

## 4.2.5.3.2 - INTERCONNECTION - FIBER OPTIC CABLE

### City of Suffolk Fiber Optics Interconnect Standards

#### Communications Pull Boxes

Fiber optic pull boxes shall be utilized for all communications cables. Pull boxes shall be spaced at a distance of 200 feet or as agreed by the engineer. The Fiber optic pull boxes shall be heavy duty and non-metallic with an open bottom and shall be rated for a static design load of at least 20,000 pounds over a 10 inch square area. The cover (lid) shall be extra heavy duty with 2 bolts with 2 lifting slots and shall be flush seated. Pull box dimensions are 24"X 36"X 30". One fiber optic pull box shall be installed at or within 10 feet of the traffic controller cabinet. Fiber optic pull box shall not contain any items other than communications cable or fiber optic (such as no electrical conductors). When pull box is to be placed in a sidewalk, removal, restoration and replacement of sidewalk slab is required. For drainage, 12" of drainage rock shall be required under the pull box similar to typical shown in VDOT Bridge and Road standard.. Pull box covers shall be stamped

"TRAFFIC SIGNAL FIBER OPTICS". For all fiber optic pull boxes in grassy areas, a concrete reinforced apron will be required. The concrete apron shall be 12" wide x 6" deep reinforced and sloped away around pull box similar to typical shown in VDOT Bridge and Road Standard. . Each pull box shall have 50 feet of spare fiber per run and 50 feet of spare fiber per run at the cabinet pull box.

#### Communications Cable

This paragraph applies to conduit installed for all the communications cables, as to provide for a "fiber friendly" installation. The Conduit shall enter communications pull boxes at a 45 degree angle relative to the vertical wall of the pull box. Conduit ends must be plugged to allow fiber to enter the conduit but keep water from conduit from entering the pull box. Further, the conduit shall terminate in each communications pull box at diagonally opposed corners. Two 2" conduits shall be installed from the communications pull box most adjacent to the traffic controller cabinet and shall terminate within the cabinet. Communications conduit shall include no more than 180 degrees of total bend, and shall have a bending radius of at least 10 times the conduit diameter. All conduits shall be placed at a minimum level of 36" below the finished grade. A City of Suffolk traffic signal inspector shall be notified and be present on site to check the depth of the conduit during the installation. A warning tape 4" in width shall be installed 18" below the finished grade. The warning tape shall read "WARNING FIBER, BURIED COMMUNICATIONS CABLE BELOW". A midpoint splice shall be made at each traffic cabinet location allowing 2 fibers to enter the traffic cabinet and be terminated inside the cabinet using an Iris connector and then to the fiber splice enclosure.. Fiber cables shall be clearly marked indicating direction and locations. Upon completion of fiber installation an OTDR report shall be provided to the City of Suffolk Traffic Engineering Department for review.

**Special Requirements for Traffic Control Signal Devices and ITS Devices  
Municipal Services Department/ Traffic Division  
City of Suffolk**

**Fiber cable Specification –**

**Environment** Outdoor  
**Application** Aerial, Direct Buried, Duct  
**Cable Type** Loose Tube  
**Product Type** Armored  
**Fiber Category** Single-mode (OS2)

**Standards**

**Common Installations** Outdoor lashed aerial, duct and direct-buried; indoor when installed according to National Electrical Code® (NEC®) Article 770  
**Design and Test Criteria** ANSI/ICEA S-87-640

**Cable Design**

<b>Central Element</b>	Dielectric
<b>Fiber Count</b>	12
<b>Fiber Coloring</b>	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
<b>Maximum Fibers per Tube</b>	12
<b>Number of Tube Positions</b>	6
<b>Number of Active Tubes</b>	1
<b>Buffer Tube Color Coding</b>	Blue
<b>Buffer Tube Diameter</b>	2.5 mm (0.1 in)
<b>Number of Filling Elements</b>	5
<b>Tape</b>	Water-swellable
<b>Number of Ripcords</b>	2
<b>Tensile Strength Elements and/or Armoring - Layer 1</b>	Corrugated steel tape armor
<b>Outer Jacket Material</b>	Polyethylene (PE)
<b>Outer Jacket Color</b>	Black

## Temperature Range

**Storage** -40 °C to 70 °C (-40 °F to 158 °F )  
**Installation**-30 °C to 70 °C (-22 °F to 158 °F )  
**Operation** -40 °C to 70 °C (-40 °F to 158 °F )

## Mechanical Characteristics Cable

**Max. Tensile Strengths, Short-Term** 2700 N (600 lbf)  
**Max. Tensile Strengths, Long-Term** 890 N (200 lbf)  
**Weight** 129 kg/km (87 lb/1000 ft)  
**Nominal Outer Diameter** 12.1 mm (0.48 in)  
**Min. Bend Radius Installation** 182 mm (7.2 in)  
**Min. Bend Radius Operation** 121 mm (4.8 in)

## Chemical Characteristics

RoHS Free of hazardous substances according to RoHS 2002/95/EG

## Optical Characteristics (cabled)

**Fiber Type** Single-mode  
**Fiber Core Diameter** 8.2 μm  
**Fiber Category** OS2  
**Fiber Code** E  
**Performance Option Code** 01  
**Wavelengths** 1310 nm / 1383 nm / 1550 nm  
**Maximum Attenuation** 0.4 dB/km / 0.4 dB/km / 0.3 dB/km  
**Serial 1 Gigabit Ethernet** 5000 m / - m / - m  
**Serial 10 Gigabit Ethernet** 10000 m / - m / 40000 m

## Ground kit

Product Type FOH Closures  
Order Number SCF-KT-GND

## Splice spec

- Compact Size: 17" L x 8.6" W x 7.2" H (43.2 cm x 21.9 cm x 18.4 cm)
- Two end plate options – 4 Port and 6 Port
  - 6 Port provides (4) 7/8" (22mm) ports and (2) 3/4" (19mm) ports
  - 4 Port provides (2) 1 1/4" (32mm) ports and (2) 1" (25mm) ports
- Can be configured for butt or in-line applications
- Organizers designed for loose buffer tube and ribbon applications

- Size allows for mounting in small hand holes
  - Provided with LOCK-TAPE Sealing System
  - Accepts a wide variety of grommets for multi drop applications
  - Permanent neoprene gasket system requires no re-entry kits
  - Future cable ports provide capability for future cable installation, without end plate removal
  - Integrated air valve to confirm integrity of final assembly
  - Full line of mounting hardware
  - **UL Approved, RUS Listed**
  - Tested in accordance to Telcordia GR-771 CORE
- COYOTE PUP Closure Kits**

8006622

COYOTE PUP Closure Kit for Buffer Tube – includes (1) 3 section 6 Port End Plate, (1) blank end plate and organizer

8006621

COYOTE PUP Closure Kit for Unitube – includes (1) 3 section 6 Port End Plate, (1) blank end plate, transport tube kit and organizer

8006661

RUS Listed COYOTE PUP Closure Kit for Buffer Tube – includes (1) 3 section 6 Port End Plate, (1) blank end plate, organizer and (2) RUS listed shield connectors.

**Splice Tray Kits**

80807701 12 Count Low Profile Tray w/plastic splice block  
- single fusion splices

80806033 12 Count Standard Tray w/elastomeric splice block  
- fusion & mechanical splices

80807114 72 Count Ribbon Tray w/elastomeric splice block for mass fusion

**Mounting Hardware Kits**

8003325 Aerial hanger bracket

8003279 Manhole support bracket

8003372 Pole/wall mount bracket (vertical)

**Accessories Kits**

End Plate

Grommets

See Grommet Chart in COYOTE Closure End Plate and Accessories Section

80805795 Shell Kit 6" x 17"

80805771 Buffer Tube Storage Compartment

80805775 Unitube Storage (Transition) Compartment

80805105 6 Port End Plate Kit, Includes (1) end plate assembly, (1) full set of plugs, and LOCK-Tape Sealing material

80805739 4 Port End Plate Kit, Includes (1) end plate assembly, (1) full set of plugs, and LOCK-Tape sealing material

80805260 Blank end plate kit

8003371

Future Cable Port Kit, Includes Future Cable Port for 7/8" port, plug and clamps for installation of future cable port during initial assembly

8003291

Future Cable Installation Kit, includes LOCK-TAPE Sealant, bead sealant and L-bracket for preparation of future cable up to .86" in diameter

8003289 Future Cable Port/Cable Installation Kit. Complete kit includes Cat. Nos. 8003289 and 8003291

80806037 3/4" Plug Kit (contains 2 plugs)

80806180 7/8" Plug Kit (contains 2 plugs)

80806038 1" Plug Kit (contains 2 plugs)

80806181 1 1/4" Plug Kit (contains 2 plugs)

80805293 Transport Tube Kit (contains 6 tubes)

8003280 Transition Tube Kit, used to transition fibers from top section of end plate to the transition compartment

8003418 Heat Shield for PUP Closure

**Installation Materials**

80805238 C-Cement, 1 oz. tube

80805925 LOCK-TAPE Sealant 1" W x 15" L Roll

**Splice Tray/Closure Capacities**

Low Profile Single Fusion 12 6 72

Standard Single Fusion &

Single Mechanical 12 4 48

Ribbon Mass Fusion 72 2 144

**Traffic cabinet splice enclosure - Single-panel Housing (SPH-01P) using CCH-CP12-A9 connector panel**

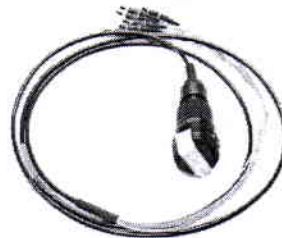
**IRIS INSTALLATION INSTRUCTIONS**






**CONNECTOR PARTS LIST**

1) Upper shell breakout assembly

Note: The upper shell breakout assembly is fitted with dust caps on both ends to prevent contamination.

After removing packaging material from the shell body and two meter pre-terminated cable assembly, be sure that all dust caps are secure.



<p>2) Lower shell drop cable assembly</p> <p>Note: The lower shell drop cable assembly is comprised of the connector with individual connector ferrule dust caps on one end and is un-terminated on the opposite end of the drop cable in order to facilitate rigging for cable pull.</p>	
<p>3) Compression spring threaded connection</p> <p>The compression spring threaded connection is part of the upper shell breakout assembly. It is the part that holds the top shell to the bottom shell in place under tension</p>	
<p>4) Compression spring bearing trip ring</p> <p>The compression spring bearing trip ring snaps over the ball bearings of the compression spring threaded connection to hold the top and bottom connector shells in the trip position.</p>	
<p>5) The trip safety ring is used to prevent accidental trip during connector assembly and while working in an operational cabinet.</p>	
<p>6) Halo trip cage</p> <p>The halo trip cage assembly attaches to the compression spring bearing trip ring and provides the necessary leverage to activate the trip function when side pressure is applied to the upper ring.</p>	




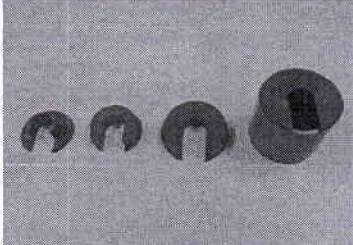

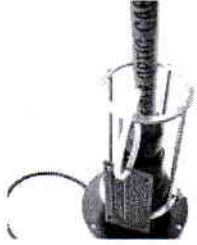


**TrueView Products Inc. Installation Guide**

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## IRIS INSTALLATION ACCESSORIES

<p>1) Connector assembly compression tool and cradle assembly is comprised of a common, off the shelf bar clamp and a specially designed slip cradle connector holder which conveniently fits bar clamp.</p>	
<p>2) Nine feet of braided steel trip wire, trip wire crimp barrels and anchor clamps are included in the connector installation kit.</p>	
<p>3) Butyl rubber splicing tape is included with the installation kit to facilitate final conduit cap seal for water proofing specifications.</p>	
<p>4) Conduit cap plates (for 2", 3" and 4" electrical rated conduits) can be slid on after the cable is pulled and also allow for additional cables to bypass the IRIS in the same conduit for retrofit or permanent cable placement.</p>	
<p>5) Connector pin cleaning kit includes special optical cleaning solution, fiber optic lint free cleaning sticks and fiber optic lint free cloth for IRIS and conventional connector cleaning. (Sold separately)</p>	
<p>6) "Caution Fiber Optic Trip Sensitive Device" ring markers are included and should be attached to the halo trip cage after the installation is complete.</p>	


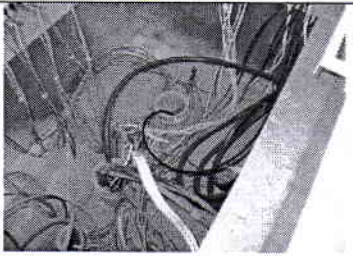


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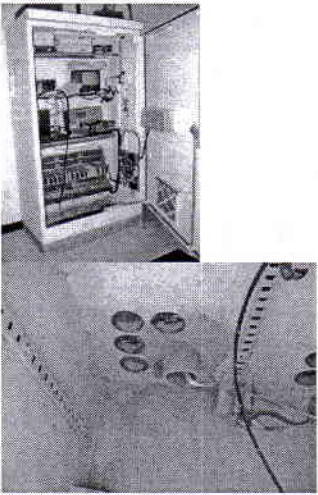

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### INSTALLATION GUIDE FOR LOWER SHELL DROP CABLE ASSEMBLY

<p>1) Remove contents of package and inventory parts.</p>	
<p>2) Prepare lower shell drop cable assembly by removing protective plastic wrap and (when provided) securing pre-installed pulling eye to the JET line or mule tape. If no pulling eye is provided, secure a basket grip swivel eye to the cable end prior to pulling. Note: Never use cinch knots direct on fiber optic jackets as this can damage the fiber.</p>	
<p>FOR PVC ELECTRICAL CONDUIT STUB-UPS</p> <p>3) Prepare cabinet conduit stub-up by cutting it flush to the concrete level. By design specifications, if no fixed cabinet parts are to protrude above the top of the concrete slab, after cutting conduit flush to the top of the slab, use a router and a 1 1/2 inch end cut router bit to hone out the conduit below the</p>	



<p>slab level.</p> <p>4) Position one individual at cabinet feed location and one individual at trunk-line interface location.</p> <p>5) Pull the drop cable in accordance with Industry Standards guidelines or customer requirements from the cabinet location to the trunk-line splice location.</p> <p>6) As the pulling end of the fiber drop cable reaches the trunk-line interface location, most of the additional slack or excess cable will need to be pulled forward toward the splice point.</p> <p>Temporarily leave approximately 24 inches of excess cable at the cabinet end in order to facilitate final assembly and mounting of the lower shell portion of the connector.</p>	 <p style="text-align: center;">→</p>
<p>7) Use the appropriate sized conduit cap for the conduit stub-up size (2 inch, 3 inch or 4 inch) as specified in the product order form. Attach the conduit cap to the bottom of the lower shell connector flange with the #8 machine screws included in the installation package.</p> <p>The conduit cap is slit on one side for easy installation. (This slit can also be used for retro-fit of an existing non-breakaway connection, eliminating cut-over modification time, as well as when additional cable is in the same conduit.)</p>	

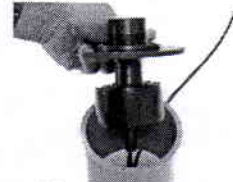
INSTALLATION GUIDE (Continued)

8) Pull the remainder of the cable slack to the splice location. Carefully slide the lower shell connector into the conduit until the flange slides down into the conduit or penetration stub up.

NOTE: Although the bottom part of the connector assembly has a fairly strong pull tension, carefully monitor the final 24" of pulling to ensure connector is not stressed during final fit-up.



Standard Installation

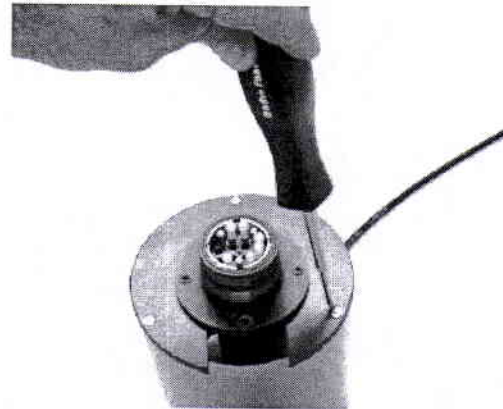


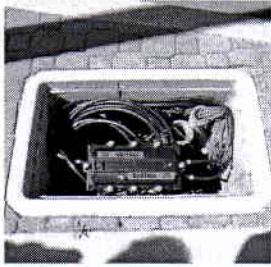

Water proof Installation

9) The conduit cap assembly provided is designed to be self holding when lateral movement is applied. However, some installation specifications may require that you drill and secure the cap to the top or side of the conduit stub-up. In this situation, the aluminum cap will drill fairly easy and fit-up can be accomplished using (3) #6 x 5/8" pan-head screws.

a) Where installation specifications require the conduit stub-up to be recessed or flush with the concrete pad, securing the cap from the top as described above is your only option.

b) For installations where the conduit stub-up is allowed to extend beyond the surface of



<p>the concrete pad, #8 side tap threads are provided in the conduit cap for easy fit-up.</p>	
<p>10) At the trunk-line splice location be sure to leave sufficient slack for splicing operations (usually a minimum of 12 feet plus the amount specified by the client or Standards) for stored slack. Remember, this is a breakaway connection so the normal amount of stored slack is not required.</p>	
<p>11) Fusion splice or connect the drop cable to trunk-line cable in accordance with client requirements and Industry Standards.</p>	



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INSTALLATION GUIDE FOR FACTORY PREASSEMBLED UPPER SHELL BREAKOUT ASSEMBLY

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