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Addendum No. 1

Date: April 3, 2017

Project: CRSD Charlton School
Locker Room & Toilet Room Renovations

The work herein shall be considered part of the bid documents for the referenced project and carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Acknowledge receipt of addendum on the bid form as indicated.

General

1. **Contract No. SRS-17001-ChRen**
   Caesar Rodney School District – Charlton School Renovations
2. Attendance at this meeting is a prerequisite for bidding on this contract.
3. Sealed bids are due at 2:30pm on April 12, 2017 at Caesar Rodney School District, Facilities Management, 7 Front Street, Wyoming, DE 19934 at which time they will be publicly opened and read aloud.
4. The deadline for RFIs to StudioJAED is Wednesday, April 5, 2017 at 4:00 pm.
5. RFI and questions are to be submitted via email to Gabe Cheung and Philip Conte at StudioJAED. cheungg@studiojaed.com contep@studiojaed.com

Pre Bid Meeting Minutes

1. Introductions
   a. Ken Starke, Caesar Rodney School District
   b. Todd Simpson, Principle, John S. Charlton Elementary School
   c. Mike Semans, John S, Charlton Elementary School
   d. Ken Starke, Caesar Rodney School District
   e. Phil Conte, Principal-in-Charge, Studio JAED
   f. Gabe, Cheung, Project Manager, Studio JAED
   g. Ed Lupinek, Studio JAED
   h. Paul Guggenberger, Studio JAED
2. Reviewed Scope

   In general, the scope of work includes the following:

   Architectural Scope of Work

   The toilet rooms and locker room are to be renovated to house new plumbing fixtures and special needs equipment. New concrete masonry walls, epoxy floors, acoustic ceiling tile, and lighting fixtures to be installed. Adjacent rooms affected by the renovation will have materials to match existing. Exterior aluminum doors and frames to be replaced including new hardware. Project also includes procurement of select equipment identified on the drawings such as transfer stations at toilets, lifts, etc.

Mechanical Scope of Work

The existing RTU with DX cooling and hot water heating serving the gymnasium and pool locker room will be replaced in kind. Existing ductwork in the gym we be reutilized as much as possible. The above mentioned ductwork will be demolished in the pool locker room, and the above mentioned RTU will no longer serve the pool locker room. A new ceiling cassette DX split system heat pump will serve the pool locker room instead. Also, supplemental heating for the pool locker room will be provided by wall mounted hot water radiant heaters. Fresh air to the pool locker room will be provided by a roof mounted ERV.

The existing pool RTU dehumidification unit, heating and cooling unit will be replaced. The new unit will have DX cooling via a split condensing unit, and it will have hot water heating. The ductwork and diffusers in the pool area will be demolished and replaced with double wall, spiral, and exposed ductwork. The existing ceiling will be demolished leaving the above structure exposed.

Electrical Scope of Work

Replace existing light fixtures with new 2x2 led lights controlled by occupancy sensor. Provide new door operator with ADA compliant pushbuttons with indicating light outside door. Provide two new GFCI outlets and required branch circuit wiring.

Plumbing Scope of Work

The existing Domestic Water and Sanitary piping will be modified to align with renovated and upgraded toilet rooms and locker room. Existing piping will be reutilized as much as possible. New updated plumbing fixtures will also be installed.

3. Reviewed Bid Form
    a. Complete forms as presented, do not edit or alter.
    b. Provide all information requested in full or bid will not be accepted.
    c. Employee drug testing form is required, including sub-contractors.
    d. Acknowledge all addendums as individual items.
    e. Include a copy of your business license, not just a number.
    f. Provide entry for all trades listed on Subcontractor List. If work is to be self-performed, enter your company's information.
4. Reviewed Sub Contractor List
    a. Demolition
    b. Masonry
    c. Carpentry
    d. Mechanical
    e. Electrical
    f. Plumbing
    g. Building Automation System

5. Reviewed Alternates
    a. Alternate 1: All labor and material to provide BAS.
6. Reviewed Allowances
    a. None
7. Prevailing Wage Project
    a. Rates included in specifications.
8. Schedule
    a. Anticipate prompt award and commencement after bids are received. Prep work, including submittals, shall begin prior to field mobilization. Anticipate major demolition to be completed during the week of June 12 when the building is not occupied. Substantial completion and certificate of occupancy shall be received prior to August 22.
    b. All work shall be completed before students return. Exact date to be announced via addendum. Key dates are as follows:

        i. June 8 — Last Day of School (2016-2017)
        ii. June 19 — First Day Summer School – Staff
        iii. July 20 — First Day Summer School – Students
        iv. July 26 — Last Day Summer School – Students
        v. July 27 — Last Day Summer School – Staff
        vi. August 22 — First Day of School (2017-2018)

    c. Contractor shall schedule the work to achieve substantial completion and certificate of occupancy by August 22, including any weekend or overtime hours as might be required.
    d. If occupancy is not received by August 22, the contractor shall bear all additional costs required to complete the work on off hours, including the cost of overtime and the cost of a school district employee to be present at the building.
9. Lay Down Area, Security and Occupancy
    a. Laydown and staging area will be designated.
    b. All immediate areas adjacent to construction will be occupied for the duration of the project by staff and students. Contractor is responsible for providing temporary walls and to limit access to those areas. Contractor to provide all measures for pedestrian control and safe occupant passage for project duration.
10. Reviewed prototypical toilet room completed last Summer.
11. Reviewed existing Locker Room
12. Additional walk-throughs for sub-contractors may be arranged with Ken Starke.

Changes to Drawings

1. ***Drawing A2.2 – Partial Floor Plans – R302***
   Sheet shall be deleted from the drawing set.
   All work associated with Room R302 as indicated on sheet A2.2 shall be omitted from the contract. Room R302 shall remain as is.

2. ***Drawing A2.5 – Partial Floor Plans – Natatorium***
   Revised scope of demolition and new construction.
   Added sprinkler scope.
   See attached sheet A2.5, Revision 1.

3. ***Drawing E9.1 – Overall Electrical Floor Plan***
   Changed the indicated view callouts to have the correct sheet and view numbers.
   See attached sheet E9.1, Revision 1.

4. ***Drawing E9.2 – Electrical Floor Plans – R102***
   Added occupied indicator light, call button, intercom speaker, and labels for all door open push buttons and power supplies.
   See attached sketch SK-E.1.

5. ***Drawing E9.3 – Electrical Floor Plans – R200***
   Added call button, intercom speaker, and labels for all door open push buttons and power supplies.
   See attached sketch SK-E.1.

6. ***Drawing E9.5 – Electrical Floor Plans – Locker Room***
   Added power wiring for electric duct heater 1.
   See attached sketch SK-E.2.

7. ***Drawing E9.7 – Electrical Panel Schedules***
   Added circuit to panel LPC1 as indicated. Added circuit breaker and power wiring note as indicated.
   See attached sketch SK-E.2.

8. ***Drawing P10.4 – Plumbing Floor Plan Locker Room***
   Added HWR piping to plan.
   See attached sheet P10.4, Revision 1.

9. ***Drawing M8.2 – Mechanical Demolition and New Roof Plan***
   Added structural notation and Roof Curb Detail to new Gym Unit.
   See attached sheet M8.2, Revision 1.

10. ***Drawing M8.3 – Mechanical Plan – Gym & Natatorium***
    Revised “Fabric Duct Installation Details” and ductwork to Natatorium.
    See attached sheet M8.3, Revision 1.

11. ***Drawing M8.5 – Mechanical Schedules***
    Modified schedules.
    See attached sheet M8.5, Revision 1.

12. ***Drawings M8.6 through M8.9 – BAS Controls Drawings***
    Drawings M8.6 through M8.9 are BAS Drawings for EXISTING EQUIPMENT ONLY as relates to Alternate #1.

Changes to Specifications

1. ***Section 230993 – Sequence of Operations for HVAC Controls***
   Revised specification section.
   See attached spec section 230993, Addendum 1.

End

SECTION 23 09 93

SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

NOTE: SEQUENCES OF OPERATION IN THIS SECTION APPLY ONLY TO THE NEWLY-INSTALLED HVAC SYSTEMS IN THE BASE SCOPE OF WORK. SEQUENCES OF OPERATION FOR EXISTING EQUIPMENT AS APPLIED TO ALTERNATE #1 ARE SHOWN ON THE DRAWINGS.

THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR MATERIALS TO MAINTAIN A FULLY FUNCTIONAL BUILDING AUTOMATION SYSTEM FOR THE PROJECT. THIS INCLUDES ALL CONTROL COMPONENTS, CONTROLLERS, WIRING, PROGRAMMING, AND COORDINATION BETWEEN TRADES TO ACCOMPLISH THE SEQUENCE OF OPERATIONS HEREIN. CONTRACTOR SHALL ENSURE THAT ALL COMPONENTS ARE COORDINATED BETWEEN EQUIPMENT SUPPLIERS AND CONTROLS VENDOR FOR ALL EQUIPMENT.

2.01 PART 1 GENERAL

2.02 SECTION INCLUDES

A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.

B. Sequence of operation for:
   1. Exhaust Fans
   2. Radiation and convectors.
   3. Packaged Rooftop Units
   4. Natatorium Environmental Control Units
   5. Ductless Split Systems

2.03 RELATED SECTIONS

A. Section 23 09 23 - Direct-Digital Control System for HVAC.

B. Section 23 09 13 - Instrumentation and Control Devices for HVAC.

C. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

2.04 SYSTEM DESCRIPTION

A. This Section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other Sections.

2.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.
   1. Preface: 1 or 2 paragraph overview narrative of the system describing its purpose, components and function.
   2. State each sequence in small segments and give each segment a unique number for referencing in Functional Test procedures; provide a complete description regardless of the completeness and clarity of the sequences specified in the contract documents.
   3. Include at least the following sequences:
      a. Start-up.
      b. Warm-up mode.
      c. Normal operating mode.
      d. Unoccupied mode.
      e. Shutdown.
      f. Capacity control sequences and equipment staging.

g. Temperature and pressure control, such as setbacks, setups, resets, etc.
h. Detailed sequences for all control strategies, such as economizer control, optimum start/stop, staging, optimization, demand limiting, etc.
i. Effects of power or equipment failure with all standby component functions.
j. Sequences for all alarms and emergency shut downs.
k. Seasonal operational differences and recommendations.
l. Interactions and interlocks with other systems.

4. Include initial and recommended values for all adjustable settings, setpoints and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.
5. For packaged controlled equipment, include manufacturer's furnished sequence of operation amplified as required to describe the relationship between the packaged controls and the control system, indicating which points are adjustable control points and which points are only monitored.
6. Include schedules, if known.

C. Control System Diagrams: Submit graphic schematic of the control system showing each control component and each component controlled, monitored, or enabled.
1. Label with settings, adjustable range of control and limits.
2. Include flow diagrams for each control system, graphically depicting control logic.
3. Include the system and component layout of all equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
4. Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.
5. Include all monitoring, control and virtual points specified in elsewhere.
6. Include a key to all abbreviations.

D. Points List: Submit list of all control points indicating at least the following for each point.
1. Name of controlled system.
2. Point abbreviation.
3. Point description; such as dry bulb temperature, airflow, etc.
4. Display unit.
5. Control point or setpoint (Yes / No); i.e. a point that controls equipment and can have its setpoint changed.
6. Monitoring point (Yes / No); i.e. a point that does not control or contribute to the control of equipment but is used for operation, maintenance, or performance verification.
7. Intermediate point (Yes / No); i.e. a point whose value is used to make a calculation which then controls equipment, such as space temperatures that are averaged to a virtual point to control reset.
8. Calculated point (Yes / No); i.e. a “virtual” point generated from calculations of other point values.

E. Project Record Documents: Record actual locations of components and setpoints of controls, including changes to sequences made after submission of shop drawings.

2.06 QUALITY ASSURANCE

A. Design system under direct supervision of a Professional Engineer experienced in design of this Work and licensed in the State in which the Project is located.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

4.01 GENERAL SYSTEM DESIGN AND OPERATION STANDARDS

A. The BAS shall control the mechanical systems within the site based upon the following design parameters:
   1. Central heating plant consisting of boilers circulators feeding a building-wide loop.
   2. Cooling provided by DX-mounted rooftop units with VAV terminal units.

B. Each unit shall be controlled by an individual DDC Controller and all required sensors, control valves, and appurtenances required to complete the sequence of operation. Units shall include occupied/unoccupied control, night-setback, morning warm-up/cool-down, and enthalpy-based economizer functions.

4.02 HYDRONIC FIN TUBE RADIATION AND CONVECTOR

A. The hydronic fin tube radiation shall be controlled by individual fully-modulating DDC-controlled control valves and individual temperature sensors mounted within the space being served. The control valves shall modulate to maintain temperature within the space (68 ºF, user adjustable).

B. The following items shall be displayed at the Operator's Terminal:
   1. Temperature Setpoint.
   2. Actual space temperature.
   3. Commanded position of control valve.

4.03 SINGLE ZONE PACKAGED ROOFTOP UNITS WITH HOT WATER HEAT AND CENTRAL ENERGY RECOVERY

A. Each unit shall be controlled by an individual DDC Controller. The DDC Controller shall be wired to a space temperature sensor, space-level CO2 sensor, discharge air temperature sensor, return air temperature sensor, space differential pressure sensor, damper motors, and the contacts to the factory-mounted unit control system controlling the compressor(s), hot-gas bypass, hot-gas reheat, and gas train combustion equipment.

B. Cooling Mode:
   1. During the programmed occupied mode, the supply fan shall run continuously with the outside air damper open to the minimum position (10% outdoor air unless otherwise shown on Schedule).
      a. The fan modulates to maintain space temperature while maintaining the discharge air setpoint (normally 55.0 deg. F - 60.0 deg. F). As the cooling load decreases, the fans will modulate down to minimum speed. As the space temperature continues to fall below the cooling setpoint by 1.0 deg. F (adj.) and remains at minimum speed for a period of time (default=10 minutes adj.) the fan will remain at minimum speed and enter into a discharge air reset mode. As the space temperature continues to drop toward the space occupied heating setpoint, the discharge air setpoint is reset between the “normal” discharge air cooling setpoint and the discharge air heating setpoint.
      b. The fan will remain at minimum speed until the space temperature exceeds the cooling setpoint +1.0 deg. F for 10 minutes (adj.). At that point it will revert to its fan modulating mode with its discharge setpoint equal to its Discharge Air Cooling setpoint.
      c. When in the occupied mode, the outdoor-air damper shall modulate to maintain the current outdoor airflow at setpoint. The BAS shall calculate and reset this outdoor airflow setpoint based on the current ventilation requirements based on field mounted CO2 sensor. The amount of outside air will be increased above the minimum setting on a rise in return air CO2 above the setpoint of 750 PPM (adjustable). On a return to

setpoint the reverse occurs. Upon a rise in CO2 level above 1500 PPM, a high CO2 level will be displayed at the BAS workstation.

d. Setpoints are adjustable at the BAS workstation. As the outdoor air damper and supply air fan adjusts, the return exhaust fan shall automatically adjust it's speed to maintain a constant static pressure within the space (0.3" WC, adjustable).

2. The DX cooling shall stage and modulate to maintain the discharge air temperature setpoint in cooling mode. If economizing is enabled the outside air damper shall also modulate to maintain the discharge air temperature setpoint.
   a. As noted in paragraph B-1-a above, if cooling or heating is required and the fan is at minimum airflow then the DAT setpoint shall be reset up or down to accommodate space requirements.
3. For units equipped with an outdoor air economizer: The DDC Controller shall receive input from the Global Enthalpy Sensor. If the enthalpy of the outdoor air is lower than the defined minimum level (user adjustable) the mixing box economizer sequence shall be activated upon a call for cooling. The outside air damper shall never close past the minimum position during the occupied period.
4. When dehuminidifcation is required as sensed by the factory-provided humidistat (setpoint, 60% RH, adjustable), the hot-gas reheat system will be engaged and follow the factory-programmed sequence.

C. Heating Mode:
1. During the programmed occupied mode, the supply fan shall run continuously with the outside air damper open to the minimum position (10% outdoor air unless otherwise shown on Schedule).
   a. The supply fan shall modulate airflow to maintain space temperature. The supply fan shall not modulate below the minimum OA ventilation rate required in the space. If cooling or heating is required and the fan is at minimum airflow then the DAT setpoint shall be reset up or down to accommodate space requirements.When the space temperature decreases to 1.0 deg. F below the heating setpoint, the fan will ramp up to 100% and the heat will be enabled. When the space temperature exceeds the heating setpoint +1.0 deg. F the heat will be disabled and the fan will ramp down to its minimum speed. Reset of the discharge air setpoint will occur every 5-10 minutes (adj.)
   b. When the space temperature rises above the occupied cooling setpoint the mode shall transition to cooling. When the space temperature falls below the occupied heating setpoint the mode shall transition to heating. When the space temperature is above the occupied cooling setpoint or below the occupied heating setpoint the mode shall remain in its last state. If the space temperature sensor fails the mode shall remain in its last state and an alarm shall be annunciated at the BAS. If the local and communicated setpoints fail the controller shall disable the supply fan and an alarm shall be annunciated at the BAS.
   c. When in the occupied mode, the outdoor-air damper shall modulate to maintain the current outdoor airflow at setpoint. The BAS shall calculate and reset this outdoor airflow setpoint based on the current ventilation requirements based on field mounted CO2 sensor. The amount of outside air will be increased above the minimum setting on a rise in return air CO2 above the setpoint of 750 PPM (adjustable). On a return to setpoint the reverse occurs. Upon a rise in CO2 level above 1500 PPM, a high CO2 level will be displayed at the BAS workstation.
   d. Setpoints are adjustable at the BAS workstation. As the outdoor air damper and supply air fan adjusts, the return exhaust fan shall automatically adjust it's speed to maintain a constant static pressure within the space (0.3" WC, adjustable).
2. The hot water control valve shall modulate to maintain the discharge air temperature setpoint as defined on the unit schedule. Temperatures shall be user-adjustable. As noted

in paragraph C-1-a above, If cooling or heating is required and the fan is at minimum airflow then the DAT setpoint shall be reset up or down to accommodate space requirements.

D. Energy Recovery Wheel Operation
   1. FOR UNITS EQUIPPED WITH AN ENERGY RECOVERY WHEEL: The AHU shall be in cooling recovery mode when the outdoor air temperature is greater than the space temperature and higher than the energy wheel enable setpoint (system economizer setpoint temperature). When the wheel is enabled, both outdoor & exhaust air bypass dampers shall be closed, outdoor air damper shall be at minimum, return air damper shall be open, and cooling shall be enabled. In cooling the recovery wheel shall be disabled when the outdoor air temperature is less than the space temperature and both outdoor & exhaust air bypass dampers shall be open.
   2. The AHU shall be in heating recovery mode when the outdoor air temperature is less than the space temperature and less than the energy wheel enable setpoint and the supply air temperature is less than the discharge air setpoint. When heat recovery is enabled the wheel shall be enabled as the first stage of heat, the outdoor air damper shall be at minimum, the outdoor & bypass recovery bypass dampers shall be open, and the unit heat shall be disabled. On a continued call for heat the second stage is enabled, the outdoor recovery bypass damper shall close, and the exhaust recovery bypass damper shall modulate to maintain the space temperature setpoint. If additional heat is required the third stage is enabled, the return air damper shall be open, both recovery bypass dampers shall be closed, and the unit heat shall be enabled.
   3. If the outdoor air temperature drops below the outdoor air frost protection setpoint (adj.), the outdoor air bypass damper shall modulate to maintain the exhaust-side leaving temperature at setpoint. If the outdoor air bypass damper reaches 100% open for 5 minutes (adj.), the wheel shall be turned off to prevent frosting and an alarm shall be annunciated.

E. Unoccupied Mode:
   1. During the programmed un-occupied mode, the supply fan, compressor, hot water control valve, and dampers for shall be cycled / modulated to maintain the un-occupied setpoints (55 degrees in Heating mode, 80 degrees in Cooling mode, both adjustable). Unless required for economizer cycle, the outside air damper shall remain closed.

F. All setpoints and shall be adjustable at the BAS workstation.

G. Provide a current sensor on one phase of power feeding each supply fan, exhaust fan, heat wheel, and compressor for status indication at the Operator's Terminal.

H. 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 Operator's Terminal. If the discharge temperature fails to fall to a programmed minimum temperature on a call for mechanical cooling, a high temperature alarm shall be activated at the Operator's Terminal.

I. The following items shall be displayed at the Operator's Terminal:
   1. Space temperature.
   2. Space temperature setpoint.
   3. Space humidity.
   4. Space humidity setpoint.
   5. Low Space temperature alarm.
   6. High Space temperature alarm.
   7. Discharge air temperature.
   8. Discharge air temperature setpoint.
   9. Return air temperature.
   10. Outside air temperature, humidity and enthalpy.

11. Economizer enthalpy setpoint.
12. Space CO2 level.
13. Space CO2 level setpoint.
14. Space high CO2 level alarm: “1500 PPM”, adjustable.
15. Supply fan operational status and speed (percentage)
16. Commanded status of supply fan.
17. Exhaust fan operational status and speed (percentage)
18. Commanded status of exhaust fan.
19. Heat Wheel operational status via current sensor.
20. Commanded status of heat wheel.
21. Commanded status of compressor(s).
22. Commanded status of hot water control valve.
23. Commanded position of dampers.
24. Diagram showing the layout of the unit with major components and dynamic temperatures shown where temperature sensors exist in the system.

4.04 EXHAUST FANS FOR ELECTRICAL ROOMS AND TELEPHONE ROOMS

A. On room temperatures above 95 degrees F open intake damper and start exhaust fan.

4.05 DUCTLESS SPLIT SYSTEMS

A. The split system shall have a BAS DDC interface wired to the manufacturer factory central system controller to provide operation, configuration, and monitoring of the system. The manufacturer factory central controller shall operate in BACnet protocol, and be connected to manufacturer factory space temperature sensors as specified.

B. Sequence of operation:
   1. Cooling Mode: Cooling mode shall be selected based on outdoor air temperatures or manually enabled or scheduled from the workstation. During the programmed occupied mode, the supply fan shall run continuously. On a rise in space temperature above the setpoint (75 degrees, adjustable), the manufacturer central controller shall energize the central compressor to provide cooling. The internal capacity control valve in the evaporator unit shall modulate to control the flow of refrigerant to maintain space temperature. On a fall in space temperature the refrigerant capacity control valve shall modulate closed.
   2. Heating Mode: Heating mode shall be selected based on outdoor air temperatures or manually enabled or scheduled from the workstation. During the programmed occupied mode, the supply fan shall run continuously. On a drop in space temperature below the setpoint (68 degrees, adjustable), the manufacturer central controller shall energize the central compressor to with the requisite reversing valve to provide heating to the evaporator unit as required. The internal capacity control valve in the evaporator unit shall modulate to control the flow of refrigerant to maintain space temperature. On a fall in space temperature the refrigerant capacity control valve shall modulate closed.
   3. The following items shall be accessible and displayed at the Operator's Terminal:
      a. Space temperature setpoint at each fan-coil unit (user adjustable).
      b. Actual space temperature of each fan-coil unit space.
      c. Operational status of each fan-coil unit (heating, cooling, off, user adjustable).
      d. Factory error codes from each unit.
      e. Remote space temperature sensor override for each fan-coil unit (user adjustable to limit temperature adjustment range, heat/cool selection, fan speed).
      f. Compressor Status

C. Each terminal unit (fan coil) shall be controlled by the factory-provided wall-mounted controller. The controller shall be capable of allowing space temperature adjustment of +1 / -1 degrees (user adjustable).

D. Where multiple units serve the same zone, a factory-supplied control twinning kit will be provided to allow for a single temperature sensor to control both zones.

E. For all public corridors, restrooms, and vestibules, provide stainless-steel flat-plate type temeprature sensors with no setpoint adjustment.

4.06 NATATORIUM ENVIRONMENTAL CONTROL UNIT AND ASSOCIATED EXHAUST FAN

A. All essential operating and logic controls shall be factory mounted and wired in the unit. Control sequences shall be designed specifically to control swimming pool environmental conditions.

B. Humidity Control
   1. When the humidity is above the set point the controller energizes the compressor and directs hot gas to air reheat condenser or the auxiliary air cooling condenser, if so equipped.

C. Space Heating
   1. When the compressor is running in the dehumidification mode and the space temperature is below the set point, the recovered heat is directed to the air reheat condenser. If the space temperature drops more than 2°F below the set point, the auxiliary space heating system (by others) shall be activated by a dry contact closure from the controller. A further drop in space temperature will activate the second stage of auxiliary heat (if available).

D. Space Humidity Reset Control based on Cold Surface Temperature
   1. When the temperature of the interior surface at the cold surface sensor drops to within 5ºF of the absolute humidity set point (dew point), the absolute humidity set point is offset downward. This condition causes the dehumidifier system to activate humidity control, lowering the space dew point and hindering the formation of condensate on the cold surfaces.

E. Air Conditioning
   1. Air Cooled Condenser (Remote)
      a. In order to achieve space cooling of the natatorium by the rejection of reclaimed heat, the dehumidifier shall be equipped with a properly sized remote air cooled condenser and shall automatically change over from heating to air conditioning as a function of dry bulb cooling demand in the natatorium. The sensible and latent heat recovered in air conditioning mode is rejected via an air cooled condenser
      b. The dehumidification unit shall include external hot gas and liquid connections to permit piping by the installing contractor to a remote air-cooled condenser provided by the unit manufacturer. The dehumidification unit's electrical panel shall have connections for the control of the condenser. The control voltage shall be 24 VAC.
      c. . The condenser shall have one or the two head pressure controlled variable speed horsepower fan motor(s). The fan motor(s) shall be specifically designed for variable speed operation and have permanently lubricated ball bearings and an internal thermal overload. Fan blades shall be of the aluminum propeller blade type. Multiple fan units will be mounted on a common weatherized steel channel base and have common refrigerant and electrical connections. The fans shall be mounted on a close-mesh steel grill that has been vinyl coated for weather resistance. The condenser shall be of the vertical airflow type. The condenser fan and control wiring shall terminate in an electrical box integral with the cabinet. The condenser cabinet shall be zinc-coated steel covered with a high adhesive, baked on finish and/or corrosion resistant aluminum. The condenser coil shall be constructed of aluminum fins mechanically bonded to copper tubes. The condenser shall be shipped with a dry nitrogen holding charge.

F. Outside Air
   1. The dehumidification unit casing shall include a manual locking damper with duct collar, to permit the introduction of up to 30% outside air to the inlet of the fan, downstream of the

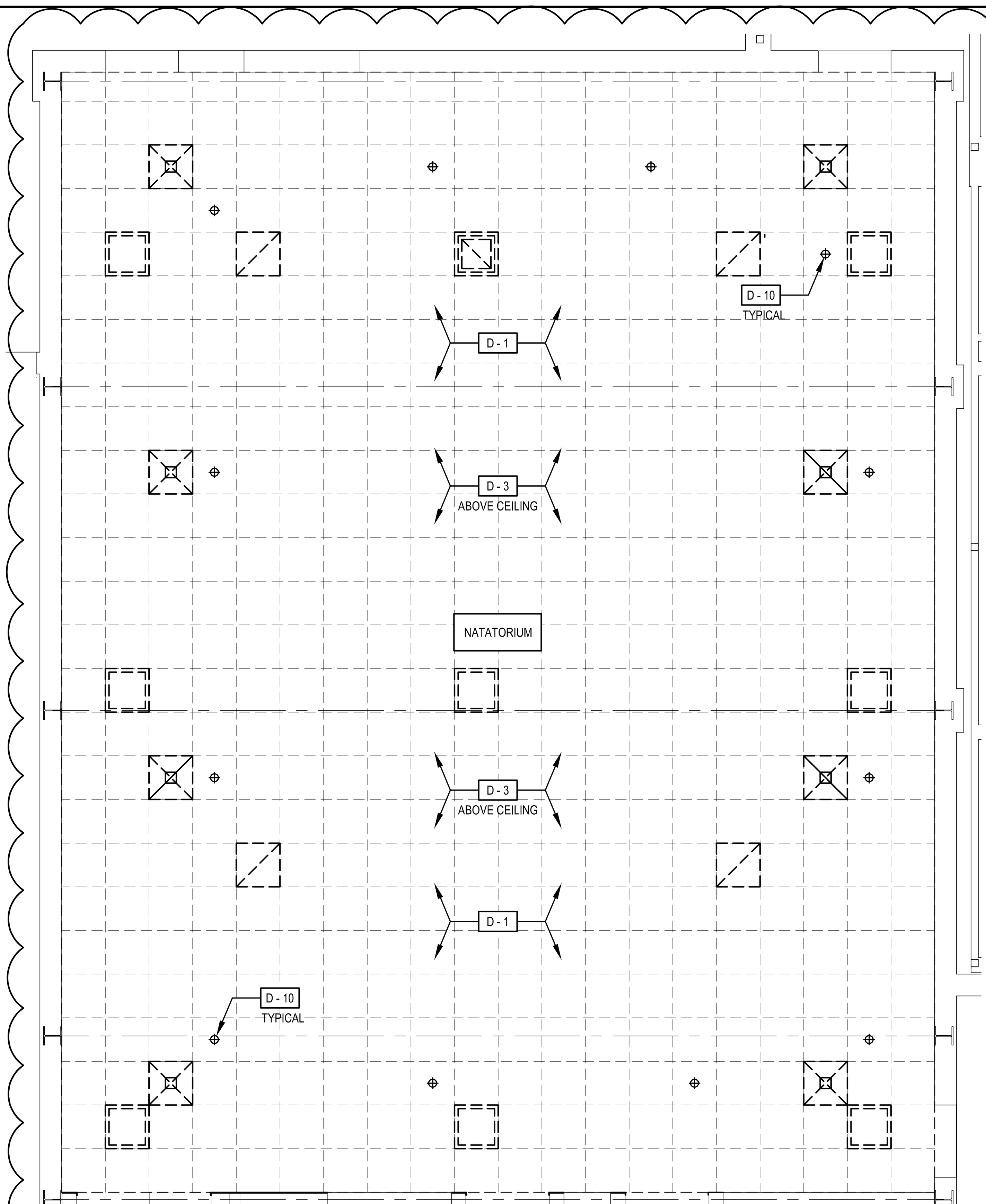
evaporator and reheat coil. Damper assembly shall be of heavy-duty construction, designed for industrial applications. The frame and opposing blades shall be fabricated of formed 16 gauge galvanized steel. The shaft shall be 1/2" plated steel hex.

2. The associated exhasut fan shall energize to maintain space pressurization.

G. Fire Trip
   1. Upon receipt of a contact closure from a fire control system (by others) a fire trip cycle shall be initiated. Compressor and fan motor shall be de-energized. For units equipped with the optional economizer, the dry contact shall open causing the outside and exhaust air dampers to close and the return air damper to open. Contact action is programmable.

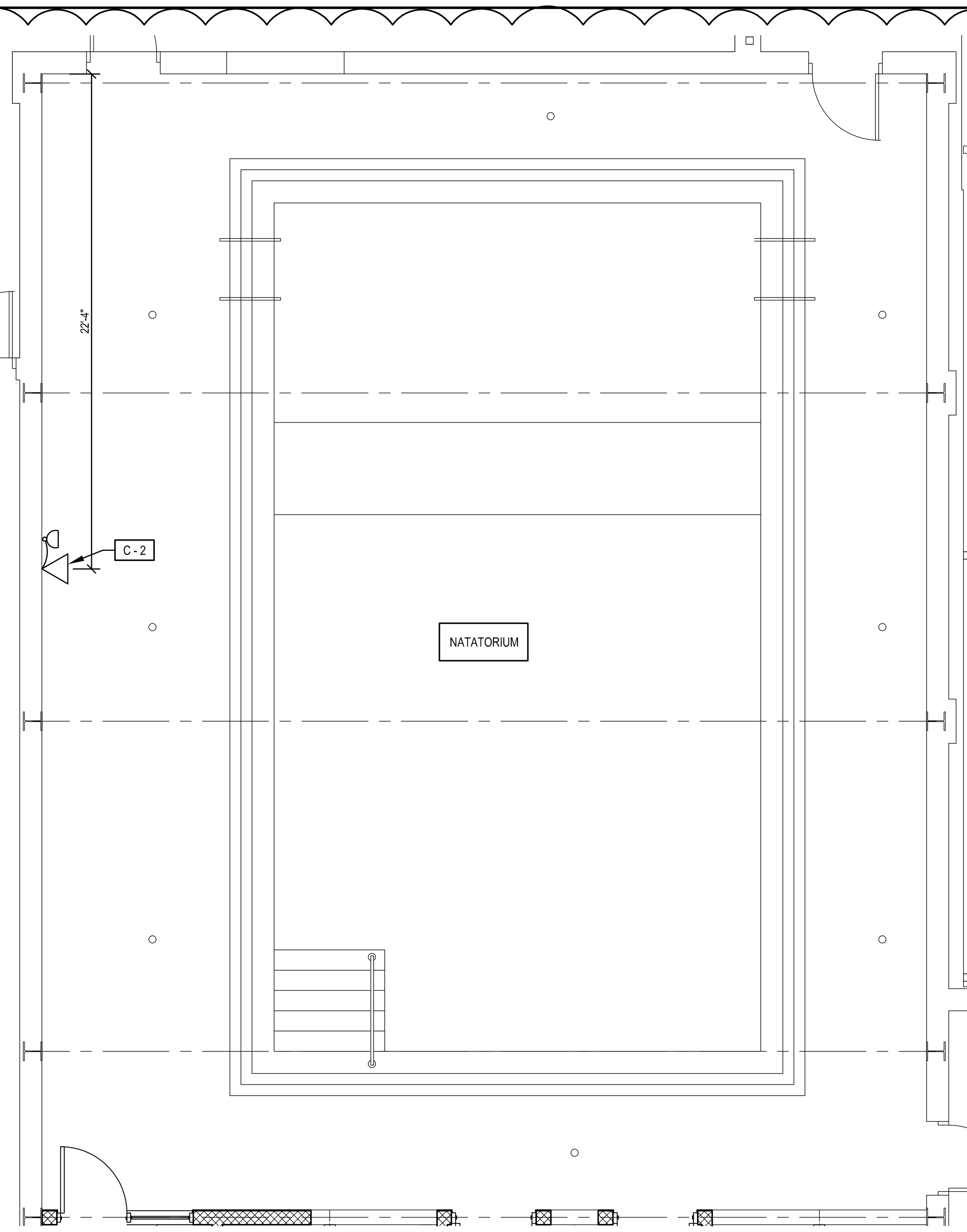
H. The following items shall be displayed at the Operator's Terminal:
   1. Space temperature.
   2. Space humidity levels
   3. Space temperature setpoint.
   4. Low Space temperature alarm
   5. High Space temperature alarm
   6. Discharge temperature.
   7. Outside air temperature, humidity and enthalpy.
   8. Return air temp sensor
   9. Freeze stat status.
   10. Smoke detector status.
   11. Fan operational status via current sensor.
   12. Commanded status of fan(s).
   13. Commanded status of compressor(s).
   14. Commanded position of hot water control valves.
   15. Commanded position of mixing box dampers.
   16. Diagram showing the layout of the unit with major components and dynamic temperatures shown where temperature sensors exist in the system

END OF SECTION



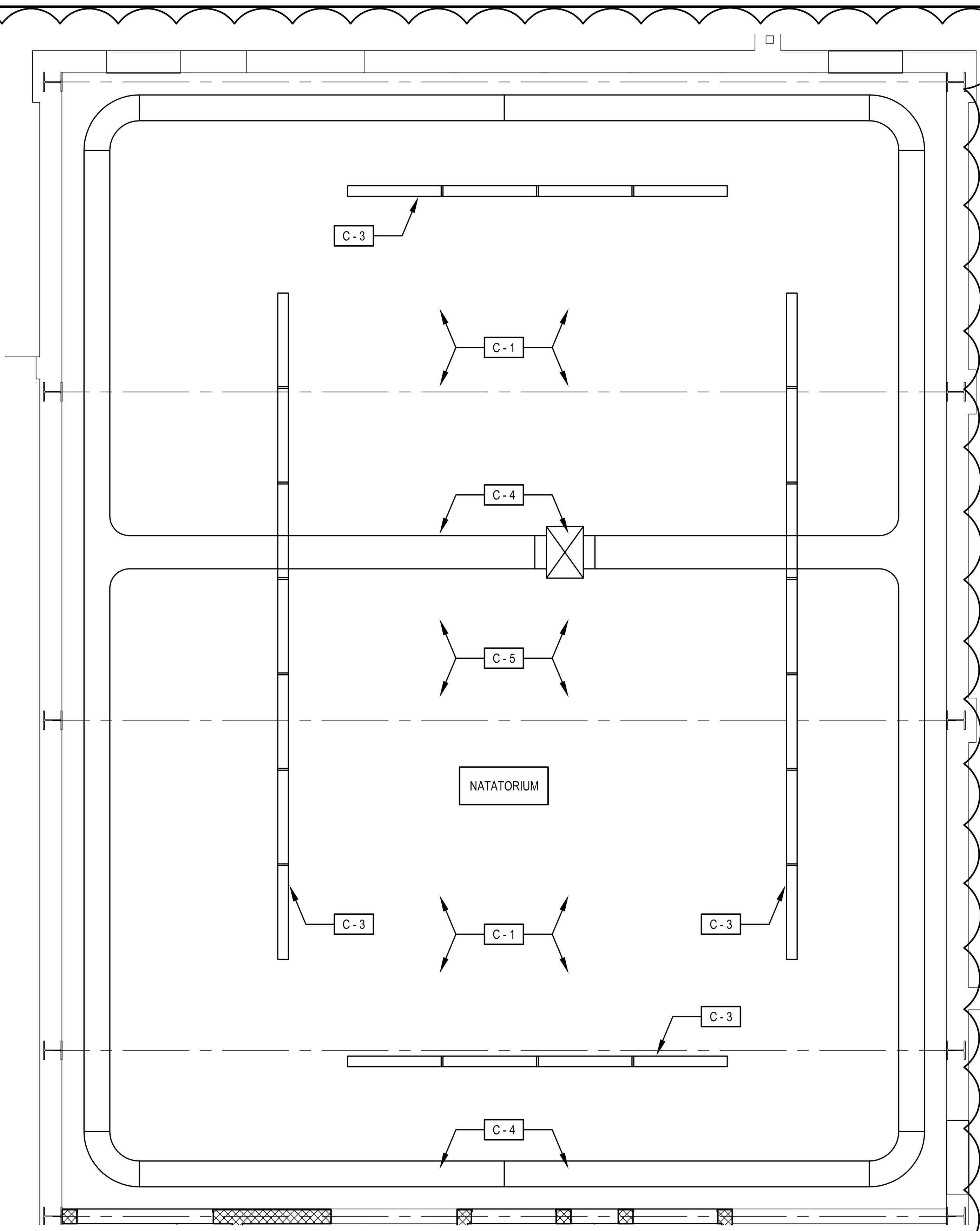
1 / 2.5 PARTIAL REFLECTED CEILING DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



2 / 2.5 PARTIAL FLOOR PLAN

SCALE: 1/4" = 1'-0"



3 / 2.5 PARTIAL REFLECTED CEILING PLAN

SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

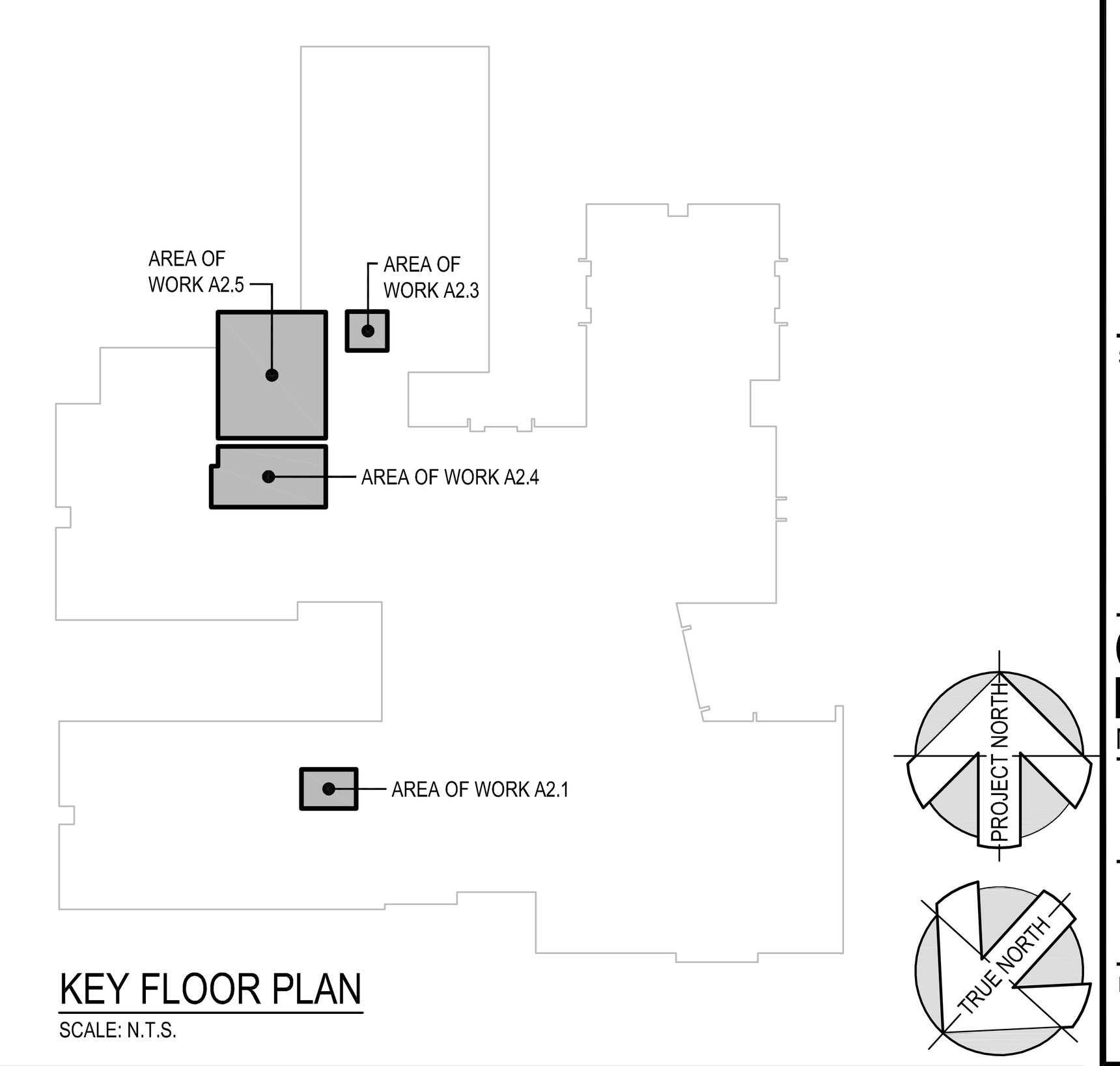
1. PERFORM ALL NECESSARY DISASSEMBLY, REMOVAL AND DISPOSAL OF BUILDING MATERIALS AND EQUIPMENT WHERE "NOTES" ON THE DRAWINGS REFER TO "REPLACE..." OR "INSTALL NEW...," OR IMPLY REMOVAL OF (E) EXISTING AND REPLACEMENT WITH NEW ITEMS.
2. AT NEW DOOR AND/OR INTERIOR WINDOW INSTALLATION, REMOVE SUFFICIENT MASONRY AT HEAD, JAMB AND SILL TO ALLOW FOR NEW MASONRY LINTEL, SOLID BLOCK SILL AND JAMB BLOCK CMU. DIMENSION SHOWN FOR NEW OPENINGS DOES NOT REPRESENT EXTENT OF MASONRY TO BE REMOVED FOR PROPER INSTALLATION. VERIFY EXACT AMOUNT IN FIELD.
3. DEMOLITION WORK AS SHOWN DASHED ON DRAWINGS IS TO INDICATE, IN A GENERAL MANNER, THE REMOVAL OF EXISTING CONSTRUCTION AND IS NOT INTENDED TO BE ALL INCLUSIVE. PROVIDE ALL DEMOLITION REQUIRED TO ACCOMMODATE OR INSTALL ALL NEW WORK.
4. EXERCISE CARE TO PREVENT ANY DAMAGE TO EXISTING CONDITIONS, UTILITIES, BUILDING ELEMENTS, AND FINISHES. INCLUDING, BUT NOT LIMITED TO, CONCRETE SLABS, FINISH FLOORING, EXTERIOR & INTERIOR WALLS AND FINISHES THAT ARE TO REMAIN. DAMAGED ITEMS SHALL BE REMOVED AND PROMPTLY RETURNED TO SERVICE OR PATCHED/REPLACED WITH NEW MATERIAL TO MATCH EXISTING AT NO ADDITIONAL COST TO THE OWNER.
5. MAINTAIN ALL EXISTING SERVICES IN USE AT ALL TIMES UNLESS WRITTEN PERMISSION IS RECEIVED FROM THE OWNER TO TEMPORARILY INTERRUPT ANY SUCH SERVICE. PERMANENTLY RECONNECT ALL SERVICES DISRUPTED BY THE ALTERATION AND DEMOLITION WORK.
6. MATERIALS AND/OR ITEMS DESIGNATED TO BE REINSTALLED AND/OR RELOCATED AS SHOWN SHALL BE STORED AND PROTECTED UNTIL REINSTALLED; DAMAGED ITEMS SHALL BE REPLACED WITH SIMILAR NEW MATERIAL.
7. COORDINATE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DEMOLITION ACCORDINGLY AND AS NECESSARY TO REMOVE AND/OR INSTALL ALL NEW WORK.
8. SELECTIVE AREAS TO BE REMOVED FOR UTILITY DISTRIBUTION AND PENETRATIONS ARE TO BE REPLACED AND PATCHED TO MATCH EXISTING UNLESS NOTED OTHERWISE. INCLUDING BUT NOT LIMITED TO, CMU AND BRICK MASONRY WALLS, MTL. ROOFING, MTL. AND CONCRETE SLABS.
9. OWNER IS TO REMOVE WANTED ITEMS PRIOR TO CONSTRUCTION. ALL REMAINING MISCELLANEOUS MATERIAL, ITEMS, AND DEBRIS SHALL BE REMOVED BY CONTRACTOR AND DISPOSED OF OFF SITE IN ITS ENTIRETY.
10. REMOVE SPRINKLER HEADS. REMOVE, ADJUST, AND EXTEND EXISTING SPRINKLER PIPING AND PROVIDE NEW, UPTURNED HEADS AS REQUIRED TO PROVIDE FULL COVERAGE AFTER REMOVAL OF CEILING.

DEMOLITION NOTES

D - 1	DEMOLISH EXISTING SUSPENDED GRID, ACOUSTIC CEILING, AND ASSOCIATED FASTENERS AND CABLES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO EXISTING LIGHT FIXTURES / DEVICES, AND MECHANICAL EQUIPMENT / DEVICES. ALL SPRINKLER HEADS TO REMAIN.
D - 2	REMOVE AND MODIFY HORIZONTAL TECTUM PANELS AS REQ'D. TO FACILITATE NEW SURFACE MOUNTED SHOWER. REINSTALL HORIZONTAL TECTUM PANELS IN ORIGINAL PLACE AFTER SHOWER INSTALLATION IS COMPLETE.
D - 3	SHOP BLAST TO REMOVE ALL RUST ON ALL EXISTING STL. JOIST AND ROOF DECK IN ACCORDANCE WITH SSPC-SP10 / NACE 2 NEAR-WHITE BLAST CLEANING.

CONSTRUCTION NOTES

C - 1	PAINT ALL EXPOSED SURFACES ABOVE EXISTING CEILING , INCLUDING BUT NOT LIMITED TO, STRUCTURAL STEEL, ROOF DECK, WALLS, DUCT WORK AND DEVICES, EXISTING PIPING, AND ELECTRICAL CONDUIT. SEE ELECTRICAL AND MECHANICAL DWGS. FOR EXTENT OF ELECTRICAL CAN MECHANICAL WORK. COLOR BY ARCHITECT.
C - 2	INSTALL NEW SURFACE MOUNTED SHOWER. SEE PLUMBING DWGS.
C - 3	INSTALL NEW LIGHTING PER ELECTRICAL PLANS.
C - 4	INSTALL NEW MECHANICAL DUCT AND EQUIPMENT PER MECHANICAL DWGS.
C - 5	REMOVE SPRINKLER HEADS. REMOVE, ADJUST, AND EXTEND EXISTING SPRINKLER PIPING AND PROVIDE NEW, UPTURNED HEADS AS REQUIRED TO PROVIDE FULL COVERAGE AFTER REMOVAL OF CEILING.



KEY FLOOR PLAN

SCALE: N.T.S.

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WRANGLE HILL ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1652 F: (302) 832-1423
Website: www.StudioJAED.com
E-Mail: info@StudioJAED.com

REVISIONS

DESCRIPTION	DATE
1 ADDENDUM #1 4/4/2017	

PROJECT

CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE

PARTIAL FLOOR PLANS - NATATORIUM

CONSTRUCTION DOCUMENTS
MARCH 27, 2017

DRAWN	CHK'D/DESIGNER
ABD	PRC
DISCIPLINE	SHEET NO.
A	2.5
PROJECT NO.	
15070	

4/4/2017 3:29 PM

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WILMINGTON ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1662 F: (302) 832-1423
Website:
www.StudioJAED.com
E-Mail:
info@StudioJAED.com

REVISIONS

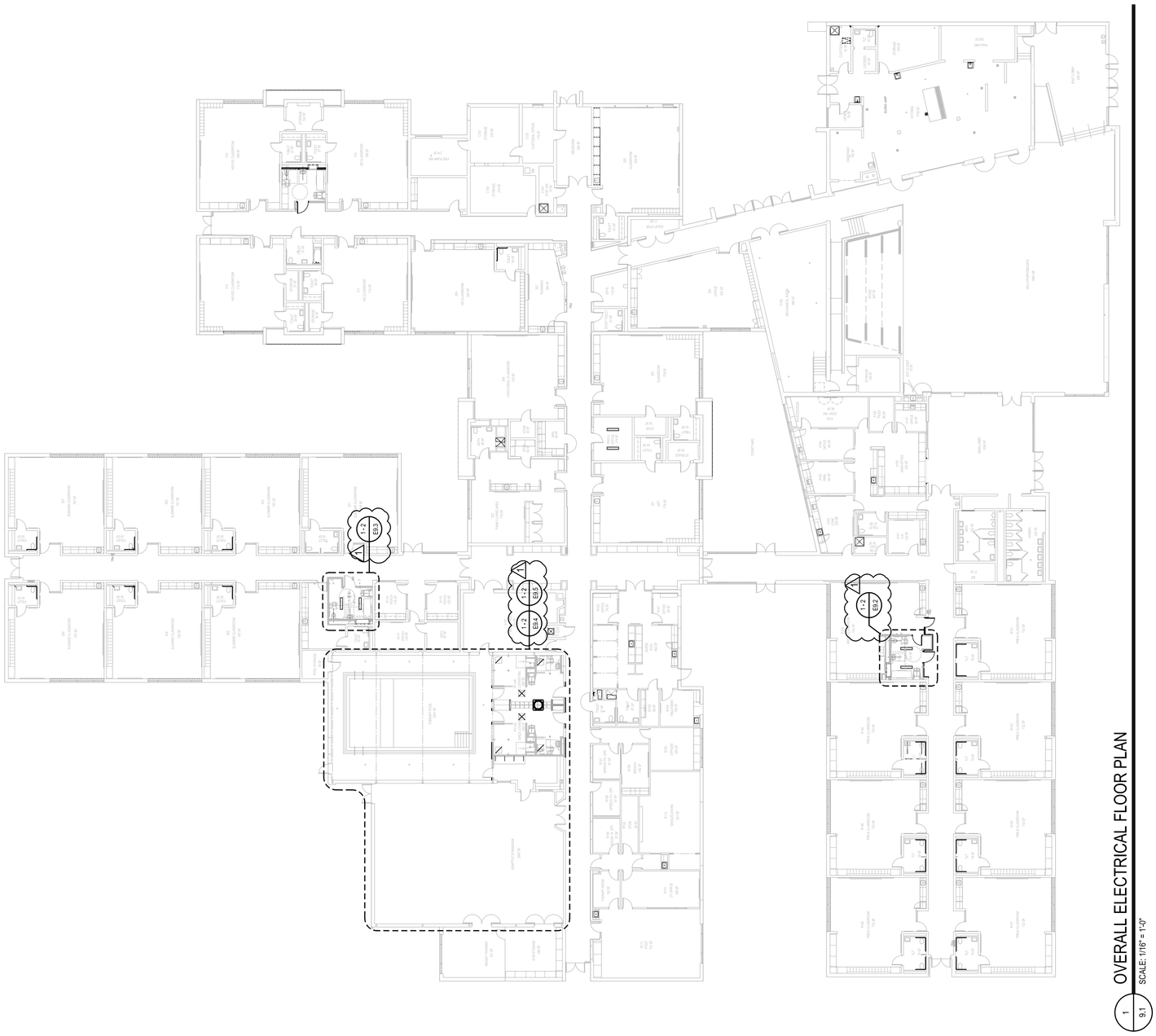
1	ADDENDUM #1 4.4.2017

PROJECT
CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE
OVERALL ELECTRICAL FLOOR PLAN

CONSTRUCTION DOCUMENTS
MARCH 27, 2017

DRAWN	JRB
CHK'D/DESIGNER	PP
DISCIPLINE	E
SHEET NO.	9.1
PROJECT NO.	15070



1 / 9.1 OVERALL ELECTRICAL FLOOR PLAN
SCALE: 1/16" = 1'-0"

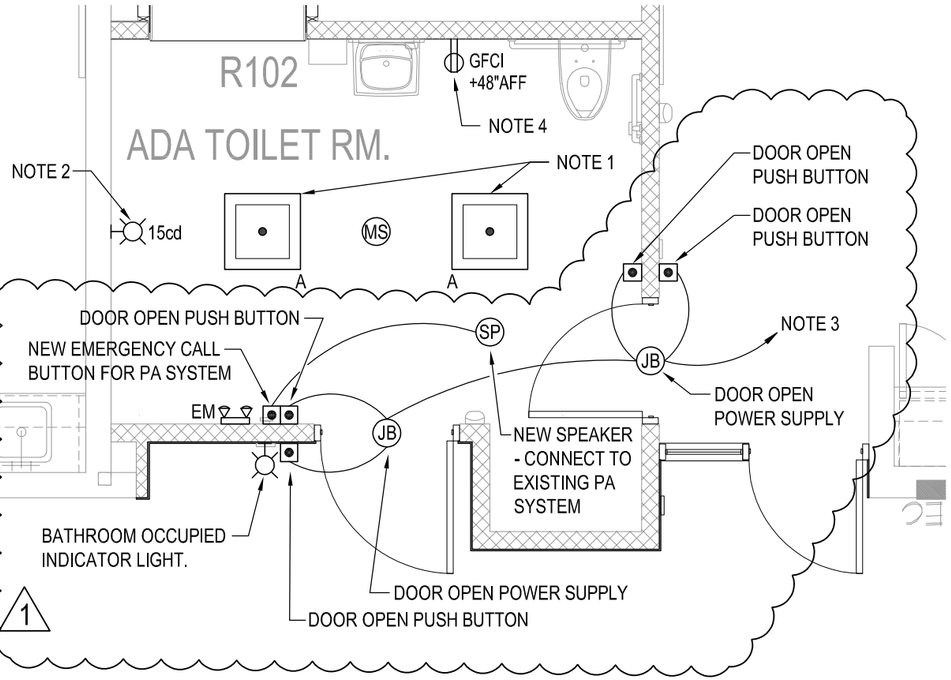
NOTES:

1. CONNECT THE NEW LIGHT FIXTURES TO THE EXISTING BRANCH CIRCUIT. BATHROOM LIGHTS ARE TO BE CONTROLLED BY A CEILING MOUNTED MOTION SENSOR. SWITCH THE 'BATHROOM OCCUPIED' INDICATOR LIGHT WITH THE BATHROOM LIGHTS. CONNECT THE EMERGENCY LIGHT AHEAD OF ANY CONTROL DEVICE OR LOCAL LIGHT SWITCHES.

2. PROVIDE A NEW 15cd VISUAL FIRE ALARM DEVICE. EXTEND EXISTING FIRE ALARM SYSTEM WIRING TO THIS DEVICE.

3. PROVIDE NEW 20 AMP, 1 POLE DEDICATED BRANCH CIRCUIT WIRING TO THE DOOR OPENER POWER SUPPLY. PROVIDE FROM NEAREST 208/120V PANEL, CONTRACTOR TO FIELD VERIFY.

4. EXTEND THE HALLWAY RECEPTACLE BRANCH CIRCUIT WIRING TO THE NEW GFCI OUTLET IN THE BATHROOM.



2 / 9.2 PARTIAL ELECTRICAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

NOTES:

1. CONNECT THE NEW LIGHT FIXTURES TO THE EXISTING BRANCH CIRCUIT. BATHROOM LIGHTS ARE TO BE CONTROLLED BY A CEILING MOUNTED MOTION SENSOR. SWITCH THE 'BATHROOM OCCUPIED' INDICATOR LIGHT WITH THE BATHROOM LIGHTS. CONNECT THE EMERGENCY LIGHT AHEAD OF ANY CONTROL DEVICE OR LOCAL LIGHT SWITCHES.

2. PROVIDE A NEW 15cd VISUAL FIRE ALARM DEVICE. EXTEND EXISTING FIRE ALARM SYSTEM WIRING TO THIS DEVICE.

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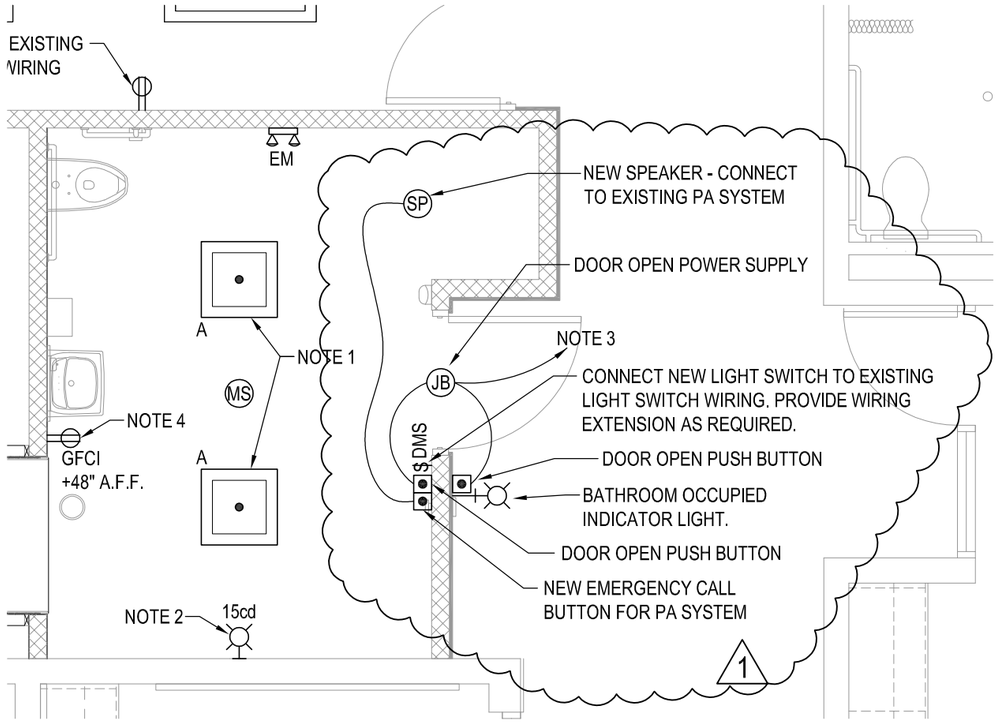
4. EXTEND THE HALLWAY RECEPTACLE BRANCH CIRCUIT WIRING TO THE NEW GFCI OUTLET IN THE BATHROOM.



2 / 9.3 PARTIAL ELECTRICAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

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STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WRANGLE HILL ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1652 F: (302) 832-1423
E-Mail: info@StudioJAED.com
Website: www.StudioJAED.com

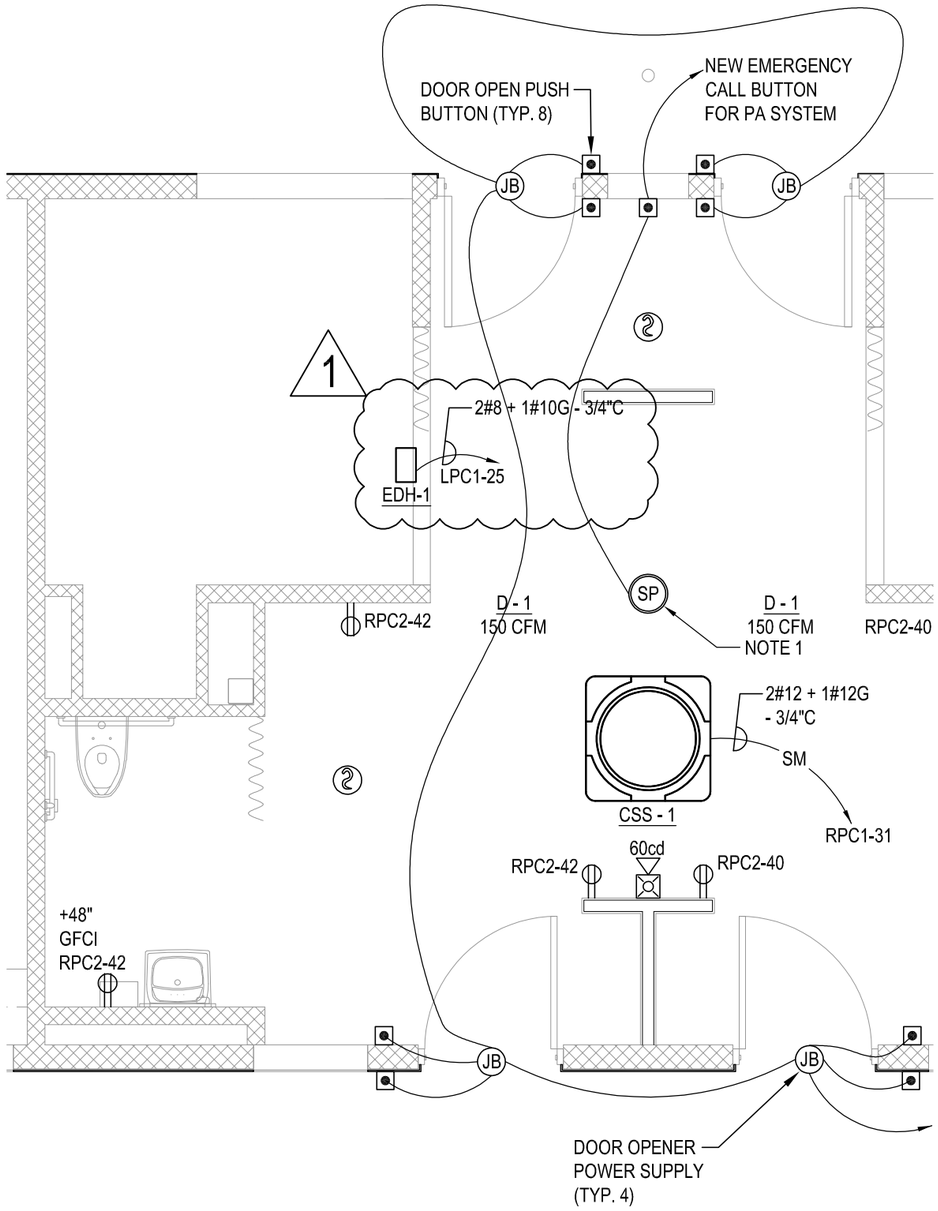
REVISIONS

	DESCRIPTION	DATE
1	ADDENDUM #1	4.4.2017

PROJECT
CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE
PARTIAL ELECTRICAL PLANS - R102 & R200

DRAWN	CHK'D/DESIGNER
JD	PP
DISCIPLINE	SHEET NO.
E	SK-E.1
PROJECT NO.	
15070	



PANEL: LPC1 (EXISTING)
LOCATION: BOILER ROOM C-101
BUS: 225A
MAIN: —

VOLTAGE: 120/208V 3PH/4W
ENCLOSURE: —
A.I.C: —
RATINGS: —

	WIRE SIZE	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ø A B C	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	WIRE SIZE
	-	-	-	-	EXISTING LOAD	1	20	1		2	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	3		4	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	5		6	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	7		8	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	9		10	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	11		12	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	13		14	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	15		16	20	1	EXISTING LOAD	-	-	-	-
	-	-	-	-	EXISTING LOAD	1	20	17		18	-	-	SPACE	-	-	-	-
*	12	1.11	-	-	LIGHTS - NATATORIUM	1	20	19		20	-	-	SPACE	-	-	-	-
*	12	-	1.11	-	LIGHTS - NATATORIUM	1	20	21		22	-	-	SPACE	-	-	-	-
*	12	-	-	0.34	LIGHTS - LOCKER ROOMS	1	20	23		24	-	-	SPACE	-	-	-	-
**	8	3.00	-	-	ERV ELECTRIC DUCT HEATER	1	40	25		26	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	27		28	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	29		30	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	31		32	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	33		34	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	35		36	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	37		38	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	39		40	-	-	SPACE	-	-	-	-
	-	-	-	-	SPACE	-	-	41		42	-	-	SPACE	-	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

1
* PROVIDE NEW 20A/1P CIRCUIT BREAKER AND 2#12 + 1#12G - 3/4"C WIRING
** PROVIDE NEW 40A/1P CIRCUIT BREAKER AND 2#8 + 1#10G - 3/4"C WIRING

PARTIAL POWER FLOOR PLAN

2 / 9.5

SCALE: 1/4" = 1'-0"

NOTES:
1. EXTEND EXISTING SPEAKER WIRING TO NEW SPEAKER AND CALL BUTTON.
2. EXTEND EXISTING FIRE ALARM SYSTEM WIRING TO NEW SMOKE DETECTORS AND AV DEVICES.

4/4/2017 4:15 PM

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WRANGLE HILL ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1652 F: (302) 832-1423
Website: www.StudioJAED.com
E-Mail: info@StudioJAED.com

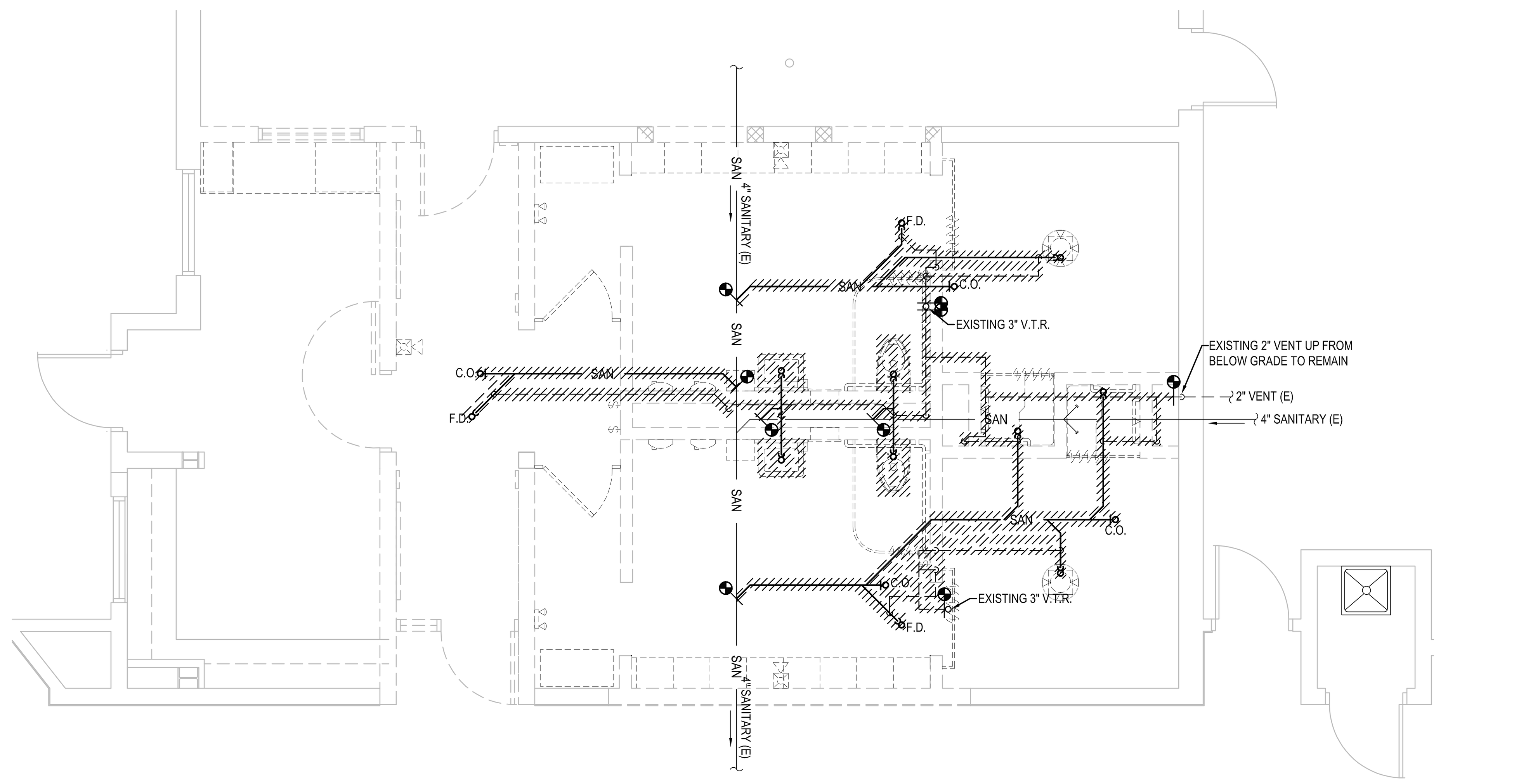
REVISIONS

DESCRIPTION	DATE
1 REVISED PER ADDENDUM #1	4.4.2017

PROJECT
CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

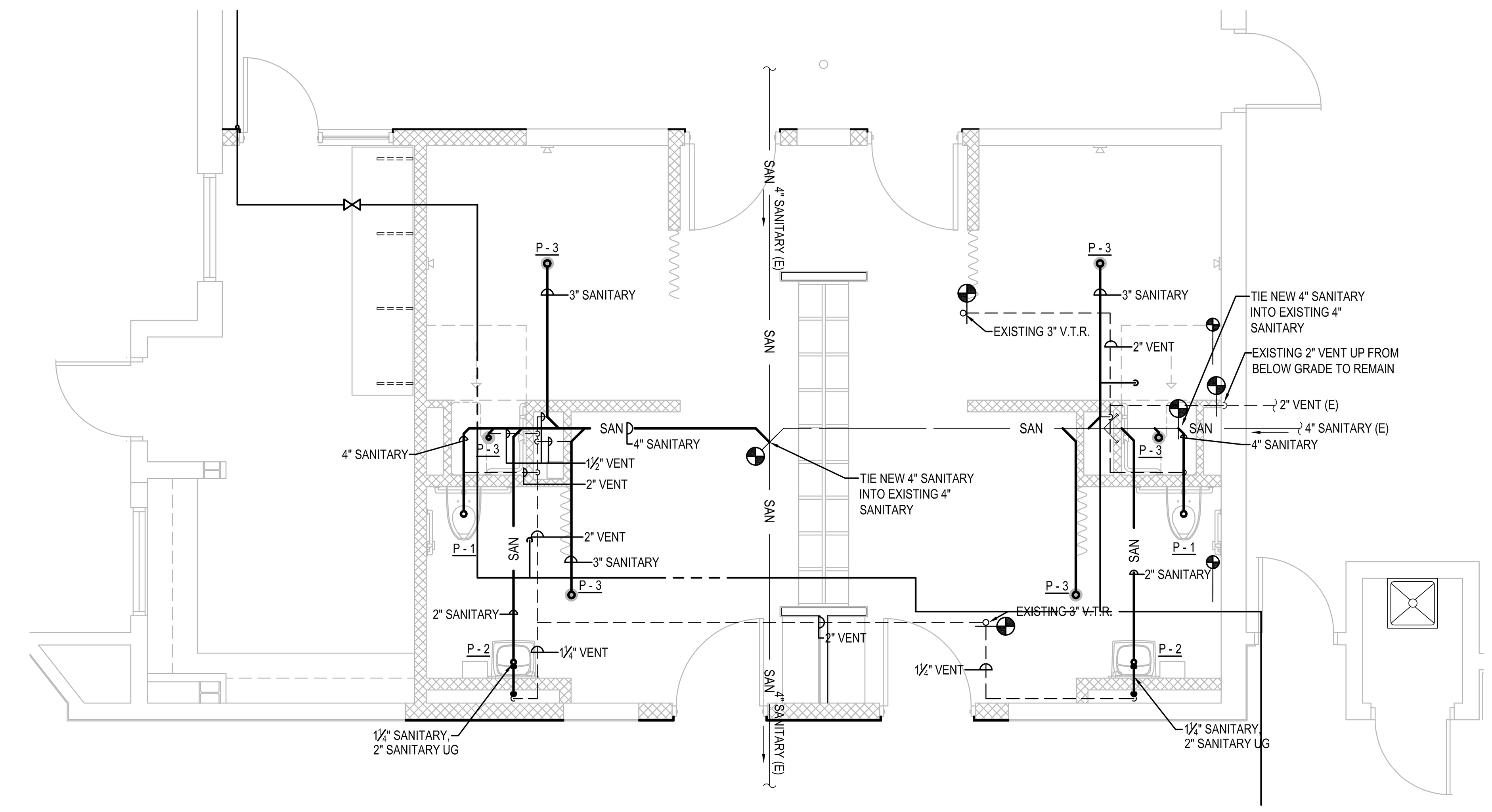
SHEET TITLE
PARTIAL ELECTRICAL PLAN - LOCKER ROOM

DRAWN	CHK'D/DESIGNER
JD	PP
DISCIPLINE	SHEET NO.
E	SK-E.2
PROJECT NO.	
15070	



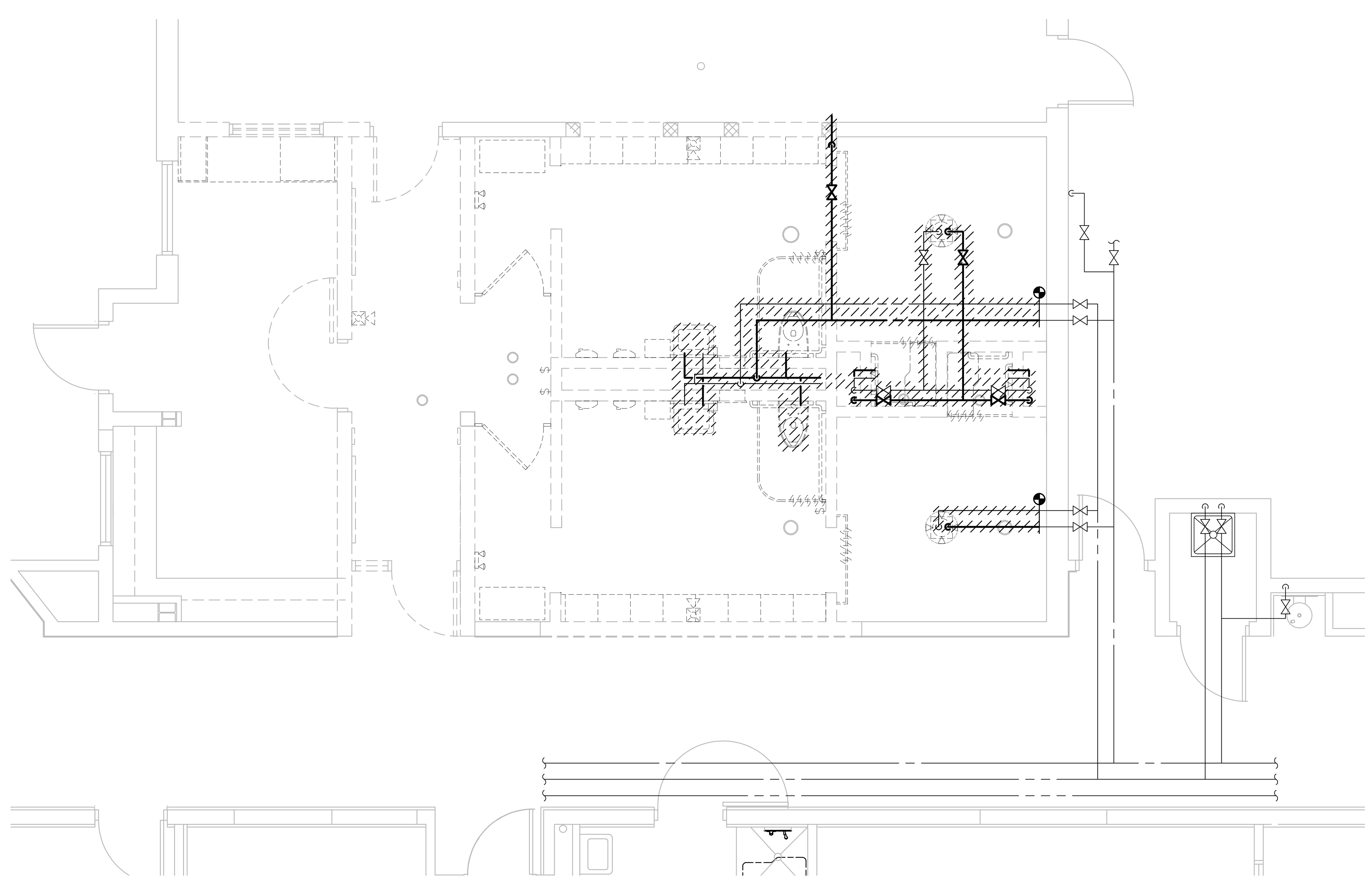
1 / 10.4 PARTIAL SANITARY DEMOLITION FLOOR PLAN

SCALE: 1/4" = 1'-0"



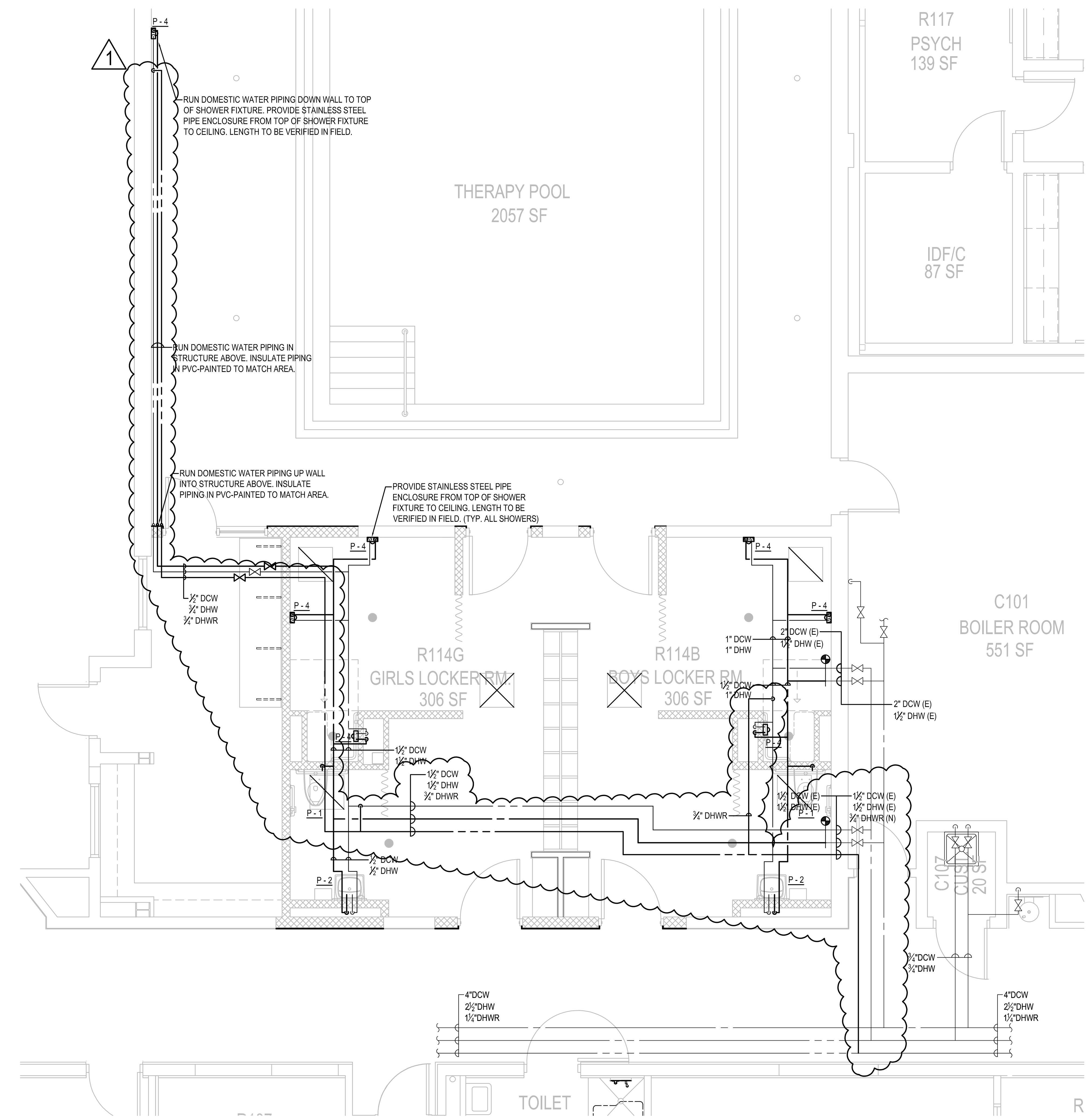
2 / 10.4 PARTIAL SANITARY FLOOR PLAN

SCALE: 1/4" = 1'-0"



3 / 10.4 PARTIAL DOMESTIC WATER DEMOLITION FLOOR PLAN

SCALE: 1/4" = 1'-0"



4 / 10.4 PARTIAL DOMESTIC WATER FLOOR PLAN

SCALE: 1/4" = 1'-0"

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ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WRANGLE HILL ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1652 F: (302) 832-1423
Website: www.StudioJAED.com
E-Mail: info@StudioJAED.com

REVISIONS

1 REVISED PER ADDENDUM #1 04 / 04 / 2017

PROJECT

CAESAR RODNEY SCHOOL DISTRICT

JOHN S. CHARLTON

LOCKER ROOM & TOILET ROOM RENOVATIONS

278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE

PLUMBING FLOOR PLANS - LOCKER ROOM

CONSTRUCTION DOCUMENTS

MARCH 27, 2017

DRAWN	CHKD/DESIGNER
JRB	BMZ
DISCIPLINE	SHEET NO.
P	10.4
PROJECT NO.	
15070	

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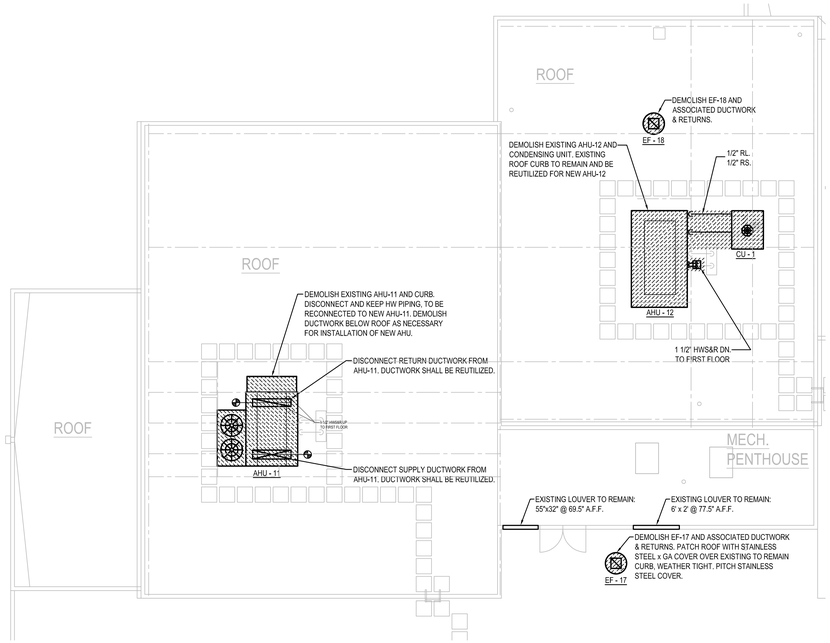
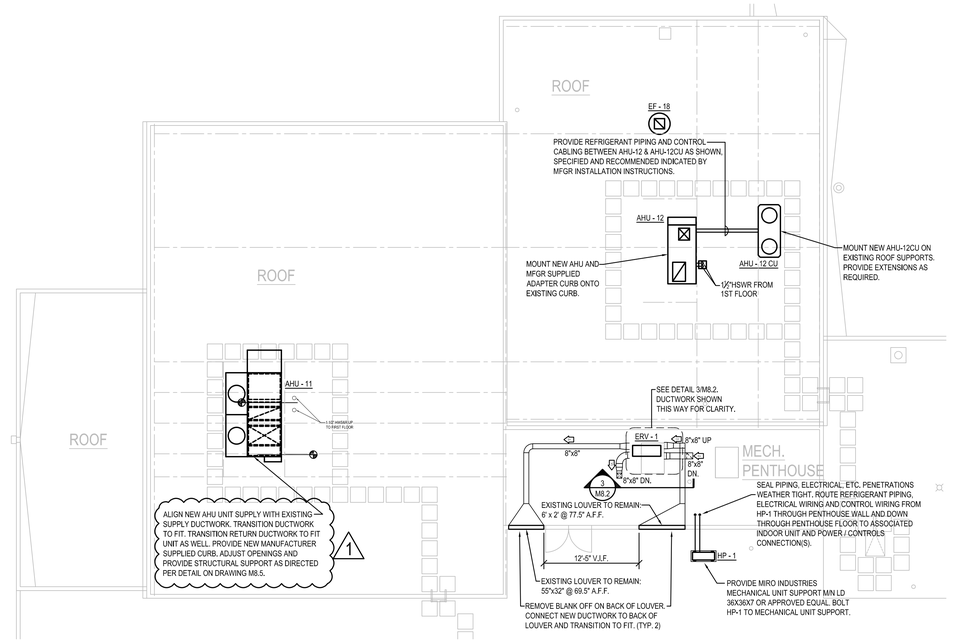


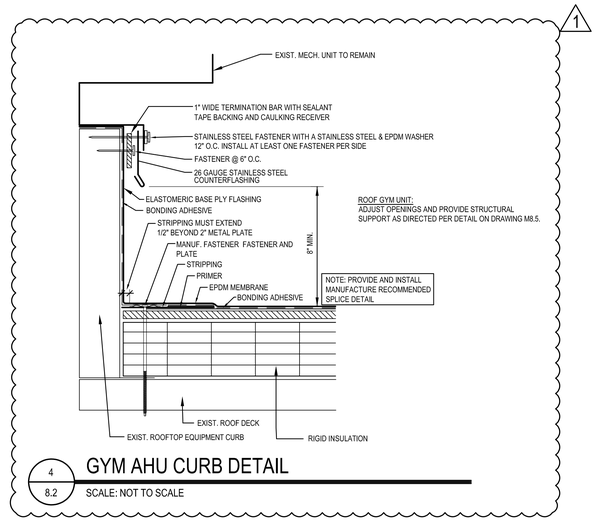
1 / 8.2 PARTIAL MECHANICAL DEMOLITION ROOF PLAN

SCALE: 1/8" = 1'-0"



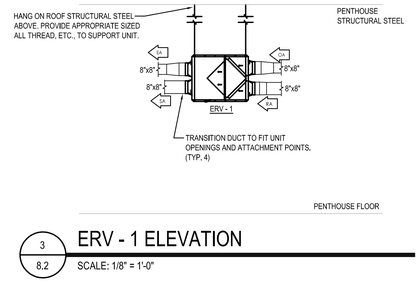
2 / 8.2 PARTIAL MECHANICAL ROOF PLAN

SCALE: 1/8" = 1'-0"



4 / 8.2 GYM AHU CURB DETAIL

SCALE: NOT TO SCALE



3 / 8.2 ERV - 1 ELEVATION

SCALE: 1/8" = 1'-0"

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 W'RANGLE HALL ROAD, STE. 110
BEAR, DE 19701
P.: (302) 832-1652 F: (302) 832-1423
Website: www.StudioJAED.com
E-Mail: info@StudioJAED.com

REVISIONS

1 REVISED PER ADDENDUM #1 04 / 04 / 2017

PROJECT

CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE

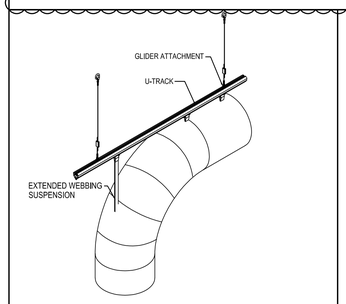
MECHANICAL DEMOLITION AND NEW ROOF PLAN

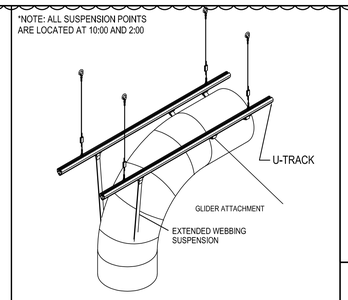
CONSTRUCTION DOCUMENTS
MARCH 27, 2017

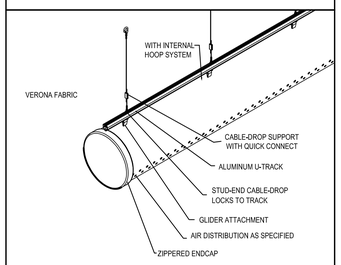
DRAWN	CHKD/DESIGNER
JRB	DTS
DISCIPLINE	SHEET NO.
M	8.2
PROJECT NO.	
15070	

1/4/2017 4:30 PM

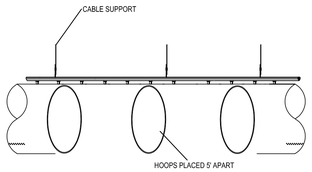
FABRIC DUCT INSTALLATION DETAILS





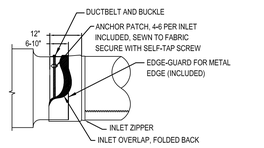


SUSPENSION DETAIL
1 ROW U-TRACK SUSPENSION AT 12 O'CLOCK HOOPS (IHS) U-TRACK



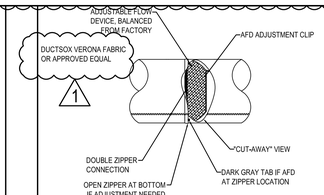
1 CUT AWAY VIEW OF HOOPS (IHS)
VIEW OF INTERIOR OF FABRIC DUCT WITH HOOPS (IHS) HANGING

HOOPS (IHS) U-TRACK



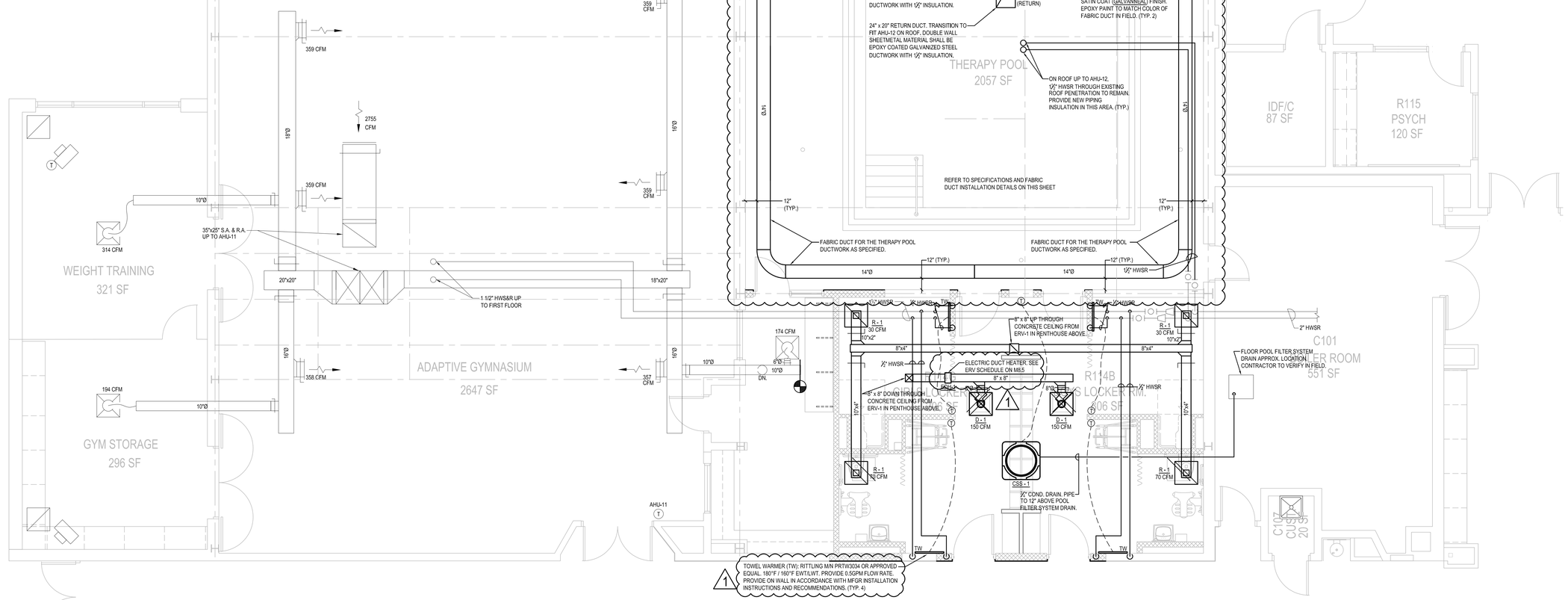
1 INLET ATTACHMENT DETAIL
DUCTSOX VERONA FABRIC OR APPROVED EQUAL

INLET DETAIL



ADJUSTABLE FLOW DEVICE (AFD)
INSTALLED AT ZIPPER LOCATION AT INLET OR AS SPECIFIED IN OTHER LOCATIONS. ZIPPER TO ZIPPER CONNECTION AS SHOWN. EXTERNAL LABEL IDENTIFIES LOCATION

COMPONENTS



1/8.3 PARTIAL MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 W'RANGLE HALL ROAD, STE. 110
BEAR, DE 19701
P.: (302) 832-1652 F: (302) 832-1423
E-Mail: info@StudioJAED.com
Website: www.StudioJAED.com

REVISIONS
1 REVISED PER ADDENDUM #1 04 / 04 / 2017

PROJECT
CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE
MECHANICAL PLAN - GYM & NATATORIUM

CONSTRUCTION DOCUMENTS
MARCH 27, 2017

DRAWN	CHK'D/DESIGNER
JRB	DTS
DISCIPLINE	SHEET NO.
M	8.3

PROJECT NO.
15070

RETURN SCHEDULE

UNIT NUMBER	MODEL #	SIZE (NECK/FACE)	TYPE
R - 1	PDR	10"x10" / 24"x24"	ALL ALUMINUM EXTRUDED SQUARE RETURN w/ SQUARE NECK

NOTE: PROVIDE EQUIPMENT BY PRICE INDUSTRIES OR APPROVED EQUAL. FINISH SHALL BE FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE. REFER TO ROOM SCHEDULE ON ARCHITECTURAL PLANS.

DIFFUSER SCHEDULE

UNIT NUMBER	MFG./ MODEL #	SIZE (NECK/FACE)	TYPE
D - 1	ASCD	8"Ø / 24"x24"	ALUMINUM SQUARE CEILING DIFFUSER w/ROUND NECK

NOTE: PROVIDE EQUIPMENT BY PRICE INDUSTRIES OR APPROVED EQUAL. ALL AIR OUTLETS SHALL HAVE FACE OPERABLE DAMPERS. FINISH SHALL BE STANDARD FACTORY OFF-WHITE FINISH. CONTRACTOR IS RESPONSIBLE TO SELECT APPROPRIATE MOUNT DEPENDING ON CEILING TYPE. REFER TO ROOM SCHEDULE ON ARCHITECTURAL PLANS.

SPLIT SYSTEM CEILING CASSETTE UNIT SCHEDULE

INDOOR UNIT						OUTDOOR UNIT				
UNIT NUMBER	COOLING CAP. (BTU/H)	ELEC	MCA	EER	SAMSUNG MODEL #	UNIT NUMBER	ELEC	MCA	SAMSUNG MODEL #	REMARKS
CSS - 1	18,000	208/1/60	8.09	11.40	AC018KN4DCH/AA ROUND CEILING CASSETTE FOR 360° EVEN AIR DISTRIBUTION	HP -1	208/1/60	8.09	AC018JXADCH/AA	PROVIDE UNIT SPECIFIED OR APPROVED EQUAL. PROVIDE SAMSUNG PC4NUDMAN OR APPROVED EQUAL FACIA PANEL FOR INSTALLATION IN LAY-IN TYPE CEILINGS. UNIT SHALL BE CONNECTED TO THE BUILDING BAS SYSTEM AS A BACNET NATURE DEVICE. PROVIDE BACNET INTERFACE.

NOTE: PROVIDE PARTS ONLY 10YR WARRANTY FOR ENTIRE UNIT/SYSTEM. PROVIDE PARTS AND LABOR 1YR WARRANTY FOR ENTIRE UNIT/SYSTEM. PROVIDE WIRED THERMOSTAT AND ASSOCIATED CABLING, ETC. INSTALL WHERE INDICATED. THERMOSTAT CABLING SHALL BE PROVIDED BY CONTRACTOR.

EXHAUST FAN SCHEDULE

UNIT NUMBER	LOCATION	TYPE	CFM	ESP	DRIVE	ELEC	POWER	MOUNT	MFG MODEL #	REMARKS
EF - 18	THERAPY POOL ROOF	CENTRIFUGAL	1,280	0.25	DIRECT	460/3P	1/2HP	ROOF	GREENHECK G-123-A	PROVIDE UNIT SPECIFIED OR APPROVED EQUAL. PROVIDE VFD DRIVE, VFD RATED MOTOR, MANUFACTURER PROVIDED ROOF CURB, HINGED BASE, FOAM CURB SEAL, MANUFACTURER PROVIDED MOD, BIRD SCREEN, COATED WITH HI-PRO POLYESTER, CONCRETE GRAY-RAL 7023, FAN AND ATTACHED ACCESSORIES, 1YR PARTS AND LABOR WARRANTY. EF SHALL OPERATE IN CONJUNCTION WITH AHU-12. PROVIDE CONTROLS, CABLING, ETC. TO ALLOW FOR THIS.

ENERGY RECOVERY VENTILATOR SCHEDULE

UNIT	FRESH AIR CFM	FRESH AIR ESP (IN W.C.)	COOLING OUTSIDE AIR DB (deg. F)	COOLING OUTSIDE AIR WB (deg. F)	HEATING OUTSIDE AIR DB (deg. F)	HEATING OUTSIDE AIR WB (deg. F)	EXHAUST AIR CFM	EXHAUST AIR ESP (IN W.C.)	COOLING ROOM EXHAUST AIR DB (deg.F)	COOLING ROOM EXHAUST AIR DB RH (%)	HEATING ROOM EXHAUST AIR DB (deg. F)	HEATING ROOM EXHAUST AIR RH (%)	COOLING SUPPLY AIR DB (deg. F)	COOLING SUPPLY AIR WB (deg. F)	HEATING SUPPLY AIR DB (deg. F)	HEATING SUPPLY AIR WB (deg. F)	COOLING TOTAL HEAT RECOVERED (MBh)	HEATING TOTAL HEAT RECOVERED (MBH)	ELECTRICAL	SUPPLY FAN (HP)	EXHAUST FAN (HP)	MCA	MOP	RENEWAIRE MODEL #	REMARKS
ERV-1	300	1.00	95	78	0	0	200	1.00	80	60	80	25	85.9	73.8	48.3	39.8	5.5	19.2	115/60/1	0.50	0.50	10.1	15	EV450IN	PROVIDE ELECTRIC DUCT HEATER COIL WARREN TECHNOLOGY, INC. M/N CBK OR APPROVED EQUAL. DUCT HEATER SHALL BE 3.0 KW 115V/1P 25.0 AMPS WITH 24V CONTROL. WIDTH 10.0"X HEIGHT 8.0" RATED FOR 300 CFM. TAG IS EDH-1. MOUNT IN SUPPLY DUCT FROM ERV-1 IN LOCATION SHOWN. ACCESSORIES SHALL INCLUDE DISCONNECTING CONTRACTORS, AIR PRESSURE SWITCH, XFMR W/PRIMARY FUSING, DOOR-INTERLOCK DISCONNECT SWITCH (NON-FUSED), SCR CONTROLS (FURNISHED AND FACTORY WIRED), INTERFACE FOR SCR CONTROL-FIELD CALIBRATED, INSULATED CONTROL PANEL, AND HINGED LID. (WWW.WARRENHVAC.COM)

NOTES: PROVIDE UNITS AS SCHEDULED OR APPROVED EQUAL. DOUBLE WALLED CONSTRUCTION, EC MOTORS FOR SUPPLY AND EXHAUST FANS, NON-FUSED DISCONNECT SWITCH, MERV13 OUTSIDE AIR FILTERS, MERV8 EXHAUST FILTERS, CONTROL XFMR w/REL;AY PACKAGE, BACKDRAFT DAMPER, VIBRATION ISOLATION KIT AND HANGING BRACKET KIT.

POOL ROOM DEHUMIDIFICATION UNIT

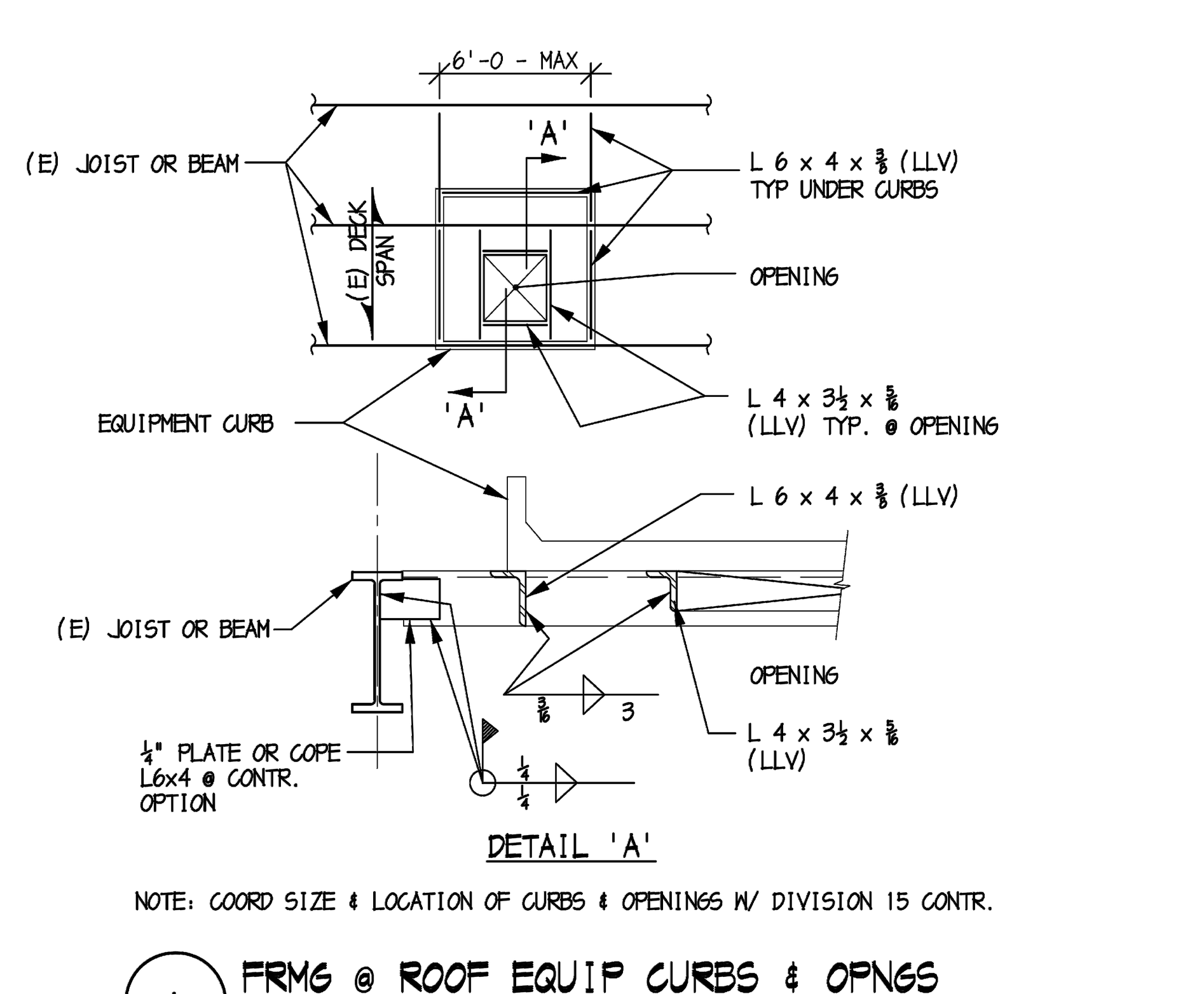
NO.	CFM	CFM MIN. OUTSIDE AIR	EXT SP (H20)	SUP FAN HP	ELEC	MCA	MOP	MOISTER REMOVAL LBS/HR	OUTSIDE DESIGN CONDITION °F DB / °F WB	DESIGN INDOOR DB (°F)	DESIGN INDOOR RH	COOLING LOAD EVAP CAPACITY		HOT GAS REHEAT COIL	HEATING HW COIL							POOLPAK (OR APPROVED EQUAL) MODEL #	REMARKS/ACCESSORIES
												TOTAL M.B.H.	SENSE M.B.H.	MBH	MBH	GPM	EWT (°F)	LWT (°F)	PRESS. DROP (FT H20)	EAT (°F)	GLYCOL (%)		
AHU - 12	4,500	980	1.0	3	460/60/3	29	40	58	95 / 78	85	60%	135	75	166	148	20	180	160	3.0	80	25	HCDH3500	COLD WALL SENSOR, PROGRAMMABLE CONTROL PANEL & THERMOSTAT. INSTALL WHERE DIRECTED BY ARCHITECT/ENGINEER. PROVIDE POOLPAK M/N ACC0161 OR APPROVED EQUAL AIR COOLED CONDENSER RATED FOR 166 MBH @ 105°F AMBIENT WITH 2 FANS. ELECTRIC SHALL BE 460/1/60 3 FLA. PROVIDE APPROPRIATE SIZE AND TYPE OF REFRIGERANT PIPING BETWEEN AIR COOLED CONDENSER AND POOL ROOM DEHUMIDIFICATION UNIT. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS.

NOTE: UNIT TO BE DOUBLE WALLED, PACKAGED, ROOF TOP TYPE AIR HANDLING AIR CONDITIONING UNIT WITH HOT WATER COIL. UNIT TO BE MOUNTED ON FACTORY SUPPLIED CURB AND CURB ADAPTER TO FIT ON EXISTING CURB.

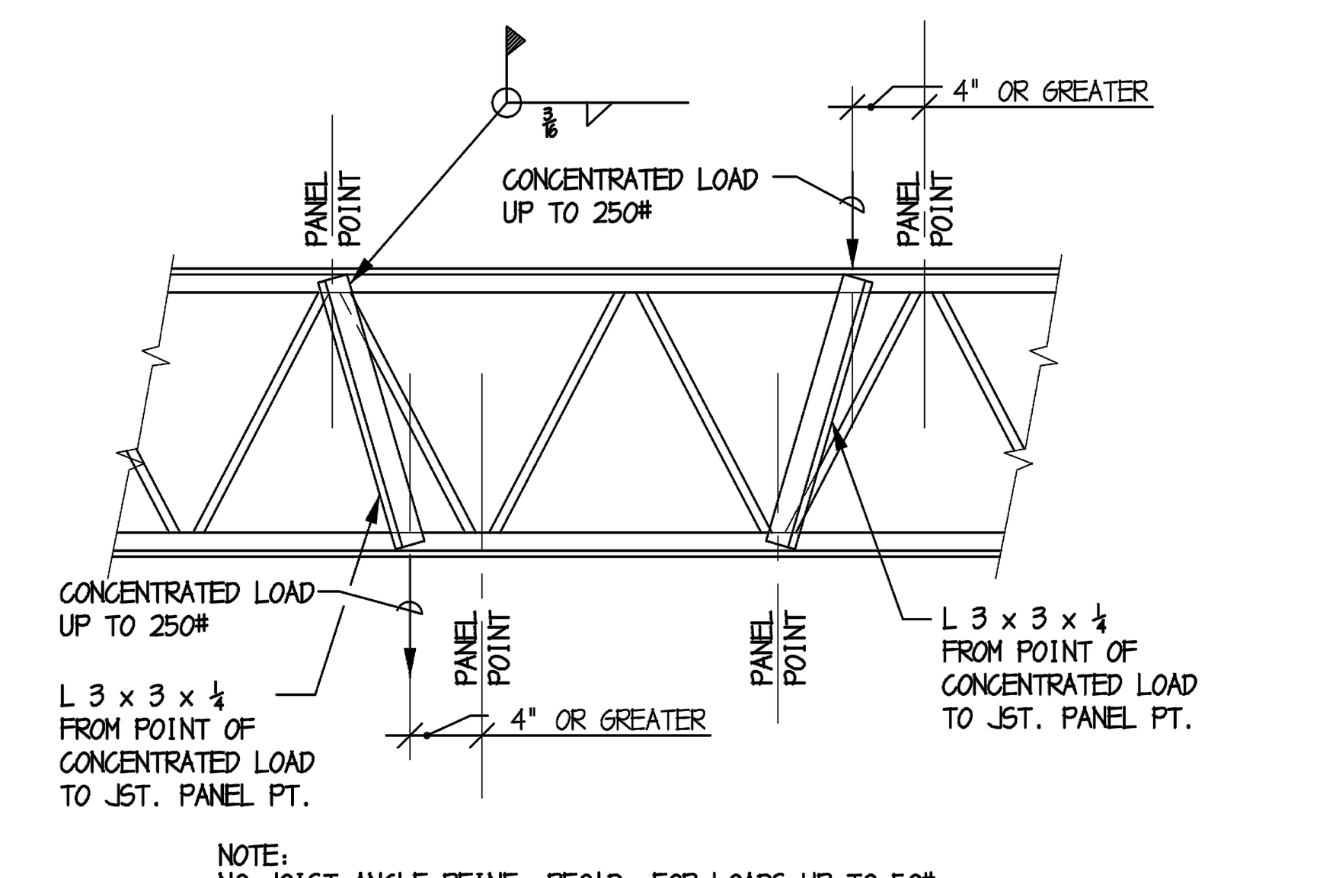
PACKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE

UNIT NUMBER	AIRFLOW CFM	MIN. OUTSIDE AIR (CFM)	EXT. SP. (IN H20)	SUP FAN HP	SUP FAN QTY	ELEC	FUSE SIZE (AMPS)	MCA	FLA	COOLING (COOLING COIL)						HOT WATER COIL		HEATING				HOT GAS REHEAT		TRANE MODEL #/TYPE	EXH. FAN CFM	EXH. FAN HP	REMARKS
										E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	SENS MBH	TOTAL MBH	E.A.T. (°F)	L.A.T. (°F)	TOTAL MBH	E.W.T. (°F)	L.W.T. (°F)	FLOW GPM	E.A.T. (°F)	L.A.T. (°F)				
AHU - 11	2,900	1,013	1	2	1	460/3	40	31.8	29.44	79.5	66.8	52.1	52.1	84.6	125.1	62.7	106.3	137.2	180	160.7	14.8	52.1	66.41	0ADD120A4-D101 A0EJ-J5D00006CE -C32B0B4A0	900	1	PROVIDE UNIT MAKE AND MODEL OR APPROVED EQUAL. UNIT SHALL BE A RTU ON MANUFACTURER SUPPLIED CURB WITH VERTICAL DISCHARGE AND RETURN, DX COOLING, HOT GAS REHEAT, POWERED EXHAUST W/VFD AND BAROMETRIC RELIEF DAMPER, ENERGY RECOVERY WHEEL, MERV-8 FILTERS, SINGLE POINT ELECTRICAL CONNECTION, 115V CONVENIENCE OUTLET, AIR FLOW MONITORING IFM PIEZO RING AND PE PIEZO RING, CONDENSER HAIL GUARD, 1 YEAR PARTS AND LABOR WARRANTY, 5 YEAR COMPRESSOR WARRANTY PARTS ONLY, HOT WATER HEATING COIL, 2 INCH DOUBLE WALL CONSTRUCTION, SUPPLY DISCHARGE AIR SENSOR (FLD), STAINLESS STEEL DRIP PAN, AND SUPPLY FAN W/VFD.

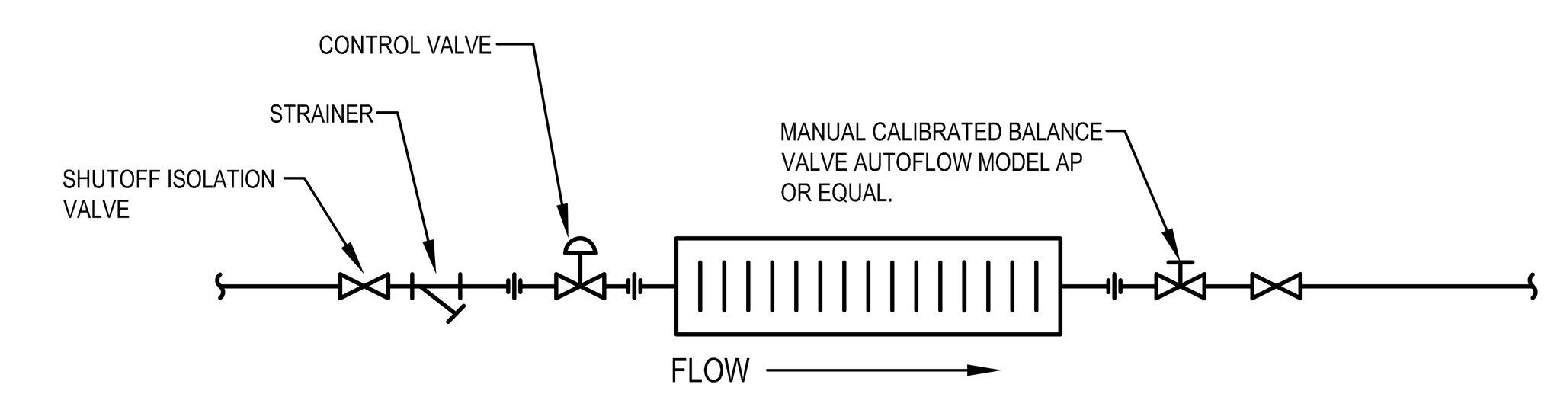
NOTE:



FRMG @ ROOF EQUIP CURBS & OPNGS
3/4" = 1'-0"

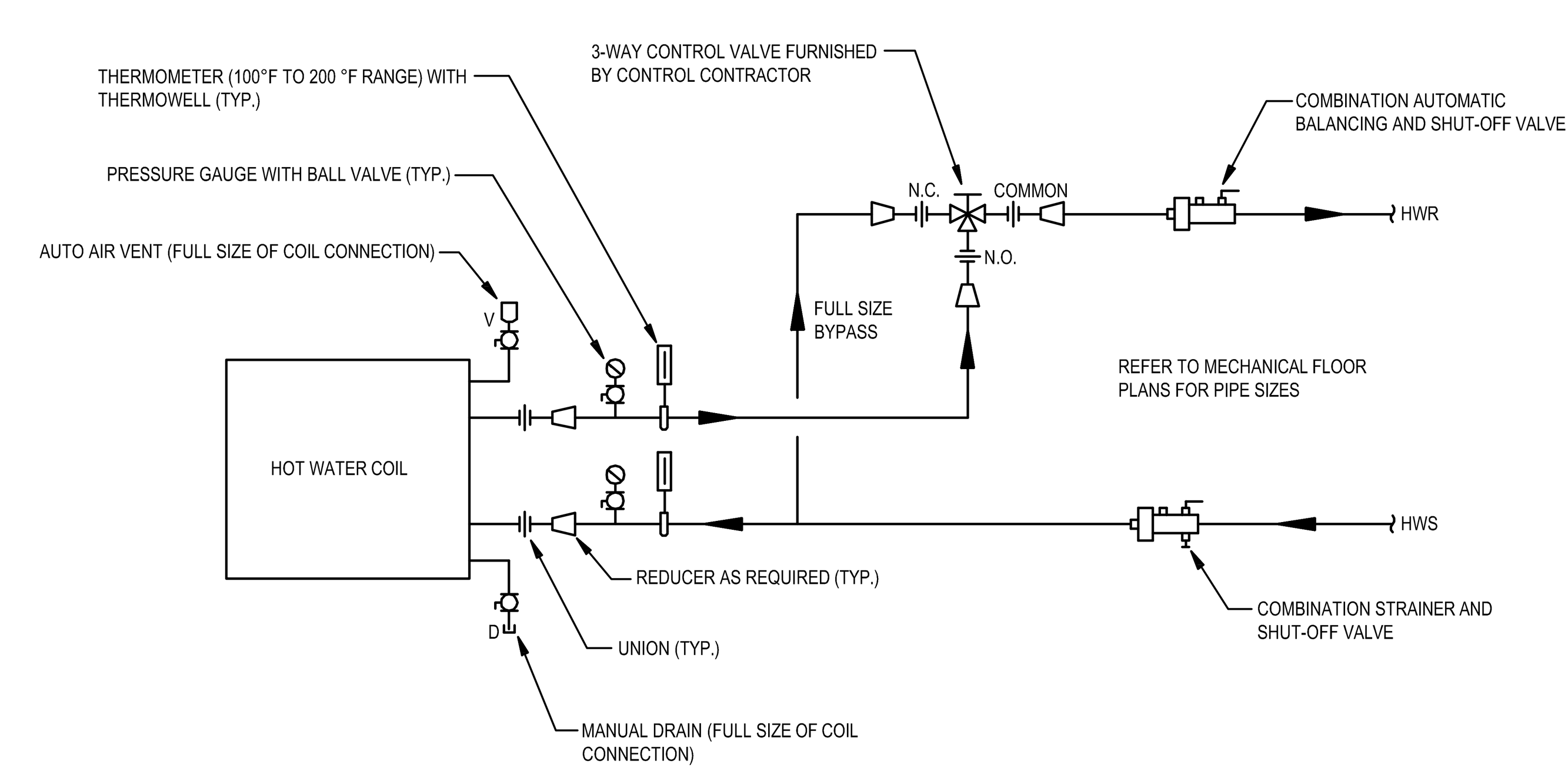


POINT LOAD JOIST REINFORCING
3/4" = 1'-0"



TYPICAL TOWEL WARMER (TW) HOT WATER COIL CONNECTION DETAIL

SCALE: Not To Scale



AHU HOT WATER COIL PIPING DIAGRAM

SCALE: Not To Scale

STUDIO JAED
ARCHITECTS ■ ENGINEERS ■ FACILITIES SOLUTIONS
CORPORATE HEADQUARTERS
2500 WRANGLE HILL ROAD, STE. 110
BEAR, DE 19701
P: (302) 832-1652 F: (302) 832-1423
Website: www.StudioJAED.com
E-Mail: info@StudioJAED.com

REVISIONS

1 — REVISED PER ADDENDUM #1 04 / 04 / 2017

PROJECT
CAESAR RODNEY SCHOOL DISTRICT
JOHN S. CHARLTON
LOCKER ROOM & TOILET ROOM RENOVATIONS
278 SORGHUM MILL RD.
CAMDEN WYOMING, DE 19934

SHEET TITLE
MECHANICAL SCHEDULES & DETAILS

CONSTRUCTION DOCUMENTS
MARCH 27, 2017

DRAWN	CHKD/DESIGNER
JRB	DTS
DISCIPLINE	SHEET NO.
M	8.5
PROJECT NO.	
15070	