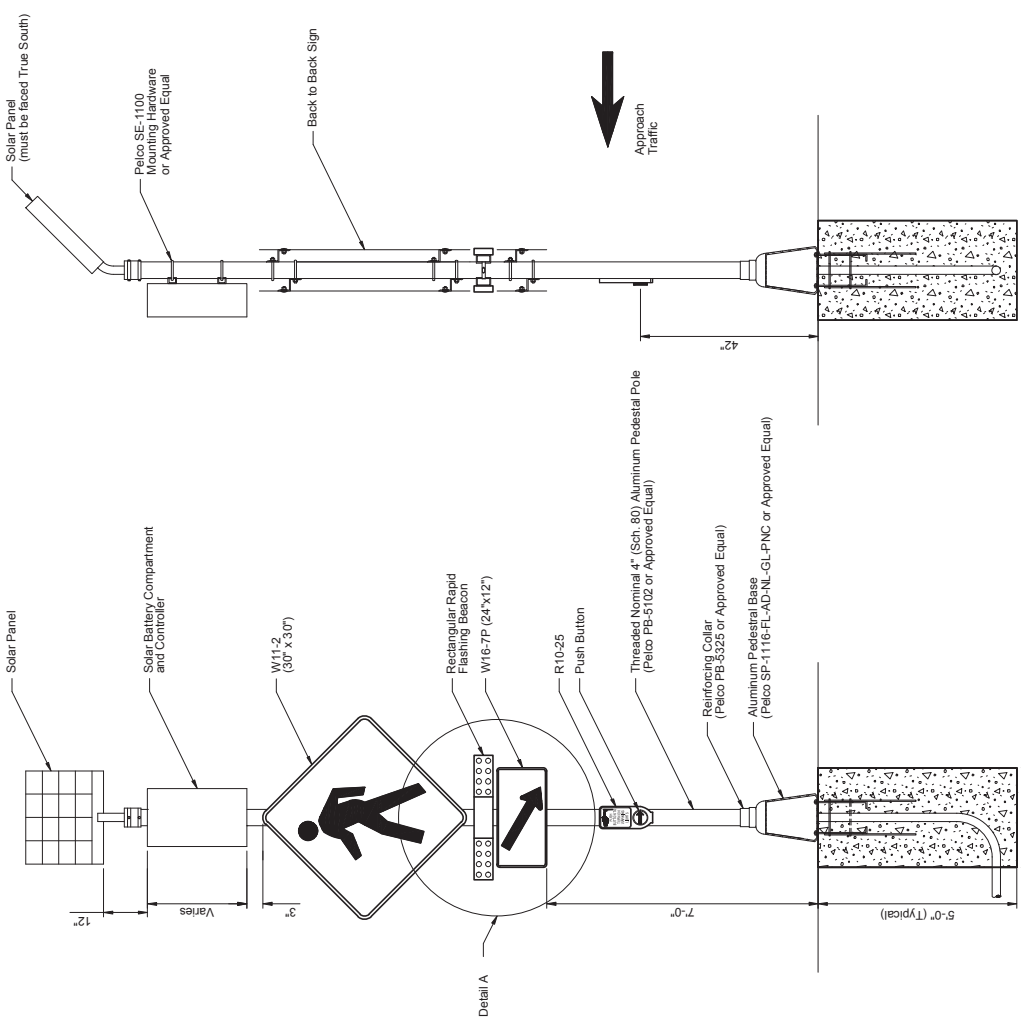


- Notes:**
1. Fuses: Class CC, 600 VAC, 15 Amps, current limiting, time-delay, UL listed, 200KA VAC RMS Sym. interrupting Rating: Limitron™ Class CC FNO-R-15 or approved equal.
 2. Single-Pole In-Line Fuse Holder with solid Breakaway Option for impact separation: Rated 30A, 600V; Limitron™ HEB-AW-RLC-J for the fused disconnect and HET-AW-RLC-J having a permanently installed solid neutral (for the non-fused disconnect), or approved equal.
 3. Cord must be SOW or SOOW type with a 600V rating, minimum 12 AWG.

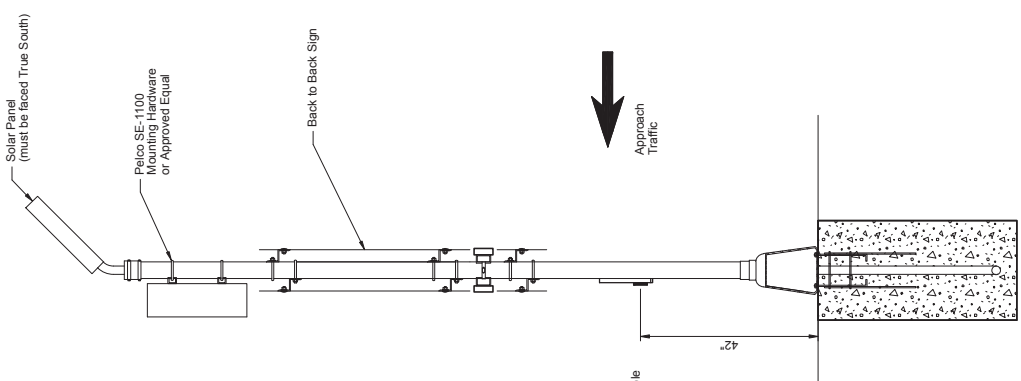
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04-24-18	04-24-18	04-24-18	04-24-18	04-24-18	ERNEST ESTRADA	MIAMI	MIAMI	MIAMI	654-1
PROJECT		PROJECT		PROJECT		PROJECT		PROJECT	
DTPW TRAFFIC SIGNALS AND SIGNS DIVISION		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION	
7100 NW 36TH STREET		7100 NW 36TH STREET		7100 NW 36TH STREET		7100 NW 36TH STREET		7100 NW 36TH STREET	
MIAMI, FLORIDA 33166		MIAMI, FLORIDA 33166		MIAMI, FLORIDA 33166		MIAMI, FLORIDA 33166		MIAMI, FLORIDA 33166	
305-592-3580		305-592-3580		305-592-3580		305-592-3580		305-592-3580	
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LATEST REVISION		LATEST REVISION		LATEST REVISION		LATEST REVISION		LATEST REVISION	
04/27/18		04/27/18		04/27/18		04/27/18		04/27/18	



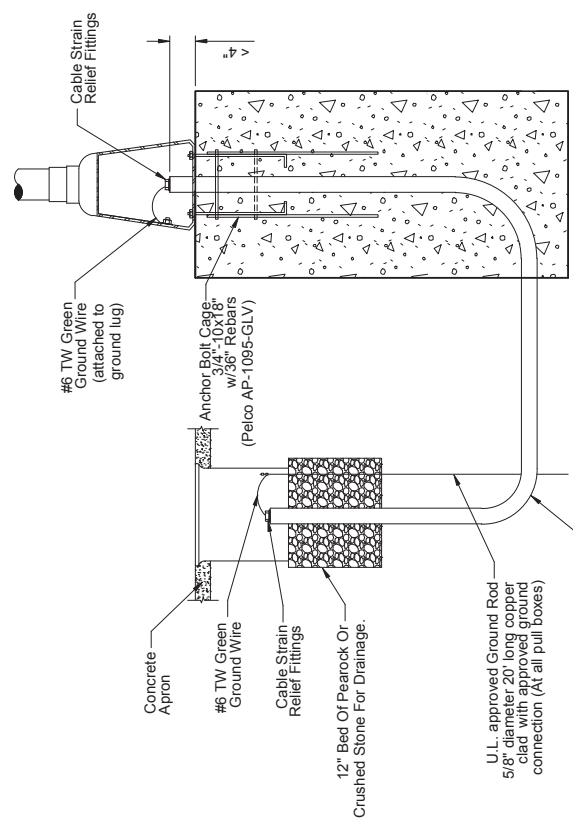
DETAIL A



SOLAR POWERED RRFB FRONT VIEW



SOLAR POWERED RRFB SIDE VIEW



POLE GROUNDING DETAIL SOLAR POWERED RRFB

DATE		DATE		DATE		DATE	
04/27/18	04/27/18	02-24-18	02-24-18	02-24-18	02-24-18	04-27-18	04-27-18
WATEST	REVISION	DESIGN	CHECKED	DESIGNED	BY	DATE	DATE
		ERNESTO ESTRADA	MIAMI TERRANCE	MIAMI TERRANCE	MIAMI TERRANCE	04-27-18	04-27-18
DESCRIPTION:		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION					
TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS		MIAMI-DADE					
REVISION		7100 NW 36th STREET					
04/27/18		MIAMI, FLORIDA, 33166					
		305.592.3880					
		APPROVED BY: FRANK, ANA, ETC.					
		RECTANGULAR RAPID FLASHING BEACONS (SOLAR POWERED) DETAILS (N.T.S.)					
		SHEET NO. 654-2					

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APPENDIX "L" TO SPECIAL PROVISIONS
SECTION 660-VEHICLE DETECTION SYSTEM

**SECTION 660
VEHICLE DETECTION SYSTEM**

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install vehicle detection system in accordance with the Contract Documents. Use only vehicle detection systems that meet the requirements of this Specification and are listed on the FDOT's Approved Products List (APL) and the Department's Traffic Signals and Signs Division's Qualified Products List (TSSQPL).

B. Method of Measurement

1. Furnish and Install:

a. Inductive Loops

- 1) The Contract unit price for each Inductive Loop Detector furnished and installed at the traffic signal cabinet includes all labor, equipment, testing and configuration necessary for a complete and accepted installation.
- 2) The Contract unit price for each Loop Assembly, furnished and installed, will include all equipment, labor, equipment, and materials necessary for a complete and accepted installation of the entire loop assembly as specified in the Contract Documents including the shielded lead-in cable into the traffic signal cabinet, proper termination, and testing.

b. Microwave Vehicle Detection System

- 1) The Contract unit price for Microwave Vehicle Detection System (MVDS), Cabinet Equipment, furnished and installed, includes all materials, tools, labor, equipment, approved mounts and hardware, operational software packages and firmware, supplies, support, testing, calibration, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the MVDS installation at each traffic signal cabinet location.
- 2) The Contract unit price for Microwave Vehicle Detection System (MVDS), Above Ground Equipment, furnished and installed, includes all materials, tools, labor, equipment, approved mounts and hardware, routing of cables and wiring properly terminating inside the traffic signal cabinet, operational software packages and firmware, supplies, support, testing, calibration, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the above ground MVDS work for each intersection approach.

c. Video Vehicle Detection System

- 1) The Contract unit price for Video Vehicle Detection System (VVDS), Cabinet Equipment, furnished and installed, includes all materials, tools, labor, equipment, approved mounts and hardware, operational software packages and firmware, supplies, support, testing, calibration, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the VVDS installation at each traffic signal cabinet location.

- 2) The Contract unit price for Video Vehicle Detection System (VVDS), Above Ground Equipment, furnished and installed, includes all materials, tools, labor, equipment, approved mounts and hardware, routing of cables and wiring properly terminating inside the traffic signal cabinet, operational software packages and firmware, supplies, support, testing, calibration, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the above ground VVDS work for each camera.

d. Wireless Magnetometer Detection System

- 1) The Contract unit price for a Wireless Magnetometer Detection System (WMDS), Cabinet Equipment, furnished and installed, will include furnishing, placement, and testing of all materials and equipment, and for all tools, labor, equipment, hardware, operational software packages and firmware, supplies, support, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the work at each interection.
- 2) The Contract unit price for a Wireless Magnetometer Detection System (WMDS), Above Ground Equipment, furnished and installed, includes all materials, tools, labor, equipment, approved mounts and hardware, routing of cables and wiring properly terminating inside the traffic signal cabinet, operational software packages and firmware, supplies, support, testing, calibration, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the above ground WMDS work for each intersection.
- 3) Separate payment will be made for each magnetometer in-road device furnished and installed in conjunction with the WMDS installation, pursuant to the Contract Documents, and approved locations depicted on the Plans.

e. Automatic Vehicle Identification

- 1) The Contract unit price for a complete Automatic Vehicle Identification (AVI) detection system, furnished and installed, will include furnishing, placement, and testing of all materials and equipment, and for all tools, labor, equipment, hardware, operational software packages and firmware, supplies, support, personnel training, shop drawings, warranty documentation, and incidentals necessary to complete the work at each location.

C. Basis of Payment

1. Price and Payment under the applicable pay item below will be full compensation for all work specified in this Section.
2. Payment will be made under (Pay Items Numbers for Department Contracts to be determined by the Contracts and Specifications Section):

Item No.	Description	Unit
660-1-109C	Inductive Loop Detector, F&I	EA
660-2-106	Loop Assembly, F&I, Type F	AS
660-2-106M	Loop Assembly, F&I, Type F Modified (Bicycle)	AS
660-3-11	Vehicle Detection System- Microwave, F&I Cabinet Equipment	EA
660-3-12	Vehicle Detection System- Microwave, F&I Above Ground Equipment	EA
660-4-11	Vehicle Detection System- Video, F&I Cabinet	EA

	Equipment	
660-4-12	Vehicle Detection System- Video, F&I Above Ground Equipment	EA
660-5-11	Vehicle Detection System- Wireless Magnetometer, F&I, Cabinet Equipment	EA
660-5-12	Vehicle Detection System- Wireless Magnetometer, F&I, Above Ground Equipment	EA
660-5-13	Vehicle Detection System- Wireless Magnetometer, F&I, In-Road Electronics	EA
660-6-120	Vehicle Detection System- Avi, Bluetooth, F&I, Complete System	EA

1.02 SYSTEM DESCRIPTION

A. Classification of Types

1. Functional Types

- a. Vehicle Presence Detection System: Vehicle presence detectors produce a corresponding output any time that a vehicle occupies the physical or virtual area of the detector.
- b. Traffic Data Detection System: Traffic data detectors provide presence, volume, occupancy, and speed data for the lanes they are configured to monitor.
- c. Probe Data Detection System: Probe data detection systems provide speed data and travel times for a road segment. Probe data detectors use automatic vehicle identification (AVI) technologies to establish a unique identifier for each vehicle they detect. This identifier is then transmitted to a central site where it can be matched to past or future detections of the same vehicle at different detector locations.

2. Technology Types

- a. Inductive Loop Detection System: An inductive loop detection system uses a minimum of one inductive loop and loop detector. The system operates by energizing and monitoring wire embedded in the road surface to detect vehicle presence and provide an output to traffic controllers or other devices that can generate volume, occupancy, and speed data (detection output).
- b. Video Vehicle Detection System (VVDS): A VVDS uses one or more cameras and video analytics hardware and software to detect vehicle presence, provides a detection output, and generates volume, occupancy, and speed data.
- c. Microwave Vehicle Detection System (MVDS): A MVDS transmits, receives, and analyzes a FCC-certified, low-power microwave radar signal to detect vehicle presence, provide a detection output, and generate volume, occupancy, and speed data.
- d. Wireless Magnetometer Detection System (WMDS): A WMDS uses one or more battery-powered wireless sensors embedded in the road surface, which communicates data by radio to a roadside receiver. Wireless magnetometer systems detect vehicle presence and provide a detection output to traffic controllers or other devices that can generate volume, occupancy, and speed data.
- e. Automatic Vehicle Identification (AVI): AVI detection systems use one or more different methods to collect information that can be used to establish a unique

identifier for each vehicle detected and the time and location that the vehicle was detected. AVI detection systems collect data using probe detectors that utilize radio-frequency identification (RFID), optical character recognition, magnetic signature analysis, laser profiling, Bluetooth®, or other technologies to establish vehicle identifier, time, and location.

B. Design Requirements

1. Provide stop bar detection in all lanes to provide a detection system that is capable of supporting a fully-actuated intersection and meet the requirements of the standard details for vehicle detection of the Miami-Dade County Traffic Control Equipment Standards and Specifications.
2. Use Inductive Loop Detection System technology type unless an alternate technology described herein is demonstrated by the Engineer of Record to be more suitable and reliable for the intersection under design. Written Department approval is required for use of detection technologies other than inductive loops.
3. Vehicle Detection Zones.
 - a. In addition to the Stop Bar Detection required by the standard details, the Department may approve the following general detection zones for use in a signal plan design where appropriate due to site-specific operational requirements:
 - 1) Queue Detection: Used on protected/permissive left turn lanes in addition to stop bar detection. Leading edge is placed at 50 feet from the Stop Bar.
 - 2) Long-Loop-Occupancy Detection: Used in each through lanes on very low-speed (25 mi/h or less) approaches for signal green time extension. Provided by increasing the length of the Stop Bar inductive loop detection to 50 feet from the Stop Bar.
 - 3) Multiple-Point Detection: Used on through lanes to ameliorate dilemma zone problems through the strategic placement of multiple sensors at high-speed (greater than 40 mi/h) approaches to intersections controlled by actuated controllers. Design based on guidance provided in Chapter 4, of the FHWA Traffic Detector Handbook: Third Edition—Volume I Inductive-loop detector placement in multiple-point detection systems used to ameliorate effects of dilemma zones.

1.03 WARRANTY

- A. Ensure that vehicle detection and data collection systems have a manufacturer's warranty covering defects for a minimum of 5 years from the date of final acceptance by Engineer in accordance with the Contract Documents and Section 600. 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 County.

PART 2 PRODUCTS

2.01 INDUCTIVE LOOP DETECTION SYSTEM

A. Materials.

1. Use inductive loop detectors and loop sealant currently listed on the FDOT's APL and the Department's TSSQPL.

2. Inductive Loop Detector Units: Ensure loop detector units meet the requirements of NEMA TS-2-2016.
3. Loop Wire:
 - a. Use No. 14 AWG stranded copper wire with Type XHHW cross-linked polyethylene insulation and an additional outer sleeve composed of polyvinylchloride or polyethylene insulation that meets the requirements of International Municipal Signal Association (IMSA) 51-7.
 - b. The wire must have surface-printed information indicating the manufacturer ID and its NRTL listing (UL, CSA, etc.), the maximum rated voltage, AWG size, the proper type letter or letters for the type of wire or the IMSA specification number every 2 feet or less.
4. Shielded Lead-in Cable: Use No. 14 AWG two conductor, stranded copper wire with shield and polyethylene insulation, meeting the requirements for IMSA 50-2.
5. Splicing Material:
 - a. Use rosin-core solder for soldered splices.
 - b. Butt-end connectors must be non-insulated Panduit Part Number BS14, BS10; Ideal Model Number TV16X, TV12X; Thomas and Betts Catalog Number BB-2, CC-2 or Engineer approved equivalent.
 - c. Insulated tubing used to cover splice must be heat-shrinkable, cross-linked polyolefin with a silicon sealant inside the tubing and an insulation rating of at least 600 V. Outer tubing must be dual/multiple wall type.
 - d. Splicing tape must be self-fusing silicone rubber.
6. Loop Sealant:
 - a. Ensure that loop sealant:
 - 1) Is manufactured for traffic loop embedding in both asphalt and concrete pavement.
 - 2) Consists of multi-component systems having simple mix ratios of 1:1 or 2:1 or are supplied in pre-measured containers in which all contents of both packages are to be mixed.
 - 3) Is self-leveling when applied.
 - 4) Does not run out of unlevel slots as tested for viscosity using ASTM D562 at 77°F.
 - 5) Is tack free within a maximum of 2 hours from time of application and when cured as tested for tack free time using ASTM C679 at 77°F.
 - 6) Securely adheres to concrete and asphalt when installed in a 3/8 inch by 3 inch saw cut, cured for 2 weeks at 77°F as tested for adhesion using visual inspection.
 - 7) Shows no visible signs of shrinkage after curing when installed in a 3/8 inch by 3 inch saw cut, cured for 2 weeks at 77°F as tested for shrinkage using a dimensional measurement.
 - 8) Resists weather, oils, gasoline, antifreeze, and brake fluid as tested for absorption using ASTM D570 for water, No. 3 oil, gasoline, antifreeze, and brake fluid for 24 hours.
 - 9) Resists penetration of foreign materials as tested for durometer hardness using ASTM D2240 Shore A for 24 hours.

- 10) Resists cracking caused by expansion and contraction due to temperature changes as tested for tensile strength and elongation using ASTM D412.
- 11) Does not become brittle with age or temperature extremes as tested for weight loss, cracking, and chalking using ASTM C1246.
- 12) Has a minimum shelf life of 1 year in undamaged containers when stored per manufacturer recommendations.

2.02 VIDEO VEHICLE DETECTION SYSTEM (VVDS)

A. Configuration and Management:

1. Ensure that the VVDS:
 - a. Is provided with software that allows local and remote configuration and monitoring.
 - b. Can display detection zones and detection activations overlaid on live video inputs.
 - c. Allows a user to edit previously defined configuration parameters, including size, placement, and sensitivity of detection zones.
 - d. Retains its programming in nonvolatile memory.
2. Ensure that the detection system configuration data can be saved to a computer and restored from a saved file. Ensure that all communication addresses are user programmable.
3. Ensure that the detection system software offers an open Application Programming Interface (API) and software development kit available to the Department at no cost for integration with third party software and systems.

B. Detection Camera: Provide a camera that is furnished or approved by the video detection system manufacturer.

C. Machine Vision Processor: Ensure the VVDS includes a machine vision processor that allows video analysis, presence detection, data collection, and interfaces for inputs and outputs as well as storage and reporting of collected vehicle detection data.

D. Video Inputs and Outputs: Ensure that analog video inputs and outputs utilize BNC connectors.

E. Solid State Detection Outputs: Ensure outputs meet the requirements of NEMA TS2-2016, 6.5.2.26.

F. Electrical Requirements: Ensure the system operates using a nominal input voltage of 120 volts of alternating current (V_{AC}). Ensure that the system will operate with an input voltage ranging from 89 to 135 V_{AC} . If a system device requires operating voltages other than 120 V_{AC} , supply a voltage converter.

2.03 MICROWAVE VEHICLE DETECTION SYSTEM (MVDS)

- A. Ensure that MVDS used for stop bar intersection presence detection can detect vehicles throughout a minimum detection range of 6-140 feet from the sensor and are capable of detecting up to 10 lanes of traffic.

- B. Ensure that MVDS used for dilemma zone protection can detect vehicles throughout a minimum detection range of 50-600 feet from the sensor; can report the speed, range, and estimated time of arrival at the stop bar of each vehicle detected; and can provide contact closure outputs when a vehicle meeting user-defined alert criteria is detected.
- C. Ensure that sidefire MVDS sensors used for data collection have a minimum 200-foot range and the capability to detect 8 lanes of traffic.
- D. Configuration and Management:
 - 1. Ensure that the MVDS is provided with software that allows local and remote configuration and monitoring. Ensure that the system software can display detection zones and detection activations in a graphical format.
 - 2. Ensure that the MVDS allows a user to edit previously defined configuration parameters, including size, placement, and sensitivity of detection zones.
 - 3. Ensure that the MVDS retains its programming in nonvolatile memory. Ensure that the detection system configuration data can be saved to a computer and restored from a saved file. Ensure that all communication addresses are user programmable.
 - 4. Ensure that the detection system software offers an open API and software development kit available to the Department at no cost for integration with third party software and systems.
- E. Solid State Detection Outputs: Ensure outputs meet the requirements of NEMA TS2-2016, 6.5.2.26.
- F. Electrical Requirements: Ensure the microwave detector will operate with a nominal input voltage of 12 V_{DC}. Ensure the microwave detector will operate with an input voltage ranging from 89 to 135 V_{AC}. If any system device requires operating voltages other than 120 V_{AC}, supply a voltage converter.
- G. Ensure that the detector is FCC-certified and that the FCC identification number is displayed on an external label. Ensure that the detector transmits within a frequency band of 10.525 gigahertz, plus or minus 25 megahertz, or another FCC-approved spectral band.

2.04 WIRELESS MAGNETOMETER DETECTION SYSTEM (WMDS)

- A. Configuration and Management:
 - 1. Ensure that the detection system is provided with software that allows local and remote configuration and monitoring.
 - 2. Ensure that the WMDS allows a user to edit previously defined configuration parameters.
 - 3. Ensure that the WMDS retains its programming in nonvolatile memory. Ensure that the detection system configuration data can be saved to a computer and restored from a saved file. Ensure that all communication addresses are user programmable.
 - 4. Ensure that the detection system software offers an open API and software development kit available to the Department at no cost for integration with third party software and systems.
- B. Solid State Detection Outputs: Ensure outputs meet the requirements of NEMA TS2-2016, 6.5.2.26.

- C. Electrical Requirements: Ensure the detection system will operate with an input voltage ranging from 89 to 135 V_{AC}. If any system device requires operating voltages other than 120 V_{AC}, supply a voltage converter.

2.05 AUTOMATIC VEHICLE IDENTIFICATION (AVI) DETECTION SYSTEM

- A. Configuration and Management: Ensure that the detection system is provided with software that allows local and remote configuration and monitoring.
- B. Probe Detector Requirements:
 - 1. Transponder Readers: Ensure transponder readers are compatible with multiple tag protocols, including Allegro and the protocol defined in ISO18000-6B.
 - 2. Bluetooth Readers: Ensure that Bluetooth readers will operate using solar power and cellular communications. Ensure that Bluetooth readers will operate using power over Ethernet. Ensure that Bluetooth readers will operate with a nominal input voltage of 12 V_{DC}.
 - 3. License Plate Readers: License plate readers must not require the use of visible strobes or other visible supplemental lighting.
- C. Electrical Requirements: Ensure the detection system will operate with an input voltage ranging from 89 to 135 V_{AC}. If any system device requires operating voltages other than 120 V_{AC}, supply a voltage converter.

2.06 COMMUNICATIONS

- A. Communication requirements for VVDS, MVDS, WMDS and AVI:
 - 1. Ensure that the VVDS includes a minimum of one Ethernet communications interface. Ensure that components of the MVDS, WMDS and AVI detection system (such as sensors, controllers, and processing hardware) include a minimum of one serial or Ethernet communications interface.
 - 2. Ensure serial interfaces and connectors conform to applicable Telecommunications Industry Association (TIA) standards. Ensure that serial ports support data rates up to 115200 bps; error detection utilizing parity bits (i.e., none, even, and odd); and stop bits (1 or 2). MVDS sensors must a serial interface that supports RS-232 and RS-485.
 - 3. Ensure that wired Ethernet interfaces provide a 10/100 Base TX connection. Verify that all unshielded twisted pair/shielded twisted pair network cables and connectors comply with TIA-568.
 - 4. Ensure wireless communications are secure and that wireless devices are Federal Communications Commission (FCC) certified. Ensure that the FCC identification number is displayed on an external label and that all detection system devices operate within their FCC frequency allocation.
 - 5. Ensure cellular communications devices are compatible with the 4G system and cellular carrier used by the agency responsible for system operation and maintenance.
 - 6. Ensure the system can be remotely configured and monitored via one or more communications interface

2.07 MECHANICAL REQUIREMENTS FOR ALL DETECTORS

- A. Ensure that all parts are made of corrosion-resistant materials, such as plastic, stainless steel, anodized aluminum, brass, or gold-plated metal.

- B. Ensure that all fasteners exposed to the elements are Type 304 or 316 passivated stainless steel.

2.08 ENVIRONMENTAL REQUIREMENTS FOR ALL DETECTORS

- A. Meet the environmental requirements of NEMA TS-2-2016.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation Requirements for all detectors:

1. Install, configure, and demonstrate a fully functional vehicle detection system, as shown in the plans. Connect all field equipment to the existing communication network, and provide all materials specified in the Contract Documents. Install all equipment according to the manufacturer's recommendations and these Specifications.
2. Mount above-ground detectors on existing poles or sign structures, or on new poles, as shown in the Plans. Furnish all equipment with the appropriate power and communication cables. Install the power cable and the communication cables according to the manufacturer's recommendation. Ensure that the cables comply with NEC sizing requirements and meet all other applicable standards, specifications, and local code requirements.
3. Do not install communication cables in the same conduit or pull boxes as power cables carrying voltage greater than 24 V_{DC}/V_{AC} or current in excess of 1.5 amps.
4. Cut cabinet wiring to the proper length. Do not double back wire to take up slack. Neatly lace wires into cables with nylon lacing or plastic straps. Secure cables with clamps and provide service loops at all connections.
5. In the event that power to the vehicle detection system or a subcomponent thereof is interrupted, ensure that the equipment automatically recovers after power is restored. Ensure that all programmable system settings return to their previous configurations and the system resumes proper operation.

- B. Inductive Loop Detector Installation:

1. Except as otherwise specified herein, install vehicle loops in accordance with the manufacturer's instructions, standard details for vehicle detection of the Miami-Dade County Traffic Control Equipment Standards and Specifications, and the Plans.
2. Unless otherwise specified in the Plans, stop bar loops in vehicular travel lanes must be thirty feet long Type F loops. Where specified in the Plans, a modified 3' x 20' Type F loop may be installed in dedicated bicycle lanes.
3. The leading edge of a loop cannot extend more than ten feet past the stop line.
4. The saw cut may not encroach into the crosswalk.
5. Inductive Loop-Detector Units: Adjust the operating frequency of each detector unit, if required, to prevent crosstalk of the units.
6. Saw Cuts:

- a. Saws must be equipped with a depth gauge to assist in maintaining proper depth and a horizontal guide to assure alignment.
 - b. Use a chalk line or equivalent method to outline the perimeter of the loop on the pavement and routes for lead-in cables. Do not allow the saw cut in the pavement to deviate by more than 1 inch from the chalked line.
 - c. Ensure that all saw cuts are free of any dust, dirt or other debris and completely dry prior to the installation of the loop wire, loop wire twisted pair lead or lead-in cable. Use compressed air to thoroughly dry the sawed slot.
 - d. Make saw cuts in accordance with standard details for vehicle detection of the Miami-Dade County Traffic Control Equipment Standards and Specifications unless otherwise stipulated in the Contract Documents.
 - e. Ensure that the top conductor of the loop wire or lead-in cable is a minimum of 2 inch below the final surface of the roadway.
7. Loop Wire:
- a. Ensure that the first turn of the loop wire is placed in the bottom of the saw cut, with each subsequent turn placed on top of the preceding turn. Push the loop wire to the bottom of the saw cut with a non-metallic tool which will not damage the insulation.
 - b. Label the loop wires in the pull box with waterproof tags and identify the start (S), finish (F) lead and the loop number.
 - c. Use alternate polarity on adjacent loops.
 - d. Hold the loop in place with strips of rubber, neoprene, flexible tubing, or foam backer rod as approved by Engineer. Ensure that the backer rod material is non-metallic, is placed in the saw slot using segments 1 to 2 inches long, spaced 12 inches apart, and that the distance from the top of the hold down material to the final surface of the roadway is not less than 1.5 inches.
8. Loop Wire Twisted Pair Lead:
- a. Create a loop wire twisted pair lead by twisting the loop wire pair a minimum of 10 turns per foot to form a loop wire twisted pair lead from the edge of the loop to the pull box located adjacent to the roadway. Place only one loop wire twisted pair lead in a saw cut. Ensure that the distance between a twisted loop wire pair lead within the roadway is a minimum of 6 inches from any other twisted loop wire pair lead or loop, until they are within 1 foot of the edge of pavement or curb, at which point they may be placed closer together.
 - b. Hold the loop wire twisted pair lead in place with strips of rubber, neoprene, flexible tubing, or foam backer rod as approved by Engineer. Ensure that the backer rod material is non-metallic, is placed in the saw slot using segments 1 to 2 inches long, spaced 24 inches apart, and that the distance from the top of the hold down material to the final surface of the roadway is not less than 1.5 inches.
 - c. Provide a minimum of 3 feet of twisted loop wire pair lead in the pull box located adjacent to the roadway. Do not route twisted loop wire pair lead directly through conduits to the cabinet, unless otherwise shown in the Plans.
9. Splicing:
- a. Splices must be made by crimping and soldering. Splice lead-in cable to the loop wire in accordance with these Specifications.
 - b. Perform the splicing in a pull box located off the roadway, not in the roadway itself. Splices must be made on the same day wires are installed unless the ends of the wires are sealed with Scotchkote to keep water out of the insulating jacket.

- c. Strip insulation of loop wires and lead-in cable as necessary. Clip one of the loop wires 3 inches shorter than other and clip the non-corresponding lead-in cable wire accordingly in order to stagger the splices.
 - d. Splice the black conductor of the lead-in cable to the finish (F) "lead" of the loop.
 - e. Crimp the appropriate wires with a non-insulated butt connector using a pressure crimping tool that provides a uniform 360-degree crimp. Insulate each wire splice separately using cross-linked polyolefin tubing.
 - f. Insulate the total splice using dual/multiple wall cross-linked polyolefin tubing.
 - g. Ensure that the ends of the cable jackets, twisted pair and lead-in, are encased in the loop splice material.
 - h. Ensure that each loop has an individual return to the cabinet and series splicing is performed on a separate terminal block in the cabinet.
10. Terminations:
- a. Using insulated terminal lugs, terminate lead-in cables or twisted pair loop wire on a terminal strip which is located in the controller or detector cabinet.
 - b. Use a calibrated ratchet type crimping tool to attach the lugs to the conductors of the lead-in cable or twisted loop wire.
11. Loop Sealant:
- a. Prepare the loop sealant in accordance with the manufacturer's instructions.
 - b. Using a manufacturer approved applicator or dispenser, apply only sufficient sealant to completely fill the saw cut without overfilling
 - c. Remove excess material from pavement.
 - d. Ensure that the loop sealant has cured completely before allowing vehicular traffic to travel over the sealant.
12. Loop Assembly Identification: Identify and tag each loop assembly in the controller or detector cabinet by lane and movement number.
- C. Video Detector Installation:
1. Install cameras and configure detection zones and settings in accordance with the Contract Documents, standard details for vehicle detection of the Miami-Dade County Traffic Control Equipment Standards and Specifications, manufacturer's recommendations, and as directed by Engineer.
 2. Submit configuration settings (including, but not limited to detector names, communication settings, and output assignments) and configuration file backups to Engineer.
 3. Submit a graphical depiction of each camera site, its pole location, mounting height, the ratio of distance away from the camera versus the mounting height, the camera's mounting type (i.e., pole or structure), camera aiming procedures, and the placement of the proposed detection zone for each lane.
 4. Do not use coaxial cable runs in excess of 500 feet. Mount and aim cameras in a manner that eliminates as much environmentally generated glare as possible.
 5. For systems where composite cables are used, Power over Ethernet (PoE) injectors are required for cable runs longer than 330 ft .
- D. Microwave Detector Installation:
1. Install detector and configure detection zones and settings in accordance with the Contract Documents, manufacturer's recommendations, and as directed by Engineer.

2. Submit configuration settings (including, but not limited to detector names, communication settings, and output assignments) and configuration file backups to Engineer.
- E. Wireless Magnetometer Installation:
1. Install in accordance with the Contract Documents, manufacturer's recommendations, and as directed by Engineer.
 2. Ensure that materials used for the installation of magnetometers in the road surface have cured completely before allowing vehicular traffic to travel over them.
- F. AVI Detection System Installation:
1. Install in accordance with the Contract Documents, manufacturer's recommendations, and as directed by Engineer.

3.02 INDUCTIVE LOOP PERFORMANCE REQUIREMENTS

- A. Obtain latest Department's Loop Assembly Test Form from Engineer. Tests must be performed and the form completed and signed by a Contractor representative that is IMSA Traffic Signal Level II certified. Deliver the completed original to Engineer prior to Engineer's inspection and place a copy in the controller cabinet.
- B. Measure loop inductance, series resistance, insulation resistance, and quality factor. Take measurements both at the junction box (loop including twisted pair lead-in) and the Cabinet (loop and shielded lead-in cable). Measurements at the junction box must be taken before and after the loop wires are sealed in the pavement.
- C. Test Equipment. Conduct tests using one or more loop tester devices capable of measuring continuity, inductance in microhenrys (μH), integrity of the wire insulation in mega-ohms ($\text{M}\Omega$), loop wire resistance in ohms (Ω), and the Loop Quality Factor (Q).
- D. Inductive Loop Tester:
1. Measure inductance.
 2. Measure series resistance.
 3. Measure Loop Quality Factor.
- E. High voltage resistance tester:
1. Measure and record the insulation resistance (leakage to ground) of each loop assembly. Use a 500 VDC insulation megger to measure the resistance. Reference all measurements to a good earth ground (ground rod, metallic water pipe, etc.). Disconnect the transient suppression devices from the loop assemblies before taking any measurements.
- F. Acceptable test results.
1. Inductance (L): The inductance reading on the loop tester is within 10 percent of the Department's calculated value.
 2. Series resistance (R): Less than or equal to 10 Ω at the Controller.
 3. Loop Quality Factor (Q): Greater than 5.
 4. Insulation Resistance: Greater than 100 $\text{M}\Omega$.

G. Corrective Actions:

1. Perform, at no additional cost to the Department and to the satisfaction of Engineer, all corrective actions necessary to obtain acceptable test results, as stipulated in the preceding Subarticle, and meet all requirements of these Specifications.
2. If the series resistance of a loop assembly is greater than 10 Ω , inspect the loop assembly to find the cause of the excessive resistance. Correct the cause of the excessive resistance at no additional cost to the Department.
3. If the insulation resistance is less than or equal to 100 M Ω , determine if the lead-in cable or the loop wire is causing the problem, and replace the defective cable or loop wire at no additional cost to the Department.

H. Turn On Requirements. Connect the loop assemblies to the appropriate inductive loop vehicle detectors and tune the detectors in accordance with the manufacturer's instructions. Separate the operating frequencies of vehicle detectors, in adjacent lanes, by at least 2 kHz.

3.03 VEHICLE PRESENCE DETECTOR PERFORMANCE REQUIREMENTS**A. Vehicle Presence Detection System Field Acceptance Testing:**

1. Ensure presence detectors provide a minimum detection accuracy of 98%. Ensure presence detectors meet the requirements for modes of operation in NEMA TS2-2016, 6.5.2.17.
2. Verify detection accuracy at installed field sites using a reduced method to that described in FDOT Specification Section 660-2.2 (Vehicle Presence Detection Performance Requirements). Compare sample data collected from the detection system with ground truth data collected by human observation. For site acceptance tests, collect samples and ground truth data for each site for a minimum of five minutes during a peak period and five minutes during an off-peak period. For presence detection at intersections, ensure there are a minimum of three detections for each signal phase. Perform site acceptance tests in the presence of Engineer.

3.04 TRAFFIC DATA DETECTOR PERFORMANCE REQUIREMENTS:**A. Traffic Data Detection System Field Acceptance Testing:**

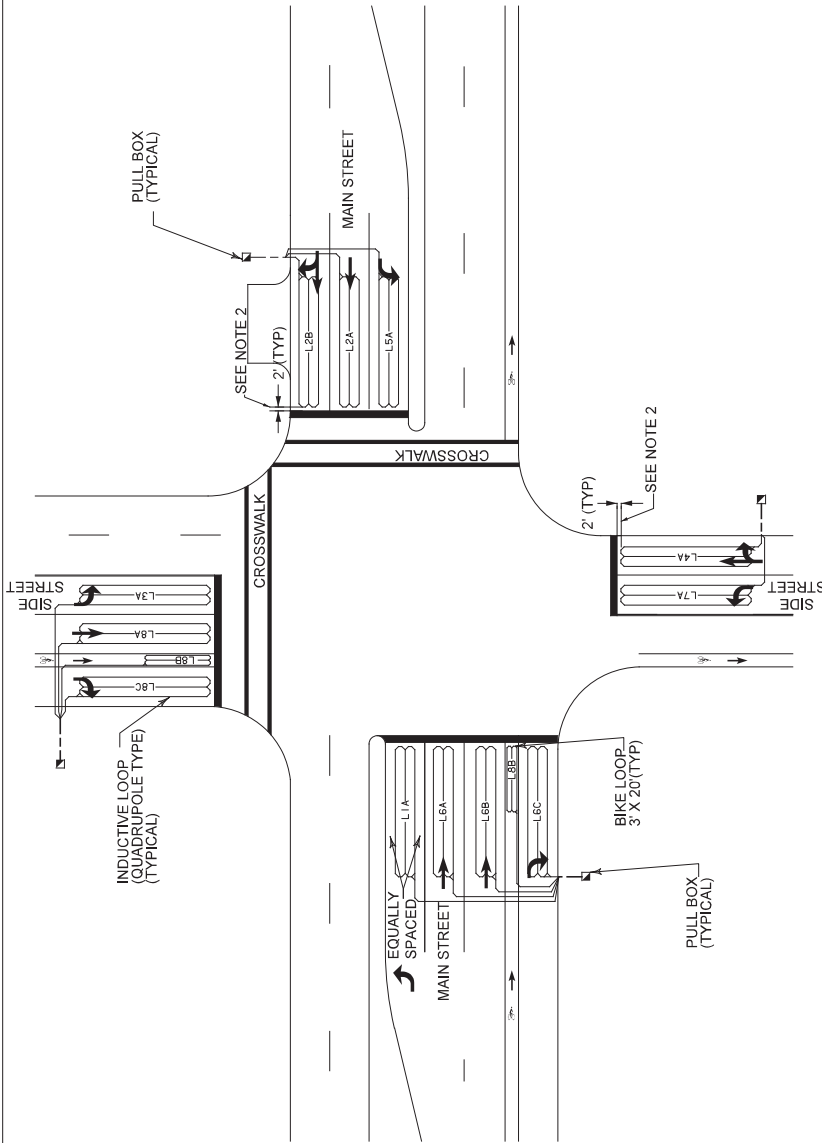
1. Vehicle detection system must be capable of meeting the minimum total roadway segment accuracy levels of 95% for volume, 90% for occupancy, and 90% for speed for all lanes, up to the maximum number of lanes that the device can monitor as specified by the manufacturer.
2. Verify detection accuracy at installed field sites using a reduced method to that described in FDOT Specification Section 660-2.3 (Traffic Data Detection System Performance Requirements). Compare sample data collected from the detection system with ground truth data collected by human observation. For site acceptance tests, collect samples and ground truth data for each site for a minimum of five minutes during a peak period and five minutes during an off-peak period. Perform site acceptance tests in the presence of the Engineer.

3.05 AVI DETECTION SYSTEM PERFORMANCE REQUIREMENTS:

- A. AVI detectors must meet the performance requirements described in FDOT Specification Section 660-2.4 (Probe Data Detection Performance Requirements).

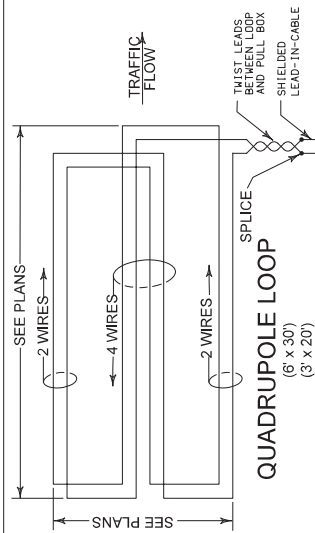
- B. Calculation of AVI Detection System Speed and Travel Time Accuracy: Calculate speed and travel time accuracy by comparing the speeds and travel times reported by the system against ground truth collected through human observation or another method approved by Engineer.

END OF SECTION 660



TYPICAL INDUCTIVE LOOP PLACEMENT

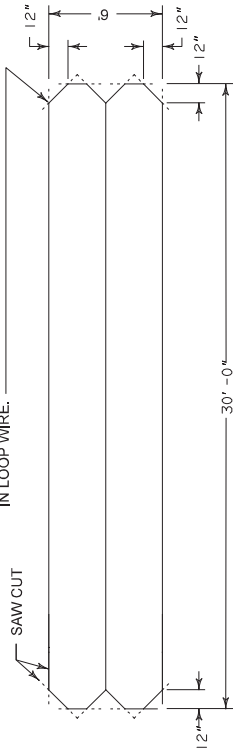
NOT TO SCALE



TYPICAL DETECTOR LOOP WIRE CONFIGURATION

NOT TO SCALE

OVERLAP SHALL BE CUT SO THAT SLOTS AT ALL CORNERS HAVE FULL DEPTH AND CUT DIAGONAL TO PREVENT SHARP BENDS IN LOOP WIRE.



TYPICAL "TYPE F" VEHICLE INDUCTIVE LOOP

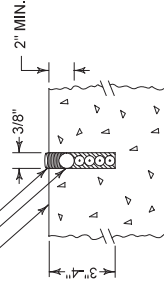
NOT TO SCALE



TYPICAL "TYPE F" MODIFIED BICYCLE INDUCTIVE LOOP

NOT TO SCALE

ROADWAY STRIPS OF RUBBER, NEOPRENE, FLEXIBLE TUBING OR FOAM BACKER ROD AS APPROVED BY THE ENGINEER LOOP SEALANT



LOOP SECTION

NOT TO SCALE

TYPICAL SAW CUT DETAIL

DATE	09-29-16
NAME	TRAVIS BREWER
DESIGN	CHUCK MORGAN
CHECKED	MIGUEL FERNANDEZ
APPROVED BY:	FRANK ABRA P.E.

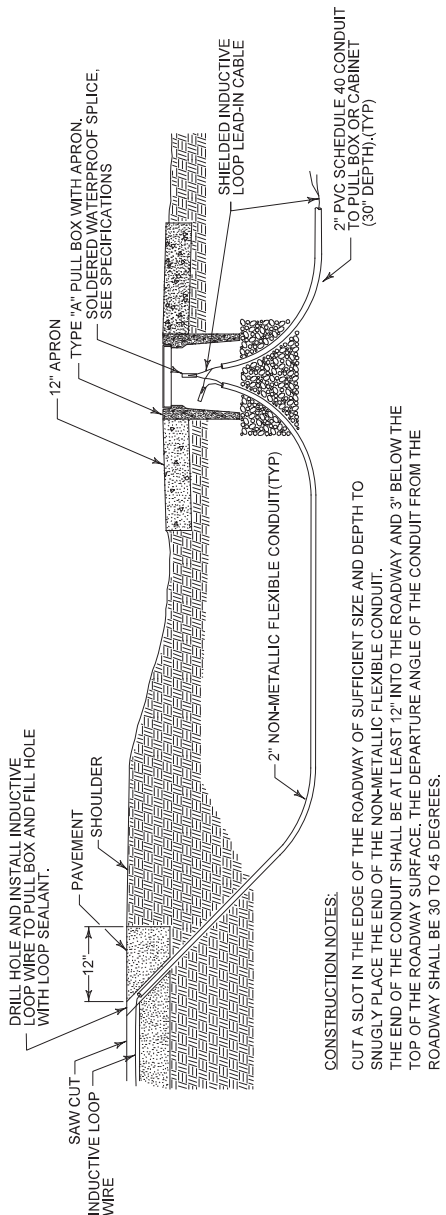
DTPW TRAFFIC SIGNALS AND SIGNS DIVISION
700 NW 36th STREET
MIAMI, FL 33136
305.595.5306
305.595.5300



TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS

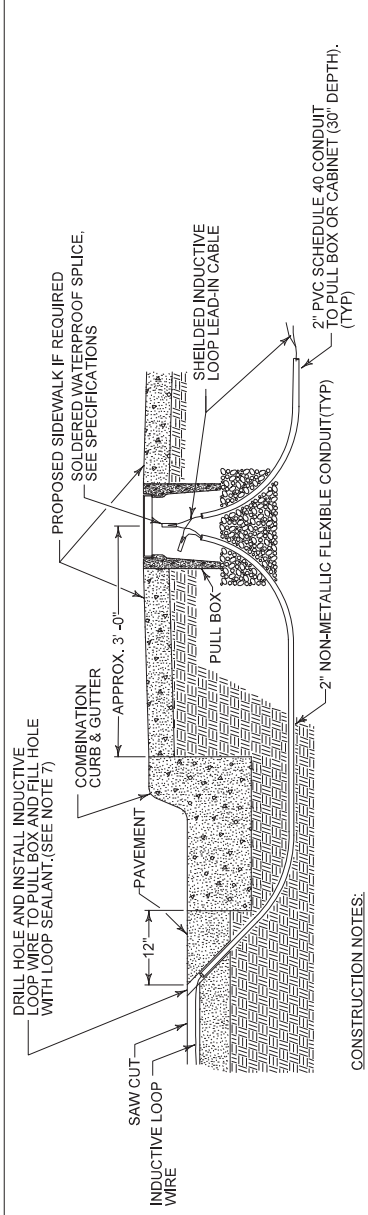
REVISION	03/27/17
DESCRIPTION	

TYPICAL INDUCTIVE LOOP INSTALLATION DETAILS (N.T.S.)



TYPICAL SECTION VIEW OF INDUCTIVE LOOP WIRE THROUGH PAVEMENT TO PULL BOX.

NOT TO SCALE



TYPICAL SECTION VIEW OF INDUCTIVE LOOP WIRE THROUGH CURB TO PULL BOX.

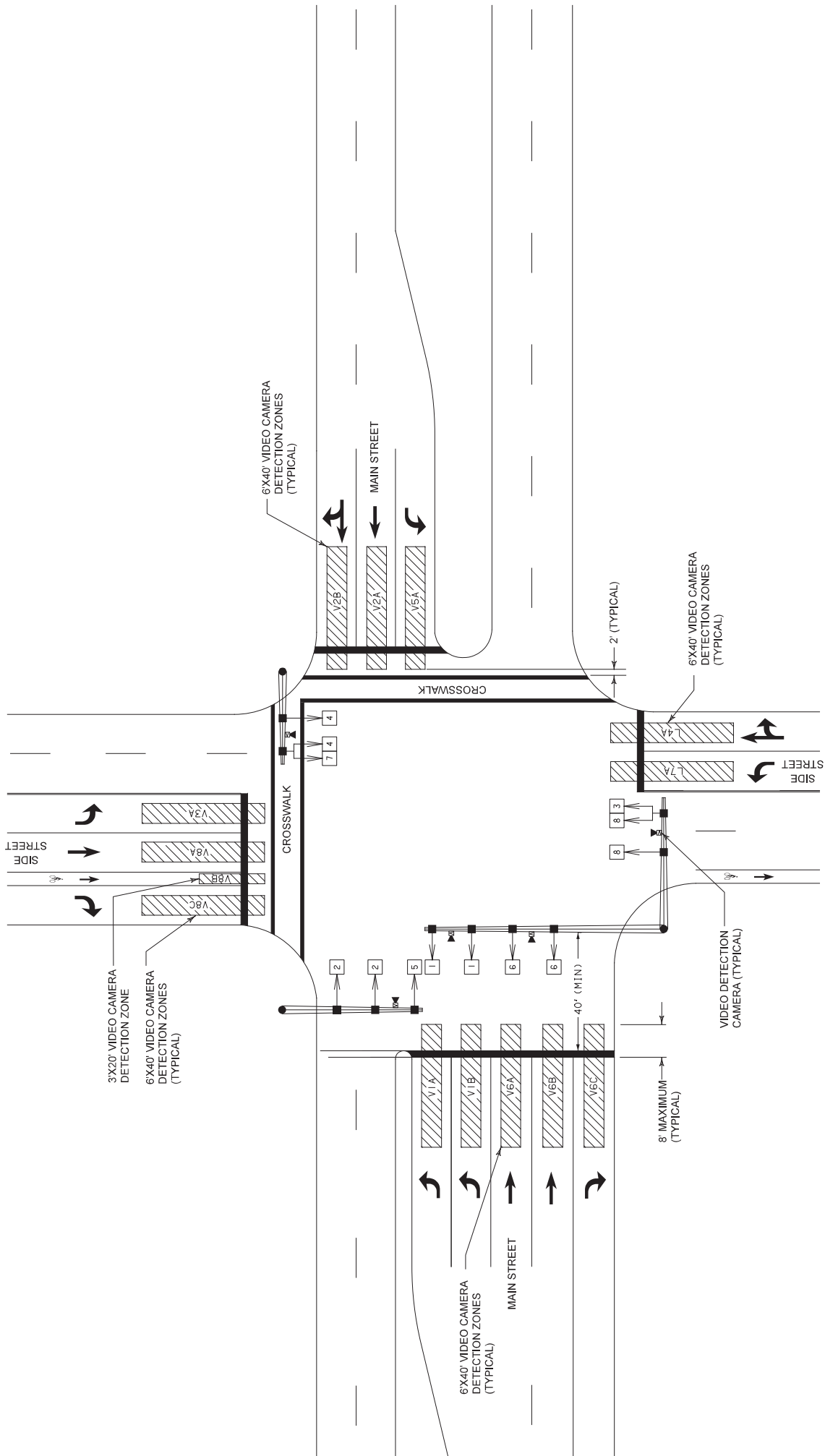
NOT TO SCALE

GENERAL NOTES:

1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 660 (VEHICLE DETECTION SYSTEMS).
2. THE STANDARD PLACEMENT OF THE LEADING EDGE OF TYPE F LOOP IS TWO FEET BEFORE THE STOP BAR BUT MAY EXTEND A MAXIMUM OF 10 FEET PAST THE STOP BAR TO MEET SITE-SPECIFIC ENGINEERING REQUIREMENTS. EACH INTERSECTION MUST BE INDIVIDUALLY DESIGNED AND IF THE AFOREMENTIONED MODIFICATION IS REQUIRED IT MUST BE NOTED OR DETAILED IN THE PLANS UNDER NO CIRCUMSTANCES MAY THE LOOP OR SAW-CUT ENCROACH INTO A CROSSWALK.
3. IF THE LOOP LEAD-IN IS 75' OR LESS FROM THE EDGE OF THE LOOP DETECTOR TO CONTROLLER CABINET, CONTINUE THE TWISTED PAIR TO THE CABINET. IF THE LOOP LEAD-IN IS GREATER THAN 75' CONTINUE THE TWISTED PAIR TO THE SPECIFIED PULL BOX. SPLICE TO SHIELDED LEAD-IN WIRE AND CONTINUE TO THE CONTROLLER CABINET.
4. THE WIDTH OF ALL SAW CUTS SHALL BE SUFFICIENT TO ALLOW UNFORCED PLACEMENT OF LOOP WIRES OR LEAD-IN CABLES INTO THE SAW CUT. THE DEPTH OF ALL SAW CUTS, EXCEPT ACROSS EXPANSION JOINTS SHALL BE STANDARD 3 INCHES WITH A MAXIMUM OF 4 INCHES.
5. LOOP LEAD-IN WIRES MUST NOT BE INSTALLED IN THE SAME PULL BOX WITH SIGNAL POWER CABLES.
6. THE MINIMUM DISTANCE BETWEEN THE TWISTED PAIRS OF LOOP LEAD-IN WIRE IS 6 INCH FROM THE LOOP TO 12 INCH FROM THE PAVEMENT EDGE OR CURB.
7. THE MAXIMUM AREA OF ASPHALT TO BE DISTURBED SHALL BE 4'X 4". THIS AREA SHALL BE RESTORED AS DIRECTED BY THE ENGINEER.
8. LOOP LEAD-IN WIRES MUST BE 6 INCHES APART WHERE THERE ARE MULTIPLE LOOPS.

LATEST REVISION 03/27/17	DESCRIPTION TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	 MIAMI-DADE COUNTY 305.592.3500	DTPW TRAFFIC SIGNALS AND SIGNS DIVISION 1515 N.W. 11th STREET MIAMI, FLORIDA 33146 305.592.3500	NAME TOMAS BREWER	DATE 08-26-16
				DRAWN CHECKED APPROVED	DATE 02-22-17
TYPICAL INDUCTIVE LOOP INSTALLATION DETAILS (N.T.S.)				SHEET 2 of 2	

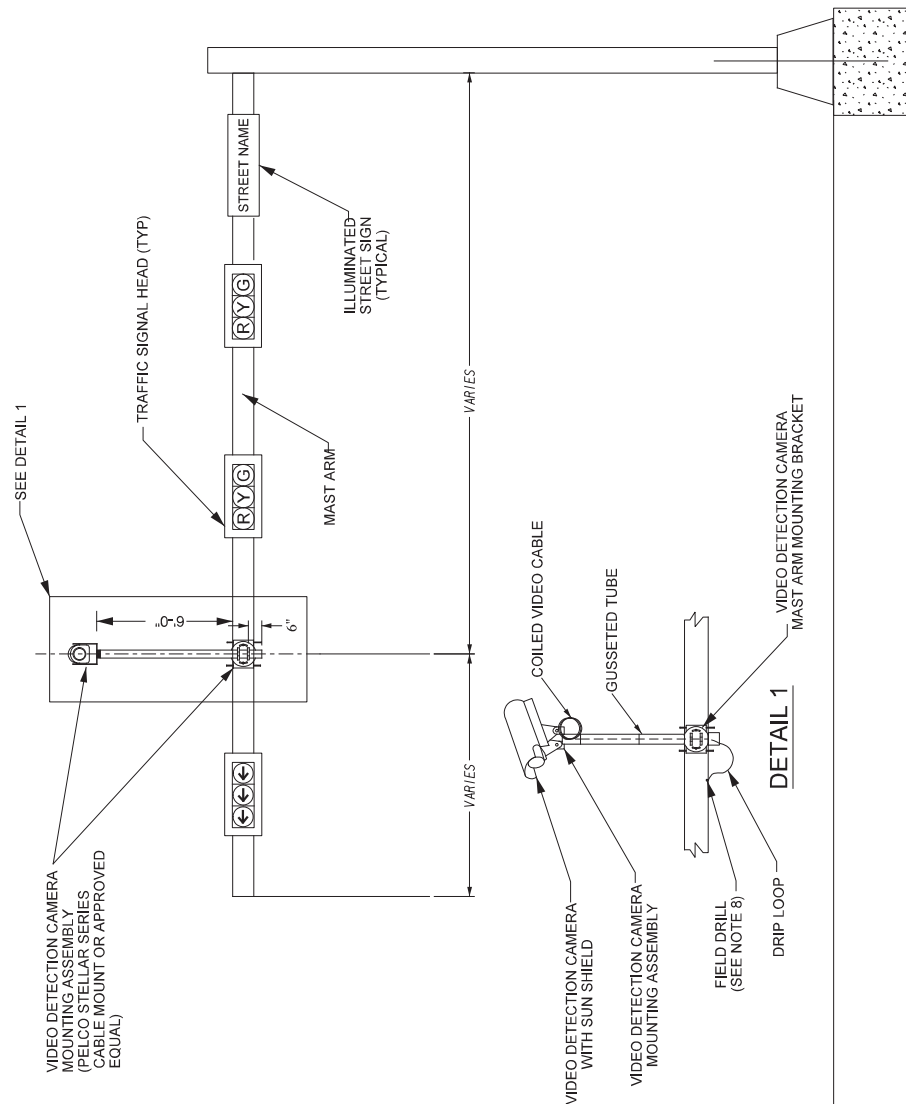
TYPICAL VIDEO DETECTION CAMERA LOCATION DETAIL



LATEST REVISION 03/27/17	DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION 700 NW 36th STREET MIAMI, FL 33146 305.592.3540	DRAWN BY: [blank] CHECKED BY: [blank]	NAME: TRAVIS BREWER	DATE: 03-29-16	SHEET 1 of 2
				APPROVED BY: FRANK ANNA, P.E.		VIDEO VEHICLE DETECTION DETAILS (N.T.S.)	

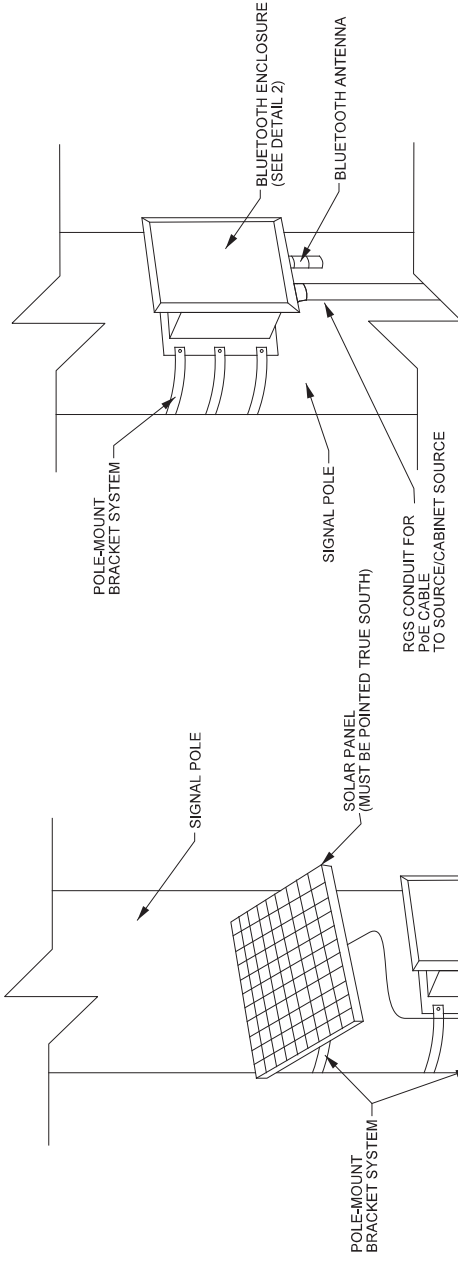
TYPICAL MAST ARM VIDEO DETECTOR MOUNTING DETAILS

- GENERAL NOTES:
1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 660 (VEHICLE DETECTION SYSTEMS). EACH INTERSECTION MUST BE INDIVIDUALLY DESIGNED TO INCLUDE SITE-SPECIFIC EQUIPMENT PLACEMENT REQUIREMENTS AND DETECTION ZONE REQUIREMENTS.
 2. REFER TO FDOT'S APPROVED PRODUCT LIST (APL) AND THE MIAMI-DADE COUNTY TRAFFIC SIGNALS AND SIGNS DIVISION'S QUALIFIED PRODUCT LIST FOR VIDEO DETECTOR SYSTEMS AND MOUNTING HARDWARE APPROVED FOR USE IN MIAMI-DADE COUNTY. SUBMIT SHOP DRAWINGS FOR APPROVAL BEFORE INSTALLATION.
 3. TYPICAL INSTALLATION WILL REQUIRE ONE CAMERA PLACED ON THE LANE LINE BETWEEN THE INBOARD THROUGH LANE AND LEFT TURN LANE.
 4. APPROACHES WITH MORE THAN FOUR LANES REQUIRE TWO CAMERAS PER APPROACH. COUNT BICYCLE LANES AS HALF A LANE. WHEN USING TWO CAMERAS, PLACE ONE BETWEEN THE LEFT LANES AND THE OTHER IN A POSITION THAT CENTERS THE CAMERA TO COVER ALL THE THROUGH LANES. THE CAMERA MUST BE ORIENTED SO THAT THE STOP BAR IS PARALLEL WITH THE BOTTOM OF THE IMAGE.
 5. WHEN PROPOSED VIDEO DETECTION CAMERAS ARE LOCATED AT A HORIZONTAL DISTANCE FROM 40 TO 100 FEET FROM THE STOP BAR AND NUMBER OF APPROACH LANE EXCEEDS THREE (OR 33 FEET TOTAL WIDTH), INDIVIDUAL VIDEO CAMERAS MUST BE INSTALLED FOR EACH CONTROLLER TIMING FUNCTION.
 6. CHECK FOR ANYTHING THAT MIGHT BLOCK THE FIELD OF VIEW OR IMPACT VEHICLE TRACKING SUCH AS TREES, OVERHEAD WIRES, AND COMMERCIAL LIGHT SOURCES.
 7. REVIEW THE PLACEMENT OF THE VIDEO IMAGE DETECTION DEVICES AND COORDINATE WITH THE ENGINEER OF RECORD TO CONFIRM THE MOST OPTIMAL LOCATION FOR THE INSTALLATION OF THE VIDEO IMAGE DETECTION DEVICES IN ORDER TO MEET THE PERFORMANCE REQUIREMENTS OF THE TECHNICAL SPECIFICATIONS OF AN APPROVED PRODUCT.
 8. CONCEAL CAMERA CABLE(S) THROUGH THE MOUNT'S GUSSETED TUBE AND NEATLY PLACE DRIP LOOP INTO THE MAST ARM MINIMIZING EXPOSED CABLE(S). WIRE ACCESS HOLE MUST NOT EXCEED ONE INCH IN DIAMETER AND MUST INCLUDE A RUBBER GROMMET. DRILL HOLE AS TO NOT DAMAGE EXISTING SIGNAL CABLES. UTILIZE EXISTING ACCESS WHEREVER POSSIBLE.
 9. MEET ALL GROUNDING AND SURGE PROTECTIVE DEVICE (SPD) REQUIREMENTS OF SECTION 620 OF THE FDOT STANDARD SPECIFICATIONS.
 10. MAKE THE VIDEO DETECTION SYSTEM OPERATIONAL IMMEDIATELY UPON INSTALLATION. REMOVING THE ASSOCIATED MINOR MOVEMENTS FROM RECALL.
 11. ZOOM AND FOCUS THE CAMERA TO INCLUDE ALL TRAVEL LANES REQUIRING DETECTION. HORIZON MUST NOT BE VISIBLE IN THE IMAGE.
 12. ALL OSHA CLEARANCE REQUIREMENTS FOR MAINTAINING SAFE DISTANCES TO OVERHEAD ELECTRIC FACILITIES WHILE PERFORMING CAMERA MAINTENANCE SHALL BE ACHIEVED BY CORRECT CAMERA PLACEMENT, LOCATE AND ANGLE CAMERAS TAKING INTO CONSIDERATION ITS RELATION TO THE RISING AND SETTING SUN TO BEST AVOID "SUNBURST" AND "WHITEOUT" EFFECTS DEMONSTRATED ON WET ROADWAYS.
 13. ALL EXTERIOR VIDEO CABLE FITTINGS SHALL HAVE A WATER AND WEATHER-PROOF BOOT.
 14. CAMERA TERMINALS THAT REQUIRE CABLE SPLICING IN THE FIELD MUST BE MADE WITH MECHANIC CONNECTORS OR TERMINAL LUGS. NO ELECTRICAL WIRE NUTS WILL BE ALLOWED AS A MEANS OF TERMINATION.
 15. SIGNAL CONTRACTOR IS RESPONSIBLE FOR INITIAL DETECTION ZONE SET-UP. COORDINATE WITH MIAMI-DADE COUNTY PRIOR TO SET-UP.
 16. VIDEO DETECTION SET-UP WILL BE SUCH THAT NO FALSE OR DROPPED CALLS ARE OBSERVED.
 17. DETECTION ZONE OUTPUT MUST BE PROGRAMMED TO CALL APPROPRIATE TIMING PHASES ASSIGNED TO CAMERA APPROACH. ONE VIDEO PROCESSOR CARD PER CAMERA. ONE DETECTION ZONE PER LANE ON APPROACH.
 18. ALL MINIMUM REQUIREMENTS LISTED ABOVE MUST BE DEMONSTRATED PRIOR TO FINAL ACCEPTANCE OF ANY VIDEO DETECTION SYSTEM INSTALLATION.

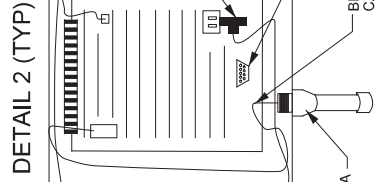
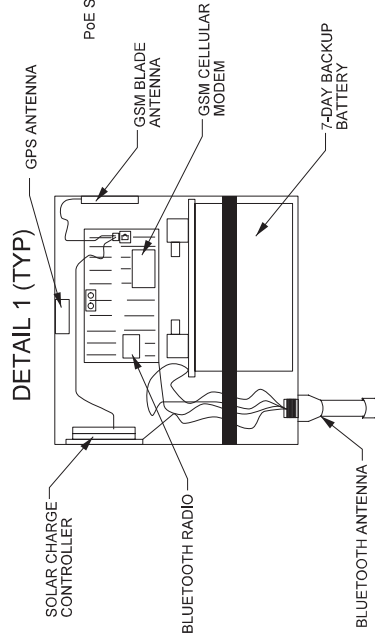


LATEST REVISION 03/21/17	DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS		DTPW TRAFFIC SIGNALS AND SIGNS DIVISION TRAFFIC SIGNALS SECTION MIAMI, FL 33146 305.592.3546	DRAWN BY: [] CHECKED BY: []	NAME: [] TITLE: [] USER: [] NUMBER: []	DATE: [] 03-21-17 03-22-17	SHEET: 2 OF 2
				VIDEO VEHICLE DETECTION DETAILS (N.T.S.)			APPROVED BY: FRANK ANH, P.E.

TYPICAL AUTOMATIC VEHICLE IDENTIFICATION (BLUETOOTH) MOUNTING DETAILS



POWER OVER ETHERNET (PoE)



GENERAL NOTES:

1. MEET THE REQUIREMENTS OF MIAMI-DADE TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 660 (VEHICLE DETECTION SYSTEM)
2. THE CONTRACTOR SHALL REFER TO THE FDOT'S APPROVED PRODUCT LIST (APL) AND THE MIAMI-DADE COUNTY QUALIFIED PRODUCT LIST SECTION 660 FOR AUTOMATIC VEHICLE IDENTIFICATION AND ALL MOUNTING HARDWARE APPROVED FOR USE IN MIAMI-DADE COUNTY AND SUBMIT SHOP DRAWINGS FOR APPROVAL BEFORE INSTALLATION. DRAWINGS MUST DEPICT THE APPROVED SOURCE/CABINET SOURCE FOR PoE.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE PLACEMENT OF THE AUTOMATIC VEHICLE IDENTIFICATION (BLUETOOTH) DEVICES AND COORDINATE WITH THE ENGINEER OF RECORD TO DETERMINE THE MOST OPTIMAL LOCATION FOR THE INSTALLATION OF THE REQUIREMENTS OF THE TECHNICAL SPECIFICATIONS OF AN APPROVED PRODUCT.
4. THE AUTOMATIC VEHICLE IDENTIFICATION (BLUETOOTH) DEVICE SHOULD BE PLACED 12' ABOVE GROUND LEVEL.

REVISION
03/21/17

DESCRIPTION
TRAFFIC CONTROL EQUIPMENT
STANDARDS AND SPECIFICATIONS



DTPW TRAFFIC SIGNALS AND SIGNS DIVISION
700 NW 36th STREET
MIAMI, FLORIDA 33166
305.592.3580

NAME
DRAWN: TRAVIS BREWER (09-29-16)
CHECKED: NAIJUM FERNANDEZ (03-22-17)
APPROVED BY: FRANK ARA, P.E.

SHEET
NO.
1 of 1

TYPICAL AUTOMATIC VEHICLE IDENTIFICATION
(BLUETOOTH) MOUNTING DETAILS (N.T.S.)

APPENDIX "M" TO SPECIAL PROVISIONS
SECTION 671-TRAFFIC SIGNAL CONTROLLERS

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

APPENDIX "N" TO SPECIAL PROVISIONS
"SECTION 682 TRAFFIC MANAGEMENT CCTV CAMERAS"

SECTION 682
TRAFFIC MANAGEMENT CCTV CAMERAS

PART 1 GENERAL

1.01 SUMMARY

A. Description

1. Furnish and install a high definition (HD) internet protocol (IP) closed-circuit television (CCTV) camera and cabinet at the location(s) shown in the Plans. Use new equipment and components that meets the minimum requirements of these specifications. Ensure that the installed equipment provides the Video Display Equipment at the Miami-Dade County TSS Division Traffic Management Center (TMC) with unobstructed video of the roadway, traffic, and other current conditions around a roadside CCTV field site; that it responds to camera control signals from the TMC operator; and that the video images can be transmitted to remote locations for observation.

B. Method of Measurement

1. The Contract unit price for each CCTV camera system furnished and installed, will include furnishing, placement, and testing of all equipment and materials, and for all tools, labor, operational software packages and firmware, supplies, support, personnel training, shop drawings, documentation, and incidentals necessary to complete the work.

C. Basis of Payment

1. Prices and payment will be full compensation for all work and materials required by this Section.
2. Payment will be made under:

Item No.	Description	Unit
682-1-133	ITS CCTV Camera, F&I, Dome PTZ Enclosure - Non-Pressurized, IP, High Definition	EA

1.02 REFERENCES

- A. Miami-Dade County Traffic Signals and Signs Division's Qualified Product List (TSSQPL)
- B. FDOT Approved Product List (APL)
- C. National Electrical Manufacturers Association (NEMA) TS-2-2016
- D. Telecommunications Industry Association (TIA)-568

1.03 SYSTEM DESCRIPTION

A. Design Requirements

1. Design to meet the requirements of all applicable standards. Ensure that the CCTV camera, cabinet, mounting hardware, and any other camera-related material that is exposed to the environment can withstand loading from 150 mph wind speeds and meet the requirements of the FDOT Structures Manual, Volume 3.

B. Performance Requirements

1. CCTV camera must provide titling and masking features, including, but not limited to, programmable camera title, programmable preset titles for each preset position, and programmable privacy zones. Ensure that programmable titles are a minimum of 18 characters per line.
2. CCTV camera must provide the following features and capabilities:
 - a. Day (color)/night (monochrome) switchover and iris control, with user-selectable manual and automatic control capabilities.
 - b. Ability to produce clear, detailed, and usable video images of the areas, objects, and other subjects visible from a roadside CCTV field site. Ensure that video produced by the camera is true, accurate, distortion free, and free from transfer smear, oversaturation, and any other image defect that negatively impacts image quality under all lighting and weather conditions in both color and monochrome modes.
 - c. User-selectable automatic gain control (AGC) that is peak-average adjustable to 28 decibels (dB).
 - d. A minimum signal-to-noise ratio of 50 dB.
 - e. Automatic color balance that references the white areas of the scene through the lens.
 - f. An automatic electronic shutter that is user selectable from 1/60 to 1/10,000 of a second.
 - g. A digital signal processor that provides a minimum 10x digital zoom.
 - h. Programmable azimuth and compass display with ability to display pan and tilt position with a 1 degree resolution.
3. CCTV camera must comply with FDOT Specification Section 682-1.2.9 (Additional Requirements for IP Cameras) for:
 - a. Video Encoding
 - b. Encoded Video Interoperability
 - c. Encoded Video Specifications
 - d. Network Interface
 - e. Configuration Management

1.04 WARRANTY

- A. Ensure that CCTV cameras have a manufacturer's warranty covering defects for a minimum of three years. Ensure that the warranty requires the manufacturer to furnish replacements for any part or equipment found to be defective during the warranty period at no cost to the County within 10 calendar days of notification.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Use a dome-type High Definition (HD) Internet Protocol (IP) CCTV camera assembly that meet the requirements of this Specification and are listed on the Miami-Dade County TSS Division Qualified Products List (TSSQPL) and the Florida Department of Transportation (FDOT) Approved Product List (APL). Ensure equipment is permanently marked with the manufacturer's name or trademark, part number, and serial number and:
1. Is compatible with the current version of the FDOT's SunGuide® software system, and any other camera operating software indicated in the Plans and contract documents.
 2. Has a minimum 18x motorized optical zoom lens with automatic iris that is:
 - a. Capable of automatic and manual focus and iris control.
 - b. Have a lens depth of field provides a clear image of roadside areas under all lighting conditions; and
 - c. Has a maximum aperture of at least f/1.6.
 3. Has an integrated pan/tilt mechanism capable of providing 360 degree continuous pan with a minimum 90 degree tilt range (i.e., 0 degrees to minus 90 degrees); provide variable speed control; have a preset position return accuracy of plus or minus 0.36 degree, or less than 0.10% or better; support a minimum of 64 presets; support a minimum of one tour with a minimum of 32 presets; and support a minimum of eight programmable blackout zones.
 4. Has a positioner with a minimum automatic pan speed of 240 degrees per second to a preset camera position; that the maximum manual pan speed is a minimum of 80 degrees per second; and that maximum manual tilt speed is a minimum of 40 degrees per second.
 5. Supports the National Transportation Communications for ITS Protocol (NTCIP) 1205 v1.08. Ensure that the camera is capable of communication with other devices using Telecommunications Industry Association/Electronic Industries Alliance (TIA/EIA)-232 or TIA-422 at a rate of 9600 bps, transmission control protocol (TCP)/IP, or user datagram protocol (UDP)/IP. Ensure that the CCTV camera supports the communication links shown in the Plans. The camera must be capable of remote firmware upgrade via the communication interface.
 6. Supports the Open Network Video Interface Forum (ONVIF) Core, Streaming, and Media Service specification.
- B. Electrical Specifications:
1. Camera must operate on a nominal voltage of 120 volts alternating current (VAC). Supply an appropriate voltage converter for devices that require operating voltages of less than 120 VAC.
 2. Meet the requirements of FDOT Specification Section 620 for Grounding and Lightning Protection.
- C. Mechanical Specifications:
1. Provide camera housings and hardware that are light in color or as noted in the Plans.
 2. Ensure that the camera housing has a sunshield to reduce the solar heating of the camera. Ensure that the total weight of dome type CCTV cameras (including the

housing, sunshield, and all internal components) is less than 17.0 pounds. Ensure that the lower dome of the camera housing is distortion free clear plastic.

3. Ensure that pressurized dome-type housings are capable of pressurization at 5 pounds per square inch (psi) using dry nitrogen, that they have a low-pressure alarm feature, and has a NEMA 4X/IP-67 rating.
4. If a non-pressurized dome-type housing enclosure is used, ensure that the unit is vented with a thermostat-controlled heater and blower. Ensure that the non-pressurized enclosure has a NEMA 4/IP-66 rating.
5. Ensure that the total weight of external positioner-type CCTV cameras (including housing, sunshield, all internal components, and external pan and tilt mechanism) is less than 35 pounds.

D. Environmental Specifications:

1. Ensure that the CCTV camera performs all required functions during and after being subjected to the environmental testing procedures described in NEMA TS2, Sections 2.2.7, 2.2.8, and 2.2.9.

E. CCTV Equipment Cabinet.

1. General. The cabinet shell must be a Caltrans Type 336 cabinet type (36"H x 24"W x 20 to 22"D) meeting the requirements of FDOT Specification subarticle 676-2.5 (Intelligent Transportation System Cabinets) with a typical equipment layout as shown in FDOT Design Standards Index 18104. In urban areas where the minimum required right-of-way clearances cannot be maintained with a standard cabinet, a Miami-Dade County TSSQPL approved pole mounted CCTV cabinet may be proposed by the Engineer of Record as an alternative to the standard cabinet. When proposed, the alternative cabinet type must be shown on the Plans along with all detailed cabinet specifications meeting the Miami-Dade County Alternative CCTV Cabinet requirements.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Ensure that the CCTV camera is installed at the locations shown in the Plans. Install the CCTV camera in accordance with the Miami-Dade County standard details and as shown in the Plans.
- B. Furnish and install the power supplies, local control equipment, and any other camera-related field electronic equipment and transient voltage surge suppressors within the approved lockable CCTV cabinet. Ensure that the cabinet protects these electrical and electronic devices from rain, dust, dirt, and other harmful elements of nature.
- C. Furnish and install all power, video, and data cables necessary to provide connection points for camera video and pan/tilt/zoom (PTZ) control signals within the cabinet. Furnish and install any and all ancillary equipment required to provide a complete and fully operational CCTV camera. Verify that all wiring meets National Electric Code (NEC) requirements where applicable.
- D. Ensure that data and video cables from the pole to the camera are routed inside the mounting hardware and protected from exposure to the outside environment.

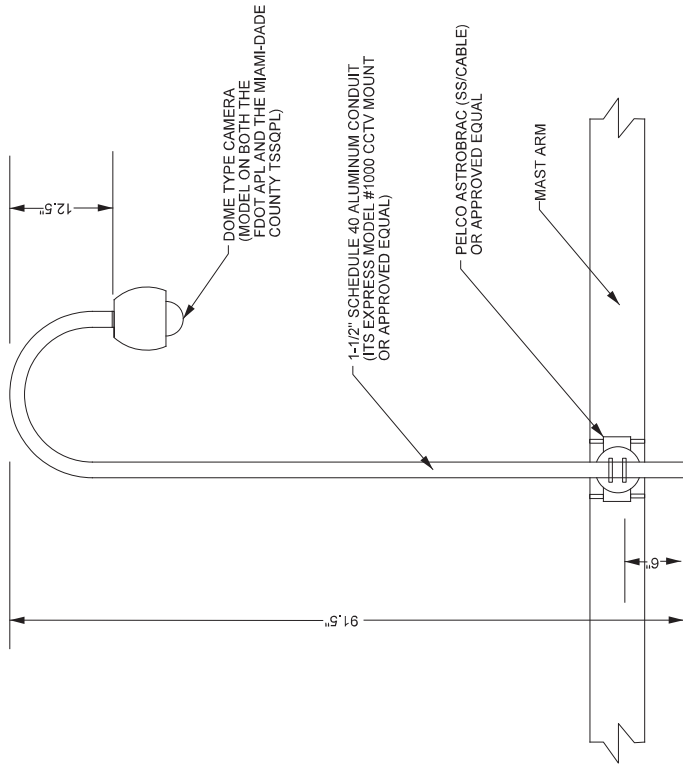
- E. Coat the exterior of the dome-type enclosure's lower half with a manufacturer-approved clear, rain repellant product prior to final acceptance.

3.02 FIELD QUALITY CONTROL

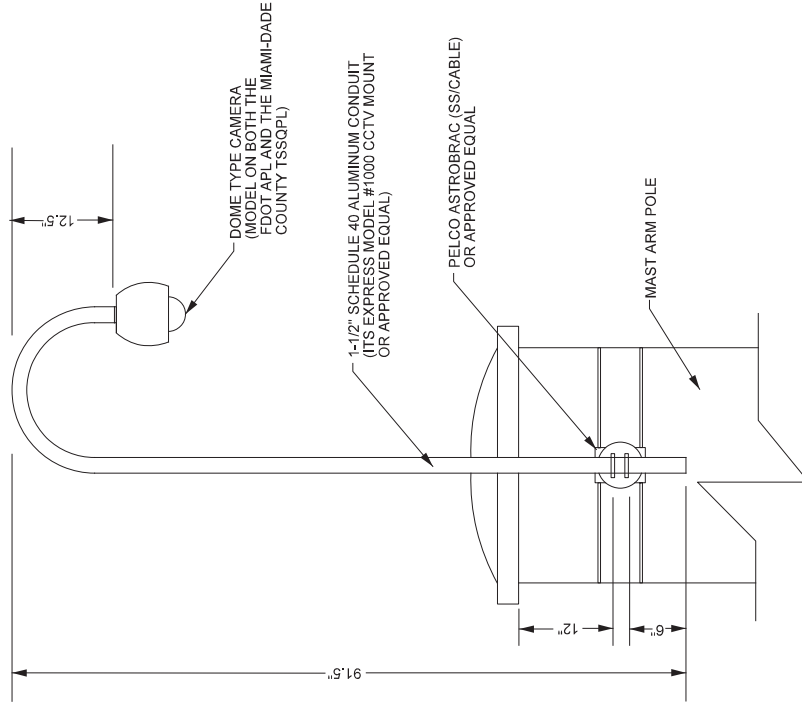
- A. Subject the equipment covered by these specifications to a field acceptance test (FAT). Develop and submit a test plan to Engineer for review and approval. Ensure that the test plan demonstrates each and every functional requirement specified for the device or system under test. Engineer reserves the right to witness all tests:
- B. Field Test Requirements: Perform local field operational tests at CCTV field sites according to the following:
 - 1. Verify that physical construction has been completed as specified in the Plans.
 - 2. Verify the quality and tightness of ground and surge protector connections.
 - 3. Verify proper voltages for all power supplies and related power circuits.
 - 4. Verify all connections, including correct installation of communication and power cables.
 - 5. Verify that the video signal from the camera is present and of consistent quality at all connection points between the camera, the cabinet, and any video devices therein.
 - 6. Verify camera network configuration settings are correct and that encoded video from the camera can be viewed on the network via a local connection at the field site and from the TMC. Verify that field site and TMC video quality is consistent and does not exhibit source degradation such as distortion and artifacts.
 - 7. Exercise PTZ and focus in all directions and execute a minimum of three other unique programming commands to ensure that the communication link between the cabinet and the camera is functioning properly.

END OF SECTION 682

TYPICAL MAST ARM CCTV MOUNTING DETAILS



MAST ARM MOUNT



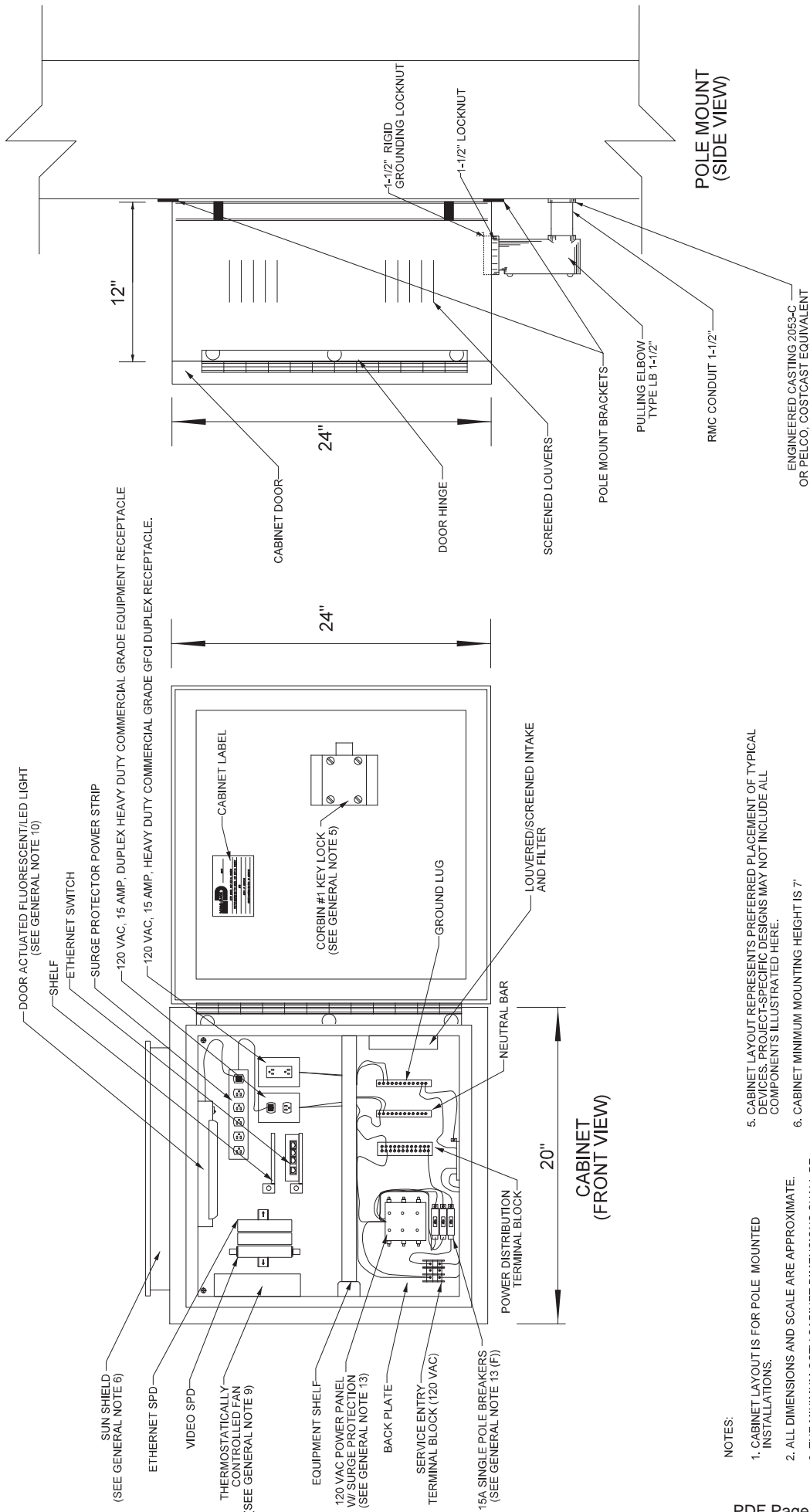
MAST ARM POLE MOUNT

GENERAL NOTES:

1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 682 (TRAFFIC MANAGEMENT CCTV CAMERAS).
2. SITE PLANS MUST IDENTIFY SPECIFIC PLACEMENT LOCATION ON MAST ARM. PROVIDE CERTIFICATION AND CALCULATIONS FROM ENGINEER OF RECORD THAT PROPOSED PLACEMENT WILL MEET APPLICABLE WIND LOADING REQUIREMENTS AND NOT EXCEED DESIGN LOADING LIMITS OR THE MAST ARM ASSEMBLY.
3. INCLUDE SITE-SPECIFIC DETAILS WITH PLANS THAT INCLUDE WIRING, CABLE ROUTING AND SUPPORTING SYSTEM EQUIPMENT.

REVISION 03/24/17	DESCRIPTION TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	 DTPW TRAFFIC SIGNALS AND SIGNS DIVISION TRAFFIC ENGINEER MIAMI, FLORIDA 33186 305.592.5580	DRAWN BY TRAVIS BREWER	NAME TRAVIS BREWER	DATE 03-23-16	SHEET 1 of 1
			CHECKED BY MICHAEL FERNANDEZ	APPROVED BY FRANK JAHN, P.E.	TYPICAL MAST ARM CCTV MOUNTING DETAILS (N.T.S.)	

ALTERNATIVE CCTV CABINET AND EQUIPMENT LAYOUT DETAILS



- NOTES:**
1. CABINET LAYOUT IS FOR POLE MOUNTED INSTALLATIONS.
 2. ALL DIMENSIONS AND SCALE ARE APPROXIMATE.
 3. THE MINIMUM CCTV CABINET DIMENSIONS SHALL BE 24"H X 20"W X 12"D.
 4. CABINET MUST HAVE A 1-1/2" KNOCKOUT HOLE AT THE BOTTOM FOR POWER CONDUIT.
 5. CABINET LAYOUT REPRESENTS PREFERRED PLACEMENT OF TYPICAL DEVICES. PROJECT-SPECIFIC DESIGNS MAY NOT INCLUDE ALL COMPONENTS ILLUSTRATED HERE.
 6. CABINET MINIMUM MOUNTING HEIGHT IS 7'.
 7. WIRING IS SHOWN FOR ILLUSTRATION ONLY. REFER TO MANUFACTURER'S WIRING DIAGRAM FOR DETAILS.

REVISION	DESCRIPTION	DATE	NAME
04/19/17	TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	10-26-16	TRAVIS BREWER
		03-22-17	MINIM FERNANDEZ
			APPROVED BY: FRANK WRA, P.E.
DTPW TRAFFIC SIGNALS AND SIGNS DIVISION			
MIAMI-DADE			
100 N. 35TH STREET			
MIAMI, FLORIDA 33166			
305.592.2580			
ALTERNATIVE CCTV CABINET AND EQUIPMENT LAYOUT DETAILS (N.I.S.)		SHEET NO. 1 of 2	

GENERAL NOTES:

ALTERNATIVE CCTV CABINET MUST BE:

1. MEET THE REQUIREMENTS OF MIAMI-DADE COUNTY TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS SECTION 682 (TRAFFIC MANAGEMENT CCTV CAMERAS).

2. UL LISTED, FDOT APL CERTIFIED, AND ON MIAMI-DADE COUNTY TSSOPL.

3. FDOT APL CERTIFIED COMPONENTS AND ENCLOSURE MEETING THE REQUIREMENTS OF FDOT SPECIFICATION SUBARTICLE 676-2.5 EXCEPT THE MINIMUM SIZE MAY BE 24" H X 20" W X 12" D WITH A SINGLE DOOR THAT IS HINGED ON RIGHT SIDE WHEN VIEW FROM FRONT.

4. STAINLESS STEEL CABINET HARDWARE, TYPE 304 AND TWO 19" EIA RACK ANGLES AND MINIMUM 10" DEEP RACK MOUNTED SHELF.

5. DOOR: CORBIN STYLE, #1, DEADBOLT LOCK, WITH TWO KEYS; CONTINUOUS, 14 GAUGE STAINLESS STEEL HINGE WHICH CANNOT BE REMOVED WITHOUT OPENING DOOR.

6. SUN SHIELD THAT SHIELDS THE ENTIRE HOUSING, EXCEPT THE DOOR, FROM DIRECT SUNLIGHT, CONSTRUCTED SO THAT IT ALLOWS THE FREE PASSAGE OF AIR BETWEEN THE CABINET AND THE SHIELD, BUT DOES NOT FORM A "SAIL" PLACING AN EXCESSIVE LOAD ON THE CABINET MOUNTING STRUCTURE IN HIGH WINDS, TOP SLOPED TO REAR TO PREVENT STANDING WATER.

7. ONE SPARE DIN-RAIL.

8. INSULATION PARTS AND WIRE INSULATION CAPABLE OF WITHSTANDING A MINIMUM OF 600 VOLTS.

9. FILTERED VENT OPENINGS WITH 4" 100 CFM BALL BEARING, 120 VAC FAN WITH FAN THERMOSTAT, 1A FUSE AND FUSE HOLDER, AND RIC NOISE SUPPRESSOR.

10. DOOR ACTUATED FLUORESCENT (OR EQUIVALENT LED) LIGHTING FIXTURE INCLUDES A COOL WHITE LAMP, COVERED AND OPERATED BY A NORMAL POWER FACTOR, UL LISTED BALLAST.

11. DOOR SWITCH FOR ALARM LOCATED IN THE BOTTOM POSITION OF THE DOOR SWITCH BRACKET.
 12. EQUIP THE CABINET WITH CIRCUIT BREAKERS; RADIO INTERFERENCE FILTERS; GROUND LOOP ISOLATORS; LIGHTING ARRESTERS AND SURGE PROTECTOR MEETING THE REQUIREMENTS OF FDOT SPECIFICATION SECTION 620.

13. POWER PANEL, FRONT RACK MOUNTED, EQUIPPED WITH AND WIRED FOR:

- A) 15A, 120VAC, 3W, SINGLE PHASE POWER.
- B) SERVICE ENTRANCE TERMINAL BLOCKS; FINGER-SAFE, SCREW TYPE.
- C) POWER DISTRIBUTION TERMINAL BLOCKS; FINGER-SAFE, SCREW TYPE.
- D) GROUNDING LUG.
- E) (1) MAIN POWER SURGE ARRESTOR, 120 / 240 VAC, 50 KA.
- F) (1) 15 AMP, SINGLE POLE, MAIN CIRCUIT BREAKER.
- G) (2) 15 AMP, SINGLE POLE, CIRCUIT BREAKERS; PROTECT THE FLUORESCENT LIGHT, GFCI-PROTECTED DUPLEX RECEPTACLE, AND FAN WITH ONE BREAKER. PROTECT THE CCTV EQUIPMENT WITH OTHER BREAKER.
- H) RECEPTACLES:
 - 1) 120 VAC, 15 AMP, DUPLEX HEAVY DUTY COMMERCIAL GRADE EQUIPMENT RECEPTACLE.
 - 2) 120 VAC, 15 AMP, HEAVY DUTY COMMERCIAL GRADE GFCI DUPLEX RECEPTACLE.

14. CABINET AND MOUNTING HARDWARE MUST MEET THE LOAD REQUIREMENTS OF SECTION 3 AASHTO L1S-6 AS MODIFIED BY FDOT STRUCTURES MANUAL VOLUME 3 USING A BASIC WIND SPEED (V) OF 150 MPH.

LATEST REVISION
04/19/17

DESCRIPTION:
TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS



DTPW TRAFFIC SIGNALS AND SIGNS DIVISION
700 NW 36th STREET
MIAMI, FL 33166
305.595.9500

DESIGNED BY	NAME	DATE
TRAVIS BREWER	TRAVIS BREWER	05-26-16
CHECKED BY	ANDREW FERNANDEZ	05-22-17

APPROVED BY: FRANK ABRA, P.E.

ALTERNATIVE CCTV CABINET AND EQUIPMENT
GENERAL NOTES

SHEET
2 of 2

APPENDIX "O" TO SPECIAL PROVISIONS
"INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS)
MIAMI-DADE COUNTY"

**INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS)
MIAMI-DADE COUNTY**

GENERAL:

1. IISNS shall be manufactured by Southern Manufacturing Co.; Quantum Lite; Transportation Control System, or a Miami-Dade County PWD-TS&S Pre-Approved equivalent.
2. Street Name sign housing shall be either constructed of a one-piece aluminum box or shall have the frame/housing fabricated out of extruded aluminum alloy inserted into aluminum corner brackets with one (1) side provided with a white polycarbonate blank for a street name legend and the backside and/or top/bottom shall be fabricated for rigid mounting of the unit with adjustable rigid mast arm mounting brackets (Pelco Astro-Brac or approved equivalent) for a rigid (face mount) to the traffic signalization mast arm.
3. The sign shall be fabricated with a “standard” length and height of 72-inches x 24-inches. The housing shall a Powder Coat finish, which shall be Flat Black in color.
4. Sign face shall have a Retroreflective Transparent Green Sheeting and shall be applied to the polycarbonate sign blank with completed sign legend. Green Transparent Sheeting shall be equivalent retroreflectivity to the County’s static Overhead Street Name signs currently installed.
5. IISNS must comply with minimum FDOT standards and shall be on the State’s current (Approved Product List) APL. In addition, the IISNS shall comply with all M-DPWD requirements.
6. Signs shall be shipped to the County with street name legends complete and installed in each sign housing per a list provided by the County/State provided to the Vendor and/or Contractor at time of purchase order.
7. Signs shall be fabricated to conform to FDOT Section 699.
8. Housings shall not have any unused holes or openings provided in the housing for any other mounting design(s); hardware (photocell); or wiring, not used or approved for use in Miami-Dade County rigid mast arm street name sign installations.
9. Manufacturer Detail Drawings and specifications submitted to the County for approval shall be complete with weights and wattages for both Fluorescent and LED type IISNS. All manufacturer drawings shall be drawn to scale.

GENERAL (Continued)

10. Submittal Data must be approved, by the County, prior to delivery to the County on Purchase Orders (P.O.); or installation by a Contractor; on all County, State, or Private Developer projects in Miami-Dade County, Florida. Failure to do so shall be cause for possible REJECTION by the County. Any additional costs for the IISNS associated with failure to comply with this standard, by the Contractor; other governmental agency; Manufacturer; Supplier/Vendor, shall in no way be cause for additional compensation be paid by the County.

11. All hardware used in the construction of the sign shall be stainless steel type 304 or 305 only.

12. Housing Mounting Designs:

- a) Top/Bottom Standard Mounting (TBSM) bracket design (Southern Manufacturing Co. and Transportation Control System) shall only have holes located where the tri-stud mount is installed. No other holes shall be located outside of the mounting bracket. 4-conductor cable shall be routed thru the mounting bracket into the bottom of the housing per the attached Detail Drawings.

Mounting brackets must conform to MD-PWD standards/specification and manufacturer's recommendations. The adjustable rigid mast arm mounting bracket assemblies shall have holes provided to easily rout cable thru the center of the mast arm adjustable mounting bracket attachment and sign bracket attachment for easy access into the aluminum tubes. The aluminum tubes used in the (TBSM) adjustable bracket shall be provided with a slot, [minimum length of nine-inches (9")] centered for easy access and routing of the 4-conductor cable through the hollow bottom sign bracket assembly into the IISNS.

- b) Top/Bottom Narrow mount (TBNM) Rail clamp bracket design (Quantum Lite) shall have no holes in the top and bottom of the housing. The attachment of the IISNS to the bracket shall be provided by top/bottom rail clamps to the extruded aluminum housing frame. 4-conductor cable shall be routed thru the mounting bracket into the rear of the housing per the attached Detail Drawings.

Mounting brackets must conform to MD-PWD standards/specification and manufacturer's recommendations. Aluminum tubes used in the (TBNM) adjustable bracket shall not require any slot, however, the adjustable rigid mast arm mounting bracket assemblies shall have holes provided to easily rout cable thru the center of the mast arm adjustable mounting bracket attachment and sign bracket attachment for easy access for routing of the 4-

GENERAL (Continued)

conductor cable between the bracket and the IISNS externally rear-mounted electrical junction box.

13. Rubber grommets shall be used throughout the sign where wires and/or cables are routed thru the housing and/or panel per National Electrical Code (NEC).

14. Sign Legends and Layout Requirements:

- a) Sign legends shall use Highway Gothic only; the series shall be “D” a.k. rev. c; “C” a.k. rev. c; or “B” a.k. rev. c. as noted below.
- b) The sign fabricator shall layout the signs using the larger series (wider/thicker) letter(s) and numerals. In the event the legend layout [do to PWD required legend size and/or long legend(s)] cannot fit the sign parameters, then the fabricator shall either modify the legend spacing and/or reduce series from series “D” to “C” or “B” in extreme cases.
- c) Legends shown in guide (in some cases) may show “worst case” example (i.e. upper/lower case letters with one or more of the following letters: g, j, p, q, or y) in that event a smaller legend size was shown to be used. The fabricator following the guidelines should try to make all legend sizes as large as possible.
- d) Legend layout drawings for each sign face shall be submitted and approved by the PWD prior to fabrication. Failure to do so by the manufacturer, if unacceptable, shall be re-done at no additional cost to the County.
- e) The Typical Legend Layout Guide is provided as a guide to the sign fabricator. It should be noted that each line (one or two), the legend layout for each (letters and numerals) shall be “centered” vertically. NOTE: When used, the Cardinal Directions **NORTH**; **SOUTH**; **EAST**; and **WEST** shall have all letters, as shown, with all letters on the same line as the larger first letter.

ADJUSTABLE RIGID MAST ARM MOUNTING BRACKETS:

1. All brackets shall have the wire entrance arm (hollow arm) supplied with stainless steel tri-studs on the Signal Head or IISNS attachment side; the aluminum tube side (fixed side) shall be provided with an internally cast-in-place 1-1/2-inch NPT into the aluminum casting and with two (2) stainless steel set-screws through the casting to rigidly secure the tube to the hollow arm. The aluminum casting shall have no bushings/nipples of any type cast into the aluminum other than stainless steel components. The aluminum tube shall be supplied threaded at one end only.
2. The bracket arm (solid arm slide-on) used on the other opposite end of the aluminum tube shall be supplied with stainless steel tri-studs on the signal head or IISNS attachment side; the aluminum tube side with the slide-on arm shall be equipped with two (2) stainless steel set screws to secure in place the arm to the aluminum tube.
3. All aluminum tubes used with the attachment method described in 1 and 2 above shall be supplied with a PWD approved wire entrance slot minimum 1/2-inch to maximum 3/4-inch wide centered in the tube length; additionally the aluminum extrusions shall have structural gussets (ribs) for continuous support running the entire length of the tube to prevent deformation of the tube. The interior of aluminum tube shall be required to have ample space for the signal cable to run through the tube between the bracket assembly and the signal head or internally illuminated sign.
4. When more than one Adjustable Rigid Mast Arm Bracket is used for mounting an Internally Illuminated Sign (i.e. IISNS, etc.) the sign assembly can be provided with only one Adjustable Rigid Mast Arm Bracket supplied with the tube assembly with a slot for the signal cable to the "wiring side" of the sign installation. The "second" bracket assembly for the sign can be provided with a threaded non-slotted tube. Non-slotted tubes shall not be required to have structural ribs extruded into the tubing.
5. Brackets shall be of a design and construction similar to Miami-Dade County's vehicular traffic signal head horizontal adjustable rigid mast arm mounting brackets (Pelco Astro-Brac or approved equivalent) and shall be constructed of aluminum with stainless steel aircraft cable and hardware only.
 - a) Top/bottom Standard Mount (TBSM) Tri-stud brackets (Southern Manufacturing Co. design), used with "Standard" IISNS top/bottom mount design signs. Refer to attached referenced Detail Drawings.
 - b) Top/Bottom Narrow mount (TBNM) Rail clamp brackets (Quantum Lite design), used with "Slim-line" top/bottom housing "rail" mount design signs. Refer to attached referenced Detail Drawings.

ADJUSTABLE RIGID MAST ARM MOUNTING BRACKETS (Continued)

6. Attachment of brackets to the mast arm shall be made with stainless steel aircraft grade cable. No other attachment cable/material shall be accepted.
7. Mounting bracket aluminum components/assemblies and shall have natural aluminum finish.
8. Brackets shall be designed to provide easy access and routing for internal wiring of the IISNS between the mast arm and the sign(s). No external method of wiring shall be permitted other than specified herein. Refer to M-DPWD Detail Drawing requirements for different IISNS sign types.

PHOTOELECTRIC CELL AND MOUNTING:

1. The Photoelectric Cell shall be Intermatic Inc. Model # K4221 (120V) or PWD-TS&S approved equivalent. Only the "Lead" IISNS shall have the photocell attached to the housing, which shall be rated to control a minimum of four (4) IISNS per intersection.
2. Only one (1) photocell shall be used per intersection to control the IISNS.

SUBMITTAL DATA DOCUMENTATION:

1. Sign (IISNS) shall include the following:
 - a) Sign Manufacturer Model Number(s) and copy of FDOT APL certificate(s).
Manufacturer Submittal Drawings and specifications, as specified above, for:

1-Fluorescent Model, when specified (each).

2-LED Model, when specified (each).
 - b) Adjustable Rigid Mast Arm Mounting Brackets – Manufacturer(s) Name and Part Number(s) and copy of FDOT APL certificate(s).
 - c) Photoelectric Cell shall have Manufacturer Name and Part Number complete with specifications and drawings.
2. IISNS mounting bracket and attachment method shall be as per Manufacturer recommendations and M-DPWD standards. The Contractor shall submit, to Miami-Dade County Public Works Department, Traffic Signs & Signal Division, Manufacturer mounting bracket data sheet(s), detail drawings and installation procedure, for approval, prior to any material procurement. Failure to do so by the Contractor, in the event of rejection by the County, shall in no way be cause for additional compensation.

WARRANTY:

1. **Fluorescent IISNS:** The Manufacturer shall guarantee the internally illuminated fluorescent sign for a period of three (3) years from date of receipt by Miami-Dade County, and shall replace, free of charge, any part or parts claimed within the period to be defective in workmanship or materials.
2. **LED IISNS:** The Manufacturer shall guarantee the internally illuminated LED sign for a period of three (3) years from date of receipt by Miami-Dade County, and shall replace, free of charge, any part or parts claimed within the period to be defective in workmanship or materials, however, the LED components (i.e. LED's and electronic circuitry assembly) shall be warranted for a total period of five (5) years from date of receipt by the County, and shall have replaced free of charge by the Manufacturer, any defect in workmanship or materials on these components.

IISNS TYPICAL LEGEND LAYOUT GUIDE (72" x 24")

1) Single Line with Number Legend:

A) **SW 87 AV**

B) **W 41 ST**

C) **5 Street**

UPPER Case
LETTERS 10"
Number(s) 12"

UPPER Case
LETTERS 10"
Number(s) 12"

UPPER/lower Case+
LETTERS 10"
Number(s) 12"

+ Special: When no compass directions are used (i.e. Miami Beach)

2) Single Line with Name Legend:

A) **W Flagler St**

B) **Old Cutler Rd**

C) **Byron Av**

UPPER/lower Case* Letters 12"

* Reduce spacing/letter height to fit sign (Minimum 10")

3) Dual Line with Number & Name Legend:

A) **SW 88 ST**
N Kendall Dr

B) **NW 186 ST**
Miami Gardens Dr

UPPER Case LETTERS 8"; Number(s) 10"

UPPER/lower case* Letters 6"

* Reduce spacing/letter height to fit sign (Minimum 5")

4) Single Line with Number / Number (Municipality & County Designation):

A) Hialeah **E 25 ST / NW 79 ST**

** (Left side – 1 or 2 Digits) UPPER Case LETTERS 8”; Number(s) 10” /
** (Right side – 2 Digits) UPPER Case LETTERS 8”; Number(s) 10”

B) Hialeah **W 68 ST / NW 122 ST**

** (Left side - 2 Digits) UPPER Case LETTERS 8”; Number(s) 10” /
** (Right side 3 - Digits) UPPER Case LETTERS 6”; Number(s) 8”

**5) Dual Line with Number/Number & Name
(Municipality & County Designation):**

Hialeah

A)** **W 32 AV / NW 92 AV**
Ed Wallace Blvd

** (Left side – 1 or 2 Digits) UPPER Case LETTERS 8”; Number(s) 10” /
** (Right side – 2 Digits) UPPER Case LETTERS 8”; Number(s) 10”
UPPER/lower case* Letters 6”
* Reduce spacing/letter height to fit sign (Minimum 4”)

B)** **W 49 ST / NW 104 ST**
Palm Springs Mile

** (Left side - 2 Digits) UPPER Case LETTERS 8”; Number(s) 10” /
** (Right side 3 - Digits) UPPER Case LETTERS 6”; Number(s) 8”
UPPER/lower case* Letters 6”
* Reduce spacing/letter height to fit sign (Minimum 4”)

Homestead

A)**

**SE 8 ST/SW 328 ST
Campbell Dr**

** (Left side - 1 Digit) UPPER Case LETTERS 8"; Number(s) 10" /

** (Right side 3 - Digits) UPPER Case LETTERS 8"; Number(s) 10"
UPPER/lower case* Letters 6"

* Reduce spacing/letter height to fit sign (Minimum 4")

B)**

**SE 12 AV/SW 167 AV
Tennessee Rd**

** (Left side - 2 Digits) UPPER Case LETTERS 8"; Number(s) 10" /

** (Right side 3 - Digits) UPPER Case LETTERS 6"; Number(s) 8"
UPPER/lower case* Letters 6"

* Reduce spacing/letter height to fit sign (Minimum 4")

6) Dual Line with Number/Name w/ 2nd Name Legend:

**SW 87 AV / Galloway Rd
St Marcellin Champagnat Way**

**SW 24 ST / Coral Way
Brothers to the Rescue Martyrs Blvd**

UPPER Case LETTERS 8";
Number(s) 10"/ UPPER/lower
case* Letters 6"

* Reduce spacing/letter height to fit sign

UPPER/lower case** 5"

** Reduce spacing/letter height
(Minimum 4")

UPPER Case LETTERS 8";
Number(s) 10"/ UPPER/lower
case* Letters 6

* Reduce spacing/letter height to fit sign

UPPER/lower case** 4"

** Reduce spacing/letter height to fit sign
(Minimum 4")

7) Dual Line with US 1 & Name:

US 1
Biscayne Blvd

US 1
S Dixie Hwy

UPPER Case 'US' LETTERS 10"; Number(s) 10"
UPPER/lower case Letters 6"

8) Dual Line with US 1 & Name/Name:

US 1 / S Dixie Hwy
Trpr Buck Buchanan Mem Hwy

US 1 / S Dixie Hwy
Pinecrest Pkwy

UPPER Case 'US' LETTERS 10"; Number(s) 10" / UPPER/lower case* Letters 10"
* Reduce spacing/letter height to fit sign (Minimum 8")
UPPER/lower case** Letters 6"; 5" or 4"
** Reduce spacing/letter height to fit sign (Minimum 4")
Abbreviations approved on a sign-by-sign basis

9) Single Line with Expressway Ramps:

A)

B)

C)

D)

SR 826 NORTH

SR 874 SOUTH

SR 836 EAST

SR 878 WEST

UPPER Case LETTERS 'SR' 8" and all letters following the first letter;
Number(s) 10" and 'First' cardinal direction letter (N, S, E & W)

10) Single Line with Turnpike Ramps:

- | | | | |
|----|-----------------------|----|-----------------------|
| A) | Turnpike NORTH | B) | Turnpike SOUTH |
| C) | Turnpike EAST | D) | Turnpike WEST |

UPPER/lower Case Letters 'Turnpike' 10" and 'first' cardinal direction letter (N, S, E & W); all letters following the first cardinal direction letter 8"

11) Single Line with Interstate Ramps:

- | | |
|-------------------|-------------------|
| I-95 NORTH | I-75 SOUTH |
| I-395 EAST | I-195 WEST |

UPPER Case Letter 'I' and Number(s) 10" and 'first' cardinal direction letter (N, S, E & W); all letters following the first cardinal direction letter 8"

12) Dual Line with Number/Name w/ 2nd Name & 3rd Name Legend:

- | | |
|---|---|
| SW 8 ST/ Tamiami Trail
Calle Ocho / Olga Guillot Way | SW 8 ST/ Tamiami Trail
Calle Ocho / Celia Cruz Way |
|---|---|

UPPER Case LETTERS 8"; Number(s) 10"/ UPPER/lower case* Letters 6"

* Reduce spacing/letter height to fit sign

UPPER/lower case** 6"; 5" or 4"

** Reduce spacing/letter height to fit sign (Minimum 4")

**13) Single Line UPPER CASE Only Special Cases:
(Transit, Places and Fire Station Driveway)**

A) BUSWAY

UPPER Case LETTERS 12"

B) MAST ACADEMY

UPPER Case LETTERS* 12"
* Reduce spacing/letter height to fit sign

C) TENNIS CENTER

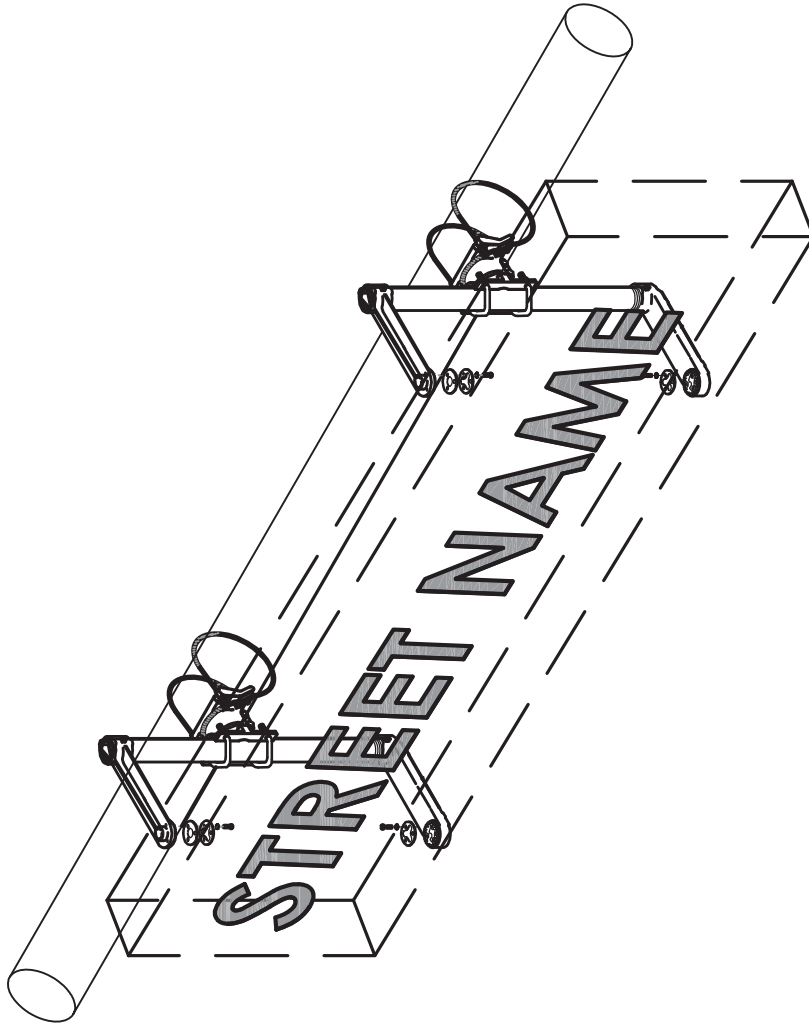
UPPER Case LETTERS* 10"
* Reduce spacing/letter height to fit sign

D) ** EMERGENCY SIGNAL

UPPER Case LETTERS 10"
** BLACK LEGEND on WHITE BACKGROUND

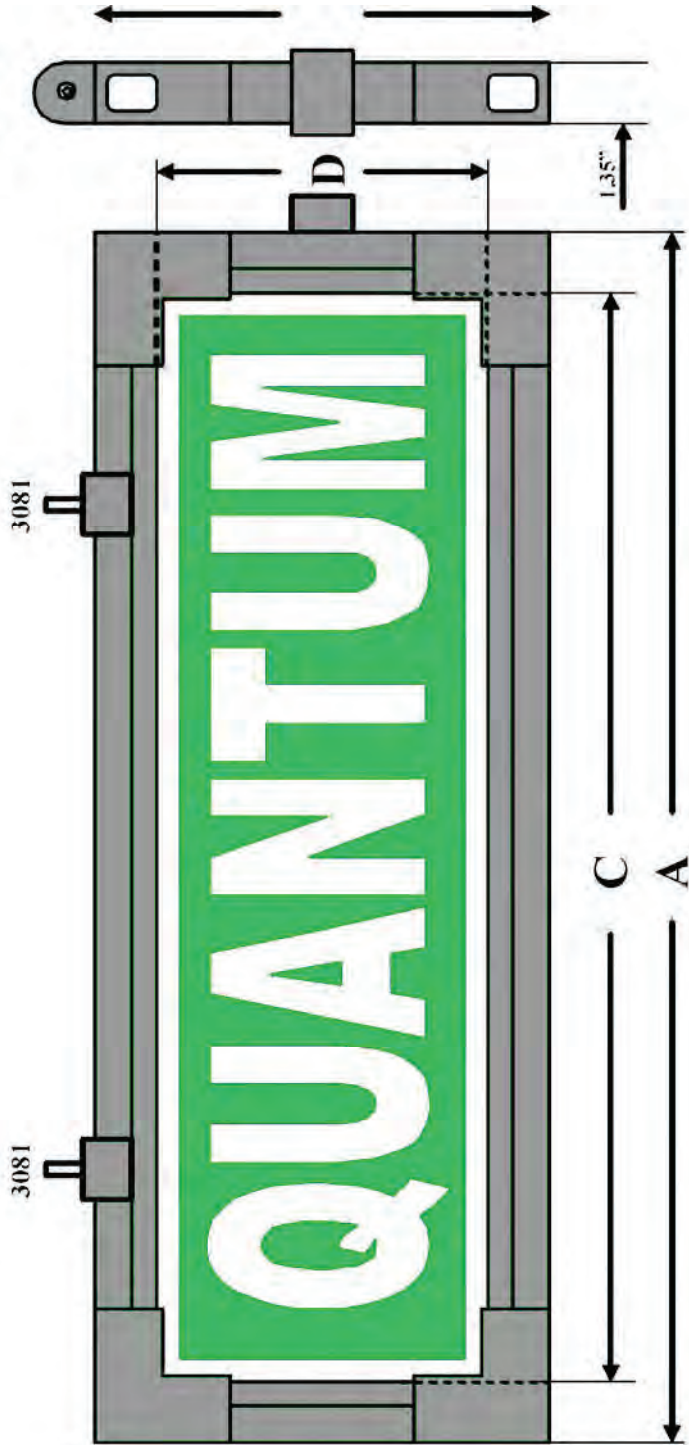
REVISED 11-01-07
INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS)
MIAMI-DADE COUNTY

INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS)
MIAMI-DADE COUNTY-Revised 08-01-08



Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCES) and National Electrical Code (NEC).

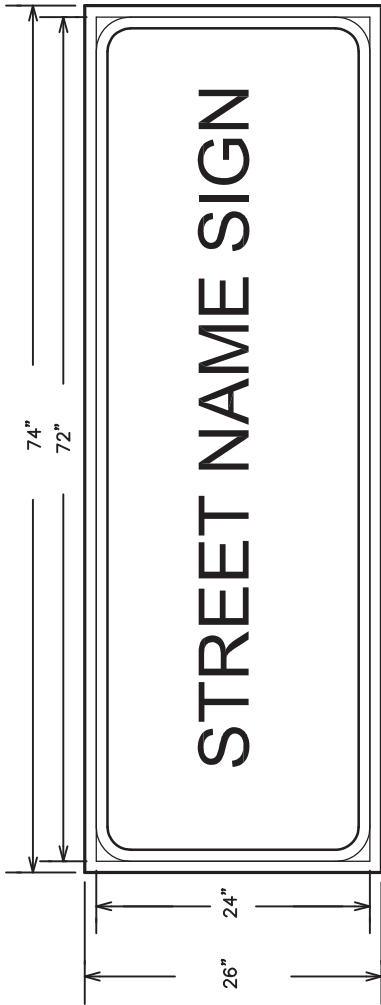
TOP/BOTTOM STANDARD MOUNTING (TBSM)
IISNS DETAIL N.T.S.



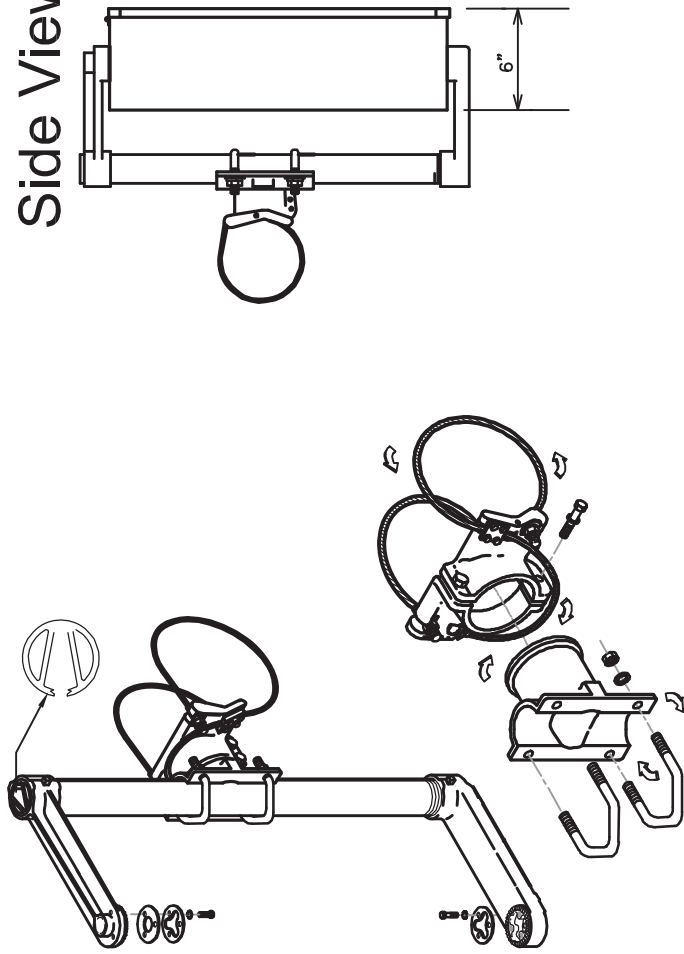
STANDARD STREET NAME SIGN			
A	B	C	D
Total Length	Total Width	Viewable	Viewable Width
0.5N-2.4S/0.SN-2.4D	1.9-2.5"	2.3"	1.5"
0.5N-3.6S/0.SN-3.6D	1.9-2.5"	3.5"	1.5"
0.5N-4.8S/0.SN-4.8D	1.9-2.5"	4.7"	1.5"
0.5N-6.0S/0.SN-6.0D	1.9-2.5"	5.9"	1.5"
0.5N-7.2S/0.SN-7.2D	1.9-2.5"	7.1"	1.5"
0.5N-8.4S/0.SN-8.4D	1.9-2.5"	8.3"	1.5"
0.5N-9.6S/0.SN-9.6D	1.9-2.5"	9.5"	1.5"

Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCESS) and National Electrical Code (NEC).

TOP/BOTTOM STANDARD MOUNTING (TBSM)
IISNS DETAIL N.T.S.



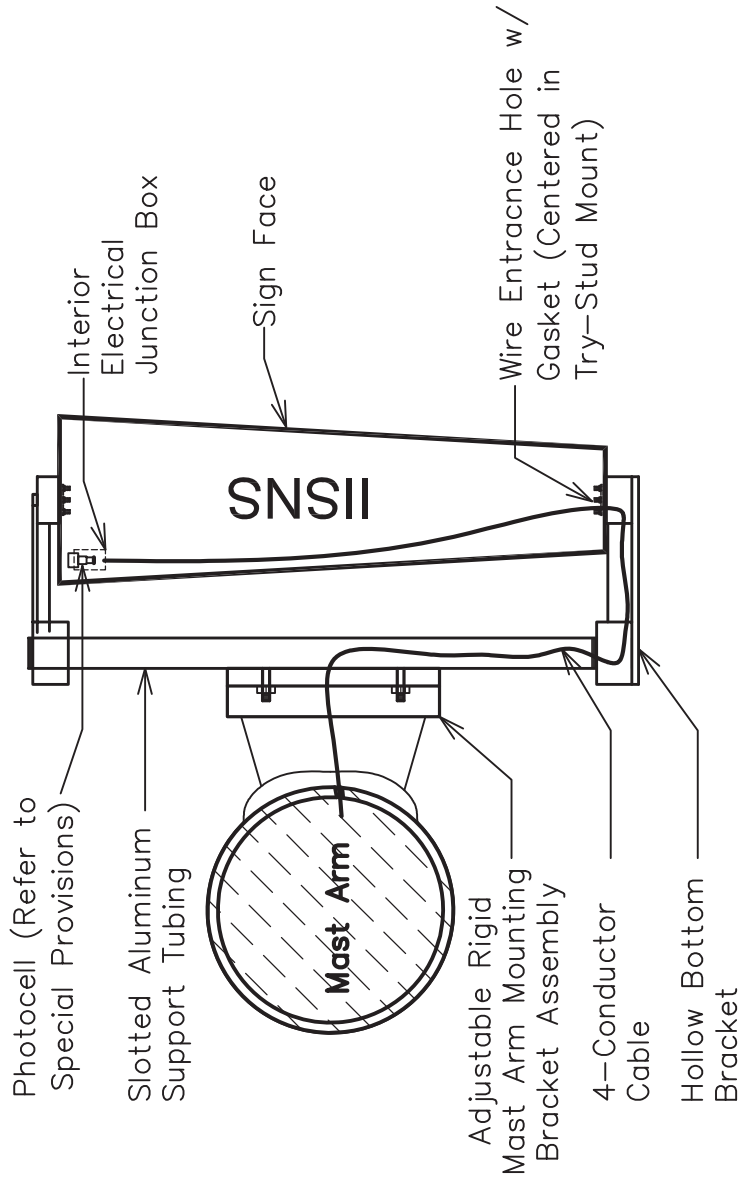
Side View



Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCESS) and National Electrical Code (NEC).

TOP/BOTTOM STANDARD MOUNTING (TBSM)
IISNS DETAIL N.T.S.

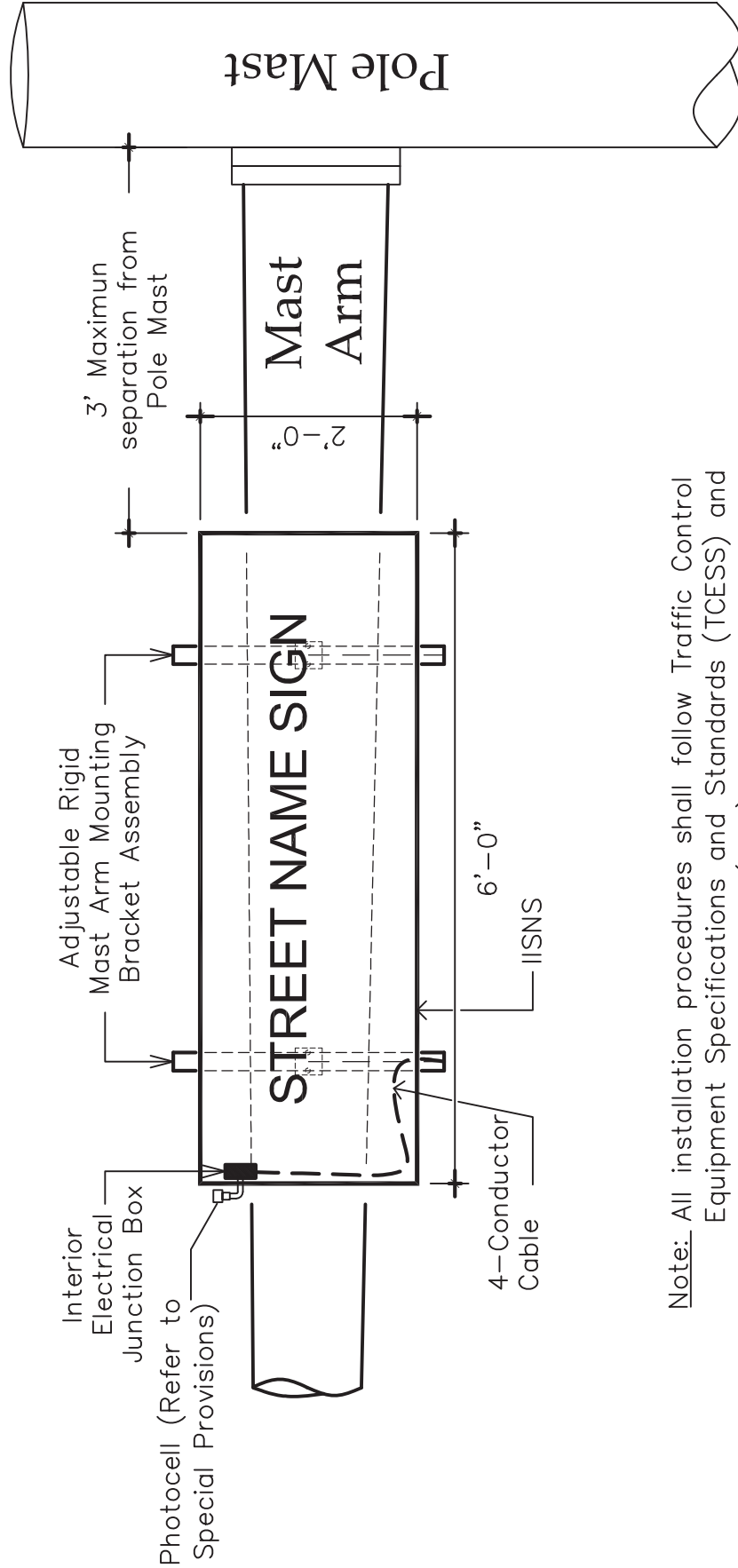
SIDE VIEW



Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCESS) and National Electrical Code (NEC).

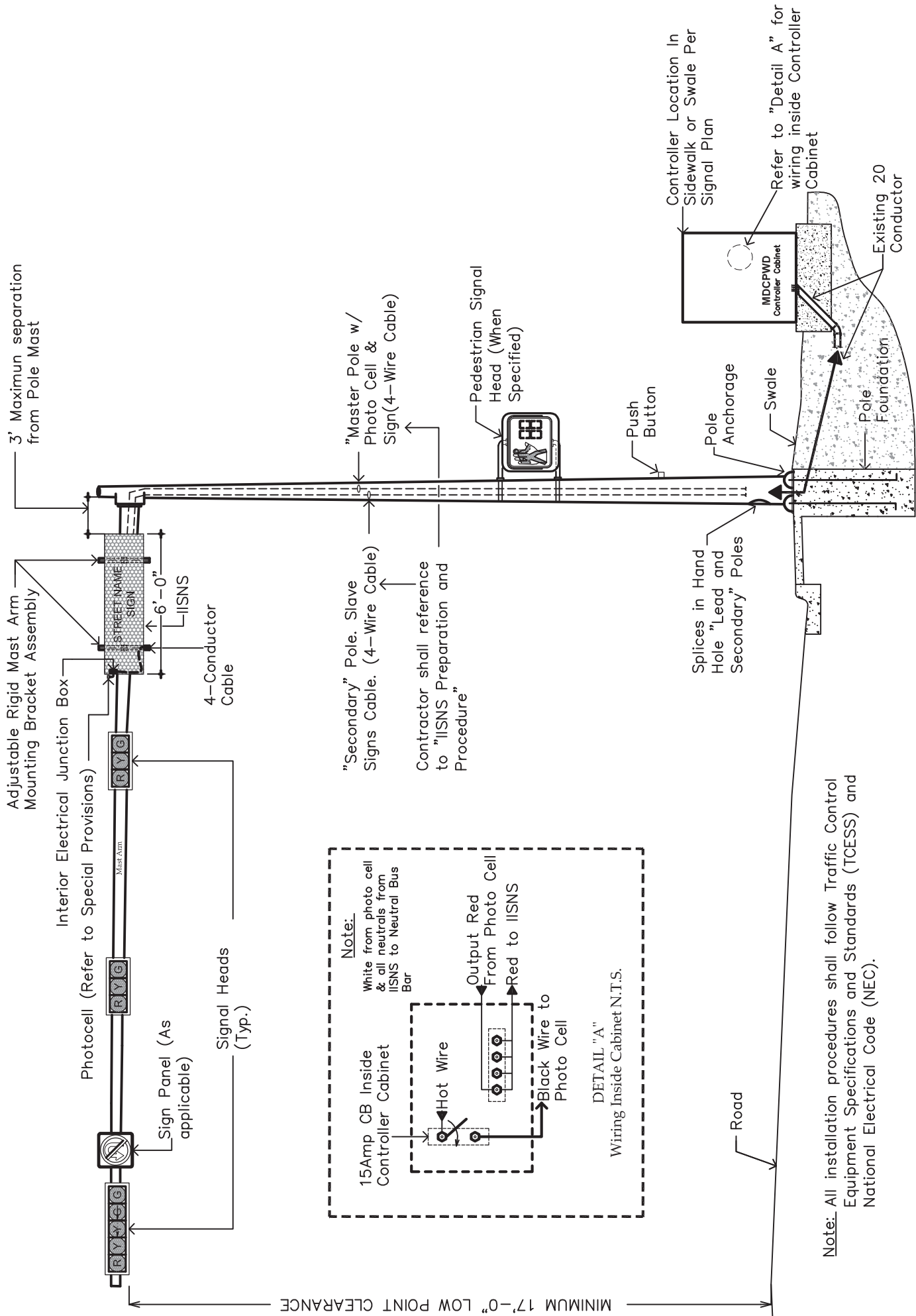
TOP/BOTTOM STANDARD MOUNTING (TBSM) IISNS DETAIL N.T.S.

FRONT VIEW



Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCESS) and National Electrical Code (NEC).

TOP/BOTTOM STANDARD MOUNTING (TBSM) 11SNS DETAIL N.T.S.



Note: All installation procedures shall follow Traffic Control Equipment Specifications and Standards (TCESS) and National Electrical Code (NEC).

TYPICAL IISNS WIRING DIAGRAM N.T.S.

APPENDIX "P" TO SPECIAL PROVISIONS
"LED PEDESTRIAN COUNTDOWN MODULE (16"X18")" FUNCTIONAL
SPECIFICATIONS

**MIAMI-DADE COUNTY PUBLIC WORKS DEPARTMENT
FUNCTIONAL SPECIFICATION LED PEDESTRIAN
COUNTDOWN MODULE (16" X 18")**

1.0 General

- 1.1 The LED pedestrian countdown module shall be as a retrofit replacement for existing modular neon module shall not require special tools for installation.
- 1.2 The LED countdown module shall fit into existing 16" x 18" traffic signal housing built to ITE VTCSH standards without modification to the housing.

2.0 Environmental

- 2.1 The LED countdown module shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to + 74°C (+165°F).
- 2.2 The LED countdown module shall be completely sealed against dust and moisture intrusion per the requirement of NEMA Standard 250 – 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

3.0 Construction

- 3.1 The LED countdown module shall be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housings.
- 3.2 The assembly of the LED countdown module shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.
- 3.3 The AC power wires for the Hand/Person portion of the signal and the Countdown Timer portion of the signal shall be secured, color coded (blue, orange, white), 39 inch long, 600V, 18 AWG anti-capillary wires or approved equivalent, and rated for service at + 105°C. Three wires (blue, orange, white) shall be provided for electrical connection to the Hand/Person portion of the module, and separate set of three wires (blue, red, white) shall be provide for electrical connection to the Countdown Timer portion of the module.
- 3.4 The LED signal module lens shall have a slightly textured surface to reduce glare.

4.0 Chromaticity

- 4.1 The measured chromaticity coordinates for the "white" walking person and the "Portland Orange" Hand and digits shall conform to the chromaticity requirements of section 8.04 and Figure 1 of the VTCSH standard.
- 4.2 The chromaticity measurements shall remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

5.0 Display

- 5.1 The LED countdown signal module shall consist of a double overlay message combining the symbols of a Hand and Walking Person and two "7 segment" digits forming the time display.
- 5.2 The Pedestrian icon LEDs shall be arranged in a manner to form solid icon symbols. The shape of the symbols shall conform to the standard symbols for pedestrian signals.
- 5.3 The LED's shall be distributed evenly in each Pedestrian icon. The distance between each LED shall be evenly spaced.

- 5.4 The Hand/Person symbols shall be not less than 11" in height and 6.5" in width.
- 5.5 The countdown digits shall be 9" high, and shall be MUTCD compliant for crosswalks over 100 feet.
- 5.6 The countdown digits shall consist of two rows of LEDs in a staggered configuration, producing rounded numeral corners. Each of the two "7-segment" digit.
- 5.7 The "Portland Orange" LED's shall be of the latest AlInGaP technology and the "white" LED's of the latest InGan technology.
- 5.8 The individual LED light sources shall be interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than 3 LED's or 5% of the signal light output.
- 5.9 The luminous output of the Hand/Person symbols and the Countdown numerals shall not vary more than 10% over the voltages range specified in Sec. 6.2, and shall not be perceptible to the human eye.

6.0 Drive Circuitry

- 6.1 The LED's shall be driven at a DC current not exceeding the maximum rating recommended by the LED manufacturer.
- 6.2 The LED drive current on both Hand and Person messages shall be regulated to compensate for line voltage fluctuations over the range of 80VAC to 135 VAC.
- 6.3 The turn-on/turn-off time for the Hand/Person shall be 75ms or less.
- 6.4 The Total Harmonic Distortion induced into an AC power line LED signal module, when operated at nominal operating voltage and at an ambient temperature of 25°C (77°F), shall not exceed 20 percent.
- 6.5 The signal shall provide a power factor of 0.90 or greater when operated at nominal operating and at 25°C (77°F).
- 6.6 The drive circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in Section 2.1.6 and Section 2.1.8 of NEMA Standard TS-2, 1992.
- 6.7 The on-board circuitry shall meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.
- 6.8 The typical power consumption for the Hand shall be 6W, the typical power consumption for the Person shall be 7W and the typical power consumption for countdown shall be 5W.
- 6.9 The circuitry shall ensure compatibility and proper triggering of load switches and conflict monitors in signal controllers currently in use by the procuring traffic authority.
- 6.10 The pedestrian countdown signal shall not be illuminated by input signals under 35 VAC.
- 6.11 The Countdown Timer portion of the signal shall have a high "of state" input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signals. The input impedance of the countdown circuitry shall maintain a voltage reading above 25 VAC to the conflict monitor for a minimum of 4 units connected on the same channel.
- 6.12 The Countdown Timer drive circuitry shall not be damaged when subjected to defective load switched providing a half wave signal output.

7.0 Countdown Functionality

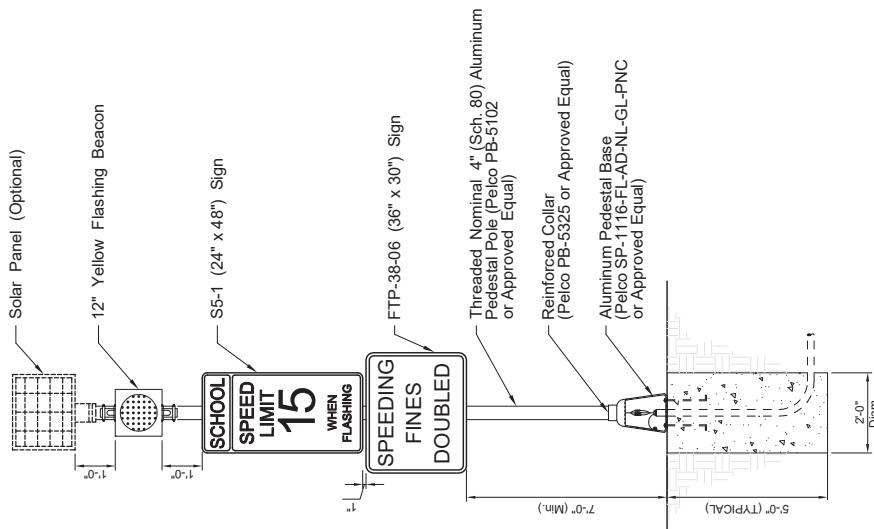
- 7.1 The countdown module shall be compatible with controllers that are compliant to NEMA TS-1, NEMA TS-2, Type 170 207 controller specifications.

- 7.2 The countdown timer module shall have a micro-processor capable of recording its own time when connected to a traffic controller.
- 7.3 When connected, the module shall blank out the display during the initial cycle while it record the countdown time using the Walk & D/Walk signal indications.
- 7.4 The countdown timer shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.
- 7.5 The countdown module shall register the time for the walk and clearance intervals individually and shall begin counting down a the beginning of the pedestrian change interval.
- 7.6 When the flashing Hand becomes solid, the module shall display 0 and then blank-out. The display shall remain dark until the beginning of the next countdown.
- 7.7 In the event of a pre-emption sequence, the countdown module shall skip the pre-empted clearance time and reach 0 when the flashing Hand becomes solid.
- 7.8 In the cycle following a pre-emption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indication and always reach 0 at the same time as the flashing Hand becomes solid.
- 7.9 The countdown timer shall be capable of timing 2 consecutive complete pedestrian cycles outputted by the traffic controller (no steady Hand signal between cycles)
- 7.10 The countdown module shall an internal conflict monitor preventing any possible conflicts between the Hand/Person signal indications and the Countdown Timer display. It shall be impossible for the display to countdown during a solid Hand indication.
- 7.11 The countdown module shall only be capable of counting down the clearance timer clearance interval.

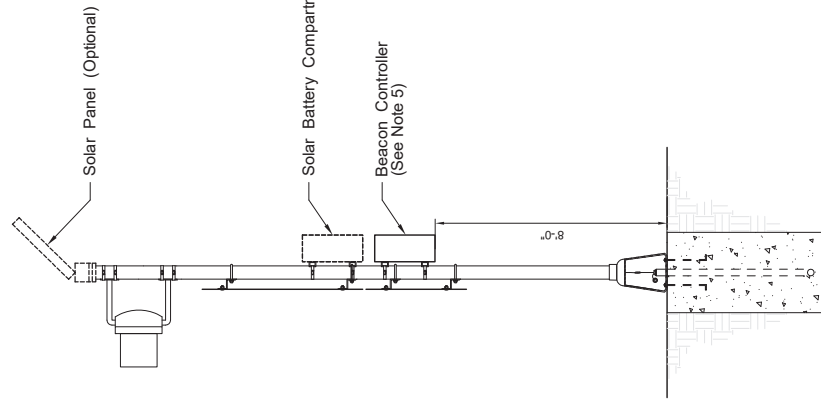
8.0 Warranty

- 8.1 Manufacturers shall provide a written warranty issued by the factory located in the NAFTA country of module origin with the following minimum provision:
- 8.2 Modules shall be repaired or purchase value refunded if the module fails to function as intended due to workmanship or material defects within the first sixty (60) months from the date of delivery.
- 8.3 Modules which exhibit luminous intensities less than the minimum specified values within the first sixty (60) months of the date of delivery shall be replaced, repaired or purchase value refunded.
- 8.4 Upon request, the LED lamp module manufacture shall provide written documentation of its ability to satisfy a worst-case, catastrophic warranty claim. A current corporate annual report duly-certified by an independent auditing firm, containing financial statement illustrating sufficient cash-on-hand and net worth to satisfy a worst-case, catastrophic warranty claim is an example of suitable documentation. The document shall clearly disclose:
 - a)The country in which the factory of module origin is located
 - b)The name of the company or organization that owns the factory of module origin including any and all of its parent companies and/or organizations, and their respective county of corporate citizenship.
 - c)For firms with business and/or corporate citizenship in the United States of less than seven years, the process by which the end-users/owners of the modules will be able to obtain worst-case, catastrophic warranty service in the event of bankruptcy or cassation-of-operations by the firm supplying within North America, or in the event of bankruptcy or cessation-of-operations by the owner of the factory of origin, shall be clearly disclosed.

APPENDIX "Q" TO SPECIAL PROVISIONS
SCHOOL ZONE SPEED LIMIT BEACON ASSEMBLY DETAIL DRAWINGS



FRONT VIEW



SIDE VIEW

NOTES:

1. MEET THE REQUIREMENTS OF SECTION 700 (HIGHWAY SIGNING) OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. MEET THE SIGN MOUNTING HARDWARE REQUIREMENTS OF FDOT STANDARD PLANS INDEX 700-010 (SINGLE COLUMN GROUND SIGNS)
3. ENGINEER OF RECORD MUST ENSURE THAT THE PROPOSED SIGN ASSEMBLIES AND FOUNDATION ARE DESIGNED TO WITHSTAND ALL APPLICABLE WIND LOADS.
4. USE ASSEMBLIES AND COMPONENTS THAT ARE LISTED ON THE FOOT ARL AND THE MIAMI DADE COUNTY TSSORL DETAILS. DETAILS DEPICT OPTIONAL EQUIPMENT NEEDED FOR SOLAR POWERED INSTALLATIONS. THE BEACON CONTROLLER AND BATTERIES MAY BE IN THE SAME CABINET IF CONSISTENT WITH ITS PRODUCT APPROVAL.
5. A PEDESTAL POLE AND TRANSFORMER BASE IS REQUIRED FOR BOTH AC AND SOLAR POWERED ASSEMBLIES. SEE DETAILS ON SHEET 3 FOR GROUNDING AND WIRING REQUIREMENTS.
6. PEDESTAL BASE REQUIRES ANCHOR BOLT CAGE DEPICTED IN THE DETAILS ON SHEET 3.

TEST REVISION 12/8/17

DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS

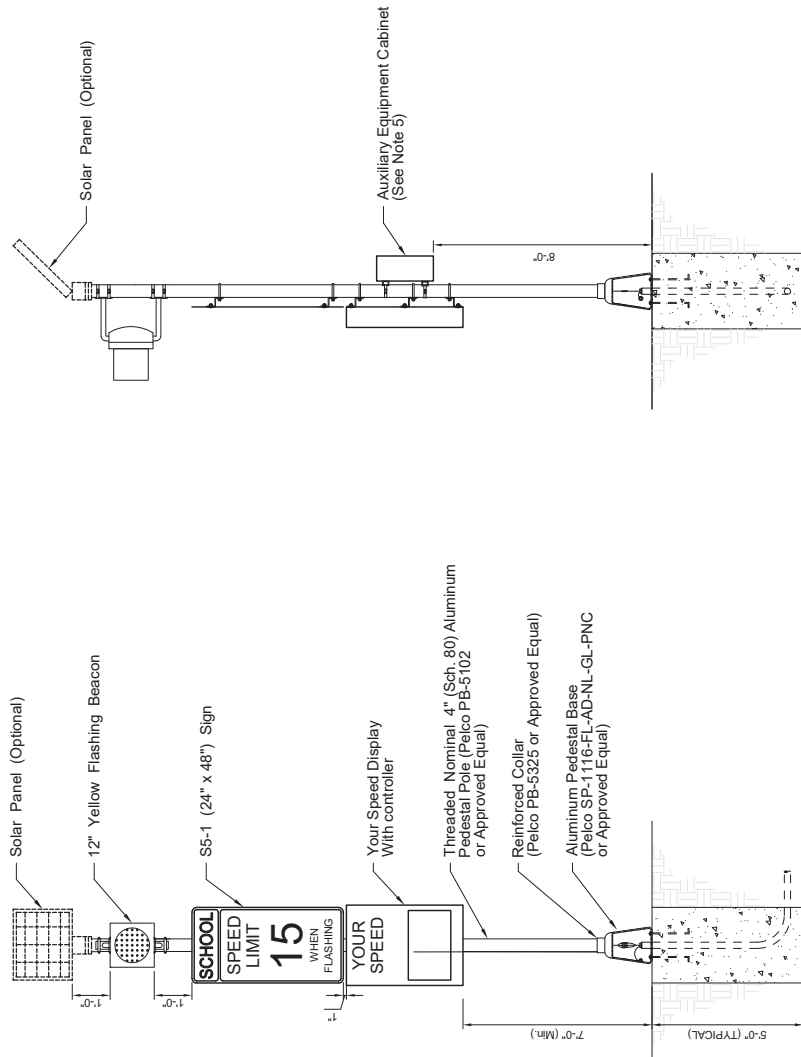


DTPW TRAFFIC SIGNALS AND SIGNS DIVISION
7100 NW 36th STREET
MIAMI, FLORIDA 33166
305-592-3880

DATE	12-8-17
NAME	LUIS DIAZ
DESIGNED BY	MIAMI-DADE COUNTY
CHECKED BY	MIAMI-DADE COUNTY
APPROVED BY:	FRANK ARA, P.E.

SCHOOL ZONE SPEED LIMIT BEACON ASSEMBLY DETAILS (N.T.S.)

SHEET NO. 1 OF 3



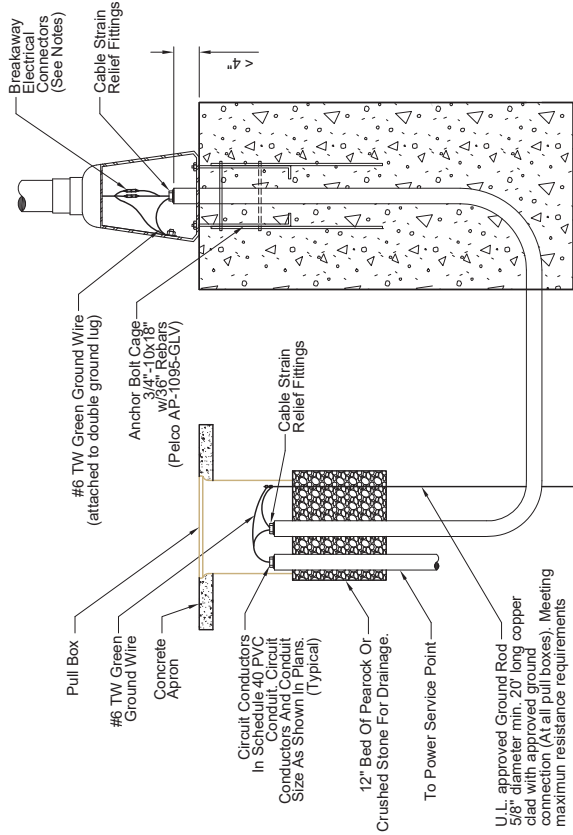
NOTES:

1. MEET THE REQUIREMENTS OF SECTION 700 (HIGHWAY SIGNING) OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. MEET THE SIGN MOUNTING HARDWARE REQUIREMENTS OF FOOT STANDARD PLANS INDEX 700.010 (SINGLE COLUMN GROUND SIGNS).
3. DETAILS DEPICTED WITH SPEED FEEDBACK SIGN DISPLAY WITH NUMERICAL HEIGHTS OF 15 FOR USE IN AREAS WITH POSTED SPEEDS LESS THAN 45 MPH.
4. ENGINEER OF RECORD MUST ENSURE THAT THE PROPOSED SIGN ASSEMBLIES AND FOUNDATION ARE DESIGNED TO WITHSTAND ALL APPLICABLE WIND LOADS.
5. USE ASSEMBLIES AND COMPONENTS THAT ARE LISTED ON THE FOOT APL AND THE MIAMI/DADE COUNTY TSSOR. DETAILS DEPICT OPTIMAL EQUIPMENT NEEDED FOR SOLAR POWERED INSTALLATIONS. THE BEACON CONTROLLER AND BATTERIES MAY BE IN THE SAME CABINET IF CONSISTENT WITH ITS PRODUCT APPROVAL.
6. A PEDESTAL POLE AND TRANSFORMER BASE IS REQUIRED FOR BOTH AC AND SOLAR POWERED ASSEMBLIES. SEE DETAILS ON SHEET 3 FOR GROUNDING AND WIRING REQUIREMENTS.
7. PEDESTAL BASE REQUIRES ANCHOR BOLT CAGE DEPICTED IN THE DETAIL ON SHEET 3.

SIDE VIEW

FRONT VIEW

REVISION 12/11/17	DESCRIPTION: TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	MIAMI-DADE COUNTY DTPW TRAFFIC SIGNALS AND SIGNS DIVISION 305-592-3366 305-592-3380 APPROVED BY: PANKAJ, JPA, LFE	DATE 12-11-17	SHEET NO. 2 OF 3
			NAME USE ONLY ISSUE NUMBER	SCHOOL ZONE SPEED LIMIT BEACON ASSEMBLY WITH ESFS DETAILS (N.T.S.)



Notes:

1. Fuses: Class CC, 600 VAC, 15 Amps, current limiting, time-delay, UL listed, 200KA VAC RMS Sym. interrupting Rating; Limitron™, Class CC FNQ-R-15 or approved equal.
2. Single-Pole In-Line Fuse Holder with solid Breakaway Option for impact separation: Rated 30A, 600V; Limitron™, HEB-AW-RLC-J for the fused disconnect and HET-AW-RLC-J having a permanently installed solid neutral (for the non-fused disconnect), or approved equal.
3. Cord must be SOW or SOOW type with a 600V rating, minimum 12 AWG.

**POLE GROUND DETAIL
SOLAR POWERED BEACON**

**POLE WIRING DETAIL
AC POWERED BEACON**

DATE 12-2-17	NAME LUC DIAZ	DRAWN BY LUC DIAZ	CHECKED BY LUC DIAZ	APPROVED BY FRANK ASH, P.E.	DTPW TRAFFIC SIGNALS AND SIGNS DIVISION 7100 NW 38th STREET MIAMI, FL 33166 305-592-3400		TRAFFIC CONTROL EQUIPMENT STANDARDS AND SPECIFICATIONS	DESCRIPTION: LATEST REVISION 12/8/17	SHEET NO. 3 OF 3
									BEACON ASSEMBLY PEDESTAL POLE WIRING DETAILS (N.T.S.)

APPENDIX "R" TO SPECIAL PROVISIONS
LOOP ASSEMBLY INDUCTANCE AND RESISTANCE TEST

Miami-Dade County Public Works and Waste Management Department

Traffic Signals and Signs Division

Loop Assembly Inductance and Resistance Test

(Complete entire Form and deliver to Engineer prior to Inspection)

Asset No.: _____ Project No.: _____ Contractor: _____

Location: _____

(L is inductance in microhenries; R_s is series resistance in Ohms; R_p is Insulation Resistance in megohms; Q is Loop Quality Factor)

Loop Wire (including twisted Lead-in Wire) measured at Junction Box

* To be filled out by Designer or Engineer			Before and After Sealing Saw cut				RESULTS**
Loop #	L *	R_s *	L	R_s	R_p	Q	Pass /Fail
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Loop Assembly (Loop Wire and Shielded Lead-in Cable) measured at Control Cabinet

* To be filled out by Designer or Engineer								RESULTS**
Loop #	Loop Location	L *	R_s *	L	R_s	R_p	Q	Pass /Fail
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Equipment Used: Loop Analyzer Manufacturer _____ Model _____
 Megger Manufacturer _____ Model _____

**The undersigned certifies that the loop assemblies were installed pursuant to all applicable specifications, meet all requirements specified therein (unless otherwise recorded on this Form), and that the above tests were performed pursuant to acceptable industry standards.

Test Completed By:

Witness:

 Signature of Contractor Representative
 (Traffic Signal Level II, IMSA)

 Date

 Signature

 Print Name

 Print Name

 IMSA Certification No.

APPENDIX "S" TO SPECIAL PROVISIONS

SECTION 700- ROADWAY SIGNS

SECTION 700 ROADWAY SIGNS

PART 1 GENERAL

1.01 SUMMARY

- A. Furnish and erect roadway signs at the locations and in accordance with the details shown in the Plans unless otherwise referenced herein. These include roadway static sign assemblies, Internally Illuminated Street Name Signs, Electronic Display Sign assemblies, and Sign Beacon assemblies.

- B. Related Sections
 - 1. Section 630 (Conduit)
 - 2. Section 635 (Pull, Splice, and Junction Boxes)
 - 3. FDOT Specification Section 620 (Grounding and Lightning Protection)
 - 4. FDOT Specification Section 646 (Aluminum Poles, Pedestals, And Posts)
 - 5. FDOT Specification Section 676 (Controller Cabinets)
 - 6. FDOT Specification Section 700 (Highway Signing)

- C. Method of Measurement
 - 1. General:
 - a. Unless otherwise specified herein, a completed assembly includes all materials, equipment, and labor necessary for a complete, functional and accepted installation.
 - b. The cost of furnishing and installing the required installation decals is considered incidental and is included in the unit prices for the signs or assemblies.
 - c. The cost for documenting and returning removed sign panels and assemblies to the Traffic Signals and Signs Division's Yard is considered incidental and is included in the unit prices for removal.
 - 2. Roadway Static Sign Assembly (ground-mounted).
 - a. Single/Multi Post Sign Assembly items: A completed assembly includes the support structure and all the sign panels required to be mounted on the support structure. The Contract unit price per assembly for ground mounted signs (single post and multi-post), furnished and installed, includes furnishing and installing the sign panels, support structure, foundation, hardware, appurtenances, and labor required for a complete and accepted installation.
 - b. Single/Multi Post Sign Assembly Relocation/Removal items: Relocation of sign assembly consists of removing the existing sign assembly and installing the assembly on a new foundation at the location shown in the Plans. When the Plans call for existing ground-mounted signs to be relocated or removed, after removing the sign panel(s) from the assembly, remove support(s) and footing(s). Restore the area of the sign assembly removal or relocation to the condition of the adjacent area at no additional cost.
 - c. Sign Panel Pay Items:

- 1) Pay items for adding/removing sign panel are used only when adding/removing a panel to/from an existing support structure that will remain in place. Adding sign panel requires the use of new attachment hardware. For new single post and multi-column signs, all panels on a new assembly are included in the payment for the assembly. No additional payment will be made for adding/removing panels on single/multi post sign assembly where the entire assembly has been relocated or removed.
- 2) Relocation of sign panels includes new attachment hardware for mounting the relocated signs onto existing support structures as indicated on the Plans.
3. Internally Illuminated Street Name Sign (IISNS).
 - a. Contract unit price per each for IISNS, furnished and installed, will include furnishing the sign panels, housing, hardware, electrical connection, photocontrol, and labor necessary for a complete and accepted installation.
 - b. Includes all hardware necessary to complete the attachment to the mast arm structure as required by the Contract Documents.
4. Electronic Display Sign Assembly (EDS).
 - a. EDS refers to a general category of electronically enhanced signs that includes electronic speed feedback signs and blank-out signs.
 - b. The Contract unit price per assembly for EDS, furnished and installed, includes the sign panels, electronic display, housing, cabinet, controller, speed detector, hardware, electrical connection, wiring, appurtenances, and labor necessary for a complete, functional, and accepted installation as required by the Contract Documents. When the EDS is ground mounted, the Contract unit price includes the sign support structure, conduit, pull box, grounding, and foundation. When the EDS is mounted on span wire or mast arm, the Contract Unit Price includes the hardware necessary to complete the attachment to the support structure; the span wire or mast arm structure will be paid separately.
 - c. In addition:
 - 1) For AC powered assembly does not include the cost of the Electrical Power Service Assembly.
 - 2) For solar powered assembly, price includes solar panels and all components for a complete and functional solar powered installation.
5. Sign Beacon Assembly.
 - a. The Contract unit price per assembly for sign beacon assembly includes the beacons, sign panels, cabinet, electronics, wiring, all necessary appurtenances, and labor necessary for a complete, functional, and accepted installation as required by the Contract Documents. When the sign beacon assembly is ground mounted, the Contract unit price includes the sign support structure, conduit, pull box, grounding, and foundation. When the sign beacon is mounted on span wire or mast arm, the Contract Unit Price includes the hardware necessary to complete the attachment to the support structure; the span wire or mast arm structure will be paid separately.
 - b. In addition:
 - 1) For AC powered beacon assembly, does not include the cost of the Electrical Power Service Assembly.
 - 2) For solar powered beacon assembly, price includes solar panels and all components for a complete and functional solar powered installation.

- 3) For beacon assembly intended for use with school zone signing, price includes equipment approved by the Department for centralized remote calendar programming of days and times of operation.
- 4) For vehicle-activated sign beacon assembly, price includes vehicle detection system listed on the FDOT APL and the TSSQPL.
- 5) For pedestrian-activated sign beacon assembly, price includes a pedestrian detector listed on the FDOT APL and the TSSQPL.
- 6) For warning beacons assembly operated from a wired input received from traffic signal cabinet to temporarily actuate beacons ahead of a change in signal phase, single cable and conduit from the signal cabinet to the sign beacon will be paid separately under the applicable pay items and Specifications in the Contract Documents.

D. Basis of Payment

1. Price and Payment will be full compensation for all work specified in this Specification Section that have awarded Contract Unit Prices under the following items:

Pay Item	Description	Unit
700-1-11B	Single Post Sign, F&I Ground Mount, Up To 12 SF	AS
700-1-12C	Single Post Sign, F&I Ground Mount, 12-20 SF	AS
700-1-50	Single Post Sign, Relocate	AS
700-1-60	Single Post Sign, Remove	AS
700-2-12	Multi- Post Sign, F&I Ground Mount, 12-20 SF	AS
700-2-50	Multi- Post Sign, Ground Mount, Relocate	AS
700-2-60	Multi- Post Sign, Remove	AS
700-3-101	Sign Panel, F&I Ground Mount, Up To 12 SF	EA
700-3-102	Sign Panel, F&I Ground Mount, 12-20 SF	EA
700-3-201	Sign Panel, F&I Overhead Mount, Up To 12 SF	EA
700-3-202	Sign Panel, F&I Overhead Mount, 12-20 SF	EA
700-3-203	Sign Panel, F&I Overhead Mount, 21-30 SF	EA
700-3-204	Sign Panel, F&I Overhead Mount, 31-50 SF	EA
700-3-501	Sign Panel, Relocate, Up To 12 SF	EA
700-3-502	Sign Panel, Relocate, 12-20 SF	EA
700-3-503	Sign Panel, Relocate, 21-30 SF	EA
700-3-601	Sign Panel, Remove, Up To 12 SF	EA
700-3-602	Sign Panel, Remove, 12-20 SF	EA
700-5-21	Internally Illuminated Sign, F&I Overhead Mount, Up To 12 SF	EA
700-5-60	Internally Illuminated Sign, Remove	EA
700-11-139	Electronic Display Sign, F&I Ground Mount- AC Powered, Speed Feedback Sign	AS

Pay Item	Description	Unit
700-11-239	Electronic Display Sign, F&I Ground Mount- Solar Power, Speed Feedback	AS
700-11-391	Electronic Display Sign, F&I Overhead Mount- AC Powered, Blank Out Sign, Up To 12 SF	AS
700-12-11	Sign Beacon, F&I Ground Mount- AC Powered, One Beacon	AS
700-12-12	Sign Beacon, F&I Ground Mount- AC Powered, Two Beacons	AS
700-12-21	Sign Beacon, F&I Ground Mount- Solar Powered, One Beacon	AS

1.02 REFERENCES

- A. Miami-Dade County Traffic Signals and Signs Division’s Qualified Product List (TSSQPL)
- B. FDOT Approved Product List (APL)
- C. Miami-Dade County’s Public Works Manual, Standard Road Detail Sheets R18.1
- D. American Society for Testing and Materials (ASTM)
- E. FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- F. National Electrical Code, NFPA 70 (NEC)

1.03 DELIVERY STORAGE AND HANDLING

- A. Storage, Handling and Labeling:
 - 1. Storage and handling:
 - a. If signs are stored prior to installation, store them in accordance with the manufacturer’s recommendations. Properly package signs to protect them during storage, shipment and handling to prevent damage to the sign face and panel.
 - 2. Installation Decals:
 - a. In addition to the information required in FDOT Specification Section 994, all permanent roadway signs (new, repaired or relocated) must be labeled on the back lower right-hand corner with the date of installation, repair or relocation punched out. The decal must not be placed over any existing installation decal.
 - b. Decals must be manufactured from Type II (ASTM D4956) sheeting with black legend and yellow reflectorized background. The decal must show information that includes the date of installation, repair, or relocation; the name “Miami-Dade County, Florida”; the relevant Florida Statutes and associated fine for sign tampering and the telephone number for reporting damaged or missing signs.
 - c. Make the labels unobtrusive, but legible enough to be easily read by an observer on the ground when the sign is in its final position. Apply the label in a manner that is at least as durable as the sign face.

1.04 ACCEPTANCE OF SIGNS

- A. Sign Inspection:

1. Submit certification that the sign assembly meets the material and installation requirements of the Contract Documents and the approved Shop Drawings. Engineer will inspect the signs at the final construction inspection. Repair and replace signs deemed unacceptable by Engineer at no expense to the Department.

B. Certification of Conformance:

1. Provide a Certificate of Conformance with a notarized Affidavit specifying the alloy and domestic source origin of aluminum signs.
2. Provide a certification that all signs, materials, and installation are in strict accordance with the requirements of this Specification Section.

1.05 SYSTEM DESCRIPTION

A. Design Requirements

1. Engineer of Record must ensure that the proposed sign assemblies and foundation are designed to withstand all applicable loads and meet performance requirements.
2. Electronic Display Signs
 - a. Electronic Speed Feedback Signs (ESFS).
 - 1) Plans must include a schedule listing the programming parameters for the ESFS including Speed Limit, Violation Alert Speed, "SLOW DOWN" Speed, High Speed Cutoff Function (Blank Display), High Speed Cutout Speed, and Minimum Display Speed.
 - 2) ESFS in a school zone may only operate while the speed limit is in effect in the zone. Otherwise the display must be blank.
 - b. Blank-Out Signs (BOS).
 - 1) Plans must include operational details pertaining to all display phases and blank-out phases.
 - 2) Plan details must depict exact mounting location in relation to other traffic signal components and signs on the Mast Arm.

B. Performance Requirements

1. The sign assembly for IISNS, Sign Beacon Assembly, and EDS must be designed and constructed to meet the requirements of FDOT's Structures Manual using a Design Wind Speed of 150 mph.
2. Manufacturer must provide engineering certification that the assembly's major components along with the recommended attachments for mounting on a 4.5" outer diameter pole (Sign Beacon and EDS Assembly) and other support structures (Mast Arms and Span Wire), meet the load requirements of Section 3 of AASHTO LTS-6 as modified by FDOT Structures Manual Volume 3 using a Basic Wind Speed (V) of 150 mph in the determination of the design wind pressure.

1.06 WARRANTY

A. Special Warranty

1. Flashing Beacons and EDS Assemblies: Ensure all EDS, IISNS, and flashing beacon systems have a manufacturer's warranty covering defects in assembly, fabrication, and materials for a minimum of five years from the date of final acceptance. Ensure

the manufacturer will furnish replacements for any part or equipment found to be defective during the warranty period at no cost to the Department within 30 calendar days of notification. In addition, ESFS must include a manufacturer's warranty of ten (10) years on the LEDs, comprising the display segments, from the date of final acceptance.

2. Outbound shipping costs for warranty replacements parts must be paid for by the manufacturer. All control software and firmware updates must be available to the County at no additional charge, during the warranty period.
3. Manufacturer must also provide technical telephone support at no extra charge to the County including replacement components for in-warranty repairs when provided in exchange for the part being replaced.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General:

1. Meet the material and equipment requirements of this Specification Section and any additional requirement stipulated in the Contract Documents.
2. Meet the Sign Fabrication requirements of FDOT Specification Section 700 (Highway Signing).
3. Meet the Storage, Handling and Labeling requirements of FDOT Specification Section 700 (Highway Signing).

B. Concrete:

1. Use concrete meeting the requirements of FDOT Specification Section 346.
2. Obtain concrete from a plant that is listed on the FDOT's Production Facility Listing.

C. Sign Panels.

1. All sign panels must be aluminum unless otherwise shown in the Plans.
2. Sheets and plates for sign panels must meet the requirements of ASTM B209, Aluminum Association Alloy 6061-T6, 5154-H38 or 5052-H38. Sign panels for single column ground mounted signs must utilize aluminum plate with a minimum thickness of 0.08 inches. All other sign panels must utilize aluminum plate with a minimum thickness of 0.125 inches. All panels shall have rounded corners.

D. Retroreflective Sign Sheeting.

1. Meet the retroreflective sign sheeting requirements of FDOT Section 700 (Highway Signing).

E. Roadway Static Sign Assembly (ground-mounted).

1. Mounting Hardware and Posts for Static Signs Only:
 - a. Unless otherwise specified in the Plans, for static roadway sign assemblies use steel sign post, base post, anchor plate, retainer spacer strap, hardware and

appurtenances meeting Standard Road Detail Sheets R18.1 of the Miami-Dade County's Public Works Manual.

b. Sign Post:

- 1) Sign post must be provided with a galvanized 30 inch base post, retainer strap, galvanized anchor plate and all the miscellaneous hardware needed for installation as required by Standard Road Detail Sheets R18.1 of the Miami-Dade County's Public Works Manual.
- 2) Sign and base post must be rolled from rail steel meeting the properties established in ASTM A499. Minimum weight of each post prior to drilling must be three pounds per foot (± 5 percent) with profile dimensions as specified in Standard Road Detail Sheets R18.1 of the Miami-Dade County's Public Works Manual. Post must be galvanized pursuant to ASTM A123 as the last step after fabrication and hole punching has been completed.
- 3) The galvanized steel post must be furnished in appropriate lengths to provide a minimum 7 ft. ground clearance to the bottom of the lowest sign unless otherwise shown in the Contract Documents or Standard Road Detail Sheets R18.1.
- 4) The finished post must be machine straightened and have a smooth uniform finish free from defects affecting strength, durability or appearance.
- 5) Bolt holes having a diameter of $7 / 16$ of an inch must be punched at one inch centers along the post's center line beginning one inch from the top of the post and continued down the length of the post.

c. Anchor Plate:

- 1) Anchor plate must be 6 inch x 12 inch x 0.120 inch steel, hot dip galvanized per ASTM A123. The anchor plate must have two $7 / 16$ inch diameter holes for attaching to base post with sign/base post assembly hardware.

d. Hardware:

- 1) Nuts, bolts, and washers for attaching signs must be 2024-T4 aluminum. Hex-head bolts must be $5 / 16$ inch – 18 UNC x $2 - 1 / 2$ inch with hexagon nuts and flat washers.
- 2) Hardware for attaching sign post to the base post and anchor plates must be Hex-head integral flange bolt, nut and lockwasher. Bolts must be $5 / 16$ inch – UNC x $1 - 3 / 4$ inch meeting ASTM A354, Grade BD (Grade 8). Nuts must be ASTM A563, Grade DH. Lock washer must be heavy duty external type. Finish must be cadmium plated per ASTM A165-80, Type OS, except using clear chromate.
- 3) Retainer-Spacer Strap must be AISI 1020 Steel and be $17 1 / 8$ inch x one inch x $0 - 3 / 8$ inch thick with a $0 - 3 / 8$ inch offset, galvanized per ASTM A123.

F. Internally Illuminated Street Name Sign.

1. Use Internally Illuminated Street Name Sign and mounting hardware that meet the requirements of FDOT Specification Section 700 (Highway Signing) and this Specification.
2. Use Internally Illuminated Street Name Sign and mounting hardware that are listed on the FDOT's APL and the Department's TSSQPL.

G. Electronic Display Sign Assembly.

1. Meet the requirements of FDOT Specification Section 700 (Highway Signing) and this Specification.
2. Use Electronic Display Sign and mounting hardware that meet the requirements of this Specification and are listed on the FDOT's APL and the Department's TSSQPL.
3. Unless otherwise shown in the Plans and approved by Engineer, the ESFS, its components, and sign panels must be U-bolt mounted on a Miami-Dade County TSSQPL approved 4-1/2 inches outer diameter (4 inch nominal) threaded aluminum pedestal pole and square aluminum break away base with a reinforcing collar assembly meeting the requirements of FDOT Specification Section 646. Attachment hardware must meet or exceed the requirements of the Florida Department of Transportation (FDOT) Standard Plans, Index No. 700-010.

H. Sign Beacon Assembly:

1. Meet the requirements of FDOT Specification Section 700 (Highway Signing) and this Specification.
2. Use Sign Beacon assembly and mounting hardware that meet the requirements of this Specification and are listed on the FDOT's APL and the Department's TSSQPL.
 - a. Beacon assemblies intended for use with school zone signing must include a remote means approved by the Department for centralized remote calendar scheduling program days and times of operation.
 - b. Vehicle activated beacons must utilize a vehicle detection system listed on the FDOT APL and the TSSQPL.
 - c. Pedestrian activated beacons must utilize a pedestrian detector listed on the FDOT APL and the TSSQPL.
3. Unless otherwise shown in the Plans and approved by Engineer, the Beacon Assembly, its components, and sign panels must be U-bolt mounted on a Miami-Dade County TSSQPL approved 4-1/2 inches outer diameter (4 inch nominal) threaded aluminum pedestal pole and square aluminum break away base with a reinforcing collar assembly meeting the requirements of FDOT Specification Section 646. Attachment hardware must meet or exceed the requirements of the Florida Department of Transportation (FDOT) Standard Plans, Index No. 700-010.

PART 3 EXECUTION

3.01 INSTALLATION

A. General.

1. Meet all requirements of FDOT Specification Section 620 (Grounding and Lightning Protection) and the National Electrical Code.
2. Perform and document utility clearances.

B. Roadway Static Sign Assembly (ground-mounted).

1. Install pursuant to Standard Road Detail Sheets R18.1 of the Miami-Dade County's Public Works Manual and the Contract Documents.

C. Internally Illuminated Street Name Sign.

1. Install pursuant to FDOT Specification Section 700, the Contract Documents, and the wiring, mounting and installation requirements of the Miami-Dade County TSS Division's "Typical Wiring and Installation Details Internally Illuminated Street Name Signs (IISNS)".
- D. Electronic Display Sign Assembly.
1. Install pursuant to FDOT Specification Section 700 and the Contract Documents.
 2. For ground mounted EDS Assembly.
 - a. Construct foundation and install support structure in accordance with FDOT Section 646, this Specification Section, Standard Plans, Index 700-120, and the Contract Documents.
 - b. Set anchor bolts 90 degrees apart with a bolt circle diameter of 13 inches. Adjust anchor bolts to a plumb line and hold rigidly in position to prevent displacement while pouring concrete.
 - c. Meet the requirements of FDOT Specification Section 620 and the NEC.
- E. Sign Beacon Assembly.
1. Install pursuant to FDOT Specification Section 700 and the Contract Documents.
 2. For ground mounted Sign Beacon Assembly.
 - a. Construct foundation and install support structure in accordance with FDOT Section 646, this Specification Section, Standard Plans, Index 700-120, and the Contract Documents. Bolt circle radius must be thirteen inches.
 - b. Set anchor bolts 90 degrees apart with a bolt circle diameter of 13 inches. Adjust anchor bolts to a plumb line and hold rigidly in position to prevent displacement while pouring concrete.
 - c. Meet the requirements of FDOT Specification Section 620 and the NEC.

3.02 REMOVAL

- A. Deliver sign panels, sign assemblies, EDS, IISNS and all sign equipment removed pursuant to these specifications a to the Department of Transportation and Public Works, Traffic Signals and Signs Division's Yard at 7100 NW 36th Street, Miami, FL 33166.
- B. Document delivery and coordinate with the TSS Division's warehouse manager prior to offloading the material.

3.03 RESTORATION

- A. Restore all areas impacted by the Work.
- B. Restore any areas impacted by the installation of a crosswalk enhancement assembly to original condition unless otherwise shown in the Plans. Install crosswalk enhancement assembly in accordance with the Americans with Disabilities Act Standards for Transportation Facilities.

END OF SECTION 700

APPENDIX "T" TO SPECIAL PROVISIONS

ROW Certification Form# 575-095-05

R/W ITEM/SEGMENT NO.: 449752-1-38-01 MANAGING DISTRICT: 6
CONSTRUCTION ITEM/SEGMENT NO.: _____ STATE ROAD: N/A
F.A.P. NO. (Construction): D622-019-B DESCRIPTION: Implementation of scramble
COUNTY: Miami Dade County (diagonal) crossing
LETTING DATE: _____

The undersigned hereby certifies as follows:

Title to all property and easements needed for the above construction project is vested in the Florida Department of Transportation (Department) or a state or local government. The Department has obtained sufficient authority to construct and maintain the proposed improvements on property and easements owned by state or local governments. Further:

Acquisition

- Right of way was not acquired for this project.
- Right of way was acquired for this project in compliance with applicable state and federal law.

Relocation


- No persons or businesses were required to move or move personal property from the project right of way.
- All persons and businesses that were required to move or move personal property from the project right of way have been provided relocation assistance in compliance with applicable state and federal law.

Demolition

- No structures or improvements, including encroachments, required removal from the project right of way.
- All structures and/or improvements, including encroachments, have been removed from the project right of way in compliance with applicable state and federal law, or will be included in the construction contract.

Asbestos Abatement

- No structures or improvements requiring asbestos abatement were located on the project right of way.
- Asbestos abatement of buildings and/or structures, including those to be removed by the construction contractor, has been completed in compliance with applicable state and federal law, or will be included in the construction contract.

Submitted by Local Agency: 
Title: TRAFFIC ENGINEER 3 Date: 6/23/2022

Certified by FDOT: _____
Title: _____ Date: _____

APPENDIX "U" TO SPECIAL PROVISIONS ROW

Railroad Clear Letter



DATE: 6/23/2022

TO: District LAP Administrator / Coordinator

FROM: *Local Agency Project Manager*

CC: District LAP Design Project Manager

SUBJECT: Railroad Certification
Agency: Miami-Dade County
FM #: 449752-1-38-01
Description: SW 72 ST AND SW 57 AVE INTERSECTION IMPROVEMENTS.

The referenced project *DOES NOT* have railroad involvement within the limits of the project.

The project consists of *implementing a diagonal/scramble crosswalk at the intersection to allow pedestrians to cross in multiple directions and increase visibility of the crossing space.*

You may consider this project to be railroad **CLEAR**.

A handwritten signature in blue ink, appearing to read "William Salazar".

William Salazar
Local Agency Project Manager

6/23/2022
Date

APPENDIX "V" TO SPECIAL PROVISIONS

Utilities Clear Letter



DATE: 6/23/2022

TO: District LAP Administrator / Coordinator

FROM: *Local Agency Project Manager*

CC: District LAP Design Project Manager

SUBJECT: **Utilities Clear**
Agency: Miami-Dade County
FM #: 449752-1-38-01
Description: SW 72 ST AND SW 57 AVE INTERSECTION IMPROVEMENTS.

This is to certify that all utility work has been completed or necessary arrangements made to undertake and complete this project as required for proper coordination with the physical construction schedule.

A handwritten signature in blue ink, appearing to read "William Salazar".

William Salazar
Local Agency Project Manager

6/23/2022
Date

APPENDIX "W" TO SPECIAL PROVISIONS

No Permits Clear Letter



DATE: 6/23/2022

TO: District LAP Administrator / Coordinator

FROM: *Local Agency Project Manager*

CC: District LAP Design Project Manager

SUBJECT: 100% Design Memo for Environmental Permits
Agency: Miami-Dade County
FM #: 449752-1-38-01
Description: SW 72 ST AND SW 57 AVE INTERSECTION IMPROVEMENTS.

No environmental permits are required for the referenced project as:

1. Drainage is not being changed.
2. No wetlands are being impacted.
3. There is no encroachment into the 100-year floodplain.
4. No additional travel lanes are proposed.

The following “no permit required determinations” were obtained:
(If there were none obtained, just list N/A)

If NPDES is required, is SWPPP included in plans? Yes N/A

WILLIAM SALAZAR
 Local Agency Project Manager

6/23/2022
 Date

APPENDIX "X" TO SPECIAL PROVISIONS

CULTURAL RESOURCES ASSESSMENT SURVEY FOR THE SW 72nd STREET AND SW 57th AVENUE
INTERSECTION IMPROVEMENTS PROJECT

**CULTURAL RESOURCE ASSESSMENT SURVEY
FOR THE SW 72ND STREET AND SW 57TH AVENUE
INTERSECTION IMPROVEMENTS PROJECT
MIAMI-DADE COUNTY, FLORIDA**

CONSULTANT: SEARCH
3117 Edgewater Drive, Orlando, Florida 32804

PRINCIPAL INVESTIGATOR: Mechelle Kerns, PhD, RPA

ARCHITECTURAL HISTORIAN: Jason Newton, MA, MLIS

CLIENT: Parsons Transportation Group, Inc., and Miami-Dade
County Department of Transportation and Public Works

DATE: August 2022

FINANCIAL MANAGEMENT #: 449752-1

SEARCH PROJECT #: T22100

This report details the results of a cultural resource assessment survey for proposed intersection improvements at SW 72nd Street and SW 57th Avenue in South Miami, Miami-Dade County, Florida (**Figure 1**). The project area is located within Township 54 South, Range 40 East, Section 36. The Miami-Dade County Department of Transportation and Public Works (DTPW) is proposing the replacement of portions of existing sidewalk, installation of detectable warning surfaces and pedestrian ramps, painting of roadways, replacement of portions of curbs and gutters, and the installation of four new aluminum pedestal signal poles at the intersection of SW 72nd Street and SW 57th Avenue to update the crosswalk safety technology and markings. This DTPW project will use federal funds administered by the Florida Department of Transportation (FDOT), District 6, for construction in 2023. The scope of work includes the in-kind replacement or upgrade to pedestrian features within existing rights-of-way along SW 72nd Street and SW 57th Avenue (**Figure 2**).

SEARCH conducted all work to comply with Stipulation VII of the Section 106 Programmatic Agreement, effective March 14, 2016, amended June 7, 2017, between the Federal Highway Administration, the Advisory Council on Historic Preservation, the Florida Division of Historical Resources (FDHR), the State Historic Preservation Officer (SHPO), and FDOT regarding implementation of the Federal-Aid Highway Program in Florida. SEARCH conducted this study to comply with Public Law 113-287 (Title 54 US Code), which incorporates the provisions of the National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1974, as amended. The study also meets the regulations for implementing National Historic Preservation Act Section 106 found in 36 Code of Federal Regulations Part 800 (*Protection of Historic Properties*). This study also complies with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code. SEARCH performed all work in accordance with Part 2, Chapter 8 of the FDOT's Project Development & Environment Manual (revised July 2020) and the FDHR recommendations for such projects, as stipulated in the FDHR's

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016, and executed by the Federal Highway Administration and FDOT.

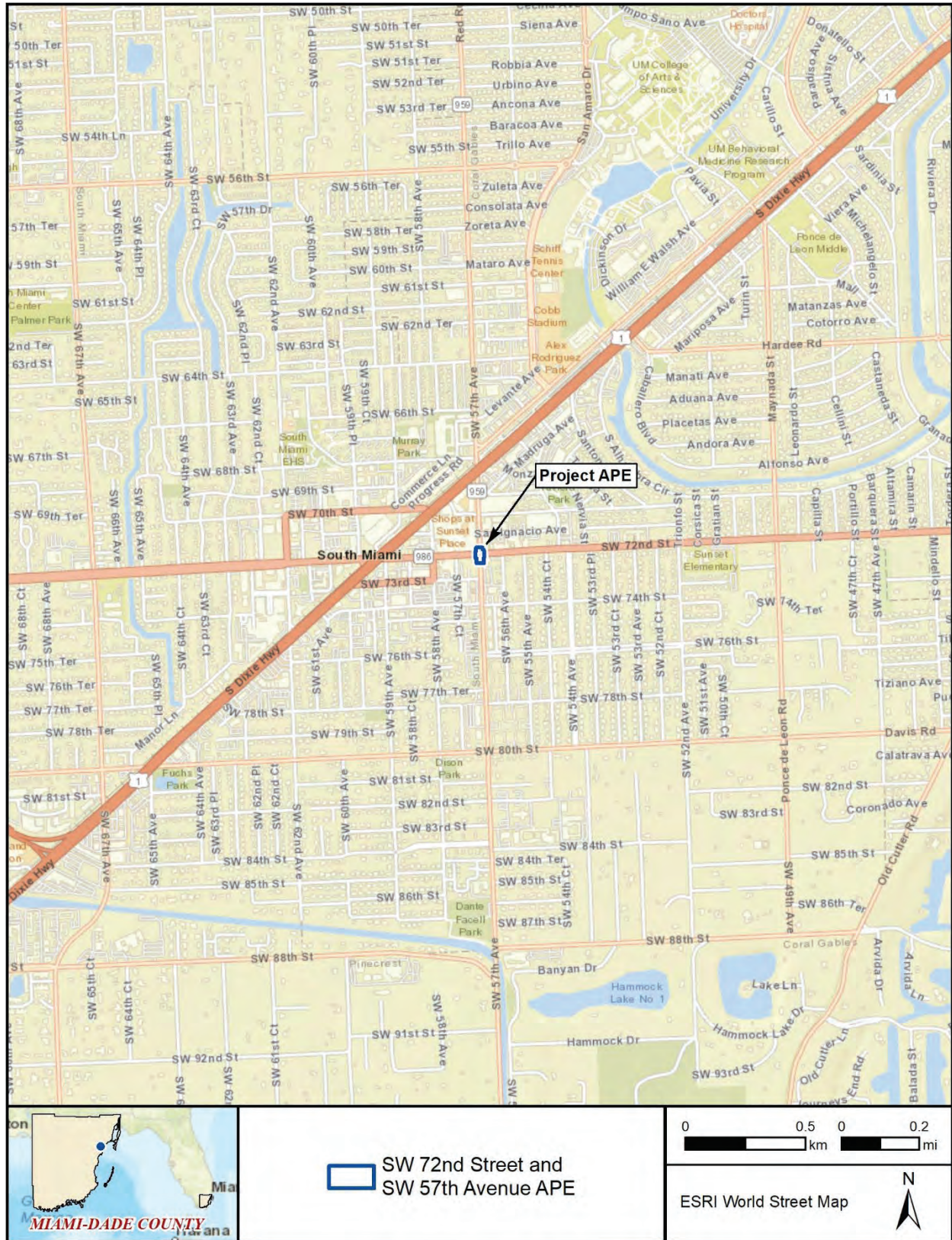


Figure 1. Location of the SW 72nd Street and SW 57th Avenue improvements project in Miami-Dade County, Florida.



Figure 2. Location of the SW 72nd Street and SW 57th Avenue APE, Miami-Dade County, Florida.

Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals. The principal investigator for this project meets the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Register 44716-42).

AREA OF POTENTIAL EFFECTS

Given the scope of the proposed improvements, which involves sidewalk and roadway improvements within the current road rights-of-way, SEARCH limited the area of potential effects (APE) for both archaeological and historic resources to the current rights-of-way where the proposed improvements will take place (see **Figure 2**).

RESEARCH CONSIDERATION AND METHODS

Due to the limited nature and urban setting of the proposed undertaking, SEARCH limited the methods for research and survey to pedestrian survey and background research. This project involves improvements to pedestrian facilities within the existing roadway footprint/operational right-of-way. Thus, the potential for archaeological resources is very low due to the natural environmental setting (Everglades wetlands) and previous disturbance from roadway construction activities. Although there are no structures within the operational right-of-way, the location of this project in a historic neighborhood creates a high potential for historic resources in the immediate vicinity of the APE. SEARCH conducted background research and a survey to identify historic resources or districts within the APE.

Certified Local Government Coordination

Because this project is within Miami-Dade County and partially within the City of Coral Gables, both Certified Local Governments, SEARCH initiated consultation with Sarah Cody, Miami-Dade County Historic Preservation Chief; Jeff Ransom, Miami-Dade County Archaeologist; and Warren Adams, Historical Resources & Cultural Arts Director at the City of Coral Gables. On June 3, 2022, SEARCH Architectural Historian Jason Newton, MA, MLIS, emailed Ms. Cody, Mr. Ransom, and Mr. Adams to inform them of the project and inquire whether they might have any concerns related to cultural resources associated with the project. In the email, Mr. Newton provided a project location map for their review. On June 7, 2022, Mr. Ransom responded via email, stating that there are no Miami-Dade County designated historic resources within the APE. At the time of this report's submittal, no response was received from the City of Coral Gables.

ENVIRONMENT

The project APE is within a densely developed section of South Miami approximately 2.5 miles (4.02 kilometers) west of Biscayne Bay. The physiographic setting is the Gold Coast-Florida Bay District within the Southern Atlantic Coastal Strip, Miami Rock Ridge (SFWMD 2016). The natural setting was associated with South Florida Flatwoods on marine terraces with sandy soils. No natural rivers or streams are in the immediate area (see **Historic Map Review** section below); however, early maps depict that the project area was previously Everglades sedge prairie or seasonal marshlands with no evidence of tree islands which were the primary indigenous occupation sites in the Everglades (see Figure 5). The SW 72nd Street and SW 57th Avenue intersection is characterized by urban commercial and roadway development, with buildings that face the roadway and little to no setback. The APE is covered in impervious surfaces and soils are poorly drained and consist of Urban land with 0 to 2 percent slopes (**Figure 3**). The topography has been altered by development and is flat with an elevation of 9.0 feet (2.7 meters) above mean sea level. The APE is limited to the current operational right-of-way, which includes existing sidewalks and roads, multiple buried utilities, and drainage infrastructure.

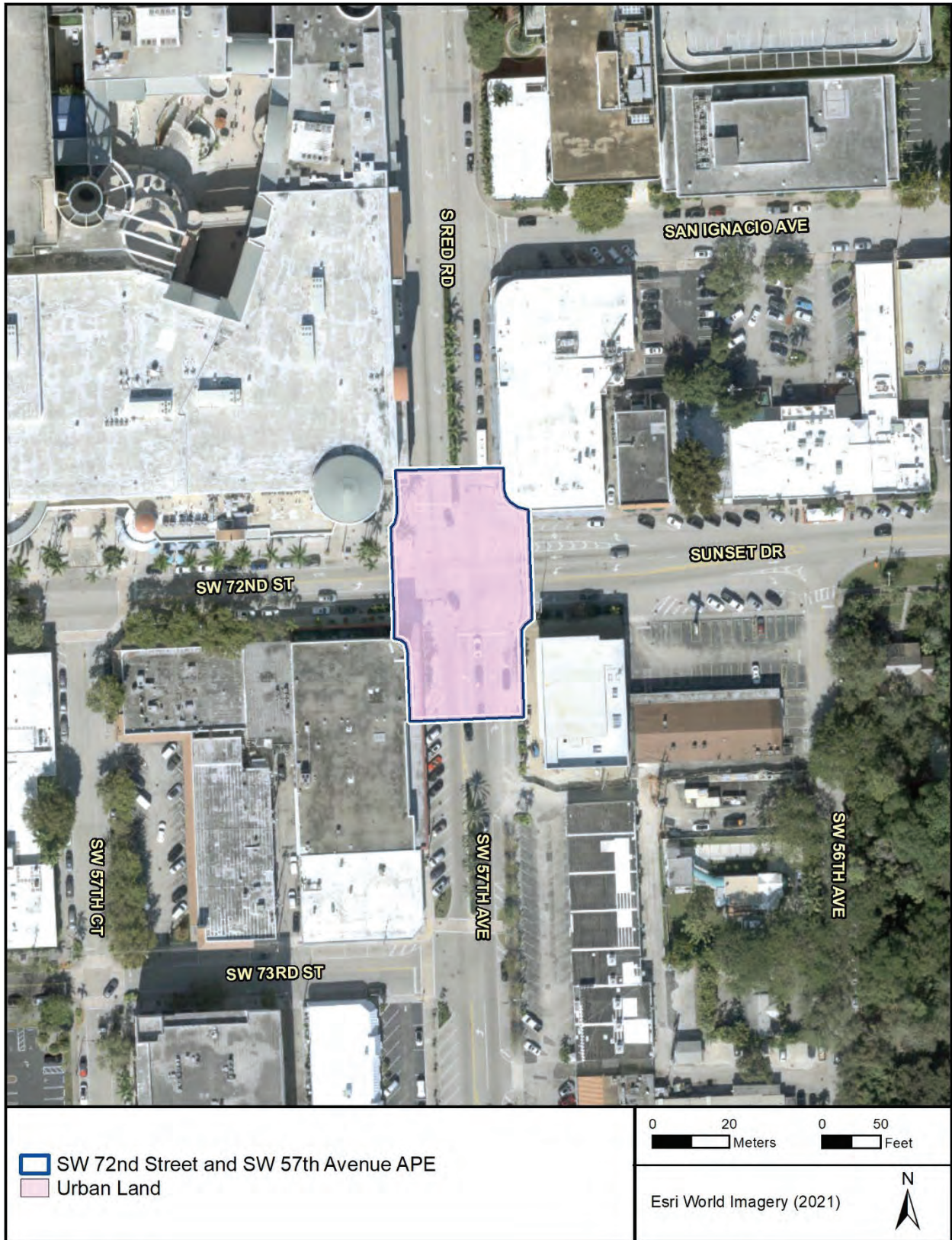


Figure 3. Soil drainage in the SW 72nd Street and SW 57th Avenue APE.

BACKGROUND RESEARCH

Native American Culture History

The following brief overview of the Native American culture history of the project area is intended to provide a context for evaluating any prehistoric archaeological sites that may be present within the project area. **Table 1** provides a summary of the archaeological periods represented in the project area vicinity.

Table 1. Archaeological Periods in South Florida.

Archaeological Period	Years BP
Paleoindian	14,500–11,500 BP
Early Archaic	11,500–8000 BP
Middle Archaic	8000–5000 BP
Late Archaic	5000–2500 BP
Post Archaic (Glades)	2500–250 BP

Paleoindian Period (14,500–11,500 BP)

Although prehistoric native peoples entered Florida at least 14,500 years ago, and while there is abundant archaeological evidence for an early occupation of northern and central Florida (Milanich 1994), there is no firm evidence that people inhabited the Everglades at that early time. Lake Okeechobee and the Everglades did not exist, sea levels were much lower than at present, surface water was limited, and extensive grasslands probably existed, which may have attracted mammoth, bison, and other large grazing mammals. This landscape inhibited intensive human habitation except perhaps along the coast; however, any coastal sites are probably now inundated by higher sea levels.

Early Archaic Period (11,500–8000 BP)

The beginning of the Archaic period coincides with the onset of the Holocene at approximately 11,500 BP. This period can be divided into two horizons: Side-Notched or Bolen (11,500–9000 BP) and Stemmed or Kirk (9000–8000 BP). Both horizons are well represented in northern and central Florida (Milanich 1994), and there is limited evidence for occupation along Florida’s southern coasts during this time. At the Cutler site in Miami, side-notched Bolen points were recovered in association with animal bones and a hearth feature (Carr 1986). Based on radiocarbon dates from a cultural stratum believed to be associated with the Bolen points, the Cutler site is believed to date to around 9600 BP (uncalibrated). Bolen points also have been recovered along Florida’s southwestern coastline, as well as from several sites on the southeast coast (Janus Research 2006), suggesting that while the interior may still have been arid, coastal areas may have been more habitable. The Kirk Horizon is not well represented in southern Florida, although the mortuary pond at Windover in Brevard County may contain a Kirk component. Radiocarbon dates associated with human bone or wooden artifacts at this site range from 8120 ± 70 BP to 6980 ± 80 BP, (Doran 2002), placing it at the end of the Kirk Horizon as it has been defined throughout the rest of the southeastern United States (Chapman 1985; Sherwood et al. 2004). Three possible Kirk Stemmed projectile points were associated with the burials.

Middle Archaic Period (8000–5000 BP)

A dramatic increase in precipitation and surface runoff in southern Florida is indicated by peat deposits in the Everglades that began to form about 6000–5000 BP (Gleason and Stone 1994). This enabled native peoples to expand into formerly inhospitable locations. Sea levels reached modern levels and may have exceeded them for short periods (Bader and Parkinson 1990; Stapor et al. 1991; Tanner 1991). Modern estuaries began to form, and exploitation of coastal resources began in earnest. The expansion of populations into new locations resulted in a variety of settlement and subsistence strategies, each adapted to local conditions. Preceramic Archaic sites have been documented in the interior around Lake Okeechobee (Gleason and Stone 1994; Hale 1989:48, 55-56), in the Kissimmee River basin (Austin 1996, 1997), and in the lower levels of Everglades tree island sites (Carr 2006; Schwadron et al. 2006). However, no major excavations of Middle Archaic components have been conducted, and information on occupation of the Everglades during this period is extremely limited.

Late Archaic Period (5000–2500 BP)

By 4000 BP, Florida’s climate and environment had reached essentially modern conditions. This allowed further regionalization of cultures, as individual societies developed increasingly sophisticated adaptations to their local environments (Milanich 1994). During the Late Archaic period, Florida’s native peoples made their first pottery. Until recently, it was assumed that the earliest pottery in Florida was tempered with plant fibers, but recent research indicates that this may not have been the case everywhere. Sand-tempered pottery and pottery made with a spiculate clay also appear to have been developed relatively early.

In southern Florida, two separate late Archaic cultures can be identified archaeologically: the Orange culture and the Glades Archaic culture. The Orange culture is known primarily from northeastern Florida, including the Atlantic coast and the St. Johns River drainage basin. The Orange peoples made a distinctive pottery tempered with fiber (Bullen 1972). Site types are generally oyster and coquina shell middens along the coast and freshwater pond snail middens along the inland rivers and streams. Recent work in Martin County indicates that Orange populations were present along the southeast coast (Carr et al. 1995), possibly migrating to that area from the Indian River estuary farther north.

Based on his work in the Kissimmee River basin, Austin (1997) states that the “identification of a true Orange Horizon in south Florida is debatable” (Austin 1997:136). In the Kissimmee River basin, pure fiber-tempered components are rare. More common is the presence of sand-and-fiber-tempered pottery in the basal levels of middens, often in association with thick St. Johns Plain or sand-tempered plain sherds overlying either culturally sterile sands or sparse scatters of lithic artifacts (Austin 1996, 1997:136). Both Widmer (1988:72-73) and Austin (1997:136) believe that semi-fiber-tempered components in southern Florida are “ephemeral” and are soon replaced in the archaeological record by components consisting exclusively of sand-tempered pottery.

The Joseph Reed Mound (8MT00013) on Jupiter Island may represent an indigenous ceramic tradition. The inhabitants of Joseph Reed were contemporaneous with Orange populations farther north, but they produced only sand-tempered plain pottery and a spiculate-tempered pottery that strongly resembles pottery of the St. Johns series; however, no fiber-tempered Orange pottery has been recovered from the site (Russo and Heide 2004). Although the Reed Mound has been damaged by storm surges, it once was probably a constructed ring made up mostly of oyster shell. In this respect, it seems similar to other Orange-period shell rings located farther north (Newman and Weisman 1992).

Carr et al. (1995) suggest that a separate Late Archaic culture, which they call the “Glades Archaic,” also was present in southern Florida and probably had only limited ties to the Orange culture. The presence of this culture is suggested by non-ceramic bone middens on nearly every interior tree island or former tree island in nearly every marsh or former marsh in southern Florida (e.g., Carr 2006; Carr and Steele 1993; Ehrenhard et al. 1978, 1979; Ehrenhard and Taylor 1980; Griffin 2002; Schwadron et al. 2006). Faunal remains from these sites are all mainly freshwater species, such as turtle, fish, and apple snail, which were plentiful in the surrounding marshes.

Post Archaic Period (2500–250 BP)

Glades (Everglades) Archaeological Region

The project area is located within the Glades archaeological region, originally defined by Goggin (1947). Geographically, the region encompasses all southern Florida, south of Lake Okeechobee and up the east coast to St. Lucie County (**Figure 3**). Archaeologically, the region is dominated by the presence of plain, sand-tempered pottery, a technology based on bone and shell tools, and an economy based on freshwater and marine resources (Goggin 1949). Subsequent research has subdivided the region into at least three “districts”: the Ten Thousand Islands, Glades, and East Okeechobee. The chronology for the Glades region (**Table 2**) was established by Goggin (1947) and later refined by Griffin (2002).

Most Glades sites in the interior Everglades are black dirt middens, and nearly all are situated on tree islands. Until recently, these sites were considered to have been temporary, seasonal campsites used by coastal dwelling populations. However, the large number of midden sites

Table 2. Glades Area Archaeological Chronology.

Period	Dates	Distinguishing Characteristics
Glades I early	500 BC–AD 500	First appearance of sand-tempered pottery; no decoration.
Glades I late	AD 500–750	First appearance of decorated pottery: Fort Drum Incised, Fort Drum Punctated, Cane Patch Incised, Gordon’s Pass Incised, Opa Locka Incised, Sanibel Incised; Sand-tempered Plain persists.
Glades IIa	AD 750–900	Appearance of Key Largo Incised and Miami Incised; Sand-tempered Plain and Opa Locka Incised persist; none of the earlier decorated types are present.

Table 2. Glades Area Archaeological Chronology.

Period	Dates	Distinguishing Characteristics
Glades IIb	AD 900–1100	Sand-tempered Plain and Key Largo Incised persist; Matecumbe Incised appears; none of the earlier decorated types are present; certain rim modifications (incised lip arcs and lip crimping and grooving) also appear for the first time.
Glades IIc	AD 1100–1200	Almost no decorated pottery; some grooved lips but no more lip arcs or crimped rims; Plantation Pinched appears.
Glades IIIa	AD 1200–1400	Plantation Pinched is no longer present; Sand-tempered Plain and grooved lips persist; appearance of Surfside Incised and St. Johns Check Stamped.
Glades IIIb	AD 1400–1513	Glades Tooled, Sand-tempered Plain and St. Johns Check Stamped are present, Surfside Incised and grooved lips are not present.
Glades IIIc	AD 1513–ca. 1700	Same as previous period with the addition of historic artifacts.

Source: Griffin 2002:141-144

and the dense midden assemblages contained at some of them have led archaeologists to consider that some sites may have served as permanent villages (Carr and Beriault 1984:3; Pepe 2000; Pepe and Jester 1995; Wheeler et al. 2003). In addition to middens, other site types include cemeteries, temple mounds, earthworks, and constructed habitation mounds (Wheeler 2004:46-63). Cemeteries are usually found within habitation sites, often on the south or southwestern end near the water line (Felmley 1991). Temple mounds are constructed mounds composed of sand and possibly midden soil or shell. Within the Glades region, Maddens Hammock (8DA00045) may be such a site. It is shaped “somewhat like a truncated pyramid” (Wheeler 2004:54). Although more commonly associated with the Okeechobee Basin archaeological area farther north, earthwork sites also are known for the Glades area.

The most common form is the circle-ditch, a large, circular, or semi-circular ditch, often excavated adjacent to a natural water body. Linear ridges or linear embankments also are known. These usually involve a sand mound partially enclosed by a crescent-shaped earthwork and paired linear embankments that emanate from the sand mound (Wheeler 2004:56). Constructed habitation mounds consist of tree island sites that have been deliberately augmented through the addition of freshwater marl or muck. At a few sites, marl or muck seems to have been added to



Figure 3. Archaeological regions of Florida (after Milanich 1995); project area depicted by red dot.

construct mounds or ramps (Griffin 2002:192; Wheeler 2004:58).

Food resources included fish, turtles, snakes, alligator, and deer (Fradkin 1996; Keel 1990; Masson and Hale 1990). Analysis of botanical materials from the Honey Hill site (8DA00411) and the Granada site (8DA00011) provide evidence of edible plant remains, including the fruits of the false mastic (*Sideroxylon foetidissimum*) (Masson and Scarry 1990; Scarry and Newsom 1992).

In addition to the pottery types listed (see **Table 2**), Glades people made a wide variety of tools and ornaments from bone, shell, stone, and wood (Griffin 2002). Bone artifacts were manufactured from deer antler and bone, shark teeth, fish spines and vertebrae, and turtle shell. Artifacts constructed from these materials included picks, adzes, chisels, billets, anvils, awls, scrapers, fishhooks, gorges, points, daggers, spatulas, beads, rings, ornaments, net gauges, and pins. Shell artifacts were made from marine species such as *Busycon*, *Strombus*, and *Pleuroploca* and included dippers, vessels, saucers, spoons, picks, hammers, celts, adzes, gouges, chisels, awls, hones, knives, weights, beads, gorgets, and plummetts. Stone artifacts are rare and usually included items obtained through trade from groups located farther north where toolstone is common. Dugout canoes were manufactured by hollowing out pine or cypress logs. They are often found preserved in lake or pond beds that are exposed during drought conditions or through dredging operations. Other items, such as bowls, pegs, digging sticks, masks, and totems (e.g., Gilliland 1975), are assumed also to have been made, but have rarely been preserved.

Miami-Dade County Postcontact History

The following provides a postcontact historic context of Miami-Dade County from European exploration to present. European explorers made contact with the coast of present-day Miami-Dade County in the early sixteenth century. Juan Ponce de Leon is well-known as the first European to explore Florida. However, some historians believe that John Cabot, explorer of the Atlantic coast of Canada and New England, might have sailed as far south as Florida during his explorations in 1498 (Dovell 1952; Eriksen 1994). There is also evidence that Spanish traders from Cuba might have raided the indigenous villages of coastal Florida to enslave the locals; when the Ponce de Leon expedition came to Florida, they encountered a local Native American who understood Spanish. Ponce de Leon's 1513 expedition was more thorough than any of his potential predecessors, leaving Puerto Rico with a fleet of three ships on March 3, 1513, and making landfall around Cape Canaveral (present-day Brevard County) on April 2, 1513. The mission also explored Jupiter Inlet and the countercurrents of the Gulf Stream (previously unknown to Europeans), leading them to Biscayne Bay (Miami-Dade County) and Key Biscayne, which he claimed for Spain and named Santa Martia (Kushlan and Hines 2014:9). In 1521, he mounted another expedition in hopes of establishing a colony; however, local Native American resistance prevented his colonization (Eriksen 1994; Gannon 1996; Milanich 1995).

While the interior of present-day Miami-Dade County remained an unsettled frontier, the coast became visible in colonial history in the mid-seventeenth century. St. Augustine, founded in 1565 in present-day St. Johns County, was the first successful European settlement in Florida. Though

geographically far from the Biscayne Bay region, St. Augustine was influential because it was a base for a circuit of Catholic missions and defensive outposts. In 1567, Pedro Menendez de Aviles, founder of St. Augustine and governor of Florida, established a fort and mission on Biscayne Bay, then within the realm of the Tequesta Native Americans. In the following year, the fledgling settlement fell apart because of Native American opposition. As the decades passed, Europeans made no effort to resettle the Biscayne Bay region, although the coastal waters became a major shipping lane (Tubby 1997).

Though at times treacherous, the waters off present-day Miami-Dade County were an important passageway for New World shipping. In 1715, a fleet of Spanish ships laden with treasure wrecked in a hurricane. Millions of pesos in gold and other valuables were lost along the coast of eastern Florida in the catastrophe. The Spanish mounted a salvaging effort, but much of the treasure remained sunken. These wrecks were generally north of Miami-Dade County, but in the coming centuries, numerous ships would be lost in the Biscayne Bay region (Rights 1994). Bound for Spain with a cargo of cocoa, the *Almiranta de Honduras* and an accompanying frigate are believed to have wrecked somewhere near present-day Miami in 1632 (Singer 1998). The HMS *Fowey*, a 20-gun British warship, sank off Biscayne Bay in 1748. Commanded by Captain Francis Drake (a descendant of the more famous seaman and privateer Francis Drake), the ship carried 44 guns and over 200 men (Skowronek and Fischer 2009).

A new chapter of settlement in present-day Miami-Dade County began during the British Period (1763–1784) of Florida history. Historian Daniel L. Schafer deemed Biscayne Bay “totally uninhabited” at the start of British rule (Schafer 1984:23). Epidemics decimated the local Tequesta population, and there were certainly no European settlements to be found. In 1772, surveyor Frederick G. Mulcaster visited the bay in a schooner with orders to survey a land grant for Lord Dartmouth and other British investors interested in establishing plantations in the region. Along Biscayne Bay, Mulcaster saw the makings of “a valuable Country” (Schafer 1984:26). Due to the isolation of this land and the interruption of the American Revolution, none of these proposed ventures was successful. By the conclusion of Great Britain’s rule over Florida in 1783, the region continued to be largely uninhabited. However, the Seminole were migrating into the region in steady numbers during this time (Schafer 1984).

Wreckers, men who risked their lives to rescue sailors, ships, and cargoes from the Florida Reef, were probably the most knowledgeable within the area, aside from the local Seminole. Key West was the largest and most active wrecking station in the early nineteenth century, but there were several smaller stations. Historian John Viele notes three wrecking captains based out of the Biscayne Bay region in the 1820s (Viele 2001). The United States’ acquisition of Florida in 1821 brought new attention to present-day Miami-Dade County. Lieutenant Matthew Perry of the United States Navy wrote of the need for lighthouses in the region after taking possession of Key West for the United States in 1822. Out of his recommendation came the establishment of the Cape Florida, Key West, Sand Key, and Garden Key lighthouses (Viele 2001). The original Cape Florida lighthouse was completed in 1825. A landmark in the region for decades to come, the lighthouse was a significant feature in local history (Florida State Parks 2021).

Following in the footsteps of earlier British and Spanish interests in the region, American settlers ventured into present-day Miami-Dade County by the 1830s. The most notable American settler was Richard Fitzpatrick, who developed a plantation on the north side of the Miami River beginning in 1830 after buying land from Spanish Land grant holders in the region. He brought 60 enslaved peoples to work his fields. The Miami River was vital in transporting the plantation's products to market (Black 1981; Chapman 1993; Chardon 1977; George 1992). Several years after Fitzpatrick and other settlers ventured into the area, the Second Seminole War (1835–1842) erupted, stifling a nonmilitary settlement in present-day Miami-Dade County (Chapman 1993). In 1836, just as the war began, the Seminole attacked and set fire to the Cape Florida lighthouse, wounding the lighthouse keeper, and killing his assistant (Mahon 1967). As the war gradually moved inland to the Everglades region, the United States Army chose the former Fitzpatrick plantation as the site of Fort Dallas. The fort was established in 1838 and became a principal staging point for the soldiers and sailors moving into the Everglades against the Seminole (Buker 1978). Knowledge of present-day Miami-Dade County grew because of the military presence.

With the war over in 1842, settlement slowly crept forward. William English, a nephew of Fitzpatrick, reassembled the Miami River plantation and made plans for a "Village of Miami" on the southern bank of the river. He had sold several lots by the beginning of the 1850s, but the California gold rush soon lured him away from his Florida enterprise. The lighthouse was reconstructed in 1846 as shipping increased along the Atlantic Coast (Florida State Parks 2021). A third war with the Seminole erupted in 1855. Fort Dallas was reactivated at the earlier location on the north side of the river, bringing yet another flood of troops to the region (George 1992).

In comparison to other parts of the state, both the Civil War and Reconstruction periods (1861–1877) were relatively quiet in present-day Miami-Dade County. There was only a very small population—approximately 40—in the region in this period. Several starch mills, which relied on the local comtite (also known as coonti) plant, operated in the Miami area. Union and Confederate deserters, Union spies, and blockade runners used the abandoned site of Fort Dallas as a refuge during the Civil War. Also, Confederate sympathizers extinguished the light atop the lighthouse to prevent Union ships from taking advantage of its guidance. As late as the 1870s, there were only 50 inhabitants in the region around Biscayne Bay. The Biscayne Bay Company, a banana-growing enterprise run by several Georgians, was one of the only attempts at economic development (Staubach 1993; Tubby 1997).

In the late nineteenth century, settlement spread across Florida like never before. Present-day Dade County, still relatively unsettled, became an area of interest to investors from the north who viewed Florida as a land of immense opportunity. The United States Army Corps of Engineers also became interested in Biscayne Bay, initiating years of private interest and both local and federal support that created the port of Miami. The first Army Corps survey of Biscayne Bay was undertaken in 1895. Major Thomas H. Handbury was the lead surveyor who recommended that Bear Cut—one of three cuts between the bay and the ocean—held the best potential for improvements (Buker 1978).

The City of Miami emerged in the late nineteenth century as Henry M. Flagler built his Florida East Coast Railway through the area en route to Key West. In 1895, Flagler, having blazed down the eastern coast of the state, agreed to extend the railroad to the Miami River in exchange for several hundred acres of land on the north side of the Miami River where Fort Dallas once stood. Upon these lands, Flagler planned the city that became Miami. In less than a decade, the former frontier outpost burgeoned into one of the more populous cities of southern Florida. Flagler's Royal Palm Hotel, lying on the north side of the river, was an early centerpiece. By Spring 1896, the first railroad arrived, and hundreds of tourists flocked to the city in the following years. Flagler built a wharf about half a mile upstream from the mouth of the river and dredged a channel from here to Cape Florida (Buker 1978).

Flagler's developments brought new settlements and encouraged economic growth in the region. Regular steamship service between Miami and Key West began in 1897. That same year, Wilson A. Larkins arrived in present-day South Miami. After following a wagon trail (present-day Ingraham Highway), Larkins established himself and his family at the end of the trail amidst lush wilderness. Larkins established a small dairy farm and a year later opened a post office near present-day Cocoplum Circle, where he served as postmaster (South Miami, Florida 2022). With the extension of the Florida East Coast Railroad into South Miami in 1906, Larkins purchased more property near present-day Red Road and Sunset Drive. Eventually, Larkins opened a grocery and general supply store as more families arrived in the area. The United States government moved the existing post office to the new location and named it Larkins in honor of its postmaster and first settler. By 1917, the small community had 350 residents (South Miami, Florida 2022).

In the 1920s, the entire state of Florida experienced a land boom. Dade County emerged as the epicenter, with many land speculators purchasing land and properties without having seen them. The land boom created numerous new neighborhoods in the county and increased the population and urban density. In the small community of Larkins, a 10-acre (4.0-hectare) tract sold for \$100,000 at the height of the land boom. In addition, the South Miami County Club subdivision was further subdivided to establish High Pines Subdivision in October 1924. New residents arrived as well, including Arden Hayes "Doc" Thomas, who opened a pharmacy and feed store. Though not a physician, Thomas gained his nickname for serving as the community doctor through his pharmacy. He bought property in the new High Pines Subdivision (Florida Bureau of Historic Preservation 2014). With the influx of new residents and expansion of the community, the citizens of Larkins voted to incorporate in 1926 as South Miami. After electing a town council, the men approved a town seal and formalized a town code. In a few short weeks, the town council rented a building to serve as the town hall, purchased a fire truck, and appointed a city health officer, engineer, and attorney (South Miami, Florida 2022).

This flurry of activity ended in 1926 when a devastating hurricane swept across southern Florida. The hurricane was known as the "Miami Hurricane" because of the devastation it wrought in the area. The hurricane directly influenced the end of the local land boom (Chapman 1993). In South Miami, the town requested federal assistance but received no answer. The area attributed the lack of response due to their status as a town, and the town reincorporated as the City of South Miami in 1927. The stagnation of the late 1920s continued through the Great Depression of the

1930s. Financial problems and local conflict caused all city functions to cease for six months. However, no one planned to cover the debts accrued by the government, and a judge required the mayor and city council to resume business. To reduce city spending, the city council voted to reduce the overall size of the city twice, resulting in its present-day size (South Miami, Florida 2022). During this tumultuous time, Doc Thomas built his home on present-day Sunset Drive using the pine on the property and designed by his friend, Robert Finch Smith. The house was later listed in the National Register of Historic Places (NRHP) (Florida Bureau of Historic Preservation 2014).

The military buildup of the late 1930s brought Miami out of economic depression as the federal government developed training bases in Dade County and the local population became connected to the war effort in various ways. Early in the war, danger often lurked along the coast as the menace of prowling German U-boats jeopardized the port of Miami. In 1942, a U-boat torpedoed the tanker Pan Massachusetts off Cape Canaveral. A Mexican tanker met a similar fate near Fowey Rocks later that year. Officials suspended all cruise ship and coast-wide waterborne traffic (Chapman 1993).

Incredible growth and development occurred in the postwar era in Dade County. In this period, the county—particularly Miami—became a destination for families from Cuba and elsewhere in Latin America who were seeking a better life as their own countries suffered from political unrest. The economy of the county grew in significant ways. The modern cruise industry emerged in the decade following the war. The Peninsular and Occidental Company offered cruises to Havana and other parts of the Caribbean. Also, the housing industry expanded as Miami became increasingly suburbanized. In South Miami, this postwar growth highlighted the inadequacies of its original charter. A committee reviewed the existing charter and recommended South Miami create a new charter and implement a new government with a city manager and a commission. The City of South Miami instituted these changes in July 1953 (South Miami, Florida 2022).

In the same period, the agricultural industry that developed in the interior of the county in the early twentieth century began to fade from the landscape (Chapman 1993). In 1973, Arden Thomas donated his house and property to the Tropical Audubon Society with the condition that the house and surrounding land be used to educate visitors on the local environment, a mission which they embrace into the present-day (CBS Broadcasting Inc. 2022; Florida Bureau of Historic Preservation 2014). As Miami grew into a city of international importance, citizens voted in 1997 to change the county's name from Dade to Miami-Dade. However, South Miami retained its small-town atmosphere, which became a staple in the city's marketing of the area (South Miami, Florida 2022).

Florida Master Site File Review

A review of the Florida Master Site File (FMSF) database updated in April 2022 indicates that three previous cultural resource surveys have been conducted within the APE (**Table 1; Figure 4**).

Table 1. Previous Cultural Resource Surveys within the SW 72nd Street and SW 57th Avenue APE.

FMSF No.	Title	Year	Author
340	<i>Dade County Archaeological Survey Interim Report</i>	1980	Robert S. Carr
4506	<i>A Cultural Resources Assessment Survey of SR 986/SW 72nd Street/Sunset Drive from US 1 to Red Road/SW 57th Avenue, Dade County, Florida</i>	1996	Janus Research
2127	<i>Dade County Historic Survey, Phase II: Final Report</i>	1989	Metropolitan Dade County

The FMSF also indicates that one previously recorded cultural resource is within the APE (see **Figure 4**). Resource 8DA06486, Sunset Drive, traverses the current APE from west to east. Sunset Drive was previously documented in numerous locations to the west of the current project APE. In each of these previous evaluations, the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (HNTB Corporation and Janus Research 2010; Janus Research 2006, 2007, 2016, 2019; Kerns and Newton 2019).

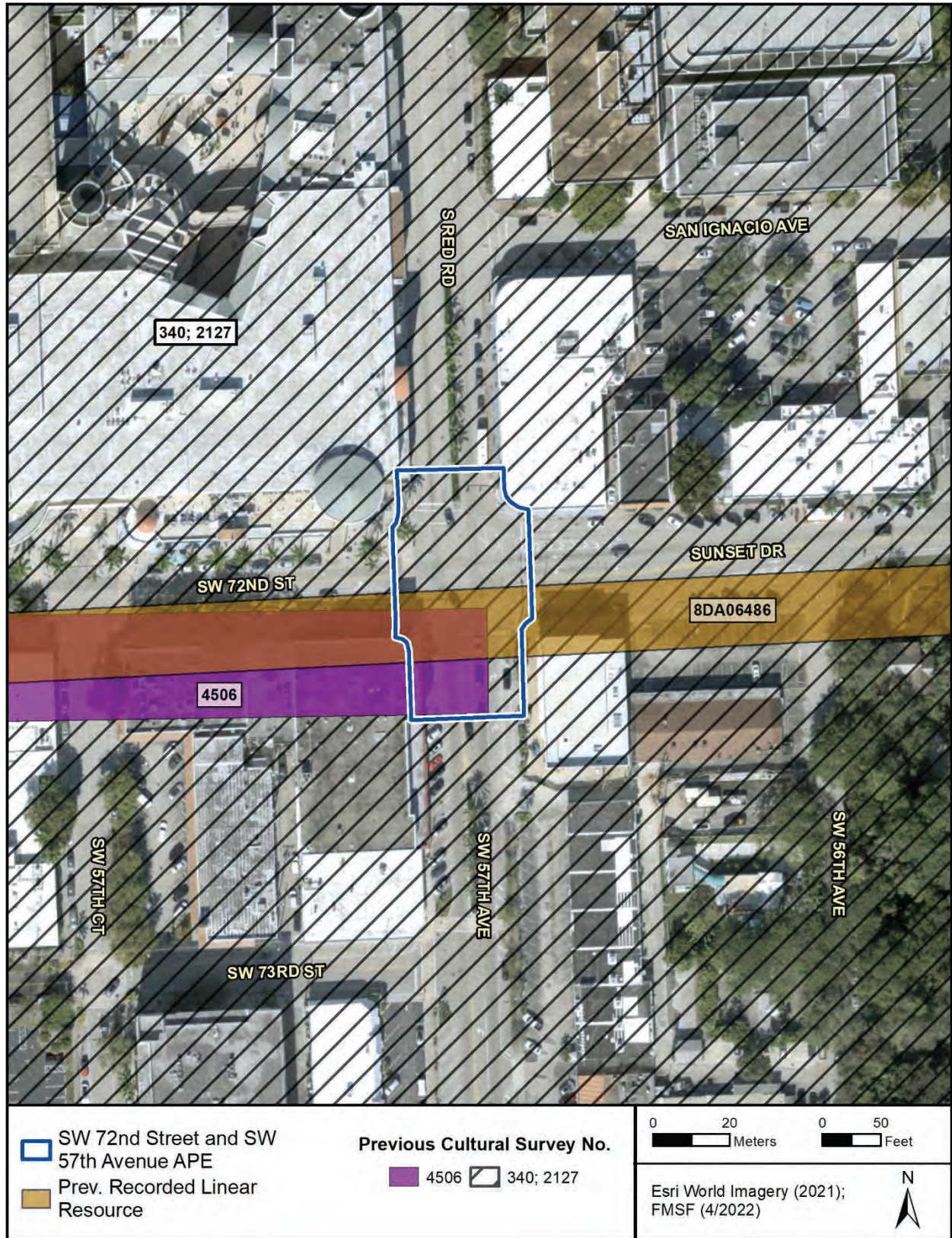


Figure 4. Previously conducted cultural resource surveys and previously recorded cultural resources within the SW 72nd Street and SW 57th Avenue APE.

Historic Map and Aerial Review

SEARCH examined historic maps and aerial photographs to identify past land use in the vicinity of the SW 72nd Street and SW 57th Avenue APE. The earliest detailed maps consulted were General Land Office (GLO) survey maps. Government land surveyors created GLO maps during the nineteenth century as part of the surveying, platting, and sale of public lands. In Florida, these maps characteristically show landscape features such as vegetation, bodies of water, roads, and Spanish land grants. The level of detail in GLO maps varies, with some also depicting structures, Native American villages, railroads, and agricultural fields. GLO maps of Florida Township 54 South, Range 40 and 41 East created in the mid-1840s show no development within the APE (**Figure 5**) (GLO 1845, 1846).

Miami is labeled outside the APE to the northeast in 1860 (Mitchell 1860). No further improvement is illustrated until 1880 when Fort Dallas is labeled outside the APE to the northeast (Asher and Adams 1871; Leslie-Judge Company 1880). By 1890, the town of Coral Gables is apparent outside the APE to the east (Norton 1890). In 1900, Miami is the final stop on the Florida East Coast Railroad that extended north (Rand McNally and Company 1900). The town of Larkins (present-day South Miami) is labeled as a stop on the Florida East Coast Railroad in 1910 (C. S. Hammond and Company 1910). A general highway map created in 1935 shows roads on the present-day paths of SW 72nd Street and SW 57th Avenue intersected within the APE (Florida State Road Department 1935).

By 1950, the two roads within the APE were improved highways (**Figure 6**) (US Geological Survey [USGS] 1950).

An aerial photograph taken in 1961 shows buildings on the western and southeastern corners of the intersection on the border of the APE (**Figure 7**) (USGS 1961).

In 1969, the APE is within an area shaded to indicate high population density. A building is depicted on the northeastern corner of the intersection on the APE border (**Figure 8**) (USGS 1969).

By 1973, buildings are on all corners of the intersection within the borders of the APE. No other changes are evident (**Figure 9**) (USGS 1973).

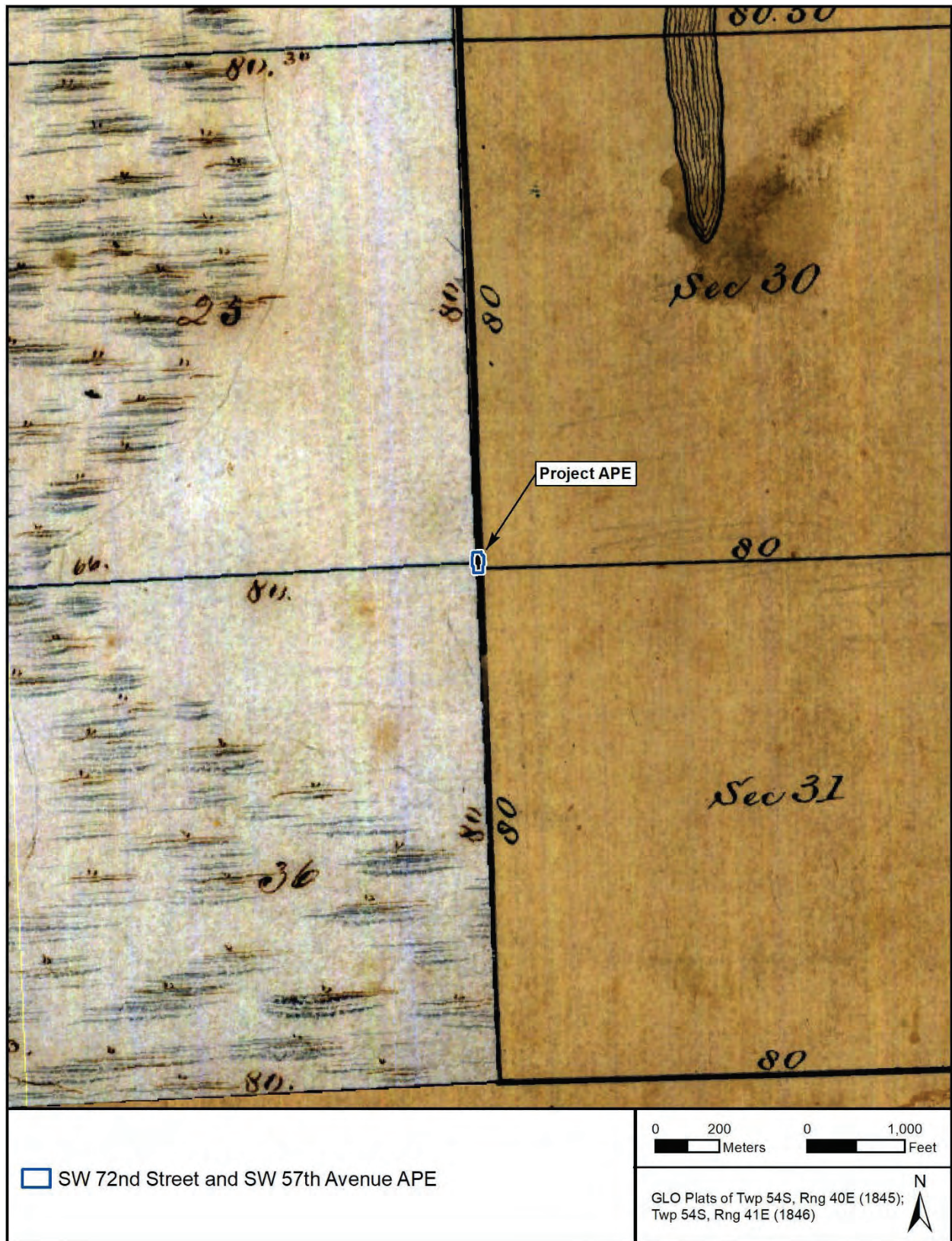


Figure 5. GLO survey maps of Township 54 South, Ranges 40 and 41 East (GLO 1845, 1846).

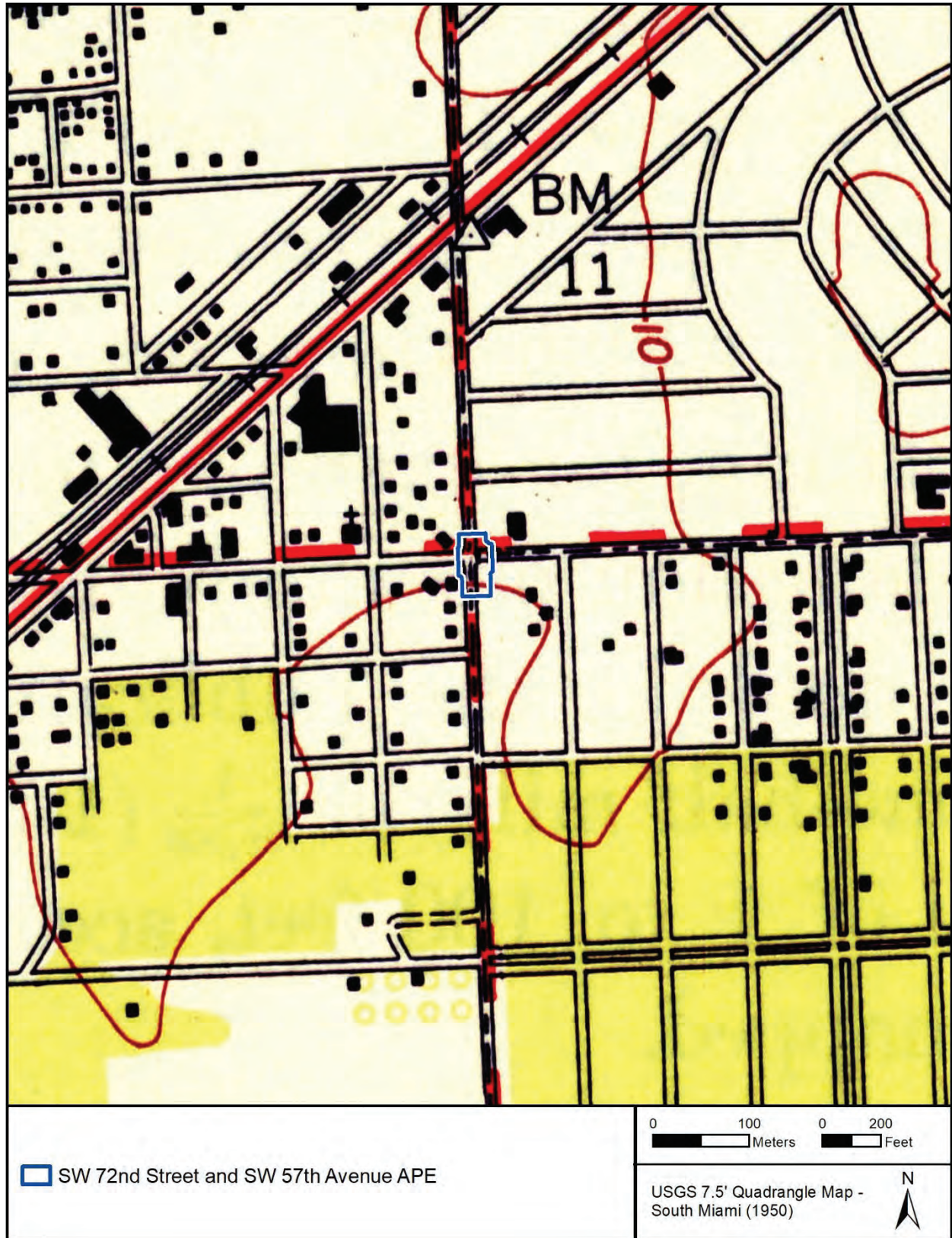


Figure 6. South Miami, Florida, USGS topographic map (USGS 1950).



Figure 7. USGS aerial photograph of Dade County, Florida (USGS 1961).

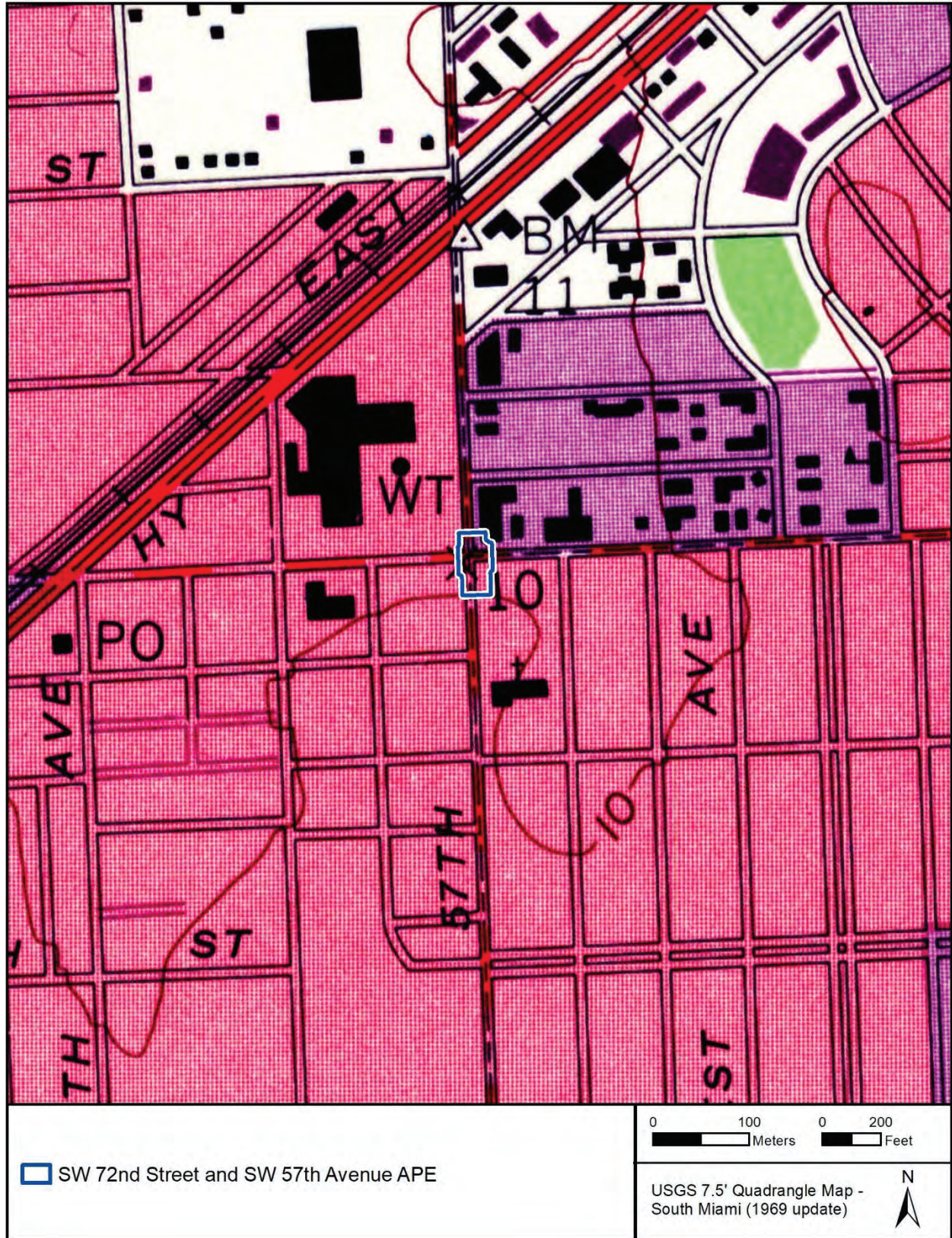


Figure 8. South Miami, Florida, USGS topographic map (USGS 1969).



Figure 9. USGS aerial photograph of Dade County, Florida (USGS 1973).

SURVEY EXPECTATIONS

Based on an examination of environmental variables (e.g., poor soil drainage, limited access to freshwater and marine resources, and relative elevation), the results of previously conducted surveys, and the modern development, SEARCH considered the potential for encountering intact archaeological resources to be low within the construction footprint for the proposed undertaking. The proposed improvements are within the existing operational right-of-way which is previously disturbed and covered with impervious surface and thus archaeological testing was not possible. Moreover, the construction work involves replacement in kind and other roadway surface treatments which would not extend below the previous limits of disturbance. The setting of the project location is characterized as Urban land lacking natural soil deposition. SEARCH based this assessment of the proposed construction footprint on the significant previous disturbance, including buried utilities and drainage structures, the existing modernized roadway, and multiple episodes of construction in the past.

Review of the FMSF GIS database and Miami-Dade County Property Appraiser's GIS database indicates that there are no parcels containing unrecorded historic (pre-1974) buildings and structures within the APE. However, review of historic topographic maps indicates that SW 72nd Street and SW 57th Avenue have been following their current routes through the APE since at least 1935. Therefore, SEARCH considered the potential for historic built resources in the APE to be high.

SURVEY METHODS

Archaeological Field Methods

Due to evidence of disturbance from the installation of buried utilities, drainage structures, and other development throughout the APE, and given the presence of impervious paved surfaces, the archaeology field survey consisted of pedestrian survey. SEARCH took digital photographs of the current conditions within the project right-of-way, including existing pavement, sidewalk, and buried utility markers. SEARCH documented the field conditions in field notebooks and with photographs.

Architectural Field Methods

The architectural survey for the project utilized standard procedures for locating, investigating, and recording historic built resources. In addition to searching the FMSF database for previously recorded historic resources within the SW 72nd Street and SW 57th Avenue APE, SEARCH reviewed USGS quadrangle maps for resources constructed prior to 1974. The field survey inventoried existing buildings, structures, and other aspects of the built environment within the APE. Each historic resource was plotted on USGS quadrangle maps and project aerials. SEARCH photographed the historic resources with a digital camera and recorded all pertinent information

regarding the architectural style, distinguishing characteristics, and condition on FMSF structure forms.

Upon completion of fieldwork, forms and photographs were returned to the SEARCH offices for analysis. The date of construction, design, architectural features, condition, integrity of the structure, and how the resources relate to the surrounding landscape were carefully considered. The resources were evaluated regarding their eligibility for listing in the NRHP and then recommended eligible, potentially eligible, or not eligible.

Laboratory Methods

No artifacts were recovered because of this survey, and no laboratory analysis was required.

Curation

The original maps and field notes are presently housed at the SEARCH office in Newberry, Florida. Upon project completion, the original maps and field notes will be turned over to the FDOT, District 6; copies will be retained by SEARCH.

FIELD SURVEY FINDINGS

Archaeological Survey Results

According to files maintained by the FMSF, there are no previously recorded archaeological sites within the APE. All land within the APE is previously disturbed from roadway and sidewalk construction, buried utilities associated with urban development, and extant drainage structures. The soils within the APE are classified as Urban land, and the ground surface is covered in an impervious surface; therefore, testing was not possible. SEARCH encountered no archaeological resources during this survey, and SEARCH recommends no further archaeological work in support of the SW 72nd Street and SW 57th Avenue improvements.

Every reasonable effort has been made during this investigation to identify and evaluate possible locations of prehistoric and historic archaeological sites; however, the possibility exists that evidence of cultural resources may yet be encountered within the project limits. Should evidence of unrecorded cultural resources be discovered during construction activities, all work in that portion of the project area must stop. Evidence of cultural resources includes aboriginal or historic pottery, prehistoric stone tools, bone or shell tools, historic trash pits, and historic building foundations. Should questionable materials be uncovered during the excavation of the project area, representatives of the FDOT, District 6, will assist in the identification and preliminary assessment of the materials. If such evidence is found, the FDHR will be notified within two working days.

In the unlikely event that human skeletal remains or associated burial artifacts are uncovered within the project area, all work in that area must stop. The FDOT, District 6, Cultural Resources Coordinator must be contacted. The discovery must be reported to local law enforcement, who will in turn contact the medical examiner. The medical examiner will determine whether or not the State Archaeologist should be contacted per the requirements of Chapter 872.05, Florida Statutes.

Architectural Survey Results

The architectural survey resulted in the identification and evaluation of two historic resources within the SW 72nd Street and SW 57th Avenue APE (**Figures 10 and 11**). Both resources, Sunset Drive (8DA06486) and Red Road/SW 57th Avenue (8DA11931), are previously recorded linear resources. Sunset Drive was previously documented in numerous locations to the west of the current project APE. In each of these previous evaluations, the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (HNTB Corporation and Janus Research 2010; Janus Research 2006, 2007, 2016, 2019; Kerns and Newton 2019). As the portion of the resource within the APE is comprised of a modernized roadway that features characteristics similar to those segments already determined ineligible, SEARCH recommends that this segment of Sunset Drive (8DA06486) is also ineligible for the NRHP.

Red Road/SW 57th Avenue (8DA11931) was previously documented in several locations to the north of the current project APE. In each of these previous evaluations, the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (Janus Research 2010, 2017, 2018). As the portion of the resource within the APE is comprised of a modernized roadway that features characteristics similar to those segments already determined ineligible, SEARCH recommends that this segment of Red Road (8DA11931) is also ineligible for the NRHP.

It should be noted that a portion of Red Road within the current APE is designated State Historic Highway (SHH). In addition, a portion of Sunset Drive a block to the east of the APE and continuing east was also designated a SHH. As SHHs, specific segments of Sunset Drive and Red Road were granted, by state legislation, special protections to preserve the historic character and landscaping of the roadways. The designated portion of Red Road SHH (Chapter 89-383 and amended by Chapter 2007-196 of the Laws of Florida) terminates at the intersection within the APE and continues north, while the designated portion of Sunset Drive SHH terminates a block east of the APE. The complete text for these applicable laws can be found in **Attachment A**, and additional information on the Red Road SHH in relation to the current project is included with the resource description below. Review of the applicable law for Sunset Drive SHH (Chapter 83-365 of the Laws of Florida) confirmed that the project is of sufficient distance from the designated portion of the roadway, which ends at SW 56th Avenue, such that the law does not apply to the portion within the current APE.

SEARCH identified no existing or potential historic districts during the survey. Descriptions and evaluations are provided below for Sunset Drive (8DA06486) and Red Road/SW 57th Avenue (8DA11931), as the presentation of their attributes in a table was deemed insufficient. FMSF forms were completed for both resources within the APE, and these forms are provided in **Attachment B**. An FDHR survey log sheet is included in **Attachment C**.

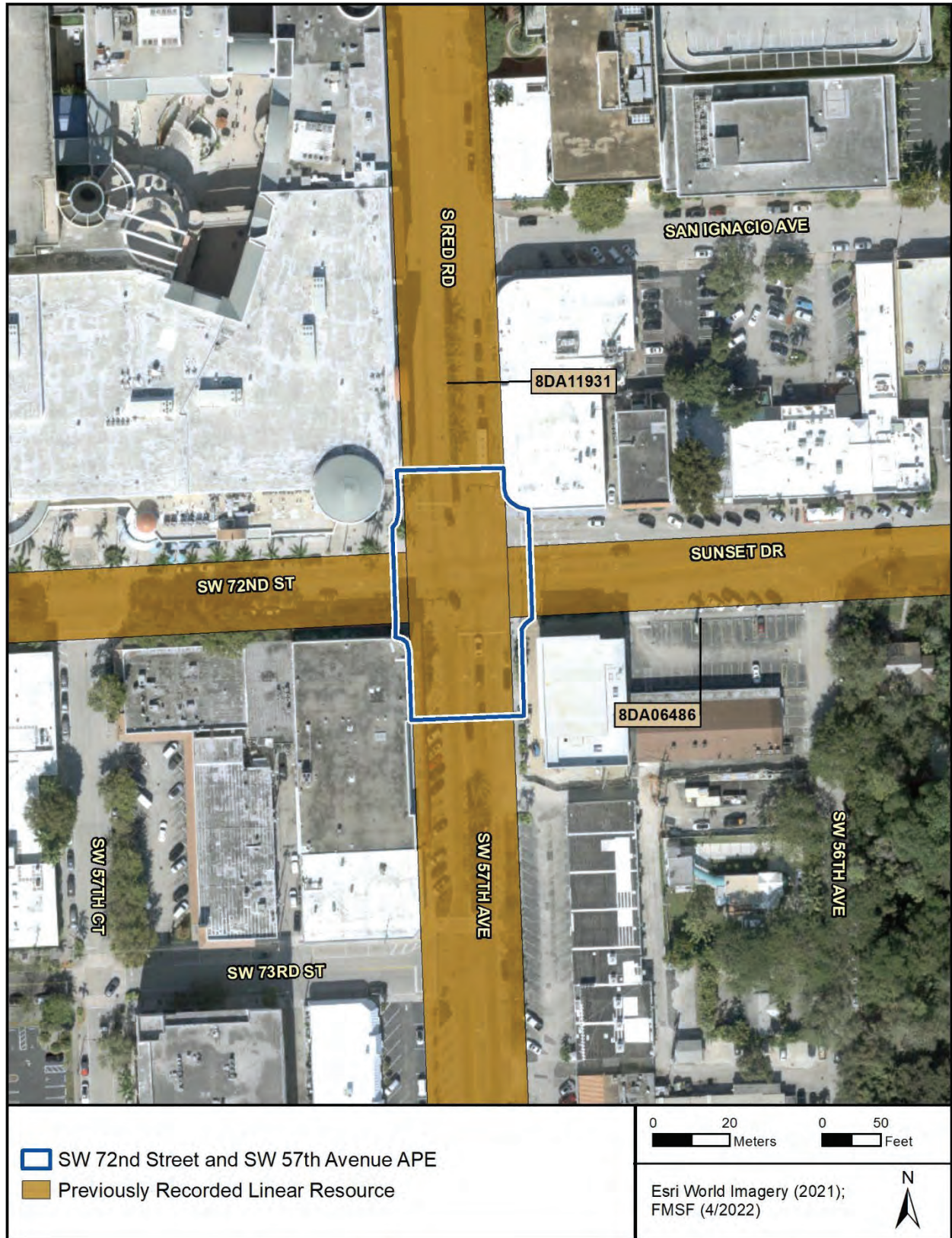


Figure 10. Identified historic resources within the SW 72nd Street and SW 57th Avenue APE shown on an aerial map.



Figure 11. Identified historic resources within the SW 72nd Street and SW 57th Avenue APE shown on a topographic map.

NRHP EVALUATIONS

Linear Resources

8DA06486, Sunset Drive

Sunset Drive (8DA06486), also designated SW 72nd Street, is a newly recorded segment of a previously recorded linear resource in Miami-Dade County, Florida. Within the APE, 8DA06486 is in Sections 25 and 36 of Township 54 South, Range 40 East, and Sections 30 and 31 of Township 54 South, Range 41 East as shown on the 2021 South Miami, Fla. USGS quadrangle map (see Figure 11). The current APE is confined to the small segment of the roadway that intersects Red Road/SW 57th Avenue. Sunset Drive was previously documented in several locations to the west of the current project APE. In each of these previous evaluations, the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (HNTB Corporation and Janus Research 2010; Janus Research 2006, 2007, 2016, 2019; Kerns and Newton 2019). This segment of 8DA06486 runs east to west for approximately 115 feet (35 meters). It has been modernized and features four lanes on the east side of the intersection and three on the west, including multiple turn lanes. The road is in an urban, commercial environment and is bounded by concrete curbs and sidewalks (**Figures 12 and 13**).

Constructed circa 1922, Sunset Drive was originally called Sunset Road and was a simple dirt road during its early history, according to a photograph from 1926 (**Figure 14**). The portion of the roadway within the current APE appears on the 1938 aerial photograph as a two-lane road in what was then a mostly rural area, albeit with development beginning to encroach from the Dixie Highway corridor to the west (US Department of Agriculture [USDA] 1938). Later aerial photographs show the area around the APE continuing to develop. By 1968, substantial development encompassed the entire area, with the roadway also being notably widened during these years (FDOT 1951, 1968).

Assessment

Previously recorded segments of 8DA06486 have all been determined ineligible for listing in the NRHP (HNTB Corporation and Janus Research 2010; Janus Research 2006, 2007, 2016, 2019; Kerns and Newton 2019). Based on a comparison of modern and historic aerial imagery, the segment within the APE retains its historic alignment (USDA 1938). However, historic aerial imagery also indicates that the road has been expanded from its original two-lane design since at least 1952 (FDOT 1968). In addition, the segment of 8DA06486 within the APE has been paved with modern asphalt, and its environment has been developed with commercial structures, modern traffic signage, utility poles, and non-historic pavement. Therefore, it no longer retains its integrity of setting, design, materials, or workmanship. While it retains its integrity of location, the loss of these other aspects of integrity diminishes its integrity of feeling and association.



Figure 12. Resource 8DA06486, facing west at SW 57th Avenue, showing the portion of the road within the APE.



Figure 13. Resource 8DA06486, facing east at SW 57th Avenue, showing the portion of the road within the APE.



Figure 14. Resource 8DA06486 as it appeared in 1926. The exact location of the photograph is unknown (Florida Memory 1926).

Based on the results of the current survey, this segment of 8DA06486 is not recommended eligible under Criterion A because it does not possess sufficient integrity to illustrate its connection with the original historic roadway. The resource is not eligible under Criterion B as it lacks association with any person(s) significant in history. Resource 8DA06486 is not eligible under Criterion C as it has been modernized from its original construction and so is not a rare or early example of a standard type of road, does not display any distinctive or character-defining engineering or aesthetic elements, and does not have a significant association with a prominent builder, designer, engineer, or planner. Finally, the resource is not eligible under Criterion D because it lacks the potential to yield further information of historical importance. Therefore, SEARCH recommends this section of Sunset Drive (8DA06486) ineligible for listing in the NRHP as it lacks the minimum criteria for listing, either individually or as a contributing resource to a historic district.

8DA11931, Red Road/SW 57th Avenue

Red Road/SW 57th Avenue (8DA11931) is a newly recorded segment of a previously recorded linear resource in Miami-Dade County. It was previously documented in several locations to the north of the current project APE. In each of these previous evaluations, the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (Janus Research 2010, 2017, 2018). Within the current APE, 8DA11931 is within Sections 25 and 36 of Township 54 South, Range 40 East, and Sections

30 and 31 of Township 54 South, Range 41 East as shown on the 2021 South Miami, Fla. USGS quadrangle map (see **Figure 11**). This segment of 8DA11931 runs north to south for approximately 210 feet (64 meters). It has been modernized and widened into a four-lane asphalt-paved road within the APE due to the addition of multiple turn lanes, and is bounded by concrete curbs, sidewalks, and street parking (**Figures 15** and **16**). Intermittent medians containing shrubs and palms are also present and continue to the north and south beyond the APE.

Red Road was originally constructed circa 1921 and demarcated the western boundary of the City of Coral Gables when it initially developed. Although likely taken outside of the current project APE, a 1921 photograph shows Red Road as a dirt road as it appeared soon after its initial construction (**Figure 17**). As the current project APE is limited to the area around the intersection of Red Road/SW 57th Avenue and Sunset Drive, historical development along this section of Red Road mirrors that discussed for Sunset Drive above. Red Road appears as a two-lane road on the 1938 aerial photograph (USDA 1938). The roadway remained two lanes in 1951, but commercial development began in the vicinity of the intersection by that time (FDOT 1951). By 1968, the area has been entirely developed, the roadway had been widened, and considerable modernization was evident (FDOT 1968).

Assessment

Previously recorded segments of 8DA11931 have been recommended ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (Janus Research 2010, 2017, 2018). Based on a comparison of modern and historic aerial imagery, the segment within the APE retains its historic alignment (USDA 1938; FDOT 1951). However, historic aerial imagery also indicates that the road has been expanded from its original two-lane design into its current four-lane (including turn lanes) design since at least 1951 (FDOT 1951). In addition, 8DA11931 within the APE has been paved with modern asphalt, and its environment has been developed with commercial structures, modern traffic signage, utility poles, and non-historic pavement. Therefore, it no longer retains its integrity of setting, design, materials, or workmanship. While it retains its integrity of location, the loss of these other aspects of integrity diminishes its integrity of feeling and association.



Figure 15. Resource 8DA11931, facing north toward the Sunset Drive/SW 72nd Street intersection, showing the portion of the road within the APE.



Figure 16. Resource 8DA11931, facing northwest at the Sunset Drive/SW 72nd Street intersection, showing the portion of the road within the APE.



Figure 17. Resource 8DA11931 as it appeared in 1921. The exact location of the photograph is unknown (Florida Memory 1921).

Based on the results of the current survey, SEARCH recommends that this segment of 8DA11931 is not eligible under Criterion A because it does not possess sufficient integrity to illustrate its connection with the original historic roadway. The resource is not eligible under Criterion B as it lacks association with any person(s) significant in history. Resource 8DA11931 is not eligible under Criterion C as it has been modernized from its original construction and therefore is not a rare or early example of a standard type of road, does not display any distinctive or character-defining engineering or aesthetic elements, and does not have a significant association with a prominent builder, designer, engineer, or planner. Finally, the resource is not eligible under Criterion D because it lacks the potential to yield further information of historical importance. Therefore, SEARCH recommends this section of Red Road/SW 57th Avenue (8DA11931) ineligible for listing in the NRHP as it lacks the minimum criteria for listing, either individually or as a contributing resource to a historic district.

The intersection of Red Road/SW 57th Avenue and Sunset Drive serves as the southern terminus for the portion of Red Road that has been designated a SHH. This designated segment of Red Road was made a SHH on June 28, 1989 (Chapter 89-383 and amended by Chapter 2007-196 of the Laws of Florida). Section 2 of this law states that no public funds shall be expended for:

- (1) The removal of any healthy tree which is not a safety hazard.
- (2) Any alteration of the physical dimensions or location of Red Road, the median strip thereof, the land adjacent thereto, or any part of the original composition of the entranceway, including the towers, the walls, and the lampposts.

(3) Any construction on or along Red Road of any new structure, or any building, clearing, filling, or excavating on or along Red Road except for routine maintenance or work which is essential to the health, safety, or welfare of the environment.

Part of the proposed sidewalk reconstruction and scramble crosswalk addition along Red Road is within the SHH, so it must be addressed in relation to this legislation. Although part of the current APE serves as the southern terminus of the Red Road SHH, the description of the road's historical significance largely pertains to the portion of Red Road near the entrance to Coral Gables Wayside Park, which is located approximately 3.75 kilometers (2.33 miles) north of the project APE. As a result of this field survey, which identified no historic fabric within the project APE, SEARCH understands that the construction will not require the removal of any historic structures or features associated with the SHH. In addition to the stipulations noted above, Section 3 of Chapter 89-383 also states:

Prior to performing any work claimed to be essential to the health, safety, or welfare of the environment, including the removal of any healthy tree, Dade County shall hold an advertised public meeting to present the findings of fact necessitating such work.

As required by the law, a public meeting addressing the proposed improvements was held on June 15, 2022.

CONCLUSIONS AND RECOMMENDATIONS

This report details the results of a cultural resource assessment survey for the proposed intersection improvements at SW 72nd Street and SW 57th Avenue in Miami-Dade County, Florida. The Miami-Dade County DTPW is proposing the replacement of portions of existing sidewalk, installation of detectable warning surfaces and pedestrian ramps, painting of roadways, replacement of portions of curbs and gutters, and installation of four new aluminum pedestal signal poles at the intersection SW 72nd Street and SW 57th Avenue. This DTPW project will use federal funds administered by the FDOT, District 6, for construction in 2023. The scope of work includes the in-kind replacement or upgrade to pedestrian features within existing rights-of-way along SW 72nd Street and SW 57th Avenue. The APE was limited to include the current road right-of-way where the improvements will take place.

SEARCH limited the archaeological survey to a pedestrian survey as the ground within the APE is covered in impervious surfaces. SEARCH encountered no archaeological resources during this survey. Due to current conditions, SEARCH recommends no further archaeological work in support of the SW 72nd Street and SW 57th Avenue improvements.

The architectural survey resulted in the identification and evaluation of two historic resources within the SW 72nd Street and SW 57th Avenue APE. Sunset Drive was previously documented in numerous locations to the west of the current project APE. In each of these previous evaluations,

the surveyor recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (HNTB Corporation and Janus Research 2010; Janus Research 2006, 2007, 2016, 2019; Kerns and Newton 2019). As the portion of the resource within the APE is comprised of a modernized roadway that features characteristics like those segments already determined ineligible, SEARCH recommends that this segment of Resource 8DA06486 is also ineligible for the NRHP. Red Road/SW 57th Avenue (8DA11931) was previously documented in several locations to the north of the current project APE. In each of those previous evaluations, the surveyor also recommended the roadway ineligible for listing in the NRHP, and the SHPO subsequently concurred with these recommendations (Janus Research 2010, 2017, 2018). As the portion of the resource within the APE is comprised of a modernized roadway that features characteristics like those segments already determined ineligible, SEARCH recommends that this segment of Resource 8DA11931 is also ineligible for the NRHP.

A portion of Red Road within the current APE is designated a SHH (Chapter 89-383 and amended by Chapter 2007-196 of the Laws of Florida). In addition, a portion of Sunset Drive a block to the east of the APE and continuing east was also designated a SHH. Review of the applicable law for Sunset Drive SHH (Chapter 83-365 of the Laws of Florida) confirmed that the project is of sufficient distance from the designated portion of the roadway, and as such, that the law does not apply to the portion within the current APE. With regards to the proposed improvements along Red Road SHH, the field survey identified no historic fabric within the project APE.

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ATTACHMENT A

**FLORIDA LAW CHAPTER 83-365, AMENDED BY CHAPTER 2007-
196
AND FLORIDA LAWCHAPTER 89-383**

Broward Regional Service Center in Broward County, for which materials and work the department agreed to pay Edward L. Nezelek, Inc., the sum of \$3,688,500, and

WHEREAS, Edward L. Nezelek, Inc., satisfactorily completed all of said work and furnished all of said materials and received payment in the sum of \$3,688,500 pursuant to said contract, and

WHEREAS, Edward L. Nezelek, Inc., filed claims with the department for certain additional moneys to which it claimed entitlement as a result of additional work and services performed for the department pursuant to said contract, and

WHEREAS, following their filing for said additional moneys with the appropriate state administrative agency, said claims were compromised by a consent order and agreement between Edward L. Nezelek, Inc., and the department, dated March 2, 1982, and

WHEREAS, said consent order and agreement of March 2, 1982, provided that the department was in agreement that Edward L. Nezelek, Inc., should receive an additional sum of \$75,000 for said additional work and services performed pursuant to said contract, and

WHEREAS, an additional appropriation of funds by the state is necessary in order for Edward L. Nezelek, Inc., to receive said additional compensation of \$75,000, NOW, THEREFORE,

Be It Enacted by the Legislature of the State of Florida:

Section 1. The facts stated in the preamble to this act are found and declared to be true.

Section 2. The sum of \$75,000 is appropriated from the General Revenue Fund to be paid to Edward L. Nezelek, Inc., as relief for additional services performed and materials furnished to the department in connection with a construction contract and pursuant to a consent order and agreement.

Section 3. The Comptroller is directed to draw his warrant in favor of Edward L. Nezelek, Inc., in the sum of \$75,000 from the General Revenue Fund, and the State Treasurer is directed to pay the same out of such funds in the State Treasury not otherwise appropriated.

Section 4. This act shall take effect July 1, 1983.

Became a law without the Governor's approval.

Filed in Office Secretary of State June 14, 1983.

CHAPTER 83-365

House Bill No. 563

An act relating to historic preservation; designating Sunset Drive as a historic highway; providing definitions; prohibiting the use of state funds for certain physical changes on or near Sunset Drive; requiring the approval of the Division of Archives, History and Records

Management of the Department of State for other specified changes; limiting the erection of signs; authorizing the division to erect markers and to obtain historic easements in property along the road; providing an effective date.

WHEREAS, in 1894, John Burtashaw and members of his family settled along Cutler Trail in the vicinity of what later became Larkins, and

WHEREAS, a one-room school was built and opened in 1896 at the corner of what is now Sunset Drive and Erwin Road, and the pathway to the school along the section line through the pine woods was the beginning of Sunset Drive, and

WHEREAS, early in 1904, Wilson A. Larkins, son-in-law of John Burtashaw, purchased an 80-acre tract of land 5 miles west and north of Larkins, which settlement now bore his name, and in order to reach the farming tract, travel by wagon occurred along the section lines from Larkins to a point just east of what is now Galloway Road and then turned northwest, and

WHEREAS, when the railroad to Homestead was completed in 1904, mail was dropped off at the point where Larkins Road crossed the railroad tracks, and

WHEREAS, by 1907, there was a community effort to improve the road in that settlers gathered rocks and deposited them along the roadbed, county convicts then smashed the stones with sledgehammers, and rocks were quarried along the roadway to build both road and homes, and

WHEREAS, also by 1907, a portion of Larkins Road from Coco Plum Circle at Old Cutler Road to Larkins Station was oiled and, in 1917, the oiled surface was extended west of the rail station to what is now Ludlam Road, and

WHEREAS, there were, by 1923, widely spaced residences among the avocado groves along the road now called Sunset Drive, and several of these native stone and Dade County pine structures still exist as far west as 80th Avenue, and

WHEREAS, it is the finding of the Legislature that Sunset Drive should be preserved in order that present and future residents of Florida may enjoy its benefits, NOW, THEREFORE,

Be It Enacted by the Legislature of the State of Florida:

Section 1. Definitions.--As used in this act:

(1) "Sunset Drive" means those portions of Sunset Drive located between Cartegena Plaza and Southwest 56th Avenue and between Southwest 69th Avenue and Southwest 87th Avenue, otherwise known as Galloway Road, in Dade County.

(2) "Division" means the Division of Archives, History and Records Management of the Department of State.

(3) "Historic easement" means any easement, restriction, covenant, or condition running with the land, designated to preserve, maintain, or enhance all or part of the existing state of places of historic, architectural, archeological, or cultural significance.

Section 2. Sunset Drive is hereby designated as a state historic highway. No state funds shall be expended by any public body or agency for any of the following purposes:

(1) To cut or remove any tree having a diameter at its thickest part in excess of 6 inches within 35 feet of either side of the paved surface of Sunset Drive, or to engage in an activity which requires the removal without replacement of such a tree;

(2) To alter the physical dimensions or location of Sunset Drive except for the addition of primary or secondary roads intersecting the limits of Sunset Drive;

(3) To erect, demolish, or significantly alter the appearance of any structure, including, but not limited to, walls, fences, sidewalks, and curbing, within 100 feet of either side of the paved surface of Sunset Drive, with the following exceptions:

(a) Bicycle paths and recreational facilities, the construction of which does not require the removal of any structure deemed worthy of preservation by the division. The division shall be consulted and official approval obtained before any work is begun.

(b) Erections, demolitions, alterations, and restorations undertaken for the purpose of preserving or enhancing the historic or scenic value of Sunset Drive and its surroundings. The division shall be consulted and official approval obtained before any work is begun.

Nothing in this section shall be construed to prevent the ordinary maintenance and repair of Sunset Drive or structures adjacent thereto, provided the physical dimensions and location of Sunset Drive and the appearance of any such structure are preserved, nor to prevent any work that is necessary for the public health or safety as determined by the agency having jurisdiction over the portion of Sunset Drive involved. However, the preservation of Sunset Drive shall take priority over considerations of traffic management, and the public safety shall not be construed to require alterations in Sunset Drive when alternative means of promoting safety, including more restrictive traffic regulations, are available.

Section 3. No signs may be erected within 300 feet of either side of the paved surface of Sunset Drive, except the following:

(1) Official road signs, including traffic control devices, erected by the Department of Transportation or by the city or county having jurisdiction over the portion of Sunset Drive involved;

(2) Signs not visible from Sunset Drive;

(3) Markers indicating points of historical interest erected or approved by the division;

(4) Signs that do not exceed 6 square feet in area advertising the sale or lease of the property upon which they are located; or

(5) Signs advertising only the name or nature of the business being conducted upon, or the products, facilities, goods, or services being sold, supplied, or distributed upon or from, the premises where

the signs are located, if such signs do not exceed a total of 30 square feet in area for any one business.

The provisions of this section shall not supersede a more restrictive law, ordinance, or regulation already in effect or taking effect after the enactment of this act.

Section 4. The division is authorized to obtain, by purchase, gift, or devise, historic easements in property situated along Sunset Drive, whenever and to whatever extent that the division may determine appropriate, for the preservation of Sunset Drive or of any structure of historic significance along Sunset Drive. To be considered worthy of protection by the division, property or the protected part thereof need not be of great historic, architectural, archeological, or cultural significance when considered by itself, provided that it makes a significant contribution to the area considered as a whole. Any restriction placed on the use of property situated along Sunset Drive pursuant to this section shall be reported by the division to the tax assessor of Dade County and shall be taken into consideration when the property is assessed for tax purposes.

Section 5. The division shall provide for the erection of suitable markers on and along Sunset Drive.

Section 6. This act shall take effect upon becoming a law.

Approved by the Governor June 13, 1983.

Filed in Office Secretary of State June 14, 1983.

CHAPTER 83-366

House Bill No. 825

An act relating to the naming of state buildings; authorizing and directing the Board of Regents of the Division of Universities of the Department of Education to name the expanded business building at Florida State University the "Charles A. Rovetta Building"; and to name the athletic administration and fieldhouse building at Florida State University the "Coyle E. Moore Athletic Center"; providing an effective date.

WHEREAS, Charles A. Rovetta has devoted much of his adult life to the cause of higher education in this nation and this state, and

WHEREAS, for 20 years he served Florida State University as Dean of the College of Business and was instrumental in developing the reputation which the college bears today, and

WHEREAS, in addition to his academic duties, Dean Rovetta unselfishly gave of his time to the community of Tallahassee and the State of Florida in civic, religious, and social endeavors, and

WHEREAS, Florida State University, this state, and higher education have greatly benefited from the leadership and concern demonstrated by Dean Charles A. Rovetta, and

Approved by the Governor July 5, 1989.

Filed in Office Secretary of State July 5, 1989.

CHAPTER 89-383

Senate Bill No. 124

An act relating to the designation of state historic highways; designating Red Road which borders Coral Gables Wayside Park in Miami as a state historic highway; providing a definition; providing restrictions on removing trees and on construction in the area and physical alterations to the area; providing for a public meeting prior to physical alteration; providing for the erection of suitable markers; providing an effective date.

WHEREAS, Coral Gables Wayside Park is historically significant as the original entranceway to the Central Miami Subdivision, one of our earliest fully planned communities, noted for its Mediterranean revival architecture, and

WHEREAS, the entranceway was constructed in 1925, using the waterway as its centerpiece and bounded on the east by Red Road and was built with the style and flair that characterized the entrances and plazas of Coral Gables, and

WHEREAS, such entrance consists of a wall set back from the west shoulder of Red Road punctuated by eight towers of medieval appearance, with pairs of towers flanking the Coral Gables Waterway at the center and to each side and a wall which curves forward to complete the planned composition with two additional towers close to the right-of-way of Red Road, and

WHEREAS, the romantic spirit of the overall design was intended to use the entranceway to its maximum advantage to create the old world urbanism associated with the plan of the City Beautiful, and

WHEREAS, the open space between the walls and Red Road is a well-landscaped park with large shade trees, including pigeon plum, ficus, and live oak trees up to 42 inches in diameter and the original lampposts remain at the ends of the bridge, and

WHEREAS, it is the finding of the Legislature that Red Road should be preserved in order that its benefits and beauties may be maintained in accordance with the original plan, NOW, THEREFORE,

Be It Enacted by the Legislature of the State of Florida:

Section 1. As used in this act, "Red Road" means that road which forms the eastern boundary of the Coral Gables Western Section, which includes the entranceway to the Central Miami Subdivision with the Coral Gables Waterway as its centerpiece and which begins at S.W. 8th Street in Miami and runs south to S.W. 72nd Street.

Section 2. Red Road is hereby designated as a state historic highway. No public funds shall be expended for:

- (1) The removal of any healthy tree which is not a safety hazard.
- (2) Any alteration of the physical dimensions or location of Red Road, the median strip thereof, the land adjacent thereto, or any part of the original composition of the entranceway, including the towers, the walls, and the lampposts.
- (3) Any construction on or along Red Road of any new structure, or any building, clearing, filling, or excavating on or along Red Road except for routine maintenance or work which is essential to the health, safety, or welfare of the environment.

Section 3. Prior to performing any work claimed to be essential to the health, safety, or welfare of the environment, including the removal of any healthy tree, Dade County shall hold an advertised public meeting to present the findings of fact necessitating such work.

Section 4. The provisions of this act shall not supersede a more restrictive law, ordinance, or regulation already in effect or taking effect after the effective date of this act.

Section 5. The Division of Historical Resources of the Department of State shall provide for the erection of suitable markers on and along Red Road.

Section 6. This act shall take effect upon becoming a law.

Became a law without the Governor's approval June 28, 1989.

Filed in Office Secretary of State June 28, 1989.

CHAPTER 89-384

Senate Bill No. 169

An act relating to road designations; designating a portion of the eastern extension of the Orlando East-West Expressway as the James B. Greene Expressway; directing the Orlando-Orange County Expressway Authority to erect suitable markers; providing an effective date.

WHEREAS, James B. Greene was Chairman of the Orlando-Orange County Expressway Authority from February 15, 1971, to January 2, 1985, and

WHEREAS, Mr. Greene was a leader in the planning of transportation facilities for the authority and for central Florida, and

WHEREAS, Mr. Greene was deeply involved in his community and was the Orlando-Orange County Expressway Authority Chairman from 1971 to 1985, the chairman of the Nominating Board of Orlando, the director of the Executive Committee of the Florida Chamber, a member of the Committee of 100 of Orange County, Inc., Director of Goodwill Industries of Central Florida, Inc., member and past president of the Industrial Development Commission of Mid-Florida, Inc., a member of the Board of Directors of the Orlando Utilities Commission, a member of the Florida Council of 100 and director of the University Club, and

WHEREAS, Mr. Greene possessed a deep and lasting affection and loyalty to the authority, and

whose geographical boundaries include any county as defined in s. 125.011(1) must include an additional voting member appointed by that city's governing body for each city with a population of 50,000 or more residents.

Section 59. Subsection (1) of section 341.828, Florida Statutes, is amended to read:

341.828 Permitting.—

(1) The authority, for the purposes of permitting, may utilize one or more permitting processes provided for in statute, including, but not limited to, the metropolitan planning organization long-range transportation planning process as defined in s. 339.175~~(6) and (7) and (8)~~, in conjunction with the Department of Transportation's work program process as defined in s. 339.135, or any permitting process now in effect or that may be in effect at the time of permitting and will provide the most timely and cost-effective permitting process.

Section 60. Section 2 of chapter 89-383, Laws of Florida, is amended to read:

Section 2. Red Road is hereby designated as a state historic highway. No public funds shall be expended for:

(1) The removal of any healthy tree which is not a safety hazard.

(2) Any alteration of the physical dimensions or location of Red Road, the median strip thereof, the land adjacent thereto, or any part of the original composition of the entranceway, including the towers, the walls, and the lampposts.

(3) Any construction on or along Red Road of any new structure, or any building, clearing, filling, or excavating on or along Red Road except for routine maintenance or alterations, modifications, or improvements to it and the adjacent right-of-way made for the purpose of enhancing life safety for vehicular or pedestrian use of Red Road if the number of traffic lanes is not altered ~~work which is essential to the health, safety, or welfare of the environment.~~

Section 61. Subsection (27) is added to section 479.01, Florida Statutes, to read:

479.01 Definitions.—As used in this chapter, the term:

(27) “Wall mural” means a sign that is a painting or an artistic work composed of photographs or arrangements of color and that displays a commercial or noncommercial message, relies solely on the side of the building for rigid structural support, and is painted on the building or depicted on vinyl, fabric, or other similarly flexible material that is held in place flush or flat against the surface of the building. The term excludes a painting or work placed on a structure that is erected for the sole or primary purpose of signage.

ATTACHMENT B
FMSF RESOURCE FORMS



RESOURCE GROUP FORM
FLORIDA MASTER SITE FILE
Version 5.0 3/19

Site #8 DA06486
Field Date 6-3-2022
Form Date 6-6-2022
Recorder#

Original
Update

Consult the Guide to the Resource Group Form for additional instructions

NOTE: Use this form to document districts, landscapes, building complexes and linear resources as described in the box below. Cultural resources contributing to the Resource Group should also be documented individually at the Site File. Do not use this form for National Register multiple property submissions (MPSs).

Check ONE box that best describes the Resource Group:

- Historic district
Archaeological district
Mixed district
Building complex
Designed historic landscape
Rural historic landscape
Linear resource

Resource Group Name Sunset Drive
Project Name CRRS for SW 72nd St and SW 57th Ave Intersection
National Register Category
Linear Resource Type
Ownership

LOCATION & MAPPING

Address:
City/Town (within 3 miles) South Miami
County or Counties (do not abbreviate) Miami-Dade
Name of Public Tract (e.g., park)
USGS 7.5' Map(s)
Verbal Description of Boundaries (description does not replace required map)
The small segment of Sunset Drive within the current APE is limited to the intersection with SW 57th Ave/Red Road, a distance of approximately 115 feet (35 meters).

Table with 3 columns: DHR USE ONLY, OFFICIAL EVALUATION, DHR USE ONLY. Contains criteria for NR listing and evaluation.

HISTORY & DESCRIPTION

Construction Year: 1922 [] approximately [x] year listed or earlier [] year listed or later

Architect/Designer: Builder:

Total number of individual resources included in this Resource Group: # of contributing 0 # of non-contributing 1

Time period(s) of significance (choose a period from the list or type in date range(s), e.g. 1895-1925)

- 1. Boom Times 1921-1929 3.
2. American-20th Century 4.

Narrative Description (National Register Bulletin 16A pp. 33-34; attach supplementary sheets if needed)

Resource 8DA06486 within the APE runs in an east-west direction at the intersection with SW 57th Ave, with four lanes on the east side of the intersection and three on the west, including multiple turn lanes.

RESEARCH METHODS (check all that apply)

- [x] FMSF record search (sites/surveys) [x] library research [] building permits [] Sanborn maps
[] FL State Archives/photo collection [] city directory [] occupant/owner interview [] plat maps
[] property appraiser / tax records [] newspaper files [] neighbor interview [] Public Lands Survey (DEP)
[x] cultural resource survey [] historic photos [] interior inspection [] HABS/HAER record search
[x] other methods (specify) Historic aerial photography

Bibliographic References (give FMSF Manuscript # if relevant)

[Empty box for Bibliographic References]

OPINION OF RESOURCE SIGNIFICANCE

Potentially eligible individually for National Register of Historic Places? [] yes [x] no [] insufficient information

Potentially eligible as contributor to a National Register district? [] yes [x] no [] insufficient information

Explanation of Evaluation (required, see National Register Bulletin 16A p. 48-49. Attach longer statement, if needed, on separate sheet.)

The portion of 8DA06486 within the APE is a modern roadway that has lost its historic integrity and, therefore, lacks the minimum criteria for NRHP listing and is recommended ineligible as a non-contributing segment to the overall linear resource.

Area(s) of Historical Significance (see National Register Bulletin 15, p. 8 for categories: e.g. "architecture", "ethnic heritage", "community planning & development", etc.)

- 1. 3. 5.
2. 4. 6.

DOCUMENTATION

Accessible Documentation Not Filed with the Site File - including field notes, analysis notes, photos, plans and other important documents

- 1) Document type All materials at one location Maintaining organization Southeastern Archaeological Research
Document description Photos, Maps, Field Notes, Aerial File or accession #'s T22100
2) Document type Maintaining organization
Document description File or accession #'s

RECORDER INFORMATION

Recorder Name Newton, Jason Affiliation Southeastern Archaeological Research

Recorder Contact Information 3117 Edgewater Dr., Orlando, FL 32804/754-206-1056/jason.newton@searchinc.com
(address / phone / fax / e-mail)

Required Attachments
1 PHOTOCOPY OF USGS 7.5' MAP WITH DISTRICT BOUNDARY CLEARLY MARKED
2 LARGE SCALE STREET, PLAT OR PARCEL MAP WITH RESOURCES MAPPED & LABELED
3 TABULATION OF ALL INCLUDED RESOURCES - Include name, FMSF #, contributing? Y/N, resource category, street address or other location information if no address.
4 PHOTOS OF GENERAL STREETScape OR VIEWS (Optional: aerial photos, views of typical resources) When submitting images, they must be included in digital AND hard copy format (plain paper grayscale acceptable). Digital images must be at least 1600 x 1200 pixels, 24-bit color, jpeg or tiff.



8DA06486_a Facing West



8DA06486_b Facing West



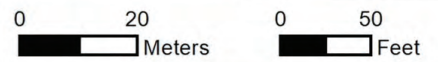
8DA06486_c Facing East



8DA06486_d Facing East



- SW 72nd Street and SW 57th Avenue APE
- Previously Recorded Linear Resource



Esri World Imagery (2021);
FMSF (4/2022)





8DA11931

8DA06486

- SW 72nd Street and SW 57th Avenue APE
- Previously Recorded Linear Resource



USGS 7.5' Quadrangle Map - South Miami (2018); FMSF (4/2022)



Original
 Update



RESOURCE GROUP FORM FLORIDA MASTER SITE FILE Version 5.0 3/19

Site #8 DA11931
Field Date 6-3-2022
Form Date 6-6-2022
Recorder# _____

Consult the *Guide to the Resource Group Form* for additional instructions

NOTE: Use this form to document districts, landscapes, building complexes and linear resources as described in the box below. Cultural resources contributing to the Resource Group should also be documented individually at the Site File. **Do not use this form for National Register multiple property submissions (MPSs).** National Register MPSs are treated as Site File manuscripts and are associated with the individual resources included under the MPS cover using the Site File manuscript number.

Check ONE box that best describes the Resource Group:

- Historic district** (NR category "district"): buildings and NR structures only: NO archaeological sites
- Archaeological district** (NR category "district"): archaeological sites only: NO buildings or NR structures
- Mixed district** (NR category "district"): includes more than one type of cultural resource (example: archaeological sites and buildings)
- Building complex** (NR category usually "building(s)"): multiple buildings in close spatial and functional association
- Designed historic landscape** (NR category usually "district" or "site"): can include multiple resources (see *National Register Bulletin #18*, page 2 for more detailed definition and examples: e.g. parks, golf courses, campuses, resorts, etc.)
- Rural historic landscape** (NR category usually "district" or "site"): can include multiple resources and resources not formally designed (see *National Register Bulletin #30, Guidelines for Evaluating and Documenting Rural Historic Landscapes* for more detailed definition and examples: e.g. farmsteads, fish camps, lumber camps, traditional ceremonial sites, etc.)
- Linear resource** (NR category usually "structure"): Linear resources are a special type of structure or historic landscape and can include canals, railways, roads, etc.

Resource Group Name Red Road/SW 57th Avenue Multiple Listing [DHR only] _____
 Project Name CRRS for SW 72nd St and SW 57th Ave Intersection FMSF Survey # _____
 National Register Category (please check one): building(s) structure district site object
 Linear Resource Type (if applicable): canal railway road other (describe): _____
 Ownership: private-profit private-nonprofit private-individual private-nonspecific city county state federal Native American foreign unknown

LOCATION & MAPPING

Address:

Street Number	Direction	Street Name	Street Type	Suffix Direction

 City/Town (within 3 miles) South Miami/Coral Gables In Current City Limits? yes no unknown
 County or Counties (do not abbreviate) Miami-Dade
 Name of Public Tract (e.g., park) _____
 1) Township 54S Range 40E Section 25 ¼ section: NW SW SE NE Irregular-name: _____
 2) Township 54S Range 40E Section 36 ¼ section: NW SW SE NE
 3) Township 54S Range 41E Section 30 ¼ section: NW SW SE NE
 4) Township 54S Range 41E Section 31 ¼ section: NW SW SE NE
 USGS 7.5' Map(s) 1) Name SOUTH MIAMI USGS Date 2021
 2) Name _____ USGS Date _____
 Plat, Aerial, or Other Map (map's name, originating office with location) _____
 Landgrant _____
 Verbal Description of Boundaries (description does not replace required map)

The small segment of Red Road/SW 57th Ave within the current APE is limited to the portion around the intersection with Sunset Drive/SW 72nd Street, a distance of approximately 210 feet (64 meters).

DHR USE ONLY	OFFICIAL EVALUATION	DHR USE ONLY
NR List Date _____ <input type="checkbox"/> Owner Objection	SHPO – Appears to meet criteria for NR listing: <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> insufficient info KEEPER – Determined eligible: <input type="checkbox"/> yes <input type="checkbox"/> no NR Criteria for Evaluation: <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d (see <i>National Register Bulletin 15</i> , p. 2)	Date _____ Init. _____ Date _____

HISTORY & DESCRIPTION

Construction Year: 1921 [X]approximately []year listed or earlier []year listed or later
Architect/Designer: Builder:
Total number of individual resources included in this Resource Group: # of contributing 0 # of non-contributing 1
Time period(s) of significance (choose a period from the list or type in date range(s), e.g. 1895-1925)
1. Boom Times 1921-1929 3.
2. American-20th Century 4.

Narrative Description (National Register Bulletin 16A pp. 33-34; attach supplementary sheets if needed)
Resource 8DA11931 within the APE runs in a north-south direction at the intersection with SW 57th Ave, with one through traffic lane in each direction and multiple turn panes. A median with planted shrubs and palms is located north of Sunset Drive.

RESEARCH METHODS (check all that apply)

- [X]FMSF record search (sites/surveys) [X]library research []building permits []Sanborn maps
[]FL State Archives/photo collection []city directory []occupant/owner interview []plat maps
[]property appraiser / tax records []newspaper files []neighbor interview []Public Lands Survey (DEP)
[X]cultural resource survey []historic photos []interior inspection []HABS/HAER record search
[X]other methods (specify) Historic aerial photography

Bibliographic References (give FMSF Manuscript # if relevant)

OPINION OF RESOURCE SIGNIFICANCE

Potentially eligible individually for National Register of Historic Places? []yes [X]no []insufficient information
Potentially eligible as contributor to a National Register district? []yes [X]no []insufficient information
Explanation of Evaluation (required, see National Register Bulletin 16A p. 48-49. Attach longer statement, if needed, on separate sheet.)

The portion of 8DA11931 within the APE is a modern roadway that has lost its historic integrity and, therefore, lacks the minimum criteria for NRHP listing and is recommended ineligible as a non-contributing segment to the overall linear resource.

Area(s) of Historical Significance (see National Register Bulletin 15, p. 8 for categories: e.g. "architecture", "ethnic heritage", "community planning & development", etc.)
1. 3. 5.
2. 4. 6.

DOCUMENTATION

Accessible Documentation Not Filed with the Site File - including field notes, analysis notes, photos, plans and other important documents
Document type All materials at one location Maintaining organization Southeastern Archaeological Research
1) Document description Photos, Maps, Field Notes, Aerial File or accession #'s T22100
2) Document type Maintaining organization
Document description File or accession #'s

RECORDER INFORMATION

Recorder Name Newton, Jason Affiliation Southeastern Archaeological Research
Recorder Contact Information 3117 Edgewater Dr., Orlando, FL 32804/754-206-1056/jason.newton@searchinc.c+
(address / phone / fax / e-mail)

Required Attachments

- 1 PHOTOCOPY OF USGS 7.5' MAP WITH DISTRICT BOUNDARY CLEARLY MARKED
2 LARGE SCALE STREET, PLAT OR PARCEL MAP WITH RESOURCES MAPPED & LABELED
3 TABULATION OF ALL INCLUDED RESOURCES - Include name, FMSF #, contributing? Y/N, resource category, street address or other location information if no address.
4 PHOTOS OF GENERAL STREETScape OR VIEWS (Optional: aerial photos, views of typical resources)
When submitting images, they must be included in digital AND hard copy format (plain paper grayscale acceptable).
Digital images must be at least 1600 x 1200 pixels, 24-bit color, jpeg or tiff.



8DA11931_a Facing North



8DA11931_b Facing South



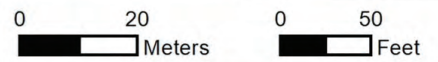
8DA11931_c Facing North



8DA11931_d Facing Northwest



- SW 72nd Street and SW 57th Avenue APE
- Previously Recorded Linear Resource



Esri World Imagery (2021);
FMSF (4/2022)





- SW 72nd Street and SW 57th Avenue APE
- Previously Recorded Linear Resource



USGS 7.5' Quadrangle Map -
South Miami (2018); FMSF (4/2022)



ATTACHMENT C

FDHR SURVEY LOG SHEET

Ent D (FMSF only) _____



Survey Log Sheet

Florida Master Site File
Version 5.0 3/19

Survey # (FMSF only) _____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Manuscript Information

Survey Project (name and project phase)

Cultural Resource Reconnaissance Survey for the SW 72nd Street and SW 57th Avenue Intersection Improvements Project

Report Title (exactly as on title page)

Cultural Resource Reconnaissance Survey for the SW 72nd Street and SW 57th Avenue Intersection Improvements Project, Miami-Dade County, Florida.

Report Authors (as on title page)

1. Newton, Jason 3. _____
2. Dye, Melissa 4. _____

Publication Year 2022

Number of Pages in Report (do not include site forms) _____

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)

On File SEARCH, Newberry. FDOT FM #449752-1. SEARCH Project No. T22100.

Supervisors of Fieldwork (even if same as author) Names Mechelle Kerns

Affiliation of Fieldworkers: Organization Southeastern Archaeological Research **City** Miami

Key Words/Phrases (Don't use county name, or common words like *archaeology, structure, survey, architecture, etc.*)

1. SW 72th Street 3. _____ 5. _____ 7. _____
2. SW 57th Avenue 4. _____ 6. _____ 8. _____

Survey Sponsors (corporation, government unit, organization, or person funding fieldwork)

Name _____ Organization Florida Dept of Transportation - District 6

Address/Phone/E-mail _____

Recorder of Log Sheet Melissa Dye **Date Log Sheet Completed** 6-8-2022

Is this survey or project a continuation of a previous project? No Yes: **Previous survey #s (FMSF only)** _____

Project Area Mapping

Counties (select every county in which field survey was done; attach additional sheet if necessary)

1. Dade 3. _____ 5. _____
2. _____ 4. _____ 6. _____

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)

1. Name SOUTH MIAMI Year 2018 4. Name _____ Year _____
2. Name _____ Year _____ 5. Name _____ Year _____
3. Name _____ Year _____ 6. Name _____ Year _____

Field Dates and Project Area Description

Fieldwork Dates: Start 6-2-2022 **End** 6-2-2022 **Total Area Surveyed (fill in one)** 0.17 hectares 0.43 acres

Number of Distinct Tracts or Areas Surveyed 1

If Corridor (fill in one for each) Width: _____ meters _____ feet **Length:** _____ kilometers _____ miles

Research and Field Methods

Types of Survey (select all that apply): archaeological architectural historical/archival underwater
damage assessment monitoring report other(describe): _____

Scope/Intensity/Procedures

Archaeological pedestrian survey and architectural history survey of right-of-way.

Preliminary Methods (select as many as apply to the project as a whole)

Florida Archives (Gray Building) library research- local public local property or tax records other historic maps LIDAR
Florida Photo Archives (Gray Building) library-special collection newspaper files soils maps or data other remote sensing
Site File property search Public Lands Survey (maps at DEP) literature search windshield survey
Site File survey search local informant(s) Sanborn Insurance maps aerial photography
other (describe): _____

Archaeological Methods (select as many as apply to the project as a whole)

Check here if NO archaeological methods were used.
surface collection, controlled shovel test-other screen size block excavation (at least 2x2 m) metal detector
surface collection, uncontrolled water screen soil resistivity other remote sensing
shovel test-1/4" screen posthole tests magnetometer pedestrian survey
shovel test-1/8" screen auger tests side scan sonar unknown
shovel test 1/16"screen coring ground penetrating radar (GPR)
shovel test-unscreened test excavation (at least 1x2 m) LIDAR
other (describe): _____

Historical/Architectural Methods (select as many as apply to the project as a whole)

Check here if NO historical/architectural methods were used.
building permits demolition permits neighbor interview subdivision maps
commercial permits windshield survey occupant interview tax records
interior documentation local property records occupation permits unknown
other (describe): _____

Survey Results

Resource Significance Evaluated? Yes No

Count of Previously Recorded Resources 2 Count of Newly Recorded Resources 0

List Previously Recorded Site ID#s with Site File Forms Completed (attach additional pages if necessary)

DA06486, DA11931

List Newly Recorded Site ID#s (attach additional pages if necessary)

Site Forms Used: Site File Paper Forms Site File PDF Forms

REQUIRED: Attach Map of Survey or Project Area Boundary

SHPO USE ONLY SHPO USE ONLY SHPO USE ONLY
Origin of Report: 872 Public Lands UW 1A32 # _____ Academic Contract Avocational
Grant Project # _____ Compliance Review: CRAT # _____
Type of Document: Archaeological Survey Historical/Architectural Survey Marine Survey Cell Tower CRAS Monitoring Report
Overview Excavation Report Multi-Site Excavation Report Structure Detailed Report Library, Hist. or Archival Doc
Desktop Analysis MPS MRA TG Other: _____
Document Destination: Plottable Projects Plotability: _____

SECTION 8: ENGINEERING DRAWINGS

ENGINEERING DRAWINGS ARE AVAILABLE SEPARATE FROM THIS
PORTION OF THE SOLICITATION DOCUMENTS.