COMMSCOPE®

FTTX Solutions

SCTE N-CA Tech Days & Vendor Show

Scott Barr - AM
Craig Fleming - FAE

04/12/2017

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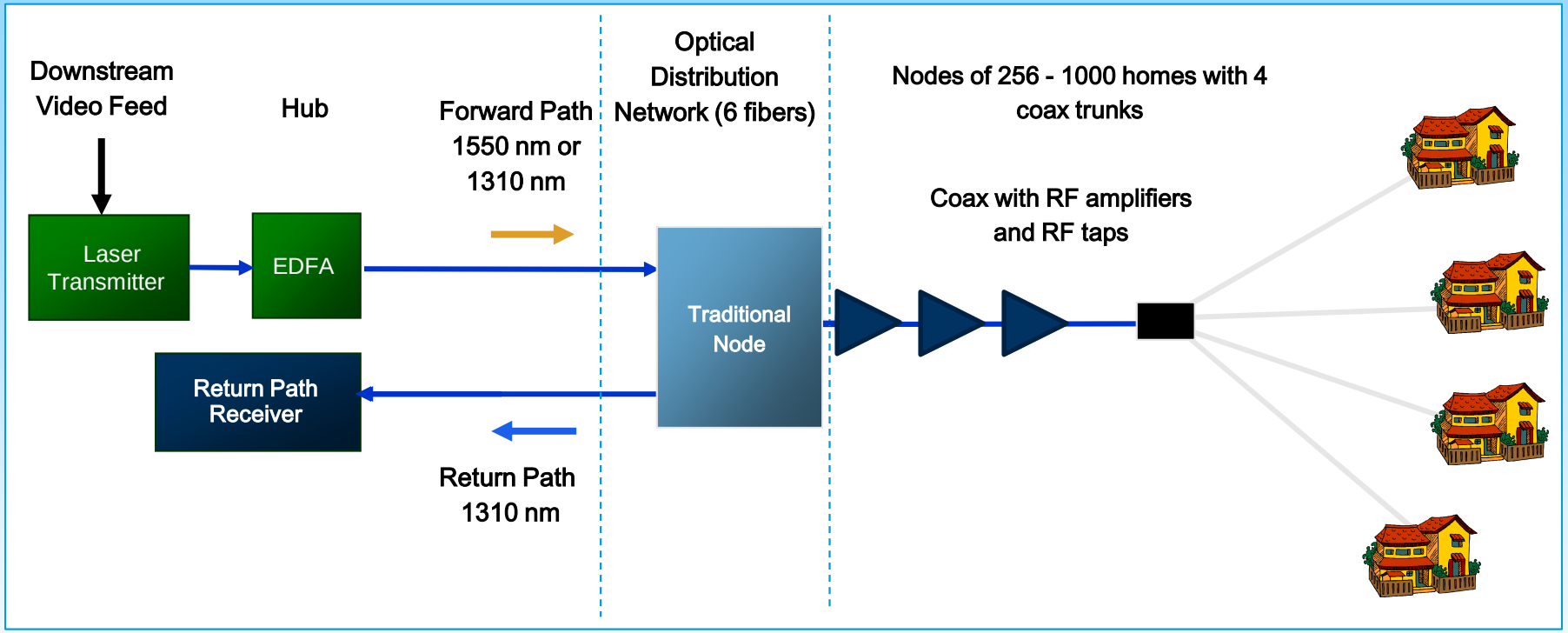
Traditional HFC Architecture



- Migrate to single fiber per node by adding WDM

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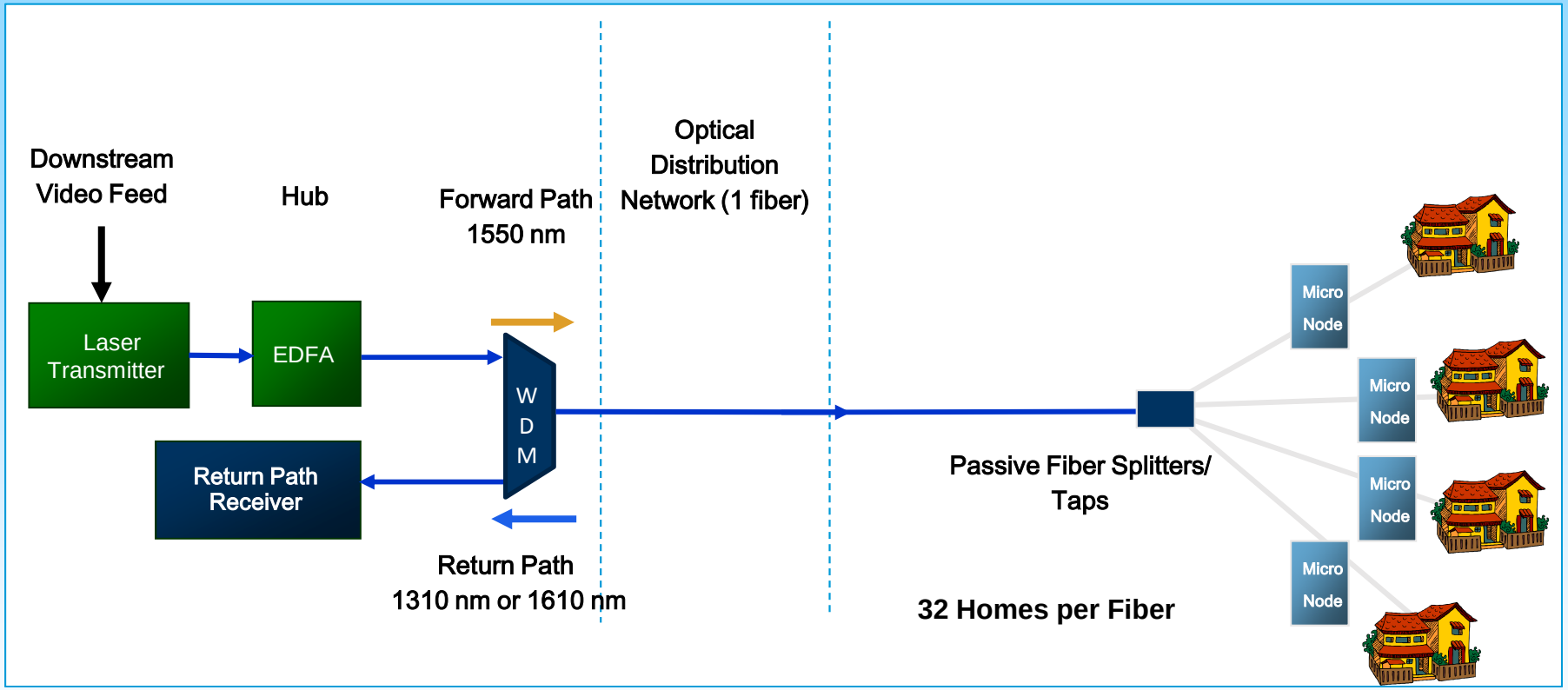
Evolved to RFoG Architecture



- Society of Cable Television Engineers
  - Radio Frequency Over Glass (RFoG), SCTE Standard 174 2010
- Migrate to single fiber per node by adding WDM
- Remove amplifiers and RF Taps
- Take fiber to each home via taps and splitters
- Shrink the HFC node and place one with each subscriber

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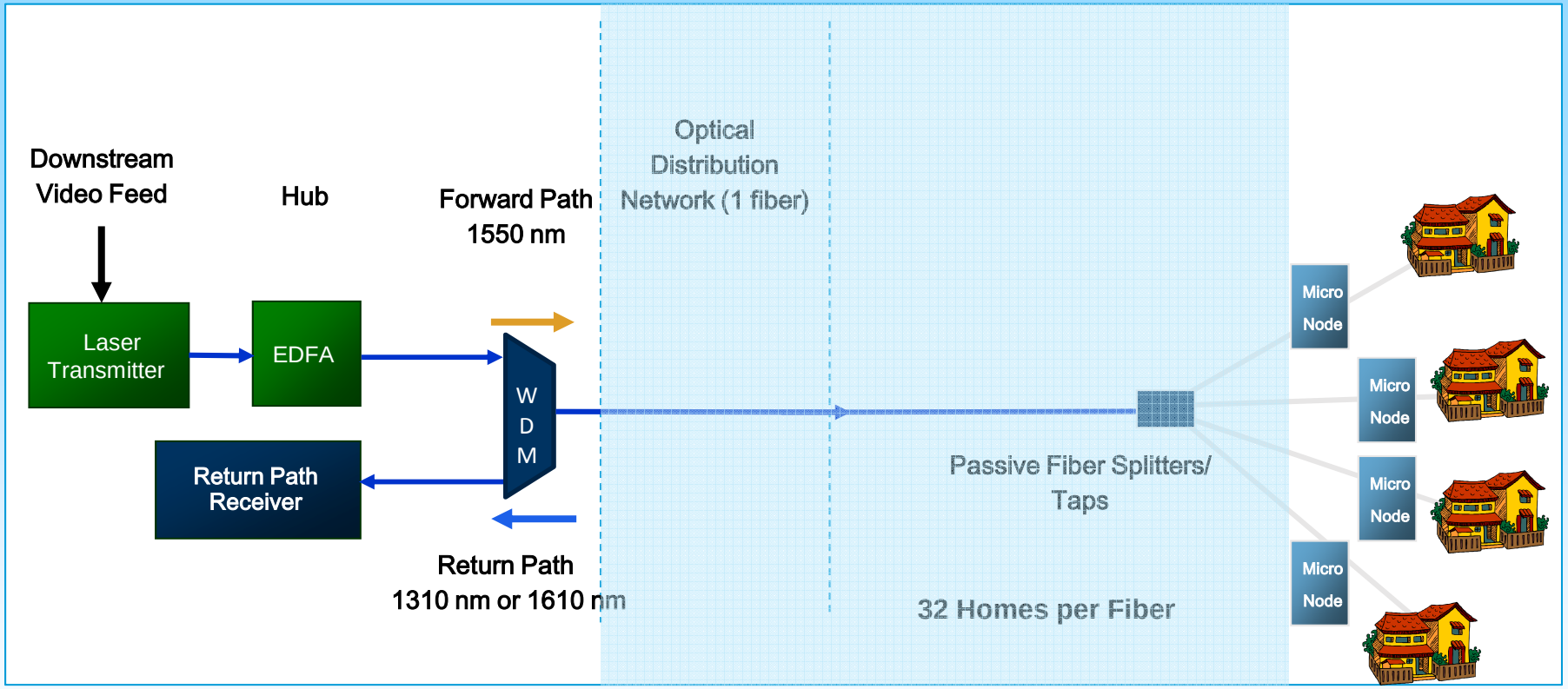
Evolved to RFoG Architecture



- Point to Multipoint (P2MP)
- Uses Existing Back Office And Subscriber Equipment
- SCTE Recommended Budget is 25db (10 to 20 KM Reach)
- 1:32 Splitter Option
- Gateway to Ethernet PON's

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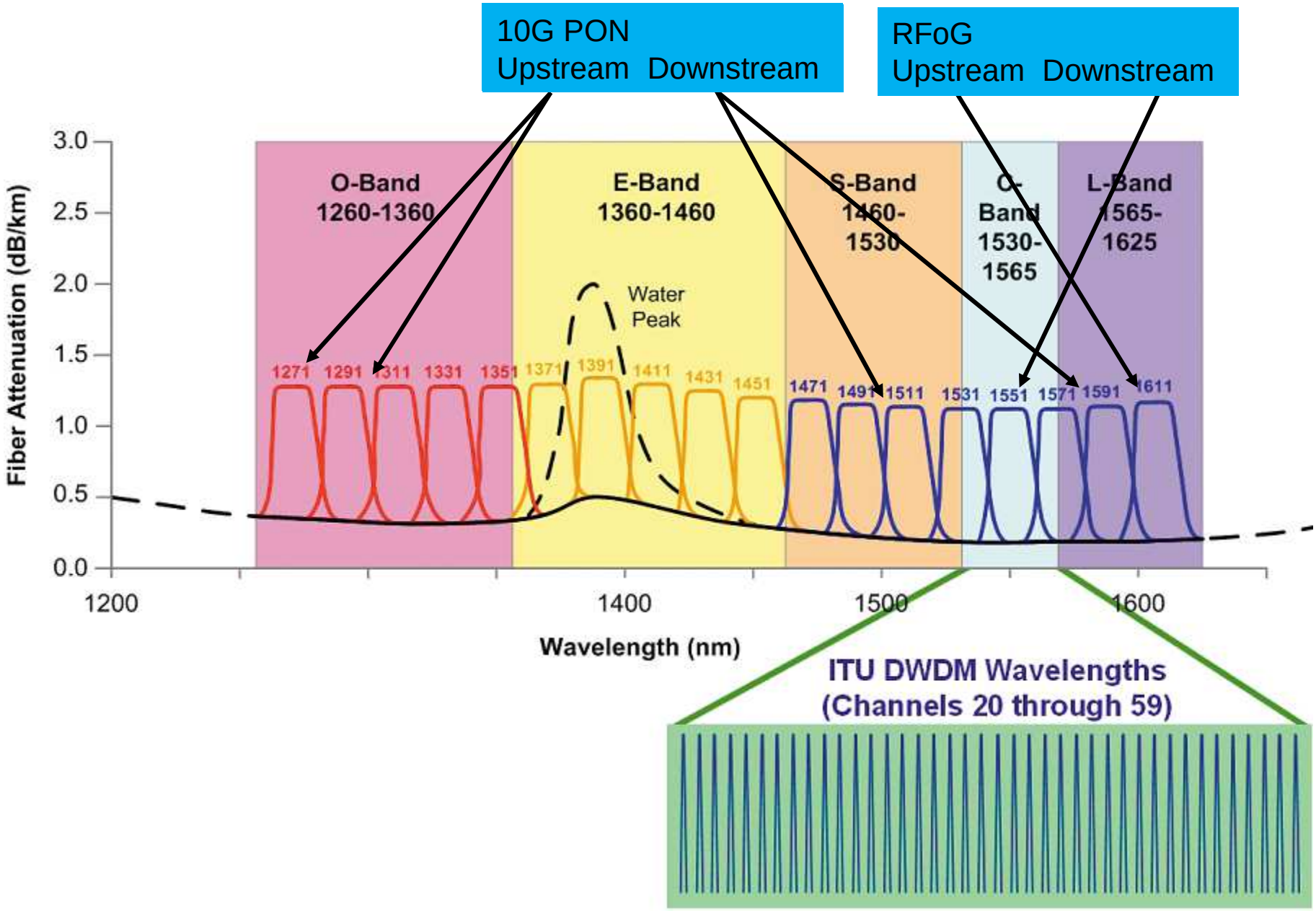
FTTX Wavelength Allocation



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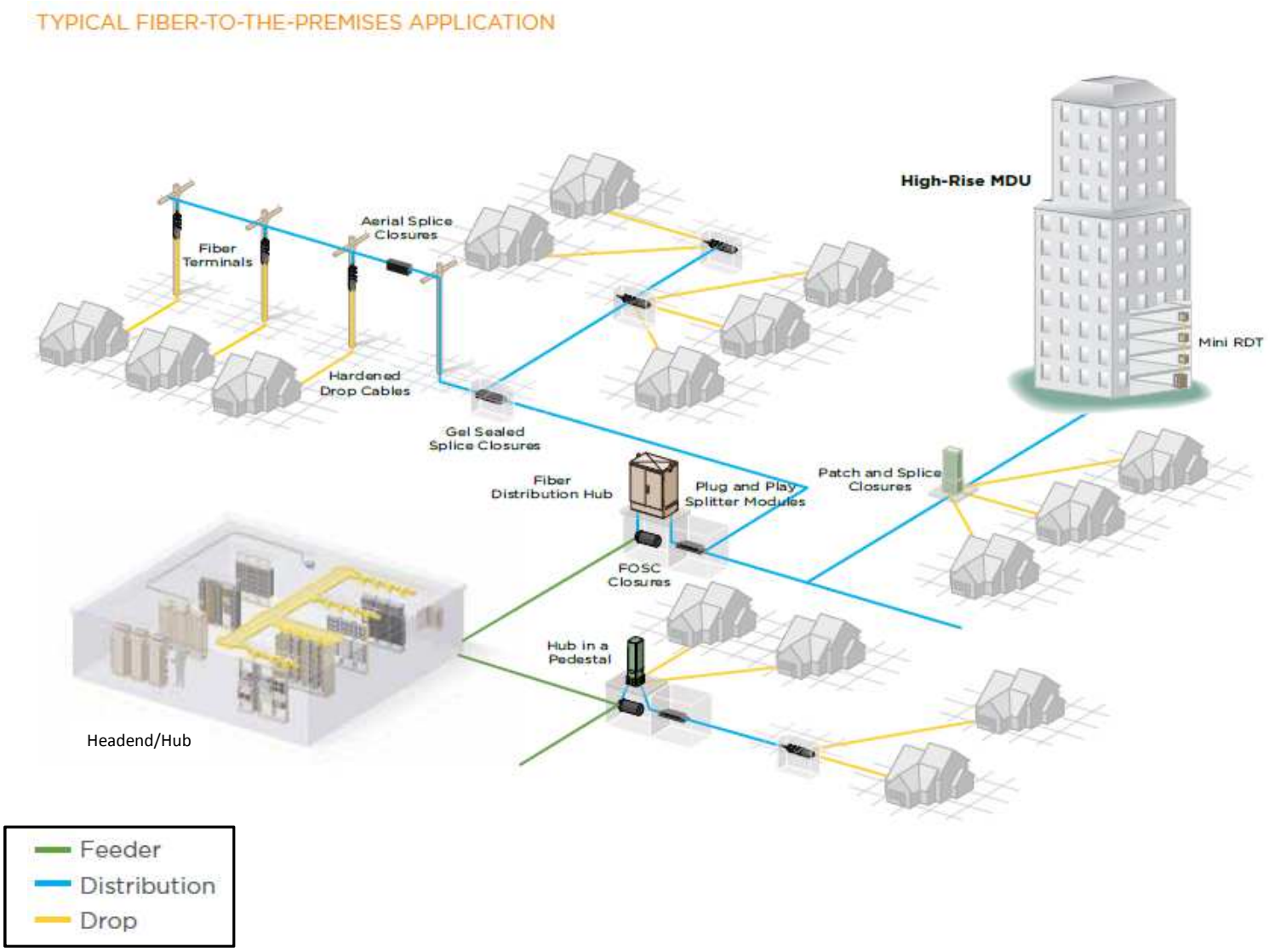
FTTX Architecture



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FTTX Subdivision Drawing

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LEGEND

- MST - 4 Port Multi-Service Tap
- MST 4 Port MST Cable
- MST Tails back to FOSC Aggregation Point
- MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
- Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
- Fiber Distribution Hub

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Fiber Distribution Cabinet And Node

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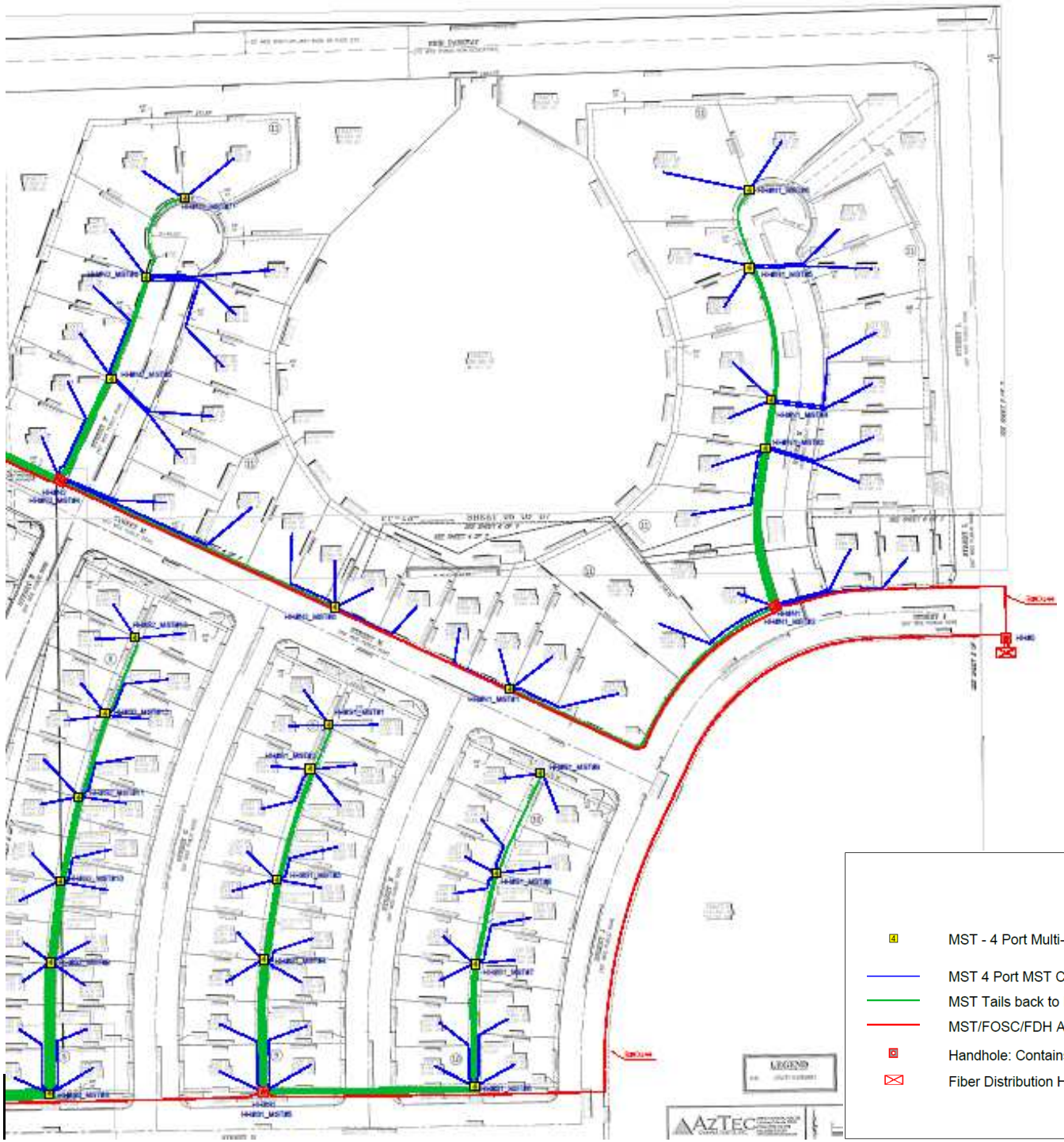

LEGEND

- MST - 4 Port Multi-Service Tap
- MST 4 Port MST Cable
- MST Tails back to FOSC Aggregation Point
- MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
- Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
- Fiber Distribution Hub

LEGEND

- MST - 4 Port Multi-Service Tap
- MST 4 Port MST Cable
- MST Tails back to FOSC Aggregation Point
- MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
- Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
- Fiber Distribution Hub

Outside Plant Solutions

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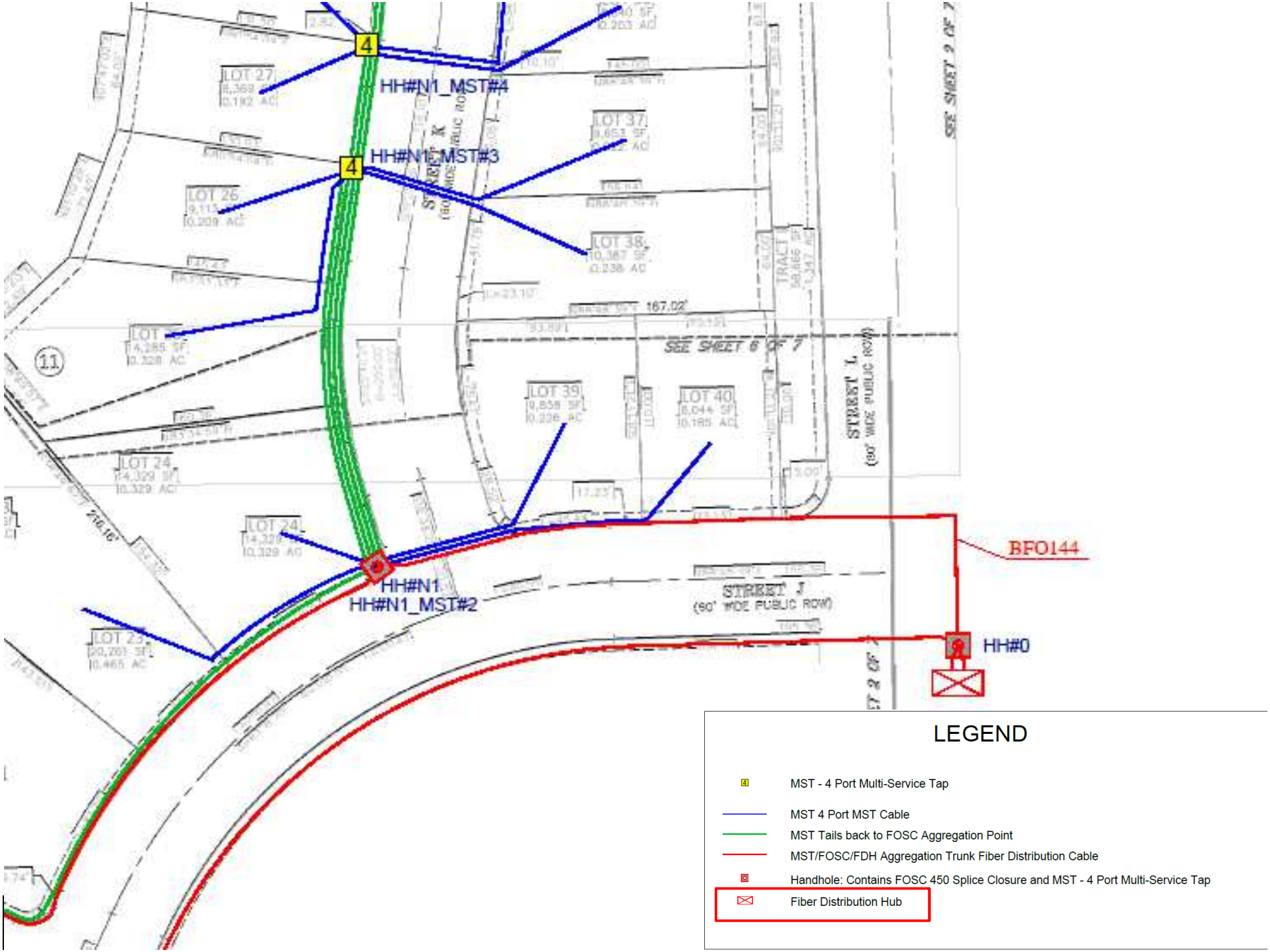
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HH#N1_MST#4
4
HH#N1_MST#3
LOT 27
LOT 26
LOT 37
LOT 38
LOT 39
LOT 40
LOT 24
LOT 23
11
SEE SHEET 6 OF 7
SEE SHEET 2 OF 7
STREET K
STREET I
STREET J
(60' WIDE PUBLIC ROW)
BFO144
HH#N1
HH#N1_MST#2
HH#0
LEGEND
MST - 4 Port Multi-Service Tap
MST 4 Port MST Cable
MST Tails back to FOSC Aggregation Point
MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
Fiber Distribution Hub

Fiber Distribution Cabinet

Reliability, Flexibility and Operational Benefits

- Bend radius protection
- Intuitive cable routing
- Easy fiber/connector access
- Physical protection

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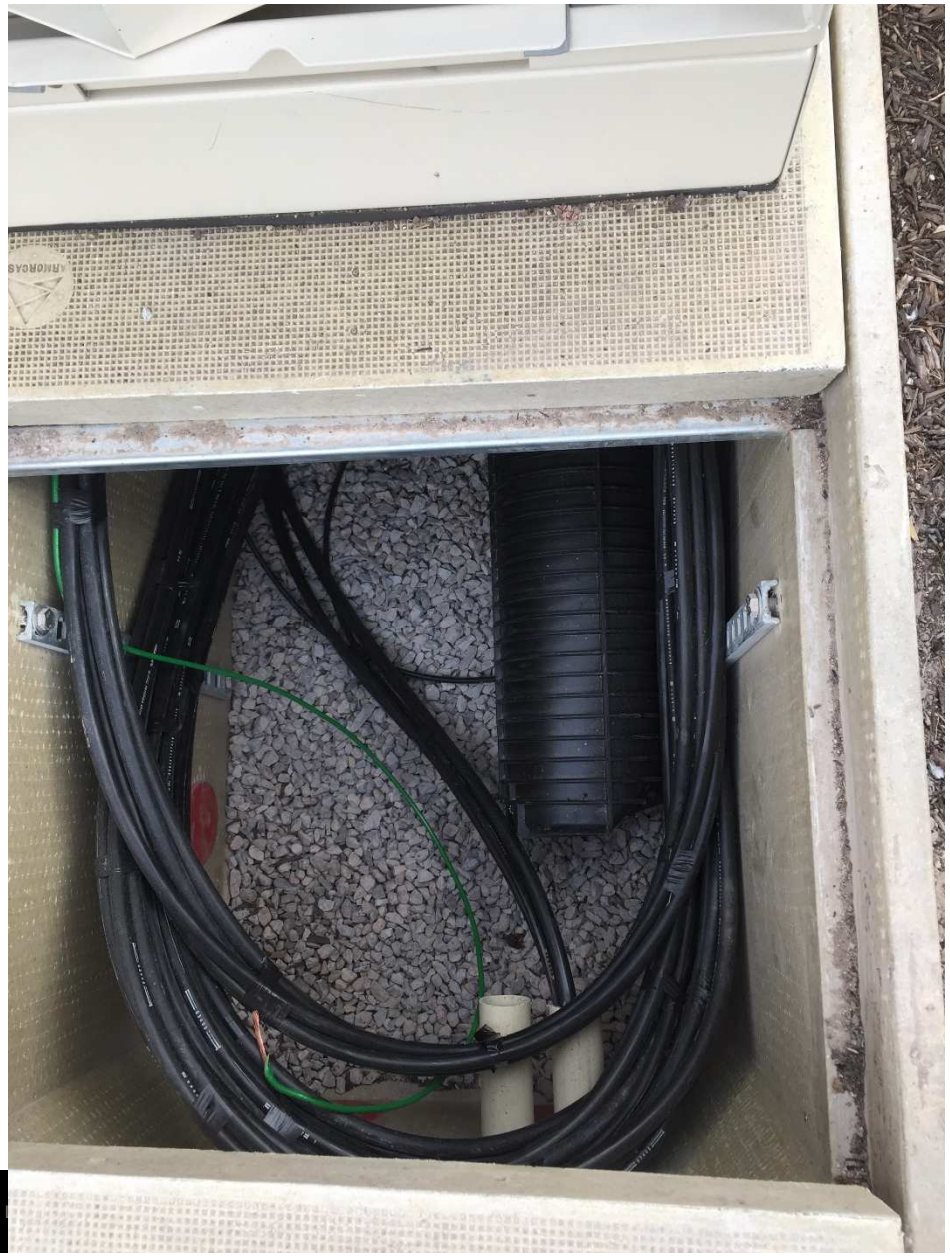
Fiber Distribution Cabinet



Fiber Distribution Cabinet – FDH Swing Frame

- Unique Swing Frame Design
- Convenient Access to Rear of Termination Shelf for Cleaning/Maintenance
- Modular Growth
  - Future distribution cables
  - Future patch panels
  - Future splitter modules

- Quick Release Latch Provides Easy Access to Rear and Securely Locks Chassis Into Place

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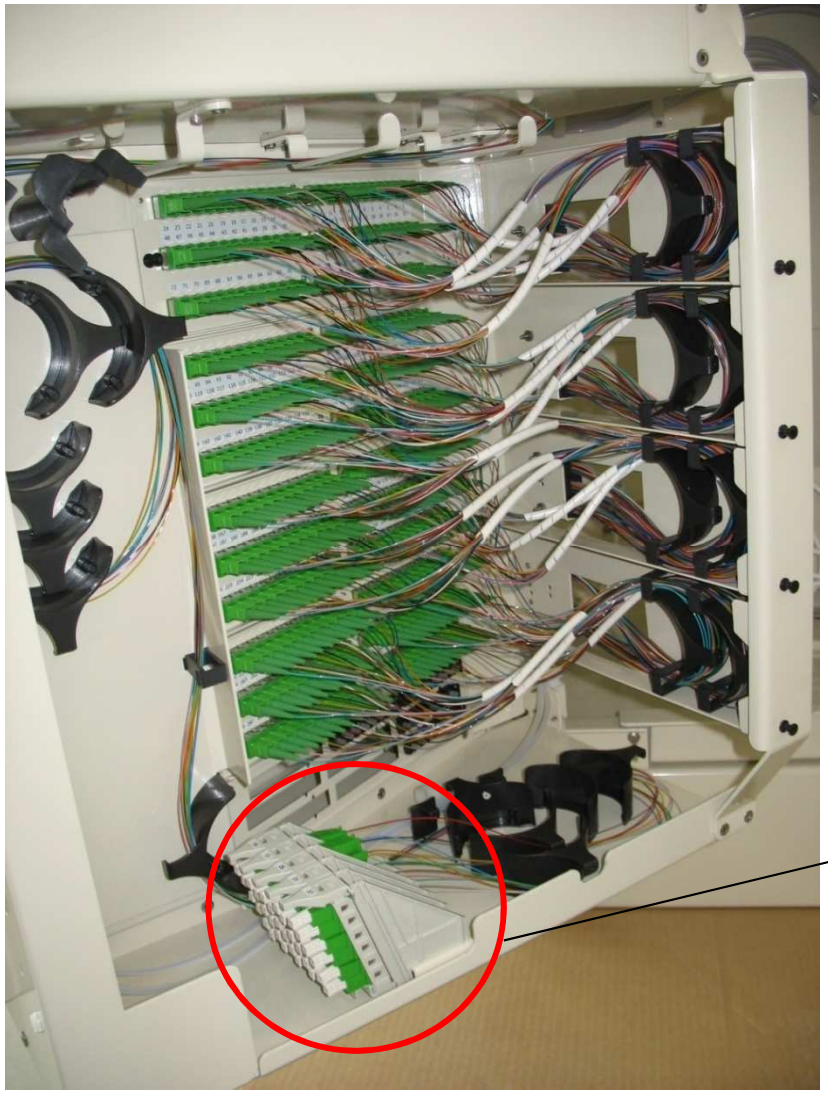
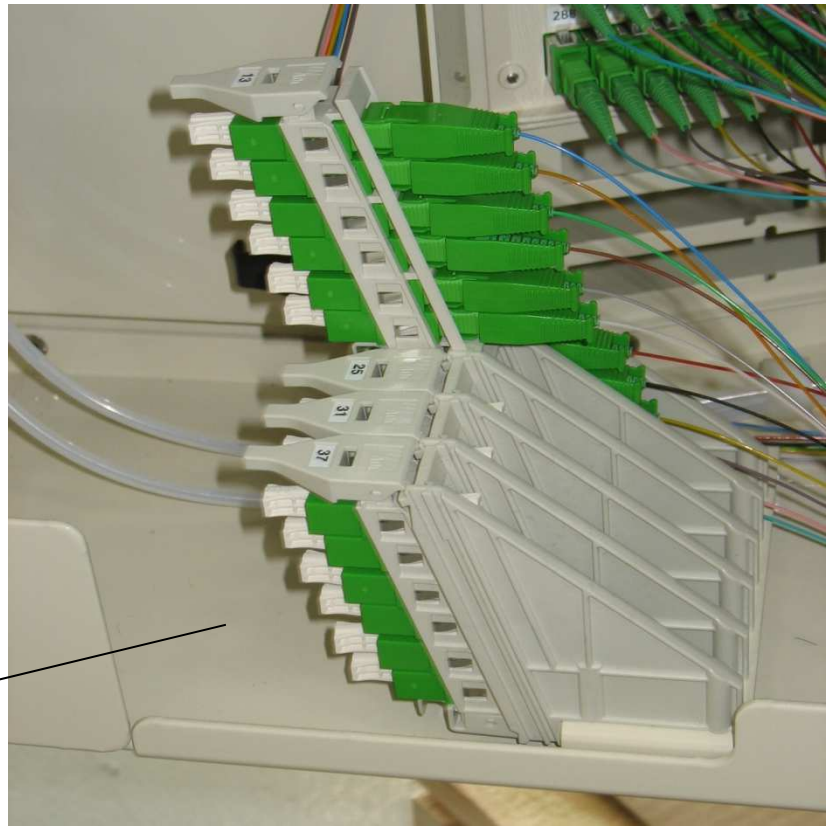
Fiber Distribution Cabinet - Pass-Through Panel





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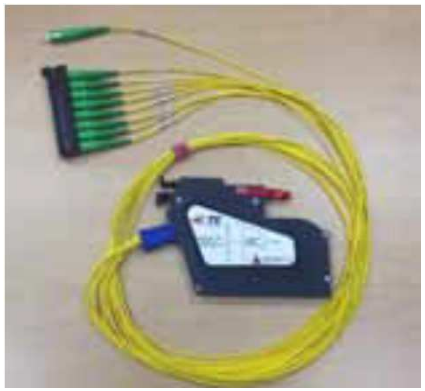
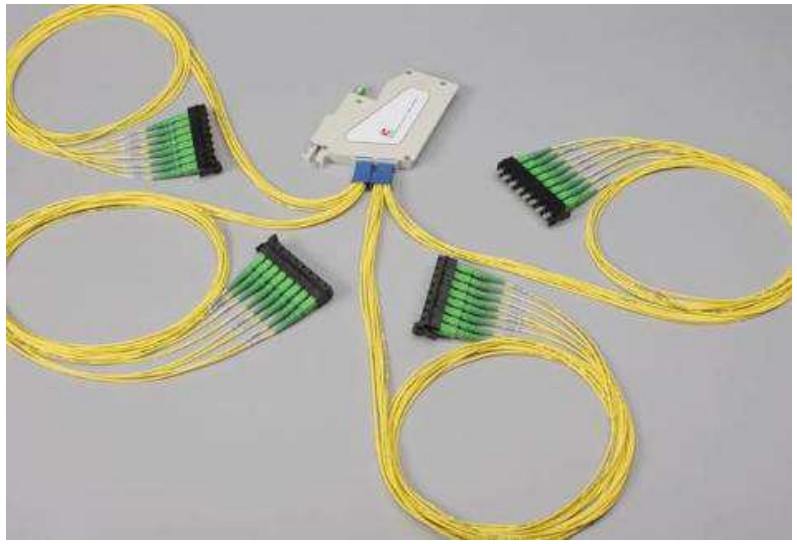
Fiber Distribution Cabinet– Plug-and Play Splitters, CWDM Muxes & DWDM Muxes

- Industry leading low loss splitter (16.7dB max for 1x32) offers over 6000 feet further reach than industry standard splitters
- Easy snap-in design requires no tools and allows easy deferment of splitter costs (< 5 min installation & customer turn up)
- 2mm pigtailed outputs designed for commonality among all of CommScope's cabinets & distribution Solutions
- Splitter types supported: 1x32, 1x16, 1x8, 1x4, 1x2, and 1x64 are standard (other custom configurations such as dual and 2xN also possible)
- CWDM types supported: 8CH, 10CH and 16CH
- DWDM Types supported: 8CH, 10CH And Coming Soon 20CH And 40CH





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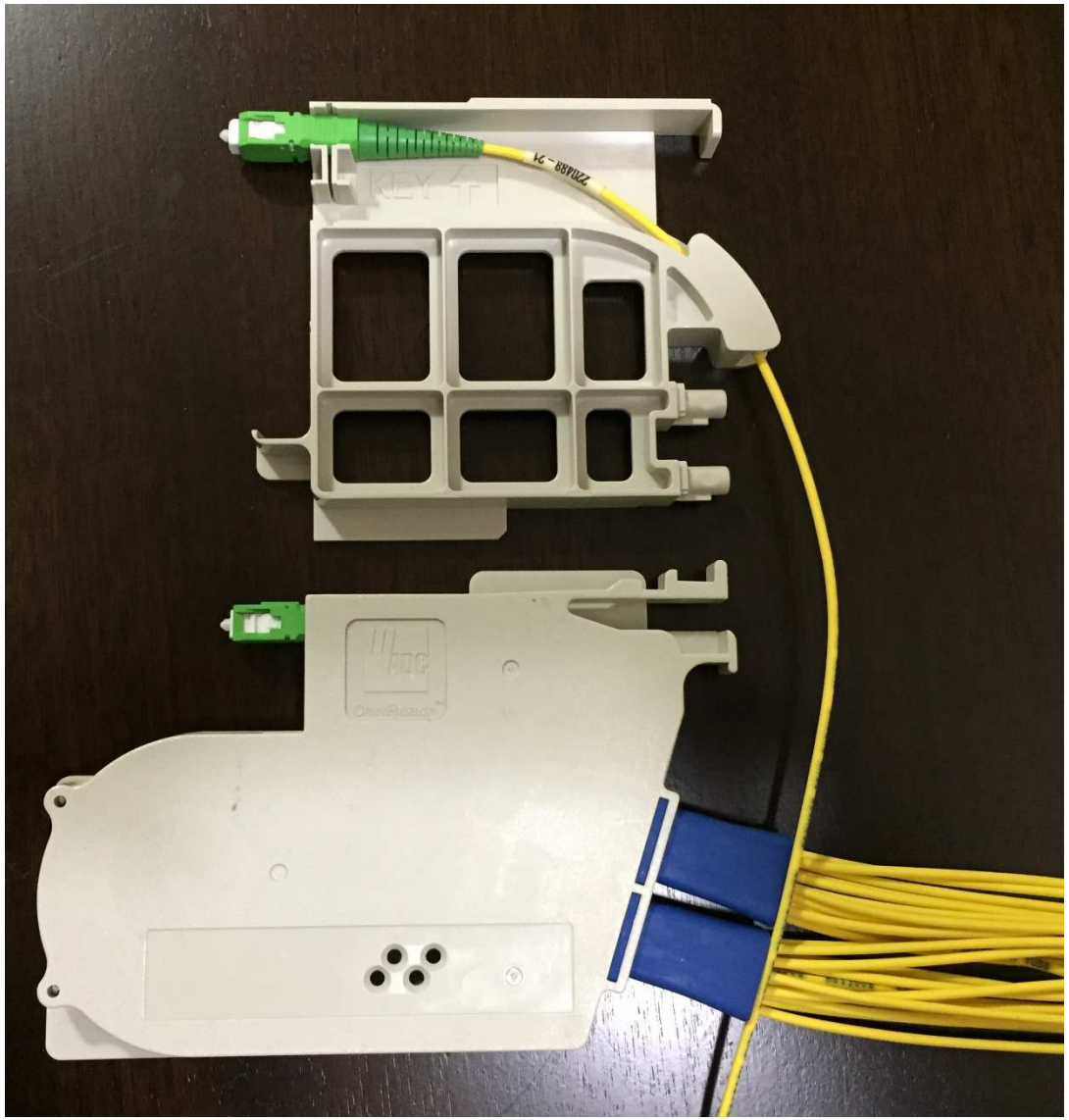
Fiber Distribution Cabinet – Plug-and Play Splitters – Test Access



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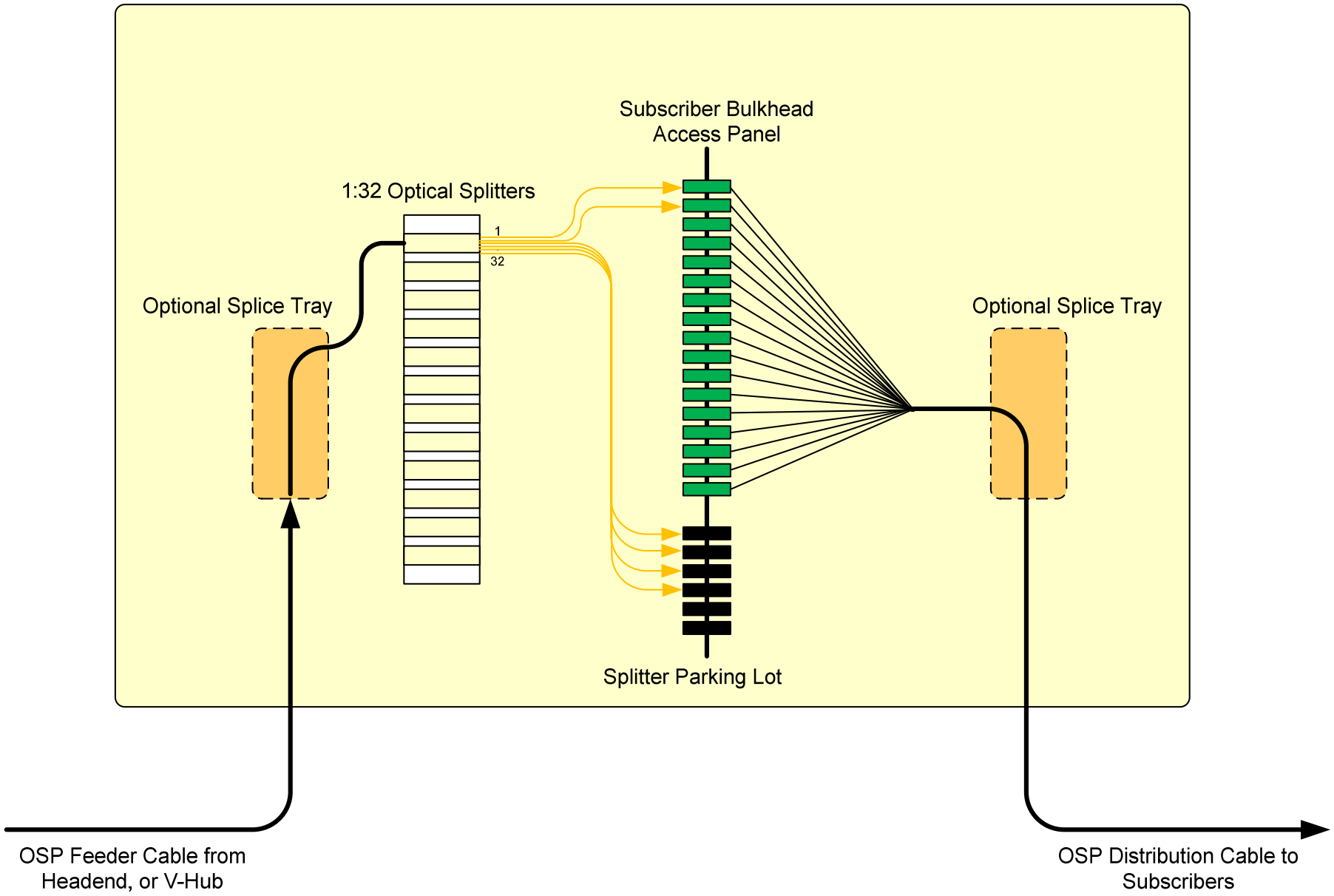
Fiber Distribution Cabinet – Plug-and Play Splitters – Block Diagram



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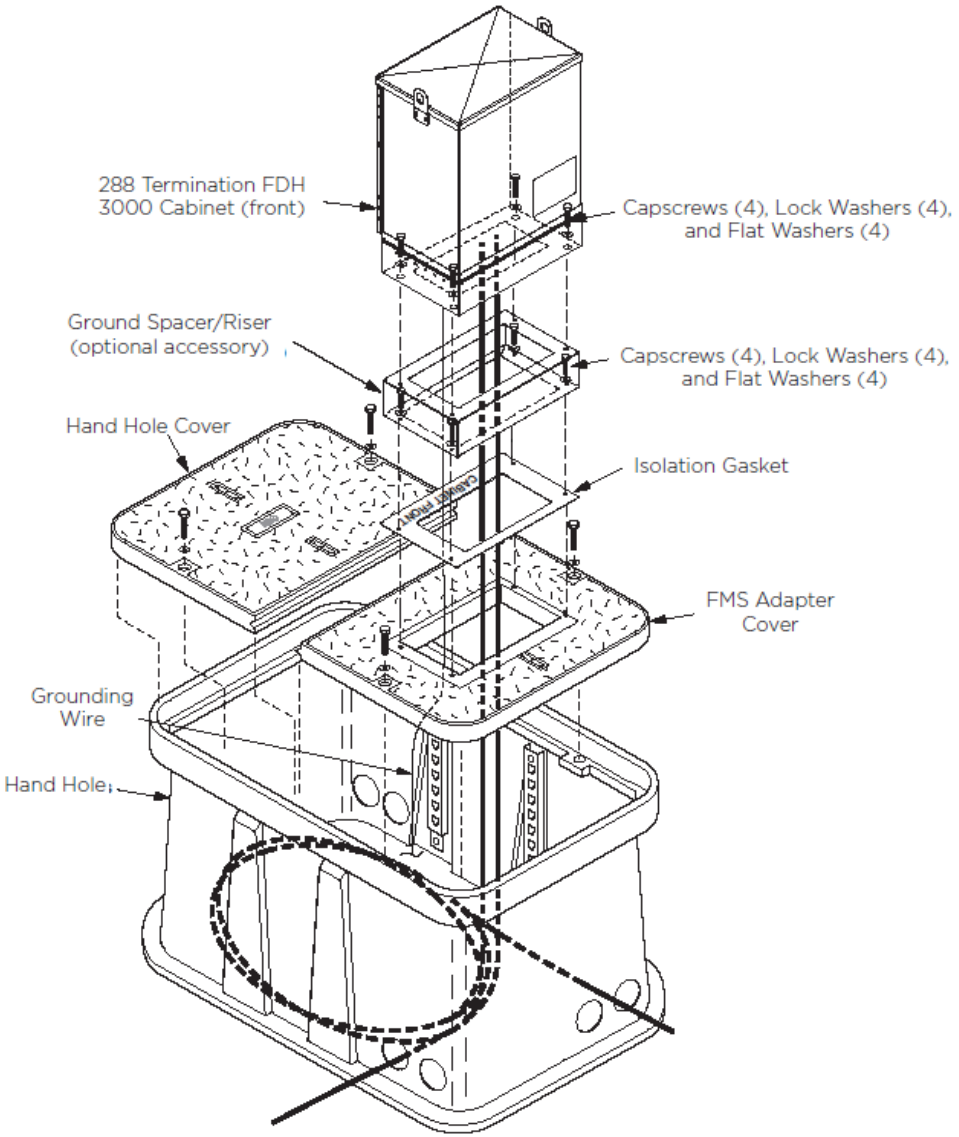
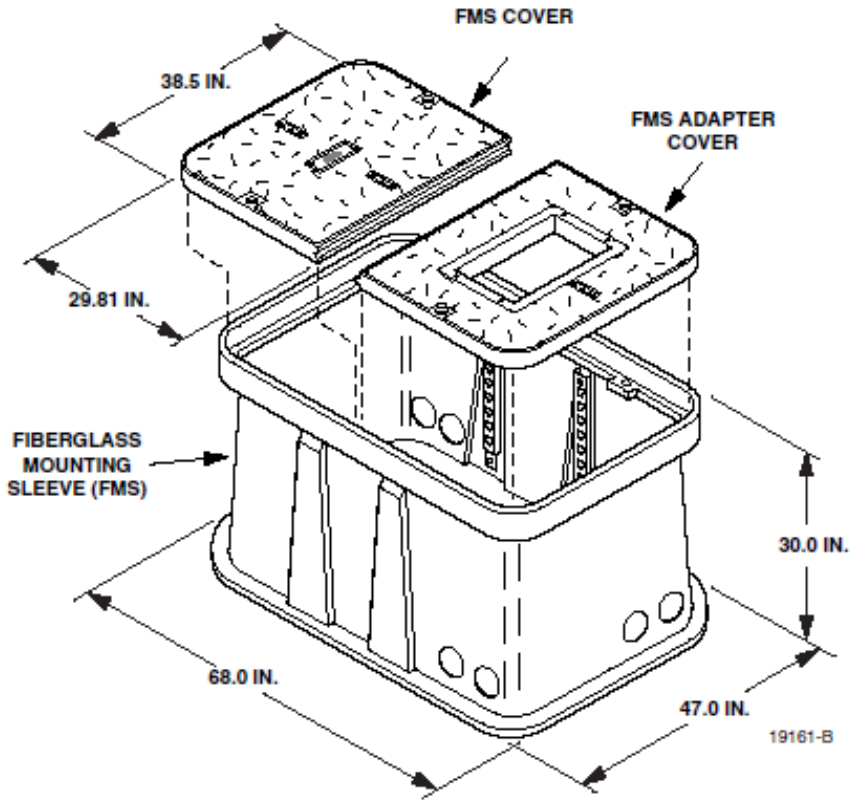
Fiber Distribution Cabinet – Fiberglass Mounting Sleeve (FMS)





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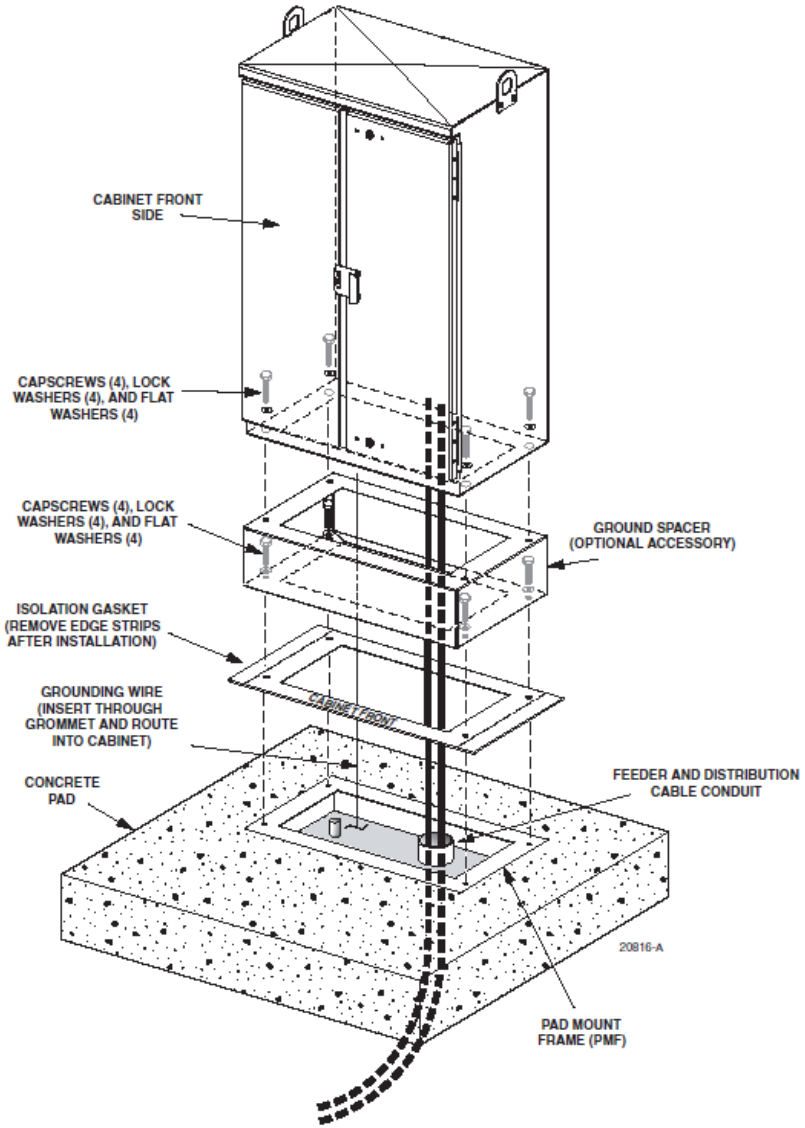
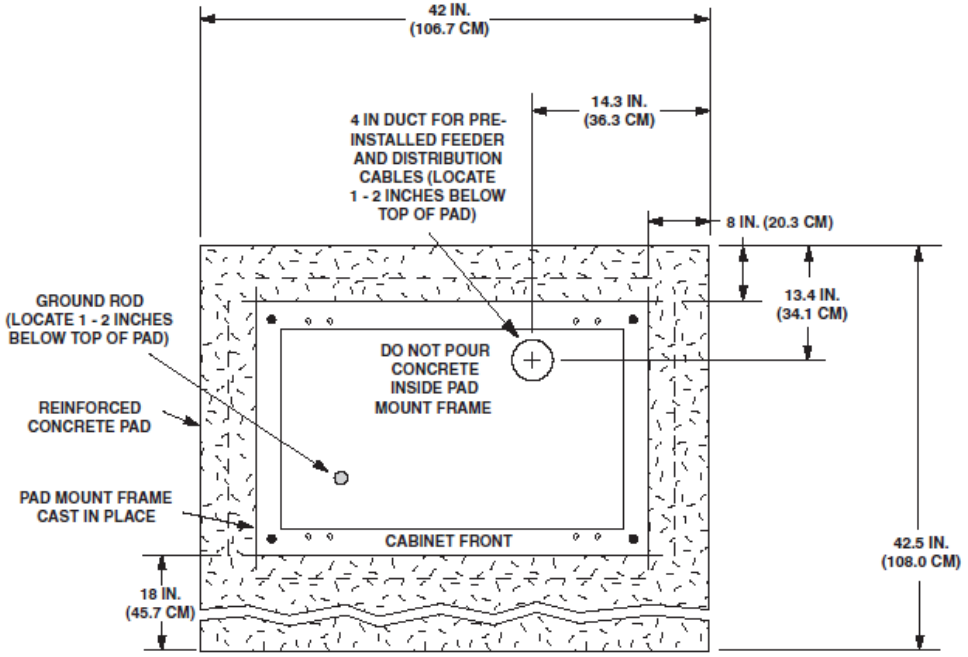
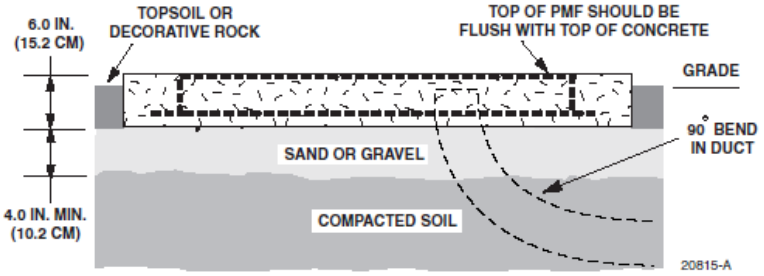
Fiber Distribution Cabinet– Mounting the FDC on a Concrete Pad







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Fiber Distribution Cabinet – 144F Cabinet Pole Mount

FDC 144 Fiber Cabinet Pole Mounted

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Sealed Fiber Distribution Hub (FDH)

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Fiber Distribution Cabinet Within Sealed Closure

Features and Benefits

- Extremely Compact/High Capacity Design
  - Scalable up to 288 distribution ports, 12-72 feeder ports. (Unused ports can be used for pass through applications)
- Superior Performance
  - Unsurpassed reliability makes it ideal for aerial and below grade applications
- Environmental Protection
  - Thermoplastic construction provides UV stabilization, flame retardancy, and chemical & impact resistance
- Field Proven Hermetically Sealed Closure
  - Provides air/water tight seal ensuring protection from flooding and fungus
- Re-Enterable/Reusable Shell
  - No re-entry kits or tools required
- Supports Diverse Splitter Module Configurations
  - Standard optical splitters, CWDM's and DWDM's
- Craft Friendly Splitter Module Design
  - Easy to insert and remove without affecting adjacent splitters
- Compatible Mounting Kits (sold separately)
  - Allow for easy strand, pole, pedestal and hand-hole installations

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Fiber Distribution Cabinet Within Sealed Closure

Specifications

FDH 4000	**A-size**	**B-size**
Configuration	Below Grade	Below Grade
Access	Removable Dome	Removable Dome
Height Pole-Mount	28” (72 cm)	32” (81.1 cm)
Width (Diameter)	9.5” (24 cm)	9.5” (24 cm)
Enclosure Weight (without pedestal, cables, or splitters)	30 lbs (13.6 kg)	35 lbs (15.9 kg)
Connectors	SC or LC	APC or UPC
Splitter Capacity	9	9
Splitter Modules Included	0	0
Distribution Port Count	72 SC / 144 LC	144 SC / 288 LC
Feeder Fiber Count	12 - 72	12 - 72
F1 Fiber Terminations	12 - 72	12 - 72
Pass-Thru’s	**	**
Cable Ports	3	3
Cable Clamps	1	1
Enclosure Rating	IP68	IP68
FDH Performance	GR-3121, GR-3125	GR-3121, GR-3125
Standard Color	Black	Black

**configurable

Front View
(Door Open)

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Outside Plant Solutions

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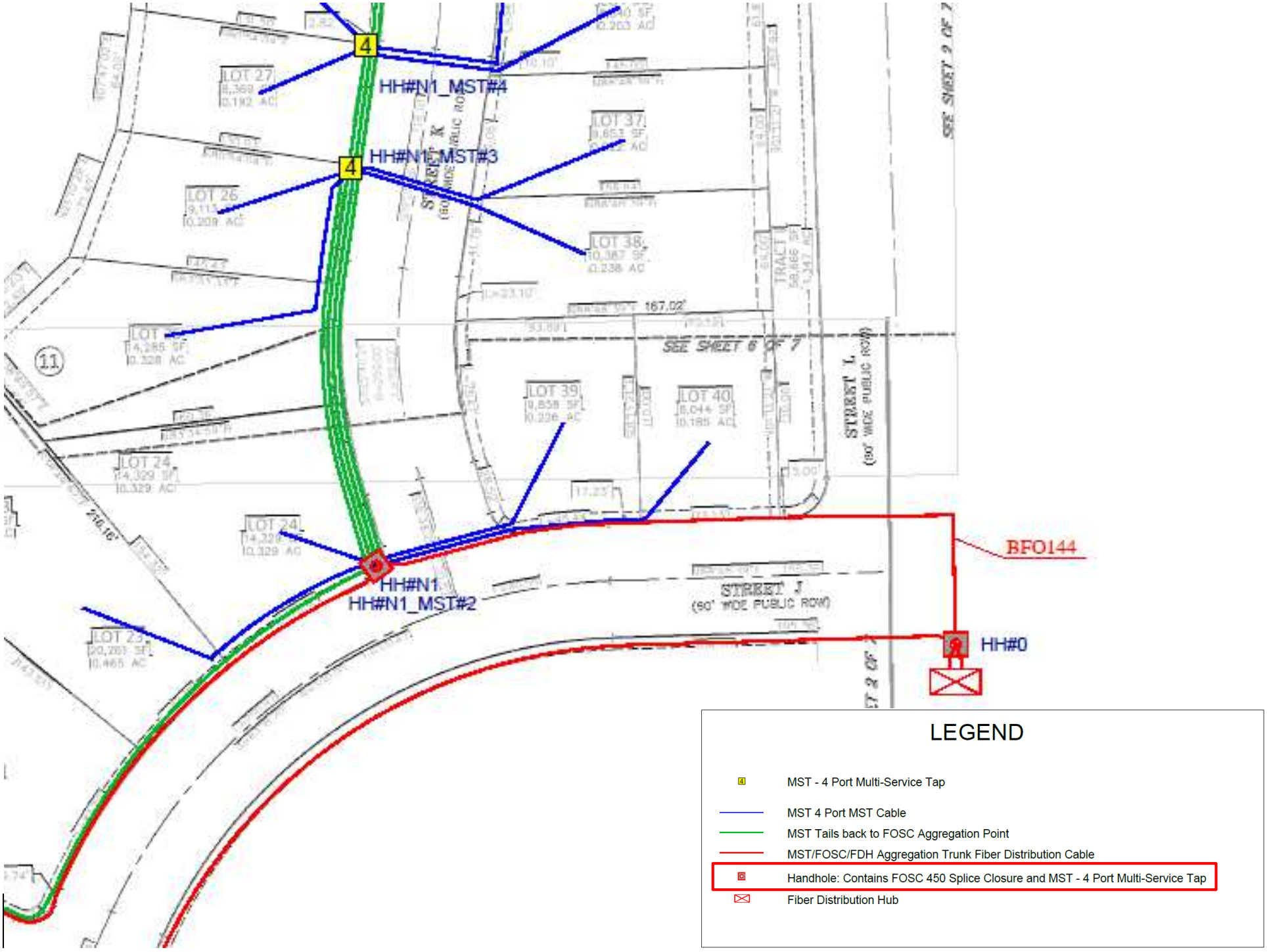
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HH#N1_MST#4
4
HH#N1_MST#3
LOT 27
LOT 26
LOT 37
LOT 38
LOT 39
LOT 40
LOT 24
LOT 23
11
SEE SHEET 6 OF 7
SEE SHEET 2 OF 7
STREET K
STREET I
STREET J
(60' WIDE PUBLIC ROW)
BFO144
HH#N1
HH#N1_MST#2
HH#0
LEGEND
MST - 4 Port Multi-Service Tap
MST 4 Port MST Cable
MST Tails back to FOSC Aggregation Point
MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
Fiber Distribution Hub

Fiber Optic Splice Closure (FOSC) – Product Description and Applications

Description:

- FOSC 450 Fiber Optic Splice Closures are a family of 5 fiber optic splice closures for use in all fiber splicing applications in outside plant fiber networks.

Applications:

- Backbone, distribution and FTTX splicing of most all cable types
- All outside plant locations including:
  - Below grade (handholds, manholes, direct buried)
  - Pedestals
  - Pole
  - Aerial (strand, including ADSS applications)

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FOSC 450 Splice Closures – Gel Seal Technology

- **Conforms to wide ranges of shapes and size of cable**
- **Gel stays flexible in wide temperature ranges**
- **Gel withstands harsh chemical environments**
- **Cold Sealed…no heat gun required**
  - **FOSC 450 D6**
    (432 splice capacity w/basket)
  - **FOSC 450 C6**
    (144 splice capacity w/basket)
  - **FOSC 450 B6**
    (144 splice capacity w/basket)
  - **FOSC 450 BS**
    (B Short version: 96 sp. cap. w/basket)
  - **FOSC 450 A**
    (Up to 96 splice capacity)

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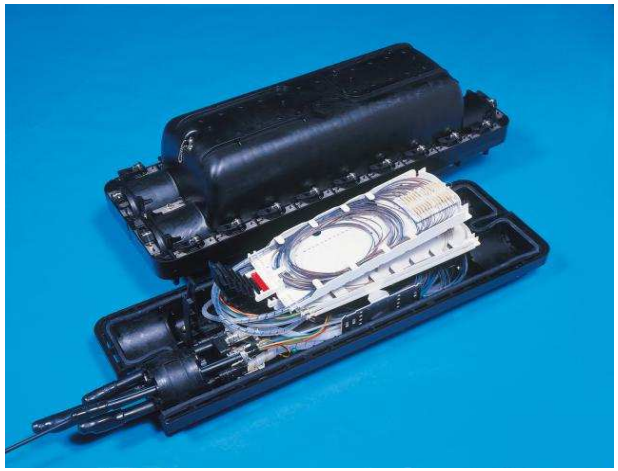
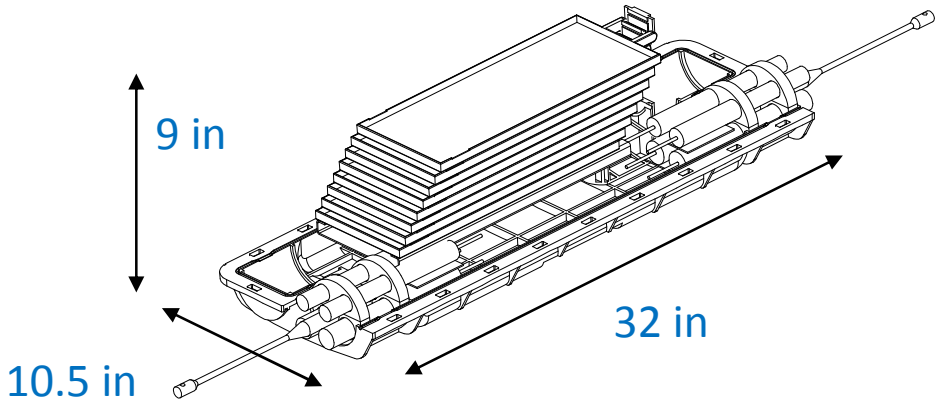
FOSC 600 Splice Closures – Inline/Butt Splice Closure

- For large fiber count applications…holds up to **1728** fibers
- Single ended (butt) or In-line capability (also field configurable from one to the other)
- Gel cable sealing
- Up to 9 splice trays
- Large loop storage area
- Excellent rehab closure





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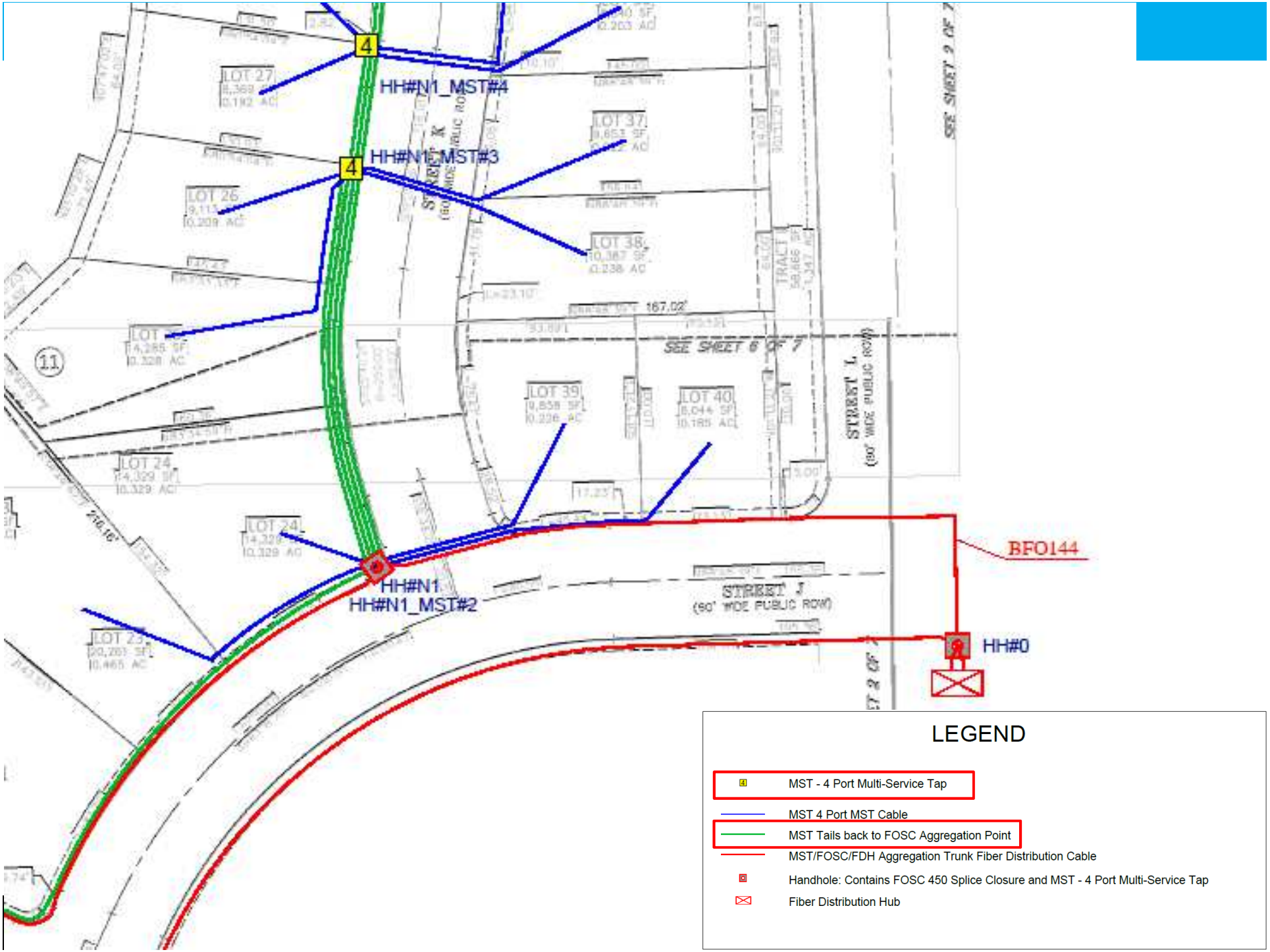
4
HH#N1_MST#4
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HH#N1_MST#3
HH#N1
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BFO144
HH#0
STREET J
(60' WIDE PUBLIC ROW)
SEE SHEET 6 OF 7
LOT 27
LOT 26
LOT 37
LOT 38
LOT 39
LOT 40
LOT 24
LOT 23
11
LEGEND
MST - 4 Port Multi-Service Tap
MST 4 Port MST Cable
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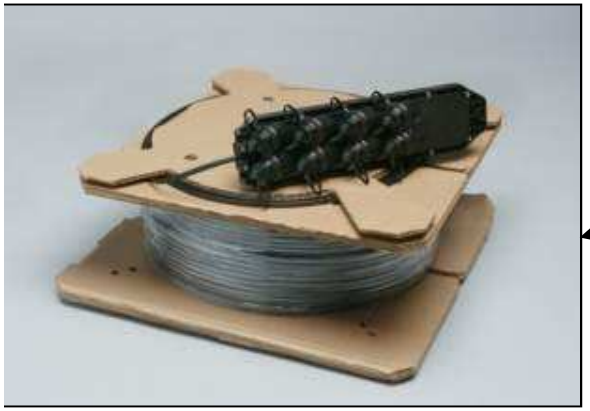
MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
Fiber Distribution Hub

NAP Summary



- **Available Sizes 4, 6, 8, 12**
- **Standard Lengths 50, 100, 200, 250, 500, 750, 1000, 1500, 2000**
- **Common 2xN Footprint**
- **Dielectric-Flat-Loose Tube, Locatable-Flat-Loose Tube, Armored-Round-Loose Tube**
- **Ships with Universal Mounting Bracket**
- **Packaging**
  - ≤ 300’ coiled
  - ≥ 301’ spooled

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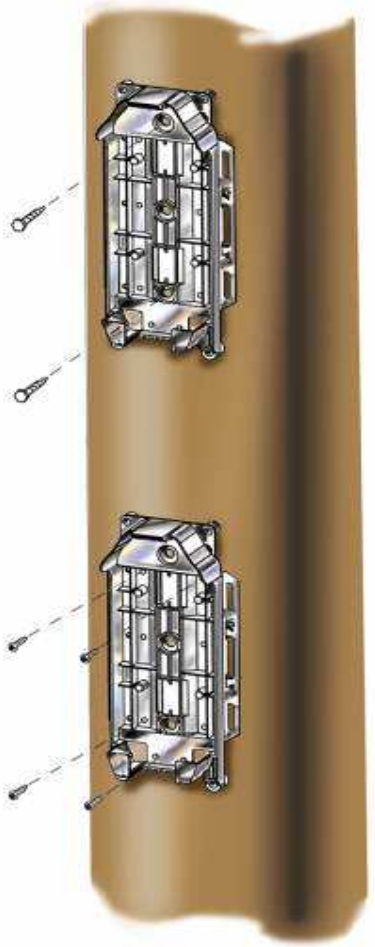
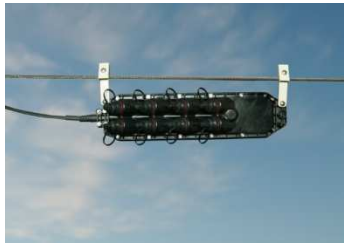
OSP Hardened Solutions – Network Access Point Pole/Aerial Mount

NAP Universal Mounting Bracket
Aerial & Pole Installation





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OSP Hardened Solutions – Network Access Point Pole/Aerial Mount

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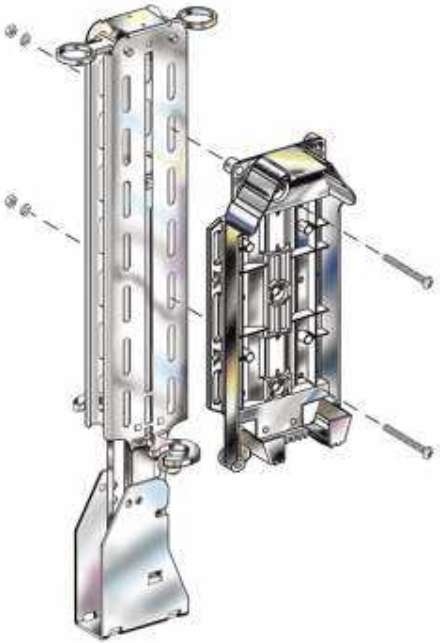
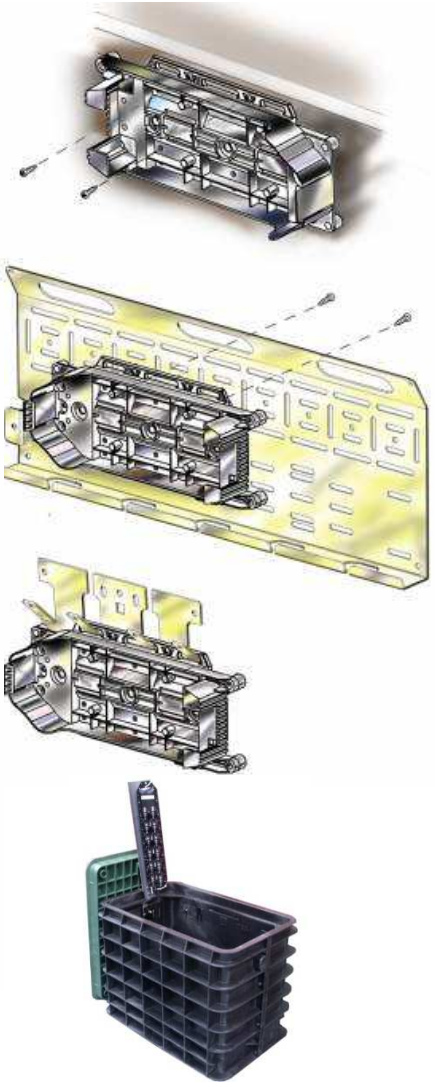
OSP Hardened Solutions – Network Access Point Pedestal/Below Grade Mount

NAP Universal Mounting Bracket
Pedestal & Below Grade Installation





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OSP Hardened Solutions – Network Access Point Pedestal/Below Grade Mount

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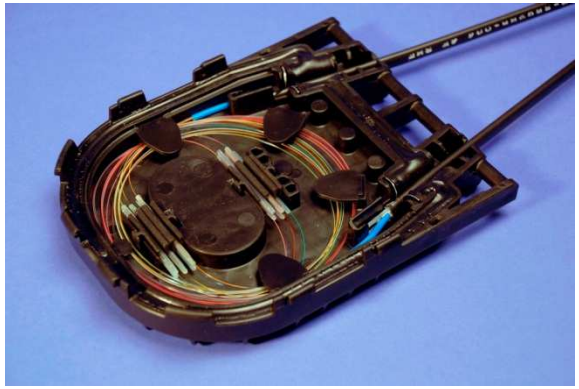
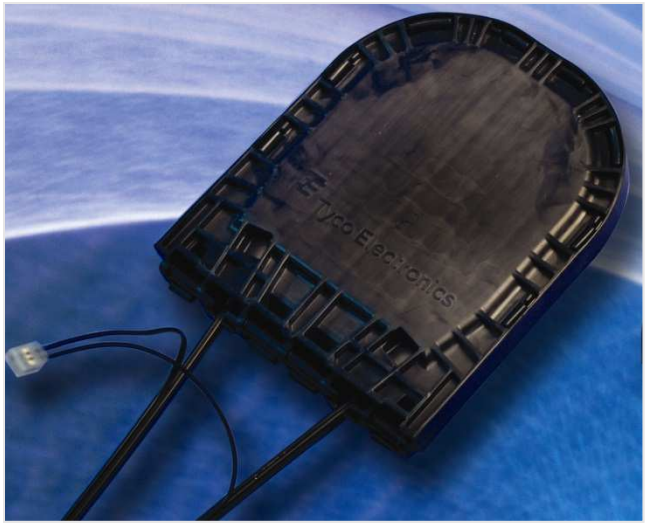
Drop Repair Kit

- Flat drop style cables
- Gel sealing, no encapsulant required
- One in, one out, butt-style configuration
- Large splice capacity; (12) singles, one 12F ribbon or (12) ribbonized fibers
- Small size (7” x 5.7” x 1.25”) fits into flowerpot size hand holes
- Above grade, below grade, aerial, or direct buried applications
- Tone wire hardware included (Tel-Splice)
- Hinged closure design for easy access
- No tools needed - quick, clean installation
- Not designed for UL - will not be UL listed





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Quick Drop Gel Seal

Gel Drop Seal:

- New flat drop cable sealing accessory for FOSC 450
- Improves FOSC FTTH position

Features of the product

- Multi-flat drop cable seal for FOSC 450 B, B Short, C and D Closures
- More efficient installation of flat drop cable
  - No base removal
- Fewer loose components than other multi-drop kits

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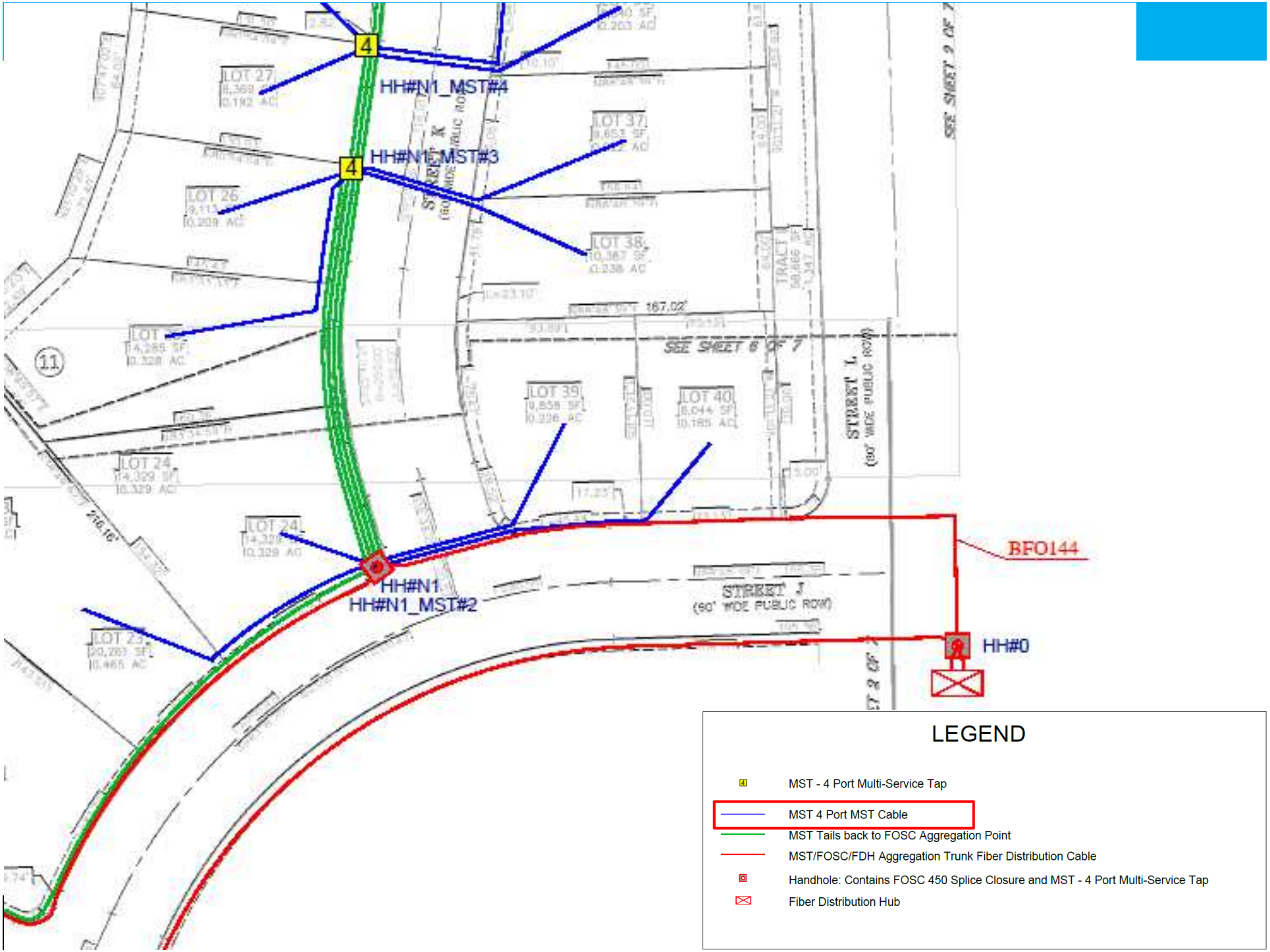

HH#N1_MST#4
HH#N1_MST#3
HH#N1
HH#N1_MST#2
BFO144
HH#0
LOT 27
LOT 26
LOT 37
LOT 38
LOT 39
LOT 40
LOT 24
LOT 23
SEE SHEET 6 OF 7
STREET L
(80' WIDE PUBLIC ROW)
STREET J
(80' WIDE PUBLIC ROW)
LEGEND
MST - 4 Port Multi-Service Tap
MST 4 Port MST Cable
MST Tails back to FOSC Aggregation Point
MST/FOSC/FDH Aggregation Trunk Fiber Distribution Cable
Handhole: Contains FOSC 450 Splice Closure and MST - 4 Port Multi-Service Tap
Fiber Distribution Hub

OSP Hardened Solutions – Hardened Drop Cables

- Single-fiber, single-mode hardened connector SC/APC drop cable assemblies
- Available with one or both ends connectorized
- Environmentally sealed connector
- Easy connection to hardened adapters on terminals or closures
- Connector can be pulled through 1.25-inch conduit
- Pulling eye on connector cap is designed for 100 lb. maximum pulling tension
- Drop cable designed to meet Telcordia GR-20 requirements
- Dielectric, Tonable and Aerial cable options.

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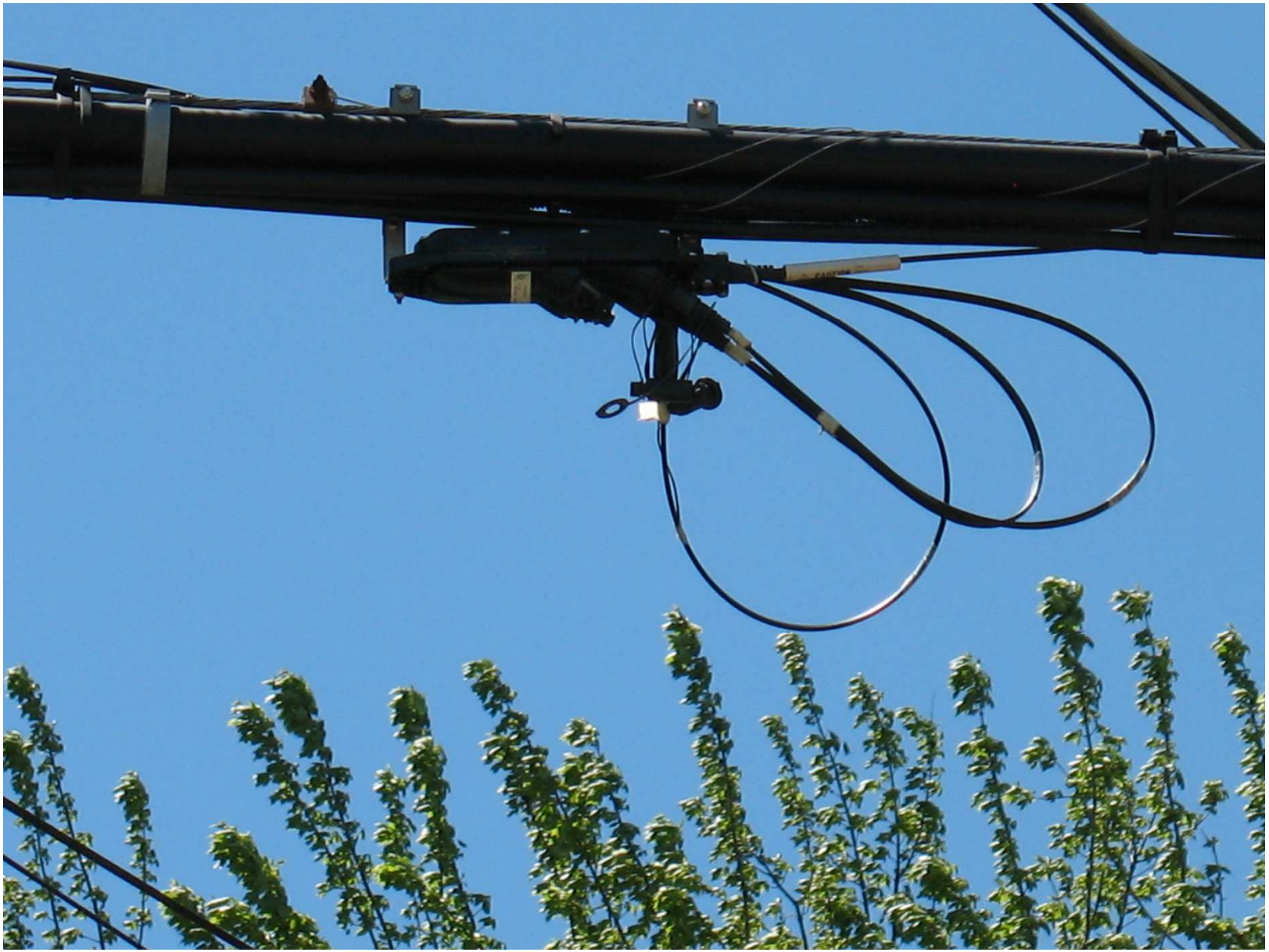
OSP Hardened Solutions – Hardened Drop Cables



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Customer Premises Solutions

SCTE N-CA Tech Days & Vendor Show 041217

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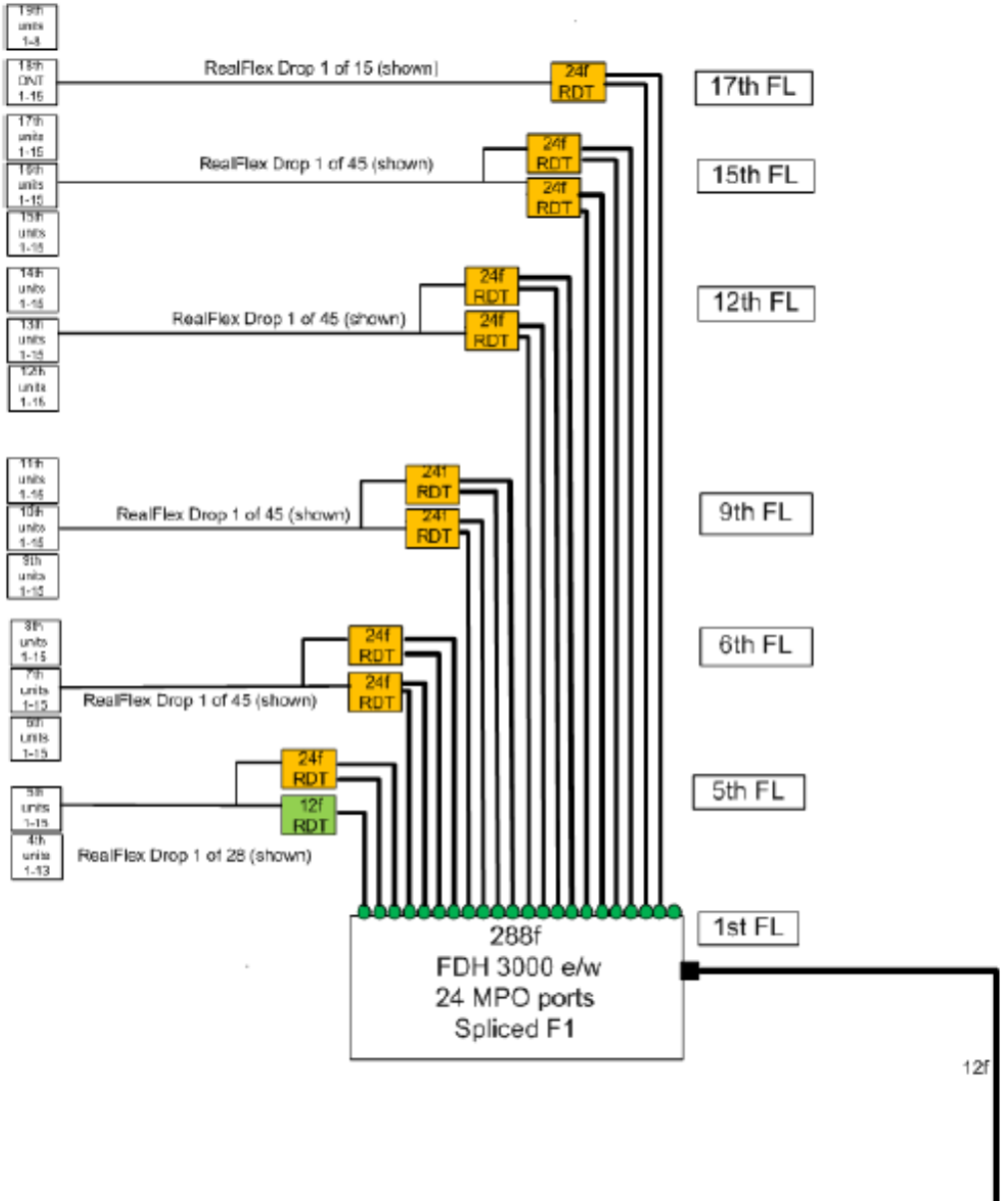
MDU Solutions – 17 Story Building



Notes:

1. 19 Story Bldg.
2. Approx 235 MDU's
3. Approx. 15 units per fl
4. 1 MPO for each 12 port RDT
5. 288 FDH spliced Feeder
6. ReelFlex drop double ended SC/APC.

288 FDH 3000 — Mini FDH e/w 6 MPO

24f RDT — Rapid Distribution Terminal (RDT) e/w 24f

12f RDT — Rapid Distribution Terminal (RDT) e/w 12f (Floor 5 only)

● MPO 12f Connector

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Virtual Hub

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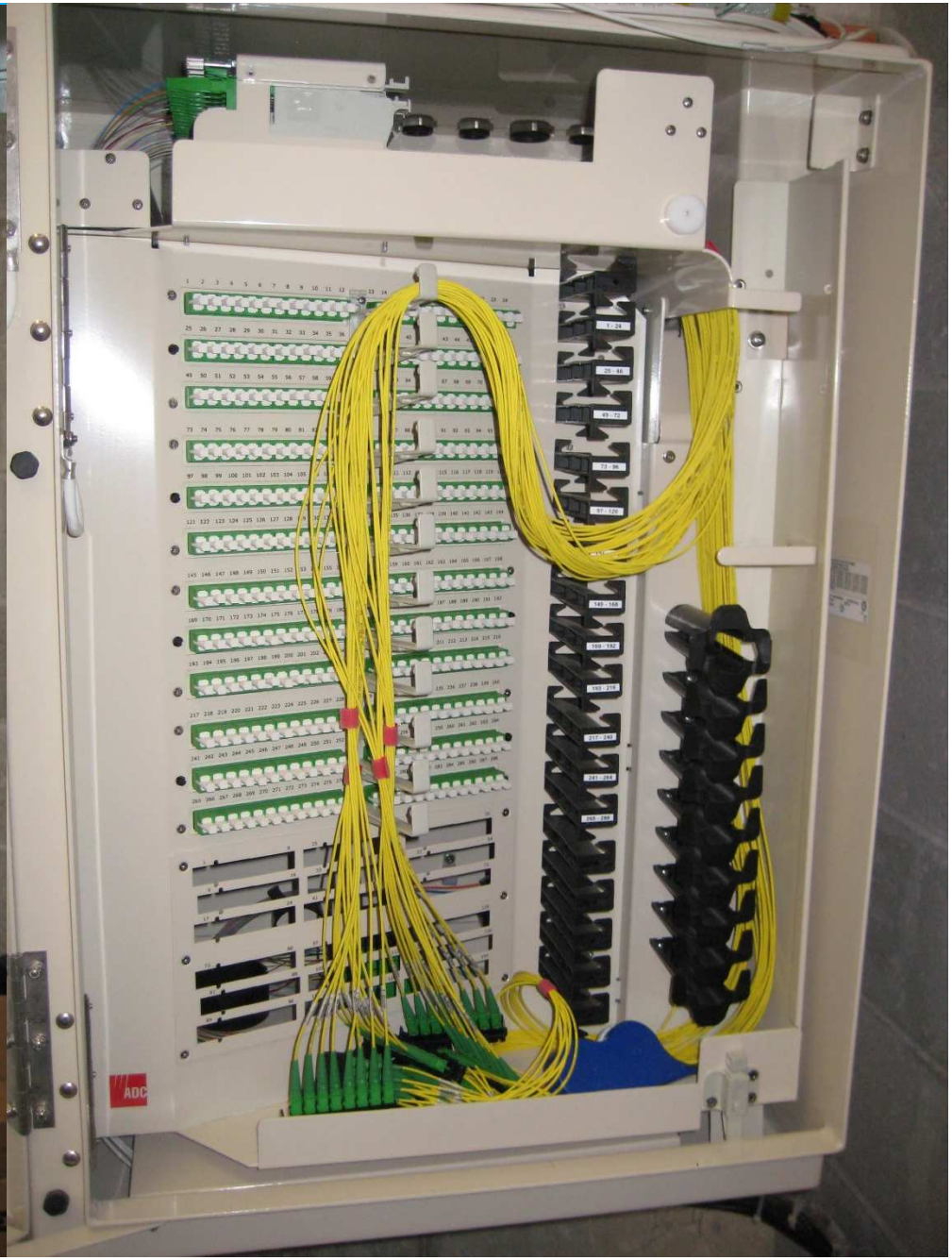

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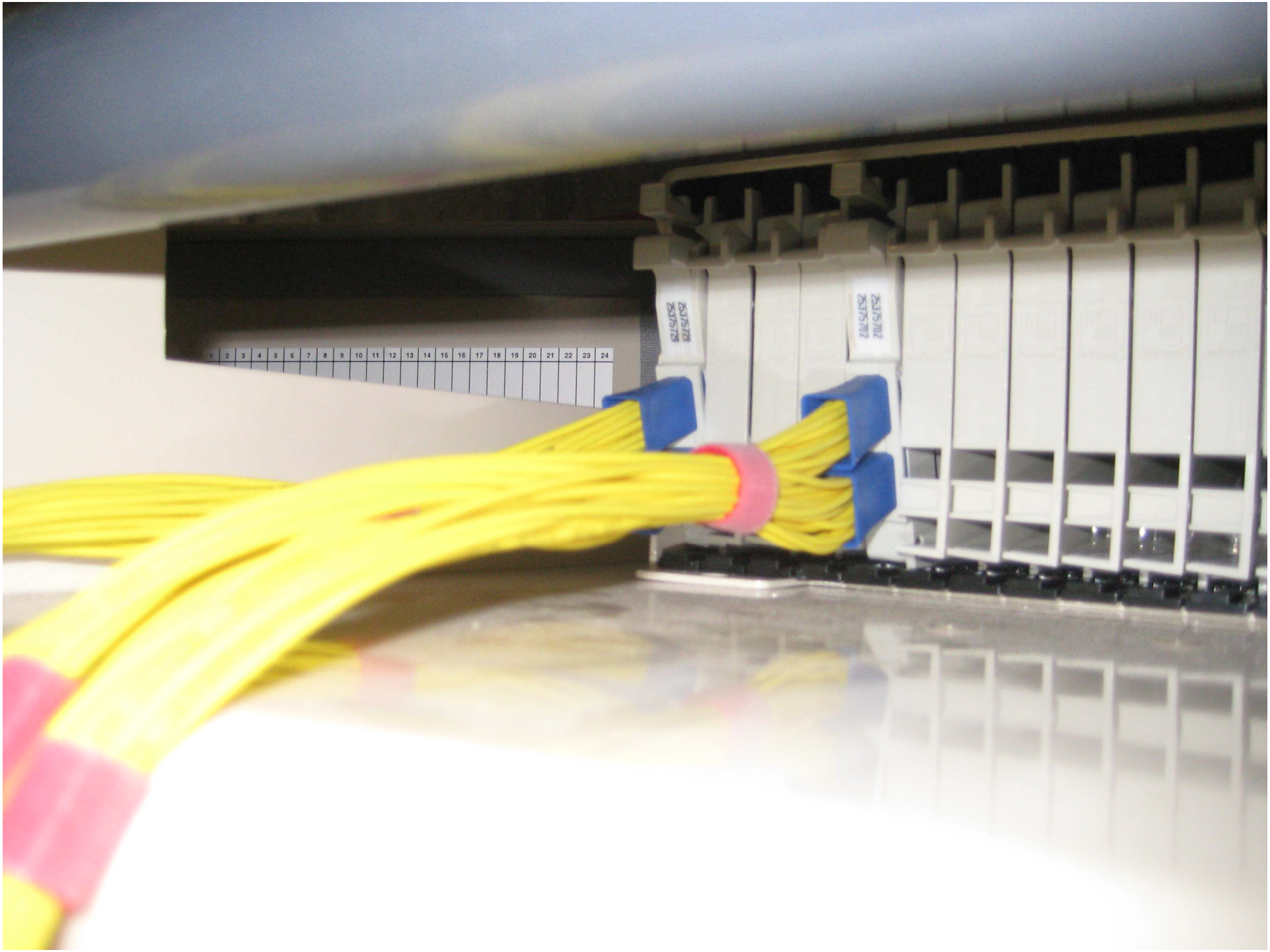
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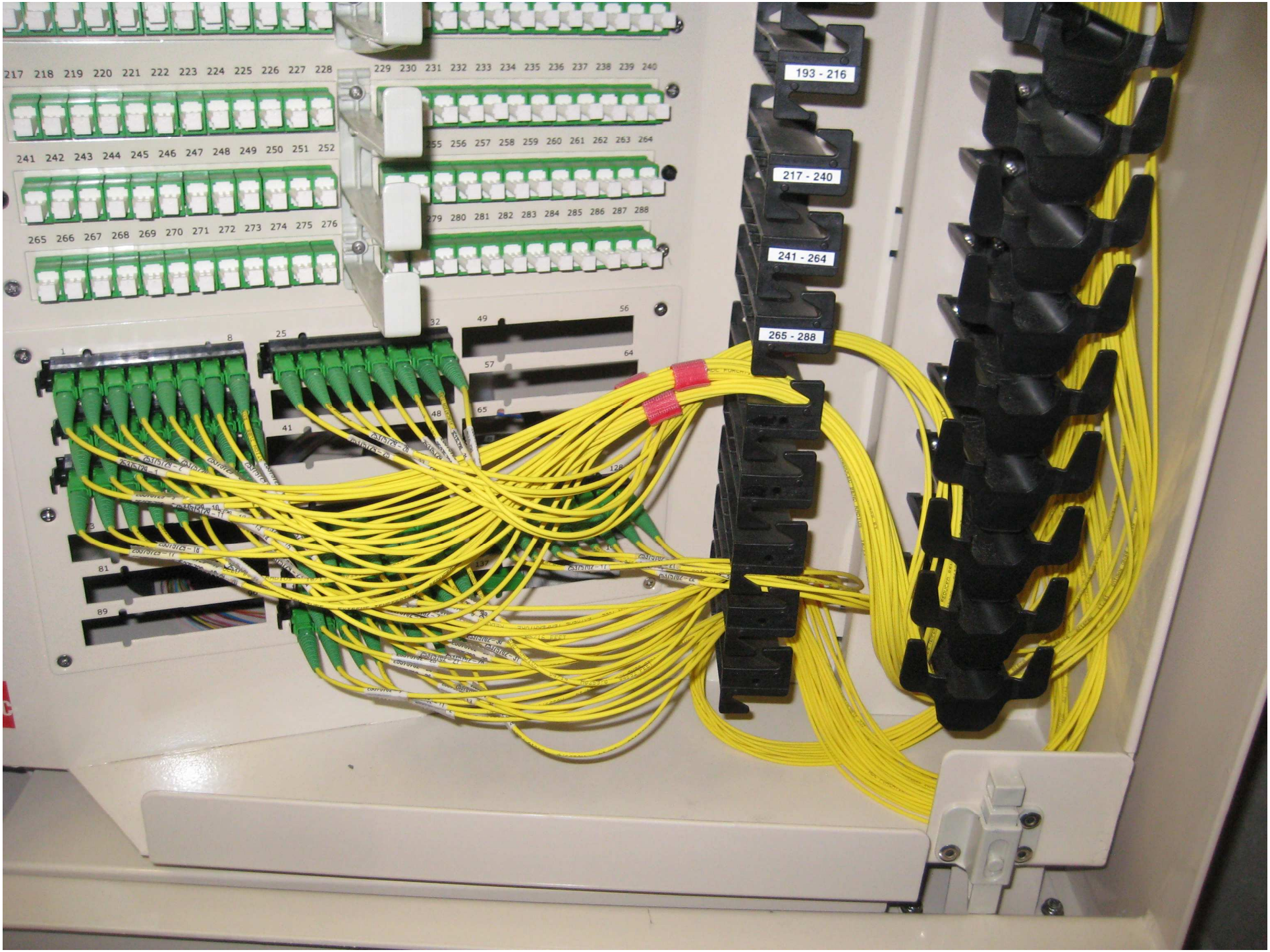
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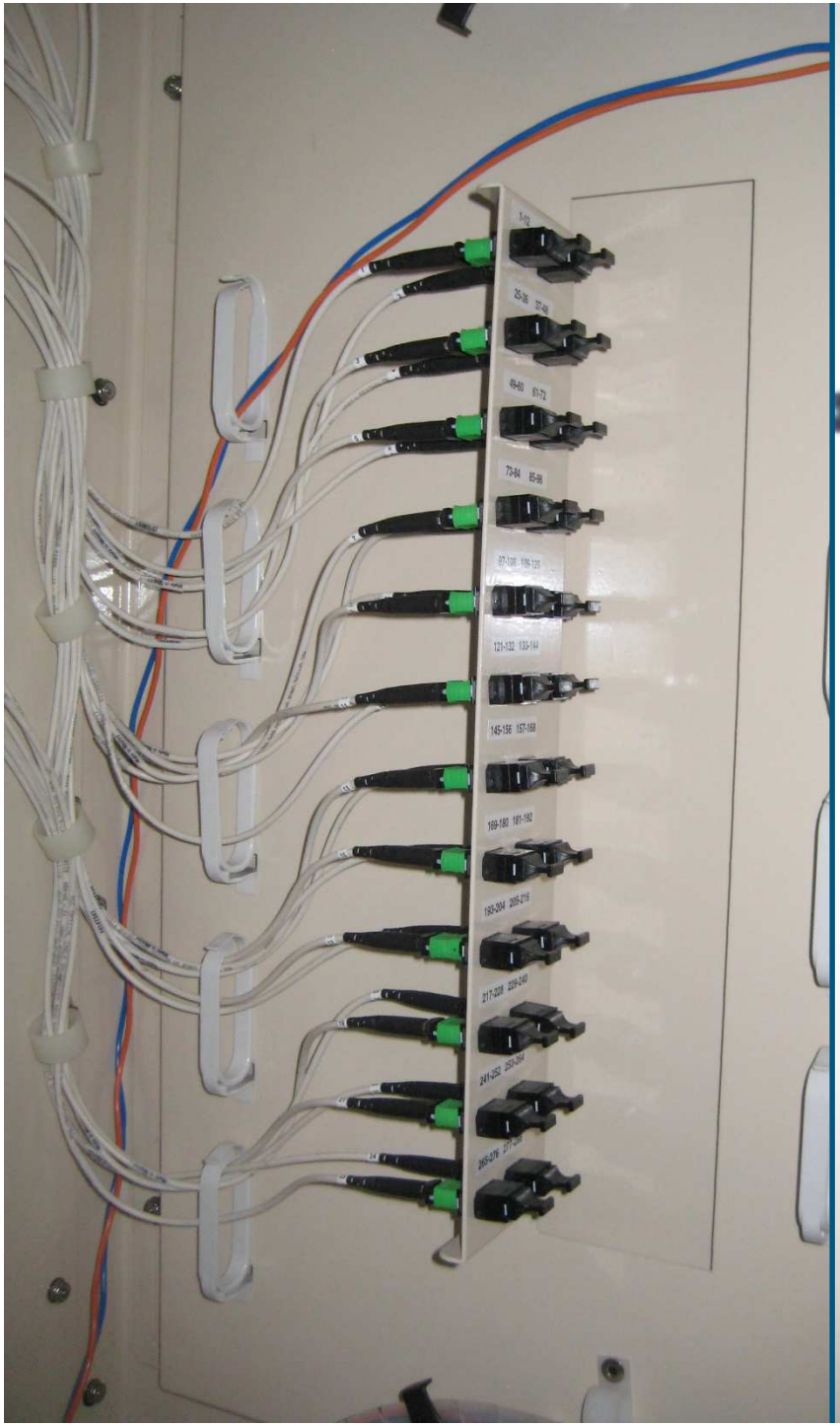
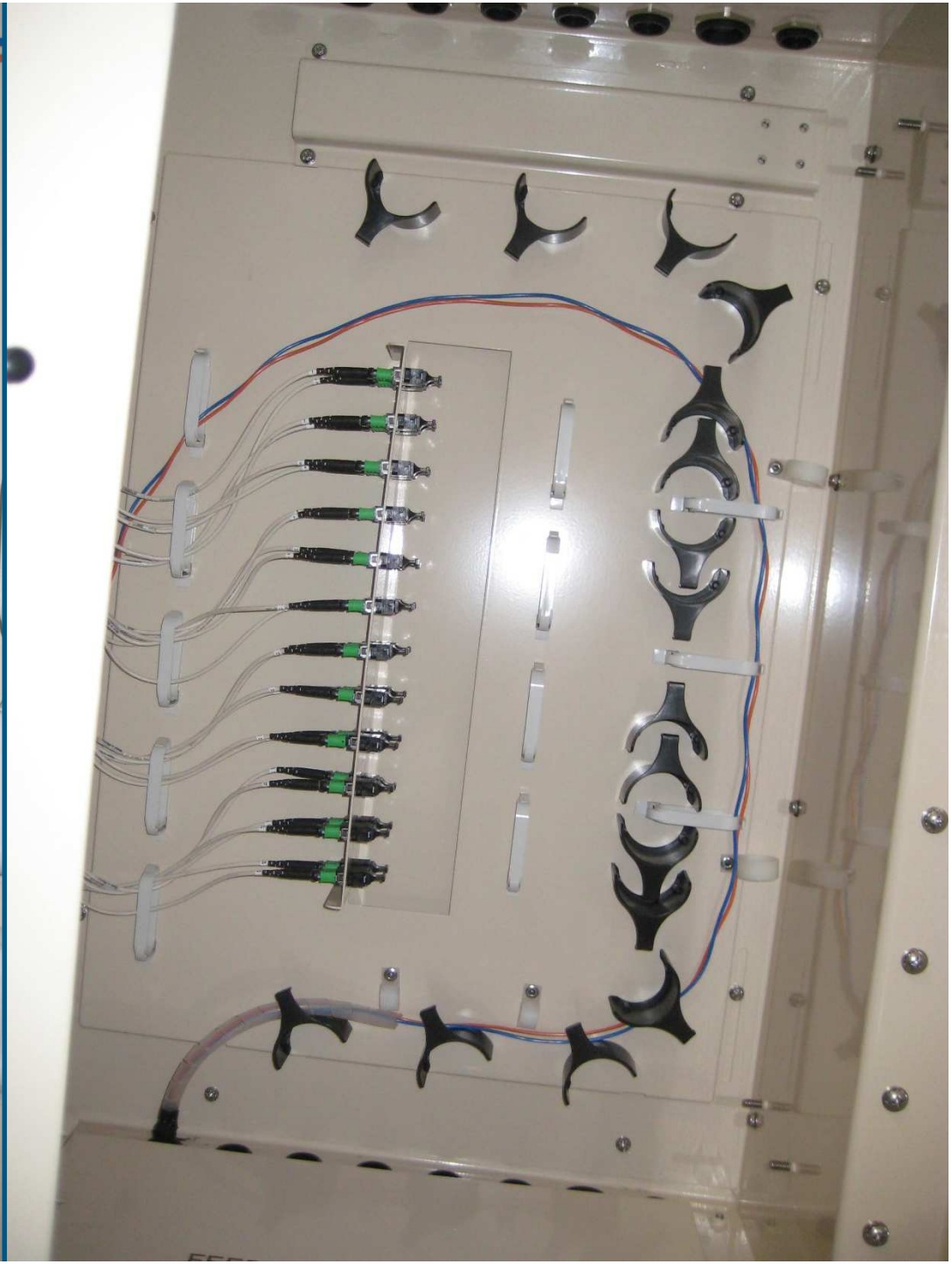
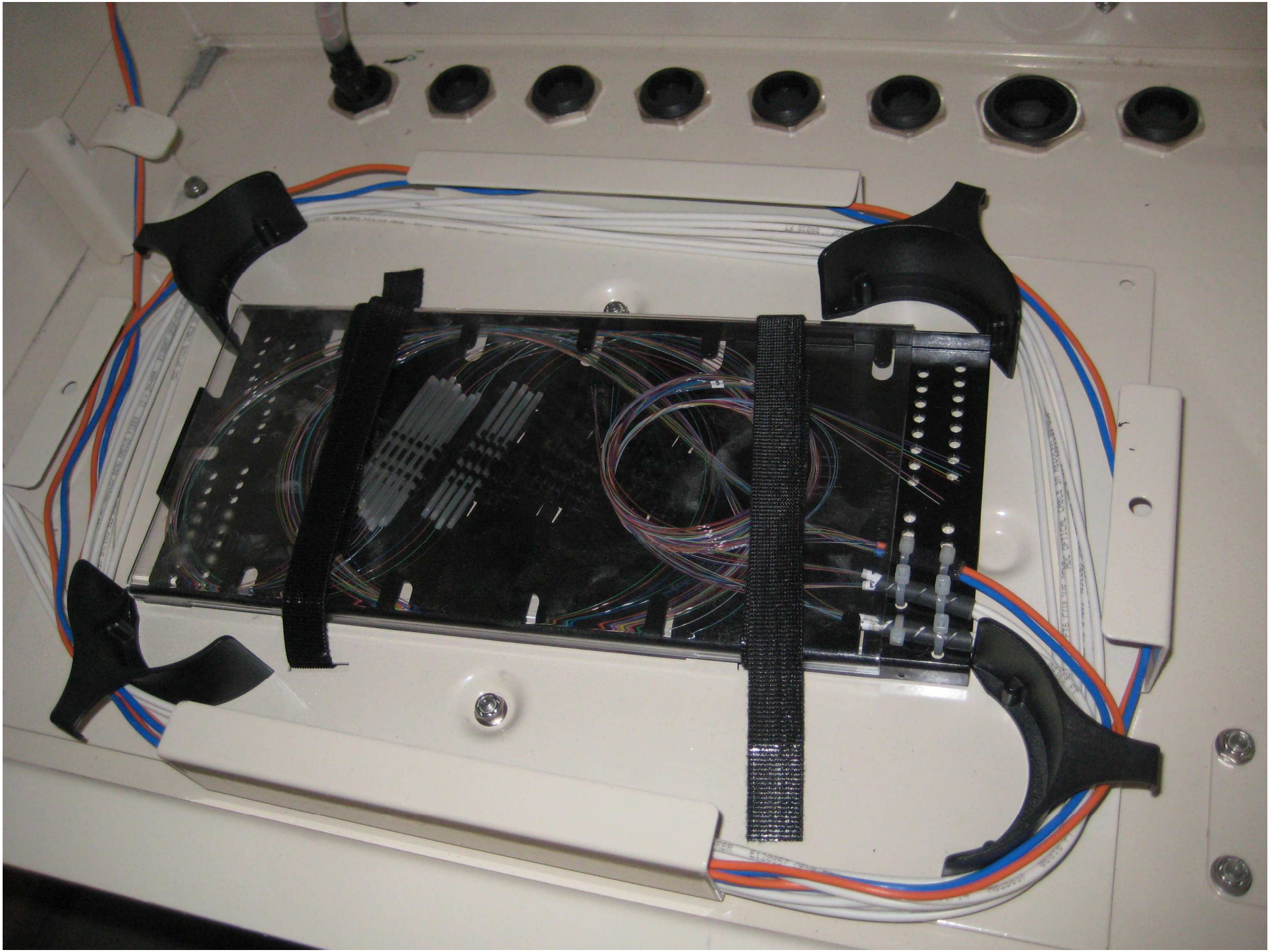
217 - 240
241 - 264
265 - 288





24
23



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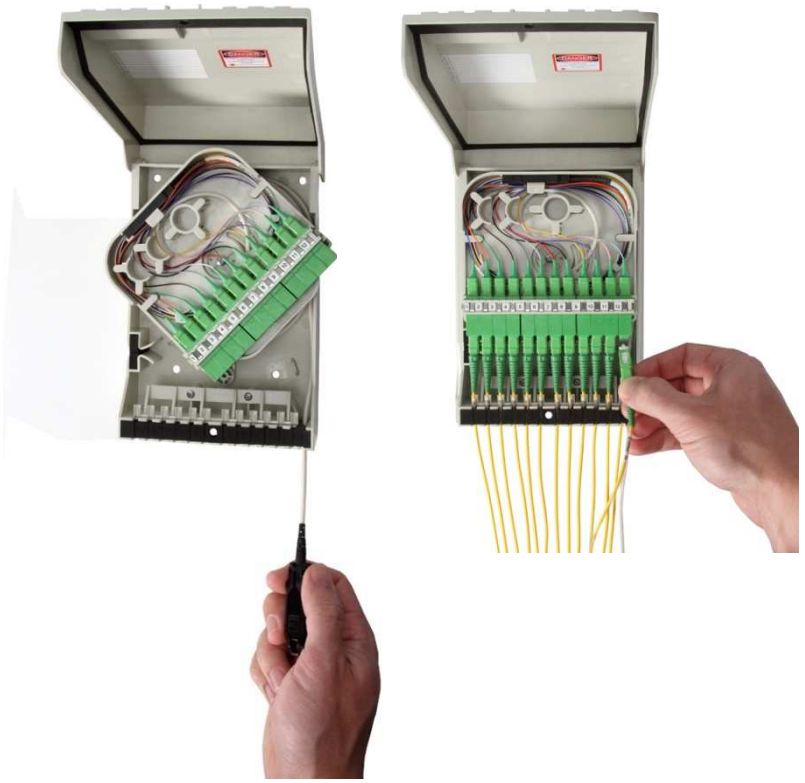
CLASS 1 LASER PRODUCT
Complies with 21 CFR 1040.10 and 1040.11
except for deviations pursuant to Laser Notice
No. 50, dated June 24, 2007
+12VDC ⎓
250-750mA
POWER IN
RF IN/OUT
OK
ALARM
+12VDC ⎓
250/500mA
POWER IN/OUT
NETWORK
Hoffman
CAT. NO. ABE12X12X4NK
RG6/U QUAD SHIELD

Mini – RDT (Rapid Distribution Terminal)

- Compact size: 7.75”h x 5.5”w x 2.25”d
- Up to 100 Feet of built-in Slack storage
- Uses RapidReel technology
- Plug & play MPO stub connections (no splicing)
- 4-port to 12-port compatible
- Security screw
- Two cable exit locations (left and down sides)



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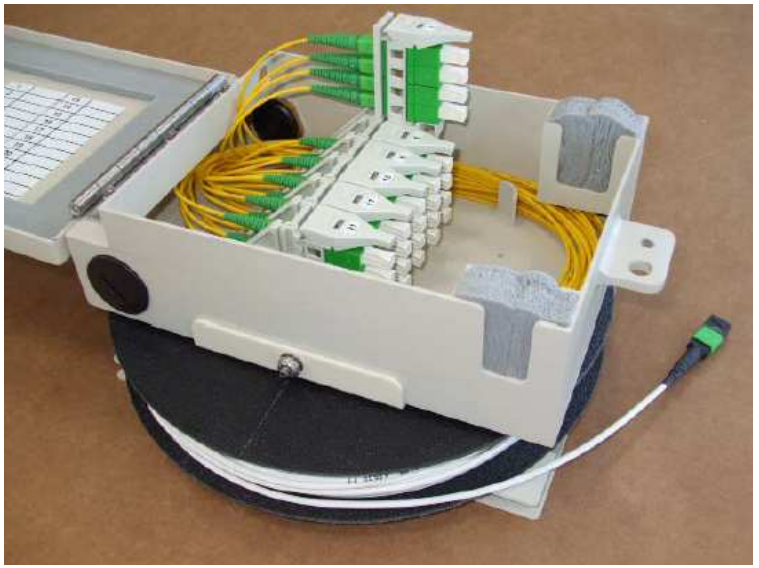
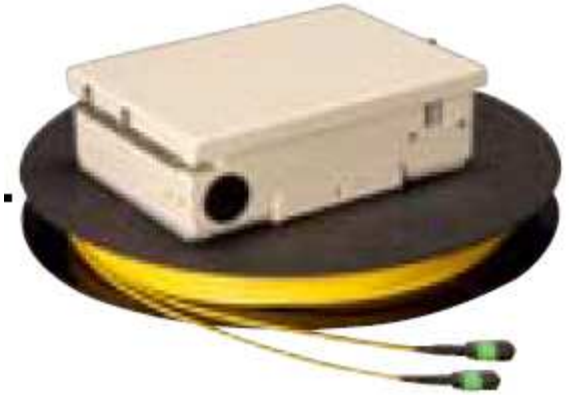
24Fiber Rapid Distribution Terminal (RDT)

- Provides flexibility in deployment with various size terminals, cable types and standard cable lengths
- Reduces overall lead-time and installation process
- Miniaturized cable requires less space for slack storage of excess fiber cable
- RapidReel technology allows for easy payoff of MPO stub
- Patented break-away spool flanges reduce slack

storage size to within the enclosures footprint

- Designed for indoor use
- Utilizes Reduced Bend Radius Fiber
- Designed to meet NEMA-12 requirements





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ReelFlex 3 Fiber Drop Cable

Features and Benefits

- Fiber bend radius as small as 7.5 mm without changing cable characteristics
- Greatly reduces risk to bend induced insertion loss created during installation
- Indoor/Outdoor, Plenum and Riser cable options available
- 900 micron buffer coating strips easily in one pass to save on installatior time
- Rugged 3 mm cable jacket construction
- Cable maintains its flexibility even in extreme cold temperatures
- G.657 Table A and B compliant
- Two cable configurations available: connectors on both ends or connect on one end
- Spooling options: end with connector pulled first or end without connector pulled first
- Ivory cable color helps distinguish cable in the field

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Thank You

Craig Fleming

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