ADDENDUM NO. 04

February 12, 2026

Kalamazoo Public Schools Northglade Montessori Magnet
1914 Cobb Ave
Kalamazoo, MI 49007

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated January 9, 2026, by TowerPinkster. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 4-1 through ADD 4-1 and TowerPinkster Addendum No. 04, dated February 11, 2026, consisting of 19 pages.

A. **Refer to the attached Request For Information summary, Pre-Bid RFI No. 01 through 30 are included.**

TowerPinkster
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ADDENDUM NO. 4

DATE OF ISSUANCE:	**February 11, 2026**
PROJECT:	**Northglade Montessori School** **1914 Cobb Avenue** **Kalamazoo, Michigan 49007**
OWNER:	**Kalamazoo Public Schools**
ARCHITECT'S PROJECT NO.:	**23-638.00**
ORIGINAL BID ISSUE DATE:	**January 9, 2026**

SCOPE OF WORK

This Addendum includes changes to, or clarifications of, the original Bidding Documents and any previously issued addenda, and shall be included in the Bid. All of these Addendum items form a part of the Contract Documents. The Bidder shall acknowledge receipt of this Addendum in the appropriate space provided on the Bid Form. Failure to do so may result in disqualification of the Bid.

DOCUMENTS INCLUDED IN THIS ADDENDUM

This Addendum includes **2** pages of text and the following documents:

- Bidding Documents: **n/a**
- Contract Conditions: **n/a**
- Specification Sections: **23 2113**
- Drawings: **MD 101C, M 101B, M 501**

CHANGES TO SPECIFICATIONS

ADD-4 Item No. S-1 - Air Separator Type Revised

Refer to Specification Section: 23 2113

Tangential Type Air Separator section removed; In-Line Air Separator section added.

CHANGES TO DRAWINGS

ADD-4 Item No. D-1 - Removed Unit C Finned Tube

Refer to Sheet(s): MD 101C

Existing finned tube in Unit C removed.

ADD-4 Item No. D-2 - Diffuser Type in OFFICE B4 Changed

Refer to Sheet(s): M 101B

TA-1 in OFFICE B4 revised to SA-3.

ADD-4 Item No. D-3 - GRD Schedule Revised to Reflect

Refer to Sheet(s): M 501

SA-6 revised to have volume control damper at face of diffuser.

END OF ADDENDUM.

SECTION 23 2113 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes pipe and fitting materials, joining methods, special-duty valves, and specialties for the following:

1. Hot-water heating piping.
2. Chilled-water piping.
3. Condenser-water piping.
4. Heat recovery water piping.
5. Makeup-water piping.
6. Condensate-drain piping.
7. Blowdown-drain piping.
8. Air-vent piping.
9. Safety-valve-inlet and -outlet piping.

B. Related Sections include the following:

1. Division 23 Section "Hydronic Pumps" for pumps, motors, and accessories for hydronic piping.
2. Division 23 Section "Common Work Results for HVAC" for general piping materials and installation requirements.
3. Division 23 Section "Meters and Gages for HVAC Piping" for thermometers and pressure gages.
4. Division 23 Section "General Duty Valves for HVAC Piping" for general-duty ball, butterfly, and check valves.
5. Division 23 Section "Hangers and Supports for HVAC Equipment" for pipe supports, product descriptions, and installation requirements. Hanger and support spacing is specified in this Section.
6. Division 23 Section "Identification for HVAC Piping and Equipment" for labeling and identifying hydronic piping.
7. Division 23 Section "Instrumentation and Control for HVAC" for temperature-control valves and sensors.
8. Division 23 Section "HVAC Water Treatment" for pipe cleaning and water treatment for HVAC systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of the following:

1. Calibrated Balancing Valves: Include flow and pressure drop curves based on manufacturer's testing for calibrated-orifice balancing valves.
2. Air control devices.
3. Hydronic specialties.
4. Dielectric fittings.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control test reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 01.

B. Comply with the provisions of the following:

1. Michigan Mechanical Code

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Drawn-Temper Copper Tubing: ASTM B 88, Type L.

B. Annealed-Temper Copper Tubing: ASTM B 88, Type K.

C. Wrought-Copper Fittings: ASME B16.22.

D. Copper or Bronze Pressure-Seal Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Viega.

2. Housing: Copper.
3. O-Rings and Pipe Stops: EPDM.
4. Tools: Manufacturer's special tools.
5. Minimum 200-psig working-pressure rating at 250 deg F.

E. Copper, Mechanically Formed Tee Option: For forming T-branch on copper water tube.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. T-DRILL Industries Inc.

F. Wrought-Copper Unions: ASME B16.22.

2.2 STEEL PIPE AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; type, grade, and wall thickness as indicated in Part 3 "Piping Applications" Article.

B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125.

C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150.

D. Malleable-Iron Unions: ASME B16.39; Classes 150.

E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 125, raised ground face, and bolt holes spot faced as indicated in Part 3 "Piping Applications" Article.

F. Wrought-Steel Fittings: ASTM A 234/A 234M, wall thickness to match adjoining pipe.

G. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:

1. Material Group: 1.1.
2. End Connections: Slip-on or butt welded.
3. Facings: Raised face.

H. Grooved Mechanical-Joint Fittings and Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Anvil International, Inc.
b. Victaulic Company of America.
c. Tyco/Grinnell.

2. Joint Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47/A 47M, Grade 32510 malleable iron; ASTM A 53/A 53M, Type F, E, or S, Grade B fabricated steel; or ASTM A 106, Grade B steel fittings with grooves or shoulders constructed to accept grooved-end couplings; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.
3. Couplings: Ductile- or malleable-iron housing and synthetic rubber gasket of central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.

I. Steel Pipe Nipples: ASTM A 733, made of same materials and wall thicknesses as pipe in which they are installed.

2.3 DUCTILE IRON PIPE AND FITTINGS

A. Ductile Iron Pipe: AWWA C151/A21.51.

B. Fittings: AWWA C110/A21.10, ductile iron, standard thickness.

1. Joints: AWWA C111/A21.11, rubber gasket with 3/4 inch diameter rods.

2.4 PLASTIC PIPE AND FITTINGS

A. PVC Plastic Pipe: ASTM D 1785, Schedules 40 and 80, plain ends as indicated in Part 3 "Piping Applications" Article.

B. PVC Plastic Pipe Fittings: Socket-type pipe fittings, ASTM D 2466 for Schedule 40 pipe; ASTM D 2467 for Schedule 80 pipe.

C. PVC Solvent Cement: ASTM D 2564.

2.5 JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless thickness or specific material is indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.

E. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

F. Solvent Cements for Joining Plastic Piping:

1. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

G. Gasket Material: Thickness, material, and type suitable for fluid to be handled and working temperatures and pressures.

2.6 DIELECTRIC FITTINGS

A. Dielectric Connections: Ground joint, copper unions, ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends; and suitable system fluid, pressure and temperature.

2.7 VALVES

A. Check, Ball, and Butterfly Valves: Comply with requirements specified in Division 23 Section "General-Duty Valves for HVAC Piping."

B. Automatic Temperature-Control Valves, Actuators, and Sensors: Furnished by temperature controls provider. Refer to Division 23 Section "Instrumentation and Control for HVAC."

C. Bronze, Calibrated-Orifice, Balancing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Bell & Gossett.
    b. Tour & Andersson.
    c. Griswold Controls.
    d. Armstrong Pumps, Inc.

2. Body: Bronze, ball or plug type with calibrated orifice or venturi.
3. Ball: Brass or stainless steel.
4. Plug: Resin.
5. Seat: PTFE.
6. End Connections: Threaded or socket.
7. Pressure Gage Connections: Integral seals for portable differential pressure meter.
8. Handle Style: Lever, with memory stop to retain set position.
9. CWP Rating: Minimum 125 psig.
10. Maximum Operating Temperature: 250 deg F.

D. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Bell & Gossett.
    b. Tour & Andersson.
    c. Griswold Controls.
    d. Armstrong Pumps, Inc.

2. Body: Cast-iron or steel body, ball, plug, or globe pattern with calibrated orifice or venturi.
3. Ball: Brass or stainless steel.
4. Stem Seals: EPDM O-rings.
5. Disc: Glass and carbon-filled PTFE.
6. Seat: PTFE.
7. End Connections: Flanged or grooved.
8. Pressure Gage Connections: Integral seals for portable differential pressure meter.
9. Handle Style: Lever, with memory stop to retain set position.
10. CWP Rating: Minimum 125 psig.
11. Maximum Operating Temperature: 250 deg F.

E. Diaphragm-Operated, Pressure-Reducing Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Bell & Gossett.
    b. Armstrong Pumps, Inc.

2. Body: Bronze or brass.
3. Disc: Glass and carbon-filled PTFE.

4. Seat: Brass.
5. Stem Seals: EPDM O-rings.
6. Diaphragm: EPT.
7. Low inlet-pressure check valve.
8. Inlet Strainer: removable without system shutdown.
9. Valve Seat and Stem: Noncorrosive.
10. Valve Size, Capacity, and Operating Pressure: Selected to suit system in which installed, with operating pressure and capacity factory set and field adjustable.

F. Diaphragm-Operated Safety Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Bell & Gossett.
   b. Armstrong Pumps, Inc.

2. Body: Bronze or brass.
3. Disc: Glass and carbon-filled PTFE.
4. Seat: Brass.
5. Stem Seals: EPDM O-rings.
6. Diaphragm: EPT.
7. Wetted, Internal Work Parts: Brass and rubber.
8. Inlet Strainer: removable without system shutdown.
9. Valve Seat and Stem: Noncorrosive.
10. Valve Size, Capacity, and Operating Pressure: Comply with ASME Boiler and Pressure Vessel Code: Section IV, and selected to suit system in which installed, with operating pressure and capacity factory set and field adjustable.

G. Drain Valves:

1. Ball-Valve-Type, Hose-End Drain Valves:

   a. Standard: MSS SP-110 for standard-port, two-piece ball valves.
   b. Pressure Rating: 400-psig minimum CWP.
   c. Size: NPS 3/4.
   d. Body: Copper alloy.
   e. Ball: Chrome-plated brass.
   f. Seats and Seals: Replaceable.
   g. Handle: Vinyl-covered steel.
   h. Inlet: Threaded or solder joint.
   i. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

2. Gate-Valve-Type, Hose-End Drain Valves:

   a. Standard: MSS SP-80 for gate valves.
   b. Pressure Rating: Class 125.
   c. Size: NPS 3/4.
   d. Body: ASTM B 62 bronze.
   e. Inlet: NPS 3/4 threaded or solder joint.
   f. Outlet: Garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

2.8 AIR CONTROL DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Bell & Gossett.
2. Armstrong Pumps, Inc.

B. Manual Air Vents:

1. Body: Bronze.
2. Internal Parts: Nonferrous.
3. Operator: Screwdriver or thumbscrew.
4. Inlet Connection: NPS 1/2.
5. Discharge Connection: NPS 1/8.
6. CWP Rating: 150 psig.
7. Maximum Operating Temperature: 225 deg F.

C. Expansion Tanks:

1. Tank: Welded steel, rated for 125-psig working pressure and 375 deg F maximum operating temperature, with taps in bottom of tank for tank fitting and taps in end of tank for gage glass. Tanks shall be factory tested with taps fabricated and labeled according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
2. Air-Control Tank Fitting: Cast-iron body, copper-plated tube, brass vent tube plug, and stainless-steel ball check, 100-gal. unit only; sized for compression-tank diameter. Provide tank fittings for 125-psig working pressure and 250 deg F maximum operating temperature.
3. Tank Drain Fitting: Brass body, nonferrous internal parts; 125-psig working pressure and 240 deg F maximum operating temperature; constructed to admit air to compression tank, drain water, and close off system.
4. Gage Glass: Full height with dual manual shutoff valves, 3/4-inch- diameter gage glass, and slotted-metal glass guard.

~~D. Tangential-Type Air Separators:~~

~~1. Tank: Welded steel; ASME constructed and labeled for 125-psig minimum working pressure and 375 deg F maximum operating temperature.~~
~~2. Air Collector Tube: Perforated stainless steel, constructed to direct released air into expansion tank.~~
~~3. Tangential Inlet and Outlet Connections: Threaded for NPS 2 and smaller; flanged or grooved connections for NPS 2-1/2 and larger.~~
~~4. Blowdown Connection: Threaded.~~
~~5. Size: Match system flow capacity.~~

E. In-Line Air Separators:

1. Tank: One-piece cast iron with an integral weir constructed to decelerate system flow to maximize air separation.
2. Maximum Working Pressure: Up to 175 psig.
3. Maximum Operating Temperature: Up to 300 deg F.

2.9 HYDRONIC PIPING SPECIALTIES

A. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 40-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
4. CWP Rating: 125 psig.

B. T-Pattern Strainers:

1. Body: Ductile or malleable iron with removable access coupling and end cap for strainer maintenance.
2. End Connections: Grooved ends.
3. Strainer Screen: 40-mesh startup strainer, and perforated stainless-steel basket with 57 percent free area.
4. CWP Rating: 750 psig.

C. Stainless-Steel Bellow, Flexible Connectors:

1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
2. End Connections: Threaded or flanged to match equipment connected.
3. Performance: Capable of 3/4-inch misalignment.
4. CWP Rating: 150 psig.
5. Maximum Operating Temperature: 250 deg F.

D. Pipe Cover System:

1. Description: Factory-fabricated steel cover support system with concealed surface mounted attachment clamps for concealment of piping.

    a. Cover system shall incorporate a concealed snap-lock connection which, once assembled, renders the cover essentially irremovable with the use of ordinary tools.

2. Cover: Smooth in appearance and made of 18-gauge G90 galvanized steel, with a paint-grip finish for field painting.
3. Manufacturer: Grice Engineering, Inc. or equivalent.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Hot-water heating piping, aboveground, NPS 2 and smaller, shall be any of the following:

1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered or brazed joints.
2. Schedule 40 steel pipe; Class 125 cast-iron or Class 150 malleable-iron threaded fittings.
3. Type L, drawn-temper copper tubing, wrought-copper fittings, and pressure-seal joints.

B. Hot-water heating piping, aboveground, NPS 2-1/2 and larger, shall be any of the following:

1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
2. Schedule 40 steel pipe; grooved, mechanical joint coupling and fittings; and grooved, mechanical joints.
3. Type L, drawn-temper copper tubing, wrought-copper fittings, and pressure-seal joints.

C. Makeup-water piping installed aboveground, NPS 2 and smaller, shall be the following:

1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered or brazed joints.

D. Condensate-Drain Piping: Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

E. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.

F. Air-Vent Piping:

1. Inlet: Same as service where installed.
2. Outlet: Type L, annealed-temper copper tubing with soldered or flared joints.

G. Safety-Valve-Inlet and -Outlet Piping for Hot-Water Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed.

3.2 VALVE APPLICATIONS

A. Install shutoff-duty valves at each branch connection to supply mains, and at supply connection to each piece of equipment.

B. On NPS 2 and smaller, install throttling-duty valve and calibrated-orifice balancing valve at each branch connection to return main.

C. On NPS 2-1/2 and larger, install calibrated-orifice balancing valves at each branch connection to return main.

D. Install calibrated-orifice, balancing valves in the return pipe of each heating or cooling terminal.

E. Install check valves at each pump discharge and elsewhere as required to control flow direction.

F. Install safety valves at hot-water generators and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install drip-pan elbow on safety-valve outlet and pipe without valves to the outdoors; and pipe drain to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 01, for installation requirements.

G. Install pressure-reducing valves at makeup-water connection to regulate system fill pressure.

3.3 PIPING INSTALLATIONS

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicate piping locations and arrangements if such were used to size pipe and calculate friction loss,

expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.

L. Install drains, consisting of a tee fitting, NPS 3/4 drain valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.

M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.

O. Install branch connections to mains using tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.

P. For expansion compensation at risers and terminals, install connection between piping mains and risers with at least 5 pipe fittings including tee in main. Install connections between piping risers and terminal units with at least 4 pipe fittings including tee in riser.

Q. Install valves according to Division 23 Section "General-Duty Valves for HVAC Piping."

R. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

S. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated unless mechanical grooved connections allowed.

T. Install strainers on inlet side of each in-line pump and elsewhere as indicated. Install NPS 3/4 nipple and ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.

U. Identify piping as specified in Division 23 Section "Identification for HVAC Piping and Equipment."

3.4 HANGERS AND SUPPORTS

A. Install structural steel members between building structure members as required for upper attachment of hangers and supports. Use members of size and strength required for span and load. The use of joist or truss bridging for hanging and supporting is prohibited.

B. Hanger, support, and anchor devices are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment." Comply with the following requirements for maximum spacing of supports.

C. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
4. Spring hangers to support vertical runs.
5. Provide copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.

D. Install hangers for steel piping with maximum spacing and minimum rod in accordance Michigan Mechanical Code or MSS SP-69.

E. Install hangers for drawn-temper copper piping with the following maximum spacing and minimum rod sizes:

1. NPS 3/4: Maximum span, 5 feet; minimum rod size, 1/4 inch.
2. NPS 1: Maximum span, 6 feet; minimum rod size, 1/4 inch.
3. NPS 1-1/2: Maximum span, 8 feet; minimum rod size, 3/8 inch.
4. NPS 2: Maximum span, 8 feet; minimum rod size, 3/8 inch.

F. Support vertical runs at roof, at each floor, and at 10-foot intervals between floors.

3.5 PIPE JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.

2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

F. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

G. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

H. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Nonpressure Piping: Join according to ASTM D 2855.

a. PVC solvent cement shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
b. Adhesive primer shall have a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

I. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. Cut or roll grooves in ends of pipe based on pipe and coupling manufacturer's written instructions for pipe wall thickness. Use grooved-end fittings and rigid, grooved-end-pipe couplings.

J. Mechanically Formed, Copper-Tube-Outlet Joints: Use manufacturer-recommended tool and procedure, and brazed joints.

K. Pressure-Sealed Joints: Use manufacturer-recommended tool and procedure. Leave insertion marks on pipe after assembly.

3.6 HYDRONIC SPECIALTIES INSTALLATION

A. Install manual air vents at high points in piping, at heat-transfer coils, and elsewhere as required for system air venting.

B. Install piping from boiler air outlet, air separator, or air purger to expansion tank with a 2 percent upward slope toward tank.

C. Install tangential air separator in pump suction. Install ball valve in blowdown connection. Install blowdown piping; extend full size to nearest floor drain.

D. Install expansion tanks above the air separator. Install tank fitting in tank bottom and charge tank. Use manual vent for initial fill to establish proper water level in tank.

1. Install tank fittings that are shipped loose.
2. Support tank from floor or structure above with sufficient strength to carry weight of tank, piping connections, fittings, plus tank full of water. Do not overload building components and structural members.

E. Install flexible connectors at inlet and discharge connections to base mounted pumps and other vibration-producing equipment.

1. In lieu of flexible connectors, three flexible mechanical grooved couplings in accordance with manufacturer's recommendations will be allowed.

F. Install pipe cover system where indicated in accordance with manufacturer's requirements. Paint cover to match surrounding area. Coordinate with Architect.

3.7 TERMINAL EQUIPMENT CONNECTIONS

A. Sizes for supply and return piping connections shall be the same as or larger than equipment connections.

B. Install control valves in accessible locations close to connected equipment.

C. Install ports for test plugs and pressure gages at pumps and elsewhere as indicated according to Division 23 Section "Meters and Gages for HVAC Piping."

D. Install ports for pressure gages and thermometers at coil inlet and outlet connections and elsewhere as indicated according to Division 23 Section "Meters and Gages for HVAC Piping."

3.8 FIELD QUALITY CONTROL

A. Prepare hydronic piping according to ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

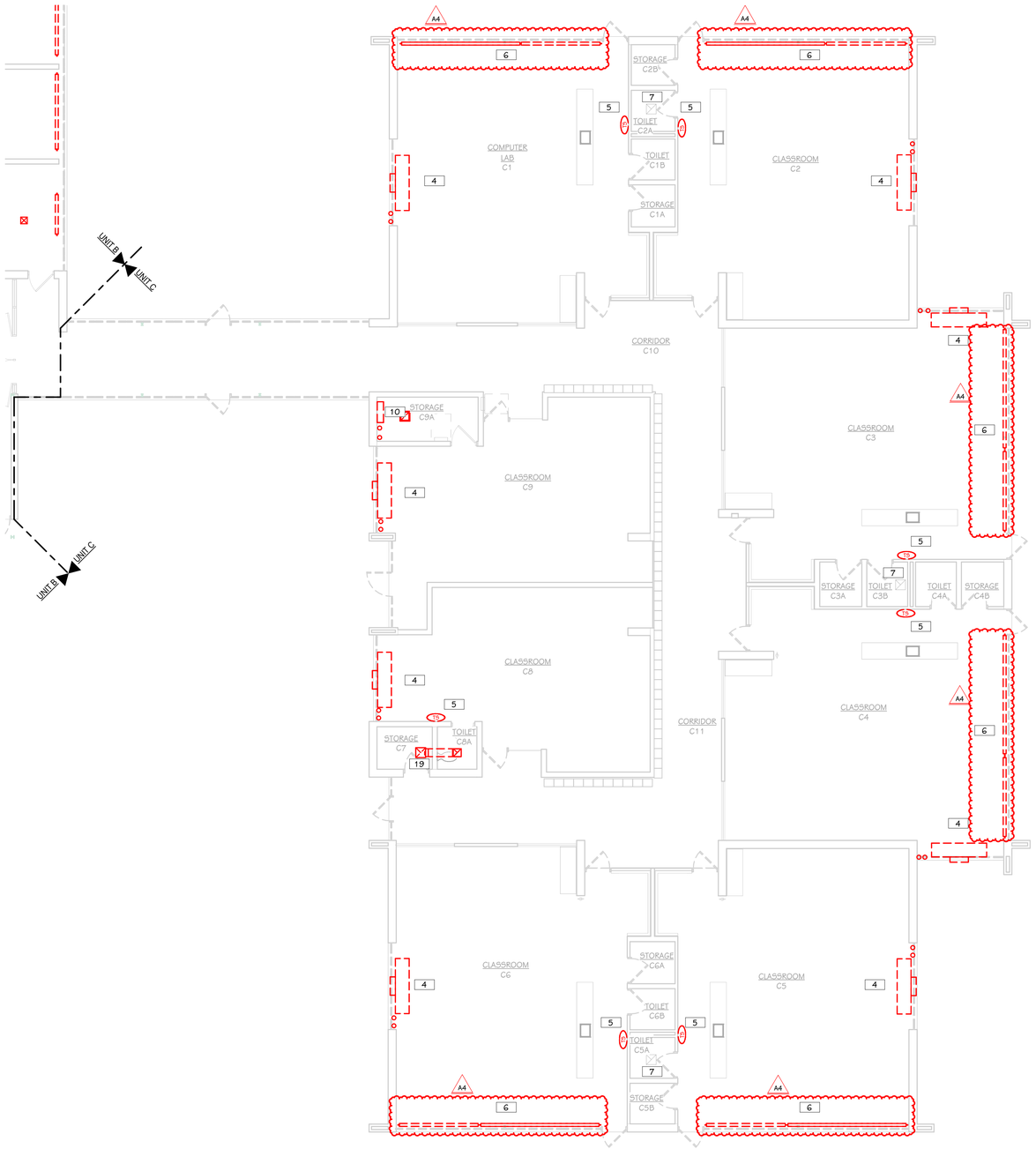
B. Perform the following tests on hydronic piping:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

C. Perform the following before operating the system:

1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and bleed air completely.
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic to specified values.
7. Verify lubrication of motors and bearings.

END OF SECTION 23 2113



FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT C
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE HYDRONIC PIPING, TO INCLUDE ALL INSULATION, VALVING, AND HANGING MATERIAL.

2 REMOVE HYDRONIC PIPING, CAP, AND PREPARE FOR NEW WORK.

3 REMOVE COMPRESSION TANK WITH ASSOCIATED PIPING AND HANGING MATERIAL.

4 REMOVE UNIT VENTILATOR, CONTROLS, VALVES, AND ACCESSORIES.

5 REMOVE THERMOSTAT AND WIRING ASSOCIATED WITH HUV CONTROLS.

6 REMOVE FINNED TUBE, CONTROLS, VALVES, AND ACCESSORIES.

7 REMOVE EXHAUST FAN, CONTROLS, AND ACCESSORIES. MAINTAIN EXISTING ROOF CURB TO BE REUSED IN NEW WORK.

8 REMOVE DUCTWORK, TO INCLUDE ALL INSULATION, AND HANGING MATERIAL.

9 REMOVE OA DUCTWORK, TO INCLUDE ALL INSULATION, AND HANGING MATERIAL. REMOVE OA HOOD AND CURB. PATCH ROOF TO MATCH ADJACENT CONSTRUCTION.

10 REMOVE CABINET HEATER, CONTROLS, VALVES, AND ACCESSORIES.

11 REMOVE AIR HANDLER UNIT IN ITS ENTIRITY TO INCLUDE ALL CONTROLS, AND ACCESSORIES. MAINTAIN EXISTING DUCTS FOR NEW WORK.

12 REMOVE OA DUCTWORK, TO INCLUDE ALL INSULATION, AND HANGING MATERIAL. REMOVE OA HOOD AND CURB. PATCH ROOF TO MATCH ADJACENT CONSTRUCTION.

14 REMOVE PUMPS WITH ASSOCIATED PIPING AND CONTROLS. PREPARE FOR NEW.

15 REMOVE AIR SEPARATOR WITH ASSOCIATED PIPING. PREPARE FOR NEW.

16 REMOVE GRILLE, REGISTER, OR DIFFUSER, ASSOCIATED DUCTWORK, AND ACCESSORIES.

17 REMOVE UNIT HEATER WITH ASSOCIATED CONTROLS, PIPING AND HANGING MATERIAL.

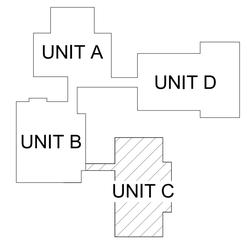
18 REMOVE AND SALVAGE SK AND FAUCET. MAINTAIN AND CAP DOMESTIC PIPING. PREPARE FOR REINSTALLATION.

19 REMOVE EXHAUST FAN, CONTROLS, AND ACCESSORIES. REFER TO ARCH FOR ROOF PATCHING.

20 REMOVE RELIEF HOOD, CONTROLS, AND ACCESSORIES. MAINTAIN ROOF CURB. PREPARE FOR NEW.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

NORTHGLADE MONTESSORI SCHOOL



KEY PLAN
SCALE: NO SCALE

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ADDENDUM #4	02-11-2025
ISSUED FOR	DATE

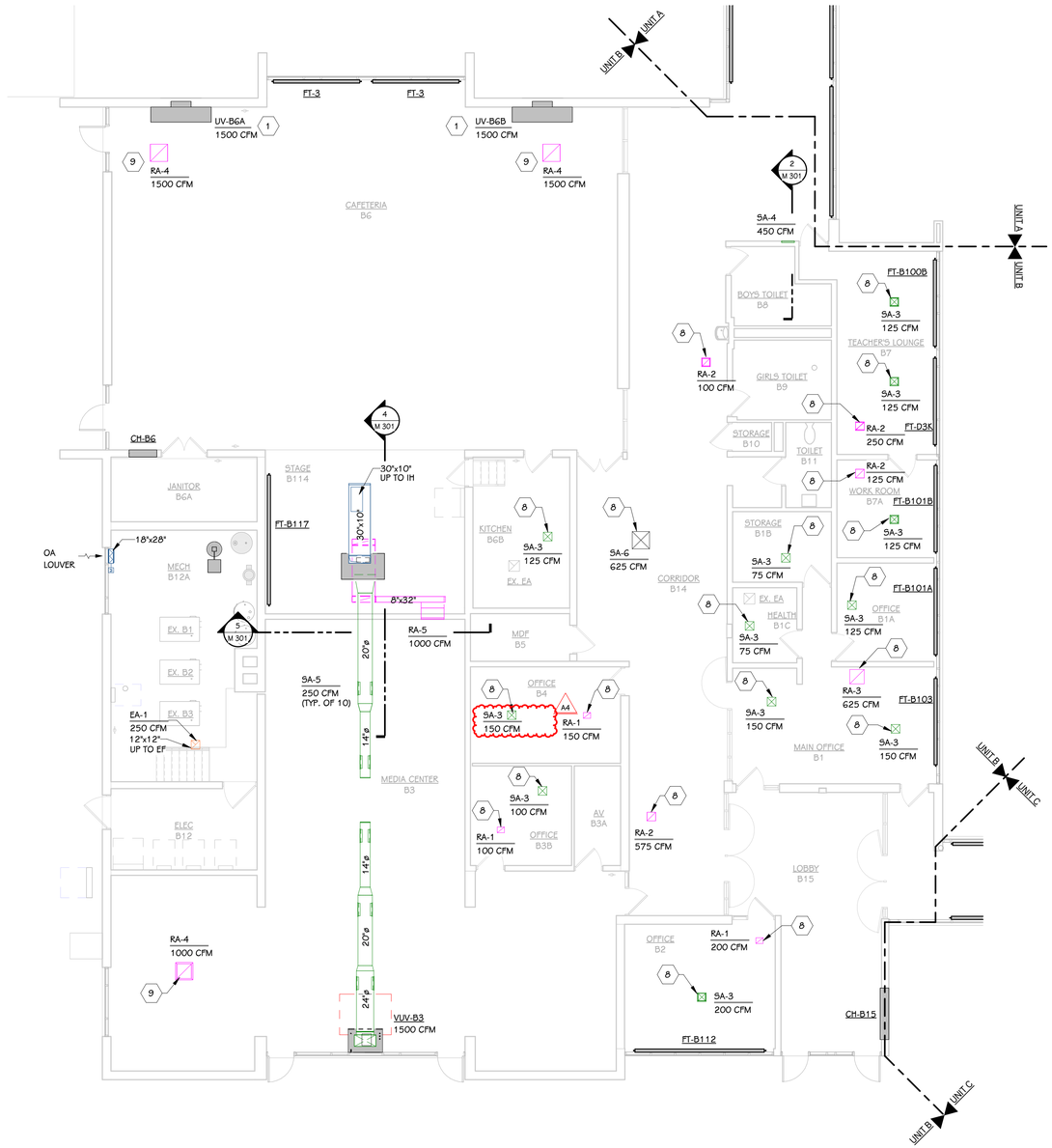
PROJECT TITLE
NORTHGLADE MONTESSORI SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, MI

SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT C

DATE
JANUARY 9, 2026

SHEET NUMBER
MD 101C
23-638.000



FIRST FLOOR SHEET METAL PLAN - UNIT B

1/8" = 1'-0"

KEYED NOTES - MECHANICAL - SHEET METAL

1 REFRIGERANT LINESET SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION. ROUTE TIGHT TO CEILING, NEXT TO STRUCTURE. ENCLOSE DROP TO UNIT IN SHEET METAL PIPE SHROUD. SHROUD SHALL NOT BOCK WINDOW.

2 REFER TO STRUCTURAL DRAWINGS 201D FOR LOCATION REQUIREMENTS ON EXISTING JOISTS.

3 INTERLOCK TWO POSITION MOTOR CONTROL DAMPER WITH ASSOCIATED FC.

4 SEE FIRST FLOOR PLAN FOR CONTINUATION.

5 ALL EXISTING DUCTWORK, GRDs, AND ACCESSORIES TO BE CLEANED PER SPECIFICATION.

6 PROVIDE CURB MOUNTED TYPE DUCT STAND. SPACING SHOWN FOR REFERENCE ONLY, REFER TO SMACNA FOR DUCT SUPPORT REQUIREMENTS.

7 PROVIDE HIGH TYPE DUCT STAND. SPACING SHOWN FOR REFERENCE ONLY, REFER TO SMACNA FOR DUCT SUPPORT REQUIREMENTS.

8 SUPPLY OR RETURN DUCT WORK THRU ROOF. REFER TO ROOF PLAN FOR CONTINUATION.

9 RELIEF DUCT WORK UP THRU ROOF TO RH. REFER TO ROOF PLAN FOR CONTINUATION.

10 UNIT TO BE PLACED ON ENDS OF EXISTING BEAMS AS SHOWN PICTORIALLY ON STRUCTURAL DRAWINGS.

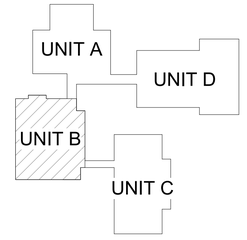
11 REFRIGERANT LINESET SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION.

12 ALL OUTDOOR DUCT CURB SUPPORTS ARE TO BE CONNECTED DIRECTLY TO A BEAM. WHERE SUPPORTS DO NOT LAND OVER A BEAM, THEY ARE TO BE SUPPORTED ON A CHANNEL THAT SPANS BETWEEN BEAMS. FOR THE LATTER, REFER TO THE TYPICAL RTU SUPPORT ON EXISTING TECTUM DECK DETAIL ON THE STRUCTURAL DRAWINGS. DUCT SUPPORT LOCATIONS ARE TO BE DETERMIND BY CONTRACTOR, INCLUDING REQUIRED CHANNEL LOCATIONS. THESE ARE NOT SHOWN ON THE STRUCTURAL OR MECHANICAL DRAWINGS. DUCT SUPPORT CURB, RAILS, AND SUPPORT CHANNELS NOT TO BE SUPPORTED ON TECTUM DECK.

13 CONTRACTOR TO VERIFY LEGTH TO FIT WITH CASEWORK. COORDINATE WITH ARCH AND INTERIORS.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

NORTHGLADE MONTESSORI SCHOOL



KEY PLAN

SCALE: NO SCALE

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ADDENDUM #4	02-11-2025

PROJECT TITLE
NORTHGLADE MONTESSORI SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, MI

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT B

DATE
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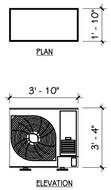


CONDENSING UNIT

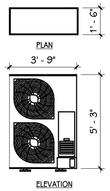
MARK: ACCU-A1, ACCU-A2, ACCU-A3, ACCU-A4, ACCU-A5, ACCU-A6, ACCU-B3, ACCU-C1, ACCU-C2, ACCU-C3, ACCU-C4, ACCU-C5, ACCU-C6, ACCU-C8, ACCU-C9, ACCU-D1, ACCU-D2, ACCU-D10, & ACCU-D11
TYPE: 3 TON NOMINAL, SPLIT COOLING SYSTEM. BASED ON YORK - MODEL YHY936.
WEIGHT: 184 LB
SERVES: UV-A1, UV-A2, UV-A3, UV-A4, UV-A5, UV-A6, UV-C1, UV-C2, UV-C3, UV-C4, UV-C5, UV-C6, UV-D1, UV-D2, UV-D10, & UV-D11
REFRIGERANT: R-454B, 7 LB 7 OZ CHARGE

CAPACITY: 37.6 TMBH, 29.1 SMBH, 95°F DB, 67.5°F WB

FEATURES: MODULATING INVERTER CONDENSING UNIT.

SEER2: 18.0

ELECTRICAL: 208/1/60, 28 MCA, 35 MOCP



CONDENSING UNIT

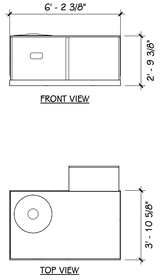
MARK: ACCU-B6A & ACCU-B6B
TYPE: 5 TON NOMINAL (CONFIGURED FOR 4 TON) SPLIT COOLING SYSTEM. BASED ON YORK - MODEL YHY960.
SERVES: UV-B6A & UV-B6B
WEIGHT: 234 LB
REFRIGERANT: R-454B, 7 LB 7 OZ CHARGE

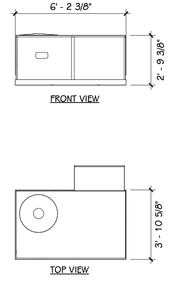
CAPACITY: 41.6 TMBH, 29.2 SMBH, 95°F DB, 67.5°F WB

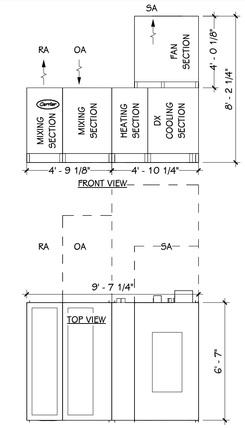
FEATURES: MODULATING INVERTER CONDENSING UNIT.

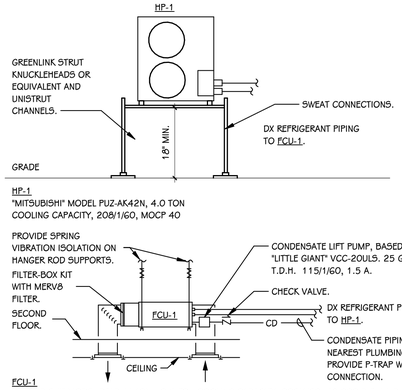
SEER2: 18.0

ELECTRICAL: 208/1/60, 37 MCA, 45 MOCP









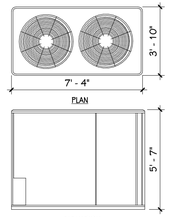
HP-1
"MITSUBISHI" MODEL PUZ-AK42N, 4.0 TON COOLING CAPACITY, 208/1/60, MOCP 40

FCU-1
"MITSUBISHI" MODEL PEAD-AA42NL, 3.5 TON COOLING CAPACITY, 208/1/60. 42,000 B.T.U./HR. COOLING CAP., 1000 CFM @ MED. SPEED, 74 WATT FAN.

OPTIONS:
MANUFACTURER PACKAGED CONTROLS. WALL BOX WITH INTEGRAL TEMPERATURE AND HUMIDITY SENSORS. FILTER-BOX KIT WITH (2) SPARE FILTERS.

DUCTED SPLIT SYSTEM UNIT PIPING DETAIL

SCALE: NONE



CONDENSING UNIT

MARK: ACCU-1
TYPE: 21.5 TON NOMINAL, SPLIT COOLING SYSTEM. BASED ON CARRIER - MODEL 38RCD.
SERVES: AHU-1
WEIGHT: 1175 LB
REFRIGERANT: R-32, 25 LB CHARGE

CAPACITY: 264 MBH, 95°F DB, 67.5°F WB

FEATURES: 22 CONTROL STEPS, DIGITAL SCROLL CONDENSING UNIT

IEER: 14.46 AT OPERATING CONDITIONS

ELECTRICAL: 208/3/60, 90.6 MCA, 125 MOCP, NON-FUSED DISCONNECT, SINGLE POINT POWER,

OPTIONS: BACnet IP / MSTP

ROOF TOP UNIT (RTU-2)

AREA SERVED: OFFICES
TYPE: OUTDOOR PACKAGED, SINGLE ZONE VARIABLE VOLUME, 1000 CFM
BASED ON: VALENT VX-12-3J-B-J2
OUTSIDE AIR: 100 - 200 CFM
WEIGHT: 1,200 LBS
UNIT MOUNTING: 18" FULL PERIMETER CURB

FILTERS: 2" PLEATED MERV 13

HEATING COIL (INDIRECT - NATURAL GAS):
CAPACITY: 75 MBH INPUT , 60 MBH OUTPUT
ENTERING / LEAVING AIR TEMP (DB): 57.9 / 114°F
12:1 TURNDOWN

DX COOLING COIL (R-454B):
CAPACITY: 43.8 TMBH, 26.5 SMBH
ENTERING AIR TEMP (DB/WB): 77.9 / 66.9°F
LEAVING AIR TEMP (DB/WB): 52.0 / 51.9°F
3 ROWS, 5.83 FT² FA, 171 FPM
INVERTER SCROLL, 7.6 LB/CIRCUIT
30.3 MBH W/ 81°F LAT HGRH CAPACITY

SUPPLY FANS: 1,600 CFM, (1) FAN, 1.5 HP @ 1.08 BHP, 1.5" ESP, 211G RPM.
208/3/60, VARIABLE FREQUENCY DRIVE FURNISHED BY TEMPERATURE CONTROLS. WITH FAN INLET AIR MEASURING DEVICE BY MANUFACTURER.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE. 208/3/60, 26.3 FLA, 30.6 MCA, 45 MOCP, AND DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS:
DUCT DETECTOR INTEGRATION, PACKAGED CONTROLS WITH BACNET INTEGRATION, A2L REFRIGERANT SENSORS WITH CONTROL DEVICE & DISSAPATION SEQUENCE, OUTDOOR AIR FLOW MEASURING DEVICE, MOTORIZED RELIEF AIR DAMPER, AND BPI.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
INLET/OUTLET	80.5	75.7	83.9	81.9	69.2	66.4	65.1	64.8
RADIATED	80	74	80	77	76	69	61	57

ROOF TOP UNIT (RTU-1)

AREA SERVED: OFFICES
TYPE: OUTDOOR PACKAGED, SINGLE ZONE VARIABLE VOLUME, 1600 CFM
BASED ON: VALENT - VX-12-5J-C-G2
OUTSIDE AIR: 200 - 300 CFM
WEIGHT: 1,300 LBS
UNIT MOUNTING: 18" FULL PERIMETER CURB

FILTERS: 2" PLEATED MERV 13

HEATING COIL (INDIRECT - NATURAL GAS):
CAPACITY: 100 MBH INPUT , 81 MBH OUTPUT
ENTERING / LEAVING AIR TEMP (DB): 58.8 / 105°F
16:1 TURNDOWN

DX COOLING COIL (R-454B):
CAPACITY: 65.9 TMBH, 43.7 SMBH
ENTERING AIR TEMP (DB/WB): 77.7 / 65.4°F
LEAVING AIR TEMP (DB/WB): 52.0 / 51.9°F
4 ROWS, 5.83 FT² FA, 275 FPM
INVERTER SCROLL, 7.8 LB/CIRCUIT
41.5 MBH W/ 76.1°F LAT HGRH CAPACITY

SUPPLY FANS: 1,600 CFM, (1) FAN, 1.5 HP @ 1.08 BHP, 1.5" ESP, 211G RPM.
208/3/60, VARIABLE FREQUENCY DRIVE FURNISHED BY TEMPERATURE CONTROLS. WITH FAN INLET AIR MEASURING DEVICE BY MANUFACTURER.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE. 208/3/60, 26.3 FLA, 30.6 MCA, 45 MOCP, AND DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS:
DUCT DETECTOR INTEGRATION, PACKAGED CONTROLS WITH BACNET INTEGRATION, A2L REFRIGERANT SENSORS WITH CONTROL DEVICE & DISSAPATION SEQUENCE, OUTDOOR AIR FLOW MEASURING DEVICE, MOTORIZED RELIEF AIR DAMPER, AND BPI.

DISCHARGE / INLET SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
INLET/OUTLET	82.5	74.4	84.5	86.4	73.9	70.1	67.4	64.6
RADIATED	80	74	80	77	76	69	61	57

AIR HANDLING UNIT (AHU-1)

AREA SERVED: GYMNASIUM
TYPE: INDOOR MODULAR SPLIT SYSTEM, SINGLE ZONE VARIABLE VOLUME, 7000 CFM
BASED ON: CARRIER 39MN
OUTSIDE AIR: 300-2,000 CFM
WEIGHT: 2,900 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD (EXISTING)

FILTERS: 2" PLEATED MERV 8 (PRE-FILTER), 4" PLEATED MERV 13

HEATING COIL:
CAPACITY: 539 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 110°F
ENTERING / LEAVING AIR TEMP (DB): 47 / 97°F
FLOW RATE / FLUID PRESSURE DROP: 54.5 GPM / 3.6'
2 ROWS, 16.93 FT² FA, 414 FPM FV

DX COOLING COIL (R-32):
CAPACITY: 264.7 TMBH, 208 SMBH
ENTERING AIR TEMP (DB/WB): 80.7 / 65.4°F
LEAVING AIR TEMP (DB/WB): 53.5 / 52.7°F
6 ROWS, 12 FPI MAX, 16.93 FT² FA, 414 FPM

SUPPLY FANS: 7,000 CFM, (1) FAN, 10 HP @ 8.4 BHP, 1.25" ESP, 1800 RPM.
208/3/60, 14 FLA. VARIABLE FREQUENCY DRIVE FURNISHED BY TEMPERATURE CONTROLS. WITH FAN INLET AIR MEASURING DEVICE BY MANUFACTURER.

ELECTRICAL: SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE. 208/3/60, 28.6 FLA, 35.7 MCA, 60 MOCP, AND DEDICATED 120/1/60 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

OPTIONS:
PACKAGED CONTROLS WITH BACNET INTEGRATION, A2L REFRIGERANT SENSORS WITH CONTROL DEVICE, AND BPI.

RADIATED SOUND POWER LEVELS (db)								
	63 HZ	125 HZ	250 HZ	500 HZ	1 kHZ	2 kHZ	4 kHZ	8 kHZ
DISCHARGE	87	85	94	90	88	91	84	81
INLET	76	81	90	84	76	75	75	74
RADIATED	75	79	88	82	74	72	72	72

PUMPS — BASED ON BELL & GOSSETT

MARK	MODEL	FLOW RATE (GPM)	HEAD (FT)	PEIcl	MOTOR DATA					SYSTEM	LOCATION	REMARKS
					HP	BHP	RPM	VOLTAGE	PHASE			
CP-1	ECOCIRC XL 65-130	55	25	-	1	0.664	2415	208	3	(AHU-1)	MECH D3B	
P-1	e-1510 2BD	175	75	0.85	7.5	4.27	1800	208	3	HEATING HOT WATER	MECH B12A	1, 2
P-2	e-1510 2BD	175	75	0.85	7.5	4.27	1800	208	3	HEATING HOT WATER	MECH B12A	1, 2
P-3	PL-55	32	27	-	0.2	0.15	3250	120	1	CARTRIDGE FILTER PUMP	MECH B 12A	

NOTES:
1. VFD PROVIDED BY TEMPERATURE CONTROLS CONTRACTOR.
2. P-1 & P-2 SHALL OPERATE IN PARALLEL AT 350 GPM AT 75' HD.

FINNED TUBE - WATER — BASED ON RITTLING

MARK	MODEL	HEATING ELEMENT (1)					COVER			REMARKS
		SIZE	ROWS	LENGTH (2)	CAPACITY (BTUH/FT)	FLOW (GPM)	TYPE	HEIGHT	PANEL SURFACE	MOUNT HEIGHT	
FT-1	FT	0.75C-3.25x3.25	2	5' - 0"	690	0.7	WALL-MOUNTED, FLAT TOP	1' - 8"	STEEL	4"	
FT-2	FT	0.75C-3.25x3.25	2	9' - 0"	690	1.2	WALL-MOUNTED, FLAT TOP	1' - 8"	STEEL	4"	
FT-3	FT	0.75C-3.25x3.25	2	10' - 0"	690	1.4	WALL-MOUNTED, FLAT TOP	1' - 8"	STEEL	4"	
FT-4	FT	0.75C-3.25x3.25	2	15' - 0"	690	2.1	WALL-MOUNTED, FLAT TOP	1' - 8"	STEEL	4"	

NOTES:
1. BASED ON 130°F EWT, 110°F LWT, AND 60° F EAT.
2. VERIFY ALL LENGTHS IN FIELD.

AIR & DIRT SEPARATORS — BASED ON BELL & GOSSETT

MARK	MODEL	TYPE	DIAMETER	HEIGHT	WEIGHT (LBS)	FLOW (GPM)	PRESSURE DROP (FT)	SYSTEM SERVED	FLUID TYPE	LOCATION	REMARKS
AS-1	CRS-5F MAG	COALESCING	16"	40"	362	320	1.44	HEATING HOT WATER	WATER	BOILER ROOM	1, 2

NOTES:
1. MANUFACTURER TO PROVIDE REMOVABLE HEAD.
2. MANUFACTURER TO PROVIDE MAGNETIC INSERT.

OUTDOOR AIR INTAKE / RELIEF HOODS — BASED ON GREENHECK

MARK	MODEL	THROAT SIZE	HOOD SIZE	CURB HEIGHT	AIR FLOW (CFM)	MAX APD (IN WC)	CONTROL DAMPER	REMARKS
IH-1	FGI	8"x8"	14"x14"	2' - 0"	80	0.05	No	
IH-2	FGI	14"x30"	28"x51"	1' - 6"	1,000	0.05	No	
RH-1	FGR	14"x30"	28"x51"	2' - 0"	1,250	0.05	No	
RH-2	FGR	16"x30"	28"x51"	2' - 0"	1,500	0.05	No	

GRILLES, REGISTERS, & DIFFUSERS — BASED ON PRICE

MARK	PANEL SIZE	FACE SIZE	NECK SIZE	MODEL	CFM RANGE	VCD	THROW	MATERIAL	FINISH	INSTALLATION	REMARKS
SA-1	24"x24"	24"x24"	8" Ø	A5CDA	175-315	NO	3-4-8	ALUMINUM	WHITE	LAY-IN	
SA-3	-	12"x12"	10"x10"	620	0-500	YES	5-8-15	ALUMINUM	WHITE	SURFACE	
SA-4	-	20"x8"	18"x6"	620	150-600	YES	16-23-31	ALUMINUM	WHITE	SURFACE	
SA-5	-	20"x6"	18"x4"	5DGE	200-350	AIR SCOOP	7-11-16	ALUMINUM	CLEAR ANONODIZED	DUCT MOUNTED	
SA-6	24x24	-	12" Ø	A5CDA	300-630	YES	5-8-13	ALUMINUM	WHITE	DUCT MOUNTED	
						A4					
RA-1	-	12"x10"	10"x8"	80	0-400	YES	-	ALUMINUM	WHITE	SURFACE	
RA-2	-	12"x12"	12"x12"	80	0-850	YES	-	ALUMINUM	WHITE	SURFACE	
RA-3	-	20"x20"	20"x20"	80	0-2200	YES	-	ALUMINUM	WHITE	SURFACE	
RA-4	24"x24"	24"x24"	20"x20"	80	0-3000	NO	-	ALUMINUM	WHITE	LAY-IN	
RA-5	-	34"x14"	32"x12"	610Z	700-1400	NO	-	ALUMINUM	WHITE	SURFACE	
EA-1	12"x12"	-	12"x12"	80	0-500	NO	-	ALUMINUM	WHITE	SURFACE	
EA-2	24"x24"	24"x24"	22"x22"	80	0-500	NO	-	ALUMINUM	WHITE	SURFACE	
TA-1	-	160"x6"	-	LBPH 15A	-	NO	-	ALUMINUM	CLEAR ANONODIZED	SURFACE	
TA-2	-	246"x6"	-	LBPH 15A	-	NO	-	ALUMINUM	CLEAR ANONODIZED	SURFACE	
TA-3	-	312"x6"	-	LBPH 15A	-	NO	-	ALUMINUM	CLEAR ANONODIZED	SURFACE	

CABINET HEATERS - WATER — BASED ON RITTLING

MARK	MODEL	TYPE	AIRFLOW (CFM)	HEATING COIL					MOTOR DATA				REMARKS
				CAPACITY (MBH)	ROWS	FLOW (GPM)	WPD (FT)	EWT (°F)	LWT (°F)	HP	RPM	VOLTAGE	PHASE	
CH-A12	RCW-420-03	WALL SURFACE MOUNTED	300	15.6	4	1.5	1.4	130 °F	110 °F	0.25	1025	120	1	
CH-B6	RCW-420-04	WALL SURFACE MOUNTED	420	19.9	4	1.5	1.5	130 °F	110 °F	0.25	1025	120	1	
CH-B15	RCW-420-08	WALL SURFACE MOUNTED	810	29.2	4	2.0	1.3	130 °F	110 °F	0.25	1025	120	1	
CH-C11	RCW-420-04	WALL SURFACE MOUNTED	420	21.4	4	2.0	2.5	130 °F	110 °F	0.25	1025	120	1	
CH-C122	RCW-420-02	WALL FULLY RECESSED	220	10.5	2	1.5	0.5	130 °F	110 °F	0.25	1025	120	1	
CH-D6	RCW-420-02	WALL FULLY RECESSED	220	12.4	4	2.0	2.1	130 °F	110 °F	0.25	1025	120	1	
CH-D13A	RCW-420-06	WALL SURFACE MOUNTED	620	28.3	4	2.0	1.3	130 °F	110 °F	0.25	1025	120	1	
CH-D13B	RCW-420-06	WALL SEMI-RECESSED	620	28.3	4	2.0	1.3	130 °F	110 °F	0.25	1025	120	1	
CH-D113A	RCW-420-04	WALL SURFACE MOUNTED	420	21.4	4	2.0	1.3	130 °F	110 °F	0.25	1025	120	1	

NOTES:
1. BASED ON 130°F EWT, 110°F LWT, 60°F EAT.

UNIT HEATER - HOT WATER — BASED ON RITTLING

MARK	MODEL	TYPE	CFM	MBH	GPM	WPD	HP	VOLTAGE	REMARKS
UH-1	RH-108	HORIZONTAL	1,240	27.5	2.8	0.1	1/8	120/1	1

NOTES:
1. BASED ON 130°F EWT, 110°F LWT, 60°F EAT.

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ADDENDUM #4	02-11-2025
ISSUED FOR	DATE

PROJECT TITLE
NORTHGLADE MONTESSORI SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, MI

SHEET TITLE
MECHANICAL SCHEDULES AND DETAILS

DATE
JANUARY 9, 2026

SHEET NUMBER
M 501
23-638.000

KPS NMMS- Pre-Bid RFI Log

Date - 02/12/2026

RFI #	Company Submitting RFI	Date Received	RFI Description	RFI Response
1	Moore Electric	1/26/2026	Bid Category 04 - Electrical •Do you know which fire alarm company is in this building currently?.	TSC: Riverside Integrated Systems - (616) 726-7026
2	TSC	1/27/2026	Bid Category 04 - Electrical •What is the responsibility of Bid Category 04 as it relates to work shown on the Technology Drawing Set?	TSC: All new doors with access controls need to be roughed in by Bid Category 04 - Electrical. The technology contractor will be responsible for removal, storage, installation and final wiring.
3	Lakeshore Glass	1/28/2026	Bid Category 02 - Aluminum Entrances / Storefronts / Doors •Door schedule labels glass as ILG-1 but this type is not called out in the spec section. Is ILG-1 needed as door glass or is IG-1 acceptable. Window elevation page calls out IG-1 for the storefront.	TP: IG-1 is to be provided in lieu of ILG-1
4	Battle Creek Glass	2/2/2026	Bid Category 02 - Aluminum Entrances / Storefronts / Doors •Division 08 – Openings, Is there a specification section for windows?	TSC: We have requested a specification for the sliding/egress windows and expect this answer from the architect by the end of the day 2/4. This will be released in addendum #2.
5	Battle Creek Glass	2/2/2026	Bid Category 02 - Aluminum Entrances / Storefronts / Doors •On Sheet number A502, Glazing Key, Insulated Spandrel Panel – Clear Anodized. Is this supposed to be glass or insulated aluminum panel?	TSC: Insulated glazing infill panel
6	Battle Creek Glass	2/2/2026	Bid Category 02 - Aluminum Entrances / Storefronts / Doors •I also cannot find a specification for the spandrel.	TP: The specification can be found in 08 4113-2.3-E
7	Battle Creek Glass	2/2/2026	Bid Category 02 - Aluminum Entrances / Storefronts / Doors •There are also no specifications on Aluminum Flush Doors.	TSC: The specification can be found in 08 4113-2.4-B

KPS NMMS- Pre-Bid RFI Log

Date - 02/12/2026

8	Hi Tech Electric	2/4/2026	Bid Category 04 - Electrical •In section 26 0500-1 Common Work Results for Electrical: #4 under “Scope of Work” states we are to provide a cash allowance of $50,000 for utility charges associated with electrical service upgrade. o Do we need to include this cost in our bid?	TSC: Please include allowances listed in 26 0500-1.3-A-4
9	Hi Tech Electric	2/4/2026	Bid Category 04 - Electrical •In section 26 2816-6 Enclosed Switches and Circuit Breakers: States Owner will engage in a qualified testing agency to perform tests and inspections. The next line states Engage a qualified testing agency to perform tests and inspections. o Do we need to provide this cost / sub contractor or is the owner responsible for this	**TP**: Typically electrical contractors or their subs handle this, it is NOT an owner responsibility.
10	Hi Tech Electric	2/4/2026	Bid Category 04 - Electrical • In section 28 3100-3 Fire Detection and Alarm: Under “2.1 Manufactures” it lists eight different fire alarm systems that are acceptable to provide the fire alarm system. o Does Kalamazoo Public Schools have a preference to which: - Fire alarm system gets installed. - Fire alarm contractor / company does the install.	**TP:** - Fire alarm system gets installed: Probably, we need to get that information from the owner. Provide breakout pricing for fire alarm vendors that submit. - Fire alarm contractor / company does the install: If so, this would limit the vendors. We need to get this information from the owner.
11	Jergens	2/5/2026	Bid Category 03 - Mechanical • Can Pro Press ball valves be used on the hydronic piping system?	TP: Yes, pro-press is acceptable for hydronic system ball valves. Approved manufactures shall be the same as listed for Grooved-end, ductile iron butterfly vavles, and shall comply with AWWA C606.
12	Swaney Sales	2/5/2026	Bid Category 03 - Mechanical • Please indicate what is approved for Condensing Unit Roof Pipe Supports. No details were found.	TP: Refer to spec section 2.6 PIPE STAND FABRICATION found under 23-05923 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT for acceptable piping supports.
13	Swaney Sales	2/5/2026	Bid Category 03 - Mechanical • Will it be permissible to move the Condensing Units closer to the Roof Pipe penetration?	TP: Negative, Condensor locatoins have been closely coordinated with supporting roof structure.
14	Ideal Consolidated	2/6/2026	Bid Category 03 - Mechanical • The size of the tank in the Water Softener Detail on M502 is the size for a 300k grain softener, while I assume the model they’ve indicated in that drawing (90 TCFM-E) would be a 90k please confirm if a 300k or 90k grain softener is required.	TP: Basis of Design is Model 90 TCFM-E. Water softener dimensions to read 14"x65" instead of 24"x76".

KPS NMMS- Pre-Bid RFI Log

Date - 02/12/2026

15	Ideal Consolidated	2/6/2026	Bid Category 03 - Mechanical • In the Domestic Water Softener specs (22 3100-2) under section 2.2 item 3, it lists configuration as a “twin unit with two mineral tanks and two brine tanks” causing confusion on if this system should really be a single or twin system when considering other acceptable manufacturers listed. Please confirm. o If a twin system is required, please specify if the configuration is to be Twin Alternation, Parallel or Progressive	TP: Provide simplex configeration.
16	KMI	2/11/2026	Bid Category 03 - Mechanical • The windows in the mechanical room that are being replaced, confirm that removal and temporary coverings will be provided by general trades to allow access during construction activities.	TSC: General trades will provide the initial barricade, any trade that removes it will be expected to replace it at the end of the day.
17	KMI	2/11/2026	Bid Category 03 - Mechanical • Please confirm if there will be additional access provided for tunnel work, and if so where. It was currently identified to have access at the boiler room only.	TSC: See Clarification No 04 for Bid Category No 03 Mechanical in Addenum #3
18	KMI	2/11/2026	Bid Category 03 - Mechanical • Typical Detail on 3/M301 looks like the FT enclosure is wall to wall, can you confirm this is the case for length required and that FT-1 is only 5’ per schedule?	TP: Element length is 5', enclosure length is wall-to-wall, or wall-to-door (unless the element is hidden by casework).
19	KMI	2/11/2026	Bid Category 03 - Mechanical • MD 101C does not show fin tube demo, please confirm.	TP: There is fin tube to be demolished in MD 101C.
20	KMI	2/11/2026	Bid Category 03 - Mechanical • Fin tubes are all called out with covers and some have transfer air grills also called out where casework is being installed. Is this accurate?	TP: Finned tube in case work will be element only, no covers.
21	KMI	2/11/2026	Bid Category 03 - Mechanical • Storage C9A has us replacing CH with new. This is directly below an IT cabinet. Is this accurate?	TP: Yes

KPS NMMS- Pre-Bid RFI Log

Date - 02/12/2026

22	KMI	2/11/2026	Bid Category 03 - Mechanical • Existing fin tube in Media Center is not shown. Is the intent to replace this?	TP: Yes, the intent is to replace all hydronic components. However, I don't know where we missed it. Assume it will be replaced with an element that is the length of the window and the enclosure is wall-to-wall.
23	KMI	2/11/2026	Bid Category 03 - Mechanical • Ceiling demo does not include area of work required for new FCU-1 and duct/piping required. Can you confirm this is being picked up by others?	TSC: Ceiling demo (BC 01 General Trades) has been expanded to include all tile and grid as shown in Addendum #2.
24	KMI	2/11/2026	Bid Category 03 - Mechanical • There is more ceiling demo/replacement for work required for new piping per M201D. Can you confirm this is being picked up by others?	TSC: Ceiling demo (BC 01 General Trades) has been expanded to include all tile and grid as shown in Addendum #2.
25	KMI	2/11/2026	Bid Category 03 - Mechanical • M 201D: Will casework be moved in corner for rework to happen for new lines in corner of rooms?	TSC: Deconstruction or removal of any cabinetry required for access will be done by BC 01 General Trades. This work will be covered in their allowance for areas that have yet to be identified.
26	KMI	2/11/2026	Bid Category 03 - Mechanical • Is piping in the gymnasium going to be exposed and require pipe covers?	TP: Piping to serve the AHU is to be is shown off wall for clarity. There is currently a pair of 2" pipes feeding the AHU. The intent is to reuse that path and make the existing wall penetrations larger. The current route does not penetrate into the gym.
27	KMI	2/11/2026	Bid Category 03 - Mechanical • The ductwork feeding Office B4 shows transfer air but assuming this should be supply.	TP: Confirmed, that is a SA-3 supply grille.
28	KMI	2/11/2026	Bid Category 03 - Mechanical • I am not seeing any dampers to the rooftop supplies where they are feeding the corridor. Can you confirm this is correct?	TP: GRDs serving the office area that are ducted on the roof are scheduled for volume-control dampers integrated into the grille or diffuser. SA-6 will be updated to VCD - Yes.

KPS NMMS- Pre-Bid RFI Log

Date - 02/12/2026

29	KMI	2/11/2026	Bid Category 03 - Mechanical • Where the storefront is being removed at the boiler room, can you confirm that there will be a temporary opening installed that we can use during construction for getting materials in and out?	TSC: Yes, we will leave that opening accessible. BC 01 General Trades will provide the initial barricade, any trade that removes it will be expected to replace it at the end of the day.
30	KMI	2/11/2026	Bid Category 03 - Mechanical • We will need access to the new AHU-1 for demo and install of new through the new louver opening. Can you confirm we will be able to run equipment through the yard as needed and any ground repairs will be handled by others?	TSC: Reseeding or repair of the lawn will be the responsibility of the contractor that disturbs the existing.