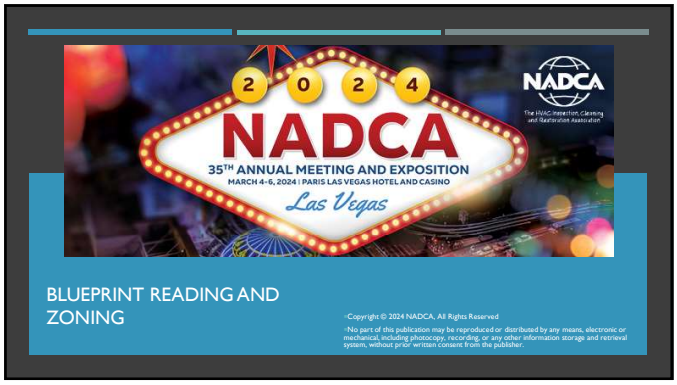

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Clint Orr
ASCS, CVI, Red Seal Refrigeration Mechanic

2

- ✓This presentation is not intended to be a comprehensive program covering all aspects of this topic.
- ✓All participants are encouraged to read and follow applicable standards, codes and regulations related to this topic.
- ✓The views and opinions following are the presenter's opinions and not necessarily the official position of the National Air Duct Cleaners Association.

3

SESSION DESCRIPTION

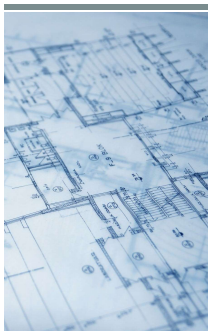
What are Blueprints
How to Interpret Blueprints
Tools
Blueprints and intertwining with a General Specification
Blueprints as a Communication Script
Summary

4

WHAT ARE BLUEPRINTS?

- As per the Oxford Dictionary:
- **Blueprints:** a design plan or other technical drawing.

Fun fact: Why are they called blueprints?
The word blueprint originated in the mid-nineteenth century when engineering drawings were printed on blue paper with white lines.



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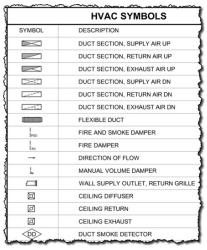
HOW TO INTERPRET BLUEPRINTS:

- Legends
- Section M.
- Zoning
- Schedules of equipment
- Blueprints not available?

6

HOW TO INTERPRET BLUEPRINTS: LEGENDS

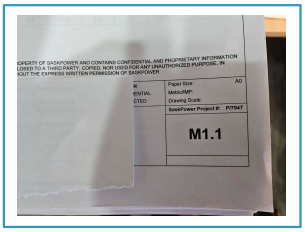
Legends contain symbols necessary for reading blueprints. Understanding what each symbol means will be necessary for determining direction of ductwork, accessories within the system, points of restriction (turning vanes, reheat coils, etc.) and determining what exactly you are looking at when building your bid or executing the work at hand.



HVAC SYMBOLS	
SYMBOL	DESCRIPTION
	DUCT SECTION, SUPPLY AIR UP
	DUCT SECTION, RETURN AIR UP
	DUCT SECTION, EXHAUST AIR UP
	DUCT SECTION, SUPPLY AIR DN
	DUCT SECTION, RETURN AIR DN
	DUCT SECTION, EXHAUST AIR DN
	FLEXIBLE DUCT
	FIRE AND SMOKE DAMPER
	FIRE DAMPER
	DIRECTION OF FLOW
	MANUAL VOLUME DAMPER
	WALL SUPPLY OUTLET; RETURN GRILLE
	CEILING DIFFUSER
	CEILING RETURN
	CEILING EXHAUST
	DUCT SMOKE DETECTOR

7

HOW TO INTERPRET BLUEPRINTS: SECTION M

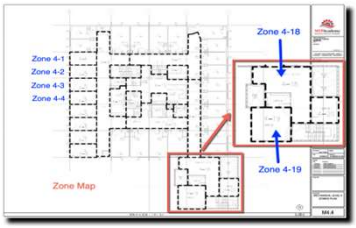


- Most blueprints that we will require are found in section M = Mechanical Blueprints.
- There could be 1 – 2 pages or hundreds depending on the size of the building and all the equipment and ventilation found throughout the facility.

8

HOW TO INTERPRET BLUEPRINTS: ZONING

- **Zoning Map**
- Drawings that show how the HVAC zones are divided up. Each zone typically has its own controller or thermostat. You can see that the floor plan is separated with dashed lines indicating which areas or rooms share the same HVAC zone.
- Great tool to determine your timelines that you may want to lay out to your Project Manager, Technicians and the Customer.



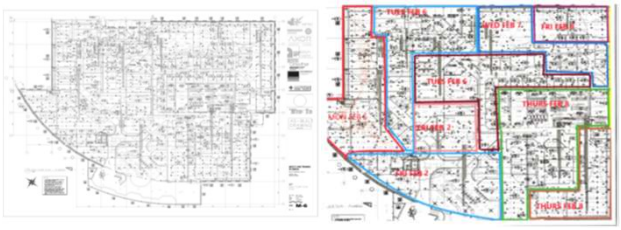
9

TOP SECRET!

- Fun Fact:
- Canadian drones have been giving it to America for years! They are called Canadian Geese!
- You shoot them with a single shot shotgun, and we send them over by the millions every year!
- We can do this ALL-NIGHT LONG BABY!

10

HOW TO INTERPRET BLUEPRINTS: ZONING



11

HOW TO INTERPRET BLUEPRINTS: SCHEDULES OF EQUIPMENT

- Section within the blueprints which lays out all HVAC Equipment for a building. It will list the make, model and product specifics which are required to provide air flow to the space. Please note that many schedules of equipment are as per the Engineer's requirements but what gets installed may vary depending on availability of the product and different makes and models may be approved by the Engineer or the Site Supervisor. These variations in equipment usually do not impact a cleaning project but good to know should the make and model not match up when you are performing your work.

AIR HANDLING UNIT SCHEDULE

UNIT NO.	LOCATION	AREA SERVED	SUPPLY FAN NO.	CFM [L/s]		EXTERNAL STATIC PRESSURE (NOTE 1) IN[mm]	SPECIFIED INTERNAL LOSSES (NOTE 2) IN[mm]	UNSPECIFIED INTERNAL LOSSES (NOTE 3) IN[mm]	FAN TOTAL S.P. (NOTE 4) IN[mm]	TYPE SYSTEM
				SUPPLY	O.A.					
1-AH5	2nd FLOOR	SURGERY	1-SF5	20,000 [9439]	20,000 [9439]	2.5 [63.5]	2.0 [50]	1.0 [25]	5.5 [140]	VAV

NOTES:

1. EXTERNAL STATIC PRESSURE REQUIRED AT DUCT CONNECTIONS TO INLET & OUTLET OF AHU. MEASUREMENTS SHALL BE TAKEN WITHIN 3 FT. [1.0 M] OF INLET AND OUTLET AT A POINT OF MAX. ACCURACY.
2. TOTAL OF MAX. PRESSURE DROPS OF COMPONENTS WHICH ARE SPECIFIED SEPARATELY, IE., PREFILTERS, AFTER FILTERS, HEATING & COOLING COILS, DIFFUSER PLATE, AND SOUND ATTENUATORS.
3. INTERNAL LOSS ALLOWANCE SHALL INCLUDE LOSSES DUE TO ENTRANCE & EXIT OF AHU, MIXING BOXES, DIFFUSER SECTION (OTHER THAN DIFFUSER PLATE) INCLUDING LOSSES DUE TO FAILURE TO PROPERLY CONVERT FAN DISCHARGE VELOCITY PRESSURE TO STATIC PRESSURE, FAN INLET CONDITIONS, CASINGS, HUMIDIFIERS, DAMPERS, ETC.
4. TOTAL FAN S.P. = EXTERNAL STATIC PRESSURE + SPECIFIED INTERNAL LOSSES + UNSPECIFIED INTERNAL LOSSES. MANUFACTURER SHALL PROVIDE SUBMITTAL SHOWING ACTUAL LOSSES OF ALL EQUIPMENT PROVIDED. REFER TO FAN SCHEDULE FOR ADDITIONAL FAN SELECTION INFORMATION.

DESIGNER'S NOTE:
FOR AREA SERVED SHOW FUNCTIONAL AREA SUCH AS SURGERY, KITCHEN, LABORATORIES, ETC., WHERE APPLICABLE, OTHERWISE SHOW FLOORS SERVED. FOR TYPE OF SYSTEM INDICATE DUAL DUCT, MEDIUM PRESSURE, VARIABLE VOLUME, LOW PRESSURE REHEAT, MULTIZONE, VENTILATION SUPPLY UNIT, ETC.

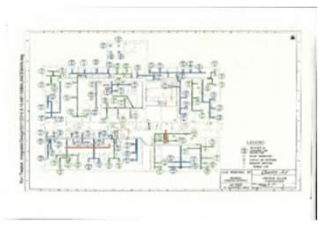
12

HOW TO INTERPRET BLUEPRINTS: BLUEPRINTS NOT AVAILABLE?

- Floor Plans
- Air Balancing plans
- Good old fashion " Not to Scale" Plan (Graph Paper and a Pencil)

13

HOW TO INTERPRET BLUEPRINTS: BLUEPRINTS NOT AVAILABLE?



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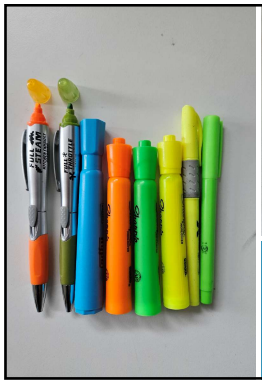
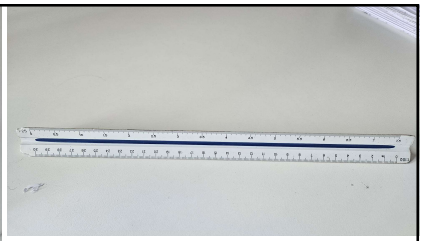




TOOLS FOR READING BLUEPRINTS

15

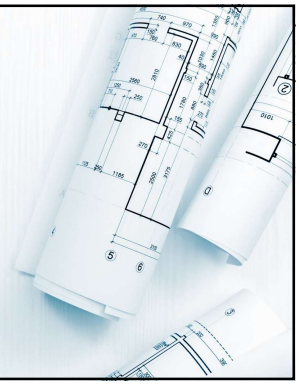
SCALE

A drawing at a scale of 1:100 means that the object is 100 times smaller than in real life. You could also say, 1 unit in the drawing is equal to 100 units in real life.

There are many online tools to help you calculate your scale measurements whether it is in metric or imperial. Make sure you get your units correct, there is a big difference between 100 meters and 100 feet!

16

BLUEPRINTS AND INTERTWINING WITH A GENERAL SPECIFICATION



17

HOW TO INTERPRET BLUEPRINTS: WHERE TO FIND SPECIFICATIONS

- Generally, specifications will be a separate document. It should have details pertaining to the level of cleaning, engineering controls and execution of the work to be performed. Sometimes it can be several pages and other specifications we may be lucky to get one line! Do not be afraid to ask for one if one is not provided!
- This information is instrumental in understanding what is expected from your company and what the customer can expect to see for results. Be careful, some specifications may not be obtainable, so make sure to read carefully and understand what is being requested. Ask questions and get clarification!

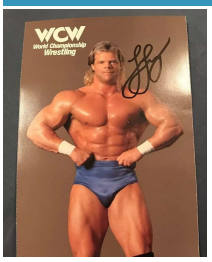
18

HOW TO INTERPRET BLUEPRINTS: NO SPECIFICATION……NO PROBLEM!

- **What to do if there isn't a Specification?** Refer to our General Specification which you can send to your client and work with them to create a specification.
- Go to: NADCA.com
- Login to your account
- Click on: Facility Managers
- Click on: Standards & Publications
- Download the NADCA General Specification.
- Still unsure, talk with the AMAZING NADCA Staff to get this editable document to add to your resource collection!

19

THE TOTAL PACKAGE!



- General Specification + Blueprints + Zoning = SUCCESS!!!
- The process to talk to your client and get their engagement is now set. The only thing left to do is execute!
- A NADCA member will also be able to use these tools to communicate to their team and ensure that nothing gets missed!

20

BLUEPRINTS AS A COMMUNICATION SCRIPT

- Customer
- Technicians
- Site Contractors

21

SUMMARY

*Understanding blueprints

*How to interpret blueprints and the different sections is key for creating a top-notch quote or game plan to complete a project!

*Get the right tools

*Blueprints are communication script (client, techs, building staff)

*A project can still be done without official blueprints, It just may take more time, so charge accordingly and create some "As-builts for future service."

*Don't be afraid to ask for blueprints! It can be a way to engage the level of commitment the client may have to you and your company. Sometimes the best job is the one you didn't get!

22

QUESTIONS?

23

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24

Thank You for Participating!

25