

**DOCUMENT 00 91 13.02
ADDENDUM NO. 2**

Project: Pawtucket Scope B **Project No.** 12014.02

Owner: Pawtucket School Department
School Administration Building
286 Main Street, Pawtucket Rhode Island, 02860

Architect: Symmes Maini & McKee Associates
1000 Massachusetts Avenue
Cambridge, MA 02138
617-547-5400; FAX 617-354-5758

Date: March 4, 2014

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated January 31, 2014, and previously issued Addenda No. 1, dated February 14, 2014. Portions of the Bidding and Contract Documents not altered by this addendum remain in full force.

Attached reissued documents and specifications indicate changes to the Contract Documents within the attachment.

Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

ATTACHMENTS

Drawings: The following reissued Drawings replace those included with the Bidding Documents:

Item	Drawing Number	Drawing Name
ALP		
1.	G0.01	COVER/ INDEX
2.	M4.11	BOILER ROOM DEMO & NEW PART PLANS & SCHEDULES
3.	M5.10	DETAILS
4.	M7.10	CONTROLS DIAGRAMS & SEQUENCE OF OPERATIONS

Item	Drawing Number	Drawing Name
	BALDWIN	
5.	G0.01	COVER/ INDEX
6.	M1.21	FIRST FLOOR PLAN

Revised Documents and Specifications: The following reissued Documents and Specification Sections replace those issued with the Bidding Documents:

7. Section 01 22 00 Unit Prices.
8. Section 23 74 13 PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS
9. Pre-Construction RFI Log, Updated March 4, 2014.

END OF ADDENDUM

SECTION 01 22 00
UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Procurement and Contracting Requirements and other Division 01 General Requirements apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 01 40 00 "Quality Requirements" for general testing and inspecting requirements.

1.03 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.04 PROCEDURES

- A. Unit prices shall include all necessary material, plus cost for delivery, installation, insurance, general conditions, overhead, and profit and all other direct or indirect expenses of Contractor or subcontractors, as applicable to that class of work, unless otherwise stated in the Contract Documents.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.
- E. Should certain additional classes of work be required, or should the quantities of certain classes of work be increased or decreased from those on which the general bid is to be based, Unit

Prices may be used by the Owner as the basis of payment to the Contractor or credit to the Owner for such addition, increase, or decrease in the Work.

- F. Schedule: If the Owner has accepted the Unit Prices proposed by the Contractor with the Bid, then these Unit Prices may be used for determining changes to the Cost of the Work, in accordance with provisions of the General Conditions of the Contract.
- G. Unit prices included in the Contract, when used as the basis of payment for changes in the work, shall be the exact gross amount per unit to be paid to the Contractor in the case of additions or increases; in the case of decreases, the exact gross amount to be refunded to the Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SCHEDULE OF UNIT PRICES

- A. Unit Price No. 1: General excavation by machine, including off-site disposal.
 - 1. Description: Soil excavation and disposal off site, as required, in accordance with Section 31 20 00 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard of soil excavated, based upon survey of volume removed.
- B. Unit Price No. 2: Unclassified general excavation by machine, including on-site placement and compaction outside limits of structure.
 - 1. Description: Unclassified soil excavation and on-site placement and compaction outside limits of structure, as required, in accordance with Section 31 20 00 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard of soil excavated, based upon survey of volume removed.
- C. Unit Price No. 3: Granular fill brought in from an approved off-site source, including placing and compaction.
 - 1. Description: Approved granular fill from off-site source, placed and compacted, as required, in accordance with Section 31 20 00 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard of fill brought in based upon survey of volume placed.
~~[Addendum No. 1]~~ [Addendum No. 1]
- D. Unit Price No.4: Common fill brought in from an approved off-site source, including placing and compaction.
 - 1. Description: Approved common fill from an off-site source, placed and compacted, as required, in accordance with Section 31 20 00 "Earth Moving."
 - 2. Unit of Measurement: Cubic yard of fill brought in, based upon survey of volume placed. ~~[Addendum No. 1]~~ [Addendum No. 1]
- E. Unit Price No. 5: Base course sand and gravel brought in from an approved source, including placement and compaction.
 - 1. Description: Approved base-course sand and gravel from an off-site source, placed and compacted, as required, in accordance with Section 31 20 00 "Earth Moving."

2. Unit of Measurement: Cubic yard of ~~soil materials brought in excavated~~, based upon survey of volume ~~removed~~placed. **[Addendum No. 1]**
- F. Unit Price No. 6: Trench excavation, backfill and compaction for utilities.
1. Description: Excavation in trenches and disposal off site and replacement with satisfactory fill material or engineered fill from off site, as required, in accordance with Section 31 20 00 "Earth Moving."
 2. Unit of Measurement: Cubic yard of soil excavated, based upon survey of volume removed.
- G. Unit Price No. 7: Cutting and patching of concrete floor slabs.
1. Description: Cutting of new or existing concrete floor slabs up to 6 inches thick, removal and excavation as required, and subsequent backfill, compaction, and patching of concrete in accordance with Division 01 Section "Execution." not otherwise indicated in the Contract Documents.
 2. Unit of Measurement: Square feet of concrete removed.
- H. Unit Price No. 8: Exit sign.
1. Description: Provide illuminated exit sign, including 75 feet of conductor and raceway.
 2. Unit of Measurement: Each.
- I. Unit Price No. 9: Fire alarm pull station.
1. Description: Provide fire alarm pull station, including 75 feet of conductor and raceway.
 2. Unit of Measurement: Each.
- J. Unit Price No. 10: Fire alarm horn/strobe.
1. Description: Provide fire alarm horn/strobe, including 75 feet of conductor and raceway.
 2. Unit of Measurement: Each.
- K. Unit Price No. 11: Electrical outlet.
1. Description: Provide duplex electrical outlet, GFI where required, including 20 feet of conductor and raceway.
 2. Unit of Measurement: Each.
- L. Unit Price No. 12: Fire alarm speaker/strobe.
1. Description: Provide fire alarm speaker/strobe, including power supply increase, 75 feet of conductor and raceway.
 2. Unit of Measurement: Each
- M. Unit Price No. 13: Light Fixture Relocation.
1. Description: Provide relocation of lighting fixture for removal and reinstallation including supports and 20 feet of conductor and raceway.
 2. Unit of Measurement: Each. **[Addendum No. 1]**
- N. Unit Price No. 14: Speaker Relocation.
1. Description: Provide relocation of speaker for removal and reinstallation including supports and 20 feet of conductor and raceway.
 2. Unit of Measurement: Each.

- O. Unit Price No. 15: Smoke or heat detector Relocation.
1. Description: Provide relocation of smoke or heat detector for removal and reinstallation including supports and 20 feet of conductor and raceway.
 2. Unit of Measurement: Each.
- P. Unit Price No. 16: Cable support.
1. Description: Provide cable support including j-hook and tie wire supports
 2. Unit of Measurement: Each.
- Q. Unit Price No. 17: Sprinkler Head.
1. Description: Provide sprinkler head.
 2. Unit of Measurement: Each.
- ~~R. Unit Price No. 18: Hot Water Unit Ventilator.~~
- ~~1. Description: Provide new hot water unit ventilator, associated DDC control valve, space sensors, including demolition, repair of bookshelves, and patching of floors and walls.~~
 - ~~2. Unit of Measurement: Each. [Addendum No. 2]~~
- ~~S.R. Unit Price No. 19: Steam Unit Ventilator.~~
- ~~1. Description: Provide new steam unit ventilator, associated DDC control valve, space sensors, including demolition, repair of bookshelves, and patching of floors and walls.~~
 - ~~2. Unit of Measurement: Each.~~
- S. Unit Price No. 20: Dedicated Receptacle:
1. Description: Provide dedicated receptacle, including 20 feet of conductor and raceway.
 2. Unit of Measurement: Each
- T. Unit Price No. 21: Voice and Data Outlet:
1. Description: Provide dedicated receptacle, including 20 feet of conductor and raceway.
 2. Unit of Measurement: Each
- U. Unit Price No. 22: Moisture Mitigation Membrane:
1. Description: Provide moisture mitigation membrane.
 2. Unit of Measurement: Square foot.
- V. Unit Price No. 23: VCT
1. Description: Install new VCT.
 2. Unit of Measurement: Square foot.
- ~~Unit Price No. 24: Hazardous Materials Contractor Mobilization:~~
- ~~1. Description: Total mobilization costs.~~
 - ~~2. Unit of Measurement: Per mobilization.~~
- ~~Unit Price No. 25: Asbestos Containing Floor Tile removal~~
- ~~1. Description: Removal and disposal of asbestos containing floor tile and mastic.~~
 - ~~2. Unit of Measurement: Square foot.~~

-
- ~~Unit Price No. 26: Asbestos Containing Window/Door Frame Caulking/Sealant Removal:
Description: Removal and disposal of asbestos containing window/door frame
caulking/sealant.
Unit of Measurement: Linear foot.~~
- ~~Unit Price No. 27: Asbestos Containing Pipe Insulation Removal, Less than 3 inches in
Diameter:
Description: Removal and disposal of asbestos containing pipe insulation, less than 3"
diameter.
Unit of Measurement: Linear foot.~~
- ~~Unit Price No. 28: Asbestos Containing Pipe Insulation Removal, Greater than 3 inches in
Diameter:
Description: Removal and disposal of asbestos containing pipe insulation, greater than 3"
diameter.
Unit of Measurement: Linear foot.~~
- ~~Unit Price No. 29: Asbestos Containing Cement Board:
Description: Removal and disposal of asbestos containing cement board (transite).
Unit of Measurement: Square foot.~~
- ~~Unit Price No. 30: Asbestos Containing Cement Board (transite) Lab Table Tops/Backsplash
Removal:
Description: Removal and disposal of asbestos containing cement board (transite) lab
table tops/backsplashes.
Unit of Measurement: Square foot.~~
- ~~Unit Price No. 31: Asbestos Containing Cloth Vibration Damper Removal:
Description: Removal and disposal of asbestos containing cloth vibration damper.
Unit of Measurement: Each.~~
- ~~Unit Price No. 32: Asbestos Containing Exterior or Interior Door Removal
Description: Removal and disposal of asbestos containing interior or exterior doors.
Unit of Measurement: Per Leaf.~~
- ~~Unit Price No. 33: Asbestos Containing Roof Flashing Removal
Description: Removal and disposal of asbestos containing roof flashing.
Unit of Measurement: Square foot..~~
- ~~Unit Price No. 34: Asbestos Containing Pipe Fitting Removal:
Description: Removal and disposal of asbestos containing pipe fittings up to 4 inches in
diameter.
Unit of Measurement: Each.~~
- ~~Unit Price No. 35: Asbestos Containing Pipe Fitting Removal:
Description: Removal and disposal of asbestos containing pipe fittings greater than 4
inches in diameter.
Unit of Measurement: Each.~~

~~Unit Price No. 36: Asbestos Containing Duct Sealant Removal:~~

~~Description: Removal and disposal of asbestos containing duct sealant.~~

~~Unit of Measurement: Linear foot.~~

~~Unit Price No. 37: Asbestos Containing Ceiling Tile Removal:~~

~~Description: Removal and disposal of asbestos containing ceiling tile.~~

~~Unit of Measurement: 2 x 4 foot tile.~~

~~Unit Price No. 38: PCB Containing Caulk, Removal~~

~~Description: Removal and disposal of PCB containing caulk.~~

~~Unit of Measurement: Linear foot.. [Addendum No. 2]~~

W. Unit Price No. 39: ACT Additional Point

1. Description: ACT additional .point, installed and programmed.

2. Unit of Measurement: Per point.

[Addendum No. 1]

END OF SECTION 01 22 00

SECTION 23 74 13
PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes packaged, outdoor, central-station air-handling units (rooftop units) with the following components and accessories:
 - 1. Direct-expansion cooling.
 - 2. Economizer outdoor- and return-air damper section.
 - 3. Hot Water Coils
 - 4. VAV Dampers/reheat coils.
 - 5. Roof curbs.

1.02 DEFINITIONS

- A. DDC: Direct-digital controls.
- B. Outdoor-Air Refrigerant Coil: Refrigerant coil in the outdoor-air stream to reject heat during cooling operations and to absorb heat during heating operations. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- C. Outdoor-Air Refrigerant-Coil Fan: The outdoor-air refrigerant-coil fan in RTUs. "Outdoor air" is defined as the air outside the building or taken from outdoors and not previously circulated through the system.
- D. RTU: Rooftop unit. As used in this Section, this abbreviation means packaged, outdoor, central-station air-handling units. This abbreviation is used regardless of whether the unit is mounted on the roof or on a concrete base on ground.
- E. Supply-Air Fan: The fan providing supply air to conditioned space. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.
- F. Supply-Air Refrigerant Coil: Refrigerant coil in the supply-air stream to absorb heat (provide cooling) during cooling operations and to reject heat (provide heating) during heating operations. "Supply air" is defined as the air entering a space from air-conditioning, heating, or ventilating apparatus.
- G. VAV: Variable-air volume terminal.

1.03 PERFORMANCE REQUIREMENTS

- 1. AHU-2 Shall have a modified frame and housing to fit the existing curb and include the integral VAV dampers and reheat coils replacing the original Multizone distribution.

1.04 SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each RTU, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Coordination Drawings: Plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Structural members to which RTUs will be attached.
 - 2. Roof openings
 - 3. Roof curbs and flashing.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For RTUs to include in emergency, operation, and maintenance manuals.
- F. Warranty: Special warranty specified in this Section.

1.05 QUALITY ASSURANCE

- A. ARI Compliance:
 - 1. Comply with ARI 210/240 and ARI 340/360 for testing and rating energy efficiencies for RTUs.
 - 2. Comply with ARI 270 for testing and rating sound performance for RTUs.
- B. ASHRAE Compliance:
 - 1. Comply with ASHRAE 15 for refrigeration system safety.
 - 2. Comply with ASHRAE 33 for methods of testing cooling and heating coils.
- C. NFPA Compliance: Comply with NFPA 90A and NFPA 90B.
- D. UL Compliance: Comply with UL 1995.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.06 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of RTUs that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.

2. Warranty Period for Hot water coils and components: Manufacturer's standard, but not less than five years from date of Substantial Completion. Coil freeze due to power failure or Owner neglect exempted.
3. Warranty Period for Control Boards: Manufacturer's standard, but not less than three years from date of Substantial Completion.

1.07 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Fan Belts: One set for each belt-driven fan.
 2. Filters: One set of filters for each unit.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings Trane SLHLF or a comparable product by one of the following:
 1. AAON, Inc.
 2. Carrier Corporation.
 3. Engineered Air.
 4. Lennox Industries Inc.
 5. McQuay International.
 6. YORK International Corporation.

2.02 CASING

- A. General Fabrication Requirements for Casings: Formed and reinforced double-wall insulated panels, fabricated to allow removal for access to internal parts and components, with joints between sections sealed.
- B. Exterior Casing Material: Galvanized steel with factory-painted finish, with pitched roof panels and knockouts with grommet seals for electrical and piping connections and lifting lugs.
 1. Exterior Casing Thickness: 0.052 inch thick.
- C. Inner Casing Fabrication Requirements:
 1. Inside Casing: Galvanized steel, 0.034 inch thick.
- D. Casing Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.
 1. Materials: ASTM C 1071, Type I.
 2. Thickness: 1/2 inch.
 3. Liner materials shall have air-stream surface coated with an erosion- and temperature-resistant coating or faced with a plain or coated fibrous mat or fabric.
 4. Liner Adhesive: Comply with ASTM C 916, Type I.

- E. Condensate Drain Pans: Formed sections of stainless-steel sheet, a minimum of 2 inches deep.
 - 1. Double-Wall Construction: Fill space between walls with foam insulation and seal moisture tight.
 - 2. Drain Connections: Threaded nipple both sides of drain pan.

2.03 FANS

- A. Direct-Driven Supply-Air Fans: Double width, forward curved, centrifugal; with permanently lubricated, inverter duty motor motor resiliently mounted in the fan inlet. Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.
- B. Belt-Driven Supply-Air Fans: Double width, forward curved, centrifugal; with permanently lubricated, single-speed motor installed on an adjustable fan base resiliently mounted in the casing. Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.
- C. Condenser-Coil Fan: Propeller, mounted on shaft of permanently lubricated motor.
- D. Relief-Air Fan: Forward curved, shaft mounted on permanently lubricated motor.
- E. Fan Motor: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."

2.04 COILS

- A. Supply-Air Refrigerant Coil:
 - 1. Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
 - 2. Condensate Drain Pan: Stainless steel formed with pitch and drain connections.
- B. Outdoor-Air Refrigerant Coil:
 - 1. Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
- C. Preheat Coil:
 - 1. Coil Type: Self-draining.
 - 2. Piping Connections: Threaded, same end of coil.
 - 3. Tube Material: Copper.
 - 4. Fin Type: Plate.
 - 5. Fin Material: Aluminum.
 - 6. Coil Working-Pressure Ratings: 200 psig, 325 deg F.
- D. AHU-2 shall have a modified frame such that the VAV air valve and zone reheat coils are mounted in the unit discharge and ducted to the appropriate zones.
 - 1. Refer to the VAV terminal specification and the schedules on the plans for performance requirements.

2.05 REFRIGERANT CIRCUIT COMPONENTS

- A. Compressor: Hermetic, scroll, mounted on vibration isolators; with internal overcurrent and high-temperature protection, internal pressure relief.

B. Refrigeration Specialties:

1. Refrigerant: R-410A.
2. Expansion valve with replaceable thermostatic element.
3. Refrigerant filter/dryer.
4. Manual-reset high-pressure safety switch.
5. Automatic-reset low-pressure safety switch.
6. Minimum off-time relay.
7. Automatic-reset compressor motor thermal overload.
8. Brass service valves installed in compressor suction and liquid lines.

2.06 AIR FILTRATION

- A. Minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2.
1. Pleated: Minimum 90 percent arrestance, and MERV 8

2.07 DAMPERS

- A. Outdoor- and Return-Air Mixing Dampers: Parallel- or opposed-blade galvanized-steel dampers mechanically fastened to cadmium plated for galvanized-steel operating rod in reinforced cabinet. Connect operating rods with common linkage and interconnect linkages so dampers operate simultaneously.
1. Damper Motor: Modulating with adjustable minimum position.
 2. Relief-Air Damper: Gravity actuated or motorized, as required by ASHRAE/IESNA 90.1-2004, with bird screen and hood.

2.08 ELECTRICAL POWER CONNECTION

- A. Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

2.09 CONTROLS

- A. Control equipment and sequence of operation are specified in Division 23 Section "Instrumentation and Control for HVAC."
- B. Basic Unit Controls:
1. Control-voltage transformer.
 2. Wall-mounted thermostat or sensor with the following features:
 - a. Heat-cool-off switch.
 - b. Fan on-auto switch.
 - c. Fan-speed switch.
 - d. Automatic changeover.
 - e. Adjustable deadband.
 - f. Exposed set point.
 - g. Exposed indication.
 - h. Degree F indication.
 - i. Unoccupied-period-override push button.

- j. Data entry and access port to input temperature set points, occupied and unoccupied periods, and output room temperature, supply-air temperature, operating mode, and status.
 - 3. Unit-Mounted Annunciator Panel for Each Unit:
 - a. Lights to indicate power on, cooling, heating, fan running, filter dirty, and unit alarm or failure.
 - b. DDC controller or programmable timer and interface with HVAC instrumentation and control system.
 - c. Digital display of outdoor-air temperature, supply-air temperature, return-air temperature, economizer damper position, indoor-air quality, and control parameters.
 - C. DDC Controller:
 - 1. Controller shall have volatile-memory backup.
 - 2. Safety Control Operation:
 - a. Smoke Detectors: Stop fan and close outdoor-air damper if smoke is detected. Provide additional contacts for alarm interface to fire alarm control panel.
 - b. Firestats: Stop fan and close outdoor-air damper if air greater than 130 deg F enters unit. Provide additional contacts for alarm interface to fire alarm control panel.
 - c. Fire Alarm Control Panel Interface: Provide control interface to coordinate with operating sequence described in Division 28 Section "Fire Detection and Alarm."
 - 3. Scheduled Operation: Occupied and unoccupied periods on 365-day clock with a minimum of four programmable periods per day.
 - D. Interface Requirements for HVAC Instrumentation and Control System:
 - 1. Interface relay for scheduled operation.
 - 2. Interface relay to provide indication of fault at the central workstation and diagnostic code storage.
 - 3. Provide BACnet or LonWorks compatible interface for central HVAC control workstation for the following:
 - a. Adjusting set points.
 - b. Monitoring supply fan start, stop, and operation.
 - c. Inquiring data to include outdoor-air damper position, supply- and room-air temperature.
 - d. Monitoring occupied and unoccupied operations.
 - e. Monitoring constant and variable motor loads.
 - f. Monitoring variable-frequency drive operation.
 - g. Monitoring cooling load.
 - h. Monitoring economizer cycles.
 - i. Monitoring air-distribution static pressure and ventilation air volume.
- 2.10 ACCESSORIES
- A. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required. Outlet shall be energized even if the unit main disconnect is open.
 - B. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of RTUs.
- B. Examine roughing-in for RTUs to verify actual locations of piping and duct connections before equipment installation.
- C. Examine roofs for suitable conditions where RTUs will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Roof Curb: Install unit on existing curbs.
- B. Unit Support: Install unit level on structural curbs. Coordinate wall penetrations and flashing with wall construction. Secure RTUs to structural support with anchor bolts.

3.03 CONNECTIONS

- A. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.
- B. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
 - 1. Install ducts to termination at top of roof curb.
 - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
 - 3. Connect supply ducts to RTUs with flexible duct connectors specified in Division 23 Section "Air Duct Accessories."
 - 4. For multi-zone unit replacement insure each VAV terminal is properly ducted to the appropriate zone.
 - 5. Install return-air duct continuously through roof structure.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- B. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Report results in writing.
- C. Tests and Inspections:

1. After installing RTUs and after electrical circuitry has been energized, test units for compliance with requirements.
2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Remove and replace malfunctioning units and retest as specified above.

3.05 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions and do the following:

1. Inspect for visible damage to unit casing.
2. Inspect for visible damage to furnace combustion chamber.
3. Inspect for visible damage to compressor, coils, and fans.
4. Inspect internal insulation.
5. Verify that labels are clearly visible.
6. Verify that clearances have been provided for servicing.
7. Verify that controls are connected and operable.
8. Verify that filters are installed.
9. Clean condenser coil and inspect for construction debris.
10. AHU-2 test shall include testing each VAV zone damper and reheat for proper operation.
11. Remove packing from vibration isolators.
12. Verify lubrication on fan and motor bearings.
13. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
14. Adjust fan belts to proper alignment and tension.
15. Inspect and record performance of interlocks and protective devices; verify sequences.
16. Calibrate thermostats.
17. Inspect outdoor-air dampers for proper stroke and interlock with return-air dampers.
18. Start refrigeration system and measure and record the following when ambient is a minimum of 15 deg F above return-air temperature:
 - a. Coil leaving-air, dry- and wet-bulb temperatures.
 - b. Coil entering-air, dry- and wet-bulb temperatures.
 - c. Outdoor-air, dry-bulb temperature.
 - d. Outdoor-air-coil, discharge-air, dry-bulb temperature.
19. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
20. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.
 - a. Supply-air volume.
 - b. Return-air volume.
 - c. Relief-air volume.
 - d. Outdoor-air intake volume.
21. Simulate maximum cooling demand and inspect the following:
 - a. Compressor refrigerant suction and hot-gas pressures.

- b. Short circuiting of air through condenser coil or from condenser fans to outdoor-air intake.
- 22. Verify operation of remote panel including pilot-light operation and failure modes. Inspect the following:
 - a. Low-temperature safety operation.
 - b. Filter high-pressure differential alarm.
 - c. Economizer to minimum outdoor-air changeover.
 - d. Relief-air fan operation.
 - e. Smoke and firestat alarms.
- 23. After startup and performance testing and prior to Substantial Completion, replace existing filters with new filters.

3.06 CLEANING AND ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site during other-than-normal occupancy hours for this purpose.
- B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

3.07 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain RTUs. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 23 74 13

PAWTUCKET SCHOOL DEPARTMENT – IMMEDIATE HEALTH AND SAFETY PROJECT

SCOPE B

PRE-CONSTRUCTION RFI LOG – Bid Documents Dated: January 31, 2013

Log Created: February 14, 2014 (Addendum #1)

UPDATED: N/A – March 4, 2014 (Addendum #2)

QUESTION 1: [ADDENDUM NO.1]

Alternate Learning Program – Missing drawing “MD4.11”

Response: MD4.11 will be deleted from the index sheet via Addendum #1. Complete demolition scope is presently included within M1.1B, M4.11 and M4.12

QUESTION 2: [ADDENDUM NO.1]

Goff – Missing drawings “M0.01” “E1.162” “E1.163” “E0.03” and “E0.04”

Response:

- *M0.01 is part of the Goff set. This sheet is exactly the same as the M0.01 sheet for all other schools*
 - *Information that was on E1.162 and E1.163 on previous progress prints were moved to and combined within sheet E1.161. The index shall be updated within Addendum #1 to indicate that E1.162 and E1.163 are no longer part of the drawing set.*
 - *Information on Sheets E0.03 and E0.04 were consolidated into E0.01 and E0.02. The references on the index sheet will be corrected via Addendum #1*
-

QUESTION 3: [ADDENDUM NO.1]

Fallon – Missing drawing “E0.03”

Response: Sheets E0.03 was consolidated into E0.01 and E0.02. The reference on the index sheet will be corrected via Addendum #1

QUESTION 4: [ADDENDUM NO.1]

Baldwin – Missing Plumbing/Fire Protection drawings entirely. There are two mechanical legends shown “M0.01” and “M0.21”

Response:

- *No Plumbing/ Fire Protection drawings are part of the Baldwin set. Reference to these on the index sheet are in error and will be corrected within Addendum #1*
- *The correct legend sheet should be M0.01. M0.21 is a duplicate sheet which will be deleted within Addendum #1*

QUESTION 5: [ADDENDUM NO.2]

I see 4 manufacturers are listed for reference (FCI, Notifier, Fire-Lite and Edwards) but I assume other vendors are allowed that are of equal quality?

Response:

- *Other vendors of equal quality are allowed provided their programming does not utilize non-proprietary programming software.*

QUESTION 6: [ADDENDUM NO.2]

Alternate Learning Program: On Dwg M1.1B it has a note on the basement floor plan stating that the W' gas line is to be replaced with a 2" and to run 60 ft. Should this piping be done by the plumber because dwg P101 shows the plumber doing the other gas piping to the boilers.

Response:

- *The ¾" gas piping is a historical note that should not be on the drawing.*

QUESTION 8: [ADDENDUM NO.2]

Alternate Learning Program: Is there glycol in the existing cw/hw system?

Response:

- *No Glycol in the existing systems. Glycol will be added to the modified Chilled water system.*

QUESTION 9: [ADDENDUM NO.2]

Alternate Learning Program: Dwg#4.11 it calls for a buffer tank per the schedule. However, nothing is shown on the drawings or detailed.

Response:

- *The buffer tank is to be provided by the chiller manufacturer and packaged and piped as a unit. This will be clarified on the schedule and on the Controls/ Schematic Diagram.*

QUESTION 10: [ADDENDUM NO.2]

Alternate Learning Program: On Dwg M4.11 it shows two 811 lines which I assume to be flues (no label) rising up inside the existing chimney. How do we support the flues inside the chimney? No support detail provided. How do you gain access to the inside of the chimney? How high is the chimney to the roof cap? How do we terminate the flue? Where are the combustion air pipes for the boilers? Not shown on the drawings.

Response:

Yes these are the PVC flue and combustion air pipes. There is a total of 4 pipes, one combustion air and one vent for each boiler.

- *The pipes shall be supported at the bottom to accept the weight but allow for small lateral movement.*
- *At the top of the chimney a new cap is to be fabricated which should act as a sway restraint.*

QUESTION 11: [ADDENDUM NO.2]

Alternate Learning Program: On Dwg. M4.12 note #1 it calls for replacement of the control valves to the existing ahu's #1&2. What are the sizes of the pipes and flow rates required?

Response:

- *Approximately 3 and 2-1/2 inches but as the note says this must be field verified.*

QUESTION 12: [ADDENDUM NO.2]

Alternate Learning Program: What is the height of the building from the basement to the mechanical penthouse?

Response:

- *Approximately forty feet.*
-

QUESTION 13: [ADDENDUM NO.2]

Alternate Learning Program: The chilled water piping is shown in a chase on M4.12 .. What is the condition on the floors below? Is there access into the chase? What is the wall construction?

Response:

- *The chase is the existing combustion/ventilation airshaft for the boiler room and is integral to the chimney. Conditions must be filed verified.*
-

QUESTION 14: [ADDENDUM NO.2]

Alternate Learning Program: On Dwg M4.12 it doesn't show how are the new 4" chilled water lines supported on the roof. Nothing is detailed or specified.

Response:

- *M4.12 is being reissued via this Addendum to clarify this matter further.*
-

QUESTION 15: [ADDENDUM NO.2]

Alternate Learning Program: There is no chiller piping detail indicating any isolation valves, flow switches, temp gauges, strainers, flex connections at the chiller. Do you require them?

Response:

- *Additional non-control valves and gauges have been added to the controls/schematic diagram to clarify this.*
-

QUESTION 16: [ADDENDUM NO.2]

Alternate Learning Program: What is the existing roof system? Rubber, EPDM, built up? Is it under any warranty?

Response: It is EPDM, we don't think is under warranty

QUESTION 17: [ADDENDUM NO.2]

Alternate Learning Program: On dwg M4.11 it shows 2 fuel oil pumps to be removed. Are they active? Do the pumps and piping contain oil piping in them? There is no mention in the specs for hazardous oil waste.

Response:

- *The oil was abandoned years ago and the pumps left in place. Only minimal residual oil is expected.*

QUESTION 18: [ADDENDUM NO.2]

Potter Burns School: On Dwg#MDI.90 and M1.90 note #23 it mentions a concern about attaching to the concrete floor above in the boiler room. Is it a asbestos or lead paint issue? If so, than wouldn't the Owner take care of the hazardous material per the specification selective demo work page 2.

Response:

The ceiling consists of plaster and wire lathe. That cannot support hanging of equipment. Regarding hazardous materials, the owner has engaged a Hazardous Materials consultant to provide an abatement plan and specifications for the same. Given the timing of this effort we understand the Owner anticipates executing abatement work as a Change Order to the contract.

QUESTION 19: [ADDENDUM NO.2]

Potter Burns School: On Dwg #m1.90 it shows two 16" flues rising up inside the existing chimney. How high is the chimney from the basement to the chimney cap? How do I support the flue internally inside the chimney? No support detail provided. How do I gain access on the upper floors to the chimney?

Response:

- *The chimney top is approximately 15 feet above roof level. Floor of boiler room is below grade, there are three floors each approx. 15' slab to slab. Final verification by contractor upon approval. The chimney rises up external to the building in an area way – access, if needed, can be gained there. Coordinate with flue supplier, based on this information, on support.*

QUESTION 20: [ADDENDUM NO.2]

Potter Burns School: Note #5 calls for replacement of the existing F&T traps in the boiler room but doesn't indicate how many and what size.

Response:

- *Quantities and sizes are provided on bullet #5 under notes on drawing M1.90.*

QUESTION 21: [ADDENDUM NO.2]

Potter Burns School: Can all of the relief vents terminate through the basement foundation wall and then rise up a safe distance above grade instead or through the roof as shown on the detail drawing.

Response:

- *Route to Roof As shown*
-

QUESTION 22: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: On Dwg.Ml.21 it shows the new ductwork layout for the space but shows no demolition of the existing ductwork.

Response:

- *The existing condition has a single large reheat coil that is being split into two VAV zones. This occurs at two locations VAV-1 and VAV-2. The demolition is limited to the extent of the new work. Existing duct sizes may be inferred by the sizes at the connection points.*
-

QUESTION 23: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: Is there glycol in the existing system?

Response:

- *No.*
-

QUESTION 24: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: On Dwg.Ml.21 it doesn't show any hot water piping going to the vav#4. What size is it and where do I connect the new piping to the existing lines.

Response:

- *Note #1 applies here you are to reuse the existing piping to the old reheat coil.*
-

QUESTION 25: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: The specification section 23-74-13 Central Station AHU has not been modified for the project. It still has the multiple choice options for the equipment. The vendor cannot determine what the engineer wants.

- *This specification section is being reissued as part of Addendum 2.*

QUESTION 26: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: Does the existing structural steel and roof need to be modified for the new roof top units and curbs?

Response:

- *No it is the equipment manufacturer's responsibility to provide equipment of similar weight and sized to fit the existing curb.*

QUESTION 27: [ADDENDUM NO.2]

Elizabeth Baldwin Elementary School: What is the existing roof material rubber, epdm, built-up? Is it under any warranty?

Response:

- *Built up and beyond the warranty. The contractor remains responsible for damage resulting from his work.*

QUESTION 28: [ADDENDUM NO.2]

Lyman Goff Junior High School: On dwg#Ml.162 and Ml.163 note #2 it calls for the replacement of the existing registers. No size is given. What size do I use?

Response:

- *Approximately 15x30 but must be field verified.*

QUESTION 29: [ADDENDUM NO.2]

Lyman Goff Junior High School: On Dwg#M4.161 it shows the ductwork to EF#4 having duct liner. However EF#3 does not. Do I install liner on them? The specification has a liner section #23-31-13-4 but doesn't have anything specifically written where the liner is to be used.

Response:

- *The intention was to line the new duct for both fans – this will be clarified via sketch.*

QUESTION 30: [ADDENDUM NO.2]

Lyman Goff Junior High School: There is no detail showing how to blank off the unused portion of the 19ftx10ft louvers. Is it a double wall panel with rigid board insulation? Please provide additional info.

Response:

- *Per detail A8/A201 on addendum # 1 set, the GC is to provide the insulated panel. The MC must build a plenum and coordinate his work with the GC.*
-

QUESTION 31: [ADDENDUM NO.2]

Lyman Goff Junior High School: How are the utility fans supported? Are they hung from the roof or floor mounted.

Response:

- *They are base mounted and may sit on the existing curb.*
-

QUESTION 32: [ADDENDUM NO.2]

Lyman Goff Junior High School: What size is the existing grille opening I attach the return ducts from AHU#1 & 2.

Response:

- *Approximately 24x24 but this must be field verified.*
-

QUESTION 33: [ADDENDUM NO.2]

Lyman Goff Junior High School: Are there supply grilles for the discharge on the AHU#1&2 or are they wire mesh screen.

Response:

- *Wire mesh is sufficient.*
-

QUESTION 34: [ADDENDUM NO.2]

General: Under alternates P.2 of the specifications Items B&C Curtis School. There are no Drawings in the bid package for this work.

Response:

- *There will be no work at the Curtis Elementary School under this contract.*
-

QUESTION 35: [ADDENDUM NO.2]

General: Why am I being asked to provide unit pricing on various asbestos removal when the specifications say that the owner will handle it per page 2 of the selective structure demo.

Response: The owner has engaged a Hazardous Materials consultant to provide an abatement plan and specifications for the same. Given the timing of this effort we understand the Owner anticipates executing abatement work as a Change Order to the contract.

QUESTION 36: [ADDENDUM NO.2]

General: How many lineal feet of book shelving are required for repair per the unit pricing requirements item R on page 4 of the unit pricing section. What is the material of construction? Painted or stained. Wood or metal. What specifically needs to be repaired?

Response:

- *There are no book shelving in the scope for this project. The specifications would be updated as part of Addendum #2*
-

QUESTION 37: [ADDENDUM NO.2]

General: Can the temporary construction office be assigned within each building area instead of a stand-alone trailer, with temp power as specified on P7 of temp facilities section of the specification.

Response:

- *Opportunities to accommodate this request will be limited given over-crowding at some facilities. Bidders shall assume stand alone trailers in their bids*
-

QUESTION 38: [ADDENDUM NO.2]

General: The painting specification calls for painting of the piping with insulation on it for exposed to view in rooms and mechanical spaces. Is that correct! If so, do we paint the existing piping to match existing? Also do we paint the entire wall surface where the walls are patched at the old the unit ventilators intake ducts where located.

Response:

- *Yes it is correct. Paint the new piping to match existing, if existing is not painted, then you don't paint, therefore matching existing condition On the Goff School the pipe insulation will have a pvc jacket, those will not be painted. Where the walls are patched in Goff the entire wall surface should be painted with a color that closely matches the existing.*
-

QUESTION 39: [ADDENDUM NO.2]

General: Do we include fast shipping costs to obtain the equipment in time to meet the contract timeline?

Response:

- *We consider that means and methods*
-

QUESTION 40: [ADDENDUM NO.2]

General: Have the constructions fees been waved for the project by the city of Pawtucket?

Response:

- *Fees are not waived*
-

QUESTION 41: [ADDENDUM NO.2]

General: The mechanical specs METAL DUCTS page 9, Item A calls for the cleaning of the existing ductwork. To what extend do we do duct cleaning because most of the existing ductwork does not show on the drawings?

Response:

- *In the area of new work plus six (6) feet beyond areas of demolition.*
-

QUESTION 42: [ADDENDUM NO.2]

General: Are there fees associated with Pawtucket Fire Dept Fire Watch work any welding operations.

Response:

- *Yes all fees to the City will be enforced*
-

QUESTION 43: [ADDENDUM NO.2]

General: If some of the work is determined that it needs to be done at night time because of noise has to be done at night or weekends hours who pays for the custodian staff to be on duty in the school . If the contractor is required what is the rate per hour.

Response:

- *Bidders shall assume that the District's custodial staff will make the buildings and themselves available at no additional cost*
-

END OF LOG

AIR COOLED CHILLER ALP

TAG	SERVICE LOCATION	REFRESHMENT CAPACITY (TONS)	NOMINAL CAPACITY (TONS)	CHILLED WATER				CONDENSER				COMPRESSOR				ELECTRICAL		OPERATING WEIGHT (LBS)		BASIS OF DESIGN		REMARKS		
				FLOW (GPM)	EMT (FT)	WT (FT)	MAX WT (FT)	EMT (FT)	FAN NO.	FAN KW	TYPE	QTY	HP	KW	VOLTS	PHASE	WEIGHT (LBS)	MANUFACTURER	MODEL	CSAM100	CSAM100			
CH-1	ROOF	410A	100	103	152	304P65	57.5	42	6.5	96	8	9.8	SPOOL	4	-	103	2864	4747	-	-	10,38	TRANE	CSAM100	① ②

- ① ALL OPERATING CHARACTERISTICS BASED ON 50% PROPYLENE GLYCOL. OPERATING CAPACITY AS SCHEDULED 81.8 TONS.
- ② DUAL, HIGH-NEED 10.2-PP-PUMP WITH 8 FT AVAILABLE HEAD AND 95% DME.

BOILER ALP

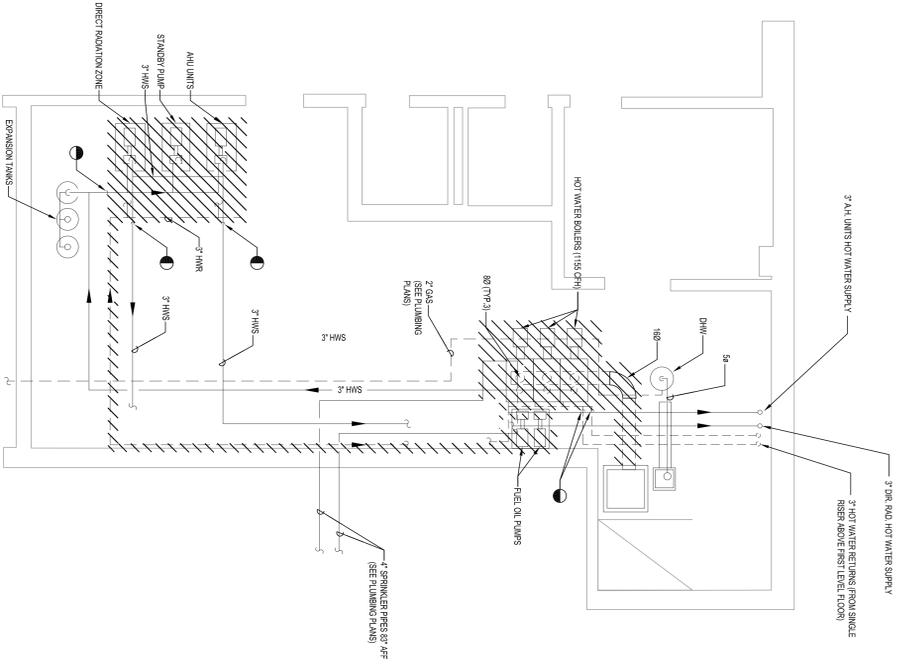
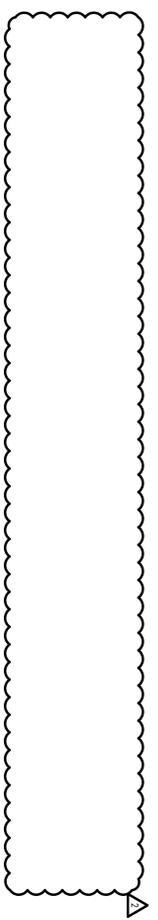
TAG	SERVICE LOCATION	INPUT (MMBtu)	OUTPUT (MMBtu)	HEATING EFFICIENCY (%)	FLOW (GPM)	HEAD (FT-H2O)	WATER DATA		GAS DATA		PRESSURE DROP (IN WC)		ELECTRICAL TOTAL AMP	EMERGENCY POWER (KW)	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		REMARKS
							EMT (FT)	WT (FT)	EMT (FT)	WT (FT)	MANUFACTURER	MODEL						
B-1	ROOF	800	752	94%	74	35	180	180	180	420	4	1	120/180	-	405	LOCHNHAAS	HRN 101	① ② ③
B-2	ROOF	800	752	94%	74	35	180	180	420	4	1	120/180	-	405	LOCHNHAAS	HRN 101	① ② ③	

- ① NETTER OUTPUT SCALER IN NON-CONDENSING MODE.
- ② PROVIDE SMART SYSTEM SOFTWARE W/ LABOURER DAILY.
- ③ PROVIDE CONDENSATE REINTEGRATION KIT.

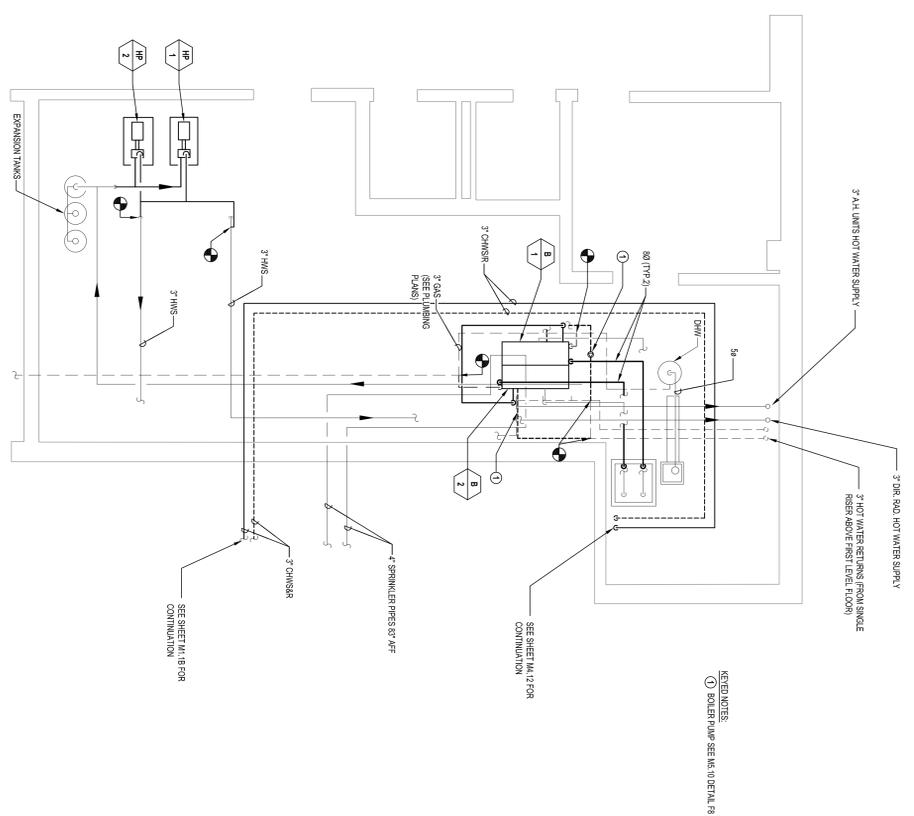
PUMPS ALP

TAG	SERVICE LOCATION	TYPE	WATER DATA FLOW (GPM)	HEAD (FT-H2O)	NUM. STAGES	WATER DATA FLOW (GPM)	HEAD (FT-H2O)	NUM. STAGES	WORKING PRESSURE (PSI)	WELLER SIZE (IN)	MOTOR DATA		VFD	EMERGENCY POWER (KW)	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		REMARKS					
											HP	FW				HP	FW		MANUFACTURER	MODEL			
BP-1	BOILER	IN LINE	180	35	-	180	35	-	1.25	-	1	1750	208/240	Y	-	-	TAOO	K138	-				
BP-2	BOILER	IN LINE	180	35	-	180	35	-	1.25	-	1	1750	208/240	Y	-	-	TAOO	K138	-				
BP-3	BOILER	IN LINE	180	35	-	180	35	-	1.25	-	1	1750	208/240	Y	-	-	TAOO	K138	-				
BP-4	HW BOILER ROOM	FOR END SECTION	190	55	4	190	55	4	-	11.5	3.3	5	1180	208/240	N	-	-	TAOO	FS253	①			
BP-5	HW BOILER ROOM	FOR END SECTION	190	55	4	190	55	4	-	11.5	3.3	5	1180	208/240	N	-	-	TAOO	FS253	①			
BP-6	HW BOILER ROOM	FOR END SECTION	190	55	4	190	55	4	-	11.5	3.3	5	1180	208/240	N	-	-	TAOO	FS253	①			
CP-1	CHILLED WATER	IN LINE	150	35	-	150	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CP-2	CHILLED WATER	IN LINE	140	35	-	140	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CP-3	CHILLED WATER	IN LINE	80	35	-	80	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

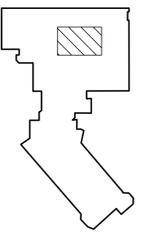
- ① PROVIDE INVERTER DUTY MOTOR FOR FUTURE CONVERSION TO VFD.



E7 EXISTING PENTHOUSE AND ROOF PART PLAN



A7 EXISTING PENTHOUSE AND ROOF PART PLAN



KEY PLAN

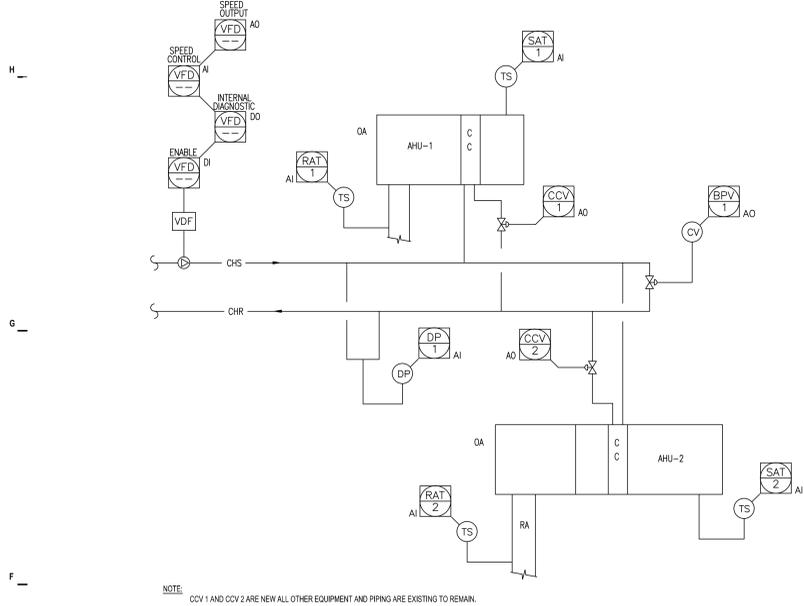
SCALE: 1/4" = 1'-0"
 DRAWN BY: _____
 CHECK BY: _____
 PROJECT NO.: 12014142
 © SWINER, MAIN & WICKEL ASSOCIATES, INC. 2013

BOILER ROOM DEMO & NEW PART PLANS & SCHEDULES

NO.	REVISION	DATE	DESCRIPTION
1	ISSUE FOR CONSTRUCTION	07/15/2014	CONSTRUCTION DOCUMENTS
2	ISSUE FOR CONSTRUCTION	07/15/2014	CONSTRUCTION DOCUMENTS

PHASE 2 - EMERGENCY REPAIRS

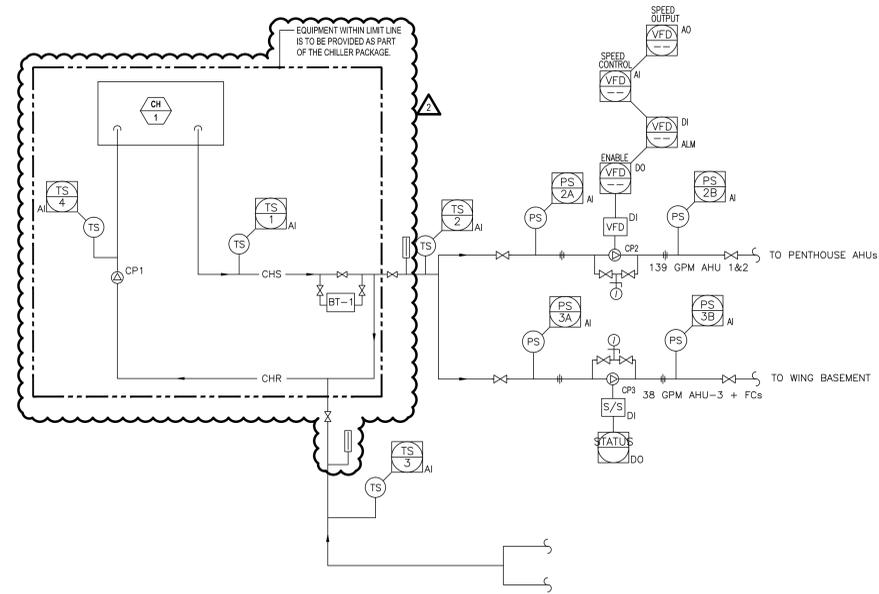
ALTERNATIVE LEARNING PROGRAM
 288 Main Street
 Pawtucket, Rhode Island 02860



F1 AHU TEMPERATURE CONTROL
NTS

ALP AHU-1 & 2 COOLING SEQUENCE OF OPERATION

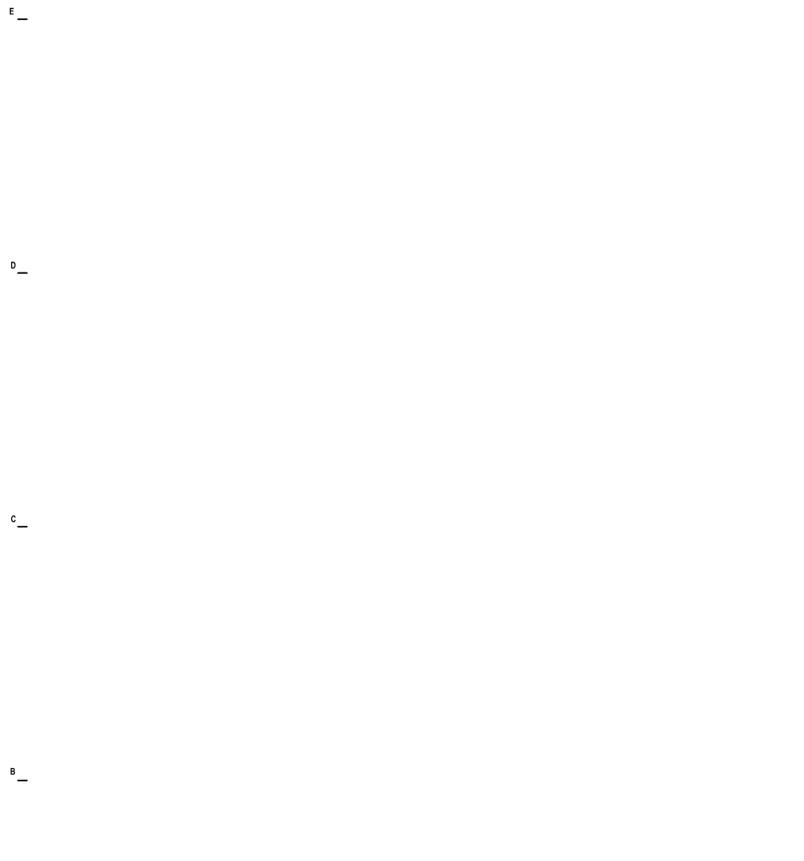
- GENERAL:
- ALL SETPOINTS SHALL BE EASILY ADJUSTABLE FROM THE CONTROLLER OR HEAD END COMPUTER'S PULL DOWN GRAPHICS.
 - ALL UNITS OF MEASURE SHALL BE COMMON US UNITS, I.E. DEGREES FAHRENHEIT, GPM, PSI, ETC.
- OCCUPIED COOLING MODE:
- SECONDARY PUMP CP-2 SHALL MODULATE ITS SPEED TO MAINTAIN THE SETPOINT DIFFERENTIAL PRESSURE AT DP-1. THE SETPOINT SHALL BE INITIALLY SET AT 0.75 PSIG BUT SHALL BE RESET BY THE BALANCE CONTRACTOR AS PART OF HIS SCOPE.
 - THE COOLING CONTROL VALVE (CCV) FOR EACH AHU SHALL MODULATE TO MAINTAIN THE RETURN AIR TEMPERATURE (RAT) AT THE SETPOINT (TS₁+TS₂).
 - THE SUPPLY AIR TEMPERATURE (SAT) SHALL NOT BE LESS THAN 52°.
 - AS RAT APPROACHES TSP THE CCV SHALL MODULATE BACK TO MAINTAIN TSP WITHOUT OVERSHOOTING.
 - IF AT MINIMUM PUMP FLOW THE DIFFERENTIAL PRESSURE AT DP-1 IS GREATER THAN THE SETPOINT, BPV-1 SHALL MODULATE OPEN TO MAINTAIN THE SETPOINT.
 - UNOCCUPIED COOLING MODE: NONE.



E7 CHILLER CONTROLS DIAGRAM
NTS

ALP CHILLER SEQUENCE OF OPERATIONS

- GENERAL:
- ALL SETPOINTS SHALL BE EASILY ADJUSTABLE FROM THE CONTROLLER OR HEAD END COMPUTER'S PULL DOWN GRAPHICS.
 - ALL UNITS OF MEASURE SHALL BE COMMON US UNITS, I.E. DEGREES FAHRENHEIT, GPM, PSI, ETC.
- OCCUPIED MODE:
- PUMPS CP2 AND CP3 SHALL RUN CONTINUOUSLY WHEN CH-1 ENABLED.
 - SEE AHU SDO FOR PUMP MODULATION.
 - IF THE CHILLED WATER SUPPLY TEMPERATURE AS MEASURED BY T2 > 47°
 - PUMP CP1 SHALL START
 - UPON PROOF OF FLOW THE CHILLER'S INTERNAL LOGIC SHALL SEQUENCE THE CHILLER ON.
 - WHILE RUNNING THE CHILLER SHALL MAINTAIN 42° LEAVING WATER AT T1.
 - THE CHILLER SHALL CONTINUE TO RUN UNTIL T4-T1 < ΔT THRESHOLD (2°) OR THE CHILLER'S LOGIC SHUTS DOWN FOR LOW HEAD.
 - PUMP CP1 SHALL SHUT DOWN 30 SECONDS AFTER THE CHILLER.
 - MINIMUM DOWN TIME BETWEEN CYCLES SHALL BE 5 MINUTES OR AS DEFINED BY THE CHILLER MANUFACTURER.
- UNOCCUPIED MODE:
- DURING UNOCCUPIED HOURS THE CHILLER, PUMPS C1, C2 AND C3 SHALL ALL SHUT DOWN.
- ALARMS AND SAFETIES:



A4 BOILER CONTROLS DIAGRAM
NTS

ALP BOILER SEQUENCE OF OPERATIONS

- GENERAL:
- ALL SETPOINTS SHALL BE EASILY ADJUSTABLE FROM THE CONTROLLER OR HEAD END COMPUTER'S PULL DOWN GRAPHICS.
 - ALL UNITS OF MEASURE SHALL BE COMMON US UNITS, I.E. DEGREES FAHRENHEIT, GPM, PSI, ETC.
- OCCUPIED MODE:
- THE LEAD HEATING PUMP (HP1A OR B) SHALL START AND RUN CONTINUOUSLY.
 - IF THE TEMPERATURE OF THE HOT WATER SUPPLY (HWS) < T SETPOINT (TS) THE BOILER MANUFACTURER'S DIGITAL CONTROLLER SHALL SEQUENCE THE BOILERS ON USING ITS OWN OPTIMIZATION LOGIC.
 - THE BOILER CONTROL PANEL SHALL SEND A START COMMAND TO THE BOILER PUMP(S) (BP1 & 2)
 - THE BOILER CONTROL PANEL SHALL RELAY TO THE HOUSE DDC CONTROL SYSTEM THE PUMP AND BOILER STATUS, INCLUDING FIRING RATE.
 - THE HWS SETPOINT TEMPERATURE (TSP) AND MEASURED AT TS-3 SHALL BE LINEARLY RELATED TO THE OUTDOOR AIR TEMPERATURE (TOA) AS FOLLOWS:

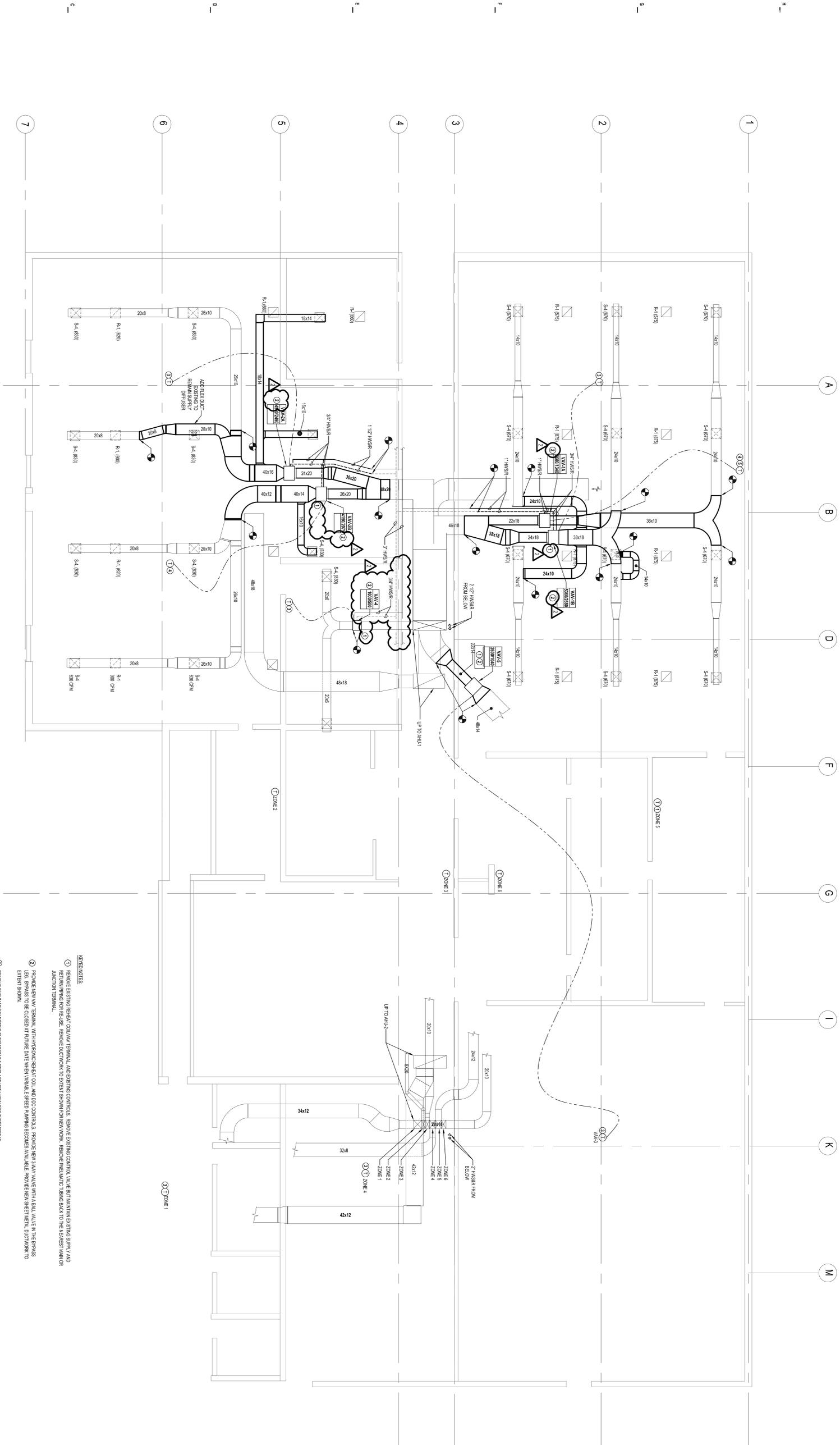
TOA	TSP
15'	180'
60'	110'
 - PUMP SPEED
 - SINGLE BOILER/PUMP
 - THE PUMP SHALL RUN AT FULL SPEED
 - MULTIPLE BOILERS/PUMPS
 - FLOW TO EACH BOILER SHALL BE THE SAME
 - FLOW BP1 + BP2 = FLOW .95 HP1
 - PUMP ROTATION: THE DDC CONTROLLER SHALL ROTATE THE LEAD AND LAG HOT WATER PUMPS (HP1A AND B) ON A WEEKLY BASIS TO MAINTAIN APPROXIMATELY EQUAL WEAR.
- UNOCCUPIED MODE:
- THE OCCUPANCY SCHEDULE SHALL REFLECT THE SCHOOL SCHEDULE INCLUDING UNOCCUPIED DAYS FOR WEEKENDS AND SCHEDULED HOLIDAYS.
 - A THREE HOUR OVERRIDE MAY BE EASILY INPUT FROM THE GRAPHICS SCREEN FOR SPECIAL EVENTS.
 - THE OCCUPANCY SCHEDULE WILL BUILD IN A VARIABLE WARMUP/COOL-DOWN PERIOD.
 - THE UNOCCUPIED SPACE TEMPERATURE SETPOINT SHALL BE 60°
 - TWO TEMPERATURE SENSORS SHALL BE PLACED IN REPRESENTATIVE LOCATIONS.
 - UPON A CALL FOR UNOCCUPIED HEATING THE FOLLOWING SHALL OCCUR:
 - THE LEAD HP SHALL START.
 - UPON PROOF OF FLOW THE BOILER CONTROLLER WILL BE ISSUED A START COMMAND BY THE HOUSE DDC SYSTEM.
 - THE BOILERS AND PUMPS SHALL CONTINUE TO RUN UNTIL ALL SETBACK TEMPERATURE SENSORS ARE SATISFIED. THE BOILERS SHALL THEN SHUT DOWN. WITH BOILERS OFF THE PUMPS SHALL SHUT DOWN.
- ALARMS AND SAFETIES:

- THE BOILER CONTROL MODULE SHALL TRANSMIT A GENERAL WARNING ALARM OR A FAILURE ALARM TO THE BMS.
- PUMP ALARMS:
 - PUMP FAILURE
 - HIGH HEAD, ΔP > SCHEDULED HEAD x1.2
- HIGH TEMPERATURE TS-3 > TSP + 2°F
- LOW TEMPERATURE TS-3 > TSP - 2°F

2	03/05/2014	ADDENDUM # 2
1	02/14/2014	ADDENDUM # 1
0	01/15/2014	CONSTRUCTION DOCUMENTS

MARK: DATE: DESCRIPTION:
ISSUE LOG
△ = CLOUDED CHANGE

SCALE	NTS
DRAWN BY	HET
CHECK BY	DRN
PROJ. ARCH. ENGR.	DRN
PROJ. MGR.	DFBR
JOB NO.	12014.02
© SYMMES, MAINI & MCKEE ASSOCIATES, INC. 2013	



- KEYNOTES:**
- 1 REMOVE EXISTING REBERT COIL/WATER TERMINAL, AND EXISTING CONTROLS. REMOVE EXISTING CONTROL VALVE BUT MAINTAIN EXISTING SUPPLY AND RETURN PIPING FOR REUSE. REMOVE DUCTWORK TO EXISTING SHOW/STAIRWELLWORK. REMOVE MECHANICAL DUCTWORK BACK TO THE REBERT MAIN OR EXISTING TERMINAL.
 - 2 PROVIDE REBERT TERMINAL WITH HYDRONIC REBERT COIL AND DDC CONTROLS. PROVIDE REBERT MAIN VALVE WITH BALL VALVE IN THE PRESS EXHIBIT ROOM.
 - 3 REMOVE MECHANICAL/ELECTRIC THERMOSTAT & REPLACE WITH REBERT THERMOSTAT.
 - 4 PROVIDE REBERT/ODC THERMOSTAT.
 - 5 MOUNT THERMOSTAT ON AN INSULATED BLOCK.

NO.	REVISION	DATE	DESCRIPTION
1	ISSUED FOR PERMIT	08/14/23	ISSUED FOR PERMIT
2	ISSUED FOR CONSTRUCTION	08/14/23	ISSUED FOR CONSTRUCTION
3	ISSUED FOR CONSTRUCTION	08/14/23	ISSUED FOR CONSTRUCTION

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

DRAWN BY: HET

CHECK BY: DRN

PROJECT NO.: 230142

DATE: 08/14/23

ISSUE: 03

PROJECT: ELIZABETH BALDWIN ELEMENTARY SCHOOL

PHASE: PHASE 2 - EMERGENCY REPAIRS

DATE: 08/14/23

ISSUE: 03

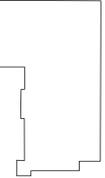
PROJECT: ELIZABETH BALDWIN ELEMENTARY SCHOOL

PHASE: PHASE 2 - EMERGENCY REPAIRS

DATE: 08/14/23

ISSUE: 03

**FIRST FLOOR
PLAN**



KEY PLAN