# Contents at a Glance

## Introduction

**Introduction**

**Part I** Technology and Components

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Data Cabling</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Cabling Specifications and Standards</td>
<td>61</td>
</tr>
<tr>
<td>3</td>
<td>Choosing the Correct Cabling</td>
<td>115</td>
</tr>
<tr>
<td>4</td>
<td>Cable System and Infrastructure Constraints</td>
<td>151</td>
</tr>
<tr>
<td>5</td>
<td>Cabling System Components</td>
<td>177</td>
</tr>
<tr>
<td>6</td>
<td>Tools of the Trade</td>
<td>203</td>
</tr>
</tbody>
</table>

**Part II** Network Media and Connectors

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Copper Cable Media</td>
<td>237</td>
</tr>
<tr>
<td>8</td>
<td>Wall Plates</td>
<td>279</td>
</tr>
<tr>
<td>9</td>
<td>Connectors</td>
<td>299</td>
</tr>
<tr>
<td>10</td>
<td>Fiber-Optic Media</td>
<td>325</td>
</tr>
<tr>
<td>11</td>
<td>Unbounded (Wireless) Media</td>
<td>349</td>
</tr>
</tbody>
</table>

**Part III** Cabling Design and Installation

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Cabling-System Design and Installation</td>
<td>375</td>
</tr>
<tr>
<td>13</td>
<td>Cable-Connector Installation</td>
<td>411</td>
</tr>
<tr>
<td>14</td>
<td>Cable-System Testing and Troubleshooting</td>
<td>445</td>
</tr>
<tr>
<td>15</td>
<td>Creating a Request for Proposal (RFP)</td>
<td>481</td>
</tr>
<tr>
<td>16</td>
<td>Cabling @ Work: Experience from the Field</td>
<td>509</td>
</tr>
</tbody>
</table>

**Glossary**

527
Appendices

Appendix A: Cabling Resources
Appendix B: Registered Communications Distribution Designer (RCDD) Certification
Appendix C: Home Cabling: Wiring Your Home for Now and the Future
Appendix D: Overview of IEEE 1394 and USB Networking
Appendix E: The Electronics Technicians Association, International (ETA) Certifications

Index
## Contents

*Introduction*  

**Part I**  

**Technology and Components**  

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Introduction to Data Cabling</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1</td>
<td>The Golden Rules of Data Cabling</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>The Importance of Reliable Cabling</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The Cost of Poor Cabling</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Is the Cabling to Blame?</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>You’ve Come a Long Way, Baby: The Legacy of Proprietary Cabling Systems</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Proprietary Cabling Is a ‘Thing of the Past’</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Cabling and the Need for Speed</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Types of Communications Media</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Cable Design</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Plenum</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Riser</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>General Purpose</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Limited Use</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Cable Jackets</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Wire Insulation</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Twists</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Solid Conductors versus Stranded Conductors</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Data Communications 101</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Bandwidth, Frequency, and Data Rate</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>What a Difference a dB Makes!</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Speed Bumps: What Slows Down Your Data</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Hindrances to High-Speed Data Transfer</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Attenuation (Loss of Signal)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Noise (Signal Interference)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Near-End Crosstalk (NEXT)</td>
<td>52</td>
</tr>
</tbody>
</table>
Far End Crosstalk (FEXT) 53
Equal-Level Far-End Crosstalk (ELFEXT) 53
Pair-to-Pair Crosstalk 54
Power-Sum Crosstalk 54
External Interference 56
Attenuation-to-Crosstalk Ratio (ACR) 57
Propagation Delay 58
Delay Skew 58
The Future of Cabling Performance 59

Chapter 2  Cabling Specifications and Standards 61
Structured Cabling and Standardization 62
  Standards and Specifying Organizations 64
ANSI/TIA/EIA-568-B Cabling Standard 73
  ANSI/TIA/EIA-568-B Purpose and Scope 75
  Subsystems of a Structured Cabling System 76
  Media and Connecting Hardware Performance 92
ANSI/TIA/EIA-569-A 95
ANSI/TIA/EIA-607 102
ANSI/TIA/EIA-570-A 103
Other TIA/EIA Standards and Bulletins 104
ISO/IEC 11801 105
  Classification of Applications and Links 106
Anixter Cable Performance Levels Program 106
  Anixter Levels: Looking Forward 108
  What About Components? 108
Other Cabling Technologies 109
  The IBM Cabling System 109
  Avaya SYSTIMAX SCS Cabling System 112
  Digital Equipment Corporation DECconnect 112
  NORDX/CDT Integrated Building Distribution System 113

Chapter 3  Choosing the Correct Cabling 115
Topologies 116
  Star Topology 117
  Bus Topology 118
  Ring Topology 119
# Contents

UTP, Optical Fiber, and Future-Proofing 120
Network Architectures 121
  Ethernet 121
  Token Ring 133
  Fiber Distributed Data Interface (FDDI) 136
  Asynchronous Transfer Mode (ATM) 137
  100VG-AnyLAN 139
Network-Connectivity Devices 140
  Repeaters 140
  Hubs 141
  Bridges 144
  Switches 147
  Routers 147

Chapter 4 Cable System and Infrastructure Constraints 151

Where Do Codes Come From? 152
  The United States Federal Communications Commission 152
  The National Fire Protection Association 153
  Underwriters Laboratories 155
  Codes and the Law 157
The National Electrical Code 159
  NEC Chapter 1 General Requirements 159
  NEC Chapter 2 Wiring and Protection 160
  NEC Chapter 3 Wiring Methods and Materials 164
  NEC Chapter 5 Special Occupancy 166
  NEC Chapter 7 Special Conditions 166
  NEC Chapter 8 Communications Systems 169
Knowing and Following the Codes 176

Chapter 5 Cabling System Components 177

The Cable 178
  Horizontal and Backbone Cables 178
  Modular Patch Cables 180
  Pick the Right Cable for the Job 180
Wall Plates and Connectors 181
Cabling Pathways 183
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduit</td>
<td>183</td>
</tr>
<tr>
<td>Cable Trays</td>
<td>183</td>
</tr>
<tr>
<td>Raceways</td>
<td>185</td>
</tr>
<tr>
<td>Fiber-Protection Systems</td>
<td>186</td>
</tr>
<tr>
<td>Wiring Closets</td>
<td>187</td>
</tr>
<tr>
<td>TIA/EIA Recommendations for Wiring Closets</td>
<td>188</td>
</tr>
<tr>
<td>Cabling Racks and Enclosures</td>
<td>190</td>
</tr>
<tr>
<td>Cross-Connect Devices</td>
<td>196</td>
</tr>
<tr>
<td>Administration Standards</td>
<td>200</td>
</tr>
<tr>
<td>Chapter 6 Tools of the Trade</td>
<td>203</td>
</tr>
<tr>
<td>Building a Cabling Tool Kit</td>
<td>204</td>
</tr>
<tr>
<td>Common Cabling Tools</td>
<td>205</td>
</tr>
<tr>
<td>Wire Strippers</td>
<td>206</td>
</tr>
<tr>
<td>Wire Cutters</td>
<td>209</td>
</tr>
<tr>
<td>Cable Crimpers</td>
<td>210</td>
</tr>
<tr>
<td>Punch-Down Tools</td>
<td>213</td>
</tr>
<tr>
<td>Fish Tapes</td>
<td>216</td>
</tr>
<tr>
<td>Voltage Meter</td>
<td>218</td>
</tr>
<tr>
<td>Cable Testing</td>
<td>218</td>
</tr>
<tr>
<td>A Cable-Toning Tool</td>
<td>218</td>
</tr>
<tr>
<td>Twisted-Pair Continuity Tester</td>
<td>219</td>
</tr>
<tr>
<td>Coaxial Tester</td>
<td>220</td>
</tr>
<tr>
<td>Optical-Fiber Testers</td>
<td>221</td>
</tr>
<tr>
<td>Cabling Supplies and Tools</td>
<td>223</td>
</tr>
<tr>
<td>Cable-Pulling Tools</td>
<td>223</td>
</tr>
<tr>
<td>Wire-Pulling Lubricant</td>
<td>228</td>
</tr>
<tr>
<td>Cable-Marking Supplies</td>
<td>229</td>
</tr>
<tr>
<td>Tools That a Smart Data-Cable Technician Carries</td>
<td>231</td>
</tr>
<tr>
<td>A Preassembled Kit Could Be It</td>
<td>232</td>
</tr>
<tr>
<td>Part II Network Media and Connectors</td>
<td>235</td>
</tr>
<tr>
<td>Chapter 7 Copper Cable Media</td>
<td>237</td>
</tr>
<tr>
<td>Types of Copper Cabling</td>
<td>238</td>
</tr>
<tr>
<td>Major Cable Types Found Today</td>
<td>238</td>
</tr>
</tbody>
</table>
## Contents

- Picking the Right Patch Cables 247
- Why Pick Copper Cabling? 249
- Best Practices for Copper Installation 250
  - Following Standards 250
  - Planning 253
  - Installing Copper Cable 255
- Copper Cable for Data Applications 260
  - 110-Blocks 260
  - Sample Data Installations 263
- Copper Cable for Voice Applications 266
  - 66-Blocks 266
  - Sample Voice Installations 270
- Testing 274
  - Tone Generators and Amplifier Probes 275
  - Continuity Testing 275
  - Wire-Map Testers 276
  - Cable Certification 276
  - Common Problems with Copper Cabling 276

### Chapter 8  Wall Plates 279

- Wall-Plate Design and Installation Issues 280
  - Manufacturer System 280
  - Wall-Plate Location 281
  - Wall-Plate Mounting System 283
  - Fixed-Design or Modular Plate 287
- Fixed-Design Wall Plates 289
  - Number of Jacks 289
  - Types of Jacks 290
  - Labeling 291
- Modular Wall Plates 291
  - Number of Jacks 292
  - Wall-Plate Jack Considerations 292
  - Labeling 296
- Biscuit Jacks 296
  - Types of Biscuit Jacks 297
  - Advantages of Biscuit Jacks 297
  - Disadvantages of Biscuit Jacks 298
<table>
<thead>
<tr>
<th>Chapter 9 Connectors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Twisted-Pair Cable Connectors</td>
<td>300</td>
</tr>
<tr>
<td>Patch-Panel Terminations</td>
<td>300</td>
</tr>
<tr>
<td>Modular Jacks and Plugs</td>
<td>302</td>
</tr>
<tr>
<td>Shielded Twisted-Pair Connectors</td>
<td>316</td>
</tr>
<tr>
<td>Coaxial Cable Connectors</td>
<td>317</td>
</tr>
<tr>
<td>F-Series Coaxial Connectors</td>
<td>318</td>
</tr>
<tr>
<td>N-Series Coaxial Connectors</td>
<td>318</td>
</tr>
<tr>
<td>The BNC Connector</td>
<td>319</td>
</tr>
<tr>
<td>Fiber-Optic Cable Connectors</td>
<td>320</td>
</tr>
<tr>
<td>Fiber-Optic Connector Types</td>
<td>320</td>
</tr>
<tr>
<td>Installing Fiber-Optic Connectors</td>
<td>323</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 10 Fiber-Optic Media</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Fiber-Optic Transmission</td>
<td>326</td>
</tr>
<tr>
<td>Advantages of Fiber-Optic Cabling</td>
<td>327</td>
</tr>
<tr>
<td>Immunity to Electromagnetic Interference (EMI)</td>
<td>328</td>
</tr>
<tr>
<td>Higher Possible Data Rates</td>
<td>328</td>
</tr>
<tr>
<td>Longer Maximum Distances</td>
<td>328</td>
</tr>
<tr>
<td>Better Security</td>
<td>329</td>
</tr>
<tr>
<td>Disadvantages of Fiber-Optic Cabling</td>
<td>329</td>
</tr>
<tr>
<td>Higher Cost</td>
<td>329</td>
</tr>
<tr>
<td>Difficult to Install</td>
<td>330</td>
</tr>
<tr>
<td>Types of Fiber-Optic Cables</td>
<td>331</td>
</tr>
<tr>
<td>Composition of a Fiber-Optic Cable</td>
<td>331</td>
</tr>
<tr>
<td>Additional Designations of Fiber-Optic Cables</td>
<td>337</td>
</tr>
<tr>
<td>Fiber Installation Issues</td>
<td>342</td>
</tr>
<tr>
<td>Components of a Typical Installation</td>
<td>343</td>
</tr>
<tr>
<td>Fiber-Optic Performance Factors</td>
<td>345</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 11 Unbounded (Wireless) Media</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrared Transmissions</td>
<td>350</td>
</tr>
<tr>
<td>How Infrared Transmissions Work</td>
<td>350</td>
</tr>
<tr>
<td>Advantages of Infrared</td>
<td>354</td>
</tr>
<tr>
<td>Disadvantages of Infrared</td>
<td>355</td>
</tr>
<tr>
<td>Examples of Infrared Transmissions</td>
<td>356</td>
</tr>
</tbody>
</table>
Radio-Frequency (RF) Systems 357
  How RF Works 358
  Advantages of RF 363
  Disadvantages of RF 363
  Examples of RF 364
Microwave Communications 366
  How Microwave Communication Works 367
  Advantages of Microwave Communications 370
  Disadvantages of Microwave Communications 371
  Examples of Microwave Communications 371

Part III  Cabling Design and Installation 373

Chapter 12  Cabling-System Design and Installation 375
  Elements of a Successful Cabling Installation 376
    Proper Design 376
    Quality Materials 378
    Good Workmanship 379
  Cabling Topologies 379
    Bus Topology 379
    Star Topology 380
    Ring Topology 380
    Mesh Topology 381
    Backbones and Segments 381
    Selecting the Right Topology 383
  Cabling Plant Uses 383
    Telephone 384
    Television 385
    Fire-Detection and Security Cabling 385
  Choice of Media 386
  Telecommunications Rooms 386
    LAN Wiring 387
    Telephone Wiring 388
    Power Requirements 391
    HVAC Considerations 391
Cabling Management 392
Physical Protection 392
Electrical Protection (Spike Protection) 394
Fire Protection 396
Data and Cabling Security 397
EM (Electromagnetic) Transmission Regulation 397
Tapping Prevention 398
Cabling Installation Procedures 398
Design the Cabling System 398
Schedule the Installation 399
Install the Cabling 399
Terminate the Cable 406
Test the Installation 409

Chapter 13  Cable-Connector Installation 411
Twisted-Pair Cable-Connector Installation 412
Types of Connectors 412
Conductor Arrangement 414
Connector Crimping Procedures 415
Coaxial Cable-Connector Installation 421
Types of Connectors 421
Connector Crimping Procedures 422
Fiber-Optic Cable-Connector Installation 426
Connector Types 426
Connectorizing Methods 426
Connector Installation Procedures 427

Chapter 14  Cable-System Testing and Troubleshooting 445
Installation Testing 446
Copper-Cable Tests 446
Fiber-Optic Tests 455
Cable-Plant Certification 458
Creating a Testing Regimen 459
Copper-Cable Certification 460
Fiber-Optic Certification  462
Third-Party Certification  463
Cable-Testing Tools  464
  Wire-Map Testers  464
  Continuity Testers  465
  Tone Generators  465
  Time Domain Reflectometers (TDR)  466
  Fiber-Optic Power Meters  468
  Fiber-Optic Test Sources  469
  Optical Loss Test Sets and Test Kits  469
  Optical Time Domain Reflectometers (OTDRs)  470
  Fiber-Optic Inspection Microscopes  471
  Visual Fault Locators  472
  Multifunction Cable Scanners  472
Troubleshooting Cabling Problems  474
  Establishing a Baseline  474
  Locating the Problem  475
  Resolving Specific Problems  476

Chapter 15  Creating a Request for Proposal (RFP)  481
What Is a Request for Proposal?  482
  What Do We Want in Life?  483
Developing a Request for Proposal  484
  The Needs Analysis  484
  Designing the Project for the RFP  488
  Writing the RFP  496
Distributing the RFP and Managing the Vendor-Selection Process  498
  Distributing RFPs to Prospective Vendors  498
  Vendor Selection  499
Project Administration  500
  Cutover  500
Technology Network Infrastructure Request for Proposal
  (A Sample RFP)  501
    General  502
    Purpose of This RFP  502
    Cable Plant  504
### Chapter 16  Cabling @ Work: Experience from the Field  509

- Hints and Guidelines 510
  - Know What You Are Doing 510
  - Plan the Installation 511
  - Have the Right Equipment 512
  - Test and Document 513
  - Train Your Crew 513
  - Work Safely 514
  - Make It Pretty 514
  - Look Good Yourself 515
  - Plan for Contingencies 515
  - Match Your Work to the Job 517
  - Waste Not, Want Not 518

- Case Studies 518
  - A Small Job 519
  - A Large Job 521
  - A Peculiar Job 523
  - An Inside Job 524

### Glossary  527

### Part IV  605

### Appendix A  Cabling Resources  607

- Informational Internet Resources 608
  - wiring.com 608
  - comp.dcom.cabling 608
  - The Cabling News Group FAQ 608
  - Whatis 609
  - TIA Online 609
  - TechFest 609
  - TechEncyclopedia 609
  - Global Technologies, Inc. 609
  - cabletesting.com 609
National Electrical Code Internet Connection 609
Charles Spurgeon’s Ethernet Website 610
American National Standard T1.523-2001: Glossary of Telecommunications Terms 610
Protocols.com 610
Webopedia: Online Computer Dictionary for Internet Terms and Technical Support 610
Books, Publications, and Videos 610
  Cabling Business Magazine 610
  Cabling Installation and Maintenance 611
  Cabling Installation and Maintenance Tips and Videos 611
  Newton’s Telecom Dictionary by Harry Newton 611
  Premises Network Online 611
  Building Your Own High-Tech Small Office by Robert Richardson 611
  BICSI’s Telecommunications Distribution Methods and Cabling Installation Manuals 612
  Understanding the National Electrical Code (3rd Edition) by Mike Holt and Charles Michael Holt 612
  ANSI/TIA/EIA-568-B Commercial Building Telecommunication Cabling Standard 612
Vendors and Manufacturers 612
  The Siemon Company 612
  MilesTek, Inc. 613
  IDEAL DataComm 613
  Ortronics 613
  Superior Essex 613
  Jensen Tools 613
  Labor Saving Devices, Inc. 613
  Erico 614
  Berk-Tek 614
  Microtest 614
  Fluke 614
  Panduit 614
  Anixter 614
Appendix B  Registered Communications Distribution Designer (RCDD) Certification  615
Apply and Be Accepted as a Candidate for the Designation of RCDD  617
Successfully Pass the Stringent RCDD Exam  617
Maintain Your Accreditation through Continuing Membership and Education  620
Check Out BICSI and the RCDD Program for Yourself  621

Appendix C  Home Cabling: Wiring Your Home for Now and the Future  623
Home-Cabling Facts and Trends  624
Structured Residential Cabling  626
Picking Cabling Equipment for Home Cabling  628
Thinking Forward  630

Appendix D  Overview of IEEE 1394 and USB Networking  631
IEEE 1394  633
USB  635
References  637

Appendix E  The Electronics Technicians Association, International (ETA) Certifications  639
Data Cabling Installer Certification (DCIC) 2004 Competency Requirements  640
1.0 BASIC ELECTRICITY  640
2.0 DATA COMMUNICATIONS BASICS  641
3.0 DEFINITIONS, SYMBOLS, AND ABBREVIATIONS  641
4.0 CABLE CONSTRUCTION  641
5.0 CABLE PERFORMANCE CHARACTERISTICS  642
6.0 CABLING STANDARDS  642
7.0 BASIC NETWORK TOPOLOGIES  642
8.0 BASIC NETWORK ARCHITECTURES  642
9.0 NATIONAL ELECTRIC CODE - NEC and UL requirements  642
10.0 CBLING SYSTEM COMPONENTS  643
11.0 DCIC INSTALLATION TOOLS  643
12.0 CONNECTORS AND OUTLETS  643
13.0 Cabling System Design  644
14.0 Cabling Installation  644
15.0 Connector Installation  644
16.0 CABLING TESTING AND CERTIFICATION 645
17.0 CABLING TROUBLESHOOTING 645
18.0 DOCUMENTATION 645
Certified Fiber Optics Installer (CFOI) 2004 Competency Requirements 645
1.0 HISTORY OF FIBER OPTIC CABLING 645
2.0 PRINCIPLES OF FIBER OPTIC TRANSMISSION 646
3.0 FIBER OPTIC CABLING SAFETY 646
4.0 BASIC PRINCIPLES OF LIGHT 646
5.0 OPTICAL FIBER CONSTRUCTION AND THEORY 646
6.0 OPTICAL FIBER CHARACTERISTICS 647
7.0 ADVANTAGES OF FIBER OVER COPPER 647
8.0 OPTICAL CABLES 647
9.0 LIGHT SOURCES 648
10.0 DETECTORS 648
11.0 CONNECTORS 648
12.0 PASSIVE COMPONENTS 649
13.0 TYPES OF SPLICING 649
  13.1 Mechanical Splicing 649
  13.2 Fusion Splicing 649
14.0 CABLE INSTALLATION AND HARDWARE 649
15.0 FIBER OPTIC LINK 650
16.0 OPTICAL FIBER TEST EQUIPMENT 650
17.0 OPTICAL FIBER MEASUREMENT AND TESTING 650
Fiber Optic Technician (FOT) 2004 Competency Requirements 651
1.0 PRINCIPLES OF FIBER OPTIC TRANSMISSION 651
2.0 BASIC PRINCIPLES OF LIGHT 651
3.0 OPTICAL FIBER CONSTRUCTION AND THEORY 652
4.0 OPTICAL FIBER CHARACTERISTICS 652
5.0 ADVANTAGES OF FIBER OVER COPPER 652
6.0 FIBER OPTIC CABLES 652
7.0 SOURCES 653
8.0 DETECTORS 654
9.0 CONNECTORS 654
10.0 PASSIVE COMPONENTS 655
11.0 TYPES OF SPLICING 655
  11.1 Mechanical Splicing 655
Contents

11.2 Fusion Splicing 655
12.0 CABLE INSTALLATION AND HARDWARE 655
13.0 FIBER OPTIC LINK 656
14.0 OPTICAL FIBER MEASUREMENT AND TESTING 656
15.0 LINK AND CABLE TESTING 656

Index 659