

NORTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT
SECTION 27 16 00 – COMMUNICATIONS CONNECTING CORDS,
DEVICES AND ADAPTERS
SAMPLE SPECIFICATION

RELATED SECTIONS:

- Section 27 00 00 General Requirements
- Section 27 02 00 General Communication Requirements
- Section 27 05 00 Common Work Results for Communications
- Section 27 05 26 Grounding and Bonding for Communications
- Section 27 05 28 Pathways for Communication Systems
- Section 27 05 37 Fire-stopping For Communication Systems
- Section 27 10 00 Structure Cabling Testing
- Section 27 11 00 Communication Equipment Room Fittings
- Section 27 12 00 Communication Requirements for (RF) CATV System
- Section 27 12 23 ABF Fiber Optic Cabling
- Section 27 15 00 Communications Horizontal Cabling

Communications Patch Cords, Station Cords, and Cross-Connect Wire

Copper Patch Cords

PART 1 - GENERAL

1.1 WORK INCLUDES

Provide all labor, materials, and equipment for the complete installation of all Copper Patch cords into the approved patch panels called for in the Bid Documents.

1.2 SCOPE OF WORK

- 1.2.1 This section includes the minimum requirements for Copper Patch Cords. All Patch/Equipment Cords shall be new.
- 1.2.2 On new installations, Patch/Equipment Cords shall be made by the same manufacturer as the Horizontal Cable used in the new installation.
- 1.2.3 Patch/Equipment Cords shall be available in multiple colors. Colors required are to be detailed in the Bid Documents.
- 1.2.4 All Patch/Equipment Cords shall be factory manufactured and tested for compliance to the appropriate standards and performance.
- 1.2.5 Patch/Equipment Cord length shall be determined by the end user.
- 1.2.6 Patch/Equipment Cords shall be installed using proper cable management.
- 1.2.7 Minimum bend radius shall not be exceeded.

1.3 QUALITY ASSURANCE

- 1.3.1 All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative.
- 1.3.2 Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where

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“approved equal” is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

- 1.3.3 Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.
- 1.3.4 Material and work specified herein shall comply with the applicable requirements of the current adopted revision of the following:
ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard
TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces
ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
NFPA 70 – National Electric Code
BICSI – Telecommunications Distribution Methods Manual
ANSI/ICEA S-87-640, Standard for Optical Fiber Outside Plant Communications Cable
Telcordia, GR-20-CORE, Generic Requirements for Optical Fiber and Optical Fiber Cable

1.4 SUBMITTALS

Provide product data for the following:
Manufacturers cut sheets, specifications and installation instructions for all products (submit with bid).

1.5 COORDINATION

Coordinate layout and installation of Patch/Equipment Cords with other trades.

PART2 – PRODUCTS

2.1 CATEGORY 5 ENHANCED (5E) CORDS

The Modular Patch Cords shall meet or exceed Attenuation and NEXT Category 5 and Category 5e specifications for patch cords as specified in ISO/IEC 11 801, CENELEC, EN50173 and ANSI/TIA-568-C.2.

2.1.1 Basis for Design Specifications: CommScope Systemax Category 5 Patch and Equipment Cords.

2.1.2 Approved Manufacturer: CommScope Systemax

(The following Catalog/Part number is shown as an example, contact CommScope Representative to specify correct Catalog/Part numbers.

(Provide Approved Materials and Product List)

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2.2 CATEGORY 6/CLASS E PATCH CORDS

- 2.2.1 The Modular Patch Cords shall meet or exceed TIA ANSI/TIA-568-C.2 Category 6 and ISO/EIC Category 6/Class E specifications and shall be fully backward compatible with Category 5e and 5 connectors.
- 2.2.2 Basis for Design Specifications: CommScope Systimax Category 6 Patch and Equipment Cords.
- 2.2.3 Approved Manufacturer: CommScope Systimax
(The following Catalog/Part number is shown as an example, contact CommScope Representative to specify correct Catalog/Part numbers.
(Provide Approved Materials and Product List))

2.3 CATEGORY 6 AUGMENTED (6A)/CLASS EA PATCH CORDS

- 2.3.1 The Modular Patch Cords shall meet or exceed the channel specifications of Amendment 1 to ISO/IEC 11 801:2002 Class EA and ANSI/TIA-568-C.2 Category 6A up to 500 MHz when used as part of a UTP Channel.
- 2.3.2 Basis for Design Specifications: CommScope Systimax Category 5 Patch and Equipment Cords.
- 2.3.3 Approved Manufacturer: CommScope Systimax
(The following Catalog/Part number is shown as an example, contact CommScope Representative to specify correct Catalog/Part numbers.
(Provide Approved Materials and Product List))

PART 3: EXECUTION

3.1 INSTALLATION

- 3.1.1 Copper Jumpers/patch cables
- 3.1.2 Contractor shall comply applicable codes, standards and with all local codes and requirements. It is the responsibility of the contractor to identify and adhere to any unique codes or requirements governed by the region where the work is to be performed.
- 3.1.3 Cable shall be installed following industry standard practices.
- 3.1.4 Contractor shall not exceed the maximum pulling tension or the minimum bending radius for copper cables per manufacturer's specifications.
- 3.1.5 All installations shall comply with:
 - ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard
 - TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces
 - ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
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50 Micron Multimode Optical Fiber Cords and Pigtails

PART 1 - GENERAL

1.1 WORK INCLUDES

Provide all labor, materials, and equipment for the complete installation of all 50 Micron Multimode Optical Fiber Cords and Pigtails into the approved patch panels called for in the Bid Documents.

1.2 SCOPE OF WORK

1.2.1 This section includes the minimum requirements for Fiber Patch Cords.

1.2.2 All Patch/Equipment Cords shall be new.

1.2.3 On new installations, Patch/Equipment Cords shall be made by the same manufacturer as the Horizontal Cable used in the new installation.

1.2.4 Patch/Equipment Cords shall be available in multiple colors. Colors required are to be detailed in the Bid Documents.

1.2.5 All Patch/Equipment Cords shall be factory manufactured and tested for compliance to the appropriate standards and performance.

1.2.6 Patch/Equipment Cord length shall be determined by the end user.

1.2.7 Patch/Equipment Cords shall be installed using proper cable management.

1.2.8 Minimum bend radius shall not be exceeded.

1.3 QUALITY ASSURANCE

1.3.1 All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative.

1.3.2 Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

1.3.3 Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.

1.3.4 Material and work specified herein shall comply with the applicable requirements of the current adopted revision of the following:

ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard

TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces

ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings

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ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

NFPA 70 – National Electric Code

BICSI – Telecommunications Distribution Methods Manual

ANSI/ICEA S-87-640, Standard for Optical Fiber Outside Plant Communications Cable
Telcordia, GR-20-CORE, Generic Requirements for Optical Fiber and Optical Fiber Cable

1.4 SUBMITTALS

Provide product data for the following:

Manufacturers cut sheets, specifications and installation instructions for all products (submit with bid).

1.5 COORDINATION

Coordinate layout and installation of Fiber Cords and Pigtails with other trades.

PART 2 – PRODUCTS

2.1 To maintain channel integrity, optical fiber patch cords and pigtails shall be fabricated to meet the performance parameters corresponding to the optical fiber cable approved product type specified below. Patch cord and pigtail plug connectors shall be equipped with boots, and shall have same colors as related optical fiber backbone cables, unless specified or indicated otherwise. Optical fiber patch cords and pigtails shall be available with the following options as indicated on the bid document.

2.2 Termination types:

2.2.1 SC Patch cord outside diameters:

2.2.2 Simplex: 1.6 mm (0.063 in)

2.2.3 Duplex: 1.6 mm x 3.3 mm (0.063 in x 0.130 in)

2.2.4 Pigtails: Ruggedized and tight-buffered optical fiber, 0.9 mm (0.035 in) outside diameter

2.2.5 SC Patch cord outside diameters:

2.2.5.1 Simplex: 3.0 mm (0.118 inches)

2.2.5.2 Duplex: 3.0 mm x 5.9 mm (0.063 in x 0.232 in)

2.2.5.3 Pigtails: Ruggedized and tight-buffered optical fiber, 0.9 mm (0.035 in) outside diameter

2.2.6 Lengths: As specified in the bid document

2.2.7 Basis for Design Specifications: CommScope LazrSPEED 550 multimode optical fiber, with the appropriate jacket material (OFNR or OFNP) for the pathway in which the cable will be routed. NOTE: All CommScope 50 micron optical jumpers are constructed using OM4 fiber.

2.2.8 Approved Manufacturer: CommScope Systemax

2.2.9 Example Catalog/Manufacturer Part Number (Note: contact CommScope Representative for assistance for construction of Trunk Catalog/Part numbers.)
A 2 fiber optic jumper, riser, LazrSPEED 550 Multimode glass with LC connectors on both ends. Substitute xxx in part number with actual length in meters.

(Provide Approved Materials and Product List)

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PART 3: EXECUTION

3.1 INSTALLATION

- 3.1.1 Fiber Optic Jumpers/patch cables
- 3.1.2 Contractor shall comply applicable codes, standards and with all local codes and requirements. It is the responsibility of the contractor to identify and adhere to any unique codes or requirements governed by the region where the work is to be performed.
- 3.1.3 Cable shall be installed following industry standard practices.
- 3.1.4 Contractor shall not exceed the maximum pulling tension or the minimum bending radius for fiber cables per manufacturer's specifications.
- 3.1.5 All installations shall comply with:
 - ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard,
 - TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces,
 - ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
 - NFPA 70 – National Electric Code
 - BICSI – Telecommunications Distribution Methods Manual

Single-mode Optical Fiber Cords and Pigtails

PART 1 - GENERAL

1.1 WORK INCLUDED

Provide all labor, materials, and equipment for the complete installation of all Single-Mode Optical Fiber Cords and Pigtails into the approved patch panels called for in the Bid Documents.

1.2 SCOPE OF WORK

- 1.2.1 This section includes the minimum requirements for Fiber Patch Cords.
- 1.2.2 All Patch/Equipment Cords shall be new.
- 1.2.3 On new installations, Patch/Equipment Cords shall be made by the same manufacturer as the Horizontal Cable used in the new installation.
- 1.2.4 Patch/Equipment Cords shall be available in multiple colors. Colors required are to be detailed in the Bid Documents.
- 1.2.5 All Patch/Equipment Cords shall be factory manufactured and tested for compliance to the appropriate standards and performance.
- 1.2.6 Patch/Equipment Cord length shall be determined by the end user.
- 1.2.7 Patch/Equipment Cords shall be installed using proper cable management.
- 1.2.8 Minimum bend radius shall not be exceeded.

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1.3 QUALITY ASSURANCE

- 1.3.1 All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative.
- 1.3.2 Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.
- 1.3.3 Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.
- 1.3.4 Material and work specified herein shall comply with the applicable requirements of the current adopted revision of the following:
 - ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard
 - TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces
 - ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
 - NFPA 70 – National Electric Code
 - BICSI – Telecommunications Distribution Methods Manual
 - ANSI/ICEA S-87-640, Standard for Optical Fiber Outside Plant Communications Cable
 - Telcordia, GR-20-CORE, Generic Requirements for Optical Fiber and Optical Fiber Cable

1.4 SUBMITTALS

- Provide product data for the following:
 - Manufacturers cut sheets, specifications and installation instructions for all products (submit with bid).

1.5 COORDINATION

- Coordinate layout and installation of Fiber Cords and Pigtails with other trades.

PART 2 – PRODUCTS

- 2.1** To maintain channel integrity, optical fiber patch cords and pigtails shall be fabricated to meet the performance parameters corresponding to the optical fiber cable approved product type specified below. Patch cord and pigtail plug connectors shall be equipped with boots, and shall have same colors as related optical fiber backbone cables, unless specified or indicated otherwise. Optical fiber patch cords and pigtails shall be available with the following options as indicated on the bid document.

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2.2 Termination types:

- 2.2.1 SC Patch cord outside diameters:
- 2.2.2 Simplex: 1.6 mm (0.063 in)
- 2.2.3 Duplex: 1.6 mm x 3.3 mm (0.063 in x 0.130 in)
- 2.2.4 Pigtails: Ruggedized and tight-buffered optical fiber, 0.9 mm (0.035 in) outside diameter
- 2.2.5 SC and ST Patch cord outside diameters:
- 2.2.6 Simplex: 3.0 mm (0.118 inches)
- 2.2.7 Duplex: 3.0 mm x 5.9 mm (0.063 in x 0.232 in)
- 2.2.8 Pigtails: Ruggedized and tight-buffered optical fiber, 0.9 mm (0.035 in) outside diameter
- 2.2.9 Lengths: As specified in the bid document
- 2.2.10 Basis for Design Specifications: CommScope TeraSPEED Single-mode optical fiber, with the appropriate jacket material (OFNR or OFNP) for the pathway in which the cable will be routed.
- 2.2.11 Approved Manufacturer: CommScope Systimax
- 2.2.12 Example Catalog/Manufacturer Part Number (Note: contact CommScope Representative for assistance for construction of Trunk Catalog/Part numbers.)
FEWLCLC42-JXMxxx – A 2 fiber optic jumper, riser, TeraSPEED Single mode glass, with SC connectors on both ends. Substitute xxx in part number with actual length in meters. Part number with actual length in meters.
(Provide Approved Materials List and Part Number Here)

PART 3: EXECUTION

3.1 INSTALLATION

- 3.1.1 Fiber Optic Jumpers/patch cables
- 3.1.2 Contractor shall comply applicable codes, standards and with all local codes and requirements. It is the responsibility of the contractor to identify and adhere to any unique codes or requirements governed by the region where the work is to be performed.
- 3.1.3 Cable shall be installed following industry standard practices.
- 3.1.4 Contractor shall not exceed the maximum pulling tension or the minimum bending radius for fiber cables per manufacturer's specifications.
- 3.1.5 All installations shall comply with:
 - ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard
 - TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces
 - ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
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Communication Optical Fiber Specifications

Refer to **Section 27 13 23** ABF Optical Fiber Cabling.

END of SECTION

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