MDU

MULTIPLE DWELLING UNIT

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An Orbia Connectivity
Solutions business.

Why install fiber directly to individual living units?

▶ **Around 30% of all households are Multiple Dwelling Units[1]** (MDUs) and those owners and renters are the most demanding broadband users.

▶ Fiber-ready MDUs can attract higher rents and sale prices.[2]

▶ Only fiber can meet the expectations of high speeds, fast downloads, and property-wide wi-fi reliability.

▶ Limitless broadband capabilities are an essential utility. Only fiber can handle future demand and support the growth of the Internet of Things (IoT).

▶ Home workers and gamers demand speed and reliability that only fiber can deliver.

▶ Supports video-on-demand with little or no buffering.

Reference:
1 https://constructioncoverage.com/research/cities-building-the-most-multi-family-housing

2 Fiber Broadband Association (2017, October 16). Multiple Dwelling Unit. Retrieved from www.fiberbroadband.org

Why use a MicroDuct pathway?

☑ MicroDucts are small ducts, (8.5 mm–27 mm in diameter) that can be installed for a permanent, reusable, behind-the-wall pathway for fiber-optic cable placement.

☑ MicroDucts are ideal for MDU and FTTX installations.

☑ MicroDucts meet necessary fire codes, available in Riser or Plenum material (UL 2024).

☑ The MicroDuct pathway allows for easy repair or future fiber upgrades.

☑ Fiber cable can be pre-installed in the MicroDuct for the fastest, lowest-cost installation.

☑ Dura-Line stocks bend-insensitive single mode (BIF-SM) fiber cordage for quick turn-around on pre-installed fiber cable orders.

☑ The MicroDucts can alternatively be supplied with a pre-installed pull string for pulling in fiber-optic cable at time of service request.

☑ MicroDuct pathways can be installed in new construction (greenfield) or existing buildings (brownfield).

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Greenfield Installations
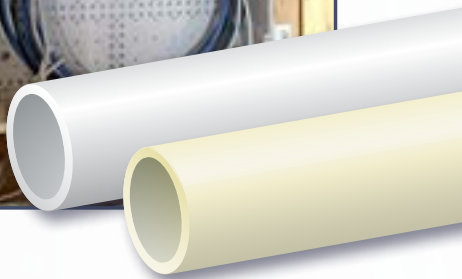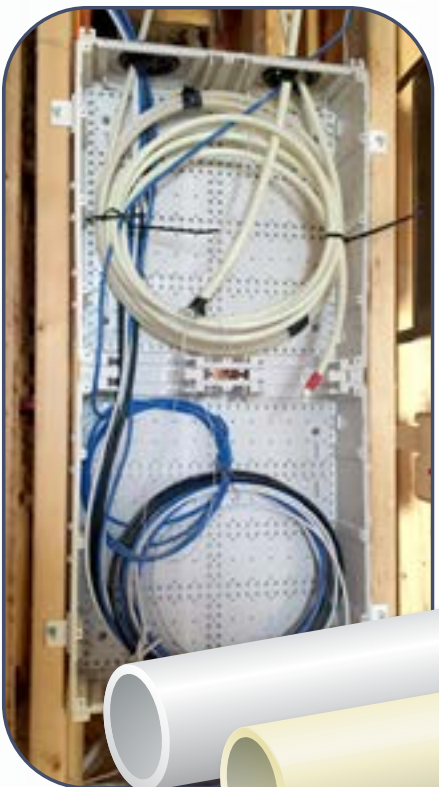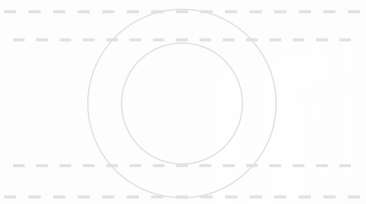
In greenfield installations, the MicroDuct pathway should be placed prior to the dry wall installation.
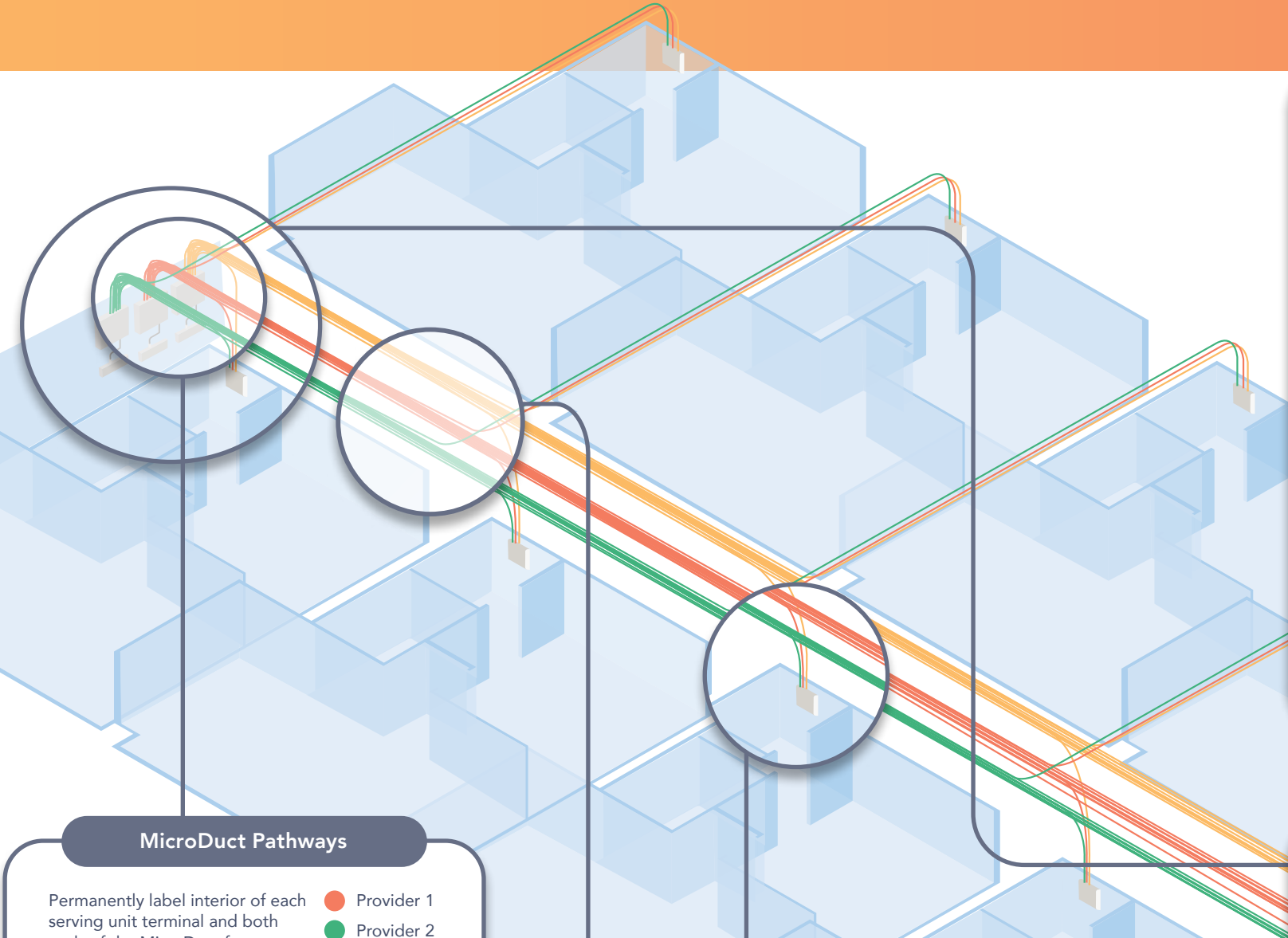
MDU route guidelines when placing MicroDuct

▶ Number of bends should not exceed eight 90° turns, or sixteen 45° turns.

▶ Bends of 45° or less are easier to pull through and should be used when possible.

▶ Run lengths of 200' are recommended, but routes can be designed with longer distances.

▶ Long sweeping bends are encouraged with a minimum 13" bend radius for easiest fiber cable installation or removal for repair or upgrades.

Remember:

▶ If storing the MicroDucts outside, protect from prolonged exposure to the sun.

▶ Install in accordance with all local fire codes.

▶ Avoid shortcuts that affect installation quality.

Bend Radius Gauge

▶ Each 24" reel shipment of MicroDuct should contain a bend radius gauge that will be taped to the outside of the reel.

▶ The bend radius gauge serves as a guide to encourage sweeping bends in the MicroDuct pathway for all future fiber installations.

13" radius gauge

More detailed installation information can be found in Technical Bulletin DCEB-06004: "MicroDuct for Communication Systems in MDU's"

MDU Installation Techniques

A

B

✔ For straight runs, either horizontal or vertical, secure MicroDuct every 16" - 24".

✔ **(A)** Plastic cable strap clamps recommended. On runs with multiple MicroDucts, use two-hole cable straps or cable ties, properly secured along entire length of route.

✔ **(B)** Utilize nail plate or other protective hardware to stop drywall screws or nails from damaging pathways.

✔ Do not overtighten cable ties or crush MicroDuct.

✔ Label MicroDucts at both ends, preferably at three places, outward facing for easy ID.

✔ MicroDuct organizing brackets are designed to be used where multiple MicroDucts are terminated.

MicroDuct Pathways

Permanently label interior of each serving unit terminal and both ends of the MicroDuct for easy identification.

● Provider 1
● Provider 2
● Provider 3

Fiber Installation Options (further details on page 9)

Empty – ready for cable jetting

Pull string

Pre-installed fiber

Serving Unit Terminal

✔ When MicroDuct reaches the serving unit terminal, insert MicroDuct and pull 8' to 10' of MicroDuct into terminal housing. Coil MicroDuct and secure with cable ties.

✔ Do NOT remove the MicroDuct from the cable in the terminal housing. Secure MicroDuct with connector or a cable strap clamp. Avoid sharp bends.

✔ If MicroDuct kinks, pull additional MicroDuct into terminal housing and remove kink, or remove and discard damaged MicroDuct.

Communication Closet

MDU Riser MicroDuct

MicroDuct Mounting Bracket

Cable Slack Storage Box

Flex Tube

Fiber Distribution Terminal

OSP Fiber Entrance

MicroDuct mounting brackets are available for MicroDuct sizes: 8.5 mm, 12.7 mm, and 16 mm.

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In brownfield installations, the building construction will dictate the best installation method.

Things to consider for brownfield MicroDuct installations:

▶ MicroDuct pathway is typically installed outside via a protective raceway.

▶ Ideal with attic access.

▶ Best suited for buildings with five stories or fewer.

▶ Behind-the-wall installations are typical, but surface-mount installations are common as well.

Riser and Plenum MicroDuct

▶ SILICORE® ULF super-slick permanent lining.

▶ Sequential footage markings.

▶ UL/ETL specs for both US and Canada (CSA).

▶ Riser MicroDucts are dull yellow in color.

▶ Plenum MicroDucts are opaque white in color.

▶ Available with pre-installed 50# pull string.

▶ Available with pre-installed fiber.

Fiber Cordage

Dura-Line stocks bend-insensitive single mode (BIF-SM) fiber cordage for factory pre-installation into the MicroDuct.

Remember

▶ Protect the MicroDucts from exposure to the sun with permanent raceway.

▶ Install in accordance with all local fire codes.

▶ Avoid shortcuts that affect installation quality.

Drill Locations

Serving Unit Terminal

Protective Raceway
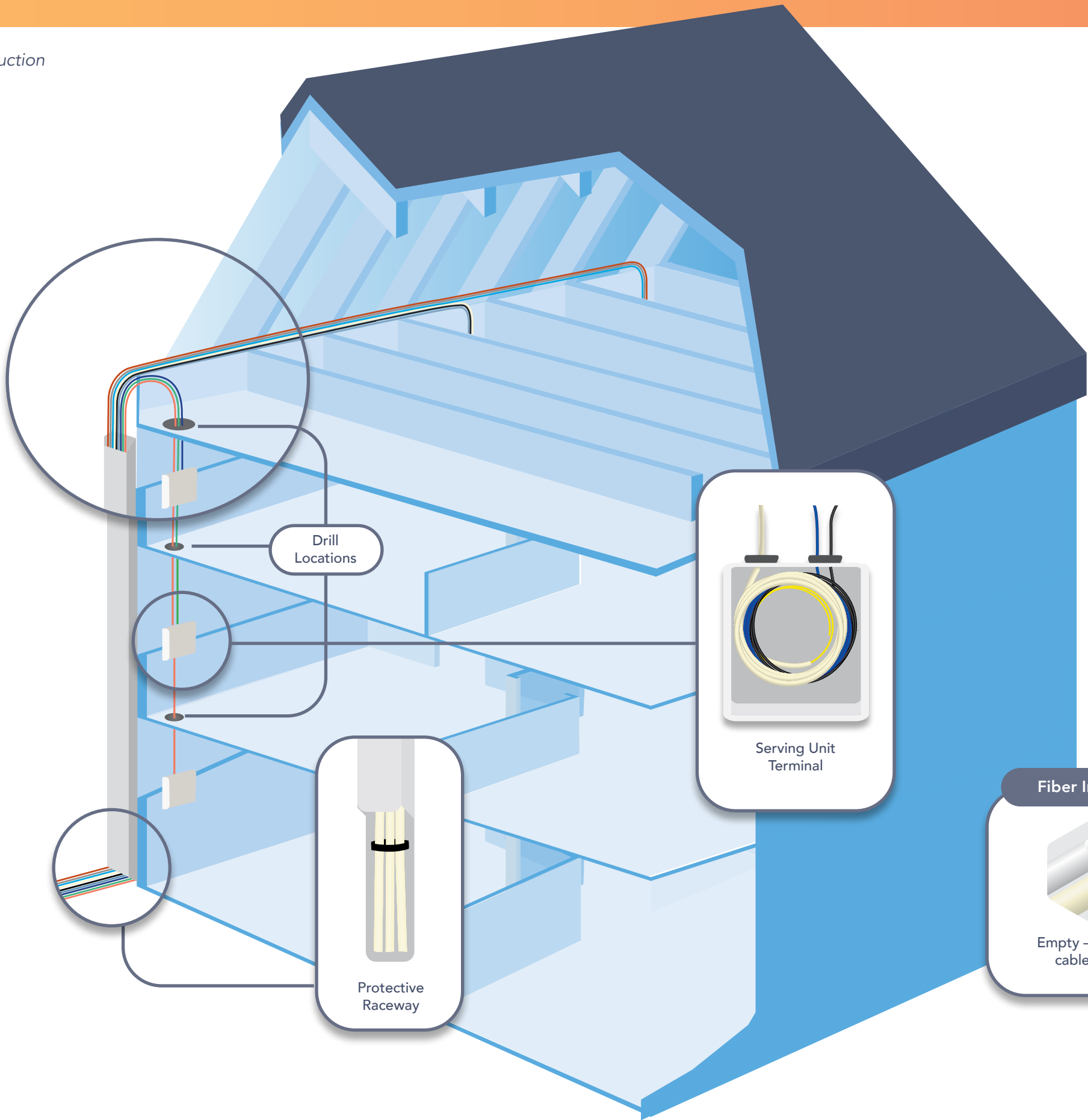
Typical Installation:

▶ Pull the MicroDuct from the outside of the building to the attic level.

▶ Penetrate the attic wall or enter through the soffit or gable.

▶ Use a raceway to protect the exposed MicroDuct on the outside of the building from UV and weather.

▶ Choose a utility room or closet to terminate the MD Pathway.

▶ From the attic floor, drill a hole large enough for all MicroDucts to be pulled, one per floor. Sleeve and/or fire seal as per local codes. One duct for each unit to be served.

▶ Pull the MicroDuct bundle from the attic to the top floor.

▶ Drill through the floor to access the next level, sleeving and fire sealing as per local code.

▶ Pull the MicroDuct bundle, dropping one MicroDuct at each floor, as you move down through the levels.

▶ The MicroDuct and pull string are cut and stored in the serving unit terminal.

Fiber Installation Options: (further details on page 9)
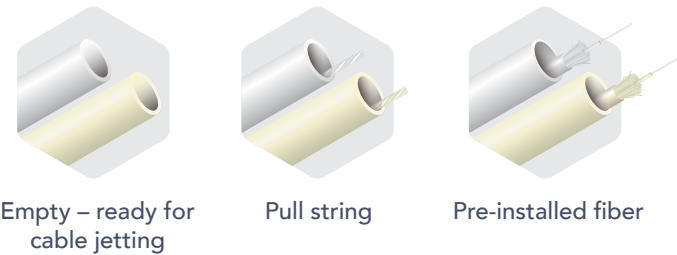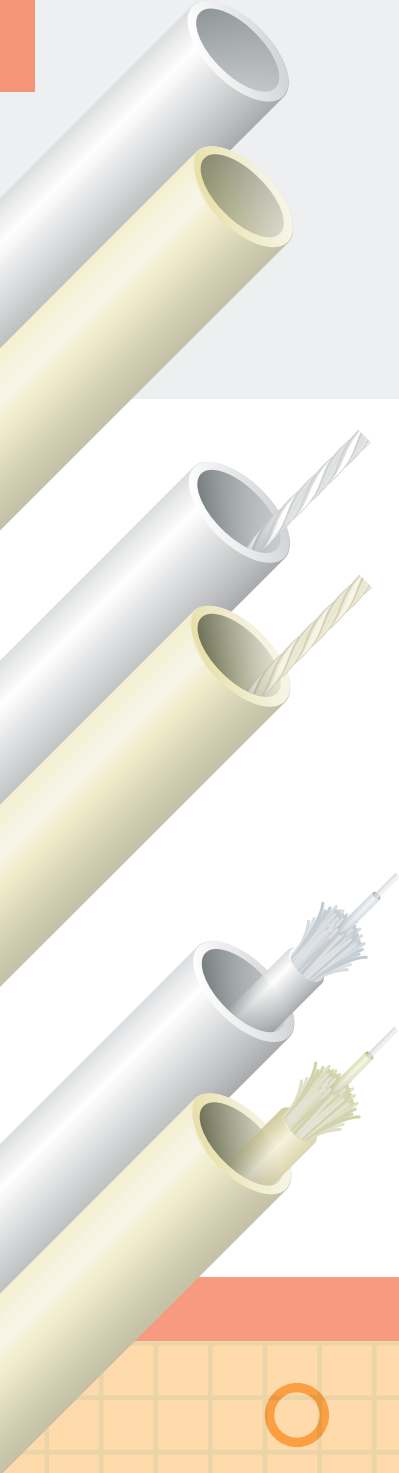
Empty – ready for cable jetting

Pull string

Pre-installed fiber

Riser and Plenum MicroDuct

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- ▶ Sequential footage markings
- ▶ UL/ETL specs for both US and Canada (CSA)
- ▶ Riser MicroDucts are dull yellow in color

- ▶ Plenum MicroDucts are opaque white in color
- ▶ Available with pre-installed 50# pull string
- ▶ Available with pre-installed fiber for one-step installation

Pull String

MicroDucts can be provided with pre-installed pull string for fiber placement at a later date.

Pre-Installed Fiber

MicroDucts can be provided with pre-installed fiber for easy one-step placement of fiber and MicroDuct pathway.

Empty

MicroDucts can be provided empty for future cable placement. Hand-held cable jetting equipment can be used to install fiber quickly and easily.

Sweeping Bend Radius

For MDU MicroDuct installation, use a sweeping bend radius of 13". MicroDucts can sustain a much tighter bend radius; however, the sweeping bend radius ensures easy cable placement and future upgrades.

13"
radius gauge

How to Measure OD/ID Specifications

Inside Diameter (ID)

Outside Diameter (OD)
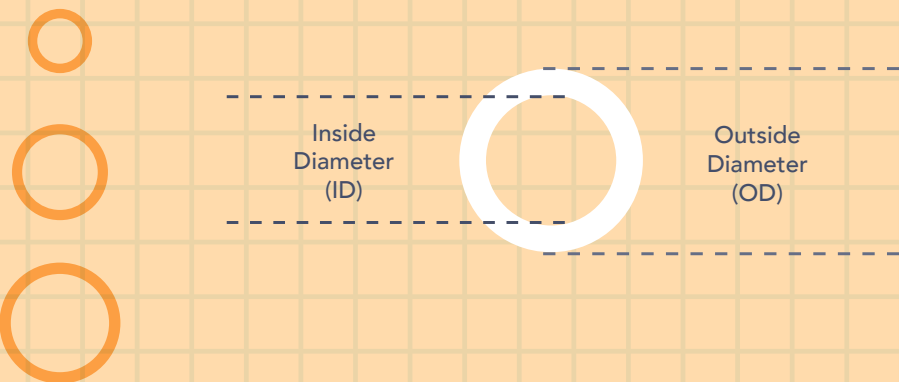
Riser and Plenum MicroDuct Specifications

	OD/ID (MM)	Nom OD (MM/IN)	Min ID (MM/IN)	Weight (LB/FT)	SWPS (lbs)	Standard FT Per Reel	Wooden Reel Size (IN)
RISER	8.5/6	8.5/0.34	5.9/0.23	0.022	89	1,000	24
						2,500	24
	12.7/10	12.7/0.50	9.8/0.39	0.033	156	1,000	24
						2,500	35
	16/12	15.9/0.63	11.6/0.46	0.060	285	1,000	24
						2,500	35
PLENUM	8.5/6	8.5/0.34	6.7/0.26	0.024	89	1,000	24
						2,500	24
	12.7/10	12.7/0.50	10.2/0.40	0.052	188	1,000	24
						2,500	35
	16/13	16/0.63	12.8/0.51	0.080	293	1,000	24
						2,500	35

Riser MicroDucts: ETL Listed to UL 2024, CSA C22.2 No.262-04, UL-94 V-2 and CSA FT4

Plenum MicroDucts: ETL Listed to UL 2024, CSA C22.2 No.262-04, UL-94 V-0 and CSA FT6

For Installation Guides or further information, contact
Customer Service: (800) 847-7661

Training information available online:
https://academy.duraline.com

MicroDuct Cutters

The Straight MicroDuct Cutter is a simple tool to use. Open the cutter, place the MicroDuct inside and then close. This cutter creates a clean, 90 degree cut that is required at the MicroDuct splice point.

The Round MicroDuct Cutter operates similarly, but only cuts the MicroDuct itself. It leaves the MicroCable or pull string inside the MicroDuct unscathed. The Round MicroDuct Cutter has guides that prevent the blade from cutting any deeper than the wall of the MicroDuct.

MicroDuct Coupler

Couplers provide an air-tight and water-tight connection while keeping debris out of the MicroDuct pathway. They are designed and tested to meet or exceed industry standards while the low-profile design withstands chemicals and harsh environment conditions.

Description	Part #
Round MicroDuct Cutter	20005284
Straight MicroDuct Cutter	20001856
8.5 mm Straight Coupler	20001834
12.7 mm Straight Coupler	20001832
16 mm Straight Coupler	20001517
FlexClip with Screw	20002885

Fiber Cordage

Dura-Line stocks bend-insensitive single mode (BIF-SM) fiber cordage for factory pre-installation into the MicroDuct.

MicroDuct Mounting Brackets and Plates

In MDU applications, a method was needed to organize and secure the MicroDucts. Dura-Line developed a bracket system that securely holds the MicroDucts in place and avoids possible damage and potential fiber breakage. It is modular and it can be customized for specific requirements. Depending on the application, the brackets will also work with both Riser and Plenum rated MicroDucts.

Features:

▶ Expandable modular system designed to organize multiple MicroDucts at termination.

▶ Additional brackets can be added as needed.

▶ First bracket comes already mounted to the base plate.

▶ No special tools required, just a 3/16" Allen wrench needed to assemble and disassemble the bracket.

Description	Color	# of Ducts per Bracket	Part #
8.5 mm MicroDuct Wall Mounting Plate (Includes 1 wall plate, 2 brackets, and 6 screws)	Orange	8	20093818
8.5 mm MicroDuct Top Mounting Bracket (Each bracket secures a row of 8 MicroDucts with 3 screws)	Orange	8	20001719
12.7 mm MicroDuct Wall Mounting Plate (Includes 1 wall plate, 2 brackets, and 6 screws)	Orange	8	20093819
12.7 mm MicroDuct Top Mounting Bracket (Each bracket secures a row of 8 MicroDucts with 3 screws)	Blue	8	20001929
16 mm MicroDuct Wall Mounting Plate (Includes 1 wall plate, 2 brackets, and 6 screws)	Orange	6	20093820
16 mm MicroDuct Mounting Bracket (Each bracket secures a row of 8 MicroDucts with 3 screws)	Black	6	20003575

Extra Items:

☐ Clamps
☐ Wall clips
☐ Cable strap clamps

☐ Cable supports
☐ Sharpie
☐ Cover - should be rated to reflect UV rays