

## ADDENDUM NO. 2

TO: PLANS AND SPECIFICATIONS FOR STATE OF MISSOURI

Upgrade HVAC  
Boonslick State School  
St. Peters, Missouri  
PROJECT NO.: E2317-01

**Bid Opening Date: 1:30 PM, February 15, 2024 (changed)**

**Bidders are hereby informed that the construction Plans and/or Specifications are modified as follows:**

### **SPECIFICATION CHANGES:**

1. Section 004322- Unit Prices Form: Add Section **“This form is to be included when submitting bid in Missouri Buys”**
2. Section 012200 – Unit Prices: Add section
3. Section 232113 – Hydronic Piping
  - a. Add section 2.5 showing polypropylene piping specs.
  - b. Add Polypropylene transition to section 2.7.
  - c. Update section 3.1 to show correct piping schedule.
  - d. Add grooved pipe specifications to section.

### **DRAWINGS CHANGES:**

1. Sheet M-202
  - a. Revise exterior piping from below grade to above grade. Remove underground drain sump and drain piping.
  - b. Add pipe stands to support exterior pipe every 10 feet.
  - c. Add piping crossover walkway.
2. Sheet M-401
  - a. Revise piping diagram to show exterior piping to be above ground.
3. Sheet M-501
  - a. Revise pump detail to remove triple duty valve.
  - b. Add pipe stand detail.
4. Sheet E-102
  - a. Add low-voltage verbiage to keyed note 1

### **GENERAL COMMENTS:**

Responses to bidder questions:

1. Please clarify how bidders should address ceiling removal. Should there be an allowance each contractor should include for ceiling tile replacement? The existing tiles are 2'x2' and some look to be old and in bad shape. There will be some that will

break when taken down to replace piping insulation and other work.  
**100 ceiling tiles shall be included in the base bid. Provide a unit price per each tile for additional tiles.**

2. Please clarify what to use as backfill around underground piping to chiller.  
**Drawings are being revised to show chiller piping to be routed above grade so no backfill will be needed.**
3. Please clarify what type of piping is acceptable for underground piping.  
**Drawings are being revised to show chiller piping to be routed above grade. Refer to revised piping specification section 232113 for an updated piping spec and schedule.**
4. It looks like the drains from the gutters all tie in together below grade where the underground chiller piping is to be routed. Should contractor include re-piping drain irrigation piping? If so, what type of piping is acceptable below grade for this?  
**Drawings are being revised to show chiller piping to be routed above grade so no under grade work will be needed.**
5. At the walk through it was brought up to route chiller piping high out the mechanical room and have stands to keep piping high where people can walk under and then down at chiller, in lieu of routing below grade.  
**Drawings are being revised to show chiller piping to be routed low above grade.**
6. Please clarify if the controls for the VAVs should be 120V or 24V to controller.  
**Controls for the VAV boxes in alternate 1 shall be 24V power. Utilize existing fan coil unit circuits with step down transformers for power.**

**ATTACHMENTS:**

Section 004322- Unit Prices Form

Section 012200 – Unit Prices

Section 232113 – Hydronic Piping

Sheet M-202

Sheet M-401

Sheet M-501

Sheet E-102

**END ADDENDUM NO. 2**

**PER ADDENDUM #2**

**SECTION 004322 - UNIT PRICES FORM**

PROJECT NUMBER: E2317-01

**1.0 Description**

- A. For changing specified quantities of work from those indicated by the contract drawings and specifications, upon written instructions of Owner, the following unit prices shall prevail. The unit prices include all labor, overhead and profit, materials, equipment, appliances, bailing, shoring, shoring removal, etc., to cover the finished work of the several kinds of work called for. Only a single unit price shall be given and it shall apply for either MORE or LESS work than that shown on the drawings and called for in the specifications or included in the Base Bid. In the event of more or less units than so indicated or included during construction the total contract price shall be decreased as appropriate or increased by contract change in accordance with General Conditions Article 4.1.

**2.0 Unit Prices**

- A. Unit Price No. 1 – Name: Lay-in ceiling tile
  - 1. Description: Lay-in ceiling tile to match existing
  - 2. Unit of Measurement: (1) 2X2 ceiling tile
  - 3. Base Bid Quantity: 100 ceiling tiles

\$ \_\_\_\_\_ per ceiling tile

## **SECTION 012200 – UNIT PRICES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

#### **1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for Unit Prices.
- B. Related Sections include the following:
  - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for unit prices.

#### **1.3 DEFINITIONS**

- A. Unit Price is an amount proposed by bidders, stated on the Bid Form Attachment 004322 a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

#### **1.4 PROCEDURES**

- A. Unit Prices include all necessary material plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- 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 list of Unit Prices is included in Part 3.

### **PART 2 - PRODUCTS (Not Used)**

### **PART 3 - EXECUTION**

#### **3.1 LIST OF UNIT PRICES**

- A. Unit Price No. 1:
  - 1. Description: Lay-in ceiling tile to match existing
  - 2. Unit of Measurement: (1) 2X2 ceiling tile.
  - 3. Base Bid Quantity: 100 ceiling tiles

**END OF SECTION 012200**

## **SECTION 232113 - HYDRONIC PIPING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section includes pipe and fitting materials and joining methods for the following:
  - 1. Copper pipe and fittings.
  - 2. Steel pipe and fittings.
  - 3. Plastic pipe and fittings.
  - 4. Joining materials.
  - 5. Transition fittings.
  - 6. Dielectric fittings.

#### **1.2 QUALITY ASSURANCE**

- A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature unless otherwise indicated:
  - 1. Condenser-Water Piping: 150 psig at 73 deg F.
  - 2. Condensate-Drain Piping: 150 deg F.

#### **2.2 COPPER TUBE AND FITTINGS**

- A. Tube in "Drawn-Temper Copper Tube" Paragraph below is generally available in NPS 1/8 to NPS 12 (DN 6 to DN 300). Drawn-temper copper tube is commonly referred to as "hard" copper tube. Drawn-Temper Copper Tubing: ASTM B88, Type L
- B. Tube in "Annealed-Temper Copper Tube" Paragraph below is generally available in NPS 1/8 to NPS 12 (DN 6 to DN 300). Annealed-temper copper tubing is commonly referred to as "soft" copper tube. Annealed-Temper Copper Tubing: ASTM B88, Type L
- C. DWV Copper Tubing: ASTM B306, Type DWV.

## **2.3 STEEL PIPE AND FITTINGS**

- A. Steel Pipe: ASTM A53/A53M, black steel with plain ends; welded and seamless, Grade B, and wall thickness as indicated in "Piping Applications" Article.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125 and 250 as indicated in "Piping Applications" Article.
- C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in "Piping Applications" Article.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in "Piping Applications" Article.
- E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in "Piping Applications" Article.
- F. 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: Butt welding.
  - 3. Facings: Raised face.
- G. Grooved, Mechanical-Joint, Fittings and Couplings:
  - 1. Fittings: ASTM A536, Grade 65-45-12 ductile iron with grooves or shoulders constructed to accept grooved-end couplings; with nuts and bolts to secure grooved pipe and fittings.
  - 2. Couplings: Installation Ready, Ductile-iron housing and EPDM gasket of central cavity pressure-responsive design with included pipe stop; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.

## **2.4 PLASTIC PIPE AND FITTINGS**

- A. PVC Plastic Pipe: ASTM D1785, with wall thickness as indicated in "Piping Applications" Article.
  - 1. PVC Plastic Pipe Fittings: Socket-type pipe fittings, ASTM D2466 for Schedule 40 pipe; ASTM D2467 for Schedule 80 pipe.

## **2.5 POLYPROPYLENE PIPE AND FITTINGS**

- A. Polypropylene Pipe: ASTM F2389, pipe pressure rating to comply with temperature and pressure ratings of code requirements for the applicable service.
- B. Polypropylene Fittings: ASTM F2389, socket fusion, butt fusion, electrofusion, or fusion outlet fittings to be used for fusion-welded joints between pipe and fittings.
- C. Mechanical fittings and transition fittings to be used where transitions are made to other piping materials or to valves and appurtenances.

- D. Polypropylene pipe is to be unthreaded. Threaded transition fittings per ASTM F2389 to be used where a threaded connection is required.

## 2.6 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 otherwise 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. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.
- D. Solder Filler Metals: ASTM B32, lead-free alloys. Include water-flushable flux according to ASTM B813.
- E. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.
- F. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- G. Solvent Cements for PVC Piping: ASTM D2564. Include primer according to ASTM F656.

## 2.7 TRANSITION FITTINGS

- A. Plastic-to-Metal Transition Fittings:
  - 1. One-piece fitting with one threaded brass or copper insert and one solvent-cement-joint end of material and wall thickness to match plastic pipe material.
- B. Plastic-to-Metal Transition Unions:
  - 1. Brass or copper end, solvent-cement-joint end of material and wall thickness to match plastic pipe material, rubber gasket, and threaded union.
- C. Polypropylene to Steel Transition Couplings:
  - 1. A mechanical coupling for plain end polypropylene to grooved steel is acceptable for 2" to 8" Polypropylene. Coupling housings shall be ductile iron conforming to ASTM A536, Grade 65-45-12. Couplings shall be installation-ready for plain-end pipe and require no groove or disassembly to install. Gaskets shall be pressure responsive Polypropylene. Temperature range 30°F to +230°F. Couplings must meet or exceed the pressure rating of the Polypropylene pipe.

## **2.8 DIELECTRIC FITTINGS**

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
  - 1. Description:
    - a. Standard: ASSE 1079.
    - b. Pressure Rating: 125 psig minimum at 180 deg F
    - c. End Connections: Solder-joint copper alloy and threaded ferrous.

## **PART 3 - EXECUTION**

### **3.1 PIPING APPLICATIONS**

- A. Chilled-water piping, indoor, aboveground, 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 fittings; cast-iron flanges and flange fittings; and threaded joints.
  - 3. Schedule 40 steel pipe; grooved, mechanical joint coupling and fittings; and grooved, mechanical joints.
- B. Chilled-water piping installed aboveground on exterior of building shall be the following:
  - 1. Polypropylene (PP-RCT), SDR 9, with fused joints or plain end mechanical couplings.

### **3.2 INSTALLATION OF PIPING**

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, 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 ball 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. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- Q. Install shutoff valve immediately upstream of each dielectric fitting.
- R. Install sleeves for piping penetrations of walls, ceilings, and floors.
- S. Install sleeve seals for piping penetrations of concrete walls and slabs.

### **3.3 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 B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.
- 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/A5.8M.
- 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. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- G. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
  2. PVC Pressure Piping: Join ASTM D1785 schedule number, PVC pipe and PVC socket fittings according to ASTM D2672. Join other-than-schedule number PVC pipe and socket fittings according to ASTM D2855.
  3. PVC Nonpressure Piping: Join according to ASTM D2855.
- H. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. 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.

### **3.4 INSTALLATION OF DIELECTRIC FITTINGS**

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

### **3.5 INSTALLATION OF HANGERS AND SUPPORTS**

- A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hangers, supports, and anchor devices.
- B. Install hangers for copper tubing and steel piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Install hangers for plastic piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced code, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Support horizontal piping within 12 inches of each fitting and coupling
- E. Support vertical runs of copper tubing and steel piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- F. Support vertical runs of PVC piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

### **3.6 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 bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install ports for pressure gages and thermometers at coil inlet and outlet connections.

### **3.7 CHEMICAL TREATMENT**

- A. Fill system with fresh water and add liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products from piping. Circulate solution for a minimum of 24 hours, drain, clean strainer screens, and refill with fresh water.
- B. Add initial chemical treatment and maintain water quality in ranges noted above for the first year of operation.

### **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 the 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 the "SE" value in Appendix A in ASME B31.9, "Building Services Piping."

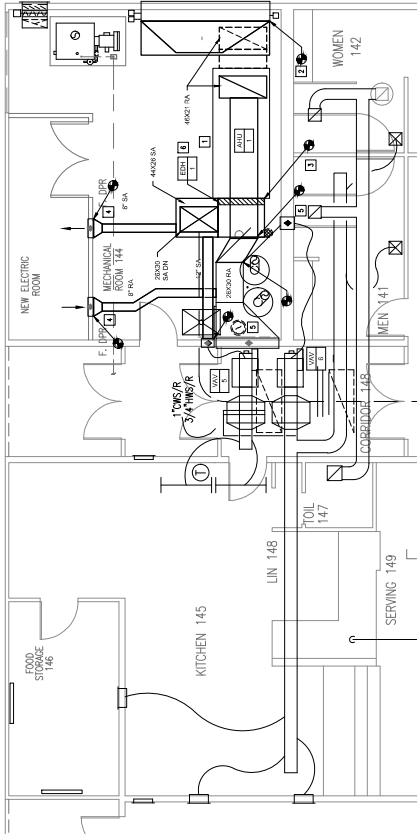
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
  6. Prepare written report of testing.
- C. Perform 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 operating freely (automatic type), or bleed air completely (manual type).
  5. Set temperature controls so all coils are calling for full flow.
  6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
  7. Verify lubrication of motors and bearings.

**END OF SECTION 232113**



**DUCT PLAN KEYED NOTES**

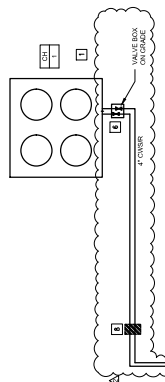
- 1 REMOVE EXISTING AIR TO EXISTING 1350F LOWVOLTAGE LOCATION ON THE ROOF OF MAIN BUILDING. RECONNECT TO EXISTING DUCTWORK AND SPRING CONNECTION OUTSIDE AIR TO EXISTING 1350F LOWVOLTAGE LOCATION ON THE ROOF OF MAIN BUILDING.
- 2 CONNECT NEW RIGID AIR DUCT TO EXISTING 3000 DUCT. SINK OUT TO EXISTING IMPEDING SUPPLY FLUCT.
- 3 PROVIDE NEW RIGID DUCT THROUGH FAN CONNECT TO EXISTING SIGNAL GRILL ROOMS.
- 4 PROVIDE NEW RIGID DUCT THROUGH FAN CONNECT TO EXISTING FREE COOLER ROOMS.
- 5 INSTALL ELECTRIC DUCT LEAVE AT DISCHARGE SUPPLY OPENING. FIELD VERIFY DUCT SIZE AND INSULATION REQUIREMENTS.



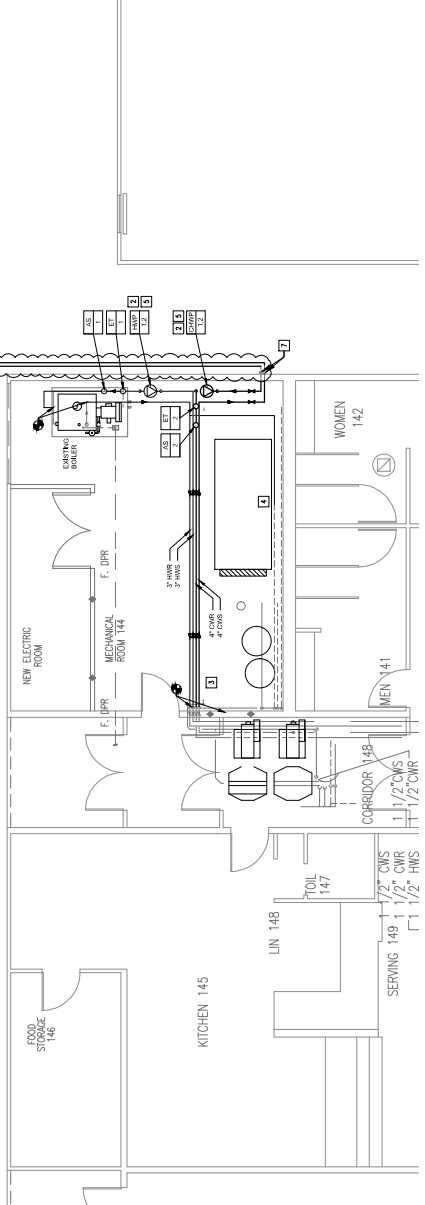
**1 ENLARGED MECHANICAL DUCT PLAN - NEW**  
SCALE: 1/4" = 1'-0"

**PIPING PLAN KEYED NOTES**

- 1 INSTALL NEW PIPING FOR COOLED CHILLER AT EXISTING CHILLER LOCATION.
- 2 REMOVE EXISTING 2\"/>



**2 ENLARGED MECHANICAL PIPING PLAN - NEW**  
SCALE: 1/4" = 1'-0"





**Faith Group**  
Faith Group, LLC  
3101 South Hanley  
St. Louis, MO 63143  
Missouri State Certificate of  
Authority #2014009675

BID SET  
DOCUMENTS  
SUBMITTED NOV 20, 2023

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

ST. PETER BOONSLUICK  
STATE SCHOOL

321 KNAUST RD.  
ST. PETERS, MO 63376

PROJECT # 231701  
SITE # 2027  
FACILITY # 501027002

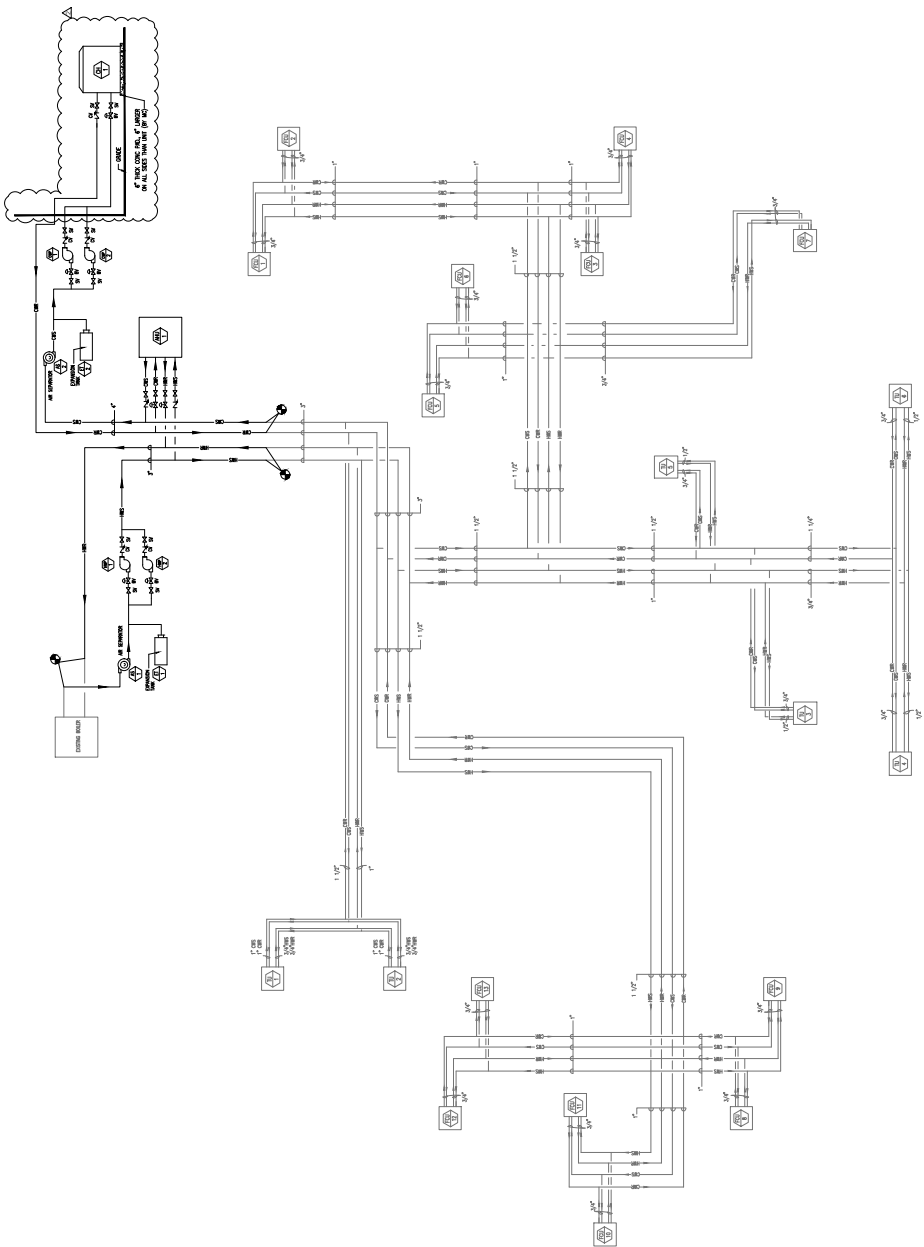
REVISION: APPENDIX 2  
DATE: 11/20/2023  
BY: JDF  
REV. DATE:

ISSUE DATE: 11/20/2023  
DRAWN BY: JDF  
CHECKED BY: JDF  
DESIGNED BY: JDF  
SHEET TITLE:

MECHANICAL PIPING  
SCHEMATIC

SHEET NUMBER:  
**M-401**

9 OF 16 SHEETS  
11/20/2023



CHILLED WATER AND HOT WATER PIPING SCHEMATIC DIAGRAM



Faith Group

Faith Group, LLC  
3101 South Hanley  
St. Louis, MO 63114  
Missouri State Certificate of  
Authority #2314096975

AIR HANDLING UNIT SCHEDULE																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	CALCULATED CONDITIONS					REMARKS
											INLET DB	INLET WB	OUTLET DB	OUTLET WB	WATER	
CH-1	DARIN	4380	60.0	55.92	10.92	113.7	14.8	55.00	46.0	1.0	55.0	55.0	55.0	55.0	1.0	

AIR COOLED CHILLER																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	CONDENSER					REMARKS
											INLET DB	INLET WB	OUTLET DB	OUTLET WB	WATER	
CH-1	DARIN	4380	60.0	55.92	10.92	113.7	14.8	55.00	46.0	1.0	55.0	55.0	55.0	55.0	1.0	

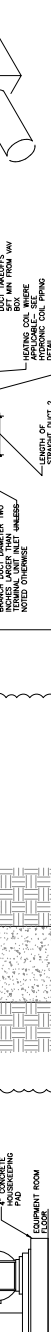
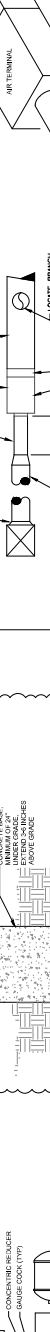
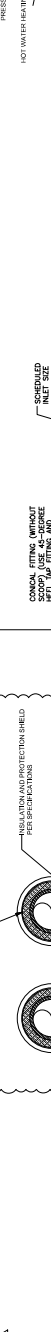
PUMP SCHEDULE																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	MOTORS					REMARKS
											HP	EFF	WINDING	INSULATION	TYPE	
PUMP-1	AMARTRONIC	4380	70	60	2	460/3	1									
PUMP-2	AMARTRONIC	4380	70	60	2	460/3	1									

EXPANSION TANK SCHEDULE																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	CAPACITY					REMARKS
											MIN	MAX	WORKING	RESERVE	TOTAL	
EXP-1	AMARTRONIC	4380	70	60	2	460/3	1									

AIR SEPARATOR SCHEDULE																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	CAPACITY					REMARKS
											MIN	MAX	WORKING	RESERVE	TOTAL	
SEP-1	AMARTRONIC	4380	70	60	2	460/3	1									

ALTERNATE #1 - VAV BOX SCHEDULE - HOT WATER HEATING																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	CAPACITY					REMARKS
											MIN	MAX	WORKING	RESERVE	TOTAL	
WAV-1	TIITUS	DESV	10	375	412	750	10	0.6	55	78	0.09	180	145.3	0.07	12.2	
WAV-2	TIITUS	DESV	10	375	412	750	10	0.6	55	78	0.09	180	145.3	0.07	12.2	
WAV-3	TIITUS	DESV	10	375	412	750	10	0.6	55	78	0.09	180	145.3	0.07	12.2	
WAV-4	TIITUS	DESV	10	375	412	750	10	0.6	55	78	0.09	180	145.3	0.07	12.2	
WAV-5	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	
WAV-6	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	
WAV-7	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	
WAV-8	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	
WAV-9	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	
WAV-10	TIITUS	DESV	14	750	825	1500	25	1.0	55	77.3	0.07	180	146	0.08	12.2	

ELECTRIC DUCT HEATER SCHEDULE																
TAG	MANUFACTURER	MODEL	SIZE	TYPE	SERVING	FLOW (GPM)	SCCR (GPM)	FLOW (GPM)	PUMP (HP)	PUMP (HP)	HEATER					REMARKS
											WATT	WATT	WATT	WATT	WATT	
EDH-1	GREENHECK	DHE	4000	15	200/3	3	1									





Faith Group

Faith Group, LLC  
314.991.2228  
St. Louis, MO 63103  
A Subsidiary of  
Autodesk #2914099675

BID SET  
DOCUMENTS  
SUBMITTED NOV. 20, 2023

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

ST. PETER BOONSLICK  
STATE SCHOOL

321 KNAUST RD  
ST. PETERS, MO 63376

PROJECT # 231701  
SITE # 2027  
FACILITY # 5012027002

REVISION: ADMIN/MLM/LZ  
DATE: 11/20/2023  
REVISION: ADMIN/MLM/LZ  
DATE: 11/20/2023  
REVISION: ADMIN/MLM/LZ  
DATE: 11/20/2023  
ISSUE DATE: 11/20/2023

CAD DWG FILE:  
PROJECT: ST. PETER BOONSLICK  
CHECKED BY: JLP  
DESIGNED BY: JLP  
SHEET TITLE:

OVERALL  
ELECTRICAL PLAN -  
ALTERNATE #1

SHEET NUMBER:  
**E-102**

1 OF 16 SHEETS  
11/20/2023

**ALTERNATE KEYED NOTES**

- PROVIDE ALL ELECTRICAL WORK TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL APPLICABLE LOCAL AND STATE CODES.
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