



PROSPER INDEPENDENT SCHOOL DISTRICT

*CAFETERIA AV UPGRADES, BLACK BOX LIGHTING UPGRADES, AND PAC
LIGHTING ADDITIONS
for
PROSPER HIGH SCHOOL*

*REQUEST FOR PROPOSAL / COMPETITIVE SEALED PROPOSAL PROCESS
TECHNOLOGY PACKAGE PHASE 1 - RFP # 01-2016-001*

Issued: January 5, 2016

Proposals Due By: January 28, 2016 at 2:00 P.M. CST.

trueNORTH
consulting group

www.tncg.com



PROSPER INDEPENDENT SCHOOL DISTRICT
CAFETERIA AV UPGRADES, BLACK BOX LIGHTING UPGRADES, AND PAC LIGHTING ADDITIONS RFP

Scope and Specifications of the Proposal

SCOPE: The intent of the RFP is to refresh the Cafeteria AV system and provide lighting upgrades for the Black Box and Performing Arts Center (PAC) at Prosper High School. The District will enter into a contract with the awarded Contractor(s) to replace, upgrade, and add technology systems at the following:

- Prosper High School
 - Cafeteria AV Upgrades
 - Black Box Lighting
 - PAC Lighting Fixture Additions

Prosper ISD reserves the right to modify the Scope and Specifications as circumstances require, including but not limited to adding, changing, or deleting proposed locations/devices.

MANDATORY – RESPONDENT’S CHECKLIST

Proposers must provide the documents/information requested below. If documents are missing or incomplete, or information requested is not included with proposal, Proposer(s) will receive commensurate points during the evaluation process.

Item	Respondent Initials	Administration Review
Proposal Form and Unit Pricing		
Conflict of Interest Questionnaire		
Felony Conviction Notice		
Contractor Criminal Background Certification		
Statement of Debarment		
Affidavit of Non-Discriminatory Employment		
Certificate of Residency		
Affidavit of Non-discrimination		
Statement of Non-Collusion		
Request for Taxpayer Identification Number & Certification (W-9)		
Audited Financial Statements for last two (2) years		
Authorized installer Certifications from manufacturer(s)		

IMPORTANT DATES:

RFP Issued: January 5, 2016

Mandatory Pre-Proposal Conference*: January 11, 2016 at 10:00 AM CST

***Pre-proposal conference will be followed by a mandatory campus site visits. Campus site visits will begin at 10:30. Site visits are mandatory for proposers to observe existing site conditions. Site visits may take up to 2 hours. Walk thru will be limited to up to 2 people from each firm. Pre-proposal and post meeting site visit**



are mandatory. Proposers that do not attend the pre-proposal meeting and full site walk will have their proposals rejected.

Location: 301 Eagle Drive
Prosper, TX 75078

Questions Due By: January 18, 2016, 12:00 PM CST

Last Addendum Issued: January 21, 2016, 5:00 PM CST

Due Date for Responses: January 28, 2016, 2:00 PM CST

Notice to Proceed, Anticipated: February 9, 2016

Contract Executed, Anticipated: February 16, 2016

Substantial Completion: See detail campus schedule included herein:

Campus	Substantial Completion Date
Black Box Lighting	March 4, 2016
PAC Lighting	March 4, 2016
Cafeteria AV Upgrades	March 15, 2016

Proposers shall include work plan that shows this schedule can be met or shall list exceptions and provide a proposed revised work plan with proposal response.

SUBMITTAL REQUIREMENTS: One original and three copies for a total of four (4) complete hard copy sets, and a USB drive with a full PDF version of the Proposal shall be submitted on or before 2:00 PM CST, January 28, 2016. Send proposals to the following address:

One (1) original and three (3) copies:
Marci McGuire, Technology Purchasing Manager
Prosper Independent School District
Administrative Office
605 E. Seventh Street
Prosper, TX 75078
RFP – 012816-AVLIGHTING

The Proposal is to be signed only by persons authorized to enter into a contract with Prosper ISD.

PROPOSER’S SIGNATURE

COMPANY NAME



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2 LIST OF PROJECT DRAWINGS:

<u>Sheet Number</u>	<u>Sheet Title</u>
T101	TECHNOLOGY – A/V SYSTEMS – BLACK BOX – FLOOR PLAN
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T103	TECHNOLOGY – A/V SYSTEMS – CAFETORIUM – FLOOR PLAN
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3 DEFINITIONS AND BACKGROUND INFORMATION

3.01 Definitions

- A. Owner/District: Prosper Independent School District (also referred to as PISD or 'The District').
- B. Consultant: True North Consulting Group (TNCG), the entity contracted by the District to act as the Owner's representative to provide design and project management of the projects.
- C. Proposer/Respondent: The entity submitting a proposal in response to this RFP.
- D. Contractor: The entity/entities contracted by the District to provide and implement the systems and services specified within this RFP.
- E. MDF or MER: Main Distribution Frame, also known as Main Equipment Room, MER, or head-end. The primary location in a building for network systems and the point of interconnection for all technology rooms.
- F. IDF or TR: Intermediate Distribution Frame or Technology Room – a dedicated room for network and telecommunications infrastructure supporting a specific area of a building.
- G. RFP and CSP: The Request for Proposal (RFP) is to be conducted as a Competitive Sealed Proposal (CSP) process: a procurement option allowing the award to be based upon an evaluation process using stated criteria to arrive at a contract that will be the most advantageous to the District.



4 SUBMITTAL REQUIREMENTS AND PROPOSAL FORMAT

- 4.01 **Combining Cafetorium AV and Lighting Proposals:** PISD reserves the right to award or not award a contract or separate contracts. PISD also will award the contract to the party or parties that the Board of Trustees of PISD determines to be most qualified and most responsive to this RFP. Additional 'bonus' points may be awarded to a contractor that can perform more than one system (AV and/or Lighting).
- 4.02 **Proposal Clarification Questions:** After reviewing all proposals received in response to this RFP, the District may develop a list of clarification questions to be addressed by the Respondent. The District or its agent shall send these questions to the Respondent for clarification. The Respondent shall provide a response within three (3) business days following the inquiry.
- 4.03 **Proposal Requirements:** Proposals shall be submitted by tab number as instructed below. The Respondent agrees and shall comply with all provisions and specifications as stated in this RFP unless otherwise stated in the Exceptions section of this RFP. Any additional cost or factors to meet a specification or requirement must be noted in the Exceptions section. Failure to respond to these requirements may result in the proposal being considered non-responsive.

A. Tab 1 – Minimum Criteria

1. Proposal Bond
2. Cover letter – with overall price, any special conditions, and signature.
3. Proposal Form with Unit Pricing
4. A brief profile of the firm, including the following:
 - a. A brief history of the business
 - b. Organizational structure of business, including principals and officers
5. The overall qualifications of the business to provide the services requested.

B. Tab 2 – Required Documents

1. Conflict of Interest Questionnaire
2. Felony Convictions Notice
3. Criminal Background Certification (SB9)
4. Statement of Debarment
5. Affidavit of Non-Discriminatory Employment
6. Certificate of Residency
7. Affidavit of Non-discrimination
8. Statement of Non-collusions
9. Request for Taxpayer Identification Number & Certification (W-9)
10. Proof of insurability



11. Audited or Reviewed Financial Statements for last two (2) years
 12. Proof of Authorized installer Certifications from manufacturer(s)
- C. Tab 3 – Executive Summary/Overview
1. Written summary of the understanding of the scope of work to be performed (for every proposal/system being responded to).
 2. Technical summary of the system proposed, including details about any “value add improvements” over and above the base requirements (for every proposal/system being responded to).
- D. Tab 4 – Project Team Resumes/ Individual Certifications
- E. Tab 5 – Bill of Materials and Pricing Guarantee Letter
1. Provide separate detailed pricing sheets for each section. Include labor and materials as separate line items for each (for every proposal/system being responded to).
 2. Provide separate detailed Bill of Materials pricing sheets as follows:
 - a. AV/Multimedia
 - i. Cafeteria A|V
 - b. Lighting
 - i. Black Box
 - ii. PAC
 3. Provide a signed acknowledgement that unit pricing proposed will be valid for a period of ***eighteen (18) months from the date of award***. Also, the Respondent shall acknowledge that pricing for new/replacement models of equipment will be extended the same pricing as the previous model given that the manufacturer did not increase or decrease the list at the time of this RFP response. The Respondent shall further acknowledge if the manufacturer increases or decreases the price of new/replacement models that the same percentage discount for the previous model shall be used.
- F. Tab 6 – Installation Methodology
- G. Tab 7 – Quality Control Plan
1. Proposer shall provide detailed company Quality Control procedures, examples of QC plans/results, and checklists...
- H. Tab 8 – Qualifications, References, and Certifications
1. Respondent Qualifications
 2. Support Capabilities
 3. References
 4. Contractor qualifications form (for all systems being proposed)



5. Certifications and/or letter from manufacturer(s) that the firm is an authorized installer and maintenance provider

I. Tab 9 – Exceptions, Assumptions and Clarifications

4.04 **Alternate Proposals:** In addition to the base proposal, Proposers who wish to submit an alternate proposal may do so. Alternate proposals shall clearly describe the proposed changes and shall include any price changes from the original base proposal.

4.05 **Selection Criteria:** Proposals shall be evaluated based on, but not limited to, the following criteria:

Evaluation Criteria		
Item	Description	Percentage Possible
1	Cost - Base Price	30%
2	Cost - Unit Pricing	5%
3	Proposer: Ability to execute and perform, length of time in business, number of active customers, and company structure.	20%
4	Support: Number of overall full time, installers/technicians, certified technicians, remote and on-site response time guarantee, dispatch distance, and maintenance capabilities.	15%
5	Understanding of requirements: Scope of work, bill of materials	15%
6	References	5%
7	Quality of Proposal	10%
	Total Points	100%

A. Cost – Base Price (30 points) – The price included in the RFP response shall be the price evaluated. There SHALL NOT be an opportunity for a best and final offer. Respondent is encouraged to include their best prices in their initial response. The lowest cost proposal shall receive 30-points. Other proposals shall receive a percentage of points.

B. Cost – Unit Price (5 points) – The unit prices included in the RFP response shall be the price evaluated. For evaluation purposes, the evaluation team shall use the detailed Bill of Materials in the Proposer’s response.

C. Proposer (20 points) – Ability to meet the District’s technology configuration goals, hardware/network configuration, feature functionality, systems management, and compatibility with existing systems.

D. Support – (15 points) – Number of overall full time, installers/technicians, manufacturer certified technicians, dispatch distance, maintenance capabilities, installation methodology, project and maintenance teams experience and certifications, long term product support, remote and on site response time guarantee.

E. Understanding of requirements – (15 points) – Proposer’s understanding of the Scope of Work and completeness of Bill of Materials in proposal.



F. References – (5 points):

4-5 points: All three references are favorable and all three are similar to the project and organization as specified in this RFP.

2-4 points: All three references are favorable and one or two are not similar to the project and organization as specified in this RFP.

0-2 points: Any reference provides unfavorable comments about the Bidder. Or all three references are favorable but none are similar to the project and organization as specified in this RFP.

G. Quality of proposal – Proposers will be awarded up to 10 points based on the quality of the proposal including providing the correct quantity and all required and requested information in a complete, neat and organized proposal.

- 4.06 **Evaluation Committee:** Proposals shall be evaluated by an Evaluation Committee, and the Evaluation Committee will make recommendations regarding ranking to the Board of Trustees.
- 4.07 **Submittal of Qualifications:** Respondents should submit experience and qualifications as described in the RFP. Additional information may be submitted as appropriate to further describe vendor and provide product capabilities.



5 MINIMUM CONTRACTOR QUALIFICATIONS

Base Proposal #2 – Classroom Audio/Visual & PA/Bell/Clock System Contractor Qualifications

This form shall be completed and delivered with proposal response. Response shall also include references and required certifications. Proposers not meeting these requirements may have their proposal rejected.

In submitting this bid and upon award of a contract, I hereby certify that (check all that apply). Proposers that are using a subcontractor for this scope shall have an authorized agent of the subcontracting company complete this form.

Check all that apply:

- My company has the required Prior Project Experience: Installation of the proposed Cafetorium AV system (Extron/ Behringer Digital) for K12 clients. My company can provide a minimum of three (3) project references that have/had a similar scope and each project equal at least 60% of the base bid price for this project.
- My company meets all of the following minimum qualifications in order to be considered qualified to perform this contract. Failure to meet these minimum requirements shall be grounds for disqualification of the Proposer. My company certifies that it:
 - a. Maintains a minimum of eight (8) full time installers/technicians. This does not include subcontractors or part-time employees.
 - b. Is a certified integrator for the proposed systems
 - c. Can respond on-site to standard service calls within 8 hours (business hours) time. Can respond on-site to emergency service calls within 4 hours (business hours) time.
- I have provided documentation verifying the experience including, but not limited to; job description, point of contact, mailing address, telephone number, and references for each project. And, I understand that failure to provide this documentation will constitute grounds for rejection of response.

By signing this statement, I certify that the information provided above is accurate and will not change during the course of the contract without prior, written approval from Prosper ISD.

Name of Company: _____

Authorized Signature: _____ Date: _____

Title: _____



Base Proposal #3 – Theatrical Lighting Systems Contractor Qualifications

This form shall be completed and delivered with Proposal response. Response shall also include references and required certifications. Bidders not meeting these requirements will have their bid rejected. In submitting this bid and upon award of a contract, I hereby certify that:

Check all that apply:

- My company has the required Prior Project Experience: Installation of Theatrical Lighting systems. My company can provide a minimum of three (3) project references that have/had a similar scope and each project equal at least 80% of the base bid price for this project.

References must include contact name, phone number, brief description of project, date of completion, and contract amount.

- My company meets all of the following minimum qualifications in order to be considered qualified to perform this contract. Failure to meet these minimum requirements shall be grounds for disqualification of the Proposer. My company certifies that it:
 - a. Maintains a minimum of eight (8) full time installers/technicians. This does not include subcontractors or part-time employees. List of installers/technicians must be provided before award of contract.
 - b. Can respond on-site to standard service calls within 8 hours (business hours) time. Can respond on-site to emergency service calls within 4 hours (business hours) time
- I have provided documentation verifying the experience including, but not limited to; job description, point of contact, mailing address, telephone number, and references for each project. And, I understand that failure to provide this documentation will constitute grounds for rejection of response.

By signing this statement, I certify that the information provided above is accurate and will not change during the course of the contract without prior, written approval from Prosper ISD.

Name of Company: _____

Authorized Signature: _____ Date: _____

Title: _____



6 PROPOSAL FORM AND COST DETAIL

6.01 Price Summary

To: Prosper Independent School District, Prosper TX

We, _____, a (joint venture)
(Corporation)
(Partnership)
(Individual)
[Cross out inapplicable]

Of _____
Street City County State Zip

Hereby agree to execute the proposed contract and to furnish a satisfactory Payment and Performance Surety Bond in the amount specified within ten (10) days of offering (proposal surety bond must accompany proposal), and to provide all labor and material required for the construction of the project designated above, for the prices hereinafter set forth, in strict accordance with the RFP issued on January 5, 2016.



ALL PROPOSALS – Proposer shall provide a complete Bill of Material (BOM) with all equipment unit pricing in a similar format to the table listed below for each system. This pricing shall be valid for a period of 12 months subsequent to project completion.

Part#	Manufacturer	Description	Quantity	Unit Price	Extended Price	Installation	Line Item Total
			-	\$ -	\$ -	\$ -	\$ -
			-	\$ -	\$ -	\$ -	\$ -
			-	\$ -	\$ -	\$ -	\$ -
			-	\$ -	\$ -	\$ -	\$ -

Proposal-1 – Extron/ Behringer Digital Cafeteria (Sections 270000, 274000, & 274114)

Total base proposal for the work at the following campuses of this project are:

_____ DOLLARS (\$_____)

Proposal-2 – Black Box & PAC Lighting Classroom AV (Sections 270000, 274000 & 274118)

Total base proposal for the work at the following campuses of this project are:

_____ DOLLARS (\$_____)

6.02 Split Award

For each Proposal/system, the District reserves the right to split the campuses and award them to two separate contractors based on the Proposers’ pricing and ability to complete the work in a timely manner.

6.03 Commencement and Completion of Contract Work

The undersigned agrees, if awarded the contract, to commence the Contract work on a date to be specified in a written Notice to Proceed, and to complete the work within the time dictated in the Instructions to Proposers.

6.04 Addendum Receipt

We acknowledge receipt of the following Addenda:

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____



Signature

By signing this proposal form, such action certifies that the Proposer has personal knowledge of the following:

- A. That said Proposer has examined the drawings and specifications, carefully prepared the proposal form, and checked the same in detail before submitting said proposal; and that said Proposer, or the agents, officers, or employees thereof, have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive proposal in connection with this proposal.
- B. That all of said work will be performed at the Proposer’s own proper cost and expense and that the Proposer will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications and at the time stated in the contract.
- C. That said Proposer has followed the Federal Gift Rule and Lowest Corresponding Price Rule as required by the Federal Communications Commission.

(Firm Name)

(Phone Number)

(Seal, if proposal is by a corporation)

By: _____
(Signature of Proposer)

Date: _____



7 CONFLICT OF INTEREST QUESTIONNAIRE

CONFLICT OF INTEREST QUESTIONNAIRE For vendor or other person doing business with local governmental entity	
<p>This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Reg Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. <i>See</i> Section 176.006, Local Government Code.</p> <p>A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.</p>	<p>OFFICE USE ONLY</p> <hr/> <p>Date Received</p>
<p>1 Name of person who has a business relationship with local governmental entity.</p>	
<p>2 <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)</p>	
<p>3 Name of local government officer with whom filer has employment or business relationship.</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Name of Officer</p> <p>This section, (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.</p> <p>A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the vendor?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of one percent or more?</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>D. Describe each employment or business relationship with the local government officer name in this section.</p>	
<p>4</p> <p>_____</p> <p>Signature of person doing business with the governmental entity</p> <p style="text-align: right;">_____</p> <p style="text-align: right;">Date</p>	



8 FELONY CONVICTION NOTICE

State of Texas Legislative Senate Bill No.1, Section 44.034, Notification of Criminal History, Subsection (a) states “a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.”

Subsection (b) states “a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract.”

This notice is not required of a Publicly-held Corporation.

I, the undersigned agent for the firm named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

Vendor’s Name: _____

Authorized Company Official’s Name (Printed): _____

a. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable:
Signature of Company Official _____

b. My firm is not owned nor operated by anyone who has been convicted of a felony.
Signature of Company Official _____

c. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony:
Name of Felon(s) _____
Details of Conviction(s) _____
Signature of Company Official _____



9 SENATE BILL 9 AND INSTRUCTIONS

Instructions to School District Contractors

Regarding Criminal History Background Searches

Under Senate Bill 9

Senate Bill 9 directs school district contractors (i.e., Company) to obtain state and national criminal history background searches on their employees who will have direct contact with students, and to receive those results through the DPS criminal history clearinghouse (Fingerprint-based Applicant Clearinghouse of Texas – FACT). In order for contractors to receive the information through FACT, they must first establish an account with the DPS for FACT clearinghouse access. The Company owner must sign a user agreement with the DPS. To obtain the user agreement and more information, Company must contact:

Access and Dissemination Bureau
Texas Department of Public Safety
Crime Records Service
P. O. Box 149322
Austin, Texas 78714-9322

Email: FACT@txdps.state.tx.us
Phone: (512) 424-2365

For fastest service, please email or call. State in the message that Company is a school district contractor and needs to have an account established for DPS FACT clearinghouse access. Please include:

Company Name
Company Address
Company Phone
Name of Company point of contact
Phone of Company point of contact
Company email to be used for notification of FACT records and messages

The information in the DPS FACT Clearinghouse is confidential, and access must be restricted to the least number of persons needed to review the records. The account must include at least one designated supervisor to make necessary changes and to monitor the site's security and the access to the criminal history data retrieved. Additional users must be limited to those who need to request, retrieve, or evaluate data regarding the individual applicants.

PLEASE NOTE: After the Company signs the DPS User Agreement for FACT, DPS will provide the Company with a revised **FAST Fingerprint Pass** that Company will have to provide to its employees and applicants. Company's employees and applicants will use that **FAST Fingerprint Pass** when scheduling their FAST fingerprinting.



10 GENERAL ROLES AND RESPONSIBILITIES

10.01 Damage and Cleanup

- A. Existing floors, walls, ceilings, or any structural piece shall not be drilled or cut without prior approval of the District. The Contractor shall be held responsible for and make payment on any damage caused from the delivery and/or installation of its work.
- B. The Contractor shall keep the premises clean from debris and rubbish. After each workday, the Contractor will be required to properly dispose of any refuse or packing materials by their own means and at their expense. Trash receptacles located on the District's property shall not be used to dispose of the refuse or packing materials. If Contractor is found to be using District trash receptacles, Contractor will be charged the current contracted price to have the receptacle picked up and replaced with an empty one.

10.02 Project Manager

- A. The Contractor shall appoint a Project Manager who shall be the main point of contact regarding the project for the District. The Project Manager is responsible for the following:
 - 1. Ensuring the contract is completed successfully in a timely manner.
 - 2. Guaranteeing the work and performance of all employees that have been hired by the Contractor.
 - 3. Completing and submitting all required submittals and documentation.
 - 4. Attending all project coordination and/or construction meetings as required by the District, plus chairing a weekly project status meeting throughout the duration of the project.
 - 5. Maintaining the project status meeting minutes and distributing them to all participants within two days following the meeting.
 - 6. Providing written status reports to the District Project Manager, as required.
 - 7. Informing the District of all unexpected conditions and problems that may result in delay or expense. The Contractor must report issues immediately upon discovery and must provide the District with the option(s) for resolving them.
 - 8. The Contractor and/or District may require changes during the project(s). Any changes must be accompanied by a formal Change Order Request form that will be provided by the District. Change Order Request forms will be submitted to the Consultant, True North Consulting Group, for initial review and approval. Once approved, the Change Order will be submitted to the District by the Consultant for review and approval. Once approved, the fully executed Change Order will be sent to the Contractor. Any deviations from this process will not constitute an approved contract change.
- B. If the Contractor seeks to change the Project Manager during the course of the project, such change is subject to prior written approval from the District.



- C. The District reserves the right to request a new Project Manager during the course of the project if the Project Manager does not perform to the District's satisfaction.
- 10.03 Contractors may assume rack space is available for all components.
- 10.04 If other Contractors' work delays this Contractor, that information must immediately be communicated to the District's Project Manager and appropriate extra time may be allowed. Shipping delays are the sole responsibility of the Contractor.
- 10.05 **Project Closeout and Acceptance**
- A. Punch List Approval – The punch list shall be considered complete only after having been signed by the District.
 - B. Acceptance – Acceptance shall occur after all of the following conditions have been met:
 1. All items/systems have been delivered, installed, configured, tested, and transitioned into service. The system, including all ancillary devices, applications, and options made part of the contract, has had 30 consecutive days with 100 percent availability.
 2. All of the work has been completed in accordance with the contract and RFP specifications (including testing procedures as outlined in the accepted response).
 3. Training as specified is complete.
 4. The system operates in conformance with manufacturer's published specifications.
 5. The system is transitioned to service.
 6. All of the documentation requirements have been met.
 7. All outstanding punch list items have been corrected. The system post-cutover requirements have been completed.
 8. The Contractor has supplied test results needed to verify compliance with the specifications found in this RFP.
 9. The Contractor has certified in writing to the District that the system is installed and operational in accordance with these specifications and is ready for use.
 10. The District or the District's designated representative has inspected the installation and provided written approval.

At this time, upon the District's written acceptance, operational control becomes the responsibility of the District. This constitutes Date of Acceptance. The warranty for the entire system and all components begins as of this date.

- 10.06 **Warranty Period** – The Contractor, by entering into a contract with the District, warrants and represents that all materials, equipment, and services delivered to the District pursuant to the contract conforms to all of the specifications contained or referred herein. The Contractor further guarantees to replace all materials, equipment, software, or services that may be rejected by the District due to defective materials or workmanship for a minimum of one year following acceptance. Specific systems may have additional warranty requirements listed in the individual system specifications (Division 27).



11 COST & BILL OF MATERIALS

- 11.01 Provide all costs requested in *Proposal Form and Cost Detail* of the RFP. Insert a hard copy of the completed form in this section of the response and a **SOFT COPY IN PDF** format with the original copy of the response.
- 11.02 Provide Bill of Materials (BOM) showing model number/description, and quantity, for all components proposed per school. Respondent shall provide this BOM in a MS Excel format. Successful Contractor(s) shall provide detailed unit pricing and extended pricing.
- 11.03 Base prices requested in Proposal Form and Cost Detail shall be all inclusive of all specified components. Respondent shall not include optional items in base prices. Provide optional pricing as separate line items outside of totals.



12 ACCEPTANCE TESTING

INCLUDE ACKNOWLEDGEMENT THAT PRICING PROPOSED WILL BE VALID FOR THE DURATION OF THE PROJECT, APPROXIMATELY 18 MONTHS.

12.01 Provide the recommended acceptance test plan for all proposed products and applications.

A. References will be contacted – please verify information before submitting. Use the format below for all references. All references will be called. Please inform your contacts that a 10 to 15 minute call may be anticipated.

Classroom AV & PA/Bell/Clock Reference 1:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____

Date of Installation _____

Description of System _____

Number of Classroom AV systems _____

Classroom AV Classroom AV & PA/Bell/Clock Reference 2:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____

Date of Installation _____

Description of System _____

Number of Classroom AV systems _____

Classroom AV Classroom AV & PA/Bell/Clock Reference 3:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____



Date of Installation _____

Description of System _____

Number of Classroom AV systems _____

Theatrical Lighting Reference 1:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____

Date of Installation _____

Description of System _____

Number of Classroom AV systems _____

Theatrical Lighting Reference 2:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____

Date of Installation _____

Description of System _____

Number of Classroom AV systems _____

Theatrical Lighting Reference 3:

Organization Name _____

Contact Person/Title _____

Telephone/Email _____

Date of Installation _____

Description of System _____

Number of Classroom AV systems _____



B. Subcontractors

1. The use of subcontractors is permitted. The respondent is responsible for understanding the full scope of the project and determining its ability to perform under all requirements set herein.
2. Please acknowledge full understanding of the systems and scope of project specified herein.

12.02 Service after Installation

A. How many service personnel, trained in maintaining the proposed systems, does Respondent employ in the District's area? Please indicate location closest to the District.

1. Trained Service Personnel: _____
2. Location: _____

B. Provide the address of Respondent's service center(s) closest to the District:

1. Company _____
2. Address _____
3. Telephone Number _____



13 PROJECT TEAM

- 13.01 Resumes of key members of the team, including Project Manager, that will be assigned to the project (include previous projects, certifications, and number of years employed).
- 13.02 Provide proof of manufacturer's certification/specialization for the company. All certifications must be current and valid.
- 13.03 Provide proof of manufacturer's certification for individuals listed above. All certifications must be current and valid.

14 EXCEPTIONS AND CLARIFICATIONS

- 14.01 Please provide detailed information on any exceptions or clarifications to this RFP that the respondent is taking. If no exceptions or clarifications are specifically listed, then the respondent explicitly and knowingly accepts all terms, conditions, and requirements set forth in this RFP.

**SECTION 27 00 00****GENERAL TECHNOLOGY REQUIREMENTS****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Documents: Provisions of General Conditions, Supplementary Conditions, and the sections included under Procurement & Contract Requirements are included as part of this section as though bound herein.

1.02 DEFINITIONS

- A. Work: The provision of products and/or services to meet the requirements specified in these documents.
- B. Owner: The party named in the Procurement and Contract Requirements as the advertising party.
- C. Consultant: True North Consulting Group
- D. NIC: Not in Contract. Item will be the responsibility of others.
- E. Approved or Approval: Where approval is called for, only persons with the authorized authority may grant approval. Owner reserves all rights to govern over and grant approval and will appoint authority of agents acting on their behalf.
- F. OFE: Owner Furnished Equipment. Item will be provided and integrated by Owner.
- G. OFCI: Owner Furnished Contractor Installed. Item will be provided by Owner and installed by Contractor.
- H. OFOI: Owner Furnished Owner Installed. Item will be provided and installed by Owner.
- I. As Required: Contractor shall provide the quantity of said item that is necessary. Owner and Consultant reserve the right to make the final determination of necessary quantities to provide for a complete system.

1.03 REFERENCE STANDARDS

- A. Standards and other procedures referenced by this bid package are as follows:
 - 1. ADA – Americans with Disabilities Act of 2010
U.S. Department of Justice
950 Pennsylvania Ave., NW
Civil Rights Division Disability Rights Section – NYAV
Washington, DC 20530



2. AIA – American Institute of Architects
1735 New York Avenue. NW
Washington, DC 20006
3. ANSI – American National Standards Institute
1819 L Street, NW 6th Fl.
Washington, DC 20036
4. ASTM – American Society of Testing and Materials
100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA 19428
5. BICSI – Building Industry Consulting Service International, Inc.
(RCDD Standards)
8610 Hidden River Parkway
Tampa, FL 33637
6. CFR – Code of Federal Regulations
(Available from the Government Printing Office)
732 N. Capitol Street, NW
Washington, DC 20401
7. EIA – Electronic Industries Alliance
2500 Wilson Blvd.
8. IACS – International Annealed Copper Standard
CDA – Copper Development Association
260 Madison Avenue
New York, NY 10016
9. IEC – International Electrotechnical Commission
3, rue de Varembe
P.O. Box 131
CH – 1211 Geneva 20
Switzerland
10. IEEE – Institute of Electrical and Electronics Engineers
3 Park Ave. 17th Fl.
New York, NY 10016
11. ISO – International Organization for Standardization
1, rue Varembe
Case Postale 56
CH-1211 Geneva 20
Switzerland
12. ITU-T – International Telecommunication Union – Telecommunications
Standardization Sector
Places des Nations



CH-1211 Geneva 20
Switzerland

13. NEC – National Electrical Code
maintained by NFPA – National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169
 14. NECA – National Electrical Contractors Association
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814-5372
 15. NEMA – National Electrical Manufacturers' Association
2101 L Street, N.W., Suite 300
Washington, DC 20037
 16. OSHA – Occupational Safety and Health Administration
(U.S. Department of Labor, OSHA)
200 Constitution Avenue, NW
Washington, DC 20210
 17. TIA – Telecommunications Industry Association
2500 Wilson Blvd., Suite 300
Arlington, VA 22201
 18. UL – Underwriters' Laboratories
333 Pfingsten Road
Northbrook, IL 60062-2096
- B. Standards: Referenced standards and/or procedures will be binding on the Contractor and work will be judged against such standards and procedures unless otherwise stated in writing.

1.04 EXAMINATION OF EXISTING CONDITIONS

- A. Examination: Contractor shall examine the facility and construction documents to the extent necessary to plan for efficient installation strategies prior to the delivery of materials to the site or the commencement of work. Other documents (architectural drawings, hardware schedules, etc.) may be made available upon request. Failure to adequately complete the examination shall not result in change order requests.
- B. Acceptance of Conditions: Commencement of work by Contractor shall constitute acceptance of existing conditions, unless a written notice of exceptions has been provided to Owner prior to commencement.
- C. Observation: If Contractor observes (during preliminary examinations or subsequent work) existing violations of fire stopping, electrical wiring, grounding, or other safety or code-related issues, Contractor shall report these to Owner in a timely manner.



1.05 DRAWING SYMBOLS

- A. General: Work, equipment, or material delineated on any drawing in this package will be expected to be provided by Contractor unless noted otherwise.
- B. Interpretation: Work shall be installed in accordance with the intent diagrammatically expressed on the Drawings and described in the written specifications. Contractor shall not make limiting interpretation that provides for incomplete work or a non-functioning system.

1.06 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Storage: Storage of materials shall remain the full responsibility of Contractor until Final Acceptance.
- B. Protection: Contractor shall take all necessary precautions to protect new and existing materials from the following:
 - 1. Theft
 - 2. Vandalism/Tampering
 - 3. Dents
 - 4. Scratches
 - 5. Dust
 - 6. Temperature
 - 7. Weather
 - 8. Cutting
 - 9. Paint
 - 10. Other hazardous conditions
- C. Replacement: Contractor shall replace any damaged or lost material as required by Owner or Consultant.
- D. Installed Materials: Installed materials remain the responsibility of the Contractor until Final Acceptance. Contractor shall take necessary precautions to ensure the safety and security of installed materials.

1.07 CONTRACT MODIFICATION PROCEDURES

- A. Changes: Changes to the contract may be initiated by Owner, Consultant or Contractor.
- B. Proposal Request (PR): If a change originates with Owner or Consultant, Consultant shall issue a Proposal Request to Contract.



- C. Request for Information (RFI): If a change originates with Contractor, the Contractor shall submit an RFI for Consultant review. If it is deemed a change is necessary, the Consultant shall issue a PR to address the change.
- D. References: A Change Proposal shall reference the work to be performed, and shall include the cost change to the Project (if any) and the time change to the scheduled completion (if any).
- E. Additional Information: Consultant may request additional information to be supplied with the Change Proposal for consideration.
- F. Acceptance: Owner reserves the right to accept or reject Change Proposals.
- G. Change Order: A Change order is a modification of the contract:
 - 1. If a Change Order is approved, Owner will issue a Change Order that references PR. Change Order is not valid until it has been signed by Owner.
 - 2. Work performed or equipment supplied without a fully executed Change Order will be done at the Contractor's own risk.

1.08 OWNER-FURNISHED PRODUCTS

- A. Delivery: Owner is responsible for delivery of Owner-furnished products to the Project site, unless otherwise specified in this document.
- B. Placement: Contractor is responsible for locating, inspecting, and moving Owner-furnished products to their final installation position.
- C. Inspection: Contractor shall report any damage, discrepancies in quantity, type, or function to Owner and Consultant immediately upon discovery.
- D. Warranty: Contractor assumes no responsibility for any material warranty for Owner-furnished products. Contractor shall be responsible for integrating, cabling, and installing Owner-furnished products under the same warranty conditions as other products furnished by Contractor.

1.09 CONSTRUCTION PROGRESS MEETINGS

- A. Attendance: Contractor is required to attend job progress meetings in accordance with requirements set by Owner or Consultant.
- B. Additional Coordination: Contractor shall request additional job construction coordination meetings it deems to be necessary to ensure coordination of its responsibilities with other parties.

1.10 CONSTRUCTION PROGRESS DOCUMENTATION

- A. Completion: Contractor shall complete and submit all construction progress documentation as requested by Owner and Consultant. Progress documents shall be submitted every two weeks, at minimum.



- B. Failure to Complete: Failure to complete requested construction progress documentation may result in the withholding of payment by Owner.

1.11 SUBMITTAL PROCEDURES

- A. Provision: Contractor shall provide submittals of any corrections or additions to Consultant prior to the procurement of equipment or commencement of work. Drawings shall be prepared, copied, and submitted on 42" x 30" paper, electronic CAD, MS Visio or PDF delivery. Equipment lists, data sheets, etc., shall be on 8½" x 11" paper, or electronic format (PDF or MS Word Format). Provide all electronic materials in tabular format on USB thumb drives (quantity of 3) with one (1) bound copy of all submittal documentation.
- B. Prior to Work: Submittals shall be provided to Consultant within ten (10) days after the notice to proceed. Submittals are identified in section(s) following Section 27 00 00.
- C. Review: Submittals shall be received and stamped "Reviewed" by Consultant prior to the procurement of material or the commencement of work. Any procurement or work performed prior to this approval is at Contractor's own risk.
- D. Project Timeline: Project timeline will not be altered due to lateness of submittals. Contractor will remain bound to deliver a timely, complete, and finished project as stipulated in their contract.
- E. Failure to Provide: The failure of Contractor to provide submittals as required herein may result in the withholding of payment for work and/or the cancellation of the contract.

1.12 PAYMENT PROCEDURES

- A. Terms: Unless stated otherwise in the contract between the Owner and the Contractor, the Owner shall pay the Contractor on a monthly basis for work completed, based on inspection and sign-off by the Owner or Owner's Agent. Retainage shall be 5% of the scheduled contract value for each item listed in the "Schedule of Values and shall be paid only after Final Written Acceptance by the Consultant. The "Schedule of Values" shall include separate lines for each category of the work with separate values for materials and labor,
- B. Application: Payments to the Contractor shall be made only after the Contractor has issued the proper Application for Payment. Pay request must be on the Consultant's supplied AIA form(s). Contractor's Application for Payment must be provided:
- C. On AIA Document G702 with AIA G703 support page. The Contractor shall submit for approval by the Owner and Consultant a "Schedule of Values" on the form AIA G-703 prior to the first application for payment.
- D. The Owner or Owner's representative must review and sign the Contractor's Application for Payment prior to payment being issued.
- E. The Contractor's payments shall not be processed if any of the following conditions exist:
 - 1. Contractor's submittals are not provided or current as required herein.



2. Contractor's work is not in compliance with the specification.
3. Application for Payment has not been submitted on the proper form and with required support documentation.

1.13 CLOSEOUT PROCEDURES

- A. Notification: Contractor shall provide written notification to Consultant and Owner when Contractor is satisfied that the work has been completed and is ready for inspection.
- B. Closeout Submittals: Contractor shall provide closeout submittals to Consultant in accordance with the requirements found in these documents. Consultant shall receive the closeout submittals no less than three (3) business days prior to the scheduled final inspection.
- C. Final Inspection: Contractor is required to be present for the final inspection by Consultant.
- D. Punch List: Work or materials found to be incomplete, of unsatisfactory quality, failing to meet the specifications in these documents, and/or unacceptable to Consultant or Owner shall be documented by Consultant and provided to Contractor to rectify.
- E. Re-Inspection: If more than one (1) re-inspection is necessary, the costs of the additional travel, hours, and expenses of Owner and Consultant may be deducted by Owner from the contract amount due Contractor.
- F. Punch List Approval: Once all punchlist items are complete, the Contractor shall return an initialed punchlist to the Consultant and Owner for verification. Punch list shall be considered complete only after having been signed by Owner and Consultant.

1.14 SOFTWARE

- A. Versions: Consultant uses the following software versions:
 1. Autodesk AutoCAD MEP 2016 or earlier version
 2. Microsoft Word 2013 or 2010
 3. Microsoft Excel 2013 or 2010
 4. Microsoft Visio 2013 or 2010

1.15 PROJECT MANAGEMENT

- A. Project Manager: Contractor shall appoint a Project Manager who will be the main point of contact for Owner and Consultant regarding the Project.
- B. Responsibility: Project Manager is responsible for the following:
 1. Successfully completing the contract in a timely manner.
 2. Overseeing work and performance of all employees and subcontractors who have been hired by Contractor and ensuring compliance with specification.



3. Completing and submitting required documentation.
 4. Attending Project coordination meetings as required by Owner, Consultant, and Contractor. Contractor is responsible for taking minutes of these meetings and distributing copies to all participants.
 5. Coordinating with Owner, Consultant, and other Contractors involved in the Project to ensure smooth flow of work and on-time Project completion.
 6. Providing a written bi-weekly progress update to the Owner and Consultant.
 7. Reporting all unexpected conditions and problems that may result in delay or expense to Owner and Consultant immediately upon discovery.
- C. Change of Project Manager: If Contractor seeks to change Project Manager during the course of the Project, such change is subject to prior written approval from Owner.

1.16 QUALITY ASSURANCE

- A. Assurance: It is the intent of these specifications to describe and provide for a complete, professional, and reliable installation.
- B. Qualifications: Contractor employees who are engaged in installation shall be properly trained in the tasks they are expected to perform.
- C. Acceptability: Owner shall determine the acceptability of work.
- D. Regulatory Requirements: Contractor shall comply with code requirements that apply to the work being performed.
- E. Certifications: Where manufacturer certifications are required for warranty or for authorized resale, installation personnel shall have received such certification prior to the start of installation of those manufacturers' materials.

1.17 QUALITY CONTROL

- A. Installation: During installation period, when connections are made to the Owner's existing infrastructure, Contractor shall use care to ensure that no negative results occur that could reduce or hamper existing systems.

PART 2 - PRODUCTS

2.01 BASIC EQUIPMENT AND MATERIALS REQUIREMENTS

- A. Standards: Equipment and materials used to accomplish the goals of this Project shall meet standards for good engineering practice as defined within this document.
- B. Quality: Products specified in these documents are intended to establish a baseline or operational, functional, and performance-based standards that all proposed products shall meet or exceed by functionality and quality.



2.02 FACTORY-ASSEMBLED PRODUCTS

- A. Manufacturer: Reference to specific equipment manufacturers does not imply that all products produced by that manufacturer meet the specification requirements.
- B. Age of Equipment: Equipment shall be new and unused with full manufacturer's warranties. Contractor shall supplement such warranties as required by the specification.
- C. No Modification: Where a product is available from a factory/manufacturer to meet the needs as outlined, that product shall be used without modification to ensure the full factory warranty is maintained.
- D. Like Materials: Like materials used shall be of the same manufacturer, model, and quality unless otherwise specified.
- E. Software/Firmware: No software or firmware is to be used unless specifically authorized by Owner or its appointed representative.

2.03 RACKS, CABINETS, HARDWARE

- A. Equipment Racks and Cabinets: Provide racks and cabinets as specified herein and/or described in accompanying documents, appendices, or Drawings. Verify that any existing racks and/or cabinets provided by others are complete, bringing any discrepancies to the attention of Owner and Consultant prior to beginning the installation.
- B. Shelves and Mounts: Contractor shall supply necessary mounting hardware to install rack-mounted equipment. Mounting hardware shall be a product of the manufacturer of the equipment to be mounted, or manufacturer of the rack system, or approved by either for use with their product. Provide supporting channels, shelves, rack mounts, and/or rack ears as recommended by equipment manufacturers.
- C. Screws and Washers: Contractor shall provide screw head types appropriate to the level of security required for the equipment and racking. Screws shall include polyethylene or nylon washer.
 - 1. Public Access Areas: Star post security screws shall be used for hardware and equipment mounted in equipment racks and consoles in areas that are accessible to the public. Provide three (3) spare security bits per rack for the Owner.
 - 2. Restricted Access Areas: Philips head screws shall be used where a secure room or locked rack/console door prevents public access.

2.04 CABLE AND CONNECTORS

- A. Cable: Cable shall be selected and applied in a manner defined by signal type, consistent with best industry practices. Highest quality products shall be used with attention given to transmission characteristics, termination methods, resistive and complex impedance at operating frequencies, and insulating material characteristics. Where required by the NEC, substitutions of air handling plenum cable shall exactly match the normally applied product and shall meet the standards of UL Standard #900 and the NEC Articles 800 and 820.



- B. Connectors: Highest quality products shall be used with attention given to transmission characteristics, termination methods, resistive and complex impedance at operating frequencies, and insulating material characteristics. Strain reliefs and cable clamps shall be sized for the connector and the cable.
- C. Color: Cable and connector color shall be coordinated with Consultant and Owner to maintain consistency with cable and connector color schemes used by other trades.

2.05 CABLE MANAGEMENT

- A. Velcro Cable Ties: Above or below ceiling level and within equipment enclosures, Velcro straps shall be used on all cable bundles. Velcro straps shall be black, with no logo or decoration.
- B. Plastic/nylon cable ties shall not be used for any AV or Theatrical Lighting cables.

2.06 ANCILLARY HARDWARE

- A. General: Contractor will provide ancillary and required accessory items necessary to furnish to Owner a complete and fully functional system.
- B. Interpretation: Exclusion of or limitation in the language used in the Drawings or specifications shall not be interpreted as meaning that ancillary or accessory items of work or equipment necessary to complete or make the installed system fully functional can be omitted.

2.07 GROUNDING HARDWARE

- A. Mechanical Connectors
 - 1. Material: Mechanical connector bodies shall be manufactured from high strength, high conductivity cast copper alloy material. Bolts, nuts, washers, and lock washers shall be made of Silicon Bronze and supplied as a part of the connector body and shall be of the two bolt type.
 - 2. Split Bolts: Split bolt connector types shall not be used.
 - 3. Standards: Connectors shall meet or exceed UL 467 and be clearly marked with the catalog number, conductor size, and manufacturer.
- B. Compression Connectors
 - 1. Material: Compression connectors shall be manufactured from pure wrought copper. Conductivity of this material shall be no less than 99% by IACS standards.
 - 2. Standards: Connectors shall meet or exceed the performance requirements of IEEE 837, latest revision.
 - 3. Installation: Installation of the connectors shall be made with a compression, tool and die system, as recommended by the manufacturer of the connectors.



4. Labeling: Connectors shall be clearly marked with manufacturer, catalog number, conductor size, and required compression tool settings.
 5. Protection: Each connector shall be factory filled with an oxide-inhibiting compound.
- C. Wire
1. Material: Stranded copper (aluminum not permitted). AWG #3, AWG #4 and AWG #6 as specified on Project Drawings or sections after 27 00 00.
 2. Feeder and Branch Circuit Equipment Ground: Size as shown on drawings, specifications, or as required by NFPA 70, whichever is larger. Differentiate between normal ground and isolated ground when both are used on the same facility.

2.08 COMPATIBILITY OF RELATED EQUIPMENT

- A. Existing Equipment: Equipment and systems specified in these documents shall be assumed to be compatible with the systems already installed at Owner site(s) and as identified in this document as related to this Project.
- B. Installed Equipment: Specified equipment and systems shall be compatible with all other equipment and systems as offered by Contractor, thus placing the responsibility on Contractor to ensure proper interaction.

2.09 MAINTENANCE MANUALS

- A. Contractor shall produce a maintenance manual showing interconnection of equipment and any special procedures necessary for proper operation of the systems.

PART 3 - EXECUTION

3.01 GENERAL

- A. Contractor shall provide, furnish, deliver, transport, erect, install, configure, and connect completely all of the material and equipment described herein or depicted on any bid package document or Drawing, and shall leave all systems in first-class operating condition.

3.02 COORDINATION

- A. General: Contractor shall cooperate with other Contractors for proper provisioning, anchorage, placement, and execution of all work. Interference between the work of various Contractors shall be resolved before installation. In the event of conflict with other trades on space requirements or location, refer the matter to Owner and Consultant for decision.
- B. Related Work: References to the following related work do not limit or release Contractor from the responsibility of coordination with other trades or from having the necessary knowledge of other non-referenced work.
 1. Work by other Technology Contractors.



2. Work by Electrical Contractor, including electrical rough-ins and surface-mounted raceway.
- C. Delays: Contractor shall coordinate with all other trades to avoid causing delays in the installation schedule.
 - D. AC Power: Contractor shall coordinate with Electrical Contractor its requirements for proper AC power to service all equipment installed by Contractor.
 - E. Grounding: Contractor shall coordinate with Electrical Contractor its requirements for proper ground system to its equipment.
 - F. Surface-Mounted Raceway Coordination
 1. General and Electrical Contractors: Contractor shall coordinate with Consultant and Electrical Contractor the installation of surface-mounted-raceway where not provided but made necessary by non-penetrable wall.
 2. Verification: Contractor shall field verify and coordinate the proposed use of surface-mounted raceway at any location with Consultant and Owner.

3.03 BASIC EXECUTION REQUIREMENTS

- A. General: Contractor is responsible for following industry standards of good practice for telecommunications and networking equipment.
- B. Aesthetic Factors: With the installation of equipment and cables, consideration shall be given not only to operation efficiency but also to overall aesthetic factors. Contractor shall redo, at no cost to Owner, any work deemed by Owner to appear sloppy, hastily done, or unprofessional. Owner shall make final decision over whether work shall be redone.
- C. Manufacturers' Recommendations: Manufactured items, materials, and equipment shall be applied, installed, connected, erected, used, and adjusted as recommended by the manufacturers or as indicated in their published literature unless otherwise noted herein.
- D. Protection of Work Area: Work shall be properly protected during construction, including the shielding of soft or fragile materials, protecting against dust and dirt, protecting and supporting cable ends off of the floor and from other traffic, protecting floor box lids, and temporarily plugging open conduits during construction. Upon completion, installation shall be thoroughly cleaned and all tools, equipment, obstructions, or debris present as a result of work shall be removed from the premises.
- E. Waste Materials: Contractor shall keep work area neat, orderly, and free from accumulation of waste materials. Remove trash and debris from the building and job site as required to maintain a clean work environment at all times. Rubbish shall be moved to a common trash point or receptacle on the job site as determined and directed by Owner.
- F. Ceiling Grid: Contractor shall not hang cable supports from ceiling grid wire.
- G. Roof Deck: Contractor shall not shoot into the roof deck for mounting cable hangers.



- H. Mounting: Equipment and enclosures shall be mounted plumb and square in relation to the structure.

3.04 PREPARATION

- A. Existing Equipment: Prior to any installation, the Contractor shall prepare the site by removing any remaining debris, leveling equipment racks (where appropriate), and verifying information and systems stated to be in-place are ready for use.
- B. Equipment for Installation: Prior to installation, Contractor shall ensure that required major equipment has been secured and is ready for installation.

3.05 CLEANING

- A. At the end of each work period or day, Contractor shall remove excess packing, drilling remnants, and other non-equipment related parts, materials, or debris to ensure a clean, safe, and professional working environment.

3.06 FIRE STOPPING

- A. Contractor is responsible for applying fire-stopping material in and around all openings that it creates or are created for it, whether or not specifically indicated in specifications or Project Drawings, where code or good engineering practice suggests or requires the use of fire stopping material.
- B. Contractor shall ensure that all fire-stopping materials meet appropriate codes and are applied according to good engineering practice.

3.07 WATERPROOFING

- A. Contractor shall create a waterproof seal in and around any openings to the outside environment that are created by Contractor or for systems being installed.
- B. Contractor shall ensure that all waterproof materials meet appropriate codes and are applied according to good engineering practice.

3.08 RACKS, CABINETS, AND HARDWARE

- A. Racks and Cabinets: Contractor shall assemble and install racks and cabinets.
- B. Installation Hardware: Install hardware in a secure manner. Screws shall be tightened to a torque just sufficient to secure equipment without deforming washers beyond their original diameter.
- C. Considerations: Rack mount equipment shall be secured as recommended by the manufacturer with consideration to airflow, power, and in/out connections.
- D. Cross Connections: Where cross connections are required between equipment, interconnections shall be installed using cable management technology to secure cables in a neat and orderly fashion, applying best industry practices.



3.09 GROUNDING

- A. General: Install products in accordance with manufacturer's instructions. Mechanical connections shall be accessible for inspection and maintenance. No insulation shall be installed over mechanical ground connections. Ground connection surfaces shall be cleaned and all connections shall be made so that disconnection or removal is impossible.

3.10 CABLE

- A. Cable Treatment: Cable shall be stored and handled to assure that it is not stretched, kinked, crushed, or abraded in any way. Bend radiuses shall meet manufacturer specifications and/or recommendations. Cable shall not be installed in ambient temperatures or moisture conditions above or below the rating of the manufacturer.
- B. Splicing
 - 1. Length: No splices shall be installed in any multimedia/video cable less than five hundred (500) feet in length.
 - 2. Voice and Data Cables: No splices are allowed in any voice or data cables.
 - 3. Cable Splices for overhead paging system shall occur only at speaker, amplifier or volume control knob locations.
- C. Lengths
 - 1. Variations: Where cables are to be of the same length, variations in the length shall be less than plus or minus ½". Lengths of cables are based on the length of the un-terminated signal conductors.
 - 2. Labeling: Cables shall be marked with a scheme approved by Consultant.
 - 3. Grouping: Cables shall be separated into like groups according to signal or power levels.
 - 4. Power Cables: Power cables shall be grouped to one side of the equipment rack while low-level cables shall be grouped to the other side.
 - 5. Equipment Racks: Rack wiring and cabling shall be neatly dressed.
 - 6. Service Loops: Cables shall have service loops as defined in sections after 27 00 00.
 - 7. Fastening: Rack cabling shall be adequately supported with Velcro wraps and horizontal support cable managers fastened to rack frame.
 - 8. External Wire Support: External wire and cables shall be supported at least every 5 feet from the structure or as required to maintain not more than 6" cable sag between supports and without over tensioning the cables.
 - 9. Support Hardware: Cables shall be supported by J-hooks, cable tray, or ladder rack. Hardware shall be secured to building structure using 3/8" threaded rod supports.
 - 10. Right Angles: Cables shall run at right angles to the structure, placed above ceiling in halls or corridors.



11. Height: Cables shall not run above red iron joist.
- D. Concealment: Contractor shall make every effort to conceal wiring and other apparatus into walls, floors, and ceilings, assuming code and good engineering practice allows and suggests. Cabling systems installed in public areas shall be installed within walls, ceiling, or floors or within surface wiring pathways, as dictated by codes and good engineering practice.
- E. Velcro Straps: Velcro straps shall be installed snugly without deforming cable insulation. Straps shall be spaced at uneven intervals not to exceed 8 inches.
- F. Obstruction: Contractor shall notify Owner immediately if any obstruction or hazard is discovered in a pathway provided by others.

3.11 CONNECTORS

- A. Preparation: Cables shall be carefully prepared and connectors installed as directed by the manufacturer. Proper stripping devices and crimping tools shall be used.
- B. Terminations: Connectors shall be carefully fitted to mating devices on equipment to avoid damage to mating contacts, inserts, or bodies. Specialized terminations shall be made in a neat and secure manner suited to the service of the wire and as directed by the manufacturer. Contractor shall use manufacturer specified terminations when those specifications exist.
- C. Soldering: A person skilled in that practice shall execute soldered terminations. All terminations will be made by a thermostatically controlled soldering iron. Failure to use a properly operating iron may result in replacement of all soldered connections.
- D. Adapters: Adapters shall be used only where the identity of the necessary type of connector is unknown at the time of installation, such as for Owner-provided equipment or in anticipation of future equipment upgrades, with Consultant's approval.

3.12 EQUIPMENT INSTALLATION

- A. General: Contractor shall make system properly operational and physically secure by mounting equipment and related accessories into furniture, consoles, and racks as required. Manufacturer's guidelines for installation shall be followed. Discrepancies in installation procedure or inability to complete a given task due to a shortage of materials or malfunctioning equipment shall be reported to Consultant immediately upon discovery.
- B. Equipment Placement: Contractor shall locate equipment as indicated on Drawings and as specified herein. Where such information is not provided, follow industry practices and locate operable devices at convenient positions—heat generating devices at the top and seldom-accessed equipment below. Unless otherwise specified, end user-operable devices shall be positioned within the range of front wheelchair access per ADA standards.
- C. Equipment Installation: Equipment shall be installed as directed by the manufacturer using equipment manufacturer's desktop mounting frames, equipment tubs, installation hardware, and techniques. Contractor shall be responsible for moving equipment from



storage and for providing necessary personnel or devices to carry and lift equipment around obstacles and into operating position.

3.13 ROUGH-IN

- A. Scheduling: Contractor shall make every effort to install systems per this specification in a timely manner including rough-in of cabling and other apparatus where appropriate to stay on schedule.
- B. Protection of Environment: Where cabling and/or equipment is installed prior to other trades completing their work in an area, Contractor shall take necessary precautions to cover, wrap, or otherwise protect to reduce possible damage due to plastering, painting, cleaning, or other such work.

3.14 CUTTING, DRILLING, PATCHING, AND PAINTING

- A. Coordination: Contractor shall coordinate the work when any cutting or drilling is required in the performance of installing the specified systems.
- B. Restoration: Contractor shall return all surfaces (including walls, floors, and ceilings) to their previous condition after any cutting.

3.15 LABELING

- A. General: Rack-mounted equipment and hardware shall be labeled as required herein. Connectors, jacks, receptacles, outlets, cables, cable terminations, terminal blocks, rack mounted equipment, active slots of card frame systems, etc. shall be clearly, logically, and permanently labeled in a manner acceptable to Consultant.
- B. Approval: Proposed wording and/or numbering schemes for labeling shall be provided to Consultant for review and written approval prior to procurement or installation.
- C. Labels used shall be permanent and secure. Provide labeling as follows unless otherwise noted in a specific section:
 - 1. Like Size: Labels shall be sized to match other labels used for same purpose. Similarly, provide engraved labels of like size in other locations.
 - 2. Equipment Racks: For enclosed racks containing equipment, provide labels on each equipment rack rear door or console rear panel reading "No user serviceable parts. Refer service to qualified technician."
 - 3. Installer and Consultant Identification: Position at the front top center section of each equipment rack a label that states the names of system Installer and Consultant.
 - 4. Custom Panels: Custom panel nomenclature shall be engraved, etched, or screened. Markings are to be designed to ensure consistency and clarity within and without of system. Verify markings and placements by submitting label sample layouts to Consultant for approval prior to procurement.
 - 5. Documentation: Labeling information shall appear on the as-built drawings.



3.16 ADDITIONAL ENGINEERING SERVICES

- A. General: Contractor shall secure necessary engineering services where needed to meet the needs of the installation.
- B. Change Orders: Only when Contractor can show that additional engineering services are needed as a result of changes to the scope of the services being requested will Owner entertain a Change Order for these services.

END OF SECTION



SECTION 27 40 00

AV-MULTIMEDIA & THEATRICAL LIGHTING GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 REFERENCE

- A. Provisions of Section 27 00 00 and Construction Documents are included as a part of this section as though bound herein.

1.02 SCOPE SUMMARY

- A. This section contains general requirements for AV/Multimedia technology provision, installation, configuration, and documentation. Requirements apply to all following sections unless specifically noted.

1.03 GOVERNING REQUIREMENTS

- A. The following are general provisions, requirements and expectations of the Technology Contractor delivering Audio & Video Systems equipment and installation for this construction package:
 - 1. This document is intended to provide all hopeful Vendor(s) / Contractor(s), hereafter referred to as the Proposer, with information needed to submit a complete Turnkey solution and proposal for the Prosper Independent School District, hereafter referred to as the District. The District will evaluate the submitted proposals to select a perceived Best Value Vendor to supply and install the Audio & Video Systems for this project as described herein.
 - 2. The work performed shall be of professional quality and installed as would normally be expected by a professional Audio & Video System integration Contractor in the primary business of providing quality installations of equivalent systems.
 - 3. The Proposer shall furnish their lump sum price offer to provide a turn-key package in response to the Audio & Video systems specified herein and further defined in the associated Construction Documents.
 - 4. The Contractor shall provide a 100% performance bond, payable to the Owner, until written acceptance by the Owner of all work and materials. The cost of these bonds shall be included in the Contractor's proposal price and shown by separate line item.
 - 5. The District shall accept proposals from both manufacturers and authorized resellers of products and systems specified herein and desire to have a competitive choice of local authorized reseller / manufacturers to find the best value for delivery of the systems.
 - 6. The Proposer's proposal response shall include provisioning, installation, configuration, training and warranty support for all systems furnished and provide the District a fully functional system.
 - 7. The Successful Proposer's responsibilities shall include but are not limited to the following:
 - a. Provide, install, and make fully functional the systems made up of equipment, cabling, devices, and hardware described in this Construction Document and found in Appendix "A" attached hereto.
 - b. Integrate into the construction any owner furnished equipment and miscellaneous hardware as may be described herein.



- c. Systems shall include complete Audio & Video Systems of like and uniform design over the entire campus.
- d. Furnish necessary services to integrate each system component into a fully functional package with seamless functionality as described herein.
- e. Integrate into the construction any owner furnished equipment and miscellaneous hardware as may be described herein.
- f. Maintain timely installations according to the project construction schedule and Contract Documents.
- g. Provide Owner with necessary system Training, As-Built documentation, and project manuals.

1.04 DEFINITIONS

- A. General Construction common words, acronyms, and phrases found herein this specification and construction documents shall be as defined by and in accordance with AIA Document A201, Current Edition.
- B. Specific special use of common words, acronyms, and phrases found here in this document shall use the following definitions:
 1. "Owner" shall refer to the Prosper Independent School District.
 2. "Consultant" shall refer to True North Consulting Group (TNCG)
 3. "Successful Contractor" shall imply the Vendor or Contractor that is awarded the project scope of work described herein and enters into a written contract with the Owner or General Contractor to deliver said work.
 4. "Proposer" shall mean Vendor, Offeror, Contractor or Subcontractor that submits a proposal to deliver the scope of work described herein this construction document package.
 5. "Lump Sum" shall refer to a total amount to deliver full scope of work described inclusive of all materials and labor.
 6. "Turn Key" shall refer to all work required to provide the full scope of work described inclusive of all materials and labor and deliver to the Owner a fully functional system.
- C. "OFCl" shall be an acronym for Owner Furnished & Contractor Installed
- D. "OFoI" shall be an acronym for Owner Furnished & Owner Installed
- E. "CFCl" shall be an acronym for Contractor Furnished & Contractor Installed
- F. WUXGA: Referring to Widescreen Ultra Extended Graphics Array, or a resolution of 1920x1200 pixels, or a high-density 15-pin D connector used for analog computer graphics.
- G. HDMI: Referring to High-Definition Multimedia Interface, or a resolution of 1920x1080 pixels, or a high-density 19 pin D connector used for digital computer and video graphics.
- H. HDCP: High-Bandwidth Digital Content Protection, or a security protocol designed to limit unauthorized use of protected content. Where applicable, HDCP compliant devices shall be utilized per design specifications. Use of HDCP compliant systems designed herein are the responsibility of the end user and compliance with owner's Fair Use policies.



1.05 REFERENCE STANDARDS

- A. As listed in Section 27 00 00.
- B. Giddings, G. H. Philip. *Audio Systems – Design and Installation*. Focal Press, 1990.
Focal Press, Elsevier Inc.
30 Corporate Drive, Suite 400
Burlington, MA 01803
Phone: (781) 221-2212
Fax: (781) 221-1615
- C. *AV Installation Handbook, Second Edition*. InfoComm International, 2009.
11242 Waples Mill Road, Ste. 200
Fairfax, VA 22030
Phone: (703) 273-7200
Fax: 703-278-8082
- D. Cable Products Guide #01-03 68-554-01 (latest revision)
Extron Electronics
1025 E. Ball Road
Anaheim, CA 92805
Phone: (714) 491-1500 Toll Free: (800) 633-9876
Fax: (714) 491-1517

1.06 RELATED DOCUMENTS

- A. References to the following related documents do not limit or release the Contractor from the responsibility of having the necessary knowledge of other non-referenced related documents that makeup the Construction Document Package.
- B. The following Contract Documents are hereby made a part of this Section:
 - 1. AIA Document A201, Current Edition
 - 2. Division 1 Documents found in the Project Manual
 - 3. Division 27 documents that collectively make up the Construction Package including:
 - a. Section 27 00 00 General Technology Requirements
 - b. Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements
 - c. Section 27 41 14 Cafeteria AV-Multimedia
 - d. Section 27 41 18 Theatrical Lighting
 - 4. Work diagrammatically shown or noted on project drawings
 - 5. Other documents that collectively make up a part of this Construction Document package
- C. Documents: Provisions of General Conditions, Supplementary Conditions, and the sections included under Procurement & Contract Requirements are included as part of this section as though bound herein.

1.07 SUBMITTALS

- A. General Information: As required by Section 27 00 00.



- B. There are three types of submittals required:
1. Preconstruction Submittals, including shop drawings.
 2. Progress Submittals, including progress reports, work plans, and completion schedules.
 3. Closeout Submittals, including as-built drawings, equipment manuals, quick reference guides, and custom software programming/configurations.
- C. General Requirements
1. Provide a full electronic file copy in PDF format of all paper document submittals. The PDF Files shall be delivered on USB Thumb-Drive.
 2. Contractor shall submit Full System Shop Drawings as described herein to the Owner and Consultant for review within (15) fifteen days from the date of the contract. Failure to comply with this requirement may be cause for cancellation of the contract without penalty or cost to the Owner/ Consultant.
 3. Present submitted documents in a clear and thorough manner, include original drawings that illustrate diagrammatically Contractor's intent to assemble, construct, fabricate, build, and supply the systems and equipment as described by the collective specifications.
 4. Product Data Sheets (Cut-Sheets) on all products. Do not provide product manuals.
 5. Submit only pages that are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Provide required performance standard information, descriptive characteristics, capacities and wiring requirements for system control.
 6. Modify manufacturer's diagrams and schematic drawings to supplement standard information and provide information specifically applicable to the Work.
 7. Omit information on product cut sheet not applicable to this project
 8. Identify each detail element of drawings by reference to full drawing sheet number.
 9. Submit where applicable any and all finish options for prior approval where not specifically specified.
 10. Title each drawing with the project name, drawing name, installing Contractor's name, and Consultant's name True North Consulting Group.
- D. Submittal Conditions
1. The Contractor shall not consider the Consultant or Owner's review of submittals to be exhaustive or complete in every detail. Approval of shop drawings or submittals including substitutions indicates only the acceptance of the Contractor's apparent intent to comply with general design or method of construction and quality as specified. The finished product must meet functional requirements, operations, arrangements, and quantities and comply with the contract documents unless specifically approved to the contrary.
 2. The Contractor shall be held responsible for delivery of systems as specified any errors or omissions in the submittals shall not relieve said Contractor of responsibility to deliver complete systems as specified, that fully meets or exceeds the minimum requirements set forth by the specifications, drawings and contract documents.



3. The Contractor shall be responsible for deviations in submittals from the requirements of Contract Documents, unless Consultant gives specific written acceptance specifically identifying such deviation. The Consultant shall review and stamp submittals for general conformance to design intent only. This stamped review alone does not imply any specific written acceptance of deviations.
4. Submittals that, in the Consultant's opinion, are incomplete, deviate significantly from the requirements of the Contract Documents, or contain numerous errors shall be returned, without review, for rework and are to be re-submitted.
5. Submittals of front end shop drawings and other items shall not be in more than two (2) partial submittals, or as allowed by the Consultant. Do to the complexity of the systems the consultant reserves the right to require full Submittals prior to Submittal Review.
6. If shop drawings are rejected for any reason, the Contractor shall correct and resubmit within seven (7) working days. The Contractor shall always be required to obtain stamped approval of submittals prior to any fabrication or installation of equipment.
7. The submittals must be received and stamped reviewed by the Consultant prior to procurement of equipment or commencement of work. Any prior work performed is at the Contractor's own risk.
8. Failure to obtain shop-drawing approval within thirty (30) days of contract award, where the delay is due to the poor performance of the Contractor, may be cause for cancellation of the contract without penalty to Owner / General Contractor.
9. Do not fabricate products or begin work that requires submittals until return of stamped reviewed submittals with Consultant acceptance. If work does progress prior to this, the Contractor shall have proceeded at his or her own risk.
10. Any Contractor noted corrections, changes, and additions, as may be necessary to the design document drawings, shall clearly show any such changes by a noted cloud around the change.

E. Front End Submittal Requirements

1. Complete project material list for each item and or device to be furnished. The Materials List is required to include the following categories:
 - a. Quantity provided
 - b. Manufacturer name
 - c. Model Numbers
 - d. Product Description
 - e. Product value in the form of cost to the project
2. Product Data Sheets (Cut-Sheets) are required on all major system components/ products. Product Cut-Sheets for each item furnished shall be submitted as follows:
 - a. As 8-1/2" by 11" product catalog specification sheet from the manufacturer
 - b. Neatly assembled and divided by manufacturer with tab dividers/ folders
 - c. The front of the binder shall include a material list as described above
 - d. The products shall be organized in the binder such that they match the materials list order



- e. Where more than one item appears on a page, the Contractor shall mark the appropriate item, for easy identification
 - f. Submit only pages that are pertinent, delete or mark through information not applicable, mark each copy of printed data to identify pertinent products
 - g. Reference pertinent products to Specification Section and Article number, if more than one Section of work.
 - h. Highlight reference standards, performance characteristics, capacities, component parts, finishes; and dimensions
 - i. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work or scope
3. Construction Drawings:
- a. Comprehensive system drawings with device locations overlaid on project floor plans, system schematic diagrams in block format, and detail of all custom fabrications including but not limited to device wall plates. Drawings shall be prepared and submitted on 30" X 42" size paper.
 - b. Drawings shall be executed at an appropriate scale as the project would require to clearly read pertinent detail, but for equipment layouts not smaller than 1/4" = 1'- 0" and the floor plans and reflected ceiling plans, not smaller than 1/16" = 1'-0".
 - c. The shop drawings shall include: Identification of equipment manufacturer, equipment model numbers, cable types, cable identification numbers, cable color codes, cable paths, plate and panel details, consoles and enclosures' details. Additionally, equipment rack layouts showing locations of all rack-mounted equipment, comprehensive system schematic block diagrams (one-line drawings showing device connectivity), equipment rack elevations and custom fabricated equipment.
 - d. Shop drawings that depict all devices and device locations to be installed.
 - e. Shop drawings that depict all cabling infrastructure to be installed. Cabling shall be overlaid on floor plan drawings.
 - f. Comprehensive system schematic wiring diagrams showing detailed point-to-point connections to and between all equipment.
 - g. Elevation drawings showing intended equipment room layouts.
 - h. Elevation drawings showing intended equipment rack layouts. The equipment rack layouts shall show locations of all rack mounted equipment and identification of equipment as shown on the system schematic diagram.
 - i. Detail drawings showing intended fabricated equipment, custom work, and wall plates, etc.
 - j. Complete wire and cable riser diagram showing path and location of all cable to and between equipment; this cable shall be overlaid on facility floor plan. Include cable types, cable identification numbers, and color codes.
4. Plate or panel details:
- a. Drawings shall include examples of proposed nomenclature and labeling scheme intended for use in labeling plates, equipment, cables, etc.



- b. Connector numbering, e.g. "Mic # 1, Mic #2, used as examples in Construction Drawing set shall be submitted in full sequential numbering between plates as proposed to be installed. The Contractor is responsible for receiving review approval from Consultant prior to ordering.
 - c. Detail dimensional drawings of custom plates or panels.
 - d. Consoles, enclosures or support tables.
 5. Wire and Cables
 - a. The Contractor shall provide their intended Wire and Cable color code strategy for the cabling between equipment. The Contractor must receive approval of color code prior to ordering cabling.
 - b. Provide complete wire and cable riser diagram showing pathways and locations of all wire and cables to and between equipment. The cabling infrastructure shall be overlaid on facility floor plan.
- F. Progress Submittals: Submittals shall include the following:
1. Weekly Report: Weekly written report to be submitted to Consultant via email by 5 PM each Monday, outlining progress from previous week, plans for progress in the current week, and any coordination issues that may require Consultant or Owner attention.
- G. Project Closeout Submittals (As-Built Documents): Shall include the following:
1. Binders: A complete set of equipment manuals shall be kept and organized in 3-ring binder(s) for each room or system type.
 2. Quick Reference: Contractor shall write a quick-reference guide covering normal system operation and basic troubleshooting procedures for each room or system type. Guide shall be a maximum of 1 page; front and back (may include pictures/illustrations). Subject to Consultant review/approval at least 3 days prior to final submittal.
 3. Serial Numbers: Contractor shall also include a list of serial numbers for all supplied components which have serial numbers and a unit price more than \$99.00. These will be provided on a per-room and per-system basis.
 4. General
 - a. When the Contractor considers installation substantially complete, provide to Consultant a written report listing all known system deficiencies compared to specified requirements. Also furnish a timeline for correction of any deficiencies.
 - b. Submit a written report detailing the results of initial adjustments and verification tests including all relevant drawings, charts, and photographs. This report shall be completed and submitted for review at least five (5) days prior to acceptance verification walkthrough by the Owner and Consultant.
 - c. The Contractor shall provide written request, requesting a final acceptance walkthrough and demonstration. This request shall certify Contractor's declaration of completion with the project and that to the best of their knowledge all systems are installed and fully functional and ready for review by Consultant.



- d. Submit one complete copy of each manual and other closeout documents for review ten (10) days prior to the final acceptance walkthrough.
 - e. At the time of the walkthrough, the Contractor shall transfer and turnover to the Owner's or Owner's representative the following:
 - i. All ancillary and portable equipment such as microphone cables, patch cables, microphones, camcorders, spare equipment, etc.
 - ii. An installable and actual copy of all software used and or created for the system including the source code.
 - iii. Passwords
 - iv. Keys
 - f. After the walkthrough review, make any noted corrections and / or additions required by Consultant. Provide corrected copies of final as-built documents.
 - g. Closeout Submittals shall be bound in three-ring binders with clear vinyl pockets on cover and spine for title cards with project name and manual volume numbers. Provide table of contents and tabular dividers with legends for each section.
 - h. Closeout Submittals shall be printed originals, not photocopied, unless more copies of a manual are required than the number of units used in the system. For custom circuits or modifications, provide a thorough description of the purpose, function, specifications, and operation
5. System Documentation, prepare the following system manuals and other information to accompany the finished installed system. These documents (electronic) shall be provided prior to the final acceptance walkthrough with the Consultant:
- a. System Operations Manual(s)
 - b. System Service Manual(s) and Maintenance Instructions
 - c. As-built Drawings and other Documents
 - d. Proposed Training Documentation and Materials
 - e. Test Reports and Results
 - f. Statements of Contractor's Warranty
6. The System Operations Manual shall assume the reader to be technically inexperienced and unfamiliar with the operation of the system. This manual shall step a user through common and typical use of each system or subsystem. The manual shall include the following:
- a. Overall system operation and instructions
 - b. Complete and typical operating procedures for the equipment by activity
 - c. "Quick Setup" instructions for use by inexperienced users working under time pressure



7. Service Manuals & Maintenance Instructions include clear statements of:
 - a. Original Manufacturer's Instruction / Technical Service Manuals for all equipment. Instruction manuals shall be printed originals, not photocopied, unless more copies of a manual are required than the number of units provided
 - b. The terms and coverage period of the Manufacturers' and Contractor's warranty
 - c. Contractor's service department phone number(s) and hours
 - d. Required maintenance schedules for any equipment
 - e. Instructions for the proper maintenance of products
 - f. Instructions for the Owner to obtain service on installed systems and equipment
 - g. For custom circuits or modifications, provide a thorough description of the purpose, function, device modification, and operation
 - h. Provide a list of correct settings for all semi-fixed controls (this shall be finalized after acceptance testing)
 - i. Any other pertinent data generated during the project or required for future service.
8. System As-Built Documents
 - a. Provide complete and corrected as-built drawings at the time of final system testing and Consultant / Owner demonstration.
 - b. Original submittals shall be updated to become As-built drawings at the close-out of the project.
 - c. Prior to final walkthrough of completed job, the Contractor shall supply one (1) corrected as-built set of Drawings showing the work as installed. Consultant, with any necessary noted corrections that may be required, shall return this drawing set to Contractor. Contractor shall have corrected the installation work as noted and have updated the drawings and have them present at final walkthrough. Upon final acceptance by Owner, the Contractor shall provide electronic copies of as-built drawings and manuals.
 - d. The Contractor shall also furnish to Owner a copy of the complete set of electronic CAD files, in DFX or DWG format, along with a complete PDF file copy of all As-Built drawings.
 - e. Include as part of the As-built drawings the original submittals with updates to reflect the actual installed work.
 - f. Any other pertinent data generated during the project or required for future service.
9. Owner Training
 - a. Contractor shall provide a proposed Owner training plan for installed systems for review by Consultant prior to Owner Training
 - b. Training plan shall comply with training requirements found herein under the Owner Training Requirements.
10. Test Reports and Results



11. Warranty Information

- a. Warranty information: Include clear statements of the terms and coverage periods for all equipment.
 - b. Provide Contractor's service department phone number(s) and hours, maintenance schedule and description of products recommended for use in maintenance.
- H. The Contractor shall complete and deliver to the Owner a warranty card for each piece of equipment covered by manufacturer's Preconstruction Submittals: Exact copies of original specification drawings are not acceptable as preconstruction submittal drawings. Submittals shall show the following:
1. Block Diagrams: Interconnection diagrams, including cable identification detail, notes to installers, and specific input/output port identification.
 2. Mounted Elements: Structurally mounted elements, including but not limited to monitors, projectors, and loudspeakers. This shall include both plan view of placement, as well as detail of structural mounting techniques to be used.
 3. Identification: Layout and labeling/engraving of custom products, including wall plates and interconnection panels.
 4. Cable: Make and model of bulk cable and connectors, cable labels and connector detail.
 5. Changes: Proposed changes to block diagrams and elevations provided with the Bid documents. Required changes are detailed in Section(s) to follow.
- I. Additional Submittals: Contractor shall supply additional submittals, as required by subsequent sections.

1.08 CORRECTION PERIOD

- A. Length of Period: Contractor shall offer a one year correction period to Owner for this system. Contractor shall repair all equipment and cabling problems at no additional cost to Owner during the correction period.
- B. Commencement: Correction period shall begin at date of Final Acceptance.
- C. Final Acceptance: shall be defined as the date at which all contract work (save for a correction period) is complete, including punchlist completion & verification, closeout submittals, and written verification by the Owner is obtained by the Contractor that the systems have been accepted.
- D. On-site Response: Contractor shall respond on-site within eight (8) business hours from the time of the initial phone contact in the event that the issue cannot be resolved over the phone.
- E. Equipment on Loan: Contractor shall loan equipment for any broken, defective, or non-functional equipment that cannot be repaired and returned within one week. Contractor shall provide shipping, delivery, and integration at no additional cost to Owner. Equipment shall be comparable in size, speed, brightness, and relevant performance specifications, as determined by Owner.
- F. Projection Lamps: Projection lamps are to be warranted by Contractor for a minimum of 90 days, or the rated life expectancy of the lamp, whichever comes first.
- G. Damaged Equipment: Equipment that is damaged due to intentional misuse, abuse or negligence is not covered under this warranty; however, Contractor shall assist Owner in putting the system back



in working order in the shortest possible timeframe while charging normal service rates for labor and equipment.

1.09 DELIVERY, STORAGE, AND HANDLING

A. General

1. The Project General Contractor shall have final approval authority for any Subcontractor's needs regarding material Delivery, Storage, and Protection.
2. Storage of materials installed or stored will remain the full responsibility of the Contractor until written acceptance of the completed system by the Owner.
3. Refer to Delivery, Storage, and Handling found in Section 27 41 00.

B. Delivery

1. The Contractor shall have full responsibility for delivery of all materials needed to meet requirements of this specification package.
2. The Contractor shall coordinate with the General Contractor any delivery requirements they may have.

C. Storage

1. Storage of materials shall remain the full responsibility of the Contractor, until the Owner has accepted the work and materials in writing.
2. The Contractor shall coordinate with the General Contractor any need for storage requirements at the site of work.

D. Handling

1. The Contractor shall take necessary steps to protect all materials from:
 - a. Dents
 - b. Scratches
 - c. Dust
 - d. Temperature
 - e. Moisture and Weather
 - f. Cutting
 - g. Other hazardous conditions
2. The Contractor shall replace any damaged material as required by the General Contractor or Consultant.

1.10 PROJECT CONDITIONS

A. Existing Conditions

1. This work is Renovations
2. The Contractor shall be responsible to visit the site to familiarize themselves with site conditions.



3. The Contractor shall be responsible to closely coordinate with other trades including but not limited to:
 - a. Electrical Contractor
 - b. Data Contractor

1.11 WARRANTY

1. Refer to Warranty found in Section 27 00 00
2. Warranty/Maintenance Program
 - a. All materials, equipment, parts and labor shall be guaranteed (warranted) for a minimum warranty period of two years (24 months).
 - b. Warranty period shall begin immediately following the date of final acceptance in writing by the Owner and Project Consultant.
 - c. During the first two (2) year Warranty period, all warranty repairs shall include parts & labor.
 - d. The Proposer shall, upon notification of any malfunction, make the necessary repairs, including labor and materials, at no cost to the Owner.
 - e. Contractor's Warranty shall include the following provisions:
 - i. Contractor's statements of long-term commitment to the sales and service of their products in the project's geographic location.
 - ii. The Contractor shall warrant that the system(s) shall be provided free from defects and shall perform under usual usage and with continued service for a period of two years after written final acceptance by the Owner or Consultant.
 - iii. The Contractor guarantees replacement of all defective materials, parts, components, equipment, including labor, free of charge to the Owner during the Warranty period, when made necessary from normal usage and / or wear.
 - iv. The Contractor shall provide on and off site technical support, software patches, and labor for any necessary site repairs.
 - v. The Contractor shall provide a full service office, capable of troubleshooting and repairing any system failure in a timely fashion as required by these specification documents
 - vi. Warranty service shall be delivered within regular facility access hours set forth by the Owner
3. The Warranty more specifically, shall be provided in accordance with the following:
 - a. For major system failures: "major system failures" are failures that prohibit the use of a typical system function in one or more instructional spaces or pose a life safety concern. Such failures are considered a major impact to the Owner. The Contractor shall provide service correcting the impact within eight (8) hours after notification by the Owner or his representative and no later than the next business day if the notification falls after noon of the notification date



- b. For minor system failures: "minor system failures" are failures that do not inhibit typical system usage in an instructional space or pose no life safety concern. The Contractor shall provide service within forty-eight (48) hours, after notification by the Owner or his representative.
 - c. The Owner reserves the right to make the final determination of major or minor system failures and the right to coordinate the best times for service of any system failure.
 - d. The Contractor shall supply Service Request forms and or proper contact procedure to the Owner with instructions for proper notification of the Contractor for warranty service. By following said instructions, the Owner shall constitute proper notification for any need warranty service.
4. The Contractor shall provide an optional extended one-year warranty as an Owner Alternate option. The extended one-year warranty shall extend the warranty for one additional year and cover all technology systems that are a part of this specification package. The warranty shall be equal to the base 2 year warranty described above and shall include on and off sight technical support, materials, software patches, and labor for any necessary site repairs.
 5. The Contractor shall offer this extended warranty price to the Owner for their acceptance up to and including thirty days after basic warranty expiration. The Contractor shall be responsible for contacting the Owner in writing 30 days prior to the expiration of this offer. Failure to do so shall constitute an extension of the extended warranty offer.

PART 2 - PRODUCTS

2.01 PRODUCT REQUIREMENTS

- A. Substitutions: Contractor may propose substitutions during the bid process.
- B. Substitution Approval: Consultant and Owner reserve the right to govern over and determine whether proposed substitutions are equal to the product(s) named in the specifications.

2.02 PRODUCT SPECIFICATIONS

- A. Provisions: Product specifications are provided in subsequent sections to Contractor for the appropriate configuration and/or provision of accessories as well as for a guide to indicate key features for possible substitutions.
- B. Substitutions for Non-specified Products: Where no product specification is provided, Contractor may use manufacturer's specification for the identified product as a guide for suggesting appropriate substitutions. Substitutions are subject to prior approval by Consultant.
- C. Deviation: Products provided or installed that deviate from the products named herein in make, model, color, or other significant characteristic (i.e., non-approved substitutions) shall be removed and replaced with specified products at no additional expense to Owner.
- D. Where wireless microphone systems are specified, Contractor shall determine optimal frequency range for final product selection and submit Manufacturer's recommended frequency band for Owner and Consultant approval prior to ordering equipment. Contractor shall provide congruent frequency band products where like systems are specified for interoperability of components. Where three (3) or more wireless microphones are specified within the same system, Contractor shall provide and install necessary antennae distribution for optimal performance, to be submitted for Owner and Consultant approval during pre-construction phase.



2.03 MISCELLANEOUS MATERIAL

- A. Required Equipment: Contractor shall provide additional system components typically and reasonably required to make system operational even though not specifically indicated in Drawings, Appendices or Specifications including, but not limited to, cable, connectors, connecting accessories, adaptors, power supplies, power strips, rack mounting adapters and shelves, cover plates and closure panels, relays and switches, remote antenna mounts, terminal blocks, and related connector and termination hardware required by but not supplied with the equipment.
- B. Blank Fill Panels: Contractor shall provide blank fill panels to cover any openings in equipment racks provided under this contract whether specified in the equipment schedules or not. Fill panels shall match finish of specified rack hardware.
- C. Power Distribution Strips: Contractor shall provide power distribution strips as necessary for distributing power within equipment racks and consoles. Strips shall be UL listed, be securely mountable, and appropriate for professional installation.

2.04 CABLE

- A. Cable shall be provided and installed as detailed herein. Cable installed that does not conform to these standards or that has not been given prior approval by Consultant shall be removed by Contractor and replaced at Contractor's sole expense.
- B. HDMI: High Definition Multimedia Interface cables shall support all current formats of HDMI specifications, including but not limited to HDMI 2.0. Cables shall be flexible and provide ease of mating to HDMI ports on user devices.
- C. Installed Video: Video signal coaxial cables shall have #18 solid copper center conductor, gas-injected high density Polyethylene or Fluorinated Ethylene Propylene insulation, copper braid shield of at least 95% coverage and 100% dual-sided foil and black PVC jacket unless color is otherwise noted. Cable shall be designed as a low loss serial digital video cable. Belden 1694A, WestPenn 6350, Canare L-5CFB, Liberty 18-CMR-SD, or equal. Plenum cable, Belden 1695A, WestPenn 256350, Liberty 18-CMP-VID-COAX, or equal.
- D. Flexible Video: Short video cables that are intended to be moved or adjusted on a regular, frequent basis may be constructed of a stranded bare copper center conductor RG-59/equivalent cable with >94% copper braid shield and polyethylene dielectric. Canare LV-61S, Belden 1505A, WestPenn 819, or equal. Plenum cable, Belden 1506A, WestPenn 25819, or equal.
- E. High Resolution RGBHV Graphics/Video: Cable type and size shall be selected to provide a minimum of 250 MHz bandwidth (-3dB) at over the length of each RGBHV signal path from source to display, including losses and gains through cable loss, signal processing, switching and distribution equipment. Manufacturer shall designate cable as suitable for high-resolution use. Extron MHR-5, Liberty RGB5C-CM or equal. Plenum cable, Extron MHR-5P, Liberty RGB5C-25-CMP, or equal.
- F. Installed Line Level and Microphone (single line): Audio signal cable shall have twisted pair #22 stranded tinned copper conductors, polyethylene conductor insulation, aluminum-polyester foil shield, #24 stranded tinned copper drain wire and chrome PVC jacket. Belden 8761, West Penn 291, Canare L-2T2S, Liberty 24-2P-STAR, or equal. Plenum cable, Belden 88761 or equal.
- G. Portable Microphone, Enclosure and Breakout Line Level Audio: Cable shall have 4 conductors per channel arranged in star quad double-balanced pairing, #24 stranded conductors of at least 40 tinned annealed copper wires, 100% coverage wrap shield, tinned copper braid shield of



approximately 50% coverage, uniformly round form and black PVC jacket. Canare L-4E6S, Belden 8723, WestPenn 355, or equal. Plenum Cable, Belden 88723, Liberty 24-4P-PLCSH-WHT, or equal.

- H. Broadband Video Antenna Cable: For runs shorter than 15', RG-59. For runs 15'-50', RG-6.
- I. Wireless Microphone Antenna Extension Cable: 50-Ohm coaxial cable, or as directed by microphone manufacturer.
- J. Loudspeaker Wire: 14 AWG minimum.
- K. UTP Cable: Shall be consistent with Project standards for CAT-6 cable, unless otherwise noted in specification or recommended by hardware manufacturer for use with their equipment.
- L. Control: Shall be as recommended by equipment manufacturer, with the appropriate number of conductors for the application.
- M. Cable Construction: Contractor shall fabricate interconnecting cables using products defined in this section unless equipment manufacturer-provided cable is of a specialized or proprietary nature. Pre-manufactured cables are subject to prior approval by Consultant.
- N. Labels: Labels shall include a white paper or vinyl slip with typed or machine printed designations, secured in place with a wider section of clear heat shrink tubing or integral clear adhesive-backed plastic.
- O. Terminations: Provide specialized terminating hardware as required.
- P. Schedule: Contractor shall submit schedule prior to installation for Consultant review indicating cable types that will be used on the project.

2.05 CONNECTORS

- A. Connectors shall be provided and installed as detailed herein. Connectors installed that do not conform to these standards or that have not been given prior approval by Consultant shall be removed by Contractor and replaced at Contractor's sole expense.
- B. HDMI (Video/Audio/Control): Cables to be factory-terminated with molded strain relief.
- C. BNC (Video): Video signal BNC connectors shall be 3-piece crimp-on type with insertion barrel and ferrule, and gold flashed crimp-on center pin. Barrel shall provide full circumferential contact with the braid. Fittings shall be sized to fit the cable. Canare BCP-C series or equal. Crimping and die tools shall be Canare TC-1 Hand Crimp Tool with appropriate TCD die sets or equal.
- D. RCA (Video): Video signal RCA connectors shall be 3-piece crimp-on type with gold flashed center pin, Canare RCAP-C series or equal. Crimping and die tools shall be Canare TC-1 Hand Crimp Tool with appropriate TCD die sets or equal.
- E. F (Video): Video signal F connectors shall be 3-piece crimp-on type with gold flashed crimp-on center pin. Canare FP-C series or equal. Crimping and die tools shall be Canare TC-1 Hand Crimp Tool with appropriate TCD die sets or equal.
- F. BNC (RGBHV Graphics): Graphics signal BNC connector shall be crimp-on type with insertion barrel and ferrule, and gold flashed crimp-on center pin. Barrel shall provide full circumferential contact with the braid. Fittings shall be sized to fit the cable. BNC manufacturer, model and tools as recommended by the manufacturer of the RGBHV/graphics cable.
- G. XLR: Strain relief shall be sized to fit the cable. Connector shell shall be isolated from all contacts. Neutrik CA-NC series or equal.



- H. Mini-XLR: Strain relief shall be sized to fit the cable. Connector shell shall be isolated from all contacts. Switchcraft or equivalent.
- I. Phono (RCA): Phono/RCA connectors shall have gold contact and solid center pin with metal strain relief. Canare F-10 or Canare F-09 or equal.
- J. Phone (1/4 inch): Reinforced one-piece body shall have brass bar running length of handle. Canare F-15 (TS) or Canare F-16 (TRS) or equal.
- K. Mini (1/8 inch): Shall be Canare F-11 (TS) or Canare F-12 (TRS) or equal.
- L. RJ45: RJ45 jacks that are field-terminated shall be punch-down type. All flexible connectivity to AV devices shall be factory-molded patch cables. Where a field-terminated plug is required by manufacturer recommendations, Contractor shall use appropriate connector type to the type of cable used (solid vs. stranded).
- M. Shielded cable to be terminated with shielded connectors or as required by manufacturer recommendations.
- N. Schedule: Contractor shall submit schedule prior to installation for Consultant review indicating connectors that will be used on the project.

2.06 INTERFACE PANELS

- A. Finish: Interface plates and connector panels shall be as indicated on Drawings and as specified herein. Finish on custom wall interface plates shall match that of electrical and other work and shall be coordinated with Consultant prior to ordering. Connector panels in equipment racks shall match finish of rack frame and specified/provided blank panels unless called out otherwise in equipment schedules.
- B. Floor Boxes: Floor box plates shall be provided wherever connectivity through a floor box is indicated on drawings.
- C. Labels: Interface plates and connector panels shall be engraved to show connector functionality. Engravings shall be finished with a contrasting color to plate finish. Verify engraving detail in preconstruction submittal prior to fabrication.
- D. Connector Placement: Verify connector layout detail for custom panels in Preconstruction submittal prior to fabrication.
- E. Box Mounts: Wall and floor interface plates shall mount to appropriate electrical conduit boxes unless indicated otherwise.
- F. Cut-ins: Where no box is provided, Contractor shall cut in appropriate opening for plate, and provide appropriately sized mud-ring/caddy to securely attach plate to wall.
- G. Rack Blank Panels: Contractor shall provide all blank rack panels necessary to fill opening in the front of AV equipment racks, whether specified in the equipment schedules or not.

PART 3 - EXECUTION

3.01 EQUIPMENT

- A. As required by Section 27 00 00.
 - 1. Safety: Contractor shall use proper structural installation techniques and maintain a minimum 5:1 safety margin.



2. Custom Mounting Finish: Custom mounting hardware shall be painted by Contractor to match either color of wall, ceiling or equipment, at Consultant's discretion.

3.02 INTERCONNECTION

A. As required by Section 27 00 00.

1. Interpretation: Contractor shall make system interconnections as indicated on Drawings and specified herein. Contractor shall interpret Drawings using an understanding of the equipment and general system topology (both existing and future/specified). Contractor shall provide power and control lines to and from power supplies, remotely controlled equipment and other devices even though not explicitly indicated on Drawings or listed in equipment tables.
2. Additional: Contractor shall be responsible for associated equipment signals not specifically documented in provided drawings. These include synchronizing signals, transmitting and receiving antennas, and LAN connections to equipment provided and/or installed by Contractor.
3. Exceptions: Contractor shall not be responsible for unrelated low voltage wiring such as data and voice connections except as they pertain to interface boxes, interface plates, and integrated control systems.

3.03 CABLE MANAGEMENT

A. As required by Section 27 00 00.

1. Above Ceiling: Cabling located above ceilings shall be tied off to and supported by ceiling supports or other structures at a minimum of eighteen (18) inches above the ceiling.
2. Not on Ceiling: Cabling shall not lie on the ceiling.
3. Wall Cabling: Cables installed in a horizontal fashion along wall surfaces shall be installed in surface raceway approved by Owner and Consultant.
4. Floor Cabling: Cabling placed at floor level such as microphones shall be installed on the floor in the shortest possible route to the nearest wall considering traffic patterns and in an enclosure designed for that use and offering protection from foot traffic.
5. Desk Cabling: Where a cable is installed inside desk furniture, a means of protecting the cables and holding cabling to a fixed surface shall be installed.
6. Grommets: Holes in horizontal furniture surfaces for cable pass-through shall be provided with appropriate sized grommet. Grommet shall be black unless otherwise specified or required.
7. Stub-ups: Where conduit is stubbed-up through the floor and exposed, Contractor shall wrap cables with black expandable sleeving and secure at least three (3) inches below level of conduit top.
 - a. Where conduit is stubbed-up through floor and concealed within furniture, Contractor shall install tether comprised of aircraft cabling to limit the distance furniture may be moved away from stubbed-up conduit. Cabling service loop exiting stubbed-up conduit and entering furniture shall be longer than the corresponding tether, providing protection against movement of furniture that would otherwise damage installed cabling.
8. Umbilicals: Exposed cable umbilicals, such as those between instructional furniture and a floor- or wall-mounted plate, shall be covered in black expandable sleeving, with neatly finished ends (heat-shrink or Consultant-approved method).



3.04 CONNECTOR TERMINATION

- A. As required by Section 27 00 00.
 - 1. Video Connectors: Video connectors (BNC, RCA, and F) shall be terminated using a crimp tool or dies designed specifically for the connectors being applied.
 - 2. XLR Connectors: Terminate XLR type connectors wired pin 2 high, pin 3 low, and pin 1 shield.
 - 3. UTP: UTP cable shall be terminated with appropriate crimps tools or tools specified by manufacturer. Refer to 27 40 00, 2.05 Connectors.
 - 4. HDMI: Cables shall be factory terminated. No field termination will be accepted.

3.05 TRAINING

- A. General Information: As required by Section 27 00 00 and following section(s).
- B. Coordination and Personnel: Training shall be coordinated with Owner's schedule, and Contractor personnel who provide training are subject to Owner's approval.

3.06 PROJECT CLOSEOUT

- A. Completion: System shall be considered complete when all of the following has occurred:
 - 1. Testing has been completed to the satisfaction of Owner and Consultant.
 - 2. Punch-listed items have been addressed to the satisfaction of Owner.
 - 3. As-built drawings and system documentation has been turned over to Owner and Consultant.
 - 4. Complete operational training has been conducted with Owner's staff.
 - 5. System Commissioning Process has been completed.
- B. Acceptance: Contractor shall secure written Acceptance of systems in the form of authorized Owner signature on Acceptance Document. This shall constitute the date of Acceptance.

3.07 TESTING & INSPECTION

- A. General Information: As required by Section 27 00 00.
- B. Notification: Prior to start of testing, provide a list to Consultant of test equipment make, model numbers and calibration dates that will be used.
- C. Testing: Contractor shall perform complete testing on system before inspection. Selected systems may be retested during inspection at Owner's discretion.
- D. Display/Output checks: Contractor shall verify that visual and audio outputs from the system are high-quality and without noticeable distortion or feedback at normal operating levels.
- E. Wiring and Labeling: Contractor shall check all inputs and outputs for correct wiring and labeling.
- F. Loudspeakers: Contractor shall measure the impedance of each speaker line leaving the equipment racks. For full range devices, use a frequency of 1000 Hz, for band limited devices, use a frequency appropriate for the operating range of the transducer. When documenting results, Contractor shall



include the calculated impedance based on number of units on a line and the size and distance of the run. Contractor shall correct any field readings that differ more than 20% from the calculated impedance. Contractor shall use an electronic polarity checker to test each reinforcement speaker. Speakers shall have the same relative polarity.

- G. Computer Graphics: Computer graphics shall be crisp and focused with respect to color alignment. If color alignment is not registered properly, Contractor shall identify source of problem and correct. EDID and other auto-registration features shall be set within AV equipment where required for optimal system performance.

END OF SECTION



SECTION 27 41 14

**CAFETERIA AV-MULTIMEDIA SYSTEMS
(PROPOSAL # 1)**

PART 1 - GENERAL

1.01 SCOPE-OF-WORK SUMMARY

- A. Unless otherwise noted, the terms “Contractor”, “Offeror”, and “Proposer” are used interchangeably herein and refers to the respondent submitting a proposal for this RFP Section of Work.
- B. The Proposer Shall:
 - 1. Provide Equipment, Cable, and Devices described herein or depicted in the construction drawings.
 - 2. Provide Labor and Services necessary to integrate each piece of Equipment, Cable, and Device into a fully operational system as a Turn-Key installation without additional charges to the Owner outside the contracted amount.
 - 3. Integrate into the construction any existing or owner furnished equipment and miscellaneous hardware as may be described herein.
 - 4. Maintain timely installations according to the project construction schedule.
 - 5. Provide Owner Training, As-Built documentation, and operations manuals.
- C. Collectively Contractor delivered systems as described herein and depicted in the construction drawings shall provide for the following:
 - 1. High School Cafeteria AV System Refresh and Upgrade to Digital Video inputs.
 - 2. The Contractor will be required to supply all components necessary to provide a digital multimedia system and all necessary hardware and software to provide a complete functional system.

1.02 GOVERNING REQUIREMENTS

- A. The following are general provisions, requirements and expectations of the Technology Contractor delivering Audio & Video Systems equipment and installation for this construction package:
 - 1. This document is intended to provide all hopeful Vendor(s) / Contractor(s), hereafter referred to as the Proposer, with information needed to submit a complete Turnkey solution and proposal for the Prosper Independent School District, hereafter referred to as the District. The District will evaluate the submitted proposals to select a perceived Best Value Vendor to supply and install the Audio & Video Systems for this project as described herein.



2. The work performed shall be of professional quality and installed as would normally be expected by a professional Audio & Video System integration Contractor in the primary business of providing quality installations of equivalent systems.
3. The Proposer shall furnish their lump sum price offer to provide a turn-key package in response to the Audio & Video systems specified herein and further defined in the associated Construction Documents.
4. The Contractor shall provide a 100% performance bond, payable to the Owner, until written acceptance by the Owner of all work and materials. The cost of these bonds shall be included in the Contractor's proposal price and shown by separate line item.
5. The District shall accept proposals from both manufacturers and authorized resellers of products and systems specified herein and desire to have a competitive choice of local authorized reseller / manufacturers to find the best value for delivery of the systems.
6. The Proposer's proposal response shall include provisioning, installation, configuration, training and warranty support for all systems furnished and provide the District a fully functional system.
7. The Successful Proposer's responsibilities shall include but are not limited to the following:
 - a. Provide, install, and make fully functional the systems made up of equipment, cabling, devices, and hardware described in this Construction Document.
 - b. Integrate into the construction any owner furnished equipment and miscellaneous hardware as may be described herein.
 - c. Furnish necessary services to integrate each system component into a fully functional package with seamless functionality as described herein.
 - d. Maintain timely installations according to the project construction schedule and Contract Documents.
 - e. Provide Owner with necessary system Training, As-Built documentation, and project manuals.

1.03 DEFINITIONS

- A. Reference Section 27 40 00 AV-Multimedia General Requirements

1.04 RELATED DOCUMENTS

- A. References to the following related documents do not limit or release the Contractor from the responsibility of having the necessary knowledge of other non-referenced related documents that makeup the Construction Document Package.
- B. The following Contract Documents are hereby made a part of this Section:
 1. AIA Document A201, Current Edition
 2. Division 1 Documents found in the Project Manual
 3. Division 27 documents that collectively make up the Construction Package including:
 - a. Section 27 00 00 General Technology Requirements
 - b. Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements



- c. Section 27 41 14 Cafeteria AV-Multimedia Systems
- d. Section 27 41 18 Theatrical Lighting
4. Work diagrammatically shown or noted on project drawings
5. Other documents that collectively make up a part of this Construction Document package

1.05 RELATED WORK

- A. References to the following specific related work do not limit or release the Contractor from the responsibility of coordination with other trades, or from having the necessary knowledge of other related work.
 1. Work provided by Owner or Owner's Contractors
 2. Work by Electrical Subcontractor

1.06 UNIT PRICES

- A. The Proposer shall provide unit pricing breakdown for all equipment as a line item materials list submitted with their proposal. In the event the Proposal form does not specifically provide a worksheet for requested unit pricing, the Contractor shall provide the unit price list by separate attachment along with their Proposal.
 1. The unit price may be used to add or deduct, by change order, quantities of units as represented by the unit price.
 2. Failure to provide requested unit prices may result in the rejection of the proposal.

1.07 PROPOSED SYSTEMS

- A. Alternates
 1. The Base proposal shall include all equipment described herein and / or depicted in the construction-drawing package, but shall not include any marked or listed Alternates.
 2. Provide a lump sum amount for one or more of the following alternative manufacturers' products for Section 27 41 14 Campus Communication Systems Scope of Work. The system shall meet or exceed all requirements herein and be inclusive of all parts necessary for a fully operational system. Identify the Manufacturer of the AV Multimedia System on the proposal form in the field provided. Basis of design is:
 - a. Extron DTP Presentation Scaling/ Switching System or approved equal.

1.08 PERFORMANCE REQUIREMENTS & REFERENCES

- A. Referenced standards and / or procedures will be binding on Contractor and all work will be judged against such standards and procedures unless otherwise stated in writing.
- B. The Contractor shall be held responsible for and adhere to Manufacturers' installation recommendations and guidelines.
- C. Other Reference Standards:
 1. Audio Engineering Society (AES) Standards
 2. BICSI/InfoComm International AVDRAM (AV Design Reference Manual)



1.09 SUBMITTALS

- A. Reference Section 27 40 00 AV-Multimedia General Requirements

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Reference Section 27 40 00 AV-Multimedia General Requirements

1.11 PROJECT CONDITIONS

- A. Reference Section 27 40 00 AV-Multimedia General Requirements

1.12 WARRANTY

- A. Refer to Warranty found in Section 27 00 00
- B. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

PART 2 - PRODUCTS

2.01 GENERAL:

- A. The Contractor is bound by the intent of these Specifications to provide a complete and functional technology system as described herein, of high professional quality and reliability, and that meets or exceeds standards that are currently established for such systems.
- B. Provide all necessary labor, materials, tools, transportation, services, ancillary items, and coordination to furnish the Owner a complete and fully functional turnkey installation as described herein.
- C. The Contractor warrants that they will provide professional services, to meet or exceed performance standards and industry recommendations that relate to the scope of work under contract, and that the workmen or system installers are experienced and regularly in the business of installing such systems as specified herein.
- D. All work shall be in accordance with the respective drawings, written specifications, supplemental information, industry standards, manufacturer specific installation procedure, trade practice, and applicable regulatory agencies.
- E. The Contractor(s) shall thoroughly familiarize themselves with complete construction documents, Proposal package information and all necessary details of the complete set of drawings and specifications before submitting their Proposal.
- F. Ancillary and Accessory Items
 - 1. The Proposer shall provide ancillary and required accessory items necessary to furnish to the Owner a complete and fully functional system.
 - 2. The exclusion of / or limitation in the language used in the drawings or specifications shall not be interpreted as meaning that ancillary or accessories items of work or equipment necessary to complete or make the installed system fully functional can be omitted.
 - 3. The mention in writing or representation by depiction materials, services, or operations within this specification document and or Proposal package is binding upon the Proposer to include and provides such items, services, and operations without additional charge to Owner. Exceptions shall be noted by the acronym (NIC) "Not In Contract" or (OFE) "Owner Furnished



- Equipment.” If this notation does not appear, then the Proposer shall assume the need to provide the item in question.
4. The Proposer shall receive no allowances because of omissions in work due to unfamiliarity or their misunderstanding of Proposal package.
- G. Drawing Symbols
1. The project scope drawings utilize symbols and schematic block diagrams to indicate various items of work. Neither of these has any dimensional significance nor do they delineate all items that may be required for the intended construction and installation.
 2. The work shall be installed in accordance with the intent diagrammatically expressed on the drawings and described in the written specifications. The Proposer shall not make limiting interpretation that provides for incomplete work or a non-functioning system.
- H. Document Discrepancy
1. In the event of an inconsistency or discrepancy that may exist in or between parts of these Construction Documents, the following direction shall be followed and shall govern:
 - a. The document, section, phrase, or requirement with better quality, more stringent requirement, or greater amount or quantity of work or material shall apply and shall be expected, delivered and used. Such work or material shall be provided by the Contractor and installed at no additional cost to the Owner.
- I. Omissions
1. The omission of or express reference to any part(s) necessary for or reasonably incidental to a complete and fully functional system and installation as intended shall not be construed as a release from the Proposer providing and installing such parts.

2.02 MANUFACTURERS

- A. Governing Clauses
1. It is not the intent of these specifications to limit or restrict submission of proposals for products or systems by manufacturers other than those specified.
 2. The products specified are intended to establish a minimum baseline of operational, functional, and performance based system expectations that all proposed products must meet or exceed by features, functionality and quality.
 3. The Owner reserves the right to govern over and proclaim whether proposed products are equal to the specified system standards.
 4. If the proposed system does not meet all of the features or functions described herein, then the Proposer shall identify and list those exceptions in their proposal submittal by separate cover titled “System Exceptions” in red letters.
 5. The Proposer shall not be automatically disqualified for not meeting one or more requirements. The Owner shall evaluate proposals on their overall value; all proposals shall be fully considered for best value.
 6. Reference to specific equipment manufacturers does not imply that all products produced by that manufacturer meet the specification requirements.



2.03 SOFTWARE TERMS & CONDITIONS

- A. The successful Contractor providing software for this project affirms that it possesses complete and valid title and rights to furnish the said software. Further that it possesses legal right to sell, transfer, or license the software to the Owner.
- B. The Successful Contractor hereby agrees to protect, indemnify, and hold the Owner harmless against any and all claims, suits, or proceedings for patent, trademark, copyright, or franchise infringement arising out of, or resulting from, the installation or use of software or any part of the Contractor provided materials or equipment.
- C. Provide the Owner with an installable and exact copy of each software program installed and running on any system furnished. The software delivered to the Owner shall include the source code. Additionally provide a compiled copy that is user installable. Provide all software to the owner on a DVD, CD, Thumb-Drive or other format acceptable to the Owner.

2.04 THE CAFETERIA AV-MULTIMEDIA SYSTEM

- A. General
 1. The AV-Multimedia Systems described herein and diagrammatically shown in the construction drawings shall set minimum standards, features, and functions to be delivered. The brief descriptions below shall not be interpreted as limiting to functions and / or features required. The Contractor shall specifically identify in their proposal in (RED) letters or yellow highlight any exceptions to features, functions, or devices that would deviate from those specified, depicted, or implied requirements. Or any that would not be delivered by the Contractor's proposed system or products.
- B. The Cafeteria AV-Multimedia System
 1. Furnish and install a complete Extron digital multimedia system with all wire, outlets, devices, and equipment as specified herein, required for fully functional system and or shown on the drawings. The completed installation shall provide a fully operational sound and voice communications system for the Campus.
 2. The system shall replace a fully functioning Extron MTP system. The awarded contractor shall make every attempt to provide similar functionality to the installed system. There are no as-built drawings of this system and the contractor shall make use of the existing equipment to provide a turn-key AV refresh of the existing system.
 3. The existing Ashly mixer is exhibiting poor performance and power issues. A new Behringer X32 Rack will replace the existing Ashly and its controls.
 4. The existing wireless microphone system is experiencing interference and is out of spec in the new whitespace definitions. A new Shure Dual Channel ULXD system will replace these systems. The contractor will be responsible for insuring wireless antenna coverage and interference free operation in this area.
 5. The existing Denon CD Player is to be replaced. A new Denon CD300Z Media Player, CD player, SDHC, USB, Bluetooth player shall replace this unit.
 6. The remainder of the system will remain in place and be interfaced as indicated on plans.



2.05 EQUIPMENT GENERAL

- A. This document sets forth the minimum equipment requirements. Described are both technical performance specifications along with certain desired features and functions that the Contractor must provide with their proposed system solution.
- B. The Construction Drawings shall be referenced for specific devices and interconnections of said devices and together with this written specification form the required minimum equipment requirements.
- C. The Proposer shall provide one lump sum price for a complete turn-key-system installation per the construction documents. This lump sum price shall be inclusive of all work and material needed for fully functional systems.
- D. The Proposer shall provide a lump sum price for each Alternate requested and list them separately from the base proposal lump sum price
- E. Collectively the described system form certain desired features and functions that the Contractor shall provide with their proposed system solution.
 1. The Proposer must state clearly in their proposal any exceptions to the equipment and or requirements found in the construction documents to that offered in the Contractors proposal.
 2. Additionally to exceptions, the Proposer shall list clearly any value added features and or functions their proposed equipment may offers over and above the stated minimums.
 3. All equipment provided and installed shall be as depicted or shown on the construction drawings, described herein this document or more specifically under the System Description above.
 4. The Contractor shall be aware that the construction documents in totality identifies the requirements and equipment required to deliver the desired performance, this means the written specifications, drawings, and associated equipment list or generally known in totality as the "Construction Documents."
- F. Proposal Equipment List
 1. The Proposer shall provide along with their Proposal Bid Form Provide complete project material/equipment list for each device to be furnished. The Materials List is required to include the following completed categories the following:
 - a. Quantity of item provided
 - b. Manufacturer of item
 - c. Model number of item
 - d. Description of item
 - e. Individual price of item
 - f. Extended price for quantity of items
 - g. Total of Proposal in the form of Lump Sum Amount
 2. The Project Material / Equipment List shall be complete in detail and provided in XL spreadsheet file form and as a PDF document included and attached to the Proposal Form.



- G. Contractor shall also furnish any ancillary equipment, devices, cables, connectors, and hardware necessary to provide a complete and functional system.

2.06 EQUIPMENT TO PROVIDE

A. Digital Rack Mount Mixer

1. 40-Input Channel
2. 25-bus
3. 3U Rack mountable
4. 32 x32 USB 2.0 Interface
5. High-resolution 5" day-viewable Color TFT
6. Acceptable Products:
 - a. Behringer X32 Rack

B. Dual Channel Wireless Microphone System

1. The digital wireless system shall operate in the UHF band between 470-932 MHz with the specific range being dependent on the user's locale. The system shall include the option of changing the operating frequency in order to avoid RF interference. Preconfigured group, channel and frequency setups shall be available to ensure that multiple systems in use do not interfere with one another.
2. All transmitters shall be powered by either a Shure SB900 Lithium Ion Battery or 2 AA batteries and shall have a power on/off switch.
3. The transmitter front end shall optimize itself for standard inputs without requiring transmitter gain adjustments thus allowing all gain changes to be made at the receiver, which provides a 60dB range of system gain.
4. Overall system signal to noise ratio shall be >120dB.
5. The system shall be capable of AES-256 encryption that is conforming to the US Government National Institute of Standards and Technology (NIST) publication FIPS-197.
6. The receiver shall include an RF level meter, an audio level meter, and a Networking Interface connector for computer control and monitoring.
7. The system shall detect RF interference and indicate such to the user via the LCD and RF meters.
8. The system shall be the Shure ULX-D Wireless
9. Acceptable Products:
 - a. Shure ULXD4D Dual Channel Receiver Wireless
 - i. Provide two (2) ULXD1 Bodypack Transmitter
 - ii. Provide two (2) ULXD2/B58 Handheld Transmitter with Beta 58 Microphone
 - iii. Provide two (2) Point Source CR-8S-XSH-BE Earset Microphones
 - iv. Provide and Install RF Venue Diversity Fin Wireless Antenna



C. Multimedia Player

1. Super-fast loading, slot-in CD mechanism
2. Removable USB thumb and HDDs, SD/SDHC cards
3. Wireless audio playback from devices via Bluetooth
4. Plays CD, MP3, WAV, and AAC files
5. 3.5mm Aux-in for audio playback of other devices
6. AM/FM Tuner w/ dedicated audio out for multi-room use
7. Unbalanced combi audio output
8. 10-key direct track access
9. Random, Repeat One, Repeat All, and continuous play modes
10. Folder only and All play modes
11. IR controllable with included, compact remote
12. 1RU chassis with removable rack ears
13. Detachable IEC-weighted AC inlet with 100-220v switching power supply
14. Acceptable Products:
 - a. Denon DN300Z

D. Digital Video Matrix Switching System

1. HDCP-compliant scaling presentation switcher
2. Inputs:
 - a. Four (4) HDMI
 - b. Two (2) universal analog video,
 - c. Two (2) Extron DTP®.
3. Outputs
 - a. Two (2) HDMI outputs,
 - b. One (1) Extron DTP®
4. Acceptable products:
 - a. Extron IN1608
 - b. Provide and Install two (2) Extron DTP T HWP 4K 331 D Transmitters
 - c. Provide and Install one (1) Extron DTP HDMI 4K 330 RX Receiver
 - d. DTP cabling shall be Shielded Twisted Pair Cable for XTP Systems and DTP Systems
 - e. DTP connectors shall be Shielded RJ-45 Plug Kit for Extron XTP DTP 24 Shielded Twisted Pair Cable
 - f. Reprogram existing MLC226 for control of the new Extron IN1608 and OFE Projector.



2.07 ALTERNATES

- A. Alternates shall be identified clearly on the proposal with the associated Alternate number as listed below. State clearly if the alternate is an Additive or Deductive price to the base bid lump sum amount.
 - 1. Not Used

PART 3 - EXECUTION

3.01 EXAMINATION

- A. The Contractor's responsibilities
 - 1. Examine all related construction documents to ensure compliance of them.
 - 2. Examine and coordinate the installation schedule to comply with contracted timeline.
 - 3. Examine the facility and construction documents to the extent necessary to plan for efficient installation strategies prior to the delivery of materials to the site or the commencement of work.
 - 4. Failure to make the required examinations shall not result in any additional charges to the Owner.

3.02 INSTALLATION

- A. Requirements and Responsibilities
 - 1. The Contractor shall furnish, deliver, transport, erect, install, configure, and connect completely all of the materials and equipment described herein, found or depicted on the construction document package and drawings. The Contractor shall supply all other incidental material required, such as interconnecting cables, connectors, and hardware to make the work complete and leave all systems in first class operating condition.
 - 2. The Contractor shall make this a "Turnkey Project" ready for the Owner's use.
 - 3. Coordinate with other trades working in the facility to provide seamless installation.
 - 4. In the event of any conflicts, delays or improper preparatory work by other trades or existing conditions, notify the General Contractor, Consultant and Owner.
 - 5. Provide cut-in boxes or approved clamping rings where back boxes are required but not provided by Electrical Contractor.
 - 6. The Contractor shall coordinate their requirements for proper ground system to all equipment.
 - 7. Coordinate and verify with the Electrical Contractor, the installation of needed cable raceways
 - 8. The Contractor shall not use any other trade's work or material for support or fastening. Example: ceiling grid support wires cannot be used to support cable hangers, etc. Any exceptions shall be noted or coordinated in writing with the General Contractor.
 - 9. The Contractor shall not shoot, fasten, or screw hangers to the roof deck. Any exceptions shall be noted or coordinated in writing with the General Contractor.
 - 10. The Contractor shall coordinate clearance for cable paths and coordinate clearance for access above cable tray to easily add or remove cable from the cable tray they install.



11. A Contractor installing any equipment shall be responsible for providing all interconnecting cables to and/or between same equipment that may be required to make equipment fully operational.
12. Equipment shall be fabricated with equipment mounted into racks, enclosures, and consoles and be fully wired and tested, before delivery to job site.
13. With the installation of equipment and cables, consideration shall be given not only to operation efficiency but also to overall aesthetic factors to comply with industry standards and practices.
14. Contractor's construction, fabrication, installation, or delivery of materials must comply with applicable standards and practices.
15. The Contractor shall coordinate and field-verify the electrical rough-ins provided for their use by the Electrical Contractor.
16. The Contractor shall remove and replace cabling that is found to have been stretched or pulled past the recommended pulling tension during installation.
17. The Contractor shall install all operational software, as required by equipment and ensure that such software is fully functional and operational. In the event of software conflicts due to upgrades, bugs, or other reasons, the Contractor shall provide solutions suitable to Owner at no additional cost.
18. The Contractor shall be responsible for coordination with Owner's staff the software configuration options of software configurable systems.
19. The Contractor shall provide to the Owner keys for all lockable equipment installed.
20. The Contractor shall provide all passwords for any system or equipment that may use or be locked with a password.

B. Procedures & Methods

1. The Contractor shall provide rack shelves or rack mounting ears for any equipment that is not rack mountable. All equipment installed using shelves shall be fastened to the rack shelf. If Velcro is used to fasten any equipment, the Velcro must be fastened with screws. Adhesive is not an acceptable means to fasten any equipment.
2. Supplementary equipment within equipment racks, such as special assemblies that are not rack mountable or fastened to rack shelves shall be mounted on painted black high grade wooden boards running vertically on side rails of equipment racks. The same wooden strips shall also be used to support cable tie support bars for lacing cables to equipment.
3. Equipment shall be mounted into racks and consoles, and fully wired and tested, before delivery to job site.
4. Equipment and enclosures shall be mounted plumb and square in relation to the structure.
5. Devices, wire raceways, and equipment, except for portable equipment, shall be permanently attached to equipment racks or building structure and held firmly in place with screws or fasteners. Adhesives alone shall not be accepted as fasteners.



6. All equipment mounting boards in head-end rooms, MER's, electrical, or TR closets shall be painted white or black as location dictates with fire retardant paint. The mounting boards shall be made of high-grade plywood.

C. Wire and Cable Requirements

1. Cable installation must follow related TIA/EIA standards and recommendations, including methodology as noted in TIA/EIA 569 - Part 4.6 Ceiling Pathways. Specifically, including sections 4.6.1 General, 4.6.2 Design Guidelines, and 4.6.5 Cable Support.
2. All equipment rack wiring and cabling shall be neatly laced, ends dressed with heat shrink tubing, and all cables shall have service loops between the horizontal tie bar and the connection to equipment. Rack cabling shall be adequately supported with tie wraps or Velcro wire wraps and horizontal support bars to rack frame as it enters or exits the front or back of equipment.
3. There shall be no unmarked cables at any place in any part of any system this includes both in equipment racks and outside of equipment racks. Label markings codes used on cables shall correspond and be shown clearly on as built drawings
4. All cables shall be separated into like groups according to signal or power levels and routed separately to eliminate signal contamination and cross-talk, this includes both in equipment racks and outside of equipment racks.
5. All power cables, control cables, and high level cables shall be grouped to one side of the equipment rack while low level cables shall be grouped to the other side.
6. All cables within equipment racks will use Velcro wire wraps to manage and bundle cables. Velcro strips will be no more than a ¼" wide.
7. All cabling located above ceilings shall be tied off to and supported by ceiling supports or other structures at a minimum of eighteen inches above the ceiling.
8. Cabling shall be placed in conduit where exposed in gym roof joist. Exposed cables shall not be allowed.

D. Equipment and Cable Labels:

1. All cables, regardless of length, shall be marked with indelible color-coded labels that have unique identifying number that corresponds with those found on the schematic diagrams and as-built drawings.
2. Labels shall be directly hot stamped or factory-stamped with closed sleeve method. Adhesive strip labels may only be used if protected by transparent heat-shrink tubing.
3. Marking codes used on cables shall correspond and be shown clearly on as-built drawings.
4. Provide all proposed wording and / or numbering scheme for labeling to the Consultant for review and written approval prior to procurement or installation.
5. All labels used must be permanent and secure. Provide labeling as follows unless otherwise noted in a specific section:
 - a. Provide engraved Lamacoid labels at the front of all equipment mounted in the racks. Labels shall indicate equipment type and model number and correspond to the As-Built drawings for equipment identification.



- b. Mount labels on the equipment rack, not on the equipment, and attach in a neat, plumb, and permanent manner. The labels shall be placed on the equipment rack vertical frame (post). If the equipment rack vertical posts have a recessed mid-section, then match label width to fit this recessed section.
 - c. Labels shall be uniform in size. All adjacent labels shall be sized to match the other labels used for same purpose. Similarly, provide engraved labels of like size in other locations.
 - d. Provide engraved Lamacoid labels on each equipment rack rear door or console rear panel reading "No user serviceable parts. Refer service to qualified technician."
 - e. Embossed adhesive labels are not acceptable.
 - f. All label lettering shall be a minimum of .08" high. Embossed adhesive labels are not acceptable.
 - g. Position at the left side front top rack space of each equipment cabinet a label that states the name of system Installer with contact information and at the right side a label that states the Design Consultant with contact information.
 - h. Unless otherwise noted, labels on dark panels shall be black with white letters. Labels on stainless steel or brushed natural aluminum plates or light colored panels shall be white with black lettering.
 - i. All wall plates shall have input and output connectors labeled in a professional and permanent manner, no hand written labels shall be accepted.
 - j. Cable and Jack labels shall include room identification with unique cable number, jack location within the room, and MER or TR number.
 - k. The Contractor shall use actual room identifications in their labeling scheme. Contractor shall obtain written approval from the Owner for the actual room numbers, and labeling scheme, to be used prior to installation.
 - l. Switches, connectors, jacks, receptacles, outlets, cables and cable terminations shall be logically and permanently marked in a manner approved by the Consultant.
 - m. Custom panel nomenclature shall be engraved, etched, or screened. Markings for these items are purposely detailed in the construction drawings to ensure consistency and clarity. Verify markings and placement with the Consultant prior to procurement. Submit label sample layouts for Project Consultant's review.
 - n. All terminal blocks, rack mounted equipment, and active slots of card frame systems shall be clearly and logically labeled in a manner acceptable to the Consultant.
 - o. All labeling information shall appear on the As-Built drawings as device and equipment cross-reference identifier and servicing aids.
- E. Connections and Connectors
- 1. Connections shall be made with approved connectors on cables, terminal blocks, or punch blocks. Crimp style connectors shall be made with proper crimping tool. Two point crimps will not be accepted.
 - 2. RF cable connectors shall be made with hex crimp.



3. Cables shall be terminated with the proper connector specifically produced for use with each type of cable.
4. Video connectors that are not of solder type (HDMI, BNC, RCA, F, etc.) shall be terminated using a crimp tool or dies designed specifically for the connectors being applied.
5. XLR type connectors shall be wired with pin 2 high, pin 3 low, and pin 1 shield.
6. Mechanical connectors must be specially made for type of cable or wire used.
7. Connector adapters will not be allowed in any part of the system.
8. Twist on connectors shall not be allowed.
9. Solder joints will be made with rosin-core solder.

F. Interconnection

1. Contractor shall make all system interconnections as necessary, as indicated on the Drawings, or specified herein.
2. Contractor shall provide power and control cables to and from power supplies, remotely controlled equipment and other devices even though such cables are not explicitly indicated on Drawings or listed in equipment tables.

G. Cable Management

1. Cabling located above ceilings shall be tied off to and supported with cable hangers fastened directly to the structure.
2. Where a cable is installed inside desk or other furniture, a means of protecting the cables and holding cabling to a fixed surface shall be provided.
3. Holes in horizontal furniture surfaces for cable pass-through shall be provided with appropriate sized grommet. Grommet shall be black unless otherwise specified.
4. Provide Service Loops with ample cable at each termination so that plates, panels, and equipment can be removed for service, re-termination or inspection. Provide the following as a minimum:
 - a. Wall plate outlet box: minimum of ten (10) inches from wall surface to jack.
 - b. Termination panel: Six (6) inches behind termination panel from cable tie to jack.

H. Equipment Racks

1. Install all rack-mounted equipment using steel 10-32 machine screws with Phillips large oval heads or Allen head drives. Screws must have a black oxide finish, and plastic cup washers to protect the equipment panel finish.
2. Provide wire and cable management at the front of equipment and wire and cable support bars at the rear of equipment. Support bars will be used to tie cables for strain relief before connection to the accompanying equipment. Provide sufficient service loops between support bars and equipment.
3. Unused open front rack spaces in equipment racks must be filled with black rack blank spacers (not vents). Equipment rack vents shall only be used at top and bottom of the rack.



4. Place all rack devices requiring adjustments, cleaning, or similar attention so that they will be accessible for such attention.
5. Equipment racks shall be positioned to permit full access for operation and service. This means clearance for door swing and service technician at both front and back of equipment rack.
6. Equipment racks and sensitive components shall be placed so that signals will not be contaminated by induced electromagnetic and electrostatic noise from other electrical devices.
7. All wire and cable to and from the equipment racks shall run across the top of the racks on a ladder cable tray mounted with standoffs from the equipment rack or hung below the ceiling.
8. As a general practice, all power cables, control cables, and high level cables shall be grouped to one side of the equipment rack while low-level cables are on the other side.

3.03 CONSTRUCTION

A. Required typical system mockups

1. The Contractor shall build typical mockups as required and complete in detail for review by the Owner and Consultant prior to their final equipment install in the rest of the facility. Once reviewed and accepted, this mockup shall be the approved configuration model to install in the remaining locations. Mockups for this project include but are not limited to the following:

B. Special Techniques

1. Network Devices

- a. Coordinate with the Owner's IT staff the assigned data port numbers for use with any Network Devices of the system.
 - b. Most of the Data Network system devices will likely require a data network port number and IP; the Contractor shall coordinate with the Owner and configure the following:
 - i. Device IP Address
 - ii. Network Subnet Mask
 - iii. Default Gateway
 - c. V-LANs are required for control system data traffic and will require coordination with the Owner's IT staff.
2. The Contractor installing infrared devices shall be aware of other infrared devices and infrared interference in the facility and take whatever precautions necessary to avoid this causing problem to other equipment operations. For example, cover all IR receiver sensors.
 3. The Contractor installing any RF devices shall be aware that RF devices may cause interference to the equipment and take whatever precautions necessary to avoid causing interference.

3.04 PROTECTION AND CLEANING

A. Equipment

1. The Contractor shall coordinate with other trades to provide an acceptable environment for installed equipment. For example, provide a dust free environment for optical disk players, devices with vents, etc.



2. Cover installed equipment racks for protection during high dust periods.
 3. Do not operate equipment with fans during high dust periods of the installation.
 4. Coil and protect cabling from damage prior to termination to equipment
- B. Prior to system turnover to Owner:
1. Remove all dirt and debris from equipment racks and equipment rooms.
 2. Clean all equipment filters, vents, and fans.
 3. Clean all enclosures and back box interiors thoroughly before installing plates, panels, or covers.

3.05 CLOSE OUT & QUALITY CONTROL

- A. The Contractor will not receive written acceptance of work and materials until the Contractor provides written release of lien to the Owner.
- B. The following should be complete and in place before final system inspection & demonstration is scheduled and performed with the Owner's Consultant:
1. Provide written detailed substantial completion reports of system testing
 2. Dust, debris, solder splatter, etc. is removed
 3. Cables are dressed, routed, and labeled with heat-shrink tubing over label at ends
 4. Connections are confirmed consistent with regard to polarity
 5. Equipment operation tested and operating normally
 6. Equipment software is installed and configured
 7. Electronic devices are properly grounded
 8. Devices requiring AC Power are Powered and from the proper circuit
 9. Test each AC power receptacle for proper hot, neutral and ground connections
 10. Interconnecting patch cables and jumpers are in place
 11. The system documentation is complete with "as- built" drawings available
 12. To the best of the Contractor's knowledge, all contractual system specifications are fully met, in detail and intent.
- C. TESTING & ADJUSTING
1. The Contractor will be responsible for adjusting the installed system and notifying the Consultant when system adjustments have been completed:
 - a. In accordance with Construction Documents
 - b. As required, to provide the Owner a fully functional system at system turnover
 - c. As directed by the Consultant
 2. Audio System Equalization



- a. Using a Real-Time audio frequency spectrum analyzer, such as Audio Control SA-3052 or equivalent, with both 1/3 band and narrow band display, equalize all loudspeaker systems to provide a suitable frequency response as follows:
 - i. Flat from 60 Hz to 2 kHz + or – 1-1/2db with a 1db per 1/3 octave roll off after 2K
 - ii. Load and save the final normal settings in the DSP as preset one and record same settings including system gain and amplifier level settings in the As-Built Project Manual
3. Notification: When above tests have been completed and system is ready for inspection, notify Consultant in writing at least seven working days prior to inspection. Include in this notice copies of all data recorded, date each test was completed and results of each test. All test data shall be available during inspection process.

3.06 DEMONSTRATION

- A. The final acceptance, with proof of performance and operational verifications for the installed Audio & Video Systems shall be the responsibility of and performed by the Contractor in the presence of the Consultant and Owner's representative.
- B. Final acceptance shall be in accordance with Construction Documents, General Conditions, and Division 27 Technology General Requirements.
- C. The Contractor shall notify the Consultant 10 day's prior substantial completion and intended schedule for the final acceptance walkthrough demonstration.
- D. Acceptance Testing shall include, but not be limited to the following:
 1. Demonstration of all system operations to the Consultant as the Owner's representative.
 2. A minimum of two (2) installation technicians provided by the Contractor to assist the project Consultant, as required, during final test verification and final acceptance demonstration.
 3. The technicians shall be equipped to perform necessary corrections to the system. They Contractor shall provide test equipment capable of testing any and all parts of the equipment, cabling, or systems.
 4. The minimum required test equipment shall include but not be limited to the following:
 - a. Three (3) two-way radios, that covers the area of testing, for communications between Contractor and Consultant
 - b. Multi test meter for reading AC / DC Voltage, Amperage, Resistance, and continuity
 - c. Sound level meter calibrated in dB with A, C, and flat filters
 - d. Audio Tone Generator and audio signal tracer
 - e. Calibrated Pink Noise Generator
 - f. Real Time Audio Analyzer (RTA)
 - g. Audio acoustical pulse polarity / phase tester
 - h. Computer with installed device software and connecting cables, example DSP



5. The Contractor shall be responsible for equipment adjustments to ensure normal and proper operation. Owner required system adjustments will be made by the Contractor as directed by Owner or Project Consultant during final testing
6. During the final acceptance walkthrough the Contractor shall demonstrate operation of each major component and functional requirement as specified herein.
7. If any portion of the system does not appear to be functioning properly during the final acceptance walkthrough the Contractor shall do further test, along with corrective actions that may be immediately possible. If the need for further corrections or corrective actions does not resolve the issue the demonstration, at the Consultant's discretion, shall be discontinued until the system operates properly.
8. The Contractor shall remain responsible for all equipment, labor, hardware and documentation, in part and in total, until Owner accepts such work or material in writing.

3.07 OWNER'S TRAINING

A. Training Requirements

1. Owner Training of the completed installation is an important part of the overall success of this project and therefore the installing Contractor shall provide comprehensive system training to the Owner as defined below and with the minimum training hours as specified.
2. Prior to scheduling or delivering Owner Training confirm the following:
 - a. System as-built documentation must be provided for review to Owner and Consultant.
 - b. System final walkthrough inspection must be completed.
 - c. Training materials and program outline must be provided and approved by the Owner / Consultant.
 - d. Training schedule must be coordinated with the Owner and Consultant.
3. Training is to include:
 - a. Detailed training plan that meets approval by the Consultant and the Owner
 - b. Practical and comprehensive operation of system
 - c. Basic system troubleshooting techniques
 - d. Digital Video file of each training session. Furnish two edited copies to the Owner
4. Training Hours
 - a. The Owner reserves the right to establish training times, duration, and training topics within the total training time allotted. Training Session Blocks, as defined below, can at the Owner's request be combined in any combination
 - b. Provide each group of users, as defined below, with the minimum training hours as specified.
 - c. Training time shall be defined as those hours specifically set-aside for the sole purpose of training District personnel. Credited time shall not be given for time spent providing instructions to the Owner's staff for a system not completed or that has not passed final



- acceptance by the Owner and Consultant, or training performed outside of the approved training plan.
- d. The Contractor shall issue a certificate of training completion to the trainees, upon completion of their training. Both the trainer and trainee(s) must sign the certificate before Contractor shall receive final payment.
 - e. The Contractor shall provide a minimum of (8) eight hours of Owner training. This training shall be divided into training session "Blocks" as coordinated with the Owner.
 - f. The first block session will consist of a two-hour training period and occur when the basic system comes on line. This training shall primarily be intended for the common system operators.
 - g. The second block will consist of a two-hour training period and will occur as directed by the Owner. This training session shall be structured for high-level users, for example staff champions that will provide instruction to other users.
 - h. The third block will consist of a two-hour training period to assist the staff champions with training the end users. This training shall consist of a training session structured for Advanced System Configuration and Operational Knowledge needed to maintain and manage all systems. It shall include basic troubleshooting skills.
 - i. The fourth training session shall be structured as requested by the Owner. Unless otherwise directed, provide a minimum of four (2) two hours of special in-service training for District's maintenance personnel. This training shall cover system overview and any special maintenance requirements. The owner will designate the personnel to attend this training and the systems to be covered.
5. Training sessions shall cover at a minimum:
 - a. Basic System Configuration and Operation Knowledge
 - b. Advance System Configuration and Operation Knowledge
 - c. Typical system usage
 - d. Typical User troubleshooting skills
 - e. Service and maintenance requirements
 6. The Owner reserves the right to establish training times, duration, and topics.

END OF SECTION

**SECTION 27 41 18****THEATRICAL LIGHTING SYSTEMS****(PROPOSAL # 2)****PART 1 - GENERAL****1.01 SCOPE-OF-WORK SUMMARY**

- A. Unless otherwise noted, the terms "Contractor", "Offeror", and "Proposer" are used interchangeably herein and refers to the respondent submitting a proposal for this RFP Section of Work.
- B. The Proposer Shall:
 - 1. Provide Equipment, Cable, and Devices described herein or depicted in the construction drawings.
 - 2. Provide Labor and Services necessary to integrate each piece of Equipment, Cable, and Device into a fully operational system as a Turn-Key installation without additional charges to the Owner outside the contracted amount.
 - 3. Integrate into the construction any existing or owner furnished equipment and miscellaneous hardware as may be described herein.
 - 4. Maintain timely installations according to the project construction schedule.
 - 5. Provide Owner Training, As-Built documentation, and operations manuals.
- C. Collectively Contractor delivered systems shall be as described herein and depicted in the construction drawings and provide for the following:
 - 1. Theatrical Lighting Systems, as follows:
 - a. Black Box Theater
 - b. PAC (Product only)

1.02 GOVERNING REQUIREMENTS

- A. The following are general provisions, requirements and expectations of the Technology Contractor delivering Audio & Video Systems equipment and installation for this construction package:
 - 1. This document is intended to provide all hopeful Vendor(s) / Contractor(s), hereafter referred to as the Proposer, with information needed to submit a complete Turnkey solution and proposal for the Prosper Independent School District, hereafter referred to as the District. The District will evaluate the submitted proposals to select a perceived Best Value Vendor to supply and install the Theatrical Lighting Systems for this project as described herein.
 - 2. The work performed shall be of professional quality and installed as would normally be expected by a professional Audio & Video Systems integration Contractor in the primary business of providing quality installations of equivalent systems.
 - 3. The Proposer shall furnish their lump sum price offer to provide a turn-key package in response to the Theatrical Lighting systems specified herein and further defined in the associated Construction Documents.



4. The Contractor shall provide a 100% performance bond, payable to the Owner, until written acceptance by the Owner of all work and materials. The cost of these bonds shall be included in the Contractor's proposal price and shown by separate line item.
5. The District shall accept proposals from both manufacturers and authorized resellers of products and systems specified herein and desire to have a competitive choice of local authorized reseller / manufacturers to find the best value for delivery of the systems.
6. The Proposer's proposal response shall include provisioning, installation, configuration, training and warranty support for all systems furnished and provide the District a fully functional system.
7. The Successful Proposer's responsibilities shall include but are not limited to the following:
 - a. Provide, install, and make fully functional the systems made up of equipment, cabling, devices, and hardware described in this Construction Document.
 - b. Integrate into the construction any owner furnished equipment and miscellaneous hardware as may be described herein.
 - c. Furnish necessary services to integrate each system component into a fully functional package with seamless functionality as described herein.
 - d. Maintain timely installations according to the project construction schedule and Contract Documents.
 - e. Provide Owner with necessary system Training, As-Built documentation, and project manuals.

1.03 DEFINITIONS

- A. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

1.04 RELATED DOCUMENTS

- A. References to the following related documents do not limit or release the Contractor from the responsibility of having the necessary knowledge of other non-referenced related documents that makeup the Construction Document Package.
- B. The following Contract Documents are hereby made a part of this Section:
 1. AIA Document A201, Current Edition
 2. Division 1 Documents found in the Project Manual
 3. Division 27 documents that collectively make up the Construction Package including:
 - a. Section 27 00 00 General Technology Requirements
 - b. Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements
 - c. Section 27 41 14 Cafeteria AV-Multimedia Systems
 - d. Section 27 41 18 Theatrical Lighting
 4. Work diagrammatically shown or noted on project drawings
 5. Other documents that collectively make up a part of this Construction Document package



1.05 RELATED WORK

A. References to the following specific related work do not limit or release the Contractor from the responsibility of coordination with other trades, or from having the necessary knowledge of other related work.

1. Work provided by Owner or Owner's Contractors

1.06 UNIT PRICES

A. The Proposer shall provide unit pricing breakdown for all equipment as a line item materials list submitted with their proposal. In the event the Proposal form does not specifically provide a worksheet for requested unit pricing, the Contractor shall provide the unit price list by separate attachment along with their Proposal.

1. The unit price may be used to add or deduct, by change order, quantities of units as represented by the unit price.
2. Failure to provide requested unit prices may result in the rejection of the proposal.

1.07 ALTERNATE & ALTERNATIVE PROPOSALS

A. Alternates

1. The Base proposal shall include all equipment described herein and / or depicted in the construction-drawing package, but shall not include any marked or listed Alternates.
2. All Alternates shall be listed, Marked as Additive or Deductive Amounts and Priced separately on the proposal form or by Contractor in a separate attachment if Proposal form does specifically have a place for Alternate prices.
3. Provide pricing for the following add alternates to the base proposal of this Section of work:

1.08 PERFORMANCE REQUIREMENTS & REFERENCES

A. Referenced standards and / or procedures will be binding on Contractor and all work will be judged against such standards and procedures unless otherwise stated in writing.

B. The Contractor shall be held responsible for and adhere to Manufacturers' installation recommendations and guidelines.

C. Other Reference Standards:

1. Audio Engineering Society (AES) Standards
2. BICSI/InfoComm International AVDRAM (AV Design Reference Manual)
3. ISO / ICS 33.160.01 through 33.160.99

1.09 SUBMITTALS

A. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

1.10 DELIVERY, STORAGE, AND HANDLING

A. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

1.11 PROJECT CONDITIONS

A. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

**1.12 WARRANTY**

- A. Refer to Warranty found in Section 27 00 00
- B. Reference Section 27 40 00 AV-Multimedia & Theatrical Lighting General Requirements

PART 2 - PRODUCTS**2.01 GENERAL:**

- A. The Contractor is bound by the intent of these Specifications to provide a complete and functional technology system as described herein, of high professional quality and reliability, and that meets or exceeds standards that are currently established for such systems.
- B. Provide all necessary labor, materials, tools, transportation, services, ancillary items, and coordination to furnish the Owner a complete and fully functional turnkey installation as described herein.
- C. The Contractor warrants that they will provide professional services, to meet or exceed performance standards and industry recommendations that relate to the scope of work under contract, and that the workmen or system installers are experienced and regularly in the business of installing such systems as specified herein.
- D. All work shall be in accordance with the respective drawings, written specifications, supplemental information, industry standards, manufacturer specific installation procedure, trade practice, and applicable regulatory agencies.
- E. The Contractor(s) shall thoroughly familiarize themselves with complete construction documents, Proposal package information and all necessary details of the complete set of drawings and specifications before submitting their Proposal.
- F. Ancillary and Accessory Items
 - 1. The Proposer shall provide ancillary and required accessory items necessary to furnish to the Owner a complete and fully functional system.
 - 2. The exclusion of / or limitation in the language used in the drawings or specifications shall not be interpreted as meaning that ancillary or accessories items of work or equipment necessary to complete or make the installed system fully functional can be omitted.
 - 3. The mention in writing or representation by depiction materials, services, or operations within this specification document and or Proposal package is binding upon the Proposer to include and provides such items, services, and operations without additional charge to Owner. Exceptions shall be noted by the acronym (NIC) "Not In Contract", "Existing", or (OFE) "Owner Furnished Equipment." If this notation does not appear, then the Proposer shall assume the need to provide the item in question.
 - 4. The Proposer shall receive no allowances because of omissions in work due to unfamiliarity or their misunderstanding of Proposal package.
- G. Drawing Symbols
 - 1. The project scope drawings utilize symbols and schematic block diagrams to indicate various items of work. Neither of these has any dimensional significance nor do they delineate all items that may be required for the intended construction and installation.



2. The work shall be installed in accordance with the intent diagrammatically expressed on the drawings and described in the written specifications. The Proposer shall not make limiting interpretation that provides for incomplete work or a non-functioning system.

H. Document Discrepancy

1. In the event of an inconsistency or discrepancy that may exist in or between parts of these Construction Documents, the following direction shall be followed and shall govern:
 - a. The document, section, phrase, or requirement with better quality, more stringent requirement, or greater amount or quantity of work or material shall apply and shall be expected, delivered and used. Such work or material shall be provided by the Contractor and installed at no additional cost to the Owner.

I. Omissions

1. The omission of or express reference to any part(s) necessary for or reasonably incidental to a complete and fully functional system and installation as intended shall not be construed as a release from the Proposer providing and installing such parts.

2.02 MANUFACTURERS

A. Governing Clauses

1. It is not the intent of these specifications to limit or restrict submission of proposals for products or systems by manufacturers other than those specified.
2. The products specified are intended to establish a minimum baseline of operational, functional, and performance based system expectations that all proposed products must meet or exceed by features, functionality and quality.
3. The Owner reserves the right to govern over and proclaim whether proposed products are equal to the specified system standards.
4. If the proposed system does not meet all of the features or functions described herein, then the Proposer shall identify and list those exceptions in their proposal submittal by separate cover titled "System Exceptions" in red letters.
5. The Proposer shall not be automatically disqualified for not meeting one or more requirements. The Owner shall evaluate proposals on their overall value; all proposals shall be fully considered for best value.
6. Reference to specific equipment manufacturers does not imply that all products produced by that manufacturer meet the specification requirements.

2.03 SOFTWARE TERMS & CONDITIONS

- A. The successful Contractor providing software for this project affirms that it possesses complete and valid title and rights to furnish the said software. Further that it possesses legal right to sell, transfer, or license the software to the Owner.
- B. The Successful Contractor hereby agrees to protect, indemnify, and hold the Owner harmless against any and all claims, suits, or proceedings for patent, trademark, copyright, or franchise infringement arising out of, or resulting from, the installation or use of software or any part of the Contractor provided materials or equipment.
- C. Provide the Owner with an installable and exact copy of each software program installed and running on any system furnished. The software delivered to the Owner shall include the source



code. Additionally provide a compiled copy that is user installable. Provide all software to the owner on a DVD, CD, Thumb-Drive or other format acceptable to the Owner.

2.04 THEATRICAL LIGHTING SYSTEM

A. General

1. The Theatrical Lighting System described herein and diagrammatically shown in the construction drawings shall set minimum standards, features, and functions to be delivered. The brief descriptions below shall not be interpreted as limiting to functions and / or features required. The Contractor shall specifically identify in their proposal in (RED) letters or yellow highlight any exceptions to features, functions, or devices that would deviate from those specified, depicted, or implied requirements. Or any that would not be delivered by the Contractor's proposed system or products.

B. Schematics

1. Contractor shall provide all components, cables, and accessories necessary for a turnkey functional system in each space. Functional requirements shall be determined by referring to the schematic diagrams and other information contained in the technology detail sheets as well as the floor plans.
2. Omission below of any necessary components shall not be misconstrued as an exemption from providing said components. The AV components described below are only an indication of some of the major pieces and functionality required, not to be interpreted as a complete product schedule.

C. Black Box Scope of Work

1. The Black Box is an existing instructional space that has a fully functioning Dimmer system that has a limited fixture set and shares fixtures with the PAC. This arrangement is problematic and additional fixtures are needed to prevent the conflicts. LED fixtures will be added to the Black Box to create up to 6 zones of lighting. DMX will be added and wired into the existing equipment cabinet.
2. Data Plug-In Stations
 - a. Provide Data Plug in stations as quantity as indicated on plans.
 - b. The Plug-in Stations shall consist of the appropriate connectors required for the functional intent of the system. These stations shall be available with DMX input or output.
3. Connector Options
 - a. The following standard components shall be available for Plug-in Stations:
 - i. 5-Pin male XLR connectors for DMX input
 - ii. 5-Pin female XLR connectors for DMX output
4. Physical
 - a. Faceplates shall be .80" aluminum, finished in fine texture, scratch-resistant black powder coat. Silk-screened graphics shall be white.
 - b. The station panel shall mount into an industry standard back box, depending on size and quantity of connectors. A terminal block shall be supplied for contractor terminations.
5. DMX Distribution



- a. The DMX Repeater Module shall permit star-wiring and repeating of DMX512 signals over the connected DMX cabling.
- b. The Module shall fully isolate and protect DMX transmitters and receivers from high common mode voltages, ground loop currents and other potentially damaging or disrupting electrical faults.
- c. The Module shall have one input port, one (1) pass-thru port and eight (8) output ports.
- d. All ports shall be bi-directional.
- e. There shall be no in-line processing of the input signal, to ensure that all output signals are exact duplicates of the input signal with no processing delays.
- f. Provide Leviton DMXSM-H18 (Qty as required)

6. Fixtures Schedule:

Part#	Manufacturer	Description	Quantity
PLFR-1-03-GP	PHILIPS/ STRAND or ETC COMPARABLE	PLFresnel 1 LED Luminaire, 15-54degrees fresnel, black with stage pin connector installed.	6
PLZS1-2444-03-GP	PHILIPS/ STRAND or ETC COMPARABLE	PLPROFILE 1 LED LUMINAIRE 24-44degrees zoomspot with stage pin connector installed.	12
PLSTUPML-03-GP	PHILIPS/ STRAND or ETC COMPARABLE	Studio Panel LED Luminaire tunable white with stage pin connector installed	5
PLSTUPNLBD	PHILIPS/ STRAND or ETC COMPARABLE	STUDIO PANEL BARN DOORS (2LEAF)	5
PLSTUPNLL40	PHILIPS/ STRAND or ETC COMPARABLE	STUDIO PANEL 40 DEGREES SPREAD	5
PLSTUPNLL60	PHILIPS/ STRAND or ETC COMPARABLE	STUDIO PANEL 60 DEGREES SPREAD	5
PLCYC1-03	PHILIPS/ STRAND or ETC COMPARABLE	BLACK PLCYC LED LUMINAIRE	5
PC1GTL	PHILIPS/ STRAND or ETC COMPARABLE	AC POWER INPUT CABLE	-
	PHILIPS/ STRAND or ETC COMPARABLE		-
	PHILIPS/ STRAND or ETC COMPARABLE		-
DMX-5	PROCO or COMPARABLE	DMX 5 PIN XF/5 PIN XM 5FT	30
DMX-10	PROCO or COMPARABLE	DMX 5 PIN XF/5 PIN XM 10FT	20
DMX-50	PROCO or COMPARABLE	DMX 5 PIN XF/5 PIN XM 50FT	2
Misc	COMPANY	Cable Mgmt; Misc Cables, Connectors, Installation Hardware and Testing	1
PM	COMPANY	Project Management	1
CAD	COMPANY	CAD Drawings / Documentation	1
Rentals	COMPANY	Site Container	1

D. PAC Scope of Work

- 1. The PAC is just receiving material only no labor shall be required. The contractor will supply all necessary hardware to allow the school to hang the lights without purchasing additional hardware or materials.
- 2. Fixtures Schedule:

Part#	Manufacturer	Description	Quantity
			-
PLZS1-1834-03	Phillips (or ETC Comparable)	Phillips PLprofile1 LED Luminaire 18-34 Zoomspot, Black	12
PLFR-1-03-GP	Phillips (or ETC Comparable)	Phillips PLfresnel1 LED Luminaire, 15-54 Fresnel, Black	12
Misc	COMPANY	Cable Mgmt; Misc Cables, Connectors, Installation Hardware and Testing	1

**2.05 EQUIPMENT GENERAL**

- A. This document sets forth the minimum Theatrical Lighting Systems equipment requirements. Described are both technical performance specifications along with certain desired features and functions that the Contractor must provide with their proposed system solution.
- B. The Construction Drawings shall be referenced for specific devices and interconnections of said devices and together with this written specification form the required minimum equipment requirements.
- C. The Proposer shall provide one lump sum price for a complete turn-key-system installation per the construction documents. This lump sum price shall be inclusive of all work and material needed for fully functional systems.
- D. The Proposer shall provide a lump sum price for each Alternate requested and list them separately from the base proposal lump sum price
- E. Collectively the described system form certain desired features and functions that the Contractor shall provide with their proposed system solution.
 1. The Proposer must state clearly in their proposal any exceptions to the equipment and or requirements found in the construction documents to that offered in the Contractors proposal.
 2. Additionally to exceptions, the Proposer shall list clearly any value added features and or functions their proposed equipment may offers over and above the stated minimums.
 3. Theatrical Lighting equipment provided and installed shall be as depicted or shown on the construction drawings, described herein this document or more specifically under the System Description above.
 4. The Contractor shall be aware that the construction documents in totality identifies the requirements and equipment required to deliver the desired performance, this means the written specifications, drawings, and associated equipment list or generally known in totality as the "Construction Documents."
- F. Proposal Equipment List
 1. The Proposer shall provide along with their Proposal Bid Form Provide complete project material/equipment list for each device to be furnished. The Materials List is required to include the following completed categories the following:
 - a. Quantity of item provided
 - b. Manufacturer of item
 - c. Model number of item
 - d. Description of item
 - e. Individual price of item
 - f. Extended price for quantity of items
 - g. Total of Proposal in the form of Lump Sum Amount
 2. The Project Material / Equipment List shall be complete in detail and provided in XL spreadsheet file form and as a PDF document included and attached to the Proposal Form.
- G. Contractor shall also furnish any ancillary equipment, devices, cables, connectors, and hardware necessary to provide a complete and functional system.



2.06 ALTERNATES

A. Alternates shall be identified clearly on the proposal with the associated Alternate number as listed below. State clearly if the alternate is an Additive or Deductive price to the base bid lump sum amount.

1. Not used

2.07 MAINTENANCE MANUALS

A. Contractor shall produce a maintenance manual showing interconnection of equipment and any special procedures necessary for proper operation of the systems.

**PART 3 - EXECUTION****3.01 EXAMINATION****A. The Contractor's responsibilities**

1. Examine all related construction documents to ensure compliance of them.
2. Examine and coordinate the installation schedule to comply with contracted timeline.
3. Examine the facility and construction documents to the extent necessary to plan for efficient installation strategies prior to the delivery of materials to the site or the commencement of work.
4. Failure to make the required examinations shall not result in any additional charges to the Owner.

3.02 INSTALLATION**A. Requirements and Responsibilities**

1. The Contractor shall furnish, deliver, transport, erect, install, configure, and connect completely all of the materials and equipment described herein, found or depicted on the construction document package and drawings. The Contractor shall supply all other incidental material required, such as interconnecting cables, connectors, and hardware to make the work complete and leave all systems in first class operating condition.
2. The Contractor shall make this a "Turnkey Project" ready for the Owner's use.
3. Coordinate with other trades working in the facility to provide seamless installation.
4. In the event of any conflicts, delays or improper preparatory work by other trades or existing conditions, notify the General Contractor, Consultant and Owner.
5. Provide cut-in boxes or approved clamping rings where back boxes are required but not provided by Electrical Contractor.
6. The Contractor shall coordinate their requirements for proper ground system to all equipment.
7. Coordinate and verify with the Electrical Contractor, the installation of needed cable raceways
8. The Contractor shall not use any other trade's work or material for support or fastening. Example: ceiling grid support wires cannot be used to support cable hangers, etc. Any exceptions shall be noted or coordinated in writing with the General Contractor.
9. The Contractor shall not shoot, fasten, or screw hangers to the roof deck. Any exceptions shall be noted or coordinated in writing with the General Contractor.
10. The Contractor shall coordinate clearance for cable paths and coordinate clearance for access above cable tray to easily add or remove cable from the cable tray they install.
11. A Contractor installing any equipment shall be responsible for providing all interconnecting cables to and/or between same equipment that may be required to make equipment fully operational.
12. Equipment shall be fabricated with equipment mounted into racks, enclosures, and consoles and be fully wired and tested, before delivery to job site.
13. With the installation of equipment and cables, consideration shall be given not only to operation efficiency but also to overall aesthetic factors to comply with industry standards and practices.



14. Contractor's construction, fabrication, installation, or delivery of materials must comply with applicable standards and practices.
15. The Contractor shall coordinate and field-verify the electrical rough-ins provided for their use by the Electrical Contractor.
16. The Contractor shall remove and replace cabling that is found to have been stretched or pulled past the recommended pulling tension during installation.
17. The Contractor shall install all operational software, as required by equipment and ensure that such software is fully functional and operational. In the event of software conflicts due to upgrades, bugs, or other reasons, the Contractor shall provide solutions suitable to Owner at no additional cost.
18. The Contractor shall be responsible for coordination with Owner's staff the software configuration options of software configurable systems.
19. The Contractor shall provide to the Owner keys for all lockable equipment installed.
20. The Contractor shall provide all passwords for any system or equipment that may use or be locked with a password.

B. Procedures & Methods

1. The Contractor shall provide rack shelves or rack mounting ears for any equipment that is not rack mountable. All equipment installed using shelves shall be fastened to the rack shelf. If Velcro is used to fasten any equipment, the Velcro must be fastened with screws. Adhesive is not an acceptable means to fasten any equipment.
2. Supplementary equipment within equipment racks, such as special assemblies that are not rack mountable or fastened to rack shelves shall be mounted on painted black high grade wooden boards running vertically on side rails of equipment racks. The same wooden strips shall also be used to support cable tie support bars for lacing cables to equipment.
3. Equipment shall be mounted into racks and consoles, and fully wired and tested, before delivery to job site.
4. Equipment and enclosures shall be mounted plumb and square in relation to the structure.
5. Devices, wire raceways, and equipment, except for portable equipment, shall be permanently attached to equipment racks or building structure and held firmly in place with screws or fasteners. Adhesives alone shall not be accepted as fasteners.
6. All equipment mounting boards in head-end rooms, MER's, electrical, or TR closets shall be painted white or black as location dictates with fire retardant paint. The mounting boards shall be made of high-grade plywood.

C. Wire and Cable Requirements

1. Cable installation must follow related TIA/EIA standards and recommendations, including methodology as noted in TIA/EIA 569 - Part 4.6 Ceiling Pathways. Specifically, including sections 4.6.1 General, 4.6.2 Design Guidelines, and 4.6.5 Cable Support.
2. All equipment rack wiring and cabling shall be neatly laced, ends dressed with heat shrink tubing, and all cables shall have service loops between the horizontal tie bar and the connection to equipment. Rack cabling shall be adequately supported with tie wraps or Velcro wire wraps and horizontal support bars to rack frame as it enters or exits the front or back of equipment.



3. There shall be no unmarked cables at any place in any part of any system this includes both in equipment racks and outside of equipment racks. Label markings codes used on cables shall correspond and be shown clearly on as built drawings
4. All cables shall be separated into like groups according to signal or power levels and routed separately to eliminate signal contamination and cross-talk, this includes both in equipment racks and outside of equipment racks.
5. All power cables, control cables, and high level cables shall be grouped to one side of the equipment rack while low level cables shall be grouped to the other side.
6. All cables within equipment racks will use Velcro wire wraps to manage and bundle cables. Velcro strips will be no more than a ¼" wide.
7. All cabling located above ceilings shall be tied off to and supported by ceiling supports or other structures at a minimum of eighteen inches above the ceiling.
8. Cabling shall be placed in conduit where exposed in gym roof joist. Exposed cables shall not be allowed.

D. Equipment and Cable Labels:

1. All cables, regardless of length, shall be marked with indelible color-coded labels that have unique identifying number that corresponds with those found on the schematic diagrams and as-built drawings.
2. Labels shall be directly hot stamped or factory-stamped with closed sleeve method. Adhesive strip labels may only be used if protected by transparent heat-shrink tubing.
3. Marking codes used on cables shall correspond and be shown clearly on as-built drawings.
4. Provide all proposed wording and / or numbering scheme for labeling to the Consultant for review and written approval prior to procurement or installation.
5. All wall plates shall be labeled with Input and Output identifications and referenced to corresponding operational software or hardware it serves.
6. All labels used must be permanent and secure. Provide labeling as follows unless otherwise noted in a specific section:
 - a. Provide engraved Lamacoid labels at the front of all equipment mounted in the racks. Labels shall indicate equipment type and model number and correspond to the As-Built drawings for equipment identification.
 - b. Mount labels on the equipment rack, not on the equipment, and attach in a neat, plumb, and permanent manner. The labels shall be placed on the equipment rack vertical frame (post). If the equipment rack vertical posts have a recessed mid-section, then match label width to fit this recessed section.
 - c. Labels shall be uniform in size. All adjacent labels shall be sized to match the other labels used for same purpose. Similarly, provide engraved labels of like size in other locations.
 - d. Provide engraved Lamacoid labels on each equipment rack rear door or console rear panel reading "No user serviceable parts. Refer service to qualified technician."
 - e. Embossed adhesive labels are not acceptable.
 - f. All label lettering shall be a minimum of .08" high. Embossed adhesive labels are not acceptable.



- g. Position at the left side front top rack space of each equipment cabinet a label that states the name of system Installer with contact information and at the right side a label that states the Design Consultant with contact information.
 - h. Unless otherwise noted, labels on dark panels shall be black with white letters. Labels on stainless steel or brushed natural aluminum plates or light colored panels shall be white with black lettering.
 - i. All wall plates shall have input and output connectors labeled in a professional and permanent manner, no hand written labels shall be accepted.
 - j. Cable and Jack labels shall include room identification with unique cable number, jack location within the room, and MER or TR number.
 - k. The Contractor shall use actual room identifications in their labeling scheme. Contractor shall obtain written approval from the Owner for the actual room numbers, and labeling scheme, to be used prior to installation.
 - l. Switches, connectors, jacks, receptacles, outlets, cables and cable terminations shall be logically and permanently marked in a manner approved by the Consultant.
 - m. Custom panel nomenclature shall be engraved, etched, or screened. Markings for these items are purposely detailed in the construction drawings to ensure consistency and clarity. Verify markings and placement with the Consultant prior to procurement. Submit label sample layouts for Project Consultant's review.
 - n. All terminal blocks, rack mounted equipment, and active slots of card frame systems shall be clearly and logically labeled in a manner acceptable to the Consultant.
 - o. All labeling information shall appear on the As-Built drawings as device and equipment cross-reference identifier and servicing aids.
- E. Connections and Connectors
- 1. Connections shall be made with approved connectors on cables, terminal blocks, or punch blocks. Crimp style connectors shall be made with proper crimping tool. Two point crimps will not be accepted.
 - 2. RF cable connectors shall be made with hex crimp.
 - 3. Cables shall be terminated with the proper connector specifically produced for use with each type of cable.
 - 4. Video connectors that are not of solder type (HDMI, BNC, RCA, F, etc.) shall be terminated using a crimp tool or dies designed specifically for the connectors being applied.
 - 5. XLR type connectors shall be wired with pin 2 high, pin 3 low, and pin 1 shield.
 - 6. Mechanical connectors must be specially made for type of cable or wire used.
 - 7. Connector adapters will not be allowed in any part of the system.
 - 8. Twist on connectors shall not be allowed.
 - 9. Solder joints will be made with rosin-core solder.
- F. Interconnection
- 1. Contractor shall make all system interconnections as necessary, as indicated on the Drawings, or specified herein.



2. Contractor shall provide power and control cables to and from power supplies, remotely controlled equipment and other devices even though such cables are not explicitly indicated on Drawings or listed in equipment tables.

G. Cable Management

1. Cabling located above ceilings shall be tied off to and supported with cable hangers fastened directly to the structure.
2. Where a cable is installed inside desk or other furniture, a means of protecting the cables and holding cabling to a fixed surface shall be provided.
3. Holes in horizontal furniture surfaces for cable pass-through shall be provided with appropriate sized grommet. Grommet shall be black unless otherwise specified.
4. Provide Service Loops with ample cable at each termination so that plates, panels, and equipment can be removed for service, re-termination or inspection. Provide the following as a minimum:
 - a. Wall plate outlet box: minimum of ten (10) inches from wall surface to jack.
 - b. Termination panel: Six (6) inches behind termination panel from cable tie to jack.

H. Equipment Racks

1. Install all rack-mounted equipment using steel 10-32 machine screws with Phillips large oval heads or Allen head drives. Screws must have a black oxide finish, and plastic cup washers to protect the equipment panel finish.
2. Provide wire and cable management at the front of equipment and wire and cable support bars at the rear of equipment. Support bars will be used to tie cables for strain relief before connection to the accompanying equipment. Provide sufficient service loops between support bars and equipment.
3. Unused open front rack spaces in equipment racks must be filled with black rack blank spacers (not vents). Equipment rack vents shall only be used at top and bottom of the rack.
4. Place all rack devices requiring adjustments, cleaning, or similar attention so that they will be accessible for such attention.
5. Equipment racks shall be positioned to permit full access for operation and service. This means clearance for door swing and service technician at both front and back of equipment rack.
6. Equipment racks and sensitive components shall be placed so that signals will not be contaminated by induced electromagnetic and electrostatic noise from other electrical devices.
7. All wire and cable to and from the equipment racks shall run across the top of the racks on a ladder cable tray mounted with standoffs from the equipment rack or hung below the ceiling.
8. As a general practice, all power cables, control cables, and high level cables shall be grouped to one side of the equipment rack while low-level cables are on the other side.

3.03 CONSTRUCTION

A. Required typical system mockups

1. The Contractor shall build typical mockups as required and complete in detail for review by the Owner and Consultant prior to their final equipment install in the rest of the facility. Once



reviewed and accepted, this mockup shall be the approved configuration model to install in the remaining locations.

B. Special Techniques

1. Network Devices

- a. Coordinate with the Owner's IT staff the assigned data port numbers for use with any Network Devices of the system.
 - b. V-LANs are required for control system data traffic and will require coordination with the Owner's IT staff.
2. The Contractor installing infrared devices shall be aware of other infrared devices and infrared interference in the facility and take whatever precautions necessary to avoid this causing problem to other equipment operations. For example, cover all IR receiver sensors.
 3. The Contractor installing any RF devices shall be aware that RF devices may cause interference to the equipment and take whatever precautions necessary to avoid causing interference.

3.04 PROTECTION AND CLEANING

A. Equipment

1. The Contractor shall coordinate with other trades to provide an acceptable environment for installed equipment. For example, provide a dust free environment for VCRs, laser disk players, CD players, etc.
2. Cover installed equipment racks for protection during high dust periods.
3. Do not operate equipment with fans during high dust periods of the installation.
4. Coil and protect cabling from damage prior to termination to equipment

B. Prior to system turnover to Owner:

1. Remove all dirt and debris from equipment racks and equipment rooms.
2. Clean all equipment filters, vents, and fans.
3. Clean all enclosures and back box interiors thoroughly before installing plates, panels, or covers.

3.05 CLOSE OUT & QUALITY CONTROL

A. The Contractor will not receive written acceptance of work and materials until the Contractor provides written release of lien to the Owner.

B. The following should be complete and in place before final system inspection & demonstration is scheduled and performed with the Owner's Consultant:

1. Provide written detailed substantial completion reports of system testing
2. Dust, debris, solder splatter, etc. is removed
3. Cables are dressed, routed, and labeled with heat-shrink tubing over label at ends
4. Connections are confirmed consistent with regard to polarity
5. Equipment operation tested and operating normally
6. Equipment software is installed and configured
7. Electronic devices are properly grounded



8. Devices requiring AC Power are Powered and from the proper circuit
9. Test each AC power receptacle for proper hot, neutral and ground connections
10. Interconnecting patch cables and jumpers are in place
11. The system documentation is complete with "as- built" drawings available
12. To the best of the Contractor's knowledge, all contractual system specifications are fully met, in detail and intent.

C. TESTING & ADJUSTING

1. The Contractor will be responsible for adjusting the installed system and notifying the Consultant when system adjustments have been completed:
 - a. In accordance with Construction Documents
 - b. As required, to provide the Owner a fully functional system at system turnover
 - c. As directed by the Consultant
2. Notification: When above tests have been completed and system is ready for inspection, notify Consultant in writing at least seven working days prior to inspection. Include in this notice copies of all data recorded, date each test was completed and results of each test. All test data shall be available during inspection process.

3.06 DEMONSTRATION

- A. The final acceptance, with proof of performance and operational verifications for the installed Audio & Video Systems shall be the responsibility of and performed by the Contractor in the presence of the Consultant and Owner's representative.
- B. Final acceptance shall be in accordance with Construction Documents, General Conditions, and Division 27 Technology General Requirements.
- C. The Contractor shall notify the Consultant 10 day's prior substantial completion and intended schedule for the final acceptance walkthrough demonstration.
- D. Acceptance Testing shall include, but not be limited to the following:
 1. Demonstration of all system operations to the Consultant as the Owner's representative.
 2. A minimum of two (2) installation technicians provided by the Contractor to assist the project Consultant, as required, during final test verification and final acceptance demonstration.
 3. The technicians shall be equipped to perform necessary corrections to the system. They Contractor shall provide test equipment capable of testing any and all parts of the equipment, cabling, or systems.
 4. The minimum required test equipment shall include but not be limited to the following:
 - a. Three (3) two-way radios, that covers the area of testing, for communications between Contractor and Consultant
 - b. Multi test meter for reading AC / DC Voltage, Amperage, Resistance, and continuity
 - c. Sound level meter calibrated in dB with A, C, and flat filters
 - d. Audio Tone Generator and audio signal tracer
 - e. Calibrated Pink Noise Generator



- f. Real Time Audio Analyzer (RTA)
 - g. Audio acoustical pulse polarity / phase tester
 - h. Computer with installed device software and connecting cables, example DSP
5. The Contractor shall be responsible for equipment adjustments to ensure normal and proper operation. Owner required system adjustments will be made by the Contractor as directed by Owner or Project Consultant during final testing
 6. During the final acceptance walkthrough the Contractor shall demonstrate operation of each major component and functional requirement as specified herein.
 7. If any portion of the system does not appear to be functioning properly during the final acceptance walkthrough the Contractor shall do further test, along with corrective actions that may be immediately possible. If the need for further corrections or corrective actions does not resolve the issue the demonstration, at the Consultant's discretion, shall be discontinued until the system operates properly.
 8. The Contractor shall remain responsible for all equipment, labor, hardware and documentation, in part and in total, until Owner accepts such work or material in writing.

3.07 OWNER'S TRAINING

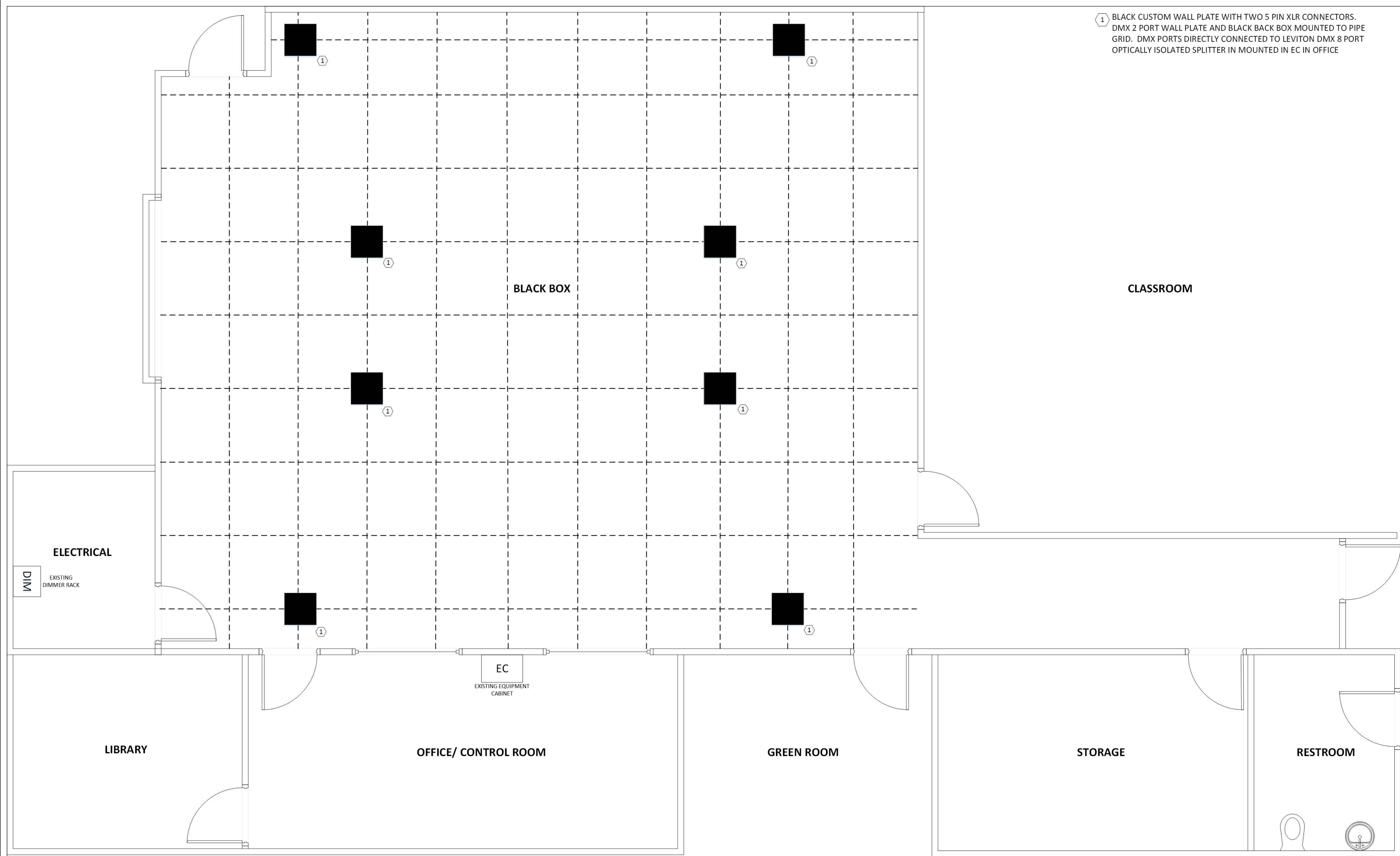
A. Training Requirements

1. Owner Training of the completed installation is an important part of the overall success of this project and therefore the installing Contractor shall provide comprehensive system training to the Owner as defined below and with the minimum training hours as specified.
2. Prior to scheduling or delivering Owner Training confirm the following:
 - a. System as-built documentation must be provided for review to Owner and Consultant.
 - b. System final walkthrough inspection must be completed.
 - c. Training materials and program outline must be provided and approved by the Owner / Consultant.
 - d. Training schedule must be coordinated with the Owner and Consultant.
3. Training is to include:
 - a. Detailed training plan that meets approval by the Consultant and the Owner
 - b. Practical and comprehensive operation of system
 - c. Basic system troubleshooting techniques
 - d. Digital Video file of each training session. Furnish two edited copies to the Owner
4. Training Hours
 - a. The Owner reserves the right to establish training times, duration, and training topics within the total training time allotted. Training Session Blocks, as defined below, can at the Owner's request be combined in any combination
 - b. Provide each group of users, as defined below, with the minimum training hours as specified.
 - c. Training time shall be defined as those hours specifically set-aside for the sole purpose of training District personnel. Credited time shall not be given for time spent providing



- instructions to the Owner's staff for a system not completed or that has not passed final acceptance by the Owner and Consultant, or training performed outside of the approved training plan.
- d. The Contractor shall issue a certificate of training completion to the trainees, upon completion of their training. Both the trainer and trainee(s) must sign the certificate before Contractor shall receive final payment.
 - e. The Contractor shall provide a minimum of (2) two hours of Owner training. This training shall be divided into training session "Blocks" as coordinated with the Owner.
5. Training sessions shall cover at a minimum:
- a. Basic System Configuration and Operation Knowledge
 - b. Advance System Configuration and Operation Knowledge
 - c. Typical system usage
 - d. Typical User troubleshooting skills
 - e. Service and maintenance requirements
6. The Owner reserves the right to establish training times, duration, and topics

END OF SECTION



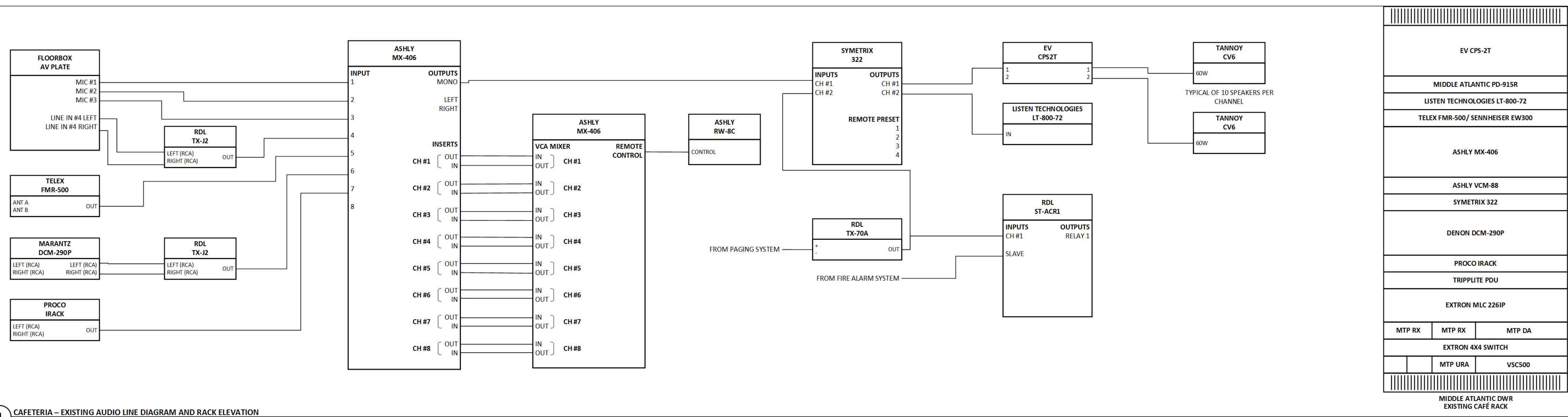
HIGH SCHOOL AUDIO/VISUAL PROGRAM
PROSPER HIGH SCHOOL
PROSPER INDEPENDENT SCHOOL DISTRICT

1 BLACK BOX FLOOR PLAN
SCALE: NTS

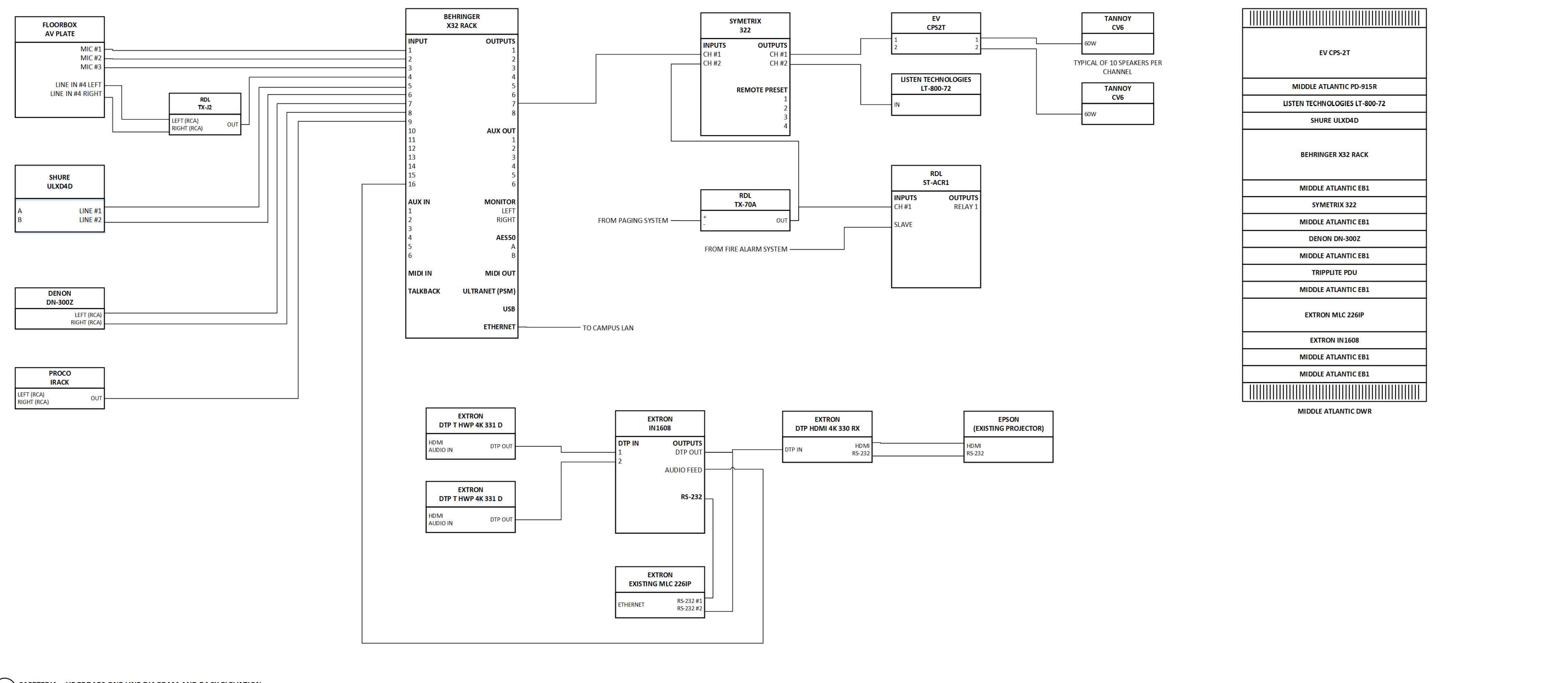
Revision:	Date:
Project No.:	07-1511
Checked By:	JM
Designed By:	JM
Drawn By:	JM/AD
Scale:	as shown
Date:	01/04/2016

AV SYSTEMS -
BLACK BOX - FLOOR
PLAN

T101



1 CAFETERIA – EXISTING AUDIO LINE DIAGRAM AND RACK ELEVATION
NTS



2 CAFETERIA – UPGRDAES ONE LINE DIAGRAM AND RACK ELEVATION
NTS

HIGH SCHOOL AUDIO/VISUAL PROGRAM
PROSPER HIGH SCHOOL
PROSPER INDEPENDENT SCHOOL DISTRICT

Revision:	Date:
Project No.:	07-1511
Checked By:	JM
Designed By:	JM
Drawn By:	JM/AD
Scale:	as shown
Date:	01/04/2016

AV SYSTEMS -
CAFETORIUM -
DETAILS

T104