



EXHAUST DUCTS

The dirty little secret duct no one cares about



About the Presenter

Brooks Ingrassia, ASCS, CVI

- From Kansas City, MO, founder of True Cleaning Solutions in Denver, CO.
- Been involved in the duct cleaning industry for over 10 years.
- Participated in a variety of roles for NADCA.
- When I'm not on the jobsite I'm generally chasing one of my three awesome kiddos around town to watch them play sports.



Disclaimer

This presentation is not intended to be a comprehensive program covering all aspects of this topic. All technicians are encouraged to read and follow all applicable standards, codes and regulations related to this topic.

- ✔ It is the responsibility of each individual contractor to follow local building codes and licensing requirements and to work safely in accordance with OSHA guidelines.
- ✔ It is the contractor's responsibility to take proper precautions on each project to prevent cross contamination. Always take the health and safety of the building occupants into consideration before you conduct any cleaning procedures.
- ✔ All of the following tips are only general tips. They do not cover every situation and it is your responsibility to adapt these tips to the individual system you are working on.
- ✔ The Instructor is not responsible in any way for the work you perform after viewing this slide show. You are responsible for your own work.
- ✔ The views and opinions following are the instructor's opinions and not necessarily the official position of the National Air Duct Cleaners Association.

What we'll Learn

Project Management

We are going to discuss how we put this project together, and look at the site walks, discussions, and planning that went into this project including

Benefits from cleaning

The improvements that come from cleaning these systems and how they play an important factor in the ventilation of facilities

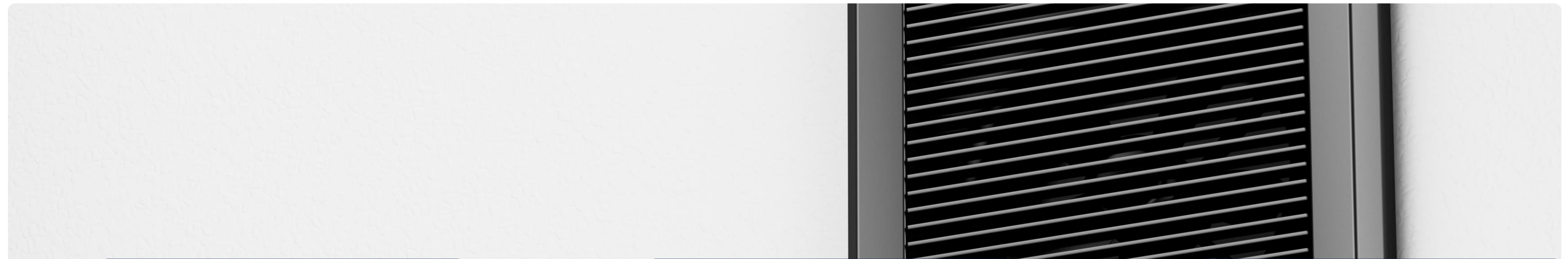
Key Take Aways

Discussion around the key take aways and how you can take this and go back to your market and make money!



- Approximately 3 kWh/square foot are consumed by cooling equipment.
- Approximately 2 kWh/square foot are consumed by heating equipment.
- Approximately 2 kWh/square foot are consumed by ventilation

Exhaust Ventilation



Why

Designed to remove stale air, moisture, odors, and other contaminants to improve the indoor air quality of the facility.



What

- Kitchen Exhaust
- Industrial Exhaust
- Bathroom Exhaust
- Mop / Sink Exhaust
- Lab / Pharmaceutical Exhaust



Where

Either Exposed or in the most difficult place to access!

Exhaust Duct Cleaning Market Segmentation

Bathroom Exhaust

Industrial Exhaust

Kitchen Exhaust

Mop / Sink Exhaust

Lab and Pharmaceutical Exhaust

07

Million US People employed by Hospital System

06

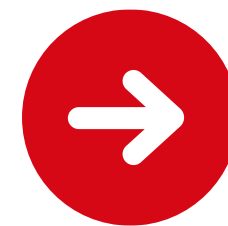
Million US People employed by Public Schools

03

Million US People employed by Universities

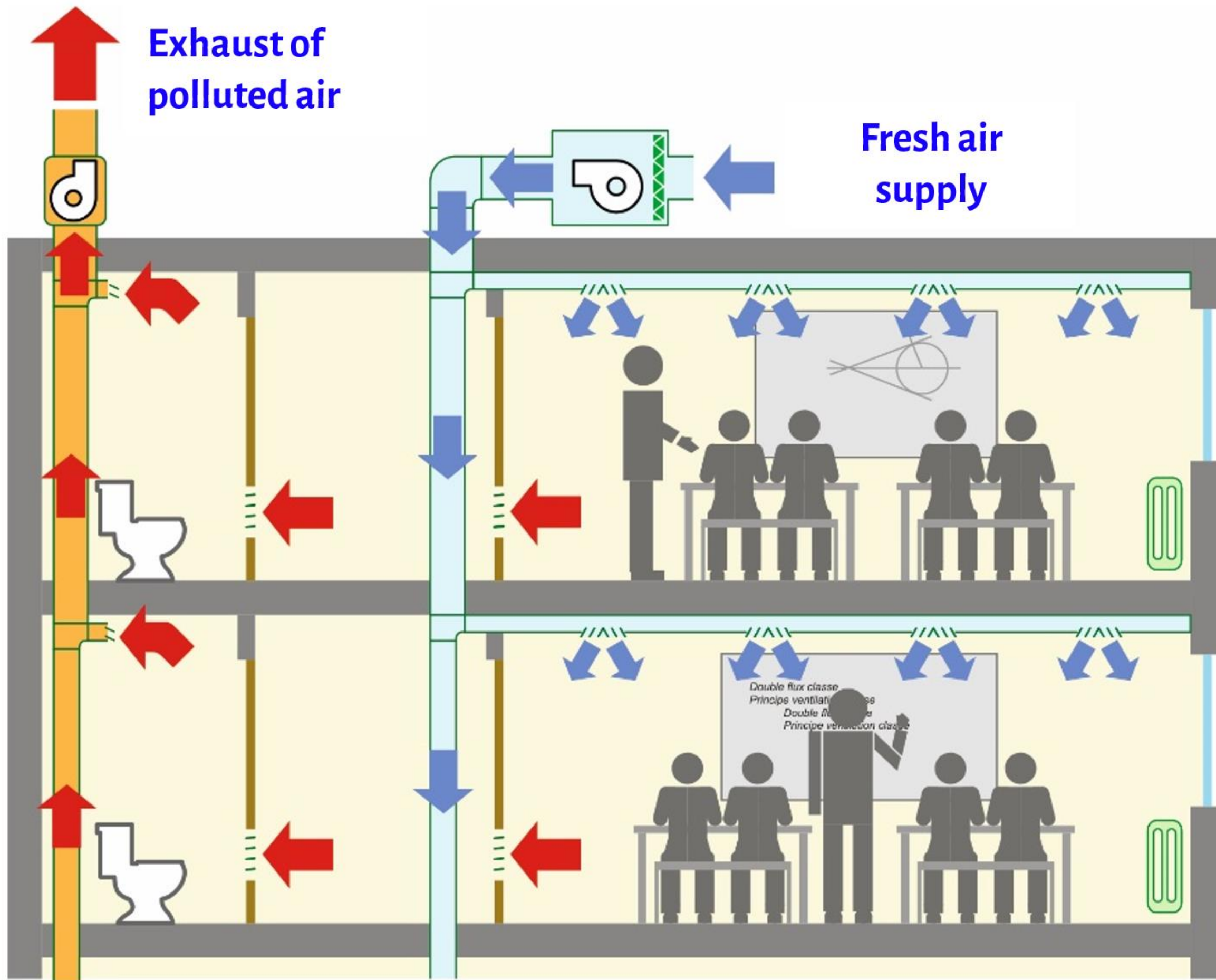
01

Million US People employed by Airport Operations



Exhaust duct cleaning alone is a \$700k - \$1b dollar industry by 2030





- Exhaust is important to a majority of ventilation strategies.
- Most facilities are required by law to provide exhaust where contaminants are strong.
- Removes pollutants and irritants from the air protecting patrons, staff, guests, etc.
- Leads to more efficient HVAC operations.
- Removes humidity and moisture from the air.

For these systems to achieve these goals and function properly. They must be:

- 1.) Well designed
- 2.) Installed Properly
- 3.) Used for the proper uses
- 4.) Well maintained
- 5.) Properly cleaned

Our Focus: **Local Exhaust Ducts**

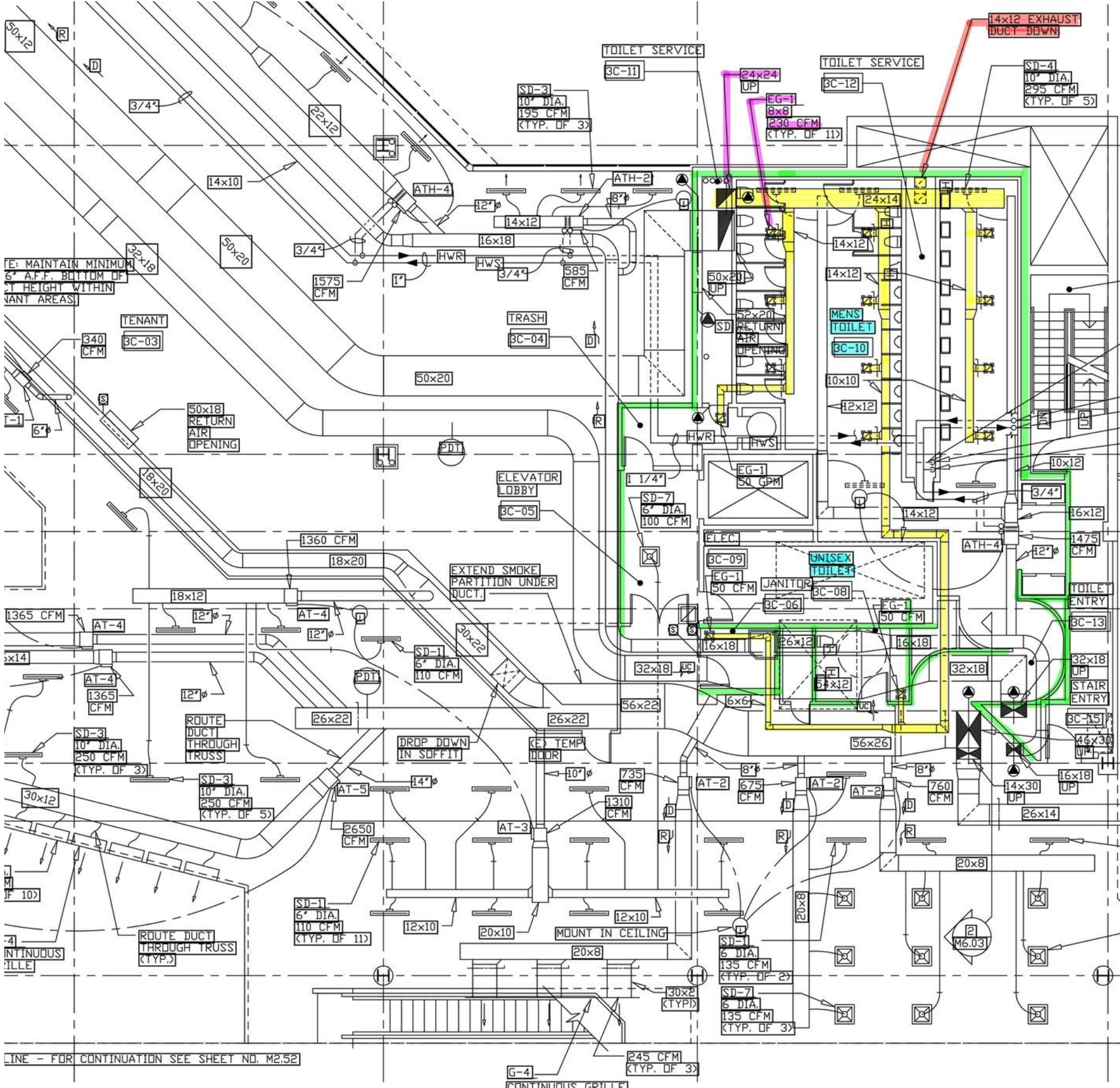


Forgotten Duct

Exhaust ducts are to be inspected annually per the ACR, The NADCA Standard- 2021 Edition inspection table.

Duct cleaners walk sites but don't include the local exhaust ducts in their bid for cleaning in commercial / hospital facilities.

Many of our customers may not know the importance exhaust ducts play in ventilation and how poorly they operate when dirty.





- **Local exhaust projects come with unique challenges (*Location, above hard lid, difficult to access, contaminate source*).**
- **When taking on any exhaust project, the contractor must consider building / space pressurization concerns.**
- **Upon accessing exhaust ducts, any dampers in the system must be placed back into the position they were found in or that may impact the building / space pressurization.**
- **To maximize the effectiveness of the exhaust system, intakes are generally close to the source of contamination.**
- **Exhaust systems should be inspected when looking at projects that have been part of fire, water, or microbial damage.**

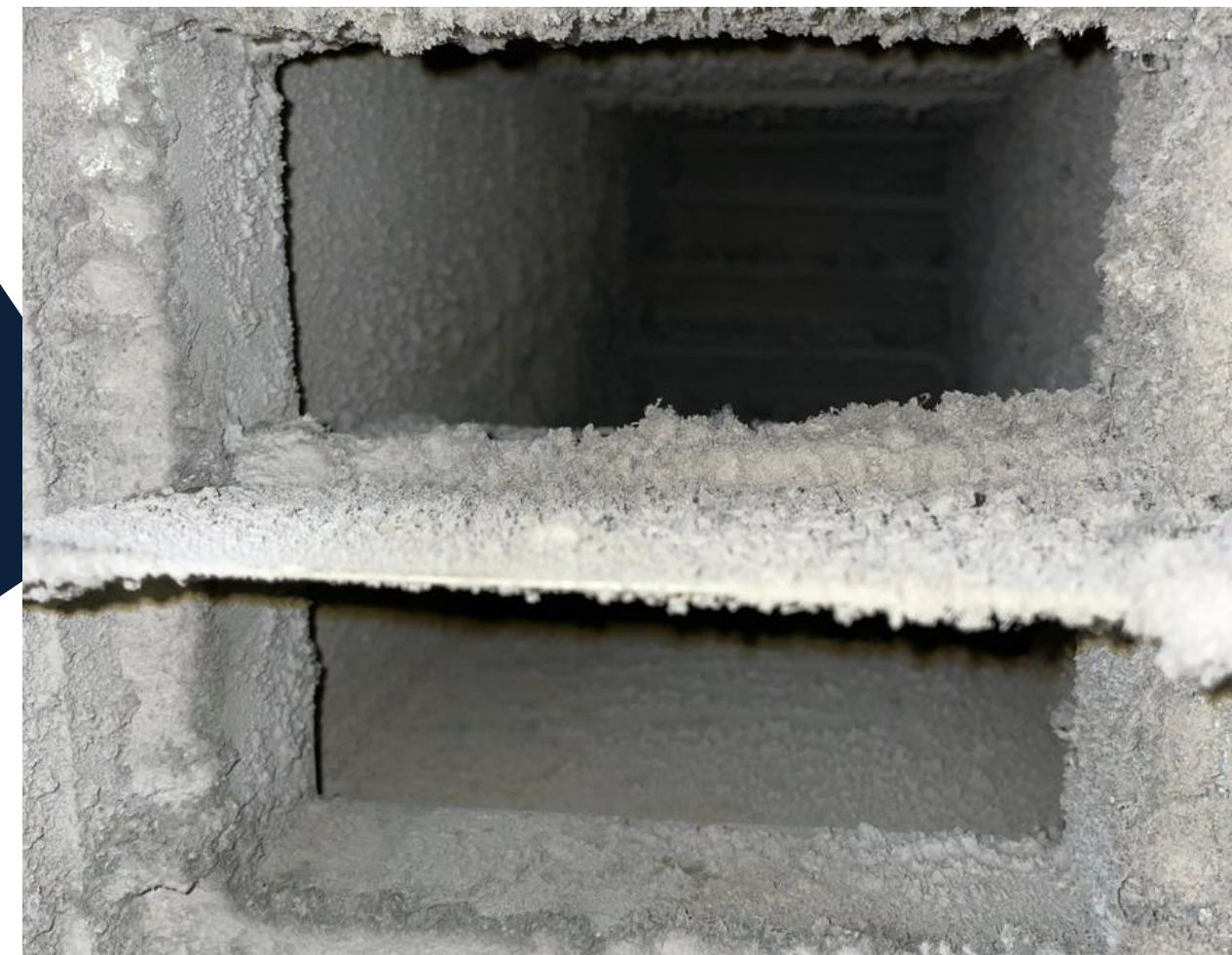
THE PROBLEM

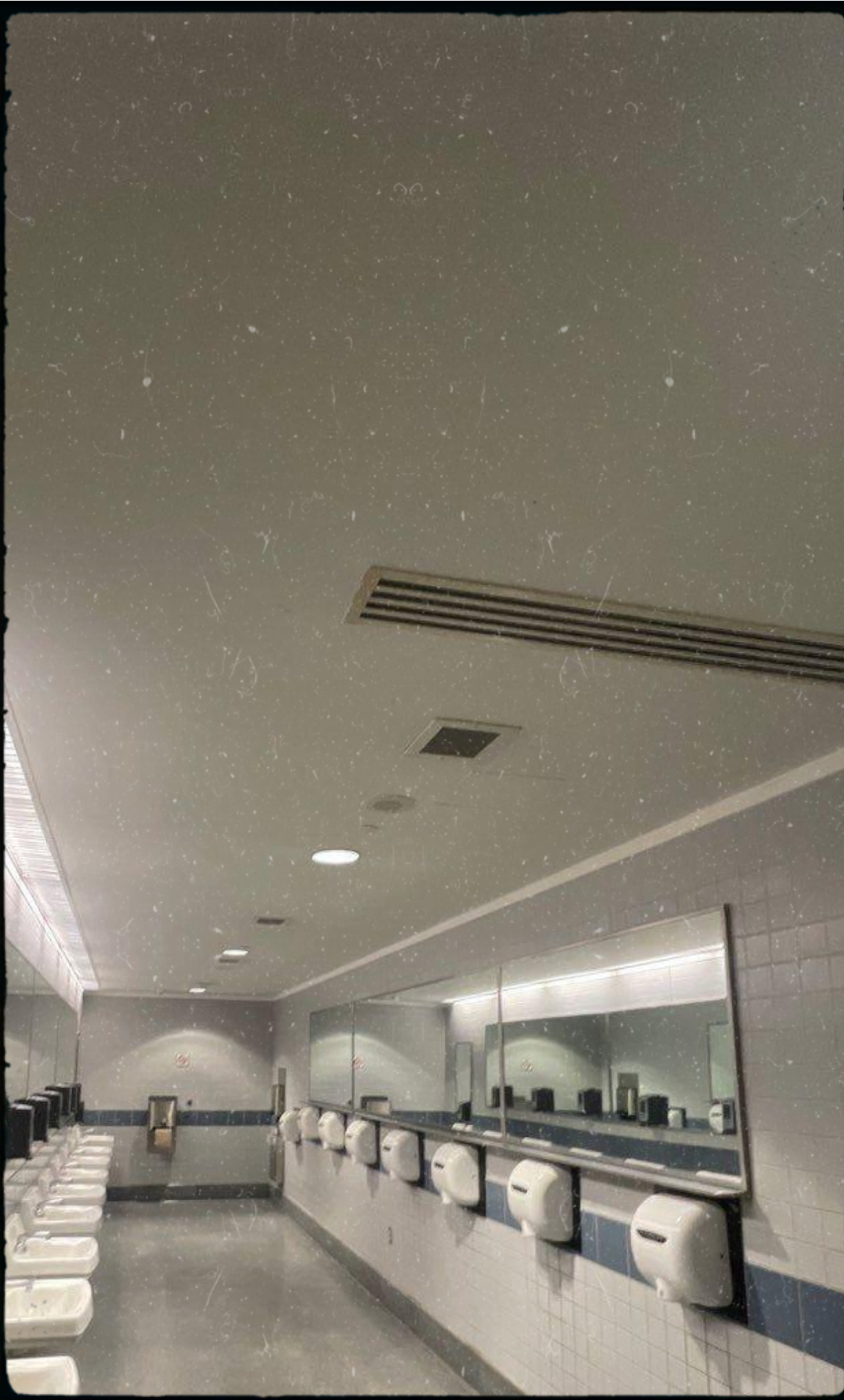
- Facility hired another contractor who cleaned from the vent to as far as they could reach, never accessing any other portions of the duct.

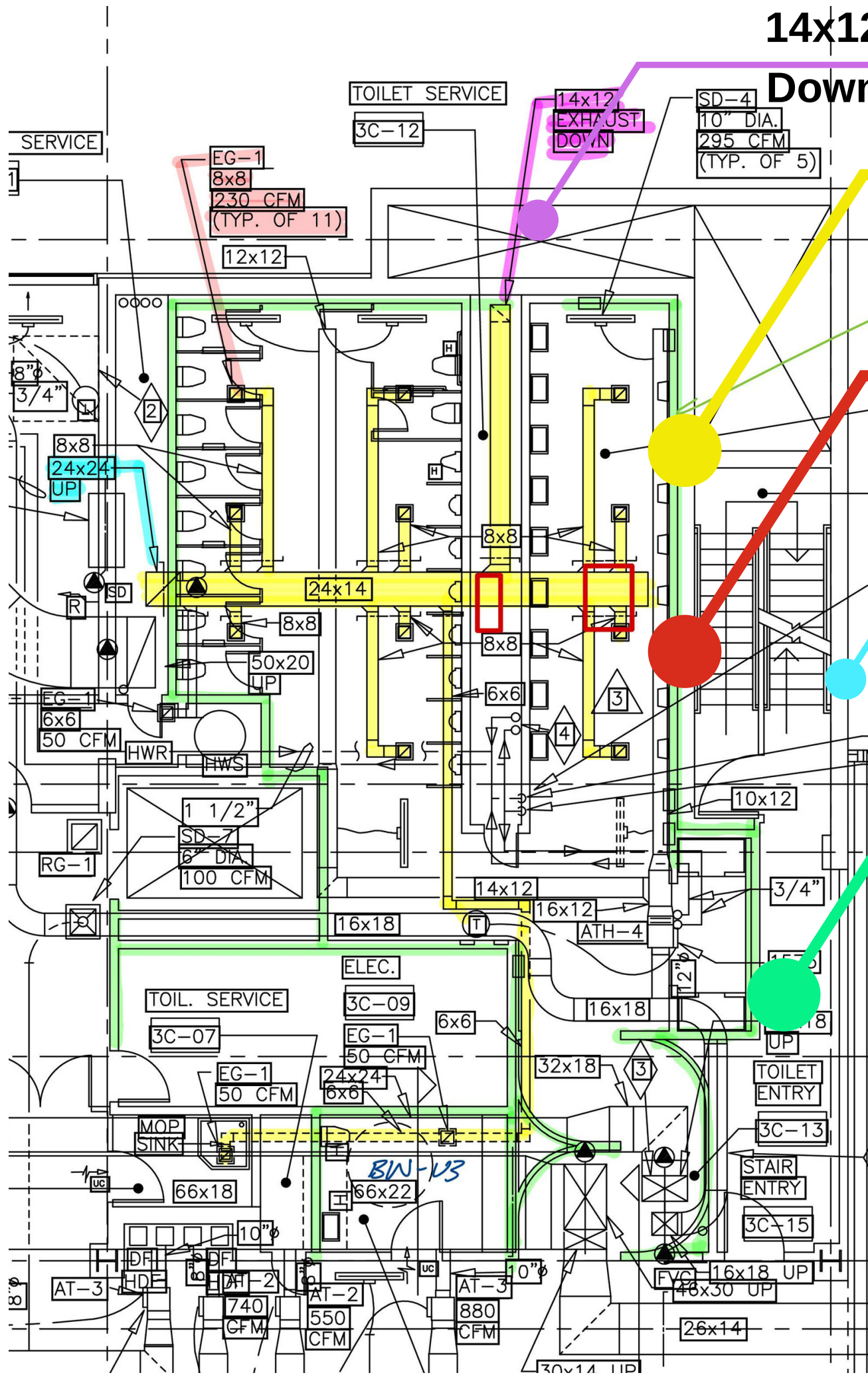


OUR STRATGEY

- Shut the restrooms down for 8 hours and do it right.
- Clean from the fan to the intake in one night.
- Take CFM readings at the intakes before and after.
- Follow ACR, The NADCA Standard and industry best practices.
- Clean and return the restroom to open by 4:00 a.m. daily







14x12

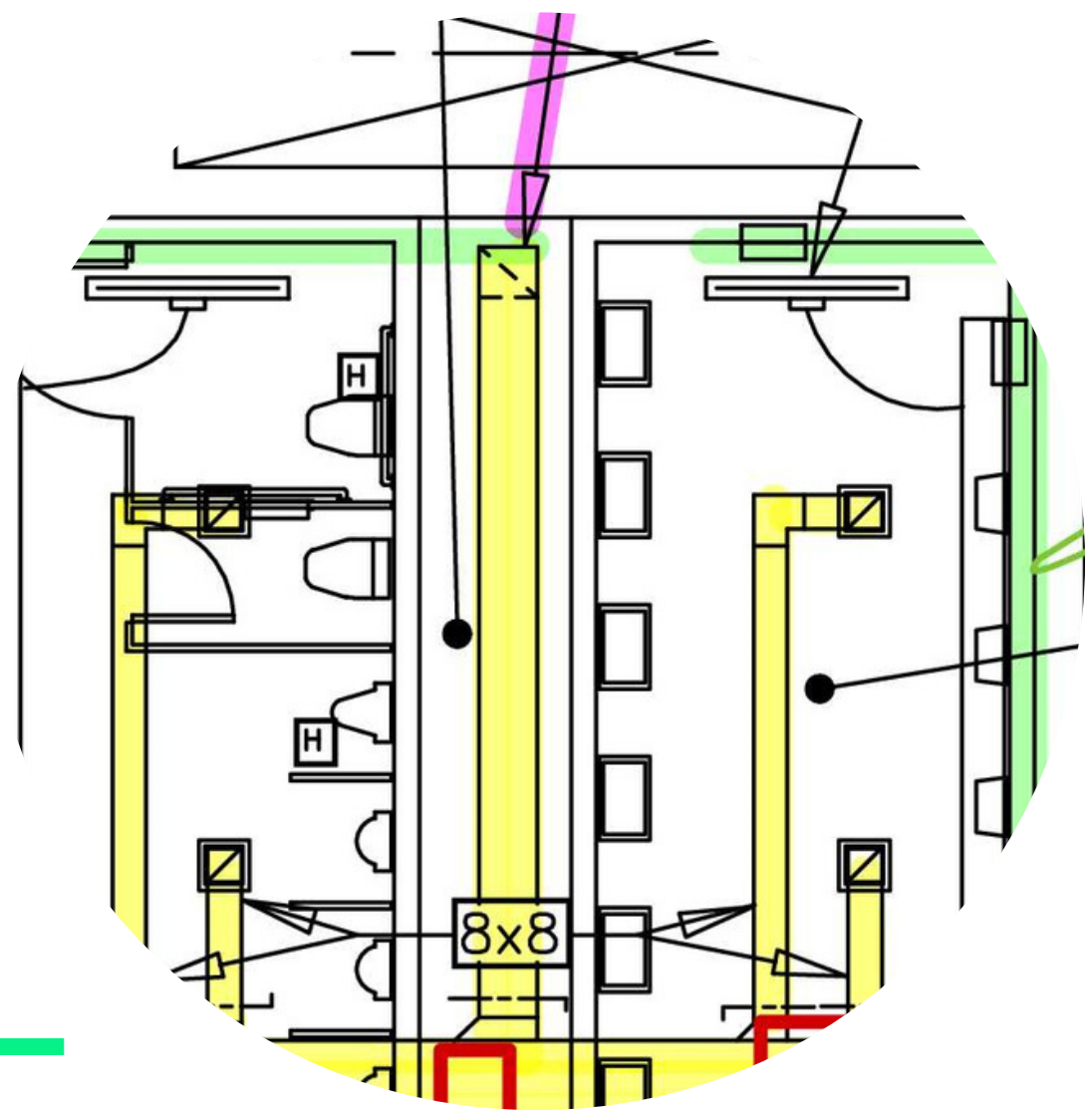
Down

Exhaust Duct

Drywall access openings

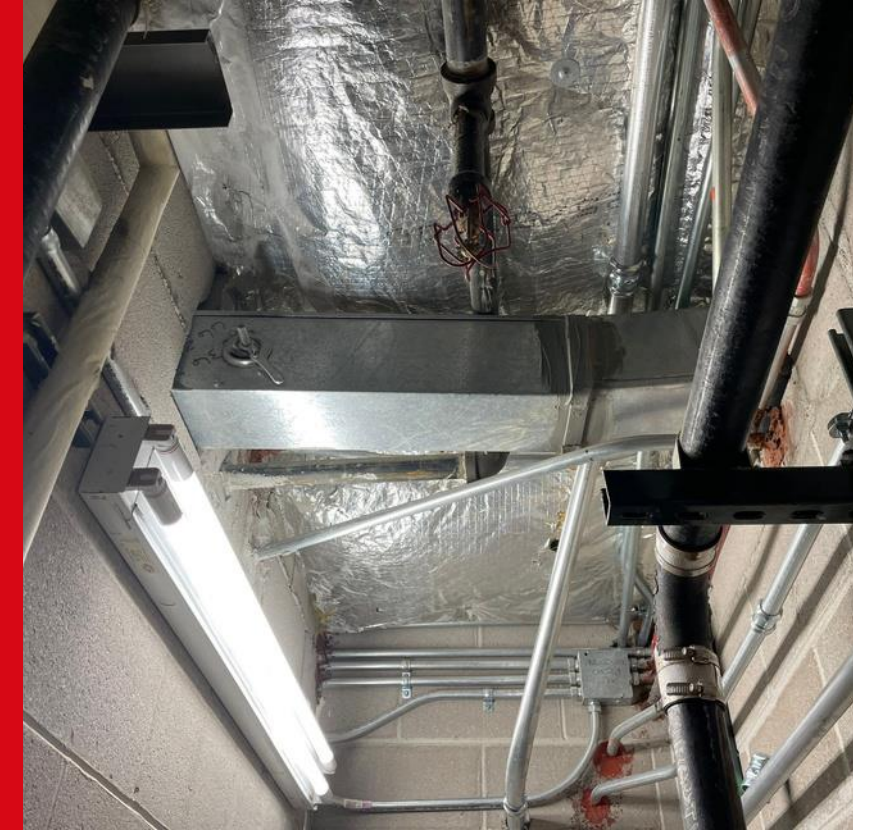
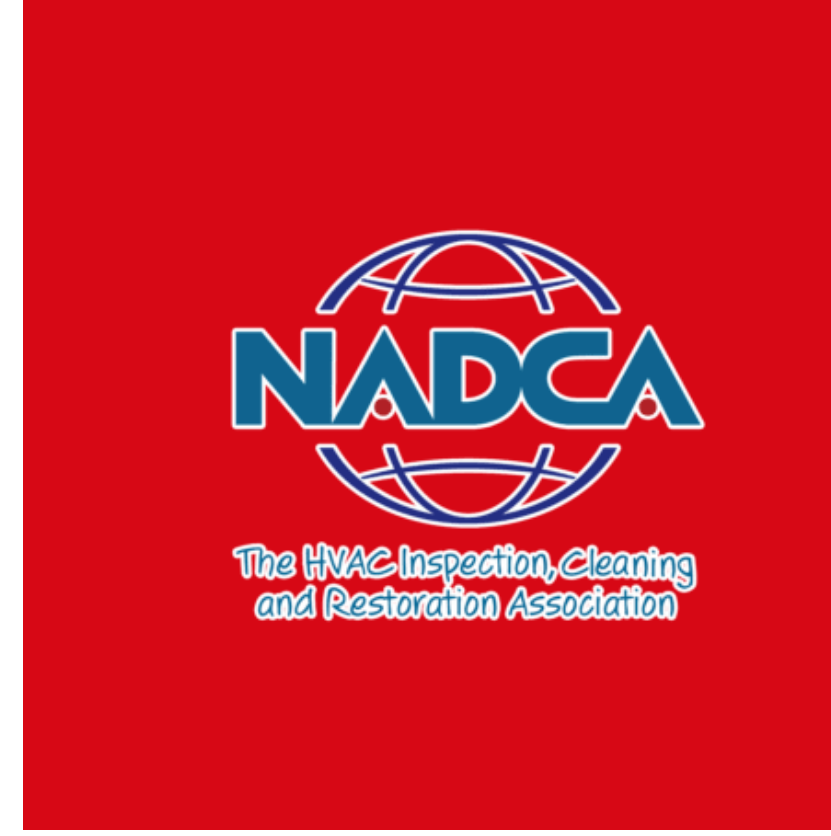
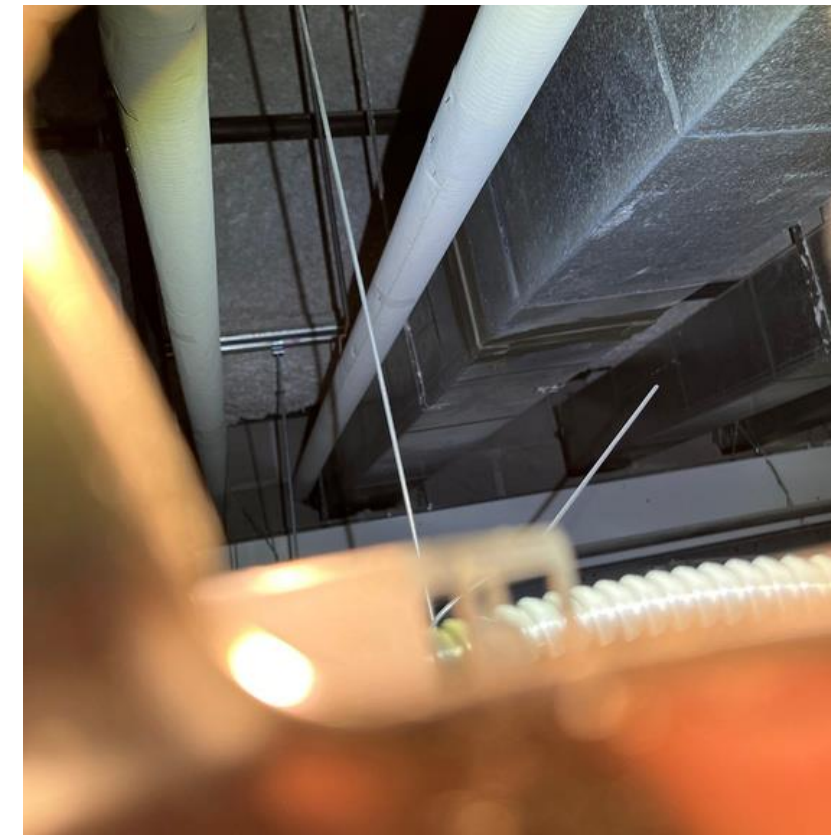
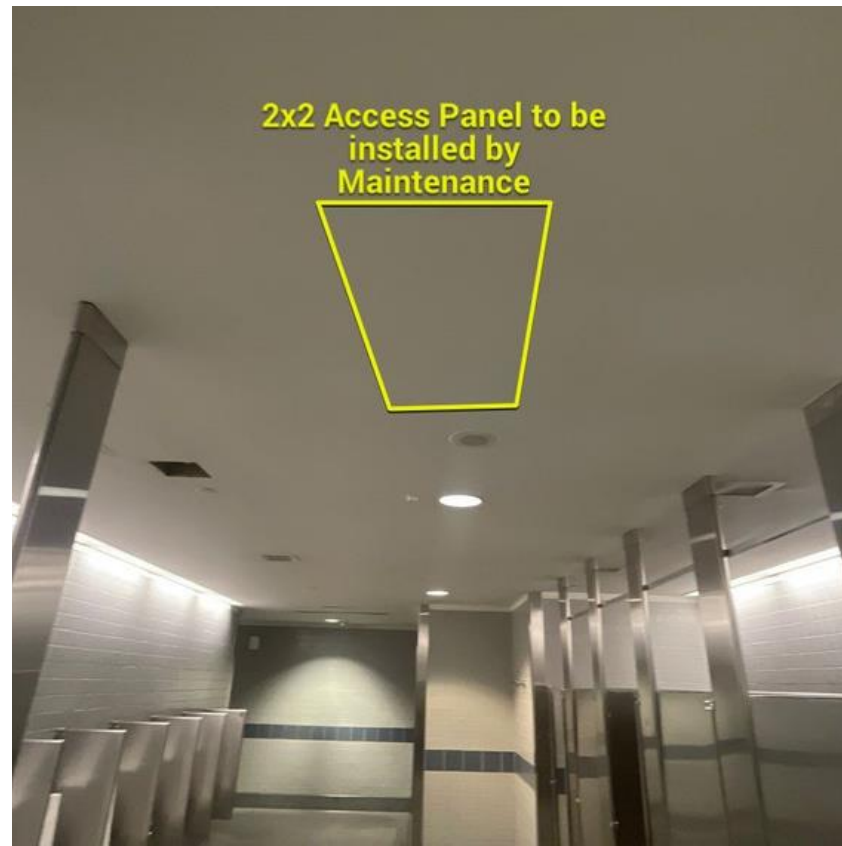
24 x24
UP

The Area where working in



- **Section 2 of the ACR, The NADCA Standard - Work Plans**
 - The project consisted of cleaning (24) exhaust systems.
 - Systems haven't been cleaned since install 1995.
 - Multiple exhaust fans were inoperable
 - The ones that weren't were significantly reduced in cfm.
 - The facility received ongoing complaints due to odors.
 - This document was shared with all for alignment
 - Facilities Team
 - HVAC Team
 - Building Maintenance Team
 - TCS
 - I created this for each Bathroom Exhaust Fan.

THERE WAS A HEAVY INSPECTION AND PLANNING PERIOD. VERY INVOLVED SITE WALKS

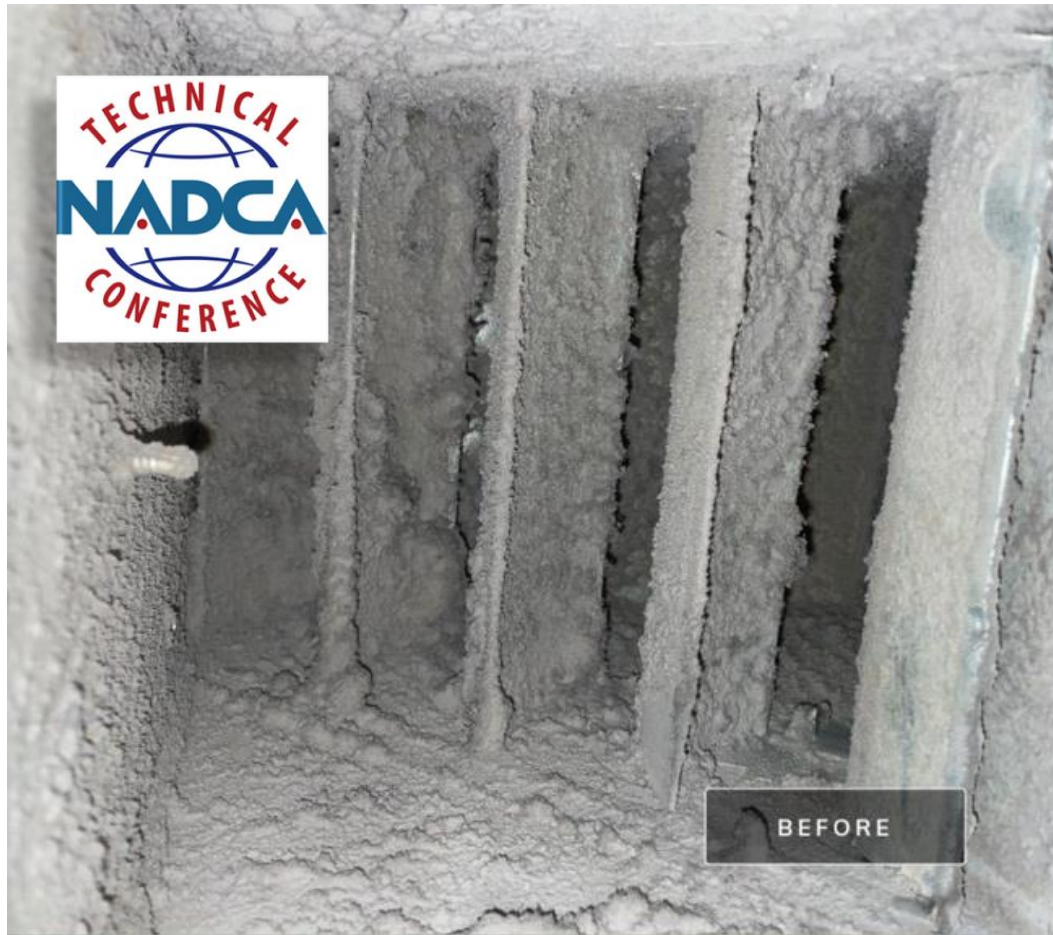






EQUIPMENT USED



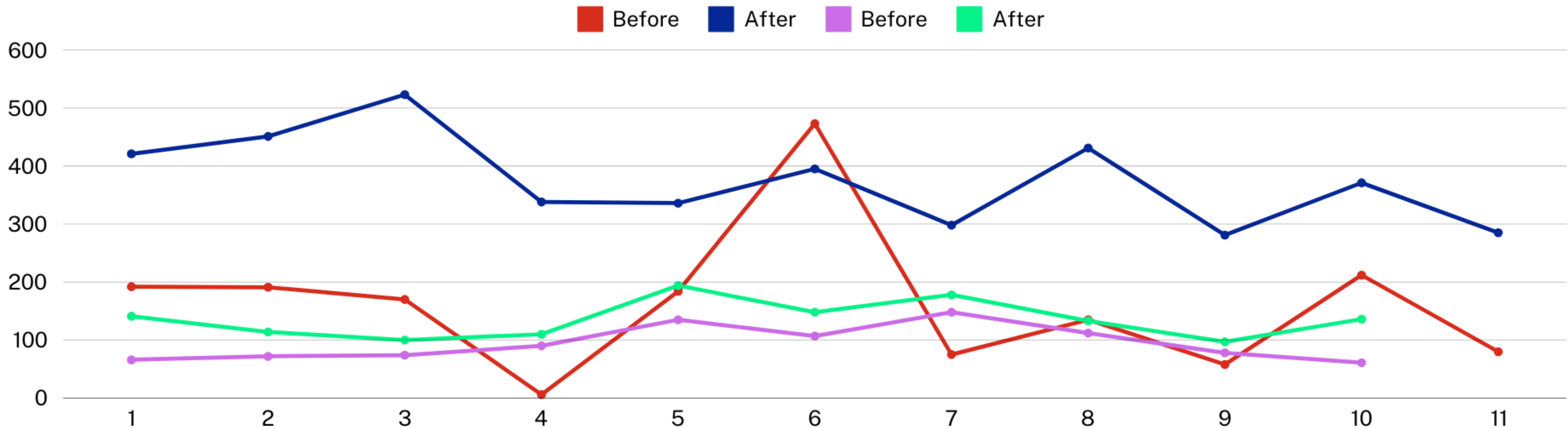


CFM Readings

Bathroom #5 and #12

- **NOTES:**

- We're not a TAB Company
- Used CPS Bluetooth anemometer
- Several vents in each bathroom with a 0 before reading... and much higher after
- Nonworking exhaust fans were replaced after cleaning



Sell the Solution

01

Reduced Odors

Bathroom and foul odors were now being properly exhausted out.

02

Improved Air Flow

Increased air flow and proper ventilation for the space

03

Occupant Comfort

Reduction in complaints, leading to more satisfied occupants

04

Energy Management

Exhaust fans aren't working as hard to exhaust air out of the space.

05

Maintenance Reduction

Reduction in labor expense for maintenance



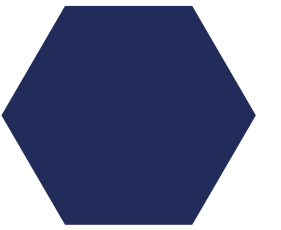
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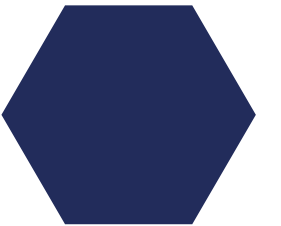
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KEY TAKE AWAYS

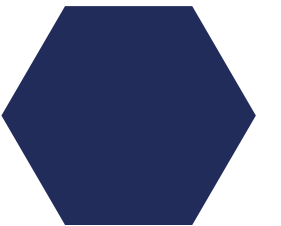
TAKE TIME TO PLAN THE PROJECT



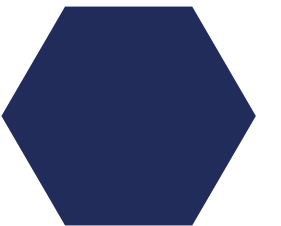
COORDINATE WITH ALL STAKEHOLDERS



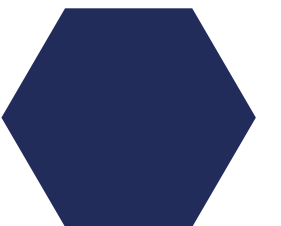
STAY IN YOUR LANE



SHOW WHAT YOU DID IN YOUR REPORTING



SET YOUR TEAMS UP FOR SUCCESS



THANK YOU FOR ATTENTION



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Call

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The HVAC Inspection, Cleaning
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