From: Rick Frieseke <rfrieseke@fecinc.us>
Sent: Tuesday, October 22, 2019 10:09 AM
To: Ackerman, Jeffrey A - DNR; John M. Van Lieshout; tott@fecinc.us
Subject: Re: PFET results and VMS specifications
Attachments: 700 Oak street PFET Report PDF.pdf; 700 Oak Street VMS Specifications PDF.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Jeff

Please find attached the results of the PFET and specifications for the proposed VMS based on the result of the PFET and sub-slab testing to date.

Additional mitigation is also needed in the area of VP-9 and VP-15.

This week we are conducting additional sub-slab testing to determine of those areas will be addressed via a single drop or trench system.

We will forward you the results.

Let me know if you have questions or need additional information at this time

Rick

On 10/16/2019 11:00 AM, Ackerman, Jeffrey A - DNR wrote:

> Hi Rick,
>
> Today I received a second duplicate bundle of notification letters for the DB Oak project, forwarded from our Central Office.
>
> Please send hard copies of DB Oak correspondence to DNR just to me, at the Fitchburg address.
>
> And FYI, Alyssa Sellwood left DNR in 2018.
>
> Thank you, Jeff
>
> **We are committed to service excellence.**
> Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.
>
> Jeff Ackerman, P.G.
> Hydrogeologist – Bureau for Remediation and Redevelopment/Environmental Management Division
> Wisconsin Department of Natural Resources

3911 Fish Hatchery Road, Fitchburg, WI 53711
Phone: 608-275-3323
jeff.ackerman@wisconsin.gov


dnr.wi.gov

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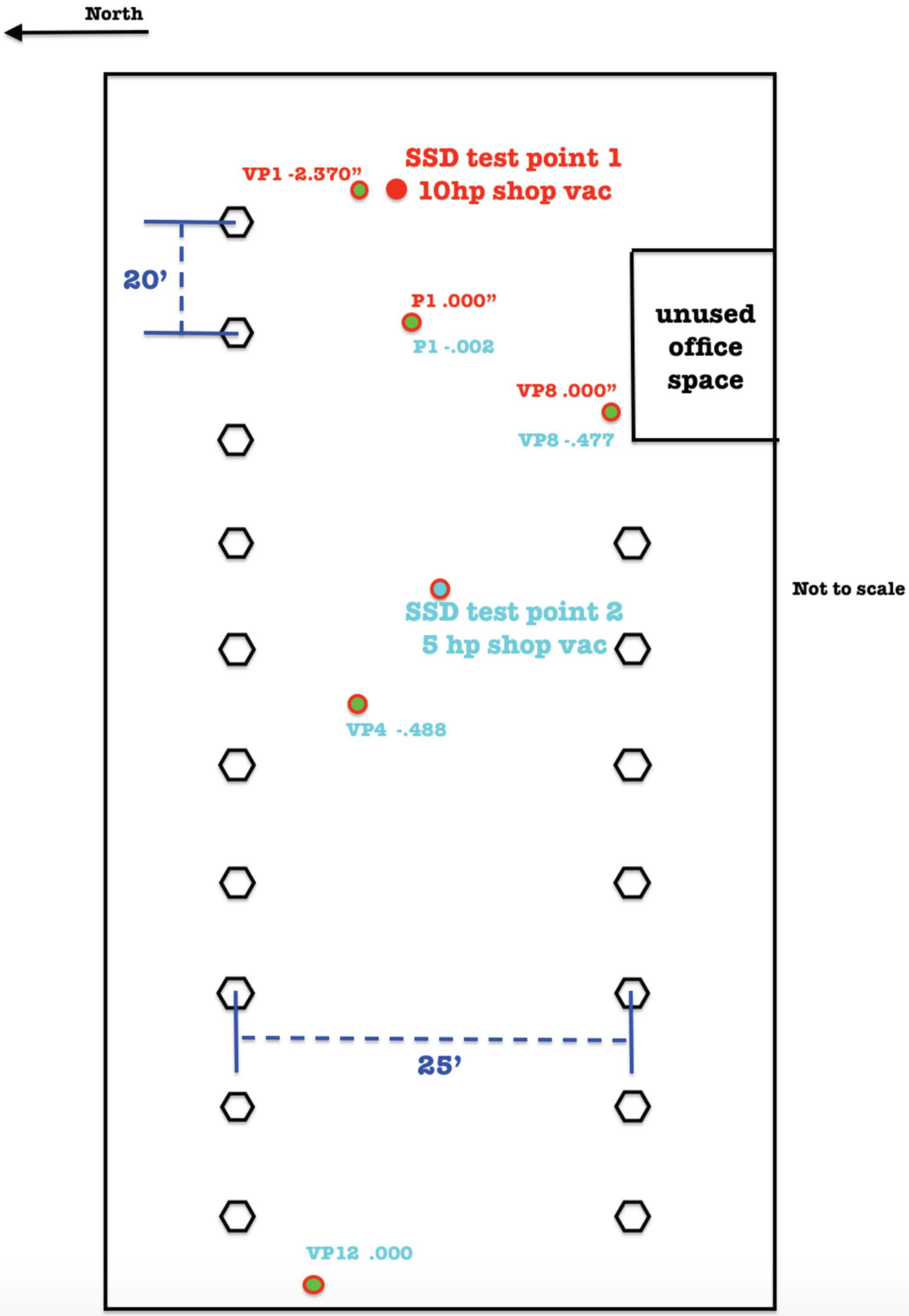
Rick Frieseke
Friess Environmental Consulting
6635 N Sidney Pl
414-228-9815 Office
414-731-9875 Mobile

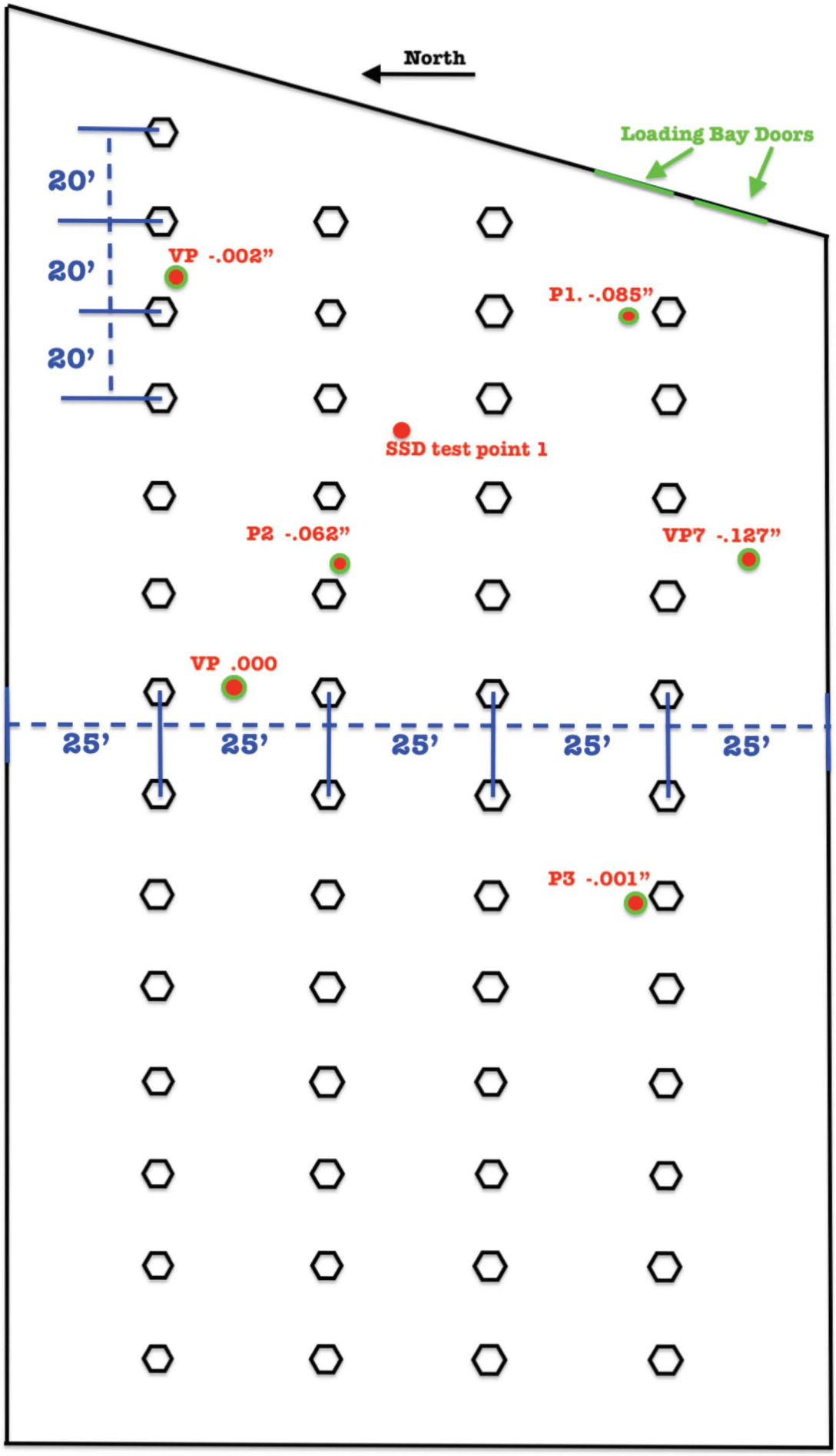
PFET Results and Report for 700 Oak Street in Fort Atkinson, WI

Proposal To: Trenton J. Ott
Project Manager
Friess Environmental Consulting, Inc.
office (414) 228-9815
mobile (414) 688-6683

Proposal From: Chad Rogness, Director of Commercial Projects
Lifetime Radon Solutions Inc.
825 Wells St. Delafield Wi, 53018
262-955-5701
Oct. / 7 / 2019

Results: The PFET results show there are multiple areas with communication blockage throughout the slab area of concern. There were three different large pressure points created and tested, all with different communication abilities. The first sub-slab depressurization (SSD) test point was created near VP1, this pressure point had little to no communication through the slab in any direction. There were 2-5hp shop vacs connected creating near absolute vacuum (about 120” negative pressure) and just three feet away at VP1 there was less than 2.5” of negative pressure left. A pressure test point was created about 20 feet away to the west and there was no measurable negative pressure left. SSD test point 2 was created about 70 feet to the west of SSD test point 1 were communication was found to be considerably better than test point 1 but still would not reach most of the area needed to be mitigated. SSD test point three was created about 70 feet to the North East of SSD 2. Here it was found to have decent communication to the south and west but could not communicate well to north or east.
Due to time constraint and costs, it was determined that it would be best to stop and analyzed the data that was collected to best decide what type of mitigation systems would be able to handle the large footprint with such extremely variable sub-slab soils and conditions. Based on the information gathered it was determined the best way to mitigate would be to burry large perforated vent pipe in long horizontal trenches with large custom built blowers that could handle the possibility of extremely high volumes and/ or create the extremely high negative pressures that are required for the tighter sub slab soil areas.
The first diagram located on the next page is for the South Bay Area and the second on the following page is for the rest of the building area of concern located to the north of the south bay.


North
SSD test point 1
10hp shop vac
VP1 -2.370”
20’
P1 .000”
P1 -.002
unused
office
space
VP8 .000”
VP8 -.477
Not to scale
SSD test point 2
5 hp shop vac
VP4 -.488
25’
VP12 .000


North
Loading Bay Doors
20'
20'
20'
VP -.002"
P1. -.085"
SSD test point 1
P2 -.062"
VP7 -.127"
VP .000
25'
25'
25'
25'
25'
P3 -.001"

Soil Vapor Mitigation at 700 Oak St. in Fort Atkinson, WI

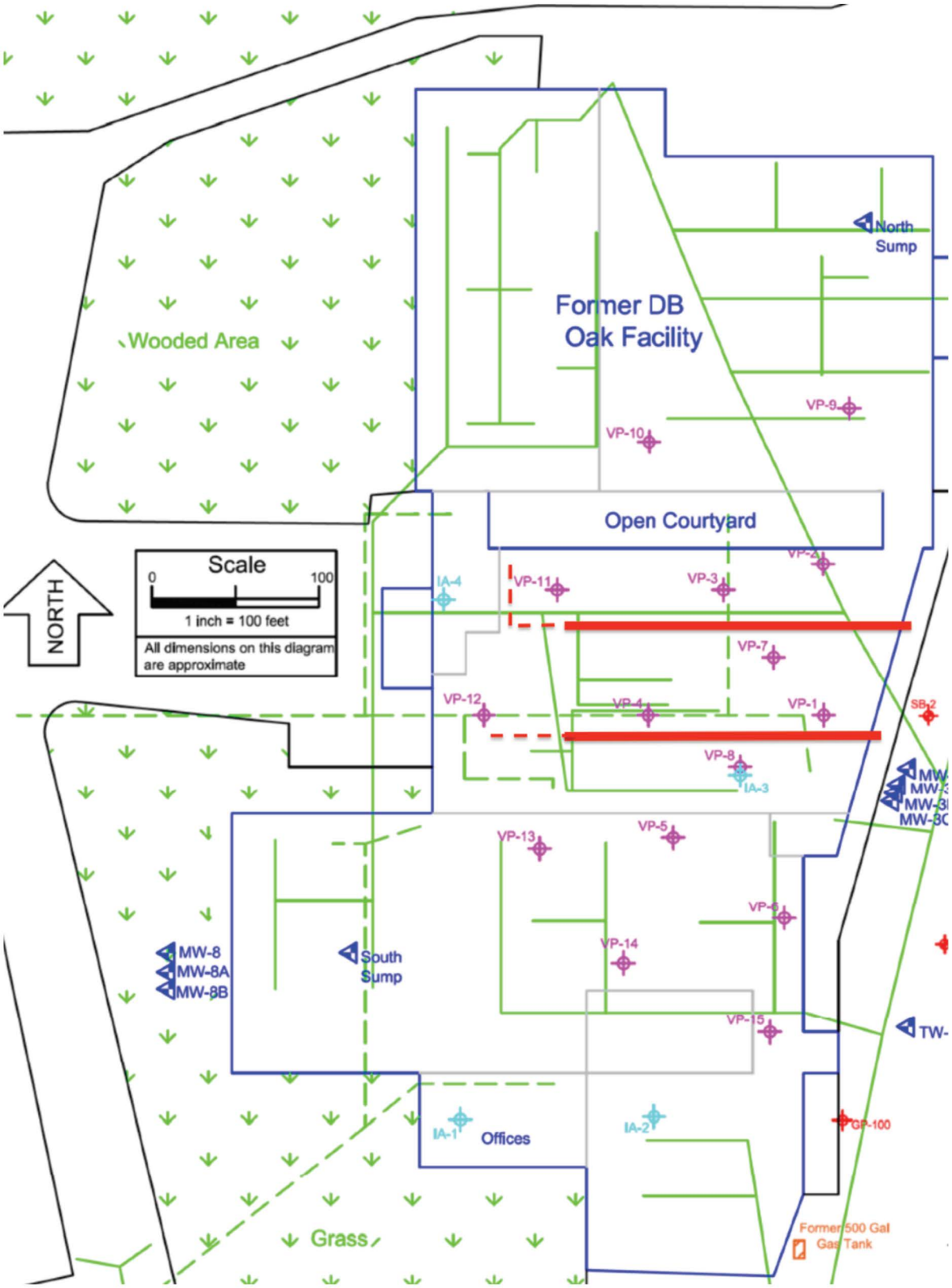
Specifications To: Trenton J. Ott
Project Manager
Friess Environmental Consulting, Inc.
office (414) 228-9815
mobile (414) 688-6683

Specifications From: Chad Rogness, Director of Commercial Projects
Lifetime Radon Solutions Inc.
825 Wells St. Delafield Wi, 53018
262-955-5701
Oct. / 7 / 2019

Description of work: This particular project will include several phases of work for each system. As each system has a similar design and scope, the following description fits them both appropriately except that they will be completed individually. The systems will require a long slender saw cut (about 14" wide), demolition and removal of the existing concrete floor. Within that demo'ed area trenching and removing the existing soil beneath to a depth of at least 14" will be required. The disposal of that soil will be handled by Friess Environmental Consulting, Inc. (the primary contractor on site) as it is considered contaminated. Once the soil has been removed a bedding of about 4"'s deep of 1" washed stone will be laid and 6" perforated sch 40 PVC will be installed in the trench and then backfilled with 1" washed stone. The stone will completely fill the trench to the bottom of the original existing concrete (at least but no more than 8" from finished floor). On top of the stone new concrete will be poured to a depth of about 8" which will be reinforced by 1/2" steal rebar that will be drilled into the existing slab every 3' at alternating points on both sides of the saw cut which in turn would mean there is a reinforcement essentially every 18". At the far east side of the building, the end of the trench, a 6" PVC riser will be installed that then exits the building and continues to the location of the blower motor. The vent piping has a final exhaust point 12" above the roof. The blower motors are a custom design and build that will have the capability of nearly 3000cfm, and/or our goal of 500cfm at 20"w.c. negative pressure. Due to the size and weight of these blowers, a treated lumber stand/structure will need to be erected in order to properly support the blower on the outside of the building. Due to the extremely high levels of contaminants located at this location the manufacturer of theses blowers designed them to be intrinsically safe. This is not due to explosive possibilities but because that design makes them less likely to corrode from the highly chlorinated vapors.
These systems are designed to work in unison with one another in order to create a massive negative pressure zone that will likely extend the depressurization to areas

Trenching Legend

beyond what was capable during the pressure field extension testing. Our testing capability was simply unable to handle the pressure and volume requirements for the square footage being mitigated and so the design of the systems does require both systems to be operational before post mitigation PFET's will be successful.
Keep in mind the scope associated herein are only for the areas shown in the PFET diagrams and does not have the area of VP5 in the data storage facility accounted for.


Former DB
Oak Facility
Wooded Area
Open Courtyard
North
Sump
South
Sump
MW-8
MW-8A
MW-8B
Offices
Grass
Former 500 Gal
Gas Tank
NORTH
Scale
0
100
1 inch = 100 feet
All dimensions on this diagram
are approximate
VP-1
VP-2
VP-3
VP-4
VP-5
VP-6
VP-7
VP-8
VP-9
VP-10
VP-11
VP-12
VP-13
VP-14
VP-15
IA-1
IA-2
IA-3
IA-4
SB-2
GP-100
TW-

Tuesday, October 1, 2019

Job Name: Lifetime Radon Solutions
Reference: Quote: 392197

Operating Requirements

Volume, SCFM	500
Static Pressure, in. wg	20.0
Density, lb./ft.³	0.0712
Operating Temperature, °F	70
AMCA Arrangement No.	4
Motor Frequency, Hz	60
Start-Up Temperature, °F	70

Fan Selection and Specifications

Model	PB-15A
Fan RPM	3,500
Wheel Description	16-1/2 X 5 Radial
Wheel Width, %	100%
Wheel Diameter, in.	16.50
Inlet Diameter, in.	8.00
Outlet Velocity, ft./min.	1,494
Fan BHP	3.82
Static Efficiency, %	42.1%
Cold Start BHP	3.82
Construction Class	N/A

Fan Sound Data

Lp = Sound Pressure Level at a specific distance from the fan. Measured in decibels (dB) or A-weighted decibels (dB(A)) re 0.0002 microbar.
Lw = Sound Power Level of the fan. Measured in decibels (dB) or A-weighted decibels (dB(A)) re 1E-12 watt.
dB = Decibel, ten times the logarithm (base 10) of the ratio of a value to a reference value.
dB(A) = A-Weighted decibel. A-weighting corrects the spectrum for human hearing response.

Sound Directivity Factor, Q : 2 - HemiSpherical radiation
Fan Inlet Ducting: Ducted
Fan Outlet Ducting: Ducted

Calculated Octave Band Sound Data (dB)

Quantity	63 Hz	125 Hz	250Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000Hz
Lw Total	93	96	99	101	97	94	87	82
Lw Inlet	90	93	96	98	94	91	84	79
Lw Outlet	90	93	96	98	94	91	84	79
Lp Total	70	73	76	78	74	71	65	59
Lp inlet	67	70	73	75	71	68	61	56
Lp outlet	67	70	73	75	71	68	61	56

Total A-weighted Sound Pressure Level, Lp dB(A) 80 at 5.0 feet from fan
Total A-weighted Sound Power Level, Lw dB(A) 102
Blade Passage Frequency, Hz 467

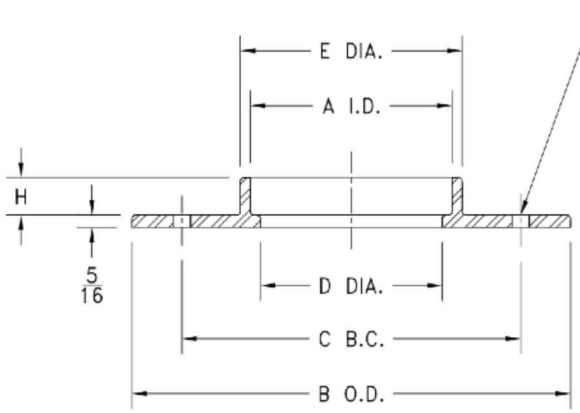
- Sound Pressure values are calculated based upon assumed environmental conditions. Actual values may vary for specific installations due to environmental factors (other noise sources, walls, duct design, etc.)
- Noise from the driver is not included in these data.
- Sound Pressure Level calculations assume free field propagation occuring outdoors.
- Duct End Corrections applied (AMCA 300-85 Appendix C).

CFSWin Version: 8.5.7164.13283 Database Version: 8.5.4

INSERTION LOSS (dB)

	OCTAVE BAND CENTER FREQUENCY, HZ						
MODEL	125	250	500	1K	2K	4K	8K
GSA-4	8	14	26	34	41	45	25
GSA-5	6	12	22	28	37	38	22
GSA-6	5	10	18	23	33	30	19
GSA-8	4	9	17	22	29	25	18
GSA-10	6	11	21	27	39	25	19

A 27062



	A I.D.	B O.D.	C B.C.	D DIA.	E DIA.	H	G QTY.
	$4\frac{1}{16}$	9	$7\frac{1}{2}$	$3\frac{11}{16}$	$4\frac{9}{16}$	$\frac{15}{16}$	4
	$5\frac{1}{16}$	11	$8\frac{1}{2}$	$4\frac{9}{16}$	$5\frac{9}{16}$	$\frac{15}{16}$	4
	$6\frac{1}{16}$	11	$9\frac{1}{2}$	$5\frac{1}{2}$	$6\frac{9}{16}$	$1\frac{1}{16}$	4
	$7\frac{1}{16}$	11	9	$6\frac{7}{16}$	$7\frac{11}{16}$	$\frac{15}{16}$	8
	$8\frac{1}{16}$	$13\frac{1}{2}$	$11\frac{3}{4}$	$7\frac{1}{2}$	$8\frac{5}{8}$	1	8
	$10\frac{1}{16}$	16	$14\frac{1}{4}$	$9\frac{11}{16}$	$10\frac{9}{16}$	1	8

NOTES:

STANDARD FLANGES PROVIDED WITHOUT HOLES.

OPTIONS:

- ☐ HOLES PROVIDED, ON VERTICAL CENTERLINE (CFV STANDARD LOCATION)
- ☐ HOLES PROVIDED, STRADDLING CENTERLINE

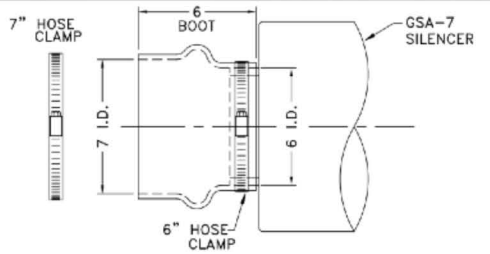
TOLERANCES:

CAST DIMENSIONS (A, B, D, E, H) ±3/32

MACHINED DIMENSIONS (C, FLANGE HOLE DIA.) ±1/16

A GSA

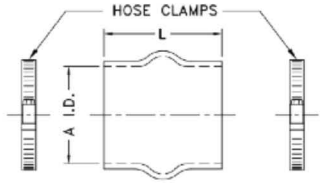
GSA-7 MODEL ONLY



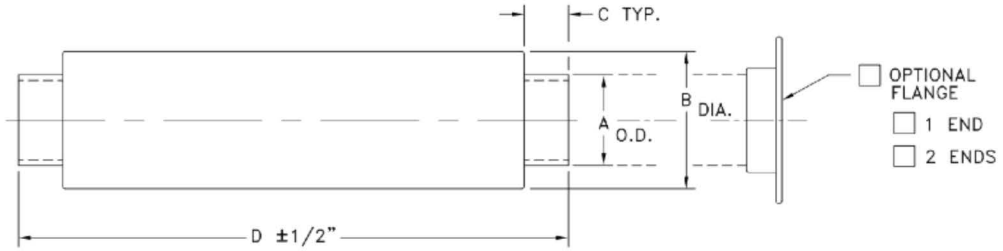
7" BOOT KIT (STANDARD) – 1 END

OPTIONAL 2ND BOOT: ☐ 6" ☐ 7"

GSA MODELS-4, 5, 6, 8, & 10



☐ OPTIONAL BOOT KIT ☐ 1 END ☐ 2 ENDS



GSA SOUND ATTENUATOR

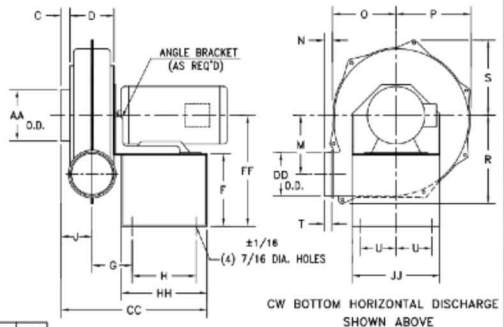
	MODEL NO.	SILENCER SIZE	A O.D.	B DIA.	C	D	L	WT. (LBS.) *
	GSA-4	4	4	7-7/8	2-1/4	28-1/2	5	10
	GSA-5	5	5	8-7/8	2-1/4	28-7/8	6	11
	GSA-6	6	6	9-7/8	1-3/8	26-1/8	6	12
	GSA-7	6	6	9-7/8	1-3/8	26-1/8	6	14
	GSA-8	8	8	11-7/8	2-3/4	29-3/4	8	16
	GSA-10	10	10	14	2-1/4	39-5/8	6	26

NOTES:

1. MAXIMUM STATIC PRESSURE: 20 IN. WG.
2. MAXIMUM TEMPERATURE: 200 DEGREES F.

* 3. GSA-7 WEIGHT INCLUDES 6 INCH TO 7 INCH BOOT WEIGHT.

A PB4



CW BOTTOM HORIZONTAL DISCHARGE SHOWN ABOVE

MODEL	FRAME	HOUSING C	D	J	M	N	O	P	R	S	T	AA	DD	F	G	H	U	CC	FF	HH	JJ
PB-8	56	1	3 3/4	2 7/8	4 1/2	1 1/8	4 4/8	5 5/8	7 3/16	4 7/8	1 1/8	4	4	5	3 3/16	5	2 3/4	12 1/8	8 9/16	7 1/8	7
PB-9	56	1 1/16	4 1/8	3 1/8	5 5/8	1 3/16	6 1/8	7 3/8	8 1/2	6 5/8	1	5	4	6 7/8	3 3/8	5 3/4	2 3/4	13 5/16	10 7/16	7 7/8	7
	143T-145T													8 1/4	4 3/16	5	3 3/4	13 13/16	11 7/8	8	9
PB-10A	56	1 1/4	4 1/4	3 3/8	6 9/16	1	6 7/8	9 7/16	10 3/16	7 1/16	1	6	5	6 7/8	3 7/16	5 3/4	2 3/4	13 5/8	10 7/16	7 7/8	7
	143T-145T													8 1/4	4 1/4	5	3 3/4	14 1/8	11 7/8	8	9
PB-12A	56	1 1/4	5	3 3/4	7 9/16	7/8	8	9 5/8	11 11/16	9 7/16	1	7	6	8 1/4	4 1/4	5	3 3/4	14 7/8		8	9
	143T-145T													8 1/4	4 5/8	5	3 3/4	14 7/8	11 7/8	8	9
	182T-184T													6 7/16	5	8 3/4	4 15/16	19		11 3/4	12
PB-14A	56C *	1 1/4	6	4 1/4	8 1/16	1	8 13/16	10 3/8	12 3/16	10 1/4	1	7	6	9 15/16	5 3/16	8 3/4	4 15/16	19 11/16	15 3/16	11 3/4	12
	143T-145T														5 1/2			20			
	182T-213T																				
PB-15A	182T-184T	1 1/4	7 1/4	4 7/8	7 7/8	1	9 13/16	11 3/8	13	10 13/16	1	8	8	9 15/16	6 1/8	8 3/4	4 15/16	21 1/4	15 3/16	11 3/4	12
	213T-215T																				
	254T-256T													8 15/16		13		25 1/2		16	16 1/2
PB-18	182T-184T	1 1/4	6 1/4	4 3/8	10 1/2	15/16	10 1/2	12 11/16	14 1/2	12 7/16	1	8	6	9 15/16	5 5/8	8 3/4	4 15/16	20 1/4	15 3/16	11 3/4	12
	213T-215T																				
	254T-256T													8 15/16		13		24 1/2		16	16 1/2
PB-18WA	182T-184T	1 1/4	8 1/16	5 5/16	9 7/8	7/8	11	13 5/16	15 1/8	11 13/16	1	10	8	12 3/4	6 1/2	10 3/4	6 1/4	24 1/16	18	13 3/4	16 1/2
	213T-215T																				
	254T-256T													11 3/4		15 3/4		29 1/16		18 3/4	
	284T-286T													11							

OPTIONAL INLET SIZES

- ☐ 6" INLET AVAILABLE FOR PB-14A, PB-15A & PB-18
- ☐ 7" INLET AVAILABLE FOR PB-15A
- ☐ 8" INLET AVAILABLE FOR PB-14A & PB-18WA
- ☐ 10" INLET AVAILABLE FOR PB-15A & PB-18

NOTES:

1. HOUSINGS ARE ROTATABLE IN 45° INCREMENTS.
2. DISCHARGE FLANGE NOT AVAILABLE FOR DOWN BLAST DISCHARGE, ALL MODELS EXCEPT PB-18, 182T THRU 215T MOTORS.
* 3. PB-14A 56 FRAME MOTOR MUST BE 56C ROUND BODY ONLY (NOT FOOT MOUNT).

Cincinnati Fan PB-15A 16-1/2 X 5 Radial Wheel (Full Width) @ 3,500 RPM
Rating Point: 500 SCFM @ 20.0 in. wg SP, 0.0712 lb./ft.³ Density, 3.82 BHP, 8.0 in. Inlet