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	**Postal code**	**Plan number/ other description**		
BRAMPTON				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			Unit no.	Lot/con.
375 FINLEY AVE			**202**	**N/A**
Municipality	Postal code	Province	E-mail	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	Fax number		Cell number	
(**905**) **619-2300**	(**905**) **619-2375**		( )	

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:** 7001 - ELEV C OPT IN-LAW **Project:** VALES OF HUMBER SOUTH

D. Declaration of Designer

I **MICHAEL O'ROURKE** 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 Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ 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.

April 7, 2022
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. 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.
2. 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.

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SITE NAME: VALES OF HUMBER SOUTH | OPT IN-LAW | DATE Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.241 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 7001 - ELEV C | GFA: 5590 | LO# 95345 | SUMMER NATURAL AIR CHANGE RATE 0.078 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			GREAT			KIT			PANT			DIN			LIV			FOY			IN-LAW			PWD-1			PWD-2			MD/LN				
EXP. WALL			48			32			20			26			30			20			22			3			8			33				
CLG. HT.			21			11			11			11			11			23			11			11			11			12				
	FACTORS																																	
GRS.WALL AREA	LOSS	GAIN	1008			352			220			286			330			460			242			33			88			396				
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN		
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	519	387		
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	34	706	1396	33	686	1355	34	706	1396	0	0	0	0	0	0	0	0	0		
SOUTH	20.8	24.4	0	0	0	0	0	0	0	0	0	39	810	951	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
WEST	20.8	41.0	192	3989	7881	107	2223	4392	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DOORS	24.7	3.7	0	0	0	20	493	73	0	0	0	0	0	0	0	0	0	60	1479	219	0	0	0	0	0	0	0	0	0	40	986	146		
NET EXPOSED WALL	3.5	0.5	816	2829	419	225	780	116	220	763	113	247	856	127	296	1026	152	367	1272	189	208	721	107	33	114	17	88	305	45	331	1148	170		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	503	630	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	80	215	95	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0			0			0			
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0			0			0			
SUBTOTAL HT LOSS				7475			3496			763			1667			1733			3652			1428			114			305			2653			
SUB TOTAL HT GAIN					8593			4581			113			1078			1548			1858			1503			17			45			703		
LEVEL FACTOR / MULTIPLIER			0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37		0.30	0.37			
AIR CHANGE HEAT LOSS				2788			1304			285			622			646			1362			533			43			114			990			
AIR CHANGE HEAT GAIN					466			248			6			58			84			101			81			1			2			38		
DUCT LOSS				0			0			0			0			0			0			0			0			0			0			
DUCT GAIN					0			0			0			0			0			0			0			0			0			0		
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0	1		240	0		0	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					1636			1636			0			1636			1636			0			1636			0			0			1636		
TOTAL HT LOSS BTU/H				10264			4800			1047			2288			2379			5014			1960			157			419			3643			
TOTAL HT GAIN x 1.3 BTU/H					13903			8404			155			3604			4248			2546			4498			23			62			3090		

ROOM USE			I-ENS																					BAS		
EXP. WALL			11																					250		
CLG. HT.			11																					10		
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	121																					1750		
GLAZING			LOSS		GAIN																			LOSS		GAIN
NORTH	20.8	15.5	0	0	0																			0	0	0
EAST	20.8	41.0	0	0	0																			0	0	0
SOUTH	20.8	24.4	0	0	0																			12	249	293
WEST	20.8	41.0	0	0	0																			12	249	493
SKYLT.	34.1	100.3	0	0	0																			0	0	0
DOORS	24.7	3.7	0	0	0																			20	493	73
NET EXPOSED WALL	3.5	0.5	121	420	62																			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0																			750	2635	391
EXPOSED CLG	1.3	0.6	0	0	0																			0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0																			0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0																			0	0	0
BASEMENT/CRAWL HEAT LOSS				0																					8939	
SLAB ON GRADE HEAT LOSS				0																						
SUBTOTAL HT LOSS				420																					12566	
SUB TOTAL HT GAIN					62																					1249
LEVEL FACTOR / MULTIPLIER			0.30	0.37																				0.50	1.17	
AIR CHANGE HEAT LOSS				156																					14738	
AIR CHANGE HEAT GAIN					3																					68
DUCT LOSS				0																					0	
DUCT GAIN					0																					0
HEAT GAIN PEOPLE	240		0		0																			0		0
HEAT GAIN APPLIANCES/LIGHTS					0																					
TOTAL HT LOSS BTU/H				576																					27304	
TOTAL HT GAIN x 1.3 BTU/H					85																					1712

TOTAL HEAT GAIN BTU/H: 76833 TONS: 6.40 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 83912 TOTAL COMBINED HEAT LOSS BTU/H: 89922

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.

Michael O'Rourke

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BUILDER: ROYAL PINE HOMES | TYPE: 7001 - ELEV C | GFA: 5590 | LO# 95345 | SUMMER NATURAL AIR CHANGE RATE 0.078 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			PRI			ENS			DRESS			BED-2			BED-3			BED-4			BED-5			RETR			ENS-2			ENS-3		
EXP. WALL				25			27			11			13			20			24			30			10			6			20		
CLG. HT.				10			10			10			10			11			10			10			10			10			10		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN		250			270			110			130			220			240			300			100			60			200		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	27	561	418	0	0	0	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	16	340	672	32	665	1314	32	665	1314	0	0	0	0	0	0	28	582	1149
SOUTH	20.8	24.4	0	0	0	32	665	781	8	166	195	0	0	0	0	0	0	0	0	0	0	0	0	18	374	439	0	0	0	0	0	0
WEST	20.8	41.0	54	1122	2217	23	478	944	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	196	680	101	215	745	111	102	354	52	103	357	53	204	706	105	208	721	107	268	929	138	82	284	42	51	177	26	172	596	88
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	546	684	304	180	226	100	165	207	92	325	407	181	211	264	118	352	441	196	216	271	120	310	388	173	66	83	37	91	114	51
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	50	134	60	0	0	0	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	20	50	7	261	650	96	30	75	11	0	0	0	0	0	0	66	164	24	91	227	34
BASEMENT/CRAWL HEAT LOSS				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	
SUBTOTAL HT LOSS				2486			2114			727			1375			2094			1902			1865			1047			611			1519	
SUB TOTAL HT GAIN					2622			1936			340			659			1050			1628			1572			654			227			1322
LEVEL FACTOR / MULTIPLIER			0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35	
AIR CHANGE HEAT LOSS				860			731			251			476			724			658			645			362			211			525	
AIR CHANGE HEAT GAIN					142			105			18			36			57			88			85			35			12			72
DUCT LOSS				0			0			0			185			282			256			0			0			82			204	
DUCT GAIN					0			0			0			257			298			359			0			0			24			139
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1636			0			0			1636			1636			1636			1636			1636			0			0
TOTAL HT LOSS BTU/H				3345			2845			978			2036			3101			2815			2510			1409			904			2248	
TOTAL HT GAIN x 1.3 BTU/H					6343			2653			465			3676			4265			5136			4592			3023			342			1993

ROOM USE			ENS-4			SHARED			WIC-4		
EXP. WALL			0			6			6		
CLG. HT.			10			10			10		
	FACTORS										
GRS.WALL AREA	LOSS	GAIN	0			60			60		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	16	332	657
SOUTH	20.8	24.4	0	0	0	9	187	220	0	0	0
WEST	20.8	41.0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	0	0	0	51	177	26	44	153	23
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	70	88	39	90	113	50	42	53	23
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	40	100	15	0	0	0	42	105	16
BASEMENT/CRAWL HEAT LOSS				0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0	
SUBTOTAL HT LOSS				187			477			642	
SUB TOTAL HT GAIN					54			296			718
LEVEL FACTOR / MULTIPLIER			0.20	0.35		0.20	0.35		0.20	0.35	
AIR CHANGE HEAT LOSS				65			165			222	
AIR CHANGE HEAT GAIN					3			16			39
DUCT LOSS				25			0			86	
DUCT GAIN					6			0			76
HEAT GAIN PEOPLE	240		0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					0			0			0
TOTAL HT LOSS BTU/H				277			641			951	
TOTAL HT GAIN x 1.3 BTU/H					81			406			1083

TOTAL HEAT GAIN BTU/H: 76833 | TONS: 6.40 | LOSS DUE TO VENTILATION LOAD BTU/H: 6010 | STRUCTURAL HEAT LOSS: 83912 | TOTAL COMBINED HEAT LOSS BTU/H: 89922

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.

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

OPT IN-LAW
TYPE: 7001 - ELEV C

DATE: Apr-22

GFA: 5590 LO# 95345

FURNACE 1

HEATING CFM	1370	COOLING CFM	1370
TOTAL HEAT LOSS	59,851	TOTAL HEAT GAIN	42,330
AIR FLOW RATE CFM	22.89	AIR FLOW RATE CFM	32.36

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 62857 BTUH

#CARRIER
59SP5A-80-16 **80**
FAN SPEED

LOW	0
MEDLOW	975
MEDIUM	1200
MEDIUM HIGH	1370
HIGH	1540

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**
DESIGN CFM = **1370**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 53 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	21	8
R/A	0	0	0	5	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	GREAT	GREAT	GREAT	GREAT	GREAT	KIT	KIT	KIT	PANT	DIN	DIN	LIV	LIV	FOY	FOY	IN-LAW	IN-LAW	PWD-1	PWD-2	MD/LN	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.05	2.05	2.05	2.05	2.05	1.60	1.60	1.60	1.05	1.14	1.14	1.19	1.19	2.51	2.51	0.98	0.98	0.16	0.42	3.64	3.41	3.41	3.41	3.41
CFM PER RUN HEAT	47	47	47	47	47	37	37	37	24	26	26	27	27	57	57	22	22	4	10	83	78	78	78	78
RM GAIN MBH.	2.78	2.78	2.78	2.78	2.78	2.80	2.80	2.80	0.15	1.80	1.80	2.12	2.12	1.27	1.27	2.25	2.25	0.02	0.06	3.09	0.21	0.21	0.21	0.21
CFM PER RUN COOLING	90	90	90	90	90	91	91	91	5	58	58	69	69	41	41	73	73	1	2	100	7	7	7	7
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	31	25	21	23	28	35	47	53	55	50	62	78	74	78	82	81	87	31	11	18	53	38	21	25
EQUIVALENT LENGTH	100	100	120	140	120	110	90	110	100	120	110	100	120	150	130	120	130	120	170	140	110	100	130	130
TOTAL EFFECTIVE LENGTH	131	125	141	163	148	145	137	163	155	170	172	178	194	228	212	201	217	151	181	158	163	138	151	155
ADJUSTED PRESSURE	0.12	0.13	0.11	0.1	0.11	0.11	0.12	0.1	0.11	0.1	0.1	0.1	0.09	0.08	0.08	0.09	0.08	0.11	0.1	0.1	0.11	0.12	0.11	0.11
ROUND DUCT SIZE	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	4	5	5	5	5	5	5	**6**	**6**	4	4	**6**	5	5	5	5
HEATING VELOCITY (ft/min)	240	240	240	240	240	189	189	189	275	191	191	198	198	419	419	112	112	46	115	423	573	573	573	573
COOLING VELOCITY (ft/min)	459	459	459	459	459	464	464	464	57	426	426	507	507	301	301	372	372	11	23	510	51	51	51	51
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	F	F	F	E	E	E	E	D	D	C	C	A	A	A	B	B	B	E	E	F	D	E	E	F

RUN #	25	26	27	28	29
ROOM NAME	BAS	BAS	BAS	BAS	I-ENS
RM LOSS MBH.	3.41	3.41	3.41	3.41	0.58
CFM PER RUN HEAT	78	78	78	78	13
RM GAIN MBH.	0.21	0.21	0.21	0.21	0.09
CFM PER RUN COOLING	7	7	7	7	3
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	52	58	71	78	60
EQUIVALENT LENGTH	110	110	110	100	120
TOTAL EFFECTIVE LENGTH	162	168	181	178	180
ADJUSTED PRESSURE	0.11	0.1	0.1	0.1	0.1
ROUND DUCT SIZE	5	5	5	5	4
HEATING VELOCITY (ft/min)	573	573	573	573	149
COOLING VELOCITY (ft/min)	51	51	51	51	34
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	A	B	B

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	189	0.08	7.5	8	x	8	425	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	192	0.08	7.6	8	x	8	432	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	589	0.08	11.5	16	x	8	663	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	139	0.10	6.3	8	x	8	313	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1066	0.08	14.4	24	x	8	800	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	302	0.10	8.5	10	x	8	544	TRUNK L	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	1370	0.06	17	26	x	12	632
TRUNK Y	775	0.06	13.7	22	x	8	634
TRUNK Z	515	0.06	11.8	16	x	8	579
DROP	1370	0.06	17	24	x	12	685

RETURN AIR #	1	2	3	4	5												**BR**
AIR VOLUME	330	155	360	130	130	0	0	0	0	0	0	0	0	0	0	0	265
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
ACTUAL DUCT LGH.	15	55	55	63	60	1	1	1	1	1	1	1	1	1	1	1	16
EQUIVALENT LENGTH	145	205	200	205	165	0	0	0	0	0	0	0	0	0	0	0	185
TOTAL EFFECTIVE LH	160	260	255	268	225	1	1	1	1	1	1	1	1	1	1	1	201
ADJUSTED PRESSURE	0.09	0.06	0.06	0.06	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	9	7.5	10.3	7	6.8	0	0	0	0	0	0	0	0	0	0	0	8.8
INLET GRILL SIZE	8	8	8	8	8	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
INLET GRILL SIZE	30	14	30	14	14	0	0	0	0	0	0	0	0	0	0	0	30

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Michael O'Rourke

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

OPT IN-LAW
TYPE: 7001 - ELEV C

DATE: Apr-22

GFA: 5590 LO# 95345

FURNACE 2

HEATING CFM	1040	COOLING CFM	1040	furnace pressure	0.6	
TOTAL HEAT LOSS	24,060	TOTAL HEAT GAIN	34,057	furnace filter	0.05	
AIR FLOW RATE CFM	43.22	AIR FLOW RATE CFM	30.54	a/c coil pressure	0.2	
				available pressure for s/a & r/a	0.35	

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 27065 BTUH

#*CARRIER
59SP5A-40-12 **40**
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 770
HIGH 1040

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = **39,000**
DESIGN CFM = **1040**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 35 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	20	0	0
R/A	0	0	7	0	0

plenum 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

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	15	16	17	18	19	20	21
ROOM NAME	PRI	PRI	PRI	ENS	ENS	DRESS	BED-2	BED-2	ENS-2	WIC-4	BED-3	BED-3	ENS-3	BED-4	BED-4	ENS-4	BED-5	BED-5	SHARED	RETR
RM LOSS MBH.	1.12	1.12	1.12	2.13	0.71	0.98	1.02	1.02	0.90	0.95	1.55	1.55	2.25	1.41	1.41	0.28	1.25	1.25	0.64	1.41
CFM PER RUN HEAT	48	48	48	92	31	42	44	44	39	41	67	67	97	61	61	12	54	54	28	61
RM GAIN MBH.	2.11	2.11	2.11	1.99	0.66	0.47	1.84	1.84	0.34	1.08	2.13	2.13	1.99	2.57	2.57	0.08	2.30	2.30	0.41	3.02
CFM PER RUN COOLING	65	65	65	61	20	14	56	56	10	33	65	65	61	78	78	2	70	70	12	92
ADJUSTED PRESSURE	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	0.17	0.17	0.17	0.17	0.17	0.17	0.16
ACTUAL DUCT LGH.	84	69	63	90	85	85	43	38	33	41	37	42	49	64	58	39	94	88	80	92
EQUIVALENT LENGTH	190	200	210	160	170	200	180	180	110	110	120	130	130	190	220	110	170	170	170	190
TOTAL EFFECTIVE LENGTH	274	269	273	250	255	285	223	218	143	151	157	172	179	254	278	149	264	258	250	282
ADJUSTED PRESSURE	0.06	0.06	0.06	0.06	0.07	0.06	0.08	0.08	0.12	0.11	0.11	0.1	0.09	0.07	0.06	0.12	0.07	0.07	0.07	0.06
ROUND DUCT SIZE	**6**	**6**	**6**	**6**	4	5	5	5	4	4	**6**	**6**	**6**	**6**	**6**	4	**6**	**6**	4	**6**
HEATING VELOCITY (ft/min)	245	245	245	469	356	308	323	323	447	470	342	342	495	311	311	138	275	275	321	311
COOLING VELOCITY (ft/min)	331	331	331	311	229	103	411	411	115	379	331	331	311	398	398	23	357	357	138	469
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	4X10
TRUNK	A	A	A	A	A	A	B	B	B	D	D	B	B	C	C	D	C	C	C	C

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

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	309	0.06	9.7	10	x	8	556	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	600	0.06	12.4	18	x	8	600	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	319	0.06	9.8	14	x	8	410	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	439	0.06	11.1	18	x	8	439	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	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	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1040	0.05	16	30	x	8	624
TRUNK Y	585	0.05	12.9	20	x	8	527
TRUNK Z	230	0.05	9.1	10	x	8	414
DROP	1040	0.05	16	24	x	10	624

RETURN AIR #	1	2	3	4	5	6	7										**BR**
AIR VOLUME	280	95	230	115	115	75	130	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	46	42	54	66	89	60	53	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	175	165	245	205	210	215	205	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	221	207	299	271	299	275	258	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.07	0.05	0.05	0.05	0.05	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	9	6	9.1	7	7	6	7	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
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	30	14	14	14	14	0	0	0	0	0	0	0	0	0	0

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Michael O'Rourke

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TYPE: 7001 - ELEV C LO # 95345
SITE NAME: VALES OF HUMBER SOUTH OPT IN-LAW

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	5	@ 10.6 cfm	53	cfm
Kitchen & Bathrooms	9	@ 10.6 cfm	95.4	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	254.4	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

6 Bedrooms

As Per Ashrea 62.2 Dwelling- Unit Ventilation

4.1.1 Total Ventilation Rate

Q_tot=0.03A_floor+7.5(N_br+1)

TOTAL 220.2 cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	254.4	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	104.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

150.0 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
150.0 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
ENS-3	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H INSTALL 2 HRV / ERV's

150 cfm high 35 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: Michael O'Rourke.

HRAI # 001820

Date: April-22

I REVIEW AND TAKE RESPONIBILITY 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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 95345 Model: 7001 - ELEV C Builder: ROYAL PINE HOMES Date: 2022-04-07

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2793	10	27930
First	2793	11	30723
Second	3336	10	33360
Third	0	9	0
Fourth	0	9	0
		Total:	92,013.0 ft³
		Total:	2605.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.241
SUMMER NATURAL AIR CHANGE RATE	0.078

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.241 x 723.76 x 41 °C x 1.2 = 8639 W

= **29475 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.078 x 723.76 x 6 °C x 1.2 = 416 W

= **1421 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

x 2 HRV / ERV's

300 CFM x 74 °F x 1.08 x 0.25 = **6010 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

300 CFM x 11 °F x 1.08 x 0.25 = **891 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	29,475	12,566	1.173
2	0.3		23,705	0.373
3	0.2		17,044	0.346
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 7001 - ELEV C OPT IN-LAW **BUILDER:** ROYAL PINE HOMES
SFQT: 5590 **LO#** 95345 **SITE:** VALES OF HUMBER SOUTH

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):	92013.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	2.20	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 63.0 ft	WIDTH: 62.0 ft	EXPOSED PERIMETER:	250.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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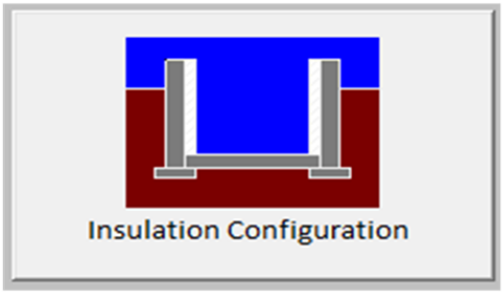
Residential Foundation Thermal Load Calculator

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):	**19.2**	 Insulation Configuration
Floor Width (m):	**18.9**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**2.2**	
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):	**2619**	

TYPE: 7001 - ELEV C OPT IN-LAW
LO# 95345

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	7.32
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	2605.5
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2432.2 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 70.8 / Total Exhaust 70.8
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.241**
Cooling Air Leakage Rate (ACH/H):	**0.078**

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