

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.
Municipality RICHMOND HILL			Postal code
Plan number/ other description			Lot/con.
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]			
☐ House ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ 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: 4502 OPT 5 BED 4 BATH Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
☐ 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) BUILDER: ROYAL PINE HOMES										DATE: Jun-21 LO# 91144	WINTER NATURAL AIR CHANGE RATE SUMMER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F. HEAT GAIN AT °F.	CSA-F280-12 SB-12 PERFORMANCE
OPT 5 BED 4 BATH TYPE: 4502										GFA: 2842			
ROOM USE	MBR	ENS	BATH-3	BED-4	BED-3	BATH-1	BED-5	BATH-2					
EXP. WALL	32	11	14	11	33	33	264	72	9	25	7	152	110
CLG. HT.	9	8	8	8	8	8	0	0	8	8	0	0	0
FACTORS													
GRS.WALL AREA	288	88	112	88	264	264	264	200	72	200	72	152	110
GLAZING	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.8	15.8	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	40.9	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	24.5	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8	40.9	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	35.8	101.2	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
NET EXPOSED WALL	4.2	0.7	262	1102	181	71	299	49	112	471	77	70	294
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	255	335	150	187	246	110	266	350	156	154	202
NO ATTIC EXPOSED CLG	2.8	1.3	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
BASEMENT/CRAWL HEAT LOSS	0	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	0
SUBTOTAL HT LOSS	2003	915	1108	889	3235	2739	2133	642	913	1342	603	235	235
SUB TOTAL HT GAIN	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20	0.18	0.20
LEVEL FACTOR / MULTIPLIER	359	164	199	159	580	580	382	115	22	241	108	11	11
AIR CHANGE HEAT LOSS	65	40	13	27	128	128	0	76	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	131	0	382	382	0	50	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	2	480	0	1	240	1	240	0	1	240	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	480	0	0	490	490	490	490	0	0	490	0	0	0
TOTAL HT LOSS BTU/H	2362	1079	1437	1048	4197	5145	2516	833	711	1583	711	319	319
TOTAL HT GAIN x 1.3 BTU/H	3160	1163	421	1740	5145	5145	3582	711	2192	2192	2192	2192	2192

OPT 5 BED 4 BATH TYPE: 4502										GFA: 2842			
EXP. WALL	30	34	37	17	16	16	60	180	18	11	0	0	0
CLG. HT.	10	10	10	10	11	11	10	10	10	11	0	0	0
FACTORS													
GRS.WALL AREA	300	340	370	170	176	176	60	180	18	11	0	0	0
GLAZING	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.8	15.8	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	40.9	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	24.5	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8	40.9	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	35.8	101.2	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
NET EXPOSED WALL	4.2	0.7	266	1119	184	289	1215	200	146	614	101	121	509
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	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
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	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	0
SUBTOTAL HT LOSS	1859	2326	3105	1066	1314	1314	375	1436	509	84	0.50	0.68	668
SUB TOTAL HT GAIN	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29	0.30	0.29	0.50	0.68	668
LEVEL FACTOR / MULTIPLIER	537	672	896	308	379	379	108	414	147	4	5769	31	31
AIR CHANGE HEAT LOSS	74	107	176	28	15	15	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	490	490	490	490	490	490	490	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	2396	2998	4001	1374	1693	1693	484	1850	656	114	14267	490	490
TOTAL HT GAIN x 1.3 BTU/H	2781	3750	5761	1447	1693	1693	284	1850	1033	114	1546	1546	1546

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMESTYPE: 4502
OPT 5 BED 4 BATH

DATE: Jun-21

GFA: 2942 LO# 91144

HEATING CFM 1145 COOLING CFM 1145
TOTAL HEAT LOSS 45,486 TOTAL HEAT GAIN 36,213
AIR FLOW RATE CFM 25.17 AIR FLOW RATE CFM 31.62furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35r/a pressure 0.17
r/a grille press. loss 0.02
adjusted pressure r/a 0.1559TNGA-060-14V 60
FAN SPEED
LOW 820
MEDIUM 1145
HIGH 1520

**CARRIER

AFUE = 97 %

INPUT (BTU/H) = 60,000

OUTPUT (BTU/H) = 58,000

DESIGN CFM = 1145

CFM @ 6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	10	4
R/A	0	0	5	3	1

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

All S/A fans 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	BED-5	ENS	BED-2	MBR	BED-2	BED-3	BATH-1	BATH-3	BED-3	BATH-2	BED-4	LIV	GRT	KT/BR	KT/BR	DIN	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.56	1.08	2.10	2.36	2.10	1.26	0.83	1.44	1.26	0.71	1.05	2.40	1.50	2.00	2.00	1.37	1.69	0.48	1.85	0.66	3.57	3.57	3.57	3.57
CFM PER RUN HEAT	40	27	53	59	53	32	21	36	32	18	26	60	38	50	50	35	43	12	47	17	90	90	90	90
RM GAIN MBH	2.19	1.16	2.57	3.16	2.57	1.79	0.71	0.42	1.79	0.32	1.74	2.78	1.87	2.88	2.88	1.45	1.06	0.28	1.03	0.11	0.39	0.39	0.39	0.39
CFM PER RUN COOLING	69	37	81	100	81	57	22	13	57	10	55	88	59	91	91	46	34	9	33	4	12	12	12	12
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	27	51	56	65	51	45	43	52	38	19	28	30	40	25	35	5	39	16	35	40	19	42	10	30
EQUIVALENT LENGTH	150	130	140	140	130	160	200	140	190	200	110	110	150	130	120	140	140	140	130	150	130	140	130	110
TOTAL EFFECTIVE LENGTH	177	181	196	205	181	205	243	192	228	219	136	140	190	155	155	145	179	156	165	190	149	182	140	140
ADJUSTED PRESSURE	0.1	0.1	0.08	0.08	0.09	0.08	0.07	0.09	0.08	0.08	0.13	0.12	0.09	0.1	0.1	0.12	0.1	0.11	0.11	0.09	0.11	0.09	0.12	0.12
ROUND DUCT SIZE	6	4	6	6	6	5	4	4	5	4	6	6	5	6	6	4	4	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	204	310	270	301	270	235	241	413	235	207	133	306	279	255	255	402	493	138	539	195	459	459	459	459
COOLING VELOCITY (ft/min)	352	424	413	510	413	419	252	149	419	115	280	449	433	464	464	528	390	103	379	46	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	B	D	A	D	C	C	D	C	B	D	C	A	B	B	D	A	C	C	A	B	A	D	C

RUN #	25
ROOM NAME	GRT
RM LOSS MBH	1.50
CFM PER RUN HEAT	38
RM GAIN MBH	1.87
CFM PER RUN COOLING	59
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH	47
EQUIVALENT LENGTH	110
TOTAL EFFECTIVE LENGTH	157
ADJUSTED PRESSURE	0.11
ROUND DUCT SIZE	5
HEATING VELOCITY (ft/min)	279
COOLING VELOCITY (ft/min)	433
OUTLET GRILL SIZE	3X10
TRUNK	A

SUPPLY AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	285	0.08	8.8	10	513	TRUNK G	0	0.00	0	0	TRUNK O	0	0.05	0	8
TRUNK B	560	0.08	11.3	16	630	TRUNK H	0	0.00	0	0	TRUNK P	0	0.05	0	8
TRUNK C	294	0.07	9.2	10	529	TRUNK I	0	0.00	0	0	TRUNK Q	0	0.05	0	8
TRUNK D	587	0.07	11.9	16	660	TRUNK J	0	0.00	0	0	TRUNK R	0	0.05	0	8
TRUNK E	0	0.00	0	0	0	TRUNK K	0	0.00	0	0	TRUNK S	0	0.05	0	8
TRUNK F	0	0.00	0	0	0	TRUNK L	0	0.00	0	0	TRUNK T	0	0.05	0	8
											TRUNK U	0	0.05	0	8
											TRUNK V	0	0.05	0	8
											TRUNK W	0	0.05	0	8
											TRUNK X	1145	0.05	16.6	8
											TRUNK Y	315	0.05	10.2	8
											TRUNK Z	465	0.05	11.8	8
											DROP	1145	0.05	16.6	10

RETURN AIR #	1	2	3	4	5	6	7	8																BR
AIR VOLUME	95	75	85	75	95	155	150	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175
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.	47	79	54	40	47	32	27	38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	225	215	255	175	230	145	190	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	222	304	269	295	222	262	172	228	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.05	0.06	0.05	0.07	0.06	0.09	0.06	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	0.10
ROUND DUCT SIZE	6	6	6	6	6	7.5	6.7	8.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	8	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
INLET GRILL SIZE	14	14	14	14	14	14	14	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14

TYPE: 4502
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 91144
OPT 5 BED 4 BATH

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	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	6 @ 10.6 cfm	63.6 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	201.4 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		95.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE 65H	Location: BSMT
95.4 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-1	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH-2	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 cfm low	
75 % 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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																			
LO#: 91144		Model: 4502		Builder: ROYAL PINE HOMES		Date: 2021-06-04																													
Volume Calculation				Air Change & Delta T Data																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">House Volume</th> </tr> </thead> <tbody> <tr> <td>Level</td> <td>Volume (ft³)</td> </tr> <tr> <td>Bsmt</td> <td>11745</td> </tr> <tr> <td>First</td> <td>13050</td> </tr> <tr> <td>Second</td> <td>13096</td> </tr> <tr> <td>Third</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> </tr> <tr> <td>Total:</td> <td>37,891.0 ft³</td> </tr> <tr> <td>Total:</td> <td>1073.0 m³</td> </tr> </tbody> </table>				House Volume		Level	Volume (ft³)	Bsmt	11745	First	13050	Second	13096	Third	0	Fourth	0	Total:	37,891.0 ft³	Total:	1073.0 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">WINTER NATURAL AIR CHANGE RATE</th> <th colspan="2" style="text-align: left;">SUMMER NATURAL AIR CHANGE RATE</th> </tr> </thead> <tbody> <tr> <td></td> <td>0.219</td> <td></td> <td>0.068</td> </tr> </tbody> </table>						WINTER NATURAL AIR CHANGE RATE		SUMMER NATURAL AIR CHANGE RATE			0.219		0.068
House Volume																																			
Level	Volume (ft³)																																		
Bsmt	11745																																		
First	13050																																		
Second	13096																																		
Third	0																																		
Fourth	0																																		
Total:	37,891.0 ft³																																		
Total:	1073.0 m³																																		
WINTER NATURAL AIR CHANGE RATE		SUMMER NATURAL AIR CHANGE RATE																																	
	0.219		0.068																																
				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DTDC</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </tbody> </table>						Design Temperature Difference				Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-21	43	Summer DTDC	24	31	7				13						
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6.2.6 Sensible Gain due to Air Leakage																																			
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																			
$= 0.068 \times 298.04 \times 7^\circ\text{C} \times 1.2 = 173 \text{ W}$																																			
$= 11538 \text{ Btu/h}$																																			
6.2.7 Sensible heat Gain due to Ventilation																																			
$HL_{vaibr} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																			
$95 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 330 \text{ Btu/h}$																																			
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																			
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																			
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*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: 4502	OPT 5 BED 4 BATH	BUILDER: ROYAL PINE HOMES
SFQT: 2942	LO# 91144	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 (ft³):	37891.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 48.0 ft	WIDTH: 38.0 ft	EXPOSED PERIMETER:	172.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
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%	-

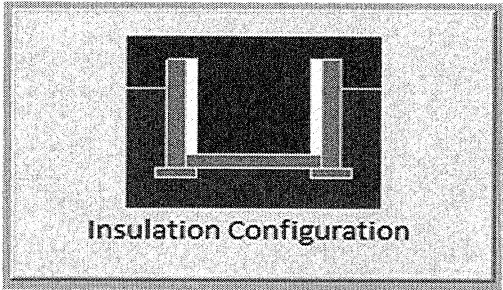
INDIVIDUAL BCIN: 19669

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):	14.6	 Insulation Configuration
Floor Width (m):	11.6	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.8	
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):		1724

TYPE: 4502
LO# 91144

OPT 5 BED 4 BATH

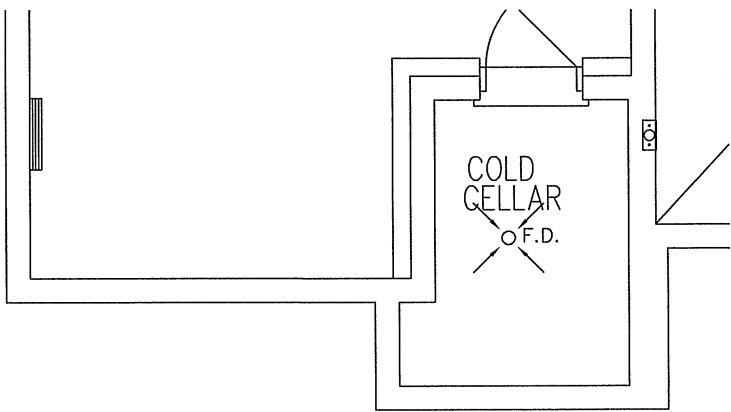
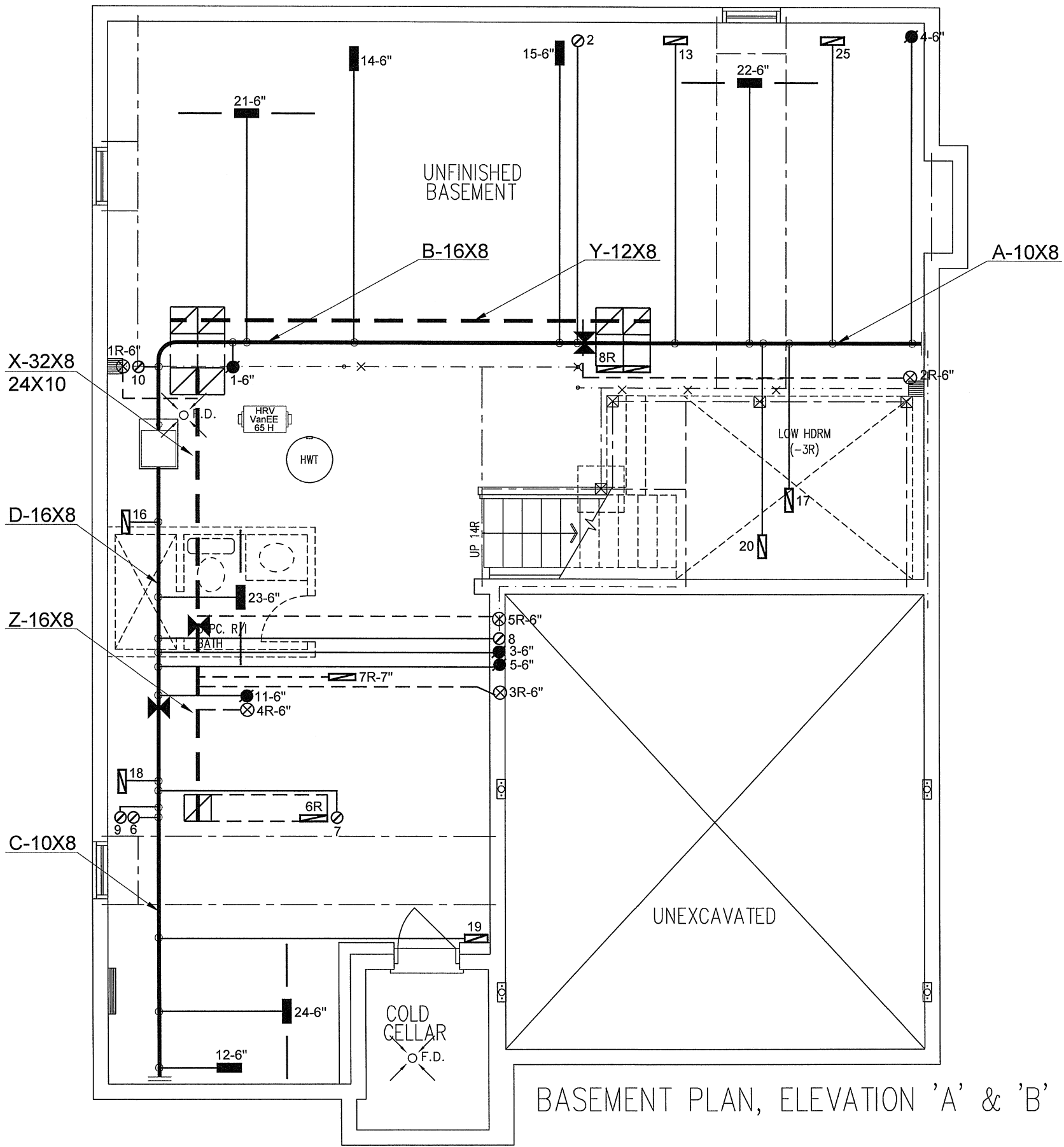
Air Infiltration Residential Load Calculator

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):	6.40			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1073.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1001.6 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):	0.219			
Cooling Air Leakage Rate (ACH/H):	0.068			

TYPE: 4502
LO# 91144

OPT 5 BED 4 BATH



I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 OF THE BUILDING CODE.

Michael O'Rourke

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

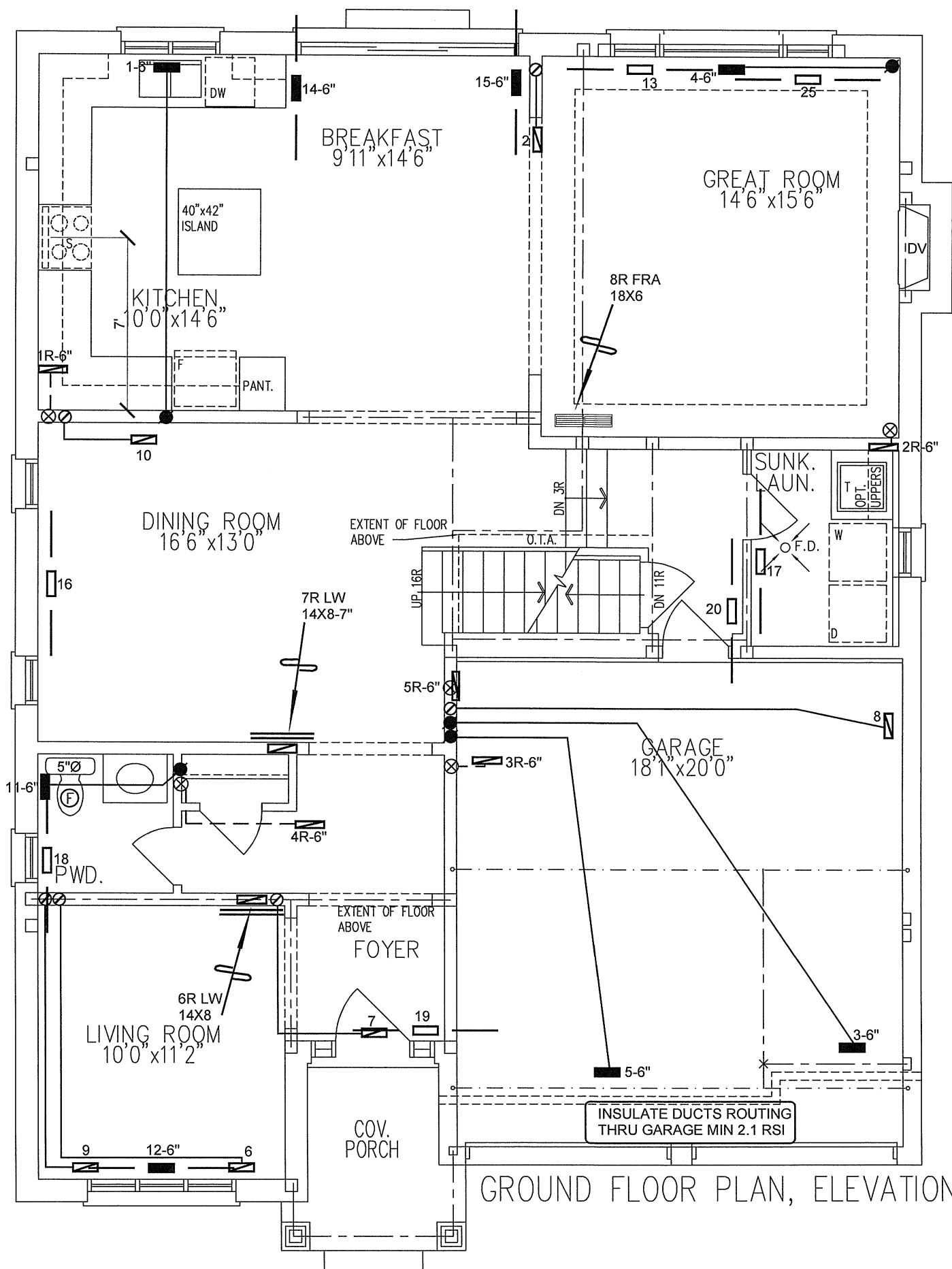
CSA-F280-12

SB-12 PERFORMANCE

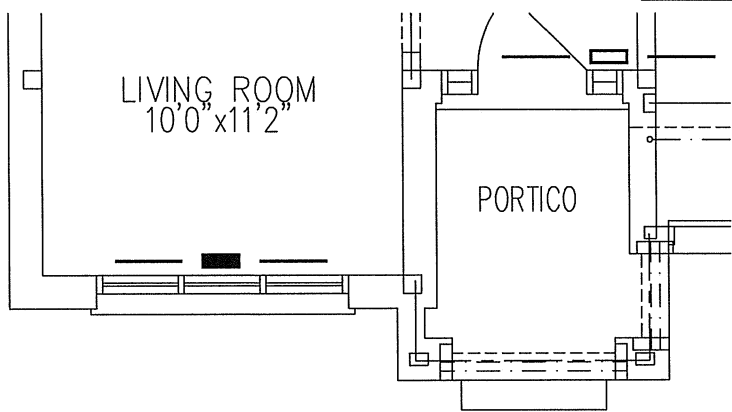
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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN 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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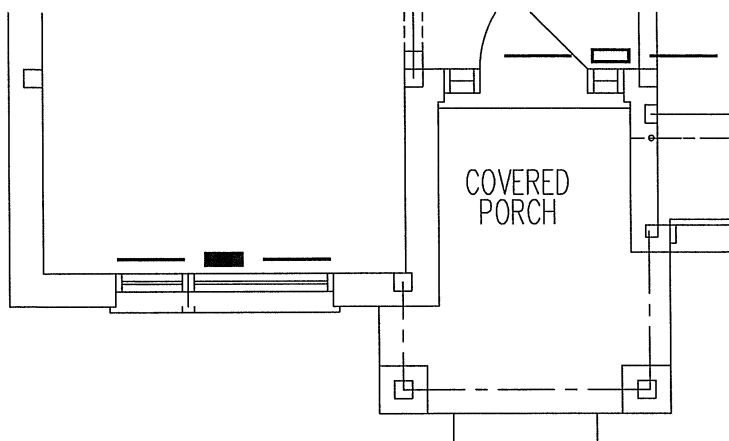
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	HEAT LOSS 47490 BTU/H		# OF RUNS S/A R/A FANS			Sheet Title	
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR			BASEMENT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE CARRIER		2ND FLOOR 11 5 4			HEATING	
			MODEL 59TN6A-060-14V		1ST FLOOR 10 3 2			LAYOUT	
			INPUT 60 MBTU/H		BASEMENT 4 1 0			Date JUNE/2021	
OPT 5 BED 4 BATH 4502 2942 sqft		OUTPUT 58 MBTU/H		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"		
		COOLING 3.0 TONS					BCIN# 19669		
		FAN SPEED 1145 cfm @ 0.6" w.c.					LO# 91144		



GROUND FLOOR PLAN, ELEVATION 'A'



GROUND FLOOR PLAN, ELEVATION 'B'



GROUND FLOOR PLAN, ELEVATION '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.

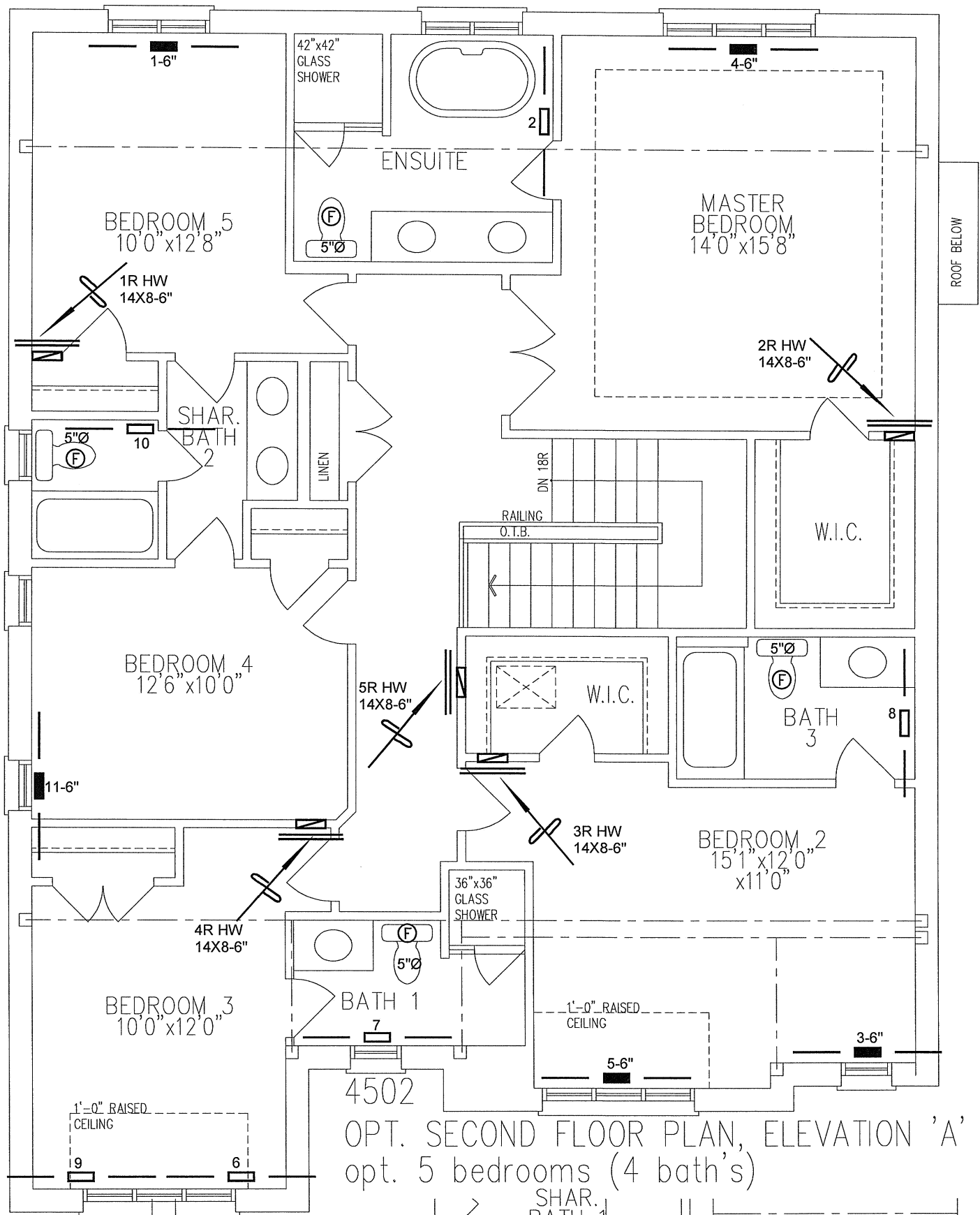
CSA-F280-12

SB-12 PERFORMANCE

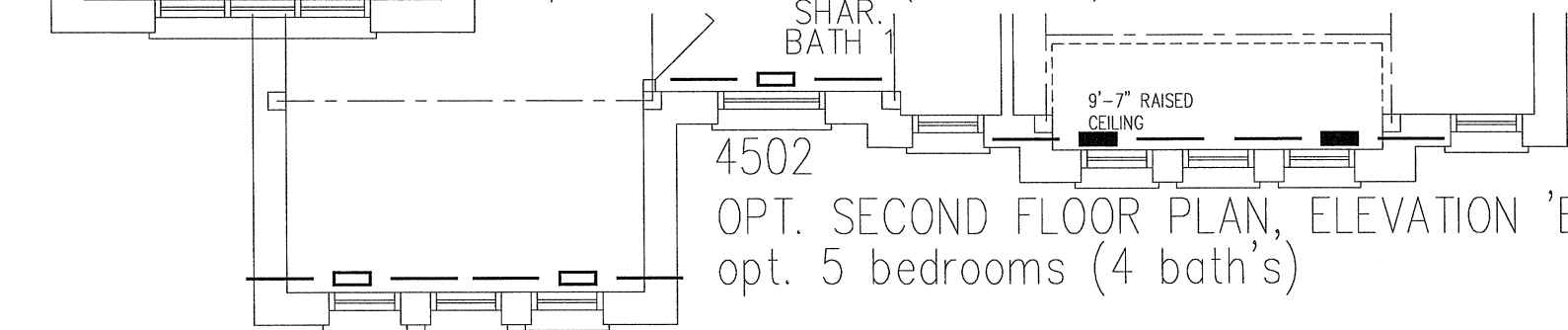
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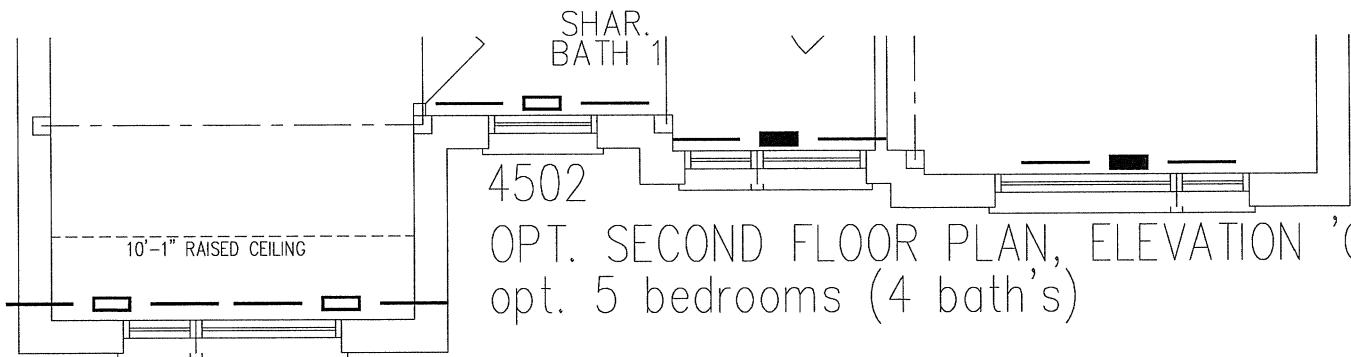
Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date JUNE/2021	
OPT 5 BED 4 BATH 4502			Scale 3/16" = 1'-0"	
2942 sqft			BCIN# 19669	
			LO# 91144	
		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.		



OPT. SECOND FLOOR PLAN, ELEVATION 'A'
opt. 5 bedrooms (4 bath's)



OPT. SECOND FLOOR PLAN, ELEVATION 'B'
opt. 5 bedrooms (4 bath's)



OPT. SECOND FLOOR PLAN, ELEVATION 'C'
opt. 5 bedrooms (4 bath's)

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
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND							3.		
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Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date JUNE/2021	
OPT 5 BED 4 BATH 4502			Scale 3/16" = 1'-0"	
2942 sqft			BCIN# 19669	
			LO# 91144	