



Florida Department of Transportation

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605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

August 20, 2024

Cathy Kendall
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: 996
Proposed Specification: **9960101 Intelligent Transportation System Device and
Auxiliary Component Materials**

Dear Ms. Kendall:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Richard Stepp to add language for specialized Toll Site Pull Boxes independently. The change is associated with 6350100 and also adds language to support the all-new Standard Plans Index 635-005.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.
State Specifications Engineer

DS/dh

Attachment

cc: Florida Transportation Builders' Assoc.
State Construction Engineer

**INTELLIGENT TRANSPORTATION SYSTEM DEVICE AND AUXILIARY
COMPONENT MATERIALS**
(REV 8-20-24)

SUBARTICLE 996-1.1 is deleted and the following substituted:

996-1 Description.

996-1.1 General: This Section governs the requirements for all permanent intelligent transportation system devices, surge protection devices for traffic control devices, pull boxes, splice boxes, fiber optic splice vaults, camera lowering devices, and traffic control system auxiliaries. All equipment shall be permanently marked with manufacturer name or trademark, part number, and date of manufacture or serial number.

ARTICLE 996-5 is deleted and the following substituted:

996-5 Pull Boxes, and Splice Boxes, and Fiber Optic Splice Vaults.

996-5.1 ~~General~~ Pull and Splice Boxes: Pull and splice boxes ~~shall~~must be listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6.

The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.

Ensure in-ground boxes have an open bottom design.

996-5.2-1.1 Marking: The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, bonded with adhesive material suitable for outdoor applications, and capable of installation in the field

1. Mark application as follows:

_____ FDOT TRAFFIC SIGNAL for signalized intersections

_____ FDOT FIBER OPTIC CABLE for fiber optic cable

_____ FDOT LIGHTING for highway lighting

_____ FDOT TRAFFIC MONITORING for traffic monitoring

_____ FDOT ELECTRICAL for other electrical applications

_____ TPK ITS FIBER OPTIC for Turnpike ITS fiber optic cable

_____ TPK ITS ELECTRIC for Turnpike ITS electric power

_____ TPK ITS LOCATE for Turnpike ITS fiber locate cables

_____ TPK ITS COMPOSITE for Turnpike ITS electric power (<50

Volts)

_____ TPK LIGHTING for Turnpike highway lighting

_____ 2. Manufacturer's name or logo

_____ 3. FDOT APL approval number

_____ 4. TIER rating per Section 996-5.1.4

_____ The date of manufacture (month/day/year, or date code) shall be permanently located on the top or bottom of the cover. The interior of the box body shall have a permanent marking that includes the manufacturer part/model number and date of manufacture near the top of box in a location that is visible after installation when the cover is removed.

~~_____ 996-5.3-1.2 Dimensions: For signalized intersection and lighting applications, pull boxes with nominal cover dimensions of 13 inches wide by 24 inches long or larger and no less than 12 inches deep shall be provided. The inside opening area shall be a minimum of 240 square inches and no inside dimension shall be less than 12 inches.~~

~~_____ For fiber optic cable applications, pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 24 inches deep shall be provide~~

~~_____ Rectangular splice boxes with nominal cover dimensions of 30 inches wide by 60 inches long or larger and no less than 36 inches deep shall be provided. Round splice boxes with a nominal cover diameter of 36 inches or larger and no less than 36 inches deep shall be provided.~~

<u>Table 996-4</u>			
<u>Minimum Dimensions for Pull and Splice Boxes</u>			
<u>Application:</u>	<u>Type:</u>	<u>Minimum Size(inches):</u>	<u>Notes:</u>
<u>Signalized Intersection and Lighting</u>	<u>Pull Box</u>	<u>13W x 24L x 12D</u>	<u>Provide a minimum area of 240 square inches and no inside dimension less than 12 inches.</u>
<u>Fiber Optic Cable</u>	<u>Pull Box</u>	<u>24W x 36L x 24D</u>	
<u>ITS</u>	<u>Rectangular splice box</u>	<u>30W x 60L x 36D</u>	
	<u>Round splice box</u>	<u>36Dia. x 36D</u>	

~~_____ 996-5.4.1.3 Fabrication: Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.~~

~~_____ Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.~~

~~_____ 996-5.5.1.4 Testing Requirements: Pull and splice boxes shall must meet have or exceed the a TIER 15 load capacity per the American National Standards Institute/Society of Cable Telecommunications Engineers (ANSI/SCTE) 77 2017 Specification for Underground Enclosure Integrity. for TIER 15 loading requirements with Pull and splice boxes must have a TIER 22 load capacity when used for ITS applications on toll road corridors; this excludes express lane corridors.~~

~~_____ Additionally, meet the following additional clarifications and requirements:~~

- ~~_____ 1. Apply all environmental tests to the box and its cover.~~
- ~~_____ 2. All flexural testing shall be conducted in accordance with an appropriate ASTM standard and clearly stated in the report.~~
- ~~_____ 3. Perform repetitions of Cycle 1 in Table X2.1 of ASTM G154 for a minimum duration of 1000 hours for the simulated sunlight exposure test.~~
- ~~_____ 4. Use deflection-measuring devices positioned to measure vertical and lateral deflection (wherever maximum deflection occurs) for the vertical sidewall load test.~~
- ~~_____ 5. Conduct the lateral sidewall pressure, vertical sidewall load and cover vertical load tests without any removable or permanent wall to wall supporting beams located in the interior or top of the box opening.~~

_____ When testing pull and splice boxes of various sizes (width x length x depth), the cover impact test, internal equipment protection test, coefficient of friction test, and all environmental tests, can be completed using a single representative box/cover (instead of samples from all box/cover sizes) as long as the test report indicates the following:

1. Materials of construction, compositions, and manufacturing processes are identical for all box and cover sizes submitted for listing on the APL.
2. Size (width x length x depth) of the representative box/cover.

996-5.2 Fiber Optic Splice Vaults: Construct fiber optic splice vaults in accordance with Standard Plans, Index 635-005.

Manufacturers of fiber optic splice vaults must meet the requirements of Section 105 and be listed on the Department's Production Facility Listing.

Construct the vault top and bottom with concrete in accordance with Section 346, and use steel reinforcement bars in accordance with Section 415.

Construct the concrete apron per the requirements of Section 347.

Use non-shrink grout per the requirements of Sections 400 and 934.

Provide hook racks and mount them to the interior walls of the fiber optic splice vaults per the Standard Plans. Precast steel inserts into the vault's interior walls, and attach the racks using galvanized steel bolts threaded into these inserts.

Provide cable support hooks and mount them to the compatible installed hook racks for supporting the fiber optic cabling and fiber optic splice enclosures. Provide two hooks per rack as shown in the Standard Plans.

Racks, cable support hooks, and inserts must be made of steel material that is galvanized per ASTM A153 or A123.

996-5.3 Toll Site Pull Boxes: In addition to the Pull Box requirements of 996-5.1, use UL listed or other National Recognized Testing Laboratory (NRTL) listed handhole enclosures (pull and splice boxes) from the APL.

Use un-reinforced polymer concrete enclosures for toll site pull box covers. Provide one-piece covers with two hold-down bolts.

996-5.3.1 Toll Site Pull Box Marking: The following information must be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, bonded with adhesive material suitable for outdoor applications, and capable of installation in the field.

1. Mark application as follows:

TPK TOLL LOOPS for loops

TPK GANTRY DATA for gantry data

TPK GANTRY POWER for gantry power

TPK ITS INTERFACE for ITS lateral

2. Manufacturer's name or logo

3. FDOT APL approval number

4. TIER rating per Section 996-5.1.4

The date of manufacture (month/day/year, or date code) must be permanently located on the top or bottom of the cover. The interior of the box body must have a permanent marking that includes the manufacturer part/model number and date of manufacture near the top of box in a location that is visible after installation when the cover is removed.

996-5.3.2 Toll Site Pull Box Dimensions: The dimensions for pull boxes used at toll sites are listed below:

<u>Table 996-5</u> <u>Minimum Dimensions for Toll Site Pull Boxes</u>		
<u>Application:</u>	<u>Type:</u>	<u>Size (inches):</u>
<u>Gantry power</u>	<u>Pull Box</u>	<u>24W x 36L x 24D</u>
<u>Gantry data</u>		
<u>Fiber optic cable</u>		
<u>Leased line communications</u>		
<u>Toll Loop</u>	<u>Pull Box</u>	<u>30W x 48L x 24D</u>
<u>Grounding</u>	<u>Pull Box</u>	<u>12W x 12L x 12D</u>

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996-5 Pull Boxes, Splice Boxes, and Fiber Optic Splice Vaults.

996-5.1 Pull and Splice Boxes: Pull and splice boxes must be listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6.

The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.

Ensure in-ground boxes have an open bottom design.

996-5.1.1 Marking: The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, bonded with adhesive material suitable for outdoor applications, and capable of installation in the field

1. Mark application as follows:

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996-5.1.2 Dimensions:

Table 996-4 Minimum Dimensions for Pull and Splice Boxes			
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Signalized Intersection and Lighting	Pull Box	13W x 24L x 12D	Provide a minimum area of 240 square inches and no inside dimension less than 12 inches.
Fiber Optic Cable	Pull Box	24W x 36L x 24D	
ITS	Rectangular splice box	30W x 60L x 36D	
	Round splice box	36Dia. x 36D	

996-5.1.3 Fabrication: Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.

Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.

996-5.1.4 Testing Requirements: Pull and splice boxes must have a TIER 15 load capacity per the American National Standards Institute/Society of Cable Telecommunications Engineers (ANSI/SCTE) 77 2017 Specification for Underground Enclosure Integrity. Pull and splice boxes must have a TIER 22 load capacity when used for ITS applications on toll road corridors; this excludes express lane corridors.

Additionally, meet the following additional clarifications and requirements:

1. Apply all environmental tests to the box and its cover.
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996-5.3.2 Toll Site Pull Box Dimensions: The dimensions for pull boxes used at toll sites are listed below:

Table 996-5 Minimum Dimensions for Toll Site Pull Boxes		
Application:	Type:	Size (inches):
Gantry power	Pull Box	24W x 36L x 24D
Gantry data		
Fiber optic cable		
Leased line communications		
Toll Loop	Pull Box	30W x 48L x 24D
Grounding	Pull Box	12W x 12L x 12D