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**		
RICHMOND HILL				

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:** AVIGNON 3 18 DENHAM DRIVE **Project:** BALTRIO

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.

September 30, 2020
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: BALTRIO | 18 DENHAM DRIVE | DATE Sep-20 | WINTER NATURAL AIR CHANGE RATE 0.332 | HEAT LOSS ΔT °F. 78 | CSA-F280-12

BUILDER: GREENPARK HOMES | TYPE: AVIGNON 3 | GFA: 6495 | LO# 83730 | SUMMER NATURAL AIR CHANGE RATE 0.107 | HEAT GAIN ΔT °F. 14 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WICS			BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4			FAM			H-OFF		
EXP. WALL			25			37			0			22			75			38			17			21			0			0			25			30		
CLG. HT.			10			9			9			9			9			9			9			10			9			9			14			11		
	FACTORS																																					
GRS.WALL AREA	LOSS	GAIN	250			333			0			198			675			342			153			210			0			0			350			330		
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN
NORTH	21.8	16.3	0	0	0	0	0	0	0	0	0	0	0	0	23	501	374	24	523	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	41.8	73	1590	3054	22	479	920	0	0	0	24	523	1004	22	479	920	0	0	0	12	261	502	0	0	0	0	0	0	0	0	0	88	1917	3681	44	958	1841
SOUTH	21.8	25.2	0	0	0	24	523	604	0	0	0	0	0	0	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	21.8	41.8	0	0	0	0	0	0	0	0	0	0	0	0	23	501	962	46	1002	1924	0	0	0	51	1111	2133	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	38.1	102.0	0	0	0	0	0	0	0	0	0	0	0	0	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	25.8	4.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.6	0.8	177	809	143	287	1311	233	0	0	0	174	795	141	607	2773	492	272	1243	220	141	644	114	159	726	129	0	0	0	0	0	0	262	1197	212	286	1307	232
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	425	558	257	310	407	187	216	284	131	370	486	224	472	620	285	336	441	203	70	92	42	346	455	209	58	76	35	56	74	34	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	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	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	395	1031	183	312	815	144	0	0	0	0	0	0	0	0	0	56	146	26	0	0	0	0	0	0
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			2957			2720			284			1804			5906			4023			998			2292			76			220			3114			2265		
SUB TOTAL HT GAIN					3454			1945			131			1369			3216			2882			659			2471			35			60			3894			2072
LEVEL FACTOR / MULTIPLIER			0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.30	0.55		0.30	0.55	
AIR CHANGE HEAT LOSS				1001			921			96			611			2000			1362			338			776			26			74			1698			1235		
AIR CHANGE HEAT GAIN					263			148			10			104			245			219			50			188			3			5			296			158
DUCT LOSS				0			0			0			0			791			539			0			0			0			29			0			0		
DUCT GAIN					0			0			0			0			450			414			0			0			0			6			0			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					802			0			0			802			802			802			0			802			0			0			802			802
TOTAL HT LOSS BTU/H				3959			3642			380			2415			8696			5924			1335			3068			102			324			4812			3500		
TOTAL HT GAIN x 1.3 BTU/H					6499			2720			183			3269			6440			5926			921			4812			49			92			6490			3942

ROOM USE			ENS-5			DIN			KIT			LIV			LAUN			PWD			FOY			MUD			REC			HALL			WUB			BAS		
EXP. WALL			0			42			56			44			23			11			7			36			131			37			25			123		
CLG. HT.			9			11			11			14			9			11			11			13			10			9			10			10		
	FACTORS																																					
GRS.WALL AREA	LOSS	GAIN	0			462			616			616			207			121			77			468			917			333			250			861		
GLAZING			LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN	LOSS		GAIN
NORTH	21.8	16.3	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	12	261	195	0	0	0	0	0	0
EAST	21.8	41.8	0	0	0	0	0	0	86	1873	3598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	109	209	0	0	0	0	0	0	0	0	0
SOUTH	21.8	25.2	0	0	0	0	0	0	25	545	629	52	1133	1309	0	0	0	8	174	201	0	0	0	0	0	0	0	0	0	27	588	680	0	0	0	0	0	0
WEST	21.8	41.8	0	0	0	57	1242	2384	0	0	0	77	1677	3221	11	240	460	0	0	0	16	349	669	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	38.1	102.0	0	0	0	0	0	0	0	0	0	0	0	0	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	25.8	4.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	1241	220	60	1551	275	20	517	92	0	0	0	40	1034	183	0	0	0
NET EXPOSED WALL	4.6	0.8	0	0	0	405	1850	328	505	2307	409	487	2225	395	196	895	159	113	516	92	13	59	11	408	1864	331	0	0	0	294	1343	238	210	959	170	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	393	1448	257	0	0	0	0	0	0	369	1359	241
EXPOSED CLG	1.3	0.6	80	105	48	0	0	0	0	0	0	0	0	0	126	166	76	0	0	0	0	0	0	0	0	0	0	0	0	662	870	400	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	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	0	0	0	0	0	0
EXPOSED FLOOR	2.6	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	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0			0			0			4095			0						1834		
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0			0			0			0			0			248					
SUBTOTAL HT LOSS			105			3092			4725			5035			1301			691			1649			3415			6168			3062			2241			3193		
SUB TOTAL HT GAIN					48			2713			4636			4925			695			293			900			606			558			1513			354			241
LEVEL FACTOR / MULTIPLIER			0.20	0.34		0.30	0.55		0.30	0.55		0.30	0.55		0.20	0.34		0.30	0.55		0.30	0.55		0.30	0.55		0.50	1.36		0.20	0.34					0.50	1.36	
AIR CHANGE HEAT LOSS				36			1686			2576			2745			440			377			899			1862			8373			1037						7376		
AIR CHANGE HEAT GAIN					4			206			353			375			53			22			68			46			42			115								45
DUCT LOSS				0			0			0			0			0			0			0			0			0			0						0		
DUCT GAIN					0			0			0			0			0			0			0			0			0			0								0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0	0		0	0	
HEAT GAIN APPLIANCES/LIGHTS					0			802			802			802			802			0			0			802			0			0						802
TOTAL HT LOSS BTU/H				141			4778			7302			7780			1741			1067			2548			5277			14541			4099			2489			10569		
TOTAL HT GAIN x 1.3 BTU/H					68			4838			7529			7933			2015			410			1259			847			1823			2117			460			1415

TOTAL HEAT GAIN BTU/H: 75974 TONS: 6.33 LOSS DUE TO VENTILATION LOAD BTU/H: 6512 STRUCTURAL HEAT LOSS: 110990 TOTAL COMBINED HEAT LOSS BTU/H: 117502

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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SITE NAME: BALTRIO — 18 DENHAM DRIVE — DATE: Sep-20 — WINTER NATURAL AIR CHANGE RATE 0.332 — HEAT LOSS ΔT °F. 78 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: AVIGNON 3 — GFA: 6495 — LO# 83730 — SUMMER NATURAL AIR CHANGE RATE 0.107 — HEAT GAIN ΔT °F. 14 — SB-12 PACKAGE A1

ROOM USE			NANN			B-ENS			B-KIT			B-PWD		
EXP. WALL			40			6			38			0		
CLG. HT.			10			10			10			10		
	FACTORS													
GRS.WALL AREA	LOSS	GAIN	280			42			266			0		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN	
NORTH	21.8	16.3	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	41.8	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	25.2	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8	41.8	5	109	209	0	0	0	5	109	209	0	0	0
SKYLT.	38.1	102.0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.8	4.6	0	0	0	0	0	0	20	517	92	0	0	0
NET EXPOSED WALL	4.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.7	120	442	78	18	66	12	114	420	74	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				1250			188			1188			167	
SLAB ON GRADE HEAT LOSS				0			0			0			0	
SUBTOTAL HT LOSS				1801			254			2234			167	
SUB TOTAL HT GAIN					288			12			375			0
LEVEL FACTOR / MULTIPLIER			0.50	1.36		0.50	1.36		0.50	1.36		0.50	1.36	
AIR CHANGE HEAT LOSS				2445			345			3032			226	
AIR CHANGE HEAT GAIN					22			1			29			0
DUCT LOSS				0			0			0			0	
DUCT GAIN					0			0			0			0
HEAT GAIN PEOPLE	240		1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					802			0			802			0
TOTAL HT LOSS BTU/H				4246			598			5265			393	
TOTAL HT GAIN x 1.3 BTU/H					1757			16			1568			0

ROOM USE		
EXP. WALL		
CLG. HT.		
	FACTORS	
GRS.WALL AREA	LOSS	GAIN
GLAZING		
NORTH	21.8	16.3
EAST	21.8	41.8
SOUTH	21.8	25.2
WEST	21.8	41.8
SKYLT.	38.1	102.0
DOORS	25.8	4.6
NET EXPOSED WALL	4.6	0.8
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.7
EXPOSED CLG	1.3	0.6
NO ATTIC EXPOSED CLG	2.8	1.3
EXPOSED FLOOR	2.6	0.5
BASEMENT/CRAWL HEAT LOSS		
SLAB ON GRADE HEAT LOSS		
SUBTOTAL HT LOSS		
SUB TOTAL HT GAIN		
LEVEL FACTOR / MULTIPLIER		
AIR CHANGE HEAT LOSS		
AIR CHANGE HEAT GAIN		
DUCT LOSS		
DUCT GAIN		
HEAT GAIN PEOPLE	240	
HEAT GAIN APPLIANCES/LIGHTS		
TOTAL HT LOSS BTU/H		
TOTAL HT GAIN x 1.3 BTU/H		

TOTAL HEAT GAIN BTU/H: 75974 — TONS: 6.33 — LOSS DUE TO VENTILATION LOAD BTU/H: 6512 — STRUCTURAL HEAT LOSS: 110990 — TOTAL COMBINED HEAT LOSS BTU/H: 117502

Michael O'Rourke.

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

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SITE NAME: BALTRIO — 18 DENHAM DRIVE
BUILDER: GREENPARK HOMES — TYPE: AVIGNON 3 — DATE: Sep-20 — GFA: 6495 — LO# 83730 — **FURNACE 1**

HEATING CFM	1131	COOLING CFM	1131	furnace pressure	0.6					#GOODMAN	AFUE =	96 %
TOTAL HEAT LOSS	53,965	TOTAL HEAT GAIN	34,275	furnace filter	0.05	**3256 BTHU**					INPUT (BTU/H) =	60,000
AIR FLOW RATE CFM	20.96	AIR FLOW RATE CFM	33	a/c coil pressure	0.2	**HRV VENTILATION**				GMEC960603BNA 60	OUTPUT (BTU/H) =	**57,600**
				available pressure for s/a & r/a	0.35	**3256+53965=**	**57,221**			FAN SPEED LOW		
										MEDLOW	DESIGN CFM =	**1131**
				plenum pressure s/a	0.18	r/a pressure	0.17			MEDIUM	CFM @ .6 " E.S.P.	
				max s/a dif press. loss	0.03	r/a grille press. Loss	0.02			MEDIUM HIGH		
				min adjusted pressure s/a	0.15	adjusted pressure r/a	0.15			HIGH 1131	TEMPERATURE RISE	47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	6	7
R/A	0	0	3	3	2

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
ROOM NAME	LAUN	BED-5	BED-5	BED-4	BED-4	ENS-4	ENS-5	LIV	LIV	FOY	DIN	DIN	HALL	BAS	BAS	NANN	B-KIT	LIV	BAS	B-PWD	B-ENS
RM LOSS MBH.	1.74	1.53	1.53	2.96	2.96	0.32	0.14	2.59	2.59	2.55	2.39	2.39	4.10	4.35	4.35	4.25	5.27	2.59	4.35	0.39	0.60
CFM PER RUN HEAT	36	32	32	62	62	7	3	54	54	53	50	50	86	91	91	89	110	54	91	8	13
RM GAIN MBH.	2.02	2.41	2.41	2.96	2.96	0.09	0.07	2.64	2.64	1.26	2.42	2.42	2.12	0.62	0.62	1.76	1.57	2.64	0.62	0.00	0.02
CFM PER RUN COOLING	67	79	79	98	98	3	2	87	87	42	80	80	70	21	21	58	52	87	21	0	1
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.17	0.17
ACTUAL DUCT LGH.	45	39	50	53	51	63	23	45	30	25	36	31	30	35	23	24	36	37	28	27	18
EQUIVALENT LENGTH	150	180	160	170	180	120	120	140	150	150	130	110	190	120	110	170	160	150	140	110	100
TOTAL EFFECTIVE LENGTH	195	219	210	223	231	183	143	185	180	175	166	141	220	155	133	194	196	187	168	137	118
ADJUSTED PRESSURE	0.09	0.08	0.08	0.07	0.07	0.09	0.12	0.09	0.09	0.1	0.1	0.12	0.07	0.1	0.12	0.08	0.08	0.09	0.1	0.13	0.15
ROUND DUCT SIZE	5	**6**	**6**	**6**	**6**	4	4	5	5	4	5	5	**6**	5	5	**6**	**6**	5	5	4	4
HEATING VELOCITY (ft/min)	264	163	163	316	316	80	34	396	396	608	367	367	438	668	668	454	561	396	668	92	149
COOLING VELOCITY (ft/min)	492	403	403	500	500	34	23	639	639	482	587	587	357	154	154	296	265	639	154	0	11
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	B	A	A	E	E	D	D	B	B	A	A	A	E	C	C	A	B	E	C	C	E

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

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	306	0.08	9	10	x	8	551	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	560	0.08	11.3	14	x	8	720	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	281	0.10	8.2	8	x	8	632	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1128	0.07	15.2	26	x	8	781	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	837	0.07	13.6	22	x	8	685	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1131	0.06	15.8	30	x	8	679
TRUNK Y	265	0.06	9.2	10	x	8	477
TRUNK Z	0	0.06	0	0	x	8	0
DROP	1131	0.06	15.8	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7									**BR**
AIR VOLUME	130	130	130	165	145	235	100	0	0	0	0	0	0	0	0	96
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
ACTUAL DUCT LGH.	64	43	43	38	17	26	20	1	1	1	1	1	1	1	1	20
EQUIVALENT LENGTH	155	155	185	175	220	215	150	0	0	0	0	0	0	0	0	190
TOTAL EFFECTIVE LH	219	198	228	213	237	241	170	1	1	1	1	1	1	1	1	210
ADJUSTED PRESSURE	0.07	0.07	0.06	0.07	0.06	0.06	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	6.8	6.8	7	7.4	7.3	8.8	5.7	0	0	0	0	0	0	0	0	6
INLET GRILL SIZE	8	8	8	8	8	8	8	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	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	14

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SITE NAME: BALTRIO — 18 DENHAM DRIVE
BUILDER: GREENPARK HOMES — TYPE: AVIGNON 3 — DATE: Sep-20 — GFA: 6495 — LO# 83730 — **FURNACE 2**

HEATING CFM	1504	COOLING CFM	1504	furnace pressure	0.6				**#*GOODMAN**	AFUE =	96 %
TOTAL HEAT LOSS	56,014	TOTAL HEAT GAIN	40,292	furnace filter	0.05	**3256 BTHU**				INPUT (BTU/H) =	80,000
AIR FLOW RATE CFM	26.85	AIR FLOW RATE CFM	37.33	a/c coil pressure	0.2	**HRV VENTILATION**			**GMEC960804CNA 80**	OUTPUT (BTU/H) =	**76,800**
				available pressure		**3256+56014 =**	**59,270**		FAN SPEED		
				for s/a & r/a	0.35				LOW		
									MEDLOW	DESIGN CFM =	**1504**
				plenum pressure s/a	0.18	r/a pressure	0.17		MEDIUM	CFM @ .6 " E.S.P.	
				max s/a dif press. loss	0.03	r/a grille press. Loss	0.02		MEDIUM HIGH 1504		
				min adjusted pressure s/a	0.15	adjusted pressure r/a	0.15		HIGH 1615	TEMPERATURE RISE 47	°F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	10	4
R/A	0	0	3	2	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	BED-3	BED-3	ENS-3	ENS-4	BED-2	BED-2	MBR	MBR	WICS	ENS	ENS	KIT	KIT	FAM	FAM	H-OFF	PWD	REC	REC	REC	REC	MUD	BED-3	MBR
RM LOSS MBH.	2.90	2.90	0.10	0.32	1.21	1.21	1.32	1.32	0.19	1.82	1.82	2.43	2.43	2.41	2.41	1.75	1.07	3.64	3.64	3.64	3.64	2.64	2.90	1.32
CFM PER RUN HEAT	78	78	3	9	32	32	35	35	5	49	49	65	65	65	65	47	29	98	98	98	98	71	78	35
RM GAIN MBH.	2.15	2.15	0.05	0.09	1.63	1.63	2.17	2.17	0.09	1.36	1.36	2.51	2.51	3.24	3.24	1.97	0.41	0.46	0.46	0.46	0.46	0.42	2.15	2.17
CFM PER RUN COOLING	80	80	2	3	61	61	81	81	3	51	51	94	94	121	121	74	15	17	17	17	17	16	80	81
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.15	0.15	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.16
ACTUAL DUCT LGH.	74	73	46	72	69	54	50	73	33	80	71	52	46	43	57	66	54	68	41	44	68	14	64	77
EQUIVALENT LENGTH	170	160	140	180	210	150	150	120	190	140	140	150	130	130	110	150	100	130	140	120	120	100	180	130
TOTAL EFFECTIVE LENGTH	244	233	186	252	279	204	200	193	223	220	211	202	176	173	167	216	154	198	181	164	188	114	244	207
ADJUSTED PRESSURE	0.07	0.07	0.09	0.07	0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.08	0.11	0.08	0.09	0.1	0.09	0.15	0.07	0.08
ROUND DUCT SIZE	**6**	**6**	4	4	5	5	**6**	**6**	4	5	5	**6**	**6**	**6**	**6**	5	4	**6**	**6**	**6**	**6**	5	**6**	**6**
HEATING VELOCITY (ft/min)	398	398	34	103	235	235	178	178	57	360	360	331	331	331	331	345	333	500	500	500	500	521	398	178
COOLING VELOCITY (ft/min)	408	408	23	34	448	448	413	413	34	374	374	479	479	617	617	543	172	87	87	87	87	117	408	413
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	4X10
TRUNK	D	D	D	C	C	D	D	B	B	A	A	C	C	B	B	A	A	C	D	B	A	E	D	B

RUN #	25	26	27	28
ROOM NAME	WICS	KIT	H-OFF	MUD
RM LOSS MBH.	0.19	2.43	1.75	2.64
CFM PER RUN HEAT	5	65	47	71
RM GAIN MBH.	0.09	2.51	1.97	0.42
CFM PER RUN COOLING	3	94	74	16
ADJUSTED PRESSURE	0.17	0.16	0.17	0.17
ACTUAL DUCT LGH.	65	37	70	10
EQUIVALENT LENGTH	150	120	140	130
TOTAL EFFECTIVE LENGTH	215	157	210	140
ADJUSTED PRESSURE	0.08	0.1	0.08	0.12
ROUND DUCT SIZE	4	**6**	5	5
HEATING VELOCITY (ft/min)	57	331	345	521
COOLING VELOCITY (ft/min)	34	479	543	117
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10
TRUNK	B	D	A	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	319	0.08	9.1	10	x	8	574	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	627	0.08	11.8	16	x	8	705	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	269	0.06	9.2	10	x	8	484	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	736	0.06	13.4	20	x	8	662	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1505	0.06	17.6	28	x	10	774	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1504	0.06	17.6	32	x	10	677
TRUNK Y	984	0.06	15	26	x	8	681
TRUNK Z	379	0.06	10.5	14	x	8	487
DROP	1504	0.06	17.6	24	x	14	645

RETURN AIR #	1	2	3	4	5												**BR**
AIR VOLUME	185	205	130	405	385	0	0	0	0	0	0	0	0	0	0	0	194
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.	40	51	61	62	68	1	1	1	1	1	1	1	1	1	1	1	45
EQUIVALENT LENGTH	220	175	175	150	190	0	0	0	0	0	0	0	0	0	0	0	185
TOTAL EFFECTIVE LH	260	226	236	212	258	1	1	1	1	1	1	1	1	1	1	1	230
ADJUSTED PRESSURE	0.06	0.07	0.06	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	8	8	7	10.3	10.5	0	0	0	0	0	0	0	0	0	0	0	8.2
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	14	30	30	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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TYPE: AVIGNON 3 LO # 83730
SITE NAME: BALTRIO 18 DENHAM DRIVE

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	1	@ 21.2 cfm	21.2	cfm
Other Bedrooms	5	@ 10.6 cfm	53	cfm
Kitchen & Bathrooms	10	@ 10.6 cfm	106	cfm
Other Rooms	9	@ 10.6 cfm	95.4	cfm
Table 9.32.3.A.		TOTAL	275.6	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 247.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	275.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	120.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

155.0 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
155.0 CFM	X	78 F	X	1.08	X	0.25

SUPPLEMENTAL FANS NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
ENS-2	QTXEN050C	50	✓	0.3
ENS-4	QTXEN050C	50	✓	0.3
PWD	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H **INSTALL 2 HRV'S**

155 cfm high 64 cfm low

X 2 = 310 cfm

75 % Sensible Efficiency [✓] HVI Approved

@ 32 deg F (0 deg C)

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: GREENPARK 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: September-20

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 83730 Model: AVIGNON 3 Builder: GREENPARK HOMES Date: 9/30/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2979	10	29790
First	2979	11	32769
Second	3516	9	31644
Third	0	9	0
Fourth	0	9	0
		Total:	94,203.0 ft³
		Total:	2667.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.332
SUMMER NATURAL AIR CHANGE RATE	0.107

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-21	43	78
Summer DTDc	23	31	8	14

5.2.3.1 Heat Loss due to Air Leakage

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

0.332 x 740.98 x 43 °C x 1.2 = 12777 W

= **43594 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.107 x 740.98 x 8 °C x 1.2 = 731 W

= **2493 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

155 CFM x 78 °F x 1.08 x 0.25 = **6512 Btu/h**

X 2

6.2.7 Sensible heat Gain due to Ventilation

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

155 CFM x 14 °F x 1.08 x 0.25 = **578 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	43,594	16,058	1.357
2	0.3		23,985	0.545
3	0.2		25,748	0.339
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: AVIGNON 3 | 18 DENHAM DRIVE | **BUILDER:** GREENPARK HOMES
SFQT: 6495 | **LO#** 83730 | **SITE:** BALTRIO

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	74

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	94203.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 62.0 ft	WIDTH: 65.0 ft	EXPOSED PERIMETER:	254.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package A1**	
	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	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

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MICHAEL O'ROURKE

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375 Finley Ave, Suite 202
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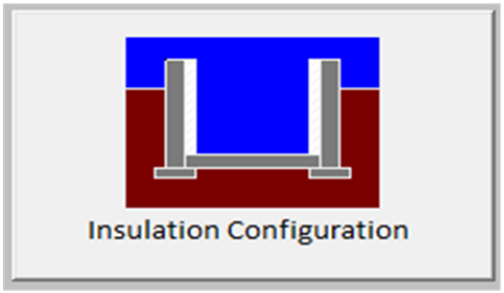
Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	**18.9**	 Insulation Configuration
Floor Width (m):	**19.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**0.5**	
Door Area (m^2):	**5.6**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**2555**	

TYPE: AVIGNON 3
LO# 83730

18 DENHAM DRIVE

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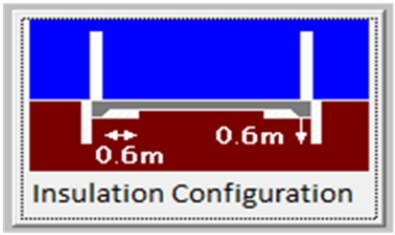
Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Length (m):	**2.4**	
Width (m):	**5.2**	
Exposed Perimeter (m):	**7.6**	

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Results	
Heating Load (Watts):	**73**

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18 DENHAM DRIVE

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Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
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):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	2667.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 3555.9 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 73.2 / Total Exhaust 73.2
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.332**
Cooling Air Leakage Rate (ACH/H):	**0.107**

TYPE: AVIGNON 3 18 DENHAM DRIVE

LO# 83730