

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: 7003 OPT IN-LAW 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		DATE Apr-22		WINTER NATURAL AIR CHANGE RATE 0.241		HEAT LOSS AT °F. 74		CSA-F280-12	
BUILDER: ROYAL PINE HOMES		TYPE: 7003		GFA: 6169		LO# 95349		SUMMER NATURAL AIR CHANGE RATE 0.078		SB-12 PERFORMANCE	
ROOM USE		GREAT	KIT	DIN	LIV	FOY	IN-LAW	I-ENS	MUD	LAUN	
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	13 270 534	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	40 986 146	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	1568	1868	343	1644	267	
SUB TOTAL HT GAIN			4440	4387	2418	2201	726	1947	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		1804	1902	1543	1159	749	892	164	785	128	
AIR CHANGE HEAT GAIN		222	219	121	110	36	97	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	1	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS		2095	2095	2095	2095	2095	2095	0	0	2095	
TOTAL HT LOSS BTU/H		5579	5883	4772	3584	2317	2760	507	2430	395	
TOTAL HT GAIN x 1.3 BTU/H		8785	8712	6023	5727	991	5694	69	333	2777	

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												62
DUCT LOSS												0
DUCT GAIN												0
HEAT GAIN PEOPLE	240											0
HEAT GAIN APPLIANCES/LIGHTS												0
TOTAL HT LOSS BTU/H												27468
TOTAL HT GAIN x 1.3 BTU/H												1688

TOTAL HEAT GAIN BTU/H:

87685

TONS: 7.31

LOSS DUE TO VENTILATION LOAD BTU/H: 6010

STRUCTURAL HEAT LOSS: 88834

TOTAL COMBINED HEAT LOSS BTU/H: 94844

SITE NAME: VALES OF HUMBER SOUTH										OPT IN-LAW										DATE Apr-22										WINTER NATURAL AIR CHANGE RATE 0.241										HEAT LOSS AT °F. 74										CSA-F280-12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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ROOM USE			PR/ST			ENS			WIC-1			WIC-2			BED-2			BED-3			BED-4			BED-5			ENS-2			ENS-3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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GRS.WALL AREA			LOSS			GAIN			649			340			80			0			140			240			140			561			120			0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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NORTH			20.8		15.5		0		0		0		28		582		433		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		32		665		1314		40		831		1642		83		1724		3407		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		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		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		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		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		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		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		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		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		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		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		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		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		0		0		0		0		0			

ROOM USE			ENS-4			ENS-5			WIC-3															
EXP. WALL			20			7			19															
CLG. HT.			11			10			10															
FACTORS																								
GRS.WALL AREA	LOSS	GAIN	220			70			190															
GLAZING			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	0	0	0										
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														
SUB TOTAL HT GAIN					2310			286			830													
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24		0.20	0.24														
AIR CHANGE HEAT LOSS				520			124			308														
AIR CHANGE HEAT GAIN					116			14			42													
DUCT LOSS				267			0			158														
DUCT GAIN					243			0			87													
HEAT GAIN PEOPLE	240		0			0		0	0		0													
HEAT GAIN APPLIANCES/LIGHTS				0				0			0													
TOTAL HT LOSS BTU/H				2932			637			1739														
TOTAL HT GAIN x 1.3 BTU/H					3468			390			1246													

TOTAL HEAT GAIN BTU/H: 87685 TONS: 7.31 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 88834 TOTAL COMBINED HEAT LOSS BTU/H: 94844

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

OPT IN-LAW
TYPE: 7003

DATE: Apr-22

GFA: 6169 LO# 95349

FURNACE 1

HEATING CFM 1370 COOLING CFM 1370
TOTAL HEAT LOSS 55,695 TOTAL HEAT GAIN 40,799
AIR FLOW RATE CFM 24.6 AIR FLOW RATE CFM 33.58

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
= 58700 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	20	9
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	KIT	KIT	KIT	KIT	DIN	DIN	DIN	LIV	LIV	LIV	FOY	IN-LAW	IN-LAW	I-ENS	MUD	LAUN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.39	1.39	1.39	1.39	1.47	1.47	1.47	1.47	1.59	1.59	1.59	1.19	1.19	1.19	2.32	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	57	34	34	12	60	10	75	75	75	75
RM GAIN MBH.	2.20	2.20	2.20	2.20	2.18	2.18	2.18	2.18	2.01	2.01	2.01	1.91	1.91	1.91	0.99	2.85	2.85	0.07	0.33	2.78	0.19	0.19	0.19	0.19
CFM PER RUN COOLING	74	74	74	74	73	73	73	73	67	67	67	64	64	64	33	96	96	2	11	93	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	180	170	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	248	242	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	0.07	0.07	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	419	173	173	138	441	51	551	551	551	551
COOLING VELOCITY (ft/min)	543	543	543	543	536	536	536	536	492	492	492	470	470	470	242	489	489	23	81	474	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														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	213	0.09	7.6	8	x	8	479	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0			0
TRUNK B	467	0.09	10.2	12	x	8	701	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0			0
TRUNK C	258	0.11	7.8	8	x	8	581	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0			0
TRUNK D	725	0.09	12.1	18	x	8	725	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0			0
TRUNK E	362	0.07	9.9	12	x	8	543	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	0	0	x	8	0			0
TRUNK F	641	0.07	12.3	18	x	8	641	TRUNK L	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	0			0

RETURN AIR #	1	2	3	4	5											BR	TRUNK W	0	0.05	0	0	x	8	0
AIR VOLUME	280	310	205	155	135	0	0	0	0	0	0	0	0	0	0	285	TRUNK X	1080	0.05	16.2	30	x	8	648
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	TRUNK Y	280	0.05	9.8	12	x	8	420
ACTUAL DUCT LGH.	44	30	20	58	71	1	1	1	1	1	1	1	1	1	1	18	TRUNK Z	290	0.05	9.9	12	x	8	435
EQUIVALENT LENGTH	160	145	145	195	200	0	0	0	0	0	0	0	0	0	0	150	DROP	1370	0.05	17.7	24	x	12	685
TOTAL EFFECTIVE LH	204	175	165	253	271	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	0.09								
ROUND DUCT SIZE	9	9	7.5	7.5	7.5	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	8								
	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	24								

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

OPT IN-LAW
TYPE: 7003

DATE: Apr-22

GFA: 6169 LO# 95349

FURNACE 2

HEATING CFM 1440 COOLING CFM 1440
TOTAL HEAT LOSS 33,139 TOTAL HEAT GAIN 46,441
AIR FLOW RATE CFM 43.45 AIR FLOW RATE CFM 31.01

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
= 36144 BTUH**
#*CARRIER
59SP5A-60-14

FAN SPEED

LOW

MEDLOW

MEDIUM

MEDIUM HIGH

HIGH

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	27	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	0.27	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	12	51	51	56	57	57	57	6	76	37	37	37	64	64	72	72
RM GAIN MBH.	2.52	2.52	2.52	2.52	1.08	1.08	1.08	0.12	0.13	2.18	2.18	1.16	2.15	2.15	2.15	0.07	1.25	2.08	2.08	2.08	1.73	1.73	2.38	2.38
CFM PER RUN COOLING	78	78	78	78	34	34	34	4	4	68	68	36	67	67	67	2	39	64	64	64	54	54	74	74
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	138	260	260	411	291	291	291	69	388	189	189	189	470	470	367	367
COOLING VELOCITY (ft/min)	398	398	398	398	250	250	250	46	46	347	347	264	342	342	342	23	199	326	326	326	396	396	377	377
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
ROOM NAME	BED-5	BED-5	ENS-5
RM LOSS MBH.	1.67	1.67	0.64
CFM PER RUN HEAT	72	72	28
RM GAIN MBH.	2.38	2.38	0.39
CFM PER RUN COOLING	74	74	12
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	69	73	60
EQUIVALENT LENGTH	180	180	160
TOTAL EFFECTIVE LENGTH	249	253	220
ADJUSTED PRESSURE	0.07	0.07	0.08
ROUND DUCT SIZE	6	6	4
HEATING VELOCITY (ft/min)	367	367	321
COOLING VELOCITY (ft/min)	377	377	138
OUTLET GRILL SIZE	4X10	4X10	3X10
TRUNK	A	A	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	399	0.06	10.7	14	x	8	513	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0				
TRUNK B	660	0.06	12.9	20	x	8	594	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0				
TRUNK C	956	0.06	14.8	26	x	8	662	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0				
TRUNK D	256	0.08	8.4	8	x	8	576	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	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 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	260	115	230	115	230	230	260	0	0	0	0	0	0	0	0	0	0	TRUNK W	375	0.05	10.9	14	x	8	482	
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	TRUNK X	1065	0.05	16.2	30	x	8	639	
ACTUAL DUCT LGH.	45	69	108	103	110	91	53	1	1	1	1	1	1	1	1	1	1	TRUNK Y	805	0.05	14.5	24	x	8	604	
EQUIVALENT LENGTH	165	220	215	195	200	215	215	0	0	0	0	0	0	0	0	0	0	TRUNK Z	345	0.05	10.6	14	x	8	444	
TOTAL EFFECTIVE LH	210	289	323	298	310	306	268	1	1	1	1	1	1	1	1	1	1	DROP	1440	0.05	18.1	24	x	14	617	
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									

TYPE: 7003
SITE NAME: VALES OF HUMBER SOUTH

LO # 95349
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	8 @ 10.6 cfm 84.8 cfm
Other Rooms	5 @ 10.6 cfm 53.0 cfm
Table 9.32.3.A.	TOTAL 233.2 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	237.6 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	233.2	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	83.2	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
ENS	BY INSTALLING CONTRACTOR	50	☒
ENS-2	BY INSTALLING CONTRACTOR	50	☒
ENS-3	BY INSTALLING CONTRACTOR	50	☒
ENS-4	BY INSTALLING CONTRACTOR	50	☒

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	April-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																	
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																	
LO#: 95349		Model: 7003		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>2783</td><td>10</td><td>27830</td></tr> <tr><td>First</td><td>2783</td><td>11</td><td>30613</td></tr> <tr><td>Second</td><td>3651</td><td>10</td><td>36510</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>94,953.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>2688.8 m³</td></tr> </tbody> </table>					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	<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 746.88 x 41 °C x 1.2 = 8915 W = 30417 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 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					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)																																																																	
$HL_{airr} = Level \ Factor \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.5</td><td rowspan="5" style="text-align: center;">30,417</td><td>12,259</td><td>1.241</td></tr> <tr><td>2</td><td>0.3</td><td>19,102</td><td>0.478</td></tr> <tr><td>3</td><td>0.2</td><td>25,109</td><td>0.242</td></tr> <tr><td>4</td><td>0</td><td>0</td><td>0.000</td></tr> <tr><td>5</td><td>0</td><td>0</td><td>0.000</td></tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0										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	19,102	0.478	3	0.2	25,109	0.242	4	0	0	0.000	5	0	0	0.000																														
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								Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 7003	OPT IN-LAW	BUILDER: ROYAL PINE HOMES
SFQT: 6169	LO# 95349	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:	7
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	-

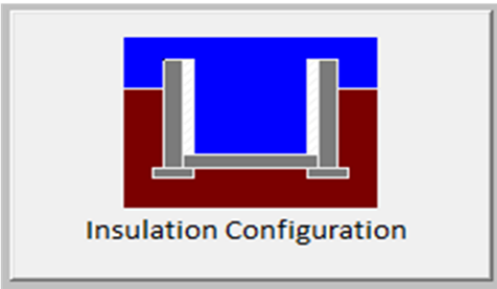
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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

TYPE: 7003
LO# 95349

OPT IN-LAW

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		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: 7003
LO# 95349

OPT IN-LAW