BANKS SCHOOL DISTRICT 13
TECHNOLOGY DEPARTMENT
42350 NW TRELLIS WAY
BANKS, OR 97106

Request for Proposal:
Category 2 RFP: Network Modernization Project 2026

Release Date: February 27, 2026
Bid Due Date: March 28, 2026

Banks School District #13 – Banks, OR
Request for Proposal Category TWO: Network Modernization Project 2026

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RFP OVERVIEW

The Banks School District is requesting proposals and pricing to provide and install a robust expansion of our high-speed network infrastructure at Banks High School. This project is a critical component of an ongoing Banks School District facility modernization and expansion initiative. specifically, Banks School District is seeking proposals to supply and install the following components:

- **Communication Equipment Room:** Establishment of a new, centralized Main Distribution Frame (MDF) equipped with eligible racks, fiber distribution units, and cable management to serve as the campus network core. *(See 27 11 00 Communication Equipment Room for SOW and more details)*.

- **Communication Backbone:**
  - Splice the existing 12-strand single mode fiber in the existing temporary MDF and extend to the new MDF.
  - Install (1) 12 strand single mode fiber from the new MDF to the existing temporary MDF.
  - Install (1) 12 strand single mode fiber from the new MDF to the existing West IDF.
  - Vendor will also provide sufficient patch cords for patching in one half of the installed fiber strands. *(See 27 13 00 Communication Backbone Cabling for SOW and more details)*.

- **Horizontal Cabling:** Installation, testing, and certification of 378 Category 6a (Cat6a) ethernet drops to support high-density Wireless Access Points (WAPs) and instructional spaces throughout Banks High School. Vendor will also provide (1) 3 ft Cat6A patch cord and (1) 5 ft Cat6A patch cord for each of the (378) locations. *(See 27 15 00 Communication Horizontal Cabling for SOW and more details)*.

NOTICE REGARDING SITE MAPS AND FACILITY DRAWINGS

Detailed floor plans and site maps for the newly constructed and modernized facilities at Banks High School are available upon request. These documents provide the routing specifics for the 378 Cat6a drops and the fiber backbone paths between the MDF and IDFs. To maintain facility security, these maps are not attached to this public RFP. Prospective vendors should contact the District Representative listed below to receive a digital copy of the updated facility drawings.

RFP RESPONSE COMMUNICATION

- Please submit RFP responses and inquiries to

  Banks School District 13
  Attn: Dr. Max Sigander
  42350 NW Trellis Way
  Banks, OR 97106

  Phone: 503-324-8591
  Email: itmgr@banks.k12.or.us

- Submission may be made by email or paper copy

- If submitting by email, please call to verify that it is received. Banks School District cannot be responsible for an RFP sent through email without the Vendor verifying that it was sent and received. Email Submissions must include "**Network Modernization Project 2026**" in the subject line.

- **Due Date: March 28, 2026 at 11:59 AM PST**

- **Proposals received after the exact time and date noted will NOT be considered**

PROJECT LOCATION
The entirety of the project will take place at Banks High School at the following address.

Banks High School
13050 NW Main St
Banks, OR 97106

RESERVATIONS AND ANNULMENTS
The Banks School District reserves the right to accept or reject any or all Proposals and to waive any and/or all technicalities in the interest of the District. The District reserves the right to increase or decrease the given quantity. In the event quantities are increased or decreased, the amount added or deducted shall be based upon unit prices quoted.

CONSIDERATION OF PROPOSALS
The Banks School District shall have the right to accept or reject any or all Proposals, or any part thereof; to waive any technicalities in the interest of the District.

PROPOSAL ERRORS
All proposals shall be deemed final, conclusive, and irrevocable, and no proposal shall be subject to correction or amended for errors or miscalculations by the proposer after proposal opening date.

VALUE ADDED SERVICES
Value added services included in the proposal will be considered for award of contract. All value-added services must be declared in detail by the Proposer, in writing, at the time of submittal of the formal proposal.

CONTRACT PERIOD
The equipment and services will be purchased only with a favorable ERATE approval of the items and services described in this RFP.

DIVISION 27 – COMMUNICATIONS

SECTION 27 02 00
COMMUNICATIONS GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Telecommunications system to include the following systems:
   1. Structured Cabling System for Communications Systems
   2. Pathways for Communications Systems
   3. Grounding and Bonding System for Communications Systems
   4. Firestopping for Communications Systems

1.02 ADDITIONAL REQUIREMENTS

A. Coordination of Work: Coordinate Work among project Specification divisions and contractor/subcontractors involved in this project. Coordination of Work Includes following instructions provided the Construction Manager or General Contractor.

B. General Compliance Requirements:
   1. Provide a complete and operable system in compliance with project drawings, Specifications, referenced standards, applicable building codes, and Authority Having Jurisdiction (AHJ) requirements. Scope of this contract includes planning, design, materials, equipment, labor, configuration, programming, testing, startup and commissioning services, and documentation costs for complete and operable system that meets all requirements indicated on drawings or contained in Specifications.
   2. Comply with all contract documents, Specifications, drawings, manufacturer's instructions, and Owner and AHJ requirements. In case of conflict among applicable documents or standards, notify Architect of apparent conflict and comply with most stringent requirements unless otherwise directed.
   3. Work includes all items required for complete system whether identified in Specification or drawings or not.

C. Information about general construction and architectural features and finishes to be derived from structural and architectural drawings and Specifications only.

D. Items referred to in singular number in Contract Documents to be provided in quantities necessary to complete Work.

E. Work related to telecommunications system to be installed by a manufacturer's authorized or certified trained installer and supervised manufacturer's authorized or certified Engineer. Owner reserves the right to review and approves any personnel assigned to this project in a supervisory or managerial role.

F. Contractor Qualifications: At least 10 years of comparable experience with communications projects. As part of the proposal, Contractor to submit at least three comparable Project reference descriptions with reference contacts. Comparable projects to be equal to or exceed size and complexity of work on drawings.

1.03 CODES AND STANDARDS

A. General:
   1. All work, including but not limited to cabling, pathways, support structures, wiring, equipment, installation and workmanship to comply with the latest editions of the requirements of the AHJ, National Electrical Code, National Electrical Safety Code, all applicable local rules and regulations, equipment manufacturer's instructions, and the National Electrical Contractors Association (NECA) Standard of Installation. In case of discrepancy or disagreement between the documents noted above, satisfy the most stringent requirements.
   2. Other Sections of this document contain References to Codes and Standards that are applicable to the Section.

B. Codes:
   1. National Fire Protection Association (NFPA):
      a. NFPA 70, National Electrical Code (NEC), 2008.
      b. NFPA 72, National Fire Alarm Code, 2007.
      c. NFPA 780, Standard for the Installation of Lightning Protection Systems, 2004.

C. Reference Standards:
   1. Telecommunications Industry Association (TIA)
      a. TIA-568-C.0, Generic Telecommunications Cabling for Customer Premises.
      b. TIA-568-C.1, Commercial Building Telecommunications Cabling Standard Part 1: General Requirements.
      c. TIA-568-C.2 , Commercial Building Telecommunications Cabling Standard—Part 2: Balanced Twisted Pair Cabling Components.
      d. TIA-568-C..3, Optical Fiber Cabling Components Standard.
      e. TIA-569-B, Commercial Building Standards for Telecommunications Pathways and Spaces.
      f. TIA-569-B-1, Commercial Building Standard for Telecommunications Pathways and Space.
      g. TIA-606, Administration Standard for Commercial Telecommunications Infrastructures.
      h. ANSI J-STD-607-A, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
      i. TIA-942, Telecommunications Infrastructure Standard for Data Centers.
      j. ANSI/NECA/BICSI 568 Standard for Installing Telecommunications Systems.
      k. Category TSB-155, Guidelines for the Assessment and Mitigation of Installed 6 Cabling to Support 10GBASE-T.
   2. Other Reference Materials:
      a. ANSI/NECA/GICSI-568 Standard, Installing Commercial Building Telecommunications Cabling.
      b. BICSI Outside Plant Design Reference Manual (COOSP), current edition.
      c. BICSI Electronic Safety and Security Reference Manual (ESSDRM), current edition.
      d. BICSI Information Transport Systems Installation Methods Manual (ITSIM), current edition.
      e. BICSI Network Design Reference Manual (NDRM), current edition.
      f. BICSI Telecommunications Distribution Methods Manual (TDMM), current edition.
      g. BICSI Wireless Design Reference Manual (WDRM), current edition.
      h. Institute of Electrical and Electronic Engineers (IEEE).
      i. National Electrical Manufacturers Association (NEMA).
      j. Underwriters Laboratories (UL) Cable Certification and Follow Up Program.

1.04 ABBREVIATIONS, ACRONYMS AND DEFINITIONS

A. AFF: Above Finished Floor.
B. AHJ: Authority Having Jurisdiction.
C. AWG: American Wire Gauge.
D. BICSI: Building Industry Consulting Services International.
E. CAT6: Category 6 Copper Cable.
F. CAT6A: Category 6A Copper Cable.
G. EIA: Electronic Industries Association.
H. HVAC: Heating, Ventilation, and Air Conditioning.
I. IDF: Intermediate Distribution Frame.

J. IEEE: The Institute of Electrical and Electronics Engineers.

K. MDF: Main Distribution Frame.

L. PoE: Power over Ethernet (IEEE 802.3af).

M. SCS: Structured Cabling System.

N. TIA: Telecommunications Industry Association.

O. TR: Telecommunications Room.

P. TO: Telecommunications Outlet.

Q. UPS: Uninterruptible Power Supply.

R. VOIP: Voice over Internet Protocol.

S. WAO: Work Area Outlet.

1.05 SUBSTITUTIONS

A. Substitution Requests:
   1. Substitution requests will be considered only if submitted to the Architect not less than ten working days prior to project bid date. Acceptance or rejection of proposed substitution is at Owner's Representative's sole discretion. No exceptions.
   2. Requests for substitutions to be considered not approved unless approval is issued in writing by Owner's Representative.

B. Rejection:
   1. For equipment, cabling, wiring, materials, and all other products indicated or specified as no substitutions or no alternates, Owner does not expect nor desire requests for substitutions and alternate products other than those specified.
   2. Owner reserves right for Owner's Representative to reject proposed substitution requests and submissions of alternates without review or justification.

1.06 WARRANTY

A. General Requirements: Comply with additional requirements in contract general requirements and extended warranties required in other Specification Sections. Refer to all Division 27, Communications Sections for specific additional warranty requirements that exceed or are in addition to those of this Section.

B. Contractor Warranty:
   1. Provide all services, materials and equipment necessary for successful operation of the entire communications systems for a period of one year after system acceptance. Scope of warranty includes all equipment, devices, wiring, accessories, software, hardware, installation, programming, and configuration required to maintain a complete and operable system. Provide manufacturer's published recommended preventative maintenance procedures during warranty period. This applies to all items except those specifically excluded, or items where a longer period of service and warranty is specified or indicated.
   2. All warranties to be effective for one year, minimum, from date Certificate of Final Acceptance is issued. Warranty to cover repair or replacement of defective materials, equipment, workmanship, and installation that may be incurred during this period. Warranty Work is to be done promptly and to Owner's satisfaction. In addition, warranty to cover correction of damage caused in making necessary repairs and replacements under warranty.
   3. Additional Warranty Responsibilities:
      a. Obtain written equipment and material warranties offered in manufacturer's published data without exclusion or limitation, in Owner's designated name. Replace material and equipment that require excessive service during guarantee period as determined by Owner.
      b. Provide two business day service beginning on date of Substantial Completion and lasting until termination of warranty period. Service to be at no cost to Owner. Service can be provided by installing contractor or by a separate service organization. Choice of service organization to be subject to Owner's approval. Submit name and a phone number that will be answered on a 24-hour basis each day of week, for duration of service.

c. Submit copies of equipment and material warranties to Owner before final acceptance.

d. If warranty work problems cannot be corrected immediately to Owner's satisfaction, advise Owner in writing, describing efforts to correct situation, and provide analysis of cause for problem. If necessary to resolve problem, provide at no cost services of manufacturer's engineering and technical staff at site in a timely manner to analyze warranty issues, and develop recommendations for correction, for review and approval by Owner.

C. Owner's Rights: This Section is not to be interpreted to limit Owner's rights under applicable codes and under this Contract.

D. Material and Installation Warranty: Provide all services, materials and equipment necessary to warrant the installation and performance of all pathway materials for a period of one year after beneficial use. Scope of warranty includes all equipment, devices, installation and other Work required to maintain a complete and operable system. Provide manufacturer's published recommended preventative maintenance procedures during warranty period.

1.07 MANUFACTURER'S EXTENDED WARRANTY

A. Structured Cabling Systems to be covered by a two-part certification program provided by a single manufacturer and that manufacturer's certified vendor.
   1. The first part is an assurance program, which provides that the certified system will support the applications for which it is designed, during the 25 year warranty of the certified system.
   2. The second portion of the certification is a 25 year warranty provided by the manufacturer and contractor on all products within the system (cords, telecommunications outlet/connectors, cables, cross-connects, patch panels, etc.).

B. Provide documentation proving the cabling system's compliance to the End-to-End Link Performance recommendations, as listed in ANSITIA/EIA-568-B prior to the installation of the structured cabling system.

C. Cabling system to conform to the current issue of industry standard ANSI/TIA/EIA-568. Adhere to all performance requirements of this document. Workmanship and installation methods used to be equal to or better than that found in the BICSI ITSIM and TDMM manuals.

1.08 COMPLETENESS OF WORK

A. Provide complete and usable Work according to contract documents. All materials and equipment to be provided with all accessories and additional work required for field conditions, as well as additional work and accessories required for complete, usable, and fully functional construction and systems, even if not explicitly specified or indicated.

B. Communications systems in this Contract to be provided as complete and operable systems in full compliance with requirements on drawings and Specification requirements. Drawings are diagrammatic and Specifications are performance based. Provide all work required to comply with drawings and Specifications, even if not explicitly indicated or specified.

C. Coordinate installation of electrical systems with all field conditions and work of other trades. Minimum clearances and work required for compliance with NFPA 70, National Electrical Code (NEC), and manufacturer's instructions to be provided. Comply with additional requirements indicated for access and clearances. Verify all field conditions and dimensions that affect selection and provision of materials and equipment, and provide any disassembly, reassembly, relocation, demolition, cutting and patching required to provide work specified or indicated, including relocation and reinstallation of existing wiring and equipment.

D. Protect from damage resulting from Contractor's operations existing facility, equipment, and wiring. Extra charges for completion and contract time extension will not be allowed because of field conditions or additional work required for complete and usable construction and systems. Comply with additional requirements indicated for access and clearances.

E. Drawings and Specifications form complementary requirements. Provide work specified and not shown, and work shown and not specified as though explicitly required by both. Except where explicitly modified by a specific notation to contrary, it is to be understood that indication or description of any Item, in drawings or Specifications or both, carries with it instruction to furnish and install Item, provided complete.

F. Terms: As used in these Specifications, "provide" means "furnish and install". "Furnish" means “to purchase and deliver to project site complete with every necessary appurtenance and support." "Install" means “to unload at delivery point at site and perform every operation necessary to establish secure mounting and correct operation at proper location in project.”

G. Authority Approvals: Give notices, file plans, obtain permits and licenses, pay fees, and obtain necessary approvals from authorities that have jurisdiction as required to perform work according to all legal requirements and with Specifications, Drawings, Addenda and Change Orders, all of which are part of Contract Documents.

H. Supplementary Items:
   1. Provide supplementary or miscellaneous items, appurtenances, devices and materials necessary for a sound, secure and complete installation. Examine project drawings and other Sections of Specifications for requirements that affect work of this Section.
   2. Completely coordinate work of this Section with work of other Sections and provide a complete and fully functional installation. Refer to all other drawings and other Specifications Sections that indicate types of construction in which work to be installed and work of other Sections with which work of this Section must be coordinated.

I. Quantities: Provide Items referred to in singular number in Contract Documents in quantities necessary to complete work.

1.09 PROJECT CONDITIONS

A. Field Verification:
   1. Carefully verify location, use and status of all material, equipment, and utilities that are specified, indicated, or deemed necessary for removal. Verify all materials, equipment, and utilities to be removed are completely inactive and will not be required or in use after completion of project.
   2. Replace with equivalent any material, equipment and utilities that were removed by Contractor that are required to be left in place.

B. Existing Utilities:
   1. As applicable, do not interrupt utilities serving facilities occupied by Owner or others unless permitted under following conditions and then only after arranging to provide temporary utility services according to requirements indicated.
   2. Notify Owner in writing at least 14 days in advance of proposed utility interruptions. Do not proceed with utility interruptions without Owner’s written permission.
   3. Equipment installation:
      a. Determine suitable path for moving unit substation into place; consider Project conditions.
      b. Verify clearance requirements and locate equipment to meet installation tolerances.
      c. Revise locations and elevations from those indicated to those required to suit Project.

1.10 DELIVERY STORAGE AND HANDLING

A. Contractor is responsible for the deliveries, storing and handling of all materials relative to the communications systems, including materials supplied by others that are part of the installation contract. Material to be stored and protected according to manufacturer’s instructions.

B. Contractor is responsible for the security of all material during installation. For all material provided by contractor, or delivered to contractor on site, contractor assumes full responsibility and liability for any material shortages, damages, or loss due to storage and handling methods.

1.11 PERMITS AND INSPECTIONS

A. All communications systems to meet or exceed the latest requirements of all national, state, county, municipal, and other authorities exercising jurisdiction over the telecommunications systems and the Project.

B. Obtain and pay for all licenses, permits, and inspection fees required by local agencies and/or other agencies having jurisdiction.

C. Furnish any additional labor or material required to comply with all local and other agencies having jurisdiction at no additional cost.

D. Obtain certificates of inspection and approval from all authorities having jurisdiction, and forward copies of same to Owner's Representative prior to request for Project acceptance inspections, final completion inspections, substantial completion inspections, and acceptance testing/demonstrations.

E. All required permits and inspection certificates to be made available at the completion of the telecommunications system installation and commissioning.

F. Any portion of the communications work which is not subject to the requirements of an electric code published by a specific AHJ to be governed by the National Electrical Code and other applicable Sections of the National Fire Code, as published by the National Fire Protection Association (NFPA).

G. Installation procedures, methods and conditions to comply with the latest requirements of the Federal Occupational Safety and Health Administration (OSHA).

1.12 EXAMINATION

A. Prior to submitting a proposal, Contractor to examine site, review Project drawings and Specifications, and determine exact extent of work required. Include in proposals all materials, labor, and equipment required to complete required work indicated. Work that is necessary to obtain complete and usable Project as specified herein to be included in proposal, even if not indicated or specified.

B. Bidders' Questions: Questions as to intent of drawings and Specifications, quality of materials to be used, and work to be performed, to be submitted in writing to the Architect. All answers and clarifications to drawings and Specifications will be issued in writing.

1.13 DIVISION OF WORK

A. Contractor holding contract with Owner is responsible for coordinating work of all subcontractors to provide a complete and usable Project complying with contract provisions of Project documents.

B. Failure to coordinate work by subcontractors and suppliers will not be considered justification for additional compensation or extension of schedule.

1.14 SPECIAL RESPONSIBILITIES AND INFORMATION

A. Coordination of Information: Cooperate and coordinate with work of other Sections in executing work of this Section. Perform work so progress of entire project, including work of other Sections, will not be interfered with or delayed. Provide information as requested on items furnished under this Section, which are to be installed under other Sections. Obtain detailed installation information from manufacturers of equipment provided under this Section.

B. Obtain final rough-in dimensions or other information as needed for complete installation of Items furnished under other Sections or by Owner. Keep fully informed as to shape, size and position of openings required for material or equipment to be provided under this and other Sections. Give full information so openings required by work of this Section may be coordinated with other Work and other openings and may be provided for in advance. In case of failure to provide sufficient information in proper time, provide cutting and patching or have same done, at no expense to Owner.

C. Maintenance of Equipment and Systems: Maintain equipment and systems until Final Acceptance. Ensure adequate protection of equipment and material during delivery, storage, installation and shutdown and during delays pending final test of systems and equipment because of seasonal conditions.

D. Use of premises to be restricted as directed by Owner's Representative and as required below:
   1. Remove and dispose of dirt and debris and keep premises clean. During progress of Work, remove equipment and unused material. Maintain building and premises in neat and clean condition; perform cleaning and washing as required to provide acceptable appearance and operation of equipment, to satisfaction of Owner's Representative.
   2. Garbage Removal: Provide for the removal from the site of all spoils, debris, boxes, packaging, crates, and trash generated from the Work.
   3. Storage: Store materials maintaining an orderly, clean appearance. If stored on site in open or unprotected areas, keep all equipment and material off ground by means of pallets or racks and covered with tarpaulins.
   4. Protection of Fireproofing:

a. Clips, hangers, clamps, supports and other attachments to surfaces to be fireproofed when possible, prior to start of spray fire proofing work.

b. Install conduits and other items that would interfere with proper application of fireproofing after completion of spray fire proofing work.

c. Patching and repairing of fireproofing due to cutting or damage during course of work specified under this Section to be performed by installer of fireproofing and paid for by Section responsible for damage. This Work to be performed at no additional cost to Owner.

5. Movement of Materials: Unload materials and equipment delivered to site. Pay costs for rigging, hoisting, lowering and moving equipment on and around site, in building, or on roof.

PART 2 PRODUCTS

2.01 MATERIALS AND MANUFACTURERS

A. Materials and equipment are to be new, UL listed, and be the most recent model.

B. Structured cabling materials are to be from one manufacturer as specified.

PART 3 EXECUTION

3.01 EQUIPMENT INSTALLATION

A. Install equipment according to manufacturer's written instructions. Install equipment level and plumb. Install wiring and cabling between equipment and all related devices.

B. Cleaning: Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish. Clean devices internally using methods and materials as recommended by manufacturer.

C. Connections: Tighten wiring connectors, terminals, bus joints, and mountings. This includes lugs, screws and bolts according to equipment manufacturer's published torque tightening values for equipment connectors. In absence of published connection or terminal torque values, comply with torque values specified in UL 486A and UL 486B.

3.02 CUTTING AND PATCHING

A. Perform cutting and patching according to contract general requirements. In addition, following requirements apply:
   1. Perform cutting, fitting, and patching of electrical equipment and materials required to uncover existing infrastructure to provide access for correction of improperly installed existing or new Work.
   2. Remove and replace defective Work.
   3. Remove and replace Work not conforming to requirements of Contract Documents.
   4. Remove samples of installed Work as specified for testing.
   5. Install equipment and materials in existing structures.

B. Demolition and Removal:
   1. Cut, remove, and legally dispose of selected equipment, components, and materials as indicated, including but not limited to removal of material, equipment, devices, and other items indicated to be removed and items made obsolete by new Work.
   2. Provide and maintain temporary partitions or dust barriers adequate to prevent spread of dust and dirt to adjacent areas.

C. Protection of Work:
   1. Protect structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed. During cutting and patching operations, protect adjacent installations.
   2. Patch finished surfaces and building components using new materials specified for original installation and experienced Installers.

3.03 PENETRATIONS AND SLEEVES

A. Coordinate work with other Sections. Provide all necessary cabling sleeves and conduits.

B. When required, set sleeves in forms before concrete is poured. Provide core drilling as necessary if walls are poured or otherwise constructed without sleeves and wall penetration is required. Do not penetrate structural members. Provide sleeves and packing materials at all penetrations of foundations, walls, slabs (except on-grade), partitions, and floors. Sleeves to meet requirements of pertinent Specifications. Lay out penetration and sleeve openings in advance, to permit provision in work. Set sleeves and conduit in forms before concrete is poured. Provide remedial work where sleeves and conduits are omitted or improperly placed.

C. Sleeve Fill: Sleeves that penetrate outside walls, basement slabs, footings, and beams to be waterproof.
   1. Fill slots, sleeves and other openings in floors or walls if not used.
   2. Fill spaces in openings after installation of conduit or cable.
   3. Fill for floor penetrations to prevent passage of water, smoke, fire, and fumes.
   4. Fill to be fire resistant in fire floors and walls, and to prevent passage of air, smoke and fumes.
   5. Sleeves through floors to be watertight and to extend 2-inches above floor surface.
   6. Where raceways passing through openings are exposed in finished rooms, finishes of filling materials to match and be flush with adjoining floor, ceiling, and wall finishes.

D. Conduit Sleeves:
   1. Annular space between conduit and sleeve to be at least 1/4-inch.
   2. Sleeves to not be provided for slabs-on-grade unless specified or indicated otherwise.
   3. For sleeves through rated fire walls and smoke partitions, comply with requirements of Division 07, Thermal and Moisture Protection.

E. Supports: Do not support piping risers or conduit on sleeves.

F. Future Use: Identify unused sleeves and slots for future installation.

3.04 CORE DRILLING

A. Avoid core drilling when possible. Where core drilling is unavoidable, locate all required openings prior to coring.

B. Coordinate openings with other trades and utilities and prevent damage to structural reinforcement.

C. Thoroughly investigate existing conditions in vicinity of required opening prior to coring.

D. Set sleeves prior to installation of structure for passage of pipes, conduit, ducts, etc. Protect all areas from damage.

3.05 CLEANING

A. Clean up debris daily. Cleanup costs are the responsibility of the Contractor.

B. During progress of Work, remove equipment and unused material. Maintain building and premises in neat and clean condition. Perform cleaning and washing required to provide acceptable appearance and operation of equipment to satisfaction of Owner’s Representative.

C. After completion of Project, clean exterior surfaces of all equipment. Cleaning to include, but not be limited to, removal of concrete residue, dirt, and paint residue. Final cleaning to be performed prior to Project acceptance by Owner’s Representative.

3.06 ACCESS AND ACCESS PANELS

A. Provide access to materials and equipment that require inspection, replacement, repair or service. Provide access panels and/or doors as required to allow service of all equipment components. Provide access panels where items installed require access and are concealed in floor, wall, furred space or above ceiling. Ceilings consisting of lay-in or removable splined tiles do not require access panels. Locations of equipment requiring access to be noted on record drawings. Access panels to have same fire rating classification as surface penetrated.

B. Coordination: Coordinate and prepare a location, size, and function schedule of access panels required to fully service equipment and deliver to Owner.

C. Construction: Panels to be at least 12-inches by 12-inches. Locate access panels to provide optimum access to equipment for maintenance and servicing. Verify access panel locations and construction with Architect.

3.07 STARTUP AND OPERATIONAL TESTING

A. Owner maintains right to have access to entire project site to prepare facility for occupancy and operation. Completion of startup and field testing to be accomplished as a prerequisite for substantial completion.

B. Operate and maintain systems and equipment until final acceptance by Owner. All guarantees and warranties to not begin until final acceptance of systems and equipment by Owner. Acceptance requires, at a minimum, complete systems startup and testing.

END OF SECTION

SECTION 27 11 00
COMMUNICATIONS EQUIPMENT ROOMS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Provide all labor, materials, and equipment for the complete installation of Work called for in the Contract Documents.

1.02 SCOPE OF WORK

A. This section includes the requirements for the equipment and cable installations in communications equipment rooms.

B. Included in this section are the minimum composition requirements and installation methods for Communication Racks and Rack Cable Management.

1.03 RELATED SECTIONS

A. Section 27 05 28, Pathways for Communications Systems

B. Section 27 13 00, Communications Backbone Cabling

C. Section 27 15 00, Communications Horizontal Cabling

1.04 QUALITY ASSURANCE

A. Install all cable and equipment in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents to be subject to the control and approval of the Owner or Owner's Representative. Equipment and materials to be of the quality and manufacture indicated. Equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment to be equivalent in every way to that of the equipment specified and subject to approval.

B. 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.

C. Material and work specified herein to comply with the applicable requirements of the current adopted revision of the following:
   1. ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard.
   2. TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces.
   3. ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
   4. ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
   5. EIA-310-E, Cabinets, Racks, Panels, and Associated Equipment; most recent version.
   6. NFPA 70 – National Electric Code.
   7. BICSI – Telecommunications Distribution Methods Manual.

1.05 SUBMITTALS

A. Submit Manufacturer's cut sheets, specifications and installation instructions for all products.

PART 2 PRODUCTS

2.01 GENERAL

A. Racks:
   1. Each rack to have two L-shaped top angles, two L-shaped base angles, and two C-shaped equipment-mounting channels. Rack to assemble with nut and bolt hardware. Base angles to be pre-punched for attachment to the floor.
   2. Equipment mounting channels to be punched on the front and rear flange with the EIA-310 Universal Mounting hole pattern.
      a. Aluminum Racks to be threaded with 12-24 roll-formed threads and will include 40 each combination pan head, pilot point mounting screws.
      b. Rack to include assembly and equipment-mounting hardware.

c. Rack Ratings; Two Post Racks: 1,000 lbs. of equipment.

3. Rack to be UL Listed.
4. When assembled with top and bottom angles, space equipment-mounting channels to allow attachment of 19-inch rack-mount equipment.

B. Rack Cable Management:
1. Vertical cable management to have front and rear doors.
2. Doors to come standard with on all cable management.
3. Doors to have dual hinge design, with the ability to be opened to the right or left.
4. Door to have one-point removal and installation process for door.
5. Horizontal Wire Managers: Door to have horizontal cover hinges up or down and be lockable into position with cylindrical finger ends for easy snap on installation

2.02 FREE STANDING TWO POST ALUMINUM RACKS

A. 7-feet high by 19-inches wide:
1. Rack is to provide 45 rack-mount spaces for equipment. Each mounting space will be marked and numbered on the mounting channel.
2. Finish: Epoxy-polyester hybrid powder coat, black in color.
3. Manufacturer: Chatsworth 46753-703.

2.03 VERTICAL CABLE MANAGEMENT

A. Install vertical cable management as shown in the drawings.

B. Cable managers are to be 7-feet high by 6-inches wide by with front and rear doors.

C. Manufacturer: Chatsworth 35521-703.

2.04 HORIZONTAL CABLE MANAGEMENT

A. Install horizontal cable management as shown in the drawings.

B. Units to include covers that can be opened from the top, the bottom, or removed altogether.

C. Manufacturer: Chatsworth 35441-701 and 35441-702.

2.05 LADDER RACK

A. General:
1. Ladder rack to be manufactured from tubular steel. Stringers to be made from 3/8-inch wide by 1-1/2-inch high tubular steel with .065-inch wall thickness. Cross members to be made from 1-inch wide by 1/2-inch high tubular steel with .065-inch wall thickness.
2. Ladder rack cross members will be welded in between stringers on 9-inch centers.
3. Manufacturer: Chatsworth 11275-712.

B. Ladder Rack Splices:
1. Splice kits to provide a method of mechanically connecting ladder rack sections and turns together end-to-end or side-to-end to form a continuous pathway for cables.
2. Manufacturer: Chatsworth.

C. Ladder Rack Accessories:
1. Cable retaining posts to be manufactured from 1-inch by 1/2-inch tubular steel with .065-inch wall thickness. Cable retaining posts to be 6-inches high and attach to the side stringer of the ladder rack with included hardware. Fit the tops of cable retaining posts with rubberized end caps to protect cables. End caps used to cover the ends of ladder rack will be manufactured from a black fire-retardant rubberized material
2. Radius drops or “waterfalls” used to maintain the bend Radius of the cables as they exit or enter the ladder rack to be manufactured from aluminum extrusion. Extrusion to be formed in a 90-degree arc with a minimum bend radius of 3-inches. Radius drops will attach to either the side stringer or the cross member of the ladder rack/tray using manufacturer's recommended hardware. Radius drops to include 1-1/2-inch high cable spools that attach to the top of the radius drop to guide cables.
3. Auxiliary support brackets used to support cables that should be physically separated from the cables in the ladder rack will be made from 1/8-inch by 1-inch steel bar. Bracket to be L-shaped, and attach to the side stringer of the ladder rack. Bracket to hang below the ladder rack a minimum of 4-inches. Bracket to be zinc plated with a gold chem. finish.

4. Unless otherwise noted, finish on all metal components to be epoxy-polyester hybrid powder coat, black in color. Hardware to be zinc plated with a gold chem. finish.
5. Manufacturer: Chatsworth.

2.06 FIRE RATED PLYWOOD BACKBOARD

A. 8-feet high by 4-feet wide by 3/4-inch deep, fire rated plywood.

B. Paint all eight sides of plywood with white, fire rated paint.

2.07 TELECOMMUNICATIONS BONDING BUS BAR

A. Telecommunications Secondary Bonding Bus Bar: 12-inches wide by 2-inches high. Chatsworth 13622-012.

B. Ground Lugs: Compression style 2-hole ground lugs. Chatsworth.

PART 3 EXECUTION

3.01 RACKS AND CABLE MANAGEMENT

A. Assemble racks and cable management according to manufacturer's instructions. Verify equipment mounting rails are sized properly for rack-mount equipment before attaching the rack to the floor.

B. All racks must be attached to the floor in four places using appropriate floor mounting anchors. When placed over a raised floor, threaded rods to pass through the raised floor tile and be secured in the structural floor below.

C. Racks to be grounded to the PBB or SBB using appropriate hardware. The ground will meet local code requirements and will be approved by the Authority Having Jurisdiction (AHJ).

D. In seismic areas, provide and install additional rack bracing as required by building codes and the recommendations of a licensed structural engineer.

E. All threaded rod used in support of overhead cable trays to have cable guard protectors installed over the exposed threaded rod. The exposed end of the threaded rod hangers to be cut flush with the mounting brackets, filed, and painted to match site conditions. Install rubber finishing caps on any exposed metal end rail or potential sharp point.

3.02 LADDER RACK

A. Provide all components of the ladder rack/tray system (ladder rack/tray, turns, splices, supports, and accessories) from a single manufacturer.

B. Attach ladder rack to the top of the rack for cable routing. Do not drill the ladder rack to attach; use appropriate hardware from the ladder rack manufacturer.

C. Equipment load to be evenly distributed and uniform on the rack. Place large and heavy equipment towards the bottom of the rack. Secure all equipment to the rack with equipment mounting screws.

D. Install ladder rack with side stringers facing down so the ladder forms an inverted U-shape, and welds between the stringers and cross members face away from cables.

E. Secure ladder rack to the structural ceiling, building truss system, wall, floor or the tops of equipment racks and/or cabinets using the manufacturer's recommended supports and appropriate installation hardware and methods as defined by local code or the AHJ.

F. Ladder rack splices to be made in mid-span, not over a support, with the manufacturer's recommended splice hardware.

G. Support ladder rack every 5-feet or less in accordance with TIA-569. Ladder rack to be supported within 2-feet of every splice and within 2-feet on both/all sides of every intersection. Support ladder rack within 2-feet on both sides of every change in elevation. Support ladder rack 2-feet when attached vertically to a wall.

H. When the pathway is overhead, install ladder rack with a minimum clearance of 12-inches above the ladder rack. Leave a minimum of 12-inches between ladder rack and ceiling/building truss structure. Leave a minimum of 3-inches between ladder rack and the tops of equipment racks and/or cabinets.

I. Within each telecommunications room, ladder rack is to be bonded together, electrically continuous, and bonded to the PBB or SBB, unless otherwise noted in the specifications and contract documents. Ladder rack and turns to be bonded across each splice with a bonding kit. Ladder rack to be bonded to the Telecommunications Primary and Secondary Bonding Bus Bars using a two-hole ground lug on the ladder rack and a minimum #6 grounding wire or as recommended by the AHJ. Remove paint from the ladder rack where bonding/ground lugs contact the ladder rack so that the lug will contact bare metal. Use antioxidant joint compound in between the bare metal on the ladder rack and ground lug. Use antioxidant joint compound in between the busbar and the ground lug. Verify continuity through the bonds at splices and intersections between individual ladder rack sections and turns and through the bond to the PBB and SBB.

J. Combined weight of cables within the ladder rack is not to exceed the stated load capacity of the ladder rack as stated in the manufacturer's product specifications or load/design tables.

K. Use a radius drop to guide cables wherever cable exits overhead ladder rack to access a rack. Provide supports for other conductors that should be physically separated from cables within the ladder rack as defined by local code or the AHJ.

L. Maintain a 2-foot separation between ladder rack used for communications cables and pathways for other utilities or building services.

3.03 FIRE RATED PLYWOOD BACKBOARD

A. Install fire rated plywood backboards on each wall of the Telecom room.

B. Install boards vertically and firmly secure to structure per manufacturer's requirements.

C. Install boards vertically, 4-inches from floor.

3.04 TELECOMMUNICATIONS BONDING BUS BAR

A. Install the telecommunications ground bus bar in the new intermediate telecom room.

B. Bond the rack and ladder racking the SBB with a #6 conductor.

C. Connect the SBB to the electrical main distribution panel.

D. Use two-hole lugs to bond to the SBB.

END OF SECTION

SECTION 27 13 00
COMMUNICATIONS BACKBONE CABLING

PART 1 GENERAL

1.01 WORK INCLUDES

A. Provide all labor, materials, and equipment for the complete installation of all copper and fiber backbone systems.

1.02 SCOPE OF WORK

A. Pull back existing 12-strand, single mode fiber cable from the temporary MDF to the new MDF. Install new, 12-strand single mode fiber cables from the new MDF to (3) existing IDFs as shown in the backbone riser diagram *(contact Dr. Max Sigander at itmgr@banks.k12.or.us for a copy of the diagram)*.

1.03 RELATED SECTIONS

A. Section 27 05 28, Pathways for Communications Systems

B. Section 27 11 00, Communications Equipment Rooms

C. Section 27 15 00, Communications Horizontal Cabling

1.04 QUALITY ASSURANCE

A. All cable and equipment to be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents to be subject to the control and approval of the Owner or Owner's Representative. Equipment and materials to be of the quality and manufacture indicated. Equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment to be equivalent in every way to that of the equipment specified and subject to approval.

B. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices.

C. Material and work specified to comply with the applicable requirements of the current adopted editions of the following:
   1. ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard.
   2. TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces.
   3. ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
   4. ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
   5. NFPA 70 – National Electric Code.
   6. BICSI – Telecommunications Distribution Methods Manual.

1.05 WARRANTY

A. Provide a minimum one-year warranty on installation.

B. Provide the approved manufacturer’s 25-year extended product and application assurance warranty.

C. Provide all warranty documentation with the closeout documents.

1.06 SUBMITTALS

A. Submit manufacturer’s product data sheets, including part numbers, cut sheets and detailed descriptions for all proposed equipment included in project.
   1. Cut sheets to have each specific part number highlighted or underlined.
   2. Submit cut sheets in PDF format for review.

B. Submit proof of certified installers for approved manufacturer used.

PART 2 PRODUCTS

2.01 COPPER BACKBONE CABLE

A. Interbuilding Cable:
   1. 4-pair, Category 6A, 23 AWG, UL-listed, CMP Cable. Solid copper conductors with FEP insulation and overall low smoke PVC jacket. Plenum rated.

B. Manufacturers:
   1. Leviton or approved equal.

2.02 COPPER TERMINATION HARDWARE

A. Wall mounted 66 block with stand-off bracket.

B. Manufacturers:
   1. Leviton or approved equal.

2.03 FIBER BACKBONE CABLE

A. 12-Strand, Single mode, Armored, Plenum Rated Tight Buffer; UL Listed OFCP: Tight buffer optical fibers, aramid strength yarn, a plenum-rated outer jacket, aluminum interlocking armor with an overall plenum-rated sheath jacket.

B. Manufacturers:
   1. Leviton or approved equal.

2.04 FIBER TERMINATION HARDWARE

A. Fiber Distribution Units:
   1. 2RU, rack mounted, with front and rear locking doors. Accepts 12 adapter panels.

B. Fiber Adapter Plates: Duplex, LC adapters, zirconia ceramic sleeve, single mode, 12-fiber plate.

C. Fiber Connectors: LC, single mode, ceramic ferrule, blue housing.

D. Fiber Patch Cords: LC to LC, single mode, 9/125, duplex, 1-meter.

E. Manufacturers:
   1. Leviton or approved equal.

PART 3 EXECUTION

3.01 GENERAL BACKBONE CABLE

A. Comply with applicable codes, standards and with all local codes and requirements. Identify and adhere to any unique codes or requirements governed by the region where Work is to be performed.

B. Provide all necessary products for installation of copper backbone cabling to include cable supporting hardware.

C. Backbone cable to be installed following industry standard practices.

D. Terminate 4-pair cable on a wall mounted 66-block.

E. All Installations to Comply With:
   1. ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard.
   2. TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces.
   3. ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
   4. ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
   5. NFPA 70 – National Electric Code.
   6. BICSI – Telecommunications Distribution Methods Manual.

3.02 GENERAL FIBER BACKBONE CABLE

A. Terminate each end of the fiber with single mode LC connectors and place in single mode LC adapters in fiber distribution units.

B. Install rack mounted 2U fiber distribution units in each telecom room for fiber terminations.

3.03 COPPER BACKBONE CABLE TESTING

A. Complete end-to-end test results for all copper UTP cables installed are required.

B. All multi-pair copper cable pairs installed to be tested to TIA/EIA 568A, Category 6A.

C. Notify Owner at least 24 hours prior to testing to allow observation at the Owner's discretion. If Owner confirms intention to observe, a reasonable starting time to be agreed upon. Should the Owner not be present at the scheduled commencement time, it is acceptable to begin testing as scheduled.

D. 100% of all pairs in backbone copper cables to be tested for continuity and wire-map.

E. Utilize a Level IV tester. Testing to include:
   1. Wire map.
   2. Length.
   3. Attenuation.

F. Submit copies of electronic test results at closeout.

3.04 FIBER BACKBONE CABLE TESTING

A. Complete end-to-end test results for all fiber optic cables installed are required.

B. All fiber optic cable must be visually inspected and optically tested on the reel upon delivery to the installation site. Using an Optical Time Domain Reflectometer (OTDR), an access jumper with like fiber, a pigtail, and a mechanical splice, all fibers to be tested for continuity and attenuation prior to installation.

C. Testing for continuity and attenuation on the reel must confirm factory specifications to ensure that the fiber optic cable was not damaged during shipment. Test results must match the results of the factory-attached tag on the reel, or the fiber to not be used. Reel data sheet must be provided showing test results.

D. End to end (bi-directional) test measurements to be provided for single-mode and multimode fibers (two wavelengths per test are required). Submit test results for review as part of the installation inspection requirements. Test results to be in paper form and electronic form and must contain the names and signatures of the technicians performing the tests.

E. Testing to be performed on 100% of the fibers in the completed end-to-end system.

F. Notify Owner at least 24 hours prior to testing to allow observation at the Owner's discretion. If Owner confirms intention to observe, a reasonable starting time to be agreed upon. Should the

Owner not be present at the scheduled commencement time; it is acceptable to begin testing as scheduled.

G. All test results are to be recorded and submitted to the Owner. Test results to show day/time of testing, cable identification, pass/fail, Db loss for each connector, and location of project.

3.05 CABLE SUPPORT

A. Provide cable supports and clamps to attach cables to backboards and walls.

B. Attach horizontal and vertical backbone cables at 2-foot intervals using manufacturer approved supports, such as D-rings or jumper troughs utilized for wire management.

C. Attach cables to manhole racks using manufacturer approved methods

D. Backbone cabling to be secured to the cable/ladder tray following manufacturer's recommended procedures, and appropriate installation hardware and methods as defined by local code or the AHJ.

3.06 LABELING

A. Label backbone cable on each end, 6-inches above terminations.

B. Label the front cover of each fiber distribution unit.

C. Labels to denote cable type, strand count/pair count, origination (with room name and number) and destination (with room name and number). Example: 12 Strand SM Fiber – MDF 101 to IDF 125.

3.07 AS-BUILT DRAWINGS

A. CAD Files: Provide CAD files in .dwg format showing floor plans with room numbers and actual backbone cabling and pathway locations and labeling. Deliverable is required within five business days of final cable testing.

B. Red Line Drawings: Maintain one ARCH E size set of floor plans on site during work hours showing installation progress marked and backbone cable labels noted. Contractor may be asked to produce these drawings for examination during construction meetings or field inspections.

END OF SECTION

SECTION 27 15 00
COMMUNICATIONS HORIZONTAL CABLING

PART 1 GENERAL

1.01 WORK INCLUDES

A. Provide all labor, materials, and equipment for the complete installation of the Horizontal Cabling System.

1.02 SCOPE OF WORK

A. Horizontal structured cabling system consists of 4-pair, Category 6A cabling, faceplates, jacks and patch panels. Provide a structured cabling system from each outlet location to the nearest Telecom Room.

1.03 RELATED SECTIONS

A. Section 27 02 00, Communications General Requirements

B. Section 27 05 28, Pathways for Communications Systems

C. Section 27 11 00, Communications Equipment Rooms

1.04 QUALITY ASSURANCE

A. Install all cable and equipment in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents to be subject to the control and approval of the Owner or Owner's Representative. Equipment and materials to be of the quality and manufacture indicated. Equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment to be equivalent in every way to that of the equipment specified and subject to approval.

B. 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.

C. Material and work specified to comply with the applicable requirements of the current adopted revision of the following:
   1. ANSI/TIA – 568 Series Commercial Building Telecommunications Cabling Standard.
   2. TIA – 569 Commercial Building Standard for Telecommunications Pathways and Spaces.
   3. ANSI/TIA – 606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
   4. ANSI-J-STD – 607 Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
   5. BICSI – Telecommunications Distribution Methods Manual.
   6. TIA/EIA-568-C.1 – Commercial Building Telecommunications Cabling Standard.
   7. TIA/EIA-568-C.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards.

1.05 WARRANTY

A. Provide a minimum one-year warranty on installation.

B. Provide the approved manufacturer’s 25-year extended product and application assurance warranty.

C. Warranty documentation is to be provided with the closeout documents.

1.06 SUBMITTALS

A. Submit manufacturer’s product data sheets, including part numbers, cut sheets and detailed descriptions for all proposed equipment included in project.

PART 2 PRODUCTS

2.01 COMMUNICATIONS HORIZONTAL CABLING

A. Category 6A Unshielded Twisted-Pair (UTP) Cable:
   1. Category 6A, 4-pair, 23 AWG cable, plenum rated, color blue.

B. Manufacturers:
   1. Leviton or approved equal.

2.02 CABLE TERMINATION HARDWARE

A. Category 6A Patch Panel: Modular style, 48 port, rack mounted patch panel.

B. Modular Jacks:
   1. Category 6A, T568A/B wiring scheme, RJ45.
   2. Color: Outlet end to match the faceplate, patch panel end to be black.

C. Vertical, Flush Mount Faceplate:
   1. Single-gang, thermoplastic, four port and one port with recessed label and label cover. Color to match building finishes.

D. Blank Insert: Single insert for empty faceplate ports, color to match faceplate.

E. Category 6A Patch Cord:
   1. Category 6A, stranded conductors, 8-position, 8-conductor, factory terminated.
   2. Provide one 3-foot cord and one 7-foot cord for each terminated cable.

F. Manufacturers:
   1. Leviton or approved equal.

PART3 EXECUTION

3.01 INSTALLATION

A. Comply with all applicable codes, standards, and local codes and requirements. Identify and adhere to any unique codes or requirements governed by the region where the work is to be performed.

B. Cable to be installed following industry standard practices.

C. Horizontal cabling to be installed from the work area outlet location to the nearest Telecommunications Room. Horizontal cabling is not to exceed 300-feet.

D. Do not exceed the maximum pulling tension or the minimum bending radius for twisted pair cables per manufacturer's specifications.

E. Terminate Category 6A cabling on jacks and patch panels using the T568B wiring scheme.

F. Cabling to be installed continuously from the jack to the patch panel. Splicing of Category cabling is prohibited.

G. Provide proper separation distances between communications cabling and electrical wiring.

H. Test all horizontal links per the ANSI/TIA-568-C Requirements. Perform testing with a Level IV tester. Testing to include:
   1. Wire map
   2. Length
   3. Attenuation
   4. NEXT
   5. Return loss
   6. ELFEXT loss
   7. Propagation delay
   8. Delay skew
   9. PSNEXT
   10. PSELFEXT

J. Provide electronic test results in pdf format to the architect.

K. Labeling:
   1. Label cabling with machine printed labels at each end, 6-inches from each termination.
   2. Faceplate labels to be Telecom Room number, patch panel number and patch panel port number. Label outlets sequentially in each room.
   3. Label each patch panel sequentially in the Telecom Room.
   4. Include outlet labeling at each location on the as-built drawings.

END OF SECTION