

Amendments and Q&A

- All references to 12 strand, OM4 50/125 micron multimode plenum rated fiber updated to 12 strand, OS2 9/125 µm single mode plenum rated with aluminum interlocking armor fiber.

QUESTIONS ASKED BY VENDORS

1. You want the fiber enclosure to use SC connectors but the network equipment to use LC connectors and then they ask for LC to LC jumper cables. Did you mean SC to LC jumper cables?

All fiber, enclosures, and connections should be LC. Cables should be LC-LC. Copy/paste error in bid. Will be corrected.

2. Are all the standard data drops going to be going in a 2 port face plate?

Vendor's discretion, vendor is supplying face plate. There is no requirement to provide a face plate with extra port space, however there is no prohibition against doing so if vendor wishes to do so (for instance if pricing is better with all 6-port plates, that's fine) as long as any unused ports are filled with blanks.

3. Do they know the number of drops for each type (standard, audio, wireless, & security) going to which of the 3 locations? This will help give me a patch panel count.

Yes, that information is in the blueprints and in the port-details document. Do you have a copy of those? It's broken down per room, and a sum total. The port details document is included in PDF of RFP, and also as a separate spreadsheet available here: <https://www.barrow.k12.ga.us/departments/business-services/files/documents/Bids/23-24/2023-BASA2-Port-Details.xlsx>

4. Do they need patch cables for the Audio and security biscuit boxes?

No. Vendor is only responsible for providing patch cables in data closets for every connection installed (including audio/security), but vendor is not responsible for patch cables at other end-point.

5. Do they want every patch cable coming from the patch panels to be blue or do they want us to match jack color?

Vendor's discretion, but RFP only requires blue patch cables regardless of jack color. In previous installations vendor has matched jack color, but that is not required in the RFP.

REQUEST FOR BID PROPOSAL
ON THE STRUCTURED CABLING PLANT
FOR BASA ADDITION – BASA 2
FOR THE BARROW COUNTY SCHOOL SYSTEM

The Barrow County School System
Information Technology Services
179 W. Athens Street
Winder, Georgia 30680
Voice - 770-307-0533

REQUEST FOR PROPOSAL (RFP) FOR STRUCTURED CABLING

To: All Interested Vendors

You are invited to submit a formal proposal (bid) for installing new data communications cabling at the Barrow Arts & Sciences Academy new addition under construction next to the original building in Winder, GA in accordance with the attached General Conditions and Specifications.

All questions should be emailed no later than Friday, September 15th, to ITSbids@barrow.k12.ga.us. Any modifications to the RFP based on questions and answers regarding this offering will be posted as addendums to the RFP, and made available on the web site at <http://www.barrow.k12.ga.us/>. **Vendors are responsible for checking the web site for amendments to the RFP. Vendors should check for RFP updates prior to submitting final proposal.**

Proposals from bidders will be received by Barrow County Schools via email until 10:00 A.M. Friday, September 22nd. Proposals must be sent to ITSbids@barrow.k12.ga.us and should include the words "BASA 2 Cabling response" in the subject. Only email proposals will be accepted.

Emailed proposals will only be deemed accepted for consideration upon delivery of a confirmation email from jstclair@barrow.k12.ga.us to vendor's email indicating receipt of proposal. If vendor does not receive confirmation of receipt of proposal via email, vendor should consider proposal not to have been delivered.

Barrow County reserves right to postpone bid opening to later the same day beyond original due date/time in event of notification of delayed bid delivery. Once time has been called and the first proposal has been opened, any proposals received thereafter will be returned unopened. Proposals must be valid for a period of ninety (90) days after the date of receipt of bid. Barrow County Schools reserves the right to reject any and all bids or to waive any informality in bidding.

GENERAL CONDITIONS

1. Locations of Sites

The location of the work is at 1007 Austin Rd., Winder, GA 30680.

2. Scope of Work

The following are the General Conditions for the work to be performed as outlined in the Specifications.

It is understood that except as otherwise specifically stated in the contract, the Vendor (Contractor) shall provide and pay for all materials, labor, tools, equipment, transportation, temporary construction of every nature and all other services and facilities of every nature whatsoever, necessary to execute, complete and deliver the work within the specified time. Permits and licenses necessary for the execution of the work shall be secured and paid for by the Vendor.

Any work necessary to be performed after regular working hours or on Sundays or legal holidays shall be performed without additional expense to the Owner.

3. Protection in General

The Vendor shall protect all buildings, trees, shrubs, lawns, and all landscape work from damage. Any damaged property shall be repaired and replaced at the Vendor's expense.

The Vendor shall protect all private roads, streets and sidewalks, driveway aprons, driveways, and shall make all necessary repairs at the Vendor's expense.

The Vendor shall protect all furniture, carpeting, flooring, doors, door facings, ceilings, windows, and interior walls from damage, and shall make all repairs or replacements at the Vendor's expense.

The Vendor shall protect all existing equipment, wiring, and cabling that is not scheduled for vendor removal, and shall make all repairs or replacements at the Vendor's expense.

Prior to executing any repairs or replacements resulting from failure to adhere to these guidelines, Vendor shall notify Owner of nature/extent of damages and shall consult with Owner to insure that repairs are planned, executed, and completed in a manner satisfactory to Owner.

4. Change in Contract

The Owner will not be responsible for any change in the work involving extra cost unless approval in writing is furnished by the Owner before such work is begun.

5. Existing Conditions

The Vendor, in undertaking the work under this contract, is assumed to have carefully inspected the blueprints, visited the site, asked any questions, and to have taken into consideration all conditions which might affect the work. **No consideration will be given to any claims based on lack of knowledge of existing conditions.**

6. Affidavits

Before acceptance of proposal by the Barrow County School System, the Vendor will be required to furnish affidavits on enclosed forms.

7. Insurance

Within seven days after notification of award, Vendor shall furnish to Owner a Certificate of Insurance showing compliance with the following limitations.

The Vendor agrees to comply with the provisions of Worker's Compensation laws of the State of Georgia.

It shall be stated on every policy or certificate of insurance, as the case may be, that "The insurance company agrees that Policy No. _____ shall not be canceled, changed, or allowed to lapse until ten (10) days after the Barrow County School System has received written notice as evidence by return receipt of registered letter, and it is agreed further that as to lapsing, such notice will not be valid if mailed more than fifteen (15) days prior to the expiration date shown on this policy".

The Vendor further shall maintain such other insurance (with limits as shown below) as shall protect the Vendor and Owner from any claims for property damage or personal injury, including death, which may arise out of operations under this contract, and the Vendor shall furnish the Owner certificates and policies of such insurance as shown below.

Below is listed the insurance coverage that must be procured by the Vendor at his own expense. The Vendor agrees to follow instructions indicated in each case:

A. Owner's Protective Liability Insurance

Protective injury, including death - limits of \$250,000.00 for each person and \$500,000.00 for each accident.

B. Vendor's Public Liability Insurance

Personal injury, including death - limits of \$250,000.00 for each person and \$500,000.00 for each accident.

Property Damage - limits of \$50,000.00 for each accident and \$100,000.00 for the aggregate.

Disposition: Certificate of Insurance of both of above must be sent to Owner prior to commencement of work.

No insurance will be acceptable unless written by a company licensed by the State Insurance Department to do business in Georgia.

8. Warranty

The Vendor shall furnish a **written warranty** indicating (a) the equipment (electronics) supplied under these specifications will be free from defects of materials and workmanship for a period of no less than five (5) years, (b) the cable plant and labor will be free from defects of materials and workmanship for a period of no less than fifteen (15) years from the date of final acceptance unless otherwise specified and, (c) all defects occurring within that period shall be corrected in a timely manner at no cost to the Barrow County School System.

9. Payments

Payment will be made only after inspection and approval by the director of technology or his designee. Such approval will be given only after all debris, equipment, materials, etc., are removed from the property, all cleaning completed, any damage repaired, and test results are delivered and approved. **Only a single payment is guaranteed to be made to the vendor when all aspects of the contract have been completed to the Owner's satisfaction. Requests for partial payments may be considered.**

10. Application for Payment

All applications for payment shall be signed by the Vendor and mailed or emailed to:

The Barrow County Schools
Information Technology Services
Attention: Mr. John St.Clair
179 W. Athens Street
Winder, GA 30680
jestclair@barrow.k12.ga.us

11. Addenda

Any addenda issued during the time of the request for proposal shall be addressed in the proposal, and in closing the contract they shall become part thereof.

12. Proposal Acceptance and Interpretations

The Barrow County School System may accept any proposal offered on an all, partial, or none basis, within funds available, whichever is in the best interest of the school system.

If any questions arise within the RFP documents, the vendor may submit to the Barrow County School System an emailed written request for interpretation to ITSbids@barrow.k12.ga.us. Any interpretation of documents will be made by addendum to the RFP. Copy of such addendum, approved by the director of technology, will be made available on the school system web site. The Barrow County School System will not be responsible for any other explanation or interpretations. The Barrow County School System reserves the right to extend the due date if such information significantly amends this solicitation or makes compliance with the original due date impractical. The Barrow County School System reserves the right to reject any or all proposals and wave technicalities and informalities, including but not limited to late arrival of proposals so long as said proposal arrives on the date proposals are due.

13. Withdrawal of Proposal

A proposal cannot be withdrawn after it is filed, unless vendor makes a request in writing to the Barrow County School System prior to time set for opening of proposals, unless the Barrow County School System fails to accept bid within ninety (90) days after date fixed for opening of bids.

14. Vendor's Qualifications

As part of the proposal, vendor must complete the attached "Statement of Vendor's Qualification" form. Vendor may be required, before awarding of contract, to demonstrate to the complete satisfaction of the Barrow County School System, that vendor has the necessary facilities, ability and financial resources to execute the work in a satisfactory manner and within the time specified; that vendor has had experience in work of the same or similar nature; and that vendor has past history and references which will assure the Barrow County School System of vendor's qualifications for executing the work.

Vendors must submit a copy of a valid low-voltage license (Low-Voltage General, Low-Voltage Telecommunications, or Low-Voltage Unrestricted as issued by the State Construction Industry Licensing Board of Low-Voltage Contractors) of the individual(s) who will perform and/or supervise this work.

Vendors must submit a copy of a BICSI (Building Industry Consulting Service International) certified RCDD (Registered Communications Distributions Designer) certificate of the individual(s) who designs and/or supervises the design of the proposed work.

15. Stored Materials

Any materials stored on job site shall be Vendor's responsibility.

16. Specifications

Complete specification details or "cut-sheets" for all products proposed must be provided as part of the proposal package.

17. Time of Completion and Penalties

Vendor's proposal shall specify the number of calendar days in which vendor guarantees completion of the contract. That number of days should include all installation, testing, certification, and completion of punch lists. For each calendar day that a component of the proposal remains uncompleted beyond the number of days agreed upon by vendor and owner, vendor agrees to a reduction in total cost of the project of 1% per calendar day. The final invoice(s) to Owner shall be reduced by any such amount and shall be indicated as a "vendor penalty for late completion." Penalty shall only be assessed to vendor when delays are due to circumstances under vendor's domain, including problems with vendor's supply chain, labor, etc. Delays due to construction

delays by other contractors under the hire of Barrow County Schools or acts of nature impacting vendor's work shall not be held against vendor.

18. Trade Names "or Equal" Clause

The number and trade names given for any products are taken from various manufacturer's catalogs and shall construed as being descriptive only of type, style, and quality of materials required, and should be considered to include "or equivalent" in the description.

Reference to or specification of any article, device, product, material fixture, form or type of construction, etc., by name, make or catalog number, with or without the words "or equal," shall be for the purpose of establishing a standard of quality and shall not be construed as limiting competition. Should the Vendor wish to use a product other than the make or kind specified, but which is equal to that specified, vendor shall specify the product substitution and reference the original line item being substituted.

19. Indemnification

Vendor agrees to hold the Barrow County School System harmless and to indemnify the Barrow County School System from every expense, liability or payment arising out of or through injury (including death) to any person or persons or damage to property (regardless of who the owner may be of the property) of any place in which work is located arising out of or suffered through any act or omission of Vendor or subcontractor.

20. Vendor's Representative

The Barrow County School System reserves the right, with sole discretion, to refuse to allow any representative of the Vendor to service the contract in any manner. In this event the Vendor shall furnish another representative who is acceptable to the Barrow County School System.

The vendor **may not use subcontractors** for any portions of the work. The Barrow County School System will reject any un-authorized subcontractor without explanation or recourse by the Contractor or the subcontractor.

21. School District Regulations

The Vendor and its representatives shall follow all applicable Barrow County School System policies and regulations while on school district property, including the no smoking, no weapons, and drug-free policies. No work shall interfere with school or system activities or environment unless permission is given by the Principal of the school or the Director of Technology or designee.

22. Governing Law

All proposals and related documents submitted to the Barrow County School System by vendors are governed by the laws of the State of Georgia.

23. Special Stipulations

Attached to these General Conditions are certain conditions specific to the work to be performed.

24. Comprehensive list of references

Vendor's proposal shall include a detailed list of references along with contact person, dates of work, mailing address, and telephone numbers.

25. Demonstrated Capability of Vendor

The Vendor must provide proof of successful installation in a minimum of two sites using Category 6 structured cabling with four hundred (400) or more active nodes installed.

26. Approved materials list

Materials proposed must match those in appendix B, or be approved in writing prior to submission of proposal.

**CHECKLIST FOR PROPOSAL TO PROVIDE STRUCTURED COMMUNICATIONS CABLING
FOR BASA ADDITION IN
WINDER, GEORGIA**

BIDDERS:

YOU ARE REQUIRED TO COMPLETE THIS CHECKLIST AND INCLUDE IT WITH YOUR PROPOSAL.

YOUR PROPOSAL PACKAGE MUST INCLUDE THE FOLLOWING ITEMS IN THE ORDER SPECIFIED:

- _____ 1. PROPOSAL CHECKLIST (This page)
- _____ 2. SIGNED PROPOSAL FORM (Following page of this document)
- _____ 3. PROPOSAL INCLUDING ALL OF THE FOLLOWING
 - _____ A. TOTAL COSTS OF PROPOSAL
 - _____ B. COMMENCEMENT AND COMPLETION SCHEDULES
 - _____ C. BILL OF MATERIALS AND LABOR PER TASK
 - _____ D. CATALOG PAGES AND/OR CUT SHEETS AS APPROPRIATE
 - _____ E. Proposed cable TESTING and ACCEPTANCE procedures and documentation
 - _____ F. WARRANTY services, procedures, conditions, and time periods.
 - _____ G. OTHER CONSIDERATIONS - See page 16 of this RFP
- _____ 4. STATEMENT OF VENDOR'S QUALIFICATIONS
- _____ 5. SIGNED AFFIDAVIT
- _____ 6. LOW VOLTAGE LICENSE AND PROOF OF RCDD CERTIFICATION

PROPOSAL FORM TO PROVIDE STRUCTURED CABLING

EMAIL ALL QUESTIONS AND FINAL PROPOSAL TO: JOHN ST.CLAIR, saint@barrow.k12.ga.us

Having carefully examined the Proposal Invitation Letter, the General Conditions, and the Request for Proposal for Structured Cabling, any addenda, as well as the actual sites and premises, and conditions affecting the work, the undersigned proposes to provide the required materials, labor, and services specified in the attached proposal for the total sum of

_____ Dollars (\$ _____)

Respectfully Submitted,

Name of Firm

Address of Firm

Sam.gov cage code

Signature

Telephone Number

Name and Title

Name and Title of Vendor's Representative who will service contract

Address and Telephone Number of Vendor's Representative

Email address

SUMMARY OF COSTS AND SCHEDULES

PROJECT COST SUMMARY – Print or type ALL amounts HERE:

Task	Materials	Labor	TOTAL
1	\$	\$	\$
2	\$	\$	\$
3	\$	\$	\$
4	\$	\$	\$
5	\$	\$	\$

SCHEDULE SUMMARY – Print or type ALL quantities HERE:

Estimated start date – contract will be awarded Wednesday, October 4th.

_____ Estimated start date.

Estimate completion date

_____ Estimated completion date

(Vendor Name)

(Date)

(Signature Approving The Cost and Schedule Quotes Given Above)

(Print or Type Name of Vendor Representative Giving This Approval)

PROPOSAL FORMAT
BILL OF MATERIALS AND LABOR PER TASK
Attach separate pages as necessary utilizing this format

Task #

Material or Labor Description and Units	Part/Item No.	Quantity	Unit Price	Extended Price
CABLE				
RACKS				
PATCH PANELS/WIRE MANAGEMENT				
DATA JACKS				
FACEPLATES				
PATCH CORDS				
RACEWAY & RELATED FITTINGS				
OUTLET BOXES				
CABLE TRAY				
J HOOKS, TIES, CLIPS, etc.				
OTHER				

Fully define and describe the testing and acceptance procedures and documentation. Tests performed must meet requirements specified in this RFP.

Fully explain all warranty provisions including services to be provided, procedures, conditions, response times and time periods.

STATEMENT OF VENDOR'S QUALIFICATIONS

To accompany proposals submitted for installing data and voice communications networks in the Barrow County School System.

Name of Vendor _____

Telephone Number _____

Email Address _____

Business Address of
Office or Facility Which
Will Service This Contract _____

Distance from Barrow County Miles _____
School System board office 179 W. Athens Street, Winder GA 30680

When Organized? _____

Where Organized? _____

Partnership? _____ Corporation? _____

How many years have you been engaged in this business under the present firm name? _____

Have you ever refused to sign a contract at your original bid? _____

Please attach a list of major accounts in Georgia comparable to the work proposed.

If no accounts in Georgia, list other accounts.

Remarks: _____

Attach copies of Low-Voltage License and RCDD Certificate of individual(s) who will perform/supervise/design the proposed work.

AFFIDAVIT

In accordance with the Laws of Georgia, the following affidavit is required by all vendors submitting proposals.

Fill out the affidavit below and include with this proposal.

State of _____

County of _____

Before me, an officer of said state, authorized by law to administer oaths, personally come the undersigned affiant, who on oath says that the attached proposal is submitted independently of any other proposal, and that this vendor has no interest, directly or indirectly, in any other proposal for said material, equipment, or services, and that this vendor will not receive any commission or any sum whatsoever, directly or indirectly, on the sale of said material, equipment, or services, in the event some other person, association, firm or corporation should be awarded the contract or sale for said material, equipment, and/or services.

_____ L.S.
Affiant

Sworn to and subscribed before me on this
the _____ day of _____ 20____.

Notary Public

Notary Seal

Commission Expires

***Failure to properly execute this affidavit
is considered grounds for rejecting this proposal***

SCHOOL DISTRICT RESPONSIBILITIES

The Barrow County School System and its contractors will:

Access for Installation

During the progress of the installation, allow the vendor and its employees access to the premises and facilities at all reasonable hours or at hours to which the school district and vendor may agree.

Provide free and clear access to existing conduit or allow vendor to place new conduit if necessary to all work locations, floors, buildings, etc., to support the media installation and provide vendor access to these adjacent areas where and when required.

Secure Storage

Provide secure storage space for materials and equipment during the progress of the installation.

Hazardous Conditions

Take such action as necessary to ensure that the premises are dry and free from hazardous materials or chemicals, (i.e., asbestos) and in such condition as not to be hazardous to the installation personnel or the material to be installed.

Building Plans

Furnish adequate detailed drawings of the buildings to allow installation of equipment and cables by the vendor.

Inspections

Promptly make inspections when notified by the vendor that the project, or any part thereof, is ready for acceptance.

Coordination

Facilitate coordination between the work of the vendor and all other vendors and trades at the site(s). Such facilitation responsibility does not alleviate the cabling vendor of any responsibilities for completing this project in a timely and cost effective manner.

VENDOR RESPONSIBILITIES

The vendor will:

Provision

Provide all supervision, labor, tools, equipment, hardware and cabling materials as specified, transportation, erection, construction, unloading, inspecting, keeping inventory, and returning spare or unused material as specified in attached contract documents. Whenever used in this RFP the terms "provide," "furnish," "supply," or "install," etc., can be interpreted as requiring the vendor to both furnish and/or install materials, unless specific provisioning/installation of the materials by the school district is denoted.

Permits

Obtain all necessary city, county, municipal or state work/building permits at vendor's own expense.

Damage

Be responsible for and repair all damage to the building due to negligence of its workers, and report to the school system any such damage to the building which may exist or may occur during the occupancy of the quarters.

Fire Fighting Apparatus

Take necessary steps to ensure that required fire fighting apparatus is accessible at all times. Flammable materials shall be kept in suitable places outside the building.

Identification

Identify to the district any work necessitating cutting into or through any part of the building structure such as girders, beams, concrete, dry wall, tile floors or partition ceilings. The school district and its contractors will approve such work before it is performed.

Cutting, Drilling, Penetrating

Provide any cutting, drilling, or other structural penetration for the purpose of installing all conduits or sleeves through firewalls as required to meet codes.

Sealing of Firewall Penetrations

Seal all firewall penetrations made to accommodate the cabling installed. Sealant materials and processes shall meet all applicable building codes **and must be approved by the general contractor.**

Installation

Install the wire, cable, and associated hardware in accordance with the manufacturer's specifications.

Trenching and Boring Beneath and/or Cutting Through Pavement

Provide any boring under and/or cutting through exterior concrete or asphalt pavement to allow burial of underground cabling. Provide any trenching necessary for burial of underground cabling. All boring, cutting, and/or trenching must be appropriately coordinated with the appropriate contractors and/or municipal authorities.

Status Reports

Provide project status reports to school system's director of technology or his designee as agreed upon before commencing work.

Tests and Inspections

Conduct tests and inspections after installation has been completed in order that the school district may be assured that the requirements for the installation are met.

Completion Notification

Promptly notify the school district of the completion of work on each project or such portion(s) thereof that is/are ready for inspection.

Ceiling Tiles

Vendor must provide for the removal and reinstallation of all ceiling tiles required for the installation of all above ceiling wire. Any tiles damaged by vendor's representatives will be replaced at the vendor's own expense prior to project completion.

Defects

Promptly correct all defects for which the vendor is responsible.

School System Contact

Coordinate all work with the school system contact who will be designated before the commencement of the installation.

Clean Up

Upon completion of the work each day, remove all tools, equipment, rubbish and debris from the premises and leave the premises clean and neat.

Subcontractors

Vendor **may not use subcontractors to perform any work.**

TEST/ACCEPTANCE CONDITIONS

Outline

The PROPOSAL must contain an outline of the recommended acceptance criteria. Prior to start of installation, the vendor will provide the school system with a complete detailed acceptance test procedure covering the offered distribution system. The criteria for acceptance procedure must be based upon contractual agreements as to what constitutes system failure and restoration procedure.

Cable Assignment Records

Upon completion of the installation, the vendor will furnish the school district with a complete set of cable assignment records showing pair assignments and terminations for both copper and fiber cables throughout the installation.

MAINTENANCE

This section addresses the service maintenance contracts, levels of service, and service procedures that are of interest to the school system when assessing the service capabilities of a distribution systems vendor. If someone other than the vendor is to provide service, the servicing company, instead of the vendor, shall be listed along with the following information.

Copy

A copy of the vendor's maintenance/service agreement with current prices, levels of service, and service procedures must be attached to the proposal.

School District Responsibilities

The school district will notify the vendor of any equipment malfunction in accordance with normal reporting procedures provided by the vendor. The school district will provide reasonable access to equipment and maintain environmental standards as specified by the vendor. The school district will provide, if needed, space to store spare parts as designated by the vendor, which will remain vendor's property.

Services

The following services must be provided as part of the contract:

Labor

Parts

Technical resources and support for consultation for unique or major problems

Maintenance according to specifications

Records of service and administration

WARRANTY

The vendor shall describe the appropriate product warranty periods, conditions, and services. The vendor shall also describe vendor's capability to collaborate with other vendors whose products rely upon the data transmission network for operability in order to develop solutions if difficulties and problems arise during the warranty period.

POST WARRANTY MAINTENANCE

The vendor shall describe post warranty maintenance offerings and rates.

SERVICE PROCEDURES

The vendor shall describe Service Procedures.

OTHER CONSIDERATIONS

Describe the following with supporting documentation as indicated:

What is the distance and location of installation forces in relation to the customer site?

What geographical area do these forces serve, relative to school district sites?

Will your firm maintain responsibility for repair of any damage done to the school district premises by anyone representing your firm?

Will you agree to a guaranteed installation date?

REQUEST FOR PROPOSAL (STRUCTURED CABLING)

PROJECT SPECIFICATIONS

0. CAD DRAWINGS

PDF blueprints for this RFP with data locations marked will be sent upon request emailed to ITSbids@barrow.k12.ga.us.

1. Scope of Project Standards and Description

The Barrow County School System is interested in installing data network cabling in the new 3-story addition under construction at the Barrow Arts and Sciences Academy that will conform to established communications standards. The horizontal cabling system is based on the installation of 4-pair unshielded twisted pair (UTP) category 6 and category 6a data cables, and optical fiber – 12 strand, OS2 9/125 μ m Single Mode, plenum-rated, with aluminum interlocking armor fiber optic cable, all conforming to applicable ANSI/EIA/TIA/BICSI standards.

Specifications for the Fiber Optic Backbone, the Network Switch Units, Jacks and Outlets, Horizontal Wiring, and Patch Panels are provided in this document.

The intent of this document is to establish the specifications and standards of the project. Specific products and model numbers are mentioned for the purpose of conveying design expectations. Comparable or equivalent equipment will be considered.

The Barrow County School System may accept any RFP offered on an all, some, or none basis, within funds available, whichever is in the best interest of the school system.

2. Quality Assurance

This request for proposal establishes the general specifications for a “universal” premises distribution system that will support virtually all industry standards communications systems and allow multi-vendor compatibility on shared media to meet the data and voice needs of the Barrow County School System.

3. Design Requirement

The system must be based on an open-distribution architecture so that existing equipment and facilities as well as future equipment from multiple vendors can be supported by the proposed system.

A star or distributed star topology is required in the design of the distribution system. MDFs and IDFs must house all electronics, cabinets, and racks. Electronics and racks will not be installed in any other areas unless specified by the school system.

All cables shall be permanently labeled at both the patch panel and the communications outlet. The labeling shall consistently adhere to the following scheme: all labeling at the jack shall designate closet, patch panel, and port #. Example: MDF-A1 indicates MDF, first patch panel, first port. IDF1-C-24 indicates first IDF, third patch panel, 24th port.

4. Testing and Certification

Testing fiber optic and copper distribution systems is crucial in assuring the overall integrity and satisfactory performance of the network. Test results quantify system quality, identify system faults, and establish the baseline accountability performance of the system. Proper testing also maximizes the longevity of the system, minimizes downtime and maintenance, and facilitates system upgrades or reconfigurations.

The contractor shall test, fully document, and provide proof of communications wiring systems certification.

Each communication outlet tested should include the patch panel, device jack, and all cable connecting them.

Testing must include complete, unmodified cat6 and cat6a testing parameters, including but not limited to:

Copper testing

1. Length
2. Delay and delay skew
3. Impedance (TDR)
4. Resistance
5. Capacitance
6. Attenuation
7. Near End Cross Talk (NEXT)
8. Line Mapping
9. Return loss
10. PSNEXT (Power sum near-end cross talk loss)
11. PSELFEXT (Power sum equal level far-end cross talk loss)
12. ELFEXT Loss

and fiber testing including:

13. OTDR

Failure of vendor to provide these full test results will result in delay of payment until full test results are provided.

6. Fiber Optic Backbone

Fiber optic cable is required for all inter-building and intra-building backbone wiring. This includes all MDF to IDF and vertical riser applications.

Fiber optic cable shall possess the following construction and performance attributes:

At least 12 strand, OS2 9/125 μm Single Mode, plenum-rated, with aluminum interlocking armor fiber optic cable.

7. Fiber Routing, Termination, and Labeling Requirements

Fiber optic connections should be terminated in rack mounted enclosures to ensure that the connections are protected. All fibers shall be permanently labeled (on the enclosures) at both ends indicating the originating and terminating location of each end. All unused fibers will be terminated for future use. All terminations shall use LC style connectors.

8. Local Area Network (LAN) Horizontal Wiring Specifications

This section covers the cable from the communications outlet to the patch panel in the IDF or MDF. Each cable shall be placed in a "point-to-point" fashion from the communication outlet to the wiring closet for each communications outlet needed. There shall be no intermediate splices or cross connects in these cables. The vendor may use any pull cords provided by the electrical contractor in any conduits designated for network and voice cabling, in which case the vendor is to bring new pull cords through the conduits with the cabling for future use.

The characteristics of the horizontal cable are as follows:

Category 6 or 6a as specified in the appendix list of drops, cable consisting of four pair of 24 AWG bare solid copper conductors insulated with a **plenum-rated** material shall be used for data cabling. Cable must be blue in color. Data jacks must be blue in color.

All cabling shall be plenum grade.

The cabling shall meet or exceed all applicable EIA/TIA/BICSI standards.

Patch cables from data outlet to end-user computers/phones will be provided by Owner and are not required from the vendor as part of this proposal. Patch cables from patch panel to network equipment in MDF and IDF are to be provided by vendor. Vendor provided data patch cables are to be blue in color.

All face plates should be white.

No existing conduit from hallway into rooms for data cabling is provided. Vendor must provide pathway from cable tray into room for installation of cable – J-hooks are acceptable in room. Data drop locations have 1” conduit stubbed up above ceiling in room.

9. Local Area Network (LAN) Patch Panel Specifications

This section covers the termination hardware located in the MDFs and IDFs (wiring closets). The termination hardware will provide the capability to be able to patch connections between ports on the LAN hardware (electronics) and the horizontal cables to the classrooms (data and voice).

The patch panels shall be Category 6 or 6a as required modular jack panels, 24-port or multiples thereof.

The termination hardware will be co-located on 19-inch racks in the MDF and IDFs with the owner-supplied LAN switches. The configuration of the patch panels should be in an arrangement that minimizes patch cord lengths. Vertical cable management is required on the racks. Vertical cable management must be on both sides of all racks. Velcro ties and not zip ties are to be used to bundle cables. The exact configuration will be determined by the school system’s network administrator and the successful Contractor.

Horizontal cables from the MDF/IDF to the data outlets in the building shall be directly connected to punch-down style patch panels rated for cat6 or cat6a cabling as appropriate and wired to the EIA 568A wiring standard for cat6/6a respectively.

Category 6 or 6a, factory-built, manufacturer-tested, blue patch cords should be provided wherever called for to match the cat6/6a standard used for horizontal cabling.

10. Wireless arrays

Two Category 6A cables shall be used for each wireless access point location (blue location on blueprints), terminated in a biscuit jack or similar enclosure above ceiling. Cabling shall be yellow in color. Data jacks in patch panel shall be yellow in color.

For clarity in determining cable counts, in appendices, Wireless Array data locations are specified at two data drops per individual array location.

Data outlet at ceiling must be labeled as per normal labeling scheme. Patch panel outlet must be labeled with wireless array number specified for location, numbers to be provided to vendor by the district.

11. Audio Enhancements data locations

Two Category 6 cables shall be used for each Audio Enhancements location identified as a purple location on blueprints (typically classrooms, receiving both audio-amp and camera).

One cable shall be used for classroom camera installed center of classroom, terminated in a biscuit jack or similar enclosure above ceiling. Cabling shall be purple in color. Data jacks in patch panel shall be green in color.

One cable shall be used for audio amplifier installed in location to be determined, terminated in a biscuit jack or similar enclosure above ceiling. Cable length shall be sufficient to be able to reach furthest corner in room, and left coiled up above ceiling for Audio Enhancements installer to be able to place in room at a later time. Cabling shall be purple in color. Data jacks in patch panel shall be orange in color.

Each location on the blueprints marked with purple mark indicates both a camera and amplifier to be installed.

For clarity, in appendices, Audio Enhancements data locations are specified at two data drops per individual room installations with camera and amplifier.

12. Security Camera data locations

One category 6 cable shall be used for each security camera location (green location on blueprints), terminated in a biscuit jack or similar enclosure above ceiling for inside cameras, and terminated in a suitable enclosure for outdoor use for outdoor locations. Cabling shall be green in color. Data jacks in patch panel shall be green in color.

13. System Documentation

As part of the wiring system installation, the Contractor should provide detailed documentation of the distribution system to facilitate system administration, system maintenance and future system changes. This requirement includes a bill of materials of all installed equipment and wiring, rack equipment layouts showing placement of support equipment, and model and serial numbers of all installed equipment. A clear and consistent nomenclature scheme is to be defined and used on the documentation and the cable labeling which facilitates locating and identifying each cable.

System verification and acceptance documentation signed and dated by the installer (Contractor) and the design professional shall also be provided. This documentation shall include test measurements and system calibrations performed for the entire system. Sample system operations shall also be performed with actual hardware or using Contractor provided test equipment and documented to verify that the system is operational and ready for acceptance. This shall also establish the baseline performance of the system.

14. Bill of Materials for Local Area Network (LAN)

Attach a Bill of Materials listing each product, product number, product description, and quantity, unit costs and price extensions. A sample Bill of Materials is presented below. Specify all materials using the categories noted and in the order shown in the sample. A product specification sheet will be required for each of the network components.

Materials Description	Manufacturer's Product Number	Quantity	Unit Price	Extension
<u>CABLE</u>		Example Only!		
4-Pair Plenum Cable, Cat 6	?	40,000 ft.	###	###
12-Strand Fiber Optic Plenum Cable	?	300 ft.		
1" Plenum Interduct	?	300 ft.		
LC Connectors	?	12		
Raceway - 6'	?	324 ft.		
Couplers	?	27		
<u>PATCH PANELS (FIBER)</u>				
Wall Mountable Interconnect	?	2		
Center for Fiber Optic Termination				
Mounting Bracket for WIC	?	2		
6-Port ST Coupling Panel for WIC	?	2		
ST-ST Fiber Jumper	?	2		
<u>PATCH PANELS (COPPER)</u>				
24 Port Patch Panel, Cat-5	?	1		
48 Port Patch Panel, Cat-5	?	4		
Patch Cables, Cat-5	?	162		
<u>EQUIPMENT RACK</u>				
7" X 19" Equipment Rack	?	2		
Cable Management Hardware	?	1		
<u>COMMUNICATIONS OUTLET</u>				
Faceplate	?	32		
Single RJ45 Wall Plates, Cat 5	?	96		
Sixplex RJ45 Wall Plates, Cat 5	?	39		
Blank Insert	?	8		
Surface Mount Box	?	32		
Workstation Jumpers, Cat 5	?	162		

Standards for Structured Cabling Plant

All installations must comply with the Georgia Administrative Code. The most recent issue of the following standards and references apply in whole or in part to the installation of the communications and electrical power facilities. Where the guidelines differ with the listed reference standards, the standards shall dominate with the exception of the National Electrical Code which shall dominate.

The terms and definitions used in this RFP are found and specified in the following standards. All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the local Electrical Codes and current manufacturing standards. All materials shall be listed by UL and shall bear the UL label. If UL has not published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. The cabling system described in this RFP derived from the recommendations made in recognized telecommunications industry standards. The following documents are incorporated by reference:

- A. **ANSI/TIA/EIA – 568-A**, Commercial Building Telecommunications Cabling Standards
 - **TSB-67**, Field Testing of UTP Cabling Systems
 - **TSB-72**, Centralizing Cabling Guidelines
 - **TSB-75**, Additional Horizontal Cabling Practices for Open Offices
 - **TSB-95**, Additional Field Testing Requirements for Category 5
 - **ANSI/TIA/EIA – 568-A, Addendum 1**: Propagation Delay and Delay Skew Specifications for 100 ohm 4-pair Cables
 - **ANSI/TIA/EIA – 568-A, Addendum 2**: Miscellaneous changes and corrections
 - **ANSI/TIA/EIA – 568-A, Addendum 3**: Hybrid and Bundled Cables
 - **ANSI/TIA/EIA – 568-A, Addendum 4**: Modular Patch Cord Production Testing
 - **ANSI/TIA/EIA – 568-A, Addendum 5**: Category 5e Performance
 - **ANSI/TIA/EIA - 568B.2-1**, all addendums: Category 6 standards

- B. **ANSI/TIA/EIA – 569-A**, Commercial Building Standards for Telecommunications Pathways and Spaces
 - **ANSI/TIA/EIA – 569-A, Addendum 1**: 2000, Perimeter pathways
 - **ANSI/TIA/EIA – 569-A, Addendum 2**: 2000, Furniture pathways
 - **ANSI/TIA/EIA – 569-A, Addendum 3**: 2000, Access floors
 - **ANSI/TIA/EIA – 569-A, Addendum 4**: 2000, Poke-thru devices

- C. **ANSI/TIA/EIA – 606**, Administration Standards for Telecommunications Infrastructure of Commercial Buildings
- D. **ANSI/TIA/EIA – 607**, Commercial Building Grounding and Bonding Requirements for Telecommunications
- E. **ANSI/TIA/EIA – 729**, Screened, 100 ohm Twisted Pair Cabling
- F. **ANSI/TIA/EIA – 758**, Customer-Owned Outside Plant Telecommunications Cabling Standards
 - **ANSI/TIA/EIA – 758-1, Addendum 1**, OSP Optical fiber cabling practices
- G. **BICSI – TDMM**, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM) – 9th Edition, 2000
- H. National Fire Protection Agency (**NFPA – 70**), National Electrical Code (**NEC**) – **2002**
- I. **TIA – 568.C.2**
 - General Conditions
 - A. #9 Warranty add Cabling System Warranty
 - 1. A Cable Products Warranty shall provide a complete warranty to guarantee a high performance cabling systems that meet application requirements. The guarantee shall include all cable installed in the structured cabling system. The Cable shall be warranted for a period of at least 15 or 25 years. Contractor must be a Certified Installer for solution provided.
 - 8. LAN Horizontal Wiring Specifications Cabling characteristic
 - Category 6 cable & connectivity. Products shall be made in the USA.
 - Cable performance guaranteed to 350 MHz
 - Cable must be third-party verified for guaranteed performance
 - Cable must meet specifications of General Cable 7131800.
 - 9. LAN Patch Panel
 - Category 6 modular patch panels 24 port.
 - A. Patch cords to be 28 AWG, factory made and tested

If this document and any of the documents listed above are in conflict, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The Contractor has the responsibility to determine and adhere to the most recent release when developing the proposal for Installation.

This document does not replace any code, either partially or wholly. The contractor must be aware of local codes that may impact this project.

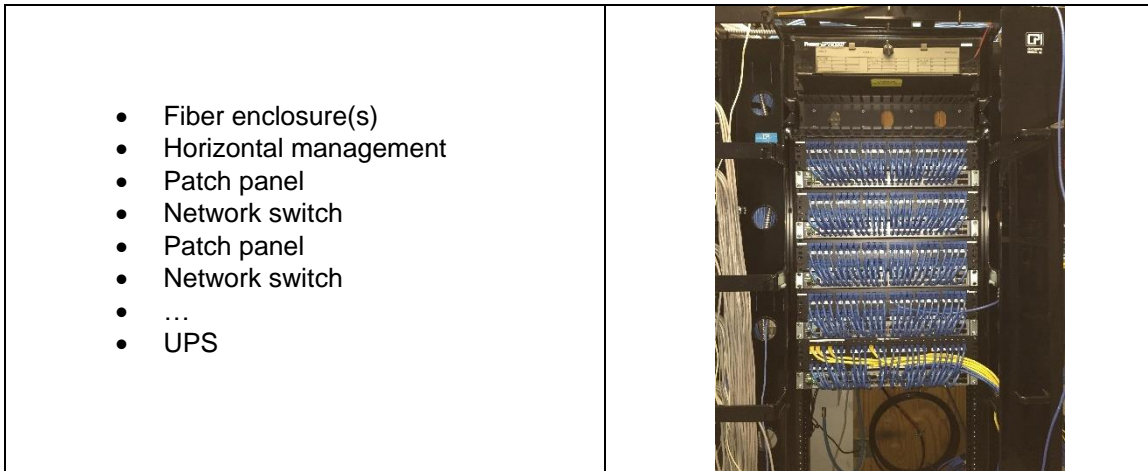
APPENDIX A – REQUIRED TASKS PER LOCATION

Task 1 – Establish Data Wiring Closets

Establish the IDFs/MDFs in rooms 4.033 sheet E2.1, 4.132 sheet E2.2, 4.224 Sheet 2.4.

Install vendor supplied 19" equipment rack to house patch panels, vertical wire management, horizontal wire management, UPS, network electronics, and fiber enclosure. Mount school supplied UPS and school supplied network switching equipment. Exact configuration and orientation of rack to be arranged with owner prior to commencement of work. Vertical cable management is to be used on both left and right sides of rack.

For all racks and cabinets: Fiber enclosures are to be mounted at the top level. System supplied UPS units are to be mounted at the bottom level. Patch panels, horizontal cable management if applicable, and switches are to be installed from the top, following this sequence:



Horizontal and vertical cable management is to be of Panduit “finger style” or equivalent. Bracket style cable management is not acceptable. Horizontal cable management is to be 2U sized. All racks to be grounded to building steel. Vendor is to use vendor supplied blue patch cables to connect patch panels to network equipment. Vendor to determine specific length required for patch cables, but patch cables should be of sufficient length to avoid cable strain but of minimal length to prevent excess cable. Reference photo above uses 6” patch cables. 6” patch cables preferred.

Task 2 – Establish Fiber Backbone Between MDF 4.132 and IDFs 4.033 and 4.224

Install and test one (1) 12-strand plenum rated OS2 9/125 μm Single Mode, plenum-rated, with aluminum interlocking armor fiber optic cable from the MDF 4.132 to the IDFs 4.033 and 4.224 in owner supplied conduit. All fiber will terminate into rack mounted fiber interconnects in the MDF and IDFs. Vendor will provide appropriate fiber jumpers to connect the electronics in each closet, 1 fiber pair to be used for each IDF network switch (1 switch per patch panel). Fiber enclosures are to use LC style connections. Network switching equipment will use LC style connectors.

Task 2a – Establish Fiber Backbone between MDF 4.132 and MDF in existing BASA main building

Install and test one (1) 12-strand plenum rated OS2 9/125 μm Single Mode, singlemode fiber optic cable from the MDF 4.132 to the MDF in the pre-existing main BASA building in owner supplied conduit. All fiber will terminate into rack mounted fiber interconnects in the MDF and IDFs. Vendor will provide appropriate fiber jumpers to connect the electronics in each closet, 1 fiber pair to be used for each IDF network switch (1 switch per patch panel). Fiber enclosures are to use LC style connections. Network switching equipment will use LC style connectors.

Task 3 – Existing cable tray distribution and any additional necessary wall penetrations, and in-room J-hooks

Vendor is to use existing cable tray distribution for continuous support of cable plant in hallways. Any deficiencies in continuous support of cable due to cable tray configuration must be brought by vendor to owner for resolution. For sake of bid response, vendor should assume no deficiencies exist. During work, if deficiencies are identified vendor and owner will

determine resolution. If additional expenses are necessary to address deficiencies, owner will issue a change order with vendor based on vendor's approved quote.

Any required penetrations into MDF/IDF or through hallway junctions not already existing to be provided by vendor. All penetrations, whether pre-existing or new, must be via one or more 4-inch sleeves with appropriate bushings to protect cabling and cabling must be equally distributed between penetrations to avoid overloading single penetration where applicable. All penetrations must be fire sealed using general contractor approved fire sealant and methodology.

Provide and install any needed J-hooks in classrooms, office, gym, cafeteria, and other non-hallway areas as required, where owner supplied conduit or J-hooks are not available.

All data cabling pathways must be installed with a minimum 12" clearance from other cabling and electrical sources whenever possible. Any deviation from this must be discussed with and approved by owner prior to work commencing. Owner will reasonably respect any physical constraints on meeting this requirement but will otherwise require adherence if physically possible.

No penetrations may be shared with other cabling. It is the data-cabling vendor's responsibility to immediately notify owner if another vendor or owner employee or contractor installs cabling that violates this clearance. Vendor must regularly inspect cable plant when on premise for these violations. **Vendor must conduct final inspection of entire cabling plant and alert owner of any violation of non-shared cabling requirement.**

All long-haul cable bundles must be completely supported by cable tray or penetration sleeves, or ladder rack inside data closets. No gaps in support are acceptable.

Task 4, Category 6 Data Cables from Closets to Data Communication Ports

Install, terminate, and test category 6 plenum rated cables from the wiring closets to locations in building as specified in the blueprints (orange locations on blueprints) and in the port details document. Label each drop with closet, patch panel, and port #. Example: MDF-A1 indicates MDF, first patch panel, first port. IDF1-C24 indicates first IDF, third patch panel, 24th port. Data jacks are to be blue. Face plates are to be white.

Cables must be supported by cable tray or j-hook or conduit. Tying cabling to building steel, other cabling, or other conduit will not be acceptable.

Task 5 – Cable Wireless Arrays

Install and terminate two Category 6A plenum rated cables from the wiring closets to each wireless access point location (blue location on blueprints) as specified in appendix, terminated in a biscuit jack or similar enclosure above ceiling. Cabling shall be yellow in color. Data jacks in patch panel shall be yellow in color. Vendor must include 6' service loop on cabling to array locations to allow for future minor adjustment of array location.

For clarity in determining cable counts, in appendices, Wireless Array data locations are specified at two data drops per individual array location.

Data outlet at ceiling must be labeled as per normal labeling scheme. Patch panel outlet must be labeled with wireless array number specified for location, numbers to be provided to vendor by the district.

Wireless arrays must be patched into data outlet with vendor supplied patch cable.

Task 6 – Audio Enhancements Classroom Camera and Audio Amplifier Cabling

Two category-6 data drops per marked classroom (purple mark on prints)

Each classroom on the blueprints marked with purple mark indicates the location of a to-be-installed Audio Enhancements Classroom System. Each system includes one audio amplifier installed near ceiling on one wall in the classroom, exact location to be determined, and one network-based-camera, to be installed in ceiling in center of classroom.

Vendor is to provide two CAT-6 data drops, terminated in biscuit jack or equivalent, in each marked classroom. One data drop located center of classroom for camera location, and one data drop location to-be-determined for amplifier. Vendor is responsible for providing sufficient cable length for amplifier data drop to reach any point in classroom. Cabling shall be purple in color. Data jacks in patch panel shall be green in color.

Task 7 – Security Camera data locations

One category 6 cable shall be installed for each security camera location (green location on blueprints), terminated in a biscuit jack or similar enclosure above ceiling for inside cameras, and terminated in a suitable enclosure for outdoor use for outdoor locations. Cabling shall be green in color. Data jacks in patch panel shall be green in color.

Task 8 – Change order costs

Change orders are possible during the work. Vendor must include document with maximum costs for change orders for the following items (price each item individually):

- Single Cat-6 data drop installed into existing infrastructure.
- Single instance of above-ceiling Cat-6a data drop into biscuit jack or similar
- Per-hour labor rate, standard working hours
- Per-hour labor rate, evening/weekend/non-standard working hours

Appendix A Port Details

Sheet	Room	Standard Data Drop As numbered on prints	Standard Audio Enhancement Drop (Amp and Camera) 2 CAT6 per purple location on prints	Wireless Drop CAT6A 2 Cat6A per location	Security Camera Drop As numbered on prints	Notes
E2.1	4.000	0	0	0	1	
E2.1	4.001	2	2	2	0	
E2.1	4.002	1	0	2	0	
E2.1	4.004	2	2	2	0	
E2.1	4.005	0	0	0	2	Cameras as shown in corridor 4.005
E2.1	4.006	34	2	2	0	11 triples, 1 single data location
E2.1	4.008	2	0	0	0	
E2.1	4.009	1	0	0	0	
E2.1	4.010	1	0	0	0	
E2.1	4.013	2	2	2	2	2 Camera locations outside
E2.1	4.016	0	0	0	0	1 Camera location outside
E2.1	4.020	0	0	0	2	Camera as shown in corridor 4.020
E2.1	4.022	0	0	0	1	Camera location outside room 4.022
E2.1	4.025	0	0	2	2	Wireless at far left end of corridor 2.025
E2.1	4.026	2	2	2	1	Camera location outside room 4.026
E2.1	4.027	2	2	2	2	Camera location outside room 4.027
E2.1	4.028	2	2	2	0	
E2.1	4.029	2	2	2	0	
E2.1	4.030	2	2	2	0	
E2.1	4.031	2	2	2	0	
E2.1	4.032	2	2	2	0	
E2.1	4.035	0	0	0	2	Cameras as shown in corridor 4.035
E2.1	Stair 2	0	0	0	2	1 camera inside, 1 camera outside stair #2
E2.1	STAIR 3	0	0	0	1	
E2.2	4.131	2	2	2	0	
E2.2	4.134	2	2	2	0	
E2.2	4.135	0	0	0	2	Cameras as shown in corridor 4.135
E2.2	4.136	0	0	0	1	
E2.2	4.137	2	2	2	0	
E2.2	4.138	31	2	2	0	10 triples, 1 single
E2.2	4.140	1	0	0	0	
E2.2	4.142	2	2	2	0	
E2.2	4.143	2	2	2	0	
E2.2	4.146	2	2	2	0	
E2.2	4.147	2	2	2	0	
E2.2	4.150	0	0	0	2	Cameras as shown in corridor 4.150
E2.2	4.152	2	2	2	0	
E2.2	4.153	2	2	2	0	
E2.2	4.155	0	0	2	3	1 dual location camera, 1 single camera between corridors 4.155 and 4.165
E2.2	4.157	2	2	2	0	
E2.2	4.159	2	2	2	0	
E2.2	4.160	2	2	2	0	
E2.2	4.164	2	2	2	0	
E2.2	4.165	0	0	0	2	
E2.2	4.166	1	2	2	1	Camera location outside room 4.166
E2.2	4.168	2	2	2	0	
E2.2	Stair 2	0	0	0	1	
E2.2	Stair 3	0	0	0	1	

E2.3	4.100	1	0	0	1	
E2.3	4.101	0	0	0	2	2 camera locations inside lobby 4.101, 1 camera outside lobby 4.101
E2.3	4.102	7	0	2	1	1 Camera location outside room 4.102
E2.3	4.102a	2	0	0	0	
E2.3	4.103	0	0	2	0	
E2.3	4.104	2	0	0	0	
E2.3	4.105	2	0	0	0	
E2.3	4.106	2	0	0	0	
E2.3	4.107	2	0	0	0	
E2.3	4.108	2	0	0	0	
E2.3	4.109	2	0	0	2	2 Camera locations outside room 4.109
E2.3	4.111	2	0	2	0	
E2.3	4.114	2	2	2	0	
E2.3	4.115	0	0	0	2	
E2.3	4.116	0	0	2	0	
E2.3	4.117	0	0	0	1	
E2.3	4.118	2	2	2	2	2 single camera locations outside room 4.118
E2.3	4.119	2	2	2	0	
E2.3	4.120	2	2	2	2	2 Camera locations outside room 4.120
E2.3	4.121	2	2	2	0	
E2.3	4.122	2	2	2	0	
E2.3	4.123	2	0	2	0	
E2.3	4.125	0	0	2	2	
E2.3	4.169	0	0	0	1	
E2.3	Learning Stair	0	0	0	1	1 Camera location outside learning stairs area
E2.3	Stair 1	0	0	0	2	1 camera inside, 1 camera outside
E2.4	2.243	2	2	2	0	
E2.4	4.221	2	2	2	0	
E2.4	4.225	0	0	0	2	
E2.4	4.227	2	2	2	0	
E2.4	4.228	2	2	2	0	
E2.4	4.230	2	2	2	0	
E2.4	4.231	0	0	2	0	
E2.4	4.234	2	2	2	0	
E2.4	4.235	0	0	0	2	
E2.4	4.240	2	2	2	0	
E2.4	4.244	0	0	2	2	2 cameras in center of corridor, 1 camera far right
E2.4	4.246	2	2	2	0	
E2.4	4.248	1	2	2	0	
E2.4	4.251	2	2	2	0	
E2.4	4.252	1	2	2	0	
E2.4	4.253	2	0	0	0	
E2.5	4.200	1	0	0	1	1 Data and camera drop top right of room 4.200
E2.5	4.201	2	2	2	0	
E2.5	4.202	2	0	0	1	1 Camera is outside room 4.202
E2.5	4.203	2	0	2	0	
E2.5	4.204	2	0	0	0	
E2.5	4.205	0	0	0	2	
E2.5	4.206	3	2	2	0	
E2.5	4.209	3	2	2	0	
E2.5	4.211	0	0	0	1	Camera location to the far left of 4.211, next to room 4.213
E2.5	4.212	2	2	2	0	
E2.5	4.213	3	2	2	1	1 Camera location is outside room 4.213
E2.5	4.214	0	2	2	0	
E2.5	4.215	3	2	2	0	
E2.5	4.220	0	0	2	2	
E2.5	4.255	0	0	0	2	
E2.5	4.256	2	2	2	0	
E2.5	4.257	2	2	2	1	1 camera location outside room 4.257
E2.5	4.258	0	0	0	2	2 camera locations outside room 4.258
E2.5	4.259	2	2	0	0	Print error. There is both a room 4.259 and a corridor 4.259 in different locations. This is room 4.259, bottom left of print E2.5
E2.5	4.259	0	0	0	2	Print error. There is both a room 4.259 and a corridor 4.259 in different locations. This is corridor 4.259, next to room 4.201.
E2.5	4.259	0	0	0	2	2 camera location inside, 1 outside
E2.5	Stair 1	0	0	0	2	1 camera location inside, 1 outside
TOTALS		209	108	132	78	
		Total # of CAT-6 data drops		395		
		Total # of CAT-6A data drops		132		

Appendix B

Approved list of Materials

1) Network Closet

- a) 2-Post Racks
 - i) Hoffman EDR19FM45U
 - ii) Chatsworth 55053-703
- b) Full Sized Cabinet
 - i) Eaton RSV4580B
- c) Wall Mount Cabinet
 - i) Hoffman ACCESSPLUS II EWMW242425 is typical
 - ii) Other sizes of Hoffman ACCESSPLUS II cabinets may be used if EWMW242425 is too small. For example, EWMW362425 or EWMW482425
- d) Trailers / Mobile Units
 - i) Chatsworth ThinLine II 13050-712
- e) Cable Runway/ Ladder Rack
 - i) Straight Sections – Hoffman LSS12BLK
 - ii) 90-Degree Horizontal E-Bend – Hoffman L90HB12BLK
 - iii) Curved Inside Radius Bend – Hoffman LIB12BLK
 - iv) Curved Outside Radius Bend – Hoffman LOB12BLK
 - v) Triangle Support Bracket – Hoffman LTSB12BLK
 - vi) Wall Angle Support – Hoffman LWASK12BLK
 - vii) Junction Splice – Hoffman LJSKB
 - viii) Rack to Runway Mounting Plate – Hoffman LRRMPBLK
 - ix) Butt-Splice – Hoffman LBSKB
 - x) Radius Drop – Hoffman LRD12BLK
 - xi) Vertical Wall Bracket – Hoffman LVWBB

Part numbers above are typical but may vary depending on the installation. All cable runway / ladder rack components should be black in color and 12" in width unless otherwise specified. Chatsworth equivalent part numbers may be substituted.

- f) Wire Management
 - i) Vertical Manager for 2 Post Racks – Panduit WMPV45E
 - ii) Horizontal Manager / Front Only – Panduit WMPHF2E
 - iii) Horizontal Manager / Front & Rear – Panduit WMPH2E
- g) Patch Panels
 - i) 24 Port Panel – Panduit NKPP24FMY
 - ii) 48 Port Panel – Panduit NKPP48HDY
- h) Fiber Enclosures
 - i) Rack Mount – Panduit FRME1, FRME2, FRME3, FRME4 depending on the capacity required in the closet.
 - ii) Wall Mount – Panduit FWME2

Fiber enclosure shall be loaded with appropriate Panduit Fiber Adapter Panel based on fiber optic cable type and strand count. Panduit FAP6WAQDLCZ and FAP12WAQDLCZ are typical. At least one two-meter duplex-style LC<->LC OM2 patch cable should be included with each installed fiber adapter panel.

2) Cable Support and Pathways

- a) Cable Tray – nVent Caddy WBT tray, fasteners, and accessories shall be used for cable tray applications. Tray and fasteners shall be sized appropriately for future growth and shall not exceed a fill rate allowed by the NEC or other applicable codes.
- b) J-hooks – nVent Caddy Cablecat J-hooks shall be used to support small branch runs of horizontal and backbone cabling where cable tray is not practical, such as in classroom and office ceiling spaces. Hooks should be spaced appropriately to adequately support and distribute the cable's weight. The manufacturer's specifications for cable loading should be followed.

- c) Surface Mount Raceway – Legrand Wiremold metallic surface raceway and metallic boxes shall be used when surface mounting is required. Surface mounting should be avoided when practical. Surface raceway shall be sized appropriately and not exceed allowable fill rate specified by the NEC or other applicable codes.

3) Horizontal Cabling

- a) Category 6 Cable
 - i) Blue Cat6 Cable – General Cable 7133900
 - ii) Green Cat6 Cable – General Cable 7133906
- b) Category 6a Cable
 - i) Yellow Cat6A Cable - General Cable 7151822, 7151871, or 7151802
- c) Keystone Jack Modules
 - i) Blue Cat6 – Panduit NK688MBU
 - ii) Green Cat6 – Panduit NK688MGR
 - iii) Orange Cat6 – Panduit NK688MOR
 - iv) Yellow Cat6A – Panduit NK6X88MYL
- d) Wall Plates and Surface Boxes
 - i) Wall Plates - Panduit NetKey Stainless Steel Faceplates shall be used. NKF2S, NKF4S, NKF6S are typical.
 - ii) Biscuit Style Surface Box – Panduit NK2BXIW-A shall be used for above-ceiling locations, such as wireless access point locations, IP camera locations, Audio Enhancement amplifier locations, etc.

4) Backbone Cabling

- a) Fiber optic cabling shall be used for all backbone connections between network closets.
- b) Cable Type – OS2 9/125 μ m Single Mode, plenum-rated, with aluminum interlocking armor shall be used
- c) Strand Count – 6F, 12F, and 24F are typical. See exact scope of work for expected strand count.
- d) Acceptable Manufactures
 - i) Corning
 - ii) General Cable
 - iii) Berk-Tek