**27 06 00 Schedules for Communication Systems**

(Revision date: 12/15/15)

**1.0 Purpose**

1. These guidelines provide requirements for designers to incorporate into bid documents. They are part of the campus University Wiring Standard (UWS), version 3.0.

**2.0 General Requirements**

1. Infrastructure components. The infrastructure installed in campus buildings for support of communications services are comprised of a sizeable array of components. In order to provide the necessary consistent support for these services, it is imperative that some of these components be manufacturer and part number specific. These are specified due to matched compatibility with existing installed systems or were selected via public bid processes. No substitutions will be accepted for these identified items for installation on campus projects. All other components are not manufacturer and part number specific, and approved equals will be accepted.

**3.0 Materials and Standards**

1. Materials. Following are matrices denoting materials acceptable for use with NC State University projects. All materials shall be manufacturer and part number specific unless specified as accepting “or equal.”
2. Conduits/outlet boxes. Refer to Section 27 05 33 Conduits and Outlet Boxes for Communication Systems.
* Typical outlet conduit components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Outlet conduit | 1” EMT conduit | Allied | 1-EMT | yes |
| Outlet flex conduit | 1” flexible conduit, steel | Eastern Wire & Conduit | GFSU | yes |
| Conduit coupling | 1” EMT compression coupling, steel | RACO | 2924 | yes |
| Conduit connector | 1” EMT compression connector, steel | RACO | 2904 | yes |
| Locknut | 1” locknut, steel | RACO  | 1004 | yes |
| Flex/EMT transition coupling | 1” rigid conduit coupling (2” long) | Teddico | 9002 | yes |
| Flex/EMT transition connector | 1” straight squeeze connector, malleable | Madison | ML-42-3 | yes |
| Small junction box | 4 11/16” square outlet box with 1” KO’s, steel | RACO | 258 | yes |
| Small junction box cover | 4 11/16” square box device cover, flat blank, steel | RACO | 832 | yes |
| Flush mounted outlet box - new work | 4” square outlet box, 2 1/8” deep, with 1” KOs, steel | RACO | 233 | yes |
| Plaster ring for new flush outlet box | Square cornered tile wall cover for 4” square box, double device capacity, raised ¾”, steel | RACO | 779 | yes |
| Flush mounted outlet box – old work | 3 ½” deep gangable switch box with ¾” KOs, steel | Steel City | CY-3/4 | yes |
| Surface mounted outlet box | Two gang extra deep device box, surface mounted outlet box, steel, ivory color | The Wiremold Co. | V-2444-2 | yes |
| Conduit strap | 1” EMT conduit strap, one hole, steel | RACO | 2084 | yes |
| Surface outlet raceway | V2400, two piece steel surface raceway, 7/8” x 1 29/32”, ivory color  | The Wiremold Co. | V2400 | yes |

* Typical floorbox and poke thru components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Floor outlet box (one power and one telecom) | 8”x9”x5.25” floor box w/ one single-gang and one double-gang opening | FSR, Inc. | FL-710 | yes |
| Floor outlet box cover (brass) | 8”x9” watertight cover with brass flange | FSR, Inc. | FL-710-BLP | yes |
| Poke-thru | Evolution 8AT Series Poke-Thru Device – Recessed Prewired Assembly | The Wiremold Co. | 8ATCPxx or 8ATPxx | yes |
| Poke-thru adapter kit | Evolution 8AT Special 3-gang to 2-gang communications plate kit | The Wiremold Co. | E62236-NCSUP1 | no |

1. Raceways. Refer to Section 27 05 36 Raceways for Communication Systems.
* Typical wireway components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| 8x8 wireway | NEMA 1, 8”x8” wireway, screw cover, gray powder coating, 10’ section | The Austin Co. | AB-88120SW | yes |
| 8x8 wireway hardware | 45 degree elbows, tees, reducers, universal connectors, and end caps in above product line | The Austin Co. | Various | yes |
| 6x6 wireway | NEMA 1, 6”x6” wireway, screw cover, gray powder coating, 10’ section | The Austin Co. | AB-66120SW | yes |
| 6x6 wireway hardware | 45 degree elbows, tees, reducers, universal connectors, and end caps in above product line | The Austin Co. | Various | yes |
| Threaded rod | 3/8” hanger rod, continuous thread, 10’ section, steel | Kindorf | H-193-3/8-10 | yes |
| Horizontal trapeze | 1 ½” x 1 ½”, 12 gauge channel, 10’ section, steel | Kindorf | B-905-10 | yes |
| Wall mount bracket | 9” “L” bracket, steel | Custom | 9LBRACKET | yes |
| Plastic edge channel | Durostrip, plastic edge channel, gray, 4’ section | Richco, Inc. | DSC-1 | yes |

* Typical surface perimeter raceway components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Multi-outlet wireway | V6000, two piece steel surface raceway, 3 9/16” x 4 ¾”, ivory color | The Wiremold Co. | V6000 | yes |
| Multi-outlet wireway hardware | Elbows, tees, end caps, and couplings in above product line | The Wiremold Co. | Various | yes |
| Multi-outlet wireway outlet plate – horizontal | V6000, two gang device plate | The Wiremold Co | V6007C-2 | yes |
| Multi-outlet wireway outlet brackets – vertical | Two gang device plate mounting brackets (associated with device plate G4007C-2) | The Wiremold Co. | E40667 | yes |

* Typical riser raceway components.

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| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Riser conduit | 4” EMT conduit | Allied | 4-EMT | yes |
| Conduit coupling | 4” EMT compression coupling, steel | RACO | 2956 | yes |
| Conduit connector | 4” EMT compression connector, steel | RACO | 2946 | yes |
| Locknut | 4” locknut, steel | RACO | 1016 | yes |
| Conduit bushing | 4” plastic insulating bushing | RACO | 1416 | yes |
| Grounding bushing | 4” threaded insulated grounding bushing, steel | RACO | 1296 | yes |
| Conduit strap | 4” EMT conduit strap, two hole, steel  | RACO | 2242 | yes |
| Trapeze strap | 4” channel conduit strap, steel | Kindorf | C-105-4 | yes |
| Riser clamp | 4” conduit support | Kindorf | C-210-4 | yes |
| Cabinet riser conduit system | 2” EMT conduit with hardware similar to above | Allied, RACO, Kindorf | various | yes |
| Threaded rod | 3/8” hanger rod, continuous thread, 10’ section, steel | Kindorf | H-193-3/8-10 | yes |
| Horizontal trapeze | 1 ½” x 1 ½”, 12 gauge channel, 10’ section, steel | Kindorf | B-905-10 | yes |

1. Inter-building. Refer to Section 27 05 43 Inter-Building Ductbanks/Cabling for Communication Systems.
* Typical manhole/handhole components. Sizes may vary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Large manholes | 10’- 0” X 10’- 0” X 8’- 0” (interior dimensions) square precast concrete manhole, 4000 PSI concrete, H-20 bridge loading, E/W standard waffle type knockout panels, 30” min. top opening, floor mounted pulling irons, ground rod hole, and bottom sump depression | various |  | yes |
| Small manholes | 8’- 6” X 6’- 0” X 8’- 0” (interior dimensions) rectangular precast concrete manhole, 4000 PSI concrete, H-20 bridge loading, E/W standard waffle type knockout panels, 30” min. top opening, floor mounted pulling irons, ground rod hole, and bottom sump depression | various |  | yes |
| Handholes | 4’- 0” X 4’- 0” X 4’- 0” (interior dimensions) precast concrete handhole, 4000 PSI concrete, H-20 bridge loading, E/W standard waffle type knockout panels, 24” min. top opening, floor mounted pulling irons, ground rod hole, and bottom sump | various |  | yes |
| Manhole and handhole racks | Hot dipped galvanized steel cable rack 1 ½” wide with t-slots spaced at 1 ½” intervals (58” long for manholes and 27” long for handholes) | Inwesco, Inc. | 10A17 and 10G11 | yes |
| Manhole cable hooks | 5” diameter curved steel manhole hook with vinyl coating  | Inwesco, Inc. | 10A61 | yes |
| Manhole ground rod  | 5/8” X 8” copper clad ground rod  | Inwesco, Inc. | 12A60 | yes |
| Manhole rings and covers | 49” diameter (base) cast iron ring with 31 15/16” heavy duty cast iron cover, type A2 style cover, labeled “Communication” | various |  | yes |
| Handhole rings and covers | 46” diameter (base) cast iron ring with 28 15/16” heavy duty cast iron cover, type A2 style cover, labeled “Communication” | various |  | yes |
| Manhole ladder | 8’- 6” tall manhole ladder, 12” wide, with 5/8” rungs, steel rails, hot dip galvanized with brackets | Inwesco, Inc. | I-3600 | yes |
| Small enclosure | 17”x 30” polymer concrete enclosure with standard cover (no bolts), labeled “Communications” | Quazite, Inc. | PG-1730-WA-00-12 | yes |

* Typical ductbank components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| PVC conduits | 1 ½” and 4” diameter, rigid PVC conduit, schedule 40 and fittings | Carlon Electrical Products, Inc. | Plus 40 product line | yes |
| PVC conduit end bell | 1 ½” and 4” diameter, rigid PVC conduit end bells, schedule 40, long | Carlon Electrical Products, Inc. | Plus 40 product line | yes |
| Conduit spacers | Plastic, underground encasement supports | Carlon Electrical Products, Inc. | Snap-Loc product line | yes |
| Rebar | #4 steel rebar | various |  | yes |
| Warning tape | Plastic encased, magnetic foil underground warning tape, 6” wide X 5 mil (0.005”) thick, orange color, labeled “Communications Line Below” or similar,  | Empire Level Mfg. Corp. | MagnaTec product line | yes |
| Mule tape | ¼” conduit measuring tape, nondeteriorating material, with footage markings, 1,250 lbs. average breaking strength | Greenlee-Textron, Inc. | 39243 | yes |
| Entrance end conduit | 1 ½” and 4” rigid metal conduit and associated fittings | various |  | yes |

1. Termination hardware. Refer to Section 27 11 19 BDF/IDF Termination Hardware.
* 192-outlet, 144-outlet, 96-outlet, 48-outlet, and 24-outlet rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Data patch panel | 2RU 72-port QuickPort flat panel, empty, with no number labels, with four label holders | Leviton | 49255-NCS**(custom NCSU part number)** | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| Video connectors | Feedthrough QuickPort F-connector, nickel plated, grey housing (optional) | Leviton | 41084-FGF | no |
| Fiber housing | 2RU Pretium connector panel | Corning | PCH-02U | no |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* BDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Voice riser panels | 8P4C voice grade patch panel, 110 termination | Leviton | 49013-P24 | no |
| Fiber housing  | 4RU Pretium connector panel | Corning | PCH-04U | no |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* IDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Voice riser panels | 8P4C voice grade patch panel, 110 termination | Leviton | 49013-P24 | no |
| Fiber housing | 2RU Pretium connector panel | Corning | PCH-02U | no |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* Single rack BDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Data patch panel | 2RU 72-port QuickPort flat panel, empty, with no number labels, with four label holders | Leviton | 49255-NCS**(custom NCSU part number)** | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| Fiber housing | 2RU Pretium connector panel | Corning | PCH-02U | no |

* Single rack IDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Voice riser panels | 8P4C voice grade patch panel, 110 termination | Leviton | 49013-P24 | no |
| Data patch panel | 2RU 72-port QuickPort flat panel, empty, with no number labels, with four label holders | Leviton | 49255-NCS**(custom NCSU part number)** | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| Fiber housing | 2RU Pretium connector panel | Corning | PCH-02U | no |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* Surface mounted BDF cabinet components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Data patch panel | 2RU 72-port QuickPort flat panel, empty, with no number labels, with four label holders | Leviton | 49255-NCS**(custom NCSU part number)** | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| Fiber housing | 1RU Pretium connector panel | Corning | PCH-01U | no |

* Surface mounted IDF cabinet components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Voice riser panels | 8P4C voice grade patch panel, 110 termination | Leviton | 49013-P24 | no |
| Data patch panel | 2RU 72-port QuickPort flat panel, empty, with no number labels, with four label holders | Leviton | 49255-NCS**(custom NCSU part number)** | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| Fiber housing | 1RU Pretium connector panel | Corning | PCH-01U | no |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* Flush mounted IDF cabinet components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Patch panels | QuickPort 12-port bracket for Structured Media Center | Leviton | 47600-QPB | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| SM fiber adapter | Duplex LC QuickPort fiber optic adapter, blue, SM, zirconia ceramic sleeve, white color | Leviton | 41085-SLW | no |
| MM fiber adapter | Duplex LC QuickPort fiber optic adapter, aqua, OM3, zirconia ceramic sleeve, white color | Leviton | 41085-LLW | no |
| Voice riser jack | QuickPort CAT 3 connector, white | Leviton | 41108-RW3 | no |

1. Cable management. Refer to Section 27 11 19 BDF/IDF Termination Hardware.
* 192-outlet and 144-outlet rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical manager | RCM+ rack mounted vertical cable manager, double sided, fingers style (front side) and gate style (rear side), 12"W x 16 1/4"D x 80"H, flat black, w/o cover | Cooper B-Line | CCSB006002**(custom NCSU part number)** | no |
| Vertical manager extra gate (rear) | RCM+ cable management plastic gate section, 12"W | Cooper B-Line | SB86212KFB | no |
| Vertical manager extra gate (front) | RCM+ cable management plastic cable retaining gate, 12”W | Cooper B-Line | SB86212GTFB | no |
| Vertical manager divider | RCM+ cable management cable retaining bars, 12" wide, metal | Cooper B-Line | CCSB006667 | no |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Large horizontal manager (for data patch panels) | RCM+ rack mounted horizontal cable manager, plastic finger style, 3RU x 19"W x 5 ½”D, flat black | Cooper B-Line | SB87019S3FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |
| Rear cable support bar | High-Density cable management bar, 1 RU | Leviton | 49005-DMB | no |

* 96-outlet and 48-outlet rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical manager | RCM+ rack mounted vertical cable manager, double sided, fingers style (front side) and gate style (rear side), 10"W x 16 1/4"D x 80"H, flat black, w/o cover | Cooper B-Line | CCSB006003**(custom NCSU part number)** | no |
| Vertical manager extra gate (rear) | RCM+ cable management plastic gate section, 10"W | Cooper B-Line | SB86210KFB | no |
| Vertical manager extra gate (front) | RCM+ cable management plastic cable retaining gate, 10”W | Cooper B-Line | SB86210GTFB | no |
| Vertical manager divider | RCM+ cable management cable retaining bars, 10" wide, metal | Cooper B-Line | CCSB006666 | no |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Large horizontal manager (for data patch panels) | RCM+ rack mounted horizontal cable manager, plastic finger style, 3RU x 19"W x 5 ½”D, flat black | Cooper B-Line | SB87019S3FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |
| Rear cable support bar | High-Density cable management bar, 1 RU | Leviton | 49005-DMB | no |

* 24-outlet rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical manager | RCM+ rack mounted vertical cable manager, double sided, fingers style (front side) and gate style (rear side), 6"W x 16 1/4"D x 80"H, flat black, w/o cover | Cooper B-Line | CCSB006004**(custom NCSU part number)** | no |
| Vertical manager extra gate (rear) | RCM+ cable management plastic gate section, 6"W | Cooper B-Line | SB8626KFB | no |
| Vertical manager extra gate (front) | RCM+ cable management plastic cable retaining gate, 6”W | Cooper B-Line | SB8626GTFB | no |
| Vertical manager divider | RCM+ cable management cable retaining bars, 6" wide, metal | Cooper B-Line | CCSB006679 | no |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Large horizontal manager (for data patch panels) | RCM+ rack mounted horizontal cable manager, plastic finger style, 3RU x 19"W x 5 ½”D, flat black | Cooper B-Line | SB87019S3FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |
| Rear cable support bar | High-Density cable management bar, 1 RU | Leviton | 49005-DMB | no |

* BDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical managers | Cable ring, 2.3"W x 3.8"D | Great Lakes Case & Cabinet | CM-425 | yes |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Small horizontal manager (for voice riser) | RCM+ rack mounted horizontal cable manager, plastic finger style, 1RU x 19"W x 5 1/2"D, flat black | Cooper B-Line | SB87019S1FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |

* IDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical managers | Cable ring, 2.3"W x 3.8"D | Great Lakes Case & Cabinet | CM-425 | yes |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Small horizontal manager (for voice riser) | RCM+ rack mounted horizontal cable manager, plastic finger style, 1RU x 19"W x 5 1/2"D, flat black | Cooper B-Line | SB87019S1FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |

* Electronics rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical managers | Cable ring, 2.3"W x 3.8"D | Great Lakes Case & Cabinet | CM-425 | yes |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 6"D, flat black | Cooper B-Line | SB81319LTD6FB | no |

* Single rack BDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical manager | RCM+ rack mounted vertical cable manager, double sided, fingers style (front side) and gate style (rear side), 6"W x 16 1/4"D x 80"H, flat black, w/o cover | Cooper B-Line | CCSB006004**(custom NCSU part number)** | no |
| Vertical manager extra gate (rear) | RCM+ cable management plastic gate section, 6"W | Cooper B-Line | SB8626KFB | no |
| Vertical manager extra gate (front) | RCM+ cable management plastic cable retaining gate, 6”W | Cooper B-Line | SB8626GTFB | no |
| Vertical manager divider | RCM+ cable management cable retaining bars, 6" wide, metal | Cooper B-Line | CCSB006679 | no |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Large horizontal manager (for data patch panels) | RCM+ rack mounted horizontal cable manager, plastic finger style, 3RU x 19"W x 5 ½”D, flat black | Cooper B-Line | SB87019S3FB | no |
| Small horizontal manager (for voice riser) | RCM+ rack mounted horizontal cable manager, plastic finger style, 1RU x 19"W x 5 1/2"D, flat black | Cooper B-Line | SB87019S1FB | no |
| Rear cable support bar | High-Density cable management bar, 1 RU | Leviton | 49005-DMB | no |

* Single rack IDF rack components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Equipment rack | Two-post network equipment rack, 3" uprights, 19"W x 84"H, flat black | Cooper B-Line | SB556084XUFB | no |
| Vertical manager | RCM+ rack mounted vertical cable manager, double sided, fingers style (front side) and gate style (rear side), 6"W x 16 1/4"D x 80"H, flat black, w/o cover | Cooper B-Line | CCSB006004**(custom NCSU part number)** | no |
| Vertical manager extra gate (rear) | RCM+ cable management plastic gate section, 6"W | Cooper B-Line | SB8626KFB | no |
| Vertical manager extra gate (front) | RCM+ cable management plastic cable retaining gate, 6”W | Cooper B-Line | SB8626GTFB | no |
| Vertical manager divider | RCM+ cable management cable retaining bars, 6" wide, metal | Cooper B-Line | CCSB006679 | no |
| Fiber jumper transition tray | Rack mounted top transition tray, 1 1/2"H x 19"W x 6 "D, flat black | Cooper B-Line | SB81319TT6FB | no |
| Large horizontal manager (for data patch panels) | RCM+ rack mounted horizontal cable manager, plastic finger style, 3RU x 19"W x 5 ½”D, flat black | Cooper B-Line | SB87019S3FB | no |
| Small horizontal manager (for voice riser) | RCM+ rack mounted horizontal cable manager, plastic finger style, 1RU x 19"W x 5 1/2"D, flat black | Cooper B-Line | SB87019S1FB | no |
| Voice patch cord transition tray | Rack mounted lower transition tray - double - 3 1/2"H x 19"W x 3 1/2"D, flat black | Cooper B-Line | SB81319LTD3FB | no |
| Rear cable support bar | High-Density cable management bar, 1 RU | Leviton | 49005-DMB | no |

* Surface mounted cabinet components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Cabinet | V-LINE dual hinge wall mount cabinet, 36"H x 25"D, solid door, black | Cooper B-Line | VLWM3625SB | no |
| Lock Hasp | Rotating hasp, 7/8”H x 3 ½”L, with max shackle diameter 3/8”, black | Stanley | 4FWE5 | yes |
| Horizontal manager (for data patch panel) | Horizontal manager, 2RU with cover | Leviton | 4925C-BCM | no |
| Horizontal manager (for voice patch panel) | Horizontal manager, 1RU with cover | Leviton | 4925C-LPM | no |
| Cabinet support bracket | Welded steel universal shelf bracket | Cooper B-Line | B888W | yes |
| Support post base | Steel post base | Cooper B-Line | B279FL | yes |
| Channel fitting | Three hole corner angle | Cooper B-Line | B232 | yes |
| Support channel | 1 5/8” 12 gauge channel, 10’ section, steel, TH type | Cooper B-Line | B22TH | yes |

* Flush mounted cabinet components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Upper cabinet | Structured Media Enclosure, 21” enclosure only | Leviton | 47605-21E | no |
| Upper cabinet door | Structured Media Enclosure, 21” premium vented hinged door | Leviton | 47605-21S | no |
| Lower cabinet | Structured Media Enclosure, 42” enclosure only | Leviton | 47605-42N | no |
| Lower cabinet door | Structured Media Enclosure, 42” premium vented hinged door | Leviton | 47605-42S | no |
| Receptacle | Non-surge J-box kit, one duplex receptacle, wall plate | Leviton | 47605-ACN | no |
| Lock set | Structured Media Center lock and key for hinged doors | Leviton | 5L000-LOK |  |

* Ladder rack system components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Overhead ladder rack | Flextray, 4”D x 12”W | Cooper B-Line | FT4X12X10 | no |
| Overhead ladder rack | Flextray, 4”D x 18”W | Cooper B-Line | FT4X18X10 | no |
| Top of rack support | Flextray standoff angle | Cooper B-Line | CCSB006182**(custom NCSU part number)** | no |
| Ladder rack mounting washer | Hold down plates, zinc | Cooper B-Line | SUPT WASHERZN | no |
| Ladder rack connector | Washer splice kit, zinc | Cooper B-Line | WASTER SPL KITEG | no |
| Wall mount bracket (side) | L Bracket, 12”, zinc | Cooper B-Line | 12 L BRKTEG | no |
| Wall mount bracket (end) | Wall termination kit, zinc | Cooper B-Line | FTA9WTKZN | no |
| Vertical wall mount bracket | Wall mount kit, 12”, zinc | Cooper B-Line | WB1224WMKZN | no |
| Cable drop out | Drop out fitting, zinc | Cooper B-Line | DROP OUTEG | no |
| Wire end cap | Rubber cap | Cooper B-Line | B719EB | no |
| Additional Flextray hardware | various | Cooper B-Line | various | no |

1. Riser cables. Refer to Section 27 13 00 Communications Riser Cabling.
* Riser system components.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Voice riser cable | 25 pair, Category 3, CMR UTP cable, gray jacket | Superior Essex | 18-475-33 | yes |
| MM fiber riser cable | MIC fiber optic cable, riser rated, 50 micron MMF (OM3), 12 strand, aqua jacket | Corning | 012T81-33180-24 | no |
| MM fiber riser cable | MIC fiber optic cable, riser rated, 50 micron MMF (OM3), 6 strand, aqua jacket | Corning | 006T81-31180-24 | no |
| SM fiber riser cable | MIC fiber optic cable, riser rated, single mode (OS2), 12 strand, yellow jacket | Corning | 012E81-33131-24 | no |
| SM fiber riser cable | MIC fiber optic cable, riser rated, single mode (OS2), 6 strand, yellow jacket | Corning | 006E81-31131-24 | no |
| Innerduct | 1” flexible plastic innerduct, orange with pull line | Endot Industries | 1050 | yes |
| Fiber panel | Closet connector housing panel, 50 micron MMF (OM3), 12 fiber count | Corning | CCH-CP12-E4 | no |
| Fiber panel | Closet connector housing panel, single mode (OS2), 12 fiber count | Corning | CCH-CP12-A9 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

1. Horizontal cables. Refer to Section 27 15 00 Communications Horizontal Cabling.
* UWS outlets.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Faceplate | QuickPort angled dual-gang, stainless steel, 4-port wallplate with ID windows | Leviton | 43081-2L4 | no |
| Blank, gray | Blank QuickPort module, gray, (bag of 10) | Leviton | 41084-0BG | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| UTP cable | 10Gain XP Category 6A UTP cable, CMR, 0.295" OD, white jacket | Superior Essex | 6H-272-4A | no |

* UWS outlets with video.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Faceplate | QuickPort angled dual-gang, stainless steel, 4-port wallplate with ID windows | Leviton | 43081-2L4 | no |
| Video connector | Feedthrough QuickPort F-connector, nickel plated, grey housing (optional) | Leviton | 41084-FGF | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| UTP cable | 10Gain XP Category 6A UTP cable, CMR, 0.295" OD, white jacket | Superior Essex | 6H-272-4A | no |
| Video cable | RG6 (F6SSV) quad shield, 75 Ohm, coaxial cable, black jacket, non-plenum | Commscope | 5740 | no |
| RG6 connector | Male F type connectors, hex crimp for RG6 cable | Corning-Gilbert | GF 6 AHS/USA | no |

* Fiber outlets (multi-mode).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Faceplate | QuickPort angled dual-gang, stainless steel, 4-port wallplate with ID windows | Leviton | 43081-2L4 | no |
| Fiber adapter | Duplex LC QuickPort fiber optic adapter, aqua, OM3, zirconia ceramic sleeve, white color  | Leviton | 41085-LLW | no |
| Blank, gray | Blank QuickPort Module, gray (bag of 10) | Leviton | 41084-0BG | no |
| Fiber cable | MIC fiber optic cable, riser rated, 50 micron MMF (OM3), 4 strand, aqua jacket | Corning | 004T81-31180-24 | no |
| Fiber connector | UniCam fiber connector, LC, 50 micron MMF (OM3) | Corning | 95-050-99X | no |

* Fiber outlets (single-mode).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Faceplate | QuickPort angled dual-gang, stainless steel, 4-port wallplate with ID windows | Leviton | 43081-2L4 | no |
| Fiber adapter | Duplex LC QuickPort fiber optic adapter, blue, SM, zirconia ceramic sleeve, white color | Leviton | 41085-SLW | no |
| Blank, gray | Blank QuickPort module, gray (bag of 10) | Leviton | 41084-BGB | no |
| Fiber cable | MIC fiber optic cable, riser rated, single mode (OS2), 4 strand, yellow jacket | Corning | 004E81-31131-24 | no |
| Fiber connector | UniCam fiber connector, LC, UPC, single mode (OS2) | Corning | 95-200-99 | no |

* Modular furniture outlets components (varies by furniture manufacturer).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Faceplate | QuickPort modular furniture faceplate, 4-port extended depth w/ 1 QuickPort blank, white | Leviton | 49910-EW4 | no |
| Faceplate | QuickPort modular furniture faceplate, 4-port Herman Miller w/ 1 QuickPort blank, white | Leviton | 49910-HW4 | no |
| Adapter | Modular furniture bracket (Steelcase 9000, Haworth, Knoll, Allsteel, Westinghouse, and Teknion) | Leviton | 49222-BLK | no |
| Adapter | Modular furniture bracket (Herman Miller Action Office) | Leviton | 49222-ESP | no |
| Adapter | Modular furniture bracket (Herman Miller Ethospace and Steelcase Avenir) | Leviton | 49222-HAO | no |
| Faceplate, white | QuickPort angled dual-gang, white plastic, 4-port wallplate with ID windows | Leviton | 42081-4WS | no |
| Blank, white | Blank QuickPort module, white (bag of 10) | Leviton | 41084-0BW | no |
| Data jack, crimson | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), crimson | Leviton | 6AUJK-SC6 | no |
| Data jack, white | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), white | Leviton | 6AUJK-SW6 | no |
| Data jack, black | Atlas-X1 CAT 6A UTP QuickPort connector with shutters, crimson (jack), black | Leviton | 6AUJK-SE6 | no |
| UTP cable | 10Gain XP Category 6A UTP cable, CMR, 0.295" OD, white jacket | Superior Essex | 6H-272-4A | no |

1. Elevator telephones. Refer to Section 27 32 23 Elevator Telephones.

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| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| UTP cable | 4 pair Category 3 UTP cable, 24 AWG solid bare copper, tan jacket, non-plenum | Superior Essex, Inc. | 18-241-13 | yes |
| Telephone | Emergency telephone, single button, flush-mount, stainless steel, voice annunciation option | Gai-Tronics, Corp. | 397-002 | no |

1. Emergency telephones. Refer to Section 27 32 26 Communications Horizontal Cabling.
* Area of rescue telephones.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Telephone | Emergency telephone, single button, surface-mount, aluminum housing, safety yellow, voice annunciation option | Gai-Tronics, Corp. | 393AL-002 | no |
| UTP cable | 4 pair Category 3 UTP cable, 24 AWG solid bare copper, tan jacket, non-plenum | Superior Essex, Inc. | 18-241-13 | yes |

* Blue light telephones.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Stanchion | Model 234 emergency telephone stanchion, with video hole, white paint with red letters | Gai-Tronics, Corp. | 84501-031 | no |
| Strobe light | Strobe with dual constant-on lamps, blue | Gai-Tronics, Corp. | 530-001 | no |
| Telephone | Emergency telephone, single button, flush-mount, stainless steel, voice annunciation option | Gai-Tronics, Corp. | 397-002 | no |
| Cable | Telephone buried distribution wire, with aluminum tape, 2 pair 22AWG copper, water-tight | Superior Essex, Inc. | 04-052-84 | yes |
| Wall stanchion | Model 234WM emergency telephone wall mount, white paint with red letters | Gai-Tronics, Corp. | 84505-031 | no |

1. Grounding and Bonding System. Refer to Section 27 05 26 BDF/IDF Grounding and Bonding for Communication Systems.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
| Bonding Conductor for Telecommunications (BCT) | Stranded grounding wire, 6 AWG to 3/0 AWG, with green insulation | Southwire | SIMpull THHN | yes |
| Telecommunications Main Grounding Busbar (TMGB) | Bar assembly and hardware kit, 12” long | Cooper B-Line | SBTMGB12K | yes |
| Telecommunications Grounding Busbar (TGB) | Bar and hardware kit, 12” long | Cooper B-Line | SBTGBK | yes |
| Telecommunications Bonding Backbone (TBB) | Stranded grounding wire, 6 AWG to 3/0 AWG, with green insulation | Southwire | SIMpull THHN | yes |
| Grounding Equalizer (GE) | Stranded grounding wire, 6 AWG to 3/0 AWG, with green insulation | Southwire | SIMpull THHN | yes |
| Mechanical lug | Two-hole mechanical lug | Cooper B-Line | SB4780x | yes |
| Compression lugs | Long barrel compression lug | Cooper B-Line | SBCL x | yes |
| Lay-in lug | Lay-in lug | Cooper B-Line | SBLL 1 | yes |
| Ladder rack ground bolt | Flextray ground bolt | Cooper B-Line | GROUND BOLT | yes |
| Tap connectors | H-tap, type WR-wide range aluminum tap connectors | Blackburn | WR379 or WR159 | yes |
| Conduit grounding bushing | Insulated metallic grounding bushing with lay-in lug | Halex | 95220B or 95240B | yes |
| Grounding pipe clamp | Ground rod/pipe clamp | Cooper B-Line | SBPC150200 or SBPC350400 | yes |
| TMGB/TGB anti-oxidant  | Copper-based anti-oxidant compound | Cooper B-Line | SBJCC | yes |
| Other surfaces anti-oxidant | Zinc-based anti-oxidant compound | Cooper B-Line | SBJCA | yes |

1. Owner provided equipment. For reference only.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Description | Manufacturer | Part Number | Equals Accepted |
|  | Patch cords | Leviton |  |  |
|  | Uninterruptible Power Systems (UPS) | Tripp-Lite |  |  |
|  | Power strips | Geist |  |  |
|  | Thermometer | Timex |  |  |

End of Section