



Florida Department of Transportation

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GOVERNOR

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: 635
Proposed Specification: **6350100 Pull Boxes, Splice Boxes, Junction Boxes, and Fiber Optic Splice Vaults REVISED**

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 clarify existing language and standardize requirements for fiber optic splice vaults and higher rated pull boxes for toll facilities.

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

PULL BOXES, SPLICE BOXES, AND JUNCTION BOXES, AND FIBER OPTIC SPLICE VAULTS

(REV 8-19-24)

ARTICLE 635-1 is deleted and the following substituted:

635-1 Description.

Furnish and install pull boxes, splice boxes, ~~and~~ junction boxes, and fiber optic splice vaults as shown in the Plans.

SUBARTICLE 635-2.1 is deleted and the following substituted:

635-2 Materials.

635-2.1 General: Meet the following requirements:

<u>Pull and Splice Boxes*</u>	<u>996-5</u>
<u>Fiber Optic Splice Vault</u>	<u>996-5</u>
<u>Junction Boxes</u>	<u>635-2.3</u>
<u>Toll Site Pull Boxes*</u>	<u>996-5</u>

*Use ~~pull and splice boxes~~ products listed on the Department's Approved Product List (APL).

SUBARTICLE 635-2.2 is deleted and the following substituted:

635-2.2 Pull Boxes, ~~and~~ Splice Boxes, and Fiber Optic Splice Vaults:

635-2.2.1 General: ~~Use only boxes that meet the requirements of Section 996 and are listed on the Department's Approved Product List (APL).~~ Ensure box the bodies and covers of these products are free of flaws such as cracks, sharp, broken, or uneven edges, and voids.

~~Ensure in-ground boxes have an open bottom design.~~

635-2.2.2 Marking: Mark boxes in accordance with 996-5.

~~635-2.2.3 Dimensions: Unless otherwise shown in the Plans, provide pull and splice boxes with dimensions in accordance with 996-5.~~

ARTICLE 635-3 is deleted and the following substituted:

635-3 Installation.

635-3.1 General: Do not install power and communication cables in the same box unless otherwise shown in the Plans.

~~When signal or 120 volt (or greater) power is present, ground all metal covers in accordance with Section 620.~~

~~Ensure metal junction boxes are grounded and bonded in accordance with the NEC Section 314.4.~~

Covers must be flush with the concrete apron or sidewalk. Do not install in roadways, driveways, parking areas, public sidewalk curb ramps, or in low-lying locations with

poor drainage. Do not subject the cable to a bend radius less than 14 times the diameter of the cable.

635-3.21.1 Placement and Spacing: Place fiber optic splice vaults or toll site pull boxes as shown in the Plans. Place pull boxes or splice boxes as shown in the Plans and at the following locations, unless directed otherwise by the Engineer:

1. At all major fiber optic cable and conduit junctions.
2. Approximately every 2,500 feet for fiber optic cable applications in rural areas with any continuous section of straight conduit if no fiber optic cable splice is required.
3. At a maximum of 1,760 feet for fiber optic cable applications in metropolitan areas.
4. At a maximum of 500 feet for electrical applications.
5. At each end of a tunnel, and on each side of a river or lake crossing.
6. On each side of an aboveground conduit installation, such as an attachment to a bridge or wall.
7. At all turns in the conduit system **As required for bends in the conduit per Section 630.**
8. Near the base of a service pole or communication cabinet to provide:
 - a. A transition point between the fiber optic conduits extending from the fiber backbone and the conduit feeding the communication cabinet.
 - b. An assist point for the installation of fiber optic drop cable.
 - c. Storage of slack fiber optic drop cable.

635-3.21.2 Electronic Box Marker: Equip all pull and splice boxes buried below finish grade with an electronic box marker inside the pull or splice box to mark the location. Use an electronic box marker to mark the location of products buried below the finish grade surface. Ensure that the electronic box marker is a device specifically manufactured to electronically mark and locate underground facilities. Ensure that the electronic box marker includes circuitry and an antenna encased in a waterproof polyethylene shell. Ensure that the outer shell is impervious to minerals, chemicals, and temperature extremes normally found in underground plant environments. Ensure that the electronic box marker does not require any batteries or active components to operate. Ensure that electronic box markers used to mark fiber optic cable and general telecom applications are orange in color and operate at 101.4 kHz. Ensure that the electronic box marker's passive circuits produce an RF field when excited by a marker locator to direct the locator to the marker's position. Ensure that the electronic box marker has a minimum operating range of 5 feet from the marker locator.

635-3.2 Pull and Splice Boxes: Install pull and splice boxes in accordance with Standard Plans, Index 635-001. ~~Ensure pull and splice boxes are sized for the amount of cable to be placed inside. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Do not install pull or splice boxes in roadways, driveways, parking areas, or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without subjecting the cable to a bend radius less than 14 times the diameter of the cable. Install identification plates according to the box manufacturer's instructions.~~

635-3.2.1 Placement and Spacing: Place pull and splice boxes as shown in the Plans and at the following locations, unless directed otherwise by the Engineer:

1. At all major fiber optic cable and conduit junctions.

- ~~2. Approximately every 2,500 feet for fiber optic cable applications in rural areas with any continuous section of straight conduit if no fiber optic cable splice is required.~~
- ~~3. At a maximum of 1,760 feet for fiber optic cable applications in metropolitan areas.~~
- ~~4. At a maximum of 500 feet for electrical applications.~~
- ~~5. At each end of a tunnel, and on each side of a river or lake crossing.~~
- ~~6. On each side of an aboveground conduit installation, such as an attachment to a bridge or wall.~~
- ~~7. At all turns in the conduit system.~~
- ~~8. Near the base of a service pole or communication cabinet to provide:
 - ~~a. A transition point between the fiber optic conduits extending from the fiber backbone and the conduit feeding the communication cabinet.~~
 - ~~b. An assist point for the installation of fiber optic drop cable.~~
 - ~~c. Storage of slack fiber optic drop cable.~~~~

~~**635-3.2.2 Electronic Box Marker:** Equip all pull and splice boxes buried below finish grade with an electronic box marker inside the pull or splice box to mark the location. Ensure that the electronic box marker is a device specifically manufactured to electronically mark and locate underground facilities. Ensure that the electronic box marker includes circuitry and an antenna encased in a waterproof polyethylene shell. Ensure that the outer shell is impervious to minerals, chemicals, and temperature extremes normally found in underground plant environments. Ensure that the electronic box marker does not require any batteries or active components to operate. Ensure that electronic box markers used to mark fiber optic cable and general telecom applications are orange in color and operate at 101.4 kHz. Ensure that the electronic box marker's passive circuits produce an RF field when excited by a marker locator to direct the locator to the marker's position. Ensure that the electronic box marker has a minimum operating range of 5 feet from the marker locator.~~

~~**635-3.3 Fiber Optic Splice Vaults:** Install fiber optic vaults in accordance with Standard Plans, Index 635-005.~~

~~**635-3.4 Toll Site Pull Boxes:** Install at locations shown in the Plans, according to the pull box installation instructions in this Section, except that toll site pull boxes may be installed in the maintenance pull off area.~~

~~**635-3.3.5 Aerial Junction Boxes:** Install aerial junction boxes in accordance with Standard Plans, Index 634-002.~~

~~**635-3.4.6 Mounted Junction Boxes:** Install mounted junction boxes in accordance with Standard Plans, Index 676-010. Ensure that the bottom surface of pole mounted junction boxes is a minimum of 4 feet above the finished grade.~~

~~**635-3.5.7 Cable Terminations:** Make cable terminations in junction boxes in accordance with Section 632. Route and form the cable to allow access to the terminal screws. Do not cover the terminal identification numbers with the cable.~~

~~**635-4 Relocation of Pull, Splice, and Junction Boxes.**~~

~~Relocation of pull, splice, and junction boxes shall consist of removing an existing box and installing the box at the location shown in the Plans. Restore the area of the box removal and relocation to the condition of the adjacent area. The costs for restoration will be included in the Contract unit price of the relocation.~~

~~Boxes damaged due to the Contractor's operations must be replaced by the Contractor at no cost to the Department. Replacement boxes must be of the same material and size of the existing box, unless directed otherwise by the Engineer.~~

635-~~5~~4 Warranty.

Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance in accordance with 5-11 and Section 608. Ensure the warranty includes providing replacements, within 30 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency.

635-~~6~~5 Method of Measurement.

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

635-~~7~~6 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, ~~except grounding.~~

No separate payment will be made for the removal of pull, splice, and junction boxes.

Payment will be made under:

Item No. 635- 2- Pull and Splice Boxes - each.

Item No. 635- 3- Junction Boxes - each.

Item No. 635- 4- Fiber Optic Splice Vaults - each.

Item No. 635- 5- Toll Site Pull Boxes - each.

PULL BOXES, SPLICE BOXES, JUNCTION BOXES, AND FIBER OPTIC SPLICE VAULTS
(REV 8-19-24)

ARTICLE 635-1 is deleted and the following substituted:

635-1 Description.

Furnish and install pull boxes, splice boxes, junction boxes, and fiber optic splice vaults as shown in the Plans.

SUBARTICLE 635-2.1 is deleted and the following substituted:

635-2 Materials.

635-2.1 General: Meet the following requirements:

Pull and Splice Boxes*	996-5
Fiber Optic Splice Vault	996-5
Junction Boxes	635-2.3
Toll Site Pull Boxes*	996-5

*Use products listed on the Department's Approved Product List (APL).

SUBARTICLE 635-2.2 is deleted and the following substituted:

635-2.2 Pull Boxes, Splice Boxes, and Fiber Optic Splice Vaults:

635-2.2.1 General: Ensure the bodies and covers of these products are free of flaws such as cracks, sharp, broken, or uneven edges, and voids.

635-2.2.2 Marking: Mark boxes in accordance with 996-5.

ARTICLE 635-3 is deleted and the following substituted:

635-3 Installation.

635-3.1 General: Do not install power and communication cables in the same box unless otherwise shown in the Plans. When signal or 120 volt (or greater) power is present, ground all metal covers in accordance with Section 620. Ensure metal junction boxes are grounded and bonded in accordance with the NEC Section 314.4.

Covers must be flush with the concrete apron or sidewalk. Do not install in roadways, driveways, parking areas, public sidewalk curb ramps, or in low-lying locations with poor drainage. Do not subject the cable to a bend radius less than 14 times the diameter of the cable.

635-3.1.1 Placement and Spacing: Place fiber optic splice vaults or toll site pull boxes as shown in the Plans. Place pull boxes or splice boxes as shown in the Plans and at the following locations:

1. At all major fiber optic cable and conduit junctions.

2. Approximately every 2,500 feet for fiber optic cable applications in rural areas with any continuous section of straight conduit if no fiber optic cable splice is required.
3. At a maximum of 1,760 feet for fiber optic cable applications in metropolitan areas.
4. At a maximum of 500 feet for electrical applications.
5. At each end of a tunnel, and on each side of a river or lake crossing.
6. On each side of an aboveground conduit installation, such as an attachment to a bridge or wall.
7. As required for bends in the conduit per Section 630.
8. Near the base of a service pole or communication cabinet to provide:
 - a. A transition point between the fiber optic conduits extending from the fiber backbone and the conduit feeding the communication cabinet.
 - b. An assist point for the installation of fiber optic drop cable.
 - c. Storage of slack fiber optic drop cable.

635-3.1.2 Electronic Box Marker: Use an electronic box marker to mark the location of products buried below the finish grade surface. Ensure that the electronic box marker is a device specifically manufactured to electronically mark and locate underground facilities. Ensure that the electronic box marker includes circuitry and an antenna encased in a waterproof polyethylene shell. Ensure that the outer shell is impervious to minerals, chemicals, and temperature extremes normally found in underground plant environments. Ensure that the electronic box marker does not require any batteries or active components to operate. Ensure that electronic box markers used to mark fiber optic cable and general telecom applications are orange in color and operate at 101.4 kHz. Ensure that the electronic box marker's passive circuits produce an RF field when excited by a marker locator to direct the locator to the marker's position. Ensure that the electronic box marker has a minimum operating range of 5 feet from the marker locator.

635-3.2 Pull and Splice Boxes: Install pull and splice boxes in accordance with Standard Plans, Index 635-001.

635-3.3 Fiber Optic Splice Vaults: Install fiber optic vaults in accordance with Standard Plans, Index 635-005.

635-3.4 Toll Site Pull Boxes: Install at locations shown in the Plans, according to the pull box installation instructions in this Section, except that toll site pull boxes may be installed in the maintenance pull off area.

635-3.5 Aerial Junction Boxes: Install aerial junction boxes in accordance with Standard Plans, Index 634-002.

635-3.6 Mounted Junction Boxes: Install mounted junction boxes in accordance with Standard Plans, Index 676-010. Ensure that the bottom surface of pole mounted junction boxes is a minimum of 4 feet above the finished grade.

635-3.7 Cable Terminations: Make cable terminations in junction boxes in accordance with Section 632. Route and form the cable to allow access to the terminal screws. Do not cover the terminal identification numbers with the cable.

635-4 Warranty.

Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance in accordance with 5-11 and Section 608. Ensure the warranty includes providing replacements, within 30 calendar days of

notification, for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency.

635-5 Method of Measurement.

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

635-6 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section. No separate payment will be made for the removal of pull, splice, and junction boxes. Payment will be made under:

- Item No. 635- 2- Pull and Splice Boxes - each.
- Item No. 635- 3- Junction Boxes - each.
- Item No. 635- 4- Fiber Optic Splice Vaults - each.
- Item No. 635- 5- Toll Site Pull Boxes - each.