NG4access® ODF Platform
Application and Planning Guide

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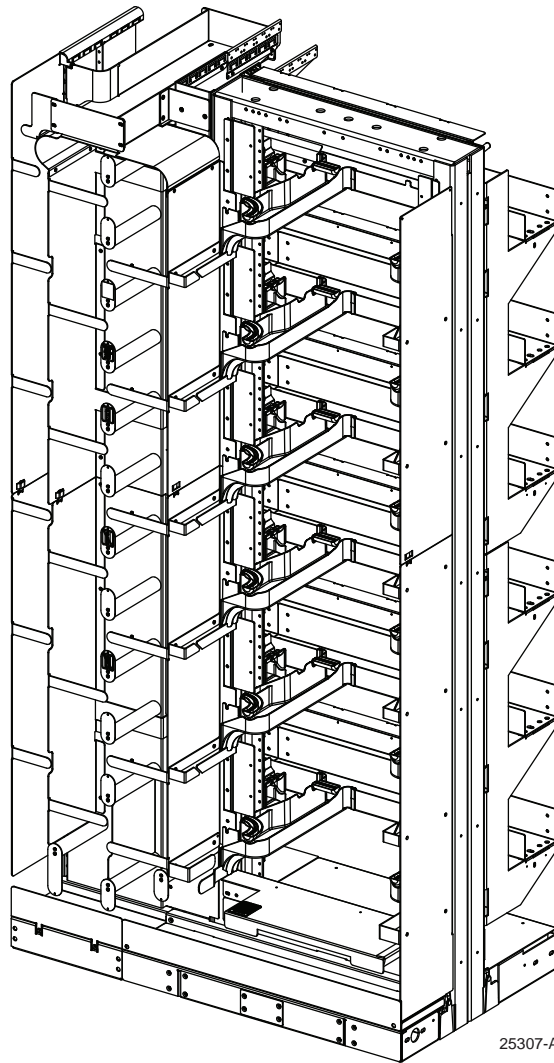
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NG4access Frame With Integrated FOTSP

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REVISION HISTORY

ISSUE	DATE	REASON FOR CHANGE
1	9/2012	Original.
2	9/2013	Updated to reflect design changes.
3	11/2013	Updated to change trademark information.

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ABOUT THIS MANUAL

This manual describes the NG4access ODF Platform and provides pre-sale application and planning information intended for a manager or engineer designing a complete installation of lineups, frames, chassis, cables, and other components.

RELATED PUBLICATIONS

Listed below are related manuals and their publication numbers. Copies of these publications can be ordered by contacting the **Technical Assistance Center (TAC)** (phone 800.830.5056 or email TAC.Americas@commscope.com).

Title/Description	Publication Number
NG4access ODF Platform **Frame Installation Manual: Concrete Floor** Provides step by step pictorial instructions for installing a NG4access frame on a concrete floor.	**90-702**
NG4access ODF Platform **Frame Installation Manual: Raised Floor** Provides step by step pictorial instructions for installing a NG4access frame on a raised floor.	**90-708**
NG4access ODF Platform **Universal Chassis Installation Manual** Contains a product description and installation instructions for the NG4access universal chassis.	**90-703**
NG4access ODF Platform **Splice Chassis and Splice Tray Installation Manual** Contains a product description and installation instructions for the NG4access splice chassis.	**90-704**
NG4access ODF Platform **Patch Cord Routing Guide** Provides pictorial guidelines for routing patch cords on a NG4access lineup. This manual consists of laminated cards that hang on the lineup.	**90-705**
NG4access ODF Platform **Rear Side Routing Guide** Provides pictorial guidelines for routing feeder cables and splice chassis output fibers to the universal chassis on the rear of the NG4access frame.	**90-706**

ADMONISHMENTS

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment. These admonishments — in the form of Dangers, Warnings, and Cautions — must be followed at all times. These warnings are flagged by use of the triangular alert icon (seen below), and are listed in descending order of severity of injury or damage and likelihood of occurrence.

⚠ **Danger:** *Danger is used to indicate the presence of a hazard that **will** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*

⚠ **Warning:** *Warning is used to indicate the presence of a hazard that **can** cause severe personal injury, death, or substantial property damage if the hazard is not avoided.*

⚠ **Caution:** *Caution is used to indicate the presence of a hazard that **will** or **can** cause minor personal injury or property damage if the hazard is not avoided.*

GENERAL SAFETY PRECAUTIONS

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

⚠ **Caution:** *When working with panels above easy reach, use an A-frame type of step ladder to provide a secure footing at the necessary height.*

LIST OF ACRONYMS

The following acronyms are used in this manual:

C-MOD	Cabled Module
FOTSP	Fiber Optic Terminal Storage Panel
IFC	Intrafacility Fiber Cable
MPO-MOD	MPO Module
ODF	Optical Distribution Frame
VAM	Value Added Module

1   PRODUCT DESCRIPTION

1.1   General Description

The NG4access ODF Platform is a modular, high density optical distribution system consisting of frame components, chassis, and accessories. Figure 1 shows two NG4access frames, each loaded with six "universal" chassis, so called because the same design accommodates adapter packs, cabled modules, MPO modules, and VAM modules. Also shown are two other frame components: the Fiber Optic Storage Panel (FOTSP) and end guard. A splice chassis, not shown, is also available. The FiberGuide Fiber Cable Management System, shown here, is often used with the NG4access system to provide a patch cord conduit from Fiber Optic Terminal (FOT) equipment. A fully loaded frame with LC connectors provides 3456 terminations. NG4access frames, chassis, and accessories are described on the following pages.
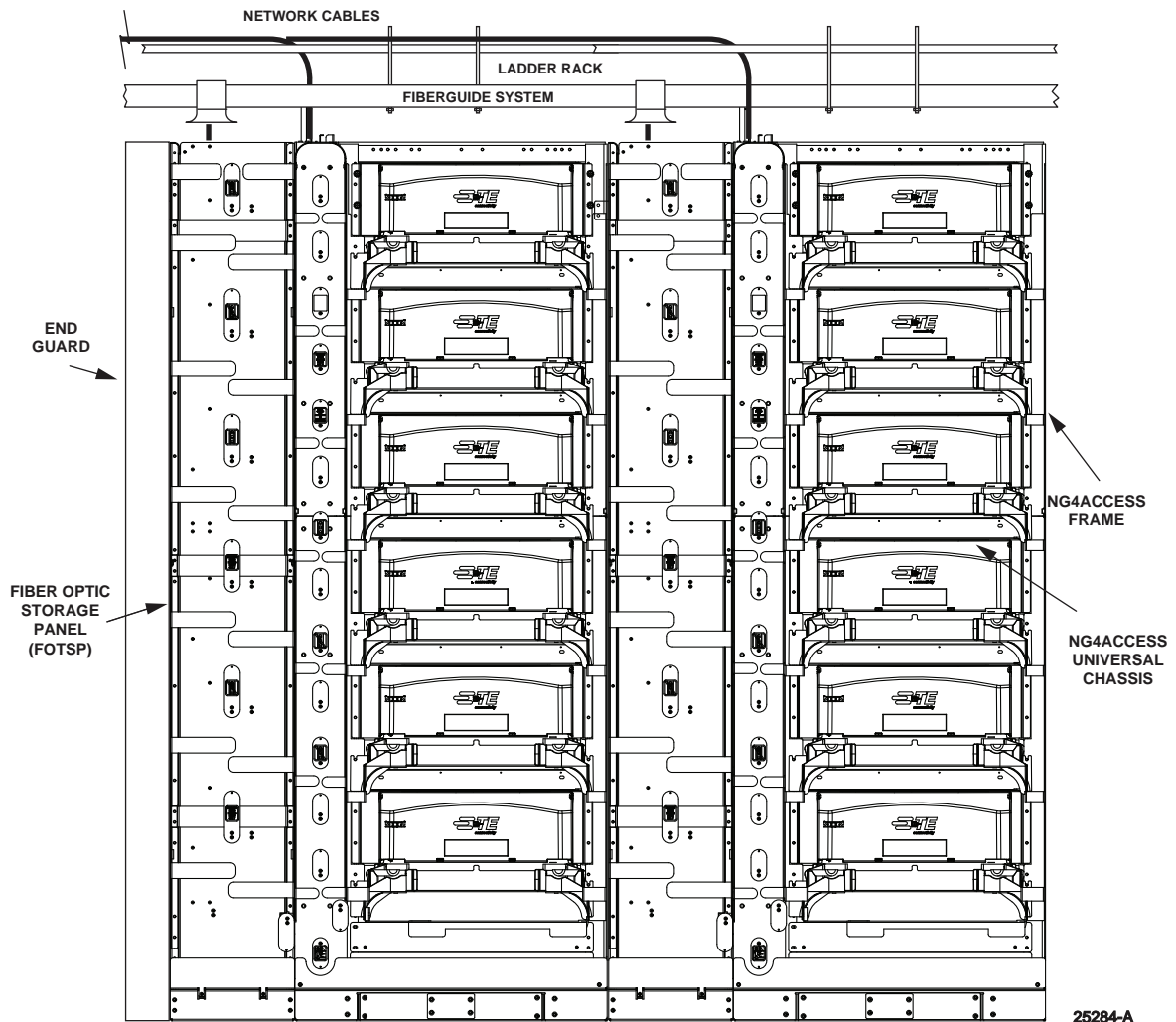
Figure 1. NG4access Lineup With Frames, FOTSPs, and End Guard

1.2   Frame Components

NG4access frame components include the Zone 4 earthquake-rated standard NG4access frame, the Fiber Optic Storage Panel (FOTSP), and the end guard. A Zone 4 earthquake-rated frame with integrated FOTSP is also available.

1.2.1   Standard Frame

The standard frame, shown in Figure 2, is an high density equipment rack with vertical and horizontal cable management on front and rear side and a slack storage compartment on the left side of the frame. The frame is the foundation on which NG4access universal chassis (six per frame) are mounted. The frame also holds the optional splice chassis and splitter chassis.

FRONT ISO VIEW   **REAR ISO VIEW**
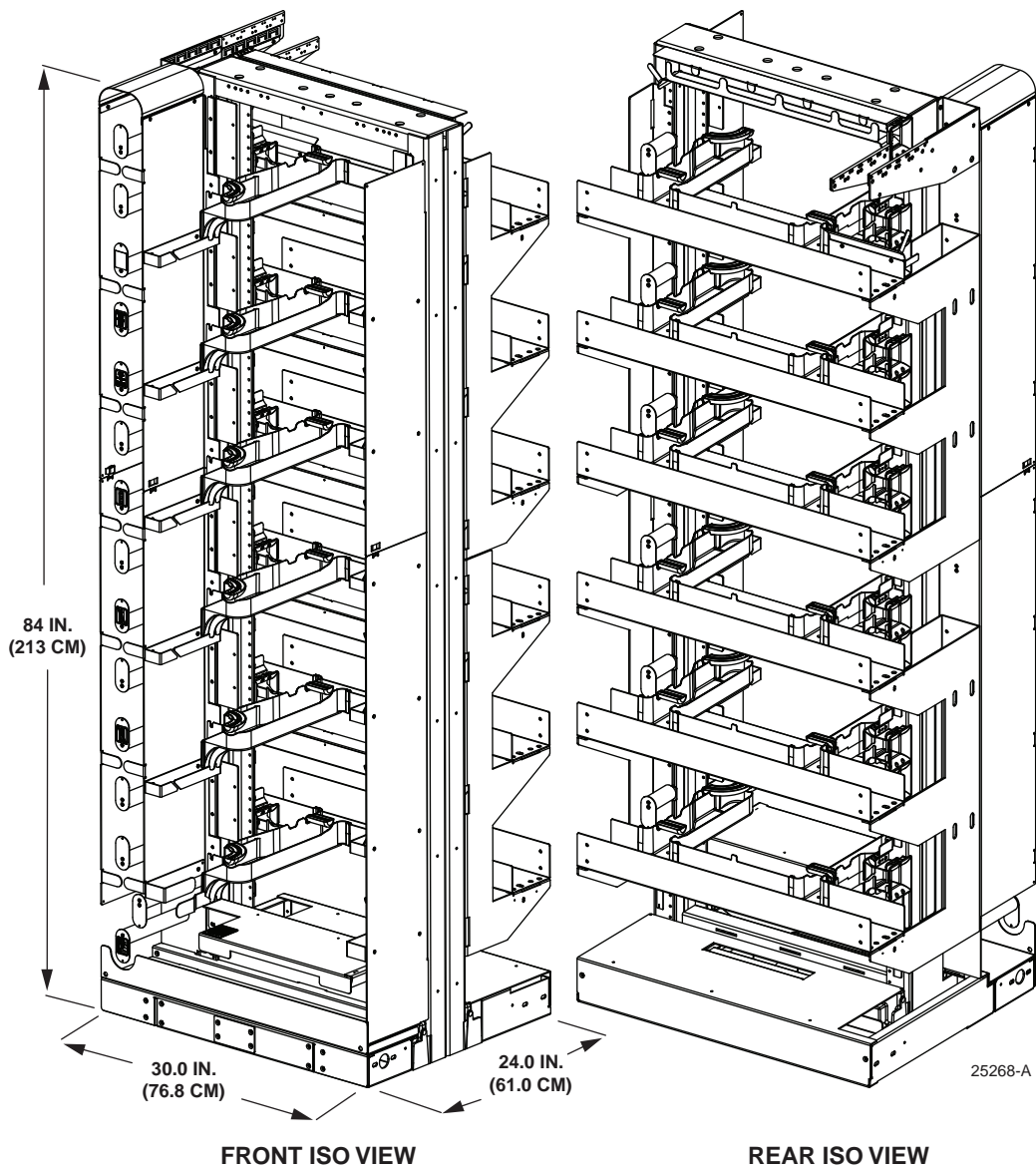
Figure 2. NG4access Standard Frame

The frame has the cable management features called out in Figure 3 and Figure 4. Included are

- **Slack Storage Spool Area**—is used for storing patch cord slack. The storage area can store up to 14 feet (4.27 m) of slack per patch cord.

- **Anchor Spools**—provide an anchor point for changing patch cord routing direction. All patch cords are routed from the universal chassis to the bottom of the frame and then around the anchor spools and up and around the slack storage spools.

- **Front Bottom Trough**—is used to route patch cords along the bottom of the frame from one side of the frame to the other.
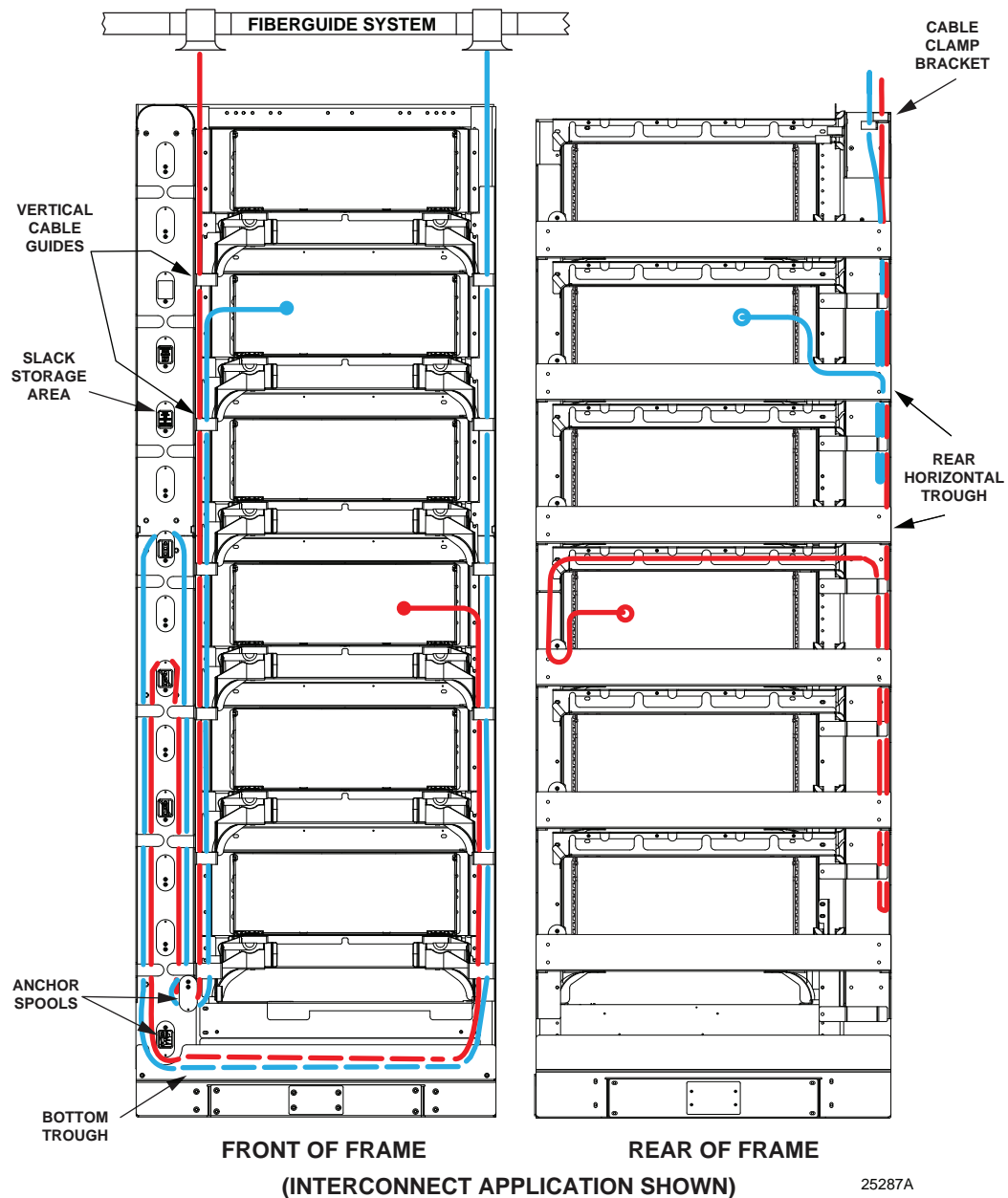
Figure 3. NG4access Frame Cable Management Features

- **Cable Clamp Bracket**—is located at the top right corner of the frame when viewed from the rear. The bracket holds up to 24 clamps for cables with an outer diameter of less than 0.80 in. (2.03 cm) or up to 16 clamps for cables with an outer diameter of 0.80 in. (2.03 cm) to 1.2 in. (3.05 cm). Cable clamps are provided with IFC CMODs; additional clamps may be ordered from TE.

  Note: Cables may also enter the frame from below a raised floor using kits available from TE. For more information, refer to Topic 2.12.1 on page 37.

- **Vertical Cable Guides**—are used for routing patch cords down from a universal chassis to the bottom trough, as shown in "front routing" in Figure 4.

- **Front-to-Rear Troughs**—are used for routing patch cords from the universal chassis to the rear horizontal trough, as shown in "rear routing" in Figure 4.

- **Rear Horizontal Trough**—shown in Figure 4, is used for routing patch cords from one frame to another in the same lineup, as is often done in a cross-connect application.

- **Cross-Frame Trough**—shown in Figure 5 and Figure 6, is positioned above the rear of each universal chassis and is used for routing cables from the cable ducts on the right rear side of the frame to the left rear side of the frame.

  Note: For schematic drawings of typical cable routing on the rear of the frame, refer to Topic 2.4 on page 24.
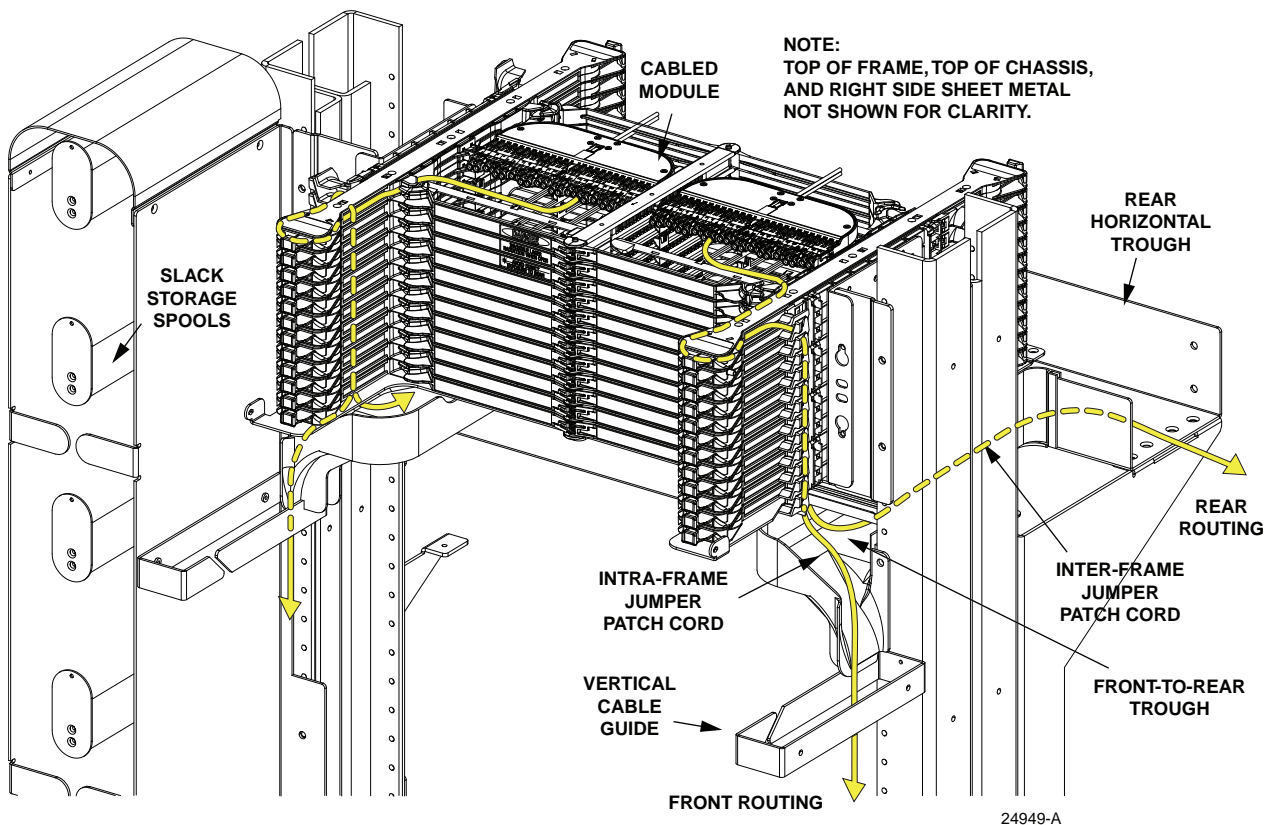
Figure 4. See Through View of Frame Features

CROSS FRAME TROUGH

ROUTE UP OR DOWN

UPPER TRUMPET FLARE

OUTER TRAY CABLE GUIDE

RADIUS LIMITER

ACCESS TRAY OUT FOR CABLE ROUTING

REAR VIEW (SOME SHEET METAL REMOVED FOR CLARITY)

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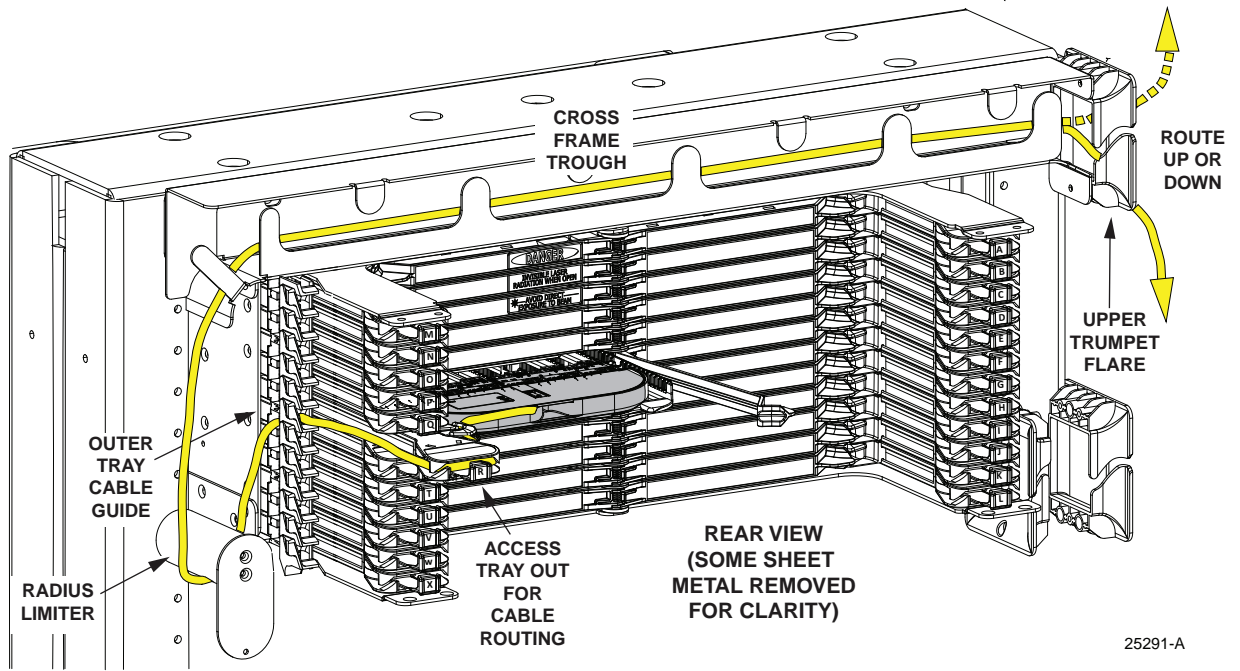
Figure 5. Left Iso View of Rear Cable Management

CROSS FRAME TROUGH

TRUMPET FLARES

REAR HORIZONTAL TROUGH

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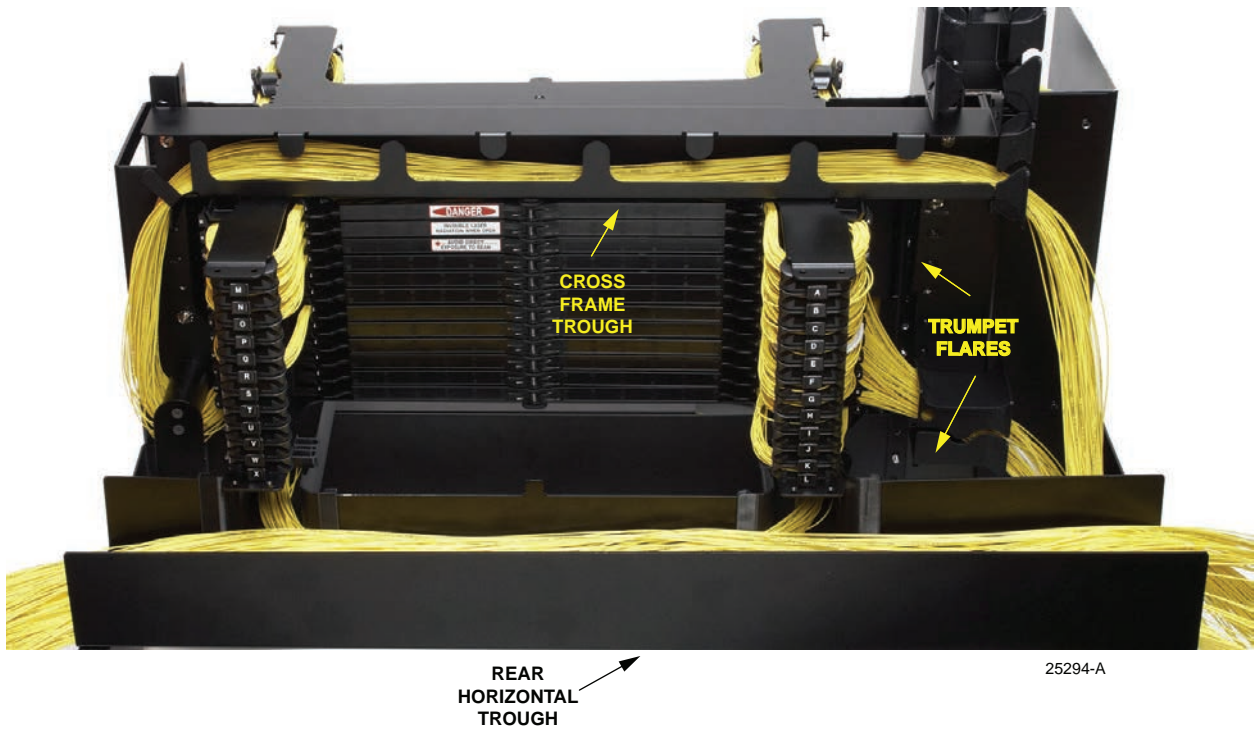
Figure 6. Rear View of Rear Cable Management

1.2.2   Fiber Optic Storage Panel (FOTSP)

The FOT Storage Panel (FOTSP), shown in Figure 7, is 12 inches (30.5 cm) wide and serves as a filler mount next to the NG4access frame. It provides storage capacity for up to 3.6 meters (12 feet) of excess jumper slack per FOT jumper at the full frame capacity of 3456 jumpers of 1.2 mm O.D. The FOTSP provides FOT jumper storage on the rear for cross-connect applications and also on the front for interconnect applications.

FOTSP

ISO FRONT VIEW

STANDARD FRAME

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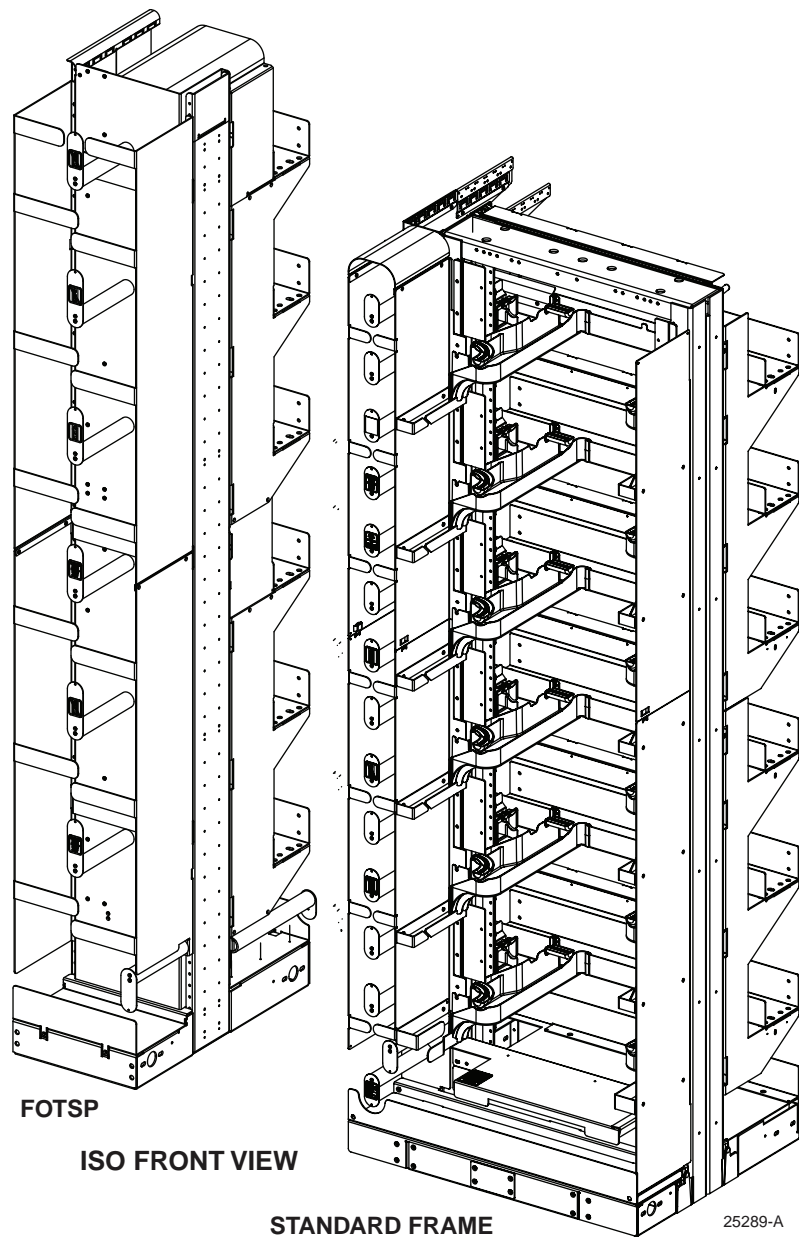
Figure 7. Standard Frame With FOTSP (Iso Front View)

1.2.2.1   Use in Cross-Connect Application

In a cross-connect application, FOTSPs are placed to the left of FOT-dedicated frames (right when looking from the rear), as shown in Figure 8, and are accessed from the rear of the frame. Figure 8 shows an example of typical cable routing on the FOTSP in a cross-connect application.
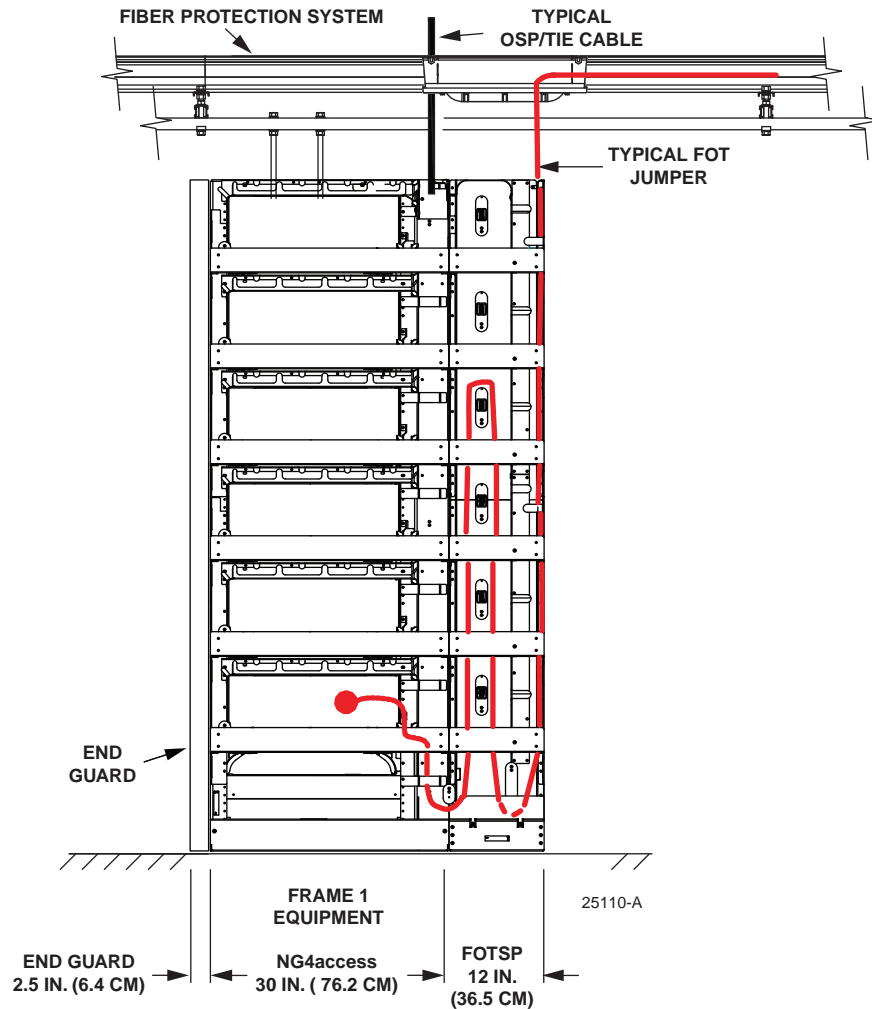
**Figure 8. Rear View of NG4access Frame With FOTSP
(Cross-Connect Application)**

1.2.2.2   Use in Interconnect Application

In an interconnect application, FOTSPs are placed to the left of FOT-to-OSP transition frames (when looking from the front), as shown in Figure 9, and are accessed from the front of the frame. Figure 8 shows an example of typical cable routing on the FOTSP in an interconnect application.
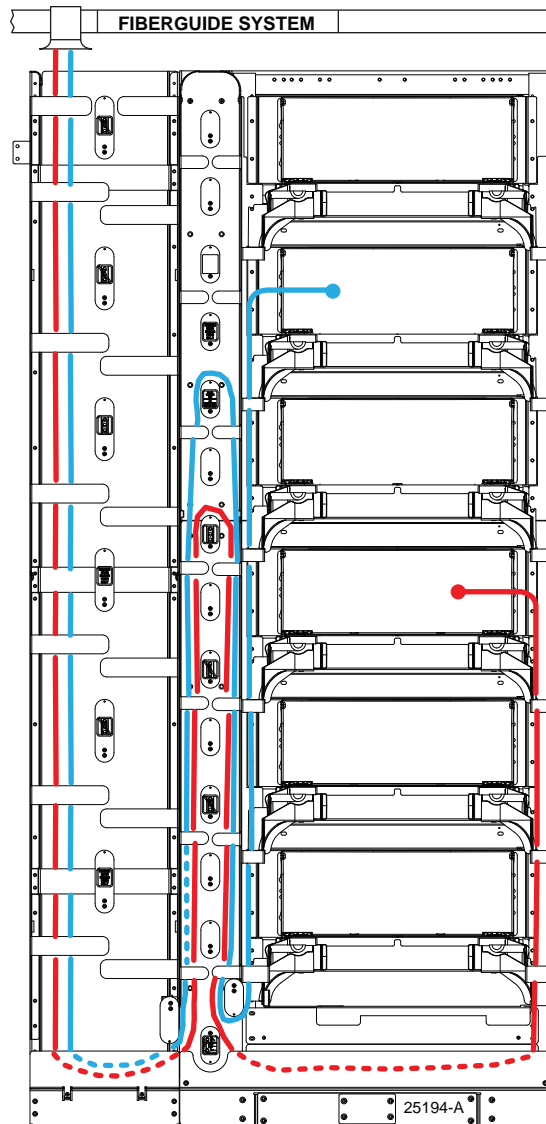
Figure 9. Front View of NG4access Frame With FOTSP
(Interconnect Application)

1.2.3   End Guard

The end guard is a narrow panel installed on each end of a NG4access lineup to dress up the lineup and protect the first and last frames. End guards can be seen on the left side of the rear view of the frame and FOTSP shown in Figure 8, above.

As shown, the end guard is 2.5 inches (5.4 cm) wide. It is 24 inches deep.

1.2.4   Frame With Integrated FOTSP

The NG4access integrated frame combines standard frame and FOTSP components in one integrated unit, assembled in the factory, with the cable storage spools arranged for optimum routing and storage of cable slack.

The FOTSP component also has a built in overhead cross-aisle cable trough.

Figure 10 shows an integrated frame.
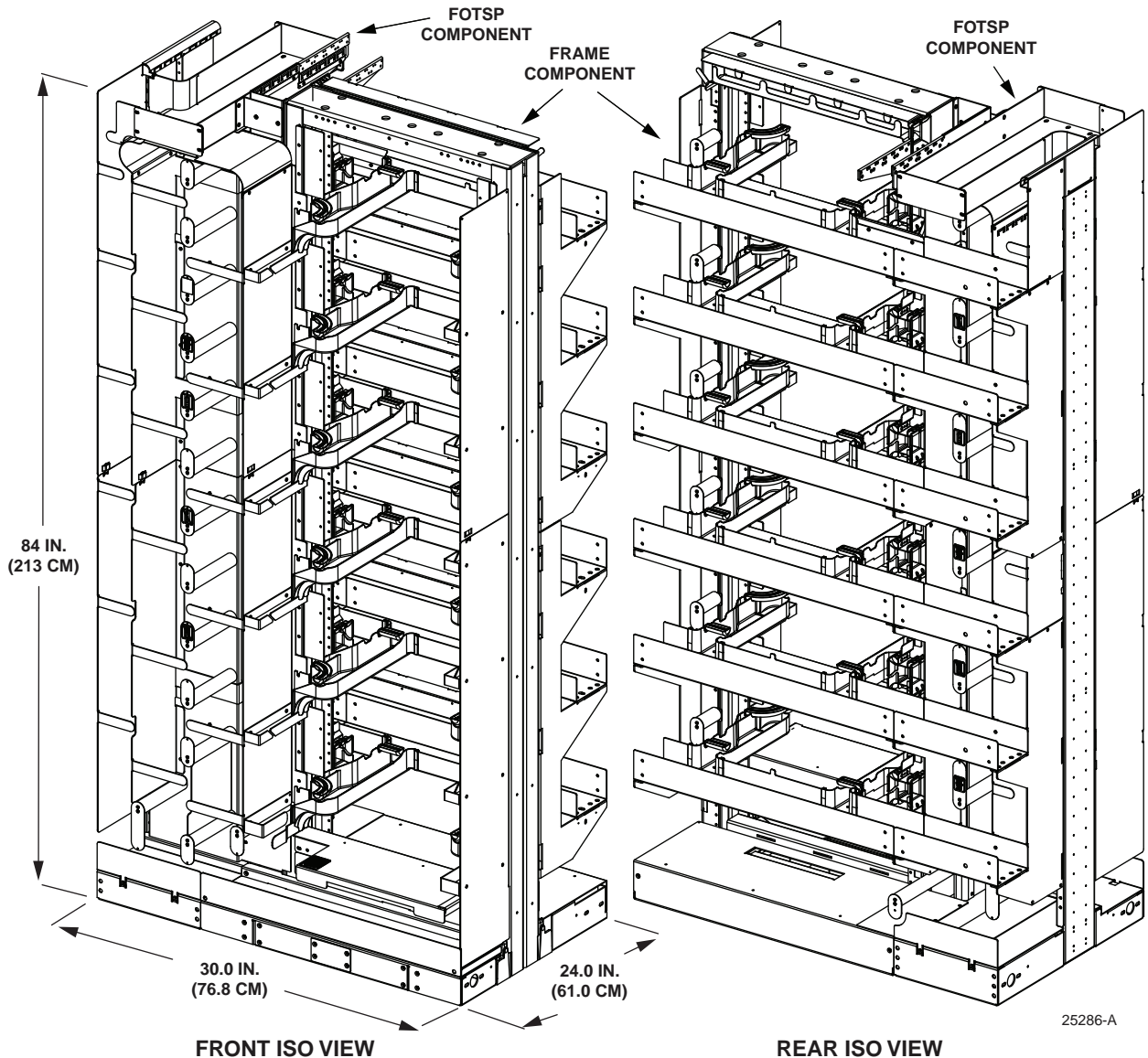
Figure 10. NG4access Integrated Frame

Figure 11 shows a typical interconnect application cable routing scheme such as employed on an integrated frame.
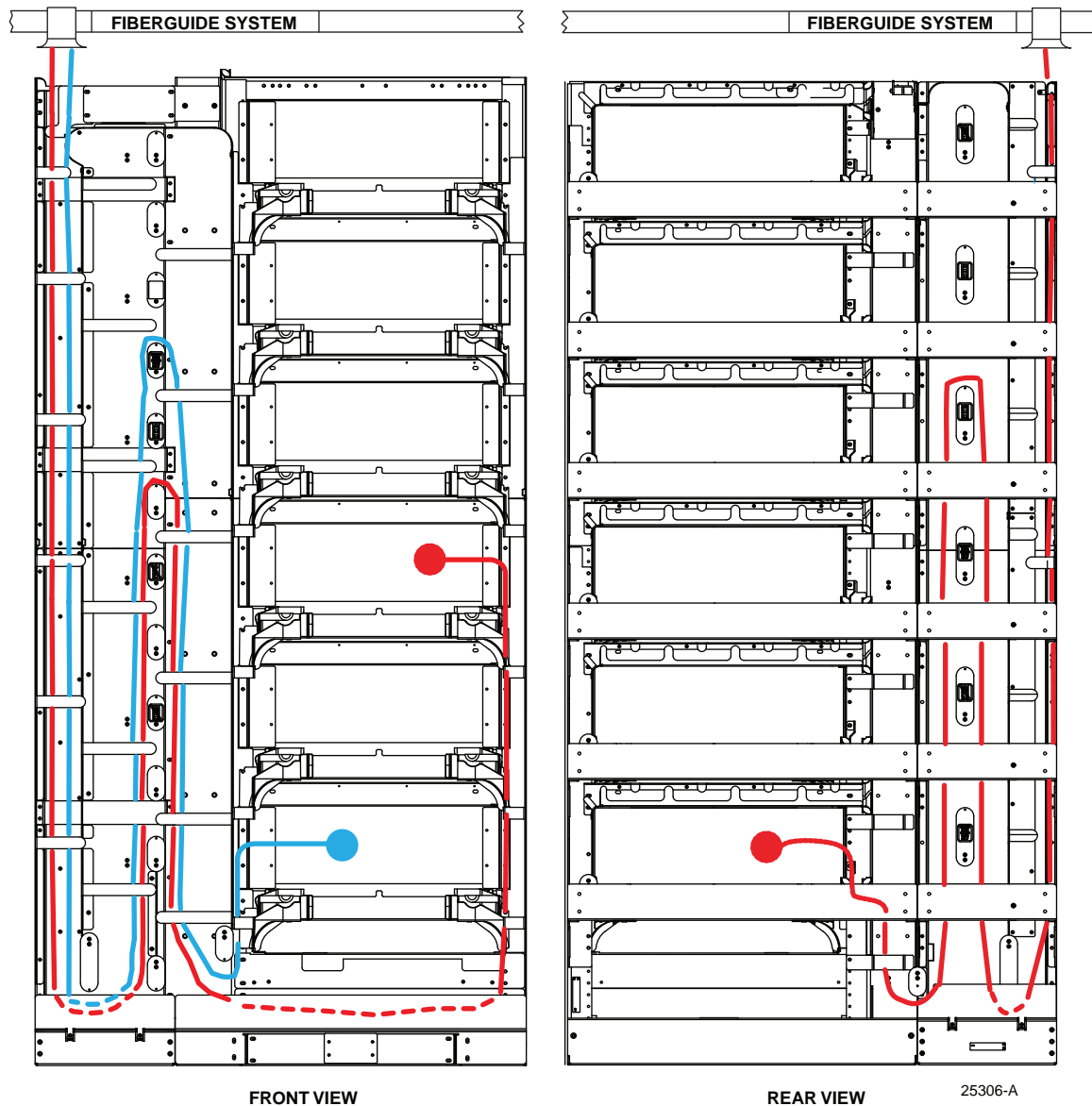
**Figure 11. Example of Integrated Frame Cable Routing
(Interconnect Application)**

1.3   Universal Chassis and Components

The universal chassis is the main component of the frame. Six universal chassis are mounted on a single NG4access frame. The universal chassis design accommodates adapter packs, cabled modules, MPO modules, and VAM modules.

1.3.1   Universal Chassis

The universal chassis is a high-density connector panel providing up to 576 terminations using LC adapters (or 288 SC terminations). It is seven inches (17.78 cm) tall, and occupies one of the six chassis positions in the NG4access frame. The universal chassis can also be mounted as a stand-alone chassis in a 23-inch rack with WECO or EIA hole spacing.

Figure 12 shows the main components of the universal chassis. They are as follows:

- **Access Tray**—can be moved toward front or rear to provide front or rear access to adapter packs with the associated fibers and connectors. In place of adapter packs, each access tray may hold a snap-in cabled module, VAM, or MPO module. Each universal chassis has 24 access trays. Each access tray has 24 LC positions or 12 SC positions.

- **Access Tray Doors**—swing out when an access tray is opened. Access tray doors protect the individual access trays and provide laser eye protection.

- **Routing Guides**—are used for routing patch cords from the access tray to the vertical cable guides. The guides allow the fibers within the chassis to be repositioned without being pinched or pulled when an access tray is opened or closed.

- **Mounting Bracket**—provides a physical interface for mounting the chassis on a frame. The tabs hold four mounting screws, two on each side. The mounting bracket has WECO hole spacing.

- **Guide Strip (Front and Rear)**—provide cable management for fibers routed into the chassis on the front or rear of the frame.
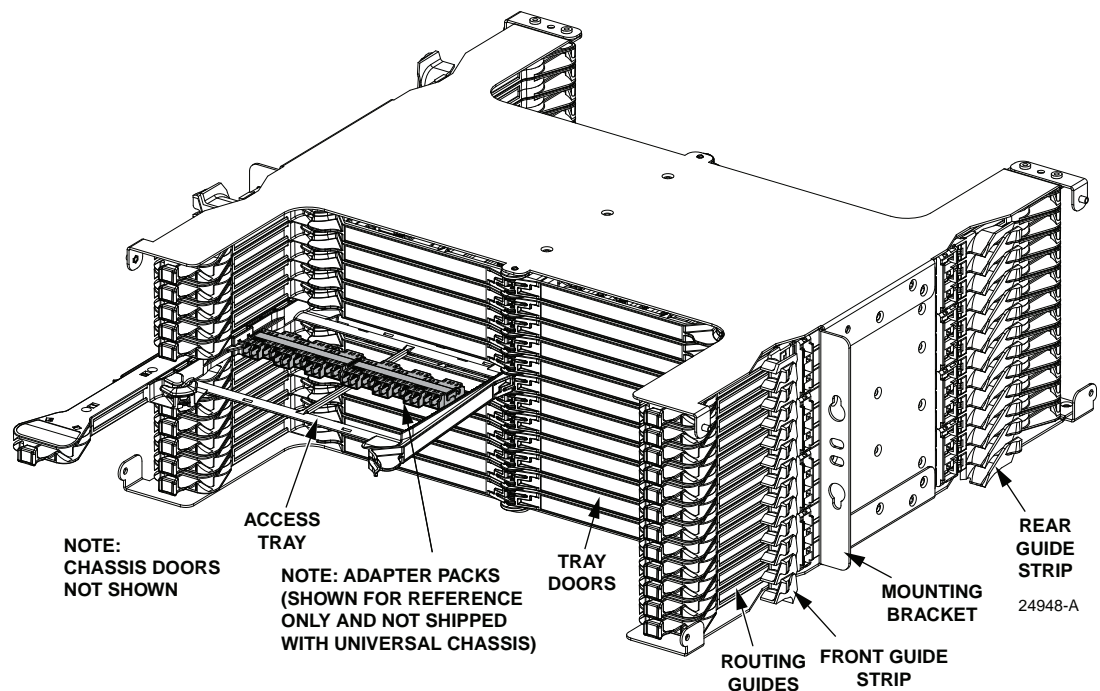
Figure 12. NG4access Universal Chassis

The universal chassis also has a front door, shown in Figure 12. The front door provides protection for the access trays when operations are not being performed. Also, it holds 24 designation cards such as shown in Figure 25 on page 20. The door snaps open and swings down for easy access to the access trays.

The universal chassis also has an optional rear door.

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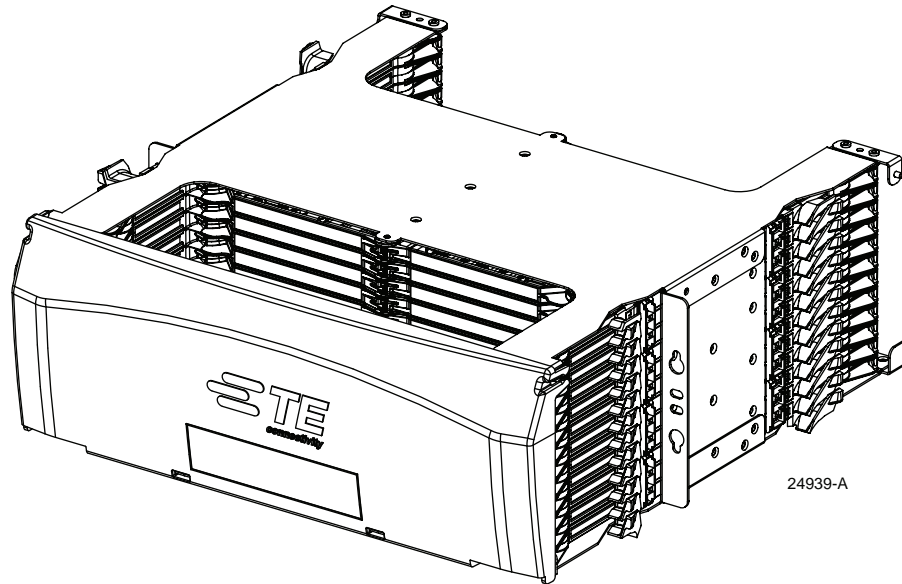
Figure 13. Universal Chassis With Door

1.3.2   Adapter Packs

Universal adapter packs are snap-in components that are installed within an access tray on the universal chassis. Two LC12 or two SC6 packs can be installed per access tray, and up to 48 total packs per chassis. Universal adapter packs are designed to accept a variety of connector types (Figure 14). Included are singlemode and multimode, angled and ultra polished connectors. Adapter packs are installed from the front or rear of the chassis by open the access tray and snapping them into position as shown in Figure 15; no screws or tools are required.
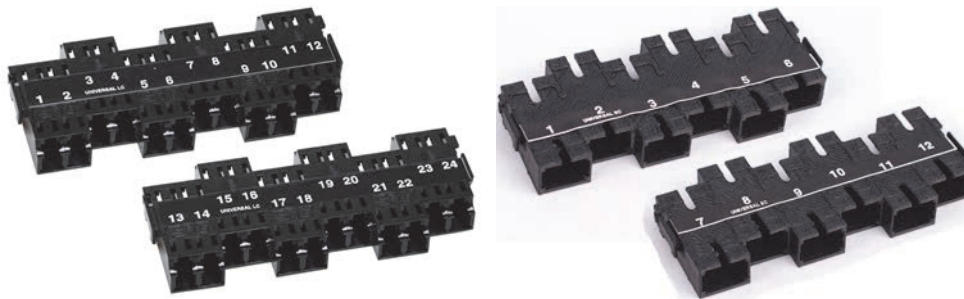
Figure 14. Adapter Packs (Two Per Access Tray, Two Per Kit)
LC Shown on Left, SC on Right

Universal adapter packs have a staggered design that help installers to access connectors without pinching or moving adjacent connections. The staggered design eliminates the need for an extraction tool. A specially designed latch window on the rear of the LC adapter pack and key slot window on the SC adapter pack allow easy identification of the connector type on either side of the unit. Adapter pack kits include two adapter packs.
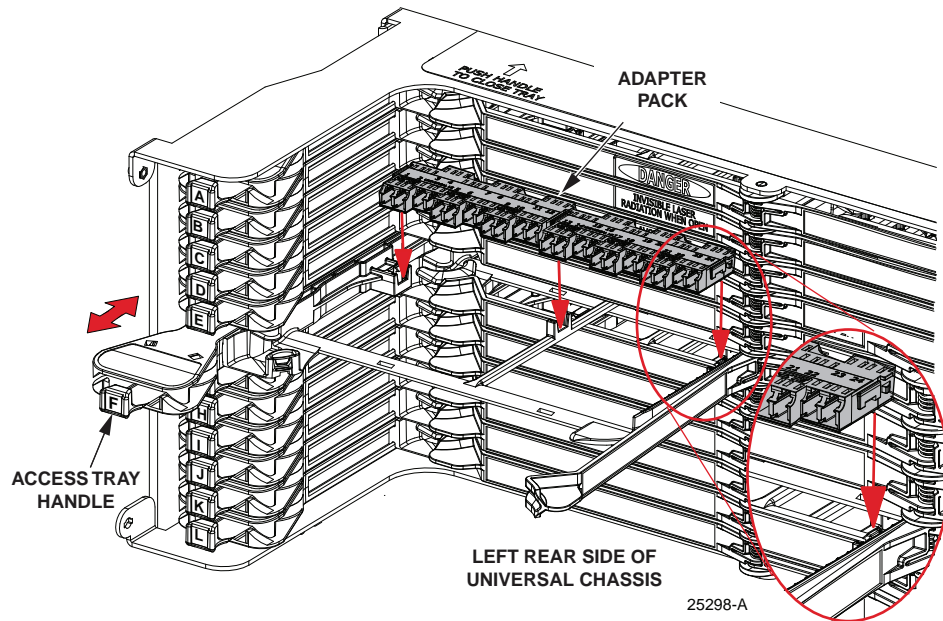
Figure 15. Snap Installing an Adapter Pack

1.3.3   Pre-terminated IFC Cabled Modules

Pre-terminated IFC cabled modules have a stub, individual connectors, or CMODs on the far end and NG4access cabled modules on the NG4access end. For example, a pre-terminated 72-fiber cable may have three cabled modules, each with 24 LC connectors, on the NG4access end, as shown in Figure 16; or it may have six cabled modules, each with 12 SC connectors.

Figure 16. 72-Fiber IFC Cable Preterminated to Three LC Cabled Modules

All pre-terminated IFC cabled modules utilize reduced bend radius fiber and may be installed in any access tray on any chassis position in the frame. The IFC cabled module is installed from the rear of the universal chassis by opening the access tray and snapping the module into position as shown in Figure 17.
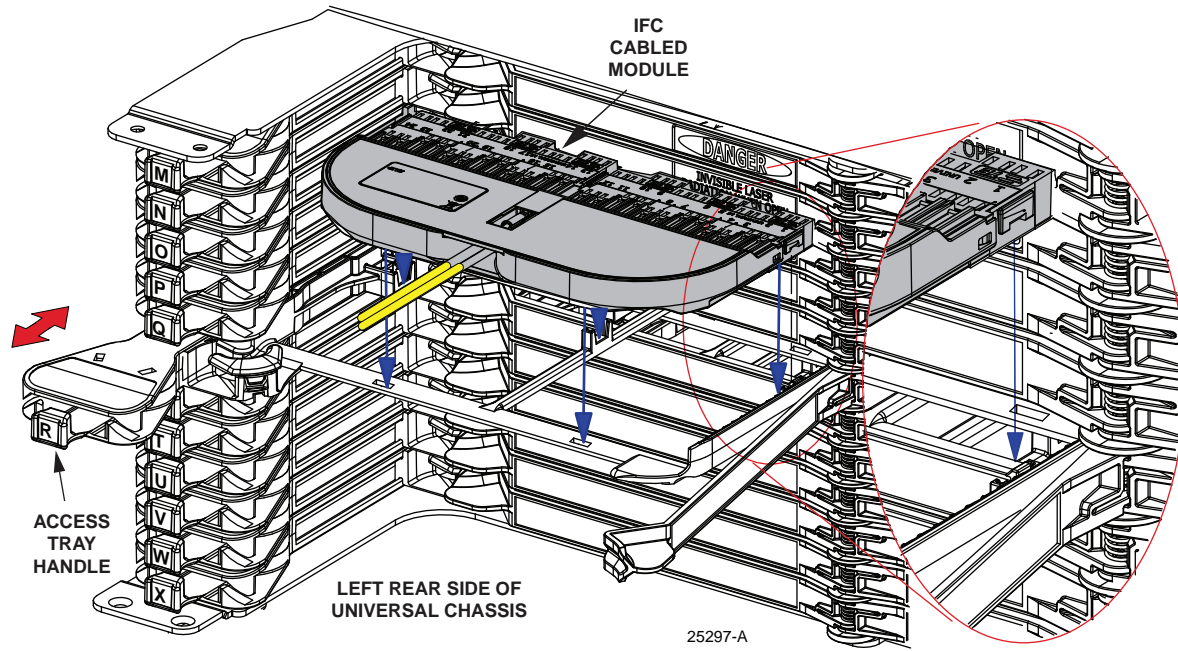
Figure 17. Snap Installing a Cabled Module or MPO Module

1.3.4   24-Fiber Microcable Cabled Module

This 24-fiber micro cable cabled module is a snap-in component that is installed in the same way as shown in Figure 17 above. Cabled modules can also be preterminated to dual zipped 24-fiber microcable, as shown in the example in Figure 18.

For the SC configuration, the 24-fiber microcable is preterminated to two cabled modules, each with 12 connectors.

For the LC configuration, the 24-fiber microcable is preterminated to one cabled modules with 24 connectors.

The 24-fiber microcable is a plenum rated dual zipped cable containing reduced bend radius 250 micron fiber in a loose tube design.

24-fiber microcable has the same compression, tensile strength and crush rating as conventional IFC cable and is fully compliant with GR-409. It can be secured to overhead cable racking or placed in FiberGuide Fiber Cable Management Systems. Cabled modules are available with stub ends or with connectors on the far end.

Figure 18. 24-Fiber Microcable Preterminated to One SC Cabled Module
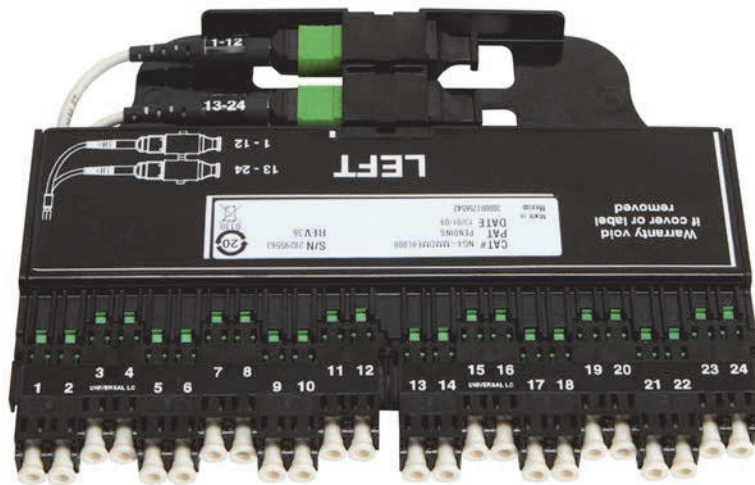
Figure 19. MPO Module

1.3.5   Value Added Module (VAM)

The NG4access Value Added Module (VAM) (Figure 20), occupies one access tray position. and snaps into place from the rear of the universal chassis as shown in Figure 17 on page 14. VAMs have a left or right orientation. LEFT VAMs are installed from the left rear of the chassis, in access trays M-X. RIGHT VAMs are installed in access trays A-L.

VAMs include:

- Monitor modules

- CWDM modules, and

- DWDM modules

All front access VAMs have 24 ports (LC) or 12 ports (SC). A rear port option is available for monitor modules. For more information, refer to TE catalog 316178AE 03/13.

Figure 20. VAM Module (All Front Access Shown)

1.4   Splice Chassis and Components

The NG4access splice chassis provides a splicing location for OSP cables that are spliced to micro cables and routed to universal chassis on the NG4access frame.

1.4.1   Splice Capacity

Splice capacity for the NG4access frame depends on cable type (ribbon or stranded), number of fibers per splice, and splice method. Table 1 summarizes the available options and related capacities. Splice chassis and frame capacity are the same; there is one splice chassis per frame.

Table 1. OSP Cable Types and Splice Tray, Splice Chassis Capacity

OSP CABLE TYPE	NUMBER OF FIBERS PER SPLICE TRAY	CONFIGURATION OF OSP SUBUNITS IN EACH SPLICE CHIP	MAX. SPLICES PER CHASSIS/ FRAME	SPLICE METHOD	COMMENT
Ribbon	72	6 x 12	3456	Mass fusion	
	72	3 x 24	3456	Mass fusion	
Stranded	24	2 x 12 (3 mm OD)	1152	Single fusion	Heat shrink
	24	2 x 12 (5 mm OD)	1152	Single fusion	Heat shrink
	48	4 x 12	2304	Mass fusion	Fibers ribbonized

1.4.2 On-Frame Splice Chassis

The NG4access splice chassis, shown in Figure 21, is mounted below the lowest rear horizontal trough on the NG4access frame, as shown in Figure 22.

Due to its location, the splice chassis does not reduce frame termination capacity. It can be installed when the frame is first deployed or at any time after.
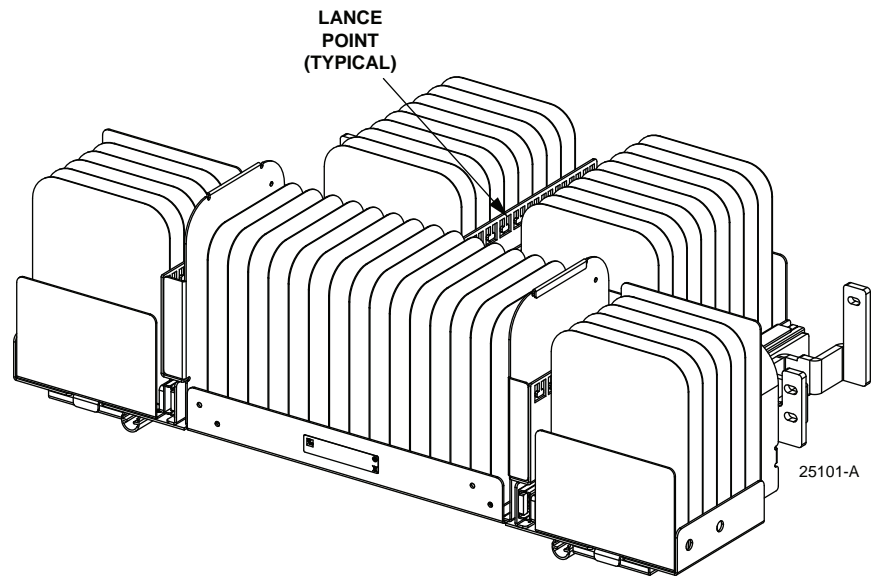
Figure 21. NG4access Splice Chassis
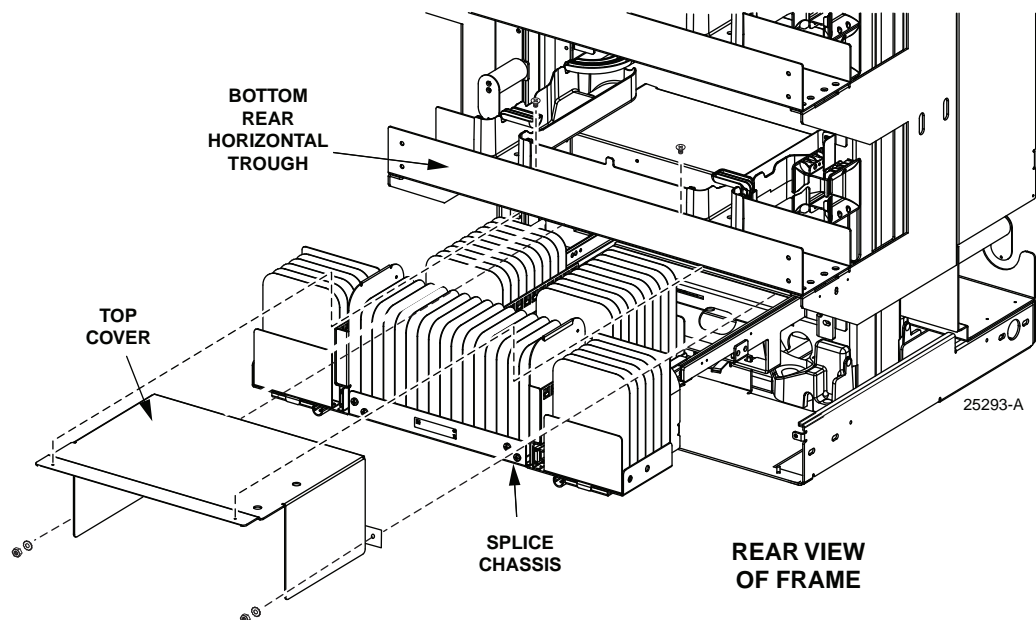
Figure 22. Splice Chassis Location

The chassis accommodates up to 48 splice trays for a total of 1152 splices per splice chassis using single fusion techniques or 3456 splices using mass fusion techniques. Pigtailed 24 fiber microcable cabled modules may be used to connect any universal chassis to the splice chassis.

▶ **Note:** Detailed instructions for installing a splice chassis, loading a splice tray, and routing fiber cables to and from a splice tray are available in user manual TECP-90-704,

1.4.3 Splice Tray

The splice tray, installed in the splice chassis, provides the location for splices. Figure 23 shows the splice tray. The tray protects and stores completed splices and the associated cable sub-units and bare fibers.

Up to 24 fibers may be spliced per tray using single fusion techniques, or up to 72 fibers using mass fusion techniques. Each splice tray provides for storage of 6 feet of jacketed 24-fiber microcable and OSP/IFC sub-unit, and an additional 3 feet of unjacketed fiber inside the tray.
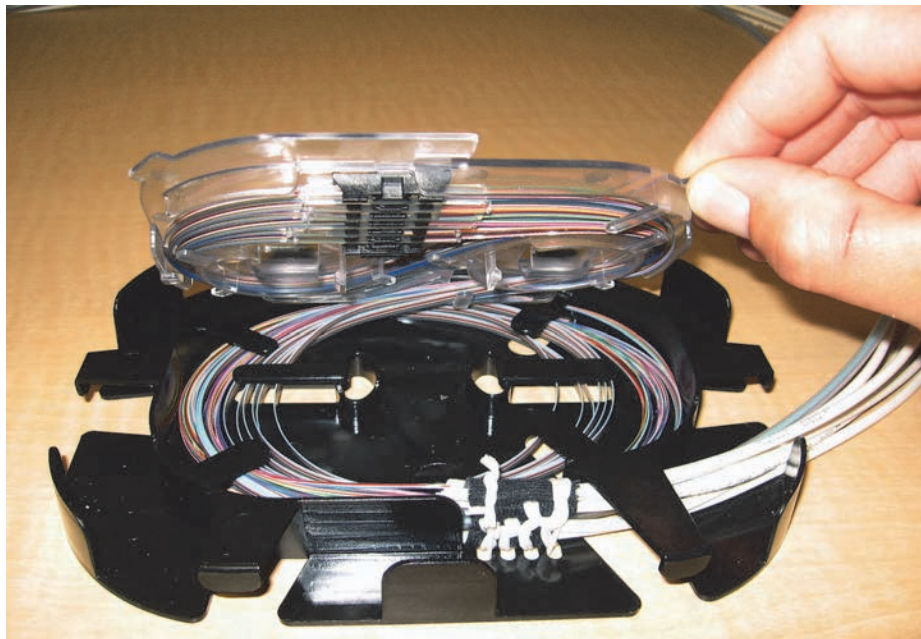
Figure 23. NG4access Splice Tray

1.4.4 Pigtail Cabled Module With 24-Fiber Microcable

The pigtail cabled module, shown in Figure 24, is designed to be installed in any of the six universal chassis loaded in a frame to provide the link between the universal chassis and the splice chassis. These modules have eight meter (27 feet) pigtails which is a sufficient length to

reach the splice tray with appropriate storage. Each 24-fiber pigtail is preterminated to either two SC12 cabled modules or one LC24 cabled module.

Figure 24. Pigtail Cabled Module With Two SC/UPC Cabled Modules

1.5   Accessories

Related NG4access products include the following. For details, refer to catalog 314120AE.

1.5.1   Replacement Access Tray

Individual access trays are available for replacing damaged trays.

1.5.2   Chassis Door Kits

Chassis door kits are used to replace a damaged front door on the universal chassis or to add a door on the rear of the universal chassis. The door kit includes designation labels.

1.5.3   1.2 mm Patch Cords

TE 1.2 mm small form factor patch cords are available with LC or SC connectors and occupy half the space of traditional 1.6 mm patch cords and a third of the space of traditional 2.0 mm patch cords. In environments where space constraints and cable routing prove most challenging, the 1.2 mm patch cords offer the necessary flexibility and quality to realize significant labor and cost savings for service providers.

1.2 mm patch cords have the following features:

- SC/UPC, SC/APC, LC/UPC and LC/APC connector versions;
- Reduced Bend Radius fiber OFNP cable;
- Compatible with industry standard fiber cable and SC and LC connectors;
- Same tensile strength and crush rating as 1.6 mm, 2.0 mm, or 3 mm patch cords.

1.5.4 Designation Cards

Designation cards mount on the universal chassis door and are used to record patch cord designations. These cards are meant as replacements for the cards provided when the chassis is shipped from the factory. Figure 25 shows the designation cards for one access tray.

| PORT | FRAME_____ CHASSIS_____ ACCESS TRAY_____ | |
	FRONT	REAR
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
1		
2		

FRONT VIEW

| PORT | FRAME_____ CHASSIS_____ ACCESS TRAY_____ | |
	FRONT	REAR
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

REAR VIEW   26296-A

Figure 25. Designation Cards for One Access Tray

1.5.5 Cable Clamp Kit

Large and small cable clamp kits are available. For more information, see Table 2 on page 21.

1.5.6 Fiber Inspection Kit

The Optical Fiber Inspection and Cleaning Kit for Standard Connector Styles (LC, SC, FC, MT-RJ, and MPO) contains everything needed to perform routine fiber maintenance and troubleshooting, including cleaning tools, an inspection microscope, a visual fault locator, and a CD-ROM with detailed inspection and cleaning instructions and a rugged carrying case.

1.5.7   Attenuators

A fiber optic attenuator is an optical device that induces a calibrated fixed loss between two connectors to dampen, or attenuate, the fiber optic signal. Attenuation is required if the signal has too much power, exceeding the operating range of the equipment, which causes saturation at the receiver and induces system errors or failures. In-line attenuators are installed between an adapter and a connector; they are fused attenuators, providing exceptional optical performance.

1.5.8   Transition Kits

Transition kits are available to transition from an NG4access frame to a legacy TE frame (FDF, NGF, or NG3). Contact TE Technical Support for guidelines before proceeding.

1.5.9   Additional Accessories

- Frame Installation Kit
- Isolation Pad
- Grounding Kit
- AC Outlets
- Raised Floor Cable Entry Clamp Kit
- Raised Floor Slack Management Kit
- Raised Floor Large Cable Clamp Kit
- Rack Extender Kit
- Ribbon Breakout Kit

1.6   Specifications

Table 2 lists the specifications for the NG4access ODF Platform.

Table 2. NG4access ODF Platform Specifications

PARAMETER	SPECIFICATION
System Capacity	
Number of terminations per frame	3456 with LC connectors; 1728 with SC connectors
Horizontal trough configuration per frame	Six 5-inch rear horizontal troughs and front lower cable trough
Recommended minimum number of frames for initial installation	1

Table 2. NG4access ODF Platform Specifications, continued

PARAMETER	SPECIFICATION

Maximum number of frames in a lineup*
  using 2.0 mm jumpers
  using 1.6 mm jumpers
  using 1.2 mm jumpers
 (* Calculations based on GR-449-CORE, Issues 3 requirements)
	8
	 10
	 20

Maximum number of terminations allowed in a frame lineup before exceeding two-inch pileup
  of 2.0 mm jumpers
  of 1.7 mm jumpers
  of 1.2 mm jumpers
	25,950
	 37,440
	 69,120

NG4access Frame	
Dimensions (H x W x D)	84 x 30 x 24 in. (214.0 x 76.2 x 61 cm)
Weight without chassis and cables	350 lbs. (158.76 Kg)
Weight with chassis and cables	805 lbs. (365.14 Kg)
NG4access Universal Chassis	
Number of terminations per chassis	576 with LC connectors; 288 with SC connectors
Chassis dimensions (H x W x D)	6.9 x 19.7 x 18.0 in. (17.5 x 50.0 x 45.7 cm)
Adapter pack connector types available	LC/APC, SC/APC, LC/UPC, SC/UPC
Module types available	Preterminated IFC cabled module; 24-fiber microcable cabled module; MPO module; VAM module; pigtail cabled module
NG4access Splice Chassis	
Number of splice trays per chassis	48
Number of splices per splice tray	Up to 72 (mass fusion) or 24 (single fusion heat shrink)
Number of splices per splice chassis (See also Table 1 on page 16)	Up to 3456 (mass fusion); up to 1152 (single fusion heat shrink)
Splice chip types	Single fusion heat shrink (for individual stranded fibers); mass fusion (for ribbonized fibers)
Splice chassis to universal chassis cabling	Pigtail cabled module with 24-fiber micro-cable
Splice tray storage	6 ft. (1.8 m) of jacketed 24-fiber microcable and OSP/IFC sub-unit; additional 3 ft. (0.9 m) of unjacketed fiber inside tray
Splice chassis dimensions (H x W x D) with drawer closed	12.4 x 27.0 x 16 in. (31.5 x 68.6 x 40.6 cm)
Fiber Optic Storage Panel	
Dimensions (H x W x D)	84 x 12 x 24 in. (214 x 30.5.x 61.0 cm)
Storage capacity	Up to 14 feet (4.3 m) per jumper

Table 2. NG4access ODF Platform Specifications, continued

PARAMETER	SPECIFICATION
End Guard	
Dimensions (H x W x D)	84 x 2.5 x 24 in. (214 x 6.3.x 61.0 cm)
Network Cable Type Options	
Outside Plant (OSP)	Spliced off-frame or in splice chassis; ribbon fiber or stranded (see Table 1 on page 16)
Pre-terminated IFC or indoor/outdoor cabled module	LC/APC, SC/APC, LC/UPC, SC/UPC; 72-, 96-, or 144-fiber ribbon or stranded; 50, 75, 100, 150, 200, or 300 ft. length (16, 23, 46, 61, or 92 m); far end stub, NG4, NG3, NGF, FCM, or LSX configurations
24-fiber plenum microcable cabled module	LC/APC, SC/APC, LC/UPC, SC/UPC; 24-fiber stranded; 50, 75, 100, 150, or 200 ft. length (16, 23, 46, or 61 m); far end stub, NG4, NG3, NGF, FCM, or LSX breakout configurations
1.2 mm patch cords	All singlemode, ONFP jacket; near end - far end connector configurations: SC-SC, LC-LC, Hybrid SC-LC; all can be either APC or UPC; length in meters: 6, 7, 10, or 15
Cable Champ Options	
Cable clamp types	Standard and large. Kits include clamps and grommets
Overhead (O.D. < 0.80 in. (2.03 cm)	Standard cable clamp kits are available with six clamps per kit for mounting OSP or IFC cables with up to 0.8 inch diameter at top of the frame. 24 clamp positions are available on frame. (Note: Per-terminated IFC cabled modules include cable clamp)
Overhead (O.D. = 0.80 in. (2.03 cm) - 1.2 in. (3.05 cm)	Large cable clamp kits are available with four clamps per kit for mounting OSP or IFC cables with 0.8 to 1.2 inch diameter at the top of frame. 16 clamp positions are available on frame. (Note: Per-terminated IFC cabled modules include cable clamp)
Raised floor (O.D. < 0.80 in. (2.03 cm)	Standard cable clamp kits are available with 24 clamps per kit for mounting OSP or IFC cables with up to 0.8 inch diameter entering frame from under the floor. Includes clamp mounting bracket
Raised floor (O.D. < 0.80 in. (2.03 cm)	Large cable clamp kit is available with one clamp per kit for mounting OSP or IFC cables with 0.8 to 1.2 inch diameter when cables enter frame from under the floor. Requires raised floor standard clamp kit

Table 2. NG4access ODF Platform Specifications, continued

PARAMETER	SPECIFICATION
Raised Floor Slack Management Kit	Spool kit for managing IFC sub-unit slack when cables enter frame from under floor. Kit includes one spool. One kit is required per universal chassis (six per frame)
Environment	
Temperature	
Operating	5° C to 40° C (41° F to 104° F)
Short Term Operating	–5° C to 40° C (23° F to 104° F)
Storage	–40° C to 70° C (–40° F to 158° F)
Humidity	
Operating	5% to 85%
Short Term Operating	5% to 93%
Storage	Up to 93%

2   APPLICATION AND PLANNING

2.1   General System Location

The NG4access ODF Platform can be deployed in the controlled environment of a central office, data center, headend, CEV, customer premise, or other indoor environment without any special engineering procedures.

2.2   System Capacity

See "System Capacity" in .

2.3   Bonding and Grounding Requirements

The NG4access frame is suitable for installation in an Integrated Bonding Network or a Common Bonding Network. The NG4access universal chassis and splice chassis use thread-forming mounting screws to provide an electrical path between the chassis and the metalwork in which they are mounted. It is required that nonconductive coatings must be removed on the mating metal surfaces. Before installation the mating surfaces must be cleaned and coated with an antioxidant.

2.4   Schematic Overview of Cabling In an NG4access Lineup

The NG4access ODF Platform can be used in either an interconnect or a cross-connect application. Each application uses a different approach for connecting network cables with Fiber Optic Terminal (FOT) equipment.

2.4.1   Interconnect Application

Figure 26 shows a typical interconnect application. As shown, in an interconnect application, the network cable is terminated on the rear of the frame while the cable from the FOT is terminated on the front of the frame. This is a one-to-one method for network signal routing. The advantage of this configuration, in comparison to a cross-connect configuration, is it requires less floor space. The disadvantage of an interconnect configuration is it provides less flexibility for reconfiguration.

FRONT VIEW   -- (SAME FRAME) --   REAR VIEW

24980-A
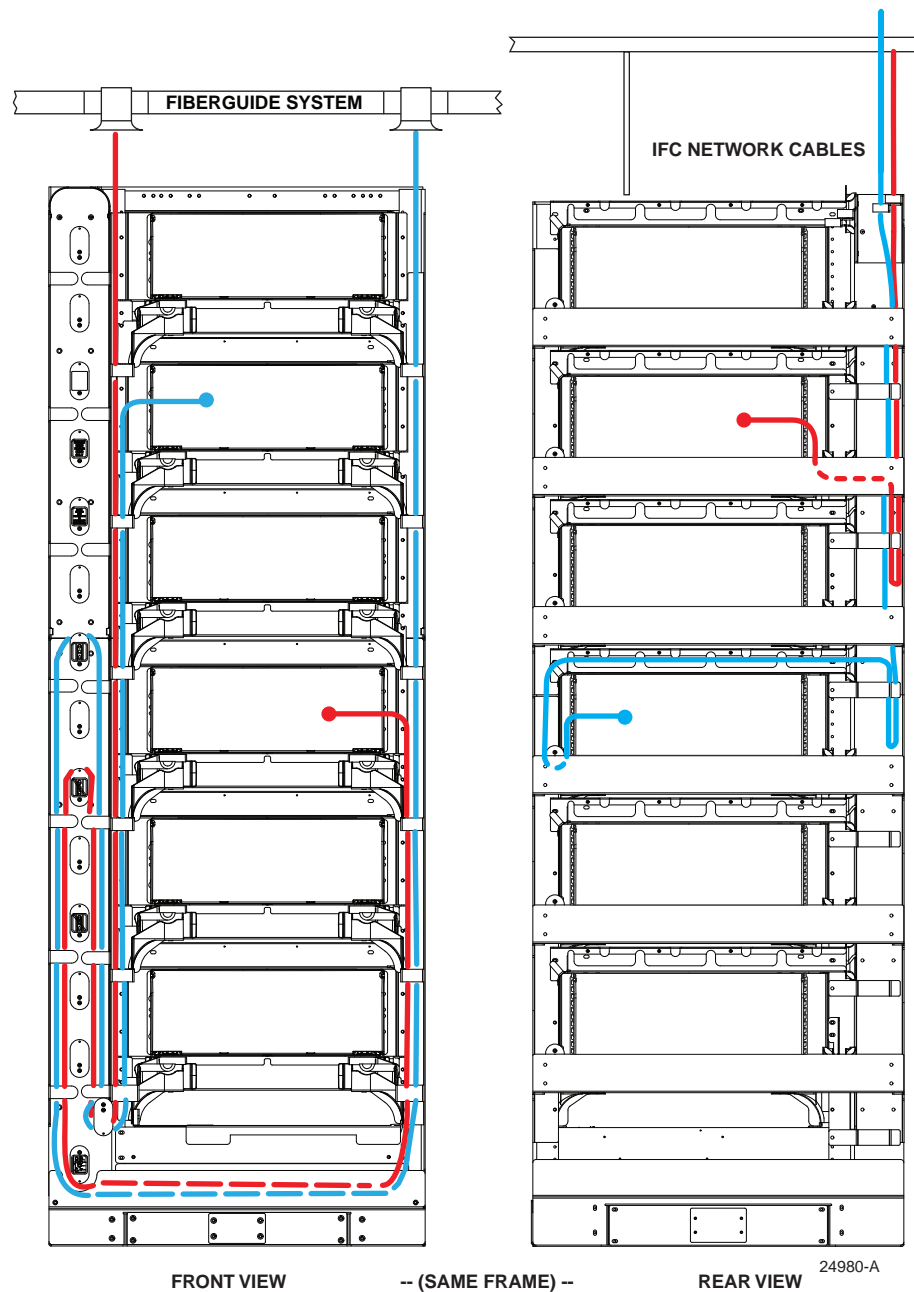
Figure 26. Typical NG4access Interconnect Application

2.4.2 Cross-Connect Application

By comparison, Figure 27 shows a typical cross-connect NG4access application. As shown, in a cross-connect application, an intermediate patch cord is positioned between the network frame and the frame used for connection of patch cords to the FOT equipment. The advantage of a cross-connect configuration is it provides more flexibility for reconfiguration. The disadvantage is it requires more floor space.

REAR HORI-ZONTAL TROUGH

FOT FRAME   **FRONT VIEW**   **OSP FRAME**

TO FOT EQUIPMENT

NETWORK CABLE

REAR VIEW   24981-A
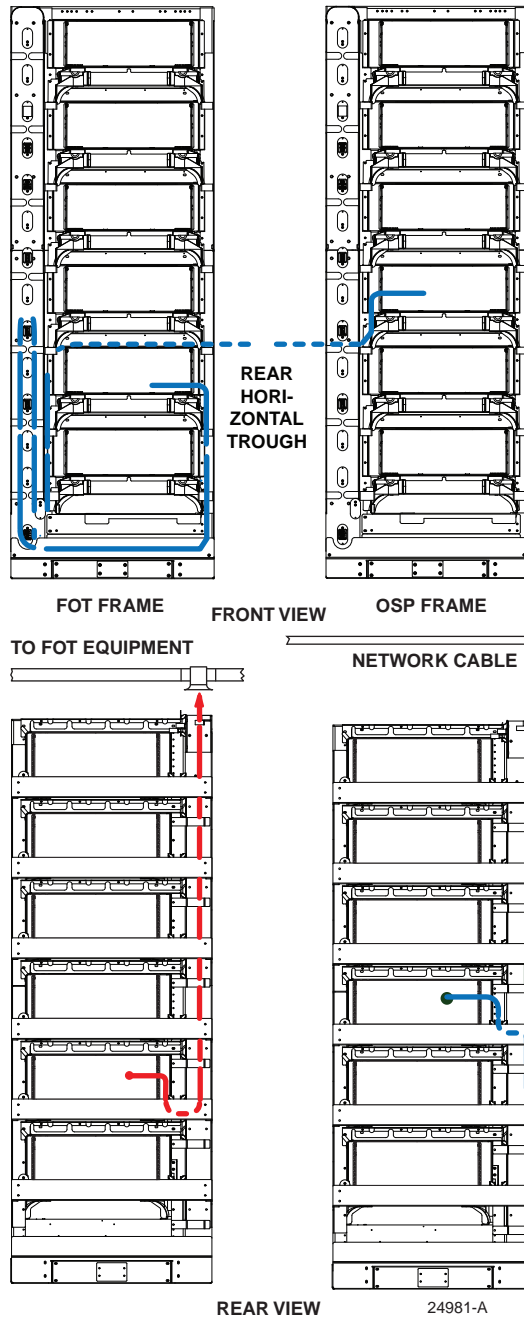
Figure 27. Typical NG4access Cross-Connect Application

As also shown in Figure 27, in a cross-connect multiple frame lineup, the intermediate patch cord between the network cable entry frame and the FOT frame is terminated on the front of both frames and routed through the rear horizontal trough.

The front-to-rear trough (shown in the frame cutout view in Figure 4 on page 4) is used to route the patch cord from the front of the frame to the rear horizontal trough. At the FOT frame, the FOT patch cord is terminated on the rear of the FOT frame and routed through a FiberGuide raceway to the FOT equipment.

2.5   Aisle Spacing

An aisle width of at least 42 inches (1.07 m) is recommend in a QNG4 application, provided in front of the QNG4 frame and three feet (0.91 m) behind it.

Figure 28 shows aisle spacing for a typical NG4access installation.

NG4access ODF PLATFORM FLOOR PLAN DATA

HEIGHT: 7-FT
WIDTH: 30 IN. (76.2 CM)
DEPTH: 24 IN. (61.0 CM)
LOADED WEIGHT (INCLUDES FRAME, 6 STANDARD CHASSIS, CABLES, PATCH CORDS, AND TROUGHS): 805 LBS (365.1 KG)

OTHER EQUIPMENT

OPERATING AISLE
42 IN. (1.07 M)
RECOMMENDED

FRONT

NG4access ODF PLATFORM LINE-UP

24 IN. (61 CM)

REAR

WIRING AISLE
36 IN. (0.91 M)
MINIMUM RECOMMENDED

OTHER EQUIPMENT

50 FEET (15.2 M) RECOMMENDED MAXIMUM
(CHECK LOCAL CODES AND POLICIES)

24975-A

Figure 28. Recommended Aisle Spacing

2.6   Off-Frame vs. On-Frame Splicing

In an NG4access application, splicing may be done in the cable vault or cable entrance cabinet or within the splice chassis on the NG4access frame. Figure 29 compares the two options.

- Splicing in the cable vault or cable entrance cabinet is used when the frame is beyond the OSP indoor maximum distance specification. An IFC cable is used to link from the cable vault or cable entrance cabinet to the NG4access frame.

- On-frame splicing may be used when the OSP cable building entrance and NG4access frame are within the OSP indoor maximum distance specification. In such a case, the OSP cable can be routed directly to the splice chassis on the NG4access frame. Pigtail cabled modules can only be used between the splice chassis and a universal chassis on the same frame.
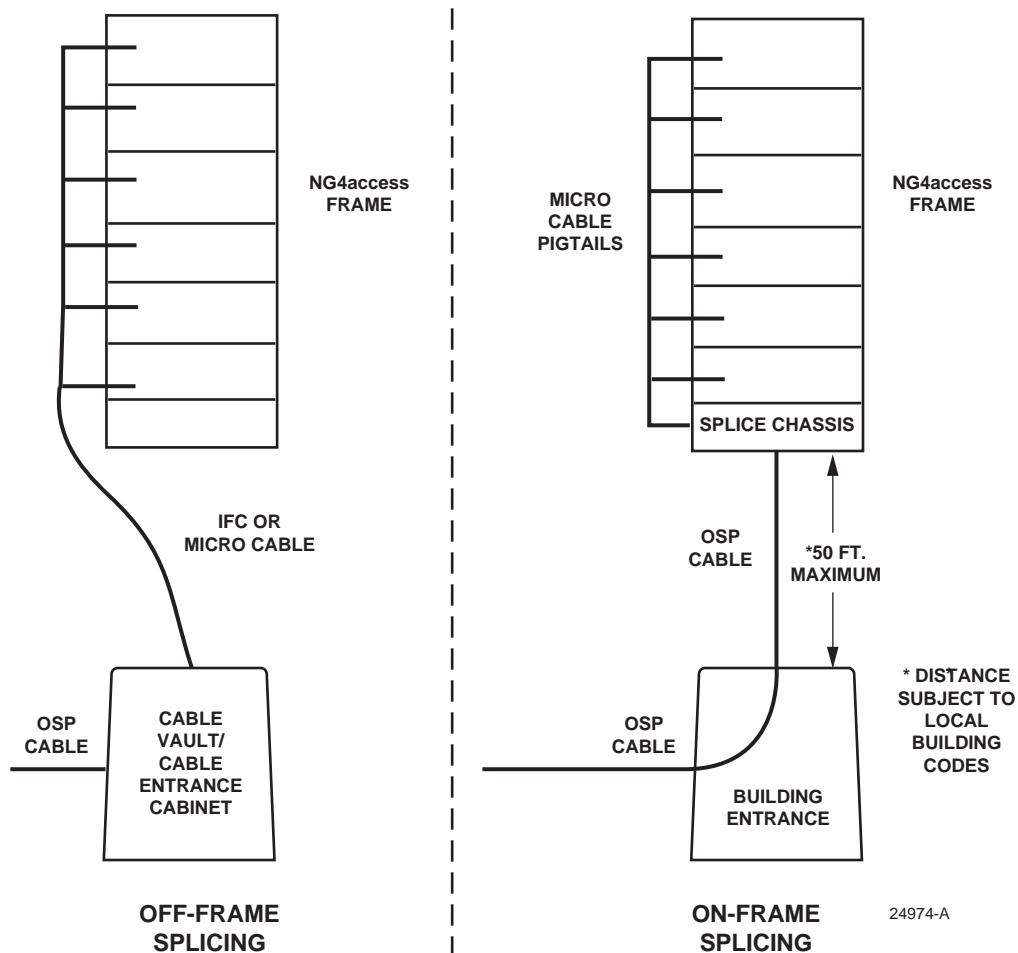
Figure 29. Off-Frame vs. On-Frame Splicing

When splicing is done on the NG4access frame, all cabling related to splicing is located on the rear side of the frame. Figure 30 shows the typical cable routing used when the OSP cable is routed overhead.
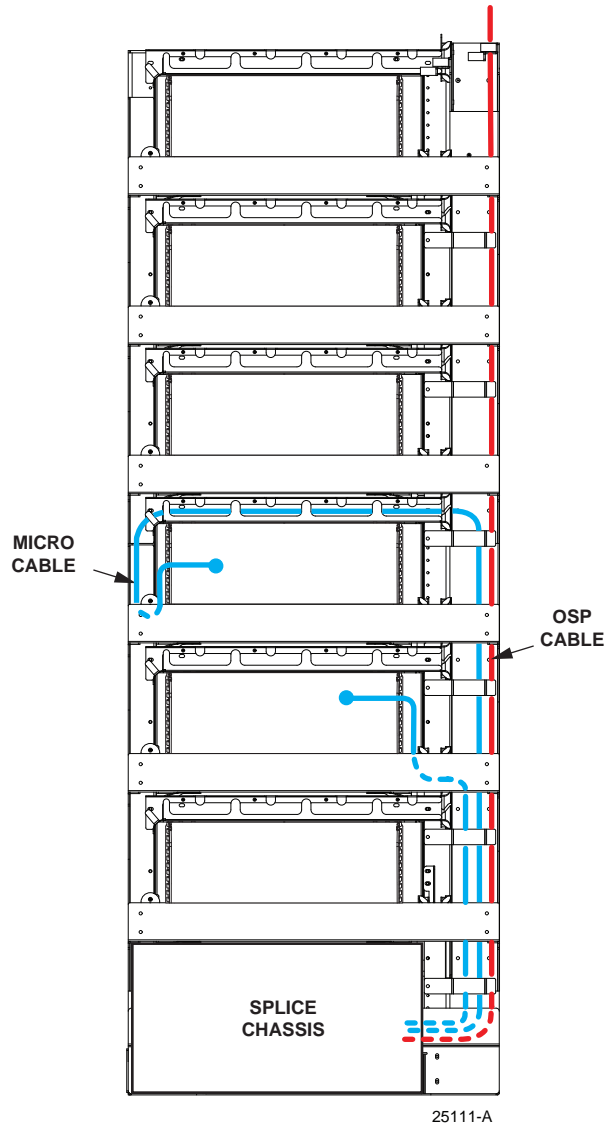
Figure 30. NG4access Frame With Splicing (Rear View)

As shown, in this application, the network OSP cable is routed down the right rear side of the frame to the splice chassis, which is always at the bottom of the frame. Cabled modules with pigtails are installed into one of the universal chassis within the same frame and the pigtails are routed to the splice chassis. Within the splice chassis, the OSP cable fibers are spliced to the stub end of pigtail cabled modules.

◂ **Note:** For additional information on the splice chassis, see user manual TECP-90-704.

2.7   NG4access Compatibility with Other TE Frames

An NG4access frame may be placed next to an existing Fiber Distribution Frame (FDF), Next Generation Frame (NGF), or NG3 Frame. Transition kits are available to transition from an NG4access frame to a legacy TE frame (FDF, NGF, or NG3). Contact TE Connectivity Technical Support for guidelines before proceeding. For contact information, see Section 4 on page 58.

2.8   NG4access Lineup Planning

The NG4access frame is typically installed as part of a contiguous lineup consisting of multiple frames together with frame accessories; however, non-contiguous lineups may be configured if required.

2.8.1   Contiguous Lineup

The standard NG4access lineup is referred to as "contiguous" because it is comprised of multiple NG4access frames mounted side by side and fastened together. End guards positioned on each end of the lineup protect the outside frames. A contiguous lineup equipped with Fiber Optic Terminal Storage Panels (FOTSPs) is shown in Figure 31. FOTSPs may be used to provide additional storage for FOT jumpers in a cross-connect application. FOTSPs are not required if a frame is dedicated for termination of OSP cables,
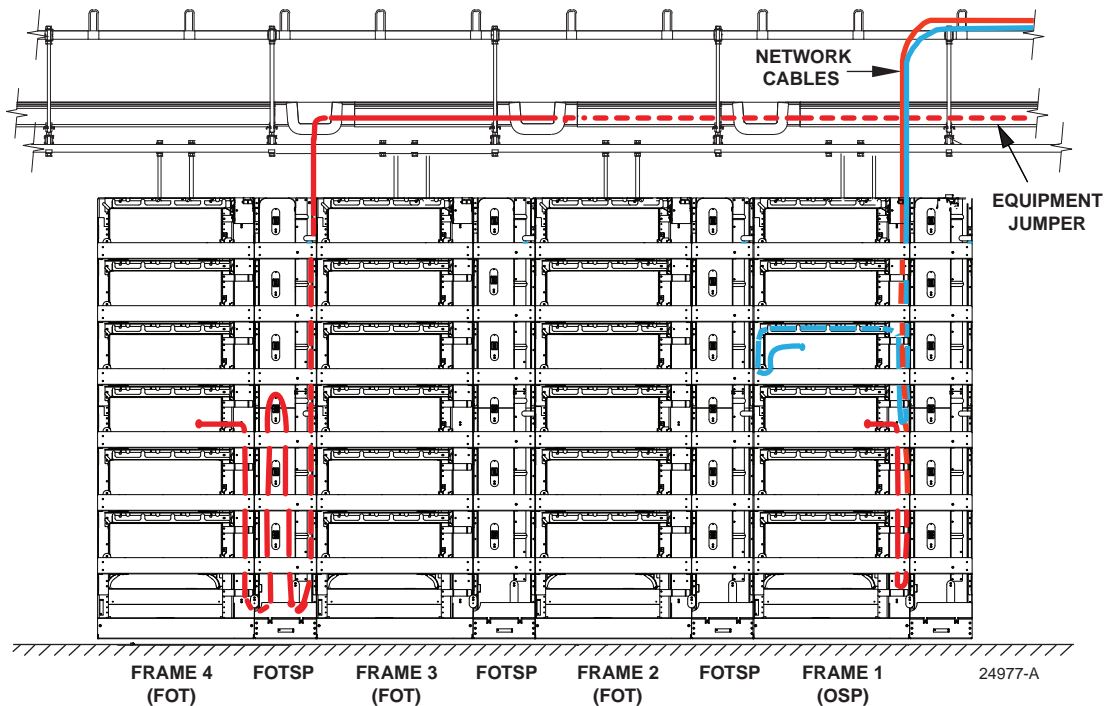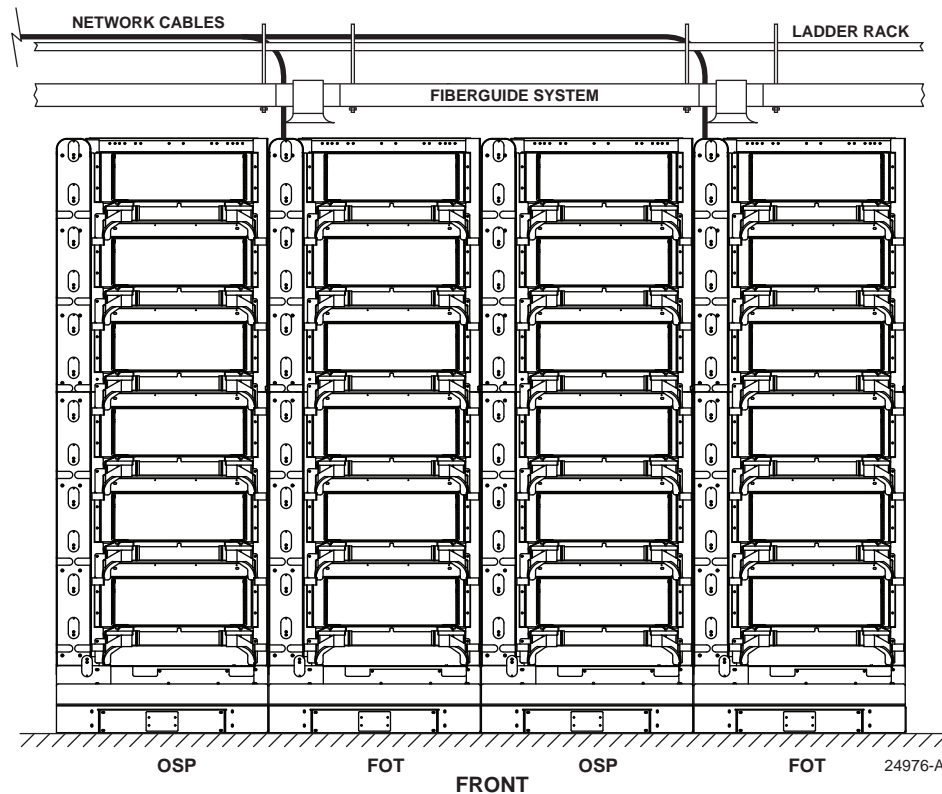

Figure 31. Example of a Contiguous Lineup With FOTSP's (Rear View)

A contiguous lineup without FOTSPs is shown in Figure 32. NG4access lineups can be built from left to right, from right to left, or from center outward.

Figure 32. Example of a Contiguous Lineup Without FOTSPs

2.8.2 Non-Contiguous Lineup

A "non-contiguous" lineup is one in which there is a gap between frames that are functionally part of a single cross-connect configuration. These non-contiguous frames could be adjacent to one another or in physically more removed locations (two different lineups on the same floor of a facility, for example, or on different floors).

2.8.2.1 Use of "Tie Chassis"

When two NG4access lineups are separate from one another, but functionally part of the same cross-connect configuration, the "tie chassis" option can be used to tie the two lineups together. The tie chassis option involves assigning a universal chassis on either side of the gap between frames to serve as a tie chassis, with the tie chassis configured to have identical termination locations. A tie cable is installed on the rear of the frame to connect between these locations, and jumper patch cords are installed on the front of the frames between each tie chassis and the corresponding OSP and FOT universal chassis.

Figure 33 shows a typical cross-connect patch cord routing between two NG4access frames (identified as Frame A and Frame B) in a contiguous lineup, and a tie chassis configuration between the same two frames when located in a non-contiguous lineup.
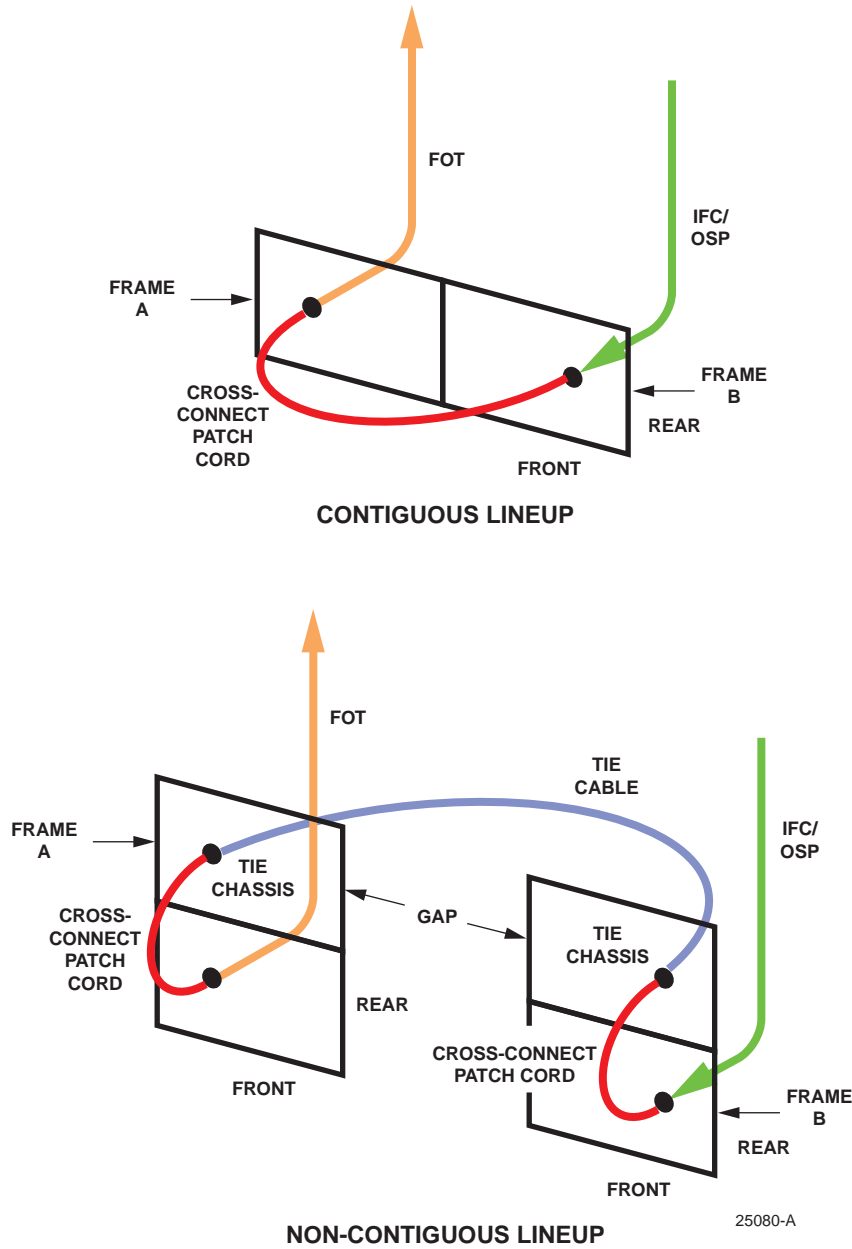
Figure 33. Use of Tie Chassis in a Non-Contiguous Lineup

The tie cable in this configuration is typically a connectorized IFC cable. The connectorized IFC cable must be the exact length required to reach between the two panels without requiring excess slack storage.

2.8.2.2   Other Uses of Tie Cable

Tie cables can also be used, in a similar configuration, to connect from the rear of a tie chassis, in a NG4access frame, directly to an equipment lineup or to a legacy ODF frame.

This may be the preferred method when there is a considerable gap between the NG4access lineup and the destination equipment or frame, as, for example, when the two ends are on opposites side of the same large building or on different floors.

Figure 34 shows a configuration of this kind between NG4access lineup and an equipment lineup or legacy ODF frame.
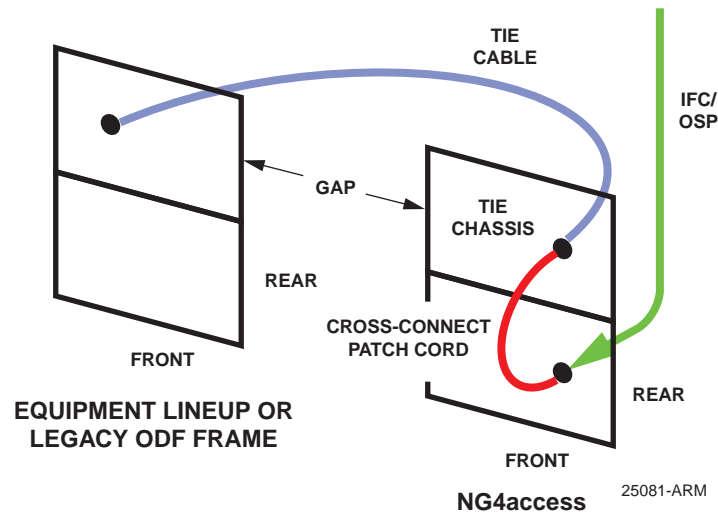
Figure 34. Tie Cable Connection to Equipment Lineup or Other ODF

For further details about such a configuration, contact TE Connectivity Technical Support for guidelines before proceeding.

2.8.3   Lineup Expansion

NG4access contiguous lineups can be expanded to the right or left side without interfering with any installed circuits.

2.9   NG4access Frame Mounting Considerations

The NG4access frame may be installed on a concrete floor or raised floor. For step by step pictorial instructions, refer to TECP-90-702 for concrete floor installations and TECP-90-708 for raised floor installations.

ESTIMATED INSTALLATION TIME: 4 HOURS PER FRAME

Figure 35 shows a detail from a concrete floor installation.

ALIGN SLOTS IN RACK AND TEMPLATE/ISOLATION PAD WITH THREADED RODS

TEMPLATE/ISOLATION PAD (SHADED FOR CLARITY)

FRONT

24996-A
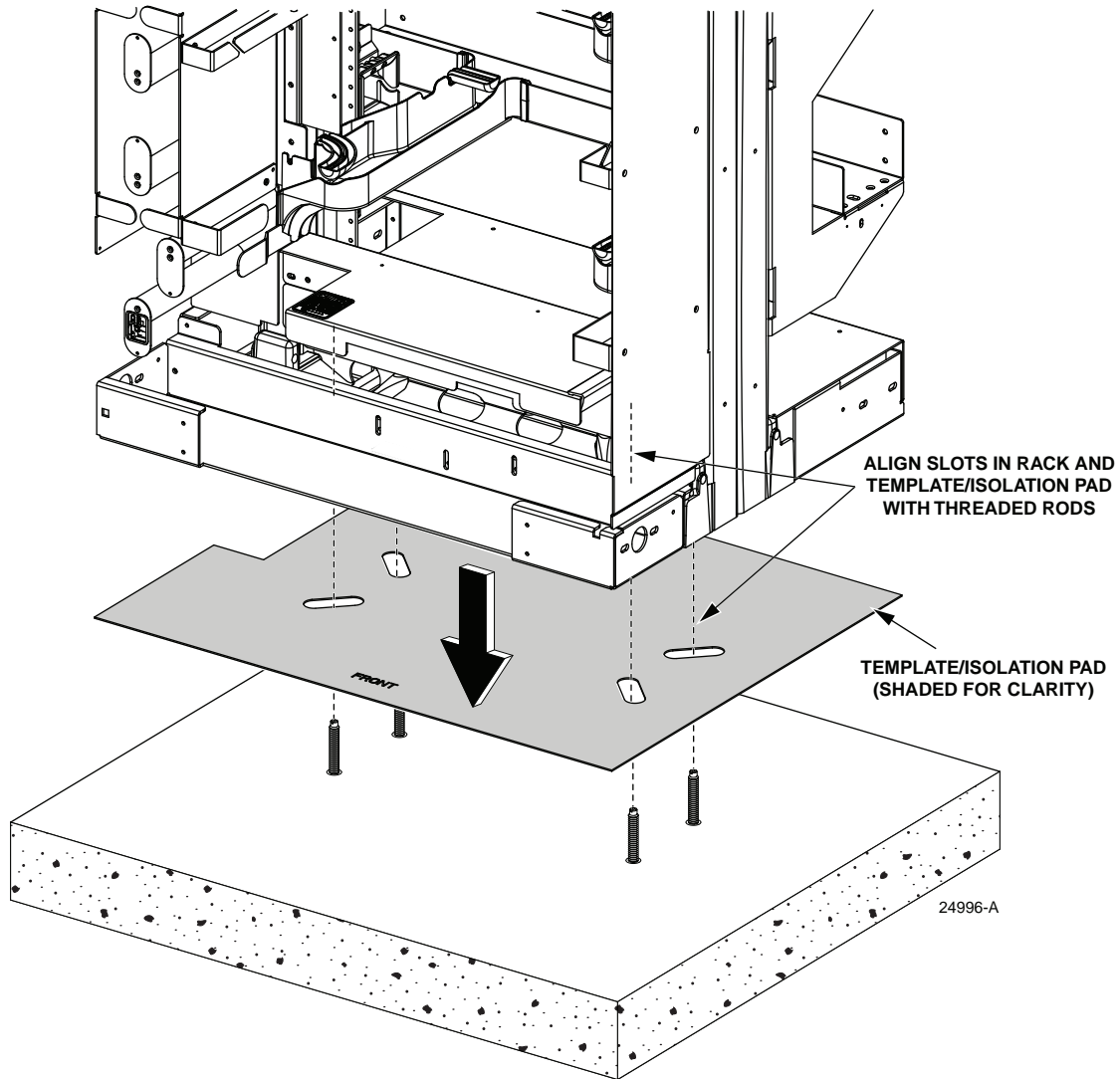
Figure 35. Concrete Floor Installation

2.10 Inclusion of Frame Accessories in Lineup

As indicated in Topic 2.8 on page 30, an NG4access frame is typically installed as part of a lineup having an end guard on each end of the lineup and, in some cases, FOTSPs between frames. The end guard may be installed on a frame or on a FOTSP.

An end guard installed in a lineup adds 2.5 (5.4 cm) inches to the lineup length (depth and height are the same). A FOTSP adds 12 inches (30.5 cm) to the lineup length.

2.10.1 Installing a FOTSP

For instructions for installing a FOTSP, refer to the frame mounting manuals (TECP-90-702 or TECP-90-708). Figure 36 shows the hardware used in installing a FOTSP.
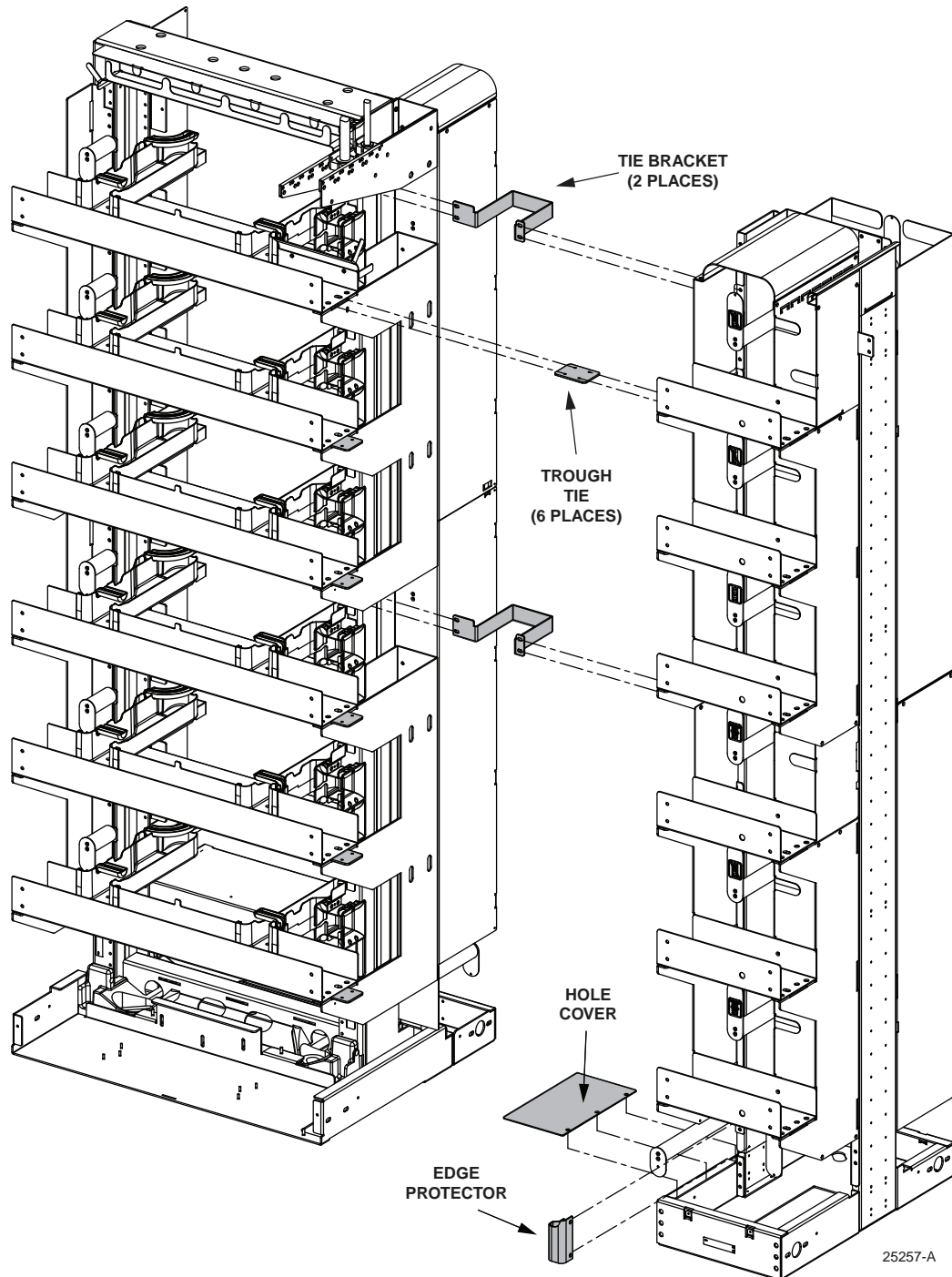
Figure 36. FOTSP Exploded from NG4access Standard Frame

2.10.2 Installing an End Guard

Instructions for installing an end guard are contained within the installation drawing provided with the end guard.

2.11 Location of Standard Chassis on Frame

A NG4access universal chassis may be installed in any of the six pre-determined locations on the NG4access frame. Installation of a universal chassis is a simple procedure, involving just aligning the chassis with the frame and securing the chassis to the frame with the four mounting screws provided, as shown in Figure 37. Cable guides for the universal chassis must also be installed by snapping them into position. For detailed information on installing a universal chassis in the frame, refer to TECP-90-703.
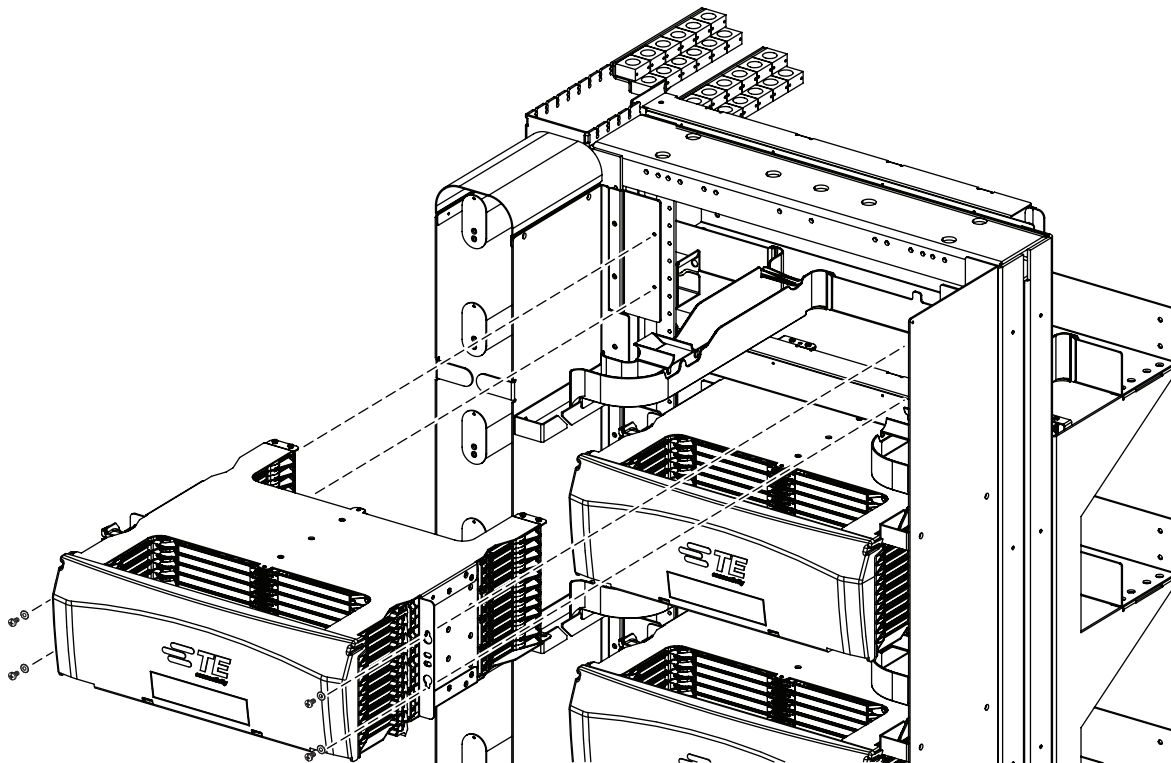
24940-A

Figure 37. Installing a Standard Chassis

If the incoming cables enter the frame from overhead, it is recommended that universal chassis be loaded into the NG4access frame starting at the bottom and working toward the top. If the incoming cables enter the frame from the bottom, it is recommended that universal chassis be loaded into the NG4access frame starting at the top and working toward the bottom. NG4access chassis may be loaded into any open position if necessary.

2.12 Network Cable Guidelines

In an NG4access application, network cables may be Outside Plant (OSP), Intra Facility Cable (IFC), microcable, or patch cords. A NG4access frame loaded to capacity with LC connectors will have 3456 terminations and will, therefore, require 3456 network cable fibers to be routed into and secured on the frame. If SC connectors are used, the number of possible terminations is 1728 terminations per frame (half of LC capacity).

2.12.1 Cable Clamp Options

The NG4 cable clamp bracket, located in the upper right corner on the frame, holds up to 24 clamps for cables with an outer diameter of less than 0.80 in. (2.03 cm) or up to 16 clamps for cables with an outer diameter of 0.80 in. (2.03 cm) to 1.2 in. (3.05 cm). Cable clamps are provided with TE IFC cables. Additional clamps can be ordered as accessories.
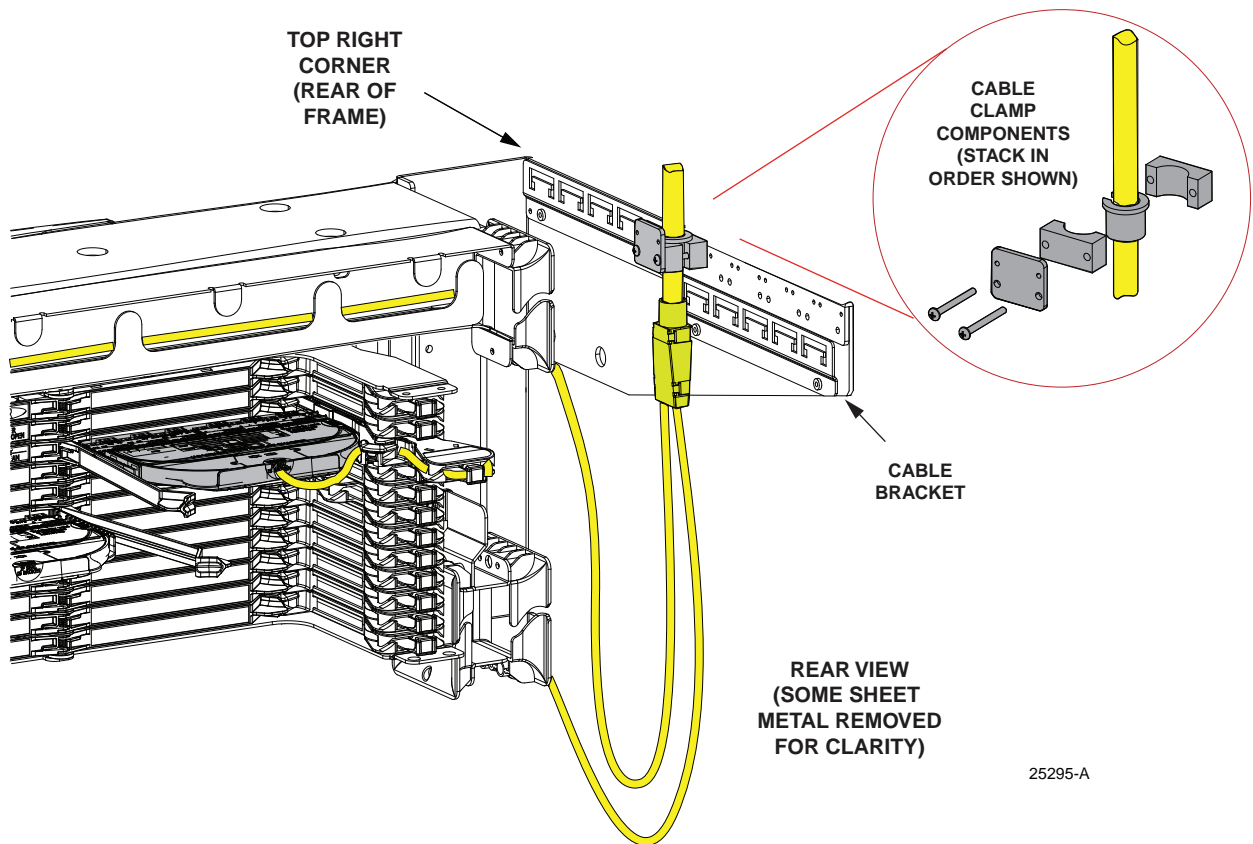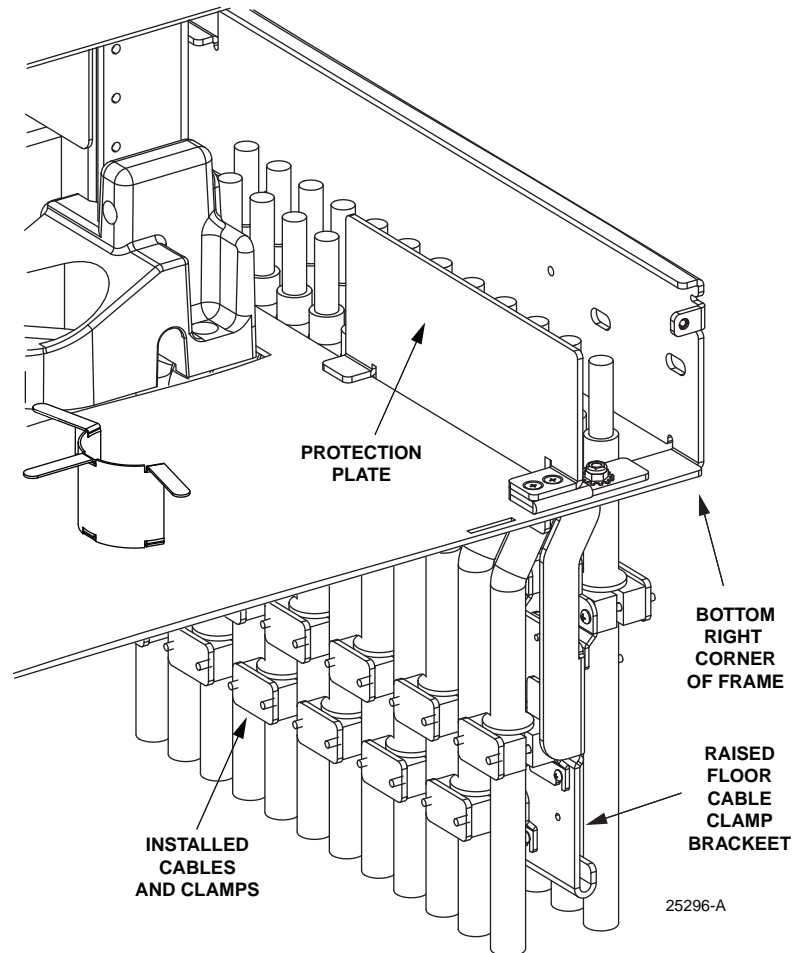

Figure 38. Top-Entry Cable Clamp Bracket

If cables will be brought into the frame from under the raised floor, a Raised Floor Cable Entry Kit (available from TE) must be installed below the frame in the bottom right corner. The kit is designed for standard size cables, with an Outside Diameter (OD) of up to 0.8 in. (2.03 mm).

If large cables are to be installed, with an OD in the range from 0.8 to 1.03 in. (2.03 to 26.16 mm), a Raised Floor Large Cable Kit is also required.

When cables are brought in from under a raised floor, a Raised Floor Slack Management Kit is also required. This kit provides auxiliary slack storage spools on the rear of the frame.

Figure 39. Underfloor Cable Clamp Bracket

2.12.2 Outside Plant

In an NG4access system, all OSP cables are spliced. They may either be spliced in a separate splice vault or routed directly to the NG4access frame and spliced within the NG4access splice chassis, as illustrated in Figure 29 on page 28.

To achieve maximum capacity in the splice chassis, OSP cables must be of ribbon construction. Splice tray capacity for ribbon cable is 72 splices, and the splice chassis holds 48 splice trays, for a total of 3456 splices, which is equivalent to the number of terminations in a frame equipped with LC connectors. For splicing options with less capacity, refer to Table 1 on page 16.

2.12.3 Intra Facility Cable

Intra Facility Cable (IFC) may enter the frame from either above or below, as shown in Figure 40. IFC cable may be of two types:
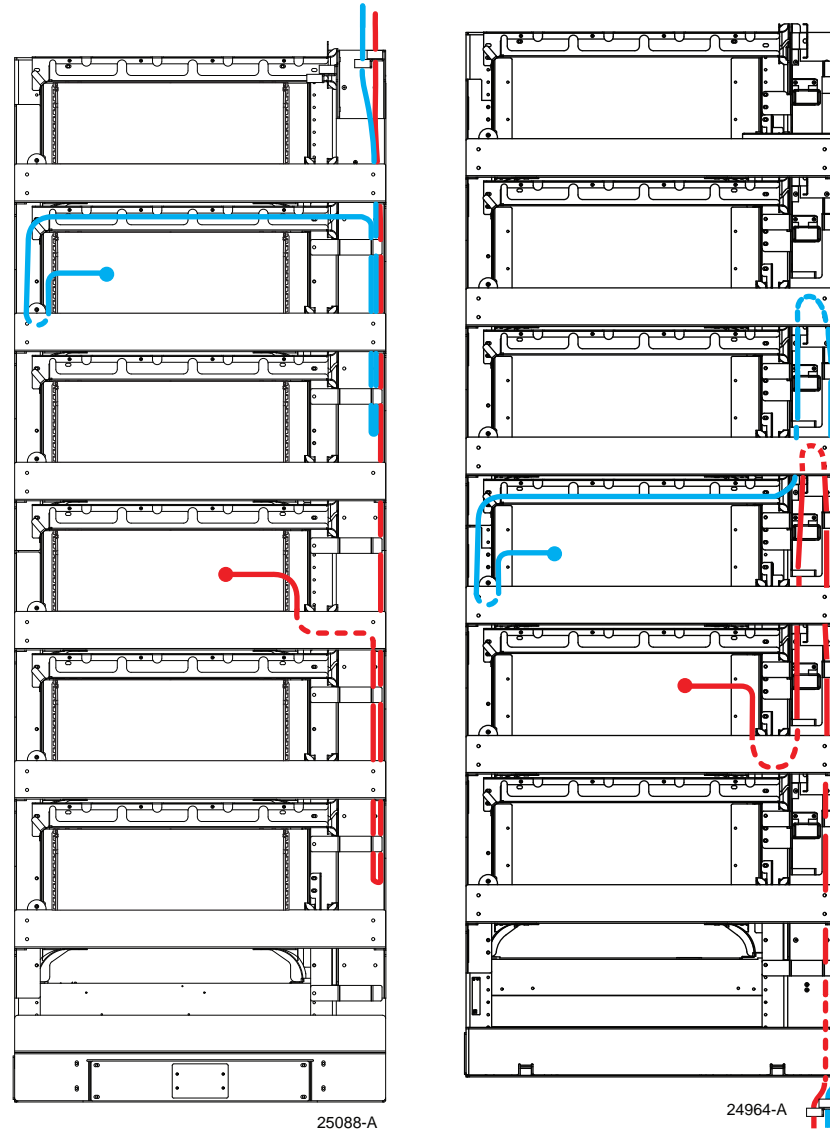
Figure 40. IFC Cable Routing Examples
Overhead (Left); Underfloor (Right)

- **Conventional IFC cabled modules.** These assemblies consist of a 72-, 96-, or 144-fiber IFC cable of conventional stranded or ribbon construction with a stub or connectors on one end and the other end terminated to an NG4access cabled module. The cabled module is snapped into the designated access tray and the attached stub or connectorized end is then routed to the cable entry location.

Figure 41. 72-Fiber IFC Cable Preterminated to Three LC Cabled Modules

- **24-Fiber Microcable IFC cabled modules.** These assemblies consist of a dual zipped 24-fiber microcable terminated to a cabled module. The modules are snapped into the designated access tray and the attached microcable is then routed to the cable entry location.

Figure 42. 24-Fiber Microcable Preterminated to One LC/APC Cabled Module

2.12.4 1.2 mm Patch Cords

In an NG4access platform, TE 1.2 mm, small form factor patch cords can also be used as the link between the network and the frame. For a description and picture, refer to Topic 1.5.3 on page 19. Patch cords are available with near end to far end configurations of LC-LC, SC-SC, or hybrid LC-SC, all either AP or UP, all singlemode, and in lengths of 6, 7, 10, or 15 meters.

2.13   FOT Patch Cord Guidelines

2.13.1   Frame Capacity

Patch cords are used in an NG4access platform to connect fiber optic signals to Fiber Optic Terminal (FOT) equipment.

Front side NG4access ODF jumper wireways are optimized when using 1.2 mm patch cords.

In cross-connect applications, FOT patch cords are routed to the rear of the frame and patch cords up to 2.0 mm can be used without affecting frame capacity.

In interconnect applications, FOT patch cords are routed to the front of the frame. Table 3 provides patch cord capacity levels when using different patch cord densities.

Table 3. Frame Capacities in Interconnect Application

PATCH CORD DIAMETER	PERCENTAGE OF FULL CAPACITY
SC Connectors (100% Capacity = 1728)	
1.2	100%
1.6	100%
1.7	100%
2.0	78%
LC Connectors (100% Capacity = 3456)	
1.2	100%
1.6	61%
1.7	54%
2.0	Not recommended

2.13.2   Patch Cord Routing in an Interconnect Application

In an interconnect application, patch cords are routed directly from the front of the frame into the FiberGuide system and FiberGuide drops are positioned on both sides of the frame as shown in Figure 26 on page 25.

FIBERGUIDE SYSTEM

25034-B
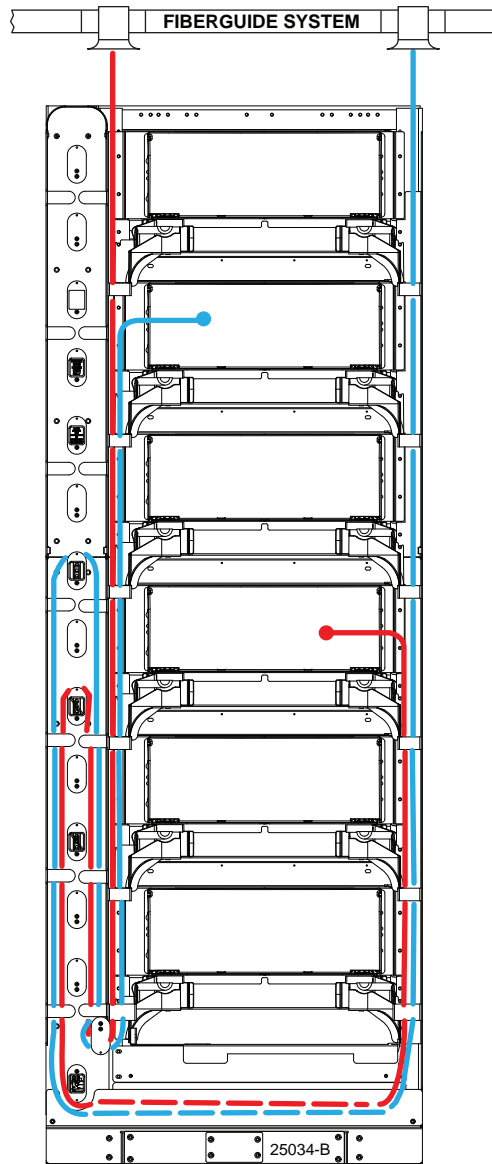
Figure 43. FOT Patch Cords in an Interconnect Application (Front View of Frame)

2.13.3 Patch Cord Routing in a Cross-Connect Application

In a **cross-connect** application, one frame is dedicated as an FOT frame. FOT patch cords are routed between the universal chassis on this frame through the FiberGuide system to FOT equipment. In such an application, the lineup may or may not include FOTSPs. Figure 44 shows an FOT frame in an application where FOTSPs are not present in the lineup. For an illustration of a cross-connect lineup with FOTSPs, see Figure 31 on page 30.

25085-A
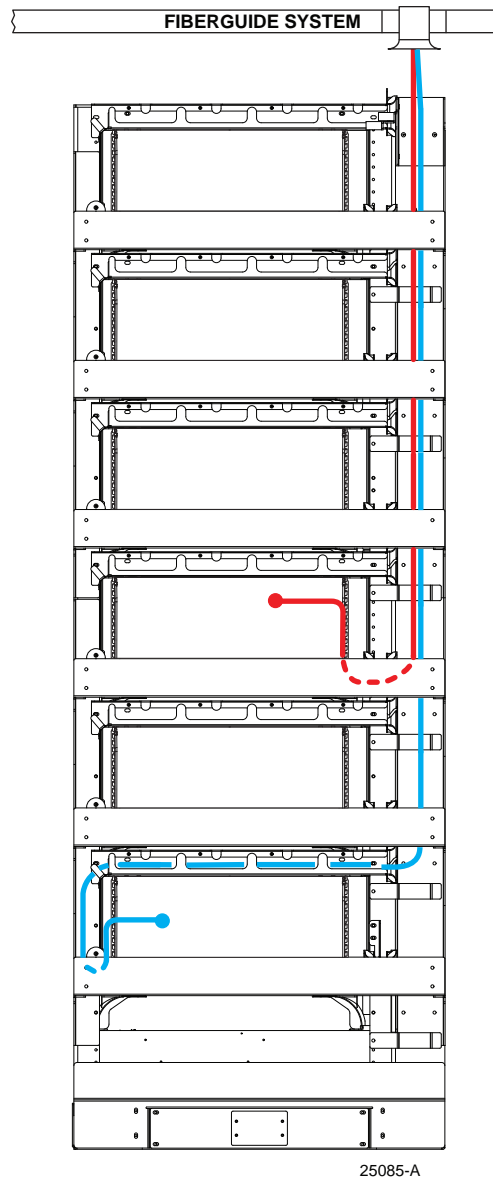
**Figure 44. FOT Patch Cords in a Cross-Connect Application
(Rear View of Frame)**

◆ **Note:** For more information on patch cord routing, refer to TECP-90-705 for standard frame applications and TECP-90-712 for patch cord routing on a frame with an integrated FOTSP.

2.14 Use of FiberGuide System With NG4access

The 12- or 24-Inch FiberGuide System is recommended for management and routing of FOT patch cords in a NG4access ODF Platform.

Figure 45 shows a typical installation with 24-inch FiberGuide and 90-degree elbow leading down to an NG4access frame. Figure 46 and Figure 47 on the next two pages show alternative configurations for use of a 24-inch FiberGuide System with the NG4access ODF Platform.

> **Note:** For a complete description of the FiberGuide System, with exploded views of FiberGuide kits, refer to ADCP-95-005.
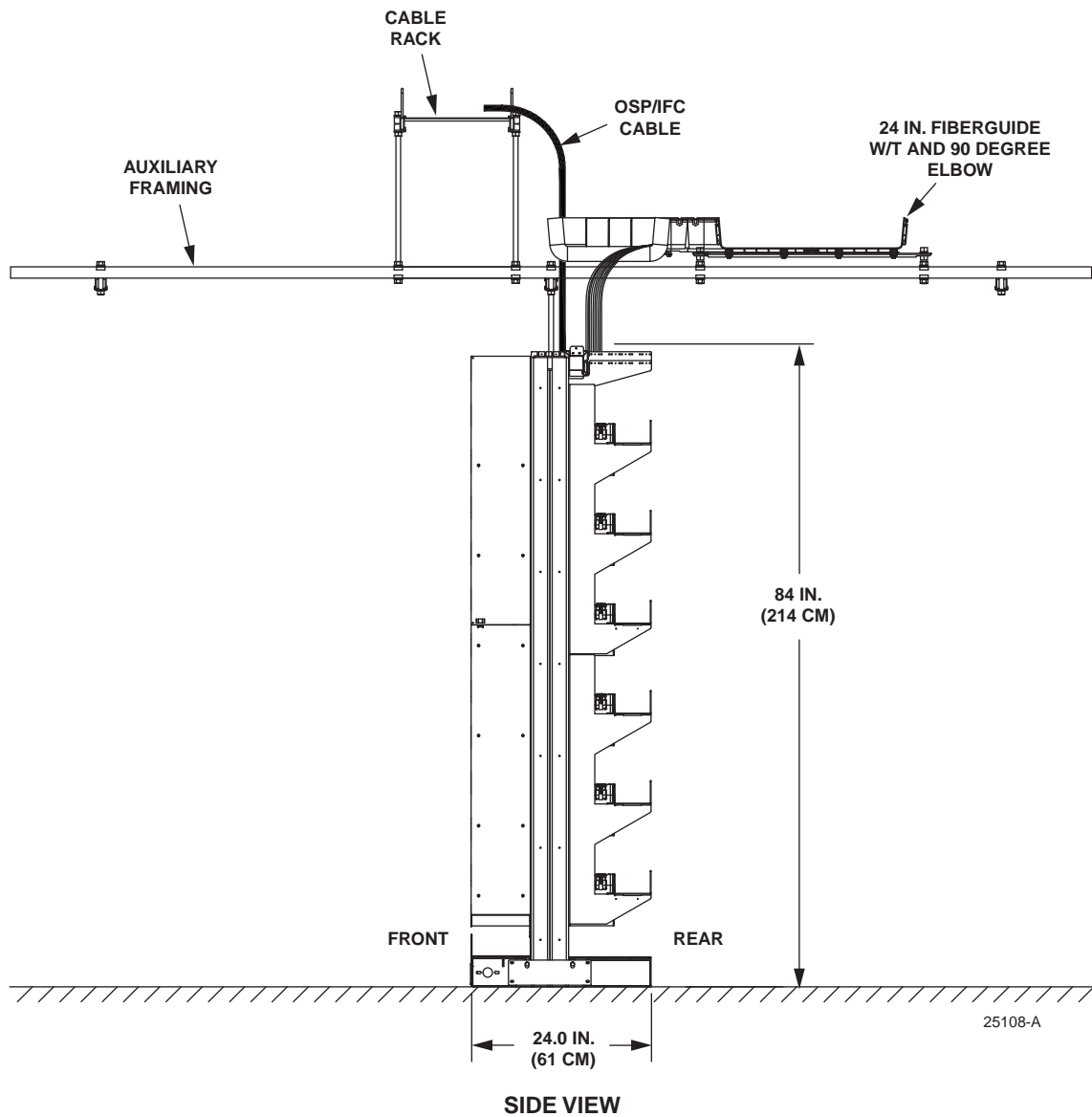
Figure 45. FiberGuide System in a NG4access Application

FIBERGUIDE
SYSTEM

FRONT VIEW

25309-A
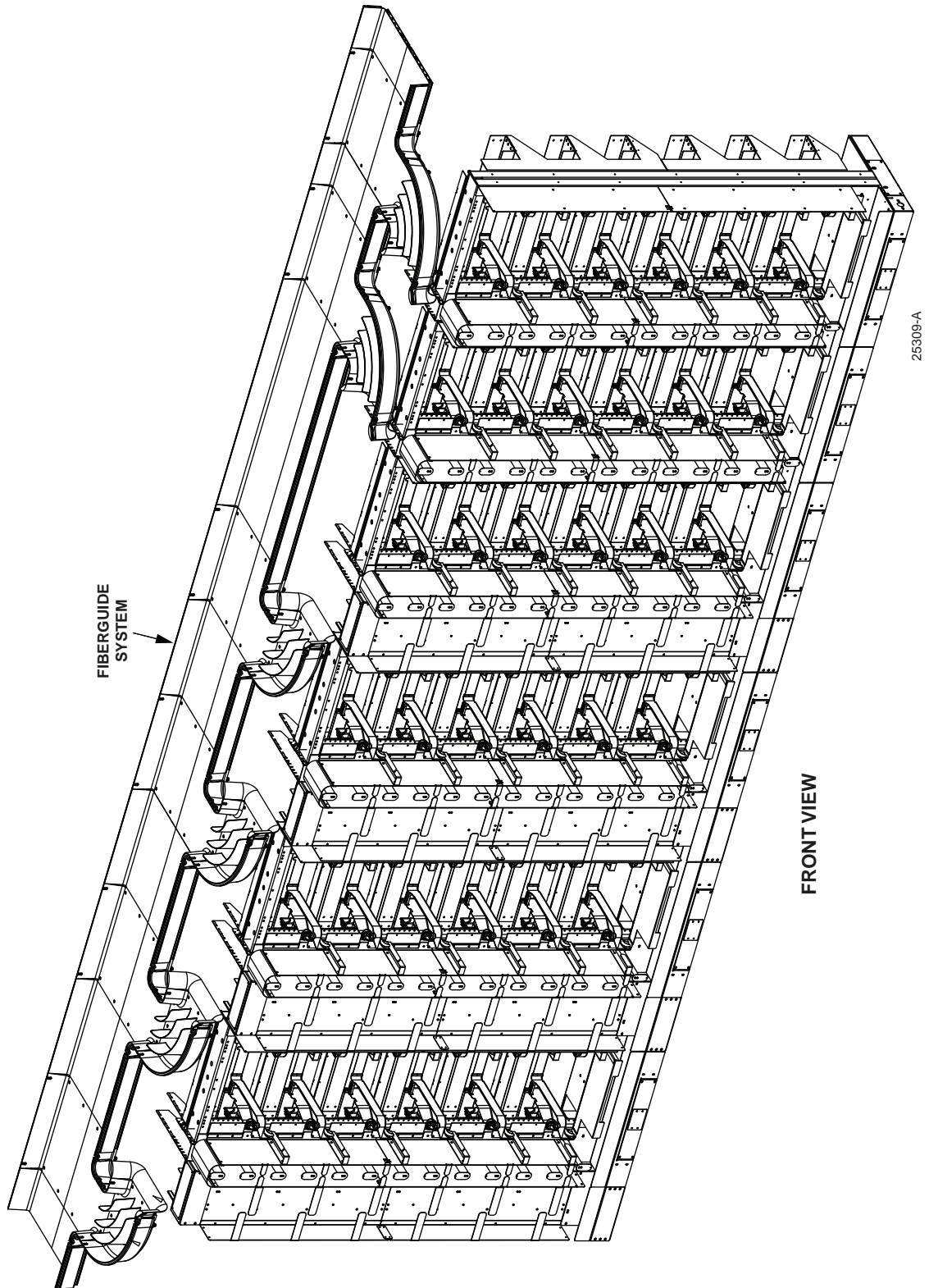
Figure 46. NG4access Lineup With FiberGuide System in Rear (Front View)

FIBERGUIDE SYSTEM

25310-A
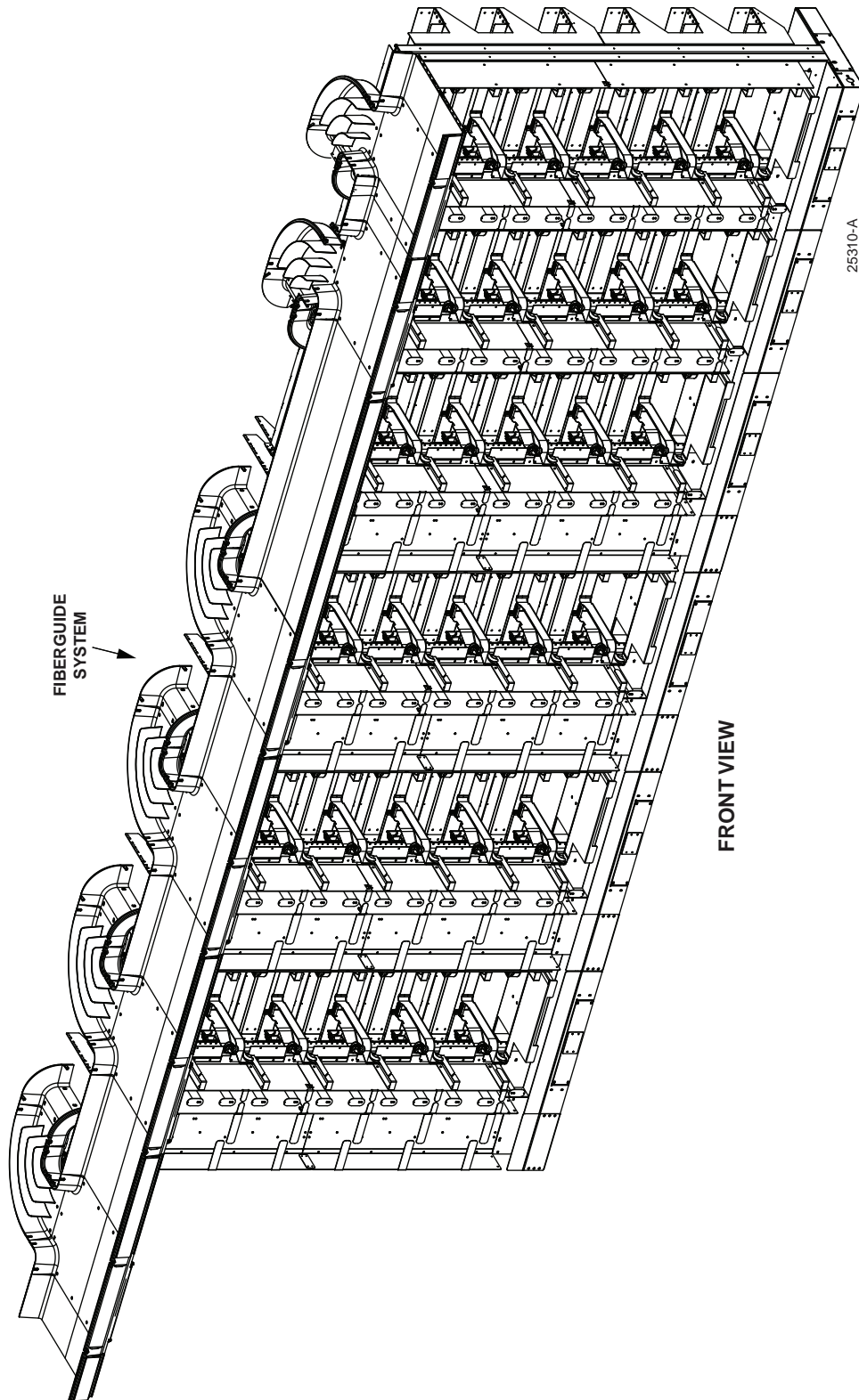
FRONT VIEW

Figure 47. NG4access Lineup With FiberGuide System in Front (Front View)

Figure 48 shows a alternative FiberGuide configuration with a 90-degree horizontal elbow and a 90 degree vertical down elbow. Other configurations are possible to conform to the needs of different installation sites. For more information, see FiberGuide manual, ADCP-90-005.

Figure 48. Alternative FiberGuide Configuration

3   SYSTEM PROCEDURES

3.1   General System Procedures

System procedures, listed below, address general troubleshooting situations in terms of connections between circuits.

- Series test access (Subsection 3.1.1)

- Temporary service restoral (Subsection 3.1.2)

- Moving optical fiber to new equipment (Subsection 3.1.3)

3.1.1   Series Test Access

This procedure is used to obtain series test access to the FOT equipment or IFC network cable at the NG4access frame. Th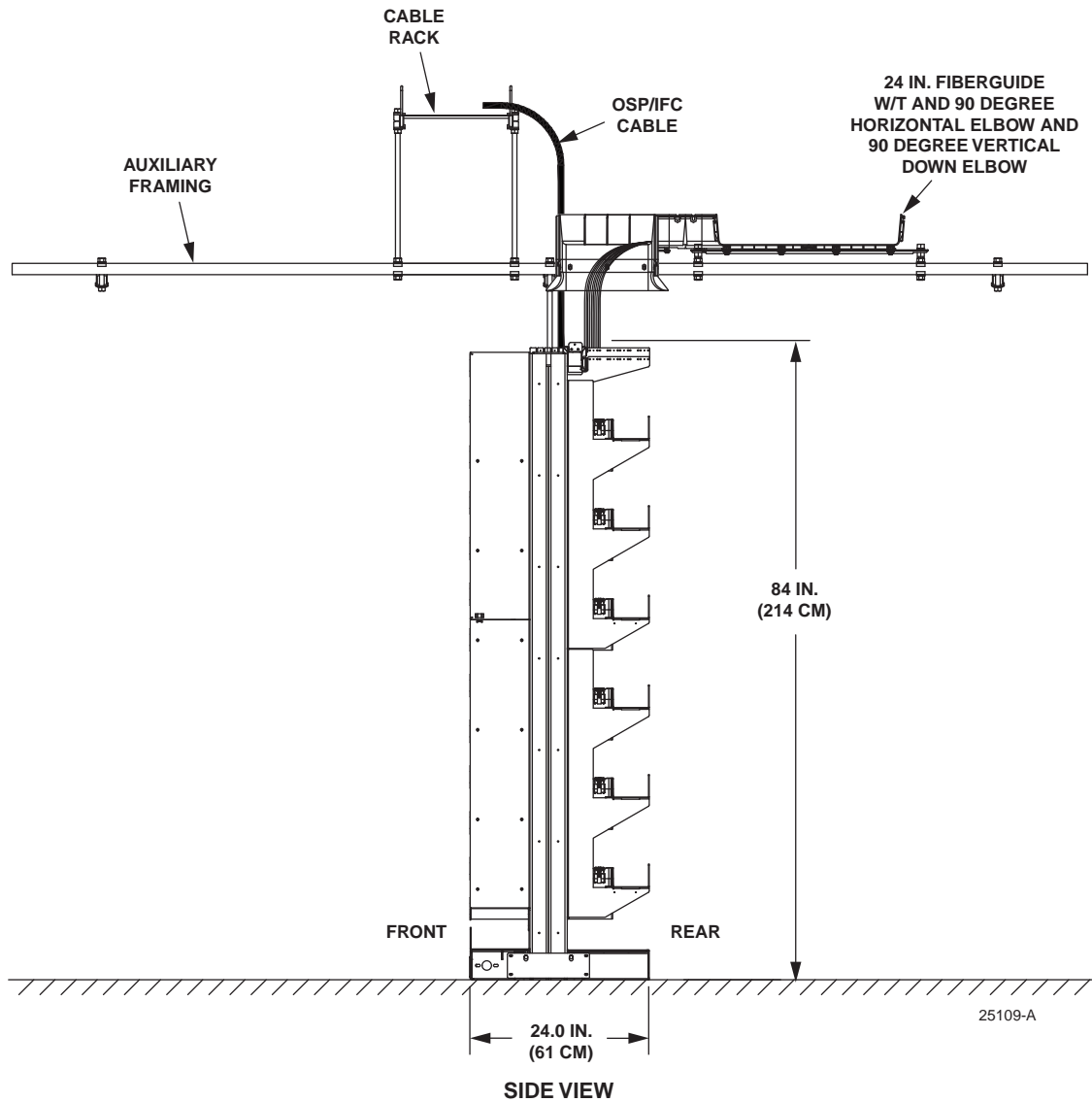e appropriate test equipment may then be connected to the FOT equipment or network cable that requires testing. Separate procedures are provided for interconnect and cross-connect applications. Refer to Figure 49 for a schematic diagram of the procedure. The same procedures are used for bidirectional test access which requires breaking a circuit to access both directions. Test equipment should be used on a secure surface at a convenient work level. Do not support test equipment on the NG4access panel.

▶   **Note:** For general patch cord routing guidelines, refer to Section 3.2.

⚠   **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

3.1.1.1   Interconnect Application

For interconnect applications, use the following procedure:

1. Locate the adapter that serves as the termination point for the FOT equipment or network cable that requires testing (see Figure 49).

2. Disconnect the FOT equipment patch cord connector from the front side of the adapter located in step 1.

3. Place a clean dust cap on the connector or into the adapter to prevent contamination.

4. Connect appropriate test equipment to the network cable adapter or the FOT equipment patch cord. Note that a separate patch cord or test cord with the proper adapters may be needed to make the required connection to the test equipment.

5. Install dust caps on all adapters and connectors that will not be used during the test.

3.1.1.2   Cross-Connect Application

For cross-connect applications, use the following procedure:

1. Locate the adapter that serves as the termination point for the FOT equipment or network cable that requires testing (see Figure 49).

2. Disconnect the cross-connect patch cord connector from the front side of the adapter located in step 1.

3. Place a clean dust cap on the connector and/or the adapter to prevent contamination.

4. Connect appropriate test equipment to the network cable adapter or the FOT equipment adapter. Note that a separate patch cord or test cord with the proper adapters may be needed to make the required connection to the test equipment.

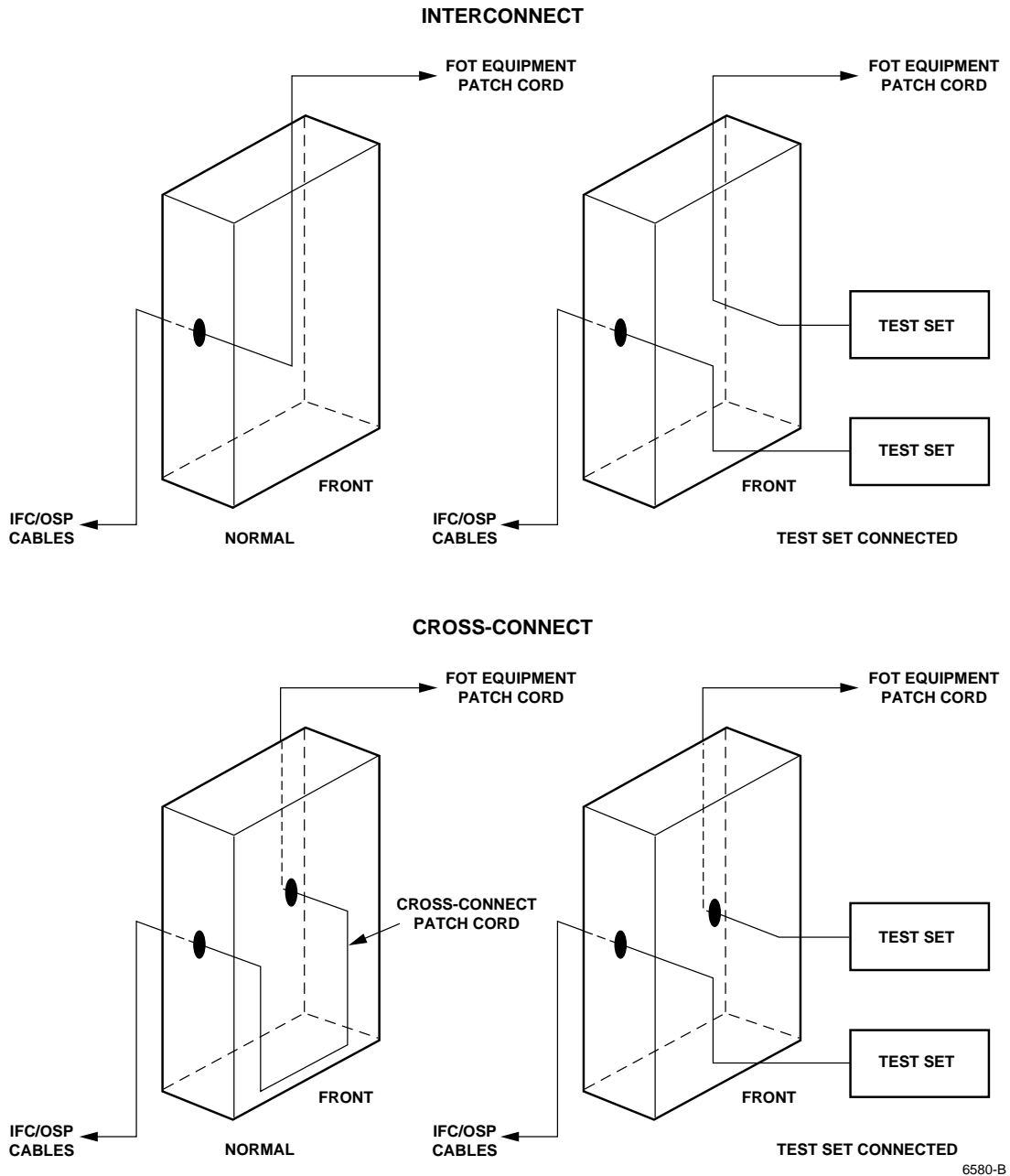5. Install dust caps on all adapters and connectors that will not be used during the test.

INTERCONNECT

CROSS-CONNECT

Figure 49. Series Test Access

3.1.2   Temporary Service Restoral

This procedure is used to temporarily restore service after an IFC network cable has been cut or damaged. To perform this procedure, a spare network cable must be available. Separate procedures are provided for interconnect and cross-connect applications. Refer to Figure 50 for a schematic diagram of this procedure.

> ◆ **Note:** For general patch cord routing guidelines, refer to Section 3.2.

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

3.1.2.1   Interconnect Application

For interconnect applications, use the following procedure:

1. Locate the adapter that serves as the termination point for the damaged network cable (see Figure 50).

2. Disconnect the FOT equipment patch cord connector from the front side of the network cable adapter located in step 1.

3. Place a clean dust cap on the connector to prevent contamination.

4. Locate the adapter that serves as the termination point for the spare network cable.

5. Route the FOT equipment patch cord to the adapter for the spare network cable, clean the connector end face, and mate the patch cord connector with the spare network cable adapter. If the patch cord is too short, select and route a new patch cord between the FOT equipment and the spare network cable adapter.

6. Install a dust cap on the adapter for the damaged network cable.

3.1.2.2   Cross-Connect Application

For cross-connect applications, use the following procedure:

1. Locate the adapter that serves as the termination point for the damaged network cable (see Figure 50).

2. Disconnect the cross-connect patch cord connector from the front side of the network cable adapter located in step 1.

3. Place a clean dust cap in the connector and in the adapter to prevent contamination.

4. Locate the adapter that serves as the termination point for the spare network cable.

5. Route the cross-connect patch cord from step 2 to the adapter for the spare network cable and mate the patch cord connector with the spare network cable adapter. If the patch cord is too short, select and route a new patch cord between the FOT equipment and the spare network cable adapter.

6. Install a dust cap on the adapter for the damaged cable line.

INTERCONNECT

CROSS-CONNECT
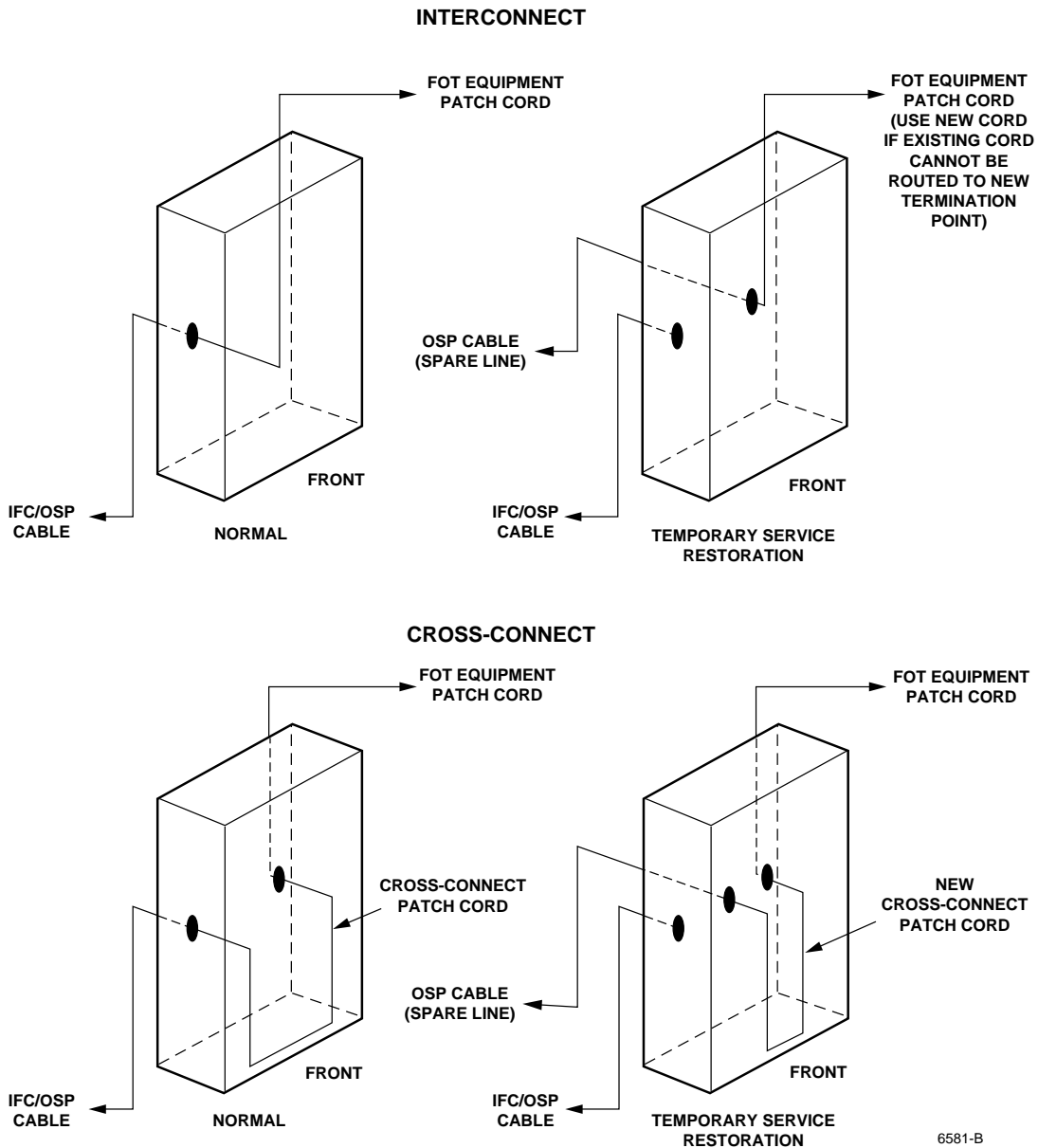
Figure 50. Temporary Service Restoral

3.1.3   Moving Optical Fiber to New Equipment

This procedure is used to disconnect an IFC network cable termination and reconnect it to new equipment. Separate procedures are provided for interconnect and cross-connect applications. Refer to Figure 51 for a schematic diagram of the procedure.

▶   **Note:** For general patch cord routing guidelines, refer to Section 3.2.

⚠   **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

3.1.3.1   Interconnect Application

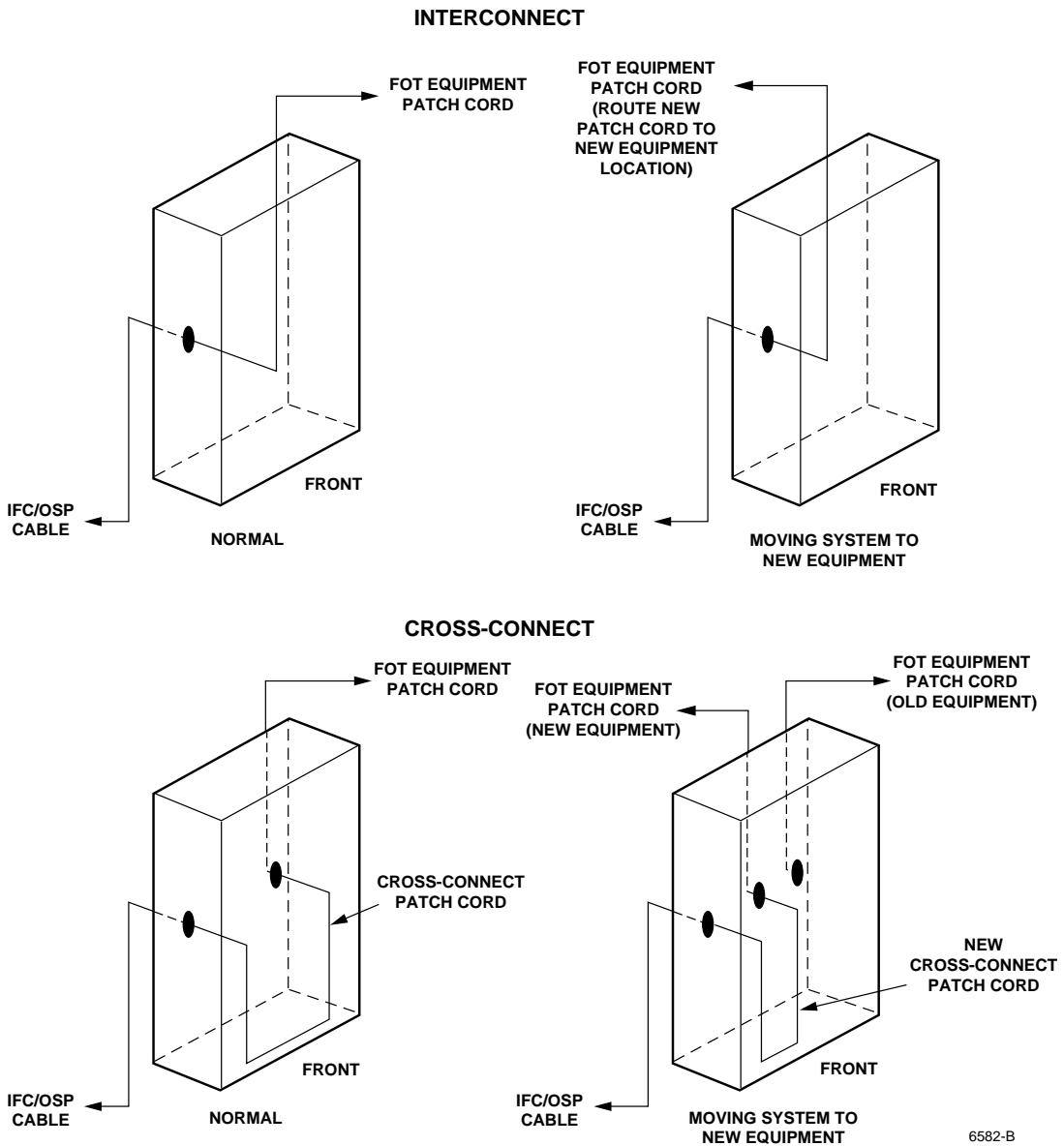For interconnect applications, use the following procedure:

1. Locate the adapter for the network cable that is to be connected to the new equipment (see Figure 28).

2. Disconnect the FOT equipment patch cord connector from the front side of the adapter located in step 1.

3. Place a clean dust cap on the connector and in the adapter to prevent contamination.

4. Select and route a new patch cord between the new FOT equipment and the adapter for the network cable. Mate patch cord connector with adapter.

5. Remove the old FOT patch cord from the frame and raceway system.

3.1.3.2   Cross-Connect Application

For cross-connect applications, use the following procedure:

1. Locate the adapter for the new FOT equipment.

2. Locate the adapter for the present FOT equipment (see Figure 51).

3. Disconnect the cross-connect patch cord connector from the front side of the adapter located in step 2.

4. Place a clean dust cap on the connector and in the adapter to prevent contamination.

5. Route the FOT end of the cross-connect patch cord to the new FOT equipment adapter, clean the end face, and mate the patch cord connector with the adapter. If the patch cord is too short, select and route a new cross-connect patch cord between the network cable adapter and the new FOT equipment adapter and mate the connector with the adapter.

6. If a new cross-connect patch cord was installed, remove the old cross-connect patch cord from the frame and raceway system.

INTERCONNECT

FOT EQUIPMENT PATCH CORD

FOT EQUIPMENT PATCH CORD (ROUTE NEW PATCH CORD TO NEW EQUIPMENT LOCATION)

FRONT

IFC/OSP CABLE

NORMAL

FRONT

IFC/OSP CABLE

MOVING SYSTEM TO NEW EQUIPMENT

CROSS-CONNECT

FOT EQUIPMENT PATCH CORD

FOT EQUIPMENT PATCH CORD (NEW EQUIPMENT)

FOT EQUIPMENT PATCH CORD (OLD EQUIPMENT)

CROSS-CONNECT PATCH CORD

NEW CROSS-CONNECT PATCH CORD

FRONT

IFC/OSP CABLE

NORMAL

IFC/OSP CABLE

FRONT

MOVING SYSTEM TO NEW EQUIPMENT

6582-B

Figure 51. Moving Optical Fiber to New Equipment

## 3.2   Cross-Connect Patch Cord Procedure and Guidelines

To minimize cable and patch cord congestion, observe the following guidelines:

1. Locate the chassis containing the adapters to be connected.

2. Select a patch cord of the appropriate length based on how many frames apart the adapters are. To determine where to route patch cords, refer to the laminated cards on the frame (TECP-90-705 or TECP-90-712). Find the appropriate routing diagram.

3. Open the chassis door by pulling it out at the top and letting it swing down into a resting position below the chassis.

⚠ **Danger:** *Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the ends of any optical fiber. Do not look directly into the optical adapters of the adapter packs. Exposure to invisible laser radiation may result. An optical power meter should be used to verify active fibers. A protective cap or hood MUST be immediately placed over any radiating adapter or optical fiber connector to avoid the potential of dangerous amounts of radiation exposure. This practice also prevents dirt particles from entering the adapter or connector.*

4. Locate and open the access tray where the adapter is located. To open the access tray, pull out the access tray handle. Refer to Figure 52.


ACCESS
TRAY
HANDLE

24950-ARM
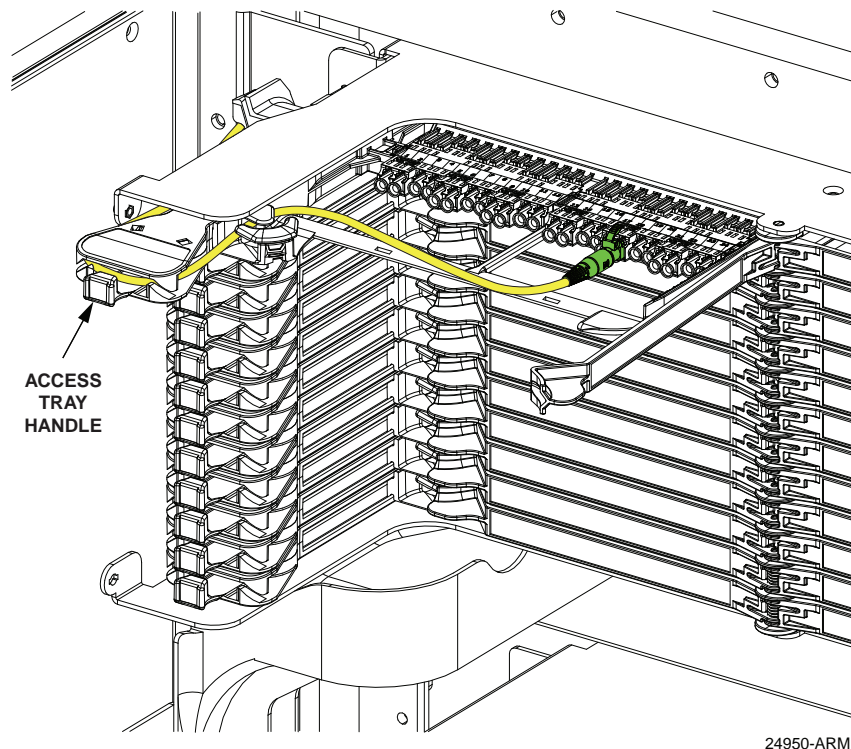
Figure 52. Open Access Tray With Connector Mated to Adapter

5. Remove the dust cap from the designated adapter and clean the connector and adapter per local practice.

6. Mate the patch cord connector with the adapter.

7. Route the patch cord from the adapter around the access tray handle and down through the cable guides on the outside of the access tray to the point just below the access tray where either front routing or rear routing must be chosen. Refer to Figure 53.

> **Note:** In general, front routing is used to route a patch cord to another access tray on the same frame. Rear routing is used to route a patch cord to another frame in the same lineup, as shown in the laminated cards.
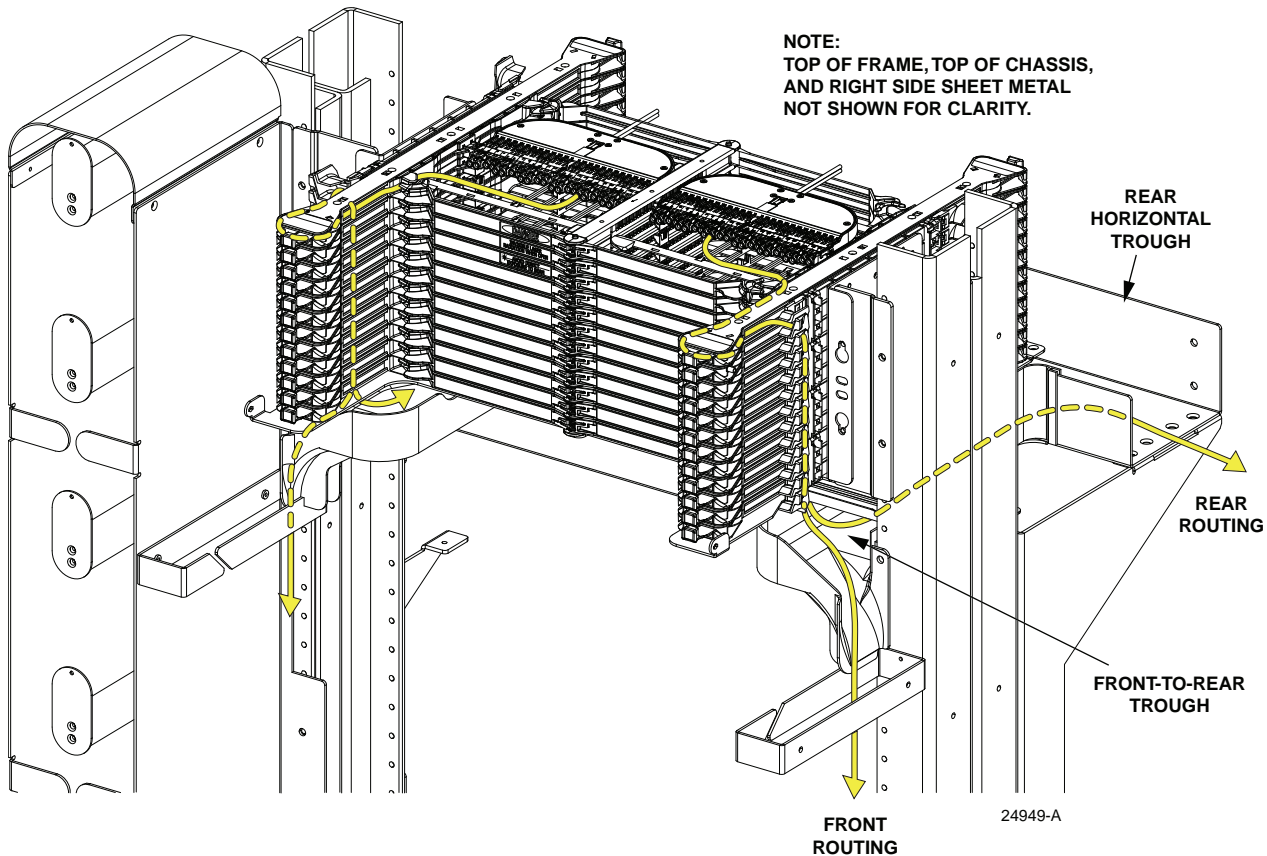
Figure 53. Front and Rear Routing

8. If routing the patch cord on the same frame, route it down through the vertical cable guides to the bottom trough and then connect the other end of the patch cord at the designated adapter. Store patch cord slack in the slack storage area.

9. If routing the patch cord to another frame, route it down through the front-to-rear trough to the rear horizontal trough to the rear side of the other frame. At the second frame, route it to the front of the frame using the front-to-rear trough, then down through the vertical cable guides to the bottom trough. Connect the patch cord at the designated adapter. Store patch cord slack in the slack storage area.

3.3   Maintenance

Maintenance procedures are provided within videos available from TE Customer Service, and also at **te.com/ng4access** ("Instruction Videos" link).

3.3.1   Cleaning Procedures

3.3.1.1   Connector Removal and Cleaning

Refer to the video, "Removing and Cleaning Connectors."

3.3.2   Disassembly Procedures

3.3.2.1   Remove/Replace Sliding Tray

Refer to the video, "Removing and Installing the Access Tray."

3.3.2.2   Remove/Replace Tray Door

Refer to the video, "Tray Door/Spring Removal and Installation."

3.3.2.3   Remove/Replace Chassis Door

Refer to the video, "Removing and Installing the Chassis Door."

3.3.3   Special Tools Needed

None.

3.3.4   Replacement Components

Related NG4access products include the following. For details, refer to catalog 314120AE.

- Replacement access tray
- Chassis door kit
- Designation cards
- Cable clamp kit
- Replacement tray door kit

For more information, refer to .

4   CUSTOMER INFORMATION AND ASSISTANCE

Contact **Customer Service** to order kits listed in this TSB. Call 800.366.3891 (main Customer Service number), or contact a specific Customer Service team directly.

Contact the **Product Return Group** to obtain an RMA if product is deemed defective per this TSB. Call 800.366.3891 extension 73748 or 952.917.3748, or send an email to Telecom.returns@te.com.

Contact the **Technical Assistance Center (TAC)** for technical questions per this TSB (cable routing and installation of the kits). Call 800.830.5056 or send an email to TAC.Americas@commscope.com