MDU

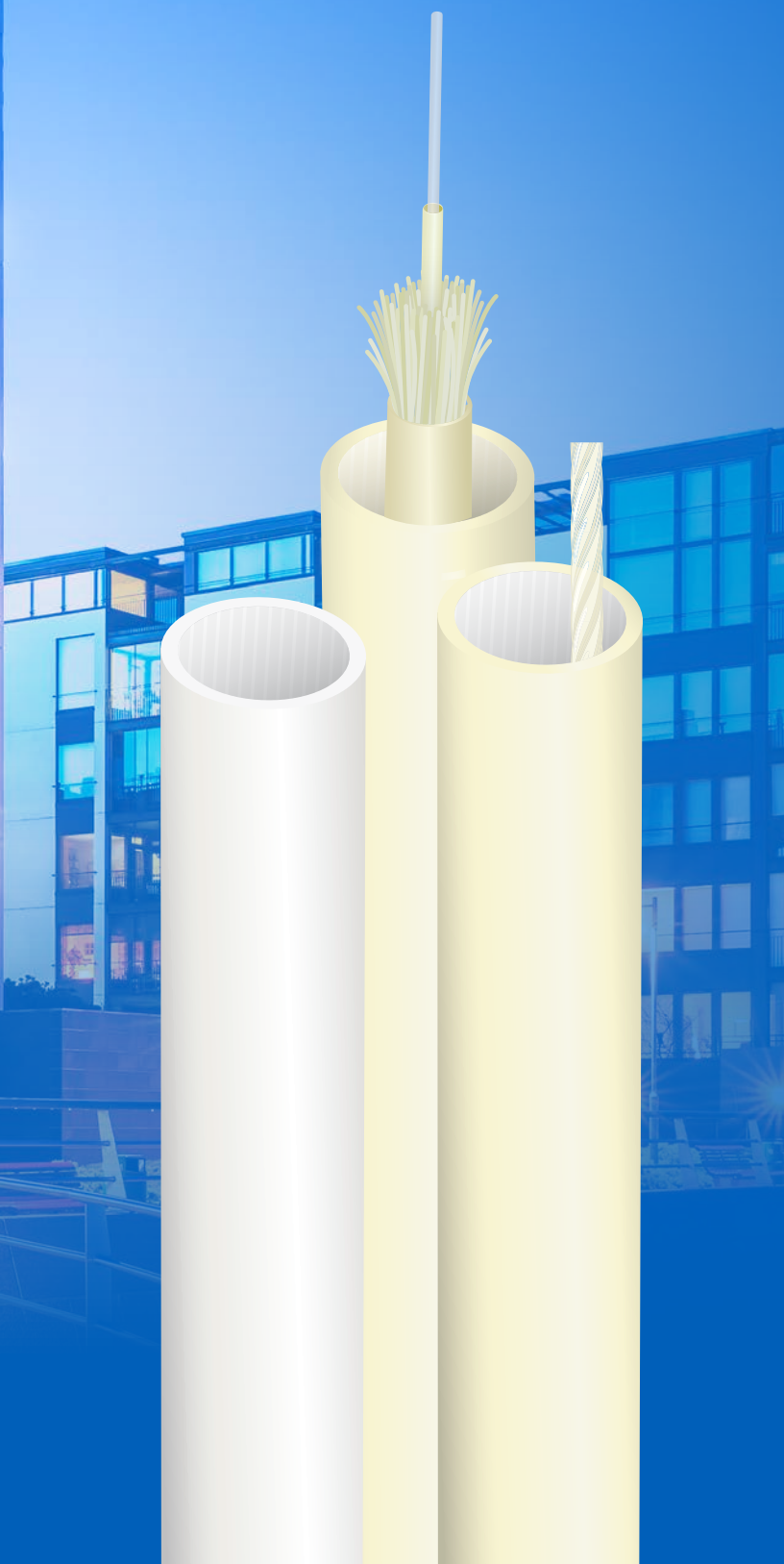## MULTIPLE DWELLING UNIT

dura·line

PATHWAYS MAKE IT POSSIBLE

Why install fiber directly to individual living units?

- 25% of all households are Multiple Dwelling Unit's (MDU's) and those owners & renters are the most demanding broadband users
- If the MDU's are fiber ready, properties can realize 8% premium in US, and 2.5% in Canada (Reference: "Fiber Broadband Association (2017, October 16). Multiple Dwelling Unit. Retrieved from www.fiberbroadband.org")
- 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)
- Telecommuters demand speed and reliability that only fiber can deliver
- Supports video-on-demand with little or no buffering

Why use a MicroDuct Pathway?

- MicroDucts are small ducts, (8.5mm–16mm in diameter) that can be installed for a permanent, reusable, behind-the-wall pathway for fiber optic cable placement
- 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 one-step installation of MicroDuct and Fiber Cable for the fastest, lowest cost installation
- Dura-Line stocks bend-insensitive single mode (BIF-SM) fiber cordage for quick turn-around on pre-installaed 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)

For Installation Guides or further information, contact
Customer Service: 800.847.7661
Training information available online: www.duraline.com/training

---

Riser and Plenum MicroDuct

- SILICORE™ super slick permanent lining
- Sequential footage markings
- UL/ETL specs for both US & Canada (CSA)
- Riser MicroDucts are dull yellow in color
- Plenum MicroDucts are opaque white in color
- Available with 50# pull string pre-installed
- Available with fiber pre-installed for one-step installation of fiber and MicroDuct pathway

Fiber Cordage

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

---

Riser and Plenum MicroDuct Specs

	OD/ID (MM)	NOM OD (MM/IN)	MIN ID (MM/IN)	WEIGHT (#/FT)	SAFE WORKING PULL STRENGTH (LBS) †	STANDARD PUT UP	WOODEN REEL
RISER	8.5/6	8.5/0.33	5.9/0.23	0.022	89	1,000'	24 "
						2,500'	24 "
	12.7/10	12.7/0.50	9.5/0.37	0.042	172	1,000	24 "
						2,500	35 "
	16/12	16/0.63	11.6/0.46	0.06	285	1,000	24 "
						2,500	35 "
PLENUM	8.5/6	8.51/0.33	6.7/0.26	0.024	89	1,000'	24 "
						2,500'	24 "
	12.7/10	12.7/0.50	10.2/0.40	0.049	177	1,000	24 "
						2,500	35 "
	16/13	16/0.63	12.8/0.51	0.08	293	1,000	24 "
						2,500	35 "

Outside Diameter

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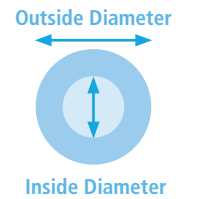
Riser MicroDucts:
ETL Listed to UL 2024 & CSA C22.2 No.262-04 and UL-94 V-2 & CSA FT4

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

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.

Recommended Installation Tools
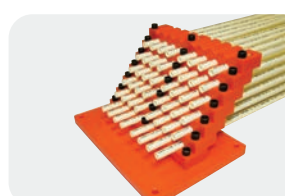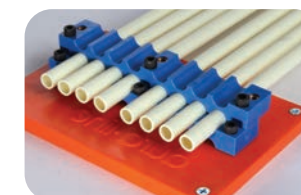
☐ Round MicroDuct Cutter

☐ Straight MicroDuct Cutter

☐ Straight Coupler

☐ Modular MicroDuct Mounting Brackets

PART #	DESCRIPTION
20001745	Round MicroDuct Cutter
20001856	Straight MicroDuct Cutter
20001834	8.5mm Coupler
20001832	12.7mm Coupler
20001517	16mm Coupler
20002885	FlexClip with Screw

PART #	DESCRIPTION*	COLOR	† MICRODUCT #
20002120	8.5mm MicroDuct Wall Mounting Plate (includes wall plate, base bracket, and 3 screws; top mounting bracket ordered separately)	Orange	8
20001719	8.5mm MicroDuct Top Mounting Bracket (each bracket secures a row of 8 MicroDucts, w/3 screws)	Orange	8
20002121	12.7mm MicroDuct Wall Mounting Plate (includes wall plate, base bracket, and 3 screws; top mounting bracket ordered separately)	Orange	8
20001929	12.7mm MicroDuct Top Mounting Bracket (each bracket secures a row of 8 MicroDucts, w/3 screws)	Blue	8
20003574	16mm MicroDuct Wall Mounting Plate (includes wall plate, base bracket, and 3 screws; top mounting bracket ordered separately)	Orange	6
20003575	16mm MicroDuct Mounting Bracket (each bracket secures a row of 6 MicroDucts, w/3 screws)	Black	6

*To complete first row order (1) Wall Mounting Plate and (1) Top Mounting Bracket. For additional rows, order top mounting brackets as required / † Number of MicroDucts per bracket

☐ Plumett P2P V20

☐ Conduit FlexClip with screw

Extra Items:
- ☐ Clamps
- ☐ Wall clips
- ☐ Cable strap clamps
- ☐ Cable supports
- ☐ Sharpie
- ☐ Cover for long term outside storage (to protect from UV rays)

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 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.
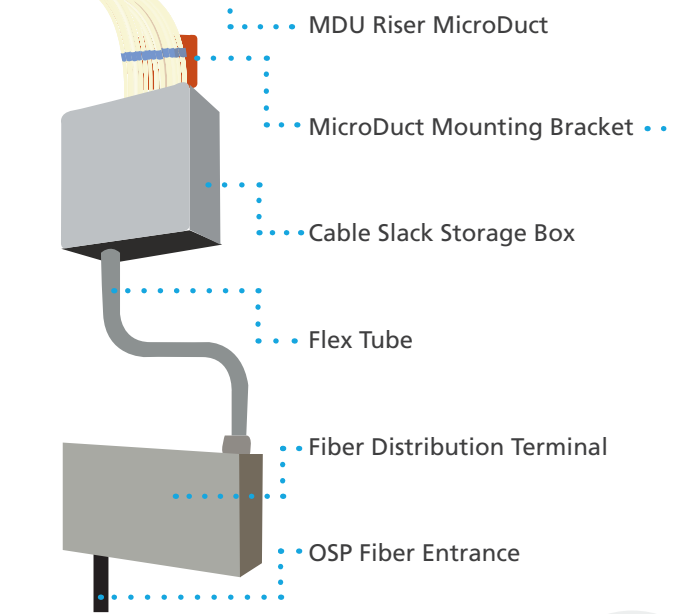
13"
radius gauge

For more detailed installation information, see Technical Bulletin DCEB-06004
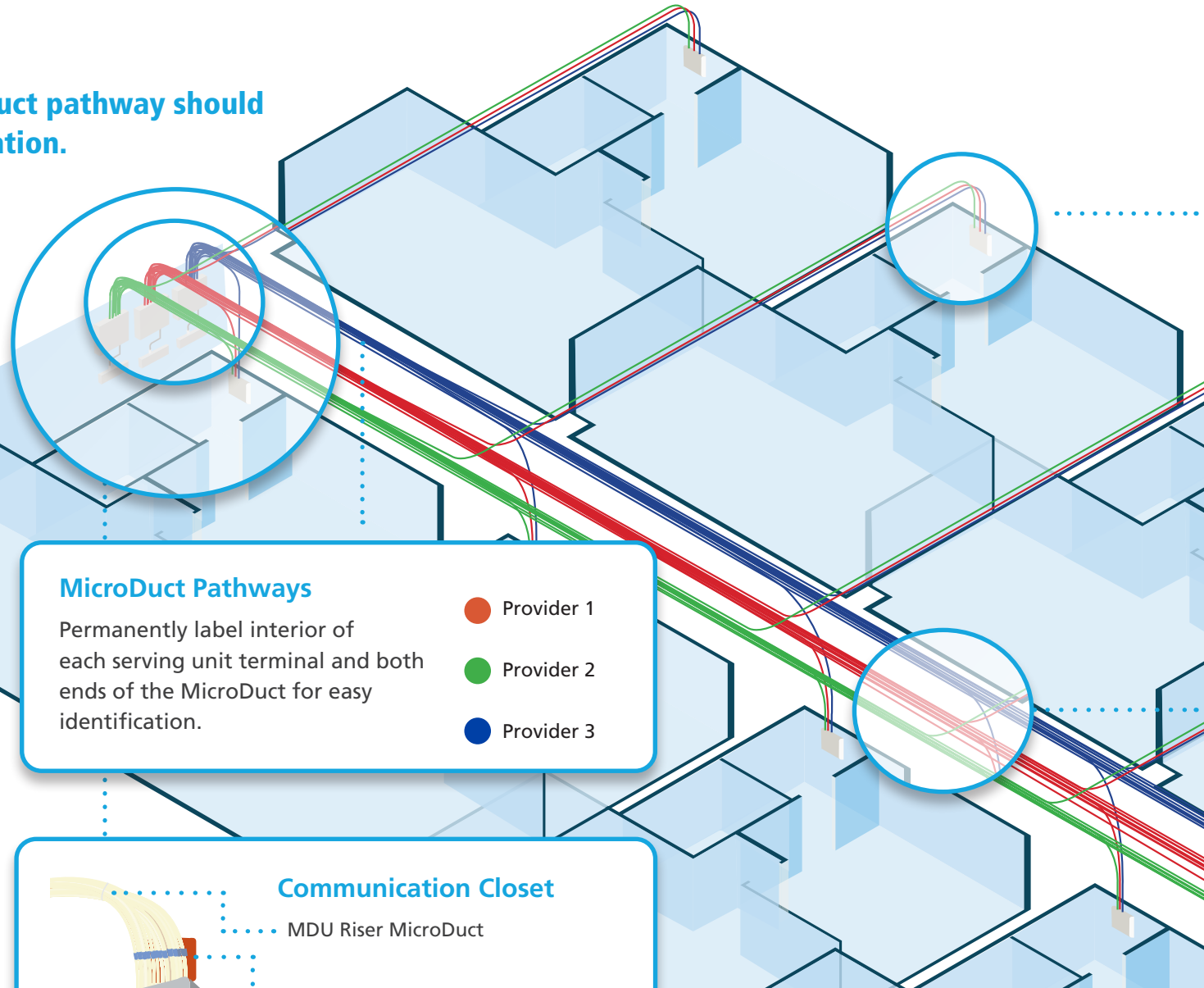
MicroDuct Pathways

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

- 🔴 Provider 1
- 🟢 Provider 2
- 🔵 Provider 3

Communication Closet

- MDU Riser MicroDuct
- MicroDuct Mounting Bracket
- Cable Slack Storage Box
- Flex Tube
- Fiber Distribution Terminal
- OSP Fiber Entrance

MicroDuct Mounting Brackets

MicroDuct Mounting Brackets are available for the following MicroDuct sizes: 8.5mm, 12.7mm and 16mm.
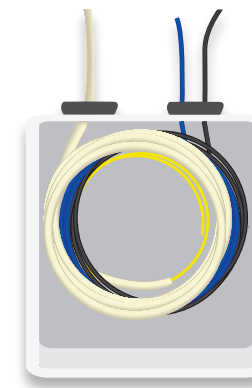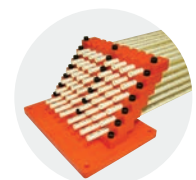
Serving Unit Terminal

- 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 Micro-Duct with connector or a cable strap clamp. Avoid sharp bends.
- If MicroDuct kinks, pull additional Micro Duct into terminal housing and remove kink, or remove and discard damaged MicroDuct.

Serving Unit Terminal
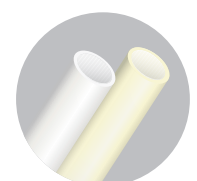
Fiber Installation Options:

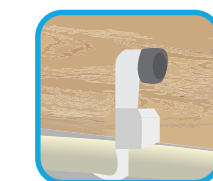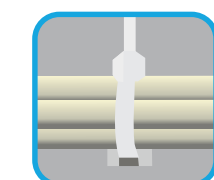(further details on following page)

Pull String
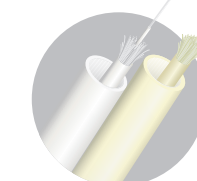
Pre-installed Fiber

Empty – ready for Cable Jetting

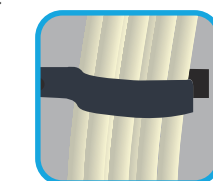### MDU Installation Techniques

- For straight runs, either horizontal or vertical, secure MicroDuct every 16" - 24"
- Plastic cable strap clamps recommended **(A)**
- On runs with multiple MicroDucts, use two-hole cable straps or cable ties **(B)**
- MicroDucts should be properly secured along entire length of route **(C)**
- Utilize nail plate prior to dry wall installation **(D)**
- Do not over tighten cable ties or crush MicroDuct
- Label MicroDucts at both ends, preferably at three places, outward facing for easy ID
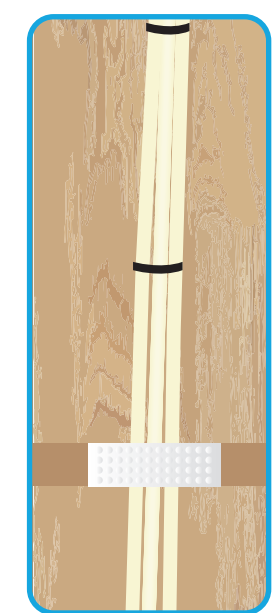- MicroDuct Organizing Bracket is designed to be used where multiple MicroDucts are terminated

A

B

C

D

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 less
- Behind the wall installations are typical, however surface-mount installations are common as well

Riser and Plenum MicroDuct

- SILICORE™ super slick permanent lining
- Sequential footage markings
- UL/ETL specs for both US & Canada (CSA)
- Riser MicroDucts are dull yellow in color
- Plenum MicroDucts are opaque white in color
- Available with 50# pull string pre-installed
- Available with fiber pre-installed

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
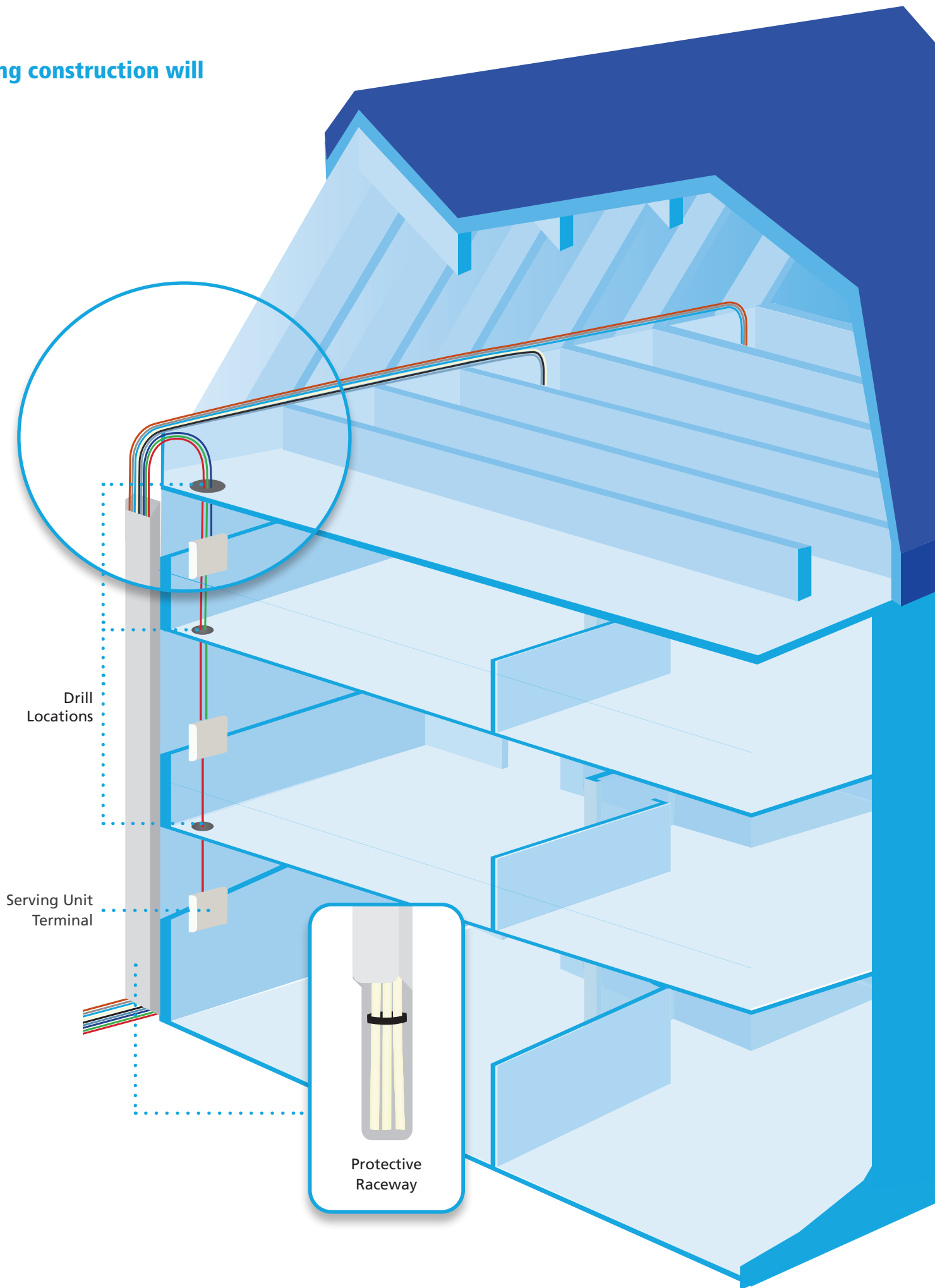
Typical Installation:

- Pull the MicroDuct from the outside of the building to the attic level
- Penetrate the attic wall or enter through the soffit
- Use a raceway to protect the exposed MicroDuct on the outside of the building
- Choose a utility room or closet to locate the MicroDuct pathway
- From the attic floor, drill a hole large enough for all MicroDucts to be pulled, one per each floor
- Pull the MicroDuct bundle from the attic to the top floor
- Drill through the floor to access the next level
- Pull the MicroDuct bundle, dropping one MicroDuct at each floor, as you move down through the levels.
- The MicroDuct & Pull String are cut and stored in the Serving Unit Terminal placed in close proximity to a power source

Fiber Installation Options
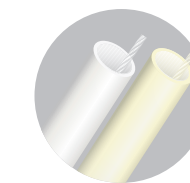
Pull String

Pull String: MicroDucts can be provided with factory pre-installed pull string for fiber placement at a later date.
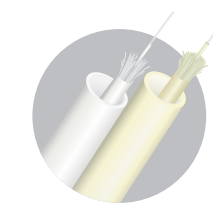
Pre-installed Fiber

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

Empty

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