

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@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☐ 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: 7001 OPT IN-LAW - LAUN Project: VALES OF HUMBER SOUTH	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name) declare that (choose one as appropriate):			
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
April 7, 2022			
Date		Signature of Designer	

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										OPT IN-LAW - LAUN										DATE Apr-22										WINTER NATURAL AIR CHANGE RATE 0.241										HEAT LOSS AT °F. 74										CSA-F280-12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
BUILDER: ROYAL PINE HOMES										TYPE: 7001										GFA: 5543										LO# 95298										SUMMER NATURAL AIR CHANGE RATE 0.078										HEAT GAIN AT °F. 11										SB-12 PERFORMANCE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
ROOM USE		GREAT		KIT		PANT		DIN		LIV		FOY		IN-LAW		PWD-1		PWD-2		MD/LN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

ROOM USE																							
EXP. WALL																							
CLG. HT.																							
FACTORS																							
GRS.WALL AREA	LOSS	GAIN																					
GLAZING																							
NORTH	20.8	15.5	0	0	0																		
EAST	20.8	41.0	0	0	0																		
SOUTH	20.8	24.4	0	0	0																		
WEST	20.8	41.0	0	0	0																		
SKYLT.	34.1	100.3	0	0	0																		
DOORS	24.7	3.7	0	0	0																		
NET EXPOSED WALL	3.5	0.5	121	420	62																		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0																		
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			0																				
SLAB ON GRADE HEAT LOSS			0																				
SUBTOTAL HT LOSS				420																			
SUB TOTAL HT GAIN					62																		
LEVEL FACTOR / MULTIPLIER	0.30	0.37																					
AIR CHANGE HEAT LOSS					154																		
AIR CHANGE HEAT GAIN						3																	
DUCT LOSS				0																			
DUCT GAIN				0																			
HEAT GAIN PEOPLE	240		0		0																		
HEAT GAIN APPLIANCES/LIGHTS					0																		
TOTAL HT LOSS BTU/H				573																			
TOTAL HT GAIN x 1.3 BTU/H					85																		

TOTAL HEAT GAIN BTU/H: 76956 TONS: 6.41 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 85131 TOTAL COMBINED HEAT LOSS BTU/H: 91141

SITE NAME: VALES OF HUMBER SOUTH

BUILDER: ROYAL PINE HOMES

OPT IN-LAW - LAUN

TYPE: 7001

GFA: 5543

DATE Apr-22

LO# 95298

WINTER NATURAL AIR CHANGE RATE 0.241

SUMMER NATURAL AIR CHANGE RATE 0.078

HEAT LOSS AT °F. 74

HEAT GAIN ΔT °F. 11

CSA-F280-12

SB-12 PERFORMANCE

ROOM USE	EXP. WALL	CLG. HT.	PRI	ENS	DRESS	BED-2	BED-3	BED-4	BED-5	RETR	ENS-2	ENS-3		
			25	27	11	13	35	24	30	10	6	8		
			10	10	10	10	11	10	10	10	10	10		
FACTORS														
GRS.WALL AREA	LOSS	GAIN	250	270	110	130	385	240	300	100	60	80		
GLAZING	LOSS	GAIN												
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	9	187	139	0
EAST	20.8	41.0	0	0	0	0	0	0	83	1724	3407	40	831	1642
SOUTH	20.8	24.4	0	0	0	32	665	781	8	166	195	0	0	0
WEST	20.8	41.0	54	1122	2217	23	478	944	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	196	680	101	215	745	111	102	354	52	103	357	53
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	546	684	304	180	226	100	165	207	92	325	407	181
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	50	134	60
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	20	50	7	418	1041	154
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2486		2114	727	1375	4408	1996	2003	1047	611	524	
SUB TOTAL HT GAIN				2622	1936	340	659	3981	1932	1896	654	227	102	
LEVEL FACTOR / MULTIPLIER	0.20	0.32												
AIR CHANGE HEAT LOSS			807		686	236	446	1431	648	650	340	198	170	
AIR CHANGE HEAT GAIN				129	95	17	32	196	95	93	32	11	5	
DUCT LOSS			0		0		182	584	264	0		81	69	
DUCT GAIN				0	0	0	219	568	353	0	0	24	11	
HEAT GAIN PEOPLE	240	2	480	0	0	0	1	240	1	240	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS			1262		0	0	1262	1262	1262	1262	1262	0	0	
TOTAL HT LOSS BTU/H			3293		2800	962	2004	6422	2909	2653	1387	890	764	
TOTAL HT GAIN x 1.3 BTU/H			5840		2640	463	3137	8121	5047	4539	2533	340	153	

ROOM USE	EXP. WALL	CLG. HT.	ENS-4	SHARED	LAUN									
			0	6	0									
			10	10	10									
FACTORS														
GRS.WALL AREA	LOSS	GAIN	0	60	0									
GLAZING	LOSS	GAIN												
NORTH	20.8	15.5	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
SOUTH	20.8	24.4	0	0	0	9	187	220	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	0	0	0	51	177	26	0	0	0	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	70	88	39	90	113	50	77	96	43			
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	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			187		477	96								
SUB TOTAL HT GAIN				54	296	43								
LEVEL FACTOR / MULTIPLIER	0.20	0.32												
AIR CHANGE HEAT LOSS			61		155	31								
AIR CHANGE HEAT GAIN				3	15	2								
DUCT LOSS			25		0	0								
DUCT GAIN				6	0	0								
HEAT GAIN PEOPLE	240	0	0	0	0	0								
HEAT GAIN APPLIANCES/LIGHTS			0		0	1262								
TOTAL HT LOSS BTU/H			273		631	128								
TOTAL HT GAIN x 1.3 BTU/H			81		404	1699								

TOTAL HEAT GAIN BTU/H:

76956

TONS: 6.41

LOSS DUE TO VENTILATION LOAD BTU/H: 6010

STRUCTURAL HEAT LOSS: 85131

TOTAL COMBINED HEAT LOSS BTU/H: 91141

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

TYPE: 7001
OPT IN-LAW - LAUN

DATE: Apr-22

GFA: 5543 LO# 95298

FURNACE 1

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 60,015 TOTAL HEAT GAIN 41,514
AIR FLOW RATE CFM 22.83 AIR FLOW RATE CFM 33

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35

**FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 63020 BTUH**
#CARRIER
59SP5A-80-16

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.	2.04	2.04	2.04	2.04	2.04	1.58	1.58	1.58	1.04	1.14	1.14	1.27	1.27	2.55	2.55	1.06	1.06	0.16	0.42	3.62	3.40	3.40	3.40	3.40
CFM PER RUN HEAT	47	47	47	47	47	36	36	36	24	26	26	29	29	58	58	24	24	4	10	83	78	78	78	78
RM GAIN MBH.	2.67	2.67	2.67	2.67	2.67	2.71	2.71	2.71	0.15	1.56	1.56	2.07	2.07	1.87	1.87	2.19	2.19	0.02	0.06	2.60	0.21	0.21	0.21	0.21
CFM PER RUN COOLING	88	88	88	88	88	90	90	90	5	51	51	68	68	62	62	72	72	1	2	86	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	0.09	0.08	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	184	184	184	275	191	191	213	213	426	426	122	122	46	115	423	573	573	573	573
COOLING VELOCITY (ft/min)	449	449	449	449	449	459	459	459	57	374	374	499	499	455	455	367	367	11	23	438	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.	3.40	3.40	3.40	3.40	0.57
CFM PER RUN HEAT	78	78	78	78	13
RM GAIN MBH.	0.21	0.21	0.21	0.21	0.08
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													RETURN AIR TRUNK SIZE												
TRUNK	STATIC	ROUND	RECT	VELOCITY				TRUNK	STATIC	ROUND	RECT	VELOCITY				TRUNK	STATIC	ROUND	RECT	VELOCITY					
CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)	CFM	PRESS.	DUCT	DUCT				(ft/min)			
TRUNK A	194	0.08	7.6	8	x	8	437	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.06	0	0	x	8	0		
TRUNK B	197	0.08	7.6	8	x	8	443	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.06	0	0	x	8	0		
TRUNK C	599	0.08	11.6	16	x	8	674	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.06	0	0	x	8	0		
TRUNK D	138	0.10	6.3	8	x	8	311	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.06	0	0	x	8	0		
TRUNK E	1073	0.08	14.4	24	x	8	805	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.06	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	TRUNK T	0	0.06	0	0	x	8	0		

RETURN AIR #	1	2	3	4	5	BR									
AIR VOLUME	330	155	360	130	130	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
ACTUAL DUCT LGH.	15	55	55	63	60	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	185
TOTAL EFFECTIVE LH	160	260	255	268	225	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	0.07
ROUND DUCT SIZE	9	7.5	10.3	7	6.8	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	8
	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	30

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

TYPE: 7001
OPT IN-LAW - LAUN

DATE: Apr-22

GFA: 5543 LO# 95298

FURNACE 2

HEATING CFM 1040 COOLING CFM 1040
TOTAL HEAT LOSS 25,116 TOTAL HEAT GAIN 34,997
AIR FLOW RATE CFM 41.41 AIR FLOW RATE CFM 29.72

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

**FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 28121 BTUH**
#*CARRIER
59SP5A-40-12
40

AFUE = 97 %

INPUT (BTU/H) = 40,000

OUTPUT (BTU/H) = **39,000**

FAN SPEED

LOW 0

MEDLOW 0

MEDIUM 0

MEDIUM HIGH 770

HIGH 1040

DESIGN CFM = **1040**

CFM @ .6" E.S.P.

TEMPERATURE RISE 35 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	22	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
ROOM NAME	PRI	PRI	PRI	ENS	ENS	DRESS	BED-2	BED-2	ENS-2	BED-3	BED-3	BED-3	BED-3	ENS-3	BED-4	BED-4	ENS-4	BED-5	BED-5	SHARED	RETR	LAUN
RM LOSS MBH.	1.10	1.10	1.10	2.10	0.70	0.96	1.00	1.00	0.89	1.61	1.61	1.61	1.61	0.76	1.45	1.45	0.27	1.33	1.33	0.63	1.39	0.13
CFM PER RUN HEAT	45	45	45	87	29	40	41	41	37	66	66	66	66	32	60	60	11	55	55	26	57	5
RM GAIN MBH.	1.95	1.95	1.95	1.98	0.66	0.46	1.57	1.57	0.34	2.03	2.03	2.03	2.03	0.15	2.52	2.52	0.08	2.27	2.27	0.40	2.53	1.70
CFM PER RUN COOLING	58	58	58	59	20	14	47	47	10	60	60	60	60	5	75	75	2	67	67	12	75	50
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	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	84	69	63	90	85	85	43	38	33	41	37	42	49	39	64	58	39	94	88	80	92	62
EQUIVALENT LENGTH	190	200	210	160	170	200	180	180	110	110	120	130	130	120	190	220	110	170	170	190	220	220
TOTAL EFFECTIVE LENGTH	274	269	273	250	255	285	223	218	143	151	157	172	179	159	254	278	149	264	258	250	282	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	0.1	0.11	0.07	0.06	0.12	0.07	0.07	0.07	0.06	0.06
ROUND DUCT SIZE	6	6	6	6	4	5	5	5	4	5	5	5	5	4	6	6	4	6	6	4	6	5
HEATING VELOCITY (ft/min)	229	229	229	444	333	294	301	301	424	485	485	485	485	367	306	306	126	280	280	298	291	37
COOLING VELOCITY (ft/min)	296	296	296	301	229	103	345	345	115	441	441	441	441	57	382	382	23	342	342	138	382	367
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	A	A	A	A	A	A	B	B	B	D	D	B	B	B	C	C	D	C	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
1	PRI	1.10	45	1.95	58	0.17	84	190	274	0.06	6	229	296	4X10	A
2	PRI	1.10	45	1.95	58	0.17	69	200	269	0.06	6	229	296	4X10	A
3	PRI	1.10	45	1.95	58	0.17	63	210	273	0.06	6	229	296	4X10	A
4	ENS	2.10	87	1.98	59	0.16	90	160	250	0.06	6	444	301	4X10	A
5	ENS	0.70	29	0.66	20	0.17	85	170	255	0.07	4	333	229	3X10	A
6	DRESS	0.96	40	0.46	14	0.17	85	200	285	0.06	5	294	103	3X10	A
7	BED-2	1.00	41	1.57	47	0.17	43	180	223	0.08	5	301	345	3X10	B
8	BED-2	1.00	41	1.57	47	0.17	38	180	218	0.08	5	301	345	3X10	B
9	ENS-2	0.89	37	0.34	10	0.17	33	110	143	0.12	4	424	115	3X10	B
10	BED-3	1.61	66	2.03	60	0.17	41	110	151	0.11	5	485	441	3X10	D
11	BED-3	1.61	66	2.03	60	0.17	42	130	172	0.1	5	485	441	3X10	D
12	BED-3	1.61	66	2.03	60	0.17	49	130	179	0.1	5	485	441	3X10	B
13	BED-3	1.61	66	2.03	60	0.17	39	120	159	0.11	4	367	57	3X10	B
14	ENS-3	0.76	32	0.15	5	0.17	64	190	254	0.07	6	306	382	4X10	C
15	BED-4	1.45	60	2.52	75	0.17	58	220	278	0.06	6	306	382	4X10	C
16	BED-4	1.45	60	2.52	75	0.17	39	190	278	0.06	6	306	382	4X10	C
17	ENS-4	0.27	11	0.08	2	0.17	94	110	149	0.12	4	126	23	3X10	D
18	BED-5	1.33	55	2.27	67	0.17	88	170	264	0.07	6	280	342	4X10	C
19	BED-5	1.33	55	2.27	67	0.17	80	170	258	0.07	6	280	342	4X10	C
20	SHARED	0.63	26	0.40	12	0.17	92	190	282	0.07	4	298	138	3X10	C
21	RETR	1.39	57	2.53	75	0.17	92	190	282	0.06	6	291	382	4X10	C
22	LAUN	0.13	5	1.70	50	0.17	62	220	282	0.06	5	37	367	3X10	C

SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE														
TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY								
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)						
TRUNK A	291	0.06	9.5	10	x	8	524	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0						
TRUNK B	574	0.06	12.2	18	x	8	574	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0						
TRUNK C	318	0.06	9.8	14	x	8	409	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0						
TRUNK D	461	0.06	11.3	18	x	8	461	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	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 S	0	0.05	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	TRUNK T	0	0.05	0	0	x	8	0						

RETURN AIR #	1	2	3	4	5	6	7	BR
AIR VOLUME	280	95	230	115	115	75	130	0
PLENUM PRESSURE	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
EQUIVALENT LENGTH	175	165	245	205	210	215	205	0
TOTAL EFFECTIVE LH	221	207	299	271	299	275	258	1
ADJUSTED PRESSURE	0.07	0.07	0.05	0.05	0.05	0.05	0.06	14.80
ROUND DUCT SIZE	9	6	9.1	7	7	6	7	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0
	X	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	30	14	14	14	14	0

TYPE: 7001
SITE NAME: VALES OF HUMBER SOUTH

LO # 95298
OPT IN-LAW - 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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Kitchen & Bathrooms	<u>9</u> @ 10.6 cfm	<u>95.4</u> cfm
Other Rooms	<u>7</u> @ 10.6 cfm	<u>74.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>265.0</u> 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		<u>218.8</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>265</u>	cfm
Less Principal Ventil. Capacity	<u>150</u>	cfm
Required Supplemental Capacity	<u>115.0</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE V150H
Location:	BSMT
<u>150.0</u> 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
<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:	April-22

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#: 95298		Model: 7001		Builder: ROYAL PINE HOMES																																																									
				Date: 2022-04-07																																																									
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>2786</td> <td>10</td> <td>27860</td> </tr> <tr> <td>First</td> <td>2786</td> <td>11</td> <td>30646</td> </tr> <tr> <td>Second</td> <td>3296</td> <td>10</td> <td>32960</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="2" style="text-align: right;">Total:</td> <td></td> <td>91,466.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>2590.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2786	10	27860	First	2786	11	30646	Second	3296	10	32960	Third	0	9	0	Fourth	0	9	0	Total:			91,466.0 ft³	Total:			2590.0 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%;">0.241</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.078</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>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>			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
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.241 x 719.45 x 41 °C x 1.2 = 8587 W = 29300 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.078 x 719.45 x 6 °C x 1.2 = 414 W = 1412 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E) \times 2 \text{ HRV / ERV's}$ 300 CFM x 74 °F x 1.08 x 0.25 = 6010 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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	29,300	12,566	1.166																																																									
2	0.3		24,009	0.366																																																									
3	0.2		18,050	0.325																																																									
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: 7001	OPT IN-LAW - LAUN	BUILDER: ROYAL PINE HOMES
SFQT: 5543	LO# 95298	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 (ft³):	91466.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.85	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	-

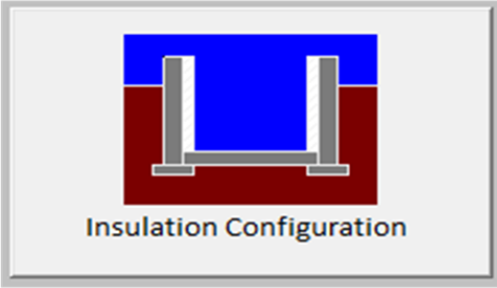
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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
LO# 95298

OPT IN-LAW - LAUN

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):	2590.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		2417.8 cm ²	
	2.50		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	70.8		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			

TYPE: 7001
LO# 95298

OPT IN-LAW - LAUN