

ADDENDUM NO. 3

TO

RED CLAY CONSOLIDATED SCHOOL DISTRICT
WILMINGTON CAMPUS RENOVATIONS
BID PACKAGE 'B'

This addendum is hereby made part of the Project Manual and Drawings dated 28 May 2013.

The Project Manual and Drawings shall be supplemented or amended as specified herein.

This Addendum contains changes to the requirement of the Project Manual. Such changes shall be incorporated into the Contract Documents and shall apply to work with the same meaning and force as if they had been included in the original Documents. Whenever this Addendum modifies a portion of a paragraph of the Project Manual, the remainder of the paragraph affected shall remain in force. Added information is shown as **Bold**, deleted information is shown as ~~striketrough~~.

This Addendum contains changes to the requirement of the Drawings. Such changes shall be incorporated into the Contract Documents and shall apply to work with the same meaning and force as if they had been included in the original Documents. Whenever this Addendum modifies a portion of any drawing, the remainder of the drawing affected shall remain in force. Added, deleted or revised information is shown as "clouded".

The conditions and terms of the basic Contract Documents shall govern work unless otherwise described in this Addendum. Whenever the conditions of work, and the quality or quantity of materials, or workmanship are not fully described in this Addendum, the conditions of work included in the basic Contract Documents for similar items of work shall apply to the work described in this Addendum.

If no similar items of work are included in the basic Contract Document, the best quality of material and workmanship shall apply and all work shall be subject to the written acceptance of the Architect.

THE BID OPENING DATE HAS BEEN CHANGED. ALL BIDS ARE DUE AT THE MAIN OFFICE OF THE CAB CALLOWAY SCHOOL OF THE ARTS, 100 NORTH DUPONT ROAD, WILMINGTON, DELAWARE 19807 UNTIL 3:30 PM LOCAL TIME ON TUESDAY JULY 9, 2013.

BIDDERS ARE ADVISED THAT THE ONLY RELIABLE SOURCE OF DOCUMENTS FOR THIS SOLICITATION IS THE EDIS FTP SITE. BIDDERS THAT RELY ON INFORMATION PUBLISHED ON ANY OTHER COMMERCIAL WEBSITES DO SO AT THEIR OWN RISK.

BIDDERS CAN CONTACT CRAIG HENRY TO SCHEDULE A SITE VISIT AT 302-753-2405

Addendum No. 3 – Consists of the following:

- I. Response to Bidders' Questions
- II. Revisions to Project Manual/Specifications
- III. Revisions to Drawings

I. RESPONSES TO BIDDERS' QUESTIONS

- A. A copy of the response to RFI No. 4, 8, 10, 13, 15, 19, 20, 22 & 24 is attached hereto.

II. REVISIONS TO PROJECT MANUAL/SPECIFICATIONS

A. SECTION 000110 – TABLE OF CONTENTS - Make the following pen and ink changes to this section and annotate these changes as Addendum No. 3.

1. ADD the following NEW specification sections:
- a) Section 23 07 30 – Terminal Heating and Cooling Equipment
 - b) Section 23 07 32 – Terminal Heat Pumps

B. SECTION 000115 – LIST OF DRAWINGS: Add the following NEW drawings to the list of drawings:

1. M-110 First Floor Mechanical Plans – Alternate #7

C. SECTION 004100 – BID FORMS

1. Contract B-5 – Demolition

- a) DELETE pages 004100-1 through 004100-7 in their entirety. INSERT revised pages 004100-1 through 004100-7 annotated Addendum No. 3. This revision adds Alternates No. 7A, 7B and 7C to the bid form.

2. Contract B-10 – Structural Steel & Miscellaneous Metals

- a) DELETE pages 004100-1 through 004100-7 in their entirety. INSERT revised pages 004100-1 through 004100-7 annotated Addendum No. 3. This revision adds Alternates No. 5 and 8 to the bid form.

3. Contract B-17 – Mechanical & Plumbing - Theater

- a) DELETE pages 004100-1 through 004100-7 in their entirety. INSERT revised pages 004100-1 through 004100-7 annotated Addendum No. 3. This revision adds Alternates No. 7A, 7B and 7C to the bid form.

4. Contract B-18 Electrical, Fire Alarm & Special Systems

- a) DELETE pages 004100-1 through 004100-7 in their entirety. INSERT revised pages 004100-1 through 004100-7 annotated Addendum No. 3. This revision adds Alternates No. 7A, 7B and 7C to the bid form.

5. Contract B-19 Testing, Adjusting and Balancing

- a) DELETE pages 004100-1 through 004100-7 in their entirety. INSERT revised pages 004100-1 through 004100-7 annotated Addendum No. 3. This revision adds Alternates No. 7A, 7B and 7C to the bid form.

D. SECTION 011100 – SUMMARY OF WORK

1. Contract B-07 – Carpentry and General Work

- a) ADD the following NEW items after item 7-32 on page 011100-17:

"7-33. Provide metal support brackets for countertops."

"7-34. Stain and finish all plywood and wood trim."

"7-35. Provide 5/8" veneer plywood, wood trim cap, and all associated hardware/stainless steel fasteners on removable pit railing along the front and sides of the orchestra pit."

"7-36. The 5/8" fire rated plywood shown on partition type G5 will be provided by Contract B-11 – Metal Studs and Drywall."

2. Contract B-08 – Masonry

- a) DELETE item 8-26 on page 011100-19 and INSERT revised item:

"8-26. Provide saw cutting, selective demo, disposal, temporary shoring and any relative masonry work at any new or reconfigured masonry openings per key notes 12, 39, and 40 on drawings A101, A102, and A103. Coordination with the mechanical, plumbing or electrical drawings is required."

- b) ADD the following NEW items after item 8-26 on page 011100-19:

"8-27 Provide L5x4x1/4"x 6" long steel angles at 4'-0" on center, staggered each side of the masonry walls as detailed on drawing A-002."

"8-28 Saw cut on both side of columns – saw cut through 8" CMU only. Provide sealant type 1 with backer rod per key note 2 on drawings A-111, A112, and A113."

3. Contract B-11 – Metal Studs and Drywall

- a) ADD the following NEW item after item 11-16 on page 011100-26:

"11-17 Provide the 5/8" fire rated plywood shown on partition type G5."

4. Contract B-12 – Painting

- a) DELETE item 12-4 on page 011100-27. The staining and finishing of wood trim is being assigned to Contract B-07 Carpentry and General Work.

- b) ADD the following NEW item after item 12-19 on page 011100-28:

"12-20 Paint wood stage floor"

5. Contract B-18 – Electrical, Fire Alarm & Special Systems

- a) ADD the following NEW item after 18-29 on page 011100-39:

"18-30 The Electrical Contractor will make final connections for the aisle lighting furnished with the auditorium seating."

E. SECTION 012300 – ALTERNATES – DELETE this section in its entirety and INSERT revised section annotated Addendum No. 3, dated 27 June 2013.

F. SECTION 11 61 23 – ORCHESTRA PIT FILLER SYSTEM

1. Page 6, Article 3.02 Standard Manufactured Components: INSERT item 3.02.E after item 3.02.D:
“E. Additional Items
 1. Add a performance level position 1/2 way between the orchestra pit floor and the auditorium floor level.
 2. Provide one set of 4'-0" wide steps with handrail up to this level from the pit floor, and one set of 4'-0" wide steps with handrail down to this level from the auditorium floor.
 3. Provide a 42" high removable railing assembly, attached to the platform, adjacent to the closure panel at the stage, across the rear of the platforms.”

G. SECTION 12 61 16 – FIXED AUDIENCE SEATING

1. Page 1, Article 1.02, REVISE sentence to read:
“A. Deliver and install fixed and movable seats as specified, with self-lifting seat which rises to a ¾ safety fold position and can be pushed back to full fold.”
2. Page 1, Article 1.02, ADD new paragraph:

“B. Layout shown on Drawing 1-121 is for design intent only. Provide seats as follows:
 - a. Provide a total of 990 fixed seats, approximately 10 of which will be knock-down for extra parts.
 - b. Provide a total of 38 movable seats on 16 bases.
 - c. Provide up to 8 retractable armrests at end of aisle. (location to be determined)”
3. Page 3, Article 2.03.A, ADD the following sentence:

“For pre-approved products in 1: Where gauges and details of construction vary from minimums listed in this specification, manufacturer’s standards are acceptable.”
4. Page 3, Article 2.03.C.2, REVISE sentence to read:
“2. LED aisle lights – provide at each row. Seat manufacturer to provide transformers as required.”
5. Page 4, Article 2.03.I, REVISE article as follows:
“I. Approved Fabrics
 1. Guildford-of-Maine Grade J Pattern Open House
 2. Absecon Mills Grade F Pattern Sherpa
 3. Colors to be selected from manufacturer’s standard colors and patterns.”

H. SECTION 23 04 50 – REFRIGERATION EQUIPMENT – HVAC

1. Page 1, Article 1.2.A: Insert the following:
“4. Condensing Unit (10 to 20 Tons)”

2. Page 9, Article 2.4: Insert the following:
"2.9 CONDENSING UNIT (10-20 Tons)
 - A. General:
 1. Furnish air-cooled condensing unit with hot gas bypass in accordance with the performance schedule shown on the plans.
 2. Install them as shown on the plans in accordance with:
 - The manufacturer's recommendations and
 - All applicable national and local codes.
 3. UL (CSA) approved.
 4. Leak, pressure and functionally tested at the factory to assure a trouble-free start-up after installation.
 5. In current production with published literature available to check performance, limitations, specifications, power requirements, dimensions, operation and appearance.
 - B. Unit Enclosure:
 1. A steel angle frame to provide the rigid support required for shipping, rigging and years of dependable operation.
 2. Exterior panels of 18-gauge galvanized sheet steel which have been bonderized and finished with baked enamel to provide a long-lasting quality appearance.
 3. Removable panels to provide easy access to all internal components for maintenance, service and adjustment.
 - C. Each compressor shall be mounted on spring isolators and shall be enclosed in a separate compartment to minimize the transmission of sound and vibration.
 - D. Condenser Coils:
 1. Shall be draw-thru, with manufacturer's standard wire guards.
 2. Shall be constructed of copper tubes arranged in staggered rows and mechanically expanded into aluminum fins, and
 3. Shall have a separate circuit which will provide at least 19 degrees F of liquid sub-cooling at design conditions.
 - E. Condenser Fan Motors:
 1. Shall be directly connected to the condenser fans,
 2. Shall have permanently lubricated ball bearings, and
 3. Shall have inherent overload protection.
 4. Motors shall be of the permanent split-capacitor type.
 5. Condenser fans shall be arranged for vertical discharge of the condenser air, with manufacturer's standard wire guards.
 - F. Remote Indoor Evaporator:
 1. Provide single pass, ANSI Type 316 stainless steel brazed plate design or shell and tube type evaporator, seamless or welded steel construction with cast iron or

fabricated steel heads, seamless internally finned copper tubes, roller expanded into tube sheets.

2. Design, test, and stamp refrigerant side working pressure and water side working pressure, in accordance with ANSI/ASME Code at:

Heat Exchanger	Evaporator
Brazed Plate	
Refrigerant Side	430 psig
Water Side	300 psig

3. Insulate with 0.75 inch minimum thick flexible elastometric rubber closed cell insulation with maximum K value of 0.26.

4. Provide water drain connection, vent and fittings for factory installed leaving water temperature control and low temperature cutout sensors.

5. Water connections shall be flanged or mechanical grooved. Evaporator shall have only one entering and one leaving connection. If manufacturer provides 2 separate evaporators, contractor shall provide manifold and pressure gauges to ensure equal flow is provided to each evaporator.

G. The wiring for each unit shall include:

1. A crankcase heater (one per compressor).
2. A 24-volt temperature control circuit.
3. High and low pressure circuits.
4. Condenser fan motor controls to assure stable operation of ambient temperatures down to 0 degrees F.
5. Condenser fan and compressor contactors factory wired to pressure lugs or terminal block for power wiring.
6. Factory mounted and wired fused disconnect switch.

H. The refrigerant piping for each system shall include:

1. A strainer-drier,
2. A moisture indicating sight glass, and
3. Service access valves.

The strainer-drier and sight glass may be shipped separately for field installation.

I. Manufacturers: York, Carrier, Trane, Lennox, McQuay.

1. Any listed equivalent manufacturer and the Mechanical Contractor shall be completely responsible to comply with all requirements on the contract documents. This shall include, but not be limited to, space requirements, code clearances, the type, horsepower, capacities, number and size of services required from other trades."

I. SECTION 23 05 00 – PIPING SYSTEMS & ACCESSORIES - HVAC

1. Page 1, Article 1.2.A: Insert the following:
“10. In-Line Circulator Pumps”

2. Page 4, Article 2.4: Insert the following:
“2.4.A AIR SEPARATORS (INLINE TYPE)
A. Closed circulating water system shall have air separators provided in piping at:
 1. Outlet side of heat exchangers.
 2. Suction side of circulating pumps.
 3. Air relief connection compression tanks.
B. Provide air separators pressure rated for 125 psi. Select capacity based on total system gpm.

C. In-Line Air Separators: Construct sizes 1-1/2" and smaller of cast iron; and sizes 2" and larger of steel.

D. Manufacturers: Provide air separators of one of the following:
Armstrong
Bell & Gossett
Patterson
Taco, Inc.
Thrush Div., Amtrol, Inc.
Wheatley
John Woods”

3. Page 6, Article 2.10: Insert the following:
“2.10 IN-LINE CIRCULATOR PUMPS
A. Provide in-line circulator pumps where indicated, and of capacities as scheduled.

B. End suction with vertically split casing, close coupled, single stage, designed for 175 psi working pressure.

C. Cast iron body, 125 psi ANSI flanges of equal size, tappings for gauge and drain fittings.

D. Steel shaft with replaceable shaft sleeve and standard mechanical seal with ceramic seal seat.

E. Enclosed type impeller hydraulically and dynamically balanced, keyed to shaft and secured with locking screw.

F. Manufacturers: Subject to compliance with requirements, provide pumps of one of the following:

Armstrong Pumps
Aurora
Bell & Gossett
Ingersoll Rand
Peerless
Patterson
Paco
Taco"

J. SECTION 23 06 05 – FANS

1. Page 1, Article 1.2.A: Insert the following:
"3. Booster Fan"

2. Page 3, Article 2.3: Insert the following:
"2.3 BOOSTER FAN
A. Booster fan shall consist of a round, high impact plastic housing enclosing a backward inclined wheel directly driven by an external rotor motor.

B. Motor and fan shall be totally enclosed, permanently sealed bearings, variable speed adjustable.

C. The casing shall be maintenance free.

D. Provide electronic speed controller as scheduled on the drawings.

E. Unit shall be U.L. listed.

F. Manufacturers: Tjernlund, Fan Tech."

K. SECTION 23 07 30 – TERMINAL HEATING AND COOLING EQUIPMENT

1. Insert New section attached.

L. SECTION 23 07 32 – TERMINAL HEAT PUMPS

1. Insert New section attached.

M. SECTION 23 07 60 – AIR HANDLING EQUIPMENT

1. Page 1, Article 1.2.A: Insert the following:
"3. Air Handling Units (Modular, Sectional Type)"

2. Page 9, Article 2.3: Insert the following:
"2.3 AIR HANDLING UNITS (MODULAR, SECTIONAL TYPE)
A. The air handling units for central station air conditioning shall be sectional - component type. Components shall include fan section, heating coil section, access section(s) cooling coil section, drain pan, double wall construction, filter/mixing box and air filters.

1. All segments shall be double wall construction and shall be constructed of G90 mill galvanized sheet steel, formed and reinforced to provide a rigid assembly.
2. The exterior casing shall be constructed of minimum 18-gauge galvanized steel.
3. The interior lining shall be a perforated lining of a minimum of 20 gauge. units with double wall construction must have a full 2" (non-compressed) insulation throughout the entire unit.
4. All panels shall be insulated with 2" – 1.5# fiberglass insulation. The insulation shall meet the flame and smoke generation requirements of NFPA-90A.
5. All panels shall be completely gasketed prior to shipment with a minimum of ¼" thick and ¾" wide closed cell neoprene.
6. All access panels shall be completely removable for unit access and removal of components. All access panels must be removable without the use of electricity or compressed air. Panels will be removable with a hex wrench, or built-in latching handle.
7. Double wall access doors shall be provided in the fan and filter segments on the motor side of the unit. Access doors must also be provided in all segments where the removal of sheet metal screws is required for unit access. Doors shall be of the same thickness and construction as the wall panels. A bulb type gasket shall be provided around the entire door perimeter. Industrial style hinges shall permit a complete 180 degree door swing. A door stop will be provided on all positive pressure doors.
8. The exterior of the unit shall be completely cleaned prior to application of finished coats. A prime coat of epoxy chromate shall be applied to a minimum thickness 1.5 mils.

B. The fan section shall consist of a rectangular steel cabinet, incorporating single or multiple centrifugal fans mounted on a cold rolled steel shaft which shall rotate in grease lubricated ball bearings. The fans shall be multi-blade forward, backward inclined or air foil as required by operating conditions shown in schedules. Fan ratings shall be based on AMCA Standards 210 and 300. Fans shall bear the AMCA seal.

1. Fan and fan motor shall be internally mounted and isolated on a full width isolator support channel using 1" springs. The fan discharge shall be connected to the fan cabinet using a flexible connection to ensure vibration-free operation. The isolator support rail shall be structurally supported from the unit base.
2. Fan motors shall be NEMA design ball bearing type with electrical characteristics and horsepower as specified on the schedule. Motors shall be 1750 RPM, open drip proof type. All motors shall be high efficiency.
3. The motor shall be mounted on the same isolation base as the fan. The motor shall be on an adjustable base.
4. Fan bearings shall be self-aligning, pillow block or flanged type regreaseable ball bearings and shall be designed for an average life (AFBMA L50) of at least

200,000 hours. All bearings shall be factory lubricated and equipped with standard hydraulic grease fittings and lube lines extended to the motor side of the fan.

5. Fan drives shall be selected for a 1.5 service factor and anti-static belts shall be furnished. All drives shall be adjustable pitch.

6. Fan shafts shall be selected to operate well below the first critical speed and each shaft shall be factory coated after assembly with an anticorrosion coating.

C. The fan shaft shall be motor driven through a Vee-belt drive. The drive assembly shall be designed for not less than 150% of the motor ampere rating. Adjustment of belt tension shall be by means of an adjustable motor base. The drive assembly shall conform to A.R.I. Standard 435-78. The drive sheave shall be variable pitch type where it falls between limits of A.R.I. Standard 435-78. Outside the established limits, an initial and a final set of fixed drives shall be required. Fan motors shall have copper windings.

D. Heat transfer coils shall be non-ferrous tube-in-fin type. The tubes shall be seamless copper with a wall thickness not less than 0.024 inch. The fins shall be rectangular plate type of aluminum with a thickness of not less than 0.009 inch. The tube openings in the fins shall be die-formed to provide a spacing collar between adjacent fins. The tubes shall be mechanically expanded with the fins to form a tight permanent mechanical joint. The tubes shall be silver-alloy brazed into heavy wall thickness copper or brass tubular headers.

1. All coils shall be installed on tracks for easy removal from the air handling unit. Units that require disassembly of the unit for coil removal are not acceptable.

2. Drainable water coils shall be designed to operate at 250 psig design working pressure and up to 300°F and shall be tested with 325 psig compressed air under water. Circuiting shall provide free and complete draining and venting when installed in the unit. All vent and drain connections shall be extended to the outside of the unit casing.

3. Coils shall be circuited for counter flow of air and water. All coils must have same end connections regardless of the number of rows deep.

4. Coil casing to be constructed of 16-gauge galvanized steel. Intermediate casing supports shall be supplied for finned lengths that exceed 60".

5. The primary surface shall be ½" O.D. copper tube, staggered in direction of air flow. Tubes shall be mandrel expanded to form fin bond and provide burnished, work-hardened interior surface.

6. Extended surface shall consist of die-formed, continuous, aluminum fins. The fins shall have fully drawn collars to accurately space fins, and to form a protective sheath for the primary surface.

7. Headers shall be of heavy seamless copper tubing, silver-brazed to tubes. Connections shall be of red brass, with male pipe threads, silver-brazed to the headers. A ¼" FPT, plugged, vent or drain tap will be provided on each connection.

8. Coil grommets shall be provided on all coils to completely seal the area between the coil connection and the unit casing.

E. Hot water heating and chilled water coils shall have tube diameters of approximately 1/2 inch, and shall be arranged in the required serpentine circuits. The assembled coils shall be pressure tested at 400 psig hydrostatic pressure and 200 psig air under water.

F. The cooling coil section shall be provided with an extra heavy gauge drain pan sloping to drain outlets. The drain pan shall be insulated and finished or coated with waterproof and rust resistant material.

G. Air filters shall be 2 inches thick arranged in modular sized to be readily removable through a hinged access door. Air filters shall be throwaway type.

1. Flat pre-filter segments shall accommodate 2" media, MERV 8.
2. The filter frames shall be constructed of galvanized steel and be built as an integral part of the unit. All filter segments shall be side service with an access door on the drive side of the unit.
3. A magnahelic differential pressure gauge shall be factory installed and flush mounted on drive side to measure the pressure drop across the prefilter and high efficiency filters.

H. The exterior and interior of the casing shall receive a rust and corrosion resistant finish.

I. Air handling unit shall be provided with a 6" base rail to support unit.

J. The air conditioning units shall be manufactured by: American Air Filter, Carrier Corporation, USA Coil & Air, Trane Company, York/Johnson Controls.

1. Any listed equivalent manufacturer and the Mechanical Contractor shall be completely responsible to comply with all requirements on the contract documents. This shall include, but not be limited to, space requirements, code clearances, the type, horsepower, capacities, number and size of services required from other trades."

N. SECTION 23 09 00 – AUTOMATIC TEMPERATURE CONTROLS (DDC)

1. Page 6, Article 2.8: Insert the following:

"J. ADMINISTRATION AREA CHILLED WATER PLANT (ALTERNATE #7A)

1. The BAS shall provide a signal to the required plant equipment on a call for chilled water.

- a. The chilled water plant consists of a two-piece chiller with the remote evaporator EVAP-1 and air-cooled condenser/compressor unit ACC-5 outdoors, two pumps P-3 and P-4 piped in a lead/lag arrangement, and auxiliaries.

2. The following items shall be available for display at the OWS:
 - a. Graphical display of the system and related piping.
 - b. Global outside air temperature.
 - c. Chilled water system supply and return temperatures.
 - d. Equipment status/alarms.

3. Chilled Water System Control:

This system shall be activated and controlled by the OWS. Once activated, and subject to a flow switch in the leaving water line at the evaporator, the chiller shall start and sequence through its factory controls to maintain leaving water temperature at 42°F, adjustable.

The following items shall be available for display at the OWS:

- a. Graphical display of the chiller, pumps, piping layout and temperature control devices with dynamic display of each status, temperature, etc.
- b. Chilled water discharge and return temperature.
- c. Up to 3 alarms/status points for the chiller.
- d. Chilled water discharge temperature reset.
- e. Chiller on/off command.

4. Loop Pumps Control:

All loop pumps shall be controlled directly by the OWS. Rotate lead pump on a minimum weekly basis or as reset manually at the OWS. Lead loop pump shall start and run continuously when the heating or cooling system is activated by the OWS. When lead pump fails to start once activated, initiate an alarm to the system after a twenty second delay. Monitor flow status of each pump with a current sensor on one leg of power feeding the pump motor.

The following items shall be available for display at the OWS:

- a. Designated lead and lag pump.
- b. Flow status/alarm.
- c. Commanded status of each pump – on/off.
- d. Loop discharge and return temperature.
- e. Diagram showing the layout of the equipment with major components and dynamic temperatures shown where temperature sensors exist in the system.

5. Make-Up Water Monitoring System Control

- a. Provide system control for the make-up water serving each of the heating and cooling systems in the Energy Plant.
- b. Provide a water flow meter on the make-up water supply. When the measured flow exceeds 10 gallons/minute, adjustable, close the normally open solenoid valve, generate an alarm at the OWS, and signal the Energy Plant System controls to shut down the boilers, pumps, chiller, and auxiliaries affected.

- c. Flow sensor, consisting of a removable flow sensor mounted in a cast-bronze housing, available in 1/2" to 1-1/2" pipe size. Sensor shall be rated for a flow range of 0.5 to 15 feet per second, 220°F max., 400 psig at 100°F maximum pressure; Nylon impeller, Pennlon bearing, tungsten carbide shaft, PPS housing and EPDM seals. Manufacturer: Kele Model 250B.
- d. Programmable analog flow transmitter shall be a loop-powered device that converts a flow sensor signal into a linear 4 – 20mA signal, with electronic signal dampening, computer programmable, and compact size in a metal enclosure. Power input, 9-35 VDC/0-1 kHz, 75 ohms at 24 VDC, accuracy of 0.1% of full scale. Manufacturer: Kele Model 310-02.
- e. The following items shall be displayed at the OWS:
 - (1) Water flow in gallons per minute.
 - (2) Command signal to the valve.
 - (3) High flow/equipment shut down alarm.

6. Refrigerant Monitoring System RMS-1 Control:

- a. This system consists of a refrigerant monitor and air sampling sensors mounted in the Mechanical Room A801. The Mechanical Contractor shall provide the monitor. ATC shall provide terminal devices, all functions, and the following interlocks.
- b. Whenever the monitor goes into high-level alarm, activate alarm horn and strobe light at each door into MER A801. Provide horn reset switch at each door to allow the horn to be silenced, while strobe light continues to flash until the system is reset.
- c. Activate exhaust fan EF-D4 after motor operated exhaust damper is open subject to damper limit switch. When fan fails to start once activated, initiate an alarm to the system after a twenty second delay. Monitor fan status with a current sensor on one leg of power feeding the fan motor. Calibrate sensor for motor full load/no load amps. Open outside air damper at OAI-D4. Provide motor operated dampers and actuators for control of exhaust air and outside air.
- d. Exhaust fan shall continue to run until the monitoring system resets. Once reset, the exhaust fan shall stop, dampers shall close, and the strobe lights shall turn off.
- e. Provide alarm and system status at the OWS with remote alarm call out through the building Fire Alarm System as directed by the Owner's representative. Coordinate interface with the FAS Contractor.

K. Fan Coil Unit Control (FCU-1) (Alternate #7A)

- 1. Provide an individual DDC Controller for unit. The DDC Controller shall be wired to a space temperature sensor with setpoint adjustment and override switch. Provide a 24-volt control transformer and all sensors required for operation, monitoring, and control. Provide a 3-way control valve and actuator for each coil for installation by the Mechanical Contractor.
- 2. During the programmed occupied mode, the fan shall run continuously.

- a. Provide motor operated damper and actuator for control of outside air for ventilation. Damper shall open fully during the occupied mode and remain closed during the unoccupied mode. Energize O.A. supply fan.
 - b. Heating mode: On a fall in space temperature below the programmed heating setpoint of 70°F, adjustable, the heating coil control valve shall modulate open to the coil. On a rise in space temperature, the valve shall modulate closed. The valve shall be under further to prevent damage to the unit's components. Provide an alarm at the OWS if the discharge air temperature rises above the high limit setpoint.
 - c. Cooling mode: On a rise in space temperature above the programmed cooling setpoint of 75°F, adjustable, the cooling coil control valve shall modulate open. On a fall in space temperature, the valve shall modulate closed to the coil.
3. During the programmed unoccupied mode, the fan shall cycle and the control valves shall modulate in sequence to maintain the programmed unoccupied space temperature setpoints of 60°F (heating) and 85°F (cooling), all adjustable.
 4. If the discharge temperature fails to rise to a programmed minimum temperature during a call for heating, a low temperature alarm shall be activated at the OWS. If the discharge temperature fails to fall to a programmed minimum temperature on a call for cooling, a high temperature alarm shall be activated at the OWS.
 5. Provide a current sensor on one phase of power feeding the supply fan for status indication at the OWS.
 6. Provide a condensate sensor in the auxiliary drain pan below the unit. When condensate is detected in the pan, close the cooling coil control valve, deactivate the unit supply fan, and provide an alarm at the OWS.
 7. When the low limit thermostat (freeze stat) trips, de-energize the supply fan, chilled water control valve, hot water control valve, and damper motors. When de-energized the damper motors shall spring return the outside air damper closed, the hot water control valve shall fail open to the coil. When the freeze stat trips, an alarm shall be generated at the OWS. Serpentine the element across the downstream face of the heating coil. Set at 40°F.
 8. Interface with a common fire alarm input from the fire alarm system. The fire alarm contact shall be provided at the fire alarm panel by the Fire Alarm Contractor. The status of the alarm contact shall be communicated throughout the BAS. When the fire alarm contact indicates an alarm condition, the BAS shall de-energize the unit. When de-energized, the damper motor shall spring return the outside damper closed. Provide an alarm at the OWS to indicate fire alarm status.
 9. The following items shall be displayed at the OWS:
 - a. Global outside air temperature.

- b. Space temperature.
- c. Space temperature setpoint.
- d. Discharge temperature.
- e. High and low limit discharge air setpoints.
- f. Commanded status of fan.
- g. Operational status of fan via current sensor.
- h. Low discharge temperature alarm.
- i. High discharge temperature alarm.
- j. Condensate alarm.
- k. Low limit alarm.
- l. Diagram showing the layout of the unit with major components and dynamic temperatures shown where temperature sensors exist in the system.

L. Hydronic Fin Tub Radiation Control (FT-A) Chorus Room (Alternate #7B)

1. The hydronic fin tube radiation shall be controlled as the first stage of heat. The control valves will be controlled based on an outdoor reset schedule. The sections shall be further under control of a high limit setpoint which is based on the space temperature sensor in the space. On a rise in space temperature above the high limit setpoint, the control/isolation valve shall be closed.
2. The normally open isolation / control valve shall be of the modulating type and shall include a spring return fail safe feature.
3. When the central plant is in the cooling mode, the control/isolation valve shall remain in the closed position.
4. The following items shall be displayed at the Operator's Terminal:
 - a. Diagram showing the layout of the building floor plan showing the location of all heat FTR sections, control/isolation valves and relates space temperature sensors.
 - b. High limit space temperature setpoints.
 - c. Heating / Cooling mode – switch and status

M. Vertical Heat Pump with De-Humidification and Energy Recovery Ventilator (VHP-1 and VHP-2) (Alternate #7B)

1. Each heat pump shall be directly controlled by a dedicated DDC Controller. The DDC Controller shall directly control the heat pump fan, compressor and reversing valve to maintain heating and cooling setpoints. The DDC Controller shall also provide a dry contact to activate the units' de-humidification sequence and to activate / deactivate the energy recovery sequence of the unit. The DDC Controller shall be wired to a wall mounted temperature sensor with override switch, setpoint adjustment and service tool jack as well as a space humidity sensor.

2. During the programmed occupied mode, the fan and energy recovery ventilator function shall run continuously. The DDC Controller shall cycle the compressor and reversing valve to maintain heating and cooling setpoints.
3. The DDC Controller shall vary the compressor "On" duty time, within ten minute cycles, to maintain the heat anticipator feature of a conventional thermostat and incorporate proportional plus integral control action.
4. During the unoccupied mode, cycle fan with compressor to maintain unoccupied space temperature as required for energy conservation. The energy recovery sequence shall remain deactivated.
5. Provide heat pump discharge temperature sensor downstream of each heat pump. Provide diagnostic functions at operator's terminal to allow operator to view current discharge temperature of the heat pump, temperature obtained during last heating mode and during last cooling mode separately.
6. Provide automatic heat pump alarm at terminal if discharge temperature fails to rise above high alarm setpoint when in heating. Also generate alarm if discharge temperature fails to go below low alarm setpoint if heat pump is in cooling. High and low alarm setpoints shall be set on a zone by zone basis. Provide delay time before alarm is generated.
7. Provide internal safety timers to provide a minimum one minute ON and one minute OFF time for compressors and fan. Compressor to be ON only when fan is ON. Turn off compressor if an operational alarm is detected.
8. On a rise in space humidity level above the adjustable setpoint, the unit's dehumidification sequence shall be activated via a dry contact from the BAS. On a fall in space humidity level below the adjustable setpoint the unit's dehumidification sequence shall be de-activated. Provide an alarm if the space humidity rises more than 5% above the dehumidification setpoint.
9. The following items shall be displayed at the Operator's Terminal:
 - a. Diagram showing the layout of the building floor plan showing the location of all heat pumps and space temperature sensors.
 - b. Cooling and heating temperature setpoints.
 - c. Space humidity level.
 - d. Space humidity setpoint.
 - e. Occupied / unoccupied mode.
 - f. Discharge air temperature.
 - g. Operational alarms indicated above.
 - h. Percentage of call for heating.
 - i. Percentage of call for cooling.
 - j. Call for dehumidification sequence.

k. Call for energy recovery ventilation

N. Administration HVAC Unit Control:

1. The sequence that follows is for unit AHU-1. The unit shall consist of a supply fan, chilled water cooling coil, hot water heating coil, filters and economizer with motor operated dampers to control return air and outside air.

a. The unit is a constant volume system with minimum outside air and economizer mode of operation.

b. Provide actuators for the return air, outside air and relief air dampers.

2. The unit shall be controlled by an individual DDC Controller. The DDC Controller shall be wired to the coil discharge air temperature sensors, unit discharge air temperature and humidity sensor, return air temperature and humidity sensor, outside air temperature and humidity sensor, mixed air temperature sensor and freeze-stat.

3. The DDC Controller and required sensing and control devices shall be provided for the unit for field installation and wiring. The equipment manufacturer shall provide wiring diagrams for the equipment. Provide wiring diagrams to the equipment manufacturer, detailing installation and wiring requirements for the DDC Controls. The BAS wiring diagrams will also detail connections from the DDC Controller to the equipment terminal blocks.

4. The following items shall be provided by the equipment manufacturer:

a. Dampers for the mixing box

5. The following items shall be provided by the BAS Contractor and field installed in the equipment:

a. DDC Controller

b. Unit discharge air temperature and humidity sensors

c. Heating and cooling coil discharge air temperature sensors

d. Return air temperature and humidity sensors

e. Control valves and actuators

f. Current sensor for one phase of power feeding the supply fan

g. Manual reset freeze-stat

h. Actuators for all dampers

i. Control transformers

j. Terminal blocks for all wiring connections between equipment and control devices

6. During the scheduled occupied mode, the supply fan shall run continuously with the outside air and relief air dampers closed. Each fan shall ramp up to full speed during the changeover cycle. When fan fails to start once activated, initiate an alarm to the system after a twenty second delay. Monitor fan status with a current sensor on one leg of power feeding the fan motor.

7. During the morning warm up period, the outside air damper and relief damper shall remain closed and the heating coil shall open to maintain fan discharge air setpoint until the return air temperature is 70 deg. F (adj.).

8. During the occupied mode, upon a drop in discharge air temperature below 55 deg. F (adj.) as sensed by the discharge air sensor, the chilled water control valve shall modulate closed. Whenever the mixed air temperature falls below setpoint, the heating coil shall open on to maintain leaving air temperature at 55 deg. F (adj.).

9. During the scheduled unoccupied mode, the supply fan, chilled water coil and heating coil shall cycle/modulate to maintain the programmed unoccupied setpoint of 60 deg. F (heating) and 85 deg. F (cooling) adjustable. The outside air damper and relief damper shall remain closed. Unless required for economizer cycle, the outside air and relief air dampers shall remain closed with the return air damper fully open.

10. On a call for cooling or heating the fan, chilled water cooling system, and heating coil shall cycle to maintain unoccupied discharge temperature setpoint.

11. The economizer sequence shall be activated on a call for first stage of cooling. Economizer mode: when outdoor enthalpy, as sensed by the global outside air temperature and humidity sensor, is 21 Btu/lb. (adj.), the outdoor air and relief air dampers shall modulate open while the return air damper modulates closed proportionately. The mixed air temperature sensor shall modulate outside, return and relief air dampers to maintain a minimum mixed air temperature of 55 deg. F (adj.).

12. Provide a manual reset freezestat on the discharge side of the hot water preheat coil. On a drop in temperature below 40 deg. F (adj.), de-energize the supply fan, return fan, coil control valve and damper motors, and energize the electric heater. When the freezestat trips, a low limit alarm shall be displayed at the OWS.

13. The BAS shall interface with a "Global" fire alarm input from the fire alarm system (FAS). The fire alarm contact shall be provided to the BAS from the fire alarm panel by the fire alarm system vendor. The status of the alarm contact shall be communicated throughout the BAS. When the fire alarm contact indicates an alarm condition, the BAS shall de-energize the supply fan, return fan and damper motors. When de-energized, the damper motors shall spring return all of the air dampers closed. Provide an alarm at the OWS to indicate fire alarm status.

14. Duct smoke detectors shall be installed in the supply and return air ducts at the unit as part of the work of Division 15. The detectors shall be furnished and wired to the fire alarm system as part of the work of Division 16. The duct smoke detector shall alarm through the FAS, which shall provide a signal to the BAS to de-energize the supply fan, return fan, chilled water control valve, electric heater and damper

motors. When deenergized the damper motors shall spring return all of the air dampers closed. When the smoke detectors trip, an alarm shall be generated at the OWS.

15. The following shall be displayed at the Operator's Terminal:
- a. Discharge air temperature and humidity.
 - b. Coil discharge air temperature.
 - c. Discharge air temperature setpoints.
 - d. Commanded status of mixing box dampers and relief damper.
 - e. Supply fan operational status/alarm via current sensor.
 - f. Discharge static pressure.
 - g. Discharge static pressure setpoint.
 - h. Discharge static pressure high limit alarm.
 - i. Command position of chilled water control valve.
 - j. Mixed air temperature.
 - k. Mixed air temperature setpoint.
 - l. Return air temperature, humidity and enthalpy.
 - m. Outside air temperature, humidity and enthalpy.
 - n. Economizer enabled/disabled status.
 - n. High/low discharge air temperature.
 - o. Freeze stat status/alarm.
 - p. Smoke detector status/alarm.
 - q. Fire alarm system status/alarm.
 - r. Diagram showing the layout of the equipment with major components and dynamic temperatures shown where temperature sensors exist in the system.

O. H&V Units' Control: (Alternate #7C)

1. The sequence that follows is for unit HV-1 serving the Boy's Locker Room. Unit consists of a supply fan, hot water heating coil, coil face & by-pass dampers, access section, filters, outdoor air damper
2. Provide a motor-operated dampers and actuators for control of face & by-pass and outside air.
3. Provide 2-way, 2-position control valve and actuator for the heating coil.
4. The BAS shall maintain occupied/unoccupied periods according to its programmed schedule.
5. During the unoccupied mode, the supply fan shall de-energize. When fan is proven off, outdoor air damper shall close. Supply fan and outdoor air damper shall cycle, and the face and by-pass damper valve on the heating coil shall modulate to maintain space temperature at 60 degrees F, adjustable. Upon a demand for heating or whenever the outdoor air is below 45 degrees F, adjustable the heating coil 2-

position valve shall open. If the space temperature falls below 40 degrees F, the BAS shall generate an alarm at the OWS.

6. During the occupied mode, the outside air damper shall open. When damper is proven open the fan shall start and run continuously. The face and by-pass damper valve on the heating coil shall modulate to maintain space temperature at 70 degrees F, adjustable. Upon a demand for heating or whenever the outdoor air is below 45 degrees F, adjustable the heating coil 2-position valve shall open. If the space temperature falls below 55 degrees F, the BAS shall generate an alarm at the OWS.

7. Room sensor shall open the heating coil control valve full to coil and modulate the face & by-pass to maintain temperature.

a. Low limit control on the down-stream face of the heating coil shall stop the unit, close all dampers and open unit coil control valve full to the coil whenever the temperature off of the heating coil is at or below 40 deg. F (adj.).

b. When the freezestat trips, deenergize the supply fan, return fan and damper motors. When deenergized, the damper motors shall spring return the outside air and exhaust air dampers closed, and the control valve on the heating coil shall open full to the coil. When the freezestat trips, an alarm shall be generated at the OWS.

8. The BAS shall interface with a "Global" fire alarm input from the fire alarm system (FAS). The fire alarm contact shall be provided to the BAS from the fire alarm panel by the fire alarm system vendor. The status of the alarm contact shall be communicated throughout the BAS. When the fire alarm contact indicates an alarm condition, the BAS shall de-energize the supply fan and outdoor air damper motors. When de-energized, the damper motor shall spring return the outside air damper closed. Provide an alarm at the OWS to indicate fire alarm status.

9. Duct smoke detectors shall be installed in the supply air at the unit as part of the work of Division 15. The detectors shall be furnished and wired to the fire alarm system as part of the work of Division 16. The duct smoke detector shall alarm through the FAS, which shall provide a signal to the BAS to de-energize the supply fan and damper motors. When de-energized the damper motor shall spring outside air damper closed. When the smoke detectors trip, an alarm shall be generated at the OWS.

10. The following items shall be displayed at the OWS:

- a. Space temperature.
- b. Commanded status of fans.
- c. Command status of heating coil valve
- d. Fan operational status/alarm via current sensor.
- e. Face & by-pass damper position.
- e. Smoke detector status/alarm.
- f. Low limit alarm.

g. Diagram showing the layout of the equipment with major components and dynamic temperatures shown where sensors exist in the system.

O. SECTION 26 55 31 STAGE LIGHTING SYSTEMS

1. See clarification listed for Drawing TL-100 below.

P. SECTION 27 41 18 SOUND & VIDEO SYSTEM

1. Add/replace section with the one attached of the same name. See responses to RFI 24

II. REVISIONS TO DRAWINGS

A. A-101 SECOND FLOOR DEMOLITION PLAN : REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

B. A-102 MEZZANINE DEMOLITION PLAN:

1. Add plan A1 shown on sketch A-707.

C. A-103 THIRD FLOOR DEMOLITION PLAN: REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

D. A-113 THIRD FLOOR PLAN: REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

E. A-114 ROOF PLAN: REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

F. A-121 SECOND FLOOR REFLECTED CEILING PLAN: REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

G. A-406 SPIRAL STAIR PLANS & DETAILS: REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

H. A-503 CASEWORK LOCKER ELEVATIONS & DETAILS :

1. Add Detail C1 – See attached sketch A-705
2. Add Detail D1 – See attached sketch A-706

I. A-506 ROOFING DETAILS : REPLACE drawing in its entirety with attached drawing annotated Addendum No. 3, dated 06-26-13.

J. I-111 INTERIOR SECOND FLOOR FINISH PLAN ; BASE BID:

1. REPLACE Detail E6 with revised detail shown on sketch A-704.

K. S-104 ROOF FRAMING AND GRID IRON FRAMING:

1. MODIFY Detail 2 on S-104 with Detail 2 on Sketch S-705 attached.

L. S-108 SECTIONS:

1. MODIFY Section 7 on S-108 with Section 1 on Sketch S-705 attached.

M. S-109 SECTIONS:

1. ADD Details 3 & 4 on Sketch S-705 attached.

N. P-100 PLUMBING & FIRE PROTECTION LEGEND, NOTES & SCHEDULES:

1. Add Fixture F-14 to schedule. Refer to attached Sketch SKP-702.

O. P-101 FIRST & SECOND FLOOR DEMOLITION & NEW WORK PLUMBING:

1. Add Demolition of roof drains, piping, & slab. Refer to attached Sketch SKP-700.

P. P-111 SECOND FLOOR PLUMBING PLANS:

1. Add roof drains and piping. Refer to attached Sketch SKP-701.

Q. M-101 SECOND FLOOR MECHANICAL DEMOLITION (ALTERNATE #7B)

1. Demolition of (2) Existing Heat Pumps. Refer to attached Sketch # M-704

R. M-103 CATWALK & ROOF MECHANICAL DEMOLITION (ALTERNATE #7C)

1. Demolition of Boy's Locker Room Unit. Refer to attached Sketch #705.

S. M-110 FIRST FLOOR MECHANICAL PLAN: INSERT NEW drawing annotated Addendum No. 3, dated 06-26-13. (ALTERNATE #7A)

1. Work includes Demolition & New Systems for Administration Area.

T. M-111 SECOND FLOOR MECHANICAL PLANS

1. New HVAC Systems (Chorus & Computer Lab). Refer to attached Sketch #M-706. (ALTERNATE #7B)
2. Air Balancing & installation of Duct Volume Dampers. Refer to attached Sketch #M-707. (ALTERNATE #7A)

U. M-112 MEZZANINE MECHANICAL PLANS (ALTERNATE #7C)

1. New HVAC System for Boy's Locker Room. Refer to attached Sketch #M708.

V. M-201 MECHANICAL DETAILS (ALTERNATES #7A, 7B & 7C)

1. Add details. Refer to attached Sketch #M-709 & M-710.

W. M-202 MECHANICAL DETAILS (ALTERNATES #7A, 7B & 7C)

1. Add details. Refer to attached Sketch #M-711.

X. M-301 MECHANICAL SCHEDULES (ALTERNATES #7A, 7B & 7C)

1. Add & Modify Mechanical Schedules. Refer to attached Sketches #M-712 & M-713.

Y. E-100 ELECTRICAL LEGEND AND SCHEDULES

1. Add Lucen as an equal to fixture types "C" and "C2".

- Z. E-101 SECOND FLOOR ELECTRICAL DEMOLITION (ALTERNATE #7A)**
1. Add Demolition Plan #2 First Floor Mechanical Room 1161. Refer to attached Sketch E-700.
- AA. E-102 MEZZANINE ELECTRICAL DEMOLITION (ALTERNATE #7B)**
1. Add Demolition Plan #2 Second Floor Rooms 226 and 228. Refer to attached Sketch E-701.
- AB. E-103 CATWALK ELECTRICAL DEMOLITION (ALTERNATE #7C)**
1. Add Demolition Plans #2 and #3 Third Floor Mechanical Room and IDF. Refer to attached Sketch E-702.
- AC. E-113 CATWALK ELECTRICAL LIGHTING & POWER PLANS (ALTERNATE #7C)**
1. Add Plan #2 – Partial Power Plan Third Floor Mechanical room. Refer to attached Sketch E-703.
- AD. E-210 FIRST FLOOR POWER PLAN (ALTERNATE #7A)**
1. Add Plan #2 Partial Power Plan – First Floor Mechanical Room 1161. Refer to attached Sketch E-704.
- AE. E-211 SECOND FLOOR POWER PLAN**
1. Add Plans #2 and #4 – Partial Second Floor Administration Area and rooms 226 and 228. Refer to attached Sketch E-705. (ALTERNATES #7A & 7B)
 2. ADD the following sentence to the end of Note 8: (BASE BID)
“Transformer/s for LED lighting as provided by seat manufacturer.”
- AF. E-300 ELECTRICAL DETAILS AND SCHEDULES (ALTERNATES #7A, 7B & 7C)**
1. Revise Mechanical Equipment Requirements Schedule. Refer to attached Sketch E-706.
- AG. TL-100 STAGE LIGHTING SYSTEM:**
1. Add note: “On the near catwalk lighting position move stage lighting instruments #1 & #2 and over hang above instruments #3 & #4.”
- AH. TH-101 STAGE RIGGING SYSTEMS PLAN AT GRID STAGE RIGGING EQUIPMENT**
1. Delete Lineset No. 21 (one manual counterweight utility lineset) and move all linesets upstage of No. 21 downstage 0'-8". Renummer linesets, and shorten locking rail accordingly.

END OF ADDENDUM NO. 3



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 4

FROM: VINNIE COLONNA DATE: 17 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. The electrical scope of work on page 011100-37 number 18-1 references Bid pack A drawings. Is 18-1 a part of the bid pack B scope of work? **EDiS – Provide a complete electrical system as indicated on Bid Pack A drawings, schedules and in the specifications, excluding work associated with Toilet Rooms 243 & 247.**
2. It appears that most of the walls are existing and the specifications say where it is impossible or impractical to install a raceway concealed and surface raceway is not indicated to consult with the Architect or engineer prior to installation. Can you tell me what the intended wiring method is for existing walls?
Furlow - Stage/Scene shop – Surface mounted conduit installed prior to painting. Public Areas shall be wiremold. New walls concealed.
3. On drawing E-211 there are several areas where underground electric conduit and floor boxes are indicated. Is the existing floor being removed? OR will cutting and patching be required for the under slab work indicated?
Furlow - Theatre Floor slab is being removed complete. Stage floor is being saw-cut to allow for floor pocket installation. Refer to Architectural Plans
4. Almost no fire alarm work is indicated on the drawings and no specification is provided only a couple of devices and a note to coordinate with Simplex Grinnell on drawing-212. Can you indicate to what extent we own in regards to fire alarm?
Furlow - Coordinate with Simplex. Reusing existing devices and providing new to cover renovated areas and bringing them up to code.

Submitted By: Matt Healy, Nickle Electric Date: 17 June 13

RESPONSE:

See Above for Responses

Response By: Douglas M Green – Furlow Associates, Inc Date: 6-18-13



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA

PRE-BID RFI#: 8

FROM: VINNIE COLONNA

DATE: 19 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. Does the Theatrical Lighting Subcontractor bidding to the Electrical Contractors section 265531 need to be prequalified with EDiS?
2. Referencing 26 55 31 – 11: Please provide a model number of the (1) wireless RFU Remote Focus Unit required in both the ETC and Strand schedules.

Submitted By: Karen Spacie, Barbizon Capitol Inc.

Date: 18 June 13

RESPONSE:

1. No. The Electrical Contractor classified as an Electric Power Trade is required to be prequalified – EDiS response.
2. [ETC RFU is model RRFU-US](#), the Strand model is the [Pocket Palette RFU OS v3.0x](#).

Response By: Chandra Nilekani / ABHA

Date: 27 JUNE 13



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 10

FROM: VINNIE COLONNA DATE: 20 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. Drawing E-300 on the mechanical equipment schedule RTU1 RTU2 and RTU 3 are indicated to be fed from existing panel HP1. Where is that panel located?
2. P1 and P2 say they are fed from "existing panel" where is that panel located?

Submitted By: Matt Healy, Nickle Electric Date: 19 June 13

RESPONSE:

1. Refer to Drawing E-113, Upper right hand side of plan.
2. Panel HP1 also same room.

Response By: Douglas M Green
Furlow Associates, Inc. Date: 6-26-13



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 13

FROM: VINNIE COLONNA DATE: 21 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. The bid form addresses alternate #1 only. What about alternate #5 on bid form (drawing identifies it as alt. #6) for acoustic banner headers and hangers? Ref dwg. S-103
2. After full demo. – can we get a forklift into the building to set the steel?
3. Contract B-10 summary of work, pg 23, 10-21 reinstall diamond plate removed by demo. contractor? I see the existing catwalk has diamond plate, is this the plate we are to reuse? Where are we to reuse it? Does this show on a drawing?
4. Will scaffolding for all trades be built after structural steel and catwalk is installed?

Submitted By: Scott C. Little, Kinsley Manufacturing Inc Date: 19 June 13

RESPONSE:

1. The bid form will be changed to include Alt #5 Add Acoustical Banners. ABHA - Change all references to Alt 6 to read Alt 5. See Addendum No. 3.
2. The area will be available for bringing a forklift into the building. The contractor is responsible for reviewing the existing conditions to see how best to access the space to include furnishing temporary ramps to get the equipment from the level of the stage to the level of the theater seating area.
3. Refer to S-108 & A-507.
4. The sequence is as follows: Install catwalk, install structural steel for raised seating, install scaffolding.

Response By: Chris McCone, EDiS Company Date: 27 Jun 13



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA

PRE-BID RFI#: 15

FROM: VINNIE COLONNA

DATE: 21 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. The aluminum pit rails on A-5.8 are fabricated from 1-1/2" square tube. Specification 055213 – Pipe and Tube Railings requires per 2.02 Aluminum Materials, Part B. Aluminum Tube: minimum wall thickness of 0.127 inch. Aluminum 1-1/2" square tube is only made with a 0.125 inch wall thickness. Confirm the use of standard 0.125 inch wall tubing will be accepted.
0.125 is acceptable.
2. There is a stair indicated on A-113 at third floor door 354. I don't see it on any Demo dwg. Is this stair existing?
Is this a new stair and is it in our bid package?
Can details be provided for bidding?
**Provide new aluminum roof stair. See details D1/A-506 & E1 A-506 (revised for addendum 3)
Stair specified in section 05 50 00**
3. In detail B5/A-4.2 there is a step from El. 9'-0 to El. 7'-10 between Lighting Booth 246 and the rear of the Theater.
What type of construction is this stair with one tread and two risers?
Refer to detail A4/A-502 (revised per addendum 2)
4. Is the Stair from Ticket Booth to Lighting Booth considered a public area, or back of house?
Confirm if these rails are to be stainless steel, or prime painted steel.
Stair railing within the ticket booth shall be painted steel.
5. There is an open grate platform from the spiral stair to what appears to be an existing concrete landing in plan B5/A-406.
Can direction be provided for the framing of this platform?
**Landing attached to post/existing concrete to be provided by spiral stair manufacturer.
(drawing A-406 revised for addendum 3)**
6. There is a platform indicated from the spiral stair to door 354A in plan C5/A-406.
Can direction be provided for the framing of this platform?
Can direction be provided for the floor type at this platform?
Can direction be provided for the railing design for this platform?
**Landing attached to post/existing wall to be provided by spiral stair manufacturer.
Railings provided by spiral stair manufacturer
(drawing A-406 revised for addendum 3)**



7. There is a platform, or possibly two platforms indicated from the spiral stair at the grid iron in plan D5/A-406.
Can more direction be provided for the layout of this platform?
Can direction be provided for the floor type at this platform?
Can direction be provided for the railing design for this platform?
Grid Iron extension provided by steel fabricator.
Landing attached to post/grid iron extension to be provided by spiral stair manufacturer.
Railings at provided by steel fabricator
(drawing A-406 revised for addendum 3)

8. Section 1/A-406 is cut along the grid iron to the left of the spiral stair access platform in plan D5/A-406.
Can clarification of what is new and what is existing be provided for the angle hangers, top rail and intermediate rail in this section?
If this is new please confirm if it is the full length of the gridiron with an opening at the stair access platform.
(drawing A-406 revised for addendum 3)

Submitted By: Bill Baum, Kinsley Manufacturing

Date: 21 June 13

RESPONSE:

See above for responses

Response By: David Barisa Date: 06-26-2013



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA

PRE-BID RFI#: 19

FROM: VINNIE COLONNA

DATE: 24 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK ‘B’

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

1. Item 10-4

Remove existing access ladder at Elevator Penthouse.

Is this Demo work, or is it ours to do? **EDiS: Structural Steel & Misc. Metals.**

Provide aluminum access stair...

Confirm that no supplemental support framing is needed at the wall or under the roof.

Aluminum roof stairs do not require supplemental steel. Installed over existing concrete deck.

Stair specified in section 05 50 00

2. Item 10-5

Remove existing access ladder,

Is this Demo work, or is it ours to do? **EDiS: Structural Steel & Misc. Metals.**

sand blast rust, prep, prime and paint.

Is this by a painting contractor, or is it ours to do? **EDiS: Structural Steel & Misc. Metals.**

How do we determine the type of construction and length of the existing ladder? **EDiS: Verify in Field**

Install ladder in new location...Remove existing access ladder,

How do we determine the type of construction we are fastening to? **EDiS: Verify in Field**

3. Demo dwgs

Sheet keynote 42 states: Relocate loading bridge ladder

Is the removal of this Demo work, or is it ours to do? **EDiS: Structural Steel & Misc. Metals.**

Where is it found on the demo plans? **Plan A5/a-103 to be revised for addendum 3.**

Sheet keynote 19 states: Remove access ladder, cage and landings

Is the removal of this Demo work, or is it ours to do? **EDiS: DEMO Contractor**

Sheet A-102 keynote 43 states: Remove roof ladder

Is the removal of this Demo work, or is it ours to do? **EDiS: DEMO Contractor**



DEMO NOTE 43 CHANGED TO: REMOVE WOOD RAILING

4. Dwg A-114 **Plan shows ladders marked RL and others marked RL(EXIST)**
Are the ladders marked RL 'new' ladders?
How do we determine the length and type of construction we are fastening to?
Can a typical roof ladder detail be provided?
[No New Roof Ladders Required with removal of roof screen A-114 revised for addendum 3.](#)
5. Dwg A-002 **Detail E5 shows angle clips at top of CMU walls.**
Are these in our bid scope? **EDiS: No**
6. Item 10-18 **Provide stairs...**
Section 055100. Part 2.01 Manufacturers lists approved suppliers.
Kinsley Manufacturing is not listed.
Can we quote a stair fabricated in our shop?
[Shop manufactured stairs are acceptable. Specifications to be used as Basis of Design](#)
7. Item 10-20 **Miscellaneous rough hardware,**
Can you clarify this or give an example? **EDiS: All rough hardware necessary to complete your work**
8. Dwg A-402 **Detail 9 shows Metal Countertop Support Bracket**
Are these in our bid scope? **EDiS: Yes**
9. Dwg A-507 **Details A3, A5 & D5 show ¼" Perforated Metal (see Struct)**
I find no information on perforated metal on the Struct Dwgs
Can a Specification for this be provided?
The drawing details are very vague.
Can additional details be provided?
[Structural detail updated per drawing S-705 \(addendum 3\)](#)
10. Dwg A-508 **Aluminum rails have a wood trim cap**
Confirm the wood is not in our contract package. **EDiS: Wood trim caps shall be by the Carpentry & General Works Contract.**
Aluminum rails have veneer plywood infill panels
Confirm the plywood panels are not in our contract package **EDiS: Plywood panels shall be by the Carpentry & General Works Contract.**

Submitted By: Bill Baum, Kinsley Manufacturing Inc.

Date: 19 June 13



RESPONSE:

See responses above

Response By: David Barisa _____ Date: 06-26-2013



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 20

FROM: VINNIE COLONNA DATE: 24 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

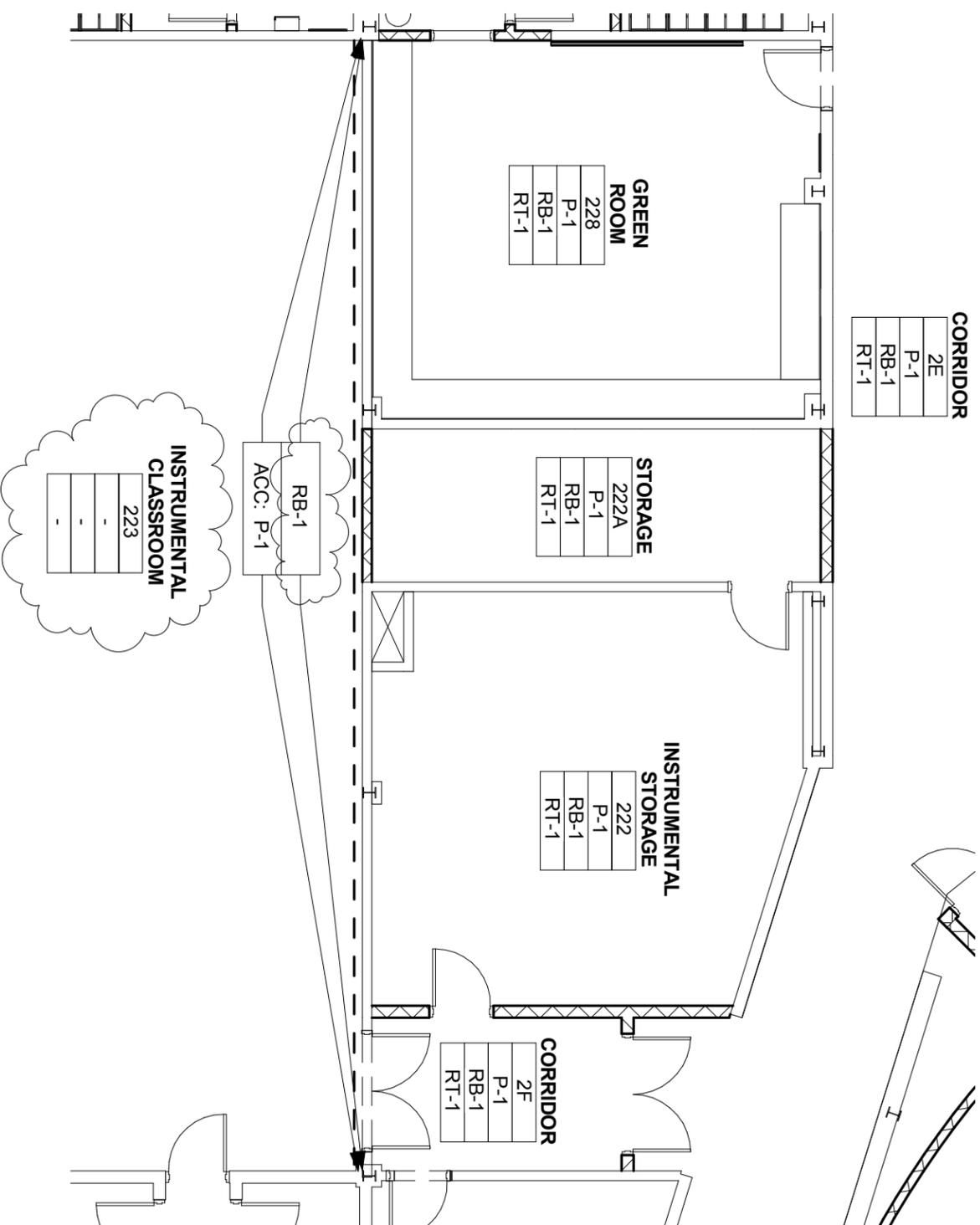
I-111 drawing: Instrumental Classroom 223 might be NIC like some other rooms around it but it has a keynote 3 referring you to E6 on the same drawing for finishes. If it is part of the work, a room finish legend is needed.

Submitted By: Bill Michelinie, BCI Date: 24 June 13

RESPONSE:

Paint and provide base along patched wall for alternate 1, otherwise no work.
See attached sketch A-704

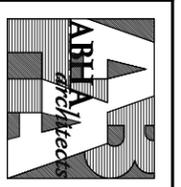
Response By: David Barisa Date: 06-26-2013



E6
 SECOND FLOOR PARTIAL FINISH PLAN -
 ALTERNATE - RELOCATE CORRIDOR
 1/8" = 1'-0"

* REPLACE DETAIL E6 ON SHEET I-111

* ISSUED FOR RFI #20

	
1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	abhagen@ABHA.com www.ABHA.com

REV:	2
ISSUE:	06/25/13
PROJECT NO:	1219
FILE NAME:	1219-CAB CALLOWAY.rvt
DRAWN BY:	KD
CHECKED BY:	CK

SHEET TITLE	SECOND FLR. PARTIAL FINISH PLAN-ALTERNATE
PROJECT	WILMINGTON CAMPUS RENOVATIONS
CONSULTANT	
	A-704



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA

PRE-BID RFI#: 22

FROM: VINNIE COLONNA

DATE: 25 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

We have to provide and install new breakers into the existing switchgear.
Can we be given the brand and model number of the existing switchgear?
These could be a high dollar item depending on availability.

Submitted By: Matt Healy, Nickle Electric

Date: 25 June 13

RESPONSE:

480V switch gear is Square D QED Style.
208V switch gear Field Verify. GE or Westinghouse.

Response By: Douglas M Green
Furlow Associates, Inc Date: 6-26-13



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 24

FROM: VINNIE COLONNA DATE: 25 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

The spec is "section 274118 Sound and Video systems" but the text only discusses the sound system. It is the absolute last thing in the spec. Is there any possibility of getting the narrative for the video? The prints do show the video as well

Submitted By: Matt Healy, Nickle Electric Date: 25 June 13

RESPONSE:

Requested section is attached and will be included in addendum 3.

Response By: Chandra Nilekani Date: 25-JUNE-2013



REQUEST FOR INFORMATION

TO: CHANDRA NILEKANI, ABHA PRE-BID RFI#: 24

FROM: VINNIE COLONNA DATE: 25 JUNE 2013

PROJECT: WILMINGTON CAMPUS RENOVATIONS – BID PACK 'B'

DWG. # / DETAIL: _____ SPEC. SECTIONS: _____ PAGE: _____

REQUEST:

The spec is "section 274118 Sound and Video systems" but the text only discusses the sound system. It is the absolute last thing in the spec. Is there any possibility of getting the narrative for the video? The prints do show the video as well

Submitted By: Matt Healy, Nickle Electric Date: 25 June 13

RESPONSE:

The "video" part of the sound & video system is shown primarily on sheets TS-102 and TS-103. Additional video information is spread throughout the remainder of the "TS" sheet set. "Video" and video specific information is also spread throughout the spec. A very brief and simplistic narrative for the video system to be inserted into section 1.04A would be:

6. A high output high definition three DLP chip video projector will be installed for rear projection.
7. Connection points for center and side projectors on the catwalk.
8. A dual use front & rear video screen will be integrated within the stage rigging system.
9. Large format digital displays framing the proscenium will be included.
10. A Blue-Ray DVD player, a tuner and assorted video inputs make up the video sources.
11. A small production video switcher based on HD-SDI.
12. A video switcher input and output routing matrix with touchscreen control.
13. Video system touchscreen control will be programmed to allow the system to operate in "production mode" via the production video switcher or "presentation mode" where computer and DVD signals will bypass the production switcher and be routed via the switching matrix directly to the displays / projectors.



14. Production camera receptacles located throughout the facility for owner supplied production cameras.
15. Video show relay remote controlled pan / tilt / zoom cameras providing a full stage picture and a conductor picture will feed TVs located throughout the facility.
16. The main projector feed will also be modulated and feed to the TVs referenced above

Response By: Rusty Cadaret Date: 06/26/13

SECTION 274118

SOUND & VIDEO SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 RELATED WORK AND REQUIREMENTS

- A. Basic Electrical Requirements
- B. Raceways and Conduits
- C. Wires and Cables
- D. Outlet Boxes
- E. Grounding

1.03 SCOPE OF WORK

- A. This section requires the fabrication, furnishing, delivery, installation, testing of the sound and video systems and equalization of the sound system as indicated on the drawings and specified herein.
- B. The sound contractor shall provide all materials, equipment, procedures, labor, tools, scaffolds, and incidentals necessary to the scope of work.
- C. It is the intention of these specifications that the sound contractor provides a professional quality, complete and properly operating system in every respect and detail.
- D. The installation contractor shall examine the plans in detail to familiarize him with the scope of the work.
- E. The installation contractor shall assume full responsibility for a complete operating installation, in the required location, in accordance with the contract documents.
- F. The contractor shall provide all necessary specialty equipment for the complete sound and video system installation as specified herein.
- G. The contractor shall provide all necessary specialty equipment for the complete sound and video system as shown on the drawings.

- H. Any errors, omissions, or ambiguities found in these documents do not relieve the Contractor of the responsibility of providing all items necessary for complete, safe, fully functional systems. Any errors, omissions, or ambiguities shall be brought to the attention of the Architect/Engineer of Record, Owner, and/or Theater Consultant for clarification.
- I. The drawings and specification when taken together communicate the design intent of the system. The contractor is responsible for all engineering, procedures, drawings, equipment, material, means and methods, and contract administration necessary to fully and completely provide and install the system contemplated by these documents.
- J. No changes will be allowed for any issue that could have or should have been known at the time of bid. This includes but is not limited to discontinued products.
- K. The contractor is solely responsible for meeting all codes and regulations and for the complete code compliance of the finished system.
- L. The contractor shall employ the most current best standard practices for all aspects of work.
- M. The contractor acknowledges that the consultants' opinion is final.
- N. Coordinate fully with the electrical contractor.

1.04 WORK INCLUDED IN THE AUDITORIUM THEATER

- A. Without restricting volume or generality of above "Scope", work to be performed under this section shall include, but is not limited to, the furnishing and installation of the following:
 - 1. Sound Reinforcement System. A sound reinforcement system consisting of left, right, center clusters, mixing console, microphone and line level inputs, microphones, stands, cables, accessories, and all necessary processing and electronics.
 - 2. Show Monitor System. A system comprising of a show monitor mic mounted in the theatre, which is feed to speakers in the public and backstage areas.
 - 3. Production Intercom. A two channel intercom system for technical communications.
 - 4. An Assisted Listening System. A broadcast system that sends program to receivers with earphones for the hearing impaired.
 - 5. Sound Booth Wire Duct. This contractor is to install "Panduit" type plastic wire ducts in the sound booth. These ducts are to carry all necessary cabling between the under counter junction boxes, the processing rack mounted on the wall, and the mixing console. A separate duct is required for each signal level.
- B. Control system programming in a manner that meets all the owner's needs and request in terms of function and usability.
- C. Supply all non standard back boxes shown on the electrical drawings.
- D. Power distribution within all equipment racks. Provide a jbox in the top of each rack for the electrical contractor to "make up" to. Provide power strips, power outlet boxes, internal rack

wiring and everything necessary to power up all rack equipment. System power is via a sequenced panel board. See electrical drawings for more details.

- E. Provide sound panel board.
- F. Control booth wire duct (Panduit).

1.05 WORK NOT INCLUDED

- A. The following items of work, if required, are included in other sections and must be reviewed by the sound contractor for impact on this work:
 - 1. Necessary conduit and raceway runs.
 - 2. Stage flooring.
 - 3. Theatrical stage lighting and electrical connections, electrical contractor supplied junction and back boxes, wiring to power sources, and wiring to all other electrically powered devices.
 - 4. Front of house catwalks.

1.06 CONTRACTOR'S QUALIFICATIONS

- A. The work of this section will be contracted to a single firm, referred to as the contractor.
- B. The contractor shall be a systems contractor who regularly engages in the furnishing, installation and servicing of professional systems of similar nature, size, scope and complexity to that contemplated by this specification. The contractor shall have done so for a period of not less than five years preceding the bid date.
- C. The contractor shall have maintained for the five years preceding the bid date, a suitably staffed and equipped service organization which has continuously offered maintenance and repair services for systems of the nature, size, scope and complexity to that contemplated by this specification.
- D. The contractor shall demonstrate to the satisfaction of the owner, through exhibits presented with his bid, that the sound contractor has a history to indicate the following:
 - 1. Statement of company history. Include a breakdown by percentage of gross sales of all business activities the contractor is involved in for each of the last 5 years (e.g. system installation = 30%, box sales = 40%, equipment rentals = 20%, design and other professional services = 10%, etc).
 - 2. Previous experience: Provide a list of four installations of the type and size contemplated by these specifications, currently in use as originally installed, in which a theatre / system consultant was involved, completed in the last 5 years and the following information regarding each installations:
 - a. Name and address of each installation facility.
 - b. Facility owner and telephone number.

- c. Name, address, and phone number of a person regularly employed by the owner, who is familiar with the operation of the systems and who has no connection or business connections with the contractor except as the contractor shall fully disclose
 - d. Name, address, and phone number of the theatre / system consultant, along with the names of all the consultant's personal directly involved.
 - e. System shop drawing - These will be returned if the contractor provides a call tag or return postage.
 - f. Owner's manual drawing - These will be returned if the contractor provides a call tag or return postage.
 - g. System as-built drawings drawing - These will be returned if the contractor provides a call tag or return postage.
 - h. List of contractors personal involved with each persons responsibility on the project.
 - i. Name, address and phone number of the general contractor, along with the names of all key GC personal directly involved.
 - j. Name address and phone number of the electrical contractor, along with the names of all key EC personal directly involved.
3. Statement of current company capabilities and ownership.
 4. Key Personnel: For each of the key personnel listed below; Include individual's name, title, and number of continuous years of service to contractor. Include a biography detailing industry experience, and role within organization (include only full-time/regular staff employees; not independent contractor, freelance, or temporary positions). List all industry certifications held, training courses attended, and continuing education credits, including dates of attendance. List recently completed projects, scope of project, and completion dates.
 - a. Project Manager
 - b. Senior Technician
 - c. Service Manager
 5. Other Department Staff – Include size of staff, and experience of each staff member.
 6. Replacement and Spare Parts Inventory – Provide detailed list of primary replacement parts, components, and spares typically held in inventory.
 7. Test Equipment and Physical Plant – Include an inventory of all test facility equipment owned and used regularly by the Service Department. Provide description of physical plant and space utilization.
 8. Copies of all business and professional licenses and insurance certificates.

PART 2 - PRODUCTS

2.01 ALTERNATES

- A. In no case will equipment or materials of lesser design or workmanship be acceptable. Only those materials and equipment listed in this specification will be considered unless prior approval is sought and received.
- B. Substitutions: When a specific piece of equipment specified has been discontinued and/or replaced by a new model, substitution will be acceptable when:
 - 1. Submission of complete data on the new model or substitute has been approved by the owner prior to equipment acquisition. Data shall include list pricing for specified and replacement equipment.
 - 2. Substitute equipment or the replacement of rejected equipment shall be at the sole expense of the sound contractor.
 - 3. After submittals have been approved there will be no cost to the owner for any required replacement equipment under any circumstances.
- C. Should the contractor proposed and receive approval for the use of alternative wire and cable which requires additional conduit, the contractor will be solely responsible for the installation of such conduit.

2.02 GENERAL REQUIREMENTS

- A. The major items of equipment shall be furnished in the quantity as on the drawings and the quantity as specified herein.
- B. When documents list several acceptable manufacturers for a particular item of equipment, more than one of which is to be provided, the sound contractor shall supply all of those similar items of equipment from one manufacturer.
- C. The sound contractor will provide necessary millwork, enclosures, baffles, grille cloth, wall plates, and any other item furnished under this contract not specifically noted otherwise herein or on the drawings in a manner and color as approved by the owner.
- D. Any item of equipment or hardware that may not be specifically shown on the drawings or specified herein but required for proper sound system operation or installation shall be furnished and installed and be of the highest quality available.
- E. The performance of all equipment must meet the most recently published manufacture's data sheet
- F. Provide all power supplies required.
- G. Provide all software.
- H. Provide the follow equipment in the quantities shown on the contract drawings:
 - 1. MIX-1: 72 mono, 8 stereo input digital front of house mixing console, 8 local mic/line ins and 8 local line outs.
Yamaha CL-5 mixer. Include main & spare PW800 power supply, power supply cable and LED Littlite Lamp sets. Include console dust cover, Dugan-MY-16

- card MY8-AE96S card and MY8-ADDA96 card. Include road case with wheels and "TMB EZ-tilt" console stand.
2. RIO-1: 32 input, 16 output, 4 AES digital out Dante audio network interface. All inputs and outputs shall be balanced
Yamaha RIO3224-D
 3. CDR-1: Compact disk recorder / player. All inputs and outputs shall be balanced. Include a wired remote.
Tascam CD-RW901SL
 4. IPD-1: Ipod dock with controls.
Tascam CD-200iB
 5. WIR-1: UHF Digital Wireless mic system. Twenty four (24) transceiver systems are required. Provided 12 handheld and 24 bodypack transmitters. All receivers shall be Shure ULX4Q series. Provide standard accessories (i.e. microphone clips, lavalier accessories, zippered cases, starter battery, ½ wave antennas, power supplies, receiver rack mount kits, etc). Coordinate frequency band with local TV Broadcast stations and other RF transmission systems in use. Provide Shure Wireless Workbench control software.
 - 6 @ Shure ULX4Q - quad channel digital receivers.
 - 12 @ ULXD24/Beta87A – handheld transmitter with Beta 87A mic, WA371 mic clip and #26A14 zipper bag
 - 24 @ ULXD1 – bodypack transmitter with 26A13 zipper bag
 - 48 @ SB900 batteries
 - 3 @ SBC800-US battery charger + power strip & 6' extension cord
 - 24 @ B6 –Countryman subminiature omni lavalier mic with TA4F connector
 6. WIR-2: Wireless antenna distribution amp. Provide active antennas.
Shure UA845SWB.
 7. WIR-3: Active Wideband Antennas. PROVIDE AS REQUIRED – NOT SHOWN ON ONE LINE DRAWING. Include (1) pair active antennas. Provide rigid mounts for the antennas, permanently installed in the correct orientation.
Shure UA874 or as required
 8. WCM-1: Wireless Intercom System with 4 single channel beltpaks. Include (1) pair antennas, rechargeable battery packs and 4 port battery station. Provide rigid mounts for the antennas, permanently installed in the correct orientation.
 - HME Pro 850 Base Station
 - 4 @ HME BP850 beltpacks
 - 6 @ HME BAT850 rechargeable battery packs
 - 1 @ HME AC850A charger base station
 9. PRO-1: Programmable digital signal processor. 6 input x 16 output. Provide Meyer Compass control software with RMS built in.
Meyer Galileo 616
NOTE: THE FIRE ALARM INTERFACE SHALL BE CONFIGURED IN SUCH A WAY THAT WHEN IN ALARM MODE THE SYSTEM VOLUME SHALL MUTE.
 10. PRO-2: Programmable digital signal processor. 8 input x 8 output
Symetrix SymNet Audio Matrix 8x8 DSP
NOTE: THE FIRE ALARM INTERFACE SHALL BE CONFIGURED IN SUCH A WAY THAT WHEN IN ALARM MODE THE SYSTEM VOLUME SHALL MUTE.

11. ALS-1: Assistive listening system. Channel E.
Listen Technologies Corporation (or equal by Williams Sound)
1 model LT-800 transmitter.
40 model LR-300 receiver
32 model LA-161 earbuds.
8 inductive loops
1 model LA-326 rack mounting kit.
1 model LA-116 remote coax antenna.
1 model LA-313 carrying/storage case
1 model LA-304 wall plaque kit
2 complete sets of batteries
Battery chargers, power strips, etc. to accommodate one complete set of batteries
12. AMP-1: 520 watt per channel stereo into 8 ohms.
Crown MA 2402
Crest PRO 7200
QSC PL 325
13. AMP-2: Show Relay Mixer Amplifier
TOA model A-912 MK2 with rack ears, one L-11S balanced line input module
and one M-11S microphone input module.
14. MPS-1: 48 volt speaker system power supply and controller with RMS module.
Meyer MPS-488HP power supply.
15. RMS-1: RMS Server interface for connecting sound network to the Meyer RMS remote
monitoring system. Include Compass software.
RMServer
16. NET-1: 16 port 10/100/1000 Gigabit Ethernet switch for sound network running Meyer
Galileo/RMS remote monitoring software.
Cisco SG100-16
17. NET-2: 24 port 10/100/1000 Gigabit Ethernet switch with QOS for Dante audio network
and Shure wireless monitoring software.
BSS GS724T
18. COMP-1:
Dell XPS 15, i7-3320m processor, Windows 7, 64 bit, 16GB ram, 512GB SSD,
Blu-ray, NVIDIA GT640 with 2GB video, all required software
19. Provide speaker rigging hardware + power + signal cabling for every speaker.
20. SPK-1: Main full range self powered speaker, center cluster , 40X35 coverage, with
RMS module.
Meyer MSL-4
21. SPK-2: Main full range self powered speaker, stereo cluster bottom cabinet, 80X40 wide
coverage, with RMS module.
Meyer CQ-1
22. SPK-3: Main full range self powered speaker, stereo cluster top cabinet, 50X40 narrow
coverage, with RMS module.
Meyer CQ-2
23. SPK-4: Main full range self powered down fill speaker, 50 symmetrical coverage, with
RMS module.
Meyer DF-4
24. SPK-5: Main full range delay fill speaker, 100X40 coverage, with RMS module.
Meyer UPA-1

25. SPK-6: Main cluster self powered sub woofer, with RMS module.
Meyer 700-HP
26. SPK-7: Main full range 48 volt powered front fill speaker, 80X50 coverage. Portable, provide floor bracket with each speaker
Meyer UPM-1XP
27. SPK-8: Ceiling Speakers: Backbox / speaker / baffle assembly for distributed systems. Coordinate the color of the baffle with the architect.
Atlas Soundolier 96-8(-x) Backbox w/ 180 Series Channel Support. Atlas Soundolier 61-8W Baffle. Atlas Soundolier C10LAT70 Speaker and transformer
28. ICM-1: Intercom power supply
Clear Com PS 704
29. ICSS: Intercom speaker station
Clear Com KB-701 or KB-702
See contract drawings for type required. Provide a backbox for each station
30. Projection Screen:
Draper Truss-Style Cinefold Portable Projection Screen
16:9 HDTV format 245" diagonal
Provide CineFlex CH1200V rear projection surface (install this surface)
Provide Matt White XT1000V front projection surface
Include 2' bottom dress drape
Hang from stage rigging system batten
31. DWR-3: 3U rack drawer.
Middle Atlantic Products D3
32. DWR-2: 2U rack drawer.
Middle Atlantic Products D2
33. ATN-1: 10 watt attenuator
Atlas Soundolier AT10
34. ATN-2: 35 watt attenuator
Atlas Soundolier AT35
35. LGT-4: Rack mount light module with power distribution outlets
Furman Sound PL-8 Series II
36. LGT-3: Rack mount light module
Littlite RL-10-D
37. SWT-1: SPST MON push button switch
Augat MPG-106F
38. LGT-2: Local control light, 12 VDC, panel mount
Dialight 557-1503-203 (or as required by the system processor's logic outputs)
39. POT-1: 10Kohm linear control pot. and knob.
Clarostat RV4NAYS103A + Atlas Soundolier HX21-B
40. SWT-2: Power system on and off push button switches – shown as “ON” and “OFF” on the drawings
Lyntec SS-2 Sequencer switch set
41. RACK RS-1: Floor Mounted 19" slide out rack. Provide locking doors, top and side panels as required.
Middle Atlantic Products model WR- 44-32
42. RACK RS-2: Dual Credenza style 19" equipment rack. 12U pull out rack rail system. Coordinate with architect on finishing kit for style and color choices of sides, top, rear panels. Smoked plexi doors to match.

Middle Atlantic Products C5F2-D

43. RACK RS-3: Single Credenza style 19" equipment rack. 12U pull out rack rail system. Coordinate with architect on finishing kit for style and color choices of sides, top, rear panels. Smoked plexi doors to match.

Middle Atlantic Products C5F1-D

44. RACK RS-4: Portable 19" Equipment Rack. 12U Custom "Anvil" style, single wide, rolling equipment rack. Removable front and rear covers. Minimum 2" foam, with floating internal racks. Minimum 4" full swivel casters, of which two shall lock..

R&R Cases

45. RACK RS-5: Portable 19" Equipment Rack. 8U Custom "Anvil" style, single wide, equipment rack. Removable front and rear covers. Minimum 2" foam, with floating internal racks.

R&R Cases

46. RACK RV-1: Video rack.

Middle Atlantic Products MRK-4026AXS

Provide tracks and tracks stand for each rack

Provide side and top panels as required

47. COS & POS: Hofmann enclosure. See panel drawing for details

48. CO: Custom FSR WB-610 or WB-1X or WB-2X as required. Size, type and plates as required. Provide all necessary part including doors and covers.

49. TVs:

All TVs must have IR control

Include IR "bugs"

50" TV cannot be taller than 27"

All TVs shall be 1080p native

50. Cable Ladders – PROVIDE AS REQUIRED – NOT SHOWN ON ONE LINE DRAWING

1 Lot CL Series by Middle Atlantic Products. As needed, to span overhead from stub-outs in the amp/dimmer room, and feed down to the equipment rack. All cable ladders shall be located 80" A.F.F., or as required by code, and allow clear access to equipment racks. Include all necessary ladder sections, suspension hardware, and accessories.

- I. Panels: All panels are made of 1/8" thick Aluminum plate, brushed anodized black and sealed. All controls and connectors will have engraved labels. The minimum allowable label size is 1/8"s. All labels will be back filled with white paint. All connectors are mounted with machine hardware. All panel layouts and labels must be submitted and approved prior to construction, the panels shown in the drawings are typical only.
- J. Microphone Receptacles: The above general requirements for panels apply to the construction of Microphone Receptacles as well. See the contract drawings for quantity and type required.
- K. Monitor Speaker Receptacles: The above general requirements for panels apply to the construction of Monitor Speaker Receptacles as well. See the contract drawings for quantity and type required.
- L. Tie Line Receptacles: The above general requirements for panels apply to the construction of Tie Line Receptacles as well. See the contract drawings for quantity and type required.

M. Intercom Connection Receptacles: The above general requirements for panels apply to the construction of Intercom Connection Receptacles as well. See contract drawings for quantities and types required. All 6 pin connectors must be Switchcraft compatible.

N. Custom panels: See drawings for required components.

O. System Wire: All wiring installed in a conduit which is located in the slab must be rated for wet locations.

1. 10 A.W.G. for speaker lines enclosed in conduit, racks, or speaker enclosures. Use for all speaker runs except 70 volt systems. 10 A.W.G. THWN.
2. 16 A.W.G. twisted pair for RMS control system and for 70 volt audio wire for use in conduit, racks, or speaker enclosures. West Penn Wire AQC 225
3. 22 A.W.G. shield twisted pair for all mic, line or D.C. control lines enclosed in conduit or racks. Belden 5500F1 or West Penn Wire AQC 291
4. 18 A.W.G. Shielded twisted pair with 18 A.W.G. drain wire for all intercom lines enclosed in conduit or racks. Belden 5300F1 or West Penn Wire AQC 293. An additional 12 A.W.G. THWN will be required if speaker stations are used. This additional wire shall be used in parallel with the drain wire of the shielded twisted pair cable.
5. 24 A.W.G. shield twisted pair for all AES/EBU digital audio lines enclosed in conduit or racks. West Penn DA2401.
6. Coax Antenna Lines. As called for by equipment manufacture.
7. UTP Category 5 network cable. Four twisted pair of 24 A.W.G. wire with an outer diameter suitable for termination by standard type RJ-45 connectors. Use for all Category 5 cable run within a conduit or raceway. Belden 7934A.
8. Category 5 service cable. Use for all Category 5 cable NOT run within a conduit or raceway. TMB Associates ProPlex™ Ethernet cable.
9. RG6 coax for all video cable (including HD-SDI) West Penn Wire AQC806
10. RG 11 coax for wireless receiver antennas Liberty RG11-DB-CCTV
11. RG59 coax as required West Penn Wire AQC 815
12. DC power + signal for all under balcony and front fill speakers. Each location is home run back to the equipment rack. West Penn Wire AQC 225 + West Penn Wire AQC 291 or Belden 5500F1
13. Crestron cable as called for by manufacture. Wet location rated as necessary by installation location.
14. Extron cables as called for by Extron -

P. Sound Panel Board: Provide the following sound power panel board to the electrical contractor:

1. LynTec Model RPC341 sequencing panel board
Standard 225 amp main breaker
See drawings for breaker type and configuration
SGX20-10 power conditioning side car

Q. Portable Equipment: Provide the following portable equipment that is not shown on the contract drawings:

1. Show monitor mic: Mount a Shure SM87 from the near catwalk pointed toward the stage and wired to the near catwalk mic jack. This is a permanent installation and will require a custom assembly of mic mounting hardware. Typically a mounting flange with a small boom arm will be required to place the mic out into the room and rigidly hold it in position. Fishing line or other similar methods will not be accepted.
2. Microphones. Provide a mic clip for each mic.
 - 6 @ Shure SM-58
 - 4 @ Shure SM-57
 - 1 @ Shure VP88
 - 1 @ Shure SD565
 - 2 @ AKG C414 XLS
 - 1 @ Rode NT4 stereo mic
 - 1 @ Countryman ISOMAX 4RF (M4HP5RF18EB) + AT8416 shockmount
 - 2 @ Audio Technica 4040.
 - 4 @ Audio Technica 4041.
 - 1 @ CT Audio; C-Ducer CP Series CSP/8P.
 - 5 @ Crown PCC160.
 - 3 @ Countryman Type 85 Direct Box.
 - 1 @ Emtech Electronics, Inc. Model EJ-10 multi-input adapter box.
 - 1 @ Whirlwind PCDI
 - 4 @ Audio Technica 853A hanging mics
 - 1 @ Audix DP7 drum mic kit
3. Microphone Stands & Accessories.
 - 24 @ Atlas Sound MS12CE
 - 16 @ K&M KM210/91 black, mic stand w/boom
 - 1 @ Atlas Sound D7
4. Intercom belt pack.
 - 12 @ Clear Com RS-601.
 - 3 @ Clear Com RS-602
5. Intercom speaker station (portable)
 - 2 @ Clear Com KB-701 w/ V-box
6. Intercom single muff headset.
 - 12 @ Clear Com CC-300
7. Intercom dual muff headset
 - 3 @ Clear Com CC-400
8. Intercom cable, 6 pin XLR
 - 5 @ 25 feet – Clear Com IC-25/6

9. Mic Cables: Whirlwind MKQ series in black.
 - 10 @ 10 feet
 - 40 @ 20 feet.
 - 30 @ 30 feet.
 - 10 @ 50 feet.
 - 6 @ 100 feet.
10. Speaker Cables.
 - 8 @ Whirlwind NL-4-50
 - 8 @ Whirlwind NL-4-25
11. Multi pair drop boxes.
 - 4 @ Whirlwind 50' 12pr stage box w/ W1 multi-pin connector
 - 2 @ Whirlwind 25' 12pr stage box w/ W1 multi-pin connector
12. Patch Cables and Adapters - Audio
 - 8 @ Neutrik NL4MM.
 - 2 @ Switchcraft 389.
 - 2 @ Switchcraft 390
 - 2 @ Switchcraft 387A
 - 2 @ Switchcraft 386A
 - 2 @ Switchcraft 384A
 - 2 @ Switchcraft 383A
13. Monitor Speakers.
 - 4 @ JBL MRX512M w/ stand sockets
 - 4 @ Galaxy Hot Spots with volume control and 2 NL4 connectors
 - 4 @ Ultimate Support TS-90B speaker stands
14. Video adapters & cables:
 - 6 @ Extron 15HD GCF
 - 4 @ Extron 15HD GCM
 - 2 @ Extron SVHSF-2BNCF
 - 2 @ Extron SVHSM-2BNCF
 - 20 @ Extron BNCF-BNCF
 - 4 @ Extron BNCF-BNCF T
 - 12 @ Extron RCAF-BNCF
 - 2 @ Extron DP-DVIDF
 - 2 @ Extron DP-HDMIF
 - 2 @ Extron HDMIF-DVIDF
 - 2 @ Extron HDMIF-DVIDM
 - 2 @ Extron HDMIM-DVIDF
 - 2 @ Extron DVIAM-VGAF PT
 - 2 @ Extron DVIAF-VGAM
 - 2 @ Extron VGA-A-M-M-MD/6
 - 2 @ Extron VGA-A-M-M-MD/35
 - 2 @ Extron VGA-A-M-F-MD/12
 - 2 @ Extron SYM BNCF/3

- 2 @ Extron SYM BNCM/3
- 2 @ Extron SYF BNCF/3
- 2 @ Extron SYF BNCM/3
- 4 @ Extron RG6-5 BNC/6
- 12 @ Extron RG6 BNC/6
- 2 @ Extron HDMI PRO/6
- 2 @ Extron DISPLAYPORT-M-M/6
- 2 @ Extron DVID DL PRO/6
- 2 @ Extron HDMI DVI-D/6
- 2 @ Extron HDTV RCA/6
- 2 @ Extron AV RCA/6
- 2 @ Extron MHR-2-SVMF/20

15. Headphones.
1 @ Sony MDR-7506

PART 3 - EXECUTION

3.01 SUBMITTALS:

- A. The sound contractor, within thirty days of the bid award and prior to beginning work, shall submit all of the following at the same time to the owner for approval:
- B. Drawings: Complete shop drawings details and complete on all phases of installation including a minimum of:
1. Device location plan drawing(s)
 2. System wiring diagram
 - a. Make and model of all equipment
 - b. All connection points on each piece of equipment
 - c. All wire types
 - d. All cable labels
 3. Rack elevations
 4. Details of all connection plates and custom panels
 5. Rack and equipment labels
 6. Mounting and rigging details for all equipment
 7. Drawing showing the projector, the screen, the throw distance and all lens calculations in both plan and section
- C. Mountings and Attachments: Prior to equipment installation, the sound contractor will submit to the owner detailed scale drawings of all proposed enclosures and speaker mounting or rigging weighing more than ten pounds. All mountings and attachments must be approved and stamped by an engineer licensed in Delaware prior to submittal and the beginning of the installation.
- D. Materials and Equipment: The sound contractor will submit to the owner a complete list of all materials and equipment to be furnished including catalog cuts for all equipment items. These must contain full information on dimensions, construction, applications, etc. to permit proper evaluation. In addition, they must be properly identified as to their intended use and any

options or variations must be clearly marked. The contractor is to confirm equipment availability at time of submittal. It is assumed that all equipment submitted on is and will be available.

- E. Test Equipment: The sound contractor will submit to the owner a list of test equipment to be used to test, equalize and demonstrate the final installation.
- F. Schedule: Prior to the commencement of the installation work, the sound contractor shall submit for approval, to the owner, an outline of a proposed commencement and completion schedule and project requirements.
- G. Variations: Any deviation from what is specified here and or shown on the system drawings must be “starred” and noted in ¼” high letters on the shop drawings and highlighted in the submittal data.
- H. Approval of shop drawings and materials does not relieve the Contractor of any responsibilities.

3.02 COORDINATION WITH OTHER WORK:

- A. The sound contractor shall specifically coordinate the placement and sizes of conduit relating to this work and shall specifically review and approve the conduit rough-in in time to advise all parties of needed changes, omissions, etc. The sound contractor shall report this successful coordination in writing to the owner's representative. Failing this, the following will be enforced:
 - 1. The sound contractor shall provide and install any additional conduits required for the hookup, proper location and proper isolation of the various cable / signal types and equipment in the systems. The sound contractor must coordinate his conduit installation with those installed by the electrical contractor. All conduits shall be sized to their intended fill plus fifty percent.
 - 2. The contractor shall at all times coordinate his work with the other trades to ensure smooth progress of work and satisfactory final results.

3.03 INSTALLATION:

- A. Personnel: A single, competent, technically qualified foreman will oversee the entire job from start to finish. This foreman must:
 - 1. Be present on the job site during all phases of installation and testing.
 - 2. Be authorized to receive instructions from the Architects or their representatives.
- B. Only experienced sound installers shall be employed on this job.
- C. The contractor shall keep the job adequately staffed at all times.
- D. All job documents pertaining to the installation of this system will be accessible to all workers throughout the installation process.

- E. Installation practices shall be in accordance with OSHA Safety and Health Standards and all local codes.
- F. The sound contractor shall not commence the installation of equipment and devices, other than the pulling of cable, until all areas are clean, painted and finished to a point that they are completely dust, dirt, lint, fiber and airborne particle free. The air conditioning system must be operating to its design level and be able to keep all areas with sound equipment stable.

G. General Workmanship:

- 1. The installation of all work shall be neat.
- 2. All boxes, equipment, etc shall be plumb and square.
- 3. The installation shall conform to the plans and spec.
- 4. Equipment racks shall be assembled, wired and tested in the contractors shop prior to delivery to the job site.

H. Wiring:

- 1. If enclosed in conduit run only similar signal levels in a single conduit.
- 2. All pulls to be made be hand, care will be taken not to nick cable jackets, and any nicked or damaged cable will be replaced.
- 3. A pull string will be left in all conduits after wire is installed.
- 4. **NO SPLICES WHATSOEVER IN CONDUIT!**
- 5. If not enclosed in conduit neatly group cables into bundles and secure out of harms way.
- 6. Separate cable grouping by signal level. Mic and A.C. power shall be not less than 18" all other levels by not less than 6".
- 7. Include spare cables with all field runs. Quantity to be 10% or 1 which ever is greater unless otherwise specified.

I. Terminations:

- 1. All cables shall be permanently labeled at every termination.
- 2. Service loops of not less than 6" will be present at all terminations to equipment.
- 3. Where terminal blocks or barrier strips are used only uninsulated fork terminals with a brazed seam, sized according to wire and stud sizes, crimped with notch across from the seam will be approved.
- 4. Use barrier strips on equipment where provided.
- 5. Where shielded cable is in use leave shield drain wire the same length as the circuit conductor(s), sleeve shield drain wire in green pvc tubing. Cap where the cable jacket was removed with heat shrink. Where the shield drain wire is to be lifted follow the above and fold back over cable jacket. Then cap end with heatshrink. Do not use a single piece of heatshrink for this use two smaller ones.
- 6. All soldering will be clean and neat and not exhibit evidence of a " cold" joint, were necessary heat sinks will be used. Use only rosin core "electronic type " solder.

7. Wire nuts will be allowed only for field connections of 70 volt speaker lines and priority attenuation control lines, and then only when the proper size is used.

J. Polarity:

1. The " high " side will be connected to pin 2 on XLR connectors, to tip on 1/4" connectors and to the pin on phono connectors.
2. The " low " side will be connected to pin 3 on XLR connectors, to ring on 1/4" balanced connectors and to case on phono connectors.
3. Microphones will be wired so that an acoustic compression at the diaphragm produces a positive going signal on pin 2 with respect to pin 3.
4. Speakers will be wired so that when a positive going signal is applied to the + or red terminal an acoustic compression is produced.
5. The system will be wired to maintain absolute polarity though all system components to insure that a positive signal on pin 2 or tip produces a positive signal at the + or red speaker terminal.

K. Shield Grounding:

1. Do not tie pin 1 to case of XLR connectors anywhere.
2. Microphone shield drain wires will be grounded only at mixer inputs. Where microphone lines and mixer inputs run though a patchbay, connect shield drain wire to sleeve of patchbay connector and only to this point.
3. Line level lines will have shield drain wire lifted from ground at outputs and connected to ground at inputs.
4. The intent here is to not make ground loops, should any situation arise which would form a ground loop, please inform the owner for direction.

L. Mountings and Attachments:

1. Any and all structural, mounting, or rigging details are shown on the drawings for concept only.
2. The detail drawings and calculations of all proposed mounting or rigging of any equipment weighing more than ten pounds will be approved and stamped by a P.E. who is licensed in Delaware.
3. Each cluster element is to be individually adjustable.
4. Provide for an adjustment range of +/- 10 degrees from the information shown in the contract documents.
5. In the absence of specific direction otherwise, standard rigging practices shall be followed.

M. Labels:

1. Cable Labels: All cables shall be labeled at all termination points. The label shall not be hand written. Clear heat shrink shall cover the label.
2. Equipment Labels. All equipment shall be labeled front and rear. Labels shall functionally describe the use of each piece of equipment. On equipment having multiple channels, each channel shall be labeled. Additionally the equipment

label will call out equipment designation which will correspond with the designations shown on the approved contractor's one-line diagram. Labels shall be engraved lanacoid, white letters on black background, with a minimum letter size of 3/16". Approved patchbay labeling may vary from this.

- N. Power Sequencing. The system shall turn on and off, in proper order, on circuit at a time, when the power switch is pressed. The power light shall be solid on when all circuits are on , and shall flash during sequencing.
- O. The system may not be used prior to checkout.

3.04 INSPECTION AND TESTING:

- A. During the installation of the equipment the sound contractor shall arrange for access as necessary for inspection of equipment by the owner's and/or architect's representatives.
- B. Provide a safe means of accessing all system components for all visits.
- C. Equipment Pretesting: All racks are to be built and wired in contractors shop and tested prior to delivery to site. All other equipment is to be tested prior to delivery and installation. A written test report will be submitted to the owner.
- D. Final Inspection:
 - 1. The final inspection will confirm that the systems, as installed, meets the requirements of this spec, the contract documents, and the approved contractor's shop drawing and submittals.
 - 2. The contractor will inform the owner in writing of the system's completion. The contractor will then request final inspection by the consultant, and carry out the necessary coordination. This coordination includes:
 - a. Giving at least fourteen days notice to the consultant prior to the final inspection.
 - b. Arranging for the contractor's and consultant's exclusive use of the space.
 - c. Arranging for a HVAC technician to be available to turn the AC system on and off as required.
 - d. Arranging for a lighting technician to be available to control the stage lighting as required.
 - e. The contractor's job foreman and one additional worker familiar with the job will be present during all check out, testing and tuning.
 - 3. Contractor will complete the following tasks prior to consultant's arrival:
 - a. Unpack and assemble all portable equipment.
 - b. Place all portable equipment in one location.
 - c. If anything has been turned over to the owner have the signed Letters of Transmittal on site.
 - d. Complete all required paperwork (pre-testing reports, letters indicating successful coordination of the installation, etc.).
 - e. Remove all security covers.

- f. Contractor will provide all necessary software, cables, and interfaces to facilitate the setting of computer, remote controlled, or DSP based equipment.
 - g. Contractor will either: 1) relocate all system equalizers to a tech area in the house for the duration of system tuning or 2) for remotely controllable devices, locate the control position in a tech area in the house for the duration of system testing. In either case a tech area in the house will be required with a minimum of a 4' x 6' folding table, intercom communications to the rack and console locations, and AC power.
4. Contractor will provide the following test equipment for use during tuning and acceptance testing:
 - a. Sennheiser ZP-3 impedance bridge.
 - b. Low distortion sine wave oscillator with variable sweep (start frequency, stop frequency, and sweep rate).
 - c. Distortion meter.
 - d. Oscilloscope dual channel, 100Mhz, .001v/div vertical amp.
 - e. Noise generator that will provide pink, white, or bandwidth limited pink noise.
 - f. 1/3 octave real time audio spectrum analyzer.
 - g. Precision sound level meter with filter set.
 - h. Polarity checker.
 - i. Precision true R.M.S. reading A.C. millivolt meter with dB scale.
 - j. Playback and recording media for testing all supplied source equipment.
 5. Contractor will provide safe means to access all system components during the entire commissioning process.
 6. Contractor shall provide personal and equipment to make adjustments to the speaker cluster(s), as well as to correct problems, for the entire inspection and testing period.
- E. The Theatre Consultant or his representative will conduct all final system tests and equalization adjustments in order to determine final acceptance.
- F. In no event shall the theatrical sound systems installation be submitted for final approval or acceptance until any and all elements of the facility that may have a bearing on the system performance, including but not limited to doors, windows, HVAC, carpeting, furniture, wall coverings, interior design elements, lighting and lighting control systems have been completed and are operable. All elements that may effect sound systems operation or performance shall be "on" and operating during adjustments. The sound contractor will be responsible for coordinating the requirements of this paragraph with other work on the project.
- G. Should more than two trips be required to complete the systems testing, systems tuning, and clearing punch list items, the contractor will be charged for any additional visits. These charges will include:
1. A minimum of two people at a rate of \$1250 per day per person.
 2. Travel expense to and from the job site.
 3. These charges will be paid to the consultant, in advance of the consultant's arrival on the job site.

3.05 MANUALS:

A. Prepare four identical copies of owner's manuals. The owner is to receive two, the consultant receives one and the contractor retains one. Before distribution of manuals submit one copy to consultant for approval. Each manual is to contain the following:

1. System one line drawing including all labeling and changes (" as built ").
2. Owners manual for each piece of equipment.
3. Schematic diagram for each piece of equipment.
4. Contractors service phone number in a conspicuous place.
5. All test reports.

3.06 INSTRUCTION: The following is to be carried out within two months of system acceptance:

- A. Provide a total of 12 hours of instruction, on a maximum of two occasions. This is to be time on site, travel time is not to be included within the allotted time.
- B. Provide operational assistance for the first usage of the system. This is to be on the owners time schedule but, not to exceed 8 hours.

3.07 WARRANTY

- A. Contractor will warrant the system to be free from defects in materials and workmanship for a period of one year from the date of acceptance, or first beneficial use, which ever comes first.
- B. Acts of god and owner abuse, or neglect are not covered.
- C. During the warranty period the contractor will respond to and correct any call for service within one day of the call. Loaner equipment will be provided if necessary.

END OF SECTION 274118

CONTRACT B-05 DEMOLITION
BID FORM

For Bids Due: _____ To: Red Clay Consolidated School District
1502 Spruce Avenue
Wilmington, Delaware 19805

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES (Bidders must review Section 012300 Alternates for a complete description of alternates)

Alternate No. 1: Add Relocation of Instrumental Classroom Corridor

Add/Deduct _____ (\$ _____)

Alternate No. 7A: Replace the HVAC Units serving the Administration Area

Add/Deduct _____ (\$ _____)

Alternate No. 7B: Replace the Heat Pumps in Rooms 226 & 228

Add/Deduct _____ (\$ _____)

Alternate No. 7C: Replace the HVAC Unit serving the Boy's Locker Room

Add/Deduct _____ (\$ _____)

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

N/A

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed ten percent (10%).

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Bid Bond
- Consent of Surety
- (Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
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1. Demolition	_____	_____
---------------	-------	-------

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of B-05 Demolition have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____ . NOTARY PUBLIC _____ .

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Red Clay Consolidated School District in the sum of _____
_____ Dollars (\$ _____), or percent not to exceed _____
_____ Dollars (\$ _____) of amount of bid on Contract No. B-05 Demolition to be paid to the
Red Clay Consolidated School District for the use and benefit of the Red Clay Consolidated School District for which
payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators. and
successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Red Clay Consolidated School District a certain proposal to enter into this contract for the furnishing of certain material
and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and
execute this Contract as may be required by the terms of this Contract and approved by the Red Clay Consolidated School
District this Contract to be entered into within twenty days after the date of official notice of the award thereof in
accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and
virtue.

Sealed with _____ seal and dated this ___ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

CONSENT OF SURETY

DATE _____

To:

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

CONTRACT B-10 STRUCTURAL STEEL & MISC. METALS
BID FORM

For Bids Due: _____ To: Red Clay Consolidated School District
1502 Spruce Avenue
Wilmington, Delaware 19805

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES (Bidders must review Section 012300 Alternates for a complete description of alternates)

Alternate No. 1: Add Relocation of Instrumental Classroom Corridor

Add/Deduct _____ (\$ _____)

Alternate No. 5: Add Acoustical Banners.

Add/Deduct _____ (\$ _____)

Alternate No. 8: Delete Steel Stairs and Handrails to Light Booth.

Add/Deduct _____ (\$ _____)

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

N/A

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed ten percent (10%).

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____

(Authorized Signature)

(SEAL)

(Title)

Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Bid Bond
- Consent of Surety
- (Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. Structural Steel	_____	_____
2. Misc. Metals	_____	_____

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of B-10 Structural Steel & Misc. Metals have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____ . NOTARY PUBLIC _____ .

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Red Clay Consolidated School District in the sum of _____
_____ Dollars (\$ _____), or percent not to exceed _____
_____ Dollars (\$ _____) of amount of bid on Contract No. B-10 Structural Steel & Misc.
Metals to be paid to the Red Clay Consolidated School District for the use and benefit of the Red Clay Consolidated
School District for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors,
administrators. and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Red Clay Consolidated School District a certain proposal to enter into this contract for the furnishing of certain material
and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and
execute this Contract as may be required by the terms of this Contract and approved by the Red Clay Consolidated School
District this Contract to be entered into within twenty days after the date of official notice of the award thereof in
accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and
virtue.

Sealed with _____ seal and dated this ___ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

CONSENT OF SURETY

DATE _____

To:

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

CONTRACT B-17 MECHANICAL & PLUMBING - THEATER
BID FORM

For Bids Due: _____ To: Red Clay Consolidated School District
1502 Spruce Avenue
Wilmington, Delaware 19805

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES (Bidders must review Section 012300 Alternates for a complete description of alternates)

Alternate No. 1: Add Relocation of Instrumental Classroom Corridor

Add/Deduct _____ (\$ _____)

Alternate No. 6: Replace Roofing in Bid Pack 'A' Area

Add/Deduct _____ (\$ _____)

Alternate No. 7A: Replace the HVAC Units serving the Administration Area

Add/Deduct _____ (\$ _____)

Alternate No. 7B: Replace the Heat Pumps in Rooms 226 & 228

Add/Deduct _____ (\$ _____)

Alternate No. 7C: Replace the HVAC Unit serving the Boy's Locker Room

Add/Deduct _____ (\$ _____)

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices: N/A

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed ten percent (10%).

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Bid Bond
- Consent of Surety
- (Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. Mechanical	_____	_____
2. Plumbing	_____	_____
3. Sheet Metal	_____	_____
4. Insulation	_____	_____

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of B-17 Mechanical & Plumbing - Theater have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Red Clay Consolidated School District in the sum of _____
_____ Dollars (\$ _____), or percent not to exceed _____
_____ Dollars (\$ _____) of amount of bid on Contract No. B-17 Mechanical & Plumbing -
Theater to be paid to the Red Clay Consolidated School District for the use and benefit of the Red Clay Consolidated
School District for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors,
administrators. and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Red Clay Consolidated School District a certain proposal to enter into this contract for the furnishing of certain material
and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and
execute this Contract as may be required by the terms of this Contract and approved by the Red Clay Consolidated School
District this Contract to be entered into within twenty days after the date of official notice of the award thereof in
accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and
virtue.

Sealed with _____ seal and dated this ___ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

CONSENT OF SURETY

DATE _____

To:

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

CONTRACT B-18 ELECTRICAL, FIRE ALARM & SPECIALTY SYSTEMS
BID FORM

For Bids Due: _____ To: Red Clay Consolidated School District
1502 Spruce Avenue
Wilmington, Delaware 19805

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES (Bidders must review Section 012300 Alternates for a complete description of alternates)

Alternate No. 1: Add Relocation of Instrumental Classroom Corridor

Add/Deduct _____ (\$ _____)

Alternate No. 2: Add (6) Additional Intelligent Light Fixtures.

Add/Deduct _____ (\$ _____)

Alternate No. 3: Add LED Ground Row Cyclorama Fixtures.

Add/Deduct _____ (\$ _____)

Alternate No. 7A: Replace the HVAC Units serving the Administration Area

Add/Deduct _____ (\$ _____)

Alternate No. 7B: Replace the Heat Pumps in Rooms 226 & 228

Add/Deduct _____ (\$ _____)

Alternate No. 7C: Replace the HVAC Unit serving the Boy's Locker Room

Add/Deduct _____ (\$ _____)

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

N/A

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed ten percent (10%).

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

- ATTACHMENTS
- Sub-Contractor List
 - Non-Collusion Statement
 - Bid Bond
 - Consent of Surety
 - (Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. Electrical	_____	_____
2. Fire Alarm Vendor	_____	_____
3. A/V Systems Vendor	_____	_____
4. Theater Lighting Vendor	_____	_____

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of B-18 Electrical, Fire Alarm & Specialty Systems have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Red Clay Consolidated School District in the sum of _____
_____ Dollars (\$ _____), or percent not to exceed _____
_____ Dollars (\$ _____) of amount of bid on Contract No. B-18 Electrical, Fire Alarm &
Specialty Systems to be paid to the Red Clay Consolidated School District for the use and benefit of the Red Clay
Consolidated School District for which payment well and truly to be made, we do bind ourselves, our and each of our
heirs, executors, administrators. and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Red Clay Consolidated School District a certain proposal to enter into this contract for the furnishing of certain material
and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and
execute this Contract as may be required by the terms of this Contract and approved by the Red Clay Consolidated School
District this Contract to be entered into within twenty days after the date of official notice of the award thereof in
accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and
virtue.

Sealed with _____ seal and dated this ___ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

CONSENT OF SURETY

DATE _____

To:

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

CONTRACT B-19 TESTING, ADJUSTING & BALANCING
BID FORM

For Bids Due: _____ To: Red Clay Consolidated School District
1502 Spruce Avenue
Wilmington, Delaware 19805

Name of Bidder: _____

Bidder Address: _____

Contact Name: _____ E-Mail Address: _____

Delaware Business License No.: _____ Taxpayer ID No.: _____

(Other License Nos.): _____

Phone No.: () _____ - _____ Fax No.: () _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

\$ _____ (\$ _____)

ALTERNATES (Bidders must review Section 012300 Alternates for a complete description of alternates)

Alternate No. 7A: Replace the HVAC Units serving the Administration Area

Add/Deduct _____ (\$ _____)

Alternate No. 7B: Replace the Heat Pumps in Rooms 226 & 228

Add/Deduct _____ (\$ _____)

Alternate No. 7C: Replace the HVAC Unit serving the Boy's Locker Room

Add/Deduct _____ (\$ _____)

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

N/A

NOTE: The difference in price between Add and Deduct in the above Unit Prices should not exceed ten percent (10%).

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Bid Bond
- Consent of Surety
- (Others as Required by Project Manuals)

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>
1. Testing & Balancing	_____	_____

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date

All the terms and conditions of B-19 Testing, Adjusting & Balancing have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE
(TYPED): _____

AUTHORIZED REPRESENTATIVE
(SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ of
_____ in the County of _____ and State of _____ as
Principal, and _____ of _____ in the County of _____
_____ and State of _____ as Surety, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the Red Clay Consolidated School District in the sum of _____
_____ Dollars (\$ _____), or percent not to exceed _____
_____ Dollars (\$ _____) of amount of bid on Contract No. B-19 Testing, Adjusting &
Balancing to be paid to the Red Clay Consolidated School District for the use and benefit of the Red Clay Consolidated
School District for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors,
administrators. and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bounden Principal who has submitted to the
Red Clay Consolidated School District a certain proposal to enter into this contract for the furnishing of certain material
and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and
execute this Contract as may be required by the terms of this Contract and approved by the Red Clay Consolidated School
District this Contract to be entered into within twenty days after the date of official notice of the award thereof in
accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and
virtue.

Sealed with _____ seal and dated this ___ day of _____ in the year of our Lord two thousand
and _____ (20__).

SEALED, AND DELIVERED IN THE PRESENCE OF

Name of Bidder (Organization)

Corporate Seal	By: _____ Authorized Signature
Attest _____	_____ Title
Witness _____	_____ Name of Surety
	_____ Title

CONSENT OF SURETY

DATE _____

To:

Gentlemen:

We, the _____

(Surety Company's Address)

a Surety Company authorized to do business in the State of Delaware hereby agrees that if

(Contractor)

(Address)

is awarded the Contract No. _____

We will write the required Performance and/or Labor and Material Bond required by Paragraph 9 of the Instructions to Bidders.

(Surety Company)

By _____
(Attorney-in-Fact)

END OF SECTION

SECTION 012300 - ALTERNATES

1. GENERAL PROVISIONS

- 1.1 The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other conditions, if any) and Division 1 as appropriate, apply to the Work specified in this Section.
- 1.2 Refer to provisions in AIA Document A232 – 2009 Edition, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISOR EDITION, for requirements in addition to those specified in Division 1.
- 1.3 For work being constructed under separate prime contracts, provisions of this Section apply to each contract being bid.

2. BASE BID

- 2.1 The Base Bid shall consist of all work shown or specified in the Contract Documents, exclusive of any Additive Alternates specified herein.
- 2.2 The Base Bid shall include all work in any Subtractive Alternates specified herein.

3. ALTERNATES

- 3.1 State in the Bid Form the amount to be added to the Base Bid for each Alternate specified.
- 3.2 See Section 002113 - INSTRUCTIONS TO BIDDERS for related information.
- 3.3 The description of Alternates contained herein is in summary form. Detailed requirements for materials and execution shall be as specified in other sections and as shown on drawings.

Alternate No. 1: Add Relocation of Instrumental Classroom Corridor

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, relocating the instrumental classroom corridor.

Alternate No. 2: Add (6) Additional Intelligent Light Fixtures.

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, adding 6 additional intelligent light fixtures in the theater.

Alternate No. 3: Add LED Ground Row Cyclorama Fixtures

- a. Base Bid: ~~No work is required.~~ **Provide underground roughin (conduits, boxes, & pull strings).**
- b. Alternate: Includes, but is not limited to, adding LED ground row cyclorama fixtures in the theater.

Alternate No. 4: Upgrade to Seamless Plastic (PVC) Cyclorama

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, upgrading the cyclorama to (Gerriets "Opera" or Rosco "Twin White")

Alternate No. 5: Add Acoustical Banners

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, adding adjustable acoustical banner system in the theater.

Alternate No. 6: Replace Roofing in Bid Pack 'A' Area

- a. Base Bid: Patch and repair roof associated with the installation of new roof HVAC equipment shown on the bid pack 'A' documents.
- b. Alternate: Includes, but is not limited to, removing the entire existing ballasted EPDM roofing system and insulation down to existing deck. Provide new TPO membrane roofing system with tapered insulation (3" minimum) and 1/2" cover board.

Alternate No. 7A: Replace the HVAC Units serving the Administration Area

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, demolition of the existing HVAC equipment, piping, ductwork, & controls and the installation of new HVAC equipment, piping, ductwork & controls as detailed on the mechanical and electrical drawings.

Alternate No. 7B: Replace the Heat Pumps in Rooms 226 & 228

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, demolition of the existing HVAC equipment, piping, ductwork, & controls and the installation of new HVAC equipment, piping, ductwork & controls as detailed on the mechanical and electrical drawings.

Alternate No. 7C: Replace the HVAC Unit serving the Boy's Locker Room

- a. Base Bid: No work is required.
- b. Alternate: Includes, but is not limited to, demolition of the existing HVAC equipment, piping, ductwork, & controls and the installation of new HVAC equipment, piping, ductwork & controls as detailed on the mechanical and electrical drawings.

electrical drawings.

Alternate No. 8: Delete Steel Stairs and Handrails to Light Booth.

- a. **Base Bid: Install the steel stairs and handrail shown on drawing A402.**
- b. **Alternate: Delete the steel stairs and handrail shown on drawing A402.**

END OF SECTION

SECTION 274118

SOUND & VIDEO SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 RELATED WORK AND REQUIREMENTS

- A. Basic Electrical Requirements
- B. Raceways and Conduits
- C. Wires and Cables
- D. Outlet Boxes
- E. Grounding

1.03 SCOPE OF WORK

- A. This section requires the fabrication, furnishing, delivery, installation, testing of the sound and video systems and equalization of the sound system as indicated on the drawings and specified herein.
- B. The sound contractor shall provide all materials, equipment, procedures, labor, tools, scaffolds, and incidentals necessary to the scope of work.
- C. It is the intention of these specifications that the sound contractor provides a professional quality, complete and properly operating system in every respect and detail.
- D. The installation contractor shall examine the plans in detail to familiarize him with the scope of the work.
- E. The installation contractor shall assume full responsibility for a complete operating installation, in the required location, in accordance with the contract documents.
- F. The contractor shall provide all necessary specialty equipment for the complete sound and video system installation as specified herein.
- G. The contractor shall provide all necessary specialty equipment for the complete sound and video system as shown on the drawings.

- H. Any errors, omissions, or ambiguities found in these documents do not relieve the Contractor of the responsibility of providing all items necessary for complete, safe, fully functional systems. Any errors, omissions, or ambiguities shall be brought to the attention of the Architect/Engineer of Record, Owner, and/or Theater Consultant for clarification.
- I. The drawings and specification when taken together communicate the design intent of the system. The contractor is responsible for all engineering, procedures, drawings, equipment, material, means and methods, and contract administration necessary to fully and completely provide and install the system contemplated by these documents.
- J. No changes will be allowed for any issue that could have or should have been known at the time of bid. This includes but is not limited to discontinued products.
- K. The contractor is solely responsible for meeting all codes and regulations and for the complete code compliance of the finished system.
- L. The contractor shall employ the most current best standard practices for all aspects of work.
- M. The contractor acknowledges that the consultants' opinion is final.
- N. Coordinate fully with the electrical contractor.

1.04 WORK INCLUDED IN THE AUDITORIUM THEATER

- A. Without restricting volume or generality of above "Scope", work to be performed under this section shall include, but is not limited to, the furnishing and installation of the following:
 - 1. Sound Reinforcement System. A sound reinforcement system consisting of left, right, center clusters, mixing console, microphone and line level inputs, microphones, stands, cables, accessories, and all necessary processing and electronics.
 - 2. Show Monitor System. A system comprising of a show monitor mic mounted in the theatre, which is feed to speakers in the public and backstage areas.
 - 3. Production Intercom. A two channel intercom system for technical communications.
 - 4. An Assisted Listening System. A broadcast system that sends program to receivers with earphones for the hearing impaired.
 - 5. Sound Booth Wire Duct. This contractor is to install "Panduit" type plastic wire ducts in the sound booth. These ducts are to carry all necessary cabling between the under counter junction boxes, the processing rack mounted on the wall, and the mixing console. A separate duct is required for each signal level.
- B. Control system programming in a manner that meets all the owner's needs and request in terms of function and usability.
- C. Supply all non standard back boxes shown on the electrical drawings.
- D. Power distribution within all equipment racks. Provide a jbox in the top of each rack for the electrical contractor to "make up" to. Provide power strips, power outlet boxes, internal rack

wiring and everything necessary to power up all rack equipment. System power is via a sequenced panel board. See electrical drawings for more details.

- E. Provide sound panel board.
- F. Control booth wire duct (Panduit).

1.05 WORK NOT INCLUDED

- A. The following items of work, if required, are included in other sections and must be reviewed by the sound contractor for impact on this work:
 - 1. Necessary conduit and raceway runs.
 - 2. Stage flooring.
 - 3. Theatrical stage lighting and electrical connections, electrical contractor supplied junction and back boxes, wiring to power sources, and wiring to all other electrically powered devices.
 - 4. Front of house catwalks.

1.06 CONTRACTOR'S QUALIFICATIONS

- A. The work of this section will be contracted to a single firm, referred to as the contractor.
- B. The contractor shall be a systems contractor who regularly engages in the furnishing, installation and servicing of professional systems of similar nature, size, scope and complexity to that contemplated by this specification. The contractor shall have done so for a period of not less than five years preceding the bid date.
- C. The contractor shall have maintained for the five years preceding the bid date, a suitably staffed and equipped service organization which has continuously offered maintenance and repair services for systems of the nature, size, scope and complexity to that contemplated by this specification.
- D. The contractor shall demonstrate to the satisfaction of the owner, through exhibits presented with his bid, that the sound contractor has a history to indicate the following:
 - 1. Statement of company history. Include a breakdown by percentage of gross sales of all business activities the contractor is involved in for each of the last 5 years (e.g. system installation = 30%, box sales = 40%, equipment rentals = 20%, design and other professional services = 10%, etc).
 - 2. Previous experience: Provide a list of four installations of the type and size contemplated by these specifications, currently in use as originally installed, in which a theatre / system consultant was involved, completed in the last 5 years and the following information regarding each installations:
 - a. Name and address of each installation facility.
 - b. Facility owner and telephone number.

- c. Name, address, and phone number of a person regularly employed by the owner, who is familiar with the operation of the systems and who has no connection or business connections with the contractor except as the contractor shall fully disclose
 - d. Name, address, and phone number of the theatre / system consultant, along with the names of all the consultant's personal directly involved.
 - e. System shop drawing - These will be returned if the contractor provides a call tag or return postage.
 - f. Owner's manual drawing - These will be returned if the contractor provides a call tag or return postage.
 - g. System as-built drawings drawing - These will be returned if the contractor provides a call tag or return postage.
 - h. List of contractors personal involved with each persons responsibility on the project.
 - i. Name, address and phone number of the general contractor, along with the names of all key GC personal directly involved.
 - j. Name address and phone number of the electrical contractor, along with the names of all key EC personal directly involved.
3. Statement of current company capabilities and ownership.
 4. Key Personnel: For each of the key personnel listed below; Include individual's name, title, and number of continuous years of service to contractor. Include a biography detailing industry experience, and role within organization (include only full-time/regular staff employees; not independent contractor, freelance, or temporary positions). List all industry certifications held, training courses attended, and continuing education credits, including dates of attendance. List recently completed projects, scope of project, and completion dates.
 - a. Project Manager
 - b. Senior Technician
 - c. Service Manager
 5. Other Department Staff – Include size of staff, and experience of each staff member.
 6. Replacement and Spare Parts Inventory – Provide detailed list of primary replacement parts, components, and spares typically held in inventory.
 7. Test Equipment and Physical Plant – Include an inventory of all test facility equipment owned and used regularly by the Service Department. Provide description of physical plant and space utilization.
 8. Copies of all business and professional licenses and insurance certificates.

PART 2 - PRODUCTS

2.01 ALTERNATES

- A. In no case will equipment or materials of lesser design or workmanship be acceptable. Only those materials and equipment listed in this specification will be considered unless prior approval is sought and received.
- B. Substitutions: When a specific piece of equipment specified has been discontinued and/or replaced by a new model, substitution will be acceptable when:
 - 1. Submission of complete data on the new model or substitute has been approved by the owner prior to equipment acquisition. Data shall include list pricing for specified and replacement equipment.
 - 2. Substitute equipment or the replacement of rejected equipment shall be at the sole expense of the sound contractor.
 - 3. After submittals have been approved there will be no cost to the owner for any required replacement equipment under any circumstances.
- C. Should the contractor proposed and receive approval for the use of alternative wire and cable which requires additional conduit, the contractor will be solely responsible for the installation of such conduit.

2.02 GENERAL REQUIREMENTS

- A. The major items of equipment shall be furnished in the quantity as on the drawings and the quantity as specified herein.
- B. When documents list several acceptable manufacturers for a particular item of equipment, more than one of which is to be provided, the sound contractor shall supply all of those similar items of equipment from one manufacturer.
- C. The sound contractor will provide necessary millwork, enclosures, baffles, grille cloth, wall plates, and any other item furnished under this contract not specifically noted otherwise herein or on the drawings in a manner and color as approved by the owner.
- D. Any item of equipment or hardware that may not be specifically shown on the drawings or specified herein but required for proper sound system operation or installation shall be furnished and installed and be of the highest quality available.
- E. The performance of all equipment must meet the most recently published manufacture's data sheet
- F. Provide all power supplies required.
- G. Provide all software.
- H. Provide the follow equipment in the quantities shown on the contract drawings:
 - 1. MIX-1: 72 mono, 8 stereo input digital front of house mixing console, 8 local mic/line ins and 8 local line outs.
Yamaha CL-5 mixer. Include main & spare PW800 power supply, power supply cable and LED Littlite Lamp sets. Include console dust cover, Dugan-MY-16

- card MY8-AE96S card and MY8-ADDA96 card. Include road case with wheels and "TMB EZ-tilt" console stand.
2. RIO-1: 32 input, 16 output, 4 AES digital out Dante audio network interface. All inputs and outputs shall be balanced
Yamaha RIO3224-D
 3. CDR-1: Compact disk recorder / player. All inputs and outputs shall be balanced. Include a wired remote.
Tascam CD-RW901SL
 4. IPD-1: Ipod dock with controls.
Tascam CD-200iB
 5. WIR-1: UHF Digital Wireless mic system. Twenty four (24) transceiver systems are required. Provided 12 handheld and 24 bodypack transmitters. All receivers shall be Shure ULX4Q series. Provide standard accessories (i.e. microphone clips, lavalier accessories, zippered cases, starter battery, ½ wave antennas, power supplies, receiver rack mount kits, etc). Coordinate frequency band with local TV Broadcast stations and other RF transmission systems in use. Provide Shure Wireless Workbench control software.
 - 6 @ Shure ULX4Q - quad channel digital receivers.
 - 12 @ ULXD24/Beta87A – handheld transmitter with Beta 87A mic, WA371 mic clip and #26A14 zipper bag
 - 24 @ ULXD1 – bodypack transmitter with 26A13 zipper bag
 - 48 @ SB900 batteries
 - 3 @ SBC800-US battery charger + power strip & 6' extension cord
 - 24 @ B6 –Countryman subminiature omni lavalier mic with TA4F connector
 6. WIR-2: Wireless antenna distribution amp. Provide active antennas.
Shure UA845SWB.
 7. WIR-3: Active Wideband Antennas. PROVIDE AS REQUIRED – NOT SHOWN ON ONE LINE DRAWING. Include (1) pair active antennas. Provide rigid mounts for the antennas, permanently installed in the correct orientation.
Shure UA874 or as required
 8. WCM-1: Wireless Intercom System with 4 single channel beltpaks. Include (1) pair antennas, rechargeable battery packs and 4 port battery station. Provide rigid mounts for the antennas, permanently installed in the correct orientation.
 - HME Pro 850 Base Station
 - 4 @ HME BP850 beltpacks
 - 6 @ HME BAT850 rechargeable battery packs
 - 1 @ HME AC850A charger base station
 9. PRO-1: Programmable digital signal processor. 6 input x 16 output. Provide Meyer Compass control software with RMS built in.
Meyer Galileo 616
NOTE: THE FIRE ALARM INTERFACE SHALL BE CONFIGURED IN SUCH A WAY THAT WHEN IN ALARM MODE THE SYSTEM VOLUME SHALL MUTE.
 10. PRO-2: Programmable digital signal processor. 8 input x 8 output
Symetrix SymNet Audio Matrix 8x8 DSP
NOTE: THE FIRE ALARM INTERFACE SHALL BE CONFIGURED IN SUCH A WAY THAT WHEN IN ALARM MODE THE SYSTEM VOLUME SHALL MUTE.

11. ALS-1: Assistive listening system. Channel E.
Listen Technologies Corporation (or equal by Williams Sound)
1 model LT-800 transmitter.
40 model LR-300 receiver
32 model LA-161 earbuds.
8 inductive loops
1 model LA-326 rack mounting kit.
1 model LA-116 remote coax antenna.
1 model LA-313 carrying/storage case
1 model LA-304 wall plaque kit
2 complete sets of batteries
Battery chargers, power strips, etc. to accommodate one complete set of batteries
12. AMP-1: 520 watt per channel stereo into 8 ohms.
Crown MA 2402
Crest PRO 7200
QSC PL 325
13. AMP-2: Show Relay Mixer Amplifier
TOA model A-912 MK2 with rack ears, one L-11S balanced line input module
and one M-11S microphone input module.
14. MPS-1: 48 volt speaker system power supply and controller with RMS module.
Meyer MPS-488HP power supply.
15. RMS-1: RMS Server interface for connecting sound network to the Meyer RMS remote
monitoring system. Include Compass software.
RMServer
16. NET-1: 16 port 10/100/1000 Gigabit Ethernet switch for sound network running Meyer
Galileo/RMS remote monitoring software.
Cisco SG100-16
17. NET-2: 24 port 10/100/1000 Gigabit Ethernet switch with QOS for Dante audio network
and Shure wireless monitoring software.
BSS GS724T
18. COMP-1:
Dell XPS 15, i7-3320m processor, Windows 7, 64 bit, 16GB ram, 512GB SSD,
Blu-ray, NVIDIA GT640 with 2GB video, all required software
19. Provide speaker rigging hardware + power + signal cabling for every speaker.
20. SPK-1: Main full range self powered speaker, center cluster , 40X35 coverage, with
RMS module.
Meyer MSL-4
21. SPK-2: Main full range self powered speaker, stereo cluster bottom cabinet, 80X40 wide
coverage, with RMS module.
Meyer CQ-1
22. SPK-3: Main full range self powered speaker, stereo cluster top cabinet, 50X40 narrow
coverage, with RMS module.
Meyer CQ-2
23. SPK-4: Main full range self powered down fill speaker, 50 symmetrical coverage, with
RMS module.
Meyer DF-4
24. SPK-5: Main full range delay fill speaker, 100X40 coverage, with RMS module.
Meyer UPA-1

25. SPK-6: Main cluster self powered sub woofer, with RMS module.
Meyer 700-HP
26. SPK-7: Main full range 48 volt powered front fill speaker, 80X50 coverage. Portable, provide floor bracket with each speaker
Meyer UPM-1XP
27. SPK-8: Ceiling Speakers: Backbox / speaker / baffle assembly for distributed systems. Coordinate the color of the baffle with the architect.
Atlas Soundolier 96-8(-x) Backbox w/ 180 Series Channel Support. Atlas Soundolier 61-8W Baffle. Atlas Soundolier C10LAT70 Speaker and transformer
28. ICM-1: Intercom power supply
Clear Com PS 704
29. ICSS: Intercom speaker station
Clear Com KB-701 or KB-702
See contract drawings for type required. Provide a backbox for each station
30. Projection Screen:
Draper Truss-Style Cinefold Portable Projection Screen
16:9 HDTV format 245" diagonal
Provide CineFlex CH1200V rear projection surface (install this surface)
Provide Matt White XT1000V front projection surface
Include 2' bottom dress drape
Hang from stage rigging system batten
31. DWR-3: 3U rack drawer.
Middle Atlantic Products D3
32. DWR-2: 2U rack drawer.
Middle Atlantic Products D2
33. ATN-1: 10 watt attenuator
Atlas Soundolier AT10
34. ATN-2: 35 watt attenuator
Atlas Soundolier AT35
35. LGT-4: Rack mount light module with power distribution outlets
Furman Sound PL-8 Series II
36. LGT-3: Rack mount light module
Littlite RL-10-D
37. SWT-1: SPST MON push button switch
Augat MPG-106F
38. LGT-2: Local control light, 12 VDC, panel mount
Dialight 557-1503-203 (or as required by the system processor's logic outputs)
39. POT-1: 10Kohm linear control pot. and knob.
Clarostat RV4NAYS103A + Atlas Soundolier HX21-B
40. SWT-2: Power system on and off push button switches – shown as “ON” and “OFF” on the drawings
Lyntec SS-2 Sequencer switch set
41. RACK RS-1: Floor Mounted 19" slide out rack. Provide locking doors, top and side panels as required.
Middle Atlantic Products model WR- 44-32
42. RACK RS-2: Dual Credenza style 19" equipment rack. 12U pull out rack rail system. Coordinate with architect on finishing kit for style and color choices of sides, top, rear panels. Smoked plexi doors to match.

Middle Atlantic Products C5F2-D

43. RACK RS-3: Single Credenza style 19" equipment rack. 12U pull out rack rail system. Coordinate with architect on finishing kit for style and color choices of sides, top, rear panels. Smoked plexi doors to match.

Middle Atlantic Products C5F1-D

44. RACK RS-4: Portable 19" Equipment Rack. 12U Custom "Anvil" style, single wide, rolling equipment rack. Removable front and rear covers. Minimum 2" foam, with floating internal racks. Minimum 4" full swivel casters, of which two shall lock..

R&R Cases

45. RACK RS-5: Portable 19" Equipment Rack. 8U Custom "Anvil" style, single wide, equipment rack. Removable front and rear covers. Minimum 2" foam, with floating internal racks.

R&R Cases

46. RACK RV-1: Video rack.

Middle Atlantic Products MRK-4026AXS

Provide tracks and tracks stand for each rack

Provide side and top panels as required

47. COS & POS: Hofmann enclosure. See panel drawing for details

48. CO: Custom FSR WB-610 or WB-1X or WB-2X as required. Size, type and plates as required. Provide all necessary part including doors and covers.

49. TVs:

All TVs must have IR control

Include IR "bugs"

50" TV cannot be taller than 27"

All TVs shall be 1080p native

50. Cable Ladders – PROVIDE AS REQUIRED – NOT SHOWN ON ONE LINE DRAWING

1 Lot CL Series by Middle Atlantic Products. As needed, to span overhead from stub-outs in the amp/dimmer room, and feed down to the equipment rack. All cable ladders shall be located 80" A.F.F., or as required by code, and allow clear access to equipment racks. Include all necessary ladder sections, suspension hardware, and accessories.

- I. Panels: All panels are made of 1/8" thick Aluminum plate, brushed anodized black and sealed. All controls and connectors will have engraved labels. The minimum allowable label size is 1/8"s. All labels will be back filled with white paint. All connectors are mounted with machine hardware. All panel layouts and labels must be submitted and approved prior to construction, the panels shown in the drawings are typical only.
- J. Microphone Receptacles: The above general requirements for panels apply to the construction of Microphone Receptacles as well. See the contract drawings for quantity and type required.
- K. Monitor Speaker Receptacles: The above general requirements for panels apply to the construction of Monitor Speaker Receptacles as well. See the contract drawings for quantity and type required.
- L. Tie Line Receptacles: The above general requirements for panels apply to the construction of Tie Line Receptacles as well. See the contract drawings for quantity and type required.

M. Intercom Connection Receptacles: The above general requirements for panels apply to the construction of Intercom Connection Receptacles as well. See contract drawings for quantities and types required. All 6 pin connectors must be Switchcraft compatible.

N. Custom panels: See drawings for required components.

O. System Wire: All wiring installed in a conduit which is located in the slab must be rated for wet locations.

1. 10 A.W.G. for speaker lines enclosed in conduit, racks, or speaker enclosures. Use for all speaker runs except 70 volt systems. 10 A.W.G. THWN.
2. 16 A.W.G. twisted pair for RMS control system and for 70 volt audio wire for use in conduit, racks, or speaker enclosures. West Penn Wire AQC 225
3. 22 A.W.G. shield twisted pair for all mic, line or D.C. control lines enclosed in conduit or racks. Belden 5500F1 or West Penn Wire AQC 291
4. 18 A.W.G. Shielded twisted pair with 18 A.W.G. drain wire for all intercom lines enclosed in conduit or racks. Belden 5300F1 or West Penn Wire AQC 293. An additional 12 A.W.G. THWN will be required if speaker stations are used. This additional wire shall be used in parallel with the drain wire of the shielded twisted pair cable.
5. 24 A.W.G. shield twisted pair for all AES/EBU digital audio lines enclosed in conduit or racks. West Penn DA2401.
6. Coax Antenna Lines. As called for by equipment manufacture.
7. UTP Category 5 network cable. Four twisted pair of 24 A.W.G. wire with an outer diameter suitable for termination by standard type RJ-45 connectors. Use for all Category 5 cable run within a conduit or raceway. Belden 7934A.
8. Category 5 service cable. Use for all Category 5 cable NOT run within a conduit or raceway. TMB Associates ProPlex™ Ethernet cable.
9. RG6 coax for all video cable (including HD-SDI) West Penn Wire AQC806
10. RG 11 coax for wireless receiver antennas Liberty RG11-DB-CCTV
11. RG59 coax as required West Penn Wire AQC 815
12. DC power + signal for all under balcony and front fill speakers. Each location is home run back to the equipment rack. West Penn Wire AQC 225 + West Penn Wire AQC 291 or Belden 5500F1
13. Crestron cable as called for by manufacture. Wet location rated as necessary by installation location.
14. Extron cables as called for by Extron -

P. Sound Panel Board: Provide the following sound power panel board to the electrical contractor:

1. LynTec Model RPC341 sequencing panel board
Standard 225 amp main breaker
See drawings for breaker type and configuration
SGX20-10 power conditioning side car

Q. Portable Equipment: Provide the following portable equipment that is not shown on the contract drawings:

1. Show monitor mic: Mount a Shure SM87 from the near catwalk pointed toward the stage and wired to the near catwalk mic jack. This is a permanent installation and will require a custom assembly of mic mounting hardware. Typically a mounting flange with a small boom arm will be required to place the mic out into the room and rigidly hold it in position. Fishing line or other similar methods will not be accepted.
2. Microphones. Provide a mic clip for each mic.
 - 6 @ Shure SM-58
 - 4 @ Shure SM-57
 - 1 @ Shure VP88
 - 1 @ Shure SD565
 - 2 @ AKG C414 XLS
 - 1 @ Rode NT4 stereo mic
 - 1 @ Countryman ISOMAX 4RF (M4HP5RF18EB) + AT8416 shockmount
 - 2 @ Audio Technica 4040.
 - 4 @ Audio Technica 4041.
 - 1 @ CT Audio; C-Ducer CP Series CSP/8P.
 - 5 @ Crown PCC160.
 - 3 @ Countryman Type 85 Direct Box.
 - 1 @ Emtech Electronics, Inc. Model EJ-10 multi-input adapter box.
 - 1 @ Whirlwind PCDI
 - 4 @ Audio Technica 853A hanging mics
 - 1 @ Audix DP7 drum mic kit
3. Microphone Stands & Accessories.
 - 24 @ Atlas Sound MS12CE
 - 16 @ K&M KM210/91 black, mic stand w/boom
 - 1 @ Atlas Sound D7
4. Intercom belt pack.
 - 12 @ Clear Com RS-601.
 - 3 @ Clear Com RS-602
5. Intercom speaker station (portable)
 - 2 @ Clear Com KB-701 w/ V-box
6. Intercom single muff headset.
 - 12 @ Clear Com CC-300
7. Intercom dual muff headset
 - 3 @ Clear Com CC-400
8. Intercom cable, 6 pin XLR
 - 5 @ 25 feet – Clear Com IC-25/6

9. Mic Cables: Whirlwind MKQ series in black.
 - 10 @ 10 feet
 - 40 @ 20 feet.
 - 30 @ 30 feet.
 - 10 @ 50 feet.
 - 6 @ 100 feet.
10. Speaker Cables.
 - 8 @ Whirlwind NL-4-50
 - 8 @ Whirlwind NL-4-25
11. Multi pair drop boxes.
 - 4 @ Whirlwind 50' 12pr stage box w/ W1 multi-pin connector
 - 2 @ Whirlwind 25' 12pr stage box w/ W1 multi-pin connector
12. Patch Cables and Adapters - Audio
 - 8 @ Neutrik NL4MM.
 - 2 @ Switchcraft 389.
 - 2 @ Switchcraft 390
 - 2 @ Switchcraft 387A
 - 2 @ Switchcraft 386A
 - 2 @ Switchcraft 384A
 - 2 @ Switchcraft 383A
13. Monitor Speakers.
 - 4 @ JBL MRX512M w/ stand sockets
 - 4 @ Galaxy Hot Spots with volume control and 2 NL4 connectors
 - 4 @ Ultimate Support TS-90B speaker stands
14. Video adapters & cables:
 - 6 @ Extron 15HD GCF
 - 4 @ Extron 15HD GCM
 - 2 @ Extron SVHSF-2BNCF
 - 2 @ Extron SVHSM-2BNCF
 - 20 @ Extron BNCF-BNCF
 - 4 @ Extron BNCF-BNCF T
 - 12 @ Extron RCAF-BNCF
 - 2 @ Extron DP-DVIDF
 - 2 @ Extron DP-HDMIF
 - 2 @ Extron HDMIF-DVIDF
 - 2 @ Extron HDMIF-DVIDM
 - 2 @ Extron HDMIM-DVIDF
 - 2 @ Extron DVIAM-VGAF PT
 - 2 @ Extron DVIAF-VGAM
 - 2 @ Extron VGA-A-M-M-MD/6
 - 2 @ Extron VGA-A-M-M-MD/35
 - 2 @ Extron VGA-A-M-F-MD/12
 - 2 @ Extron SYM BNCF/3

- 2 @ Extron SYM BNCM/3
- 2 @ Extron SYF BNCF/3
- 2 @ Extron SYF BNCM/3
- 4 @ Extron RG6-5 BNC/6
- 12 @ Extron RG6 BNC/6
- 2 @ Extron HDMI PRO/6
- 2 @ Extron DISPLAYPORT-M-M/6
- 2 @ Extron DVID DL PRO/6
- 2 @ Extron HDMI DVI-D/6
- 2 @ Extron HDTV RCA/6
- 2 @ Extron AV RCA/6
- 2 @ Extron MHR-2-SVMF/20

15. Headphones.
1 @ Sony MDR-7506

PART 3 - EXECUTION

3.01 SUBMITTALS:

- A. The sound contractor, within thirty days of the bid award and prior to beginning work, shall submit all of the following at the same time to the owner for approval:
- B. Drawings: Complete shop drawings details and complete on all phases of installation including a minimum of:
1. Device location plan drawing(s)
 2. System wiring diagram
 - a. Make and model of all equipment
 - b. All connection points on each piece of equipment
 - c. All wire types
 - d. All cable labels
 3. Rack elevations
 4. Details of all connection plates and custom panels
 5. Rack and equipment labels
 6. Mounting and rigging details for all equipment
 7. Drawing showing the projector, the screen, the throw distance and all lens calculations in both plan and section
- C. Mountings and Attachments: Prior to equipment installation, the sound contractor will submit to the owner detailed scale drawings of all proposed enclosures and speaker mounting or rigging weighing more than ten pounds. All mountings and attachments must be approved and stamped by an engineer licensed in Delaware prior to submittal and the beginning of the installation.
- D. Materials and Equipment: The sound contractor will submit to the owner a complete list of all materials and equipment to be furnished including catalog cuts for all equipment items. These must contain full information on dimensions, construction, applications, etc. to permit proper evaluation. In addition, they must be properly identified as to their intended use and any

options or variations must be clearly marked. The contractor is to confirm equipment availability at time of submittal. It is assumed that all equipment submitted on is and will be available.

- E. Test Equipment: The sound contractor will submit to the owner a list of test equipment to be used to test, equalize and demonstrate the final installation.
- F. Schedule: Prior to the commencement of the installation work, the sound contractor shall submit for approval, to the owner, an outline of a proposed commencement and completion schedule and project requirements.
- G. Variations: Any deviation from what is specified here and or shown on the system drawings must be “starred” and noted in ¼” high letters on the shop drawings and highlighted in the submittal data.
- H. Approval of shop drawings and materials does not relieve the Contractor of any responsibilities.

3.02 COORDINATION WITH OTHER WORK:

- A. The sound contractor shall specifically coordinate the placement and sizes of conduit relating to this work and shall specifically review and approve the conduit rough-in in time to advise all parties of needed changes, omissions, etc. The sound contractor shall report this successful coordination in writing to the owner's representative. Failing this, the following will be enforced:
 - 1. The sound contractor shall provide and install any additional conduits required for the hookup, proper location and proper isolation of the various cable / signal types and equipment in the systems. The sound contractor must coordinate his conduit installation with those installed by the electrical contractor. All conduits shall be sized to their intended fill plus fifty percent.
 - 2. The contractor shall at all times coordinate his work with the other trades to ensure smooth progress of work and satisfactory final results.

3.03 INSTALLATION:

- A. Personnel: A single, competent, technically qualified foreman will oversee the entire job from start to finish. This foreman must:
 - 1. Be present on the job site during all phases of installation and testing.
 - 2. Be authorized to receive instructions from the Architects or their representatives.
- B. Only experienced sound installers shall be employed on this job.
- C. The contractor shall keep the job adequately staffed at all times.
- D. All job documents pertaining to the installation of this system will be accessible to all workers throughout the installation process.

E. Installation practices shall be in accordance with OSHA Safety and Health Standards and all local codes.

F. The sound contractor shall not commence the installation of equipment and devices, other than the pulling of cable, until all areas are clean, painted and finished to a point that they are completely dust, dirt, lint, fiber and airborne particle free. The air conditioning system must be operating to its design level and be able to keep all areas with sound equipment stable.

G. General Workmanship:

1. The installation of all work shall be neat.
2. All boxes, equipment, etc shall be plumb and square.
3. The installation shall conform to the plans and spec.
4. Equipment racks shall be assembled, wired and tested in the contractors shop prior to delivery to the job site.

H. Wiring:

1. If enclosed in conduit run only similar signal levels in a single conduit.
2. All pulls to be made be hand, care will be taken not to nick cable jackets, and any nicked or damaged cable will be replaced.
3. A pull string will be left in all conduits after wire is installed.
4. **NO SPLICES WHATSOEVER IN CONDUIT!**
5. If not enclosed in conduit neatly group cables into bundles and secure out of harms way.
6. Separate cable grouping by signal level. Mic and A.C. power shall be not less than 18" all other levels by not less than 6".
7. Include spare cables with all field runs. Quantity to be 10% or 1 which ever is greater unless otherwise specified.

I. Terminations:

1. All cables shall be permanently labeled at every termination.
2. Service loops of not less than 6" will be present at all terminations to equipment.
3. Where terminal blocks or barrier strips are used only uninsulated fork terminals with a brazed seam, sized according to wire and stud sizes, crimped with notch across from the seam will be approved.
4. Use barrier strips on equipment where provided.
5. Where shielded cable is in use leave shield drain wire the same length as the circuit conductor(s), sleeve shield drain wire in green pvc tubing. Cap where the cable jacket was removed with heat shrink. Where the shield drain wire is to be lifted follow the above and fold back over cable jacket. Then cap end with heatshrink. Do not use a single piece of heatshrink for this use two smaller ones.
6. All soldering will be clean and neat and not exhibit evidence of a " cold" joint, were necessary heat sinks will be used. Use only rosin core "electronic type " solder.

7. Wire nuts will be allowed only for field connections of 70 volt speaker lines and priority attenuation control lines, and then only when the proper size is used.

J. Polarity:

1. The " high " side will be connected to pin 2 on XLR connectors, to tip on 1/4" connectors and to the pin on phono connectors.
2. The " low " side will be connected to pin 3 on XLR connectors, to ring on 1/4" balanced connectors and to case on phono connectors.
3. Microphones will be wired so that an acoustic compression at the diaphragm produces a positive going signal on pin 2 with respect to pin 3.
4. Speakers will be wired so that when a positive going signal is applied to the + or red terminal an acoustic compression is produced.
5. The system will be wired to maintain absolute polarity though all system components to insure that a positive signal on pin 2 or tip produces a positive signal at the + or red speaker terminal.

K. Shield Grounding:

1. Do not tie pin 1 to case of XLR connectors anywhere.
2. Microphone shield drain wires will be grounded only at mixer inputs. Where microphone lines and mixer inputs run though a patchbay, connect shield drain wire to sleeve of patchbay connector and only to this point.
3. Line level lines will have shield drain wire lifted from ground at outputs and connected to ground at inputs.
4. The intent here is to not make ground loops, should any situation arise which would form a ground loop, please inform the owner for direction.

L. Mountings and Attachments:

1. Any and all structural, mounting, or rigging details are shown on the drawings for concept only.
2. The detail drawings and calculations of all proposed mounting or rigging of any equipment weighing more than ten pounds will be approved and stamped by a P.E. who is licensed in Delaware.
3. Each cluster element is to be individually adjustable.
4. Provide for an adjustment range of +/- 10 degrees from the information shown in the contract documents.
5. In the absence of specific direction otherwise, standard rigging practices shall be followed.

M. Labels:

1. Cable Labels: All cables shall be labeled at all termination points. The label shall not be hand written. Clear heat shrink shall cover the label.
2. Equipment Labels. All equipment shall be labeled front and rear. Labels shall functionally describe the use of each piece of equipment. On equipment having multiple channels, each channel shall be labeled. Additionally the equipment

label will call out equipment designation which will correspond with the designations shown on the approved contractor's one-line diagram. Labels shall be engraved lanacoid, white letters on black background, with a minimum letter size of 3/16". Approved patchbay labeling may vary from this.

- N. Power Sequencing. The system shall turn on and off, in proper order, on circuit at a time, when the power switch is pressed. The power light shall be solid on when all circuits are on , and shall flash during sequencing.
- O. The system may not be used prior to checkout.

3.04 INSPECTION AND TESTING:

- A. During the installation of the equipment the sound contractor shall arrange for access as necessary for inspection of equipment by the owner's and/or architect's representatives.
- B. Provide a safe means of accessing all system components for all visits.
- C. Equipment Pretesting: All racks are to be built and wired in contractors shop and tested prior to delivery to site. All other equipment is to be tested prior to delivery and installation. A written test report will be submitted to the owner.
- D. Final Inspection:
 - 1. The final inspection will confirm that the systems, as installed, meets the requirements of this spec, the contract documents, and the approved contractor's shop drawing and submittals.
 - 2. The contractor will inform the owner in writing of the system's completion. The contractor will then request final inspection by the consultant, and carry out the necessary coordination. This coordination includes:
 - a. Giving at least fourteen days notice to the consultant prior to the final inspection.
 - b. Arranging for the contractor's and consultant's exclusive use of the space.
 - c. Arranging for a HVAC technician to be available to turn the AC system on and off as required.
 - d. Arranging for a lighting technician to be available to control the stage lighting as required.
 - e. The contractor's job foreman and one additional worker familiar with the job will be present during all check out, testing and tuning.
 - 3. Contractor will complete the following tasks prior to consultant's arrival:
 - a. Unpack and assemble all portable equipment.
 - b. Place all portable equipment in one location.
 - c. If anything has been turned over to the owner have the signed Letters of Transmittal on site.
 - d. Complete all required paperwork (pre-testing reports, letters indicating successful coordination of the installation, etc.).
 - e. Remove all security covers.

- f. Contractor will provide all necessary software, cables, and interfaces to facilitate the setting of computer, remote controlled, or DSP based equipment.
 - g. Contractor will either: 1) relocate all system equalizers to a tech area in the house for the duration of system tuning or 2) for remotely controllable devices, locate the control position in a tech area in the house for the duration of system testing. In either case a tech area in the house will be required with a minimum of a 4' x 6' folding table, intercom communications to the rack and console locations, and AC power.
4. Contractor will provide the following test equipment for use during tuning and acceptance testing:
 - a. Sennheiser ZP-3 impedance bridge.
 - b. Low distortion sine wave oscillator with variable sweep (start frequency, stop frequency, and sweep rate).
 - c. Distortion meter.
 - d. Oscilloscope dual channel, 100Mhz, .001v/div vertical amp.
 - e. Noise generator that will provide pink, white, or bandwidth limited pink noise.
 - f. 1/3 octave real time audio spectrum analyzer.
 - g. Precision sound level meter with filter set.
 - h. Polarity checker.
 - i. Precision true R.M.S. reading A.C. millivolt meter with dB scale.
 - j. Playback and recording media for testing all supplied source equipment.
 5. Contractor will provide safe means to access all system components during the entire commissioning process.
 6. Contractor shall provide personal and equipment to make adjustments to the speaker cluster(s), as well as to correct problems, for the entire inspection and testing period.
- E. The Theatre Consultant or his representative will conduct all final system tests and equalization adjustments in order to determine final acceptance.
- F. In no event shall the theatrical sound systems installation be submitted for final approval or acceptance until any and all elements of the facility that may have a bearing on the system performance, including but not limited to doors, windows, HVAC, carpeting, furniture, wall coverings, interior design elements, lighting and lighting control systems have been completed and are operable. All elements that may effect sound systems operation or performance shall be "on" and operating during adjustments. The sound contractor will be responsible for coordinating the requirements of this paragraph with other work on the project.
- G. Should more than two trips be required to complete the systems testing, systems tuning, and clearing punch list items, the contractor will be charged for any additional visits. These charges will include:
1. A minimum of two people at a rate of \$1250 per day per person.
 2. Travel expense to and from the job site.
 3. These charges will be paid to the consultant, in advance of the consultant's arrival on the job site.

3.05 MANUALS:

A. Prepare four identical copies of owner's manuals. The owner is to receive two, the consultant receives one and the contractor retains one. Before distribution of manuals submit one copy to consultant for approval. Each manual is to contain the following:

1. System one line drawing including all labeling and changes (" as built ").
2. Owners manual for each piece of equipment.
3. Schematic diagram for each piece of equipment.
4. Contractors service phone number in a conspicuous place.
5. All test reports.

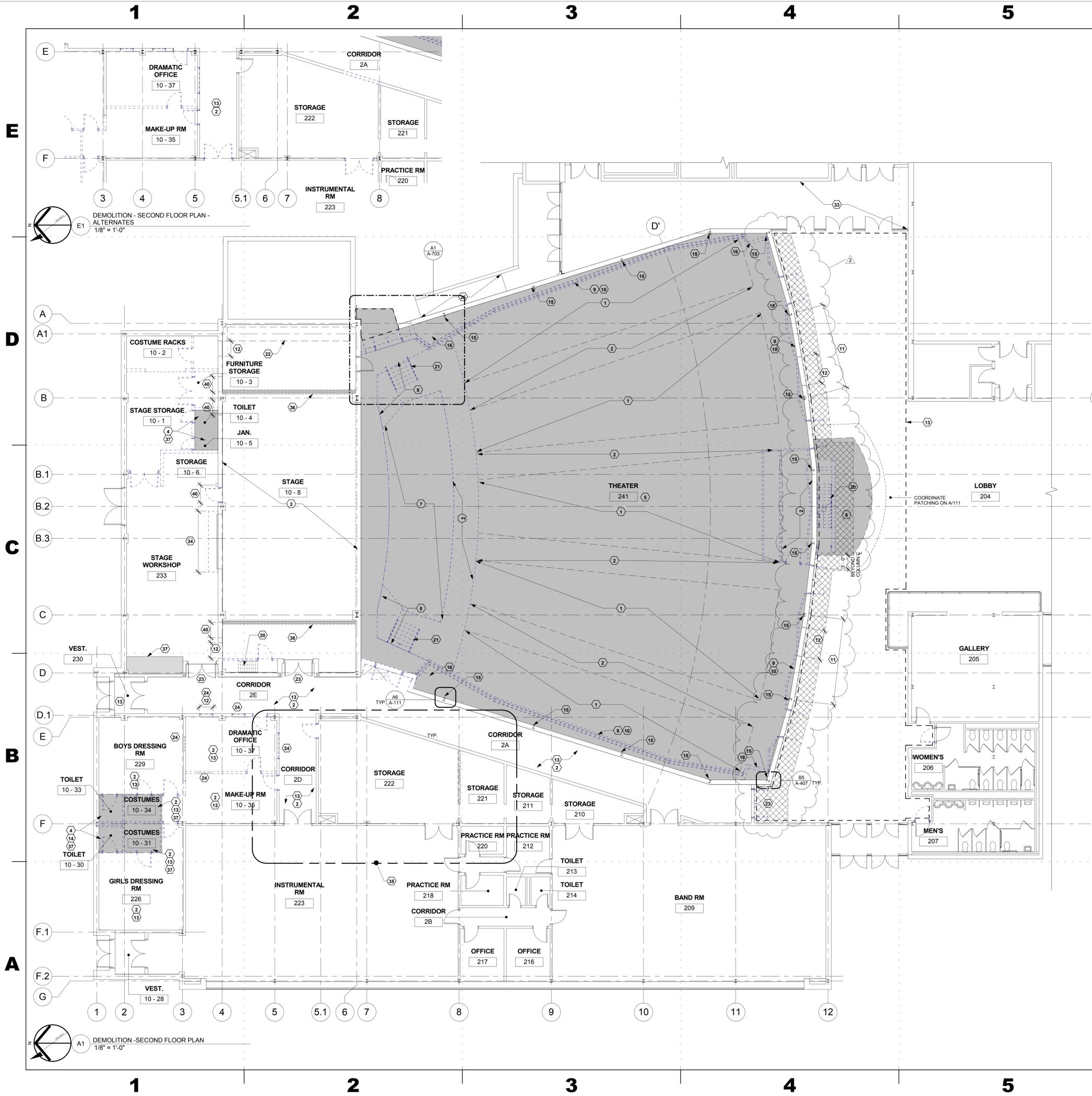
3.06 INSTRUCTION: The following is to be carried out within two months of system acceptance:

- A. Provide a total of 12 hours of instruction, on a maximum of two occasions. This is to be time on site, travel time is not to be included within the allotted time.
- B. Provide operational assistance for the first usage of the system. This is to be on the owners time schedule but, not to exceed 8 hours.

3.07 WARRANTY

- A. Contractor will warrant the system to be free from defects in materials and workmanship for a period of one year from the date of acceptance, or first beneficial use, which ever comes first.
- B. Acts of god and owner abuse, or neglect are not covered.
- C. During the warranty period the contractor will respond to and correct any call for service within one day of the call. Loaner equipment will be provided if necessary.

END OF SECTION 274118



GENERAL SHEET NOTES

- A. LEGEND:**
- EXISTING CONSTRUCTION TO REMAIN
 - - - CONSTRUCTION TO BE REMOVED
 - REMOVE DOOR AND FRAME (U.N.O.)
TURN ALL HARDWARE OVER TO OWNER
 - AREA OF CONCRETE SLAB REMOVAL
 - ▨ AREA OF EPDM REMOVAL
 - ▩ AREA OF SOFFIT REMOVAL
(COORDINATE EXTENT WITH REFLECTED CEILING PLAN)
- B. SEE ARCHITECTURAL PLANS FOR COORDINATION OF DEMOLITION WITH NEW CONSTRUCTION.**
- C. SEE STRUCTURAL DRAWINGS FOR EXTENT OF STRUCTURAL DEMOLITION.**
- D. SEE MECHANICAL DRAWINGS FOR EXTENT OF MECHANICAL DEMOLITION.**
- E. SEE ELECTRICAL DRAWINGS FOR EXTENT OF ELECTRICAL DEMOLITION.**
- F. SEE FIRE PROTECTION DRAWINGS FOR EXTENT OF SPRINKLER DEMOLITION.**
- G. SPRINKLER WORK TO BE PERFORMED UNDER BID PACK A. SEE PLUMBING DRAWINGS FOR EXTENT.**

SHEET KEYNOTES

1. REMOVE AUDITORIUM SEATING
2. REMOVE RESILIENT FLOORING/ACCESSORIES AND ADHESIVE
3. REMOVE WOOD STAGE FLOORING AND SLEEPERS DOWN TO EXISTING CONCRETE SLAB
4. REMOVE CERAMIC TILE FLOOR AND MUD BED DOWN TO EXISTING CONCRETE SLAB
5. SAWCUT AND REMOVE CONCRETE FLOOR SLAB
6. SAWCUT AND REMOVE TERRAZZO FLOOR AND CONCRETE SLAB
7. REMOVE CONCRETE ORCHESTRA PIT INCLUDING FOUNDATIONS
8. REMOVE STAGE APRON BACK TO PROSCENIUM WALL INCLUDING FOUNDATIONS
9. REMOVE PLASTER WALLS AND SUPPORTING GRID IRON
10. REMOVE MASONRY KNEE WALL AND RELATED FOUNDATIONS
11. REMOVE "HALL OF FAME" WALL - DOWN TO EXISTING MASONRY
12. SAW CUT MASONRY WALL FOR NEW DOOR OPENING
13. REMOVE ACOUSTICAL CEILING TILE, GRID, AND HANGING WIRE
14. REMOVE PLASTER CEILINGS AND SUPPORTING GRID IRON.
15. REMOVE CMU PILASTER SURROUND FROM STRUCTURAL STEEL COLUMN
16. REMOVE CMU CHASE
17. SAWCUT AND REMOVE ELEVATED CONCRETE SLAB AND SUPPORTING STRUCTURAL STEEL
18. REMOVE CAT WALK SYSTEM AND SUPPORT RODS
19. REMOVE ACCESS LADDER, CAGE, AND LANDINGS
20. REMOVE STEEL STAIRS
21. REMOVE WOOD STAGE STAIRS
22. REMOVE STAGE RIGGING
23. REMOVE DOOR - HOLLOW METAL FRAME TO REMAIN
24. REMOVE HOLLOW METAL VISION PANEL
25. REMOVE STEEL WINDOW SYSTEM
26. REMOVE CONCRETE RAMP
27. MECHANICAL RELIEF VENT - SEE MECHANICAL
28. REMOVE EPDM ROOFING SYSTEM DOWN TO EXISTING DECK
29. REMOVE EXISTING ROOF DECK - SEE MECHANICAL
30. NOT USED
31. NOT USED
32. NOT USED
33. REMOVE ACOUSTICAL CEILING GRID AND TILE AS REQUIRED FOR STEEL INSTALLATION - SEE STRUCTURAL
34. REMOVE OVERHEAD COIL DOOR
35. ALTERNATE #2 - SEE DRAWING E11/A-101
36. TRENCH CONCRETE SLAB AS REQUIRED FOR ELECTRICAL FLOOR BOXES - SEE ELECTRICAL
37. SAW CUT AND REMOVE CONCRETE SLAB AS REQUIRED FOR PLUMBING WORK - SEE PLUMBING
38. REMOVE EXISTING LOUVER
39. SAW CUT AND REMOVE EXISTING EXTERIOR MASONRY WALL FOR DUCT PENETRATION - SEE MECHANICAL
40. SAW CUT MASONRY WALL FOR DUCT/LOUVER PENETRATION - SEE MECHANICAL
41. REMOVE DIAMOND PLATE, STORE FOR REINSTALLATION
42. RELOCATE LOADING BRIDGE LADDER
43. REMOVE WOOD GUARD RAILING



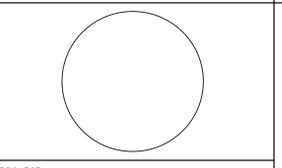
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PROJECT
**WILMINGTON CAMPUS
RENOVATIONS**



100 NORTH DUPONT ROAD
WILMINGTON, DE 19807

OWNER
**RED CLAY CONSOLIDATED
SCHOOL DISTRICT**
1502 SPRUCE AVENUE
WILMINGTON, DE 19805

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1	05-28-13	ISSUED FOR BID PACK B

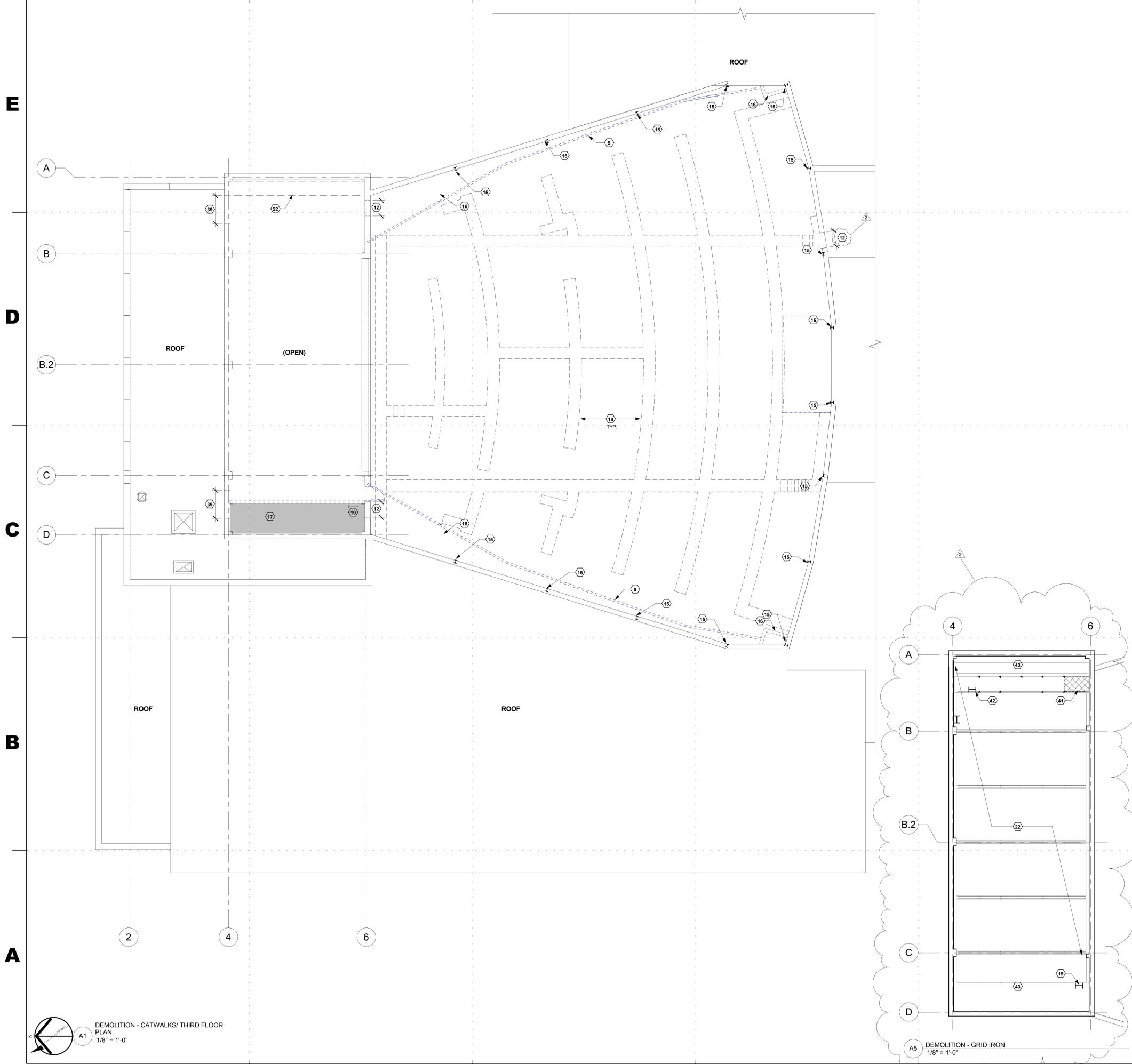
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SHEET TITLE
**SECOND FLOOR
DEMOLITION PLAN**

(BID PAC B)

A-101



- GENERAL SHEET NOTES**
- A. LEGEND:**
- EXISTING CONSTRUCTION TO REMAIN
 - CONSTRUCTION TO BE REMOVED
 - REMOVE DOOR AND FRAME (U.N.O.) TURN ALL HARDWARE OVER TO OWNER
 - AREA OF CONCRETE SLAB REMOVAL
 - AREA OF EPDM REMOVAL
- B. SEE ARCHITECTURAL PLANS FOR COORDINATION OF DEMOLITION WITH NEW CONSTRUCTION.**
- C. SEE STRUCTURAL DRAWINGS FOR EXTENT OF STRUCTURAL DEMOLITION.**
- D. SEE MECHANICAL DRAWINGS FOR EXTENT OF MECHANICAL DEMOLITION.**
- E. SEE ELECTRICAL DRAWINGS FOR EXTENT OF ELECTRICAL DEMOLITION.**
- F. SEE FIRE PROTECTION DRAWINGS FOR EXTENT OF SPRINKLER DEMOLITION.**
- G. SPRINKLER WORK TO BE PERFORMED UNDER BID PACK A. SEE PLUMBING DRAWINGS FOR EXTENT.**

- SHEET KEYNOTES**
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 7. REMOVE CONCRETE ORCHESTRA PIT INCLUDING FOUNDATIONS
 8. REMOVE STAGE APRON BACK TO PROSCENIUM WALL INCLUDING FOUNDATIONS
 9. REMOVE PALSTER WALLS AND SUPPORTING GRID IRON
 10. REMOVE MASONRY KNEE WALL AND RELATED FOUNDATIONS
 11. REMOVE 'HALL OF FAME' WALL - DOWN TO EXISTING MASONRY
 12. SAW CUT MASONRY WALL FOR NEW DOOR OPENING
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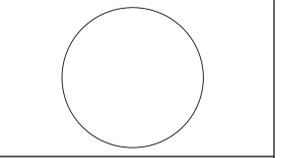
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PROJECT

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OWNER

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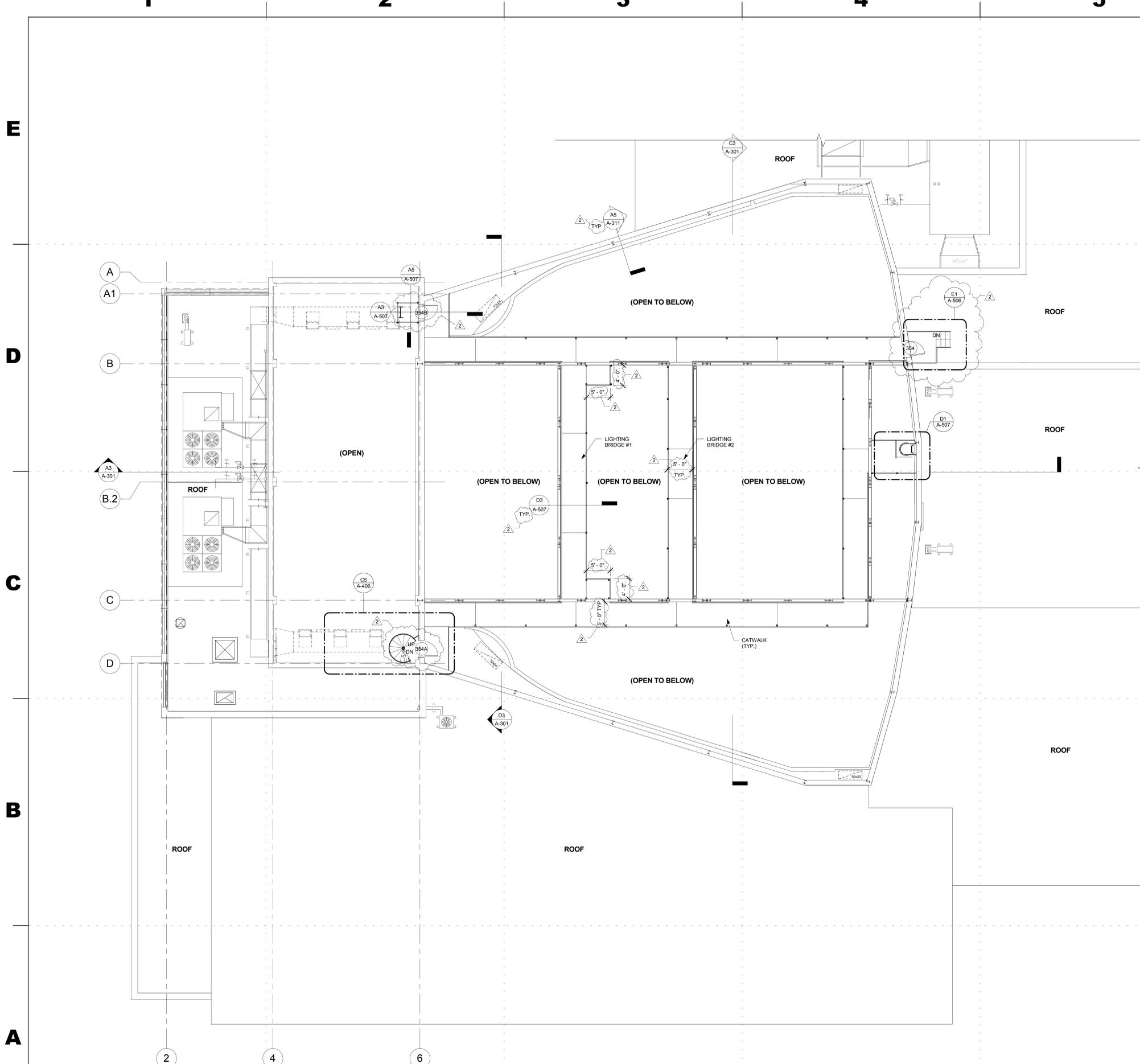
**THIRD FLOOR DEMOLITION
PLAN**

(BID PAC B)

A-103

DEMOLITION - CATWALKS/ THIRD FLOOR
PLAN
1/8" = 1'-0"

DEMOLITION - GRID IRON
1/8" = 1'-0"



GENERAL SHEET NOTES

- A. LEGEND:**
- EXISTING CONSTRUCTION
 -
 - CMU PARTITION. SEE PLAN FOR SIZE
 - EXTENT OF STAGE FLOORING
 - NEW DOOR
 - EXISTING DOOR
- B. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD BEFORE PROCEEDING WITH WORK.**
- C. ALL CONSTRUCTION SHOWN IS NEW (UNLESS OTHERWISE NOTED).**
- D. ALL PARTITIONS ARE DIMENSIONED TO FACE OF STUD (UNLESS OTHERWISE NOTED.)**
- E. ALL MASONRY PARTITIONS ARE DIMENSIONED TO FACE OF PARTITION OR OPENING.**
- F. TOOTH ALL NEW MASONRY INTO EXISTING TO CREATE UNIFORM APPEARANCE (UNLESS OTHERWISE NOTED.)**
- G. SEAL ALL PENETRATIONS THRU RATED PARTITIONS AND FLOOR SLABS WITH FIRE SAFING INSULATION AND SEALANT AS REQUIRED TO MAINTAIN RATED SEPARATION.**

SHEET KEYNOTES

1. CONC. RAMP
2. SAWCUT ON BOTH SIDES OF COLUMNS - SAWCUT THROUGH 8" CMU ONLY. PROVIDE SEALANT TYPE 1 W/ BACKER ROD.
3. ALTERNATE #2. SEE DRAWING E1A-111.
4. SEE A1A-121 FOR THEATRE SEATING DIAGRAM.
5. REINSTALL DIAMOND PLATE
6. REINSTALL LOADING BRIDGE LADDER. 2 1/2" CLEAR FROM WALL.

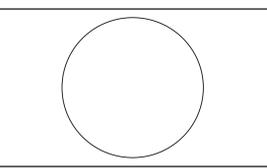


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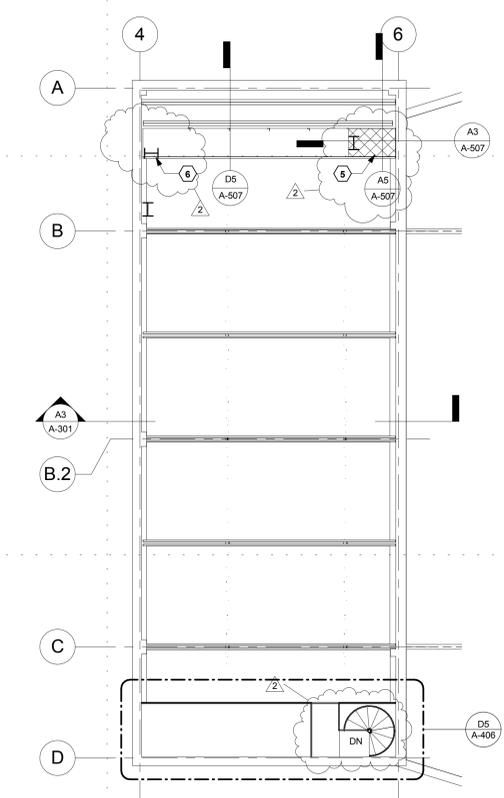
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A1 THIRD FLOOR PLAN - BASE BID
1/8" = 1'-0"

A6 GRID IRON
1/8" = 1'-0"

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SHEET TITLE
THIRD FLOOR PLAN

(BID PAC B)

A-113



- GENERAL SHEET NOTES**
- A. LEGEND:**
- [Symbol] EXISTING ROOF
 - [Symbol] TPO ROOFING SYSTEM OVER TAPERED INSULATION (3" MIN THICKNESS) W/ 1/2" COVER BOARD - BID PACK A
 - [Symbol] TPO ROOFING SYSTEM OVER TAPERED INSULATION (3" MIN THICKNESS) W/ 1/2" COVER BOARD
 - [Symbol] RH ROOF HATCH
 - [Symbol] SH SMOKE HATCH
 - [Symbol] HRL ROOF LADDER
 - [Symbol] RD ROOF DRAIN (SEE DETAIL C2/A-506)
 - [Symbol] SC THRU-WALL SCUPPER (SEE DETAIL A3/A-506)
 - [Symbol] DS SCUPPER BOX AND DOWNSPOUT (SEE DETAIL A3/A-506)
 - [Symbol] V VENT PIPE (SEE DETAIL C1/A-506)
- B. SEE STRUCTURAL DRAWINGS FOR COORDINATION OF STRUCTURAL WORK.**
- D. SEE PLUMBING DRAWINGS FOR COORDINATION OF PLUMBING WORK.**
- D. SEE MECHANICAL DRAWINGS FOR COORDINATION OF MECHANICAL WORK.**
- E. SEE ELECTRICAL DRAWINGS FOR EXTENT OF ELECTRICAL WORK.**

- SHEET KEYNOTES**
1. ROOF TOP UNIT - SEE MECHANICAL (SEE DETAIL D3/A-506)
 - 1A. ROOF TOP UNIT - SEE MECHANICAL - BID PACK A
 2. EXHAUST FAN - SEE MECHANICAL (SEE DETAIL D3/A-506 - SIMILAR)
 3. MECH. UNIT INTAKE / EXHAUST - SEE MECHANICAL (SEE DETAIL D3/A-506 - SIMILAR)
 4. CONDENSING UNIT - SEE MECHANICAL
 - 4A. CONDENSING UNIT - SEE MECHANICAL - BID PACK A
 5. ROOF CURBS - SEE DETAIL (SEE DETAIL C3/A-506)
 6. ROOF CURB OVER EXISTING TPO ROOF (SEE DETAIL C3/A-506 - SIMILAR)
 7. ROOF CURB OVER EXISTING EPDM ROOF (SEE DETAIL C3/A-506 - SIMILAR)
 8. POURABLE SEAL POCKET (SEE DETAIL B1/A-506)
 9. POURABLE SEAL POCKET OVER EXISTING TPO ROOF (SEE DETAIL B1/A-506 - SIMILAR)
 10. POURABLE SEAL POCKET EXISTING EPDM ROOF (SEE DETAIL B1/A-506 - SIMILAR)
 11. PATCH EXISTING EPDM ROOF. (SEE DETAIL E3/A-506)



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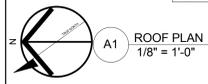
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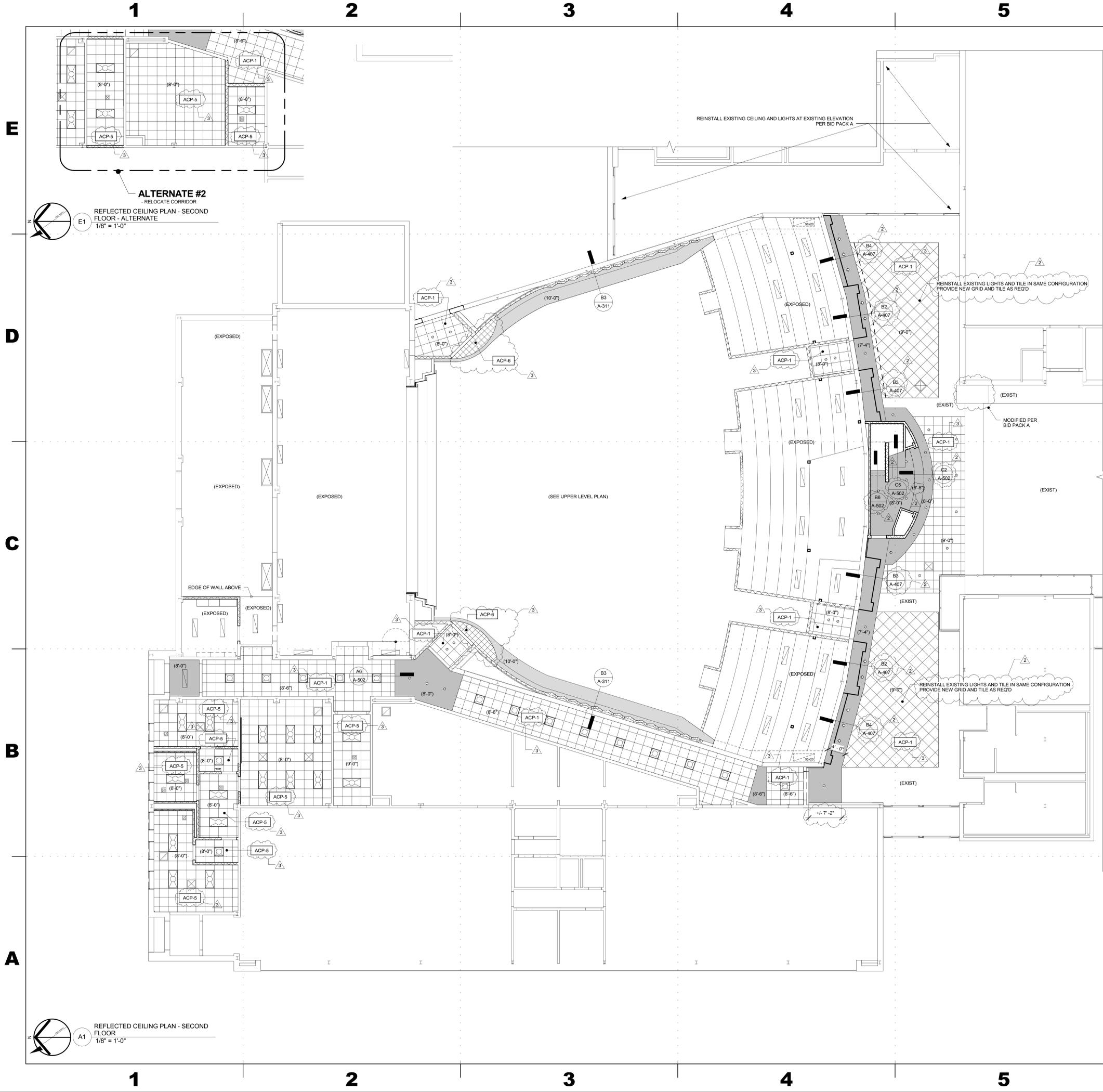
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SHEET TITLE
ROOF PLAN

(BID PAC B)

A-114





GENERAL RCP SHEET NOTES

- SEE SPECIFICATIONS FOR ACOUSTIC CEILING TILE AND GRID SUSPENSION SYSTEM TYPES.
- ACOUSTIC CEILING TILES TO BE TYPE 1 U.O.N.
- SEE MECH. & ELEC. DWGS & SPECS FOR SIZES & TYPES OF FIXTURES, DIFFUSERS, GRILLES, ETC.
- (X-X') DENOTES HEIGHT OF CEILING A.F.F.
- LIGHTING SHOWN FOR REFERENCE ONLY IN LECTURE ROOM (SEE ELEC. FOR ALL LIGHTING WORK)

REFLECTED CEILING PLAN LEGEND

- 2X2 ACOUSTICAL CEILING AND GRID
- GYPSUM BOARD CEILING/SOFFIT
- ACOUSTICAL CEILING PANEL - ACP-3
- ACOUSTICAL CEILING PANEL - ACP-2
- 2X2 LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- DELETED
- PENDANT LIGHT FIXTURE
- WALL WASHER
- SUPPLY AIR DIFFUSER/ EXHAUST REGISTER (SEE MECH)
- RETURN AIR GRILLE (SEE MECH)
- LINEAR SUPPLY AIR DIFFUSER (SEE MECH)



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SHEET TITLE
SECOND FLOOR
REFLECTED CEILING PLAN

(BID PAC B)
A-121



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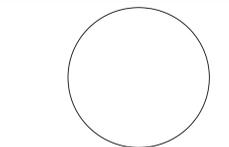
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Scheu Consulting Service, Inc.
Theater Consultant

1615 Sunset Lane
Wilmington, DE 19816
1206 Society Drive
Claymont, DE 19705
210 Falls Boulevard
Chesapeake, DE 19829



PROJECT
WILMINGTON CAMPUS
RENOVATIONS

100 NORTH DUPONT ROAD
WILMINGTON, DE 19807

OWNER
RED CLAY CONSOLIDATED
SCHOOL DISTRICT
1502 SPRUCE AVENUE
WILMINGTON, DE 19805

2	6-26-13	ADDENDUM 3
7	05-28-13	ISSUED FOR BID PACK B
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	1219	
FILE NAME:	1219 - CAB CALLOWAY.rvt	
DRAWN BY:	KJR / DOB	
CHECKED BY:	CK	

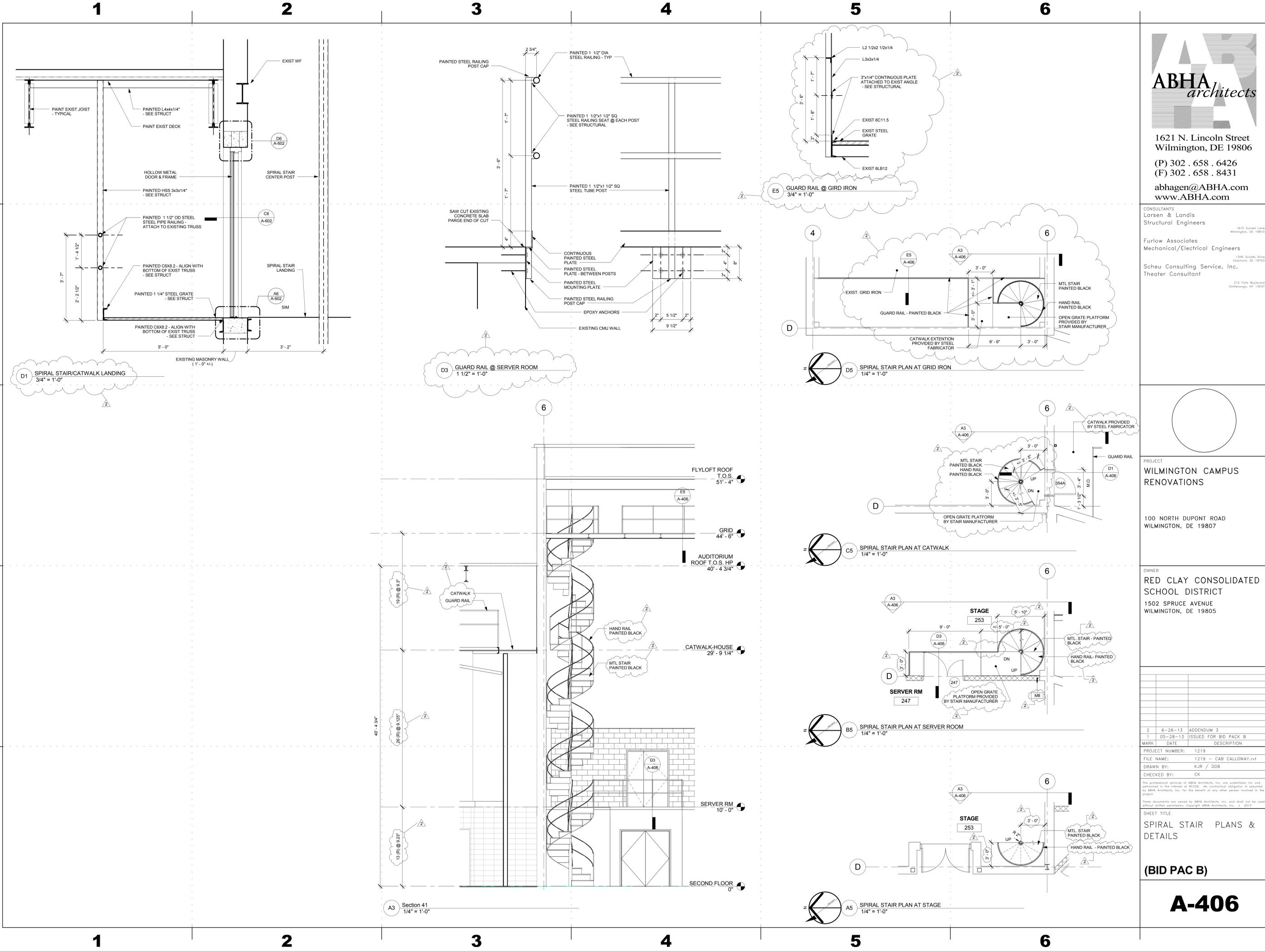
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SHEET TITLE
SPIRAL STAIR PLANS &
DETAILS

(BID PAC B)

A-406





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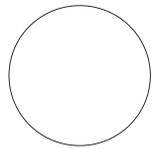
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Theater Consultant
210 Falls Boulevard
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PROJECT
WILMINGTON CAMPUS
RENOVATIONS

100 NORTH DUPONT ROAD
WILMINGTON, DE 19807

OWNER
RED CLAY CONSOLIDATED
SCHOOL DISTRICT
1502 SPRUCE AVENUE
WILMINGTON, DE 19805

MARK	DATE	DESCRIPTION
2	6-26-13	ADDENDUM 3
7	05-28-13	ISSUED FOR BID PACK B
PROJECT NUMBER: 1219		
FILE NAME: 1219 - CAB CALLOWAY.rvt		
DRAWN BY: KJR / DOB		
CHECKED BY: CK		

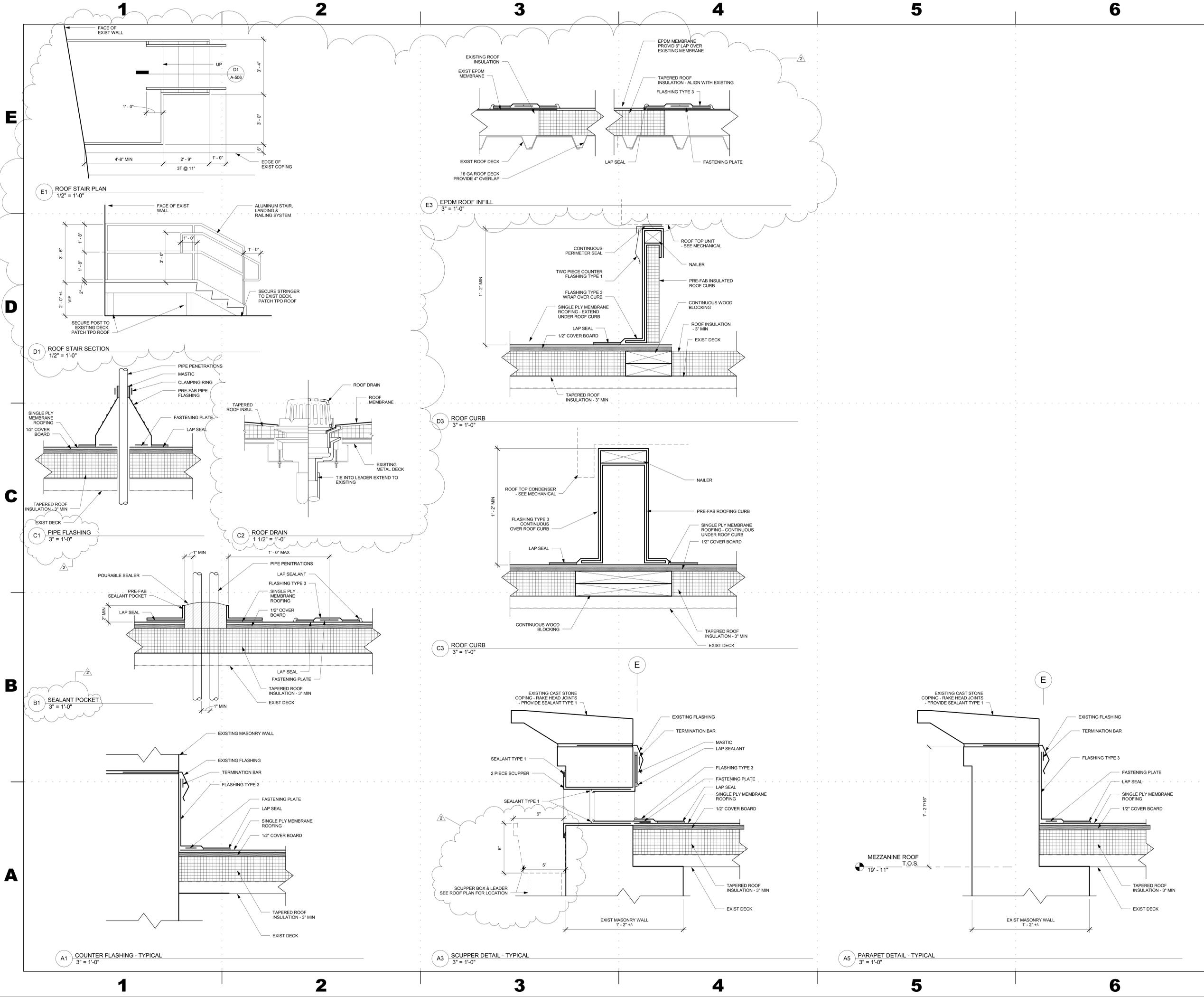
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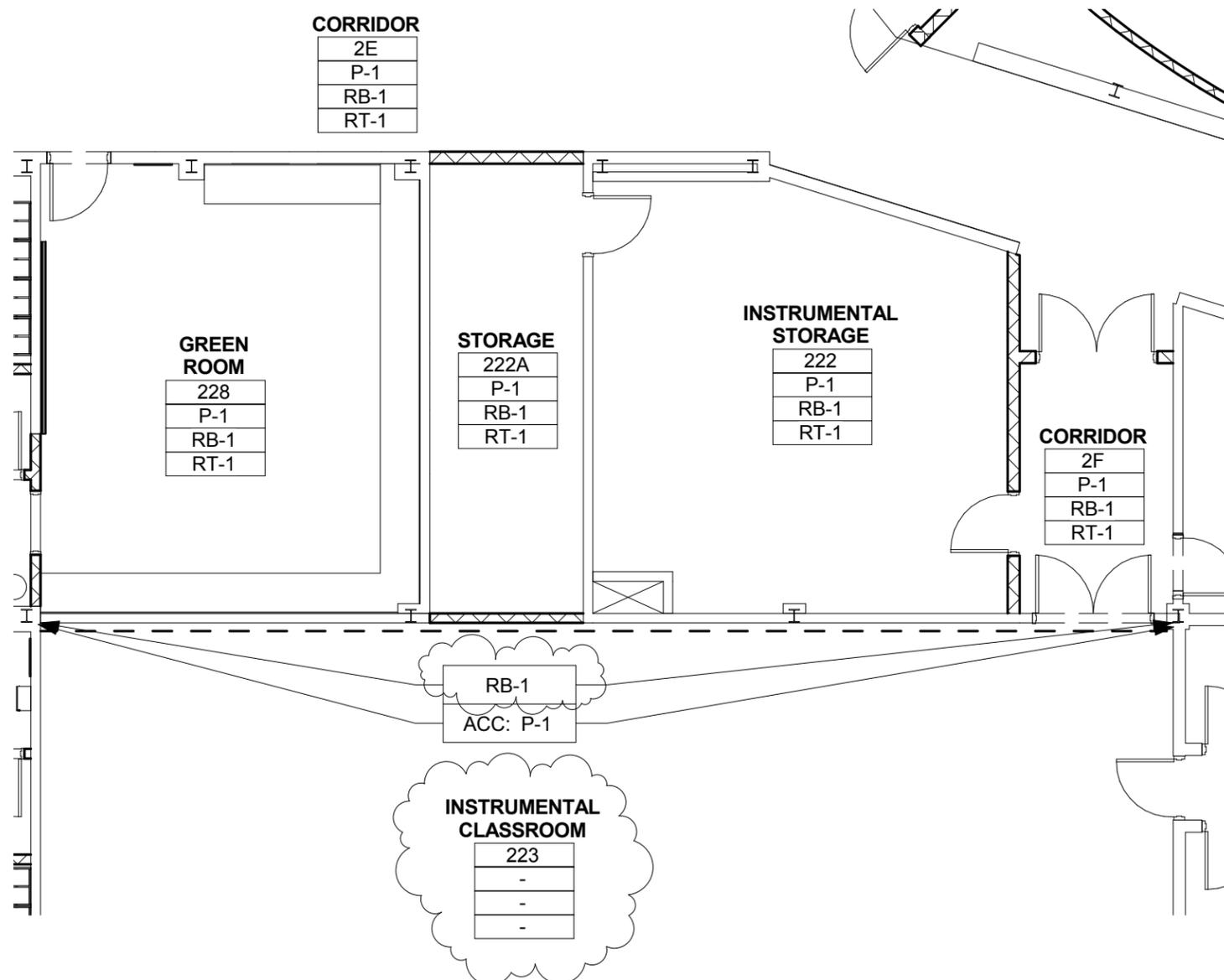
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SHEET TITLE
ROOFING DETAILS

(BID PAC B)

A-506





E6 SECOND FLOOR PARTIAL FINISH PLAN -
ALTERNATE - RELOCATE CORRIDOR
1/8" = 1'-0"

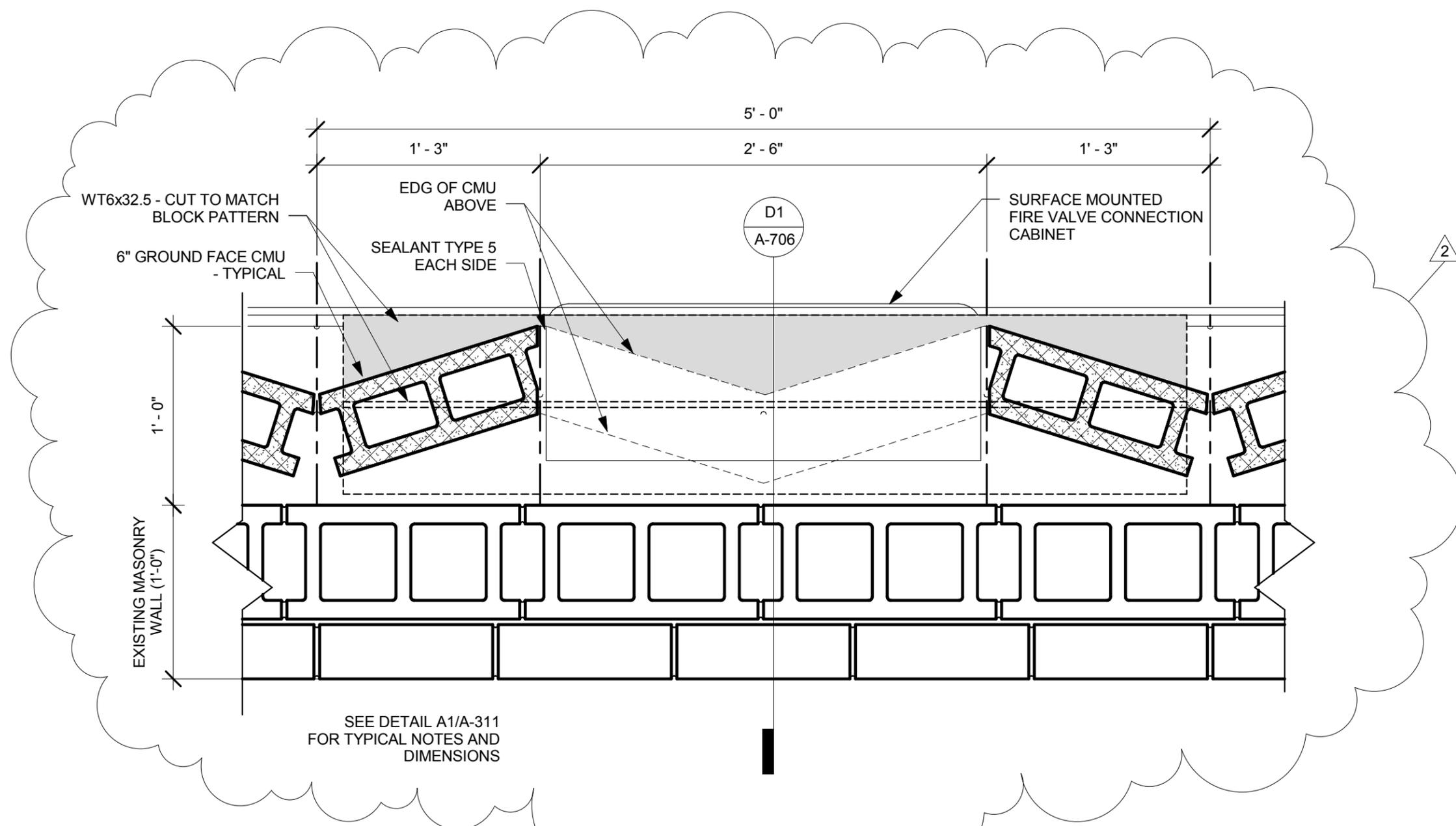
* REPLACE DETAIL E6 ON SHEET I-111

*ISSUED FOR RFI #20

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	ISSUE: 06/25/13
	PROJECT NO: 1219
FILE NAME: 1219-CAB CALLOWAY.rvt	
DRAWN BY: KD	
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SHEET TITLE	
SECOND FLR. PARTIAL FINISH PLAN-ALTERNATE	
PROJECT	
WILMINGTON CAMPUS RENOVATIONS	
CONSULTANT	

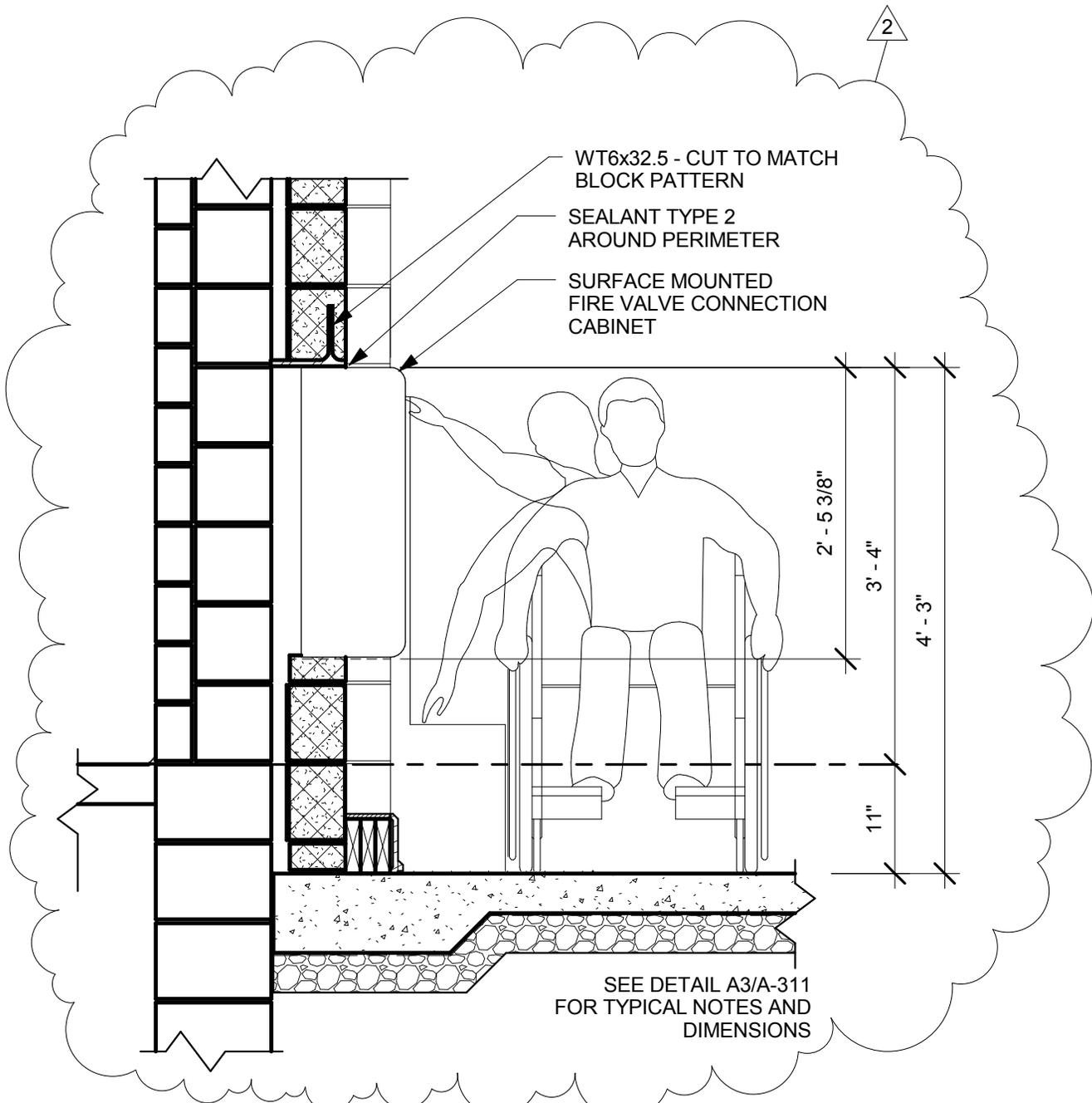
A-704



C1 FIRE VALVE CONNECTION PLAN DETAIL
 1 1/2" = 1'-0"
 *ADD TO SHEET A-503

***ISSUED FOR ADDENDUM 3**

 <p>1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431 abhagen@ABHA.com www.ABHA.com</p>	SHEET TITLE	
	FIRE VALVE CONNECTION PLAN DETAIL	
	PROJECT	
	WILMINGTON CAMPUS RENOVATIONS	
	CONSULTANT	
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FIRE VALVE CONNECTION CABINET SECTION

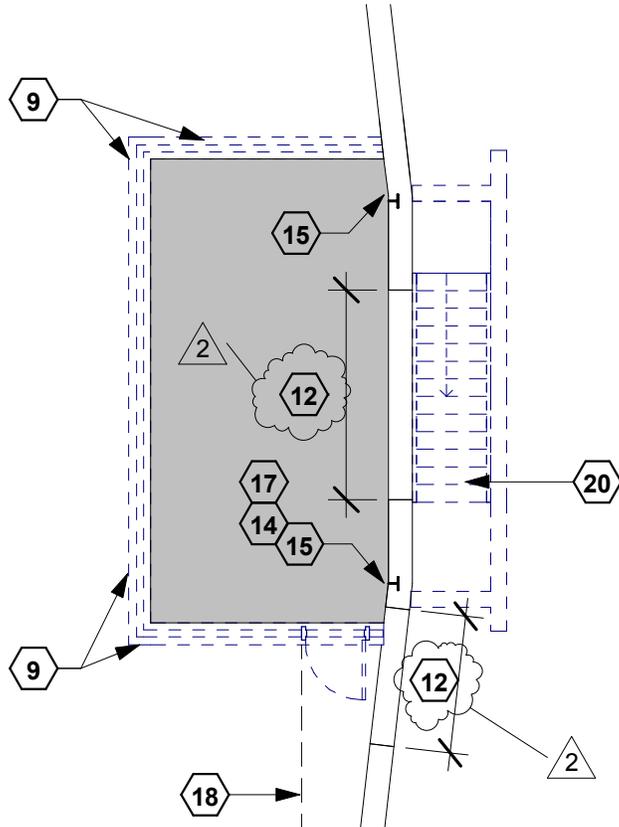
D1

3/4" = 1'-0"

*** ADD TO SHEET A-503**

***ISSUED FOR ADDENDUM 3**

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	<p>PROJECT WILMINGTON CAMPUS RENOVATIONS</p>	
<p>REV: 2</p> <p>ISSUE: 06/26/13</p> <p>PROJECT NO: 1219</p> <p>FILE NAME: 1219-CAB CALLOWAY.rvt</p> <p>DRAWN BY: Author</p> <p>CHECKED BY: Checker</p>	<p>CONSULTANT</p>	
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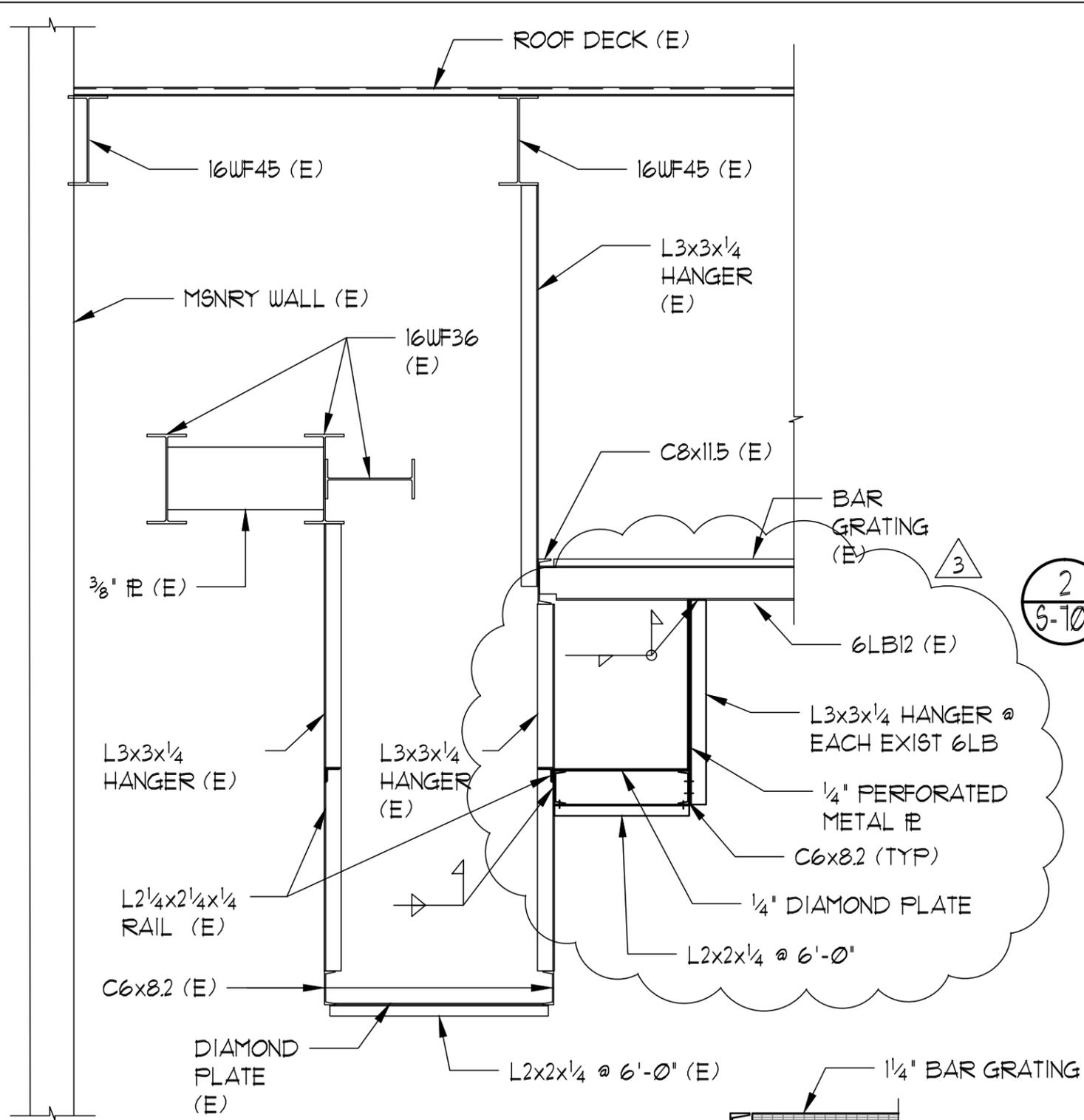


A1 DEMOLITION - MEZZANINE
 1/8" = 1'-0"

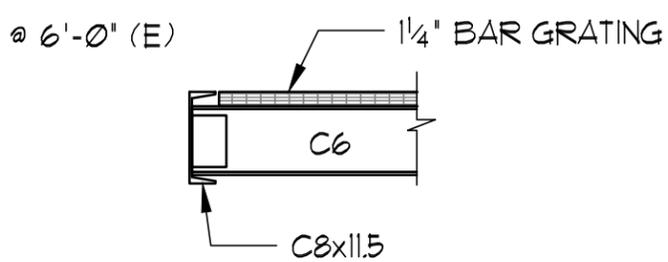
* ADD REVISION TO DETAIL A1/A-102

*ISSUED FOR ADDENDUM 3

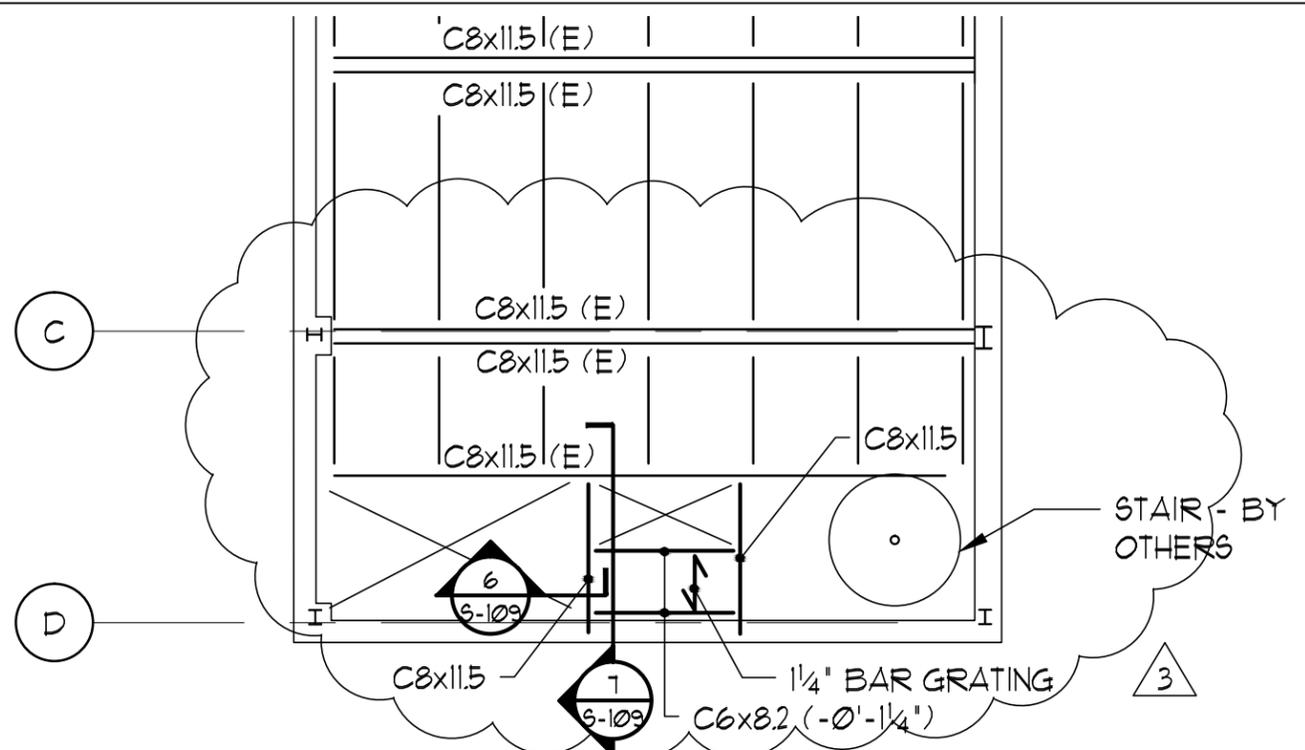
	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	SHEET TITLE	
	abhagen@ABHA.com www.ABHA.com	VISION PANEL AND DOOR OPENINGS – DEMOLITION – MEZZANINE	
REV: 2 ISSUE: 06/26/13 PROJECT NO: 1219 FILE NAME: 1219-CAB CALLOWAY.rvt DRAWN BY: Author CHECKED BY: Checker		PROJECT	
		WILMINGTON CAMPUS RENOVATIONS	
		CONSULTANT	
		A-707	



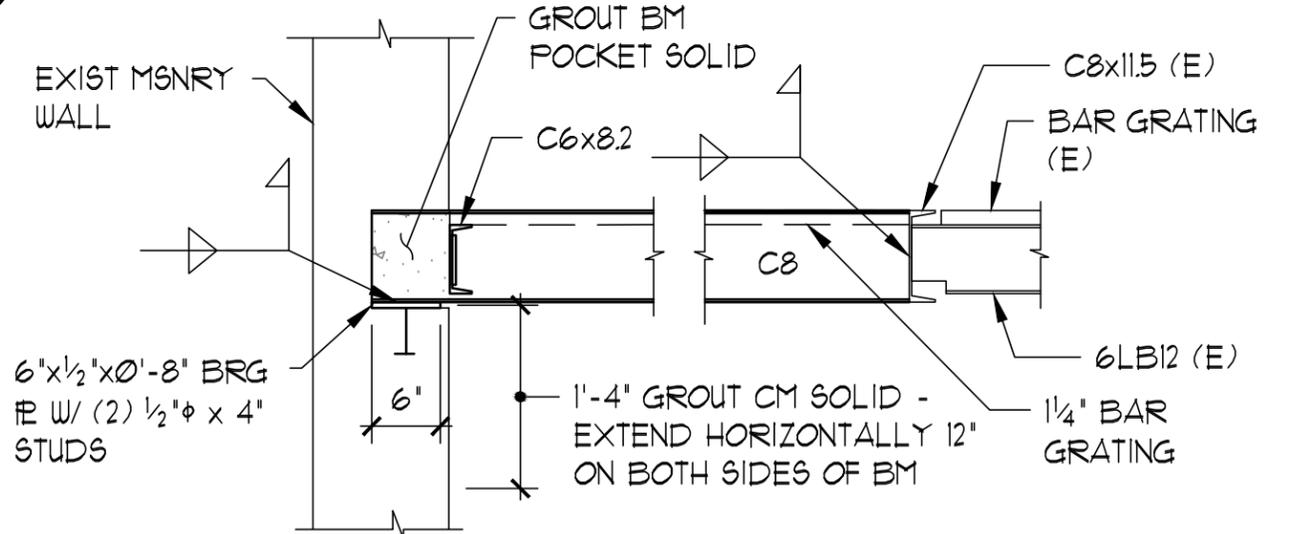
1 SECTION
 SCALE: 1/2"=1'-0" REF. 7/S-108



3 SECTION
 SCALE: 3/4"=1'-0" REF. 6/S-109



2 PARTIAL STAGE GRID-IRON FRAMING PLAN
 SCALE: 1/8"=1'-0" REF. 2/S-104



4 SECTION
 SCALE: 3/4"=1'-0" REF. 7/S-109

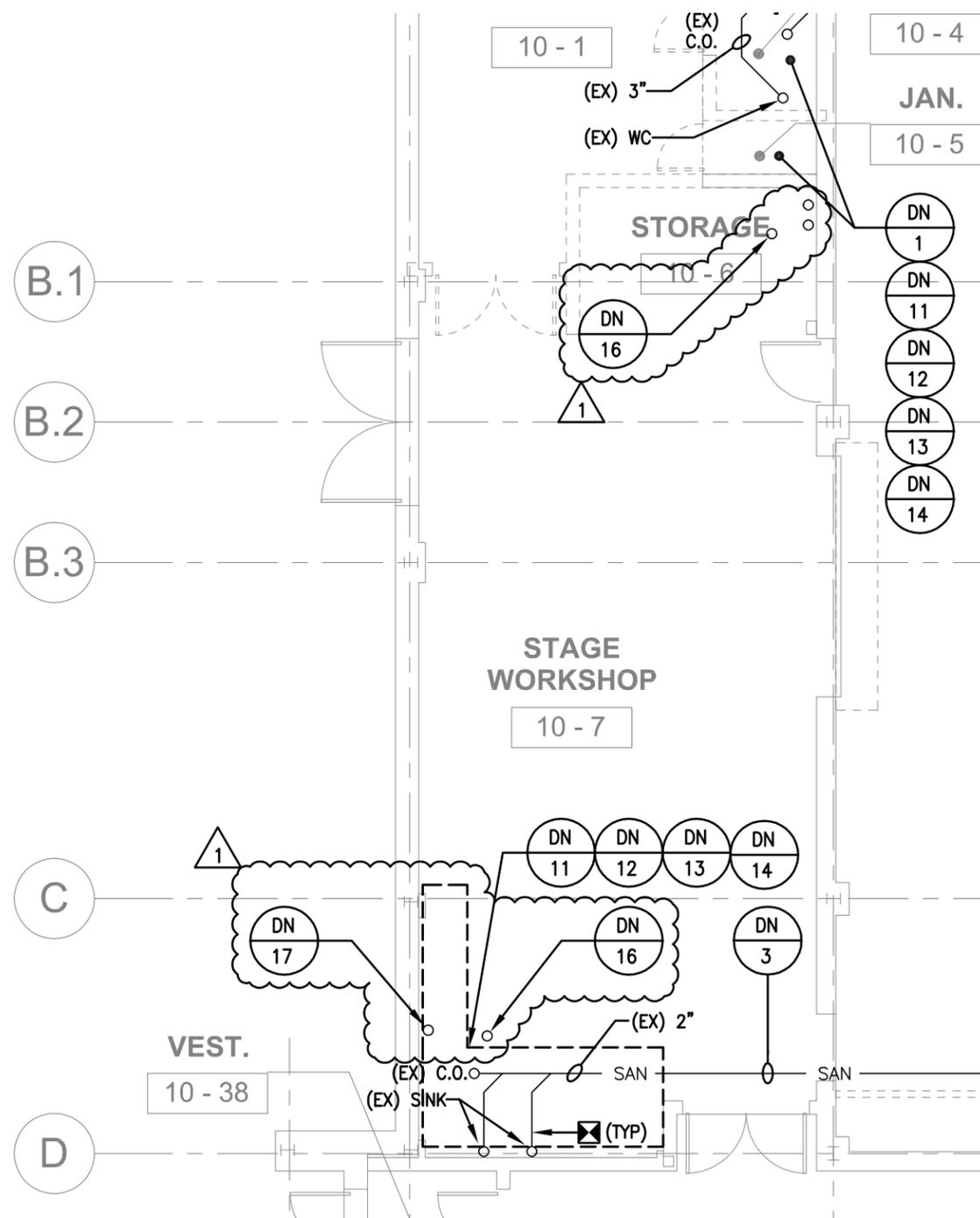
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FILE NAME:	FILE_NAME	
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SHEET TITLE GRID-IRON PLAN & SECTIONS	
PROJECT WILMINGTON CAMPUS RENOVATIONS	
CONSULTANT LARSEN & LANDIS	S-705



PLUMBING DEMOLITION NOTES

DN 15 CONTRACTOR SHALL REMOVE EXISTING SANITARY WASTE PIPE WHERE EXISTING FIXTURES WILL NOT BE REPLACED. CAP SANITARY BELOW SLAB AND IDENTIFY ON AS BUILT DOCUMENTS.

DN 16 CONTRACTOR TO REMOVE ROOF DRAIN & PIPING BELOW ROOF TO STACK LOCATION.

DN 17 CONTRACTOR TO REMOVE STORM STACK TO BELOW SLAB.

1 ALL SPRINKLER WORK SHALL BE PER BID PACK "A".

1 PLUMBING DEMOLITION - SECOND FLOOR - BELOW SLAB
1/8" = 1'-0"

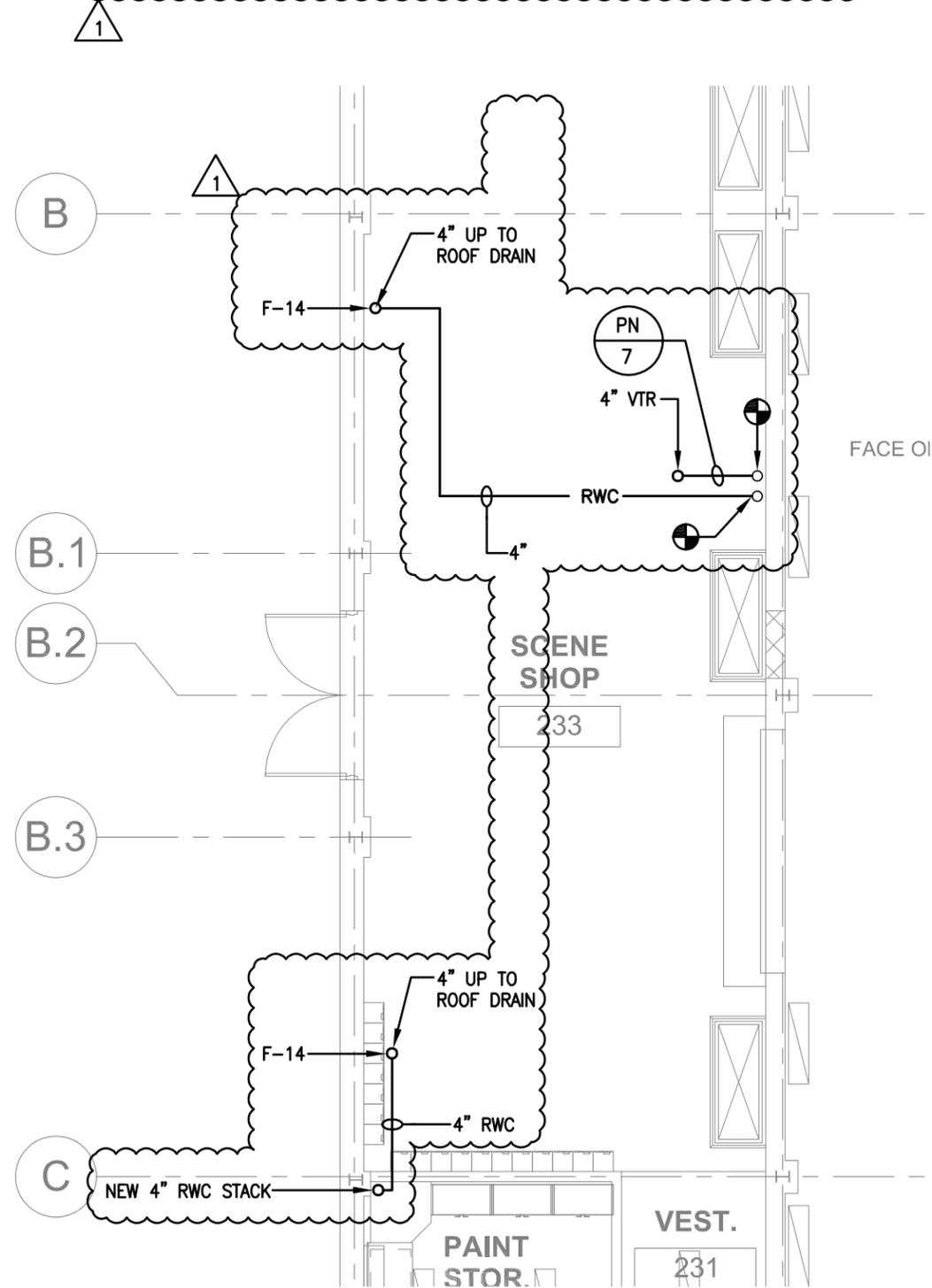
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ADDENDUM #3

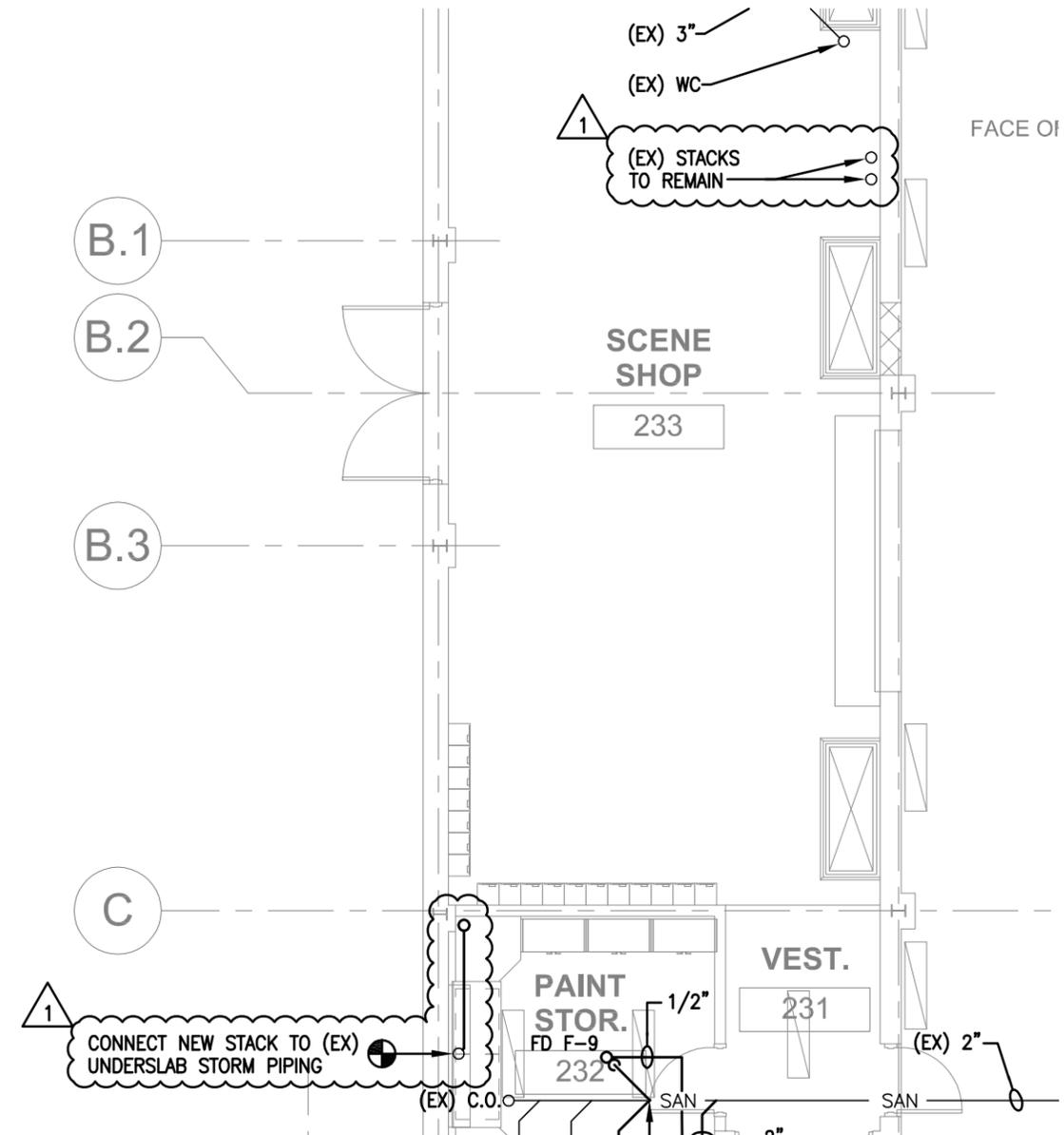
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REV: 1 06-26-13 ISSUE: 06-26-13 PROJECT NO: 1219 FILE NAME: P-700_12062.002 DRAWN BY: RWJ CHECKED BY: SAJ	CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS		P-700

PLUMBING NOTES

PN
7
CONTRACTOR TO OFFSET EXISTING VENT PIPING TO ALLOW FOR DUCTWORK INSTALLATION (ROOF). PROVIDE NEW 4" VTR.



2 PLUMBING - SECOND FLOOR - ABOVE SLAB
1/8" = 1'-0"



1 PLUMBING - SECOND FLOOR - BELOW SLAB
1/8" = 1'-0"

REFERENCE DRAWING NUMBER: P-111

ADDENDUM #3

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FILE NAME:		P-701_12062.002
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CHECKED BY:		SAJ

SHEET TITLE
SECOND FLOOR PLAN
PLUMBING

PROJECT
WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B

CONSULTANT
FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS

P-701

PLUMBING FIXTURE / EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	CW	HW	SOIL WASTE	TRAP	SETTING HEIGHT	GAS	STORM	COMP. AIR	COND. WASTE	POWER	SPECIFICATIONS/REMARKS
F-13	CONDENSATE PUMP	1/2"	-	-	-	-	-	-	-	-	-	HARTELL MODEL KT-3-X, 19 GPM @ 18 FT HEAD, 1/20 HP, 120V, 1 ϕ , 1.3 AMP WITH AUXILIARY CONTACTS TO SHUT DOWN HVAC UNIT ON HIGH WATER LEVEL.
F-14	ROOF DRAIN	-	-	-	-	-	-	4"	-	-	-	JAY R. SMITH FIG. 1015Y, DUCO CAST IRON BODY, ADJ. EXTENSION SLEEVE, REVERSIBLE COLLAR, COMBINED FLASHING CLAMP & GRAVEL STOP, W/C.I. DOME, UNDER DECK CLAMP, SUMP RECEIVER.

1

REFERENCE DRAWING NUMBER: P-100

ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	SHEET TITLE PLUMBING & FIRE PROTECTION LEGEND, NOTES & SCHEDULE	
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REV: 1 06-26-13 ISSUE: 06-26-13 PROJECT NO: 1219 FILE NAME: P-702_12062.002 DRAWN BY: RWJ CHECKED BY: SAJ	CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS		P-702



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SCHEU CONSULTING SERVICE, INC.
Theater Consultant

210 Falls Road
Cherry Hill, NJ 08003

PROJECT

WILMINGTON CAMPUS
RENOVATIONS

100 NORTH DUPONT ROAD
WILMINGTON, DE 19807

OWNER

RED CLAY CONSOLIDATED
SCHOOL DISTRICT
1502 SPRUCE AVENUE
WILMINGTON, DE 19805

1 06-26-13 ADDENDUM #3
05-28-13 ISSUED FOR BID PAC 'B'

PROJECT NUMBER: 1219

FILE NAME: M-110_ADDENDUM12062.002.DWG

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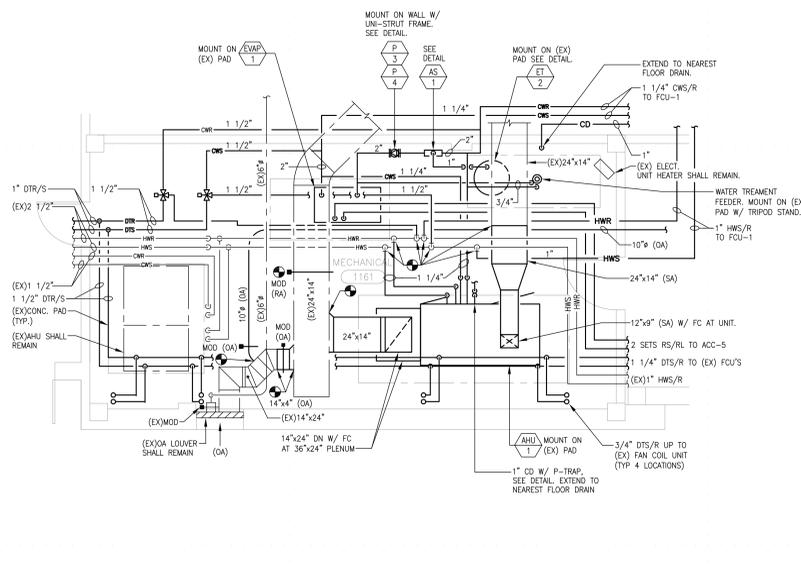
SHEET TITLE

FIRST FLOOR
MECHANICAL
PLANS

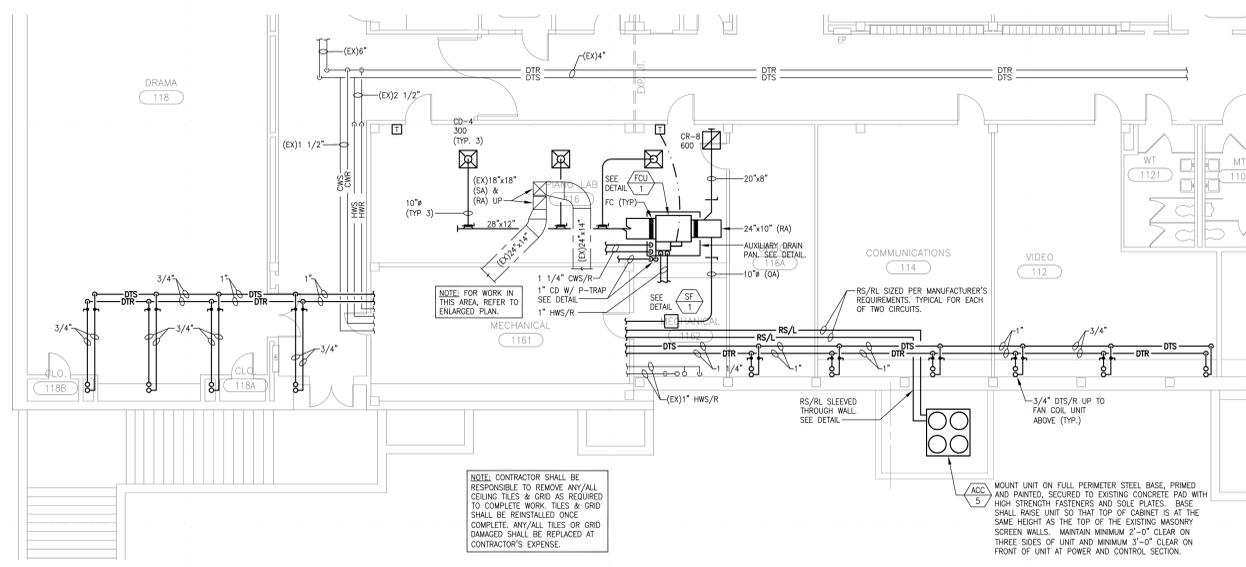
ALTERNATE #7A

(BID PAC B)

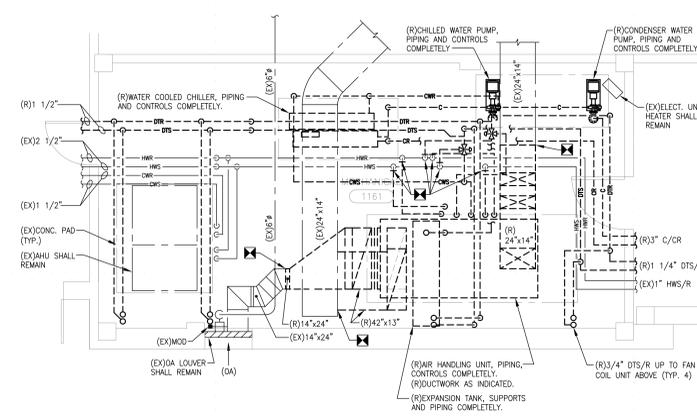
M-110



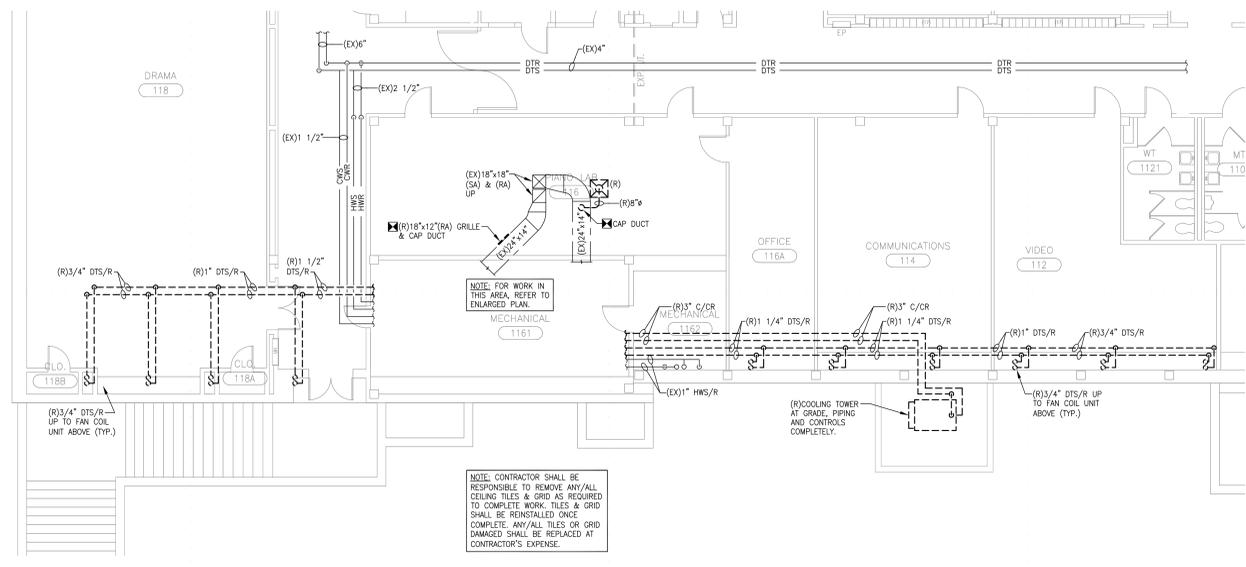
2 ENLARGED MECHANICAL ROOM PLAN
1/4" = 1'-0"



4 MECHANICAL PARTIAL PLAN - FIRST FLOOR
1/8" = 1'-0"

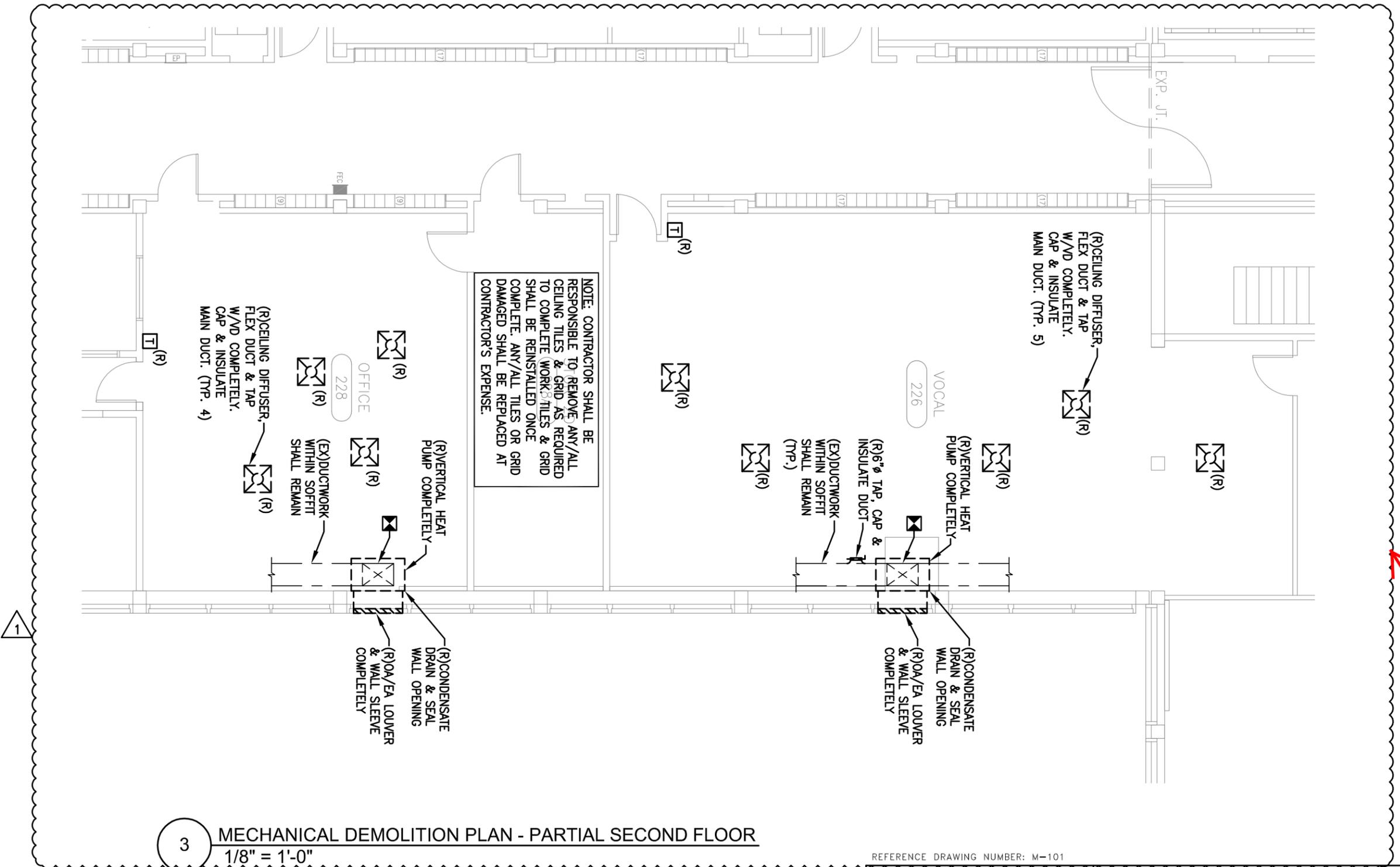


1 ENLARGED MECHANICAL ROOM DEMOLITION PLAN
1/4" = 1'-0"



3 MECHANICAL PARTIAL DEMO. PLAN - FIRST FLOOR
1/8" = 1'-0"

Thursday, May 30, 2013 7:50:59 AM \\MS01\12062\002\DWG\M-110_ADDENDUM12062.DWG



3 MECHANICAL DEMOLITION PLAN - PARTIAL SECOND FLOOR
 1/8" = 1'-0"

REFERENCE DRAWING NUMBER: M-101

ADDENDUM #3

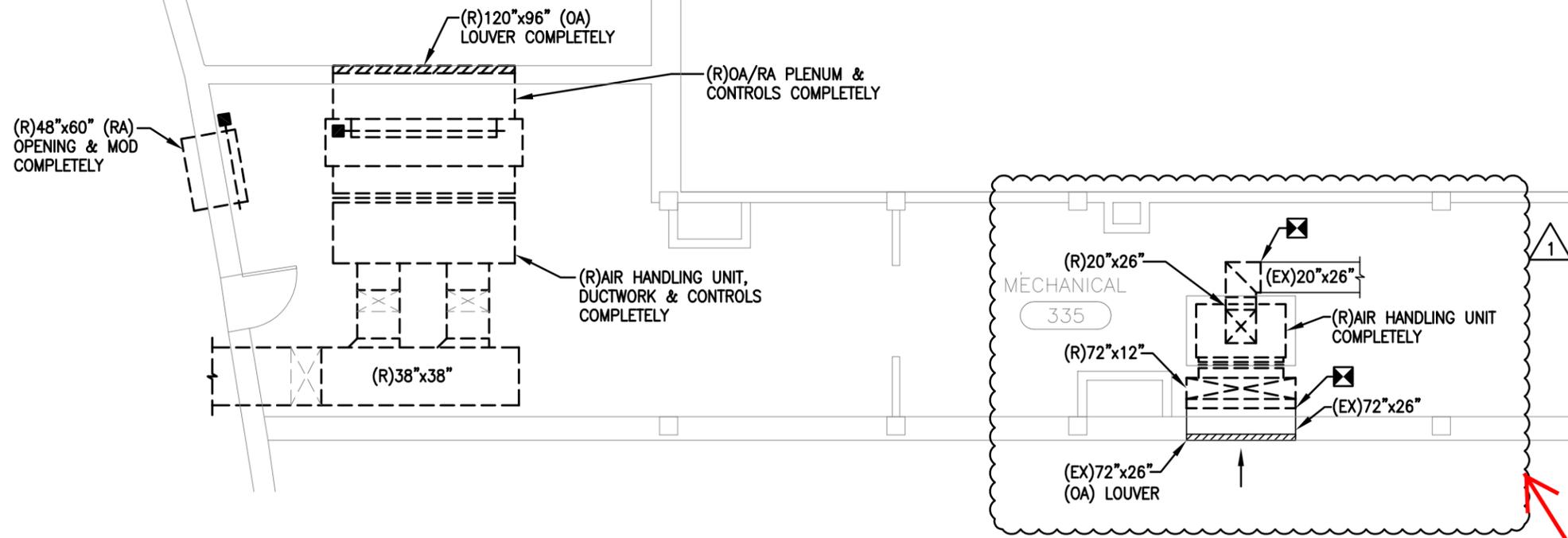
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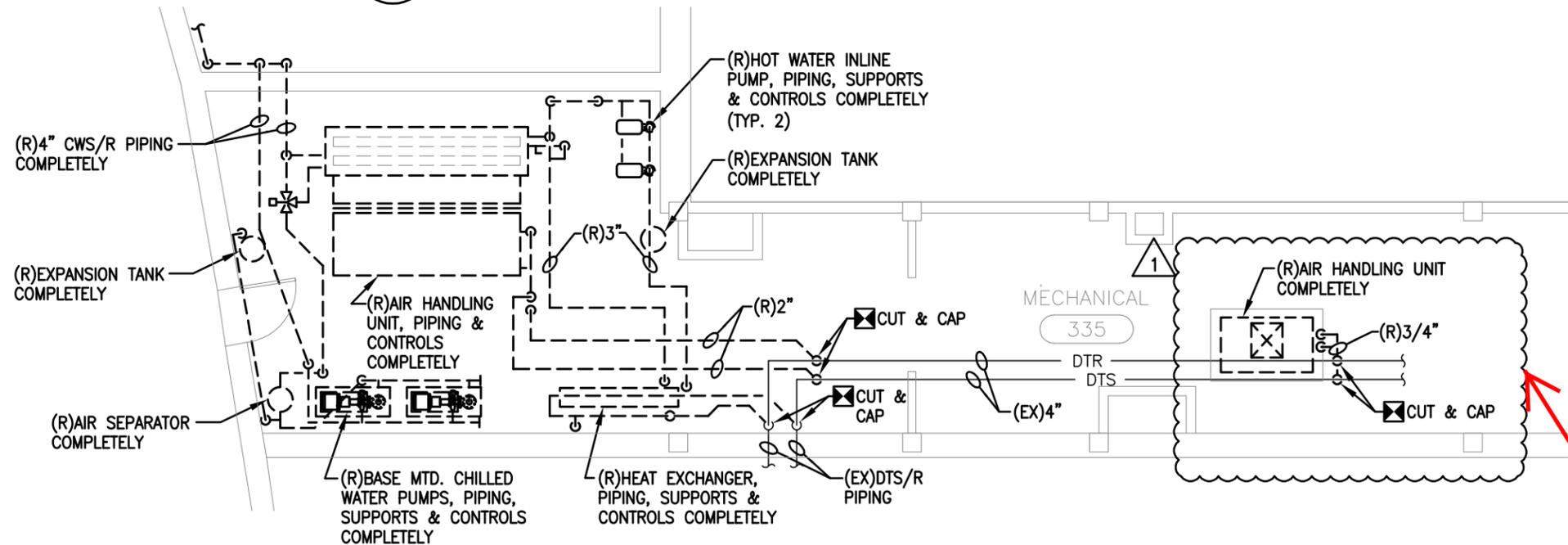
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SHEET TITLE SECOND FLOOR MECHANICAL DEMOLITION	
PROJECT WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B	
CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS	M-704



3 MECHANICAL ROOM DEMOLITION PLAN
1/8" = 1'-0"

ALTERNATE #7C



4 MECHANICAL ROOM PIPING DEMOLITION PLAN
1/8" = 1'-0"

ALTERNATE #7C

REFERENCE DRAWING NUMBER: M-103

ADDENDUM #3

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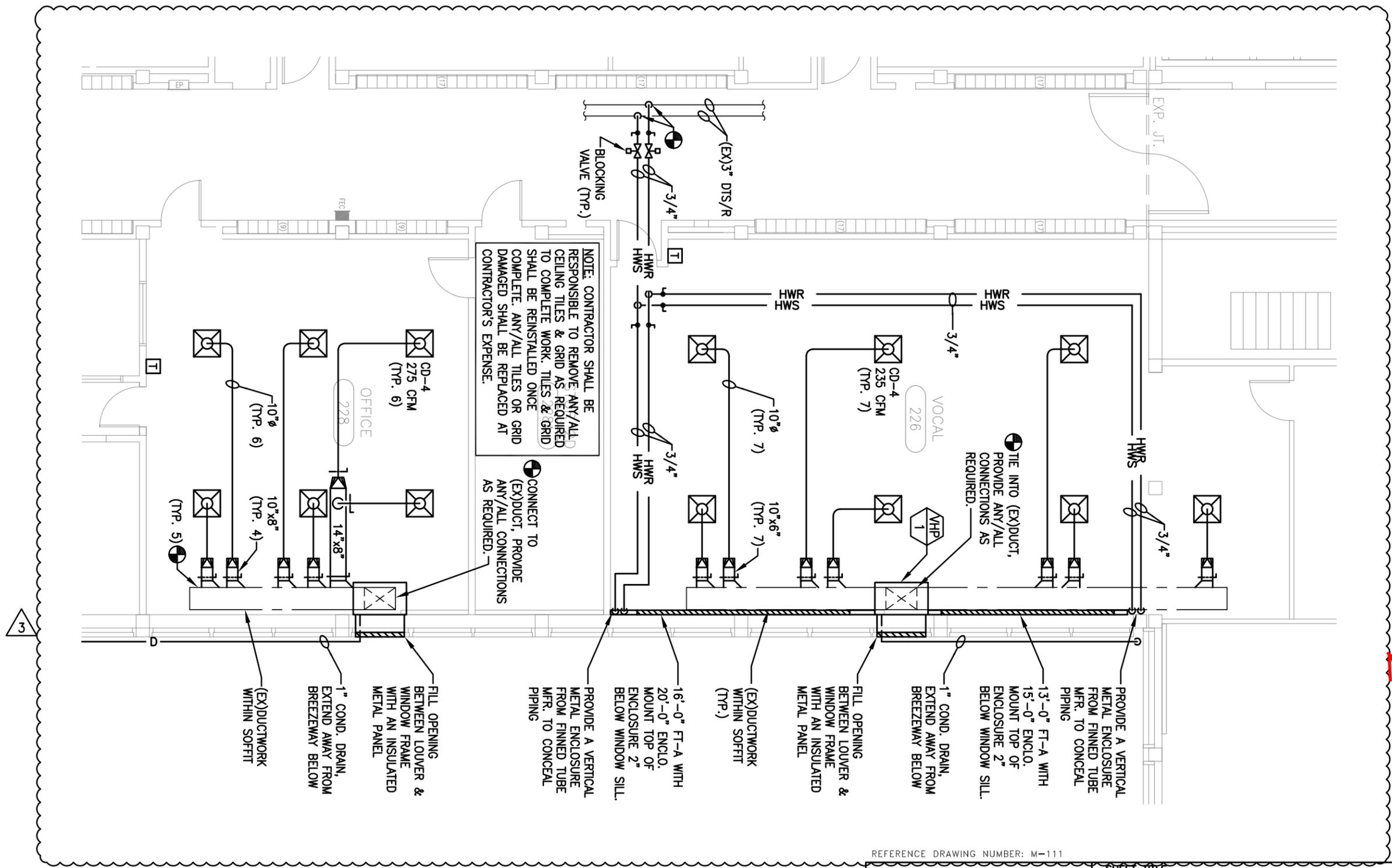
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SHEET TITLE
CATWALK & ROOF
MECHANICAL DEMOLITION

PROJECT
WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B

CONSULTANT
FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS

M-705



ALTERNATE #7B

REFERENCE DRAWING NUMBER: M-111

ADDENDUM #3

3 MECHANICAL PLAN - PARTIAL SECOND FLOOR
1/8" = 1'-0"

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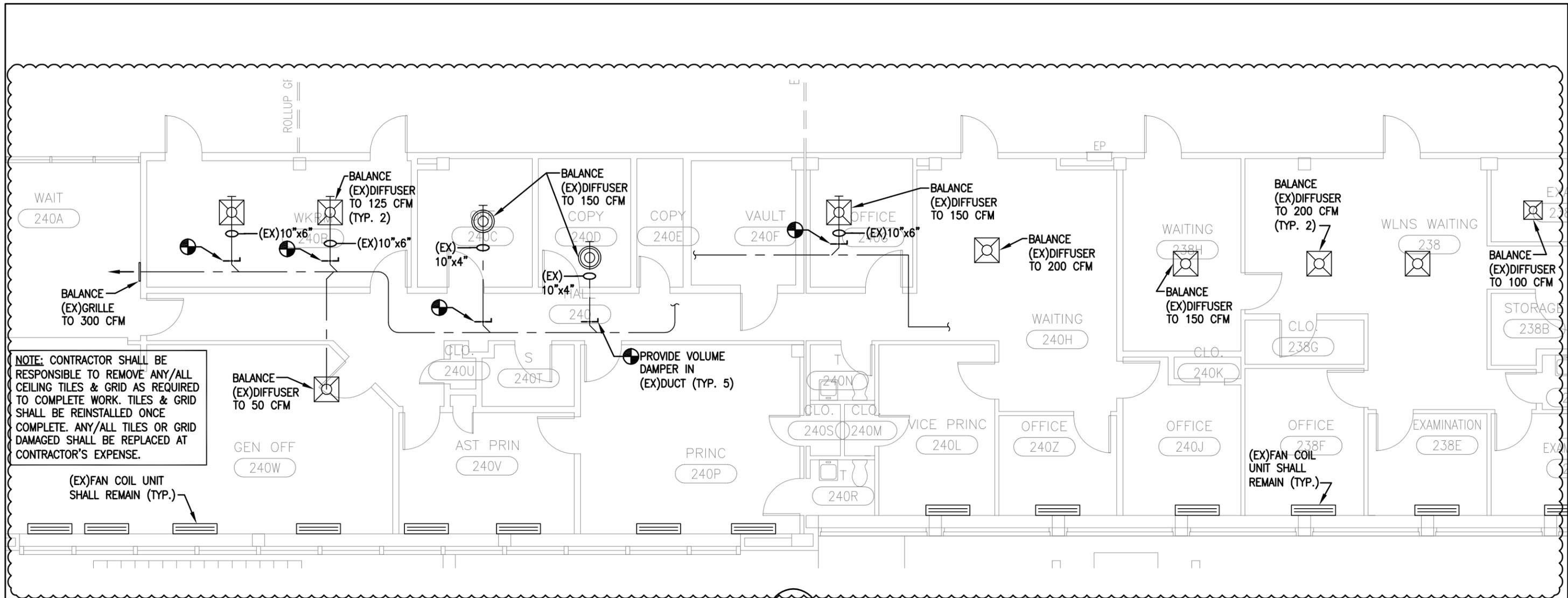
SHEET TITLE
**SECOND FLOOR
MECHANICAL PLANS**

PROJECT
**WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B**

CONSULTANT
**FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS**

M-706

REV: 1	06-26-13
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3

4

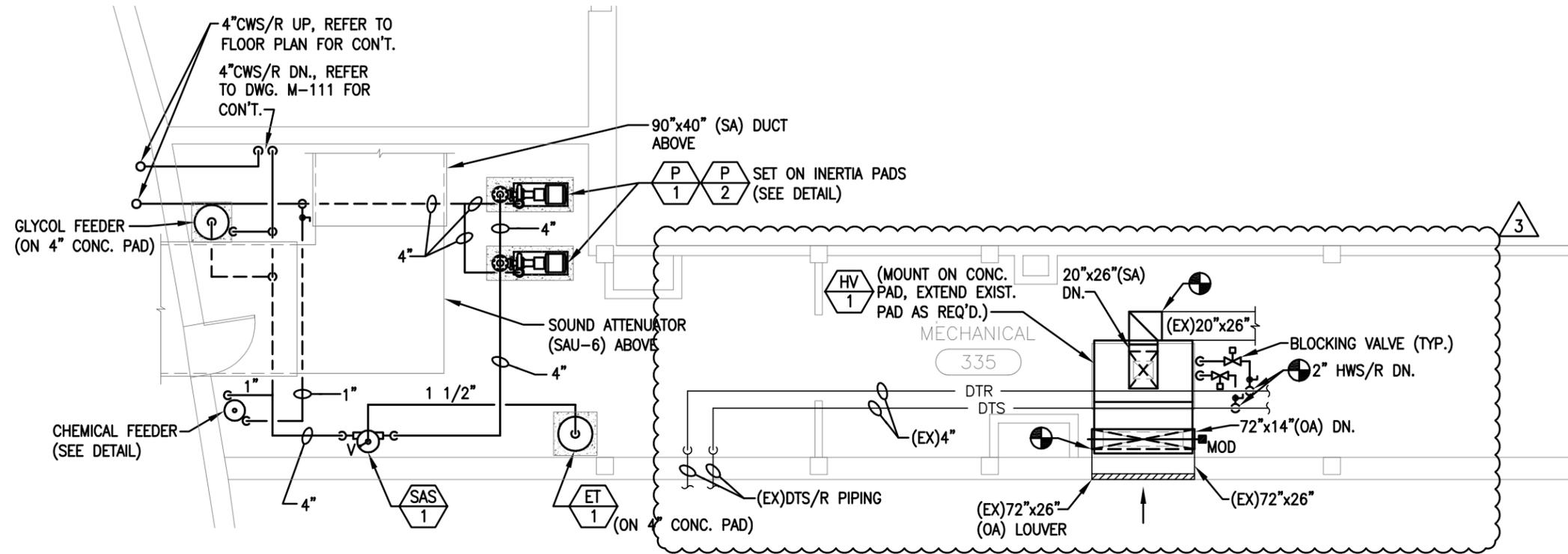
ALTERNATE #7A

REFERENCE DRAWING NUMBER: M-111

ADDENDUM #3

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M-707	



4 MECHANICAL ROOM PIPING PLAN
1/8" = 1'-0"

ALTERNATE #7C

REFERENCE DRAWING NUMBER: M-112

ADDENDUM #3

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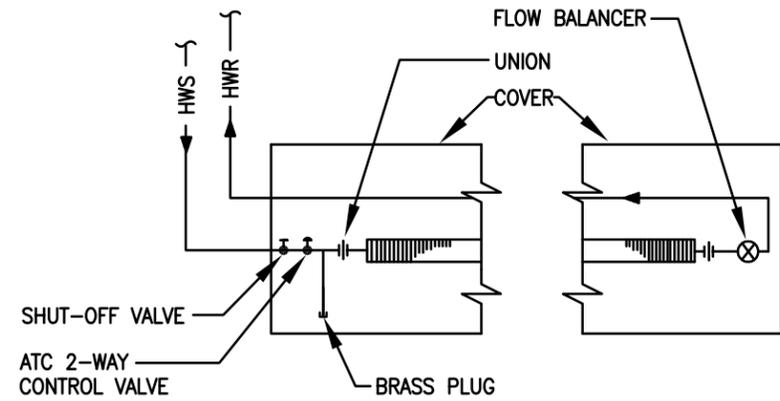
SHEET TITLE
**SECOND FLOOR
MECHANICAL DEMOLITION**

PROJECT
**WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B**

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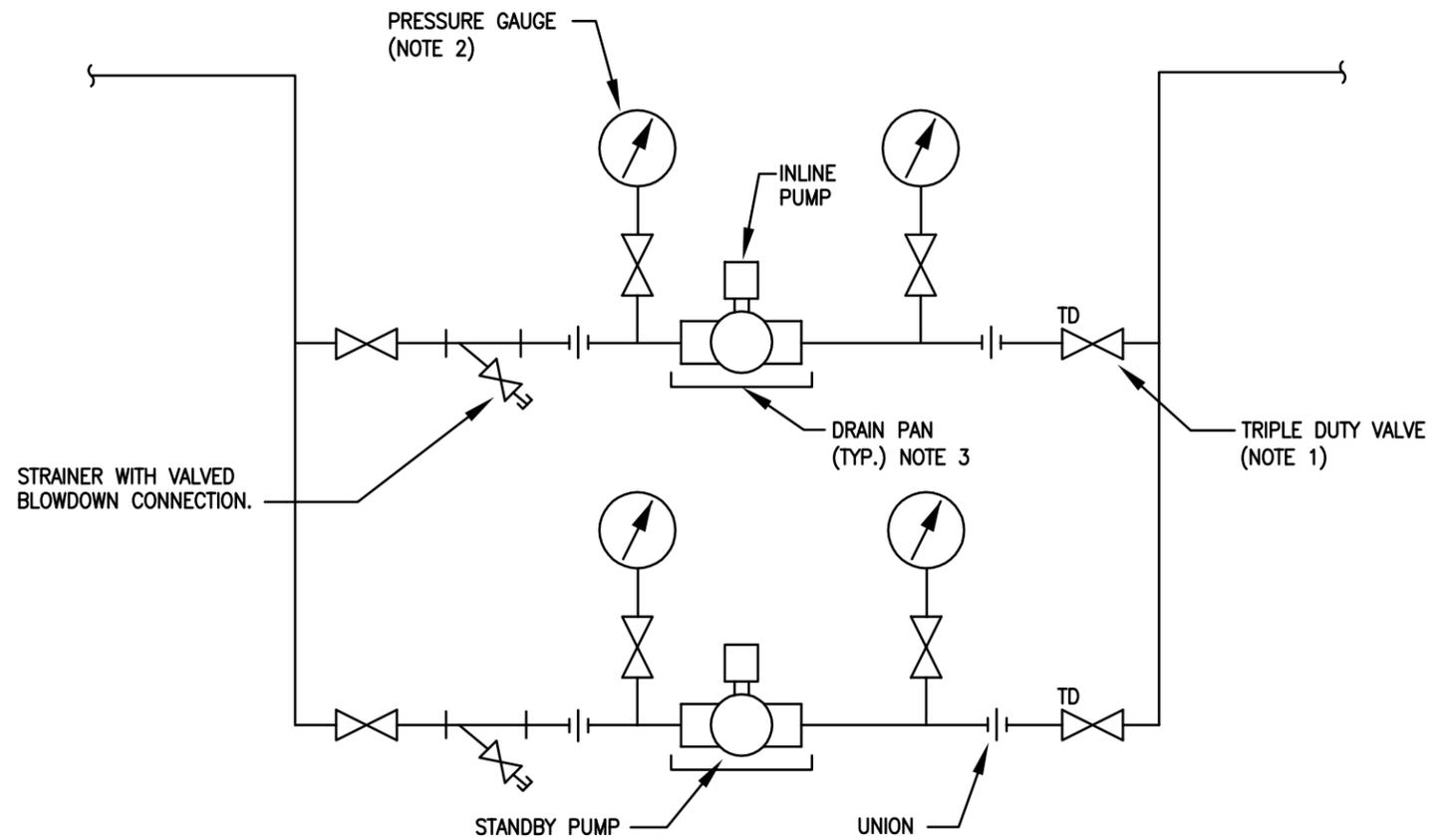


HYDRONIC FIN RADIATION PIPING DETAIL

NOT TO SCALE

1

ALTERNATE #7B



INLINE PUMP DETAIL

NOT TO SCALE

NOTE:

1. PROVIDE CHECK VALVE AND FLOW BALANCER IN PLACE OF TRIPLE DUTY VALVE WHERE PIPE SIZE IS LESS THAN 2".
2. PROVIDE ONE PRESSURE GAUGE MANIFOLD TO TWO VALVES. (OPTION)
3. PROVIDE DRAIN PAN 22 GA. GALVANIZED STEEL. SOLDER ALL JOINTS WATERTIGHT. TURN UP EDGE MIN. 1" AND EXTEND 3" AROUND ALL SIDES OF PUMP HOUSING. SUPPORT FROM ADJACENT PIPE HANGERS. (CHILLED WATER APPLICATIONS ONLY.)

1

REFERENCE DRAWING NUMBER: M-201

ADDENDUM #3

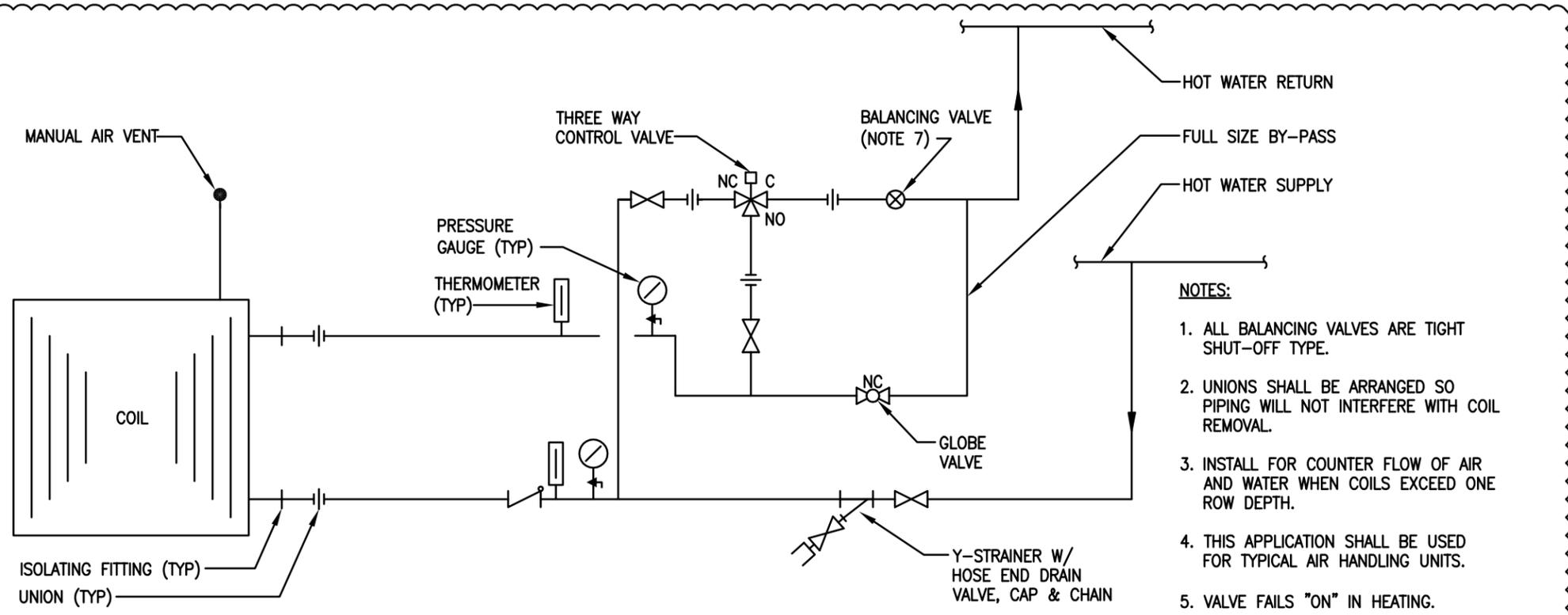
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SHEET TITLE
MECHANICAL
DETAILS

PROJECT
WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B

CONSULTANT
FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS

M-709



HOT WATER COIL 3-WAY CONTROL VALVE PIPING DETAIL

NOT TO SCALE

- NOTES:**
1. ALL BALANCING VALVES ARE TIGHT SHUT-OFF TYPE.
 2. UNIONS SHALL BE ARRANGED SO PIPING WILL NOT INTERFERE WITH COIL REMOVAL.
 3. INSTALL FOR COUNTER FLOW OF AIR AND WATER WHEN COILS EXCEED ONE ROW DEPTH.
 4. THIS APPLICATION SHALL BE USED FOR TYPICAL AIR HANDLING UNITS.
 5. VALVE FAILS "ON" IN HEATING.
 6. NO = NORMALLY OPEN
NC = NORMALLY CLOSED
C = COMMON
 7. UP TO 4" LINE SIZE. FOR 5" AND LARGER, PROVIDE GLOBE VALVE AND FLOW SENSOR.
 8. MAINTAIN FULL LINE SIZE FOR SUPPLY AND RETURN PIPING AND ACCESSORIES FOR THE COIL, AS SHOWN ON THE FLOOR PLANS, REGARDLESS OF COIL HEADER AND CONTROL VALVE CONNECTION SIZES.
 9. ARRANGE PIPING SO THAT ALL COMPONENTS ARE CLEAR OF UNIT ACCESS PANELS AND SERVICE ACCESS TO AIR FILTERS AND FAN MOTOR. ALL CLEARANCES SHALL BE SUFFICIENT TO ALLOW FOR REMOVAL OF ALL FILTERS, FAN ASSEMBLIES AND COILS WITHOUT REMOVAL OF EXTERNAL PIPING IN THE VICINITY OF THE UNIT.

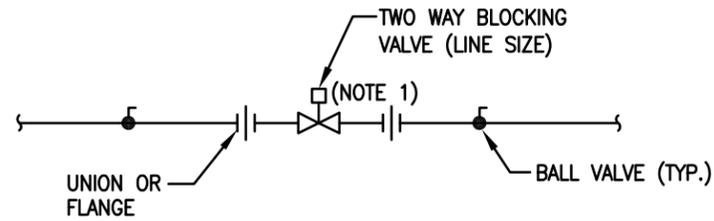
ALTERNATES
#7A, 7B, & 7C

REFERENCE DRAWING NUMBER: M-201

ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	SHEET TITLE MECHANICAL DETAILS	
	abhagen@ABHA.com www.ABHA.com	PROJECT WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B	
REV: 1 06-26-13 ISSUE: 06-26-13 PROJECT NO: 1219 FILE NAME: M-710_12062.002 DRAWN BY: DEG CHECKED BY: SAJ	CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS		M-710

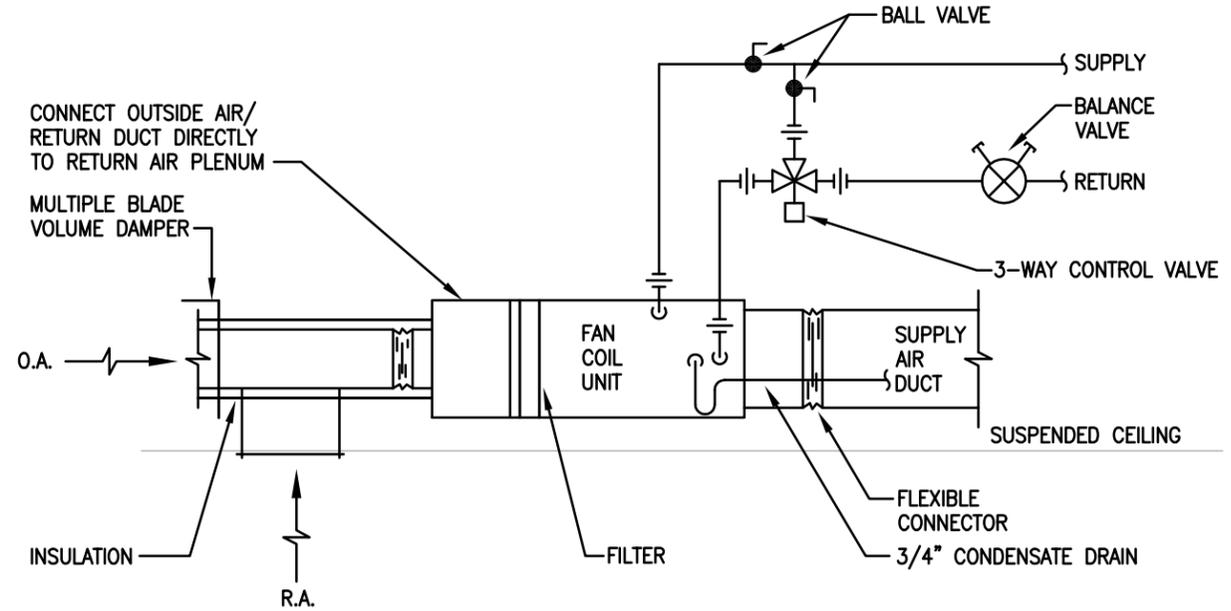
ALTERNATES #7A, 7B, & 7C



BLOCKING VALVE DETAIL

NOT TO SCALE

NOTE:
1. HEATING SYSTEM BLOCKING VALVE SHALL BE NORMALLY OPEN;
COOLING SYSTEM - NORMALLY CLOSED.

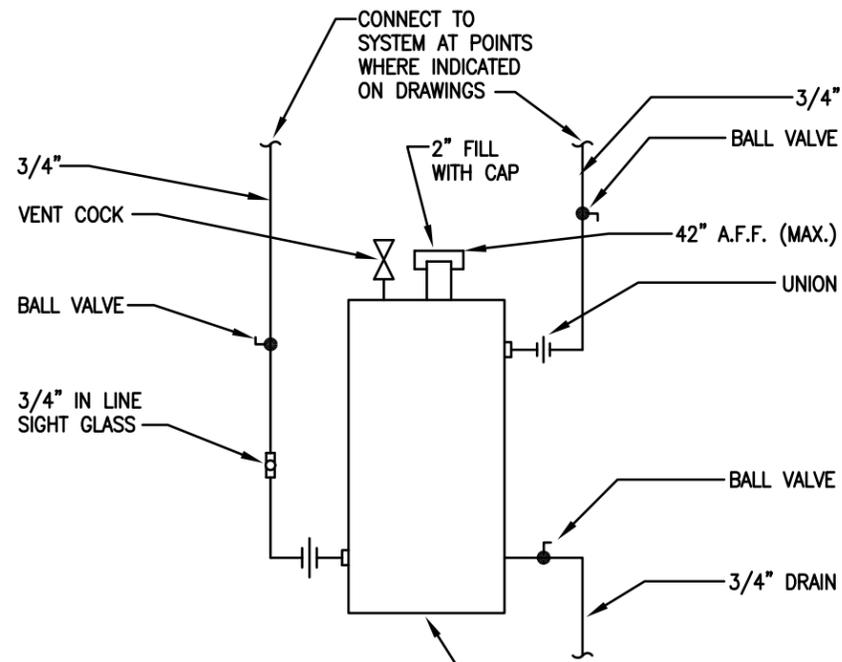


NOTE:

1. ARRANGE PIPING SO THAT ALL COMPONENTS ARE CLEAR OF UNIT ACCESS PANELS AND SERVICE ACCESS TO AIR FILTERS AND FAN MOTOR. ALL CLEARANCES SHALL BE SUFFICIENT TO ALLOW FOR REMOVAL OF ALL FILTERS, FAN ASSEMBLIES AND COILS WITHOUT REMOVAL OF EXTERNAL PIPING IN THE VICINITY OF THE UNIT.

FAN COIL UNIT DETAIL

NOT TO SCALE



WATER TREATMENT FEEDER DETAIL

NOT TO SCALE

REFERENCE DRAWING NUMBER: M-202

ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431
	abhagen@ABHA.com www.ABHA.com
	REV: 1 06-26-13
	ISSUE: 06-26-13
	PROJECT NO: 1219
FILE NAME: M-711_12062.002	
DRAWN BY: DEG	
CHECKED BY: SAJ	

SHEET TITLE
MECHANICAL DETAILS

PROJECT
WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B

CONSULTANT
FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS

M-711

AHU PLAN SYMBOL			AIR HANDLING UNIT SCHEDULE ALTERNATE #7A																									MAKE & MODEL		NOTES						
EQUIPMENT NUMBER	LOCATION	AREA SERVED	ELECTRICAL DATA				SUPPLY FAN				COOLING COIL										HEATING COIL							MAKE & MODEL	NOTES							
			MCA	FACTORY STARTER	FACTORY DISCONNECT	SPP	SA CFM	OA CFM	ESP (IN. W.C.)	TSP (IN. W.C.)	FAN MOTOR			TOTAL MBH	SENS MBH	EAT (°F)		LAT (°F)		EWT (°F)	LWT (°F)	GPM	APD (IN. W.C.)	WPD (FT. HD)	FACE VELOCITY	TOTAL MBH	GPM			EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)	APD (IN. W.C.)	WPD (FT. HD)	FACE VELOCITY
AHU-1	MECH. RM. 1161	ADMIN. & WELLNESS	7.2	YES	YES	YES	1900	350	0.75	1.8	2	1566	208/3	60	48	78	65	55	54	42	55	9.6	0.38	2.3	452	92	12.1	180	160	55	100	0.1	2.9	452	YORK MODEL 'SOLUTION XT1-30x42'	1

NOTES:
1. AHU-1 SHALL CONSIST OF THE FOLLOWING SECTIONS: SUPPLY FAN, COOLING COIL, HEATING COIL AND FLAT FILTER SECTION.

FCU PLAN SYMBOL			FAN COIL UNIT SCHEDULE ALTERNATE #7A																									MAKE & MODEL		NOTES					
EQUIPMENT NUMBER	FLA	FACTORY STARTER	FACTORY DISCONNECT	SPP	SUPPLY FAN			COOLING COIL										HEATING COIL							MAKE & MODEL	NOTES									
					SA CFM	OA CFM	ESP (IN. W.C.)	FAN MOTOR			TOTAL MBH	SENS MBH	EAT (°F)		LAT (°F)		EWT (°F)	LWT (°F)	GPM	APD (IN. W.C.)	WPD (FT. HD)	ROWS	FPI	TOTAL MBH			GPM	EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)	APD (IN. W.C.)	WPD (FT. HD)	ROWS	FPI
FCU-1	5.4	NO	NO	YES	900	300	0.44	(2)1/6	1075	120/1	26	16	80	67	55	54	42	52	7.4	0.17	2.26	4	10	34	3.5	180	160	60	95	0.03	2.11	1	10	JCI MODEL 'FNP-12'	ALL

NOTES:
1. LOCATE COIL IN THE PRE HEAT POSITION
2. PROVIDE AUXILIARY DRAIN PAN BELOW UNIT AS DETAILED

VHP PLAN SYMBOL			VERTICAL HEAT PUMP SCHEDULE ALTERNATE #7B																									MAKE & MODEL		NOTES
EQUIP NUMBER	AREA SERVES	NOM. TONS	FAN DATA					ENERGY RECOVERY WHEEL DATA			COOLING DATA					HEATING DATA			ELECTRICAL DATA				BASIS OF DESIGN MANUFACTURER & MODEL	WEIGHT (LBS)	NOTES					
			SA CFM	ESP IN W.C.	HP	OA CFM	EA CFM	MODE	EAT, °F DB/WB	LAT, °F DB/WB	TOTAL MBH RECOVERED	SENS MBH RECOVERED	HTG MBH RECOVERED	TOTAL MBH	SENS MBH	EAT, °F DB/WB	LAT, °F DB/WB	EER	MBH	KW	VOLTS/PHASE	COP				VOLTS/PHASE	MCA	FACTORY STARTER	FACTORY DISCONNECT	SPP
VHP-1	VOCAL 226	5	1650	0.2	3/4	450	450	SUMMER	95/78	82/69	15.4	5.9	22.7	56	38	77/65	55/54	10	71	15	460/3	3	460/3	37.3	NO	NO	YES	MARVAIR MODEL 'VANS60HPD150HGII'	1,085	1, 2
								WINTER	10/9	44/38																				
VHP-2	COMPUTER 228	5	1650	0.2	3/4	450	450	SUMMER	95/78	82/69	15.4	5.9	22.7	56	40	77/65	55/54	10	71	15	460/3	3	460/3	37.3	NO	NO	YES	MARVAIR MODEL 'VANS60HPD150HGII'	1,085	1, 2
								WINTER	10/9	44/38																				

NOTES:
1. HEAT PUMP SHALL BE PROVIDED WITH THE FOLLOWING: SINGLE POINT POWER CONNECTION, EC MOTOR, BASE STAND, HOT GAS REHEAT, GREENWHEEL ERV, OA LOUVER & WALL SLEEVE, EXHAUST AIR CONTROLLER, EXHAUST AIR GRILLE MAR7000 THERMOSTAT/CONTROLLER WITH SACKET INTERFACE.
2. FINAL COLOR SELECTION OF UNIT BY ARCHITECT.

HV PLAN SYMBOL			HEATING & VENTILATION UNIT SCHEDULE ALTERNATE #7C																									MAKE & MODEL		NOTES
EQUIPMENT NUMBER	LOCATION	AREA SERVED	ELECTRICAL DATA				SUPPLY FAN				HEATING COIL										MAKE & MODEL	NOTES								
			MCA	FACTORY STARTER	FACTORY DISCONNECT	SPP	SA CFM	OA CFM	ESP (IN. W.C.)	TSP (IN. W.C.)	FAN MOTOR			TOTAL MBH	GPM	EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)	APD (IN. W.C.)			WPD (FT. HD)	FACE VELOCITY						
HV-1	MECH. RM. 335	BOY'S LOCKER RM.	11.9	YES	YES	YES	5000	5000	0.75	2.6	7.5	1725	460/3	432	32	180	150	10	90	0.42	10	725	YORK MODEL 'SOLUTION XT1-33x69'	1						

NOTES:
1. HV-1 SHALL CONSIST OF THE FOLLOWING SECTIONS: TOP TIER: SUPPLY FAN, BOTTOM TIER: VERTICAL COIL SECTION, INTERNAL FACE & BY-PASS, 18" ACCESS SECTION AND INLET PLENUM. MANUFACTURER SHALL PROVIDE A FLAT FILTER SECTION TO BE FIELD INSTALLED (LOCATE AT TOP INLET OF INLET PLENUM).

FT PLAN SYMBOL			FINNED TUBE RADIATION SCHEDULE ALTERNATE #7B												MAKE & MODEL		NOTES
EQUIPMENT NUMBER	TYPE	BTUH PER LF	FIN HEATING ELEMENT				ENCLOSURE		WATER TEMPERATURE		ROWS OF FINNED TUBE	PIPE SIZE (IN)	MAKE & MODEL	NOTES			
			THICK (IN)	WIDTH (IN)	HEIGHT (IN)	FINS PER FOOT	HEIGHT (IN)	WIDTH (IN)	EWT (°F)	LWT (°F)							
FT-A	SLOPED GRILLE	950	0.016	3 1/4	3 1/4	40	20	5 3/8"	180	160	1	3/4	RITTLING MODEL 'FSS'	1			

NOTES:
1. PROVIDE AN END CAP AND END CAP WITH ACCESS DOOR FOR EACH SECTION. FINAL COLOR SELECTION BY ARCHITECT.

REFERENCE DWG M-301
ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	SHEET TITLE MECHANICAL SCHEDULES	
	abhagen@ABHA.com www.ABHA.com	PROJECT WILMINGTON CAMPUS RENOVATIONS	
	REV: 3	CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS	
	ISSUE: 06/26/13	M-712	
	PROJECT NO: 1219		
FILE NAME: 1219_WILM_CAMPUS.rvt			
DRAWN BY: DEG			
CHECKED BY: SAJ			

EXPANSION TANK SCHEDULE									
EQUIPMENT NUMBER	SYSTEM	APPROX. SYSTEM VOLUME (GAL.)	SYSTEM TEMP. (F)		INITIAL PRESS. IN TANK (PSIG)	FILL PRESS AT TANK (PSIG)	TANK VOLUME (GAL.)	ACCEPTANCE VOLUME (GAL.)	B & G MODEL NO.
			MIN.	MAX.					
ET-1	COOLING	141	40	60	40	40	53	53	B-200
ET-2	COOLING	50	40	60	12	12	53	53	B-200

NOTES:
1. MOUNT EXPANSION TANK ON 4" CONCRETE PAD.

SOLIDS/AIR SEPARATOR SCHEDULE										
EQUIPMENT NUMBER	SYSTEM	FLUID	CIRCULATING FLUID			PIPE SIZE TO TANK	COLD WATER FILL SIZE	MAKE & MODEL	NOTES	
			GPM	EWT (F)	SIZE (IN)					WPD (FT HD)
SAS-1	COOLING	CHILLED WATER	193	42	4	0.7	1 1/2"	1"	B&G MODEL 'SRS-4'	1
AS-1	COOLING	CHILLED WATER	33	42	2	-	1"	EXISTING	B&G MODEL 'AS-2'	1

NOTES:
1. MOUNT SEPARATOR ON PIPE LEGS AT FLOOR. MAINTAIN 24" CLEARANCE FOR BLOWDOWN VALVE.

FAN SCHEDULE													
EQUIPMENT NUMBER	FUNCTION	DESCRIPTION	ELECTRICAL DATA - FAN MOTOR				CFM	RPM	ESP (IN. WC.)	HP	MAKE & MODEL	DRIVE	NOTES
			VOLT/PHASE	FACTORY STARTER	FACTORY DISCONNECT	SPP							
EF-1	GENERAL EXHAUST	INLINE FAN	120/1	NO	NO	YES	200	1284	0.25	173 WATTS	COOK MODEL 'GN-184'	DIRECT	1
EF-2	STAGE BELIEF	ROOF MOUNTED	120/1	NO	NO	YES	1100	893	0.25	1/6	COOK MODEL '436-AGEB'	BELT	2
SF-1	OA SUPPLY FAN	BOOSTER FAN	120/1	NO	NO	YES	300	1550	0.0350	1/100	TJERNLUND MODEL 'EF-10'	DIRECT	3

NOTES:
1. FAN SHALL BE PROVIDED WITH VIBRATION ISOLATORS, BRICK VENT AND A SPEED CONTROLLER (MTD. AT FAN). FAN SHALL BE CONTROLLED BY A WALL SWITCH (PROVIDED BY DIV. 26).
2. FAN SHALL BE PROVIDED WITH A ROOF CURB AND BELT TENSION ADJUSTER.
3. FAN SHALL BE PROVIDED WITH A SPEED CONTROLLER.

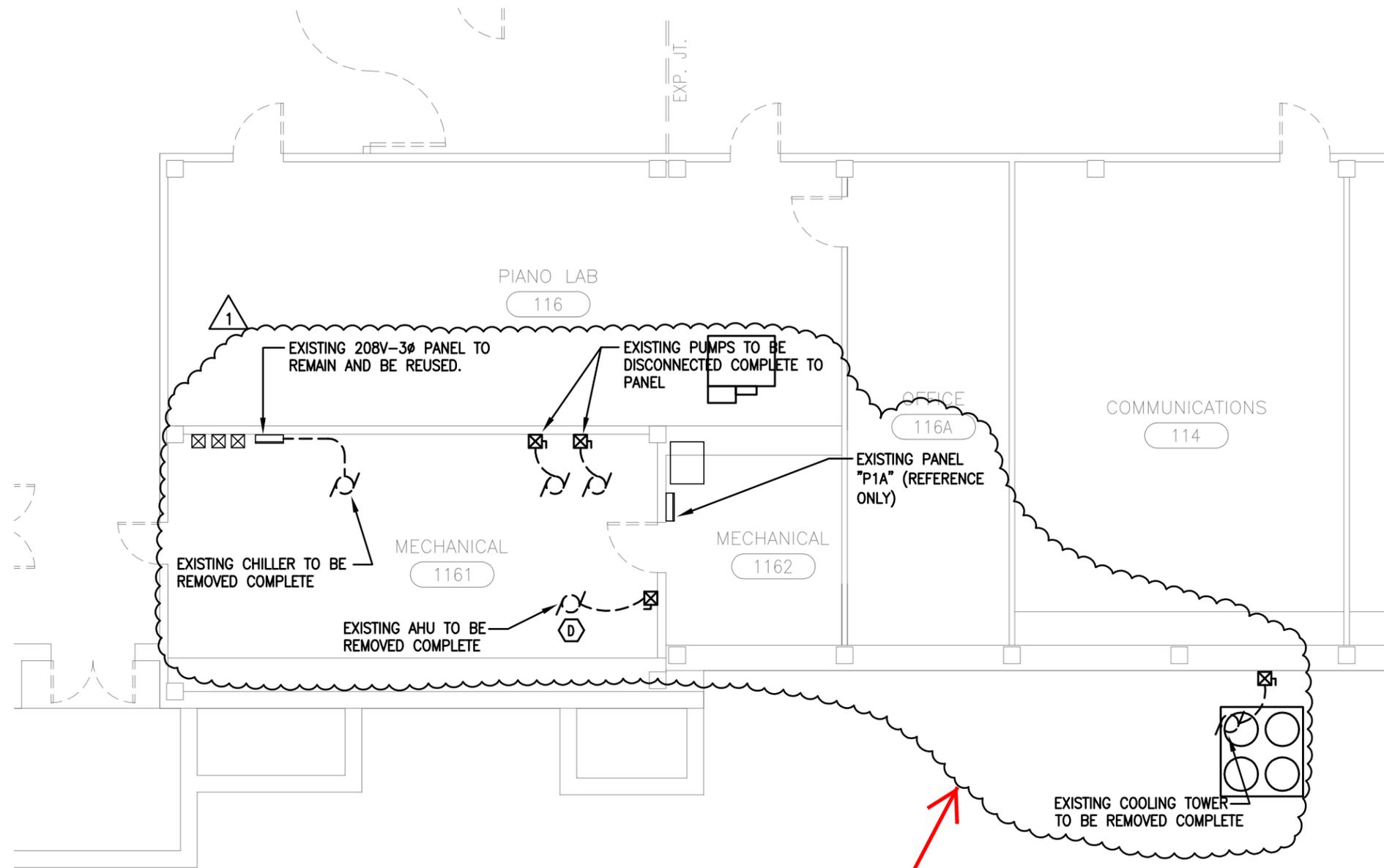
PUMP SCHEDULE											
EQUIPMENT NUMBER	DESCRIPTION	MEDIA	GPM	FT HD	IMPELLER SIZE (IN)	EFFICIENCY	PUMP BHP	MOTOR			MAKE & MODEL
								HP	RPM	VOLT/PHASE	
P-1	BASE MOUNTED PUMP	30% PGW	193	65	8.25	74%	4.42	7.5	1750	460/3	B&G 'SERIES 1510; SIZE 2-1/2BB'
P-2	BASE MOUNTED PUMP	30% PGW	193	65	8.25	74%	4.42	7.5	1750	460/3	B&G 'SERIES 1510; SIZE 2-1/2BB'
P-3	INLINE PUMP	WATER	33	35	5.875	42.5%	0.69	1.5	1750	208/3	B&G 'SERIES 60; SIZE 1-1/2x7'
P-4	INLINE PUMP	WATER	33	35	5.875	42.5%	0.69	1.5	1750	208/3	B&G 'SERIES 60; SIZE 1-1/2x7'

AIR COOLED CONDENSING UNIT SCHEDULE															
SYSTEM NUMBER	LOCATION	SYSTEM CLG. CAP. MBH	SYSTEM HTG. CAP. MBH	SYSTEM EER/COP	SATURATED SUCTION TEMP. F	REFRIGERANT	LBS. OF REFRIGERANT SYSTEM (NOTE 1)	ELECTRICAL DATA					BASIS OF DESIGN MANUFACTURER & MODEL	WEIGHT (LBS)	NOTES
								RLA	VOLT/PHASE	FACTORY STARTER	FACTORY DISCONNECT	SPP			
ACC-1	ROOF	96	108	13.9/4.73	-	R-410A	16.31	11.5	460/3	YES	NO	NO	SAMSUNG 'AM096FXVJH/AA'	613	1, 2
ACC-3	SCENE SHOP ROOF	36	39.9	14.3 SEER/3.81 COP	-	R-410A	8.82	15.6	208/1	YES	NO	NO	SAMSUNG 'R0040MFXCA'	223	1, 2
ACC-4	ROOF	38	42	14.3 SEER/3.82 COP	-	R-410A	7.05	15.6	208/1	YES	NO	NO	SAMSUNG 'AM036FXMDCH/AA'	221	1, 2
ACC-5	GRADE	173	-	11.3 EER	35	R-410A	-	80 MCA	208/3	NO	YES	YES	YORK MODEL 'YD240C00A2BAZ'	930	3

NOTES:
1. QUANTITY OF REFRIGERANT IS FOR PIPING AND CONDENSER(S) UNIT(S) IN THE SYSTEM. MECHANICAL CONTRACTOR TO PROVIDE ADDITIONAL REFRIGERANT FOR PIPING AND EQUIPMENT FOR PROPER CHARGE DEFINED BY SYSTEM MANUFACTURER.
2. PROVIDE A COMPLETE CONTROL SYSTEM WITH BAS INTERFACE FOR THE SYSTEM.
3. UNIT SHALL BE COMBINED WITH A PACKAGED INDOOR EVAPORATOR (EVAP-1) BHE MODEL 'ACH-2300Q-30H'.
4. UNIT SHALL BE PROVIDED WITH A RANVAL VALVE PACKAGE & ACCESSORIES (FOR FIELD INSTALLATION) AND HOT GAS BY-PASS ON CIRCUIT No.1. UNIT HAS (2) REFRIGERANT CIRCUITS: 1 3/8" SUCTION & 5/8" LIQUID.

REFERENCE DWG M-301
ADDENDUM #3

 1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431 abhagen@ABHA.com www.ABHA.com	SHEET TITLE	MECHANICAL SCHEDULES ALTERNATE #7A
	PROJECT	WILMINGTON CAMPUS RENOVATIONS
REV: 3 ISSUE: 06/26/13 PROJECT NO: 1219 FILE NAME: 1219_WILM_CAMPUS.rvt DRAWN BY: DEG CHECKED BY: SAJ	CONSULTANT	FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS
		M-713



ALTERNATE #7A

2 ELECTRICAL DEMOLITION - FIRST FLOOR
 1/8" = 1'-0"

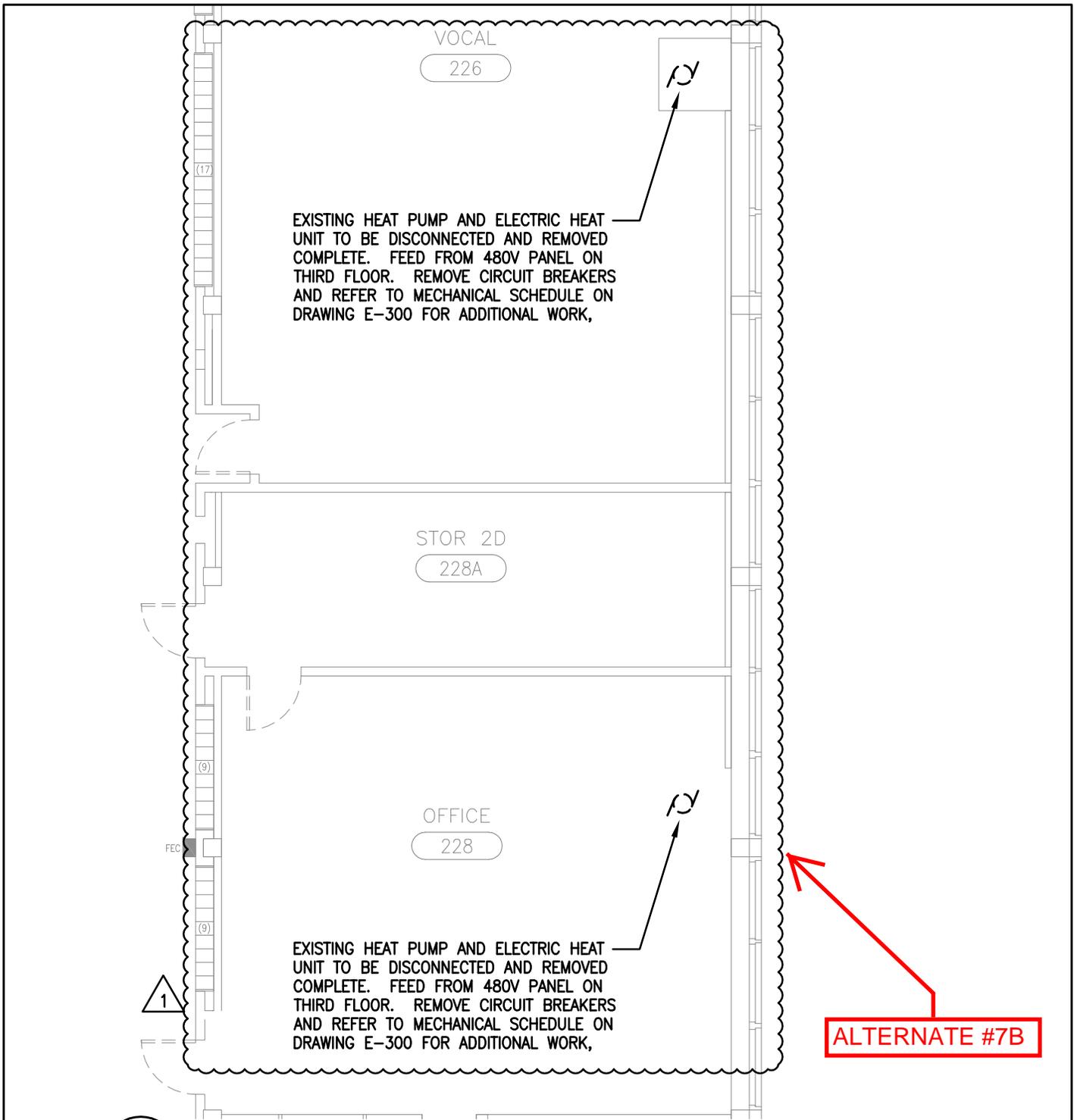
REFERENCE DRAWING NUMBER: E-101

ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	
	abhagen@ABHA.com www.ABHA.com	
	REV: 1	06-26-13
	ISSUE:	06-26-13
	PROJECT NO:	1219
FILE NAME:	E-700_12062.002	
DRAWN BY:	DMG	
CHECKED BY:	SAJ	

SHEET TITLE FIRST FLOOR ELECTRICAL DEMOLITION	
PROJECT WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B	
CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS	

E-700



2 ELECTRICAL DEMOLITION - SECOND FLOOR
 1/8" = 1'-0"

REFERENCE DRAWING NUMBER: E-102

ADDENDUM #3



1621 N. Lincoln Street
 Wilmington, DE 19806
 (P)302-658-6426
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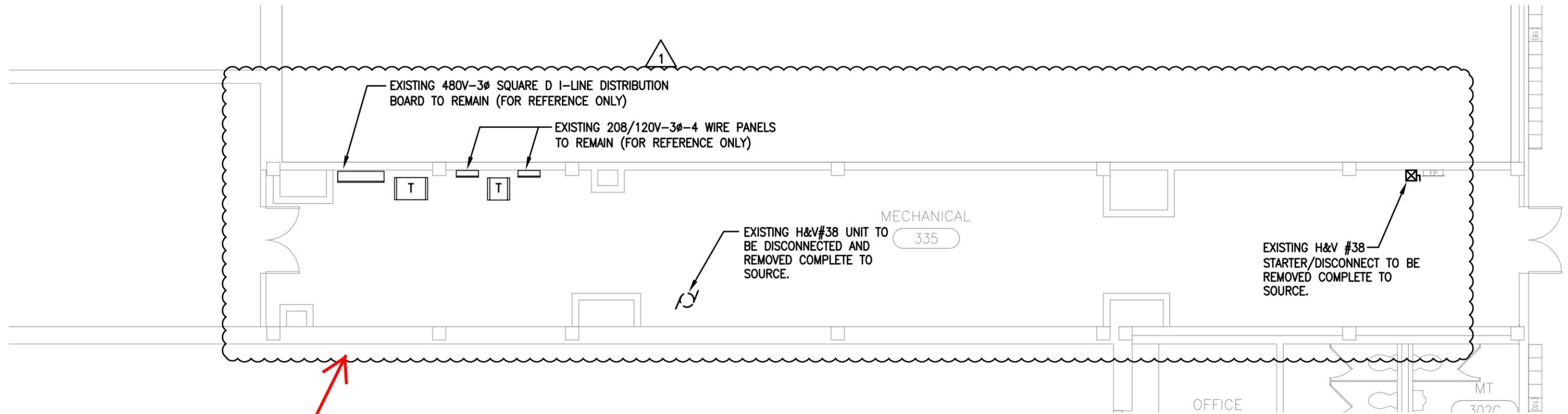
SHEET TITLE
SECOND FLOOR
ELECTRICAL DEMOLITION

PROJECT
WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B

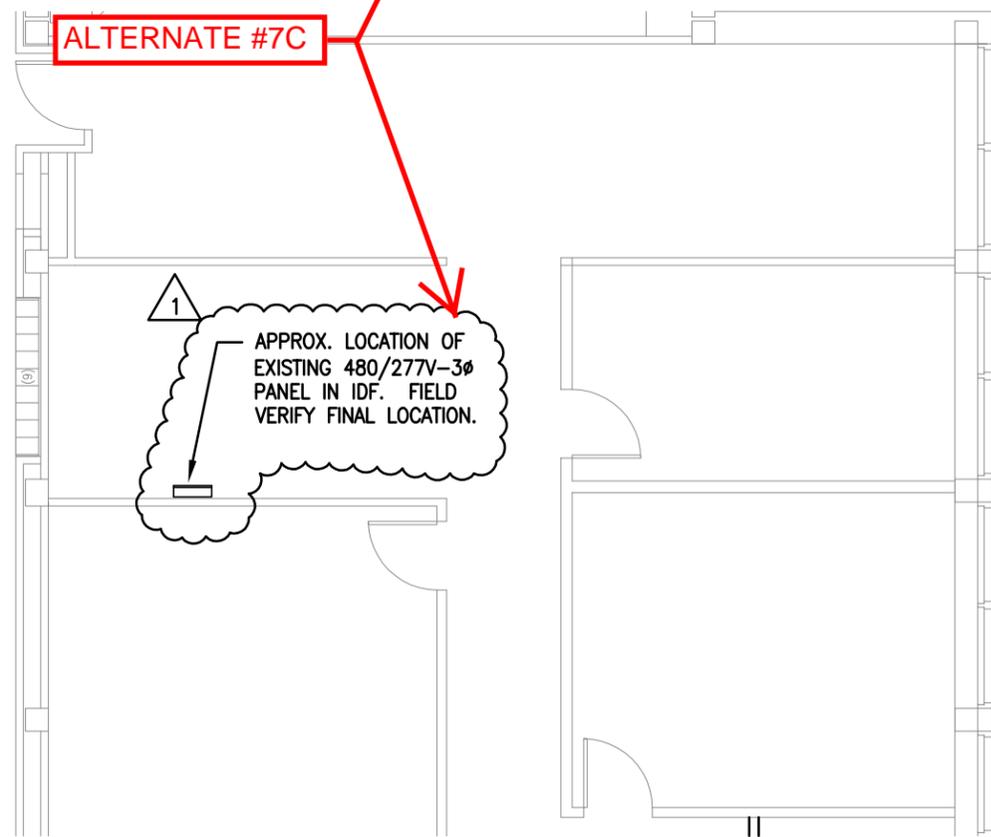
CONSULTANT
FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS

E-701

REV:	1	06-26-13
ISSUE:		06-26-13
PROJECT NO:	1219	
FILE NAME:	E-701_12062.002	
DRAWN BY:	DMG	
CHECKED BY:	SAJ	



2 **ELECTRICAL DEMOLITION - PARTIAL THIRD FLOOR**
1/8" = 1'-0"



3 **ELECTRICAL DEMOLITION - PARTIAL THIRD FLOOR**
1/8" = 1'-0"

REFERENCE DRAWING NUMBER: E-103

ADDENDUM #3

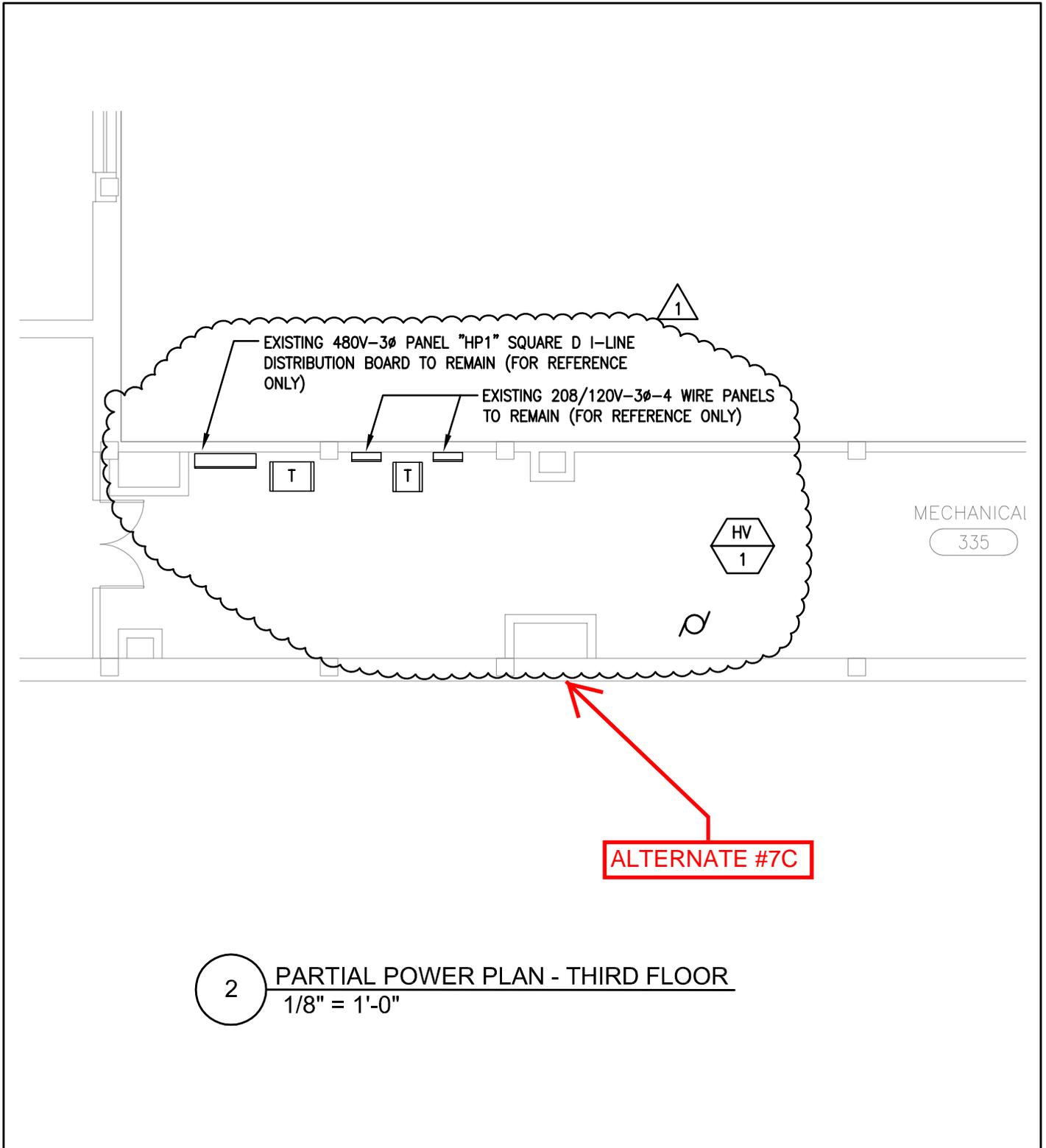
	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431
	abhagen@ABHA.com www.ABHA.com
	REV: 1 06-26-13
	ISSUE: 06-26-13
	PROJECT NO: 1219
FILE NAME: E-702_12062.002	
DRAWN BY: DMG	
CHECKED BY: SAJ	

SHEET TITLE
**THIRD FLOOR
ELECTRICAL DEMOLITION**

PROJECT
**WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B**

CONSULTANT
**FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS**

E-702



2 PARTIAL POWER PLAN - THIRD FLOOR
1/8" = 1'-0"

REFERENCE DRAWING NUMBER: E-113

ADDENDUM #3



1621 N. Lincoln Street
Wilmington, DE 19806
(P)302-658-6426
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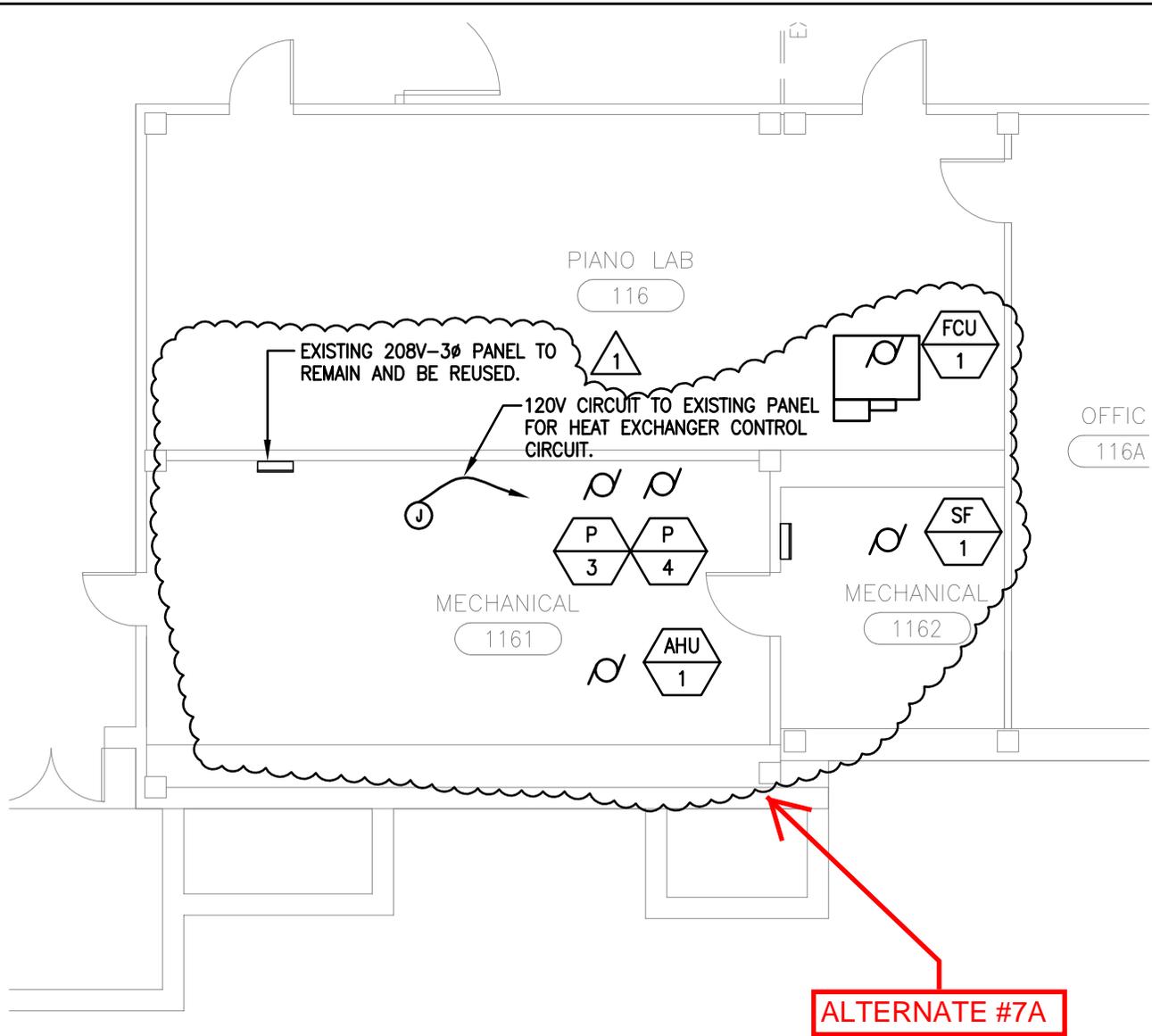
SHEET TITLE
**THIRD FLOOR
POWER PLAN**

PROJECT
**WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B**

CONSULTANT
**FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS**

E-703

REV: 1	06-26-13
ISSUE:	06-26-13
PROJECT NO:	1219
FILE NAME:	E-701_12062.002
DRAWN BY:	DMG
CHECKED BY:	SAJ



2 PARTIAL POWER PLAN - FIRST FLOOR
1/8" = 1'-0"

REFERENCE DRAWING NUMBER: E-210

ADDENDUM #3



1621 N. Lincoln Street
Wilmington, DE 19806
(P)302-658-6426
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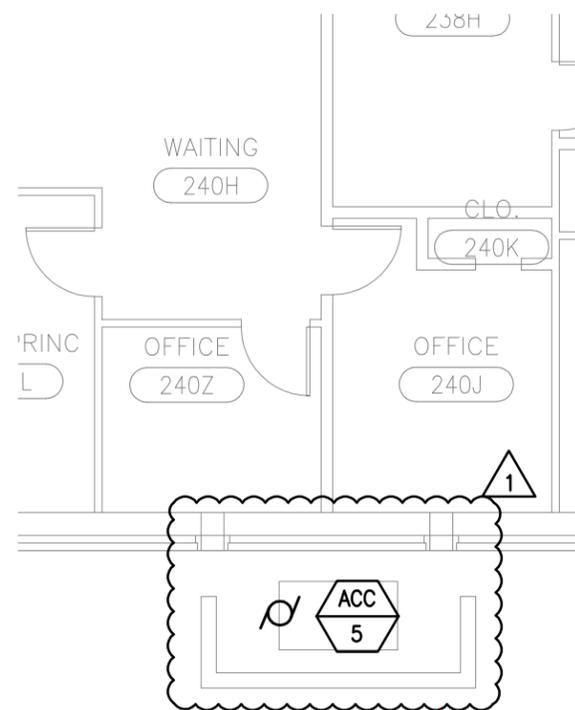
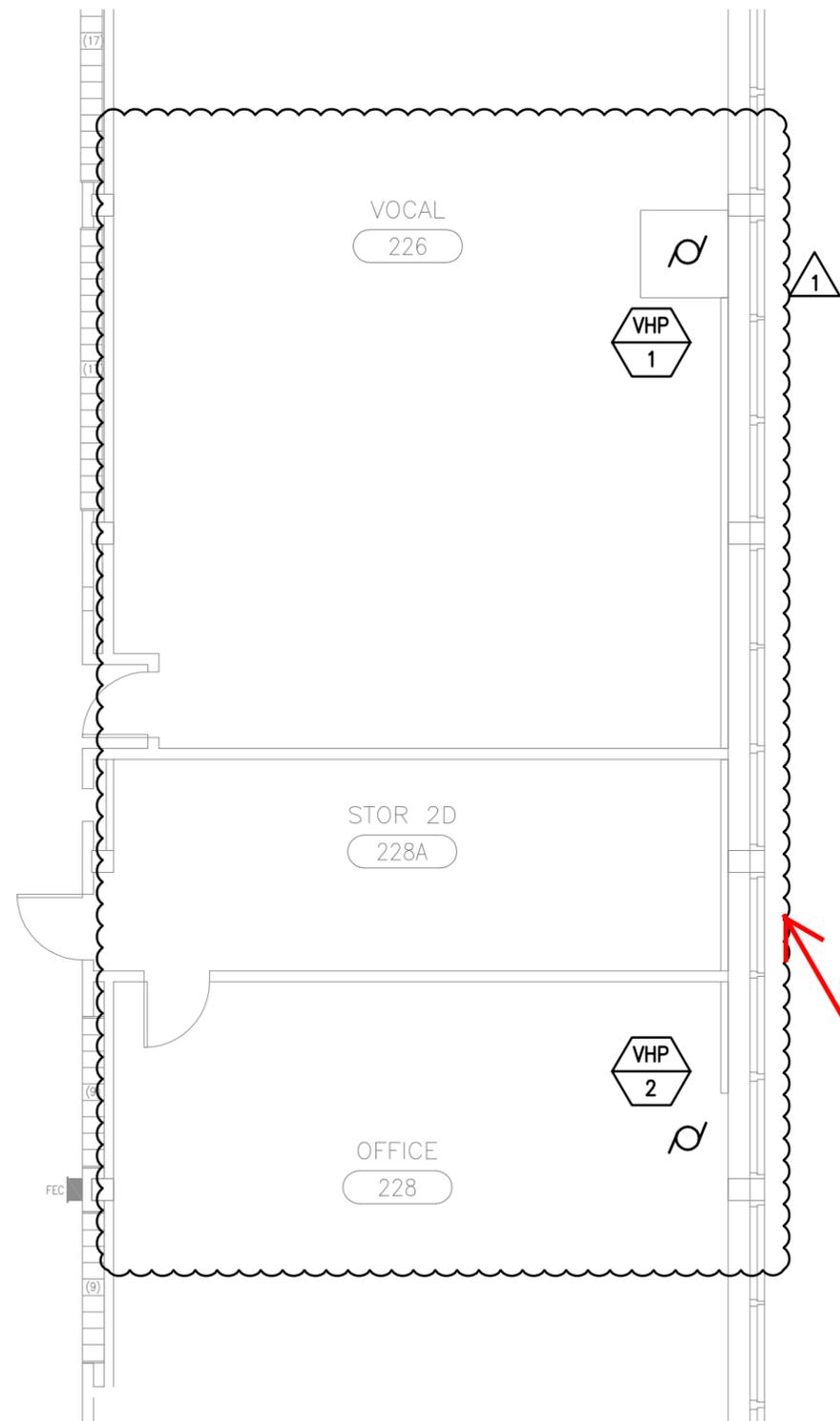
SHEET TITLE
**FIRST FLOOR
POWER PLAN**

PROJECT
**WILMINGTON HIGH SCHOOL RENOVATIONS
BID PACK B**

CONSULTANT
**FURLOW ASSOCIATES, INC.
MECHANICAL/ELECTRICAL ENGINEERS**

E-704

REV:	1	06-26-13
ISSUE:		06-26-13
PROJECT NO:	1219	
FILE NAME:	E-704_12062.002	
DRAWN BY:	DMG	
CHECKED BY:	SAJ	



2 POWER PLAN - SECOND FLOOR
1/8" = 1'-0"

ALTERNATE #7A

ALTERNATE #7B

4 POWER PLAN - SECOND FLOOR
1/8" = 1'-0"

REFERENCE DRAWING NUMBER: E-211

ADDENDUM #3

	1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431	
	abhagen@ABHA.com www.ABHA.com	
	REV: 1	06-26-13
	ISSUE:	06-26-13
	PROJECT NO:	1219
FILE NAME:	E-705_12062.002	
DRAWN BY:	DMG	
CHECKED BY:	SAJ	

SHEET TITLE SECOND FLOOR POWER PLANS	
PROJECT WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B	
CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS	
E-705	

ACC-4	CONDENSING UNIT	-	208V-1Ø	15.6A	20A-2/P	2#12+#12 GND: 3/4"C	30A-2/P WP/NF BY E.C.	LAP-1 #15	
HP-1	HEAT PUMP	-	208V-1Ø	2.45A	15A-2/P	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-2 #23	1
HP-2	HEAT PUMP	-	208V-1Ø	2.45A	-	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-2 #23	1
HP-3	HEAT PUMP	-	208V-1Ø	0.27A	15A-2/P	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-2 #24	1
HP-4	HEAT PUMP	-	208V-1Ø	0.27A	-	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-2 #24	1
HP-5	HEAT PUMP	-	208V-1Ø	0.25A	15A-2/P	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-1 #12	1
HP-6	HEAT PUMP	-	208V-1Ø	0.4A	-	2#12+#12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	LAP-1 #12	1
P-1	PUMP	7.5	480V-3Ø	-	20A-3/P	3#12 + #12 GND: 3/4"C	COMBO STARTER/DISC BY E.C.	EXISTING PANEL	
P-2	PUMP	7.5	480V-3Ø	-	20A-3/P	3#12 + #12 GND: 3/4"C	COMBO STARTER/DISC BY E.C.	EXISTING PANEL	
FCU-1	FAN COIL UNIT	-	120V	10.8	20A-1/P	2#12 + #12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	EXISTING PANEL	
AHU-1	AIR HANDLER	2	208V-3Ø	-	15A-3/P	3#12 + #12 GND: 3/4"C	COMBO STARTER/DISC BY E.C.	EXISTING PANEL	
ACC-5	CONDENSING UNIT	-	208V-3Ø	80	100-3/P	3#4 + #8 GND: 1 1/4"C	FURNISHED WITH UNIT	EXISTING PANEL	
VHP-1	HEAT PUMP	-	480V-3Ø	37.3A	40A-3/P	3#8+#10 GND: 1"C	60A-3/P NF BY E.C.	EXISTING PANEL	
VHP-2	HEAT PUMP	-	480V-3Ø	37.3A	40A-3/P	3#8+#10 GND: 1"C	60A-3/P NF BY E.C.	EXISTING PANEL	
HV-1	HEAT AND VENT UNIT	7.5	480V-3Ø	-	20A-3/P	3#12 + #12 GND: 3/4"C	COMBO STARTER/DISC BY E.C.	EXISTING PANEL "HP1"	4
SF-1	SUPPLY FAN	-	120V	-	20A-1/P	2#12 + #12 GND: 3/4"C	TOGGLE SWITCH BY E.C.	EXISTING PANEL	
P-3	PUMP	1 1/2	208V-3Ø	-	15A-3/P	3#12 + #12 GND: 3/4"C	STARTER BY E.C.	EXISTING PANEL	
P-4	PUMP	1 1/2	208V-3Ø	-	15A-3/P	3#12 + #12 GND: 3/4"C	STARTER BY E.C.	EXISTING PANEL	

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NOTES:

- MULTIPLE UNITS ON COMMON CIRCUIT.
- PROVIDE 120V CIRCUIT TO CHILLER HEAT TRACE ON BUNDLE FROM PANEL "EAP-1". TERMINATE ON 20A-1/P C.B.
- PROVIDE 5#12'S IN A 3/4" CONDUIT FROM OUTDOOR UNIT TO INDOOR UNIT. PROVIDE TOGGLE SWITCH AT INDOOR UNIT AND MAKE ALL FINAL CONNECTIONS.
- PROVIDE (1) SUPPLY AND (1) RETURN FIRE ALARM SYSTEM DUCT DETECTOR MOUNTED IN A WEATHERPROOF ENCLOSURE. TURN UNITS OVER TO M.C. FOR INSTALLATION. UPON COMPLETION CONNECT TO FIRE ALARM CONTROL PANEL FOR UNIT SHUT DOWN. COORDINATE ALL WORK WITH LOCAL FIRE MARSHAL OFFICE AND SIMPLEX/GRINNELL.
- ALL WIRING AND CIRCUIT BREAKERS INDICATED ABOVE ARE NEW.

ALTERNATES
#7A, 7B, & 7C

REFERENCE DRAWING NUMBER: E-300

ADDENDUM #3

 <p>1621 N. Lincoln Street Wilmington, DE 19806 (P)302-658-6426 (F)302-658-8431 abhagen@ABHA.com www.ABHA.com</p>	<p>SHEET TITLE ELECTRICAL DETAILS AND SCHEDULES</p>	
	<p>PROJECT WILMINGTON HIGH SCHOOL RENOVATIONS BID PACK B</p>	
<p>REV: 1 06-26-13 ISSUE: 06-26-13 PROJECT NO: 1219 FILE NAME: E-706_12062.002 DRAWN BY: DMG CHECKED BY: SAJ</p>	<p>CONSULTANT FURLOW ASSOCIATES, INC. MECHANICAL/ELECTRICAL ENGINEERS</p>	
		E-706