



COMMUNICATIONS RACEWAY/INNERDUCT

PART 1 GENERAL

To allow for future communication upgrades, including transitioning from multi-pair copper cables to optical fiber media, a specific number of conduits shall be dedicated for that purpose. And to further that effort and achieve maximum conduit utilization, those conduits shall contain innerduct.

1.1 SECTION INCLUDES

- A. Flexible Textile Raceway, Innerduct or Conduit

1.2 REFERENCES

- A. Innerduct definition per the American National Standards Institute (ANSI)

1.3 SUBMITTALS

- A. Product Data - Provide standard details and installation instructions.

PART 2 PRODUCTS

2.1 GENERAL

- A. Materials & Equipment: Labeled and/or listed as acceptable to the authority having jurisdiction as suitable for the intended use
- B. Flexible optical fiber/communication raceway.
- C. Provide wire management in a building for fiber optic and data and communications cabling.
- D. A non-metallic raceway, usually circular, placed within a larger raceway. (Sub duct)

2.2 MANUFACTURERS

- A. Provide products offered by MaxCell Group/TVC Communications
600 Plum Creek Dr.
Wadsworth, OH. 44281
1-888-387-3828

- 1. Substitutions will not be acceptable.

2.3 MATERIALS

- A. White Polyester and Nylon resin polymer

2.4 TEXTILE INNERDUCT

- A. Standard Outdoor Textile Innerduct: Micro (33mm), 2-inch, 3-inch and 4-inch single or multi-cell polyester/nylon textile innerduct containing 1250lb polyester flat woven pull tape.

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- B. Detectable Outdoor Textile Innerduct: Micro (33mm), 2-inch, 3-inch and 4-inch single or multi-cell polyester/nylon textile innerduct containing 1250lb polyester flat woven pull tape, and a solid copper, polyvinyl color coated conductor (19AWG minimum) for tracing and rated for a minimum of 6 amps and 600 volts. Conductor shall be placed in the sidewall edge fold of the textile sleeve.
- C. Indoor Textile Innerduct (Riser-listed): Micro (33mm), 2-inch, 3-inch and 4-inch single or multi-cell nylon textile innerduct containing 1250lb polyester flat woven pull tape which meets UL2024A for flame propagation and smoke density values for general applications.
- D. Plenum-Listed Textile Innerduct: Micro (33mm), 2-inch and 3-inch single or multi-cell nylon textile innerduct containing 200lb nylon-resin flat woven pull tape which meets UL2024A for flame propagation and smoke density values for use in air handling spaces.

2.5 TEXTILE INNERDUCT FITTINGS

- A. Conduit Plugs: Compression-type conduit plugs with locking nuts for sealing and securing one or more textile innerducts within a 4-inch inside diameter conduit, e.g.:
 - a. 4-inch plug with nine holes for cables in a 3 pack (9-cell) configuration
- B. Termination Bags: Inflation-type bags for sealing and securing around one or more textile innerducts and cables within 2-inch outside diameter or larger conduit.

2.6 PULL TAPE

- A. Pull Tape: measuring and pulling tape constructed of synthetic fiber, printed with accurate sequential footage marks. Color-coded.

2.7 PENETRATION SEALING MATERIALS

- A. Duct Water Seal: products suitable for closing underground and entrance conduit openings where innerduct or cable is installed, to prevent entry of gases, liquids, or rodents into the structure.

3. EXECUTION

3.1 Protection During Construction

- A. Protect products from the effects of moisture, UV exposure, corrosion and physical damage during construction.

3.2 Textile Innerduct Type to Be Used

- A. Aboveground, Exterior and Interior Conduit Installations: Outdoor textile innerduct (Standard or Detectable as desired)

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- B. Interior Exposed Locations
 - a. Non-plenum Areas: Indoor textile innerduct
 - b. Plenum Areas: Plenum-listed indoor innerduct
- C. When installed in 4" conduit, use two 3" 3-Cell packs with an additional pull tape on the outside for future pulls in each conduit.
- D. Cable Tray: use standard outdoor or indoor textile innerduct

3.3 Textile Innerduct Installation

- A. Provide textile innerduct in conduit and wire ways, and place textile innerduct within and under cable trays using continuous unspliced lengths of textile innerduct between maintenance holes, pull boxes, and/or termination points as indicated on the drawings.
- B. Make a 2" incision, approximately 18" from the end of textile innerduct. Pull out and cut off approximately 2 feet of pull-tape. Thus allowing the pull tape ends to retract back into the cells.
- C. Using approximately 6 feet of pull tape, tie a non-slip knot to the incision. Then tie 3 to 6 half-hitch knots down to the end of textile innerduct. Apply black vinyl tape over all knots and the end of textile innerduct. Using a Bow Line knot tie a swivel to the end of 3 feet pull tape. For multi-pack installations one swivel is sufficient, but stagger each textile innerduct.
- D. Using a Bow Line knot, attach the pull rope located in the rigid conduit to the other end of the swivel. Install textile innerduct – ensuring that no twist is introduced to the innerduct.
- E. Provide suitable textile innerduct slack in the maintenance holes, hand holes, pull boxes, and at turns to ensure there is no kinking or binding of the product.
- F. Textile Innerduct Mountings, Hangers and Attachments: When exposed indoors or in maintenance holes, hold firmly in place using independent support.
 - a. Design & install hangers and other similar fittings adequate to support loads and so as to not damage innerduct.
 - b. Do not fasten textile innerduct to steam, water, or other piping, ductwork, mechanical equipment, electrical equipment, electrical raceways, or wires
 - c. When appropriate, use the following cable ties to secure textile innerduct through previously created incisions:
 - i. Plenum areas: plenum-rated plastic or stainless steel
 - ii. Non plenum areas: Conventional flame-retardant nylon ties
 - iii. Underground locations : Conventional plastic cable ties
- G. Maintenance Hole and Hand Hole Installation:

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- a. At locations where textile innerduct will be continuous through a manhole or hand hole, allow sufficient slack so that the innerduct may be secured to the side of the vault maintaining the minimum bend radius.
 - b. At maintenance holes serving as the junction location, pull the exposed end of the innerduct to the far end of the vault, install termination bag, and secure to the vault.
- H. Cable Tray and Runway Installation: Cut incisions every 24 inches into the edge of the textile innerduct and cable wrap to one side of vertical ladder rack or horizontal ladder-type cable tray at each incision.

3.4 Penetrations

- A. Seal all conduit and textile innerduct entering structures at the first box or outlet to prevent entrance into the structure of gases, liquids or rodents.
- B. Inspect fire stopping installation by others between building structure and conduit, wire way, and cable tray to verify integrity of installation.
- C. Exposed Textile Innerduct Penetrations: Install conduit sleeves or fire barrier sealing systems in all openings where open and exposed textile innerduct passes through fire-rated walls and floors. After installation, install intumescent fire barrier penetration sealing material (Hilti system) between textile innerduct and sleeves or fire barrier system.
- D. Raceway Penetrations: After textile innerduct installation, install intumescent fire barrier penetration sealing material (Hilti system) between textile innerduct and conduit or wire way at all exposed penetration locations.
- E. Protect adjacent surfaces from damage during water seal or fire stop installation. Repair any damage.
- F. Document entire installation process for future referral.

End of Section

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