

**EXHIBIT "0"**  
**15-100**  
**SPECIFICATIONS**

**FOR FULL HVAC SYSTEM MAINTENANCE**

**JUVENILE COURT FACILITY**

The Contractor is required to read carefully the specifications for all parts of the work as to become familiar with the work covered by this contract. The Contractor shall visit the site and familiarize himself with the existing conditions before submitting his bid. No additional compensation will be awarded due to unfamiliarity. It shall be assumed that he has full knowledge of existing conditions and accepts them as is.

**GENERAL SPECIFICATIONS**

**1. GENERAL**

It is understood and agreed that the following conditions shall be part of the specifications of this contract. These General Specifications shall be binding upon this Contractor.

**2. DEFINITIONS**

Where the word "Bidder" is used in the specifications, it shall be understood to mean any contractor submitting a bid to perform the work and supply the materials as defined in these specifications. Where the word "Contractor" is used in these specifications, it is understood to mean the successful bidder to whom the service contract is awarded. Where the word "Owner" is used in these specifications, it shall be understood to mean the County of Summit and the duly authorized representative thereof.

**3. SCOPE OF WORK**

This specification covers one (1) 5 Year full service HVAC maintenance and associated systems and components thereof at the SUMMIT COUNTY JUVENILE COURT, 650 Dan Street, Akron, Ohio 44310.

**4. PROPOSAL REQUIREMENTS**

Before submitting a proposal, each bidder must make a careful study of the site and specifications and fully assure himself as to the extent of the work, the type and quality of the materials, and the type and quality of the workmanship required. The bidder must carefully consider and visit the places where the work is to be performed, the materials delivered and,

should his proposal be accepted, he will be held responsible for any misunderstanding or error, whether or not it is the result of his unfamiliarity with the work. The bidder accepts all equipment as is. The proposal for this work must cover all contingencies, including all labor and material, scaffolding, equipment, rigging, tools, transportation, etc., necessary for the complete service on everything described, shown or reasonably implied herein. These specifications include all labor materials, equipment, replacement parts, etc., necessary to keep all systems in good operating condition satisfactory to the Owner. All items of labor, material or equipment not specifically required by the specifications but incidental to or necessary for the proper operation of the various systems, or reasonably implied in connection therewith, shall be furnished as if specifically required by the specifications. The right is reserved to furnish any detail drawings which, in the judgment of the Owner, may be necessary.

5. DISCREPANCIES

In the case of any discrepancies, the subject shall be referred to the Owner for decisions and the Owner's decision shall be binding and without such decision, adjustment shall not be made by the Contractor save at his own risk.

6. SUMMIT COUNTY REPRESENTATIVES

The Summit County representative shall be the following and shall be called in the order of precedence as noted below sequentially.

1. Jon Holland (330) 926-2492

7. BIDDER QUALIFICATIONS

The following requirements shall be considered as the minimum standards for a Service Company to be considered as qualified to provide services under this contract, and shall be a prerequisite to any award.

- A. The Service Company shall maintain a field office and/or warehouse that is within fifty (50) miles of the facility to be serviced under this specification. Bidder must submit address of said facility with his bid.
- B. A minimum of two (2) local HVAC mechanics and two (2) local Electronic Technicians employed by the Service Company shall be a resident in an area within a maximum of a fifty (50) mile radius of the facility to be serviced. Bidder must submit the names and cities of residence of these individuals with his bid.

- C. Services that are to be provided shall be performed by qualified and trained service personnel that are directly employed by the Service Company. Subcontracting portions of the system or services requested in this specification shall not be allowed without prior written consent.
- D. EMPLOYEES – The Service Company shall provide with their proposal, resumes of all personnel to be associated with this contract. Minimum resumes required are:
1. HVAC mechanic – (2)
  2. Service Manager – (1)
  3. Electronic Technician – (2)
- E. The Service Company shall submit with his bid evidence of at least five (5) documented full service maintenance contracts in excess of \$40,000 per years similar to that of this specification with documented full service for at least five (5) years. This evidence shall include name, address, phone number, length of contract and type of equipment covered.
- F. The Service Company shall submit with this bid, evidence that indicates the use of a uniform and detailed method by which preventative maintenance tasks are defined, scheduled, recorded, updated, and processed. The Service Company's preventative maintenance program shall be computer generated, based on manufacturer's recommended maintenance procedures, and include provisions to build a historical data bank of all equipment being maintained. Single computer based, run time only, or hand scheduled programs are not acceptable.
- G. A copy of the preventative maintenance work order form which the Service Company plans to use shall be submitted with his bid package and must be approved by the Owner.
- H. The Service Company shall submit with their bid, evidence, satisfactory to the Owner, of their ability to troubleshoot, maintain, modify as required and secure replacement parts for the Carrier Comfort View System.
- I. There will be a mandatory bidder's meeting on \_\_\_\_\_, at \_\_\_\_\_ at the Summit County Juvenile Court, 650 Dan Street, Akron, Ohio in the entrance rotunda. This pre-bid meeting will involve an Owner's agent giving a tour of the job site and is the time the bidders may submit questions. All bidders are required to attend.

8. STANDARD OF QUALITY

- A. The specific mention of manufacturer's name brand of material, equipment, etc., shall be considered as indicating a standard of quality, grade, or type desired. Material of manufacturers other than those mentioned throughout these specifications may be accepted if they are equal in quality, dimension, and performance to those specified and approval is given by Owner as outlined herein, except if the statement "no substitute" is shown.
- B. The intent of these qualifications is to encourage and permit competition, qualified products by all reputable and qualified contractors, suppliers, and manufacturers whose products, reputations, and performances warrant performance consideration.
- C. Whenever a product is specified or shown by describing proprietary items, model number, catalog number, manufacturer, trade names or similar references, the supplier obligates himself to submit proposals and accept awards of contracts based upon the use of such products, or their equal. Use of such references is intended to establish the measure of quality and dimensions which the Owner has determined as requisites and necessary for this project. The right is reserved to approve or disapprove proposed deviations to design, function, construction or similar differences that will affect the design intent.

9. PARTS REPLACEMENT

- A. All parts, components, or devices for the mechanical systems that are worn or are not in proper operational conditions shall be repaired and/or replaced with new parts, components, or devices of the same manufacturer. Exceptions shall not be permitted without prior written consent of the Owner.
- B. When equipment or parts are replaced in their entirety and a newer design of this device is available and is functionally equivalent and compatible, the device of the new design shall be used as the replacement.
- C. All repair and replacement parts, components, and devices for the mechanical systems and equipment as listed shall be supplied by the Service Company and shall be included in the cost of the service program.
- D. All miscellaneous parts and supplies necessary to maintain the mechanical systems and equipment shall be supplied by the Service Company and shall be included in the cost of the service program (belts, valve packings, lubricants, tools, paints, refrigerant, test instruments, meters, etc.)

E. The Service Company shall not be made responsible for repair or replacement necessitated by reason of negligence or misuse of the equipment by other than the Service Company, or by any other cause beyond the control of the Service Company, except ordinary wear and tear.

10. SCOPE

The Contractor shall be responsible for maintaining ORIGINAL DESIGN PERFORMANCE (ODP) condition for all equipment and systems covered under this specification. The Contractor accepts all equipment and systems AS IS upon submitting this maintenance proposal.

Design, installation labor and materials required to keep systems at ODP are the responsibility of the Contractor, and shall be affected at no additional costs to the owner.

Please be aware that the majority of the systems in this specification operate 24 hours per day and 12 months per year. It is, therefore, likely that a significant portion of repairs and maintenance will take place outside of normal working hours, and will have to be prescheduled. Additionally, much of the work to be performed will be located in a secured area and may have to be prescheduled. All premium time incurred shall be at not additional cost to the Owner.

Due to the frequent and critical nature of off-hour calls, the bidder must provide their procedure for handling night and weekend calls with their bid proposal.

Contract for HVAC Maintenance will be awarded to include:

- Domestic Boiler Preventative Maintenance
- Domestic Boiler Emergency Service
- HVAC Preventative Maintenance
- HVAC Emergency Service
- HVAC Equipment Repair
- HVAC Equipment Test and Calibration
- HVAC Water Treatment Service
- HVAC Filter Service
- Emergency Generator Preventative Maintenance
- Emergency Generator Repair
- Emergency Management System Preventative Maintenance
- Emergency Management System Repair
- Automatic Temperature Control Maintenance and Repair

For the Summit County Juvenile Court located at 650 Dan Street, Akron, Ohio 44310.

All HVAC equipment, appurtenant devices and systems that are related to the HVAC Systems, Domestic Hot Water Tanks and Boilers are the equipment to be maintained. The equipment not to be maintained under this contract are such items as foundations, structural supports, domestic water lines, drains plumbing, gas lines, unit cabinets, cooling tower structure, piping, electrical services (power), etc.

11. CLEANING

Upon completion of any work, the work area shall be cleaned of all refuse caused by work performed under this contract.

12. RUBBISH

The Contractor shall not allow waste material, or rubbish, caused by his employees to accumulate in or about the premises, but shall have same properly removed, as requested by Owner.

13. EMERGENCIES

Because of the nature of the Owner's facility, the Contractor will be required to have personnel on site and commence corrective action within two (2) hours of receipt of notification (by telephone, or otherwise) from the Owner that such an emergency exists. Failure of the Contractor to adequately respond to emergency situations within the terms of this contract will be grounds for the Owner to seek assistance from whatever means available and back charge the associated charges to the Contractor.

14. EQUIPMENT ACCESS

Due to the nature of the facility and the security involved, as well as the design of the facility, access to some equipment may be very difficult. Additionally, it is the responsibility of the bidder to evaluate the accessibility of the equipment and make his own provisions for the access to the equipment. Some dampers, linkages, endswitches, valves, etc., have been covered in insulation. This insulation must be replaced after servicing of these devices.

15. PERFORMANCE REVIEW

A. The Owner's agent may review, at any time, the services provided and reports submitted, to verify that the preventative maintenance is, in fact, being properly and adequately performed. Any lack of maintenance service, complaints, or deficiencies in the performance of the services shall be submitted to the Service Company in writing for correction.

- B. For problems or deficiencies of significant importance or of a continual nature, a time period of compliance shall be established after discussion and mutual agreement. Failure of the Service Company to correct the deficiencies within the time period agreed upon shall constitute cause for termination of the services and/or withholding of payment.

16. EXTENDED OUTAGES

If for some unknown reason or reasons, equipment must be shut down for an extended period of time, the County of Summit shall be notified immediately of the delay and the measures being taken to put the equipment back in service. During situations involving extended outages of critical equipment it shall be the Contractor's responsibility to implement contingency plans to temporarily provide the required services.

17. EQUIPMENT MAINTENANCE SERVICE

A. Equipment included

1. The specific quantities and sizes of the major pieces of equipment shall be listed separately on the EQUIPMENT LIST attached.
2. The preventative maintenance and responsibility of the Service Company shall not be limited only to these major pieces of equipment as shown on the EQUIPMENT LIST, but shall also include all appurtenant devices and systems that are related to heating, ventilating, and air conditioning system.
3. This mechanical maintenance includes all parts, materials, and labor necessary to perform preventative maintenance and make the repairs and, in addition, the necessary replacement of any units.
  - a. Heating System – Boilers, furnaces, furnace pumps, heating coils, steam traps, water strainers, unit heaters, duct heaters, heat exchangers, humidifiers, expansion tanks, etc.
  - b. Cooling System – Air conditioning compressor(s), evaporative condensers, air cooled condensers, pumps, water chillers, cooling coils, ice pit, related equipment, etc.
  - c. Air Handling System – Fans, motors, air grills, plenums, registers, air filters, dampers, induction units, mixing boxes, fan coil units, etc.

- d. Temperature Control System – Thermostats, pressure controls, relays, limits, valve operators, damper motors, humidity controls, step switches, time clocks, contactors, controllers, capacity controls, safety controls, recorders, control panels, gauges, air compressor.
- e. Emergency Management System – Processors, keyboards, mouse, monitors, power supplies, hard disks displays, sensors, transducers, actuators, feedback devices, interface devices, cabinets, contacts, surge protectors, software, relays printers, modems, duct smoke detectors, etc.
- f. Miscellaneous Equipment – Exhaust fans, manual valves, float valves, direct expansion valves, thermometers, gauges, magnetic starters, manual motor starters, pumps and fan motor starter their respective motor, check valves, refrigerant piping and piping insulation, refrigerant.
- g. Emergency power generator equipment including transfer switches.
- h. Smoke control, pressurization and removal system.

**B. EQUIPMENT NOT INCLUDED**

- 1. Excluded items shall be considered as: foundations, structural supports, fan ductwork, domestic water lines, drains, hydronic & domestic piping, etc.
- 2. This specification covers only that equipment in place at the time the bid was submitted, and in the event the system is altered, changed, or if any equipment is added, or not included in this specification, then that portion shall be added or deleted as required, and shall be in accordance with this specification.
- 3. Supplies, accessories, or any items defined as replaceable by us such as printer ribbons, paper, lights, etc.
- 4. Service resulting from vandalism, misuse, abuse, operator error, or site related problems unless caused by service company.



C. SERVICES INCLUDED

1. The Contractor shall be responsible for scheduling of the preventative maintenance; and task functions to be performed on each scheduled call by calendar periods; and operating hours as pertinent to each task. Master records shall be maintained in the owner's office and such schedules will be adhered to.
2. The Contractor shall have in his possession the manufacturer's specified maintenance and repair procedures and complete parts lists for all equipment to be maintained.
3. As work is scheduled under Item #1 the Contractor shall issue, to the mechanic on the job, the necessary and appropriate manufacturer's recommended maintenance procedures and a listing of any special lubricants, tools, etc., that are required for proper maintenance of the apparatus concerned.
4. As work is performed, it shall be checked off on the service sheets and then kept on file by the Contractor and a copy shall be left with the Owner. The Department of Physical Plants reserves the right to have access to the Contractor's file within 48 hours of notification of the Contractor. These files must be kept for the life of the contract. This and all other work is to be performed in a professional manner by properly trained personnel. All maintenance shall include parts, labor and materials. Preventative maintenance calls shall include checking the performance of all components and testing, adjusting, calibrating and cleaning of all system components.
5. The Contractor shall report to the Owner daily when on the job. One individual shall be responsible for reporting the number of men working on the job on a daily basis and for completion and submission of reports.
  - a. After each service call, a service report shall be left with the owner, detailing work accomplished.
  - b. Two of the scheduled service calls shall include the system start-up and the system shut-down, for the appropriate season.
6. AT A MINIMUM, scheduled service calls should include the following:

- a. Comprehensive Annual Inspections – Tasks listed under these inspections are to be performed as a single service at least once annually, (during a seasonal start-up when applicable).
  - b. Operational Inspection – The tasks listed under these inspections are to be performed as a single service while equipment is operational.
7. The Contractor shall provide maintenance and repair service to keep subject equipment in good operating condition, as follows:
- c. Furnish and install as required, all replacement and repair parts and/or system components.
  - d. Furnish, as required, all labor, refrigerant, materials, parts components, and supplies, including freight and delivery.

NOTE: All refrigeration controls are the responsibility of the Contractor. In the event of damage caused by the compressor failure, ELECTRIC STARTERS will also be the responsibility of the Contractor.

**D. SPECIAL INCLUSIONS**

Repair and replacement of all moving parts which suddenly or accidentally fail including gears, motors, stators, bearings, shafts, contactors, etc. Also included is any sudden or accidental failure of tubes, cracking of vessels and refectories and resulting damage to other equipment. Correctional steps determined as required from diagnostic tests and maintenance procedures that are necessary to maintain ORIGINAL DESIGN PERFORMANCE of the equipment are also included.

**E. PREVENTATIVE MAINTENANCE INSPECTIONS:**

Inspection Tasks – The minimum required task to be performed under the comprehensive annual inspections and operational inspections for specific pieces of equipment are as follows:

**COMPREHENSIVE ANNUAL INSPECTION – AIR HANDLING UNIT**

**FAN AND MOTOR**

1. Verify operation of system motor, gages, etc.
2. Inspect flexible connections and ductwork for damage and leaks – repair as required.

3. Inspect tension on drive and fan belts, and change as needed.
4. Lubricate fan shaft bearings.
5. Lubricate motor bearings.
6. Lubricate dampers.
7. Clean intake screen on motor.
8. Inspect fan wheel for free rotation, cracks and alignment.
9. Inspect for vibration and unusual noises.
10. Inspect coils for water leaks.
11. Report condition of dampers.
12. Test secureness of guards, doors and panels.
13. Inspect all major stop valves and report condition.
14. Inspect all structural elements for corrosion and damage.
15. Report condition of coils – clean/dirty – clean as required.

### STARTER

1. Inspect wiring for secureness and damage.
2. Megger motor at starter and record readings.
3. Inspect switch gear, starter and contactor points.
4. Inspect starter for signs of wear, arcing, overheating, burns, etc.
5. Inspect electrical connections for tightness and absence of moisture.
6. Measure and record operating voltage.
7. Measure and record operating amperage.

## OPERATIONAL INSPECTIONS – AIR HANDLING UNIT

### FAN AND MOTOR

1. Verify operation of system motor, gages, etc.
2. Inspect tension on drive and fan belts, and change as needed.
3. Lubricate fan shaft bearings.
4. Lubricate motor bearings.
5. Lubricate dampers.
6. Inspect for vibrations and unusual noises.
7. Inspect coils for water leaks.
8. Report condition of dampers
9. Report condition of coils – clean/dirty.
10. Report condition of motor windings – clean/dirty.
11. Clean intake screen on motor.

### STARTER

1. Inspect starter for signs of wear, arcing, overheating, burns, etc.
2. Measure and record operating amperage.

## COMPREHENSIVE ANNUAL INSPECTION – PUMP

1. Inspect for vibrations, unusual noises, odors, etc.
2. Inspect mounting points for secureness and tighten.
3. Inspect packing; adjust to a slow drip if necessary.
4. Inspect mechanical seal.
5. Verify flow in sealing/flushing line.
6. Lubricate coupling.
7. Lubricate motor bearings.
8. Inspect system for leaks in piping, flange connections, etc.
9. Lubricate pump bearings.
10. Inspect motor windings for dirt buildup.
11. Clean ventilation openings (grills and/or screens).
12. Visually inspect coupling.

## STARTER OR CONTACTOR

1. Inspect wiring for secureness and damage, and record condition.
2. Megger motor at starter and record reading.
3. Clean enclosure.
4. Tighten terminal connections at starter.
5. Inspect contacts for signs of wear, arcing, overheating, etc., and record condition.
6. Measure operating amperage and record readings.

## OPERATIONAL TEST

1. Inspect level in system expansion tank and record reading.
2. Record discharge pressure.
3. Measure operating voltage and record reading.
4. Test accuracy of all pressure gages.
5. Record suction pressure.

## OPERATIONAL INSPECTION – PUMP

1. Inspect for vibrations, unusual noises, odor, etc.
2. Inspect packing; adjust to a slow drip if necessary.
3. Inspect mechanical seal.
4. Verify flow in sealing/flushing line.
5. Lubricate coupling.
6. Lubricate motor bearings.
7. Inspect system for leaks in piping, flange connections, etc., and record condition.
8. Lubricate pump bearings.
9. Clean ventilation openings (grills and/or screens).
10. Visually Inspect coupling.

## STARTER OR CONTACTOR

1. Inspect contacts for signs of wear, arcing, overheating, etc., and record condition.
2. Measure operating amperage and record reading.

## OPERATIONAL TEST

1. Inspect level in system expansion tank and record reading.
2. Record suction and discharge pressures.

## COMPREHENSIVE ANNUAL INSPECTION – FURNANCE

### FAN AND MOTOR

1. Verify operation of system motor, gage, etc.
2. Inspect flexible connections and ductwork for damage and leaks.
3. Inspect tension on drive and fan belts, and change as needed.
4. Lubricate fan shaft bearing.
5. Lubricate motor bearings.
6. Verify operation of dampers and damper linkage.
7. Clean intake screen on motor.
8. Inspect fan wheel for free rotation, cracks and alignment.
9. Inspect for vibrations and unusual noises.
10. Report condition of dampers.
11. Test secureness of guards, doors and panels.
12. Inspect all structural elements for corrosion and damage.
13. Test air flow switch operation.
14. Inspect motor winding for cleanliness.
15. Test operating controls.
16. Test high limit.

### STARTER

1. Inspect wiring for secureness and damage.
2. Megger motor at starter and record reading.
3. Inspect starter and contactor points.
4. Inspect starter for signs of wear, arcing, overheating, burns, etc.
5. Inspect electrical connections for tightness and absence of moisture.
6. Measure and record operating voltage.
7. Measure and record operating amperage.

### GAS BURNER

1. Inspect and clean all combustion/primary air passages.
2. Test all burner linkages for secureness and/or damage.
3. Test linkage for ease of operation and lubricate as required.
4. Remove, clean and inspect nozzles.

5. Inspect condition of, and replace or clean air filter element.
6. Test secureness of mounting points and tighten all major points.
7. Inspect ignition assembly and electrode and clean if necessary.
8. Inspect pilot and clean pilot orifice if necessary.
9. Inspect high tension wire for deterioration.
10. Inspect and set spark gap.
11. Perform combustion test and adjust fuel/air ration as required.
12. Test operation and setting of the gas pressure regulators.
13. Inspect area around oil pump seals for seal leakage.
14. Inspect for unusual noises, vibrations, odors, etc.
15. Inspect flame detector and clean if necessary.

### PROGRAMMER

1. Test main and pilot flame failure protection.
2. Test signal from flame detector.
3. Test flame detector with hot refractory.
4. Test minimum pilot function.

## OPERATIONAL INSPECTIONS – FURNACE

### FAN AND MOTOR

1. Verify operation of system motor, gages, etc.
2. Inspect tension on drive and fan belts, and change as needed.
3. Lubricate fan shaft bearings.
4. Lubricate motor bearings.
5. Inspect for vibrations and unusual noises.
6. Report condition of dampers, lubricate.
7. Report condition of motor windings – clean/dirty.
8. Clean intake screen on motor.

### STARTER

1. Inspect starter for signs of wear, arcing, overheating, burns, etc.
2. Measure and record operating amperage.

### GAS BURNER

1. Inspect all burner linkages for secureness and/or damage.
2. Visually inspect accessible fuel delivery system for leaks.
3. Inspect and clean all air intake screens
4. Inspect linkages for ease of operation and lubricate as required.
5. Inspect area around pump seals for seal leakage.

### PROGRAMMER

1. Test main and pilot flame failure protection.

### OPERATIONAL TEST

1. Test combustion air flow safety circuit.
2. Verify operation of high operating limit controls.
3. Verify operation of operating controls.
4. Inspect flame condition.

### COMPREHENSIVE ANNUAL INSPECTION – HOT WATER BOILERS

1. Drain boiler as required to perform tests and inspections.
2. Perform slow drain test of low water cutoff.
3. Verify operation of makeup water system.
4. Inspect condition of flues and report.
5. Inspect refractory for defects and reports.
6. Visually inspect boiler exterior for possible leaks and report.
7. Test boiler room floor drains for proper functioning.
8. Inspect fireside of boiler and report.
9. Inspect waterside of boiler for scale buildup and/or oil and report.
10. Reassemble and fill boiler fire burner to boil off oxygen.

### BOILER TRIM

1. Disassemble, clean and inspect low water fuel cutoff.
2. Clean or replace sight glass.
3. Disassemble, clean and inspect water feeder.

### CONTROLS

1. Clean or replace expansion tank sight glass.
2. Inspect electrical connections for tightness.
3. Verify boiler room supply vents are free from obstructions.
4. Verify accuracy of temperature gages.

### OPERATIONAL INSPECTIONS – HOT WATER BOILERS

#### CONTROLS

1. Verify boiler room supply vents are free from obstructions.
2. Verify operation of makeup water system.
3. Verify operation of pressure or temperature, primary and backup controls.

#### OPERATIONAL TEST

1. Test accuracy of stack temperature gage.
2. Test low water cutoff.
3. Try lever test safety relief valve.

## COMPREHENSIVE ANNUAL INSPECTIONS – GAS BURNER

### POWER BURNER

1. Inspect and clean air intake screens.
2. Test linkage for ease of operation and lubricate as required.
3. Verify operation of primary and secondary air dampers and clean as required.
4. Test secureness of mounting points and tighten all major points.
5. Visually inspect coupling for abnormal conditions.
6. Lubricate coupling.
7. Inspect starter for signs of wear, overheating, arcing, burns, etc.
8. Test all burner linkages for secureness and/or damage.
9. Test primary and secondary shutoff damper(s) for tight closure.
10. Inspect condition of, and clean blowers and passages.
11. Inspect for unusual noises, vibrations, odors, etc.
12. Lubricate blower bearings.
13. Inspect motor windings for dirt buildup.

### UL, IRI OR FM GAS TRAIN

1. Bubble leak test the vent line(s).
2. Inspect operation and setting of gas pressure regulators.
3. Leak test accessible gas train (soap test).
4. Inspect gas train support and general condition.

### IRI GAS TRAIN (ONLY)

1. Verify operation of the vent line solenoid.
2. Test high gas pressure safety circuit.
3. Bubble leak test the gas shutoff valve.
4. Test low gas pressure safety circuit.

### FM GAS TRAIN (ONLY)

1. Bubble leak test the gas shutoff valves.
2. Test low gas pressure safety circuit.
3. Test high gas pressure safety circuit.

### PILOT

1. Leak test pilot gas train (soap test).
2. Inspect ignition assembly and electrode and clean if necessary.
3. Inspect pilot and clean pilot orifice if necessary.
4. Inspect high tension wire for deterioration.
5. Inspect and set spark gap.



## FLAME SAFEGUARD

1. Clean flame detector.
2. Test main flame failure protection.
3. Test scanner viewing of main flame.
4. Test for detection with hot chamber.
5. Test pilot flame failure protection.
6. Test scanner viewing of pilot flame.
7. Test minimum pilot test.
8. Perform combustion test and adjust air mixture as required.

## OPERATIONAL INSPECTION – GAS BURNER

### POWER BURNER

1. Inspect and clean air intake screens.
2. Test linkage for ease of operation and lubricate as required.
3. Lubricate power bearings.
4. Visually inspect coupling for abnormal conditions.
5. Lubricate coupling.
6. Inspect starter for signs of wear, overheating, arcing, burns, etc.
7. Test all burner linkages for secureness and/or damage.
8. Inspect condition of, and clean blowers and passages.
9. Inspect for unusual noises, vibrations, odors, etc.
10. Inspect drive belts; replace if necessary.
11. Lubricate motor bearings.
12. Inspect motor windings for dirt buildup.

### UL, IRI OR FM GAS TRAIN

1. Bubble leak test vent line(s).
2. Inspect operation and setting of the gas pressure regulators.
3. Leak test accessible gas train (soap test).
4. Inspect gas train support and general condition.

### IRI GAS TRAIN (ONLY)

1. Verify operation of the vent line solenoid.
2. Test high gas pressure safety circuit.
3. Bubble leak test the gas shutoff valve.
4. Test low gas pressure safety circuit.

### FM GAS TRAIN (ONLY)

1. Bubble leak test the gas shutoff valves.
2. Test low gas pressure safety circuit.
3. Test high gas pressure safety circuit.

## PILOT

1. Leak test pilot gas train (soap test).
2. Inspect ignition assembly and electrode and clean if necessary.
3. Inspect pilot and clean pilot orifice if necessary.
4. Inspect high tension wire for deterioration.
5. Inspect and set spark gap.

## FLAME SAFEGUARD

1. Clean flame detector.
2. Perform turn-down test.

## OPERATIONAL TEST

1. Test combustion air flow safety circuit.
2. Verify operation of high operating limit controls.
3. Verify operation of operating controls.
4. Inspect flame condition.

## COMPREHENSIVE ANNUAL INSPECTION – EMERGENCY GENERATOR

### ENGINE

1. Measure and record coolant level.
2. Inspect hoses, piping, and connections for tightness.
3. Inspect fan belt for wear and proper tension.
4. Determine fan operation and wear condition for report.
5. Clean and inspect intake air filtering system.
6. Change oil and oil filters.
7. Examine condition of exhaust system.
8. Inspect fuel supply system.
9. Measure antifreeze concentration.
10. Lubricate fan drive bearing.

### DIESEL ENGINE

1. Change fuel filters.
2. Inspect and adjust rack on unit injector of fuel distributor pump according to manufacturer's instruction.
3. Inspect governor and adjust as needed.

### CONTROLS, SAFETIES, AND CHARGING SYSTEM

1. Visually inspect panel interior for signs of system leaks or problems.
2. Verify proper operation of alarm indicators.
3. Check gages against operating conditions.

4. Measure and report status of battery electrolyte.
5. Report water level and corrective measures, if any.
6. Verify and record battery charging rate and voltage.
7. Examine condition of battery posts and cables, and remove corrosion.
8. Verify operation of low oil level and low water indicators.
9. Verify overspeed and reverse power indicators.
10. Confirm operation of alarm silence, alarm horn and alarm reset.
11. Verify high temperature indicator.

#### GENERATOR

1. Clean, inspect and report condition of brushes regarding wear and tension.
2. Clean and examine appearance of generator windings and report.
3. Visually inspect commutator and collector rings and report condition. Follow manufacturer's adjustment procedure if necessary.

### OPERATIONAL INSPECTION – EMERGENCY GENERATOR

#### ENGINE

1. Measure and record coolant level.
2. Inspect hoses, piping and connections for tightness.
3. Inspect fan belt for wear and proper tension.
4. Determine fan operation and report.

#### CONTROLS, SAFETIES AND CHARGING SYSTEM

1. Visually inspect panel interior for signs of system leaks or problems.
2. Verify proper operation of alarm indicators.
3. Check gages against operating conditions.
4. Measure and report status of battery electrolyte.
5. Report water level and corrective measures, if any.
6. Examine condition of battery posts and cables, and remove corrosion.

#### GENERATOR

1. Inspect brushes for wear and check for proper tension. Report condition.
2. Examine appearance of generator windings and report.
3. Visually inspect commutator and collector rings. Report condition.

### OPERATIONAL TEST

1. Manually start and transfer to line.
2. Measure and record oil level.
3. Read and record oil and water temperature.
4. Confirm and record all operating temperatures, pressures, amperage, control panel readings, etc.

### COMPREHENSIVE ANNUAL INSPECTION – HEAT EXCHANGER

1. Check control set point.
2. Verify operation of control valve.
3. Confirm flow level through heat exchanger.
4. Perform operation test.
5. Test pressure control switch.
6. Try lever test safety valve.

### COMPREHENSIVE ANNUAL INSPECTION – WATER HEATER

1. Manually flush and try lever test pressure relief valve.
2. Open and close isolation valves and check piping and valves for leaks.
3. Record hot water supply temperature.
4. Bottom-blow heater tank to remove sediment.
5. Check all wiring, insulation, and connections on heater and controls.
6. Check safety power cutoff on heater.
7. Inspect flue system.
8. Test operation of automatic vent dampers.
9. Test flame failure protection device.

### COMPREHENSIVE ANNUAL INSPECTIONS – EXPANSION TANK UNIT

1. Check air pressure.
2. Inspect connecting piping for leaks.
3. Confirm proper water level indication at sight glass.
4. Charge tank to adjust water level, if necessary.
5. Inspect overflow drain function.
6. Tests float valve operation.
7. Test operation of automatic fill system.

### COMPREHENSIVE ANNUAL INSPECTIONS – COOLING TOWER

#### SYSTEM

1. Test mounting points for secureness and tighten if necessary.
2. Inspect structural elements for corrosion and damage.
3. Inspect for scale buildup on eliminators.
4. Adjust float assembly.

5. Clean sump and condenser strainers.
6. Test for secureness of guards, doors and panels.
7. Inspect spray orifice/nozzles.
8. Inspect system for leaks in piping, flange connections, etc.
9. Inspect heater elements for scale buildup.
10. Tighten terminal connections on heater elements.
11. Verify operation of heaters.
12. Verify operation of dump valve and drain system.

### CONTROLS

1. Verify operation of the fan/damper/load control systems.
2. Verify that overflow drain is clear.
3. Verify operation of water level probes.
4. Verify operation of water feed and controls.
5. Verify operation of bleed system.
6. Verify operation of low ambient temperature controls.
7. Test low water level heater shutdown and record results.
8. Measure operating amperage and record.
9. Inspect contacts for signs of wear, arcing, overheating, etc.
10. Measure operating voltage and record.

### FAN(S)

1. Lubricate fan bearing.
2. Inspect pulley groves and belts for alignment, wear and tension.
3. Inspect fan wheel for free rotation, cracks and alignment.
4. Replace belts as necessary.

## COMPREHENSIVE ANNUAL INSPECTION – UNIT HEATER

### FAN AND MOTOR

1. Verify operation of system motor, gages, etc.
2. Inspect flexible connections and ductwork for damage and leaks.
3. Inspect tension on drive and fan belts, and change as needed.
4. Lubricate fan shaft bearings.
5. Lubricate motor bearings.
6. Verify operation of dampers and damper linkage.
7. Clean intake screen on motor.
8. Inspect fan wheel for free rotation, cracks and alignment.
9. Inspect for vibrations and unusual noises.
10. Report condition of dampers.
11. Test secureness of guards, doors and panels.
12. Inspect roof curb flashing.
13. Inspect all structural elements for corrosion and damage.
14. Test air flow switch operation.
15. Inspect motor windings for cleanliness.
16. Test high limit.

## STARTER

1. Inspect wiring for secureness and damage.
2. Megger motor at starter and record readings.
3. Inspect starter for signs of wear, arcing, overheating and moisture.
4. Remove, clean and inspect nozzles.
5. Inspect condition of, and replace or clean air filter element.
6. Test secureness of mounting points, and tighten all major points.
7. Inspect ignition assembly and electrode and clean if necessary.
8. Inspect pilot and clean pilot orifice if necessary.
9. Inspect high tension wire for deterioration.
10. Inspect and set spark gap.
11. Perform combustion test and adjust fuel/air ratio as required.
12. Test operation and setting of the gas pressure regulators.
13. Inspect area around oil pump seals for seal leakage.
14. Inspect flame detector and clean if necessary.

## PROGRAMMER

1. Test main and pilot flame failure protection.
2. Test signal from flame detector.
3. Test flame detection with hot refractory.
4. Test minimum pilot function.

## COMPREHENSIVE ANNUAL INSPECTION – EXHAUST FAN AND BLOWER

### FAN AND MOTOR

1. Verify operation of system motor.
2. Inspect flexible connections and ductwork for damage and leaks.
3. Inspect tension on drive and fan belts, and change as needed.
4. Lubricate fan shaft bearings.
5. Lubricate motor bearings.
6. Lubricate dampers.
7. Clean intake screen on motor.
8. Inspect fan wheel for free rotation, cracks and alignment.
9. Inspect for vibrations and unusual noises.
10. Test secureness of guards, doors and panels.
11. Verify operation of all indicators.
12. Inspect all structural elements for corrosion and damage.
13. Inspect motor windings for cleanliness.

### STARTER

1. Inspect wiring for secureness and damage.
2. Megger motor at starter and record reading. \*\*
3. Inspect starter for signs of wear, arcing, overheating, burns, etc.

4. Inspect electrical connections for tightness and absence of moisture.
5. Measure and record operating voltage.
6. Measure and record operating amperage. \*\*

## COMPREHENSIVE INSPECTION AND CALIBRATION – AUTOMATIC TEMPERATURE CONTROLS

### AIR COMPRESSOR

1. Drain tank and check traps.
2. Change oil and check oil pressure.
3. Check belt and sheaves; change as required.
4. Change suction filter semi-annually.
5. Inspect unloader and check valve.
6. Inspect high pressure safety valve.
7. Analyze motor operating conditions and lubricate.
8. Check PE switch, starter and alternator.
9. Record compressor run time.
10. Record oil carryover rate. \*\*

### REFRIGERATED AIR DRYER

1. Check refrigerant pressure and record.
2. Record refrigerant temperature.
3. Brush condenser and cover grills as required.
4. Operate drain trap and bypass valves.

### FILTER AND PRESSURE REDUCING STATION

1. Inspect coalescent filters and change.
2. Inspect charcoal filter and change.
3. Record pressure reducing valve setting, adjust as required.
4. Operate drain trap and bypass valves.

### BOILER, CHILLER, CONVERTOR, PUMPS AND ZONE CONTROLS

1. Check and calibrate all controllers.
2. Calibrate all transmitters and set receiver gages, as required.
3. Check all PE switches.
4. Check all control valves.
5. Check all pilot positioners.
6. Check auxiliary control devices.

### FAN SYSTEMS AND HVAC UNIT CONTROLS

1. Review sequence of operation.
2. Check operation of all dampers and lubricate.

3. Check pilot positioners, calibrate.
4. Calibrate all controllers at least once annually.
5. Calibrate all transmitters and set receiver gauges, as required.
6. Check all solenoid air valves, PE switches and air valves for proper operation.
7. Check auxiliary control devices.

### ROOM-TERMINAL UNIT CONTROLS

1. Check all room stats and calibrate at least once annually.
2. Check operation of unit coil steam traps.
3. Check operation of all dampers.
4. Check all PE switches, solenoid air valves and limit controls.
5. Check operation of auxiliary devices.

### TERMINAL UNITS

#### Boxes – Mixing and Variable Air Volume (without Fan)

1. Inspect box for ductwork connection.
2. Lubricate and adjust dampers and linkage.
3. Verify operation of control.

#### Electric Duct Heaters

1. Inspect coil for damage to element.
2. Inspect isolators for damage or cracks.
3. Brush coil. Remove dust and debris (where accessible).
4. Torque heating terminals
5. Verify operation of control.
6. Verify staging of heating elements.

#### Induction Units

1. Visually inspect coil. Clean as required.
2. Check and clean drains and drain pans.

## OPERATIONAL INSPECTIONS - AUTOMATIC TEMPERATURE CONTROL

### AIR COMPRESSOR

1. Drain tank and check traps.
2. Check belt, sheaves, filter; change as required.
3. Change suction filter as required.
4. Analyze motor operating conditions and lubricate.
5. Check PE switch, starter and alternator.



## REFRIGERATED AIR DRYER

1. Check refrigerant pressure and record.
2. Record refrigerant temperature.
3. Brush condenser and cover grills as required.
4. Operate drain trap and bypass valves.

## COMPREHENSIVE ANNUAL INSPECTION CENTRIFUGAL CHILLERS

### LUBE SYSTEM

1. Megger oil pump motor and record readings.
2. Measure and record oil pump voltage and amperage.
3. Inspect the starter for signs of overheating, arcing, burns, etc.
4. Verify operation of oil cooling system. \*\*
5. Tighten terminal connections on the oil pump motor.
6. Verify operation of the oil heater.
7. Change the compressor oil and filter.

### MOTOR AND STARTER

1. Clean starter cabinet.
2. Inspect starter and starter components for signs of discoloration, burns, moisture, etc.
3. Inspect wires for discoloration and burns.
4. Test accuracy of motor current (amp meter).
5. Test tightness of terminal connections.
6. Check dash pot oil and add as necessary.
7. Megger motor at the starter terminals; record readings.
8. Measure operating voltage and record.

### CONTROLS AND SAFETIES

1. Inspect the control panel for cleanliness, control air leaks, etc.
2. Inspect wiring and connections for signs of overheating, burns.
3. Verify operation of the van control system:
  - A. Check for free and smooth operation.
  - B. Check mechanical linkages for wear and secureness.
4. Report accuracy of all gauges and thermometers (use masters).
5. Verify working condition of all indicator and alarm lights.
6. Verify operation of start, stop and anti-recycle timers.
7. Test all flow switch cutouts (cw, chw). \*\*
8. Verify operation of oil temperature and pressure controller(s).
9. Test high oil temperature switch.
10. Test high compressor discharge switch.
11. Test high suction temperature switch.
12. Test high discharge temperature switch.
13. Test low suction pressure switch.

14. Verify operation of automatic and manual capacity control.
15. Test the operation of all pump auxiliary contacts (chw, cw, oil, etc.) \*\*

### COMPRESSOR AND VESSELS

1. Check for leaks and report results.
2. Check refrigerant charge.
3. Replace filter/dryer in motor cooling line. \*\*
4. Test the secureness of mounting points; tighten all major points.
5. Record refrigerant level.
6. Review machine operation with operator.
7. Log machine at departure.
8. Run complete interlocking circuit where possible.
9. Report machine condition and repair requirements (if any) where applicable.

### OPERATIONAL INSPECTION – HERMETIC CENTRIFUGAL CHILLERS

#### SYSTEM

1. Run and record a complete test log on the equipment.
2. Report unusual noises, vibrations, odors, etc.
3. Verify capacity control reaction.
4. Verify operation of van linkage.
5. Verify operation of flow switch.
6. Record refrigerant level as seen in sight glass.
7. Test complete interlocking circuit where possible.
8. Record oil level as seen in sight glass.
9. Run full load test if operating conditions permit.
10. Check for leaks (high side).

#### STARTER

1. Open starter cabinet; check starter contacts for signs of overheating, arcing, burns, discoloration, etc.

#### LUBE SYSTEM

1. Inspect oil pump starter enclosure for cleanliness, moisture, and signs of oil.
2. Inspect the starter for overheating, arcing, burns, etc.
3. Measure and record motor amperage.
4. Verify operation of the oil heater and oil cooler.
5. Confirm and record all operating temperatures, pressures, amperage, control panel readings, etc.
6. Upon completion, review machine operation with operator.
7. Report machine condition and repair requirements (if any).

## ADDITIONAL REQUIRED SERVICES

### A. CHILLERS AND OTHER ROTATING EQUIPMENT

All chillers shall have the following additional services provided:

1. Eddy Current Test of evaporator and condenser tubes shall be performed in the third and fifth year of this agreement. Contractor responsible for providing all necessary equipment to perform the analysis and provide detailed report to Owner.

The Eddy Current Test shall include as a minimum:

#### a. Analysis

1. Probe the full length of every tube to detect stress corrosion, O.D. corrosion, mechanical wear at supports, erosion, pitting, and holes.
2. Remove and replace any tubes designated by the testing to be in danger of failing.

#### b. Report

Provide an analysis of the report certified by a technician with an NDT Level III Certification.

The written report will include the following:

1. Provide, in writing, identification of equipment used in the analysis and the calibration settings (e.g. gain sensitivity, etc.)
2. Provide a definition of "Good", "Marginal", "Needs Replacement" recommendation as related to graph readings.
3. Provide calibration graphs of good finning areas and good support areas.
4. Provide a list of the limits of the analysis, if any.
5. The report will individually include all tubes with location on graph verification, by row and tube number, which deviate from "Good".

The analysis technician will discuss the condition of the tubes with the owner before closing the equipment in order to facilitate any necessary repairs.

The written report will be available within ten days and include all aforementioned certifications.

2. Two (2) spectrochemical oil analysis per refrigeration compressor per year. These should be performed at mid-season and at shut down with a final report as follow up.

Test shall identify the following: wear, presence of metal, dirt, condition of additives, viscosity index, and presence of water. THE FIRST SAMPLES SHALL BE TESTED WITHIN 30 DAYS FROM THE CONTRACT COMMENCEMENT DATE. Corrective action shall be the responsibility of the Contractor and will be performed at NO ADDITIONAL COST TO SUMMIT COUNTY.

A written analysis and report shall be provided to the Owner including:

- a. Provide laboratory analysis to identify twenty metallic elements which are measured by a direct reading spectrometer.
  - b. Identify water content which will be reported in ppm, detectable to less than 1 ppm.
  - c. Measure the viscosity of the sample at 40 degree C and report in centistokes.
  - d. Measure total acid number and report.
  - e. Provide a written report of all conditions and contents, to include:
    1. Unit/oil condition (normal, abnormal, critical).
    2. Suitability of oil for continued use.
    3. Recommendations for corrective action (if required).
    4. Answer to specific questions submitted with the sample.
3. One (1) vibration analysis per refrigeration compressor per year. This should be performed at the shut down time of each cooling season. The Owner reserves the right to request a second analysis, per compressor, per year. For any compressor showing an alert condition or significant change in readings a final report shall be given to the Owner for each compressor not more than thirty (30) days after

seasonal shutdown. Written report and analysis shall include:

- a. Compare machine vibration signature to model-specific failure norms to detect motor/electrical, mechanical and hydraulic conditions and defects.
- b. Compare current data to prior diagnostic vibration samples to determine wear, failure trends, if sample are available.
- c. Report imminent failure condition to Owner verbally at time located.
- d. A written report of results and recommendations will be provided to the owner.

The written report will be available within ten days and will include:

1. Written description of analysis procedures used to take readings.
  2. Classifications of severity based on scale for centrifugal chillers.
  3. Chiller identification data.
  4. Vibration data for type of system, amplitude, orientation and severity.
  5. Analysis/results of specific findings based on chiller vibration analysis.
  6. Recommendations to include any specific actions warranted by the analysis.
  7. Chiller measurement diagram showing diagnostic frequencies and measurement points.
  8. Spectral plots indicating frequency, magnitude and identification of spectral peaks above threshold.
4. Condenser and evaporator tubes to be brushed in the third and fifth year of this agreement. Head removal and replacement with new gaskets to be performed by the contractor.

B. BOILERS

Boilers shall have both their fire side and water side cleaned in third and fifth years of the contract at a minimum.

1. FLUE GAS ANALYSIS

Burners shall be set up to optimum efficiency at least once annually in the beginning of the heating season. Provide a written report indicating calculated burner efficiency to include excess air and theoretical CO<sub>2</sub>.

C. PNEUMATIC TEMPERATURE CONTROLS

Control Valves: Annual Inspections

Inspect and verify operation of control valves on an annual basis. Operation is to be verified by disconnecting from pneumatic system and using squeeze bulb pressure gauge to stroke valve and verify operating spring range. Any leaking shall be repaired.

Thermostats:

Calibrate each thermostat AT LEAST once annually.

D. DIRECT DIGITAL CONTROL, MICRO PROCESSOR BASED SYSTEM

Any and all software revisions as designated by the manufacturer and requested by the Owner during the term of this contract shall be implemented and utilized as soon as they are commercially available **AT NO ADDITIONAL COST** to the County of Summit.

1. The Contractor shall provide a **TRAINED TECHNICIAN** to perform services as outlined below:

a. Semi-Annually

1. Verify regulated power assembly and battery voltages, adjust as required.
2. Insure cabinet is a earth ground potential
3. Verify proper system electrical ground isolation.
4. Inspect and secure interconnecting cables and electrical connections.

5. Via CDB, exercise all control devices with manual command functions and verify proper response of field hardware. Check all alarms and overrides using the scan functions.

Note: Review specific alarm override conditions with County of Summit personnel.

6. Clean external surfaces of the panel enclosure and associated field equipment units.

Note: Some of this equipment is in a highly-restricted area and may require pre-scheduling.

7. Exercise point value display and PCR diagnostic self-test.

8. Test and verify operation of UPS equipment for emergency operation of OWS. Replace parts as necessary.

b. Annually:

1. Inspect interior surfaces and components of the panel enclosure and associated field equipment unit and clean if required. Insure all mounted devices and plug-in components are securely in place.
2. Evaluate binary and analog points for proper operation and reporting. At the CDB, make a general performance review of all points.
3. Check each individual critical point. Determine new or revised calibration coefficients as required. Make adjustments to connected FEU/field hardware as required.
4. ENTER REVISED CALIBRATION COEFFICIENTS INTO SOFTWARE after completing critical point procedures.
5. Review control loop for proper operation; i.e., controlled positions are stable at setpoint. If necessary, verify or adjust tuning constants, set points, parameter values and reset schedules.
6. Record any parameter values which are different than those shown on the metasys program listing.

7. Permanently record all changes in CPU program and on back-up discs.

2. REPAIR

All repair labor and materials associated with the direct digital control systems are to be included in this contract.

- E. WATER TREATMENT SERVICE

This Contractor shall be responsible for total water treatment service including any necessary cleaning of any water side equipment such as, condensers, sumps and cooling towers. The selection of a water treatment shall be sufficient to hold monthly test results within 7.0 – 8.0 ph, 160 ppm Alkalinity "M", 400 ppm hardness, 700-800 micro-mho TDS, 140-160 ppm chlorides, and system shall be kept free from algae. Summit County will retain approval rights on the proposed water treatment vendor.

1. Equipment Included

WATER TREATMENT SYSTEM: Hot water system, chilled water system (open or closed), evaporative condensers, cooling towers, chilled water system, condenser water system, water softeners, and chilled and hot water circulating pumps.

2. Services Included

- a. The Service Company shall provide the necessary labor and chemicals to properly maintain all water within the heating and cooling circulating system to control metal corrosion, scale formation, biological fouling, or contaminated discharge.
- b. Drain the system of existing water and treatment.
- c. Refill system with clean water and the required dosage of chemical treatment.
- d. Meet all existing and anticipated pollution controls standards. The chemical treatment used must be approved by the Owner.
- e. The Contractor shall provide the necessary parts, labor and materials to test and maintain the proper treatment level.



- f. The Service Company shall provide all labor to take test samples, adjust feet rates, change settings, drain and flush systems, service automatic monitoring equipment, manually inject chemicals (for closed systems) and provide a detailed water analysis and service report after performing those services as outlined above.

F. AIR FILTER SERVICE

1. Contractor shall provide air filter service which includes labor, frames, and replacement filter media and other materials necessary for this service. Replacement shall be as needed, with a minimum of four (4) changes per year for the pre-filters and one (1) per year for the annual filters.
2. Air Filters:
  - a. Filters shall be extended surface, pleated panel disposable filters.
  - b. Replacement filters are to be as recommended by the equipment manufacturer and must fit properly so as not to allow the passage of air around them.
  - c. A wire grid shall be bonded to the leaving air side of the filter to support the media and to maintain the uniform shape of the pleats.
  - d. The frame shall be two pieces, die-cut from heavy duty chipboard, one on the entering air side and one on the leaving air side. Then assembled, the two mating halves of the frame shall overlap to provide a double wall on all four sides. The pleated media rack shall be bonded to the inside of the frame, forming a totally unitized construction and providing a positive seal against leakage.
  - e. Average efficiency shall be 25 to 30% based on ASHREA 52-76 test method. Performance tolerances shall conform to Section 7.4 of AR1 Standard 850-78.
  - f. Filters shall be U.L. Class 2 approved band listed. Testing and performance shall be according to U.L. Standard 900.

NOTE: Accessibility to filters in some air handling units is very limited and special; multiple smaller filters may be required.

G. COOLING COIL DRAIN PANS

Pans are to be inspected on a monthly basis to ensure that they are draining properly and do not contain biological growth. Pans are to be cleaned and disinfected quarterly during filter changing.

H. EMERGENCY SERVICE

PREVENTATIVE MAINTENANCE AND EMERGENCY SERVICE CALL

1. The Service Company shall schedule and perform the preventative maintenance services on no less than a monthly basis.
  - a. After each service call a service report shall be left with the Owner detailing the work accomplished.
  - b. Two of the scheduled service calls shall include the system start-up and the system shut-down, for the appropriate season.
2. The Service Company shall provide emergency service on an as required basis. Emergency service shall be considered as calls in addition to the scheduled preventative maintenance calls.
  - a. All labor, overtime, travel costs, parts, supplies and any other expenses incurred and expended on such a call shall be provided by the Service Company and shall be included in the cost of the service program.
  - b. The emergency service shall be provided as often as needed, on a 24-hour basis, weekends and legal holidays included.
  - c. The Service Company shall be capable of having personnel on site and commencing corrective action to an emergency situation within two (2) hours.
  - d. Emergency service response system shall be professionally manned telephone answering service. Automatic answering/recording machines or home telephone numbers are not acceptable.

I. MAINTENANCE PROCEDURES AND RECORDS

1. The Service Company shall utilize computer generated preventative maintenance directions, which indicate task functions to be performed on each scheduled service call, as determined by calendar periods, operating hours, (runtime), manufacturer's recommendations, and historical data bank, if available.
2. As work is due, the Service Company shall issue, to his mechanic on the job, the necessary and appropriate recommended maintenance procedures and a listing of any special lubricants, tools, etc., that are required for proper maintenance of the apparatus concerned.
3. The Service Company's administration system shall provide for continuous updating of maintenance procedures and frequencies. Breakdown experience and frequency shall determine the on-site material inventory level and preventative maintenance frequencies.
4. During the course of the service program, the Service Company shall advise and assist in the determination of improvements to the mechanical system that shall conserve energy and minimize utility expenditures.

J. PERFORMANCE REVIEW

1. The Owner's agent may review, at any time, the services provided and reports submitted, to verify that the preventative maintenance is, in fact, being properly and adequately performed. Any lack of maintenance service, complaints, or deficiencies in the performance of the services shall be submitted to the Service Company in writing for correction.
2. For problems or deficiencies of significant importance or of a continual nature, a time period of compliance shall be established after discussion and mutual agreement. Failure of the Service Company to correct the deficiencies within the time period agreed upon shall constitute cause for termination of the services and/or withholding of payment.

K. PARTS AND COMPLETE REPLACEMENTS

1. The Contractor will repair or replace worn parts or complete components with new parts. Reconditioned components may be used only when delivery time of new components is excessive, and it is mandatory to get a piece of equipment in operation.

2. Damage obviously due to vandalism will be reimbursable by the County of Summit Department of Physical Plants to the Contractor for replacement parts used plus the labor necessary to install parts.

L. PARTS INVENTORY

1. **ON-SITE:** The Contractor shall maintain an on-site inventory of maintenance and replacement parts for each type of machine, in an area designated by the agent of the County of Summit.

This inventory shall contain at a minimum: (3) of each type of thermostats, (1) oil filter cartridge, (1) intake air filter cartridge, (2) universal sensors, (1) set of belts for air compressor cooling tower, (1) set of belts for each size of air handling units, (3) diaphragms for valve actuators or replacement valve actuators, (3) diaphragms for damper actuators or replacement damper actuators, 100 feet of polyethylene tubing, (2) pints compressor oil, (40) 12 vcd plug in relays (for use in energy management system), (1) E/P solenoid valve, miscellaneous pneumatic fittings, (1) mixed air low limit thermostat, (1) processor controller board (master).

The Contractor shall obtain all other needed parts in the quickest way possible at no additional cost to the County.

The above listed parts must meet the parts requirements as specified elsewhere in this specification.

2. **TRUCK OR LOCAL WAREHOUSE INVENTORY:** To assure the quickest repair time possible, the Contractor must maintain an inventory on the local service trucks or in the local warehouse consisting of a minimum of: (1) field interface controller, (1) control display board, (2) regulated power assemblies, (2) back-up batteries for digital system controllers, (2) electric to pneumatic analog transducers, (2) pressure to electric analog transducers, (1) process control board, (2) application specific controllers, (6) bulb temperature element sensors, (4) 120v to 24 vac transformers, (1) transmitter/receiver board, (1) communication enhancement board, (2) backup batteries to be replaced bi-annually.

The above listed parts must meet the part requirements as specified elsewhere in this specification.

8. Both parties must agree that the contract is not transferable or assignable.
9. It is further understood that no other agreement, oral or written, expressed or implied, shall limit or qualify the terms of this agreement unless such additional agreement is accepted in writing by both parties.
10. It should further be understood that, should any major components of the system be replaced by the County of Summit Agent, a credit shall be issued by the Contractor pro-rated over the period of time in the contract period during which service and repair of the new equipment is covered by the manufacturer's or installer's warranty.

**\*\* Where applicable**

## HVAC EQUIPMENT LIST FOR JUVENILE COURT FACILITY

**CHILLERS (2) 146 ton**  
Make: Carrier

Chiller #1 – Model #30HXA146RZ-640-BA  
Chiller #2 – Model #30HXA146RZ-640-BA

**CHILLER COMPRESSOR (4)**  
Make: Carlyle

Chiller #1 – Compressor #A1 model #06NA2250S7NA-A00  
Chiller #1 – Compressor #B1 model #06NA2209S7NA-A00  
Chiller #2 – Compressor #A1 model #06NA2250S7NA-A00  
Chiller #2 – Compressor #B1 model #06NA2209S7NA-A00

**CHILLER PUMPS (2) both the same**  
Make: Taco

Model #FI3011E2JAJ1LOA Manufactured Sept 2002

### AIR COOLED CONDENSERS

Model #09AZV142WE-6-8

**BOILERS (2) both the same**  
Make: Bryan

Model #HECL300-W-FDG year built 2002

**BOILER PUMPS (3) all the same**  
Make: Taco

H.P. 7.5 Model #FI2509E2FAJ1LOA

### HOT WATER STORAGE TANK

Pumps  
Motors

**WATER HEATERS (2) both the same**  
Make: A. O. Smith (gas)

Model #HW670-932 year manufactured 2005

**ERV – ENERGY RECOVERY VENTILATOR (1)**

Make: Micromelt

Model #1401B-1620-1009

**FORCED DRAFT BURNER**

Make: John Zink

Model #R10.9-G15-E110/EP160/ED510-E2.25S-UL-FM-CSD-1

**UNIT VENTILATORS (3)**

Make: Carrier

Model #40UV, UH

**VAV & FPB BOXES (170)**

Make: Carrier

Single duct VAV Model #35E

Dual duct VAV Model #35L, M, N

Fan powered box Model #45J, M, K, N

**AHU AIR HANDLING UNITS (7)**

Unit #1 & #3 – Make Racan – Model #701267-002-A4D-55/91-DO

Unit #2 – Make Carrier – Model #39-LF12KA-EBSCFN-E9

Unit #4 – Make Racan – Model #701267-3

Unit #5 – Make Carrier – Model #39M

Unit #6 & #7 – Make Racan – Model #701267-001

**AIR**

Make: Toshiba

**MICROMELT AIR SYSTEM ROOF UNIT**

Model #ERV-B-1420-D23ABP

**SANYO AIR CONDITIONING SYSTEM (3 floor CourtSmart Room)**

Model #KS1251

**SANYO CONDENSOR (on roof)**

Model #C1251

**SHULTZ AIR CONDITION SYSTEM (Electronic's room, gym)**

Model #OHS-018-AHU

**SHULTS CONDENSOR (on roof)**

Model #OHS-018-RCU-O

**UNIT VENTILATORS (3)**

Make: Carrier

Model #40UV,UH or 1078555-01

**CARRIER CONTROLS, SENSORS, GAUGES, CONTROLLERS**

**CARRIER COMFORTVIEW SYSTEM (computer)**

Buses and boxes

**REPEATERS**

Model #RS-485 to #RS-232

**CEILING UNIT HEATERS (5)**

**TPI CORP. (2)**

Model #F2F5105CAIN

**DUNHAM – BUSH (1)**

Model #H525A

**DUNHAM – BUSH (2)**

Model #H300A

**SHULTZ AIR CONDITION SYSTEM (Computer Room)**

Model #G05-042-AHU-U

**SHULTZ CONDENSOR ROOF UNIT**

Model #OHS-042-RCU-O



**COOLING FANS (roof)**

Make: Carrier

Model #09AZV142WE-6-B

**ALL AIR HANDLERS HAVE TOSHIBA INVERTERS**

Air Handler Unit #1 –

Air Handler Unit #2 –

Air Handler Unit #3 –

Air Handler Unit #4 – VT130E3U4270

Air Handler Unit #5 – VY130E3U4080A

Air Handler Unit #6 –

Air Handler Unit #7 –

**KITCHEN FOOD COOLER UNIT**

Make: Heatcraft

Model: MOH008X62C

Rooftop Condensing Unit

**KITCHEN FOOD FREEZER UNIT**

Make: Heatcraft

Model# MOH025L63C

Rooftop Condensing Unit