



RFP No. 21/22-01 Network Cabling
PROPOSAL DEADLINE: June 3, 2022, 2:00 PM

Contact: Dave Lopez
Richfield Elementary School District
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NOTICE CALLING FOR PROPOSALS

DISTRICT: RICHFIELD ELEMENTARY SCHOOL DISTRICT
PROPOSAL DEADLINE: June 3, 2022 – 2:00 PM PDT
PLACE OF RECEIPT: Richfield Elementary School District Office

Attn: Helen Pitkin
23875 River Road, Corning, CA 96021

NOTICE IS HEREBY GIVEN that the Richfield Elementary School District of Tehama County, California, acting by and through its Governing Board, hereinafter referred to as "District" will receive up to, but no later than, the above stated Proposal Submission Deadline, sealed Proposals at the place identified above for its upcoming RFP No. 21/22-01 Network Cabling.

Request for Proposal documents can be downloaded on May 6, 2022, at <https://www.richfieldschool.org/rfp>.

Time is of the essence. The District reserves the right to reject any and all submissions, to negotiate with any or all responsible Proposers, and to waive any deficiencies, irregularities or informalities in any proposal or during the evaluation process. The award of the Contract, if made by the District, will be by action of the Governing Board.

Pre-Proposal Vendor Conference: The District will conduct a non-mandatory pre-proposal vendor walkthrough on May 18, 2022 at 3:00 PM PDT at Richfield Elementary School, 23875 River Road, Corning, CA 96021. Vendors who wish to attend this meeting should RSVP to Dave Lopez at dlopez@tehamaschools.org.

Any questions regarding the Request for Proposals shall be directed to Dave Lopez at dlopez@tehamaschools.org via e-mail *only*.

Richfield Elementary School District Governing Board

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2 Background and Overview

2.1 Overview

This Request for Proposal (RFP) states instructions for submitting proposals, and the procedure and criteria by which a Bidder will be selected. This RFP also contains contractual terms by which RESD intends to govern the relationship between it and the selected Bidder.

2.2 Requested Services

This solicitation is intended to provide a mechanism for Richfield Elementary School District to procure service and installation related to network cabling, as outlined in Exhibit B: Cabling Scope of Work.

2.3 Current Environment

RESD currently has existing network cabling that was installed when the school was built around 2005.

3 Instructions to Vendors

3.1 Proposal Deadline and Submission

Proposals must be received no later than **2:00 pm PST on June 3, 2022**.

Vendor to submit:

3.1.1 Proposals shall be submitted to:

Richfield Elementary School District
Attn: Helen Pitkin
23875 River Road
Corning, CA 96021
hpitkin@richfieldschool.org
dlopez@tehamaschools.org

3.1.2 Withdrawal, Resubmission or Modification

Vendor may withdraw the Proposal at any time prior to the Proposal Submission Deadline specified in the Calendar of Events, by submitting a written request for its withdrawal to the designated District RFP contact, signed by the Vendor or authorized agent. Vendor may thereafter submit a new or modified Proposal prior to the Proposal Submission Deadline.

Modification offered in any other manner, oral or written, will not be considered. A Proposal cannot be changed, corrected, or withdrawn after the Proposal Submission Deadline.

3.2 Calendar of Events

Activity	Due Date
Request for Proposal Issued	May 6, 2022
Onsite Bidder Walk-through	May 18, 2022 – 3:00 PM PDT
Deadline for Proposal Submission - electronic responses required	June 3, 2022 – 2:00 PM PDT
Vendor Follow-ups and Demonstrations	June 6, 2022 - Award
Award/Bidder Selection (on or before)	June 8, 2022

3.3 Preparation

A Proposal should be prepared in such a way as to provide a straightforward description of Vendor capabilities to satisfy the requirements of this RFP. Emphasis should be concentrated on conformance to the RFP instructions, responsiveness to the RFP requirements, and completeness and clarity of content.

The completed document(s) should be without interlineations, alterations, or erasures. The Proposal should present all information in a concise manner, neatly arranged, legible, and in terms understandable for evaluation. All information requested is to be addressed directly and completely. It is more desirable to give additional information than less when the answer could be misinterpreted.

The contents of Vendor’s proposal to the District, including technical specifications for hardware and software and software maintenance fees, shall remain valid for a minimum of ninety (90) calendar days from the Proposal due date. If selected, Vendor’s Proposal pricing shall remain valid for the duration of the contract term including the original contract and all extensions.

Vendor shall include sample contracts for all applicable goods, services, and software in its proposal. All Vendor contracts are subject to negotiation.

3.4 False and Misleading Statements

A Proposal which contains false or misleading statements, or which provides references which do not support an attribute or condition contended by the Vendor, may be rejected. If, in the opinion of the District, such information was intended to mislead the District in its evaluation of the Proposal and the attribute, which is a condition or capability of a requirement of this RFP, the Proposal shall be rejected.

3.5 Request for Information (RFI)

Vendors are encouraged to ask questions during the open RFP period. All questions shall be in writing and submitted to the listed District contact person. Questions must be received by the deadline specified in the Calendar of Events. There shall be no verbal understandings or clarifications recognized by the District. All responses shall be in writing by an authorized District employee or their designated representative. Responses to all RFIs received will be posted on the District Website. It is Vendor’s responsibility to monitor the District website for RFI Responses, RFP Amendments, changes, updates, revisions and/or uploaded documents.

3.6 Amendments to the RFP

During the RFP period, the District may amend the RFP. Amendments to the RFP and/or calendar of events will be posted at <https://www.richfieldschool.org/rfp>.

3.7 Limits of the RFP

RESD reserves the right to reject all proposals and will determine what future action, if any, will be taken. All costs incurred in the preparation or submission of a proposal shall be entirely the responsibility of the Vendor and shall not be chargeable directly or indirectly to the District.

3.8 Public Records Act

All records, documents, drawings, plans, specifications and other materials submitted by Vendor in its proposal and during the course of any work awarded shall become the exclusive property of RESD and may be deemed public records and subject to the provisions of the California Public Records Act (Government Code, sections 6250 et seq.). RESD's use and disclosure of its records are governed by this Act. RESD will accept information clearly labeled "TRADE SECRET," "CONFIDENTIAL," or "PROPRIETARY" as determined by the submitting party in accordance with the Act. RESD will endeavor to inform Vendor of any request for the disclosure of such information. However, under no circumstances will RESD be responsible or liable to Vendor or any other party for the disclosure of any such labeled information. Vendors that indiscriminately identify all or most of their proposal as exempt from disclosure without justification may, at RESD's discretion, be deemed non-responsive. RESD will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act, including interpretations of the Act or the definitions of "Trade Secret," "Confidential" or "Proprietary." If litigation is brought under the Public Records Act concerning documents submitted in response to this RFP, Vendor shall indemnify, defend and hold harmless RESD in such litigation.

4 Evaluation and Award

4.1 General Information

RESD shall not be obligated to accept the lowest priced proposal, but will make an award in the best interest of the District after all factors have been evaluated. All proposals received in response to this RFP will receive a fair and impartial evaluation by the District. In conducting this evaluation, the District may obtain and use information, in addition to that contained in the proposals, from any source desired. Customers on each Vendor's reference list will be contacted, as may other customers selected by the District and listed by the Vendor as a reference.

The District shall make its evaluation in its sole discretion and its decision shall be final. Public Contracts Code section 20118.2 shall govern the evaluation of proposals, selection of vendor, and contract negotiations associated with this Request for Proposals.

4.2 Requirements

Vendors must meet all of the minimum requirements defined in this RFP, including compliance with performance, licensing requirements, ability to deliver specified services, conformance to the terms and conditions of this RFP, meeting mandatory system requirements, performance expectations, contract requirements and general terms. Vendors that do not meet the minimum requirements may be disqualified.

This RFP contains the system specifications and the requested format for vendor proposals. If additional features or equipment are believed to be appropriate for the District's operations, Vendors shall quote them as options and include supporting justification and cost detail.

4.3 Scoring

Qualifying Vendors will be evaluated on their complete proposal, based on the following considerations:

Factor	Weight
Ability to perform work summer 2022	30%
Cabling design and materials quality	30%
Price	40%

4.3.1 Interviews/Vendor Presentations:

The District reserves the right to conduct in-person interviews and/or require a formal presentation for all or a portion of the responding Vendors.

4.3.2 Discussions:

Discussions may, at the District’s sole option, be conducted with responsible representatives who submit proposals determined to be reasonably susceptible of being selected for an award. Discussions may be for the purpose of clarification to assure full understanding of, and responsiveness to, the solicitation requirements. Vendors shall be given fair and equal treatment with respect to any opportunity for discussion and written revision of proposals.

Revisions may be permitted after submissions and before award for obtaining best and final proposals. In conducting discussions, The District will not disclose information derived from proposals submitted by competing firms.

4.4 Award

The District will make a “Notice of Intent to Award” available to all Vendors on the District website. The Award of the RFP will be voted on by the Board of Education at a public meeting. Any Vendor protesting the award of a contract to another Vendor must do so, in writing, within five (5) days of the Intent to Award posting.

4.5 Contract and Warranties

The Selected Vendor will guarantee that the proposed products and services shall conform in all material respects to the District’s specifications in this RFP and the Selected Vendor’s documentation accompanying or referred to in this RFP.

If a contract is awarded as a result of this procurement process all warranties made by the Selected Vendor, including the Vendor’s response to the RFP, this RFP and any bulletins or addenda to the RFP shall be incorporated into the Agreement and shall be binding upon the Selected Vendor. This RFP, and Addenda issued, the Selected Vendor’s Proposal, and all supporting documentation will become a part of the Agreement. Any Proposal attachments, documents, letters, and materials submitted by the Vendor shall be binding and may be included as part of the Agreement. Submission of a successful Proposal is not the end of the contractual process; further negotiation over the Agreement terms and conditions will be necessary, which, in and of itself, could change the Selected Vendor.

5 Implementation Process

5.1 Project Timeline

Within thirty (30) days of vendor selection, the selected Vendor shall provide the District with a project

plan that details the proposed implementation approach and timeline for the network cabling system upgrades. The District expects the timeline to conform to a Summer 2022/2023 install while students and staff are on summer break.

5.2 Site Access and Work Hours

Access to each site will be coordinated through the District representative at least five (5) work days in advance. Site access schedule and work plan must be submitted and approved by RESD prior to the Vendor arriving onsite.

Vendor may not have workers on any site when there are students present, during school hours or during school events. All work will be performed after operational hours, on non- instructional days, or on weekends. Exceptions to this schedule must be approved by District personnel.

5.3 DOJ Clearance

All Vendor personnel working on any District site shall have attained the proper Department of Justice (DOJ) clearance. Vendor must demonstrate this green light clearance for all personnel to RESD prior to being allowed onsite. Those who are not cleared or are red-lighted are not allowed on the project.

6 Vendor Experience and Ability to Perform

This section should provide background information that supports Vendor's ability to provide the requested services effectively and reliably. Please respond to each requirement directly and provide additional documentation as needed to support the Proposal.

6.1 Vendor Background/Qualifications

Provide a brief description of Vendor's firm(s), as well as any other firms joining with Vendor to provide services. This description should include:

- A history of the firm(s)
- Age of the firm(s)
- Number of employees
- Organizational structure of the firm(s)
- Length of time in the telecommunications industry
- Number of office locations
- Address of the location nearest to the District
- Address of the local office responding to this RFP

Provide a list of company contacts. For each contact include:

- Description of role
- Background
- Detailed experience information

Provide a brief overview of Vendor's technical experience, qualifications, and background in providing and maintaining Network Cabling Systems and related services for similarly sized customers. Indicate the prior experience of Vendor that is relevant to this contract. Include sufficient detail to demonstrate the relevance of such experience. Please provide specific examples of recently completed, K-12 projects similar in size, scope and timeline to this project. Proposal should evidence Vendor's awareness of and support for the unique needs of education clients.

The selected vendor will be responsible for acquiring any permits, fees, inspections, and construction administrative requirements. A copy of all applicable permit applications shall be provided to the District prior to submission. A copy of the approved permit(s) shall be provided to the District upon issuance.

6.2 Support and Maintenance

Provide full-time, local, company-employed customer service professionals who are trained specifically to support the products and configuration recommended for RESD. Please describe the size, work location and organizational structure of the support team.

Provide response and resolution times to tickets/reported incidents. Include the severity/type of incident, the average response and resolution time for similar incidents over the past two years and the target and guaranteed response and resolution times included in Vendor's proposal.

Describe the process for submitting service requests. Explain how service requests are tracked. Describe how the original requestor as well as centralized District support personnel (IT contact and contract administrator) can view service request history.

Describe the escalation procedures for issues. Identify whether support requests are automatically escalated based on severity and/or time-lag.

Describe the process for submission, review, escalation and development for new feature requests.

7 Exceptions

Describe any exceptions to the RFP content, general expectations, specific requirements, and/or the District's standard agreement. For each exception, propose acceptable alternative language and/or provide rationale to support the exception. Exceptions that are contrary to the District's best interests, do not meet the needs of our staff and students, or conflict with regulations related to public contracts and procurement will not be accepted by the District and may be cause for rejection of the proposal.

8 District Rules and General Terms

District Rules and General Terms are written as statements of compliance. Vendor must confirm compliance/conformance to all statements in its response.

8.1 Termination

- 9.1.1** Termination for Cause: District may terminate the contract resulting from this agreement for a material breach that is not remedied within thirty (30) days of written notice to the Vendor by the District.
- 9.1.2** The District reserves the right to cancel this RFP at any time or limit quantities due to insufficient or non-appropriation of funds. No termination liability penalties will apply if funding is denied, reduced, or discontinued, or if it is not in the best interest of the District.
- 9.1.3** Non-Appropriation: Notwithstanding any other provision to the contrary, if for any fiscal year of this Agreement the Governing Board for any reason fails to appropriate or allocate funds for future payments under this Agreement, the District will not be obligated to pay the balance of funds remaining unpaid beyond the fiscal period for which funds have been appropriated and allocated.

9 EXHIBIT A: Required Forms

ACKNOWLEDGEMENT OF ADDENDA TO RFP

PROPOSER HEREBY ACKNOWLEDGES RECEIPT OF ANY AND ALL ADDENDA TO THE RFP.

If Proposer has no knowledge of any ADDENDA to the RFP having been issued to, or received by, Proposer, please check following box:

ADDENDA:

Addenda No.	Date Published	Date Received

By: _____
Signature of Authorized Agent

Date: _____

Name and Title of Authorized Agent

Name of Proposer

PROPOSER REPRESENTATION AND CERTIFICATION

The undersigned hereby acknowledges and affirms that:

1. He/she is a duly authorized agent of the Proposer with the authority to submit a Proposal on behalf of the Proposer (corporate or other authorization confirmation may be requested prior to final contract execution).
2. He/she has read the complete RFP documents and all amendments issued pursuant thereto.
3. The Proposal complies with State conflict of interest laws. The Proposer certifies that no employee of its firm has discussed, or compared the Proposal with any other Proposer or District employee, and has not colluded with any other Proposer or District employee.
4. If the Proposer's Proposal is accepted by the District, the Proposer will enter into a contract with the District to provide the Services, Systems and Equipment described by the Proposal on the terms mutually acceptable to the District and the Proposer.
5. The District reserves the right to reject any or all proposals.

I hereby certify that I am submitting the attached Proposal on behalf of

_____ [Specific Entity Submitting Proposal].

I understand that, by virtue of executing and returning this required response form with the Proposal, I further certify, that the Proposer understands and does not dispute any of the contents of the proposal requirements (except as may be noted in the response).

Proposer Name: _____

Address: _____

Telephone: _____

FAX: _____

E-Mail: _____

By: _____ Date: _____

Signature of Authorized Agent

Name and Title of Authorized Agent

NOTE: If Joint Venture, each member of the joint venture must provide a completed certificate form.

**CERTIFICATION OF PRIMARY PARTICIPANT REGARDING DEBARMENT, SUSPENSION,
AND OTHER RESPONSIBILITY MATTERS**

The _____ (Principal) of _____ (Firm Name)

Certifies to the best of its knowledge and belief that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local), with commission of any of the offenses enumerated in paragraph (2) of this certification; and
4. Have not within a three-year period preceding this proposal had one (1) or more public transactions (federal, state, or local) terminated for cause or default.

If unable to certify to any of the statements in this certification, the participant shall attach an expiration to this certification.

I HEREBY CERTIFY AND AFFIRM THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTAND THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

Signature

Proposer/Firm Name

Name and Title of Primary Participant/Authorized Official

Date

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I hereby certify on behalf of _____ (name of offeror)
that _____ (Firm name) meets the
following qualifications:

1. No Federal appropriated funds have been paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds, other than Federal appropriated funds, have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit the attached, Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in all subcontracts, and that all subcontractors shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Executed this _____ day of _____, 2022

By: _____

(Signature of authorized official)

(Name and Title of authorized official)

10 EXHIBIT B: Cabling Scope of Work



RFP CABLING SCOPE

Richfield Elementary School District

March 4, 2022



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1 Overview

Richfield Elementary School District (“RESD”) is seeking to upgrade and extend its existing cabling infrastructure at Richfield Elementary School. The school, located at 23875 River Road, Corning, CA 96021, will seek bids for this work.

This Cabling Scope provides the specifications and site requirements for installation of network infrastructure necessary to support the communications, VoIP telephony, and data requirements at the new facility. Work will include the following components:

- Category 6/6A Copper Cable System

2 General Conditions and Specifications

2.1 Work Included

The work covered by this scope includes the construction described and implied, all labor required to perform and complete such construction, all materials required to perform and complete such construction, all services, facilities, tools and equipment required to perform and complete such construction, and coordination with RESD, Tehama County Department of Education, and all other trades.

2.2 Coordination of Work

- Wherever work interconnects with or contacts the work of other trades, coordinate with other trades to insure that all trades have the information necessary so that they may properly install all the necessary connections and equipment.
- Coordinate project and schedule work with Tehama County Department of Education.
- The Contractor should make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper compliance with the design intent.

2.3 Site Visit & Field Conditions

The Contractor shall verify all dimensions and distances in the field and document the lengths and materials to be furnished. Building construction plans are available upon request.

2.4 Special Conditions

Any item not specifically shown on the drawings or called for in the specifications, but normally required to conform to the system design intent as presented, is to be considered as part of the contract and required to be furnished and installed by the Contractor.

2.5 Products

All products shall be new, unused, in perfect working condition, and in the original packaging containers upon arrival at the project site.

2.6 Fire Stopping

2.6.1 Work

Contractor is responsible for fire stopping of floor and rated wall penetrations specifically provided for the distribution of telecommunications cables.

Required floor and wall ratings shall be maintained.

2.6.2 Penetration Sealant

- Provide fire-resistant materials of a type and composition necessary to restore fire ratings to

all wall or floor ceiling penetrations. Material must be properly classified and meet all national and local codes. The fire rating of the penetration seal shall be at least that of the floor or wall into which it is installed, so that the original fire rating of the floor or wall is maintained as required by Article 300-21 of the National Electrical Code.

- The materials shall have been subjected to fire exposure in accordance with standard time-temperature curve in the Standard, UL ASTM E 119 and NFPA 251. The fire stop material shall have also been subjected to the hose stream test in accordance with UL 10B.

2.7 Cable Pathways and Equipment Racks

2.7.1 Conduit

Contractor shall use conduit as intended when designated for low voltage telecommunications. Conduit fill rates shall be taken into consideration when determining the type and quantity of cables.

2.7.2 Equipment Racks

Contractor shall provide Middle Atlantic equipment racks at IDF locations if required with the following specifications:

- Middle Atlantic DWR-24-26 (26" D X 49" H) with vented front door LVFD-18

Commented [DL1]: Verify Cab Door

All cables descending from the ceiling at the cabinet location should be placed in conduit or similar vertical cable manager sized appropriately for the quantity of cables to be installed.

2.7.3 Non-Continuous Cable Supports

For cables not in conduit, Contractor is responsible for installing J Hook Assemblies as follows:

- Multi-tiered non-continuous cable support assemblies shall be used to support telecommunications cables in accessible ceiling areas.
- Provide all necessary hardware for installing support brackets in accessible ceiling spaces. These spaces may include T-bar ceiling, threaded rod spaces and direct mounting to concrete wall or ceiling.
- Supports are to be spaced to prevent cable bundle droop in excess of 6" from parallel between supports. If the cables cannot be kept within the specified droop, additional supports are to be added.
- Acceptable manufacturers are: Erico CADDY, B-Line, or equivalent.

2.8 Cabling

2.8.1 Cabling Standards and Codes

- All cabling is to be installed according to the latest EIA/TIA-568 and TIA-569 standards and

the latest BICSI-proposed installation procedures as outlined in Telecommunications Distribution Methods Manual and Telecommunications Cabling Installation Manual.

- All work and materials shall be in accordance with the National Electric Code (latest edition), Federal, State, and local codes, and all other bodies having jurisdiction with the installation practice.

2.8.2 Cabling System Installation

- The Contractor shall follow manufacturers' instructions for installing components and adjusting all equipment. Where no instructions are included with the equipment, follow accepted industry practices and workmanlike installation standards.
- Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and National Electrical Code ("NEC") and with manufacturer's printed instructions.
- Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.
- Where manufacturer does not provide bending radii information, minimum bending radius shall be 10 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to RESD.
- Contractor shall insure that the maximum tensile load and or pulling tensions do not exceed that specified by the manufacturer of the cable to be installed.
- Tie-wraps are to be hand-tightened on cables or cable bundles, and are not to deform the cable jacket or crimp the sheath.

2.8.3 Cable Routing and Management

- Primary cable routes are to be coordinated with RESD for approval prior to installation.
- Velcro straps are to be utilized to manage cable within wiring closets and cabinets. Over-tightened tie-wraps causing cable jacket deformation will not be accepted by RESD.
- Exposed cabling within the wiring room(s) shall be neatly managed utilizing cable management and Velcro straps.

2.8.4 Labels

- Brother P-Touch or equivalent
- Machine-printed
- Smear resistant
- Laminated / Adhesive
- Size and color provided in specific work sections

2.8.5 Warranty

All components and procedures used for installation of the Category 6 or 6A copper and fiber optic cable systems shall meet all eligibility requirements for both links and channels, and be registered with cabling manufacturers 25-year system warranty if required. **All structured cabling products included in this project should be covered by a 25-year warranty.**

3 Fiber Optic Cable System

3.1.1 Work Included

- No planned optical cable work for this scope of work.

3.1.2 Specifications

A. Fiber Optic Cable

Corning FREEDM One OS2 Tight Buffered Cable, Riser, 12-Fiber, Black. Equivalent cables are acceptable. Preferred brands are Corning, CommScope.

B. Fusion Splice-on Connectors

Compatible LC fusion splice connectors.

C. Fiber Enclosure – Server Room (214) and Classroom IDF (125)

Corning CCH-01U (2 slots with 12 strand CCH panels).

D. Fiber Adapter Panels

Corning Closet Connector Housing (CCH) Panel, LC adapters, Duplex, UPC, 12 fibers, Single-mode (OS2).

3.1.3 Installation

A. Fiber Optic Cabling System Installation

Manufacturer minimum bend radius for installation and while in-service shall not be exceeded.

B. Fiber Optic Cable Routing and Management

- Fiber optic cable will be carefully and neatly tie wrapped to cable runways, racks and backboards.
- The fiber optic sheath will be mechanically secured to the fiber optic enclosure.
- Service loops will not exceed the minimum operating cable radius specified by manufacturer.
- Leave a pull string to the end of each conduit run. Replace pull string if it is used for a cable pull.

C. Fiber Termination

- Fusion splicing will be performed using an Optical Arc Fusion Splicer

approved by the manufacturer of FSOCs being used.

- Terminated fibers will be joined to Fiber Adapter Panels according to TIA/EIA 598C color code and sequence.

D. Fiber Optic Testing

- Trained technicians who have successfully attended an appropriate training program and have obtained a certificate, as proof thereof, shall execute the tests.
- Testing will only be performed on the completed end-to-end system.
- Test equipment will be accurately calibrated and operated.

E. Fiber Testing Protocol

- All fiber optic strands will be inspected and cleaned prior to testing.
- All fiber strands will be tested end-to-end bi-directionally using a light source and power meter (LSPM) at 1310 nm and 1550 nm.
- Optional - fiber strands will be tested end-to-end bi-directionally using an optical time domain reflectometer (OTDR) at 1310 nm and 1550 nm.
- Testing and measurement of optical power loss will be performed according to ANSI/TIA-526-14 and IEC 61280-4-1.

F. Test Results

Test records are to contain the following information:

- Location/Segment Identifier.
- Date and Time Measurements were taken.
- Cable Identifier, optic strand ID and Fiber Type.
- Wavelength of test: 1310 nm and 1550 nm.
- Measurement direction.
- Loss Budget, Connector, Cable and splices.
- Loss measurement.
- Full Data Graphics (Curve) with all events in the optic path identified.
- Test Equipment: Model, Serial Number and Certification Date.
- Measurements shall carry a precision through one significant decimal place, minimum.

G. Test Reports

- Test reports will contain all necessary information, and system performance will comply with all manufacturer requirements, for acceptance and registration with cabling manufacturers 25-year System Warranty.
- Shall be provided to RESD in electronic form.

H. Cable Grounding

Armored cable (if required) shall be bonded and grounded to racks on both ends of a cable span.

4 Category 6/6A Copper System

4.1 Work Included

RES D typically calls for Category 6A cable for high bandwidth devices such as datacenter networking or wireless access point drop locations.

All copper cabling should be colored blue. Please see **Appendix A** for detailed counts for runs by type.

The scope of this work includes:

- Structured CAT6/6A Cabling System Installation
- Patch Panel Installation
- Strain Relief Bar Installation
- Cable Termination
- Label all Patch Panels and Faceplates
- Test and Certify System

4.2 Specifications

4.2.1 Cable

Preferred brands include Belden, Mohawk, and CommScope.

4.2.2 Patch Cords

No patch cords are required for this scope of work.

4.2.3 Jack Modules

As recommended by Contractor, appropriate for the specifications listed in this scope. Jack Modules should be color blue.

4.2.4 Blank Modules

White blank modules are required at cable termination locations.

4.2.5 Faceplates

White faceplates are required at cable termination locations.

4.2.6 Patch Panels

As recommended by Contractor, appropriate for the specifications listed in this scope.

4.2.7 Strain Relief Bars

As recommended by Contractor, appropriate for the specifications listed in this scope.

4.2.8 Rack Mount Shelves

No rack mount shelves are required for this scope of work.

4.2.9 Surface Mount Boxes

If required, white surface mount boxes are required at cable termination locations.

4.2.10 Labels

All labels should be sized appropriately for the design of product it's labeling.

4.3 Execution

4.3.1 CAT 6/6A Cabling System Installation

- Contractor is to furnish and completely install the specified faceplates, jacks, patch panels, cable and surface mount components for a complete installation.
- Category 6/6A UTP data cable lengths are to be kept at three hundred (300) feet or less. Contractor shall notify the RESD prior to the cable installation if a UTP data cable could exceed this length. Rerouting the cable will be reviewed.
- Cable bundles are to be a maximum of 48 cables.
- Service loops of 12 inches at the outlet and 10 feet at the MDF/IDF will be maintained in the ceiling area for cable runs. Service loops may not touch the ceiling assembly and if so must be remedied at the Contractor expense.
- Cable routing shall be such that the cable is not closer than six (6) inches from light fixture ballasts; twelve (12) inches from conduit and cables used for electrical power distribution; and four (4) feet from motors, transformers and/or any other device capable of emitting RF noise and electromagnetic interference.
- Always use grommets to protect the cable when passing through metal studs or anything that can possibly cause damage to the cable.
- Leave a pull string to the end of each conduit run. Replace pull string if it was used for a cable pull.

4.3.2 CAT6A Cable Termination

- Minimal cable jacket shall be removed for termination per the manufacturer's specifications.
- The twist of each pair shall remain natural to final termination. Contractor shall not add twist to the pairs after the jacket has been removed.
- Cabling contractor shall refer to the manufacturer's recommended procedure for terminating to the connector.

- Cable is to be terminated using manufacturer recommended tools.
- Conductors are to be flush cut and properly seated in wire caps.
- Each cable shall be supported up to the point of termination through the use of strain-relief bars or other mechanisms as recommended by the manufacturer.

4.3.3 Access-Points

- Two (2) cables will be run to each Wireless Access Point location.
- Access point runs should be terminated with the appropriate Mod Jack and left above the ceiling tile at each Wireless Access Point location.

4.3.4 Card Reader Locations

- One (1) cable will be run to each Card Reader location.
- Cable should be left un-terminated on both sides of the run, and cables separated on the IDF side from other data cables.

4.3.5 Patch Panel Installation

Patch panels shall be installed in equipment racks located in both Room 214 (Server) and Room 125 (Classroom Storage IDF).

Installation order of components in the rack:

- Optical splice trays at the top.
- Skip one (1) U space.
- One (1) 24 port Category 6A patch panel.
- Skip three (3) U spaces.
- One (1) 48 port Category 6/6A patch panel.
- Skip three (3) U spaces.
- One (1) 48 port Category 6/6A patch panel.
- Repeat as necessary.

4.3.6 Strain Relief Bar Installation

Strain Relief Bars (2 per patch panel) shall be installed on rear of rack post corresponding to patch panel in both Room 214 (Server) and Room 125 (Classroom Storage IDF). Cables are to be positioned over strain relief clips and snugged down.

4.3.7 Category 6A Patch Cords

No patch cords are required for this scope of work.

4.3.8 4 Post Rack Mount Shelf

No rack mount shelves are required for this scope of work.

4.3.9 Blank Modules

Un-populated ports in modular patch panels and faceplates shall be fitted with blanks as required.

4.3.10 CAT 6/6A System Field Test – General Requirements

- Trained technicians who have successfully attended an appropriate training program and have obtained a certificate, as proof thereof, shall execute the tests.
- Testing will only be performed on the completed end-to-end system.
- All testers used must be factory calibrated by the manufacturer according to factory calibration recommendations.
- Test unit must meet level III accuracy (Cat 6A), or level III (Cat 6) in accordance with ANSI/TIA-1152.
- All twisted-pair copper cable segments must be tested in compliance to the requirements in ANSI/TIA 1152 and ANSI/TIA 568-C.2 for Category 6A compliance.

4.3.11 CAT6A System Field Test - Parameters

Each cabling link shall be in tested for:

- Wire Map
- Length
- Propagation Delay
- Delay Skew
- FEXT (Far-End Crosstalk)
- Insertion Loss
- NEXT (Near-End Crosstalk)
- PS NEXT (Power Sum Near-End Crosstalk)
- ACR-N (Attenuation to Crosstalk Ratio Near-End)
- PS ACR-N (Power Sum Attenuation to Crosstalk Ratio Near-End)
- ACR-F (Attenuation to Crosstalk Ratio Far-End)
- PS ACR-F (Power Sum Attenuation to Crosstalk Ratio Far-End)
- Return Loss

4.3.12 CAT6A System Field Test – Results

A. Test Records are to contain the following information:

- Location.
- Date and Time Measurements were taken.
- Cable Identifier: Composed of Patch Panel and Port #.
- Full Test Results and Data Graphics.
- Test Equipment: Model, Serial Number, and Certification Date.

B. Test Reports

- Test reports will contain all necessary information, and system performance will comply with all manufacturer requirements.
- Shall be provided to RESD in electronic form.

4.3.13 Labeling

Please confirm with RESD the determined labeling scheme prior to labeling products.

5 Category 3 Voice Cross-Connects

5.1 Work Included

- No planned optical cable work for this scope of work.

5.2 Specifications

5.2.1 Category 3 25 Pair Cable

SUPERIOR ESSEX MFR PART # 04-097-31 or equivalent.

5.2.2 66 Blocks

SIEMON COMPANY MFR PART # M1-50 or equivalent.

6 Appendix A

Appendix A

Proposed Category 6 Ethernet Runs

Building	Location		Category 6 Runs (General Use)	Category 6A Runs (WAP)	Clock	External Speaker	Room Total	Notes
Office	Office			1	1		2	WAP in middle of office, Speaker on east wall
Cafeteria	Cafeteria			1	2		3	2 speakers, one on east wall, one in kitchen
Gym	Gym			1			1	1 AP middle Gym, 1 speaker in gym, 2 ethernet in office
	Gym Office		2	1	1		4	
100	Room	101			1		1	Clock west wall
	Room	102	8	1	1		10	Clock west wall, AP middle, North wall 8 runs for desktops
	Room / Staff	103			1		1	Clock east wall
	Room	104		1	1		2	Clock east wall, AP middle
200	Room	201		1	1		2	Clock west wall, AP middle
	Room	202	2	1	1		4	Clock west wall, AP middle, 2 eth southwest wall
	Room	203		1	1		2	Clock west wall, AP middle
	Room	204		1	1		2	Clock west wall, AP middle
	Room	205	2	1	1		4	Clock west wall, AP middle, 2 eth northwest wall
	Room	206		1	1	1	3	Clock west wall, AP middle
300	Room	301		1	1	1	3	Clock north wall, AP middle
	Room	302		1	1		2	Clock north wall, AP middle
	Room	303		1	1	1	3	Clock north wall, AP middle
	Room	304		1	1	1	3	Clock north wall, AP middle
	Room	305		1	1		2	Clock north wall, AP middle
	Room	306		1	1	1	3	Clock south wall, AP middle
	Room	307		1	1		2	Clock east wall, AP middle
Totals			14	19	21		59	

