The Commercial Air Duct Cleaning Planning Guidelines

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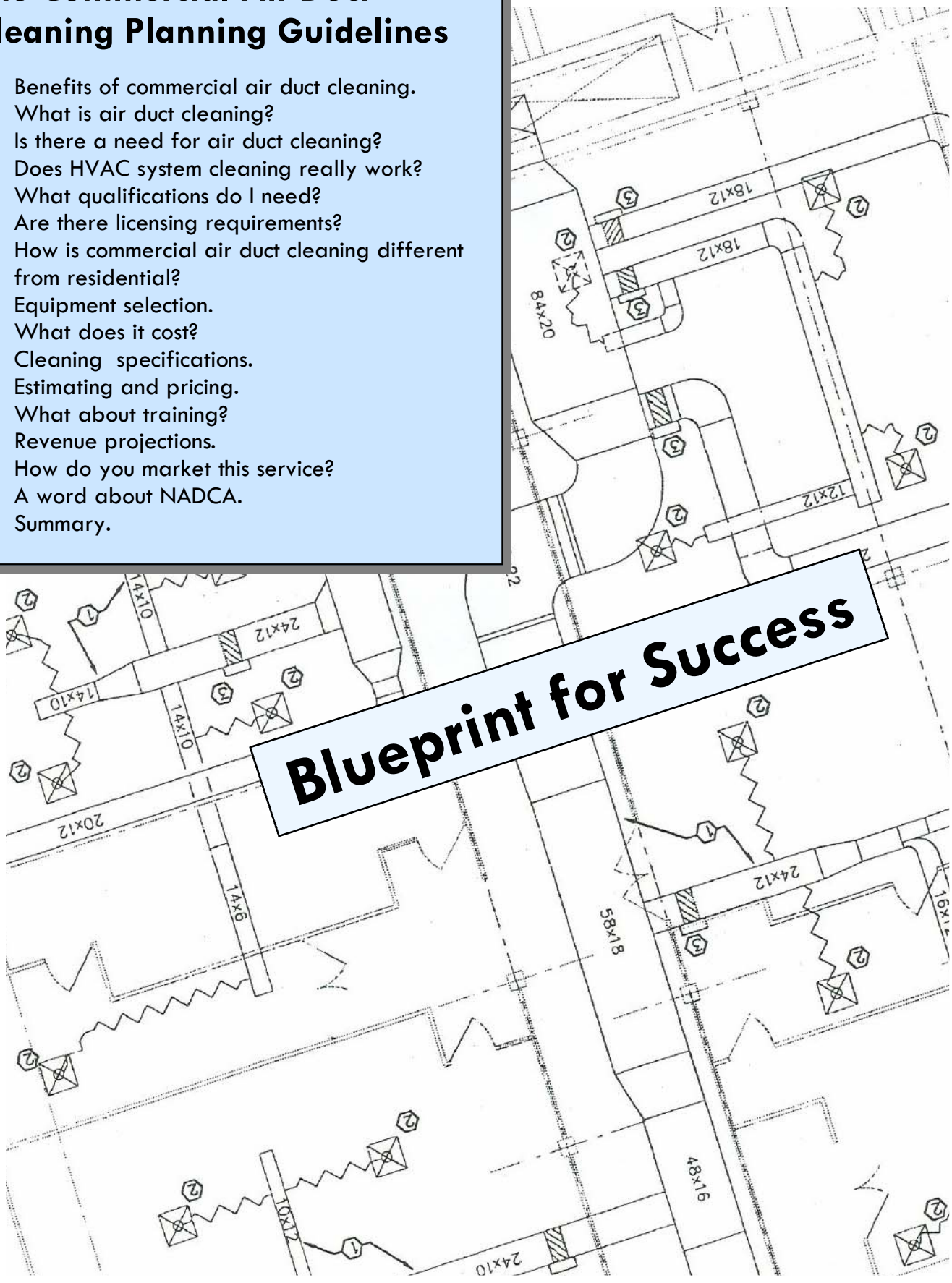

Blueprint for Success

Commercial Air Duct Cleaning Guidelines

Benefits of commercial air duct cleaning.

Commercial air duct cleaning represents a tremendous business opportunity as part of the growing indoor air quality field. Since the early 1990's the duct cleaning business growth rate has exceeded 50%. Industry analysts are predicting this to continue for some time. Commercial air duct cleaning offers you many attractive features including:

- Excellent gross margins (40% to 60%).
- Can provide significant add-on revenues with existing customers.
- Can generate new customers for your existing products and services.
- Can help sell other IAQ related products and services.
- Can generate revenues during slow times of the year.
- Can help identify potential HVAC retrofit customers & close equipment retrofit deals.

What is air duct cleaning?

Air duct cleaning is more than cleaning air ducts. A more appropriate term to use would be "HVAC system cleaning" (HVAC means heating, ventilating and air conditioning). The HVAC system includes everything in the air stream including: all of the registers, grilles and diffusers, the supply ductwork, the return ductwork, turning vanes, the air handler or rooftop unit and other components like VAV boxes, in line coils etc.

Some surfaces, like the inside of the air handler or rooftop unit, you clean via contact vacuuming. Others, like ductwork, you put under negative pressure with a vacuum collection unit and then dislodge the accumulated dirt and debris with your air washing and power bushing tools. This dirt and debris is collected (via the negative pressure or suction from the vacuum collection unit) and blown (via air washing tools) to the vacuum collection unit. Coils can be cleaned via air washing or with coil cleaning solutions and water. If microbial contamination is a concern, the HVAC system can be cleaned and then sanitized. In some HVAC systems there is fiberglass insulation. In many of these systems this insulation is deteriorated over time and must either be replaced or repaired. The goal is to remove all of the accumulated dirt, debris and other contamination found in the system. This is called source removal.

Is there a need for air duct cleaning?

Yes. The number of non-residential buildings in your area represents your market potential. Not every building needs to have its air ducts cleaned right now but there is a good possibility that over time the clean air ducts of today will become the dirty air ducts of tomorrow. Inadequate filtration, activities within the building or renovation and construction debris, and microbial contamination are just some of the reasons why air duct systems become dirty and/or contaminated.

This need for cleaning HVAC systems will continue until we improve the design, installation and maintenance of HVAC systems and the buildings they are in.

Does HVAC system cleaning really work?

Yes, if done properly, HVAC system cleaning can improve the indoor air quality of the building and in most cases can improve the efficiency of the HVAC system. Common sense tells us that if you remove the accumulated dirt, debris and contaminates from the fan, coils), ductwork and

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other components in a HVAC system the air quality of that building will be improved and the HVAC system should run more efficiently. There have not been a lot of studies done to look at this question but the National Air Duct Cleaning Association (NADCA) and the EPA did a pilot study that did indicate that, when done properly, duct levels were reduced and the efficiency of the HVAC system improved.

The pilot study was designed to evaluate the effectiveness of HVAC system cleaning in residences. The study was conducted on 9 homes in North Carolina during 1996 with pre and post testing. The results showed:

- Dust levels prior to cleaning were:
  - Supply ducts 1.48 to 26.03 g/sq. meter
  - Return ducts 5.26 to 35.11 g/sq. meter
- Dust levels after cleaning were:
  - All ducts 0.06 to 1.97 g/sq. meter
- Improved system performance was indicated by:
  - Supply air flows increased 4 to 38% in 8 homes measured
  - Air handling unit blower motor current increased in the 4 homes that were measured
  - Static pressure in return ducts increased in the 6 homes that were measured.

To obtain a copy of the study you can contact NADCA @ 202-737-2926. There are also other articles that have appeared in trade publications that support the need and positive return on investment of cleaning HVAC systems.

In addition you need to understand that there are different levels of cleaning. Currently there are three levels of cleaning quality.

1. The first level is air washing only. Air washing is the use of high-pressure air that comes from your air compressor through an air hose to an air nozzle. This air nozzle delivers the streams of high-pressure air, which dislodges the accumulated dirt and debris. The suction from the vacuum collection system and the high-pressure air from the air nozzle move the dirt and debris that has been dislodged from the ductwork into the vacuum collection system.

2. The next level of cleaning is achieved by using air whips. Air whips is a combination of air washing (high pressure air) with some agitation from the whips. This is a higher level of cleaning because, in addition to air washing, the whips make contact with some of the interior ductwork. Again, the suction from the vacuum collection system and the high-pressure air from the air nozzle move the dirt and debris that has been dislodged from the ductwork into the vacuum collection system.

3. The highest level of cleaning is achieved by power brushing and air washing because it does the best job of removing the accumulated dirt and debris in the ductwork. The brushing does the best job of dislodging the accumulated dirt and debris because it is making physical contact with more of the interior ductwork than the other methods. Air washing after brushing is necessary to help move the dirt and debris out of the ductwork to the vacuum collection system.

An example of different levels of cleaning quality is washing your car. There are car washes that

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use just high-pressure water with soap and others use high-pressure water, soap and brushes. Both clean you car but which method gets it cleaner? Brushing gets your car cleaner because it makes physical contact with most of your car. Likewise brushing cleans ductwork better because it makes physical contact with most of the ductwork.

In commercial air duct cleaning defining what constitutes "clean" is determined by the cleaning specification on that project.

What qualifications do I need to clean HVAC systems?

The ability to learn and understand how HVAC systems works, the ability to learn how to inspect, clean and decontaminate a HVAC system, and the commitment to doing quality work. Many people start out doing residential air duct cleaning since residential HVAC systems are easier to understand. Later on some choose to expand into commercial air duct cleaning.

Now if you have a mechanical contracting background you already have knowledge of how an HVAC systems works but there are many trades that are entering into the commercial air duct cleaning business including:

- Mechanical contractors
- Plumbing contractors
- Mold abatement con tractors
- Asbestos abatement contractors
- Fire restoration contractors

Even if you are an individual without these types of backgrounds you can become a successful air duct-cleaning contractor. Your success will be based on your desire to learn what is required, your ability to provide quality work and your ability to provide good customer service.

Are there licensing requirements?

Every state is different. In some states you don't need anything, while in other states you must obtain a mechanical contractors license. NADCA keeps track of state requirements so your first step may be to call them at 202-737-2926. You should also check with your appropriate state agency.

How is commercial air duct cleaning different from residential?

There are several major difference between residential and commercial air duct cleaning including:

- Time of day: Residential work is typically done during regular day hours 8:00 am to 5:00 pm. were many times commercial work is done during second shift hours of 4:00 pm to 12:00 am when the occupants of the commercial building are gone. Also, there is normal day work, especially in the summer months when schools projects are done.
- Size of project: In residential you are dealing with a house or smaller commercial projects. In commercial you are dealing with small commercial projects to very large multiple building projects. Commercial work can be intimidating but you just break the project down into smaller bits and clean one system at a time.
- Receiving payment: In residential work you get paid at the completion of the project. In commercial work you submit an invoice for payment. This can take 30 to 90 days to receive depending if you are a prime contractor or a sub-contractor.
- Payment: In residential

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you typically get paid anywhere from $300.00 to $600.00 per project. In commercial work your average invoice can be $4,000.00 to 5,000.00.

- Commercial work requires more insurance coverage, bonding ability, safety manuals/ training, etc.
- Marketing: In residential you are marketing to consumers. In commercial you market yourself to several different audiences that can impact your success. This includes: mechanical contractors, environmental consultants, large corporations, and others.

Equipment selection.

Lets start with a basic explanation of the different types of vacuum collection systems that are available.

- The large truck mounted units offer lots of suction so you typically do not have to zone off the HVAC system. These units sit outside and a large 50' to 100' long suction hose is brought into the home or building. You are limited to cleaning residential and 1-2 story commercial buildings. These units are also the most expensive.
- Trailer mounted and portable gas vacuum collection systems are less expensive than truck mounted units, but like them, they sit outside and you bring in the large 50' to 100' long suction hose. Depending on the system you may or may not have to zone off the HVAC system to achieve the suction you need. You are limited to cleaning residential and 1-2 story commercial buildings.
- Portable electric vacuum collection systems offer the most flexibility in that you can clean virtually any type (residential, apartments, condos, light commercial, commercial and industrial) of building with them. You bring these collectors into the building and position them where you can be the most productive. You zone off (divide up) the HVAC system to achieve the suction you need to clean. These units operate on 110 or 220 volt, 50 or 60 Hz., and have HEPA filtration. Most commercial air duct cleaning contractors use portable electric equipment because it best suits their needs.

In generic terms a typical equipment package to inspect, clean and decontaminate a commercial HVAC systems will include:

- Vacuum collection system – puts ductwork under negative pressure (suction).
- Agitation tools – used to dislodge accumulated dirt, debris and contaminates.
  - Power brushing tools
  - Air whip tools
  - Air washing tools
- Air compressor – provides high-pressure air for air washing tools and air whips.
- HEPA filtered wet/dry vac – used to contact vacuum surfaces
- Duct accessing tools and service panels – used to cut access openings, isolation, and closing access openings.
- Visual inspection system (optional) – used to show client pre (existing) and post (after cleaning) conditions in the ductwork.
- Spraying systems (optional) - used for applying coatings and sanitizers inside the ductwork. Used with an airless sprayer.
- Chemicals (sanitizers coil cleaners, degreasers, etc.) and chemical dispensing tools (optional).
- Coatings (optional) -

for repairing damaged insulation.
- Closed cell insulation (optional) - for relining air handlers & rooftop units.

You would need to supply other miscellaneous items (hand tools, ladders, drop cloths, etc) and a truck or trailer to transport the equipment to and from the job site.

Approximately 95% of the cost of air duct cleaning is labor. To maximize your profits you need to maximize your productivity.

One way to do that is to select equipment that will help you to maximize your productivity. We have published an article titled "Profits follow Productivity" that discusses this in detail. Plus we offer an article titled "How to select a portable vacuum collection system for commercial air duct cleaning" Contact us to receive your free copy.

We also recommend that you work with an equipment supplier that has actual commercial air duct cleaning experience so you get equipment and training that is suited for commercial work. You can and will use some residential air duct cleaning tools in commercial work but in some cases residential equipment will limit or restrict your productivity. You need to talk with equipment suppliers that know the difference.

What does it cost to get into commercial air duct cleaning?

The cost will vary depending on the equipment you choose but a basic equipment package will range from $9,000.00 to $12,000.00. More if you want to add robotic equipment.

There are different purchasing options that can greatly affect your payments/cost.
- Leasing gives you the lowest first cost and lowest monthly payment which when you are starting up might be your most important consideration. Lease payment will run from $235.00 to $325.00. One cleaning project will easily make your lease payment for you.
- Some equipment suppliers offer shorter term (less than 12 months) purchasing options that require a larger down payment and then a set number of payments.
- You can also pay for the equipment prior to or upon delivery and avoid any financing/interest charges. This gives you the lowest overall cost.

In addition you will need a truck/van or trailer to transport the equipment.
- If you already have one there would be no additional cost.
- A new trailer with a top and ramp can cost $2,750.00 and a new truck or van can cost $15,000 to $25,000.
- Used vehicles and trailers can reduce this cost.

Cleaning Specifications.

In commercial air duct cleaning the Cleaning Specification tells you what is required on that project, like:
- The scope of the project (what is to be cleaned).
- Cleaning procedures.
- Work hours and when the project must be completed.
- Workmanship, inspection and result verification.
- Qualification and insurance requirements.
- Who you give your proposal to and other requirements.

This document is created by the Architect, Engineering or Environmental Consulting firm. In many cases they may refer to NADCA's cleaning standard "ACR 2006 - Assessment,

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Cleaning & Restoration of HVAC Systems."

A well written cleaning specification will make your job easier because it will spell everything out in black and white leaving less chance of disagreements or different interpretations of the requirements between you and your client.

Estimating & Pricing

Estimating commercial air duct cleaning projects is different that estimating and pricing residential projects. You cannot count the number of vents or go by the square footage of the building to estimate commercial projects. Typical steps in doing a commercial estimate and proposal (pricing) include the following:

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- Review and understand the Cleaning Specifications.
- Getting a set of blueprints for the project. You will need to know how to read blueprints.
- Do a walk through of the project. This will help you understand the project and let you see anything that will affect accessibility to the cleaning of the HVAC system. Accessibility to the HVAC system and components will help determine the production rate you will use. Good accessibility generally means a higher production rate and poor accessibility means a lower production rate.
- Do a take off. Based on the blueprints, you break down the HVAC system into its component parts and determine the number of each component you have. For example: how many air handlers, linear feet of supply duct work, linear feet of return ductwork, number of grills and registers, number of VAV boxes, number of coils etc.
- Once the take off is complete, you determine the number of man hours to clean each component.
- For example: 2 air handlers at 6 man hours each = 12 man hours, 500 linear feet of ductwork at 15 feet per man hour = 33 man hours, etc. You then add up all the man hours for each component to get the total man hours for the project.
- Once you have your total man hours you apply the labor rate that you will charge your client. For example: you have a total of 250 man hours on the project x a $50.00 labor rate = $12,500 labor estimate. You will need to charge at least $50.00 per man hour to have gross profits that ranges from 40% to 60%. Some parts of the country charge more.
- Then you determine your material cost. The percent of labor method (typically 5% -7%) will cover the cost of the normal consumables on the project like duct tape, poly etc,. If you apply a coating or sanitizers or reline air handlers you will need to add these items to the percent of labor method to determine your total material cost.
- Once you have determined your total labor and total material cost you create your proposal or bid and give it to your client. Hopefully you win the project.

What about training?

Training is very important. You want to learn how to maximize your cleaning productivity (for greater profits and revenues) as well as maximizing your cleaning quality (for greater customer satisfaction and more referrals).

If you can improve your labor productivity by even 5% or 10% you will be more profitable on each

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project and have more time to do additional revenue producing projects. So you want to learn and implement the best practices and procedures you can. This training should be based on the actual air duct cleaning experience of the trainer. You may want to specify that the trainer be certified as an "Air System Cleaning Specialist (ASCS)" by NADCA. This will insure that the trainer has (at minimum) the expertise to pass the certification test.

Vac System International offers two types of commercial training in it's Super Partnership Custom Training Program. This program is based on over 15 years of hands on experience:

- The first type is "hands-on" training at your location were you learn by working side by side with a ASCS certified and experienced trainer.
- The second type is classroom training where you select from over 20 training topics to custom design a class to best fit your needs and budget. This can include technical topics like: "Performing inspections," "HVAC system cleaning methods & procedures," and "Coating fiberglass insulation." Some management topics include: "Understanding mechanical drawings," Estimating," "Understanding & writing specifications," and "Marketing." Contact us for complete training details.

Revenue projections

In our experience a two person crew will generate anywhere from $200,000.00 to$250,000.00 in revenues per year. A lot will depend on the experience and productivity of the crew. A company with 3 to 4 experienced crews can reach $ 1,000,000.00 in revenues.

How do you market commercial air duct cleaning?

The best marketing you can do is to deliver quality work. Satisfied customers (who will refer you) are the least expensive and most effective marketing tool ever created.

It is estimated that 60% or more of your business will come from referrals. Quality work is your first and most important marketing tool.. To get the other 40% you need to spend additional dollars and use the traditional advertising and marketing tools.

There are several different customer types that the commercial air duct cleaning contractor needs to communicate to and develop good relationships with. These can include:

- Mechanical Contractors
- Environmental Consultants
- Fire Restoration Contractors
- Hospital & Medical Facilities
- Schools & University Facilities
- Large Corporations

Your marketing efforts to reach these various audiences can include:

- Direct Mail
- Yellow Pages Advertising
- Local Trade Shows
- Join Local Associations
- Telemarketing
- Internet/web Site

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Contact us for any marketing question or assistance.

NADCA.

National Air Duct Cleaners Association (NADCA) is a non-profit trade association dedicated to the continuous progression and improvement of the heating ventilating and air conditioning (HVAC) hygiene industry. NADCA's mission is to lead the domestic and international HVAC hygiene industry in standard setting, research, information dissemination and promotion of ethical practices.

In order to ensure the continuing education of the HVAC hygiene industry, NADCA has created cleaning standards called ACR2005 that is recognized industry wide. In addition NADCA has created three certification programs for contractors:

- Air System Cleaning Specialist (ASCS)
- Certified Ventilation System Inspector (CVI)
- Ventilation System Mold Remediator (VSMR)

And NADCA offers the following additional contractor training programs:

- Basics Residential HVAC Cleaning
- Basic Commercial HVAC Cleanin
- Blueprint, Estimating & Project Managemnet

Consumers can also find a wealth of information on ventilation system cleaning.

NADCA offers both consumers and contractors many benefits. We encourage you to look into NADCA and become involved in our industry!

NADCA – National Air Duct Cleaners Association
1518 K Street N.W.,
Suite 503
Washington, DC 20005
Tel: 202-737-2926
Fax: 202-347-8847
E-mail:
info@nadca.com
Web Site:
www.nadca.com

Summary.

Thank you for the time you spent reviewing the "Blueprint For Success – Commercial Air Duct Cleaning Planning Guidelines." We hope it has been helpful in answering many of the initial questions you may have.

<u>Our sole purpose is to help you succeed.</u>

If you have additional questions on anything in this "Blueprint for Success" or air duct cleaning please contact:

Peter Haugen
President
Vac Systems Int.
1800 E. Cliff Rd, #11
Burnsville, MN 55337 at
800-597-3955
952-808-1616
952-808-1584
phaugen@vacsysint.com
www.vacsysint.com

"Blueprint for Success" is a series of articles and publications developed by Vac Systems International to help you succeed as an air duct cleaning contractor. In addition to this publication they include:

- Residential Planning Guide.
- Selecting the Right Tool for the Job Guide.
- Introduction to Coating HVAC Systems Guide
- How to Select a Portable Vacuum Collection System for Commercial Air Duct Cleaning Guide.
- "Profit follows productivity" article.
- "The air duct cleaning opportunity for HVAC Contractors" article.