

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@hvacdsgns.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]			
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ 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: 4505 OPT 2ND Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
☐ 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: _____			
☒ 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>			
☐ 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 4, 2021		 Signature of Designer	
Date			

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 2ND		DATE: Jun-21		WINTER NATURAL AIR CHANGE RATE 0.229		HEAT LOSS ΔT °F. 78		CSA-F280-12	
BUILDER: ROYAL PINE HOMES				TYPE: 4505		GFA: 3289		LO# 87521		SUMMER NATURAL AIR CHANGE RATE 0.072		HEAT GAIN ΔT °F. 13	
ROOM USE				MBR		ENS		BED-2		BED-3		BED-4	
EXP. WALL				37		34		34		44		15	
CLG. HT.				10		9		9		10		9	
FACTORS													
GRS.WALL AREA				370		306		306		418		135	
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH				21.8	15.6	0	0	0	0	0	0	0	0
EAST				21.8	40.5	0	0	0	0	0	0	0	0
SOUTH				21.8	24.3	0	0	0	0	0	0	0	0
WEST				21.8	40.5	26	566	1052	17	370	688	0	0
SKYLT.				35.8	101.2	0	0	0	0	0	0	0	0
DOORS				25.8	4.3	0	0	0	0	0	0	0	0
NET EXPOSED WALL				4.2	0.7	344	1447	238	289	1215	200	248	1043
NET EXPOSED BSMT WALL ABOVE GR				3.7	0.6	0	0	0	0	0	0	0	0
EXPOSED CLG				1.3	0.6	390	513	229	264	347	155	241	317
NO ATTIC EXPOSED CLG				2.8	1.3	0	0	0	0	0	0	24	67
EXPOSED FLOOR				2.6	0.4	0	0	0	0	0	0	265	692
BASEMENT/CRAWL HEAT LOSS						0		0		0			
SLAB ON GRADE HEAT LOSS						0		0		0			
SUBTOTAL HT LOSS						2526		1933		3382			
SUB TOTAL HT GAIN							1519			2804		3110	
LEVEL FACTOR / MULTIPLIER				0.20	0.20			0.20	0.20			0.20	0.20
AIR CHANGE HEAT LOSS						499		382		668		705	
AIR CHANGE HEAT GAIN							89			164		182	
DUCT LOSS						0		0		405		427	
DUCT GAIN							0			388		420	
HEAT GAIN PEOPLE				240	2		480	0		1		240	1
HEAT GAIN APPLIANCES/LIGHTS							667	0				667	
TOTAL HT LOSS BTU/H						3025		2314		4456		4699	
TOTAL HT GAIN x 1.3 BTU/H							3582		1435			6005	

ROOM USE				LIV		K/B/G		DIN		LAUN		W/R	
EXP. WALL				35		72		23		28		7	
CLG. HT.				11		11		11		12		11	
FACTORS													
GRS.WALL AREA				385		792		253		336		77	
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH				21.8	15.6	0	0	0	0	8	174	125	0
EAST				21.8	40.5	37	806	1497	0	0	0	0	12
SOUTH				21.8	24.3	0	0	0	0	0	0	0	0
WEST				21.8	40.5	0	0	0	0	0	0	0	0
SKYLT.				35.8	101.2	0	0	0	0	0	0	0	0
DOORS				25.8	4.3	0	0	0	0	20	517	85	0
NET EXPOSED WALL				4.2	0.7	348	1463	241	697	2931	482	222	934
NET EXPOSED BSMT WALL ABOVE GR				3.7	0.6	0	0	0	0	0	0	0	0
EXPOSED CLG				1.3	0.6	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG				2.8	1.3	0	0	0	10	28	13	0	0
EXPOSED FLOOR				2.6	0.4	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS						0		0		0		0	
SLAB ON GRADE HEAT LOSS						0		0		0		0	
SUBTOTAL HT LOSS						2269		5110		1609		1986	
SUB TOTAL HT GAIN							1738			3615		907	
LEVEL FACTOR / MULTIPLIER				0.30	0.32			0.30	0.32			0.30	0.32
AIR CHANGE HEAT LOSS						727		1637		515		636	
AIR CHANGE HEAT GAIN							102			211		53	
DUCT LOSS						0		0		0		0	
DUCT GAIN							0			0		0	
HEAT GAIN PEOPLE				240	0		0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS							667			667		667	
TOTAL HT LOSS BTU/H						2997		6747		2124		2623	
TOTAL HT GAIN x 1.3 BTU/H							3259		5842		2115		1450

TOTAL HEAT GAIN BTU/H:

37092

TONS: 3.09

LOSS DUE TO VENTILATION LOAD BTU/H: 2004

STRUCTURAL HEAT LOSS: 53600

TOTAL COMBINED HEAT LOSS BTU/H: 55603

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

OPT 2ND
TYPE: 4505

DATE: Jun-21

GFA: 3289 LO# 87521

HEATING CFM 1200 COOLING CFM 1200
TOTAL HEAT LOSS 53,600 TOTAL HEAT GAIN 36,762
AIR FLOW RATE CFM 22.39 AIR FLOW RATE CFM 32.64

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

**CARRIER
59TN6A-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	9	4
R/A	0	0	6	3	1

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

DESIGN CFM = 1200
CFM @ .6" E.S.P.
TEMPERATURE RISE 45 °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	BED-2	BED-2	BED-3	BATH	BATH-2	BED-3	BATH-2	MBR	BED-4	LIV	K/B/G	K/B/G	K/B/G	DIN	LAUN	W/R	FOY	WIC	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.51	1.16	2.23	2.23	2.35	0.74	0.32	2.35	0.32	1.51	1.54	3.00	2.25	2.25	2.25	2.12	2.62	0.64	2.60	0.77	3.98	3.98	3.98	3.98
CFM PER RUN HEAT	34	26	50	50	53	17	7	53	7	34	35	67	50	50	50	48	59	14	58	17	89	89	89	89
RM GAIN MBH.	1.79	0.72	2.77	2.77	3.00	0.40	0.08	3.00	0.08	1.79	2.12	3.26	1.95	1.95	1.95	2.12	1.45	0.37	1.06	0.18	0.24	0.24	0.24	0.24
CFM PER RUN COOLING	58	23	90	90	98	13	3	98	3	58	69	106	64	64	64	69	47	12	34	6	8	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	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	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	32	58	58	51	49	29	41	47	45	49	32	31	28	39	51	6	43	17	36	46	45	26	8	27
EQUIVALENT LENGTH	150	150	150	140	180	130	120	170	130	150	140	90	130	130	100	140	120	150	100	160	110	120	150	110
TOTAL EFFECTIVE LENGTH	182	208	208	191	229	159	161	217	175	199	172	121	158	169	151	146	163	167	136	206	155	146	158	137
ADJUSTED PRESSURE	0.09	0.08	0.08	0.08	0.07	0.11	0.11	0.07	0.1	0.09	0.1	0.13	0.11	0.1	0.11	0.12	0.11	0.1	0.13	0.08	0.1	0.11	0.1	0.12
ROUND DUCT SIZE	5	5	6	6	6	5	4	6	4	5	6	6	5	5	5	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	191	255	255	270	125	80	270	80	250	178	342	367	367	367	245	433	161	426	195	454	454	454	454
COOLING VELOCITY (ft/min)	426	169	459	459	500	95	34	500	34	426	352	540	470	470	470	352	345	138	250	69	41	41	41	41
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	D	B	B	A	B	B	A	B	D	A	A	D	C	C	B	C	A	A	C	C	D	B	A

RUN #	25	26
ROOM NAME	ENS	BED-5
RM LOSS MBH.	1.16	1.77
CFM PER RUN HEAT	26	40
RM GAIN MBH.	0.72	2.27
CFM PER RUN COOLING	23	74
ADJUSTED PRESSURE	0.17	0.17
ACTUAL DUCT LGH.	30	9
EQUIVALENT LENGTH	170	170
TOTAL EFFECTIVE LENGTH	200	179
ADJUSTED PRESSURE	0.09	0.1
ROUND DUCT SIZE	4	6
HEATING VELOCITY (ft/min)	298	204
COOLING VELOCITY (ft/min)	264	377
OUTLET GRILL SIZE	3X10	4X10
TRUNK	D	D

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT		VELOCITY		TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT		(ft/min)		CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK A	369	0.07	10	14	x	8	474	TRUNK G	0	0.00	0	0	8
TRUNK B	637	0.07	12.2	20	x	8	573	TRUNK H	0	0.00	0	0	8
TRUNK C	265	0.08	8.5	8	x	8	596	TRUNK I	0	0.00	0	0	8
TRUNK D	564	0.08	11.3	14	x	8	725	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	910	0.05	15.2	26	x	8
TRUNK Y	425	0.05	11.5	16	x	8
TRUNK Z	290	0.05	9.9	12	x	8
DROP	1200	0.05	16.9	24	x	12

RETURN AIR #	1	2	3	4	5	6	7	8	9	
AIR VOLUME	0	0	0	0	0	0	0	0	0	BR
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	41	50	53	52	58	35	23	30	46	1
EQUIVALENT LENGTH	215	205	245	165	175	200	185	190	185	0
TOTAL EFFECTIVE LH	256	255	298	217	233	235	208	220	231	1
ADJUSTED PRESSURE	0.06	0.06	0.05	0.07	0.06	0.06	0.07	0.07	0.06	14.80
ROUND DUCT SIZE	7.1	5.7	6	5.8	5.7	7.5	7.5	7.5	5.7	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0
	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	14	14	0

TYPE: 4505
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87521
OPT 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	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>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>5</u> @ 10.6 cfm	<u>53.0</u> cfm
Table 9.32.3.A.	TOTAL	<u>190.8</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>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>190.8</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>95.4</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
<u>95.4</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
95.4 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	☒	3.5
BATH-2	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	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	☒ 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

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 87521	Model: 4505	Builder: ROYAL PINE HOMES	Date: 2021-06-04																																																									
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>1434</td> <td>10</td> <td>14340</td> </tr> <tr> <td>First</td> <td>1434</td> <td>11</td> <td>15774</td> </tr> <tr> <td>Second</td> <td>1861</td> <td>9</td> <td>16749</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>46,863.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1327.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1434	10	14340	First	1434	11	15774	Second	1861	9	16749	Third	0	9	0	Fourth	0	9	0	Total:			46,863.0 ft³	Total:			1327.0 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%; text-align: center;">0.229</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.072</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 style="text-align: center;">22</td> <td style="text-align: center;">-21</td> <td style="text-align: center;">43</td> <td style="text-align: center;">78</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.229	SUMMER NATURAL AIR CHANGE RATE	0.072	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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Summer DTDc	24	31	7	13																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.229 x 368.61 x 43 °C x 1.2 = 4385 W = 14960 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.072 x 368.61 x 7 °C x 1.2 = 225 W = 768 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 78 °F x 1.08 x 0.25 = 2004 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 13 °F x 1.08 x 0.25 = 330 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	14,960	8,433	0.887																																																								
2	0.3		14,008	0.320																																																								
3	0.2		15,146	0.198																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4505	OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 3289	LO# 87521	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):	46863.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.5 ft
LENGTH: 38.0 ft	WIDTH: 56.0 ft	EXPOSED PERIMETER:	188.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package	
Component		SB-12 PERFORMANCE	
		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%	-

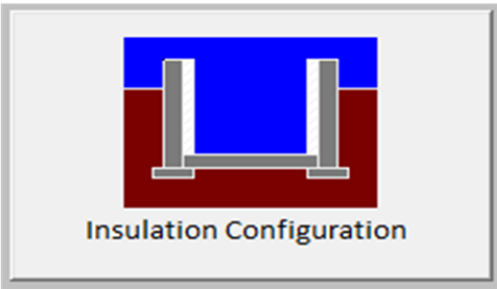
INDIVIDUAL BCIN: 19669

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):	11.6	 Insulation Configuration
Floor Width (m):	17.1	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.29	
Window Area (m ²):	1.2	
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):		1729

TYPE: 4505
LO# 87521

OPT 2ND

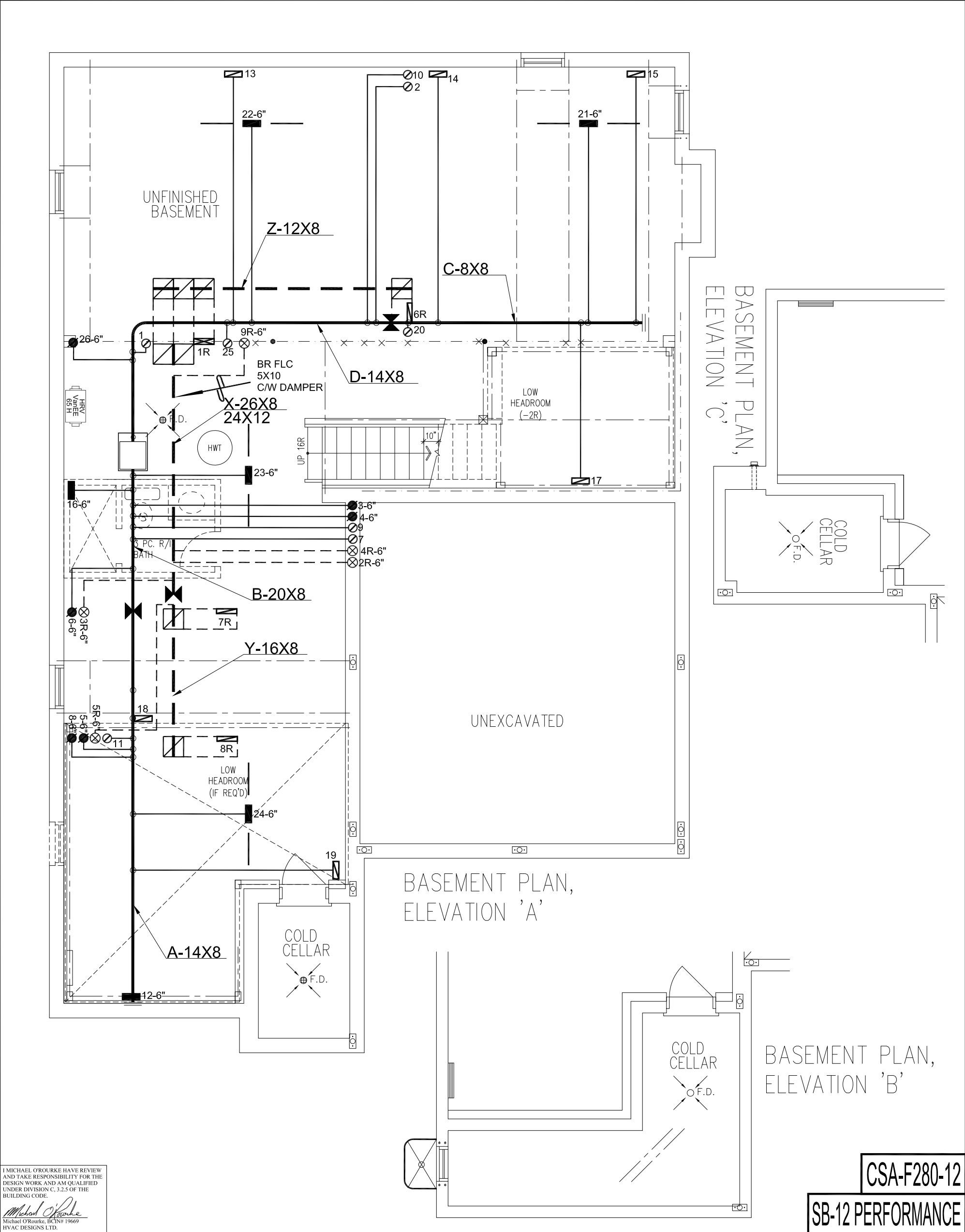
Air Infiltration Residential Load Calculator

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):	6.86			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1327.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1238.8 cm ²	
	2.50		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	45.0		45.0	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.229			
Cooling Air Leakage Rate (ACH/H):	0.072			

TYPE: 4505
LO# 87521

OPT 2ND



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.

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.	Description	Date
								REVISIONS		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		HVACDESIGNS LTD. 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	HEAT LOSS 55603 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title		
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR					BASEMENT HEATING LAYOUT	
Project Name			MAKE		2ND FLOOR		13	6	4		
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MODEL		1ST FLOOR		9	3	2		
			INPUT		BASEMENT		4	1	0	Date	SEPT/2020
			OUTPUT								Scale
		COOLING		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				BCIN# 19669	
OPT 2ND 4505		FAN SPEED		cfm @ 0.6" w.c.						LO#	87521
3289 sqft		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.									

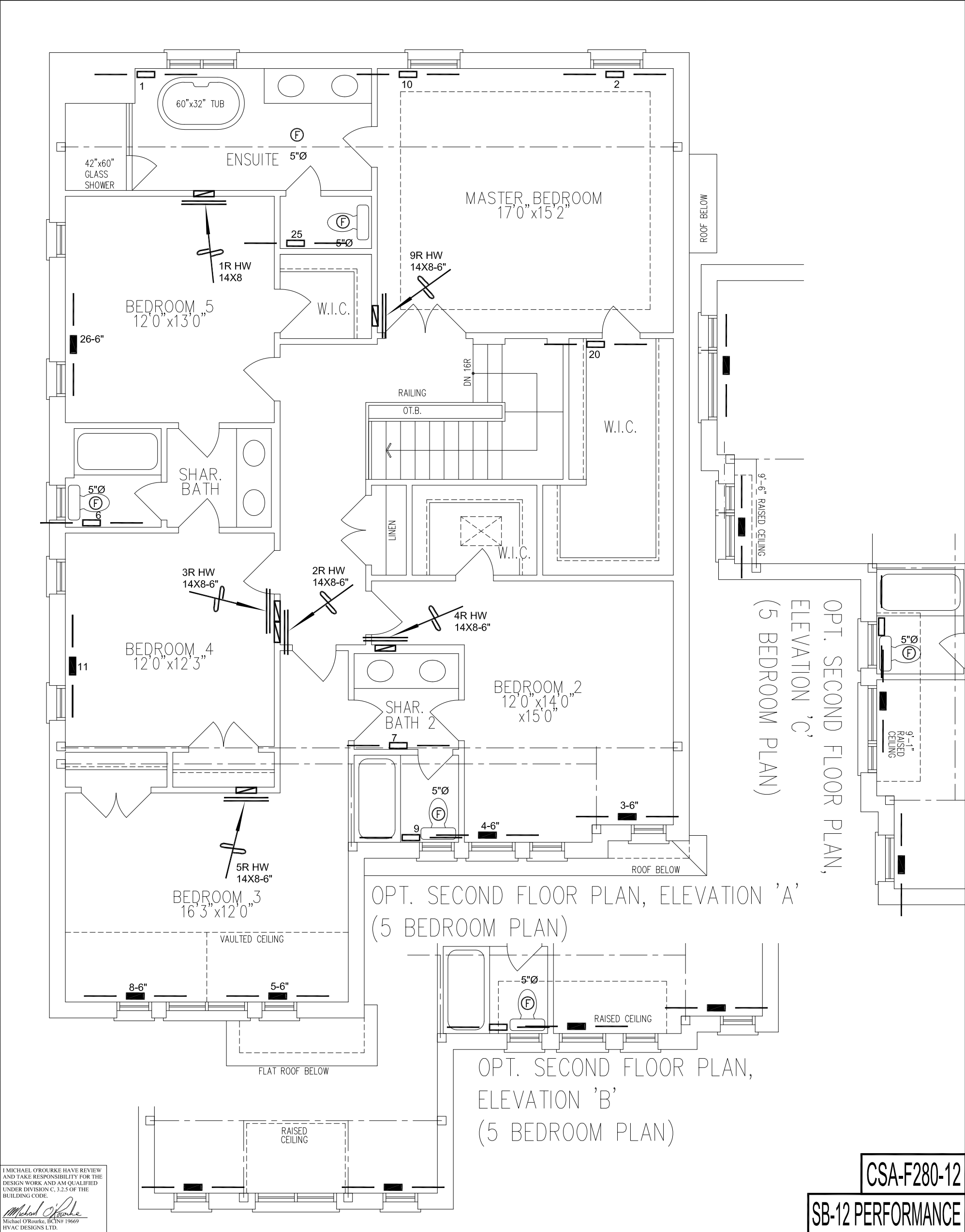
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

BASEMENT PLAN,
ELEVATION 'C'

BASEMENT PLAN,
ELEVATION 'B'

CSA-F280-12

SB-12 PERFORMANCE



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.

HVAC LEGEND								3.	REVISED AS PER CAD	JUNE/2021
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	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		 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 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.	Sheet Title	
ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2020
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
OPT 2ND 4505		BCIN# 19669		
3289 sqft		LO#	87521	