

A Career in Commercial Construction

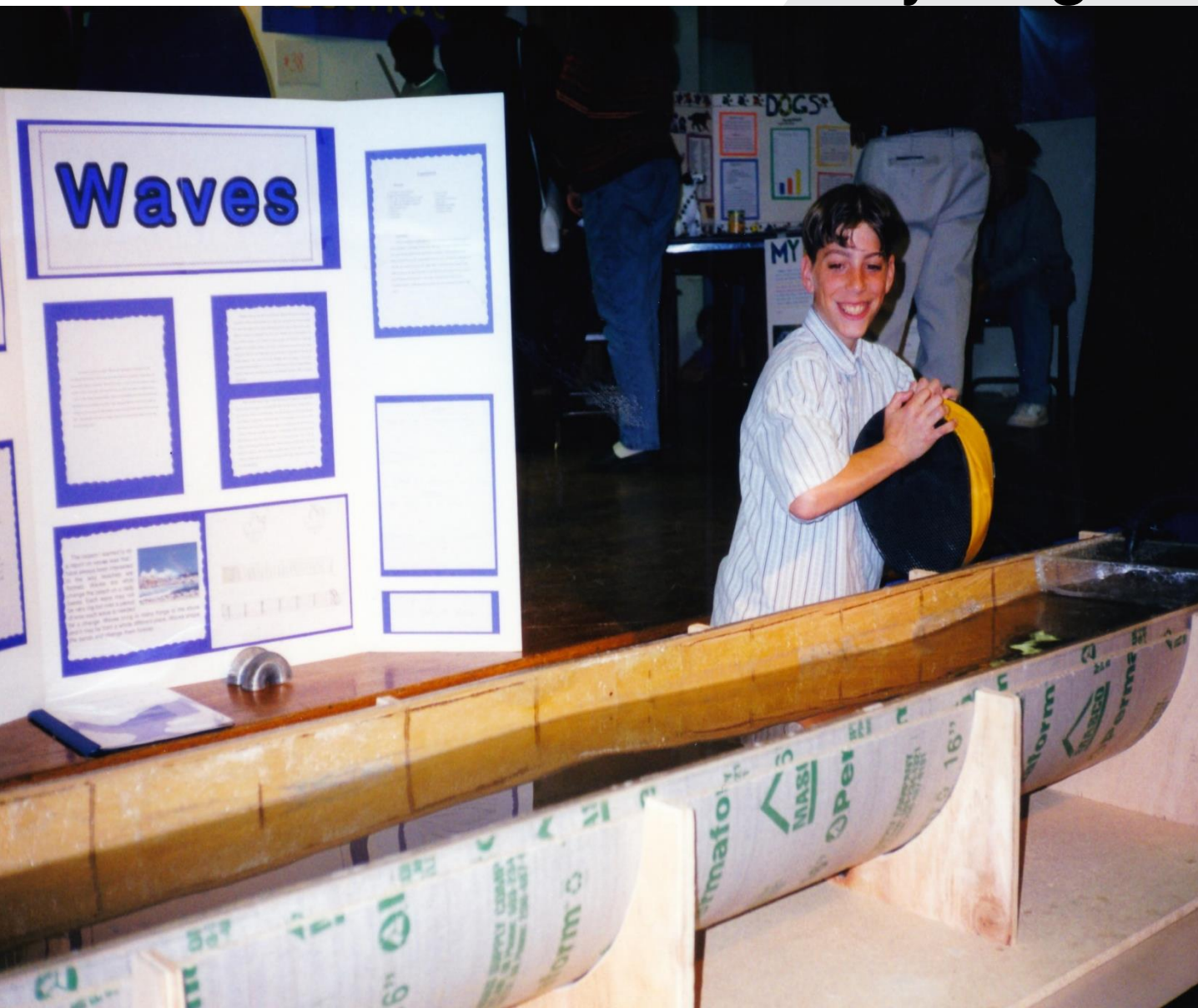
NWESI



My inspiration, my grandpa and dad



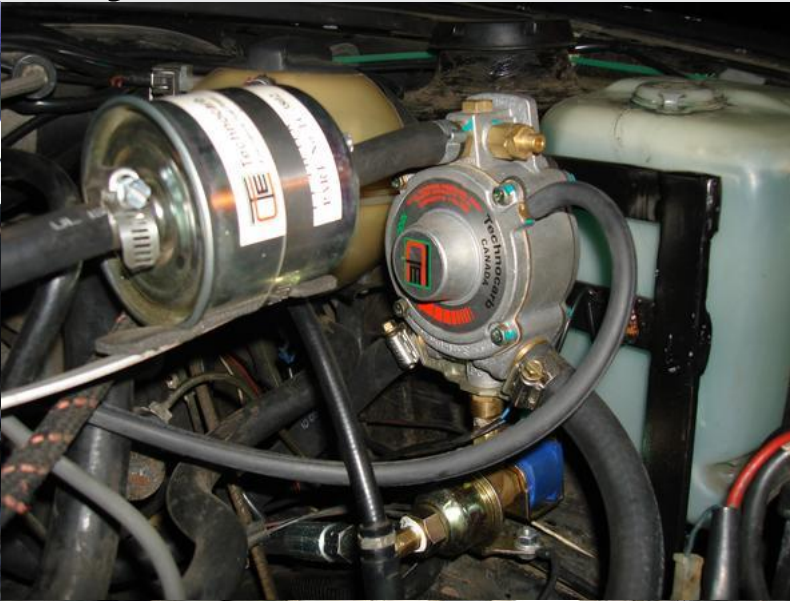
My 7th grade science and bridge projects



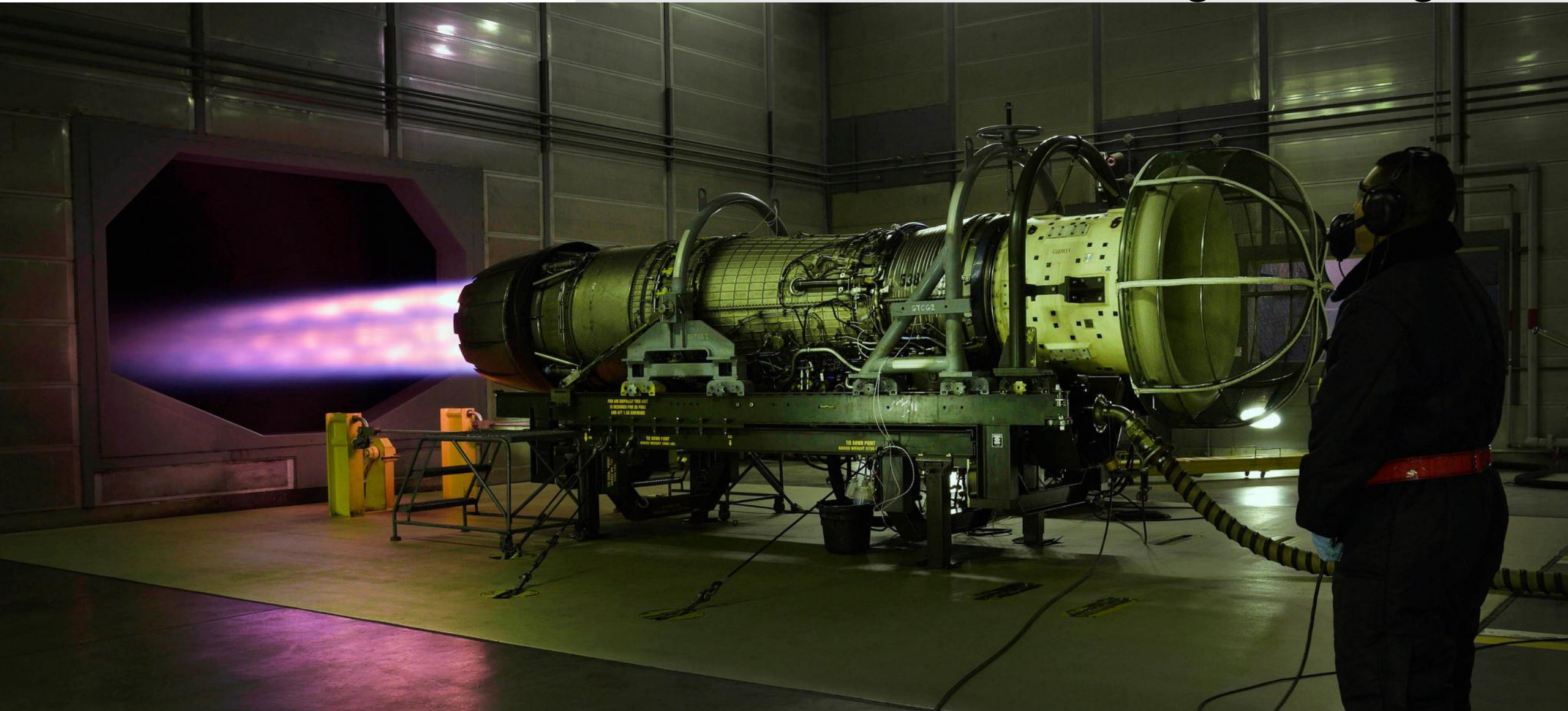
Going into and out of high school



My Univ. of Portland senior design project



What I wanted to do, design/test engineer



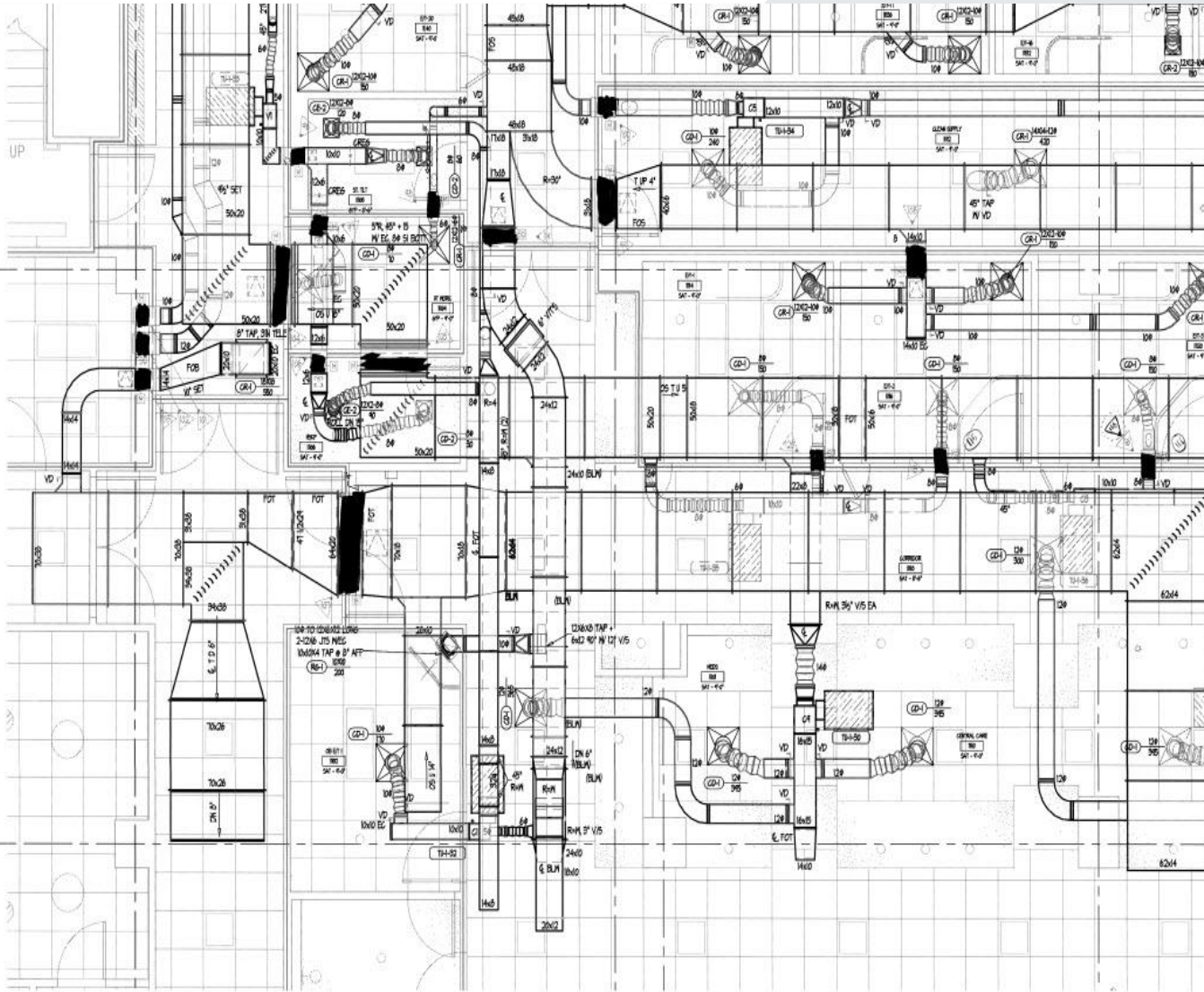
What I actually do, field test engineer



Sometimes I inspect equip. or bldgs.



A lot of times it is paperwork and details



FOR CONTINUATION SEE M2.1-F1

1ST FLOOR PARTIAL FLOOR PLAN - AREA D1

Scale: 1/4" = 1'-0"

Project:

Site Address:

Project Site Contact:

NWESI Project Manager: John M. Herboth, johnh@nvesi.com, 503-701-9138

NWESI Technicians: Ben DuChalard and Stephen Cannon

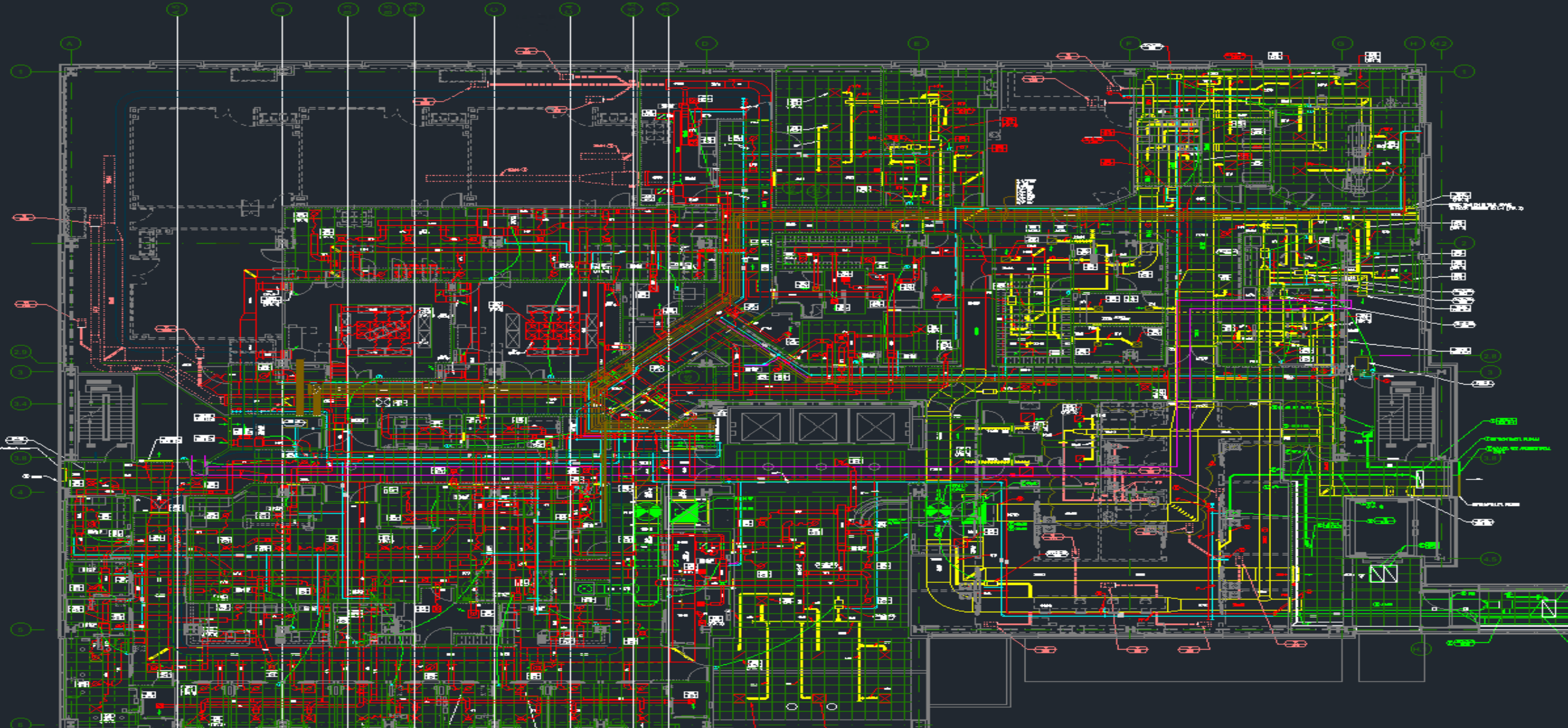
FSD/SD Matrix:

Floor	Dwg	Rm # or Location Detail	FSD #	Ceiling Tag #	HVAC Service Type	HVAC Eqt #	FACP On	Elec Panel	Elec Circ	FSD Dimen	Access Grnd	Inspector	Date of Insp	Pass / Fail	Notes		
2	M2.02	Corridor 266	1	FSD-M2-01	SA	AHU-1	3	ELP	4	8'8"	2A	SC	3/12/2019	P			
2	M2.02	Room 212	2	FSD-M2-02	SA	AHU-1	3	ELP	4	14'8"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 276	3	FSD-M2-03	SA	AHU-1	3	ELP	4	14"x20"	1A	BD	3/12/2019	P			
2	M2.02	Clean Utility / Medicine 265	4	FSD-M2-04	SA	AHU-1	3	ELP	4	6'8"	1A	SC	3/12/2019	P			
2	M2.02	Room 254	5	FSD-M2-05	EX	AHU-1	3	ELP	4	18"x14"	1A	JMH	3/12/2019	P			
2	M2.02	Hallway 252	6	FSD-M2-06	SA	AHU-1	3	ELP	4	20'8"	1A	BD	3/12/2019	P			
2	M2.02	Hallway 251	7	FSD-M2-07	SA	AHU-1	3	ELP	4	6'8"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 266	8	FSD-M2-08	EX	AHU-1	3	ELP	4	36"x14"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 276	9	FSD-M2-09	EX	AHU-1	3	ELP	4	44"x20"	1A	BD	3/12/2019	P			
2	M2.02	Elec Lobby 293	10	FSD-M2-10	EX	AHU-1	3	ELP	4	10'8"	2A	SC	3/12/2019	P	Access hatch in office 291		
2	M2.02	Corridor 276	11	FSD-M2-11	SA	AHU-1	3	ELP	4	6'8"	1A	JMH	3/12/2019	P			
2	M2.02	Clean Utility 284	12	FSD-M2-12	SA	AHU-1	3	ELP	4	6'8"	1A	BD	3/12/2019	P			
2	M2.02	Clean Utility 284	13	FSD-M2-13	SA	AHU-1	3	ELP	4	6'8"	1A	BD	3/12/2019	P			
2	M2.02	Spa 278	14	FSD-M2-14	SA	AHU-1	3	ELP	4	72"x20"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 276	15	FSD-M2-15	SA	AHU-1	3	ELP	4	16'24"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 209	16	FSD-M2-16	SA	AHU-1	3	ELP	6	8'8"	1A	JMH	3/12/2019	P			
2	M2.02	Clean Utility 290	17	FSD-M2-17	SA	AHU-1	3	ELP	6	6'8"	1A	SC	3/12/2019	P			
2	M2.02	Clean Utility 290	18	FSD-M2-18	SA	AHU-1	3	ELP	6	6'8"	1A	SC	3/12/2019	P			
2	M2.02	Corridor 203A	19	FSD-M2-19	SA	AHU-1	3	ELP	6	24'16"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 203A	20	FSD-M2-20	EX	AHU-1	3	ELP	6	10'8"	1B	BD	3/12/2019	P	Scope inspection hold drilled, recommend installing appropriately sized hatch for future maintenance.		
2	M2.02	Rm 203	21	FSD-M2-21	EX	AHU-1	3	ELP	6	12'12"	1B	JMH	3/12/2019	P	Scope inspection hold drilled, recommend installing appropriately sized hatch for future maintenance.		
2	M2.02	Corridor 200	22	FSD-M2-22	SA	AHU-1	3	ELP	6	12'12"	1A	SC	3/12/2019	P			
2	M2.02	Corridor 200	23	FSD-M2-23	EX	AHU-1	3	ELP	6	12'12"	1A	JMH	3/12/2019	F	Failed, open.		
2	M2.02	Cor. 200B / Solid Utility 211	24	FSD-M2-24	SA	AHU-1	3	ELP	6	6'8"	1A	SC	3/12/2019	P			
2	M2.02	Corridor 200B	25	FSD-M2-25	EX	AHU-1	3	ELP	6	20'8"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 200B	26	FSD-M2-26	SA	AHU-1	3	ELP	6	10'8"	1A	SC	3/12/2019	P			
2	M2.02	Rm 241	27	FSD-M2-27	SA	AHU-1	3	ELP	6	22'10"	1A	SC	3/12/2019	P			
2	M2.02	Rm 241	28	FSD-M2-28	EX	AHU-1	3	ELP	6	34'14"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 203C	29	FSD-M2-29	EX	AHU-1	3	ELP	6	6'8"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 286 into RR 210	30	FSD-M2-30	EX	AHU-1	3	ELP	6	12'8"	1A	JMH	3/12/2019	P	Difficult to view without a scope even with hatch on side of duct. Recommend adding a second access hatch on bottom of duct or improving access to existing duct hatch.		
2	M2.02	Corridor 209C	31	FSD-M2-31	SA	AHU-1	3	ELP	6	40'16"	2A	JMH	3/12/2019	P			
2	M2.02	Nurse Station 216	32	FSD-M2-32	SA	AHU-1	3	ELP	6	16'14"	1A	BD	3/12/2019	P	Actuator in nurse station, viewing hatch is employee lounge		
2	M2.02	Med / Chart 216A	33	FSD-M2-33	SA	AHU-1	3	ELP	6	10'8"	1A	SC	3/12/2019	P			
2	M2.02	Corridor 222 / Between Dining and Med Chart	34	FSD-M2-34	EX	AHU-1	3	ELP	6	10'8"	1A	JH	3/12/2019	P			
2	M2.02	Employee Lounge 217	35	FSD-M2-35	EX	AHU-1	3	ELP	6	14'12"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 207	36	FSD-M2-36	EX	AHU-1	3	ELP	4	56'16"	1A	BD	3/12/2019	P	Dual actuators, 1 in corridor, 1 in dining 208		
2	M2.02	Sales 217A	37	FSD-M2-37	SA	AHU-1	3	ELP	6	56'16"	1B	BD	3/12/2019	P	Scope inspection hold drilled, recommend installing appropriately sized hatch for future maintenance.		
2	M2.02	SC Dining 221	38	FSD-M2-38	SA	AHU-1	3	ELP	4	10'8"	1A	SC	3/12/2019	P			
2	M2.02	Physical Therapy 277	39	FSD-M2-39	SA	AHU-1	3	ELP	4	24'10"	1B	SC	3/12/2019	P	Scope inspection hold drilled, recommend installing appropriately sized hatch for future maintenance.		
2	M2.02	Storage 290	40	FSD-M2-40	SA	AHU-1	3	ELP	4	10'8"	1A	SC	3/12/2019	P			
2	M2.02	Storage 290	41	FSD-M2-41	SA	AHU-1	3	ELP	4	16'14"	1A	SC	3/12/2019	P			
2	M2.02	Rm 277	42	FSD-M2-42	SA	AHU-1	3	ELP	4	44'10"	1A	BD	3/12/2019	P			
2	M2.02	Rm 243	43	FSD-M2-43	SA	AHU-1	3	ELP	6	66'10"	1A	JMH	3/12/2019	P			
2	M2.02	Rm 244	44	FSD-M2-44	EX	AHU-1	3	ELP	6	40'16"	1A	JMH	3/12/2019	P			
2	M2.02	Rm 244	45	FSD-M2-45	EX	AHU-1	3	ELP	6	76'16"	2A	JMH	3/12/2019	P			
2	M2.02	Rm 244	46	FSD-M2-46	SA	AHU-1	3	ELP	6	44'10"	1A	BD	3/12/2019	P			
2	M2.02	Corridor 276	47	FSD-M2-47	EX	AHU-1	3	ELP	4	10'8"	1A	BD	3/12/2019	P			
2	M2.02	Rm 248	48	FSD-M2-48	EX	AHU-1	3	ELP	6	76'16"	2A	BD	3/12/2019	P			
2	M2.02	Rm 248	49	FSD-M2-49	EX	AHU-1	3	ELP	4	6'8"	1B	JMH	3/12/2019	P	Scope inspection hold drilled, recommend installing appropriately sized hatch for future maintenance.		
2	M2.02	Rm 252	50	FSD-M2-48	SA	AHU-1	3	ELP	4	14'8"	1A	JMH	3/12/2019	P			
2	-	AHU Mechanical Room	-	SD-MT-1	SA	AHU-1	3	-	-	-	-	JMH	3/12/2019	P	Supervisory with initial trip, 150 seconds of constant smoke to trip.		
2	-	AHU Mechanical Room	-	SD-MT-2	SA	MAU-1	3	-	-	-	-	JMH	3/12/2019	P	Supervisory with initial trip, 150 seconds of constant smoke to trip.		
Total FSD Count			50			Fails Count			1			Pass Count			51		

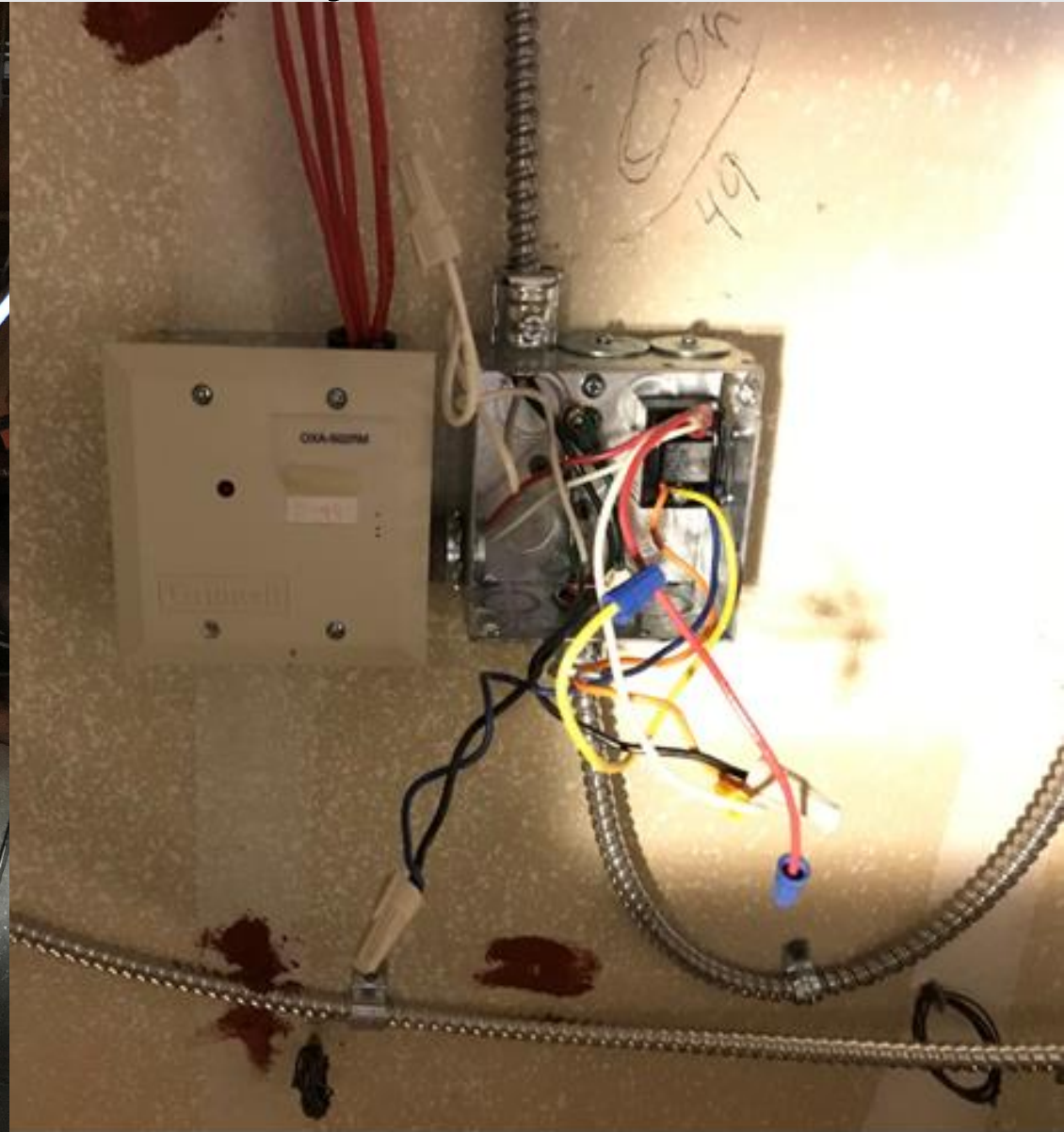
Access Grading

1	8ft Ladder	A	Hatch
2	8ft Ladder	B	Scopes Inspection Hole Drilled to View Duct
3	10ft Ladder	C	Ductwork Visible
4	12ft Ladder	D	Shadows Req'd

Others it is reviewing colorful drawings



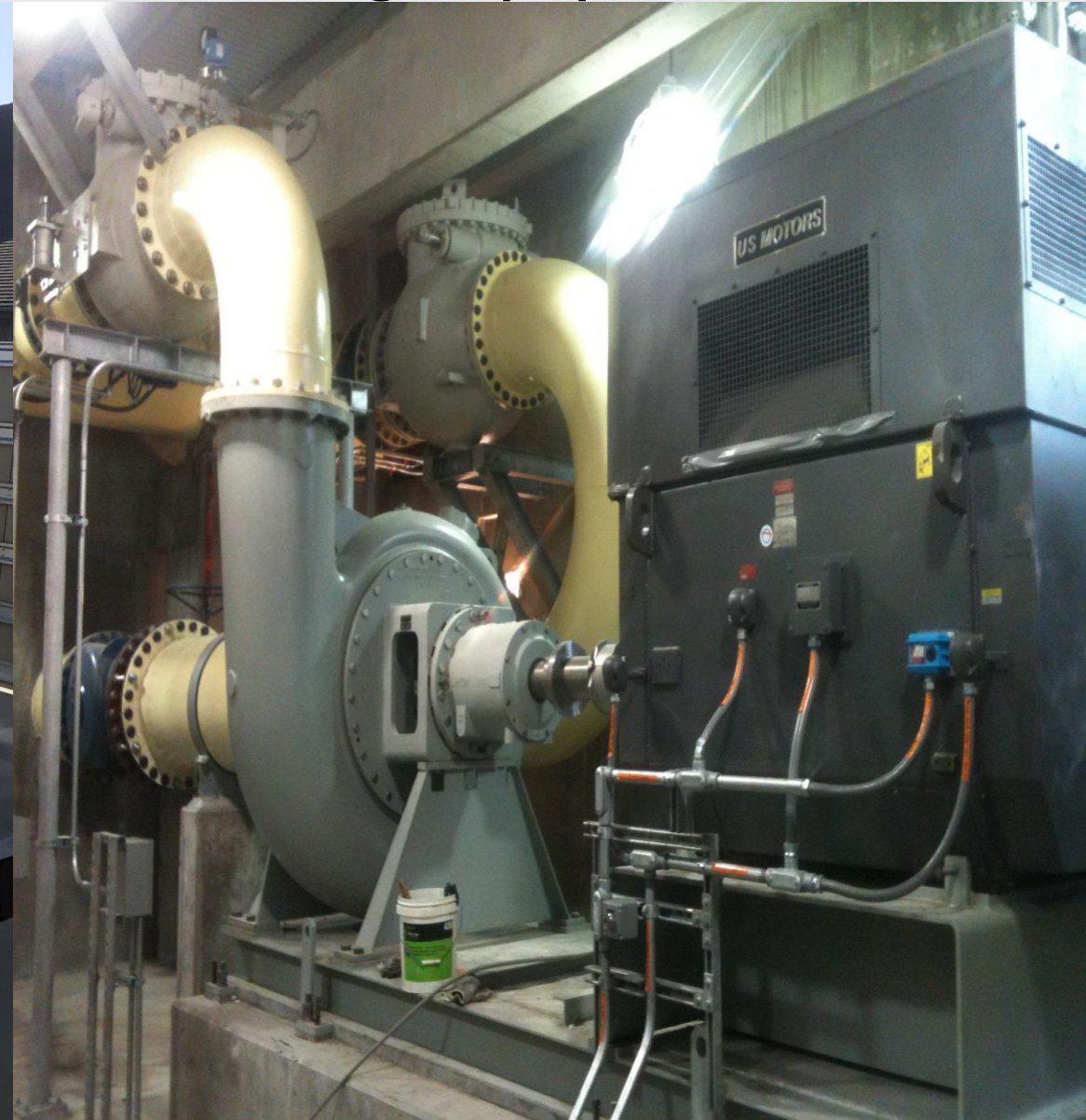
Sometimes it is dirty, hot, and a mess



Sometimes testing is complicated



Sometimes I test big equipment



Sometimes I test small buildings



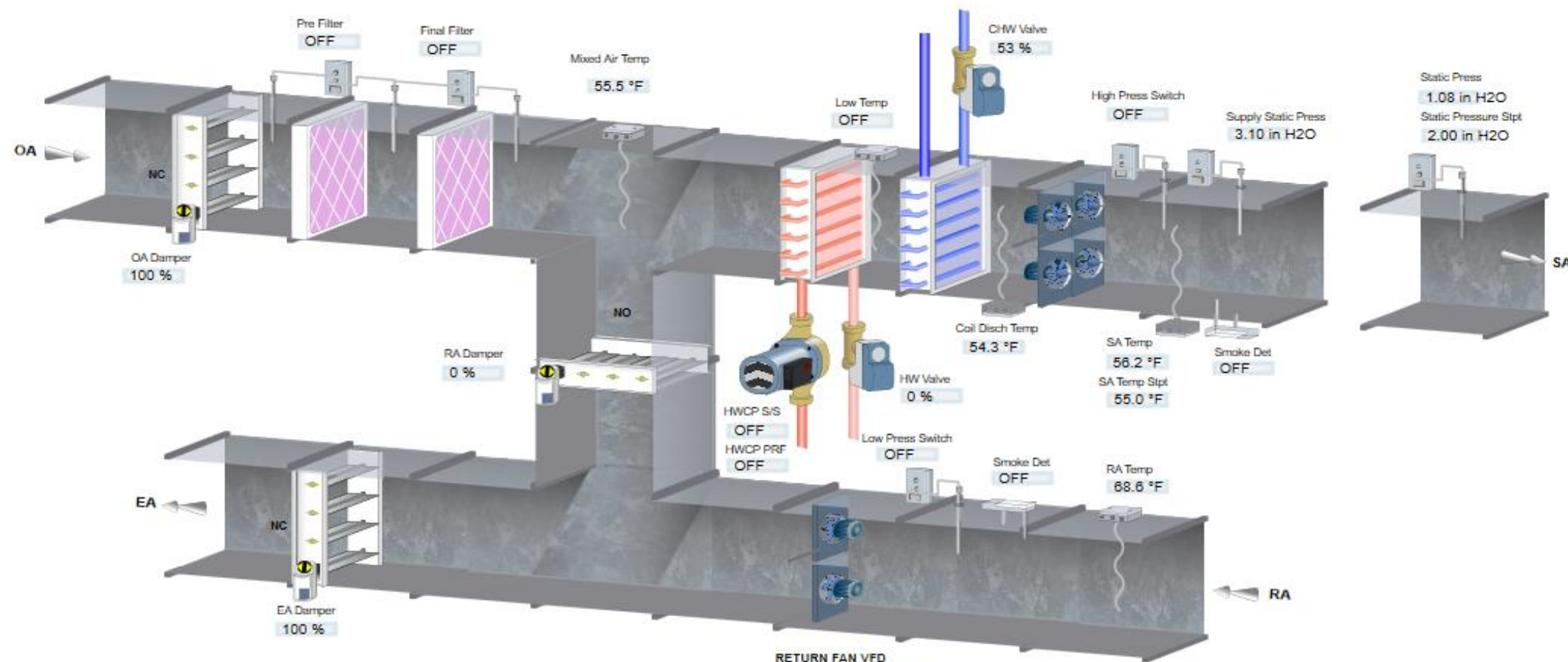
My current project in Newport, OR



OSU Marine Studies Initiative Bldg



Testing the building automation system



RETURN FAN VFD

Start/Stop	ON
Speed	87.2 %
RF1	
Alarm	OFF
Flow	18,979 cfm
RF2	
Alarm	OFF

AHU Mode 1.00

0 = Unoccupied
1 = Occupied

Max Zone Temp	69.9 °F
Min Zone Temp	62.4 °F
Avg Zone Temp	67.7 °F
Night Heating	OFF
Night Cooling	OFF

VFD Control

Start/Stop	ON
Speed	88.07 %
Supply Fan 1	
Alarm	OFF
Proof	ON
Flow	9,357 CFM
Supply Fan 2	
Alarm	OFF
Proof	ON
Flow	9,862 CFM
Supply Fan 3	
Alarm	OFF
Proof	ON
Flow	9,719 CFM
Supply Fan 4	
Alarm	OFF
Proof	ON
Flow	9,118 CFM

Alarms

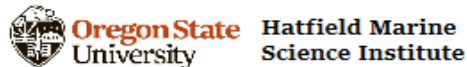
Fire Alarm	OFF
Low Pressure	OFF

Testing the building automation system

Default

Textual Viewer

_Hatfield Marine Science Institute\Heating_Water_System - HMSC_HWP103_SS



Heating Water System

Serves: Hot Water Coils

Outside Temperature 55.22 °F

System Schematic

Boiler Control

BOILER-101
Start/Stop: ON
Status: ON
Setpoint: 140 °F
Alarm: OFF

BOILER-102
Status: ON
Alarm: OFF

Hot Water Pumps & VFD Control

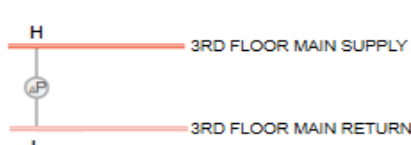
HWP-101
Fault: OFF

HWP-102
Fault: OFF

HWP-103 VFD
Start/Stop: ON
Status: ON
Speed: 79 %
Alarm: OFF

HWP-104 VFD
Start/Stop: ON
Status: ON
Speed: 20 %
Alarm: ON

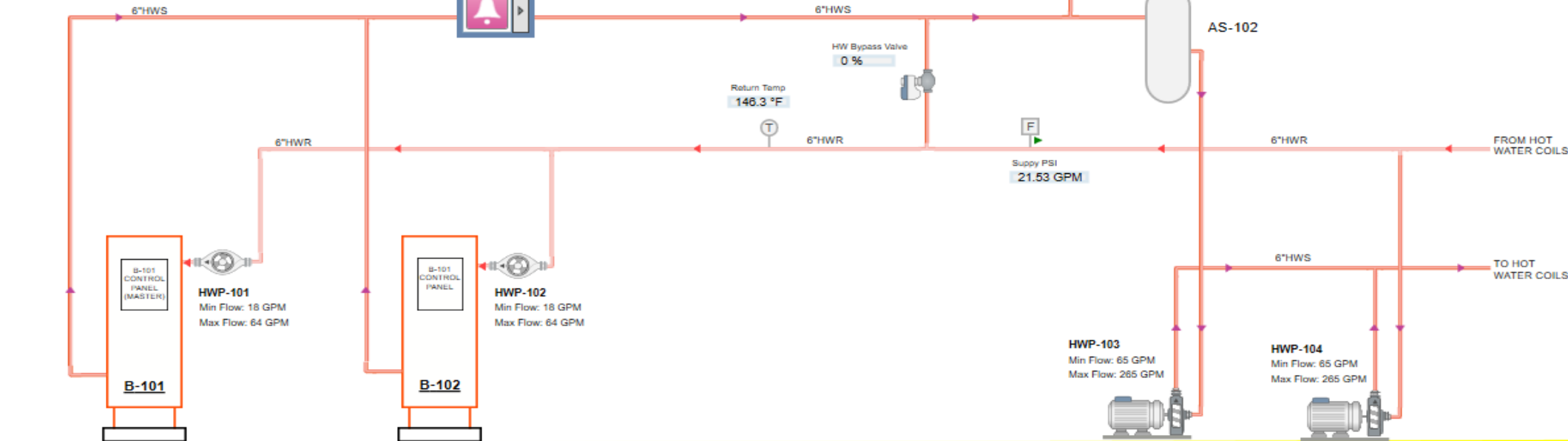
HW Diff Pressure
13 PSI
HW Diff Press Setpt
11 PSI



SYSTEM DIFFERENTIAL PRESSURE
LOCATION: 3RD FLOOR MAINS

Analog Read Only Points

System/Cascade Stpt	59.5 °F
Outlet Stpt	0.0 °F
Outlet Temp	64.2 °F
Firing Rate	0.0 %
Boiler Pump Speed	0.0 %
Boiler Status Code	34



Boilers 101 & 102
Location: 1st Floor Boiler Room
Serves: Hot Water System

Heating Water Pumps
Location: 1st Floor Boiler Room
Hot Water System

Bldg envelope testing - water intrusion



Exterior and interior setups









Thank you, any questions?



John Michael Herboth, PE, CxA, BET CP, EMP

What I wanted to be growing up was an engineer who got to play with cool, expensive, large toys, period.

I dreamt of designing cars and doing tests in a wind tunnel or on a dynamometer.

I dreamt of designing and working on the machines that drive large scale construction projects like a skyscraper or hydroelectric dam.

I was not the stereotypical tinkerer taking things apart and putting them together at home or building computers. I was just good at math and science and was always curious how things work.

My reality now are large and small commercial construction sites, testing HVAC equipment and systems, finding problems, and working with the project team to solve them.