



ATT-TELCO-IS-002-316-066

ADC Breakout Bay Provisioning for the NORTEL OPTera Connect DX System

Presented in this document are the methods and procedures to provide Breakout Bay Provisioning Standards within the att 13 State Network supporting the NORTEL OPTera Connect DX System.

To: The primary audience for this document is ATT-13STATE personnel in the following disciplines, Transport Equipment Engineer (TEE), Facility Equipment Engineer (FEE), Digital Transport Engineer (DTE), Maintenance Engineer, Space Planner, Circuit Provisioning and Network Operations (LFO). This document is to be used internally within ATT-13STATE and has a limited distribution subject to the header/footer information.

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Related Documents: See [Reference Section](#) of this document.

Canceled Documents: See Section 2.

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2. REASONS FOR REISSUE

Issue 3, Correct completion errors throughout entire document.

Issue 2, Section 7: New Drawings in this section.

Issue 2, Section 3, Paragraph A: New ADC drawings showing the FiberGuide for the MPT/MPO cables.

Issue 2, Section 3, Paragraph C: Added Parts and PID numbers

Issue 2, Section 8, References-All: Updated in its entirety.

3. INTRODUCTION

A. The NORTEL System & the ADC Breakout Bay

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The Nortel Connect DX OC 192 SONET system has been standardized in Release 1 as a single bay OC 192 system with one vacant bay for thermal management. With Release 4, which will be standardized in the June time frame Nortel will add a new OC 3 Hex card (16 OC 3s per card) that utilizes an MTP connector for the connection of the fiber to the card. The use of this connector requires a breakout bay next to the Connect DX bay to transition from the MTP connector to a SC-UPC, SingleMode connector. The new DX Breakout Bay will allow for this transition.

The NORTEL DX Breakout bay will be use in conjunction with the NORTEL Connect DX. The NORTEL Connect DX is an OC192 SONET System with OC 3, OC 12 and OC 48 drop side and multiple OC 192 line optics for both ring and linear operation. The Fiber Breakout Bay will provide multiple uses and enhance the capabilities of the NORTEL Connect DX. The primary use of the Fiber Breakout Bay will be to will be to provide for SC-UPC, SingleMode connector access with the new OC 3 Hex card (that will be available in Release 4 of the NORTEL Connect DX). It will also allow test access for the new OC 3 card and provide interconnect and slack storage for the NORTEL Connect DX bay single fiber jumpers. The Fiber Breakout Bay will provide access for up to six 64-port modules, which is 384 OC 3 SC-UPC, SingleMode connectors, and slack storage for about 168 single fiber jumpers in up to a three-meter length each. **A Fiber Breakout Bay (covered in PAN 20021030, dated Apr 2002) will be ordered with each new NORTEL Connect DX bay and installed on the left of the NORTEL Connect DX bay.** You will also be able to order a retrofit Fiber Breakout kit that can be mounted in an existing Hendry or Newton Zone 4 rated frame. This will allow the upgrade of an existing NORTEL Connect DX bay so it can support the Release 4 features.

On a new installation, the minimal equipped Fiber Breakout Bay will be configured in a Skeleton Bay configuration part# FMX-NB-FRM2612P, as shown in the ordering guide. A second application will be to retro fit an existing Hendry or Newton frame that is vacant and positioned to the left of the Connect DX Bay the retro fit kit order # FMX-NB-FRM2612Q. The 64-port module, which is part of both configurations, comes with eight (8) ribbon cables 27 feet long. If a longer cable is required they can be special ordered from ADC. The ordering information is in the ordering guide. Along with both of the Fiber Breakout Bay configurations, you will need to order two (2) IFC cables, 32-fiber bundle, 1.7 loose tube sub-units. These cables will come in varying lengths and have either single ended SC connector terminations or double-ended SC connector terminations. The single ended cables can be ordered from Telamon in four different lengths, the double-ended cables can be special ordered from ADC. The IFC cables will be used to provide the fiber connection from the front of the fiber panel in the Fiber Breakout Bay to the 72-fiber connector panel in the Fiber Distribution Frame (FDF). One 32-fiber IFC cable will be connected to One OC 3 Hex card and the cables can be diversely routed between the Fiber Breakout bay and the FDF. If the single ended cable is ordered, the cable can be cut to the correct length and a field mounted SC connector can be placed using an ATT standard field mount SC-UPC, SingleMode connector termination unit, i.e. Fuselite II.

One DX panel is required for every two Hex OC-3 cards. They should be placed in the bay from the bottom to the top. The (2) 32-count cable which runs from the front of the DX bay to FDF line-up is ordered separately from bay configurations and growth panels. Check the existing FDF line-up for a vacant 72-position panel for the termination of this cable. Below are the custom configurations where breakout bay and OC-192 bays are not located adjacent to each other (such as a CPE location). Both a panel with custom length cable and a separate fiber trough are required between the NORTEL OPTera Connect DX bay and the ADC Breakout Bay for the special cable requirements.

B. The Breakout Module

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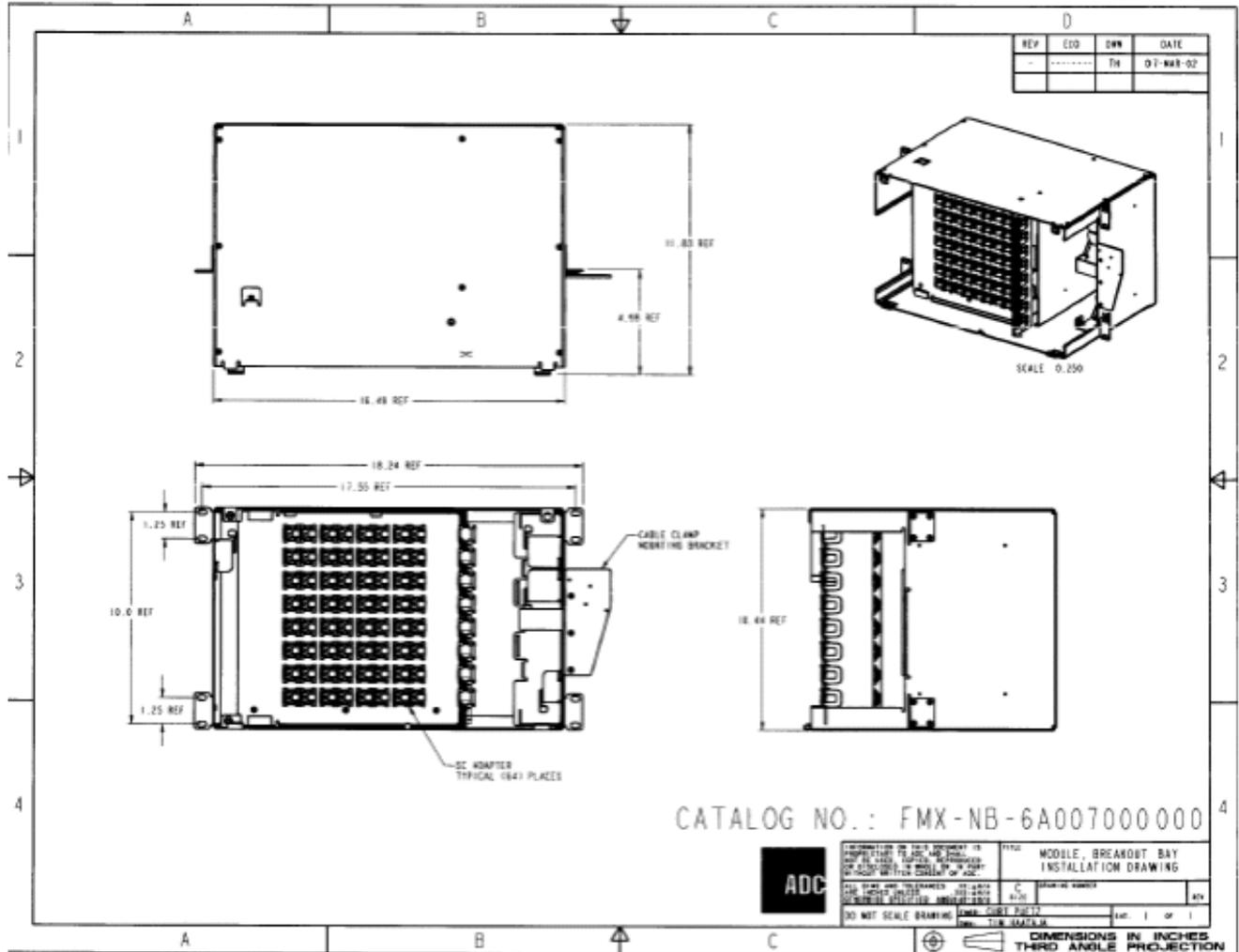


Illustration of the Breakout Module placed in the ADC Breakout Bay

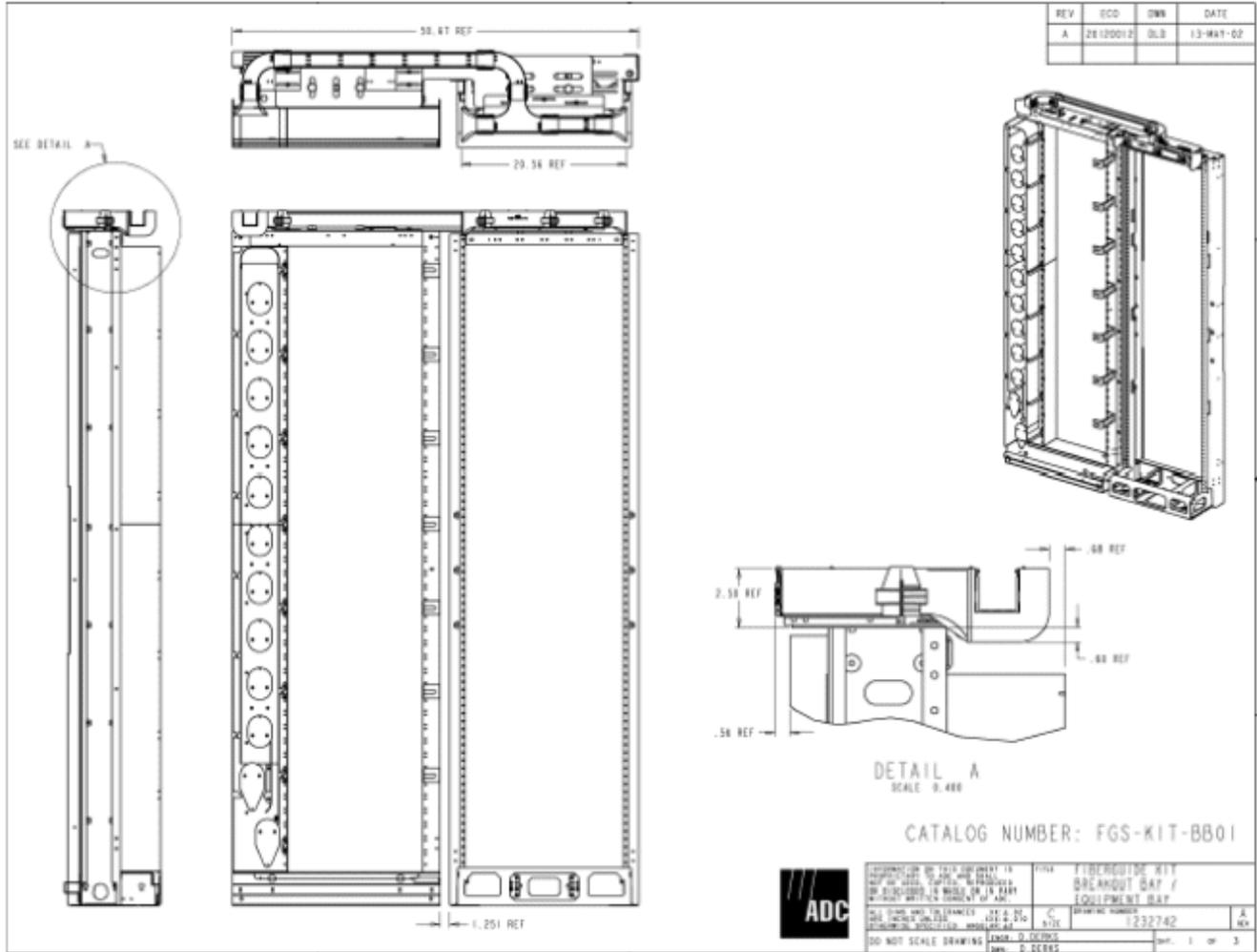
A Fiber Breakout Bay Cable Routing Guide, ADCP-90-329, Issue 1, dated February 2002 has been prepared by ADC Telecommunications Inc, to guide in the installation and routing of the ribbon cable between the NORTEL Connect DX OC3 Hex card and the back of the Fiber Breakout Module. This routing guide will describe the stenciling, routing and connecting of the ribbon cable on the OC 3 Hex card. This routing guide also shows the correct use of the Interbay Management Panel (IMP) for patch cords and for jumper storage. In addition the routing guide shows the correct routing for the fiber cross-connect jumpers.

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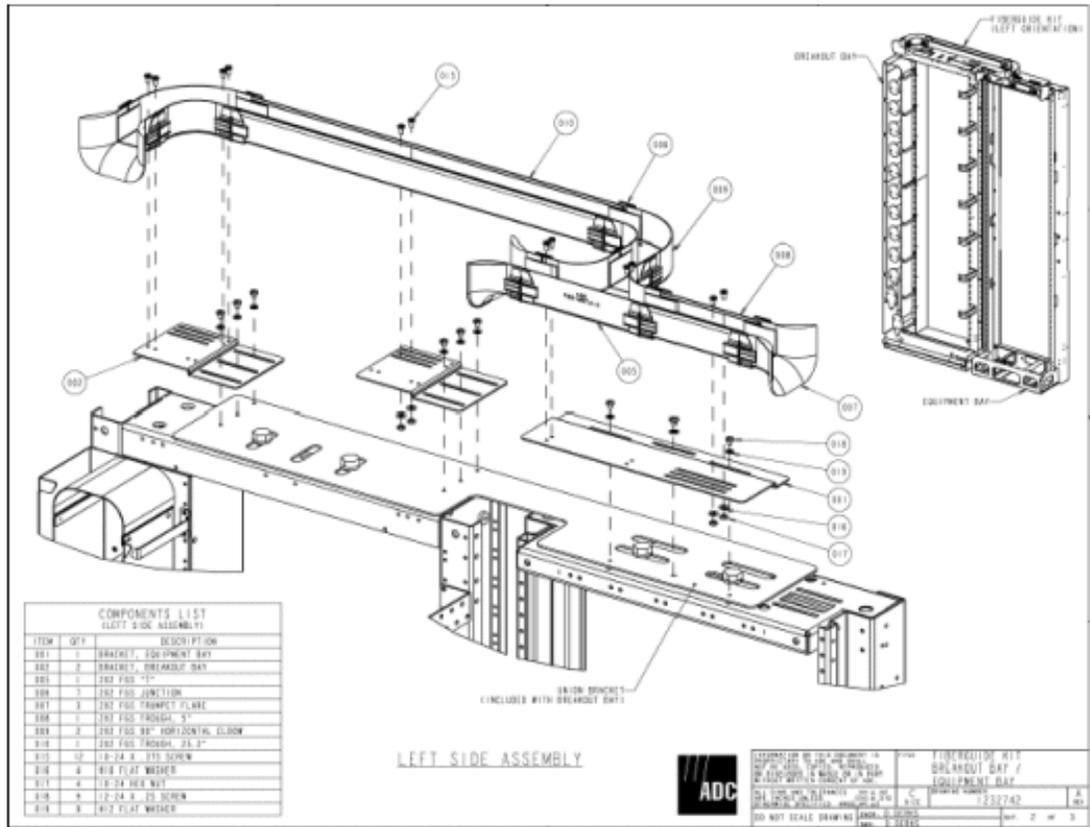
This ADC illustration shows the Breakout Bay configuration, cable management system and the fiber raceway needed between bays.

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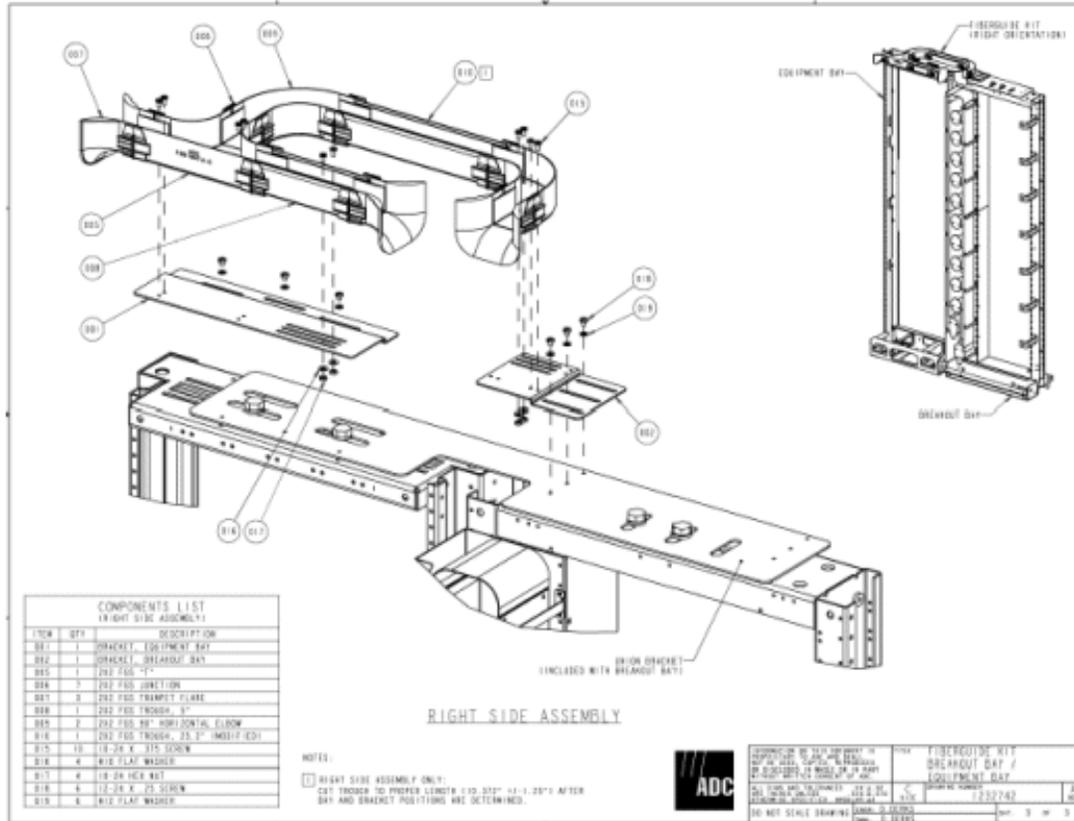
This ADC Drawing shows the FiberGuide Routing associated with the kit to connect the Breakout Bay with the Nortel Ptera Connect DX Bay, fiber feed to the opposite side of bay.

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This ADC Drawing shows the FiberGuide Routing associated with the kit to connect the Breakout Bay with the Nortel OPTera Connect DX Bay, fiber feed is adjacent.

Testing of the OC 3 signals from the OC 3 Hex card will be accomplished from the front of the Breakout Module. One Breakout Module has eight horizontal rows with eight SC-UPC, SingleMode connectors in each row for a total of 64 ports or SC-UPC, SingleMode connectors. This configuration will support two OC 3 Hex cards. The top four rows are for one OC 3 Hex card the top row is 1 to 8 Receive, the second row down is 1 to 8 Transmit, the third row down is 9 to 16 receive and the fourth row down is 9 to 16 Transmit. The second set of four rows is for the second OC 3 Hex card.

Each time you add two OC 3 Hex cards in the NORTEL Connect DX bay you must add one new Breakout Module, with the associated ribbon cables, part # FMX-NB-6R277000000 and two IFC cables of the appropriate length.

This product is intended to support both new and previously installed NORTEL Optera Connect DX equipment. Refer to the ordering information regarding the minimum configuration for each NORTEL equipment site.

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C. Embedded NORTEL Installations

Effective immediately, all existing Nortel OPTera Connect DX installations will be required to have an ADC Breakout Bay installed. In addition, the installation of a special Fiber Raceway dedicated between the NORTEL Eqpt and the Breakout Bay will be required in addition to any standard Central Office infrastructure FiberGuide raceway placements. The dedicated Fiber Raceway will be for the MPT-SC special cabling arrangement only.

The minimum ADC Breakout Bay configuration shown below will be used to replace an empty non-Hendry or Newton Frame has been placed adjacent to the NORTEL eqpt.

FMX-NB-FRM2612P

Minimum breakout bay, is 26" wide X 12" deep, gray in color, and includes the following:

- (1) Frame, zone 4 earthquake rated,
 - (1) Breakout Module, w/ ribbon cables, FMX-NB-6R277000000
 - (1) fiber storage panel, Interbay Management Panel
 - (1) 2" X 6" interbay FiberGuide Trough kit, FGS-KIT-BB01
- cable rings, set of (7)

Supplied by Telamon as the distributor.

PID: 3010054771 CPR: N/A CLEI: N/A
SNET PID: 3583048

For installations where an empty Hendry or Newton bay exists next to the NORTEL eqpt, a retrofit kit can be ordered to modify that bay to support the ADC Breakout Bay Configuration.

FMX-NB-FRM2612Q

Retro fit kit, to mount in existing Hendry or Newton earthquake rated frame,

- (1) Breakout Module, w/ ribbon cables, FMX-NB-6R277000000
 - (1) fiber storage panel, Interbay Management Panel
 - (1) 2" X 6" interbay FiberGuide Trough kit, FGS-KIT-BB01
- cable rings, set of (7)

Supplied by Telamon as the distributor.

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D. New NORTEL Installation Sites

New installations of the NORTEL equipment will need the addition to the order of the ADC Breakout Bay in the following configuration (plus the Fiber Raceway between the bays):

FMX-NB-FRM2612P

Minimum breakout bay, is 26" wide X 12" deep, gray in color, and includes the following:

- (1) Frame, zone 4 earthquake rated,
 - (1) Breakout Module, w/ ribbon cables, FMX-NB-6R277000000
 - (1) fiber storage panel, Interbay Management Panel
 - (1) 2" X 6" interbay FiberGuide Trough kit, FGS-KIT-BB01
- cable rings, set of (7)

Supplied by Telamon as the distributor.

PID: 3010054771 CPR: N/A CLEI: N/A
SNET PID: 3583048

3.1. Growth Items

One DX panel is required for every two Hex OC-3 cards. They should be placed in the bay from the bottom to the top. The (2) 32-count cable which run from the front of the DX breakout bays to FDF line-up is ordered separately from bay and growth panels. Check the existing FDF line-up for a vacant 72-position panel for the termination of these (2) 32-count cables. Below are the custom configurations where the breakout bay and OC-192 bay are not located adjacent to each other such as a CPE location. Both a panel with custom length cable and a separate fiber trough is required.

FMX-NB-6R277000000

DX Panel, 64 Port Module for use in CO with qty (8) eight fiber Ribbon cables, 27 feet in length, MTP female connectors on one end for Hex OC-3 card, SC connectors for rear termination on DX Bay. Order from Telamon.

PID: 301054797 CPR: 204504 CLEI: LGCYA28CAA
TIRKS Code: 357C
SNET PID: 3583050
FPM-07/0BD100F-49

IFC cable, 32 fiber bundle, 1.7mm loose tube subunits, terminated at one end with high performance SC connectors, stub ended at other end, 100 feet in length. Order from Telamon

PID: 301054805

SNET PID: 3583051

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FPM-07/0BD200F-49

IFC cable, 32 fiber bundle, 1.7mm loose tube subunits, terminated at one end with high performance SC connectors, stub ended at other end, 200 feet in length. Order from Telamon.

PID: 301054813

SNET PID: 3583052

FPM-07/0BD300F-49

IFC cable, 32 fiber bundle, 1.7mm loose tube subunits, terminated at one end with high performance SC connectors, stub ended at other end, 300 feet in length. Order from Telamon.

PID: 301054821

SNET PID: 3583053

FPM-07/0BD500F-49

IFC cable, 32 fiber bundle, 1.7mm loose tube subunits, terminated at one end with high performance SC connectors, stub ended at other end, 500 feet in length. Order from Telamon.

PID: 301054839

SNET PID: 3583054

MRE-AF/07BA027F-56

Replacement Ribbon breakout cable, 8 fiber, terminated at one end with high performance SC connectors, 8 fiber MTP female connector at other end, 27 feet in length. Order from Telamon.

PID: 301054847

SNET PID: 3583055

3.2. CPE or Non-standard applications

For CPE applications where the OC192 equipment is greater than 2 bays away from the breakout bay a DX panel with a custom length cable will be created. Both the DX panel with a custom length cable and a separate fiber trough are required for these installations. A separate storage panel will also be required, use either the IMP or FMT panel. These panels can mount in either a 19-inch or 23-inch bay. Call ADC for the pricing and catalog number. Allow 3 weeks for delivery.

FMX-NB-6S337000000

64 Port Module for CPE application with qty (8) eight fiber Ribbon cables, 33 feet in length, MTP female connectors on one end for Hex OC-3 card, SC connectors on other end for rear termination on DX Bay. **Order direct from ADC, not Telamon.**

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PID: 301054854 CPR: 204504 CLEI: LGCYA28CAA
TIRKS Code: 357C
SNET PID: 3583056
FMX-NB-6S43700000

64 Port Module for CPE application with qty (8) eight fiber Ribbon cables, 43 feet in length, MTP female connectors on one end for Hex OC-3 card, SC connectors on other end for rear termination on DX Bay. **Order direct from ADC, not Telamon.**

PID: 301054862 CPR: 204504 CLEI: LGCYA28CAA
TIRKS Code: 357C
SNET PID: 3583057

4. ORDERING & PROVISIONING

A. Account Classifications

For the installation of all associated cabling and equipment supporting the NORTEL equipment including the ADC Breakout Bay and cabling the account classification is 357C.

B. Initial Installation

The initial installation of the ADC Breakout Bay will provide for one Breakout Module suitable to support the first two OC 3 Hex cards that may require up to 64 fiber terminations. The trigger for this installation will be either with the first deployment of the NORTEL OPTera Connect DX equipment or the need to augment an existing site during the original trial testing.

C. Augments to existing Breakout Bay Deployments

When the first orders arrive for the OC3 services, requiring the utilization of the OC 3 Hex cards on the NORTEL OPTera Connect DX system, the requesting engineer will need to notify the TEE/FEE/DTE on an interim basis prior to the exhaust of the first module/panel. Each time you add two new Hex cards, a Breakout Module must also be ordered and installed to the FDF. The TEE/FEE/DTE will then immediately issue a TEO to have the next Breakout Module installed and terminated using IFC cables with a subtending FOT panel in the FDF being placed as well.

D. Product Approval Notice for the ADC Breakout Bay

ATT PAN 20021030, ADC Fiber Breakout Bay in support of the NORTEL OPTera Connect DX System, Issue 1, dated April 2002 has been issued to cover this fiber interface arrangement. This document may be obtained with parts listings and pricing for the Breakout Bay and bay materials. Refer to <http://pan2.sbc.com/>

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E. Minor Materials Cabling

The IFC cables between the Breakout Modules and the FOT FDF panels will be ordered as minor materials and installed by the **ATT-13STATE** Authorized Vendor. The cable needed for this installation will be IFC cable, 32 fiber bundle, 1.7mm loose tube subunits, recommended to be terminated at one end with high performance SC-UPC SingleMode connectors, stub ended or connectorized at other end per local practices. Per ATT-ED-0136-E, Issue 11, the Fiber Cable Standard reflects the following manufacturers suitable to provide this cable with the following restrictions:

Restrictions:

- Fiber Tie Cable shall be purchased directly from the manufacturers shown (this material shall not be purchased from other distributors).
- The breakout length (distance from end of the outer jacket to connectors) on fiber tie cable should be based on job conditions, minimum bend radius requirements and the protection of the exposed conductors.
- The exposed conductors shall have a 900-micron design.
- The Fiber Raceway (yellow duct) is not to be used for fiber cabling. Raceways are used for Fiber Jumper Cross-connects.

ATT Approved Manufacturers:

Corning, Empowercom, Pirelli, Sumitomo, ADC, Alcoa/Fujikura, OFS (ex-Lucent), Optical Datacom and Telect.

F. Building Block & ATT-13STATE Authorized Vendor Process

The Building Block process is being developed to support the Fiber Deployment for the NORTEL equipment at this time. Documentation regarding this Building Block Process may be found under the Web Site:

<http://transdata.sbc.com/tbp/bbmain.cfm> .

5. OPERATIONAL CONSIDERATIONS

Testing of the OC-3 Signals from the OC-3 Hex card will be accomplished from the front of the Breakout Module. All jumpers and MPT/MPO cables will be cleaned and installed by the LFO personnel.

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6. CIRCUIT ASSIGNMENTS & MANAGEMENT

A. TIRKS Assignments & E1 Loading

The bay and associated breakout modules will perform simply an interconnection function. The termination for the Nortel equipment in TIRKS will reflect the location of the Breakout Bay (as the cable termination point). Each 64-port breakout module will be terminated via IFC cabling to a 72-port (or equivalent FOT panel located in the FDF. The stenciling and nomenclature will follow ATT-E-01110-W, Interconnection Drawing for the Nortel OPTera Connect DX, Issue 3, dated April 2002.

The remaining ports on each FOT can be used for other termination assignments. Only place one breakout module per FOT panel and do not use the remaining terminations for a portion of a second breakout module. FOT assignments will follow standard E1 inventory standards for equipment posting.

B. Termination Layouts & Stenciling

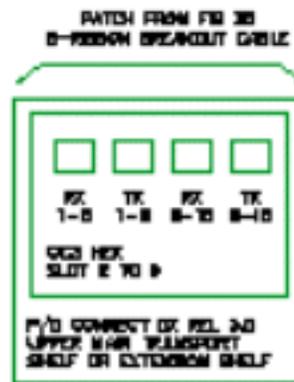


FIG 34
 64X HEX CARD
 REL. 4.0
 NOTE 7, TABLE 34A

TABLE 34A		
64X HEX CARD SLOT/CIRCUIT NUMBERS		
SEE ALSO 300-C-61110-C FIG 9.		
SHELF	SLOT	CIRCUIT
UPPER 64X 72-PORT	E	1A-1EA
	3	1B-1BA
	4	1C-1CC
	6	1D-1DD
	8	1E-1EE
	7	1F-1FF
	8	1G-1GG
	8	1H-1HH
8	1I-1II	
EXTENSION	E	1J-1JE
	2	1K-1KE
	4	1L-1LE
	5	1M-1ME
	8	1N-1NE
	7	1O-1OE
	8	1P-1PE
	8	1Q-1QE

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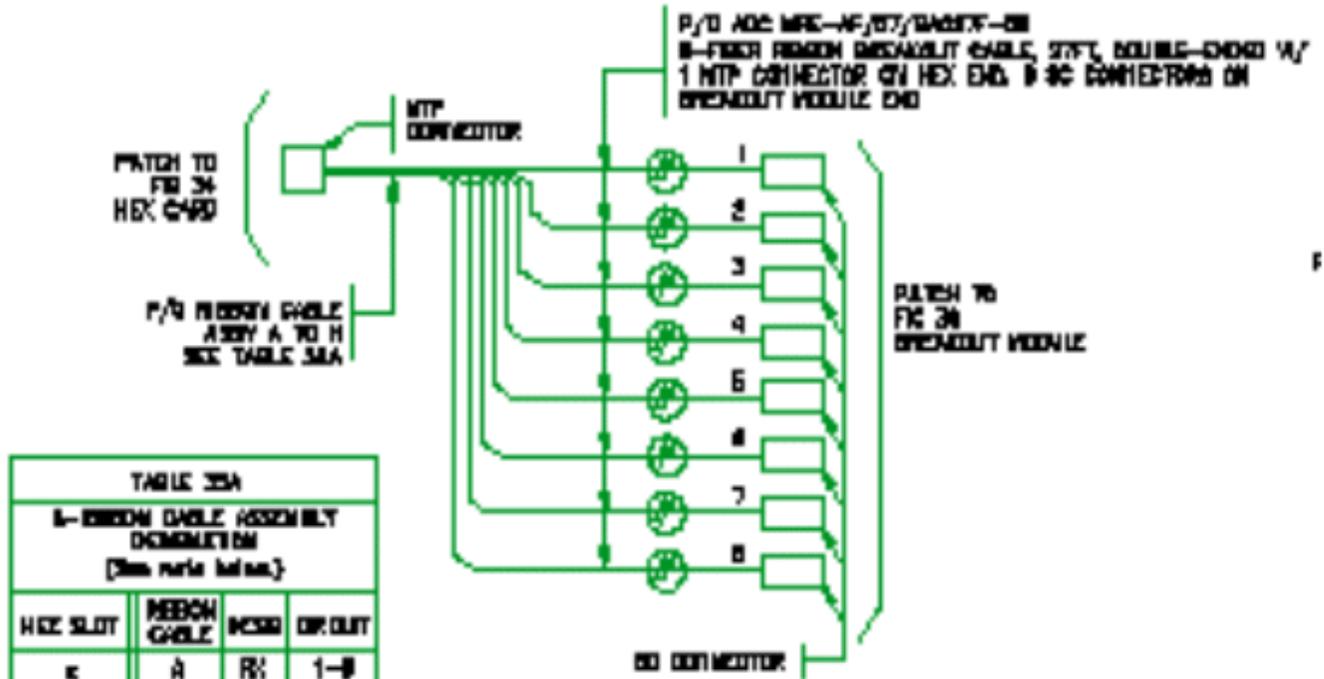


TABLE 35A
8-FIBER CABLE ASSEMBLY CONNECTION
 (See notes below.)

HEX SLOT	FIBER CABLE	WAVE	DIR. OUT
K (1st HEX Card of J)	A	RZ	1-B
	B	TK	1-B
	C	RZ	8-18
	D	TK	8-18
Y (2nd HEX Card of J)	E	RZ	1-B
	F	TK	1-B
	G	RZ	8-18
	H	TK	8-18

FIG 36
8-FIBER BREAKOUT CABLE

NOTE: A total of four 8-Fiber Fiber assemblies, A to D or E to H, is required per area 003 HEX card, or eight assemblies, A to H, for 888 Breakout Module.

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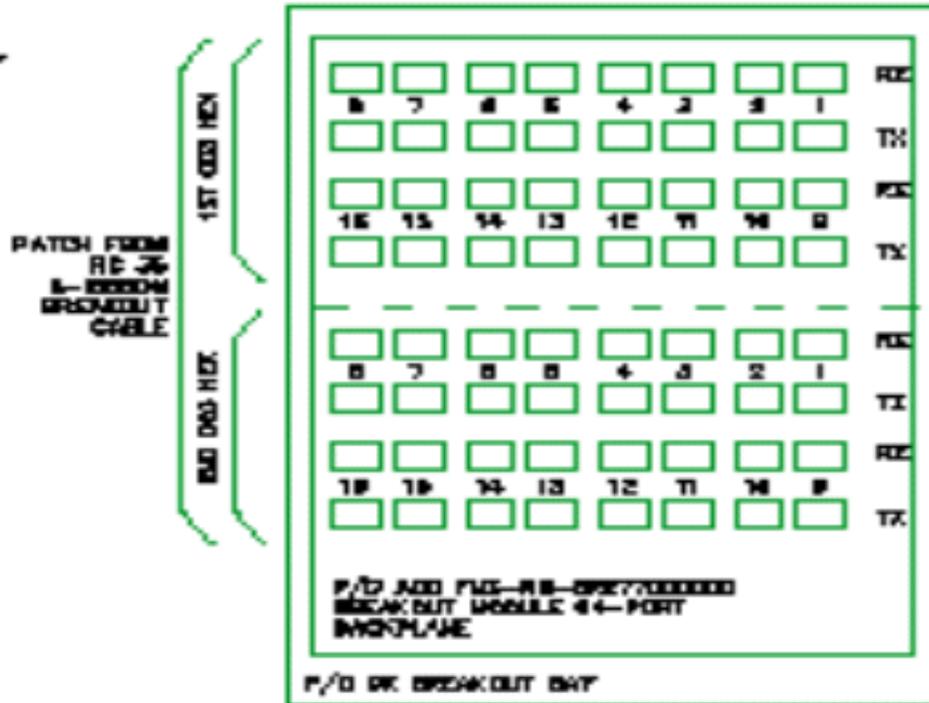


FIG 35
 8-BRODM MODULE INPUT
 REAR VIEW

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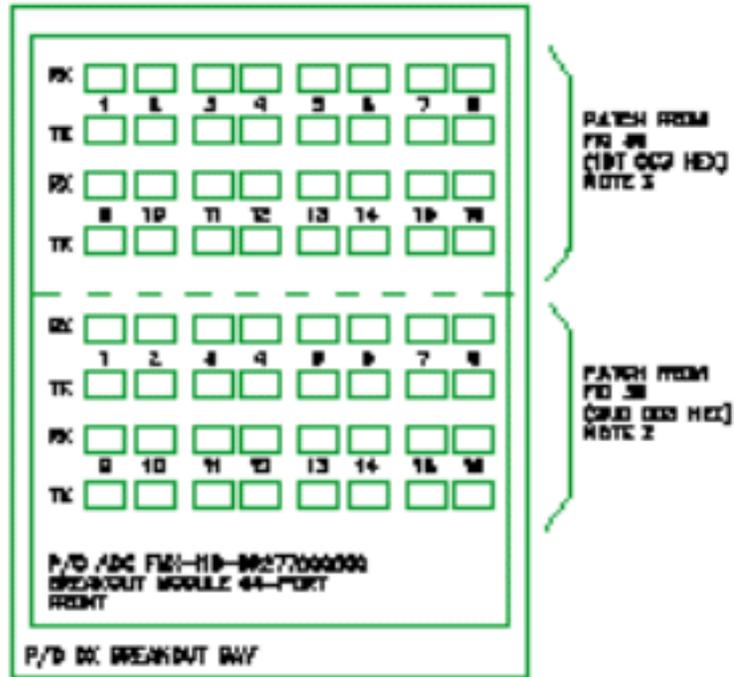


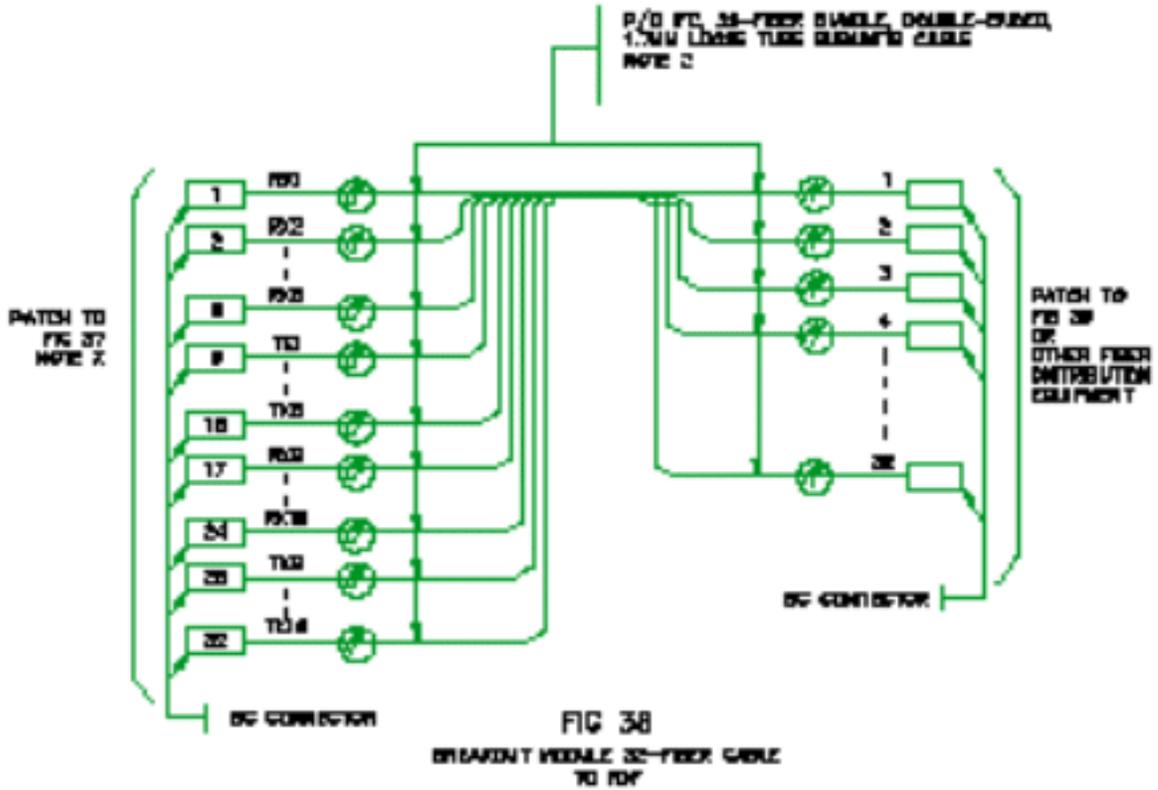
FIG 37
BREAKOUT MODULE OUTPUT
FRONT VIEW

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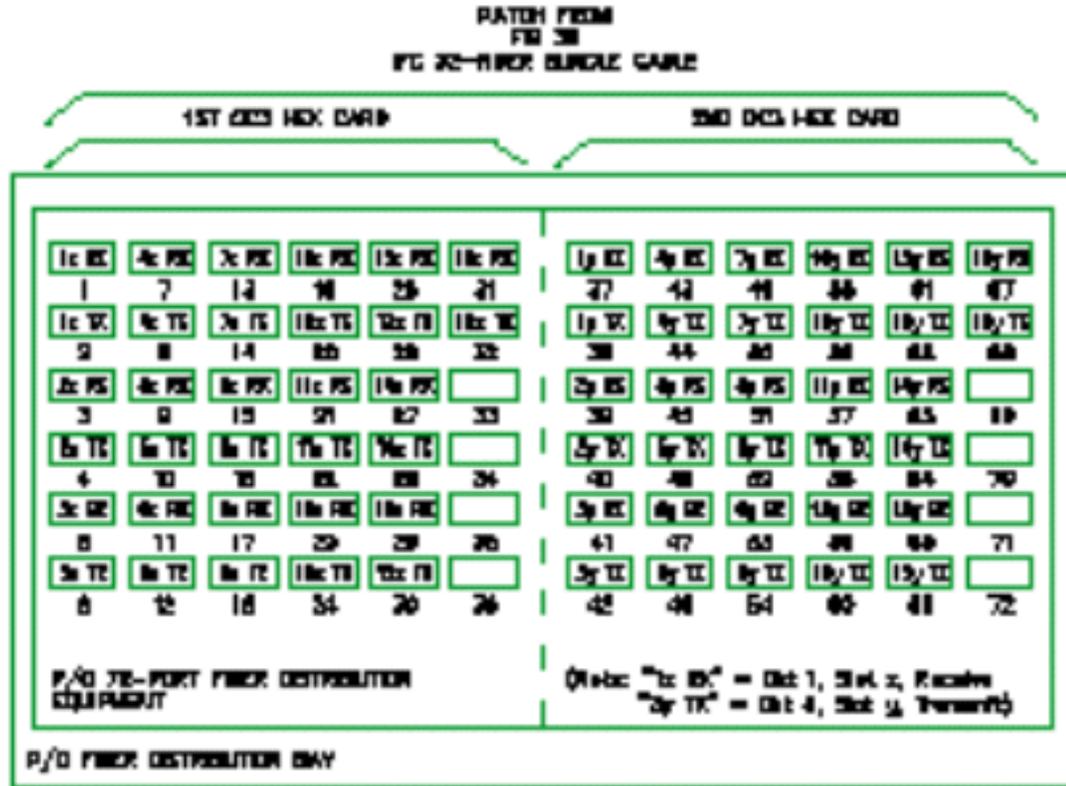


FIG 39
 72-PORT FIBER DISTRIBUTION MODULE

7. CABLE ROUTING

A. ADC Breakout Bay to FOT (IFC Cabling)

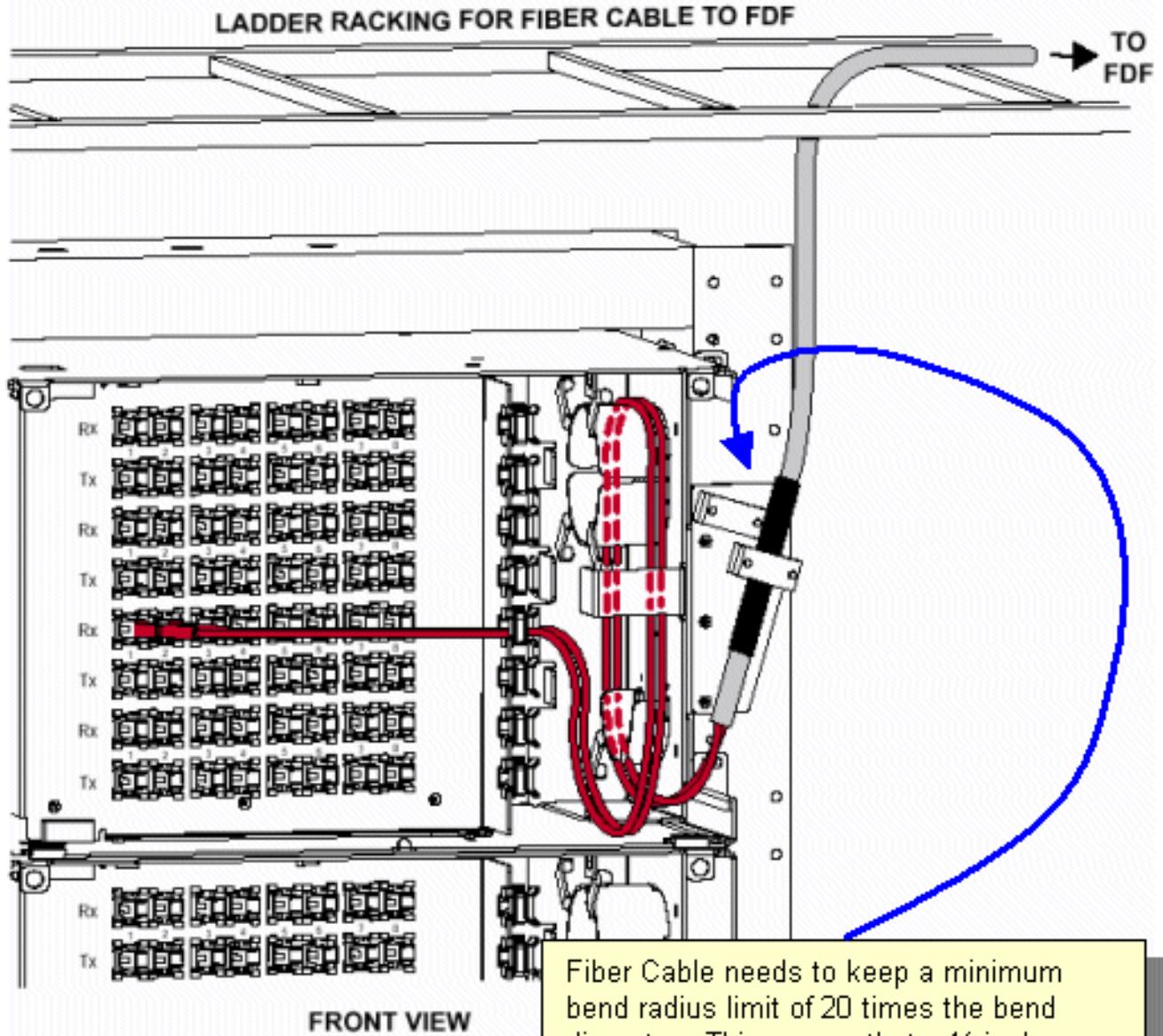
Correct Routing For Multi-Fiber Cable

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Fiber Cable needs to keep a minimum bend radius limit of 20 times the bend diameter. This means that a ½ inch diameter cable would require 20 inches to make a full 180-degree arc turn. In this instance, the 900 micron jacketed fiber cables would need to coil around the upright management fingers.

B. Cabling between the Breakout Bay and the NORTEL Equipment Bay

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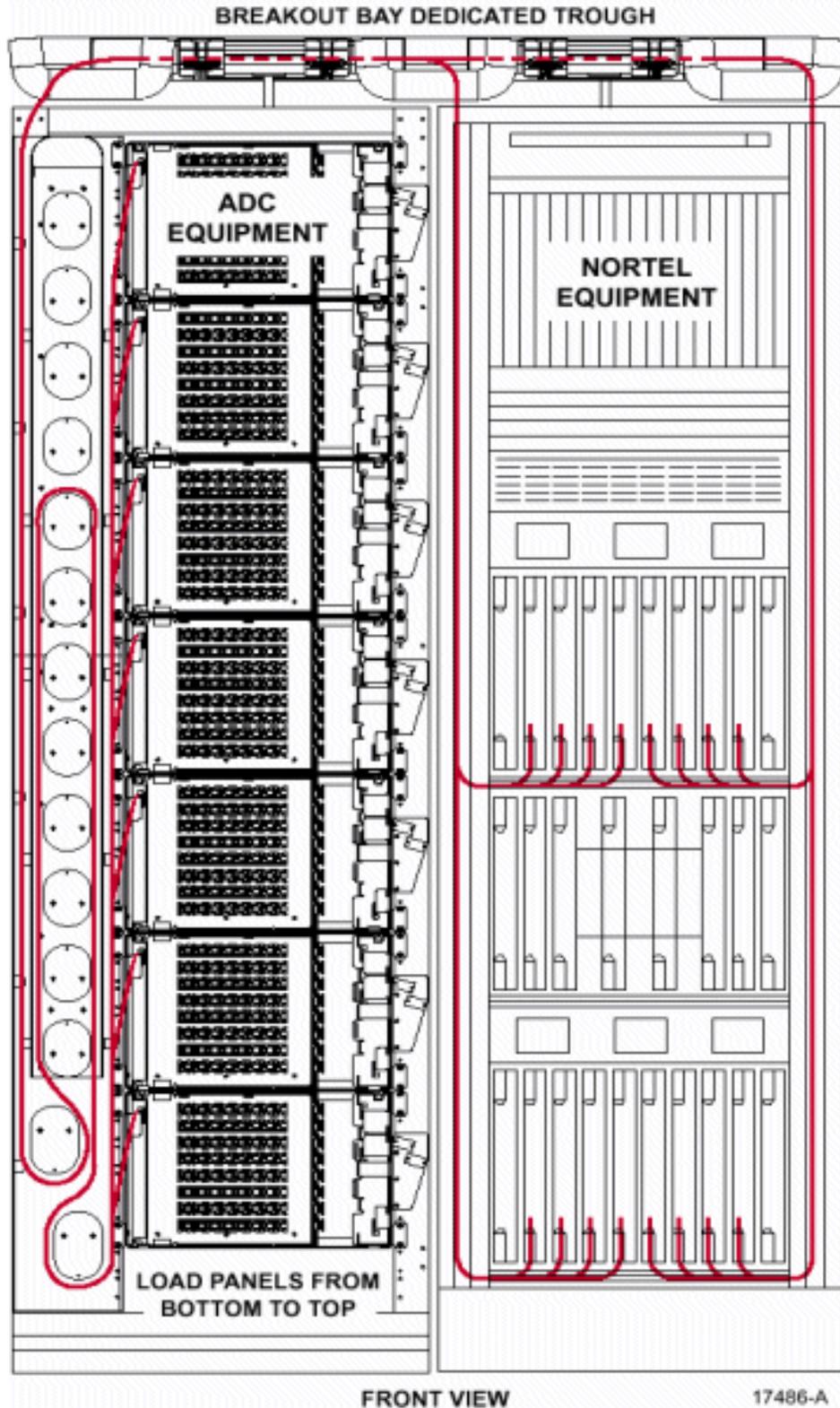
Correct Use of Innerbay Management Panel (IMP) For FOT Ribbon Breakout Cables

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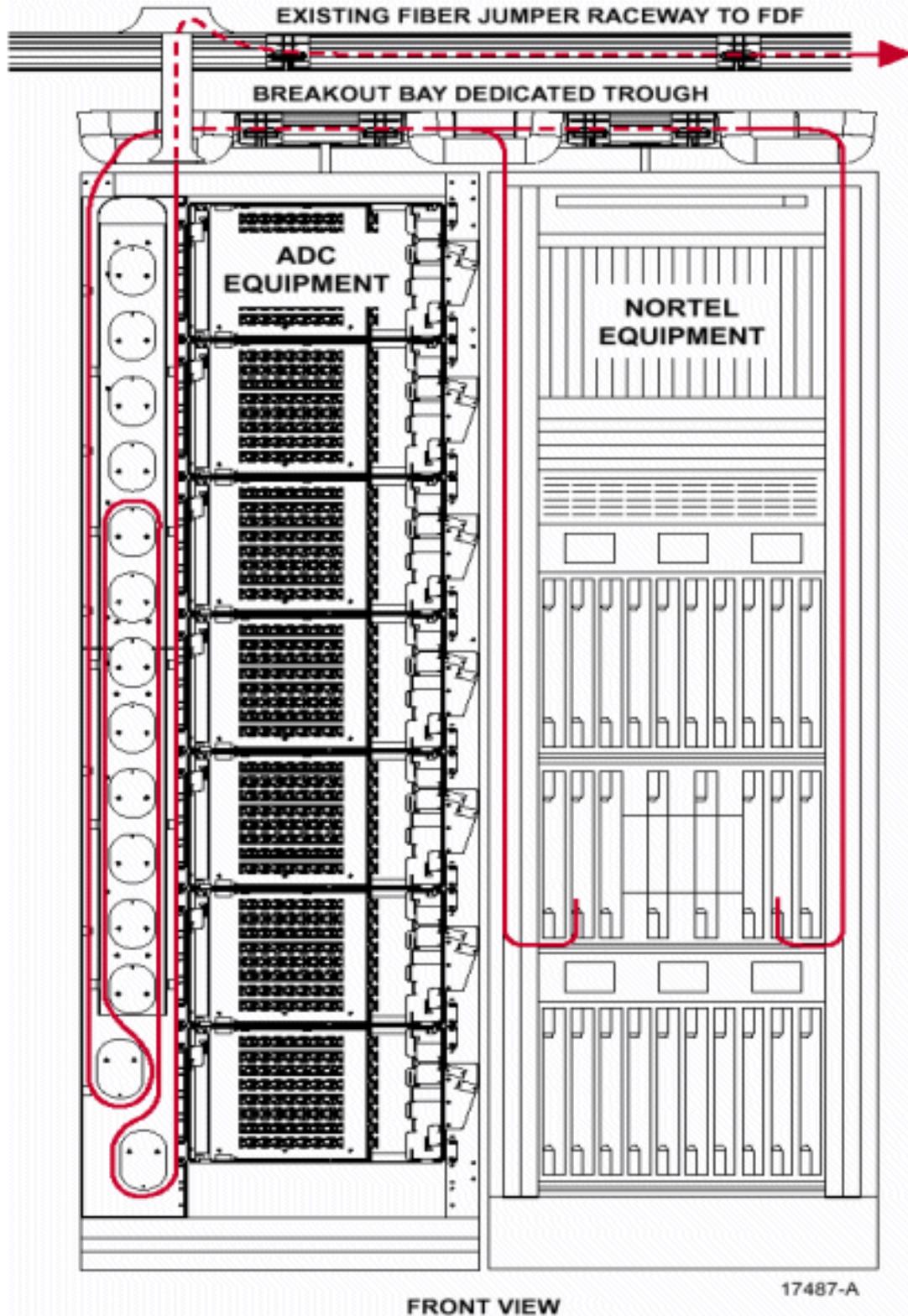
C. Correct Use of the Interbay Management Panel (IMP) for Jumper Slack Storage for High Speed Termination

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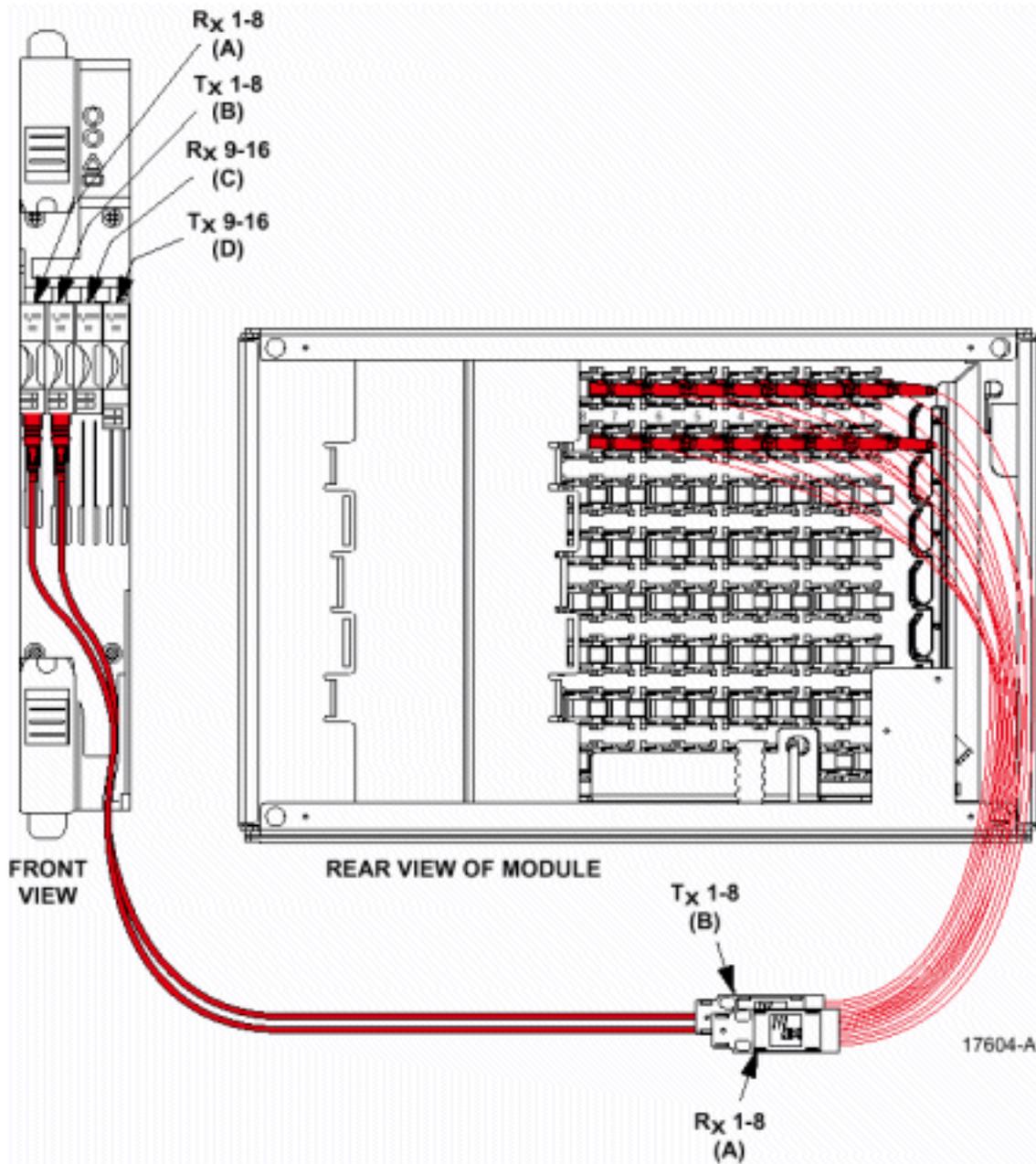
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D. Correct Routing for Nortel HD OC-3 HEX Cards



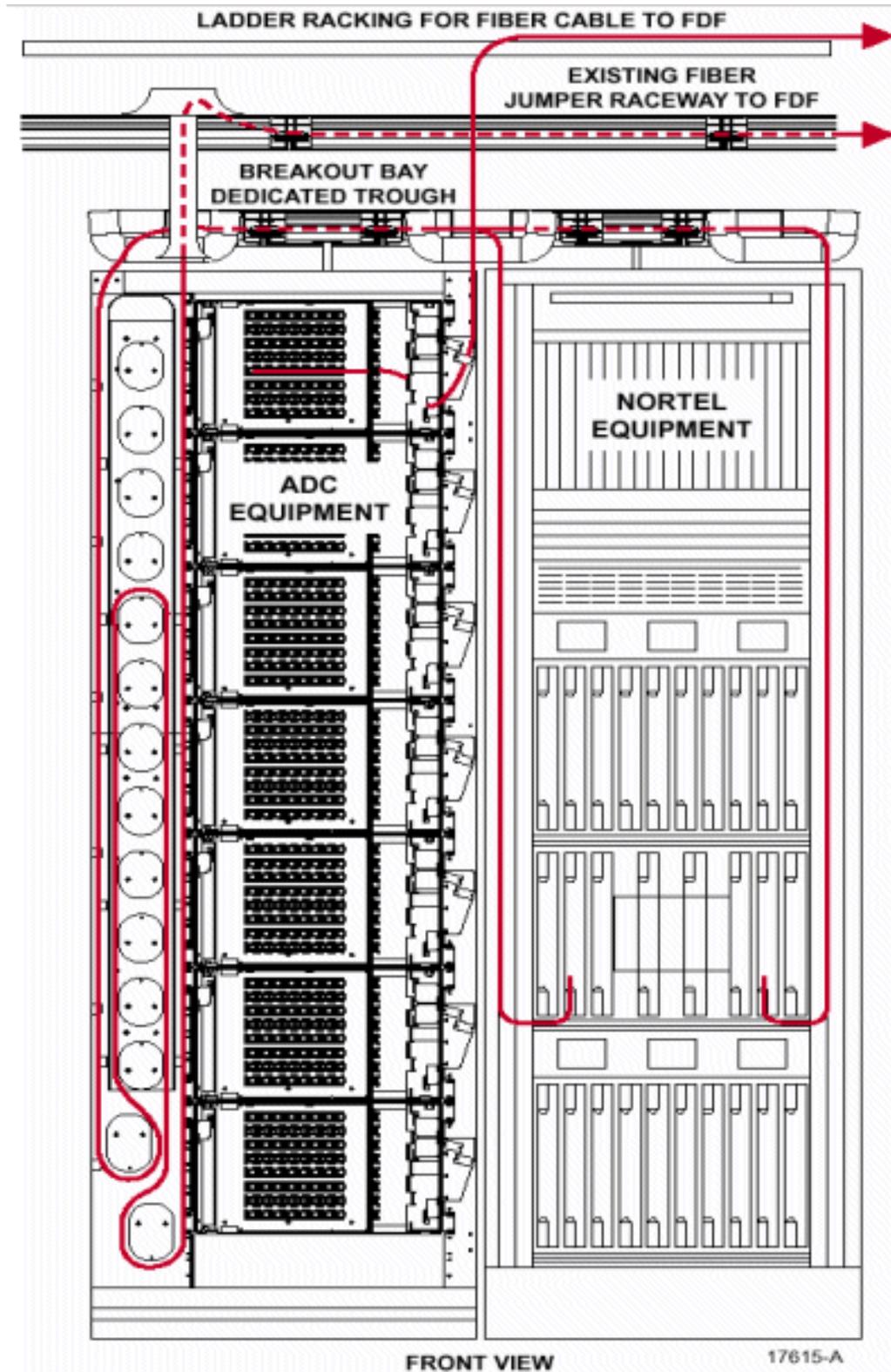
E. Correct Overhead Routing

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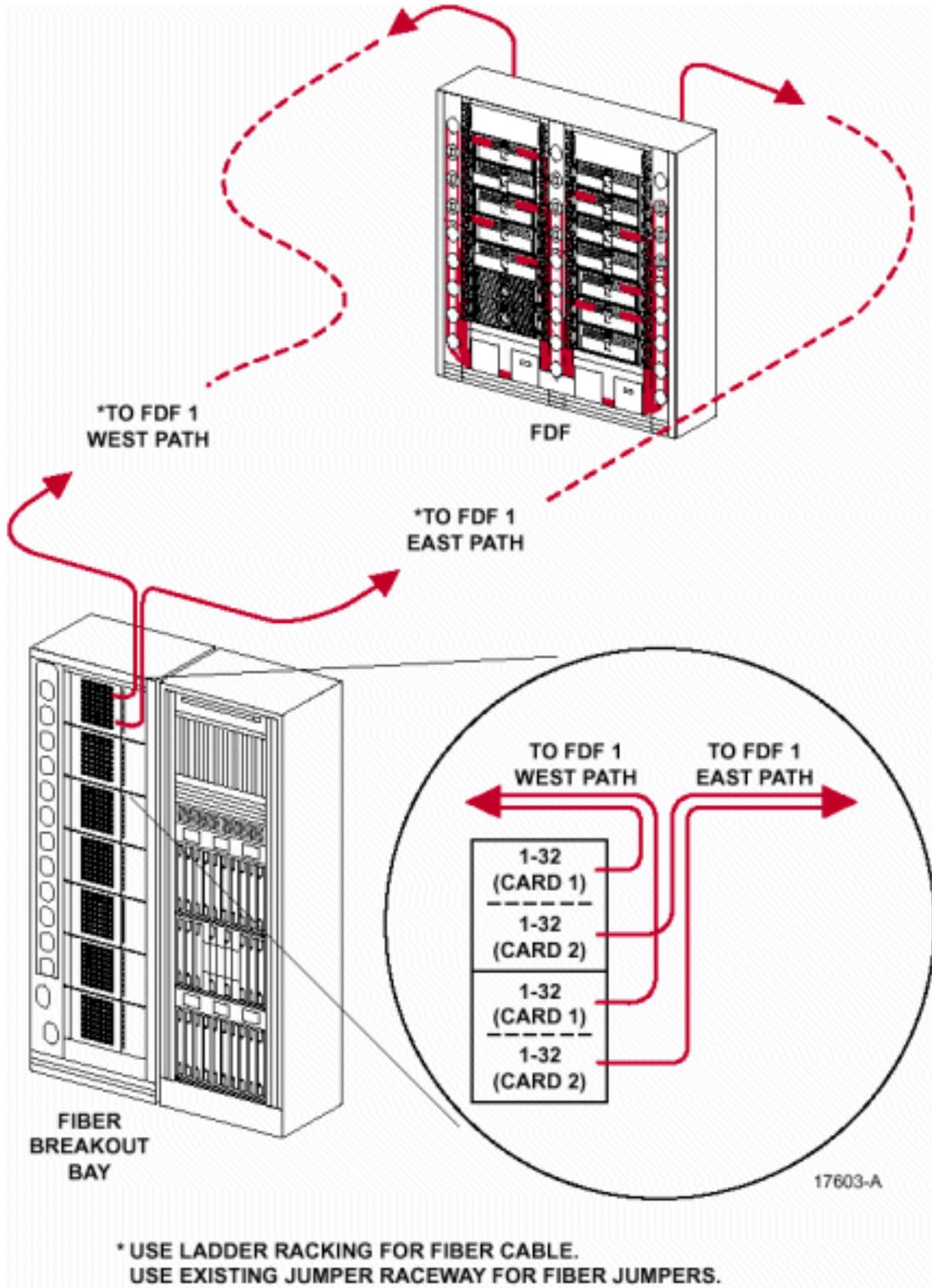
F. Correct Routing for Diverse Routing Paths

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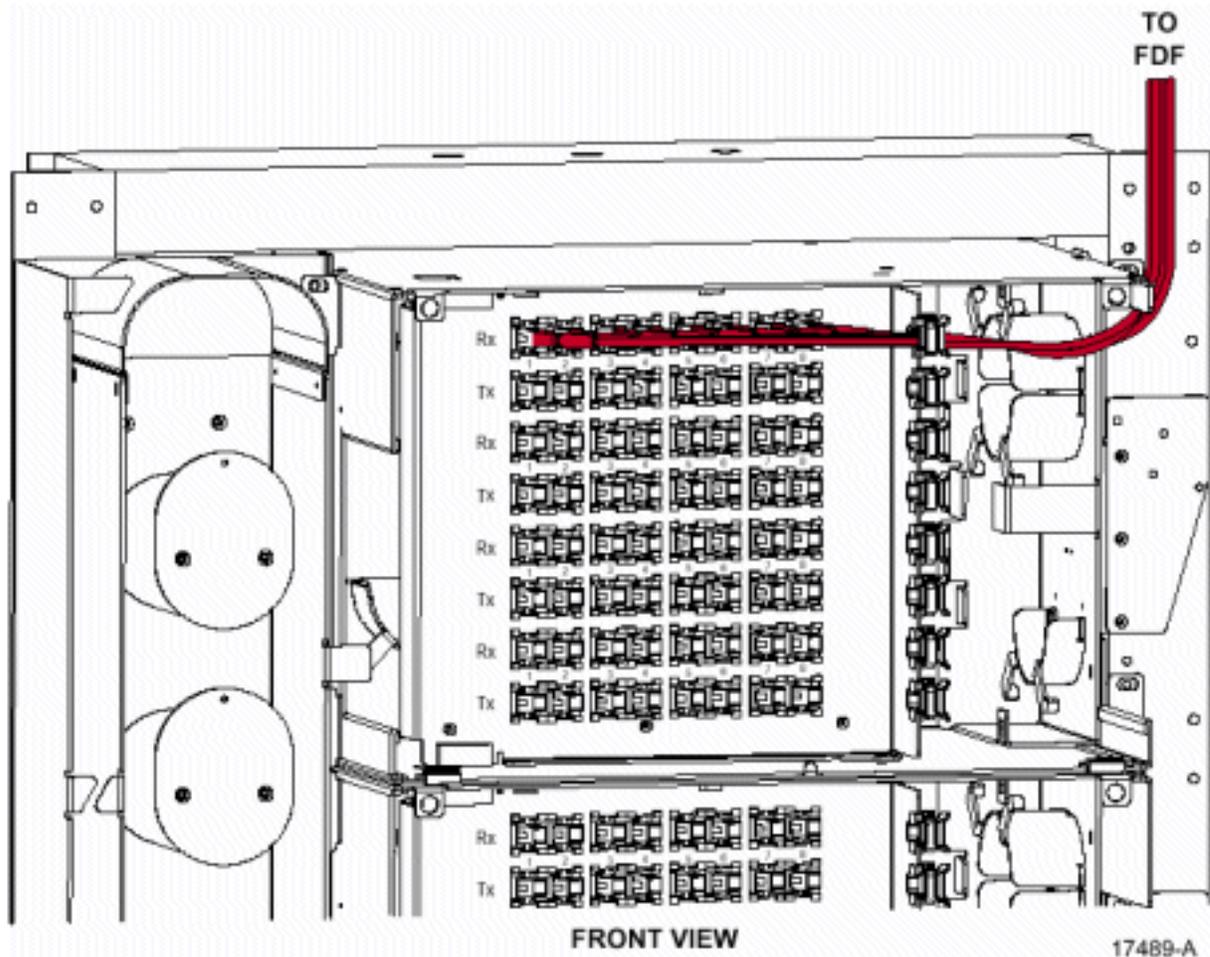
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G. Correct Routing for Fiber Jumpers



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Document	Description	Issue & Date
ATT-002-316-043	ATT-FDF Frame Deployment M&P Replaces AM-915-890-953 effective Dec 2001 Replaces AM IL 95-07-017 effective Dec 2001	Issue 3, Dec 2001
ATT-002-316-053	ATT-Fiber Raceway Deployment M&P	Issue 3, Jan 2002
ATT-002-316-066	ATT-Breakout Bay Deployment in Support of the NORTEL OPTera Connect DX System	Issue 2, June 2002
ATT-002-203-001 Section 13	Infrastructure Deployment Guidelines, Transport, Wavelength Division Multiplexing (WDM)	June 2002
ATT-002-203-001 Section 12	Infrastructure Deployment Guidelines, Transport, Fiber Optic Splitters	June 2002
ATT-002-203-001 Section 4	Infrastructure Deployment Guidelines, Transport, Fiber Distribution Frames (FDF)	June 2002
ATT-C-500001-E-00	ATT-13STATE Fiber Raceway Drawings	Current
ATT-E-01110-E	ATT-13STATE Equipment Drawing for the Nortel OPTera Connect DX	Current
ATT-E-01110-W	ATT-13STATE Interconnection Drawing for the Nortel OPTera Connect DX	Current
ATT-E-00136-E	ATT-13STATE Fiber Cable Standards	Issued 2002
TP 76200MP	Network Equipment - Building Systems (NEBS)	Issued 2001
TP 76300MP	Installation Guide within the Central Office	Issued 2001
TP 76400 MP	Detail Engineer Requirements for the C.O.	Issued 2001
RFQ2001000147	ATT RFQ for High Density-Fiber Distribution Frames	Nov 2001
ATT-PAN-2002-3001	ATT-Standard for Fiber Jumpers & ATTenuators	June 2002
PAN 20021030	ATT-Fiber Breakout Bay Product Approval Notice for the Nortel OPTera Connect DX Platform	Apr 2002

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PAN 20011120	ATT-AIT Restricted Approval for AIT only with Sunset Clause for FMDF	Dec 2001
PAN 19995018	Frames (FDF) and FiberOptic Apparatus	Jun 1999
PAN 19985043	Fiber Protection Systems (Raceways &Fiber Duct Work)	Aug 1998
BSP 800-003-150MP	ATT-Cable & Wire Installation for Cable Racks and (Fiber) Raceways	Issue 1, Sep 1998
BSP 636-299-900MP	ATT-Fiber Distribution Frame &FiberOptic Deployments within a C.O.	Issue 1, Feb 2000 (Issue 2 Pending)
ATT-NOT-000-000-473	ATT-Optical In-Line ATTenuators Use	Issue 1, June 2002
ATT-NOT-000-000-346	ATT-FMDF Restricted Use Approval with Sunset Clause Announcement	Issue 1, Dec 2001
FLASH-2001-015	ATT-Construction Support SC-ST Conv. in SWBT	Jun 2001
FLASH OSP-4/23/2002	ATT-Cleaner, Fiber Optic Connector Universal	Apr 2002
SO.520.99.043	TRI-Recommendation to Replace Biconic Connectors	Issue 1, Mar 1999
GR-449-CORE	Telcordia-Fiber Distribution Frames	Issue 1, Dec 1999 (Issue 2 Pending)
ADCP-90-329	ADC-Fiber Breakout Bay Cable Routing Guide	Issue 3, Apr 2002
ADCP-95-007	ADC-FDF Interbay Cross-Connect Wiring Procedures	Jun 1999
ADC/Splitter & WDM Products	ADC-WDM Product Description	Issue 2, Jun 2001
ADC/AOFR	ADC-1310/1533/1557 Wavelength Division Mux/Demux	Issue 1, Aug 1996

9. CONTACTS

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