Origination Form

Specifications

Name:	Richard Stepp	**Specification Number:**	Section Title, 635-1, 635-2.1, 635-2.2, 635-2.2.1, 635-2.2.2, 635-2.2.3, 635-3.1, 635-3.1.1, 635-3.1.2, 635-3, 635-3.2, 635-3.3, 635-3.4, 635-4, 635-5, 635-6
Email:	richard.stepp@dot.state.fl.us	**Associated Specs:**	996
Date:	2024-06-05T20:14:32Z	**Verified:**	VERIFIED

Summary:

Central Office held multiple meetings with the Florida Turnpike Enterprise (FTE) to clarify miscellaneous items throughout this section, as finalized with FTE subject experts Jason Tosspon, James Beverly, and Eddie Register. In addition to the miscellaneous clarifications, substantial revisions are shown below: 635-2.1 (MATERIALS) – Added references to correct sections in list format for materials; 635-2.2, 3.3: (FIBER OPTIC SPLICE VAULTS) – Added “Fiber Optic Splice Vault” language to support new Standard Plans, Index 635-005; 635-3.4: (TOLL SITE PULL BOXES) – Added “Toll Site Pull Box” language to accommodate this unique pull box type that is generally used around toll sites; 635-4: (RELOCATION OF PULL, SPLICE, AND JUNCTION BOXES) – Removed this section and renumbered subsequent sections; 635-6: (PAYMENT) – Added Pay Items for “Fiber Optic Splice Vault” and Toll Site Pull Boxes”. These Pay Items have been added to the BOE

Justification:

FTE helped draft the proposed revisions to better handle their needs. The new Spec language handles specialized Toll Site Pull Boxes independently, and it now adds language to support the all-new Standard Plans Index 635-005 "Fiber Optic Optic Splice Vault". This Spec language has already been successfully used as a Blanket MSP for Turnpike projects this past year. Also, the "Fiber Optic Splice Vault" has been published as Developmental Standard Plans for this past year, and it has been successfully incorporated into numerous project plans already.

Do the changes affect other types of specifications?

Neither

List Specifications Affected:

Other Affected Documents/Offices	Contacted	Yes/No
Other Standard Plans	I am the developer of Index 635-005	Yes
Florida Design Manual		No
Structures Manual		No

Basis of Estimates Manual	Ryan Gray, Melissa Hollis	Yes
Approved Product List		No
Construction Office		No
Maintenance Office		No
Materials Manual		No
Traffic Engineering Manual		No

Are changes in line with promoting and making progress on improving safety, enhancing mobility, inspiring innovation, and fostering talent; explain how?

These revisions were the result of FTE meetings to better meet their needs for Turnpike Pull Boxes and Splice vaults. This incorporates an innovative new standardized Fiber Optic Splice Vault which incorporates other standardized items for cost efficiency.

What financial impact does the change have; project costs, pay item structure, or consultant fees?

Reduced costs are expected because the Specifications will meet more needs and be easier to understand. This will reduce project-specific design work. Also, standardizing the Fiber Optic Splice Vault creates an an efficient and safe reusable design with economy of scale. Also, the past project-specific designs for the Fiber Optic Splice Vault are no longer needed, saving time and cost in the future.

What impact does the change have on production or construction schedules?

This will reduce project-specific design time once required to meet miscellaneous needs that are now covered in these Spec revisions. Also, the past project-specific designs for the Fiber Optic Splice Vault are no longer needed, saving time and cost in the future.

How does this change improve efficiency or quality?

See production and construction schedule response.

Which FDOT offices does the change impact?

Design, Construction, Program Management

What is the impact to districts with this change?

These changes were requested by the FTE. See production and construction schedule response.

Does the change shift risk and to who?

No.

Provide summary and resolution of any outstanding comments from the districts or industry.

Comments and Responses are available on the Track the Status of Revisions hyperlink located on the Specifications landing page: https://www.fdot.gov/programmanagement/Specs.shtm

What is the communication plan?

Through the established specification revision process (e.g., Internal and Industry Review)

What is the schedule for implementation?

The Standard Specifications eBook and Workbook are effective July 1st every year.

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

(REV 6-5-24)

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:

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

*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.~~2~~1.1 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~~1.2 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.

635-3.46 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.

635-3.57 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.