


Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 38-13 OPT GROUND Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
<input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
<input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 21, 2021			
Date		Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: CENTREFIELD (WEST GORMLEY)				OPT GROUND				DATE: Jun-21				WINTER NATURAL AIR CHANGE RATE 0.227				HEAT LOSS ΔT °F. 78				CSA-F280-12							
BUILDER: ROYAL PINE HOMES				TYPE: 38-13				GFA: 2602				LO# 91283				SUMMER NATURAL AIR CHANGE RATE 0.071				HEAT GAIN ΔT °F. 13				SB-12 PERFORMANCE			
ROOM USE				MBR		ENS		WIC		BED-2		BED-3		BED-4		ENS-2								S-BATH			
EXP. WALL				35		22		8		36		27		13		6								6			
CLG. HT.				9		9		9		9		9		9		9								9			
FACTORS																											
GRS.WALL AREA		LOSS GAIN		315		198		72		324		243		117		54								54			
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN								LOSS GAIN			
NORTH		21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	18	392	288	0	0	0					8	174	128
EAST		21.8	41.6	37	806	1537	18	392	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH		21.8	24.9	0	0	0	0	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST		21.8	41.6	0	0	0	0	0	0	0	52	1133	2161	64	1394	2659	0	0	0	15	327	623			0	0	0
SKYLT.		35.8	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS		25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL		4.2	0.7	278	1169	192	171	719	118	72	303	50	272	1144	188	179	753	124	99	416	68	39	164	27	46	193	32
NET EXPOSED BSMT WALL ABOVE GR		3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3	0.6	303	398	178	123	162	72	75	99	44	195	256	115	160	210	94	210	276	123	85	112	50	75	99	44
NO ATTIC EXPOSED CLG		2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0	45	126	57	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR		2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	205	535	88	95	248	41	85	222	37	75	196	32
BASEMENT/CRAWL HEAT LOSS				0		0		0		0		0		0		0		0		0		0		0		0	
SLAB ON GRADE HEAT LOSS				0		0		0		0		0		0		0		0		0		0		0		0	
SUBTOTAL HT LOSS				2373		1469		401		2533		3019		1332		824								662			
SUB TOTAL HT GAIN						1908		1163		94		2464		3022		520		737						236			
LEVEL FACTOR / MULTIPLIER		0.20 0.16				0.20 0.16		0.20 0.16		0.20 0.16		0.20 0.16		0.20 0.16		0.20 0.16		0.20 0.16						0.20 0.16			
AIR CHANGE HEAT LOSS				382		237		65		408		486		215		133								107			
AIR CHANGE HEAT GAIN				85		52		4		110		135		23		33								11			
DUCT LOSS				0		0		0		0		351		155		96								77			
DUCT GAIN				0		0		0		0		399		138		77								25			
HEAT GAIN PEOPLE		240		2	480	0	0	0	0	1	240	1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				593		0		0		593		593		593		593								0			
TOTAL HT LOSS BTU/H				2756		1706		466		2941		3856		1702		1053								846			
TOTAL HT GAIN x 1.3 BTU/H				3986		1579		128		4428		5705		1968		1101								352			

ROOM USE		GRT	KT/BR	LAUN	PWD	FOY	MUD				BAS		
EXP. WALL		53	54	14	10	35	21				168		
CLG. HT.		10	10	9	10	10	10				10		
FACTORS													
GRS.WALL AREA	LOSS GAIN	535	545	126	101	354	212				1176		
GLAZING		LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN				LOSS GAIN		
NORTH	21.8 16.0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				3 65 48		
EAST	21.8 41.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				3 65 125		
SOUTH	21.8 24.9	0 0 0	10 218 249	32 697 797	9 196 224	0 0 0	0 0 0				6 131 149		
WEST	21.8 41.6	60 1307 2493	48 1046 1994	0 0 0	0 0 0	22 479 914	0 0 0				0 0 0		
SKYLT.	35.8 101.2	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				0 0 0		
DOORS	25.8 4.3	0 0 0	0 0 0	0 0 0	0 0 0	40 1034 170	20 517 85				20 517 85		
NET EXPOSED WALL	4.2 0.7	475 1999 329	487 2050 337	94 395 65	92 387 64	292 1226 202	192 808 133				0 0 0		
NET EXPOSED BSMT WALL ABOVE GR	3.7 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				504 1857 305		
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	110 145 65	0 0 0	0 0 0	0 0 0				0 0 0		
NO ATTIC EXPOSED CLG	2.8 1.3	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				0 0 0		
EXPOSED FLOOR	2.6 0.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				0 0 0		
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0				5708		
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0						
SUBTOTAL HT LOSS		3306	3313	1237	583	2739	1325				8342		
SUB TOTAL HT GAIN			2822	926	288	1286	218				712		
LEVEL FACTOR / MULTIPLIER	0.30 0.30		0.30 0.30	0.20 0.16	0.30 0.30	0.30 0.30	0.30 0.30				0.50 0.67		
AIR CHANGE HEAT LOSS		982	984	199	173	814	394				5579		
AIR CHANGE HEAT GAIN		126	115	41	13	57	10				32		
DUCT LOSS		0	0	0	0	0	0				0		
DUCT GAIN		0	0	0	0	0	0				0		
HEAT GAIN PEOPLE	240	0	0	0	0	0	0				0		
HEAT GAIN APPLIANCES/LIGHTS			593	593	593	0	593				593		
TOTAL HT LOSS BTU/H		4288	4298	1436	756	3553	1718				13922		
TOTAL HT GAIN x 1.3 BTU/H			4603	4275	2029	391	1067				1738		

TOTAL HEAT GAIN BTU/H: 35371 TONS: 2.95 LOSS DUE TO VENTILATION LOAD BTU/H: 1670 STRUCTURAL HEAT LOSS: 45295 TOTAL COMBINED HEAT LOSS BTU/H: 46965

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

OPT GROUND
TYPE: 38-13

DATE: Jun-21

GFA: 2602 LO# 91283

HEATING CFM 1115 COOLING CFM 1115
TOTAL HEAT LOSS 45,295 TOTAL HEAT GAIN 35,097
AIR FLOW RATE CFM 24.62 AIR FLOW RATE CFM 31.77

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35

**CARRIER
59TN6B-060-14V
FAN SPEED 60

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	7	4
R/A	0	0	5	1	1

plenium pressure s/a 0.18
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.16
r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15

LOW 930
MEDLOW 1050
MEDIUM 1115
MEDIUM HIGH 1245
HIGH 1520

DESIGN CFM = 1115
CFM @ .6" E.S.P.

TEMPERATURE RISE 48 °F

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-2	BED-3	MBR	S-BATH	GRT	GRT	KT/BR	KT/BR	S-BATH	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.38	1.71	0.47	1.47	1.93	1.70	1.05	1.47	1.93	1.38	0.42	2.14	2.14	2.15	2.15	0.42	1.44	0.76	3.55	1.72	3.48	3.48	3.48	3.48
CFM PER RUN HEAT	34	42	11	36	47	42	26	36	47	34	10	53	53	53	53	10	35	19	87	42	86	86	86	86
RM GAIN MBH.	1.99	1.58	0.13	2.21	2.85	1.97	1.10	2.21	2.85	1.99	0.18	2.30	2.30	2.14	2.14	0.18	2.03	0.39	1.75	1.07	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	63	50	4	70	91	63	35	70	91	63	6	73	73	68	68	6	64	12	55	34	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	41	54	46	73	67	24	60	78	69	33	55	30	37	32	26	54	45	48	60	21	31	25	25	43
EQUIVALENT LENGTH	130	210	130	200	160	120	150	200	180	140	190	140	150	150	120	200	160	170	150	160	160	170	160	160
TOTAL EFFECTIVE LENGTH	171	264	176	273	227	144	210	278	249	173	245	170	187	182	146	254	205	218	210	181	191	195	185	203
ADJUSTED PRESSURE	0.1	0.07	0.1	0.06	0.07	0.12	0.08	0.06	0.07	0.1	0.07	0.1	0.09	0.09	0.12	0.07	0.08	0.08	0.08	0.1	0.08	0.08	0.09	0.08
ROUND DUCT SIZE	5	5	4	6	6	6	4	6	6	5	4	5	5	5	5	4	5	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	308	126	184	240	214	298	184	240	250	115	389	389	389	389	115	257	218	444	482	438	438	438	438
COOLING VELOCITY (ft/min)	463	367	46	357	464	321	402	357	464	463	69	536	536	499	499	69	470	138	280	390	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	C	D	C	B	C	A	C	A	A	A	A	C	D	B	B	C	A	A	C	B

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-2	BED-3	MBR	S-BATH	GRT	GRT	KT/BR	KT/BR	S-BATH	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.38	1.71	0.47	1.47	1.93	1.70	1.05	1.47	1.93	1.38	0.42	2.14	2.14	2.15	2.15	0.42	1.44	0.76	3.55	1.72	3.48	3.48	3.48	3.48
CFM PER RUN HEAT	34	42	11	36	47	42	26	36	47	34	10	53	53	53	53	10	35	19	87	42	86	86	86	86
RM GAIN MBH.	1.99	1.58	0.13	2.21	2.85	1.97	1.10	2.21	2.85	1.99	0.18	2.30	2.30	2.14	2.14	0.18	2.03	0.39	1.75	1.07	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	63	50	4	70	91	63	35	70	91	63	6	73	73	68	68	6	64	12	55	34	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	41	54	46	73	67	24	60	78	69	33	55	30	37	32	26	54	45	48	60	21	31	25	25	43
EQUIVALENT LENGTH	130	210	130	200	160	120	150	200	180	140	190	140	150	150	120	200	160	170	150	160	160	170	160	160
TOTAL EFFECTIVE LENGTH	171	264	176	273	227	144	210	278	249	173	245	170	187	182	146	254	205	218	210	181	191	195	185	203
ADJUSTED PRESSURE	0.1	0.07	0.1	0.06	0.07	0.12	0.08	0.06	0.07	0.1	0.07	0.1	0.09	0.09	0.12	0.07	0.08	0.08	0.08	0.1	0.08	0.08	0.09	0.08
ROUND DUCT SIZE	5	5	4	6	6	6	4	6	6	5	4	5	5	5	5	4	5	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	308	126	184	240	214	298	184	240	250	115	389	389	389	389	115	257	218	444	482	438	438	438	438
COOLING VELOCITY (ft/min)	463	367	46	357	464	321	402	357	464	463	69	536	536	499	499	69	470	138	280	390	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	C	D	C	B	C	A	C	A	A	A	A	C	D	B	B	C	A	A	C	B

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	RETURN AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY
	CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	494	0.07	11.1	14	x 8	635	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK B	264	0.06	9.2	10	x 8	475	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK C	532	0.06	11.9	16	x 8	599	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK D	1114	0.06	15.7	28	x 8	716	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK E	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK F	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	120	120	120	120	85	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	54	63	78	75	69	26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	240	235	250	245	205	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	294	298	328	320	274	181	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.05	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	7.1	7.1	7.1	7.1	6.3	9.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 38-13
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 91283
OPT GROUND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	<input checked="" type="checkbox"/> Direct vent (sealed combustion) only	
b)	<input type="checkbox"/> Positive venting induced draft (except fireplaces)	
c)	<input type="checkbox"/> Natural draft, B-vent or induced draft gas fireplace	
d)	<input type="checkbox"/> Solid Fuel (including fireplaces)	
e)	<input type="checkbox"/> No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric Space Heat	

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/> I	Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/> II	Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/> III	Any Type c) appliance	
<input type="checkbox"/> IV	Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/> 1	Exhaust only/Forced Air System	
<input type="checkbox"/> 2	HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/> 3	HRV Simplified/connected to forced air system	
<input type="checkbox"/> 4	HRV with Ducting/non forced air system	
<input type="checkbox"/>	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>169.6</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	<input checked="" type="checkbox"/> HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 CFM	X 78 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
S-BATH	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
PWD	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % Sensible Efficiency	<input checked="" type="checkbox"/> HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
ROYAL PINE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 91283	Model: 38-13	Builder: ROYAL PINE HOMES	Date: 2021-06-21																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1078</td> <td>10</td> <td>10780</td> </tr> <tr> <td>First</td> <td>1078</td> <td>10</td> <td>10887.8</td> </tr> <tr> <td>Second</td> <td>1524</td> <td>9</td> <td>13716</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>35,383.8 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1002.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1078	10	10780	First	1078	10	10887.8	Second	1524	9	13716	Third	0	9	0	Fourth	0	9	0	Total:			35,383.8 ft³	Total:			1002.0 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.227</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.071</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-21</td> <td>43</td> <td>78</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.227	SUMMER NATURAL AIR CHANGE RATE	0.071	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-21	43	78	Summer DTDc	24	31	7	13
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.227 x 278.32 x 43 °C x 1.2 = 3270 W</p> <p>= 11158 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.071 x 278.32 x 7 °C x 1.2 = 168 W</p> <p>= 573 Btu/h</p>																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h</p>																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 38-13	OPT GROUND	BUILDER: ROYAL PINE HOMES
SFQT: 2602	LO# 91283	SITE: CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	35383.8	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.45	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 53.0 ft	WIDTH: 31.0 ft	EXPOSED PERIMETER:	168.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package SB-12 PERFORMANCE	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	18.50
Basement Walls Minimum RSI (R)-Value		20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value		-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value		10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value		10	11.13
Windows and Sliding Glass Doors Maximum U-Value		1.6	-
Skylights Maximum U-Value		2.6	-
Space Heating Equipment Minimum AFUE		0.96	-
HRV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF		TE=94%	-

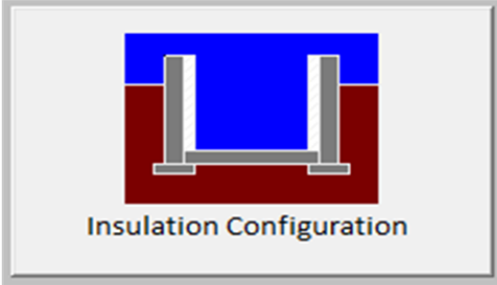
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.2	 Insulation Configuration
Floor Width (m):	9.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.1	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1672

TYPE: 38-13
LO# 91283

OPT GROUND

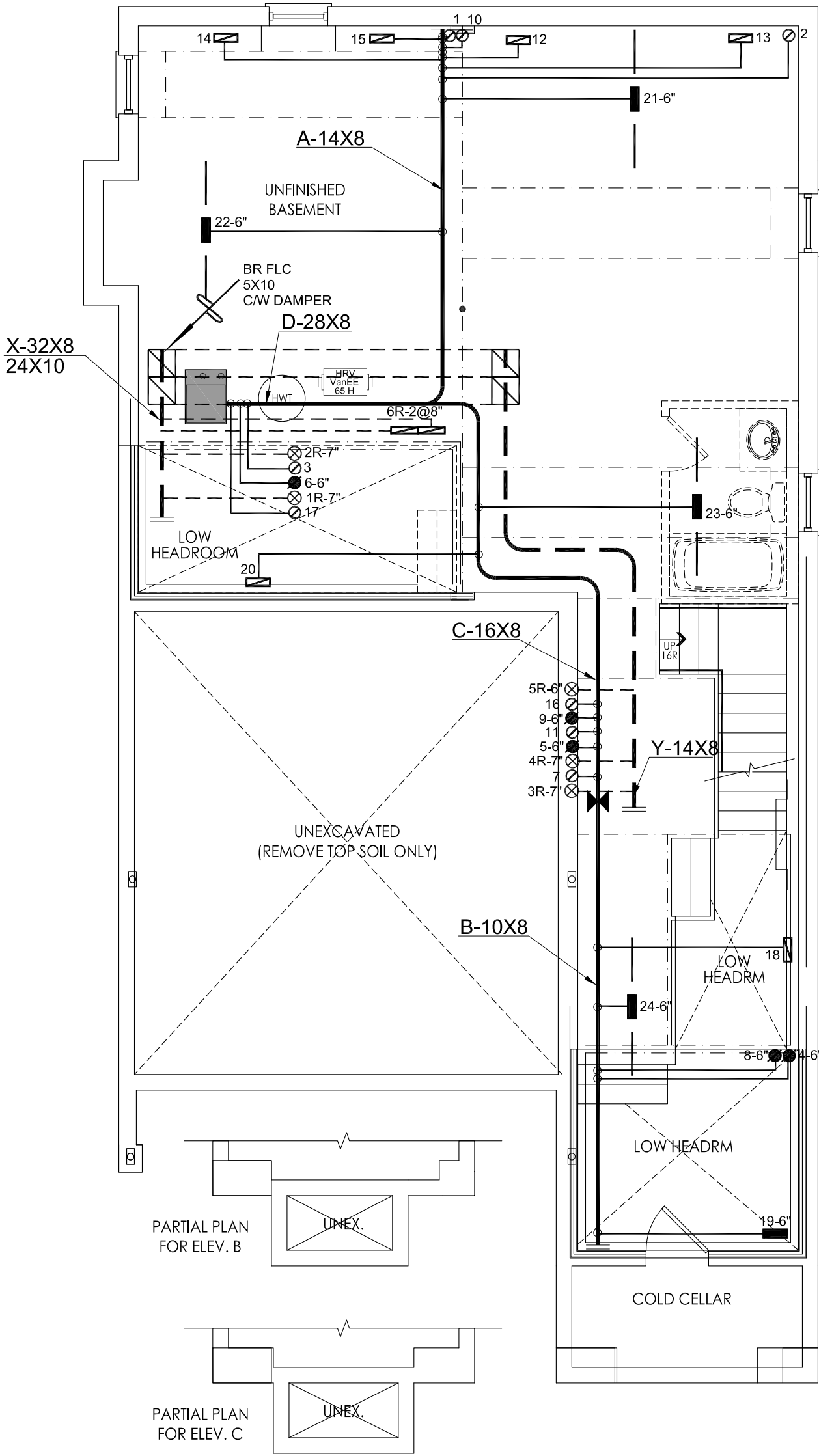
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.74			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1002.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		935.3 cm ²	
	2.50		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	37.5		37.5	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.227			
Cooling Air Leakage Rate (ACH/H):	0.071			

TYPE: 38-13
LO# 91283

OPT GROUND



BASEMENT FLOOR PLAN ELEV 'A', 'B' & 'C'

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
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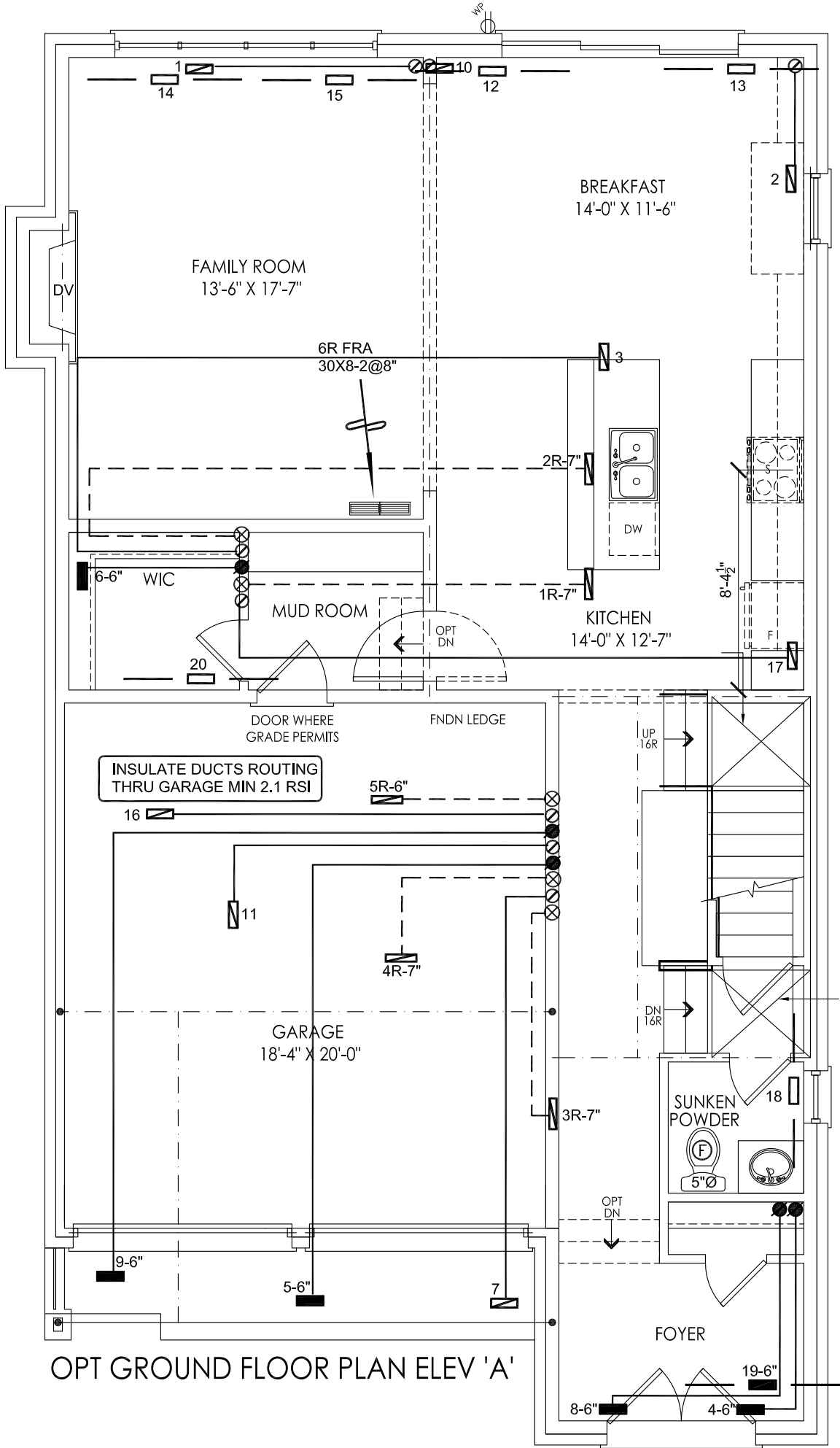
CSA-F280-12

SB-12 PERFORMANCE

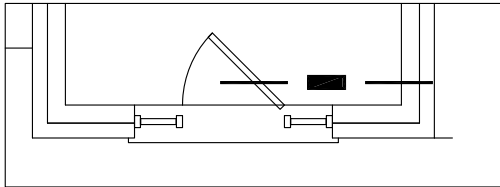
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

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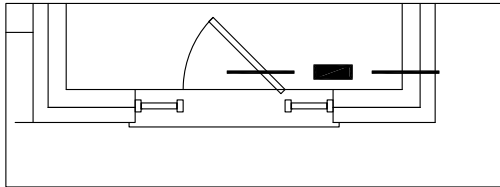
Client		<div><p>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</p></div>	HEAT LOSS 46965 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
ROYAL PINE HOMES			MAKE	CARRIER	3RD FLOOR				BASEMENT HEATING LAYOUT
Project Name			MODEL	59TN6B-060-14V	2ND FLOOR	13	5	3	
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			INPUT	60 MBTU/H	1ST FLOOR	7	1	2	
OPT GROUND 38-13			OUTPUT	58 MBTU/H	BASEMENT	4	1	0	Date
2602 sqft		COOLING 3,0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				Scale	3/16" = 1'-0"
		FAN SPEED 1115 cfm @ 0.6" w.c.						BCIN# 19669	
								LO#	91283



OPT GROUND FLOOR PLAN ELEV 'A'



GROUND FLOOR PLAN ELEV 'B'



GROUND FLOOR PLAN ELEV 'C'

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

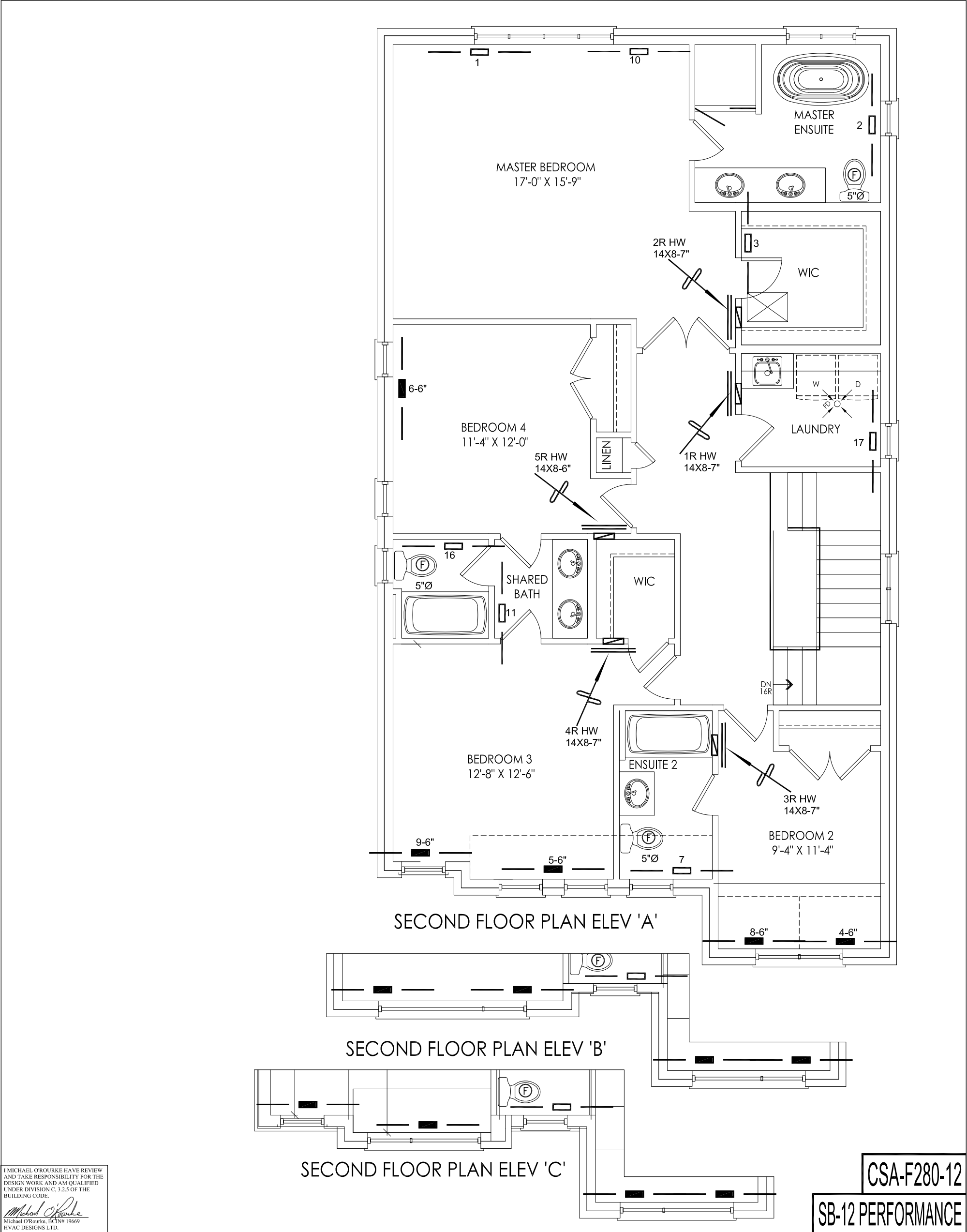
CSA-F280-12

SB-12 PERFORMANCE

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Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.</div>	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	JUNE/2021
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
OPT GROUND 38-13			BCIN# 19669	
2602 sqft			LO#	91283



I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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CSA-F280-12

SB-12 PERFORMANCE

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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	JUNE/2021
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
OPT GROUND 38-13			BCIN# 19669	
2602 sqft			LO#	91283