INVITATION TO BID

PROJECT: TIMPVIEW HIGH SCHOOL - SOUND SYSTEM UPGRADE

OWNER: PROVO CITY SCHOOL DISTRICT

ARCHITECT: MHTN ARCHITECTS, INC.
420 EAST SOUTH TEMPLE - SUITE 100
SALT LAKE CITY, UTAH 84111

PROPOSAL RECEIPT SEALED PROPOSALS **JUNE 26, 2017 2:00** pm MDST
Provo City School District
Attention: Tina Fluehe
District Purchasing Director
280 West 940 North
Provo, Utah 84604

Sealed Bids from Contractors will be received by the Provo School District until time stated above, for all construction work to complete the above referenced project in accordance with the Contract Documents prepared by MHTN Architects, Inc.

Bids will be received at the times stated above. Proposals received after the opening times stated will not be accepted.

Pre-bid conference will be held at the Project site, Timpview High School 3750 N 650 E, Provo, UT on JUNE 19, 2017 at 11:00 AM, MDST.

Proposals must conform and be responsive to all Documents.

The Provo School District will take advantage of the tax-exempt law that became effective January 1, 1996. The vendors must use tax exempt form TC721G when purchasing construction materials for Provo School District projects. A copy of form TC721G will be completed and signed by a District representative at time of award.

Proposal Documents will be available in Electronic format on or after **JUNE 16, 2017. Plans and Specifications can be requested from MHTN Architects at 420 E South Temple, #100, Salt Lake City, Utah 84111.**

Bid security is required in the form of a **bid bond only** in favor of the Owner, executed by the bidder as principal and a satisfactory surety company as surety, in an amount not less than 5% of the maximum amount of the bid. Bid security shall be given as a guarantee that the proposer will execute the contract if it is awarded to him, in conformity with the Contract Documents.

The successful contractor must submit a performance and payment bond prior to commencement of the work.

Amounts withheld as retainage will be held in an interest bearing account

The Contractor and the contractor's surety shall be liable for and pay the Owner damages for each calendar day of delay until the work is substantially completed.

The Project shall be substantially completed within the number of days indicated in the Project Manual.

No bidder may withdraw his proposal within a sixty-day period after the bid opening.

Provo City School District Board of Education reserves the right to reject any and all proposals, or to waive any irregularities or informalities in any proposal or in the proposal process.

PROVO SCHOOL DISTRICT

GENERAL BID REQUIREMENTS

A. Standard Contract Terms and Conditions

The successful contractor shall be required to execute required AIA Contract Documents with all Terms and Conditions contained therein.

Contract Period

This agreement shall commence on the date the contract is fully executed by the parties and shall continue for one (1) year beyond substantial completion for correction of warranty items. Construction time period is noted in the construction documents.

B. Bid Requirements

1. By signing their Bid, the Contractor certifies the following:

   a.) **CONFLICT OF INTEREST**: Contractor certifies that it has not offered or given any gift or compensation prohibited by the laws of the State of Utah to any officer or employee of the state or participating political subdivision to secure favorable treatment with respect to being awarded this contract.

   b.) **NON-COLLUSION**: By signing the bid, the bidder certifies that the bid submitted has been arrived at independently and has been submitted without collusion with, and without any agreement, understanding or planned common course of action with, any other vendor of materials, supplies, equipment or services described in the invitation to bid, designed to limit independent bidding or competition.

   c.) **DEBARMENT**: The contractor certifies that neither the company nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract) by any governmental department or agency.

   If the contractor cannot certify this statement, attach a written explanation for review by the District.

   d.) **Non-Discrimination Requirements**

   The proposing firm must comply, at all times during the solicitation and contracting period, with all applicable Federal, State, County and City anti-discrimination laws, ordinances, rules, and regulations. Any violations of this provision shall be considered a violation of a material provision of the solicitation

process and subsequent contract and shall be grounds for disqualification, cancellation, termination, or suspension.

e.) **Other Requirements**

1.) **Conform to Request for Proposal Guidelines**

2.) **Bids Submitted on a Timely Basis**

One copy of the Bid labeled RE; Timpview Sound System Upgrades must be submitted to Tina Fluehe District Purchasing Director on or before 2:00 p.m. Mountain Daylight SavingsTime Any Bid received after the due date and time will be deemed non-responsive and will not be considered for evaluation. ***Faxed or emailed copies will not be accepted.***

C. Project Bid Calendar

Date: 16 JUNE 2017 Documents Released

Date: 19 JUNE 2017 Pre-Bid Meeting at Timpview High 11:00 AM, MDST

Date: 26 JUNE 2017 Proposals due. Sealed proposals - One (1) complete and bound copy is to be submitted at the District Offices no later than 2:00 p.m. Mountain Daylight Savings Time.

Recommendation given to the Board of Education for approval follows evaluation of Bids.

D. Provo City School District Contacts

All inquiries relative to this Request for Proposal must be directed to:

Tina Fluehe District Purchasing Director. TinaF@provo.edu

No other Provo City School District employee, School Board Member, or evaluation committee member shall be contacted concerning this RFP during the procurement and selection processes. Failure to comply with this requirement will result in disqualification.

E. Questions Regarding the Bid Documents or Proposed Substitutions

All questions regarding the Bid Documents or Proposed Substitutions must be directed to: Scott Later, AIA at MHTN Architects, Inc., 801-595-6700. Scott.later@mhtn.com

F. Right of Rejection

The Board of Education reserves the right to reject any and all proposals or to waive any non-statutory informality. The Board of Education further reserves the right to make the contract award deemed by the Purchasing Director and the selection committee to be in the best interest of the District. The Board's decision to accept or reject the contract shall be final.

G. Firm Proposal

An official of the Firm authorized to bind the company must sign proposals and proposal must be firm for a period of sixty (60) days from the due date.

II. PROPOSED SERVICES

A. Construction

Construction shall meet all requirements of the Contract Documents issued by MHTN Architects Inc., with accompanying drawings, specifications and addenda.

B. One Year Warranty Inspection

The Contractor will be required to visit the site one year after Substantial Completion with the assigned representative of the District and the Architect to review warranty issues. A Warranty Punch List will be issued and the Contractor will be responsible to complete these warranty items. Additional inspections will take place as required to satisfactorily complete warranty punch list items in accordance with Section 12.2 of the General Conditions AIA A201.

C. Schedule

The successful contractors must review and familiarize themselves with the required project completion date as it pertains to the performance of their work. Liquidated damages will be assessed upon failure to complete the project on or before the stipulated date in the construction documents.

Contractor shall provide a critical path schedule at the time of the contract signing showing how completion dates will be met and updated as required by the Owner and Architect throughout the construction period

III. **INSURANCE** The selected contractor will provide Builders Risk Insurance for the project and include the costs in the Schedule of Values. The Contractor may purchase Builders Risk Insurance through Provo City School District and State Risk Management, but the coverage will be in the Contractor's name.

FORM OF PROPOSAL

TO: Tina Fluehe – District Purchasing Director
Provo School District

PROJECT: TIMPVIEW HIGH SCHOOL SOUND SYSTEM UPGRADES

NAME OF PROPOSER: _____

PHONE_____

DATE: _____

Gentlemen:

The undersigned, having examined the Drawings and Specifications and related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of labor, hereby propose to furnish all labor, materials and supplies as required for the Project in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the work required under the Contract Documents of which this proposal is a part.

ADDENDA:
I/We acknowledge receipt of the following addenda: ___/___/___/___

BID BOND: (Included in Bid amount as 5% of Project Total)

Enclosed is _____, as required, in the sum of _____.
(Bond or Certified Funds)

BASE BID TOTAL: Total project cost including Bid bond, and Insurance

_____**Dollars ($**_____**)**
(In the case of discrepancy, written amount shall govern)

SOUND SYSTEM – MODEL/BRAND_____

_____

SCHEDULE – Starting at issuance of Notice to Proceed

Number of weeks to prepare and receive approval for Submittals _____

Number of weeks to order equipment_____

Number of weeks to install _____

Number of weeks to Final completion _____

COMPLETION DATE:

I /We guarantee and shall be liable for and shall pay the Owner the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the Work is complete and including all punch list items: Five Hundred dollars ($500.00) per day.

This bid shall remain good for 60 days after bid opening.

Proposers are required to submit to the Provo School District a copy of their State of Utah Contractor's License, including a statement of licensure limits. If proposer has requested an increase of monetary licensure limits, a copy of the request must be attached to the Proposal Form when submitted for Bid to the District.

BONDS:
Upon receipt of notice of acceptance of this Bid, the undersigned agrees to execute the contract within five (5) days and deliver Performance and Payment Bond in the prescribed form in the amount of 100% of the general construction contract price for faithful performance of the contract. The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Provo School District in the event that the contract is not negotiated and/or the Performance and Payment bond delivered within the time set forth, as liquidated damages for the delay and additional expense caused thereby.

Cost of Performance and Payment Bond included in the original Base Bid:

$_____

SUBSTITUTIONS:
The following substitutions of materials and/or equipment are proposed:

Item	Manufacturer and Description	Addition	Deduction
_____	_____	$_____	$_____
_____	_____	$_____	$_____

Type of Organization:
(Corporation, Partnership, Individual, etc.)
SEAL (If a Corporation)

Respectfully Submitted,

_____
Name of Bidder

_____
Title

_____
Authorized Signature

Attachments: Bid Bond
State of Utah Contractors License

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SECTION 260001 – ELECTRICAL GENERAL PROVISIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. The contract documents indicate the extent of electrical work. Provide all labor, materials, equipment, supervision and service necessary for a complete electrical system as described in divisions 26 and 27.

1.3 RELATED SECTIONS:

A. Other Divisions relating to electrical work apply to the work of this section. See other applicable Divisions including, but not necessarily limited to:

1. Division 1 – General Requirement
2. Division 27 – Communications

1.4 INTERPRETATIONS OF DRAWINGS AND SPECIFICATIONS:

A. Prior to bidding the job, submit requests for clarification in writing to the Architect/Engineer prior to issuance of the final addendum.

B. After signing the contract, provide all materials, labor, and equipment to meet the intent, purpose, and function of the contract documents.

C. The following terms used in Division 26, and 27 documents are defined as follows:

1. "Provide" - Means furnish, install, and connect, unless otherwise indicated.
2. "Furnish" - Means purchase new and deliver in operating order to project site.
3. "Install" - Means to physically install the items in-place.
4. "Connect" - Means make final electrical connections for a complete operating piece of equipment. This includes providing conduit, wire, terminations, etc. as applicable.
5. "Or Equivalent" - Means to provide equivalent equipment. Such equipment must be approved by the Engineer prior to bidding.

1.5 EXAMINATION OF SITE:

A. Visit the site and verify existing field conditions prior to submitting bid.

B. All costs arising from site conditions and/or preparation shall be included in the base bid. No additional charges will be allowed due to inadequate site inspection.

1.6 QUALITY ASSURANCE:

A. Perform work in accordance with all governing codes, rules, and regulations including the following minimum codes (latest editions or as otherwise accepted by the Authorities Having

Jurisdiction):

1. National Electric Code (NEC)
2. International Building Code (IBC)
3. International Fire Code (IFC)
4. International Mechanical Code (IMC)
5. International Plumbing Code (IPC)
6. American Disability Act (ADA)
7. National Electrical Safety Code (NESC)
8. Local Codes and Ordinances

B. Comply with all standards where applicable for equipment and materials including the following minimum standards:

1. Underwriter's Laboratories (UL)
2. American Society for testing Materials (ASTM)
3. Certified Ballast Manufacturers (CBM)
4. Insulated Cable Engineers Association (ICEA)
5. National Electrical Manufacturer's Institute (NEMA)
6. American National Standards Institute (ANSI)
7. Electrical Testing Laboratories (ETL)
8. National Fire Protection Association (NFPA)
9. Institute of Electrical and Electronics Engineers (IEEE)
10. American Institute of Electrical Engineer's Electrical Power
11. Systems and Grounding in Commercial Construction
12. Illuminating Engineers Society (IES)

C. Provide new electrical equipment conforming to all requirements as set forth in the above standards. Provide UL labeled equipment where such label is applicable.

D. Comply with all state and local codes and ordinances. When conflicts occur among codes, standards, drawings, and/or specifications, the most stringent requirements shall govern.

E. Obtain all permits, inspections, etc. required by authority having jurisdiction. Include all fees in bid. Provide a certificate of approval to the owner's representative from the inspection authority at completion of the work.

F. Provide only first-class workmanship from competent workers, conforming to the best electrical construction practices.

G. The contractor shall have a current state contracting license applicable to type of work to be performed under this contract.

1.7 SUBMITTALS:

A. The contractor shall submit complete shop drawings and other required submittals. Incomplete submittals will be returned to the contractor unreviewed. No time extensions or cost increases will be allowed for delays caused by the return of incomplete submittals.

1.8 WARRANTY:

A. Ensure that the electrical system installed under this contract is in proper working order and in compliance with drawings, specifications, and/or authorized changes and is free from electrical defects. Without additional charge, replace or repair, to satisfaction of the owner's representative, except from ordinary wear and tear, any part of the installation which may fail or

be determined unacceptable within a period of one (1) year after final acceptance or as otherwise indicated in individual sections, but in no case less than one year. Warranty incandescent and fluorescent lamps only for a period of two months from the date of substantial completion.

B. Provide complete warranty information for each item including beginning of warranty period, duration of warranty, names, addresses, and telephone numbers and procedures for filling a claim and obtaining warranty services. Written warranties and guarantees are to be submitted separately as:

1. Originals bound in a binder clearly identified with the title, "WARRANTIES AND GUARANTEES," the project name, the project number, and the Contractor's business name.
2. Electronic documents in *.pdf format.

PART 2 – PRODUCTS

2.1 GENERAL:

A. All materials shall be new and shall bear the manufacturer's name, trade name, and the approved testing laboratory such as the UL label in every case where a standard has been established for that particular material. Used materials are acceptable only if specifically indicated on drawings.

2.2 SUBSTITUTION OF MATERIALS:

A. Provide only specified products or products approved by addendum. Substitutions will be considered if two copies of the proposal is received at the architect's/engineer's office eight (8) working days prior to the bid day. Include in the proposal the specified and proposed catalog numbers of the equipment under consideration and a catalog cut sheet(s) with pictorial and descriptive information. Certify that the equipment proposed is equal to that specified, that it has the same electrical and physical characteristics, compatible dimensions, and meets the functional intent of the contract documents.

B. It is the responsibility of the contractor to make all substituted equipment comply with the intent of the contract documents and bear all cost associated with conflicts arising form the use of substituted equipment.

C. Provide samples if so required by the architect or engineer before or after bid day.

PART 3 – EXECUTION

3.1 GENERAL:

A. Workmanship: Provide only first class workmanship from competent workers. Defective materials or workmanship will not be allowed on the project. Provide competent supervision for the work to be accomplished. Keep same foreman on the job, unless a change is authorized by the engineer.

B. Provide cutting, drilling, channeling, etc. only as necessary for proper completion of the work. Do not cut structural members unless authorization is issued in writing by the architect/engineer.

C. Repairs: Repair damage to building, grounds, or utilities as a result of work under this contract at no additional cost to the owner.

D. Dimensioning: Electrical drawings indicate locations for electrical equipment only in their approximate location, unless specifically dimensioned. Do not scale electrical drawings for dimensional information. Refer to architectural drawings and shop drawings where applicable for locations of all electrical equipment. Field verify all dimension on the job site.

E. Provide block-outs, sleeves, demolition work, etc., required for installation of work specified in this division.

F. Standards: Provide electrical installation in accordance with manufacturer's written instructions, applicable requirements of NEC, NEMA standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

G. All workmen doing work of any nature on State of Utah projects must at all times carry their electrician's license with them and show it upon request. The acceptable ratio of apprentice to journeyman electricians on the job is 1:1.

3.2 REQUESTS FOR INFORMATION:

A. When it is clearly apparent that information is not adequately described in the construction documents or when a coordination problem exists, submit a request for information (RFI) through proper contractual channels. The electrical engineering design firm will provide a response through its contractual channel. Although verbal direction may be given to expedite changes, responses are not considered part of the contract documents until a change order has been issued and signed by the Owner or his designated representative. The Contractor shall bear all costs associated with proceeding on any change order that has not been approved by the Owner or his designated representative.

B. Any damages caused by construction delays due to frivolous RFI's, will be born solely by the Contractor.

3.3 SAFETY PRECAUTIONS:

A. Provide all necessary guards or construction barriers and take all necessary precautions to insure the safety of life and property.

3.4 CLEAN:

A. Clean up all equipment, conduit, fittings, wire, packing cartons, plastic, and other debris that is a direct result of the installation of the work of this division, both during the execution, and at the conclusion, of the project. Keep the site clean and safe during the progress of the work. Clean fixtures, interior and exterior of all equipment, and raceways prior to final acceptance. Vacuum interior of all electrical panels and equipment. Correct any damaged equipment. Touch-up or repaint if necessary.

3.5 POWER OUTAGES:

A. All power outages required for execution of this work shall occur during non-standard working hours and at the convenience of the owner. Any electrical service interruption will be coordinated at least 7 days in advance of the power shut-off. Include all costs for overtime work in bid. Coordinate all outages and proceed only after receiving authorization from the owner's representative. Keep all outages to an absolute minimum.

3.6 STORAGE AND PROTECTION OF MATERIALS:

A. Provide storage space for storage of materials and apparatus and assume complete responsibility for all losses due to any cause whatsoever. Lost or damaged materials will be replaced at no additional cost to owner. Do not store materials and apparatus in any public thoroughfare or in any area on the site where such storage would constitute a hazard to persons in the vicinity. Protect completed work, work underway, and apparatus against loss or damage.

3.7 FIRE PENETRATION SEALS:

A. Seal all raceway and/or cable penetrations through fire-rated floors, wall, and ceilings to prevent the spread of smoke, fire, toxic gas or water through the penetration either before, during or after fire. Provide penetration sealants and fittings of ratings to match the rating of the penetrated materials so that the original fire rating of the floor or wall is maintained as required by Article 300-21 of the NEC.

B. Sealant Systems: Provide sealants, wall wraps, partitions, caps, and other accessories complying with UL 1479 (ASTM E-814) from the following where applicable:

1. 3M Fire Barrier Sealing Penetration System
2. Chase Foam Fire Stop System
3. Thomas and Betts Flame Safe Fire Stop System
4. Nelson Fire Stop Products

C. Fittings: Where applicable, provide OZ Type CFSF/I and CAFSF/I fire seal fittings for conduit and cable penetrations through concrete and masonry wall, floor, slabs, and similar structures.

D. Install sealants and fittings in accordance with all manufacturer's written instructions.

3.8 TESTS:

A. Notify engineer prior to all testing specified herein at least three business days prior to testing. Engineer shall observe all tests to insure the proper operation of the electrical system.

END OF SECTION 260001

SECTION 26 0072 - ELECTRICAL SUPPORTS AND SEISMIC RESTRAINTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Seismic restraints for electrical equipment and systems.
3. Construction requirements for concrete bases.

1.3 DEFINITIONS:

A. IBC: International Building Code.

B. Seismic Restraint: A structural support element such as a metal framing member, a cable, an anchor bolt or stud, a fastening device, or an assembly of these items used to transmit seismic forces from an item of equipment or system to building structure and to limit movement of item during a seismic event.

1.4 SUBMITTALS:

A. Product Data: Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of electrical support and seismic-restraint component used.

1. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an agency acceptable to authorities having jurisdiction.
2. Annotate to indicate application of each product submitted and compliance with requirements.

B. Shop Drawings: Indicate materials and dimensions and identify hardware, including attachment and anchorage devices, signed and sealed by a qualified professional engineer. Include the following:

1. Fabricated Supports: Representations of field-fabricated supports not detailed on Drawings.
2. Seismic Restraints: Detail anchorage and bracing not defined by details or charts on Drawings. Include the following:
   a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
   b. Details: Detail fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events.

c. Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

C. Coordination Drawings: Show coordination of seismic bracing for electrical components with other systems and equipment in the vicinity, including other supports and seismic restraints.

D. Welding certificates.

E. Qualification Data: For professional engineer and testing agency.

F. Field quality-control test reports.

1.5 QUALITY ASSURANCE:

A. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

B. Testing of Seismic Anchorage Devices: Comply with testing requirements in Part 3.

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 – PRODUCTS

2.1 MANUFACTURERS:

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS:

A. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed under this Project, with a minimum structural safety factor of five times the applied force.

B. Steel Slotted Support Systems: Comply with MFMA-3, factory-fabricated components for field assembly.

1. Available Manufacturers:
   a. Cooper B-Line; a division of Cooper Industries.
   b. ERICO International Corporation.
   c. Allied Support Systems; Power-Strut Unit.
   d. GS Metals Corp.
   e. Michigan Hanger Co., Inc.; O-Strut Div.
   f. National Pipe Hanger Corp.
   g. Thomas & Betts Corporation.

h. Unistrut; Tyco International, Ltd.
i. Wesanco, Inc.

2. Finishes:
   a. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.
3. Channel Dimensions: Selected for structural loading and applicable seismic forces.

C. Raceway and Cable Supports: As described in NECA 1.

D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Verify suitability of fasteners in subparagraph below for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick.
2. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
   a. Available Manufacturers:
      1) Hilti, Inc.
      2) ITW Construction Products.
      3) MKT Fastening, LLC.
      4) Simpson Strong-Tie Co. Inc.
3. In the following subparagraph, use stainless steel anchors in corrosive environments.
4. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
   a. Available Manufacturers:
      1) Cooper B-Line; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc
      3) Hilti, Inc.
      4) ITW Construction Products.
      5) MKT Fastening, LLC.
      6) Powers Fasteners.
5. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
6. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.
7. Toggle Bolts: All-steel springhead type.
8. Hanger Rods: Threaded steel.

2.3 SEISMIC-RESTRAINT COMPONENTS:

A. Rated Strength, Features, and Application Requirements for Restraint Components: As defined

in reports by an agency acceptable to authorities having jurisdiction.

1. Structural Safety Factor: Strength in tension, shear, and pullout force of components used shall be at least five times the maximum seismic forces to which they will be subjected.

B. Angle and Channel-Type Brace Assemblies: Steel angles or steel slotted-support-system components; with accessories for attachment to braced component at one end and to building structure at the other end.

C. Cable Restraints: ASTM A 603, zinc-coated, steel wire rope attached to steel or stainless-steel thimbles, brackets, swivels, and bolts designed for restraining cable service.

1. Available Manufacturers:
   a. Amber/Booth Company, Inc.
   b. Loos & Co., Inc.
   c. Mason Industries, Inc.
2. Seismic Mountings, Anchors, and Attachments: Devices as specified in Part 2 "Support, Anchorage, and Attachment Components" Article, selected to resist seismic forces.
3. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rod, of design recognized by an agency acceptable to authorities having jurisdiction.
4. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to type and size of anchor bolts and studs used.
5. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to type and size of attachment devices used.

2.4 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES:

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 5 Section "Metal Fabrications" for steel shapes and plates.

PART 3 – EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 for application of hangers and supports for electrical equipment and systems, except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for raceways as within 12 inches of coupling, fitting, and box, at each 90 degrees bend, minimum of two supports per ten foot run. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps, or as otherwise required by an agency acceptable to authorities having jurisdiction.

3.2 SUPPORT AND SEISMIC-RESTRAINT INSTALLATION:

A. Comply with NECA 1 for installation requirements, except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, raceways may be supported by openings through structure members, as permitted in NFPA 70.

C. Install seismic-restraint components using methods approved by the evaluation service providing required submittals for component.

D. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

E. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69 Spring-tension clamps.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

F. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

G. Do not drill or core cut holes for anchors or use powder-activated fasteners in post-tension slabs, joists, and beams.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS:

A. Comply with installation requirements in Division 5 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 INSTALLATION OF SEISMIC-RESTRAINT COMPONENTS:

A. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

B. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

C. Restraint Cables: Provide slack within maximums recommended by manufacturer.

D. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, upper truss chords of bar joists, or at concrete members.

3.5 FIELD QUALITY CONTROL:

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing: Test pullout resistance of seismic anchorage devices.

1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless post connection testing has been approved), and with at least seven days' advance notice.
3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
5. Test to 90 percent of rated proof load of device.
6. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.

C. Record test results.

END OF SECTION 26 0072

SECTION 260080 – ELECTRICAL DEMOLITION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26 and 27 sections making reference to electrical demolition.

1.2 DESCRIPTION OF WORK:

A. Extent of electrical demolition work is indicated by drawings.

B. Electrical demolition items are shown to give a basic description of the extent of demolition work, but may not be inclusive.

C. Do not assume that the electrical drawings reflect as-built conditions. Visit and observe the project prior to submitting bid and determine extent of electrical demolition work.

1.3 QUALITY ASSURANCE:

A. Standards: Refer to Section 260001 - Electrical General Provisions as applicable.

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION

3.1 GENERAL:

A. Demolition work shall be laid out in advance to eliminate unnecessary cutting, drilling, channeling, etc. Where such cutting, drilling, or channeling becomes necessary, perform with care, use skilled mechanics of the trades involved. Cutting work of other contractors shall be done only with the consent of that contractor. Cutting of structural members is not permitted. Repair damage to building and equipment as a result of electrical demolition work under this contract at no additional cost to owner.

B. Obtain permission from the engineer before penetrating any ceiling, floor, and wall surfaces.

3.2 METHODS:

A. Disconnect and remove any/all devices, equipment, etc. required for proper completion of the work whether shown or not.

B. Relocate, rewire, and/or reconnect any/all devices, equipment, etc. that for any reason obstructs construction.

C. Maintain circuit integrity and continuity of all existing circuits/feeders, and systems that interfere with or are interrupted by remodel work, unless those circuits/feeders are to be abandoned completely. Maintain all circuits and systems in operation during construction. Provide temporary panels, temporary wiring and conduits, etc. as required.

D. Remove and dispose of all raceways, conductors, boxes, devices, equipment, etc., that are not to be reused.

E. Existing raceways may be reused, if in place, where in compliance with the contract documents and the National Electrical Code. Upgrade and/or provide new conduit supports where necessary for all raceways being reused. Insure integrity of existing raceways before re-use.

3.3 PATCHING AND REPAIR:

A. Finished Surfaces: The electrical contractor is responsible for patching and repair of all existing interior surfaces pertaining to the installation of work under this Division, unless specifically noted elsewhere in the contract documents. Where patching and repair is necessary, surfaces shall be finished (painted, etc.) to match the adjacent materials, finished, and colors.

B. Hard Surfaces: Whenever excavation or trenching is required for the installation of electrical work, it shall be the responsibly of the electrical contractor to make repairs and/or replacements of hard finish surfaces such as concrete, asphalt, etc.

3.4 CONCEALING:

A. All raceways shall be concealed within the ceilings, walls, and floors, except in locations where exposed raceways are specifically permitted, such as equipment rooms and unfinished storage areas.

B. Surface-mounted raceways or systems shall be permitted only where approved by Owner.

END OF SECTION 260080

SECTION 260110 – CONDUIT RACEWAYS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26, and 27 sections making reference to conduit raceways.

1.2 DESCRIPTION OF WORK:

A. Extent of raceways is indicated by drawings and schedules.

B. Types of raceways in this section include the followings:

1. Electrical Metallic Tubing

1.3 QUALITY ASSURANCE:

A. Standards: Refer to Section 260001 – Electrical General Provisions as applicable. Provide conduit raceway installation in accordance with recommendations of the American Iron and Steel Institute "Design Manual on Steel Electrical Raceways", latest edition.

B. Manufacturers: Firms regularly engaged in the manufacture of raceway of types and sizes required, whose products have been in satisfactory service for not less than three (3) years.

C. Shop Drawings: Not required.

PART 2 – PRODUCTS

2.1 CONDUITS:

A. Electric Metallic Tubing (EMT): Provide electric metal tubing in accordance with Federal Specification WW-C-563 and ANSI C80.3.

2.2 FITTINGS:

A. Electric Metallic Tubing: Provide insulated throat, non-indenter, set screw, malleable steel fittings. Screws must have a full set. Provide concrete-tight compression-type fittings in suspended slabs. All EMT fittings shall be fabricated from steel. Die-cast fittings or fittings made from pot metal shall not be allowed. Indenter type fittings are not acceptable. Install OZ Type B bushings on conduits 1" and larger.

2.3 SIZES:

A. Provide conduits in sizes as indicated in contract documents or as otherwise specified herein, but not less than 3/4".

PART 3 – EXECUTION

3.1 GENERAL:

A. Install raceway and accessories in accordance with manufacturer's written instructions, applicable requirements of NEC, NEMA Standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

3.2 LOCATIONS:

A. Electric Metal Tubing and Fittings: Use for above-grade feeders, branch circuits, and signal and control circuit, unless specifically noted otherwise on drawings. Install in suspended slabs subject to local code requirements and fire rating considerations.

3.3 METHODS:

A. Maintain a minimum of 12" clearance between steam or hot water lines or other hot surfaces. Where such clearance is impractical, insulate conduit with approved materials.

B. Install conduits parallel with or at right angles to lines of the structure. Route conduits symmetrically where possible.

C. Field bends and offsets shall be made without flattening, kinking, rippling or destroying the smooth internal bore or surface of the conduit and to not less than NEC minimum radius. Conduit that shows signs of rippling or kinking shall not be installed. Conduits installed with wrinkles or kinks or otherwise in an unworkmanlike manner shall be replaced at no additional cost to owner.

D. Precaution shall be exercised to prevent accumulation of water, dirt or concrete in the conduits during the execution of the project. Conduits in which water or foreign matter has been permitted to accumulate shall be thoroughly cleaned or the conduits runs replaced where such accumulation cannot be removed by methods approved the engineer.

E. Any conduit which pierces airtight spaces or plenums shall be sealed to prevent air leakage with mastic acceptable to the Architect.

3.4 CONCEALING:

A. All raceways shall be concealed within the ceilings, walls, and floors, except in locations where exposed raceways are specifically permitted, such as equipment rooms and unfinished storage areas. In equipment rooms, if lighting raceways are run exposed, installation shall not be done until piping and duct work layout has been determined in order that lighting boxes may be located so as to avoid being covered by overhead ducts and piping. If lighting raceways in equipment rooms are concealed in the structural ceiling slab, after mechanical work is complete, exposed conduit extensions shall be run to locate lighting fixtures where they are not obscured by work of other trades.

3.5 ELECTRICAL CONTINUITY:

A. Provide electrically continuous conduit systems throughout.

3.6 CONDUIT ENDS:

A. Cap all spare conduits. Cap or plug conduit ends during construction to prevent entrance of

foreign material.

3.7 CLEANING:

A. Pull mandrel and swab through all conduits before installing conductors.

END OF SECTION 260110

SECTION 260120 – CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26, 27, and 28 sections making reference to conductors and cables.

1.2 DESCRIPTION OF WORK:

A. This section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

B. Types of conductors and cables in this section include the following:

1. Copper Conductors.
2. Flexible Cords.

C. Applications for conductors and cables required for project include:

1. Electrical service.

1.3 SUBMITTALS:

A. Product Data: For each type of conductor and/or cable indicated.

B. Field Quality-Control Test Reports: From Contractor. Refer to Section 260001 – General Electrical Provisions.

1.4 QUALITY ASSURANCE:

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 – PRODUCTS

2.1 GENERAL:

A. Manufacturers: In other Part 2 articles where subparagraph titles below introduce lists, provide products by the manufacturer specified, subject to compliance with requirements.

B. Ambient Conditions: Conductors used for branch circuits in areas where the ambient conditions exceed 30 degree C. shall be provided with insulation approved for that temperature.

C. Wire Sizes: As indicated on electrical drawings or as specified herein, but in no case less than No. 12 AWG.

2.2 COPPER CONDUCTORS:

A. Manufacturers:

1. Cerro Wire & Cable Company.
2. General Cable Technologies Corporation.
3. Encore Wire Corporation.
4. Southwire Incorporated.

B. Refer to Part 3 "Conductor and Cable Applications" Article for application requirements.

C. References and Ratings:

1. ICEA S-95-658 / NEMA WC70.
2. ASTM.
3. UL Standard 83.
4. UL Standard 1063 (MTW).
5. Federal Specification J-C-30B.
6. NEC.

D. Conductor Material: Copper.

E. Stranding: Solid conductor for No. 12 AWG, stranded for No. 10 AWG and larger.

F. Stranding: Stranded Conductor.

G. Conductor Insulation Types: Thermoplastic-insulated, Type THHN / THWN-2.

2.3 FLEXIBLE CORDS:

A. Manufacturers:

1. Cerro Wire & Cable Company.
2. General Cable Technologies Corporation.
3. Encore Wire Corporation.
4. Southwire Incorporated.

B. Refer to Part 3 "Conductor and Cable Applications" Article for application requirements.

C. References and Ratings:

1. ASTM.
2. ICEA.
3. UL 62.
4. Pendant or portable.
5. Damp locations.
6. 600 Volts.
7. NEC Article 400.

D. Conductor Material: Copper.

E. Stranding: Class K, flexible stranded conductor.

F. Conductor Insulation Types: Heat- and moisture-resistant TPE insulation.

G. Fillers and Wrapping: Non-wicking polypropylene fillers, with tissue-paper separator wrapped around the assembly.

H. Outer Jacket: Black-colored, heat-, moisture-, and oil-resistant TPE jacket.

I. Grounding: Insulated green grounding conductor.

J. Cord Type: SO, hard-usage.

2.4 CONNECTORS AND SPLICES:

A. Manufacturers:

1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

C. Splices for wire sizes #10 and smaller shall be screw-on type similar to scotch or ideal wing nut connectors. Crimp-on splices designed to be used without wire stripping are not acceptable.

PART 3 – EXECUTION

3.1 GENERAL:

A. Install conductors, cables, and accessories as indicated, in compliance with manufacturer's written instruction, applicable requirements of NEC, NECA's "Standards of Installation", and in accordance with recognized industry practices to ensure that products fulfill requirements.

3.2 CONDUCTOR AND CABLE APPLICATIONS:

A. Branch Circuits:

1. Exposed, including in crawlspaces: Copper conductors in raceway.
2. Concealed in ceilings, walls, and partitions: Copper conductors in raceways.

B. Portable Appliance Connections: Flexible cord.

C. Class 1 Control Circuits: Copper conductors in raceway.

3.3 INSTALLATION:

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means; including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.

D. When raceway is not required, install concealed cables parallel and perpendicular to surfaces of structural members, and follow surface contours where possible.

E. Support cables according to other applicable specification sections.

F. Seal around cables penetrating fire-rated elements to comply with applicable fire stop specification sections.

G. Color Coding: Color code secondary service, feeder, and branch circuit conductors. Colors shall remain consistent throughout the project and shall match existing coding system where applicable.

1. Conductor sizes No. 6 AWG and smaller: Colored insulation.
2. Conductors sizes No. 4 AWG and larger: 2 inch (51 mm) band of Colored adhesive marking tape applied at all terminations, junction boxes, and pull boxes.
3. Branch circuit switched-legs and travelers: Colored insulation (in colors other than those indicated below).
4. Color-code 120/208V system conductors:
   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.
   d. Neutral A: White with Black stripe.
   e. Neutral B: White with Red stripe.
   f. Neutral C: White with Blue stripe.
   g. Neutral (Shared when allowed): White
   h. Ground: Green.
   i. Isolated Ground: Green with yellow tracer.

3.4 HOMERUN CIRCUITS:

A. Homerun circuits may be combined in common conduits at the option of the contractor in compliance with the following:

1. Three-Phase Installations: Not more than three single-phase circuits in one conduit, unless specifically noted otherwise, if each circuit is from a different phase (a, b, or c).
2. Single-Phase Installations: Not more than two single-phase circuits in one conduit, unless specifically noted otherwise, if each circuit is from a different phase (a or b).

3.5 NEUTRAL CONDUCTORS:

A. LINE-TO-NEUTRAL BRANCH CIRCUITS: Provide a dedicated neutral for each line-to-neutral branch circuit. Size the neutral conductor the same as the phase conductor. In each outlet or junction box containing multiple neutral conductors, tag each neutral to identify which circuit it serves.

3.6 VOLTAGE DROP:

A. Provide branch circuit conductors in sizes such that voltage drop for branch circuits do not exceed 3 percent at the farthest outlet. Provide service, feeder, and branch circuit conductors so that the voltage drop on the entire electrical system does not exceed 5 percent at the farthest outlet. This shall be strictly followed regardless of the conductor sizes indicated on the electrical drawings. Increase conductor sizes (and conduits where necessary to comply with NEC

conduit fill requirements) as necessary to accommodate this requirement. Calculations shall be based on the following:

1. Lighting Branch Circuits: Connected load plus 25% spare.
2. Appliance and Equipment Branch Circuits: Nameplate or NEC required load.
3. 120V Convenience Outlet Branch Circuits: 12 amps minimum, but in no case less than NEC loading requirements. Use the following schedule:

Distance (feet)	Wire Size (AWG)
0-80	#12
81-125	#10
126-200	#8
201-320	#6

4. Use the NEC method to calculate voltage drop.

3.7 CONNECTIONS:

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack. Use pig tails when wiring outlets.

3.8 FIELD QUALITY CONTROL:

A. Testing: Perform the following field quality-control testing:

1. Visual and Mechanical Inspection:
   a. Inspect cables for physical damage and proper connection in accordance with the electrical construction documents.
   b. Test cable mechanical connections to manufacturer's recommended values with a calibrated torque wrench.
   c. Check cable color coding for compliance with electrical specifications.
2. Electrical Tests:
   a. Perform insulation resistance test on each conductors for feeders 100 amps and greater with respect to ground and adjacent conductors. Applied potential shall be 1000 volts dc for 1 minute.
   b. Perform continuity test to insure proper cable connection.
3. Test Values:
   a. Minimum insulation resistance values shall not be less than two megaohms.

B. Test Reports: Prepare a written report and submit to the Electrical Engineer at the completion of the project. The report shall include the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 260120

SECTION 260135 – ELECTRICAL BOXES AND FITTINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26, 27, and 28 sections making reference to electrical boxes and fittings.

1.2 DESCRIPTION OF WORK:

A. Extent of electrical boxes and fittings work is indicated by drawings and schedules.

B. Types of electrical boxes and fittings in this section include the following:

1. Outlet Boxes
2. Junction Boxes
3. Pull Boxes
4. Conduit Bodies
5. Bushings
6. Locknuts
7. Knockout Closures
8. Miscellaneous Boxes and Fittings

1.3 QUALITY ASSURANCE:

A. Standards: Refer to Section 260001 – Electrical General Provisions as applicable.

B. Manufacturers: Firms regularly engaged in the manufacturer of boxes and fittings required, whose products have been in satisfactory service for not less than three years.

C. Shop Drawings: Submit shop drawings on floor boxes only where required.

PART 2 – PRODUCTS

2.1 INTERIOR OUTLET BOXES:

A. General: Provide one piece, galvanized or cadmium-plated, flat-rolled, sheet steel interior outlet boxes of types, shapes, and sizes to suit respective location and installation. Construct with stamped knockouts on back and sides and with threaded screw holes. Provide corrosion-resistant screws for securing boxes, covers, and wiring devices. Size all junction boxes in accordance with NEC Table 314.16(A), with a minimum box size of 4" x 4" x 1-1/2". Where three raceway entries are made, provide outlet boxes with a minimum depth of 2-1/8". Where four or more raceway entries are made, provide outlet boxes with a minimum depth of 4-11/16". Gangable boxes shall not be used.

B. Switch, Telephone, and Receptacle Outlets: Provide outlet boxes not less than 4" square, with

adapting tile or plaster covers where necessary to set flush with finished surfaces. Where three raceway entries are made, provide outlet boxes with a minimum depth of 2-1/8". Gang boxes shall be used where more than one switch or device is located at one point. Sectional Boxes are not acceptable. In masonry walls where tile or plaster ring cannot be used, install a single-gang 3-1/2" deep box minimum, unless otherwise noted. Where four or more raceway entries are made, provide outlet boxes with a minimum depth of 4-11/16".

2.2 WEATHERPROOF OUTLET BOXES:

A. Provide corrosion-resistant, cast-metal weatherproof outlet boxes, of types, shapes, and sizes, with threaded conduit ends, cast metal coverplates with spring-hinged waterproof caps, face plate gaskets, and corrosion-resistant fasteners.

2.3 JUNCTION AND PULL BOXES:

A. Provide code-gauge sheet steel junction and pull boxes, with removable screw-on covers and welded seams, of types, shapes, and sizes to suit each respective location and installation. Size all junction and pull boxes in accordance with NEC 314.28. Provide stainless steel nuts, bolts, screws, and washer.

2.4 CONDUIT BODIES:

A. Provide galvanized, cast-metal conduit bodies of type, shapes, and sizes to suit respective locations and installation. Construct with threaded conduit entrance ends and removable covers. Provide corrosion-resistant screws.

B. Aluminum boxes and fitting shall not be permitted.

2.5 CONDUIT CONNECTIONS:

A. Box connectors 3/4" and larger shall be insulated, throat-type or equal type plastic bushings. Provide double locknuts and insulating plastic bushings for RMC and IMC terminating at panels and boxes.

B. Where RMC penetrates building, manholes, or vault walls and floors below grade, provide sealing bushings with external membrane clamps as applicable. Provide segmented internal sealing bushings in all raceways penetrating building walls and slabs below grade, and in all above grade raceway penetrations susceptible to moisture migration into building through raceway. Where RMC terminates in manhole, vault, or pull box, provide insulated grounding bushings. Also see Section 260135 – Electrical Boxes and Fittings.

C. Install OZ type "B" connectors for all conduits 1" and larger.

D. Provide cable supports in all vertical risers in accordance with NEC 300-19.

2.6 EXPANSION FITTINGS:

A. Provide expansion joint fittings in all conduit runs crossing structural expansion joints, whether above-grade, in slab-on-grade, or in suspended slabs. Provide OZ type "AX" or approved equivalent, size to the raceway.

2.7 ACCESSORIES:

A. Provide all accessories including, but not necessarily limited to, bushings, knockout closures, locknuts, offset connectors, etc. of types, shapes, and sizes to suit respective locations and

installation. Construct of corrosion-resistant steel.

PART 3 – EXECUTION

3.1 GENERAL:

A. Install electrical boxes and fittings in accordance with manufacturer's written instruction, applicable requirements of the NEC, NEMA Standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

3.2 METHODS:

A. Where outlet boxes are subject to weather or moisture, install weatherproof outlet boxes.

B. Remove knockouts only for entering conduits. Provide knockout closures to cap unused knockout holes where blanks are mistakenly removed.

C. Do not use condulets in place of elbows or junction boxes. Condulets in sizes 2" or larger shall not be used, unless specifically approved by the electrical engineer.

D. Install boxes and conduit bodies in readily accessible locations. Install recessed boxes with faces of boxes or rings flush with finished surfaces. Seal all openings between outlet box and adjacent surfaces with plaster, grout, or similar suitable material.

E. For stud construction, install boxes with rigid supports using metal bar hangers, or 2" X 4", 1" X 6" wood bridging between studs with screws. Welding or nailing boxes directly to metal joist and studs is not acceptable. Boxes set opposite in common wall shall have at least 10" of conduit between them. Securely fasten outlet boxes to structural surfaces to which attached.

F. For concrete or masonry construction, solidly embed electrical boxes in concrete and masonry. Provide box supports as required to keep outlet boxes flush with finished surfaces.

G. Coordinate location of all outlet boxes with millwork, back splashes, tackboards, etc.

H. Install junction boxes or condulets in conduit runs as required at 100 foot maximum intervals on long runs. This shall apply to concrete junction boxes in grade and junction boxes within the building.

I. Provide electrical connections for installed boxes.

3.3 IDENTIFICATION:

A. Mark circuit number on exterior side of junction boxes located in ceilings such that circuits numbers are readily identifiable. For outlet boxes in wall, mark circuit numbers on interior sides of outlet boxes.

END OF SECTION 260135

SECTION 26 0140 - WIRING DEVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26, 27, and 28 sections making reference to wiring devices.

1.2 DESCRIPTION OF WORK:

A. Extent of wiring device work is indicated by drawings and schedules.

B. Types of electrical wiring devices in this section include the following:

1. Toggle Switches
2. Receptacles
3. Special Purpose Outlets
4. Cord Caps and Connectors

1.3 QUALITY ASSURANCE:

A. STANDARDS: Refer to Section 260001 – Electrical General Provisions as applicable.

B. SHOP DRAWINGS:

1. Submit manufacturer's data on all electrical wiring devices.
2. Where occupancy sensors are required, provide scaled drawing showing manufacturer's recommended locations.

PART 2 – PRODUCTS

2.1 GENERAL:

A. Provide factory-fabricated wiring devices, in types, and electrical ratings for applications indicated and complying with NEMA standards Pub No. WD 1; nylon construction, 20 amp rating minimum.

B. Provide wiring devices in colors selected by Architect/Engineer. Provide red receptacle outlets where devices are circuited to standby power.

2.2 TOGGLE SWITCHES:

A. Provide toggle switches from one of the following manufacturers (Fed-Spec):

Manufacturer	1-Pole	3-Way	4-Way	W/Pilot
Hubbell	HBL1221	1223	1224	1221-PL
Pass & Seymour	20AC1	20AC3	20AC4	20AC1-RPL
Leviton	1221	1222	1223	1221-PLR
Cooper	2221	2223	2224	2221-PL
Bryant	4901	4903	4904	4901-PL

B. Abbreviations are defined as follows:

1. 1-Pole - Single-Pole Toggle Switch
2. 3-Way - Three-Way Toggle Switch
3. 4-Way - Four-Way Toggle Switch
4. W/Pilot - Single-Pole Toggle Switch with Pilot Light

C. Must be back and side wired, and have color-coded covers, Brass terminal screws, back wire ground clamp, and self-grounding clip.

2.3 RECEPTACLES:

A. Provide duplex receptacles from one of the following manufacturers:

Manufacturer	CO	GFCI	IG
Hubbell	5362	GF5362	5362IG
Pass & Seymour	5362	2091-S	IG6300
Leviton	5362	8899	5362-IG
Cooper	5362	VGF20	IG5362
Bryant	5362	GFR53FT	5362IG

B. Where duplex receptacles are shown with an "H" subscript on the electrical drawings, provide hospital Grade devices from one of the following manufactures:

Manufacturer	CO	GFCI	IG
Hubbell	HBL8300WH (R)	HGF8300W (R)	IG8300
Pass & Seymour	9300-HGW (R)	2091-SHGW (R)	IG9300-HG
Leviton	8300-W (R)	8899-HGW (HGR)	5362-IGW (IGR)
Cooper	8300W (R)	GF8300W (R)	IG8300W (R)
Bryant	8300-W (RED)	GFR83FT-W (R)	8300-IG

C. Where duplex receptacles are shown with an "USB" subscript on the electrical drawings, provide hospital Grade devices from one of the following manufactures:

Manufacturer	CO
Hubbell	USB8300W

Other Manufacturers of USB outlets may be considered for approval during the bidding period. Approval is subject to adherence with the prior approval process. Refer to

Section 26 0000, "General Electrical Provisions".

D. Abbreviations are defined as follows:

1. CO- Convenience Outlet Duplex Receptacle
2. GFCI- Ground Fault Circuit Interrupter duplex Receptacle
3. IG- Isolated Ground Duplex Receptacle

E. Must have one-piece Brass back strap and back wire grounding clamp (Does not apply to GCFI or isolated ground).

2.4 SPECIAL PURPOSE OUTLETS:

A. Provide special purpose outlets of voltage and ampere ratings, and NEMA configurations to suit respective application. Refer to drawings for NEMA configuration. Provide special purpose outlets in amperages at least as large as the overcurrent protective device from which they are served.

2.5 CORD CAPS AND CONNECTORS:

A. Provide cord caps and connectors of voltage and ampere ratings, and NEMA configurations which mate and match with outlets specified as required for final connections for equipment. Provide cord caps and connectors of one of the following:

1. Hubbell
2. Pass & Seymour
3. Leviton
4. Cooper
5. Bryant

2.6 COVERPLATES:

A. Wall Plates: Provide coverplates for all wiring devices. In all finished areas, provide stainless steel coverplates. Provide ganged coverplates for all switches and/or dimmers. Provide pre-marked coverplates for special purpose outlet indicating voltage, amperages, and phase. Provide raised stamped, galvanized, steel plates in all unfinished areas. Provide weather-proof coverplates for outlets exposed to weather and moisture.

B. Weather-Protecting Device Enclosure: Where required for compliance with NEC 410-67 (receptacles installed outdoors for use other than with portable tools or equipment), provide weather-tight device covers which provide complete protection with the cord and cap inserted into the wring device. Provide units which mount on either single or double gang devices. Provide device enclosures manufactured by one of the following:

1. Intermatic WP1020 or WP1030
2. Hubbell WP826MP
3. Pass & Seymore

PART 3 – EXECUTION

3.1 GENERAL:

A. Install wiring devices and accessories in accordance with manufacturer's written instruction, applicable requirements of the NEC, NEMA Standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to insure that products fulfill requirements.

3.2 METHODS:

A. Install wiring devices only in electrical boxes which are clean and free from excess building materials, dirt, and debris. Do not install wiring devices until painting work is completed.

B. Replace receptacles and/or coverplates which are damaged, stained, or burned.

3.3 GFCI RECEPTACLES:

A. Provide separate neutral conductor from panel to each GFCI receptacle circuits.

B. Install GFCI receptacles for all receptacles installed in restrooms, outdoors, or within six feet of any sink. All receptacles in kitchens shall be GCFI protected.

C. Do not wire standard receptacles on the load side of GFCI receptacle - Install GFCI receptacles.

3.4 GROUNDING:

A. Provide electrical continuous, tight, grounding connections for wiring devices.

3.5 TESTING:

A. Prior to energizing circuitry, test wiring devices for electrical continuity and proper polarity connections. After energizing circuitry, test wiring devices to demonstrate compliance with requirements.

3.6 IDENTIFICATION:

A. All devices shall be identified on the cover plate with the panel board name and the circuit number by a black on clear adhesive label.

B. In each outlet, tag each wire to identify the circuit it serves.

END OF SECTION 26 0140

SECTION 26 0452 - GROUNDING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. This section is a Division 26 General Provisions section, and is part of each Division 26, 27, and 28 sections making reference to grounding.

1.2 DESCRIPTION OF WORK:

A. Extent of grounding work is indicated by drawings and schedules and is specified herein.

B. Ground the complete electrical installation including metallic conduits and raceways, boxes, fittings, devices, cabinets, equipment, and separately derived systems in accordance with the NEC and all other applicable codes to provide a permanent, continuous, low impedance, grounding system.

1.3 QUALITY ASSURANCE:

A. STANDARDS: Refer to Section 260001 – Electrical General Provisions as applicable.

PART 2 – PRODUCTS

2.1 GENERAL:

A. Provide grounding equipment and accessories of types, sizes, ratings, and electrical characteristics indicated or as otherwise required to provide a complete system.

2.2 GROUNDING CONDUCTORS:

A. Unless noted otherwise, provide grounding conductors with stranding and insulation types to match phase conductors. Provide conductors with green insulation if possible; otherwise wrap with green tape. Size ground conductors as indicated on drawings. Do not size ground conductors smaller than that allowable by NEC.

2.3 BONDING JUMPERS:

A. Provide bonding jumpers with hot dip galvanized malleable or ductile iron clamps, hot dip galvanized steel U-bolts, and tinned copper braids (OZ Gedney BJ Series or equivalent).

PART 3 – EXECUTION

3.1 GENERAL:

A. Install grounding systems in accordance with manufacturer's written instructions, applicable requirements of NEC, NEMA standards, and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

3.2 CLEANING:

A. Thoroughly clean all metal contact surfaces prior to installation of clamp-on connectors.

B. otherwise indicated on drawings.

3.3 EQUIPMENT BONDING AND GROUNDING:

A. Provide an NEC sized conductor, whether indicated or not on the drawings, in raceways as follows:

1. Non-metallic conduits and ducts.
2. Distribution feeders.
3. Motor and equipment branch circuits.
4. Device and lighting branch circuits.
5. Full length of all multi-outlet assemblies and other surface wireways.

3.4 ADDITIONAL GROUNDING INSTALLATION REQUIREMENTS:

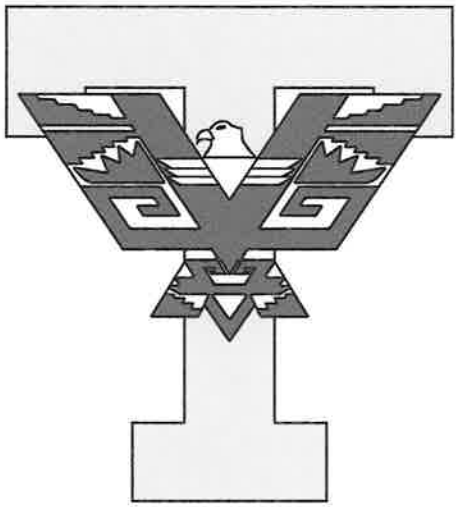
A. Provide bonding jumpers across expansion and deflection couplings in conduit runs.

B. Provide bonding wire in all flexible conduits.

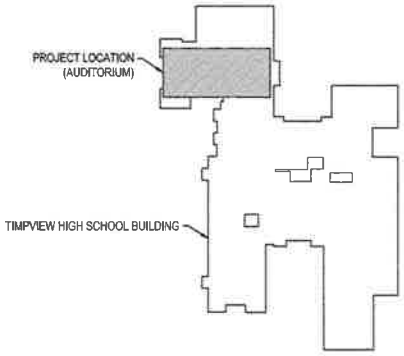
END OF SECTION 26 0452

GENERAL DEMOLITION NOTES:

ET001	GENERAL NOTES AND SHEET INDEX
ED105	AUDITORIUM A/V FLOOR PLAN - DEMOLITION
ED106	AUDITORIUM A/V FLOOR PLAN - DEMOLITION
ET103	AUDIO/VISUAL AUDITORIUM FLOOR PLAN
ET104	AUDIO/VISUAL AUDITORIUM CEILING PLAN
ET105	AUDIO/VISUAL UPPER AUDITORIUM FLOOR PLAN
ET301	AUDIO/VISUAL CROSS-SECTION
ET501	AUDIO/VISUAL DETAILS
ET702	AUDIO/VISUAL RISER AND EQUIPMENT LIST
ET703	AUDIO/VISUAL RISER AND EQUIPMENT LIST



Timpview High School
Auditorium Sound System Upgrade



SITE MAP

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PROVO, UTAH 84604

MHTN PROJECT no. 2017517.00

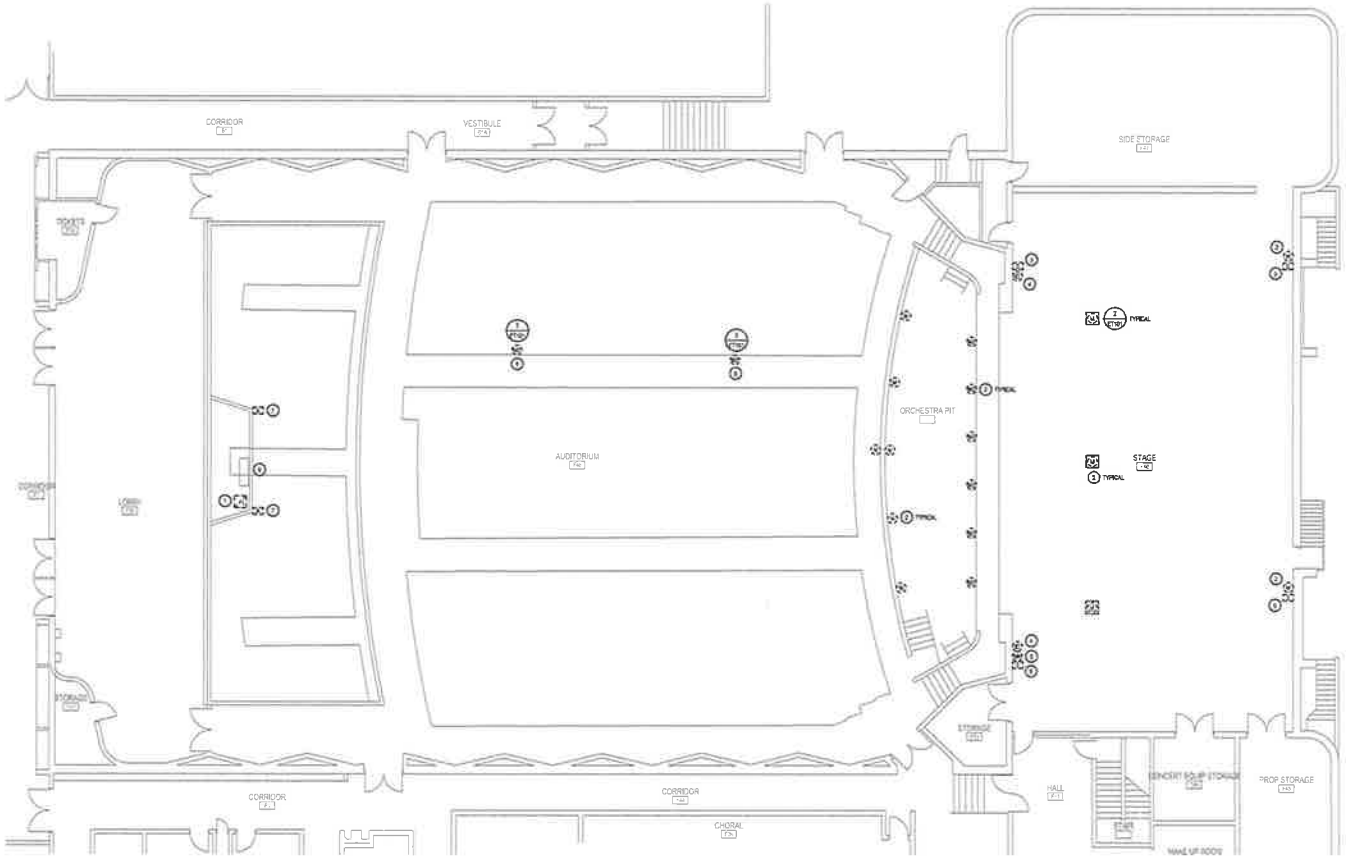
CONSTRUCTION DOCUMENTS
JUNE 9, 2017

GENERAL NOTES
AND SHEET INDEX

ET001

2 EXISTING STAGE MICROPHONE INPUT
SCALE: NONE

3 EXISTING MICROPHONE INPUT
SCALE: NONE



AUDIO/VISUAL AUDITORIUM DEMOLITION FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

1. UNLESS SPECIFICALLY NOTED OTHERWISE, REMOVE ALL ELECTRICAL ITEMS SHOWN IN DARK & DASHED LINES. LIGHT & SOLID TYPE ARE TO REMAIN. DEMOLITION ITEMS ARE SHOWN TO CONVEY A BASIC DESCRIPTION OF THE EXTENT OF DEMOLITION WORK, BUT MAY NOT BE INCLUSIVE. PROVIDE DEMOLITION WORK IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
   - 1.1. EXISTING RACEWAYS MAY BE REUSED IF IN PLACE, WHERE POSSIBLE, AND WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND THE INTENT OF THE CONTRACT DOCUMENTS. LOOSE AND OR PROVIDE NEW CONDUIT SUPPORTS WHERE NECESSARY FOR ALL RACEWAYS BEING REUSED. ENSURE INTEGRITY OF EXISTING RACEWAYS BEFORE REUSE.
   - 1.2. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOFS, ETC.
   - 1.3. COORDINATE WITH OWNER WHAT EQUIPMENT SHOULD BE DISPOSED OF AND WHAT EQUIPMENT IS TO BE RETURNED TO OWNER.

KEYED NOTES:

1. REMOVE ALL THE EXISTING EQUIPMENT WITHIN THE EXISTING CABINET AND THE CABINET ITSELF. RETURN ALL OF THEM TO THE OWNER. LEAVE THE EXISTING POWER OUTLET UNDISTURBED FOR REUSE.
2. DISCONNECT, REMOVE, AND RETURN THE MICROPHONE INPUT TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING BACKBOX AND CONDUITS UNDISTURBED FOR REUSE.
3. DISCONNECT, REMOVE AND RETURN ALL THE EXISTING SPEAKERS TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THEM BACK TO THE EXISTING CABINET COMPLETELY. ASSOCIATED EXISTING CONDUITS ARE TO BE ABANDONED.
4. DISCONNECT, REMOVE AND RETURN THE INTERCOM INPUT TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS SYSTEM ONLY BACK TO THE INTERCOM MASTER STATION.
5. DISCONNECT, REMOVE AND RETURN SPEAKER OUTPUT TO THE OWNER. INSTALL BLANK COVER PLATE TO COVER THE EXISTING BACKBOX. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. ASSOCIATED EXISTING CONDUITS ARE TO BE ABANDONED.
6. DISCONNECT, REMOVE AND RETURN MICROPHONE INPUT AND NETWORK JACK COMBO PLATE TO THE OWNER. REMOVE CABLES ASSOCIATED WITH MICROPHONE INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING NETWORK CABLE, BACKBOX AND CONDUITS UNDISTURBED FOR REUSE.
7. DISCONNECT, REMOVE AND RETURN THE WIRELESS MICROPHONE REMOTE ANTENNA TO THE OWNER. REMOVE CABLING ASSOCIATED WITH IT ONLY BACK TO THE EXISTING CABINET COMPLETELY. THERE ARE NO EXISTING BACKBOX AND CONDUIT ASSOCIATED WITH THE ANTENNA.
8. DISCONNECT, REMOVE, AND RETURN THE MICROPHONE INPUT TO THE BACKBOX, AND THE CONDUITS TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING EQUIPMENT CABINET OR MIXER.
9. DISCONNECT, REMOVE AND RETURN THE MIXING CONSOLE TO THE OWNER. REMOVE CABLING ASSOCIATED WITH IT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING CONDUITS UNDISTURBED FOR REUSE.

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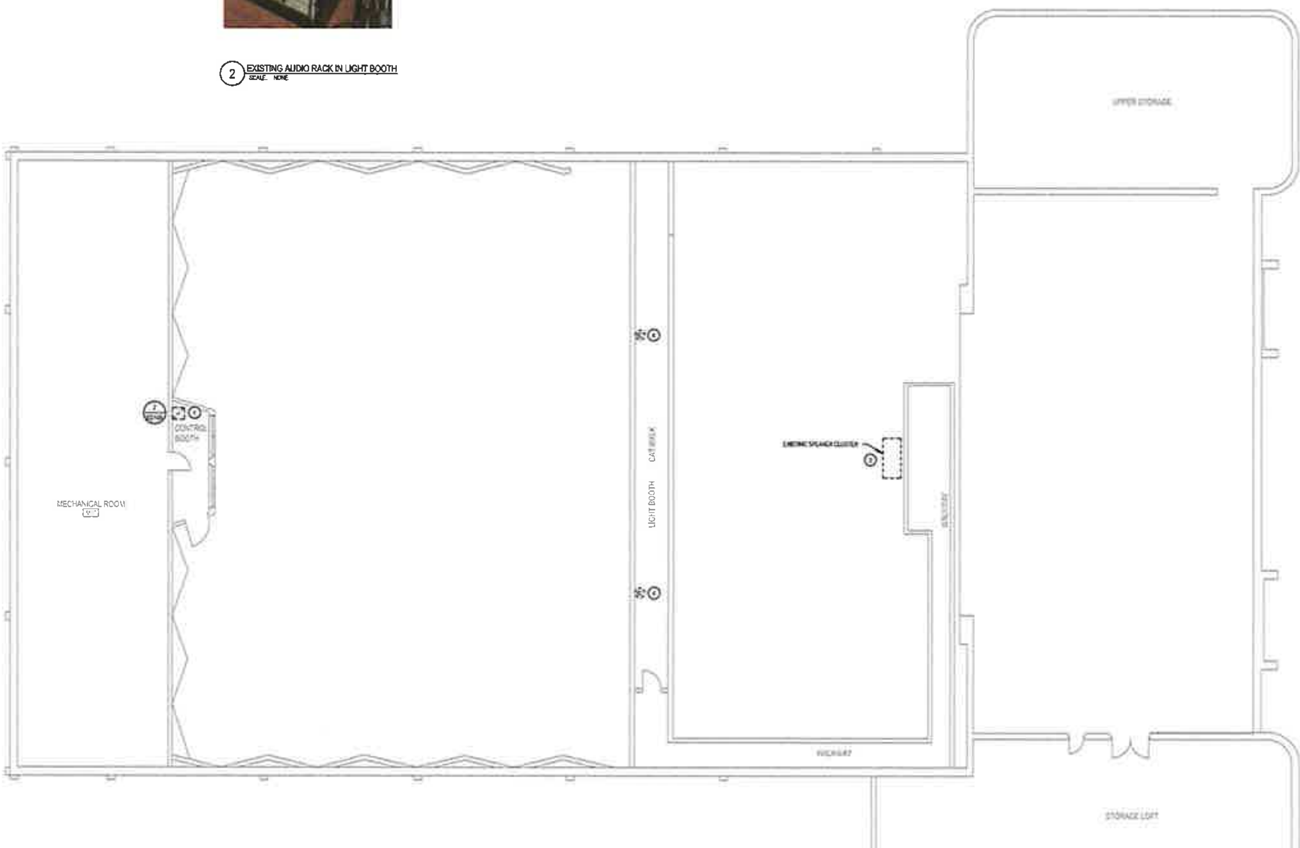
CONSTRUCTION DOCUMENTS
JUNE 9, 2017

AUDITORIUM A/V FLOOR PLAN - DEMOLITION

ED105

(2) EXISTING AUDIO RACK IN LIGHT BOOTH
SCALE: NONE



AUDIO/VISUAL DEMOLITION UPPER AUDITORIUM PLAN
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

1. UNLESS SPECIFICALLY NOTED OTHERWISE, REMOVE ALL ELECTRICAL ITEMS SHOWN IN DARK & DASHED LINES. LIGHT & SOLID ITEMS ARE TO REMAIN. DEMOLITION ITEMS ARE SHOWN TO GIVE A BASIC DESCRIPTION OF THE EXTENT OF DEMOLITION WORK, BUT MAY NOT BE INCLUSIVE. PROVIDE DEMOLITION WORK IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:
   1.1. [illegible] POSSIBLE, AND WHERE IN COMPLIANCE WITH THE SPECIFICATIONS AND THE INTENT OF THE CONTRACT DOCUMENTS. UPGRADE AND OR PROVIDE NEW CONDUIT SUPPORTS WHERE NECESSARY FOR ALL RACEWAYS BEING REUSED. ENSURE INTEGRITY OF EXISTING RACEWAYS BEFORE REUSE.
   1.2. DO NOT PENETRATE STRUCTURAL ELEMENTS OF FLOORS, WALLS, CEILINGS, ROOFS, ETC.
   1.3. COORDINATE WITH OWNER WHAT EQUIPMENT SHOULD BE DISPOSED OF AND WHAT EQUIPMENT IS TO BE RETURNED TO OWNER.

KEYED NOTES: (#)

1. REMOVE ALL THE EXISTING EQUIPMENT WITHIN THE EXISTING CABINET AND THE CABINET ITSELF. RETURN ALL OF THEM TO THE OWNER. LEAVE THE EXISTING POWER OUTLET UNDISTURBED FOR REUSE.
2. DISCONNECT, REMOVE, AND RETURN THE MICROPHONE INPUT TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING BACKBOX AND CONDUITS UNDISTURBED FOR REUSE.
3. DISCONNECT, REMOVE AND RETURN ALL THE EXISTING SPEAKERS TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THEM BACK TO THE EXISTING CABINET COMPLETELY. ASSOCIATED EXISTING CONDUITS ARE TO BE ABANDONED.
4. DISCONNECT, REMOVE AND RETURN THE INTERCOM INPUT TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS STATION ONLY BACK TO THE INTERCOM MASTER STATION.
5. [illegible] OWNER. INSTALL BLANK COVER PLATE TO COVER THE EXISTING BACKBOX. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. ASSOCIATED [illegible]
6. [illegible] ASSOCIATED WITH MICROPHONE INPUT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING NETWORK CABLE, BACKBOX AND CONDUITS UNDISTURBED FOR REUSE.
7. DISCONNECT, REMOVE AND RETURN THE WIRELESS MICROPHONE REMOTE ANTENNA TO THE OWNER. REMOVE CABLING ASSOCIATED WITH IT ONLY BACK TO THE EXISTING CABINET COMPLETELY. THERE ARE NO EXISTING BACKBOX AND CONDUIT ASSOCIATED WITH THE ANTENNA.
8. DISCONNECT, REMOVE, AND RETURN THE MICROPHONE INPUT THE BACKBOX AND THE CONDUITS TO THE OWNER. REMOVE CABLING ASSOCIATED WITH THIS INPUT ONLY BACK TO THE EXISTING EQUIPMENT CABINET OR MIXER.
9. DISCONNECT, REMOVE AND RETURN THE MIXING CONSOLE TO THE OWNER. REMOVE CABLING ASSOCIATED WITH IT ONLY BACK TO THE EXISTING CABINET COMPLETELY. LEAVE THE EXISTING CONDUITS UNDISTURBED FOR REUSE.

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MHTN PROJECT NO. 2017517.00

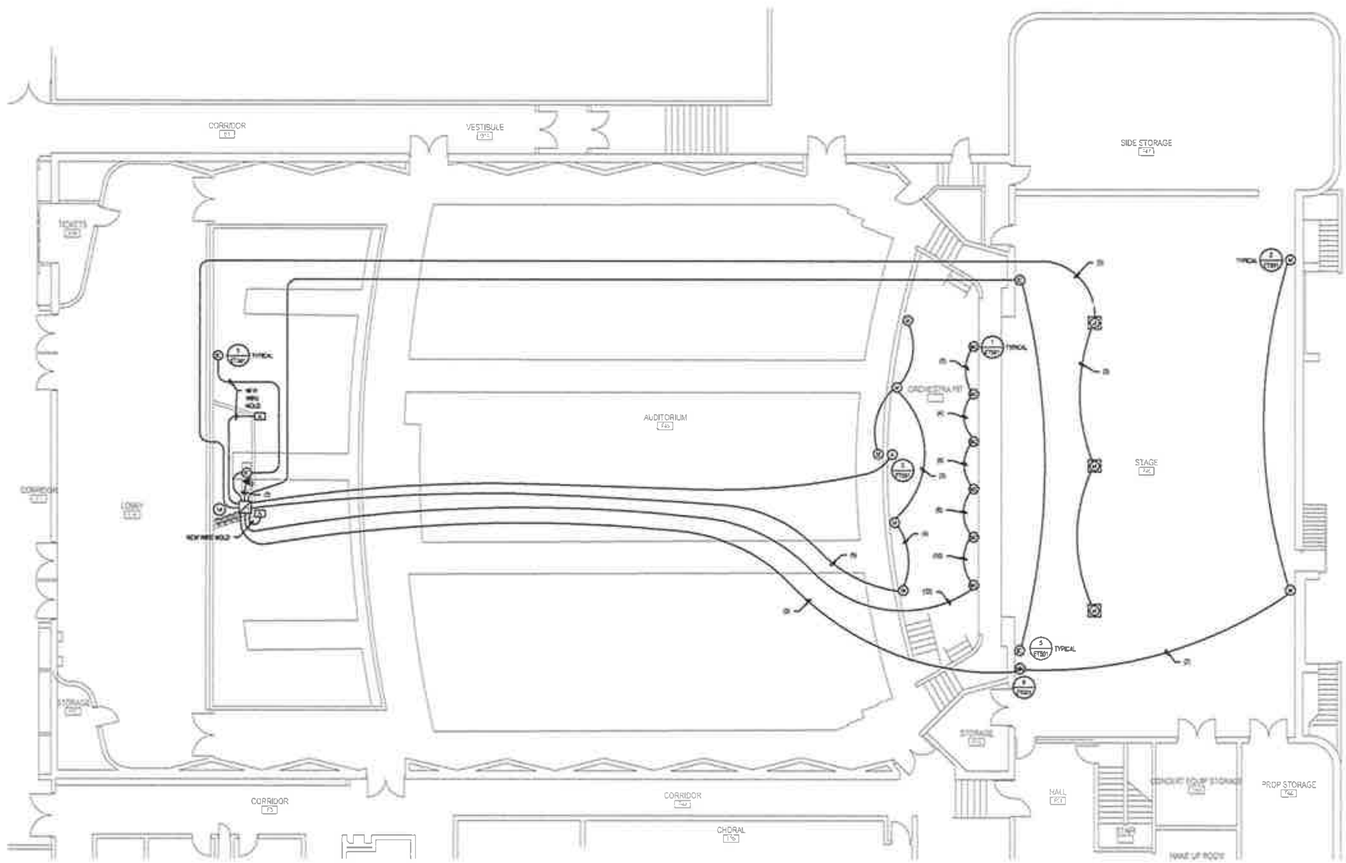
CONSTRUCTION DOCUMENTS
JUNE 9, 2017

UPPER AUDITORIUM A/V FLOOR PLAN - DEMOLITION

ED106

GENERAL NOTES:

1. SOUND CONTRACTOR IS RESPONSIBLE FOR ALL WORK INCLUDING DEMOLITION, ELECTRICAL AND AUDIO WORKS.
2. NO CHANGES SHALL BE MADE WITHOUT THE AV CONSULTANT'S WRITTEN CONSENT.
3. ALL WIRING SHALL BE ROUTED CONCEALED. WHERE HARD INACCESSIBLE CEILING AND WALL EXIST, ROUTE THE WIRING IN WIRE MOLD PAINTED TO MATCH EXISTING SURFACE. REVIEW ALL SAID CONDITIONS WITH OWNER PRIOR TO ROUGH-IN.
4. PRIOR TO SUBMITTING A BID, THE SOUND CONTRACTORS SHALL PERSONALLY EXAMINE THE PROPOSED WORK SITE AND VERIFY THE CONDITIONS WHICH (redacted) THEIR WORK.
5. [illegible]
6. COLORS OF ALL SOUND DEVICES THAT ARE EXPOSED, INCLUDING INPUT AND OUTPUT PLATES, VOLUME CONTROLS, SWITCHES, SPEAKERS, SPEAKER ENCLOSURES, SPEAKER MOUNTING HARDWARE, ETC. SHALL BE REVIEWED AND APPROVED BY OWNER PRIOR TO ORDERING.
7. CABLE ROUTES SHOWN ON DRAWINGS DO NOT ACTUALLY REFLECT THE EXISTING OR NEW RACEWAYS. THE EXISTING RACEWAYS AND ANY NEW REQUIRED RACEWAYS SHALL BE DETERMINED IN THE FIELD.
8. WITH THE SHOPPING DRAWING SUBMISSIONS, SUBMIT THE PROPOSED STAGE SPEAKER LOCATIONS, ALONG WITH THE LOCATIONS OF EXISTING LIGHTS AND CURTAINS FOR REVIEW AND APPROVAL.
9. LABEL ALL THE WIRELESS HANDHELD MICROPHONES AND BELT PACKS WITH NAMES OR NUMBERS FOR EASY IDENTIFICATION.
10. PROGRAM THE MIXING CONSOLE SO THAT IT CAN CONTROL ALL THE INPUTS FROM WIRED MICROPHONES, WIRELESS MICROPHONES, AND CD RECORDER, AS WELL AS ALL THE AUDIO OUTPUTS TO THE CD RECORDER, AMPLIFIERS, AND MICROPHONE INPUTS DIRECTLY CONNECTED TO THE MIXING CONSOLE.
11. PROGRAM THE DIGITAL SIGNAL PROCESSORS, THE MIXING CONSOLE, AND AUTO/MANUAL SWITCH SO THAT THE AUDIO SYSTEM MAY FUNCTION AS EITHER AN AUTO MIXING SYSTEM OR MANUAL MIXING SYSTEM OR MANUAL MIXING SYSTEM. PROGRAM LEDS ON THE SWITCH TO BE ON AND OFF ACCORDINGLY. ALSO PROVIDE CUSTOM LABELS ON THE SWITCH AS BEING SHOWN ON THE SWITCH DETAIL.
12. CONTACT MIXING CONSOLE MANUFACTURER FOR THE REQUIRED SPECIFICATIONS OF THE IPAD. PROGRAM THE IPAD TO CONTROL MIXING CONSOLE FUNCTIONS WIRELESSLY. IPAD TO BE PROVIDED BY SOUND CONTRACTOR.
13. EQUALIZE THE AUDIO SYSTEM IN THE AUDITORIUM AFTER THE INSTALLATION IS COMPLETE.
14. THERE IS ONE EXISTING 20A, 110V DUPLEX RECEPTACLE AT THE EXISTING CABINET LOCATION. THREE MORE DEDICATED 20A, 110V DUPLEX RECEPTACLES ARE REQUIRED AT THE SAME LOCATION.



AUDIO/VISUAL AUDITORIUM FLOOR PLAN

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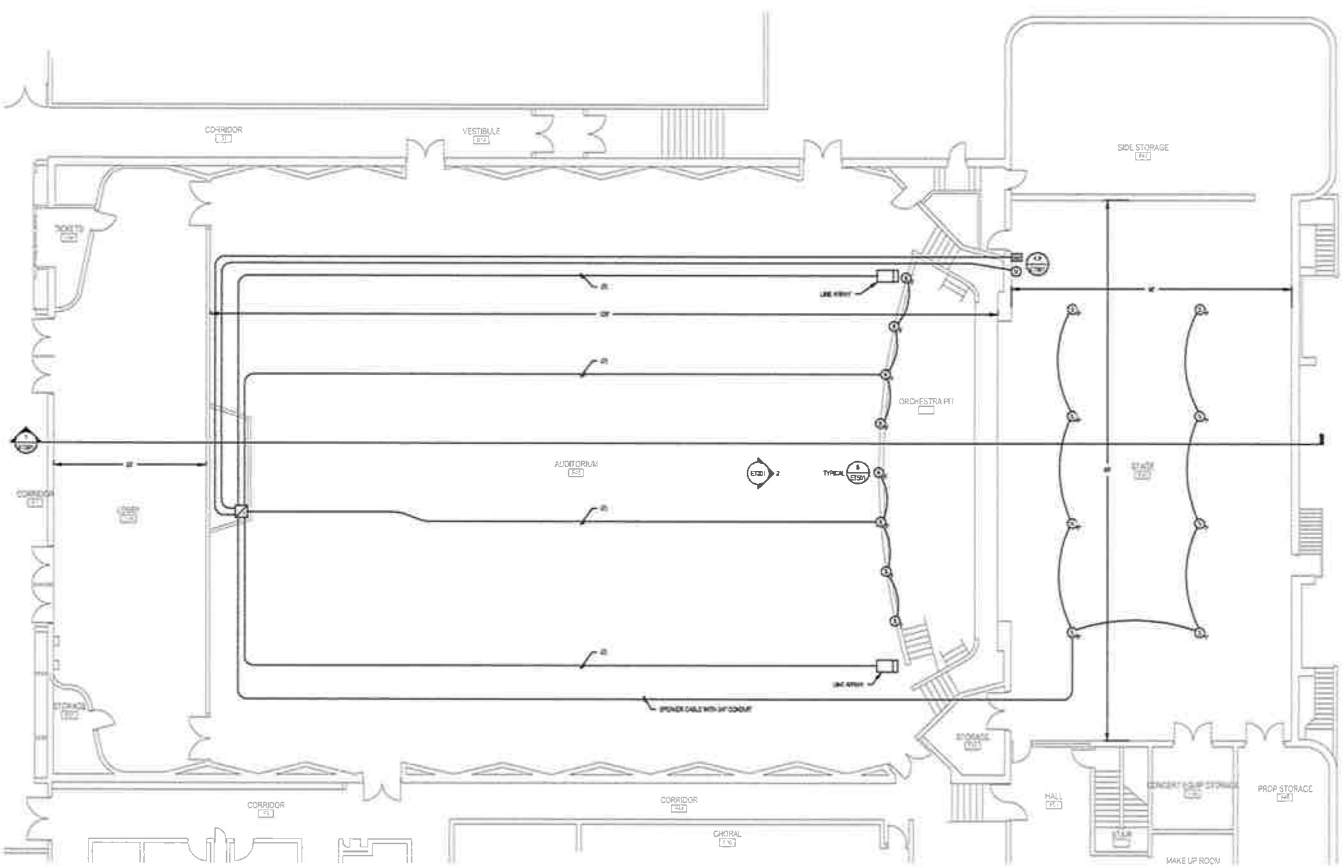
MHTN PROJECT NO. 2017517.00
DRAWN BY: Author CHECKED BY: Checker

CONSTRUCTION DOCUMENTS
JUNE 9, 2017

AUDIO/VISUAL AUDITORIUM FLOOR PLAN

ET103



AUDIO/VISUAL AUDITORIUM CEILING PLAN

GENERAL NOTES:

1. SOUND CONTRACTOR IS RESPONSIBLE FOR ALL WORK, INCLUDING DEMOLITION, ELECTRICAL, AND AUDIO WORKS.
2. NO CHANGES SHALL BE MADE WITHOUT THE AV CONSULTANT'S WRITTEN CONSENT.
3. ALL WIRING SHALL BE ROUTED CONCEALED. WHERE HARD INACCESSIBLE CEILING AND WALL EXIST, ROUTE THE WIRING IN WIRE MOLD PAINTED TO MATCH EXISTING SURFACE. REVIEW ALL SAID CONDITIONS WITH OWNER PRIOR TO ROUGH-IN.
4. PRIOR TO SUBMITTING A BID, THE SOUND CONTRACTORS SHALL PERSONALLY EXAMINE THE PROPOSED WORK SITE AND VERIFY THE CONDITIONS WHICH MAY AFFECT THEIR WORK.
5. PROVIDE [illegible] AWG THHN WIRE WITH GREEN INSULATION FROM AUDIO EQUIPMENT CABINET TO THE BUILDING ELECTRICAL PANEL.
6. COLORS OF ALL SOUND DEVICES THAT ARE EXPOSED, INCLUDING INPUT AND OUTPUT PLATES, VOLUME CONTROLS, SWITCHES, SPEAKERS, SPEAKER ENCLOSURES, SPEAKER MOUNTING HARDWARE, ETC. SHALL BE REVIEWED AND APPROVED BY OWNER PRIOR TO ORDERING.
7. CABLE ROUTES SHOWN ON DRAWINGS DO NOT ACTUALLY REFLECT THE EXISTING OR NEW RACEWAYS. THE EXISTING RACEWAYS AND ANY NEW REQUIRED RACEWAYS SHALL BE DETERMINED IN THE FIELD.
8. WITH THE SHOPPING DRAWING SUBMISSIONS, SUBMIT THE PROPOSED STAGE SPEAKER LOCATIONS, ALONG WITH THE LOCATIONS OF EXISTING LIGHTS AND CURTAINS FOR REVIEW AND APPROVAL.
9. LABEL ALL THE WIRELESS HANDHELD MICROPHONES AND BELT PACKS WITH NAMES OR NUMBERS FOR EASY IDENTIFICATION.
10. PROGRAM THE MIXING CONSOLE SO THAT IT CAN CONTROL ALL THE INPUTS FROM WIRED MICROPHONES, WIRELESS MICROPHONES AND CD RECORDER, AS WELL AS ALL THE AUDIO OUTPUTS TO THE CD RECORDER, AMPLIFIERS, AND MICROPHONE INPUTS DIRECTLY CONNECTED TO THE MIXING CONSOLE.
11. PROGRAM THE DIGITAL SIGNAL PROCESSORS, THE MIXING CONSOLE, AND AUTO/MANUAL SWITCH SO THAT THE AUDIO SYSTEM MAY FUNCTION AS EITHER AN AUTO MIXING SYSTEM OR MANUAL MIXING SYSTEM OR MANUAL MIXING SYSTEM. PROGRAM LEDS ON THE SWITCH TO BE ON AND OFF ACCORDINGLY. ALSO PROVIDE CUSTOM LABELS ON THE SWITCH AS BEING SHOWN ON THE SWITCH DETAIL.
12. CONTACT MIXING CONSOLE MANUFACTURER FOR THE REQUIRED SPECIFICATIONS OF THE IPAD. PROGRAM THE IPAD TO CONTROL MIXING CONSOLE FUNCTIONS WIRELESSLY. IPAD TO BE PROVIDED BY SOUND CONTRACTOR.
13. EQUALIZE THE AUDIO SYSTEM IN THE AUDITORIUM, AFTER THE INSTALLATION IS COMPLETE.
14. THERE IS ONE EXISTING 20A, 110V DUPLEX RECEPTACLE AT THE EXISTING CABINET LOCATION. THREE MORE DEDICATED 20A, 110V DUPLEX RECEPTACLES ARE REQUIRED AT THE SAME LOCATION.

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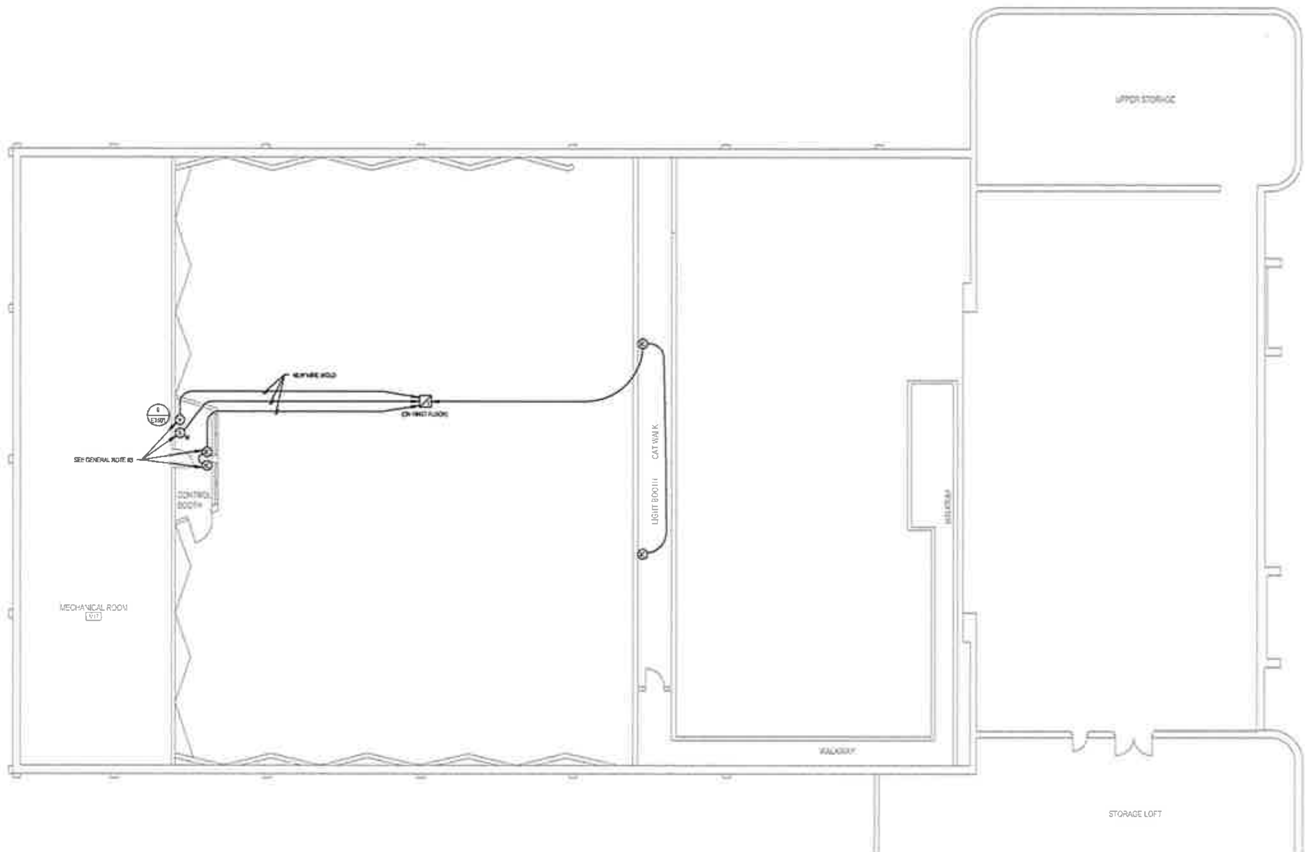
CONSTRUCTION DOCUMENTS
JUNE 9, 2017

AUDIO/VISUAL AUDITORIUM CEILING PLAN

ET104

GENERAL NOTES:

1. SOUND CONTRACTOR IS RESPONSIBLE FOR ALL WORK, INCLUDING DEMOLITION, ELECTRICAL, AND AUDIO WORKS.
2. NO CHANGES SHALL BE MADE WITHOUT THE AV CONSULTANT'S WRITTEN CONSENT.
3. ALL WIRING SHALL BE ROUTED CONCEALED. WHERE HARD INACCESSIBLE CEILING AND WALL EXIST, ROUTE THE WIRING IN WIRE MOLD PAINTED TO MATCH EXISTING SURFACE. REVIEW ALL SAID CONDITIONS WITH OWNER PRIOR TO ROUGH-IN.
4. PRIOR TO SUBMITTING A BID, THE SOUND CONTRACTORS SHALL PERSONALLY EXAMINE THE PROPOSED WORK SITE AND VERIFY THE CONDITIONS WHICH INVOLVE THEIR WORK.
5. PROVIDE #6 AWG THHN WIRE WITH GREEN INSULATION FROM AUDIO EQUIPMENT CABINET TO THE BUILDING ELECTRICAL PANEL.
6. COLORS OF ALL SOUND DEVICES THAT ARE EXPOSED, INCLUDING INPUT AND OUTPUT PLATES, VOLUME CONTROLS, SWITCHES, SPEAKERS, SPEAKER ENCLOSURES, SPEAKER MOUNTING HARDWARE, ETC. SHALL BE REVIEWED AND APPROVED BY OWNER PRIOR TO ORDERING.
7. CABLE ROUTES SHOWN ON DRAWINGS DO NOT ACTUALLY REFLECT THE EXISTING OR NEW RACEWAYS. THE EXISTING RACEWAYS AND ANY NEW REQUIRED RACEWAYS SHALL BE DETERMINED IN THE FIELD.
8. WITH THE SHOPPING DRAWING SUBMISSIONS, SUBMIT THE PROPOSED STAGE SPEAKER LOCATIONS, ALONG WITH THE LOCATIONS OF EXISTING LIGHTS AND CURTAINS FOR REVIEW AND APPROVAL.
9. LABEL ALL THE WIRELESS HANDHELD MICROPHONES AND BELT PACKS WITH NAMES OR NUMBERS FOR EASY IDENTIFICATION.
10. PROGRAM THE MIXING CONSOLE SO THAT IT CAN CONTROL ALL THE INPUTS FROM WIRED MICROPHONES, WIRELESS MICROPHONES, AND CD RECORDER AS WELL AS ALL THE AUDIO OUTPUTS TO THE CD RECORDER, AMPLIFIERS, AND MICROPHONE INPUTS DIRECTLY CONNECTED TO THE MIXING CONSOLE.
11. PROGRAM THE DIGITAL SIGNAL PROCESSORS, THE MIXING CONSOLE, AND AUTO/MANUAL SWITCH SO THAT THE AUDIO SYSTEM MAY FUNCTION AS EITHER AN AUTO MIXING SYSTEM OR MANUAL MIXING SYSTEM OR MANUAL MIXING SYSTEM. PROGRAM LED'S ON THE SWITCH TO BE ON AND OFF ACCORDINGLY. ALSO PROVIDE CUSTOM LABELS ON THE SWITCH AS BEING SHOWN ON THE SWITCH DETAIL.
12. CONTACT MIXING CONSOLE MANUFACTURER FOR THE REQUIRED SPECIFICATIONS OF THE IPAD. PROGRAM THE IPAD TO CONTROL MIXING CONSOLE FUNCTIONS WIRELESSLY. IPAD TO BE PROVIDED BY SOUND CONTRACTOR.
13. EQUALIZE THE AUDIO SYSTEM IN THE AUDITORIUM AFTER THE INSTALLATION IS COMPLETE.
14. THERE IS ONE EXISTING 20A, 110V DUPLEX RECEPTACLE AT THE EXISTING CABINET LOCATION. THREE MORE DEDICATED 20A, 110V DUPLEX RECEPTACLES ARE REQUIRED AT THE SAME LOCATION.



AUDIO/VISUAL UPPER AUDITORIUM FLOOR PLAN
SCALE: 1/8" = 1'-0"
NORTH

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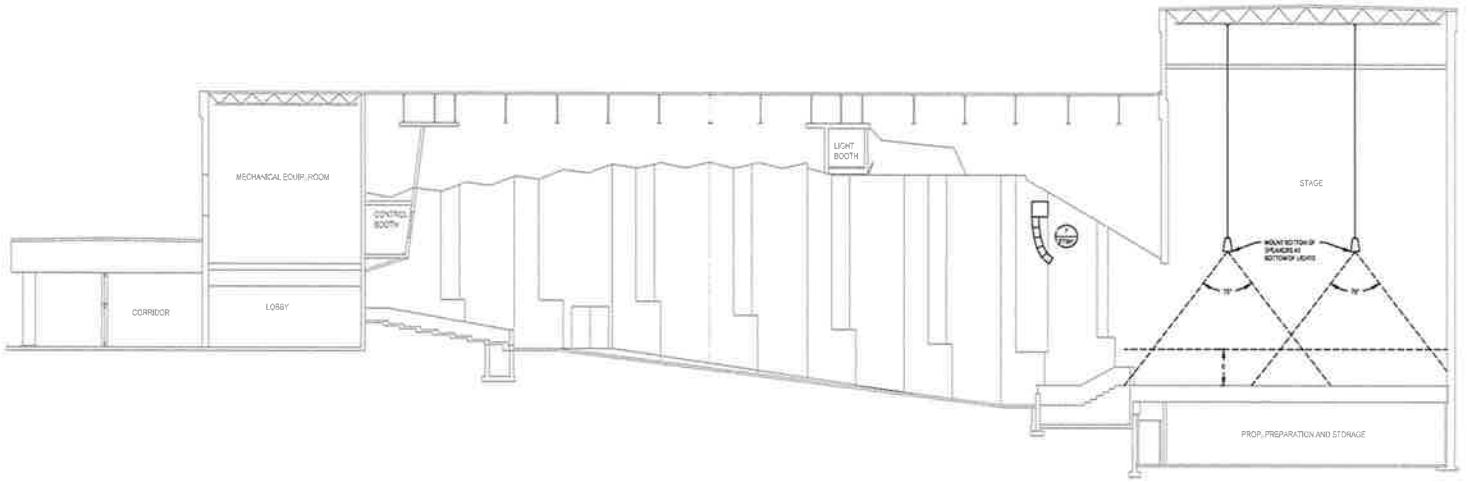
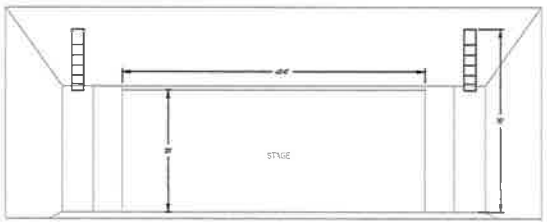
AUDIO/VISUAL UPPER AUDITORIUM FLOOR PLAN

ET105



1 AUDITORIUM CROSS-SECTION
SCALE: 1/8" = 1'-0"



1 STAGE FRONT VIEW ELEVATION
SCALE: 1/8" = 1'-0"

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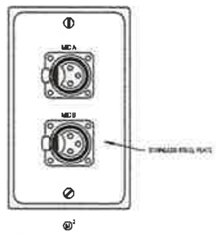
PROVO SCHOOL DISTRICT
TIMPVIEW HIGH SCHOOL
MISCELLANEOUS PROJECTS
3570 TIMPVIEW DRIVE
PROVO, UTAH 84604

PROJECT NO. 20170717.00

CONSTRUCTION DOCUMENTS
JUNE 9, 2017

SHEET NAME
AUDIO/VISUAL
CROSS-SECTIONS

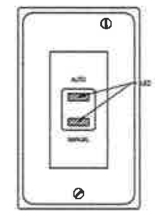
SHEET NUMBER
ET301



1 MICROPHONE INPUT
SCALE: NONE

2 MICROPHONE INPUT
SCALE: NONE

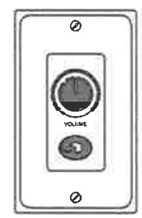
3 AUX (I-POD) INPUT PLATE
SCALE: NONE



4 AUTO / MANUAL SWITCH
SCALE: NONE

5 INTERCOM INPUT/OUTPUT
SCALE: NONE

6 MICROPHONE AND NETWORK INPUTS
SCALE: NONE



9 VOLUME CONTROL
SCALE: NONE

7 LINE ARRAY SPEAKER LOCATIONS
SCALE: NONE

8 FRONT FILL SPEAKER LOCATIONS
SCALE: NONE

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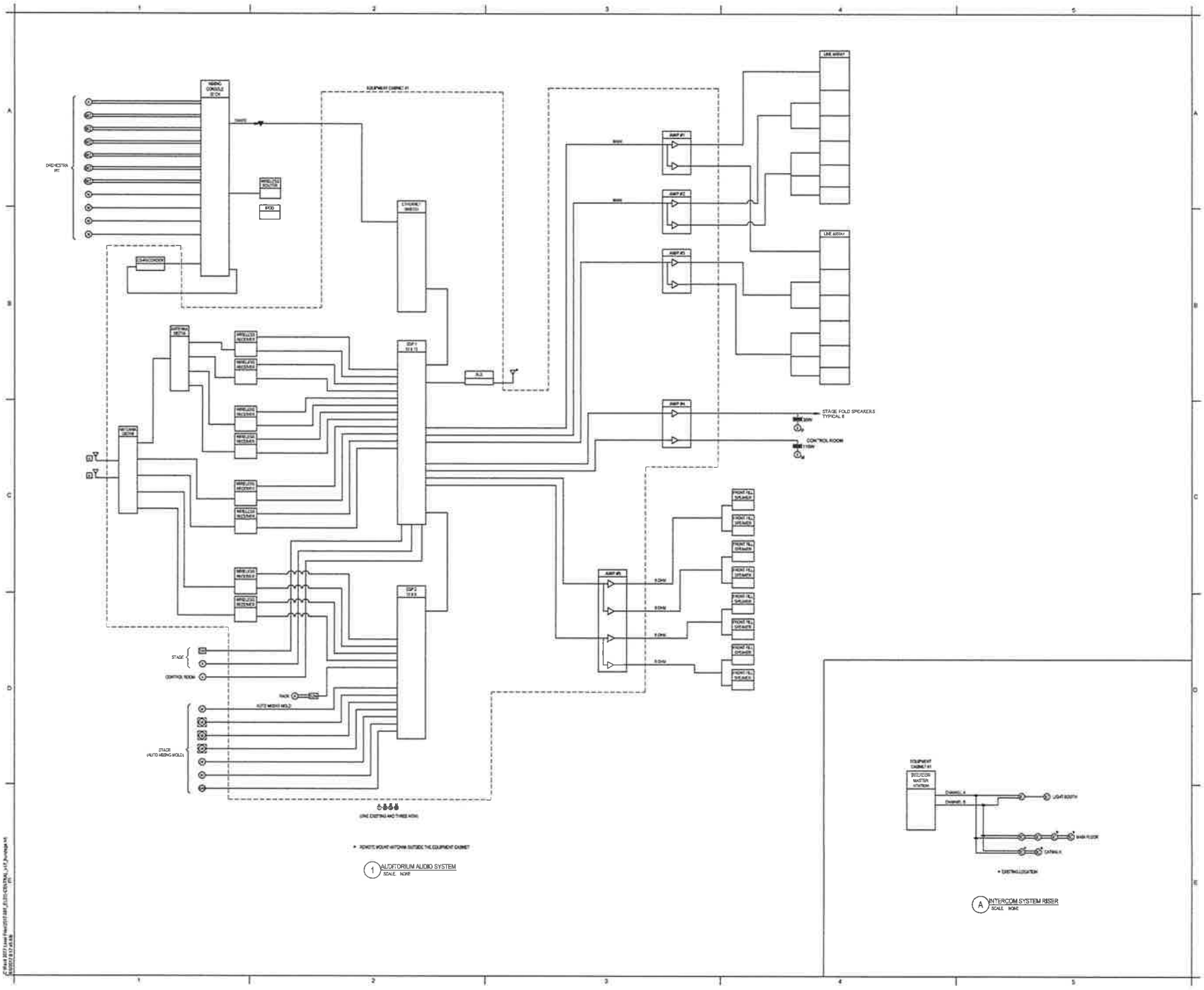
CONSTRUCTION DOCUMENTS
JUNE 9, 2017

AUDIO/VISUAL
DETAILS

ET501



1 AUDITORIUM AUDIO SYSTEM
SCALE: NONE

A INTERCOM SYSTEM RISER
SCALE: NONE

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CONSTRUCTION DOCUMENTS
JUNE 9, 2017

AUDIO/VISUAL RISER AND EQUIPMENT LIST

ET702

SYMBOL	DESCRIPTION	QTY	SUPPLIER	MODEL	ROUGH-IN	CABLE
	INTERCOM SYSTEM EQUIPMENT LIST (AUDITORIUM)					
	INTERCOM STATION SEE D7/A506	A/R	CLEAR-COM	WP-5	1-GANG, 3" DEEP 3/4" C. THROUGHOUT OUTLET HEIGHT	[illegible]
	INTERCOM SPEAKER STATION SEE D/TA506	A/R	CLEAR-COM	KB-702	1-GANG, 3" DEEP 3/4" C. THROUGHOUT SWITCH HEIGHT	[illegible]
	MASTER STATION	1	CLEAR-COM	MS-702		
	HEADSET FOR MASTER	1	CLEAR-COM	CC-300-X4		
	BELTPACK	4	CLEAR-COM	RS-702		
	CABLE FOR BELTPACK	4	CLEAR-COM	[illegible]		
	HEADSET FOR BELTPACK	4	CLEAR-COM	[illegible]		

A/R = AS REQUIRED

SYMBOL	DESCRIPTION	QTY	SUPPLIER	MODEL	ROUGH-IN	CABLE
	AUDIO SYSTEM EQUIPMENT LIST (AUDITORIUM)					
	MICROPHONE INPUT, DUAL SEE ME7501	A/R	PROCO	[illegible]		WEST PENN 452
	MICROPHONE INPUT	A/R	PROCO	[illegible]		WEST PENN 452
	MICROPHONE INPUT SEE 2/ED108	1	CUSTOM	CUSTOM PLATE WITH A FEMALE XLR CONNECTOR, FITTING WITH A 4"X4" [illegible]		WEST PENN 452
	AUTO/ MANUAL SWITCH SEE ME7501	1	[illegible]	[illegible]	1-GANG, 3" DEEP 3/4"C THROUGHOUT SWITCH HEIGHT	[illegible]
	CD RECORDER	1	TASCAM	SS-CDR-200		
	WIRELESS REMOTE ANTENNA, PAIR	1	[illegible]	[illegible]	SURFACE MOUNT	[illegible] WEST PENN [illegible]
	ANTENNA DISTRIBUTOR	1	[illegible]	[illegible]		
	HANDHELD WIRELESS SYSTEM, 2 CHANNELS	2	[illegible]	[illegible]		
	BODY PACK SYSTEM, 2 CHANNELS	4	[illegible]	[illegible] PERFORMER SET		
	DSP #1, 12X12	1	SYMETRIX	PRISM 12X12		
	DSP #2	1	SYMETRIX	[illegible]		
	ETHERNET SWITCH	1	CISCO	[illegible]		WEST PENN 4246 3F
	ASSISTIVE LISTENING SYSTEM	1	LISTEN	[illegible]		
	MIXING CONSOLE, 32CH	1	SOUNDCRAFT	[illegible]		
	[illegible] CARD	1	SOUNDCRAFT	[illegible] CARD		
	AMP #1, AMP #2, AMP #3	1	ELECTRO-VOICE	[illegible]		
	AMP #4	1	CROWN	[illegible]		
	AMP #5	1	CROWN	[illegible]		
	LINE ARRAY SPEAKER					WEST PENN 227
	SUBWOOFER FRAME	2 2	ELECTRO-VOICE ELECTRO-VOICE	[illegible] [illegible]		WEST PENN 227
	SPEAKER [illegible]	8	ELECTRO-VOICE	[illegible]		
	SPEAKER [illegible]	4	ELECTRO-VOICE	[illegible]		WEST PENN 227
	ATTENUATOR	1	ELECTRO-VOICE	[illegible]		
	ADDITIONAL RIGGING KIT	2	CUSTOM			
	SPEAKER, PENDENT	A/R	JBL	CONTROL [illegible]		WEST PENN 226
	STEREO TO MON	A/R	[illegible]	[illegible]		
	VOLUME CONTROL [illegible]	1	SYMETRIX	[illegible]		WEST PENN [illegible]
	EQUIPMENT CABINET [illegible] RACK	1	MID ATLANTIC	[illegible]		
	[illegible] SPACE UTILITY DRAWER	1	MID ATLANTIC	[illegible]		
	RACK DRAWER	1	MID ATLANTIC	[illegible]		
	BLANK PANEL	A/R	MID ATLANTIC	[illegible]		
	[illegible]	2	SHURE	[illegible]		
	MICROPHONE CORD 25'	2	AUDIO TECHNICA	[illegible]		
	MICROPHONE STAND-[illegible]	1	ATLAS SOUND	[illegible]		
	MIC CORD [illegible]	2	AUDIO TECHNICA	[illegible]		
	POWER CONDITIONER	1	[illegible]	[illegible]	[illegible]	
	POWER STRIP	2	[illegible]	[illegible]		
	NETWORK JACK	1	CUSTOM	SINGLE GANG WITH [illegible]	1-GANG 3" DEEP BOX 3/4" C. THROUGHOUT	WEST PENN 4246
	IPAD [illegible]	1	APPLE			
	MIC AND NETWORK INPUTS	1	CUSTOM	[illegible]		WEST PENN 452
	FRONT FILL SPEAKER BRACKET	A/R A/R	JBL JBL	[illegible] [illegible]		WEST PENN 226
	MONITOR SPEAKER	1 1	JBL JBL	[illegible] CONTROL [illegible]		WEST PENN 226
	IPOD INPUT	1	RDL	[illegible]	[illegible]	WEST PENN [illegible]

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MHTN PROJECT NO. 201751.00

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JUNE 9, 2017

AUDIO/VISUAL
RISER AND
EQUIPMENT LIST

ET703