



ATT-002-316-053

Fiber Protection System M&P

Abstract

Presented in this document are the methods and procedures to implement ADC FiberGuide Fiber Protection System for the placement of fiber optic jumpers in the Central Office.

Audience: The primary audience for this document is AT&T Local Exchange Carrier personnel in the following disciplines, Switch Capacity Planner/Engineer, Resident Engineer, Transport Equipment Engineer (TEE), Facility Equipment Engineer (FEE), Digital Transport Engineer (DTE), Space Planner, Frame Planner, Long Range Technical Planners and Network Operation (LFO) organizations. . This document is to be used internally within AT&T-13STATE and their Authorized Vendors and have a limited distribution subject to the header/footer information. This M&P may be found on the Internal Web Sites listed below:

Effective Date: December 21, 2001

Date Issued: Issue 3, December 21, 2001

Expires On: Next Issue Distribution

Related Documents: See Reference Section of this document.

Issuing Dept: AT&T Services, Network Planning & Engineering

Business Unit: Network

Documents Coordinator: Ed Granger (203)-553-8180 E-Mail: eg1724@att.com

Author(s):

Mike Yeilding – (925) 823-4747, E-Mail: mlveild@att.com

Ed Granger – (203) 553-8180, E-Mail: eg1724@att.com

Steve Weinert – (214) 858-1355, E-Mail: sw0872@att.com.

Dave Dorman – (913) 676-1781, E-Mail: dd2223@att.com

Table of Contents

1. REASONS FOR REISSUE	3	Deleted: 3
2. INTRODUCTION	4	Deleted: 4
3. DEPLOYMENT PLAN	4	Deleted: 4
3A. ENGINEERING CONSIDERATIONS	4	Deleted: 4
3B. INSTALLATION CONSIDERATIONS	4	Deleted: 4
3C. MINIMUM TROUGH SIZING	5	Deleted: 5
3D. EXPRESS RACEWAY TROUGH	6	Deleted: 6
3E. DIVERSE ROUTING	6	Deleted: 6
3F. CODING AND CLASSIFICATION	6	Deleted: 6
3G. ORDERING INFORMATION	7	Deleted: 7
4. REFERENCES	8	Deleted: 8
5. CONTACTS	9	Deleted: 9
5A. AT&T CORPORATION CONTACTS	9	Deleted: 9
5B. MAJOR MANUFACTURER CONTACTS	9	Deleted: 9
5C. DISTRIBUTOR CONTACT	9	Deleted: 9
6. COPYRIGHT PAGE	10	Deleted: 10

1. Reasons for Reissue

Issue 3, Section 3, Paragraph 3.B: Provide clarity and definition on diverse fiber protection systems.

Issue 3, Section 3, Paragraph 3E: Provide clarity on the requirements for diverse fiber protection system.

Issue 3, Section 4: Update Common Systems website address and reference to document ATT-002-316-043 as Issue 3.

2. Introduction

The ADC Fiber Protection System product line will be used in the AT&T Corporation. The actual products used in Local Exchange Company, henceforth referred to as **AT&T-13STATE**, will be determined by Network Engineering (Common Systems) working with the Frame Committee, Cross Functional Sourcing Team (Frame-CFST), each State organization and Engineering Center. Requests for modifications and improvement will be forwarded to the Network Engineering (Common Systems) for review. **These products will use the industry standard of bright yellow for the fiber raceway components. No other color is authorized for use.**

Documentation will be provided by ADC Telecommunications for each product with associated installation and use guidelines upon request, including CAD drawings and training video.

3. Deployment Plan

3A. Engineering Considerations

The growth of the equipment environment will determine the appropriate size of the raceway to use. Placement of the raceway and future access points to the system will be processed by the appropriate Engineering Center.

Requests for modifications of existing products will only be approved through the Network Engineering (Common Systems) technical staff listed in the Contact Section of this document. Proposed changes and modifications may be reviewed within the Frame Committee, as deemed necessary.

Adapters to connect the ADC FiberGuide system to other manufacturer's systems are detailed in the standards drawing ATT-C-50001-E-00.

ADC has developed templates or stencils for layout design of the FiberGuide. These templates are for use within Microsoft Visio Professional 2002 and Microsoft Visio Enterprise Network Tools, both available from Microsoft Visio by calling (800) 248-4746.

3B. Installation Considerations

Refer to the ATT-C-50001-C-00 drawing, and the user Manual provided by ADC Telecommunications, catalog number ADCP-90-116. Procedures will be forwarded upon request. The AT&T standards drawing ATT-C-50001-E-00 is a complete comprehensive standards representation that is the final authority for standard configurations.

The Fiber Protection System represents a separate and unique fiber optic protection system used only for fiber optic patchcords between Transmission and Switch equipment and the FDF. All equipment which uses fiber optic connectivity will hub to the FDF for all intraoffice connections. This protection system will provide both separation from all other cable racks and will provide a protection of the fiber optic patchcords from installation activity in a Central Office. The Protection System will provide routing capability for the SONET ring paths for **both** primary and protect connections from the Transport/Switch equipment to the FDF. The fiber pairs will be cross-connected at the FDF to either OSP facilities or to other intraoffice equipment. Diverse

routing capability from the NE to the FDF for the primary and protect paths shall be required. Diverse routing may be accomplished in two ways: **example 1**) by placing working and protect fiber patch cords on opposite sides of the same physical raceway or **example 2**) by placing working and protect fiber patch cords in completely separate physical raceways. It is not necessary to add multiple raceways down the same line-up simply to achieve route diversity, thus a maximum of only one raceway path per lineup will be allowed. Route diversity will be achieved via main aisles not line-ups. **Note: Once a high speed Optical Carrier system such as OC-192, its equivalent or higher speed system has been placed in the central office, diverse routing for connections between the high speed Optical Carrier and the FDF must be accomplished via example 2 listed above. Fiber diversity for Optical Carrier speeds less than OC-192 can be accomplished by example 1 or 2.** The Fiber Protection System will be provided to within 2 inches of the Fiber Distribution Frame (FDF) and located to the adjacent vertical trough and at the same level horizontally as the Transport/Switching Equipment termination point on the primary and protect routes. **Fiber Optic Cables will not be placed in the raceway/duct work of the Fiber Protection System.** Fiber Optic Cable placements within the Central Office will adhere to merged practice standards as outlined in BSP 800-003-150MP and Fiber Raceways will adhere to ATT-002-316-043, *Fiber Distribution Frame (FDF) Deployment M&P*. The **AT&T-13STATE** Standard Drawing is ATT-C-50001-E-00.

The FDF shall be the primary hub for the Local Exchange Company Central Office. The Fiber Protection System will be the primary tool for fiber optic cabling on each floor. The FDF will be treated as the common cable entrance and cross-connect point. When there is a need for fiber optic cabling to equipment on another floor, a tie cable will be terminated in a shelf on the FDF and will be directly terminated on a new satellite FDF bay on that other floor using a FOT shelf. The Fiber Protection Shelf will be extended from the FDF's to the equipment involved. With the deployment of high capacity Optical Carrier systems such as OC-192 and higher, to the Fiber Distribution Frame, it is strongly recommended that any FDF that has the forecast to provision OC-192's within the next 5 years should have raceway routes from the Optical Multiplexers to the FDF provisioned with 12" wide Fiber Protection System troughs. In addition, the Fiber Protection System over the FDF should have 12" wide horizontal troughs and 4" wide vertical troughs as a minimum throughout its length. Do not permit cable buildup of fiber jumpers to exceed 2-inches in depth at any point within the Fiber Protection System. The minimum trough size is 4-inches on a going forward basis; do not use the 2-inch for optical jumpers. In addition, use rectangular vertical troughs to bays, not "vacuum hose" arrangements. **Use of the flexible tube for vertical runs should be utilized only when absolutely necessary on an exception basis.**

3C. Minimum Trough Sizing

Fiber Raceway Provisioning Table

Trough Width Sizing	No Fiber Needs in the Lineup	Normal Fiber Need to Lineup w/i next 5-years	High (OC-192 DWDM) to Lineup w/i next 5-yrs	Main Routes & FDF have normal fiber demand	Main Routes & FDF have high demand	OC-192 or DWDM projected with existing troughs
2-inch	NO	NO	NO	NO	NO	NO
4-inch	NO	YES	NO	NO	NO	NO
6-inch	NO	YES	NO	YES	NO	NO
12-inch	NO	NO	YES RETROFIT	YES RETROFIT	YES RETROFIT	YES RETROFIT

3D. Express Raceway Trough

The standard for turndown feeds going forward is the new "Express Exit Unit" 2"x2" waterfall made by ADC Telecommunications. This piece permits the NP&E and **AT&T-13STATE** Authorized Vendor to simply place the turndown part on the lip of the Fiber Raceway without having to create an incision in the Raceway trough to make a permanent turndown point. This will allow for the placement of a turndown only when required for a particular location. The use of the old generation "cut-in" downspouts will be limited only to those instances when the use of the "Express Exit Unit" would be prohibited due to space limitations.

Turndowns used on the existing FiberOptic Raceways (FiberGuide) will use Snap-On "Express Exit Unit" 2"x2" waterfall parts shown below:

ADC Manufacturer Part Number	AT&T-Region	PID	Price	Supporting Drawing Documents
FGS-MEXP-A/B/F	ATT-SWBT/AIT/PB/NB	301041026	\$66.75	ATT-C-500001-E-00
FGS-MEXP-A/B/F	ATT-SNET	003582533	\$66.75	ATT-C-500001-E-00

3E. Diverse Routing

When diverse fiber routing is required, each Fiber Distribution Frame needs to be reached via a Fiber Protection System from each end. Routing of Fiber Jumpers from the FDF to the respective termination lineup where the Multiplexer/DCS, etc is placed should have diverse routes for the primary and protect paths of a fiber ring. Fiber jumpers may reside in the same trough of the served lineup of the multiplexer and the FDF. **Note: Refer to paragraph 3B above for specific requirements on route diversity.**

3F. Coding and Classification

The Coding and Classification will be used to identify the family of products that have been initially standardized across **AT&T-13STATE** and provided in bright yellow color. For specific uses, refer to PAN19985043, equipment order lists, ADC catalog and ATT-C-50001-C-00, the 13 state drawing. No deviations of the AT&T 13 state standards drawing will be permitted without written authorization from the Common Systems Standards organization. Products used within the Central Office will use the 357C Account Code and all outside plant and customer's premises and Remote Terminal locations will use the 257C Account Codes.

3G. Ordering Information

Distributor-Optical Datacom

SWBT Region

Leti Diaz
(972) 323-7334, ldiaz@opticaldatacom.com

AIT Region

Scott Gifford
(630) 293-1685, sgifford@opticaldatacom.com

PB/NB Region

Bryan Pruet
(858) 566-3559, bpruet@opticaldatacom.com

SNET Region

Alonzo Taylor
(732) 651-6022, ataylor@opticaldatacom.com

Manufacturer

ADC Telecommunications Inc.
PO Box 1101
Minneapolis, Minnesota 55440 - 1101
Contact: Jessica Checco
(800) 366-3891 ext. 63168
(952) 946-3237 FAX

The Standard Products listed in the **AT&T-13STATE** drawing will be used at AT&T Local Exchange Company. In addition, the raceway products are intended to be used in CEV, Huts, and Customers Premises in support of AT&T provisioned services. Due to the nature of our Product Approval Agreements with the manufacturers and distributors, **the purchase of products for the fiber protection system from any other manufacturer is not authorized or permitted.** This product line will automatically substitute for any other type of Trough system originally installed in the Central Office. ADC has made adapter parts that will fit any of the commonly deployed products made by Corning, Siecor, Telect, Lucent, Western, AT&T, Hendry and others. Due Diligence must be exercised by all organizations and departments to scrutinize their purchase methodology to insure that fiber raceway products for services are changed effective immediately. All existing purchase arrangements at a local level with other manufacturer's or distributors must be severed without delay.

4. References

For further information or electronic copies of this document and related information, visit the internal AT&T Local Exchange Carrier Web site: <http://ebiz.sbc.com/commonsystems/> or <http://apex.sbc.com>

Document	Description	Issue & Date
ATT-002-316-011	SingleMode Fiberoptic Optical Splitters	Issue 3, Apr 2001
ATT-002-316-026	SingleMode Passive WDM M&P	Issue 3, Nov 2001
ATT-002-316-043	Fiber Distribution Frame (FDF) Deployment M&P	Issue 3, Dec 2001
ATT-002-316-101	Space Planning Method & Procedures	Issue 8, Apr 2001
Infrastructure Deployment Guidelines (IDG), Transport, Tab 13	Wavelength Division Multiplexing (WDM)	Aug 2001
Infrastructure Deployment Guidelines (IDG), Transport, Tab 12	Fiber Optic Splitters	Aug 2001
Infrastructure Deployment Guidelines (IDG), Transport, Tab 4	Fiber Distribution Frames (FDF)	Dec 2001
ATT-C-50001-E-00	AT&T-13STATE Fiber Raceway Common Systems Equipment Drawings	Issue 2, Dec 2001
PBSD-ID-1097	AT&T-Pacific Bell Drawings for old WDM (Discontinued)	Jun 2001
PBSD-ED-1140	AT&T-FDF Drawings, Fig 9/10	Jun 2001
PBSD-ID-1140	AT&T-FDF Drawings, Fig 9/10	Jun 2001
AM-E-01582-10	AT&T-FDF Interconnection Drawing for AIT	Jun 2001
SNE J95145-71	AT&T-FDF Equipment Drawing for SNET (12")	Jun 2001
SNE T95145-31	AT&T-FDF Interconnection Drawing for SNET (12")	Jun 2001
SNE J95218-71	AT&T-FDF Equipment Drawing for SNET (15")	Jun 2001
SNE T95218-31	AT&T-FDF Interconnection Drawing for SNET (15")	Jun 2001
PAN 20011064	AT&T-Fiber Administration Software (FAS)	Jun 2001
PAN 20011069	AT&T Standard on WDM Couplers	Jun 2001
PBEL 3210	Pacific Bell WDM Product Approval Notice	Feb 1997
PAN 20011068	AT&T-PAN Destandardizing the Pacific Bell PBEL 3210	Jun 2001
PAN 19995018	Frames (FDF) and FiberOptic Apparatus	Jun 1999
PAN 20001026	Fiberoptic Splitters and Associated Housings	Mar 2000
BSP 800-003-150MP	AT&T-Cable & Wire Installation for Cable Racks and (Fiber) Raceways	Issue 1, Sep 1998
BSP 636-299-900MP	AT&T-Fiber Distribution Frame & FiberOptic Deployments within a C.O.	Issue 1, Feb 2000
ADCP-95-007	ADC-FDF Interbay Cross-Connect Wiring Procedures	Jun 1999
ADC/AOFR	ADC-1310/1533/1557 Wavelength Division Mux/Demux	Issue 1, Aug 1996
ADCP-90-116	Product guide to the Fiber Protection System	May 2000

5. Contacts

5A. AT&T Corporation Contacts

Steve Weinert, Associate Director-Enterprise Technology Support (Common Systems Standards)
(214) 858-1355, E-Mail: sw0872@txmail.att.com

Mike Yeilding, Area Manager-Enterprise Technology Support (AT&T Drawings)
(925) 823-4747, E-Mail: myeild@att.com

Ed Granger, Area Manager-Enterprise Technology Support (SNET-Common Systems)
(203) 553-8180, E-Mail: eg1724@att.com

Dave Dorman, Area Manager- Enterprise Technology Support
913-676-1781, E-Mail: dd2223@att.com

Doug Florence, Area Manager-Enterprise Technology Support (Building Blocks)
(925) 867-9951, E-Mail: daflor1@att.com

Guy Franks, Director-Enterprise Technology Support
925-823-3717, E-Mail: grfrank@att.com

Laura Crosby, Senior Contract Manager-Procurement Contracting
(925) 327-2568, E-Mail: lc4135@att.com

Formatted: French (France)

5B. Major Manufacturer Contacts

ADC Telecommunications: Chuck Worley-AT&T Lead Account Manager
(314) 514-1151, E-Mail: chuck.worley@adc.com

ADC Telecommunications: Sandy Gogue-AT&T Lead Detail Engineer
(314) 514-1150, E-Mail: sandy.gogue@adc.com

5C. Distributor Contact

Optical Datacom: Darryl Neil – National Sales Manager
(972) 323-7334, E-Mail dneil@opticaldatacom.com

6. Copyright Page

Notice: This document is an unpublished work protected by the United States copyright laws and is proprietary to AT&T Corporation Incorporated. Disclosure, copying, reproduction, merger, translation, modification, enhancement, or use by anyone other than authorized employees or licensees of AT&T Corporation Inc. without the prior written consent of AT&T Corporation Inc. is prohibited.

© 2004-2005 AT&T Knowledge Ventures All rights reserved.

Trademarks: Windows 95, 97, 98, 2000, NT, ME, XP, Excel, Word for Windows, PowerPoint, Internet Explorer, Office Professional 97, Visio 2000, Visio Professional 2002, Visio Enterprise Network Tools and Microsoft are trademarks of the Microsoft Corporation. Netscape Navigator is a trademark of the Netscape Corporation. AutoCAD 2000, 2000i & 2002 are trademarks of the Autodesk Corporation. Adobe Acrobat 4.0 and PDF are trademarks of the Adobe Corporation. Common Language®, SWITCH®, TIRKS®, CLEI®, CLLI® and CLFI® are registered trademarks of Telcordia Technologies Inc.

Publisher: Network Planning & Engineering – Common Systems Standards
AT&T Services Inc.
3 Bell Plaza, Rm 1610.A4
Dallas, Texas 75202