

Schedule L

Facility Maintenance Checklist

General Definitions

1. **"Provide"** - Furnish and install.
2. **"Furnish"** - Obtain and deliver to the job for installation by others.
3. **"Install"** - Set and final connect an equipment item furnished by others. Place item in full operating condition.
4. **"Existing"** - Existing equipment or device.
5. **"Owner"** - Department of Corrections of the Commonwealth of Pennsylvania- Camp Hill
6. **"Maintenance Contractor"** - Provider of the maintenance service (May be Owner or Contractor Thired by the Owner)
7. **"Visual Inspection"** - To visually inspect for improper operation, unusual corrosion, misalignment, dirt buildup, evidence of leaks, bent or otherwise damaged components, etc. Other than normal access covers, panels, or hatches, no disassembly or draining of equipment shall be required for visual inspections.
8. **"Full Inspection"** - Shall include all the requirements of a visual inspection and include any disassembly required to fully access all areas of the component being inspected. In addition the component itself shall be disassembled and cleaned to the extent necessary to insure that all parts are in good condition; i.e. free of physical damage, heavy corrosion, cracks, pitting, misalignment, worn parts or seals, cracked or hardened seals, parts prone to binding due to ware, etc. The condition of all fluids shall be checked for proper levels of treatment chemicals, contaminants, discoloration, or unusual orders that may indicate improper operation. All fluid levels shall be checked.
9. **"Check Operation"**- Shall require the confirmation of proper and smooth operation of the component or equipment item over its full range of operation. This may require putting the item in manual or bypass mode to confirm proper operation and/or temporally false loading equipment to allow brief operation at full capacity. The response of the item shall be closely observed for any unusual noise, vibration, binding, current draw, or temperatures out or expected range.
10. **"Exercise"** - Shall require that the component be operated through it's full range of motion and returned to it's normal mode or position.
11. **"Lubricate"** - Shall require that new lubricant be applied or changed as required to all the points and items requiring lubrication as recommended by the manufacturer or by common experience. In addition anti-seize lubricant shall be applied to any exposed bolt thread required for disassembly that is subject to corrosion. Lubricants appropriate for each specific application shall be used. Spent lubricants shall be disposed of properly.
12. **"Thoroughly Clean"** - Clean completely all areas of the component or equipment item. Disassemble as necessary to reach all areas of the component to be cleaned. Use custom or equipment specifically designed to all areas of the component to be reached. Use cleaning solutions designed for the specific application.

Energy Performance Contract

13. **"Convenience Clean"** - Clean as completely as practical without disassembly, except for normal access panels, covers, or hatches, or spending undue time. No specialized tools or cleaners are required but brushes, vacuums, and rags should be used.
14. **"Adjust"** - To modify component setting, linkages, programs, operating temperatures or pressures, feed rates, set points, etc. to obtain proper, smooth, and optimum operation of the component.
15. **"Calibrate"** - Adjust sensors, thermostats, pressure, or temperature gages against a known gage of verified accuracy to obtain proper readings and responses.
16. **"Renew/Replace"** - To replace with new components of like grade and quality or to recondition components completely so as to be in a "like new" condition.
17. **"Repair"** - To trouble shoot a malfunctioning system, equipment item, or component, and determine the cause of the malfunction. Then readjust, re-calibrate, replace, recondition, clean, or renew as required to place the malfunctioning item back into safe and proper operation.
18. **"Percentage to Service"** - This is the percentage of the total number of items that need to be serviced each year.

Energy Performance Contract

Lighting –ECM 1 General

It will be necessary to replace any lamps that fail to ignite even during the linear fluorescent warranty period.

Group relamping should be performed every three years. Group relamping greatly reduces spot relamping labor costs because all lamps are replaced before they reach the point in life where failures are accelerating. A facility that is properly group relamped will have better maintained light levels than one which is not.

Warrantee

The linear fluorescent ballasts are warranted for the term of the agreement (10 years). If any of the fluorescent ballast fail during the term of the contract, replacement of the ballast will be necessary. The warranty provides for a labor credit for replacing the defective part and a replacement of the defective ballast.

Boiler Tune Up and Digital Controls– ECM 2

Mechanical Components – ECM 2

General

1. The intent of the Mechanical Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain proper equipment operation at all times
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, subsystems, components, hardware, sub-components, and assemblies associated with the main component listed.
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.
2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. **Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.**
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

Energy Performance Contract

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.
3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Steam Traps											
Test for leakage of steam through trap	BY NORESKO										
Pumps - Water less than 100 °F											
Motor		1		1		1		1			
Seals		1		1							
Bearings		1		1		2					
Impeller				1							
Piping, Valves, Supports, Shaft Coupling		1					1				
Strainers											
Pumps - Water Greater than 100 °F											
Motor		1		1		1		1			
Seals		2		2							
Bearings		1		1		3					
Impeller				1							
Piping, Valves, Supports, Shaft Coupling		1									
Strainers							1				
Pumps - Steam Condensate											
Motor		1		1		1		1			
Seals		1	1	2							
Bearings		1	1	1		4					
Impeller			1	1			1				
Piping, Valves, Supports, Shaft Coupling		2									
Strainers							1				
Heat Exchangers/Steam Converters	100										
Control Valve			1	1							
Safety valve			1	1							
Shell & Tubes			1								
Piping, Valves, Supports		1									

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Make Up Air Units	100										
Fans		1		1		2		1			
Motors		1		1		1		1			4
Filters											
Heating Coil	20		1				1				
Heating Coil		1		1							
Cooling Coil	25		1				1				
Cooling Coil		2		1							
Condensate Drain Pans and Drains		3	1				1				
Dampers		2	1	1	1	1		1	1		
Humidifiers		1		1							
Belts		1		1					1		
Preheat Coils		1		1				1			
Casing, Piping, Valves		1									
Centrifugal Fans Greater than 5 Hp.	100										
Bearings		1				2					
Belts		1		1					1		
Motors						1		1			
Inlet Vanes				1	1	2		1	1		
Casing, Supports, & Vibration Isolators		1									

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Boiler Room	Main	Main	2	Steam Coal Bollers	#2 & #3	Keeler	35,000 lbs/hr		By Owner or his Agent
Boiler Room	Main	Main		Steam Coal Bollers Auxiliary Equipment	#2 & #3	Keeler	35,000 lbs/hr		By Owner or his Agent

Control Systems & Components– ECM 2
GENERAL

1. The intent of the Control Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain comfort conditions during occupied periods
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives
 - g) Maintain updated control sequence documentation, trending reports, and alarm functions.
 2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, equipment, sequences, controllers, panels, hardware, programming, sub-components, and assemblies associated with control within the listed building..
 3. The frequencies listed for work to be performed are minimum requirements.
- Materials and Methods

1. All components, replacement parts, control strategies, and sequences shall be suitable for the particular application intended.

Pneumatic and Electric Systems

1. All pneumatic and electric relays, controllers, thermostats, pressure regulators, filter dryers, logic devices, electric/pneumatic switches, and similar devices shall be checked for proper operation, calibrated, and adjusted or replaced as necessary according to the Frequency of Work Schedule below.
2. Pneumatic systems Work will include insuring the Control air is clean, dry, and free of oils. This shall be checked at the frequency noted in the Frequency of Work Schedule Below.
3. Pneumatic and electric actuators shall be checked for proper operation and repaired, or replaced as necessary to insure a properly operating system. If an actuator is not able to operate correctly due to a malfunctioning valve, damper or the like, the Control Maintenance Contractor shall report this to the Owner and Mechanical Maintenance Contractor within one working day. The Control Maintenance Contractor shall use a reporting method mutually agreed to for this purpose.

Direct Digital Control and Electronic Systems

1. Electronic devices, panels, cards, sensors, and thermostats shall be checked for proper operation and calibrated, repaired or replaced as necessary according to the Frequency of Work Schedule below.
2. Software shall be updated as new releases are released in order to keep the system up to date. Software updates will be under **NORESCO** 's responsibility.
3. Schedules shall be updated as necessary as dictated by the occupancy requirements of the various buildings and areas.
4. System integrity tests shall be made according to the Frequency of Work Schedule below on a representative sampling of sub systems in each building and major area served by the DDC system. The system integrity tests shall include but not be limited to point checks, point commanding, selective disabling, and examination of system report and error logs. Testing shall include reasonable verification that all sensors are within range and calibrated.

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- Reporting logs, Alarm logs, and Trend logs, shall be reviewed, cleared as required, and updated as necessary, according to the Frequency of Work Schedule below.

Proprietary Systems

- The existing DDC Control system has proprietary components and software. If it is the intent that the Owner contract with a Control Maintenance Contractor to service the existing and new in place equipment, then it shall be the sole responsibility of the Control Maintenance Contractor to make legal and lawful arrangements for obtaining parts, software, and rights to modify programming for the existing system.
- Arrangements for servicing the existing DDC system may include but is not limited to:
 - Direct subcontract with the existing DDC Vendor
 - Licensing agreements with the DDC Vendor for software and programming revisions.
 - Arrangements with the Owner for replacement parts purchasing.
 - Direct arrangement with the DDC vendor for replacement parts purchase.
 - Training of the Control Maintenance Contractor's employees by the existing control vendor.
- NORESKO** will assume the responsibility for maintaining the new and existing DDC controls in the Boiler Room.

Frequency of Work

- The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
- The table lists the minimum frequencies. The Facility may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service.

Pneumatic and Electric Systems

Components / Systems	Yearly Percentage	Frequency / Year
Air Quality, Filter Dryers, Pressure Regulators	100	2
Controllers, logic devices,	50	1
Relays, and switches	25	1
Actuators	25	1
Thermostats	20	1
Sequence Operation	20	1

Direct Digital Control and Electronic Systems

Components / Systems	Yearly Percentage	Frequency / Year
System - (Integrity test)	100	2
Panels and primary controllers	100	2
PC Workstation, Printer, Modem, CRT	100	4
Cards and Sensors	25	1
Thermostats	20	1

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Boller Room	All	All	All	New & Existing	DDC	Honeywell	N/A	Various	By NORESKO

Energy Performance Contract

VFD's on Combustion Air Blowers-- ECM 3

Mechanical Components - ECM 3

General

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Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.
2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. **Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.**
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
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Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Variable Frequency Drives											
Control Action	100			1					1		
Connection tightness	100								1		
Clean Dust from heat sinks	100						2				
Check air circulation Fans	100						2				
Check DC bus capacitors	100	1									
Monitor heat sink temperatures	100			6							
Other Internal Components	20		1					1			

List of Maintained Items

LOCATION			MAINTAINED ITEMS							
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks	
Boiler Room	Main	Main	2	VFD Drives	Comb. Air Fans		40 Hp		By Owner or his Agent	

VFD on Baghouse Fan Blowers- ECM 4

Mechanical Components - ECM 4

General

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4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
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Variable Frequency Drives											
Control Action	100			1					1		
Connection tightness	100								1		
Clean Dust from heat sinks	100						2				
Check air circulation Fans	100						2				
Check DC bus capacitors	100	1									
Monitor heat sink temperatures	100			6							
Other Internal Components	20		1					1			

Energy Performance Contract

List of Maintained Items

LOCATION			MAINTAINED ITEMS							
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks	
Boiler Room	Main	Main	2	Steam Coal Boilers	#2 & #3	Keeler	35,000 lbs/hr		By Owner or his Agent	
Baghouse	1st	Fan	1	VFD Drive	I. D. Fan		200 Hp		By Owner or his Agent	

**Maximize Condensate Return to Boiler Plant - Electric Driven- ECM 5
Mechanical Components - ECM 5**

General

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Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Condensate Return Units	100										
Pumps		5	1	2		2					
Tank		5									
Controls		5		2							
Steam Traps											
Test for leakage of steam through trap		BY NORESKO									
Pumps - Water Greater than 100 °F											
Motor		1		1		1		1			
Seals		2		2							
Bearings		1		1		3					
Impeller				1							
Piping, Valves, Supports, Shaft Coupling		1									
Strainers							1				
Pumps - Steam Condensate											
Motor		1		1		1		1			
Seals		1	1	2							
Bearings		1	1	1		4					
Impeller			1	1			1				
Piping, Valves, Supports, Shaft Coupling		2									
Strainers							1				
Heat Exchangers/Steam Converters	100										
Control Valve			1	1							
Safety valve			1	1							
Shell & Tubes			1								
Piping, Valves, Supports		1									
Hot Water or Steam Radiation	25										
Heat transfer surfaces		1						1			
Casing, Cover, Piping, and Valves		1									

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Stm Tunnel and Buildings	Bsmt.	Bsmt	14	New Elect Cond. Return Units			Various		By Owner or his Agent
Stm Tunnel and Buildings	Bsmt.	Bsmt		New Elect Cond. Return Units Associated Equipment			Various		By Owner or his Agent
Steam Traps									By NORESKO

Repair/Replace Steam Traps – ECM 6
 Mechanical Components – ECM 6

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Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Steam System	100										
Chemical Feed System		6	2	4							
Water Treatment Equipment/Systems		6	2	4							
Steam Traps											
Test for leakage of steam through trap	BY NORESKO										

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Steam Traps									By NORESKO

Install Centralized Water Softening System- ECM 7
Mechanical Components - ECM 7

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6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.
3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Pumps - Water less than 100 °F											
Motor		1		1		1		1			
Seals		1		1							
Bearings		1		1		2					
Impeller				1							
Piping, Valves, Supports, Shaft Coupling		1									
Strainers							1				
Water Softener System	100										
Controls	See Controls Section										
Control Action and Sequences				1							
Clean Brine Tank							1				
Clean Resin							1				
Control Valve			1	1							

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
New Water Softener Bldg.	1st	All	1 Sys.	Central Water Softener		Guardian			By Owner or his Agent

Night Setback- ECM 8

Mechanical Components - ECM 8

General

1. The intent of the Mechanical Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain proper equipment operation at all times
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, subsystems, components, hardware, sub-components, and assemblies associated with the main component listed.
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.

Energy Performance Contract

2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.
3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Heat Exchangers/Steam Converters	100										
Control Valve			1	1							
Safety valve			1	1							
Shell & Tubes			1								
Piping, Valves, Supports		1									
Split Systems - Evaporator coil with air Cooled Condensers	100										
Evaporator Coil	25	1	1				1				
Evaporator Coil		1									
Evaporator Fan		1		1		1					
Evaporator Fan Motor		1		1		1					
Filters											1
Belts		1							1		
Condensate Drains and Drain pans			1				1				
Condenser Fans						2		1	1		
Condenser Coil								1			
Condenser Fan Motors						2					
Controls				1							
Safeties				1							
Valves, Piping, Casing, Supports		1									
Roof Top Units	100										
Evaporator Coil	50		1				1				
Evaporator Coil		1									
Evaporator Fan		1		1		1					
Evaporator Fan Motor		1		1		1					
Filters											2
Belts		1							1		
Dampers			1	1	1	1		1	1		
Condensate Drains and Drain pans			1				1				
Condenser Fans						2		1	1		
Condenser Coil								1			
Condenser Fan Motors						2					
Controls				1							
Safeties				1							
Valves, Piping, Casing, Supports		1									

Energy Performance Contract

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Air Handling Units	100										
Fans		1		1		2		1			
Motors		1		1		1		1			
Filters											2
Heating Coil	20		1				1				
Heating Coil		1		1							
Cooling Coil	25		1				1				
Cooling Coil		2		1							
Condensate Drain Pans and Drains		2	1				1				
Dampers		2	1	1	1	1		1	1		
Humidifiers		1		1							
Belts		1		1					1		
Preheat Coils		1		1				1			
Casing, Piping, Valves		1									
Make Up Air Units	100										
Fans		1		1		2		1			
Motors		1		1		1		1			
Filters											4
Heating Coil	20		1				1				
Heating Coil		1		1							
Cooling Coil	25		1				1				
Cooling Coil		2		1							
Condensate Drain Pans and Drains		3	1				1				
Dampers		2	1	1	1	1		1	1		
Humidifiers		1		1							
Belts		1		1					1		
Preheat Coils		1		1				1			
Casing, Piping, Valves		1									
Centrifugal Fans Greater than 5 Hp.	100										
Bearings		1				2					
Belts		1		1					1		
Motors						1		1			
Inlet Vanes				1	1	2		1	1		
Casing, Supports, & Vibration Isolators		1									

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Centrifugal Fans 5 Hp or Less and Exhaust Fans	25										
Bearings		1				1					
Belts		1		1					1		
Motors						1		1			
Inlet Vanes				1	1	1		1	1		
Casing, Supports, & Vibration Isolators		1									

Energy Performance Contract

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Administration	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Chapel	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Education Bldg.	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Laundry	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Sports Complex	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Gym	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Main Store Rm.	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
CDCC 1	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
CDCC 2	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod E	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod F	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod H	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod J	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod K	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Furniture Factory	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Main Gate	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 1	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 2	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 3	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 4	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 5	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block A	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block B	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block C	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block D	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent

Energy Performance Contract

Control Systems & Components – ECM 8

GENERAL

1. The intent of the Control Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain comfort conditions during occupied periods
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives
 - g) Maintain updated control sequence documentation, trending reports, and alarm functions.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, equipment, sequences, controllers, panels, hardware, programming, sub-components, and assemblies associated with control within the listed building..
3. The frequencies listed for work to be performed are minimum requirements.
Materials and Methods
2. All components, replacement parts, control strategies, and sequences shall be suitable for the particular application intended.

Pneumatic and Electric Systems

1. All pneumatic and electric relays, controllers, thermostats, pressure regulators, filter dryers, logic devices, electric/pneumatic switches, and similar devices shall be checked for proper operation, calibrated, and adjusted or replaced as necessary according to the Frequency of Work Schedule below.
2. Pneumatic systems Work will include insuring the Control air is clean, dry, and free of oils. This shall be checked at the frequency noted in the Frequency of Work Schedule Below.
3. Pneumatic and electric actuators shall be checked for proper operation and repaired, or replaced as necessary to insure a properly operating system. If an actuator is not able to operate correctly due to a malfunctioning valve, damper or the like, the Control Maintenance Contractor shall report this to the Owner and Mechanical Maintenance Contractor within one working day. The Control Maintenance Contractor shall use a reporting method mutually agreed to for this purpose.

Direct Digital Control and Electronic Systems

1. Electronic devices, panels, cards, sensors, and thermostats shall be checked for proper operation and calibrated, repaired or replaced as necessary according to the Frequency of Work Schedule below.
2. Software shall be updated as new releases are released in order to keep the system up to date. Software updates will be under NORESKO 's responsibility.
3. Schedules shall be updated as necessary as dictated by the occupancy requirements of the various buildings and areas.
4. System integrity tests shall be made according to the Frequency of Work Schedule below on a representative sampling of sub systems in each building and major area served by the DDC system. The system integrity tests shall include but not be limited to point checks, point commanding, selective disabling, and examination of system report and error logs. Testing shall include reasonable verification that all sensors are within range and calibrated.

Energy Performance Contract

5. Reporting logs, Alarm logs, and Trend logs, shall be reviewed, cleared as required, and updated as necessary, according to the Frequency of Work Schedule below.

Proprietary Systems

1. The existing DDC Control system has proprietary components and software. If it is the intent that the Owner contract with a Control Maintenance Contractor to service the existing and new in place equipment, then it shall be the sole responsibility of the Control Maintenance Contractor to make legal and lawful arrangements for obtaining parts, software, and rights to modify programming for the existing system.
2. Arrangements for servicing the existing DDC system may include but is not limited to:
 - a) Direct subcontract with the existing DDC Vendor
 - b) Licensing agreements with the DDC Vendor for software and programming revisions.
 - c) Arrangements with the Owner for replacement parts purchasing.
 - d) Direct arrangement with the DDC vendor for replacement parts purchase.
 - e) Training of the Control Maintenance Contractor's employees by the existing control vendor.
3. NORESKO will assume the responsibility for maintaining the new and existing DDC controls in the Boiler Room.

Frequency of Work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Facility may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service.

Pneumatic and Electric Systems

Components / Systems	Yearly Percentage	Frequency / Year
Air Quality, Filter Dryers, Pressure Regulators	100	2
Controllers, logic devices,	50	1
Relays, and switches	25	1
Actuators	25	1
Thermostats	20	1
Sequence Operation	20	1

Direct Digital Control and Electronic Systems

Components / Systems	Yearly Percentage	Frequency / Year
System - (Integrity test)	100	2
Panels and primary controllers	100	2
PC Workstation, Printer, Modem, CRT	100	4
Cards and Sensors	25	1
Thermostats	20	1

Energy Performance Contract

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Boiler Room	All	All	All	New & Existing	DDC	Honeywell	N/A	Various	By NORESCO
Administration	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Chapel	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Education Bldg.	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Laundry	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Sports Complex	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Gym	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Main Store Rm.	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
CDCC 1	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
CDCC 2	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod E	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod F	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod H	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod J	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod K	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Furniture Factory	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Main Gate	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 1	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 2	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 3	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 4	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 5	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Cell Block A	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block B	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block C	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block D	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent

Insulation of Steam System Components- ECM 9

There are no maintenance requirements for the insulation on steam piping other than to repair any physical damage that might occur.

Optimizing Flow at Water Treatment Plant- ECM 10

Mechanical Components - ECM 10

General

1. The intent of the Mechanical Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain proper equipment operation at all times
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, subsystems, components, hardware, sub-components, and assemblies associated with the main component listed.
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.
2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.

Energy Performance Contract

3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Air Compressors (ATC)	100										
Compressor		2		1		3		1	1		
Motor		2		1		2					
Tank		2									
Safeties and Controls		2	1								
Relief Valve		2	1								
Air Filter		2									2
Regulator		2							1	1	
Pumps - Water less than 100 °F											
Motor		1		1		1		1			
Seals		1		1							
Bearings		1		1		2					
Impeller				1							
Piping, Valves, Supports, Shaft Coupling		1									
Strainers							1				
Variable Frequency Drives											
Control Action	100			1					1		
Connection tightness	100								1		
Clean Dust from heat sinks	100						2				
Check air circulation Fans	100						2				
Check DC bus capacitors	100	1									
Monitor heat sink temperatures	100			6							
Other Internal Components	20		1					1			

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Water Treatment Pump House	Main	Main	2	Pump			15Hp		By Owner or his Agent
Water Treatment	Main	Bsmt.	2	Pump			40Hp		By Owner or his Agent
Water Treatment Pump House	Main	Main	2	Pump VFD			15Hp		By Owner or his Agent
Water Treatment	Main	Bsmt.	2	Pump VFD			40Hp		By Owner or his Agent

Control Systems & Components – ECM 10
GENERAL

1. The intent of the Control Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain comfort conditions during occupied periods
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives
 - g) Maintain updated control sequence documentation, trending reports, and alarm functions.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, equipment, sequences, controllers, panels, hardware, programming, sub-components, and assemblies associated with control within the listed building..
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All components, replacement parts, control strategies, and sequences shall be suitable for the particular application intended.

Pneumatic and Electric Systems

1. All pneumatic and electric relays, controllers, thermostats, pressure regulators, filter dryers, logic devices, electric/pneumatic switches, and similar devices shall be checked for proper operation, calibrated, and adjusted or replaced as necessary according to the Frequency of Work Schedule below.
2. Pneumatic systems Work will include insuring the Control air is clean, dry, and free of oils. This shall be checked at the frequency noted in the Frequency of Work Schedule Below.
3. Pneumatic and electric actuators shall be checked for proper operation and repaired, or replaced as necessary to insure a properly operating system. If an actuator is not able to operate correctly due to a malfunctioning valve, damper or the like, the Control Maintenance Contractor shall report this to the Owner and Mechanical Maintenance Contractor within one working day. The Control Maintenance Contractor shall use a reporting method mutually agreed to for this purpose.

Direct Digital Control and Electronic Systems

1. Electronic devices, panels, cards, sensors, and thermostats shall be checked for proper operation and calibrated, repaired or replaced as necessary according to the Frequency of Work Schedule below.

Energy Performance Contract

2. Software shall be updated as new releases are released in order to keep the system up to date. Software updates will be under **NORESCO** 's responsibility.
3. Schedules shall be updated as necessary as dictated by the occupancy requirements of the various buildings and areas.
4. System integrity tests shall be made according to the Frequency of Work Schedule below on a representative sampling of sub systems in each building and major area served by the DDC system. The system integrity tests shall include but not be limited to point checks, point commanding, selective disabling, and examination of system report and error logs. Testing shall include reasonable verification that all sensors are within range and calibrated.
5. Reporting logs, Alarm logs, and Trend logs, shall be reviewed, cleared as required, and updated as necessary, according to the Frequency of Work Schedule below.

Proprietary Systems

1. The existing DDC Control system has proprietary components and software. If it is the intent that the Owner contract with a Control Maintenance Contractor to service the existing and new in place equipment, then it shall be the sole responsibility of the Control Maintenance Contractor to make legal and lawful arrangements for obtaining parts, software, and rights to modify programming for the existing system.
2. Arrangements for servicing the existing DDC system may include but is not limited to:
 - a) Direct subcontract with the existing DDC Vendor
 - b) Licensing agreements with the DDC Vendor for software and programming revisions.
 - c) Arrangements with the Owner for replacement parts purchasing.
 - d) Direct arrangement with the DDC vendor for replacement parts purchase.
 - e) Training of the Control Maintenance Contractor's employees by the existing control vendor.
3. **NORESCO** will assume the responsibility for maintaining the new and existing DDC controls in the Boiler Room.

Frequency of Work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Facility may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service.

Pneumatic and Electric Systems

Components / Systems	Yearly Percentage	Frequency / Year
Air Quality, Filter Dryers, Pressure Regulators	100	2
Controllers, logic devices,	50	1
Relays, and switches	25	1
Actuators	25	1
Thermostats	20	1
Sequence Operation	20	1

Energy Performance Contract

Components / Systems	Yearly Percentage	Frequency / Year
System - (Integrity test)	100	2
Panels and primary controllers	100	2
PC Workstation, Printer, Modem, CRT	100	4
Cards and Sensors	25	1
Thermostats	20	1

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Water Treatment Building	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent

Energy Performance Contract

Domestic Water Conservation– ECM 11

Mechanical Components – ECM 11

General

1. The intent of the Mechanical Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain proper equipment operation at all times
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, subsystems, components, hardware, sub-components, and assemblies associated with the main component listed.
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.
2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.
3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Domestic Water Fixtures and Valves											
Concealed flush valve diaphragm components	50		1	1				1			1
Concealed flush valve pneumatic/mechanical actuators	50		1	1				1			1
Concealed faucet pneumatic/mechanical actuators	50		1	1				1			1
Concealed shower valve and diaphragm components	50		1	1				1			1
Concealed shower pneumatic/mechanical actuators	50		1	1				1			1
Exposed flush valve diaphragm components	100	1		1				1			1
Exposed flush valve spud, handle, misc. components	100	1		1				1			1

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Site	All	All	175	Retrofitted Toilets					By Owner or his Agent
Site	All	All	45	Retrofitted Urinals					By Owner or his Agent
Site	All	All	236	Retrofitted Showers					By Owner or his Agent
Site	All	All	186	Retrofitted faucets					By Owner or his Agent

JCI Front End Control System- ECM 12

Mechanical Components - ECM 12

General

1. The intent of the Mechanical Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain proper equipment operation at all times
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives.

Energy Performance Contract

2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, subsystems, components, hardware, sub-components, and assemblies associated with the main component listed.
3. The frequencies listed for work to be performed are minimum requirements.

Materials and Methods

1. All fluids, refrigerants, and lubricants shall be approved and suitable for the particular application intended.
2. All fluids, refrigerants, and lubricants shall be handled and disposed of using lawful and approved means.
3. The Maintenance Contractor shall make suitable arrangement with the Owner to obtain keys to the various mechanical rooms when doing work. Under no circumstance shall mechanical rooms be left unattended for any period with the door unlocked.
4. All replacement parts, filters, fluids, belts, gaskets, refrigerants, and components shall be of equal or better quality and capacity than the existing.
5. The filter replacement frequency may be increased, subject to the approval of the Owner, if it can be shown through air pressure drop readings that the dirt loading seen by the filters do not require filter replacement at the interval indicated.
6. All maintenance procedures shall be as recommended by the manufacture of the equipment being serviced. If information from the equipment manufacturer is no longer available, then the maintenance procedures shall be as dictated by common practice, and the Maintenance Contractor's experience.

Frequency of work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Maintenance Contractor may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service. The cost for this increased frequency, as determined by the Maintenance Contractor, shall be included in the proposal price.
3. Equipment shut down for a season shall not require service during its inoperative period, but will require service and inspection prior to being put back in service. This seasonal start up service shall count as one call per the Frequency of Work Table.
4. Repairs shall be performed in a timely manner when required for the safe, or proper operation of equipment, to restore malfunctioning equipment to a safe operation, to make operative broken inoperative equipment, and to prevent eminent breakdowns.

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Air Handling Units	100										
Fans		1		1		2		1			
Motors		1		1		1		1			
Filters											2
Heating Coil	20		1				1				
Heating Coil		1		1							
Cooling Coil	25		1				1				
Cooling Coil		2		1							
Condensate Drain Pans and Drains		2	1				1				
Dampers		2	1	1	1	1		1	1		
Humidifiers		1		1							
Belts		1		1					1		
Preheat Coils		1		1				1			
Casing, Piping, Valves		1									
Make Up Air Units	100										
Fans		1		1		2		1			
Motors		1		1		1		1			
Filters											4
Heating Coil	20		1				1				
Heating Coil		1		1							
Cooling Coil	25		1				1				
Cooling Coil		2		1							
Condensate Drain Pans and Drains		3	1				1				
Dampers		2	1	1	1	1		1	1		
Humidifiers		1		1							
Belts		1		1					1		
Preheat Coils		1		1				1			
Casing, Piping, Valves		1									
Centrifugal Fans Greater than 5 Hp.	100										
Bearings		1				2					
Belts		1		1					1		
Motors						1		1			
Inlet Vanes				1	1	2		1	1		
Casing, Supports, & Vibration Isolators		1									
Hot Water or Steam Radiation	25										
Heat transfer surfaces		1						1			
Casing, Cover, Piping, and Valves		1									

Item to Service	Percent to Service	Visual Inspection	Full Inspection	Check Operation	Exercise	Lubricate	Thoroughly Clean	Convenience Clean	Adjust	Calibrate	Renew / Replace
Centrifugal Fans 5 Hp or Less and Exhaust Fans	25										
Bearings		1				1					
Belts		1		1					1		
Motors						1		1			
Inlet Vanes				1	1	1		1	1		
Casing, Supports, & Vibration Isolators		1									

Energy Performance Contract

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Administration	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Chapel	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Education Bldg.	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Laundry	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Sports Complex	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Gym	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Main Store Rm.	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
CDCC 1	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
CDCC 2	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod E	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod F	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod H	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod J	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Pod K	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Furniture Factory	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Main Gate	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 1	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 2	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 3	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 4	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Old Cell Pod 5	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block A	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block B	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block C	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent
Cell Block D	All	All	All	Controlled HVAC Equip.	Various	Various	Various	Various	By Owner or his Agent

Control Systems & Components – ECM 12
GENERAL

1. The intent of the Control Maintenance services is as follows:
 - a) Maintain safe operating conditions at all times
 - b) Maintain comfort conditions during occupied periods
 - c) Protect the integrity of buildings and property at all times
 - d) Prolong the life of the equipment
 - e) Maintain system operation at optimum conditions.
 - f) Ensure the most energy efficient operation commensurate with the above objectives
 - g) Maintain updated control sequence documentation, trending reports, and alarm functions.
2. Maintenance shall include the items as listed in the List of Maintained Items. Listed items shall mean to include all systems, equipment, sequences, controllers, panels, hardware, programming, sub-components, and assemblies associated with control within the listed building..
3. The frequencies listed for work to be performed are minimum requirements.
Materials and Methods
4. All components, replacement parts, control strategies, and sequences shall be suitable for the particular application intended.

Pneumatic and Electric Systems

1. All pneumatic and electric relays, controllers, thermostats, pressure regulators, filter dryers, logic devices, electric/pneumatic switches, and similar devices shall be checked for proper operation, calibrated, and adjusted or replaced as necessary according to the Frequency of Work Schedule below.
2. Pneumatic systems Work will include insuring the Control air is clean, dry, and free of oils. This shall be checked at the frequency noted in the Frequency of Work Schedule Below.
3. Pneumatic and electric actuators shall be checked for proper operation and repaired, or replaced as necessary to insure a properly operating system. If an actuator is not able to operate correctly due to a malfunctioning valve, damper or the like, the Control Maintenance Contractor shall report this to the Owner and Mechanical Maintenance Contractor within one working day. The Control Maintenance Contractor shall use a reporting method mutually agreed to for this purpose.

Direct Digital Control and Electronic Systems

1. Electronic devices, panels, cards, sensors, and thermostats shall be checked for proper operation and calibrated, repaired or replaced as necessary according to the Frequency of Work Schedule below.
2. Software shall be updated as new releases are released in order to keep the system up to date. Software updates will be under NORESCO 's responsibility.
3. Schedules shall be updated as necessary as dictated by the occupancy requirements of the various buildings and areas.
4. System integrity tests shall be made according to the Frequency of Work Schedule below on a representative sampling of sub systems in each building and major area served by the DDC system. The system integrity tests shall include but not be limited to point checks, point commanding, selective disabling, and examination of system report and error logs. Testing shall include reasonable verification that all sensors are within range and calibrated.

Energy Performance Contract

5. Reporting logs, Alarm logs, and Trend logs, shall be reviewed, cleared as required, and updated as necessary, according to the Frequency of Work Schedule below.

Proprietary Systems

1. The existing DDC Control system has proprietary components and software. If it is the intent that the Owner contract with a Control Maintenance Contractor to service the existing and new in place equipment, then it shall be the sole responsibility of the Control Maintenance Contractor to make legal and lawful arrangements for obtaining parts, software, and rights to modify programming for the existing system.
2. Arrangements for servicing the existing DDC system may include but is not limited to:
 - a) Direct subcontract with the existing DDC Vendor
 - b) Licensing agreements with the DDC Vendor for software and programming revisions.
 - c) Arrangements with the Owner for replacement parts purchasing.
 - d) Direct arrangement with the DDC vendor for replacement parts purchase.
 - e) Training of the Control Maintenance Contractor's employees by the existing control vendor.
3. **NORESKO** will assume the responsibility for maintaining the new and existing DDC controls in the Boiler Room.

Frequency of Work

1. The frequency of work table indicates the number of times per year maintenance service or inspections shall be performed. Where large numbers of equipment items are involved that may not require regular yearly service the percentage to be serviced each year is also noted.
2. The table lists the minimum frequencies. The Facility may determine that greater frequencies are required for specific items to achieve the objectives of the maintenance service.

Pneumatic and Electric Systems

Components / Systems	Yearly Percentage	Frequency / Year
Air Quality, Filter Dryers, Pressure Regulators	100	2
Controllers, logic devices,	50	1
Relays, and switches	25	1
Actuators	25	1
Thermostats	20	1
Sequence Operation	20	1

Direct Digital Control and Electronic Systems

Components / Systems	Yearly Percentage	Frequency / Year
System - (Integrity test)	100	2
Panels and primary controllers	100	2
PC Workstation, Printer, Modem, CRT	100	4
Cards and Sensors	25	1
Thermostats	20	1

List of Maintained Items

LOCATION			MAINTAINED ITEMS						
Building	Fl.	Rooms	Qty	Description	Tag	Mfr.	Rating	Model	Remarks
Administration	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Chapel	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Education Bldg.	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Laundry	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Sports Complex	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Gym	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Main Store Rm.	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
CDCC 1	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
CDCC 2	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod E	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod F	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod H	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod J	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Pod K	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Furniture Factory	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Main Gate	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 1	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 2	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 3	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 4	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Old Cell Pod 5	All	All	All	New & Existing	Various	Honeywell & Others	N/A	Various	By Owner or his Agent
Cell Block A	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block B	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block C	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent
Cell Block D	All	All	All	New & Existing	Various	Johnson & Others	N/A	Various	By Owner or his Agent