SECTION 27 05 39

Surface raceway for communication systems

Notes to the Specification Writer:

This Section has been written to cover most, but not all, project conditions that you will encounter. Depending on the project, you may need to add material, delete items, or modify what is currently written. Editing instructions are included throughout the document. (If this document is viewed or printed in color, these instructions appear in red italic text.)

Review this entire specification Section and edit it to meet the requirements of the specific project. Options or items where the specification writer’s input is needed are enclosed in <<karets>>.

Before publishing your final version of this specifications, remove all placeholders / instructions in red text.

1. GENERAL
	1. SUMMARY

### This Section includes:

#### The supply, delivery, supervision, coordination, and installation of equipment items specified herein and shown on the Drawings

#### The documentation and instruction for completing the installation of Surface Raceway Systems

### Examine the contract documents in their entirety (including drawings and specification sections in the other divisions) for requirements or work which may affect work under this section, regardless of whether such requirements or work are specifically indicated in this section.

### Contractor Shall Provide and Install

#### The materials and labor required for the installation of cable pathway systems include, but are not limited to:

##### Surface Raceway

#### Although such work is not specifically mentioned herein or on the Drawings, the Contractor shall furnish and install all miscellaneous items, accessories, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation, without claim for additional payment.

### Errors or Omissions in Drawings or Documentation

#### If any errors or omissions appear in Drawings, Specifications, or other documents, the bidding Contractor shall notify the Engineer no later than ten (10) days prior to submitting the bid.

#### Should conflict occur in or between Drawings and Specifications, the bidding Contractor is deemed to have estimated the more expensive way of doing the work, unless the bidding Contractor has asked for and obtained written decision (addendum) before submission of the bid as to which method or materials will be required.

### Related Sections:

#### Section 00 00 00 – Procurement and Contracting Requirements

#### Section 01 00 00 – General Requirements

#### Section 07 84 00 – Penetration Firestopping

#### Section 26 05 26 – Grounding and Bonding for Electrical System

#### Section 27 05 26 – Grounding and Bonding for Communication Systems

#### Section 27 13 23 – Communications Fiber Backbone Cabling

#### Section 27 15 13 – Communications Copper Horizontal Cabling

#### Section 27 16 13 – Communications Copper Custom Cable Assemblies

#### Section 27 16 13.01 – Communications Fiber Custom Cable Assemblies

#### Section 27 16 19 – Communications Patch Cords

* 1. Definitions

### ANSI – American Northern Standards Institute

### AWG – American Wire Gauge

### BICSI – Building Industry Consulting Service International

### BCT – Bonding Conductor for Telecommunications

### EIA – Electronics Industry Alliance

### ETL – Intertek Certification Services

### IEC – International Electrotechnical Commission

### IEEE – Institute of Electrical and Electronic Engineers

### IDC – Insulation displacement contact

### ISO – International Standards Organization

### NECA – National Electrical Contractors Association

### NFPA – National Fire Protection Agency

### NRTL – Nationally Recognized Testing Laboratory

### TIA – Telecommunications Industry Association

### UL – Underwriters Laboratory

### Provide: Furnish, install, terminate, label, test and certify a complete operating cabling system.

### Contract Documents (CD): Design drawings, specifications, sketches and schedules provided by the Engineer as they directly relate to this scope of work and this project.

### Structured Cabling Systems (SCS): Wiring is defined as all required equipment and cabling including hardware, termination blocks, cross connect wire or cordage, patch panels, patch cords, telecommunication outlets, work area cords, UTP and fiber cable installed and configured to provide computer data and voice connectivity.

### Point–of–Entry (POE): Unmarked Manholes/Vaults at property line

### NET–POP Rooms/MPOE (Main Point of Entry): The area where the outside plant media/carrier services appear in the facility. The NET–POP contains equipment used by owner or carrier to hand–off/transition cable from outside plant into inside plant type.

### Network Center/Main Distribution Frame (MDF) Areas: This technology space houses Layer 2/3 network switching gear and other main network distribution equipment and acts as the mid–connection point between the Core/Network and the TR/IDF/access zones for all connections.

### Telecommunications Room (TR)/Intermediate Distribution Frame (IDF): The location for the termination of backbone cables and for termination of horizontal cables, and for the interconnection of each. The space also hosts access–layer switches and user network connections within each floor.

### Active Equipment: Electronic equipment used to develop various WAN, LAN, and voice services, e.g., digital multiplexers, RS–232 controllers, Ethernet hubs, switches, routers, PBX, etc.

### Horizontal: Cabling system consisting of media and termination hardware interconnecting the Telecommunication Outlets (TOs) and the TRs.

### Bonding: Permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed on it.

### Basket Cable Tray: A cable support and management system fabricated of continuous, rigid, welded steel wire mesh and available in many sizes with attachment hardware suiting multiple installation methods

### Cable Tray: Vertical or horizontal open supports, usually made of aluminum or steel, which are fastened to the building structure. Cables are laid in and fastened to the trays.

### Cabinet: Free standing, floor–mounted or wall–mounted modular enclosure designed to house and protect rack–mounted electronic equipment and passive terminations.

### Channel: The end–to–end transmission path between two points at which application specific equipment is connected; encompasses all the elements of the horizontal cabling link, plus the equipment cords in the telecommunications spaces and work area.

### Cross–Connect: Equipment used to terminate and tie together communications circuits.

### Cross–Connect Jumper: A cluster of twisted–pair conductors without connectors used to establish a circuit by linking two cross–connect termination points.

### Grounding: A conducting connection to earth, or to some conducting body that serves in place of earth.

### Jack: Receptacle used in conjunction with a plug to make electrical contact between communications circuits, e.g., eight–position/eight–contact modular jacks.

### Ladder Cable Tray: A fabricated structure consisting of two longitudinal side rails connected by individual transverse members (rungs).

### LAN: Local area network.

### Link: Horizontal cabling link encompassing all components of the horizontal cabling (TO, patch panels, blocks, jumpers and patch cords that join them in the horizontal cross–connect). It is distinguished from a channel because it does not include the equipment cables/cords at the telecom spaces or work area.

### Media: Twisted–pair, and fiber optic cable or cables used to provide signal transmission paths.

### Mounting Frame: Rectangular steel framework, which can be equipment rack or wall mounted to support wiring blocks, patch panels, and other communications equipment.

### Outside Plant (OSP): Generally, any and all portions of the cable system that runs outside of an environmentally enclosed structure and/or building with each end terminated at different buildings. This specifically includes inter–building cables, conduits, manholes, hand–holes, and innerduct.

### UTP: Unshielded Twisted Pair.

### FO: Fiber Optic

### Passive Equipment: Non–electronic hardware and apparatus, e.g., equipment racks, cable trays, electrical protection, patch panels, wiring blocks, fiber optic shelves, etc.

### Patch Cords: A length of wire or fiber cable with connectors on one or both ends used to join communications circuits at a cross–connect.

### Patch Panel: System of terminal blocks or connectors used with patch cords that facilitate administration of cross–connect fields.

### Pathway: Facility for the placement of communications cable. A pathway facility can be composed of several components including conduit, wireway, cable tray, surface raceway, under floor systems, overhead systems, raised floor, ceiling support wires, etc.

### Protectors: Electrical protection devices used to limit foreign voltages on metallic communications circuits.

### Raceway: An enclosed channel designed expressly for holding wires or cables; may be of metal or insulating material. The term includes conduit, tubing, wire ways, under floor raceways, overhead raceways and surface raceways; does not include cable tray.

### Racks: An open, freestanding, floor–mounted structure, typically made of aluminum or steel, used to mount equipment; usually referred to as an equipment rack.

### Riser Backbone: The Riser Backbone subsystem links the main cross connect (MDF) in the equipment room to the distribution rooms (TRs).

### Structured Cabling System (SCS): An SCS is defined as all required cabling including hardware, termination blocks, cross connect wire or cordage, patch panels, patch cords, telecommunication outlets, work area cords, UTP and fiber optic cable installed and configured to provide computer data and voice connectivity from each data or voice device to the network file server or voice network/switch designated as the service point of the local area network.

### Telecommunication Outlet (TO): Connecting device mounted in a work area used to terminate horizontal cable and interconnect cabling with station equipment.

### Trough or Ventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal rails and a bottom having openings sufficient for the passage of air and using 75 percent or less of the plan area of the surface to support cables.

### Work Area Subsystem: The connection between the telecommunications outlet and the station equipment in the work area is provided by the Work Area Subsystem. It consists of cords, adapters, and other transmission electronics.

### Wireless Access Point (WAP): Telecom outlet designated for use with wireless network devices. Such outlet shall be mounted above ceiling.

### Contractor – The successful bidder engaged to provide the work of this specification

## REFERENCES

### Design, manufacture, test, and install telecommunications cabling networks per manufacturer’s requirements and in accordance with latest revision of the NFPA-70 (the National Electrical Code®), state codes, local codes, requirements of Authorities Having Jurisdiction (AHJs), and the following standards, including the most current revisions, addenda, and any Technical Service Bulletins (TSB’s) released at the time of bid, including the most recent editions and addenda of the following documents:

### ANSI/TIA 568 series, most recent revisions, addenda and systems bulletins. All applicable

### ANSI/TIA–569 Telecommunications Pathways and Spaces, most recent revision including all relevant addenda and systems bulletins

### ANSI/TIA–606 Administration Standard for Telecommunications Infrastructure, most recent revision including all addenda and systems bulletins

### ANSI/TIA–607 Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, most recent revision including all addenda and systems bulletins

### ANSI/TIA–862 Structured Cabling Infrastructure Standard for Intelligent Building Systems, most recent revision including all addenda and systems bulletins

### ANSI/TIA–942 Telecommunications Infrastructure Standard for Data Centers, most recent revision including all addenda and systems bulletins

### ANSI/TIA–1179 Healthcare Facility Telecommunications Infrastructure Standard, most recent revision including all addenda and systems bulletins

### ANSI/TIA–4966 Telecommunications Infrastructure Standard for Educational Facilities, most recent revision including all addenda and systems bulletins

### TIA–TSB–162 Telecommunications Cabling Guidelines for Wireless Access Points, most recent revision including all addenda and systems bulletins

### Telecommunications Distribution Methods Manual, most recent edition

### Information Transport Systems Installation Methods Manual (ITSIMM), most recent edition

### National Electric Codes (NEC) – all applicable

### OSHA Standards and Regulations – all applicable

### Local Codes and Standards – all applicable

### UL444 – Standard for Safety of Communications Cable

### UL 1666 – Standard for Safety of Flame Propagation Height

### Local Authority Having Jurisdiction (AHJ)

### Anywhere cabling standards conflict with one another or with electrical or safety codes, Contractor shall defer to the NEC and any applicable local codes or ordinances, or default to the most stringent requirements listed by either

### Any violations of applicable standards or codes committed by the Contractor shall be remedied at the Contractor’s expense

## SYSTEM DESCRIPTION

### Surface Raceway

#### Surface Raceway refers to a surface raceway system used for branch circuit wiring and/or data network, voice, video and other low-voltage cabling.

#### Surface raceway shall be used in solid wall and/or slab floor applications or for applications where moves, adds and changes are very typical to the workflow.

## SUBMITTALS

### Engineer’s Review

#### The Engineer’s review of shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the contract documents.

#### With the shop drawings, the Contractor shall include an index sheet detailing all deviations from the contract documents, and will be held responsible for all deviations, unless the Contractor has received written approval from the Engineer for the specific deviation, separate from general shop drawing approval.

#### The Engineer’s review shall not relieve the Contractor from responsibility for errors or omissions in the shop drawings or samples.

### General Component Data

#### For all products covered under this Section, the Contractor shall submit the following data for each component:

##### A Specification Section

##### The Manufacturer’s name.

##### The Manufacturer’s model and part number

### Identification

#### In addition to the general requirements above, the Contractor shall submit the following additional data:

##### Cable identification numbers scheme for all installed items

## QUALITY ASSURANCE

### Standards for Materials and Equipment

#### The Contractor shall provide all materials, equipment, and installation in compliance with the latest applicable standards from ANSI, FCC, ASTM, EIA/TIA, IEEE, NEC, NFPA, NEMA, OSHA, REA, and UL.

### Installer Qualifications

#### Refer to Section 27 05 00

## DELIVERY, STORAGE, AND HANDLING

### To prevent damage, theft, soiling, and misalignment, protect equipment during transit, storage, and handling

### The contractor shall coordinate the secure storage of equipment and materials on site, or, if no on-site storage is available, shall provide their own secure storage at the Contractor’s expense.

#### Do not store equipment where conditions fall outside the manufacturer's recommendations for environmental conditions.

#### Do not install damaged equipment. Remove environmental conditions from the site and replace damaged equipment with new equipment.

#### If off-site storage of materials is necessary, this shall be at the Contractor’s expense.

## COORDINATION

### The Contractor shall coordinate with all other trades. The Contractor will submit a schedule for the installation within 10 days of contract award

#### The schedule shall include delivery, installation, and testing for conformance to specific job completion dates.

#### At minimum, the schedule shall provide dates for the start of demolition, the completion of demolition, the installation start date, the completion of copper cabling, the completion of backbone cabling, the completion of testing and labeling, cutover, the completion of the final punch list, final inspection, and acceptance.

### Meeting Attendance and Schedule Adherence

#### The Contractor must attend all project-related meetings and adhere to schedule set by the Project Manager.

### Final Inspection

#### The Contractor is required to notify the Engineer of a proposed appointment for Final Inspection at least 72 hours before the appointment.

#### Within five working days after the final inspection, the Contractor shall send final project documentation and warranty information to the Owner and Engineer. The final project documentation shall include, but may not be limited to:

##### As-Built Drawings, in an AutoCAD format, with legible outlet address and cable paths

##### Outlet location spreadsheets with appropriate Identification

##### Warranty paperwork

##### A copy of the Final Inspection and Acceptance Signoff Sheet

## PROJECT CONDITIONS

### Project Environmental Requirements

#### Hazardous Materials Prohibition

##### The Contractor shall ensure that all materials used in the project are asbestos-free, unless specifically authorized in writing by the Owner

#### Existing Conditions

##### Verify that all conditions on the project site are acceptable for the Work specified in this Section. Prior to bid opening, notify the Consulting Engineer, in writing, of any discrepancies, conflicts, or omissions. Otherwise, correct these issues at no additional cost to the Owner.

##### Continue to monitor the project site. If conditions develop that require a variance from the Specifications or Drawings, then immediately notify the Owner in writing. Otherwise, make recommendations, submit drawings showing how the Work may be installed, and, upon approval, proceed with the necessary changes without additional cost to the Owner.

### Record Drawings

#### Keep a complete set of all telecommunications drawings in the job site office for demonstration of the actual installation work specified in this Section.

#### Use this set of drawings for no other purpose.

#### Where any material, equipment, or system components are installed differently than what is shown on the drawings, indicate the differences clearly and neatly using ink or indelible pencil.

#### Upon completion of the project, submit the record set of drawings.

## USE OF THE SITE

### Where the Owner deems it necessary to place restrictions, use the site as directed by the Owner.

### When proceeding with the work, do not interfere with the ordinary use of streets, aisles, passages, exits, or operations of the Owner. During the day, set up cones and barriers in hallways and walkways. Do not string cable down the hallways during normal hours.

### Request a hazardous materials worksheet that identifies potentially-hazardous locations. Do not proceed with any work in locations where hazardous materials are known to be. Obtain instructions from the Contractor’s Project Manager on and when to work in these areas.

### Multiple times each day, each contractor shall remove all trash and debris from the site. Before leaving the room each day:

#### The Contractor shall replace all ceiling tiles that they have removed.

#### The Contractor shall place all furniture and equipment that they have moved back into its original location.

#### The Contractor shall return any equipment that they have disconnected to working order.

#### The Contractor’s Job Foreman shall inspect all work locations to ensure that the rooms are clean and that all of the tasks described above have been done.

#### It is recommended that the Contractor inspect the site and take pictures to document the condition of the ceilings and walls.

## CONTINUITY OF SERVICES

### Take no action that will interfere with or interrupt existing building services, unless previous arrangements have been made with the Owner's representative. Arrange all work to minimize shutdown time.

### The Owner's personnel shall perform shutdown of operating systems. When shutdown of systems is required, the Contractor shall give three (3) days advance notice.

### Should building services be inadvertently interrupted:

#### The Job Foreman shall immediately notify the Project Manager of the accidental disruption of services, the remedy, and how long it will take to restore services.

#### The Contractor shall immediately furnish the labor, including overtime, the material, and the equipment necessary to promptly restore the interrupted service at no cost to the Owner.

## WARRANTY

### Refer to Section 27 05 00

# PRODUCTS

## GENERAL

### Refer to Section 27 05 00 for General Requirements

### All materials and products shall be:

#### Appropriate for the intended use

#### Recognized as such by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratories (UL), ETL SEMCO (ETL), the Canadian Standards Association (CSA) or the American National Standards Institute (ANSI)

#### Permitted by the Authority Having Jurisdiction (AHJ)

### All products shall be new, of the latest version at time of bid, and brought to the job site in original manufacturer's packaging. Used equipment and damaged material will be rejected.

### Any modifications to equipment to suit the intent of the specifications shall be performed in accordance with these requirements.

### Take care during installation to prevent scratches, dents, chips, etc. Equipment with significant or disfiguring cosmetic flaws will be rejected.

### All components will be approved by the Engineer and shall have the most aesthetic value possible while maintaining specified functionality. Hardware shall:

#### Be in compliance with the Construction Documents

#### Have fit and finish compatible with the existing surrounding structure

#### Be unobtrusive

#### Provide the required functionality

### Provide products that are suitable for the intended use, including, but not limited to environmental, regulatory, and electrical factors.

## SUBSTITUTION POLICY

### This is a performance-based specification developed from the experience of <<ClientName>> IT in providing exceptional solutions for all our facilities and departments. As such, substitution of specified products or systems is not allowed.

### Contractor shall assume all costs for removal and replacement of any product installed in substitution of those specified. Such costs shall include but not be limited to labor, materials as well as any penalties, fees or costs incurred for late completion.

### Refer to Section 27 05 00

## ldph Series raceway

### LDPH Raceway shall have the following attributes:

#### A two-piece design with a base and a cover

#### Base shall have a hinge attaching the cover to the base

#### Available in 6”, 8’ and 10’ sections

#### Tamper resistant characteristics inherit with the design of the latch

#### Raceway manufactured of rigid PVC compound and have a smooth texture

#### Available in three colors: off-white (IW), electric ivory (EI), and white (WH)

### Fittings

#### A full complement of fittings (LDPH series) must be available including but not limited to flat, internal and external elbows, divided tees and entrance fittings, couplers, and end caps

#### The fittings shall be manufactured from a rigid PVC (or ABS/PC) compound and a matte texture and they shall overlap the raceway to hide any uneven cuts

#### Available in three colors: off-white (IW), electric ivory (EI), and white (WH) to match the raceway.

### Accessories

#### Junction boxes and faceplates shall be available for mounting standard devices

#### The junction boxes shall be available in standard, deep, and extra deep versions

#### The faceplates shall allow for terminating of standard electrical devices, both duplex and rectangular styles

#### The faceplates must be designed to accept Panduit communications modules for data terminations. The faceplates may accommodate up to 6 jacks and shall be modular in design to accept UTP, Coax, ST, SC, and Fiber- Jack type of connector

#### They shall be available in off-white (IW), electric ivory (EI), and white (WH) to match the raceway

### <<ClientName>> approved Manufacturer:

#### Panduit

### <<ClientName>> approved LDPH Raceway part numbers. The part numbers and sizes listed are a small subset of the number available. For additional information, contact Panduit customer service or refer to the current parts catalog.

| Part Number | Description |
| --- | --- |
| LDPH3IW8-A  | Hinged LDPH Raceway, 0.77” W, Off-White  |
| LDPH5IW8-A  | Hinged LDPH Raceway, 1.02” W, Off-White  |
| CFX5IW-X | Coupler fitting for use with LDPH5, Off-White |
| ECFX5IW-X | End cap fitting for use with LDPH5, Off-White |

## LD Series Raceway

### LD Raceway shall have the following attributes:

#### A one-piece base and cover design

#### The raceway (LD) shall have an integral hinge attaching the cover to the base

#### The base and cover shall be manufactured of a rigid PVC compound

#### The raceway and all system components must exhibit non-flammable self-extinguishing characteristics, tested to comparable specifications of UL94V-0

#### The raceway shall have a smooth texture and be available in three colors: off-white (IW), electric ivory (EI), and white (WH).

### Fittings

#### A full complement of fittings (LD series) must be available including but not limited to flat, internal and external elbows, divided tees and entrance fittings, couplers, and end caps.

#### Applicable fittings shall be of either cover only design or cover & base design if required to provide bend radius control.

#### The fittings shall be manufactured from high impact polystyrene (HIPS).

#### The fittings shall have a matte texture and be available in three colors, off-white (IW), electric ivory (EI), and white (WH) to match the raceway.

#### They shall overlap the raceway to hide uneven cuts

### Accessories

#### Junction boxes and faceplates shall be available for mounting standard devices

#### The junction boxes shall be available in standard, deep, and extra deep versions

#### The faceplates shall be designed to accept Panduit communications modules for data terminations. The faceplates may accommodate up to 6 jacks and shall be modular in design to accept UTP, Coax, ST, SC, and Fiber-Jack type of connectors

#### They shall be available in off-white (IW), electric ivory (EI), and white (WH) to match the raceway.

### <<ClientName>> approved Manufacturer:

#### Panduit

### <<ClientName>> approved LD Raceway part numbers. The part numbers and sizes listed are a small subset of the number available. For additional information, contact Panduit customer service or refer to the current parts catalog.

| Part Number | Description |
| --- | --- |

|  |  |
| --- | --- |
| LD3WH8-A | One-piece latching surface raceway, 0.77” W, White |
| LD5WH8-A  | One-piece latching surface raceway, 1.01” W, White |
| CF5WH-E | Coupler fitting for use with LD5 raceway, White |
| ECF5WH-E | End cap fitting for use with LD5 raceway, White |
| JBX3510WH-A | Single gang two-piece snap together outlet box, White |

## T-45 Series Raceway

### T-45 Raceway shall have the following attributes:

#### The raceway shall be a two-piece design with a base and snap-on hinging cover

#### The raceway shall maintain complete separation of the power and data channels

#### The base (T45B) shall have its own cover (T45C) and features for wire retainers and hinged data brackets

#### Available divider walls, which snap onto the base to form additional wiring channels

#### The base and cover shall be manufactured of a rigid PVC compound

#### The raceway and all system components must be UL-5A Listed, UL Listed up to 600V and CSA certified up to 300V and exhibit non-flammable self-extinguishing characteristics, tested to comparable specifications of UL94V-0eway and all system components must exhibit non-flammable self-extinguishing characteristics, tested to comparable specifications of UL94V-0

#### The raceway shall have a smooth texture and be available in two colors: off-white (IW) and electric ivory (EI)

### Fittings

#### A full complement of fittings (T-45 series) must be available including but not limited to flat, internal, and external elbows, tees with inserts to separate power and data cabling, entrance fittings, cover couplers and end caps

#### Applicable fittings shall be of either cover only design or cover & base design if required to provide bend radius control.

#### Applicable fittings shall be of base and cover design in order to maintain complete enclosure, maintain separation of power and data channels, and to eliminate mitering

#### The fittings shall be manufactured from a rigid PVC compound

#### The fittings shall have a smooth texture and be available in two colors: off-white (IW) and electric ivory (EI) to match the raceway

#### They shall overlap the raceway to hide uneven cuts

### Accessories

#### Hinged data brackets shall be available for mounting Pan-Net communication outlets in-line within the raceway

#### An offset two-piece termination box shall be available for positioning power or data devices adjacent to the raceways

#### Faceplates may be a Pan-Way Snap-On faceplate or any NEMA standard 70mm faceplate. The faceplates may accommodate up to 4 jacks and shall be modular in design to accept UTP, Coax, ST, SC, and Fiber-Jack type of connectors

#### One and two gang surface mount outlet boxes shall be available for power or data devices

#### Fast-Snap outlet boxes shall accept Pan-Way Snap-On faceplates

#### Other Pan-Way outlet boxes shall accept any NEMA standard 70mm faceplate

#### They shall be available in off-white (IW) and electric ivory (EI) to match the raceway

### <<ClientName>> approved Manufacturer:

#### Panduit

### <<ClientName>> approved T-45 Raceway part numbers. The part numbers and sizes listed are a small subset of the number available. For additional information, contact Panduit customer service or refer to the current parts catalog.

| Part Number | Description |
| --- | --- |

|  |  |
| --- | --- |
| T45BIW8 | T-45 Base, Off-White, 2.38” W, 8' Section |
| T45CIW8 | T-45 Cover, Off-White, 8’ Section |
| T45DW8 | T-45 Divider Wall, Gray, 8' Section |
| T45CCIW-X | Cover Coupler Fitting |

## t-70 series raceway

### T-70 Raceway shall have the following attributes:

#### The raceway shall be a two-piece design with a base and snap-on hinging cover

#### The raceway shall maintain complete separation of the power and data channels

#### The base (T70B) shall have a 70mm opening and its own cover (T70C)

##### Features mounting device brackets, hanging boxes, wire retainers and snap on faceplates and features for accepting any data or electrical 70mm faceplates without the use of a proprietary adapter or "special" width faceplates

##### Available divider walls, which snap onto the base to form additional wiring channels

#### The cover (T70C) shall have flanges for snapping onto the base

##### The cover shall match the finish and the color of the base and have a tamper resistant cover latch

##### Product shall require the use of a tool (i.e. straight blade screwdriver) inserted into the raceway cut end to disengage the cover latch from the base

#### The base and cover shall be manufactured of a rigid PVC compound

#### The raceway and all system components must be UL-5A Listed, UL Listed up to 600V and CSA certified up to 300V and exhibit non-flammable self-extinguishing characteristics, tested to comparable specifications of UL94V-0eway and all system components must exhibit non-flammable self-extinguishing characteristics, tested to comparable specifications of UL94V-0

#### The raceway shall have a smooth texture and be available in three colors: off-white (IW), White (WH) and electric ivory (EI)

### Fittings

#### A full complement of fittings (T-70 series) must be available including but not limited to flat, internal, and external elbows, tees with inserts to separate power and data cabling, entrance fittings, cover couplers and end caps

#### Applicable fittings shall be of either cover only design or cover & base design if required to provide a 1” minimum cable bend radius control.

#### Applicable fittings shall be of base and cover design in order to maintain complete enclosure, maintain separation of power and data channels, and to eliminate mitering

#### The fittings shall be manufactured from a rigid PVC compound

#### The fittings shall have a matte texture and be available in two colors: off-white (IW), white (WH) and electric ivory (EI) to match the base and cover

#### They shall overlap the raceway to hide uneven cuts

### Accessories

#### Device brackets and hanging boxes shall be available for mounting standard devices in-line within the raceway

#### An offset two-piece termination box shall be available for positioning power or data devices adjacent to the raceways

#### Faceplates may be a Pan-Way Snap-On faceplate or any NEMA standard 70mm faceplate. The faceplates may accommodate up to 6 jacks and shall be modular in design to accept UTP, Coax, ST, SC, and Fiber-Jack type of connectors

#### They shall be available in off-white (IW), white (WH) and electric ivory (EI) to match the raceway base and cover

### <<ClientName>> approved Manufacturer:

#### Panduit

### <<ClientName>> approved T-70 Raceway part numbers. The part numbers and sizes listed are a small subset of the number available. For additional information, contact Panduit customer service or refer to the current parts catalog.

| Part Number | Description |
| --- | --- |

|  |  |
| --- | --- |
| T70BIW8 | T-70 Base, Off-White, 4.07” W, 8' Section |
| T70CIW8 | T-70 Cover, Off-White, 8’ Section |
| T70DW8 | T-70 Divider Wall, Gray, 8' Section |
| T70BCIW-X | Base Coupler Fitting |
| T70CCIW-X | Cover Coupler Fitting |

## Pan-Way® Above Floor Raceway System

### Above Floor Raceway non-metallic multi-channel surface raceway shall be used to route, protect, and conceal data, voice, video, fiber optic and power cabling

### Pan-Way® Above Floor Raceway shall have the following attributes:

#### The raceway shall be an easy snap together two-piece design with a base and cover

#### The raceway shall have a 4-channel design and maintain separation of the power and data channels

#### The base and cover shall be manufactured from impact-resistant material, with flammability rating of V-0 and must be tamper resistant yet, also allow access for moves, adds and changes

#### Above Floor Raceway finish shall be pure color, resist scratches and dents, will not peel or corrode and be available in three standard colors

#### The raceway shall be listed as suitable for use in applications up to 600 volts between conductors by Underwriters Laboratories, Inc. per standard 5A, and by Canadian Standards Association, Inc. per 22.2 no. 62.1-03, when screw secured and installed per instructions

#### The raceway and all system components must be UL-5A 600VAC Listed, tested to comparable specifications of UL94V-0 and FT4 flammability, UL Listed 95425 (raceway) and UL Listed E116129 (fittings), as well as NEC Article 388

#### ADA Compliant - Meets 2010 American Disability Association standards by design

#### The raceway shall have a smooth texture and be available in two colors: black (BL) and office slate (OS)

### Fittings

#### A full complement of fittings must be available including but not limited to couplers, right angles with internal four channel design, to separate power and data cabling, and end caps

#### A transition fitting shall be available to adapt to Panduit T70 series raceways

#### Applicable raceway fittings will satisfy the minimum 1” bend radius requirement, Preventing the potential degradation of cable performance; meets TIA/EIA Standard and many warranty requirements

#### The fittings shall be manufactured from a rigid PVC compound

#### The fittings shall have a smooth texture and be available in available in two colors: black (BL) and office slate (OS)

### <<ClientName>> approved Manufacturer:

#### Panduit

### <<ClientName>> approved Pan-Way® Above Floor Raceway part numbers. The part numbers and sizes listed are a small subset of the number available. For additional information, contact Panduit customer service or refer to the current parts catalog.

| Part Number | Description |
| --- | --- |

|  |  |
| --- | --- |
| AFR4BCBL6 | Above Floor Raceway, Black, Base and Cover, 6.93” W x 0.50” H, 6’ section |
| AFR4CCBL | AFR Coupler Fitting, Black |
| AFR4RABL | Right Angle Fitting, Black |

# EXECUTION

## GENERAL

### Upon completion of work, a Registered Communications Distribution Designer (RCDD) shall submit as-built drawings to the Owner and Engineer

### Provide any necessary screws, anchors, clamps, tie wraps, support hardware, etc. necessary to facilitate the installation of the Surface Raceway systems.

### Furnish any special installation equipment or tools necessary to properly complete the installation.

### Failure to follow the appropriate guidelines may require the installer to provide additional material and labor required to bring the installation back into alignment with the guidelines and to correct, any and all, damage to the cables by the installer during the implementation.

### All techniques and fixtures used in the installation must allow for easy maintenance of, and ready access to, all components for test measurements.

### All the pathways shown on the drawings are suggested routes for the Contractor to use as guidelines. Prior to construction, the Contractor shall coordinate in the field with other trades to determine the exact horizontal, feeder, tie, and riser backbone cabling pathways. In any case where the communication pathway must be removed and re-routed, due to conflicts with other trades with which the Contractor did not previously coordinate, the Contractor is responsible for all costs associated with the removal and relocation

## ldph AND ld series raceway

### On brownfield installations, Contractor shall match raceway to that already installed in the facility unless instructed otherwise in project-specific documentation.

### On Greenfield installations where there are solid block walls, walls that are otherwise impenetrable due to historic protection, hazardous materials or project documentation requires cable to be surface-mounted in the work area; horizontal cable shall be routed through the appropriate Panduit LD Series <<Enter Series>>, <<Enter Color>>, plastic “latching-duct raceway.

### Contractor is responsible to size raceway to accommodate not less than 35% fill upon installation, per manufacturer fill tables, providing room for at least 50% growth in additional cables: i.e. a work area requiring 4 cables, raceway shall be sized to hold 6, etc.

### Contractor is responsible that raceway installation includes all associated fittings, drop ceiling fittings, couplers and 1” control-bend-radius fittings.

### Contractor shall not rely on the pressure sensitive adhesive foam to mount raceway, but rather use adhesive to hold raceway in place while screwing down the raceway to the structure beneath using anchors appropriate to the wall type at intervals not to exceed 2 ft. (24 inches).

## T-45, T-70 Series raceway

### On brownfield installations, Contractor shall match raceway to that already installed in the facility unless instructed otherwise in project-specific documentation.

### On Greenfield installations where there are solid block walls, walls that are otherwise impenetrable due to historic protection, hazardous materials or project documentation requires cable to be surface-mounted in the work area; horizontal cable shall be routed through the appropriate Panduit T-70, T-45 Series <<Enter Series>>, <<Enter Color>>, plastic raceway.

### Contractor is responsible to size raceway to accommodate not less than 35% fill upon installation, per manufacturer fill tables, providing room for at least 50% growth in additional cables: i.e. a work area requiring 4 cables, raceway shall be sized to hold 6, etc.

### Contractor is responsible that raceway installation includes all associated fittings, drop ceiling fittings, couplers and 1” control-bend-radius fittings.

### Contractor shall screw down the raceway, to the structure beneath using anchors appropriate, to the wall type at intervals not to exceed 16”. Raceway has pre-punch holes at 16” intervals.

END OF SECTION 27 05 39