ATTACHMENT1

RFQ MM215820037- Preventative HVAC Maintenance (Boone, IA)

The following equipment will be serviced:

(1) Trane Air-Cooled Helical Rotary Packaged Chiller **(RECENTLY REPLACED. MODEL # AND SERIAL # CAN BE OBTAINED DURING THE SITE VISIT)**

Tag	Description	Model Number	Serial Number
~~CH-1~~	~~Trane Series R A/C Chiller~~	~~RTAA1254YQ0~~	~~U04D05651~~

(3) Trane M-Series Air Handling Units

Tag	Description	Model Number	Serial Number
AHU-1	M-Series Air Handler – North	MCCB 25	K04C46934 – K04C46942
AHU-2	M-Series Air Handler – South	MCCB 25	K04C46943 – K04C46951
AHU-3	M-Series Air Handler – Storage/Lockers	MCCB 21	K04C46953 – K04C46959

(43) VAV boxes with hot water reheat

Tag	Description	Model Number	Serial Number
VAV-100 to VAV-236	Single Duct VAV boxes	VCWF	R04C46261 - R04C46303

Schedule of Maintenance

Trane Air-Cooled Helical Rotary Chiller (NOTE: Recently replaced, Model & Serial # not available)

Comprehensive Annual Inspection (Performed during Spring Startup)

- Report in with the Customer Representative.
- Record and report abnormal conditions, measurements taken, etc.
- Review customer logs with the customer for operational problems and trends.

1. General Assembly

- Inspect for leaks and report leak check result.
- Repair minor leaks as required (e.g. valve packing, flare nuts).
- Calculate the refrigerant loss rate and report the results to the customer.
- Check the condenser fans for clearances and free operation.
- Check tightness of condenser fan motor mounting brackets.
- Check the set screws on the fan shafts.
- Visually inspect the condenser coil for cleanliness.

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- Verify the performance of the fan control inverter VFD, if applicable.
- Grease bearings as required.

2. Controls and Safeties

- Inspect the control panel for cleanliness.
- Inspect wiring and connections for tightness and signs of overheating and discoloration.
- Verify the working condition of all indicator/alarm lights and LED/LCD displays.
- Test oil pressure safety device (as required). Calibrate and record setting.
- Test the operation of the chilled water pump starter auxiliary contacts.

3. Lubrication System

- Pull oil sample for spectroscopic analysis.
- Test oil for acid content and discoloration.
- Make recommendations to the customer based on the results of the test.
- Verify the operation of the oil heaters.
- Lubricate all bearings as recommended by manufacturer

4. Motor and Starter

- Clean the starter cabinet and starter components.
- Inspect wiring and connections for tightness and signs of overheating and discoloration.
- Check the condition of the contacts for wear and pitting.
- Check contactors for free and smooth operation.
- Check all mechanical linkages for wear, security and clearances.
- Verify tightness of the motor terminal connections.
- Meg the motor and record readings.
- Verify the operation of the electrical interlocks.
- Measure voltage and record. Voltage should be nominal voltage ±10%.

Startup / Checkout Procedures

- Verify the operation of the oil sump heaters.
- Verify a full chilled water system.
- Start the chilled water pump.
- Test the operation of all flow-proving devices on the chilled water circuit.
- Start the chiller.
- Verify the unit starter panel operation, amperage, and voltage.
- Verify the operation of all timing devices.
- Check the set point and sensitivity of the chilled water temperature control. Verify the operation.
- Verify the operation of the current control device.
- Check the refrigerant level and correct charge.
- Verify the operation of the capacity control slide valves.
- Verify the operation of the “load” and “unload” solenoid valves.
- Verify the lead-lag compressor operation.
- Verify the operation of the electronic expansion valves.
- Check pressure drop across the oil filter.
- Verify clear refrigerant sight glasses.
- Check oil level.
- Test the high condenser pressure safety device and record setting.
- Test the low refrigerant temperature safety device and record setting.
- Review operating procedures with operating personnel.
- Provide a written report of completed work, operating log, and indicate any uncorrected deficiencies noted.

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Fall Season Shutdown Procedure

- Check the general operation of the unit.
- Shut down the chiller, pumps, and auxiliary equipment.
- Verify voltage to heat tape.
- Turn off equipment power as necessary

Chiller Condenser Coil Cleaning

- Thoroughly disassemble the coil guards and pressure was the condenser coil with chemical coil cleaner.

Trane M-Series Air Handling Units

Comprehensive Annual Inspection - Spring

- Report in with the Customer Representative.
- Record and report abnormal conditions, measurements taken, etc.
- Review customer logs with the customer for operational problems and trends.

General Assembly

- Inspect the unit for cleanliness.
- Inspect the fan wheel and shaft for wear and clearance.
- Check the sheaves and pulleys for wear and alignment.
- Check the belts for tension, wear, cracks, and glazing.
- Verify tight bolts, set screws, and locking collars.
- Check dampers for wear, security and linkage adjustment.
- Verify clean condensate pan.
- Verify proper operation of the condensate drain.
- Verify clean air filters. Inform owner if filters need to be changed. (Filters not included.)
- Verify clean coils. Inform owner if coils need to be cleaned. (Coil cleaner and labor to clean coils is not included.)
- Verify smooth fan operation.
- Log operating conditions after system has stabilized.
- Provide a written report of completed work, operating log, and indicate any uncorrected deficiencies detected.

Lubrication

- Lubricate the fan shaft bearings, if applicable.
- Lubricate the motor bearings, if applicable.

Controls and Safeties

- Test the operation of the low temperature safety device, if applicable.
- Test the operation of the high static pressure safety device, if applicable.
- Test the operation of the low static pressure safety device, if applicable.
- Check and record supply air and control air pressure, if applicable.
- Verify the operation of the control system and dampers while the fan is operating.

Motor and Starter

- Clean the starter and cabinet.
- Inspect the wiring and connections for tightness and signs of overheating and discoloration. This includes wiring to the electric heat, if applicable.
- Check the condition of the contacts for wear and pitting.

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- Check the contactors for free and smooth operation.
- Meg the motor and record readings.

Variable Frequency Drives – Maintenance Procedures

- Clean the heat sink.
- Inspect wiring and connections for tightness and signs of overheating and discoloration.
- Visually inspect panel for loose or damaged parts or wiring; also check for any accumulation of dirt and/or moisture.
- Verify proper operation of the unit.
- Verify proper DC buss voltage.

FALL HEATING INSPECTION

- Hot Water / Steam Heat Option
- Inspect control valves and traps.
- Check and calibrate all operating and safety controls.
- Verify the operation of the heating coils.
- Verify the operation of the unit low temperature safety device.

(43) VAV Box Inspections (Spring and Fall)

- Calibrate VAV box damper and verify proper damper operation.
- Check VAV box control settings, overrides, and set points.
- Report to owner's representative any repairs needed.

Miscellaneous

- Written reports will need to be provided to the customer representative following each regular inspection or emergency call.
- Building controls will **NOT** be included in the preventative maintenance.
- Provide hourly rates for HVAC equipment service during “normal” working hours and provide the hours considered “normal” hours.
- Provide hourly rates HVAC equipment service during “other” working hours such as weekends or holidays.
- Approval is required for the repair hours and repair parts not covered under the yearly preventative maintenance plan.
- Belts and filter changes will be changed by the owner and not Contractor.