

# TABLE OF CONTENTS

<b>About This Textbook</b> .....	xiii	110.24 Available Fault Current .....	83
<b>Additional Products to Help You Learn</b> .....	xvi	110.25 Lockable Disconnecting Means .....	83
<b>How to Use the National Electrical Code</b> .....	1	<b>Part II. 1,000V, Nominal, or Less</b> .....	84
<b>Article 90—Introduction to the <i>National Electrical Code</i></b> .....	7	110.26 Spaces About Electrical Equipment.....	84
90.1 Purpose of the <i>NEC</i> .....	7	110.28 Enclosure Types .....	92
90.2 Scope of the <i>NEC</i> .....	8	<b>Chapter 1—Practice Questions</b> .....	95
90.3 <i>Code</i> Arrangement.....	10	<b>CHAPTER 5—SPECIAL OCCUPANCIES</b> .....	101
90.4 Enforcement .....	11	<b>Article 500—Hazardous (Classified) Locations</b> .....	103
90.5 Mandatory Requirements and Explanatory Material .....	13	500.1 Scope—Articles 500 Through 503 .....	104
90.7 Examination of Equipment for Product Safety.....	13	500.3 Other Articles.....	104
<b>Article 90—Practice Questions</b> .....	15	500.4 Documentation.....	104
<b>CHAPTER 1—GENERAL RULES</b> .....	19	500.5 Classifications of Hazardous Locations.....	105
<b>Article 100—Definitions</b> .....	21	500.6 Material Groups.....	107
100 Definitions .....	21	500.7 Protection Techniques.....	107
<b>Article 110—Requirements for Electrical Installations</b> ..65		500.8 Equipment.....	109
<b>Part I. General Requirements</b> .....	65	<b>Article 501—Class I Hazardous (Classified) Locations</b> .....	111
110.1 Scope .....	65	<b>Part I. General</b> .....	111
110.2 Approval of Conductors and Equipment.....	65	501.1 Scope .....	111
110.3 Use and Product Listing (Certification) of Equipment.....	66	<b>Part II. Wiring</b> .....	111
110.4 Voltage Rating of Electrical Equipment .....	66	501.10 Wiring Methods .....	111
110.5 Conductor Material .....	66	501.15 Raceway and Cable Seals .....	113
110.6 Conductor Sizes .....	67	501.30 Grounding and Bonding.....	119
110.7 Wiring Integrity.....	67	<b>Part III. Equipment</b> .....	120
110.8 Suitable Wiring Methods.....	67	501.115 Enclosures Containing Make-and-Break Contact Devices ....	120
110.9 Interrupting Rating (Overcurrent Protective Devices).....	68	501.125 Motors and Generators .....	121
110.10 Equipment Short-Circuit Current Rating.....	68	501.130 Luminaires .....	121
110.11 Deteriorating Agents.....	69	501.135 Utilization Equipment.....	122
110.12 Mechanical Execution of Work .....	70	501.140 Flexible Cords, Class I, Divisions 1 and 2.....	122
110.13 Mounting and Cooling of Equipment.....	72	501.145 Receptacles and Attachment Plugs.....	123
110.14 Conductor Termination and Splicing.....	72	501.150 Limited-Energy and Communications Systems .....	124
110.15 High-Leg Conductor Identification.....	79	<b>Article 502—Class II Hazardous (Classified) Locations</b> .....	125
110.16 Arc Flash Hazard Warning.....	80	<b>Part I. General</b> .....	125
110.21 Markings .....	81	502.1 Scope .....	125
110.22 Identification of Disconnecting Means .....	82	502.5 Explosionproof Equipment.....	125

**Part II. Wiring**..... 125

502.10 Wiring Methods ..... 125

502.15 Sealing..... 127

502.30 Grounding and Bonding..... 128

**Part III. Equipment**..... 129

502.115 Enclosures Containing Make-and-Break Contacts ..... 129

502.125 Motors and Generators ..... 130

502.130 Luminaires ..... 130

502.140 Flexible Cords ..... 131

502.145 Receptacles and Attachment Plugs..... 132

502.150 Limited-Energy and Communications Systems ..... 132

**Article 503—Class III Hazardous (Classified) Locations**..... 133

**Part I. General** ..... 133

503.1 Scope ..... 133

**Part II. Wiring**..... 133

503.10 Wiring Methods ..... 133

503.30 Grounding and Bonding..... 134

**Part III. Equipment**..... 135

503.115 Enclosures Containing Make-and-Break Contacts ..... 135

503.125 Motors and Generators ..... 135

503.130 Luminaires ..... 135

503.140 Flexible Cords ..... 136

503.145 Receptacles and Attachment plugs..... 136

503.150 Limited-Energy and Communications Systems ..... 136

**Article 511—Commercial Garages, Repair and Storage**..... 137

511.1 Scope ..... 137

511.3 Classification of Hazardous Areas..... 137

511.7 Wiring and Equipment Above Hazardous (Classified) Locations ..... 138

511.8 Underground Wiring Below Class I Locations..... 139

511.9 Seals ..... 139

511.10 Special Equipment ..... 140

511.12 GFCI-Protected Receptacles ..... 140

**Article 514—Motor Fuel Dispensing Facilities** ..... 141

514.1 Scope ..... 141

514.3 Classification of Locations ..... 141

514.4 Wiring and Equipment Within Class I Locations ..... 142

514.7 Wiring and Equipment Above Class I Locations ..... 142

514.8 Underground Wiring..... 142

514.9 Conduit Seal ..... 143

514.16 Grounding and Bonding..... 144

**Article 517—Health Care Facilities**..... 145

**Part I. General** ..... 145

517.1 Scope ..... 145

517.2 Definitions ..... 145

**Part II. Wiring and Protection** ..... 147

517.10 Applicability ..... 147

517.12 Wiring Methods ..... 147

517.13 Equipment Grounding Conductor for Receptacles and Fixed Electrical Equipment in Patient Care Spaces..... 147

517.16 Isolated Ground Receptacles..... 150

517.18 General Care Spaces ..... 151

**Article 518—Assembly Occupancies** ..... 153

518.1 Scope ..... 153

518.2 General Classifications ..... 153

518.3 Other Articles..... 154

518.4 Wiring Methods ..... 154

518.6 Illumination ..... 154

**Article 525—Carnivals, Circuses, Fairs, and Similar Events**..... 157

**Part I. General Requirements** ..... 157

525.1 Scope ..... 157

525.2 Definitions ..... 157

525.5 Overhead Conductor Clearances..... 157

525.6 Protection of Electrical Equipment..... 158

**Part III. Wiring Methods**..... 158

525.20 Wiring Methods ..... 158

525.21 Rides, Tents, and Concessions..... 159

525.22 Outdoor Portable Distribution or Termination Boxes ..... 159

525.23 GFCI-Protected Receptacles and Equipment ..... 160

**Part IV. Grounding and Bonding**..... 160

525.31 Equipment Grounding..... 160

525.32 Portable Equipment Grounding Conductor Continuity..... 160

**Article 547—Agricultural Buildings**..... 161

547.1 Scope ..... 161

547.2 Definitions ..... 161

547.5 Wiring Methods ..... 162

547.8 Luminaires ..... 163

547.10 Equipotential Planes ..... 163

**Article 550—Mobile Homes, Manufactured Homes, and Mobile Home Parks**..... 165

**Part I. General** ..... 165

550.1 Scope ..... 165

550.2 Definitions ..... 165

550.4 General Requirements..... 166

<b>Part II. Mobile and Manufactured Homes</b> .....	166	600.3	Listing.....	212
550.13 Receptacle Outlets.....	166	600.4	Markings.....	213
550.15 Wiring Methods and Materials.....	166	600.5	Branch Circuits.....	213
550.25 AFCI Protection.....	167	600.6	Disconnecting Means.....	214
<b>Part III. Services and Feeders</b> .....	167	600.7	Grounding and Bonding.....	216
550.32 Mobile and Manufactured Home Service Disconnect.....	167	600.9	Location.....	218
550.33 Feeder.....	167	600.21	Ballasts, Transformers, Class 2 Power Sources, and Electronic Power Supplies.....	218
<b>Article 555—Marinas, Boatyards, and Docking Facilities</b> .....	169	600.24	Class 2 Power Sources.....	218
<b>Part I. General</b> .....	169	<b>Part II. Field-Installed Skeleton Tubing, Outline Lightning, and Secondary Wiring</b> .....		219
555.1 Scope.....	169	600.34 Photovoltaic (PV) Powered Sign.....		219
555.2 Definitions.....	169	600.35 Retrofit Kits.....		219
555.3 Electrical Datum Plane Distances.....	171	<b>Article 604—Manufactured Wiring Systems</b> .....		221
555.4 Location of Service Equipment.....	172	604.1 Scope.....		221
555.5 Maximum Voltage.....	172	604.2 Definition.....		221
555.6 Load Calculations for Service and Feeder Conductors.....	172	604.6 Listing Requirements.....		221
555.7 Transformers.....	172	604.7 Installation—Securing and Supporting.....		222
555.9 Boat Hoists.....	173	604.10 Uses Permitted.....		222
555.10 Electric Shock Hazard Signage.....	173	<b>Article 620—Elevators, Escalators, and Moving Walks</b> .....		223
555.11 Motor Fuel Dispensing Stations—Hazardous (Classified) Locations.....	173	<b>Part I. General</b> .....		223
555.12 Repair Facilities—Hazardous (Classified) Locations.....	174	620.1 Scope.....		223
555.13 Bonding of Noncurrent-Carrying Metal Parts.....	174	620.6 GFCI-Protected Receptacles.....		223
<b>Part II. Marinas, Boatyards, and Docking Facilities</b> .....	174	<b>Part II. Conductors</b> .....		224
555.30 Electrical Connections.....	174	620.13 Feeder and Branch-Circuit Conductors.....		224
555.33 Receptacles.....	175	620.16 Short-Circuit Current Rating.....		224
555.34 Wiring Methods and Installation.....	175	<b>Part III. Wiring</b> .....		224
555.35 Ground-Fault Protection of Equipment (GFPE) and Ground-Fault Circuit-Interrupter (GFCI) Protection.....	176	620.22 Branch Circuits for Elevator Car(s).....		224
555.36 Boat Receptacle Disconnecting Means.....	177	620.23 Branch Circuits for Machine Room/Machinery Space.....		225
555.37 Equipment Grounding Conductor.....	177	620.24 Branch Circuit for Hoistway Pit Lighting and Receptacles.....		225
<b>Article 590—Temporary Installations</b> .....	179	<b>Part IV. Installation of Conductors</b> .....		226
590.1 Scope.....	179	620.37 Wiring in Elevator Hoistways, Control, and Machine Rooms/Spaces.....		226
590.2 All Wiring Installations.....	179	<b>Part VI. Disconnecting Means and Control</b> .....		226
590.3 Time Constraints.....	179	620.51 Disconnecting Means.....		226
590.4 General.....	180	<b>Article 625—Electric Vehicle Power Transfer System</b> .....		227
590.5 Listing of Decorative Lighting.....	182	<b>Part I. General</b> .....		227
590.6 GFCI Protection for Personnel.....	182	625.1 Scope.....		227
590.8 Overcurrent Protective Devices.....	183	625.2 Definitions.....		227
<b>Chapter 5—Practice Questions</b> .....	185	625.5 Listed.....		228
<b>CHAPTER 6—SPECIAL EQUIPMENT</b> .....	209	<b>Part III. Installation</b> .....		228
<b>Article 600—Electric Signs and Outline Lighting</b> .....	211	625.40 Electric Vehicle Branch Circuit.....		228
<b>Part I. General</b> .....	211	625.41 Overcurrent Protection.....		228
600.1 Scope.....	211	625.42 Rating.....		229
600.2 Definitions.....	212	625.43 Disconnecting Means.....		229

625.48 Interactive Systems .....229  
 625.50 Location .....229  
 625.52 Ventilation .....229  
 625.54 Ground-Fault Circuit-Interrupter Protection for Personnel.....230  
 625.60 Alternating-Current Electric Vehicle Power Export (EVPE)  
 Receptacles .....230

**Article 630—Electric Welders**.....231

**Part I. General** .....231  
 630.1 Scope .....231  
 630.6 Listing.....231  
**Part II. Arc Welders** .....231  
 630.11 Ampacity of Supply Conductors .....231  
 630.12 Overcurrent Protection .....234  
 630.13 Disconnecting Means .....234  
**Part III. Resistance Welders**.....234  
 630.31 Ampacity of Supply Conductor .....234  
 630.32 Overcurrent Protection .....236  
 630.33 Disconnecting Means .....236

**Article 640—Audio Signal Amplification and  
 Reproduction Equipment**.....237

**Part I. General** .....237  
 640.1 Scope .....237  
 640.2 Definitions .....237  
 640.3 Locations and Other Articles .....238  
 640.4 Protection of Electrical Equipment.....238  
 640.6 Mechanical Execution of Work .....238  
 640.9 Wiring Methods .....239  
 640.10 Audio Systems Near Bodies of Water .....239  
**Part II. Permanent Audio System Installations** .....240  
 640.21 Use of Flexible Cords and Flexible Cables .....240  
 640.23 Conduit or Tubing .....240

**Article 645—Information Technology Equipment (ITE)**.....241

645.1 Scope .....241  
 645.2 Definitions .....241  
 645.3 Other Articles.....241  
 645.4 Special Requirements .....242  
 645.5 Supply Circuits and Interconnecting Cables .....242  
 645.10 Disconnecting Means .....245  
 645.15 Equipment Grounding and Bonding .....245

**Article 680—Swimming Pools, Spas, Hot Tubs,  
 Fountains, and Similar Installations**.....247

**Part I. General Requirements for Pools, Spas, Hot Tubs, and  
 Fountains**.....247  
 680.1 Scope .....247  
 680.2 Definitions .....248

680.3 Approval of Equipment .....251  
 680.4 Inspections After Installation .....251  
 680.5 Ground-Fault Circuit Interrupters.....251  
 680.6 Bonding and Equipment Grounding .....251  
 680.7 Bonding and Equipment Grounding Terminals .....251  
 680.9 Overhead Conductor Clearance .....251  
 680.10 Electric Water Heaters.....252  
 680.11 Underground Wiring.....253  
 680.12 Equipment Rooms and Pits.....253  
 680.13 Maintenance Disconnecting Means.....253  
 680.14 Wiring Methods in Corrosive Environment.....254

**Part II. Permanently Installed Pools**.....254

680.20 General .....254  
 680.21 Pool Motors.....254  
 680.22 Receptacles, Luminaires, and Switches.....255  
 680.23 Underwater Pool Luminaires .....257  
 680.24 Junction Box, Transformer, or GFCI Enclosure .....261  
 680.25 Feeders .....262  
 680.26 Equipotential Bonding .....262  
 680.27 Specialized Equipment .....267  
 680.28 Gas-Fired Water Heaters .....267

**Part III. Storable Pools, Spas, Hot Tubs, and Immersion Pools**.....267

680.30 General .....267  
 680.31 Pumps .....267  
 680.32 GFCI Protection.....267  
 680.34 Receptacle Locations .....268  
 680.35 Storable and Portable Immersion Pools.....268

**Part IV. Spas and Hot Tubs, and Permanently Installed Immersion  
 Pools**.....268

680.40 General.....268  
 680.41 Emergency Switch for Spas and Hot Tubs .....268  
 680.42 Outdoor Installations.....269  
 680.43 Indoor Installations .....269  
 680.44 GFCI Protection.....270  
 680.45 Permanently Installed Immersion Pools .....270

**Part V. Fountains**.....271

680.50 General .....271  
 680.51 Luminaires and Submersible Equipment .....271  
 680.54 Connection to an Equipment Grounding Conductor.....272  
 680.55 Methods of Equipment Grounding .....272  
 680.56 Cord-and-Plug-Connected Equipment.....272  
 680.57 Electric Signs in or Adjacent to Fountains.....272  
 680.58 GFCI Protection for Adjacent Receptacles .....273  
 680.59 GFCI Protection for Permanently Installed Nonsubmersible  
 Pumps .....273

**Part VII. Hydromassage Bathtubs**.....273

680.70 General.....273  
 680.71 GFCI Protection.....273  
 680.73 Accessibility.....273  
 680.74 Equipotential Bonding .....274

<b>Part VIII. Electrically Powered Pool Lifts</b> .....	274	691.5	Equipment.....	314
680.80 General.....	274	691.6	Engineered Design.....	314
680.81 Equipment Approval.....	274	691.7	Conformance of Construction to Engineered Design.....	314
680.82 Protection.....	275	691.8	Direct-Current Operating Voltage.....	314
680.83 Bonding.....	275	691.9	Disconnect for Isolating Photovoltaic Equipment.....	314
680.84 Switching Devices and Receptacles.....	275	691.10	Arc-Fault Mitigation.....	314
		691.11	Fence Bonding and Grounding.....	314
<b>Article 690—Solar Photovoltaic (PV) Systems</b> .....	277			
<b>Part I. General</b> .....	277	<b>Article 695—Fire Pumps</b> .....		315
690.1 Scope.....	277	695.1	Scope.....	315
690.2 Definitions.....	278	695.3	Electric Power Source(s).....	316
690.4 General Requirements.....	282	695.4	Continuity of Power.....	316
690.6 Alternating-Current Modules and Systems.....	283	695.5	Transformers.....	317
<b>Part II. Circuit Requirements</b> .....	284	695.6	Power Wiring.....	318
690.7 Maximum PV System Direct-Current Circuit Voltage.....	284	695.7	Voltage Drop.....	319
690.8 Circuit Current and Conductor Sizing.....	288	695.10	Listed Equipment.....	320
690.9 Overcurrent Protection.....	293	695.14	Control Wiring.....	320
690.10 Stand-Alone Systems.....	295	695.15	Surge Protection.....	320
690.11 Arc-Fault Circuit Protection.....	295			
690.12 Rapid Shutdown.....	295	<b>Chapter 6—Practice Questions</b> .....		321
<b>Part III. Disconnect</b> .....	297			
690.13 PV System Disconnect.....	297	<b>CHAPTER 7—SPECIAL CONDITIONS</b> .....		343
690.15 PV Equipment Disconnecting Means to Isolate PV Equipment.....	298	<b>Article 700—Emergency Systems</b> .....		345
<b>Part IV. Wiring Methods</b> .....	300	<b>Part I. General</b> .....		345
690.31 Wiring Methods.....	300	700.1	Scope.....	345
690.32 Component Interconnections.....	305	700.2	Definitions.....	346
690.33 Connectors (Mating).....	305	700.3	Tests and Maintenance.....	346
690.34 Access to Boxes.....	306	700.4	Capacity and Rating.....	346
<b>Part V. Grounding and Bonding</b> .....	306	700.5	Transfer Equipment.....	346
690.43 Equipment Grounding and Bonding.....	306	700.7	Signs.....	347
690.45 Size of Equipment Grounding Conductors.....	308	700.8	Surge Protection.....	347
690.47 Grounding Electrode System.....	308	<b>Part II. Circuit Wiring</b> .....		348
<b>Part VI. Markings and Labels</b> .....	309	700.10	Wiring.....	348
690.53 Direct-Current PV Circuit Label.....	309	<b>Part III. Sources of Power</b> .....		349
690.54 Interactive System Point of Interconnection.....	310	700.12	General Requirements.....	349
690.55 Energy Storage.....	310	<b>Part IV. Emergency System Circuits for Lighting and Power</b> .....		351
690.56 Identification of Power Sources.....	310	700.15	Loads on Emergency Branch Circuits.....	351
<b>Part VII. Connections to Other Sources</b> .....	311	700.16	Emergency Illumination.....	351
690.59 Connection to Other Power Sources.....	311	700.19	Multiwire Branch Circuits.....	352
<b>Part VIII. Energy Storage Systems</b> .....	311	<b>Part VI. Overcurrent Protection</b> .....		352
690.71 Energy Storage Systems.....	311	700.30	Accessibility.....	352
690.72 Self-Regulated PV Charge Control.....	312	700.32	Selective Coordination.....	352
		<b>Article 701—Legally Required Standby Systems</b> .....		353
<b>Article 691—Large-Scale Photovoltaic (PV) Electric Supply Stations</b> .....	313	<b>Part I. General</b> .....		353
691.1 Scope.....	313	701.1	Scope.....	353
691.4 Special Requirements for Large-Scale PV Electric Supply Stations.....	313	701.2	Definition.....	353
		701.3	Tests and Maintenance.....	354

701.4 Capacity and Rating.....354  
 701.5 Transfer Equipment .....354  
 701.6 Signals.....355  
 701.7 Signs.....355  
**Part II. Circuit Wiring**.....355  
 701.10 Wiring .....355  
**Part III. Sources of Power** .....355  
 701.12 General Requirements.....355  
**Part IV. Overcurrent Protection** .....356  
 701.30 Accessibility.....356  
 701.32 Selective Coordination.....357

**Article 702—Optional Standby Systems** .....359

**Part I. General** .....359  
 702.1 Scope .....359  
 702.2 Definition.....360  
 702.4 Capacity and Rating.....360  
 702.5 Transfer Equipment .....361  
 702.6 Signals.....362  
 702.7 Signs.....362  
**Part II. Circuit Wiring**.....362  
 702.10 Wiring .....362  
 702.11 Portable Generator Grounding .....363  
 702.12 Outdoor Generator Sets .....363

**Article 705—Interconnected Electric Power Production Sources** .....365

**Part I. General** .....365  
 705.1 Scope .....365  
 705.2 Definitions .....365  
 705.6 Equipment Approval .....366  
 705.8 System Installation .....366  
 705.10 Identification of Power Sources.....366  
 705.11 Supply-Side Source Connections .....367  
 705.12 Load-Side Source Connections .....369  
 705.13 Power Control Systems .....375  
 705.16 Interrupting and Short-Circuit Current Rating.....376  
 705.20 Disconnect .....376  
 705.25 Wiring Methods .....376  
 705.28 Circuit Sizing and Current.....377  
 705.30 Overcurrent Protection .....377  
 705.32 Ground-Fault Protection .....378  
 705.40 Loss of Utility Power .....378  
 705.45 Unbalanced Interconnections.....379  
**Part II. Microgrid Systems** .....380  
 705.50 System Operation .....380  
 705.60 Primary Power Source Connection .....380

**Article 706—Energy Storage Systems** .....381

**Part I. General** .....381  
 706.1 Scope .....381  
 706.2 Definitions .....382  
 706.3 Qualified Personnel .....382  
 706.4 System Requirements .....382  
 706.5 Listing.....383  
 706.6 Multiple Systems.....383  
 706.8 Storage Batteries .....383  
 706.9 Maximum Voltage .....383  
**Part II. Disconnect** .....383  
 706.15 Disconnect .....383  
**Part III. Installation Requirements**.....384  
 706.20 General.....384  
 706.21 Directory (Identification of Power Sources).....385  
**Part IV. Circuit Requirements** .....385  
 706.30 Circuit Sizing and Current.....385  
 706.31 Overcurrent Protection .....386  
 706.33 Charge Control.....386  
**Part V. Flow Battery Energy Storage Systems**.....387

**Article 710—Stand-Alone Systems** .....389

710.1 Scope .....389  
 710.6 Equipment Approval .....389  
 710.10 Identification of Power Sources.....390  
 710.12 Stand-Alone Inverter Input Circuit Current .....390  
 710.15 General.....390

**Article 725—Remote-Control, Signaling, and Power-Limited Circuits** .....393

**Part I. General** .....393  
 725.1 Scope .....393  
 725.2 Definitions .....394  
 725.3 Other Articles.....394  
 725.21 Electrical Equipment Behind Access Panels.....398  
 725.24 Mechanical Execution of Work .....398  
 725.25 Abandoned Cable.....399  
 725.31 Safety-Control Equipment .....400  
 725.35 Circuit Requirements .....400  
**Part II. Class 1 Circuit Requirements**.....400  
 725.41 Class 1 Circuit Classifications and Requirements .....400  
 725.43 Class 1 Circuit Overcurrent Protection.....401  
 725.45 Class 1 Circuit Overcurrent Protective Device Location .....401  
 725.46 Class 1 Circuit Wiring Methods.....401  
 725.48 Conductors of Different Circuits in Same Cable, Cable Tray, Enclosure, or Raceway .....401  
 725.49 Class 1 Circuit Conductors .....402  
 725.51 Number of Conductors in a Raceway .....402

<b>Part III. Class 2 Circuit Requirements</b> .....	402	770.3	Other Articles.....	424
725.121 Power Sources for Class 2 Circuits .....	402	770.21	Access to Electrical Equipment Behind Panels Designed to Allow Access .....	424
725.124 Circuit Marking.....	403	770.24	Mechanical Execution of Work .....	424
725.127 Wiring Methods on Supply Side of the Class 2 Power Source .....	403	770.25	Abandoned Cable.....	425
725.130 Wiring Methods on Load Side of the Class 2 Power Source .....	404	770.26	Spread of Fire or Products of Combustion .....	426
725.135 Installation of Class 2 Cables.....	404	<b>Part V. Installation Methods Within Buildings</b> .....	426	
725.136 Separation from Power Conductors.....	405	770.110 Raceways and Cable Routing Assemblies, and Cable Trays for Optical Fiber Cables .....	426	
725.139 Conductors of Different Circuits in Same Cable, Enclosure, Cable Tray, Raceway, or Cable Routing Assembly.....	407	770.113 Installation of Optical Fiber Cables.....	427	
725.143 Support .....	408	770.114 Grounding .....	428	
725.144 Transmission of Power and Data.....	408	770.133 Installation of Optical Fiber Cables and Electrical Conductors .....	428	
725.154 Applications of Class 2 Cables.....	410	770.154 Applications of Listed Optical Fiber Cables.....	428	
<b>Part IV. Listing Requirements</b> .....	410	<b>Chapter 7—Practice Questions</b> .....	429	
725.170 Listing and Marking of Equipment for Power and Data Transmission .....	410	<b>CHAPTER 8—COMMUNICATIONS SYSTEMS</b> .....	449	
725.179 Listing and Marking of Class 2 Cables.....	410	<b>Article 800—General Requirements for Communications Systems</b> .....	451	
<b>Article 760—Fire Alarm Systems</b> .....	413	<b>Part I. General</b> .....	451	
<b>Part I. General</b> .....	413	800.1 Scope .....	451	
760.1 Scope .....	413	800.2 Definitions.....	451	
760.2 Definitions.....	413	800.3 Other Articles.....	452	
760.3 Other Articles.....	414	800.21 Access to Electrical Equipment Behind Panels Designed to Allow Access .....	453	
760.21 Access to Electrical Equipment Behind Panels Designed to Allow Access .....	416	800.24 Mechanical Execution of Work .....	453	
760.24 Mechanical Execution of Work .....	416	800.25 Abandoned Cable.....	454	
760.25 Abandoned Cables.....	417	800.26 Spread of Fire or Products of Combustion .....	454	
760.30 Fire Alarm Circuit Identification.....	418	<b>Part II. Wires and Cables Outside and Entering Buildings</b> .....	456	
760.35 Fire Alarm Circuit Requirements .....	418	800.49 Metal Entrance Conduit Bonding .....	456	
<b>Part III. Power-Limited Fire Alarm (PLFA) Circuits</b> .....	418	800.53 Separation from Lightning Conductors .....	456	
760.121 Power Sources for Power-Limited Fire Alarm Circuits .....	418	<b>Part III. Bonding Methods</b> .....	456	
760.124 Marking.....	419	800.100 Cable and Primary Protector Bonding .....	456	
760.127 Wiring Methods on Supply Side of the Power-Limited Fire Alarm Source .....	419	<b>Part IV. Installation Methods Within Buildings</b> .....	458	
760.130 Wiring Methods on Load Side of the Power-Limited Fire Alarm Power Source .....	419	800.110 Raceways and Cable Routing Assemblies .....	458	
760.135 Installation of PLFA Cables in Buildings .....	420	800.113 Installation of Communications Wires, Cables, Raceways, and Cable Routing Assemblies.....	459	
760.136 Separation from Power Conductors.....	421	800.154 Applications of Listed Communications Wires, Cables, and Raceways, and Listed Cable Routing Assemblies.....	460	
760.143 Support of PLFA Cables .....	421	800.179 Plenum, Riser, General-Purpose, and Limited Use Cables.....	460	
760.154 Applications of Power-Limited Fire Alarm Cables (PLFA).....	421	<b>Article 805—General Requirements for Communications Circuits</b> .....	461	
<b>Part IV. Listing Requirements</b> .....	422	<b>Part I. General</b> .....	461	
760.179 Listing and Marking of Power-Limited Fire Alarm Cables (PLFA).....	422	805.1 Scope .....	461	
<b>Article 770—Optical Fiber Cables</b> .....	423	805.2 Definitions .....	461	
<b>Part I. General</b> .....	423	805.18 Installation of Equipment .....	461	
770.1 Scope .....	423			
770.2 Definitions.....	423			

**Part III. Protection**.....462  
 805.90 Primary Protection.....462  
 805.93 Bonding or Interruption .....462  
**Part IV. Installation Methods Within Buildings**.....462  
 805.133 Installation of Communications Wires, Cables, and  
 Equipment.....462  
 805.154 Communications Cable(s) Substitutions .....463  
 805.156 Dwelling Unit Communications Outlet .....463

**Article 810—Radio and Television Antenna  
 Equipment** .....465

**Part I. General** .....465  
 810.1 Scope .....465  
 810.4 Community Television Antenna .....466  
**Part II. Receiving Equipment—Antenna Systems**.....466  
 810.12 Supports .....466  
 810.13 Avoid Contact with Conductors of Other Systems .....466  
 810.15 Metal Antenna Supports—Bonding .....467  
 810.18 Clearances .....467  
 810.20 Antenna Discharge Unit.....467  
 810.21 Bonding Conductors and Grounding Electrode Conductors....468

**Part III. Amateur and Citizen Band Transmitting and Receiving  
 Stations—Antenna Systems** .....470

810.51 Other Sections.....470  
 810.57 Antenna Discharge Units—Transmitting Stations.....470  
 810.58 Bonding Conductors and Grounding Electrode  
 Conductors—Amateur and Citizen Band Transmitting  
 and Receiving Stations.....470

**Article 820—Community Antenna Television (CATV)  
 and Radio Distribution Systems (Coaxial Cable)**.....471

**Part I. General** .....471  
 820.1 Scope .....471  
**Part III. Protection**.....471  
 820.93 Grounding of the Outer Conductive Shield of  
 Coaxial Cables .....471  
**Part IV. Grounding Methods**.....472  
 820.100 Bonding and Grounding Methods.....472  
**Part V. Installation Methods Within Buildings**.....472  
 820.133 Installation of Coaxial Cables and Equipment.....472

**Chapter 8—Practice Questions**.....475

**Final Exam A—Straight Order**.....481

**Final Exam B—Random Order** .....491

**INDEX**.....501

**About the Author**.....509

**About the Illustrator**.....510

**About the Mike Holt Team**.....511