

ARCHITECTURAL DESIGN ASSOCIATES, P.C.  
7501 'O' STREET, SUITE 105  
LINCOLN, NE. 68510

January 26th, 2017  
Peru State College, Theatre and Event Center Renovation and Addition  
Peru, Nebraska

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**ADDENDUM**

The Architect issues this addendum for distribution to all Bidders and suppliers before receipt of proposals. Bidders shall acknowledge the receipt of this Addendum on their bid form and all information and instructions given herein shall become a part of the Contract Documents.

**Question and Answer**

**Bid Date Extension**

The bid date has changed to 2/8/2017.

**Liquidated Damages**

Liquidated damages are excluded from the project.

**Building Liability Insurance**

The Owner is covering building liability during the construction.

**Construction Retainage**

Payment retainage will be 5%.

**The geotech report eludes to 4 different options that could be utilized. It appears from the structural drawings that the option utilizing helical piers has been utilized. However it also appears that we only have the helicals on half to 2/3 of the building addition. What is to be done with the footings/soils at the remainder of the building pad? Do the footings have to be extended down to native soils? Do the soils at the building addition need to be cored out and replaced? Does the existing fill around the existing tunnel have to be removed and replaced? There are just too many things going on with the geotech recommendations provided, and we would like clarification on exactly what the scope of work is to be.**

Over excavation is not required at the footings supported on helical piers. Suitable foundation material will need to be provided for footings West of gridline 4. Option 2B or 2C in the geotechnical report will need to be followed and the geotechnical engineer needs to confirm the depth of suitable foundation material during construction. The footings near the existing tunnel extend down to the elevation of the tunnel, and do not bear on the existing fill materials.

**You have a specification included for soil stabilization including fly ash, rock remediation, etc. However I have not seen information on the plans telling us what in this specification is to be included in our bid. Could you please clarify if fly ash or rock remediation is required, and if so where and what extent?**

Contractor shall reference Geotechnical Report, prepared by Alfred Benesch & Company, signed by Brandon L. Desh and dated 09/02/2016, for applicability of soil stabilization.

**You have a large number of helical piers shown to be implemented, with only the required bearing capacity listed on the structural drawings.**

The allowable loads are listed on the plan. The geotechnical engineer has also provided a 50' boring. Per the spec, the subcontractor shall submit a design calculation in their bid showing that their proposed helical solution will meet load requirements. The helical subcontractor determines the depth of the helical depending on which flight arrangement is most economical. Bids without design calculations will not be accepted.

**Is all site demolition shown on D1.1 and all grading shown on C2.1 completed as part of the base bid? If alternate A1 is not accepted, would the area be seeded?**

Demolition shown on Civil Sheet D1.1 is included under the base bid. If Alternate A1 is not accepted, the contractor would be expected to provide finish grade in the disturbed areas close to the future grades shown, with the Owner providing seeding of the areas at the completion of the project.

**Alternate A1 mentions water yard hydrants, plural. The utility plan shown on C3.1 shows one hydrant within the plaza area and another is located on the new main outside the plaza area. Neither are identified on the plan as part of the alternate. Please add a note to sheet C3.1 that identifies alternate work, similar to the note for the sanitary sewer.**

The single yard hydrant will be part of Alternate A1. The supply pipe stub out from the building to edge of colored concrete slab will be by base bid, refer to location of transition between base bid and alternate A1 on sheet LS1.1.

**Is the electrical work involved with alternate A4 identified on the plans? Alternate M2 is clearly indicated on E2.1, but I can't find anything for A4.**

Note 39 on sheet E2.1 identifies items affected by alternate A4.

## **Specifications**

### **Section 00 11 13 – ADVERTISEMENT FOR BIDS**

Section 1.03, A – Replace “2:00 PM Central Time on Thursday, February 2, 2017” with “2:00 PM Central Time on Wednesday, February 8, 2017” – with this change the bid date is now Wednesday February 8<sup>th</sup>. Final Bid Forms will be released no Later than Friday February 3, 2017 as part of an Addenda.

### **Section 00 73 00 – SUPPLEMENTARY CONDITIONS**

D. ARTICLE 9: PAYMENTS AND COMPLETION, 1, b, 1 – Replace ” 9.3.1.3 The Owner will pay one-hundred percent (90%) of the amount due the Contractor on account of progress payments including work in place and materials suitably stored on the site or at some other approved location.” With ” 9.3.1.3 The Owner will pay ninety-five percent (95%) of the amount due the Contractor on account of progress payments including work in place and materials suitably stored on the site or at some other approved location.”

F. ARTICLE 11: INSURANCE AND BONDS – Delete items 16 through 24. Property insurance will be purchased and maintained by owner for the duration of the construction project.

### **Section 01 23 00 – ALTERNATES**

1.04 SCHEDULE OF ALTERNATES – Add the following as H. “**Alternate No. M3 – Piano Storage Mechanical:** In the proposal to the owner state the cost to deduct PIANO STORAGE 118 dedicated HVAC system including the mini-split (MSO-1, MSI-1), duct heater (DH-118), humidifier (HU-1) and associated controls, wiring, piping and duct work. Supply and return ductwork and diffusers shall be provided into room 118 from the adjacent space DOCK AND WORKSHOP 117 and heat pump system (HP-117).”

### **Section 07 53 23 – EPDM ROOFING**

Section 1.09 WARRANTY, C, 3, B – Clarification, Unintentional damage warranty will not apply to the Base bid, 60 Mil. EPDM.

Section 2.04 ROOF INSULATION AND COVER BOARDS, A – Add sub-paragraph 8 as follows “Final roof assembly is to be a min. R-20 assembly, Canopy edge framing and blocking as required to accommodate required thickness of selected assembly components”.

### **Section 08 33 23 – OVERHEAD COILING DOORS**

Section 2.02 COILING DOORS, B,1 – Replace “3/4 hour fire rating” with “1 hour fire rating”

**Section 08 71 00 – Door Hardware**

Remove Door 201A from Set #19 and assign to set #19.1.

Section 3.5, Add the following Hardware set –  
“SET #19.1 - Int - Sgl - Exit – Auto Operator - Rated

Doors: 201A

3 Hinges	FBB168 4 1/2 X 4 1/2	US26D	ST
1 Exit Device	3RO FL 2114 X 4914D S300	630	PR
1 Electric Strike Body	9600 Security Screws	630	HS
1 Low Energy Operator		CLD-4990	628
SD			
2 Wall Actuator	CL4163	630	SD
1 Kick Plate	KO050 10" x 2" LDW CSK	630	TR
1 Gasketing	5050 B-20 20'		NA
1 Brush Sweep	672 DKB 36"		NA

NOTE: Power Supply and Wiring by Owner's Security Vendor.

Function:

1. Door normally closed, latched and unlocked. Operation by pushing actuator plates releases electric strike and activates low energy operator for entry /exit assist.
2. Manual door operation for entry /exit at all times by lever and exit device push bar.”

**Section 11 61 00 – THEATRICAL RIGGING SYSTEMS**

Section 1.05 CONTRACTOR QUALIFICATIONS, A, 1 – Add the following Pre-Approved Specialty Contractor “Electronic Theatre Controls, Inc., Middleton, Wisconsin, 800-688-4116” – provided all other specified requirements are met.

Section 2.01 MANUFACTURERS, A – Add the following approved Manufacturer “Electronic Theatre Controls, Inc., Middleton, Wisconsin, 800-688-4116” – provided all other specified requirements are met.

## **Drawings**

**Item No. C1-1:** **Sheet C1.1**

- A. Replace Sheet C1.1 with attached C1.1 – See bubbled areas Noted with revision tags.

**Item No. C1-2:** **Sheet C1.1**

- A. Replace Sheet C4.1 with attached C4.1 – See bubbled areas Noted with revision tags.

**Item No. D1-1:** **Sheet D1.1(Architectural)**

- A. GENERAL NOTES – Add the following general note “1. SEATING TO BE REMOVED BY OTHERS, SEAT MOUNT BOLTS ARE TO BE CUT BY GENERAL CONTRACTOR WITH SLAB AND RISER PATCHED AND PREPARED TO RECEIVE NEW FLUID APPLIED FINISH.”

**Item No. D1-2:** **Sheet D1.2(Architectural)**

- A. GENERAL NOTES – Add the following general note “1. SEATING TO BE REMOVED BY OTHERS, SEAT MOUNT BOLTS ARE TO BE CUT BY GENERAL CONTRACTOR WITH SLAB AND RISER PATCHED AND PREPARED TO RECEIVE NEW FLUID APPLIED FINISH.”
- B. 3/D1.2– Add the following general note “NOTE: GENERAL CONTRACTOR REMOVE PLASTER CROWN ASSEMBLY AT NORTH AND SOUTH WALL PERIMETER AND AT BALCONY SIDE OF ROOMS 231 and 232.”

**Item No. A1-1:** **Sheet A2.1**

- A. DOOR HARDWARE SCHEDULE Change Door 201A to set 19.1.

**Item No. S1-1:** **Sheet S2.2**

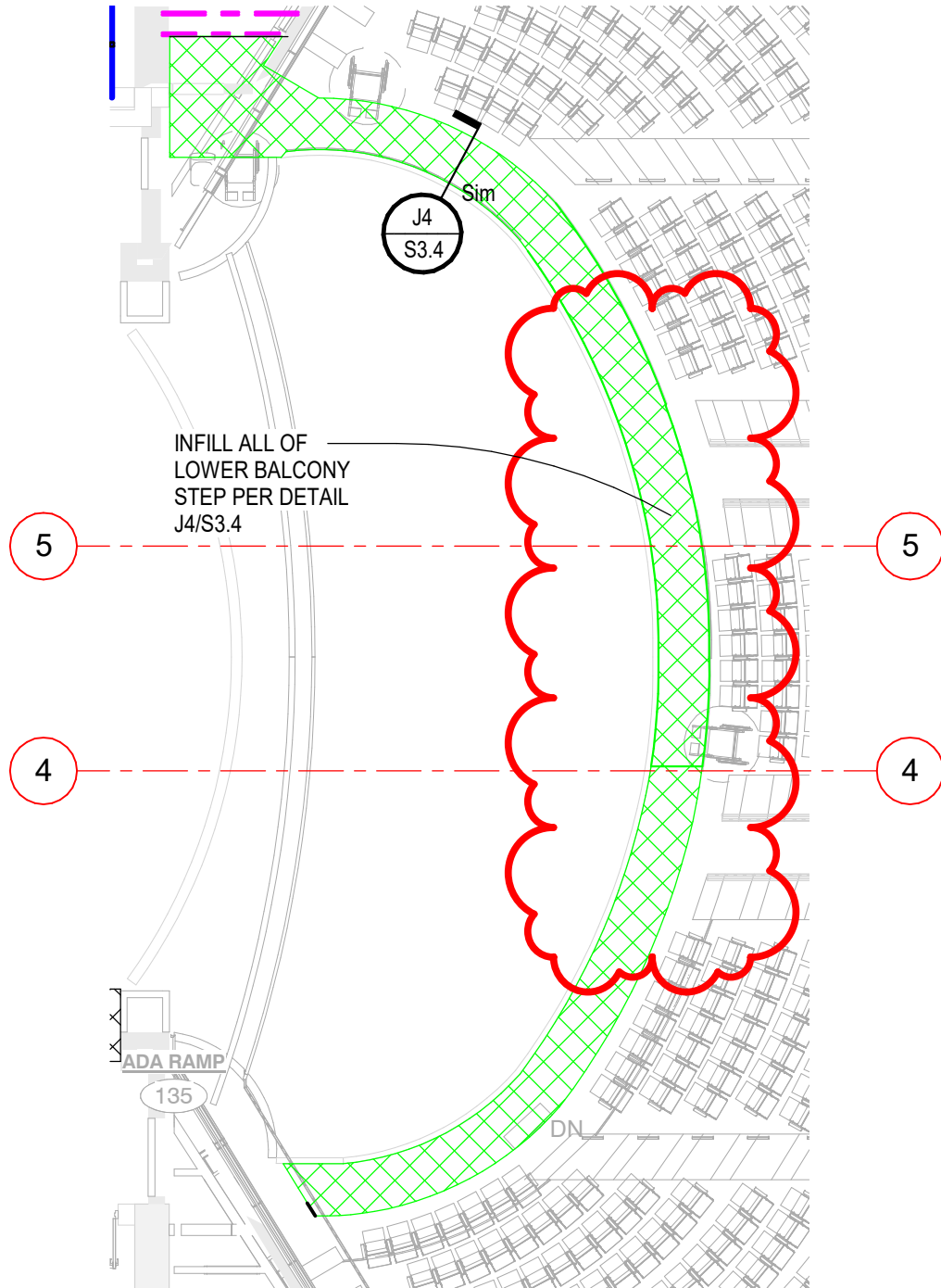
- A. GENERAL NOTES – Add the following general note “NOTE: SEE ADDENDUM #1 SHEET A1-S1 FOR BALCONY INFILL REVISION.”

**ATTACHMENTS IN THIS ADDENDUM**

**9 PAGES**

- A. A1-S1 - ADDENDUM 1- BALCONY INFILL
- B. MECHANICAL AND ELECTRICAL REVISIONS (14 PAGES)
- C. Pre-Bid Walkthrough Sign In List
- D. C1.1 - SITE PLAN SHEET
- E. C4.1 - PAVING GEOMETRICS SHEET

**END OF ADDENDUM**



1	<b>BALCONY LEVEL INFILL PLAN</b>
A1-S1	SCALE: 3/32" = 1'-0"



structural[design]group, inc.  
410 S 7th street  
lincoln, nebraska 68508  
402-438-7788

THEATRE AND EVENT CENTER ADDITION AND REMODEL  
PERU STATE COLLEGE

ADDENDUM 1- BALCONY INFILL

Project number: 16-152  
Date: 01-26-17

Drawn by: JTW  
Checked by: JTW

**A1-S1**

Scale 3/32" = 1'-0"

# ADDENDUM



**Date:** 01-26-2017  
**Project:** Peru State College  
Theatre/Event Center  
Renovation and Addition  
**To:** John Hathaway  
Architectural Design Associates  
**Project No.:** 16-078  
**Addendum No.:** 1  
**CC:**

This addendum is issued by the Architect/Engineer to all known bidders before receipt of proposals. Bidders shall acknowledge the receipt of this Addendum on their bid form and all information and instructions given herein shall become a part of the Contract Documents.

## GENERAL

**Prior Approvals – If not specifically called out as OR EQUAL under the specified product the following substitutes are acceptable as long as they meet specification; this is not a formal approval that can only be determined at shop drawing/submittal review stage.**

Energy Recovery Unit	Greenheck
Cabinet Unit Heaters	Redd/Brasch
Humidifiers	Neptronic
Duct Heaters	Neptronic
The following items were submitted for prior approval but have NOT been approved.	

### General Pre-Bid Meeting Item:

Sign-in sheets for the pre-bid meeting are attached for informational purposes only.

## CLARIFICATIONS

1. .

## CHANGES TO PROJECT MANUAL

### **Section 26 12 19 - Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers**

#### **1. Part 2 - Products**

a) Section 2.03 Three Phase Transformers:

1) Under D. High-voltage Section: Dead-front design: Add the following: 8. Provide Integral loop-feed switching.

2) Under F. Capacities and Characteristics: Change Voltage Ratings under 2. from 12.47 KV to

4.16 KV.

**Section 26 55 61 – Theatrical Lighting**

- 1) See the attached revised specification section

**CHANGES TO PROJECT DRAWINGS**

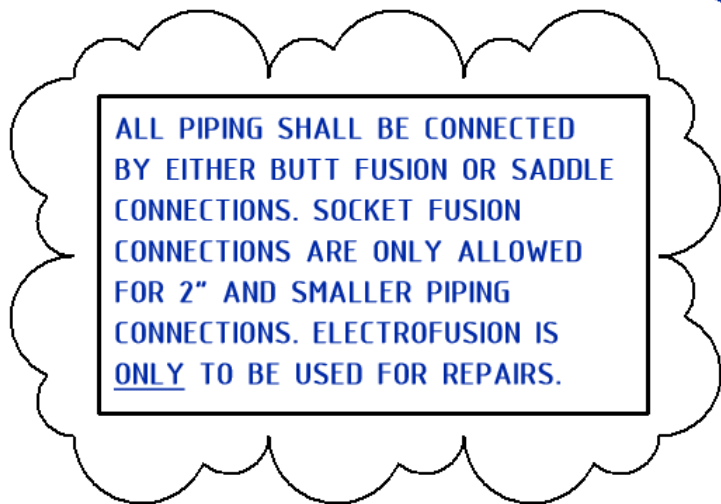
*All work shall be in accordance with the terms, stipulations, and conditions of the original contract.*

**Mechanical**

**1. Sheet W0.2**

**A. Details #1, 2, 3**

- 1) Revise general note on each detail as shown below.



**2. Sheet MD0.0**

**B. MECH. EQUIP ROOM – MECHANICAL DEMO**

- 2) Remove existing fire service entrance and associated piping and accessories. See attached sheet M1 for more information.
- 3) Remove existing sump pump, pump to be replaced. See attached sheet M1 for more information.

**3. Sheet F1.1**

**A. FIRE PROTECTION PLAN**

- 1) Install new Fire Service Entrance in Mech-103, extend service piping and piping to FDC as shown on attached sheet F1.1.
- 2) Added "NFPA 13 Fire Service Entrance Detail".

**4. Sheet M1.1**

**A. PARTIAL PLUMBING PLAN - 117**



- 1) Deleted 2"W and 4"F service piping running below slab of 117 from exterior of building to basement.
- 2) Revised routing of 4"F piping to FDC to run overhead in 117 as shown on attached sheet M1.1.

**5. Sheet M2.1**

**A. FIRST FLOOR - HVAC**

- 1) Added duct size tags.
- 2) Added general note in Auditorium-130 – "GC to provide all scaffolding in Auditorium seating area only."

**B. SECOND FLOOR - HVAC**

- 1) Added duct size tags.
- 2) Added general note in Auditorium-130 – "GC to provide all scaffolding in Auditorium seating area only."
- 3) Added EF-2 to serve elevator equipment, see Keynotes #18 & #20 for additional information.

**C. PARTIAL HVAC PLAN – 117 & 118 (ALT M-3)**

- 1) As part of Alt M-3 the dedicated HVAC system (MSO-1, MSI-1, HU-1, DH-118 as well as all associated duct, pipe and accessories) to serve Piano Storage-118 shall not be provided. In place room shall be served off of HP-117 as shown on attached drawing M2.1.

**6. Sheet M3.1**

**A. PARTIAL HVAC PLAN – MECH 210 (BASE BID)**

- 1) Added duct size tags.

**B. PARTIAL HVAC PLAN – MECH 210 (ALTERNATE)**

- 1) Added duct size tags.

**7. Sheet M3.2**

**A. MECHANICAL SECTIONS**

- 1) Added duct size tags.

**B. SECTION @ HP-130a thru HP-130g (BASE BID)**

- 1) Add Volume Damper (VD) in 16x20 SA duct of HP-130a thru HP-130g.

**8. Sheet M4.1**

**A. PUMPS**

- 1) Added P-5

PUMPS

MARK	MANUFACTURER	MODEL #	GPM	FT. HEAD	MIN. PUMPING EFFICIENCY	PUMP DATA				MOTOR DATA				DIRECT OR SPLIT COUPLNG TYPE	SYSTEM SERVED	NOTES	
						NO FLOW HD	NOL HP	NPSH	FLUID	HP	VOLT	PHASE	RPM				PUMP TYPE
P-1	PATTERSON	E2DASA-1	193.5	83	72.6	86.1	6.6	9.25	H2O	7.5	200	3	1750	BASE MOUNT	SPLIT	HEAT PUMP LOOP	1,3,5,6
P-2	PATTERSON	E2DASA-1	193.5	83	72.6	86.1	6.6	9.25	H2O	7.5	200	3	1750	BASE MOUNT	SPLIT	HEAT PUMP LOOP	1,3,5,6
P-3	TACO	001K	6.0	16	-	-	-	-	-	0.125	120	1	3250	INLME CIRCULATOR	DIRECT	DOMESTIC HOT WATER RECIRCULATION	2
P-4	STANCOR	SE50A	50.0	20	-	-	-	-	-	0.5	120	1	-	NON-CLOG EFFLUENT PUMP	DIRECT	ELEVATOR SUMP PIT	7
P-5	STANCOR	SE60	25.0	20	-	-	-	-	-	0.6	120	1	-	NON-CLOG EFFLUENT PUMP	DIRECT	BASEMENT FLOOR DRAIN	7

PUMP SCHEDULE NOTES

1. BRONZE OR STAINLESS STEEL FRITED CONSTRUCTION. PUMP SHALL HAVE INLET/OUTLET TEST PORTS AND BE BALANCED AND ALIGNED.
2. ALL BRONZE OR STAINLESS STEEL CONSTRUCTION.
3. SPLIT COUPLED PUMPS SHALL HAVE A SHAFT GROUNDING KIT, INLET/OUTLET GAUGE TAPS, SEAL FLUSH LINE, INTERNAL CASE WEAR RING, DURAFLEX COUPLING (OR EQUAL) RATED FOR VARIABLE SPEED USE AND OSHA COMPLIANT COUPLING GUARD WITH A BALANCED IMPELLER.
4. DIRECT COUPLED PUMPS SHALL HAVE A SHAFT GROUNDING KIT, INLET/OUTLET GAUGE TAPS, SEAL FLUSH LINE, INTERNAL CASE WEAR RING WITH A BALANCED IMPELLER.
5. PUMP BASE SHALL BE SHIMMED LEVELED BEFORE INSTALLATION AND ALIGNED AFTER INSTALLATION ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
6. PROVIDE A COMPATIBLE VARIABLE FREQUENCY DRIVE (VFD) FOR PUMP. PUMP MOTOR SHALL BE INVERTER DUTY RATED FOR USE WITH A VFD AND A SHAFT GROUNDING KIT. VFD SHALL BE PROVIDED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR. VFD TO MATCH HORSEPOWER RATING OF THE MOTOR AND HAVE INTEGRAL DISCONNECT.
7. SUMP PUMP SHALL BE PROVIDED WITH CORD AND PLUG AND 24"Ø X 36" DEEP FIBERGLASS BASIN WITH METAL GRATE FOR TOP.

**9. Sheet M4.2**

**A. Alternates**

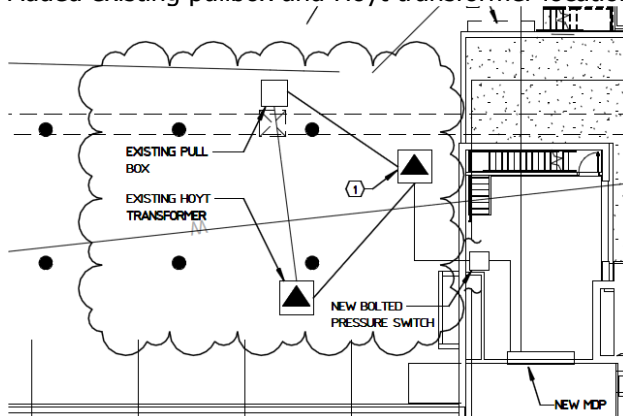
- 1) Alt M-1
  - a) Alternate Controls Contractor: In the proposal to the Owner, state the cost to ADD or DEDUCT for the proposed controls system and contractor, in lieu of that specified under the Base Bid. Indicate the control system and the installing contractor, along with the proposed cost. Work performed by the alternate controls contractor shall match the same requirements of the Base Bid controls specifications EXCEPT the proposed alternate system does not need to connect to the existing campus system and will function as a stand-alone system. The proposed alternate system shall be accessible from the internet, a full open system with all software, hardware, keys, and passwords (provided by the Owner). Alternate pricing shall be provided for EACH of the following:
    - 1. Controls Management, Inc.
    - 2. Engineered Controls, Inc.
  
- 2) Alt M-2
  - a) In the proposal to the Owner, state the cost to ADD or DEDUCT for providing two (2) larger heat pumps in lieu of seven (7) heat pumps indicated in the Base Bid to serve the theatre area. Include costs for all related piping, electrical work, duct modifications and controls modifications required.
  
- 3) Alt M-3
  - a) Alt M-3 - Shall include NOT providing the piano room 118 dedicated HVAC system including the mini-split (MSO-1, MSI-1), duct heater (DH-118), humidifier (HU-1) and associated controls, wiring, piping and duct work. A supply and return diffusers shall be provided in the room 118 from the adjacent space 117 heat pump system (HP-117).

**Electrical**

**1. Sheet E0.1**

**A. Electrical Site plan**

- 1) Revised Note #1 to read: "THE EC SHALL PROVIDE AND INSTALL NEW PAD MOUNTED LIQUID FILLED TRANSFORMER 4160 VOLT-120/208 VOLT 3PH 4W 500KVA. THE TRANSFORMER SHALL HAVE INTEGRAL PRIMARY FUSING, WITH FUSES, AND INTEGRAL LOOP FEED SWITCHING."
- 2) Added existing pullbox and Hoyt transformer locations to plans.



2. **Sheet E1.1**

**A. Second Floor - Lighting**

- 2) Delete eight(8) Type 22 stair edge light from the clouded locations shown on the attached drawing E1.1.

3. **Sheet E2.1**

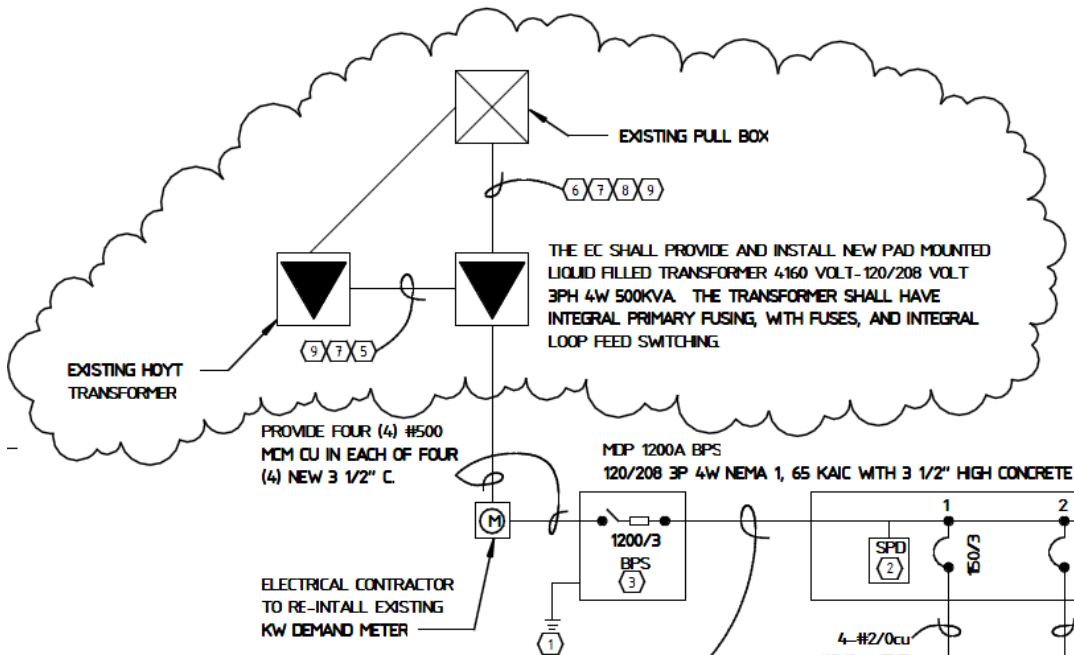
**B. First & Second Floor – Power: see attached sheet for changes**

- 1) Added electrical connection for HU-1. Provide NEMA 1 non-fusible disconnect with 2-#12 and #12 gnd in 3/4" conduit to new 20/2 breaker in Panel 'E'. Remove two 20/1 spare breakers from Panel 'E'.
- 2) Added electrical connection for EF-2. Provide STE with 2-#12 and #12 gnd in 3/4" conduit to spare 20/1 breaker in Panel 'B'.
- 3) Added electrical connection for P-5. Provide STE with 2-#12 and #12 gnd in 3/4" conduit to breaker in panel "F" that was serving the existing sump pump.
- 4) Remove all electrical connections to existing sump pump in basement
- 5) Remove door hold open. Provide connections to automatic door opener specified by architect.

4. **Sheet E3.2**

**C. Electrical One-Line & Details**

- 1) Revised note to the right of the transformer on One-Line Diagram.
- 2) Add the following notes to the one-line diagram notes.
  - a) #5- 3-#4/0, 15KV UD TYPE, XLP, 133% INSULATION LEVEL, 1/3 CONCENTRIC NEUTRAL, COOPER CONDUCTORS IN EXISTING 4" RGS CONDUIT BURIED BETWEEN HOYT TRANSFORMER AND THEATER TRANSFORMER.
  - b) #6: 3-#4/0, 15KV UD TYPE, XLP, 133% INSULATION LEVEL, 1/3 CONCENTRIC NEUTRAL, COOPER CONDUCTORS IN EXISTING 4" RGS CONDUIT BURIED BETWEEN THEATER TRANSFORMER AND EXISTING PULLBOX.
  - c) #7: REMOVE EXISTING 15KV PRIMARY CONDUCTORS.
  - d) #8: SPLICE IN NEW PRIMARY CONDUCTORS DESCRIBED IN NOTE #6.
  - e) #9: THE WORK REQUIRED IN NOTES #5, #6, #7, AND #8 SHALL BE INCLUDED IN BASE BID. THIS WORK IS ONLY REQUIRED IF EXISTING PRIMARY CONDUCTORS ARE TO SHORT. THE EC SHALL CREDIT BACK PERU STATE COLLEGE THIS AMOUNT, IF WORK IS NOT REQUIRED.





**5. Sheet E3.3**

**D. Electrical & Lighting Schedules**

- 1) On equipment connection schedule add note 3 to the following equipment: MSO-1, MSI-1, HU-1, and DH-118. Note 3 should read: "ALL ELECTRICAL CONNECTION SHALL BE PROVIDED UNDER ALTERNATE M3 AND NOT PART OF BASE BID".

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**By:**

Kyle Wilkinson, Steve Jensen, Eric Stokebrand, Don Changstrom

**Date:**

01-26-2017

## SECTION 26 55 61 (R)

### THEATRICAL LIGHTING

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Section Includes:
1. Dimmer racks.
  2. Control console and control devices.
  3. Luminaires and accessories.
  4. Distribution components for the Base Bid, Review Alternate A-4 for additional rigging requirements.
- B. The intent of this specification is to define parameters for furnishing and installing theatrical lighting instruments to the Owner and providing training for the Operation and Maintenance of this hardware. This specified hardware is selected to meet specific operational requirements of Peru State College Theatre and Event Center. Performance deviations will not be accepted.
- C. Scope of Work:
1. Provide all dimming and control equipment for this specification section to the electrical contractor.
  2. Provide all coordination for the supplying of all materials and services for a complete and functional system with the installing electrical contractor.
  3. Provide theatrical lighting fixtures and accessories as indicated and deliver to Owner or install as specified.
  4. Factory certified terminations for all low voltage control wiring for this system.
  5. Coordination with all other trades that impact the materials provided for this project, including DMX addressing, distributed circuit numbering, etc...
- D. Coordination of work provided by others:
1. Distributed circuit strips and distributed DMX by Rigging Contractor under base bid, coordinate outlet locations and numbering on the strips with the rigging contractor.
  2. Power and DMX wiring to theatrical stage strips and their management and termination shall be provided by the Rigging Contractor in association with the Electrical Contractor.

##### 1.02 DEFINITIONS

- A. Fade Time: The time it takes all zones to fade from one lighting scene to another, with all zones arriving at the next scene at the same time.
- B. Control Voltage: As defined in NFPA 70, term for circuits and equipment operating at less than 50 V or for remote-control, signaling, and power-limited circuits.
- C. Scene: The lighting effect created by adjusting several zones of lighting to the desired intensity.

- D. Channel: An individual control output on a control console, accessed and regulated by a slider, switch, or button; or in some cases, accessed by a discretely assigned address and regulated by a data input apparatus.

### **1.03 DRAWINGS**

- A. Drawings shall be furnished as follows:
  - 1. One (1) electronic set of submittal cut-sheets with furnished accessories highlighted and a detailed bill of materials shall be furnished for approval within 30 days of award of Contract. This package shall be submitted with a table of contents indicating the documentation submitted for each item supplied. Prior to shipment of equipment, one (1) electronic set of submittals shall be returned appropriately marked as the approved bill of materials.
  - 2. The owner shall be supplied with two (2) sets of bound Operation and Maintenance Manuals and one (1) set on CD ROM at the completion of the installation. Each manual shall include operation instructions and backup software for the console; and; operation instructions, lamp information, maintenance procedures and parts details for each type of fixture installed.

### **1.04 STANDARDS**

- A. All equipment, where applicable standards have been established, shall be built to the standards of Underwriters Laboratories, Inc., the National Electric Code and the United States Institute for Theater Technology. Approved equipment shall be so labeled on delivery to the job site.

### **1.05 SUBSTITUTIONS**

- A. The equipment specified is the result of efforts on the part of the Owner and the Designers to select equipment for reliability, ease of maintenance and suitability for the Owners' purposes. The bid shall be for the products listed as supplied by the manufacturer listed.
- B. Proposals for equipment from other manufacturers' will be considered as an alternate bid provided the equipment meets the operational parameters of the listed equipment and sufficient documentation is submitted ten days prior to bid date to establish that it meets or exceeds these specifications. The base bid shall be for the listed products. The price for alternate bids must be identified as an alternate bid and the amount stated as an addition or deduction to the base bid.
- C. Submittals for prior approval shall include but not be limited to: complete Bill of Materials, cut sheets on all proposed equipment showing full technical specifications and a document identifying all deviations of the proposed equipment side by side from this specification.
- D. Any revision or addition to the wiring required by substitute equipment shall be the responsibility of the Substituting Contractor. This Contractor shall also be responsible for any additional architectural or engineering fees occasioned by the necessity of evaluating alternate proposals.
- E. No exception shall be made to the requirement for dimmer doubling fixture compatibility or functionality.
- F. No deviation shall be permitted from the requirement for UL listing.

## **1.06 QUALITY ASSURANCE**

- A. This equipment shall be supplied and installed by a theatrical equipment distributor (dealer) that is a member in good standing of ESTA/PLASA. And whose primary function is the design and integration of theatrical and architectural dimming and control systems.
- B. The theatrical equipment dealer supplying this equipment shall be an authorized dealer for the manufacturer of each of the products supplied and shall be a member in good standing with ESTA.

## **1.07 WARRANTY**

- A. **Warranty:** The manufacturer of each product supplied shall warrant to the Owner that for a period of two (2) years from date of delivery its products will be free from defects in materials and workmanship under normal use and service.
- B. **Manufacturer Services:** Service shall be provided directly by the manufacturer and service calls shall be made within 24 hours.
- C. All warranty claims shall be reviewed by the manufacturer to determine if the issue was caused by product failure. Issues from misuse or acts of nature will not be covered by warranty.

## **1.08 SHIPPING**

- A. Shipping shall occur only after approved submittals and a written notice to proceed has been delivered to the Contractor at the Contractor's place of business.
- B. All shipping scheduling shall be coordinated by the equipment supplier with the electrical contractor, rush shipping for architectural or theatrical back boxes provided by the equipment supplier shall be covered in the bid.

## **1.09 TRAINING**

- A. A manufacturer qualified training representative employed by the Contractor shall visit the job site after hardware delivery and installation to verify the operation of the house and theatrical fixtures within the dimming and control system and to provide reports for the engineer with fixture response or concerns. She/he shall also perform preliminary hang and rough focus the theatrical lighting instruments as instructed by the Owner in conjunction with the theatrical consultant. She/he shall also at the time of dimming and control system and rigging training instruct the Owners' representatives in the operation and maintenance of the system. The instruction session shall last a minimum of six (6) hours and shall be provided within 21 days written notice by the Owner.

## **PART 2 - PRODUCTS**

### **2.01 PERFORMANCE REQUIREMENTS**

- A. **Electrical Components, Devices, and Accessories:** Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

## 2.02 LUMINAIRES AND ACCESSORIES

### A. Luminaire Assembly Description:

1. Comply with UL 1573 and listed and labeled by an NRTL.
2. Luminaires: Equipped with pigtail, yoke with pipe clamp, safety cable for batten mounting, and filter holder.
3. Metal Parts: Free of burrs, sharp corners, and edges.
4. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.
5. Luminaire Doors and Their Internal Access: Smooth operating, free of light leakage under operating conditions, and arranged to permit relamping without use of tools. Doors, lenses, diffusers, and other pieces arranged to prevent accidental falling during relamping and when secured in operating position.
6. Pigtail: Factory wired, 36-inch- long, three-wire cord and plug connector assembly with cord encased in woven fiberglass or silicone tubing.
7. Lamp Sockets: Relampable without disturbing alignment or focus adjustment.
8. Luminaire Ventilation Openings: Baffled against light leaks.
9. Luminaire Operating Controls and Handles: Thermally insulated.
10. Lenses: Borosilicate glass in silicone mountings.
11. Framing Shutters: Stainless steel, four way; with each blade in a separate plane under adjustable tension mounting. Blades adjust plus or minus 30 degrees of rotation in gate for 120-degree-minimum total angular rotation between adjacent blades.
12. Color Filter Frame Holder: Attached to front of luminaire.
13. Luminaire Yoke: Rigid metal, arranged for vertical aiming of unit and equipped with T-bolt or hand screw to lock alignment.

## 2.03 ELLIPSOIDAL SPOTLIGHTS

### A. General

1. The instrument shall be a Source Four ellipsoidal spotlight as manufactured by Electronic Theatre Controls, Inc. or Strand Selecon Series.

### B. Physical

1. The unit shall be constructed of rugged, die cast aluminum, free of burrs and pits, finished in black, high temperature epoxy paint. Tools shall not be required for either lamp alignment or cleaning the reflector or lens.
2. The following shall be provided:
  - a. Integral cable clamp for power leads.
  - b. Positive locking of lamp focus and independent lamp alignment controls.
  - c. High impact, thermally insulated knobs and shutter handles.
  - d. Reflector secured with shock mounts.
  - e. Lens secured with silicone shock mounts.
  - f. Rotating shutter assembly - 50° rotation.
  - g. 20 gauge stainless steel shutters.
  - h. Interchangeable lens tubes for different field angles with Teflon guides for smooth tube movement.
  - i. Sturdy gel frame holders with two (2) accessory slots and a top mounted, quick release gel frame retainer.
  - j. Rugged 3/16" x 1-1/4" steel yoke with two (2) mounting positions allowing 300°+ rotation of the fixture within the yoke.

- k. Positive locking, hand operated yoke clutch.
- l. Slot with sliding cover for motorized pattern devices or optional iris.

C. Optical

- 1. The optical train shall combine a compact filament lamp with a precision molded borosilicate, ellipsoidal reflector and aspheric lens to produce an optimum cosine field.
- 2. The unit shall provide, but not be limited to:
  - a. Molded borosilicate reflector with multiple dichroic layers.
  - b. 95% of visible light shall be reflected while 90% of infrared light as heat shall be transmitted through the reflector.
  - c. Low gate and beam temperature.
  - d. Sharp imaging through a three plane shutter design.
- 3. Projector-quality, high contrast aspheric lens, with an anti-reflective coating to increase transmission.

D. Performance

- 1. The unit shall be precision engineered to use a 575W lamp to deliver an even, intense field with cosine distribution.
- 2. The unit shall provide, but not be limited to:
  - a. 5, 10, 19, 26, 36 and 50 degree field angles.
  - b. Projector-quality pattern imaging.
  - c. Sharp shutter cuts without halation.
  - d. Shutter warping and burnout in normal use shall be unacceptable.
  - e. Adjustable hard and soft beam edges.
- 3. The unit shall be UL and CSA listed and so labeled.

E. Lamp

- 1. The high efficiency lamp shall be a 575 watt HPL lamp (rated 2000 hours) which is a compact tungsten filament contained in a krypton-filled quartz envelope. The lamp shall mount axially within the reflector. The lamp vase shall have a integral die cast aluminum heat sink that reduces seal temperature and ensures proper lamp alignment. The lamp socket shall be ATP 220 nickel gold plated.

**2.04 S4 FRESNEL - 750 W SPOTLIGHT**

A. General

- 1. The instrument shall be a Source Four Fresnel spotlight as manufactured by Electronic Theatre Controls, Inc. or Strand 6" Fresnelite.

B. Lamp

- 1. The instrument shall utilize a 750 watt HPL lamp (rated 1500 hours) which is a compact tungsten filament contained in a krypton-filled quartz envelope.
- 2. The lamp shall be prefocused in relation to the reflector.
- 3. The lamp base shall have a integral die cast aluminum heat sink that reduces seal temperature and ensures proper lamp alignment.

4. The lamp socket shall be ATP 220 nickel gold plated.
5. All versions of the instrument shall use only lamp type, the HPL lamp. Fixtures which require the purchasing of multiple lamp types to achieve different field angles shall not be acceptable.
6. The lamp shall be removable from the bottom of the fixture for relamping.

C. Physical

1. The spotlights are constructed of rugged, die cast aluminum, free of burrs and pits, finished in black, high temperature epoxy paint. Tools shall not be required for cleaning the reflector or lens.
2. The spotlight shall provide, but not be limited to:
  - a. Integral cable clamp for power leads.
  - b. High impact, thermally insulated knobs.
  - c. Sealed reflector housing shall prevent all light leaks.
  - d. Zoom adjustment by means of a large side mounted knob with integral locking lever.
  - e. Lamp socket access door shall use a tool free ¼ turn closure device
  - f. Bottom access lamp removal
  - g. Sturdy gel frame holders with two (2) accessory slots and a top mounted, quick release gel frame retainer.
  - h. Rugged steel yoke with two mounting positions 300°+ Rotation of fixture within yoke.
  - i. Positive locking, hand operated yoke clutch.
  - j. Each unit shall be provided standard with colorframe and 36-inch bare lead.
  - k. Unit shall be nominally 12.5 x 9.5
  - l. Weight without "C" clamp shall be 13.25 lbs.
  - m. The spotlight shall be UL and CSA approved.

## 2.05 COLOR MIXING LIGHT EMITTING DIODE WASH FIXTURE

A. General

1. The fixture shall be a color-mixing high-intensity LED illuminator with DMX control of intensity and color. The fixture shall be a ColorSource Par or Colorsource Par Deep Blue as manufactured by Electronic Theatre Controls, Inc. or approved equal.
2. All LED fixtures shall be provided by a single manufacturer to ensure compatibility
3. The fixture shall be UL 1573 listed for stage and studio use
4. The fixture shall comply with the USITT DMX-512 A standard

B. Physical

1. The fixture shall be contained in a rugged all-metal die-cast housing, free of burrs and pits.
2. The housing shall have a rugged black powdercoat finish
  - a. White or silver/gray powdercoat finishes shall be available as color options
  - b. Other powdercoat color options shall be available on request
3. Power supply, cooling and electronics shall be integral to each unit.

4. Fixture housing shall provide two easy-access slots for secondary lenses and other accessories
  - a. Slots shall be equipped with locking retaining clip
5. The unit shall ship with:
  - a. Theatrical-style hanging yoke as standard
  - b. 5' power lead with Edison connector as standard
6. Available options shall include but not be limited to:
  - a. Floor stand conversion Kit
  - b. Bare-end, Stage-Pin or Twist-lock type-equipped power leads
  - c. PowerCon to PowerCon cables for fixture power linking
  - d. Multiple secondary lens options to include multiple angles in the following patterns:
    - 1) Linear
    - 2) Round
    - 3) Oblong
7. Light output shall be via a round aperture
  - a. Aperture and accessory slots shall accommodate standard 7.5" accessories such as used in other similar-sized fixtures
  - b. Accessories available as options shall include but not be limited to:
    - 1) Gel/diffusion frames
    - 2) Top hats
    - 3) Barndoors
    - 4) Egg crate louvers
    - 5) Concentric ring louvers
    - 6) Multiple secondary lensing options

C. ENVIRONMENTAL AND AGENCY COMPLIANCE

1. The fixture shall be UL and cUL LISTED and/or CE rated, and shall be so labeled when delivered to the job site.
2. The fixture shall be UL LISTED to the UL1573 standard for stage and studio use
3. The fixture shall be rated for IP-20 dry location use.

D. THERMAL

1. The fixture shall be cooled with a variable speed fan.
2. The fixture shall utilize advanced thermal management systems to maintain LED life to an average of 70% intensity after 20,000 hours of use
  - a. Thermal management shall include multiple temperature sensors within the housing to include:
    - 1) The LED array
    - 2) The control board

3. The fixture shall operate in an ambient temperature range of 0°C (32°F) minimum, to 40° C (104°F) maximum ambient temperature.

#### E. ELECTRICAL

1. The fixture shall be equipped with 100V to 240V 50/60 Hz internal power supply
2. The fixture shall support power in and thru operation
  - a. Power in shall be via Neutrik® PowerCon™ input connector
  - b. Power thru shall be via Neutrik® PowerCon™ output connector
  - c. Fixture power wiring and accessory power cables shall be rated to support linking of multiple fixtures up to the capacity of a 15A breaker
3. The fixture requires power from non-dim source
4. Power supply outputs shall have self-resetting current limiting protection
5. Power supply shall have power factor correction

#### F. LED Emitters

1. The fixture shall contain 4 different LED colors to provide color characteristics as described in Section H below.
2. All LEDs used in the fixture shall be high brightness and proven quality from established and reputable LED manufacturers.
  - a. Fixture shall utilize Luxeon® Z™ LED emitters
3. Manufacturer of LED emitters shall utilize an advanced production LED binning process to maintain color consistency.
4. LED emitters should be rated for nominal 20,000 hour LED life to 70% intensity
5. All LED fixtures (100% of each lot) shall undergo a minimum three-hour burn-in test during manufacturing.
6. LED system shall comply with all relevant patents

#### G. CALIBRATION

1. Fixture shall be calibrated at factory for achieve consistent color between fixtures built at different times and/or from different LED lots or bins
  - a. Calibration data shall be stored in the fixture as a permanent part of on-board operating system
  - b. All arrays, including replacement arrays shall be calibrated to the same standard to insure consistency
  - c. Fixtures not offering LED calibration shall not be acceptable

#### H. COLOR

1. The fixture shall utilize an minimum of 40 LED emitters
  - a. These emitters shall be made up of Red, Green, Blue and Lime for ColorSource
  - b. These emitters shall be made up of Red, Green, Indigo and Lime for ColorSource Deep Blue

#### I. DIMMING

1. The LED system shall use 15-bit nonlinear scaling techniques for high-resolution dimming.
2. The dimming curve shall be optimized for smooth dimming over longer timed fades.
3. The LED system shall be digitally driven using high-speed pulse width modulation (PWM)
4. LED control shall be compatible with broadcast equipment in the following ways:
  - a. PWM control of LED levels shall be imperceptible to video cameras and related equipment
  - b. PWM rates shall be adjustable by the user via RDM to avoid any visible interference to video cameras and related equipment

**J. CONTROL AND USER INTERFACE**

1. The fixture shall be USITT DMX 512A-compatible via In and Thru 5-pin XLR connectors
2. The fixture shall be compatible with the ANSI RDM E1.20 standard
  - a. All fixture functions shall accessible via RDM protocol for modification from suitably equipped control console
  - b. Temperature sensors within the luminaire shall be viewable in real time via RDM
  - c. Fixtures not offering RDM compatibility, feature set access or temperature monitoring via RDM shall not be compatible
3. The fixture shall be equipped with a 7-segment display for easy-to-read status and control
4. The fixture shall be equipped with a three-button user-interface
5. The fixture shall offer RGB control
6. The fixture shall operate in Regulated mode for droop compensation
7. The fixture shall offer stand-alone functionality eliminating the need for a console
  - a. Fixture shall ship with 12 preset colors accessible as a stand-alone feature
  - b. Fixture shall ship with 5 Sequences accessible as a stand-alone feature
  - c. Each color and sequence can be modified by the end user
  - d. Fixtures can be linked together with standard DMX cables and controlled from designated master fixture
    - 1) Up to 32 fixtures may be linked
  - e. Fixtures in a stand-alone state shall restore to the settings present prior to power cycling, eliminating the need for reprogramming
  - f. Fixtures without stand-alone operation features described in a, b, c, d, and e shall not be acceptable.

**2.06 COLOR MIXING LIGHT EMITTING DIODE LINEAR FIXTURE**

**A. General**

1. The fixture shall be a color-mixing high-intensity LED illuminator with DMX control of intensity and color. The fixture shall be a ColorSource Linear 1, 2 or 4 as manufactured by Electronic Theatre Controls, Inc. or approved equal.

2. All LED fixtures shall be provided by a single manufacturer to ensure compatibility
3. The fixture shall be UL 1573 listed for stage and studio use
4. The fixture shall comply with the USITT DMX-512A standard.

B. Physical

1. The fixture shall be contained in a rugged all-metal die-cast and/or sheet metal housing, free of burrs and pits.
2. The housing shall have a rugged black powdercoat finish
  - a. White or silver/gray powdercoat finishes shall be available as color options
  - b. Other powdercoat color options shall be available on request
3. Power supply, cooling and electronics shall be integral to each unit.
4. The ColorSource Linear shall be available in 3 lengths
  - a. Linear 1 shall be .5 meters
  - b. Linear 2 shall be 1 meter
  - c. Linear 3 shall be 2 meters
5. Fixture housing shall provide two easy-access slots for secondary lenses and other accessories
  - a. Slots shall be equipped with locking cover on both ends of the fixture
6. Each LED optic shall be spaced for optimal photometric performance
  - a. The units shall allow for being placed end to end while maintaining optical spacing to prevent scalloping between fixtures
7. The unit shall ship with:
  - a. 2 x Floor stand trunnions that can accommodate c-clamps for hanging.
  - b. 5' power lead with Edison connector as standard
8. Available options shall include but not be limited to:
  - a. Bare-end, Stage-Pin or Twist-lock type-equipped power leads
  - b. Original or Deep Blue LED array
9. Accessories available as options shall include but not be limited to:
  - a. Hanging yoke for the Linear 1
  - b. Double hanging yoke for the Linear 1
  - c. PowerCon to PowerCon cables for fixture power linking
  - d. Multiple secondary lens options to include multiple angles in the following patterns:
    - 1) Horizontal
    - 2) Vertical
    - 3) Round
  - e. Barn doors

f. Egg crate louvers

C. ENVIRONMENTAL AND AGENCY COMPLIANCE

1. The fixture shall be UL and cUL LISTED and/or CE rated, and shall be so labeled when delivered to the job site.
2. The fixture shall be UL LISTED to the UL1573 standard for stage and studio use
3. The fixture shall be rated for IP-20 dry location use.

D. THERMAL

1. The fixture shall be cooled with a variable speed fan.
2. The fixture shall utilize advanced thermal management systems to maintain LED life to an average of 70% intensity after 20,000 hours of use
  - a. Thermal management shall include multiple temperature sensors within the housing to include:
    - 1) The LED array
    - 2) The control board
3. The fixture shall operate in an ambient temperature range of 0°C (32°F) minimum, to 40° C (104°F) maximum ambient temperature.

E. ELECTRICAL

1. The fixture shall be equipped with 100V to 240V 50/60 Hz internal power supply
2. The fixture shall support power in and thru operation
  - a. Power in shall be via Neutrik® PowerCon™ input connector
  - b. Power thru shall be via Neutrik ® PowerCon™ output connector
  - c. Fixture power wiring and accessory power cables shall be rated to support linking of multiple fixtures up to the capacity of a 15A breaker
3. The fixture requires power from non-dim source
4. Power supply outputs shall have self-resetting current limiting protection
5. Power supply shall have power factor correction

F. LED Emitters

1. The fixture shall contain 4 different LED colors to provide color characteristics as described in Section H below.
2. All LEDs used in the fixture shall be high brightness and proven quality from established and reputable LED manufacturers.
  - a. Fixture shall utilize Luxeon® Z™ LED emitters
3. Manufacturer of LED emitters shall utilize an advanced production LED binning process to maintain color consistency.
4. LED emitters should be rated for nominal 20,000 hour LED life to 70% intensity
5. LED system shall comply with all relevant patents

G. CALIBRATION

1. Fixture shall be calibrated at factory for achieve consistent color between fixtures built at different times and/or from different LED lots or bins
  - a. Calibration data shall be stored in the fixture as a permanent part of on-board operating system
  - b. All arrays, including replacement arrays shall be calibrated to the same standard to insure consistency
  - c. Fixtures not offering LED calibration shall not be acceptable

#### H. COLOR

1. The fixture shall utilize an minimum of 40 LED emitters
  - a. These emitters shall be made up of Red, Green, Blue and Lime
    - 1) Deep Blue arrays use Indigo in place of Blue

#### I. DIMMING

1. The LED system shall use 15-bit nonlinear scaling techniques for high-resolution dimming.
2. The dimming curve shall be optimized for smooth dimming over longer timed fades while responding quickly to bumps.
3. The LED system shall be digitally driven using high-speed pulse width modulation (PWM)
4. LED control shall be compatible with broadcast equipment in the following ways:
  - a. PWM control of LED levels shall be imperceptible to video cameras and related equipment
  - b. PWM rates shall be adjustable by the user via RDM to avoid any visible interference to video cameras and related equipment

#### J. CONTROL AND USER INTERFACE

1. The fixture shall be USITT DMX 512A-compatible via In and Thru 5-pin XLR connectors
2. Each half meter of length shall be individually addressable and controllable
3. The fixture shall be compatible with the ANSI E1.20 RDM standard
  - a. All fixture functions shall accessible via RDM protocol for modification from suitably equipped control console
  - b. Temperature sensors within the luminaire shall be viewable in real time via RDM
  - c. Fixtures not offering RDM compatibility, feature set access or temperature monitoring via RDM shall not be compatible
4. The fixture shall be equipped with a 7-segment display for easy-to-read status and control
5. The fixture shall be equipped with a three-button user-interface
6. The fixture shall offer RGB, IRGBS, Direct and Single Channel control
7. The fixture shall operate in Regulated mode for droop compensation
8. The fixture shall offer stand-alone functionality eliminating the need for a console
  - a. Fixture shall ship with 12 preset colors accessible as a stand-alone feature

- 1) Built in UI shall allow for setting level of these presets
- b. Fixture shall ship with 5 Sequences accessible as a stand-alone feature
- c. Each color and sequence can be modified by the end user
- d. Fixtures can be linked together with standard DMX cables and controlled from designated master fixture
- 1) Up to 32 fixtures may be linked
- e. Fixtures in a stand-alone state shall restore to the settings present prior to power cycling, eliminating the need for reprogramming
- f. Fixtures without stand-alone operation features described in a, b, c, d, and e shall not be acceptable.

## **2.07 SPARE LAMPS**

- A. Provide minimum 25% spare lamps for each lamp type necessary for fixtures.
- B. Vendor shall turn lamps over to the Owner's agent.
- C. Where lamps used in fixtures accepted as equal do not have the same factory life rating, additional spare lamps shall be provided to equal the total amount of hours as specified using the 2000-hour lamps.

## **2.08 COLOR FILTERS**

- A. Chosen vendor shall submit with drawings four (4) - Roscolux color filter sample books for the Owner to select colors for vendor supplied color filters.
- B. Vendor shall turn sheets of color filters over to the Owner's agent.

## **2.09 FOLLOWSPOTS**

- A. The luminaire is available in 4 versions- ZOT 12, a 1200 watt tungsten, Zot 5, a 575 watt MSR/HMI, ZOT 7, A 700 watt MSR and ZOT 12 HP, a 1200 watt MSR. Spot diameter shall be controlled via an insulated external lever, controlling a unique optical light intensifier system, linked to a nichrome steel iris. This "Spot Size Control" intensifies the light as the unit goes from flood to spot. Units that iris down without an increase in light output shall not be acceptable. The unit shall include an external fine focus control, rear operated fader and a side mounted 6- color, selfcancelling boomerang. A resiliently mounted, dichroic glass reflector and optical quality glass lenses shall complete the optical system. Lamping shall be through a rear door using a 1/4 turn latch. Units requiring the removal of screws or requiring handling of the glass parts of the lamp shall not be acceptable. Lamping utilizes a "bayonet" style lamp/socket combination. The lamp is inserted through the socket and with a slight twist, locks in place. The ZOT, 5, 7, 12, shall have self-contained power supplies with an ON/OFF switch. Zot 5 & 7 also include a circuit breaker. An 11 foot line cord, terminated in a NEMA 5-15P connector is also supplied. The ZOT 12HP shall have an external power supply connected to the spotlight head via a 6 foot flexible cord terminated in a head mounted twist- loc type connector. The ON/ OFF switch and circuit breaker shall be power supply mounted. The external power supply shall have a 10 foot line cord terminated in a NEMA 5-15P connector. A Lycian "forward lean" yoke will be included. A three legged fixed base will be standard with an optional tripod available. The ZOT yokes utilize the industry standard 1-1/8" male spigot, allowing the spotlight to be mounted on stands or mounting brackets using that standard. The yoke shall allow for a 70 degree downward tilt and 35 degree upward tilt.

Units shall be cooled by low volume (70 cfm maximum) muffin fans. Units using high volume fans shall not be acceptable. Housing shall be constructed of extruded aluminum and cold rolled steel and be powder coated using black and gold powder. Unit heads (all units) shall measure 42-1/2" long x 15" wide and 13" high including all controls. LYCIAN STAGE LIGHTING, ZOT 5, ZOT 7, ZOT 12, ZOT 12HP shall be specified. Units are manufactured in the United States of America

## **2.10 EQUIPMENT INCLUDED**

- A. See Sheet E3.3 for performance light fixture information and quantities:

## **2.11 DISTRIBUTION COMPONENTS**

- A. Connector Strip: Listed and labeled by an NRTL; factory-wired wireway and receptacle assembly.
1. Wireway: Steel or extruded aluminum, with removable cover and nominal cross-section dimensions of 3 by 4-1/2 inches.
  2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable.
  3. Receptacles: Pigtail mounted, 18 inches long, with strain relief at wireway wall penetration.
  4. Receptacles: Flush mounted in wireway cover.
  5. Receptacle Wiring: For connecting to terminal blocks; with 125 deg C, crosslinked, PE-insulated, identification-labeled wire.
  6. Terminal Blocks: Molded-barrier type with screw lugs to suit supply conductors.
  7. Mounting Hardware: Furnished with each unit; permits surface, single-pipe-bracket, or double-pipe-bracket mounting.
  8. Finish: Semigloss or matte black.
- B. Plug-in Boxes: Listed and labeled by an NRTL; factory-wired wireway and receptacle assembly, in sizes as required; with the following features:
1. Wireway: Steel or extruded aluminum, with removable cover and nominal cross-section dimensions of 3 by 4-1/2 inches.
  2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable.
  3. Receptacles: Pigtail mounted, 18 inches long, with strain relief at wireway wall penetration.
  4. Receptacles: Flush mounted in wireway cover.
  5. Receptacle Wiring: For connecting to terminal blocks; with 125 deg C, crosslinked, PE-insulated, identification-labeled wire.
  6. Terminal Blocks: Molded-barrier type with screw lugs to suit supply conductors.
  7. Surface or Grid Mounting: With accessories for surface mounting or with pipe-mounting accessory bracket.
  8. Recessed Mounting: With flanged cover suitable for recessed mounting in wall.
  9. Finish: Semigloss or matte black.
- C. Gridiron Junction Boxes: Listed and labeled by an NRTL; factory wired with terminal strips and concentric knockouts on all sides.
1. Terminal Blocks: Molded-barrier type with screw lugs to suit supply conductors.
  2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable; and brackets for surface or pipe mounting.
  3. Finish: Semigloss or matte black.

## **2.12 WIRE AND CABLE**

- A. Refer to Dimming Riser Diagram for cabling requirements.
- B. Provide multi-conductor wire with strain relief and cable cradle as needed.

## **2.13 LIGHTING CONTROL SYSTEM**

### **A. GENERAL**

- 1. The intent of this specification is to define parameters for furnishing and installing a complete working system to the Owner. The dimming equipment provider shall provide coordination with all associated trades to insure a proper and correct installation. The system is designed to meet specific operational requirements. Performance deviations will not be accepted.

### **B. DRAWINGS**

- 1. Drawings shall be furnished as follows:
- 2. One (1) electronic set of B-size drawings shall be furnished for approval within 45 days of award of Contract. Prior to fabrication of equipment, one (1) electronic set shall be returned appropriately marked as the approval document.
- 3. The installing contractor shall be provided with one (1) electronic set, at each stage of review..
- 4. The Owner shall be supplied with two (2) sets of "as built" drawings at the completion of the installation. These drawings shall be part of an Electrical Contractor set of Operations and Maintenance bound manual covering all system components installed.

### **C. QUALITY ASSURANCE**

- 1. To insure a uniform installation and single responsibility, the lighting control system shall be the product of one (1) manufacturer. This manufacturer shall have manufactured electronic lighting controls for a minimum of ten (10) years. Companies that assemble dimming racks or banks from components supplied by others, even if that component is private labeled, are excluded from this bid. The mixing of equipment brands shall not be acceptable.
- 2. The manufacturer shall have a factory authorized stocking service center with at least one (1) full time service technician on staff located within one hundred fifty (150) miles of the job site. In addition, the manufacturer shall provide a toll free twenty four (24) hour hotline with a maximum response time of twenty (20) minutes, twenty four (24) hours a day, and three hundred sixty five (365) days a year. Where this hotline is not available, the equipment supplier shall provide this coverage in the form of a contact sheet including: contact names, home phone numbers, cell phone numbers, and home addresses of all service technicians, owners of the company, and all company managers.
- 3. The equipment supplier shall be a Member in Good Standing of ESTA (Entertainment Services and Technology Association).
- 4. The equipment supplier shall be a stocking service center and shall have at minimum one full time technician on staff to assist in the event of any problems.
- 5. The equipment supplier shall have a dedicated in-house project manager overseeing their project, and acting as the go between with the manufacturer. This local project manager shall answer all questions that may arise from the electrical contractor, and perform all coordination with the factory providing the materials and services.

D. STANDARDS

1. All equipment, where applicable standards have been established, shall be built to the standards of Underwriters Laboratories, Inc., the National Electric Code and the United States Institute for Theater Technology. Approved equipment shall be so labeled on delivery to the job site.

E. FABRICATION

1. Fabrication shall begin only after reviewed drawings including any changes or corrections and a written notice to proceed have been delivered to the manufacturer at the manufacturer's place of business.

F. PROJECT SITE VISITS

1. The equipment supplier shall have their in-house project manager schedule a site visit with the electrical contractor, once the submittal drawings are approved and the equipment is on site. A factory certified system commissioning technician shall visit the site once all wire provided by the equipment supplier is pulled by the electrical contractor, at that time equipment supplier will perform all terminations of the low voltage control wire and test for any wire damage that may need to be replaced.

G. ENERGIZATION

1. A qualified Technical Representative employed full time by the Equipment Supplier and certified by the manufacturer shall visit the job site after the installation is complete and prior to the energization of the system to inspect, test and adjust the system. At this time the technical representative shall perform all system associated low voltage terminations and testing of these. Instruction shall be provided for the Owners' representatives in the operation and maintenance of the system. These services shall not exceed one and a half (1-1/2) days and shall be provided with a minimum of fourteen (14) days written notice by the contractor.

H. MAINTENANCE MATERIALS

1. Furnish the following maintenance materials to the owner
  - a. One (1) Spare power cube of each style and type on the project.
  - b. One (1) Spare relay of each type and style on the project.
  - c. One (1) Spare electronic assembly for each type and style on this project.

I. WARRANTY

1. The manufacturer or the manufacturers representative shall provide a written guarantee for the equipment provided for a period of twenty four (24) months from the date of energization on all control processors and architectural stations and for a period of ninety six (96) months from the date of energization on UNISON Systems, and provide a written guarantee for the equipment provided for a period of twenty four (24) months from the date of energization on all control modules the dimmer rack, fan and modular dimmers for the Sensor + Dimmer Panels, this document is to be provided in the maintenance and operation manuals.

J. MANUFACTURER SERVICES

1. Service shall be provided directly by the manufacturer and service visits shall be made within twenty four (24) hours.

K. MANUFACTURER

1. The equipment herein specified is manufactured by Electronic Theatre Controls, Inc., Middleton, Wisconsin, 800-688-4116 and shall serve to indicate the quality and functionality of the equipment required.

L. SUBSTITUTIONS

1. The equipment specified is the result of efforts on the part of the owner's consultant and the project engineer to select for reliability, factory support, ease of maintenance, and suitability for the owners' purposes.
2. Submittals for equipment from manufacturers other than ETC must be received ten days prior to the bid and must include; Complete Bill of Materials, project specific one line riser showing all components, wire types, and wire counts, cut sheets for all of the components, and a document listing every deviation for the equipment in side by side comparison to the specification.

**2.14 LIGHTING CONTROL SYSTEM CONFIGURATION AND CONTROL SOFTWARE**

- A. The Unison Paradigm LightDesigner software program shall be an application software package that facilitates off-line Unison Paradigm control system configuration. LightDesigner shall also enable a computer to be connected on-line with a Unison Paradigm lighting control system for real time preset selection, editing and recording.

- B. Software setup shall include Configuration and Space (Room) Wizards, Zone, Preset, Sequence, Station and Wall Properties, Touchscreen Station Setups, Time clock Events and Macros.

- C. The software program shall be supplied complete with Operators Manual and software disk.

D. CONFIGURATION AND ROOM WIZARDS

1. The software shall provide easy step-by-step wizards to allow configuration of rooms, channels, walls and control stations.
2. The program shall allow setup of all system parameters including quantity of rooms, dimmers, zones, presets and control stations. System limitations shall be based on systems Unison processor.
3. System program shall support a graphic display of individual rooms, showing zones, presets, control stations and moveable wall placement. Systems with non-graphic displays shall not be acceptable.
4. Software shall support the programming and operation of multi-sectioned rooms with moveable partitions.
5. LightDesigner shall support the programming of station and component electronic security.
6. LightDesigner shall support the transfer of architectural system configurations to processors via Secure Digital (SD) Cards, USB Flash Drives, or Ethernet.

E. ZONE, PRESET, STATION AND WALL PROPERTIES

1. LightDesigner shall support the configuration of system zone properties. Configurable zone properties shall include zone name, input mode, dimmer to zone patch, and maximum and minimum zone levels.
2. LightDesigner shall support the configuration of system-preset properties. Configurable preset properties shall include preset name and fade time. Presets shall have a discrete fade time, programmable from zero to 86,400 seconds with a resolution of one hundred milliseconds.
3. LightDesigner shall support the custom programming of control station buttons and faders. Button function assignments shall include Preset (last action, pile on, or toggle), Off, Manual, Zone, Record, Raise, Lower, Wall (toggle or direct) Lockout (toggle or direct), No Action, and Macro. Button properties shall include Lockout Level and Legend. Fader assignments shall include Zone, Preset, Master, and Fade time. Fader properties shall include Lockout Level and Legend.
4. LightDesigner shall support the configuration of system wall properties. Configurable wall properties shall include wall name.

#### F. TIME CLOCK EVENTS AND MACROS

1. LightDesigner software shall support the programming of Astronomical Time Clock (ATC) events for up to ten standard day types and up to 24 custom day types. ATC events include selection of presets or macros. ATC events shall be triggered by sunrise, sunset, time of day and/or periodically.
2. LightDesigner software shall support the programming of multifunction macro sequences. Macros shall be activated via buttons on any Unison station, or via time clock event.

#### G. ARCHITECTURAL CONTROL PROCESSOR

1. The Architectural Control Processor shall be the Unison Paradigm P-ACP Series Control Processor as manufactured by Electronic Theatre Controls, Inc., or equal.
2. The Architectural Control Processor (ACP) assembly shall be designed for use in DRd Series Dimming Enclosures and ERn Series Control Enclosures.
3. The processor shall utilize microprocessor based, solid state technology to provide multi-scene lighting and building control.
4. ACP shall support functions such as station programming, macro sequencing, electronic lockout, room combine and astronomical time clock events. ACP station processor shall allow configuration of the control system via the menus. See software section for additional system details.
5. When used in a dimming enclosure, the ACP shall allow access to dimming control menus including the status screen, dimming configuration screen, backup menu, test menu and configuration menu.
6. One ACP shall be rated to drive 1024 channels of control, 1024 zones, 64 rooms, 512 presets, 62 button or button/fader stations and 6 Touchscreen Stations.
7. ACP module electronics shall be convection cooled.
8. The ACP shall provide front-panel RJ45 jack, Secure Digital (SD) card slot, and Universal Serial Bus (USB) Port for configuration and data exchange.
9. Architectural Lighting System configuration and program information shall be stored in flash memory, which does not require battery backup.
10. The ACP shall be contained in a plug-in assembly and require no discrete wiring connections; all wiring shall be terminated into Dimming or Control Enclosure.
11. The ACP shall support the following communications: Echelon LinkPower,
12. 10/100BaseTX, auto MDI/MDIX, 802.3af compliant Ethernet networking with TCP/IP, ESTA BSR E1.17 Advanced Control Networks (ACN) and ESTA BSR E1.31 (sACN) Protocols, EIA-232 serial protocol, ESTA DMX512A, configurable

as input or output ports , Dry contact closure inputs , Dry contact closure outputs, rated at 1A@30VDC

#### H. BUTTON, FADER, AND INTERFACE STATIONS

1. The Lighting Control Stations shall be the Unison Heritage UH Series Control Stations as manufactured by Electronic Theatre Controls, Inc., or equal.
2. Unison Heritage Button stations shall operate using up to ten programmable buttons.
3. All button stations shall be available with white, cream, ivory, gray or black faceplates, and buttons.
4. Manufacturer's standard colors shall conform to the RAL CLASSIC Standard.
5. Stations shall have indicator lights at each button or fader.
6. Indicators shall be comprised of red, green and blue LED's
7. Indicator color and state (steady On, Blink, Off) shall be configured in software, and shall operate relative to the button or fader it is associated with.
8. All faceplates shall be designed for flush or surface mounting.
9. Station faceplates shall be constructed of ABS plastic and shall use no visible means of attachment.
10. Station faceplates shall be indelibly marked for each button or fader function.
11. The manufacturer shall supply back boxes for flush mounted half gang stations and for all surface mounted stations.
12. The Unison Paradigm Control System shall be designed to allow control of lighting and associated systems via Button, Button/Fader, and Interface or Astronomical time clock controls. System shall allow the programming of presets, sequences, macros and time clock events.
13. Station Button, Button/Fader, and Interface) control components shall be designed to operate standard default or custom system functions. Components shall operate default functions unless re-assigned via LightDesigner, the Windows-based configuration program.
14. Stations (Button and Button/Fader) shall allow programming of station and component electronic lockout levels via LightDesigner.
15. Unison control station wiring shall be an Echelon® Link power network.
16. Link power shall utilize low-voltage Class II unshielded twisted pair, type Belden 8471 or equivalent, and one #14 ESD drain wire (when not installed in grounded metal conduit).
17. Touchscreen and Interface stations shall also require (2) #16 AWG stranded wires for 24Vdc operating power. 24Vdc wiring shall be topology free.
18. Network wiring may be bus, loop, home run, star or any combination of these.
19. Network insulation displacement connectors shall be provided with all stations.

#### 2.15 UNISON ERn SERIES CONTROL ENCLOSURES

- A. The Control Enclosure shall be the Unison ERn Series Control Enclosure as manufactured by Electronic Theatre Controls, Inc., or equal.
- B. The Unison Control Enclosure (ERn) shall be a surface mounted Enclosure constructed of 18 gauge formed steel panels with a hinged, lockable full-height door containing an integral electrostatic air filter. The Enclosure door shall have an opening to allow limited access to the control module face panel.
- C. Control Enclosures shall be sized to accept one or two Control Processors, including options and accessories.
- D. All Enclosure components shall be properly treated and finished.

- E. Exterior surfaces shall be finished in fine textured, scratch resistant, powder based epoxy paint.
- F. Top, bottom, and side knockouts shall facilitate conduit entry.
- G. Enclosure shall also be available in a 19" rack mounted (RM) version.
- H. Enclosures shall be convection cooled without the use of fans.
- I. Control Enclosures shall be available in 100, 120, 230 and 240 volt, single-phase configurations.
  - 1. Control Enclosures shall be completely pre-wired by the manufacturer. The contractor shall provide input and control wiring.
  - 2. All control wire connections shall be terminated via factory provided connectors.
- J. Control Enclosures shall be designed to support the wire terminations for AC (single phase), Echelon link power, 24Vdc, 2x configurable DMX512A (In or Out), RS232 Serial In/Out ,Unshielded Twisted Pair (UTP) Category 5, 4x Contact Closure In, and 4x Contact Closure Out.

## **2.16 DIMMER MODULES**

- A. Each dimmer module shall contain one or two single-pole, fully rated (100% switch duty), fully magnetic circuit breakers, a solid state-switching module, associated toroidal filters, and power and control connectors. Dimmers employing triac power devices, pulse transformers, or other isolating devices not providing at least 2,500V RMS isolation, shall not be acceptable.
- B. Dimmer modules shall include toroidal filters to reduce the rate of current rise time resulting from switching the SCRs where used. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit radio frequency interference on line and load conductors. Modules shall offer 200 - 500uS filter rise times. Rise time shall be measured at the worst-case slew rate (about 50 percent) from 10 to 90 percent of the output waveform with the dimmer operating at full load. All dimmers shall maintain their published rise time and/or fall time regardless of duty cycle or rack temperatures. Dimmers that derate due to increased dimmer temperature caused by full load operation or high phase angles shall not be acceptable.
- C. Power efficiency for standard dimmers shall be at least 97 percent at full load with a loss of 3V RMS.
- D. Standard AIC fault current protection shall be 100,000 at 120V and 65,000 at 230V/277V.
- E. Dimmer modules shall consist of a heavy duty, die-cast aluminum chassis with integral face panel. No tools shall be required for module removal and insertion. Modules constructed of molded plastic for structural support are not equivalent and are not acceptable.
- F. The modules shall be available in types to work with their associated loads, from constant, incandescent, fluorescent to low wattage loads. All modules shall be UL Listed to control the lighting loads connected to it.
- G. D20E Dual 500us Rise time dimmer modules shall be provided on this project.

## H. ELECTRICAL

1. The panel control electronics shall operate on single phase, two wire + ground, 120/277V AC 60Hz, at an amperage sufficient to power the panel (8 amps max). Standard fault current protection shall be 5,000 AIC.
2. The individual relays shall be mechanically latching and capable of switching 20A at up to 300V circuits with no derating required for inductive lighting loads.
3. Each relay shall have an integral manual override switch with on/off status indication.
4. The relay shall have the following minimum ratings:
  - a. 2000A inrush current
  - b. 1500A short circuit current
  - c. 5000V RMS isolation
  - d. 60,000 mechanical operations
5. The panel shall be capable of switching all relays on or off at once, or in a user-selectable delay period of 0.1 to 60 seconds, in 0.1 second increments, per relay.
6. All line and neutral terminals shall accept up to 12 AWG wire. The control wiring shall land on a removable header for easy contractor installation (On-board DMX, SmartLink and Emergency Input terminations).
7. A voltage barrier shall be available to separate relays carrying different voltages in the same panel. The barrier shall be capable of installation, without tools, between any two relays, and shall allow up to eight barriers per panel (4 per side).

## I. ELECTRONICS

1. The control panel on the pack shall have a power status LED indicator (Blue) and a DMX status LED indicator (Green). A 6-button menu-navigation keypad and a two-line-by-20-character backlit LCD shall be provided for system control, configuration, and control status.
2. The panel shall receive ESTA DMX512-A control protocol. Addressing shall be set via the 6-button keypad. Any dimmer may be patched to any DMX channel.
3. The panel shall send and receive SmartLink (Echelon LonWorks with LinkPower) control protocol. Any preset and/or sequence shall be available on the SmartLink network.
4. The relays shall respond to control changes (DMX or SmartLink) in less than 25 milliseconds. DMX512 update speed shall be 40Hz.
5. The panel shall allow an optional LinkPower supply card to be factory or field installed the use of remote button stations for preset and sequence recall, recording, and status monitoring.
6. 2,500V of optical isolation shall be provided between the DMX512 inputs and the control electronics as well as between control and power components.
7. The panel shall have a UL924-listed contact input for use in Emergency Lighting systems. The panel shall respond to the contact input by switching selecting relays to "on", while switching other relays "off". Each relay can be selected for activation upon contact input.
8. From the control panel or optional button stations, it shall be possible to record up to 32 presets. Presets shall be programmable by recording current dimmer levels (as set by DMX), by entering dimmer levels on the facepanel directly, manually selecting relay state on each relay, or a combination of both methods. Indication of an active preset shall be visible on the LCD display.
9. The presets may be recorded sequentially as a Sequence with programmable fade and hold times, which shall allow for stand-alone operation. Indication of an

active sequence shall be visible on the LCD display and on optional button stations.

10. The unit shall always power-up in the last used mode and settings and shall be ready for use without user intervention. The Power Up Behavior setting shall ensure the unit restores to its previous state (preset, sequence) when power is cycled.
11. Pack setup shall be user programmable. The control panel shall provide the following setup features:
  - a. Set Menu Mode – Normal or Advanced
  - b. Set language – English, French, German and Spanish
  - c. Adjust LCD Contrast
  - d. DMX Start Address (Normal Mode) or DMX Patching (Advanced Mode)
  - e. DMX Loss Behavior – Hold Last Look, Wait and Fade, Fade to Preset
  - f. Individual settings for DMX “on” and DMX “off” threshold level, per relay
  - g. Allow Manual – allows the manual override switch to remain in the manual position, or reset immediately to the controlled position.
  - h. Station Record – allow Presets to be recorded from Station Buttons
  - i. Station Master – designates which panel shall provide synchronization timing
  - j. Power Up Behavior
  - k. Restore Defaults

#### J. DATA PLUG-IN STATIONS

1. The Plug-in Stations shall consist of the appropriate connectors required for the functional intent of the system. These stations shall be available with DMX input or output, Remote Focus Unit, Network, or architectural control connectors. Custom control connectors shall be available.
2. The following standard components shall be available for Plug-in Stations:
  - a. 5-Pin male XLR connectors for DMX input
  - b. 5-Pin female XLR connectors for DMX output
  - c. 6-Pin female XLR connectors for RFU and ETCLink connections
  - d. RJ45 connectors for Network connections - Twisted Pair
  - e. 6-Pin female DIN connectors for Unison connections
  - f. DB9 female serial connector for architectural control from a computer
  - g. Custom combinations and custom control connections shall be available.
3. Station faceplates shall be .80” aluminum, finished in fine texture, scratch-resistant black powder coat. Silk-screened graphics shall be white.
4. The station panel shall mount into an industry standard back box, depending on size and quantity of connectors. A terminal block shall be supplied for contractor terminations

### 2.17 POWER DISTRIBUTION EQUIPMENT

- A. Connectors available are 20A, 50A and 100A grounded stage pin, 20A twist lock and 20A “U” ground (dual rated “T-slot”); other connectors available as specified. Pigtailed shall be three-wire type “SOW” rubber jacketed cable sized for the circuit ampacity. Internal wiring shall be sized to circuit ampacity and shall be rated at 125°C.
- B. 20 amp cable mount stage pin connectors shall be 12 gauge 4 way indent crimp (with inspection window) type where the wire is inserted and crimped directly in the socket.

- C. Terminations shall be at one end using feed through terminals individually labeled with corresponding circuit numbers. 20 amp circuits shall use screwless tension clamp terminals listed for 20 – 8 gauge wire. 50 amp circuits shall use compression terminals listed for 10 – 1 gauge wire and 100 amp circuits shall use compression terminals listed for 8 – 2/0 gauge wire. (Terminals that place a screw directly on the wire are not acceptable.)
- D. Equipment, except for wall-mounted boxes, shall be supplied with appropriate brackets and hardware for mounting as shown on the drawings. Connector strips shall have brackets on 5' centers. Brackets shall be 1½" x .188" ASTM A 36 steel and hardware shall be ASTM A307 grade 5.
- E. A low voltage distribution system for DMX (other protocols as specified) shall be available, incorporated in the connector strip, locations and methods to be per print. Connector strips shall have a voltage barrier installed to accommodate these systems. Distributed DMX systems shall use DMX pass through assemblies consisting of a 6" panel with the following: one DMX Output Connector, one DMX Input (Pass Through) connector, one DMX Pass Through (Bypass) Switch, and a label detailing the use of the pass through assembly. The bypass switch shall be used when no DMX devices are present at that location. When activated, the DMX pass through switch shall pass DMX directly through to the next DMX panel on the strip. The pass through switch shall have a mechanical indicator to show the operator that it has or has not been engaged. Low Voltage signals shall enter the connector strip via a strain relief or connector mounted in a separate DMX terminal box at the specified end of the connector strip.
- F. Power distribution equipment shall be Underwriter Laboratories (UL) Listed.
- G. Connector Strips: Connector Strips shall be fabricated from 18 gauge galvanized steel 6.25"H x 3.3"D with length specified in increments of 6" and shipped fully wired in a minimum of 6'0" sections with all splicing hardware included. They shall be finished with fine-textured, scratch-resistant, black powder coat. Circuits shall be labeled on one side of the connector strip with 2" white lettering on black background labels. Pigtails and outlets shall be spaced on 18" centers, or as otherwise specified. Outlets shall be mounted on individual 3" panels and there shall be no external terminal boxes for units with 28 or fewer circuits unless otherwise specified.
- H. Circuits shall be labeled on one side of the connector strip with 2" white lettering on black background labels.
- I. Gridiron Junction Boxes shall be fabricated from 16-gauge cold rolled steel with 14 gauge end panels. They shall be finished with fine-textured, scratch-resistant, black powder coat. For 30 circuits and less they shall be 14"H x 14"W x 4"D and for 31 to 60 circuits they shall be 14"H x 28"W x 4"D. Cover(s) shall be attached with machine screws and Tinnerman retainer nuts. Cover(s) shall be 16-gauge cold rolled steel. Cover(s) shall be hinged and mounting should allow installer to orient the hinged door to open in any direction.
- J. Outlet and Pigtail Boxes shall be fabricated from 18-gauge cold rolled steel with 16 gauge covers. They shall be finished with fine-textured, scratch-resistant, black powder coat. Circuit numbers shall be 2" or ¾" labels with white letters on black background (sized to match product). Pigtails and outlets shall be spaced on 3" centers, or as otherwise specified

- K. Strips shall be provided with 18" Pigtails terminated in 2 P&G connectors, flush mount Socopex or equal 19 Pin connector for use with multi-conductor cable, and with NEMA 5/20 single female outlets as detailed on the drawings.
- L. Strips shall be provided with low voltage network jacks as detailed on the drawings, a single gang box shall be connected to the exterior of the distributed circuit strip for this purpose.

## **PART 3 - EXECUTION**

### **3.01 IDENTIFICATION**

- A. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
- B. Label each luminaire, lighting outlet, distribution device, and dimmer module with unique designation. Labels on elevated components shall be readable from the floor.

### **3.02 INSTALLATION**

- A. It shall be the intent of these specifications and plans to include all components required for the proper and complete installation and operation of the dimming system. All components necessary including additional requirements necessary for alternate equipment shall be provided. This shall be coordinated by the dimming and control equipment supplier with the electrical contractor.
- B. It shall be the responsibility of the Electrical Contractor to receive, inventory, and store the necessary materials and equipment for installation of the dimming system.
- C. It is the responsibility of the Electrical Contractor to dispose of all of the packing materials for this specification section.
- D. The Electrical Contractor shall be responsible for field measurements and coordinating the physical size of all the equipment with the architectural requirements of the spaces into which they are to be installed.
- E. The Electrical Contractor shall install all of the lighting control and dimming equipment in accordance with the manufacturers approved submittal drawings.
- F. The Electrical Contractor shall be accountable for providing a #14AWG green Stranded wire to all architectural control stations and for installing the Class II low voltage control wire provided by the equipment supplier for the lighting control system in accordance with the factory recommendations and shop drawings.
- G. All Class II low voltage control wire shall be labeled on both ends to match the designations on the manufacturers submittal drawings.
- H. All branch loads shall be live tested before connecting the loads to the dimmer system load terminals.
- I. The Electrical Contractor shall provide a representative as necessary during system commissioning and training to answer questions or make corrections.
- J. Upon completion of the installation, including the testing of the load circuits, the Electrical Contractor shall notify the dimming system manufacturer that the system is available for

formal checkout. No power shall be applied to the dimming system unless specifically authorized by written instructions from the manufacturer.

- K. The electrical contractor shall be responsible for coordination of all scheduling for this project with the general contractor, and shall update the equipment supplier within 3 working days of any schedule changes.
- L. The electrical contractor shall provide access to all locations for the factory certified technician to perform all low voltage terminations at the time of system commissioning.

### **3.03 MANUFACTURERS SERVICES**

- A. The Equipment Supplier shall have a factory authorized stocking service center with at least one factory certified technician within 150 miles from the job site.
- B. The Manufacturer shall test all components to verify proper working order prior to shipping the materials to site.
- C. The manufacturer shall provide one site visit at the time of equipment delivery to assist the Electrical Contractor to inventory the materials and to review the installation process with site electrician. And one visit after the low voltage wiring is pulled for terminations and testing.
- D. The Manufacturer shall coordinate the shipping of the equipment to meet the schedules of the Electrical Contractor and other associated trades.
- E. The manufacturers equipment supplier shall be responsible for coordinating the system installation with the Electrical Contractor; they shall also be liable for any return visits by the factory engineer as a result of incomplete or incorrect wiring.
- F. The manufacturer shall correspond with the owner's representative 30 days prior to system commissioning to discuss basic system programming, which will be installed at commissioning.
- G. The factory engineer shall complete all of the Class II low voltage terminations at the time of system commissioning, terminations by the electrical contractor are not allowed.
- H. Upon completion of the formal checkout, the factory engineer shall demonstrate operation and maintenance of the system to the owner's representatives. Training shall not exceed four hours on dimming and control system, and 8 hours on the Lighting Control Console.
- I. Within one year, the factory engineer shall return to the site to provide retraining and reprogramming. This training shall not exceed 8 hours of console training, system training, and system inspection and cleaning.
- J. The manufacturer within 45 days of system completion shall deliver two sets of bound Operation and Maintenance. These manuals shall include; cut sheets for all components, system as built riser, warranty information, contact information, the twenty-four hour service contact number, and panel schedules for the dimmer racks.

### **3.04 WARRANTY**

- A. The manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of 24 or 96 months from the date of

energization as detailed earlier in this section. This shall be on a written document in the Operation and Maintenance manual. For accessories other than the dimming system components and lamps, a two-year warranty shall be provided. The lamp will only be warranted per its expected life.

- B. The warranty shall cover repair or replacement of such parts determined defective upon inspection.
- C. The warranty shall not cover any labor expended or materials used to repair any equipment without the manufacturer's prior written authorization.
- D. The warranty does not cover any product or part of a product subject to accident, negligence, alteration, abuse or misuse. The warranty does not cover any accessories or parts not supplied by the manufacturer.
- E. The warranty information for all components used on the project shall be on a list provided in the Operations and Maintenance manual. This list shall include the information on the manufacturer, the warranty period, and contact phone numbers for the equipment.
- F. The equipment provider with no exceptions shall cover the above warranty periods, either through the manufacturer or through the equipment supplier.

### **3.05 DIMMING AND CONTROL BILL OF MATERIAL**

- A. Refer to Dimming Riser Diagram on Sheet E3.2 .
- B. ETC Sensor3 SR483 Dimmer Panel for 96 – 20A Circuits.
- C. Eight (8) Port Wall Mount Network switch
- D. ETC Paradigm Architectural Processing Kit
- E. DRd 12/24 Dimmer panel for 24 – 20A Circuits
- F. 60 - D20 Dual 2.4K Dimmer Modules (Stage Circuits)
- G. ECHO Feed through Relay panel with 24 – Single Pole Relays
- H. Single Button Stations with Standard Labeling Options
- I. Five Button Stations with Custom Labeling
- J. Paradigm LCD Master Control Touch Station with Flush or Surface mount Back Box TBD
- K. DMX Wall Mount Panel to include: 1 – 1 Input/12 Output DMX Splitter
- L. Single Gang DMX Output jacks recessed mount stand alone or in distribution strips or boxes
- M. DMX Emergency Bypass and Detection Kit
- N. Lighting Console Plug-in Stations DMX/DMX/Net

- O. Front of House Electric To Be Provided by Rigging manufacturer with all power cable and connections. 42 Stage Pin dimmed pig-tails on 21 circuits, 8 Black Duplex Edison Outlets for 4 circuits and 4 single Black Edison Outlets for 2 work light circuits. Theatrical Equipment supplier will provide a thirty (30) Circuit Grid Iron Junction Box.
- P. 1 – 44'0" long Apron Electric with 12 Stage Pin dimmed pig-tails on 6 circuits, 4 Black Duplex Edison Outlets for 2 relay circuits and 4 single Black Edison Outlets for 1 work light circuits DMX 5 PIN XLR Output jack. Provide 10 circuit grid iron junction box and DMX Gridiron junction box.
- Q. 1 – 40'0" long First Stage Electric with 32 Stage Pin dimmed pig-tails on 16 circuits, 4 Black Duplex Edison Outlets for 2 relay circuits and 4 single Black Edison Outlets for 1 work light circuits, 1 DMX 5 PIN XLR Output jack. Provide 20 circuit grid iron junction box and DMX Gridiron junction box. (Under the Base Bid the grid Iron junction box is still provided, distributed circuit strip and all cabling and piping is by the Rigging Contractor)
- R. 1 – 40'0" long Second Stage Electric with 30 Stage Pin dimmed pig-tails on 15 circuits, 4 Black Duplex Edison Outlets for 2 relay circuits and 4 single Black Edison Outlets for 1 work light circuits. Provide 20 circuit grid iron junction box and DMX Gridiron junction box. (Under the Base Bid the grid Iron junction box is still provided, distributed circuit strip and all cabling and piping is by the Rigging Contractor)
- S. 1 – 40'0" long Third Stage Electric with 30 Stage Pin dimmed pig-tails on 15 circuits, 4 Black Duplex Edison Outlets for 2 relay circuits and 4 single Black Edison Outlets for 1 work light circuits, 1- DMX 5 PIN XLR Output jack. Provide 20 circuit grid iron junction box and DMX Gridiron junction box. (Under the Base Bid the grid Iron junction box is still provided, distributed circuit strip and all cabling and piping is by the Rigging Contractor)
- T. 1 – 40'0" long Fourth Stage Electric with 30 Stage Pin dimmed pig-tails on 15 circuits, 4 Black Duplex Edison Outlets for 2 relay circuits, 1- DMX 5 PIN XLR Output jack. Provide 20 circuit grid iron junction box and DMX Gridiron junction box.(Under the Base Bid the grid Iron junction box is still provided, distributed circuit strip and all cabling and piping is by the Rigging Contractor)
- U. 4 - Recessed wall boxes with 5 circuits, 3 Stage Pin flush outlets and 2 Duplex Edison Receptacles
- V. 1 - Recessed wall box with 8 circuits, 6 Stage Pin flush outlets and 2 Duplex Edison Receptacles

### **3.06 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
  - 1. Schedule visual and mechanical inspections and electrical tests with at least seven days' advance notice.
  - 2. Visual and Mechanical Tests and Inspections:
    - a. Inspect each luminaire, outlet, module, control, and device for defects, finish failure, corrosion, physical damage, labeling by an NRTL, and nameplate.
    - b. Exercise and perform operational tests on mechanical parts and operable devices according to manufacturer's written instructions.
    - c. Check tightness of electrical connections with torque wrench.

- d. Verify proper protective device settings, fuse types, and ratings.
  - e. Record results of tests and inspections.
3. Electrical Tests: Perform tests according to manufacturer's written instructions.
- a. Continuity tests of circuits.
  - b. Operational Tests: Connect each outlet to a luminaire and a dimmer output circuit, so each dimmer module, dimmer-control and output circuit, outlet, and luminaire in a typical operating mode will be sequentially tested. Set and operate controls to demonstrate luminaires, outlets, dimmers, and controls in a sequence that cues and reproduces actual operating functions for a typical system of the size and scope installed. Include operation and control of houselights and stage lights from each control location and station, including optional plug-in, control-console outlet locations. Record luminaire and outlet assignments, control settings, operations, cues, and observations of performance.
- B. Stage lighting will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.
- 1. Prepare a schedule of lighting outlets by number; indicate circuits, dimmers, connected luminaires, and control-channel assignments. Prepare a schedule of control settings and circuit assignments for house control channels. Prepare written reports of tests and observations. Report defective materials, workmanship, and unsatisfactory test results. Include records of repairs and adjustments made.

### **3.07 SOFTWARE SERVICE AGREEMENT**

- A. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.
- B. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
  - 1. Upgrade Notice: At least 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

### **3.08 CONTRACTOR SERVICES**

- A. Installation and Operation Verification
  - 1. Contractor shall uncrate, assemble, lamp, hang and rough focus all lighting instruments as instructed by theatrical consultant, owners representative, or by prior arrangement by the suppliers personnel.
  - 2. Contractor shall not conduct the specified training session until the initial system programming is deemed proper by the theatrical consultant and other participating trades are prepared.
  - 3. Contractor shall remove all crates and shipping containers for the lighting instruments from the jobsite at his/her expense.

4. Contractor shall turn over spare lamps, color filters and extension cables to the Owner's agent. The Contractor shall have a detailed bill of materials for the Owner's agent to sign for receipt of these items.

**B. Training**

1. Contractor shall work as part of a team cooperating with the factory agent commissioning the Division 16 dimming and architectural control system the Division 11 Pipe Grid and the theatrical consultant to properly prepare the lighting control system for a cohesive training session. The theatrical consultant shall function as the coordinator for this team.
2. Contractor shall participate in a training session not to exceed (2) two hours designed and arranged by the theatrical consultant for the Owner's personnel.
3. This training session shall combine the Dimming and control and the theatrical lighting fixtures.
4. Contractor shall lead the training session as the area covered in the training session endorses hardware supplied in this section to include but not limited to the theatrical lighting control console and accessories and the theatrical lighting instruments.
5. The training session shall not be conducted until all participating Contractors systems are deemed properly programmed and operating by the theatrical consultant.
6. The Owner shall not be accountable for expenses associated with training session delays that result in extended over night stays due to other participating Contractor's hardware malfunctions or programming difficulties. Any such expense incurred shall be the responsibility of each participating Contractor.
7. Return Trainings: Provide one site visit for system inspection, cleaning and re-training within 6 months of system sign off. Provide a system inspection, cleaning and training prior to the end of the equipment warranty.

**C. Punchlist**

1. Contractor shall address and show evidence of an effort to solve any punchlist items associated with his/her hardware within 21 days of punchlist receipt.
2. Delays in addressing punchlist items shall result in the Contractor being subject to penalties.

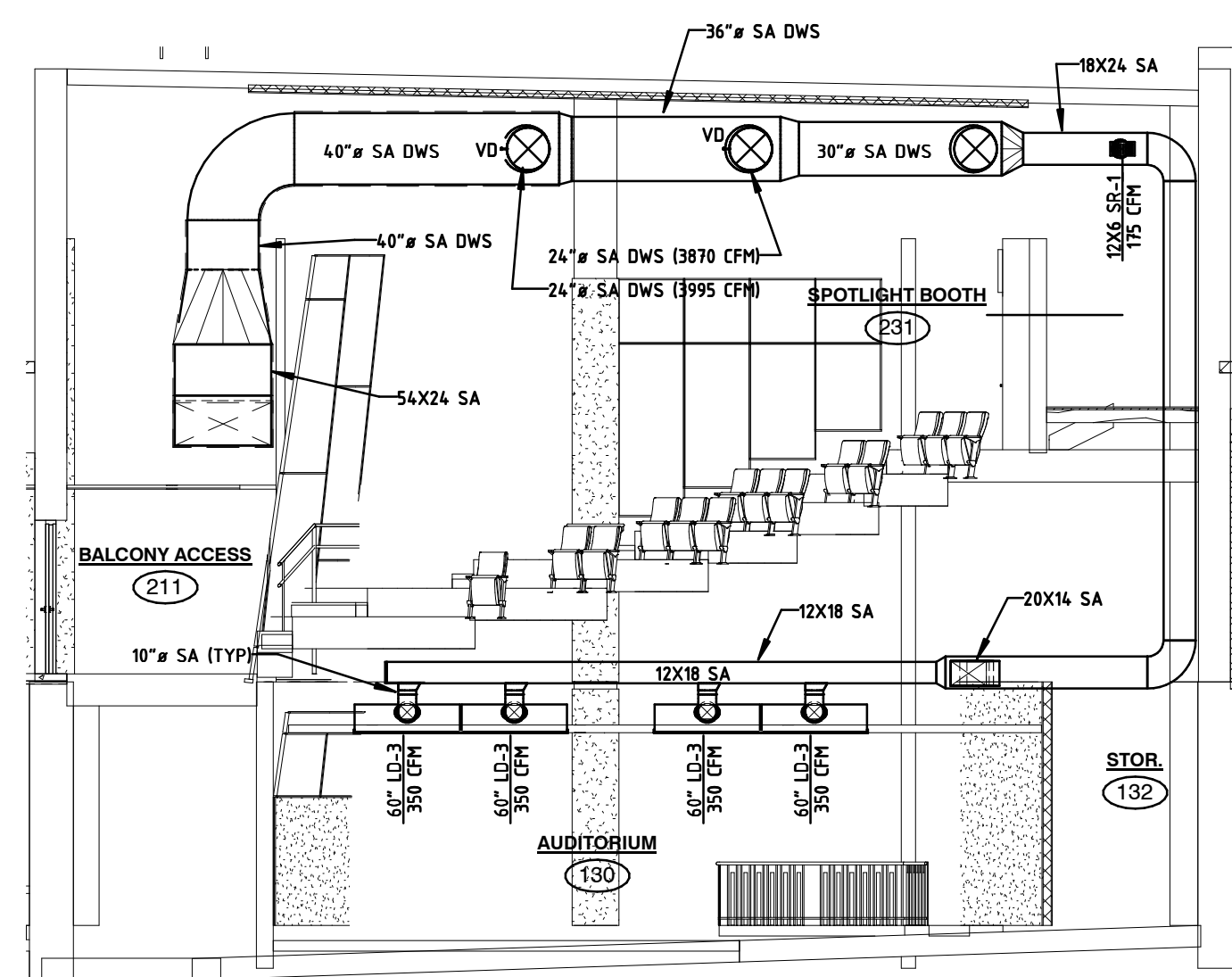
**3.09 ALTERNATES**

- A. Under Alternate A-4, this specification section shall provide the four stage distributed circuit strips, multi conductor wiring, DMX low voltage wiring, termination of these at the batten and the grid iron junction boxes

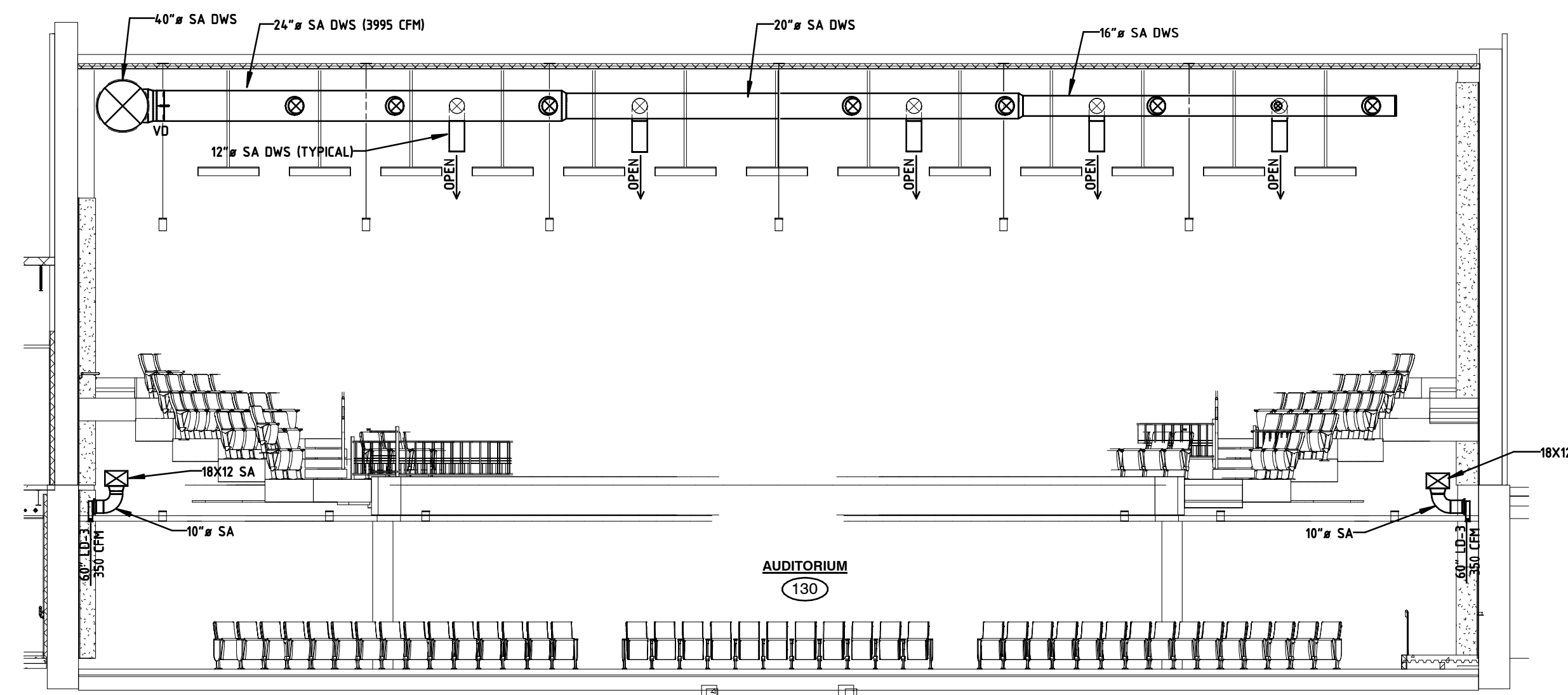
**3.10 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's staff to adjust, operate, and maintain stage lighting equipment.
1. Training shall be two four-hour sessions.
  2. Include costs associated with the training with the equipment installation.
  3. Provide a 14-day notice to Owner prior to scheduling training period.

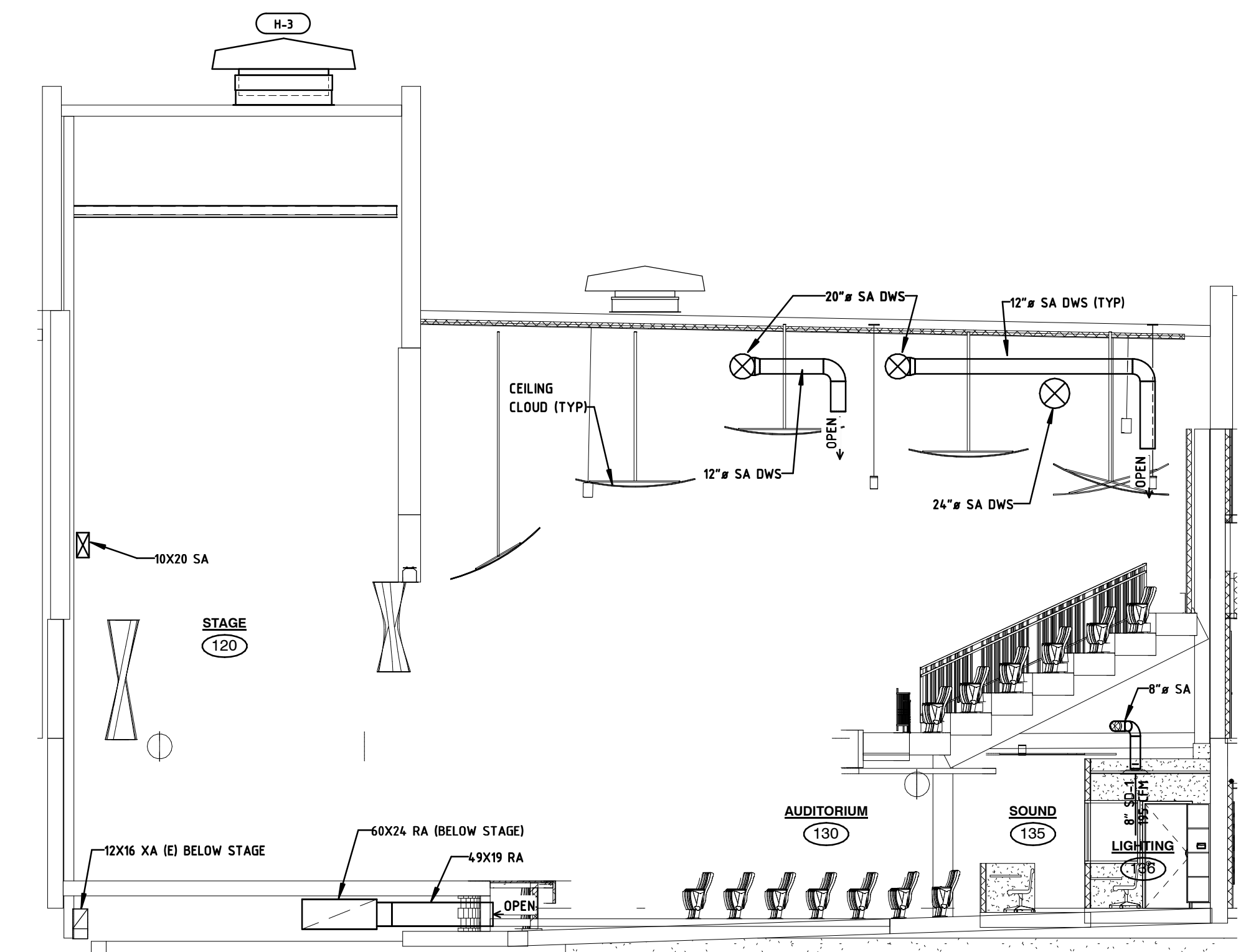
**END OF SECTION**



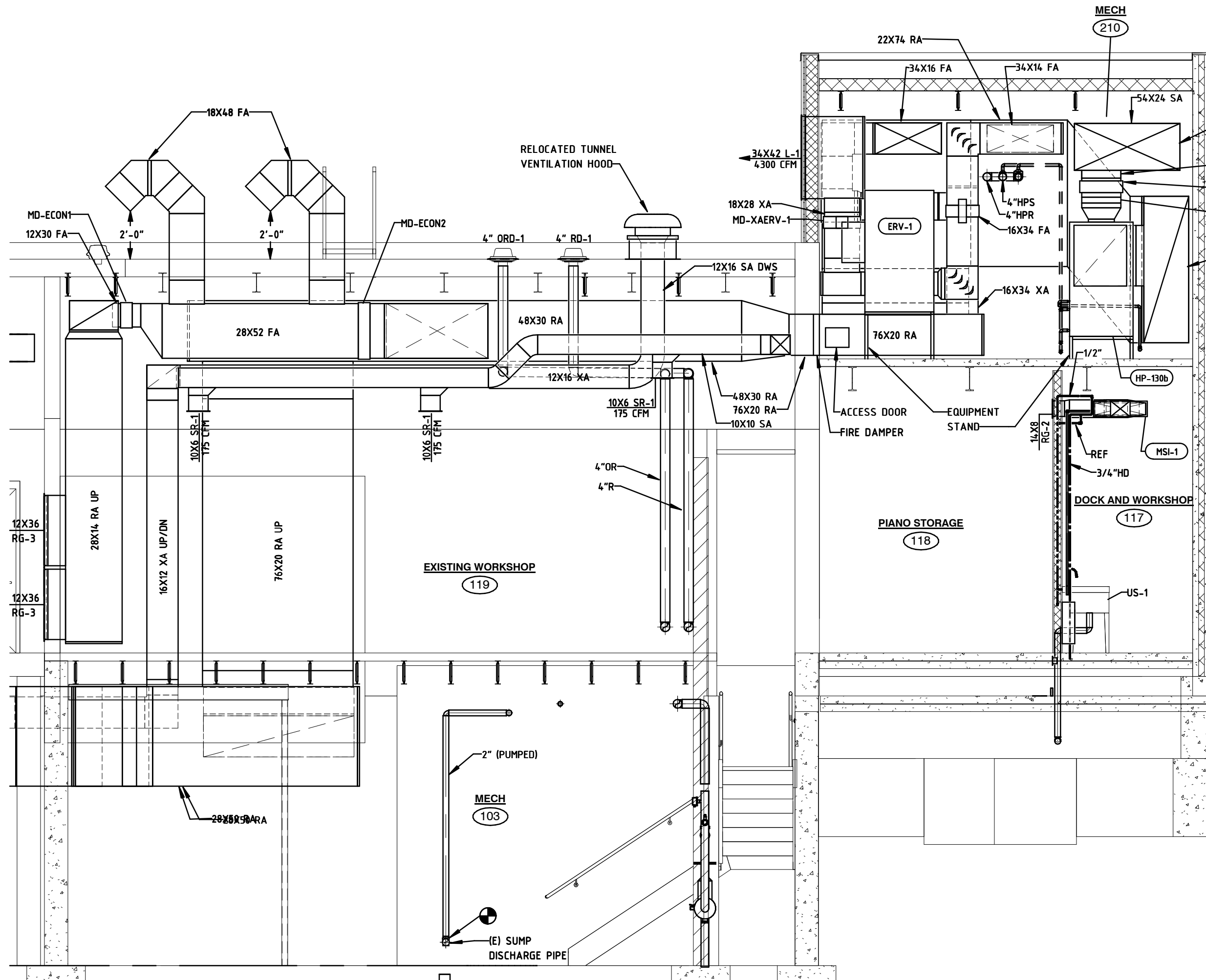
**S1 SECTION @ AUDITORIUM (EAST WALL)**  
M3.2 1/8" = 1'-0"



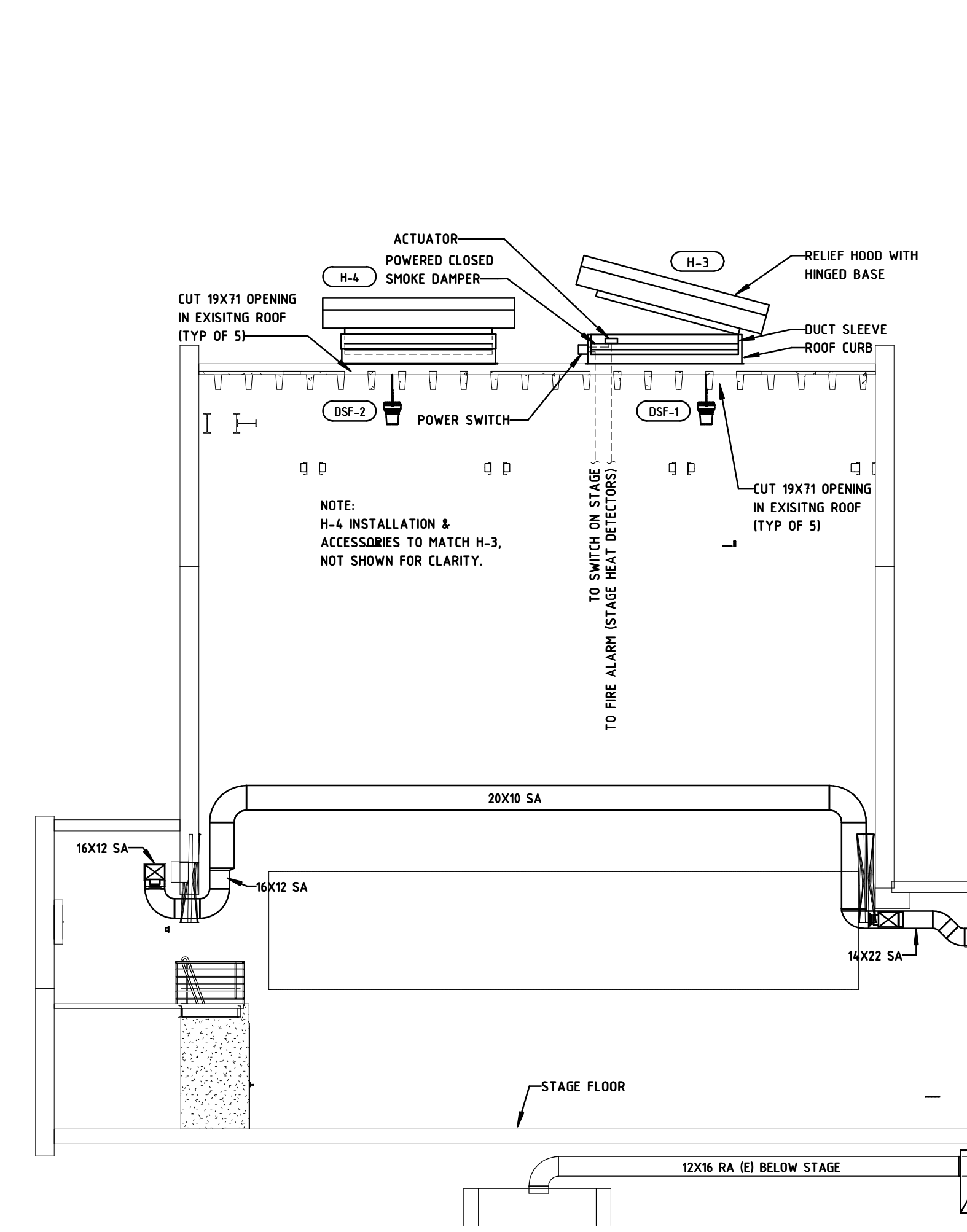
**S2 SECTION @ AUDITORIUM (EAST TO WEST)**  
M3.2 1/8" = 1'-0"



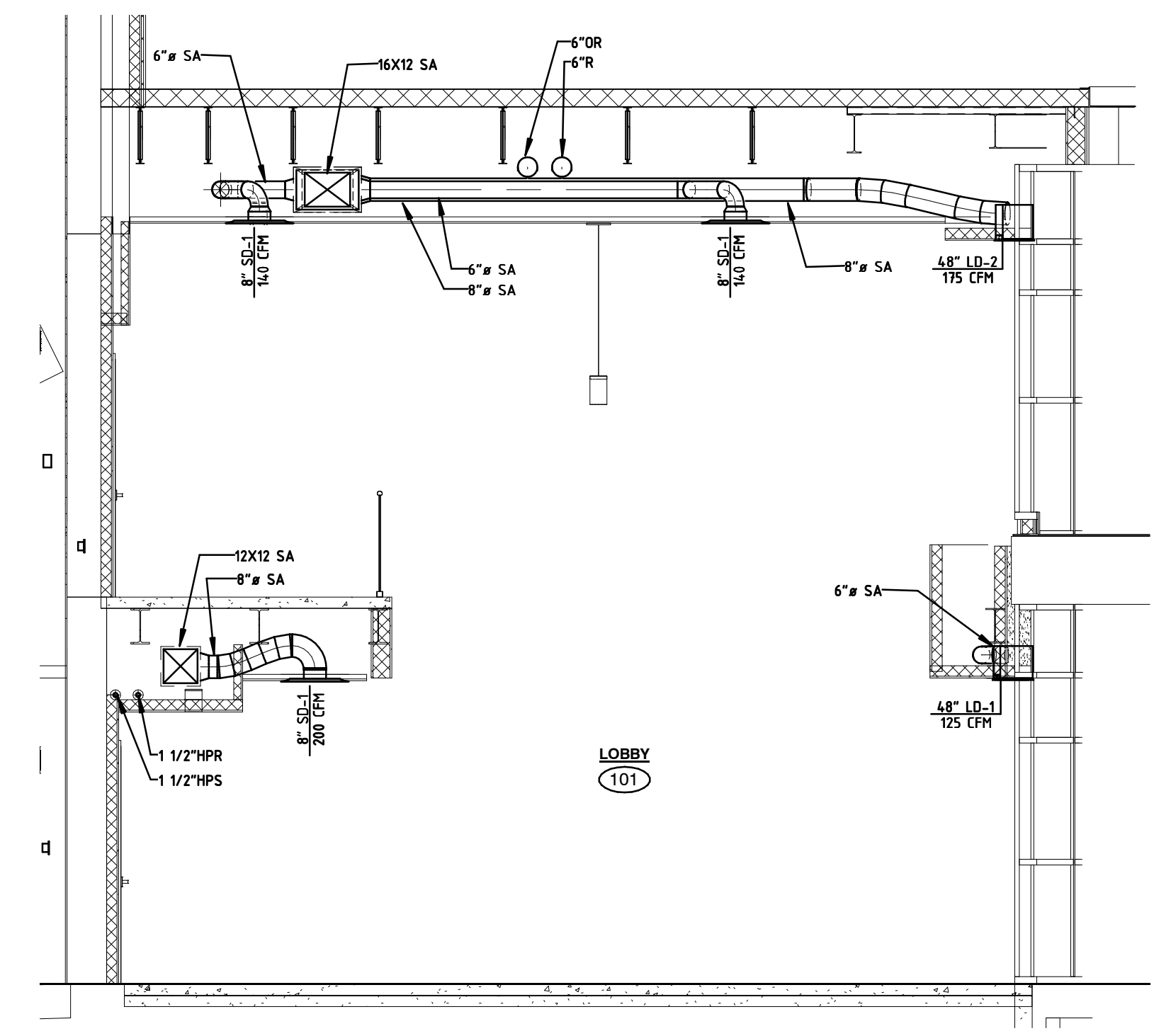
**S3 SECTION @ AUDITORIUM (CENTER)**  
M3.2 1/8" = 1'-0"



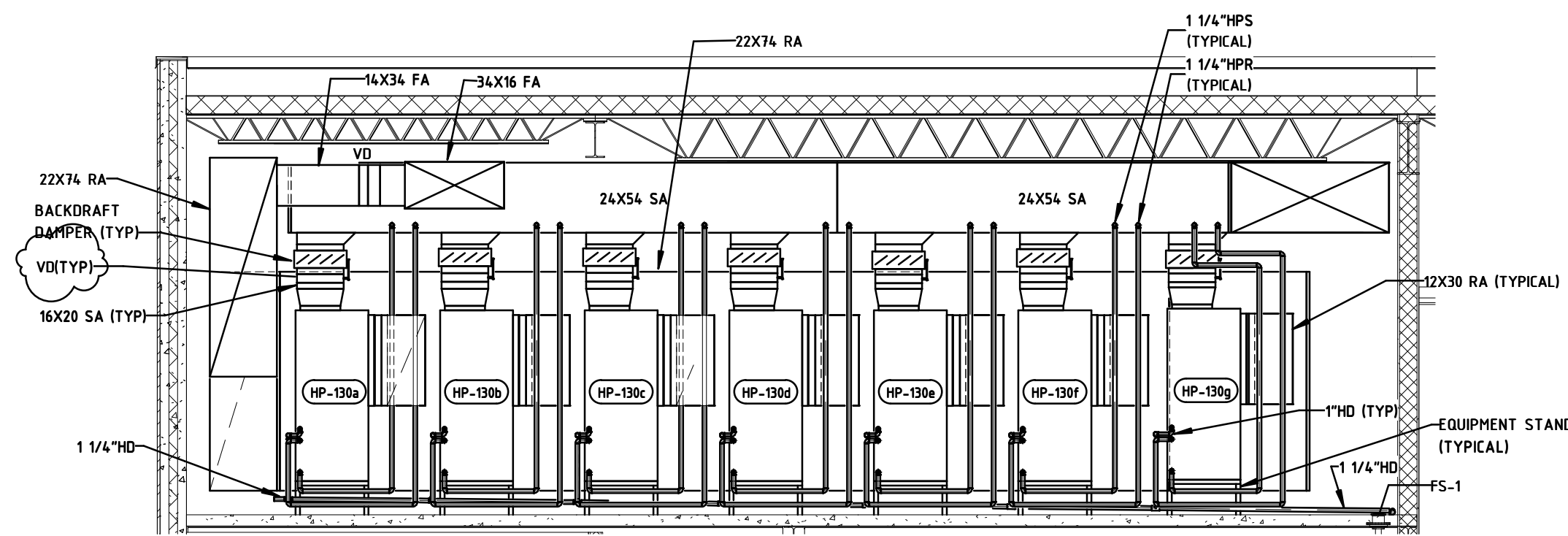
**S4 SECTION @ ERV-1 & 119**  
M3.2 1/4" = 1'-0"



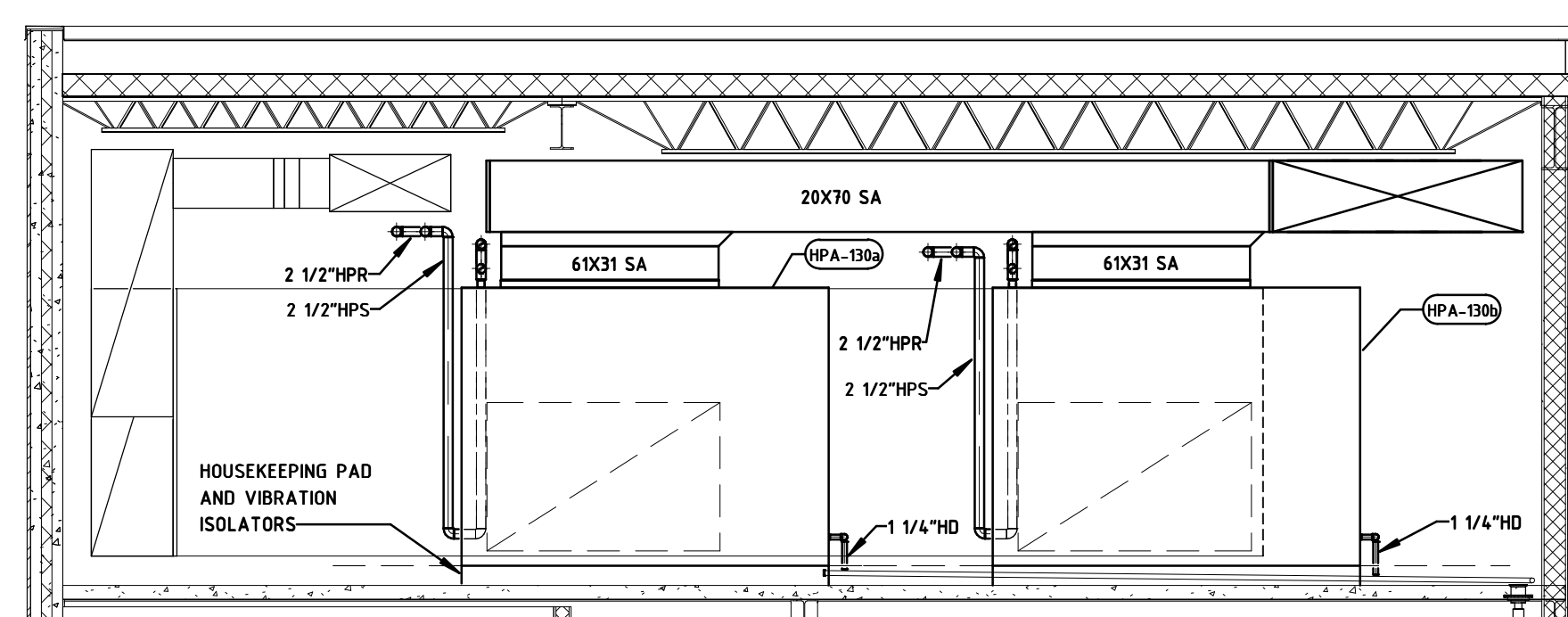
**S5 SECTION @ STAGE-120**  
M3.2 1/8" = 1'-0"



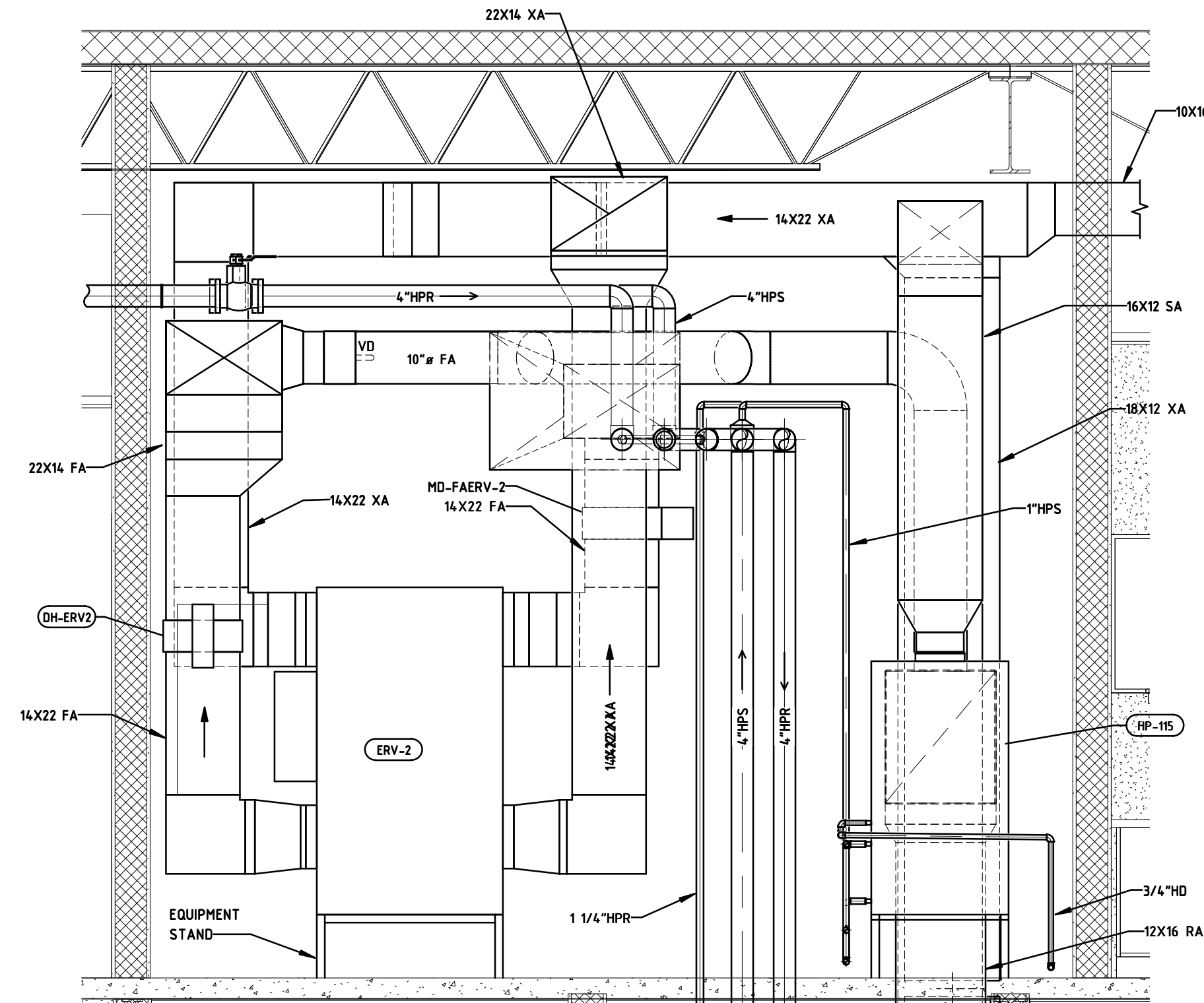
**S6 SECTION @ LOBBY-101**  
M3.2 1/4" = 1'-0"



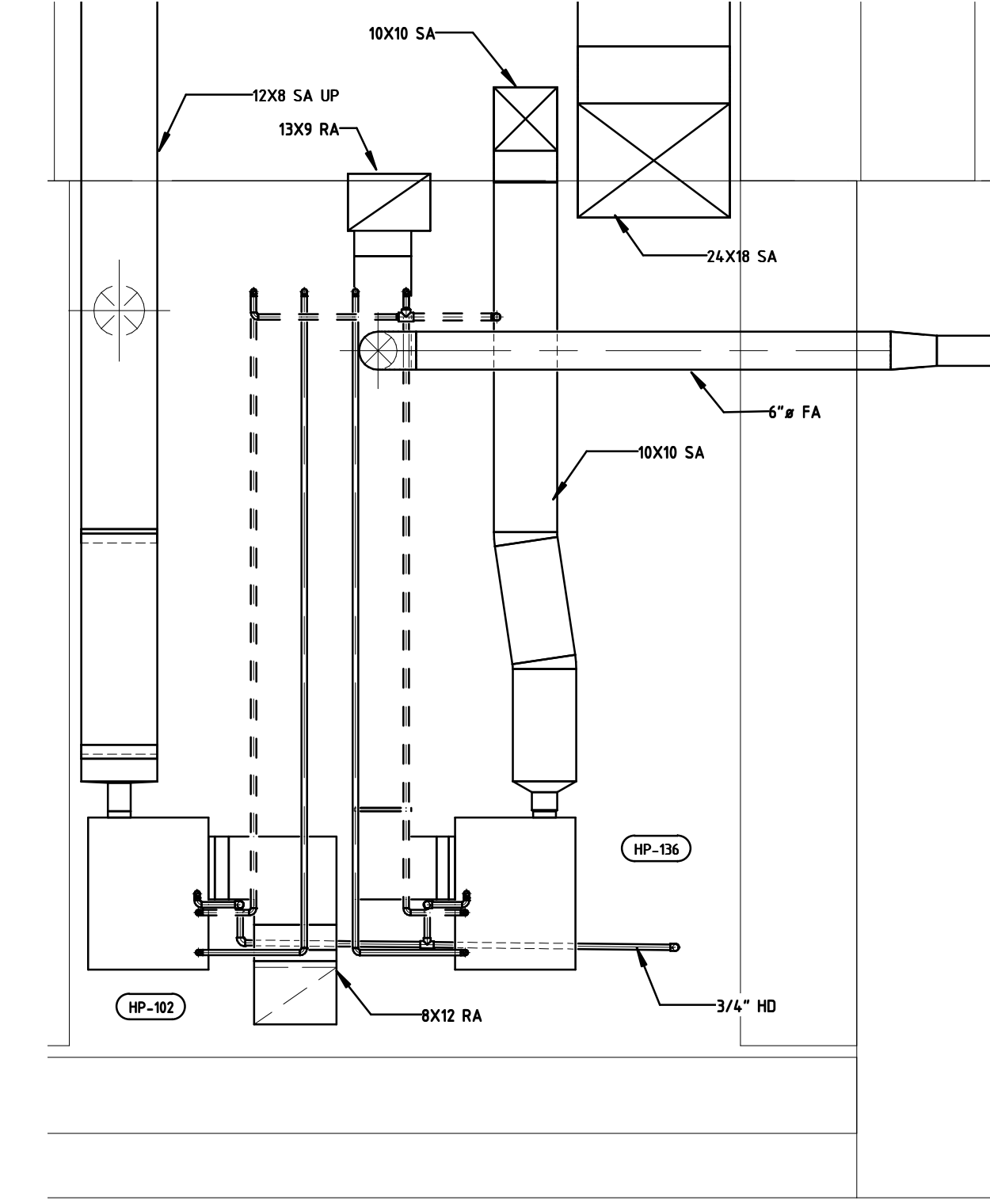
**S7 SECTION @ HP-130a thru HP-130g (BASE BID)**  
M3.2 1/4" = 1'-0"



**S8 SECTION @ HPA-130a & HPA-130b (ALTERNATE)**  
M3.2 1/4" = 1'-0"



**S9 SECTION @ ERV-2**  
M3.2 1/2" = 1'-0"



**S10 SECTION @ STOR-134**  
M3.2 1/2" = 1'-0"

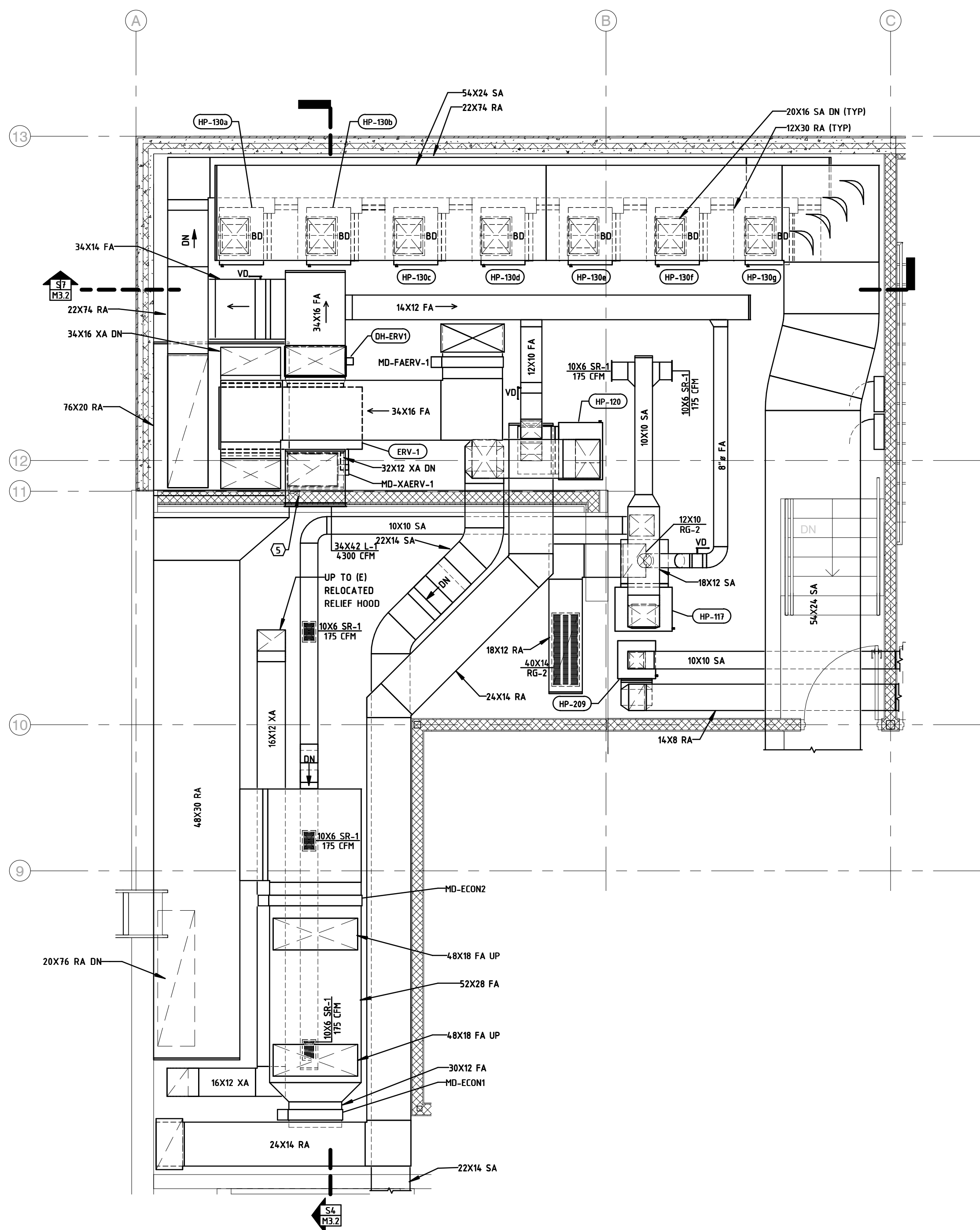
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**SHEET NOTES**

- GENERAL NOTES**
- A 10'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL MECHANICAL FRESH AIR INTAKES AND ALL PLUMBING VENTS, EXHAUST VENTS AND EXHAUST FANS. A 3'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL ENVIRONMENTAL AIR EXHAUST (RESTROOMS, ETC.) AND ALL OPERABLE OPENINGS INTO BUILDING.
  - EXACT ROUTING OF ALL DUCT AND PIPING THROUGH THE ROOF/CILING SHALL BE COORDINATED WITH STRUCTURE.
  - EXACT LOCATION OF ALL PIPING, DUCTS, DIFFUSERS, GRILLES AND SUPPORTS SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, CEILING GRID, HVAC, PLUMBING FIXTURES AND FIRE SPRINKLER PIPING.
  - NO DUCT OR PIPING SHALL BE INSTALLED ABOVE ANY ELECTRICAL PANEL.
  - FLEXIBLE DUCT CONNECTIONS WITH 1" SLACK SHALL BE INSTALLED IN BOTH THE SUPPLY AND RETURN DUCTS AT CONNECTION TO EQUIPMENT.
  - ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.
  - HIGH EFFICIENCY DUCT TAKE-OFFS WITH INTEGRAL DAMPERS MUST BE INSTALLED AT EACH SUPPLY AIR DUCT TAKE-OFF. WHERE A HIGH EFFICIENCY TAKE-OFF WILL NOT FIT BECAUSE OF STRUCTURE A SIMPLE DUCT COLLAR MAYBE USED ALONG WITH AN OPPOSED BLADE DAMPER AT THE DIFFUSER.
  - RELIEF AIR DUCT MUST ALWAYS BE CONNECTED UP STREAM OF FRESH AIR DUCT CONNECTION ON RETURN AIR DUCT.
  - FIELD VERIFY EXACT LOCATION OF EXISTING DUCT AND PIPING BEFORE BEGINNING CONSTRUCTION.
  - ALL EQUIPMENT SHALL BE SUPPORTED FROM STRUCTURE WITH "ALL THREAD" HANGING ROD AND "UNI-STRUT" SUPPORT CHANNEL, RUBBER GROMMETS OR VIBRATION ISOLATION PADS MUST BE INSTALLED AT ALL SUPPORTS.
  - ALL EQUIPMENT SHALL BE SUPPORTED WITH A 1-1/2" ANGLE IRON FRAME 24" TALL. FRAME SHOULD NOT BLOCK OR RESTRICT ACCESS IN ANY WAY. RUBBER GROMMETS OR VIBRATION ISOLATION PADS MUST BE INSTALLED AT ALL SUPPORTS.
  - ALL REFRIGERANT PIPING MUST BE SIZED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
  - ALL BLADES ON RETURN GRILLES SHALL BE PARALLEL TO THE FLOOR AND THE GRILLE SHALL BE ORIENTED SO THAT THE BLADES POINT TO THE CEILING IF MOUNTED ABOVE 5'-0" AFF AND POINT TO THE FLOOR IF MOUNTED BELOW 5'-0" AFF.
  - ALL DUCT AND DUCT CONNECTION TO EQUIPMENT SHALL BE SEALED WITH ETHER FOL TAPE OR DUCT SEAL COMPOUND ON ALL JOINTS INCLUDING LONG TRANSVERSE JOINTS IN SQUARE DUCT.
  - ALL VISIBLE RETURN, EXHAUST AND RELIEF AIR DUCTS SHALL BE PAINTED BLACK ON THE INSIDE INCLUDING INSULATION AND PINS BEHIND ALL GRILLES AND DIFFUSERS.
  - ALL DAMPERS SHALL BE INSTALLED AT AN EASILY ACCESSIBLE LOCATION IN THE DUCT.
  - VERIFY EXACT LOCATION OF EQUIPMENT WITH EQUIPMENT SUPPLIER AND ARCHITECTURAL PLANS PRIOR TO BEGINNING CONSTRUCTION.
  - THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW SUPPORTS AND HANGERS FOR ALL EXISTING PIPING, CABLING AND WIRING (HIGH AND LOW VOLTAGE) AS NECESSARY TO PREVENT DAMAGE TO EXISTING MATERIALS AND/OR REMOVE EXISTING MATERIALS. THIS INCLUDES RESUPPORTING ANYTHING THAT IS SUPPORTED BY ANY ITEM SCHEDULED TO BE REMOVED. ANY DAMAGE TO THE EXISTING SYSTEMS TO REMAIN MUST BE REPAIRED AND TESTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
  - DRAWINGS ARE LARGELY SCHEMATIC IN NATURE. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE INTENT OF DESIGN. ALL REQUIRED PIPING, SUPPORTS AND DUCTS SHALL BE PROVIDED FOR A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT. IF ROUTING IS NOT SHOWN ON THE PLANS, COORDINATE WITH THE ENGINEER PRIOR TO BIDDING.
  - DUCT SIZE TO DIFFUSERS, REGISTERS, GRILLES, ETC. SHALL BE SIZE OF NECK UNLESS OTHERWISE STATED.
  - CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS, ELBOWS, OFFSETS IN DUCT TO MAKE SYSTEMS FIT WITHIN SPACE AND STRUCTURE PROVIDED.
  - FIRE DAMPERS NOT REQUIRED IN 1 HOUR RATED WALLS DUE TO BUILDING TYPE AND PRESENCE OF FIRE SPRINKLER SYSTEM. PENETRATIONS TO BE FIRE CAULKED/SEALED AS REQUIRED.

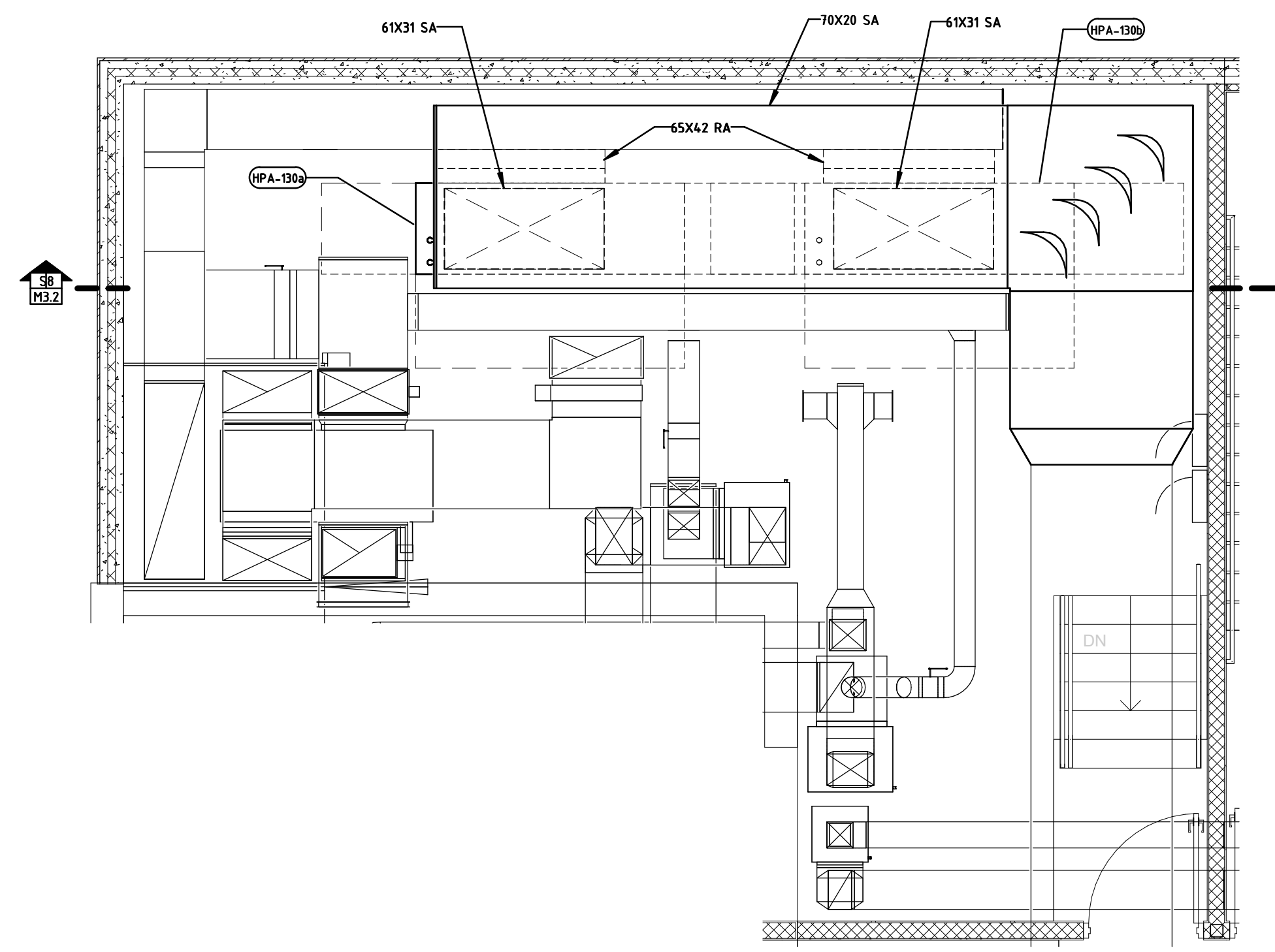
**KEY NOTES**

- CONNECT NEW 4" R TO EXISTING ROOF DRAIN LEADER AT NEW ROOF LEVEL. EXTEND AND TERMINATE OPEN ENDED OVER SPLASH BLOCK ON ROOF.
- NEW LOCATION OF EXISTING STEAM TUNNEL RELIEF HOOD.
- CONNECT 3" ROOF DRAIN IRD-1 TO DOWNSPOUT IN COLUMN BELOW.
- PROVIDE 120X12 DUCT SLEEVE IN HOOD/CURE WITH SMOKE DAMPER, DAMPER ACTUATOR TO BE ACCESSIBLE FROM ROOF.
- INSTALL FIRE DAMPER IN 16X20 RA AT WALL PENETRATION, PROVIDE ACCESS DOOR IN RA DUCT INSIDE OF MECH-210.
- PROVIDE NEW 14X20A MODULATING DAMPER IN EXISTING HOOD. DAMPER TO BE ACCESSIBLE FROM ROOF. PROVIDE HINGED FRAME SO EXISTING HOOD CAN OPEN.



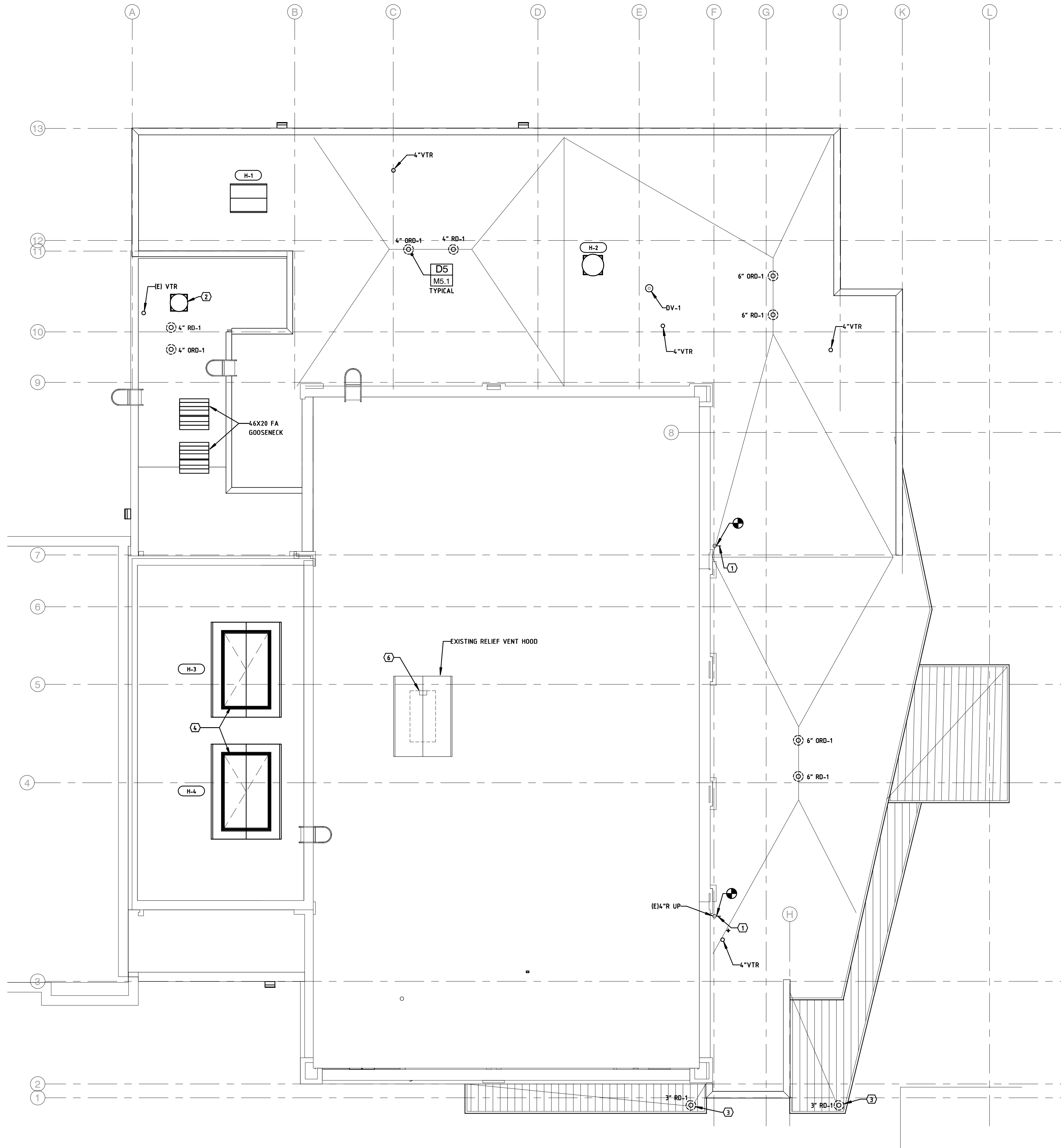
**P2 PARTIAL HVAC PLAN - MECH 210 (BASE BID)**

M3.1 1/4" = 1'-0"



**2 PARTIAL HVAC PLAN - MECH 210 (ALTERNATE)**

M3.1 1/4" = 1'-0"



**1 ROOF PLAN - MECHANICAL**

M3.1 1/8" = 1'-0"

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 Tel 402 486 9332

**ADVANCED ENGINEERING SYSTEMS**  
 PROJECT # 1024  
 PERU STATE COLLEGE THEATRE AND EVENT CENTER ADDITION AND REMODEL  
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 PERU, NEBRASKA  
 P: 402-486-9325  
 F: 402-486-9327  
 4825 WINTERGARDEN DRIVE, SUITE 200  
 LINCOLN, NE 68508

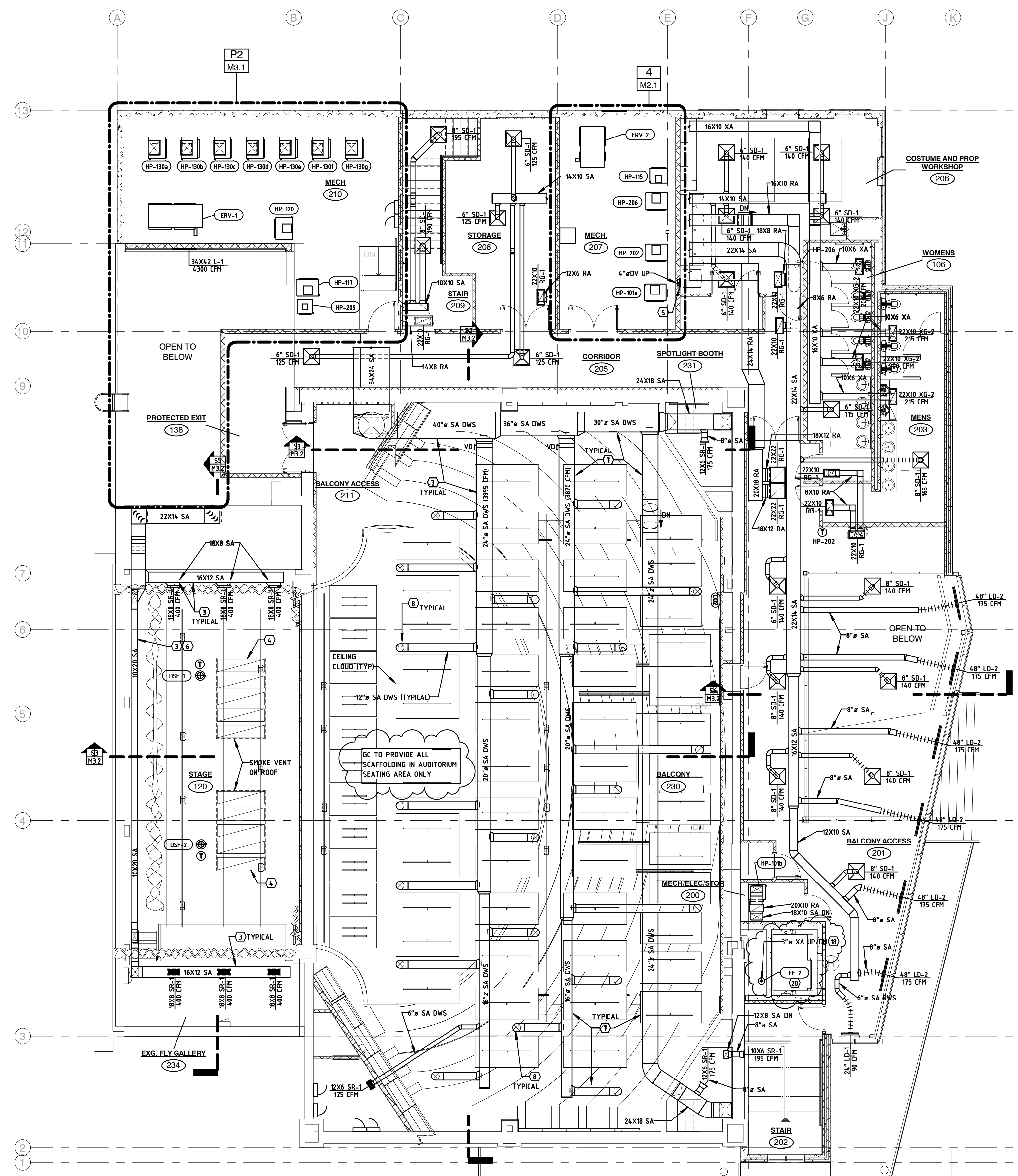
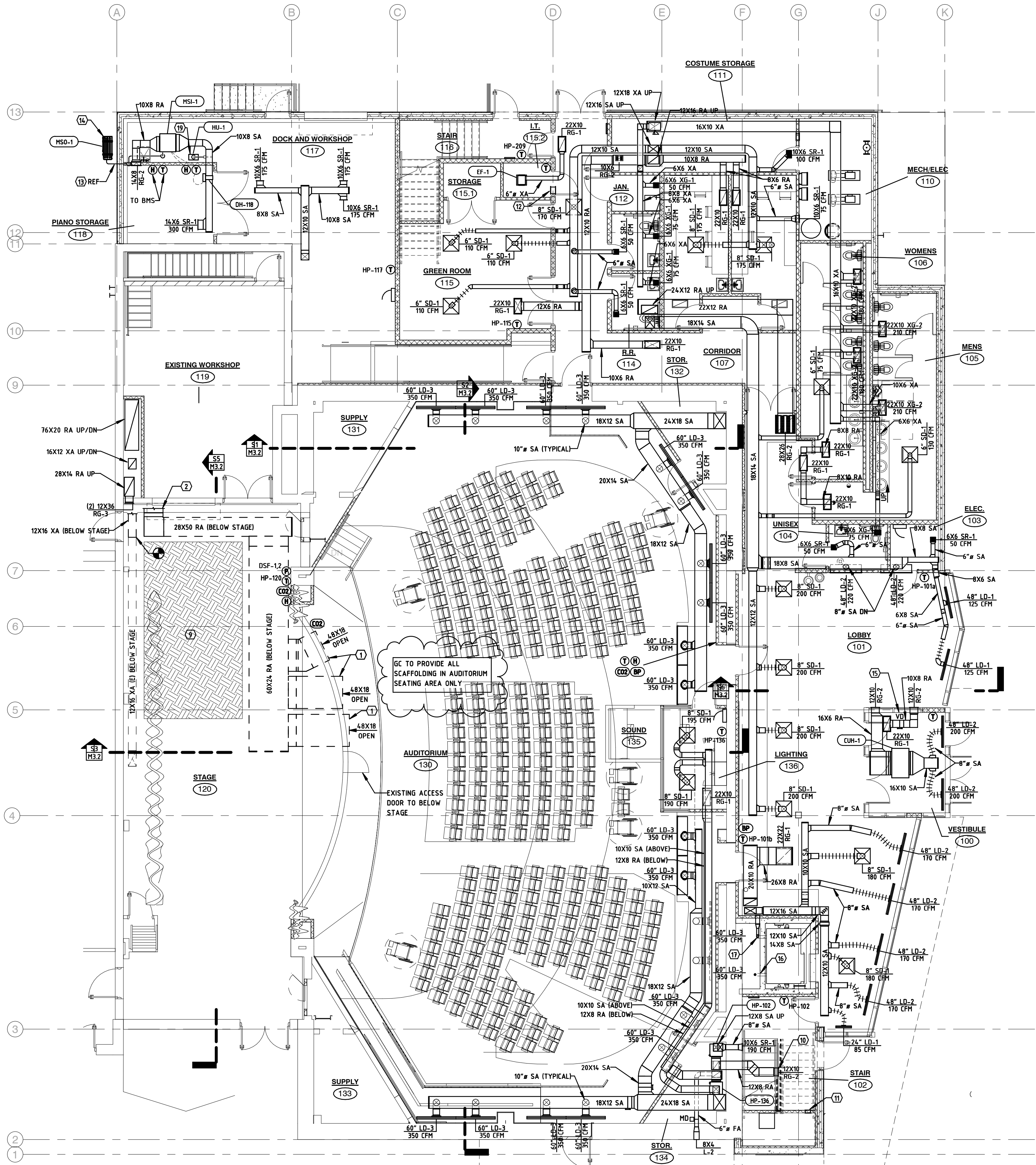
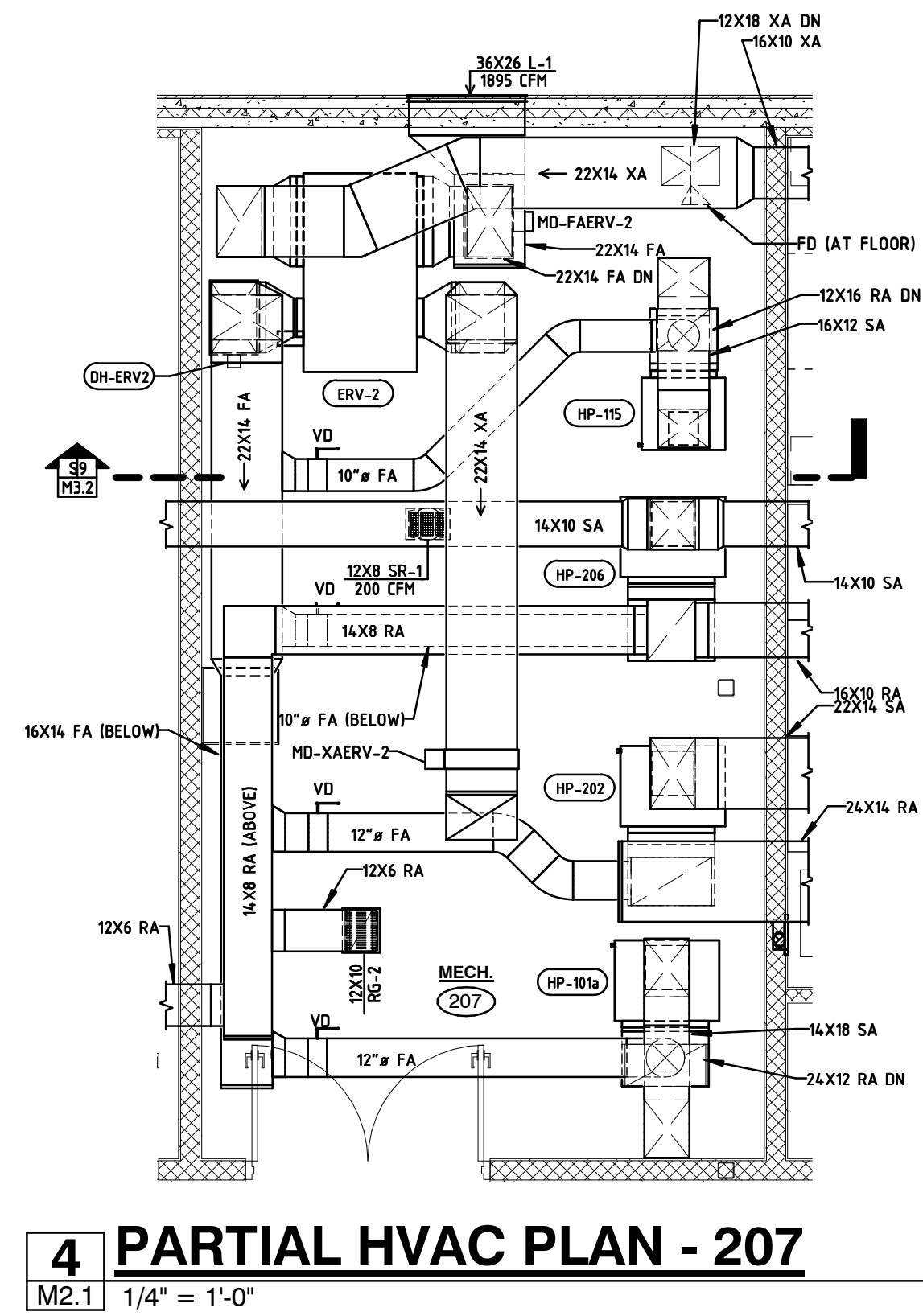
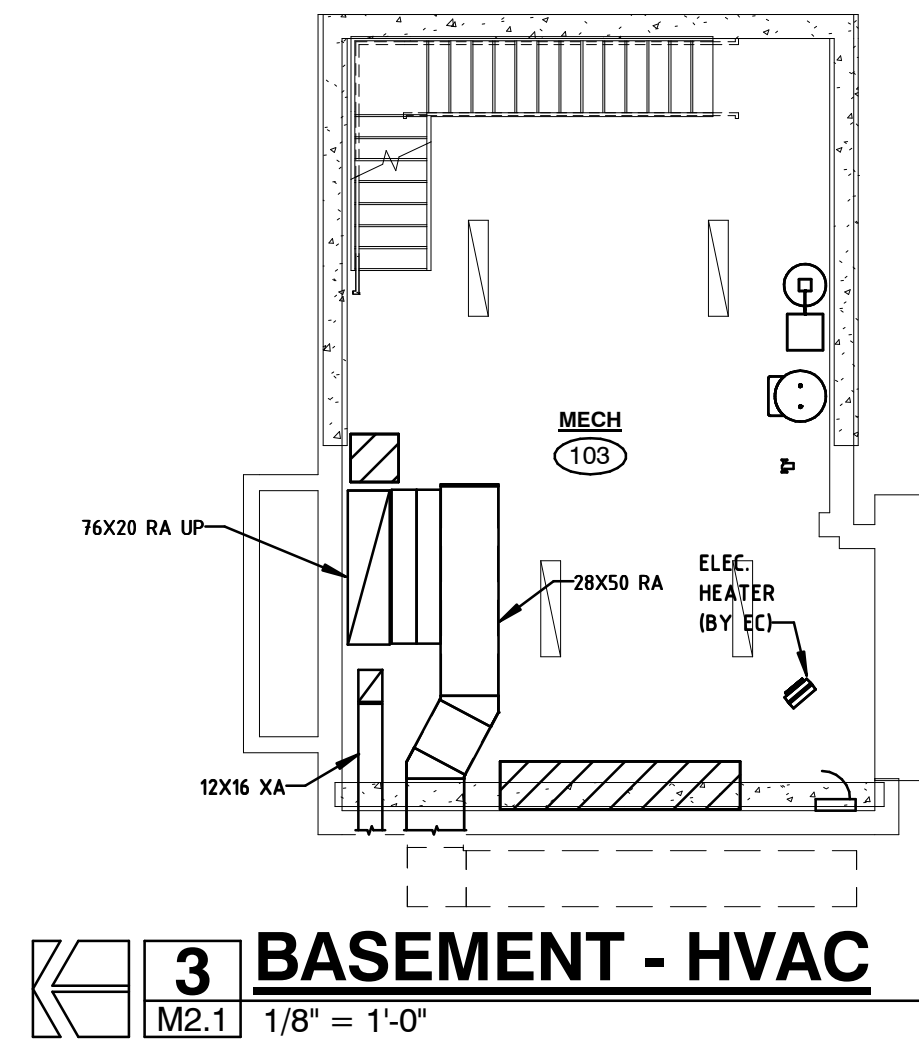
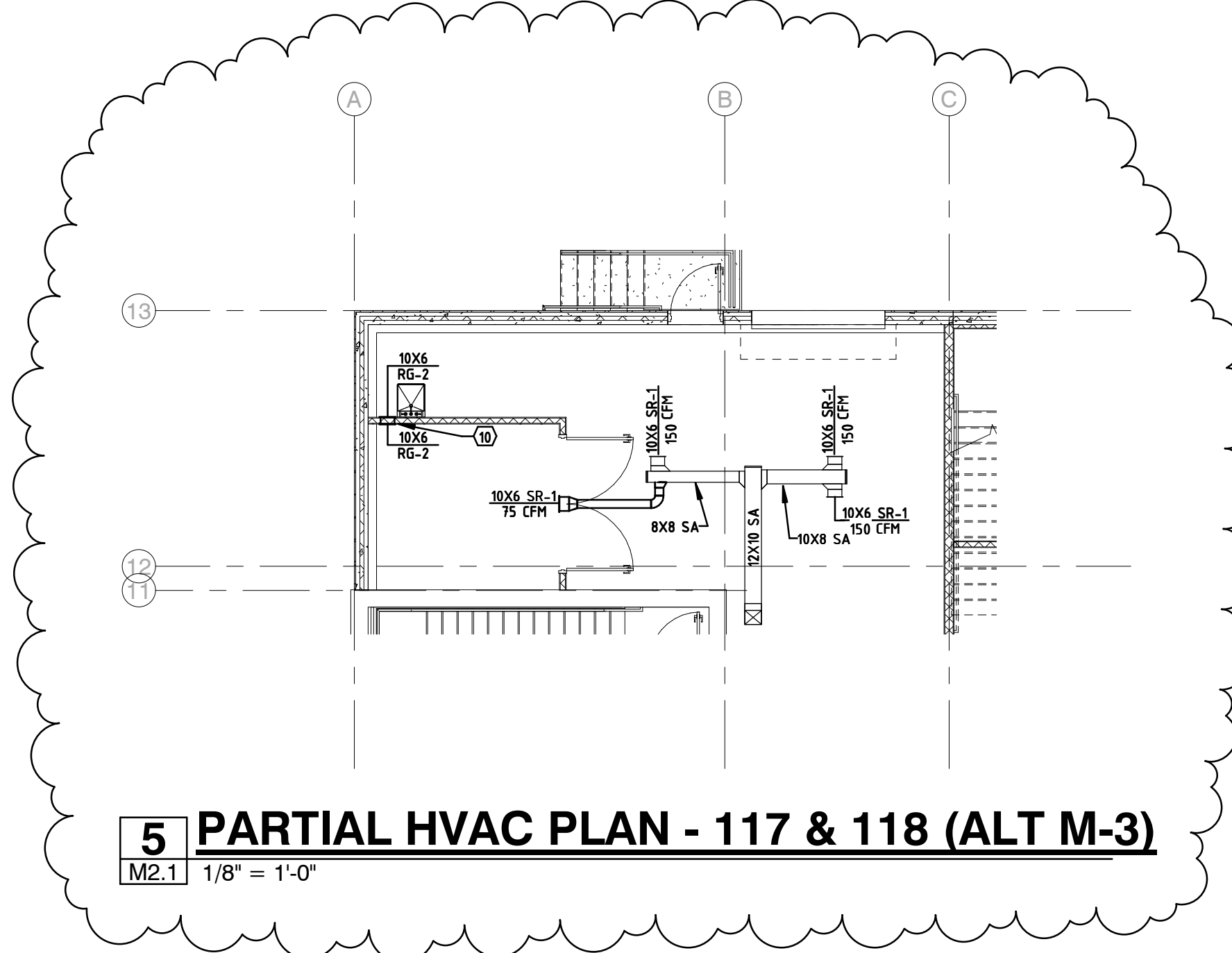
**PERU STATE COLLEGE**  
**THEATRE AND EVENT CENTER ADDITION AND REMODEL**  
 600 HOYT ST - PERU STATE COLLEGE  
 PERU, NEBRASKA

Project Number	16-083
Date	1-12-17
Revisions	
#	Date

**M3.1**

ROOF PLAN, MSH HVAC PLAN

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**SHEET NOTES**

- GENERAL NOTES**
- A. A 10'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL MECHANICAL FRESH AIR INTAKES AND ALL PLUMBING VENTS, EXHAUST VENTS AND EXHAUST FANS. A 3'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL ENVIRONMENTAL AIR EXHAUST RESTROOMS, ETC) AND ALL OPERABLE OPENINGS INTO BUILDING.
  - B. EXACT ROUTING OF ALL DUCT AND PIPING THROUGH THE ROOF/CILING SHALL BE COORDINATED WITH STRUCTURE.
  - C. EXACT LOCATION OF ALL PIPING, DUCTS, DIFFUSERS, GRILLES AND SUPPORTS SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, CEILING GRID, HVAC, PLUMBING FIXTURES AND FIRE SPRINKLER PIPING.
  - D. NO DUCT OR PIPING SHALL BE INSTALLED ABOVE ANY ELECTRICAL PANEL.
  - E. FLEXIBLE DUCT CONNECTIONS WITH 1" SLACK SHALL BE INSTALLED IN BOTH THE SUPPLY AND RETURN DUCTS AT CONNECTION TO EQUIPMENT.
  - F. ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.
  - G. HIGH EFFICIENCY DUCT TAKE-OFFS WITH INTEGRAL DAMPERS MUST BE INSTALLED AT EACH SUPPLY AIR DUCT TAKE-OFF. WHERE A HIGH EFFICIENCY TAKE-OFF WILL NOT FIT BECAUSE OF STRUCTURE A SIMPLE DUCT COLLAR MAY BE USED ALONG WITH AN OPPOSED BLADE DAMPER AT THE DIFFUSER.
  - H. RELIEF AIR DUCT MUST ALWAYS BE CONNECTED UP STREAM OF FRESH AIR DUCT CONNECTION ON RETURN AIR DUCT. FIELD VERIFY EXACT LOCATION OF EXISTING DUCT AND PIPING BEFORE BEGINNING CONSTRUCTION.
  - I. ALL EQUIPMENT SHALL BE SUPPORTED FROM STRUCTURE WITH ALL THROUGH HANGING ROD AND TUN-STRUT SUPPORT CHANNEL. RUBBER GROMMETS OR VIBRATION ISOLATION PADS MUST BE INSTALLED AT ALL SUPPORTS.
  - J. ALL EQUIPMENT SHALL BE SUPPORTED WITH A 1/2" ANGLE IRON FRAME 24" TALL. FRAME SHOULD NOT BLOCK OR RESTRICT ACCESS IN ANY WAY. RUBBER GROMMETS OR VIBRATION ISOLATION PADS MUST BE INSTALLED AT ALL SUPPORTS.
  - K. ALL REFRIGERANT PIPING MUST BE SIZED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
  - L. ALL BLADES ON RETURN GRILLES SHALL BE PARALLEL TO THE FLOOR AND THE GRILLE SHALL BE ORIENTED SO THAT THE BLADES POINT TO THE CEILING IF MOUNTED ABOVE 5'-0" AFF AND POINT TO THE FLOOR IF MOUNTED BELOW 5'-0" AFF.
  - M. ALL DUCT AND DUCT CONNECTION TO EQUIPMENT SHALL BE SEALED WITH EITHER FOAM TAPE OR DUCT SEAL COMPOUND ON ALL JOINTS INCLUDING LONG TRANSVERSE JOINTS IN SQUARE DUCT.
  - N. ALL VISIBLE RETURN, EXHAUST AND RELIEF AIR DUCTS SHALL BE PAINTED BLACK ON THE INSIDE INCLUDING INSULATION AND PINS BEHIND ALL GRILLES AND DIFFUSERS.
  - O. ALL DAMPERS SHALL BE INSTALLED AT AN EASILY ACCESSIBLE LOCATION IN THE DUCT.
  - P. VERIFY EXACT LOCATION OF EQUIPMENT WITH EQUIPMENT SUPPLIER AND ARCHITECTURAL PLANS PRIOR TO BEGINNING CONSTRUCTION.
  - Q. THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW SUPPORTS AND HANGERS FOR ALL EXISTING PIPING, CABLING AND WIRING HIGH AND LOW VOLTAGE AS NECESSARY TO PREVENT DAMAGE TO EXISTING MATERIALS AND/OR REMOVE EXISTING MATERIALS. THIS INCLUDES RESUPPORTING ANYTHING THAT IS SUPPORTED BY ANY ITEM SCHEDULED TO BE REMOVED. ANY DAMAGE TO THE EXISTING SYSTEMS TO REMAIN MUST BE REPAIRED AND TESTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
  - R. DRAWINGS ARE LARGELY SCHEMATIC IN NATURE. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT. IF ROUTING IS NOT SHOWN ON THE PLANS, COORDINATE WITH THE ENGINEER PRIOR TO BUILDING.
  - S. DUCT SIZE OF DIFFUSERS, REGISTERS, GRILLES, ETC. SHALL BE SIZE OR INCH UNLESS OTHERWISE STATED.
  - T. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS, ELBOWS, OFFSETS IN DUCT TO MAKE SYSTEMS FIT WITH SPACE AND STRUCTURE PROVIDED.
  - U. FIRE DAMPERS NOT REQUIRED IN 1 HOUR RATED WALLS DUE TO BUILDING TYPE AND PRESENCE OF FIRE SPRINKLER SYSTEM. PENETRATIONS TO BE FIRE CAULKED/SEALED AS REQUIRED.

- KEY NOTES**
1. EXTEND 48X18 RA DUCT THROUGH EXISTING STAGE WALL AND TERMINATE OPEN ENDED IN CAVITY BETWEEN EXISTING STAGE WALL AND NEW STAGE WALL.
  2. SEE "BASEMENT PLAN - HVAC" ON THIS SHEET FOR CONTINUATION.
  3. PAINT ALL EXPOSED DUCTWORK, HANGERS, SUPPORTS AND INSULATION SURFACES WITH FLAT BLACK PAINT.
  4. CUT 96X12 OPENING IN EXISTING ROOF IN WEB AREA BETWEEN EXISTING PAN. INST. FIELD COORDINATE EXACT LOCATION. (TYP. OF 3)
  5. IN-DOOR TECHNOLOGIES DRYER BOX #950, MOUNT IN WALL BEHIND DRYER.
  6. ROUTE DUCTWORK TIGHT TO WALL ACROSS BACK OF STAGE. ABOVE TOP OF BACK CURTAIN. COORDINATE DUCT ROUTING WITH RIGGING.
  7. ALL DUCTWORK IN AUDITORIUM TO BE PAINTED. COORDINATE WITH GC.
  8. EXTEND 12" DIA. DOWN TO 12" ABOVE ADJACENT CEILING CLOUDS AND TERMINATE OPEN ENDED.
  9. APPROPRIATE EXTENTS OF UNEXCAVATED AREA BELOW STAGE. REMOVE AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK.
  10. MOUNT BOTTOM OF GRILLE 6" ABOVE FINISHED FLOOR.
  11. (3) 8X6 RG-2 WITH SLEEVE THROUGH WALL. MOUNT BOTTOM OF GRILLES 6" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH ACCESS PANEL IN WALL.
  12. (3) 10X6 RG-2 WITH DUCT SLEEVE THROUGH WALL. MOUNT TOP OF GRILLES 6" BELOW FINISHED CEILING.
  13. EXTEND REFRIGERANT PIPING TO INDOOR UNIT. ALL ROUTING, INSULATION, ACCESSORIES, SIZING PER MANUFACTURER'S RECOMMENDATIONS. STEEL W/AL PLATES MUST BE USED WHERE PIPING PENETRATES JUST OF STUD WITH LESS THAN 2" OF DISTANCE BETWEEN PIPING AND DRYWALL.
  14. MOUNT OUTDOOR UNIT ON POWDER COATED BLACK SUPPORT BRACKETS THAT ARE ANCHORED TO CONCRETE FOUNDATION OR ON A PRE-CAST LEVEL CONCRETE PAD. GROUND UNDER THE PAD SHALL BE WATER SEALED TO PREVENT PAD SETTLING.
  15. BALANCE RETURN TO KEEP A POSITIVE PRESSURE IN VESTIBULE WITHOUT HOLDING ANY DOORS OPEN. PROVIDE MANUAL BALANCING DAMPER IN EASILY ACCESSIBLE LOCATION.
  16. CONNECT 3" VEC PIPE TO ELEVATOR POWER UNIT/TANK PER MANUFACTURER'S RECOMMENDATIONS AND EXTEND UP. AT BOTTOM STOP FLOOR ELEVATION TRANSITION TO 3" METAL DUCT AND EXTEND UP TO E-2.
  17. EXTEND 3" DUCT FROM GRILLE TO ELEVATOR POWER UNIT/TANK PER MANUFACTURER'S RECOMMENDATIONS.
  18. EXTEND 3" DIA. ELEVATOR VENTILATION DUCT UP TO ROOF AND TERMINATE PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE EXHAUST FAN (E-2) IN DUCT.
  19. INSTALL NUMBERER ON WALL IN ACCESSIBLE LOCATION. EXTEND STEAM PIPING TO DISPERSION TUBE IN DUCT AND DRAIN PIPING AS RECOMMENDED BY MANUFACTURER. PIPING SHALL BE INSULATED COPPER PER MANUFACTURER'S RECOMMENDATIONS.
  20. E-2 TO BE FANTECH HDBF 110 (OR EQUAL) INNE DRYER BOOSTER FAN, 120V/1 PHASE, 188 CFM.

**1 1 - FIRST FLOOR - HVAC**  
M2.1 1/8" = 1'-0"

**2 SECOND FLOOR - HVAC**  
M2.1 1/8" = 1'-0"

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**ADVANCED ENGINEERING SYSTEMS**  
PROJECT # 1003  
1/26/2017  
P. 10/20/2007  
P. 10/20/2007

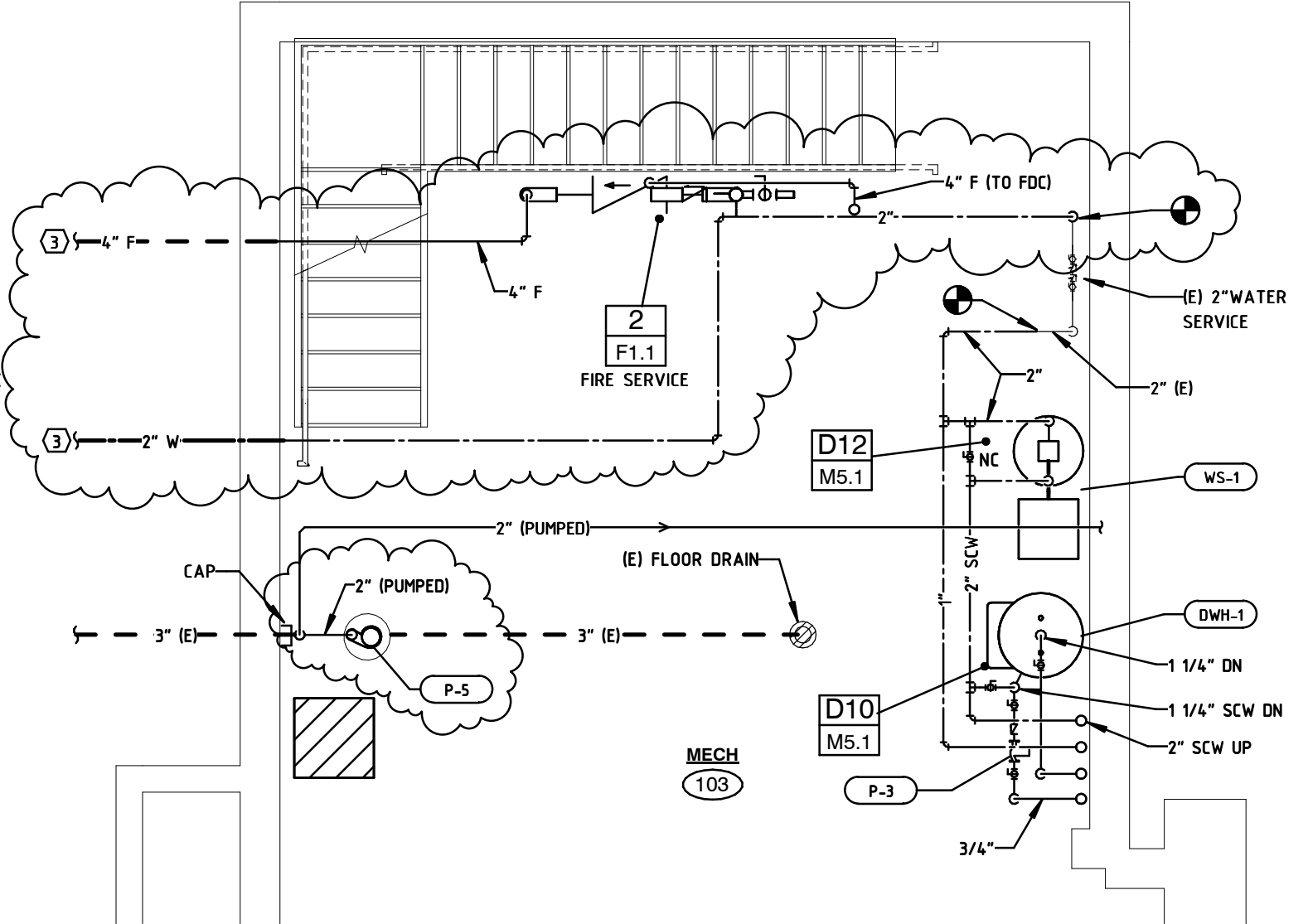
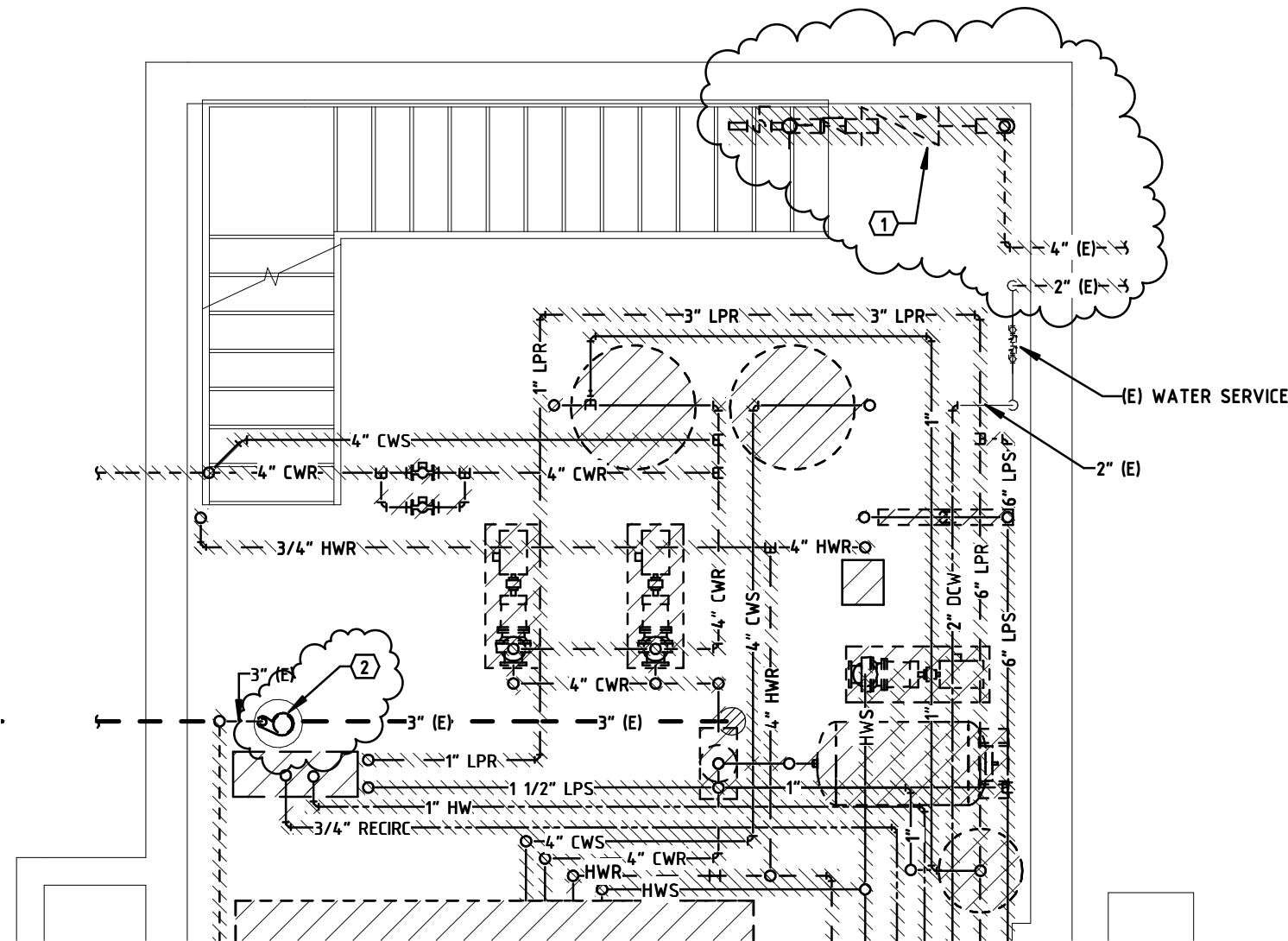
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PERU, NEBRASKA

Project Number  
16-083  
Date  
1-12-17  
Revisions  
# Date  
1 1/26/17

**M2.1**  
FIRST & SECOND FLOORS

**KEY NOTES**

- 1 REMOVE EXISTING FIRE SERVICE ENTRANCE AND ASSOCIATED PIPING AND ACCESSORIES TO EXTENTS POSSIBLE.
- 2 EXISTING SUMP PUMP TO BE REPLACED, REMOVE EXISTING PUMP.
- 3 SEE CIVIL PLANS FOR CONTINUATION.



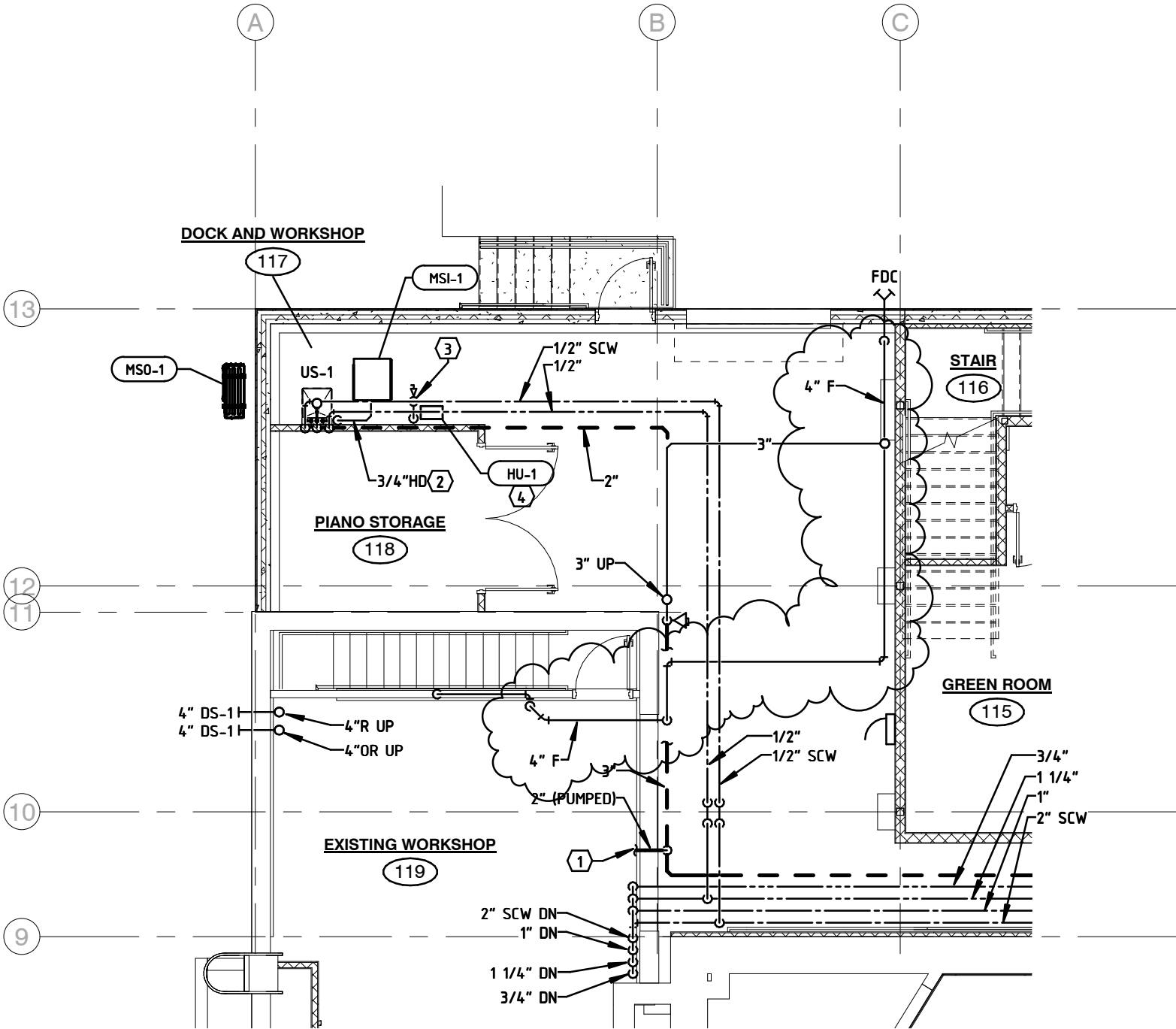
**1 PARTIAL DEMO PLAN - MECH 103**

M1 1/4" = 1'-0"

**2 PARTIAL PLUMBING PLAN - MECH 103**

M1 1/4" = 1'-0"





# 1 PARTIAL PLUMBING PLAN - 117

M1.1 1/8" = 1'-0"

# DETAIL NOTES

## GENERAL NOTES

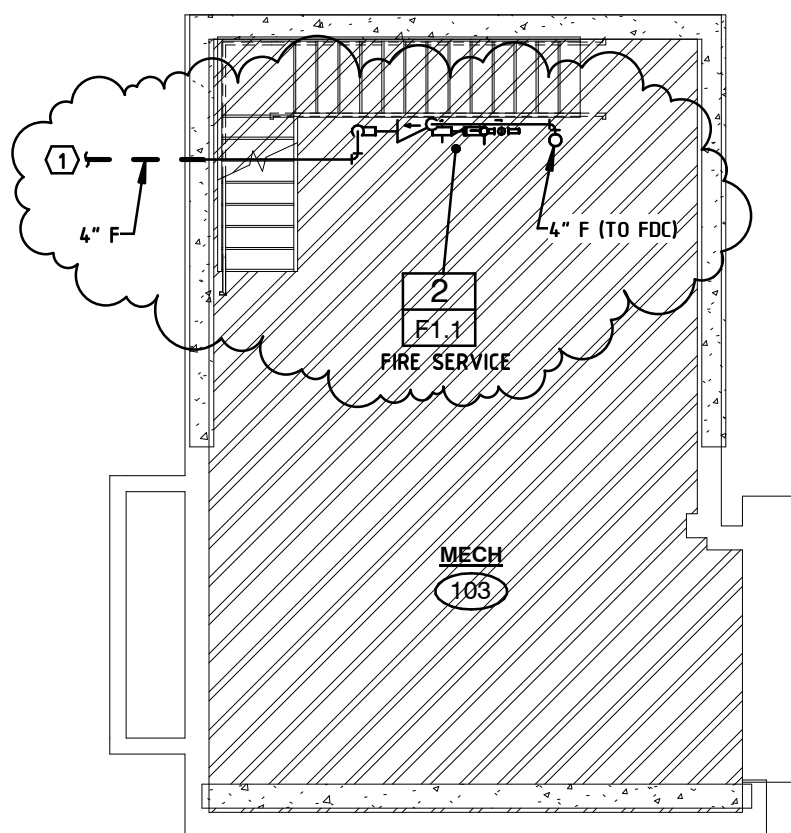
- A. ALL PIPING FITTINGS AND BENDS MUST BE RESTRAINED AGAINST MOVEMENT, PIPE CLAMPS, TIE RODS AND THRUST BLOCKS ARE APPROVED RESTRAINTS.
- B. FIRE SERVICE ENTRANCE PIPING MUST BE FLUSHED AND TESTED PER NFPA 24 STANDARDS BY OTHERS.
- C. ALL PIPING, FITTINGS AND ACCESSORIES SHALL BE GROOVED CONSTRUCTION.
- D. AIR COMPRESSOR MUST SIT IN DESIGNATED AREA (SIZE AIR COMPRESSOR PER NFPA 13). PROVIDE A 120 VOLT, 20 AMP DEDICATED CIRCUIT FOR DRY-PIPE SYSTEM AIR COMPRESSOR (IF ELECTRICAL NEEDS ARE GREATER, THEN COORDINATE EXACT REQUIREMENTS WITH ELECTRICAL CONTRACTOR PRIOR TO BID). CONNECT AIR COMPRESSOR TO DRY PIPE VALVE.
- E. LOCATION OF FIRE DEPARTMENT CONNECTION AND PIV SHALL BE COORDINATED WITH ALL AUTHORITIES HAVING JURISDICTION.

## KEY NOTES

- 1. EXTEND FULL SIZE PIPE TO 2-1/2" X 2-1/2" X 4" FIRE DEPARTMENT CONNECTION (ELKHART ROUGH BRASS MODEL 11 OR EQUAL), VERIFY HOSE THREADS WITH LOCAL AUTHORITY.
- 2. NEW DOUBLE CHECK BACKFLOW PREVENTER. VERIFY WITH LOCAL CODES EXACT REQUIREMENTS FOR INSTALLATION. BACKFLOW PREVENTER CAN BE INSTALLED IN VERTICAL POSITION IF ALLOWED BY LOCAL CODE.

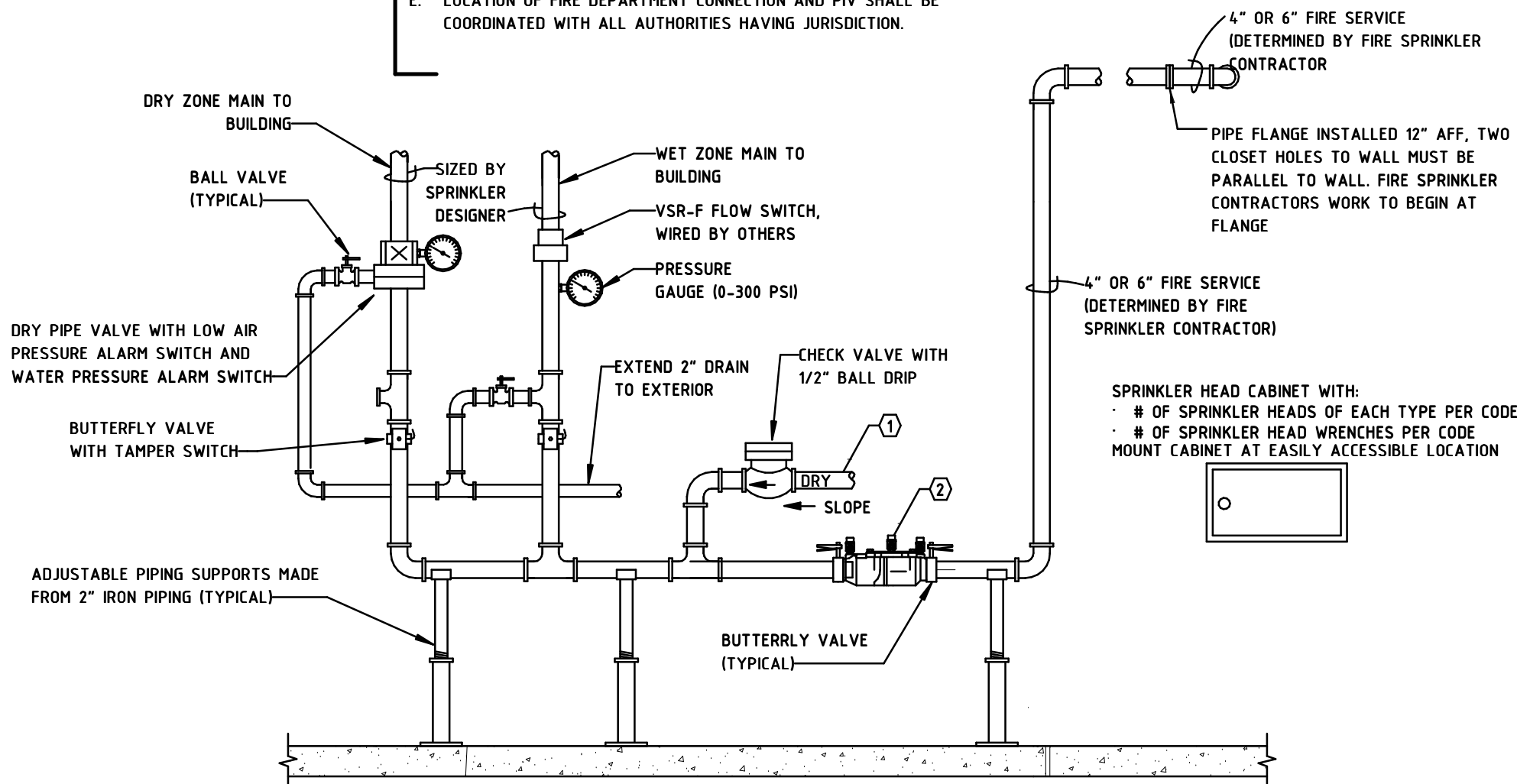
### KEY NOTES

- 1 SEE CIVIL PLANS FOR CONTINUATION.



**1 BASEMENT PLAN**

F1.1 1/8" = 1'-0"



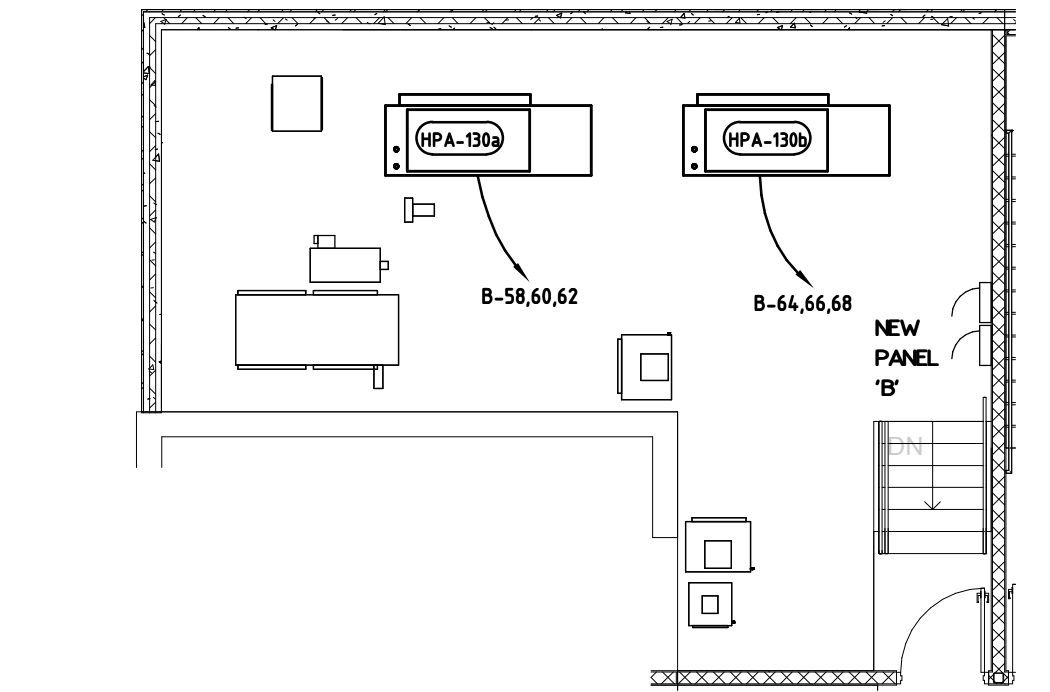
**2 NFPA 13 FIRE SERVICE ENTRANCE DETAIL**

F1.1 NO SCALE

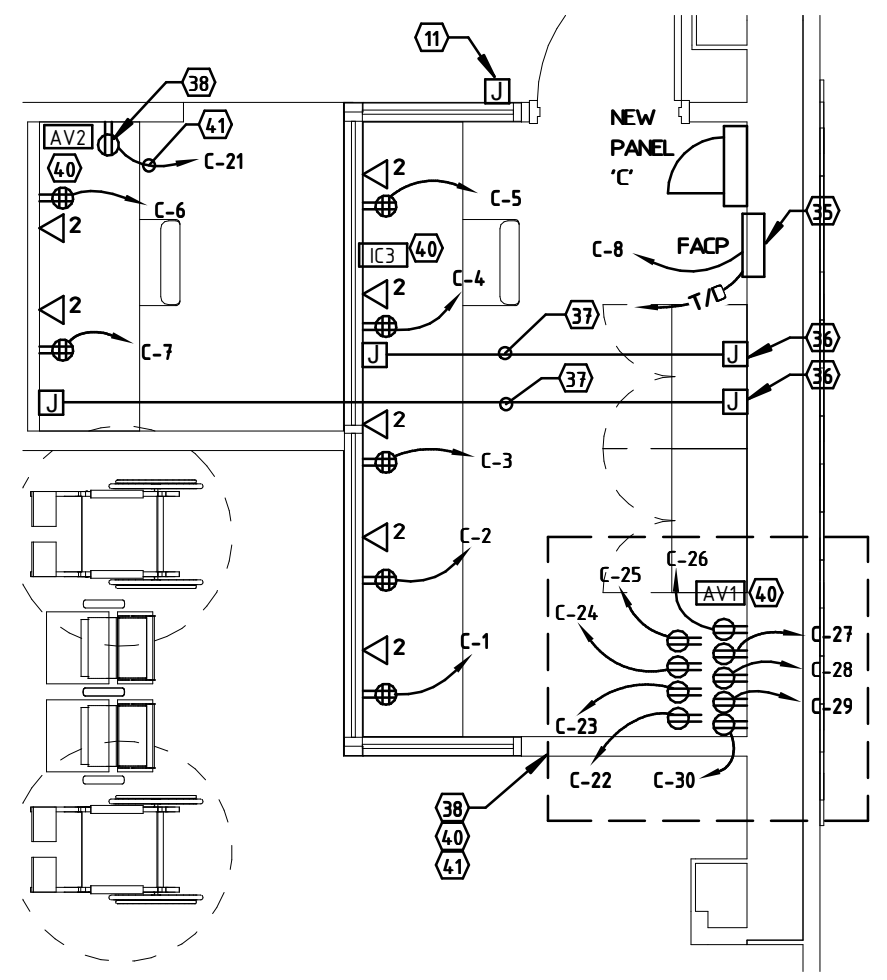
REFER TO ATTACHED THEATER RIGGING DRAWING 'TR1' AND AUDIO VISUAL DRAWINGS AV1, AV2, AV3, AV4, AV5, AV6, AV7, AV8, AV9, AV10, AV11 FOR ADDITIONAL ELECTRICAL REQUIREMENTS AND INFORMATION. PROVIDE A PULL STRING IN ALL AV CONDUITS.

**SHEET NOTES** REVISED 09/02/17

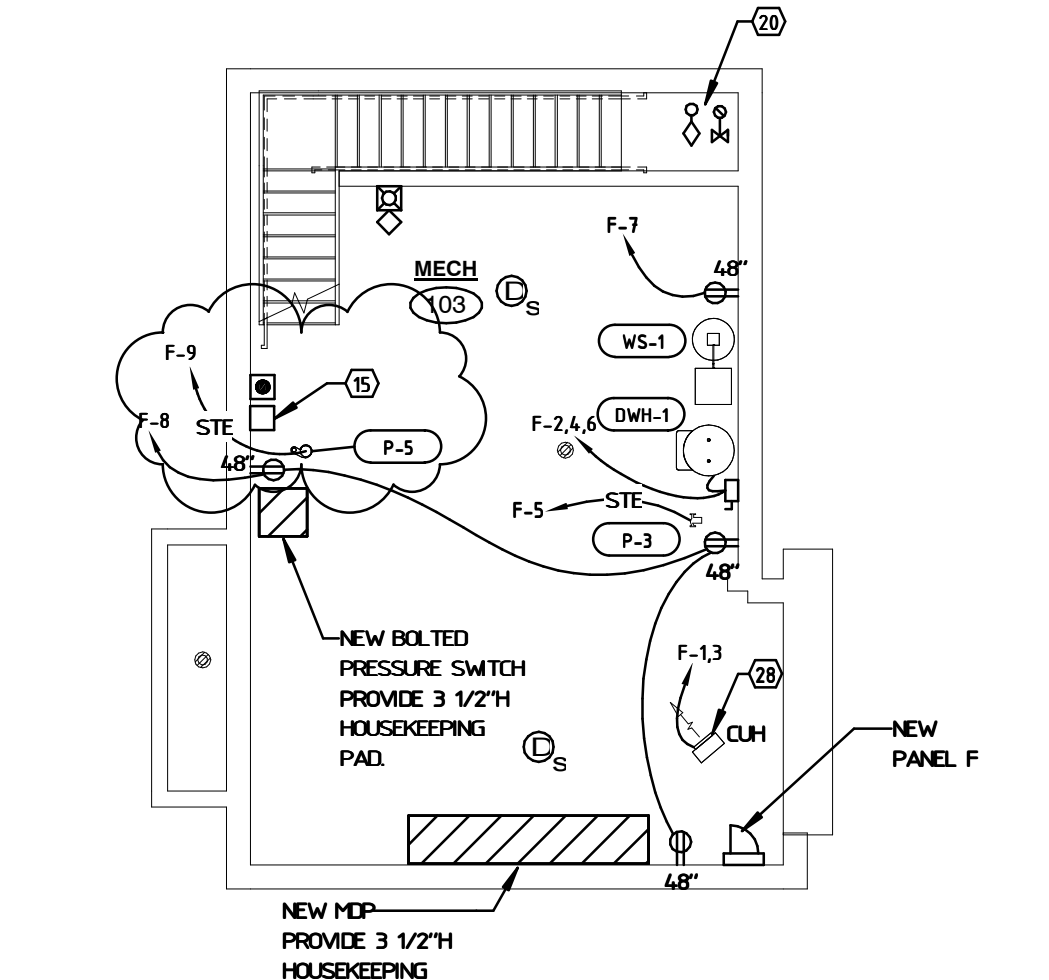
- GENERAL NOTE**
- ALL NEW WIRING/CONDUITS SHALL BE CONCEALED IN NEW WALLS AND ALSO IN EXISTING WALLS WHERE POSSIBLE. EVERY EFFORT SHALL BE MADE TO CONCEAL WIRING IN EXISTING WALLS. 3/4" FLEXIBLE METALLIC CONDUIT MAY BE USED AND ROUTED THROUGH EXISTING WALLS. BOXES SHALL BE CUT IN AND RECESSED WHERE POSSIBLE. SURFACE MOUNT CONDUIT INSTALLATIONS ARE ACCEPTABLE ONLY IN UNFINISHED AREAS (I.E. MECHANICAL AND ELECTRICAL ROOMS). SURFACE INSTALLATIONS IN FINISHED AREAS SHALL BE PERMITTED ONLY IF ABSOLUTELY NECESSARY. IF IT IS NOT PHYSICALLY POSSIBLE OR PRACTICAL TO CONCEAL RACEWAYS, THE CONTRACTORS SHALL BE PREPARED TO FINISH AND INSTALL ONE-Piece STEEL SURFACE RACEWAY, WIRELEAD TWO SERIES OR EQUAL, WITH COLOR SELECTED BY ARCHITECT. FOR NEW DEVICES SHOWN ON EXISTING GYP-BOARD WALLS, CONTRACTOR SHALL BE CUT NEW RECESSED KEYHOLE J-BOX INTO WALL AND ROUTE 3/4" FLEXIBLE METALLIC CONDUIT INSIDE WALL FROM J-BOX TO ABOVE CEILING TO ACCESSIBLE AREA. CONDUIT ENDS SHALL BE RECESSED AND FREE OF BURRS. SURFACE MOUNT EXIT IS ACCEPTABLE IN UNFINISHED AREAS.
  - PROVIDE A 4"x4"x2" VAP DEEP J-BOX WITH 1/2" STEBBED TO ABOVE CEILING TO ACCESSIBLE AREA FOR ALL TELECOMMUNICATION OUTLET LOCATIONS SHOWN. CABLING AND TERMINATIONS ARE BY THE CONTRACTOR.
- KEY NOTES**
- 4.8KW 208V/PH ELECTRIC WALL HEATER, EWH, OMARK MODEL #AWH508 OR EQUAL WITH INTEGRAL THERMOSTAT AND DISCONNECT. ROUTE 2" RIG PLUS #10 GND IN 3/4" C.
  - RECEPTACLE TO BE CONCEALED BEHIND EWC. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR.
  - LOCATE DEVICES AT TOP OF SHAFT.
  - INSTALL A PIT LIGHT SWITCH BY ABOVE THE LOWEST LANDING ADJACENT TO THE PIT LADDER WITH TWO LIGHTS (LITHONIA VAP-600M-FCL-HD-MV01-1-ARK-R001) MOUNTED 8" ABOVE THE PIT FLOOR. A GFI OUTLET MUST BE MOUNTED ADJACENT TO THE LIGHT COORDINATE INSTALLATION WITH ELEVATOR INSTALLER.
  - PROVIDE A DEDICATED ANALOG TELEPHONE LINE IN 3/4" C. TO TB WITH 4" SOUTLET AT ELEVATOR CONTROLLER THAT IS CAPABLE OF OUTGOING/INCOMING CALLS FOR EMERGENCY PHONE SYSTEM. COORDINATE EXACT LOCATION WITH ELEVATOR SUPPLIER. CONDUIT ROUTED IN SHAFT, BUT MUST BE RUN CONTIGUOUS WITH NO J-BOXES AND SHALL BE CLEARLY AND PERMANENTLY LABELED EVERY 12FT TELEPHONE CABLE.
  - 200V ELEVATOR CAR POWER SUPPLY. PROVIDE LOCKABLE, 30A, FUSIBLE SAFETY SWITCH IN NEMA 1 ENCLOSURE FUSED 300A. CONDUIT WIRE TO CONTROLLER/ELEVATOR EQUIPMENT BY EC. COORDINATE WITH ELEVATOR CONTRACTOR.
  - PERMANENT THREE-PHASE POWER TO THE ELEVATOR CONTROLLER. SEE ELECTRICAL ONE-LINE DIAGRAM.
  - PROVIDE NEW BEAM DETECTOR TRANSMITTER. COORDINATE EXACT LOCATION WITH NEW CEILING CLOUDS WITH GENERAL CONTRACTOR. CONNECT TO FACP.
  - PROVIDE NEW BEAM DETECTOR RECEIVER. CONNECT EXACT LOCATION WITH NEW CEILING CLOUDS WITH GENERAL CONTRACTOR. CONNECT TO FACP.
  - PROVIDE NEW 'WAP' CONNECTION WITH J-BOX AND CAT 6 CABLE FROM J-BOX TO DATA RACK 'TR1' IN 3/4" ELECTRICAL CONTRACTOR TO INSTALL DEVICE PROVIDED BY OWNER.
  - PROVIDE A J-BOX WITH 3/4" TO DATA RACK 'TR1' FOR PROXIMITY READER. PROVIDED BY DOOR HARDWARE SUPPLIER. COORDINATE EXACT LOCATION WITH ARCHITECT.
  - POINT FA DEVICE ABOVE BACK CURTAIN.
  - MOUNT ABOVE BACK CURTAIN. COORDINATE EXACT LOCATION WITH OWNER AND ARCHITECT.
  - PROVIDE A FLUSH MOUNTED, PRE-RATED FLOOR BOX WITH TWO (2) DUPLEX RECEPTABLES, TWO (2) CAT 6 DATA PORTS, AND TWO (2) AV JACKS. PROVIDE TWO (2) 1/4" CONDUITS TO ROOM WITH PROVIDE ONE (1) 1" CONDUIT WITH TWO (2) CAT 6 CABLES TO IT. ROOM #152. REFER TO AV DRAWINGS FOR ALL REQUIREMENTS AND EXACT LOCATIONS.
  - THE ELECTRICAL CONTRACTOR SHALL RE-INSTALL SALVAGED KW DEMAND METER AT THIS LOCATION. PROVIDE ALL CONDUIT AND WIRE AS REQUIRED, TO BE OPERATIONAL.
  - PROVIDE A DUCT SMOKE DETECTOR IN RETURN AIR DUCT AND FAN SHUT-DOWN RELAY. CONNECT TO FACP. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.
  - AUTO DOOR OPENER PROHIBITIONS MOUNTED ON HULLION AT 64" AFF. COORDINATE EXACT LOCATION WITH ARCHITECT. ELECTRICAL WIRING AND CONNECTIONS BY EC. #12 IN 3/4" C. THROUGHOUT.
  - HANDICAP AUTO DOOR OPENER. ELECTRICAL CONNECTIONS BY EC. VERIFY REQUIREMENTS WITH EQUIPMENT.
  - DSF CONTROLLER PROVIDED BY MECHANICAL CONTRACTOR. COORDINATE WITH MECHANICAL CONTRACTOR AND MANUFACTURER.
  - SPRINKLER EXACT LOCATION AND TAMPERS SWITCH. CONNECT TO FACP. COORDINATE EXACT LOCATION WITH FIRE SPRINKLER CONTRACTOR.
  - RECESSED FLOORBOX - WIREMOLD RFB-CI OR EQUAL, WITH TWO NEMA 5-20 RECEPTABLES, COMMUNICATION BRACKETS, AND BLANK COVER. VERIFY LOCATION AND FINISH WITH ARCHITECT. ROUTE 1/2" TO NEAREST WALL AND TO ABOVE ACCESSIBLE CEILING FOR FUTURE TELECOM CABLING.
  - NEW FIRE ALARM HOLD OPEN DEVICE TO BE SUPPLIED AND INSTALLED BY EC. COORDINATE EXACT LOCATION WITH ARCHITECT. CONNECT THROUGH FACP.
  - PROVIDE A DUCT SMOKE DETECTOR IN SUPPLY DUCT AND FAN SHUT-DOWN RELAY. CONNECT TO FACP.
  - CONNECT THROUGH FACP.
  - MOUNT SMOKE DETECTOR ON CEILING BELOW BALCONY.
  - PROVIDE CONNECTION TO OVERHEAD DOOR OPERATOR. OPERATOR AND CONTROLS BY OTHERS. COORDINATE ALL REQUIREMENTS WITH DOOR PROVIDER. ALL WIRING AND CONNECTIONS BY EC.
  - SKW 208V/PH CEILING MOUNTED HEATER, CHH, OMARK MODEL #WH620 OR EQUAL WITH INTEGRAL THERMOSTAT AND DISCONNECT. ROUTE 2" RIG PLUS #10 GND IN 3/4" C.
  - TYPICAL. EC TO INSTALL AND WIRE CONTROL BUTTON FURNISHED BY AV CONTRACTOR. COORDINATE ALL REQUIREMENTS WITH AV CONTRACTOR.
  - MOUNT 30/3 NON-FUSED NEMA 1 DISCONNECT AT STRUCTURAL CEILING FOR MOTOR CONNECTION. COORDINATE ALL LOCATIONS AND REQUIREMENTS WITH RIGGING SUPPLIER.
  - CONNECT TO LOCAL UNSWITCHED LIGHTING CIRCUIT. IF CONTROLLED BY THERMOSTAT PROVIDED BY MECH CONTRACTOR. COORDINATE ALL REQUIREMENTS WITH MECH CONTRACTOR.
  - PROVIDE WEATHER RESISTANT TAMPER PROOF GFI RECEPTACLE WITH IN-USE COVER AT 24" AFF. MOUNT DEVICE FLUSH IN NEW EXTERIOR WALL.
  - COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH ARCHITECT AND EXISTING CONDITIONS PRIOR TO INSTALLATION.
  - PROVIDE TWO POWER SWITCHES FOR MANUAL OPERATION OF SMOKE DAMPERS. CLEARLY LABEL EACH SWITCH "SMOKE VENTILATION". ONE SWITCH SHALL BE LOCATED ON THE EXTERIOR OF THE ROOF CURB AND THE OTHER DOWN BELOW ON THE STAGE IN AN ACCESSIBLE LOCATION. FACP SHALL OVERRIDE BOTH SWITCHES WHEN ALARMED.
  - PROVIDE (2) CAT 6 TO TELEPHONE BOARD FOR EMERGENCY CALLOUT. COORDINATE LOCATION WITH OWNER.
  - ROUTE ONE (1) 2" C. VERTICALLY UP TO STRUCTURAL CEILING ABOVE BALCONY WITH LONG SWEET ELBOW. PROVIDE BUSHING AT OPEN END FOR LIGHTING AND SOUND CONTROL CABLES.
  - ROUTE ONE (1) 2" C. WITH 90 DEG SWEET ELBOW UNDERSLAB, REMOVE AND REPLACE CONCRETE AS NECESSARY, TO A "PIT" SURFACE MOUNTED J-BOX WITH SCREW COVER PLATE, MOUNTED 24" AFF AT EACH END.
  - COORDINATE LOCATION OF RECEPTACLE WITH AV EQUIPMENT AND AV PROVIDER.
  - DELETE CONNECTION AS PART OF ALTERNATE A.
  - REFER TO AV DRAWINGS FOR REQUIREMENTS. COORDINATE ALL MOUNTING HEIGHTS AND LOCATION WITH AV SUB-CONTRACTOR.
  - PROVIDE A SEPARATE HOT, NEUTRAL, AND GROUND PER DEVICE.
  - AREA-OF-REFUGE CALL BOX. EC TO BE RESPONSIBLE FOR A TWO-WAY COMMUNICATION SYSTEM FOR COMMUNICATION BETWEEN THE AREA OF REFUGE & THE CENTRAL CONTROL POINT. INSTRUCTIONS FOR SUPPORTING ASSISTANCE & WRITTEN IDENTIFICATION OF THE AREA OF REFUGE LOCATION SHALL BE POSTED ADJACENT TO THE TWO-WAY COMMUNICATION SYSTEM. PROVIDE ALL EQUIPMENT AND WIRING AS REQUIRED.
  - PROVIDE A SYSTEM HEAT DETECTOR THAT WILL ALARM THE RESPECTIVE SMOKE VENT TO OPEN. COORDINATE WITH MECHANICAL CONTRACTOR.
  - AUTO DOOR OPENER PROHIBITIONS AT 64" AFF. COORDINATE EXACT LOCATION WITH ARCHITECT. ELECTRICAL WIRING AND CONNECTIONS BY EC. #12 IN 3/4" C. THROUGHOUT.



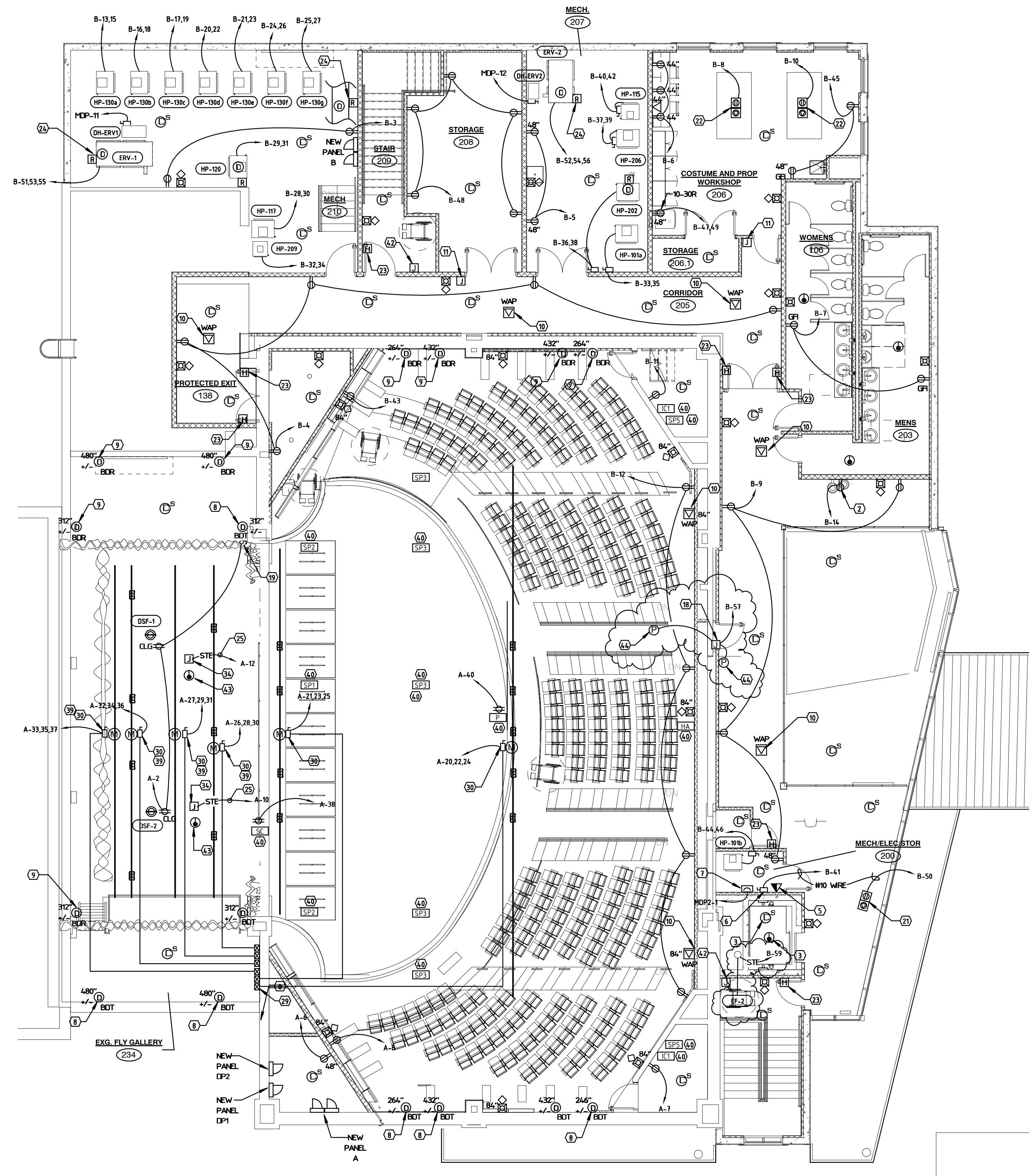
**4 PARTIAL POWER PLAN - MECH 210 (ALTERNATE M2)**  
E2.1 1/8" = 1'-0"



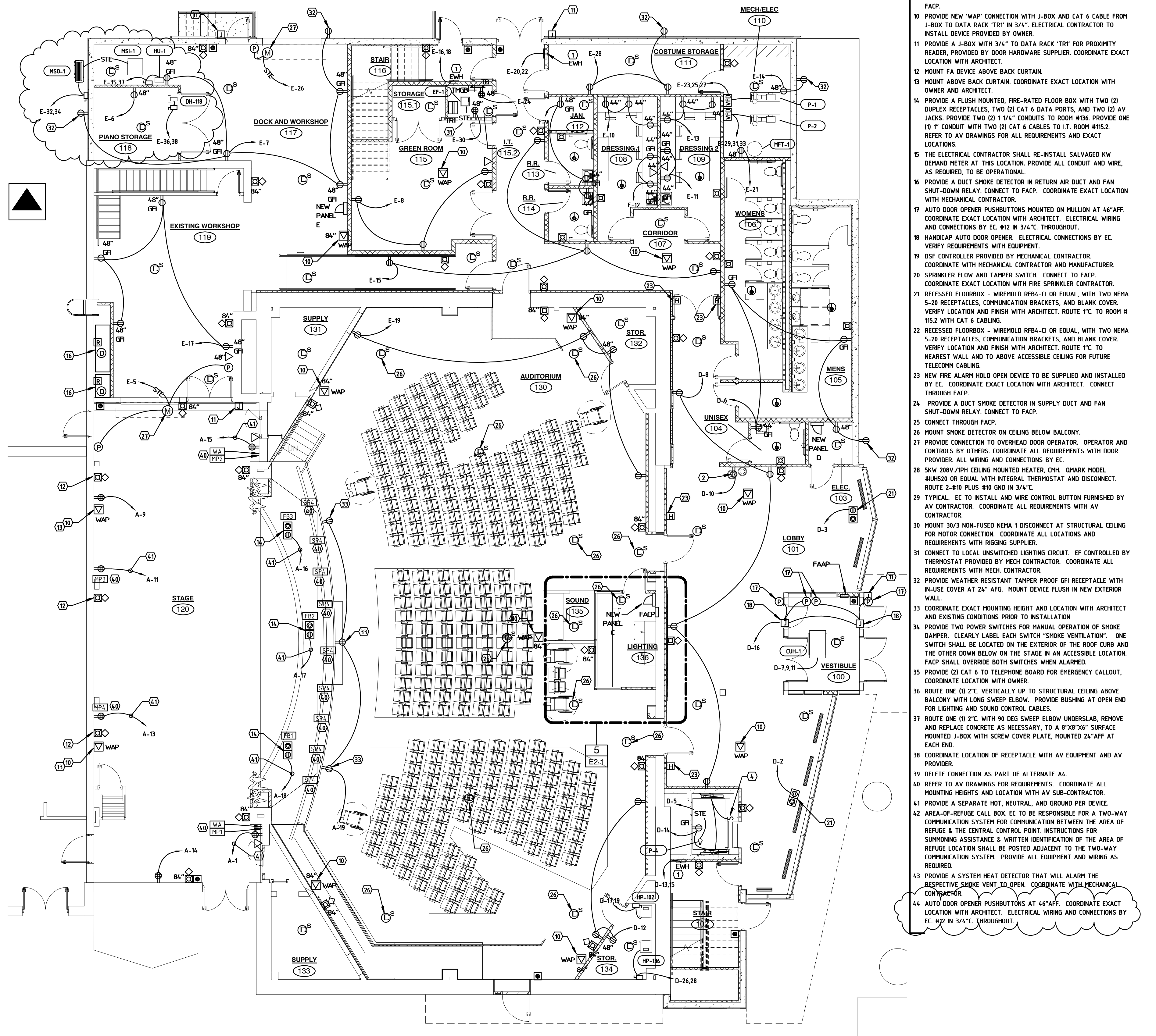
**5 ENLARGED SOUND/LIGHTING POWER PLAN**  
E2.1 1/4" = 1'-0"



**3 BASEMENT - POWER**  
E2.1 1/8" = 1'-0"



**2 SECOND FLOOR - POWER**  
E2.1 1/8" = 1'-0"



**1 FIRST FLOOR - POWER**  
E2.1 1/8" = 1'-0"

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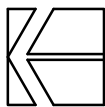
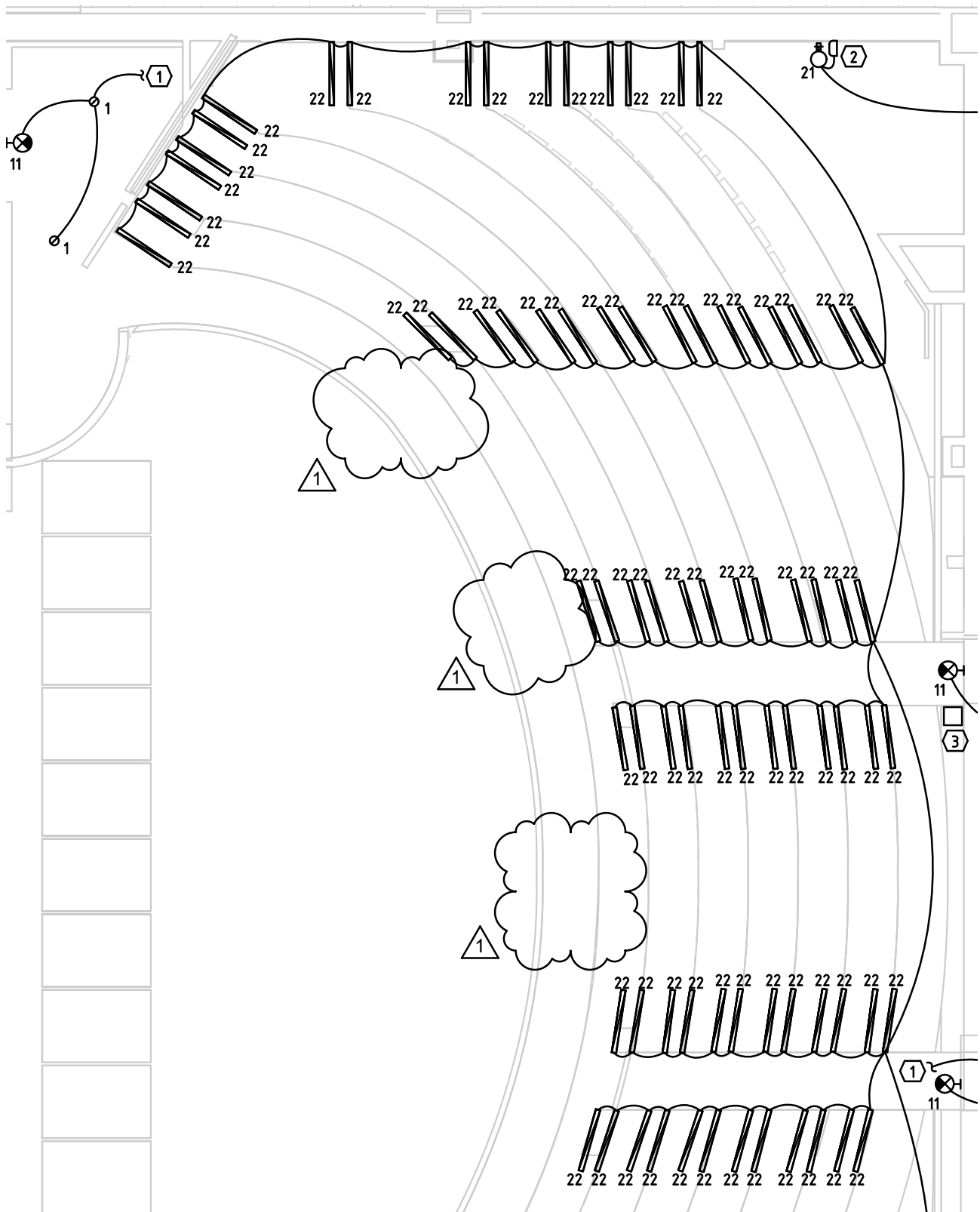
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THEATRE AND EVENT CENTER ADDITION AND REMODEL  
600 HOYT ST - PERU STATE COLLEGE  
PERU, NEBRASKA

Project Number  
16-083  
Date  
1-12-17  
Revision  
# Date  
1 1/26/17

E2.1  
FIRST & SECOND FLOOR - POWER



**1**  
E1.1

# SECOND FLOOR - LIGHTING

1/8" = 1'-0"

4630 Antelope Creek Rd Ste 200

Lincoln, NE 68506

P: 402-488-0075

F: 402-488-0272

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SHEET:

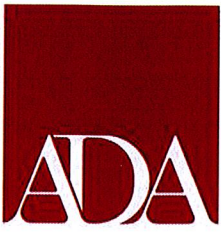
PROJECT#: 16078

DATE: 01/26/17

DESCRIPTION: Addendum #1

# E1.1





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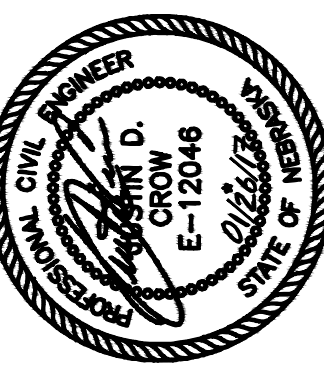
Peru State College  
 THEATRE/EVENT CENTER RENOVATION AND ADDITION  
 PERU, NEBRASKA

PRE-BID CONFERENCE  
 January 24th, 2017

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SHEET INDEX	
SHEET NO.	SHEET TITLE
C1.1	SITE PLAN SHEET
D1.1	DEMOLITION PLAN SHEET
C2.1	GRADING PLAN & RETAINING WALL PLAN/PROFILE SHEET
C3.1	UTILITY PLAN SHEET
C4.1	PAVING GEOMETRICS PLAN SHEET
C4.2	PAVING SPOT ELEVATION SHEET
C4.3	PAVING SPOT ELEVATION TABLES

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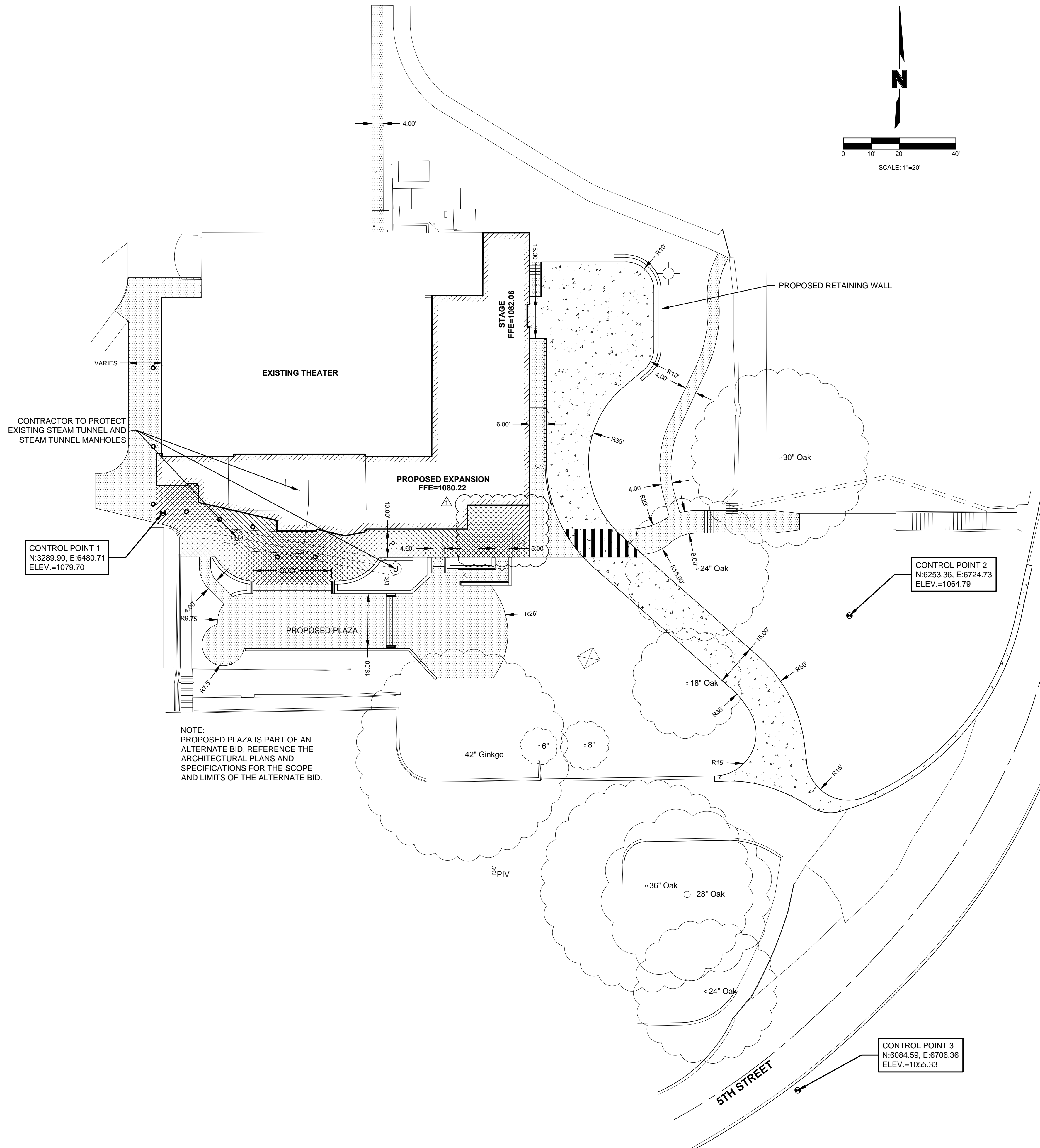
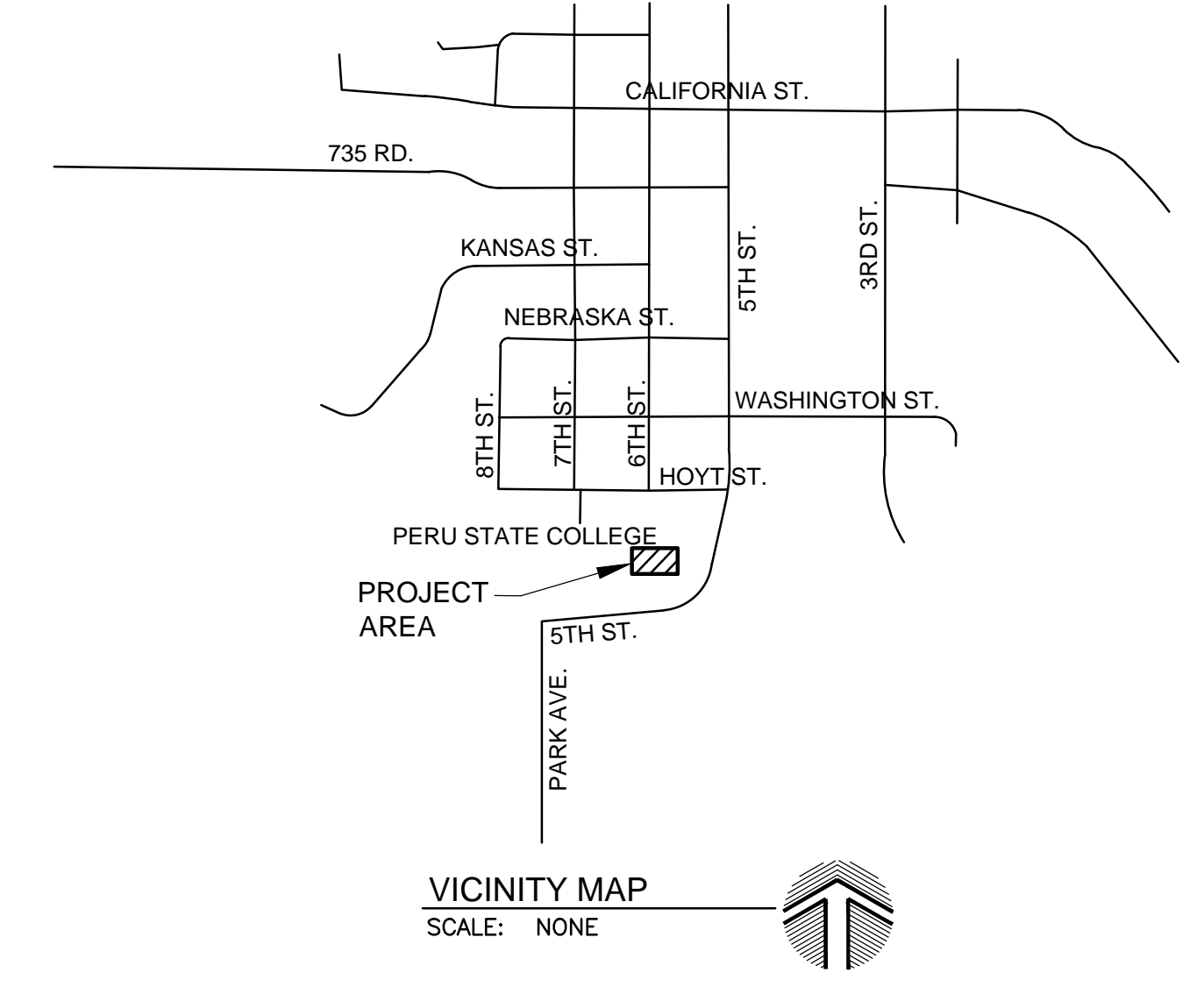
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- GENERAL NOTES**
- CONTRACTOR TO PRESERVE ALL SURVEY CONTROL.
  - CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO COMMENCING CONSTRUCTION.
  - IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
  - LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT TO THE ENGINEER ANY DISCREPANCIES BETWEEN THEIR MEASUREMENTS AND THESE PLANS.
  - CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
  - THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS AND MEASUREMENTS TAKEN IN THE FIELD WHERE POSSIBLE. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT DIGGERS HOTLINE OF NEBRASKA AT (800) 331-5666 A MINIMUM OF 72 HOURS IN ADVANCE OF ANY EXCAVATION FOR THE MARK-OUT OF THE LOCATION OF UTILITIES AND NOTIFICATION OF COMMENCEMENT OF WORK.
  - WHEN WORKING IN PUBLIC R.O.W. OR PUBLIC ACCESS AND UTILITY EASEMENTS, CONTRACTOR SHALL RESTORE DISTURBED AREAS TO EXISTING GRADE FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITY. ALL SPOIL MATERIAL FROM CONSTRUCTION SHALL BE REMOVED FROM THE STREET ROW OR UTILITY EASEMENT BY THE CONTRACTOR. SPOIL MATERIAL SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED BY ENGINEER.
  - CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING IN ACCORDANCE NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2007 EDITION - DIVISION 800, WHEN CONSTRUCTION ACTIVITY HAS BEEN HALTED OR IS PLANNED TO BE HALTED FOR MORE THAN 14 DAYS.
  - CONTRACTOR SHALL REPAIR OR REPLACE EXISTING EROSION AND SEDIMENT CONTROL STRUCTURES IMMEDIATELY AFTER COMPLETION OF CONSTRUCTION ACTIVITY IN THE AREA PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND REQUEST A FINAL WALK-THROUGH OF THE CONSTRUCTION SITE.
  - CONTRACTOR SHALL REFERENCE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS TO BE USED FOR BUILDING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IF ARCHITECTURAL BUILDING DIMENSIONS VARY FROM THE COORDINATES AND DIMENSIONS SHOWN.

**REVISIONS**

NO.	DATE	DESCRIPTION
1	1/26/17	ADDENDUM #1

**SITE PLAN SHEET**  
 PERU STATE COLLEGE THEATER/EVENT CENTER RENOVATION AND ADDITION  
 PERU, NEBRASKA

drawn by: jdc  
 checked by: jdc  
 approved by: jdc  
 project no.: 2016-0160  
 drawing no.:  
 date: 01/12/2017

**LEGEND**

---	PROPERTY LINE	○	EXISTING SANITARY SEWER MANHOLE	▨	7" P.C. CONCRETE PAVEMENT
---	LIMITS OF DISTURBANCE	⊕	EXISTING STORM SEWER MANHOLE	▨	5" P.C. CONCRETE DRIVEWAY
---	PROPOSED SILT FENCE	⊕	PROPOSED STORM SEWER MANHOLE	▨	4" P.C. CONCRETE SIDEWALK
---	PROPOSED MAJOR CONTOUR	⊕	EXISTING POWER POLE	▨	COLORED CONCRETE
---	PROPOSED MINOR CONTOUR	⊕	EXISTING TREE TO REMAIN	---	SAWCUT
---	EXISTING MAJOR CONTOUR	⊕	EXISTING SHRUB TO BE REMOVED	●	POINT (SIDEWALK)
---	EXISTING MINOR CONTOUR	⊕	EXISTING GRATE INLET	●	POINT (RADIUS)
---	PROPOSED SANITARY SEWER	⊕	EXISTING CURB INLET	●	POINT (TOP OF CURB)
---	EXISTING SANITARY SEWER	⊕	EXISTING ELECTRICAL TRANSFORMER	×	POINT (TOP OF SLAB)
---	PROPOSED DOMESTIC WATER	⊕	EXISTING BOLLARD	(TC)	TOP OF CURB ELEVATION (TS + 0.5')
---	EXISTING WATER MAIN	⊕	EXISTING LIGHT POLE	(DC)	TOP OF DROP CURB ELEVATION (TS + 0.25')
---	ABANDONED WATER MAIN	⊕	EXISTING SIGN	(TS)	TOP OF SLAB ELEVATION
---	EXISTING CHILLER WATER MAIN (PROPERTY OF UNIVERSITY OF NEBRASKA)	⊕	ELEVATION OF GARAGE THRESHOLD BELOW FFE	(G)	GUTTER ELEVATION
---	EXISTING STEAM LINE (PROPERTY OF UNIVERSITY OF NEBRASKA)	⊕	PROPOSED PARKING METER	(SW)	SIDEWALK ELEVATION
---	PROPOSED STORM SEWER	⊕	PROPOSED SIGNAGE	PI	POINT OF INFLECTION (HORIZONTAL DEFLECTION)
---	EXISTING STORM SEWER	⊕	6" STANDARD CURB	PC	POINT OF CURVATURE (START OF CURVE)
---	EXISTING UNDERGROUND GAS	⊕	3" DROP CURB	PT	POINT OF TANGENCY (END OF CURVE)
---	EXISTING UNDERGROUND TV	⊕	PAVEMENT & SIDEWALK REMOVAL	MP	MID-POINT OF CURVE
---	PROPOSED UNDERGROUND ELECTRIC	⊕	WATER MAIN REMOVAL	EP	ELEVATION POINT
---	EXISTING UNDERGROUND ELECTRIC	⊕	SANITARY SEWER SERVICE REMOVAL	HP	HIGH POINT
---	EXISTING OVERHEAD ELECTRIC	⊕		LP	LOW POINT
---	EXISTING UNDERGROUND TELEPHONE	⊕			
---	EXISTING FIBER OPTIC LINE	⊕			
---	EXISTING FIRE HYDRANT	⊕			
---	EXISTING WATER VALVE	⊕			

CONTROL POINT 4  
 N:6019.17, E:6474.32  
 ELEV.=1050.07

NOTE: ALL DIMENSIONS ARE TO BACK OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE STATED.

NOTE: ALL DIMENSIONS TO THE BUILDING STRUCTURES ARE TO OUTSIDE FACE OF BRICK. CONTRACTOR SHALL REFERENCE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS.

**DIGGERS HOTLINE OF NEBRASKA**  
 PRIOR TO ANY EXCAVATION OR LAND DISTURBANCE, THE CONTRACTOR SHALL HAVE UNDERGROUND UTILITIES LOCATED AND MARKED BY CONTACTING THE DIGGERS HOTLINE OF NEBRASKA AT 1-800-331-5666.

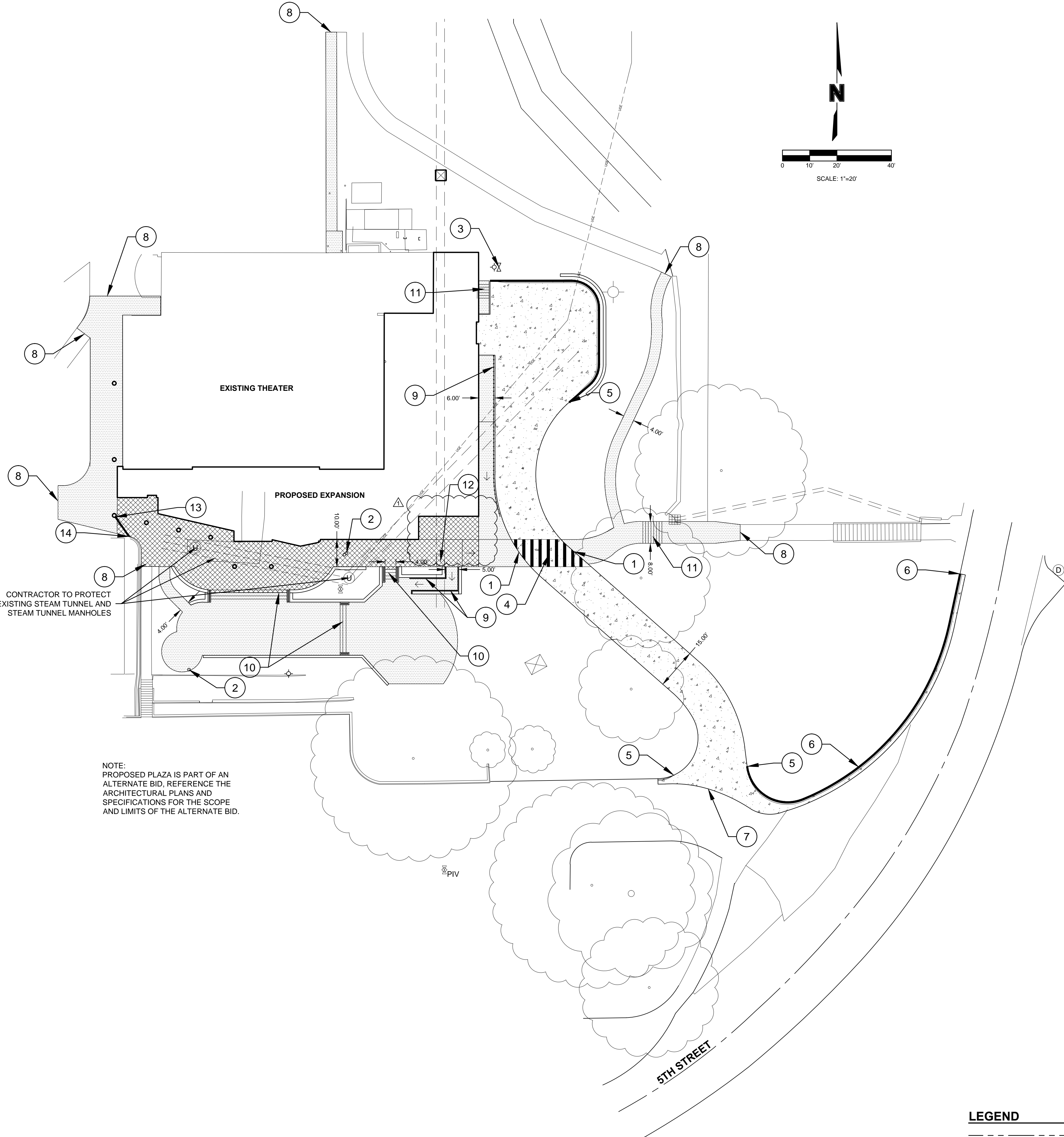
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 PLOT: 180160\_Base  
 PLOT: 180160\_Base

**GENERAL NOTES**

1. REFERENCE SHEET C1.1 FOR ADDITIONAL NOTES.
1. ALL PORTLAND CEMENT CONCRETE SHALL BE NDOR 47B-4000 MIXTURE PER NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2007 EDITION - DIVISION 1000.
2. FOR DETAILS OF PAVEMENT CONSTRUCTION, SEE NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2007 EDITION - DIVISION 600. ALL STANDARD SPECIFICATIONS AND ADDENDUMS SHALL APPLY.
3. FOR CURB CONSTRUCTION, MATCH EXISTING CURB STYLE.
4. FOR DETAILS OF CONCRETE PAVEMENT JOINTS, SEE NDOR STANDARD PLAN NO. 329-R9. 3/4" PRE-FORMED EXPANSION JOINT FILLER SHALL BE USED WHEN SIDEWALKS AND PAVEMENT ABUTS BUILDINGS OR OTHER PERMANENT STRUCTURES. JOINT SPACINGS SHALL NOT EXCEED 16' FOR LONGITUDINAL JOINTS AND 12' FOR ALL OTHER JOINTS.
5. EARTH EXCAVATION IS SUBSIDIARY TO THE PAVING.
6. WHEN WORKING IN PUBLIC R.O.W. OR PUBLIC ACCESS AND UTILITY EASEMENTS, CONTRACTOR SHALL RESTORE DISTURBED AREAS TO EXISTING GRADE FOLLOWING THE COMPLETION OF CONSTRUCTION ACTIVITY. ALL SPOIL MATERIAL FROM CONSTRUCTION SHALL BE REMOVED FROM THE STREET ROW OR UTILITY EASEMENT BY THE CONTRACTOR. SPOIL MATERIAL SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED BY ENGINEER.
7. ALL STRIPING, EXCEPT HANDICAP STALLS, SHALL BE 4" SOLID WHITE PAINT, SINGLE LINE. HANDICAP STALLS SHALL BE STRIPED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (FEDERAL REGISTER/VOL. 58 NO. 144/ RULES AND REGULATIONS).
8. GEOMETRICS OF ALL PAVEMENT MARKINGS SHALL CONFORM TO STATE OF NEBRASKA DESIGN CRITERIA.
9. ALL SIGNS SHALL COMPLY WITH U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATIONS' MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' LOCAL CODES AND AS SPECIFIED. MOUNT SIGNS TO POST IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
10. THE CONTRACTOR SHALL REFERENCE THE GEOTECHNICAL REPORT PREPARED BY TERRACON CONSULTANTS, INC. AND SIGNED BY BRANDON L. DESH AND DATED 09/02/2016 FOR PAVEMENT THICKNESS AND SUBGRADE PREPARATION UNLESS OTHERWISE NOTED ON PLANS.
11. ALL CONSTRUCTION JOINTS SHALL BE SEALED IN ACCORDANCE WITH NDOR STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2007 EDITION - DIVISION 600.
12. CONTRACTOR SHALL NOTIFY GEOTECHNICAL TESTING FIRM 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION FOR TESTING OF SUBGRADE.
13. CONTRACTOR SHALL REFERENCE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS TO BE USED FOR BUILDING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IF ARCHITECTURAL BUILDING DIMENSIONS VARY FROM THE COORDINATES AND DIMENSIONS SHOWN.
14. ALL SIDEWALKS SHALL HAVE A MAXIMUM GROSS SLOPE OF 2.0% AND A MAXIMUM LONGITUDINAL SLOPE OF 5.0%. ALL ADA RAMP SHALL HAVE A MAXIMUM CROSS SLOPE OF 2.0% AND A MAXIMUM LONGITUDINAL SLOPE OF 8.3%. ALL RAMP EXCEEDING 5.0% LONGITUDINAL SLOPE AND A GREATER THAN 0.5' VERTICAL RISE SHALL HAVE HAND RAILS IN ACCORDANCE WITH ADA GUIDELINES. ANY DISCREPANCIES SHOWN ON SPOT ELEVATION PLAN SHALL BE REPORTED TO THE ENGINEER.

**PAVING NOTES**

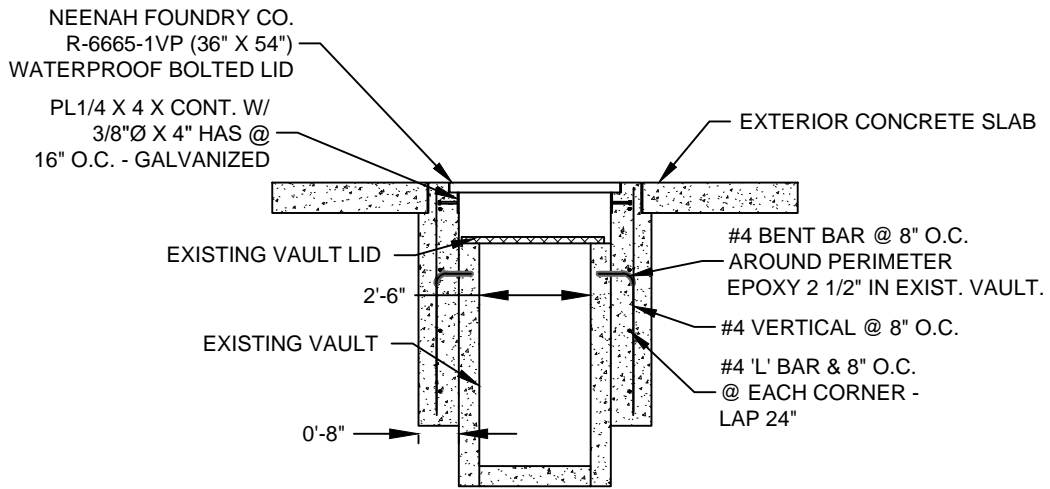
1. BUILD ADA RAMP WITH TRUNCATED DOME DETECTION, PER NDOR STANDARD PLAN 303-R2 TYPE D. ADA RAMP, SIGNAGE, AND STRIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) REGULATIONS.
2. ADJUST CLEANOUT RING AND COVER TO GRADE, POUR A 24" DIA. X 6" DEPTH CONCRETE PAD AROUND CLEANOUT RING AND COVER WHEN LOCATED IN GRASS/LANDSCAPE AREA, SEE CLEANOUT DETAIL ON SHEET C3.1.
3. ADJUST WATER VALVE BOX TO GRADE, POUR A 24" DIA. X 6" DEPTH CONCRETE PAD AROUND WATER VALVE BOX WHEN LOCATED IN GRASS/LANDSCAPE AREA.
4. CONTRACTOR TO STRIPE PEDESTRIAN CROSS-WALK. STRIPING SHALL BE 4" SOLID WHITE PAINT PARALLEL TO DRIVEWAY AND 12" SOLID WHITE PAINT PERPENDICULAR TO DRIVE.
5. TRANSITION FROM NO CURB TO 6" CURB
6. CONTRACTOR TO BUILD CONCRETE CURB AND GUTTER. MATCH EXISTING CURB AND GUTTER.
7. CONTRACTOR TO MATCH EXISTING PAVING.
8. CONTRACTOR TO MATCH EXISTING SIDEWALK.
9. CONTRACTOR TO INSTALL HANDRAIL PER AMERICANS WITH DISABILITIES ACT (ADA) REGULATIONS.
10. CONTRACTOR TO BUILD CONCRETE STEPS. FOR DETAILS SEE ARCHITECTURAL AND STRUCTURAL PLANS.
11. CONTRACTOR TO BUILD CONCRETE STEPS.
12. CONTRACTOR TO RAISE ELECTRICAL VAULT PER DETAIL THIS SHEET. VAULT LID SHALL BE NEENAH FOUNDRY COMPANY R-6665-1VP (36" X 54") OR APPROVED EQUIVALENT. VAULT LID SHALL BE WATERPROOF.
13. CONTRACTOR TO INSTALL ACO H100K-8 SERIES 4" TRENCH DRAIN WITH DOWN SPOUT INLET CONNECTION (PART #96932) AND CURB OUTLET CONNECTION (PART #96924) AT DISCHARGE POINT. FOR CONNECTION TO DOWNSPUT INSIDE COLUMN, REFERENCE ARCHITECTURAL PLANS. TRENCH DRAIN GRATE SHALL BE S100K SERIES, PART #96096.
14. CONTRACTOR TO EXTEND CONCRETE FLUME TO ALLOW AN OUTLET FOR TRENCH DRAIN.



NOTE: PROPOSED PLAZA IS PART OF AN ALTERNATE BID, REFERENCE THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR THE SCOPE AND LIMITS OF THE ALTERNATE BID.

CONTRACTOR TO PROTECT EXISTING STEAM TUNNEL AND STEAM TUNNEL MANHOLES

**EXISTING ELECTRICAL VAULT STRUCTURAL DETAIL**  
NOT TO SCALE



**LEGEND**

---	PROPERTY LINE	○	EXISTING SANITARY SEWER MANHOLE	[Pattern]	7" P.C. CONCRETE PAVEMENT
---	LIMITS OF DISTURBANCE	⊗	EXISTING STORM SEWER MANHOLE	[Pattern]	5" P.C. CONCRETE DRIVEWAY
---	PROPOSED SILT FENCE	⊕	PROPOSED STORM SEWER MANHOLE	[Pattern]	4" P.C. CONCRETE SIDEWALK
---	PROPOSED MAJOR CONTOUR	⊙	EXISTING POWER POLE	[Pattern]	COLORED CONCRETE
---	PROPOSED MINOR CONTOUR	⊗	EXISTING TREE TO REMAIN	[Pattern]	SAWCUT
---	EXISTING MAJOR CONTOUR	⊕	EXISTING SHRUB TO BE REMOVED	[Pattern]	● 100 POINT (SIDEWALK)
---	EXISTING MINOR CONTOUR	⊙	EXISTING GRATE INLET	[Pattern]	● 100 POINT (RADIUS)
---	PROPOSED SANITARY SEWER	⊗	EXISTING CURB INLET	[Pattern]	● 100 POINT (TOP OF CURB)
---	EXISTING SANITARY SEWER	⊕	EXISTING ELECTRICAL TRANSFORMER	[Pattern]	● 100 POINT (TOP OF SLAB)
---	PROPOSED DOMESTIC WATER	⊙	EXISTING BOLLARD	[Pattern]	(TC) TOP OF CURB ELEVATION (TS + 0.5')
---	EXISTING DOMESTIC WATER	⊗	EXISTING LIGHT POLE	[Pattern]	(DC) TOP OF DROP CURB ELEVATION (TS + 0.25')
---	EXISTING WATER MAIN	⊕	EXISTING SIGN	[Pattern]	(TS) TOP OF SLAB ELEVATION
---	ABANDONED WATER MAIN	⊙	ELEVATION OF GARAGE THRESHOLD BELOW FFE	[Pattern]	(G) GUTTER ELEVATION
---	EXISTING CHILLER WATER MAIN (PROPERTY OF UNIVERSITY OF NEBRASKA)	⊗	PROPOSED PARKING METER	[Pattern]	(SW) SIDEWALK ELEVATION
---	EXISTING STEAM LINE (PROPERTY OF UNIVERSITY OF NEBRASKA)	⊕	PROPOSED SIGNAGE	[Pattern]	PI POINT OF INFLECTION (HORIZONTAL DEFLECTION)
---	PROPOSED STORM SEWER	⊙	6" STANDARD CURB	[Pattern]	PC POINT OF CURVATURE (START OF CURVE)
---	EXISTING STORM SEWER	⊗	3" DROP CURB	[Pattern]	PT POINT OF TANGENCY (END OF CURVE)
---	EXISTING UNDERGROUND GAS	⊕	PAVEMENT & SIDEWALK REMOVAL	[Pattern]	MP MID-POINT OF CURVE
---	EXISTING UNDERGROUND TV	⊙	WATER MAIN REMOVAL	[Pattern]	EP ELEVATION POINT
---	PROPOSED UNDERGROUND ELECTRIC	⊗	EXISTING FIRE HYDRANT	[Pattern]	HP HIGH POINT
---	EXISTING UNDERGROUND ELECTRIC	⊕	EXISTING WATER VALVE	[Pattern]	LP LOW POINT
---	EXISTING OVERHEAD ELECTRIC	⊙			
---	EXISTING UNDERGROUND TELEPHONE	⊗			
---	EXISTING FIBER OPTIC LINE	⊕			
---	EXISTING WATER VALVE	⊙			

USER: Crew 160160\_Base 160160\_Architectural  
 160160\_Background 160160\_Base 160160\_Paving 160160\_Paving  
 160160\_Base 160160\_Base 160160\_Base  
 DATE: 2017 10/10/17  
 PROJECT: PERU STATE COLLEGE THEATER/RENT CENTER RENOVATION AND ADDITION  
 DRAWING NO.: 2017-10-10-17  
 SHEET: C4.1

NOTE: ALL DIMENSIONS ARE TO BACK OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE STATED.

NOTE: ALL DIMENSIONS TO THE BUILDING STRUCTURES ARE TO OUTSIDE FACE OF BRICK. CONTRACTOR SHALL REFERENCE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS.

**DIGGERS HOTLINE OF NEBRASKA**  
 PRIOR TO ANY EXCAVATION OR LAND DISTURBANCE, THE CONTRACTOR SHALL HAVE UNDERGROUND UTILITIES LOCATED AND MARKED BY CONTACTING THE DIGGERS HOTLINE OF NEBRASKA AT 1-800-331-5666.

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PAVING GEOMETRICS PLAN SHEET

PERU STATE COLLEGE THEATER/EVENT CENTER RENOVATION AND ADDITION

PERU, NEBRASKA

NO.	DESCRIPTION	DATE
1	ADDITIONAL PAVING	10/10/17

drawn by: jdc

checked by: jdc

approved by: jdc

project no.: 2016-0160

drawing no.: C4.1

date: 01/12/2017