

DISTRICT AV UPGRADES

Technology Request for Bid



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INVITATION TO BID

PART 1 - GENERAL

1.01 WORK INCLUDED: DISTRICT AV UPGRADES

A. Grand Ledge Public Schools (Owner) is seeking bids for a new audio visual equipment and installation. Proposed systems shall be configured and installed to service Owner's classrooms across multiple instructional facilities, and as described herein.

B. Project: DISTRICT AV UPGRADES

Owner: Grand Ledge Public Schools
220 Lamson Street
Grand Ledge, MI 48837

C. Designer: Communications by Design, Inc. & Hamilton AV Design

D. Sites of Work:

1. Sawdon Administration Building
220 Lamson Street
Grand Ledge, MI 48837

2. Beagle Middle School
600 South Street
Grand Ledge, MI 48837

1.02 GENERAL DESCRIPTION OF PROJECT SEQUENCE

A. Sequences and dates specified herein are for information only and indicate the plan and intent of the Owner. Actual dates shall be established based on final award of project.

B. Sequence of operations shall be established by the Contractor within the guidelines established by the Owner as required to meet schedules.

C. Schedule:

1. Request for Bid Distributed: February 4, 2022

2. Virtual Pre-Bid Meeting: February 9, 2022 at 10:00am

3. Intent to Bid Deadline: February 11, 2022 at 5:00pm

4. Question and Clarification Deadline: February 16, 2022 at 5:00pm

5. Public Bids Due: February 25, 2022 at 1:00pm

1.03 TYPES OF BIDS

- A. Bids shall be submitted in total and with required detail for each item bid and as is required herein and include all portions of the work identified for the individual bid package as specified herein. Bids shall be made on unaltered bid forms as included herein. Bidder shall fill in all blank spaces and the bid shall be signed by a legal officer or agent authorized to bind the bidder to a contract.

1.04 VIRTUAL PRE-BID CONFERENCE

- A. A virtual pre-bid conference will be held. A discussion of the project and review of bid documents will be followed by an opportunity to ask questions. Attendance is highly encouraged for all contractors interested in bidding on any components or portions of this project. Attendance at the pre-bid conference will be a factor considered during evaluation of bids.
- B. DATE/TIME: February 9, 2022 at 10:00am
- C. Google Meet Link: meet.google.com/fga-sjfq-vwm
- D. Call In Number: 1-978-276-4228 PIN: 531 902 981#
- E. Physical building inspections of sites of work will not be provided for at this time.

1.05 TIME AND PLACE OF BID RECEPTION

- A. Physically sealed bids for the base bid work will be received at the district office and read aloud at a public opening. Bids arriving after the appointed time as determined by the Owner's representative conducting the public opening, may be returned unopened. Bids will be accepted beginning forty-eight (48) hours prior to the appointed opening time provided they are in sealed packages and addressed as specified herein.
- B. Bid Receipt Deadline: 1:00pm on February 25, 2022
- C. Bid Receipt Location: Sawdon Administration Building
220 Lamson Street
Grand Ledge, MI 48837
- D. Faxed or electronically delivered bids will not be accepted.

1.06 EXAMINATION AND PROCUREMENT OF DOCUMENTS

- A. Specifications and any relevant Drawings may be obtained from the Technology Designer. Contractors may obtain copies by documented request to Communications by Design, Attn: Rebecca Szilagy. Requests may be made by:

- 1. Writing – 4101 Sparks Drive Grand Rapids, MI 49546

- 2. Email – rszilagy@cbdconsulting.com

1.07 BID SECURITY

- A. Bid security equal to five percent (5%) of the total bid amount, must accompany each base bid in accordance with the Instruction to Bidders.
- B. Bid security shall be either a Bid Bond issued by a company licensed in the State of Michigan to furnish bid security or Certified Check made payable to the Owner.

1.08 PERFORMANCE BOND COVERAGE

- A. Selected Contractor(s) will be required to provide a performance bond and payment bond in an amount equal to one hundred percent (100%) of the bid amount including any accepted alternates at the Owner's discretion. Such bonds shall be issued by surety licensed by the State of Michigan and acceptable to the Owner.

1.09 OWNER'S RIGHT TO REJECT BIDS

- A. The Owner reserves the right to reject any and/or all bids. The Owner reserves the right to accept a bid, or portion thereof by issuance of a valid purchase order within ninety (90) calendar days following the bid opening. No bids may be withdrawn during this time without the specific approval of the Owner.
- B. Withdrawal of any Bids after the opening time without specific approval by Owner may result in forfeiture of required bid security by Bidder.

1.10 DEFINITIONS

- A. "Owner" is intended to mean Grand Ledge Public Schools, a Michigan general powers school district.
- B. For purposes of this project, the terms "Architect", "Engineer" and "Designer" are used synonymously to refer to Communications by Design, Inc., a Michigan Corporation.
- C. The term "Bidder" refers to any organization properly and accurately submitting a complete "Intent to Bid Form" prior to the required time

specified herein and subsequently properly submitting completed set of bid documents as specified herein.

- D. The term “Contractor” herein is a reference to the firm(s) eventually selected by the Owner to provide the intended system(s), or any portion thereof, and fulfill the terms of the contract.
- E. The term Contract is a reference to the collective set of documents, drawings, diagrams, Owner’s Purchase Order, Addenda, and all other materials as provided for herein defining arrangement between Owner and Contractor.
- F. The term Addenda (or Addendum) are that portion of the Contract consisting of modifications, amendments, deletions, or substitutions to the contract documents issued prior to the execution of the Contract.

END OF SECTION

SECTION 00 40 00
BID FORMS

Intent to Bid Form

Complete and submit the following form if you have interest or intend to submit a Bid for this project. Unaltered and completed forms must be received on or before 5:00pm on February 11, 2022. Only bidders returning a completed "Intent to Bid Form" will be notified of required addenda.

Company Information

Name: _____

Address Line1: _____

Address Line2: _____

City, State and Zip Code _____

Primary Contact Information

Name: _____

Phone No.: _____

Fax. No.: _____

E-Mail Address: _____

Portions of the bid for which you will be responding:

☐

Section 27 41 25 - AUDIO-VISUAL CONTROL SYSTEMS

Submit unaltered and completed form to:

Rebecca Szilagy

Communications by Design, Inc.

rszilagy@cbdconsulting.com

SEALED BID LABEL

Separate, or fold over, the label on the line below, and affix to the exterior of sealed container so information is clearly visible for Bid Submission. Ensure label is attached in a manner to prevent accidental removal or defacement. Label shall serve as sole identification for sealed bid at submission.

BID TO: Grand Ledge Public Schools
Attention: Mr. Mark Deschaine
220 Lamson Street
Grand Ledge, MI 48837

BID FROM:

PROJECT: DISTRICT AV UPGRADES
BID ID #2730

INCLUDING Addendum No. _____ Dated _____
ADDENDA: Addendum No. _____ Dated _____

DUE: 1:00pm on February 25, 2022

BID FORM

BID TO: Grand Ledge Public Schools
220 Lamson Street
Grand Ledge, MI 48837

BID FROM: _____

PROJECT: DISTRICT AV UPGRADES
BID ID #2730

The undersigned, having familiarized themselves with all local conditions affecting the cost of work, and having examined the site and all applicable Bidding Documents herein, and herein referenced, including, but not limited to, all addenda issued thereto, hereby propose to furnish all labor, material, equipment, applicable taxes and services required for proper completion of each of the following categories of this project for the sum of:

Bid Category _____ Title _____
_____ Dollars (\$ _____).

Said amount written above constituting the Base Bid

TAXES:

Bid sum includes all applicable taxes.

ALLOWANCES:

Base bid includes all applicable allowance cost(s) as set forth herein.

COST OF BONDS:

Bid sum includes cost of furnishing a Performance Bond and Labor and Material Payment Bond, each in the amount of one hundred percent (100%) of the bid.

ACKNOWLEDGEMENT OF ADDENDA:

The following addenda have been received, are hereby acknowledged, and their execution is included in both base bid and alternate bids herein.

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

ALTERNATES:

Based bid amount may be increased or decreased in accordance with each of the following alternate bids as may be selected, following procedures stated herein. Alternates shown below are identified and described in detail on appropriate attachment(s) as referenced herein.

Voluntary Alternate A _____

Voluntary Alternate B _____

Voluntary Alternate C _____

PRINCIPAL SUBCONTRACTORS

As required herein, the following Subcontractors are proposed to be used for this project:

Legal Name: _____ Work Proposed _____

Legal Name: _____ Work Proposed _____

BID SECURITY:

Accompanying this Bid, as required herein, is a bid security in the form of Certified Check/Cashier's Check/Bidder's Bond in the amount of:

_____ Dollars (\$ _____), payable to the Owner, which it is agreed, shall be retained as liquidated damages, not as a penalty, by the Owner, if the undersigned fails to execute the Contract in conformity with the form of Contract incorporated and referenced herein and fails to furnish specified bonds within ten (10) days after date of issuance of a Letter of Intent to the undersigned.

If awarded the Contract, the undersigned agrees to commence work within ten (10) calendar days after date of issuance of a Purchase Order, which shall be considered as the notice to proceed, and agrees to complete the work in accordance with the schedule herein.

FAMILIAL DISCLOSURE:

Accompanying this Bid, as required herein, is a legally executed and notarized Michigan Familial Disclosure Statement.

EXCEPTIONS:

Bidder takes no exception to terms, conditions, specifications and/or any other requirements herein unless expressly noted, and specifically identified as provided for herein on unaltered Contract Exception form accompanying this Bid.

SIGNATORY AUTHORITY:

The undersigned certifies they are an authorized agent of the bidding entity, and legally able to bind the bidding entity to the terms, conditions and responsibilities of this, and all referenced bid documents. Furthermore, the undersigned acknowledges an understanding that non-compliance of this authority or any other bidding requirements may result in forfeiture of bid security, dismissal of consideration of bid submitted, and/or personal liability against the signatory.

AGREEMENT:

The undersigned agree(s) to provide the post-bid information required within ten (10) days after notification of a Letter of Intent and to execute an agreement for work covered by this Bid on the Owner's standard Purchase Order for which terms and conditions are expanded to include all Bidding Documents and subsequent addenda issued thereto.

In submitting this bid, it is understood that the Owner reserves the right to reject any or all bids. It is further agreed that this bid is binding for a period of Ninety (90) days from the opening thereof.

Respectfully submitted,

Date: _____

Firm Name: _____

By: _____

Signed: _____

Title: _____

Official Address: _____

Telephone Number: _____

Fax Number: _____

Primary Contact Email Address: _____

(If Corporation, affix Seal)

Michigan Familial Relationship Disclosure Statement

In accordance with Section 1267 of Michigan Revised School Code this sworn and notarized statement of an authorized representative, discloses any familial relationship between the owner and/or any employee of the Bidder, and any member of the project Owner's governing Board(s) or Superintendent(s).

If any conflict of interest is discovered subsequent to submission of bid, written disclosure shall be submitted to the project Owner within seven (7) days of discovery. The project Owner reserves the right to immediately terminate any contract with Bidder upon notification of a conflict of interest. Upon such termination, the project Owner shall compensate Bidder only for the value of any goods or services provided to the Owner prior to such termination as determined by Designer.

(Check only one Box Below)

☐ It is hereby acknowledged and certified by Bidder that no familial relationship exists between the owner or any employee of the Bidder and any member of the project Owner's governing Board(s) or Superintendent(s).

☐ A familial relationship exists between the owner or an employee of the Bidder and a member of the project Owner's governing Board(s) or Superintendent(s). The person(s) and the relationship(s) are as follows:

Bidder

Board or Superintendent

_____	_____
_____	_____
_____	_____
_____	_____

Bidder Authorized Representative:

Bidder: _____

Representative's Signature: _____

Print or Type Name: _____

Representative's Title: _____

Subscribed and sworn this _____ day of _____, 2022.

In the County of _____ State of _____

By _____
Notary Public Signature

Seal or Stamp:

My commission expires on: _____

IRAN LINKED BUSINESS AFFIDAVIT

All Bids shall be accompanied by a sworn statement disclosing any Iran Linked Business relationship that exists within the owners, including its officers, directors and employees.

The undersigned, owner or authorized officer of _____ (the bidder), pursuant to Michigan Public Act No. 517 of 2012, the "Iran Linked Business" requirement provided in the Grand Ledge Public Schools Proposals hereby represents and warrants that the bidder, including its officers, directors and employees, is not an "Iran Linked Business" within the meaning of the applicable Public Act, and that in the event bidder is awarded a contract as a result of this RFB, the bidder will not become an "Iran Linked Business" at any time during the course of performing under the contract. The bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than \$250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the District investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on future Requests for Bids for three (3) years from the date that it is determined that the person has submitted the false certification.

There is not an "Iran Linked Business" that exists within the bidder and/or owner, officers, directors and employees.

Bidder

[Company Name]

[Signature]

[Title]

This instrument was acknowledged before me, a Notary Public,

in and for _____ County,

_____ on this _____ day of _____,
20__,

[Notary Public Signature]

My Commission expires: _____

Acting in the County of: _____

REFERENCES

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____

Date of completion: _____

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____

Date of completion: _____

Customer name: _____
Address: _____
City/State/Zip: _____
Contact name: _____
Contact title: _____
Phone: _____
E-mail: _____
Scope of project: _____

Date of completion: _____

CONTRACT EXCEPTIONS

Check one Box

☐ Bidder takes no exception to, and agrees to comply with all sections, terms, conditions and/or requirements of the Contract Documents.

☐ Bidder proposes the following exceptions to the Contract Documents:

<i>Paragraph Number</i>	<i>Explanation</i>
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NOTE:

Exception(s) to any bid sections, terms, conditions and/or requirements deemed excessive for any reason by the Owner and/or Designer may result in disqualification of Bid.

SCHEDULE OF VALUES/BID FORM

(Bidder may submit version of only this form with slight variation. All information in this form is required for each division/category of work being bid. Submit a completed separate form for each division/category of work clearly delineating on the form the division/category of work for that form. Form submitted must materially match below both in content and format. Electronic version of this form for each project section/division/category being bid is required with bid package as Microsoft Excel compatible spreadsheet on a USB drive. Failure to provide appropriate and complete SCHEDULE OF VALUES for each division/category of work, as determined by the Owner and/or Designer, may result in disqualification of Bid.)

Bidder: Bid Division: 27 41 25

[illegible]

END OF SECTION

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 OWNERSHIP

- A. Bidders prepare and provide bids without any cost to the Owner and/or Designer. Once opened, bids become the sole property of the Owner. Bidders have no claim to, or ownership of bids opened. Bids become subject to all legal statutes including, if applicable, United States and Michigan Freedom of Information Acts and related laws.

1.02 COMPLIANCE

- A. This document establishes the primary system(s) design configuration. The Bidder's bid response shall include all services, supplies, components and equipment required to provide a complete turnkey system(s) which meets or exceeds all specifications for each given bid item being proposed.
- B. Owner prefers to enter into a contract with a single bidder for all materials for completion of this project but shall consider combinations of portions of bids from various bidders. The Owner reserves the right to award portions of the project to multiple bidders who will be required to cooperate with one another in order to complete the work.
- C. By their response, Bidders agree to comply with all sections, terms, conditions and/or requirements of the contract documents except as expressly noted, and specifically identified by paragraph number on the unaltered Contract Exceptions Bid Form. Exceptions to any bid sections, terms, conditions and/or requirements deemed excessive by the Owner and/or Bid Coordinator may disqualify Bid.
- D. In compliance with the Freedom of Information Act (FOIA), the Owner shall make bid documents available for public review after issuance of purchase order to the successful bidder/s.
- E. In connection with the execution of this Contract, Contractor and any Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, or national origin.
- F. Negligence in preparation, improper preparation, errors in, or omissions from Bids shall not relieve Bidder from fulfillment of any and all obligations and requirements of the Contract Documents.
- G. All Bid documents and worksheets must be completed in detail and submitted together on time.

- H. All documents constituting the entire present agreement shall be construed in accordance with and governed by the laws of the State of Michigan.
- I. Designer shall have authority for interpretation of Contract Documents. In the event terms, provisions or any other portion of the Contract Documents is/are in dispute, Designer shall have full and final authority to interpret the Contract Documents, and such interpretation shall be final and binding.
- J. In the event of a conflict between any terms or conditions in any of the documents comprising the entire present Agreement, the terms and conditions set forth in this document shall take precedence.

1.03 NOTICE AND RESPONSE

- A. Upon notification of Bidder being considered as a finalist, the Bidder shall provide to the Owner and Designer, within 48 hours, a current “Dunn and Bradstreet Supplier Evaluation Report” and other documentation as may be required of finalists herein and as requested by Owner and/or Bid Coordinator.
- B. Bidder shall provide timely response to all requests from Designer and/or Owner regarding clarification and/or elaboration concerning, but not limited to its Bid as may be deemed relevant by the Owner and/or Designer.

1.04 PROTECTION AND SAFETY

- A. Contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner’s property from injury or loss arising in connection with the execution of the Contract. Contractor shall make good any such damage, injury or loss, except such as may be directly caused by agents or employees of the Owner. The Contractor shall adequately protect adjacent property as required by law, by the Contract Documents, or as otherwise required, to cause no damage to them during the execution of the Contract. This requirement shall also apply to structures above and below ground as conditions of the site require.
- B. Contractor shall be solely responsible for, and have control over means, methods, techniques, sequences, and procedures for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the contract. Contractor shall take all necessary precautions for the safety of employees and visitors on the site of the Project and shall comply with applicable provisions of federal, state, and municipal safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and the Public.

- C. Contractor shall comply with all Federal CDC, State, and local regulations and guidance for maintaining a safe and disease free work force, and shall, in addition, comply with regulations and relevant guidance while conducting the work on site, in order to protect the health and safety of the Owner's personnel.
- D. Contractor shall vigorously defend any and all suits that may be brought against the Owner by any person and/or entity, whether in the employ of the Contractor or not, for damage to property, and/or injury or death to persons alleged or claimed to have been caused by or through the performance of work.

1.05 DRAWINGS DIAGRAMS AND ILLUSTRATIONS

- A. Drawings, Diagrams, and Illustrations are diagrammatic in nature and indicate general arrangement and nature of systems and work included.
- B. Floor plan drawings are provided to assist the contractor in preparing documentation and reports as required herein.

PART 2 - MATERIALS

2.01 VOLUNTARY ALTERNATES AND SUBSTITUTION OF SPECIFIED PRODUCTS

- A. This Request for Bid describes a particular implementation. All Bids must provide pricing on the "base bid" as described herein. Voluntary alternatives providing comparable functionality with significant cost reduction and/or performance enhancement may be proposed. Voluntary alternatives are encouraged but must be identified as "Voluntary Alternates" and detailed on unaltered Bid Forms contained herein. Voluntary Alternates may be further detailed and/or explained in attachments to the unaltered Bid Forms contained herein. Exceptions to the Request for Bid specifications must be clearly noted and explained for each Voluntary Alternate proposed.
- B. No substitutions of specified products may be made without specific prior authorization by Designer and Owner. Individual bid divisions herein contain particular information related to acceptable manufacturer and product requirements.
- C. Trade-in, equipment/license exchanges or other return allowances may be provided as a voluntary alternate. Trade-in, exchange, or other return equipment allowances shall not be included in base bid amount.

PART 3 - EXECUTION

3.01 EXAMINATION OF DOCUMENTS AND SITE

- A. Bidders shall carefully examine the Contract Documents and the construction site to obtain first-hand knowledge of existing conditions and requirements. No plea of ignorance of conditions that exist, or any other relevant matter concerning work to be performed in the execution of work will be accepted as justification for failure to fulfill every detail of all requirements as described herein.

3.02 QUESTIONS, INTERPRETATIONS AND ADDENDA

- A. Any bidder finding discrepancies between Drawings, Specifications and/or Bid Documents, or be in doubt as to the exact meaning of any provision or detail shall notify the Designer (rszilagy@cbdconsulting.com) at once, and before the deadline for Questions and Clarifications. The Designer may then, at their option, issue Addenda clarifying same. The Designer is not responsible for oral instructions, or Bidder's/Contractor's misinterpretations of Drawings, Specifications, and/or Bid Documents.
- B. The Designer reserves the right to issue Addenda at any time up to thirty-six (36) hours prior to the scheduled bid opening. All such addenda shall become, upon issuance, an inseparable part of the Specification/Contract Documents. Each bidder shall incorporate within their bid all costs for items listed in any/all Addenda and shall acknowledge receipt and identifying number of each Addendum on the Bid Form and on the outside of the sealed bid container.
- C. Addenda will be forwarded to each bidder who has received a copy of the Bidding Documents and has submitted "Intent to Bid Form".

3.03 BID SECURITY, BONDS, AND INSURANCE

- A. Bid Security, Performance and Payment Bonds are required on this project.
 - 1. Bid security equal to five percent (5%) of the bid amount must accompany each bid in accordance with the Instruction to Bidders.
 - a. Bid security shall be either a Bid Bond issued by a company licensed in the State of Michigan to furnish bid security or Certified Check made payable to the Owner.
- B. The selected Contractor will be required to provide a performance bond and a payment bond each in an amount equal to one hundred percent (100%) of the bid amount including any accepted alternates at the Owner's discretion.
 - 1. The surety of the performance bond shall remain in effect until all acceptances and final contract close-out requirements herein have been executed by the Owner.

- C. Contractor shall provide, prior to beginning any work at the sites, certificate of insurance for delivery to Owner indicating all required insurance coverage is in force.
1. Workers' Compensation and Employer's Liability Insurance
 - a. Coverage A – Statutory
 - b. Coverage B - \$1,000,000 Per Accident
 2. Broad Form Comprehensive General Liability Insurance (including – Premises, Elevators, Contractor's Protective Liability, Contractual, Products & Completed Operations – including Broad Form Extensions).
 - a. Each Occurrence - \$1,000,000
 - b. General Aggregate - \$2,000,000
 - c. Products & Completed Operation Aggregate - \$2,000,000
 - d. Personal Injury & Advertising Injury - \$1,000,000
 - e. Fire Legal - \$100,000
 3. Sub-contractors Operations, Products – Completed Operations and Contractual Liabilities, plus such excess coverage as may be appropriate for the limits listed.
 4. Comprehensive Automobile Liability Insurance (owned, hired, and non-owned automobiles).
 - a. Bodily - \$1,000,000 each Person and \$1,000,000 each Occurrence
 - b. Property Damage - \$1,000,000
 5. Furnish Owner with Contingent Liability Insurance Policy with coverage and liability limits the same as for Public Liability Insurance specified herein. Designate on policy as assured, only the Owner.
 6. Furnish Owner with Contingent Property Damage Insurance Policy with coverage and liability limits the same as for Property Damage specified herein. Designate on policy as assured, only the Owner.
 7. Policies shall include notification clause requiring ninety (90) days written notice to Owner in the event of policy cancellation, expiration, non-renewal, coverage reduction or other material change.

8. Contractor shall not commence work under the Contract until after all insurance required herein as been obtained and certificates for such are approved by Owner.
- D. All such bonds and/or insurance shall be issued by surety licensed by the State of Michigan and acceptable to the Owner.
 1. Insurance certificate(s) shall be signed by insurance agent licensed in the state of Michigan or a representative of the insurance company.
- E. Contractor agrees to indemnify and hold harmless the Owner and Designer, including their agents and employees, from and against all claims, damages, losses and expenses, including, but not limited to, attorney fees arising out of, or resulting from the performance of the work to the fullest extent allowed by law on a comparison basis of fault.

3.04 MODIFICATION AND WITHDRAWAL

- A. Bids may be withdrawn and/or changed any time prior to the deadline for submission of bids. Bids may not be withdrawn or changed thereafter and shall be deemed a firm offer continuing for ninety (90) calendar days. Bids received after the deadline for submission will be returned unopened at the Owner's discretion.
- B. Withdrawal of any Bid after the opening time without specific approval by Owner may result in forfeiture of required bid security by Bidder.

3.05 CODES, ORDINANCES, REGULATIONS AND RELATED

- A. All labor and materials shall be furnished and installed in strict accordance with the latest applicable codes, ordinances and regulations of any governing body having jurisdiction over this project.
- B. In the event the quality of labor and materials required by the Drawings and Specifications herein exceeds requirements of current applicable codes, ordinances and regulations, the Drawings and Specifications shall take precedence.
- C. In the event the quality of labor and materials required by current applicable codes, ordinances and regulations having jurisdiction over this project exceeds that of the Drawings and Specifications herein, the applicable codes, ordinances and regulations shall take precedence.
- D. The Contractor shall give all notices and comply with all codes, laws, ordinances, rules and regulations of any authority having jurisdiction, which bears on the performance of its work. This compliance includes, but is not limited to, the Michigan School Safety Initiative (PA129, PA130, PA131 and PA138) if applicable to work being performed.

- E. The Contractor shall pay for all licenses, permits, taxes, and fees required for this project; and shall comply with all federal, state, local and Owner's codes, laws, ordinances, regulations and other requirements applicable to the work specified at no additional cost to the Owner. Contractor shall submit copies of all approved certificates and approvals to the Owner upon receipt.

3.06 SUB-CONTRACTOR AND MATERIAL SUPPLIER

- A. The successful Bidder shall submit to the Owner and Designer a complete list of all sub-contractors and all material suppliers proposed to engage on the work. Sub-contracts shall not be awarded until after they have been approved by the Designer and Owner.
- B. Finalist bidders may be required to submit additional details related to sub-contractors and suppliers within forty-eight (48) hours after the bid opening.
- C. Names of any principal sub-contractors must be listed on the Bid Form.
- D. All contracts made by the successful Bidder with Subcontractors shall be covered by the terms and conditions herein. The successful Bidder shall see to it that Subcontractors are fully informed in regard to these terms and conditions and shall bind all subcontractors to the same terms and conditions. Failure to do so will absolve the Owner from any liability for additional cost due to subcontractor claims for additional cost, time or any claim(s) for additional cost by subcontractor(s).

3.07 BID RESPONSE FORMAT

- A. Bidder shall provide complete Bid copies in two formats as described herein.
 - 1. One (1) Hard copy format responses shall be in a bound tabulated format. Each response shall have tab indicators for each section.
 - 2. One (1) Electronic copy format responses shall be submitted on a USB Drive, readable by a standard Microsoft Windows 10 workstation. Electronic media shall contain separate folders to organize response documentation as described herein. Files submitted electronically shall be ***Adobe Acrobat*** "PDF" format (SCHEDULE OF VALUES is additionally required to be on the disk in the appropriate folder as a spreadsheet and as described herein).
- B. All Bid Response formats shall be clearly externally marked to include, but not be limited to:
 - 1. Bidder identification.
 - 2. Project Owner identification.

3. DISTRICT VOICE SYSTEMS UPGRADES.

4. Bid submission date.

C. Bid Responses shall include an index containing copies/PDF of a complete index of documents comprising Bid Response. Responses shall include, but not be limited to the following tabbed/folder sections:

1. Section 1 – Forms, which shall contain copies/PDF files of all required and completed bid forms.
 - a. BID FORM
 - b. Michigan Familial Relationship Disclosure Statement
 - c. Iran Linked Business Affidavit
 - d. REFERENCES
 - e. CONTRACT EXCEPTIONS
 - f. SCHEDULE(s) OF VALUES
 - g. BID BOND
2. Section 2 – Overview, which shall contain copies/PDF files of cover letter and/or executive overview.
3. Section 3 – Submittals, which shall contain copies/PDF files of all required and voluntary submittals.
4. Section 4 – Appendices, which shall contain copies/PDF files of other reference materials Bidder wishes to or is required to submit.

3.08 AWARD OF CONTRACT

- A. The material proposed to be used for the completion of work, and the competency, solvency and responsibility of bidders will receive due consideration before award of contract. In the reception of bids for this work, the Owner incurs no obligation to accept the lowest, or any bid submitted. The right to accept or reject any and all bids or portion thereof is reserved by the Owner. The Owner reserves the right to require testimonial, accounting, or legal documents pertaining to the solvency of a Contractor, or any other decision factor the Owner deems appropriate, prior to award of contract.
- B. Owner reserves the right to select individual components from schedule of values independent of installation as may be determined in Owners best interest. Selected bidder may be required to install selected components provided by others.

- C. Issuance of a Purchase Order by Owner in response to a valid bid shall be a Notice to Proceed, and shall become part of, but not limited to, all terms, conditions and requirements herein. Notice to Proceed shall have the full effect of contract award, and shall make all terms, conditions, requirements and responsibilities of Bidder binding upon issuance. Notice to Proceed, once issued, shall become an inseparable part of the contract documents herein, and constitute both Bidder and Owner's acceptance of contract.

3.09 TIME, SCHEDULES, PROJECT MANAGEMENT, MEETINGS AND PLANS

- A. Time is of the essence on this project. Award of contracts for this project will be contingent on the bidder's agreement to complete the work on or before the contract completion date stated herein.
- B. All Contractors will commence work in such a manner and at such a time as to expeditiously interface with the work of other Contractors and will pursue the project diligently to completion. All Contractors will work in a cooperative manner with Owner and other Contractors.
- C. Contractor shall appoint an overall Project Manager acceptable to Owner, with skills and experience deemed appropriate by the Owner for the scope and size of the project. Project Manager shall be responsible for the scheduling of all Contractor resources and attending all project meetings. Upon notification of Bidder being considered a finalist, the Bidder shall submit professional resume of proposed Project Manager within forty-eight (48) hours.
 - 1. Project meetings shall be conducted at Owner's selected and identified location weekly and at Owner's and/or Designer's discretion.
 - 2. Within five (5) days of Notice to Proceed (issuance of a Purchase Order by the Owner), Contractor's Project Manager shall provide to the Owner a critical flow path in the form of a "Gantt Chart" (or equivalent) indicating the proposed sequence of events and approximate beginning and completion dates in accordance with, compliance to, and coordinated with requirements herein.
 - 3. Changes of the Project Manager during the project shall not be acceptable without prior written approval from the Owner.
 - 4. It is the responsibility of the Contractor's Project Manager to schedule work, work out issues, ensure that all required products and services are delivered according to schedule and attend to any other matters required by the Owner in the interest of professional and timely completion of the project.

5. The appointed Project Manager, or a designee acceptable to the Owner, shall be in attendance of all project meetings throughout the term of the project. Failure to do so may be considered a material breach of contract.
6. After a ten (10) business day notice, the Owner reserves the right to request a new Project Manager, when it appears that, in the Owner's sole discretion, the Project Manager is not fulfilling the full responsibilities of the position. Failure by Contractor to provide adequate Project Manager meeting requirements of the Owner, may result in Contract termination.

3.10 CHANGES IN THE WORK

- A. No changes in work with the effect of either increasing or decreasing in the project value shall be made without specific and prior authorization by the Owner and Designer.
- B. Owner, without invalidating the contract and without notice to any surety, may at any time order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be authorized by a written Change Order approved by Owner and Contract Designer. Upon receipt of such an order Contractor shall promptly proceed with the work involved. All such work shall be executed under the conditions of the original Contract. Owner authorized change order(s) may be issued at any time prior to Contract close out.
- C. When so directed, Contractor shall promptly submit an itemized estimate and a unit price for performing or deleting such extra or changed work as may be contemplated. Any extensions or reductions of the contract time associated with extra or changed work shall be identified at the time Contractor submits such documentation.
- D. At the Owner's discretion, adjustments in the Contract Sum shall be determined by one or more of the following methods:
 1. By mutual acceptance of a lump sum cost, including overhead and profit, itemized and supported by sufficient substantiating data to permit evaluation.
 2. By unit prices stated in the Contract Documents including, but not limited to, Schedule of Values.
 3. By unit prices mutually agreed upon.

3.11 PAYMENT REQUESTS AND PAYMENTS

- A. Contractor's invoices shall be submitted monthly in correlation with the Project Schedule indicating percentage of work completed.

- B. All contract and change order invoices shall be sent directly to Contract Designer.
- C. A 10% retainage shall be held back on all payment requests, including, but not limited to hardware, software, change orders and services, until final completion and close out of the project or project phase as determined by Owner and Designer.
- D. Contractors are required to submit all invoices on approved AIA Payment Request Forms or other billing format pre-approved by Contract Designer. Each AIA Payment Request Form shall be accompanied by a properly completed, executed, and notarized Waiver of Lien which shall be in a format and contain verbiage approved by Owner.
- E. The Contract Designer and Owner shall process payment requests on a monthly schedule and in accordance with their respective established processes and procedures. Payments will be made by the Owner based only on AIA Request Forms having been previously certified, audited and approved by Contract Designer and accompanied by acceptable Waiver of Lien.

END OF SECTION

SECTION 00 65 00
CONTRACT CLOSE OUT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide an orderly and efficient transfer of the completed work to Owner.
- B. Details affecting work of this Section includes but is not limited to all other Sections herein and all related Contract Documents.
- C. Activities relative to Contract close-out are described in, but not limited to, this and other Sections of this document.

1.02 SUBSTANTIAL COMPLETION

- A. "Substantial Completion" shall be defined as:
 - 1. All responsibilities of Contractor for all provisions and requirements of all divisions and sections of complete Contract herein, and as amended, are properly and fully completed, or properly, accurately, and acceptably provisioned for.
 - 2. All systems, equipment, facilities, services, programming and/or components required by all divisions and sections of complete Contract are fully operational, acceptable, and useful to the Owner for their intended purposes.
- B. Prior to requesting inspection by Designer to certify Substantial Completion, Contractor shall use adequate means to assure the Work is completed in accordance with the specified requirements and is ready for such inspection.

PART 2 - MATERIALS

2.01 NOT USED FOR THIS SECTION

PART 3 - EXECUTION

3.01 PROCEDURES

- A. Contractor shall submit a written request to Designer indicating they have achieved Substantial Completion of Work.
- B. Within a reasonable time after receipt of the request, Designer will inspect Work to determine status of completion.
- C. Should Designer determine the Work is not substantially complete:

1. Designer promptly will so notify Contractor, in writing giving reasons therefore and providing sufficient details to allow Contractor to make corrective actions.
 2. Contractor shall then expeditiously remedy the deficiencies and notify Designer in writing when ready for re-inspection.
 3. Designer will re-inspect the Work.
 4. Excessive re-inspections of Work may result in fees being assessed Contractor.
- D. Should Designer concur the Work is substantially complete:
1. Designer will prepare a letter of Substantial Completion.
 2. Designer will submit the letter to Owner and Contractor.
 3. Contract shall be deemed "Closed Out" for retainage purposes.
 4. Final Acceptance of the system shall be deemed complete.

END OF SECTION

SECTION 274100 GENERAL CONDITIONS FOR AUDIO-VIDEO SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification section encompasses AV upgrades at both the Grand Ledge Beagle Middle School and the Grand Ledge Administration Building. Refer to the plans and specifications for further information.
- B. The audio-video systems reference the systems specifically identified for the above referenced project. These systems are identified as:
 - 1. Audio Systems including but not limited to:
 - a. Input equipment
 - b. Distribution equipment
 - c. Mixing consoles and controllers
 - d. Power amplifiers
 - e. Digital Signal Processing
 - f. Loudspeakers
 - g. Wire and Cable
 - h. Rigging and Hardware
 - 2. Control Systems including but not limited to:
 - a. Touchpanels
 - b. Button Panels
 - c. Virtual Panels
 - d. Control Processors
 - e. Control Programming
 - f. Wire and Cable
 - 3. Miscellaneous
 - a. Equipment Racks
 - b. Wall plates and Rack Panels
 - c. Equipment Carts
 - d. Power Distribution and Conditioning

1.2 SUMMARY OF WORK

- A. General:
 - 1. Provide audio-video systems engineering and installation for the above listed Project. Systems are to include all devices, equipment, installation, programming, and commissioning in accordance with requirements of the contract documents and drawings.
 - 2. The Work detailed within the Contract Documents has been specified to meet certain requirements for performance, appearance, and costs. It shall be the responsibility of the Contractor to implement the guidelines and requirements contained in the Contract

- Documents and translate them into a complete design package containing all elements necessary for a complete, operational, and functionally integrated Audio Visual System(s).
3. Provide all work as detailed in the Contract Documents as a turnkey installation including all material, labor, engineering, warranties, taxes, freight, and permits. Only items and requirements specifically stated to be provided by others shall not be a requirement for this Section of the Work.

1.3 GENERAL CONDITIONS

- A. The General Conditions of the above referenced project shall be considered part of this specification. Unless this Section contains statements, which are more definitive or more restrictive than those contained in the Owner's General Conditions, this Specification shall not be interpreted as waiving or overruling any requirements expressed in the General Conditions.
- B. Work Experience
 1. Contractor agrees that they are familiar with the scope and have significant work experience in projects of this nature and scope. Contractor agrees to provide all materials, product, and work to provide a complete and functional systems to the owner.
 2. Contractor must state if they intend to utilize a subcontractor for any portion of the work on this project. Contractor shall be liable for all work performed by any subcontractor. The Owner reserves the right to approve or disapprove any subcontractors.
 3. Contractor shall comply with all local and state regulations covering this work. Contractor shall rectify any work found to not be in compliance with any local or state regulatory agency.
 4. All permits and any required certifications shall be obtained and paid for by the Contractor. Contractor will forward evidence of any such required items to the owner.

1.4 RELATED WORK

1. All conduit, line voltage wire, and boxes needed for electrical outlets, junction box locations, raceways, pull boxes, and other pathways related to the AV systems installation as show on the "TA" series drawings shall be provided by the Electrical Contractor already under contract for this project.
2. The following specification sections relate to and are covered by this section:
 - a. 274110 – Training for Audio-Video Systems
 - b. 274116 – Integrated Audio-Video Systems
 - c. 274125 – Audio-Video Control Systems
 - d. 099600 – High-Performance Coatings

1.5 DEFINITIONS

- A. The following shall be used as general identifiers as specified herein:
 1. Owner – Organization or person who has undertaken the above referenced project.
 2. Construction Manager – Contractor hired by the owner to coordinate and facilitate the construction of the project.
 3. Contractor – The company awarded the work of this section by the Construction Manager.
 4. Consultant – Company hired by the Owner or Architect to design the Audio-Video Systems.

5. Electrical Contractor – The company awarded the work for the electrical and raceway portions of the project, typically, but not limited to, Division 26.
6. Subcontractor -- Company or organization contracted by the Contractor to perform or supply any portion of this specification.
7. Work – The term “Work” means all construction and services specified within this document. The Work includes all related labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the specification’s obligations.
8. Drawings – The term “Drawings” means all Audio-Video Systems Drawings and associated sketches, details, riser diagrams, etc.
9. As used in the Drawings and Specifications for the Work, certain nontechnical words and phrases shall be understood to have specific meanings as follows, regardless of indications to the contrary in the General Conditions or other documents governing the Work.
 - a. “Furnish” – Purchase and deliver to the project site complete with all necessary parts, pieces, and accessories. Where required, purchasing shall include payment of all necessary sales taxes as may be required.
 - b. “Install” – Unload new equipment or take an item furnished by others and place or mount at the location indicated by the project drawings or specifications.
 - c. “New” – Manufacturer’s current and most recent model, manufactured within the past year and not previously used.
 - d. “Provide” – Furnish and Install.
10. Where the word “conduit” is used without specific reference to type, it shall be understood to mean “raceway”.
11. Reference to “U.L. (Materials Construction) Standards” shall mean the “Standards for Safety” published by Underwriters Laboratories, Inc. Standards published by other certification agencies such as CSA and ETL may also be used.

1.6 DIVISION OF LABOR

- A. Electrical Contractor shall furnish and install all conduit and boxes associated with the AV Systems as specified, as shown on the drawings, and as required by the Contractor.
- B. Electrical Contractor shall supply a pull string in all conduits.
- C. All Audio-Video wiring shall be supplied and installed by the Contractor.
- D. All electrical connections carrying line voltage (above 100 volts) shall be connected and terminated by a licensed Electrical Contractor. All line voltage wire and cable for the audio and video systems shall be provided by the Electrical Contractor.
- E. All electrical connections carrying low voltage (below 100 volts) shall be connected and terminated by the Installing Contractor. All low voltage wire and cable for the audio and video systems shall be provided by the Installing Contractor.
- F. The contractor shall not route conduit exposed on walls or ceilings. The conduits shall be routed within walls and accessible ceiling cavity spaces. The only exception would be in the exposed ceiling areas of the Leisure and Competition pools. In these areas the conduits shall be routed as required to “hide” / blend-in with the ceiling structural supports. Coordinate all exposed locations with Architect and provide coordinated drawings indicating locations for exposed conduit for

review. All exposed conduit shall be primed and finish coated per specification 099600 HIGH-PERFORMANCE COATINGS.

1.7 QUALITY ASSURANCE

- A. All electrical installation shall be in compliance with the N.E.C., and shall be inspected by the Local or State Electrical Inspection Authority. All installation shall be subject to inspection by the Local Authority Having Jurisdiction. All installation shall be in accordance with the AHJ. Any installation methods found to not be in compliance with the AHJ shall be rectified by the contractor without claim for additional payment.
- B. Bidders for this section are expected to be an authorized dealer for all major pieces of equipment or purchasing them through an authorized dealer. Documentation of dealer status may be requested from bidders. Failure to provide adequate documentation may be grounds for disqualification from the bidding process.
- C. The master/lead technician working on site shall have a minimum certification of CTS with CTS-I highly preferred. The primary project engineer shall have a minimum certification of CTS with CTS-D highly preferred. Failure to provide proper qualifications shall be grounds for disqualification from the bidding process.
- D. Any work found by the Architect, Construction Manager, Owner, or Consultant to not be acceptable or in compliance with the specifications and drawings will be rectified by the Contractor with no additional claim for compensation.
- E. Any expense incurred by the Owner to correct or rectify unsatisfactory work of the Contractor shall be borne by the Contractor. The Owner may withhold any money due to the contractor or recover any money already paid to the contractor to cover any such expenses.

1.8 PRE-INSTALLATION SUBMITTALS

- A. Submittal sheets are required to be submitted for all specified equipment. All submittals and shop drawings shall be submitted and approved by the Consultant prior to the beginning of installation. These submittals shall be provided not more than 4 weeks following award of contract.
 - 1. If a control system is part of the project the touchpanel layouts and control system programming shall be submitted for approval prior to the start of installation. See specification section 274125 for Control System requirements.
 - 2. Contractor shall furnish an electronic PDF document for any equipment request that is not the specified product. If requested by the Construction Manager, a printed submittal set can be submitted and is to be bound on the left side and printed on 8.5x11 inch paper.
 - 3. A complete Bill of Materials (with associated cut sheets for each piece of equipment) will be submitted by the Installing Contractor showing all the equipment to be installed. Materials will be listed in the same order that the products are listed in the Appendix of the corresponding specification. Each sub system will be shown with all of the products to be installed as part of that sub system in the order listed in the specification. The Bill of Materials will indicate the quantity being supplied, the manufacturer, the model of the equipment, and a brief description of the equipment.

4. All product data sheet submittals shall be organized in the same order that products are listed in the appendix of this specification. Each sub system of the design shall have the product data sheet for each piece of equipment contained in that sub system – organized in the order listed in the specification. Under no circumstance shall the product data sheets be organized in alphabetical order. Any product data sheet submittals not conforming to this will be automatically rejected.
5. Contractor shall furnish an electronic PDF set of shop drawings detailing a complete installation plan. Shop drawings are expected to expand upon the construction documents and shall show all components and wires, complete with individual wire numbers, proposed rack layouts, riser diagrams and schematics for individual subsystems, calculations, and details of proposed rigging. Schematics shall show a separate designation for each device and labeling shall correspond to that of the rack layouts. Installing Contractor shall convey that the system is ready to install as shown in the shop drawings, and that details not explicitly defined by this specification or on the drawings have been addressed by the Contractor. Submittal drawings should match the native size of drawings in the project documentation.
6. Scanned or copied versions of the construction documents will not be accepted and shall be automatically rejected.
7. Failure to furnish all information as noted above shall result in the rejection of submittals.
8. Some of the Consultant's floor plan drawings may be available for use by the Contractor in preparing shop drawings.

1.9 STANDARDS

- A. All equipment and installation practices, where applicable standards have been established, shall be built and installed to the standards of the following institutions:
 1. Underwriters Laboratories, Inc. (UL): Comply with requirements of UL-50
 2. NFPA 70, National Electric Code (NEC)
 3. InfoComm 2M-2010: AV Design and Coordination Processes
 4. InfoComm F501.01:2015: Cable Labeling for Audiovisual Systems
 5. InfoComm V202.01:2016: Display Image Size
 6. ANSI/InfoComm 10:2013: Audiovisual Systems Performance Verification
 7. ANSI/InfoComm 1M-2009: Audio Coverage Uniformity
 8. ANSI-J-STD-710: Audio, Video and Control Architectural Drawing Symbols
 9. EIA Compliance: Comply with following Electronics Industries Standards:
 - a. Sound Systems, EIA-160
 - b. Loudspeakers, Dynamic Magnetic Structures and Impedance, EIA-299-A
 - c. Racks, Panels and associated equipment, EIA-310-A
 - d. Amplifiers for Sound Equipment, SE-101-A
 - e. Speakers for Sound Equipment, SE-103
 10. TIA/EIA-607 Telecommunications Grounding
 11. BICSI Telecommunications Distribution Methods Manual (Ninth Edition)
 12. Federal Communications Commission Part 15
 13. Audio Engineering Society (AES)

1.10 DELIVERY, STORAGE, AND CONDITIONS

- A. Include delivery, storage, and handling of all products and materials to be delivered and installed.

- B. Contractor shall be responsible for providing on-site storage if necessary. Contractor may negotiate a storage facility with the school district, but shall still be responsible for his own materials.
- C. Contractor shall provide all necessary means to protect and safeguard their work from damage by other contractors and trades up to the date of final acceptance by the Owner. Contractor shall be responsible for all costs to clean and repair any damage to installed systems unless the contractor proves to the Owner's satisfaction that the damage was caused by other contractors.
- D. Contractor bears the responsibility to verify all site conditions and coordinate with the Electrical Contractor to ensure a complete and functional system is supplied to the Owner.
- E. Verify dimensions of major components to check for entry through doors, ceiling height clearance, and column interference prior to the installation of the equipment.
- F. Contractor shall stay aware of all project time schedules and shall coordinate with all other trades for all aspects of the work.
- G. Contractor shall include provisions in the bid to make at least two (2) visits to each site prior to beginning of site work to verify site conditions, coordinate with other trades, meet with representatives of the Owner, or deal with other issues that may arise in the course of building construction.
- H. In addition to the two (2) site visits the Installing Contractor shall attend progress meetings and foreman meetings as required by the Construction Manager.

1.11 OWNER FURNISHED EQUIPMENT

- A. The Owner reserves the right to furnish any materials necessary for the Project.
- B. For items of equipment which are to be installed but not purchased as part of the Work, the Work shall include:
 - 1. Coordination of any necessary delivery.
 - 2. Unloading equipment and boxes from delivery trucks.
 - 3. Safe handling of the equipment until final installation.
 - 4. Inspection of all items and testing as necessary to verify proper operation of the equipment.
 - 5. Immediately notify the Owner of any non-functional items. Any damaged item not brought to the owner's attention within 1 week will be considered damaged by the Contractor.
 - 6. Install all owner furnished items as noted in the project specifications and drawings.

1.12 WARRANTY

- A. The Installing Contractor shall provide timely maintenance of any malfunctions of the installed systems, at no additional cost to the owner, for a period of twelve (12) months from the date of acceptance by the owner unless damage or failure of the system is caused by misuse, abuse, neglect, or accident.

- B. The Installing Contractor shall guarantee availability of local service by factory-trained personnel from an authorized distributor of the equipment manufacturer. The distributor shall have available a stock of the manufacturer's standard parts.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Refer to sections under section 27 41 00 -- Part 1 for all Equipment Specifications listed by space and type.
- B. Refer to the associated Appendices for all equipment to be installed. Contractor shall be liable to provide a complete and functional system regardless of whether parts are specifically identified in the specifications and equipment lists.
- C. In the event that a conflict would arise between the equipment lists and the associated drawings the contractor shall provide the greater quantity or cost impact to the project.

2.2 REQUESTS FOR ALTERNATES

- A. Requests for equipment to be considered as alternates shall be considered under the following circumstances:
 - 1. Alternate requests shall be submitted to the consultant.
 - 2. Show the original item specified and the proposed alternate.
 - 3. Provide a shop drawing showing how the equipment integrates to the rest of the system.
 - 4. Provide speaker mapping data (if alternate requested is a loudspeaker).
 - 5. Provide a demo piece of equipment for testing by the consultant (if requested).
 - 6. Install the specified equipment if the request is denied.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION (MATERIAL AND WORKMANSHIP)

- A. Non-compliance with any of the following as deemed by the Owner or Consultant shall be cause for rejection of Work by the Owner, and replacement by Contractor to Owner's satisfaction, and at no added cost to the Owner.
 - 1. All materials, methods, and workmanship shall be performed as specified.
 - 2. If an installation practice contrary to these specifications and drawings is desired by the contractor, then the Contractor shall make a written request to that effect. Modifications shall not be implemented without written approval from the Consultant and/or Owner.
 - 3. If a circumstance should arise where the specified item is no longer available, then the Contractor shall supply the manufacturer's current model and verify that the product is compatible with the other system components. Contractor shall bear all costs associated with this verification and testing. Failure to properly verify compatibility shall not be grounds for any additional payment.

4. All installation shall be in accordance with generally accepted broadcast, video , and audio engineering practices.
5. Contractor shall work closely with all other trades on the project to meet appropriate deadlines and complete work in a timely manner. Should Contractor fail to meet such deadlines, appropriate compensation for lost usage of the systems and space shall be withheld from payment of any fees Contractor is due or has already been paid.
6. Contractor is responsible to verify all site conditions and to coordinate with other trades to ensure that a complete and functional system is provide to the Owner. Verify all dimensions of equipment for clearance through doors and other potential obstructions.
7. Contractor shall be liable to protect their work from damage up to the date of final acceptance by the owner.
8. All permanently installed equipment will be secured in place with a minimum safety factor of 5.

3.2 FIRMWARE UPDATES

- A. All audio and video equipment shall be updated with the latest firmware prior to installation in the field.
- B. Every piece of equipment must have the firmware verified prior to installation.
- C. All time required for firmware updates should be included as part of the Contractor's cost for the project.

3.3 TRIM RINGS AND COVERS

- A. Contractor shall work with other trades to ensure that all boxes are mounted plumb, square, and do not have excessive gaps between the box and surrounding wall.
- B. Contractor shall supply a suitable trim or extension for any panel that does not cover the gap between the wall and edge of the panel.

3.4 SUBCONTRACT

- A. The Installing Contractor shall be responsible for the complete and unconditional implementation of each system, even though he may have subcontracted a portion of the installation or had certain manufacturers install their own equipment.
- B. Any delay in system commissioning caused by a Subcontractor shall be the responsibility of the Installing Contractor. If such delays cause significant disruption to the successful completion and usage of the project, the Installing Contractor shall be liable for reasonable compensation to the owner.

3.5 CONDUIT AND CABLE ROUTING

- A. An Electrical Contractor licensed in the state of Indiana shall furnish and install all conduit and boxes associated with the audio and video systems as shown on the drawings. Contractor shall coordinate with the Electrical Contractor for any additional conduits that may be required.
- B. Electrical Contractor shall provide all junction boxes for the audio and video systems with appropriate covers.
- C. All conduits not specifically identified shall be 3/4".
- D. All conduits below grade shall be PVC or as required by code. All conduits above grade shall be EMT or as required by code. Refer to Division 26 documents for conduit specification details.
- E. There shall be no more than three (3) 90-degree bends in audio or video conduit between pull points. If a conduit run requires more than two bends or if the conduit run is in excess of 150' in total length, insert a pull box. If it is not practical to install a pull box in the run due to field conditions, the conduit size shall be increased to the next trade size for each additional 90-degree bend. Offsets shall be considered as equivalent to a 90-degree bend.
- F. All conduits to be labeled at the source box with the destination box in a clear and logical manner.
- G. Ends of all conduits are to be deburred and bushed.
- H. All conduits terminating inside of an audio/video enclosure (e.g. rack) or not terminating in a junction/pull box shall be provided with plastic insulated bushings.
- I. Electrical Contractor shall be responsible to provide a poly pull-line in each conduit.
- J. Line voltage conduits shall maintain a minimum of 24" separation from audio or video signal conduits except to cross at 90-degree angles when necessary.
- K. All metal Audio and Video equipment racks must be isolated or insulated from any metallic conduits. The final connection to these audio racks or panels shall be with PVC, non-metallic flex or any other non-metallic conduit. Or, where appropriate and approved, the cables can enter the rack or panel in a bundle through a bushed opening.
- L. Junction boxes and pull boxes in the conduit system do not have to be isolated, only racks or panels with electrical power and electronic audio devices.
- M. Electrical power feed to an audio rack or audio panel shall also be via PVC or non-metallic or insulated conduit.
- N. All cables shall be laced or tied securely to assure no malfunctions resulting from interference of other trades or routine future maintenance.

3.6 CABLE INSTALLATION AND LABELLING:

- A. The AV contractor shall supply all jumper cables and interconnect cables for equipment within racks.
- B. All cables and wires throughout the installation will have a unique wire label at each termination and connection point. Labels shall use clear wrap-around number or letter cable markers. Any unlabeled cables found at system checkout shall be immediately labeled. Failure to label wires will be grounds for rejection of work.
- C. All wire markers in a given rack shall face a common direction for easy reading.
- D. Cable wire markers shall be approximately 4" from the shell of the connector and must be visible outside of any cable bundle or lacer bar.
- E. XLR connectors utilizing insulation displacement or solderless connections will not be acceptable.
- F. All cable used in plenum spaces or air ducts shall be plenum rated or in conduit.
- G. Under no circumstance shall a wire splice be installed in conduit.
- H. No cable shall be installed with a bend radius less than what is recommended by the manufacturer.
- I. All cables shall be grouped according to the signal level type. Cabling should be separated into the following general categories:
 - 1. Power Cables
 - 2. Control Cables
 - 3. Video Cables
 - 4. Microphone level audio cables
 - 5. Line level audio cables
 - 6. Speaker level audio cables
- J. Run power cables, control cables, and speaker level cables on the left side of the rack. All other cables shall be run on the right side of the rack.
- K. All cables shall be secured in place utilizing Velcro wraps. Wire "zip ties" shall not be used to secure cables.
- L. All inter-rack cabling shall be neatly strapped, dressed, and supported as approved by the Owner or Consultant. Cabling within racks shall be contained in Panduit finger tray and secured to lacer bars when appropriate.
- M. All cabling installed outside of racks shall be dressed in a suitable harness or loom to keep cables clean, neat, and tidy.
- N. All cables shall be cut to the length dictated by the run. All equipment installed in racks shall have a service loop of appropriate length.

1. For equipment mounted in racks accessible from both front and back, provide a service loop length sufficient to plug and unplug cable from the unit to allow for trouble-shooting and service of equipment.
2. For equipment mounted in racks accessible from the front only, provide a service loop length sufficient to remove the unit from the rack and easily plug and unplug all connectors.

3.7 IDENTIFICATION

- A. All labels on panels or plates shall be white lettering on black background. All lettering on panels and plates shall be engraved. Panels and plates shall have a minimum thickness of .125". All labels shall correspond to the drawings. Any labels found unacceptable shall be remedied by the Contractor without claim for additional payment. Confirm color of all panels with consultant an owner's representative prior to ordering panels.
- B. Every piece of rack-mounted equipment should have a label on the front and back showing the following:
 1. Input and output lines
 2. Schematic drawing designation
 3. IP Address (for networked devices)
 4. Devices outside the rack serviced by the equipment

3.8 TESTING AND ADJUSTMENTS

- A. Acceptance testing: Before Acceptance Tests are scheduled, the Installing Contractor shall perform his own systems checkout. Installing Contractor shall furnish all required test equipment and shall perform all work necessary to determine and/or modify performance of the system to meet the requirements of these specifications and drawings. This work shall include the following:
 1. Testing of all inputs, outputs, and tie-lines.
 2. Testing of all display devices, equipment configurations, speakers and jacks.
 3. Testing of any other wires or components.
 4. Test all audio for compliance with the Performance Standards.
 5. Check all controls functions, from all controlling points to all controlled devices, for specified operation.
- B. Testing Personnel: The Installing Contractor shall have a minimum of two persons knowledgeable as to the systems as installed available for testing and adjustment with the Consultant.
 1. All costs to the Installing Contractor for testing personnel shall be included in the bid.
 2. Installing Contractor shall allow for up to (8) eight hours of testing and adjustments with the Consultant.
 3. Failure of the Installing Contractor to provide adequate personnel or testing equipment causing lost time to the Consultant shall result in the Installing Contractor paying the Consultant's standard hourly rate for additional time and expenses as necessary.
- C. Test Equipment: Contractor shall have the following available for testing and commissioning of the system:
 1. All test equipment shall be furnished by the Contractor
 2. Computer measurements shall be performed using SMAART or EASERA

3. Current laptop computer with the DSP manufacturer's current software installed
 4. High quality multi-meter: Fluke or Similar
 5. Sweepable tone generator
 6. Impedance meter
 7. RF scanner (100 MHz up to 5 MHz)
- D. Noise, rattle, or buzz
1. Run the system in each specified mode of operation
 2. Make sure the system is free of any hum, noise, rattles or other distortions
 3. Use both speech and high quality music to test the system
 4. Apply swept sine waves to the system to listen for any anomalies
 5. Correct any issues revealed by the above tests
- E. Provide a written report to the consultant documenting the system testing performed.

3.9 FINAL ACCEPTANCE

- A. After approval of the Contractor's test report the Contractor shall demonstrate the basic operation of the system and each major component of the system.
- B. A printed "quick start" guide will be given to each of the training participants. Additionally, the quick start guide will be posted at the tech desk and on the equipment rack. Guides should be laminated.
- C. The Contractor shall provide a copy of the software for every component that utilizes an outboard computer for setup and configuration. The Installing Contractor shall demonstrate the usage of each configuration software to the Owner's Representative.
- D. All final "As-Built" drawings, manuals, any other required documents shall be reviewed and approved.
- E. Any additional time incurred by the Consultant required to oversee system testing due to improper system installation shall be charged directly to the Contractor at the Consultant's standard hourly rate.

END OF SECTION

SECTION 274110 TRAINING FOR AUDIO-VIDEO SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Some information contained in this specification is also found on the associated drawings and in the following specification sections. Work shown on drawings or described in other spec sections is deemed to be in both.
- B. Related Specification Sections:
 - 1. 274100 General Conditions for Audio-Video Systems
 - 2. 274116 Integrated Audio-Video Systems

1.2 TRAINING FORMAT

- A. Presenter: The presenter for the training session should be an individual who has been directly involved with the project and is very familiar with both the design intent and the actual installation. It is essential that the Presenter have experience with operating and training similar systems.
- B. Attendees: The client or end user should determine who will be at the training. Generally smaller groups (8-10 persons max) are better. Training should occur at a time and place arranged with the client or end user after the system(s) are fully complete and operational.
- C. Audio Instruction: A presentation of basics and fundamentals of how sound systems function should be included as part of the training. The following topics should be discussed:
 - 1. Decibel Levels
 - 2. Frequency
 - 3. Voltage
 - 4. Gain Structure
 - 5. Inputs, outputs, and controls
 - 6. Loose equipment
- D. Field Training: Hands on instruction for the use and maintenance of the systems.
 - 1. Demonstrate all controls.
 - 2. Demonstrate how all temporary or portable connections are performed.
 - 3. Demonstrate any routing or configuration options

1.3 TRAINING LENGTH

- A. The client or end user shall be entitled to a total of 4 hours of training time when spaces become fully functional. Generally, this would be two (2) separate one-hour sessions for Boardroom, an

hour for the Band & Choir rooms, and an hour for the Science rooms. An additional half hour should be made available for follow-up questions after the rooms have been used for a few weeks.

1.4 SUPPORT MATERIALS

- A. Training Manuals containing the following:
 - 1. Cover sheet indicating the type of training being performed
 - 2. Contact information
 - 3. Table of contents
 - 4. Printed copy of any presentations
 - 5. Materials List including any loose equipment
 - 6. Owner's and instruction manuals
 - 7. Record Documents including an as-built drawings.

PART 2 - PRODUCTS

PART 3 - EXECUTION

- A. PREPARATION
 - 1. Submit a copy of all training materials to the consultant for review and approval prior to the training sessions.

END OF SECTION

SECTION 27 41 16 INTEGRATED AUDIO-VIDEO SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Some information contained in this specification is also found on the associated drawings and in the following specification sections. Work shown on drawings or described in other spec sections is deemed to be in both.
- B. Related Specification Sections:
 - 1. 274100 General Conditions for Audio-Video Systems
 - 2. 274110 Training for Audio-Video Systems

1.2 ADMINISTRATION BOARDROOM AV SYSTEMS

- A. All existing AV equipment, with the exception of the wall mounted equipment rack, are to be removed and handed over to the School.
- B. While this space is intended to be utilized as a single large meeting space for Board Meetings and gatherings, the School will also be dividing the room into two (2) separate spaces via portable room dividers. The new AV systems shall be programmed to operate fully in both room configurations.
- C. The existing equipment wall rack is to be relocated to the side wall of the room as shown on the associated drawings.
- D. New motorized wall mounted screens and projectors will be installed in the space. Two of the screens will be installed and centered on one wall as shown on the drawings. The third motorized projection screen will be mounted on the opposite wall. Note that, as shown on the associated drawing set, this screen is NOT centered on the wall. This is done to ensure that the screen can be fully utilized when the room is divided.
- E. An AVoverIP system will be implemented to allow for room use flexibility. Two wall plate locations will facilitate laptop presentation capability. Two additional inputs will be installed in the equipment rack for connection of OFE Apple TV devices.
- F. New ceiling speakers, divided into four (4) zones, will be installed in the space to provide program audio and voice-lift.
- G. Four (4) new channels of wireless microphones will be available for use in the space. Two lapel style mics, a handheld mic, and a desktop/gooseneck mic will be the input options. The charger for these microphones is to be installed on a sliding shelf in the equipment rack.

- H. Sixteen (16) wireless delegate stations will be available for board members to utilize. The room's audio system should be set up to allow for the room's wireless mic and program audio to back feed into the delegate system as well as the mixed delegate audio back into the room for light voice-lift for the listening audience.
- I. Two (2) PTZ cameras along with presentation video will be available to a web streaming appliance. The AV contractor is to work with the School to set up a variety of presets for how the cameras and presentation video should be combined for the video stream. The video capture/streaming system is intended for 1-way streaming out to the School's streaming provider of choice (YouTube, Facebook Live, Vimeo, etc.). Contractor to set up the system to connect and properly stream to the school's provider.
- J. Two (2) wall mounted touch panels will be installed and utilized for room setup/configuration and AV control. A control interface is also to be developed to be available via the School's network to allow for full room/camera control via the schoolboard meeting coordinator's laptop.

1.3 BEAGLE SCIENCE CLASSROOMS (TYPICAL OF 6 ROOMS)

- A. The video signal feeding the existing projection system in the room is to be interrupted and split between the projector and an HDBaseT video distribution system. An HDMI transmitter will utilize existing building IT infrastructure to patch through to an HDMI receiver located in a nearby IT closet. The output of the HDMI receiver will connect to an HDBaseT distribution amplifier. Again, existing IT infrastructure will be utilized to feed back to the associated room and connect to eight (8) wall mounted displays.
- B. The TVs IR remotes should be attached to the back of each display (Velcro) for easy access and storage. These remotes will serve as the only means of control for the wall displays.

1.4 BEAGLE BAND & CHOIR AUDIO SYSTEMS (TYPICAL OF 2 ROOMS)

- A. Wall mounted speakers in a Left/Right stereo configuration will be installed at the front of the room to provide audio coverage into the space.
- B. An amplifier, DSP/Control processor and other necessary electronics will be installed in a wall mounted rack at the front of room. A dedicated touch panel will be installed onto custom panel inside the rack for control.
- C. Two microphone inputs will be available at the front of the room along with a dedicated wall mounted stereo mic for recording. Recordings will be made onto the QSC Core. Installing contractor shall work with the school IT department to configure the Core to interface with the school's network to facilitate file retrieval from the QSC Core.
- D. Contractor to interface with existing video system to extract a program audio feed to incorporate into the new audio system.

PART 2 - PRODUCTS

2.1 AUDIO EQUIPMENT

- A. See attached appendices for specific Manufacturer and Model numbers for each system and subsystem.
- B. Cross reference all drawings to the equipment list as shown in the appendices. Equipment shown in the appendices is for reference and assistance in bidding the project, but it is possible that not all equipment will be reflected in the appendices. Contractor shall provide a complete and functional system as designed regardless of whether a specific component is specifically noted in the Appendix.
- C. All equipment shall be new and shall be the manufacturer's newest and most current version of the product.
- D. Following are general categories of equipment that will form the system. See drawings for quantities and sizing of all equipment.
 - 1. Equipment Racks
 - a. Full size (44 RU) gang and stand-alone racks
 - b. Wall-mounted equipment racks
 - c. Desktop equipment racks
 - d. Podium/lectern mounted equipment racks
 - 2. Power sequencing and distribution
 - a. Power sequencing panel
 - b. Power raceway
 - c. UPS devices
 - d. Distributed power outlets
 - e. Rackmounted Power & Lights
 - f. Rackmounted Power outlets
 - 3. Mixers and Mixing Consoles
 - 4. Loudspeakers
 - a. Line Array Speakers
 - b. Point Source Speakers
 - c. Digitally steered column arrays
 - d. Distributed Speakers
 - 1) Wall-mounted
 - 2) Ceiling
 - 5. Amplifiers
 - 6. Digital Signal Processors
 - a. Fixed input/output configuration
 - b. Expandable systems
 - c. Fixed internal architecture
 - d. Open/flexible internal architecture
 - 7. Wireless microphones
 - 8. Audio Sources & Outboard Equipment
 - 9. Control System – See specification section 274125 for Control System components.
- E. ALLOWANCES

1. Contractors shall include a \$500 allowance for changes that may be directed by the Consultant. Any allowance not used during the project shall be credited back to the client.
- F. CORDS AND ADAPTERS
1. Provide all necessary cords, adapters, cables, and interfaces to accept the input and output signals from the specified equipment to the rest of the system.
- G. CABLING & WIRE – Not all cabling types listed below will necessarily be used. Some cables may not be used in this project. Additional cabling requirements may be noted in related spec sections, drawings, and in the equipment appendix. All AV cabling in the project shall have a gray jacket to differentiate it from other building cables.
1. Mic/Line Wire: 22 AWG 2-conductor twisted pair with drain wire, foil shield, and overall jacket. Provide plenum version in all required spaces.
 - a. Belden 9451 (Plenum -- 9451P)
 - b. West Penn 454 (Plenum – D25454)
 2. Speaker Wire: 10 AWG 2-conductor twisted pair with overall jacket and waterproof jacket.
 - a. West Penn C210
 3. Speaker Wire: 12 AWG 2-conductor twisted pair with overall jacket. Provide plenum version in all required spaces.
 - a. West Penn 227 (Plenum – 25227)
 - b. Belden 6200UE (Plenum – XXXXXX)
 4. Speaker Wire: 16 AWG 2-conductor twisted pair with overall jacket. Provide plenum version in all required spaces.
 - a. West Penn 225 (Plenum – 25225)
 - b. Belden 6200UE (Plenum – XXXXXX)
 5. Cat6 Unshielded: Eight Conductor, 24 AWG, unshielded, twisted pair cable with overall jacket.
 - a. Belden 2412
 6. Cat6 Shielded: Eight Conductor, 24 AWG, shielded, twisted pair cable with overall jacket. Provide plenum version in all required spaces.
 - a. Extron XTP DTP 24/1000 (Plenum – XTP DTP 24P/1000)
 - b. Crestron DM-CBL-8G-NP (Plenum – DM-CBL-8G-P)

PART 3 - EXECUTION

- A. COORDINATION
1. Coordinate with all other building trades to facilitate a smooth and complete installation.
 2. Coordinate all power requirements and locations with the Electrical Contractor. Contractor shall provide appropriate direction to the Electrical Contractor pertaining to the location and quantity of electrical outlets serving Audio-Video Equipment
- B. EXECUTION
1. Provide a service loop of cable between any racks and the associated cabling/infrastructure on the nearby wall such that the rack can be moved away from the wall a sufficient distance to facilitate easy service of the rack and equipment.
- C. APPENDIX A, B, C, D – EQUIPMENT LISTS
1. See the attached appendices for the equipment lists for the Audio-Video Systems. Lists are provided as a reference. Confirm all quantities with the related drawings. In case of

conflict between the equipment lists and the related drawings, the contractor shall furnish the greater quantity or price impact. Note any quantity conflicts and bring to the attention of the consultant as appropriate.

Appendix A - Board Room AV			
Qty	Make	Model	Description
Speakers & Amplifiers			
24	QSC	AD-C6T-LP	6" Low-Profile Ceiling Loudspeakers (zones 1-4)
1	Powersoft	Mezzo 604 A	4-Channel Power Amplifier
Audio Inputs			
1	Shure	MXWAPT4	4-Channel Access Point Transceiver
2	Shure	MXW1	Bodypack Transmitter [presenter/teacher]
2	Shure	WL185	Lapel Condenser Microphone
1	Shure	MXW2/SM58	Handheld Transmitter
1	Shure	MXW8	Wireless Desktop Base Transmitter [presentation podium]
1	Shure	MX410/S	10" Shock-Mounted Gooseneck Microphone - Supercardioid
1	Shure	MXWNCS4	4-Channel Networked Charging Station
1	Shure	MXCWAPT	125-Channel Access Point Transceiver
16	Shure	MXCW640	Wireless Conference Unit [Board Members]
16	Shure	MXC416DF/C	Cardioid Dual-Flex Gooseneck Microphone
2	Shure	MXCWNCS	10 Bay Battery Charger
Video Distribution			
2	Visionary Solutions	DuetE-WP-H	A/V Encoder (Wall Plate), 4K UHD over IP cinema quality ultra-low latency visually lossless switch matrix routable, with built-in video wall functionality; POE; AES67/Dante, HDMI Only
2	Visionary Solutions	DuetE-2	A/V Encoder, 4K UHD over IP cinema quality ultra-low latency visually lossless switch matrix routable, with built-in video wall functionality, Expansion Ethernet Port; POE+; Single Port AES67/Dante
4	Visionary Solutions	DuetD-2	A/V Decoder, 4K UHD over IP cinema quality ultra-low latency visually lossless switch matrix routable, with built-in video wall functionality; Expansion Ethernet Port; POE+; Single Port AES67/Dante
Video Streaming			
2	QSC	NC-20x60	20x60 Zoom Lens PTZ camera
1	Epiphan	Pearl-Mini	Recording, streaming, w/ 7" preview/touch screen

1	Comprehensive	USB3-AB-6ST	USB 3.0 A Male To B Male Cable 6ft. [connection between streaming and Core 8 Flex]
Video Projection			
3	Epson	V11HA25020	7000 lumen projector w/ lens, PowerLite L730U
3	Chief	SYSAUW	Suspended Ceiling Projector System, White
3	Dalite	39157LS	16:9, 133" diagonal, HD Progressive 1.1 Motorized Projection Screen
3	Comprehensive	MHD18G-3PROWHT	MicroFlex Pro AV/IT Certified 4K60 18G High Speed HDMI Cable with ProGrip White 3ft
DSP & Control			
1	QSC	CORE 8 FLEX	Unified Core with 8 local audio I/O channels, 64x64 network I/O channels with 8x8 Software-based Dante license included, USB AV bridging, dual LAN ports, VoIP telephony, 8x8 GPIO, 8 AEC processors, Half-size 1RU.
1	QSC	SLQUD-8N-P	Q-SYS Core 8 Flex, Core Nano, NV-32-H (Core Capable). UCI Deployment Software License, Perpetual.
1	QSC	SLQSE-8N-P	Q-SYS Core 8 Flex, Core Nano, NV-32-H (Core Capable). Scripting Engine Software License, Perpetual.
2	QSC	TSC-70-G3	Q-SYS 7" PoE Touch Screen Controller for In-Wall Mounting. Color - Black only
3	Global Cache	IP2CC-P	Ethernet to contact closure, POE
1	Netgear	GSM4230UP	M4250 26G4F POE++ MN network switch
Equipment Rack			
1	Contractor	Relocated	Relocate existing wall rack to new specified location in the room
1	Middle Atlantic	SS	1 RU Sliding Rackshelf [WL mic charger & video streamer]
1	Middle Atlantic	SS4-23VTR	4 RU Sliding Rackshelf, 23 Inches Deep [Conference WL chargers]
1	Comprehensive	CPWR-QC	USB Wall Charger with Quick Charge 2.0 technology 18W/5V/2.4A [for charging MXW8]
1	Comprehensive	USB2-AA-6ST	USB 2.0 A to A Cable 6ft [for charging MXW8]
Labor			
1			Programming
1			Engineering/PM

1			Custom Plates
1			Lift Rental
Wiring			
1			Network wire
1			Control wire
1			Mic wire
1			Speaker Wire

Product equipment list is provided as a reference. Report any conflicts in quantities to the consultant. Some products may not be listed above. See project drawings for items used, part numbers, quantities, and further details.

Appendix B - Science Rooms [typical of 6 rooms]			
Qty	Make	Model	Description
Video Distribution			
1	Atlona	AT-UHD-EX-70C-TX	(Tx Only) 4K/UHD HDMI Over HDBaseT Transmitter with Control and PoE
1	Atlona	AT-UHD-CAT-8	4K/UHD 8-Output HDMI to HDBaseT Distribution Amplifier
9	Atlona	AT-UHD-EX-70C-RX	4K/UHD HDMI Over HDBaseT Receiver with Control and PoE
8	LG	50US340C0UD	50" US340C Series UHD Commercial TV, rs232, Speakers, Tuner
8	Chief	TS318SU	Medium THINSTALL™ Dual Swing Arm Wall Display Mount - 18" Extension
8	Chief	FHB5034	FUSION and Thinstall Hardware Kits
10	Comprehensive	MHD18G-3PROWHT	MicroFlex Pro AV/IT Certified 4K60 18G High Speed HDMI Cable with ProGrip White 3ft
Labor			
1			Programming
1			Engineering/PM
1			Custom Plates
1			Lift Rental
Wiring			
1			Network wire
1			Control wire
1			Mic wire

1			Speaker Wire

Product equipment list is provided as a reference. Report any conflicts in quantities to the consultant. Some products may not be listed above. See project drawings for items used, part numbers, quantities, and further details.

Appendix C - Band & Choir Rooms Audio [Typical of 2 Rooms]			
Qty	Make	Model	Description
Speakers & Amplifiers			
2	QSC	E112	12" 2-way, externally powered, live sound-reinforcement loudspeaker. Color - Black.
2	QSC	E12YM	Powder coated steel yoke for mounting the E12 or E112 horizontally or vertically.
1	Powersoft	Mezzo 602 A	2-Channel Power Amplifier, 300W@8 ohms per channel
Audio Inputs			
1	Atterotech	unD6IOBT	4x2 Channel Dual Gang US, Dante/AES67 Wall Plate 2 Mic/Line In (XLR), RCA, 3.5 mm I/O, PoE (white and black faceplates included).
1	Audio Technica	BP4029	Stereo shotgun microphone
1	Atlas IED	AD-11BE	Surface mount female mic flange, black
1	Atlas IED	AD19BE	Extension tube, 45 degree angle, black
1	Shure	SM58-LC	Dynamic cardioid microphone
1	K&M	210/9	Mic Stand w/ Telescoping boom -- black
1	Proco	MN-25	25' Mic Cable
DSP & Control			
1	QSC	CORE 8 FLEX	Unified Core with 8 local audio I/O channels, 64x64 network I/O channels with 8x8 Software-based Dante license included, USB AV bridging, dual LAN ports, VoIP telephony, 8x8 GPIO, 8 AEC processors, Half-size 1RU.
1	QSC	SLQUD-8N-P	Q-SYS Core 8 Flex, Core Nano, NV-32-H (Core Capable). UCI Deployment Software License, Perpetual.
1	QSC	SLQSE-8N-P	Q-SYS Core 8 Flex, Core Nano, NV-32-H (Core Capable). Scripting Engine Software License, Perpetual.
1	QSC	TSC-70-G3	Q-SYS 7" PoE Touch Screen Controller for In-Wall Mounting. Color - Black only

1	Netgear	GSM4212UX	8x1G Ultra90 PoE++ 802.3bt 720W 2x1G and 2xSFP+ Managed Switch
Equipment Rack			
1	Middle Atlantic	DWR-12-22	12 RU pivoting wall rack
1	Middle Atlantic	LVFD-12	12 RU vented front door, 64% open
1	Middle Atlantic	PD-915R-SP	Rackmount Power, 9 Outlet, 15A with Series Surge Protection
1	Middle Atlantic	LT-CABUTL-SINGLE	Single LED Work Light
1	Middle Atlantic	UD2	2 RU utility rack drawer
Labor			
1			Programming
1			Engineering/PM
1			Custom Plates
1			Lift Rental
Wiring			
1			Network wire
1			Control wire
1			Mic wire
1			Speaker Wire

Product equipment list is provided as a reference. Report any conflicts in quantities to the consultant. Some products may not be listed above. See project drawings for items used, part numbers, quantities, and further details.

END SECTION 27 41 16

SECTION 27 41 25 AUDIO-VIDEO CONTROL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Some information contained in this specification is also found on the associated drawings and in the following specification sections. Work shown on drawings or described in other spec sections is deemed to be in both.
- B. Related Specification Sections:
 - 1. 27 41 00 – General Conditions for Audio-Video Systems
 - 2. 27 41 10 – Training for Audio-Video Systems
 - 3. 27 41 16 – Integrated Audio-Video Systems

1.2 GENERAL DESCRIPTION

- A. BOARD ROOM
 - 1. Two touch panels will be wall mounted in the room in locations where control is available in each half of the room when the room is divided into two spaces.
 - 2. A web-based control interface will be available for room control via a School laptop.
 - 3. A single QSC Core will be facilitating control for the entire room in all configurations.
- B. BAND & CHOIR
 - 1. A single touch panel will be installed for each room in the room's equipment rack for control.
 - 2. Each room will have their own QSC Core to facilitate room control.

1.3 BOARD ROOM FUNCTIONAL DESCRIPTION

- A. Touchpanels
 - 1. The QSC control systems in this room will handle the control of audio output routing, microphone volume controls, source volume controls, and recording tools. The control system touchpanel must be simple and minimal. The goal is to present as few controls as possible to the end user, while still giving the necessary controls. Volume levels should be restricted within the software to an effective usable range for each audio input.
 - 2. The touchpanels should always be in sync so that the status is the same on all panels (in-room and virtual) all the time. This should include any iPads or computers that login to control the system. The control system should provide true live feedback from all devices and settings across all control panels as much as possible. If live feedback is not possible then the system should poll the associated devices at a suitable interval to obtain status.
 - 3. The system shall be programmed so that a user can log in to the system with a mobile device (computer or tablet) and operate the same controls that are on the in-room touch panel.

4. Room Configuration/Setup – The User should be able to access a special menu for determining how the room will be utilized (divided or a large single room). If the room is to be divided, the wireless microphones should be “assigned” to each room in such a way that microphone controls should not be available if it is not assigned to the room.
5. Audio controls – Full level and muting controls should be available to the User for each audio source dependent on room configuration.
6. Video controls – Full video routing controls should be made available to the User based on the room configuration.
7. Streaming/Recording appliance – There is no intention to create a control interface for the video streaming interface since this device has a touch panel interface of its own as well as a comprehensive web control interface.
8. There is no interface with lighting controls in this system.

1.4 BAND AND CHOIR ROOMS

- A. Touch panels
 1. The QSC control systems in these rooms are intended to handle audio control only. Control of existing video systems that may already be installed in the space is outside of the scope of this project if doing so would incur additional cost to the School.
 2. The touch panels should offer full level control of all connected sources to be heard through the speakers in the room. Additional level and full recording controls should be created to allow for independent level mixing for the audio recording.
 3. There is no interface with lighting controls in this system.

1.5 PROGRAMMER CERTIFICATION

- A. All Control System programming is to be performed by the Contractor. Contractor must have a factory trained and experienced programmer on staff with at least 2 years of experience programming QSC systems. Programmer must have successfully completed Q-SYS Level 2 Training and QSYS Control Training 201. Contractor may also wish to subcontract the services of an independent programmer.
- B. Contractors bidding this section must have a programmer with Q-SYS Level One Training and Q-SYS Control Training 101 on staff. Failure to have a certified programmer will be grounds for disqualification of a bidder. Verification of programmer status will be required during the post-bid interview. Programming may be performed by a third-party programmer or may be performed by a staff programmer, but the AV contractor will have a Level 1 and Control 101 programmer on staff for program updates, firmware updates, and long-term maintenance of the system

1.6 PROGRAMMING SUBMITTALS

- A. All Control System programming and touchpanel layouts are to be submitted at the same time as the project shop drawings. Touchpanel layouts for the control system program are to be complete and fully labeled, representing all of the touchpanels for the entire project (auditorium and band room).
- B. Programming of touchpanels is to be submitted to the Consultant prior to writing of code.

- C. Bids shall allow for at least two (2) revisions of touch panel layouts.
- D. All touchpanel programming and control processor programming shall be completed prior to the beginning of installation.
- E. Contractor shall be responsible for all programming and implementation of the Control System.
- F. The client or end-user may provide some template files to use as the basis of the layout for the programming.

PART 2 - PRODUCTS

2.1 CONTROL SYSTEM EQUIPMENT

- A. See appendices for specific Manufacturer and Model numbers for each system and subsystem.
- B. Cross reference all drawings to the equipment list as shown in the appendices. Contractor shall provide a complete and functional system as designed regardless of whether a specific component is specifically noted in the Appendix.
- C. All equipment shall be new and shall be the manufacturer's newest and most current version of the product.

2.2 REQUESTS FOR ALTERNATE EQUIPMENT

- A. Procedures for alternate equipment requests are outlined in section 274100.

PART 3 - EXECUTION

3.1 PROGRAMMING UPDATES

- A. Bids shall be inclusive of two (2) minor programming updates after substantial completion of the project and once the owner has had the chance to use the system on a daily basis. These updates are not intended as a re-write of any panels, rather they are intended to correct any labelling issues, add/remove any needed buttons from a given panel, and make other minor updates to optimize the use of the panels.

3.2 REJECTION OF PROGRAMMING

- A. If the touchpanel layouts or processor programming are deemed unacceptable by the Consultant, client, end user, or architect the Contractor shall take whatever means necessary to provide acceptable programming without claim for additional payment.

END OF SECTION 27 41 25

TASK	FURNISH	INSTALL
AC POWER, CONDUIT, RACEWAYS, ELECTRICAL BACKBOXES, JUNCTION BOXES, PULL BOXES, CABLE TRAYS, FLOOR BOXES AND OTHER CABLE INFRASTRUCTURE	EC	EC
ROUGH OR FINISHED TRIM, CASEWORK, MILLWORK, EQUIPMENT CAVITIES, STRUCTURAL WORK, WHITE BOARDS, TACK BOARDS, OTHER NON-ELECTRONIC DISPLAY SURFACES, OR SPECIAL CONSTRUCTION	GC	GC
CEILING MOUNTED LOUDSPEAKERS	AV	AV
CEILING MOUNTED LOUDSPEAKER CABLE	AV	AV
AUDIOVISUAL CABLE	AV	AV
AUDIOVISUAL EQUIPMENT AND RACK	AV	AV
TERMINATIONS OF AUDIOVISUAL CABLE	AV	AV
VOICE/DATA NETWORK CABLE, CATV-CAT6 CABLE	DC	DC
VOICE/DATA NETWORK AND NETWORK ELECTRONICS	DC	DC
PRESENTER COMPUTER	O	O
AUDIOVISUAL EQUIPMENT WALL MOUNTS OR CEILING MOUNTS REQUIRED TO FASTEN AUDIOVISUAL EQUIPMENT TO GC PROVIDED SUPPORT SYSTEMS	AV	AV
UNISTRUT, ANCHORS, OR OTHER MATERIALS REQUIRED TO ATTACH AUDIOVISUAL EQUIPMENT MOUNTS TO STRUCTURE, INCLUDING FLAT PANEL VIDEO DISPLAY BLOCKING FOR WALL MOUNTED DEVICES	GC	GC
PRODUCTION CONSOLE, OTHER TECHNICAL FURNITURE	GC	GC
CABLE MANAGEMENT HARDWARE AT RACKS AND CONSOLES	AV	AV
FLOOR BOXES INCLUDING INTERNAL BRACKETS, TEMPORARY COVERS, AND PERMANENT COVERS	EC	EC
CUSTOM COVER PLATES FOR FLOOR BOXES, BACK BOXES	AV	AV

GENERAL DIVISION OF RESPONSIBILITIES

AV - AUDIO VIDEO CONTRACTOR
GC - GENERAL CONTRACTOR
DC - DATA COMMUNICATIONS CONTRACTOR
EC - ELECTRICAL CONTRACTOR
FC - FURNITURE CONTRACTOR
O - OWNER

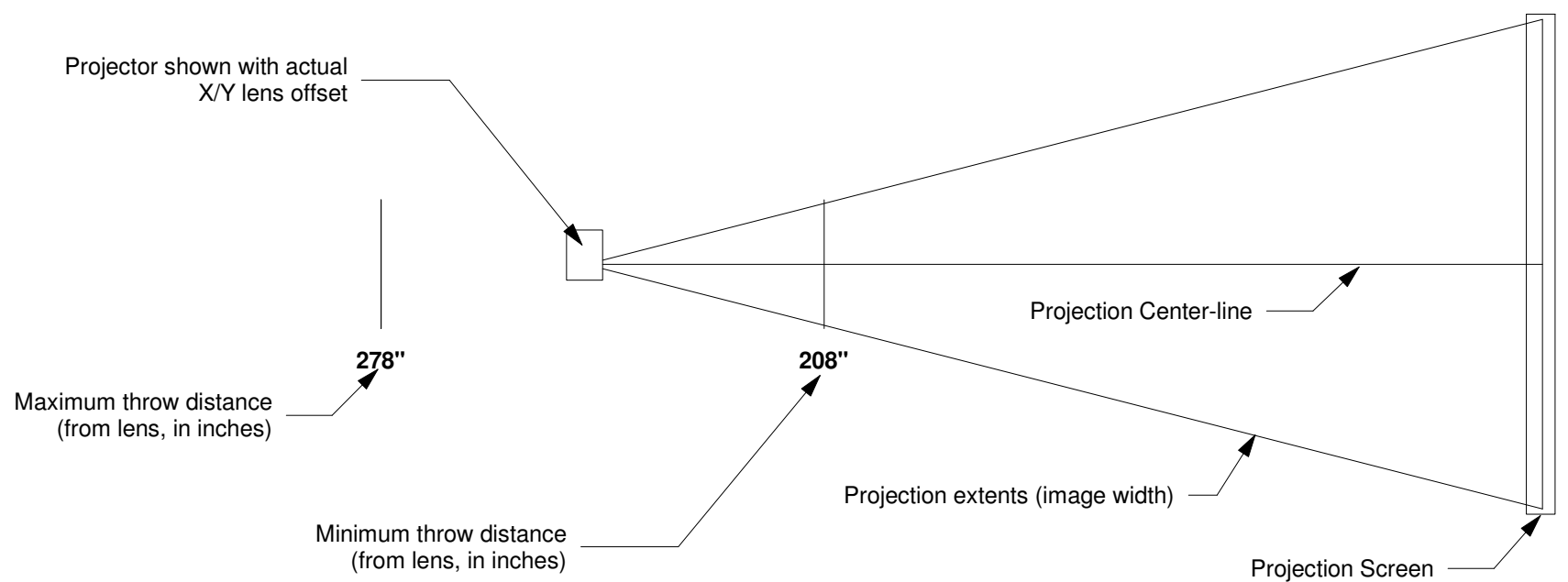
The detail drawing below shows a representation of the calculated throw range for the specified projector in each room layout's reflected ceiling plan (RCP).

**NOTE: This detail is provided as a reference ONLY.

All throw distances are based off of the center of the lens to the center of the projection screen.

Due to the variance in the outer edges of the actual lens optics, it is always a best practice to place the projector as closer to the center of the throw range as possible (also referred to as the "sweet spot").

Minimum and maximum extents are shown to define the possible locations of the projector should any mechanical issues in the field make it necessary to move the projector as a last resort.



Installation teams shall always verify these calculations prior to any installation activities as a secondary process check.

Prior to installation, these items should be reviewed and confirmed:

- The projected light path is clear from interference, and/or any obstructions.
- The area for the projector to be installed, physically, is clear of any mechanical obstructions, or items that will hinder the placement of the projector.

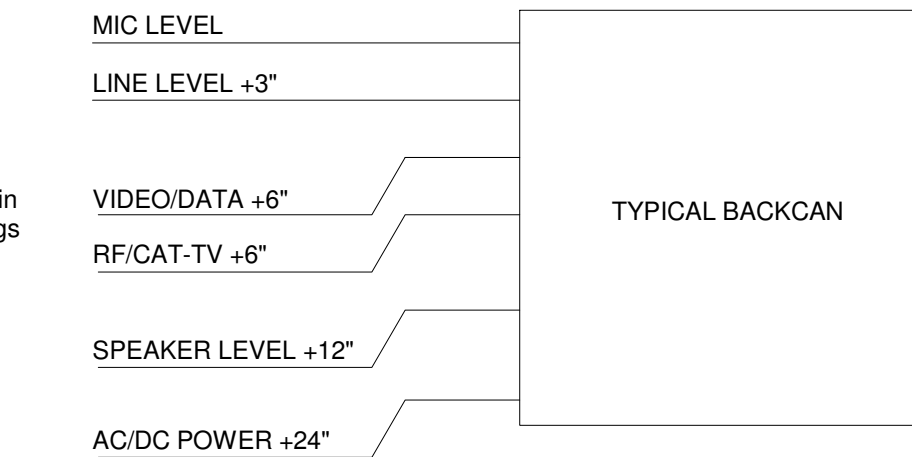
PROJECTOR THROW RANGE DETAIL (RCP ONLY)

CONDUIT SPACING GUIDELINES

NOTES:

1. All conduit spacing referenced from mic level signals.

2. All distances are minimum required spacing. Where it is not possible to maintain adequate separation, keep parallel groupings to an absolute minimum using 90 degree crossings wherever possible or necessary.



CONDUIT SEPARATION TOLERANCES

FAMILY	SIGNAL TYPE
A	Audio
B	Broadband
C	Video
D	DVI Video
E	Digital Media
F	Fiber Optic
G	AES/EBU
H	HDMI
I	IR/S
J	Optical Audio
K	Control Network
L	Serial
M	Microphone
N	Network
O	I/O
P	Power
Q	Component Video
R	Relay
S	Speaker
T	DMX
U	UTP Signal
V	RGB Signal
W	Digital Video
X	Antenna
Y	Y/C S-Video
Z	SDI Video

CABLE LABEL DETAIL	
A 014	
Cable Family	Cable Number

SHRINK WRAP DETAIL	
Minimum 1/2" Shrink Tube over all open cable.	
1 inch separation from Shrink Tube end. Standard cable orientation shown. Label must be readable from top of connector.	

NOTES:

- All exposed cable strip-points must have heat-shrink tubing applied.
- Consult project documents for specific colors if required.
- Consult project documents for "Clear" heat-shrink requirements on cable labels.

CABLE LABELING

SYMBOL	GENERAL ABBREVIATIONS
AFF	ABOVE FINISHED FLOOR
AVC	AUDIO VISUAL CONTRACTOR
EC	ELECTRICAL CONTRACTOR
EXS	EXISTING EQUIPMENT
FBO	FURNISHED BY OTHERS
FL	FLUSH MOUNT
FOH	FRONT OF HOUSE
GC	GENERAL CONTRACTOR
LAN	LOCAL AREA NETWORK

GENERAL ABBREVIATIONS

The Electrical Contractor or "EC" will be responsible for the following:

*All high voltage wiring/terminations contained within this drawing set. Scope includes, but is not limited to:

PROVISION AND INSTALLATION OF:

*Conduit, gang boxes, pull boxes, and pull string required for the audio and video systems.

*All junction boxes and in-wall enclosures required for the audio communications system. Sizes of all junction boxes and enclosures will be indicated on the audio/video drawings. All junction boxes, pull boxes, and wall mounted enclosures are to be clearly labeled with permanent marker. Refer to audio/video drawings for labeling.

*AC power circuits, outlets, and interconnection of power to each video projector location.

*All AC power circuits, outlets, power panels and interconnection of power to the sound equipment racks.

*Wherever possible, all audio circuits shall be supplied from the same A/V electrical panel.

*The designated A/V power panel (if appropriate to the project) shall not furnish power to any other equipment.

*All outlets that service the stage (if there is a stage area) shall be supplied from the same A/V electrical panel.

*All outlets that service the control booth (if there is a control booth) shall be supplied from the same A/V electrical panel.

*Wherever possible, all outlets that service the ceiling mounted video projectors shall be supplied from the same A/V electrical panel.

*All high voltage wiring and terminations for projector screens and up/down switches

INSTALLATION OF:

*Installation of the following items which are provided by the A/V contractor: (Unless specifically noted)

.
. .
. .
. .

CONDUIT GUIDELINES:

*EMT should be used when possible.

*The EC shall provide pull boxes where appropriate.

*The EC shall provide pull lines in all conduit.

*All conduit to be sized by the EC in accordance with all applicable federal and local codes.

*All conduit paths, routing and installation methods shall be verified with architect and/or consultant prior to installation.

*Use of flex conduit is prohibited without proper approval from the AV contractor.

*The overall AV system requires extensive conduit to be furnished and installed by the EC per the specifications contained within this drawing set. If site conditions prevent conduit to be installed for any particular system(s), or if any conduit is deleted by the EC, the EC shall (at no additional cost) furnish and install all plenum wire that is to be contained within said conduit.

ADDITIONAL RESPONSIBILITIES

CONDUIT GENERAL NOTES FOR ELECTRICAL CONTRACTOR

- EC to provide and install all conduit, backboxes, gutter boxes, terminal cans, raceways, cable trays and access panels unless otherwise noted.
- EC to install pull lines in all conduits.
- EC shall not substitute conduit type without written permission from the consultant.
- Conduit runs are drawn for illustration only. Actual conduit paths & interim boxes to be determined by the EC.
- EC may increase the size of junction boxes, gutters & conduit as needed in the event that a conflict exists.
- EC to provide and install all high voltage (120V - 240V) cable and fixtures unless otherwise noted.
- Install applicable size pull boxes after 270 deg. of bend or if conduit run is more than 100'.
- Label all conduit for destinations such as box numbers and/or room locations.
- Deburr all rough edges to prevent cable abrasion.
- Ensure all conduits are free from debris & water.
- Ensure all in ground pull boxes and vaults are weather proof & free of debris & water.
- Ensure conduit is electrically isolated from all equipment racks & enclosures.

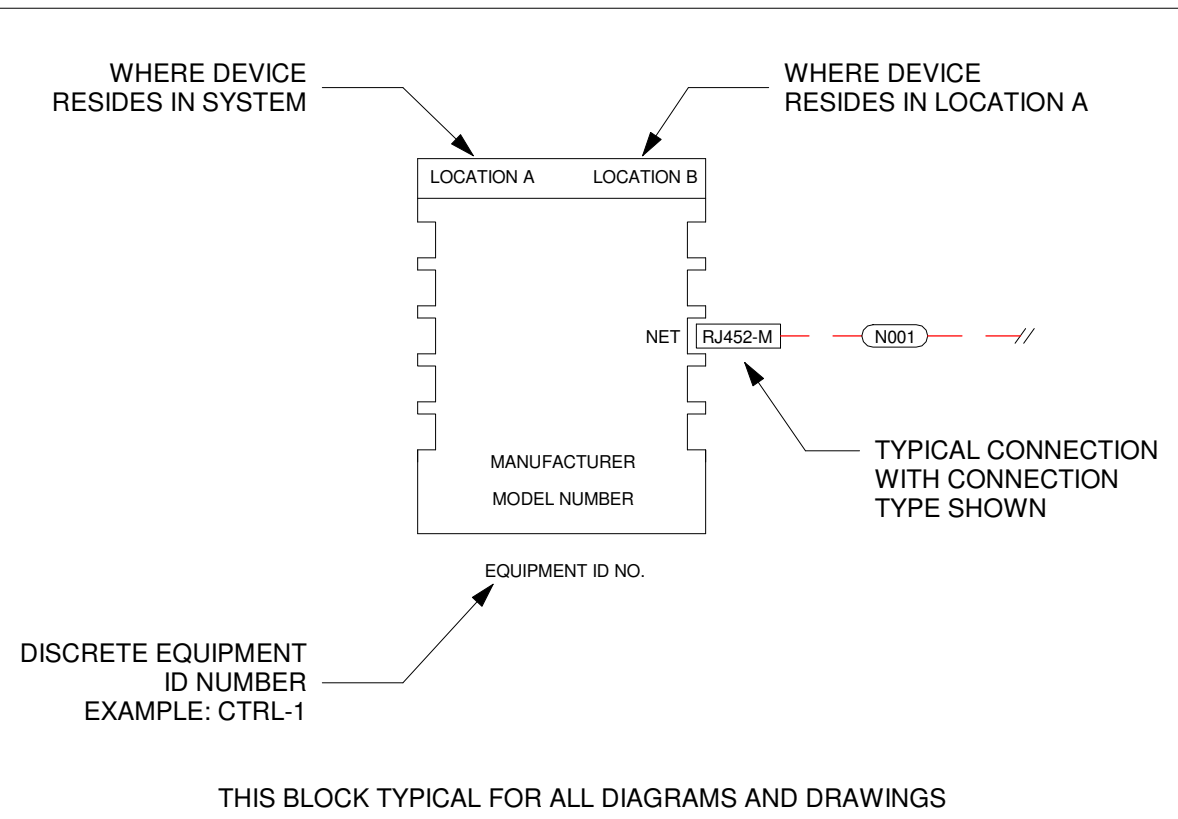
SYMBOL	CONDUIT SIZE	SYMBOL	CONDUIT TYPES
1	3/4"	EMT	ELECTRICAL METALLIC TUBING
2	1"		
3	1 1/4"	PVC	POLY-VINYL CHLORIDE
4	1 1/2"		
5	2"	RGD	GALVANIZED RIGID METAL
6	3"	FLX	FLEXIBLE METALLIC TUBING
7	4"		
8	6"	PLS	FLEXIBLE PLASTIC TUBING
9	8"		
10	12"	WMT	WIRE MOLD TRACK
11	6" CABLE TRAY	IMC	INTERMEDIATE METAL CONDUIT
12	12" CABLE TRAY	EXST	EXISTING CONDUIT
13	NO CONDUIT		

CONDUIT NOTES & COORDINATION

PREFIX	EQUIPMENT NAME ABBREVIATIONS
A	AUDIO AMPLIFIER
ACD	AUDIO CASSETTE PLAYER/RECORDER
ADA	AUDIO DISTRIBUTION AMP
ADT	ANTENNA DISTRIBUTION
ALS	ASSISTED LISTENING SYSTEM
AMN	AUDIO MONITOR
ANT	ANTENNA
APA	AUDIO PRE-AMP
APB	AUDIO PATCHBAY
ASP	ANTENNA SPLITTER
ATX	AUDIO TRANSFORMER
AVR	AUDIO-VIDEO RACK
CAM	VIDEO CAMERA
CCU	CAMERA CONTROL UNIT
CDC	INTEGRATED CD & CASSETTE PLAYER/RECORDER
CDP	CD PLAYER
CDR	CD RECORDER
CFR	CARD/MODULE FRAME
CGN	VIDEO CHARACTER GENERATOR
CMP	AUDIO COMPRESSOR
COM	PRODUCTION COMMUNICATIONS
CON	DEVICE CONTROLLER
CPI	COMPUTER INTERFACE
CPU	COMPUTER
CS	INTEGRATED CEILING LOUDSPEAKER & BACKCAN
CTL	CONTROL SYSTEM
CVT	VIDEO FORMAT CONVERTER
DMR	DIGITAL MESSAGE REPEATER
DPB	DATA PATCHBAY
DS	DIGITAL SIGNAGE PLAYER
DSP	DIGITAL SIGNAL PROCESSOR
DSW	DATA NETWORK SWITCH
DVC	DIGITAL VIDEO CASSETTE PLAYER/RECORDER
DVD	DIGITAL VIDEO DIS PLAYER/RECORDER
DVS	DIGITAL VIDEO SCALER
EFX	AUDIO EFFECTS PROCESSOR
EQU	AUDIO EQUALIZER
ER	EQUIPMENT RACK
FB	FLOOR BOX
GAT	AUDIO GATE
GUI	GRAPHICAL USER INTERFACE
JB	JUNCTION BOX
LJ	LIGHTING JUNCTION BOX
LNCR	LIGHTING NETWORK CONTROL RACK
LTC	LIGHTING CONTROL
LTD	LIGHTING DIMMER
LTF	LIGHTING FIXTURE
MIC	WIRED MIC
MIX	AUDIO MIXER
MJ	MIC JUNCTION BOX
MON	VIDEO MONITOR

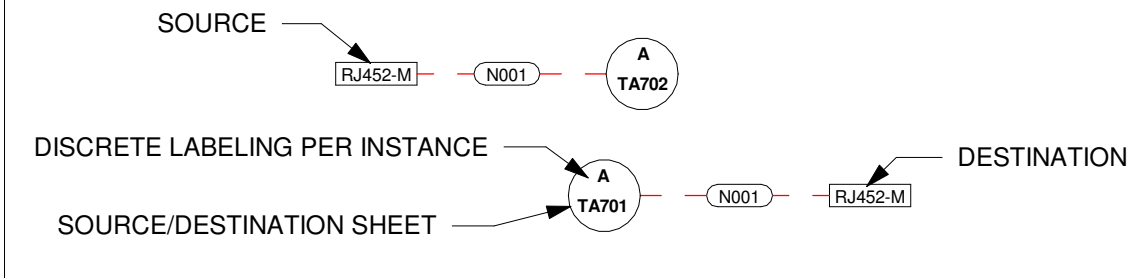
EQUIPMENT NAME ABBREVIATIONS

PREFIX	EQUIPMENT NAME ABBREVIATIONS
MP	MIC PLATE
MPA	MIC PRE-AMP
MSP	MIC SPLITTER
PCM	PRODUCTION COMMUNICATIONS MASTER
PLS	PLASMA SCREEN
PRB	ACTIVE PRESS BOX
PRJ	VIDEO PROJECTOR
PSU	POWER SUPPLY UNIT
PTC	PAN TILT CONTROLLER
PTU	PAN TILT UNIT
PWR	AC POWER DISTRIBUTION
RMT	REMOTE CONTROL
RP	RACK PANEL
RX	SIGNAL RECEIVER
SCR	PROJECTION SCREEN
SEQ	POWER SEQUENCING DEVICE
SJ	SPEAKER JUNCTION
SP	LOUDSPEAKER ENCLOSURE
STB	STAGE BOX SUB SNAKE
TPI	TOUCH PANEL INTERFACE
TSG	TEST SIGNAL GENERATOR
TVA	MATV DISTRIBUTION AMP
TVC	MATV COMBINER
TVD	MATV DE-MODULATOR
TVM	MATV MODULATOR
TVP	MATV HETERDYNE PROCESSOR
TVR	TELEVISION RECEIVER
TVS	MATV SPLITTER
TVT	MATV TAP
TX	SIGNAL TRANSMITTER
VC	VOLUME CONTROL
VCD	VIDEO CASSETTE PLAYER/DVD COMBO
VCR	VIDEO CASSETTE PLAYER/RECORDER
VDA	VIDEO DISTRIBUTION AMP
VDR	VIDEO DISC RECORDER
VJ	VIDEO JUNCTION BOX
VMX	AV MIXER
VP	VIDEO PLATE
VPB	VIDEO PATCHBAY
VSC	VIDEO SCAN CONVERTER
VSG	VIDEO SYNC GENERATOR
VSP	VIDEO SIGNAL PROCESSOR
VSW	VIDEO SWITCHER
VTX	VIDEO TRANSFORMER
WVF	WAVE FORM/VECTOR SCOPE MONITOR
WM	WIRELESS MICROPHONE
WP	WALL PLATE
WRX	WIRELESS RECEIVER
WTX	WIRELESS TRANSMITTER
XVR	AUDIO CORSSOVER

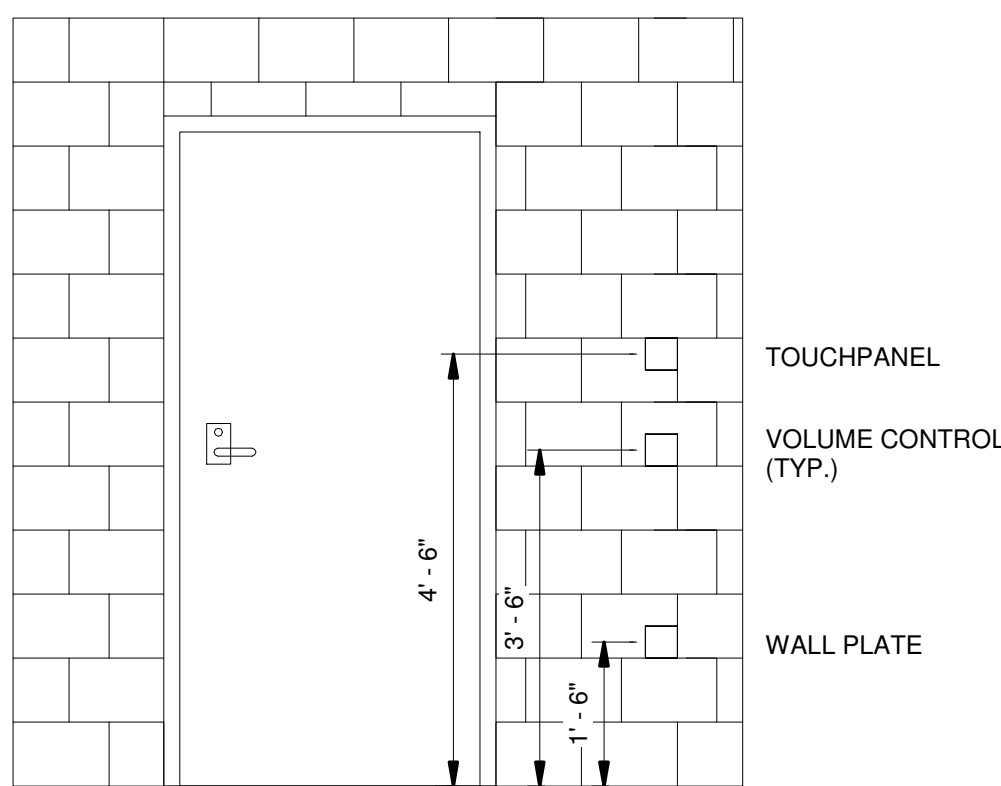


SCHEMATIC DEVICE KEY

THE FOLLOWING ILLUSTRATION SHOWN IS USED WHEN A CONNECTION NEEDS TO BE BROKEN AND CONTINUED WITHIN A DRAWINGS SHEET. AN INTRA/SHEET FLAG WILL BE USED AND NUMBERED (LABELED) TO SHOW THE CONNECTION IS CONTINUED ELSEWHERE ON THE SHEET.



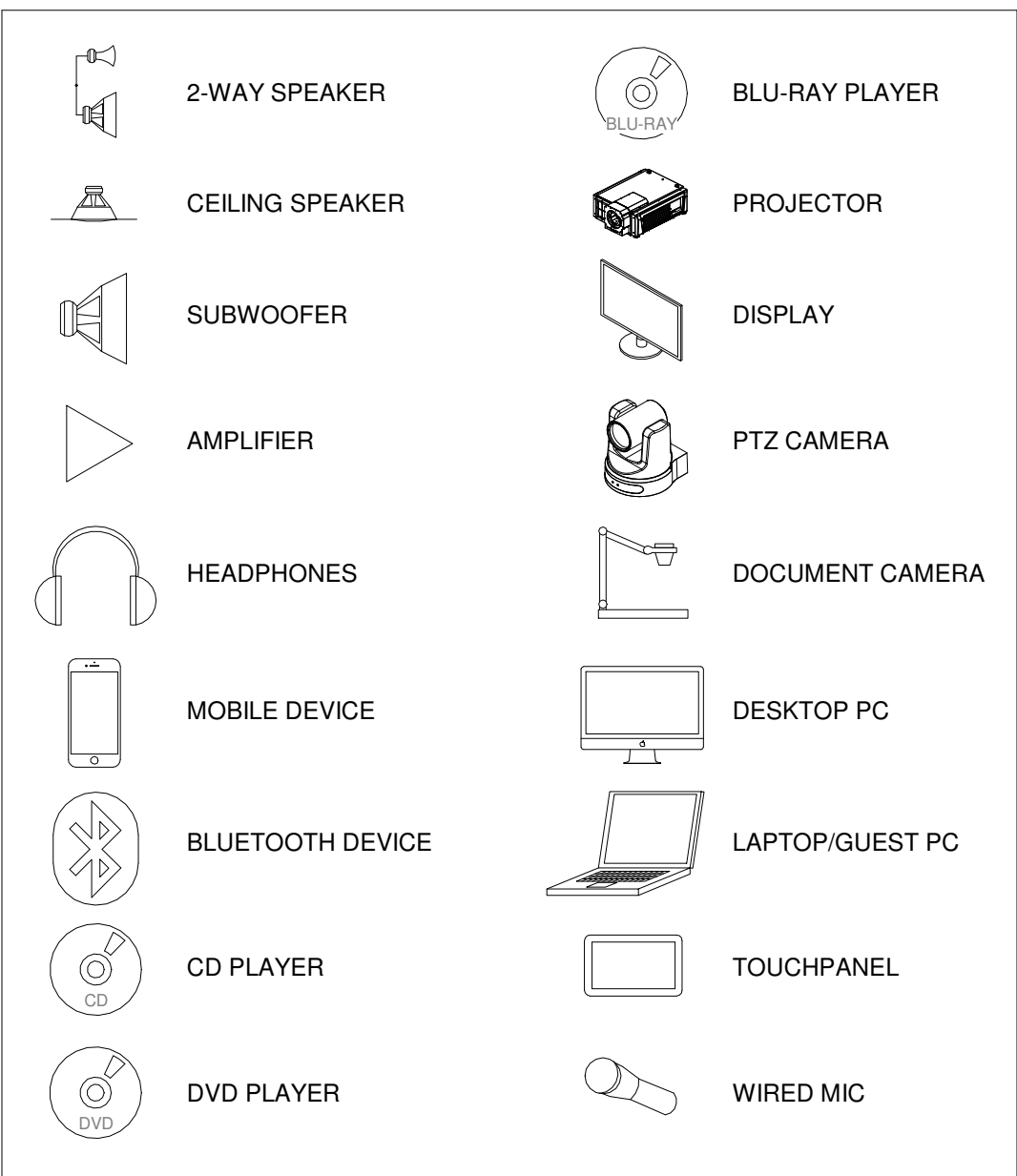
CABLE CONNECTION FLAGS



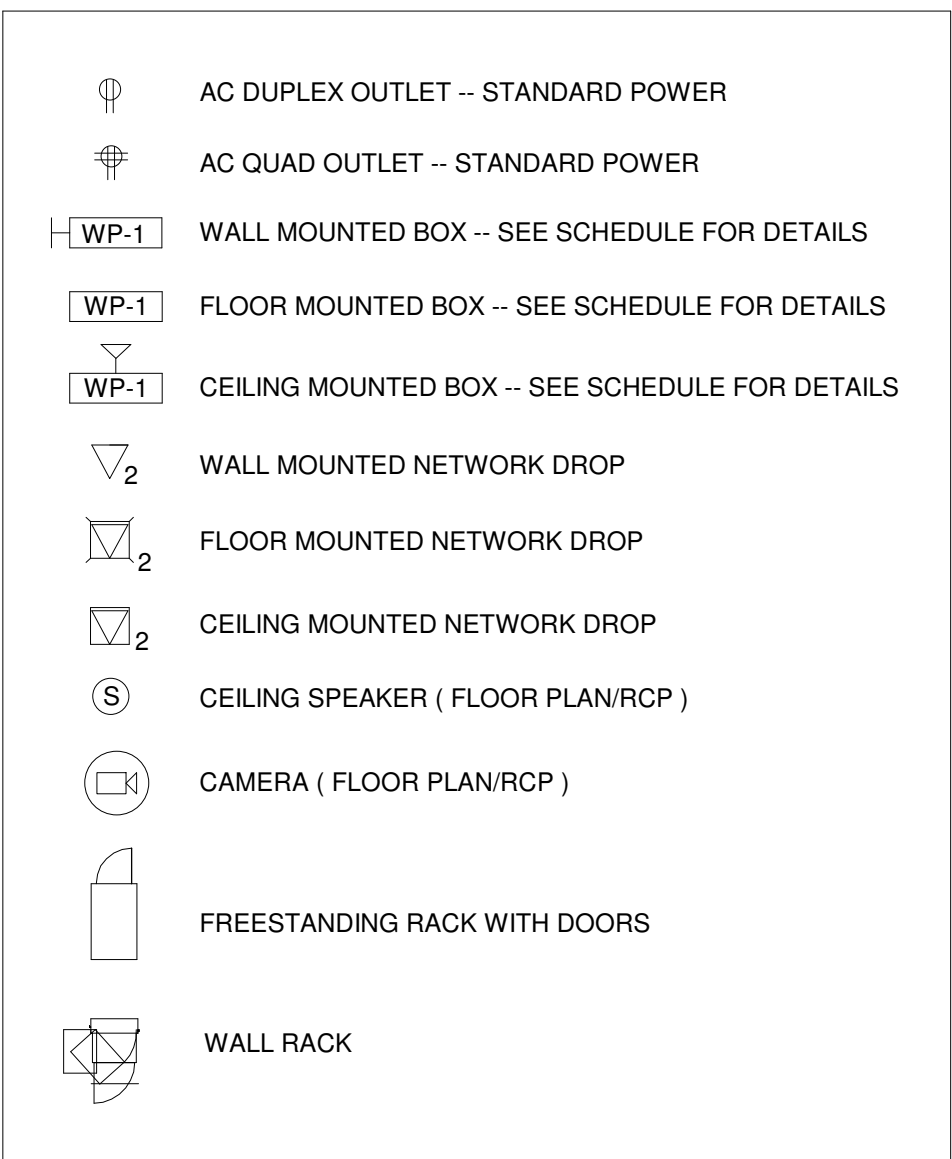
NOTE: ALL MOUNTING HEIGHTS FOR AVL BOXES IN THIS PROJECT MEASURED TO CENTER OF BOX

AV MOUNTING HEIGHT DETAILS

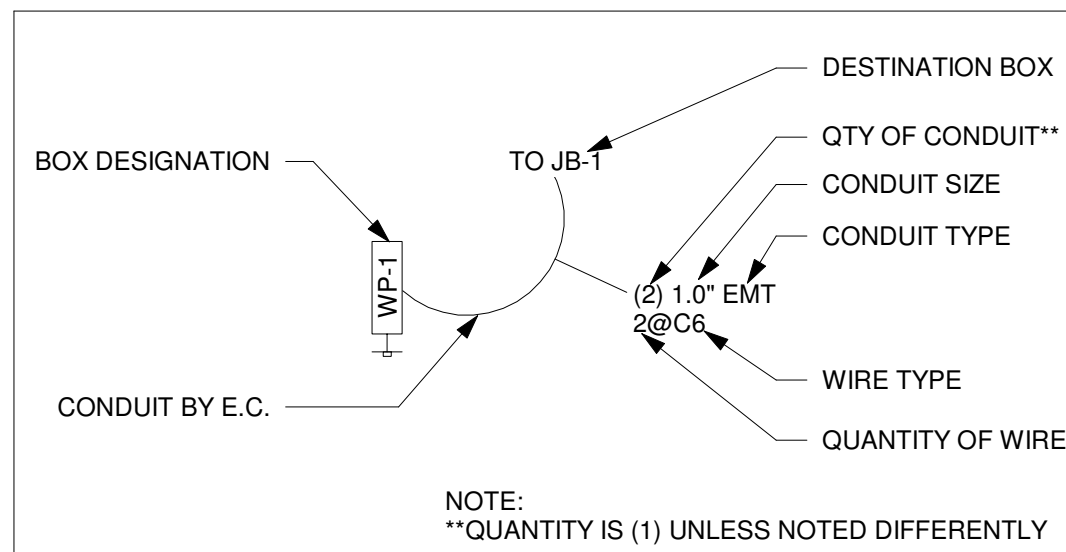
CABLE TYPES - AV					
CODE	DESCRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CN	CRESNET CONTROL WIRE	1502R	77350	CRESCOM	CRESTRON CRESNET-NP-xx-xxxx
D	DIGITAL MIC/LINE WIRE	1801B	DA252401	241PDIGICOM	
DM	DIGITAL MEDIA WIRE/DTP WIRE	1212	4245	CAT5	CRESTRON DM-CBL-8G-NP-SP1000
DMX	DMX LIGHTING CONTROL CABLE	DLC224	D2402	241PDIGICOM	
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	9913	810	RG8	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	CRESTRON CBL-HD-x
IC	INTERCOM - 2 PAIR 18 GA W/ SHILED	-	D440	251006	
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
P2	CONTROL WIRE - 1 PAIR 22 GA W/ SHIELD	9451	25291	22-1PREZ	
P4	CONTROL WIRE - 2 PAIR 18 GA W/ SHIELD	-	4D40	18-PREPSP	
RF	RG58 ANTENNA CABLE	-	-	-	LISTEN LA-112
RG	RG213 ANTENNA CABLE	-	-	-	SHURE UA8xx
RS232	CUSTOM CONTROL CABLE	9729	-	-	
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	



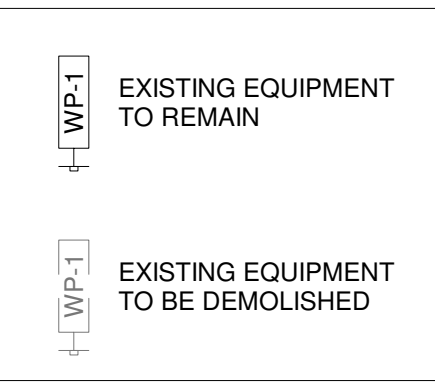
AV SCHEMATIC SYMBOLS



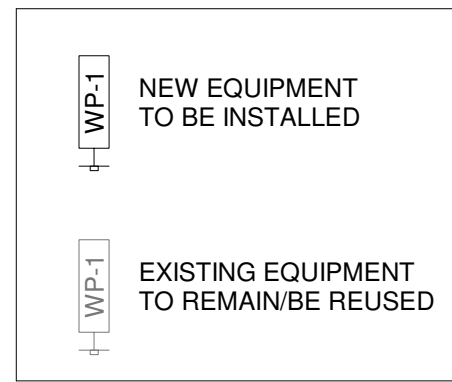
AV PLAN/RCP SYMBOLS



WIRE PULL PLAN/RCP DETAIL



EQUIPMENT STYLE - EXISTING



EQUIPMENT STYLE - NEW

SHEET LIST - TA SERIES	
NUMBER	NAME
A-TA0.1	AV SYMBOLS, NOTES, DIVISION OF LABOR
A-TA1.2	AV DEMO - FIRST FLOOR PLAN, RCP
A-TA2.2	AV NEW - FIRST FLOOR PLAN, RCP
A-TA3.1	AV SECTIONS, ELEVATIONS
A-TA4.1	AV SCHEDULES, RACKS, PLATES, DETAILS
A-TA4.2	AV TOUCHPANEL DETAILS
A-TA7.1	BOARD ROOM AV SCHEMATIC

Revisions	No	Date	Description
	1	01.04.22	BIDS

Grand Ledge Public Schools

Board Room AV Update

220 Lamson St, Grand Ledge, MI 48837

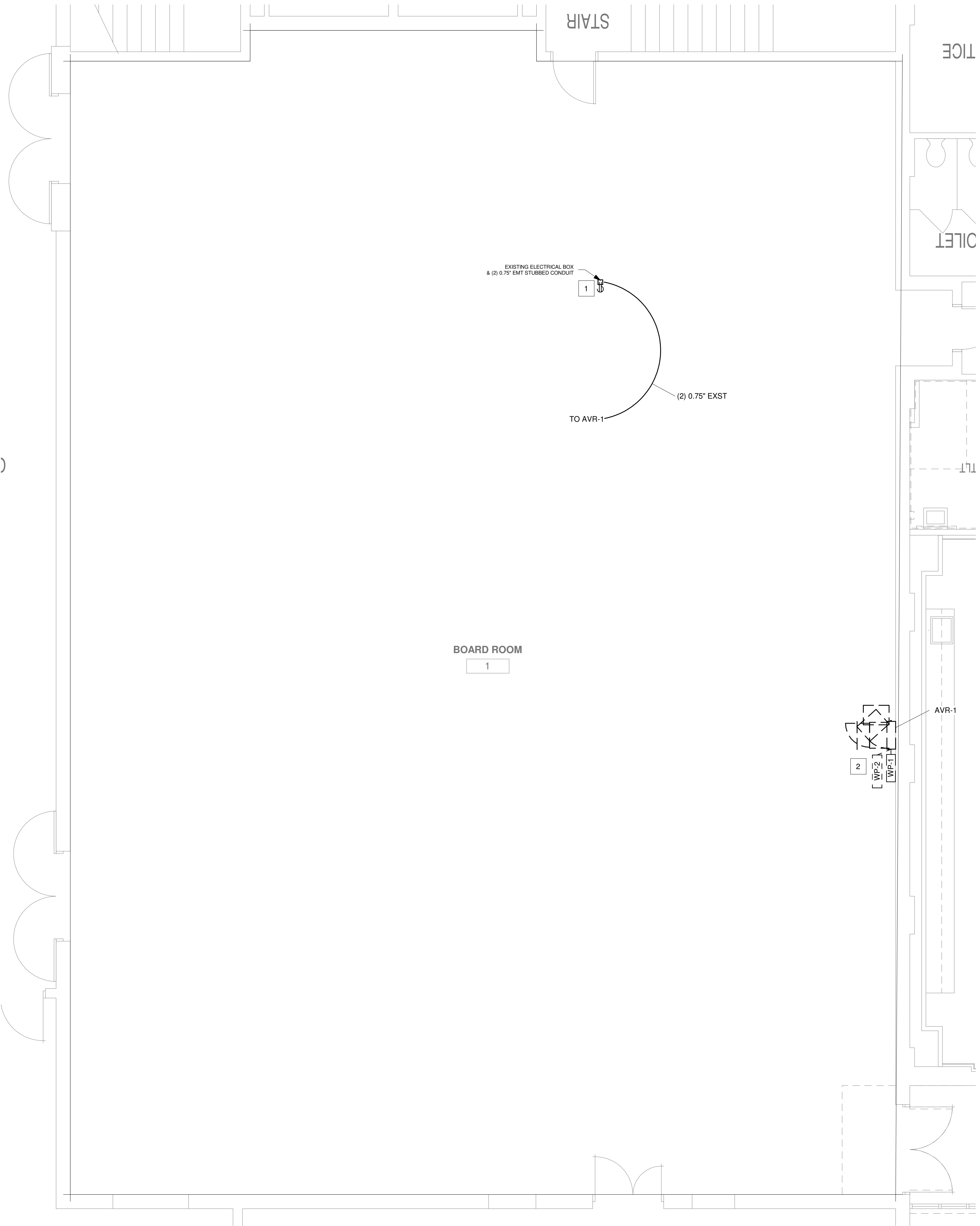
AV
SYMBOLS,
NOTES,
DIVISION OF
LABOR

Issue:	885
Project Name:	Board Room AV Update
Project Number:	GLPS-04
Designed By:	JBT
Drawn By:	ADF
Checked By:	JBT
Date Issued:	01.04.22

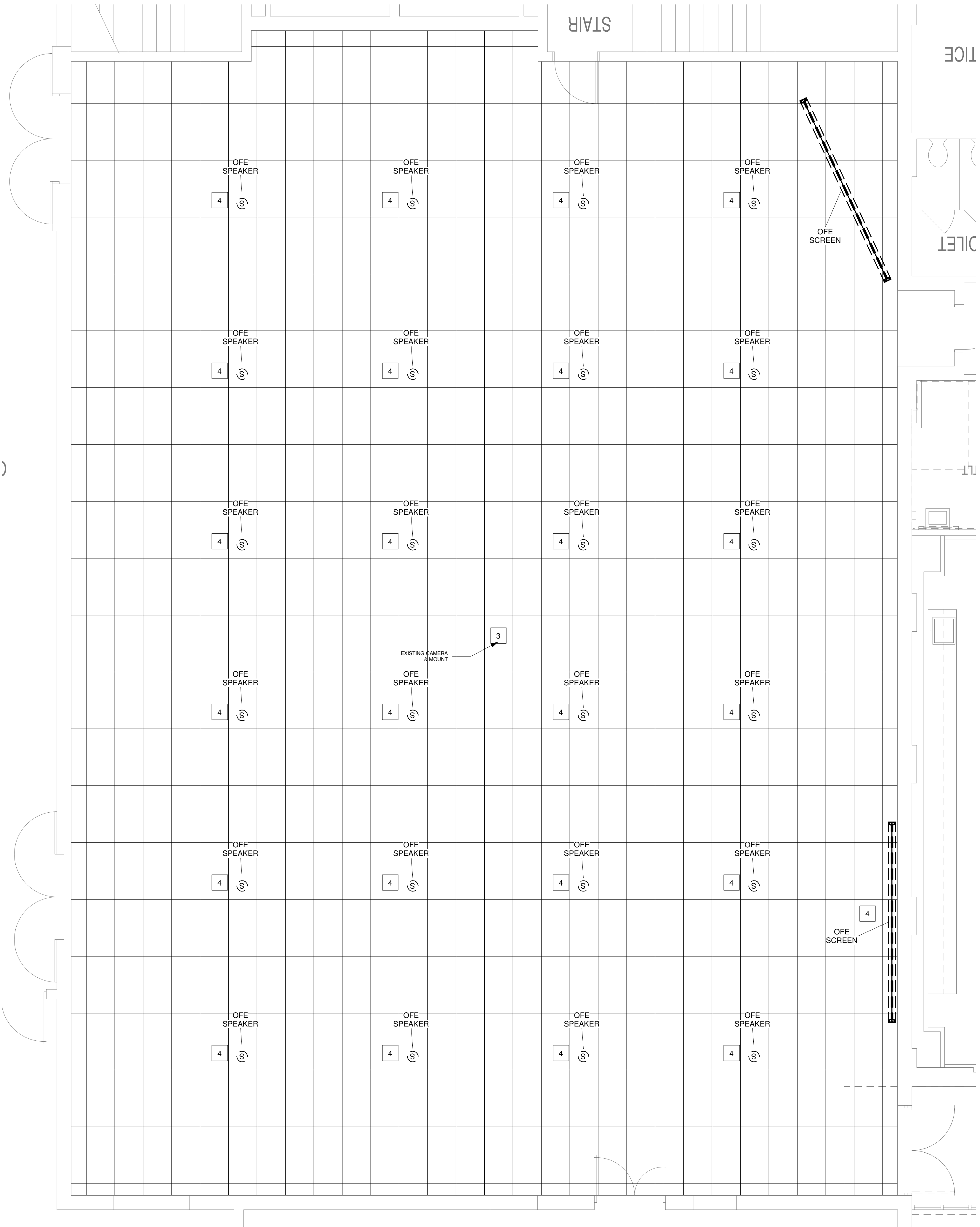
A-TA0.1

DEMO NOTES	
#	NOTES
1	REMOVE EXISTING AV CABLING BETWEEN FLOOR POCKET AND AV RACK. COVER ALL ABANDONED AV LOCATIONS.
2	EXISTING AV RACK TO BE REMOVED AN RE-USED ELSEWHERE IN THE PROJECT. REMOVE ALL EXISTING EQUIPMENT FROM AV RACK AND TURN OVER TO OWNER. DEMO EXISTING AV CONNECTION PLATES AT SIDE OF AV RACK AND COVER WITH BLANKS.
3	REMOVE EXISTING CAMER AND MOUNT. REPLACE CEILING TILE AS NEEDED.
4	REMOVE EXISTING CEILING SPEAKERS. REPLACE CEILING TILES (REPLACEMENT CEILING TILES PROVIDED BY OWNER).

CABLE TYPES - AV					
CODE	DESCRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CN	CRESNET CONTROL WIRE	1502R	77350	CRESCOM	CRESTRON CRESNET-NP-xx-xxxx
D	DIGITAL MIC/LINE WIRE	1801B	DA252401	241PDIGICOM	
DM	DIGITAL MEDIA WIRE/DTP WIRE	1212	4245	CAT5	CRESTRON DM-CBL-8G-NP-SP1000
DMX	DMX LIGHTING CONTROL CABLE	DLC224	D2402	241PDIGICOM	
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	9913	810	RG8	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	CRESTRON CBL-HD-x
IC	INTERCOM - 2 PAIR 18 GA W/ SHILED	-	D440	251006	
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
P2	CONTROL WIRE - 1 PAIR 22 GA W/ SHIELD	9451	25291	22-1PREZ	
P4	CONTROL WIRE - 2 PAIR 18 GA W/ SHIELD	-	4D40	18-PREPSP	
RF	RG58 ANTENNA CABLE	-	-	-	LISTEN LA-112
RG	RG213 ANTENNA CABLE	-	-	-	SHURE UA8xx
RS232	CUSTOM CONTROL CABLE	9729	-	-	
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	



1 AV DEMO - FIRST FLOOR PLAN
1/4" = 1'-0"



2 AV DEMO - FIRST FLOOR RCP
1/4" = 1'-0"

Revisions		No	Date	Description
		1	01.04.22	BIDS

Grand Ledge Public Schools

Board Room AV Update
220 Lamson St, Grand Ledge, MI 48837

SHEET TITLE

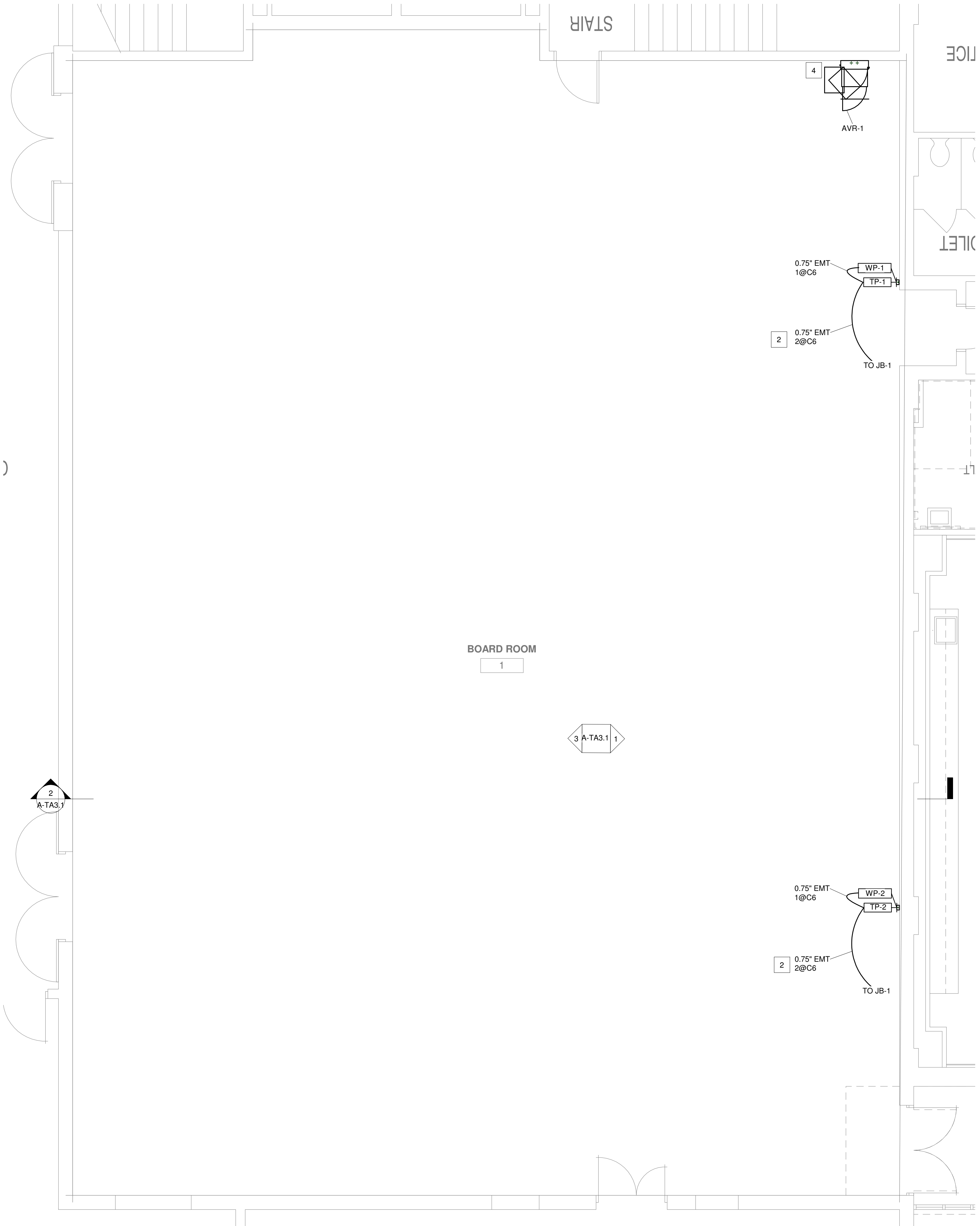
AV DEMO -
FIRST FLOOR
PLAN, RCP

Issue:	855
Project Name:	Board Room AV Update
Project Number:	GLPS-04
Designed By:	JBT
Drawn By:	ADF
Checked By:	JBT
Date Issued:	01.04.22

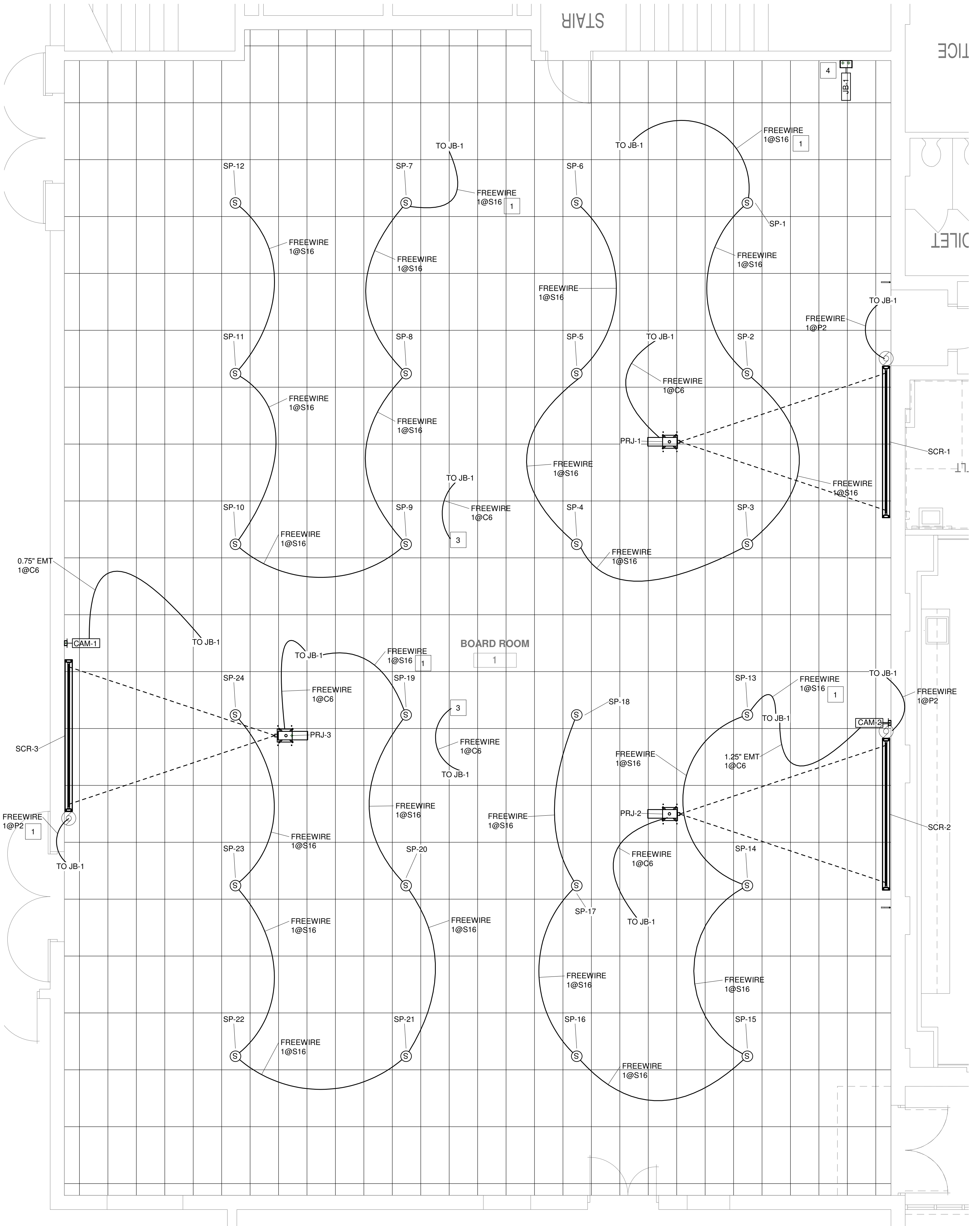
A-TA1.2

GENERAL NOTES	
#	NOTES
1	EXISTING SPEAKER WIRES MAY BE RE-USED BUT MUST BE WARRANTED BY CONTRACTOR. SPEAKER CABLING LESS THAN 16 AWG MAY NOT BE RE-USED.
2	STUB CONDUIT TO PLENUM SPACE ABOVE AND FREEWIRE TO DESTINATION
3	INSTALL ACCESS POINT FOR WIRELESS MICROPHONE SYSTEM ON CEILING GRID AT THIS LOCATION.
4	PROVIDE (2) 1.5" EMT CONDUITS FROM AVR-1 TO JB-1 ABOVE

CABLE TYPES - AV					
CODE	DESCRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CN	CRESNET CONTROL WIRE	1502R	77350	CRESCOM	CRESTRON CRESNET-NP-xx-xxxx
D	DIGITAL MIC/LINE WIRE	1801B	DA252401	241PDIGICOM	
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F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	9913	810	RG8	
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IC	INTERCOM - 2 PAIR 18 GA W/ SHILED	-	D440	251006	
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
P2	CONTROL WIRE - 1 PAIR 22 GA W/ SHIELD	9451	25291	22-1PREZ	
P4	CONTROL WIRE - 2 PAIR 18 GA W/ SHIELD	-	4D40	18-PREPSP	
RF	RG58 ANTENNA CABLE	-	-	-	LISTEN LA-112
RG	RG213 ANTENNA CABLE	-	-	-	SHURE UA8xx
RS232	CUSTOM CONTROL CABLE	9729	-	-	
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	



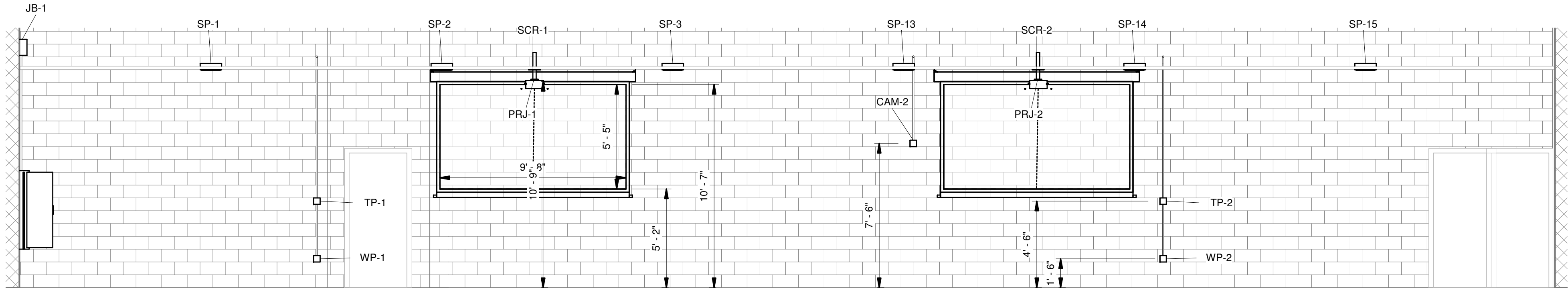
1 AV NEW - FIRST FLOOR PLAN
1/4" = 1'-0"



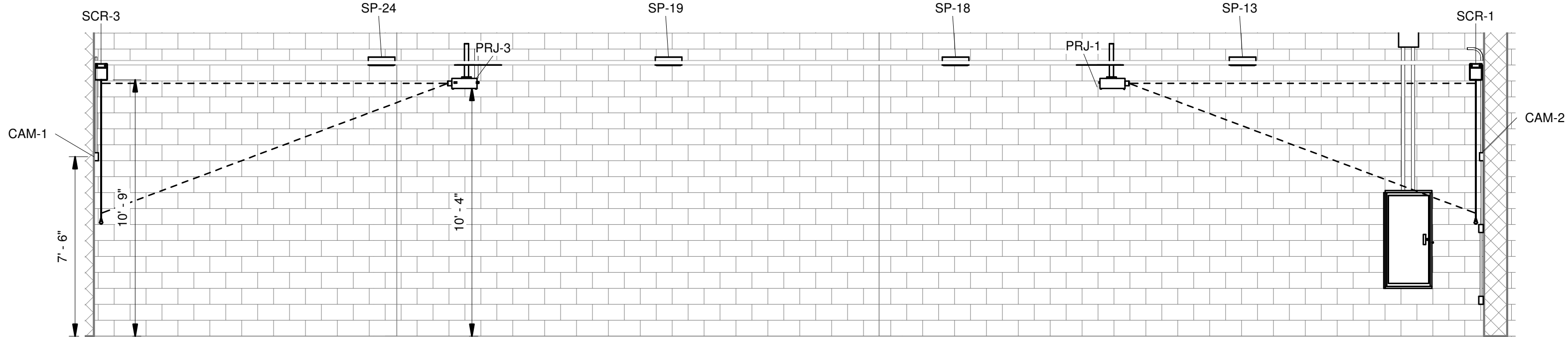
2 AV NEW - FIRST FLOOR RCP
1/4" = 1'-0"

Revisions		No	Date	Description
		1	01.04.22	BIDS

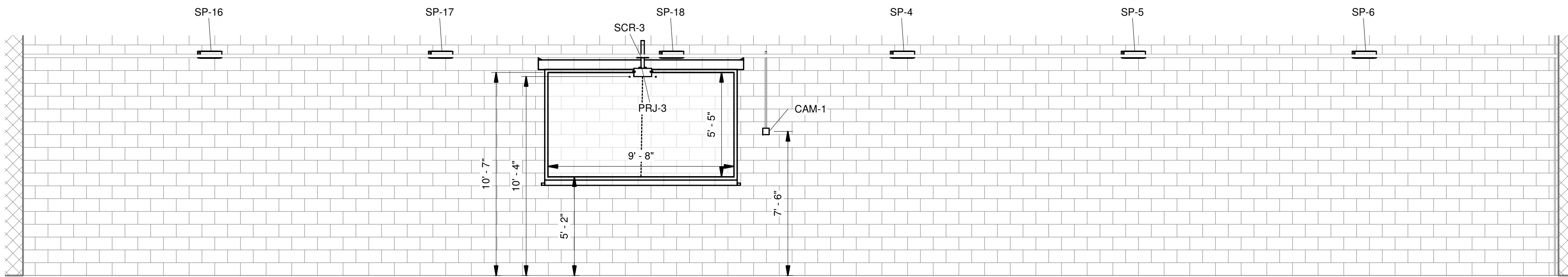
Revisions		No	Date	Description
		1	01.04.22	BIDS



1 BOARD ROOM EAST ELEVATION
1/4" = 1'-0"



2 BOARD ROOM NORTH SECTION
1/4" = 1'-0"



3 BOARD ROOM WEST ELEVATION
1/4" = 1'-0"

Grand Ledge Public Schools

Board Room AV Update

220 Lamson St, Grand Ledge, MI 48837

SHEET TITLE

AV
SECTIONS,
ELEVATIONS

Issue:	855
Project Name:	Board Room AV Update
Project Number:	GLPS-154
Designed By:	131
Drawn By:	ADF
Checked By:	131
Date Issued:	01.04.22

A-TA3.1

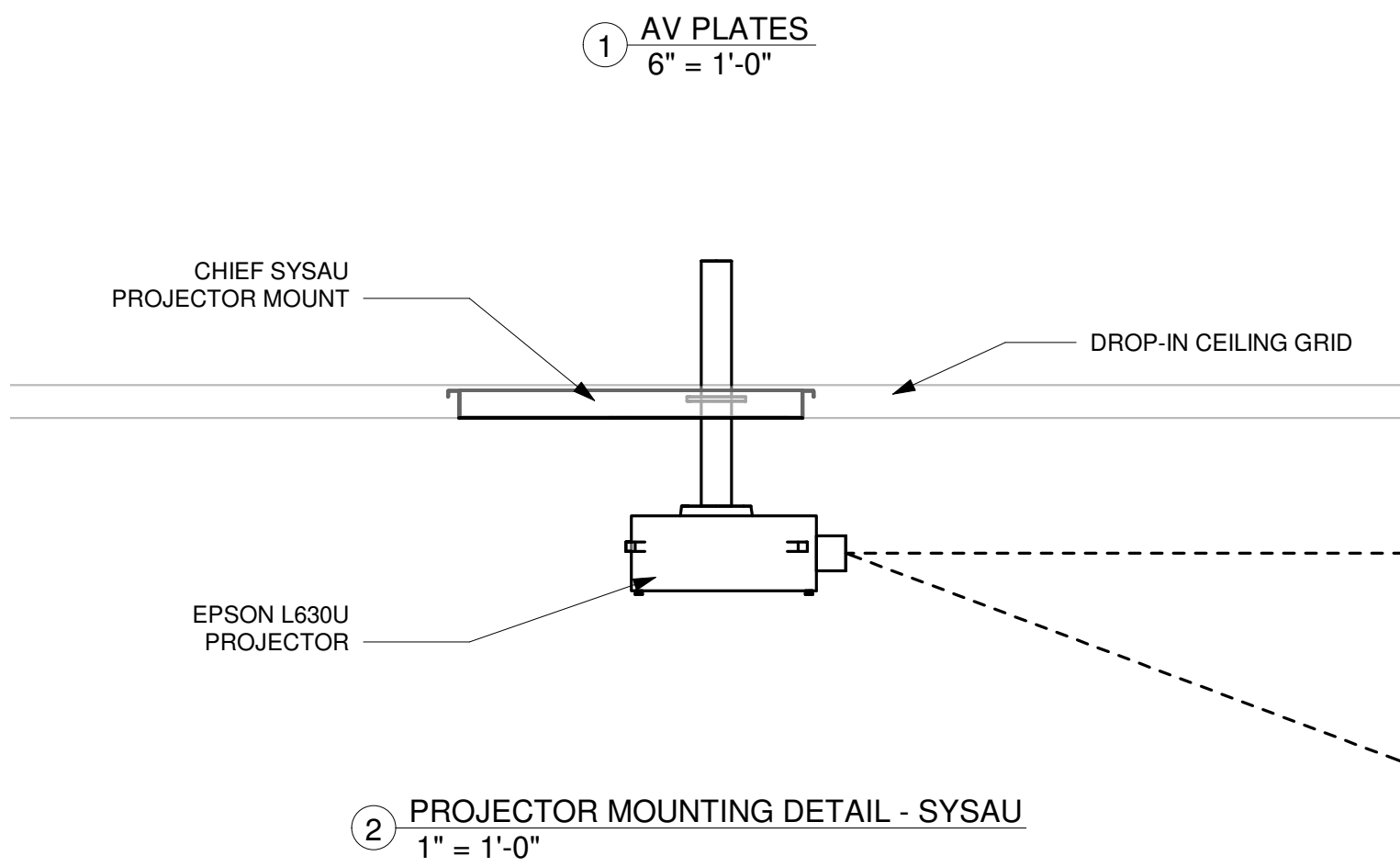
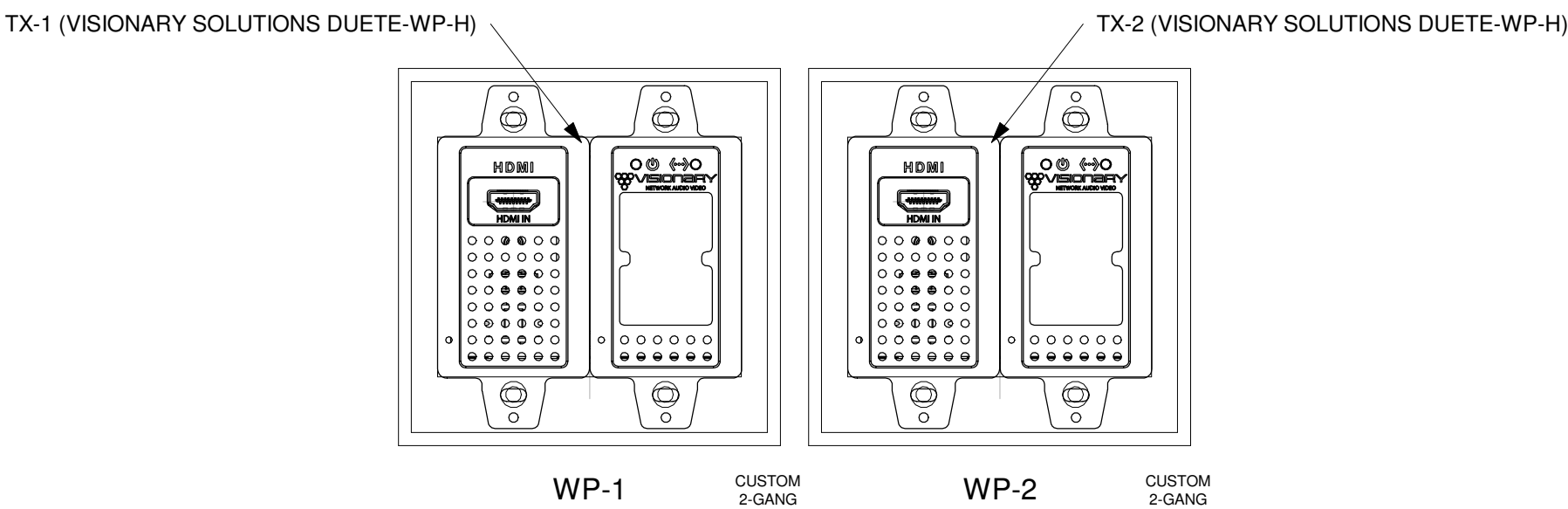
AV BOX SCHEDULE							
BOX #	LOCATION	TYPE	MOUNTING HEIGHT	MOUNTING TYPE	BOX & COVER PROVIDED BY	CONN. PLATE PROVIDED BY	COMMENTS
AVR-1	BOARD ROOM 1	DWR-24-22		WALL			
CAM-1	BOARD ROOM 1	4 SQ	7" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING
CAM-2	BOARD ROOM 1	4 SQ	7" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING
TP-1	BOARD ROOM 1	4 SQ	4" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING
TP-2	BOARD ROOM 1	4 SQ	4" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING
WP-1	BOARD ROOM 1	4 SQ	1" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING
WP-2	BOARD ROOM 1	4 SQ	1" - 6"	SURFACE	EC	AV	PROVIDE W/ 2-GANG MUD RING

AV LOUDSPEAKER SCHEDULE			
LABEL	LOCATION	MAKE	MODEL
SP-1	BOARD ROOM 1	QSC	AD-C6T-LP
SP-2	BOARD ROOM 1	QSC	AD-C6T-LP
SP-3	BOARD ROOM 1	QSC	AD-C6T-LP
SP-4	BOARD ROOM 1	QSC	AD-C6T-LP
SP-5	BOARD ROOM 1	QSC	AD-C6T-LP
SP-6	BOARD ROOM 1	QSC	AD-C6T-LP
SP-7	BOARD ROOM 1	QSC	AD-C6T-LP
SP-8	BOARD ROOM 1	QSC	AD-C6T-LP
SP-9	BOARD ROOM 1	QSC	AD-C6T-LP
SP-10	BOARD ROOM 1	QSC	AD-C6T-LP
SP-11	BOARD ROOM 1	QSC	AD-C6T-LP
SP-12	BOARD ROOM 1	QSC	AD-C6T-LP
SP-13	BOARD ROOM 1	QSC	AD-C6T-LP
SP-14	BOARD ROOM 1	QSC	AD-C6T-LP
SP-15	BOARD ROOM 1	QSC	AD-C6T-LP
SP-16	BOARD ROOM 1	QSC	AD-C6T-LP
SP-17	BOARD ROOM 1	QSC	AD-C6T-LP
SP-18	BOARD ROOM 1	QSC	AD-C6T-LP
SP-19	BOARD ROOM 1	QSC	AD-C6T-LP
SP-20	BOARD ROOM 1	QSC	AD-C6T-LP
SP-21	BOARD ROOM 1	QSC	AD-C6T-LP
SP-22	BOARD ROOM 1	QSC	AD-C6T-LP
SP-23	BOARD ROOM 1	QSC	AD-C6T-LP
SP-24	BOARD ROOM 1	QSC	AD-C6T-LP

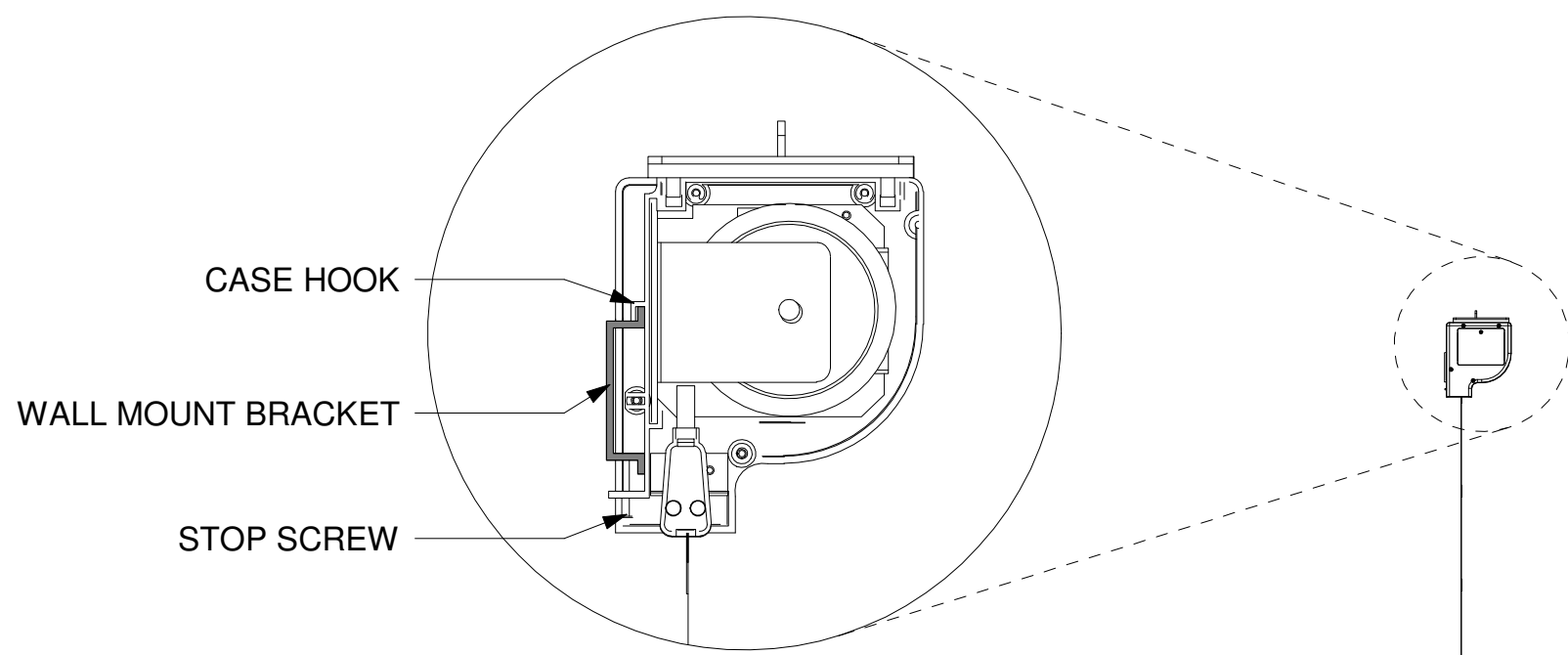
AV PROJECTOR CALCS									
LABEL	LOCATION	MAKE	MODEL	ASPECT RATIO	LENS	IMAGE HEIGHT	IMAGE WIDTH	THROW DISTANCE	
PRJ-1	BOARD ROOM 1	EPSON	L630U	16x9	N/A	65"	116"	14' - 6"	
PRJ-2	BOARD ROOM 1	EPSON	L630U	16x9	N/A	65"	116"	14' - 6"	
PRJ-3	BOARD ROOM 1	EPSON	L630U	16x9	N/A	65"	116"	14' - 6"	

AV PROJECTION SCREEN CALCS						
LABEL	LOCATION	MAKE	MODEL	ASPECT RATIO	SCREEN HEIGHT	SCREEN WIDTH
SCR-1	BOARD ROOM 1	DALITE	39157LS	16x9	65"	116"
SCR-2	BOARD ROOM 1	DALITE	39157LS	16x9	65"	116"
SCR-3	BOARD ROOM 1	DALITE	39157LS	16x9	65"	116"

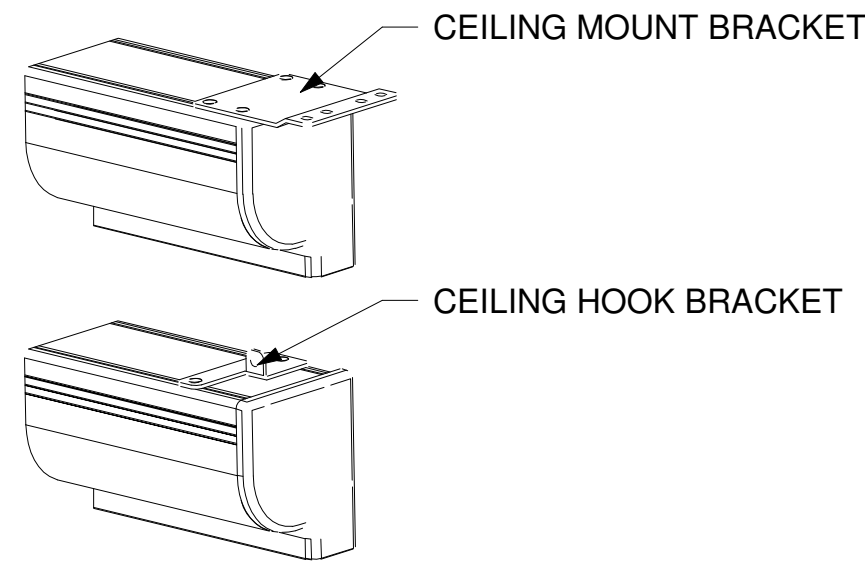
BOARD ROOM



WALL MOUNT - SECTION VIEW



CEILING MOUNTS - ISOMETRIC VIEW



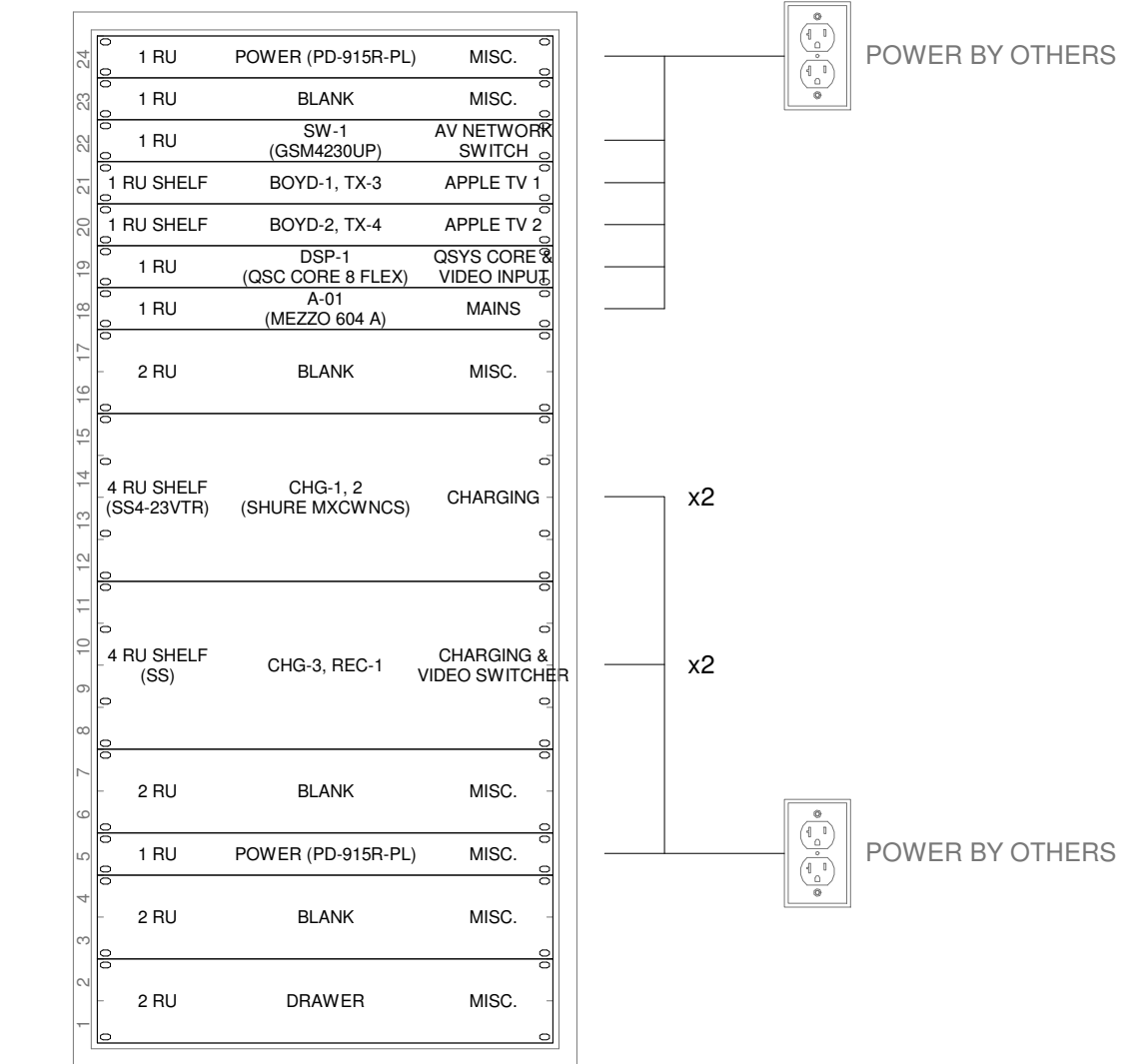
SIDE VIEW

3 PROJECTION SCREEN MOUNTING DETAIL - TENSIONED CONTOUR ELECTROL
3/4" = 1'-0"

FRONT VIEW



AVR-1
OFE
24-SP WALL RACK



RACK NOTES:

1. INSTALL RACK RAILS AT APPROPRIATE DISTANCE FROM BACK OF EQUIPMENT FOR LACER BARS.
2. ALL WIRING IN BACK OF RACKS SHOULD BE SECURED TO THE LACER BARS.
3. WIRING TO AND FROM THE RACK SHALL BE RUN ON THE LEFT HAND SIDE OF THE RACK AS YOU FACE THE REAR OF THE RACK.
4. ALL POWER CONNECTIONS AND WIRING SHALL BE RUN ON THE RIGHT HAND SIDE OF THE RACK AS YOU FACE THE REAR OF THE RACK.
5. ALL WIRING SHALL BE CONTAINED IN PANDUIT FINGER TRAY OR SIMILAR.
6. WIRING SHALL BE SEPARATED IN FINGER TRAY(S) ACCORDING TO SIGNAL AND WIRE TYPE.
7. ALL WIRES TERMINATING IN THE EQUIPMENT RACK MUST HAVE A UNIQUE LABEL. SEE DRAWINGS FOR LABELING DETAILS.
8. ALL EQUIPMENT SHALL HAVE A LABEL ON THE FRONT INDICATING THE EQUIPMENT FUNCTION AND SCHEMATIC DESIGNATION.
9. ALL NETWORKED DEVICES SHALL BE CLEARLY LABELED WITH THE NETWORK IP ADDRESS.
10. ALL NETWORKED DEVICES SHALL HAVE STATIC IP ADDRESSES. COORDINATE WITH THE SCHOOL IT DEPARTMENT FOR RESERVATIONS.
11. PROGRAM AMPLIFIERS FOR SLEEP MODE WHEN THE SYSTEM IS POWERED OFF.

4 RACK DETAILS
1 1/2" = 1'-0"

Grand Ledge Public Schools

Board Room AV Update

220 Lamson St, Grand Ledge, MI 48837

AV
SCHEDULES,
RACKS,
PLATES,
DETAILS

Issue: 855
Project Name: Board Room AV Update
Project Number: GAPS-04
Designed By: JBT
Drawn By: ADF
Checked By: JBT
Date Issued: 01.04.22

A-TA4.1

Revisions		No.	Date	Description
		1	01.04.22	BIDS

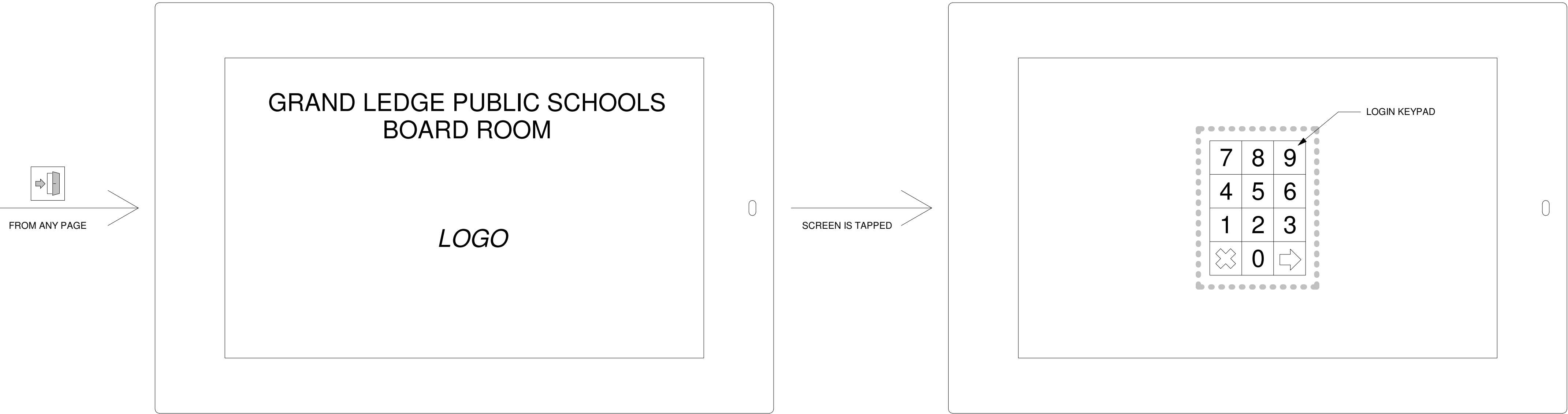
Grand Ledge Public Schools
Board Room AV Update
220 Lamson St, Grand Ledge, MI 48837

AV
TOUCHPANEL
DETAILS

Issue:	855
Project Name:	Board Room AV Update
Project Number:	GLPS-04
Designed By:	Designer
Drawn By:	Author
Checked By:	Checker
Date Issued:	01.04.22

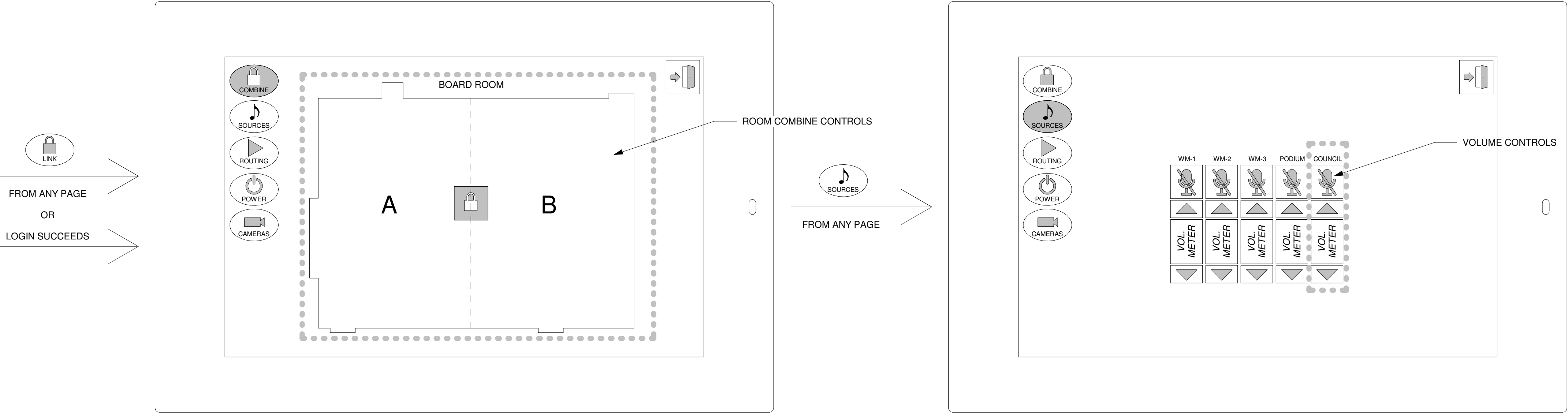
A-TA4.2

SPLASH PAGE



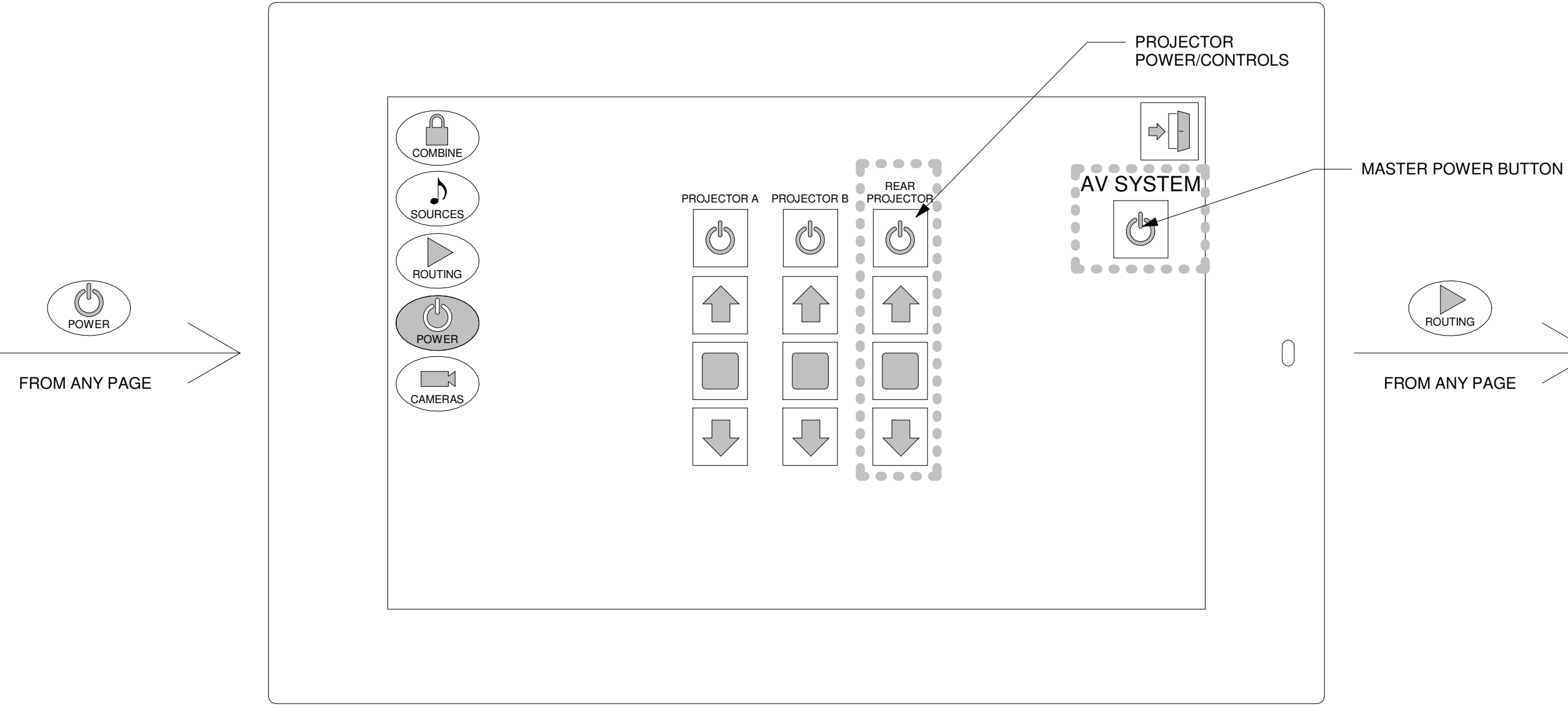
LOGIN

COMBINE MAIN

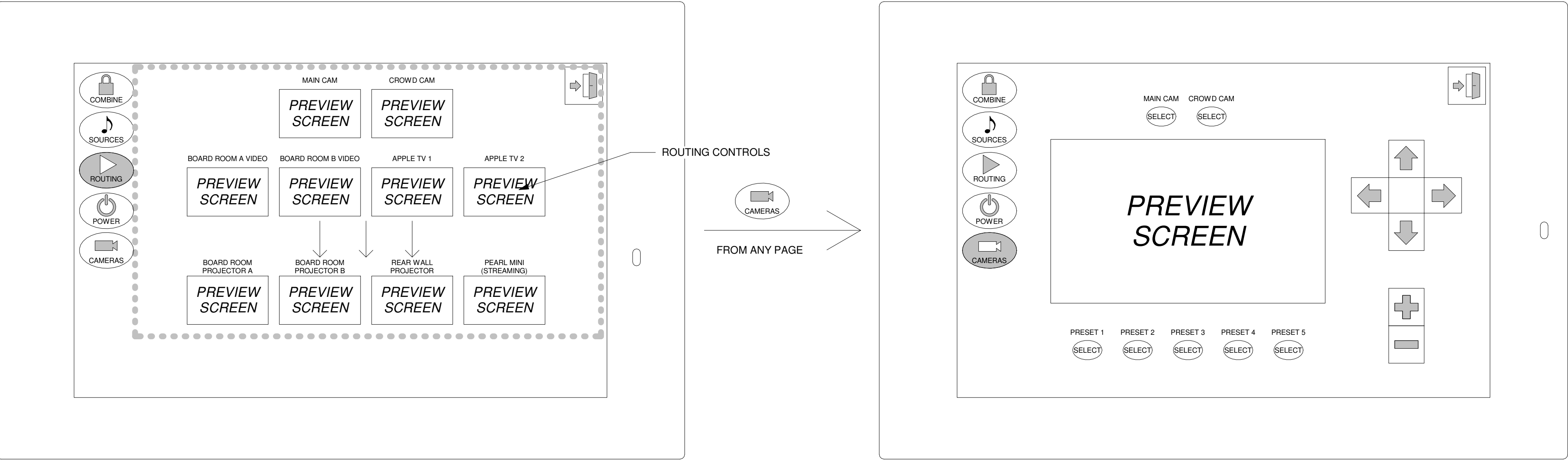


SOURCE MAIN

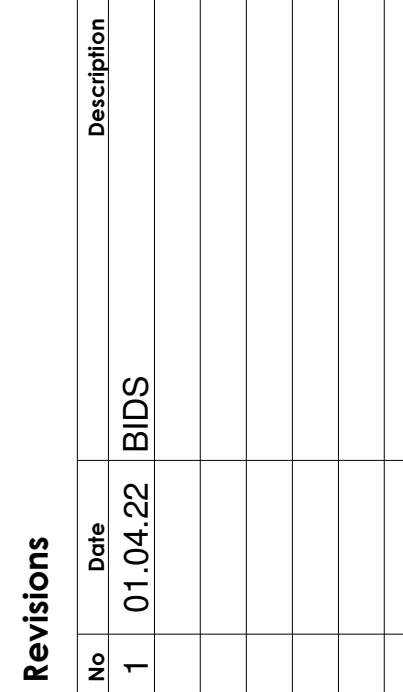
POWER MAIN



ROUTING MAIN



1 AV BOARD ROOM TOUCHPANEL LAYOUTS
12" = 1'-0"



Grand Ledge Public Schools
Board Room AV Update
220 Lamson St., Grand Ledge, MI 48837

SHEET TITLE

BOARD
ROOM AV
SCHEMATIC

Issue :	BIS
Project Name :	Board Room AV Upgrade
Project Number :	GLPS-4
Designed By :	T.
Drawn By :	AG
Checked By :	T.
Date Issue :	01.04.22

A-TA7.1

TASK	FURNISH	INSTALL
AC POWER, CONDUIT, RACEWAYS, ELECTRICAL BACKBOXES, JUNCTION BOXES, PULL BOXES, CABLE TRAYS, FLOOR BOXES AND OTHER CABLE INFRASTRUCTURE	EC	EC
AC POWER, CONDUIT, RACEWAYS, ELECTRICAL BACKBOXES, JUNCTION BOXES, PULL BOXES, CABLE TRAYS, FLOOR BOXES AND OTHER CABLE INFRASTRUCTURE		
AC POWER, CONDUIT, RACEWAYS, ELECTRICAL BACKBOXES, JUNCTION BOXES, PULL BOXES, CABLE TRAYS, FLOOR BOXES AND OTHER CABLE INFRASTRUCTURE		
ROUGH OR FINISHED TRIM, CASEWORK, MILLWORK, EQUIPMENT CAVITIES, STRUCTURAL WORK, WHITE BOARDS, TACK BOARDS, OTHER NON-ELECTRONIC DISPLAY SURFACES, OR SPECIAL CONSTRUCTION	GC	GC
CEILING MOUNTED LOUDSPEAKERS		
CEILING MOUNTED LOUDSPEAKER CABLE	AV	AV
AUDIOVISUAL CABLE	AV	AV
AUDIOVISUAL EQUIPMENT AND RACK	AV	AV
TERMINATIONS OF AUDIOVISUAL CABLE	AV	AV
VOICE/DATA NETWORK CABLE, CATV-CAT6 CABLE	DC	DC
VOICE/DATA NETWORK AND NETWORK ELECTRONICS	DC	DC
GENERAL ROOM LIGHTING DIMMING SYSTEMS (MULTI-ZONE)	EC	EC
LOW VOLTAGE INTERFACE TO GENERAL ROOM LIGHTING DIMMING SYSTEMS	EC	EC
LIGHTING FIXTURES	EC	EC
PRESENTER COMPUTER	O	O
AUDIOVISUAL EQUIPMENT WALL MOUNTS OR CEILING MOUNTS REQUIRED TO FASTEN AUDIOVISUAL EQUIPMENT TO GC PROVIDED SUPPORT SYSTEMS	AV	AV
UNISTRUT, ANCHORS, OR OTHER MATERIALS REQUIRED TO ATTACH AUDIOVISUAL EQUIPMENT MOUNTS TO STRUCTURE, INCLUDING FLAT PANEL VIDEO DISPLAY BLOCKING FOR WALL MOUNTED DEVICES	GC	GC
PRODUCTION CONSOLE, OTHER TECHNICAL FURNITURE	GC	GC
CABLE MANAGEMENT HARDWARE AT RACKS AND CONSOLES	AV	AV
FLOOR BOXES INCLUDING INTERNAL BRACKETS, TEMPORARY COVERS, AND PERMANENT COVERS	EC	EC
CUSTOM COVER PLATES FOR FLOOR BOXES, BACK BOXES	AV	AV

AV - AUDIO VIDEO CONTRACTOR
GC - GENERAL CONTRACTOR
DC - DATA COMMUNICATIONS CONTRACTOR
EC - ELECTRICAL CONTRACTOR
FC - FURNITURE CONTRACTOR
O - OWNER

GENERAL DIVISION OF RESPONSIBILITIES

The Electrical Contractor or "EC" will be responsible for the following:
*All high voltage wiring/terminations contained within this drawing set. Scope includes, but is not limited to:
PROVISION AND INSTALLATION OF:
*Conduit, gang boxes, pull boxes, and pull string required for the audio and video systems.
*All junction boxes and in-wall enclosures required for the audio communications system. Stages of all junction boxes and enclosures will be indicated on the audio/video drawings. All junction boxes, pull boxes, and wall mounted enclosures are to be clearly labeled with permanent marker. Refer to audio/video drawings for labeling.
*AC power circuits, outlets, and interconnection of power to each video projector location.
*All AC power circuits, outlets, power panels and interconnection of power to the sound equipment racks.
*Wherever possible, all audio circuits shall be supplied from the same A/V electrical panel.
*The designated A/V power panel (if appropriate to the project) shall not furnish power to any other equipment.
*All outlets that service the stage (if there is a stage area) shall be supplied from the same A/V electrical panel.
*All outlets that service the control booth (if there is a control booth) shall be supplied from the same A/V electrical panel.
*Wherever possible, all outlets that service the ceiling mounted video projectors shall be supplied from the same A/V electrical panel.
*All high voltage wiring and terminations for projector screens and up/down switches
INSTALLATION OF:
*Installation of the following items which are provided by the A/V contractor: (Unless specifically noted)
* * * * *
CONDUIT GUIDELINES:
*EMT should be used when possible.
*The EC shall provide pull boxes where appropriate.
*The EC shall provide pull lines in all conduit.
*All conduit to be sized by the EC in accordance with all applicable federal and local codes.
*All conduit paths, routing and installation methods shall be verified with architect and/or consultant prior to installation.
*Use of flex conduit is prohibited without proper approval from the AV contractor.
*The overall AV system requires extensive conduit to be furnished and installed by the EC per the specifications contained within this drawing set. If site conditions prevent conduit to be installed for any particular system(s), or if any conduit is deleted by the EC, the EC shall (at no additional cost) furnish and install all plenum wire that is to be contained within said conduit.

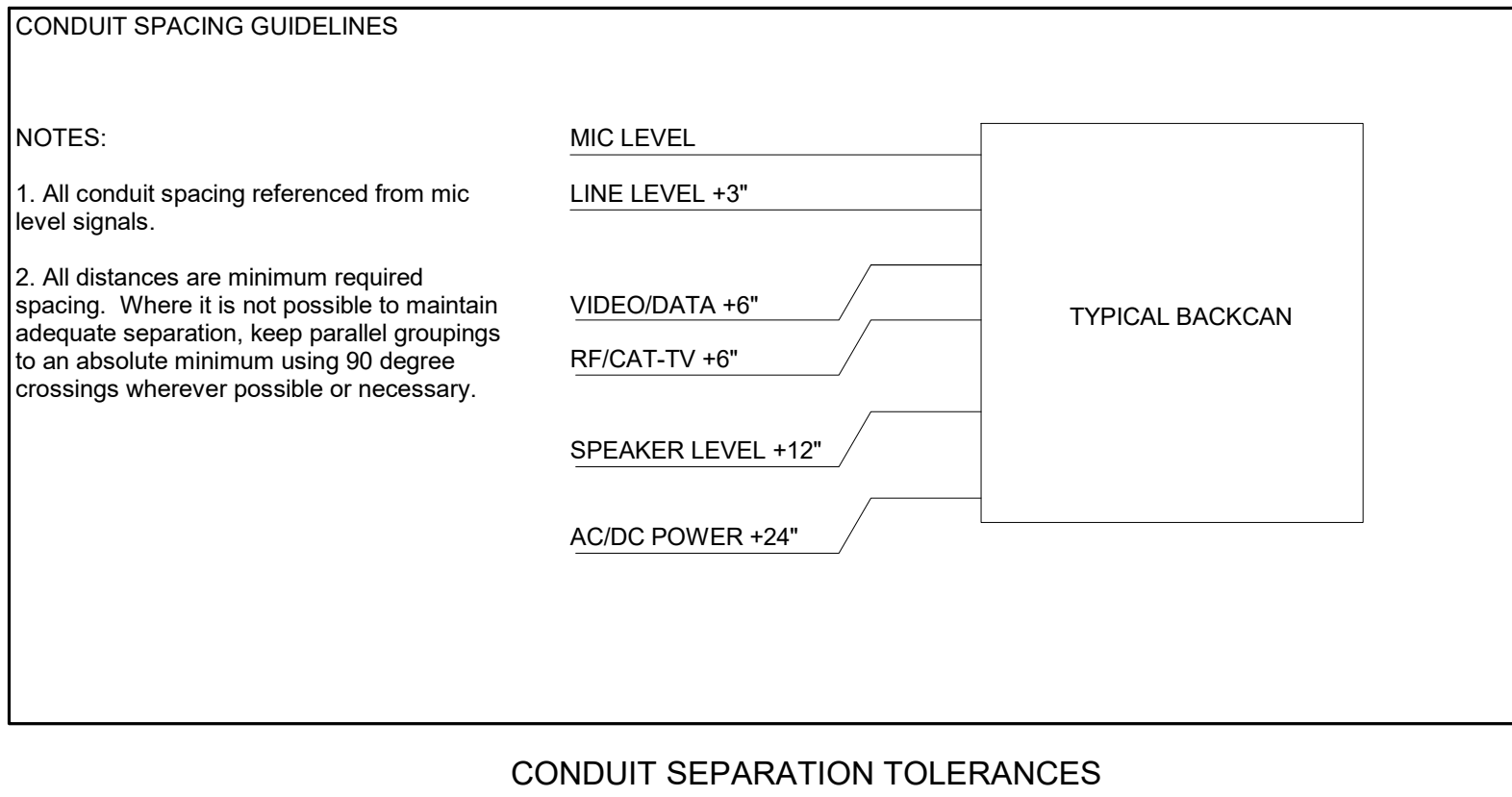
ADDITIONAL RESPONSIBILITIES

PREFIX	EQUIPMENT NAME ABBREVIATIONS	PREFIX	EQUIPMENT NAME ABBREVIATIONS
ACD	AUDIO CASSETTE PLAYER/RECORDER	MPA	MIC PRE-AMP
ADA	AUDIO DISTRIBUTION AMP	MSP	MIC SPLITTER
ALS	ASSISTED LISTENING SYSTEM	PCM	PRODUCTION COMMUNICATIONS MASTER
AMN	AUDIO MONITOR	PLS	PLASMA SCREEN
AMP	AUDIO AMPLIFIER	PRB	ACTIVE PRESS BOX
ANT	ANTENNA	PSU	POWER SUPPLY
APA	AUDIO PRE-AMP	PTC	PAN TILT CONTROLLER
APB	AUDIO PATCHBAY	PTU	PAN TILT UNIT
ATX	AUDIO TRANSFORMER	PWR	AC POWER DISTRIBUTION
CAM	VIDEO CAMERA	RMT	REMOTE CONTROL
CCU	CAMERA CONTROL UNIT	RPL	RACK PANEL
CDC	INTEGRATED CD & CASSETTE PLAYER/RECORDER	SCN	PROJECTION SCREEN
CDP	CD PLAYER	SEQ	POWER SEQUENCING DEVICE
CDR	CD RECORDER	SP	LOUDSPEAKER ENCLOSURE
CFR	CARD/MODULE FRAME	STB	STAGE BOX SUB SNAKE
CGN	VIDEO CHARACTER GENERATOR	TPI	TOUCH PANEL INTERFACE
CMF	AUDIO COMPRESSOR	TSG	TEST SIGNAL GENERATOR
COM	PRODUCTION COMMUNICATIONS	TVA	MATV DISTRIBUTION AMP
CON	DEVICE CONTROLLER	TVC	MATV COMBINER
CPI	COMPUTER INTERFACE	TVD	MATV DE-MODULATOR
CPU	COMPUTER	TVM	MATV MODULATOR
CS	INTEGRATED CEILING LOUDSPEAKER & BACKCAN	TVP	MATV HETERDYNE PROCESSOR
CTL	CONTROL SYSTEM	TVR	TELEVISION RECEIVER
CVT	VIDEO FORMAT CONVERTER	TVS	MATV SPLITTER
DMR	DIGITAL MESSAGE REPEATER	TVT	MATV TAP
DPB	DATA PATCHBAY	VCD	VIDEO CASSETTE PLAYER/DVD COMBO
DSP	DIGITAL SIGNAL PROCESSOR	VCR	VIDEO CASSETTE PLAYER/RECORDER
DSW	DATA NETWORK SWITCH	VDA	VIDEO DISTRIBUTION AMP
DVC	DIGITAL VIDEO CASSETTE PLAYER/RECORDER	VDR	VIDEO DISC RECORDER
DVD	DIGIAL VIDEO DIS PLAYER/RECORDER	VMX	AV MIXER
DVS	DIGIAL VIDEO SCALER	VOL	VOLUME CONTROL
EFX	AUDIO EFFECTS PROCESSOR	VPB	VIDEO PATCHBAY
EQU	AUDIO EQUALIZER	VPJ	AUDIO PROJECTOR
ER	EQUIPMENT RACK	VSC	VIDEO SCAN CONVERTER
FB	FLOOR BOX	VSG	VIDEO SYNC GENERATOR
GAT	AUDIO GATE	VSP	VIDEO SIGNAL PROCESSOR
GUI	GRAPHICAL USER INTERFACE	VSW	VIDEO SWITCHER
LTC	LIGHTING CONTROL	VTX	VIDEO TRANSFORMER
LTD	LIGHTING DIMMER	WVF	WAVE FORM/VECTOR SCOPE MONITOR
LTF	LIGHTING FIXTURE	WMC	WIRELESS MICROPHONE
MIC	WIRED MICROPHONE	WP	WALL PLATE
MIX	AUDIO MIXER	WRX	WIRELESS RECEIVER
MON	VIDEO MONITOR	WTX	WIRELESS TRANSMITTER
		XVR	AUDIO CORSSOVER

EQUIPMENT NAME ABBREVIATIONS

CONDUIT GENERAL NOTES FOR ELECTRICAL CONTRACTOR	SYMBOL	CONDUIT SIZE	SYMBOL	CONDUIT TYPES
- EC to provide and install all conduit, backboxes, gutter boxes, terminal cans, raceways, cable trays and access panels unless otherwise noted.	1	3/4"	EMT	ELECTRICAL METALLIC TUBING
	2	1"		
	3	1 1/4"	PVC	POLY-VINYL CHLORIDE
	4	1 1/2"		
- EC to install pull lines in all conduits.	5	2"	RGD	GALVANIZED RIGID METAL
- EC shall not substitute conduit type without written permission from the consultant.	6	3"	FLX	FLEXIBLE METALLIC TUBING
	7	4"		
	8	6"	PLS	FLEXIBLE PLASTIC TUBING
- EC may increase the size of junction boxes, gutters & conduit as needed in the event that a conflict exists.	9	8"		
	10	12"	WMT	WIRE MOLD TRACK
- EC to provide and install all high voltage (120V - 240V) cable and fixtures unless otherwise notes.	11	6" CABLE TRAY	IMC	INTERMEDIATE METAL CONDUIT
- Install applicable size pull boxes after 270 deg. of bend or if conduit run is more than 100'.	12	12" CABLE TRAY	EXST	EXISTING CONDUIT
- Label all conduit for destinations such as box numbers and/or room locations.	13	NO CONDUIT		
- Deburr all rough edges to prevent cable abrasion.				
- Ensure all conduits are free from debris & water.				
- Ensure all in ground pull boxes and vaults are weather proof & free of debris & water.				
- Ensure conduit is electrically isolated from all equipment racks & enclosures.				

CONDUIT NOTES & COORDINATION



CONDUIT SEPARATION TOLERANCES

SYMBOL	GENERAL ABBREVIATIONS	SYMBOL	GENERAL ABBREVIATIONS
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
AVC	AUDIO VISUAL CONTRACTOR	OFE	OWNER FURNISHED EQUIPMENT
EC	ELECTRICAL CONTRACTOR	RCP	REFLECTED CEILING PLAN
EXS	EXISTING EQUIPMENT	RK	RACK MOUNT
FBO	FURNISHED BY OTHERS	SR	SURFACE MOUNT
FL	FLUSH MOUNT	SSH	STANDARD SWITCH HEIGHT
FOH	FRONT OF HOUSE	SWL	SAFE WORKING LOAD
GC	GENERAL CONTRACTOR	TBD	TO BE DETERMINED
LAN	LOCAL AREA NETWORK	UON	UNLESS OTHERWISE NOTED

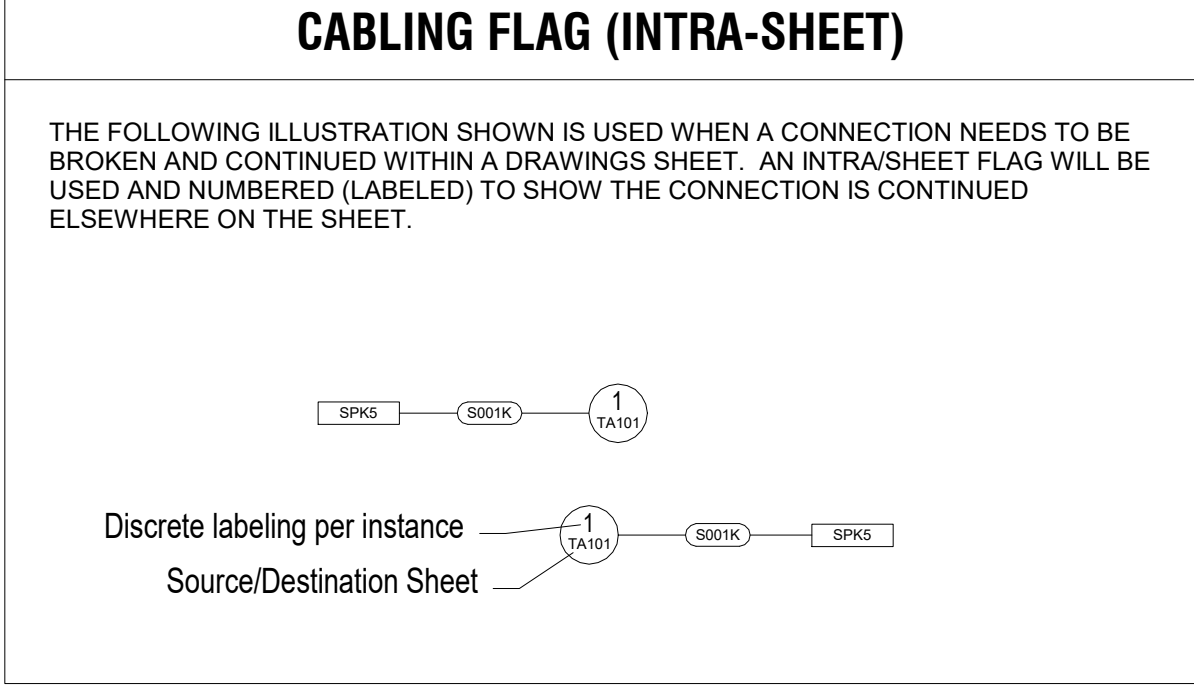
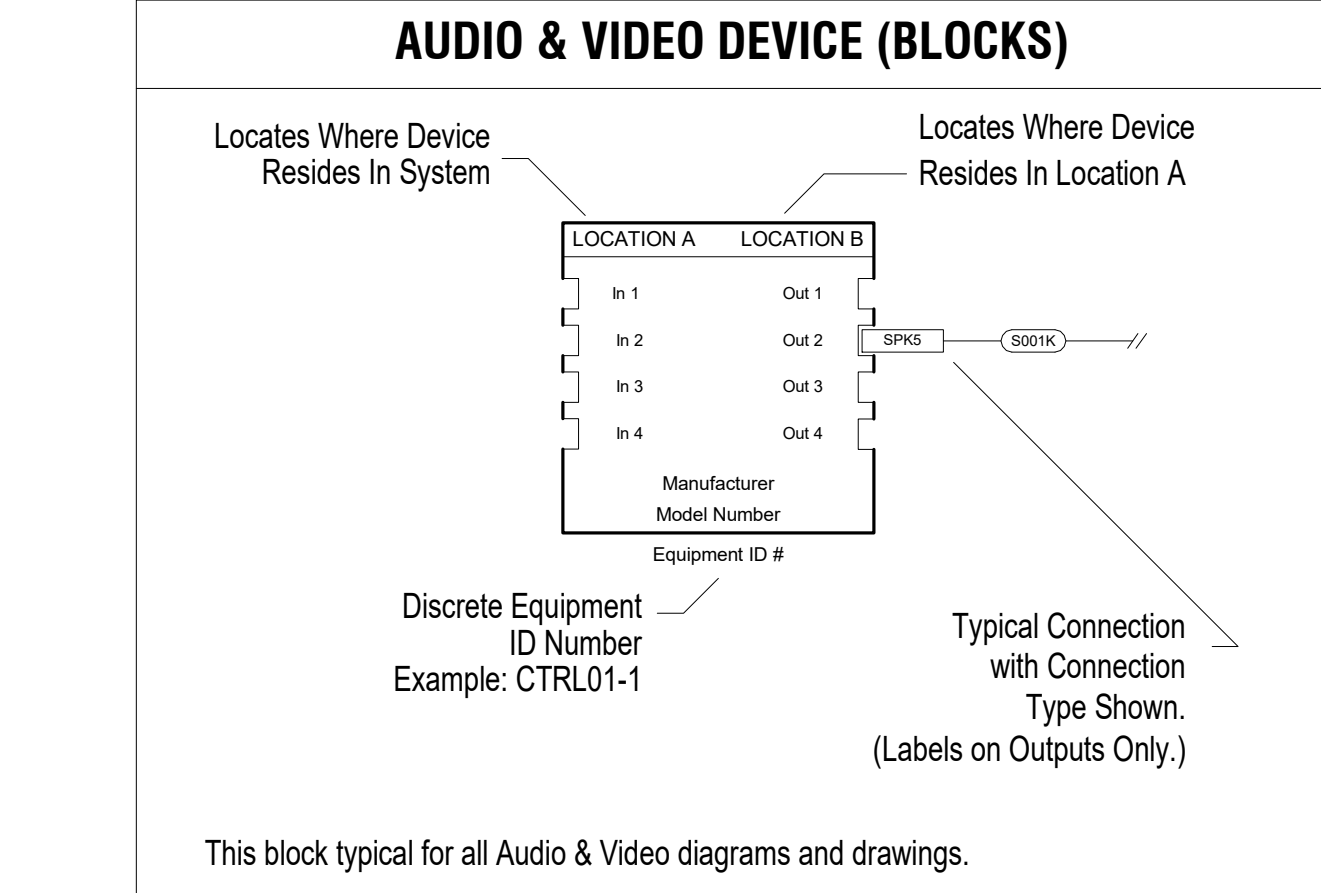
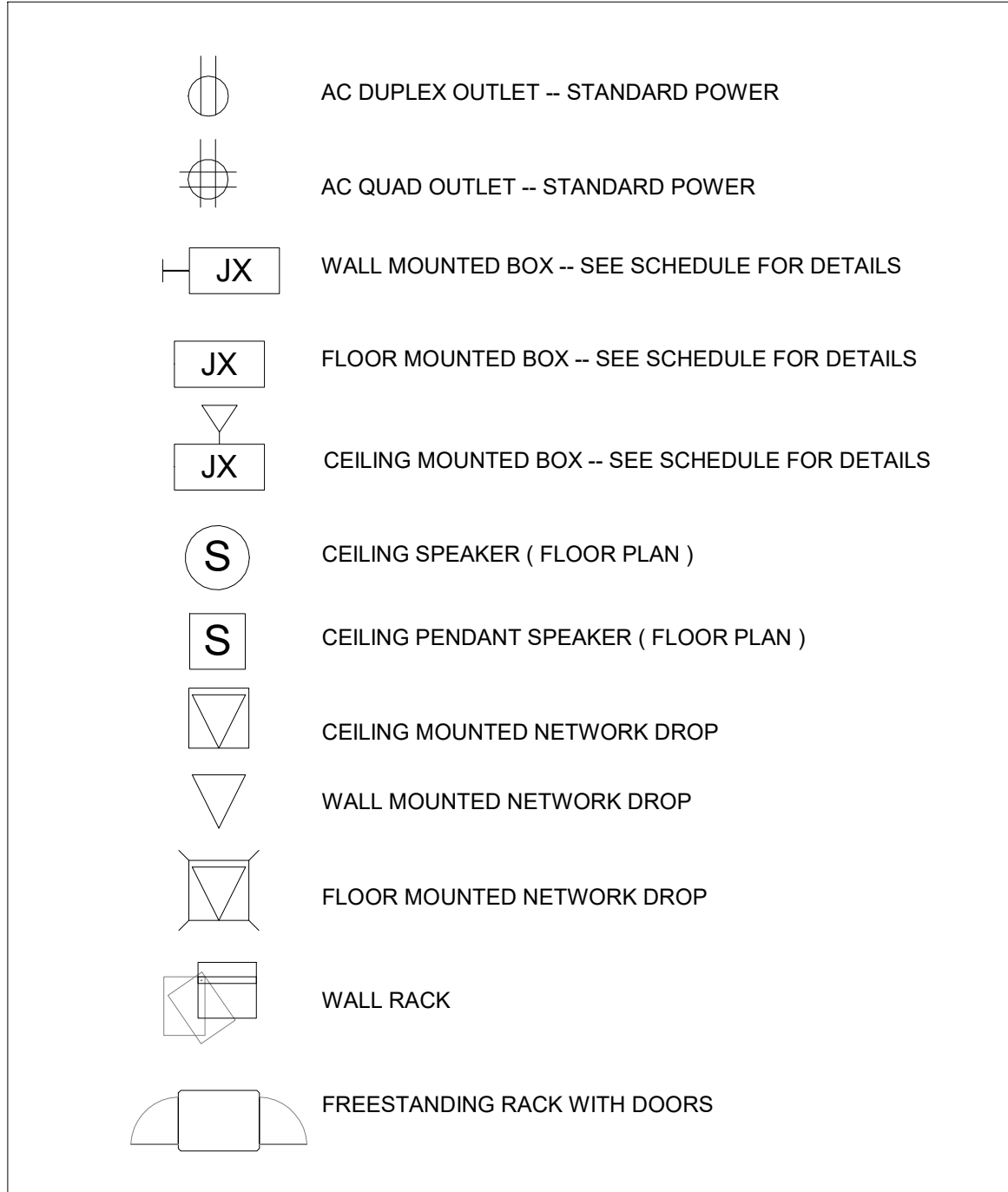
GENERAL ABBREVIATIONS

CODE	DESRIPTION	MAKE	MODEL
C5E	CAT5E - 4 UNSHIELDED, TWISTED PAIR	BELDEN	1503
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	BELDEN	2412
CN	CRESNET CONTROL WIRE	WEST PENN	77350
D	DIGITAL MIC/LINE WIRE	BELDEN	1800
DM	DIGITAL MEDIA WIRE/DTP WIRE	CRESTRON	DM-CBL-8G-XX
DMX	DMX LIGHTING CONTROL CABLE	BELDEN	9729
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	WEST PENN	819
HDMI	PRETERMINATED HDMI CABLE	CRESTRON	CBL-HD-X
IC	INTERCOM - 2 PAIR 18 GA W/ SHILED	WEST PENN	440
L	LINE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
M	MIC - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P2	CONTROL WIRE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P4	CONTROL WIRE - 2 PR 18 GA W/ SHIELD	WEST PENN	440
RF	RG58 ANTENNA CABLE	LISTEN	LA-112
RG	RG213 ANTENNA CABLE	SHURE	UA8XX
RS232	CUSTOM CONTROL CABLE	CUSTOM	CUSTOM
S10	SPEAKER - 1 PR 10 GA SPEAKER WIRE	WEST PENN	C210
S12	SPEAKER - 1 PR 12 GA SPEAKER WIRE	WEST PENN	227
S16	SPEAKER - 1 PR 16 GA SPEAKER WIRE	WEST PENN	225

CABLE TYPES

FAMILY	SIGNAL TYPE	CABLE LABEL DETAIL
A	Audio	
B	Broadband	
C	Video	
D	DVI Video	
E	Digital Media	
F	Fiber Optic	
G	AES/EBU	
H	HDMI	
I	IR/S	
J	Optical Audio	
K	Control Network	
L	Serial	
M	Microphone	
N	Network	
O	I/O	
P	Power	
Q	Component Video	
R	Relay	
S	Speaker	
T	DMX	
U	UTP Signal	
V	RGB Signal	
W	Digital Video	
X	Antenna	
Y	Y/C S-Video	
Z	SDI Video	

CABLE LABELING

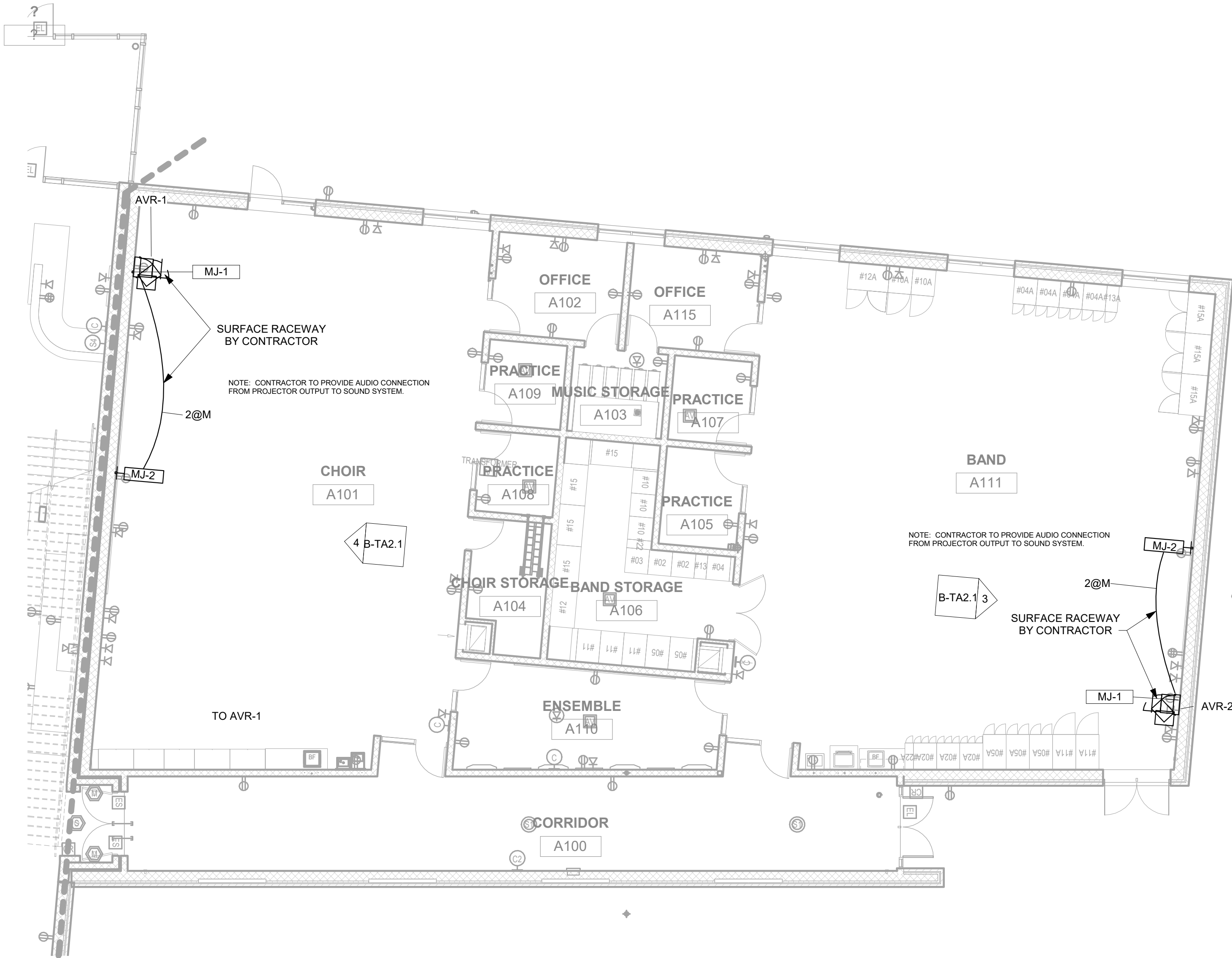


SHEET LIST	
Sheet Number	Sheet Name
B-TA0.1	SYMBOLS, NOTES, DIVISION OF LABOR
B-TA2.1	AV UNIT A FIRST FLOOR PLAN, RCP
B-TA2.4	AV UNIT F FIRST FLOOR, SECOND FLOOR PLANS
B-TA4.1	BAND & CHOIR AV TOUCHPANEL DETAILS
B-TA7.1	BAND & CHOIR AV SCHEMATIC, DETAILS
B-TA7.3	SCIENCE ROOMS AV SCHEMATIC, SECTION

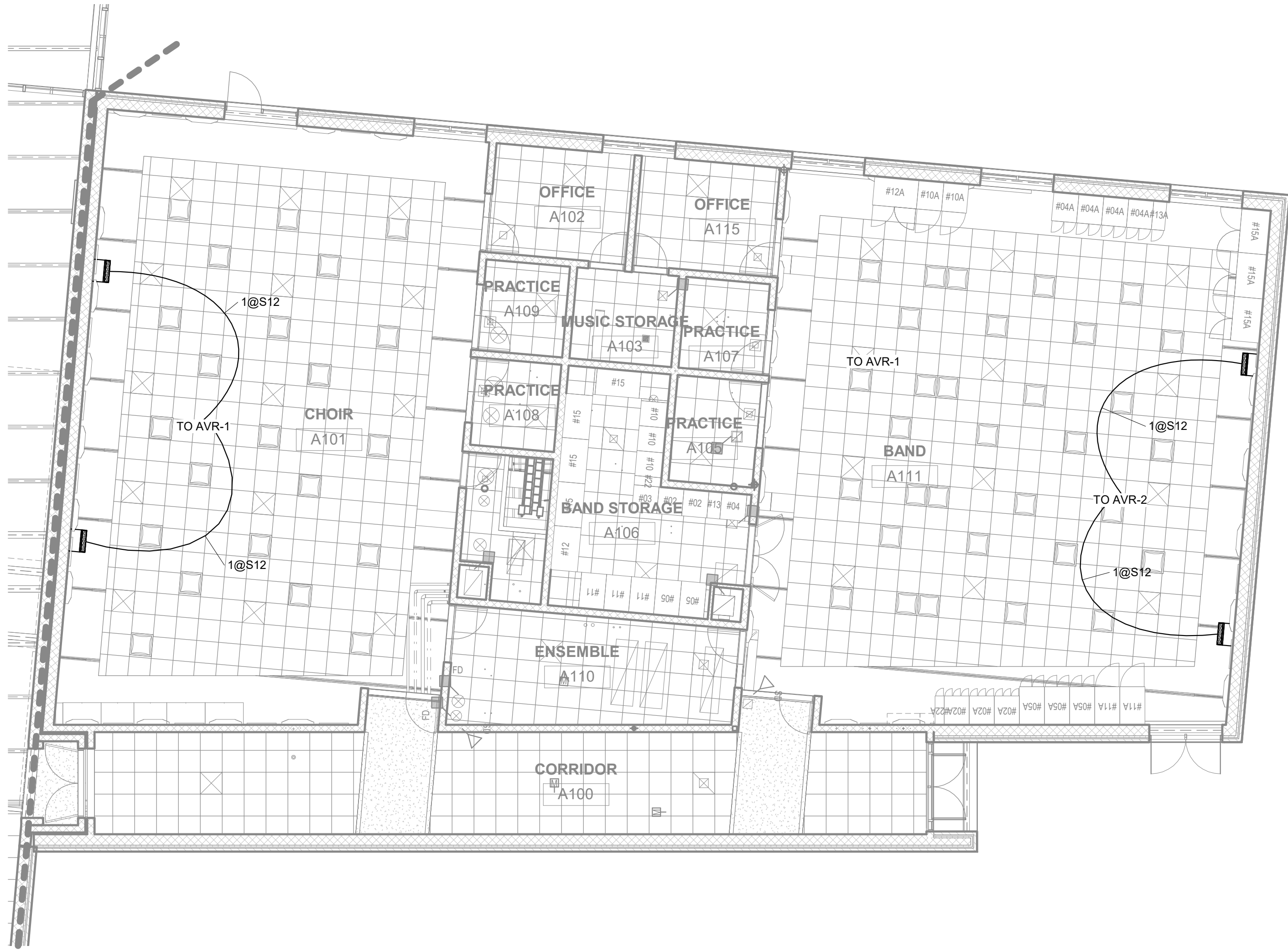
Revisions	No	Date	Description
	1	01.04.22	BIDS

SHEET TITLE

SYMBOLS,
NOTES,
DIVISION OF
LABOR



1 AV UNIT A FIRST FLOOR PLAN
1/8" = 1'-0"



2 AV UNIT A FIRST FLOOR RCP
1/8" = 1'-0"

LOUDSPEAKER SCHEDULE - BAND A111					
Label	Manufacturer	Model	Rotation	Pitch	Azimuth
SP-3	QSC	E112	0.00°	-20.00°	0.00°
SP-4	QSC	E112	0.00°	-20.00°	0.00°

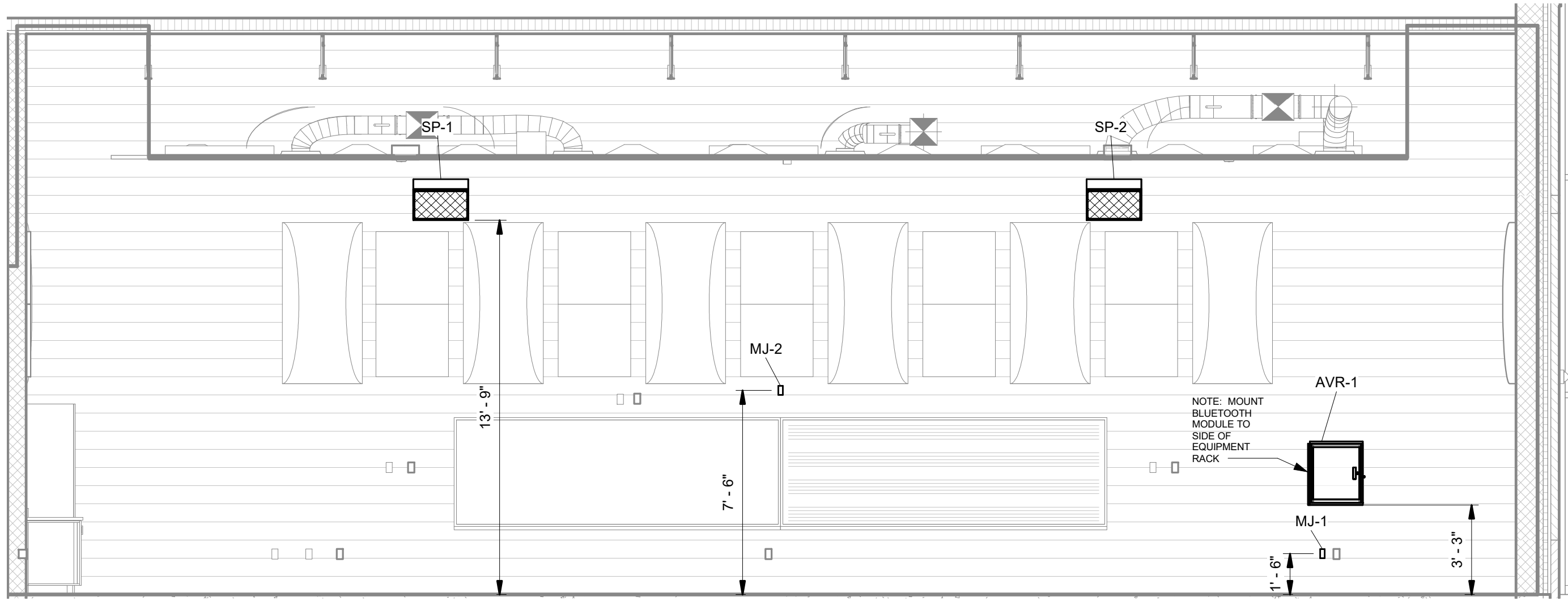
LOUDSPEAKER SCHEDULE - CHOIR A101					
Label	Manufacturer	Model	Rotation	Pitch	Azimuth
SP-1	QSC	E112	0.00°	-20.00°	0.00°
SP-2	QSC	E112	0.00°	-20.00°	0.00°

CABLE TYPES			
CODE	DESCRIPTION	MAKE	MODEL
C5E	CAT5E - 4 UNSHIELDED, TWISTED PAIR	BELDEN	1503
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	BELDEN	2412
CN	CRESNET CONTROL WIRE	WEST PENN	77350
D	DIGITAL MIC/LINE WIRE	BELDEN	1800
DM	DIGITAL MEDIA WIRE/DTP WIRE	CRESTRON	DM-CBL-8G-XX
DMX	DMX LIGHTING CONTROL CABLE	BELDEN	9729
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	WEST PENN	819
HDMI	PRETERMINATED HDMI CABLE	CRESTRON	CBL-HD-X
IC	INTERCOM - 2 PAIR 18 GA W/ SHIELD	WEST PENN	440
L	LINE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
M	MIC - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P2	CONTROL WIRE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P4	CONTROL WIRE - 2 PR 18 GA W/ SHIELD	WEST PENN	440
RF	RG58 ANTENNA CABLE	LISTEN	UA-112
RG	RG213 ANTENNA CABLE	SHURE	UA8XX
RS232	CUSTOM CONTROL CABLE	CUSTOM	CUSTOM
S10	SPEAKER - 1 PR 10 GA SPEAKER WIRE	WEST PENN	C210
S12	SPEAKER - 1 PR 12 GA SPEAKER WIRE	WEST PENN	227
S16	SPEAKER - 1 PR 16 GA SPEAKER WIRE	WEST PENN	225

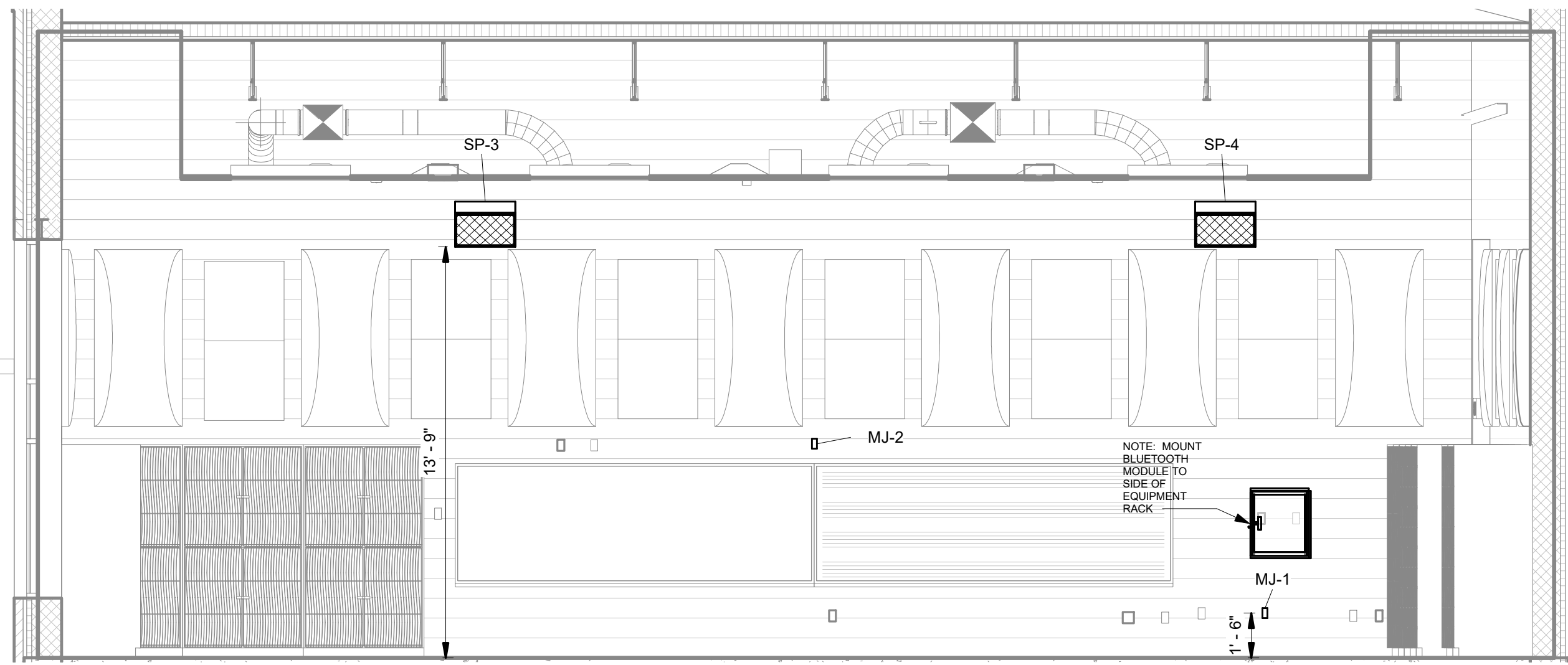
BAND/CHOIR NOTES	
#	Notes

AV EQUIPMENT SCHEDULE - BAND A111							
BOX #	LOCATION	TYPE	MOUNTING HEIGHT	MOUNTING TYPE	BOX & COVER PROVIDED BY	CONN. PLATE PROVIDED BY	COMMENTS
AVR-2	BAND A111	DWR-12-22		WALL			
MJ-1	BAND A111	1 GANG DEEP	1' - 6"	FLUSH	EC	AV	

AV EQUIPMENT SCHEDULE - CHOIR A101							
BOX #	LOCATION	TYPE	MOUNTING HEIGHT	MOUNTING TYPE	BOX & COVER PROVIDED BY	CONN. PLATE PROVIDED BY	COMMENTS
AVR-1	CHOIR A101	DWR-12-22		WALL			
MJ-1	CHOIR A101	1 GANG DEEP	1' - 6"	FLUSH	EC	AV	
MJ-2	CHOIR A101	1 GANG DEEP	7' - 6"	FLUSH	EC	AV	
MJ-2	BAND A111	1 GANG DEEP	7' - 6"	FLUSH	EC	AV	

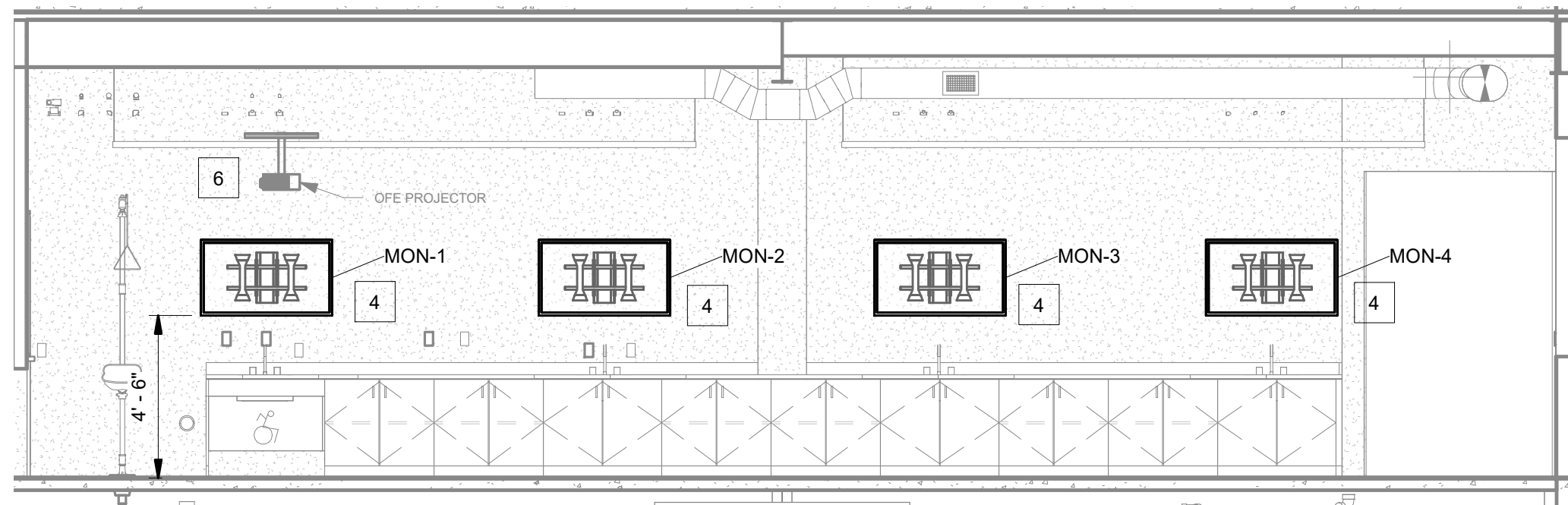


4 CHOIR A101 NORTHWEST ELEVATION
1/4" = 1'-0"



3 BAND A111 SOUTHEAST ELEVATION
1/4" = 1'-0"

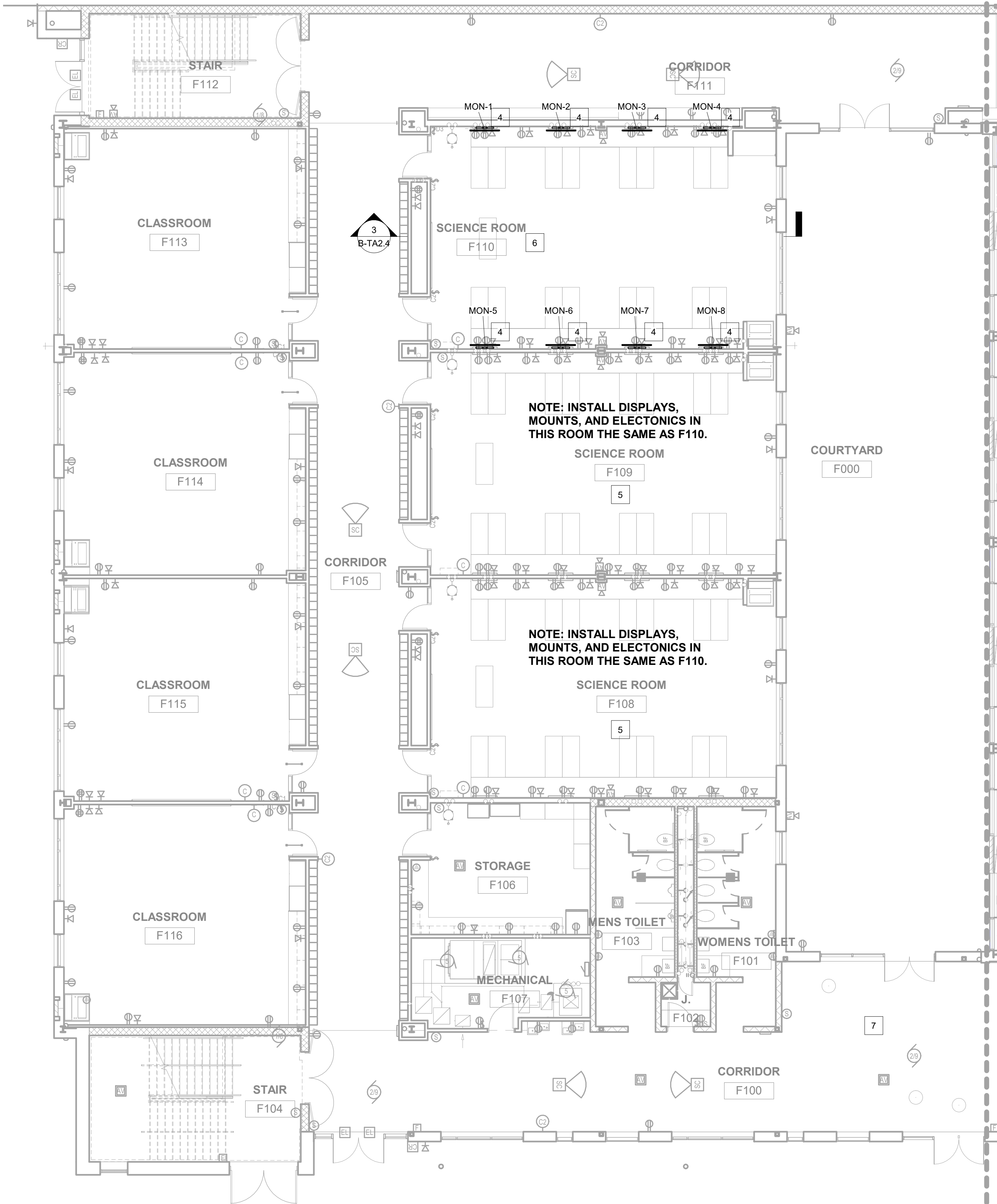
Revisions	No	Date	Description
	1	01.04.22	BIDS



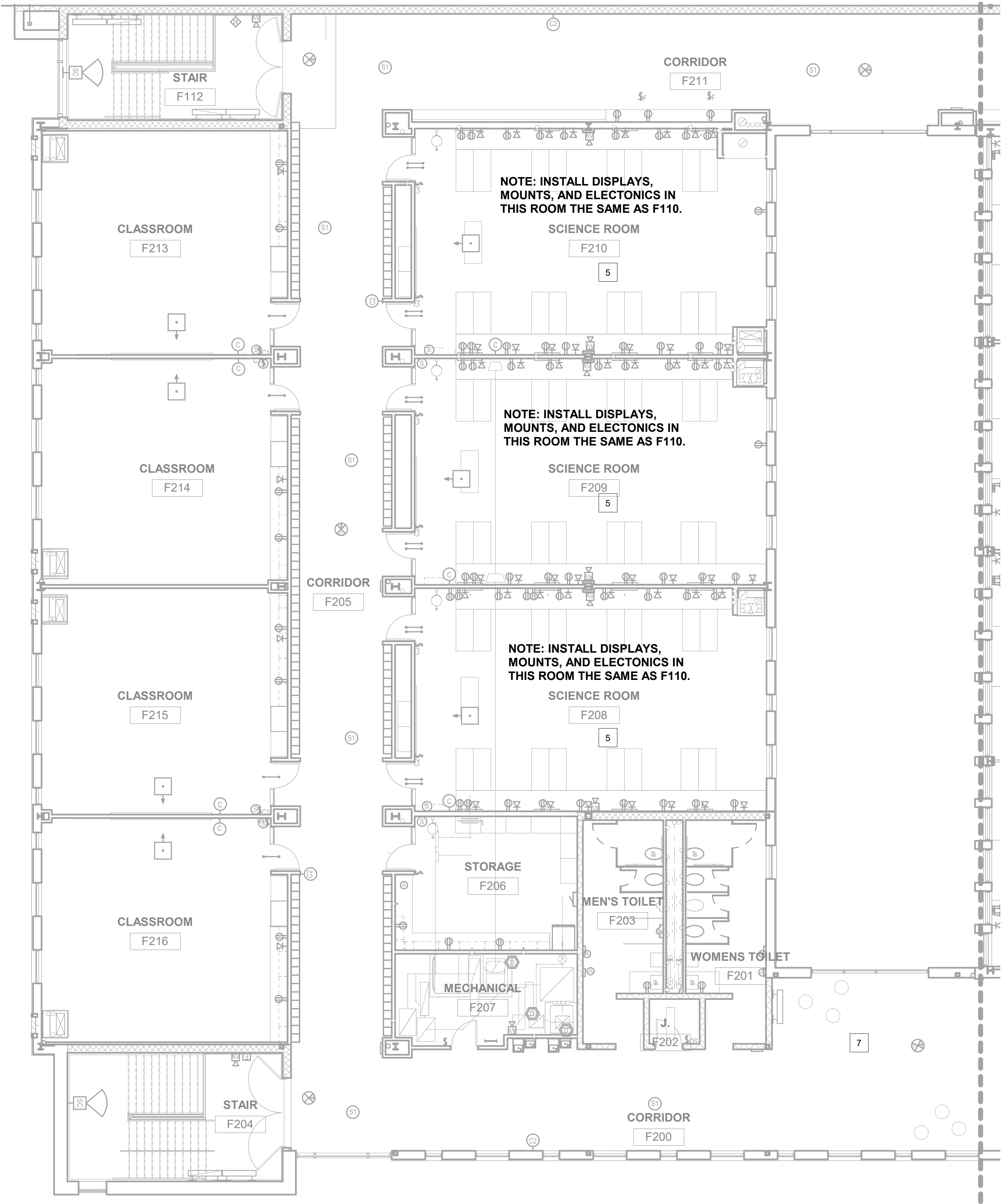
3 SCIENCE ROOM F110 NORTH ELEVATION
1/4" = 1'-0"

CABLE TYPES			
CODE	DESCRIPTION	MAKE	MODEL
C5E	CAT5E - 4 UNSHIELDED, TWISTED PAIR	BELDEN	1503
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	BELDEN	2412
CN	CRESNET CONTROL WIRE	WEST PENN	77350
D	DIGITAL MIC/LINE WIRE	BELDEN	1800
DM	DIGITAL MEDIA WIRE/DTP WIRE	CRESTRON	DM-CBL-8G-XX
DMX	DMX LIGHTING CONTROL CABLE	BELDEN	9729
HD	HIGH DEFINITION VIDEO COAXIAL WIRE	WEST PENN	819
HDMI	PRETERMINATED HDMI CABLE	CRESTRON	CBL-HD-X
IC	INTERCOM - 2 PAIR 18 GA W/ SHILED	WEST PENN	440
L	LINE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
M	MIC - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P2	CONTROL WIRE - 1 PR 22 GA W/ SHIELD	BELDEN	9451
P4	CONTROL WIRE - 2 PR 18 GA W/ SHIELD	WEST PENN	440
RF	RG58 ANTENNA CABLE	LISTEN	LA-112
RG	RG213 ANTENNA CABLE	SHURE	UA8XX
RS232	CUSTOM CONTROL CABLE	CUSTOM	CUSTOM
S10	SPEAKER - 1 PR 10 GA SPEAKER WIRE	WEST PENN	C210
S12	SPEAKER - 1 PR 12 GA SPEAKER WIRE	WEST PENN	227
S16	SPEAKER - 1 PR 16 GA SPEAKER WIRE	WEST PENN	225

SCIENCE NOTES	
#	Notes
4	INSTALL DISPLAY, MOUNT, AND ELECTRONICS AT THIS LOCATION. NEW VIDEO RX AT THIS LOCATION TO UTILIZE EXISTING DATA CABLE RUN AT THIS LOCATION TO IT E128.
5	SCIENCE ROOM AT THIS LOCATION TO HAVE AN IDENTICAL VIDEO SYSTEM TO SCIENCE ROOM F110 INSTALLED. SEE DRAWINGS FOR SCIENCE ROOM F110 FOR DETAILS.
6	EXISTING PROJECTOR AT THIS LOCATION TO REMAIN. HDMI VIDEO INPUT TO PROJECTOR TO BE ROUTED THROUGH NEW HDBT TX AT THIS LOCATION. INSTALL CMA170W IN CEILING NEAR THIS LOCATION TO STORE NEW TX. EXISTING DATA CABLE RUN AT THIS LOCATION TO IT E128 TO BE UTILIZED FOR NEW HDBT VIDEO TX.
7	INSTALL ATLONA HDBT DISTRIBUTION AMPLIFIER IN IT CLOSET. PROVIDE ALL NECESSARY PATCH CABLES TO CONNECT TO THE EXISTING PATCHBAYS.

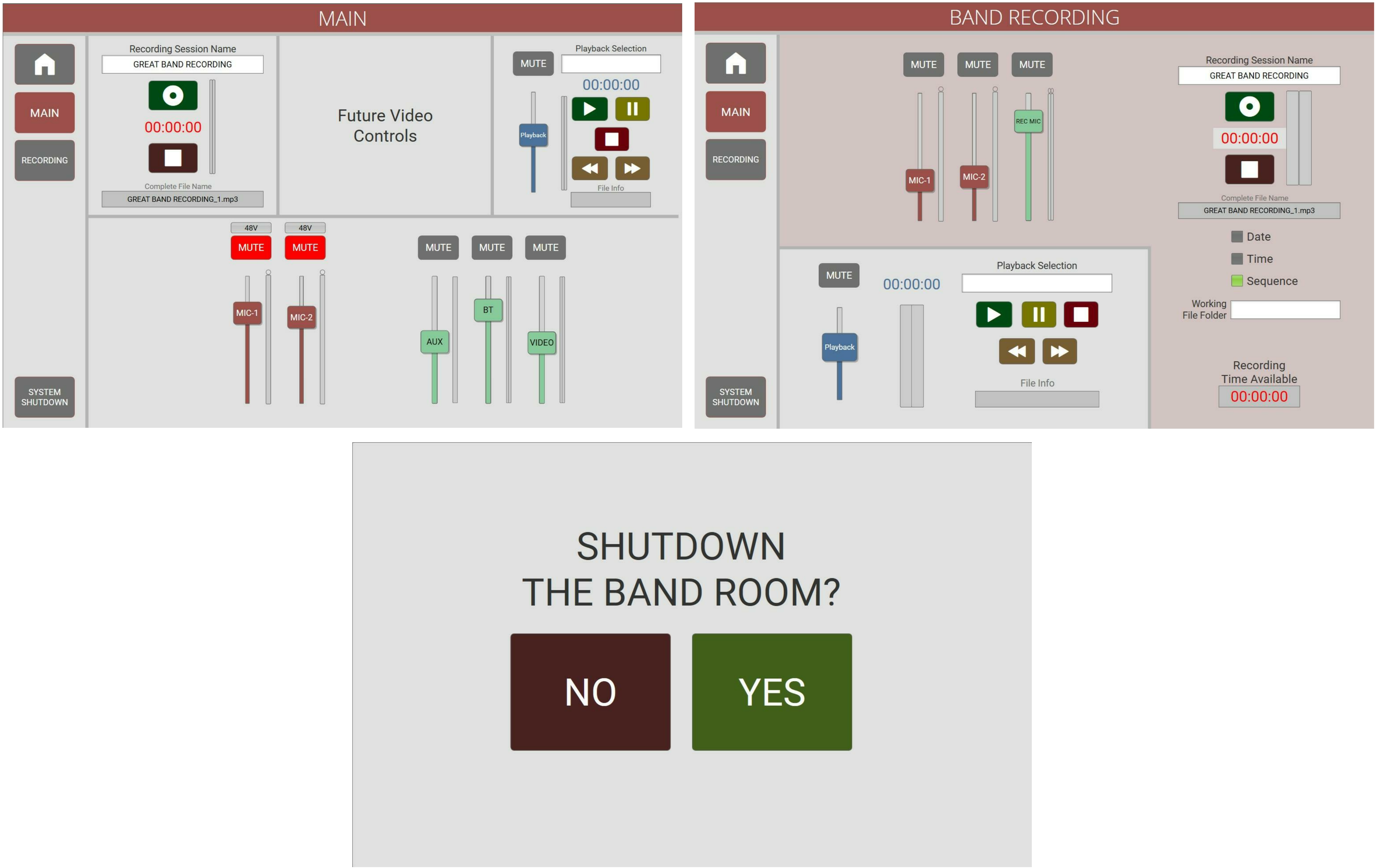


1 AV UNIT F FIRST FLOOR PLAN
1/8" = 1'-0"



2 AV UNIT F SECOND FLOOR PLAN
1/8" = 1'-0"

Revisions	No	Date	Description
	1	01.04.22	BIDS



PROGRAMMING NOTES

- The control system in this facility will handle the control of recording tools and basic sound system operation.
- Wherever possible, the control system should provide true live feedback from all devices and settings.
- TOUCHPANEL FUNCTIONALITY
 - There should be a welcoming splash page where the user should be asked to press anywhere on the screen to begin. Pressing on the page should turn on the audio system so that it is active, as well as mute all audio sources controlled by the system.
 - Muting the audio sources via touching the splash page should trigger a 2-hour timer, during which the audio sources will not be muted by pressing on the splash page. This timer should be reset every time the user touches the touchpanel.
 - Pressing the splash page should bring the user to a login page, where a passcode can be entered to access the "Main" page.
 - The "Home" button should return the user to the splash page.
 - Once a valid passcode has been entered, the "Main" page should appear. A main menu to the left of the screen should also host 3 "navigation buttons" (named "Home", "Main", "Record") to allow the user to switch between different modes and pages.
 - The "Home" button should prompt the user to confirm their choice with a yes/no pop-up window. A yes should return the user to the splash page and require re-entry of a passcode to access the controls again, while a no should return the user to the current page.
 - The "Main" button should bring the user to the "Main" page, where they can power on/off the system, view a live signal monitor for all local audio inputs, adjust/mute those audio inputs, turn the projector on/off and control the projection screen up/down.
 - The "Record" button should bring the user to the "Record" page, where they can select and/or playback existing recordings from a scrolling menu, control the volume of recording playback, start/stop recording, upload, rename and/or download recordings to a dedicated computer, and delete existing recordings.
 - a. Existing recordings should be displayed in a scrolling menu. The currently selected recording should be greyed out. The user should be able to select a different recording by tapping it.
 - b. Selecting the export button should bring up a contextual menu asking the user to confirm the selected recording to be exported. Upon confirmation, the selected recording should be exported to a local computer in a predetermined file location.
 - c. Selecting the rename button should bring up a contextual menu and keyboard that allows the user to rename the currently selected file.
 - d. Selecting the delete button should bring up a contextual menu asking the user to confirm the selected recording to be deleted. Upon confirmation, the selected recording should be deleted.
 - e. Selecting the import button should bring up a contextual menu asking the user to confirm files to be imported from a predetermined file in a local computer. Upon confirmation, all recordings in the predetermined file should be imported to the recordings list.
- All functions and pages described in Touchpanel Functionality (see 3) will be accessible on an iPad via a downloadable app.

1 BAND & CHOIR TOUCHPANEL DETAILS
12" = 1'-0"

Revisions	No	Date	Description						
	1	01.04.22	BIDS						

GRAND LEDGE PUBLIC SCHOOLS
BEAGLE MIDDLE SCHOOL AV
600 W SOUTH ST.

SHEET TITLE

BAND &
CHOIR AV
TOUCHPANEL
DETAILS

Issue	BIDS
Project Name	BEAGLE MIDDLE SCHOOL AV
Project Number	CLP-04
Designed By	TGT
Drawn By	ADF
Checked By	TGT
DATE ISSUE	01.04.22

B-TA4.1

Revisions		
No	Date	Description
1	01/04/22	BIDS

GRAND LEDGE PUBLIC SCHOOLS
BEAGLE MIDDLE SCHOOL AV
600 W SOUTH ST.

BRAGLE MIDDLE SCHOOL AV

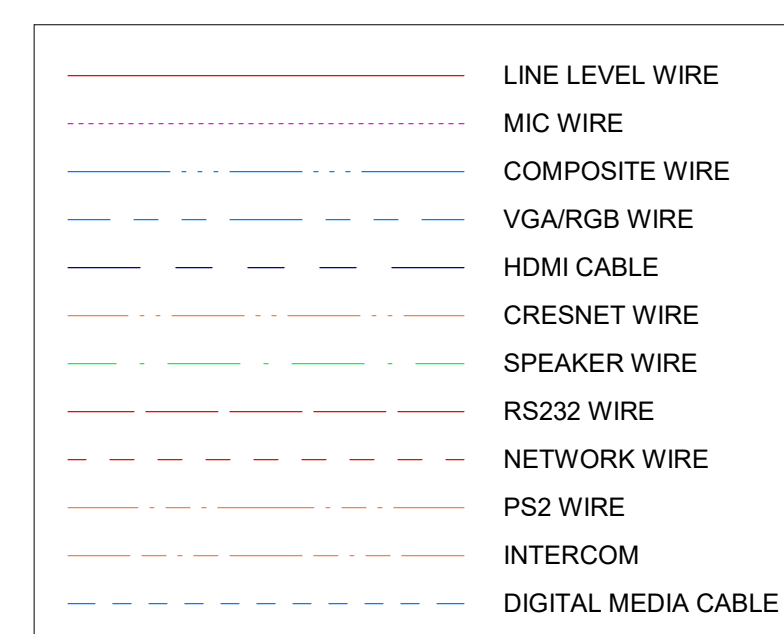
600 W SOUTH ST.

SHEET TITLE

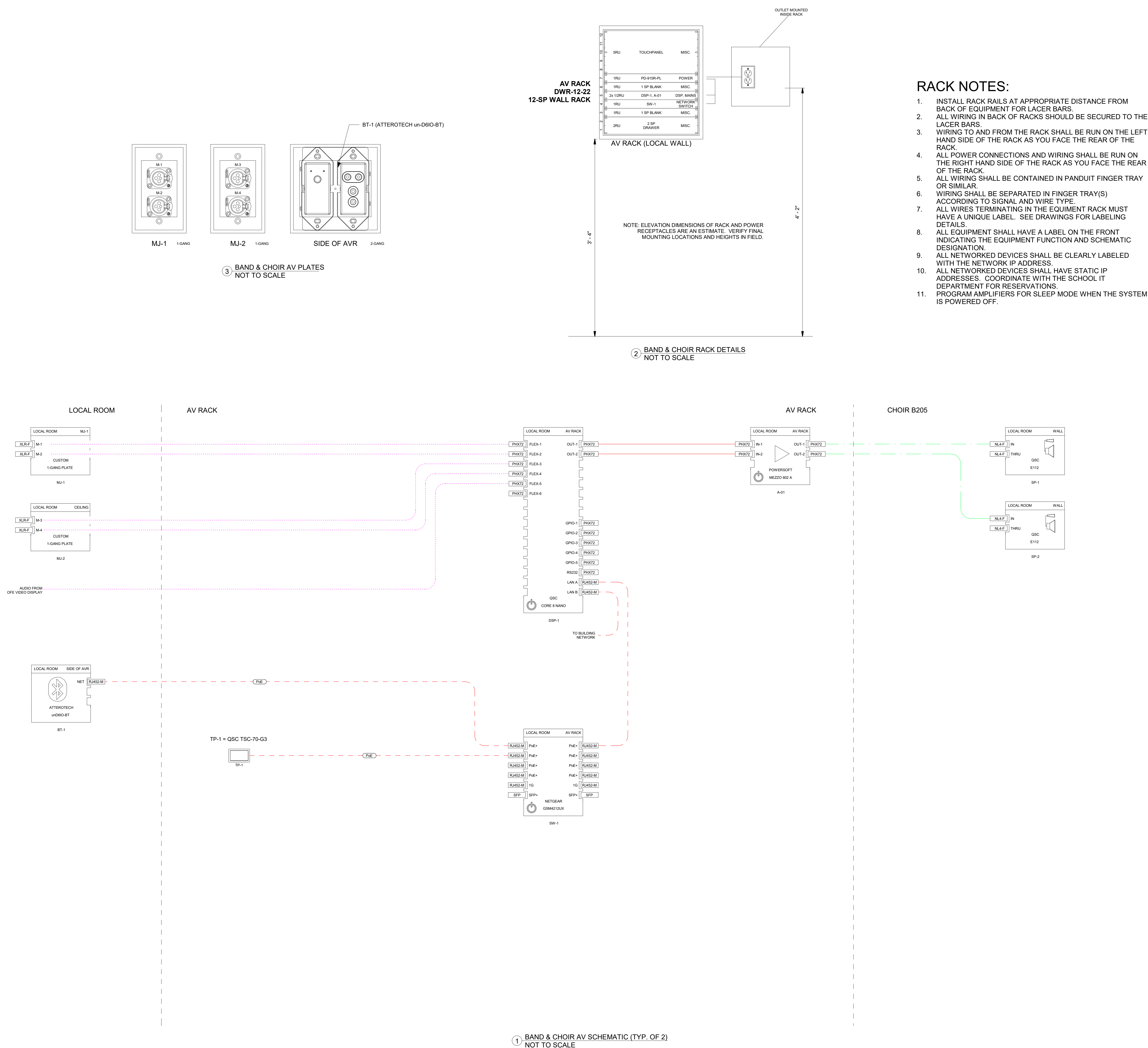
BAND & CHOIR AV SCHEMATIC, DETAILS

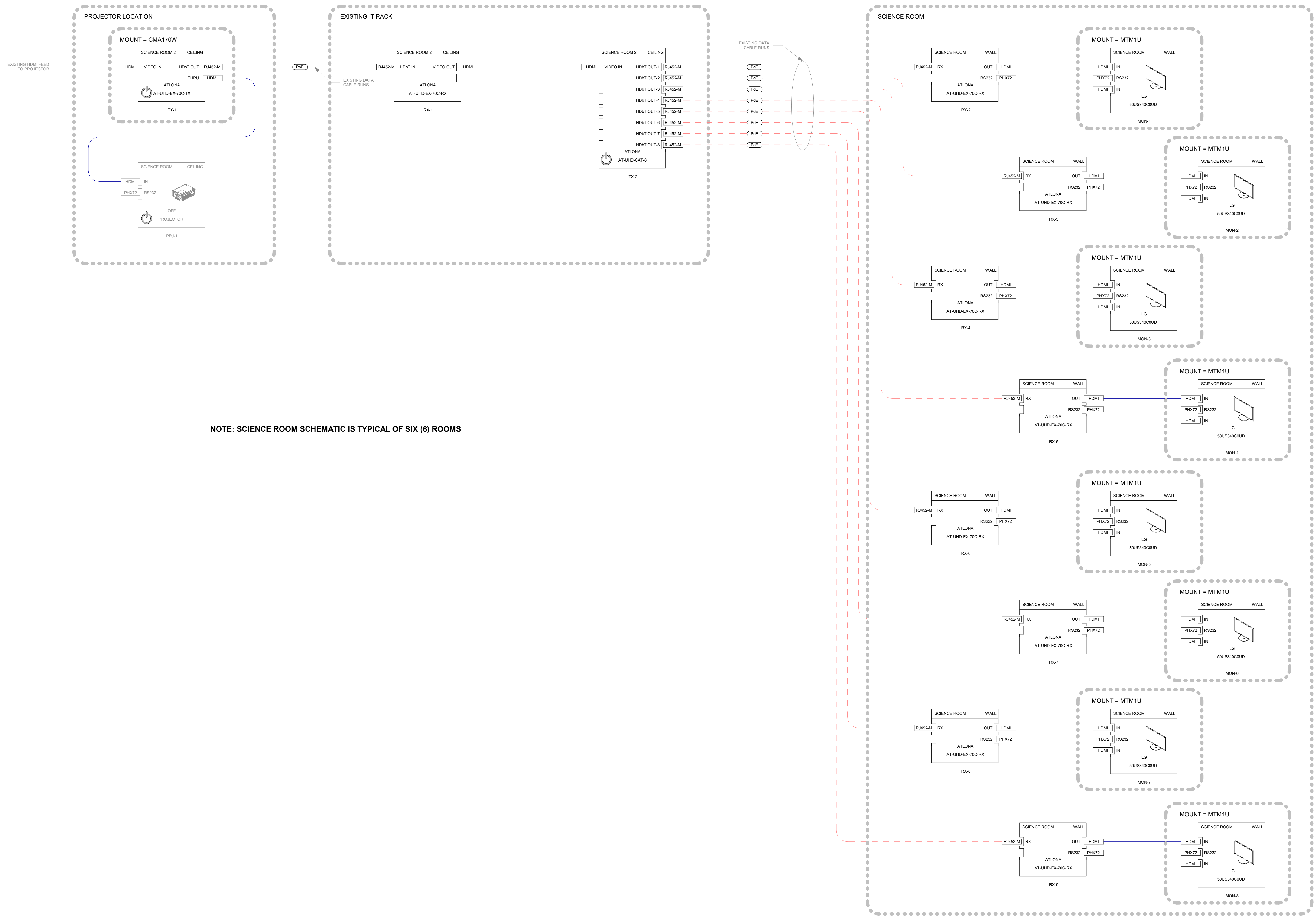
Issue :	
Project Name :	BEAGLE MIDDLE SCHOOL
Project Number :	GI
Designed By :	
Drawn By :	
Checked By :	
DATE ISSUE :	01.04.22

B-TA7.1



SCHEMATIC LINE TYPES





NOTE: SCIENCE ROOM SCHEMATIC IS TYPICAL OF SIX (6) ROOMS

1 SCIENCE ROOM AV SCHEMATIC (TYP. OF 6)
12" = 1'-0"

Revisions		No	Date	Description
1		1	01.04.22	BIDS

GRAND LEDGE PUBLIC SCHOOLS

BEAGLE MIDDLE SCHOOL AV
600 W SOUTH ST.

SHEET TITLE

SCIENCE
ROOMS AV
SCHEMATIC,
SECTION

Issue: _____
Project Name: BEAGLE MIDDLE SCHOOL AV
Project Number: GUP-04
Designed By: _____
Drawn By: _____
Checked By: _____
DATE ISSUE: 01.04.22

B-TA7.3

SCHEMATIC LINE TYPES