CITY OF DAYTON

ADDENDUM NO. 1

GOLF COURSE MAINTENANCE BUILDING

FOR THE DEPARTMENT OF RECREATION

QuestCDN eBidDoc #10336531

TO ALL BIDDERS:
This addendum, including all articles and corrections listed below, shall be taken into account in preparing the "Bid Forms" and shall become part of the Contract.

All bidders are requested to attach this Addendum to the Bid Forms and return to the City.

1. **REVISED SPECS**
   a. ADD attached DX Mini Split Systems – Air Cooled specifications 23 81 28.

2. **REVISED DRAWINGS** – None.

3. **QUESTIONS AND RESPONSES** – None.

END OF ADDENDUM NO. 1

Stephan Marcellus, Director
Department of Recreation
September 04, 2026

23 81 28 DX MINI SPLIT SYSTEMS – AIR-COOLED

PART 1 - GENERAL

1.1 The heating-cooling systems shall be variable capacity, DX split heat pump systems. The systems shall consist of indoor fan coil unit(s) matched to outdoor air-cooled heat pump condensing unit(s), singularly or multiple indoor units on a single outdoor unit, and associated controls. Refer to drawings for capacities and arrangements.

1.2 The design is based on Trane , Daikin, Mitsubishi, LG. equipment. The other manufacturers listed in Part 2 are acceptable manufacturers but shall include in their bid price all necessary revisions from the basis of design required to install their system, including but not limited to variations in electrical services, branch controllers, pipe sizing, quantities and arrangements.

1.3 Equipment shall be rated in accordance with ARI 210/240 and so labeled, and shall be Listed by UL or ETL and so labeled.

1.4 The condensing units shall be factory charged with R-454B refrigerant.

1.5 Provide a set of spare filters for each indoor unit.

1.6 The systems shall carry a five (5) year warranty from date of installation. In addition, the compressors shall be covered by the manufacturer's limited warranty for a period of seven (7) years from date of installation. If, during these periods, any part shall fail to function properly due to defects in workmanship or material, it shall be replaced or, at the discretion of the manufacturer, repaired. The 2nd thru 5th year and 2nd thru 7th year warranties do not include labor.

1.7 Refer to the HVAC and Electrical drawings for electrical power feeds. Compare unit requirements to feeder sizes shown. Refer to 23 05 13 Electrical Requirements for HVAC Equipment.

1.8 Installing contractor shall be factory trained and certified to install the systems. Training shall be documented by the manufacturer and certification shall be submitted for review with shop drawings, prior to the installation of the systems.

1.9 Mechanical equipment, appliances and supports that are exposed to wind shall be designed and installed to resist the wind pressure determined in accordance with the building and mechanical code. Refer to specification 23 05 30 Bases and Supports for HVAC Equipment for additional requirements.

PART 2 - PRODUCTS

2.1 Each Air-Cooled Heat Pump Condensing Unit shall consist of:

A. General:

1. Each outdoor unit shall be specifically matched to the corresponding indoor unit size(s), factory assembled and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of inverter scroll or rotary compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separators, service ports and refrigerant regulator. High/low pressure gas line, liquid and suction lines, individually insulated between the outdoor and indoor units.
2. Accumulator with refrigerant level sensors and controls; high-pressure safety switch, over-current protection and DC bus protection.
3. High efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained.

4. Auto-charging feature and a refrigerant charge check function. The unit shall be capable of metering the refrigerant charge as additional refrigerant is added to the system and will calculate how much additional refrigerant is to be added to the system.
5. Oil recovery cycle shall be automatic occurring after start of operation and then at re-occurring intervals during unit operation.
6. Cooling operation down to 0 degF dry bulb ambient temperature. Provide accessories as necessary to achieve the low ambient operation.
7. The system shall automatically restart operation after a power failure and will not cause any settings to be lost, thus eliminating the need for re-programming.
8. Unit shall have a sound rating no higher than 64 dB(A) measured at 3 feet from any side of the unit.

B. Cabinet shall be fabricated of galvanized or rust-proofed steel, bonderized and finished with a powder coated baked enamel. The outdoor unit shall come furnished with four (4) mounting feet, mounted across the base pan, to allow bolting to an equipment pad.

C. Condenser fans shall be statically and dynamically balanced direct drive, variable speed propeller type. Fan motor shall have inherent protection, permanently lubricated bearings, and be completely variable speed. Fan motor shall be mounted for quiet operation. Fan shall be provided with a raised guard to prevent contact with moving parts.

D. Condenser coils shall be copper or other nonferrous construction with corrugated fin tube. The fins shall be aluminum or covered with an anti-corrosion acrylic resin and hydrophilic, rated for up to 500 hours salt spray. Automatic defrost shall remove any frost from the outdoor unit allowing the system to maintain heating capacity.

E. Compressor

1. Compressors shall be inverter scroll or rotary type, inverter-driven variable speed, capable of changing the speed to follow the variations in total cooling and heating load.
2. Each compressor shall be equipped with a crankcase heater (if required for specified design and operating conditions), high pressure safety switch, and internal thermal overload protector.
3. The capacity control range shall be minimum 10% to 100%.
4. Compressor assembly shall be installed on vibration isolators.
5. The following safety devices shall be included on the condensing unit: high pressure switch, control circuit fuses, fusible plug, high pressure switch, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter and anti-recycling timers.

F. Units shall be rated under AHRI 210/240 and 340/360. Single-Phase cooling-only units shall meet or exceed the DOE requirement of 13 SEER. Single-Phase heat pump units shall meet or exceed the DOE requirement of 14 SEER and 8.2 HSPF.

Note: Shop drawing submittals shall include AHRI ratings to show compliance with the requirements.

G. Concealed Ducted Units:

1. General
   a. Concealed indoor units shall be ducted fan coil type, suspended from structure above the ceiling utilizing neoprene isolators, with front discharge air duct collar and filtered back or bottom return air for supply and return ductwork as shown on the drawings.
   b. Units shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control

circuit board and fan motor. The unit shall have a self-diagnostic function, time delay mechanism, and an auto restart function.
   c. Refer to drawings for required capacities
2. The cabinet exterior shall be 18 gauge galvanized steel. The interior of the cabinet shall be constructed with sound absorbing foamed polystyrene and polyethylene insulation
3. Fan shall be an assembly with one or two fans direct driven by a single motor. The fan shall be statically and dynamically balanced and run on a motor with permanently lubricated bearings. Airflow rate adjustment shall be available via thermally protected 3-speed motor.
4. High-efficiency 1" MERV 13 filters in the return air, back or bottom mounted per the duct layout.
5. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing, minimum 3-rows. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed and pressure tested at the factory. A drip pan under the coil shall have an internal trap and auxiliary pan under the coil header.
6. Electrical Requirements
   a. Unit shall operate on 115 volt, 208 volt, or 230 volt, 60 Hz single-phase power supply as specified on the equipment schedule. Power and control connections shall have terminal block connections
7. Controls
   a. Controls shall consist of a microprocessor-based control system, which shall control space temperature, determine optimum fan speed, and run self-diagnostics. The space temperature control range shall be from 64F to 84F.
   b. Provide hard wired wall-mounted local programmable controller and a return air sensor for each unit, with features as specified in the "Controllers" paragraph below.
   c. Controls shall be 24 volt, and shall be easily operated by the user from the wall-mounted local controller.
8. Accessories
   a. Condensate Overflow Switch -- A level sensor on the condensate pan shall stop cooling operation and alarm the BAS if the level in the condensate pan is near overflow condition.
   b. Condensate Pump – Provide a factory-furnished UL 2043 plenum-rated condensate pump and sensing unit compatible with the fan coil voltage to remove condensate from the drain pan. Pump shall be thermally-protected (auto reset) and designed for quiet operation (less than 27 dBA) and consist of two parts: a reservoir/sensor assembly, and a remote sound-shielded pump assembly. The lift capability of the condensate pump shall be minimum 18". Pump shall be powered and wired from the fan coil unit power connection, downstream of safeties.
   c. Provide mixing boxes of physical size to match basic unit, and include equal-sized flanged openings capable of handling full air flow. Arrange openings as indicated on drawing sheets. Provide dual action parallel dampers for return air with sealing edges, arranged to operate automatically with one set of linkage. Provide parallel blade damper for outside air directed towards the return air stream for reduced stratification. Provide dampers of balanced construction, rotating in sintered bronze or nylon bearings.

2.2 Controllers:

A. Local Controllers (Room Thermostats)

1. Wall mounted local remote controllers (thermostats) shall be provided to allow the user to change on/off, temperature setting, and fan speed setting for each fan coil unit. The room temperature shall be sensed at this wall mounted remote controller (thermostat) unless noted otherwise. The controller shall display a four-digit error code in the event of system abnormality/error.

2. The fan coil thermostats shall have their buttons locked out thru software so that the setpoints are only adjustable thru the BACnet interface. Review with Owner prior to implementation.
3. The Local Controller shall be mounted into a standard 2” x 4” junction box.
4. Unit Display
    a. The Local Remote Controller shall be a backlit LCD display with contrast adjustment.
    b. The controller shall display On/Off Status, Operation Mode, Setpoint, and Fan Speed. The controller shall display temperature setpoint in one degree increments with a range of 60-90 degF. On/Off status shall be displayed with an LED.
    c. Error codes shall be displayed in the event of system abnormality/error.
    d. The following system temperatures shall be capable of being displayed to assist service personnel in troubleshooting:
        1) Return air temperature
        2) Liquid line temperature
        3) Gas line temperature
        4) Discharge air temperature (if available on the unit)
        5) Remote temperature sensor temperature (if applicable)
        6) Indoor space temperature setpoint
5. Operation
    a. The controller shall be capable of controlling a group of up to 1 indoor units coupled to a common outdoor unit. The following operation groups shall be controlled:
        1) On/Off, Operation Mode (Cool, Heat, Fan, Dry and Auto* (*with VRV Heat Recovery System))
        2) Independent cooling and heating setpoints in the occupied mode
        3) Independent cooling setup and heating setback
        4) Fan speed
        5) Airflow direction
        6) The controller shall be able to limit the user adjustable setpoint ranges individually for cooling and heating in the occupied period
        7) Lock out key settings
        8) Indoor unit group assignments.
6. Program Functions
    a. Controller shall support schedule settings with selectable weekly pattern options.
        1) Seven day week
        2) Weekday + weekend
        3) Weekday + Saturday + Sunday
        4) Independently settable Cooling and/or Heating setpoints when unit is on (occupied).
        5) Setup (Cooling) and Setback (Heating) setpoints when unit is off (unoccupied)
        6) A maximum of 5 operations schedulable per day
        7) Time setting in 1-minute increments.
    b. The Controller shall support auto-changeover mode for both heat pump and heat recovery systems allowing the optimal room temperature to be maintained by automatically switching the indoor unit’s mode between Cool and Heat according to the room temperature and temperature setpoint.
        1) Changeover to cooling mode shall occur at cooling setpoint + 1oF .
        2) Changeover to heating mode shall occur at heating setpoint - 1oF .
    c. The Controller shall support an Auto-Off-Timer for temporarily enabling indoor unit operation during the unoccupied period.
        1) When the Off Timer is enabled and when the unit is manually turned on at the remote controller, the controller shall shut off the unit after a set time period.
        2) The time period shall be configurable in the controller menu with a range of 30-180 minutes in 10 minute increments.
    d. The space temperature shall be sensed at the local controller unless noted otherwise to be in the return air of the unit or as a remote temperature sensor.

2.3 Refrigerant Piping:

A. Refrigerant piping shall be copper tubing conforming to ANSI B31.5 and ASTM B280. Refrigerant piping systems and components shall be engineered, installed, tested and placed in operation in accordance with ASME B31.5, latest edition.

B. Copper tubing shall be Type ACR, hard-drawn straight lengths. Fittings shall be copper, UL or ETL tested to UL 207, and certified to a working pressure of 600 psig. All joints shall be brazed using silver brazing alloy while flowing an inert gas such as dry nitrogen through the piping. Copper tubing that is downstream of branch controllers and .625" size and smaller may be Type ACR soft annealed coils for lengths under 25 ft if approved by the equipment manufacturer. Refer to 23 23 00 for additional information.

C. Pipe arrangement, devices and sizing information shown on the drawings is limited due to variations in equipment manufacturers' requirements. The equipment supplier shall prepare project-specific drawings of each piping system showing numbers and sizes of piping, devices and accessories, coil circuitry, traps, double suction risers and other such detail required for the application shown on the drawings and as specified herein. Drawings shall be submitted to the Engineer for review with the equipment shop drawings.

D. The equipment supplier shall provide piping installation instructions to the Contractor and supervision as needed to ensure that the piping system is installed in accordance with the equipment manufacturer's recommendations.

2.4 Connectivity

A. Each system shall have integral hard-wired network connectivity to a remote cloud service such that fan coil and each condensing unit can be accessed via the web for informational and troubleshooting activities.

B. Owner's access thru the cloud shall be free of charge for the condensing unit warranty period plus one year. Cost for extending the access period beyond that stated above shall be made available to the Owner via a formal contract proposal.

C. Access shall be password protected, via IOS or Android or Windows operating systems, with secure outbound only data transmission of the following live information as a minimum via a Graphical Dashboard Display:
1. Space Temperature
2. Fan Coil Status
3. Condensing Unit Status
4. Alarms.
5. Customizable email notifications.
6. System and Data History
7. Service Log History

2.5 The split systems shall be manufactured by Trane, Daikin, Mitsubishi, LG.

PART 3 - EXECUTION

3.1 Installers shall have received training by the manufacturer of the systems being supplied for the project. If they have not received training the system manufacturer shall schedule and perform required installation training.

3.2 Piping Installation

A. Pipe arrangement, devices and sizing information shown on the drawings is schematic in nature, limited due to variations in equipment manufacturers' requirements. The equipment supplier shall prepare project-specific drawings of each piping system showing numbers and sizes of piping, devices and accessories, coil circuitry, traps, double suction risers and other such detail required for the application shown on the drawings and as specified herein. Exact routing, and pipe quantities and sizing shall be per manufacturer's requirements. Refrigerant piping shall conform to ANSI B31.5 and ASTM B280. Refrigerant piping systems and components shall be engineered, installed, tested and placed in operation in accordance with ASME B31.5, latest edition. Drawings shall be submitted to the Engineer for review with the equipment shop drawings. Exact routing, and pipe quantities and sizing shall be per manufacturer's requirements.

B. At time of equipment submittal approval a piping diagram shall be provided by the equipment manufacturer to the Installing Contractor for each split system. The equipment manufacturer shall review the piping diagram with the Installing Contractor.

C. A copy of the Approved piping diagrams shall be kept at the jobsite.

D. The Installing Contractor shall update the piping diagrams with any field changes such as re-routing, shortening, lengthening or changing diameter of a pipe segment, adding or eliminating elbows and or fittings, resizing adding or eliminating indoor units, changing the mounting height, or moving the location of a device or fitting during installation. Those changes shall be communicated to the equipment manufacturer PRIOR TO INSTALLATION. The equipment manufacturer shall review and provide written approval or required modifications prior to installation.

E. The equipment manufacturer shall update their Piping Program to an "As-Built" program. Proper refrigerant charge shall be calculated and communicated to the Commissioning/Startup Technician along with the As-Built piping program.

F. The equipment manufacturer's representative shall inspect the piping system prior to charging and start-up, and document their approval or required changes.

G. System shall be leak checked, evacuated and charged by the Installing Contractor. Refer to 23 23 00.

3.3 Control wiring shall be installed between indoor units, condensing units, in strict accordance with the manufacturer's instructions. All control wiring shall be low-voltage plenum rated type.

3.4 Furnish and install all controls, wiring and accessories for a complete and operational system. Coordinate control integration into the BAS with the BAS installer.

3.5 Locate equipment so as to afford adequate service space.

3.6 Outdoor condensing units shall be installed in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances. Set with Type C2 isolators and secure to a 4" reinforced concrete pad. Piping shall be connected utilizing flexible connectors.

3.7 Install fan coil units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances. For gravity drained units, provide a drain pipe with trap from fan coil drain pans and extend piping to a floor drain or other point of discharge as shown and terminated per the Code. For fan coils fitted with condensate pumps, install pump and sensing devices in evaporator condensate drain piping, and provide and/or extend power and control and safety wiring, all in strict accordance

with the manufacturer's instructions. Condensate piping shall be extended to a floor drain or other point of discharge as shown and terminated per the Code.

3.8 Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26. Do not proceed with equipment start-up until wiring installation is acceptable to equipment Installer.

3.9 The system shall be checked, started, tested, adjusted and commissioned by a factory trained service agent of the manufacturer prior to operation. The unit manufacturer will be responsible for the start-up, programming, and commissioning of the entire variable refrigerant volume system. This shall include coordinating the interface requirements and system points with the temperature controls contractor. Manufacturer shall test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

3.10 Provide services of manufacturer's technical representative for 2 days to instruct Owner's personnel in operation and maintenance of units. Schedule training with Owner.

3.11 In addition to the adjustments and fine tuning, the Contractor shall include as a part of this contract the equivalent of three (3) man days of service technician time for work as may be specified by the Engineer.

3.12 The control equipment supplier shall provide 4 hours of instruction and training of the Owner's personnel regarding the hardware and software of the system. Software training shall include programs, methods of programming, control loops, scheduling and reports. Site training classes shall not be scheduled for longer than 4 hours duration except at the discretion of the Owner. Contractor shall videotape the demonstrations and make copies available to the Owner.

END OF SECTION