

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 BRAMPTON	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: 5003 CNR Project: VALES OF HUMBER SOUTH		
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.				
July 10, 2024		 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: VALES OF HUMBER SOUTH

BUILDER: ROYAL PINE HOMES

TYPE: 5003 CNR

GFA: 4066

DATE: Jul-24

LO# 95283

WINTER NATURAL AIR CHANGE RATE 0.234

SUMMER NATURAL AIR CHANGE RATE 0.076

HEAT LOSS AT °F. 74

HEAT GAIN AT °F. 11

CSA-F280-12

PERFORMANCE

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	BED-2	BED-3	BED-4	BTH-2/3	MD/B5	BTH-4/5		
GRS.WALL AREA	LOSS	GAIN	414	252	162	162	324	225	162	90			
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	20.8	12.8	0	0	0	22	457	282	0	0	0	0	0
EAST	20.8	32.9	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	19.8	40	831	793	0	0	0	35	727	694	0	0
WEST	20.8	32.9	46	956	1514	13	270	428	0	0	0	0	0
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	328	1137	169	217	752	112	138	478	71	118	409
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	593	743	330	195	244	109	360	451	201	249	312
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	80	199	30	280	697
BASEMENT/CRAWL HEAT LOSS			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
SUBTOTAL HT LOSS			3667		1724	1627	2416	3084	1477	1623	940		
SUB TOTAL HT GAIN				2806	930	609	1788	2532	654	974	605		
LEVEL FACTOR / MULTIPLIER	0.20	0.22		0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22		
AIR CHANGE HEAT LOSS			824		387	365	543	693	332	365	211		
AIR CHANGE HEAT GAIN				137	45	30	87	123	32	47	29		
DUCT LOSS			0		0	199	296	0	181	0	0		
DUCT GAIN				0	0	163	287	0	69	0	0		
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0		
HEAT GAIN APPLIANCES/LIGHTS			752	0	0	752	752	752	752	1	240	0	0
TOTAL HT LOSS BTU/H			4491		2111	2192	3254	3777	1989	1988	1152		
TOTAL HT GAIN x 1.3 BTU/H			5427		1268	2331	4099	4741	980	2616	824		

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	FAM	DIN	KT/DN	LIV	LIB	PWD	FOY	LND		
GRS.WALL AREA	LOSS	GAIN	429	220	440	143	352	77	220	275			
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	25	519	320
EAST	20.8	32.9	0	0	0	0	0	0	49	1018	1613	0	0
SOUTH	20.8	19.8	0	0	0	48	997	952	28	582	555	0	0
WEST	20.8	32.9	84	1745	2765	0	0	0	0	0	0	0	0
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	10	196	29	0	0	0	20	392
NET EXPOSED WALL	3.5	0.5	345	1196	177	172	596	88	338	1172	174	95	329
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	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	2.7	1.2	10	27	12	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	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
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2968		1594	3279	1327	2553	267	2191	1789		
SUB TOTAL HT GAIN				2954	1040	2825	1001	2309	40	1815	509		
LEVEL FACTOR / MULTIPLIER	0.30	0.35		0.30	0.35	0.30	0.35	0.30	0.35	0.30	0.35		
AIR CHANGE HEAT LOSS			1037		557	1146	463	892	93	765	625		
AIR CHANGE HEAT GAIN				144	51	137	49	112	2	88	25		
DUCT LOSS			0		0	0	0	0	0	0	0		
DUCT GAIN				0	0	0	0	0	0	0	0		
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	0		
HEAT GAIN APPLIANCES/LIGHTS			752		752	752	752	752	0	0	752		
TOTAL HT LOSS BTU/H			4005		2150	4425	1790	3445	360	2956	2414		
TOTAL HT GAIN x 1.3 BTU/H			5004		2395	4828	2341	4125	54	2474	1670		

TOTAL HEAT GAIN BTU/H: 47602

TONS: 3.97

LOSS DUE TO VENTILATION LOAD BTU/H: 1911

STRUCTURAL HEAT LOSS: 62126

TOTAL COMBINED HEAT LOSS BTU/H: 64037

SITE NAME: VALES OF HUMBER SOUTH
BUILDER: ROYAL PINE HOMES

TYPE: 5003 CNR

DATE: Jul-24

GFA: 4066

LO# 95283

HEATING CFM 1495 COOLING CFM 1495
TOTAL HEAT LOSS 62,126 TOTAL HEAT GAIN 47,318
AIR FLOW RATE CFM 24.06 AIR FLOW RATE CFM 31.59

furnace pressure 0.6
furnace filter 0.00
a/c coil pressure 0.3
available pressure
for s/a & r/a 0.30

FACTORY INSTALLED

*CARRIER

AFUE = 97 %

INPUT (BTU/H) = 80,000

OUTPUT (BTU/H) = 78,000

59SC6A080M21--20

FAN SPEED

LOW 0

MEDLOW 0

MEDIUM 0

MEDIUM HIGH 1495

HIGH 0

DESIGN CFM = 1495

CFM @ .6" E.S.P.

TEMPERATURE RISE 48 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	12	6
R/A	0	0	6	3	1

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	MBR	BED-2	BED-3	BED-4	BTH-2/3	BTH-2/3	MD/B5	MBR	BTH-4/5	FAM	DIN	KT/DN	KT/DN	LIV	LIB	PWD	FOY	LND	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.50	1.06	1.50	2.19	1.63	1.26	0.99	0.99	0.99	1.50	1.15	2.00	2.15	2.21	2.21	1.79	1.72	0.36	1.48	2.41	3.27	3.27	3.27	3.27
CFM PER RUN HEAT	36	25	36	53	39	30	24	24	24	36	28	48	52	53	53	43	41	9	36	58	79	79	79	79
RM GAIN MBH.	1.81	0.63	1.81	2.33	2.05	1.58	0.49	0.49	1.31	1.81	0.82	2.50	2.40	2.41	2.41	2.34	2.06	0.05	1.24	1.67	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	57	20	57	74	65	50	15	15	41	57	26	79	76	76	76	74	65	2	39	53	11	11	11	11
ADJUSTED 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.	55	31	64	27	82	93	96	82	57	58	69	27	49	31	42	58	68	20	69	10	15	42	13	40
EQUIVALENT LENGTH	140	100	170	130	150	210	200	160	170	160	200	140	170	110	120	150	130	140	140	150	100	130	130	180
TOTAL EFFECTIVE LENGTH	195	131	234	157	232	303	296	242	227	218	269	167	219	141	162	208	198	160	209	160	115	172	143	220
ADJUSTED PRESSURE	0.07	0.11	0.06	0.09	0.06	0.05	0.05	0.06	0.06	0.07	0.05	0.09	0.07	0.1	0.09	0.07	0.07	0.09	0.07	0.09	0.13	0.08	0.1	0.07
ROUND DUCT SIZE	6	4	6	5	6	6	4	4	5	6	4	6	6	6	6	6	6	4	5	5	5	6	6	6
HEATING VELOCITY (ft/min)	184	287	184	389	199	153	275	275	176	184	321	245	265	270	270	219	209	103	264	426	580	403	403	403
COOLING VELOCITY (ft/min)	291	229	291	543	331	255	172	172	301	291	298	403	388	388	388	377	331	23	286	389	81	56	56	56
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	C	E	C	E	B	A	A	B	C	D	B	E	B	D	D	B	A	E	A	E	E	C	D	B

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BED-3	BED-4	FAM	LIB	FOY	BED-4	BAS	MD/B5	ENS
RM LOSS MBH.	3.27	1.63	1.26	2.00	1.72	1.48	1.26	3.27	0.99	1.06
CFM PER RUN HEAT	79	39	30	48	41	36	30	79	24	25
RM GAIN MBH.	0.36	2.05	1.58	2.50	2.06	1.24	1.58	0.36	1.31	0.63
CFM PER RUN COOLING	11	65	50	79	65	39	50	11	41	20
ADJUSTED PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	55	91	75	28	76	61	85	67	61	20
EQUIVALENT LENGTH	130	150	200	120	130	150	170	130	230	130
TOTAL EFFECTIVE LENGTH	185	241	275	148	206	211	255	197	291	150
ADJUSTED PRESSURE	0.08	0.06	0.05	0.1	0.07	0.07	0.06	0.07	0.05	0.1
ROUND DUCT SIZE	6	6	6	6	6	5	6	6	5	4
HEATING VELOCITY (ft/min)	403	199	153	245	209	264	153	403	176	287
COOLING VELOCITY (ft/min)	56	331	255	403	331	286	255	56	301	229
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10
TRUNK	B	B	A	D	A	A	A	A	B	E

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 A	347	0.05	10.6	14	x	8	446	TRUNK G	0	0.00	0	0	8
TRUNK B	754	0.05	14.2	24	x	8	566	TRUNK H	0	0.00	0	0	8
TRUNK C	175	0.06	7.8	8	x	8	394	TRUNK I	0	0.00	0	0	8
TRUNK D	1198	0.05	16.9	28	x	10	616	TRUNK J	0	0.00	0	0	8
TRUNK E	1495	0.05	18.3	32	x	10	673	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (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	205	0.05	8.7	10	x	8
TRUNK X	1495	0.05	18.3	32	x	10
TRUNK Y	1000	0.05	15.8	28	x	8
TRUNK Z	445	0.05	11.6	16	x	8
DROP	1495	0.05	18.3	24	x	14

RUN AIR #	1	2	3	4	5	6	7	8	9	BR
FLOOR	2	2	2	2	2	2	1	1	1	B
AIR VOLUME	130	120	120	120	120	120	305	145	85	0
PLENUM PRESSURE	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
ACTUAL DUCT LGH.	47	43	70	85	90	57	42	23	73	1
EQUIVALENT LENGTH	175	195	205	190	185	185	225	145	170	0
TOTAL EFFECTIVE LH	222	238	275	275	275	242	267	168	243	1
ADJUSTED PRESSURE	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	12.40
ROUND DUCT SIZE	7	7	7	7	7	7	10.1	7	6	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	30	14	14	0

TYPE: 5003 CNR
SITE NAME: VALES OF HUMBER SOUTH

LO # 95283

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>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>201.4</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>201.4</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>106.0</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE V150H
Location:	BSMT
<u>95.4</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
95.4 CFM	X 74 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
BTH-2/3	BY INSTALLING CONTRACTOR	50	☒	3.5
BTH-4/5	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
<u>150</u>	cfm high	<u>35</u> cfm low
<u>75</u>	% Sensible Efficiency @ 32 deg F (0 deg C)	☒ HVI Approved

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:	July-24

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

Michael O'Rourke

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 95283	Model: 5003 CNR	Builder: ROYAL PINE HOMES	Date: 7/10/2024																																																									
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>1880</td> <td>10</td> <td>18800</td> </tr> <tr> <td>First</td> <td>1880</td> <td>11</td> <td>20680</td> </tr> <tr> <td>Second</td> <td>2253</td> <td>9</td> <td>20277</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="3" style="text-align: right;">Total:</td> <td>59,757.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1692.1 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1880	10	18800	First	1880	11	20680	Second	2253	9	20277	Third	0	9	0	Fourth	0	9	0	Total:			59,757.0 ft³	Total:			1692.1 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;">0.234</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.076</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;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.234	SUMMER NATURAL AIR CHANGE RATE	0.076	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.234 x 470.04 x 41 °C x 1.2 = 5450 W = 18595 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.076 x 470.04 x 6 °C x 1.2 = 263 W = 896 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 74 °F x 1.08 x 0.25 = 1911 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 11 °F x 1.08 x 0.25 = 283 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 / HL _{clevel})																																																								
1	0.5	18,595	10,329	0.900																																																								
2	0.3		15,968	0.349																																																								
3	0.2		16,559	0.225																																																								
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																																																												
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5003 CNR	BUILDER: ROYAL PINE HOMES
SFQT: 4066	SITE: VALES OF HUMBER SOUTH
LO# 95283	

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

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):	59757.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 57.0 ft	WIDTH: 46.0 ft	EXPOSED PERIMETER:	206.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
PERFORMANCE****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	.90 EF	-

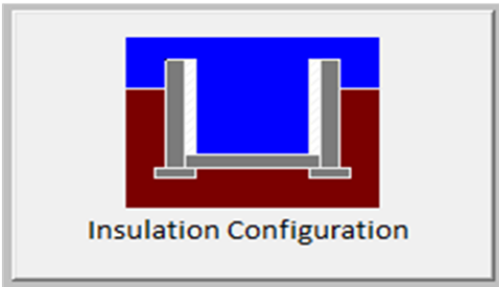
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	17.4	 Insulation Configuration
Floor Width (m):	14.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):		2154

TYPE: 5003 CNR
LO# 95283

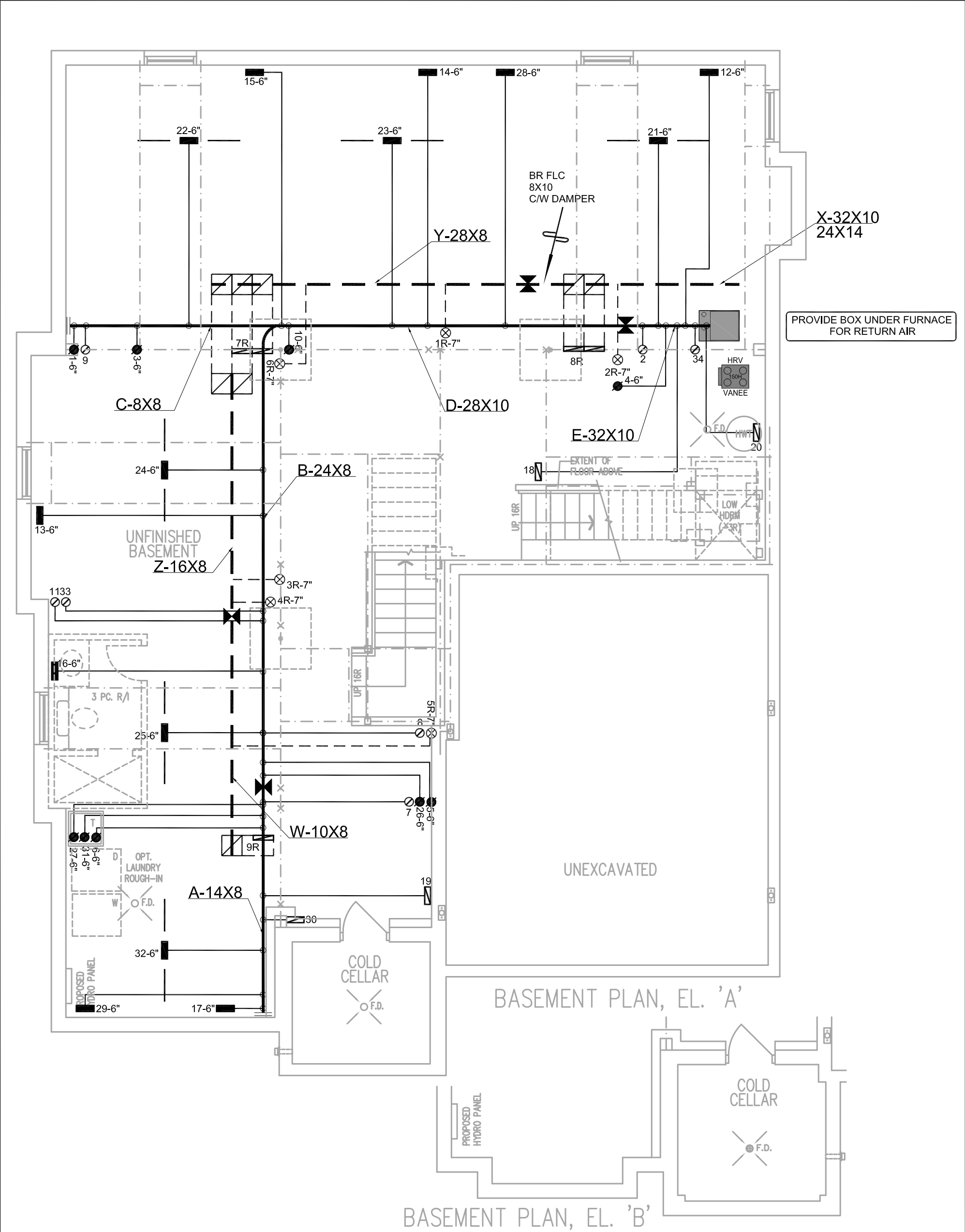
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

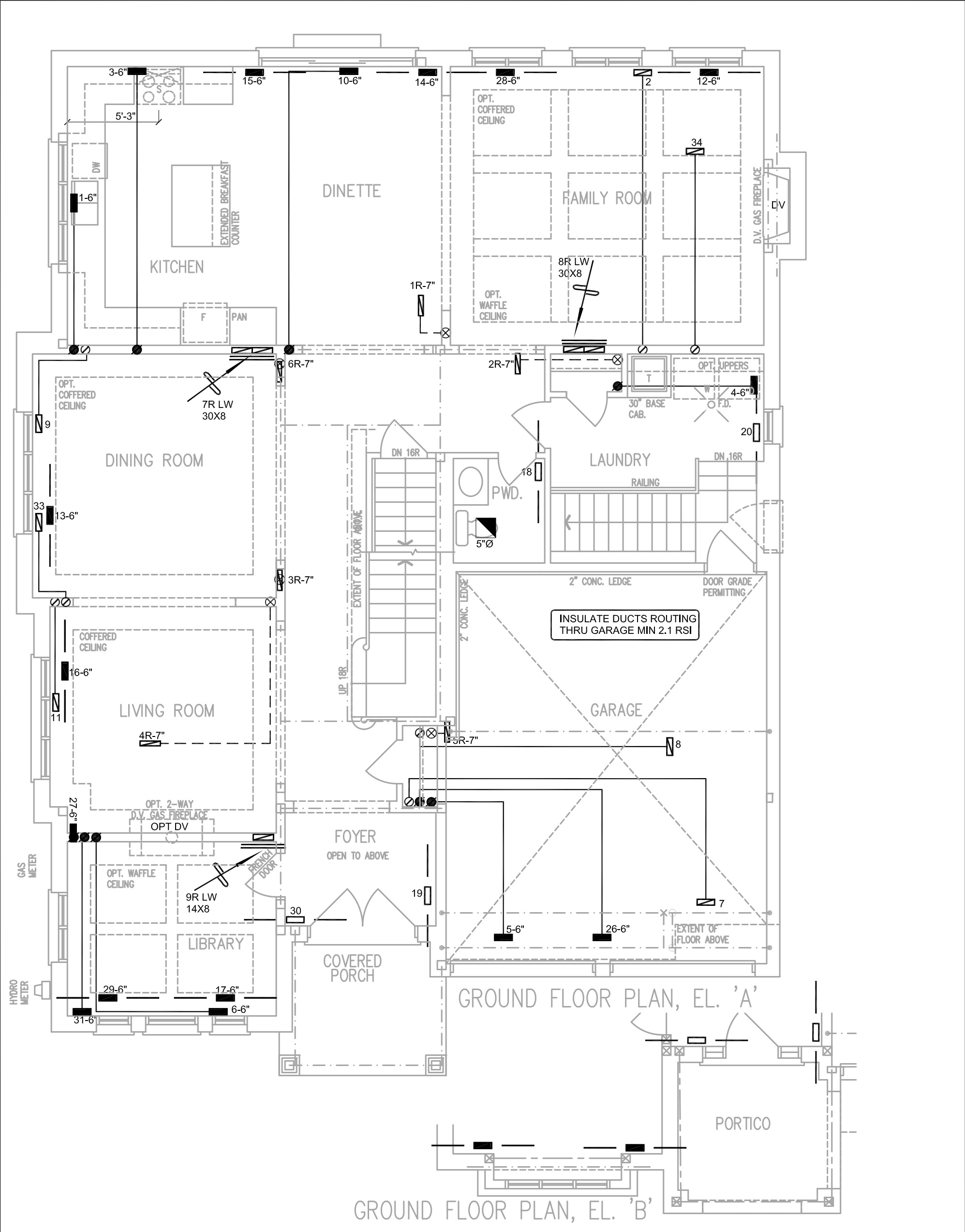
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1692.1			
Air Leakage/Ventilation				
Air Tightness Type:	Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1579.6 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):	0.234			
Cooling Air Leakage Rate (ACH/H):	0.076			

TYPE: 5003 CNR

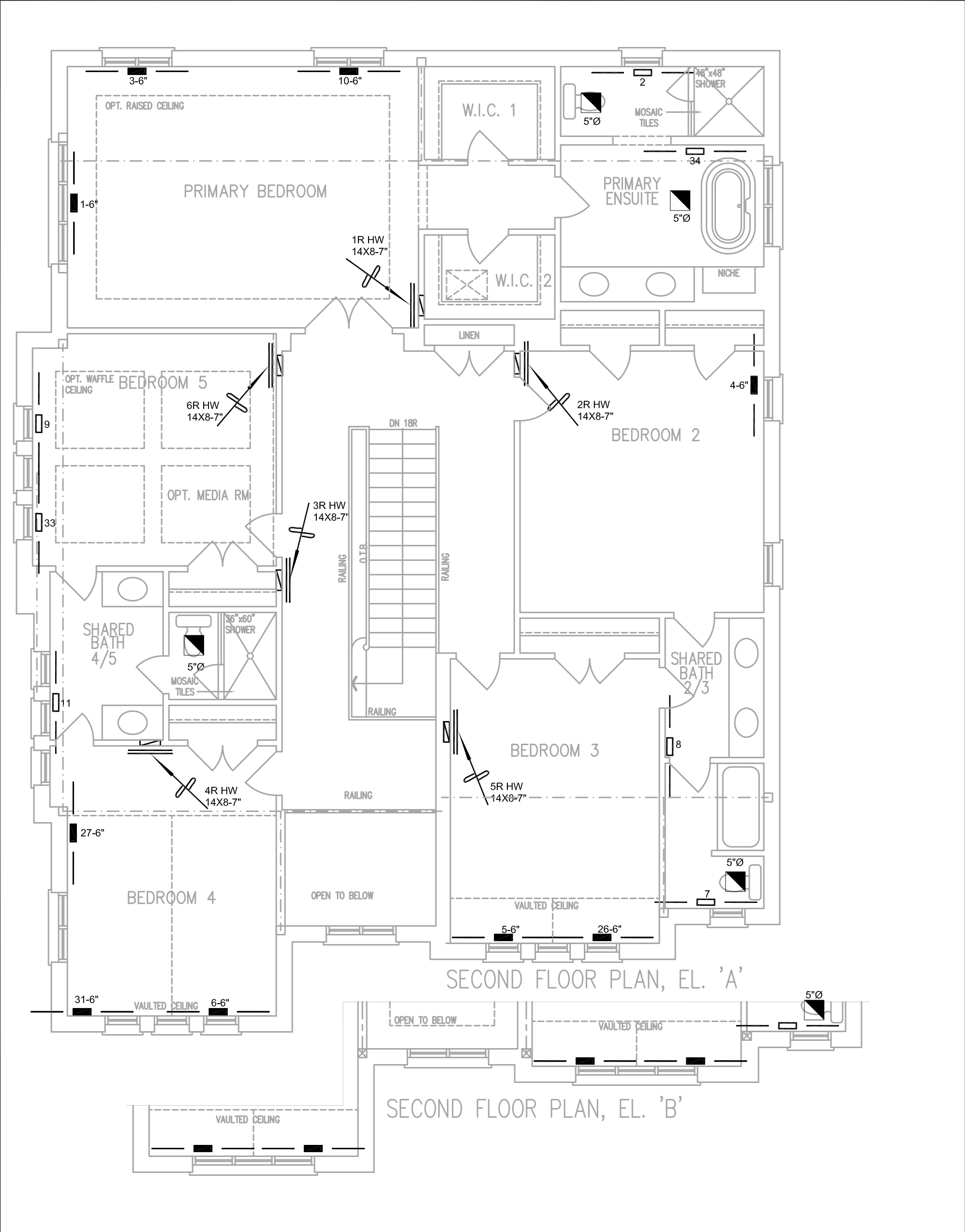
LO# 95283



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	UPDATED EQUIPMENT	JUL/2024	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	MAR/2022	
	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			
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.						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 BCIN # 19669 HVAC Designs Ltd.		SB-12 PERFORMANCE	
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				HEAT LOSS 64037 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT	
Project Name						CARRIER		2ND FLOOR 16 6 4		Date	
VALES OF HUMBER SOUTH						MODEL		1ST FLOOR 12 3 2		MAR/2022	
BRAMPTON, ONTARIO						59SC6A080M21--20		BASEMENT 6 1 0		Scale	
5003 CNR		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.				80 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		3/16" = 1'-0"	
4066 sqft						OUTPUT 78 MBTU/H				BCIN# 19669	
						COOLING 4.0 TONS				LO# 95283	
						FAN SPEED 1495 cfm @ 0.6" w.c.					



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	UPDATED EQUIPMENT	JUL/2024	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	MAR/2022	
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Project Name										FIRST FLOOR HEATING LAYOUT	
ROYAL PINE HOMES		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.								Date MAR/2022	
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO										Scale 3/16" = 1'-0"	
5003 CNR										BCIN# 19669	
4066 sqft										LO# 95283	



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	UPDATED EQUIPMENT	JUL/2024	
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	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
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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@hvacdsgns.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	
Project Name										SECOND FLOOR HEATING LAYOUT	
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO										Date	MAR/2022
										Scale	3/16" = 1'-0"
						BCIN# 19669					
5003 CNR		4066 sqft				LO#		95283			