**SPECIFICATIONS FOR PREVENTATIVE MAINTENANCE SERVICE OF AIR CONDITIONING AND VENTILATION EQUIPMENT**

**AT VARIOUS HAWAII ARMY NATIONAL GUARD (HIARNG) BUILDINGS IN OAHU**

**STATE OF HAWAI‘I**

**DEPARTMENT OF DEFENSE**

**FOR THE:**

**STATE OF HAWAI‘I DEPARTMENT OF DEFENSE**

**JULY 2016**

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1. **SCOPE**

The Contractor shall furnish all necessary labor, equipment, tools, materials, and apparatus to maintain the installed heating, ventilating, and air conditioning equipment for the Department of Defense (DoD), Hawaii Army National Guard (HIARNG) complete as specified herein, located at various installations as listed in Appendix-A “AIR CONDITIONING PREVENTATIVE MAINTENANCE SERVICE LOCATIONS”.

## **GENERAL REQUIREMENTS AND QUALIFICATIONS**

Maintenance services provided under this contract for all central or packaged air conditioning units shall be performed by personnel having a minimum of three (3) years experience in maintaining such types of units.

Personnel assigned to perform services shall be journeymen refrigeration mechanics with a minimum of three (3) years experience in maintaining such types of units.

The Contractor must be able to produce documented maintenance experience to substantiate claims of experience as indicated above. Falsification or personnel qualifications shall constitute a major breach of this contract.

## **DESCRIPTION OF WORK**

The Contractor shall perform complete preventive maintenance services, including inspections and trouble calls for all equipment included in this contract. The service shall consist of thorough maintenance work in accordance with the best commercial practices governing the maintenance of air conditioning systems. Such service shall include regularly scheduled maintenance tasks and inspections for each unit listed herein.

The Contractor shall be responsible for all costs necessary to maintain all systems (equipment, belts, filters, insulation, etc.) for complete and satisfactory operation. The Contractor shall supply, as part of the contract cost, the following materials, equipment, and consumables:

* + 1. Air filters
		2. All types of appropriate lubricants.
		3. Drive belts
		4. Cleaning detergents or other environmentally safe cleaning solutions.
		5. Algae growth-preventive pills/solutions.
		6. Cleaning brush, mops, cloth, etc.
		7. Rust remover, primer and top coat paints.
		8. Lifts required to access roof mounted fans

Prospective bidders should visit the service areas and thoroughly familiarize themselves with existing conditions and the amount and kind of work to be performed. No additional compensation will be made by reason of any misunderstanding or error regarding conditions at the service areas or the amount and kind of work to be performed. Submission of bid shall be evidence that the bidder understands and will comply with these specifications if awarded the contract. All equipment whether listed on the schedule (Appendix F “2016 HIARNG HVAC Equipment List (Oahu)”) or not, but is a component of the air conditioning system, shall be serviced.

The Contractor shall cover only such air conditioning units that are in operating condition or determined by the Project Manager, Facilities Manager Representative (FMR), or Armory Facility Administrator (AFA) at the time the contract is executed.

The Contractor shall remove all trash (i.e. old filters, belts, motors, etc.), which is produced by their work required in these specifications, from the facilities’ premises, and dispose of them properly.

All maintenance services performed by the Contractor for air conditioning and ventilation systems shall include applicable items listed but not limited to the following maintenance tasks:

1. **AI R HANDLER & FAN COIL UNITS**
	1. Monthly Services
		1. Clean and clear all drip pans and flush all related condensate drain lines with nitrogen contractor may be liable for water damage due to clogged drains. Install pan tablets if necessary to control algae.
		2. Change all disposable air filters at least once a month; use Farr 30/30 or equal.
		3. Lubricate and oil all fan and motor bearings and connections of dampers and vanes.
		4. Check all drives for wear; adjust belt tension. Replace belt as required.
		5. Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean up all equipment.
		6. Check time clock for proper operation and time settings.
		7. Certify performance of monthly service and correct and report all discrepancies.
	2. Annual Services
		1. Adjust alignment of bearings and sheaves; lubricate fan and motor bearings.
		2. Replace worn or noisy bearings or sheaves.
		3. Clean cooling coils of dirt accumulation using nitrogen, high-pressure air/water, and steam or chemical coil cleaner solution.
		4. Check pressure and temperature differential across cooling coils and log readings.
		5. Clean strainers, check vents and drains on chilled water coils.
		6. Clean supply and return air grilles and dampers, and repair or replace deteriorated bird screens.
		7. Clean and adjust water valves, clean strainers (chilled water) and clean all fan wheels and interior and exterior of equipment housings.
		8. Secure all loose housing, seal leaks and touch-up paint after cleaning all rust
		9. Check and calibrate all electric temperature controls.
		10. Certify performance of annual service and correct and report all discrepancies.
2. **CENTRIFUGAL/SCREW TYPE, WATER-COOLED, LIQUID CHILLERS**
	1. Monthly Service
		1. Check and record entering and leaving chiller water and condenser water temperatures and pressures in maintenance log.
		2. Check and record head pressure, oil pressure and system pressure; check oil heater.
		3. Check oil pump operation; service purge compressor and purge system. Manually rotate chillers where required.
		4. Check for refrigerant and oil leakage; recharge system.
		5. Adjust chilled water temperature setting for seasonal changes.
		6. Check/adjust/calibrate the oxygen/refrigerant monitor and alarm system.
		7. Certify monthly performance of chiller operation and maintenance service and correct and report all discrepancies.
	2. Quarterly Services
		1. Check chiller response at various load conditions for proper operation and calibration of capacity control system.
		2. Check safety controls and purge controls; record settings.
		3. Certify performance of quarterly service and correct and report all discrepancies.
	3. Semi-Annual Service
		1. Remove heads of condenser and internally brush tubes at the same time associated cooling tower is cleaned; coordinate with water treatment contractor and Project Manager.
		2. Perform pressure tests to detect refrigerant leaks.
		3. Check condition of insulation; repair/reinsulate properly & immediately, including any time disturbing of insulation is require to perform work, or upon discovery or notification.
		4. Certify performance of semi-annual service and correct and report all discrepancies.
	4. Annual Service
		1. Have chiller and purge compressor oil analyzed and submit written report.
		2. Replace oil cooler filter cartridge; change oil if recommended by analysis and per manufacturer's recommendations. Dispose of oil as specified.
		3. Check refrigerant; replace filter-drier.
		4. Inspect purge compressor and drum; clean and replace wearing parts
		5. Electronic leak test entire system and repair leaks.
		6. Megger chiller and oil pump motors and submit written report of readings; check relay contacts and electrical connections.
		7. Test operate control switches; unloaders, safeties; calibrate and record settings.
		8. Clean and remove all dust and foreign matter. Clean all rust spots and scratches and touch up paint with matching color, immediately upon discovery or notification.
		9. Certify performance of annual service, report and correct all discrepancies. Submit maintenance report in writing for each unit.
3. **COOLING TOWER**
	1. Monthly Service
		1. Check and adjust water make-up float valve and bleed rate.
		2. Check general condition of tower interior and water distribution pattern.
		3. Check and lubricate motor and fan bearings.
		4. Check all drives for wear; adjust belt tension. Replace belts or sheaves as required.
		5. Remove foreign material from inside the tower.
		6. Check for leaks, patch, correct or repair **immediately** **upon discovery** or **notification**.
		7. Certify performance of monthly maintenance service and correct and report all discrepancies.
	2. Semi-Annual Service
		1. Drain, clean and flush tower; coordinate with water treatment contractor and the project manager.
		2. Clean condenser suction screen, drift eliminators, spray nozzles and vacuum basin residue.
		3. Certify semi-annual cleaning of towers and correct and report all discrepancies.
4. **WATER TREATMENT SERVICE FOR COOLING TOWER**
	1. Bidder may subcontract for the chemicals and water treatment service which shall be provided under this contract by a qualified water treatment company experienced in the business of servicing air conditioning water systems.
5. **VENTILATING FANS (Exhaust and Supply)**
	1. Semiannual Services
		1. Clean fan wheels and housings of dust, dirt, and grease.
		2. Check back-draft dampers for proper operation; lubricate linkage for free movement.
		3. Lubricate fan motors and bearings.
		4. Check belt wear and tension; adjust or replace as needed.
		5. Check sheaves for wear, replace as needed.
		6. Check fan collar, bearings and shaft for wear, repair or replace as needed.
		7. Certify performance of quarterly service and correct and report all discrepancies.
6. **WATER PUMPS**
	1. Quarterly Services
		1. Lubricate and check pump and motor bearings for abnormal temperature and unusual noise or vibration and repair as needed.
		2. Check packing glands and seals for excessive leakage. Adjust, tighten or replace as required.
		3. Certify performance of quarterly service and correct and report all discrepancies.
	2. Semiannual Services
		1. Check and blow down strainer to chilled water pumps. Remove and clean strainer if excessive debris is noted.
		2. Check conditions of insulation, reinsulated as necessary.
		3. Log suction and discharge pressures.
		4. Clean and remove all dust and foreign matter. Clean all rust spots and scratches and touch up paint with matching color.
		5. Check motor coupling for alignment; secure mounting bolts.
		6. Certify performance of semi-annual service and correct and report all discrepancies.
7. **TEMPERATURE CONTROLS**
	1. Quarterly Services
		1. Check control devices for proper operation, sticking stems, and calibration; repair/replace weak or broken springs and all other parts.
		2. Adjust thermostat to maintain 75 degrees F room temperature.
		3. Certify performance of quarterly service and correct and report all discrepancies.
8. **AIR-COOLED CHILLERS**
	1. Monthly Service
		1. Check and record entering and leaving water temperatures and pressures of chilled water in "Maintenance Report”.
		2. Check and record refrigerant compressor suction and discharge and oil pressures.
		3. Visual check for water, refrigerant and oil leakage; correct or repair as required. Check vibration isolator mounts.
		4. Check compressor, fan, and motor bearings for abnormal temperature and unusual noise; lubricate and/or replace as required.
		5. Adjust chilled water temperature setting for seasonal change.
		6. Check compressor oil level and add oil as required.
		7. Check condenser fan belt and tension, adjust, or replace as required.
		8. Adjust alignment of bearings and sheaves for fans, motors, and compressors, and replace worn or noisy bearings or sheaves.
		9. Note and run system operation through complete operating cycle and adjust for proper operation.
		10. Certify performance of monthly service and correct and report all discrepancies.
	2. Quarterly Services
		1. Check chiller response at various cooling load conditions for proper operation and calibration of capacity control system.
		2. Check operation of freeze stat and oil failure switch; record settings.
		3. Test and adjust "make-up" water and expansion tank.
		4. Clean condenser coils with water washer, steam or surfactant chemical coil cleaner (alkaline or acidic cleaners not allowed).
		5. Certify performance of quarterly service and correct and report all discrepancies.
	3. Semiannual Services
		1. Remove heads of condenser and internally brush tubes.
		2. Certify performance of semi-annual service and correct and report all discrepancies.
	4. Annual Service
		1. Have compressor crankcase oil analyzed and submit written report. Replace strainer and oil filter; change oil if recommended by analysis and per manufacturer’s recommendations.
		2. Check refrigerant; replace filter-drier.
		3. Megger (electrical test to measure wire insulation resistance, i.e. condition) Chiller/compressor motor; check starter relay and control contacts and electrical connections for tightness and clean as required.
		4. Test and ·operate control switches, compressor unloading and safeties; calibrate and record settings. Adjust as required.
		5. Check and clean all unit housings (inside and outside and components), seal leaks and remove rust from exterior components and touch-up paint with match color, immediately upon discovery or notification.
		6. Check condition of insulation; repair/re-insulate properly & immediately, including any time disturbing of insulation is require to perform work, or upon discovery or notification.
		7. Submit and certify performance of annual service and correct and report in writing to the AFA all discrepancies.
9. **PACKAGE OR SPLIT DX AIR-COOLED AIR CONDITIONER**
	1. Monthly Service
		1. Perform the tasks in item A “Air Handler and Fan Coil Units”
		2. Check and record refrigerant compressor suction and discharge and oil pressures.
		3. Visual check for refrigerant and oil leakage; correct or repair as required.
		4. Check compressor, fan, and motor bearings for abnormal temperature and unusual noise; lubricate and/or replace as required.
		5. Check compressor oil level and add oil as required.
		6. Check condenser fan belt and tension, adjust, or replace as required.
		7. Adjust alignment of bearings and sheaves for fans, motors, and compressors, and replace worn or noisy bearings or sheaves.
		8. Note and run system operation through complete operating cycle and adjust for proper operation.
		9. Certify performance of monthly service and correct and report all discrepancies.
	2. Quarterly Service
		1. Clean condenser coils with water washer, steam or surfactant chemical coil cleaner (alkaline or acidic cleaners not allowed).
		2. Certify performance of quarterly service and correct and report all discrepancies.
	3. Annual Service
		1. Perform the tasks in item A “Air Handler and Fan Coil Units”
		2. Check refrigerant; replace filter-drier.
		3. Megger (electrical test to measure wire insulation resistance, i.e. condition) compressor motor; check starter relay and control contacts and electrical connections for tightness and clean as required.
		4. Test and operate control switches, compressor unloading and safeties; calibrate and record settings. Adjust as required.
		5. Check and clean all unit housings (inside and outside and components), seal leaks and remove rust from exterior components and touch-up paint with match color, immediately upon discovery or notification.
		6. Check condition of insulation; repair/re-insulate properly & immediately, including any time disturbing of insulation is require to perform work, or upon discovery or notification.
		7. Run and check units operation and controls through complete cycle; record temperature and setting when compressor cuts in.
		8. Certify performance of quarterly maintenance service and correct and report all discrepancies.
10. **DEHUMIDIFER**
	1. Monthly Service
		1. Remove and clean drip tray and condensate drain pan.
		2. Clean/unclog condensate drain pipes.
		3. Check operation of condensate pump. Lubricate bearing.
		4. Operate equipment and observe unusual noise, vibrations, and other minor defects. Make adjustments as required to keep unit in good operating condition.
11. **STANDBY AND LEAD-LAG EQUIPMENT (Pumps, Chillers, Cooling Towers, etc.) AND TIME CLOCKS**
	1. Monthly Service
		1. The Contractor shall be responsible for the operational changeover of all lead-lag-standby equipment.
		2. Clean contacts, replace if necessary; check and adjust time settings as directed or required.
		3. Certify that all discrepancies are reported and corrected.
	2. Annual Service
		1. Check time clocks for proper operation and set time clock operation as directed by the Project Manager.
12. **VALVES, EQUIPMENT AND SUPPORTS**
	1. Annual Service
		1. The Contractor shall exercise all equipment shut-off valves annually for proper operation and tightness.
		2. Wire brush, prime and paint rust from pipe, equipment and support surface to prevent further rusting.
		3. Certify that all discrepancies are reported and corrected.
13. **CLEANING OF MECHANICAL EQUIPMENT ROOMS OR ENCLOSURES**
	1. Monthly Services
		1. Vacuum or wipe clean, all equipment surfaces and all related appurtenance.
		2. Vacuum clean or sweep entire floor.
		3. Wet wash complete floor area with tap water where allowed. Remove all used, deteriorated, replace, discarded parts and related debris. CAUTION: DO NOT splash water onto the electrical and mechanical equipment.
		4. Notify the AFA of any dangerous conditions, improper storage of furniture, materials and supplies which impacts your work within rooms and enclosures, including vandalism.
14. **FRESH AIR INTAKE GRILL**
	1. Quarterly Services
		1. Grill shall be cleaned with brush, vacuum or, if heavily sooted, the grill shall be cleaned with approved detergent and rinsed with tap water.
15. **SPECIAL REPORTS**

Within ninety (90) days after the award of the contract, the Contractor shall verify the information in the Microsoft Excel spreadsheet entitled “2016 HIARNG AC Equipment List.xlsx” and resubmit the revised spreadsheet to the Project Manager and AFA.

The Excel spreadsheet contains brand/model numbers, serial numbers, actual location of equipment, as well as filter and belt information (i.e. type and quantity) for the equipment serviced.

The Contractor shall also submit an annual updated inventory of equipment both as a Microsoft Excel spreadsheet and a hardcopy during the contract period.

1. **WORK SCHEDULE**

All maintenance work shall be performed between the hours of 7:30 a.m. and 4:00 p.m., on normal working days, Monday through Friday, excluding State Holidays.

Quarterly maintenance tasks shall be performed on the fourth, seventh and tenth month of the one-year period on normal working days or as coordinated by the Project Manager.

Semiannual maintenance tasks shall be performed on the sixth month of the one-year period on normal working days or as coordinated by the Project Manager.

Annual maintenance tasks shall be performed on the final month of the one-year period, on normal working days or as coordinated by the Project Manager.

The Contractor shall provide a maintenance schedule to the Project Manager and the AFA with a 72 hour advance notice for the various service locations including day and month when they will be at each service location.

All work performed by the Contractor shall be subject to inspection by the Project Manager, FMR, or AFA. The Contractor shall be informed of all deficiencies found by the Project Manager. The Contractor shall correct all deficiencies within five (5) working days. If the deficiencies are not corrected within the five-day period, the provision on liquidated damages will be applicable.

1. **MAINTENANCE REPORT/CHECKLIST**

The Contractor shall provide a maintenance report/checklist for each item serviced and have it signed by the FMR, AFA or Project Manager on the same day of PM Service completed. A sample maintenance report/checklist is given in Appendix-C. The report/checklist shall include the following:

* + 1. Date maintenance service was performed.
		2. The name of the mechanic who performed the maintenance.
		3. The type and cost (labor, materials, parts and equipment) of repair work performed on the unit, if any.
		4. Documents and other data pertaining to the maintenance performed.
1. **EMERGENCY SERVICE AND REPAIR**

The services required for all equipment under this contract shall be for maintenance services only. However, because the equipment may require repairs on an emergency basis, Contractor shall provide these repairs if requested by the Project Manager. The cost for such emergency repairs shall be handled as a separate cost, not as part of this contract. It shall be understood and agreed that the DoD shall not be obligated under this contract to call the Contractor for emergency repairs but the Contractor shall respond and provide emergency repairs if and when requested by the DoD.

Service calls for water leaks in the ceiling, which may be associated with the condensate drain system shall be at no charge. The Contractor shall clear system, if related to condensate drainage.

The Contractor shall respond to the DoD’s request for emergency repairs within two and one-half (2-1/2) hours after such request is made to the Contractor. All emergency repair work shall be completed in a reasonable time as determined by the AFA or an authorized representative. Response time shall mean the time the Contractor is physically at the site of the air conditioning units needing repair from the time the Contractor is notified.

Emergency service and repairs required between regular service calls shall be rendered within 24 hours after the Contractor is notified, non-work days excluded.

## **INCLUSION OF NEW OR REPLACEMENT EQUIPMENT INTO THE PM AGREEMENT**

The Contractor shall provide preventive maintenance (PM) services on replaced air conditioning units under the requirements of the new equipment warranty. The Project Manager will provide a copy of the warranty to the Contractor when air conditioning units are installed. Preventive maintenance services for replacement of air conditioning units covered under this contract will be at no additional cost to the DoD.

The Contractor shall submit a proposal for preventive maintenance services for any new HVAC equipment (ie packaged or central air conditioning units) where none were previously installed. If the DoD is agreeable to the costs, the servicing of the equipment will be a supplement to the contract. Appendix B “AIR CONDITIONING PREVENTIVE MAINTENANCE FUTURE SERVICE LOCATIONS” contains a list of facilities that may have additional equipment for service.

## **REMOVAL OF CONTRACTOR'S EMPLOYEES**

The Contractor agrees to remove any of its employees from services rendered and to be rendered upon request in writing by the DoD.

In the event the Contractor fails, neglects, or refuses to comply with the requirements herein, the DoD shall have in addition to any recourse, the right to terminate the contract without service of notice or resort to legal process and without any legal liability on its part. Any loss of anticipated profits from such termination shall not constitute grounds for equitable adjustment under this contract.

1. **CLEANUP AND WORK PRACTICES**

The Contractor shall keep the job site free of debris, litter, discarded parts, etc. and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts, and equipment from the service areas upon completion of the work.

The Contractor shall exercise caution during the progress of the maintenance and repair work to prevent damages to the ceilings, roofing and other building structure. Restore all damages, caused by negligence, to its original condition at the Contractor's own expense.

1. **SAFETY PRECAUTIONS**

The Contractor is not to perform maintenance and repair work until all switches are de-energized, locked, and tagged. The Contractor shall comply with all applicable safety regulations promulgated by OSHA, EPA and other governmental agencies.

In cases of work to be performed on roof top with high risk of accidents, all workers must wear personnel harness that must be securely attached to the lifeline/s. Lifelines must be attached securely to any fixed structural members of the building. **NOTE:** When performing preventive maintenance service on roof mounted fans and other equipment, the Contractor shall always take extra precautions not to damage the existing roof panels. It will be the Contractor's responsibilities to repair and pay for the repair of any part of the roof damaged during the service.

Safety signs, warning signs, and barricades shall be posted/placed at areas where necessary.

The Contractor's Workers shall at all times, during the preventive maintenance service, wear the required Personnel Protective Equipment such as eye protector, ear plugs, work gloves, safety shoes, safety vests, respirator, head guard/helmet, and others, which are appropriate for the work activities being performed.

1. **SUBMITTALS**
	* 1. Submit Certificates that the AC Technicians who will be assigned to perform the preventive maintenance work are qualified and have a minimum of three (3) years related experience.
		2. Within fourteen (14) working days after the award of this contract, the Contractor shall submit in writing to the Project Manager a proposed Maintenance Checklist/Report Form (Appendix C and D) and a service maintenance schedule (Appendix E) all in sufficient detail to show its adequacy in carrying out the terms of this contract.
		3. Before the start of service, submit a Work and Safety Program for approval.
		4. Contractor shall submit to the Project Manager, a list of names of Technicians and Helpers, to include the names of alternate Personnel.
		5. Contractor shall submit to the Project Manager, the brand/model and licensed plate numbers of the Company vehicles that will be used in the performance of the service.

APPENDIX-A: AIR CONDITIONING PREVENTATIVE MAINTENANCE SERVICE LOCATIONS

|  |  |
| --- | --- |
| Bid Item No. | Facility/Location |
| 1 | Building 19 (JFHQ, HHD Admin Bldg), Kalaeloa |
| 2 | Building 46 (Medical Detachment), Kalaeloa |
| 3 | Building 1784 (HIARNG Staff Bldg), Kalaeloa |
| 4 | Building 1785 (HIARNG HQ Bldg), Kalaeloa |
| 5 | Building 1788 (HIARNG HQ Conf Rm), Kalaeloa |
| 6 | Building 1898 (Admin Gen Purp Bldg), Kalaeloa |
| 7 | Building 117.Kalaeloa |
| 8 | Building 117B (CSMS#1 External Work Bay), Kalaeloa |
| 9 | Building 663 (CSMS #1 Admin Bldg), Kalaeloa |
| 10 | Building 282 (Admin Gen Purpose Bldg), Kalaeloa |
| 11 | Building 134 (93d CST Ready Bldg), Kalaeloa |
| 12 | Building 29 (Readiness Center), Kalaeloa |
| 13 | Building 1903 (FMO & Env Admin Office), Kalaeloa |
| 14 | Building 175 (HIARNG Mail Distribution Center) Kalaeloa |
| 15 | Regional Training Site-Maintenance, 96-1230 Waihona St., Pearl City |
| 16 | Waiawa Armory, 103rd Troop Command (B001), 96-1210 Waihona St., Pearl City |
| 17 | Waiawa Armory, Band Building (B002), 96-1210 Waihona St., Pearl City |
| 18 | Waiawa Armory, UTES (Building 21); 96-1210 Waihona St., Pearl City |
| 19 | Building 829, Army Aviation Support Facility #1, Wheeler AAF, Wahiawa |
| 20 | Building 832, C/193 Aviation Armory, Wheeler AAF, Wahiawa |
| 21 | Building 825, OSA Det 55, Wheeler AAF, Wahiawa |
| 22 | Wahiawa Armory, 77-230 Kamehameha Highway, Wahiawa |
| 23 | RTI Classrooms Bldg. 710, Bellows AFS |
| 24 | RTI Administrative Bldg. 711, Bellows AFS |
| 25 | RTI Dining Facility Bldg. 712, Bellows AFS |
| 26 | RTI Auditorium Bldg. 713, Bellows AFS |
| 27 | RTI Army Lodging #1 Bldg. 714, Bellows AFS |
| 28 | RTI Physical Fitness/Laundry Bldg. 715, Bellows AFS |
| 29 | RTI Army Lodging #2 Bldg. 716, Bellows AFS |
| 30 | Building 300, 22nd Avenue, Fort Ruger, Honolulu |
| 31 | Battery 407 Tunnel, Diamond Head Crater |
| 32 | Building 306, 3949 Diamond Head Road, Honolulu |
| 33 | Building 306A, 3949 Diamond Head Road, Honolulu |
| 34 | Building 300A, 22nd Avenue, Fort Ruger, Honolulu |

APPENDIX-B: AIR CONDITIONING PREVENTATIVE MAINTENANCE FUTURE SERVICE LOCATIONS

|  |  |
| --- | --- |
| Item No. | Facility/Location |
| 1 | Building 46, Kalaeloa: Project to retrofit A/C system |
| 2 | Building 282, Kalaeloa: Project to add additional Split Type AC units |
| 3 | Building 30 AASF, Kalaeloa: Project in Construction |
| 4 | HQ Readiness Center (addition to Bldg 29), Kalaeloa: Project in design |
| 5 | Building 117A USPFO Central Issue Facility (CIF), Kalaeloa |
| 6 | Building 300A, Diamond Head: Renovation project in design |
| 7 | Building 1874 (Seafares Bldg), Kalaeloa |
|  |  |

APPENDIX-C: SAMPLE: MAI NTE NA NCE REPORT/CHECKLIST

|  |  |  |  |
| --- | --- | --- | --- |
| Service Location | Item No. | Item Description | Service Performed |
| Bldg. 19 | I | Air Handler # I | Changed filter, belt and cleared condensate line |
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A PPEN DIX-D: SAMPLE: OPERATIONAL PERFORMANCE TESTS

Facility: ----------------- Date: ------

A/C Equipment Description and Information:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Qty | Tag | Equip. | Manuf. | Model No. | Capacity | Area Serv. | Location |
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Remarks:

## TEST DATA:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CHILLERS | 1 | 2 | 3 | 4 | 5 | 6 |
| Chilled Water Supply Temperature |  |  |  |  |  |  |
| Chilled Water Return Temperature |  |  |  |  |  |  |
| Chilled Water Pump Discharge Pressure |  |  |  |  |  |  |
| Chilled Water Pump Suction Pressure |  |  |  |  |  |  |
| Chilled Water Pump Static Pressure |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| COMPRESSORS | 1 | 2 | 3 | 4 |
| Capacity Reduction | RLA | Ref Press | RLA | Ref Press | RLA | Ref Press | RLA Ref Press | Ref Press |
| Full Load |  |  |  |  |  |  |  |  |
| 75% |  |  |  |  |  |  |  |  |
| 50% |  |  |  |  |  |  |  |  |
| 25% |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AI R HANDLING U NITS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Supply Air Temperature |  |  |  |  |  |  |  |  |
| Return Air Temperature |  |  |  |  |  |  |  |  |
| Differential Air Pressure |  |  |  |  |  |  |  |  |
| Chilled Water Supply Temperature |  |  |  |  |  |  |  |  |
| Chilled Water Return Temperature |  |  |  |  |  |  |  |  |
| Chilled Water Supply Pressure |  |  |  |  |  |  |  |  |
| Chilled Water Return Pressure |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FAN COIL UNITS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Supply Air Temperature |  |  |  |  |  |  |  |  |
| Return Air Temperature |  |  |  |  |  |  |  |  |
| Differential Air Pressure |  |  |  |  |  |  |  |  |
| Chilled Water Supply Temperature |  |  |  |  |  |  |  |  |
| Chilled Water Return Temperature |  |  |  |  |  |  |  |  |
| Chilled Water Supply Pressure |  |  |  |  |  |  |  |  |
| Chilled Water Return Pressure |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

A PPENDIX-E: SAMPLE: EQUIPMENT LIST, SERVICE MAINTENANCE SCHEDULE

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| QTY | DESCRIPTION | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|  | AIR COOLED PACKAGE CHILLER |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | CHILLWATER AIR HANDLER UNIT(S) |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | CHILLWATER PUMPS |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | VENTILATION EQUIPMENT EXHAUST FAN and SUPPLY AIR FAN |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | DEHUMIDIFIER INDOOR UNITS |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | DEHUMIDIFIER OUTDOOR UNITS |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Check overall condition of unit | X |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Notes: Contractor shall adjust contents of APPENDIX-C, D & E sample forms for PM Service and schedule.

## END OF SECTION