

PROJECT SPECIFICATIONS

MINIMUM REQUIREMENTS

HVAC Cleaning, Sanitizing and Coating

Due to the specialized nature of HVAC system cleaning, especially involving biological pollutants, adherence to the following requirements will help assure quality results from the project.

The following project specification summary represents a compilation of: 1) cleaning requirements from ACR-2006, the latest standard from the National Air Duct Cleaners Association (www.nadca.com), 2) EPA Guidelines, and 3) direct project experience with engineers, facility / building management, and occupants.

1. Contractor Qualifications

The Contractor shall have the following qualifications:

- a. Shall be a current member in good standings of the National Air Duct Cleaners Association (NADCA).
- b. Shall have at least four (4) certified NADCA Air System Cleaning Specialist (ASCS) on staff.
- c. Shall have the appropriate state licenses
- d. Shall have at least five (5) years of experience in air systems and ductwork remediation with commercial facilities.
- e. Shall have the following insurance coverages:
 - i) Commercial General Liability
 - ii) Contractors Pollution Liability
 - iii) Environmental Consultants Professional Liability
 - iv) Microbiological DecontaminationMinimum limits required for all coverages: Each Claim: \$1,000,000; General Aggregate Limit: \$2,000,000
Note: Policies should not exclude mold
- f. Shall produce a reference list to the Owner and Project Engineer of projects successfully completed of a similar size and scope.

The project shall be supervised at all times by a person who has been certified by NADCA as an Air Systems Cleaning Specialist (ASCS).

Ductwork shall be cleaned in compliance with latest edition of the following standards:

- a. Mechanical cleaning of non-porous air conveyance system components, NADCA ACR 2006.
- b. Requirements for the Installation of Service Openings in HVAC Systems, NADCA

2. Technical Requirements / Cleaning and Removal Methods

The following general ductwork cleaning procedures are to be used as a guideline throughout the project. Methods that require the least amount of access openings, without compromising proper agitation and source removal, are required. Contractors are to provide detailed procedures in their bid proposal. Deviations from specified methods of removal must be approved by the Project Engineer prior to their implementation.

A. Debris Collection Equipment

Equipment used shall be portable and sized to enter the areas easily. Electrical requirements shall be the responsibility of the owner, and any costs incurred due to modifications to the electrical systems shall be at the owner's expense.

The collection systems shall be self-contained units, with the appropriate components to adequately collect dirt and debris loosened from the ductwork. Debris collection is to be performed by a high powered vacuum system with three stages of filtration. The final stage shall be a HEPA filter. HEPA filter efficiency shall be 99.97% @ 0.3 microns.

The collection system shall be capable of producing a minimum of 2,500 cfm, 0.42" water gauge negative static pressure and 0.25" water gauge velocity pressure in the area of ductwork to be cleaned.

Where contact vacuuming is required, the equipment used shall be HEPA filtered vacuums. These vacuums shall be capable of at least 95 cfm at 88" water column. The vacuum shall have at least four (4) stages of filtration with the final stage being a HEPA filter.

B. Agitation Equipment

The Contractor is required to remove all debris from the inside surface areas, e.g. the top, bottom, and sides of rectangular duct, and the entire inside circumference of round and flat oval ductwork by creating the least amount of access openings possible. The following restrictions for agitation tools shall be adhered to:

High power/volume vacuum alone is not an acceptable method of agitation.

The agitation equipment shall be the Collom™ Duct Cleaning System or approved equal.

Approved equal agitation systems shall be accepted only if the following conditions are met:

1. The system is capable of thoroughly cleaning (and sanitizing) up to 80 lineal feet of ductwork per access point (in a single direction). Exceptions to this requirement will apply only when the removal of the debris requires more aggressive agitation.

2. A minimum of 85 cubic feet per minute (cfm) of compressed air at 110 pounds per square inch (psi) must be supplied to the air tool or nozzle in order to effectively dislodge the built-up debris.
3. The air tool or nozzle shall not destroy the integrity of the fiberglass lining.
4. The air tool or nozzle shall be able to follow the contours of the ductwork, i.e. the tool must be able to come in contact with all sides/surfaces of the interior of the duct.
5. The air tools or nozzle must be capable of climbing risers and handling 90 degree bends.

Where ductwork is large enough, and able to support the weight of a worker, hand tools and HEPA vacuums may be used. If workers enter the inside of the duct they must follow the OSHA confined space requirements (OSHA 29 CFR 1910.146).

3. Application of Mechanical Insulation Coating Material

- A. The air tool or nozzle shall be capable of dispensing coatings and / or sanitizing solutions to cover the entire interior surface areas of the ductwork without creating additional access openings in order to maintain the integrity of the duct work.
- B. The mechanical insulation coating material shall be a material that is specifically designed for use inside HVAC / ductwork. MSDS submittals are required.

4. Application of Sanitizer

- A. Sanitizer must be EPA registered specifically for use inside air conditioning systems.

5. Post Project Verification

A final report will be submitted to the Project Engineer / owner that verifies the success the project. This report shall contain the following:

- A. Photographs of representative areas of each air handling unit and associated supply and return ductwork to verify visual level of cleanliness.
- B. Documentation that confirms levels of microorganisms are not elevated on representative surfaces of each air handling unit and associated supply and return ductwork. A minimum of 10 samples for both bacteria and fungal organisms per air handling unit and associated ductwork system are required as follows: (2 samples in each air handling unit including the coil, and 4 in the supply ductwork and 4 in the return ductwork)
- C. Areas of the system found to be damaged and / or in need of repair.
- D. [optional] Verify ventilation system is operating properly and delivering sufficient quantities of outside air, temperature and humidity levels; plus verify acceptable levels for particles, total volatile organic compounds, carbon monoxide, radon and ozone.

Indoor Air Professionals, Inc. is pleased to help you with the further development of project specifications and scope of work. Please call our commercial division at 800-683-0021.