Environmental Duct Cleaning and Air Handler System
Steam Coil Cleaning and QA/QC

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1.0 GENERAL INFORMATION:

1.1 These specifications are rigorous performance standards, evaluation criteria and QA/QC for duct cleaning, steam coil cleaning, AHU/ERU and cooling/heating coils restoration, and air conveyance system remediation. The purpose of the specifications is to define the criteria necessary to render HVAC and Air Conveyance components clean (and others as stated above) and to verify such cleanliness through inspection (and/or testing) as deemed appropriate.

1.2 From this point forward the HVAC Air Handler (Cooling/Heating Coils) and Duct System Cleaning Contractor will be referred in this document as the contractor. Qualifications of the HVAC System Cleaning Contractor shall be the following:

(A) Membership: The HVAC system cleaning contractor shall be a certified member of the National Air Duct Cleaners Association (NADCA), or shall maintain membership in a nationally recognized non-profit industry organization dedicated to the cleaning of HVAC systems.

(B) Certification: The contractor shall have a minimum of two (2) Air System Cleaning Specialist (ASCS) certified by NADCA on a full time basis, or shall have staff certified by a nationally recognized certification program and organization dedicated to the cleaning of HVAC systems. The contractor shall also have a minimum of one (1) Commercial Certified National Comfort Institute Technician, or equivalent standard.

(C) License: The contractor is required to operate under the State of Florida certified HVAC License or mechanical license.

(D) Field Supervisor Qualifications: A person certified as an ASCS by NADCA, or maintaining an equivalent certification.

(E) Experience: The HVAC system cleaning contractor shall submit records of at least 5 years experience in the field of HVAC system contractor as requested by the owner. Bids shall only be considered from firms which are regularly engaged in HVAC system maintenance with an emphasis on HVAC system cleaning and decontamination.

(F) Indoor Environmental Professional: The HVAC system cleaning contractor shall have a minimum of one (1) certified American Council for Accredited Certification (ACAC) indoor environmentalist – CIE, CIEC, CIAQP, or CIH on staff on a full time basis, or shall have staff certified by a nationally recognized certification program and organization dedicated to indoor environmental testing.

NOTE: We desire to adopt sustainable practices that impact our community and our world, therefore; our organization requires that contractors demonstrate a similar environmental commitment by providing a Green business or service certification. This certification must be derived from a national audited 3rd party verification organization e.g. Green Clean Institute or equivalent.

2.0 CONTRACT DOCUMENTS

2.1 The Contract includes the SCOPE OF WORK and the STANDARD GENERAL CONDITIONS of the Contract. Two copies of the Contract shall be signed by both parties and one signed copy retained by each party.
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2.2 The intent of these documents is to include all labor, materials, equipment and services of every kind necessary for the proper execution of the work and the terms and conditions of payment thereof.

2.3 The documents are to be considered as one, and whatever is called for by any one of the documents shall be as binding as if called for by all.

2.4 The bidding requirements, contractual conditions and requirements of the subject project shall apply to work hereunder, and in case of conflicts shall take precedence if duly noted and warranties are adjusted accordingly.

2.5 If required, Contractor will provide complete submittal packages with bids. Contractor will submit the submittal package to the General Contractor, Owner or Owner’s Project Representative. At minimum, the submittal package will include:

- Training History of Contractor's Employees
- Medical Surveillance Programs
- MSDS documentation for all products to be used,
- List of all equipment and products to be used to complete the Scope of Work,
- Insurance certificates and State licensing certifications
- List of personnel who will supervise and perform the work (with social security numbers, if required for clearance)
- Statement from a licensed physician that each employee has been found medically qualified within the past twelve months to wear the respirator(s) that will be used on the job
- Evidence of respirator training and fit testing as required in 29 CFR 1910.134,
- Evidence that all of Contractors workers have been trained in these additional items:
  - OSHA 1910.1200 - Hazard Communication
  - OSHA 1910.147 - Lock Out/Tag Out procedures
  - OSHA 1910.134 - Respiratory Protection Program
  - OSHA 1910.146 - Confined Space Program
  - OSHA Fall Protection Standards
  - OSHA 10 Hour Construction Certification
- Copy of Contractor's QA/QC Program (site specific if required)
- Copy of Contractors Corporate Health and Safety Program (site specific if required)
- Record of safety meetings

3.0 SCOPE/STATEMENT OF WORK:

3.1 Work required under this section consists of providing all labor, equipment, materials and supervision necessary to perform Ductwork Decontamination and HVAC Steam Coil Cleaning and QA/QC protocols designed herein and the techniques specifically required for the removal of agents potentially deleterious to human health and removal of visible surface contaminants as well as implementing QA/QC protocols designed herein and the techniques specifically required.

4.0 PERFORMANCE OF WORK - BASELINE CONDITIONS AND POST TESTING INSPECTION QA/QC

4.1 Baseline conditions, QA/QC protocols and clearance.

4.2 QA/QC shall be limited to the areas specified herein, and the specific zone/air handler and ductwork to be cleaned/sanitized. No other areas shall be monitored or other tests conducted, without the authorization of
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4.3 All samples collected for the baseline, QA/QC and clearance shall be analyzed by an AIHA accredited environmental microbiology laboratory and accredited CDC Elite Lab (Legionella).

4.4 Testing for the base, QA/QC and clearance for the air handlers and heat exchangers shall be performed in each zone/air handler unit area prior to any work in that area.

Testing to shall include but is not limited to:

- Temperatures and Relative Humidity of the air entering and exiting the heat exchanger
- Static Pressure measurements immediately before and after the heat exchangers.
- Air flow quantities.
- Surface Tape Preparations sampling (quantification and identification of surficial aerosols.
- Estimated energy usage based on improvements of the air flow and local degree days

4.5 Initial air flow and differential pressure readings, are to be performed by the Contractor using appropriate equipment. For example, vane anemometer, digital pressure gauges, pitot tubes, velometers, calibrated axial fans, etc. Air flow shall be measured across each heat exchanger, energy recovery unit and across the complete air handler assembly, without filters in place

4.6 The Cooling/Heating Coils will be considered clean only if the Cooling/Heating Coils is free of foreign matter and chemical residue, based on a thorough visual inspection. Cleaning of the heat exchangers shall be performed utilizing steam at 310ºF at a rate of 6 minutes per every 1 square foot of heat exchanger.

4.7 Provide Owner with QA/QC Report, including: photographs and; environmental conditions; surface tape preparation laboratory results; and air flow and pressure differential results.

4.8 All QA/QC requirements, procedures, etc. of Paragraph 3.1 inclusive, shall be completed for post-remediation quality analysis.

In addition, the following will be required to complete the post-remediation QA/QC.

4.9.1 Provide Owner with a Ductwork Cleanliness & Post Cleaning/Sterilization QA/QC Report including: Written Progress Report summary, a compilation of daily progress reports of work performed, all correspondence during ductwork & air handler cleaning/sterilization, differential pressure readings, static pressure reading, BioScan laboratory results, digital images of ductwork and all surface/coils cleaned before and after, weekly record of safety meetings, and documentation of any deficiencies. Provide Owner with compliance records of the above mentioned after the completion of each zone/duct/air handler cleaning/sterilization project.

5.0 STANDARD GENERAL CONDITIONS

5.1 All decontamination/cleaning procedures shall be accomplished by an indoor environmental company whose personnel have specialized knowledge and expertise in the methods required for the removal/cleaning of agents potentially deleterious to human health and visible surface contaminants.

5.2 The Contractor shall endeavor to provide a safe, healthful and productive work environmental for its
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employees by supporting maintenance Drug-Free Workplace as defined by the Florida Drug-Free Workplace Act, Florida Statute 112.0455.

5.3 Occupational Health and Safety Administration (OSHA) standards must be complied with. These include, but may not be limited to:

- OSHA 1910.1200 - Hazard Communication
- OSHA 1910.147 - Lock Out/Tag Out procedures
- OSHA 1910.134 - Respiratory Protection Program
- OSHA 1910.146 - Confined Space Program
- OSHA Fall Protection Standards
- OSHA 10 Hour Construction Certification

The Contractor shall provide all necessary training and equipment required by these OSHA programs for their personnel.

5.4 The Contractor shall assure that its employees have received the necessary safety equipment training, medical surveillance programs, individual health protection measures, and manufacturer's product and material safety data sheets (MSDS) required for the work described by the Contract Document. Personnel must be trained in the hazards associated with microbial exposures that may occur on the project, and provide appropriate personal protection and work procedures to minimize these exposed to employees and building occupants.

5.5 Prior to initiating any work in a new area and at the beginning of each work shift, Contractors site supervisor will conduct an on-site safety inspection of each work area to ensure that appropriate lockout/tagout procedures have been implemented, the work area is free of hazardous situations, and the workers are properly equipped with appropriate safety equipment.

5.6 The Contractor shall maintain a copy of all current MSDS documentation and safety certifications at the site at all times, as well as comply with all other site documentation requirements of the OSHA programs and this specification.

5.7 All cleaning procedures shall be accomplished by an indoor environmental company with personnel that have specialized knowledge and expertise in the methods required for the cleaning/sterilization of such materials. The contractor is required to be licensed in accordance to the state regulations.

5.8 The contractor must have a minimum of five years experience in duct cleaning and commercial air handler steam cleaning/sterilization. Additionally, the contractor providing QA/QC must have experience with modern IAQ sampling techniques on a minimum facility of 75,000 square feet and hold current IAQ certifications such as CIAQP, CIE, CIEC or Certified Industrial Hygienist.

5.9 The Contractor must supply documentation that the work performance has been in accordance with the specifications; specifically that the duct cleaning and coil cleaning/sterilization techniques performed involved the proper temperatures and pressures suitable to the task and that the systems resulted in an air handler unit that was cleaned satisfactorily to the owner as well as modern techniques utilized (example: NADCA ACR) for the cleaning and sanitizing of all ductwork.

5.10 The contractor must supply documentation that the aforementioned techniques have been successfully
performed on a minimum of one building 100,000 square feet in size or larger. This project must have utilized NADCA Standards for Air Conveyance Cleaning and steam technology followed by high volume, low pressure (HVLP) technology for coil cleaning.

5.11 List and give a brief description of similar work completed with locations, names, phone numbers and address of each project. Proof of experience, to be submitted with bid, must include company names, contact names and telephone numbers.

6.0 CORRECTION OF WORK

6.1 The Contractor shall re-execute any work that fails to conform to the requirements of the Contract, and which appears during the progress of the project, shall remedy any defects due to faulty materials or workmanship which appear within a period of one year from the date of final acceptance of the work by the owner. The provisions of this article apply to work completed by subcontractors as well as to work completed by employees of the Contractor.

6.2 THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR PROBLEMS RESULTING FROM INAPPROPRIATE OR CARELESS CLEANING TECHNIQUES PREVIOUSLY PERFORMED.

7.0 ROYALTIES AND PATENTS

7.1 The Contractor shall pay all royalties and patent fees.

8.0 PROTECTION OF WORK, PROPERTY AND PERSONS

8.1 The Contractor shall adequately protect the work, client's property and the public and shall be responsible for the cost arising out of any damage or injury due to his act or neglect.

8.2 If the building remains occupied the Contractor shall protect and isolate the occupied areas from the cleaning areas by using HEPA filtered air particulate collector (negative air machines), temporary plastic polyethylene walls, plastic/visqueen sheeting or other critical barrier.

8.3 The Contractor shall maintain contaminated work areas continually under negative pressure relative to adjacent non-work areas.

8.4 Contractor shall employ appropriate testing methods to determine the particulate retention capability of each negative air machine (NAM) prior to starting the project, as well as during the course of the work.

9.0 ACCESS TO WORK

9.1 The Contractor shall permit and facilitate observation of the work by the Owner and his agents and public authorities at all times.

10.0 CHANGES IN THE WORK

10.1 The Owner may order changes in the work, the Contract Sum being adjusted accordingly. All such orders and adjustments shall be in writing. Claims by the Contractor for extra cost must be supported by accurate cost data, and approved by the Owner before executing the work involved.

10.2 Any changes to the original Contract (work order or task order) will be executed as agreed upon utilizing
10.3 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their property can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts.

10.4 Provide all receipts to the Owner and Architects for change orders, as requested.

11.0 PLAN ERRORS, OMISSIONS, AND SPECIFICATIONS DEVIATIONS

11.1 Claims of Plan Errors, Omissions and/or Specification errors by the Contractor for extra cost must be supported by subject documents in error, field inspection and accurate cost data, and approved by the Owner before Contractor will continue with the contract work. Consequently, the Owner may order changes in the work, the Contract Sum being adjusted accordingly. All such orders and adjustments shall be in writing. All procedures from this point shall be handled as normal change orders.

12.0 WORK SCHEDULE

12.1 No work shall be completed on HVAC mechanical systems while they are active. All work shall be completed during hours as defined by the Client. Night and weekend hours available.

12.2 Contractor acknowledges that that a portion of the work may be performed in an occupied setting (e.g., Owner employees and/or guests). Safety for these people and a minimal amount of disruption in services are the foremost important considerations in the performance of the project. Contractor will be constantly vigilant for potential slip/trip and fall hazards that may be created by the work, and shall take appropriate actions to ensure the safety of employees, visitors and guests.

12.3 All work hours shall be pre-approved by the Owner or his designated representative.

12.4 Contractor will submit a work schedule to the Owner for coordination with facility management or other appropriate personnel.

12.5 Owner should not schedule conflicting maintenance of an area, during a shut down period, unless it is properly coordinated with Contractor to not interrupt the work, or be a safety hazard for personnel of either the Owner or Contractor.

12.6 All systems shall be back on line and operating at full capacity, and all areas cleaned and ready for office personnel, no later than the time indicated by Owner.

13.0 MATERIALS, EQUIPMENT & PERSONNEL

13.1 Except as otherwise noted, the Contractor shall provide and pay for all materials, labor, tools, and other items necessary to complete the work.

13.2 All material shall be new, and both workmanship and materials shall be of a high standard of quality, approved by the Owner's Representative.
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13.3 All workmen and subcontractors shall be skilled in their trades as evidenced by training documents and certifications listed in General Information, Special Provisions 1.2.

13.4 The contractor shall use materials and equipment which are specified herein and pre-approved by the owner or his representative. No chemicals will be utilized in the steam process however; any chemicals required by Owner are to be EPA registered for specific application.

13.5 The contractor shall clean specified components of herein contracted air handler units.

13.6 The cleaning procedures shall be accomplished by the use of specialized equipment, i.e., high efficiency vacuum system utilizing HEPA filters, low pressure/high heat steam pressure washers, high volume/low pressure (HVLP) rinsing devices, etc., as required.

13.7 Special attention shall be taken during duct cleaning and coil sterilization to prevent high levels of contaminants, dust, water or steam from becoming airborne and disseminated into occupied areas, by utilizing proper containment protocols.

13.8 The contractor shall, during cleaning, sterilization and decontamination, maintain certified respirators, safety glasses and clothing according to the OSHA respiratory protection standard 29-CFR-1910.134.

13.9 NOTE: The contractor shall utilize steam cleaning procedures and equipment that are certified by the Green Clean Institute or equivalent green cleaning certification process.

14.0 CONTRACTORS RESPONSIBILITIES:

THE CONTRACTOR SHALL:

14.1 Be responsible for cleaning/sterilizing/decontaminating air handler coils fouled by dust and other contaminants.

14.2 Be responsible for cleaning of specified ductwork and duct components.

14.3 Be responsible for removal and replacement of AHU insulation. Replacement insulation shall be of a closed cell liner (e.g. PURE-Cell) if required.

14.4 Report all damaged or deteriorating coils, heat exchangers and/or air handler insulation to the owner for his inspection and decision as to remediation.

14.5 Guarantee unsupervised night work: A "Progress Report" is to be faxed or otherwise delivered daily to the Owner.

15.0 SPECIAL CARE:

15.1 The contractor shall exercise care to prevent damage to client's equipment (including electrical motors, alarm systems, controls, etc.) from water and steam used in the cleaning process. Containment protocols will be utilized to protect all interior equipment (including furniture and files) and protected to prevent damage. Any damaged fixtures, equipment or system shall be repaired, if possible or replaced with equal
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equipment at no expense to the owner. All surface water shall be removed from the air handling system before restarting the system.

16.0 AIR HANDLER CLEANING/STERILIZATION/DECONTAMINATION:

16.1 Prior to gaining access or starting work inside the units or duct work, the unit will be de-energized and locked out (and tagged) by the Contractor, as specified by OSHA requirements. After the system has been de-energized, the air handler (mechanical room) unit will be put under a negative pressure by HEPA-filtered negative air machine(s). This negative pressure shall be maintained during the entire process, inspection, cleaning, and decontamination procedure for each air handler. The negative air machine(s) should be exhausted outdoors (where applicable) with flexible ducts.

16.2 Prior to opening any air handlers or ducts, the Contractor's employees shall be properly suited in disposable protective suits, and donned with at least a NIOSH-approved half-mask respirator equipped with a HEPA filters.

16.3 After the units have been properly de-energized (and lock out procedures have been completed) and then accessed, the inside surfaces of these areas shall be HEPA-vacuumed to remove any visible surface debris. The insulation (if any) inside the units shall be inspected. If any rips, tears or other degradation is observed, the Owner will be notified on daily Progress Report.

16.4 Steam produced from the steam machine must be rated at 300-350 psi, 310 degree F to 410 degree F Wet or Dry steam produced on a continuous basis. Temperature and pressure should be capable of being delivered as far as 300 ft. from the steam producing equipment. A proven demonstration may be required post award. Water is the only fluid that will be utilized in the cleaning process.

16.5 Any coil surface with contamination deposits shall be cleaned/sterilized utilizing a combination of steam technology and high volume/low pressure (HV/LP) flushing technology in the manner previously outlined.

16.6 Contractor will protect all motors, valves, fire system components, controllers, electrical and pneumatic components from exposure to steam or excessive heat.

16.7 The interior insulation, frame-work and metal surfaces, (excluding heat transfer components) shall be cleaned, painted, or relined with a closed cell insulation product (PURE-Cell or equivalent) as required in the Statement of Work. Any existing insulation impacted with moisture, physical damage, or microbial growth at unmanageable levels will need to be replaced with new materials having the same or higher insulation values per inch, flame spread of not over 25 and smoke development rate of not over 50. The utilization of a closed cell liner such as PURE-Cell, or equivalent, is required for the air handler and Cooling/Heating Coils cabinets.

Rails within AHU (vertical surfaces) that are rusty and/or in need of refurbishment will need to be wire brushed clean and treated with V570 (or equivalent) coating to vertical surfaces.
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PURE-Cell insulation, PURE-Liner drain pan protection and V570 are value added options that will be required (pending AHU condition) at additional cost.

16.8 The contractor shall remove contamination from cooling coils. Coils shall be thoroughly-cleaned using only steam/water on all exterior surfaces i.e., both upstream and downstream. In the interior cooling/heating coil bank all contamination shall be removed permitting air flow and heat transfer. Coils shall be thoroughly flushed to remove latent residues.

16.9 No black particles or chemical residues shall be visually observed or detected at any location in the system after the cleaning process.

16.9 The condensation pan shall be thoroughly cleaned and shall be free of all visible debris. If the condensation pan appears to be rusted, aged, or otherwise degraded, then the pan shall be relined with PureLiner™ sheet membrane system, or equivalent.

16.10 Any energy recovery unit shall be cleaned using compressed air and direct contact cleaning techniques with vacuums equipped with HEPA filtration.

16.11 Mechanical rooms shall be cleaned and vacuumed.

16.12 Air handler unit air filters will be removed and protected from damage prior to commencing steaming and reinstalled after unit has been inspected by Client.

16.13 Contractor will ensure there is no chilled water or refrigerant is flowing through coils during cleaning process.

16.14 The replacement of fiberglass insulation in the associated ductwork (if required in Statement of Work) shall be of a closed cell insulation material (eg. PURE-Cell) which maintains a zero porosity and meets ASTM flame and smoke rating of 25 or less flame spread and a 50 or less smoke development.

17.0 MINIMUM STEAM COIL CLEANING EQUIPMENT REQUIREMENTS:

17.1 Minimum equipment requirements are as follows:

A) Commercial Steam producing equipment. This equipment must be rated at 300-350psi through a minimum of a 2” wide nozzle, 350°F steam produced on a continuous basis. Temperature and pressure should be capable of being delivered as far as 300 feet from the steam producing equipment. Steam wand will be trigger less and flow will be initiated with a local valve accessible to the person controlling the wand. Steam generating equipment will be attended at all times while operational.

B) WET/DRY Vacuum systems fitted with HEPA filters.

C) High Efficiency HEPA filter fitted negative air scrubbers. HEPA filtration is to meet a minimum of 99.97% at .3 microns as tested by MIL-STD-282

D) Vortex Ducted Axial Fans designed for air ventilation, circulation, extraction and drying of wet
components with airflow. Minimum 3450 RPM, 3.2” static pressure.

E)  High Volume, Low Pressure flushing/rinsing device, containing only water, delivering 55 gallons of water in 5 - 10 minutes to flush coil.
F)  Set up mini-containment with coaxial blowers to capture steam/moisture in sealed receptacle containers to minimize disbursement of steam.

18.0 AIR CONVEYANCE (DUCTWORK) DECONTAMINATION PROCEDURE:

18.1 Prior to gaining access or starting work inside the units or duct work, the unit shall be de-energized and locked out (and tagged), as specified by OSHA requirements. After the system has been de-energized, the air handler system will be put under a negative pressure by HEPA-filtered negative air machine(s)/duct cleaning systems. This negative pressure shall be maintained during the entire cleaning, and decontamination procedure. The negative air machine(s) will exhaust outdoors with flexible ducts. The negative air system is attached to the most remote (from the air handler) air register and will remain in operation until no odors are detected in the exhaust air. All other supply registers will be closed and sealed with “duct-mask” other material suited for blocking the registers.

18.2 After the units have been properly de-energized (and lockout/tagout procedures have been completed) the inside insulated and non-insulated surfaces of the air ducts will be thoroughly cleaned by various methods to remove any visible surface debris. Depending on the scope of the Project, after the ducts have been thoroughly cleaned, damaged/wet insulation materials removed, the inside of the system will be encapsulated with an antimicrobial paint or thoroughly sprayed/fogged with an EPA-registered sanitizer that can be used inside air handler systems, or both in combination whereby the sanitizer will be sprayed first, allowed to dry and then the antimicrobial paint will be applied.

18.3 In the event the contractor cannot clean the entire system(s) in a single work shift, the following sequence will be used:

18.4 Contractor will start cleaning at the fresh air and return intakes and proceed toward the central air handling equipment.

18.5 Once the fresh air intake and return systems are completed, the cleaning process will start on the central air handling equipment (if required by Contract).

18.6 Cleaning will proceed downstream from the central air handling equipment via supply ducts, duct accesses and run-outs to registers and grilles. Work is conducted in the same direction as system air flow, to avoid re-contaminating portions of the HVAC system previously cleaned.

18.7 Duct sections being cleaned will be sealed off from adjoining sections by closing available dampers, or by using barriers of foam stuffing or other methods of sealing off air ducts. The positions of dampers will be marked prior to moving or closing so that they can be correctly reset following the cleaning process.

18.8 When cleaning supply duct branches or zones, cleaning begins at the duct or branch furthest upstream, working downstream to where it joins the main trunk duct. Work continues, always
working downstream, until the entire zone has been cleaned.

18.9 Duct work is cleaned by inserting powered extended whip sections, air powered oscillating brush systems, electric robotic air powered brushing systems or electric rotary brush systems through the existing/installed access. Contractor will utilize equipment that will best contact all surfaces of the duct regardless of size or shape.

18.10 Where duct work is large enough, and able to support the weight of a worker; hand tools and vacuums will be used.

18.11 All antimicrobial coatings will be applied with an airless paint sprayer to provide a uniform film on the inside of the ducts. The antimicrobial coating is normally white pigmented, and shall be applied uniformly to the manufacturer’s recommended thickness, which will allow for an even smooth coating.

18.12 For accessing and cleaning metal ducts, an access door/panel will be installed. Sufficient access openings must be provided to allow access to the duct work at required intervals.

18.13 Prior to entry into any ceiling space, contractor shall confirm the presence/absence of asbestos-containing materials in the area. If asbestos-containing materials are found, the Client will be notified immediately.

18.14 Prior to removing any ceiling tiles for above ceiling units in carpeted areas, the floor will be covered with polyethylene sheeting. The polyethylene sheeting shall be secured to prevent slippage. Prior to picking up this sheeting at the end of the work period, the sheeting shall be HEPA-vacuumed and/or wet wiped. The plastic sheeting shall not extend less than six (6) feet beyond the actual immediate work area. Light weight painter’s plastic sheeting will be utilized to cover desks, bookshelves or other furniture in the area. Client should remove all items that may tip over/break from the draping of the plastic sheeting.

18.15 Any return or supply diffusers that have visible debris will be removed and cleaned or cleaned in place, if required. If discolored or stained they may be spray painted to match the original color. After the diffuser has been cleaned and dried (and painted, if necessary) contractor will reinstall and secure the register. The Client acknowledges that the appearance of diffusers that have been cleaned and repainted may still not meet the aesthetic standards of new/original diffusers.

18.16 Contractor will follow all chemical product labels, manufacturer’s instructions, and Material Safety Data Sheet information. Sanitizing products will be mixed outdoors and then after five minutes, brought into the building or work area. The sanitizer container will be placed on top of plastic sheeting, if brought into the building.

18.17 Prior to opening any air handlers or ducts, contractor workers will be properly suited in disposable protective suits, and donned with at least a NIOSH-approved half-mask respirator that is equipped with high efficiency particulate air (HEPA) filters. Appropriate eye goggles are also required to be worn during any and all activities that may release biological agents, fiberglass, or chemicals.

18.18 Protective gloves are required when mixing chemicals and when cleaning, disinfecting, or coating the duct work.
The sanitizing and coating with antimicrobial treatments will not begin until after all duct work and air handlers for a particular air-conditioning/heating system have been cleaned of debris.

If internal insulation is friable, degraded or wetted, removal under Level IV containment will be required. Replace insulation with closed cell insulation. Eg. PURE-Cell with zero porosity meeting ASTM standard 25/50 flame spread/smoke development rate.

Verification of ductwork cleanliness:

Verification of air handler system cleanliness will be determined after mechanical cleaning and before the application of any treatment or introduction of any treatment-related substance to the air handler system. Verification of surface cleaning and verification of coil cleaning shall be conducted after mechanical cleaning and before air handler system is restored to normal operation.

The ductwork shall be inspected visually to ensure that no visible contaminants are present.

A) If no contaminants are evident through visual inspection, the ductwork shall be considered clean; however, the Owner or Client reserves the right to further verify system cleanliness through Surface Comparison Testing or the NADCA vacuum test specified in the NADCA standards.

B) If visible contaminants are evident through visual inspection, those portions of the system where contaminants are visible shall be re-cleaned and subjected to re-inspection for cleanliness.

C) NADCA vacuum test analysis should be performed by a qualified third party experienced in testing of this nature.

D) Cleanliness verification shall be performed immediately after mechanical cleaning and before the HVAC system is restored to normal operation.

Duct: On metal ductwork, ensure all interior surfaces are free of visible debris. On fiberglass lined ductwork, ensure all fiberglass material is free of visible debris, dry, and in good condition (i.e., no tears or abrasions; well adhered to underlying materials).

Access Doors: Ensure pre-existing or newly installed access doors in metal ducts are properly installed/attached (e.g., appropriate twist locks). Ensure that there is no or minimal leakage around/through the access door(s) when the air handling unit is running.

Air Vents: Ensure all registers, grilles, and diffusers are visibly clean and painted as required. Ensure all registers, grilles, and diffusers have been properly reattached to the walls, floors, and/or ceilings.

Post cleaning/sterilization inspection & testing: (See 3.0)

QA/QC shall be limited to the areas specified herein, and the specific zone/air handler to be cleaned/sterilized. No other areas shall be monitored or other tests conducted, without the authorization of the Owner.
All samples shall be quantified and qualified for microbial content in an AIHA certified laboratory.

QA/QC of the existing HVAC parameters shall be performed in each zone/air handler unit area prior to any work, in that area (as requested). Final testing subject to Project Manager discretion. Testing shall include but may not be limited to:

- Temperatures and Relative Humidity of the air entering and exiting the heat exchanger
- Static Pressure measurements immediately before and after the heat exchangers.
- Air flow quantities, Static Pressure (Pa)
- Surface Tape Preparations sampling (quantification and identification of surficial aerosols.
- Estimated energy usage based on improvements of the air flow and local degree days.

Final air flow and differential pressure readings are to be performed by the Contractor using appropriate equipment. For example, vane anemometer, digital pressure gauges, pitot tubes, velometers, calibrated axial fans, etc. Air flow shall be measured across each heat exchanger, energy recovery unit and across the complete air handler assembly, without filters in place. Both the initial and final air flow results will be employed in the calculation of the estimated energy conservation.

Provide Owner with a Post Cleaning/Sterilization QA/QC Report including: Written Progress Report summary, a compilation of daily progress reports of work performed, all correspondence during air handler cleaning/sterilization, differential pressure readings, static pressure reading, BioScan laboratory results, digital images of all surface/coils cleaned before and after, weekly record of safety meetings, and documentation of any deficiencies. Provide Owner with compliance records of the above mentioned after the completion of each air handler cleaning/sterilization project.

POST CLEANING/ DUCT DECONTAMINATION INSPECTION AND TESTING

Bioaerosol sampling and surface sampling to be performed by trained personnel. Bioaerosol sampling is to be performed using a viable particle sampler cascade impactor. Cultures shall be performed to identify and quantify bacteria and fungi.

Cultures (both air and surface) to be characterized by a qualified Microbiologist to quantify and qualify microbial content. Microbial evaluations will include bacterial and fungal protocols.

An Indoor Environmental Report is to be provided with documentation to include a report of the HVAC systems which relates to air handlers and ductwork. This shall include IAQ/HVAC Fiber Optic Imaging with video and imaging photos, air flow measurements before and after remediation, and documentation of any deficiencies.

Final air flow and differential pressure readings are to be performed by the contractor using balometer/velometer equipment.

Air Conveyance System Vacuum Tests (ACSVT) are to be performed on non-porous surfaces with the results not to exceed 3 mg/100 cm².

Provide Owner with a QA/QC Report including: Remediation Progress Report summary, a compilation of daily progress reports of work performed, all correspondence during remediation, HVAC parameter study, bioaerosol and bulk analysis, Laser Diode Particulate analysis, IAQ/HVAC Fiber Optic Imaging, differential pressure readings, surface vacuum tests (PACVT) results, wet and dry thickness (millage)
Environmental Duct Cleaning and Air Handler System
Steam Coil Cleaning and QA/QC

analysis of antimicrobial coating applications, and documentation of any deficiencies. Provide Owner with compliance records of the above mentioned after the completion of each air handler and associated ductwork remediation project.

This QA/QC analysis is to be provided to the Owner for verification of all air conveyance system’s decontamination for all porous and nonporous materials.

21.0 WARRANTY:

21.1 Contractor is to issue warranty on workmanship and material for a period of one year from the time of completion of subject contracted work

22.0 EVALUATION OF PROPOSALS

22.1 The procedure for selecting is as follows:

1. The owner shall appoint a Selection Committee to review all proposals submitted.
2. Requests for Proposal issued.
3. Subsequent to the closing of proposals, the Purchasing Agent and Project Manager shall review the proposals received and verify whether each proposal appears to be minimally responsive to the requirements of the published RFP.
4. Meetings shall be open to the public and the Purchasing Agent shall publicly post prior notice of such meetings in the lobby of the Purchasing Building at least one (1) day in advance of all such meetings.
5. The committee members shall review each Proposal individually and score each proposal based on the evaluation criteria stated herein.
6. Prior to the meeting of the selection committee, the Purchasing Agent will post a notice announcing the date, time and place of the committee meeting. Said notice shall be posted in the lobby of the Purchasing Building no less than three (3) working days prior to the meeting. The Purchasing Agent shall also post prior notice of all subsequent committee meetings and shall endeavor to post such notices at least one (1) day in advance of all subsequent meetings.
7. The committee will compile individual rankings, based on the evaluation criteria as stated herein, for each proposal to determine committee recommendations. The committee may at their discretion, schedule presentations or demonstrations from the top-ranked firm(s), make site visits, and obtain guidance from third party subject matter experts. The final recommendation will be decided based on review of scores and consensus of committee.

The owner reserves the right to withdraw this RFP at any time and for any reason, and to issue such clarifications, modifications, and/or amendments as it may deem appropriate.

Receipt of a proposal by the owner or a submission of a proposal to the owner offers no rights upon the Vendor nor obligates the owner in any manner.

Acceptance of the proposal does not guarantee issuance of any other governmental approvals. Proposals which include provision requiring the granting of zoning variances shall not be considered.

22.2 References

The owner reserves the right to contact any and all references to obtain, without limitation, ratings for the
following performance indicators:

- On a scale of 1 – 10, with 1 being very dissatisfied and ten exceeding your every expectation, how satisfied were you with the firm’s performance?
- What specifically did you like about their approach?
- What do you believe were shortcomings of that they could have done better?
- Did they meet your schedule requirements?
- How were their communications? Were you always kept in the loop?
- How responsive were they in addressing problems with the project?
- How was the quality/experience/personality of their personnel? (Specifically the project manager?)
- Would you use this firm again?
- Additional comments

A uniform sample of references will be checked for each Vendor. Vendors will be scored on a scale of 1 to 10, with 10 being the highest possible score. This score will also be used in determining the score to be given to the “past performance” evaluation factor for each proposal.

Provide a listing of all previous customers who during the past three years for work demonstrate experience of similar size and scope to the scope described in this RFP. The services provided to these clients should have characteristics as similar as possible to those requested in this RFP. Information provided for each client shall include the following:

- Client name, address and current telephone number.
- Description of services provided.
- Time period of the project or contract; briefly describe if project met or exceeded the scheduled outlined.
- Client’s contact reference name, email and current telephone number.
- Dollar value of project; briefly describe if the completed project met, or came under budget.

Failure to provide complete and accurate client information, as specified here, may result in the disqualification of your proposal.

Proposal

The owner shall appoint a Selection Committee to review all proposals submitted. The factors to be considered in the evaluation of proposal responses are listed as follows:

<table>
<thead>
<tr>
<th>Grading Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ability of Proposer to provide turn-key services Quality and comprehensiveness of the Proposer understands of the general scope of work and technical approach to similar projects.</td>
<td>30</td>
</tr>
<tr>
<td>2. Qualifications and experience of key personnel and level of commitment to this project.</td>
<td>20</td>
</tr>
<tr>
<td>3. OSHA documentation and Health &amp; Safety Plan submitted with proposal</td>
<td>10</td>
</tr>
<tr>
<td>4. Price offered.</td>
<td>10</td>
</tr>
</tbody>
</table>

Total Points: 100
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END OF DOCUMENT