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:** 7003 OPT LAUN **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 LAUN | DATE Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.241 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 7003 | GFA: 6169 | LO# 95350 | SUMMER NATURAL AIR CHANGE RATE 0.078 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			GREAT			KIT			DIN			LIV			FOY			LIBR			PWD-1			MUD			LAUN-1		
EXP. WALL			52			59			19			40			13			29			9			32			7		
CLG. HT.			11			11			21			11			11			11			11			11			11		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	572			649			399			440			143			319			99			352			77		
GLAZING				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
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	44	914	1806	28	582	1149	44	914	1806	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0	86	1787	2098	8	166	195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	20.8	41.0	102	2119	4187	100	2078	4105	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
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	25	616	91	0	0	0	0	0	0	20	493	73	0	0	0
NET EXPOSED WALL	3.5	0.5	470	1630	242	549	1904	282	313	1085	161	388	1345	199	90	312	46	275	954	141	99	343	51	332	1151	171	77	267	40
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
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	285	357	159	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	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
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				3776			3981			3229			2426			1510			1868			343			1644			267	
SUB TOTAL HT GAIN					4440			4387			2418			2201			1287			1947			51			244			40
LEVEL FACTOR / MULTIPLIER			0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48		0.30	0.48	
AIR CHANGE HEAT LOSS				1809			1908			1547			1162			724			895			164			788			128	
AIR CHANGE HEAT GAIN					220			217			120			109			64			96			3			12			2
DUCT LOSS				0			0			0			0			0			0			0			0			0	
DUCT GAIN					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	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1920			1920			1920			1920			0			1920			0			0			1920
TOTAL HT LOSS BTU/H				5585			5889			4776			3588			2234			2763			508			2432			395	
TOTAL HT GAIN x 1.3 BTU/H					8555			8482			5795			5499			1756			5153			69			333			2550

ROOM USE			BAS		
EXP. WALL			242		
CLG. HT.			10		
	FACTORS				
GRS.WALL AREA	LOSS	GAIN	1694		
GLAZING				LOSS	GAIN
NORTH	20.8	15.5	0	0	0
EAST	20.8	41.0	0	0	0
SOUTH	20.8	24.4	12	249	293
WEST	20.8	41.0	12	249	493
SKYLT.	34.1	100.3	0	0	0
DOORS	24.7	3.7	20	493	73
NET EXPOSED WALL	3.5	0.5	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	726	2551	378
EXPOSED CLG	1.3	0.6	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0
BASEMENT/CRAWL HEAT LOSS			8717		
SLAB ON GRADE HEAT LOSS					
SUBTOTAL HT LOSS			12259		
SUB TOTAL HT GAIN					1237
LEVEL FACTOR / MULTIPLIER			0.50	1.24	
AIR CHANGE HEAT LOSS			15208		
AIR CHANGE HEAT GAIN					61
DUCT LOSS			0		
DUCT GAIN					0
HEAT GAIN PEOPLE	240		0		0
HEAT GAIN APPLIANCES/LIGHTS					
TOTAL HT LOSS BTU/H			27468		
TOTAL HT GAIN x 1.3 BTU/H					1687

TOTAL HEAT GAIN BTU/H: 87742 | TONS: 7.31 | LOSS DUE TO VENTILATION LOAD BTU/H: 6010 | STRUCTURAL HEAT LOSS: 88797 | TOTAL COMBINED HEAT LOSS BTU/H: 94808

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: 7003 | GFA: 6169 | LO# 95350 | SUMMER NATURAL AIR CHANGE RATE 0.078 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			PR/ST			ENS			WIC-1			WIC-2			BED-2			BED-3			BED-4			BED-5			ENS-2			ENS-3		
EXP. WALL			59			34			8			0			14			24			14			51			12			0		
CLG. HT.			11			10			10			10			10			10			10			11			10			10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	649			340			80			0			140			240			140			561			120			0		
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	28	582	433	0	0	0	0	0	0	24	499	371	24	499	371	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	665	1314	40	831	1642	78	1621	3202	0	0	0	0	0	0
SOUTH	20.8	24.4	8	166	195	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
WEST	20.8	41.0	92	1911	3776	40	831	1642	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	332	657	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	15	370	55	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	549	1904	282	272	943	140	80	277	41	0	0	0	116	402	60	184	638	95	100	347	51	468	1623	241	104	361	53	0	0	0
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	1199	1502	668	288	361	160	88	110	49	106	133	59	350	439	195	350	439	195	346	434	193	420	526	234	78	98	43	90	113	50
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	263	117	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	150	373	55	250	622	92	100	249	37	200	498	74	60	149	22	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				5483			2717			388			133			1713			2862			1860			4900			940			113	
SUB TOTAL HT GAIN					4922			2375			90			59			681			2067			1923			3922			776			50
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24	
AIR CHANGE HEAT LOSS				1328			658			94			32			415			693			450			1186			228			27	
AIR CHANGE HEAT GAIN					244			118			4			3			34			102			95			194			38			2
DUCT LOSS				0			0			0			0			213			356			231			609			117			0	
DUCT GAIN					0			0			0			0			288			433			418			628			81			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	0		0	1		240	1		240	1		240	1		240	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1920			0			0			0			1920			1920			1920			1920			0			0
TOTAL HT LOSS BTU/H				6811			3374			481			165			2340			3911			2542			6695			1285			140	
TOTAL HT GAIN x 1.3 BTU/H					9836			3241			123			81			4112			6191			5975			8975			1164			68

ROOM USE			ENS-4			ENS-5			WIC-3			LAUN-2		
EXP. WALL			20			7			19			0		
CLG. HT.			11			10			10			10		
	FACTORS													
GRS.WALL AREA	LOSS	GAIN	220			70			190			0		
GLAZING				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
EAST	20.8	41.0	51	1060	2093	0	0	0	16	332	657	0	0	0
SOUTH	20.8	24.4	0	0	0	8	166	195	0	0	0	0	0	0
WEST	20.8	41.0	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
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	169	586	87	62	215	32	174	603	89	0	0	0
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	106	133	59	105	132	59	90	113	50	70	88	39
NO ATTIC EXPOSED CLG	2.7	1.2	20	54	24	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	126	314	47	0	0	0	90	224	33	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0	
SUBTOTAL HT LOSS				2146			513			1273			88	
SUB TOTAL HT GAIN					2310			286			830			39
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24	
AIR CHANGE HEAT LOSS				519			124			308			21	
AIR CHANGE HEAT GAIN					114			14			41			2
DUCT LOSS				267			0			158			0	
DUCT GAIN					242			0			87			0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					0			0			0			1920
TOTAL HT LOSS BTU/H				2932			637			1739			109	
TOTAL HT GAIN x 1.3 BTU/H					3467			390			1245			2549

TOTAL HEAT GAIN BTU/H: 87742 | TONS: 7.31 | LOSS DUE TO VENTILATION LOAD BTU/H: 6010 | STRUCTURAL HEAT LOSS: 88797 | TOTAL COMBINED HEAT LOSS BTU/H: 94808

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SITE NAME: VALES OF HUMBER SOUTH — OPT LAUN
BUILDER: ROYAL PINE HOMES — TYPE: 7003 — DATE: Apr-22 — GFA: 6169 — LO# 95350 — **FURNACE 1**

HEATING CFM	1370	COOLING CFM	1370	furnace pressure	0.6
TOTAL HEAT LOSS	55,636	TOTAL HEAT GAIN	39,879	furnace filter	0.05
AIR FLOW RATE CFM	24.62	AIR FLOW RATE CFM	34.35	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 58642 BTUH

#CARRIER
59SP5A-80-16 **80**
AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

FAN SPEED	
LOW	0
MEDLOW	975
MEDIUM	1200
MEDIUM HIGH	1370
HIGH	1540

DESIGN CFM = **1370** CFM @ .6 " E.S.P.
TEMPERATURE RISE 53 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	20	9
R/A	0	0	0	5	1

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	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	GREAT	GREAT	GREAT	GREAT	KIT	KIT	KIT	KIT	DIN	DIN	DIN	LIV	LIV	LIV	FOY	LIBR	LIBR	PWD-1	MUD	LAUN-1	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.40	1.40	1.40	1.40	1.47	1.47	1.47	1.47	1.59	1.59	1.59	1.20	1.20	1.20	2.23	1.38	1.38	0.51	2.43	0.39	3.05	3.05	3.05	3.05
CFM PER RUN HEAT	34	34	34	34	36	36	36	36	39	39	39	29	29	29	55	34	34	13	60	10	75	75	75	75
RM GAIN MBH.	2.14	2.14	2.14	2.14	2.12	2.12	2.12	2.12	1.93	1.93	1.93	1.83	1.83	1.83	1.76	2.58	2.58	0.07	0.33	2.55	0.19	0.19	0.19	0.19
CFM PER RUN COOLING	73	73	73	73	73	73	73	73	66	66	66	63	63	63	60	89	89	2	11	88	6	6	6	6
ADJUSTED 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	0.16	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	47	40	36	30	24	24	24	36	37	33	39	60	57	54	53	68	72	58	48	42	31	18	33	43
EQUIVALENT LENGTH	100	130	90	120	130	120	130	120	170	130	110	140	130	130	170	190	190	120	140	130	100	130	110	120
TOTAL EFFECTIVE LENGTH	147	170	126	150	154	144	154	156	207	163	149	200	187	184	223	258	262	178	188	172	131	148	143	163
ADJUSTED PRESSURE	0.12	0.1	0.14	0.11	0.11	0.12	0.11	0.11	0.08	0.11	0.12	0.09	0.09	0.09	0.08	0.06	0.06	0.1	0.09	0.09	0.13	0.12	0.12	0.11
ROUND DUCT SIZE	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	**6**	**6**	4	5	**6**	5	5	5	5
HEATING VELOCITY (ft/min)	250	250	250	250	264	264	264	264	286	286	286	213	213	213	404	173	173	149	441	51	551	551	551	551
COOLING VELOCITY (ft/min)	536	536	536	536	536	536	536	536	485	485	485	463	463	463	441	454	454	23	81	449	44	44	44	44
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	B	C	C	C	F	F	F	E	E	E	E	E	E	F	A	A	C	C	B	A

RUN #	25	26	27	28	29
ROOM NAME	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH.	3.05	3.05	3.05	3.05	3.05
CFM PER RUN HEAT	75	75	75	75	75
RM GAIN MBH.	0.19	0.19	0.19	0.19	0.19
CFM PER RUN COOLING	6	6	6	6	6
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	33	38	42	53	65
EQUIVALENT LENGTH	180	130	100	150	180
TOTAL EFFECTIVE LENGTH	213	168	142	203	245
ADJUSTED PRESSURE	0.08	0.1	0.12	0.08	0.07
ROUND DUCT SIZE	5	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	551	551	551	382	382
COOLING VELOCITY (ft/min)	44	44	44	31	31
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10
TRUNK	F	F	B	E	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	213	0.09	7.6	8	x	8	479	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	467	0.09	10.2	12	x	8	701	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	258	0.11	7.8	8	x	8	581	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	725	0.09	12.1	18	x	8	725	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	360	0.06	10.3	12	x	8	540	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	640	0.06	12.8	20	x	8	576	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	1080	0.05	16.2	30	x	8	648
TRUNK Y	280	0.05	9.8	12	x	8	420
TRUNK Z	290	0.05	9.9	12	x	8	435
DROP	1370	0.05	17.7	24	x	12	685

RETURN AIR #	1	2	3	4	5												**BR**
AIR VOLUME	280	310	205	155	135	0	0	0	0	0	0	0	0	0	0	0	285
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.	44	30	20	58	71	1	1	1	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	160	145	145	195	200	0	0	0	0	0	0	0	0	0	0	0	150
TOTAL EFFECTIVE LH	204	175	165	253	271	1	1	1	1	1	1	1	1	1	1	1	168
ADJUSTED PRESSURE	0.07	0.08	0.09	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	9	9	7.5	7.5	7.5	0	0	0	0	0	0	0	0	0	0	0	8.5
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	30	14	14	14	0	0	0	0	0	0	0	0	0	0	0	24

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Michael O'Rourke — INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: VALES OF HUMBER SOUTH — OPT LAUN
BUILDER: ROYAL PINE HOMES — TYPE: 7003 — DATE: Apr-22 — GFA: 6169 — LO# 95350 — **FURNACE 2**

HEATING CFM	1440	COOLING CFM	1440	furnace pressure	0.6	
TOTAL HEAT LOSS	33,161	TOTAL HEAT GAIN	47,417	furnace filter	0.05	
AIR FLOW RATE CFM	43.42	AIR FLOW RATE CFM	30.37	a/c coil pressure	0.2	
				available pressure for s/a & r/a	0.35	
				plenum pressure s/a	0.18	r/a pressure 0.17
				max s/a dif press. loss	0.01	r/a grille press. Loss 0.02
				min adjusted pressure s/a	0.17	adjusted pressure r/a 0.15

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 36166 BTUH

#*CARRIER
59SP5A-60-14 **60**

FAN SPEED	
LOW	0
MEDLOW	785
MEDIUM	960
MEDIUM HIGH	1145
HIGH	1440

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**
DESIGN CFM = **1440**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 37 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	28	0	0
R/A	0	0	7	0	0

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	PR/ST	PR/ST	PR/ST	PR/ST	ENS	ENS	ENS	WIC-1	WIC-2	BED-2	BED-2	ENS-2	BED-3	BED-3	BED-3	ENS-3	WIC-3	BED-4	BED-4	BED-4	ENS-4	ENS-4	BED-5	BED-5
RM LOSS MBH.	1.70	1.70	1.70	1.70	1.12	1.12	1.12	0.48	0.16	1.17	1.17	1.28	1.30	1.30	1.30	0.14	1.74	0.85	0.85	0.85	1.47	1.47	1.67	1.67
CFM PER RUN HEAT	74	74	74	74	49	49	49	21	7	51	51	56	57	57	57	6	75	37	37	37	64	64	73	73
RM GAIN MBH.	2.46	2.46	2.46	2.46	1.08	1.08	1.08	0.12	0.08	2.06	2.06	1.16	2.06	2.06	2.06	0.07	1.25	1.99	1.99	1.99	1.73	1.73	2.24	2.24
CFM PER RUN COOLING	75	75	75	75	33	33	33	4	2	62	62	35	63	63	63	2	38	60	60	60	53	53	68	68
ADJUSTED 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.	68	73	45	41	47	52	47	37	30	53	61	43	96	96	98	76	100	84	88	92	86	96	79	75
EQUIVALENT LENGTH	200	200	190	190	110	160	140	130	120	150	160	160	150	140	180	160	160	200	210	220	140	150	160	160
TOTAL EFFECTIVE LENGTH	268	273	235	231	157	212	187	167	150	203	221	203	246	236	278	236	260	284	298	312	226	246	239	235
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.11	0.08	0.09	0.1	0.11	0.08	0.08	0.08	0.07	0.07	0.06	0.07	0.07	0.06	0.06	0.06	0.08	0.07	0.07	0.07
ROUND DUCT SIZE	**6**	**6**	**6**	**6**	5	5	5	4	4	**6**	**6**	5	**6**	**6**	**6**	4	**6**	**6**	**6**	**6**	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	377	377	377	377	360	360	360	241	80	260	260	411	291	291	291	69	382	189	189	189	470	470	372	372
COOLING VELOCITY (ft/min)	382	382	382	382	242	242	242	46	23	316	316	257	321	321	321	23	194	306	306	306	389	389	347	347
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10
TRUNK	C	C	E	E	E	D	D	E	E	D	D	D	C	C	B	C	B	A	A	A	B	B	A	A

RUN #	25	26	27	28
ROOM NAME	BED-5	BED-5	ENS-5	LAUN-2
RM LOSS MBH.	1.67	1.67	0.64	0.11
CFM PER RUN HEAT	73	73	28	5
RM GAIN MBH.	2.24	2.24	0.39	2.55
CFM PER RUN COOLING	68	68	12	77
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	69	73	60	44
EQUIVALENT LENGTH	180	180	160	170
TOTAL EFFECTIVE LENGTH	249	253	220	214
ADJUSTED PRESSURE	0.07	0.07	0.08	0.08
ROUND DUCT SIZE	**6**	**6**	4	5
HEATING VELOCITY (ft/min)	372	372	321	37
COOLING VELOCITY (ft/min)	347	347	138	565
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10
TRUNK	A	A	C	D

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	403	0.06	10.7	14	x	8	518	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	663	0.06	12.9	20	x	8	597	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	959	0.06	14.8	26	x	8	664	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	261	0.08	8.5	8	x	8	587	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	486	0.07	11.1	14	x	8	625	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	375	0.05	10.9	14	x	8	482
TRUNK X	1065	0.05	16.2	30	x	8	639
TRUNK Y	805	0.05	14.5	24	x	8	604
TRUNK Z	345	0.05	10.6	14	x	8	444
DROP	1440	0.05	18.1	24	x	14	617

RETURN AIR #	1	2	3	4	5	6	7										**BR**
AIR VOLUME	260	115	230	115	230	230	260	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.	45	69	108	103	110	91	53	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	165	220	215	195	200	215	215	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	210	289	323	298	310	306	268	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.05	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	8.8	7	9.1	7	9.1	9.1	9.1	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	30	30	30	0	0	0	0	0	0	0	0	0	0

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 - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 7003 LO # 95350
SITE NAME: VALES OF HUMBER SOUTH OPT LAUN

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	8	@ 10.6 cfm	84.8	cfm
Other Rooms	7	@ 10.6 cfm	74.2	cfm
Table 9.32.3.A.		TOTAL	243.8	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	243.8	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	93.8	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 @ 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: 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.

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 95350 Model: 7003 Builder: ROYAL PINE HOMES Date: 2022-04-07

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2783	10	27830
First	2783	11	30613
Second	3651	10	36510
Third	0	9	0
Fourth	0	9	0
		Total:	94,953.0 ft³
		Total:	2688.8 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 746.88 x 41 °C x 1.2 = 8915 W

= **30417 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 746.88 x 6 °C x 1.2 = 430 W

= **1466 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	30,417	12,259	1.241
2	0.3		19,044	0.479
3	0.2		25,128	0.242
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: 7003 OPT LAUN **BUILDER:** ROYAL PINE HOMES
SFQT: 6169 **LO#** 95350 **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):	94953.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	2.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 64.0 ft	WIDTH: 57.0 ft	EXPOSED PERIMETER:	242.0 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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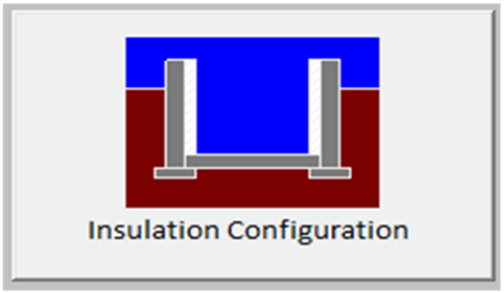
Residential Foundation Thermal Load Calculator

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):	**19.5**	 Insulation Configuration
Floor Width (m):	**17.4**	
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):	**2554**	

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HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
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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):	2688.8
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2510.0 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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