



District Five

Wrong-Way Countermeasures

A red, illuminated rectangular sign with the words "WRONG WAY" in white, capital letters. The sign is mounted on a silver metal post. The sign is positioned to the right of the main title and subtitle, partially overlapping the orange background.

WRONG
WAY

DESIGN GUIDANCE

FLORIDA DEPT. OF TRANSPORTATION
DISTRICT FIVE

A large, white, rectangular sign with the words "WRONG WAY" in black, capital letters. The sign is tilted and mounted on a white metal post. The sign is positioned in the lower right quadrant of the page, overlapping the orange background and the palm tree silhouettes.

WRONG
WAY



Florida Department of Transportation, District Five

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This document and its contents have been prepared and are intended exclusively for the Florida Department of Transportation (FDOT), District Five.

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Section I – Objectives

This document is intended to provide guidance to all stakeholders responsible for the planning, design, construction, integration, operation, and maintenance of Wrong-Way Vehicle Detection Systems (WWVDS) used to detect, alert, and notify both the motoring public and operational staff of potential wrong-way driving events on limited-access facilities. The design guidance was developed specifically for the deployment of WWVDS within projects for the Florida Department of Transportation (FDOT) District Five.

The following subsections will provide overarching guidance and reference information for the end-to-end design and implementation of WWVDS, including background information, systems overview, design considerations, necessary design submittals, and more.

DISCLAIMER:

This document is intended to be an informational resource and does not relieve the Engineer of the responsibility to design a fully functional and implementable system. The following guidance is based upon previous experience in deploying WWVDS within the District and has been made available to assist in design efforts but does not supersede engineering judgment. The Engineer shall be responsible for practicing due diligence for all aspects of the design and is encouraged to coordinate with the District personnel to better understand the current conditions and limitations of the available systems—including networking configuration constraints, integration status with SunGuide®, known operational issues, maintenance considerations, pace of technology, and more. Furthermore, this document is not intended to be all inclusive. The Engineer shall be responsible for all aspects of the design—including coordination efforts, procedural steps, and processes that are not explicitly defined in this document—based on individual experience and project-specific field conditions to ensure each WWVDS deployment meets the project objectives and is a functioning, maintainable system.

Background

Defined by the Federal Highway Administration (FHWA), a wrong-way driving crash occurs when a vehicle traveling in a direction opposing the legal flow of traffic on a high-speed divided highway or access ramp collides with a vehicle(s) traveling on the same roadway in the proper direction. Historically, wrong-way driving incidents occur randomly and less frequently than other crash types; however, the severity of these incidents are typically greater, often resulting in serious injury or fatalities. In the United States, 300 to 400 people are killed as a result of wrong-way driving incident annually.

Dated July 3, 2019, the Department issued [Roadway Design Bulletin 19-03 – Wrong-way Driving Advanced Countermeasures at Interchange Exit Ramps](#) to introduce additional minimum requirements for limited-access facility exit ramps interchanges utilizing Intelligent Transportation Systems (ITS) to supplement static signing and pavement markings for increased safety. This statewide directive requires WWVDS to be included in all design and construction project that either impact or include limited-access facility exit ramps and interchanges within the project limits. The deployment of technology-based solutions provides enhanced ability to detect wrong-way driving events in real-time, notify motorists to correct their actions, and alert the appropriate operational staff of the event to mobilize the appropriate response.



Figure 1: Recent installation along Interstate 4 at Lake Mary Boulevard (Exit 98) in Seminole County, FL.

Section II – Wrong-Way Detection System Overview

The WWVDS is comprised of three (3) basic subsystems: vehicle detection, motorist awareness, and a centralized logic platform. Working as a complete system, each WWVDS deployment will be capable of detecting wrong-way events, providing local notifications to motorists to enable corrective actions, and facilitate the appropriate response plan(s) by operational personnel.

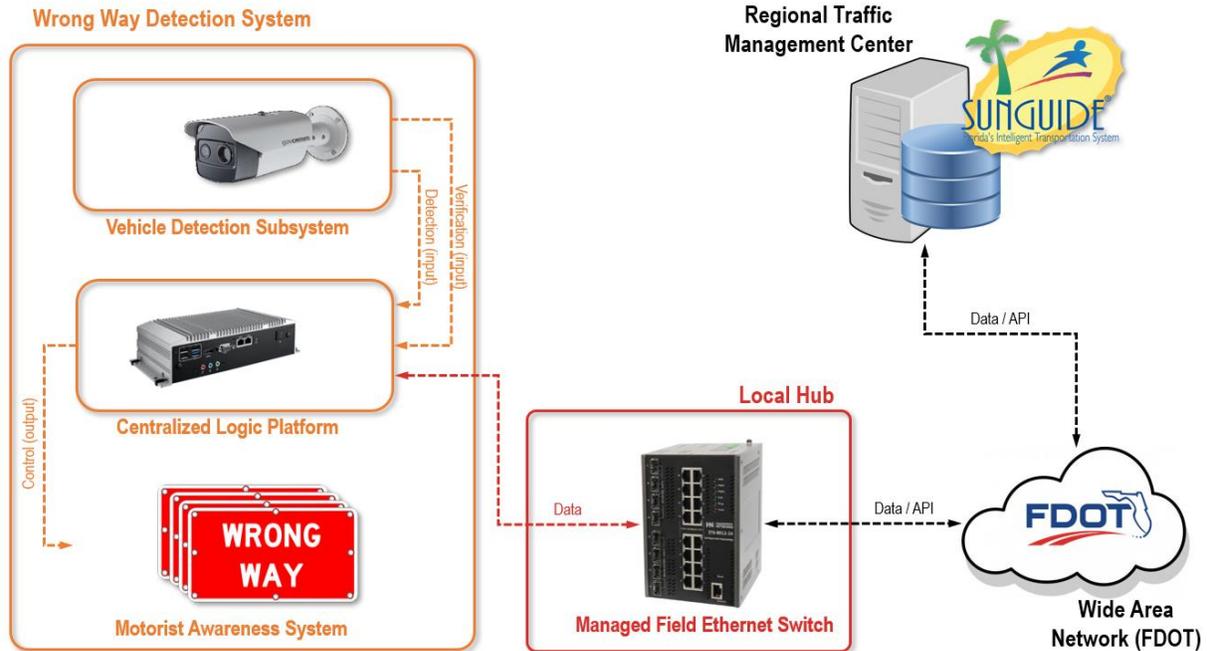


Figure 2: High-level architecture and data flow for WWVDS.

In addition to the three primary subsystems, each WWVDS installation will also include ancillary hardware and equipment necessary for the electrification and network connectivity of the system.

Vehicle Detection Subsystem

The vehicle detection subsystem is responsible for the identification of vehicles entering onto a limited-access facility in the improper direction to determine a potential wrong-way driving event. Various technologies are available to achieve wrong-way driving detection, including in-pavement loops, wireless magnetometers, video analytics, thermal imaging, doppler radar, microwave radar, and more. To date, however, the Department has only approved the following manufacturer's technology for deployment on state roadways, as identified on the [FDOT Approved Products List \(APL\)](#):

1. [Image Sensing System, Wrong-Way Alerting Solution](#) (model no. AID-WW-700)
2. [smartmicro, TRUGRD Stream](#) (model no. TRUGRD Stream)
3. [TAPCO, Wrong-Way Alert System](#) (model no. varies)
4. [Transportation Control Systems, Inc., Wrong-Way Detection and Alerting System](#) (model no. TCSWWD-OR)
5. [GovComm, Wrong-Way Vehicle Detection System](#) (model no. GC-WWVDS-Series)
6. [K&K Systems, Inc., Wrong-Way Vehicle Detection System](#) (model no. WWVDS Series)
7. [Carmanah Technologies Corp, Wrong-Way Vehicle Detection System](#) (model no. WW400D+WW400S)
8. [Kyra Solutions, Inc., WWD Detection and Notification System](#) (model no. WWD-IC1)

The Department continually updates the technology offerings of the APL (e.g., adding new technology, removing legacy equipment). The Engineer is responsible for ensuring the proposed technology is active and listed on the latest version of the APL for each project.

Each vehicle detection subsystem shall include all sensors, in-cabinet equipment, power supplies, surge protection, cabling, and hardware necessary to provide a complete installation capable of detecting wrong-way vehicles for all lanes of the selected off-ramp.



Figure 3: Examples of WWVDS in-cabinet assemblies: GovComm (left), TAPCO (right).

The vehicle detection subsystem shall be designed in accordance with the current requirements set forth in the *FDOT Standard Specifications for Road and Bridge Construction, Section 660*.

The following pay item(s) shall be included as part of the vehicle detection subsystem design for all WWVDS installations:

- **660-7-AB** Vehicle Detection System – Wrong-Way Detection for Exit Ramp, EA

Motorist Awareness Subsystem

The motorist awareness subsystem is responsible for alerting motorists who have entered in the wrong direction onto a limited-access ramp of the error in order to prompt quick and safe corrective actions. Numerous technologies are available on the market to serve as the motorist awareness subsystem for the WWVDS, including standard flashing beacons, LED highlighted signs, rapid rectangular flashing beacons (RRFB), blank out signs, small-form dynamic message signs (DMS), audible sirens, Connected Vehicle Roadside Units (RSU), and more. The Department has standardized the utilization of highlighted signs for all deployments of WWVDS along state roadways, per *Roadway Design Bulletin 19-03*. Highlighted signs are defined as static sign panels surrounded by LEDs to emphasize the sign's shape, color, or message by flashing to attract motorists' attention.

The Engineer is responsible for verifying the current state of administrative policies and acceptable technologies during the design phase to ensure no significant changes to federal or state requirements have occurred. Refer to the APL for available vendors and technologies.

The following pay item(s) shall be included as part of the motorist awareness subsystem design for all WWVDS installations:

- **700-14A-BCD** Highlighted Sign, AS
- **700-13-AB** Retroreflective Sign Strip, EA

Centralized Logic Platform

Each WWVDS shall include the necessary hardware and/or software capable of receiving real-time inputs from the vehicle detection subsystem (e.g., field sensors), activating the motorist awareness systems (e.g., LED highlighted signs) when a wrong-way driving event is verified, and providing pertinent information to the District. WWVDS shall be capable of providing an Application Programming Interface (API) feed from the field equipment into the SunGuide® central management software utilizing the District ITS wide area network (WAN). Cloud-hosted solutions are not an acceptable alternative. All WWVDS shall be integrated with the SunGuide® platform for management, operations, and control. The centralized logic platform includes all in-cabinet equipment necessary to receive and process field sensor inputs, actuate localized responses (e.g., at the off-ramp), and alert operational staff located within the Regional Traffic Management Center (RTMC).

Ancillary Equipment

In addition to the three (3) key components that comprise the WWVDS, each deployment will require additional infrastructure and equipment necessary for a complete installation. Ancillary equipment includes, but may not be limited to, conduit, pull boxes, cabinets, enclosures, poles, foundations, electrification hardware, communications equipment, grounding, and cabling.

The following pay item(s) may be included as part of the overall WWVDS installation:

- **630-2-AB** Conduit, LF
- **633-1-ABC** Fiber Optic Cable, LF
- **633-2-AB** Fiber Optic Connection, EA
- **633-3-AB** Fiber Optic Hardware, EA
- **633-8-A** Multi-Conductor Communication Cable, LF
- **635-2-AB** Pull & Splice Box, EA
- **639-1-ABC** Electrical Power Service, AS
- **639-2-A** Electrical Service Wire, LF
- **639-3-AB** Electrical Service Disconnect, EA
- **639-6-ABC** Electrical Power Service Transformer, EA
- **641-2-AB** Prestressed Concrete Pole Standard Plan 641-010, EA
- **676-2-ABC** ITS Cabinet, EA
- **684-1-A** Managed Field Ethernet Switch, EA
- **685-1-AB** Uninterruptible Power Supply, EA
- **685-2-A** Remote Power Management Unit, EA

Section III – Design Considerations

The design of each WWVDS will vary per location, dependent upon ramp geometry, physical conditions, existing infrastructure, and a litany of other factors. The Engineer shall be responsible for performing site-specific analysis and completing the design for each off-ramp location with proposed WWVDS, in accordance with the latest versions of the *FDOT Design Manual*, *FDOT Standard Plans*, and *FDOT Standard Specifications for Road and Bridge Construction*.

Prior to initiating design activities, the Engineer shall coordinate a meeting with the following District Five personnel to determine the current state of technology, network topology, and integration requirements into the larger ITS system.

- Project Manager (*varies*)
- Intelligent Transportation Systems (*TSM&O Program Engineer*)
- Intelligent Transportation Systems Technology (*ITS Network Supervisor*)
- Integration Support (*SunGuide Admin*)
- SunGuide® Software Support (*Software Specialist*)
- Networking (*Network Specialist*)

Note, the aforementioned personnel may change; please coordinate with District Five to determine the appropriate contact information.

The following sub-sections provide high-level guidance for the design of WWVDS within District Five projects.

Field Review

Often the first step in the design process, the initial field review provides the Engineer a comprehensive understanding of the existing conditions and potential design constraints within which the proposed system must function. The Engineer shall conduct a field review inclusive of all interchange off-ramps and the necessary limits of the limited-access facility and intersecting arterial roadways. The Engineer shall be responsible for identifying the following items during the initial field review of each off-ramp terminal.

- **Roadway Geometry (Off-Ramp).** Verify the geometric conditions of each off-ramp to determine design considerations and limitations for the deployment of WWVDS.
 - Total off-ramp length
 - Number of lanes
 - Potential wrong-way driving entry points
 - Lane assignments and associated movements
 - Lane and shoulder widths
 - Horizontal / vertical curves
 - Proximity of other vehicular movements (e.g., adjacent on-ramp, frontage roads)
 - Posted speed limit
 - Superelevation
 - Shoulder slopes / drop-offs
 - Clear zone concerns
 - Horizontal offset protection (e.g., concrete barrier wall, non-mountable curb, guardrail)
- **Roadside Infrastructure.** Identify roadside infrastructure that may affect the proposed location of WWVDS componentry, including physical space limitations and/or obstructed sight lines.
 - Mechanically stabilized earth (MSE) walls

- Underground and/or overhead utilities
- Signing (e.g., single post and multi-column assemblies)
- Roadway lighting poles
- Vegetation
- **Power and Communications.** Identify the existing communications infrastructure and owner, as well as locate potential connection points for network connectivity to the District Five ITS wide area network (WAN). Additionally, locate existing electrical utility service provider equipment to identify potential power service for the WWVDS.
 - Fiber optic communications infrastructure (e.g., underground / overhead cabling, fiber optic route markers, pull boxes, splice vaults, local hubs)
 - Network communication equipment (e.g., type of network switch, number of available ports, availability of fiber optic patch panel bulkheads)
 - Electrical utility service provider infrastructure (e.g., pole numbers and location, meters, electrical service disconnect, availability of punchouts in disconnect for additional breakers, transformers, electrical pull boxes, risers)

Overall Site

The Engineer shall be responsible for the design of a fully functional system including all ancillary equipment and infrastructure necessary to provide power and communications to the WWVDS—including but not limited to conduit, pull boxes, splice vaults, fiber optic cabling and hardware, electrical equipment, cabinets, in-cabinet equipment, grounding, and more.

Each site shall include the WWVDS, local hub cabinet assembly (w/ network connectivity and battery backup system), electrical systems, networking equipment, and physical infrastructure (e.g., conduit, boxes).



Figure 4: WWVDS deployment w/ vehicle detection system, highlighted sign assembly, and local hub cabinet.

Local Hub

The local hub shall consist of either a pole-mounted Type 336S or ground mounted Type 332/334 cabinet assembly, in accordance with *FDOT Standard Specifications for Road and Bridge Construction, Section 676*. Ensure each local hub provides the means to power the overall system and establish communication between the WWVDS field equipment and the District network.

At a minimum, each local hub shall include the following in-cabinet equipment:

- Fiber Optic Patch Panel
- Managed Field Ethernet Switch (MFES)
- Uninterruptible Power Supply (UPS) w/ Battery Backup System
- Remote Power Management Unit (RPMU)

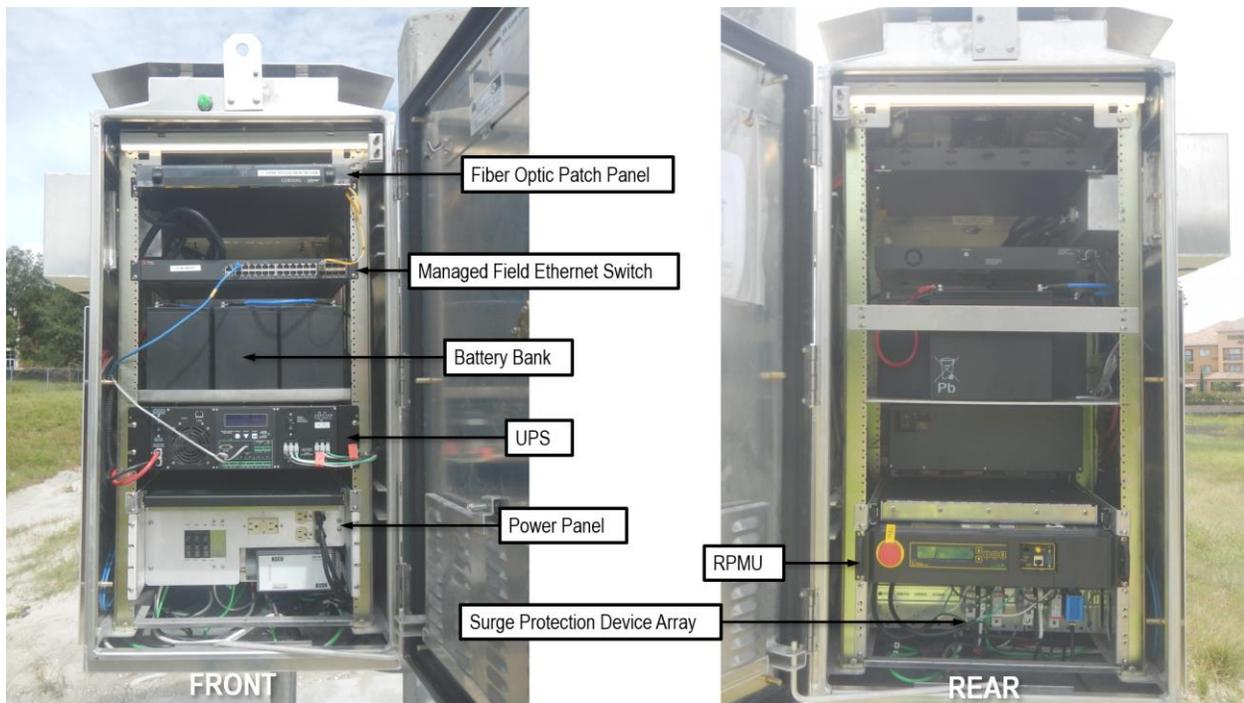


Figure 5: Example local hub cabinet assembly w/ in-cabinet equipment.

At a minimum, the design for the local hub cabinet assembly, the Engineer shall address the following considerations:

- Verify proposed cabinet location is positioned outside of clear zone and/or meets the lateral offset requirements specified in the *FDOT Design Manual (FDM), Section 215*.
- Verify proposed cabinet location is easily accessible by maintenance personnel. Where feasible, consider locations that provide opportunities for a maintenance vehicle.
- Verify proposed cabinet location allows for maintenance personnel to access the cabinet without having his/her back perpendicular to the direction of traffic.
- Verify proposed cabinet is provided a technician pad for both the front and rear access doors. Technician pad dimensions shall be at least as wide as the proposed cabinet and a minimum of 2'-6" long (*FDOT Standard Plans, Index 676*).
- For pole-mounted cabinets, verify the bottom of the cabinet is not mounted higher than 48" above grade.

- Verify proposed cabinet assembly provides adequate physical space for all in-cabinet equipment.
- Verify sunshields are provided for all local hub cabinets.



Figure 6: Type 336S local hub w/ concrete pad (left) | Local hub informational placard (right).

- Verify the design accounts for replacement of the standard Type 2 Corbin lock with an electronic CyberLock® cylinder consistent with the existing systems utilized by District Five.
- Verify the design accounts for the installation of an informational placard with a white legend on a green background and adheres to the following format identified in **Figure 7**.

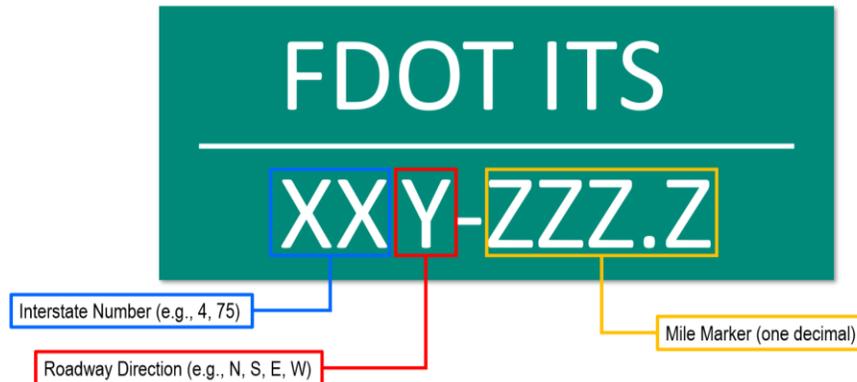


Figure 7: Informational placard for installation on local hub cabinet.

- Verify “modify/adjust” pay items are included for all work to revise existing in-cabinet equipment, as necessary. Ensure pay item notes are provided clearly defining the work to be performed.

Networking Equipment

Each WWVDS shall include the necessary networking equipment to establish and maintain communications between the field systems and the existing ITS WAN. Fiber optic communications is the preference for new network connections within District Five. Additionally, the District prefers to minimize the number of new splices introduced to the existing fiber optic backbone. The Engineer shall determine the feasibility of establishing a fiber optic spur connection between the closest existing local hub communicating on the ITS WAN and the proposed local hub. If the project is unable to

accommodate fiber optics, the Engineer shall submit for approval a design exemption with the proposed alternative (e.g., cellular modem, point-to-point wireless bridge) to the Department Project Manager.

For each WWVDS deployment, networking equipment may include, but is not limited to, the following:

- Fiber Optic Cable
- Fiber Optic Jumper
- Fiber Optic Patch Panel
- Fiber Optic Connector Panel
- Fiber Optic Splice Tray
- Fiber Optic Splice Enclosure
- Managed Field Ethernet Switch
- Ethernet Patch Cable (CAT-6)

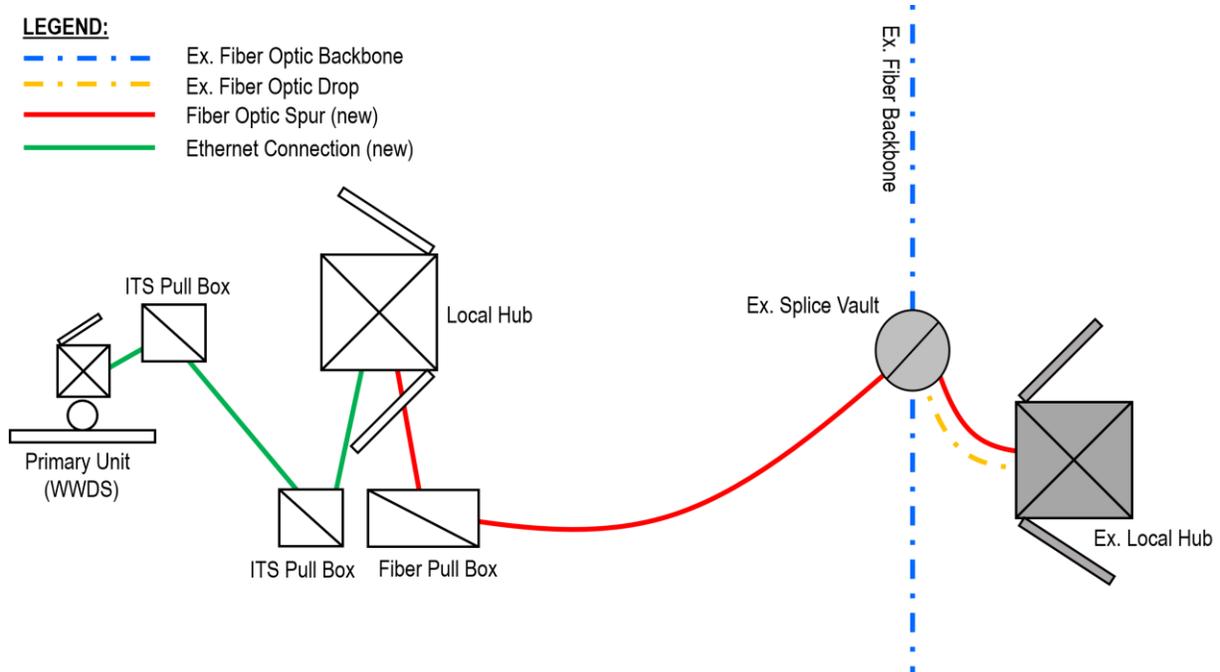


Figure 8: Proposed concept for fiber optic network connection.

The following outlines the minimum design considerations to be addressed by the Engineer related to the proposed networking equipment:

- Coordinate with the District to determine the existing network topology within the project limits, including existing splicing scheme, available fiber optic pairs, terminations, port utilization, and more.
- Verify the design includes a connection between the proposed local hub and the District Five ITS WAN using a fiber optic spur terminating within an existing ITS local hub with network connectivity. If an existing local hub is not available within the project area, coordinate with the District to identify potential alternatives (e.g., introduce new splice to the fiber optic backbone).
- Verify the existing local hub to be utilized as the network connection point has the necessary number of available ports in both the fiber optic patch panel and managed field Ethernet switch.

- Verify the design provides the necessary fiber optic hardware (e.g., patch panel, connector panels) to accommodate all new fiber optic spurs within the local hub(s), whether existing or proposed. Ensure the design provides sufficient detail to the Contractor on the type of equipment necessary (e.g., connector type).
- In scenarios where the number of available fiber optic ports (e.g., SFP) within the existing managed field Ethernet switch at the local hub is less than the number of proposed fiber optic spurs, the Engineer shall coordinate with the Department for potential strategies, including but not limited to:
 - (1) Remove the existing switch and replace with a new switch with additional fiber optic ports; or
 - (2) Provide a second switch of the same make and model and connect the two via a CAT-6 patch cable using the uplink port.

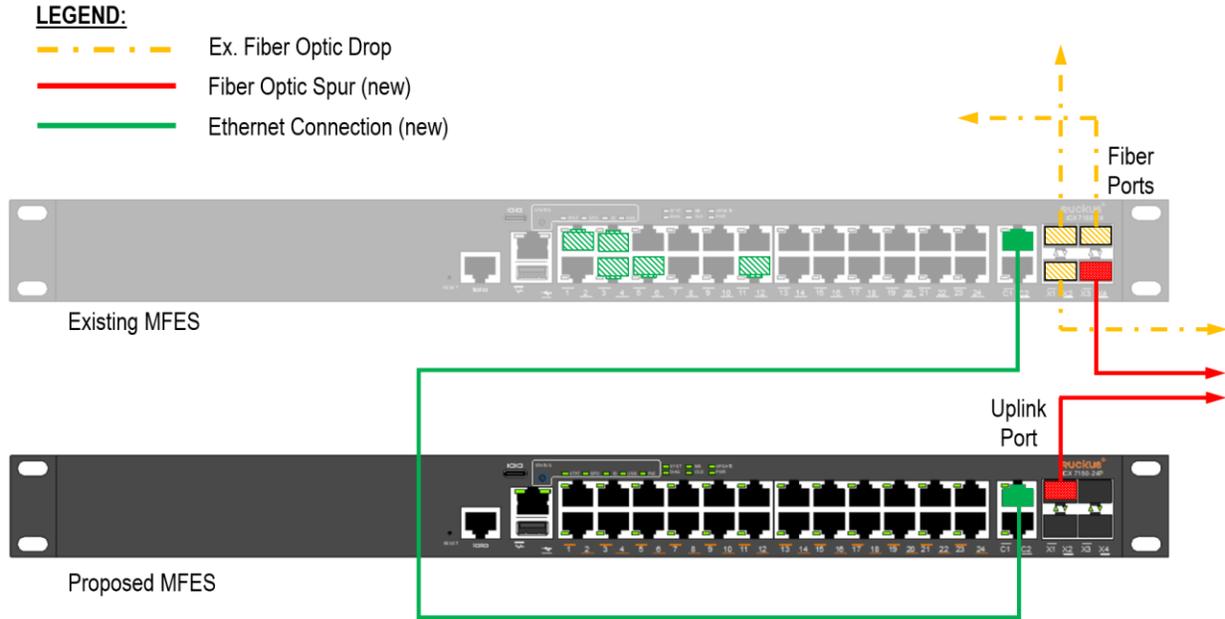


Figure 9: Typical configuration for linking multiple MFES via the uplink port.

- Verify all managed field Ethernet switches proposed within the project are Layer 3 models consistent with the specifications and requirements of the District. If an existing switch within the project limits does not meet the current District requirements of Layer 3 Managed Field Ethernet Switch (refer to **Appendix C** – Sample TSPs for TSP development information), the Engineer shall coordinate with the District to replace the switch as part of the project. Ensure the proposed switches are of the same manufacturer and model for compatibility, including the development of a Proprietary Product Certification (PPC), as required.
- Verify an Ethernet-based connection (e.g., CAT-6) is provided between the WWVDS and local hub.
- In scenarios where the WWVDS includes both a primary and secondary unit, ensure an Ethernet-based connection (e.g., CAT-6) is provided between the primary unit and secondary unit.
- Verify all applicable in-cabinet equipment is connected to the network, including WWVDS, UPS, RPMU, and more.
- Verify “modify/adjust” pay items are included for existing infrastructure where work is performed. Ensure pay item notes are provided clearly defining the work to be performed.

Electrical Systems

The Engineer shall be responsible for the identification, coordination, and design of the electrical utility service and all infrastructure necessary to provide power to the overall WWVDS site. Where feasible, the District preference is to leverage an existing metered electrical service utilized for ITS field devices. If this option is unavailable, the Engineer shall coordinate alternatives with the Department. Each WWVDS site shall be provided direct-line power; solar powered systems will not be accepted. The following identifies available options and order of preference for obtaining electrical service for new WWVDS sites:

- PREFERENCE**
1. **Existing electrical service (ITS).** Install new circuits to an existing metered electrical service providing power to ITS field devices and paid for by the Department. Connections may be tapped into either existing main electrical service disconnect at the service location or distribution disconnects at the existing local hubs.
 2. **Existing electrical service (lighting).** Install new circuits to an existing metered electrical service providing power to roadway lighting fixtures and paid for by the Department. Connections may be tapped into existing main electrical service disconnect at the service location.
 3. **Existing electrical service (traffic signals).** Install new circuits to an existing metered electrical service providing power to nearby signalized intersections at the ramp terminals and paid for by the local maintaining agency (e.g., City of Orlando). Connections may be tapped into existing main electrical service disconnect at the service location. Ensure coordination with the local maintaining agency is completed. This will require coordination between the District and the local maintaining agency to identify the owner and method of payment for the proposed utility bill. All correspondence will be required as part of Contract Documentation.
 4. **New electrical service (ITS).** Install a completely new metered electrical service from the utility service provider. Coordinate with the utility service provider to determine the appropriate pole location and service voltage and design meter, main disconnect, and electrical circuits.

For each WWVDS deployment, electrical service hardware may include, but is not limited to, the following:

- Electrical Meter
- Electrical Service Disconnect
- Electrical Power Service Transformer
- Remote Power Management Unit (RPMU)
- Uninterruptible Power Supply (UPS)
- Automatic Transfer Switch (ATS)
- Batteries
- Electrical Conductors

The following outlines the minimum design considerations to be addressed by the Engineer related to the proposed electrical systems equipment:

- Verify the local hub cabinet assembly provides an uninterruptible power supply (UPS), automatic transfer switch (ATS), and remote power management unit (RPMU). Ensure the system is capable of automatically switching operations between direct line-in, battery, and generator power without manual intervention. Note, generators are not to be included as part of the design; however, generator hookups shall be included.
- Verify electrical conductors are sized appropriately for each primary electrical circuit between the utility service and local hub. Ensure circuits are designed in accordance with FDM / NEC requirements for branch voltage drops.

- Verify direct-in power is provided from the local hub to each highlighted sign assembly (WWVDS) and connected directly to a plug within the RPMU.
- Verify the electrical conductors are sized appropriately for runs between the primary, secondary, and remote units of the WWVDS. Ensure each electrical circuit to the primary, secondary, and remote units includes an appropriately sized circuit breaker.
- Verify circuit breakers are sized appropriately within the local hub cabinet power panel, primary unit, and all electrical service disconnects.
- Verify if electrical transformers are needed for the system. Ensure the type (e.g., step-up, step-down), size, and location of each transformer is appropriately detailed.
- Verify the proposed battery backup system (UPS) is appropriately sized to provide a minimum of two (2) hours run time in the case of power loss.
- Verify either the UPS or RPMU is wired to monitor battery temperature, as well as front and rear door status through the contact closure I/O terminals for remote monitoring. Ensure temperature and door sensors support Simple Network Management Protocol (SNMP), version 2 or 3, to be configured within the District Network Management System (NMS).
- The Engineer shall provide power draw calculations for each existing and proposed local hub cabinet impacted within the project limits. The Engineer shall coordinate with the Department to obtain the latest six (6) or twelve-month meter readings and peak usage for existing local hubs to be used in power draw calculations. The Engineer shall provide the existing meter service identification number.
- The Engineer shall provide voltage drop calculations for each existing and proposed circuit impacted within the project limits. Ensure circuits are designed in accordance with FDM / NEC requirements for branch voltage drops.

Physical Infrastructure

The Engineer shall be responsible for the design of the physical infrastructure for each WWVDS site, including conduit, pull boxes, foundations, poles, and grounding in accordance with the latest versions of the *FDOT Design Manual*, *FDOT Standard Plans*, and *FDOT Standard Specifications for Road and Bridge Construction*.

The following outlines the minimum design considerations to be addressed by the Engineer related to the proposed physical infrastructure:

- Verify physically separate pathways are provided for high-voltage (120VAC), low-voltage (12-48VDC), and fiber optic communications cabling, including conduits, boxes, and foundation sweeps.
- Verify each highlighted sign assembly is provided a minimum of one (1) conduit sweep into the foundation for cabling access.
- Verify each highlighted sign assembly is provided pull box(es) in close vicinity to the foundation for conduit sweep and cabling access. Conduits installed directly into the foundations for highlighted sign assemblies is not acceptable.
- Verify pull boxes and splice vaults are provided a concrete apron with 12" clearance on all sides, per *FDOT Standard Plans, Index 635*. Where multiple pull boxes are to be installed in a single location, arrange the pull boxes to minimize the overall dimensions of the concrete pad.
- Verify pull box and splice vault lids are appropriately labeled based on utilization (e.g., "FDOT ELECTRICAL" for high-voltage cabling; "FDOT ITS" for low-voltage cabling; and "FDOT FIBER OPTICS" for fiber optic communications). Ensure a Modified Special Provision (MSP) is submitted and approved, as necessary.
- Verify the system is grounded in accordance with *FDOT Standard Specifications for Road and Bridge Construction, Section 620*. Ensure ground rods are installed in pull boxes within 36" of each highlighted sign

assembly, local hub cabinet, and electrical service disconnect. Ensure ground wire is appropriately sized and detailed.

- Verify all infrastructure with vertical obstruction is located outside of the clear zone and/or meets the lateral offset requirements (*FDM Section 215*), including highlighted sign assemblies, cabinets, electrical service equipment. Ensure frangible components (e.g., highlighted sign assemblies with transformer bases) remain in a breakaway state and avoid adding rigid structural elements, such as vertical conduit risers.
- Verify proposed systems do not occlude or will not be occluded by existing ground mounted signing—including single-post and multi-column sign assemblies. Ensure proposed infrastructure is proposed in locations where motorists' view of sign panels remain visible when traveling along the off-ramp in either direction (e.g., right way, wrong-way).

Wrong-Way Detection System

The Engineer shall design one (1) WWVDS at all limited-access facility interchanges with exit ramps onto arterial roadways. System-to-system type interchanges do not require the deployment of WWVDS, unless otherwise determined by the Engineer. The District Five standard deployment includes a total of four (4) LED highlighted sign assemblies, one (1) vehicle detection subsystem, and one (1) local hub cabinet equipped with network and electrification equipment at all off-ramp locations, regardless of ramp geometry or configuration. If the Engineer elects to deviate from the established standard an approved exemption will be required from the District Project Manager.



Figure 10: Primary unit (left) | Remote unit (right).

Each ramp shall consist of four (4) LED highlighted sign assemblies arranged into two (2) sets of signs positioned evenly on either side of the off-ramp. Dependent upon the manufacturer and ramp geometry, the system configuration will include a combination of primary, secondary, and remote units.

- **Primary** – Unit with direct communication interface to all secondary and primary units, as well as the local hub for network connectivity with District Five. This unit will include one (1) LED highlighted sign assembly, as well as the necessary componentry for the vehicle detection subsystem and the centralized logic platform. This unit will include interconnection equipment to interface with both the secondary and remote units to receive detection inputs and provide control commands (e.g., activate LED sequence), respectively.
- **Secondary** – Unit with direct communication interface with the primary unit providing supplemental detection inputs to the centralized logic platform. This is an optional unit typically deployed in scenarios where the primary unit is unable to adequately provide detection zone coverage. This unit will include one (1) LED highlight sign assembly, as well as the necessary componentry for the vehicle detection subsystem and interconnection equipment.
- **Remote** – Unit with direct communication interface with the primary unit receiving control commands (e.g., activate LED sequence). This unit will include one (1) LED highlighted sign assembly and interconnection equipment.

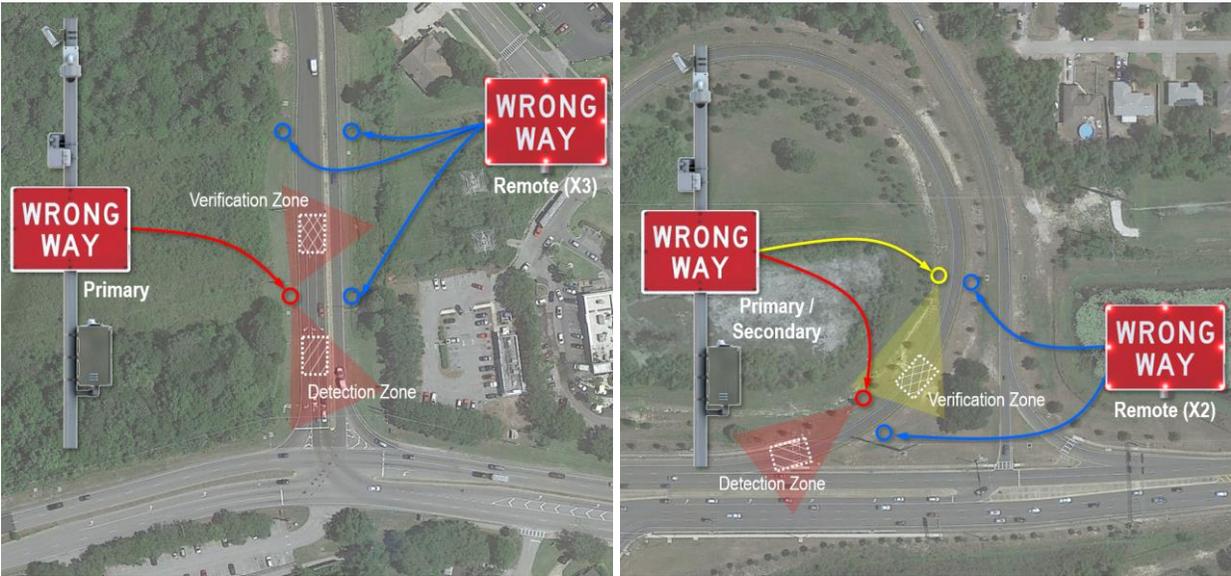


Figure 11: Example configurations of wrong-way vehicle detection systems.

Vehicle Detection Subsystem

The Engineer shall design a redundant system capable of detecting and verifying wrong-way driving events in real-time. At a minimum, the system shall include a forward “detection zone” and a subsequent “verification” zone capable of identifying vehicles traveling in the improper direction for all lanes of the off-ramp. Each system provides unique functionality and constraints inherent to the specific technology and vendor. The Engineer shall be responsible for identifying the APL-listed technology or technologies that is best suited for conditions and constraints of each deployment location.

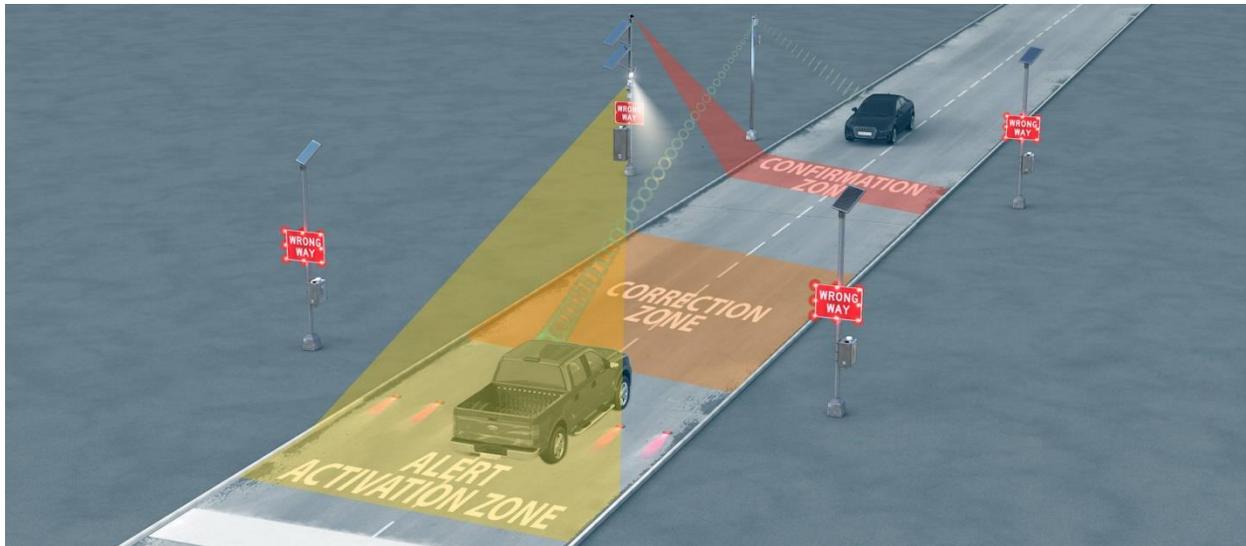


Figure 12: WWVDS utilize multiple zones to identify and validate wrong-way driving events. (Source: TAPCO)

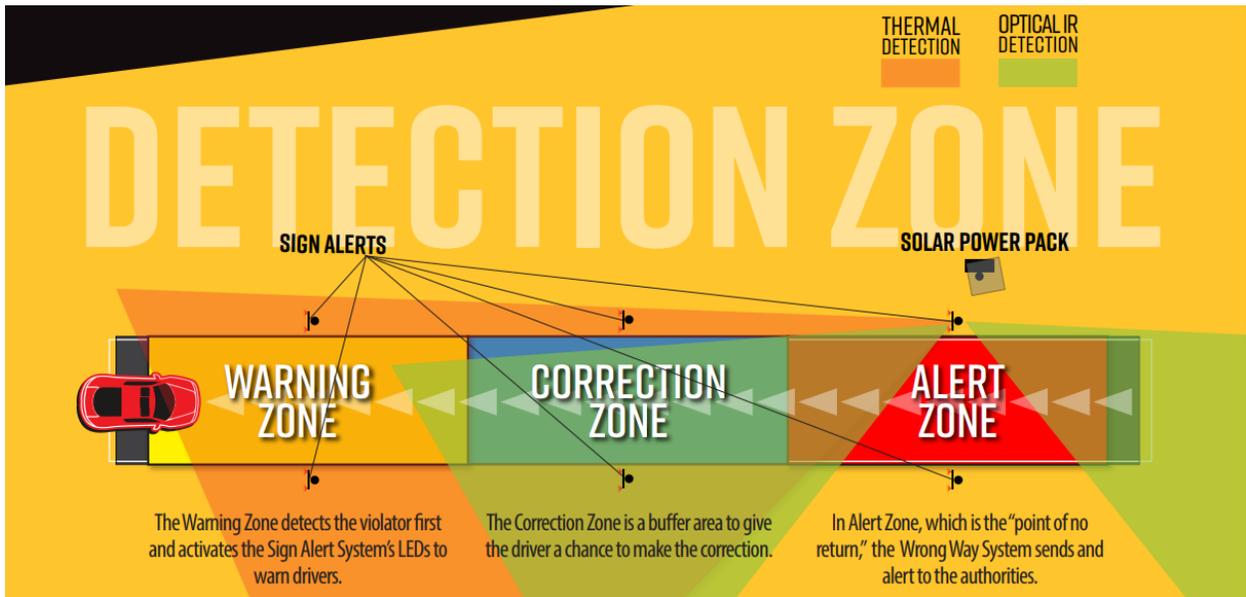


Figure 13: Redundant detection and verification zones using multiple technologies. (Source: K&K Systems)

The following outlines the minimum design considerations to be addressed by the Engineer related to the proposed vehicle detection subsystem:

- Verify the subsystem includes sensors capable of creating unique "detection" and "verification" zones.
- Verify the proposed location of sensors provides sufficient vehicle detection coverage for all lanes and shoulders of the off-ramp, including slip ramps.
- Verify sensor mounting height is sufficient to provide the necessary vehicle detection coverage. Ensure sensor is capable of capturing both "detection" and "verification" zones for all lanes and shoulders.
- For straightaway off-ramps position the start of the "detection" zone no less than 25' upstream of the stop bar.
- For ramps that include right turn lane(s) and islands position the start of the "detection" zone at the island gore point or tangent begin.

- Verify detection zones are positioned to eliminate false calls from opposing or right-way traffic on adjacent roadways and on-ramps.
- Verify sight lines are clear from obstruction, including highway signing, lighting poles, vegetations, barrier walls, and other physical features.
- Verify the vehicle detection subsystem is capable of functioning in all weather and lighting conditions. Ensure any additional hardware or equipment (e.g., illuminators) is provided as part of the system, as necessary.
- Verify the necessary configuration of the vehicle detection subsystem (e.g., primary and remote; primary, secondary, and remote) based on the roadway geometry and physical constraints of the proposed location.

It is recommended that the Engineer coordinate with the manufacturers for the APL-listed vehicle detection subsystem technologies to determine the properties of each system. Often times vendors will provide design-aid tools to assist in the decision process to select the correct equipment based on various parameters—such as lens type, mounting height, detection area, field of view angle, and more. One example is the Raven – Site Planning Tool powered by Teledyne FLIR, the vendor for the TAPCO Wrong-Way Alert System (<https://www.flir.com/security/raven-site-planning-tool/>) which allows users to toggle multiple sensor models and determine the right solutions for the proposed location.

Motorist Awareness Subsystem

The Engineer shall design the motorist awareness subsystem capable of providing localized notifications to drivers when a wrong-way driving event is determined. Each system shall consist of the LED highlight sign assemblies, including sign panels, LED arrays, breakaway pole supports, and foundations necessary for a complete installation at each off-ramp.

The following outlines the minimum design considerations to be addressed by the Engineer related to the proposed motorist awareness subsystem:

- Verify “WRONG WAY” (R5-1a) sign panel included in the highlighted sign assembly meets the “Oversized” dimensions of the *Manual on Uniform Traffic Control Devices (MUTCD)* (e.g., 42”W X 30”H).
- Verify the bottom of the “WRONG WAY” (R5-1a) sign panel of the highlighted sign assembly is mounted 7’-0” above the edge of traveled way grade (4’-0” for static signs).
- Verify each highlighted sign assembly is provided a red retroreflective strip minimum 2’-0” in length. Ensure the appropriate pay item is included.
- Verify all highlighted signs are wired to actuate simultaneously and maintain a constant LED flash pattern without drifting or becoming un-sequenced.

Additional Considerations

In addition to the design of the Intelligent Transportation System (ITS) components, the Engineer shall also be responsible for ensuring the design complies with all requirements of the Department, including the following considerations:

- **Constructability.** The Engineer shall review the design to ensure the proposed system(s) are constructable, including adequate space for bore pits; available construction vehicle ingress/egress points; material laydown locations; avoidance of low-lying areas for construction (e.g., retention areas); and more.
- **Right-of-Way.** The Engineer shall identify existing and proposed right-of-way lines and ensure all elements of the project are located within Department right-of-way. In scenarios where work is proposed outside of the right-of-way, the Engineer shall coordinate with the District to obtain access permits, construction easements, or parcel takes prior to construction.

- **Utilities.** The Engineer shall be responsible for identification of all utility agency owners (UAOs) within the project limits, including facilities owned and maintained by the Department (e.g., ITS, lighting, irrigation). The Engineer shall locate underground and overhead utilities and verify that the proposed work is not in conflict. The Engineer may be required to submit Utilities Verification Sheets and/or Utility Adjustment Sheets, as necessary.
- **Environmental.** The Engineer shall review the project limits to determine the existence of any environmental concerns, including wetlands; threatened or endangered species habitats; state and federal waters; and historical and cultural landmarks. The Engineer shall coordinate with the District to identify potential concerns, as well as minimize impacts. The Engineer may need to provide a Stormwater Runoff Control Concept (SRCC), as necessary.
- **Maintenance of Traffic.** The Engineer shall provide consideration for maintenance of traffic (MOT) to account for the construction, integration, and testing of the system(s). This may require shoulder and ramp closures and potential detour routes to be designed. The Engineer may need to provide Temporary Traffic Control Plans (TTCP), as necessary.

Section IV – Schedule of Deliverables

The following sub-sections describe the typical deliverables associated with a project including WWVDS deployment.

Table 1: Schedule of Deliverables.

| INTELLIGENT TRANSPORTATION SYSTEM (ITS) SUBMITTALS | | | | |
|--|--|----------|-----------|----------|
| DELIVERABLE(S): | | PHASE II | PHASE III | PHASE IV |
| 1 | Intelligent Transportation Systems (ITS) Plans | | | |
| | Key Sheet | P | C | F |
| | General Notes | P | C | F |
| | Project Layout | P | C | F |
| | Plan Sheets | P | C | F |
| | Logical Network Diagram | P | C | F |
| | Fiber Optic Splice Diagram | P | C | F |
| | Wiring Diagram | P | C | F |
| | Managed Field Ethernet Switch Detail | P | C | F |
| | Electrical Service Detail (if new) | P | C | F |
| | Installation Details / Mounting Detail | P | C | F |
| | Detection Coverage Detail | P | C | F |
| | Cabinet Detail | P | C | F |
| | Concrete Pad Detail | P | C | F |
| | Conduit and Route Marker Detail | P | C | F |
| | Maintenance of Communication (MOC) Plan | | P | F |
| | Cross Sections | | P | F |
| | Temporary Traffic Control Plan (TTCP) | | P | F |
| 2 | Estimated Quantities Report (EQR) | P | C | F |
| 3 | Technical Special Provisions (TSP) | P | C | F |
| 4 | Modified Special Provisions (MSP) | P | C | F |
| 5 | Proprietary Product Certification (PPC) | P | C | F |

P = Preliminary

C = Complete, but subject to change

F = Final

Intelligent Transportation Systems (ITS) Plans

Ensure all Intelligent Transportation Systems (ITS) Plans are developed to meet the requirements set forth in latest version of *FDOT Standard Plans*, *FDOT Standard Specifications for Road and Bridge Construction*, and the District Five *ITS Design Review Checklist* located on cfsmartroads.com. The following provides general guidance for the development of plan sheets and details. The. Refer to **Appendix A** – Sample Plans for specific examples.

Key Sheet – Develop Key Sheet in accordance with *FDM Section 910.2*. Engineer shall make the determination if this project requires the Key Sheet to be developed as a lead or component plan set and adjust accordingly.

General Notes – Develop General Notes sheet in accordance with *FDM Section 914.1, 914.2, & 942.3*. Engineer shall ensure the provided notes are sufficient to cover all aspects of the project. Additionally, the General Notes sheet shall include a pictorial legend defining any atypical symbology utilized within the plan sheets and all necessary pay item notes. Pay item notes are required for proposed work that requires specific direction to the Contractor outside of the direction given within the Standard Plans and Specifications (e.g., conduit color scheme, composite cable construction), as well as all adjust/modify pay item numbers.

Project Layout – The Engineer shall select the appropriate common scale (e.g., 1" = 2000') for the Project Layout sheet necessary to depict all project information in a clean, easy-to-read format. At a minimum, Project Layout sheets shall include the following:

- Begin Project Limits (w/ stationing)
- End Project Limits (w/ stationing)
- North Arrow
- Scale
- County Line (as applicable)
- Street Names for Major Intersections and Interchanges
- Plan Sheet Numbering
- ITS Device Type and ID No. (existing and proposed) (w/ stationing)
- Match Lines (as required)

If the project does not include baseline or centerline stationing provide the appropriate latitude/longitude information for project limits and device locations.

Plan Sheets – Develop ITS Plan Sheets in accordance with *FDM Section 942.4*. Plan Sheets shall be developed at either 1" = 40' or 1" = 100' scale. Ensure Plan Sheets clearly depict the existing and proposed ITS infrastructure including field devices, structures, cabinets, conduits, pull boxes, splice vaults, and electrical equipment. The Plan Sheets shall also include topographical information (e.g., survey, aerial photography) necessary to properly identify existing conditions and site constraints, such as right-of-way lines, underground and overhead utilities, roadway and drainage infrastructure, landscaping, signalization equipment, sign structures, and more. Provide textual callouts with sufficient information for the Contractor to understand the proposed work, including brief descriptions of work (e.g., activity, size, type) and pay item numbers with the associated quantities and units. Ensure all ITS devices—including existing and proposed—are properly identified with the corresponding device ID number(s), as well as stationing and offset from the baseline/centerline. If the project does not include a baseline or centerline, provide latitude and longitude information for each ITS device. Callouts shall clearly identify the unique components of the WWVDS—including clear designations of the primary, secondary, and remote sites, as appropriate. If areas within the plan sheet are heavily congested or require additional clarity, provide an inset with a higher level of detail and an increased scale (e.g., 1" = 10')

Logical Network Diagram – Develop Logical Network Diagrams to illustrate the end-to-end communications schema for all ITS devices within the project limits. Clearly identify the appropriate network nodes (e.g., local hubs), master hubs, firewalls, cloud-hosted and/or on-premises servers, and communication mediums (e.g., fiber optics, cellular) necessary to connect each field device with the appropriate operational system.

Fiber Optic Splice Diagram – Develop Fiber Optic Splice Diagrams to denote the existing and proposed physical connections of the fiber optic communications network in the field. These diagrams shall clearly illustrate the type of connection (e.g., splice, termination, unterminated, express) for each fiber strand within the cables impacted by the project. Additional information to be included within these details include cable information (e.g., fiber count, single mode versus multi-mode, origin-destination); individual fiber numbering; fiber and buffer tube color; connector type (e.g., LC, SC, ST); identification of networking equipment (e.g., splice enclosure, patch panel); stationing or physical location of splice and/or termination connection.

Wiring Diagram – Develop Wiring Diagrams to clearly depict the physical connections of field devices and in-cabinet equipment necessary to provide network communications to each system. These schematics shall illustrate power and communications connections between all field devices and in-cabinet equipment with labels for each type of wiring (e.g., 120VAC, 12-24VDC, CAT-6 (Ethernet), RS-422). Ensure the type of port (e.g., RJ-45, Db-9) is identified for each connection to in-cabinet equipment. Ensure grounding and surge protection equipment is depicted. Ensure the complete configuration for power and communications is clearly illustrated at the field level for each system comprised of multiple discrete components. Systems that are furnished as complete assemblies (e.g., WWVDS) do not require detailed wiring diagrams and will only need to depict how network connectivity and power will be provided to the overall system. Unique wiring diagrams are not required for each cabinet. If multiple cabinets will be arranged similarly, typical diagrams may be developed. Ensure the specific project locations are identified for each typical diagram, as appropriate.

Managed Field Ethernet Switch Detail – Develop Managed Field Ethernet Switch Details to illustrate the standard arrangement of field devices and in-cabinet equipment within the switch. Ensure all ports within the switch are appropriately numbered and the port type and status (e.g. occupied, open) is clearly identified. Ensure the end device connected to each port is depicted.

Electrical Service Detail – Develop Electrical Service Details to depict the complete circuitry for local hubs from the utility service point to the final cabinet power panel for each circuit. These details shall include the hardware (e.g., service meter, electrical disconnect, transformer, power panel), wiring, and connections necessary for a complete electrical circuit. Ensure each Electrical Service Detail includes the following information:

- Utility Service Provider and Pole No.
- Electrical Service Provider Voltage (incoming)
- Service Voltage (per conductor run)
- Circuitry Pathway (e.g., live, neutral, ground)
- Physical Connection Locations (e.g., termination, splice)
- Conductor Schedule (w/ size (AWG) and quantity of each run)
- Disconnect Size
- Transformer Type (e.g., step-up, step-down) and Size

Installation Detail / Mounting Detail – Develop Installation / Mounting Details to identify the infrastructure necessary for a complete deployment of any field devices and/or systems (e.g., WWVDS). Ensure these details clearly identify the location, quantity, material, and hardware necessary for the installation of individual components of a system. Ensure these details provide the information necessary for the Contractor to assemble the discrete components into a

complete system—including routing of individual conduit runs and sweeps into pull boxes, cabinets, and foundations; fastening of pole mounted enclosures, devices, and signs; mounting heights; and more.

Detection Coverage Detail – Develop Detection Coverage Details to clearly denote the proposed detection zone(s) for each off-ramp facility depicting the minimum areas of coverage to identify wrong-way driving events. Ensure two (2) distinct coverage areas are depicted for each ramp – detection zone and verification zone.

Cabinet Detail – Develop Cabinet Details to identify the location, arrangement, size, and quantity of all in-cabinet equipment. Ensure this detail is to scale (relative) with each component and cabinet assembly drawn with accurate dimensions. Ensure the details clearly denote the total amount of rack units (RU) for the cabinet and identifies whether in-cabinet equipment is rack or shelf mounted. Ensure Cabinet Details include views of both the front and back of the cabinet.

Concrete Pad Detail – Develop Concrete Pad Details in accordance with *FDOT Standard Plans, Index 635 and 676*. Details shall illustrate the size and arrangement of concrete pads for pull box (e.g., apron) and cabinet (e.g. technician pad) installations. Ensure the details include the total concrete pad dimensions, type and dimensions of pull boxes, minimum spacing between boxes, and thickness of concrete.

Conduit and Route Marker Detail – Develop Conduit and Route Marker Details in accordance with *FDOT Standard Plans, Index 630-2.5*. Details shall identify the specific information (e.g., phone number) and dimensions for the route marker cover, as well as installation requirements.

Maintenance of Communications Plans – Develop Maintenance of Communications (MOC) Plans depicting the work necessary to identify and protect in-place existing ITS communications and/or mitigate potential impacts within the project limits to maintain network uptime. Coordinate these plans with the Temporary Traffic Control Plans (TTCP) to identify the appropriate phase of construction for the work to be completed, as applicable. Ensure plans identify the area(s) impacted by construction, provide step-by-step directions to disconnect and re-establish communications, identify appropriate Department contact information, and detail maximum network downtime requirements. This information is acceptable in either text or plan sheet format.

The following items may not be required for inclusion within the Intelligent Transportation System (ITS) Plans set dependent upon if the ITS design is the lead or a component set. In the event the ITS design is a component set, all pertinent information shall be coordinated with the Engineer of Record for the Roadway plan set.

- **Cross Sections** – Develop Cross Sections in accordance with *FDM Section 942.6*.
- **Temporary Traffic Control Plan** – Develop Temporary Traffic Control Plan (TTCP) in accordance with *FDM Section 921*.

Estimated Quantities Report (EQR)

Develop Estimated Quantities Report (EQR) in accordance with *FDM Section 902*.

Modified Special Provision (MSP)

Modified Special Provisions (MSP) shall be required when an implemented Specification of the *FDOT Standard Specifications for Road and Bridge Construction* does not adequately address the specific needs of the project. The required MSP will be a revision of the implemented Specification and will require approval from both the District and State Specifications Office. **Appendix B** includes a link to the State Specifications Office’s guidance website.

The following identifies potential MSPs that may be necessary for projects inclusive of WWVDS:

- Section 660 – Vehicle Detection System
- Section 676 – Traffic Cabinets
- Section 684 – Managed Field Ethernet Switch

Technical Special Provision (TSP)

Technical Special Provisions (TSP) shall be required when there is not an applicable section of the *FDOT Standard Specifications for Road and Bridge Construction* to cover the proposed type of work. Each TSP will require approval from the District Specifications Office. **Appendix C** includes a link to the State Specifications Office’s guidance website.

The following identifies potential TSPs that may be necessary for projects inclusive of WWVDS:

- Section T612 – Device Integration and Testing
- Section T633 – Multi-Conductor Communication Cable
- Section T639 – Electrical Power Service Transformer

Proprietary Product Certification (PPC)

Based on the distinct needs of the District, there are a number of items in which a specific product or manufacturer is required to be used through Proprietary Products Certifications (PPC) to accommodate either synchronization with existing systems or unique functionality. Each PPC must be submitted to the District for review and approval by the District Traffic Operations Engineering (DTOE) utilizing the established request letter and PPC form templates available on cfsmartroads.com. For previously approved examples, refer to **Appendix D**.

The following identifies potential PPCs that may be necessary for projects inclusive of WWVDS:

- **CyberLock®** – Electronic Cylinders (Cabinet Locks)
- **Alpha® FXM** – Uninterruptible Power Supply (UPS)

Section V – Special Design Considerations

Off-Ramp Entry Prevention System (OREPS)

The Off-Ramp Entry Prevention System (OREPS) is a low-cost, wrong-way countermeasure system designed to enhance road safety and promote driver self-correction. Functionally, the system operates similarly to the standard Wrong-Way Vehicle Detection Systems (WWVDS) described earlier in this documentation; however, it features a key distinction. Unlike WWVDS, the OREPS does not coordinate directly with a local hub or, by extension, a Regional Traffic Management Center (RTMC). Instead, the OREPS is designed to prompt drivers to recognize their error and self-correct without external intervention. **Prior to the design and installation of an OREPS deployment, all equipment shall be approved by the Traffic Engineering Research Laboratory (TERL).**

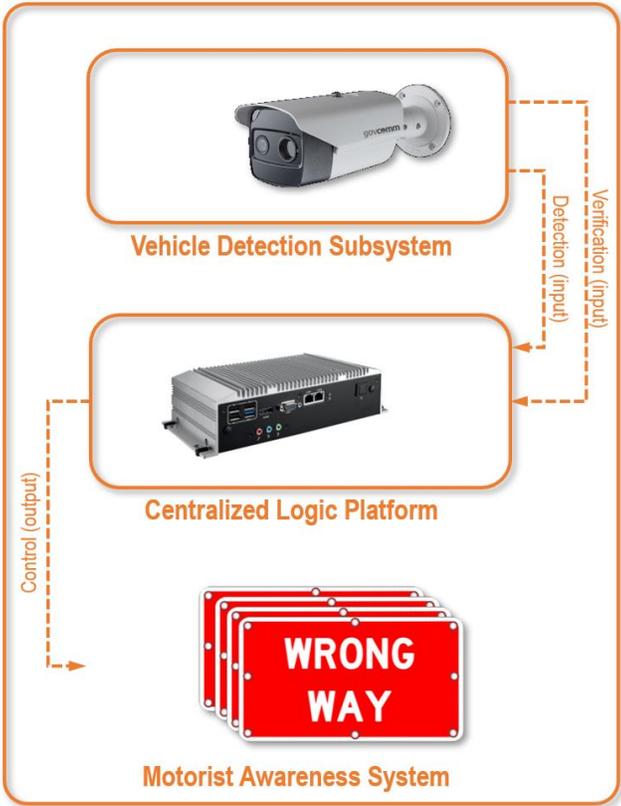


Figure 14: High-level architecture and data flow for OREPS.

The OREPS provides a low-cost, wireless deterrent to wrong-way driving. These systems are typically solar-powered, and the flashing Wrong-Way signs are connected wirelessly. The system is designed to operate completely independently of traditional infrastructure—there is no need for conduit, cabling, controllers, electrical power service, or network communication points. This makes OREPS particularly suitable for deployment in areas where fiber optic networks are unavailable or cost-prohibitive.

The OREPS uses the same design requirements as the ones previously defined in this document for Wrong-Way Vehicle Detection Systems. Rather than utilizing both a detection zone and a verification zone, the OREPS relies solely on a detection zone. This is because false negatives are not a concern—no alerts are sent to the RTMC, and no police response is triggered. The system is intentionally conservative in its activation logic, prioritizing a 100

percent true-positive event detection rate. False positives are considered acceptable within this framework, as the primary goal is to ensure that any actual wrong-way movement is reliably detected and addressed through visual deterrence.

Because the system is designed to be highly sensitive, it may be triggered by external factors such as conflicting movements by road users or high pedestrian traffic. Therefore, sign placement becomes a critical consideration. Signs must be strategically located to minimize areas where right-way vehicles may be exposed to the flashing signs. Repeated exposure to flashing signs by right-way drivers can lead to confusion or desensitization, undermining the system's effectiveness. This concern is more pronounced with OREPS than with standard WWVDS, due to the lack of centralized control and filtering mechanisms.

OREPS is best suited for deployment on less-traveled roads, where traditional infrastructure is limited and the cost of full-scale WWVDS implementation would be prohibitive. Ideal locations include low-volume cross streets, rural areas, or ramps with geometric features that naturally discourage wrong-way entry.

Section VI – References

1. FDOT Design Bulletin 19-03, *Wrong-way Driving Advanced Countermeasures at Interchange Exit Ramps*, dated July 3, 2019. ([LINK](#))
2. *SunGuide® Software System Wrong-Way Driving Concept of Operations*, latest version.
3. *FDOT District Five – ITS Plans Review Checklist*, latest version. ([LINK](#))
4. *FDOT Design Manual (FDM)*, latest version.
5. *FDOT Standard Plans*, latest version.
6. *FDOT Standard Specifications for Road and Bridge Construction*, latest version.
7. *Manual on Uniform Traffic Control Devices (MUTCD)*, latest version.

Appendix A – Sample Plans

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ENGINEER OF RECORD
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 LICENSE NUMBER: 76103
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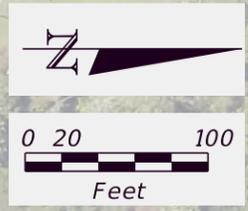
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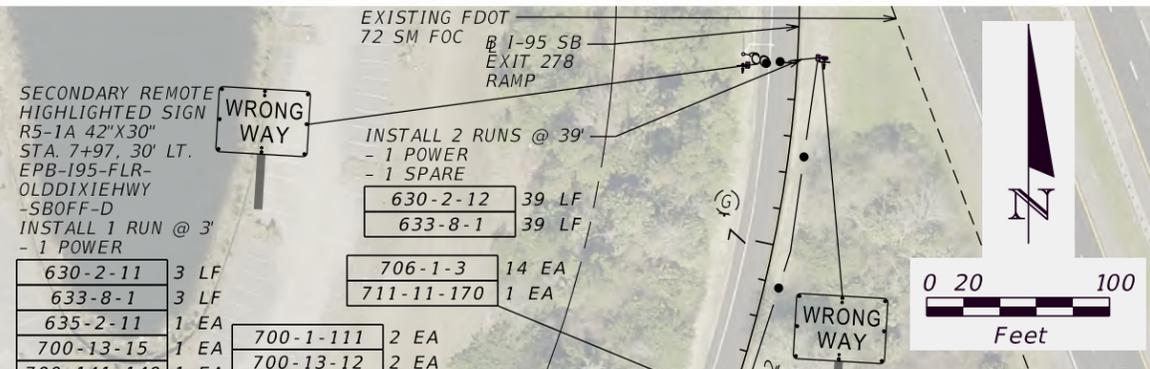
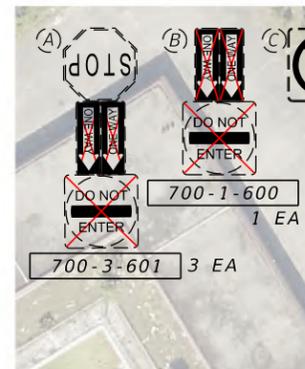
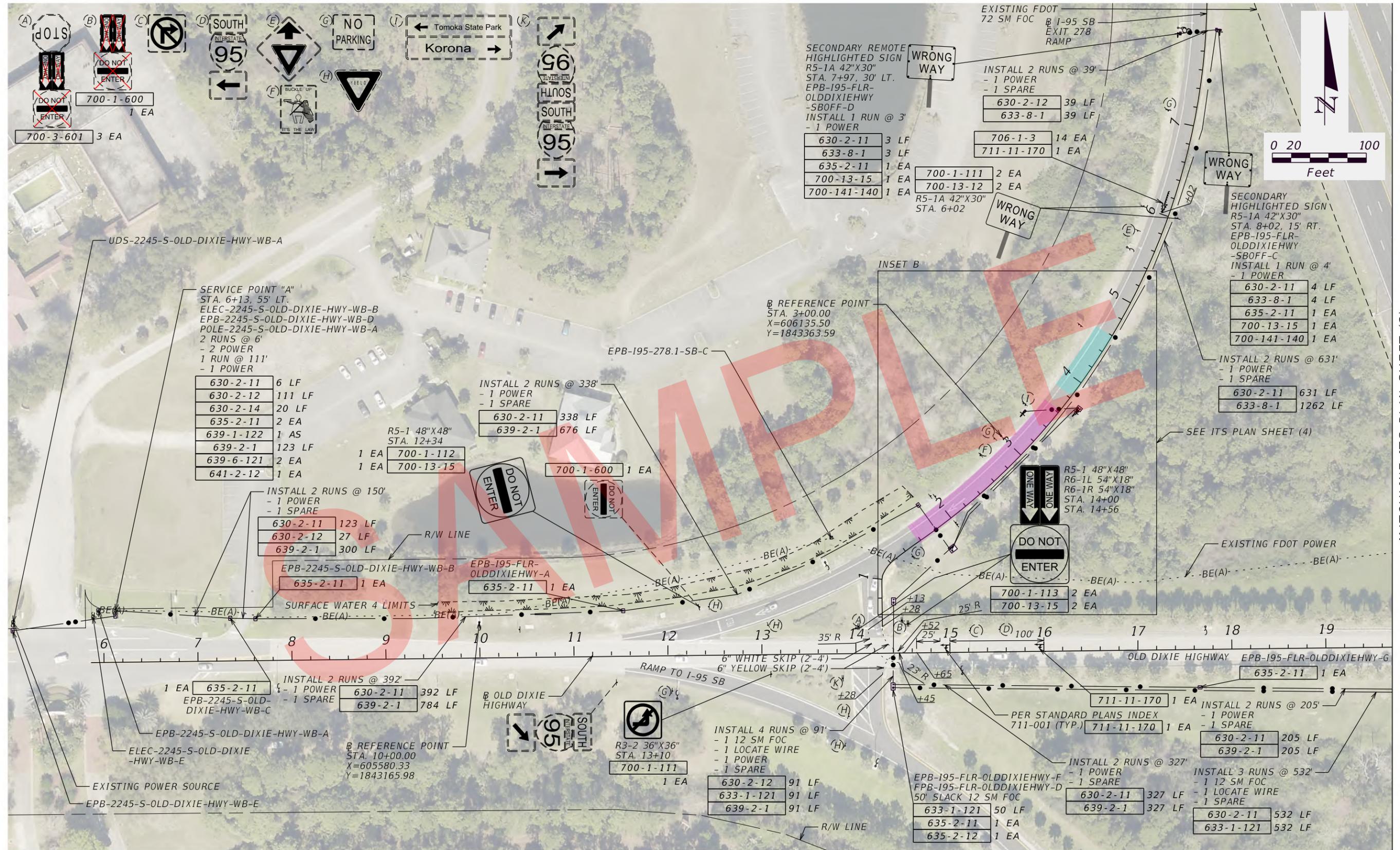
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ITS PLAN SHEET (2)

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SERVICE POINT "A"
 STA. 6+13, 55' LT.
 ELEC-2245-S-OLD-DIXIE-HWY-WB-B
 EPB-2245-S-OLD-DIXIE-HWY-WB-D
 POLE-2245-S-OLD-DIXIE-HWY-WB-A
 2 RUNS @ 6'
 - 2 POWER
 1 RUN @ 111'
 - 1 POWER

| | |
|-----------|--------|
| 630-2-11 | 6 LF |
| 630-2-12 | 111 LF |
| 630-2-14 | 20 LF |
| 635-2-11 | 2 EA |
| 639-1-122 | 1 AS |
| 639-2-1 | 123 LF |
| 639-6-121 | 2 EA |
| 641-2-12 | 1 EA |

INSTALL 2 RUNS @ 338'
 - 1 POWER
 - 1 SPARE

| | |
|----------|--------|
| 630-2-11 | 338 LF |
| 639-2-1 | 676 LF |

INSTALL 2 RUNS @ 150'
 - 1 POWER
 - 1 SPARE

| | |
|----------|--------|
| 630-2-11 | 123 LF |
| 630-2-12 | 27 LF |
| 639-2-1 | 300 LF |

INSTALL 2 RUNS @ 392'
 - 1 POWER
 - 1 SPARE

| | |
|----------|--------|
| 630-2-11 | 392 LF |
| 639-2-1 | 784 LF |

INSTALL 4 RUNS @ 91'
 - 1 12 SM FOC
 - 1 LOCATE WIRE
 - 1 POWER
 - 1 SPARE

| | |
|-----------|-------|
| 630-2-12 | 91 LF |
| 633-1-121 | 91 LF |
| 639-2-1 | 91 LF |

INSTALL 2 RUNS @ 327'
 - 1 POWER
 - 1 SPARE

| | |
|----------|--------|
| 630-2-11 | 327 LF |
| 639-2-1 | 327 LF |

INSTALL 3 RUNS @ 532'
 - 1 12 SM FOC
 - 1 LOCATE WIRE
 - 1 SPARE

| | |
|-----------|--------|
| 630-2-11 | 532 LF |
| 633-1-121 | 532 LF |

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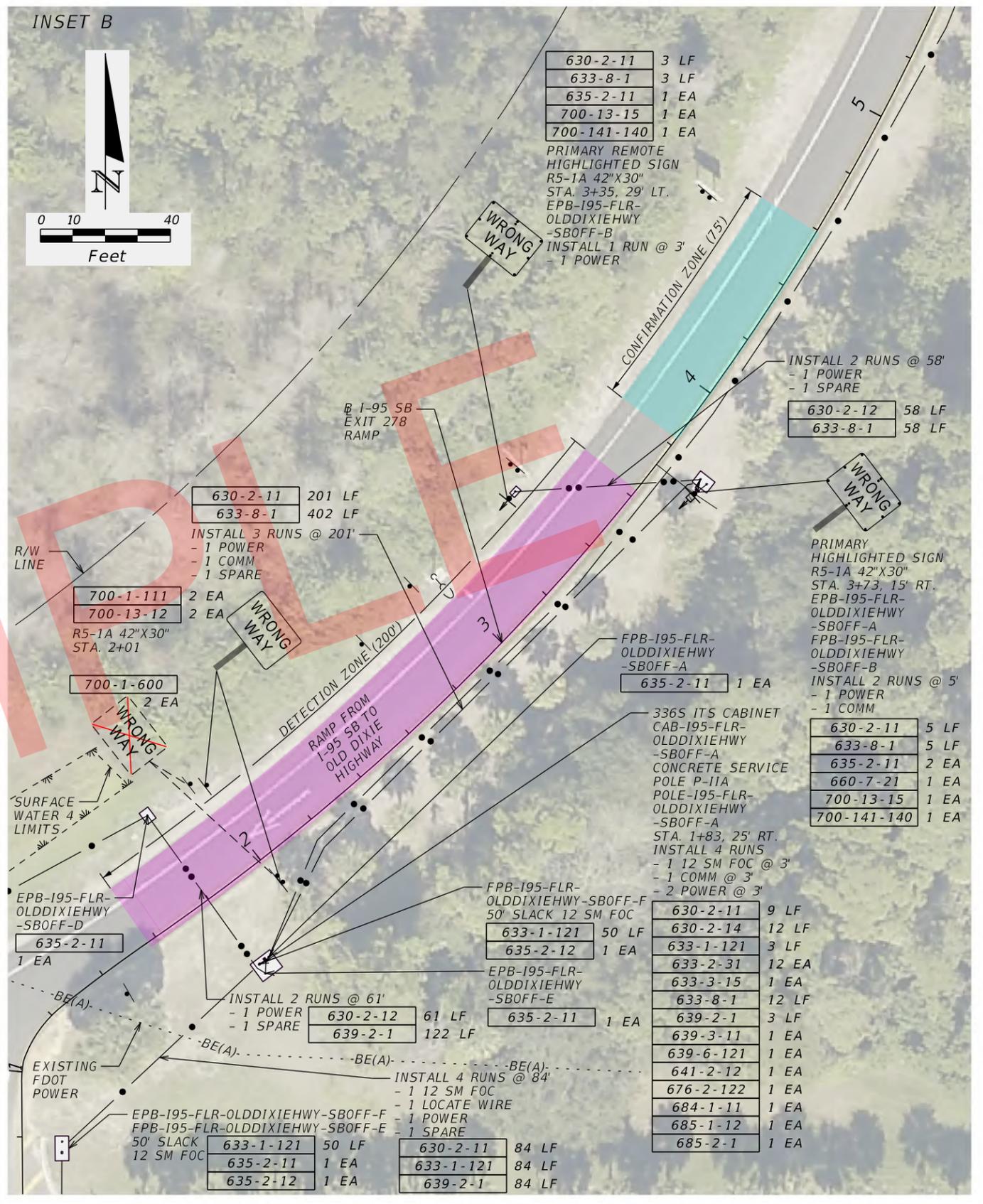
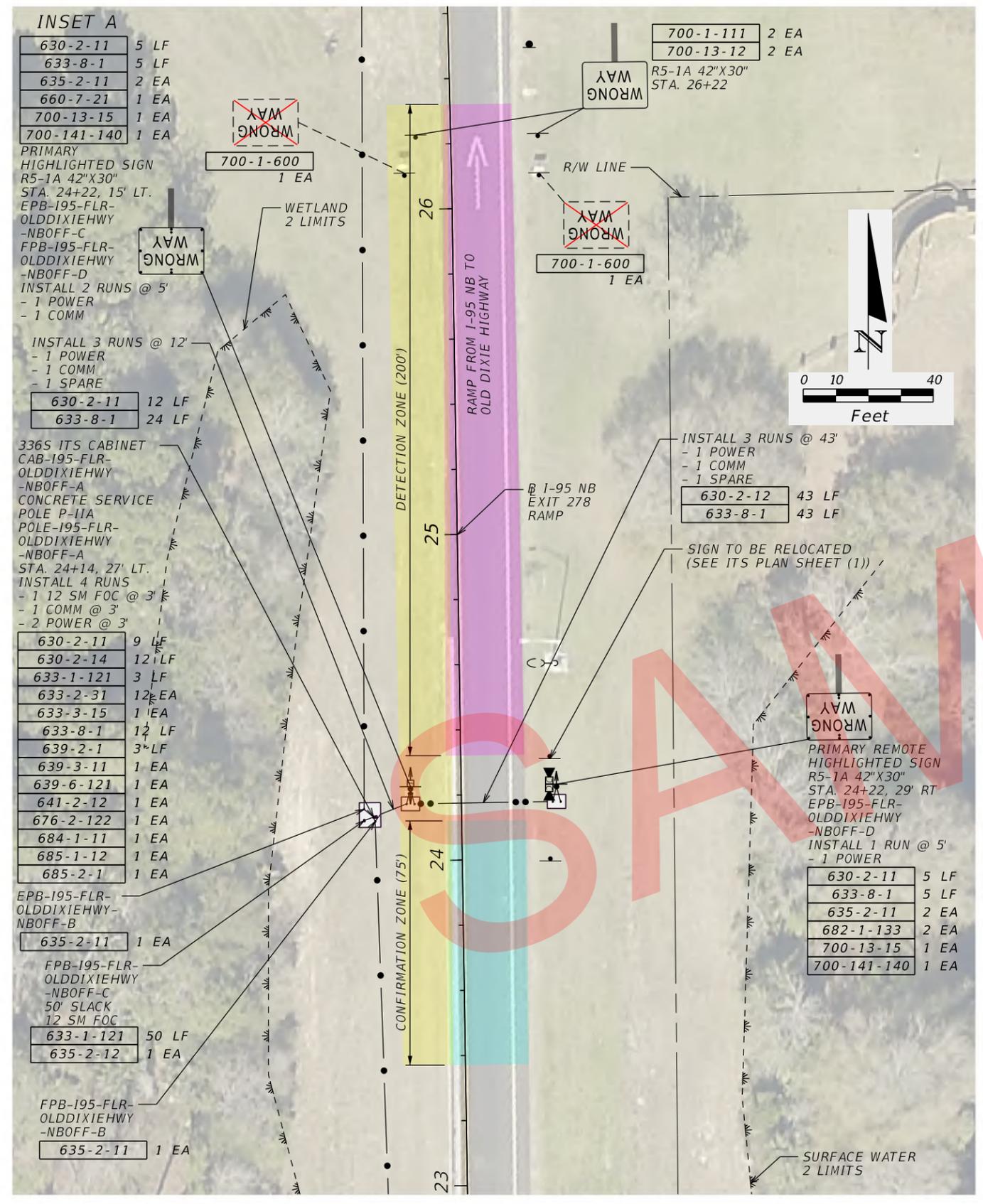
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MATCHLINE ITS PLAN SHEET (2)

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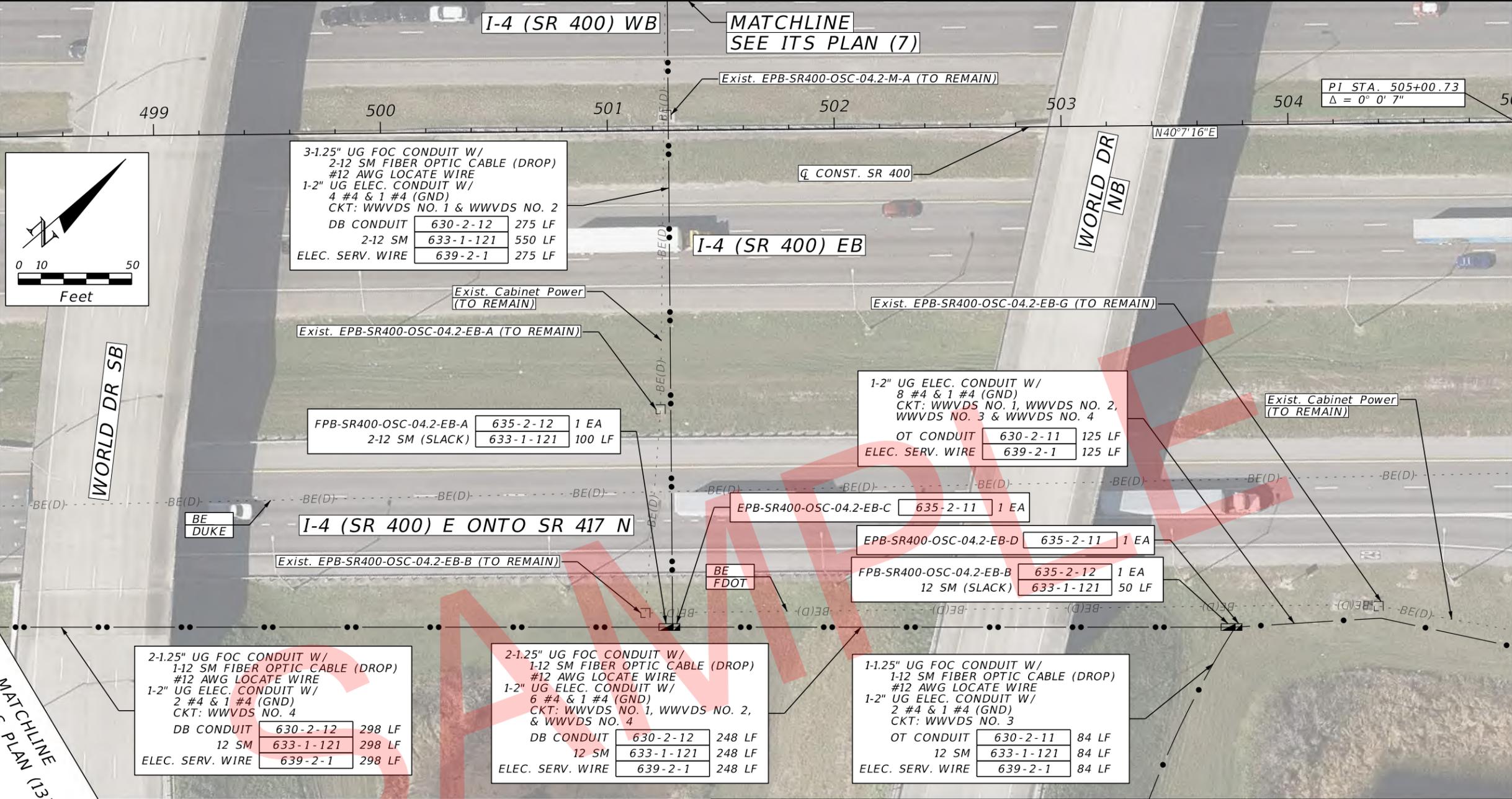
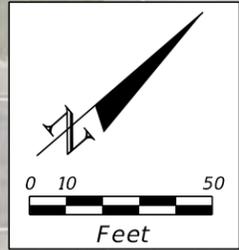
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| REVISIONS | | REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|-----------|-------------|--|--|---|---------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 10 |

ITS PLAN SHEET (4)

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MATCHLINE STA. 505+00.73
SEE ITS PLAN (II)

MATCHLINE
SEE ITS PLAN (13)

MATCHLINE
SEE ITS PLAN (12)

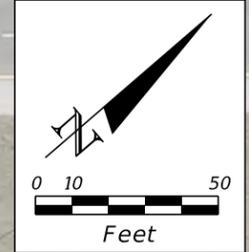
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|-----------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS PLAN (10) IT-24 |

SR 417 S ONTO
I-4 (SR 400) W

NOTE:
1. ROUTE ELECTRICAL SERVICE WIRE TO PULL BOX ADJACENT TO THE EXISTING BASE MOUNTED UTILITY COMPANY TRANSFORMER SOURCE. NEATLY BUNDLE ELECTRICAL SERVICE WIRE SLACK IN PULL BOX. POWER COMPANY TO MAKE FINAL CONNECTIONS.



MATCHLINE
SEE ITS PLAN (7)

Existing Power Company Service Point
D5 ELEC-SR400-OSC-04.3-EB
(SEE NOTE 1, THIS SHEET)

I-4 (SR 400) WB

1-2" UG ELEC. CONDUIT W/
8 #4 & 1 #4 (GND)
CKT: WWVDS NO. 1, WWVDS NO. 2,
WWVDS NO. 3 & WWVDS NO. 4
OT CONDUIT 630-2-11 174 LF
ELEC. SERV. WIRE 639-2-1 174 LF

PI STA. 505+00.73
Δ = 0° 0' 7"

506

507

508

509

N40°7'8"E

1-2" UG ELEC. CONDUIT W/
8 #4 & 1 #4 (GND)
CKT: WWVDS NO. 1, WWVDS NO. 2,
WWVDS NO. 3 & WWVDS NO. 4
OT CONDUIT 630-2-11 78 LF
ELEC. SERV. WIRE 639-2-1 78 LF

EPB-SR400-OSC-04.3-EB-B 635-2-11 1 EA

1-2" UG ELEC. CONDUIT W/
8 #4 & 1 #4 (GND)
CKT: WWVDS NO. 1, WWVDS NO. 2,
WWVDS NO. 3 & WWVDS NO. 4
DB CONDUIT 630-2-12 35 LF
ELEC. SERV. WIRE 639-2-1 35 LF

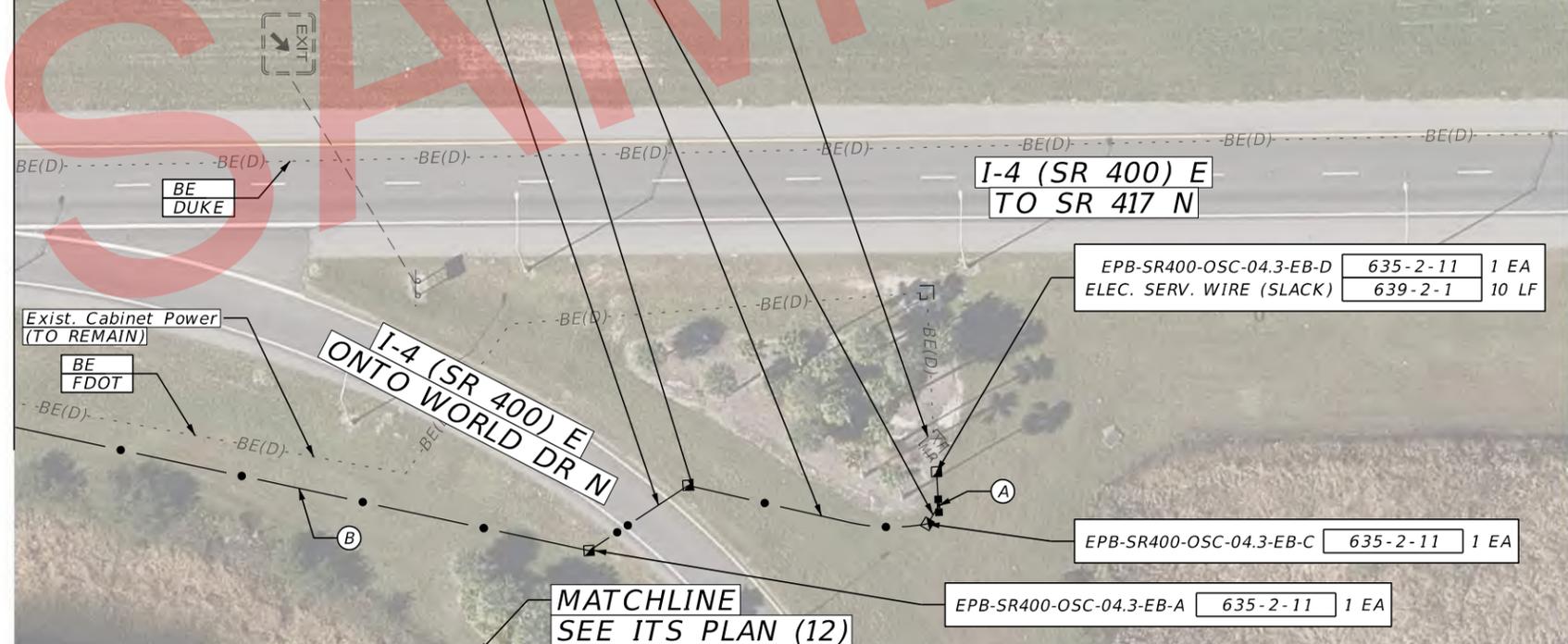
I-4 (SR 400) EB

ITS PANELBOARD A
STA. 507+71, 257' RT.
BEGIN CKT: WWVDS NO. 1, CKT: WWVDS NO. 2,
CKT: WWVDS NO. 3, & CKT: WWVDS NO. 4

1-2" UG ELEC. CONDUIT W/
2 #4 & 1 #4 (GND)
CKT: POWER SERVICE

| | | |
|--------------------|-----------|--------|
| OT CONDUIT | 630-2-11 | 10 LF |
| AG CONDUIT | 630-2-14 | 3x5 LF |
| POWER SERVICE (UG) | 639-1-121 | 1 AS |
| ELEC. SERV. WIRE | 639-2-1 | 25 LF |
| ITS PANELBOARD | 639-3-11 | 1 EA |
| TRANSFORMER | 639-6-142 | 1 EA |
| 12' TYPE IIA POLE | 641-2-11 | 2 EA |

MATCHLINE STA. 505+00.73
SEE ITS PLAN (10)



MATCHLINE
SEE ITS PLAN (12)

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|-----------|-------------|--------------------|--|--|-------------------|----------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | IT-25 |

ITS PLAN (11)

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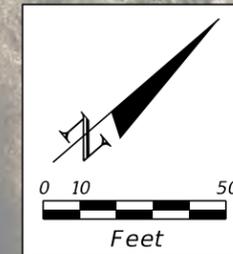
MATCHLINE
STA. 34+39.41
SEE ITS PLAN (10)

MATCHLINE
SEE ITS PLAN (11)

1-1.25" UG FOC CONDUIT W/
 1-12 SM FIBER OPTIC CABLE (DROP)
 #12 AWG LOCATE WIRE
 1-2" UG ELEC. CONDUIT W/
 2 #4 & 1 #4 (GND)
 CKT: WWVDS NO. 3

| | | |
|------------------|-----------|--------|
| OT CONDUIT | 630-2-11 | 264 LF |
| 12 SM | 633-1-121 | 264 LF |
| ELEC. SERV. WIRE | 639-2-1 | 264 LF |

CURVE DATA C-1
 PI STA. = 30+29.11
 Δ = 132°22'37" (RT)
 D = 22°03'33"
 T = 588.58
 L = 600.10
 R = 259.74
 PC STA. = 24+40.53
 PT STA. = 30+40.63



CURVE DATA C-2
 PI STA. = 32+09.29
 Δ = 57°58'57" (RT)
 D = 18°49'25"
 T = 168.66
 L = 308.03
 R = 304.38
 PC STA. = 30+40.63
 PT STA. = 33+48.66

Exist. Wrong Way Arrow
 (TO REMAIN)

INCOMING DETECTION ZONE
 (FOR REFERENCE ONLY)

STA. 31+56, 32' RT.
 SEE NOTE 1, THIS SHEET

2-1.25" UG FOC CONDUIT W/
 1-12 SM FIBER OPTIC CABLE (DROP)
 #12 AWG LOCATE WIRE
 1-2" UG ELEC. CONDUIT W/
 2 #4 & 1 #4 (GND)
 CKT: WWVDS NO. 3

| | | |
|------------------|-----------|--------|
| DB CONDUIT | 630-2-12 | 115 LF |
| 12 SM | 633-1-121 | 115 LF |
| ELEC. SERV. WIRE | 639-2-1 | 115 LF |

STATIC SIGN ASSEMBLIES
 STA. 28+87, 18' LT.
 STA. 28+88, 17' RT.

| | | |
|------------------|-----------|------|
| R5-1a (42"x30") | 700-1-11 | 2 AS |
| REFLECTIVE STRIP | 700-13-12 | 2 EA |

STATIC SIGN ASSEMBLIES
 STA. 32+13, 19' LT.
 STA. 32+11, 22' RT.

| | | |
|------------------|-----------|------|
| R5-1a (42"x30") | 700-1-11 | 2 AS |
| REFLECTIVE STRIP | 700-13-12 | 2 EA |

NOTE:
 1. TRANSITION CONDUIT BETWEEN
 OPEN TRENCH AND DIRECTIONAL
 BORE.

1-2" UG ELEC. CONDUIT W/
 2 #6 & 1 #6 (GND)
 CKT: SECONDARY

| | | |
|------------------|----------|--------|
| OT CONDUIT | 630-2-11 | 382 LF |
| ELEC. SERV. WIRE | 639-2-1 | 382 LF |

OUTGOING DETECTION ZONE
 (FOR REFERENCE ONLY)

SEE INSET E, ITS PLAN (47)

Exist. Wrong Way Arrow
 (TO REMAIN)

I-4 (SR 400) E
 ONTO WORLD DR N

WORLD DR
 S ONTO I-4
 (SR 400) E

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| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS PLAN (12) IT-26 |

MATCHLINE
SEE ITS PLAN (10)

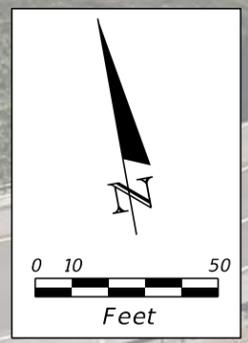
2-1.25" UG FOC CONDUIT W/
1-12 SM FIBER OPTIC CABLE (DROP)
#12 AWG LOCATE WIRE
1-2" UG ELEC. CONDUIT W/
2 #4 & 1 #4 (GND)
CKT: WWVDS NO. 4
DB CONDUIT 630-2-12 82 LF
12 SM 633-1-121 82 LF
ELEC. SERV. WIRE 639-2-1 82 LF

EPB-SR400-OSC-04.1-EB-J 635-2-11 1 EA

1-1.25" UG FOC CONDUIT W/
1-12 SM FIBER OPTIC CABLE (DROP)
#12 AWG LOCATE WIRE
1-2" UG ELEC. CONDUIT W/
2 #4 & 1 #4 (GND)
CKT: WWVDS NO. 4
OT CONDUIT 630-2-11 344 LF
12 SM 633-1-121 344 LF
ELEC. SERV. WIRE 639-2-1 344 LF

A FPB-SR400-OSC-04.1-EB-B 635-2-12 1 EA
12 SM (SLACK) 633-1-121 50 LF

B BDWR RPMs 706-1-3 17 EA
WHITE THERMO. ARROW 711-11-170 1 EA



WORLD DR S
ONTO I-4 (SR 400) E

1-2" UG ELEC. CONDUIT W/
2 #6 & 1 #6 (GND)
CKT: SECONDARY
OT CONDUIT 630-2-11 321 LF
ELEC. SERV. WIRE 639-2-1 321 LF

BDWR RPMs 706-1-3 17 EA
WHITE THERMO. ARROW 711-11-170 1 EA
REMOVE EXIST. THERMO. ARROW 711-17-1 24 SF

INCOMING DETECTION ZONE
(FOR REFERENCE ONLY)

I-4 (SR 400) E
ONTO WORLD DR S

WORLD DR SB

CONST. RAMP D
CURVE D-2



WRONG WAY
OUTGOING DETECTION ZONE
(FOR REFERENCE ONLY)



STATIC SIGN ASSEMBLIES
STA. 39+57, 17' LT.
STA. 39+56, 23' RT.
R5-1a (42"x30") 700-1-11 2 AS
REFLECTIVE STRIP 700-13-12 2 EA

STATIC SIGN ASSEMBLIES
STA. 36+56, 18' LT.
STA. 36+56, 20' RT.
R5-1a (42"x30") 700-1-11 2 AS
REFLECTIVE STRIP 700-13-12 2 EA

CURVE DATA D-2
PI STA. = 36+91.60
Δ = 57°38'35" (RT)
D = 08°01'14"
T = 393.07
L = 718.69
R = 714.36
PC STA. = 32+98.53
PT STA. = 40+17.22

REMOVE EXIST. THERMO. ARROW 711-17-1 24 SF

BE DUKE

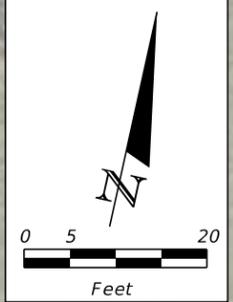
SEE INSET G, ITS PLAN (48)

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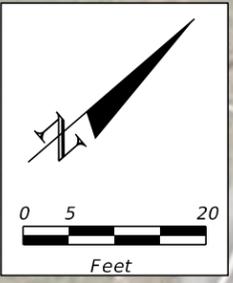
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| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS PLAN (13) IT-27 |

INSET E
I-4 E ONTO
WORLD DR N



INSET F
I-4 E ONTO
WORLD DR N



| | | |
|--|----------|-------|
| 1-2" UG ELEC CONDUIT W/ 2 #4 & 1 #4 (GND) CKT. WWVDS NO. 3 | | |
| OT CONDUIT | 630-2-11 | 10 LF |
| EPB-SR400-OSC-04.2-EB-E | 635-2-11 | 1 EA |
| ELEC. SERV. WIRE | 639-2-1 | 10 LF |

| | | |
|-------------------------|------|--|
| OT CONDUIT | | |
| 630-2-11 | 8 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 8 LF | |
| EPB-SR400-OSC-04.2-EB-F | | |
| 635-2-11 | 1 EA | |

| | | |
|---|------|--|
| D5 WWVDS-SR400-OSC-04.2-EB-B REMOTE WWVDS STA. 30+36, 23' RT. | | |
| R5-1a (42"x30") | | |
| 700-141-141 | 1 EA | |
| REFLECTIVE STRIP | | |
| 700-13-15 | 1 EA | |

| | | |
|--|------|--|
| 1-2" UG ELEC CONDUIT W/ 1 CAT-6 CABLE 1-1" GND CONDUIT | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| CAT-6 CABLE | | |
| 633-8-1 | 5 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 5 LF | |
| EPB-SR400-OSC-04.2-EB-H | | |
| 635-2-11 | 1 EA | |

| | | |
|--|------|--|
| D5 WWVDS-SR400-OSC-04.2-EB-A PRIMARY WWVDS STA. 30+38, 18' LT. | | |
| WWVDS SYSTEM | | |
| 660-7-21 | 1 EA | |
| CCTV CAMERA | | |
| 682-1-153 | 2 EA | |
| R5-1a (42"x30") | | |
| 700-141-141 | 1 EA | |
| REFLECTIVE STRIP | | |
| 700-13-15 | 1 EA | |

| | | |
|--|----------|-------|
| 1-2" UG ELEC CONDUIT W/ 2 #4 & 1 #4 (GND) CKT. WWVDS NO. 3 | | |
| OT CONDUIT | 630-2-11 | 10 LF |
| EPB-SR400-OSC-04.2-EB-I | 635-2-11 | 1 EA |
| ELEC. SERV. WIRE | 639-2-1 | 10 LF |

| | | |
|---|-------|--|
| 1-2" UG ITS CONDUIT W/ 1 CAT-6 CABLE | | |
| OT CONDUIT | | |
| 630-2-11 | 10 LF | |
| CAT-6 CABLE | | |
| 633-8-1 | 10 LF | |
| EPB-SR400-OSC-04.2-EB-J | | |
| 635-2-11 | 1 EA | |

| | | |
|--|--------|--|
| WWVDS SITE No. 3 D5 LHUB-SR400-OSC-04.2-EB STA. 30+32, 32' LT. | | |
| LOCATION DOCUMENTATION | | |
| 611-2-2 | 1 EA | |
| AG CONDUIT | | |
| 630-2-14 | 5x5 LF | |
| SPLICE | | |
| 633-2-31 | 12 EA | |
| SPLICE TRAY | | |
| 633-3-12 | 1 EA | |
| PIGTAILS | | |
| 633-3-13 | 12 EA | |
| PATCH PANEL | | |
| 633-3-16 | 1 EA | |
| CONNECTOR PANEL | | |
| 633-3-17 | 1 EA | |
| CAT6 CABLE | | |
| 633-8-1 | 5 LF | |
| SERVICE WIRE (3 #4) | | |
| 639-2-1 | 5 LF | |
| DISCONNECT | | |
| 639-3-11 | 1 EA | |
| TRANSFORMER | | |
| 639-6-122 | 1 EA | |
| P-IIA POLE | | |
| 641-2-11 | 1 EA | |
| 334 CABINET | | |
| 676-2-143 | 1 EA | |
| LAYER 3 MFES | | |
| 684-1-10 | 1 EA | |
| UPS | | |
| 685-1-11 | 1 EA | |
| RPMU | | |
| 685-2-1 | 1 EA | |

| | | |
|---|-------|--|
| 1-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| 12 SM | | |
| 633-1-121 | 5 LF | |
| 12 SM (SLACK) | | |
| 633-1-121 | 50 LF | |
| FPB-SR400-OSC-04.2-EB-C | | |
| 635-2-12 | 1 EA | |

| | | |
|--|-------|--|
| 2-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | | |
| 1-2" UG ELEC CONDUIT W/ 2 #4 & 1 #4 (GND) CKT. WWVDS NO. 3 | | |
| DB CONDUIT | | |
| 630-2-12 | 36 LF | |
| 12 SM | | |
| 633-1-121 | 36 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 36 LF | |
| ELEC. SERV. WIRE | | |
| 639-2-1 | 36 LF | |

| | | |
|--|------|--|
| 1-2" UG ELEC CONDUIT W/ 2 #4 & 1 #4 (GND) - CKT. WWVDS NO. 3 2 #6 - CKT. PRIMARY | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| EPB-SR400-OSC-04.2-EB-G | | |
| 635-2-11 | 1 EA | |
| ELEC. SERV. WIRE | | |
| 639-2-1 | 5 LF | |

| | | |
|---|-------|--|
| 1-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| 12 SM | | |
| 633-1-121 | 5 LF | |
| 12 SM (SLACK) | | |
| 633-1-121 | 50 LF | |
| FPB-SR400-OSC-04.2-EB-D | | |
| 635-2-12 | 1 EA | |

| | | |
|---|-------|--|
| 1-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | | |
| OT CONDUIT | | |
| 630-2-11 | 10 LF | |
| 12 SM | | |
| 633-1-121 | 10 LF | |
| 12 SM (SLACK) | | |
| 633-1-121 | 50 LF | |
| FPB-SR400-OSC-04.2-EB-E | | |
| 635-2-12 | 1 EA | |

| | | |
|---|-------|--|
| 1-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | | |
| OT CONDUIT | | |
| 630-2-11 | 10 LF | |
| 12 SM | | |
| 633-1-121 | 10 LF | |
| 12 SM (SLACK) | | |
| 633-1-121 | 50 LF | |
| FPB-SR400-OSC-04.2-EB-E | | |
| 635-2-12 | 1 EA | |

| | | |
|---|-------|--|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. PRIMARY | | |
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. SECONDARY | | |
| 1-1" GND CONDUIT | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| EPB-SR400-OSC-04.2-EB-K | | |
| 635-2-11 | 1 EA | |
| ELEC. SERV. WIRE | | |
| 639-2-1 | 10 LF | |

| | | |
|--------------|-------|--|
| DB CONDUIT | | |
| 630-2-12 | 35 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 35 LF | |

| | | |
|-------------------------|------|--|
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 5 LF | |
| EPB-SR400-OSC-04.3-EB-E | | |
| 635-2-11 | 1 EA | |

| | | |
|---|------|--|
| D5 WWVDS-SR400-OSC-04.3-EB-B REMOTE WWVDS STA. 26+88, 18' RT. | | |
| R5-1a (42"x30") | | |
| 700-141-141 | 1 EA | |
| REFLECTIVE STRIP | | |
| 700-13-15 | 1 EA | |

| | | |
|---|------|--|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. SECONDARY | | |
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| EPB-SR400-OSC-04.3-EB-F | | |
| 635-2-11 | 1 EA | |
| ELEC. SERV. WIRE | | |
| 639-2-1 | 5 LF | |

| | | |
|--|------|--|
| D5 WWVDS-SR400-OSC-04.3-EB-A SECONDARY WWVDS STA. 26+87, 18' LT. | | |
| ITS ENCLOSURE | | |
| 676-3-10 | 1 EA | |
| R5-1a (42"x30") | | |
| 700-141-141 | 1 EA | |
| REFLECTIVE STRIP | | |
| 700-13-15 | 1 EA | |

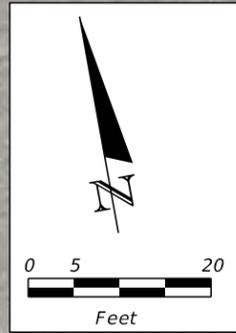
| | | |
|-------------------------|------|--|
| OT CONDUIT | | |
| 630-2-11 | 5 LF | |
| #12-2C CABLE | | |
| 633-8-1 | 5 LF | |
| EPB-SR400-OSC-04.3-EB-G | | |
| 635-2-11 | 1 EA | |

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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS PLAN (47) IT-61 |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

INSET G
I-4 E ONTO
WORLD DR S



| | |
|---|---------------|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. SECONDARY | |
| OT CONDUIT | 630-2-11 5 LF |
| EPB-SR400-OSC-041-EB-G | 635-2-11 1 EA |
| ELEC. SERV. WIRE | 639-2-1 5 LF |

| | |
|---|------------------|
| D5 WWVDS-SR400-OSC-041-EB-C SECONDARY WWVDS STA. 34+96, 22' LT. | |
| ITS ENCLOSURE | 676-3-10 1 EA |
| R5-1a (42"x30") | 700-141-141 1 EA |
| REFLECTIVE STRIP | 700-13-15 1 EA |

| | |
|------------------------|---------------|
| OT CONDUIT | 630-2-11 5 LF |
| #12-2C CABLE | 633-8-1 5 LF |
| EPB-SR400-OSC-041-EB-H | 635-2-11 1 EA |

| | |
|--------------|----------------|
| DB CONDUIT | 630-2-12 40 LF |
| #12-2C CABLE | 633-8-1 40 LF |

| | |
|--|------------------|
| D5 WWVDS-SR400-OSC-041-EB-D REMOTE WWVDS STA. 34+96, 20' RT. | |
| R5-1a (42"x30") | 700-141-141 1 EA |
| REFLECTIVE STRIP | 700-13-15 1 EA |

| | |
|------------------------|---------------|
| OT CONDUIT | 630-2-11 5 LF |
| #12-2C CABLE | 633-8-1 5 LF |
| EPB-SR400-OSC-041-EB-I | 635-2-11 1 EA |

APPARENT
R/W LINE

| | |
|--|---------------|
| 1-2" UG ELEC CONDUIT W/ 2 #4 & 1 #4 (GND) CKT. WWVDS NO. 4 | |
| OT CONDUIT | 630-2-11 5 LF |
| EPB-SR400-OSC-041-EB-A | 635-2-11 1 EA |
| ELEC. SERV. WIRE | 639-2-1 5 LF |

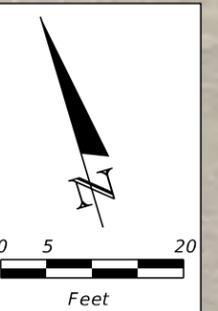
| | |
|---|-----------------|
| 1-1.25" UG FOC CONDUIT W/ 1-12 SM FIBER OPTIC CABLE (DROP) | |
| OT CONDUIT | 630-2-11 5 LF |
| 12 SM | 633-1-121 5 LF |
| 12 SM (SLACK) | 633-1-121 50 LF |
| FPB-SR400-OSC-041-EB-A | 635-2-12 1 EA |

| | |
|---|---------------|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. PRIMARY | |
| 1-2" UG ITS CONDUIT W/ 1 CAT-6 CABLE | |
| OT CONDUIT | 630-2-11 7 LF |
| CAT-6 CABLE | 633-8-1 7 LF |
| ELEC. SERV. WIRE | 639-2-1 7 LF |

| | |
|--|---------------|
| 1-2" UG ELEC CONDUIT W/ 1 CAT-6 CABLE 1 #12-2C CABLE 1-1" GND CONDUIT | |
| OT CONDUIT | 630-2-11 5 LF |
| CAT-6 CABLE | 633-8-1 5 LF |
| #12-2C CABLE | 633-8-1 5 LF |
| EPB-SR400-OSC-041-EB-D | 635-2-11 1 EA |

| | |
|---|---------------|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. PRIMARY | |
| OT CONDUIT | 630-2-11 5 LF |
| EPB-SR400-OSC-041-EB-E | 635-2-11 1 EA |
| ELEC. SERV. WIRE | 639-2-1 5 LF |

INSET H
I-4 E ONTO
WORLD DR S



| | |
|---|-----------------|
| WWVDS SITE No. 4 D5 LHUB-SR400-OSC-041-EB STA. 37+96, 32' LT. | |
| LOCATION DOCUMENTATION | 611-2-2 1 EA |
| AG CONDUIT | 630-2-14 5x5 LF |
| SPLICE | 633-2-31 12 EA |
| SPLICE TRAY | 633-3-12 1 EA |
| PIGTAILS | 633-3-13 12 EA |
| PATCH PANEL | 633-3-16 1 EA |
| CONNECTOR PANEL | 633-3-17 1 EA |
| CAT6 CABLE | 633-8-1 5 LF |
| SERVICE WIRE (3 #4) | 639-2-1 5 LF |
| DISCONNECT | 639-3-11 1 EA |
| TRANSFORMER | 639-6-122 1 EA |
| P-11A POLE | 641-2-11 1 EA |
| 334 CABINET | 676-2-143 1 EA |
| LAYER 3 MFES | 684-1-10 1 EA |
| UPS | 685-1-11 1 EA |
| RPMU | 685-2-1 1 EA |

| | |
|---|---------------|
| 1-2" UG ITS CONDUIT W/ 1 CAT-6 CABLE | |
| OT CONDUIT | 630-2-11 5 LF |
| CAT-6 CABLE | 633-8-1 5 LF |
| EPB-SR400-OSC-041-EB-C | 635-2-11 1 EA |

| | |
|---|---------------|
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. PRIMARY | |
| 1-2" UG ELEC CONDUIT W/ 2 #6 & 1 #6 (GND) - CKT. SECONDARY | |
| 1-1" GND CONDUIT | |
| OT CONDUIT | 630-2-11 5 LF |
| EPB-SR400-OSC-041-EB-B | 635-2-11 1 EA |
| ELEC. SERV. WIRE | 639-2-1 10 LF |

| | |
|---|------------------|
| D5 WWVDS-SR400-OSC-041-EB-A PRIMARY WWVDS STA. 38+07, 19' LT. | |
| WWVDS SYSTEM | 660-7-21 1 EA |
| CCTV CAMERA | 682-1-153 2 EA |
| R5-1a (42"x30") | 700-141-141 1 EA |
| REFLECTIVE STRIP | 700-13-15 1 EA |

| | |
|--------------|----------------|
| DB CONDUIT | 630-2-12 37 LF |
| #12-2C CABLE | 633-8-1 37 LF |

| | |
|--|------------------|
| D5 WWVDS-SR400-OSC-041-EB-B REMOTE WWVDS STA. 38+07, 20' RT. | |
| R5-1a (42"x30") | 700-141-141 1 EA |
| REFLECTIVE STRIP | 700-13-15 1 EA |

| | |
|------------------------|---------------|
| OT CONDUIT | 630-2-11 5 LF |
| #12-2C CABLE | 633-8-1 5 LF |
| EPB-SR400-OSC-041-EB-F | 635-2-11 1 EA |

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THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

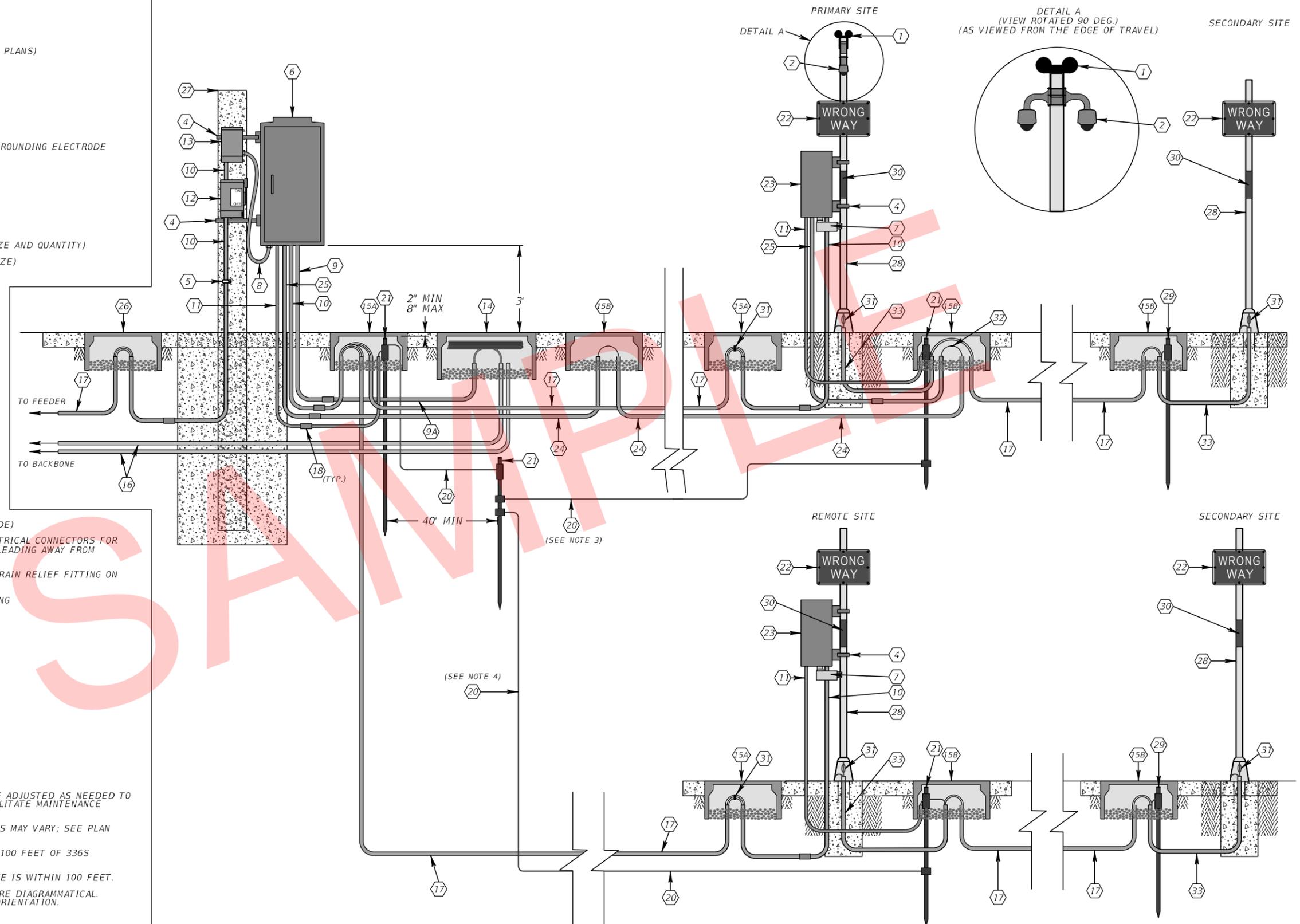
| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS PLAN (48) IT-62 |

LEGEND

- 1 THERMAL SENSOR
- 2 VERIFICATION CAMERA
- 3 NOT USED
- 4 STAINLESS STEEL STRAPS
- 5 CONDUIT STRAPS (3' O.C. TYPICAL)
- 6 TYPE 336S POLE MOUNTED CABINET (ORIENTATION PER PLANS)
- 7 TYPE LB 2" CONDUIT
- 8 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR POWER
- 9 1 1/4" RMC CONDUIT (FIBER)
- 9A 1 1/4" HDPE CONDUIT (FIBER)
- 10 2" RMC CONDUIT (POWER)
- 11 1" RMC CONDUIT FOR CABINET #2 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- 12 ELECTRICAL DISCONNECT
- 13 AC TRANSFORMER (WHEN REQUIRED)
- 14 FIBER OPTIC PULL BOX
- 15A ELECTRICAL PULL BOX (120V UPS OUTPUT)
- 15B ELECTRICAL PULL BOX (CAT-6/DC POWER)
- 16 HDPE CONDUIT FOR FIBER (SEE PLAN SHEETS FOR SIZE AND QUANTITY)
- 17 HDPE CONDUIT FOR POWER (SEE PLAN SHEETS FOR SIZE)
- 18 CONDUIT COUPLER
- 19 NOT USED
- 20 #2 AWG BARE SOLID COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- 21 3/8" X 20' MIN. GROUNDING ELECTRODE (EXTEND OR ADD ADDITIONAL GROUND RODS TO ACHIEVE 5 OHM MAX. RESISTANCE TO GROUND) ROD PLACEMENT PER FDOT INDEX 641-020
- 22 WRONG WAY HIGHLIGHTED SIGN PANEL
- 23 NEMA 3R POLE MOUNTED CABINET (ORIENTATION PER SITE DETAILS)
- 24 ITS HDPE CONDUIT (SEE PLAN SHEETS FOR SIZE)
- 25 2" RMC CONDUIT (CAT-6)
- 26 ELECTRICAL PULL BOX (POWER TO LOCAL HUB)
- 27 TYPE P-II SERVICE POLE
- 28 ALUMINUM SIGN POST WITH TRANSFORMER BASE PER STANDARD INDEX 700-120. INSTALL TOP CAP.
- 29 3/8" X 20' MIN. GROUNDING ELECTRODE
- 30 RETROREFLECTIVE SIGN STRIP (RED, 2' LENGTH, 2" WIDE)
- 31 ONE-POLE, NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR POWER. INSTALL STRAIN RELIEF FITTING ON CONDUIT LEADING AWAY FROM BREAKAWAY POST
- 32 BREAKAWAY CONNECTOR FOR CAT-6 CABLE. INSTALL STRAIN RELIEF FITTING ON CONDUIT LEADING AWAY FROM BREAKAWAY POST
- 33 2" PVC CONDUIT (DC POWER/GND) EMBEDDED IN FOOTING

- NOTES:**
1. DISCONNECT AND TRANSFORMER MOUNTING HEIGHT MAY BE ADJUSTED AS NEEDED TO FIT ON THE POLE. ENSURE THAT MOUNTING HEIGHTS FACILITATE MAINTENANCE ACCESS.
 2. NUMBER AND USAGE OF PROPOSED UNDERGROUND CONDUITS MAY VARY; SEE PLAN SHEETS FOR FURTHER DETAIL.
 3. BOND TO GROUND ARRAYS WHEN PRIMARY SITE IS WITHIN 100 FEET OF 336S CABINET.
 4. BOND TO PRIMARY SITE GROUND ARRAY WHEN PRIMARY SITE IS WITHIN 100 FEET.
 5. CABINET AND SIGN PANEL ORIENTATION ON THIS DETAIL ARE DIAGRAMMATICAL. REFER TO PLAN SHEETS AND SITE DETAILS FOR ACTUAL ORIENTATION.

WWDS INSTALLATION DETAIL - HARDWIRE
N.T.S.



| REVISIONS | | | |
|-----------|-------------|------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

ALEXANDER TEAL MIMS, P.E. PE No. 77095
 Traffic Engineering Data Solutions, Inc.
 80 Spring Vista Drive Phone: 386.753.0558
 DeBary, FL 32713 Fax: 386.753.0778

| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
|--|--------|----------------------|
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 400 | VARIES | 446159-1-52-01 |

| | |
|-------------------------------------|------------------------------|
| ITS INSTALLATION DETAILS | SHEET NO. IT-64 |
|-------------------------------------|------------------------------|

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

PRIMARY SITE DETAIL - HARDWIRE

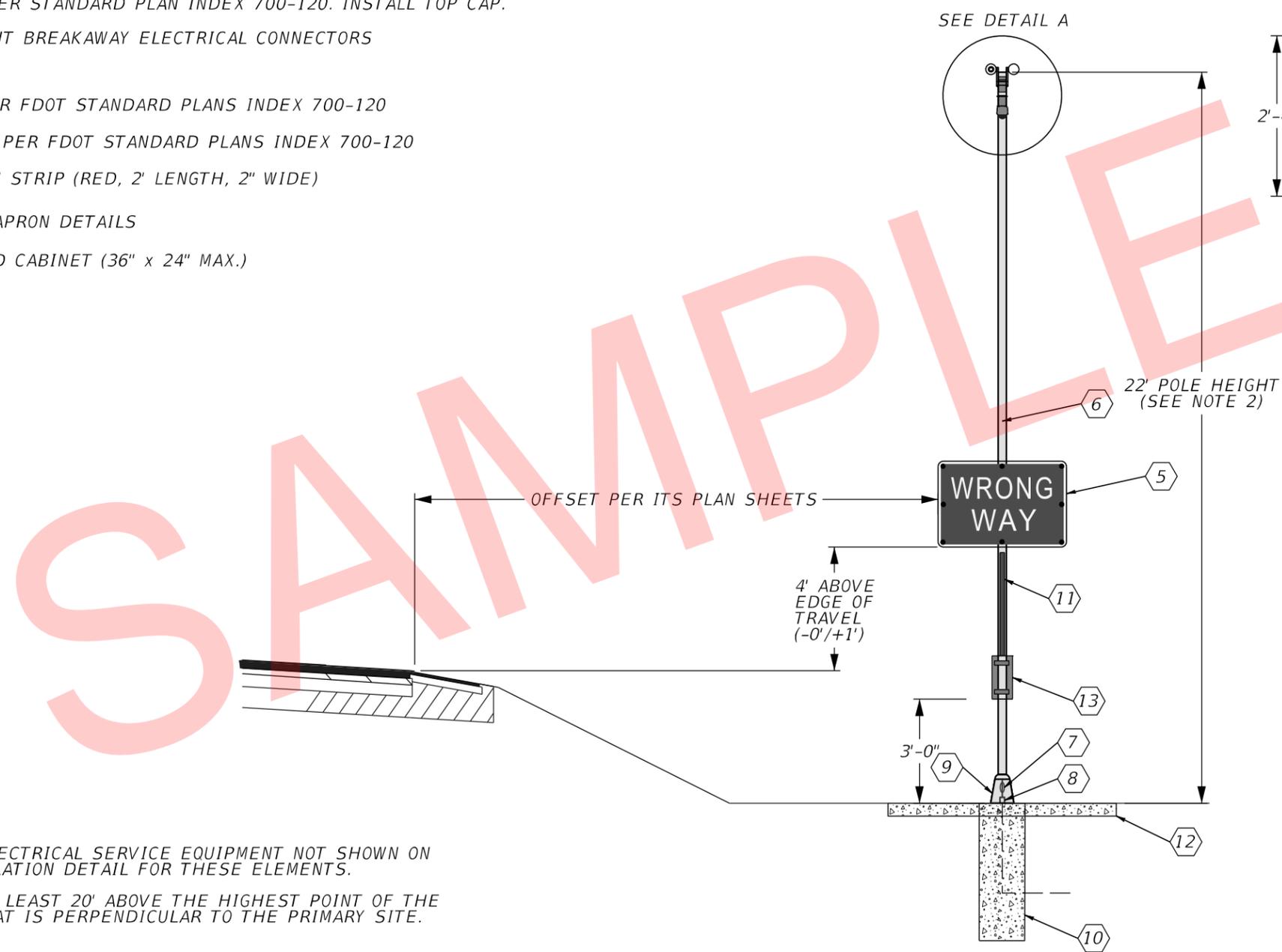
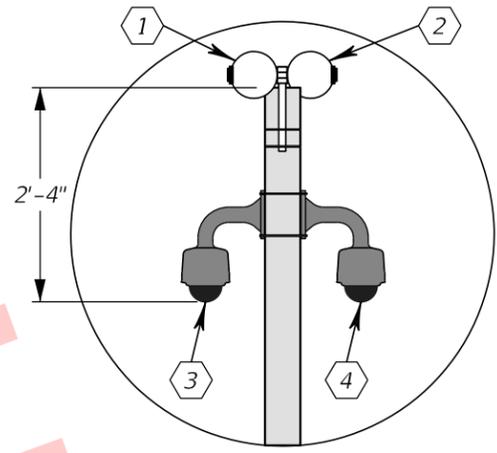
N.T.S.

LEGEND

- ① INCOMING THERMAL SENSOR (SEE NOTE 2)
- ② OUTGOING THERMAL SENSOR (SEE NOTE 2)
- ③ INCOMING CAMERA AIMED FOR VIEWING VEHICLES HEADING TOWARDS THE PRIMARY SITE
- ④ OUTGOING CAMERA AIMED FOR VIEWING VEHICLES HEADING AWAY FROM THE PRIMARY SITE
- ⑤ 42" X 30" R5-1A HIGHLIGHTED SIGN
- ⑥ ALUMINUM SIGN POST PER STANDARD PLAN INDEX 700-120. INSTALL TOP CAP.
- ⑦ NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS
- ⑧ STRAIN RELIEF FITTING
- ⑨ TRANSFORMER BASE PER FDOT STANDARD PLANS INDEX 700-120
- ⑩ CONCRETE FOUNDATION PER FDOT STANDARD PLANS INDEX 700-120
- ⑪ RETROREFLECTIVE SIGN STRIP (RED, 2' LENGTH, 2" WIDE)
- ⑫ CONCRETE APRON PER APRON DETAILS
- ⑬ NEMA 3R POLE MOUNTED CABINET (36" x 24" MAX.)

SAMPLE

DETAIL A
(VIEW ROTATED 90 DEG.)
(AS VIEWED FROM THE EDGE OF TRAVEL)



NOTES:

1. CONDUITS, PULL BOXES, AND ELECTRICAL SERVICE EQUIPMENT NOT SHOWN ON THIS SHEET. REFER TO INSTALLATION DETAIL FOR THESE ELEMENTS.
2. MOUNT THERMAL DETECTORS AT LEAST 20' ABOVE THE HIGHEST POINT OF THE RAMP'S PAVEMENT SURFACE THAT IS PERPENDICULAR TO THE PRIMARY SITE.

| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | ITS INSTALLATION DETAILS | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--------|----------------------|-----------------------------|----------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | IT-65 |
| | | | | | | SR 400 | VARIES | | 446159-1-52-01 |

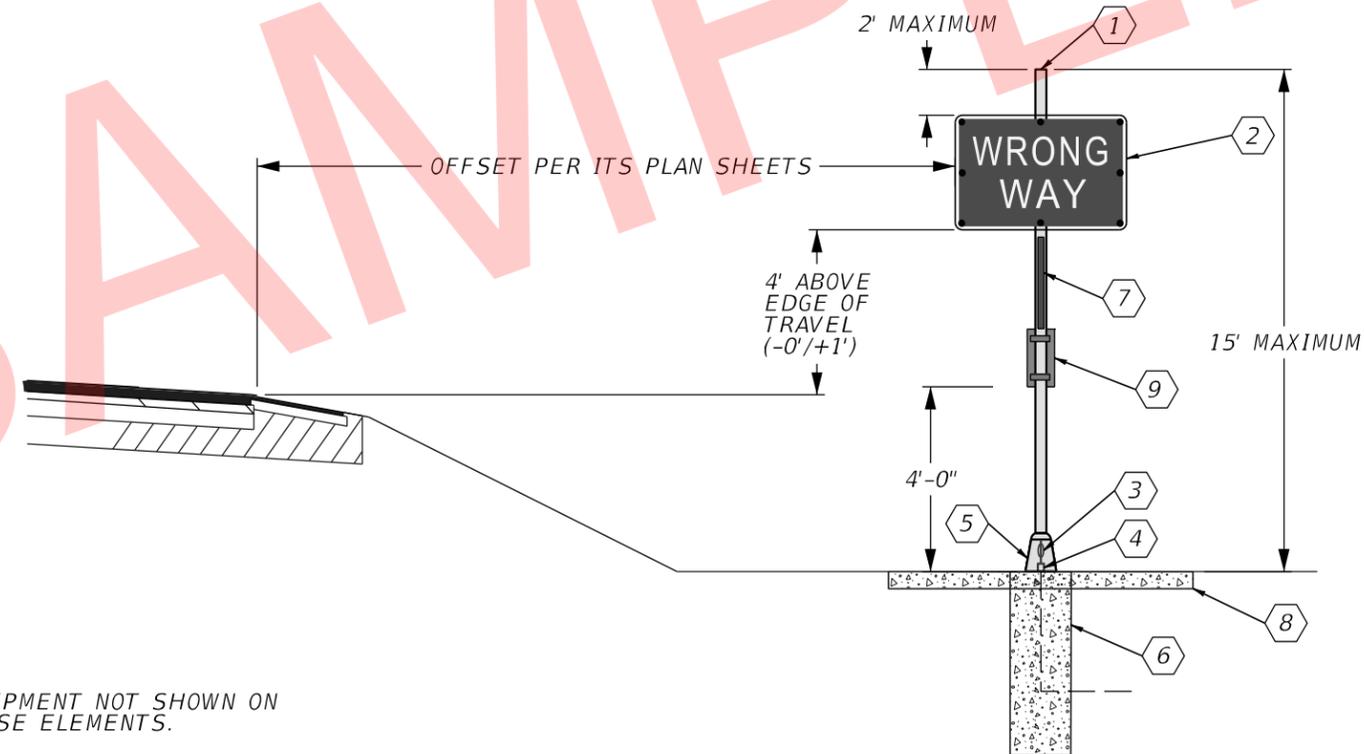
REMOTE SITE DETAIL - HARDWIRE

N.T.S.

LEGEND

- ① ALUMINUM SIGN POST PER STANDARD PLAN INDEX 700-120. INSTALL TOP CAP.
- ② 42" X 30" R5-1A HIGHLIGHTED SIGN
- ③ NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS
- ④ STRAIN RELIEF FITTING
- ⑤ TRANSFORMER BASE PER FDOT STANDARD PLANS INDEX 700-120
- ⑥ CONCRETE FOUNDATION PER FDOT STANDARD PLANS INDEX 700-120
- ⑦ RETROREFLECTIVE SIGN STRIP (RED, 2' LENGTH, 2" WIDE)
- ⑧ CONCRETE APRON PER APRON DETAILS
- ⑨ NEMA 3R POLE MOUNTED CABINET (24" x 24" MAX.)

SAMPLE



NOTES:

1. CONDUITS, PULL BOXES, AND ELECTRICAL SERVICE EQUIPMENT NOT SHOWN ON THIS SHEET. REFER TO INSTALLATION DETAIL FOR THESE ELEMENTS.

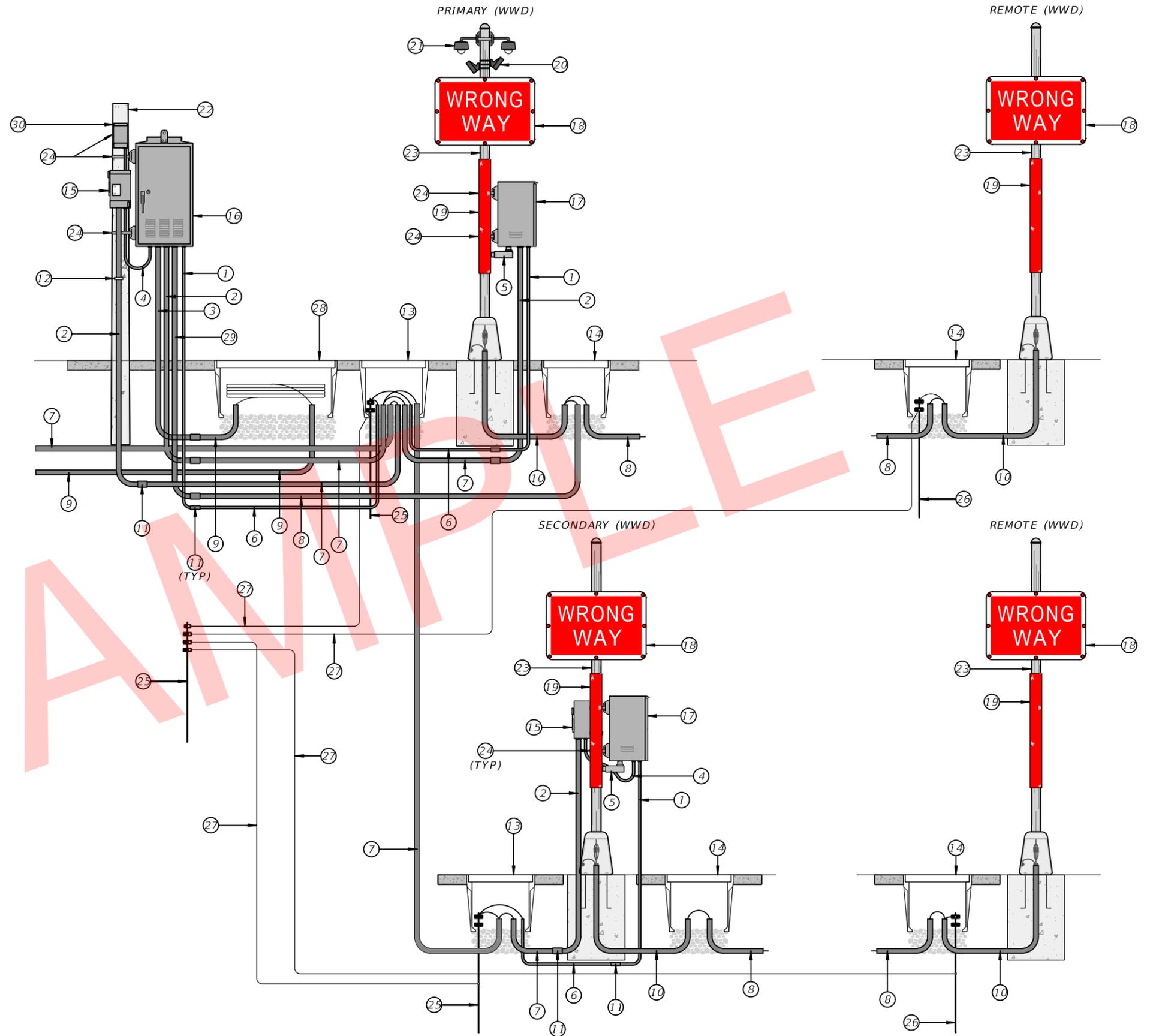
| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | ITS INSTALLATION DETAILS | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--------|----------------------|-----------------------------|----------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | IT-66 |
| | | | | | | SR 400 | VARIES | | 446159-1-52-01 |

LEGEND:

- ① 1" RGS CONDUIT W/ #2 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- ② 2" RGS CONDUIT (HIGH-VOLTAGE POWER)
- ③ 2" RGS CONDUIT (FIBER)
- ④ 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT (HIGH-VOLTAGE POWER)
- ⑤ TYPE LB 2" CONDUIT
- ⑥ 1" HDPE CONDUIT W/ #2 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- ⑦ 2" HDPE CONDUIT (HIGH-VOLTAGE POWER)
- ⑧ 2" HDPE CONDUIT (ITS) (LOW-VOLTAGE POWER / COMMUNICATION)
- ⑨ 2" HDPE CONDUIT (ITS) (FIBER)
- ⑩ 2" PVC CONDUIT (SCH. 40 OR SCH. 80) (ITS)
- ⑪ CONDUIT COUPLER (SIZE TO MATCH CONDUIT)
- ⑫ GALVANIZED METAL CONDUIT STRAPS (3' O.C. TYPICAL)
- ⑬ "ELECTRICAL" PULL BOX (HIGH-VOLTAGE POWER)
- ⑭ "ITS" PULL BOX (LOW-VOLTAGE POWER / COMMUNICATION)
- ⑮ ELECTRICAL DISCONNECT
- ⑯ TYPE 336S CABINET, POLE MOUNTED
- ⑰ NEMA 3R CONTROL CABINET, POLE MOUNTED
- ⑱ HIGHLIGHTED LED SIGN PANEL, WRONG WAY (R5-1A)
- ⑲ RETROREFLECTIVE SIGN STRIP (RED, 2' LENGTH)
- ⑳ THERMAL IMAGING DETECTION SYSTEM (ONE FORWARD, ONE REAR FACING)
- ㉑ VERIFICATION CCTV CAMERA
- ㉒ TYPE P-II CONCRETE SERVICE POLE (12')
- ㉓ SINGLE SIGN POST W/ TRANSFORMER BASE AND CONCRETE FOUNDATION (DESIGNED BY VENDOR)
- ㉔ STAINLESS STEEL BANDING / STRAPS
- ㉕ 5/8" X 20' MIN. GROUNDING ELECTRODE (NUMBER OF GROUND RODS VARY TO ACHIEVE 5 OHM MAX. RESISTANCE TO GROUND). REFER TO FDOT STANDARD PLANS, INDEX 641-020
- ㉖ 5/8" X 20' MIN. GROUNDING ELECTRODE
- ㉗ #2 AWG BARE SOLID COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- ㉘ "FIBER" PULL BOX W/ FIBER CABLE SLACK
- ㉙ 2" RGS CONDUIT (ITS) (LOW-VOLTAGE POWER / COMMUNICATION)
- ㉚ AC STEP-DOWN TRANSFORMER (WHEN REQUIRED, REFER TO PLANS)

NOTES:

- 1. MOUNTING HEIGHT FOR POLE MOUNTED DEVICES, INCLUDING ELECTRICAL DISCONNECT, CABINETS, AND DEVICES, MAY VARY AND BE ADJUSTED AS NECESSARY TO ACCOMMODATE ALL ITEMS FITTING ON THE POLE. ENSURE THAT MOUNTING HEIGHTS FACILITATE MAINTENANCE PERSONNEL ACCESS.
- 2. NUMBER AND CABLING USAGE OF PROPOSED UNDERGROUND CONDUITS VARY, REFER TO PLANS SHEETS FOR FURTHER DETAIL.
- 3. ALL WORK SHALL MEET INSTALLATION, BONDING, AND GROUND REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND FDOT STANDARD SPECIFICATIONS FOR ALL EQUIPMENT.
- 4. BARE SOLID COPPER GROUNDING CONDUCTORS SHALL BE TIN-PLATED.
- 5. CONDUCTORS FOR EQUIPMENT CABINET BONDING AND GROUND SHALL TERMINATE AT A COPPER GROUND BUS BAR LOCATED WITHIN THE EQUIPMENT CABINET. SECURELY FASTEN CONDUCTORS TO GROUNDING BUS BAR WITH CABLE LUGS.
- 6. EXOTHERMICALLY WELD ALL CONNECTIONS TO GROUND RODS.
- 7. MOUNTING HEIGHTS ARE NOT TO SCALE, REFER TO INSTALLATION DETAILS FOR EXACT MEASUREMENTS.



| REVISIONS | | | |
|-----------|-------------|------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

FLORIDA DEPARTMENT OF TRANSPORTATION
 719 SOUTH WOODLAND BLVD
 DELAND, FLORIDA 32720
 (386) 943-5000
 JEREMY H. DILMORE, P.E. #67510

| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
|--|---------|----------------------|
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 9 | VOLUSIA | 441133-1-52-01 |

INSTALLATION DETAILS

SHEET NO.
IT-49

LEGEND

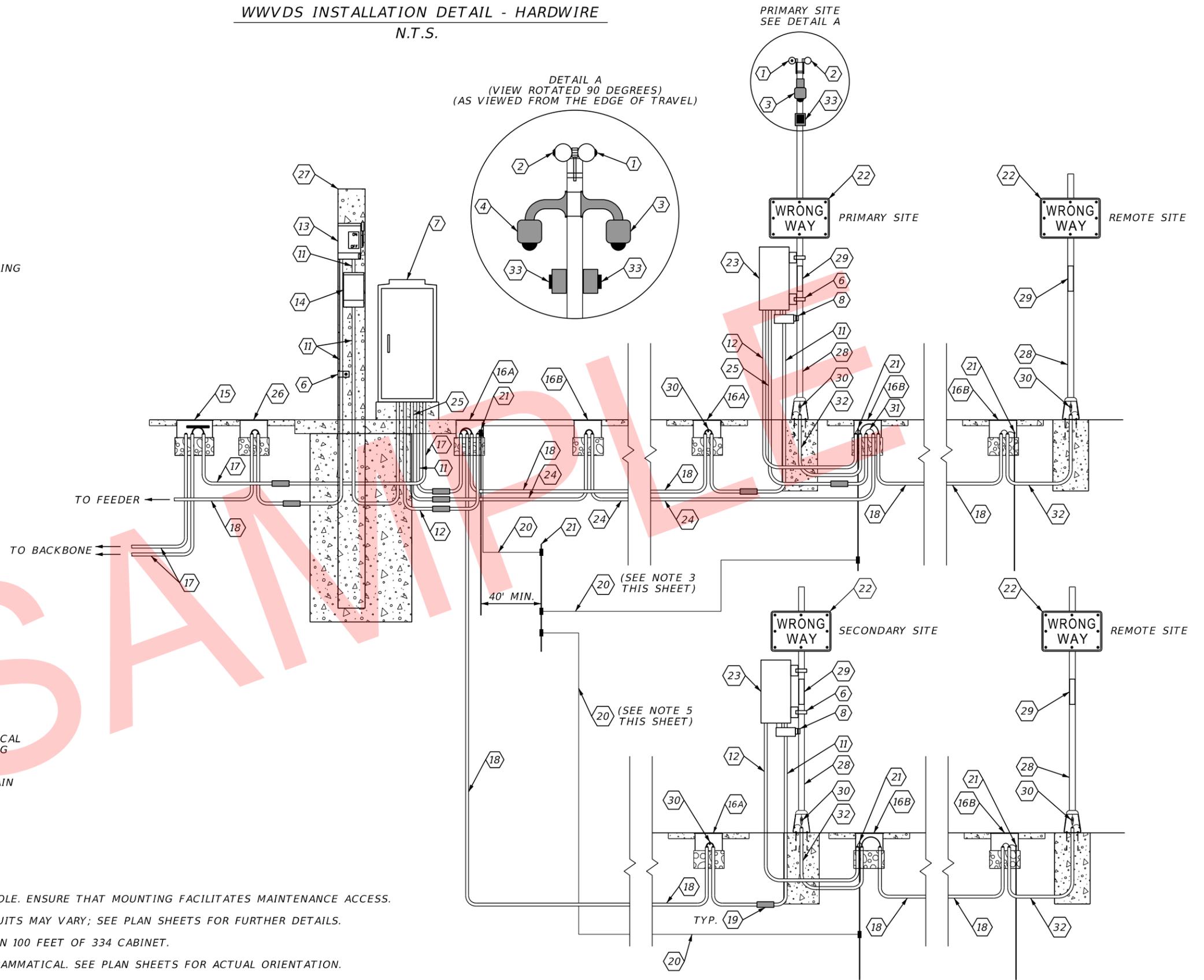
- ① INCOMING SENSOR
- ② OUTGOING SENSOR
- ③ INCOMING VERIFICATION CAMERA
- ④ OUTGOING VERIFICATION CAMERA
- ⑤ NOT USED
- ⑥ CONDUIT STRAPS
- ⑦ TYPE 334 BASE MOUNTED CABINET
- ⑧ TYPE LB 1" CONDUIT
- ⑨ NOT USED
- ⑩ NOT USED
- ⑪ 2" CONDUIT (POWER)
- ⑫ 1" CONDUIT FOR CABINET #2 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- ⑬ ELECTRICAL DISCONNECT
- ⑭ AC TRANSFORMER (480V PRIMARY / 120V SECONDARY)
- ⑮ FIBER OPTIC PULL BOX
- ⑯A ELECTRICAL PULL BOX (120V UPS OUTPUT)
- ⑯B ELECTRICAL PULL BOX (CAT-6/DC POWER)
- ⑰ CONDUIT FOR FIBER
- ⑱ CONDUIT FOR POWER
- ⑲ CONDUIT COUPLER
- ⑳ #2 AWG BARE SOLID COPPER GROUNDING ELECTRODE CONDUCTOR (BOND TO GROUNDING ROD)
- ㉑ 5/8"x20' MIN. GROUNDING ELECTRODE (EXTEND OR ADD ADDITIONAL GROUND RODS TO ACHIEVE 5 OHM MAX. RESISTANCE TO GROUND)
- ㉒ WRONG WAY HIGHLIGHTED SIGN PANEL
- ㉓ NEMA 3R POLE MOUNTED CABINET
- ㉔ ITS CONDUIT
- ㉕ 2" CONDUIT (CAT-6)
- ㉖ ELECTRICAL PULL BOX (POWER TO LOCAL HUB)
- ㉗ TYPE P-11A SERVICE POLE
- ㉘ ALUMINUM SIGN POST WITH TRANSFORMER BASE PER STANDARD INDEX 700-120. INSTALL TOP CAP.
- ㉙ RETROREFLECTIVE SIGN STRIP
- ㉚ ONE-POLE, NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS FOR POWER. INSTALL STRAIN RELIEF FITTING ON CONDUIT LEADING AWAY FROM BREAKAWAY POST.
- ㉛ BREAKAWAY CONNECTOR FOR CAT-6 CABLE. INSTALL STRAIN RELIEF FITTING ON CONDUIT LEADING AWAY FROM BREAKAWAY POST
- ㉜ 2" CONDUIT (DC POWER/GND) EMBEDDED IN FOOTING.
- ㉝ LED ILLUMINATOR (INCOMING & OUTGOING)

NOTES:

1. DISCONNECT MOUNTING MAY BE ADJUSTED TO FIT ON POLE. ENSURE THAT MOUNTING FACILITATES MAINTENANCE ACCESS.
2. NUMBER AND USAGE OF PROPOSED UNDERGROUND CONDUITS MAY VARY; SEE PLAN SHEETS FOR FURTHER DETAILS.
3. BOND TO GROUND ARRAYS WHEN PRIMARY SITE IS WITHIN 100 FEET OF 334 CABINET.
4. CABINET AND SIGN PANEL ORIENTATION ARE ONLY DIAGRAMMATICAL. SEE PLAN SHEETS FOR ACTUAL ORIENTATION.
5. BOND TO PRIMARY SITE GROUND ARRAY WHEN PRIMARY SITE IS WITHIN 100 FEET OF 334 CABINET.

WWVDS INSTALLATION DETAIL - HARDWARE

N.T.S.



PRIMARY SITE
SEE DETAIL A

DETAIL A
(VIEW ROTATED 90 DEGREES)
(AS VIEWED FROM THE EDGE OF TRAVEL)

WRONG WAY
PRIMARY SITE

WRONG WAY
REMOTE SITE

WRONG WAY
SECONDARY SITE

WRONG WAY
REMOTE SITE

TO FEEDER

TO BACKBONE

40' MIN. (SEE NOTE 3 THIS SHEET)

(SEE NOTE 5 THIS SHEET)

TYP. 19

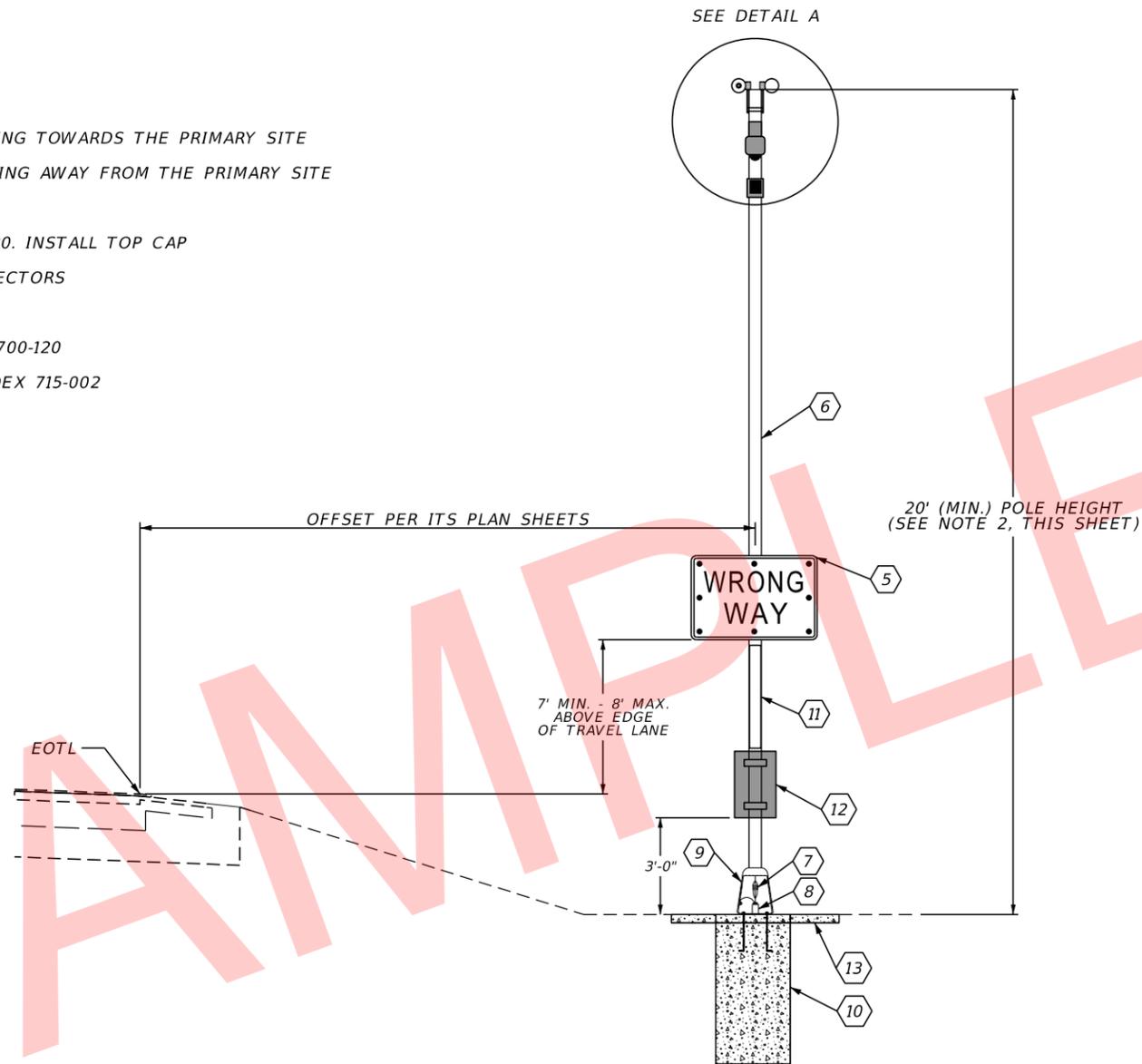
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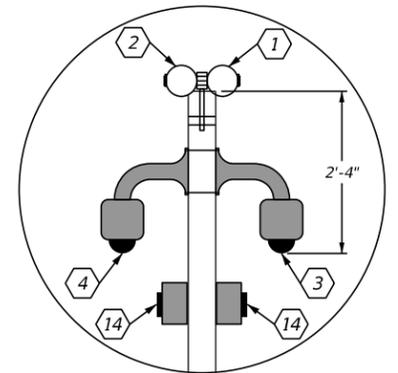
| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|--------------------|--|--|-------------------|----------------------|--|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | ITS INSTALLATION DETAILS (1) IT-94 |

LEGEND

- ① INCOMING THERMAL SENSOR (SEE NOTE 2)
- ② OUTGOING THERMAL SENSOR (SEE NOTE 2)
- ③ INCOMING CAMERA AIMED FOR VIEWING VEHICLES HEADING TOWARDS THE PRIMARY SITE
- ④ OUTGOING CAMERA AIMED FOR VIEWING VEHICLES HEADING AWAY FROM THE PRIMARY SITE
- ⑤ 42"x30" R5-1A HIGHLIGHTED SIGN
- ⑥ ALUMINUM SIGN POST PER STANDARD PLAN INDEX 700-120. INSTALL TOP CAP
- ⑦ NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS
- ⑧ STRAIN RELIEF FITTING
- ⑨ TRANSFORMER BASE PER FDOT STANDARD PLANS INDEX 700-120
- ⑩ CONCRETE FOUNDATION PER FDOT STANDARD PLANS INDEX 715-002
- ⑪ RETROREFLECTIVE SIGN STRIP
- ⑫ NEMA 3R POLE MOUNTED CABINET (36"x24" MAX.)
- ⑬ CONCRETE APRON
- ⑭ LED ILLUMINATOR (INCOMING & OUTGOING)



DETAIL A
(VIEW ROTATED 90 DEGREES)
(AS VIEWED FROM THE EDGE OF TRAVEL)



NOTES:

1. CONDUIT, PULL BOXES, AND ELECTRICAL SERVICE EQUIPMENT ARE NOT SHOWN ON THIS SHEET. SEE WWVDS INSTALLATION DETAIL - HARDWIRE FOR THESE ELEMENTS.
2. MOUNT THERMAL DETECTORS AT LEAST 20' ABOVE THE HIGHEST POINT OF THE RAMP'S PAVEMENT SURFACE THAT IS PERPENDICULAR TO THE PRIMARY SITE.

PRIMARY SITE DETAIL - HARDWIRE
N.T.S.

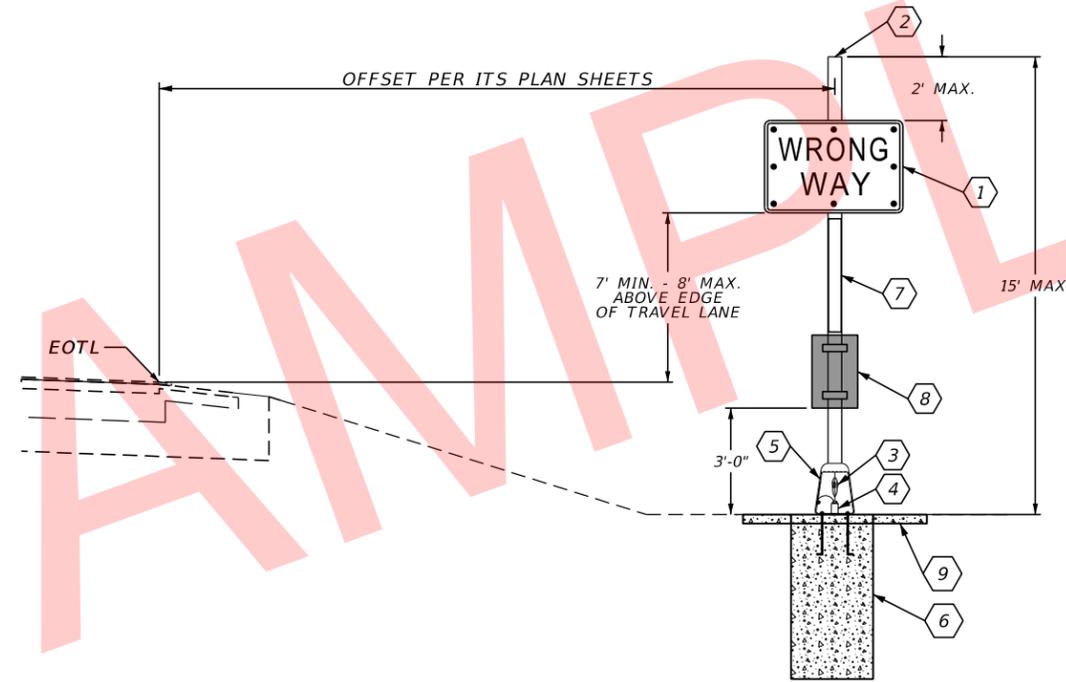
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|--------|----------------------|-------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | | | SR 400 | OSCEOLA ORANGE |
| | | | | | | | | | |

LEGEND

- ① 42"x30" R5-1A HIGHLIGHTED SIGN
- ② ALUMINUM SIGN POST PER STANDARD PLAN INDEX 700-120. INSTALL TOP CAP
- ③ NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS
- ④ STRAIN RELIEF FITTING
- ⑤ TRANSFORMER BASE PER FDOT STANDARD PLANS INDEX 700-120
- ⑥ CONCRETE FOUNDATION PER FDOT STANDARD PLANS INDEX 715-002
- ⑦ RETROREFLECTIVE SIGN STRIP
- ⑧ NEMA 3R POLE MOUNTED CABINET (36"x24" MAX.)
- ⑨ CONCRETE APRON



NOTE:

1. CONDUIT, PULL BOXES, AND ELECTRICAL SERVICE EQUIPMENT ARE NOT SHOWN ON THIS SHEET. SEE WWVDS INSTALLATION DETAIL - HARDWIRE FOR THESE ELEMENTS.

SECONDARY SITE DETAIL - HARDWIRE
N.T.S.

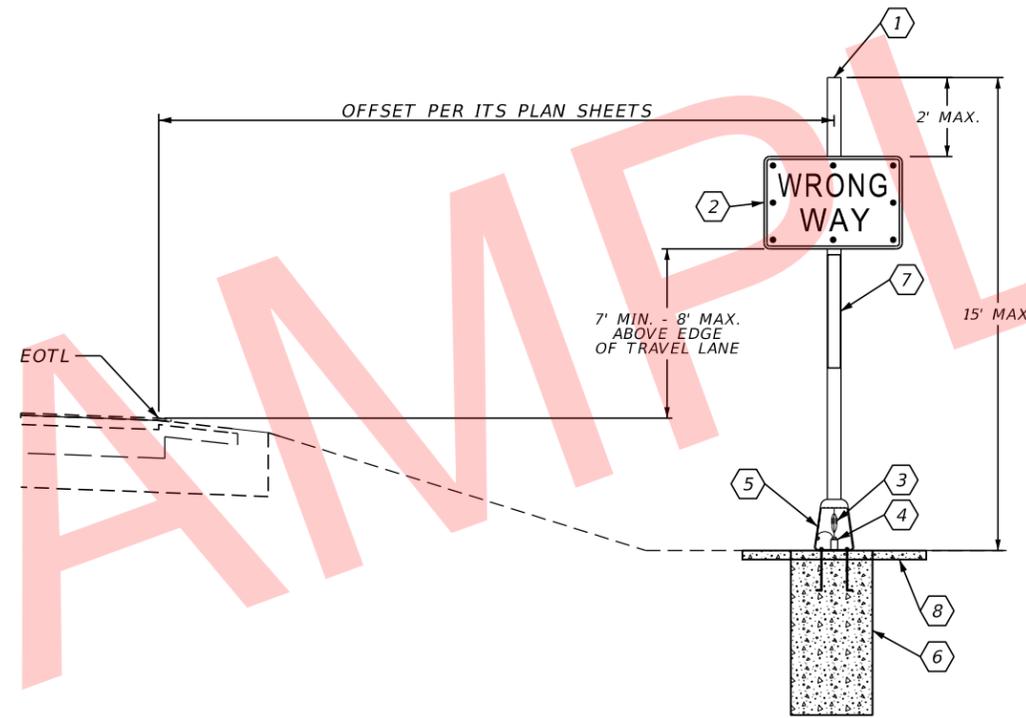
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | <i>ITS INSTALLATION DETAILS (3)</i> | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|-------------------------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | IT-96 |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | | |

LEGEND

- ① ALUMINUM SIGN POST PER STANDARD PLAN INDEX 700-120. INSTALL TOP CAP
- ② 42"x30" R5-1A HIGHLIGHTED SIGN
- ③ NON-FUSED, WATERTIGHT BREAKAWAY ELECTRICAL CONNECTORS
- ④ STRAIN RELIEF FITTING
- ⑤ TRANSFORMER BASE PER FDOT STANDARD PLANS INDEX 700-120
- ⑥ CONCRETE FOUNDATION PER FDOT STANDARD PLANS INDEX 700-120
- ⑦ RETROREFLECTIVE SIGN STRIP
- ⑧ CONCRETE APRON



NOTE:

1. CONDUIT, PULL BOXES, AND ELECTRICAL SERVICE EQUIPMENT ARE NOT SHOWN ON THIS SHEET. SEE WWVDS INSTALLATION DETAIL - HARDWIRE FOR THESE ELEMENTS.

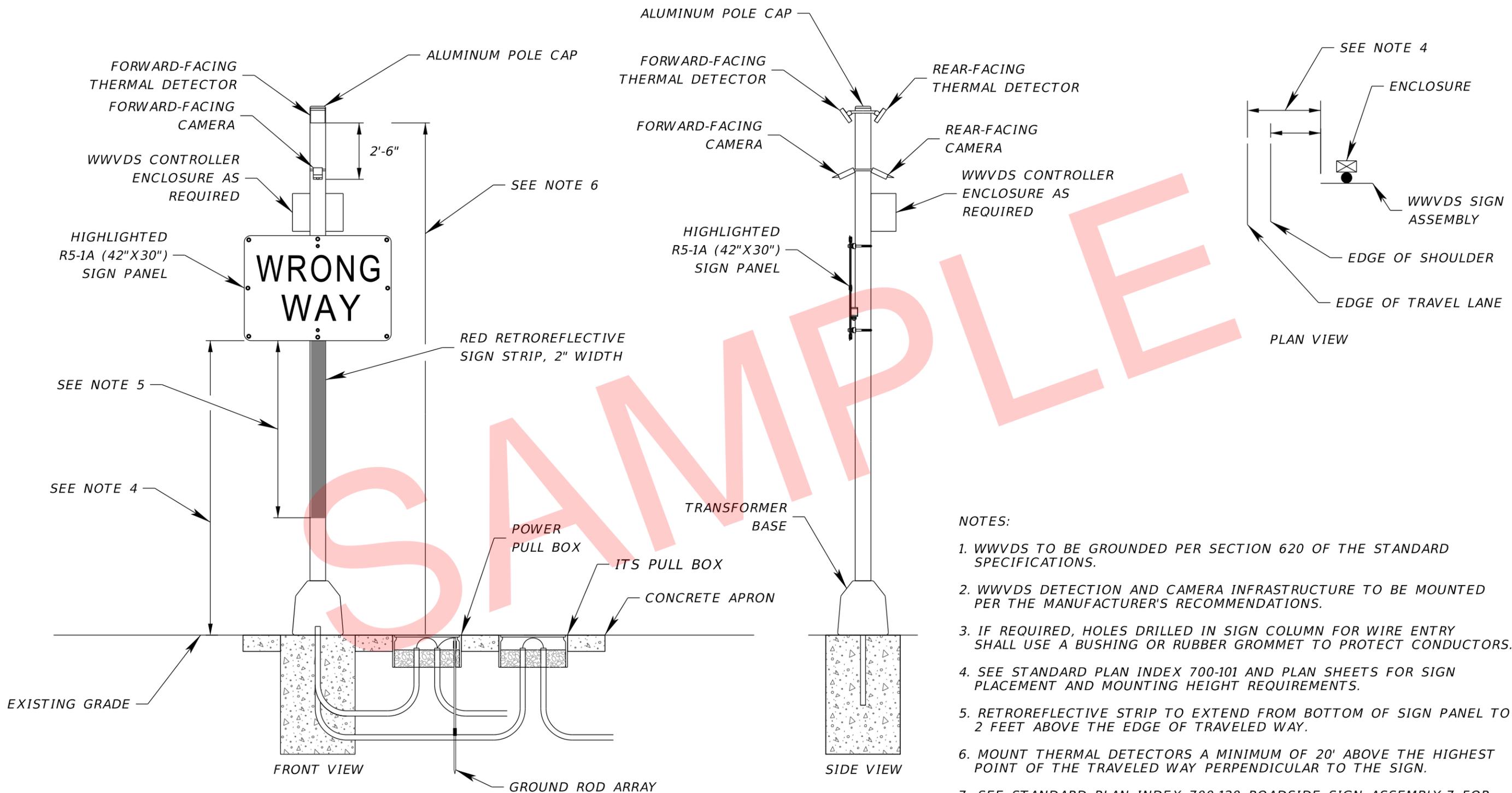
REMOTE SITE DETAIL - HARDWIRE
N.T.S.

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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|--------|----------------------|-------------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | <i>ITS INSTALLATION DETAILS (4)</i> |
| | | | | | | | | SR 400 | |

PRIMARY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) DETAIL
NTS



NOTES:

1. WWVDS TO BE GROUNDED PER SECTION 620 OF THE STANDARD SPECIFICATIONS.
2. WWVDS DETECTION AND CAMERA INFRASTRUCTURE TO BE MOUNTED PER THE MANUFACTURER'S RECOMMENDATIONS.
3. IF REQUIRED, HOLES DRILLED IN SIGN COLUMN FOR WIRE ENTRY SHALL USE A BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
4. SEE STANDARD PLAN INDEX 700-101 AND PLAN SHEETS FOR SIGN PLACEMENT AND MOUNTING HEIGHT REQUIREMENTS.
5. RETROREFLECTIVE STRIP TO EXTEND FROM BOTTOM OF SIGN PANEL TO 2 FEET ABOVE THE EDGE OF TRAVELED WAY.
6. MOUNT THERMAL DETECTORS A MINIMUM OF 20' ABOVE THE HIGHEST POINT OF THE TRAVELED WAY PERPENDICULAR TO THE SIGN.
7. SEE STANDARD PLAN INDEX 700-120 ROADSIDE SIGN ASSEMBLY-7 FOR ADDITIONAL DETAILS.

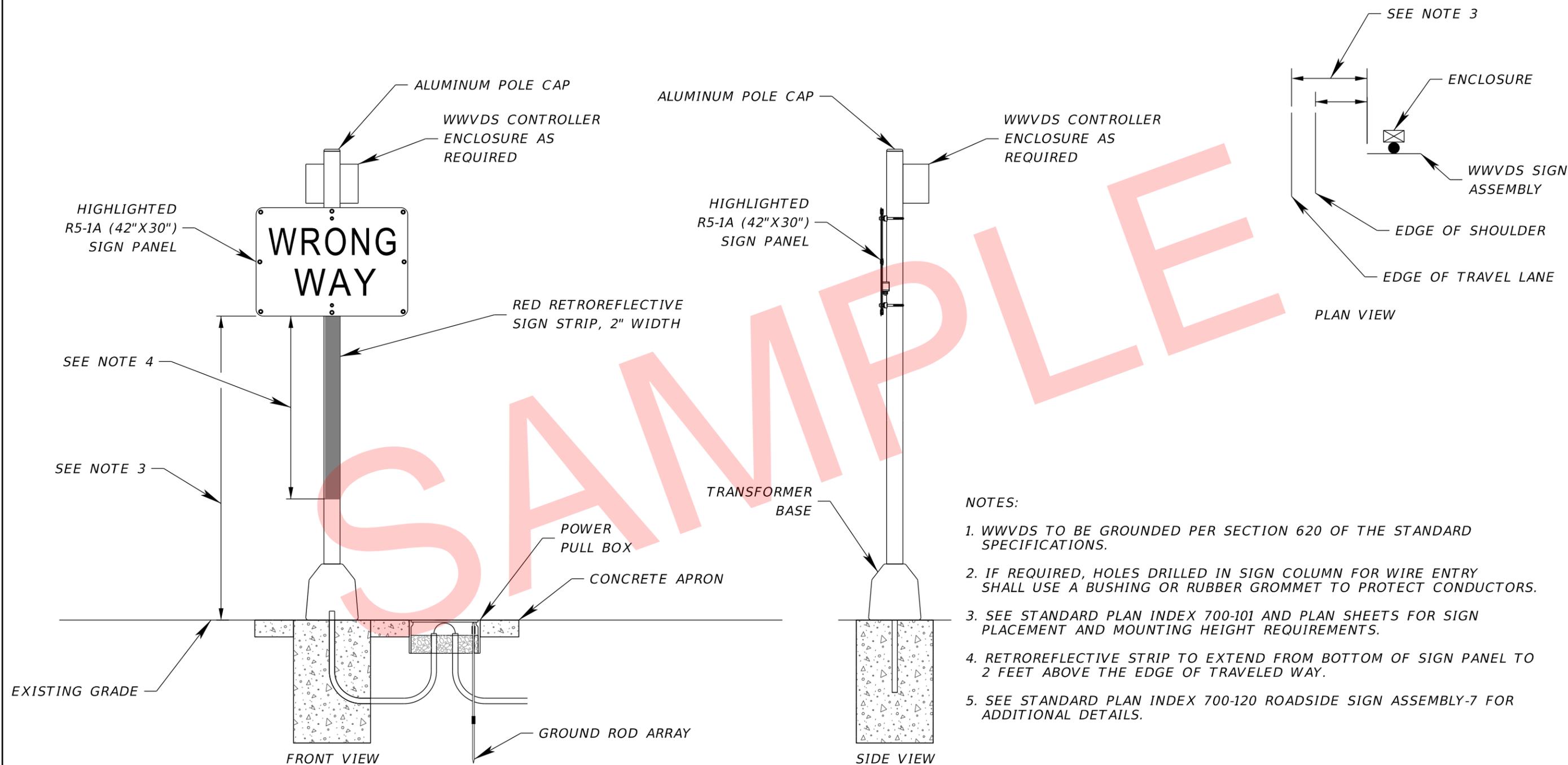
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--|---------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 17 |

**WWVDS INSTALLATION
DETAILS (1)**

SECONDARY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) DETAIL
NTS



NOTES:

1. WWVDS TO BE GROUNDED PER SECTION 620 OF THE STANDARD SPECIFICATIONS.
2. IF REQUIRED, HOLES DRILLED IN SIGN COLUMN FOR WIRE ENTRY SHALL USE A BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
3. SEE STANDARD PLAN INDEX 700-101 AND PLAN SHEETS FOR SIGN PLACEMENT AND MOUNTING HEIGHT REQUIREMENTS.
4. RETROREFLECTIVE STRIP TO EXTEND FROM BOTTOM OF SIGN PANEL TO 2 FEET ABOVE THE EDGE OF TRAVELED WAY.
5. SEE STANDARD PLAN INDEX 700-120 ROADSIDE SIGN ASSEMBLY-7 FOR ADDITIONAL DETAILS.

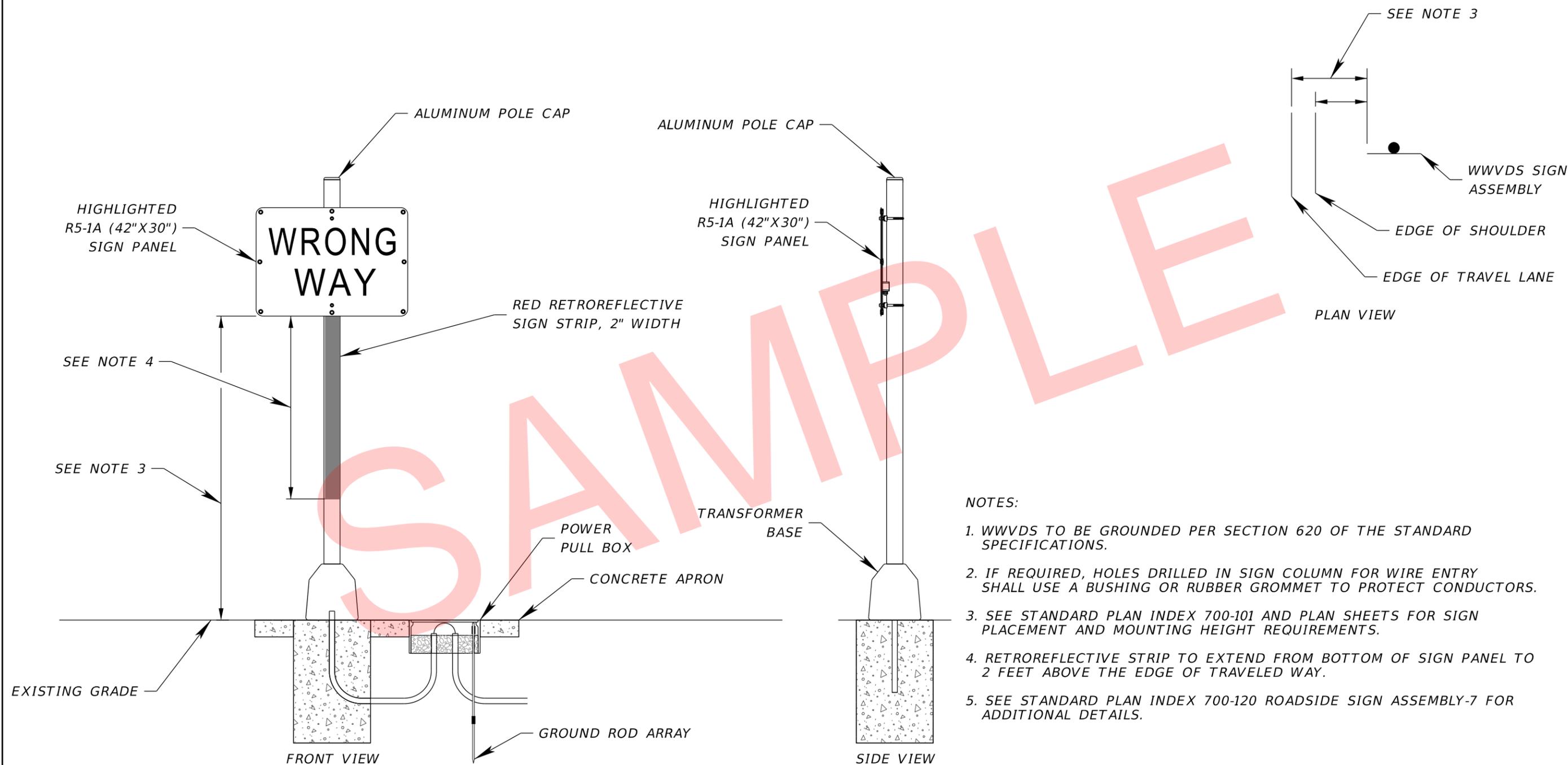
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--|---------------------|----------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 18 |

**WWVDS INSTALLATION
DETAILS (2)**

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PRIMARY/SECONDARY REMOTE WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) DETAIL
NTS



NOTES:

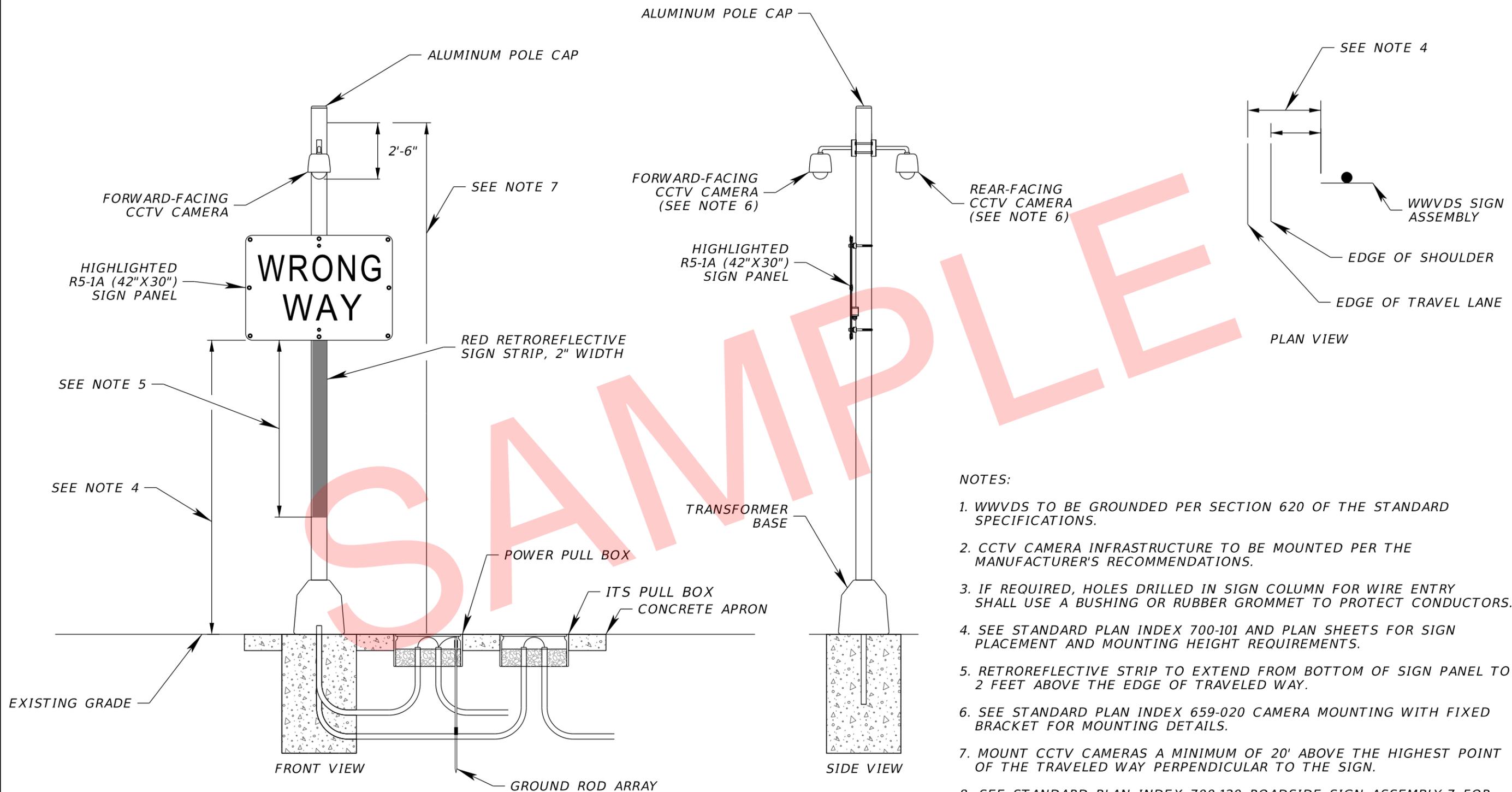
1. WWVDS TO BE GROUNDED PER SECTION 620 OF THE STANDARD SPECIFICATIONS.
2. IF REQUIRED, HOLES DRILLED IN SIGN COLUMN FOR WIRE ENTRY SHALL USE A BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
3. SEE STANDARD PLAN INDEX 700-101 AND PLAN SHEETS FOR SIGN PLACEMENT AND MOUNTING HEIGHT REQUIREMENTS.
4. RETROREFLECTIVE STRIP TO EXTEND FROM BOTTOM OF SIGN PANEL TO 2 FEET ABOVE THE EDGE OF TRAVELED WAY.
5. SEE STANDARD PLAN INDEX 700-120 ROADSIDE SIGN ASSEMBLY-7 FOR ADDITIONAL DETAILS.

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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--|---------------------|----------------------|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | WWVDS INSTALLATION DETAILS (3) |
| | | | | | | | | | 19 |

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OLD DIXIE HIGHWAY RAMP FROM I-95 NORTHBOUND
 @ I-95 NB EXIT 278 RAMP STA. 24+22, 29' RT.
 SECONDARY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) DETAIL
 NTS



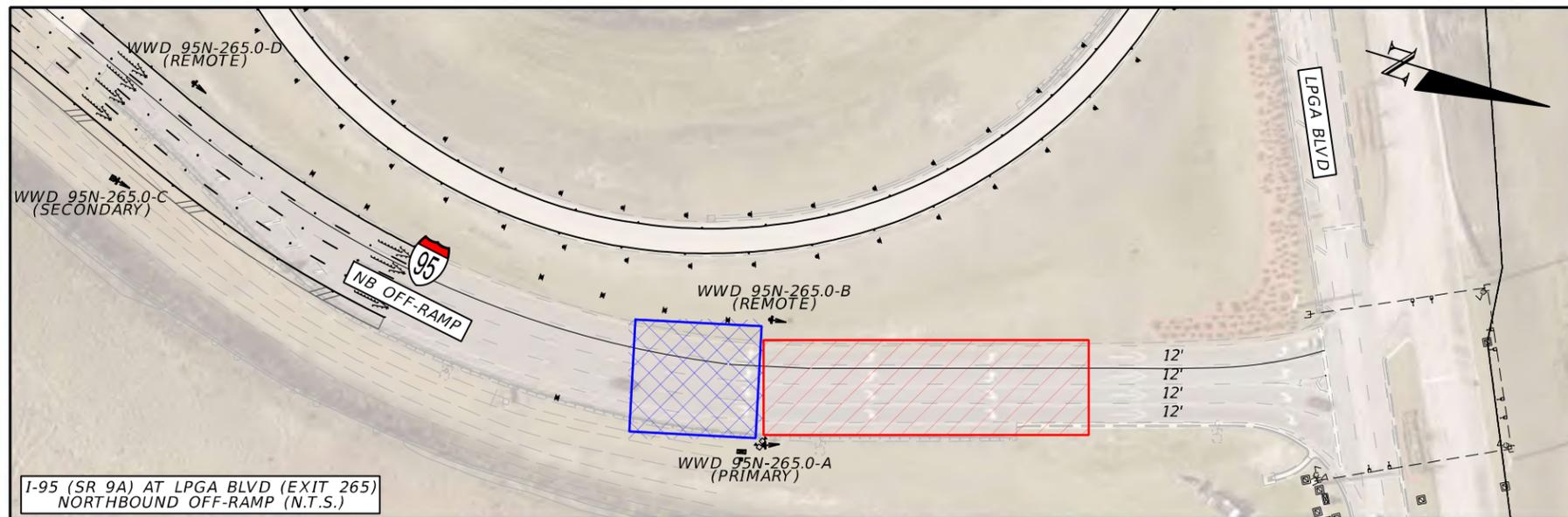
NOTES:

1. WWVDS TO BE GROUNDED PER SECTION 620 OF THE STANDARD SPECIFICATIONS.
2. CCTV CAMERA INFRASTRUCTURE TO BE MOUNTED PER THE MANUFACTURER'S RECOMMENDATIONS.
3. IF REQUIRED, HOLES DRILLED IN SIGN COLUMN FOR WIRE ENTRY SHALL USE A BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
4. SEE STANDARD PLAN INDEX 700-101 AND PLAN SHEETS FOR SIGN PLACEMENT AND MOUNTING HEIGHT REQUIREMENTS.
5. RETROREFLECTIVE STRIP TO EXTEND FROM BOTTOM OF SIGN PANEL TO 2 FEET ABOVE THE EDGE OF TRAVELED WAY.
6. SEE STANDARD PLAN INDEX 659-020 CAMERA MOUNTING WITH FIXED BRACKET FOR MOUNTING DETAILS.
7. MOUNT CCTV CAMERAS A MINIMUM OF 20' ABOVE THE HIGHEST POINT OF THE TRAVELED WAY PERPENDICULAR TO THE SIGN.
8. SEE STANDARD PLAN INDEX 700-120 ROADSIDE SIGN ASSEMBLY-7 FOR ADDITIONAL DETAILS.

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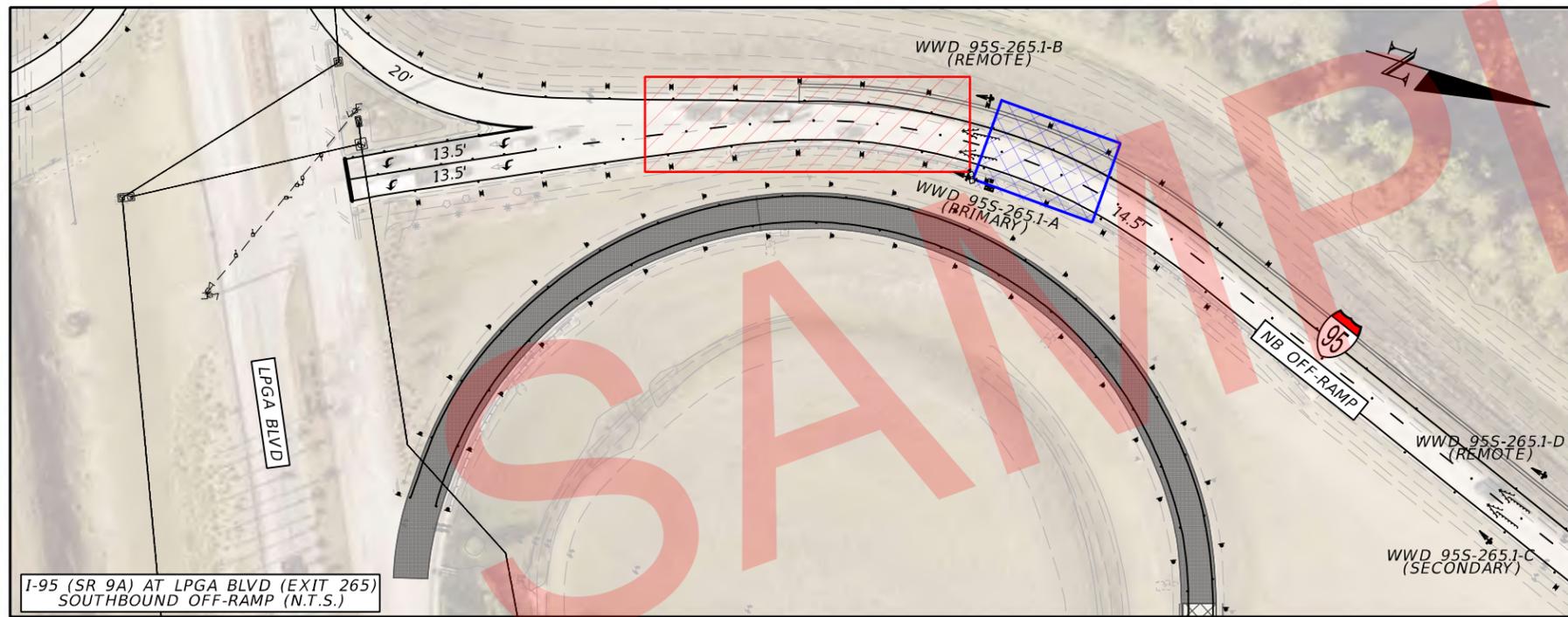
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|---|--|--|---------------------|----------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 20 |
| | | | | | | WWVDS INSTALLATION DETAILS (4) | | | |



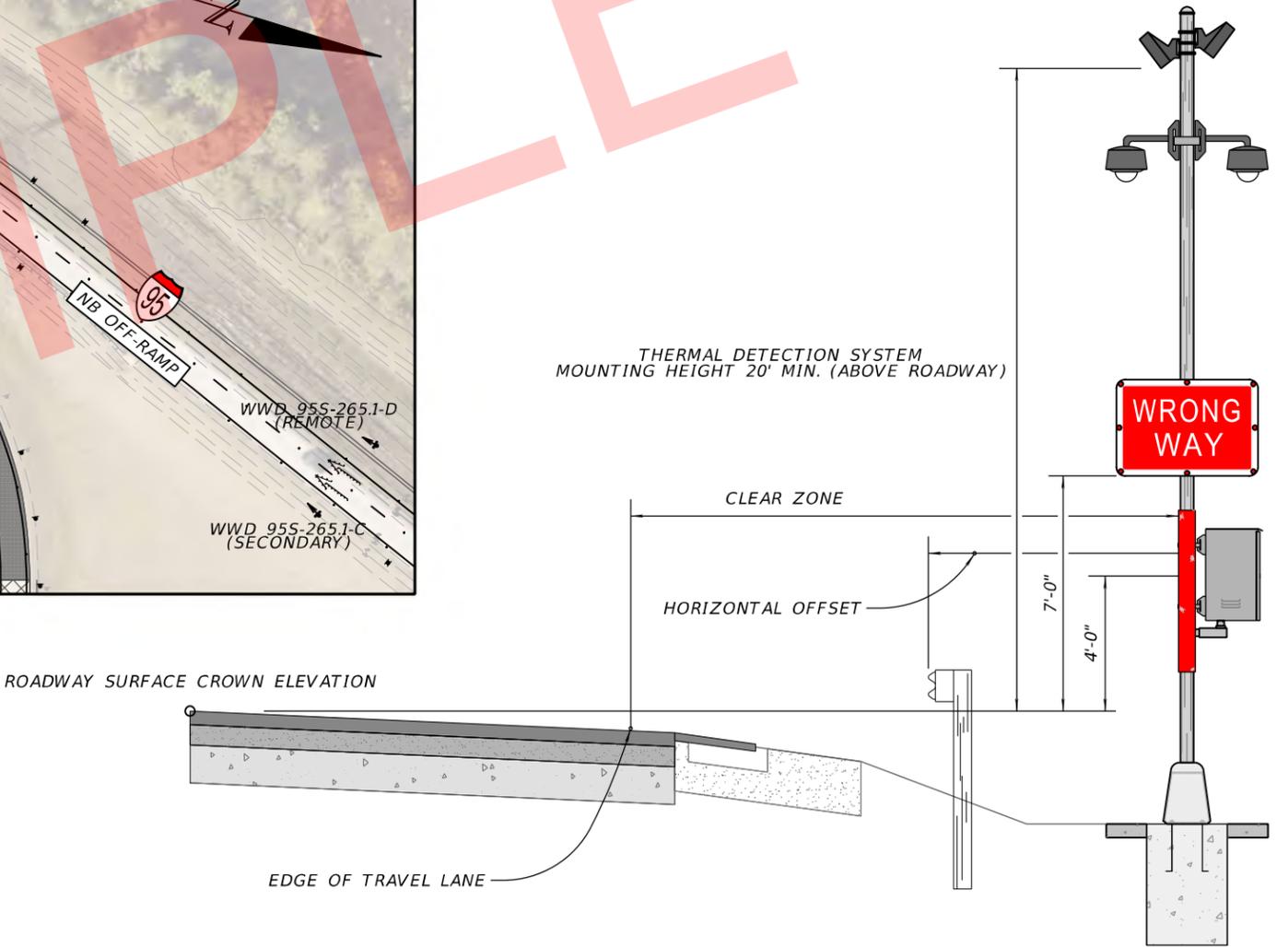
NOTES:

1. INSTALL SENSORS FOR THERMAL DETECTION SYSTEM PER MANUFACTURER'S RECOMMENDATIONS. ENSURE SENSORS ARE MOUNTED A MINIMUM OF 20' ABOVE THE ROAD SURFACE CROWN ELEVATION.
2. SENSORS SHALL BE POSITIONED TO PROVIDE COVERAGE FOR ALL RAMP LANES AND PAVED SHOULDERS. CONFIGURE FORWARD FACING SENSOR FOR DETECTION ZONE AND REAR FACING SENSOR FOR VERIFICATION ZONE.
3. DETECTION ZONES SHALL BE CONFIGURED TO ACTIVATE HIGHLIGHTED LED SIGN AND BEGIN FLASHING SEQUENCE AT BOTH PRIMARY AND SECONDARY LOCATIONS.
4. VERIFICATION ZONES SHALL BE CONFIGURED TO ACTUATE WRONG WAY DRIVING EVENT AND SUBSEQUENT RESPONSE ACTIVITIES.
5. INSTALL PRIMARY AND SECONDARY LOCATIONS OUTSIDE OF CLEAR ZONE AND/OR PROVIDE THE APPROPRIATE LATERAL OFFSET FROM FACE OF GUARDRAIL FOR THE FOLLOWING DESIGN PARAMETERS, IN ACCORDANCE WITH FDM SECTION 2015:
 - DESIGN SPEED: 50 MPH
 - PROJECT TYPE: NEW CONSTRUCTION
 - GEOMETRIC CONFIGURATION: TRAVEL LANES & MULTI-LANE RAMP



DRAFT

THERMAL DETECTION SYSTEM MOUNTING HEIGHT 20' MIN. (ABOVE ROADWAY)



- LEGEND:**
- DETECTION ZONE (ACTIVATION OF HIGHLIGHTED LED SIGNS) (MAX 200', PER 20' MOUNTING HEIGHT)
 - VERIFICATION ZONE (ACTUATE WRONG WAY DRIVING EVENT) (MAX 75', PER 20' MOUNTING HEIGHT)

| REVISIONS | | | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-50 |
|-----------|-------------|------|-------------|--|--|---------|----------------------|------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 9 | VOLUSIA | 441133-1-52-01 | COVERAGE AREA DETAILS |

REFERENCE NOTES:

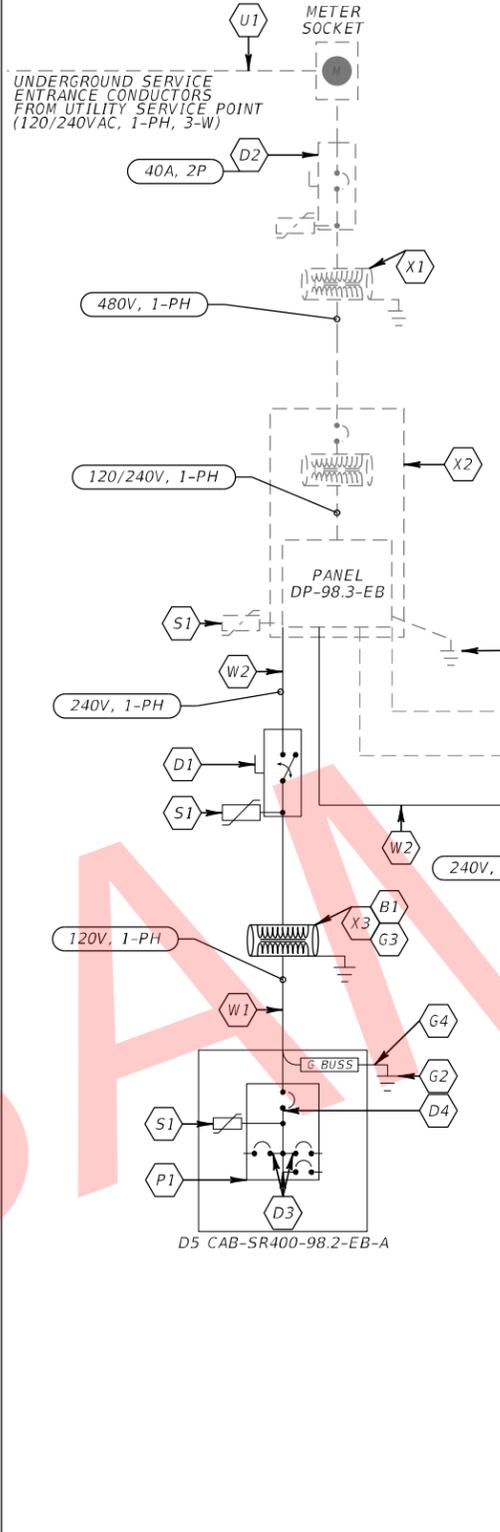
- B1 INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS
- D1 240V/60A MIN. RATED POLE MOUNTED SAFETY SWITCH: DOUBLE-POLE SINGLE-THROW, SOLID NEUTRAL, NON-FUSIBLE; NEMA 3R PADLOCKABLE ENCLOSURE
- D2 240V MIN. RATED POLE MOUNTED CIRCUIT BREAKER ENCLOSURE: NEMA 3R PADLOCKABLE ENCLOSURE
- D3 CABINET BRANCH CIRCUIT BREAKER: REFER TO CABINET WIRING DIAGRAMS FOR DETAILS (10K AIC MIN. RATED)
- D4 CABINET MAIN CIRCUIT BREAKER: REFER TO CABINET WIRING DIAGRAMS FOR DETAILS (10K AIC MIN. RATED)
- G1 EXISTING GROUNDING ELECTRODE ARRAY
- G2 GROUNDING ELECTRODE ARRAY; REFER TO TYPICAL INSTALLATION DETAILS
- G3 #6 AWG BONDING JUMPER (MAIN, SYSTEM, OR SUPPLY-SIDE)
- G4 #2 AWG COPPER GROUNDING ELECTRODE CONDUCTOR
- P1 CABINET POWER PANEL
- S1 TYPE 1 SURGE PROTECTION DEVICE
- U1 SERVICE CONDUCTORS: 2-#6 AWG XHHW, 1-#6 AWG XHHW GROUNDED CONDUCTOR
- W1 2-#6 AWG XHHW, 1-#6 AWG XHHW GROUND
- W2 SEE PLANS FOR CONDUCTOR SIZE
- X1 7.5 KVA XFMR 240V PRIMARY, 480V SECONDARY, 1-PH, POLE MOUNTED ENCAPSULATED DRY TYPE ISOLATION TRANSFORMER IN NEMA 3R ENCLOSURE
- X2 MINI-POWER CENTER: 7.5 KVA XFMR 480V PRIMARY, 120/240V SECONDARY, 1-PH, POLE MOUNTED, NEMA 3R ENCLOSURE
- X3 3 KVA XFMR 240V PRIMARY, 120V SECONDARY, 1-PH, POLE MOUNTED ENCAPSULATED DRY TYPE ISOLATION TRANSFORMER IN NEMA 3R ENCLOSURE

D5 ESP-SR400-98.3-EB

LEGEND:

- EXISTING
- NEW

ONE LINE DIAGRAM

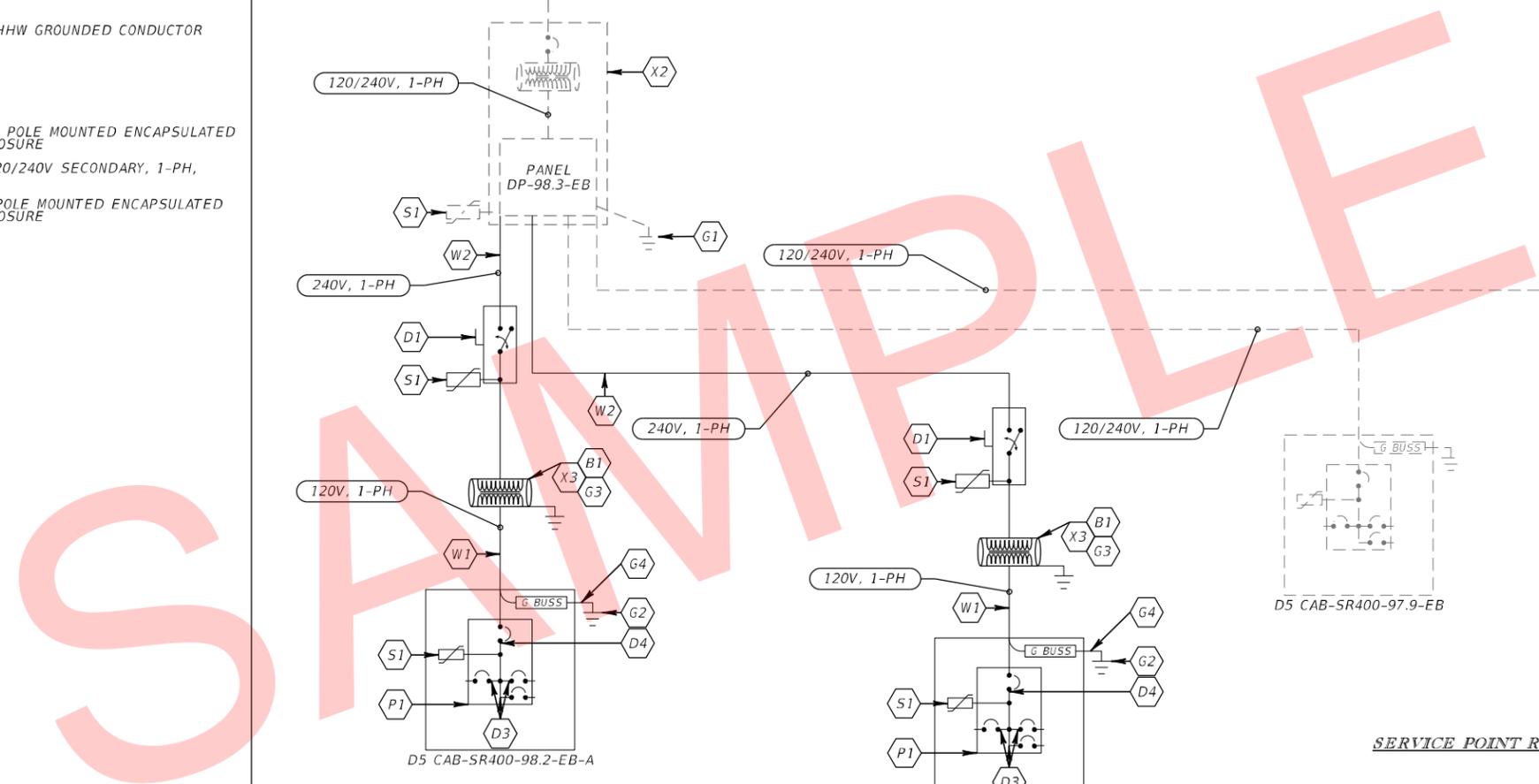


VOLTAGE: 120/240
PHASE: 1
WIRES: 3

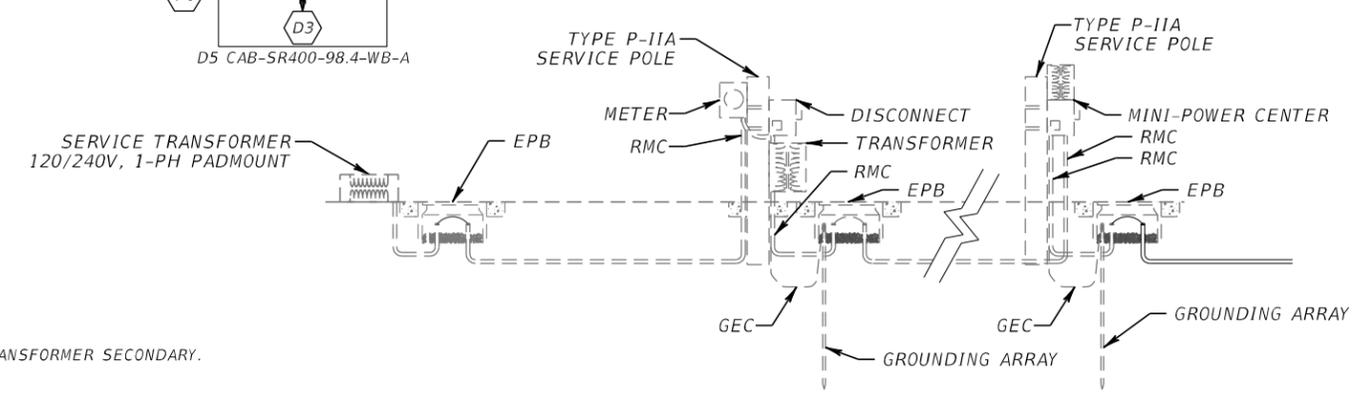
MAINS TYPE: BREAKER
PRIMARY MAIN CB: 30 A; SECONDARY MAIN CB: 40 A
AIC: 10,000 A

| CKT | CKT NAME | CONNECTED EQUIP. | TRIP | POLES | A (KVA) | | B (KVA) | | POLES | TRIP | CKT NAME | CONNECTED EQUIP. | CKT |
|-----|-----------|-----------------------|------|-------|---------------------|------|---------|------|-------|------|-----------|-----------------------|-----|
| | | | | | | | | | | | | | |
| 1 | 98.3-EB-1 | EX. CAB-SR400-97.9-EB | 20 | 2 | 0.31 | 0.26 | 0.31 | 0.26 | 2 | 20 | 98.3-EB-2 | EX. CAB-SR400-98.3-EB | 2 |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 4 |
| 5 | 98.3-EB-3 | CAB-SR400-98.2-EB-A | 25 | 2 | 0.76 | 0.76 | 0.76 | 0.76 | 2 | 25 | 98.3-EB-4 | CAB-SR400-98.4-WB-A | 6 |
| 7 | --- | --- | --- | --- | --- | --- | 0.76 | 0.76 | --- | --- | --- | --- | 8 |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | 2 | ' | SPD | SPD | 10 |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 12 |
| | | | | | LOAD PER LEG (KVA): | | 2.09 | 2.09 | | | | | |

* - SIZE BREAKER PER SPD MANUFACTURERS INSTRUCTIONS



SERVICE POINT RISER DIAGRAM



- NOTES:
- ADD NEW BREAKER TO MINI-POWER CENTER PANEL ON TRANSFORMER SECONDARY.

| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | POWER SERVICE DETAILS | SHEET NO. IT-86 |
|-----------|-------------|------|-------------|---|--|------------|----------------------|-----------------------|--------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | | SR 400 | SEMINO-L-E | 446159-1-52-01 | | |

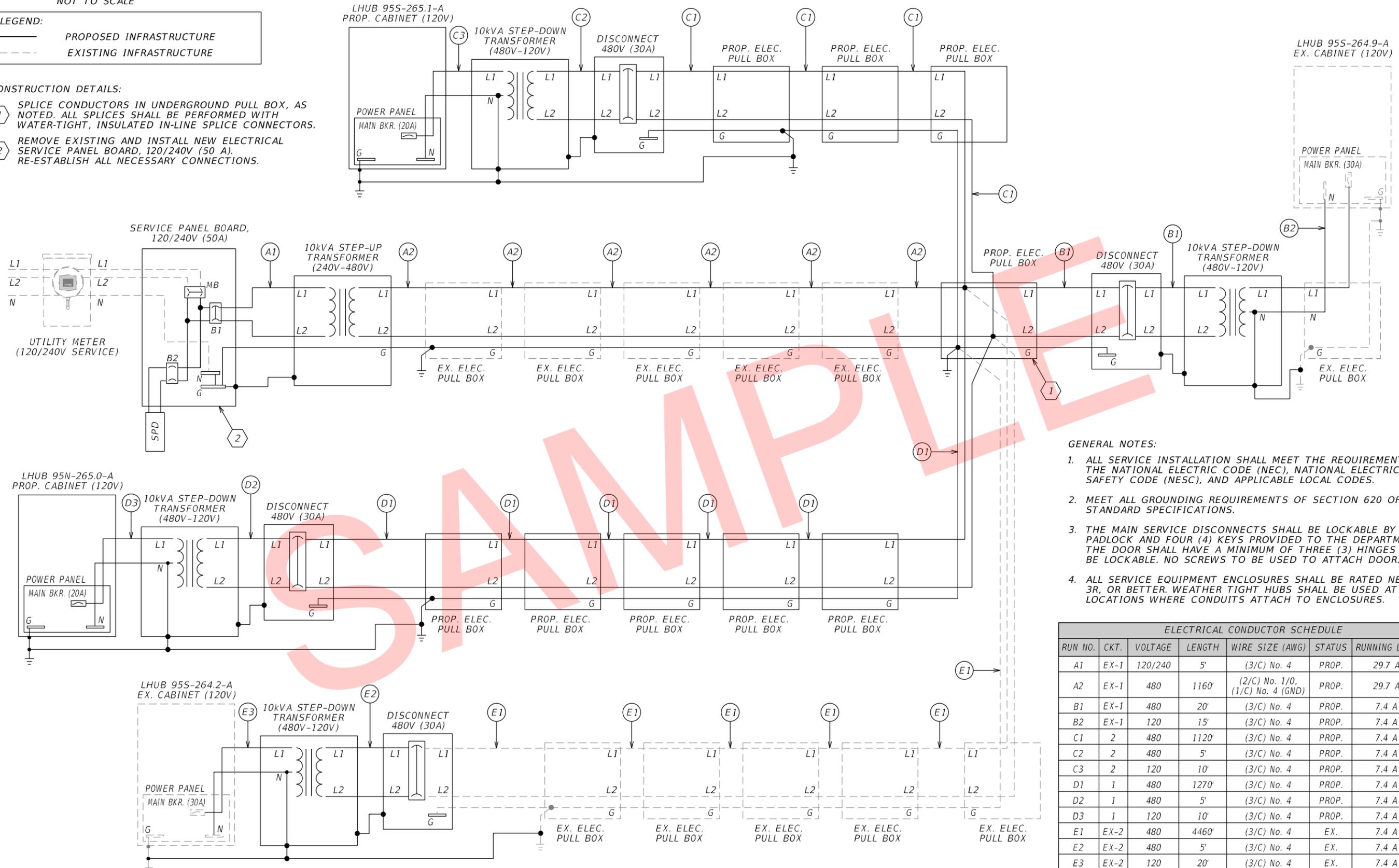
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I-95 (SR 9A) AT LPGA BLVD (EXIT 265)
NOT TO SCALE

LEGEND:
 ——— PROPOSED INFRASTRUCTURE
 - - - - EXISTING INFRASTRUCTURE

CONSTRUCTION DETAILS:

- 1 SPlice conductors in underground pull box, as noted. All splices shall be performed with water-tight, insulated in-line splice connectors.
- 2 REMOVE EXISTING AND INSTALL NEW ELECTRICAL SERVICE PANEL BOARD, 120/240V (50 A). RE-ESTABLISH ALL NECESSARY CONNECTIONS.



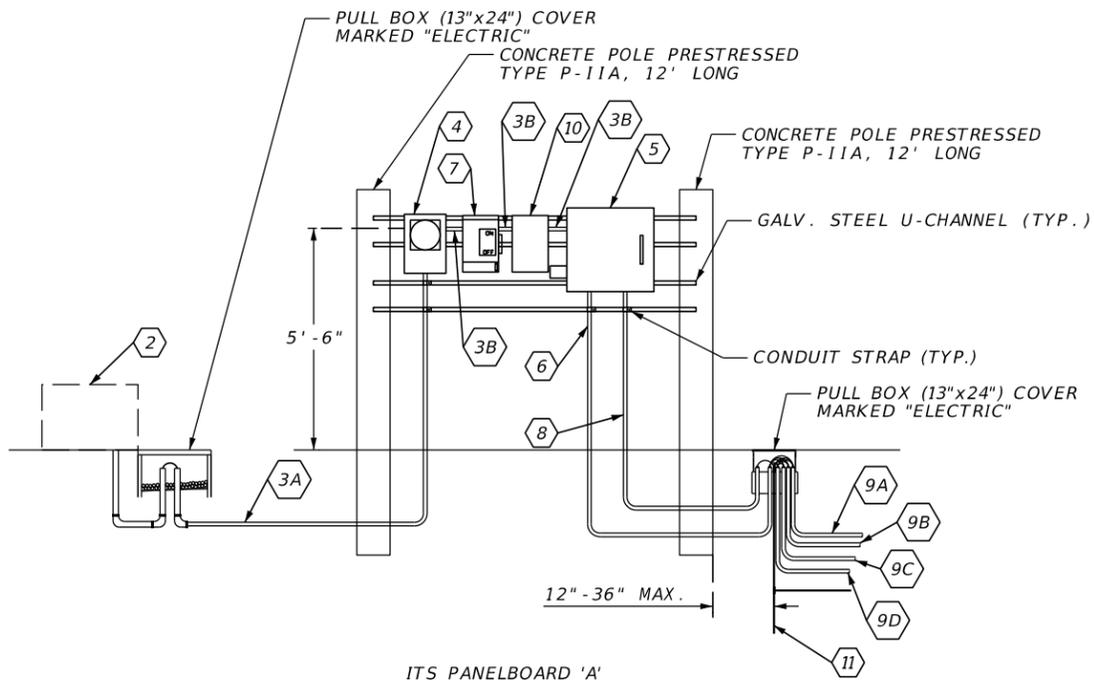
GENERAL NOTES:

- 1. ALL SERVICE INSTALLATION SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NEC), NATIONAL ELECTRIC SAFETY CODE (NESC), AND APPLICABLE LOCAL CODES.
- 2. MEET ALL GROUNDING REQUIREMENTS OF SECTION 620 OF THE STANDARD SPECIFICATIONS.
- 3. THE MAIN SERVICE DISCONNECTS SHALL BE LOCKABLE BY PADLOCK AND FOUR (4) KEYS PROVIDED TO THE DEPARTMENT. THE DOOR SHALL HAVE A MINIMUM OF THREE (3) HINGES AND BE LOCKABLE. NO SCREWS TO BE USED TO ATTACH DOOR.
- 4. ALL SERVICE EQUIPMENT ENCLOSURES SHALL BE RATED NEMA 3R, OR BETTER. WEATHER TIGHT HUBS SHALL BE USED AT LOCATIONS WHERE CONDUITS ATTACH TO ENCLOSURES.

| ELECTRICAL CONDUCTOR SCHEDULE | | | | | | |
|-------------------------------|------|---------|--------|-------------------------------------|--------|--------------|
| RUN NO. | CKT. | VOLTAGE | LENGTH | WIRE SIZE (AWG) | STATUS | RUNNING LOAD |
| A1 | EX-1 | 120/240 | 5' | (3/C) No. 4 | PROP. | 29.7 A |
| A2 | EX-1 | 480 | 1160' | (2/C) No. 1/0, (1/C) No. 4 (GND) | PROP. | 29.7 A |
| B1 | EX-1 | 480 | 20' | (3/C) No. 4 | PROP. | 7.4 A |
| B2 | EX-1 | 120 | 15' | (3/C) No. 4 | PROP. | 7.4 A |
| C1 | 2 | 480 | 1120' | (3/C) No. 4 | PROP. | 7.4 A |
| C2 | 2 | 480 | 5' | (3/C) No. 4 | PROP. | 7.4 A |
| C3 | 2 | 120 | 10' | (3/C) No. 4 | PROP. | 7.4 A |
| D1 | 1 | 480 | 1270' | (3/C) No. 4 | PROP. | 7.4 A |
| D2 | 1 | 480 | 5' | (3/C) No. 4 | PROP. | 7.4 A |
| D3 | 1 | 120 | 10' | (3/C) No. 4 | PROP. | 7.4 A |
| E1 | EX-2 | 480 | 4460' | (3/C) No. 4 | EX. | 7.4 A |
| E2 | EX-2 | 480 | 5' | (3/C) No. 4 | EX. | 7.4 A |
| E3 | EX-2 | 120 | 20' | (3/C) No. 4 | EX. | 7.4 A |

| | | | | | |
|-----------|-------------|--|--|----------------------|--|
| REVISIONS | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | ELECTRICAL SERVICE DETAILS SHEET NO. IT-47 |
| DATE | DESCRIPTION | | ROAD NO. | COUNTY | |
| | | | SR 9 | VOLUSIA | |
| | | | | FINANCIAL PROJECT ID | 441133-1-52-01 |

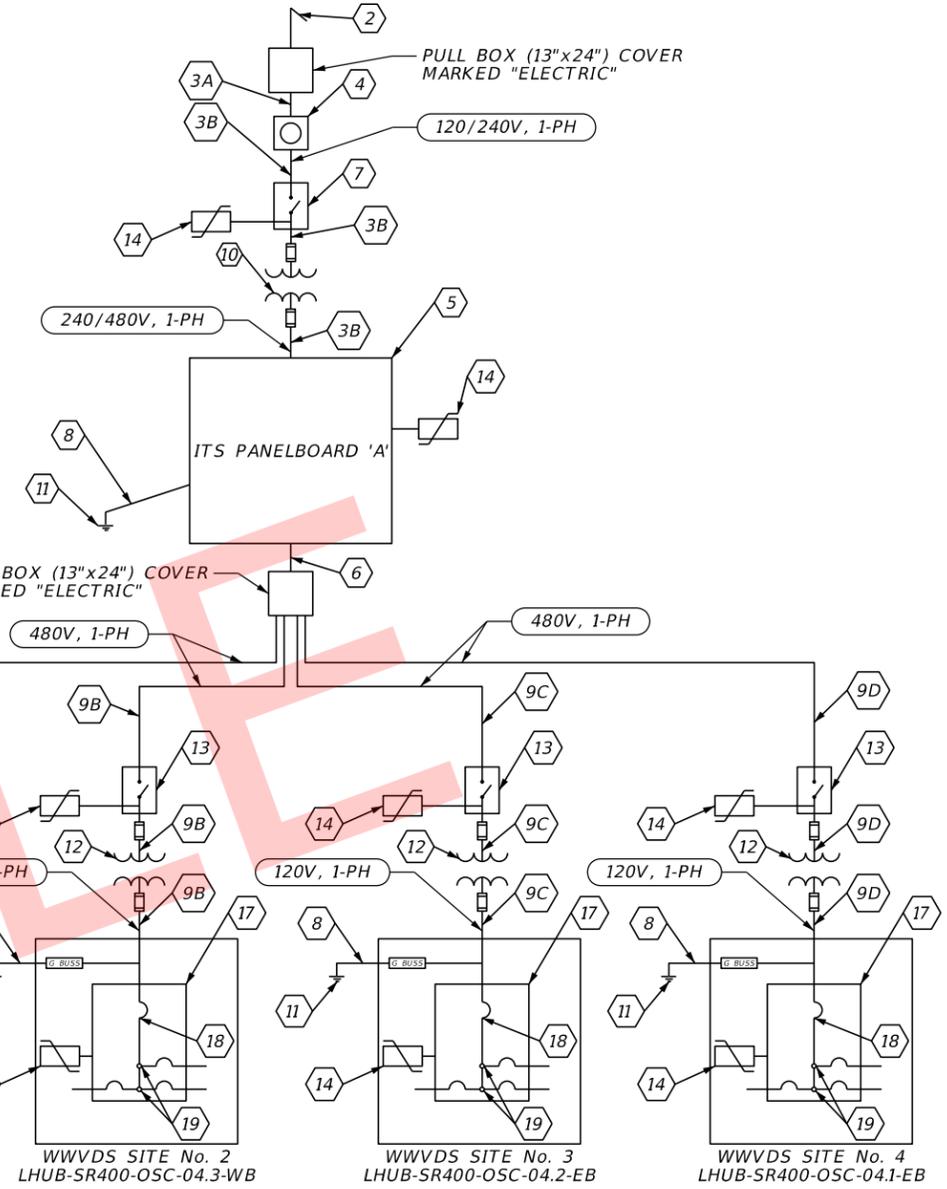
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



ITS PANELBOARD 'A'
POWER SERVICE ASSEMBLY
RISER DIAGRAM

KEYED NOTES:

- 1 NOT USED.
- 2 120/240V, SINGLE PHASE, 3-WIRE DUKE ENERGY ELECTRIC SERVICE. SAFETY SWITCH ON SERVICE SIDE OF METER WHEN REQUIRED BY POWER COMPANY.
- 3A 2-#4 AWG & 1-#4 AWG (N) IN 2" CONDUIT.
- 3B 2-#4 AWG & 1-#4 AWG (N) IN RGS CONDUIT.
- 4 ITS METER CAN.
- 5 ITS PANELBOARD, NEMA 3R PADLOCKABLE ENCLOSURE. 50 AMP, 240/480V, SINGLE PHASE, 3-WIRE MAIN BREAKER. BRANCH CIRCUIT BREAKERS AS INDICATED. SERVICE ENTRANCE RATED WITH NEUTRAL AND GROUND KITS. BOND THE SERVICE NEUTRAL TO THE GROUND.
- 6 4 #4 AWG, 4 #4 AWG (N), 1 #4 AWG (G) IN RGS CONDUIT.
- 7 ITS POWER SERVICE ASSEMBLY MAIN DISCONNECT 150 AMPS, 120V, 18,000 AIC; ENCLOSED BREAKER NEMA 3R SERVICE ENTRANCE RATED.
- 8 1 #4 AWG INSULATED COPPER GROUND WIRE IN 1" RGS CONDUIT.
- 9A 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 1.
- 9B 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 2.
- 9C 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 3.
- 9D 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 4.
- 10 CONTROL TRANSFORMER 20 KVA SINGLE PHASE, 120/240V PRIMARY, 240/480V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 11 5/8"x20' MIN. GROUND ROD, EXTEND OR ADD ADDITIONAL AT 40' MIN. SPACING, BONDED WITH #4 AWG TIN PLATED BARE COPPER GROUND WIRE TO ACHIEVE 5 OHMS OR LESS RESISTANCE TO GROUND.



ITS PANELBOARD 'A'
POWER SERVICE ASSEMBLY
ONE LINE DIAGRAM

- 12 CONTROL TRANSFORMER 9 KVA SINGLE PHASE, 480V PRIMARY, 120V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 13 15A, 1-PH, 480V RATED POLE MOUNTED CIRCUIT BREAKER ENCLOSURE (18,000 AIC RATED). NEMA 3R PADLOCKABLE ENCLOSURE.
- 14 SURGE PROTECTIVE DEVICE (SPD).
- 15 NOT USED
- 16 NOT USED
- 17 WWVDS LHUB CABINET POWER PANEL (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 18 WWVDS LHUB CABINET MAIN CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 19 WWVDS LHUB CABINET BRANCH CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.

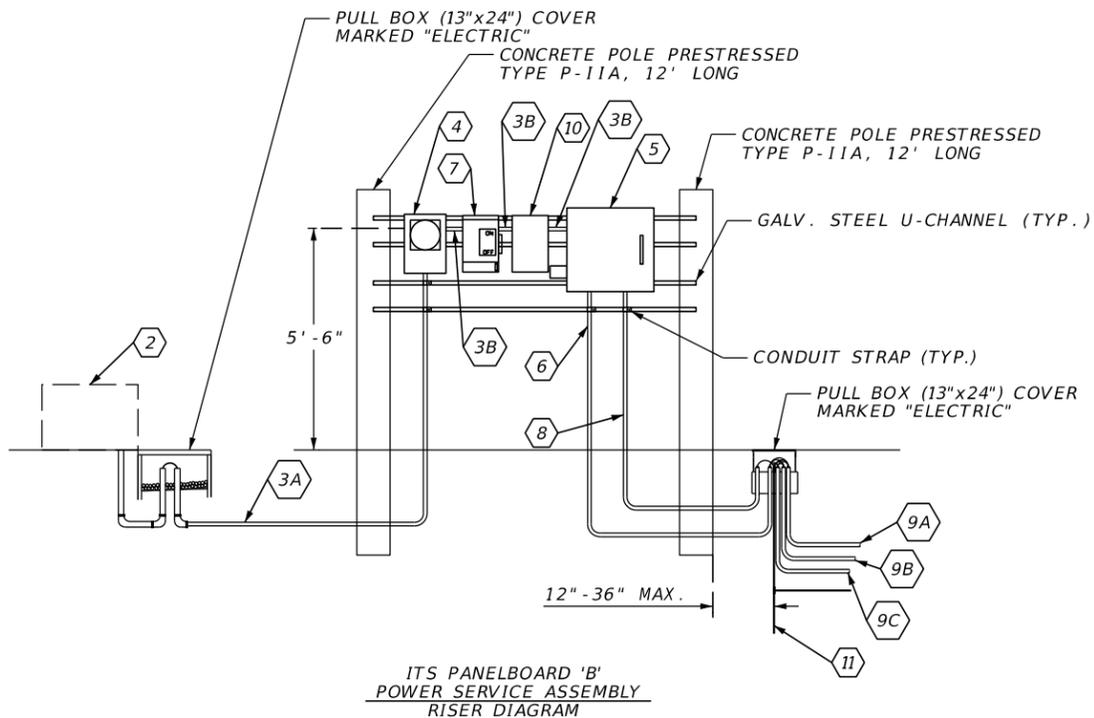
| PROP. ITS PANELBOARD 'A' PANELBOARD SCHEDULE STA. 507+71 Q CONST. SR 400 | | | | | | | |
|--|---------|-----------|-------------------|--------|---------|----------|-----------|
| CKT # | BREAKER | WIRE SIZE | OPERATING VOLTAGE | VD MAX | VD% MAX | AMP LOAD | WATT LOAD |
| WWVDS NO. 1 | 15A | #4 | 480 | 6.45 | 1.34% | 6.12 | 2940 |
| WWVDS NO. 2 | 15A | #4 | 480 | 7.28 | 1.52% | 6.12 | 2940 |
| WWVDS NO. 3 | 15A | #4 | 480 | 3.18 | 0.66% | 6.12 | 2940 |
| WWVDS NO. 4 | 15A | #4 | 480 | 5.27 | 1.10% | 6.12 | 2940 |
| SPARE | | | | | | | |
| SPARE | | | | | | | |
| ITS PANELBOARD A TOTALS | | | | | | 24.48 | 11760 |
| ITS PANELBOARD A TOTALS @ 20% SPARE CAPACITY | | | | | | 29.38 | 14112 |
| SERVICE MAIN DISCONNECT (18,000 A.I.C.) | | | | | | 50A, 2P | |

7/13/2023 8:28:23 PM bmesbitt T:\Worksets\FDOT\2379741\2319\TWO_007\ITS\SRPT\T01.dgn

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-115 |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | |

POWER SERVICE DETAILS (1)

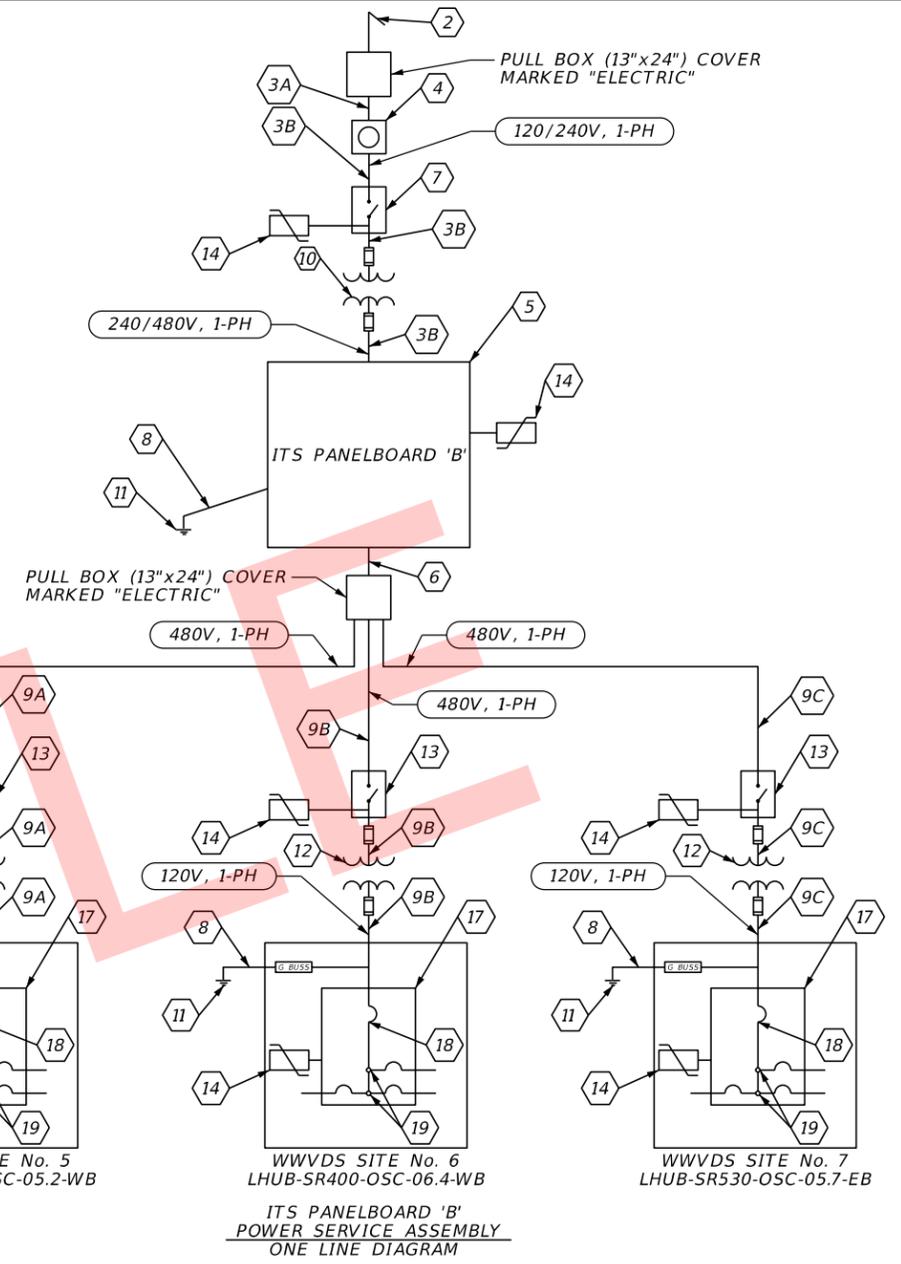
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



ITS PANELBOARD 'B'
POWER SERVICE ASSEMBLY
RISER DIAGRAM

KEYED NOTES:

- 1 NOT USED.
- 2 120/240V, SINGLE PHASE, 3-WIRE DUKE ENERGY ELECTRIC SERVICE. SAFETY SWITCH ON SERVICE SIDE OF METER WHEN REQUIRED BY POWER COMPANY.
- 3A 2-#4 AWG & 1-#4 AWG (N) IN 2" CONDUIT.
- 3B 2-#4 AWG & 1-#4 AWG (N) IN RGS CONDUIT.
- 4 ITS METER CAN.
- 5 ITS PANELBOARD, NEMA 3R PADLOCKABLE ENCLOSURE. 50 AMP, 240/480V, SINGLE PHASE, 3-WIRE MAIN BREAKER. BRANCH CIRCUIT BREAKERS AS INDICATED. SERVICE ENTRANCE RATED WITH NEUTRAL AND GROUND KITS. BOND THE SERVICE NEUTRAL TO THE GROUND.
- 6 3 #4 AWG, 3 #4 AWG (N), 1 #4 AWG (G) IN RGS CONDUIT.
- 7 ITS POWER SERVICE ASSEMBLY MAIN DISCONNECT 150 AMPS, 120V, 18,000 AIC; ENCLOSED BREAKER NEMA 3R SERVICE ENTRANCE RATED.
- 8 1 #4 AWG INSULATED COPPER GROUND WIRE IN 1" RGS CONDUIT.
- 9A 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 5.
- 9B 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 6.
- 9C 1 #4 AWG, 1 #4 AWG (N), 1 #4 AWG (G) IN CONDUIT TO WWVDS SITE No. 7.
- 10 CONTROL TRANSFORMER 20 KVA SINGLE PHASE, 120/240V PRIMARY, 240/480V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 11 5/8"x20' MIN. GROUND ROD, EXTEND OR ADD ADDITIONAL AT 40' MIN. SPACING, BONDED WITH #4 AWG TIN PLATED BARE COPPER GROUND WIRE TO ACHIEVE 5 OHMS OR LESS RESISTANCE TO GROUND.



ITS PANELBOARD 'B'
POWER SERVICE ASSEMBLY
ONE LINE DIAGRAM

- 12 CONTROL TRANSFORMER 9 KVA SINGLE PHASE, 480V PRIMARY, 120V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 13 15A, 1-PH, 480V RATED POLE MOUNTED CIRCUIT BREAKER ENCLOSURE (18,000 AIC RATED). NEMA 3R PADLOCKABLE ENCLOSURE.
- 14 SURGE PROTECTIVE DEVICE (SPD).
- 15 NOT USED
- 16 NOT USED
- 17 WWVDS LHUB CABINET POWER PANEL (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 18 WWVDS LHUB CABINET MAIN CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 19 WWVDS LHUB CABINET BRANCH CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.

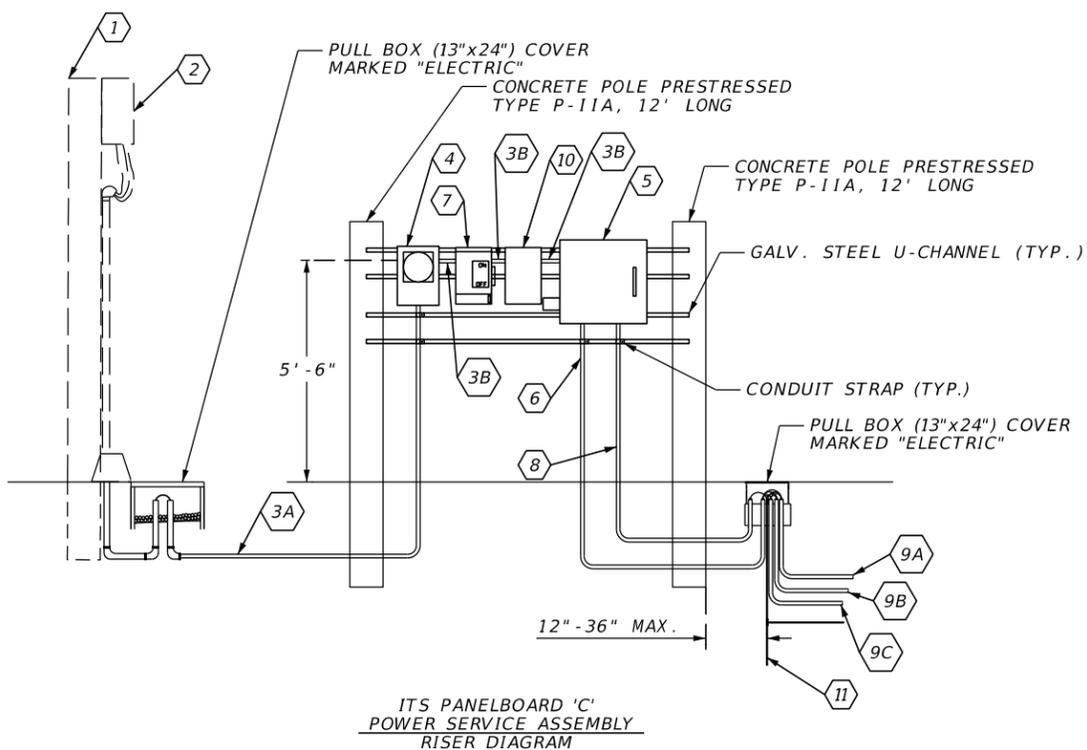
| PROP. ITS PANELBOARD 'B' PANELBOARD SCHEDULE STA. 52+79 & CONST. RAMP G | | | | | | | |
|---|---------|-----------|-------------------|--------|---------|----------|-----------|
| CKT # | BREAKER | WIRE SIZE | OPERATING VOLTAGE | VD MAX | VD% MAX | AMP LOAD | WATT LOAD |
| WWVDS NO. 5 | 15A | #4 | 480 | 7.09 | 1.48% | 6.12 | 2940 |
| WWVDS NO. 6 | 15A | #4 | 480 | 4.19 | 0.87% | 6.12 | 2940 |
| WWVDS NO. 7 | 15A | #4 | 480 | 6.71 | 1.40% | 6.12 | 2940 |
| SPARE | | | | | | | |
| SPARE | | | | | | | |
| SPARE | | | | | | | |
| ITS PANELBOARD B TOTALS | | | | | | 18.36 | 8820 |
| ITS PANELBOARD B TOTALS @ 20% SPARE CAPACITY | | | | | | 22.03 | 10584 |
| SERVICE MAIN DISCONNECT (18,000 A.I.C.) | | | | | | 50A, 2P | |

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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-116 |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | |

POWER SERVICE DETAILS (2)

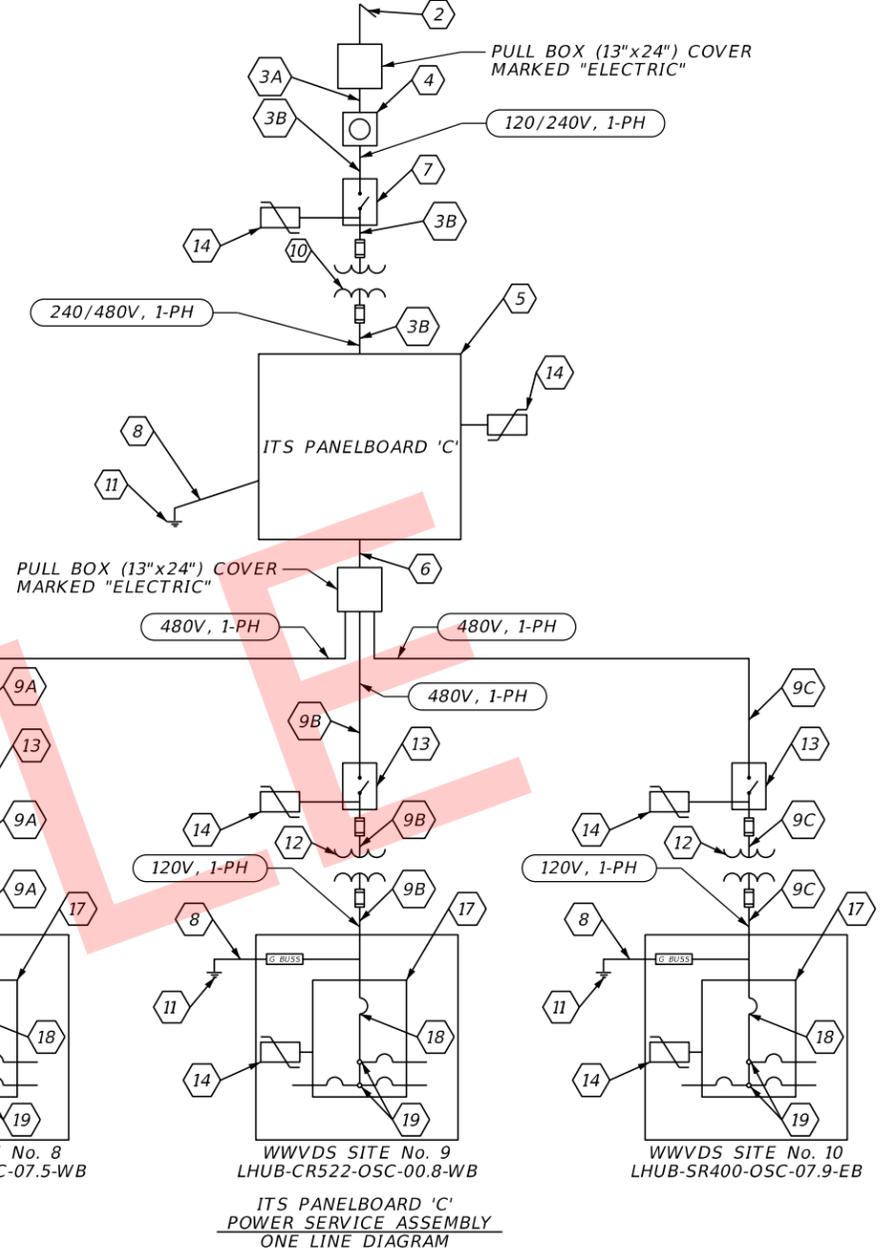
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



ITS PANELBOARD 'C'
POWER SERVICE ASSEMBLY
RISER DIAGRAM

KEYED NOTES:

- 1 POWER COMPANY SERVICE POLE.
- 2 120/240V, SINGLE PHASE, 3-WIRE DUKE ENERGY ELECTRIC SERVICE. SAFETY SWITCH ON SERVICE SIDE OF METER WHEN REQUIRED BY POWER COMPANY.
- 3A 2-#2 AWG & 1-#2 AWG (N) IN 2" CONDUIT.
- 3B 2-#2 AWG & 1-#2 AWG (N) IN RGS CONDUIT.
- 4 ITS METER CAN.
- 5 ITS PANELBOARD, NEMA 3R PADLOCKABLE ENCLOSURE. 50 AMP, 240/480V, SINGLE PHASE, 3-WIRE MAIN BREAKER. BRANCH CIRCUIT BREAKERS AS INDICATED. SERVICE ENTRANCE RATED WITH NEUTRAL AND GROUND KITS. BOND THE SERVICE NEUTRAL TO THE GROUND.
- 6 3 #2 AWG, 3 #2 AWG (N), 1 #2 AWG (G) IN RGS CONDUIT.
- 7 ITS POWER SERVICE ASSEMBLY MAIN DISCONNECT 150 AMPS, 120V, 18,000 AIC; ENCLOSED BREAKER NEMA 3R SERVICE ENTRANCE RATED.
- 8 1 #2 AWG INSULATED COPPER GROUND WIRE IN 1" RGS CONDUIT.
- 9A 1 #2 AWG, 1 #2 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 8.
- 9B 1 #2 AWG, 1 #2 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 9.
- 9C 1 #2 AWG, 1 #2 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 10.
- 10 CONTROL TRANSFORMER 20 KVA SINGLE PHASE, 120/240V PRIMARY, 240/480V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 11 5/8"x20' MIN. GROUND ROD, EXTEND OR ADD ADDITIONAL AT 40' MIN. SPACING, BONDED WITH #2 AWG TIN PLATED BARE COPPER GROUND WIRE TO ACHIEVE 5 OHMS OR LESS RESISTANCE TO GROUND.



ITS PANELBOARD 'C'
POWER SERVICE ASSEMBLY
ONE LINE DIAGRAM

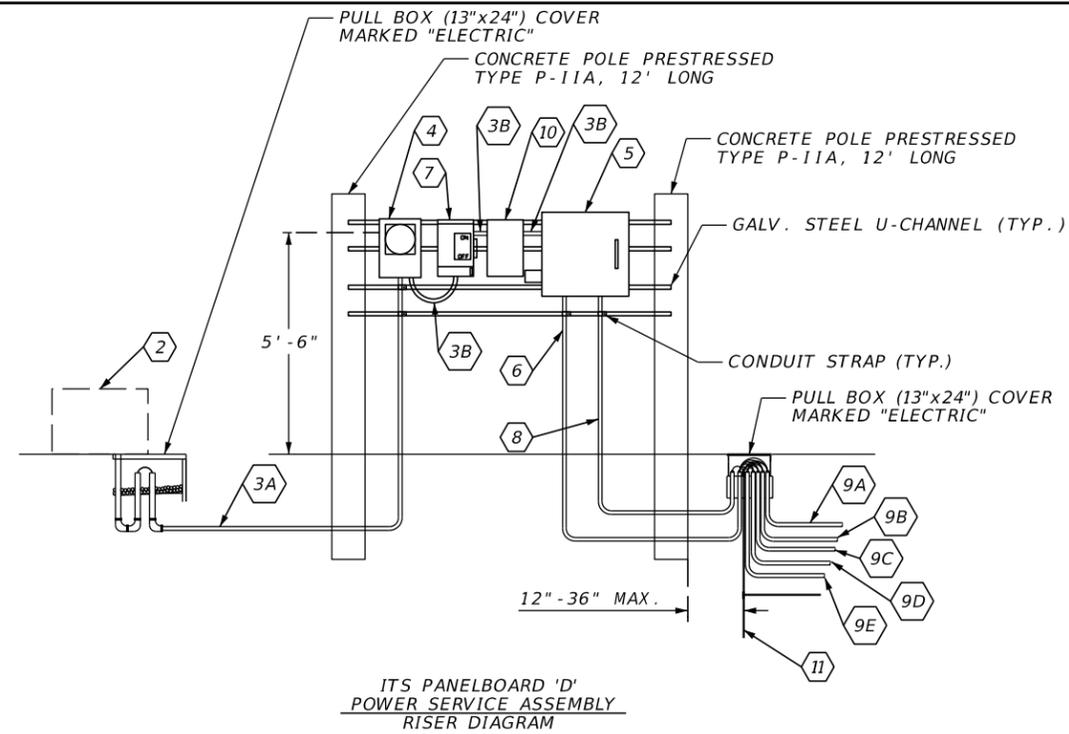
- 12 CONTROL TRANSFORMER 9 KVA SINGLE PHASE, 480V PRIMARY, 120V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 13 15A, 1-PH, 480V RATED POLE MOUNTED CIRCUIT BREAKER ENCLOSURE (18,000 AIC RATED). NEMA 3R PADLOCKABLE ENCLOSURE.
- 14 SURGE PROTECTIVE DEVICE (SPD).
- 15 NOT USED
- 16 NOT USED
- 17 WWVDS LHUB CABINET POWER PANEL (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 18 WWVDS LHUB CABINET MAIN CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 19 WWVDS LHUB CABINET BRANCH CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.

| PROP. ITS PANELBOARD 'C' PANELBOARD SCHEDULE STA. 685+24 Q CONST. SR 400 | | | | | | | |
|--|---------|-----------|-------------------|--------|---------|----------|-----------|
| CKT # | BREAKER | WIRE SIZE | OPERATING VOLTAGE | VD MAX | VD% MAX | AMP LOAD | WATT LOAD |
| WWVDS NO. 8 | 15A | #2 | 480 | 2.75 | 1.38% | 6.12 | 2940 |
| WWVDS NO. 9 | 15A | #2 | 480 | 2.46 | 1.38% | 6.12 | 2940 |
| WWVDS NO. 10 | 15A | #2 | 480 | 1.92 | 1.38% | 6.12 | 2940 |
| SPARE | | | | | | | |
| SPARE | | | | | | | |
| SPARE | | | | | | | |
| ITS PANELBOARD C TOTALS | | | | | | 18.36 | 8820 |
| ITS PANELBOARD C TOTALS @ 20% SPARE CAPACITY | | | | | | 22.03 | 10584 |
| SERVICE MAIN DISCONNECT (18,000 A.I.C.) | | | | | | 50A, 2P | |

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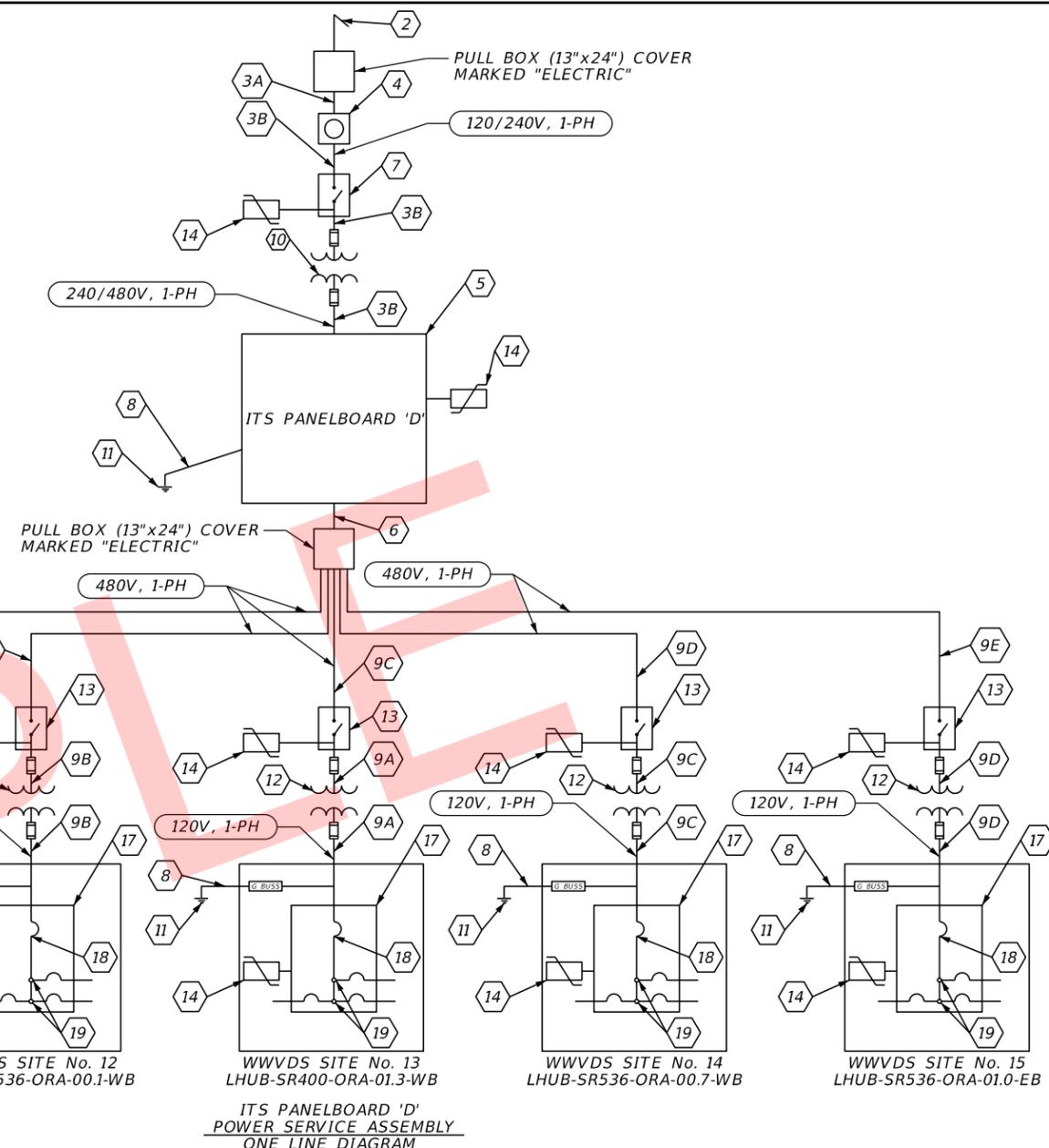
| REVISIONS | | | | ENGINEER OF RECORD | | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-117 |
|-----------|-------------|------|-------------|--|-------------------|----------------|--|--------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | POWER SERVICE DETAILS (3) | | | |
| | | | | | | | | | | |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



KEYED NOTES:

- 1 NOT USED.
- 2 120/240V, SINGLE PHASE, 3-WIRE DUKE ENERGY ELECTRIC SERVICE. SAFETY SWITCH ON SERVICE SIDE OF METER WHEN REQUIRED BY POWER COMPANY.
- 3A 2-#4 AWG & 1-#4 AWG (N) IN 2" CONDUIT.
- 3B 2-#4 AWG & 1-#4 AWG (N) IN RGS CONDUIT.
- 4 ITS METER CAN.
- 5 ITS PANELBOARD, NEMA 3R PADLOCKABLE ENCLOSURE. 50 AMP, 240/480V, SINGLE PHASE, 3-WIRE MAIN BREAKER. BRANCH CIRCUIT BREAKERS AS INDICATED. SERVICE ENTRANCE RATED WITH NEUTRAL AND GROUND KITS. BOND THE SERVICE NEUTRAL TO THE GROUND.
- 6 4 #4 AWG, 1 #2 AWG, 4 #4 AWG (N), 1 # 2 AWG (N), 1 #2 AWG (G) IN RGS CONDUIT.
- 7 ITS POWER SERVICE ASSEMBLY MAIN DISCONNECT 150 AMPS, 120V, 18,000 AIC; ENCLOSED BREAKER NEMA 3R SERVICE ENTRANCE RATED.
- 8 1 #2 AWG INSULATED COPPER GROUND WIRE IN 1" RGS CONDUIT.
- 9A 1 #4 AWG, 1 #4 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 11.
- 9B 1 #4 AWG, 1 #4 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 12.
- 9C 1 #4 AWG, 1 #4 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 13.
- 9D 1 #4 AWG, 1 #4 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 14.
- 9E 1 #2 AWG, 1 #2 AWG (N), 1 #2 AWG (G) IN CONDUIT TO WWVDS SITE No. 15.
- 10 CONTROL TRANSFORMER 20 KVA SINGLE PHASE, 120/240V PRIMARY, 240/480V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 11 5/8"x20' MIN. GROUND ROD, EXTEND OR ADD ADDITIONAL AT 40' MIN. SPACING, BONDED WITH #4 AWG TIN PLATED BARE COPPER GROUND WIRE TO ACHIEVE 5 OHMS OR LESS RESISTANCE TO GROUND.



- 12 CONTROL TRANSFORMER 9 KVA SINGLE PHASE, 480V PRIMARY, 120V SECONDARY IN NEMA 3R ENCLOSURE. INSTALL SEPARATELY DERIVED SYSTEM BONDING JUMPER CONNECTION AT CABINET POWER PANEL, BETWEEN NEUTRAL BUS AND GROUND BUS.
- 13 15A, 1-PH, 480V RATED POLE MOUNTED CIRCUIT BREAKER ENCLOSURE (18,000 AIC RATED), NEMA 3R PADLOCKABLE ENCLOSURE.
- 14 SURGE PROTECTIVE DEVICE (SPD).
- 15 1 #2 AWG COPPER GROUND WIRE IN RGS CONDUIT
- 16 5/8"x20' MIN. GROUND ROD, EXTEND OR ADD ADDITIONAL AT 40' MIN. SPACING, BONDED WITH #2 AWG TIN PLATED BARE COPPER GROUND WIRE TO ACHIEVE 5 OHMS OR LESS RESISTANCE TO GROUND.
- 17 WWVDS LHUB CABINET POWER PANEL (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 18 WWVDS LHUB CABINET MAIN CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.
- 19 WWVDS LHUB CABINET BRANCH CIRCUIT BREAKER (18,000 AIC RATED). REFER TO CABINET WIRING DIAGRAM FOR DETAILS.

**PROP. ITS PANELBOARD 'D'
PANELBOARD SCHEDULE
STA. 112+08 @ CONST. RAMP K**

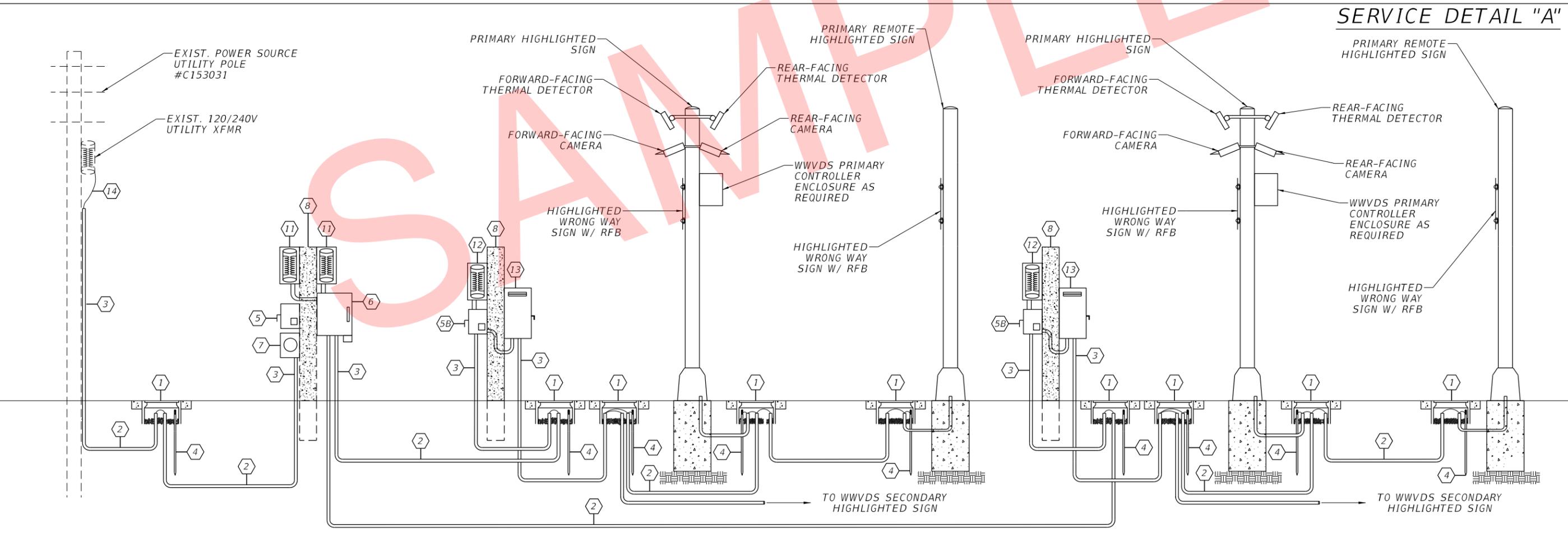
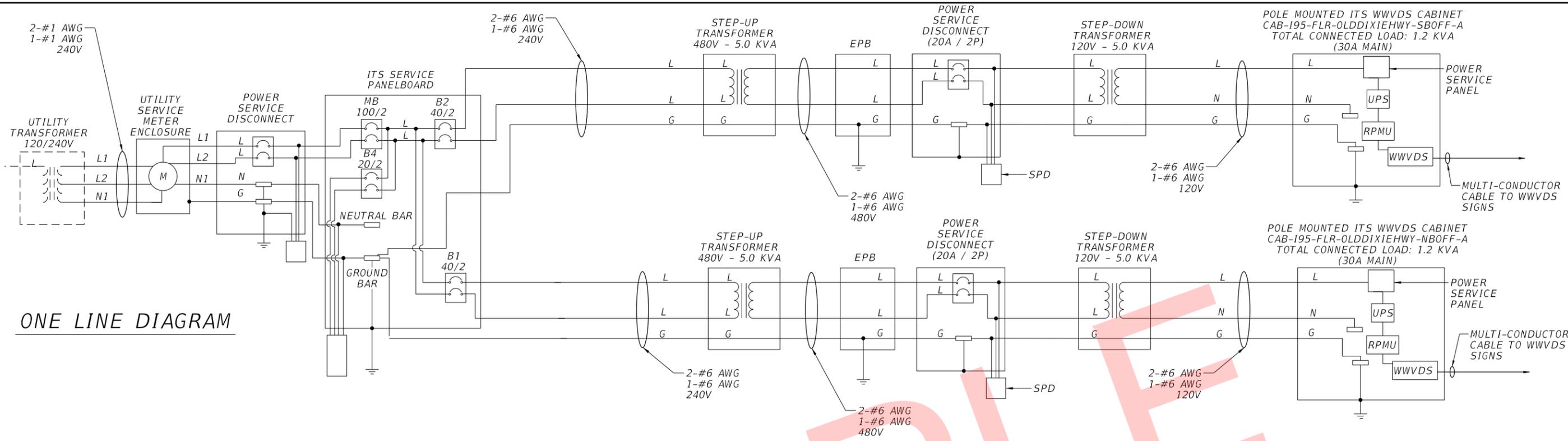
| CKT # | BREAKER | WIRE SIZE | OPERATING VOLTAGE | VD MAX | VD% MAX | AMP LOAD | WATT LOAD |
|--|---------|-----------|-------------------|--------|---------|----------|-----------|
| WWVDS NO. 11 | 15A | #4 | 480 | 5.14 | 1.07% | 6.12 | 2940 |
| WWVDS NO. 12 | 15A | #4 | 480 | 1.50 | 0.56% | 6.12 | 2940 |
| WWVDS NO. 13 | 15A | #4 | 480 | 7.14 | 1.49% | 6.12 | 2940 |
| WWVDS NO. 14 | 15A | #4 | 480 | 7.21 | 1.50% | 6.12 | 2940 |
| WWVDS NO. 15 | 15A | #2 | 480 | 6.68 | 1.39% | 6.12 | 2940 |
| SPARE | | | | | | | |
| ITS PANELBOARD D TOTALS | | | | | | 30.60 | 14700 |
| ITS PANELBOARD D TOTALS @ 20% SPARE CAPACITY | | | | | | 36.72 | 17640 |
| SERVICE MAIN DISCONNECT (18,000 A.I.C.) | | | | | | 50A, 2P | |

7/14/2023 12:26:31 PM bmesbitt T:\Worksets\FDOT\2379741\219\TWO_007\ITS_SRPRT\IT01.dgn

| REVISIONS | | | | ENGINEER OF RECORD | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|-------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | IT-118 |

POWER SERVICE DETAILS (4)

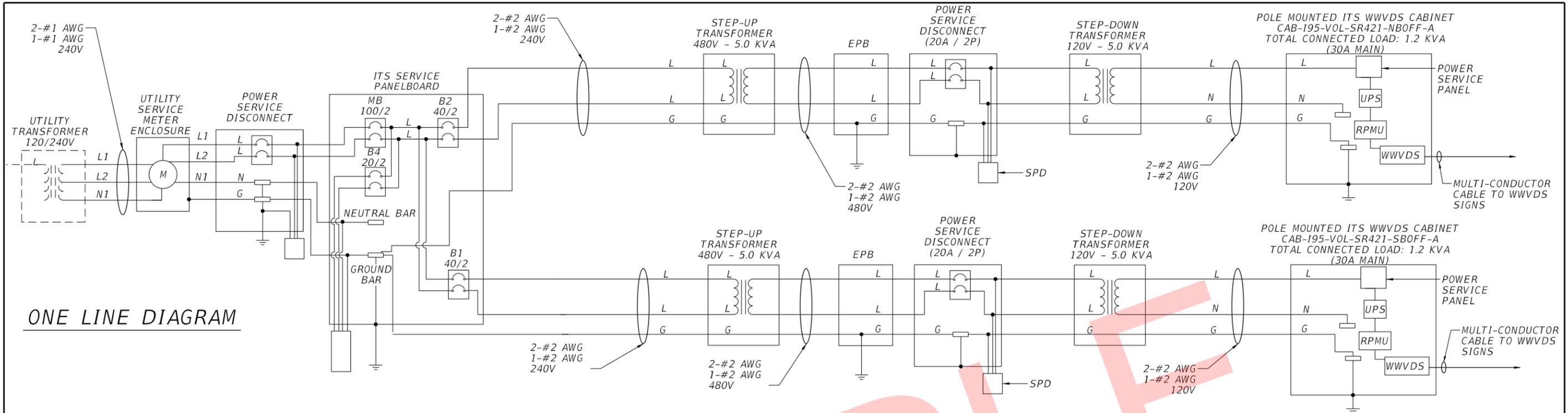
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



1/19/2024 10:48:09 AM REG66848 c:\pw_work\atknaf\01\reg66848\d0103662\SRPT1102.dgn

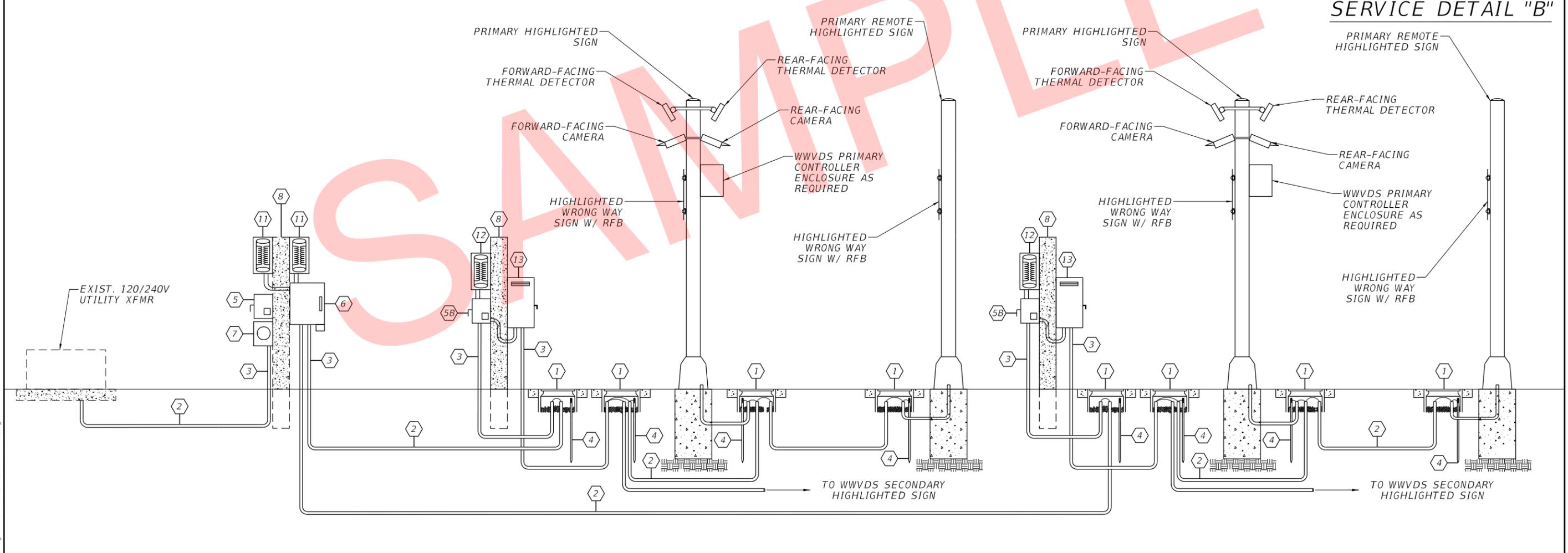
| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | POWER SERVICE DETAILS (2) | SHEET NO. 28 |
|-----------|-------------|--------------------|-------------|--|---------------------|----------------------|---------------------------|-----------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | | |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



ONE LINE DIAGRAM

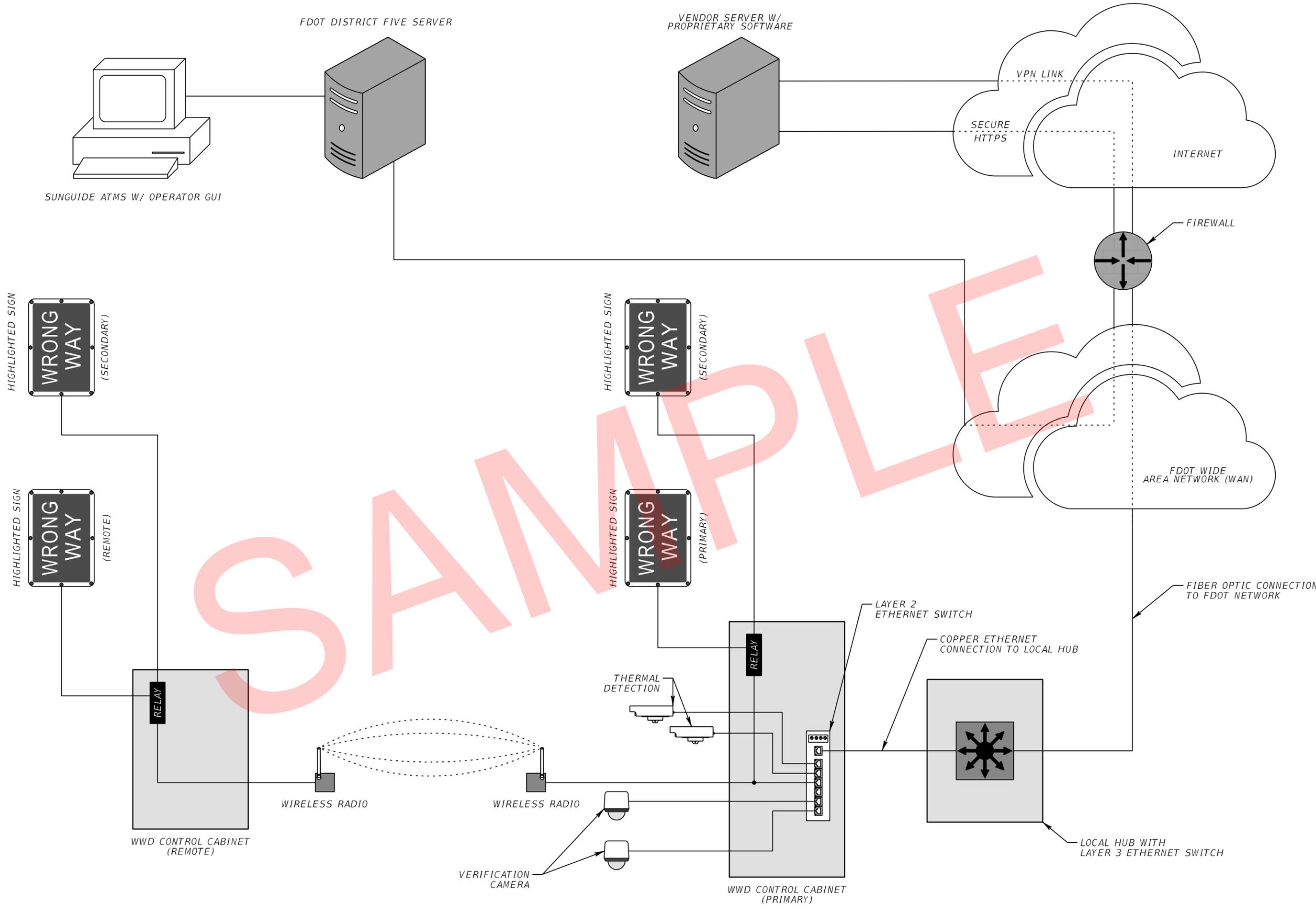
SERVICE DETAIL "B"



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| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | POWER SERVICE DETAILS (3) | SHEET NO. 29 |
|-----------|-------------|--------------------|-------------|--|---------------------|----------------------|---------------------------|-----------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | | |

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| REVISIONS | | | |
|-----------|-------------|------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

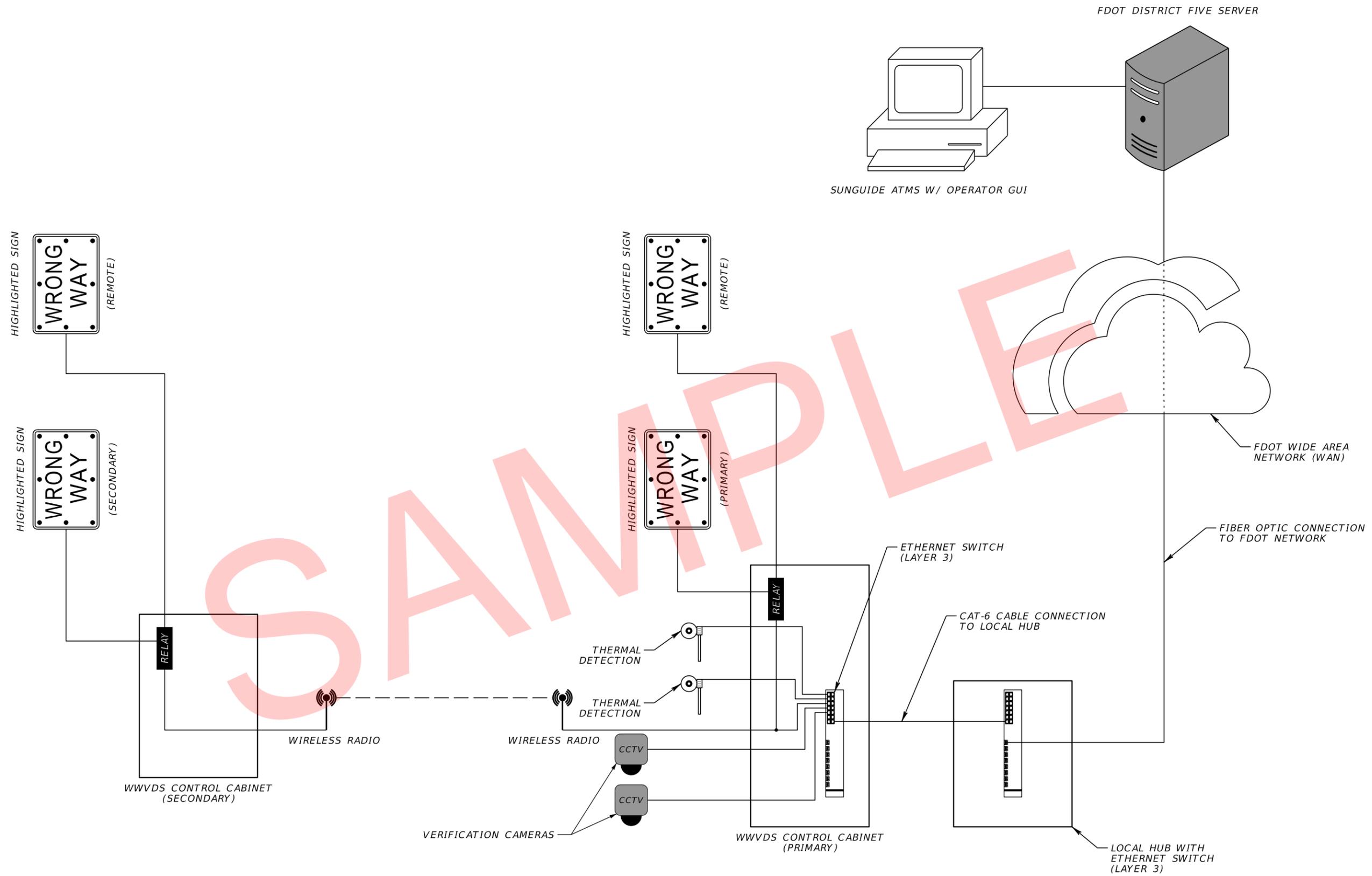
ALEXANDER TEAL MIMS, P.E. PE No. 77095
 Traffic Engineering Data Solutions, Inc.
 80 Spring Vista Drive Phone: 386.753.0558
 DeBary, FL 32713 Fax: 386.753.0778

| | | |
|--|--------|----------------------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 400 | VARIES | 446159-1-52-01 |

**NETWORK COMMUNICATION
DIAGRAM**

SHEET NO.
IT-72

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



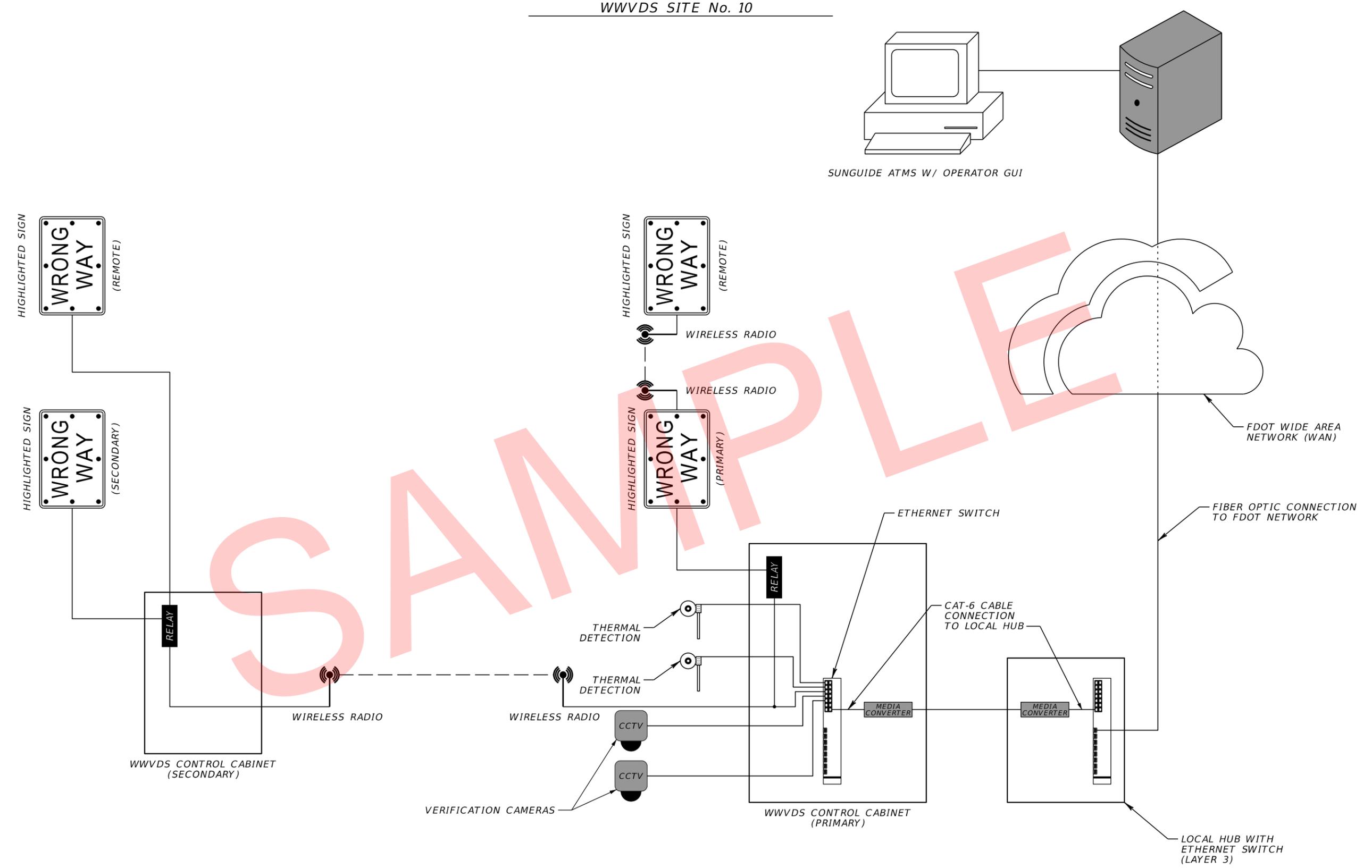
7/13/2023 8:27:53 PM bnesbitt T:\Worksets\FDOT\23797413219\TWO_007\ITFS\SRPTIT01.dgn

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | NETWORK COMMUNICATION DIAGRAM (1) | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|--------------------------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | | IT-106 |

NETWORK COMMUNICATION DIAGRAM
 WWVDS SITE No. 10

FDOT DISTRICT FIVE SERVER

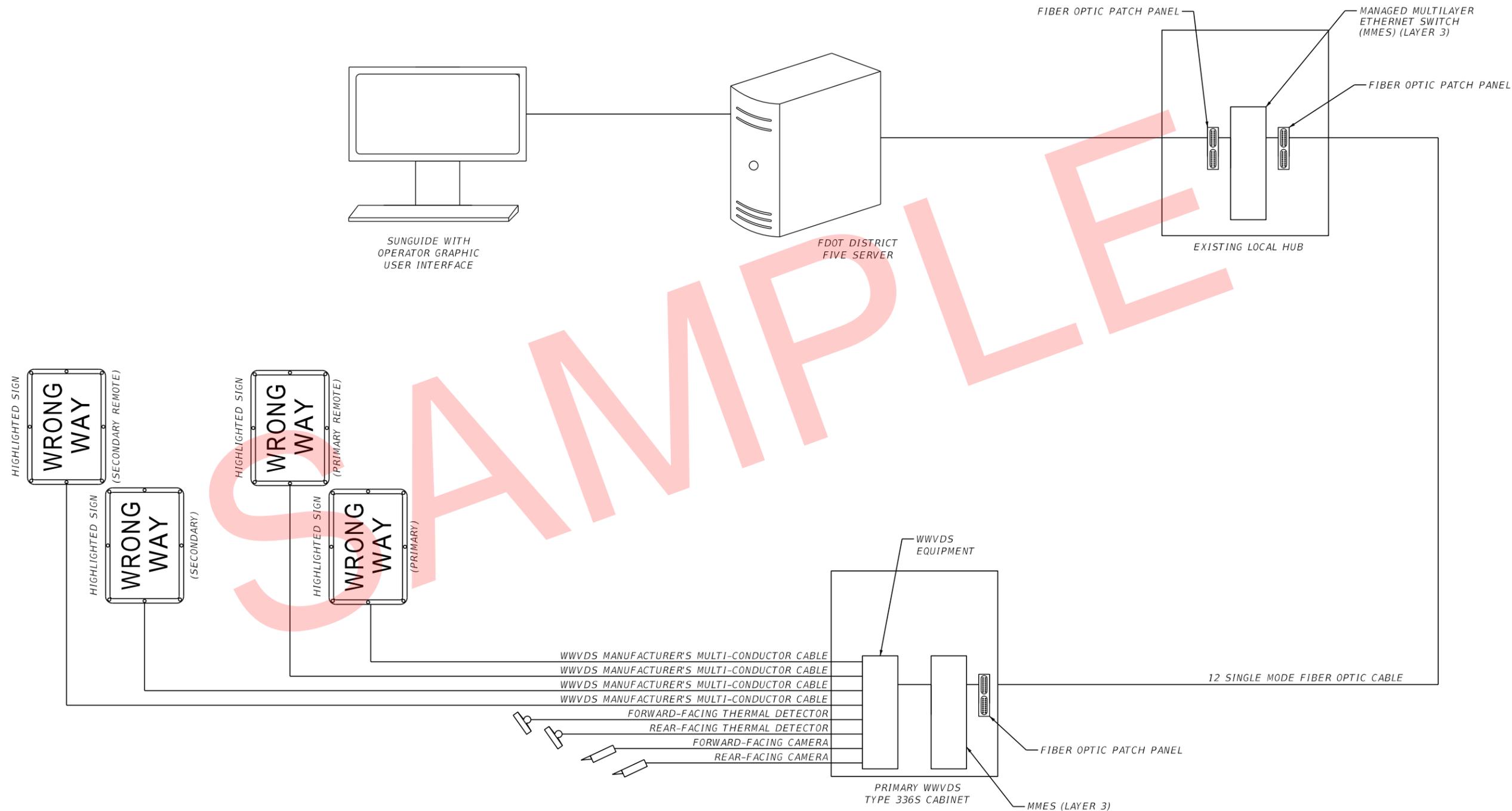


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THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | NETWORK COMMUNICATION DIAGRAM (2) | SHEET NO. IT-107 |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|--------------------------------------|------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | | |

WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) NETWORK DIAGRAM
NTS



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| REVISIONS | | | |
|-----------|-------------|------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

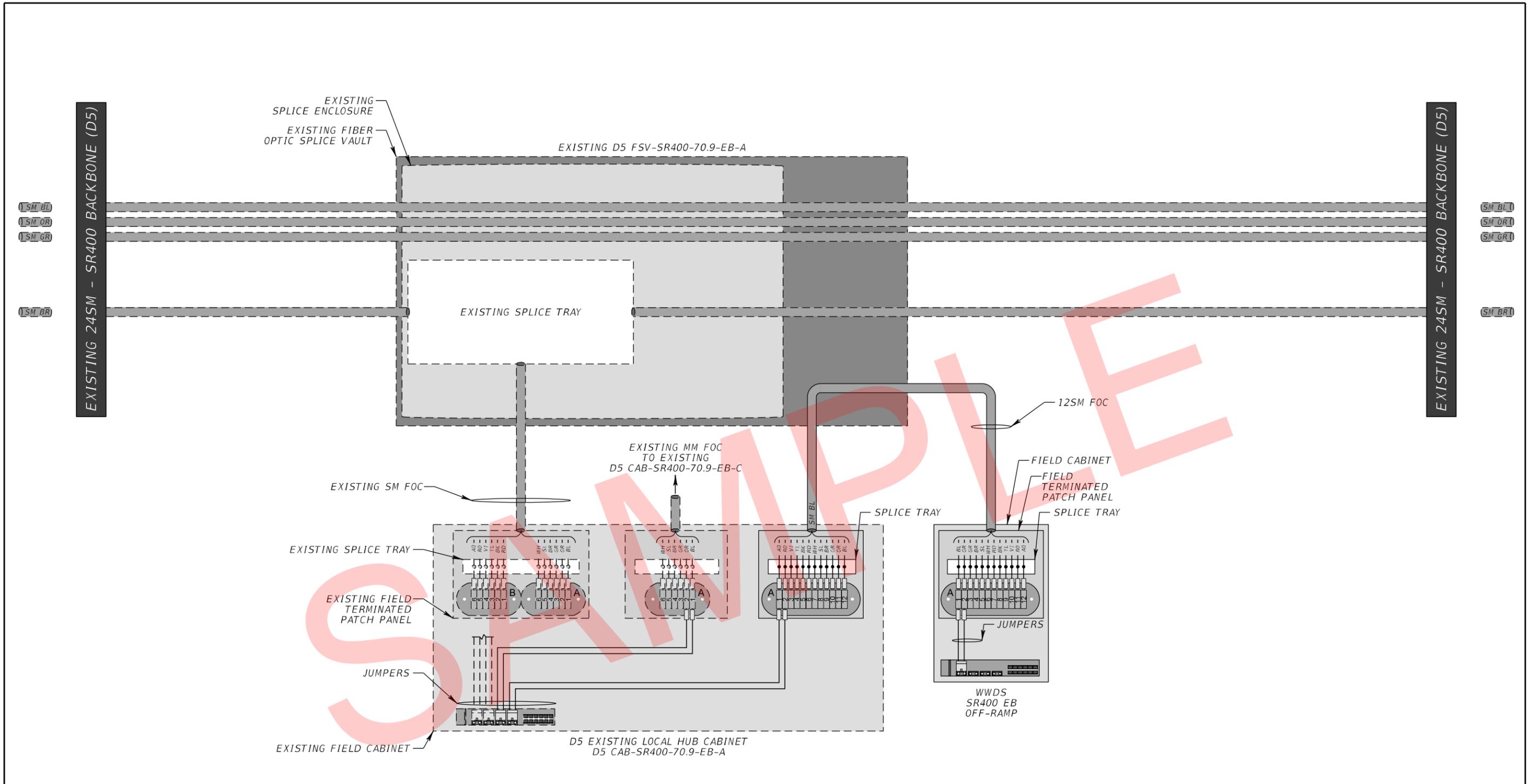
ENGINEER OF RECORD
NICHOLAS J. SPATOLA, P.E.
LICENSE NUMBER: 76103
FALLER, DAVIS & ASSOCIATES, INC.
2301 MAITLAND CENTER PKWY., SUITE 265
MAITLAND, FL 32751

| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
|--|---------------------|----------------------|
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 |

**NETWORK COMMUNICATION
DIAGRAM**

SHEET
NO.
16

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTE:
 1. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS MODIFICATIONS ARE SHOWN ON THESE SPLICING DIAGRAMS.

LEGEND

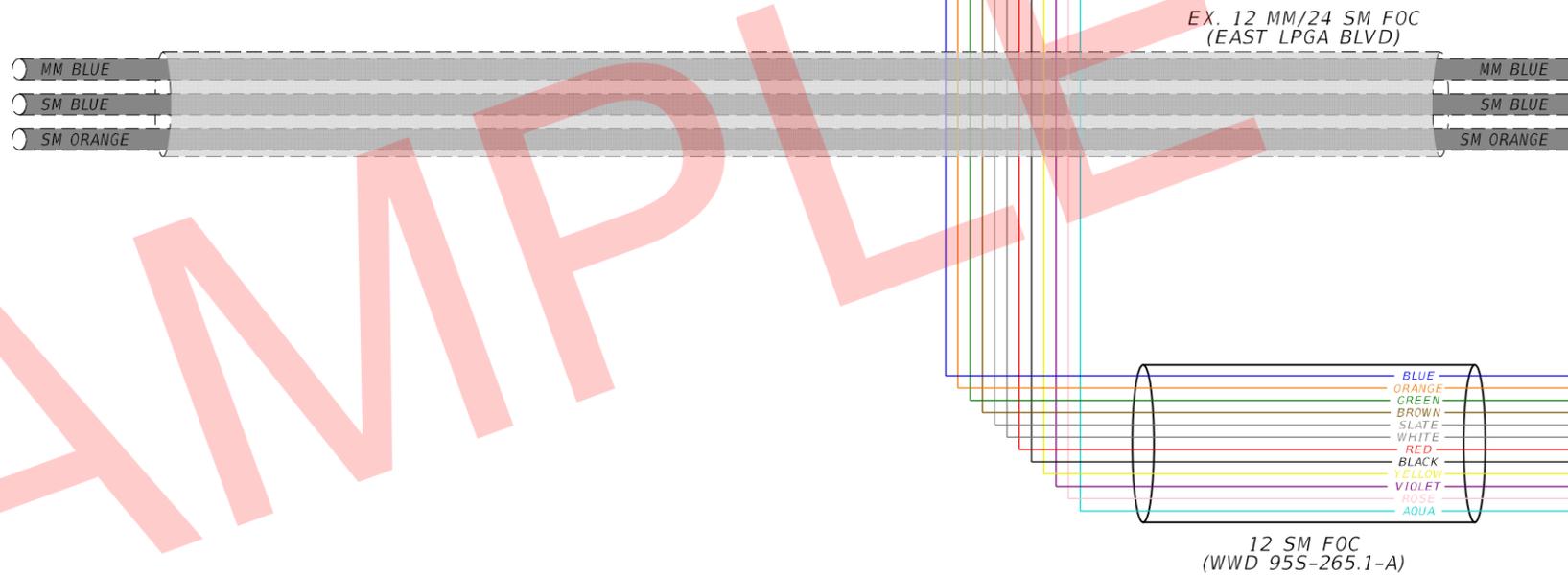
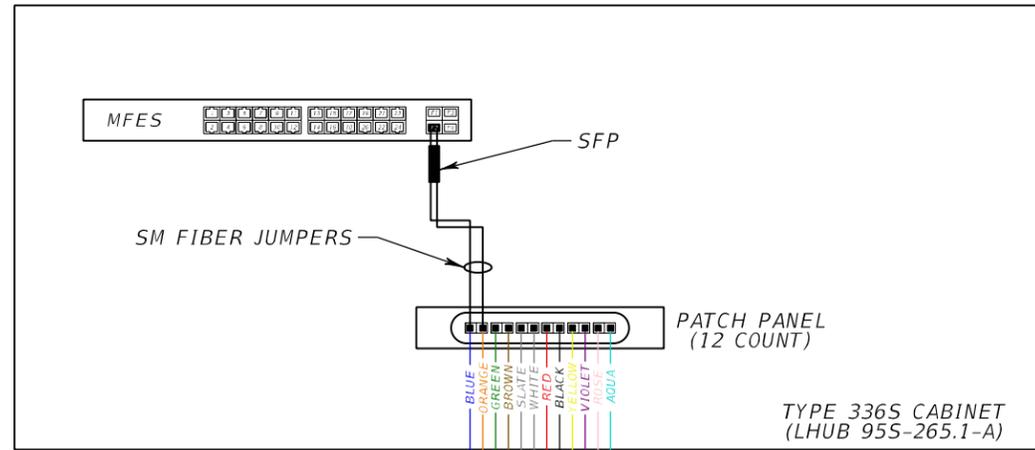
| | | |
|-----------------------|---|-------------------------|
| EXISTING FIBER | EXISTING ELEMENT | CONNECTOR PANEL |
| BUFFER TUBE | NEW ELEMENT | LAYER 3 ETHERNET SWITCH |
| FIBER | CAPPED AND COILED FIBER | |
| BUFFER TUBE | EXISTING FUSION SPLICE | |
| EXISTING ST CONNECTOR | FUSION SPLICE | |
| ST CONNECTOR | EXISTING BUFFER FUSION SPLICES (COLOR TO COLOR) | |
| EXISTING LC CONNECTOR | BUFFER FUSION SPLICES (COLOR TO COLOR) | |
| LC CONNECTOR | | |
| EXISTING SC CONNECTOR | | |
| SC CONNECTOR | | |

| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SPLICING DIAGRAM SHEET NO. IT-74 |
|-----------|-------------|------|-------------|---|--|--------|----------------------|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 400 | ORANGE | 446159-1-52-01 | |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOTES:

1. ALL CONNECTOR PANELS FOR EITHER NEW OR MODIFIED FIBER OPTIC PATCH PANELS SHALL ACCOMODATE DUPLEX SC-TYPE FIBER TERMINATION CONNECTORS.
2. FIBER OPTIC JUMPERS BETWEEN PATCH PANELS AND MANAGED FIELD ETHERNET SWITCHES SHALL BE DUPLEX SC-DUPLEX LC.
3. FOR ADDITIONAL INFORMATION RELATED TO DEVICE WIRING AND CONNECTIONS, REFER TO WIRING DIAGRAMS.



MATCHLINE SPLICING DIAGRAMS (2)

SAMPLE

LEGEND:

| | | | |
|-----|--------------------------|--|--------------------------------------|
| ■ | TERMINATION (EXISTING) | | FIELD TERMINATED PATCH PANEL |
| ■ | TERMINATION (PROPOSED) | | CONNECTOR PANEL |
| ● | FUSION SPLICE (PROPOSED) | | BUFFER TUBE |
| — | UNTERMINATED FIBER | | SMALL-FORM FACTOR PLUGGABLE (SFP) |
| --- | FIBER (PROPOSED) | | MANAGED FIELD ETHERNET SWITCH (MFES) |
| — | FIBER (EXISTING) | | |

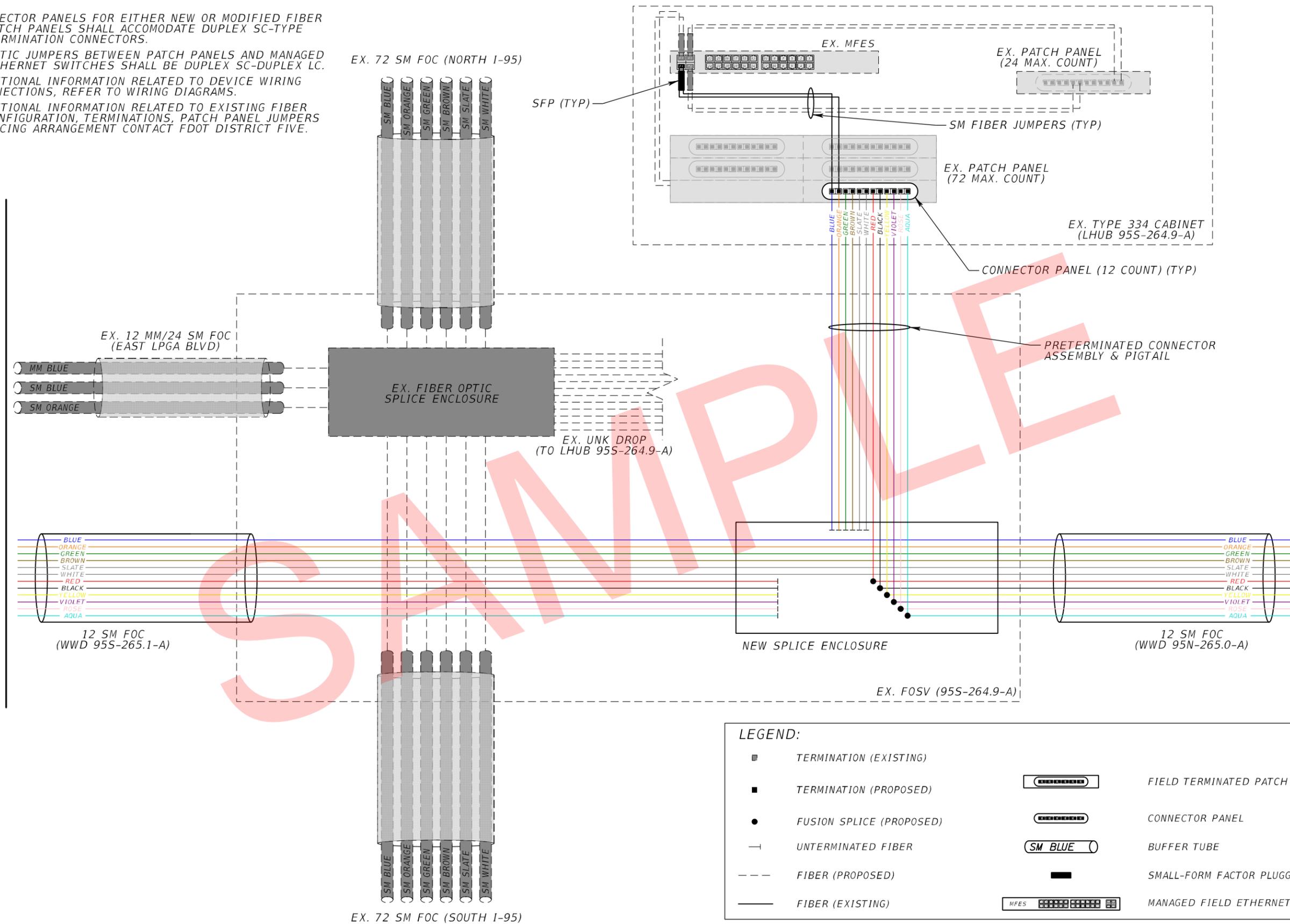
| REVISIONS | | | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-37 |
|-----------|-------------|------|-------------|--|--|---------|----------------------|------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 9 | VOLUSIA | 441133-1-52-01 | |

NOTES:

1. ALL CONNECTOR PANELS FOR EITHER NEW OR MODIFIED FIBER OPTIC PATCH PANELS SHALL ACCOMODATE DUPLEX SC-TYPE FIBER TERMINATION CONNECTORS.
2. FIBER OPTIC JUMPERS BETWEEN PATCH PANELS AND MANAGED FIELD ETHERNET SWITCHES SHALL BE DUPLEX SC-DUPLEX LC.
3. FOR ADDITIONAL INFORMATION RELATED TO DEVICE WIRING AND CONNECTIONS, REFER TO WIRING DIAGRAMS.
4. FOR ADDITIONAL INFORMATION RELATED TO EXISTING FIBER OPTIC CONFIGURATION, TERMINATIONS, PATCH PANEL JUMPERS AND SPLICING ARRANGEMENT CONTACT FDOT DISTRICT FIVE.

MATCHLINE SPLICING DIAGRAMS (1)

MATCHLINE SPLICING DIAGRAMS (3)

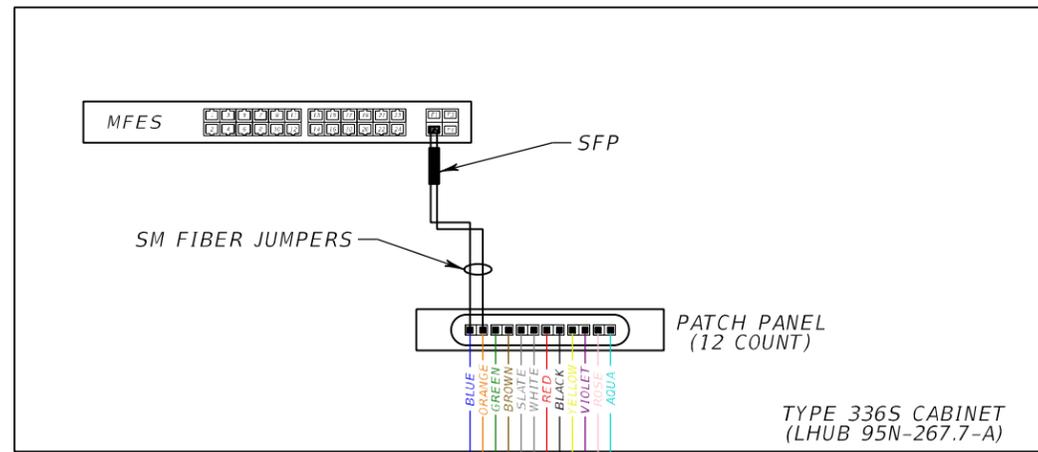
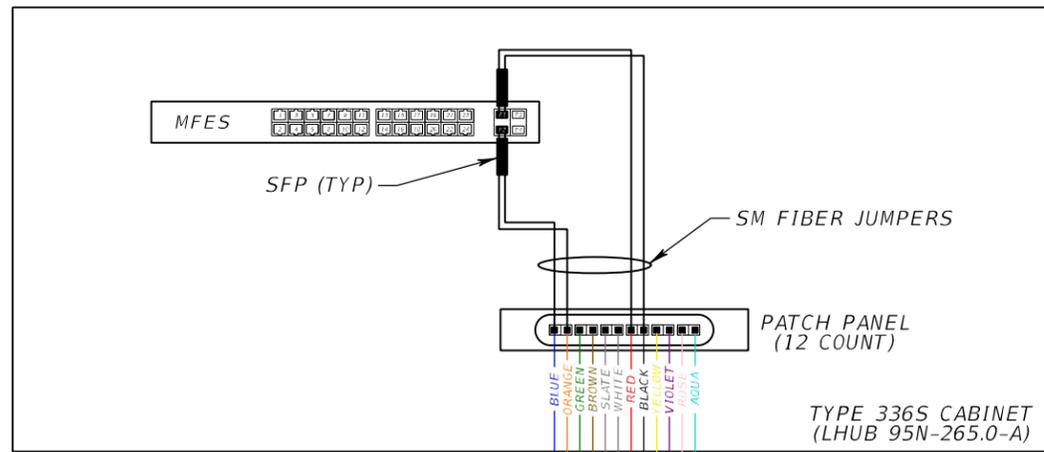


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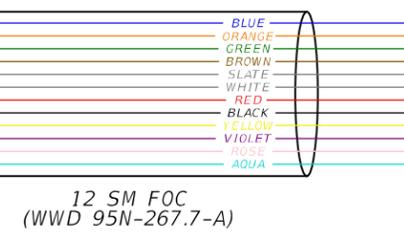
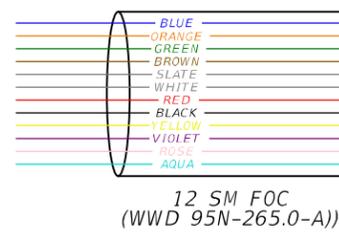
| | | | |
|-----|--------------------------|--|--------------------------------------|
| ■ | TERMINATION (EXISTING) | | FIELD TERMINATED PATCH PANEL |
| ■ | TERMINATION (PROPOSED) | | CONNECTOR PANEL |
| ● | FUSION SPLICE (PROPOSED) | | BUFFER TUBE |
| — | UNTERMINATED FIBER | | SMALL-FORM FACTOR PLUGGABLE (SFP) |
| --- | FIBER (PROPOSED) | | MANAGED FIELD ETHERNET SWITCH (MFES) |
| — | FIBER (EXISTING) | | |

| REVISIONS | | | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-38 |
|-----------|-------------|------|-------------|--|--|---------|----------------------|------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 9 | VOLUSIA | 441133-1-52-01 | |

MATCHLINE SPlicing DIAGRAMS (2)



MATCHLINE SPlicing DIAGRAMS (4)



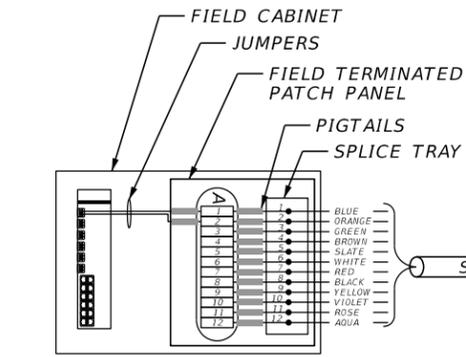
SAMPLE

- NOTES:**
- ALL CONNECTOR PANELS FOR EITHER NEW OR MODIFIED FIBER OPTIC PATCH PANELS SHALL ACCOMODATE DUPLEX SC-TYPE FIBER TERMINATION CONNECTORS.
 - FIBER OPTIC JUMPERS BETWEEN PATCH PANELS AND MANAGED FIELD ETHERNET SWITCHES SHALL BE DUPLEX SC-DUPLEX LC.
 - FOR ADDITIONAL INFORMATION RELATED TO DEVICE WIRING AND CONNECTIONS, REFER TO WIRING DIAGRAMS.

LEGEND:

| | | | |
|-----|--------------------------|--|--------------------------------------|
| ■ | TERMINATION (EXISTING) | | FIELD TERMINATED PATCH PANEL |
| ■ | TERMINATION (PROPOSED) | | CONNECTOR PANEL |
| ● | FUSION SPLICE (PROPOSED) | | BUFFER TUBE |
| — | UNTERMINATED FIBER | | SMALL-FORM FACTOR PLUGGABLE (SFP) |
| --- | FIBER (PROPOSED) | | MANAGED FIELD ETHERNET SWITCH (MFES) |
| — | FIBER (EXISTING) | | |

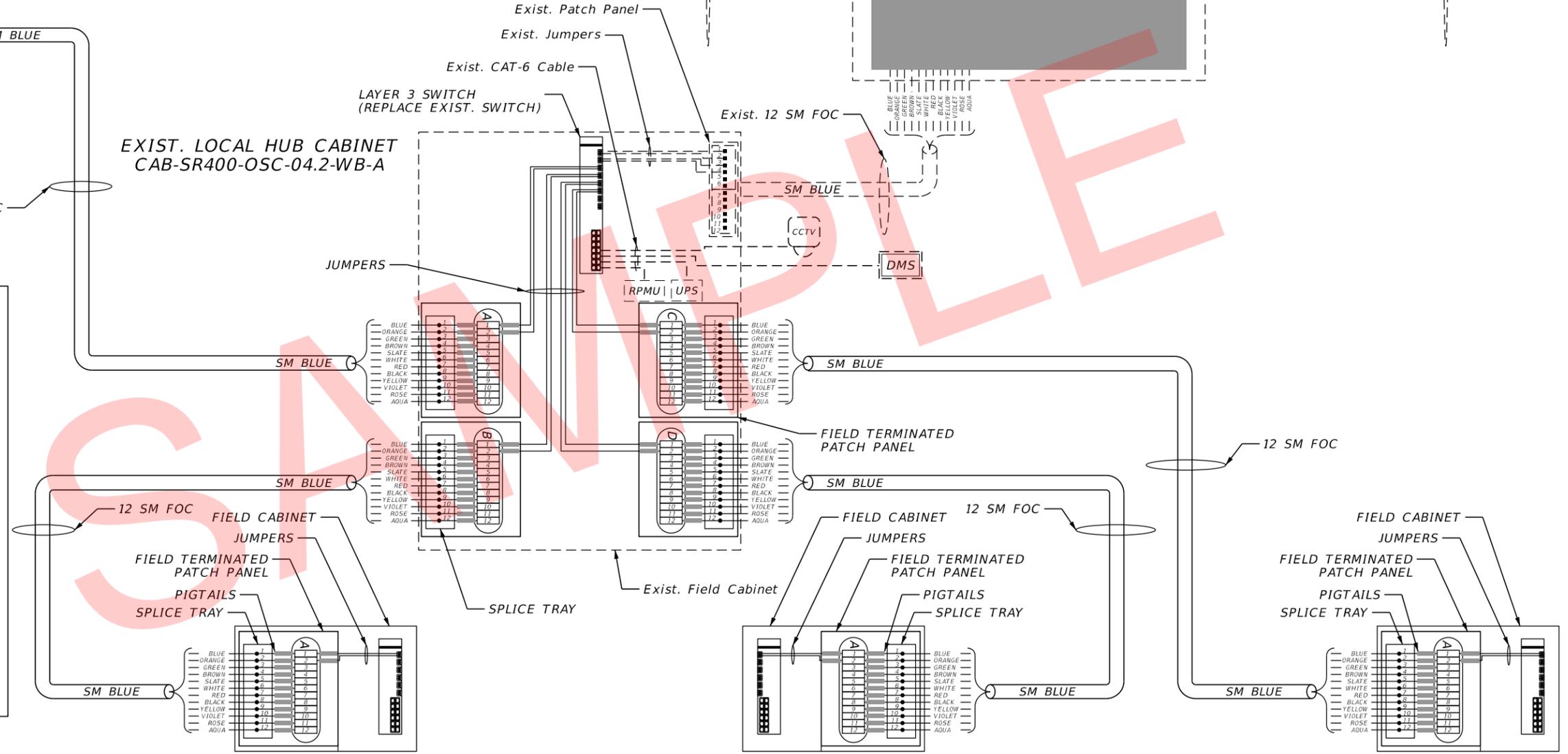
| REVISIONS | | | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SPlicing DIAGRAMS (3) | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--------|----------------------|-----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | IT-39 |
| | | | | | | | | | |



WWVDS SITE No. 1
D5 LHUB-SR400-OSC-04.1-WB



EXIST. LOCAL HUB CABINET
CAB-SR400-OSC-04.2-WB-A



LEGEND

- EXIST. CCTV CAMERA
- EXIST. REMOTE POWER MANAGEMENT UNIT
- EXIST. DYNAMIC MESSAGING SIGN
- EXIST. UNINTERRUPTIBLE POWER SUPPLY
- FUSION SPLICE (PROPOSED)
- ST CONNECTOR
- UNTERMINATED FIBER
- FIBER
- BUFFER TUBE
- ETHERNET SWITCH (LAYER 3)
- CONNECTOR PANEL

NOTE:

1. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS MODIFICATIONS ARE SHOWN ON THESE SPLICING DIAGRAMS.

SR 400 (I-4) AT WORLD DR

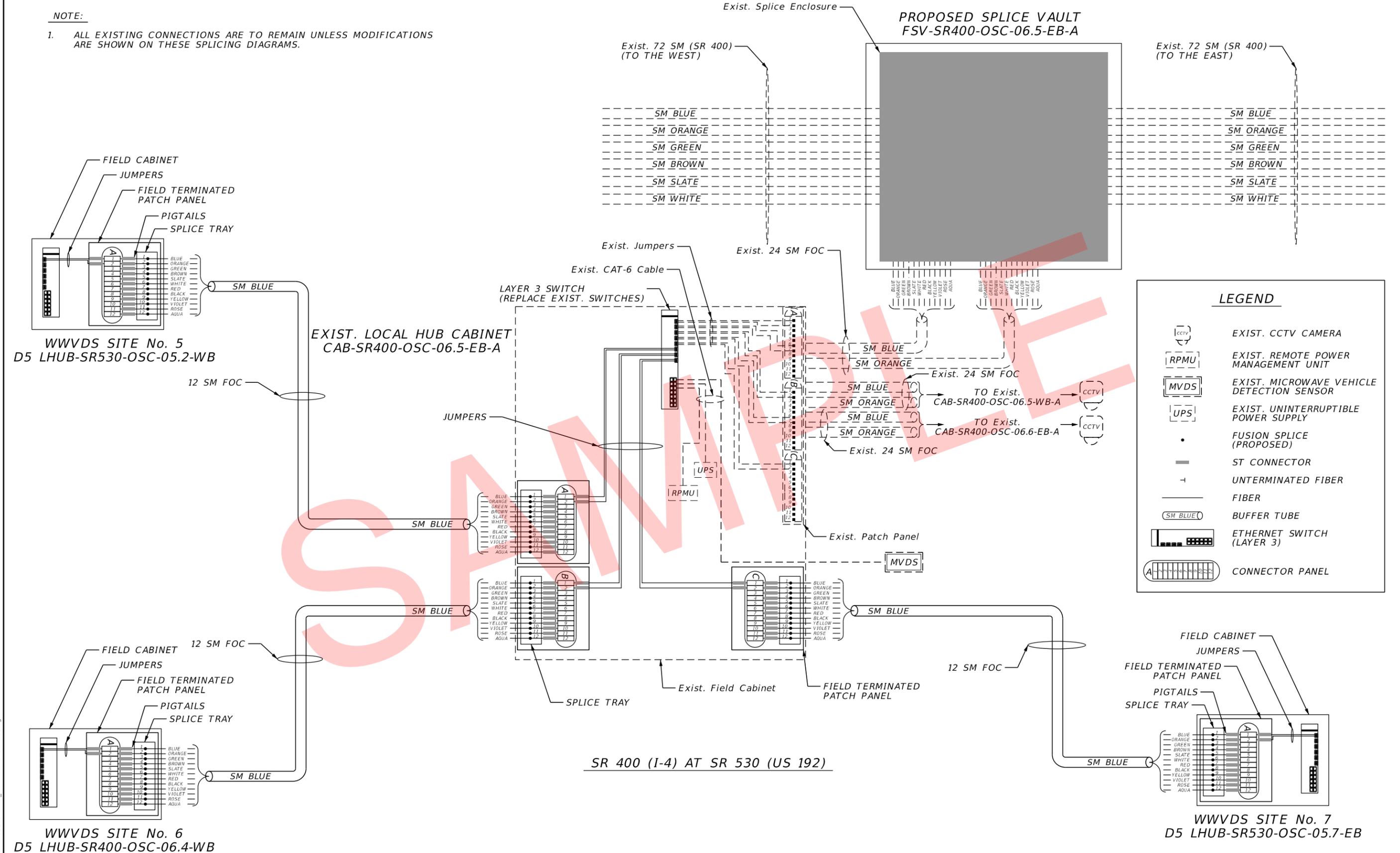
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| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------------------------|-------------|--------------------|--|--|-------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | IT-111 |
| SPLICING DIAGRAM (1) | | | | | | | |

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NOTE:

1. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS MODIFICATIONS ARE SHOWN ON THESE SPLICING DIAGRAMS.



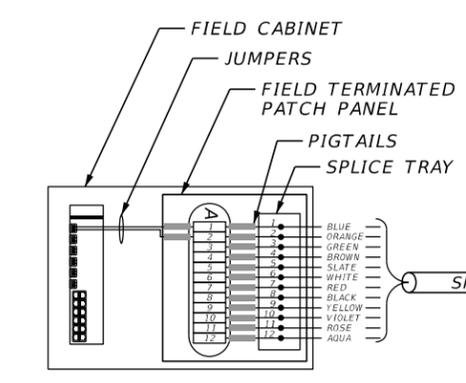
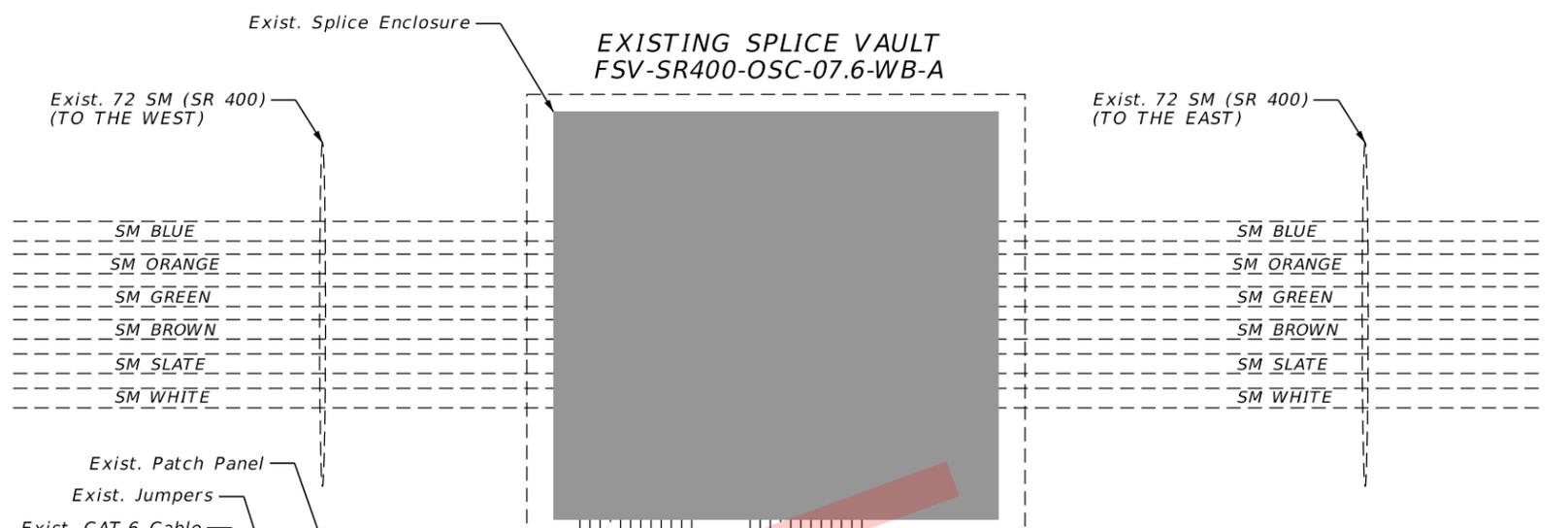
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| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SPLICING DIAGRAM (2) | SHEET NO. IT-112 |
|-----------|-------------|--------------------|--|--|-------------------|----------------------|----------------------|----------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | | |

NOTE:

1. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS MODIFICATIONS ARE SHOWN ON THESE SPLICING DIAGRAMS.

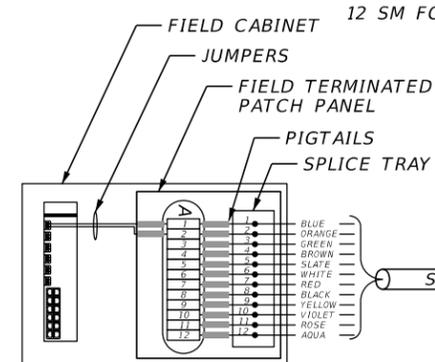
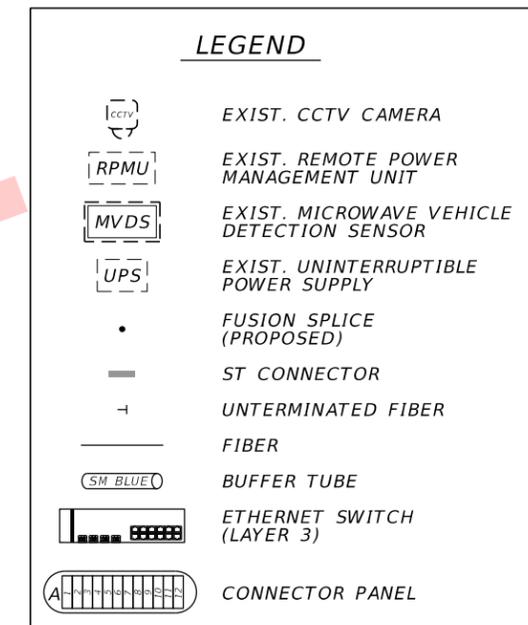


WWVDS SITE No. 8
D5 LHUB-SR400-OSC-07.5-WB

EXIST. LOCAL HUB CABINET
CAB-SR400-OSC-07.6-WB-A

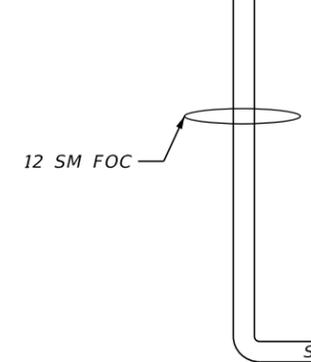
LAYER 3 SWITCH
(REPLACE EXIST. SWITCH)

Exist. 24 SM FOC



WWVDS SITE No. 9
D5 LHUB-CR522-OSC-00.8-WB

SR 400 (I-4) AT CR 522 (OSCEOLA PKWY.)



WWVDS SITE No. 10
D5 LHUB-SR400-OSC-07.9-EB

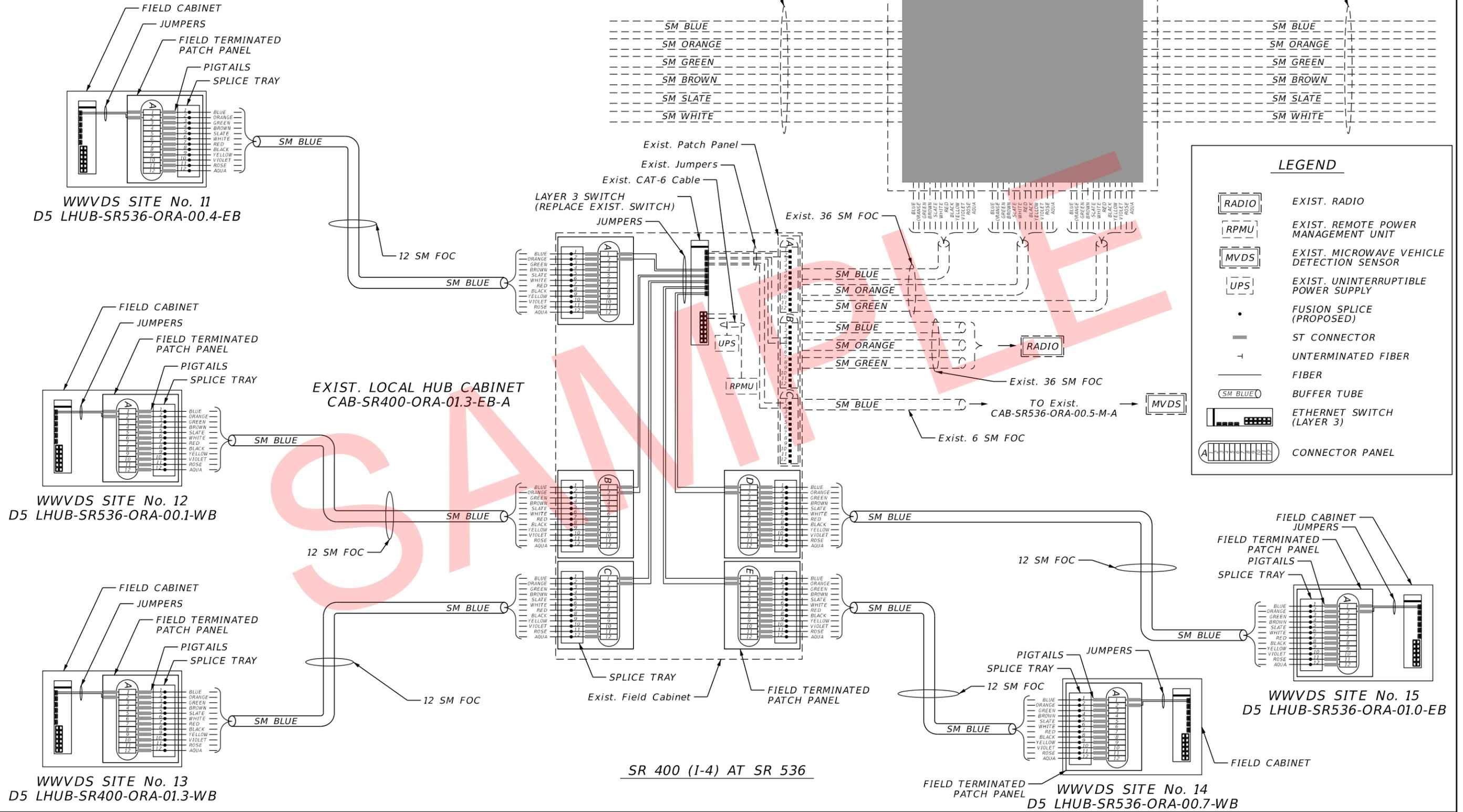
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| REVISIONS | | REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|-----------|-------------|--|--|--|-------------------|----------------------|--------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | SPLICING DIAGRAM (3) IT-113 |

NOTE:

1. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS MODIFICATIONS ARE SHOWN ON THESE SPlicing DIAGRAMS.



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| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------------------------|-------------|--------------------|--|--|-------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | IT-114 |
| SPLICING DIAGRAM (4) | | | | | | | |

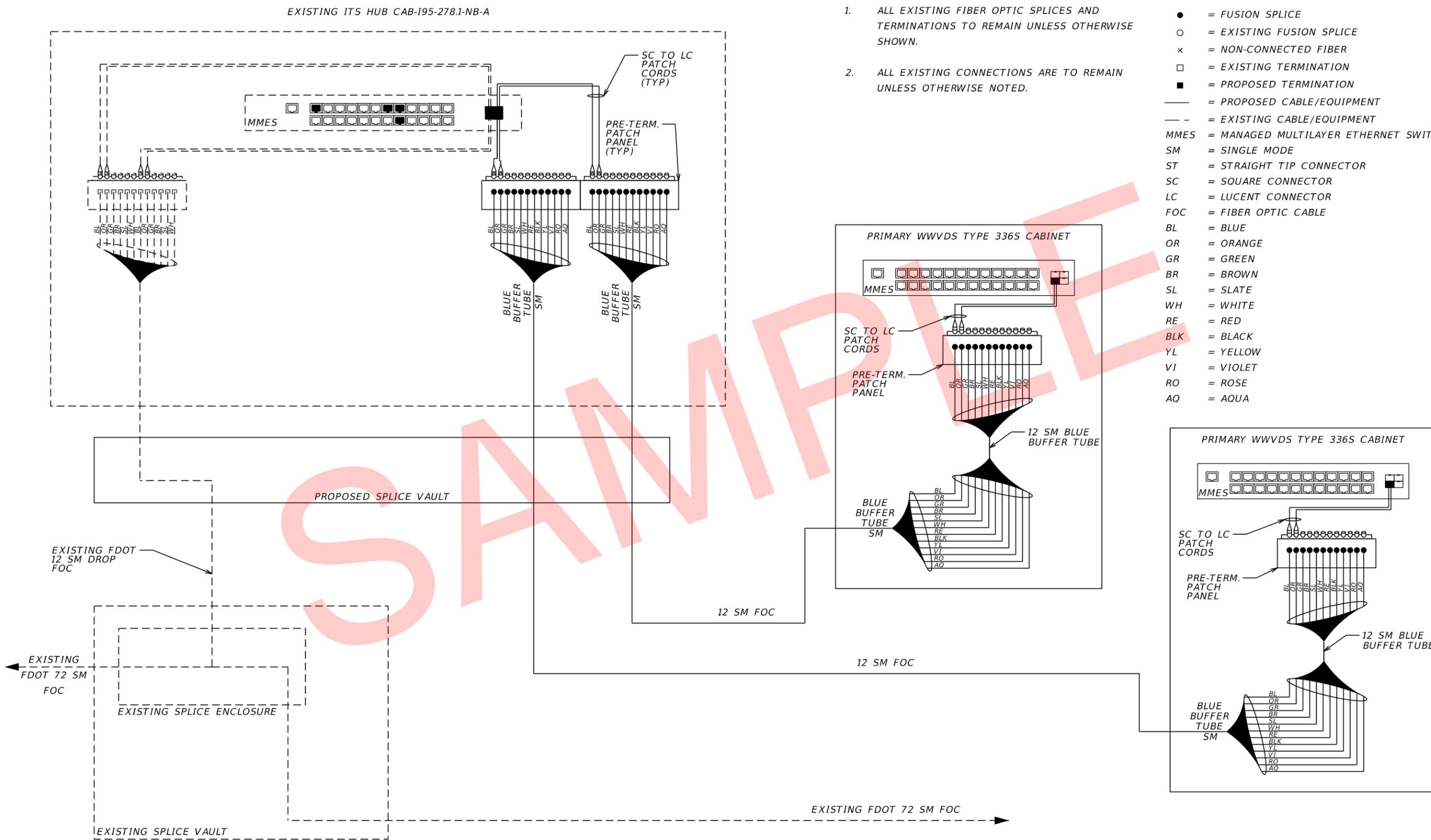
OLD DIXIE HIGHWAY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) SPLICE DIAGRAM
NTS

NOTES:

- ALL EXISTING FIBER OPTIC SPLICES AND TERMINATIONS TO REMAIN UNLESS OTHERWISE SHOWN.
- ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS OTHERWISE NOTED.

LEGEND

- = FUSION SPLICE
- = EXISTING FUSION SPLICE
- × = NON-CONNECTED FIBER
- = EXISTING TERMINATION
- = PROPOSED TERMINATION
- = PROPOSED CABLE/EQUIPMENT
- - = EXISTING CABLE/EQUIPMENT
- MMES = MANAGED MULTILAYER ETHERNET SWITCH
- SM = SINGLE MODE
- ST = STRAIGHT TIP CONNECTOR
- SC = SQUARE CONNECTOR
- LC = LUCENT CONNECTOR
- FOC = FIBER OPTIC CABLE
- BL = BLUE
- OR = ORANGE
- GR = GREEN
- BR = BROWN
- SL = SLATE
- WH = WHITE
- RE = RED
- BLK = BLACK
- YL = YELLOW
- VI = VIOLET
- RO = ROSE
- AQ = AQUA



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| REVISIONS | | | | ENGINEER OF RECORD | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|----------------------------|-------------|------|-------------|--|--|---------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 23 |
| SPLICE DIAGRAMS (1) | | | | | | | | |

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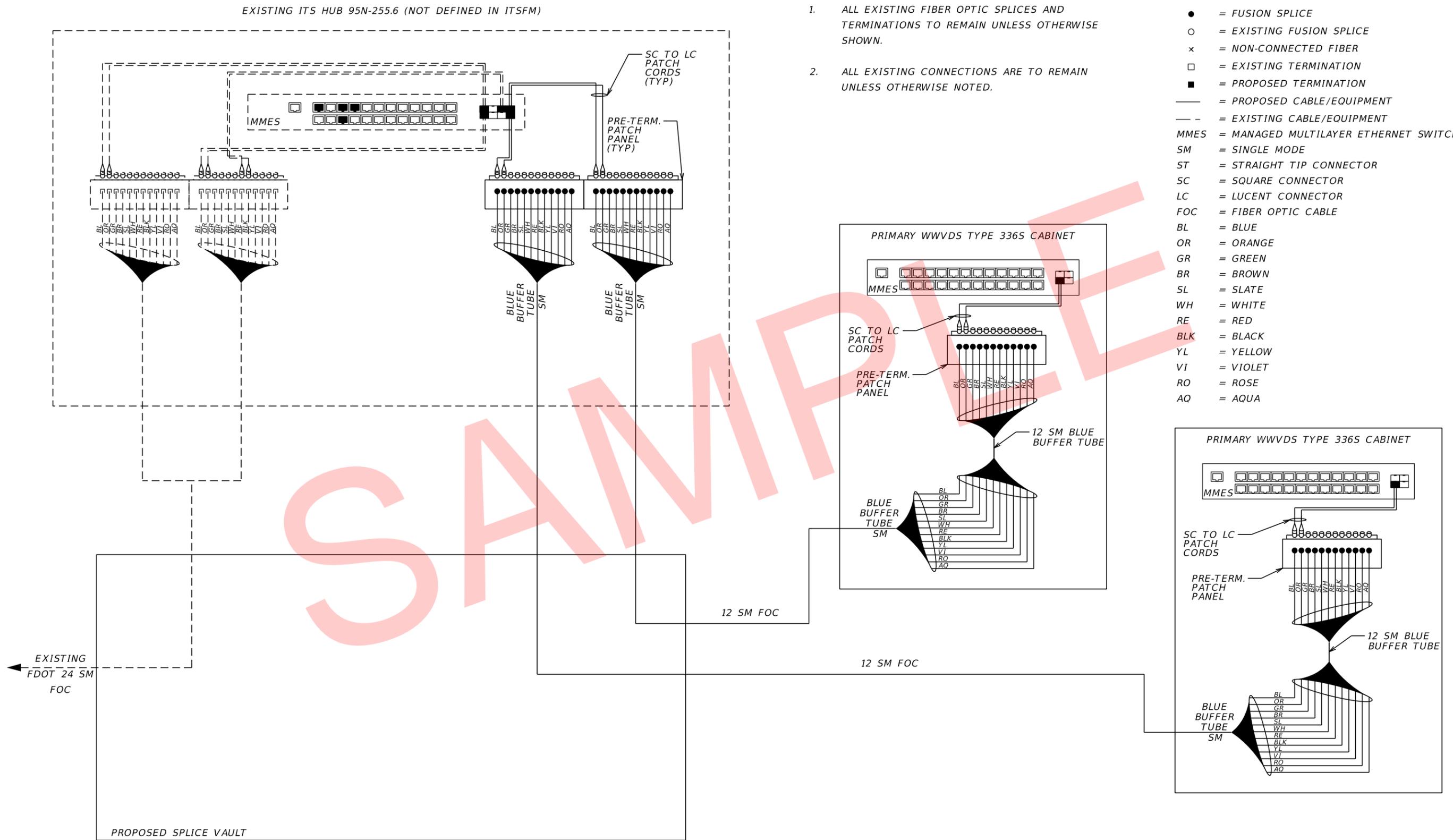
SR 421 WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) SPLICE DIAGRAM
NTS

NOTES:

1. ALL EXISTING FIBER OPTIC SPLICES AND TERMINATIONS TO REMAIN UNLESS OTHERWISE SHOWN.
2. ALL EXISTING CONNECTIONS ARE TO REMAIN UNLESS OTHERWISE NOTED.

LEGEND

- = FUSION SPLICE
- = EXISTING FUSION SPLICE
- × = NON-CONNECTED FIBER
- = EXISTING TERMINATION
- = PROPOSED TERMINATION
- = PROPOSED CABLE/EQUIPMENT
- - = EXISTING CABLE/EQUIPMENT
- MMES = MANAGED MULTILAYER ETHERNET SWITCH
- SM = SINGLE MODE
- ST = STRAIGHT TIP CONNECTOR
- SC = SQUARE CONNECTOR
- LC = LUCENT CONNECTOR
- FOC = FIBER OPTIC CABLE
- BL = BLUE
- OR = ORANGE
- GR = GREEN
- BR = BROWN
- SL = SLATE
- WH = WHITE
- RE = RED
- BLK = BLACK
- YL = YELLOW
- VI = VIOLET
- RO = ROSE
- AQ = AQUA

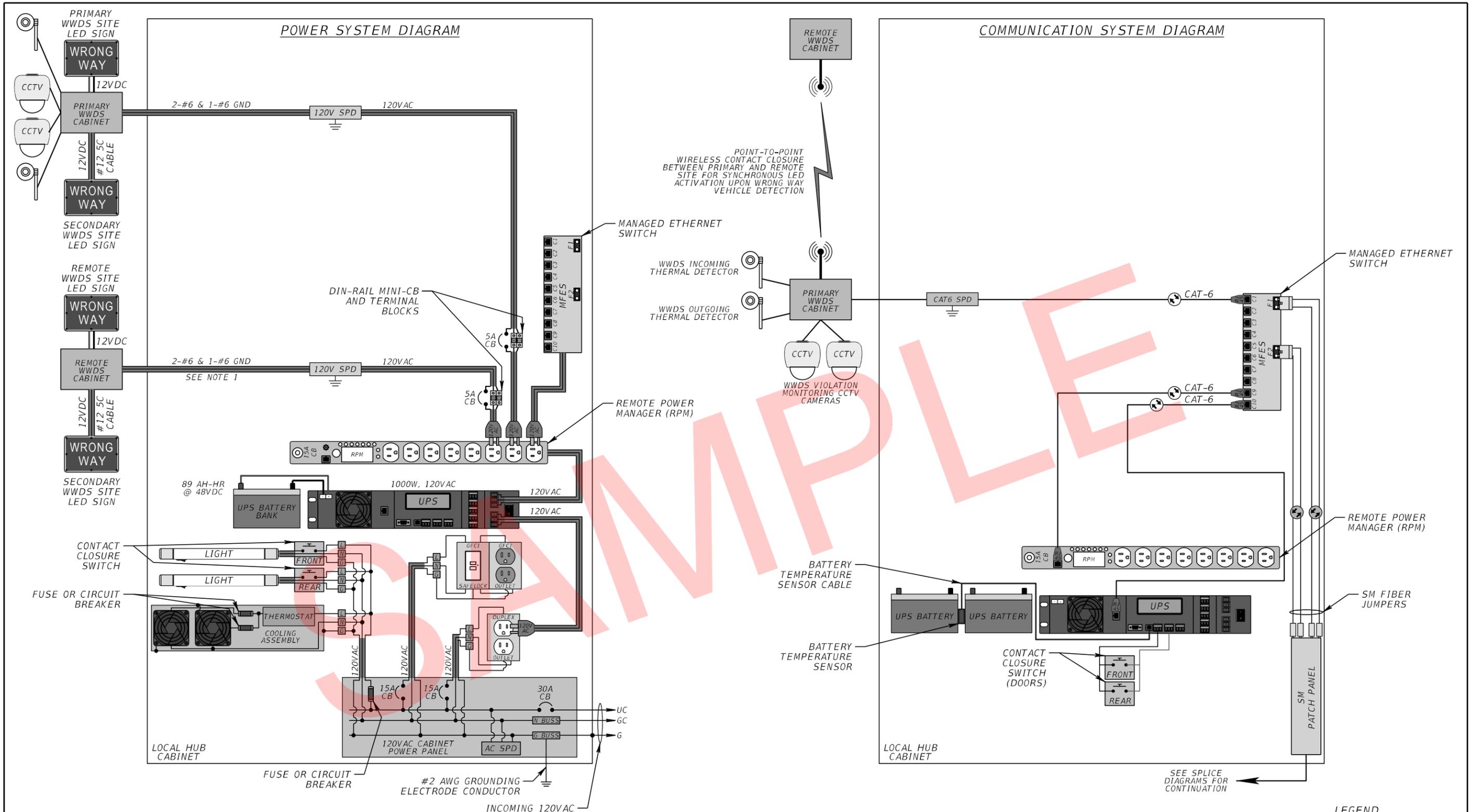


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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|---------------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 24 |

SPLICE DIAGRAMS (2)

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NOTE:
 1. FOR SOLAR POWERED REMOTE SITES, THE 120VAC CIRCUIT TO THE REMOTE WWDS SITE IS NOT INCLUDED AND EACH REMOTE SITE POWERS AND ACTIVATES A SINGLE HIGHLIGHTED SIGN PANEL.

| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-71 |
|-----------|-------------|------|-------------|---|--|--------|----------------------|---------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | VARIES | |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

LEGEND:

- ELEC. CONDUCTOR, LIVE (120 VAC)
- ELEC. CONDUCTOR, NEUTRAL (120 VAC)
- ELEC. CONDUCTOR, GROUND (120 VAC)
- ELEC. CONDUCTOR (12 VDC)

HIGHLIGHTED LED SIGN



2/C - #12 AWG (12VDC PWR)



2/C - #12 AWG (12VDC PWR)

HIGHLIGHTED LED SIGN

HIGHLIGHTED LED SIGN



2/C - #12 AWG (12VDC PWR)

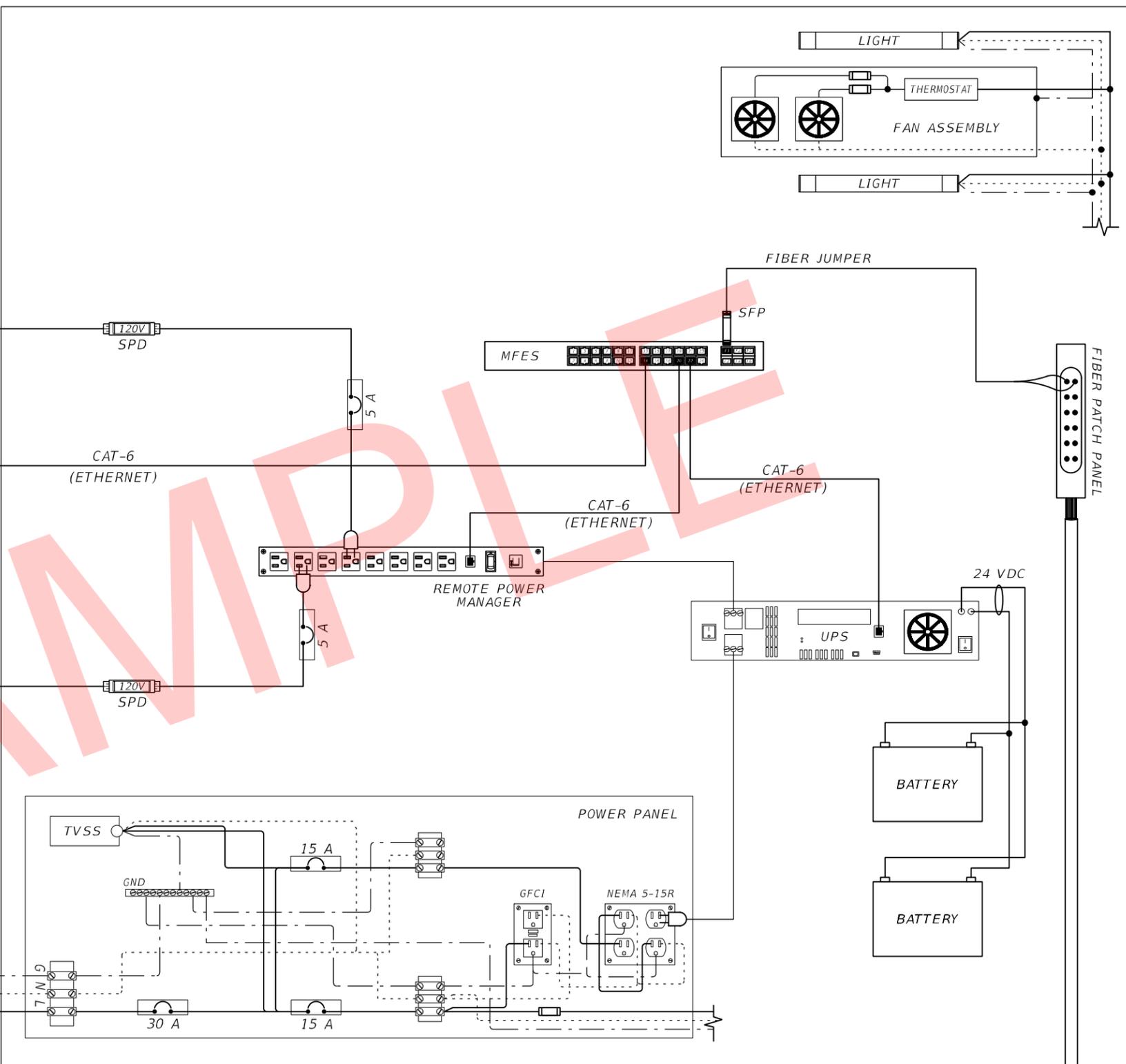
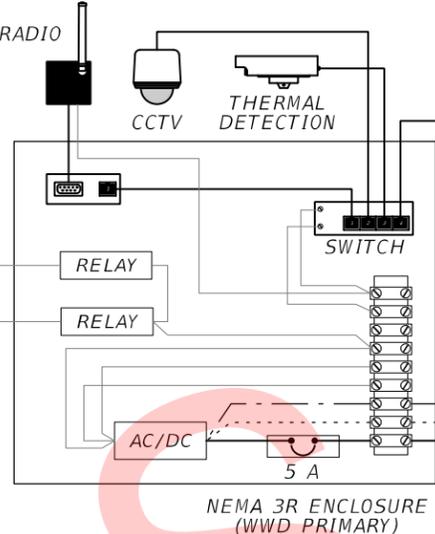
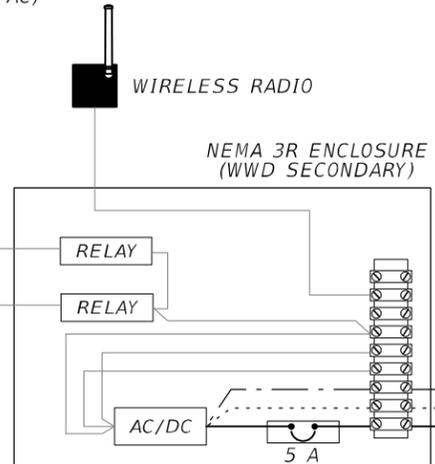


2/C - #12 AWG (12VDC PWR)

HIGHLIGHTED LED SIGN

NOTES:

1. EXISTING COMPONENTS--INCLUDING DEVICES, IN-CABINET EQUIPMENT, CONNECTIONS, AND WIRING--MAY DIFFER FROM THE WIRING DIAGRAM DEPICTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
2. ALL NEW EQUIPMENT, ELECTRICAL COMPONENTRY, AND WIRING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. REFER TO MANUFACTURER'S SPECIFICATIONS FOR WIRING OF NEMA 3R ENCLOSURE AND ALL ASSOCIATED DEVICES TO THE WRONG WAY DRIVING SYSTEM FOR BOTH PRIMARY AND SECONDARY LOCATIONS.
4. ALL PORT ASSIGNMENTS, IP ADDRESSES, VLANs, AND DEFAULT NETWORK GATEWAYS SHALL BE COORDINATED WITH THE DEPARTMENT. PORT ASSIGNMENTS DEPICTED ARE FOR COMPLETENESS ONLY AND SHALL NOT BE INTERPRETTED AS DIRECTIVE.
5. REFER TO WIRING DIAGRAM FROM THE FOLLOWING LOCATIONS:
 - LHUB 95N-265.0-A
 - LHUB 95S-265.1-A
 - LHUB 95N-267.7-A
 - LHUB 95S-267.8-A



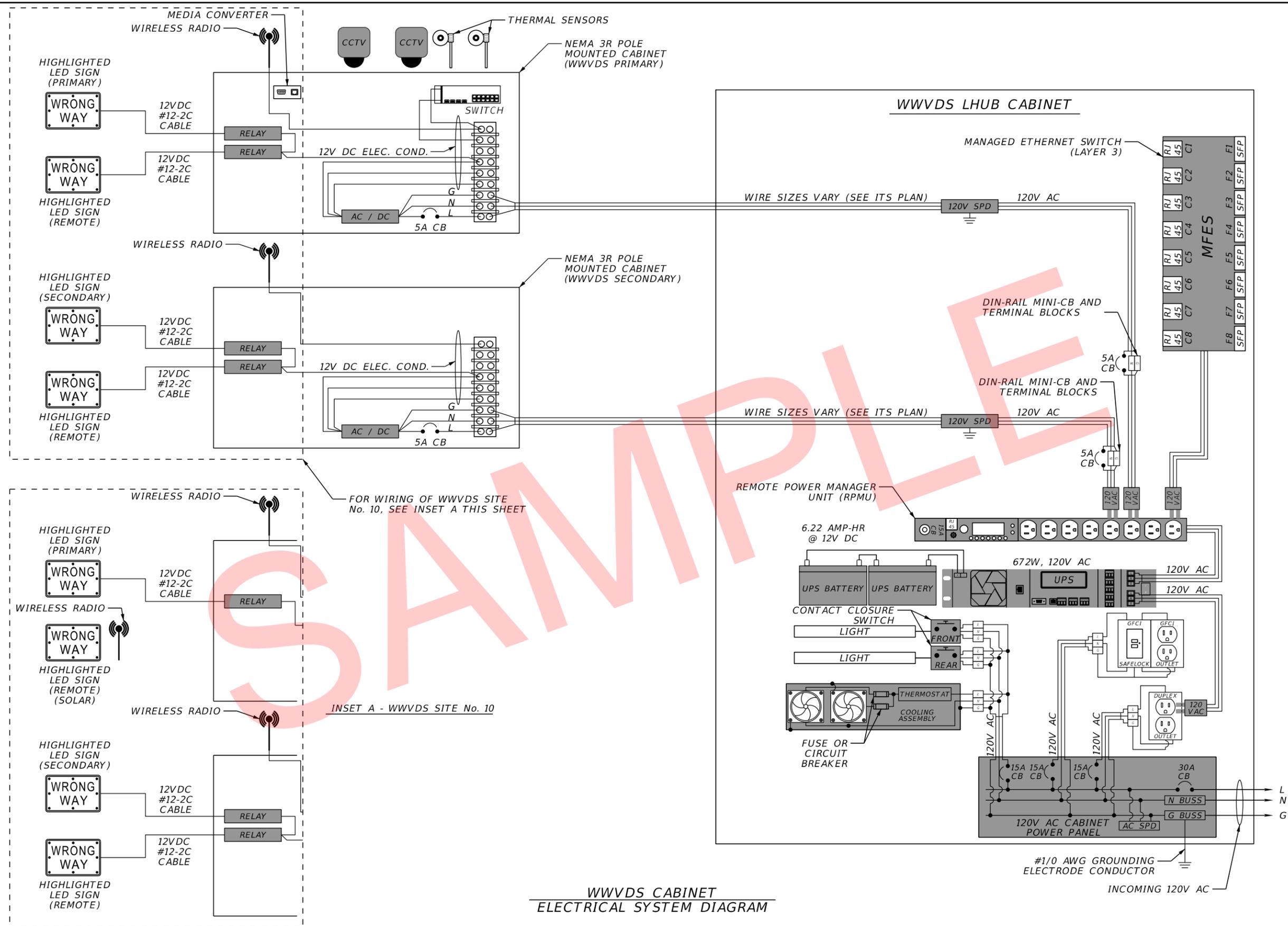
TYPE 336S CABINET (NEW)

BATTERY

BATTERY

FIBER OPTIC COMMUNICATIONS

| REVISIONS | | | | FLORIDA DEPARTMENT OF TRANSPORTATION 719 SOUTH WOODLAND BLVD DELAND, FLORIDA 32720 (386) 943-5000 JEREMY H. DILMORE, P.E. #67510 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. IT-46 |
|-----------|-------------|------|-------------|--|--|---------|----------------------|--------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 9 | VOLUSIA | 441133-1-52-01 | WIRING DIAGRAMS |



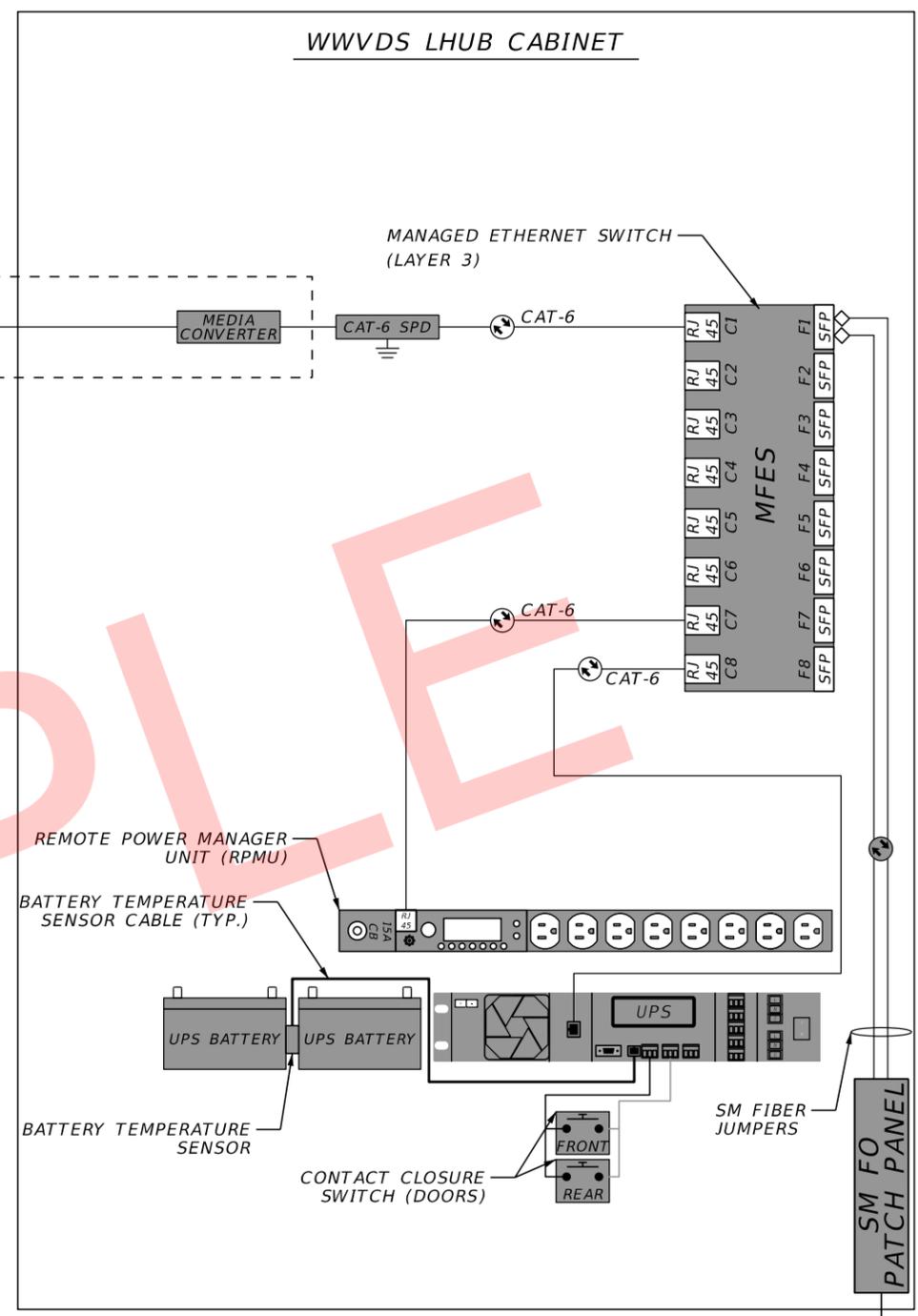
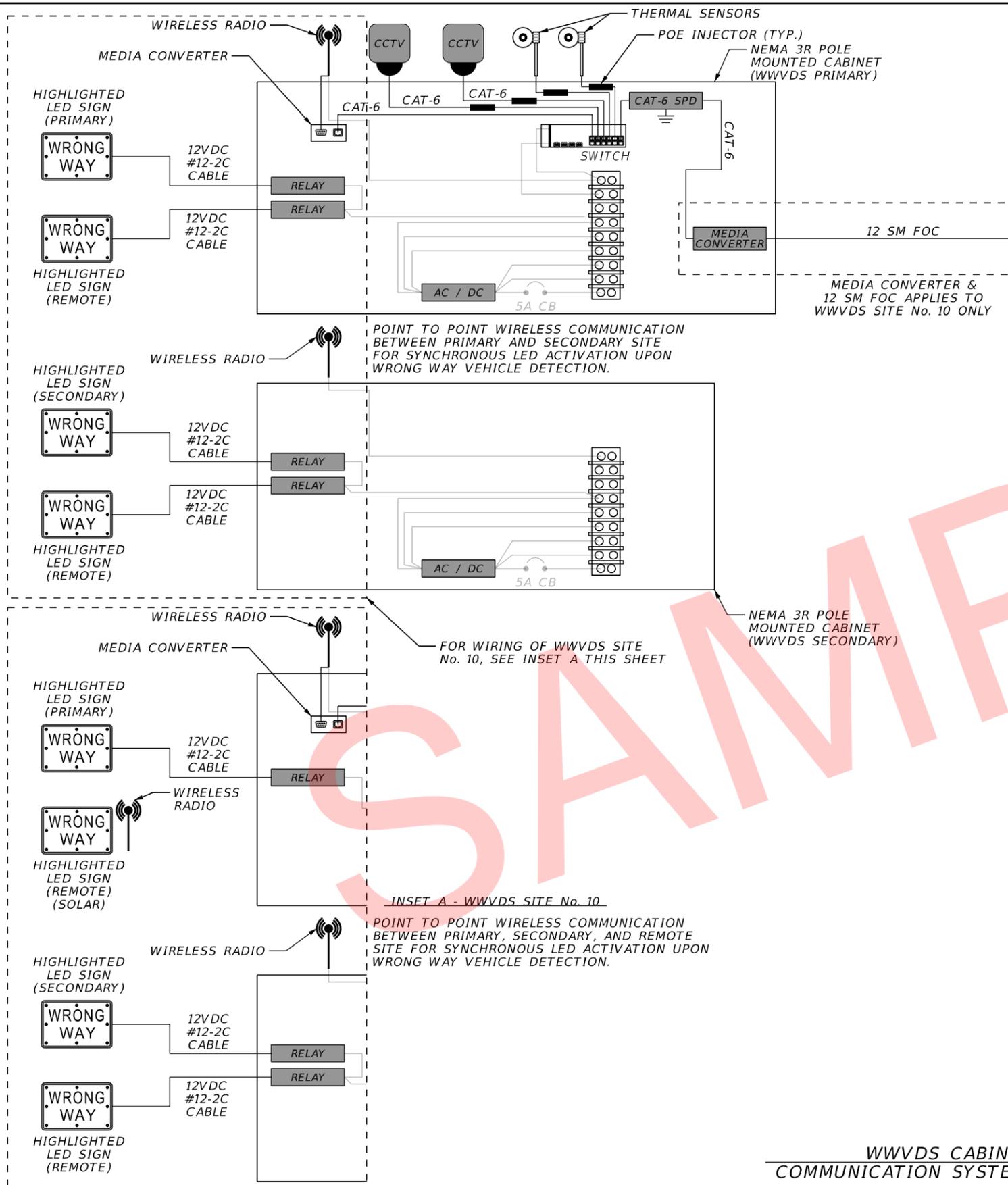
WWVDS CABINET ELECTRICAL SYSTEM DIAGRAM

| REVISIONS | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|--------------------|--|---|----------------|----------------------|-------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | WIRING DIAGRAMS (1) IT-104 |

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WWVDS CABINET COMMUNICATION SYSTEM DIAGRAM

- LEGEND**
- 1-Gbps ETHERNET
 - 10/100 MBPS ETHERNET

| REVISIONS | | | | ENGINEER OF RECORD | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|---|----------------|----------------------|-----------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | IT-105 |

WIRING DIAGRAMS (2)

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PRIMARY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS) WIRING DIAGRAM

NTS

ACRONYMS

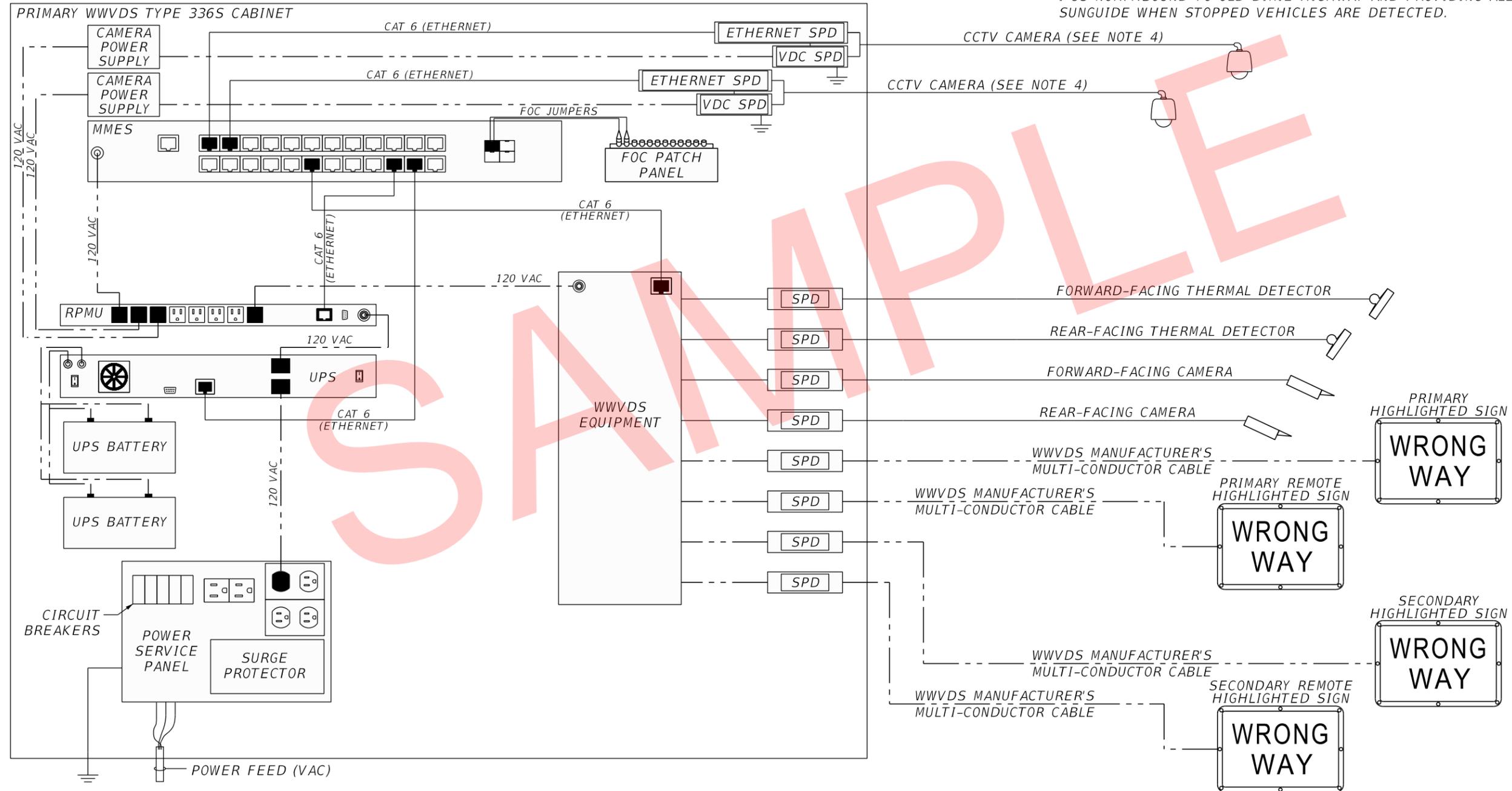
- FOC FIBER OPTIC CABLE
- MMES MANAGED MULTILAYER ETHERNET SWITCH
- RPMU REMOTE POWER MANAGEMENT UNIT
- SPD SURGE PROTECTION DEVICE
- UPS UNINTERRUPTIBLE POWER SUPPLY
- VAC VOLTAGE ALTERNATING CURRENT

LEGEND

- COMMUNICATION
- - - POWER
- ⏏ GROUND
- AVAILABLE PORT/OUTLET
- UNAVAILABLE PORT/OUTLET

NOTES:

1. WWVDS CONNECTIONS TO MEET MANUFACTURER'S RECOMMENDATIONS.
2. ALL WWVDS WIRING, HARDWARE, AND EQUIPMENT SHALL BE INSTALLED TO MEET MANUFACTURER'S RECOMMENDATIONS.
3. COORDINATE WITH FDOT DISTRICT 5 ITS OPERATIONS AT (321) 348-3290 FOR IP ADDRESSES AND COMMUNICATION PORT ASSIGNMENTS.
4. CCTV CAMERA SHALL BE CAPABLE OF DETECTING STOPPED VEHICLES IN THE DETECTION ZONES AS SHOWN IN THE PLANS ALONG THE RAMP FROM I-95 NORTHBOUND TO OLD DIXIE HIGHWAY AND PROVIDING ALERTS TO SUNGUIDE WHEN STOPPED VEHICLES ARE DETECTED.



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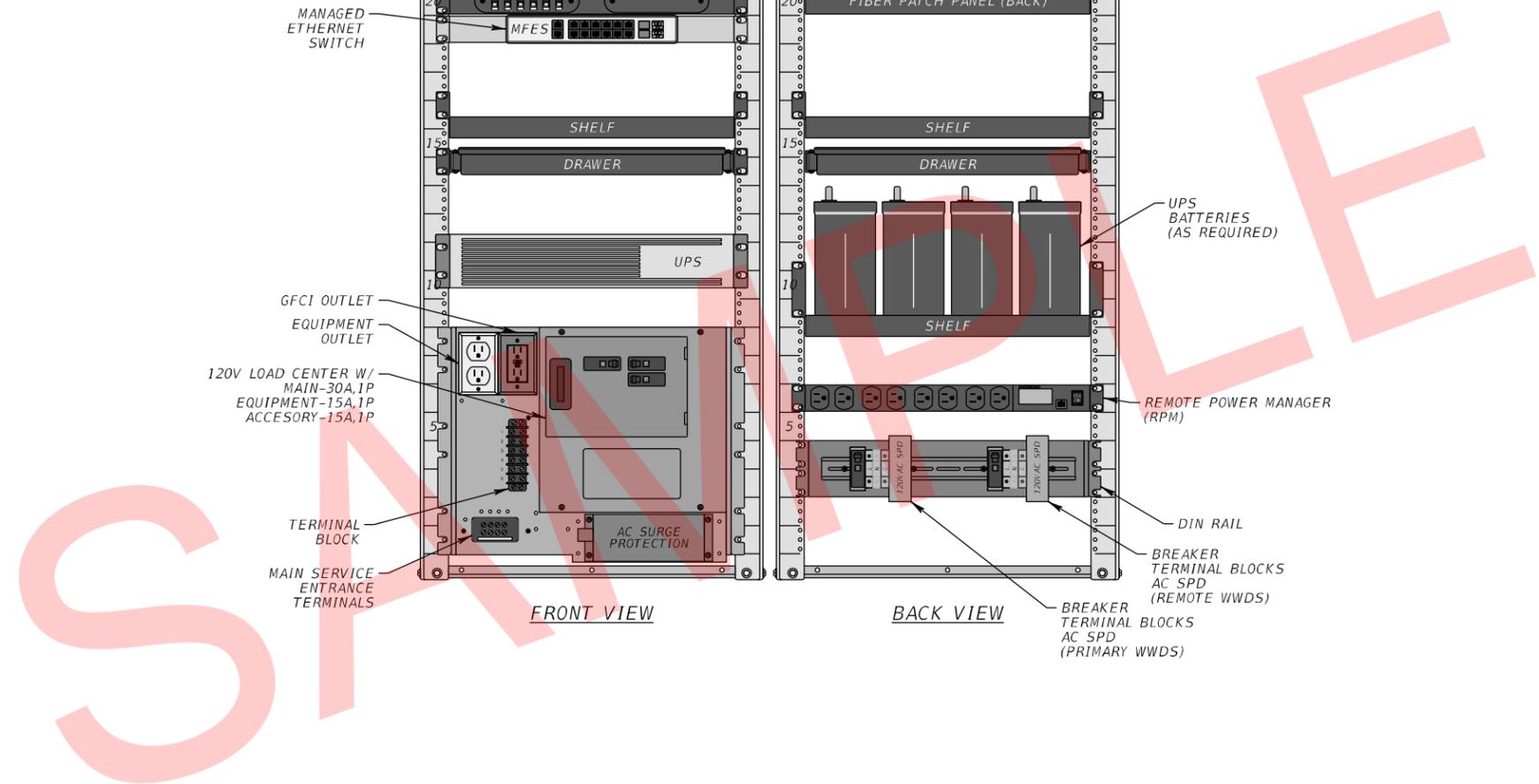
| REVISIONS | | REVISIONS | |
|-----------|-------------|-----------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

ENGINEER OF RECORD
 NICHOLAS J. SPATOLA, P.E.
 LICENSE NUMBER: 76103
 FALLER, DAVIS & ASSOCIATES, INC.
 2301 MAITLAND CENTER PKWY., SUITE 265
 MAITLAND, FL 32751

| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
|--|---------------------|----------------------|
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 |

| | |
|-----------------------|-----------------|
| WIRING DIAGRAM | SHEET NO. 22 |
|-----------------------|-----------------|

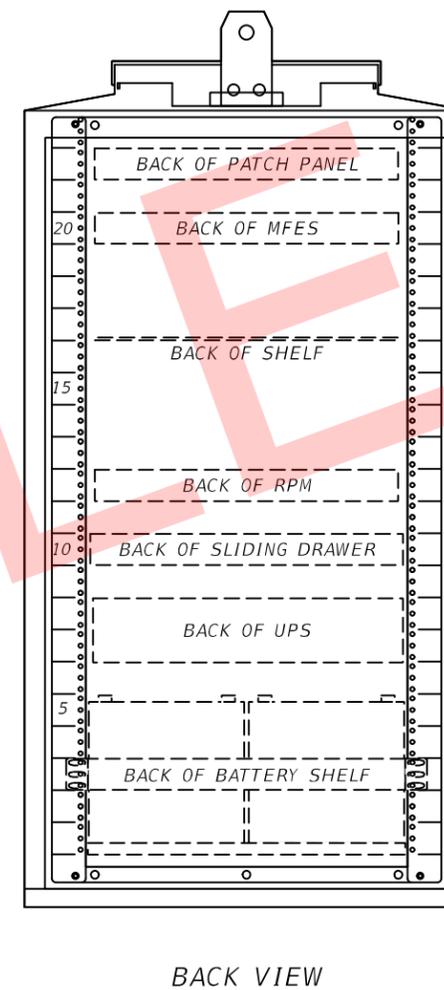
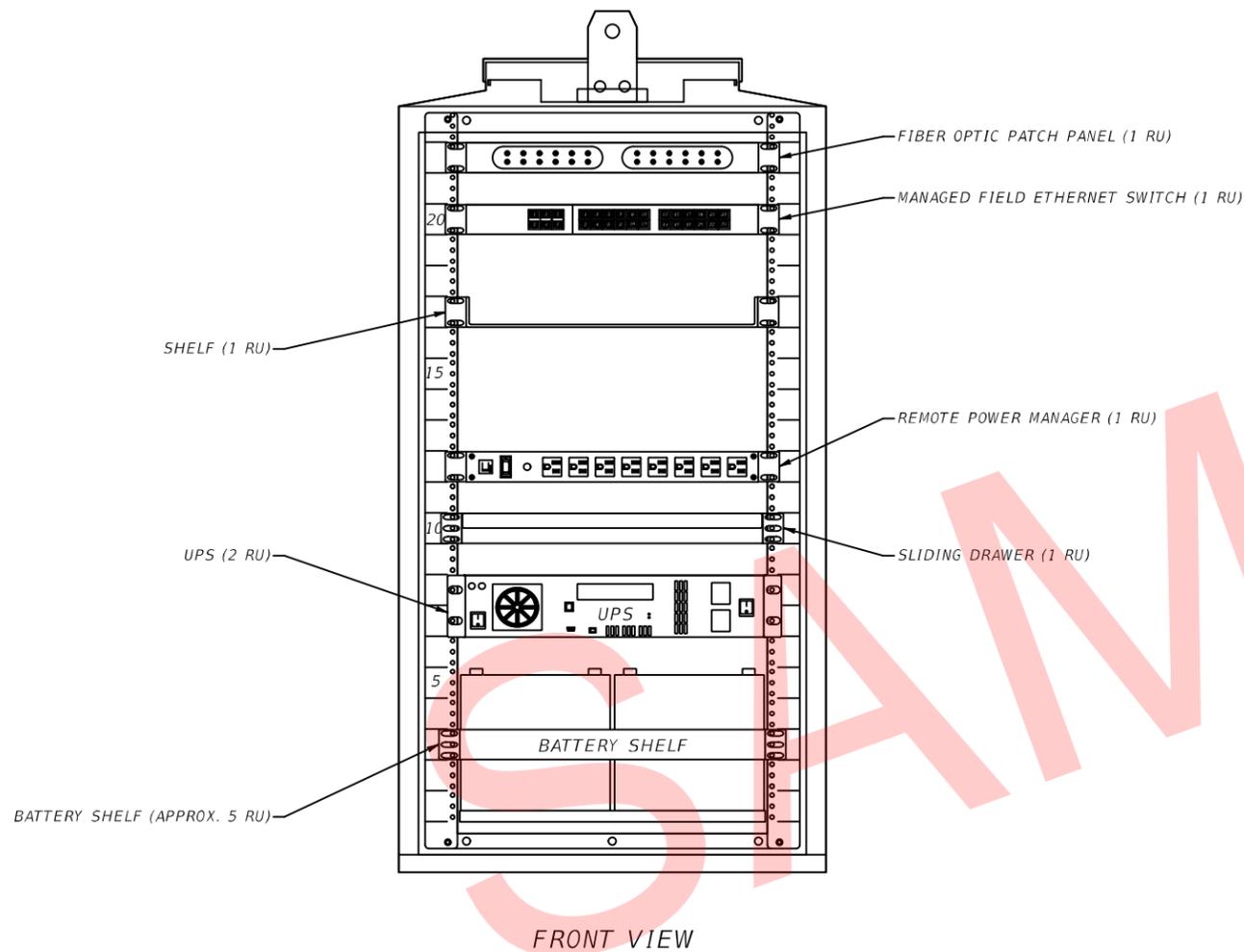
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WWDS LOCAL HUB CABINET
336S CABINET POLE MOUNTED

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| REVISIONS | | | | ALEXANDER TEAL MIMS, P.E. PE No. 77095 Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. CABINET DETAILS IT-70 |
|-----------|-------------|------|-------------|---|--|--------|----------------------|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | SR 400 | VARIES | 446159-1-52-01 | |



NEW TYPE 336S CABINET (MULTIPLE LOCATIONS)

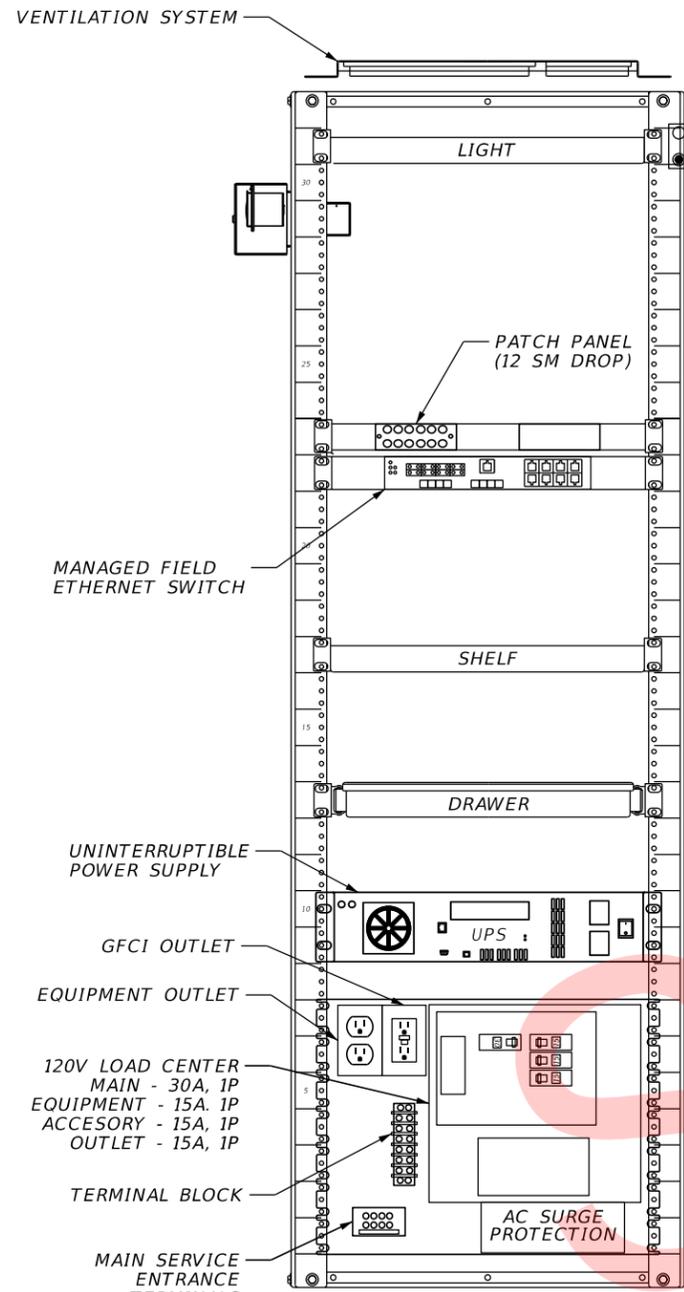
- 95N-265.0-A
- 95S-265.1-A
- 95N-267.7-A
- 95S-267.8-A

LEGEND:

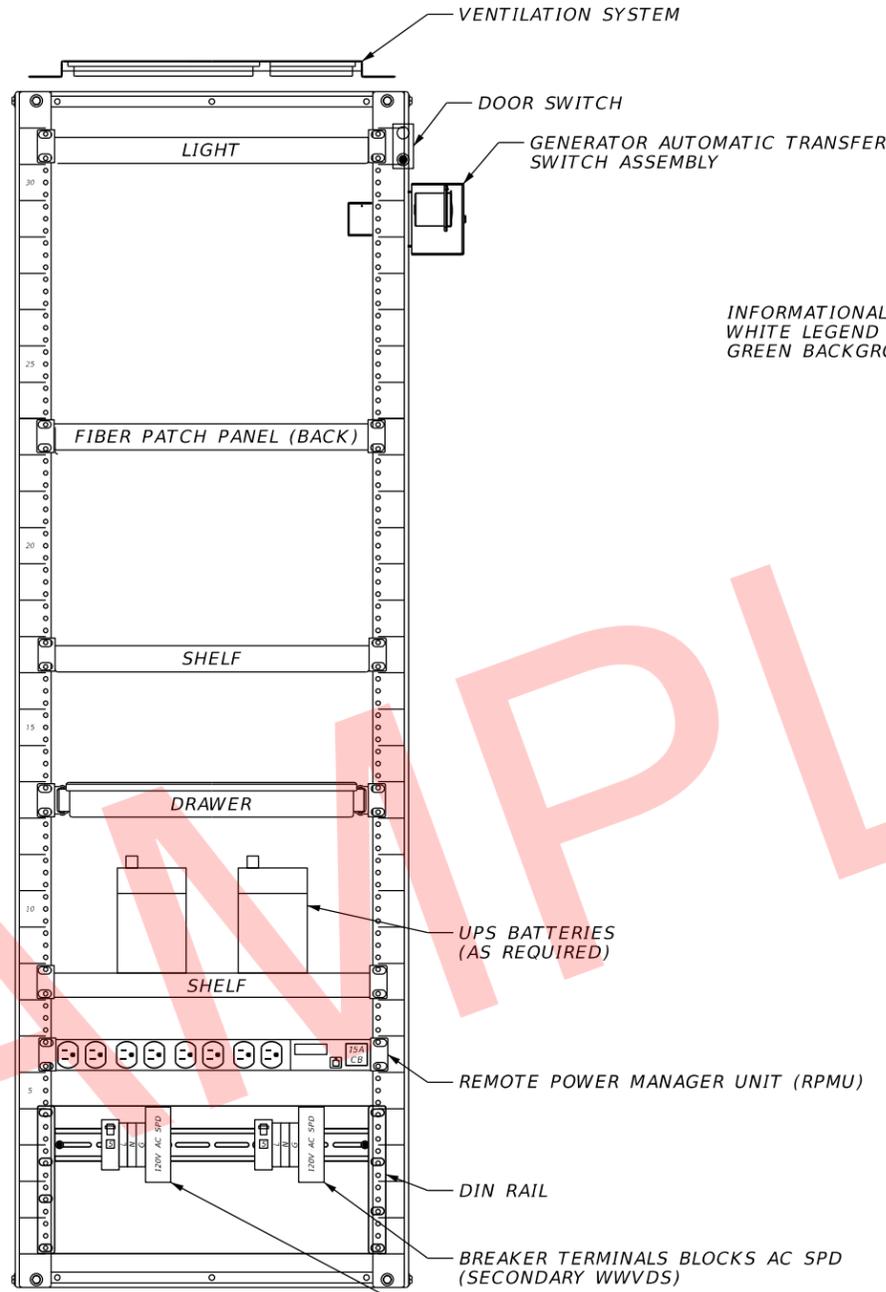
- PROPOSED, RACK UNIT OCCUPIED (FRONT)
- EXISTING, RACK UNIT OCCUPIED (FRONT)
- PROPOSED (FUTURE)
- PROPOSED, RACK UNIT AVAILABLE (REAR)
- EXISTING, RACK UNIT AVAILABLE (REAR)

| REVISIONS | | | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | CABINET DETAILS | SHEET NO. IT-57 |
|-----------|-------------|------|-------------|--|---------|----------------------|------------------------|---------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | SR 9 | VOLUSIA | 441133-1-52-01 | | |

FLORIDA DEPARTMENT OF TRANSPORTATION
719 SOUTH WOODLAND BLVD
DELAND, FLORIDA 32720
(386) 943-5000
JEREMY H. DILMORE, P.E. #67510

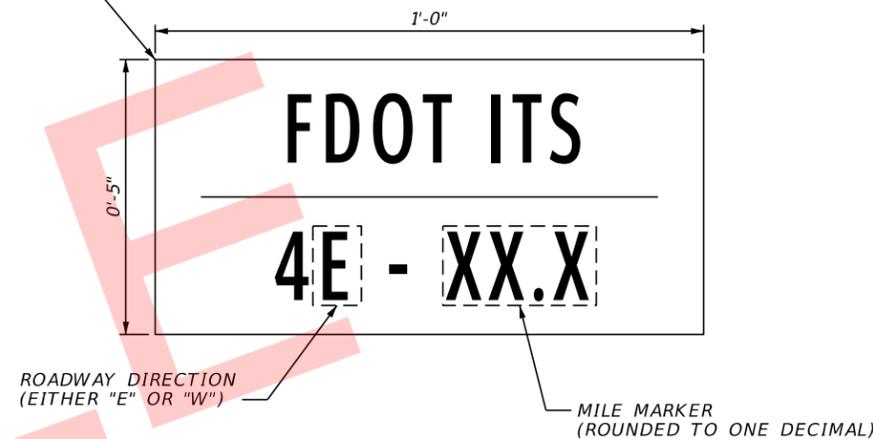


FRONT VIEW



BACK VIEW

INFORMATIONAL PLACARD
WHITE LEGEND ON
GREEN BACKGROUND



NOTES:

1. INFORMATIONAL PLACARD TO BE FURNISHED & INSTALLED ON ONE OF THE DOORS OF EACH PROPOSED LOCAL HUB CABINET.
2. ALL TEXT IS TO BE FHWA SERIES B FONT WITH A TEXT HEIGHT OF 1.5". CENTER TEXT ON INFORMATIONAL PLACARD.

**WWVDS LOCAL HUB CABINET
INFORMATIONAL PLACARD
N.T.S.**

**WWVDS LOCAL HUB CABINET
334 CABINET GROUND MOUNTED
N.T.S.**

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|------------------------|-------------|------|-------------|--|--|--|-------------------|----------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | |
| CABINET DETAILS | | | | | | | | | IT-103 |

TYPICAL PRIMARY/SECONDARY WRONG WAY VEHICLE DETECTION SYSTEM (WWVDS)
TYPE 336S CABINET INSTALLATION DETAILS

NTS

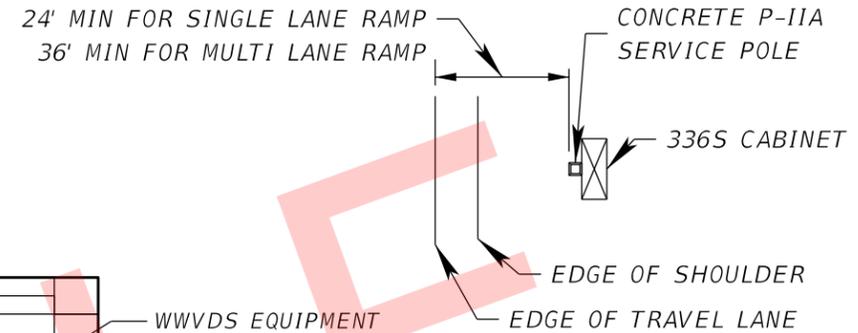
WWVDS PRIMARY CABINETS (FLAGLER COUNTY)

CAB-195-FLR-OLDDIXIEHWY-NBOFF-A @ I-95 NB EXIT 278 RAMP @ STA. 24+14, 27' LT.
CAB-195-FLR-OLDDIXIEHWY-NBOFF-A @ I-95 SB EXIT 278 RAMP @ STA. 1+83, 25' RT.

WWVDS PRIMARY CABINETS (VOLUSIA COUNTY)

CAB-195-VOL-SR421-NBOFF-A @ I-95 NB EXIT 256 RAMP @ STA. 30+12, 25' LT.
CAB-195-VOL-SR421-SBOFF-A @ I-95 SB EXIT 256 RAMP @ STA. 27+70, 61' RT.

CABINET CLEAR ZONE
REQUIREMENT DETAIL
NTS

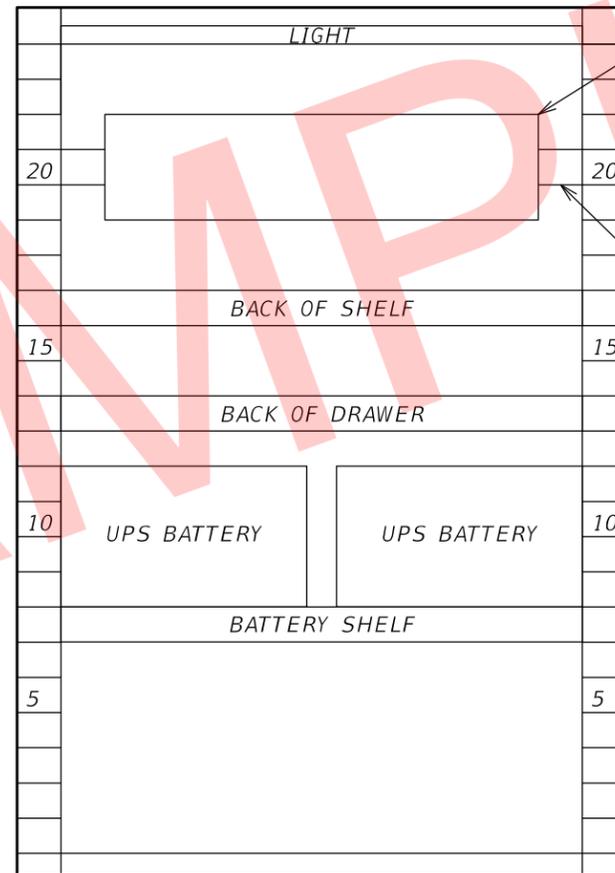
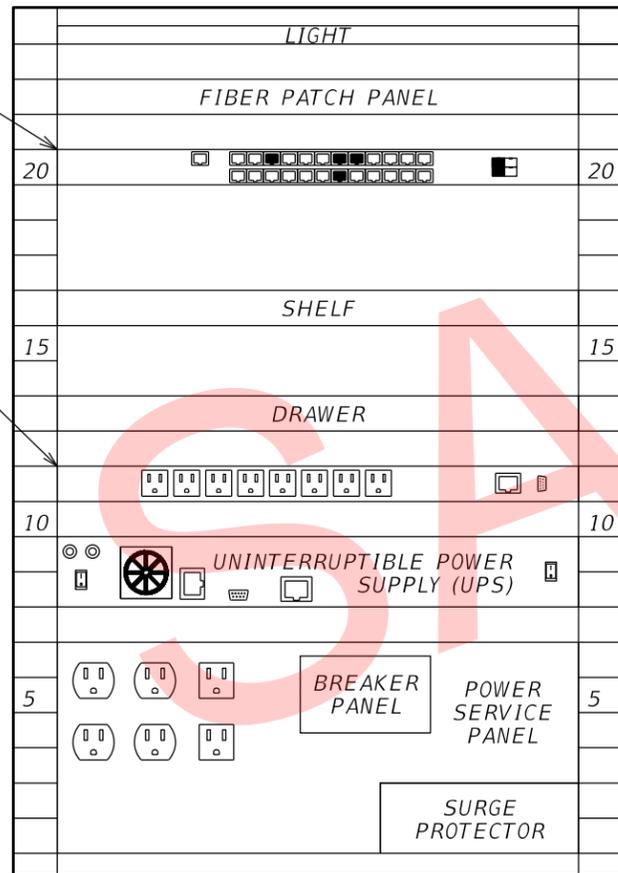


FRONT OF CABINET

BACK OF CABINET

MANAGED MULTILAYER ETHERNET SWITCH (MMES)

REMOTE POWER MANAGEMENT UNIT (RPMU)



WWVDS EQUIPMENT PER MANUFACTURER'S REQUIREMENTS

DIN RAIL

NOTE:

NUMBER OF BATTERIES MAY VARY.

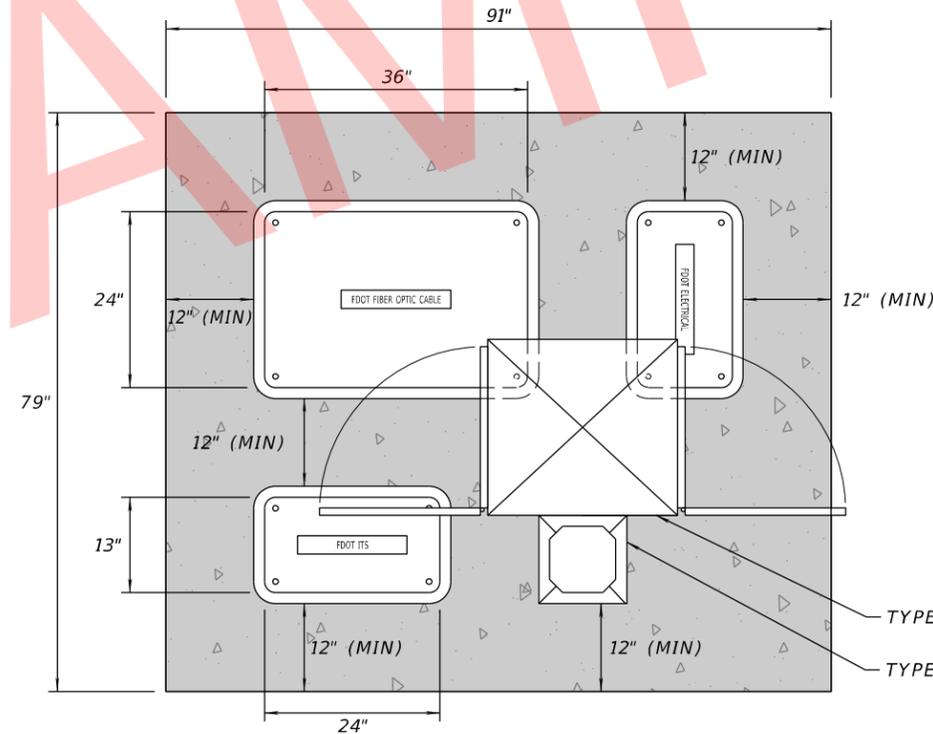
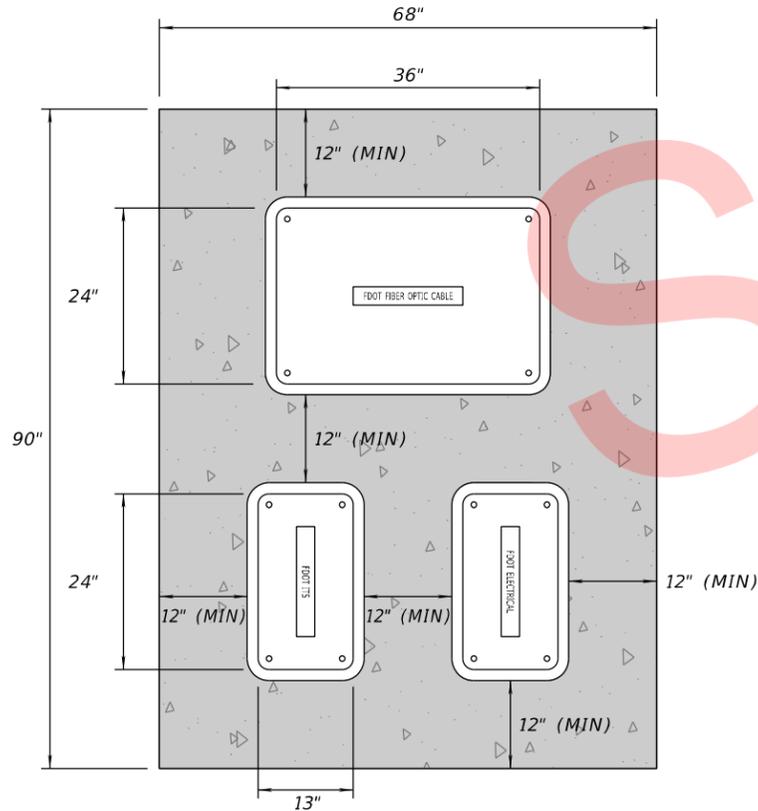
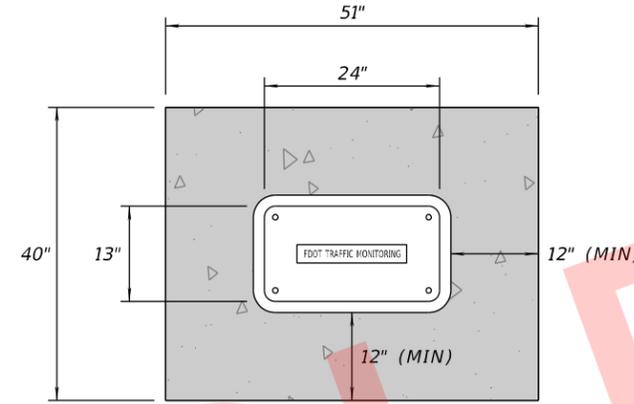
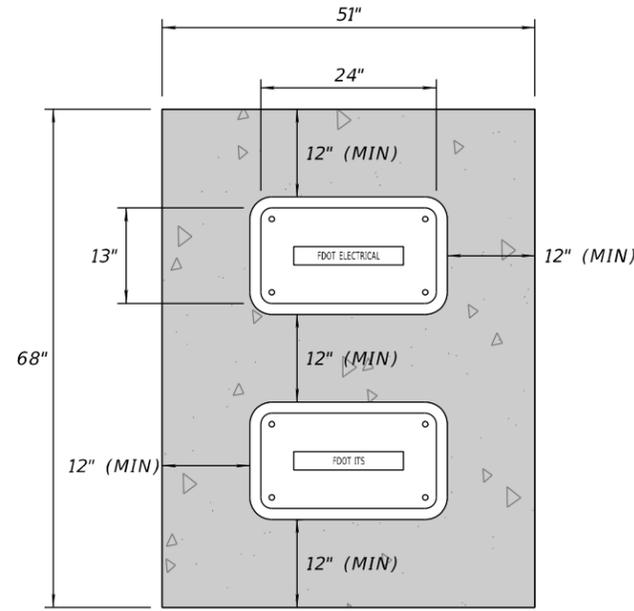
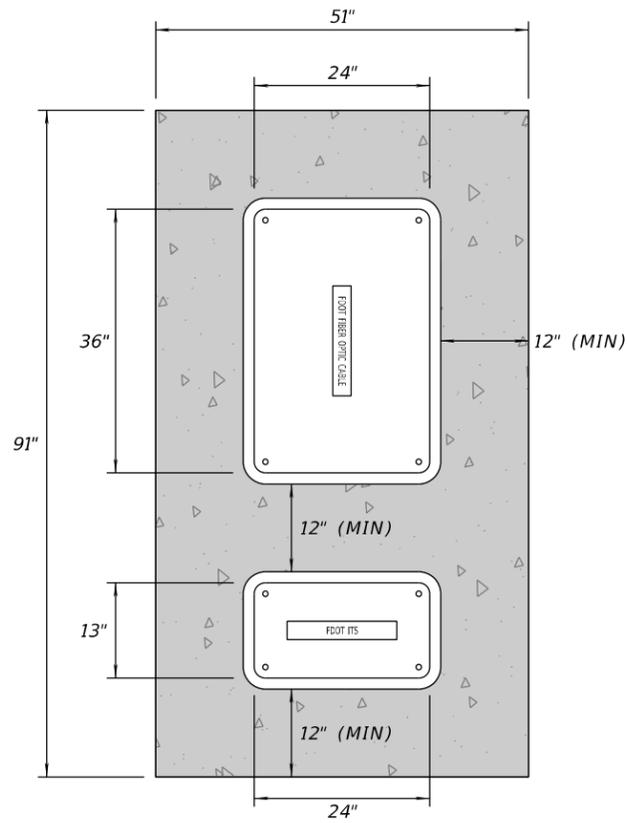
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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | CABINET INSTALLATION DETAIL | SHEET NO. 21 |
|-----------|-------------|------|-------------|---|--|--|---------------------|----------------------|--------------------------------|--------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC. 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | | |
| | | | | | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | | |

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NOTES:

1. REFER TO PLAN SHEETS FOR ADDITIONAL INFORMATION ON PULL BOX COVER LABELS FOR EACH LOCATION.
2. POLE MOUNTED TYPE 336S CABINET SHALL BE ORIENTED SUCH THAT THE DOORS OPEN ALLOWING A TECHNICIAN TO ACCESS INTERNAL EQUIPMENT WITHOUT HIS/HER BACK TO TRAFFIC.



PULL BOX COVER LABEL:

- FDOT TRAFFIC MONITORING
- FDOT ELECTRICAL
- FDOT ITS
- FDOT FIBER OPTIC CABLE

TYPE 336S CABINET, POLE MOUNT

TYPE P-II POLE (12')

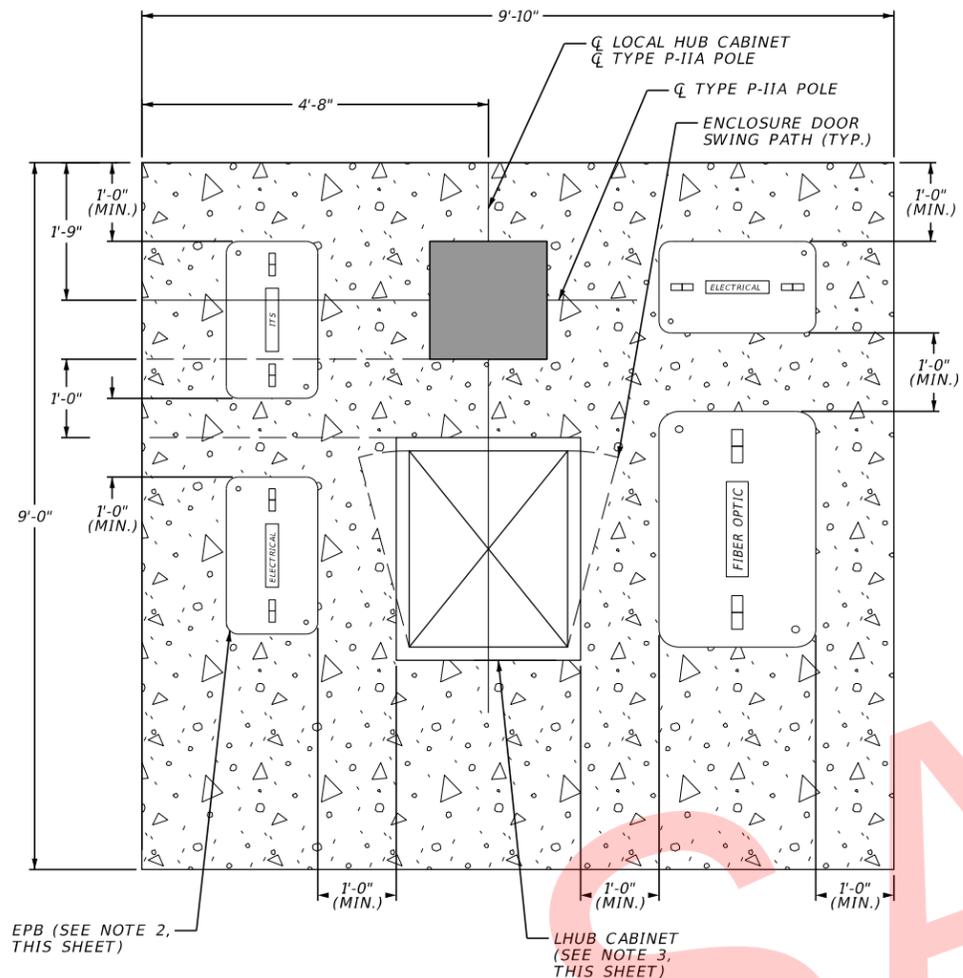
| REVISIONS | | | |
|-----------|-------------|------|-------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

FLORIDA DEPARTMENT OF TRANSPORTATION
 719 SOUTH WOODLAND BLVD
 DELAND, FLORIDA 32720
 (386) 943-5000
 JEREMY H. DILMORE, P.E. #67510

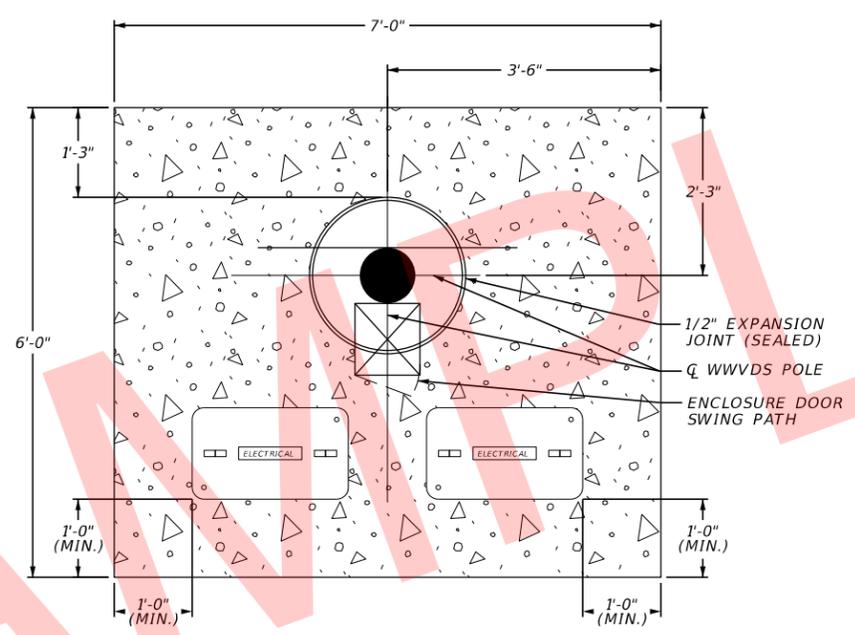
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | |
|--|---------|----------------------|
| ROAD NO. | COUNTY | FINANCIAL PROJECT ID |
| SR 9 | VOLUSIA | 441133-1-52-01 |

CONCRETE PAD DETAILS

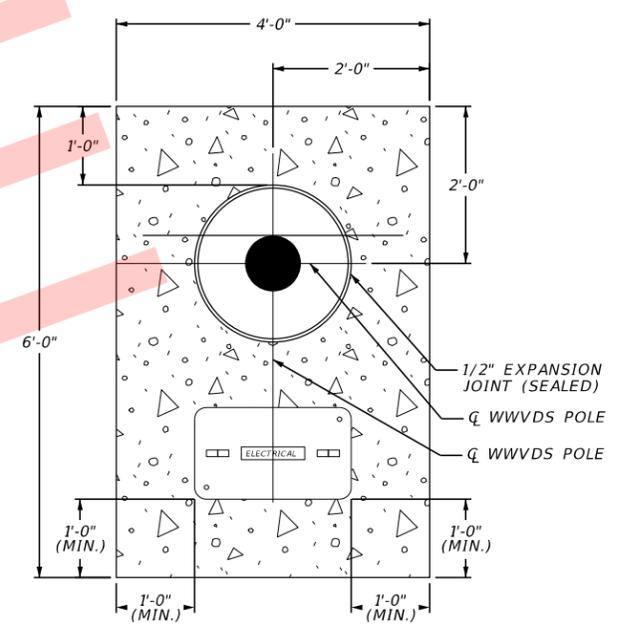
SHEET NO.
IT-58



TYPICAL WWVDS LHub
 WWVDS SITE No. 1 - 15
 N.T.S.



1-EPB, 1-EPB WITH WRONG WAY SIGN
 PRIMARY/SECONDARY WWVDS
 (EXCEPT WWVDS SITE No. 1 PRIMARY,
 WWVDS SITE No. 2 PRIMARY,
 WWVDS SITE No. 3 PRIMARY,
 WWVDS SITE No. 8 PRIMARY,
 WWVDS SITE No. 13 SECONDARY
 AND WWVDS SITE No. 14 PRIMARY)
 N.T.S.



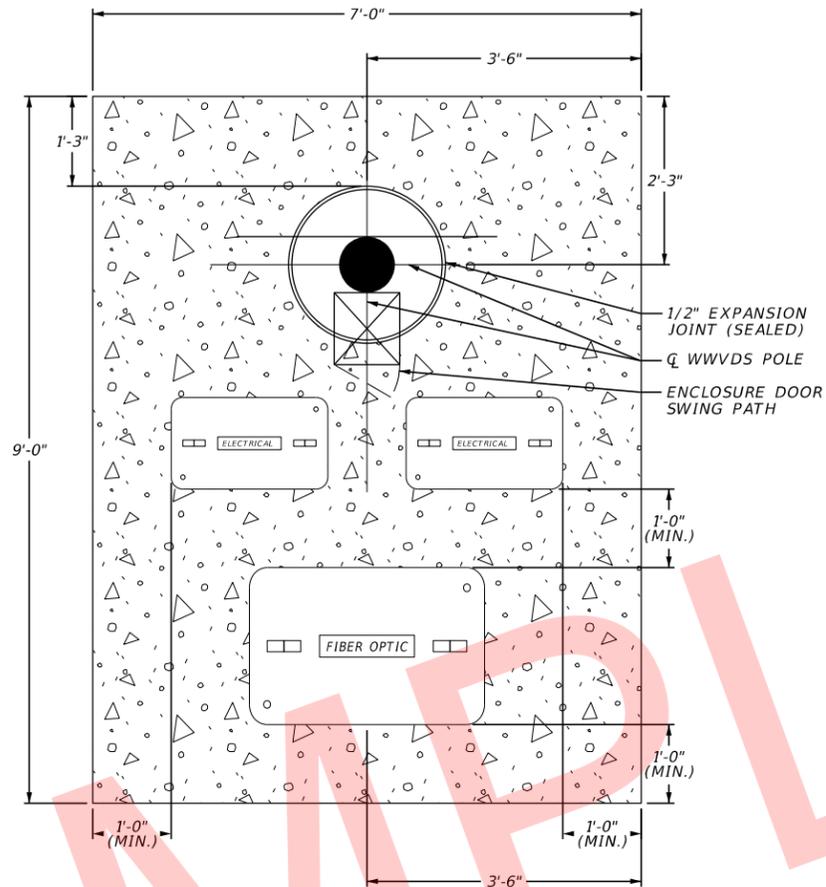
1-EPB WITH WRONG WAY SIGN
 REMOTE WWVDS
 (EXCEPT WWVDS SITE No. 1 PRIMARY REMOTE,
 WWVDS SITE No. 2 PRIMARY REMOTE,
 WWVDS SITE No. 3 PRIMARY REMOTE,
 WWVDS SITE No. 8 PRIMARY REMOTE,
 WWVDS SITE No. 13 SECONDARY REMOTE,
 AND WWVDS SITE No. 14 PRIMARY REMOTE)
 N.T.S.

- NOTES:
1. CONCRETE APRON THICKNESS AND CONCRETE CLASS PER STANDARD INDEX 635-001.
 2. FOR WWVDS SITE No. 10, EPB IS NOT REQUIRED, DIMENSIONS OF CONCRETE APRON REMAIN THE SAME.
 3. ORIENT CABINET SUCH THAT CABINET DOORS DO NOT OPEN PERPENDICULAR TO TRAVEL LANES.

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|--------------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | CONCRETE APRON DETAILS (1) IT-109 |

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2-EPB, 1-FPB WITH WRONG WAY SIGN
 WWVDS SITE No. 1 PRIMARY,
 WWVDS SITE No. 1 PRIMARY REMOTE,
 WWVDS SITE No. 2 PRIMARY,
 WWVDS SITE No. 2 PRIMARY REMOTE,
 WWVDS SITE No. 3 PRIMARY,
 WWVDS SITE No. 3 PRIMARY REMOTE,
 WWVDS SITE No. 8 PRIMARY,
 WWVDS SITE No. 8 PRIMARY REMOTE,
 WWVDS SITE No. 10 SECONDARY,
 WWVDS SITE No. 10 SECONDARY REMOTE
 WWVDS SITE No. 13 SECONDARY,
 WWVDS SITE No. 13 SECONDARY REMOTE,
 WWVDS SITE No. 14 PRIMARY, AND
 WWVDS SITE No. 14 PRIMARY REMOTE ONLY
 N.T.S.

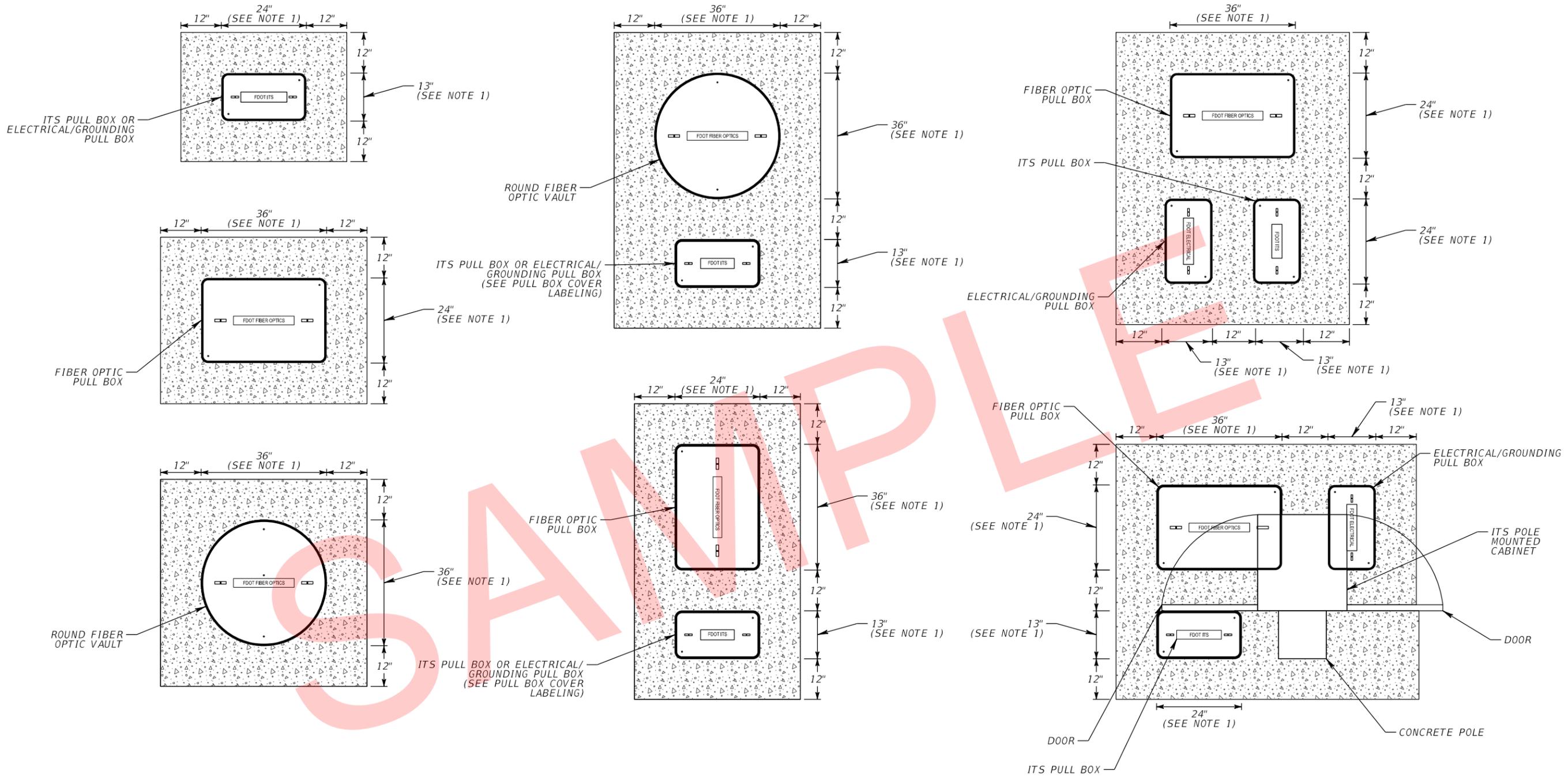
NOTE:

1. CONCRETE APRON THICKNESS AND CONCRETE CLASS PER STANDARD INDEX 635-001.

7/13/2023 8:27:56 PM bmesbitt T:\Worksets\DOT\2379741\2319\TWO_007\JTS\SRPT\T01.dgn

| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|-----------|-------------|------|-------------|--|--|--|-------------------|----------------------|--------------------------------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | ALEX W. HINKLE, P.E. LICENSE NUMBER 82354 PROTEAN DESIGN GROUP 100 EAST PINE STREET, SUITE 600 ORLANDO, FL 32801 | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | | | SR 400 | OSCEOLA ORANGE | 448520-3-52-01 | CONCRETE APRON DETAILS (2) IT-110 |

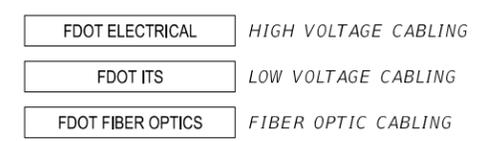
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTES

- DIMENSIONS OF PULL BOXES OR SPLICE VAULTS MAY VARY.
- PROPOSED PULL BOX CONFIGURATIONS MAY BE ADJUSTED BASED ON FIELD CONDITIONS. COORDINATE WITH ENGINEER ON ADJUSTMENTS TO THE RECOMMENDED CONFIGURATIONS.

PULL BOX COVER LABELING



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| REVISIONS | | | | ENGINEER OF RECORD | | STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | SHEET NO. |
|--|-------------|------|-------------|--|--|--|---------------------|----------------------|--------------|
| DATE | DESCRIPTION | DATE | DESCRIPTION | | | ROAD NO. | COUNTY | FINANCIAL PROJECT ID | |
| | | | | NICHOLAS J. SPATOLA, P.E. LICENSE NUMBER: 76103 FALLER, DAVIS & ASSOCIATES, INC 2301 MAITLAND CENTER PKWY., SUITE 265 MAITLAND, FL 32751 | | SR 9 | FLAGLER/ VOLUSIA | 450227-4-52-01 | 26 |
| PULL BOX INSTALLATION DETAILS | | | | | | | | | |

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Appendix B – Sample MSPs

Appendix B has been removed.

Refer to the [Pre-Spec Meeting to Letting \(fdot.gov\)](#) website for guidance.

Appendix C – Sample TSPs

Appendix C has been removed.

Refer to the [Pre-Spec Meeting to Letting \(fdot.gov\)](#) website for guidance.

Appendix D – Example PPCs

Appendix D

Coordinate with the District for specific Proprietary Product Certifications.

Appendix E – Product Data Sheets

Appendix E has been removed.

Refer to the [Approved Products List \(fdot.gov\)](#) for preferred product information