

Richard Y. Johnson & Son, Inc.

General Contractors & Construction Managers Serving Delaware Since 1946 www.ryjson.com 18404 Johnson Rd PO Box 105 Lincoln, DE 19960 Phone 302-422-3732 Fax 302-422-4696

Project No. 23.003, DTCC DC900406001 Delaware Technical Community College Terry Office of the President Bid Pac A – Contracts 1 thru 15 May 29, 2025

Addendum No. 4

Attention all Prospective Bidders:

The following clarifications, changes and /or additions shall by this reference be incorporated into the contract documents as though dully set forth therein.

Addendum No. 4 consists of: RYJ Written directive (5 pages) Revised Section 238126.13 – Small Capacity split system air conditioner (4 pages) Revised Section 238146 – Water Source Unitary Heat Pumps (8 pages) A Drawings (A004, A102, A131, A151 & A301) (5 Drawings)

Non – Technical Specifications

Section 001116 – Advertisement for Bid

Bids are Due June 4, 2025 at 11:00am and are to be read aloud in the Terry Building (Building 100) in the Downs Lecture Hall.

<u>Section 004126 – Bid Form</u> *Note: Each Contractor is required to list themselves on revised bid forms located in Addendum 2 on the sublist

Section 011100– Summary of Work

- Bid Pac A Contract 3 Carpentry & General Work
- Page 011100-15 Paragraph A; Remove from Paragraph A. " 072100, 078400"
- Page 011100-15 Paragraph E; Remove from Paragraph E. "AEDS"

Page 011100-15 – Remove Paragraph G in its entirety.

Page 011100-15 – Remove Paragraph H in its entirety.

Page 011100-15 – Remove Paragraph J in its entirety.

Page 011100-15 – Paragraph L; Remove from Paragraph L. "Provide louver siding"

Page 011100-16 – Remove Paragraph R in its entirety.

Page 011100-16 – Remove Paragraph W in its entirety.

Page 011100-16 – Remove Paragraph X in its entirety.

Page 011100-16 – Remove Paragraph Y in its entirety.

Page 011100-16 – Remove Paragraph CC in its entirety.

Page 011100-17 – Remove Paragraph NN in its entirety.

Page 011100-16 – Remove Paragraph S in its entirety.

Page 011100-16 – Delete from Paragraph T; "azek, moldings"

Page 011100-17 - Delete from Paragraph HH; "p-lam shelving in closets and"

Technical Specifications

Section 064023 Interior Architectural Woodwork Page 064023-6 – Delete 2.6 Interior Standing and Running Trim for Transparent Finish in its entirety Page 064023-8 – Delete Item F under section 3.2 Installation

Bidders Questions + Clarification

RFI No. Description

RFI 01 (RFI number corrected from Addendum 2)

Question 1:

Sheet A601 in door schedule lists door frame type F6. Frames are type F1 & F2. Should we assume that F6 frames are F2 frames?

Answer:

Yes; Corrected on the Door Schedule

Question 2:

Please confirm that all flooring and base removal is by the flooring contract?

Answer:

Yes, flooring demolition by Contract 11 Floor Covering

Question 3:

Carpentry line item "ZZ" states to remove and re-install ceiling tile for heat pump replacement. Since the mechanical contractor will need

Room to remove the heat pumps and install new should we assume they will need a 8' x 8" are of grid and tile at each heat pump removed and re-installed?

Answer:

Yes, Remove and Re-Install 8'x8' area of existing ceiling tile and grid for HP replacement. Contractor is to remove, protect and reinstall existing tile and grid.

Question 4:

Carpentry line item "E" indicates AED's. There are none that we see, only (2) FEC's

Answer:

AED's are existing, delete reference.

Question 5:

Carpentry line item "G" states to provide all wood trim, panels, and wood base. There are none of these that we see.

Answer:

See above Summary of Work Revisions.

Question 6:

Carpentry line item "H" states to provide expansion joints and covers. We do not see any and there is no specification for these.

Answer:

See above Summary of Work Revisions.

Question 7:

Carpentry line item "J" states to provide visual display boards, display case, tack boards, tack strips, tackable surface, etc. None are shown and there is not a specification for any of these **Answer:**

See above Summary of Work Revisions

Question 8:

Carpentry line item "L" states to provide architectural louvers and louver siding. There are none that we can see.

Answer:

See above Summary of Work Revisions

Question 9:

Carpentry line item "R" states to provide know box. None shown as there are no new entrances **Answer:**

See above Summary of Work Revisions

Question 10:

Carpentry line item "S" states to provide decorative formed and metal closures, trims, fiberglass, and metal column covers. None are shown for this project.

Answer:

See above Summary of Work Revisions

Question 11:

Carpentry line item "T" states to provide all wood trims, wood bases, azek, moldings, field built columns and FRP panels. None are shown on this project.

Answer:

Millwork base noted on A141; Delete other items.

Question 12:

Carp Carpentry line item "W" states to provide all signage and ADA signage. None are shown and there is no specification for this product.

Answer:

See above Summary of Work Revisions

Question 13:

Carpentry line item "X: states to provide residential appliances. None are shown and there is no specification for this product.

Answer:

See above Summary of Work Revisions

Question 14:

Carpentry line item "Y" states to provide wall protection and corner guards. None are shown and there is no specification for these products.

Answer:

See above Summary of Work Revisions

Question 15:

Carpentry line item "CC: states to provide wall protection. None are shown and there is no specification for this product.

Answer:

See above Summary of Work Revisions

Question 16:

Carpentry line item NN" states to provide all concrete demolition on the interior of the building. None is shown that we can see.

Answer:

See above Summary of Work Revisions

Question 17:

We don't see where specification sections 072100, 076200, 078400, & 079200 would apply to this scope.

Answer:

See above Summary of Work Revisions

RFI 02

Question 1:

Can height be given for demo at metal stud walls? Answer:

12'

Question 2:

Contract 5 Item 00 temp shoring this is unforeseen not knowing how the existing walls are supported can the allowance be used for temp shoring?

Answer:

It is Contract 5 Carpentry & General Work to provide shoring as necessary where demolition takes place.

Question 3:

Contract 5 Item JJ removal of debri. Does this refer to our demo only?

Answer:

Each contract that is to perform demolition as per their scope of work is to provide removal and as any costs to dispose of the debri.

Question 4:

Contract 5 Item I can be treated plywood be used on the roof deck in Lew of COX plywood?

Answer:

Provide as specified

Question 5:

Will contract 13 remove & reinstall ceilings that are not called to be done by contract 5?

Answer:

See RFI 01, question 3 answer. Contract 5 Carpentry & General Work is to provide removal and reinstallation at the width as noted in previous RFI answer.

Question 6:

Contract 5 items formed, metal closer, trims & columns these are not shown.

Please advise

Answer:

See revisions to Summary of Work this addendum.

Question 7:

Contract 5 Item T azek & molding, please provide locations.

Answer:

See revisions to Summary of Work this addendum.

Question 8:

Contract 5 Item HH closet shelving, please provide location.

Answer:

See revisions to Summary of Work this addendum.

RFI 03

Question 1:

What does the "box" near doors 3.07A and 3.08 on A112 represent?

Answer:

This is a heat pump above; is a hold over from HVAC drawings, not applicable for carpentry contract

Question 2:

Are the display cases on elevation 5/A451 existing? Please provide product information if they are new.

Answer:

Existing display case

Question 3:

Please clarify which contract owns roof blocking, plywood sheathing on the roof, and exterior wall sheathing.

Answer:

Contract 5 Carpentry & General Work

Question 4:

Please provide product information for millwork base MB-1 on A141. If it is wood, please provide the size, profile, and species.

Answer:

MB-1 is rubber millwork base. Refer to spec 096513 – Resilient base and accessories

Question 5:

Please clarify the following scope items for contract A-5 Carpentry & General Work:

Question

A: Spec section 061600 is listed. See question #3 and clarify what sheathing is owned in Contract A-5.

Answer:

Wall and roof sheathing that is wood is to be provided by contract 5 Carpentry

Question

A: Spec section 076200 is listed. I don't believe Contract A-5 owns any flashing. Please confirm that this can be deleted.

Answer:

Flashing under masonry and roofing contracts **Question**

A: Spec section 079200 is listed. I don't believe Contract A-5 owns any caulking. Please confirm that this can be deleted, or clarify what caulking you would like Contract A-5 to provide. **Answer:**

Not in Contract 5 Carpentry scope

Question

F: Please confirm that "wall caps" can be deleted, as there are none shown.

Answer:

Delete from scope

Question

L: Please confirm that this item can be deleted in its entirety, as no architectural louvers are shown.

Answer:

Delete from scope

Question

O: Please confirm that references to electric roller shades can be deleted.

Answer:

All shades are to be manual

Question

U: Please confirm that references to wood framing for floor, walls, stairs, and ceilings can be deleted, as no wood framing is shown.

Answer:

Delete from scope

Question

AA: Please confirm that this item can be deleted in its entirety, or clarify what testing you would like Contract A-5 to provide.

Answer:

Delete from scope

Question

DD: Please confirm that this item can be deleted in its entirety, as no structural steel, joist, or decking is shown to be demolished.

Answer:

This contract is responsible for demolition of wall where addition is being built; two walk thrus were scheduled for contractor to review extent of demolition.

Question

II: Solid surface window sills are shown on the drawings, but please confirm that all of the other items listed can be deleted.

Answer:

Delete from scope

Question

KK & RR: Please confirm that any temporary enclosures required will be handled by the \$25,000 temporary enclosure allowance.

Answer:

Confirmed

Question

QQ: Demolition of built-ins, display cases, casework, shelving, fire extinguishers, corner edge protection, book shelves, TV brackets, window treatments, projection screens, expansion joint covers, column covers, and modification and demolition of chalk and tack boards are all not shown on the drawings. Please confirm that these items can be deleted.

Answer:

Delete from scope

Question

UU: Please confirm that this item can be deleted in its entirety, as no wall tile is shown to be removed.

Answer:

Delete from scope

Question

WW: Please clarify what existing furniture you would like Contract A-5 to move and/or protect. Which rooms, what is it, and where do we move it to?

Answer:

Clarified on demo drawings; coordinate with owner for relocation on campus.

Question

XX: Two existing work stations are shown to be demolished, but none are shown to be reset. Please confirm that Contract A-5 does not own resetting any work stations.

Answer:

See Sheet A102 Demolition key note #8; All existing workstations in the suite being renovated are to be reused; only (2) are being put back in a different spot than they are removed from.

RFI 04

Question 1:

Can a Henry equal Fluid applied water resistive barrier be used instead of a Self adhered? **Answer:**

Yes

Question 2:

I sent the specs to our insurance company to confirm we are covered with everything and they wanted us to double check on the Contractual and Protective Liability that is referenced. This is different from the traditional Commercial General Liability that most contractors have. Can you clarify if we would need the Contractual and Protective Liability as a site work contractor or does the Commercial General Liability cover us?

Answer:

As stated in the specifications, you are required to get both, Contractor's Contractual Liability Insurance and Contractor's Protective Liability Insurance as well as Commercial General Liability Insurance. To be clear, Commerical General Liability will not be sufficient.

End of Addendum No. 4

SECTION 23 81 26.13 SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air-source heat pumps.
- B. Air cooled condensing units.
- C. Indoor air handling (fan and coil) units for ductless systems.
- D. Controls.

1.02 RELATED REQUIREMENTS

A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections and installation and wiring of thermostats and other controls components.

1.03 REFERENCE STANDARDS

- A. AHRI 210/240 Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2023.
- B. AHRI 520 Performance Rating of Positive Displacement Condensing Units; 2004.
- C. ASHRAE Std 15 Safety Standard for Refrigeration Systems; 2024, with Errata (2025).
- D. ASHRAE Std 23 Methods for Performance Testing Positive Displacement Refrigerant Compressors and Compressor Units; 2022.
- E. NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- F. NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2024.
- G. UL 207 Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.
- H. UL 1995 Heating and Cooling Equipment; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- C. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
- D. Design Data: Indicate refrigerant pipe sizing.
- E. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.
- F. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
- G. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Del Tech's name and registered with manufacturer.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. LG Electronics U.S.A., Inc[<>]: www.lghvac.com/#sle.____.
- B. Samsung: https://www.samsunghvac.com/.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SYSTEM DESIGN

- A. Split-System Heating and Cooling Units: Self-contained, packaged, matched factoryengineered and assembled, pre-wired indoor and outdoor units; UL listed.
 - 1. Heating and Cooling: Air-source electric heat pump located in outdoor unit with evaporator.
 - 2. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
- B. Performance Requirements: See Drawings for additional requirements.
- C. Electrical Characteristics:
 - 1. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Section 26 05 83.

2.03 INDOOR AIR HANDLING UNITS FOR DUCTLESS SYSTEMS

- A. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, evaporator coil, and controls; wired for single power connection with control transformer.
 - 1. Location: High-wall.
 - 2. Cabinet: Galvanized steel.
 - a. Finish: White.
 - 3. Filter return air with washable, antioxidant pre-filter and a pleated anti-allergy enzyme filter.
- B. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
 - 1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
 - 2. Manufacturer: System manufacturer.

2.04 OUTDOOR UNITS

- A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
 - 1. Refrigerant: R-454B.
 - 2. Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23 and UL 207.
- B. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
- C. Accessories: Filter drier, high-pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).
 - 1. Provide thermostatic expansion valves.
- D. Operating Controls:
 - 1. Control by room thermostat to maintain room temperature setting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available and in correct location.
- C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

- A. Install in accordance with NFPA 90A and NFPA 90B.
- B. Install refrigeration systems in accordance with ASHRAE Std 15.

END OF SECTION

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SECTION 23 81 46 WATER-SOURCE UNITARY HEAT PUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Horizontal/vertical WSHP.
- B. High-efficiency, dual-stage, horizontal/vertical WSHP.

1.02 RELATED REQUIREMENTS

- A. Section 22 10 05 Plumbing Piping: Condensate drains.
- B. Section 23 05 93 Testing, Adjusting, and Balancing for HVAC.
- C. Section 23 21 13 Hydronic Piping.
- D. Section 23 21 14 Hydronic Specialties.
- E. Section 23 21 23 Hydronic Pumps.
- F. Section 23 31 00 HVAC Ducts and Casings.
- G. Section 23 33 00 Air Duct Accessories.
- H. Section 25 14 00 Integrated Automation Local Control Units.
- I. Section 25 15 00 Integrated Automation Software.
- J. Section 25 35 19 Integrated Automation Control Valves.
- K. Section 26 05 83 Wiring Connections.

1.03 ABBREVIATIONS AND ACRONYMS

- A. BACnet/IP: BACnet communications over internet protocol.
- B. BACnet/MSTP: BACnet communications over Master-Slave/Token-Pass protocol.
- C. BAS: Building Automation System; controls.
- D. BMS: Building Management System; controls.
- E. COP: Coefficient of Performance; applicable when heating.
- F. DDC: Direct Digital Control.
- G. DX: Direct expansion cooling or refrigeration equipment.
- H. EAT: Entering Air Temperature.
- I. ECM: Electronically Commutated Motor.
- J. EER: Energy Efficiency Ratio; applicable when cooling.
- K. EFT: Entering Fluid Temperature; coil or heat exchanger.
- L. EMS: Energy Management System; BAS or BMS add-on.
- M. EWT: Entering Water Temperature; coil or heat exchanger.
- N. HDPE: High Density Polyethylene.
- O. IAQ: Indoor Air Quality.
- P. LAT: Leaving Air Temperature.
- Q. LED: Light Emitting Diode.
- R. WSHP: Water-Source Heat Pump.

1.04 REFERENCE STANDARDS

A. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2017, with Addendum (2022).

- B. ASHRAE Std 90.1 I-P Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. ASHRAE Std 135 A Data Communication Protocol for Building Automation and Control Networks; 2020, with Addendum (2024).
- D. ASHRAE Std 13256-1 Water-Source Heat Pumps Testing and Rating for Performance Part
 1: Water-to-Air and Brine-to-Air Heat Pumps; 2021.
- E. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- F. UL 94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances; Current Edition, Including All Revisions.
- G. UL 508 Industrial Control Equipment; Current Edition, Including All Revisions.
- H. UL 723 Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.
- I. UL 1995 Heating and Cooling Equipment; Current Edition, Including All Revisions.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Product Data: Provide drawings indicating dimensions, rough-in connections, and electrical characteristics and connection requirements.
- C. Manufacturer's Instructions: Include assembly instructions, support details, connection requirements, and start-up instructions.
- D. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.
- E. Operation and Maintenance Data: Provide maintenance data, parts lists, controls, and accessories. Include trouble-shooting guide.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Del Tech's name and registered with manufacturer.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL HEAT PUMP FABRICATION REQUIREMENTS

- A. Energy Efficiency: ASHRAE Std 90.1 I-P EER and COP ratings, minimum.
- B. ASHRAE Std 13256-1, factory-assembled unit including safety-controls, accessories, filters, piping, cables, wires, and precharged with R-454B refrigerant prior to testing.
- C. Include marked terminal strip to interface field-mounted components, accessories, and thermostat.
- D. Comply with UL 1995; place service and caution labels on unit.
- E. Cabinet Assembly:
 - 1. Construct of zinc-coated, heavy-gauge, galvanized steel with exposed edges rounded.
 - 2. Finish: Factory apply electrostatic powder paint or baked enamel finish. Coordinate with DEDC, LLC for specific color finish requirements of console units or other units installed within occupied spaces.
 - 3. Provide access panels for inspection, cleaning, and servicing of refrigerant, controls, condensate drain pan, coil, and blower.
 - 4. Furnish 1-inch or 3-inch duct flange on open-discharge selections.

- 5. Interior Insulation: Minimum 1/2 inch thick, dual density, bonded glass fiber.
- 6. Provide flame spread of less than 25, and smoke developed classification of less than 50 in compliance with ASTM E84 and UL 723.
- 7. Sound and Noise Suppression:
 - a. Mechanical Rooms: 18 gauge, 0.05 inch, minimum.
 - b. Occupied Spaces: 16 gauge, 0.06 inch, minimum.
 - c. Compressor enclosure lined with 1/2 inch thick insulation.
 - d. Include vibration isolation between compressor and heat exchanger.
 - e. Include length-wise, unit base stiffeners.
 - f. Foam gasket sealant around compressor and end panel perimeter.
- F. Blower Section:
 - 1. Draw-through, forward curved fan, constructed of corrosion-resistant, galvanized material and designed for efficient, quiet operation.
 - 2. Factory program for both soft start and constant flow output over static pressure range.
 - 3. Provide preinstalled neutral wire protection when required to support specified fan type.
 - 4. Motor to include thermal overload protection, quick disconnect plug, and permanently lubricated bearings.
 - 5. Belt-Driven Motor Requirements: Provide adjustable blower motor/sheave combination device based on indicated flow performance requirements.
 - 6. Variable Speed Control: Configure controller to maintain adjustable flow setpoint for modulating or speed-switched units.
 - 7. Fan Turndown: Design control features to allow fan speed reduction to adjustable 50 percent of its capacity when the zone set point temperature is satisfied or when unit runs in fan-only mode.
- G. Evaporator Section:
 - 1. Internally finned, aluminum or copper tubes mechanically bonded to configured aluminum plate fin, corrosion inhibitor coated as indicated.
 - 2. Refrigerant Coil Distributor Assembly: Orifice style with round copper distributor tubes.
 - 3. Thermostatic Expansion Valve: Factory select and install for wide control range.
 - 4. Factory leak test to minimum 450 psi and pressure test to minimum 600 psi.
 - 5. Tubes: Size tubes consistent with coil capacity. Fabricate suction header from rounded copper pipe.
 - 6. Completely evacuate air and charge with proper column of refrigerant prior to shipment.
 - 7. Drain Pan:
 - a. Construct of ABS plastic, HDPE, stainless steel, or other corrosion-resistant material and flame rated in accordance with UL 94 when using polymers.
 - b. Slope on two planes to pitch condensate to drain connection.
 - c. Float Switch: UL 508, rated for protection against condensate overflow, controller connected.
- H. Compressor Section:
 - 1. Provide rubber mounting devices located underneath compressor mounting base.
 - 2. Safety Interlocked Devices:
 - a. Thermal overload protection.
 - b. High pressure switch for protection against excessive discharge pressure.
 - c. Low pressure safety for protection against loss of refrigerant charge.
- I. Refrigerant Tubing Lines:
 - 1. Tubing made of copper with service pressure ports on high- and low-pressure sides.
 - 2. Free from contaminants and conditions such as drilling fragments, dirt, and oil.
 - 3. Include drier, thermal expansion valve, and other related components.
 - 4. Freeze Protection: 30 degrees F, thermistor based.

- 5. Insulation: Evaporator and heat exchanger sides; minimum 3/8 inch thick elastomeric insulation.
- J. Refrigerant Load Control:
 - 1. Hot-Gas Bypass: Provide to increase heat transfer efficiency at low temperatures.
 - 2. Hot-Gas Reheat Coil:
 - a. Humidity Control: Upgrade thermostat to include humidity sensor tied to unit controller for integral dehumidification control.
 - b. Coil Assembly: Aluminum or copper tubes mechanically expanded into evenly spaced aluminum fins.
 - c. Coil Testing: Proof test at minimum of 1.5 times maximum operating pressure, then leak test at maximum operating pressure.
 - 3. Hot-Water Generator:
 - a. Secondary coil or heat exchanger, reversing valve, and accessories.
 - b. Storage: Interconnect to existing water heater or external storage tanks.
- K. Water-to-Refrigerant Heat Exchanger:
 - 1. Coaxial Type: Provide aluminum or copper tube and fins.
 - 2. Brazed-Plate Type: Stainless steel, with bidirectional liquid line filter drier.
 - 3. Insulate heat exchanger, water lines, and refrigerant suction lines for prevention of condensation at temperatures below 60 degrees F.
 - 4. Provide rubber isolation to heat exchanging device for enhanced sound attenuation.
 - 5. Freeze Protection: 35 degrees F by thermistor sensing.
 - 6. Minimum Working Pressure: 400 psi water side, 600 psi DX side.
 - 7. End Connections: Copper NPT. Provide flow shut-off ball valves.
 - 8. Accessories:
 - a. Strainer, PT test plug, and flow regulator.
 - b. Unit-controlled, return-water-side solenoid valve.
- L. Waterside Economizer Section:
 - 1. Thermostat-controlled, metered, prepiped return air coil with 3-way valve assembly tied and coordinated by unit controller.
 - 2. Provide assembly factory-installed or shipped loose for field installation as indicated.
 - 3. Performance Requirements: As indicated on drawings.
 - 4. Air-to-Water Hydronic Coil:
 - a. Aluminum or copper tubes and aluminum plate fin combination.
 - b. Accessible, cleanable, dual sloped, noncorrosive drain pan.
 - c. Leak test at maximum operating pressure.
 - d. Factory proof test at minimum 1.5 times maximum operating pressure.
 - 5. Modulating or position-adjusted control valve to engage and control coil at listed EWT.
- M. Filter Section:
 - 1. ASHRAE Std 52.2, minimum efficiency reported value or MERV listing.
 - 2. Filter Box: Provide field-installed return duct-mounted filter housing with side access.
- N. Electrical:
 - 1. Provide factory-installed phase loss safety device for 3-phase units.
 - 2. Configure unit for single point connection, include terminal for field-installed components.
 - 3. Include separate holes and knockouts with plastic ferrules for respective electrical and controls wiring.
- O. Unit Controls:
 - 1. DDC:
 - a. Tested to monitor and handle sequencing functions and other operational modes using field-mounted thermostat and other sensors.
 - b. Coordination and Sequencing:

- 1) Internal Devices: Include compressors, blower, sensors, switches, valves, safeties, other components.
- 2) Field-Installed Devices: Solenoid valves, thermostat, EWT sensors, LWT sensors, load-pump contact, source pump contact, and other devices required for operation.
- 3) Safeties: At minimum include anti-short-cycle compressor protection, condensate overflow, refrigerant high pressure, refrigerant low pressure, loss-of-charge, refrigerant freeze protection, and freezestat.
- 2. Thermostat:
 - a. Field mounted and wired, tied into prewired control-interface terminals.
 - b. Smart Thermostat:
 - 1) BAS- or BMS-linked programmable thermostat; see Section 25 14 00.
 - c. Programmable Thermostat:
 - 1) Electro-mechanical type with key- or pushbutton-operated display.
 - 2) Programmable occupied/unoccupied weekly and holiday schedule.
 - d. Nonprogrammable Thermostat:
 - 1) Electro-mechanical type with key- or pushbutton-operated display.
 - 2) User-configurable, precoded options aligned with equipment functions.
 - e. Thermostat: Single-gang-box-mounted platinum or thermistor.
 - 1) Local Interface to Include:
 - (a) Filter maintenance indicating status.

2.02 HORIZONTAL/VERTICAL WATER-SOURCE HEAT PUMP

- A. Cabinet Air Discharge Configuration: As indicated on drawings.
- B. Compressor: Hermetically sealed, single-stage rotary or single-stage scroll type.
- C. Water-to-Refrigerant Heat Exchanger: Coaxial type.
- D. Blower Section: Provide high-static, permanent split capacitor (PSC) motor fan type.
- E. Filter Section: Include MERV 4 rated air filter.
- F. Electrical: 277 VAC, 1 phase, 60 Hz with field-installed disconnect switch.
- G. Accessories: Provide ball valves, hoses, and Y-strainer.
- H. Unit Controls: Factory-supplied DDC with thermostat.
 - 1. BAS, SCADA, or other Integrated Automation Link: BACnet MS/TP in accordance with ASHRAE Std 135.
 - 2. Control Valve: Return-installed, position-adjusted, ball type; see Section 25 35 19.

2.03 HIGH-EFFICIENCY, DUAL-STAGE, HORIZONTAL/VERTICAL WATER-SOURCE HEAT PUMP

- A. Manufacturers:
 - 1. WaterFurnace International, Inc; Versatec 500 WSHP: www.waterfurnace.com/#sle.
 - 2. Climate Master: www.climatemaster.com
 - 3. Substitutions: See Section 01 60 00 Product Requirements.
- B. Cabinet Air Discharge Configuration: As indicated on drawings.
- C. Compressors: High-efficiency, hermetically sealed, dual-stage scroll type.
- D. Water-to-Refrigerant Heat Exchanger: Coaxial type with factory-supplied water economizer.
- E. Blower Section: Provide static or flow-controlled, variable-speed, belt-driven fan motor.
- F. Filter Section: Include MERV 13 rated air filter.
- G. Electrical: 277 VAC, 1 phase, 60 Hz with factory-provided disconnect switch.
- H. Accessories: Provide ball valves, hoses, and Y-strainer.
- I. Unit Controls: Factory-installed DDC with thermostat; see Section 25 14 00.

- 1. BAS, SCADA, or other Integrated Automation Link: BACnet MS/TP in accordance with ASHRAE Std 135.
- 2. Control Valve: Return-installed, modulating, pressure-independent ball type; see Section 25 35 19.

2.04 HOSE KITS, VALVES, FITTINGS, AND ACCESORIES

A. Manufacturers:

- 1. Griswold Controls: www.griswoldcontrols.com/#sle.
- 2. Hays Fluid Controls: www.haysfluidcontrols.com/#sle.
- 3. IMI Flow Design, a brand of IMI Hydronic Engineering Division of IMI plc: www.flowdesign.com/#sle.
- 4. Substitutions: See Section 01 60 00 Product Requirements.

B. Hoses:

- 1. Provide hoses for units for connection to main water supply and return headers.
- 2. Length: 2 feet.
- 3. Material: Braided stainless steel rated to minimum 400 psi at 265 degrees F.
- C. Ball Valves:
 - 1. Brass body for shutoff and hydronic balancing.
 - 2. Provide pressure/temperature ports.
 - 3. Provide with balancing valves.
- D. Y Strainers:
 - 1. Bronze body.
 - 2. "Y" type configuration with brass cap.
 - 3. Maximum Operating Pressure: Minimum 450 psi.
 - 4. Screen: Stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Suspended Units: Suspend from structure with threaded steel rods and 0.25 inch minimum static deflection rubber-in-shear vibration isolators and seismic restraints.
- C. Ductwork:
 - 1. Provide as indicated on drawings; see Sections 23 31 00 and 23 33 00.
- D. Pumps: Connect to system or booster pump in accordance with Section 23 21 23.
- E. Electrical: Provide equipment raceway, wiring, and cables; see Section 26 05 83.
- F. Coordinate installation of units with architectural, mechanical, and electrical work.
- G. On water coils, provide shut-off valve on supply line and balancing valve on return line. Provide manual air vents at high points complete with stop valve.
- H. Install wall-mounted thermostats, humidistats, and switch controls in electrical outlet boxes at heights to match lighting controls. Provide thermal break barrier for outdoor walls.

3.02 CONNECTIONS

- A. Connect supply/return piping from heat pump to appropriate water source piping; see Section 23 21 13. Complete end connections with unions and shut-off valves; see Section 23 21 14.
- B. Connect condensate drain pan to indirect waste connection with P-trap of adequate depth to seal against fan pressure; see Section 22 10 05.
- C. Install cleanouts at each directional change in piping.
- D. Connect supply/return air ducts with flexible connectors; see Section 23 33 00.

- E. Installation of piping adjacent to heat pump to allow for maintenance and service.
- F. Field Install all electrical devices provided by the heat pump manufacturer not specified to be factory-installed.

3.03 SYSTEM STARTUP

- A. Provide manufacturer's field representative to perform systems startup; see Section 23 05 93.
- B. Prepare and start equipment and systems in accordance with manufacturers' instructions and recommendations.
- C. Adjust for proper operation within manufacturer's published tolerances.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements for additional requirements.
- B. Provide manufacturer's field representative to test, inspect, instruct, and observe.
- C. Inspect for and remove blocks, shipping bolts, and tie-down straps.
- D. Test the heat pumps for performance compliance upon completion of the installation and energization of all electrical circuitry.
- E. Operational Test: Start units to confirm unit operation and motor rotation.
- F. Controls and Safety Switches: Test, adjust, and replace damaged/malfunctioning controls and equipment.
- G. Coordinate BAS, BMS, or Integrated Automation linking between unit controller(s) and remote front-end interface; see Section 25 15 00.
- H. Malfunctioning Units: Remove, replace, and retest as specified above.

3.05 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 Closeout Submittals for closeout submittals.
- B. See Section 01 79 00 Demonstration and Training for additional requirements.
- C. Demonstrate proper operation of equipment to the designated representative of the Del Tech.
- D. Demonstration: Demonstrate operation of system to Del Tech personnel.
 - 1. Use operation and maintenance data as reference during demonstration.
 - 2. Conduct walking tour of project.
 - 3. Briefly describe function, operation, and maintenance of each component.
- E. Training: Train Del Tech's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.

END OF SECTION

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PRELIMINARY - ISSUED FOR BID

PARTITION GENERAL NOTES

- ALL DIMENSIONS ARE TO FACE OF STUD OR CMU UNLESS NOTED OTHERWISE.
- 2. STEEL STUDS ARE TO BE 20 GA. MINIMUM AT STEEL STUD PARTITIONS, PROVIDE 16 GA. DOUBLE STEEL STUDS AT ALL DOOR OR BORROWED LITE JAMBS. STUDS ARE TO EXTEND FROM FLOOR TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE AND SHALL BE ANCHORED AT EACH END.
- 3. UNLESS NOTED OTHERWISE ALL PARTITIONS SHALL EXTEND TO THE UNDERSIDE OF STRUCTURE FOR STEEL STUD FRAMING. PROVIDE SLIP JOINT AS RECOMMENDED BY MANUFACTURER.
- 4. UNLESS NOTED OTHERWISE ALL GYPSUM BOARD SHALL BE 5/8". PROVIDE TYPE 'X' GYPSUM BOARD AT ALL RATED PARTITIONS.
- 5. REFER TO WALL SECTIONS AND DETAILS FOR TYPICAL EXTERIOR WALLS.
- 5. STUD SPACING SHALL NOT EXCEED 16" O.C. UNLESS NOTED OTHERWISE.
- 7. AT NEW DRYWALL PARTITIONS, PROVIDE WATER RESISTANT GYPSUM BOARD WHERE INDICATED AND AT THE FOLLOWING PARTITION LOCATIONS; TOILET ROOMS, U.N.O., CUSTODIAL CLOSETS, ALL PARTITIONS WITHIN
- 5'-0" OF;PLUMBING FIXTURES OR CASEWORK WITH PLUMBING FIXTURES. PROVIDE WATER RESISTANT GYPSUM TILE BACKER PANELS (ABLE TO BE TAPED) WHERE INDICATED AND AT THE FOLLOWING LOCATIONS; PARTITIONS RECEIVING PARTIAL OR TOTAL CERAMIC TILE FINISH, AT WATER
- 9. PROVIDE IMPACT-RESISTANT GYPSUM BOARD WHERE INDICATED AND AT THE FOLLOWING LOCATIONS; CUSTODIAL ROOMS AND NEW WATER COOLER ALCOVES.
- 10. ALL NEW DRYWALL PARTITIONS, PROVIDE CEMENTITIOUS BACKER BOARD WHERE NOTED AND AT THE
- FOLLOWING LOCATIONS; SHOWER STALLS.
 11. PROVIDE GYPSUM BOARD LEVEL IV (4) FINISH (TYPICAL) U.N.O. PROVIDE GYPSUM LEVEL IV (4) FINISH (TYPICAL) AT ALL EXISTING PARTITIONS. PROVIDE SKIM COAT AND/OR GYPSUM BOARD VENEER AS REQUIRED.
- 12. WOOD BLOCKING IS TO BE FIRE TREATED TYPICAL.
- 13. SIM ALL FURRED DRYWALL PARTITIONS AS REQUIRED TO MAINTAIN FINISH SURFACE PLUMB, TRUE AND STRAIGHT. COORDINATE WITH DOOR FRAMES AS REQUIRED.
- 14. ALL PENETRATIONS, OUTLETS, AND PERIMETER OF DRYWALL PARTITIONS SHALL BE SEALED WITH ACOUSTICAL SEALANT UNLESS FIRE RATING REQUIRED.
- 15. TYPICAL, ALL STUD PARTITION TYPES; PROVIDE CONTINUOUS 2x8 TREATED WOOD BLOCKING REINFORCING SUPPORT FOR ALL WALL HUNG ITEMS INCLUDING BUT NOT LIMITED TO; HANDRAILS, GRAB BARS, MILLWORK, USE 1x8 TREATED WOOD BLOCKING AT METAL FURRING LOCATIONS TREATED WOOD BLOCKING IS CONTACTING METAL STUDS OR COLD FORMED METAL FRAMING, INSTALL A BARRIER OF 15 LB. ASPHALT FELT.
- 16. PROVIDE WALL TYPE TYPICAL FOR CONSTRUCTION OF PARTITIONS AT LOCATIONS WITH RECESSED ITEMS INCLUDING BUT NOT LIMITED TO; CASEWORK, HAND DRYERS, FIRE CABINETS, WATER COOLERS, ABOVE AND BELOW RECESSED OBJECTS - REFER TO LINTEL SCHEDULE.
- 17. PROVIDE APPROPRIATE PATCHING AT PARTITION PENETRATIONS TO MATCH WALL RATING. PENETRATIONS NOT LIMITED TO MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, GEOTHERMAL PIPING. REFER TO LIFE SAFETY PLANS FOR RATINGS. SEE SECTIONS AND DETAILS.
- 18. AT EXISTING WALLS TO REMAIN, APPLY GYPSUM BOARD VENEER OR METAL FURRING WITH GYPSUM BOARD SHEATHING AS REQUIRED TO ALIGN EACH SIDE OF PARTITION WITH ADJACENT NEW PARTITION. PROVIDE FINISH CONSISTENT WITH LEVEL IV (4) FINISH (TYPICAL).
- 19. ALL STUD CAVITIES SHALL RECEIVE FOIL M-FACED FIBERGLASS INSULATION.
- 20. ALL NEW AND EXISTING SHEATHING SHALL RECEIVE AIR INFILTRATION BARRIER PRIOR TO RECEIVING EXTERIOR FINISHES.
- 21. WHERE THERE IS AN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE, FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING IN THE CONCEALED SPACE. SUCH IDENTIFICATION SHALL:
- A. BE LOCATED WITHIN 15 FEET (4572 MM) OF THE END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION.
- B. INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3/8-INCH (9.5 MM) STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING, "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS," OR OTHER WORDING.



No.	Description	Date
1	ISSUED FOR BID	05/08/2025
2	ADDENDUM 4	05/29/25
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PRELIMINARY - ISSUED FOR BID







No.	Description	Date
1	ISSUED FOR BID	05/08/2025
2	ADDENDUM 2	05/15/2025
3	ADDENDUM 4	05/29/25



KEYPLAN

DELA	WARE
TECHNICAL	COMMUNITY
COLI	LEGE

OWNER: DTCC PO BOX 897 DOVER, DE 19903

ARCHITECT BSA+A 954 JUSTISON ST WILIMINGTON, DE 19801 p:302.6589300 f:302.658.1125

STRUCTURAL BAKER INGRAM & ASSOC. 1050 S. STATE ST. DOVER, DE 19901 p:302.734.7400 f:302.734.7592

> MEP DEDC 315 S CHAPEL ST NEWARK, DE 19711 p:302.738.7172 f:302.738.7175

CIVIL LANDMARK SCIENCE & ENGINEERING 200 CONTINENTAL DR. STE. 400 NEWARK, DE 19713 p:302.323.9377 f:302.323.9461



Buck Simpers Architect + Associates, Inc. 954 Justison St. Wilmington, DE 19801 302 658-9300 Fax 658-1125





PRELIMINARY - ISSUED FOR BID

ROOF PLAN LEGEND



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KEYPLAN

DELA	WARE
TECHNICAL	COMMUNITY
COLI	LEGE

OWNER: DTCC PO BOX 897 DOVER, DE 19903

ARCHITECT BSA+A 954 JUSTISON ST. WILIMINGTON, DE 19801 p:302.6589300 f:302.658.1125

STRUCTURAL BAKER INGRAM & ASSOC. 1050 S. STATE ST. DOVER, DE 19901 p:302.734.7400 f:302.734.7592

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CIVIL LANDMARK SCIENCE & ENGINEERING 200 CONTINENTAL DR. STE. 400 NEWARK, DE 19713 p:302.323.9377 f:302.323.9461

B S A + **A**

Buck Simpers Architect + Associates, Inc. 954 Justison St. Wilmington, DE 19801 302 658-9300 Fax 658-1125





2 CONFERENCE AND PRESIDENT'S ZOOM ROOM FURNITURE PLAN 1/4" = 1'-0"





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3 BUILDING SECTION AT MECHANICAL ACCESS 1/4" = 1'-0"















































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DTCC OFFICE OF THE PRESIDENT **RENOVATION & ADDITION**

BUILDING SECTIONS

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