Lakewood City Schools

Request for Qualifications

HVAC Preventative Maintenance

HVAC Water Treatment Service

Building Automation System Monitoring & Support

April 30, 2023

Lakewood City Schools will be accepting bids for HVAC Preventative Maintenance, Water Treatment Service and Building Automation System Monitoring & Support until 11:00 a.m. EST, Monday, May 15, 2023, at the Lakewood City Schools Board of Education Office, 13701 Lake Ave., Lakewood, OH 44107, attention Mr. Kent Zeman, Treasurer.

Bid documents may be viewed at the Lakewood City Schools District website (www.lakewoodcityschools.org).

Competitive bids must be submitted on forms furnished. The competitive bids will be sealed in an envelope, addressed to the Lakewood City School District, with the name of the vendor and project name clearly marked on the envelope. The Lakewood City School District reserves the right to accept or reject any or all competitive bids.

A one-year contract, with a renewable option for up to two, (one year at a time) additional years at the discretion of the Lakewood City School District, will be awarded to the most qualified service company, with an effective date of July 1, 2023.

Please e-mail interest in participating along with any questions to Mr. Donahoe at christopher.donahoe@lakewoodcityschools.org. Responses will be shared with those parties who have expressed interest.

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Contractor Qualifications

1. **SERVICE COMPANY QUALIFICATIONS**

A. 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 prerequisite to any award.

1. A period of ten (10) years experience in the performance of HVAC maintenance as specified, shall be considered a minimum.
2. The Service Company shall maintain a field office that is within fifty- (50) miles of the facilities to be serviced under the specification.
3. A minimum of two (2) local service personnel employed by the Service Company shall be a resident in an area within a maximum of a twenty five- (25) mile radius of the facilities to be serviced.
4. 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 consent.
5. The Service Company shall maintain an Engineering Department staffed by a minimum of two (2) Professional Engineers registered in the State of Ohio currently practicing in the mechanical engineering field. Copies of Professional Engineers certification shall be provided as a part of this bid. Should Service Company not directly employ Professional Engineers, provide a letter indicating a relationship with a professional engineering firm and include two (2) mechanical engineering PE certificates from that firm. In addition, the Service Company shall be experienced in and currently engaged in design/build projects of HVAC Systems.
6. The Service Company shall implement a computerized maintenance program using bar-code technology, or other means of tracking as part of this maintenance program. Provide a minimum of three (3) references for which this service is currently being performed by the local office of the Service Company. Each reference shall have had the system operational for a minimum of two (2) years. Should Service Company not be able to provide bar-code specific technology, please provide a narrative that will explain to Owner how you will meet the intent of this recordkeeping system.
7. The Service Company shall comply in a timely manner with all EPA rules and regulations regarding CFC's. The Service Company shall supply evidence of their ability to reclaim and/or recover these compounds.
8. The Service Company shall have the ability to adapt existing equipment to comply with all EPA rules and regulations regarding CFC's. The Service Company shall supply copies of training certificates indicating the ability to perform this work.

9. The Service Company shall also be currently licensed by the State of Ohio as a mechanical contractor and shall submit, with his bid, a copy of their Refrigeration, Hydronics & HVAC licenses.
10. The Service Company shall provide a minimum of five (5) references, within 50 miles of the owner's facility of similar size and scope, for which mechanical services are presently being provided as outlined within this specification. Each reference shall have an annual service contract value in excess of $100,000.00.
11. The Service Company shall provide data that indicates the use of a uniform and detailed method by which preventive maintenance tasks are defined, scheduled, recorded, updated and processed. The Service Company's preventative maintenance program shall be computer generated, bar coded, based on run time, manufacturer's recommendations, and a historical data bank of similar equipment. Simple computer based, run time only, or hand-scheduled programs are not acceptable.
12. Electronic work orders that can be emailed on a real-time basis as work is completed is preferred. A copy of the work order form or electronic template that the Service Company plans to use shall be included with the bid and must be approved by the Owner. Issuance of work orders must be done in conjunction with the Owner or his authorized agent.
13. The Service Company shall provide energy management consulting as part of the lump sum Agreement price. This consulting shall include providing annual energy use reports through the use of the EPA Energy Star Portfolio Manager program for each of the facilities covered under the service agreement. The report shall show the kbtu/square foot and utility cost/square foot for both the current year and the prior year. This report shall be updated monthly. Provide a sample copy of this report with your bid.
14. The Service Company shall be held responsible for damage caused by his work or through neglect of his workmen. Repairs of damaged work, or buildings' contents, furnishings or finishes shall be done as directed by the Owner and paid for by the Service Company.

Scope of Work

1. **INCLUDED SERVICES**

   A. Service to include:

      1. HVAC Preventative Maintenance (Section 7)
      2. HVAC Water Treatment Service (Section 8)
      3. Building Automation System Monitoring & Support (Section 9)

   B. Duration of the Contract will be for one (1) year from July 1, 2023 – June 30, 2024, with two (2) each one year extensions offered at the Owner's discretion for 2024-2025 and 2025-2026.

   C. All HVAC equipment, appurtenant devices and systems that are related to the HVAC systems and non-moving domestic hot water tanks are the equipment to be maintained. The equipment not to be maintained under this contract is such items as foundations, structural supports, domestic water non-maintainable lines, drain plumbing, etc.

2. **LUMP SUM AND SPECIFIC SERVICES BID**

   A. The cost for the required work to perform the HVAC preventive maintenance, HVAC water treatment service, Building Automation System Monitoring & Support shall be provided in the bid as an annual lump sum cost for each year of the contract.

   B. Optionally, a Service Company may choose to only bid on HVAC Service, Water Treatment Service, or Building Automation System (BAS) Monitoring & Support individually. By providing itemized pricing, Service Company agrees to provide any of the above services or combination of services, without the award of all service.

   C. HVAC emergency service, HVAC equipment repair and replacement labor, HVAC repair and replacement parts and material, and BAS equipment repair shall be done as a quoted price or on a time and material basis as directed by the Owner.

3. **PERFORMANCE REVIEW**

   A. The Owner may review, at any time, the service 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 by the Owner. Failure of the Service Company to correct the deficiencies within the time period established shall constitute cause of termination of the services and/or withholding of payment.

4. **EMPLOYEE PERFORMANCE AND CONDUCT**

A. Should any of the Contractor's employees working on this contract fail to perform or conduct themselves in a manner acceptable to the Owner, they shall be removed from working on this contract at the Owner's request.

5. **EQUIPMENT SHUT DOWN**

A. If for some unknown reason or reasons, equipment must be shut down for an extended period of time, the Owner shall be notified immediately. The measures being taken to mitigate the impact to the Owner and the time required to put the equipment back in service shall be reported.

6. **HVAC PREVENTIVE MAINTENANCE SERVICE**

A. The Service Company shall provide HVAC preventive maintenance services at the following locations:

- Emerson Elementary School
- Horace Mann Elementary School
- Hayes Elementary School
- Harrison Elementary School
- Garfield Middle School
- Grant Elementary School
- Harding Middle School
- Lakewood High School
- Lincoln Elementary School
- Roosevelt Elementary School
- Taft Center for Innovation

B. Inspection Frequency

1. The Service Company shall base their proposal on semi-annual PM visits, with an additional summer visit to pressure wash all air cooled condenser coils and a winter visit to brush water cooled chiller tubes.

C. Equipment Included.

1. The specific quantities, sizes, and model numbers of the major pieces of equipment are listed in this specification in Appendix A- EQUIPMENT LIST. This list is to serve as a guide only.
2. The preventative maintenance and the 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 as listed below that are related to heating, ventilating, and air conditioning system.

   a. Heating System

   Furnaces, water heaters, pumps, heating coils, steam traps, water strainers, unit heaters, duct heaters, heat exchangers, humidifiers, etc.

b. Cooling System

Air conditioning compressor(s), air-cooled condensers, cooling tower fans, pumps, water chillers, cooling coils, 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, contractors, controllers, capacity controls, safety controls, recorders, control panels, gauges, air compressor (for pneumatic control systems).

e. Miscellaneous Equipment

Exhaust fans, manual valves, float valves, direct expansion valves, thermometers, gauges, magnetic starters, manual motor starters, pump and fan motor drives, belts, electrical wiring from motor starter to their respective motor, check valves, refrigerant piping and piping insulation, refrigerant.

D. Equipment Not Included.

1. Maintenance services, including repair labor and parts replacement, for portions of the systems and equipment that are non-moving and not normally maintained are not required nor included as part of this specification.
2. Excluded items shall be considered as:

   Foundations, structural supports, domestic water lines, drains, oil lines, gas lines, piping, air handling duct work, unit cabinets, cooling tower structures, etc.
3. This specification covers the equipment and systems as listed herein, and in the event a system is altered, modified, changed or if any equipment is added, or not included in this specification, then that portion shall be added or deleted and shall be maintained in accordance with this specification.

E. Services Included.

1. The Service Company shall be responsible for scheduling of the preventative maintenance; and specific tasks outlined in Appendix B- PREVENTIVE MAINTENANCE TASKING functions to be performed on each scheduled call. Master records shall be maintained in the Owner's office and such schedules and tasks will be adhered to.
2. The Service Company 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, the Service Company 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.

The computerized maintenance program shall use bar-code technology or other means for the recording of all PM and repair work performed.

4. The Service Company shall indicate to the Owner as part of his bid, the method by which he will proceed with Parts 1, 2, and 3, all subject to the Owner's approval.
5. The Service Company shall report to the Owner daily when on the job. One (1) 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 emailed or left with the Owner, detailing work accomplished.
6. This data or historian information will be maintained on the computerized maintenance program. Monthly electronic reports shall be submitted for the Owner's review.
7. The type of data and information recorded shall include, but not necessarily be limited to, the following:
    a. Type of maintenance (preventative or emergency repair)
    b. Date of service
    c. Description of work done
    d. Proposed follow-up, if any
    e. Name of repairman
    f. Time involved for emergency repair work
    g. Equipment bar code number, if tracked in this manner
    h. Digital pictures of the equipment and, if appropriate, pictures demonstrating problems found.
8. The Service Company service reports shall be signed by designated personnel at the job site either electronically or on paper.
9. The general services listed below shall apply to the systems and equipment as shown on the EQUIPMENT LIST and as described in the section entitled HVAC PREVENTIVE MAINTENANCE SERVICE. Specific equipment tasking is listed in Appendix B- PREVENTIVE MAINTENANCE TASKING.
    a. Examine each piece of equipment and device to see that it is functioning properly and is in good operational condition.
    b. Clean all components of dust, old lubricants, etc., to allow the equipment to function as designed.
    c. Lubricate all equipment where needed to permit bearings, gears, and all contact wearing point to operate freely and without undue wear.
    d. Adjust all linkages, motors, drives, etc., that have drifted from the initial design settings and positions.

e. Calibrate all sensing, monitoring, output, safety, and read-out devices for proper ranges, settings, and optimum efficiencies.

f. Repair the equipment and/or devices by the addition of replacement parts, should the above maintenance not be adequate, as approved by Owner.

g. Test and cycle all equipment as a system after it has been cleaned, lubricated, adjusted, and calibrated to assure that it is in proper operating condition and performing at optimum efficiency.

F. Parts Replacement

1. All parts, components, or devices for the mechanical systems as listed above that are worn or are not in proper operational conditions shall be repaired, and/or replaced with new parts, components, or devices, as approved by the Owner.

2. 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 newer design shall be used as the replacement.

3. 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 performed on a time & material or fixed price basis as approved by the owner.

4. All preventive maintenance 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 (lubricants, tools, test instruments, meters, etc.).

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

6. The Service Company shall be available, at no additional charge, for consultation, minor design and equipment changes, or modifications to automatic temperature control, and mechanical systems. The Service Company shall be expected to recommend energy saving modifications, and low cost/no cost modifications and operating procedure changes to the Owner.

G. Additional Services

1. The Service Company shall not be responsible for vandalism of equipment and controls.

2. Air filters will be furnished and installed by Owner. Service Company to provide training to Owner's staff on proper filter installation procedures at the start of each contract year.

3. All belts will be replaced by the Service Company on an annual basis, as provided by the Owner. Service Company to provide Owner an inventory of belt sizes by piece of equipment after the first inspection under this Agreement.

4. For other additional services that apply to this equipment maintenance section, refer to the following sections:
    a. MAINTENANCE PROCEDURES AND RECORDS
    b. PREVENTATIVE MAINTENANCE AND EMERGENCY SERVICE
    c. COMPUTERIZED MAINTENANCE BAR-CODE SYSTEM, OR ALTERNATE MEANS

7. **WATER TREATMENT SERVICE**

A. Services Included:

1. The Service Company shall provide water treatment services on the closed heating and cooling loops at the following locations:
    - Emerson Elementary School
    - Horace Mann Elementary School
    - Hayes Elementary School
    - Harrison Elementary School
    - Garfield Middle School
    - Grant Elementary School
    - Harding Middle School
    - Lakewood High School
    - Lincoln Elementary School
    - Roosevelt Elementary School

2. The Service Company shall also provide water treatment services for the Steam Boilers and Cooling Towers at Lakewood High School.

3. Extent of water treatment system work required by this section is indicated by the requirements of this section, and includes necessary equipment, chemicals, service and on-site training to accomplish the following work:
    - One-year supply of cooling and water treatment products.
    - Supply all treatment necessary to maintain bacteria & algae free cooling tower, condenser / heat exchanger and connecting piping.
    - Supply all treatment necessary to maintain scale & corrosion free cooling tower, condenser / heat exchanger and connecting piping.
    - One-year supply of steam boiler water treatment products.
    - Provide and install treatment products for the closed loop systems (Heating and Cooling) and maintain the treatment level for the duration of the service period.
    - Minimum of monthly service visits for open cooling tower and steam boiler systems, including additional visits as necessary.
    - Closed loop systems that are proven tight (not losing inhibitor treatment between water analysis visits) may be tested every 60 days.
    - Training of operating personnel.
    - Supply water treatment dosing equipment as necessary.

4. Water Treatment contractor will furnish and install all equipment, chemicals and service necessary to provide a complete Turn-Key Water Treatment Program. A single water treatment company shall provide all products and services for undivided responsibility throughout the agreement period. The water treatment company shall be a recognized specialist in the field of commercial water treatment for a minimum of ten (10) years. This company shall have a regional accredited laboratory, research and development facilities, plus technical service representatives located within the trading area of the job site. Water Treatment Company shall be capable of, and assume liability for, delivery of chemicals to Owner's site. Once onsite, water treatment contractor shall transfer chemicals to locale where used.

5. Water treatment shall include feeding devices necessary to feed chemical solution into piping system and bring chemical properties of water to within manufactures recommended operating limits, in order to minimize corrosion and reduce build-up of slime or other contaminates.

6. Furnish and install a coupon rack capable of accepting two coupons in each chemically treated system. The chemical treatment contractor shall make recommendations as to the use of coupons and shall include the furnishing and analysis of the coupons/ system (steel and copper) minimally twice per year corrosion rate analysis is to be performed on the system.

7. Closed loop systems (chilled water) shall have water treatment consisting of Shot Feeder, to feed chemical solutions into each piping system. Chemicals shall be (Nitrite Corrosion inhibitor) to maintain control limits 600-1000 parts per million of sodium Nitrite. Closed Hot water systems must be maintained between 800- 1200 parts per million of sodium Nitrite.

8. Water treatment for open condenser water system shall consist of:

    a. Provide cooling water inhibitor maintaining control limits of 100-125 parts per million and pH of 8.3 to 9.0
    b. Furnish one year's supply of the recommended formulas for control of scale and corrosion in the open recirculating system. Provide additional formula for prevention of microbiological growth in the same system. Biocide products recommended shall be properly registered with the Environmental Protection Agency and EPA registration number shall be clearly shown on all product literature and drum labels. To ensure operator safety all chemical products shall be provided in liquid form for direct feed from shipping container to cooling system. Provide MSD sheets on all chemical products.

9. Water treatment for steam boiler systems shall control chemistry to:
    a. Soft water hardness, < 1.0 ppm as CaC03.
    b. Feed water hardness, < 1.0 ppm as CaC03.
    c. Condensate conductivity, < 20 umhos.

d. Condensate pH, 8.0-8.5.
e. Boiler water neutralized (pH of 8.3) conductivity, 3000-4000 umhos.
f. Boiler water sulfite, 30-80 ppm as S03.
g. Boiler water P-alkalinity, 200 -700 ppm.

10. Effluent from HVAC system discharged to sewer shall meet requirements of applicable local, state and national water quality standards.

11. One year service shall be included in the lump sum and shall include, but not be limited to, the following.

    a. Delivery and maintenance of water treatment chemicals for one year.
    b. Collection and analysis of samples of circulating water every thirty days for one year, and adjustments to the rate of chemical feed to suit each system.
    c. Inspection and maintenance of chemical feeding devices for one year. Inspection and maintenance should be performed at minimum intervals of every thirty days.

B. Additional Services.

1. For other additional services that apply to this water treatment service section, refer to the following sections:

    a. MAINTENANCE PROCEDURES AND RECORDS

    b. PREVENTIVE MAINTENANCE AND EMERGENCY SERVICE

    d. COMPUTERIZED MAINTENANCE BAR-CODE SYSTEM, OR ALTERNATE MEANS

8. BUILDING AUTOMATION SYSTEM (BAS) MONITORING & SUPPORT

A. Service Company shall monitor remotely the Trane Summit and Tracer Ensemble Building Automation Systems at the following locations:

- Emerson Elementary School
- Horace Mann Elementary School
- Hayes Elementary School
- Harrison Elementary School
- Garfield Middle School
- Grant Elementary School
- Harding Middle School
- Lakewood High School
- Lincoln Elementary School
- Roosevelt Elementary School
- Taft Center for Innovation

B. Service Company will provide telephone support to assist Owner with set point changes, scheduling, alarm management, outside air reset schedule adjustments and basic troubleshooting without additional compensation.

C. Service Company will furnish and install Trane software upgrades and patches as made available by Trane. This work is part of the lump sum price in this RFQ.

D. Service Company will assist the Owner with a District wide Energy Management Plan and provide a monthly report to the Owner that shows the following information:

1. Set points out of range as determined by Owner
2. Overridden points
3. Alarm history
4. Schedule anomalies

E. Service Company will provide quarterly training at the District Office for supervisors of the BAS system. Each training class will be for 4 hours. Cost of training is to be included in the lump sum for all labor and materials.

F. Service Company will provide semi-annual training at each school listed in paragraph A for operators of the BAS system. Each training class will be for 2 hours at each school. Cost of training is to be included in the lump sum for all labor and materials.

G. Provide names and training certificates of at least three (3) service technicians factory trained in Trane Summit and Ensemble Building Automation System programming and control with your bid.

H. The Service Company shall provide energy management consulting as part of the lump sum Agreement price. This consulting shall include providing annual energy use reports through the use of the EPA Energy Star Portfolio Manager program for each of the facilities covered under the service agreement. The report shall show the kbtu/square foot and utility cost/square foot for both the current year and the prior year. This report shall be updated monthly. Provide a sample copy of this report with your bid.

I. Owner reserves the right to institute energy conservation methods on any or all systems covered by this contract. Before proceeding with the work, it shall be determined by mutual agreement between the Owner and the Service Company if such request falls under the scope of this contract. If so, the work will be completed at no additional cost to the Owner. If not part of this contract, charges for the cost of the work shall be negotiated between the Owner and the Service Company before the work is started. The Owner may option to obtain bids for the work.

J. Must have a support/help desk facility within 50 miles of Lakewood City School District. Help desk support to be available 8am-5pm (M-F)

The help desk will assist with:

- Set point changes
- Changing time schedules
- Remote troubleshooting

K. Must install analytics software to trend and report on operational parameters.

L. Reports will be sent to LCSD once per quarter. These reports will include at a minimum:

- Space comfort scorecards
- Corrective action list with deficiencies and recommended solutions
- Energy star reporting

M. Additional Services.

1. For other additional services that apply to this building automation system monitoring & support section, refer to the following sections:
   a. MAINTENANCE PROCEDURES AND RECORDS
   b. PREVENTIVE MAINTENANCE AND EMERGENCY SERVICE
   e. COMPUTERIZED MAINTENANCE BAR-CODE SYSTEM, OR ALTERNATE MEANS

General Requirements

1. **MAINTENANCE PROCEDURES AND RECORDS**

   A. The Service Company shall utilize computer generated preventive maintenance directions, which indicate task functions to be performed on each scheduled service call, as determined by calendar periods, operating hours (run time), manufacturer's recommendations, and historical data bank, as pertinent to each task. At a minimum, this shall include the tasks described in Appendix B - PREVENTIVE MAINTENANCE TASKING.

   B. 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.

   C. 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 preventive maintenance frequencies.

2. **COMPUTERIZED MAINTENANCE BAR-CODE SYSTEM, OR ALTERNATE MEANS**

   A. The goal of this system is to obtain and accumulate historical data for future reporting information as part of this program. Provide three (3) sample reports with your bid, each showing different functionality of the program.

   B. The Service Company may elect to apply a bar-code to each piece of equipment. A service technician's mobile device could scan the bar-code for any and all maintenance and repair work, identifying in the database which specific unit is being serviced. All tasks, whether planned or unplanned, shall be recorded electronically in the mobile device software, and then uploaded to a central database for future reference.

   C. Electronic reports shall be provided as requested by the Customer showing detailed work, including tasking, for any given maintenance inspection; or detailed work, including tasking, for a specific piece of equipment over a period of time.

   D. The purpose of this is to monitor what is/what is not being done in order to keep track of the PM contract. The database will note the component to be inspected by name, by possible identification number, location of equipment, with other specific notation of tasks performed that month on the equipment. The system shall also keep track of all corrective repairs. Include with your bid one (1) report that shows repair history. Should Service Company be unable to provide a

computerized maintenance bar-code system, please provide a narrative on how you expect to accomplish this scope of work.

E. The Service Company shall be responsible for providing and installing all bar-code tags on equipment covered under the contract at no additional cost to the Owner, if this is the chosen means.

3. PREVENTIVE MAINTENANCE AND EMERGENCY SERVICE CALLS

A. The Service Company shall schedule and perform the preventive maintenance services on no less than a semi-annual basis.

1. After each service call, a service report shall be emailed or left with the Owner, detailing work accomplished.
2. In addition to semi-annual preventive maintenance service, Service Company shall provide a chemical cleaning and power washing of all condenser coils included on the covered equipment in the EQUIPMENT LIST. Air cooled condensers shall be cleaned in the summer, after Cottonwood seeds have dropped. Water cooled condensers (cooling towers) shall be cleaned before the start of the cooling season (April 15) and be prepared/drained for winter after October 15, but before November 15.

B. The Service Company shall provide emergency service on an as required basis. Emergency service shall be considered as calls in addition to the scheduled preventive maintenance calls.

1. 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 performed on a time & material basis.
2. Emergency service shall be provided within four (4) hours after notification by the Owner. This service, included under this contract, will continue on a 24-hour, 7-days-a-week basis until the repair is complete. An exception to this requirement of continuing service will be determined by the Owner on an individual basis when the required repair parts are not available for immediate delivery. All delays must be substantiated in writing to the Owner.

The Owner shall be notified in writing of all "shut-downs" in excess of 48 hours.

3. Emergency service response system shall be a professionally manned telephone answering service. Automatic telephone answering/recording machines, individual cell phones, or home telephone numbers are not acceptable.

4. SERVICE PERFORMANCE GUARANTEES

A. Performance Review

1. The Service Company will provide a Quarterly Report and meet with the Owner on a quarterly basis to review the services provided and reports submitted and to verify that the preventive maintenance is, in fact, being properly and adequately performed.

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 of termination of the services and/or withholding of payment.

5. SPECIAL CONDITIONS

A. The Service Company's responsibility for injury to persons or property that may be caused by, or arise through the maintenance, service, functioning, or use of the system, shall be limited to injury caused directly by the Service Company's negligence in performing the obligations as set forth in this specification. The Service Company shall not be made liable for consequential or speculative damages.

B. The Service Company shall not be made liable for any loss, delay, injury, or damage, whether direct or consequential, that may be caused by conditions beyond the Service Company's direct control including, but not limited to, acts of government, strikes, lockouts, fire, explosion, theft, riot, civil commotion, war, malicious mischief, flood and other acts of God.

C. The Service Company shall not be required to make safety tests or install new attachments or additional controls or equipment as recommended or directed by an insurance company, laboratory, or governmental authority.

D. Access to all devices to be serviced shall be provided for the Service Company. The Service Company shall not be held responsible for equipment malfunction or damage, should access to equipment, or the inability to start and stop primary equipment incidental to the operation of the mechanical system, be denied or not provided.

6. TECHNICAL AND BUSINESS PROSPECTUS

A. The Service Company shall provide as part of the bid a detailed prospectus indicating their ability to meet the following requirements:

1. The date of establishment of the Service Company within the State, and a complete resume of the service operation, history and other related facts.
2. A minimum of five (5) references with contracts in excess of $100,000 for which this service is presently being performed shall be provided. Include the company name, address, owner, representative, title, phone number and month and year of contract initiation.
3. A minimum of three (3) references with contracts that include a computerized maintenance bar-code system for a period of two (2) years shall be provided. Include the company name, address, owner, representative, title, phone number and month and year of contract initiation. Should Service Company not be able to provide bar-code technology, please provide a narrative that will explain to Owner how you will accomplish the same.

4. Evidence of the Service Company's ability to reclaim and/or recover CFC's shall be provided, including training certificates.
5. The name, title, function, location, years in the field of equipment maintenance, years with the Service Company, and qualifications of all the service personnel assigned to this project. Names should include the account executive, service manager, service dispatcher, customer service representative, service technicians and any other person involved in the service process.
6. The name, title, function, location, years in the field of HVAC maintenance, years with the Service Company, and qualifications of supervisory and management personnel.
7. The name, title, function, location, certificate of registration, years with the Service Company, and date of registration of the professional engineers registered in the State of Ohio that are employees of the Service Company.
8. Sample forms, typical service reports, methods of record keeping, computer generated scheduling, etc., that indicates the level of knowledge and degree of experience in the maintenance of mechanical systems.
9. Three (3) sample reports from the Computerized Maintenance Bar-Code system. Each report should show a different functionality of the system.
10. Sample EPA Energy Star report.
11. A Certificate of Insurance with a minimum amount of commercial general liability insurance set at $1,000,000 per occurrence.
12. Ohio Bureau of Workers Compensation certificate of insurance.
13. Include any additional descriptive literature or information that is relevant to the specification and/or services proposed, that indicates unique qualifications, particular competence in this field, technical capabilities, proprietary techniques, or special resources.
14. A list of any subcontractors the service company intends to use on this job, including contractor's name and area of expertise.

7. PROPOSAL EVALUATION

A. Each Service Company, by the submission of a proposal, assents to each and every term and condition set forth in this specification and agrees to be bound thereby.

B. Any proposal which is incomplete, conditional, or obscure, or which contains irregularities of any kind, may be cause for rejection.

C. The right is reserved to accept or reject any or all proposals, to consider the competency and responsibility of all Service Companies, and to use any information deemed necessary to establish the ability of any Service Company to perform all conditions of the contract in order to avoid awarding a contract to a firm unable to produce the quality of service required and intended by this specification.

Bid Form

Company Name: _____

Please include the following with your bid:

Requirement	Included
1. Complete resume of the service operation, history and other related facts.	
2. Five service references with contracts in excess of $100,000.	
3. Three references of contracts using a computerized maintenance bar-code system for at least 2 years.	
4. Names and qualifications of service team for this project.	
5. Names and qualifications of supervisory and management personnel.	
6. Names and certificates of at least two (2) State of Ohio registered professional engineers.	
7. Names and training certificates of at least three (3) service technicians factory trained in Trane Summit and Ensemble Building Automation System programming and control.	
8. Copies of Contractor Licenses for the State of Ohio for: a. Refrigeration b. Hydronics c. HVAC	
9. Sample forms, reports and preventive maintenance tasking checklists and schedules.	
10. Three sample reports from the Computerized Maintenance Bar-Code System, or a narrative on how this will be accomplished without the use of bar-code automation.	
11. Sample EPA Energy Star Report.	
12. Certificate of Insurance for general liability and Ohio Workers Compensation.	
13. Any other descriptive literature or information that indicates unique qualifications.	

Annual 2023-2024 cost for services rendered as specified for the period from July 1, 2023 – June 30, 2024

Combined Scope of Work for HVAC Preventive Maintenance, HVAC Water Treatment Service & Building Automation System Monitoring & Support	**$**

Annual cost for individual Scope of Work pricing. <u>DO NOT COMPLETE</u> if you included a combined Scope of Work price and are unwilling to accept an award for portion of the total work.

HVAC Preventive Maintenance	**$**
HVAC Water Treatment Service	**$**
Building Automation System Monitoring & Support	**$**

Annual % increase after 1st year if option years exercised _____ **%**

Hourly labor rates for work outside the scope of this agreement:

Straight time (8:00am – 4:30pm, M-F) _____

Time and one-half (4:30pm – 8:00am, M-F, all day Sa) _____

Double time (Sunday & Holidays) _____

Material Markup

Cost plus _____

Travel & Expenses

Service Company will only bill for labor & materials. Owner will not be charged extra for Travel & Expenses.

Authorization

_____
Printed Name

_____
Signature

_____
Title

_____
Date

APPENDIX A- EQUIPMENT INVENTORY

Lakewood High School

Qty	Description	Make	Model	Serial	Location	Unit ID
2	Unit Heaters	Trane	Unknown			PENTHOUSE #2
		Trane			C122	UH-3
2	Centrifugal chillers	Trane	CVHF570	L16L05358	CHILLER ROOM	CHILLER-1
		Trane	CVHF570	L16L05359	CHILLER ROOM	CHIILER-2
2	10HP CHW Pumps	Taco	Unknown	Unknown	CHILLER ROOM	PUMP-7
		Taco	Unknown	Unknown	CHILLER ROOM	PUMP-8
2	30HP CHW Pumps	Taco	Unknown	Unknown	CHILLER ROOM	PUMP-9
		Taco	Unknown	Unknown	CHILLER ROOM	PUMP-10
2	30HP CDW Pumps	Unknown	Unknown	Unknown	CHILLER ROOM	PUMP-5
		Unknown	Unknown	Unknown	CHILLER ROOM	PUMP-6
5	VFDs for cooling tower	S Flex	Unknown	Unknown	CHILLER ROOM	CT VFD-3
		S Flex	Unknown	Unknown	CHILLER ROOM	CT VFD-1N
		S Flex	Unknown	Unknown	CHILLER ROOM	CT VFD-1S
		S Flex	Unknown	Unknown	CHILLER ROOM	CT VFD-2N
		S Flex	Unknown	Unknown	CHILLER ROOM	CT VFD-2S
2	30HP VFDs for tower pumps	Yaskawa	Z1C1B040PM	4W1671256620001	CHILLER ROOM	PUMP-5 VFD
		Yaskawa	Z1C1B040PM	4W1671256620002	CHILLER ROOM	PUMP-6 VFD
3	Cooling Towers	Baltimore Air Coil	Unknown	Unknown	ROOFTOP	
		Baltimore Air Coil	Unknown	Unknown	ROOFTOP	
		Baltimore Air Coil	Unknown	Unknown	ROOFTOP	
6	Air Handling Units with ERV	Trane	MCCB030UA0C0UA	K08F68352	PENTHOUSE above Chiller Room	AHU-4B
		Trane	MCCB025UA0C0UB	KO8F68241	PENTHOUSE above Chiller Room	AHU-5B
		Trane	MCCB030UA0C0UB	K08F68251	PENTHOUSE above Chiller Room	AHU-6B
		Trane	MCCB040UA0C0UA	K08F68261	A WING PENTHOUSE	AHU-1A
		Trane	MCCB040UA0C0UB	K08F69156	A WING PENTHOUSE	AHU-2A
		Trane	MCCB040UA0C0UA	K08F68306	A WING PENTHOUSE	AHU-3A
4	Hot Water Boilers	Lochinvar	FBN5000	1618102920085	Boiler Room Building	BOILER-1
		Lochinvar	FBN5000	1622103019469	Boiler Room Building	BOILER-2
		Lochinvar	FBN5000	1618102920084	Boiler Room Building	BOILER-3
		Lochinvar	FBN5000	1622103019470	Boiler Room Building	BOILER-4
4	VFDs	Yaskawa	Z1000	4W1671256610001	Boiler Room Building	PUMP-1 VFD
		Yaskawa	Z1000	4W1671256610003	Boiler Room Building	PUMP-2 VFD
		Yaskawa	Z1000	4W1671256610004	Boiler Room Building	PUMP-3 VFD

		Yaskawa	Z1000	4W1671256610002	Boiler Room Building	PUMP-4 VFD
4	**Hot water pumps**	**PATTERSON PUMP**	V4C9A-RC	unknown	Boiler Room Building	PUMP-1
		PATTERSON PUMP	V4C9A-RC	unknown	Boiler Room Building	PUMP-2
		PATTERSON PUMP	V4C9A-RC	HV-C150658-1-02	Boiler Room Building	PUMP-3
		PATTERSON PUMP	V4C9A-RC	unknown	Boiler Room Building	PUMP-4
3	**Make Up Air Units Serving Kitchen**	**Trane**	GRBA15GDHF0L6CK402A0EJLNPQT1	F08F05519	ROOFTOP	MUA-1
		Trane	GRBA25GDHF0L6CN402A0EJLNPQT1	F08F05520	ROOFTOP	MUA-2
		Trane	GRDA35GDHF0L6CP402A0EJLNPQT1	F08F05521	ROOFTOP	MUA-3
1	**Pneumatic Control Air Compressor**	**SPEEDAIRE**	4XX28	G005A1150201091	BASEMENT	
3	**Unit Heaters**	**Trane**	UHSB0841TAA	F10E33001	Greenhouse	
		Modine			Greenhouse	
		Trane			E131	UH-6
11	**Cabinet Heaters**	**Unknown**	Unknown	Unknown	Door 19	
		Unknown	Unknown	Unknown	Door 3 Stairwell	
		Unknown	Unknown	Unknown	Door 4	
		Unknown	Unknown	Unknown	Door 5	
		Unknown	Unknown	Unknown	Door 7	
		Unknown	Unknown	Unknown	Door 7	
		Unknown	Unknown	Unknown	Door 8	
		Unknown	Unknown	Unknown	A141	
		Unknown	Unknown	Unknown	A134	
		Unknown	Unknown	Unknown	By B112-B129	
		Unknown	Unknown	Unknown	BY B101-B112	
		Unknown	Unknown	Unknown	By B123	
		Unknown	Unknown	Unknown	A207	
		Unknown	Unknown	Unknown	By Stairwell Behind Restroom A236	
		Unknown	Unknown	Unknown	Lecture 3-A307	
		Unknown	Unknown	Unknown		
56	**Exhaust Fans**					
12	**Drives**	YASKAWA	Z1000	1W16Y1351190022	PENTHOUSE above Chiller Room	
		YASKAWA	Z1000	1W1325227920026	PENTHOUSE above Chiller Room	
		Eaton	HVX9000	12792534	PENTHOUSE above Chiller Room	EF-6 VFD
		Eaton	HVX9000	12792568	PENTHOUSE above Chiller Room	AHU-6 SUPPLY VFD
		Eaton	HVX9000	12792569	PENTHOUSE above Chiller Room	AHU-4 SUPPLY VFD
		Eaton	HVX9000	12792535	PENTHOUSE above Chiller Room	AHU-4 EXHAUST VFD

		Eaton	HVX9000	12792565	A WING PENTHOUSE	
		Eaton	HVX9000	12792554	A WING PENTHOUSE	
		Eaton	HVX9000	12792551	A WING PENTHOUSE	
		Eaton	HVX9000	12792562	A WING PENTHOUSE	
		Eaton	HVX9000	11238307	A WING PENTHOUSE	
		Eaton	HVX9000	12792563	A WING PENTHOUSE	
		Eaton	HVX9000	12792554	A WING PENTHOUSE	
		Eaton	HVX9000	12792565	A WING PENTHOUSE	
		Eaton	HVX9000	12792546	CHILLER ROOM	PUMP-9 VFD
		Eaton	HVX9000	12792549	CHILLER ROOM	PUMP-10 VFD
2	**Mini-Splits**	**Mitsubishi**	MUZ-D36NA	8000114	ROOFTOP	
2	**Phone Room/NOC**	**Liebert**	Unknown	Unknown	ROOFTOP	
		Liebert	TCDV251-A	0852C18311	ROOFTOP	
	AHU	**Liebert**	MMD36E-AHED0	0852N179075	B213	
1	**CRAC UNIT**	**Liebert**	Liebert DS	Unknown		
5	**Domestic Hot Water Tanks**	**Bradford White**	EF100T250E3NA2	PE39476945	B209 Custodial	HWT-1
		Bradford White	EF100T250E3NA2	NH38167908	B209 Custodial	HWT-2
		Bradford White	EF100T250E3NA2	NH38167909	B209 Custodial	HWT-3
	POOL					
6	**Air Handling Units**				3rd Floor Hall	AHU-24
		Trane	TVDB06AG0F1A	K88E16186	Off Pool Balcony	AHU-25
		Trane	TVDB03AS0F1ARR00	K88E16187	Above Custodial Closet	AHU-26
		Trane	TVDBO3AS0F1ALL00	K88E16188	Above Custodial Closet	AHU-27
		Trane	Unknown	Unknown	Pool Boiler Room	AHU-28
		Trane	CCDB03AS0H	K88E15184	Pool Boiler Room	AHU-29
9	**Exhaust Fans**	**Unknown**	**Unknown**	**Unknown**		
1	**Cabinet Heaters**	**Unknown**	**Unknown**	**Unknown**		
2	**Pool Boilers**	**Camus**	DFNH-1500	92232637	Pool Boiler Room	
		Camus	DFNH-1500	92232638	Pool Boiler Room	
2	**Domestic Hot Water Tanks**	**Camus**	VTNW-0499-MSI-HL	92232635	Pool Boiler Room	
		Camus	VTNW-0499-MSI-HL	92232636	Pool Boiler Room	
2	**Domestic Storage Tanks**	**Unknown**	Unknown	Unknown	Pool Boiler Room	
		Unknown	Unknown	Unknown	Pool Boiler Room	
3	**Domestic Pumps**	**Unknown**	Unknown	Unknown	Pool Boiler Room	
		Unknown	Unknown	Unknown	Pool Boiler Room	
		Unknown	Unknown	Unknown	Pool Boiler Room	

5	**Heating Pumps**	**Wilo**	2124502/21w26	22562574/0001	Pool Boiler Room	
		Wilo	2124502/21w26	22562574/0001	Pool Boiler Room	
		Wilo	2124502/21w26	22430570/0001	Pool Boiler Room	
		Wilo	2124502/21w26	22430570/0002	Pool Boiler Room	
		Taco	Unknown	Unknown	Pool Boiler Room	
1	**Pool Electric Duct Heater**	**Thermolec**	SC-CTPBX	310710-001	Pool Boiler Room	
1	**Pool Exhaust Fan**	**Greenheck**	Unknown	Unknown	Pool Boiler Room	
2	**Air Compressor/Dryer**	**Ingersoll Rand**	SS5L5	802130070	A WING PENTHOUSE	
		Ingersoll Rand	SS5L5	705220325	A WING PENTHOUSE	
	Dryer	**Unknown**	Unknown	Unknown	A WING PENTHOUSE	
	CIVIC					
6	**Air Handling Units**	**TRANE**	CSAA008UAL00	K16E40993	CIVIC CRAWL SPACE (LADDER)	AHU-10
		Buffalo	Unknown	Unknown	CIVIC	AHU-1
		Buffalo	Unknown	Unknown	CIVIC	AHU-2
		Buffalo	Unknown	Unknown	CIVIC MECH AUD 1	AHU-3
		Buffalo	Unknown	Unknown	CIVIC OFF CATWALK	AHU-8
		Buffalo	Unknown	Unknown	CIVIC OFF CATWALK	AHU-9
10	**Drives**				CIVIC CRAWL SPACE (LADDER)	SAF VFD
		Yaskawa	Z1000	4W1671256600001	CIVIC	AHU-1 VFD
		Yaskawa	Z1000	4W1671256600003	CIVIC	AHU-2 SF VFD
		Yaskawa	Z1000	4W1681278300001	CIVIC MECH AUD 2	RAF-2 VFD
		Yaskawa	Z1000	4W1671256600005	CIVIC MECH AUD 1	SAF-3 VFD
		Yaskawa	Z1000	Unknown	CIVIC OFF CATWALK	
		Yaskawa	Z1000	Unknown	CIVIC OFF CATWALK	
		Yaskawa	Z1000	Unknown	CIVIC OFF CATWALK	AHU-8 VFD
		Yaskawa	Z1000	4W1788088200002	CIVIC OFF CATWALK	AHU-9 VFD
1	**Self-Contained Package Water Cooler for Catering**					
1	**Exhaust Fans**				CIVIC MECH AUD 1	
					CIVIC MECH AUD 2	
5	**Domestic Hot Water Tank (Electric)**					
	D BUILDING					
3	**RTU's**	**Trane**	YSC060A3ELA0000	337100501L	ROOFTOP D BUILDING	
		Trane	YCC024F1L0BH	3353J1D2H	ROOFTOP D BUILDING	Center Office
		Trane	YSC036A3ELA0000	337100168L	ROOFTOP D BUILDING	West Classroom
1	**Air Compressor**					
1	**Gas Fueled Unit Heaters**	**Modine**	Unknown	Unknown	Building D	

1	**Domestic Hot Water Tank**		G1050TDE3	9902316709	Building D	
	Exhaust Fans	**Unknown**	Unknown	Unknown	ROOFTOP D BUILDING	Center West
		Unknown	Unknown	Unknown	ROOFTOP D BUILDING	Center East
		Jenn-Air	241 RV	Unknown	ROOFTOP D BUILDING	Unknown
		Unknown	Unknown	Unknown	ROOFTOP D BUILDING	N East
		Jen Fan	DB1805DP	27068	ROOFTOP D BUILDING	EF Center
		Unknown	Unknown	Unknown	ROOFTOP D BUILDING	S/W
		COOK	30UC8B	70009-1741	ROOFTOP D BUILDING	S/Center
		COOK	30UC6B	70009-1742	ROOFTOP D BUILDING	S/E
	C Wing					
6	**Condensers**	**Liebert**	PFH020A-PL7	Y16GG1A100	ROOFTOP	ACCU-1
		Liebert	PFH020A-PL7	Y16GG1A106	ROOFTOP	ACCU-2
		Liebert	PFH020A-PL7	Y16GG10072	ROOFTOP	ACCU-3
		Liebert	PFH020A-PL7	Y16GG1A092	ROOFTOP	ACCU-4
		Liebert	PFH020A-PL7	Y16GG1A099	ROOFTOP	ACCU-5
		Liebert	PFH020A-PL7	Y16GG1A103	ROOFTOP	ACCU-6
6	**Indoor units**	**Liebert**	Unknown	Unknown	Room C205 Storage	crac 3
		Liebert	Unknown	Unknown	Room C204 Storage	crac 4
		Liebert	Unknown	Unknown	Room C305 Storage	crac 6
		Liebert	Unknown	Unknown	Room C304 Storage	crac 5
		Liebert	Unknown	Unknown	Room C104 Storage	crac 1
		Liebert	Unknown	Unknown	Room C105 Storage	crac 2
1	**Exhaust Fan**					
1	**DOAS with 8 fans 5 VFDs**	**Energy Labs**	C120188-FCH-L	1603-9211-DOAS-1	ROOM C122	DOAS-1
1	**In-line CHW pump**		Unknown	Unknown	ROOM C122	
1	**VFD**	**Yaskawa**	Z1000	4W1671256630001	ROOM C122	P-11 VFD
1	**Domestic hot water heater**	**Locnivar**	SNA151-100	1623103047449	ROOM C122	
	E Wing					
2	**Condensers**	**Liebert**	PFH027A-PL7	Y16GG1A098	ROOFTOP	
			PFH027A-PL7	Y16GG1A105	ROOFTOP	
2	**Indoor units**	**Liebert**	Unknown	Unknown	Room E214	crac-7
			Unknown	Unknown	Room E213	
1	**AHU-1 with heat wheel, 7 fans and 4 VFDs**	**Energy Labs**	C123178-FCH-L	1603-9211-1	E WING MECHANICAL	AHU-1
1	**AHU-2 with heat wheel, 3 motors and 2 VFDs**	**Trane**	CSAA040UAL00	K16E40655	E WING MECHANICAL	AHU-2
1	**AHU-3 with 2 motors and 2 VFDs**	**Trane**	CSAA014UAL00	K16E40644	E WING MECHANICAL	AHU-3
1	**AHU-4 with heat wheel, 3 motors and 2 VFDs**	**Trane**	CSAA040UAL00	K16E40680	E WING MECHANICAL	AHU-4
1	**AHU-5 with 2 motors and 2 VFDs**	**Trane**	CSAA014UAL00	K16E40633	E WING MECHANICAL	AHU-5

1	**AHU-6 with 2 motors and 2 VFDs**	**Trane**	CSAA021UAL00	K16E40693	E WING MECHANICAL	AHU-6
1	**AHU-7 with 2 motors and 1 VFD**	**Trane**	CSAA040UAL00	K16E40667	E WING MECHANICAL	AHU-7
2	**Domestic hot water heaters**	**Lochinvar**	CFN1802	1.6251E+12	E WING MECHANICAL	DHW-2
		Lochinvar	CFN0992	1625103097290	E WING MECHANICAL	DHW-3
2	**Hot water storage tanks**	**Lochinvar**	RGA0650-5	103060496	E WING MECHANICAL	
		Lochinvar	RGA0650-5	103060494	E WING MECHANICAL	
4	**Recirculating pumps**	**Taco**			E WING MECHANICAL	
		Taco			E WING MECHANICAL	
		Armstrong			E WING MECHANICAL	
		Armstrong			E WING MECHANICAL	
1	**MUA unit**	**Absolut Air**	Unknown	Unknown	ROOFTOP	
1	**Kitchen EF**	**Jen Co**				
6	**General Exhaust Fans**					
	E Athletic Wing					
1	**AHU-12**	**Trane**	CSAA012UAL00	K17C18361	LL Weight Room Mechanical	AHU-12
2	**VFDs for EFs**	**Titan**	CI-003-GS4	5506708062C	LL Weight Room Mechanical	AHU-12 EF VFD
			CI-003-GS4	5506708062C	LL Weight Room Mechanical	AHU-13 EF VFD
1	**AHU-13 with VFD**	**Trane**	CSAA012UAL00	K17C18368	Rec Center Fitness room Mechanical	AHU-13
	STADIUM					
Quantity	**Description**	**Make**				
	WEST BLEACHERS					
2	**Boilers**	**Unknown**	Unknown	Unknown	Locker Room West	
		Unknown	Unknown	Unknown	Locker Room West	
2	**Pumps**	**Unknown**	Unknown	Unknown	Locker Room West	
		Unknown	Unknown	Unknown	Locker Room West	
6	**Unit Heaters**	**REZNOR**	Unknown	Unknown	DOOR 8	
		REZNOR	Unknown	Unknown	DOOR 9	
		Unknown	MUH051	Unknown	CLOSET WEST END	
		Unknown	Unknown	Unknown	Unknown	
		Unknown	Unknown	Unknown	Unknown	
		Unknown	Unknown	Unknown	Unknown	
1	**Domestic Hot Water Tank**	**Unknown**	Unknown	Unknown	Unknown	
	EAST BLEACHERS					
2	**Boilers**	**Unknown**	Unknown	Unknown	LOCKER ROOM EAST	
		Lochinvar	PFN0250	1876645	Room Under Press Box	

2	**Pumps**	**Unknown**	Unknown	Unknown	LOCKER ROOM EAST	
		Unknown	Unknown	Unknown		
5	**Unit Heaters**	**REZNOR**	Unknown	Unknown	room 5 coaches and staff East Bleachers	
		REZNOR	Unknown	Unknown	Locker room	
		Unknown	Unknown	Unknown	Equipment room	
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
1	**Gas Through the Wall for Press Box**	**Unknown**	Unknown	Unknown	Coachs Press Box	
	Electric Heaters-NIC	**Unknown**	Unknown	Unknown	Mens Restroom	
5	**Infrared for Restrooms-NIC**	**Unknown**	Unknown	Unknown	Mens Restroom	
		Unknown	Unknown	Unknown	Womens Restroom	
		Unknown	Unknown	Unknown	Womens Restroom	
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
5	**Exhaust Fans**	**Unknown**	Unknown	Unknown	Door 10 Locker Room East	
		Unknown	Unknown	Unknown	Locker Room East	
		Unknown	Unknown	Unknown	Locker Room East	
		Unknown	Unknown	Unknown	Locker Room West	
		Unknown	Unknown	Unknown	Locker Room West	
1	**Domestic Hot Water Tank**		Unknown	Unknown	ROOM Under Press Box	

Emerson Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
5	Air Handling Units with ERV	Trane	MCCB030UA0C0UA	K07J18168A	Basement Mechanical	AHU-1
		Trane	MCCB025UA0C0UA	K07J18023A	Basement Mechanical	AHU-2
		Trane	MCCB025UA0C0UA	K07J18144A	Basement Mechanical	AHU-3
		Trane	MCCB017UA0C0UB	K07J18204A	Door 9 Mechanical	AHU-4
		Trane	MCCB006UA0C0UA	K07J17593A	Door 9 Mechanical	AHU-5
1	Air Cooled Chiller	Trane	RTAC1854UQ0NUAFNN1WY2CDCNN6EA11CR0FXN	U07M06279	Outside	CH-1
1	Computer Room Cross Connect Unit	Data Air	DRCU-0512-4	2007-4026-F	ROOFTOP	
2	Split Systems	Unknown	Unknown	Unknown	Ceiling near cafeteria	
		Unknown	Unknown	Unknown	Ceiling near cafeteria	
2	Hot Water Boilers	AERCO	Unknown	Unknown	Door 9 Mechanical	BOILER-1
		AERCO	Unknown	Unknown		BOILER-2
2	Hot Water Pumps	Armstrong	4x3x8	584048	Door 9 Mechanical	HWP-1
		Armstrong	4x3x8	584049	Door 9 Mechanical	HWP-2
2	Chilled Water Pumps	Armstrong	Unknown	Unknown	Door 9 Mechanical	CHWP-1
		Armstrong	Unknown	Unknown	Door 9 Mechanical	CHWP-2
6	Unit Heaters	Trane	UHSB060	F07K40818	Door 9 Mechanical	
		Trane	UHSB060		Basement Mechanical	
		Trane	UHSB0601TAA00100A00	F07K19512	Basement Mechanical	
		Trane	UHSB0601TAA00100A00	F07K40514	CENTRAL STORAGE ROOM	
		Trane	Unknown	Unknown		
		Trane	Unknown	Unknown		
5	Cabinet Heaters	Trane	Unknown	Unknown		
2	InLine Exhaust		Unknown	Unknown		
12	Exhaust Fans	Jen Fan	TXB18751DP-RHUL		ROOFTOP	
		GREENHECK	GB-121-5	11249738 0803	ROOFTOP	EF-1
			GB-071-6	11249739 0803	ROOFTOP	EF-2
		GREENHECK	CUBE-200-16	11249740 0803	ROOFTOP	EF-3
		GREENHECK	GB-161-3	11249741 0803	ROOFTOP	EF-4
		GREENHECK	GB-161-3	11249742 0803	ROOFTOP	EF-5
		GREENHECK	GB-161-5	11249743 0803	ROOFTOP	EF-6
		GREENHECK	GB-101-4	112497 44 0803	ROOFTOP	EF-7
						EF-8
		GREENHECK	GB-081-6	11249746 0803	ROOFTOP	EF-9
			UNKNOWN		ROOFTOP GYM	EF-10
					ROOFTOP GYM	EF-11

12	**Drives**	**EATON**	HVX00314B1K9P6	12786136	Door 9 Mechanical	AHU-5 SUPPLY
		EATON	HVX01014B1K9P6	12786142	Door 9 Mechanical	AHU-4 SUPPLY
		YASKAWA	CIMR-ZU4A0011FAA	1W1831723650010	Door 9 Mechanical	
		EATON	HVX01014B1K9P6	12786141	Door 9 Mechanical	CP-1
		EATON	SVX9000	12786137	Door 9 Mechanical	CP-2
		EATON	SVX9000	12786131	Basement Mechanical	AHU-2 Return
		EATON	SVX9000	12786123	Basement Mechanical	AHU-2 SUPPLY
		EATON	SVX9000	12786133	Basement Mechanical	AHU-1 RETURN
		EATON	SVX9000	12786134	Basement Mechanical	AHU-1 SUPPLY
		EATON	SVX9000	12786128	Basement Mechanical	AHU-3 RETURN
		EATON	SVX9000	12786139	Basement Mechanical	AHU-3 SUPPLY
		Unknown	Unknown	Unknown		
1	**Make-Up Air**	**TRANE**	DFQ109HRB	2008-X6601001-01	ROOFTOP	MUA-1
1	**Elevator Room**	**Data Air**			CROSS CONNECT	
2	**Domestic Hot Water Tanks**	**A.O. SMITH**	BTH 400A 100	0809M000392	Door 9 Mechanical	HWT-1
		A.O. SMITH	BTH 400A 200	1620M002048	Door 9 Mechanical	HWT-2

Horace Mann Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
4	**Air Handling Units with ERV**	**Trane**	MCCB030UA0C0UA	K07J17979A	Basement Mechanical	ahu-1
		Trane	MCCB025UA0C0UA	K07J17506A	Basement Mechanical	ahu-2
		Trane	MCCB025UA0C0UA	K07J17916A	Basement Mechanical	ahu-3
		Trane	MCCB021UA0C0UA	K07J17948A	PE STORAGE MECH ROOM	ahu-4
1	**Air Cooled Chiller**	**Trane**	RTAC1854UQ0NUAFNN1WY2CDCNN6EA11CR0FXN	U07M06166	OUTSIDE	
2	**Hot Water Boilers**	**AERCO**	Unknown	Unknown	PE STORAGE MECH ROOM	B-1
		AERCO	Unknown	Unknown	PE STORAGE MECH ROOM	B-2
2	**Hot Water Pumps**	**ARMSTRONG**	Unknown	Unknown	PE STORAGE MECH ROOM	HWP-1
		ARMSTRONG	Unknown	Unknown	PE STORAGE MECH ROOM	HWP-2
2	**Chilled Water Pumps**	**ARMSTRONG**	3x2x10 4030	584041	PE STORAGE MECH ROOM	CWP-1
		ARMSTRONG	3x2x10 4030	584047	PE STORAGE MECH ROOM	CWP-2
7	**Unit Heaters**	**Trane**	UHSB0601TAA00100A00	F07K40504	PE STORAGE MECH ROOM	
		Trane	Unknown	Unknown	Loading Receiving Storage	
		Trane	Unknown	Unknown	Basement Mechanical	
		Trane	UHSB0601TAA00100A00	F07K40505	Basement Mechanical	
		Trane	Unknown	Unknown		
		Trane	Unknown	Unknown		
		Trane	Unknown	Unknown		
10	**Cabinet Heaters**	**Unknown**	unknown	unknown	Gym Hall	
		Unknown	unknown	unknown	Gym Hall	
		Unknown	unknown	unknown	Gym Hall	
		Unknown	unknown	unknown	Door 6	
		Unknown	unknown	unknown	Door 4	
		Unknown	unknown	unknown	Door 3	
		Unknown	unknown	unknown	Main Entrance	
		Unknown	unknown	unknown	Vestibule	
		Unknown	unknown	unknown		
		Unknown	unknown	unknown		
13	**Exhaust Fans**	**JEN FAN**	TXB18751DP-RHUL		ROOFTOP	
		GREENHECK	GB-141-4	11249754 0803	ROOFTOP	EF-1
		Unknown	Unknown	Unknown		EF-2
		GREENHECK	GB-180-15	11249756 0803	ROOFTOP	EF-3
		GREENHECK	GB-161-3	11249758 0803	ROOFTOP	EF-4A

		GREENHECK	GB-161-3	11249757 0803	ROOFTOP	EF-4B
		GREENHECK	GB-161HP-5	11249759 0803	ROOFTOP	EF-6
		GREENHECK	GB-101-4	11249760 0803	ROOFTOP	EF-7
		GREENHECK	GB-161-3	11249806 0803	ROOFTOP	EF-8
		GREENHECK	GB-101-4	11249807 0803		EF-9
		Unknown	Unknown	Unknown		EF-10
		Unknown	Unknown	Unknown		EF-11
		Unknown	Unknown	Unknown		EF-12
12	**Drives**	**EATON**	HVX9000	12786072	PE STORAGE MECH ROOM	CHILLER PUMP 1
		EATON	HVX9000	12786085	PE STORAGE MECH ROOM	CHILLER PUMP 2
		EATON	HVX9000	12786083	PE STORAGE MECH ROOM	Hot water pump 1
		EATON	HVX9000	12786081	PE STORAGE MECH ROOM	Hot water pump 2
		EATON	HVX9000	12786089	PE STORAGE MECH ROOM	AHU-4 RETURN
		EATON	HVX9000	12786088	PE STORAGE MECH ROOM	AHU-4 SUPPLY
		EATON	HVX9000	12786086	Basement Mechanical	AHU-3 SUPPLY
		EATON	HVX9000	12786091	Basement Mechanical	AHU-3 RETURN
		EATON	HVX9000	12786087	Basement Mechanical	AHU-1 SUPPLY
		EATON	HVX9000	12786084	Basement Mechanical	AHU-1 RETURN
		EATON	HVX9000	12786073	Basement Mechanical	AHU-2 SUPPLY
		EATON	HVX9000	12786090	Basement Mechanical	AHU-2 RETURN
1	**Cross Connect**	**Data Air**	DAPA0412AO		CEILING CROSS CONNECT ROOM	
		DATA AIR	DRCU-0312-1	2007-4024-F	ROOFTOP	
1	**Make-Up Air**	**TRANE**	DFO109HRB	00084X6783001-01	ROOFTOP	
		DATA AIR	DRCU-0512-4	2007-4022-F	ROOFTOP	
1	**Elevator Room**	**Data Air**	DAMA-0112-AD		ELAVATOR MACHINE ROOM	
2	**Domestic Hot Water Tanks**	**PVI**	40P 125A-MXS	308123914	PE STORAGE MECH ROOM	HWH-1
		PVI	40P 125A-MXS	308123915	PE STORAGE MECH ROOM	HWH-2

Hayes Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
1	Air Cooled Chiller	Trane	RTAC 1704 UL0N UAFN L1WY 2CDC NN6E A11C N0EX N	U06D06458	Outside Back of Building	
5	Air Handling Units with ERV	Trane	MCCB014UA0A0 UA	K06B17723	1st Floor Mechanical	AHU-1
		Trane	MCCB030UA0A0 UA	K06B19897	2nd Floor Mechanical	AHU-2
		Trane	MCCB030UA0UA 0A0UB	K06B19917	2nd Floor Mechanical	AHU-3
		Trane	CCDB21CN0F	K86L19051	2nd Floor Mechanical	AHU-4
		Trane	Unknown	Unknown	2nd Floor Mechanical	AHU-5
1	Condensing Unit	Trane	2TTA0060A3000 AA	61435343	Rooftop	CU-1
1	Air Handling Unit Split System	Trane	Unknown	Unknown	Ceiling Administrative Storage	AHU-6
2	Hot Water Boilers	AERCO	45375	G-06-1205	1st Floor Mechanical	B-1
			45375	G-06-1204	1st Floor Mechanical	B-2
4	Pumps (CW & HW)	Taco	040-4	Unknown	1st Floor Mechanical	CWP-1
		Taco	Unknown	Unknown	1st Floor Mechanical	CWP-2
		Taco	F11509E2EAJ1L0 B	Unknown	1st Floor Mechanical	HWP-1
		Taco	F11509E2EAJ1L0 B	Unknown	1st Floor Mechanical	HWP-2
4	Unit Heaters	Trane	Unknown	Unknown	1st Floor Mechanical	
		Trane	Unknown	Unknown	Room 16	
		Trane	Unknown	Unknown	Room 14	
		Trane	Unknown	Unknown	2nd Floor Mechanical	
9	Cabinet Heaters	Trane	Unknown	Unknown	Storage	
		Trane	Unknown	Unknown	Door 12	
		Trane	Unknown	Unknown	Outside Gymnasium Door	
		Trane	Unknown	Unknown	Instructional Material Storage	
		Trane	Unknown	Unknown	Door 6	
		Trane	Unknown	Unknown	Door 10	
		Trane	Unknown	Unknown	Door 1	
		Trane	Unknown	Unknown	Door 9	
		Trane	Unknown	Unknown		
14	Exhaust Fans	Cook	Special GR2 32X32GR	240S891182-01/0016601	Rooftop	EF-1
		Cook	100 ACE 100C3B	240S891182 01/0005801	Rooftop	EF-2
		Cook	Unknown	Unknown	Rooftop	EF-3
		Cook	120 PR	240S891182-01/0019201	Rooftop	EF-4
		Cook	240 PR	240S891182-0170020601	Rooftop	EF-5
		Cook	135 ACE 135C3B	240S891182-01/0009001	Rooftop	EF-6
		Cook	200 PR	240S891182-0170021901	Rooftop	EF-7
		Cook	120 PR	240S891182-01/0019203	Rooftop	EF-8

		Cook	Unknown	Unknown	Rooftop	EF-9
		Cook	Unknown	Unknown	Rooftop	EF-10
		Cook	80 ACE 80C3B	240S891182-01/0002701	Rooftop	EF-11
		Cook	Unknown	Unknown	Rooftop	EF-12
		Cook	330 ACRU 330R9B	240S891182-01/0004301	Rooftop	EF-13
		Cook	Unknown	Unknown	Rooftop	EF-14
10	**Drives**	**Eaton**	HVX9000	12774494	1st Floor Mechanical	CWP-1
		Eaton	HVX9000	12774490	1st Floor Mechanical	CWP-2
		Eaton	HVX9000	12774485	1st Floor Mechanical	HWP-1
		YASKAWA	CIMR-ZU4A0008FAA	1W189188950022	1st Floor Mechanical	HWP-2
		Eaton	HVX9000	12774486	1st Floor Mechanical	AHU-1
		Eaton	HVX9000	12774487	2nd Floor Mechanical	UNKNOWN
		Eaton	HVX9000	12774488	2nd Floor Mechanical	UNKNOWN
		Eaton	HVX9000	12774492	2nd Floor Mechanical	UNKNOWN
		Eaton	HVX9000	Unknown	2nd Floor Mechanical	AHU-3
1	**Cross Connect Rooms (EMI w/ Trane Cond.)**	**Trane**	2TTA0036A300AA		ROOF	CU-2
			Unknown	Unknown	Technology Room	
1	**Make-Up Air**					MUA-1
2	**Domestic Hot Water Systems**	**Ventura**	27 V 125	89688746	1st Floor Mechanical	
		Lochinvar	RWN270PM	H969022	2nd Floor Mechanical	

Harrison Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
1	**Air Cooled Chiller**	**Trane**	RTAC1704UL0NUAFNL1WY2CDCNN6EA11CN0EXN	U06D06457	OUTSIDE	CH-1
6	**Air Handling Units**	**Trane**	MCCB030UA0A0UB	K06B23762	door 13 mechanical	AHU-2
		Trane	MCCB025UA0A0UA	K06B19347	door 13 mechanical	AHU-1
		Trane	MCCB017UA0A0UB	K06B19887	MECHANICAL	AHU-3
		Trane	MCCB025UA0A0UA	K06B19874	DOOR 2 MECH	AHU-4
		Trane	MCCB025UA0A0UB	K06B21471	2ND FLR MECHANICAL	AHU-5
	AHU CEILING	**Unknown**	Unknown	Unknown	Hallway ceiling by records storage 1st flr	ahu-6
1	**AHU Air Cooled Condensers/Slit System**	**Trane**	2TTA0036A3000AA	6124S3S3F	ROOFTOP	
		TRANE	2TTA0060A3000AA	6035RKC3F	ROOFTOP	
2	**Hot Water Boilers**	**AERCO**	AS-46039	G06-1157	door 13 mechanical	B-1
		AERCO	AS-46038	G06-1156	door 13 mechanical	B-2
4	**Pumps (CW & HW)**	**ARMSTRONG**	3x1.5x6 4030	543586	door 13 mechanical	HWP-1
		ARMSTRONG	3x1.5x6 4030	543586	door 13 mechanical	HWP-2
		ARMSTRONG	826768-000	300278	door 13 mechanical	CWP-1
		ARMSTRONG	826768-000	300265	door 13 mechanical	CWP-2
7	**Unit Heaters**	**Unknown**	Unknown	Unknown	ROOM 12	
		Unknown	Unknown	Unknown	ROOM 13	
		Unknown	Unknown	Unknown	ROOM 11	
		Unknown	Unknown	Unknown	LL MECHANICAL	
		Unknown	Unknown	Unknown	DOOR 2 MECH	
		Unknown	Unknown	Unknown	2ND FLR MECHANICAL	
		Unknown	Unknown	Unknown		
5	**Cabinet Heaters**	**TRANE**	Unknown	Unknown	DOOR 7	
		TRANE	Unknown	Unknown	DOOR 3	
		TRANE	Unknown	Unknown	DOOR 8	
		TRANE	Unknown	Unknown	DOOR 9	
		TRANE	Unknown	Unknown	DOOR 1	
1	**InLine Exhaust**	**JENN FAN**	TXB24103DP		ROOFTOP	
3	**Exhaust Fans**	**COOK**	120 ACE	240S894325-01/0003101	ROOFTOP	EF-5
		COOK	100 ACE	240S894325-01/0001901	ROOFTOP	EF-4
		COOK	135 ACE	240S894325-01/0010501	ROOFTOP	EF-13
		COOK	80 ACE	240S894325-01/0009301	ROOFTOP	Ef-12
		COOK	100 ACE	240S894325-01/0008101	ROOFTOP	EF-11

		COOK	120 ACE	240S894325010 0007010706	ROOFTOP	EF-1
13	**Drives**	**EATON**	HVX9000	12774451	door 13 mechanical	AHU-2 SF
		EATON	HVX9000	12774443	door 13 mechanical	AHU-2 RF
		EATON	HVX9000	12774436	door 13 mechanical	HWP-1
		EATON	HVX9000	12774439	door 13 mechanical	HWP-2
		EATON	HVX9000	12774435	door 13 mechanical	CHP-1
		EATON	HVX9000	12774445	door 13 mechanical	CHP-2
		YASKAWA	Z1000	1W16Z1374740 004	door 13 mechanical	AHU-1
		EATON	HVX9000	12774438	LL MECHANICAL	AHU-3 RF
		EATON	HVX9000	12774444	LL MECHANICAL	AHU-3 SF
		EATON	HVX9000	12774447	DOOR 2 MECH	AHU-4 RF
		EATON	HVX9000	12774452	DOOR 2 MECH	AHU-4 SF
		EATON	HVX9000	12774434	2ND FLR MECHANICAL	AHU-5 SF
		EATON	HVX9000	12774446	3rd FLR MECHANICAL	AHU-5 RF
1	**Cross Connect**	**Leibert**	Unknown	Unknown	1st floor technology room	
1	**Make-Up Air**	**ABSOLUTE AIR**	Unknown	Unknown	ROOFTOP	MUA-1
2	**Domestic Hot Water Tanks**	**A.0. SMITH**	BTH 150 970	L05M004822	door 13 mechanical	
		A.0. SMITH	BTH 150 970		1ST FLOOR ED. WING CUST CLOSET	

Garfield Middle School

Qty	Description	Make	Model	Serial	Location	Unit ID
1	**Air Cooled Chiller**	**Trane**	RTAC2504UL0NUAFNL1WY2CDCNN6EA11CR0EXN	U06D06459	ROOFTOP	CH-1
7	**Air Handling Units with ERV**	**Trane**	MCCB040UA0A0UB	K06B21491	BASEMENT MECH ROOM	AHU-1
		Trane	MCCB040UA0A0UB	K06B22033	BASEMENT MECH ROOM	AHU-2
		Trane	MCCB030UA0A0UA	K06B22139	BASEMENT MECH ROOM	AHU-3
		Trane	MCCB008UA0A0UB	K06B18342	PENTHOUSE	AHU-4
		Trane	MCCB008UA0A0UB	K06B23710	PENTHOUSE	AHU-5
		Trane	MCCB025UA0A0UB	K06B22126	PENTHOUSE	AHU-6
		Trane	MCCB021UA0A0UA	K06B23651	PENTHOUSE	AHU-7
1	**Air Cooled Condensers**	**Trane**	TTA120B400	UNKNOWN	ROOFTOP	CU-1
2	**Hot Water Boilers-with Exhausted System**	**AERCO**	AS-46007		BASEMENT MECH ROOM	BOILER-1
			AS-46008		BASEMENT MECH ROOM	BOILER-2
4	**Pumps**	**TACO**	UNKNOWN	UNKNOWN	BASEMENT MECH ROOM	CWP-1
		TACO		UNKNOWN	BASEMENT MECH ROOM	CWP-2
		TACO	F12508E2EAJ1L0A		BASEMENT MECH ROOM	HWP-1
		TACO	UHSA070W2EAA1T000A0B0		BASEMENT MECH ROOM	HWP-2
4	**Unit Heaters**	**Trane**	UHSA070W2EAA1T000A0B0	F06E35307	BASEMENT MECH ROOM	UH
		Trane	UHSA070W2EAA1T000A0B0	F06E35306	BASEMENT MECH ROOM	UH
		Trane	UHSA070W2EAA1T000A0B0	F06E35306	BASEMENT MECH ROOM	UH
		Trane	UHSA070W2EAA1T000A0B0		PENTHOUSE	UH
11	**Cabinet Heaters**	UNKNOWN	UNKNOWN	UNKNOWN	Main Entrance	
		UNKNOWN	UNKNOWN	UNKNOWN	Library	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 2	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 3	
		UNKNOWN	UNKNOWN	UNKNOWN	1st Floor Stairwell SW	
		UNKNOWN	UNKNOWN	UNKNOWN	2nd Floor Stairwell SW	
		UNKNOWN	UNKNOWN	UNKNOWN	3rd Floor Stairwell NE	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 10	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 11	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 8	
		UNKNOWN	UNKNOWN	UNKNOWN	Door 9	
2	**InLine Exhaust**	**COOK**	195 ACW	240S945532-00/0000701	ROOFTOP	TEF-1
			RSV40042-21	UNKNOWN	ROOFTOP	
14	**Exhause Exhaust**	**JEN FAN**	TXB10RHULMH1S	100008163	ROOFTOP	

		JEN FAN	TXB20101DP	UNKNOWN	ROOFTOP	
		COOK	120 ACE	240S908961-00/0000701	ROOFTOP	EF-1
		COOK	120 ACRU	240S908961-00/0021201	ROOFTOP	EF-2
		COOK	100 ACRU	240S908961-00/0022901	ROOFTOP	EF-3
					ROOFTOP	EF-4
					ROOFTOP	EF-5
		COOK	90 ACEM	240S908961-00/0013001	ROOFTOP	EF-6
					ROOFTOP	EF-7
					ROOFTOP	EF-8
		COOK	120 ACE	240S908961-00/0016101	ROOFTOP	EF-9
		COOK	135 ACE	240S908961-00/0002202	ROOFTOP	EF-10
		COOK	135 ACE	240S908961-00/0002201	ROOFTOP	EF-10-1
		COOK	100 ACEH	240S908961-00/0003901	ROOFTOP	EF-11
		COOK	135 ACE	240S908961-00/0005301	ROOFTOP	EF-12
		COOK	100 ACEH	240S908961-00/0006801	ROOFTOP	EF-13
13	**Drives**	**EATON**	HVX9000	12775281	BASEMENT MECH ROOM	AHU-3 RAF
		EATON	HVX9000	12775276	BASEMENT MECH ROOM	AHU-3 SAF
		EATON	HVX9000	12775270	BASEMENT MECH ROOM	AHU-2 SAF
		EATON	HVX9000	12775271	BASEMENT MECH ROOM	AHU-2 RAF
		EATON	HVX9000	12775273	BASEMENT MECH ROOM	AHU-1 RAF
		EATON	HVX9000	12775268	BASEMENT MECH ROOM	AHU-1 SAF
		EATON	HVX9000	12775274	PENTHOUSE	AHU-6 SAF
		EATON	HVX9000	12775262	PENTHOUSE	AHU-6 RAF
		EATON	HVX9000	12775265	PENTHOUSE	AHU-5 RAF
		EATON	HVX9000	12775260	PENTHOUSE	AHU-5 SAF
		EATON	HVX9000	12775264	PENTHOUSE	AHU-4 SAF
		EATON	HVX9000	12775259	PENTHOUSE	AHU-4 RAF
						AHU-
1	**Cross Connect**	**Data Air**	DRCU 0512	2006-2538-F	ROOFTOP	
1	**Make-Up Air**		Unknown	Unknown	ROOFTOP	MUA-1
1	**Mini-Split (Elevator Room)**	**Heat Controller**	B-DMC12SB-0		Elevator Machine Room	SS-1B
1	**Mini Split Condenser**	**Heat Controller**	A-MNC12SB-0			SS-1A
5	**Field House-Electric Heaters**	**Trane**	Unknown	Unknown	MEN'S BATHROOM	
		Trane	Unknown	Unknown	MEN'S BATHROOM	
			Unknown	Unknown	WOMEN'S BATHROOM	
			Unknown	Unknown	WOMEN'S BATHROOM	
			Unknown	Unknown	WOMEN'S BATHROOM	

1	**Air Compressor**	**Ingersoll Rand**	SS5L5	412090044	BASEMENT MECH ROOM	
	DRIER	**Ingersoll Rand**	DS25	3036380011	BASEMENT MECH ROOM	
2	**Domestic Hot Water Tanks**	**American Standard**	CE-80 AS	L16-4803	BASEMENT MECH ROOM	
		PVI	750 L 150A-TP	F008140	BASEMENT MECH ROOM	

Harding Middle School

Qty	Description	Make	Model	Serial	Location	Unit ID
1	Air Cooled Chiller	Trane	UL0NUAFNL1WY2CDCNN6EA11CN0EXN	U06D06460	OUTSIDE BACK OF BUILDING	CH-1
8	Air Handling Units with ERV	Trane	30HP			AHU-1
		Trane	MCCB021UA0A0UA	K06B23144	FLOOR 2 AIR HANDLER ROOM	AHU-2A
		Trane	MCCB017UA0A0UB	K06B23133	FLOOR 2 AIR HANDLER ROOM	AHU-2B
		Trane	MCCB040UA0A0UA	K06B25403		AHU-3
		Trane	MCCB008UA0A0UA	K06B23099	Basement Mechanical	AHU-4
		Trane	MCCB008UA0A0UA	K06B23087	Basement Mechanical	AHU-5
		Trane	MCCB025UA0A0UB	K06B23074	Basement Mechanical	AHU-6
		Trane	CCDB21AN0G	K87U27205	1ST Floor Mechanical Room	AHU-7
		Trane	15HP			AHU-8
4	Air Cooled Condensers/Split Systems	Trane	TTA180C300GA	8053KMGAD	ROOFTOP	
		Trane	TTA180C300GA	804456EAD	ROOFTOP	
		Trane	TTA120B400EA	6115N8XAD	ROOFTOP	
2	Hot Water Boilers	AERCO	AS-46103	G06-1229	1st Floor Boiler Room	BOILER-1
		AERCO	AS-46103	G06-1230	1st Floor Boiler Room	BOILER-2
4	Pumps	Armstrong	Unknown	Unknown	Basement Mechanical	CHWP-1
		Armstrong	Unknown	Unknown	Basement Mechanical	CHWP-2
		Armstrong	3x2x10 4030	548434	1st Floor Boiler Room	HWP-1
		Armstrong	3x2x10 4030	548435	1st Floor Boiler Room	HWP-2
8	Unit Heaters	Trane	USHA070W2EAA1T0000000	F06C33536	Basement Mechanical	
		Trane	USHA070W2EAA1T0000000	F06C33533	Basement Mechanical	
		Trane	Unknown	Unknown	Basement Mechanical	
		Trane	USHA070W2EAA1T0000000	F06C33537	1st Floor Boiler Room	
		Trane	Unknown	Unknown		
		Trane	Unknown	Unknown		
		Trane	Unknown	Unknown		
12	Cabinet Heaters	Unknown	Unknown	Unknown	Door 17	
		Unknown	Unknown	Unknown	Boys Bathroom 1st Floor	
		Unknown	Unknown	Unknown	Door 14	
		Unknown	Unknown	Unknown	Outside of Boiler Room	
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		

		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
4	**InLine Exhaust**	**Greenheck**	G-095-DGEX-QD	11369116 0806	ROOFTOP	
		Greenheck	G-095-DGEX-QD	10974846 0708	ROOFTOP	
		CentriMaster	unknown	unknown	ROOFTOP	EF-BOYS LOOCKER RM
		CentriMaster	PN13517	YLK404510	ROOFTOP	EF-GIRLS LOCKER RM
14	**Exhaust Fans**	**Greenheck**	G-095-DGEX-QD	10974842 0708	ROOFTOP	
		CentriMaster	Unknown	VIT404510	ROOFTOP	EF-STORAGE
		COOK	165 ACE	240S894318-01/0008801	ROOFTOP	GEF-8
		CentriMaster	PNN200K	KIT434304	Gym ROOFTOP	EF-7 GYM NORTH
		CentriMaster	PNN200N	XLF404304	Gym ROOFTOP	EF-8 GYM SOUTH
		UNKNOWN	UNKNOWN	UNKNOWN	ROOFTOP	
		UNKNOWN	UNKNOWN	UNKNOWN	ROOFTOP	
		UNKNOWN	UNKNOWN	UNKNOWN	ROOFTOP	
		UNKNOWN	UNKNOWN	UNKNOWN	ROOFTOP	
		UNKNOWN	UNKNOWN	UNKNOWN	ROOFTOP	
		JEN FAN	UNKNOWN	UNKNOWN	ROOFTOP	EF-DISHWASHER
		JEN FAN	TXB01201DP	UNKNOWN	ROOFTOP	EF-MUA
		UNKNOWN	UNKNOWN	UNKNOWN		
		UNKNOWN	UNKNOWN	UNKNOWN		
18	**Drives**	**EATON**	HVX9000	12774432		AHU-3 SF VFD
		EATON	HVX9000	12774436		AHU-3 RF VFD
		Yaskawa	Z1000	1W1525803560010	FLOOR 2 AIR HANDLER	AHU-2B RF VFD
		EATON	HVX9000	12774422	FLOOR 2 AIR HANDLER	AHU-2B SF VFD
		EATON	HVX9000	12774386	FLOOR 2 AIR HANDLER	AHU-2A RF VFD
		EATON	HVX9000	12774424	FLOOR 2 AIR HANDLER	AHU-2A SF VFD
		ABB	ACH550-UH-031A-K465	2062601936	Basement Mechanical	CWP-1 VFD
		ABB	Unknown	Unknown	Basement Mechanical	CWP-2 VFD
		EATON	HVX9000	12774395	Basement Mechanical	AHU-5 RF VFD
		EATON	HVX9000	12774431	Basement Mechanical	AHU-5 SF VFD
		EATON	HVX9000	12774394	Basement Mechanical	AHU-4 RF VFD
		EATON	HVX9000	12774430	Basement Mechanical	AHU-4 SF VFD
		EATON	HVX9000	12774383	Basement Mechanical	AHU-6 RF VFD
		EATON	HVX9000	12774428	Basement Mechanical	AHU-6 SF VFD
		ABB	ACH550-UH-012A-4K465	2062601939	1st Floor Boiler Room	HW PUMP-1 VFD
		ABB	ACH550-UH-012A-4K465	2062601938	1st Floor Boiler Room	HW PUMP-2 VFD
		UNKNOWN	UNKNOWN	UNKNOWN		
		UNKNOWN	UNKNOWN	UNKNOWN		
1	**Cross Connect**	**Data Air**	DAPA0412AO			

	Data Aire Condenser	**Data Air**	DRCU 0512	2006-4909-F	ROOFTOP	
1	**Make-Up Air**	**ABSOLUTE AIR**	Unknown	Unknown	ROOFTOP	MUA-1
2	**Field House-Electric Heaters**	**Unknown**	Unknown	Unknown		
		Unknown	Unknown	Unknown		
1	**Air Compressor**	**Ingersoll Rand**	2340	6002659	Basement Mechanical	
1	**Air Dryer**	**Ingersoll Rand**	DS25 42493510-115/1/60	3046060007	Basement Mechanical	
2	**Mini Split**	**EMI**	Unknown	unknown	ROOFTOP	
		CASSETTE	Unknown	unknown	RANGER ROOM NEAR FRONT ENTRANCE	
		Fan Coil Unit	CDX 14EM230	00050510-0898	Basement Elevator Room	
		Mitsubishi	PUZ-A42NHA	5YUOO21OA	Basement Mechanical	
2	**Domestic Hot Water Tanks**	**PVI**	750 P 225A-TP	606118762	1st Floor Boiler Room	HWT-1
		PVI	750 P 225A-TP	606118761	1st Floor Boiler Room	HWT-2

Grant Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
5	**Air Handling Units**	**Trane**	CSAA025UAL00	K15K85813	213 Mechanical	AHU-1
		Trane	CSAA030UAL00	K15K85777	213 Mechanical	AHU-2
		Trane	CSAA021UAL00	K15L88902	144 Mechanical Room	AHU-3
		Trane	CSAA017UAL00	K15K85801	144 Mechanical Room	AHU-4
		Trane	CSAA010UAL00	K15L88913	136 Mechanical Room	AHU-5
1	**Air Cooled Chiller**	**Trane**	RTAC1404U1CH UAFPL1WY1CD BNN6UN11AR0E XN	U16C04701	Outside	CH-1
2	**Hot Water Boilers**	**Cleaver Brooks**	CFC700	16010075110246	144 Mechanical Room	BOILER-1
		Cleaver Brooks	CFC700	16010075110247	144 Mechanical Room	BOILER-2
2	**Hot Water Pumps**	**Taco**	Unknown	Unknown	144 Mechanical Room	HWP-1
		Taco	Unknown	Unknown	144 Mechanical Room	HWP-2
1	**Pumps**	**Taco**	Unknown	Unknown	144 Mechanical Room	CWP-1
3	**Unit Heaters**	Trane	UHSB0481TAA10 100000	F16B30933	room 140	
		Trane	UHSB0481TAA10 100000	F16B30935	Room 143	
		Trane	UHSB0481TAA10 100000	Unknown	144 Mechanical Room	
4	**Cabinet Heaters**	Unknown	Unknown	Unknown	DOOR 1	
		Unknown	Unknown	Unknown	DOOR 2	
		Unknown	Unknown	Unknown	DOOR 10	
		Unknown	Unknown	Unknown	DOOR 11	
9	**Exhaust Fans**	**Greenheck**	GB-081-6-X	14457003	ROOFTOP	EF-32
		Greenheck	GB-091-4-X	14457002	ROOFTOP	EF-31
		Greenheck	G-103-VG-4-X	14457001	ROOFTOP	EF-29
		Greenheck	GB-091-4-X	14457000	ROOFTOP	EF-25
		Greenheck	BG-071-6-X	14457004	ROOFTOP	EF-33
		Captive Aire	NCA14FA	Unknown	ROOFTOP	MUA EF
		Greenheck	GB-121-4-X	14456999	ROOFTOP	EF-22
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
13	**Drives**	**Yaskawa**	Z1000	1W1621132120001	136 Mechanical Room	AHU-5 SF VFD
		Yaskawa	Z1000	1W1621132100006	136 Mechanical Room	AHU-5 RF VFD
		Yaskawa	Z1000	1W1641172680011	144 Mechanical Room	HWP-VFD-1
		Yaskawa	Z1000	1W1641172680008	144 Mechanical Room	HWP-VFD-2
		Yaskawa	Z1000	1W1621132120006	144 Mechanical Room	AHU-4 RF VFD
		Yaskawa	Z1000	1W1621132470005	144 Mechanical Room	AHU-4 SF VFD
		Yaskawa	Z1000	1W1621132450007	144 Mechanical Room	AHU-3 SF VFD
		Yaskawa	Z1000	1W1621132110007	144 Mechanical Room	AHU-3 RF VFD

		Yaskawa	Z1000	1W1621132450 005	144 Mechanical Room	CWP-VFD-1
		Yaskawa	Z1000	1W1621128810 005	213 Mechanical	AHU-2 SF VFD
		Yaskawa	Z1000	1W1621132450 006	213 Mechanical	AHU-2 RF VFD
		Yaskawa	Z1000	1W1621128810 004	213 Mechanical	AHU-1 SF VFD
		Yaskawa	Z1000	1W1621132120 003	213 Mechanical	AHU-1 RF VFD
1	**Kitchen MUA**	**Captive Aire**	A1-D.250-G10	Unknown	Rooftop	MUA-1
1	**Data Room-A/C**	**Liebert**	PFH037A-YL7	Y16CG10133	OUTSIDE GROUND	CU-1
	Data Room Cassette	**Liebert**	Unknown	Unknown	113 Main Control/ Equipment	CCU-1
2	**Domestic Hot Water Tanks**	**A.0. SMITH**	BTH 199 200	1614M002504	144 Mechanical Room	HWT-1
		A.0. SMITH	BTH 120 200	1614M002463	211 Custodian	HWT-2

Lincoln Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
5	Air Handling Units with ERV	Trane	CSAA025UAL00	K15K85813	213 Mechanical	AHU-1
		Trane	CSAA030UAL00	K15K85777	213 Mechanical	AHU-2
		Trane	CSAA021UAL00	K15L88902	144 Mechanical Room	AHU-3
		Trane	CSAA017UAL00	K15K85801	144 Mechanical Room	AHU-4
		Trane	CSAA010UAL00	K15L88913	136 Mechanical Room	AHU-5
1	Air Cooled Chiller	Trane	RTAC1404U1CHUA FPL1WY1CDBNN6 UN11AR0EXN	U16C04701	Outside	CH-1
2	Hot Water Boilers	Cleaver Brooks	CFC700	16010075110246	144 Mechanical Room	BOILER-1
		Cleaver Brooks	CFC700	16010075110247	144 Mechanical Room	BOILER-2
2	Hot Water Pumps	Taco	Unknown	Unknown	144 Mechanical Room	HWP-1
		Taco	Unknown	Unknown	144 Mechanical Room	HWP-2
1	Pumps	Taco	Unknown	Unknown	144 Mechanical Room	CWP-1
3	Unit Heaters	Trane	UHSB0481TAA10100000	F16B30933	room 140	
		Trane	UHSB0481TAA10100000	F16B30935	Room 143	
		Trane	UHSB0481TAA10100000	Unknown	144 Mechanical Room	
4	Cabinet Heaters	Unknown	Unknown	Unknown	DOOR 1	
		Unknown	Unknown	Unknown	DOOR 2	
		Unknown	Unknown	Unknown	DOOR 10	
		Unknown	Unknown	Unknown	DOOR 11	
9	Exhaust Fans	Greenheck	GB-081-6-X	14457003	ROOFTOP	EF-32
		Greenheck	GB-091-4-X	14457002	ROOFTOP	EF-31
		Greenheck	G-103-VG-4-X	14457001	ROOFTOP	EF-29
		Greenheck	GB-091-4-X	14457000	ROOFTOP	EF-25
		Greenheck	BG-071-6-X	14457004	ROOFTOP	EF-33
		Captive Aire	NCA14FA	Unknown	ROOFTOP	MUA EF
		Greenheck	GB-121-4-X	14456999	ROOFTOP	EF-22
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
13	Drives	Yaskawa	Z1000	1W1621132120001	136 Mechanical Room	AHU-5 SF VFD
		Yaskawa	Z1000	1W1621132100006	136 Mechanical Room	AHU-5 RF VFD
		Yaskawa	Z1000	1W1641172680011	144 Mechanical Room	HWP-VFD-1
		Yaskawa	Z1000	1W1641172680008	144 Mechanical Room	HWP-VFD-2
		Yaskawa	Z1000	1W1621132120006	144 Mechanical Room	AHU-4 RF VFD
		Yaskawa	Z1000	1W1621132470005	144 Mechanical Room	AHU-4 SF VFD
		Yaskawa	Z1000	1W1621132450007	144 Mechanical Room	AHU-3 SF VFD
		Yaskawa	Z1000	1W1621132110007	144 Mechanical Room	AHU-3 RF VFD

		Yaskawa	Z1000	1W1621132450005	144 Mechanical Room	CWP-VFD-1
		Yaskawa	Z1000	1W1621128810005	213 Mechanical	AHU-2 SF VFD
		Yaskawa	Z1000	1W1621132450006	213 Mechanical	AHU-2 RF VFD
		Yaskawa	Z1000	1W1621128810004	213 Mechanical	AHU-1 SF VFD
		Yaskawa	Z1000	1W1621132120003	213 Mechanical	AHU-1 RF VFD
1	**Kitchen MUA**	**Captive Aire**	A1-D.250-G10	Unknown	Rooftop	MUA-1
1	**Data Room-A/C**	**Liebert**	PFH037A-YL7	Y16CG10133	OUTSIDE GROUND	CU-1
	Data Room Cassette	**Liebert**	Unknown	Unknown	113 Main Control/ Equipment	CCU-1
2	**Domestic Hot Water Tanks**	**A.0. SMITH**	BTH 199 200	1614M002504	144 Mechanical Room	HWT-1
		A.0. SMITH	BTH 120 200	1614M002463	211 Custodian	HWT-2

Roosevelt Elementary School

Qty	Description	Make	Model	Serial	Location	Unit ID
4	**Air Handling Units with ERV**	**Trane**	CSAA021UAL00	K15L88833	132 Mechanical/Electrical	AHU-1
		Trane	CSAA017UAL00	K15K85707	132 Mechanical/Electrical	AHU-2
		Trane	CSAA025UAL00	K15L89140	208 Mechanical/Electrical	AHU-3
		Trane	CSAA035UAL00	K15K85742	208 Mechanical/Electrical	AHU-4
1	**Air Cooled Chiller**	**Trane**	RTAC1404U1CH UAFPL1WY1CD BNN6UN11AR0E XN	U16C04702	Outside (Door 5)	CH-1
2	**Hot Water Boilers**	**Cleaver Brooks**	CFC-700	16010075110248	132 Mechanical/Electrical	Boiler 1
		Cleaver Brooks	CFC-700	16010075110245	132 Mechanical/Electrical	Boiler 2
2	**Hot Water Pumps**	**TACO**	SD030025-5 09/15	Unknown	132 Mechanical/Electrical	HWP-1
		TACO	SD030025-5 09/15	Unknown	132 Mechanical/Electrical	HWP-2
1	**Pumps**	**Taco**	Unknown	Unknown	132 Mechanical/Electrical	CWP-1
3	**Unit Heaters**	**Trane**	Unknown	Unknown	Unknown	Unknown
		Trane	Unknown	Unknown	Unknown	Unknown
		Trane	Unknown	Unknown	Unknown	Unknown
5	**Cabinet Heaters**	Unknown	Unknown	Unknown	Door 7	Unknown
		Unknown	Unknown	Unknown	Door 9	Unknown
		Unknown	Unknown	Unknown	Door 11	Unknown
		Unknown	Unknown	Unknown	North Lobby	Unknown
		Unknown	Unknown	Unknown	South Lobby	Unknown
11	**Exhaust Fans**	**GREENHECK**	G-123-VG-5-X	14503454		EF-20
		GREENHECK	G-099-VG-4-X	14503455	ROOFTOP	EF-21
		GREENHECK	G-097-VG-4-X	14503459	ROOFTOP	EF-30
		CAPTIVE AIRE	NCA14FA	Unknown	ROOFTOP	MUA EF
		GREENHECK	G-103-VG-4-X	14503457	ROOFTOP	EF-27
		GREENHECK	G-085-VG-6-X	14503456	ROOFTOP	EF-22
		GREENHECK	GB-081-6-X	14503458	ROOFTOP	EF-29
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
		Unknown	Unknown	Unknown		
11	**Drives**	**Yaskawa**	Z1000	1W1641172680010	132 Mechanical/Electrical	HWP-VFD-2
		Yaskawa	Z1000	1W1641172680009	132 Mechanical/Electrical	HWP-VFD-1
		Yaskawa	Z1000	1W1621132470003	132 Mechanical/Electrical	AHU-2 SF
		Yaskawa	Z1000	1W1621132120013	132 Mechanical/Electrical	AHU-2 RF
		Yaskawa	Z1000	1W1621134620011	132 Mechanical/Electrical	AHU-1 RF

		Yaskawa	Z1000	1W1621129690012	132 Mechanical/Electrical	AHU-1 SF
		Yaskawa	Z1000	1W1621129690001	132 Mechanical/Electrical	CWP-VFD-1
		Yaskawa	Z1000	Unknown	208 Mechanical/Electrical	AHU-3 RF
		Yaskawa	Z1000	1W1621128810002	208 Mechanical/Electrical	AHU-3 SF
		Yaskawa	Z1000	1W1621132470004	208 Mechanical/Electrical	AHU-4 RF
		Yaskawa	Z1000	1W1621128830008	208 Mechanical/Electrical	AHU-4 SF
1	**Kitchen MUA**	**CAPTIVE AIRE**	A1-D.250-G10	Unknown	ROOFTOP	MUA-1
	KITCHEN HOOD	**CAPTIVE AIRE**	6030 ND-2	Unknown	KITCHEN	
1	**Data Room-A/C**	**LIEBERT**	PFH037A-YL7	Y16CG10078	ROOFTOP	CU-1
	Data Room Cassette	**LIEBERT**	Unknown	Unknown	100J Main Control/Equipment	CCU-1
2	**Domestic Hot Water Tanks**	**A.O. Smith**	BTH 199 200	1607M001931	132 Mechanical/Electrical	HWT-1
		A.O. Smith	BTH 120 200	1604M000404	208 Mechanical/Electrical	HWT-2

Taft Center for Innovation

Qty	Description	Make	Model	Serial	Location	Unit ID
4	RTU's w/ DX Cooling and Gas Heat	Daikin	MPS030F	FBOU190901558	rooftop	
		Daikin	MPS030F	FBOU190901559	rooftop	
		Daikin	MPS030F	FBOU190901560	rooftop	
		Daikin	MPS030F	FBOU190901561	rooftop	
3	Split AC Systems	Daikin	Unknown	Unknown		
		Daikin	Unknown	Unknown		
		Daikin	Unknown	Unknown		
1	Electric Heater	Taskmaster	Unknown	Unknown		
18	VAV's w/ Electric Reheat (2nd Floor and 1st Floor Adult Ed.)		Unknown	Unknown		

APPENDIX B- PREVENTIVE MAINTENANCE TASKING

- Air Compressor
- Air Handling Units
- Boiler Mounted Inline Pumps
- Chilled Water & Condenser Water Pumps
- Chiller
- Circulating Pump
- Computer Room AC Unit
- Condensing Unit
- Cooling Tower
- DDC Controls
- Energy Recovery Ventilator (ERV)
- Heating Boiler
- Hot Water Circulating Pump
- Make Up Air Unit
- Packaged Unit AC (Rooftop Unit)
- Starters and Contactors

Air Compressor

	Instruction	**Check**	**N/A**
1	Perform normal tour checks and operations.	☐	☐
2	Test relief valves, replace if leaking or the relief range is incorrect. Do not readjust safety relief valves in the field.	☐	☐
3	Check operation of compressor unloaders, repair or replace if not loading and unloading properly.	☐	☐
4	Check compressor suction and discharge valves for proper operation. Replace leaking valves.	☐	☐
5	Clean heat exchange surfaces.	☐	☐
6	Clean up work area and remove all debris.	☐	☐
7	Clean air intake filter.	☐	☐
8	Check air dryer, automatic condensate drains, and air tank for proper operation. Clean condenser coils and cover grills.	☐	☐
9	Inspect belt alignment and condition. Adjust or replace belts as required.	☐	☐
10	Check for corrosion and scale on water cooled units.	☐	☐
11	Check accuracy of gauges with calibrated test gauge.	☐	☐
12	On two stage compressor, check intermediate pressure.	☐	☐
13	Check cut in and cut out of compressor pressure controller, readjust if necessary for proper air pressure requirements. Do not exceed ASME maximum tank pressure.	☐	☐
14	Check to make sure belt guard is installed prior to putting air compressor back in service.	☐	☐
15	No pressure vessel is to have its hand hole or man hole covers removed unless the vessel is at atmospheric pressure.	☐	☐
16	Annually:		
17	Change compressor crankcase oil / filter.	☐	☐

Air Handling Unit

	Instruction	**Check**	**N/A**
1	Check fan blades for dust buildup and clean if necessary	☐	☐
2	Check fan blades and moving parts for cracks and excessive wear.	☐	☐
3	Check filters. Replace as necessary (by Owner).	☐	☐
4	Clean coils by brushing, blowing, vacuuming, or pressure washing.	☐	☐
5	Flush and clean condensate pans and drains.	☐	☐
6	Check belts for wear and cracks, adjust tension or alignment, and replace belts when necessary. Multi-belt drives shall only be replaced with matched sets.	☐	☐
7	Vacuum interior of unit.	☐	☐
8	Semi-annually:		
9	Check fan RPM against design specifications.	☐	☐
10	Check bearing collar set screws on fan shaft to make sure they are tight.	☐	☐
11	Check dampers for dirt accumulations, clean as necessary. Check damper gasket for proper seal, repair or replace as necessary.	☐	☐
12	Check damper actuators and linkage for proper operation. Adjust linkage on dampers if out of alignment.	☐	☐
13	Lubricate mechanical connections of dampers sparingly.	☐	☐
14	Check coils for leaking, tightness of fittings. On direct expansion units, check for refrigerant leaks on all lines, valves, fittings, coils, etc., using a halogen leak detector or similar testing device. If leaks are not able to be stopped or corrected	☐	☐
15	Use fin comb to straighten coil fins.	☐	☐
16	Remove all rust from condensate pans and drains. Hose down coils and drain pans and wash with an appropriate EPA approved solution.	☐	☐
17	Check rigid couplings for alignment on direct drives, and for tightness of assembly. Check flexible couplings for alignment and wear.	☐	☐

18	Blow down strainers and clean any debris in strainer.	☐	☐
19	Check freeze stat for proper temperature setting and operation.	☐	☐
20	Lubricate fan shaft bearings while unit is running. Add grease slowly until slight bleeding is noted from the seals. Do not over lubricate. Remove old or excess lubricant.	☐	☐
21	Complete scope of work on Energy Recovery Ventilator (ERV) preventive maintenance tasking is unit is equipment with a heat wheel or ERV.	☐	☐
22	Clean up work area and remove all debris.	☐	☐

Boiler Mounted Inline Pump

	Instruction	**Check**	**N/A**
1	Check that the base bolts are securely fastened.	☐	☐
2	Start and stop pump, noting vibration, pressure, and action of check valve.	☐	☐
3	If applicable, lubricate impeller shaft bearings. Do not over lubricate.	☐	☐
4	Check motor and pump alignment.	☐	☐
5	Check drive shaft coupling.	☐	☐
6	Clean up work area and remove all debris.	☐	☐
7	Annually:		
8	After shut-down, drain pump housing, check suction, discharge and check valve for holding.	☐	☐
9	Remove cover, gland, and packing.	☐	☐
10	Remove corrosion from impeller shaft and housing cover.	☐	☐
11	On pumps with oil ring lubricated bearings, drain oil, flush, and fill to proper oil level with new approved type oil.	☐	☐
12	Inspect water rings, seals, and impeller.	☐	☐
13	Clean pump suction strainers, and pump packing water seal filter/strainer.	☐	☐
14	Adjust packing as necessary.	☐	☐

Chilled Water & Condenser Water Pump

	Instruction	**Check**	**N/A**
1	Check that the base bolts are securely fastened.	☐	☐
2	Start and stop pump, noting vibration, pressure, and action of check valve.	☐	☐
3	If applicable, lubricate impeller shaft bearings. Do not over lubricate.	☐	☐
4	Check motor and pump alignment.	☐	☐
5	Check drive shaft coupling.	☐	☐
6	Clean up work area and remove all debris.	☐	☐
7	Annually:		
8	After shut-down, drain pump housing, check suction, discharge and check valve for holding.	☐	☐
9	Remove cover, gland, and packing.	☐	☐
10	Remove corrosion from impeller shaft and housing cover.	☐	☐
11	On pumps with oil ring lubricated bearings, drain oil, flush, and fill to proper oil level with new approved type oil.	☐	☐
12	Inspect water rings, seals, and impeller.	☐	☐
13	Clean pump suction strainers, and pump packing water seal filter/strainer.	☐	☐
14	Adjust packing as necessary.	☐	☐

Chiller

	Instruction	Check	N/A
1	Record and log all operating set points and readings. Analyze for efficient operation. Make adjustments as necessary.	☐	☐
2	Physically inspect unit and BAS readings for proper operation and consistent readings.	☐	☐
3	Lubricate drive couplings.	☐	☐
4	Lubricate motor bearings (non-hermetic).	☐	☐
5	Lightly lubricate vane control linkage bearings, ball joints and pivot points. DO NOT LUBRICATE the shaft of the vane operator.	☐	☐
6	Annually:		
7	Take a refrigerant sample in accordance with manufacturer's instructions. Sample test the refrigerant and oil to verify compliance with the Air Conditioning and Refrigeration Institute standards.	☐	☐
8	Drain and replace oil in compressor oil reservoir including filters, strainers and traps. Have oil analyzed to determine bearing conditions. Review the Material Data Safety Sheets (MSDS) for proper disposal of used oil.	☐	☐
9	Drain and replace oil in purge compressor.	☐	☐
10	Drain and replace oil in purge gearbox. Check and clean oil strainer.	☐	☐
11	Check and correct alignment of drive couplings.	☐	☐
12	Remove condenser heads and brush condenser tubes.	☐	☐
13	Clean all water strainers in the system.	☐	☐
14	Use oil-dry nitrogen to test for leaks per manufacturer's instructions. If leaks are not able to be stopped or corrected, report leak status to Owner.	☐	☐
15	Pull vacuum on refrigeration machine in accordance with manufacturer's instructions.	☐	☐
16	Megger compressor and oil pump motors and record readings.	☐	☐
17	Check dash pot oil in main starter.	☐	☐
18	Tighten all starter, control panel, motor terminals, overloads, and oil heater leads, etc.	☐	☐
19	Check all contacts for wear, pitting, etc.	☐	☐

20	Check and calibrate overloads, record trip amps and trip times.	☐	☐
21	Check and calibrate safety controls.	☐	☐
22	Clean up the work area. Properly recycle or dispose of materials in accordance with environmental regulations	☐	☐

Circulating Pump

	Instruction	Check	N/A
1	Check that the base bolts are securely fastened.	☐	☐
2	Start and stop pump, noting vibration, pressure, and action of check valve.	☐	☐
3	If applicable, lubricate impeller shaft bearings. Do not over lubricate.	☐	☐
4	Check motor and pump alignment.	☐	☐
5	Check drive shaft coupling.	☐	☐
6	Clean up work area and remove all debris.	☐	☐
7	Annually:		
8	After shut-down, drain pump housing, check suction, discharge and check valve for holding.	☐	☐
9	Remove cover, gland, and packing.	☐	☐
10	Remove corrosion from impeller shaft and housing cover.	☐	☐
11	On pumps with oil ring lubricated bearings, drain oil, flush, and fill to proper oil level with new approved type oil.	☐	☐
12	Inspect water rings, seals, and impeller.	☐	☐
13	Clean pump suction strainers, and pump packing water seal filter/strainer.	☐	☐
14	Adjust packing as necessary.	☐	☐

Computer Room AC

	Instruction	Check	N/A
1	Thoroughly inspect and clean interior and exterior of machine with wet/ dry vacuum, (remove panels).	☐	☐
2	Clean drain pan and note excessive corrosion.	☐	☐
3	Check for refrigerant leaks using a halogen detector or similar testing device. If leaks are not able to be stopped or corrected, report leak status to Owner.	☐	☐
4	Check refrigerant levels and recharge if needed. Consult the MSDS for disposal requirements. Reclaimed and recycled CFCs are exempt from hazardous waste regulations (Consult 40 CFR Part 261).	☐	☐
5	Check condition of cooling and reheat coils. Use fin comb if needed to straighten fins.	☐	☐
6	A dirty coil surface can be cleaned using a coil cleaner solution and warm water.	☐	☐
7	Drain and clean humidifier drip pan, replace pan if necessary. Remove scale if necessary.	☐	☐
8	Lubricate motor and fan bearings, if not sealed. Check alignment of motor and fan. Clean fan or blower.	☐	☐
9	Check belt tension and condition. Adjust or replace as required.	☐	☐
10	Replace prefilters if needed (by Owner).	☐	☐
11	Replace final filters if needed (by Owner).	☐	☐
12	Check compressor oil level if compressor has a sight glass.	☐	☐
13	Run machine, check action of controls, relays, switches, etc. to see that.	☐	☐
14	Compressor(s) run at proper settings.	☐	☐
15	Reheat coils activate properly.	☐	☐
16	Humidistat activates humidifier.	☐	☐
17	Suction and discharge pressures are proper.	☐	☐
18	Discharge air temperature is set properly.	☐	☐
19	Check and adjust vibration eliminators.	☐	☐
20	Check and tighten all electrical terminals, connections, and disconnect switches.	☐	☐
21	Remove all trash or debris from work area. Consult the MSDS for proper personal protective equipment (PPE).	☐	☐

Condensing Unit

	Instruction	Check	N/A
1	Remove debris from air screen and clean underneath unit.	☐	☐
2	Pressure wash coil with coil cleaning solution. Rinse and neutralize (cleaning solution) in accordance with manufacturer's recommendations.	☐	☐
3	Straighten fin tubes with fin comb.	☐	☐
4	Check electrical connections for tightness.	☐	☐
5	Check mounting for tightness.	☐	☐
6	Check all refrigeration lines for support and signs of wear.	☐	☐
7	Thoroughly inspect and clean interior and exterior of machine.	☐	☐
8	Clean and treat all rusted areas.	☐	☐
9	Check for refrigerant leaks using a halogen leak detector, soap bubbles, or similar testing device. If leaks are not able to be stopped or corrected, report leak status to Owner.	☐	☐
10	Check refrigerant levels.	☐	☐
11	Perform required lubrication and remove old or excess lubricant.	☐	☐
12	Clean motor with vacuum or low pressure air (less than 40 psi). Check for obstructions in motor cooling and air flow.	☐	☐
13	Visually inspect fused disconnect switches and contactors for condition, proper operation, arcing or any evidence of overheating.	☐	☐
14	Check motor name plate for current rating and controller manufacturer's recommended heater size.	☐	☐
15	Check line and load connections and heater mounting screws for tightness.	☐	☐
16	Check fan blades for dust buildup and clean if necessary.	☐	☐
17	Check fan blades and moving parts for excessive wear.	☐	☐
18	Check fan RPM to design specifications.	☐	☐
19	Check bearing collar set screws on fan shaft to make sure they are tight, if applicable.	☐	☐
20	Check dampers for dirt accumulation. Check felt; repair or replace as required.	☐	☐

21	Check damper motors and linkage for proper operation. Adjust linkage on vanes if out of alignment, if equipped.	☐	☐
22	Lubricate mechanical connections of dampers sparingly, if equipped.	☐	☐
23	Check compressor oil level (non-hermetically sealed units only) if compressor is equipped with a sight glass.	☐	☐
24	Run machine with service gauge manifold attached, checking action of controls, relays, switches, etc. to see that:	☐	☐
25	Compressor(s) run at proper settings.	☐	☐
26	Controls activate properly.	☐	☐
27	Controls activate unit.	☐	☐
28	Suction and discharge pressures are proper.	☐	☐
29	Check setting on controls and return to normal operation.	☐	☐
30	Clean up the work area and properly dispose of debris and waste. Note: Seal off all service ports with flare caps. Report and replace any missing caps or dust covers.	☐	☐

Cooling Tower

	Instruction	Check	N/A
1	Exterior Structural:		
2	Inspect louvers for correct position and alignment, missing or defective items, and supports	☐	☐
3	Inspect casings and attaching hardware for leaks or defects. Check the integrity and secure attachment of the corner rolls.	☐	☐
4	Inspect for loose or rotten boards on wood casings. Examine from the interior. Extensive damage may require replacement with fiberglass sheathing.	☐	☐
5	Inspect condition of access doors and hinges. Repair as necessary.	☐	☐
6	Inspect the distribution system including flange connectors and gaskets, caulking of headers on counterflow towers, deterioration in distribution basins, splash guards, and associated piping on crossflow towers. If configured with water troughs check boa	☐	☐
7	Examine the drain boards for damage and proper drainage. Check the fasteners also.	☐	☐
8	Inspect stairways including handrails, knee rails, stringers, structure and fasteners for rot, corrosion, security and acid attack.	☐	☐
9	Shake ladders to verify security, and check all rungs.	☐	☐
10	Check the security, rot, and corrosion on walkway treads. Check treads, walkways, and platforms for loose, broken, or missing parts. Tighten or replace as necessary.	☐	☐
11	Ladders must be checked for corrosion, rot, etc. Verify compliance with Occupational Safety and Health regulations regarding height requirements. Check ladder security.	☐	☐
12	Check fan decks and supports for decay, missing and broken parts, and gaps. Check the security.	☐	☐
13	Fan cylinders must be securely anchored. Check fastening devices. Note any damaged, missing, or corroded items. Watch for wood rot and corrosion of steel. Verify proper tip clearance between the fan blade and interior of cylinder.	☐	☐
14	Report to Owner if protective coatings are needed on exterior surfaces. Be sure rust and dirt have been removed first.	☐	☐
15	Interior Structural:		
16	Inspect the distribution system piping for decay, rust, or acid attack. Check the condition and tightness of connections and branch arms. Observe spray pattern of nozzles if possible and note missing and defective nozzles.	☐	☐

17	Inspect mechanical equipment supports and fasteners for corrosion. Wood structural members in contact with steel should be checked for evidence of weakness. Check condition of springs or rubber vibration absorption pads, including adjusting bolts.	☐	☐
18	Check valves and operating condition of fire detection system. Check for corrosion of pipes and connectors. Check wiring of any thermocouple installed.	☐	☐
19	Check drift eliminators and supports. Remove any clogging debris. Replace missing blades.	☐	☐
20	Inspect tower fill for damage, ice breakage, deterioration, and misplaced, missing, or defective splash bars.	☐	☐
21	Examine interior structural supports.	☐	☐
22	Inspect the nuts and bolts in partitions for tightness and corrosion. Look for loose or deteriorated partition boards. Note if partitions are installed so as to prevent wind milling of idle fans. Make sure wind walls parallel to intake louvers are in position.	☐	☐
23	Inspect steel basins for corrosion and general condition. Inspect concrete basins for cracks, breaking joints, and acid attack.	☐	☐
24	Check all sumps for debris, condition of screens, antiturbular plates, and freely operating drain valves.	☐	☐
25	Mechanical:		
26	Check alignment of gear, motor, and fan.	☐	☐
27	Inspect fans and air inlet screens and remove any dirt or debris.	☐	☐
28	Check hubs and hub covers for corrosion, and condition of attaching hardware.	☐	☐
29	Inspect blade clamping arrangement for tightness and corrosion.	☐	☐
30	Gear box:		
31	Clean out any sludge.	☐	☐
32	Change oil. Be sure gear box is full to avoid condensation.	☐	☐
33	Rotate input shaft manually back and forth to check for backlash.	☐	☐
34	Attempt to move the shaft radially to check for wear on the input pinion shaft bearing.	☐	☐
35	Look for excessive play of the fan shaft bearings by applying a force up and down on the tip of a fan blade. Note: Some output shafts have a running clearance built into them.	☐	☐
36	Power transmission:		

37	Check that the drive shaft and coupling guards are installed and that there are no signs of rubbing. Inspect the keys and set screws on the drive shaft, and check the connecting hardware for tightness. Tighten or install as required.	☐	☐
38	Look for corrosion, wear, or missing elements on the drive shaft couplings.	☐	☐
39	Examine the exterior of the drive shaft for corrosion, and check the interior by tapping and listening for dead spots.	☐	☐
40	Observe flexible connectors of both ends of the shaft.	☐	☐
41	Inspect bearings, belts, and pulleys for excessive noise, wear or cracking, alignment, vibration, looseness, surface glazing, tension. Replace or repair as required.	☐	☐
42	Check water distribution. Adjust water level and flush out troughs if necessary. Check all piping, connections, and brackets for looseness. Tighten loose connections and mounting brackets. Replace bolts and braces as required.	☐	☐
43	Check nozzles for clogging and proper distribution.	☐	☐
44	Inspect keys and keyways in motor and drive shaft.	☐	☐
45	Electrical:		
46	Check electric motor for excessive heat and vibration. Lubricate all motor bearings as applicable. Remove excess lubricant.	☐	☐
47	Inspect fused disconnect switches, wiring, conduit, and electrical controls for loose connections, charred or broken insulation, or other defects. Tighten, repair, or replace as required.	☐	☐
48	Remove dust from air intakes, and check for corrosion. Check TEFC motors for conditions of air passages and fans.	☐	☐
49	If there is a drain moisture plug installed, see if it is operational.	☐	☐
50	Check amps and volts at operating loads, recommend pitching of fan blades to compensate.	☐	☐
51	Look for corrosion and security of mounting bolts and attachments.	☐	☐
	Cleaning:		
52	Annually, pressure wash entire cooling tower, inside and outside including basin	☐	☐

DDC Controls

	Instruction	*Check*	*N/A*
1	Note: These procedures apply to all building DDC control points		
2	Check set point of controls (temperature, humidity, or pressure).	☐	☐
3	Compare control point with an external measuring device, note deviations, and adjust.	☐	☐
4	Check the unit over its range of control. If possible, impose simulated conditions to activate controls and check operation.	☐	☐
5	Check for control point cycling and proper calibration.	☐	☐
6	Check the source of the signal and its amplification.	☐	☐
7	Replace air filters in sensors, controllers, and thermostats as required.	☐	☐
8	Use test kits and manufacturer's instructions whenever possible.	☐	☐

Energy Recovery Ventilator

	Instruction	*Check*	*N/A*
1	Check fan blades for dust buildup and clean if necessary	☐	☐
2	Check fan blades and moving parts for cracks and excessive wear.	☐	☐
3	Check filters. Replace as necessary (by Owner).	☐	☐
4	Clean coils by brushing, blowing, vacuuming, or pressure washing.	☐	☐
5	Flush and clean condensate pans and drains.	☐	☐
6	Check belts for wear and cracks, adjust tension or alignment, and replace belts when necessary. Multi-belt drives shall only be replaced with matched sets.	☐	☐
7	Vacuum interior of unit.	☐	☐
8	Semi-annually:		
9	Check fan RPM against design specifications.	☐	☐
10	Check bearing collar set screws on fan shaft to make sure they are tight.	☐	☐
11	Check dampers for dirt accumulations, clean as necessary. Check damper gasket for proper seal, repair or replace as necessary.	☐	☐
12	Check damper actuators and linkage for proper operation. Adjust linkage on dampers if out of alignment.	☐	☐
13	Lubricate mechanical connections of dampers sparingly.	☐	☐
14	Check coils for leaking, tightness of fittings. On direct expansion units, check for refrigerant leaks on all lines, valves, fittings, coils, etc., using a halogen leak detector or similar testing device. If leaks are not able to be stopped or corrected	☐	☐
15	Use fin comb to straighten coil fins.	☐	☐
16	Remove all rust from condensate pans and drains.	☐	☐
17	Check rigid couplings for alignment on direct drives, and for tightness of assembly. Check flexible couplings for alignment and wear.	☐	☐
18	Blow down strainers and clean any debris in strainer.	☐	☐

19	Check freeze stat for proper temperature setting and operation.	☐	☐
20	Lubricate fan shaft bearings while unit is running. Add grease slowly until slight bleeding is noted from the seals. Do not over lubricate. Remove old or excess lubricant.	☐	☐
21	Clean up work area and remove all debris.	☐	☐

Heating Boiler

	Instruction	Check	N/A
1	Conduct the following tests in accordance with the manufacturer's O & M manual:		
2	Low draft, fan, air pressure, and damper position interlocks.	☐	☐
3	High and low gas pressure interlocks.	☐	☐
4	Relief valve try lever test.	☐	☐
5	Test the complete flame safeguard system to verify the operation of all limit switches and safety interlocks as well as flame failure protection and fuel safety shutoff valve tightness in accordance with manufacturer's technical manuals.	☐	☐
6	Check pilot assembly for the following:		
7	Ensure the ignition electrode is centered in the igniter body.	☐	☐
8	Inspect the ignition electrode and pilot assembly clean, if necessary.	☐	☐
9	Inspect the high-tension wire between the transformer and the ignition electrode for deterioration.	☐	☐
10	Inspect the flame scanner and clean, if necessary.	☐	☐
11	Check air dampers for smooth operation. Remove accumulation of lint or dirt.	☐	☐
12	Check all linkages for smoothness of operation and tightness.	☐	☐
13	Inspect gas train for leaks including pressure regulating valves, main gas shutoff, main gas valve, gauges, piping, and pilot shutoff.	☐	☐
14	Inspect boiler shell for hot spots.	☐	☐
15	Inspect flue, vent and stack for leaks, poor joint connections and obstructions at flue outlet. Replace components as necessary.	☐	☐
16	Ensure the low-water fuel cutoff and alarm is operating by performing a slow drain test.	☐	☐
17	Complete necessary repairs/adjustments and return boiler to normal operation.	☐	☐

18	Boiler Annual Maintenance - To be completed during a summer month shutdown.	☐	☐
19	De-energize power source to equipment in accordance with lockout/tag-out procedures.	☐	☐
20	Conduct the following tests in accordance with the manufacturer's O & M manual to confirm the following are operating correctly:		
21	High limit safety control	☐	☐
22	Operating control	☐	☐
23	Fuel valve interlock switch	☐	☐
24	Purge switch	☐	☐
25	Burner position interlock.	☐	☐
26	Low fire start interlock	☐	☐
27	Fire rate control – check with combustion test	☐	☐
28	Pilot and main gas leak test	☐	☐
29	Pilot turndown tests	☐	☐
30	Safety relief valves pop test	☐	☐
31	Clean burner fan and motor cooling air intake housing.	☐	☐
32	Remove water level control float and clean float bowl.	☐	☐
33	Remove secondary low water cut-off probe and check for corrosion.	☐	☐
34	Have the burner inspected and checked by a qualified service representative/inspector.	☐	☐
35	Inspect gas piping for proper support and tightness.	☐	☐

36	Complete necessary repairs/adjustments.	☐	☐
37	Remove lock, safety tags and return equipment to normal operation.	☐	☐

Hot Water Circulating Pump

	Instruction	Check	N/A
1	Check that the base bolts are securely fastened.	☐	☐
2	Start and stop pump, noting vibration, pressure, and action of check valve.	☐	☐
3	If applicable, lubricate impeller shaft bearings. Do not over lubricate.	☐	☐
4	Check motor and pump alignment.	☐	☐
5	Check drive shaft coupling.	☐	☐
6	Clean up work area and remove all debris.	☐	☐
7	Annually:		
8	After shut-down, drain pump housing, check suction, discharge and check valve for holding.	☐	☐
9	Remove cover, gland, and packing.	☐	☐
10	Remove corrosion from impeller shaft and housing cover.	☐	☐
11	On pumps with oil ring lubricated bearings, drain oil, flush, and fill to proper oil level with new approved type oil.	☐	☐
12	Inspect water rings, seals, and impeller.	☐	☐
13	Clean pump suction strainers, and pump packing water seal filter/strainer.	☐	☐
14	Adjust packing as necessary.	☐	☐

Make Up Air Unit

	Instruction	Check	N/A
1	Check fan blades for dust buildup and clean if necessary	☐	☐
2	Check fan blades and moving parts for cracks and excessive wear.	☐	☐
3	Check filters. Replace as necessary (by Owner).	☐	☐
4	Clean coils by brushing, blowing, vacuuming, or pressure washing.	☐	☐
5	Flush and clean condensate pans and drains.	☐	☐
6	Check belts for wear and cracks, adjust tension or alignment, and replace belts when necessary. Multi-belt drives shall only be replaced with matched sets.	☐	☐
7	Vacuum interior of unit.	☐	☐
8	Semi-annually:		
9	Check fan RPM against design specifications.	☐	☐
10	Check bearing collar set screws on fan shaft to make sure they are tight.	☐	☐
11	Check dampers for dirt accumulations, clean as necessary. Check damper gasket for proper seal, repair or replace as necessary.	☐	☐
12	Check damper actuators and linkage for proper operation. Adjust linkage on dampers if out of alignment.	☐	☐
13	Lubricate mechanical connections of dampers sparingly.	☐	☐
14	Check coils for leaking, tightness of fittings. On direct expansion units, check for refrigerant leaks on all lines, valves, fittings, coils, etc., using a halogen leak detector or similar testing device. If leaks are not able to be stopped or corrected	☐	☐
15	Use fin comb to straighten coil fins.	☐	☐
16	Remove all rust from condensate pans and drains.	☐	☐
17	Check rigid couplings for alignment on direct drives, and for tightness of assembly. Check flexible couplings for alignment and wear.	☐	☐
18	Blow down strainers and clean any debris in strainer.	☐	☐

19	Check freeze stat for proper temperature setting and operation.	☐	☐
20	Lubricate fan shaft bearings while unit is running. Add grease slowly until slight bleeding is noted from the seals. Do not over lubricate. Remove old or excess lubricant.	☐	☐
21	Clean up work area and remove all debris.	☐	☐

Packaged Unit AC

	Instruction	Check	N/A
1	Thoroughly inspect and clean interior and exterior of machine with wet/ dry vacuum, (remove panels).	☐	☐
2	Clean drain pan and note excessive corrosion.	☐	☐
3	Check for refrigerant leaks using a halogen detector or similar testing device. If leaks are not able to be stopped or corrected, report leak status to Owner.	☐	☐
4	Check refrigerant levels and recharge if needed. Consult the MSDS for disposal requirements. Reclaimed and recycled CFCs are exempt from hazardous waste regulations (Consult 40 CFR Part 261).	☐	☐
5	Check condition of cooling and reheat coils. Use fin comb if needed to straighten fins.	☐	☐
6	A dirty coil surface can be cleaned using a coil cleaner solution and warm water.	☐	☐
7	Drain and clean humidifier drip pan, replace pan if necessary. Remove scale if necessary.	☐	☐
8	Lubricate motor and fan bearings, if not sealed. Check alignment of motor and fan. Clean fan or blower.	☐	☐
9	Check belt tension and condition. Adjust or replace as required.	☐	☐
10	Replace prefilters if needed (by Owner).	☐	☐
11	Replace final filters if needed (by Owner).	☐	☐
12	Check compressor oil level if compressor has a sight glass.	☐	☐
13	Run machine, check action of controls, relays, switches, etc. to see that.	☐	☐
14	Compressor(s) run at proper settings.	☐	☐
15	Reheat coils activate properly.	☐	☐
16	Humidistat activates humidifier.	☐	☐

17	Suction and discharge pressures are proper.	☐	☐
18	Discharge air temperature is set properly.	☐	☐
19	Check and adjust vibration eliminators.	☐	☐
20	Check and tighten all electrical terminals, connections, and disconnect switches.		
21	Remove all trash or debris from work area. Consult the MSDS for proper personal protective equipment (PPE).	☐ ☐	☐ ☐

Starters and Contactors

	Instruction	Check	N/A
1	Begin with the OSHA Lockout/Tagout procedures.	☐	☐
2	Visually inspect for broken parts, contact arcing, or any evidence of over heating.	☐	☐
3	Check line and load connections for tightness (check manufacturer's instructions for torque specifications).	☐	☐
4	On units equipped with variable speed starters:		
5	Lubricate all moving parts with proper lubricant.	☐	☐
6	On units equipped with two stage starting, check dash pots and timing controls for proper operation. Adjust as required.	☐	☐
7	On units equipped with motor reversing capacity, check mechanical interlock.	☐	☐
8	Check tightness of connections to resistor bank.	☐	☐
9	Check heater mounting screws for tightness.	☐	☐
10	Check starter contact connections by applying a thin film of black contact grease to line and load stabs, operate contacts and check surface contact.	☐	☐
11	Clean interior of cabinet.	☐	☐
12	Clean exterior of cabinet.	☐	☐
13	Energize circuit and check operation of starter and any pilot lights. Replace as required.	☐	☐
14	Check resistor coils and plates for cracking, broken wires, mounting and signs of over heating. Clean as required.	☐	☐
15	Check all control wiring connections for tightness.	☐	☐
16	Check contacts of drum controller for arcing and over heating. Apply a thin film of lubricant to drum controller contacts and to rotating surfaces.	☐	☐
17	Check tightness of connections to drum controller.	☐	☐
18	Check motor name plate for current rating and controller manufacturer's recommended heater size (report discrepancy to Owner).	☐	☐