

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: 3802 Project: SUMMER RIDGE ESTATES		
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.				
May 16, 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: SUMMER RIDGE ESTATES

BUILDER: ROYAL PIE HOMES

TYPE: 3802

GFA: 3319

DATE: May-24

LO# 105073

WINTER NATURAL AIR CHANGE RATE 0.227

SUMMER NATURAL AIR CHANGE RATE 0.074

HEAT LOSS AT °F. 74

HEAT GAIN AT °F. 11

CSA-F280-12

PERFORMANCE

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	MEDIA	BATH		
GRS.WALL AREA	LOSS	GAIN		324	189	81	135	306	171	54	324	81		
GLAZING				LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	LOSS	GAIN		
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	0	0	8	166
EAST	20.8	32.9	0	0	0	0	0	0	0	0	55	1143	1810	0
SOUTH	20.8	19.8	0	0	0	0	0	0	0	0	17	353	337	0
WEST	20.8	32.9	37	769	1218	16	332	527	0	0	0	0	0	0
SKYLT.	34.1	132.1	0	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	0
NET EXPOSED WALL	3.5	0.5	287	995	148	173	600	89	73	253	38	118	409	61
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	315	395	176	122	153	68	131	164	73	216	271	120
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	15	40	18
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	4	10	1
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				2159		1085		583		1033		2707		1238
SUB TOTAL HT GAIN					1541		684		269		399		1693	
LEVEL FACTOR / MULTIPLIER	0.20	0.21			0.20	0.21		0.20	0.21		0.20	0.21		0.20
AIR CHANGE HEAT LOSS				458		230		124		219		574		263
AIR CHANGE HEAT GAIN				97		43		17		25		106		36
DUCT LOSS				0		0		0		328		0		57
DUCT GAIN				0		0		0		260		0		26
HEAT GAIN PEOPLE	240		2	480	0	0	0	0	1	240	1	240	0	0
HEAT GAIN APPLIANCES/LIGHTS				559	0	0	0	0		559		559	0	0
TOTAL HT LOSS BTU/H				2616		1315		707		1252		3609		1500
TOTAL HT GAIN x 1.3 BTU/H				3480		944		372		1590		3716		1829

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	FAM	LV/DN	KT/BF	DEN	LND	W/R	FOY	MUD	BAS		
GRS.WALL AREA	LOSS	GAIN		390	190	370	110	160	66	539	110	1116		
GLAZING				LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	LOSS	GAIN		
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	32.9	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	19.8	0	0	0	34	706	674	0	0	0	0	0	0
WEST	20.8	32.9	34	706	1119	0	0	0	47	976	1547	0	0	0
SKYLT.	34.1	132.1	0	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	0
NET EXPOSED WALL	3.5	0.5	356	1234	183	156	541	80	323	1120	166	89	309	46
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	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	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	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	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				1941		1247		2096		745		693		350
SUB TOTAL HT GAIN					1302		754		1713		315		181	
LEVEL FACTOR / MULTIPLIER	0.30	0.38			0.30	0.38		0.30	0.38		0.30	0.38		0.30
AIR CHANGE HEAT LOSS				731		470		790		281		261		132
AIR CHANGE HEAT GAIN				82		47		108		20		11		53
DUCT LOSS				0		0		0		0		0		0
DUCT GAIN				0		0		0		0		0		0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				559		559		559		559		559		0
TOTAL HT LOSS BTU/H				2672		1717		2886		1026		954		482
TOTAL HT GAIN x 1.3 BTU/H				2526		1769		3093		1162		976		234

TOTAL HEAT GAIN BTU/H: 30199

TONS: 2.52

LOSS DUE TO VENTILATION LOAD BTU/H: 1593

STRUCTURAL HEAT LOSS: 47198

TOTAL COMBINED HEAT LOSS BTU/H: 48790

SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PIE HOMES

TYPE: 3802

DATE: May-24

GFA: 3319

LO# 105073

HEATING CFM 975 COOLING CFM 975
TOTAL HEAT LOSS 47,198 TOTAL HEAT GAIN 29,962
AIR FLOW RATE CFM 20.66 AIR FLOW RATE CFM 32.54

furnace pressure 0.6
furnace filter 0.00
a/c coil pressure 0.21
available pressure
for s/a & r/a 0.39

FACTORY INSTALLED

59SC6A060M17--16 CARRIER

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	11	4
R/A	0	0	5	2	1

plenium pressure s/a 0.20
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.18
r/a pressure 0.19
r/a grille press. Loss 0.02
adjusted pressure r/a 0.17

FAN SPEED 60
LOW 0
MEDLOW 790
MEDIUM 975
MEDIUM HIGH 1140
HIGH 1300

DESIGN CFM = 975
CFM @ .6" E.S.P.

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-3	BED-2	BED-3	BED-4	ENS-2	MEDIA	MEDIA	MBR	BATH	FAM	LV/DN	KT/BF	KT/BF	DEN	LND	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.31	1.32	1.80	1.25	1.80	1.50	0.63	1.33	1.33	1.31	0.70	1.34	1.72	1.44	1.44	1.03	0.95	0.48	2.11	0.97	3.99	3.99	3.99	3.99
CFM PER RUN HEAT	27	27	37	26	37	31	13	27	27	27	14	28	35	30	30	21	20	10	44	20	82	82	82	82
RM GAIN MBH.	1.74	0.94	1.86	1.59	1.86	1.83	0.37	1.53	1.53	1.74	0.29	1.26	1.77	1.55	1.55	1.16	0.98	0.23	0.58	0.14	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	57	31	60	52	60	60	12	50	50	57	9	41	58	50	50	38	32	8	19	5	14	14	14	14
ADJUSTED PRESSURE	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18
ACTUAL DUCT LGH.	61	65	55	42	45	36	37	43	53	52	30	53	30	44	51	24	8	27	34	4	46	33	18	30
EQUIVALENT LENGTH	150	170	140	160	130	160	160	180	180	130	170	160	150	130	150	130	120	120	140	80	170	120	160	140
TOTAL EFFECTIVE LENGTH	211	235	195	202	175	196	197	223	233	182	200	213	180	174	201	154	128	147	174	84	216	153	178	170
ADJUSTED PRESSURE	0.09	0.08	0.1	0.1	0.11	0.1	0.1	0.09	0.08	0.11	0.1	0.09	0.11	0.11	0.1	0.13	0.15	0.13	0.11	0.23	0.08	0.12	0.1	0.11
ROUND DUCT SIZE	5	4	5	6	5	6	4	5	5	5	4	4	5	4	5	4	4	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	198	310	272	133	272	158	149	198	198	198	161	321	257	344	220	241	229	115	505	229	418	418	418	418
COOLING VELOCITY (ft/min)	419	356	441	265	441	306	138	367	367	419	103	470	426	574	367	436	367	92	218	57	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	D	B	D	B	D	C	D	A	B	A	B	A	A	B	E	D	C	E	A	B	B	C

RUN #	25	26	27	28
ROOM NAME	FOY	FAM	MEDIA	WIC
RM LOSS MBH.	2.11	1.34	1.33	0.71
CFM PER RUN HEAT	44	28	27	15
RM GAIN MBH.	0.58	1.26	1.53	0.37
CFM PER RUN COOLING	19	41	50	12
ADJUSTED PRESSURE	0.19	0.19	0.19	0.19
ACTUAL DUCT LGH.	27	47	46	53
EQUIVALENT LENGTH	170	140	210	160
TOTAL EFFECTIVE LENGTH	197	187	256	213
ADJUSTED PRESSURE	0.1	0.1	0.08	0.09
ROUND DUCT SIZE	4	4	5	4
HEATING VELOCITY (ft/min)	505	321	198	172
COOLING VELOCITY (ft/min)	218	470	367	138
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10
TRUNK	C	A	C	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	252	0.08	8.4	10	x 8 454
TRUNK B	585	0.08	11.5	16	x 8 658
TRUNK C	224	0.08	8	8	x 8 504
TRUNK D	348	0.08	9.4	12	x 8 522
TRUNK E	973	0.08	13.9	22	x 8 796
TRUNK F	0	0.00	0	0	x 8 0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.06	0	0	x 8 0
TRUNK P	0	0.06	0	0	x 8 0
TRUNK Q	0	0.06	0	0	x 8 0
TRUNK R	0	0.06	0	0	x 8 0
TRUNK S	0	0.06	0	0	x 8 0
TRUNK T	0	0.06	0	0	x 8 0
TRUNK U	0	0.06	0	0	x 8 0
TRUNK V	0	0.06	0	0	x 8 0
TRUNK W	0	0.06	0	0	x 8 0
TRUNK X	975	0.06	14.9	26	x 8 675
TRUNK Y	619	0.06	12.6	18	x 8 619
TRUNK Z	429	0.06	11	14	x 8 552
DROP	975	0.06	14.9	24	x 10 585

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
FLOOR	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AIR VOLUME	95	95	95	95	95	239	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	59	54	54	48	53	45	33	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	195	175	195	170	165	200	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	254	229	249	218	218	245	208	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.07	0.07	0.08	0.08	0.07	0.08	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72
ROUND DUCT SIZE	6	6	6	5.8	5.8	8.5	5.8	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	8	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	24	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 3802
SITE NAME: SUMMER RIDGE ESTATES

LO # 105073

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>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>7</u> @ 10.6 cfm	<u>74.2</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>201.4</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>121.9</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE V150H
Location:	BSMT
<u>79.5</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 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
ENS-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 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 PIE 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:	May-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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 105073	Model: 3802	Builder: ROYAL PIE HOMES	Date: 5/16/2024																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <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>1511</td><td>9</td><td>13599</td></tr> <tr><td>First</td><td>1511</td><td>10</td><td>15110</td></tr> <tr><td>Second</td><td>1820</td><td>9</td><td>16380</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>45,089.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1276.8 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1511	9	13599	First	1511	10	15110	Second	1820	9	16380	Third	0	9	0	Fourth	0	9	0	Total:			45,089.0 ft³	Total:			1276.8 m³	<table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%; text-align: center;">0.227</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.074</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <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	0.227	SUMMER NATURAL AIR CHANGE RATE	0.074	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 354.66 x 41 °C x 1.2 = 3989 W = 13610 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.074 x 354.66 x 6 °C x 1.2 = 192 W = 656 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 11 °F x 1.08 x 0.25 = 236 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	13,610	9,168	0.742																																																								
2	0.3		10,837	0.377																																																								
3	0.2		12,837	0.212																																																								
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: 3802	BUILDER: ROYAL PIE HOMES
SFQT: 3319	SITE: SUMMER RIDGE ESTATES
LO# 105073	

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 (ft ³):	45089.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 61.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	186.0 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	0.9	-

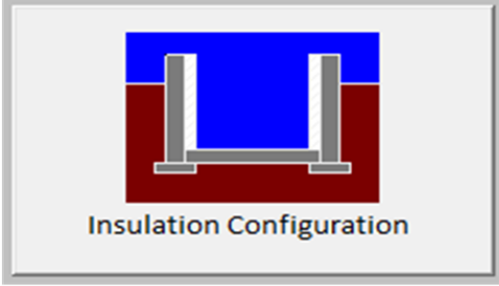
INDIVIDUAL BCIN: 19669

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):	18.6	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.3	
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):		1912

TYPE: 3802
LO# 105073

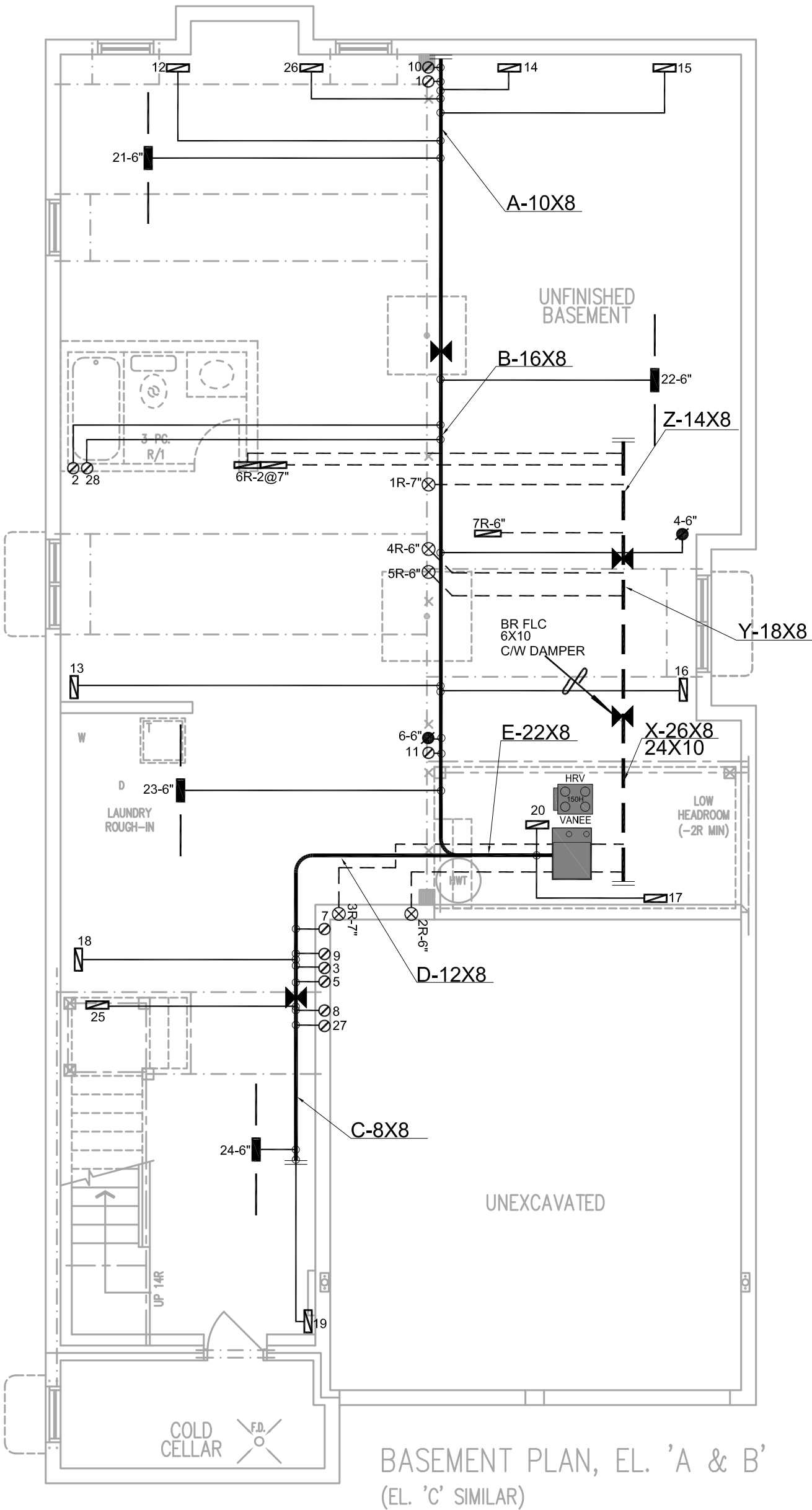
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

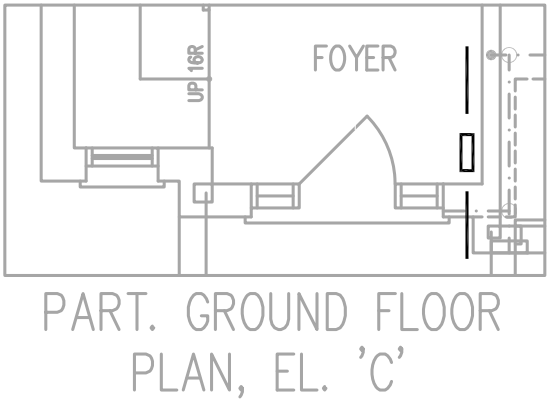
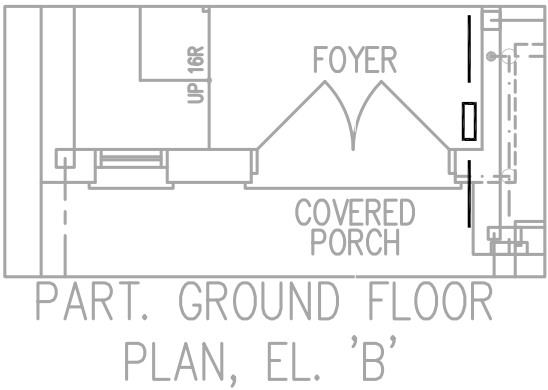
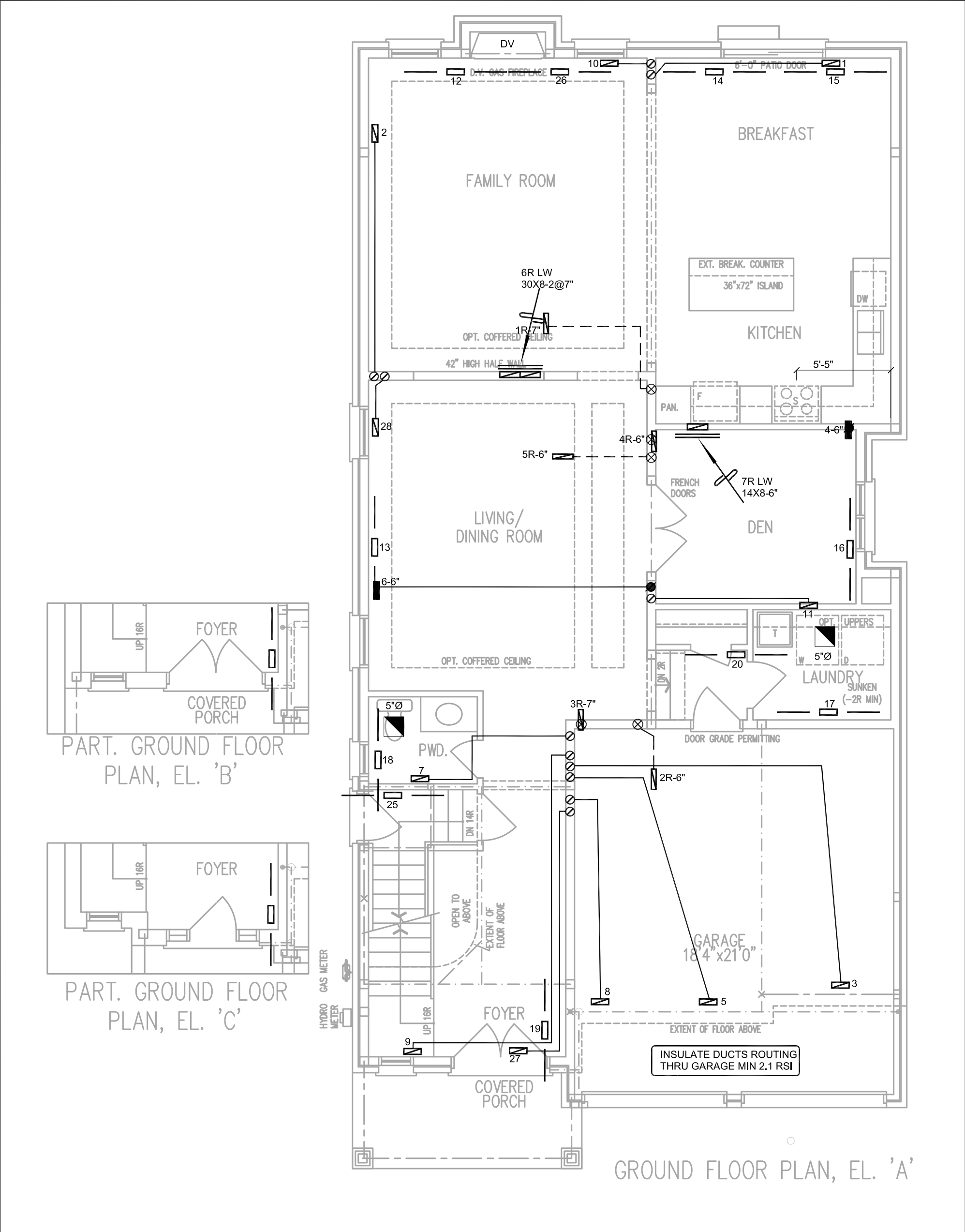
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1276.8			
Air Leakage/Ventilation				
Air Tightness Type:	Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1191.9 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):	0.074			

TYPE: 3802

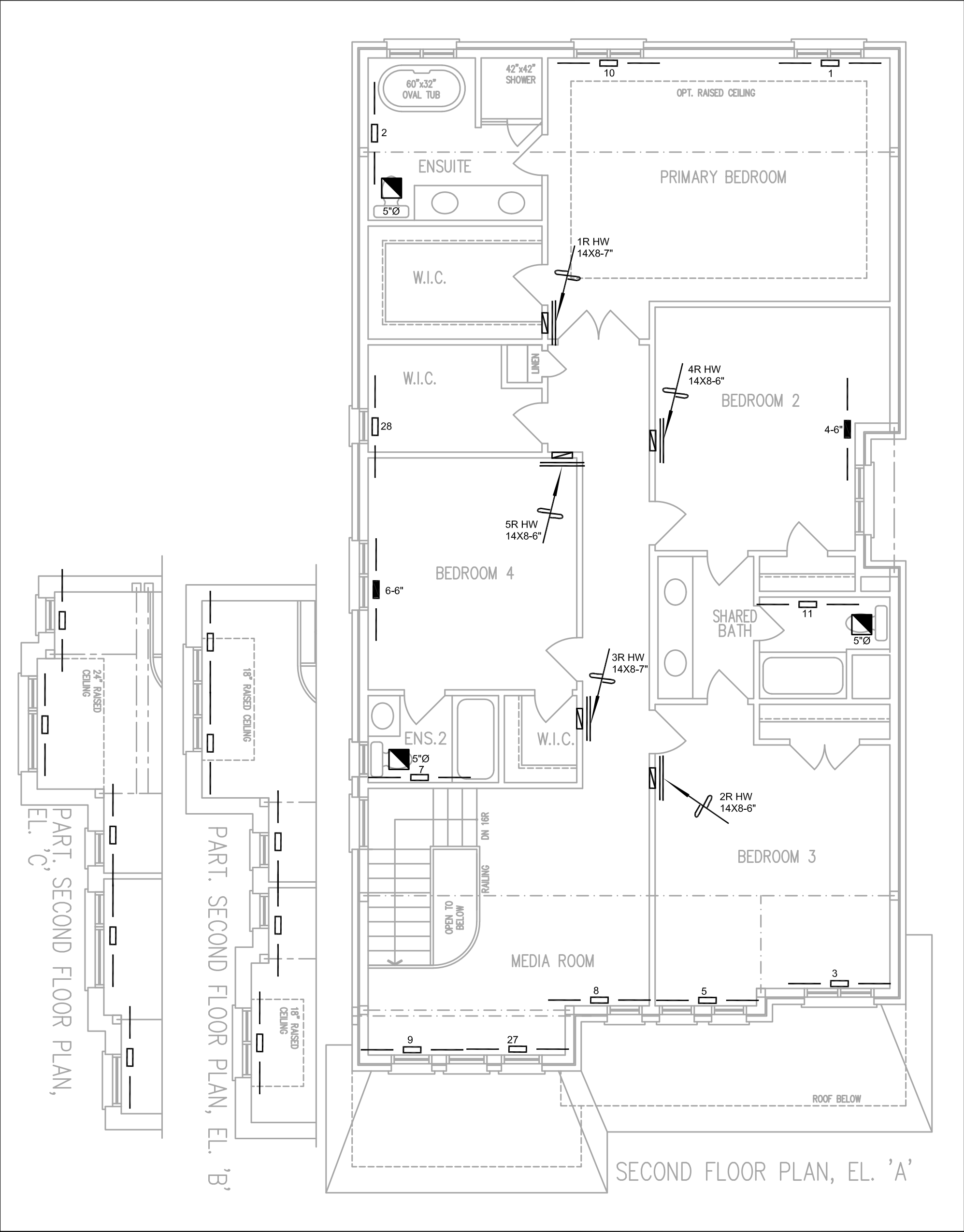
LO# 105073



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			
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.		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 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.				HEAT LOSS 48790 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title	
Project Name SUMMER RIDGE ESTATES BRAMPTON, ONTARIO						MAKE CARRIER		3RD FLOOR		BASEMENT HEATING LAYOUT	
						MODEL 59SC6A060M17--16		2ND FLOOR		13 5 3	
						INPUT 60.0 MBTU/H		1ST FLOOR		11 2 3	
						OUTPUT 58.0 MBTU/H		BASEMENT		4 1 0	
3802		3319 sqft		COOLING 2.5 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		Date MAY/2024			
				FAN SPEED 975 cfm @ 0.6" w.c.				Scale 3/16" = 1'-0"			
								BCIN# 19669			
								LO# 105073			



HVAC LEGEND								3.		
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FIRST FLOOR HEATING LAYOUT										
Project Name						Date		MAY/2024		
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO						Scale		3/16" = 1'-0"		
								BCIN# 19669		
3802		3319 sqft				LO#		105073		



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
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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	
	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	
Project Name										SECOND FLOOR HEATING LAYOUT	
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO										Date MAY/2024	
3802		3319 sqft						Scale 3/16" = 1'-0"			
								BCIN# 19669			
								LO#	105073		