

HVAC REVIEWED

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

PXV

				<u></u>		
A. Project Information						
Building number, street name				Uniit no.	Lot/con.	
Municipality	Postal code	Plan number/ other desc	cription			
RICHMOND HILL						
B. Individual who reviews and takes	responsibility for	or design activities				
Name MICHAEL O'ROURKE		Firm 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@hva	cdesigns.ca		
Telephone number	Fax number		Cell numb	er		
(905) 619-2300	(905) 619-2375		()			
C. Design activities undertaken by ir	idividual identifi	ed in Section B. [Build	ling Code	e Table 3.5.2.1 OF Div	/ision C]	
☐ House	⊠ HVAC	– House		☐ Building Structu	 ral	
☐ Small Buildings		g Services		☐ Plumbing – Hou		
☐ Large Buildings		ion, Lighting and Pov	ver	☐ Plumbing – All E		
☐ Complex Buildings	☐ Fire Pr			☐ On-site Sewage	Systems	
Description of designer's work HEAT LOSS / GAIN CALCULATIONS		Model:	38-13			
DUCT SIZING			CHADWIC	N.		
RESIDENTIAL MECHANICAL VENTILATION	ON DESIGN SUMM	MARY				
RESIDENTIAL SYSTEM DESIGN per CSA		Project:	CENTREFIE	ELD (WEST GORMLEY)		
D. Declaration of Designer						
			daala	ove that /shares are as	into\.	
I MICHAEL O'ROURKE	rint name)		decia	are that (choose one as a	ippropriate):	
☐ I review and take responsibility f Division C, of the Building Code classes/categories.				subsection 3.2.4.of appropriate		
Individual BCIN: Firm BCIN:				_		
I review and take responsibility f designer" under subsection 3.		am qualified in the appropo on C, of the Building Code		ory as an "other		
Individual BCIN: Basis for exemption t	19669 rom registration an	d qualification:	O.B.C	SENTENCE 3.2.4.1	(4)	
☐ The design work is exempt Basis for exemption from registr		tion and qualification requi	rements of	the Building Code.		
I certify that:						
The information contained I have submitted this application.		ule is true to the best of m ledge and consent of the		ge.		
June 21, 2021	_		M/s	had Ofounde		
Date				Signature of De	signer	
				BUILDING D	IVISION	
NOTE:			-	00/4/4/4	2004	

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. Application for a Permit Construct or Demolish – Effective January 1, 2015



SITE NAME: BUILDER:					RMLEY)			TYPE:	: 38-13					GFA:	2602			DATE:						R NATURAL AIR CH R NATURAL AIR CH					ΔT°F. 78 ΔT°F. 13		SB-12 F	CSA-I	F280-12 MANCE
ROOM USE				MBR		T T	ENS			WIC			BED-2			BED-3			BED-4			ENS-2					S-BATH						
EXP. WALL				35			22			8			36			27			13			6					6						
CLG. HT.				9			9			9			9			9			9			9					9						
	FACTO	RS																															
GRS.WALL AREA				315			198			72			324			243			117			54					54						
GLAZING		O,			GAIN			GAIN			GAIN			GAIN		LOSS	GAIN			GAIN		LOSS	GAIN				LOSS G	SΔIN					
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	392	288	0	0	0			8		128					
EAST	21.8	41.6	37	806	1537	18	392	748	0	0	0	ő	0	0	0	0	0	0	0	0	0	0	0			0	0	0					
SOUTH	21.8	24.9	0	0	0	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0					
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	52	1133	2161	64	1394	2659	0	0	Ô	15	327	623			0	0	0					
SKYLT.	35.8	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	۰	0	0	023			0	0	0					
DOORS			0	-	0	0	0	-	0	0	0		0	0	-	0	0	-	-	0			-			0	-	0					
	25.8	4.3	-	0	•	-	-	0	-	-	-	0	-	-	0	-	-	0	0	•	0	0	0					-					
NET EXPOSED WALL	4.2	0.7	278	1169	192	171	719	118	72	303	50	272	1144	188	179	753	124	99	416	68	39	164	27			46		32					
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0					
EXPOSED CLG	1.3	0.6	303	398	178	123	162	72	75	99	44	195	256	115	160	210	94	210	276	123	85	112	50			75		44					
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0	45	126	57	0	0	0	0	0	0			0	0	0					
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	205	535	88	95	248	41	85	222	37			75		32					
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0		l	0			0					0						
SLAB ON GRADE HEAT LOSS				0			0			0			0			0		l	0			0					0						
SUBTOTAL HT LOSS				2373			1469			401			2533			3019		l	1332			824					662						
SUB TOTAL HT GAIN					1908			1163			94			2464			3022			520			737					236					
LEVEL FACTOR / MULTIPLIER			0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16				0.20	0.16						
AIR CHANGE HEAT LOSS				382			237			65			408			486			215			133					107						
AIR CHANGE HEAT GAIN					87			53			4			112			137			24			34					11					
DUCT LOSS				0			0			0			0			351			155			96					77						
DUCT GAIN					0			0			0			0			399			138			77					25					
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0			0		0					
HEAT GAIN APPLIANCES/LIGHTS					593			0			0			593			593			593			0					0					
TOTAL HT LOSS BTU/H				2756			1706			466			2941			3856			1702			1053					846						
TOTAL HT GAIN x 1.3 BTU/H																																	
					3988			1580			128			4431			5709			1969			1101					353					l
TOTAL III GAIR X 1.0 DTO/II					3988			1580	l		128			4431			5709			1969			1101					353					
ROOM USE			1		3988	<u> </u>	GRT	1580		KIT	128			4431		LAUN	5709		PWD	1969		FOY	1101	MUD		l I		353			1	BAS	
'					3988		GRT 60	1580		KIT 32	128			4431		LAUN 14	5709		PWD 10	1969		FOY 35	1101	MUD 20			;	353				BAS 168	
ROOM USE EXP. WALL					3988		60	1580		32	128			4431			5709		10	1969		35	1101					353				168	
ROOM USE EXP. WALL CLG. HT.	FACTO	RS			3988			1580			128			4431		14	5709			1969			1101	20			:	353					
ROOM USE EXP. WALL CLG. HT.					3988		60 10	1580		32 10	128			4431		14 9	5709		10 10	1969		35	1101	20 10				353				168 10	
ROOM USE EXP. WALL CLG. HT.					3988		60 10 606			32 10 323				4431		14 9 126	5709 GAIN		10 10 101			35 10 354	1101	20 10 202				353				168 10 1176	
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING	LOSS	GAIN			3988	0	60 10			32 10				4431	0	14 9 126 LOSS			10 10 101	1969 GAIN 0	0	35 10 354 LOSS		20 10				353			3	168 10 1176 LOSS	GAIN
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH	21.8	GAIN 16.0			3988	0	60 10 606 LOSS 0	GAIN 0	-	32 10 323 LOSS 0	GAIN 0			4431	-	14 9 126 LOSS 0	GAIN 0	0	10 10 101 LOSS 0	GAIN 0	-	35 10 354 LOSS 0	GAIN 0	20 10 202 LOSS GAIN 0 0 0			<u>;</u>	353			_	168 10 1176 LOSS 65	GAIN 48
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST	21.8 21.8	16.0 41.6			3988	0 0	60 10 606 LOSS 0	GAIN 0 0	0	32 10 323 LOSS 0	GAIN 0 0			4431	0	14 9 126 LOSS 0	GAIN 0 0	0	10 10 101 LOSS 0 0	GAIN 0 0	0	35 10 354 LOSS 0 0	GAIN 0 0	20 10 202 LOSS GAIN 0 0 0				353			3	168 10 1176 LOSS 65 65	GAIN 48 125
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH	21.8 21.8 21.8 21.8	16.0 41.6 24.9			3988	0 0 0	60 10 606 LOSS 0 0	GAIN 0 0	0	32 10 323 LOSS 0 0	GAIN 0 0			4431	0 32	14 9 126 LOSS 0 0	GAIN 0 0 797	0 0 9	10 10 101 LOSS 0 0 196	GAIN 0 0 224	0	35 10 354 LOSS 0 0	GAIN 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0				353			3	168 10 1176 LOSS 65 65 131	GAIN 48 125 149
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST	21.8 21.8 21.8 21.8 21.8	16.0 41.6 24.9 41.6			3988	0 0 0 60	60 10 606 LOSS 0 0 0	GAIN 0 0 0 2493	0 0 48	32 10 323 LOSS 0 0 0	GAIN 0 0 0 1994			4431	0 32 0	14 9 126 LOSS 0 0 697	GAIN 0 0 797 0	0 0 9 0	10 10 101 LOSS 0 0 196	GAIN 0 0 224 0	0 0 22	35 10 354 LOSS 0 0 0 479	GAIN 0 0 0 914	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0				353			3 6 0	168 10 1176 LOSS 65 65 131	GAIN 48 125 149 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT.	21.8 21.8 21.8 21.8 21.8 35.8	16.0 41.6 24.9 41.6 101.2			3988	0 0 60 0	60 10 606 LOSS 0 0 0 1307	GAIN 0 0 0 2493 0	0 0 48 0	32 10 323 LOSS 0 0 0 1046	GAIN 0 0 0 1994 0			4431	0 32 0	14 9 126 LOSS 0 0 697 0	GAIN 0 0 797 0	0 0 9 0	10 10 101 LOSS 0 0 196 0	GAIN 0 0 224 0	0 0 22 0	35 10 354 LOSS 0 0 0 479 0	GAIN 0 0 0 914 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0			;	353			3 6 0	168 10 1176 LOSS 65 65 131 0	GAIN 48 125 149 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS	21.8 21.8 21.8 21.8 21.8 35.8 25.8	16.0 41.6 24.9 41.6 101.2			3988	0 0 0 60 0	60 10 606 LOSS 0 0 0 1307 0	GAIN 0 0 0 2493 0	0 0 48 0	32 10 323 LOSS 0 0 0 1046 0	GAIN 0 0 0 1994 0			4431	0 32 0 0	14 9 126 LOSS 0 0 697 0 0	GAIN 0 0 797 0 0	0 0 9 0 0	10 10 101 LOSS 0 0 196 0	GAIN 0 0 224 0 0	0 0 22 0 40	35 10 354 LOSS 0 0 0 479 0 1034	GAIN 0 0 0 914 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			;	353			3 6 0 0 20	168 10 1176 LOSS 65 65 131 0	GAIN 48 125 149 0 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7			3988	0 0 0 60 0 0 546	60 10 606 LOSS 0 0 0 1307 0 0 2296	GAIN 0 0 0 2493 0 0 378	0 0 48 0 0 275	32 10 323 LOSS 0 0 0 1046 0 0 1157	GAIN 0 0 0 1994 0 0			4431	0 32 0 0 0 94	14 9 126 LOSS 0 0 697 0 0 0 395	GAIN 0 0 797 0 0 0	0 0 9 0 0 0	10 101 LOSS 0 0 196 0 0 0	GAIN 0 0 224 0 0 0	0 0 22 0 40 292	35 10 354 LOSS 0 0 0 479 0 1034 1226	GAIN 0 0 0 914 0 170 202	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126				353			3 6 0 20	168 10 1176 LOSS 65 65 131 0 0 517	GAIN 48 125 149 0 0 85
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL	21.8 21.8 21.8 21.8 21.8 25.8 4.2 3.7	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6			3988	0 0 0 60 0 0 546	60 10 606 LOSS 0 0 0 1307 0 0 2296	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275	32 10 323 LOSS 0 0 0 1046 0 0 1157	GAIN 0 0 0 1994 0 0			4431	0 32 0 0 0 94 0	14 9 126 LOSS 0 0 697 0 0 0 395	GAIN 0 0 797 0 0 0 65	0 0 9 0 0 0 92	10 10 101 LOSS 0 0 196 0 0 0 387	GAIN 0 0 224 0 0	0 0 22 0 40 292 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0	GAIN 0 0 0 914 0 170 202 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0				353			3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 517 0	GAIN 48 125 149 0 0 85 0 305
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0	GAIN 0 0 0 1994 0 0 190			4431	0 32 0 0 0 94 0	14 9 126 LOSS 0 0 697 0 0 0 395 0 145	GAIN 0 0 797 0 0 65 0 65	0 0 9 0 0 0 0 92 0	10 10 101 LOSS 0 0 196 0 0 0 387 0	GAIN 0 0 224 0 0 0 64 0	0 0 22 0 40 292 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0	GAIN 0 0 0 914 0 170 202 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0			:	353			3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517	GAIN 48 125 149 0 0 85 0 305
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMYL GATHOUSEN EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 1046 0 1157 0	GAIN 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110	14 9 126 LOSS 0 0 697 0 0 395 0 145	GAIN 0 797 0 0 65 0 65	0 0 9 0 0 0 0 92 0	10 10 101 LOSS 0 0 196 0 0 0 387 0	GAIN 0 0 224 0 0 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0	GAIN 0 0 914 0 170 202 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0	CITY	OF			MOND	Н	3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517 0	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BABIT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 1307 0 2296 0 0	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 1046 0 1157 0 0	GAIN 0 0 0 1994 0 0 190			4431	0 32 0 0 0 94 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0	GAIN 0 0 797 0 0 65 0 65	0 0 9 0 0 0 0 92 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0	GAIN 0 0 224 0 0 0 64 0	0 0 22 0 40 292 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0	GAIN 0 0 0 914 0 170 202 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0			RIC	:HN	MOND		3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517 0 1857	GAIN 48 125 149 0 0 85 0 305
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NO ATTIC EXPOSED CLG EXPOSED CLOR EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 1307 0 2296 0 0 0	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 1046 0 0 1157 0 0	GAIN 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0	GAIN 0 797 0 0 65 0 65	0 0 9 0 0 0 0 92 0	10 101 LOSS 0 0 196 0 0 387 0 0	GAIN 0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0	GAIN 0 0 914 0 170 202 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0			RIC	:HN			3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517 0	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG SEXPOSED CLG SEXPOSED CLG NO ATTIC EXPOSED CLG SEXPOSED CLG NO ATTIC EXPOSED CLG SEXPOSED CL	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 1307 0 2296 0 0 0	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 1046 0 0 1157 0 0 0	GAIN 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0 0	GAIN 0 797 0 0 65 0 65	0 0 9 0 0 0 0 92 0	10 101 LOSS 0 0 196 0 0 387 0 0 0	GAIN 0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0	GAIN 0 0 914 0 170 202 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0			RIC	:HN	MOND IVISIO		3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517 0 1857 0	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0	60 10 606 LOSS 0 0 1307 0 2296 0 0 0	GAIN 0 0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0	32 10 323 LOSS 0 0 1046 0 0 1157 0 0	GAIN 0 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0	GAIN 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 0 92 0	10 101 LOSS 0 0 196 0 0 387 0 0	GAIN 0 0 2224 0 0 0 644 0 0 0 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0	GAIN 0 0 0 914 0 1770 202 0 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 0 0 0 1282	В	JILC	RIC	HIV	IVISIO	ON	3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 0 517 0 1857	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA, GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSI	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 1307 0 0 2296 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 378 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0 1237	GAIN 0 797 0 0 65 0 65	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0	GAIN 0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 914 0 170 202 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 0 0 0 1282	В	JILC	RIC	HIV	IVISIO	ON	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 0 517 0 1857 0 0 5708	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG SUBTOTAL HT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	600 100 6006 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603 0.32	GAIN 0 0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 1237	GAIN 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 0 92 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 583	GAIN 0 0 2224 0 0 0 644 0 0 0 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 0 914 0 1770 202 0 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32	В	JILC	RIC	HIV		ON	3 6 0 0 20 0 504	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG SEXPOSED CLG SEXPOSED CLG EXPOSED CLG SEXPOSED CLG EXPOSED CLG SUPPOSED CLG EXPOSED CLG SEXPOSED CLG SEXPOSED CLG EXPOSED CLG SEXPOSED CLG EXPOSED CLG SEXPOSED CLG SEXPOSED CLG EXPOSED CLG SEXPOSED CLG SEXP	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 1307 0 0 2296 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0 1237	GAIN 0 797 0 0 0 65 0 65 0	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0	GAIN 0 0 2224 0 0 0 644 0 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 0 914 0 1770 202 0 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 0 0 0 1282	В	JILC	RIC	HIV	IVISIO	ON	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 0 517 0 1857 0 0 5708	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG SUBTOTAL HT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	600 100 6006 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603 0.32	GAIN 0 0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 1237	GAIN 0 797 0 0 0 65 0 65 0	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 583	GAIN 0 0 2224 0 0 0 644 0 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 0 914 0 1770 202 0 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32	В	JILC	RIC	HIV	IVISIO	ON	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG SEXPOSED CLG SEXPOSED CLG EXPOSED CLG SEXPOSED CLG SEX	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	600 100 6006 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603 0.32	GAIN 0 0 0 2493 0 0 378 0 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 1237	GAIN 0 0 797 0 0 65 0 65 0	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 583	GAIN 0 0 2224 0 0 0 644 0 0 0 0 0 2888	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 914 0 170 202 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32	В)ILC 8/	RIC DING	HIN FD	ivisio 202	21	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 378 0 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16 199	GAIN 0 0 797 0 0 65 0 65 0	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 2224 0 0 0 644 0 0 0 0 0 2888	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 914 0 170 202 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32 412	В)ILC 8/	RIC DING	HIN FD	IVISIO	21	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUB TOTAL HT CASIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 378 0 0 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 190 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16 199	GAIN 0 0 797 0 0 0 65 0 65 0 0	0 9 0 0 0 92 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 2224 0 0 0 64 0 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 0 914 0 1770 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32 412 0 0	0	JILE 8/ RE	RIC DING	HIW F D	ivision 202	21	3 6 0 0 20 0 504 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BAST WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG FXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN	21.8 21.8 21.8 21.8 35.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 378 0 0 0 2871 131 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16 199	GAIN 0 0 797 0 0 0 65 0 65 0 0 926 42 0	0 0 0 0 0 0 92 0 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 0 2224 0 0 0 64 0 0 0 2888 13 0	0 0 222 0 40 2992 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 914 0 170 202 0 0 0	20 10 202 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 1282 211 0.30 0.32 412 0 0 0 0	В	JILE 8/ RE	RIC DING	HIW F D	ivisio 202	21	3 3 6 0 0 0 20 0 5044 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0 0 0
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG SEXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT LOSS SUBTOTAL HT LOSS AUB CHANGE HEAT LOSS AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 35.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	GAIN 0 0 0 2493 0 0 0 378 0 0 0 0 2871 131 0 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 1157 0 0 0 0 2203	GAIN 0 0 0 1994 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16 199	GAIN 0 0 797 0 0 65 0 65 0 0	0 0 0 0 0 0 92 0 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 0 2224 0 0 0 64 0 0 0 0 2888 13 0 0 0	0 0 222 0 40 2992 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	GAIN 0 0 0 914 0 1770 202 0 0 0 0 1286 59 0 0 0	20 10 202 LOSS GAIN 0 1282 211 0.30 0.32 412 0 0 0 0 0 0	0	JILE 8/ RE	RIC DING	HIW F D	ivision 202	21	3 3 6 0 0 0 20 0 5044 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	168 10 1176 LOSS 65 65 131 0 517 0 1857 0 0 5708 8342	GAIN 48 125 149 0 0 85 0 305 0 0 712
ROOM USE EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED TLOOR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 35.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3			3988	0 0 0 60 0 0 546 0 0	60 10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 0 2493 0 0 0 378 0 0 0 0 2871 131 0 0 0	0 0 48 0 0 275 0 0 0	32 10 323 LOSS 0 0 0 1046 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 0 1994 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			4431	0 32 0 0 0 94 0 110 0	14 9 126 LOSS 0 0 697 0 0 395 0 145 0 0 0 1237 0.16 199	GAIN 0 0 797 0 0 65 0 65 0 0	0 0 9 0 0 0 92 0 0 0 0	10 10 101 LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GAIN 0 0 0 2224 0 0 0 64 0 0 0 0 2888 13 0 0 0	0 0 222 0 40 2992 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739 0.32 881	GAIN 0 0 0 914 0 1770 202 0 0 0 0 1286 59 0 0 0	20 10 202 LOSS GAIN 0 1282 211 0.30 0.32 412 0 593	0	JILE 8/ RE	RIC DING	HIW F D	ivision 202	21	3 3 6 0 0 0 20 0 5044 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	168 10 1176 LOSS 65 65 65 131 0 0 517 0 0 5708 8342 0 0.67 5579 0	GAIN 48 125 149 0 0 85 0 305 0 0 712

TOTAL HEAT GAIN BTU/H:

34912

TONS: 2.91

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 44440

TOTAL COMBINED HEAT LOSS BTU/H: 46110

Mehal Oxombe.

17.72 BTU/SQ.FT.

22.29 BTU/SQ.FT.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

			EFIELD (\ PINE HO	NEST GO	ORMLEY)		TYPE:	20 12				DATE:	lun-21			GFA:	2602	LO#	01202				
HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM	1115 44,440		COO TOTAL H	LING CFM LEAT GAIN RATE CFM	34,637		ā	furnace furr a/c coil vailable	pressure nace filter pressure	0.05 0.2			DATE.	Juli-21			59TN6B		CARRIE 60 930			AFUE = ! (BTU/H) = !	60,000	
RUN COUNT	4th	3rd	2nd	1st	Bas]												EDLOW	1050		DESIG	GN CFM =		_
S/A R/A	0	0	13 5	7	<u>4</u> 1				ssure s/a		-/-		pressure	0.17 0.02				MEDIUM	1115 1245			CFM @ .	6 " E.S.P.	
All S/A diffusers 4"x10" unl					<u> </u>	J			ress. loss ssure s/a				ess. Loss essure r/a				MEDIC	JM HIGH HIGH	1520	т	EMPERATI	JRE RISE	48	°F
All S/A runs 5"Ø unless no							aaj	aotou p.o	004.0 0,4	00	,	aotoa pro		00					.020					-
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	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	BED-2		MBR	S-BATH		GRT	KIT	KIT	S-BATH		PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH. CFM PER RUN HEAT	1.38 35	1.71 43	0.47 12	1.47 37	1.93 48	1.70 43	1.05 26	1.47 37	1.93 48	1.38 35	0.42 11	2.38 60	2.38 60	1.46 37	1.46 37	0.42 11	1.44 36	0.77 19	3.62 91	1.69 43	3.48 87	3.48 87	3.48 87	3.48 87
RM GAIN MBH.	1.99	1.58	0.13	2.22	2.85	1.97	1.10	2.22	2.85	1.99	0.18	2.34	2.34	1.87	1.87	0.18	2.03	0.39	1.75	1.06	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	64	51	4	71	92	63	35	71	92	64	6	75	75	60	60	6	65	13	56	34	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	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	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	41	54	46	73	67	19	60	78	69	33	55	30	37	32	26	54	40	48	60	21	31	25	25	43
EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH	130 171	210	130	200	160 227	120	150	200	180	140	190	140	150	150	120	200	160	170	150	160	160	170	160	160
ADJUSTED PRESSURE	0.1	264 0.07	176 0.1	273 0.06	0.07	139 0.12	210 0.08	278 0.06	249 0.07	173 0.1	245 0.07	170 0.1	187 0.09	182 0.09	146 0.12	254 0.07	200 0.09	218 0.08	210 0.08	181 0.1	191 0.08	195 0.08	185 0.09	203 0.08
ROUND DUCT SIZE	5	5	4	6	6	6	4	6	6	5	4	5	5	5	5	4	5	4	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	257	316	138	189	245	219	298	189	245	257	126	441	441	272	272	126	264	218	464	493	444	444	444	444
COOLING VELOCITY (ft/min)	470	374	46	362	469	321	402	362	469	470	69	551	551	441	441	69	477	149	286	390	71	71	71	71
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	Α	A	D	В	С	D	С	В	С	A	С	A	A	Α	A	С	D	В	В	С	A	Α	С	В
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																								
OURDLY AID TRUNK C:==																								
SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT			VELOCITY	KETURN	AIR 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	481	0.07	11	14	x	8	618		TRUNK G	0	0.00	0	0	x	8	0	TRUNK O		0.05	0	0	x	8	0
TRUNK B		0.06	9.2	10	Х	8	488		TRUNK H	0	0.00	0	0	Х	8	0	TRUNK P	0	0.05	0	0	X	8	0
TRUNK C		0.06	12	16	X	8	613		TRUNK I		0.00	0	0	X	8	0	TRUNKQ	CIT	70.05 0.05	RCH	INONI	JIIH C	- 8 - 8	0
TRUNK D TRUNK E		0.06	15.7 0	28 0	X	8 8	718 0		TRUNK J TRUNK K	0	0.00	0	0	X	8 8	0 0	TRUNK R	0	B0.05	DIMG	DIVISI	Х		0
TRUNK F	-	0.00	0	0	X X	8	0		TRUNK L	0	0.00	0	0	X X	8	0	TRUNKT	0	0.05	0	0	X	8 8	0
												-				-	TRUNK U	Ö ,	0.05	0,	0	_ X	8	Ö
r																	TRUNK	0	0.05	10/	'	X	8	0
RETURN AIR #	1	2	3	4	5	6	0	0	0	0	0	0	0	0	0	BR	TRUNK W	0	0.05	0 /	-0	x	8	0
AIR VOLUME	0 120	0 120	0 120	0 120	0 85	0 380	0	0	0	0	0 0	0	0 0	0	0	170	TRUNK X	1115 380	0.05 0.05	16.4 11	32 14	X	8 8	627 489
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	TRUNKZ	0	0.05		0	×	8	0
ACTUAL DUCT LGH.	49	58	78	75	69	26	1	1	1	1	1	1	1	1	1	14	DROP	1115	0.05		24) x	10	669
EQUIVALENT LENGTH	240	235	250	245	205	155	0	0	0	0	0	0	0	0	0	135		Per:		daniel	le.dev	ritt		
TOTAL EFFECTIVE LH	289	293	328	320	274	181	1	1	1	1	1	1	1	1	1	149		. 01.						
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.05	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10								
ROUND DUCT SIZE INLET GRILL SIZE	7.1 8	7.1 8	7.1 8	7.1 8	6.3 8	9.8 8	0	0	0	0	0 0	0	0	0	0	6.8 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	0	0	Ô	0	0	0	0	0	0	14								



TYPE: 38-13

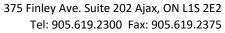
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 91282 WEST GORMLEY) RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VEN	NTILATION CAPACITY	(9.32.3.5.
a) Direct vent (sealed combustion) only		Total Ventilation Capa	city	159	_	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. (Capacity	79.5	_	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplements	al Capacity	79.5	_	cfm
d) Solid Fuel (including fireplaces)						
e) No Combustion Appliances		PRINCIPAL EXHAUST	FAN CAPACITY			
		Model:	VANEE 65H	Location:	BSMT	
HEATING SYSTEM		<mark>79.5</mark>	cfm	_	✓ HVI A	pproved
Forced Air Non Forced Air		PRINCIPAL EXHAUST			0/	LOSS
		79.5 CFM	ΔT °F X 78 F	FACTOR X 1.08		0.25
Electric Space Heat		SUPPLEMENTAL FAM	NS	BY INSTALLING CON	TRACTOR	
		Location	Model	cfm	HVI So	ones
HOUSE TYPE	9.32.1(2)	ENS	BY INSTALLING CONTRA			3.5
✓ I Type a) or b) appliance only, no solid fuel		ENS-2 S-BATH	BY INSTALLING CONTRA			3.5 3.5
1 Type a) or b) appliance only, no solid ruel		PWD	BY INSTALLING CONTRA			3.5
II Type I except with solid fuel (including fireplaces	5)					
		HEAT RECOVERY VE			9	.32.3.11.
III Any Type c) appliance		Model: 155	VANEE 65H cfm high	64	cfr	n low
IV Type I, or II with electric space heat		100	ommign		_	11 1011
Other: Type I, II or IV no forced air		75	% Sensible Efficie @ 32 deg F (0 deg		✓ HVI A	pproved
				5 - 7		
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	LOCATION OF INSTA	LLATION			
STOTEM DESIGN OFTIONS	O.N.H.W.F.	Lot:		Concession		
1 Exhaust only/Forced Air System						
		Township		Plan:		
2 HRV with Ducting/Forced Air System		Address				
HRV Simplified/connected to forced air system		Roll #		Building Per	mit #	
4 HRV with Ducting/non forced air system					THE #	
Part 6 Design		BUILDER:	ROYAL PINE HO	MES		
<u> </u>		Name:				
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:				
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:				
Other Bedrooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Telephone #:		Fax#:		
Kitchen & Bathrooms5 @ 10.6 cfm53	cfm	INSTALLING CONTRA	ACTOR			
Other Rooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Name:				
Table 9.32.3.A. TOTAL <u>159.0</u>	cfm	Address:				
		City:				
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)		OITV OF	DIGUMOND		1
1 Bedroom 31.8	cfm	Telephone #:	CITY OF	RICHMAND	HILL N	Н
2 Redroom 47.7		DESIGNER CERTIFIC		o boon design		
2 Bedroom 47.7	cfm	I hereby certify that thi in accordance with the	Ontario Building Code	11/202	1	
3 Bedroom 63.6	cfm	Name:	HVAC Designs L	td.	3	
4 Bedroom 79.5	cfm	Signature:	RE	Marked Olavah	2.	
5 Bedroom 95.4	cfm	HRAI#	Per: d	laniell@1820vit	t	
TOTAL 79.5 cfm		Date:		June-21		
I DEVIEW AND TAKE DESPONIBILITY FOR THE DESIGN WORK AND AM OLIA	LICIED IN THE AC	DDDDDDIATE CATEGODY AS AN "O	THEO DEGLONED HINDED D	IVISION C 2 2 FOR THE BI	III DINC CODE	



$= \boxed{11158 \text{Btu/h}}$ $5.2.3.2 \text{Heat Loss due to Mechanical Ventilation}$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{CFM} \qquad \times \qquad 78 \text{°F} \qquad \times \qquad 1.08 \qquad \times \qquad 0.25 \qquad = \qquad \boxed{1670 \text{Btu/h}} \qquad \boxed{8}$ $5.2.3.3 \text{Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airbv} + L_{airbv} $	·
Volume Calculation use Volume Level Floor Area (ft²) Floor Height (ft) Volume (ft³) Bsmt 1078 10 10780 First 1078 10 10887.8 Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Fourth 0 9 0 Total: 1002.0 m³ 3 5.2.3.1 Heat Loss due to Air Leakage HL_airb $\times 278.32$ <td< th=""><th>Air Change & Delta T Data WINTER NATURAL AIR CHANGE RATE 0.227 SUMMER NATURAL AIR CHANGE RATE 0.071 Design Temperature Difference Tin °C Tout °C ΔT °C ΔT °F Winter DTDh 22 -21 43 78 Summer DTDc 24 31 7 13 6.2.6 Sensible Gain due to Air Leakage $HG_{Salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ $0.071 \times 278.32 \times 7 ^{\circ}C \times 1.2 = 168 \text{ W}$ $= 573 \text{ Btu/h}$</th></td<>	Air Change & Delta T Data WINTER NATURAL AIR CHANGE RATE 0.227 SUMMER NATURAL AIR CHANGE RATE 0.071 Design Temperature Difference Tin °C Tout °C Δ T °C Δ T °F Winter DTDh 22 -21 43 78 Summer DTDc 24 31 7 13 6.2.6 Sensible Gain due to Air Leakage $HG_{Salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ $0.071 \times 278.32 \times 7 ^{\circ}C \times 1.2 = 168 \text{ W}$ $= 573 \text{ Btu/h}$
Level Floor Area (ft²) Floor Height (ft) Volume (ft³)	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Level Floor Area (ft²) Floor Height (ft) Volume (ft²) Bsmt 1078 10 10780 First 1078 10 10887.8 Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Total: 35,383.8 ft³ 35,383.8 ft³ Total: 1002.0 m³ 5.2.3.1 Heat Loss due to Air Leakage HLairb = LRairh × $\frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 278.32 x 43 °C x 1.2 = 3270 W = = 11158 Btu/h 5.2.3.2 Heat Loss due to Mechanical Ventilation HLvirb = PVC × DTD_h × 1.08 × (1 - E) 80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h 8 5.2.3.3 Calculation of Air Change Heat Loss for Each HLairre Air Leakage + Level Condu	SUMMER NATURAL AIR CHANGE RATE 0.071
Level Floor Area (ft²) Floor Height (ft) Volume (ft³) Bsmt 1078 10 10780 First 1078 10 10887.8 Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Total: 35,383.8 ft³ 35,383.8 ft³ Total: 1002.0 m³ 5.2.3.1 Heat Loss due to Air Leakage HLairb = LRairh × $\frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 278.32 x 43 °C x 1.2 = 3270 W = = 11158 Btu/h 5.2.3.2 Heat Loss due to Mechanical Ventilation HLvairb = PVC × DTD_h × 1.08 × (1 - E) 80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h 8 5.2.3.3 Calculation of Air Change Heat Loss for Each HLairr = Level Factor × HLairbv × {(HLagcr + H. Hunch HLairve Air Leakage + Level Condu	SUMMER NATURAL AIR CHANGE RATE 0.071
Bsmt 1078 10 10780 First 1078 10 10887.8 Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Fourth 0 9 0 Total: 35,383.8 ft³ 35,383.8 ft³ Total: 1002.0 m³ 1002.0 m³ **Property Of Section 100.** **First** **First** **Indication** **Indication** **First** **Indication** **Indication** **First** **Indication** **First** **Indication** **First** **Indication** **Indication** **First** **Indication** **First** **Indication** **Indication** **First** **Indication** **	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
First 1078 10 10887.8 Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Fourth 0 9 0 Total: 35,383.8 ft³ Total: 1002.0 m³ Second $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2 0.227 X 278.32 X 43 °C X 1.2 = 3270 W = = 11158 Btu/h = = 11158 Btu/h = 80 CFM X 78 °F X 1.08 X 0.25 = 1670 Btu/h 80 CFM S $	
Second 1524 9 13716 Third 0 9 0 Fourth 0 9 0 Total: 35,383.8 ft³ 1002.0 m³ 5.2.3.1 Heat Loss due to Air Leakage $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 3270 \text{ W} = 11158 \text{ Btu/h}$ $= 11158 \text{ Btu/h}$ $= 11158 \text{ Btu/h}$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ $= 80 \text{ CFM} \times 78 \text{ °F} \times 1.08 \times 0.25 = 1670 \text{ Btu/h}$ $= 5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airbv} \times HL_{ai$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Fourth 0 9 0 Total: 35,383.8 ft³ Total: 1002.0 m³	
	Summer DTDc 24 31 7 13 6.2.6 Sensible Gain due to Air Leakage $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$.071 x 278.32 x 7 °C x 1.2 = 168 W = 573 Btu/h
Total: 1002.0 m³ 5.2.3.1 Heat Loss due to Air Leakage $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 278.32 x 43 °C x 1.2 = 3270 W = =	$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ $0.071 \times 278.32 \times 7^{\circ}C \times 1.2 = 168 \text{ W}$ $= 573 \text{ Btu/h}$
	$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ $0.071 \times 278.32 \times 7^{\circ}C \times 1.2 = 168 \text{ W}$ $= 573 \text{ Btu/h}$
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 11158 \text{Btu/h}$ $5.2.3.2 \text{Heat Loss due to Mechanical Ventilation}$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ $80 \text{CFM} \times 78 \text{°F} \times 1.08 \times 0.25 = 1670 \text{Btu/h}}$ $5.2.3.3 \text{Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airve} \text{Air Leakage} + \text{Level Condu}\}$	$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ $0.071 \times 278.32 \times 7^{\circ}C \times 1.2 = 168 \text{ W}$ $= 573 \text{ Btu/h}$
0.227	.071 x 278.32 x 7 °C x 1.2 = 168 W = 573 Btu/h
0.227	.071 x 278.32 x 7 °C x 1.2 = 168 W = 573 Btu/h
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$.071 x 278.32 x 7 °C x 1.2 = 168 W = 573 Btu/h
=	= 573 Btu/h
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ 80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h 8 $5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airbv} + HL_{airbv}) \times \{(HL_{agcr} + HL_{airbv} + L_{airbv} + L_{a$	
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{ CFM} \qquad \times \qquad 78 \text{ °F} \qquad \times \qquad 1.08 \qquad \times \qquad 0.25 \qquad = \qquad \textbf{1670 Btu/h}$ $5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airbv} \times HL_{airbv$	6.2.7 Sensible heat Gain due to Ventilation
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{ CFM} \qquad \times \qquad 78 \text{ °F} \qquad \times \qquad 1.08 \qquad \times \qquad 0.25 \qquad = \qquad \textbf{1670 Btu/h}$ $5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{airbv} \times HL_{airbv$	
80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h 8 5.2.3.3 Calculation of Air Change Heat Loss for Each $HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{airve})\}$	5.2.7 Sensible near dain due to ventilation
80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h 8 5.2.3.3 Calculation of Air Change Heat Loss for Each $HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{airve})\}$	$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$
5.2.3.3 Calculation of Air Change Heat Loss for Each $HL_{airr} = Level\ Factor\ imes\ HL_{airbv}\ imes \{(HL_{agcr}+H_{agcr}+H_{airbv})\}$	
$HL_{airr} = Level\ Factor\ imes\ HL_{airbv}\ imes \{ (HL_{agcr} + HL_{airbv}) \}$	CFM x 13 °F x 1.08 x 0.25 = 275 Btu/ F
$HL_{airr} = Level\ Factor\ imes\ HL_{airbv}\ imes \{(HL_{agcr}+HL_{agcr}+HL_{airbv})\}$	
HLairve Air Leakage + Level Condu	oom (Floor Multiplier Section)
HLairve Air Leakage + Level Condu	$(HL_{root}) \div (HL_{root}) \div (HL_{root})$
Level Collud	bycr) · (·························)
Level Level Factor (LF) Ventilation Heat Loss	rive Heat Air Leakage Heat Loss Multiplier (LF x
Loss: (H	
(Btu/h)	CITY OF RICHMOND HILL
1 0.5	DI III DINC DIVICION
2 0.3 10,4	0.322
3 0.2 11,158 13,8	
4 0 0	
5 0 0	0.000 08/11/2021
*HLairbv = Air leakage heat loss + ventilation heat loss	00/4/10004
*For a balanced or supply only ventilation system HLairve = 0	0.000 08/11/2021
	0.000 08/11/2021



Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca



HEAT LOSS AND GAIN SUMMARY SHEET

		116/41	LOSS AILD C	ANT SOMMAN SITEET					
MODEL:	38-13				BUILDER: ROYAL PINE HOMES				
SFQT:	2602	LO#	91282	SITE: CENTREFIELD (WE	ST GORMLEY)				
DESIGN AS	SUMPTIONS								
HEATING			°F	COOLING	°F				
_	DESIGN TEMP.		-6	OUTDOOR DESIGN TEMP.	88				
	ESIGN TEMP.		-0 72	INDOOR DESIGN TEMP. (MAX 75°F)	75				
INDOON DI	ESIGIV FEIVII .		,,,	INDOOR BESIGN TENT : (NVX 75 T)	, ,				
BUILDING	DATA								
A = T A CU IA 45			D.E.T.A.GU.E.D.	# 05 650 DIES (DAGENAENT)	•				
ATTACHME	:NI:		DETACHED	# OF STORIES (+BASEMENT):	3				
FRONT FAC	CES:		EAST	ASSUMED (Y/N):	Υ				
			_,	(1/13/	•				
AIR CHANG	SES PER HOUR:		2.50	ASSUMED (Y/N):	Υ				
AIR TIGHTN	NESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ				
WIND EXPO	OCLIDE:		SHELTERED	ASSUMED (Y/N):	Υ				
WIND EXP	JOUNE.	•	SHELIERED	ASSOIVIED (T/IN).	1				
HOUSE VO	LUME (ft³):		35383.8	ASSUMED (Y/N):	Υ				
	, ,			, ,					
INTERNAL S	SHADING:	BLINDS	/CURTAINS	ASSUMED OCCUPANTS:	5				
INTERIOR L	IGHTING LOAD (Btu/h	n/ft²):	1.45	DC BRUSHLESS MOTOR (Y/N):	Υ				
EOI INDATI	ON CONFIGURATION		BCIN 1	DEPTH BELOW GRADE:	7.01				
TOUNDATI	ON CONFIGURATION		DCIN_I	DEFIN BELOW GRADE.	7.010				
LENGTH:	53.0 ft	WIDTH:	31.0 ft	EXPOSED PERIMETER:	168.0 ft				

2012 OBC - COMPLIANCE PACKAGE			
		Compliance	Package
Component		SB-12 PERF	ORMANCE
		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	18.50
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	CITY OF RIC	10 L	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	BUILDING		11.13
Windows and Sliding Glass Doors Maximum U-Value	BUILDING	1.6	-
Skylights Maximum U-Value	08/11	/275/2	-
Space Heating Equipment Minimum AFUE	00/11	0.96	-
HRV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF	REC	TE=94%	-
	Per:dani	elle.devitt_	
INDIVIDUAL BCIN: 19669	met + 1	00/1	
MICHAEL O'ROURKE	Millebard (founde.	



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

W	eather Static	on Description
Province:	Ontario	
Region:	Richmond H	Hill
	Site Des	cription
Soil Conductivity:	Normal con	ductivity: dry sand, loam, clay
Water Table:	Normal (7-1	L0 m, 23-33 ft)
	Foundation I	Dimensions
Floor Length (m):	16.2	
Floor Width (m):	9.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	Insulation Configuration
Window Area (m²):	1.1	
Door Area (m²):	1.9	
	Radian	t Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Design N	Vionths
Heating Month	1	
	Foundation	
Heating Load (Watts):		1672 08/11/2021
TYPE: 38-13		RECEIVED
LO# 91282		Per: danielle.devitt



Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weath	er 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):	6.74	
Buil	ding Configuration	
Type: Number of Stories: Foundation: House Volume (m ³):	Detach EPRESSURIZATION TEST REC Two BEFORE FINAL OCCUPANCY ST Full TARGETTED ACH 1002.0 2.5 ach	QUIRED TAGE TO MEET
· ·	eakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)	
Custom BDT Data:	ELA @ 10 Pa. 935.3	cm²
	2.50 ACH @ 5	O Pa
Mechanical Ventilation (L/s):	Total Supply Total Exhaust	
	37.5 37.5	
	Flue Size	
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natu	ral Infiltration Rates	
Heating Air Leakage Rate (A	\CH/H): 0.227	
Cooling Air Leakage Rate (A	CH/H): 0.07 LUILDING DIVISION	.L

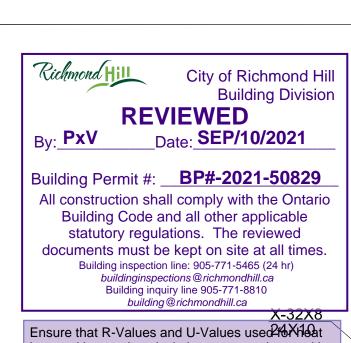
TYPE: 38-13

DEPRESSURIZATION TEST REQUIRED
BEFORE FINAL OCCUPANCY STAGE TO MEET
TARGETTED ACH

2.5 ACH

08/11/2021

RECEIVED
Per:____danielle.devitt



Ensure that R-Values and U-Values used to the total loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance:

BETTER THAN CODE/AIR TIGHTNESS TEST and the values used for architectural design.

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

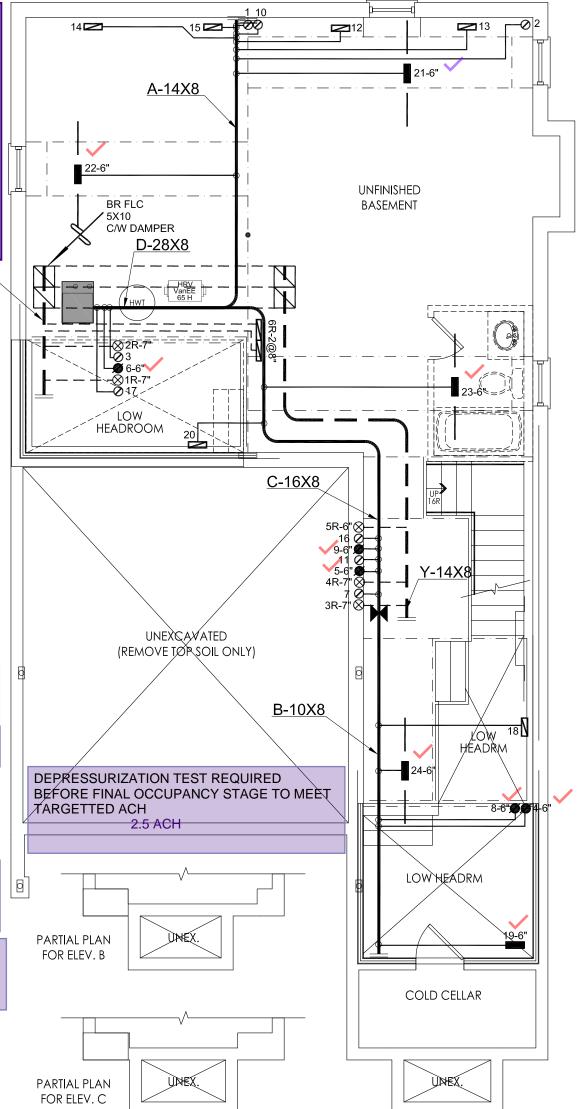
HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

For simplified HRV/ERV installation, with stale air and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV Manufacturer.

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.



BASEMENT FLOOR PLAN ELEV 'A'. 'B' & 'C

I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.25 OF THE
BUILDING CODE.

Michael O'Rourke, BC/Nr. 19669
HIVAC DESIGNS LTD.

SB-12 PERFORMANCE

	HVAC LEGEND									
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

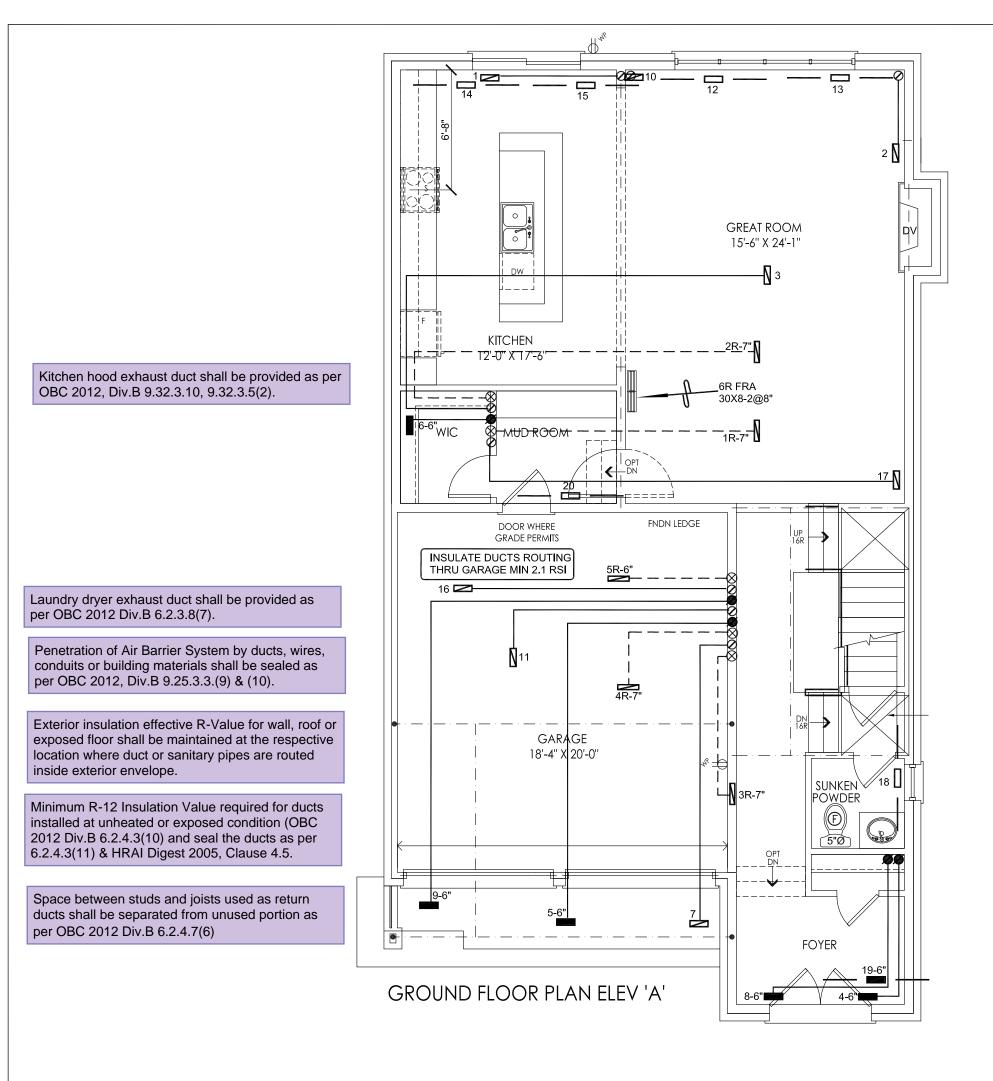
HVA DESIGNS LTD.

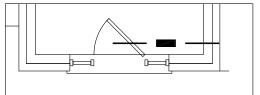
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

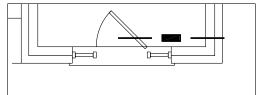
Specializing in Residential Mechanical Design Services
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper.
Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

	HEAT LO	SS 46110	BTU/H	# OF RUNS	S/Á	R/A	FANS	Sheet Title		
		IN I T DATA	4	3RD FLOOR				В	ASE	MENT
	MAKE C	ARRIER		2ND FLOOR	213 (<u>_</u> 5=	\3 F	:D	HEA	TING
	MODEL 59TN	6B-060-1	4V	1STELOOR	da	niell	e2de	vitt	LAY	DUT
	INPUT	60	MBTU/H	BASEMENT	4_	1	0_	Date	JUNE	/2021
_	OUTPUT	50	MBTU/H	ALL S/A DIFFU:	SERS	4 "x10		Scale	3/16" =	= 1'-0"
	00011110	58		UNLESS NOTE					BCIN#	19669
,	COOLING	3.0	TONS	ON LAYOUT. A UNLESS NOTE						10000
	FAN SPEED	1115	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.	NDER	CUT	IOL	LO#	# 9	1282

38-13 2602 sqft







GROUND FLOOR PLAN ELEV 'B' GROUND FLOOR PLAN ELEV 'C'

			3.							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u></u>	30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

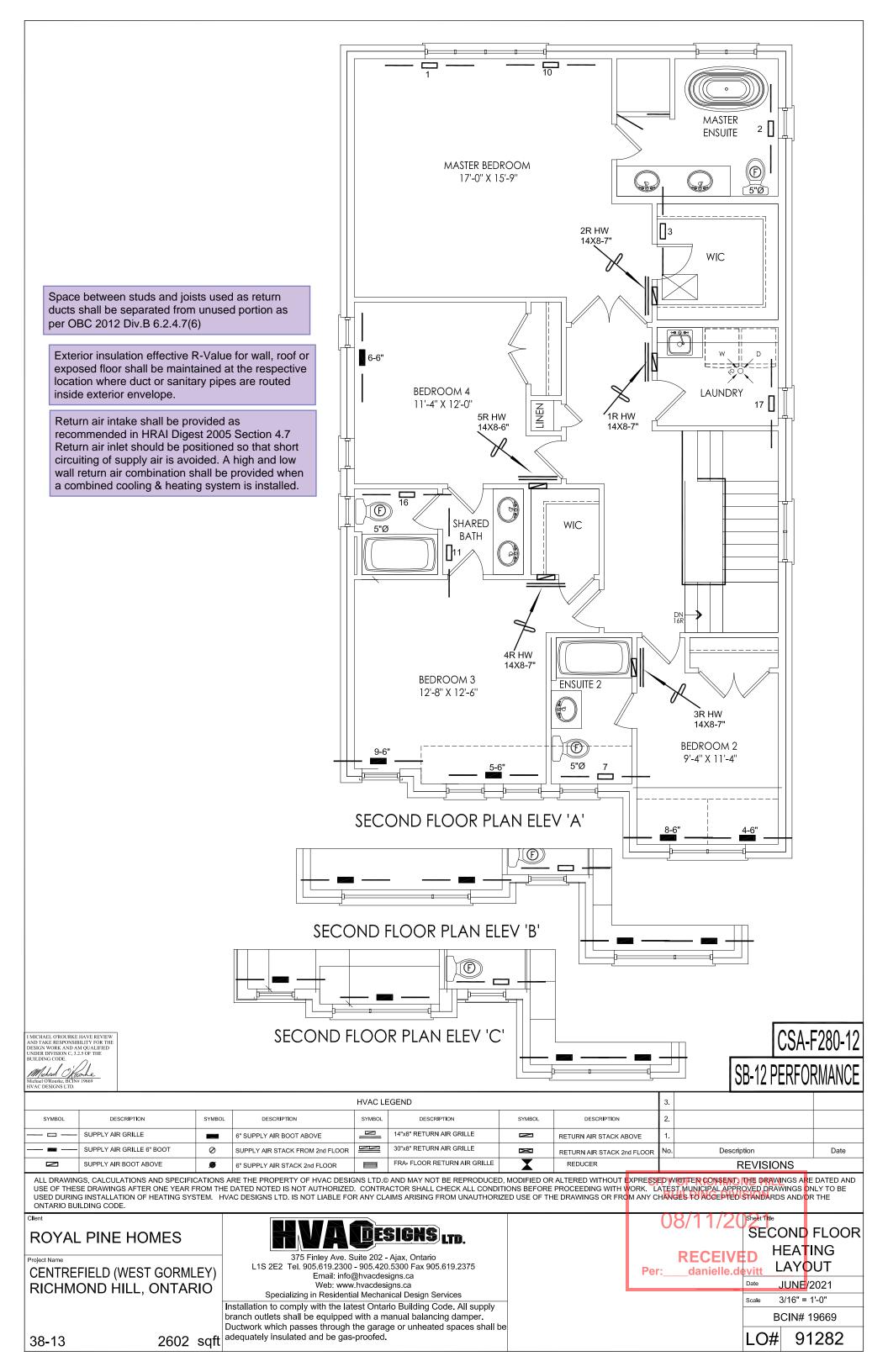
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

FIRST FLOOR **HEATING** RECEIV LAYOUT _danielle.d JUNE/2021 3/16" = 1'-0" BCIN# 19669 91282 LO#

38-13 2602 sqft



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 desc	printion	
Municipality RICHMOND HILL	Postal code	Plan number/ other desc	эприон	
B. Individual who reviews and ta	kaa raananaihilitu f	ior decign activities		
Name	ikes responsibility i	Firm		
MICHAEL O'ROURKE		HVAC DESIGNS LTD.		
Street address		•	Unit no.	Lot/con.
375 FINLEY AVE		_	202	N/A
Municipality AJAX	Postal code	Province ONTARIO	E-mail	
Telephone number	Fax number	UNTARIO	info@hvacdesigns.ca Cell number	
(905) 619-2300	(905) 619-2375		()	
C. Design activities undertaken	` '	fied in Section B. [Build	l` ding Code Table 3.5.2	2.1 OF Division C]
☐ House ☐ Small Buildings		C – House ng Services		g Structural ng – House
☐ Large Buildings		tion, Lighting and Pov		ng – All Buildings
☐ Complex Buildings	☐ Fire P		☐ On-site	Sewage Systems
Description of designer's work		Model:	38-13	
HEAT LOSS / GAIN CALCULATIONS DUCT SIZING			CHADWICK OPT GROUND	
RESIDENTIAL MECHANICAL VENTIL	ATION DESIGN SUM	MARY Dualock		ADAM EV)
RESIDENTIAL SYSTEM DESIGN per	CSA-F280-12	Project:	CENTREFIELD (WEST GO	RIVILEY)
D. Declaration of Designer				
MICHAEL O'ROURK	Œ		declare that (choos	se one as appropriate):
	(print name)			
☐ I review and take responsib Division C, of the Building C classes/categories.				4.of propriate
Individual BCIN: Firm BCIN:			Richmo	City of Richmond Hil
I review and take responsibe designer I review and take responsible designer I review and take review and take responsible designer I review and take review	ility for the design and on 3.2.5.of Di	am qualified in the appropi ion C, of the Building Code	iate category as PT V	Building Division AC REVIEWED
Individual BCIN: Basis for exemp	19669 tion from registration a	nd qualification:	O.B.C SENTENCE	PXV
☐ The design work is exempt Basis for exemption from re	from the registra	ation and qualification requi		····
I certify that:				
1. The information contain		dule is true to the best of m		
		-	Michael Ox	21.
June 21, 2021				
Date			Signa CITY OF	ature of Designer
			BUIL	DING DIVISION
NOTE: 1. For the purposes of this form, "individuand all other persons who are exempt from	qualification under Subsec	ctions 3.2.4. and 3.2.5. of Divi	sion C.	
Schedule 1 is not required to be compl Ontario Association of Architects. Schedule authorization, issued by the Association of I	1 is also not required to b	e completed by a holder of a l	icense to practise, a limited	license to practise, or a certificate of
Арр	lication for a Permit C	Construct or Demolish – I	Effective January 1, 201	5



SITE NAME:					MLEY)				OPT GR	DUND								DATE:								IANGE RATE 0.227			S ΔT °F. 78		CSA-F280-1
BUILDER:	ROYAL	PINE F	HOMES					TYPE:	38-13					GFA:	2602			LO#						R NATUR	AL AIR CH	IANGE RATE 0.071			N ΔT °F. 13 S	B-12 PE	RFORMANC
ROOM USE	ı			MBR			ENS			WIC		- 1	BED-2			BED-3			BED-4			ENS-2						S-BATH			
EXP. WALL	ı			35			22			8			36			27			13			6						6			
CLG. HT.	ı			9			9			9			9			9			9			9						9			
	FACTO	RS																													
GRS.WALL AREA	LOSS	GAIN		315			198			72			324			243			117			54						54			
GLAZING	1			LOSS	GAIN		LOSS	GAIN		oss (GAIN		oss	GAIN		LOSS	GAIN			GAIN			GAIN					LOSS GAI	IN		
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	_	0	0	18	392	288	0	0	0				8	174 12			
			-		-		-	-		-	-	-		-	١	-					0						0				
EAST	21.8	41.6	37	806	1537	18	392	748	0	0	0	0	0	0	0	0	0	0	0	0		0	0				-				
SOUTH		24.9	0	0	0	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0 0			
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0			2161	64	1394	2659	0	0	0	15	327	623				0	0 0			
SKYLT.	35.8	101.2	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	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0 0			
NET EXPOSED WALL	4.2	0.7	278	1169	192	171	719	118	72	303	50	272	1144	188	179	753	124	99	416	68	39	164	27				46	193 32	2		
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0 0			
EXPOSED CLG	1.3	0.6	303	398	178	123	162	72	75	99	44	195	256	115	160	210	94	210	276	123	85	112	50				75	99 44	1		
NO ATTIC EXPOSED CLG		1.3	0	0	0	0	0	0	0	0	0	0	0	0	45	126	57	0	0	0	0	0	0				0	0 0			
EXPOSED FLOOR		-	0		0	1		0		-	0	0	0	-	205	535	88	95	-	41			37				75	196 32			
	۵.۷	0.4	U	0	U	0	0	U	0	0	U	U		0	205		00	95	248	41	85	222	31				/5		·		
BASEMENT/CRAWL HEAT LOSS	ı			0			0		l	0			0			0			0			0						0	1		
SLAB ON GRADE HEAT LOSS	ı			0			0		l	0			0			0			0			0						0	1		
SUBTOTAL HT LOSS	ı			2373			1469			401			2533			3019			1332			824						662			
SUB TOTAL HT GAIN	ı				1908			1163			94			2464			3022			520			737					23	6		
LEVEL FACTOR / MULTIPLIER	ı		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16					0.20	0.16			
AIR CHANGE HEAT LOSS	ı			382			237			65			408			486			215			133						107			
AIR CHANGE HEAT GAIN	ı				85			52		••	4			110			135			23			33					11			
DUCT LOSS	ı			0	00			32			*		0	110		054	133		155	23		96	33					77			
	ı			U			0	_		0	_		U			351			155			96									
DUCT GAIN	ı				0			0			0			0			399			138			77					25			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0				0	0			
HEAT GAIN APPLIANCES/LIGHTS	ı				593			0			0			593			593			593			0					0			
TOTAL HT LOSS BTU/H	ı			2756			1706			466			2941			3856			1702			1053						846			
TOTAL HT GAIN x 1.3 BTU/H	ı				3986			1579			128			4428			5705			1968			1101					35	2		
																													l.		
ROOM USE							GRT			T/BR						LAUN			PWD			FOY		М	UD						BAS
EXP. WALL	ı						53		· ·	54						14			10			35			21						168
CLG. HT.	ı						10			10						9			10			10			10						10
CLG. HI.	FACTO	D O					10			10						9			10			10		'	10						10
	_	ĸo																													
GRS.WALL AREA																								_							
	LUJJ	GAIN					535			545						126			101			354			12						1176
GLAZING		GAIN					535 LOSS	GAIN			GAIN					126 LOSS	GAIN		101 LOSS	GAIN			GAIN		12 DSS GAIN						LOSS GAIR
GLAZING NORTH		16.0				0		GAIN 0	0		GAIN 0				0		GAIN 0	0		GAIN 0	0		GAIN 0	LC						3	
						0	LOSS			oss					0	LOSS			LOSS			LOSS		0 LC	SS GAIN					3	LOSS GAIR
NORTH	21.8 21.8	16.0					LOSS 0	0	0	oss 0	0				0	LOSS 0	0 0	0	LOSS 0	0	0	LOSS 0	0	0 0	OSS GAIN 0 0					_	LOSS GAIR 65 48 65 125
NORTH EAST SOUTH	21.8 21.8 21.8	16.0 41.6 24.9				0	0 0 0	0 0 0	0 0 10	0 0 0 218	0 0 249				0 32	0 0 697	0 0 797	0 0 9	LOSS 0 0	0 0 224	0 0 0	0 0 0	0 0 0	0 0 0	OSS GAIN 0 0 0 0 0 0					3	LOSS GAIR 65 48 65 125 131 149
NORTH EAST SOUTH WEST	21.8 21.8 21.8 21.8	16.0 41.6 24.9 41.6				0 0 60	0 0 0 0 1307	0 0 0 2493	0 0 10 48	.OSS 0 0 218 1046	0 0 249 1994				0 32 0	0 0 697 0	0 0 797 0	0 0 9 0	0 0 0 196 0	0 0 224 0	0 0 0 22	0 0 0 0 479	0 0 0 914	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0					3 6 0	LOSS GAIR 65 48 65 125 131 149 0 0
NORTH EAST SOUTH WEST SKYLT.	21.8 21.8 21.8 21.8 35.8	16.0 41.6 24.9 41.6 101.2				0 0 60 0	0 0 0 1307 0	0 0 0 2493 0	0 0 10 48 0	.OSS 0 0 218 1046 0	0 0 249 1994 0				0 32 0	0 0 697 0	0 0 797 0	0 0 9 0	0 0 196 0	0 0 224 0	0 0 0 22 0	0 0 0 0 479 0	0 0 0 914 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0					3 6 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS	21.8 21.8 21.8 21.8 35.8 25.8	16.0 41.6 24.9 41.6 101.2 4.3				0 0 60 0	0 0 0 1307 0	0 0 0 2493 0	0 0 10 48 0	.OSS 0 0 218 1046 0	0 0 249 1994 0 0				0 32 0 0	0 0 697 0 0	0 0 797 0 0	0 9 0 0	0 0 196 0 0	0 0 224 0 0	0 0 0 22 0 40	0 0 0 479 0 1034	0 0 0 914 0 170	0 0 0 0 0 0 0 20 5	OSS GAIN 0					3 6 0 0 20	LOSS GAIR 65 48 65 125 131 149 0 0 0 0 517 85
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL	21.8 21.8 21.8 21.8 35.8 25.8 4.2	16.0 41.6 24.9 41.6 101.2 4.3 0.7				0 0 60 0 0 475	0 0 0 1307 0 0 1999	0 0 0 2493 0 0 329	0 0 10 48 0 0 487	.OSS 0 0 218 1046 0 0	0 0 249 1994 0 0 337				0 32 0 0 0 94	0 0 697 0 0 0 0 395	0 0 797 0 0 0	0 9 0 0 0 92	LOSS 0 0 196 0 0 0 387	0 0 224 0 0 0	0 0 22 0 40 292	0 0 0 479 0 1034 1226	0 0 914 0 170 202	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0					3 6 0 0 20 0	LOSS GAIR 65 48 65 125 131 149 0 0 0 0 517 85 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				0 0 60 0 0 475	LOSS 0 0 0 1307 0 0 1999 0	0 0 2493 0 0 329	0 0 10 48 0 0 487	.OSS 0 0 218 1046 0 0 2050	0 0 249 1994 0 0 337				0 32 0 0 0 94	0 0 697 0 0 0 395	0 0 797 0 0 0 65	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0	0 0 224 0 0 0 64	0 0 22 0 40 292 0	LOSS 0 0 0 479 0 1034 1226 0	0 0 914 0 170 202	0 0 0 0 0 0 20 5 192 8	OSS GAIN 0					3 6 0 0 20 0 504	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 1857 305
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL	21.8 21.8 21.8 21.8 35.8 25.8 4.2	16.0 41.6 24.9 41.6 101.2 4.3 0.7				0 0 60 0 0 475	0 0 0 1307 0 0 1999	0 0 0 2493 0 0 329	0 0 10 48 0 0 487	.OSS 0 0 218 1046 0 0	0 0 249 1994 0 0 337				0 32 0 0 0 94	0 0 697 0 0 0 0 395	0 0 797 0 0 0	0 9 0 0 0 92	LOSS 0 0 196 0 0 0 387	0 0 224 0 0 0	0 0 22 0 40 292	0 0 0 479 0 1034 1226	0 0 914 0 170 202	0 0 0 0 0 0 20 5 192 8	OSS GAIN 0					3 6 0 0 20 0	LOSS GAIR 65 48 65 125 131 149 0 0 0 0 517 85 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				0 0 60 0 0 475	LOSS 0 0 0 1307 0 0 1999 0	0 0 2493 0 0 329	0 0 10 48 0 0 487	.OSS 0 0 218 1046 0 0 2050	0 0 249 1994 0 0 337				0 32 0 0 0 94	0 0 697 0 0 0 395	0 0 797 0 0 0 65	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0	0 0 224 0 0 0 64	0 0 22 0 40 292 0	LOSS 0 0 0 479 0 1034 1226 0	0 0 914 0 170 202	0 0 0 0 0 0 20 5 192 8	OSS GAIN 0			Pic		3 6 0 0 20 0 504	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 1857 305
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				0 0 60 0 0 475 0	LOSS 0 0 0 1307 0 0 1999 0	0 0 2493 0 0 329 0	0 0 10 48 0 0 487 0	.OSS 0 0 218 1046 0 0 2050 0	0 0 249 1994 0 0 337 0				0 32 0 0 0 94 0	LOSS 0 0 697 0 0 0 395 0	0 0 797 0 0 0 65 0	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0	0 0 224 0 0 0 64 0	0 0 0 22 0 40 292 0	LOSS 0 0 0 479 0 1034 1226 0	0 0 914 0 170 202 0	0 0 0 0 0 0 20 5 192 8 0 0	OSS GAIN 0	CITY	OF	RICH	IMOND HIL	3 6 0 0 20 0 504	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 1857 305 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0	LOSS 0 0 1307 0 0 1999 0 0	0 0 2493 0 0 329 0	0 0 10 48 0 0 487 0	OSS 0 0 218 1046 0 0 2050 0 0	0 0 249 1994 0 0 337 0				0 32 0 0 0 94 0 110	LOSS 0 0 697 0 0 0 395 0 145	0 0 797 0 0 0 65 0 65	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0	0 0 224 0 0 0 64 0	0 0 0 22 0 40 292 0 0	LOSS 0 0 0 479 0 1034 1226 0 0	0 0 914 0 170 202 0 0	0 0 0 0 0 20 5 192 8 0 0	OSS GAIN 0					3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 0 1857 3055 0 0 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED GLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED LLOR EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0	LOSS 0 0 0 1307 0 0 1999 0 0 0	0 0 2493 0 0 329 0	0 0 10 48 0 0 487 0	.OSS 0 0 218 1046 0 0 2050 0 0 0	0 0 249 1994 0 0 337 0				0 32 0 0 0 94 0 110	LOSS 0 0 697 0 0 395 0 145 0 0	0 0 797 0 0 0 65 0 65	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0	0 0 224 0 0 0 64 0	0 0 0 22 0 40 292 0 0	LOSS 0 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	0 0 0 0 0 0 20 5 192 8 0 0	OSS GAIN 0 0 0 0 0 0 0 0 17 85 08 133 0 0 0 0 0 0 0 0				IMOND HIL DIVISION	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 1857 305 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0	LOSS 0 0 1307 0 1999 0 0 0 0 0	0 0 2493 0 0 329 0	0 0 10 48 0 0 487 0 0 0	.OSS 0 0 218 1046 0 0 2050 0 0 0 0	0 0 249 1994 0 0 337 0				0 32 0 0 0 94 0 110	LOSS 0 0 697 0 0 395 0 145 0 0	0 0 797 0 0 0 65 0 65	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 224 0 0 0 64 0	0 0 0 22 0 40 292 0 0	LOSS 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	0 0 0 0 0 0 20 5 192 8 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 17 85 08 133 0 0 0 0 0 0 0 0					3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 517 85 0 0 1857 305 0 0 0 0 5708
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0	LOSS 0 0 0 1307 0 0 1999 0 0 0	0 0 0 2493 0 0 329 0 0 0	0 0 10 48 0 0 487 0 0 0	.OSS 0 0 218 1046 0 0 2050 0 0 0 0 0 0 3313	0 0 249 1994 0 0 337 0 0				0 32 0 0 0 94 0 110	LOSS 0 0 697 0 0 395 0 145 0 0	0 0 797 0 0 0 65 0 65 0	0 9 0 0 0 92 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 0	0 0 224 0 0 0 64 0 0	0 0 0 22 0 40 292 0 0	LOSS 0 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	0 0 0 0 0 0 20 5 192 8 0 0	OSS GAIN O	В	JIL	DING	DIVISION	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 0 517 85 0 0 1857 305 0 0 0 0 5708
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED ELG EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR GASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 3306	0 0 2493 0 0 329 0	0 0 10 48 0 0 487 0 0	.OSS	0 0 249 1994 0 0 337 0				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237	0 0 797 0 0 0 65 0 65	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 583	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 2739	0 0 914 0 170 202 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 17 85 08 133 0	В	JIL	DING	DIVISION	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 517 85 0 0 0 1857 305 0 0 0 0 0 0 5708 8342
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 1307 0 0 1999 0 0 0 0 0 3306	0 0 0 2493 0 0 329 0 0 0	0 0 10 48 0 0 487 0 0 0	.OSS 0 0 218 1046 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0				0 32 0 0 0 94 0 110	LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16	0 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 583	0 0 224 0 0 0 64 0 0	0 0 0 22 0 40 292 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 2739	0 0 914 0 170 202 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN O	В	JIL	DING		3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 125 131 1449 0 0 0 517 85 0 0 0 1857 305 0 0 0 0 5708 8342 712
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED ELG EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR GASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 3306	0 0 0 2493 0 0 329 0 0 0	0 0 10 48 0 0 487 0 0	.OSS	0 0 249 1994 0 0 337 0 0				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237	0 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 583	0 0 224 0 0 0 64 0 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 2739	0 0 914 0 170 202 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 17 85 08 133 0	В	JIL	DING	DIVISION	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 517 85 0 0 0 1857 305 0 0 0 0 0 0 5708 8342
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 1307 0 0 1999 0 0 0 0 0 3306	0 0 0 2493 0 0 329 0 0 0	0 0 10 48 0 0 487 0 0	.OSS 0 0 218 1046 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0				0 32 0 0 0 94 0 110 0	LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16	0 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 583	0 0 224 0 0 0 64 0 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 2739	0 0 914 0 170 202 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN O	В	JIL	DING	DIVISION	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 125 131 1449 0 0 0 517 85 0 0 0 1857 305 0 0 0 0 5708 8342 712
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG SASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 1307 0 0 1999 0 0 0 0 0 3306	0 0 2493 0 0 329 0 0 0	0 0 10 48 0 0 487 0 0	.OSS 0 0 218 1046 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0				0 32 0 0 0 94 0 110 0	LOSS 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16	0 0 797 0 0 0 65 0 65 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 387 0 0 0 0 583 0.30 173	0 0 224 0 0 64 0 0 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 2739	0 0 914 0 170 202 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN O	В)ILI 8/	DING '11/	2021	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 125 0 0 0 1857 305 0 0 0 1857 30 0 0 0 5708 8342 712 0.67 5579
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 0 3306 0.30 982	0 0 0 2493 0 0 329 0 0 0 0	0 0 10 48 0 0 487 0 0	OSS 0 0 0 218 1046 0 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0 2581				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237 0.16 199	0 0 797 0 0 0 65 0 65 0 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 0 583	0 0 2224 0 0 0 64 0 0 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 0 2739 0.30 814	0 0 914 0 170 202 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0	В)ILI 8/	DING '11/	2021	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 125 131 149 0 0 0 517 85 0 0 0 1857 305 0 0 0 5708 8342 712 0.67 5579 32
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED CLG SASEMENT/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	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 0 0 0 0 475 0 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 0 3306 0.30 982	0 0 0 2493 0 0 329 0 0 0 0	0 0 10 48 0 0 487 0 0 0 0	OSS 0 0 0 218 1046 0 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0 2581				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237 0.16 199	0 0 797 0 0 0 65 0 65 0 0	0 9 0 0 0 92 0 0 0	LOSS 0 0 196 0 0 387 0 0 0 0 583 0.30 173	0 0 2224 0 0 0 64 0 0 0	0 0 0 222 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 0 2739 0.30 814	0 0 0 914 0 170 202 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 17 85 08 133 0 0 0 0 0 0 0 0 0 0 0 0 0 1 325 218 330 94 10 0 0	0	JILI 8/ RI	DING 111/ ECE	2021	3 6 0 0 20 0 504 0 0	LOSS GAIN 65 48 65 125 125 131 1449 0 0 0 517 85 0 0 0 1857 305 0 0 0 5708 8342 712 0.67 5579 32 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED ESMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG SASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 475 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 0 3306 0.30 982	0 0 0 2493 0 0 329 0 0 0 0 0	0 0 10 48 0 0 487 0 0	OSS 0 0 0 218 1046 0 0 0 2050 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0 2581				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237 0.16 199	0 0 797 0 0 0 65 0 65 0 0	0 0 9 0 0 0 92 0 0	LOSS 0 0 196 0 0 387 0 0 0 0 583 0.30 173	0 0 2224 0 0 0 64 0 0 0 0	0 0 22 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 0 2739 0.30 814	0 0 0 914 0 170 202 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 17 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В	JILI 8/ RI	DING 111/ ECE	2021	3 6 0 0 20 0 504 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 517 85 0 0 0 1857 305 0 0 0 5708 8342 712 0.67 5579 32 0 0 0 0
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED SIMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN APPLIANCES/LIGHTS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 0 0 0 0 475 0 0 0	LOSS 0 0 0 13307 0 0 1999 0 0 0 0 0 3306 0.30 982 0	0 0 0 2493 0 0 329 0 0 0 0	0 0 10 48 0 0 487 0 0 0 0	OSS 0 0 218 1046 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0 2581				0 32 0 0 0 94 0 110 0	LOSS 0 0 0 697 0 0 0 395 0 145 0 0 0 1237 0.16 199 0	0 0 797 0 0 0 65 0 65 0 0	0 9 0 0 0 92 0 0 0	LOSS 0 0 196 0 0 0 387 0 0 0 0 583 0.30 173 0	0 0 2224 0 0 0 64 0 0 0	0 0 0 222 0 40 292 0 0 0	LOSS 0 0 0 0 479 0 1034 1226 0 0 0 0 2739 0.30 814 0	0 0 0 914 0 170 202 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	JILI 8/ RI	DING 111/ ECE	2021	3 6 0 0 20 0 504 0 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 1517 85 0 0 0 1857 305 0 0 0 0 5708 8342 712 0.67 5579 32 0 0 0 0 0 0 593
NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED ESMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG SASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 0 0 0 0 475 0 0 0	LOSS 0 0 0 1307 0 0 1999 0 0 0 0 0 0 3306 0.30 982	0 0 0 2493 0 0 329 0 0 0 0 0	0 0 10 48 0 0 487 0 0 0 0	OSS 0 0 218 1046 0 0 22050 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 249 1994 0 0 337 0 0 0 2581				0 32 0 0 0 94 0 110 0	LOSS 0 697 0 0 395 0 145 0 0 1237 0.16 199	0 0 797 0 0 0 65 0 65 0 0	0 9 0 0 0 92 0 0 0	LOSS 0 0 196 0 0 387 0 0 0 0 583 0.30 173	0 0 2224 0 0 0 64 0 0 0 0	0 0 0 222 0 40 292 0 0 0	LOSS 0 0 479 0 1034 1226 0 0 0 0 2739 0.30 814	0 0 0 914 0 170 202 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 17 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	JILI 8/ RI	DING 111/ ECE	2021	3 6 0 0 20 0 504 0 0	LOSS GAIN 65 48 65 125 131 149 0 0 0 517 85 0 0 0 1857 305 0 0 0 5708 8342 712 0.67 5579 32 0 0 0 0

TOTAL HEAT GAIN BTU/H:

35371

TONS: 2.95

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 45295

TOTAL COMBINED HEAT LOSS BTU/H: 46965

Mehal Oxombe.



HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM RUN COUNT S/A R/A All S/A diffusers 4"x10" uni All S/A runs 5"Ø unless not 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	1115 45,295 24.62 4th 0 0 ess note	3rd 0 0 0 d otherwings on large 1.58 1.71 42 1.58 50 0.17 54 210 264	COC TOTAL HIR FLOW II 13 5 see on lay ayout. 3 WIC 0.47 11 0.17 46 130 176	MES LLING CFM IEAT GAIN RATE CFM 1st 7 1 0out. 4 BED-2 1.47 36 2.21 70 0.17 73 200 273	1115 35,097 31.77 Bas 4 1 1 5 BED-3 1.93 47 2.85 91 0.16 67 160 227	6 BED-4 1.70 42 1.97 63 0.17 24 120	ple max min adju 7 ENS-2 1.05 26 1.10 35 0.17 60 150 210	furn a/c coil vailable for s/a dif pusted pre 8 BED-2 1.47 36 2.21 70 0.17 78 200 278	pressure nace filter pressure r s/a & r/a essure s/a essure s/a BED-3 1.93 47 2.85 91 0.16 69 180 249	0.6 0.05 0.2 0.35 0.18	11 S-BATH 0.42 10 0.18 6 0.17 55 190 245	grille preusted pre 12 GRT 2.14 53 2.30 73 0.17 30 140 170	DATE: pressure sss. Loss ssure r/a 13 GRT 2.14 53 2.30 73 0.17 37 150 187	0.17 0.02 0.15 14 KT/BR 2.15 53 2.14 68 0.17 32 150 182	2.15 53 2.14 68 0.17 26 120 146	16 S-BATH 0.42 10 0.18 6 0.17 54 200 254	17 LAUN 1.44 35 2.03 64 0.17 45 160 205	*** *** *** *** *** *** ** ** ** ** **	930 1050 1115 1245 1520 19 FOY 3.55 87 1.75 55 0.16 60 150 210	20 MUD 1.72 42 1.07 34 0.17 21 160 181	DESI EMPERAT 21 BAS 3.48 86 0.43 14 0.16 31 160 191	22 BAS 3.48 86 0.43 14 0.16 25 170 195	60,000 58,000 1115 6 "E.S.P. 48 23 BAS 3,48 86 0,43 14 0,16 25 160 185	- °F 24 BAS 3.48 86 0.43 14 0.16 43 160 203
ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VELOCITY (ft/min) COOLING VELOCITY (ft/min) OUTLET GRILL SIZE TRUNK RUN # ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COLING 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	0.1 5 250 463 3X10 A	0.07 5 308 367 3X10 A	0.1 4 126 46 3X10 D	0.06 6 184 357 4X10 B	0.07 6 240 464 4X10 C	0.12 6 214 321 4X10 D	0.08 4 298 402 3X10 C	0.06 6 184 357 4X10 B	0.07 6 240 464 4X10 C	0.1 5 250 463 3X10 A	0.07 4 115 69 3X10 C	0.1 5 389 536 3X10 A	0.09 5 389 536 3X10 A	0.09 5 389 499 3X10 A	0.12 5 389 499 3X10 A	0.07 4 115 69 3X10 C	0.08 5 257 470 3X10 D	0.08 4 218 138 3X10 B	0.08 6 4444 280 4X10 B	0.1 4 482 390 3X10 C	0.08 6 438 71 4X10 A	0.08 6 438 71 4X10 A	0.09 6 438 71 4X10 C	0.08 6 438 71 4X10 B
RETURN AIR # AIR VOLUME PLENUM PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LH ADJUSTED PRESSURE ROUND DUCT SIZE INLET GRILL SIZE		STATIC PRESS. 0.07 0.06 0.06 0.06 0.00 0.00 0.00 0.0	ROUND DUCT 11.1 9.2 11.9 15.7 0 0 0 120 0.15 78 250 328 0.05 7.1 8 X 14	RECT DUCT 14 10 16 28 0 0 0 120 0.15 75 245 320 0.05 7.1 8 X 14	x x x x x x x x 5 0 85 0.15 69 205 275 276 0.05 6.3 8 X	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	VELOCITY (ft/min) 635 475 599 716 0 0 0.15 1 0 0 1 14.80 0 0 X X 0	0 0 0.15 1 0 1 14.80 0 0 X	TRUNK G TRUNK H TRUNK I TRUNK J TRUNK K TRUNK L 0 0 0.15 1 0 1 14.80 0 0 X 0	TRUNK CFM 0 0 0 0 0 0 0 0 1 1 14.80 0 0 X 0	STATIC PRESS. 0.00 0.00 0.00 0.00 0.00 0.00 0.00	ROUND DUCT 0 0 0 0 0 0 0 0 0 0 0 15 1 0 0 0 14.80 0 0 0 X X 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 14.80 0 0 X 0 0 0	x x x x x x x 0 0.15 1 0 0 14.80 0 0 X	8 8 8 8 8 8 0 0.15 1 0 0 14.80 0 0 X	VELOCITY (ft/min) 0 0 0 0 0 0 0 170 0.15 14 135 149 0.10 6.8 8 X 14	TRUNK O TRUNK O TRUNK O TRUNK O TRUNK TRUNK O TRUNK U TRUNK V TRUNK V TRUNK V TRUNK Y TRUNK Y TRUNK Z DROP	0 0 0 0 0	STATIC PRESS. 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0	ROUND DUCT 0 0 0 0 0 1 R (CH DING 0 0 1 6.4 11 E 6.4 E daniel	200 32 14 1V ₂ 4E1	D IĞIL ION 2 X X X X Vitt_	8 8 8 8 8 8 8 8 8 8 8 8	VELOCITY (ft/min) 0 0 0 0 0 0 0 0 0 0 627 489 0 669



TYPE: 38-13 SITE NAME:

CENTREFIELD (WEST GORMLEY)

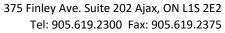
LO# 91283 OPT GROUND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VEN	ITILATION CAPACITY			9.32.3.5.
a)		Total Ventilation Capac	city	169.6	_	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. C	Capacity	79.5	_	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplementa	l Capacity	90.1	_	cfm
d) Solid Fuel (including fireplaces)						
e) No Combustion Appliances		PRINCIPAL EXHAUST	FAN CAPACITY			
		Model:	VANEE 65H	Location:	BSMT	
HEATING SYSTEM		<u>79.5</u> c			✓ HVI A	Approved
Forced Air Non Forced Air		PRINCIPAL EXHAUST	HEAT LOSS CALCULATION ΔT °F	FACTOR	%	LOSS
Electric Space Heat		79.5 CFM	X 78 F X	1.08	Х (0.25
Elocatio opace ricat		SUPPLEMENTAL FAN		ALLING CON		
HOUSE TYPE	9.32.1(2)	Location ENS	Model BY INSTALLING CONTRACTOR	cfm 50		ones 3.5
	(_)	ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
Type a) or b) appliance only, no solid fuel		S-BATH	BY INSTALLING CONTRACTOR	50		3.5
II Type I except with solid fuel (including fireplace	es)	PWD	BY INSTALLING CONTRACTOR	50	✓	3.5
	,	HEAT RECOVERY VE	NTILATOR		9	9.32.3.11.
III Any Type c) appliance		Model:	VANEE 65H			
IV Type I, or II with electric space heat		155	cfm high	64	CII	m low
		75	% Sensible Efficiency		✓ HVI A	Approved
Other: Type I, II or IV no forced air			@ 32 deg F (0 deg C)			
OVERTIME PERSON OPPOSITOR	0.1111111111111111111111111111111111111	LOCATION OF INSTA	LLATION			
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	Lot:		Concession		
1 Exhaust only/Forced Air System						
2 HRV with Ducting/Forced Air System		Township		Plan:		
✓ 3 HRV Simplified/connected to forced air system		Address				
4 HRV with Ducting/non forced air system		Roll #		Building Perm	nit#	
		BUILDER:	ROYAL PINE HOMES			
Part 6 Design		Name:				
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:				
Basement + Master Bedroom2 @ 21.2 cfm42.4	cfm	City:				
Other Bedrooms 3 @ 10.6 cfm 31.8	cfm	Telephone #:		Fax#:		
Kitchen & Bathrooms 5 @ 10.6 cfm 53	cfm	INSTALLING CONTRA	ACTOR			
Other Rooms 4 @ 10.6 cfm 42.4	_	Name:				
Table 9.32.3.A. TOTAL 169.6	-	Address:				
	-					
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)	City:	OITY OF BIOL	IMOND		7
1 Bedroom 31.8	cfm	Telephone #:	CITY OF RICH	HFax#ND I	HILL N	
		DESIGNER CERTIFIC		DIVISIO	IN	
2 Bedroom 47.7 3 Bedroom 63.6	cfm cfm	I hereby certify that this in accordance with the Name:	ventilation system has been on Ontario Building Code. HVAC Designs Ltd.	designed 2	1	
4 Bedroom 79.5	cfm	Signature:	_ md 1	1001		
5 Bedroom 95.4	cfm	HRAI#	Per: danie	1 (1201820 vitt		
5 Bediooni 99.4	OIIII	HIVAL#	<u>rei. danie</u>	1949V ITT		
TOTAL 79.5 cfm I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUA	AI IFIED IN THE ^D	Date:	THER DESIGNER" LINDER DIVISION C	June-21	II DING CODE	4
INDIVIDUAL BCIN: 19669 MICHAEL O'R		. NOT NIATE ONTEGORT AS AN 'U	DEGIGIAEN UNDER DIVISION U	, 5.2.5 OF THE BUI	LESING CODE.	



College State St					80-12 Residential Hea						
Volume Calculation				Form			aiculation)				
Second Floor Area (ft') Floor Height (ft) Volume (ft')	LO#: 91	1283			Builde	r: ROYAL PINE HOMES				Date:	2021-06-21
Floor Area (It*)			Volume Calculation	on				Air Change & De	ta T Data		
Floor Area (It*)					٦		MAINITED NA	TUDAL AID CHAN	CE DATE	0.227	7
Best 1078		Floor Aroa (ft²)	Floor Hoight (ft)	Volumo (ft³)							4
First 1078 10 10887.8 10 10887.8 10 10887.8 10 10387.8 10 10387.8 10 10347.4 9 13716 10147.5 10147.			. ,		-		SUIVIIVIER INF	TURAL AIR CHAN	IGERATE	0.071	_
Second 1524 9											
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $								Design T	emperature Diff	erence	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			9								ΔT °F
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Fourth	0	9	0			Winter DTDh	22	-21	43	78
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			Total:	35,383.8 ft ³			Summer DTDc	24	31	7	13
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 11158 \text{Btu/h}$ $= 11158 \text{Btu/h}$ $= 0.071 \times 278.32 \times 7^{\circ}\text{C} \times 1.2 = 168 \text{W}$ $= 11158 \text{Btu/h}$ $= 573 \text{Btu/h}$ $= 5275 \text{Btu/h}$ $= 573 \text{Btu/h}$ $= 52.3.3 \text{Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)}$ $= 11158 \text{Btu/h}$ $= 168 \text{W}$ $= 1168 \text{W}$ $= 168 \text{W}$ $= 168 $			Total:	1002.0 m ³							•
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 11158 \text{Btu/h}$		522	411-41				6.2.6.4	Samuella Calinata			
11158 Btu/h		5.2.3	.1 Heat Loss due to A	ir Leakage			6.2.6	sensible Gain due	e to Air Leakage		
11158 Btu/h			V_{h}					V_{h}			
11158 Btu/h		$HL_{airb} =$	$LR_{airh} \times \frac{b}{3.6} \times \frac{b}{3.6}$	$DTD_h \times 1.2$		Н	$IG_{salb} = LR_{airc} >$	$\langle \frac{1}{26} \times DTD_c \rangle$	× 1.2		
	0.227	x 278.32	x 43 °C	x 1.2	= 3270 W					=	168 W
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)}$ $HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $Level Level\ Factor (LF) HLaire Air Leakage Heat Loss (HL_{clevel}) HLairbv / HLlevel (Level Conductive Heat Loss: (HL_{clevel}))$ $1 0.5 (Btu/h) 8.342 0.669 (Btu/h) 8.342 0.669 (Btu/h) (Btu/h) 8.342 0.669 (Btu/h) $	0.22,	x <u> </u>		_ ^			x <u>270.02</u>	_ ^	_ ^	-	200 11
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{ CFM} \qquad \times \boxed{78 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{1670 \text{ Btu/h}} \qquad 80 \text{ CFM} \qquad \times \boxed{13 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{275 \text{ Btu/h}}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $Level \qquad Level \ Factor (LF) \qquad Hairve \ Air \ Leakage + Ventilation \ Heat \ Loss: (HL_{devel}) \qquad Hairve \ Hai$					= 11158 Btu/h	Ţ 				=	573 Btu/h
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{ CFM} \qquad \times \boxed{78 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{1670 \text{ Btu/h}} \qquad 80 \text{ CFM} \qquad \times \boxed{13 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{275 \text{ Btu/h}}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $Level \qquad Level \ Factor (LF) \qquad Hairve \ Air \ Leakage + Ventilation \ Heat \ Loss: (HL_{devel}) \qquad Hairve \ Hai$					<u> </u>	•					
80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agctevel} + HL_{bgclevel})\}$ Level Level Factor (LF) Hairve Air Leakage + Ventilation Heat Loss (Btu/h) 1 0.5 (Btu/h) 2 0.3 11,158 13,851 0.161 0 0 0.000		5.2.3.2 Hea	t Loss due to Mecha	nical Ventilation			6.2.7 Sei	nsible heat Gain	due to Ventilatio	n	
80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agctevel} + HL_{bgclevel})\}$ Level Level Factor (LF) Hairve Air Leakage + Ventilation Heat Loss (Btu/h) 1 0.5 (Btu/h) 2 0.3 11,158 13,851 0.161 0 0 0.000		***	DUG DWD	1.00 · · (1 - F)		,,,,	DUC D	TD100 .	. (1 - F)		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		$HL_{vairb} =$	$PVC \times DTD_h \times$	$1.08 \times (1-E)$		HL_1	$_{vairb} = PVC \times D$	$ID_h \times 1.08 \times$	(1-E)		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	00.6514	70.85	1.00	0.25	4670 Pt //	00.0584	42.85	1.00	0.25		275 Dt. /b
$HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $\begin{array}{ c c c c c c }\hline Level & Level\ Factor\ (LF) & HLairve\ Air\ Leakage\ + \\ Ventilation\ Heat\ Loss \\ (Btu/h) & S,342 & 0.669 \\\hline 2 & 0.3 & 11,266 & 0.297 \\\hline 3 & 0.2 & 11,158 & 13,851 & 0.161 \\\hline 4 & 0 & 0 & 0.000 \\\hline 5 & 0 & 0.000 \\\hline \end{array}$ $\begin{array}{ c c c c }\hline CITY\ OF\ RICHMOND\ HILL\\ BUILDING\ DIVISION \\\hline 0 & 0.000 \\\hline \hline 0 & 0.000 \\\hline \end{array}$ $\begin{array}{ c c c c c c c c c c c c c c c c c c c$	80 CFIVI	X /8 F	X 1.08	X 0.25	= 16/0 Btu/n	80 CFIVI	X 13 F	X 1.08	X 0.25	. =	2/5 Btu/n
$HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $\begin{array}{ c c c c c c }\hline Level & Level\ Factor\ (LF) & HLairve\ Air\ Leakage\ + \\ Ventilation\ Heat\ Loss \\ (Btu/h) & S,342 & 0.669 \\\hline 2 & 0.3 & 11,266 & 0.297 \\\hline 3 & 0.2 & 11,158 & 13,851 & 0.161 \\\hline 4 & 0 & 0 & 0.000 \\\hline 5 & 0 & 0.000 \\\hline \end{array}$ $\begin{array}{ c c c c }\hline CITY\ OF\ RICHMOND\ HILL\\ BUILDING\ DIVISION \\\hline 0 & 0.000 \\\hline \hline 0 & 0.000 \\\hline \end{array}$ $\begin{array}{ c c c c c c c c c c c c c c c c c c c$				E 2 2 2 Coloulo	tion of Air Changa Hoat I	loss for Each Doom /Fla	or Multiplior Costion				
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) CITY OF RICHMOND HILL BUILDING DIVISION 1 0.5 8,342 0.669 BUILDING DIVISION 3 0.2 11,158 13,851 0.161 0.000 4 0 0 0.000 0.000 0.8/11/2021 *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED				5.2.3.3 Calcula	tion of All Change Heat	LOSS TOT EACH ROOM (FIO	or waitiplier section)				
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) CITY OF RICHMOND HILL BUILDING DIVISION 1 0.5 8,342 0.669 BUILDING DIVISION 3 0.2 11,158 13,851 0.161 0.000 4 0 0 0.000 0.000 0.8/11/2021 *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED			HL_{ℓ}	$_{irr} = Level Fact$	$or \times HL_{airby} \times \{(H_{airby}) \times \{$	$(L_{agcr} + HL_{bgcr}) \div$	$(HL_{aaclevel} + HL$	haclevel)}			
Level Level Factor (LF) Ventilation Heat Loss (Btu/h) Loss: (HL _{clevel}) HLairbv / HLlevel) CITY OF RICHMOND HILL				1		uger byer)	1 agetevet	getevetys	7		
1 0.5 8,342 0.669 BUILDING DIVISION			Lovel	Lovel Factor (LF)	_	Level Conductive Heat	Air Leakage Heat Lo	ss Multiplier (LF)	d		
1 0.5 8,342 0.669 2 0.3 11,266 0.297 3 0.2 11,158 13,851 0.161 4 0 0 0.000 5 0 0 0.000 *HLairby = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED			Levei	Level Factor (LF)		Loss: (HL _{clevel})	HLairbv / I	-ILlevel)			
11,158 11,266 0.297 BUILDING DIVISION 13,851 0.161 0 0.000 0.000 0 0.000 11/2021			1	0.5	(Btu/h)	8 343	0.66	9	CITY OF F	RICHMOI	ND HILL
11,158 13,851 0.161 0 0 0.000 11,158 13,851 0.161 0 0.000 11,158 13,851 0.161 0 0.000 11,158 13,851 0.161 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 1,158 0 0 0.000 0 0.000 0 0.000 0					1				BUILDI	NG DIVI	SION
4 0 0 0.000 5 0 0.000 *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 **RECEIVED					11 158				†		
*HLairby = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED					11,130				00/4	1/00	121
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED					-				 UÖ/ I	1/20	<i> </i>
*For a balanced or supply only ventilation system HLairve = 0						<u> </u>	0.00	<u> </u>	_		
RECEIVED				J		· = 0				 ::-	
Per:danielle.devitt			rui a nalai	icea or supply only vi	entilation system fildifve	: - 0			RE	CEIVE	: U
									Per: da	nielle.de	evitt



Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca



HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	38-13		OPT GROUND	BUILDER: ROYAL PINE HOMES	
SFQT:	2602	LO#	91283	SITE: CENTREFIELD (WEST	Γ GORMLEY)
DESIGN A	SSUMPTIONS				
HEATING			°F	COOLING	°F
OUTDOO	R DESIGN TEMP.		-6	OUTDOOR DESIGN TEMP.	88
INDOOR I	NDOOR DESIGN TEMP.		72	INDOOR DESIGN TEMP. (MAX 75°F)	75
BUILDING	DATA				
ATTACHN	1ENT:		DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FA	ACES:		EAST	ASSUMED (Y/N):	Υ
AIR CHAN	IGES PER HOUR:		2.50	ASSUMED (Y/N):	Υ
AIR TIGHT	TNESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXI	POSURE:	9	SHELTERED	ASSUMED (Y/N):	Υ
HOUSE V	OLUME (ft³):		35383.8	ASSUMED (Y/N):	Υ
INTERNAI	L SHADING:	BLINDS,	/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR	LIGHTING LOAD (Btu/	h/ft²):	1.45	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDA	TION CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH:	53.0 ft	WIDTH:	31.0 ft	EXPOSED PERIMETER:	168.0 ft

2012 OBC - COMPLIANCE PACKAGE			
		Compliance	Package
Component		SB-12 PERF	ORMANCE
		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	18.50
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	CITY OF RIC	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	BUILDING		11.13
Windows and Sliding Glass Doors Maximum U-Value	BUILDING	1.6	-
Skylights Maximum U-Value	08/11	/) 2.6)	-
Space Heating Equipment Minimum AFUE	00/11	0.96	-
HRV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF	REC	TE=94%	-
	Per:dani	elle.devitt_	
INDIVIDUAL BCIN: 19669	and the	01/1	
MICHAEL O'ROURKE	Millebard C	Hounte.	



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Wea	ather Station	on Description
Province:	Ontario	
Region:	Richmond	
	Site Des	scription
Soil Conductivity:	Normal cor	nductivity: dry sand, loam, clay
Water Table:	Normal (7-	-10 m, 23-33 ft)
F	oundation	Dimensions
Floor Length (m):	16.2	
Floor Width (m):	9.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	Insulation Configuration
Window Area (m²):	1.1	
Door Area (m²):	1.9	
	Radiar	nt Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Design	Months
Heating Month	1	
	Foundati	ion Loads CITY OF RICHMOND HI
Heating Load (Watts):		16 72 08/11/2021
TYPE: 38-13 LO# 91283	O	PT GROUND RECEIVED Per:danielle.devitt



Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station	on Description							
Province:	Ontario							
Region:	Richmond Hill							
Weather Station Location:	Open flat terrain, grass							
Anemometer height (m):	10							
Local SI	hielding							
Building Site:	Suburban, forest							
Walls:	Heavy							
Flue:	Heavy							
Highest Ceiling Height (m):	6.74							
Building Co	onfiguration							
Туре:	Detached							
Number of Stories:	Two							
Foundation:	Full							
House Volume (m³):	1002.0							
Air Leakage,	/Ventilation							
Air Tightness Type:	Energy Star Detached (2.5 ACH)							
Custom BDT Data:	ELA @ 10 Pa. 935.3 cm ²							
	2.50 ACH @ 50 Pa							
Mechanical Ventilation (L/s):	Total Supply Total Exhaust							
	37.5 37.5							
Flue	e Size							
Flue #:	#1 #2 #3 #4							
Diameter (mm):	0 0 0 0							
Natural Infilt	tration Rates							
Heating Air Leakage Rate (ACH/H)	: 0.227							
Cooling Air Leakage Rate (ACH/H):	: 0.071 OF RICHMOND HILL UILDING DIVISION							

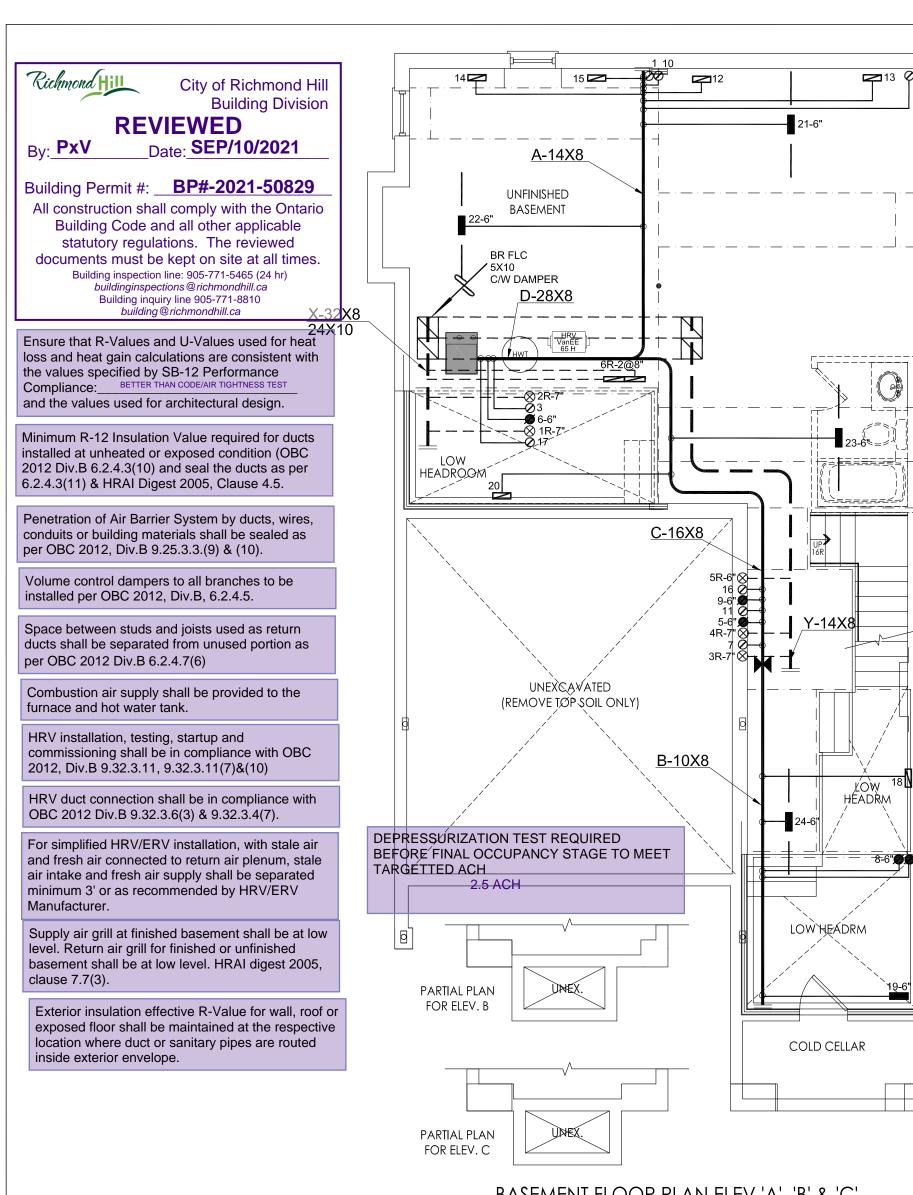
TYPE: 38-13

DEPRESSURIZATION TEST REPUBLIED
BEFORE FINAL OCCUPANCY STAGE TO MEET
TARGETTED ACH

2.5 ACH

OPT GROUND 1/2021

RECEIVED
Per: danielle.devitt



BASEMENT FLOOR PLAN FLEV 'A', 'B' & 'C'

Ø 2

		3.							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u> </u>	30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No. Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER	REVISIONS	•

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

OPT GROUND 38-13

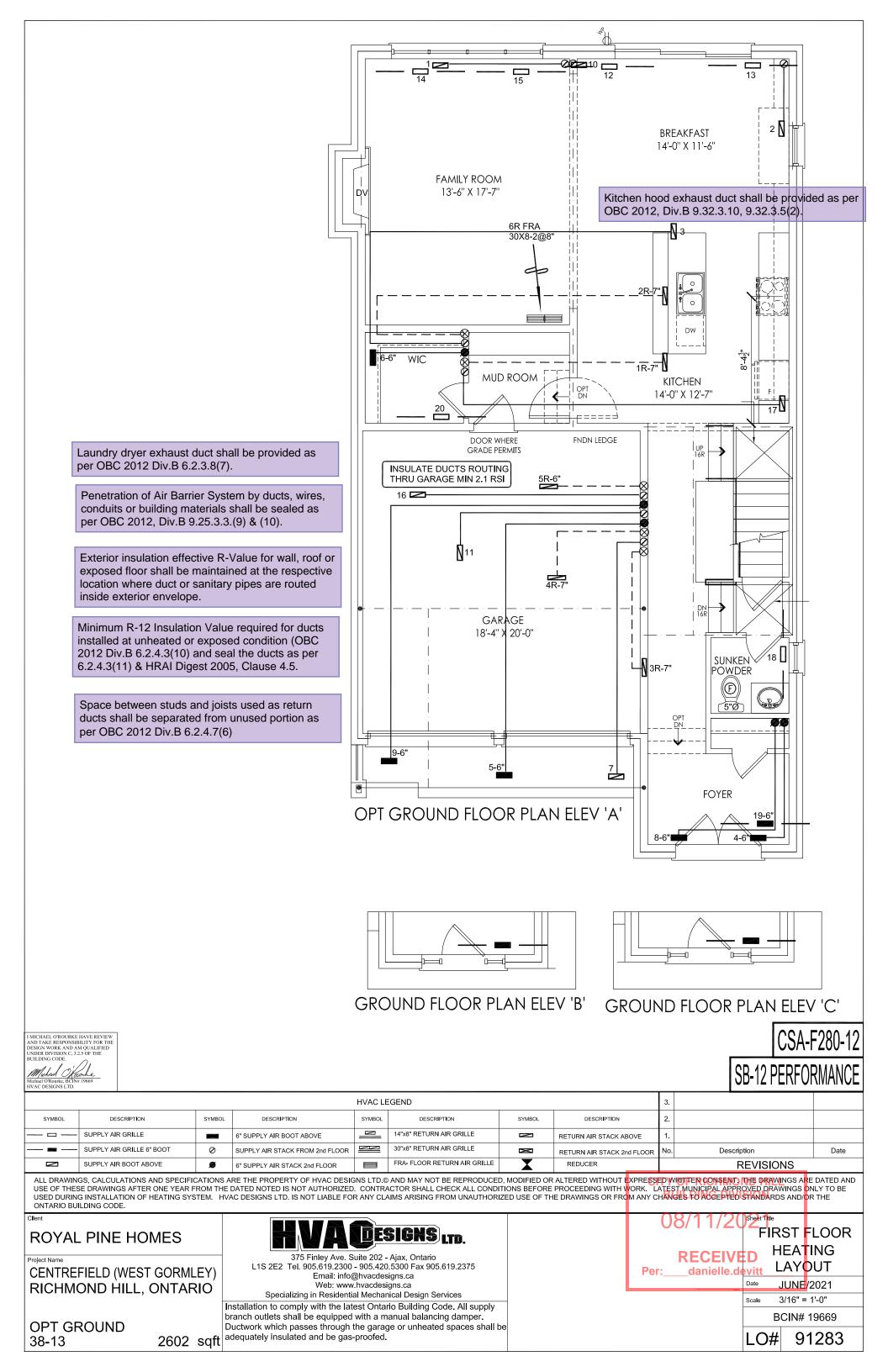
2602 sqft

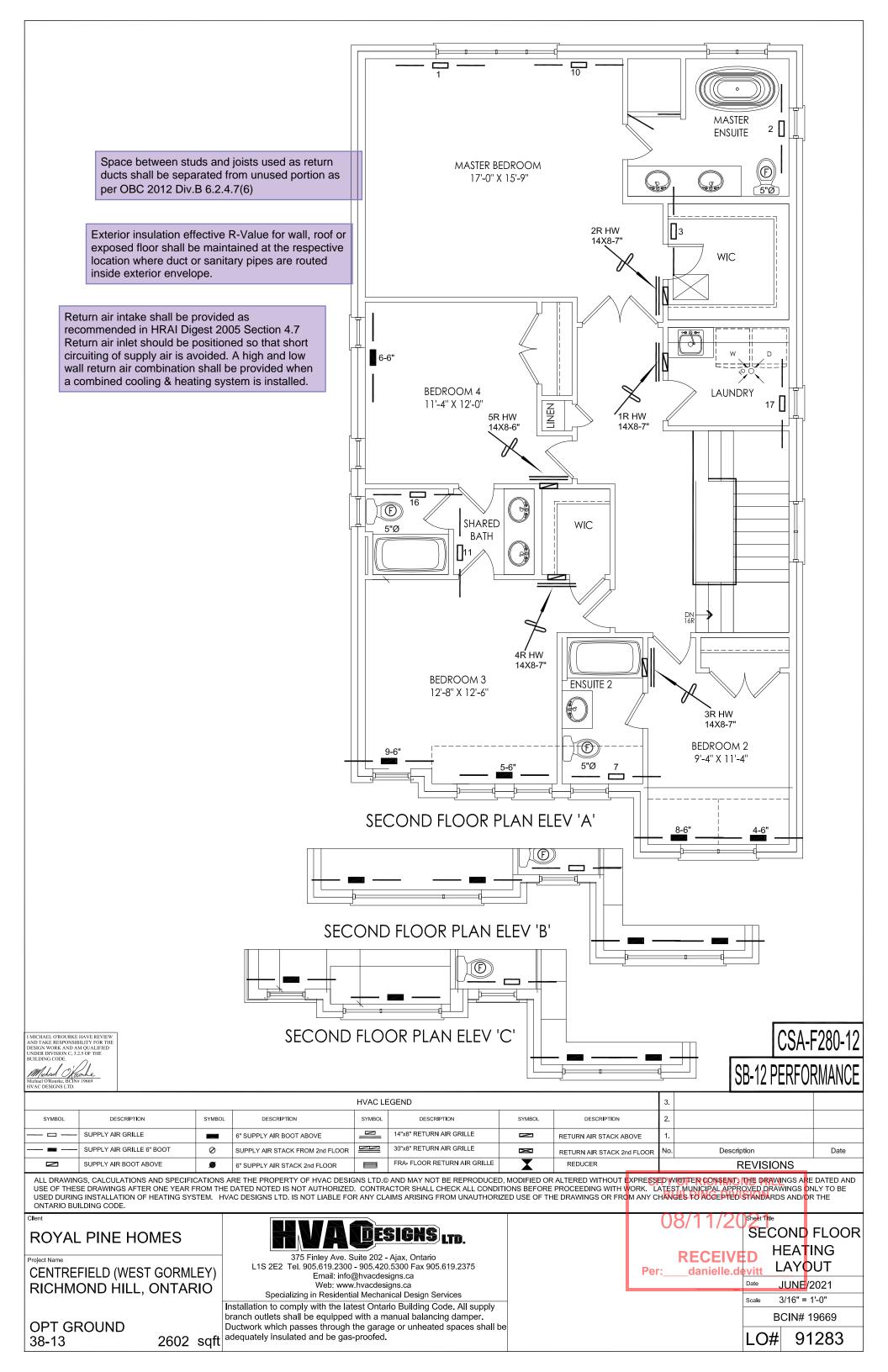
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca

adequately insulated and be gas-proofed.

Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be

	HEAT LC	SS 46965	BTU/H	# OF RUNS	S/A	R/A	FANS	Sheet Title			
	ι	JN I T DATA		3RD FLOOR		.,		BA	\SE	MENT	
		ARRIER		2ND FLOOR	213 (5=	\3 E	. I <i>)</i>		TING	
	MODEL 59TN	16B-060-14	V	1STELOOR	da	niell	e2de	evitt	_AY	DUT	
	INPUT	60	MBTU/H	BASEMENT	4_	1	0_	Date	JUNE	/2021	
_	OUTPUT	50	MBTU/H	ALL S/A DIFFU	SERS.	4 "x10		Scale	3/16" =	= 1'-0"	
	COOLING	58	TONS	UNLESS NOTE ON LAYOUT. A				Е	CIN#	19669	
Ð		3.0		UNLESS NOTE			ISE	- 04		4000	Т
	FAN SPEED	1115	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.				LO#	9	1283	





Schedule 1: Designer Information
Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Proje	ect Information					
Building nu	umber, street name				Unit no.	Lot/con.
Municipalit	ty	Postal code	Plan number/ other desc	cription	I	l
RICHMOND				•		
	dual who reviews and takes	responsibility fo	r design activities			
Name		-	Firm			
MICHAEL Street add	O'ROURKE		HVAC DESIGNS LTD.	Unit no.		Lot/con.
375 FINLE				202		N/A
Municipalit	ty	Postal code	Province	E-mail		'
AJAX		L1S 2E2	ONTARIO	info@hvacdes	igns.ca	
Telephone (905) 619-		Fax number (905) 619-2375		Cell number ()		
C. Desig	n activities undertaken by in	dividual identifie	ed in Section B. [Build	ding Code Tal	ble 3.5.2.1 OF D	Division C]
Hous		⊠ HVAC			Building Struct	
	ll Buildings e Buildings	☐ Buildino ☐ Detection	g Services on, Lighting and Pow		Plumbing – Ho Plumbing – All	
	plex Buildings	☐ Fire Pro			On-site Sewag	
	n of designer's work		Model:	38-13		
HEAT LOS	SS / GAIN CALCULATIONS ING			CHADWICK OPT GROUND 8	& OPT 2ND	
	TIAL MECHANICAL VENTILATIO	N DESIGN SUMM	ARY Project		WEST GORMLEY)	
	TIAL SYSTEM DESIGN per CSA-	F280-12	i roject.	CLIVITALITIELD (•••E31 GORWIEE1)	
D. Decla	ration of Designer					
I	MICHAEL O'ROURKE	int name)		declare th	at (choose one as	appropriate):
	I review and take responsibility for Division C, of the Building Code. classes/categories.		on behalf of a firm registe the firm is registered, in t	red under subse he	ction 3.2.4.of	City of Richmond Hi Building Division
	Individual BCIN: - Firm BCIN: _				HVAC F	REVIEWED
X	I review and take responsibility for designer" under subsection 3.2		m qualified in the appropr n C, of the Building Code		an "other Initials:	PXV
	Individual BCIN: Basis for exemption fr	19669 om registration and	d qualification:	O.B.C SEN	TENCE 3.2.4.1	(4)
	The design work is exempt Basis for exemption from registra		on and qualification requi	rements of the E	Building Code.	
I certify that	at:					
	 The information contained I have submitted this applica 		lle is true to the best of medge and consent of the f			
	luna 21 2021			Mheha	1 Ofound	e .
	June 21, 2021 Date	•			Signature of I	Designer
	Duit				HY OF RICH	MOND HILL
					BUILDING I	DIVISION
and all other 2. Schedu Ontario Ass	e purposes of this form, "individual" me r persons who are exempt from qualificule 1 is not required to be completed b ociation of Architects. Schedule 1 is al n, issued by the Association of Profess Applicati	cation under Subsecti y a holder of a license so not required to be	ons 3.2.4. and 3.2.5. of Divise, temporary license, or a cel completed by a holder of a li	sion C. rtificate of authorize cense to practise	zation, issued by the , a limit <mark>ed license to</mark>	p <mark>ractise, o</mark> r a certificate of



SITE NAME: C BUILDER: F					MLEY)			TYPE:	OPT GR 38-13	ROUND	& OPT	2ND		GFA:	2602			DATE: LO#							HANGE RATE 0.227			ΔT°F. 78 ΔT°F. 13 §	B-12 PE	CSA-F280
ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2				S-B	ATH			
EXP. WALL				35			22			8			36			27			13			6				'	6			
CLG. HT.				9			9			9			9			9			9			9				1 '	9			
	FACTOR																													
	LOSS	GAIN		315			198			72			324			243			117			54					54			
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS			LOSS			LOSS				GAIN		LOSS					OSS GAIN			
	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	392	288	0	0	0				74 128			
		41.6	37	806	1537	18	392	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0 0			
	21.8	24.9	0	0	0	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			_	0 0			
	21.8	41.6	0	0	0	0	0	0	0	0	0	52		2161	64	1394	2659	0	0	0	15	327	623			_	0 0			
		101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			_	0 0			
	25.8	4.3	0	0	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 27			-	0 0			
NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	4.2	0.7	278 0	1169 0	192 0	171 0	719 0	118 0	72 0	303 0	50	272 0	1144 0	188 0	179 0	753 0	124 0	99	416 0	68 0	39 0	164 0	0				93 32 0 0			
EXPOSED CLG	3.7 1.3	0.6 0.6	303	398	178	123	162	72	75	99	0	195	256			210	94	210	276	123	85	112	50				99 44			
NO ATTIC EXPOSED CLG					0		0	0		0	44 0	0	256	115	160		57		0	0		0	0							
EXPOSED FLOOR	2.8 2.6	1.3 0.4	0	0	0	0		0	0	0	0	0	0	0	45 205	126 535	5 <i>7</i> 88	0 95	u 248	41	0 85	0 222	0 37				0 0 96 32		1	
BASEMENT/CRAWL HEAT LOSS	2.0	0.4	U	0	U	"	0	U	U	0	U	٠	0	0	203	0	00	90	240 0	41	00	0	31				96 32 N			
SLAB ON GRADE HEAT LOSS				0		1	0			0			0		1	0			0			0					0		1	
SUBTOTAL HT LOSS				2373		1	1469			u 401			2533		1	0 3019			1332			0 824					0 62		1	
SUB TOTAL HT GAIN				2010	1908	1	1403	1163		401	94		2000	2464	1	3013	3022		1002	520		024	737			1 "	236		1	
LEVEL FACTOR / MULTIPLIER			0.20	0.16	1300	0 20	0.16	1103	0.20	0.16	J-4	0.20	0.16	2404	0.20	0.16	3022	0.20	0.16	320	0.20	0.16	131			0.20 0.				
AIR CHANGE HEAT LOSS			0.20	380		0.20	235		0.20	64		0.20	405		0.20	483		0.20	213		0.20	132					06			
AIR CHANGE HEAT GAIN				000	85		200	52		04	4		400	110		400	135		2.0	23		.02	33			· '	11			
DUCT LOSS				0	00		0	32		0	7		0	110		350	100		155	23		96	33			١,	77			
DUCT GAIN				٠	0		٠	0		٠	0		٠	0		000	393		100	132		50	77			· '	25			
	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0			0	0			
HEAT GAIN APPLIANCES/LIGHTS			_		534	-		0	_		0			534	-		534	-		534	_		0			-	0			
TOTAL HT LOSS BTU/H				2753			1704			466			2938			3852			1700			1052				8-	45			
TOTAL HT GAIN x 1.3 BTU/H					3908			1579			128			4351			5620			1883			1100				352			
ROOM USE							GRT			KIT			DEN			LAUN			PWD			FOY		MUD						BAS
EXP. WALL							52			40			14			14			10			35		20						168
CLG. HT.							10			10			9			10			10			10		10						10
	FACTOR																													
GRS.WALL AREA L	LOSS	GAIN					525			404			126			141			101			354		202						1176
GLAZING							LOSS	GAIN			GAIN			GAIN		LOSS	GAIN		LOSS	GAIN			GAIN	LOSS GAIN	l I					LOSS G
		16.0				0	0	0	12	261	192	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0					3	65 4
		41.6				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0					3	65 1
		24.9				0	0	0	0	0	0	36	784	896	0	0	0	9	196	224	0	0	0	0 0 0					6	131 1
		41.6				60	1307	2493		1046	1994	0	0	0	0	0	0	0	0	0	22	479	914	0 0 0					0	0
		101.2				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0					0	0
	25.8	4.3				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	1034	170	20 517 85					20	517 8
NET EXPOSED WALL	4.2	0.7				465	1956	322	344	1447	238	90	378	62	141	595	98	92	387	64	292	1226	202	182 765 126	1	1			0 504	0
NET EVENORED DOMESTICS						_	•		-					_		•	^		•	^		•								1857 3
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 0 0						
EXPOSED CLG	3.7 1.3	0.6				0	0	0 0	0	0 0	0	0 125	0 164	73	0	0	0	0	0	0	0	0	0	0 0 0 0					0	0
EXPOSED CLG NO ATTIC EXPOSED CLG	3.7 1.3 2.8	0.6 1.3				0	0	0 0 0	0 0 0	0 0 0	0	0 125 0	0 164 0	73 0	0 0 0	0	0	0	0	0	0	0	0	0 0 0 0 0 0 0 0 0	CITY	OF R	SICHN	IOND HII	0	0
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	3.7 1.3	0.6				0	0 0	0 0	0	0 0 0	0	0 125	0 164 0 0	73	0	0 0	0	0	0 0	0	0	0 0	0	0 0 0 0 0 0 0 0 0 0 0 0				MOND HIL	0	0
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	3.7 1.3 2.8	0.6 1.3				0	0 0 0	0 0 0	0 0 0	0 0 0 0	0	0 125 0	0 164 0 0	73 0	0 0 0	0 0 0	0	0	0 0 0	0	0	0 0 0	0	0 0 0 0 0 0 0 0 0 0 0 0				MOND HIL	0	0
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	3.7 1.3 2.8	0.6 1.3				0	0 0 0 0	0 0 0	0 0 0	0 0 0 0 0	0	0 125 0	0 164 0 0 0	73 0	0 0 0	0 0 0 0	0	0	0 0 0 0 0	0	0	0 0 0 0	0	0 0 0 0 0 0 0 0 0 0 0 0					0	0 0 5708
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENTICRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS	3.7 1.3 2.8	0.6 1.3				0	0 0 0	0 0 0	0 0 0	0 0 0 0 0 0 2754	0 0 0	0 125 0	0 164 0 0	73 0 0	0 0 0	0 0 0	0 0	0	0 0 0	0 0	0	0 0 0	0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1282	В	JILDI	NG D	IVISION	0	0 0 5708 8342
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN	3.7 1.3 2.8	0.6 1.3				0 0 0	0 0 0 0 0 0 3263	0 0 0	0 0 0	0 0 0 0 0 0 2754	0	0 125 0 0	0 164 0 0 0 0 1327	73 0	0 0 0 0	0 0 0 0 0 0 595	0	0 0 0	0 0 0 0 0 0 583	0	0 0 0	0 0 0 0 0 0 2739	0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1282	В	JILDI	NG D	IVISION	0	0 0 5708 8342
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	3.7 1.3 2.8	0.6 1.3				0 0 0	0 0 0 0 0 3263	0 0 0	0 0 0	0 0 0 0 0 0 2754	0 0 0	0 125 0	0 164 0 0 0 0 1327	73 0 0	0 0 0	0 0 0 0 0 595	0 0	0	0 0 0 0 0 0 583	0 0	0	0 0 0 0 0 0 2739	0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1282 211	В	JILDI	NG D		0	0 0 5708 8342 7 0.67
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	3.7 1.3 2.8	0.6 1.3				0 0 0	0 0 0 0 0 0 3263	0 0 0 0	0 0 0	0 0 0 0 0 0 2754	0 0 0	0 125 0 0	0 164 0 0 0 0 1327	73 0 0	0 0 0 0	0 0 0 0 0 0 595	0 0 0	0 0 0	0 0 0 0 0 0 583	0 0 0	0 0 0	0 0 0 0 0 0 2739	0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В	JILDI	NG D	IVISION	0	0 0 5708 8342 7 0.67 5579
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR 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	3.7 1.3 2.8	0.6 1.3				0 0 0	0 0 0 0 0 3263	0 0 0	0 0 0	0 0 0 0 0 0 2754	0 0 0	0 125 0 0	0 164 0 0 0 0 1327 0.16 212	73 0 0	0 0 0 0	0 0 0 0 0 0 595	0 0	0 0 0	0 0 0 0 0 583	0 0	0 0 0	0 0 0 0 0 2739	0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В	JILDI 8/1	NG D	2021	0	0 0 5708 8342 7 0.67
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	3.7 1.3 2.8	0.6 1.3				0 0 0	0 0 0 0 0 3263	0 0 0 0	0 0 0	0 0 0 0 0 0 2754	0 0 0 2424	0 125 0 0	0 164 0 0 0 0 1327	73 0 0 1032	0 0 0 0	0 0 0 0 0 595	0 0 0 0	0 0 0	0 0 0 0 0 583	0 0 0 0	0 0 0	0 0 0 0 0 0 2739	0 0 0 1286	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В	JILDI 8/1	NG D	2021	0	0 0 5708 8342 7 0.67 5579
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR 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 GOS DUCT GAIN	3.7 1.3 2.8 2.6	0.6 1.3				0 0 0	0 0 0 0 0 3263	0 0 0 0 2815	0 0 0	0 0 0 0 0 0 2754	0 0 0	0 125 0 0	0 164 0 0 0 0 1327 0.16 212	73 0 0	0 0 0 0	0 0 0 0 0 0 595	0 0 0	0 0 0	0 0 0 0 0 583	0 0 0	0 0 0	0 0 0 0 0 2739	0 0 0 1286	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	JILDI 8/1 RE	NG D 1/2 CEI	2021 VED	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 5708 8342 7 0.67 5579
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR 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	3.7 1.3 2.8	0.6 1.3				0.30	0 0 0 0 0 3263	0 0 0 0 2815	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 2754	0 0 0 2424 108	0 125 0 0	0 164 0 0 0 0 1327 0.16 212	73 0 0 1032 46	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 595	0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 583	0 0 0 0	0 0 0	0 0 0 0 0 2739	0 0 0 1286	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	В	JILDI 8/1 RE	NG D 1/2 CEI	2021	0	0 0 5708 8342 7 0.67 5579
EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE	3.7 1.3 2.8 2.6	0.6 1.3				0.30	0 0 0 0 0 3263	0 0 0 0 2815 125 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 2754	0 0 0 2424 108 0	0 125 0 0	0 164 0 0 0 0 1327 0.16 212	73 0 0 1032 46 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 595	98 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 0 583	0 0 0 0 288 13	0 0 0	0 0 0 0 0 2739	0 0 0 1286 57 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	JILDI 8/1 RE	NG D 1/2 CEI	2021 VED	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 5708 8342 7 0.67 5579

TOTAL HEAT GAIN BTU/H:

35399 TONS: 2.95 LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 45335

TOTAL COMBINED HEAT LOSS BTU/H: 47005





		CENTRE ROYAL			ORMLEY)		TYPE:	38-13		OPT 2NI)	DATE:	Jun-21			GFA:	2602	LO#	91330				
HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM	45,335 24.59		TOTAL F	DLING CFM HEAT GAIN RATE CFM	35,124 31.74		а	furr a/c coil vailable	pressure nace filter pressure pressure r s/a & r/a	0.05 0.2								O60-14V I SPEED LOW	*CARRIEI 60 930	R	OUTPUT	AFUE = (BTU/H) = (BTU/H) =	60,000 58,000	
RUN COUNT S/A R/A All S/A diffusers 4"x10" unleast not All S/A runs 5"Ø unless not	4th 0 0 ess note ed other	3rd 0 0 d otherwise on la	2nd 13 5 se on lay ayout.	1st 8 1 out.	8as 4 1		max	s/a dif p	essure s/a ress. loss essure s/a	0.18 0.02 0.16		grille pre	pressure ess. Loss ssure r/a	0.17 0.02 0.15				EDLOW MEDIUM JM HIGH HIGH	1050 1115 1245 1520	Т		GN CFM = CFM @ . URE RISE	6 " E.S.P.	- _ °F
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 MBR 1.38 34 1.95 62 0.17 41 130 171 0.1 5 250 455 3X10 A	2 ENS 1.70 42 1.58 50 0.17 54 210 264 0.07 5 308 367 3X10 A	3 WIC 0.47 11 0.13 4 0.17 46 130 176 0.1 4 126 46 3X10 D	4 BED-2 1.47 36 2.18 69 0.17 73 200 273 0.06 6 184 352 4X10 B	5 BED-3 1.93 47 2.81 89 0.16 67 160 227 0.07 6 240 454 4X10 C	6 BED-4 1.70 42 1.88 60 0.17 19 120 139 0.12 6 214 306 4X10 D	7 ENS-2 1.05 26 1.10 35 0.17 60 150 210 0.08 4 298 402 3X10 C	8 BED-2 1.47 36 2.18 69 0.17 78 200 278 0.06 6 184 352 4X10 B	9 BED-3 1.93 47 2.81 89 0.16 69 180 249 0.07 6 240 454 4X10 C	10 MBR 1.38 34 1.95 62 0.17 33 140 173 0.1 5 250 455 3X10 A	11 S-BATH 0.42 10 0.18 6 0.17 55 190 245 0.07 4 115 69 3X10 C	12 GRT 2.12 52 2.26 72 0.17 30 140 170 0.1 5 382 529 3X10 A	13 GRT 2.12 52 2.26 72 0.17 37 150 187 0.09 5 382 529 3X10 A	14 KIT 1.79 44 1.99 63 0.17 32 150 0.09 5 323 463 3X10 A	15 KIT 1.79 44 1.99 63 0.17 26 120 146 0.12 5 323 463 3X10 A	16 S-BATH 0.42 10 0.18 6 0.17 54 200 254 0.07 4 115 69 3X10 C	17 DEN 1.54 38 2.10 67 0.17 40 160 200 0.09 5 279 492 3X10 D	18 PWD 0.76 19 0.39 12 0.17 48 170 218 0.08 4 218 138 3X10 B	19 FOY 3.56 87 1.75 55 0.16 60 150 210 0.08 6 444 280 4X10 B	20 MUD 1.67 41 0.98 31 0.17 21 160 181 0.1 4 470 356 3X10 C	21 BAS 3.48 86 0.42 13 0.16 31 160 191 0.08 6 438 66 4X10 A	22 BAS 3.48 86 0.42 13 0.16 25 170 195 0.08 6 438 66 4X10 A	23 BAS 3.48 86 0.42 13 0.16 25 160 185 0.09 6 438 66 4X10 C	24 BAS 3.48 86 0.42 13 0.16 43 160 203 0.08 6 438 66 4X10 B
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	25 LAUN 0.77 19 0.83 26 0.17 27 170 197 0.09 4 218 298 3X10 C																							
SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT			VELOCITY	RETURN	AIR TRUNK	K SIZE STATIC	ROUND	RECT			VELOCITY
TRUNK A TRUNK B TRUNK C TRUNK D TRUNK E TRUNK F	474 264 550 1115 0	0.07 0.06 0.06 0.06 0.00 0.00	11 9.2 12 15.7 0	14 10 16 28 0	x x x x x	8 8 8 8	(ft/min) 609 475 619 717 0		TRUNK G TRUNK H TRUNK I TRUNK J TRUNK K TRUNK L	0 0 0 0 0 0	PRESS. 0.00 0.00 0.00 0.00 0.00 0.00	0 0 0 0 0 0	0 0 0 0 0 0	x x x x x	8 8 8 8 8	(ft/min) 0 0 0 0 0	TRUNK O TRUNK P TRUNK Q TRUNK R TRUNK S TRUNK T TRUNK U TRUNK V	© CIT	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	U	DUCT 0 0 IMON DIVIS 0		8 8 8 8 8 8	(ft/min) 0 0 0 0 0 0 0
RETURN AIR # AIR VOLUME PLENUM PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LH ADJUSTED PRESSURE ROUND DUCT SIZE INLET GRILL SIZE INLET GRILL SIZE	1 0 120 0.15 49 240 289 0.05 7.1 8 X 14	2 0 120 0.15 58 235 293 0.05 7.1 8 X	3 0 120 0.15 78 250 328 0.05 7.1 8 X	4 0 120 0.15 75 245 320 0.05 7.1 8 X 14	5 0 85 0.15 69 205 274 0.05 6.3 8 X	6 0 380 0.15 26 155 181 0.08 9.8 8 X 30	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	170 0.15 14 135 149 0.10 6.8 8 X	TRUNK W TRUNK X TRUNK Y TRUNK Z DROP	1115 380 0 1115 Per:	0.05 0.05 0.05 0.05 0.05	0 16.4 11 0 16.4	32 14 1V ₂ E le.dev	2	8 8 8 8 10	0 627 489 0 669



TYPE: 38-13

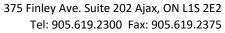
LO# 91330 OPT GROUND & OPT 2ND CENTREFIELD (WEST GORMLEY) SITE NAME:

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VEN	ITILATION CAPACITY			9.32.3.5.
a)		Total Ventilation Capac	city	169.6	_	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. C	Capacity	79.5	_	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplementa	l Capacity	90.1	_	cfm
d) Solid Fuel (including fireplaces)						
e) No Combustion Appliances		PRINCIPAL EXHAUST	FAN CAPACITY			
		Model:	VANEE 65H	Location:	BSMT	
HEATING SYSTEM		<u>79.5</u> c			✓ HVI A	Approved
Forced Air Non Forced Air		PRINCIPAL EXHAUST	HEAT LOSS CALCULATION ΔT °F	FACTOR	%	LOSS
Electric Space Heat		79.5 CFM	X 78 F X	1.08	Х (0.25
Elocatio opace ricat		SUPPLEMENTAL FAN		ALLING CON		
HOUSE TYPE	9.32.1(2)	Location ENS	Model BY INSTALLING CONTRACTOR	cfm 50		ones 3.5
	(_)	ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
Type a) or b) appliance only, no solid fuel		S-BATH	BY INSTALLING CONTRACTOR	50		3.5
II Type I except with solid fuel (including fireplace	es)	PWD	BY INSTALLING CONTRACTOR	50	✓	3.5
	,	HEAT RECOVERY VE	NTILATOR		9	9.32.3.11.
III Any Type c) appliance		Model:	VANEE 65H			
IV Type I, or II with electric space heat		155	cfm high	64	CII	m low
		75	% Sensible Efficiency		✓ HVI A	Approved
Other: Type I, II or IV no forced air			@ 32 deg F (0 deg C)			
OVERTIME PERSON OPPOSITOR	0.1111111111111111111111111111111111111	LOCATION OF INSTA	LLATION			
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	Lot:		Concession		
1 Exhaust only/Forced Air System						
2 HRV with Ducting/Forced Air System		Township		Plan:		
✓ 3 HRV Simplified/connected to forced air system		Address				
4 HRV with Ducting/non forced air system		Roll #		Building Perm	nit#	
		BUILDER:	ROYAL PINE HOMES			
Part 6 Design		Name:				
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:				
Basement + Master Bedroom2 @ 21.2 cfm42.4	cfm	City:				
Other Bedrooms 3 @ 10.6 cfm 31.8	cfm	Telephone #:		Fax#:		
Kitchen & Bathrooms 5 @ 10.6 cfm 53	cfm	INSTALLING CONTRA	ACTOR			
Other Rooms 4 @ 10.6 cfm 42.4	_	Name:				
Table 9.32.3.A. TOTAL 169.6	-	Address:				
	-					
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)	City:	OITY OF BIOL	IMOND		7
1 Bedroom 31.8	cfm	Telephone #:	CITY OF RICH	HFax#ND I	HILL N	
		DESIGNER CERTIFIC		DIVISIO	IN	
2 Bedroom 47.7 3 Bedroom 63.6	cfm cfm	I hereby certify that this in accordance with the Name:	ventilation system has been on Ontario Building Code. HVAC Designs Ltd.	designed 2	1	
4 Bedroom 79.5	cfm	Signature:	_ md 1	1001		
5 Bedroom 95.4	cfm	HRAI#	Per: danie	1 (1201820 vitt		
5 Bediooni 99.4	OIIII	HIVAL#	<u>rei. danie</u>	1949V ITT		
TOTAL 79.5 cfm I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUA	AI IFIED IN THE ^D	Date:	THER DESIGNER" LINDER DIVISION C	June-21	II DING CODE	4
INDIVIDUAL BCIN: 19669 MICHAEL O'R		. NOT NIATE ONTEGORT AS AN 'U	DEGIGIAEN UNDER DIVISION U	, 5.2.5 OF THE BUI	LESING CODE.	



Note: 38.13 Builder: ROYAL PINE HOMES Pate: 2021-06-21					80-12 Residential Hea						
Volume Calculation	10#. (21220	Madal, 20 12	Form			aiculation)			Data	. 2021 06 21
Second Floor Area (ft*)	LU#: S	91330			Bullae	IT: RUYAL PINE HUIVIES		Air Change & De	ta T Data	Date	2021-06-21
Floor Area (1t)			volume Calculatio	on				Air Change & De	la i Dala		
Floor Area (If*)	use Volume				7		WINTER NA	TURAL AIR CHAN	GF RATF	0.227	7
Birt 1078		Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	1						
First 1078			. ,								-1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	First	1078	10	10887.8	1						
Fourth O	Second	1524	9	13716				Design T	emperature Diff	erence	
Total: 35,383 81 ³ 3 13 7 13	Third	0	9	0				Tin °C	Tout °C	ΔT °C	ΔT °F
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Fourth	0	9	0			Winter DTDh	22	-21	43	78
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							Summer DTDc	24	31	7	13
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 11158 \text{Btu/h}$			Total:	1002.0 m ³							
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ $= 11158 \text{Btu/h}$		5.2.3	.1 Heat Loss due to A	ir Leakage			6.2.6	Sensible Gain due	to Air Leakage		
11158 Btu/h											
11158 Btu/h		ш —	$IP \sim \frac{V_b}{V_b} \sim 1$	$0TD \times 12$		r.	IC - ID	V_b	v 1 2		
			5.0								
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $SOCFM $	0.227	x 278.32	x 43 °C	x 1.2	= 3270 W	= 0.071	x 278.32	x <u>7°C</u>	x <u>1.2</u>	=	168 W
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $SOCFM $					- 11159 R+u/h	Ī				_	572 Rtu/h
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1-E)$ $80 \text{ CFM} \qquad \times \boxed{78 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{1670 \text{ Btu/h}} \qquad 80 \text{ CFM} \qquad \times \boxed{13 \text{ "F}} \qquad \times \boxed{1.08} \qquad \times \boxed{0.25} \qquad = \boxed{275 \text{ Btu/h}}$ $5.2.3.3 \text{ Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)}$ $HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $Level \ Level \ Factor (LF) \qquad HLairve \ Air \ Leakage + \\ Ventilation \ Heat \ Loss \ (HL_{devel}) \qquad HLairbv + HLair$					- 11138 Btu/II	1				-	3/3 Btu/11
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		5.2.3.2 Hea	nt Loss due to Mechar	nical Ventilation			6.2.7 Sei	nsible heat Gain	due to Ventilatio	n	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		$HL_{vairb} =$	$PVC \times DTD_h \times 1$	$1.08 \times (1-E)$		HL_1	$_{vairb} = PVC \times D$	$TD_h \times 1.08 \times$	(1-E)		
$HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $\begin{array}{ c c c c c c } \hline Level\ Level\ Factor\ (LF) \\ \hline Level\ Level\ Factor\ (LF) \\ \hline Level\ Level\ Level\ Loss \ (HL_{clevel}) \\ \hline 1 & 0.5 \\ \hline 2 & 0.3 \\ \hline 3 & 0.2 \\ \hline 4 & 0 \\ \hline 5 & 0 \\ \hline \end{array}$ $\begin{array}{ c c c c c } \hline Level\ Factor\ (LF) \\ \hline Level\ Conductive\ Heat\ Loss\ Multiplier\ (LF\ x\ HLairbv\ /\ HLlevel) \\ \hline Level\ Conductive\ Heat\ Loss\ Multiplier\ (LF\ x\ HLairbv\ /\ HLlevel) \\ \hline \hline 1 & 0.5 \\ \hline 2 & 0.3 \\ \hline 3 & 0.2 \\ \hline \hline 11,158 \\ \hline \hline 13,941 \\ \hline 0 & 0.000 \\ \hline 5 & 0 \\ \hline \end{array}$ $\begin{array}{ c c c c c c c c c c c c c c c c c c c$	80 CFM	x <u>78</u> °F	x <u>1.08</u>	x 0.25	= 1670 Btu/h	80 CFM	x <u>13 °F</u>	x <u>1.08</u>	x <u>0.25</u>	=	275 Btu/h
$HL_{airr} = Level\ Factor\ \times\ HL_{airbv}\ \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ $\begin{array}{ c c c c c c } \hline Level\ Level\ Factor\ (LF) \\ \hline Level\ Level\ Factor\ (LF) \\ \hline Level\ Level\ Level\ Loss \ (HL_{clevel}) \\ \hline 1 & 0.5 \\ \hline 2 & 0.3 \\ \hline 3 & 0.2 \\ \hline 4 & 0 \\ \hline 5 & 0 \\ \hline \end{array}$ $\begin{array}{ c c c c c } \hline Level\ Factor\ (LF) \\ \hline Level\ Conductive\ Heat\ Loss\ Multiplier\ (LF\ x\ HLairbv\ /\ HLlevel) \\ \hline Level\ Conductive\ Heat\ Loss\ Multiplier\ (LF\ x\ HLairbv\ /\ HLlevel) \\ \hline \hline 1 & 0.5 \\ \hline 2 & 0.3 \\ \hline 3 & 0.2 \\ \hline \hline 11,158 \\ \hline \hline 13,941 \\ \hline 0 & 0.000 \\ \hline 5 & 0 \\ \hline \end{array}$ $\begin{array}{ c c c c c c c c c c c c c c c c c c c$				5 2 3 3 Calcula	tion of Air Change Heat	loss for Each Room (Flor	or Multiplier Section)				
Level Level Factor (LF) HLairve Air Leakage + Ventilation Heat Loss (Btu/h) Level Conductive Heat Loss: (HL _{clevel}) Hlairbv / HLlevel) CITY OF RICHMOND HILL BUILDING DIVISION						•	•				
Level Level Factor (LF) Ventilation Heat Loss Loss: (HL _{clevel}) HLairby / HLlevel) CITY OF RICHMOND HILL			HL_a	_{irr} = Level Fact	·	$(L_{agcr} + HL_{bgcr}) \div$	$(HL_{agclevel} + HL)$	bgclevel)}	7		
1 0.5 8,342 0.669 2 0.3 11,216 0.298 3 0.2 11,158 13,941 0.160 4 0 0 0.000 5 0 0 0.000 *HLairby = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED			Level	Level Factor (LF)	Ventilation Heat Loss						
11,216 0.298 BUILDING DIVISION 13,941 0.160 0 0.000 0 0.000 0 0.000 0			1	0.5	(Btu/n)	8.342	0.66	9	CITY OF R	RICHMOI	ND HILL
1,158 13,941 0.160 0 0.000 1,158 13,941 0.160 0 0.000 1,158 13,941 0.160 0 0.000 1,158 1,158 13,941 0.160 0 0.000 1,158 13,941 0.160 0 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 0.000 1,158 13,941 0.160 1,158 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941 0.160 1,158 13,941					1				BUILDI	NG DIVI	SION
4 0 0 0.000 5 0 0.000 *HLairby = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED					11.158				†		
*HLairby = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED					,				00/4	1/20	121
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0 RECEIVED					-				† UO/ I	1/2	<i>1</i>
*For a balanced or supply only ventilation system HLairve = 0				<u> </u>	Luontilation heat les-	<u> </u>	3.00		_		
REGEIVED						e = 0			DE	CEIVE	:D
Per:danielie.devitt										OFIA	
									er. da	DIELLE CE	2VITT
									CIdd	mene.ac	- VICC



Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca



HEAT LOSS AND GAIN SUMMARY SHEET

			200071112 071			
MODEL:	38-13	10#	OPT GROUND &	OPT 2ND	BUILDER: ROYAL PINE HOMES	
SFQT:	2602	LO#	91330		SITE: CENTREFIELD (WEST	GORMILEY)
DESIGN A	SSUMPTIONS					
HEATING			°F	COOLING	j	°F
OUTDOO	R DESIGN TEMP.		-6	OUTDOO	OR DESIGN TEMP.	88
INDOOR [DESIGN TEMP.		72	INDOOR	DESIGN TEMP. (MAX 75°F)	75
BUILDING	G DATA					
ATTACHM	1ENT:		DETACHED	# OF STC	PRIES (+BASEMENT):	3
FRONT FA	ACES:		EAST	ASSUME	D (Y/N):	Υ
AIR CHAN	IGES PER HOUR:		2.50	ASSUME	D (Y/N):	Υ
AIR TIGHT	TNESS CATEGORY:		TIGHT	ASSUME	D (Y/N):	Υ
WIND EX	POSURE:		SHELTERED	ASSUME	D (Y/N):	Υ
HOUSE V	OLUME (ft³):		35383.8	ASSUME	D (Y/N):	Υ
INTERNAL	_ SHADING:	BLINDS	/CURTAINS	ASSUME	D OCCUPANTS:	5
INTERIOR	LIGHTING LOAD (Btu/	'h/ft²):	1.45	DC BRUS	HLESS MOTOR (Y/N):	Υ
FOUNDAT	TION CONFIGURATION		BCIN_1	DEPTH B	ELOW GRADE:	7.01
LENGTH:	53.0 ft	WIDTH:	31.0 ft	EXPOSE	PERIMETER:	168.0 f

2012 OBC - COMPLIANCE PACKAGE			
		Compliance	Package
Component		SB-12 PERF	ORMANCE
		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	18.50
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	CITY OF RIC	10 L	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	BUILDING		11.13
Windows and Sliding Glass Doors Maximum U-Value	BUILDING	1.6	-
Skylights Maximum U-Value	N8/11	/275/2	-
Space Heating Equipment Minimum AFUE	00/11	0.96	-
HRV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF	REC	TE=94%	-
	Per:dani	elle.devitt_	
INDIVIDUAL BCIN: 19669	net + 1	00/1	
MICHAEL O'ROURKE	Millsebard (Hounte.	



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Wea	ther Stati	ion Description
Province:	Ontario	
Region:	Richmond	
	Site De	scription
Soil Conductivity:	Normal co	nductivity: dry sand, loam, clay
Water Table:	Normal (7	-10 m, 23-33 ft)
Fo	oundation	Dimensions
Floor Length (m):	16.2	
Floor Width (m):	9.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	Insulation Configuration
Window Area (m²):	1.1	
Door Area (m²):	1.9	
	Radia	nt Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Design	Months
Heating Month	1	
	Foundat	ion Loads CITY OF RICHMOND HILL
Heating Load (Watts):		1672 08/11/2021
TYPE: 38-13 LO# 91330	C	OPT GROUND & OPT 2ND RECEIVED Per:danielle.devitt



Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather S	tation Description	
Province:	Ontario	
Region:	Richmond Hill	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
	al Shielding	
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	6.74	
Building	g Configuration	
Туре:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m³):	1002.0	
Air Leaka	age/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)	
Custom BDT Data:	ELA @ 10 Pa. 935.3 cm ²	2
	2.50 ACH @ 50 Pa	3
Mechanical Ventilation (L/s):	Total Supply Total Exhaust	
	37.5 37.5	
F	-lue Size	
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural I	nfiltration Rates	
Heating Air Leakage Rate (ACH,	/H): 0.227	
Cooling Air Leakage Rate (ACH/	(H): 0.071 OF RICHMOND HILL	

TYPE: 38-13 **LO#** 91330

DEPRESSURIZATION TEST REQUIRED BEFORE FINAL OCCUPANCY STAGE TO MEET TARGETTED ACH 2.5 ACH OPT GROUND & OPT 2ND

RECEIVED
Per:____danielle.devitt__

Richmond Hill

City of Richmond Hill Building Division

REVIEWED

By:_PxV

Date: SEP/10/2021

Building Permit #: **BP#-2021-50829**

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.

Building inspection line: 905-771-5465 (24 hr) buildinginspections @richmondhill.ca Building inquiry line 905-771-8810 building @richmondhill.ca

Ensure that R-Values and U-Values used for hear loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance:

BETTER THAN CODE/AIR TIGHTNESS TEST and the values used for architectural design.

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

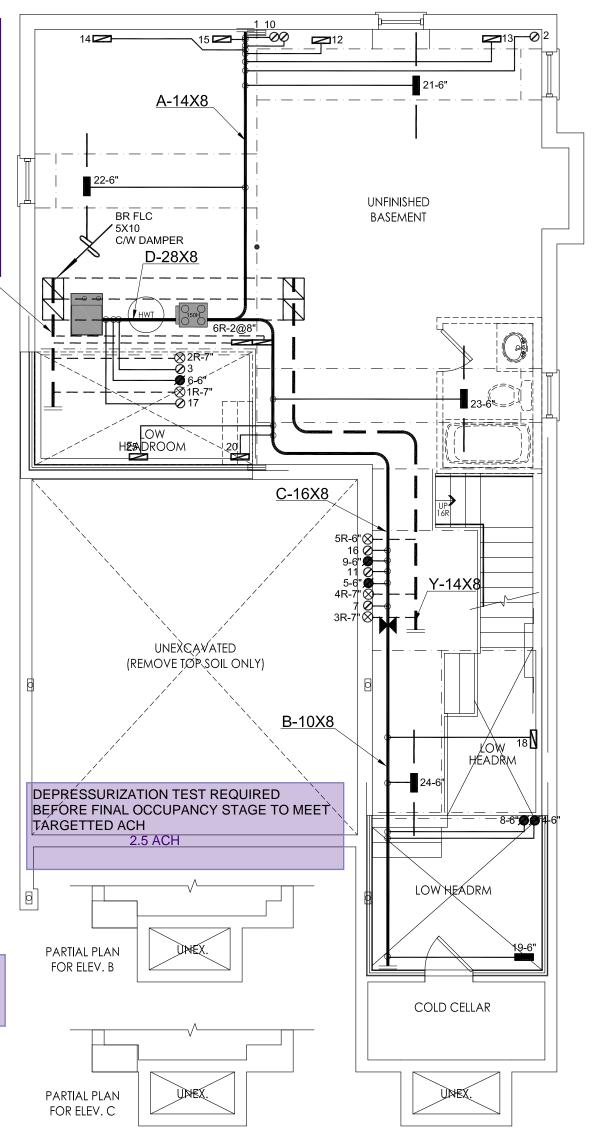
HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

For simplified HRV/ERV installation, with stale air and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV Manufacturer.

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.



BASEMENT FLOOR PLAN ELEV 'A'. 'B' & 'C

I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR TH
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.

Michael Charles

SB-12 PERFORMANCE

HVAC DESIGNS LTD.										
				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	M	RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u></u>	30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No. Des	scription	Date
	CURRLY AIR POOT AROVE	es e			FRA- FLOOR RETURN AIR GRILLE		DEDLICED		DEVICIONS	

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Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

OPT GROUND & OPT 2ND 38-13 2602 sqft

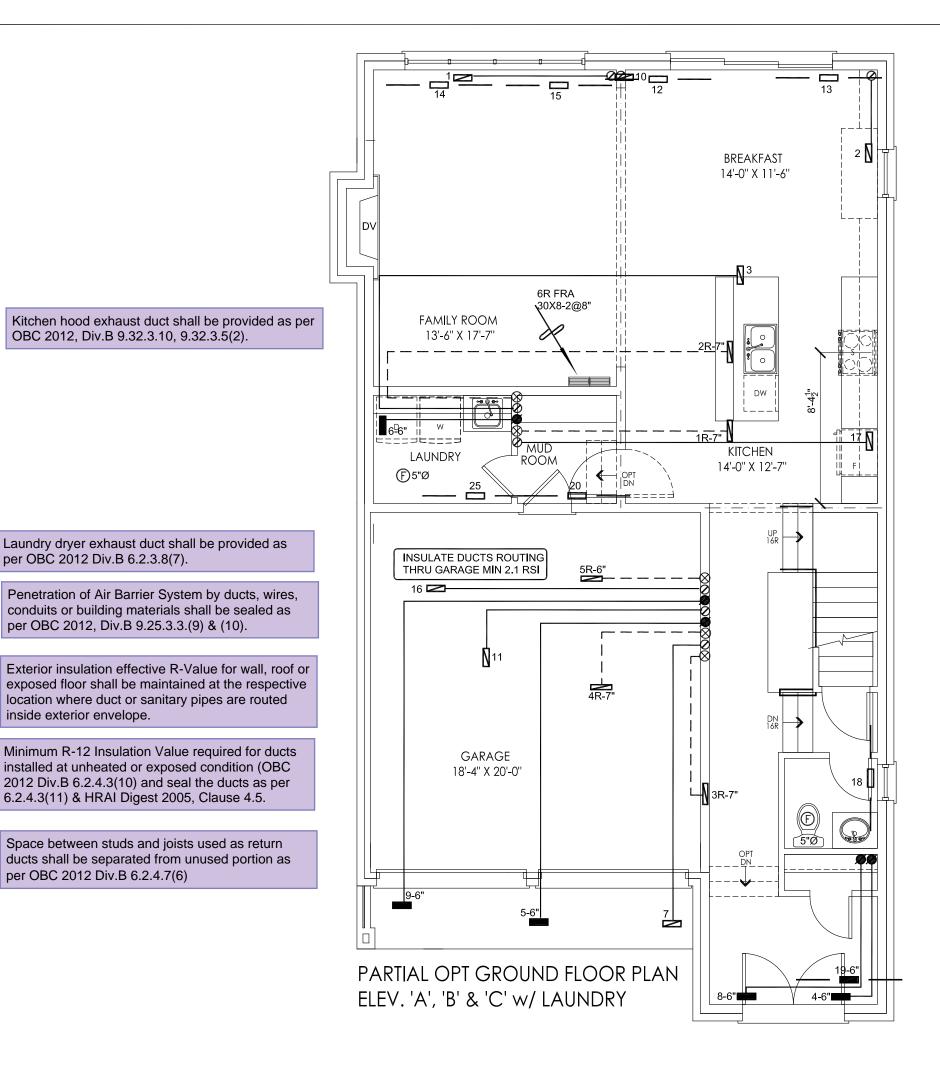
HVA DESIGNS LTD.

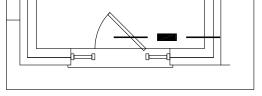
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

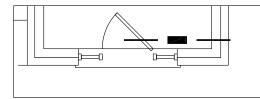
adequately insulated and be gas-proofed.

Specializing in Residential Mechanical Design Services
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper.
Ductwork which passes through the garage or unheated spaces shall be

	HEAT LO	SS 47005	BTU/H	# OF RUNS	S/Á	R/A	FANS	Sheet Title)		
	U	IN I T DATA		3RD FLOOR				_ B	ASE	MENT	
	MAKE	ARRIER		2ND FLOOR	213 (<u>-5</u>	\3	:D	HEA	ING	
	MODEL 59TN	6B-060-14V	/	1STELOOR	da	niell	e3de	evitt	LAY	DUT	
	INPUT	60	мвти/н	BASEMENT	4	1	0_	Date	JUNE	/2021	
_	OUTPUT		MBTU/H	ALL S/A DIFFU	∟ SERS	∟ 4 "x10	"	Scale	3/16" =	= 1'-0"	
	COOLING	58		UNLESS NOTE ON LAYOUT. A					BCIN#	19669	
9		3.0	TONS	UNLESS NOTE							_
	FAN SPEED	1115	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.				LO#	# 9	1330	







GROUND FLOOR PLAN ELEV 'B' GROUND FLOOR PLAN ELEV 'C'

inside exterior envelope.

				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u></u>	30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	<i>9</i> 5	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

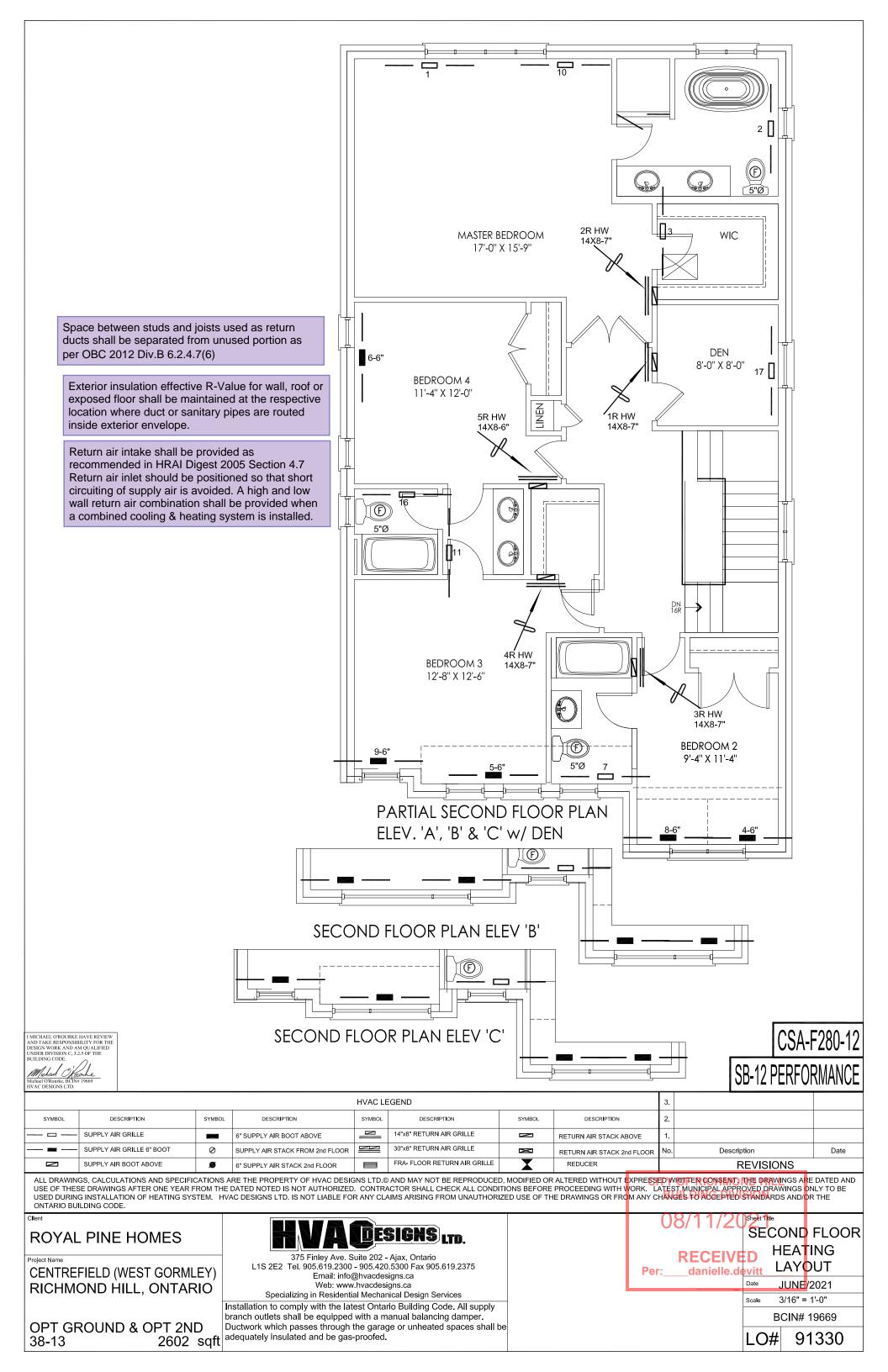
OPT GROUND & OPT 2ND 2602 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

FIRST FLOOR **HEATING** RECEIV LAYOUT _danielle.d JUNE/2021 3/16" = 1'-0" BCIN# 19669 91330 LO#



Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A Decidat Information						
A. Project Information Building number, street name				Unit no.	Lot/con.	
Danaming mamibol, outdoor mamie				Onit no.	200/0011.	
Municipality	Postal code	Plan number/ other desc	cription			
RICHMOND HILL						
B. Individual who reviews and takes	esponsibility fo					
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.				
Street address		HVAC DESIGNS LTD.	Unit no.		Lot/con.	
375 FINLEY AVE			202		N/A	
Municipality	Postal code	Province	E-mail		•	
AJAX	L1S 2E2	ONTARIO	info@hvacdes	igns.ca		
Telephone number (905) 619-2300	Fax number (905) 619-2375		Cell number ()			
C. Design activities undertaken by in	dividual identifie	ed in Section B. [Build	ding Code Tal	ole 3.5.2.1 OF Div	ision C1	
☐ House				Building Structur		
☐ Small Buildings ☐ Large Buildings		g Services on, Lighting and Pow		Plumbing – Hous Plumbing – All B		
☐ Complex Buildings	☐ Fire Pro			On-site Sewage		
Description of designer's work		Model:	38-13			
HEAT LOSS / GAIN CALCULATIONS			CHADWICK			
DUCT SIZING	N DECICAL CUMM	ADV	OPT 2ND			
RESIDENTIAL MECHANICAL VENTILATIO RESIDENTIAL SYSTEM DESIGN per CSA-		Project:	CENTREFIELD (\	WEST GORMLEY)		
D. Declaration of Designer	1200 12					
I MICHAEL O'ROURKE			doclare the	at (choose one as a	oproprioto):	
	nt name)		deciale in	at (Choose one as a	рргорпате).	
☐ I review and take responsibility for Division C, of the Building Code. classes/categories.				ection 3.2.4.of appropriate		
Individual BCIN: - Firm BCIN: _						
☐ I review and take responsibility for designer" under subsection 3.2		m qualified in the appropr n C, of the Building Code		an "other		
Individual BCIN:	19669					
Basis for exemption fr	om registration and	d qualification:	O.B.C SENT	TENCE 3.2.4.1	(4)	
The design work is exempt Basis for exemption from registra		on and qualification requi	rements of the E	Building Code.		
I certify that:						
 The information contained I have submitted this applica 		ule is true to the best of medge and consent of the f				
June 21, 2021			Michan	1 Ofounde		
Date	•			Signature of Des	signer	1
			C	I <u>TY OF RICHM</u> BUILDING DI	OND HILL	┢
NOTE				00/44/2		_
NOTE: 1. For the purposes of this form, "individual" me	ans the "person" refe	rred to in Clause 3.2.4.7(1)	d).of Division C, A	rticle 32,5.1 of Divisio	a_{n}	
and all other persons who are exempt from qualific	ation under Subsecti	ons 3.2.4. and 3.2.5. of Divis	sion C.			
Schedule 1 is not required to be completed b	y a holder of a license	e, temporary license, or a ce	rtırıcate o <mark>f</mark> authoriz	zation, 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



BUILDER:	CENTR		•		MLEY)			TYPE:	OPT 2N	ND				GFA:	2602			DATE:							HANGE RATE 0.227 HANGE RATE 0.071			S ΔT °F. 78 I ΔT °F. 13	SB-12 F	CSA-F2	
ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2				S-	BATH				
EXP. WALL				35			22			8			36			27			13			6					6				
CLG. HT.				9			9			9			9			9			9			9					9				
1	FACTO	RS																													
GRS.WALL AREA	LOSS	GAIN		315			198			72			324			243			117			54					54				
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			GAIN		LOSS	GAIN			L	OSS GAIN	4			
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	392	288	0	0	0				174 128				
EAST	21.8	41.6	37	806	1537	18	392	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0 0				
SOUTH	21.8	24.9	0	0	0	9	196	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0 0				
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	52	1133	2161	64	1394	2659	0	0	0	15	327	623			0	0 0				
SKYLT.	35.8	101.2	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	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0 0				
NET EXPOSED WALL	4.2	0.7	278	1169	192	171	719	118	72	303	50	272	1144	188	179	753	124	99	416	68	39	164	27			46	193 32				
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0 0				
EXPOSED CLG	1.3	0.6	303	398	178	123	162	72	75	99	44	195	256	115	160	210	94	210	276	123	85	112	50				99 44				
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0	45	126	57	0	0	0	0	0	0				0 0				
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	o	0	0	205	535	88	95	248	41	85	222	37				196 32				
BASEMENT/CRAWL HEAT LOSS			-	0	-	1	0	-	1	0	-	1	0	-		0			0			0				1	0				
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0					0				
SUBTOTAL HT LOSS				2373			1469			401			2533			3019			1332			824				1 .	662				
SUB TOTAL HT GAIN					1908			1163			94			2464			3022			520			737			1	236				
LEVEL FACTOR / MULTIPLIER			0.20	0.16		0.20	0.16		0.20	0.16	• •	0.20	0.16		0.20	0.16		0.20	0.16		0.20	0.16				0.20	0.16				
AIR CHANGE HEAT LOSS				380			235			64			405			483			213			132					106				
AIR CHANGE HEAT GAIN				-	86			52		٠.	4			111			136			23			33				11				
DUCT LOSS				0	00		0	32		0	-		0			350	130		155	23		96	33				77				
DUCT GAIN				Ü	0		·	0		U	0		·	0		330	393		133	132		30	77				25				
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0			0	0				
HEAT GAIN APPLIANCES/LIGHTS	240		_		534			0	ľ		0	١.		534	l '		534	'		534	٠		0			"	0				
TOTAL HT LOSS BTU/H				2753	004		1704	٠		466	٠		2938	004		3852	004		1700	004		1052	٠				845				
TOTAL HT GAIN x 1.3 BTU/H				2,00	3910		.,,,,	1579		400	128		2000	4352		0002	5622		1700	1884		1002	1101				353				
TOTAL III GAIN X 1.5 BTO/II					3310			13/3	<u> </u>		120			4002			3022			1004			1101		1	1	333				
ROOM USE							GRT		1	KIT			DEN			LAUN			PWD			FOY		MUD						BAS	
EXP. WALL							60																								
CLG. HT.										32			14			14			10											168	
										32 10			14 9			14 10			10 10			35		20						168 10	
CLG. HI.	FACTO	RS					10			32 10			14 9			14 10			10 10											168 10	
	FACTO	-					10			10			9			10			10			35 10		20 10						10	
GRS.WALL AREA	-	-					10 606	GAIN		10 323	GAIN		9 126	GAIN		10 141	GAIN		10 101	GAIN		35 10 354	GAIN	20 10 202	a a					10 1176	GAIN
GRS.WALL AREA GLAZING	LOSS	GAIN					10 606 LOSS			10 323 LOSS	GAIN 0	٥	9 126 LOSS			10 141 LOSS			10 101 LOSS	GAIN 0	0	35 10 354 LOSS		20 10 202 LOSS GAI	N				3	10 1176 LOSS	GAIN 48
GRS.WALL AREA GLAZING NORTH	LOSS 21.8	GAIN 16.0				0	10 606 LOSS 0	0	0	10 323 LOSS 0	0	0	9 126 LOSS 0	0	0	10 141 LOSS 0	0	0	10 101 LOSS 0	0	0	35 10 354 LOSS 0	0	20 10 202 LOSS GAI 0 0 0	ų.				3 3	10 1176 LOSS 65	48
GRS.WALL AREA GLAZING NORTH EAST	21.8 21.8	16.0 41.6				0	10 606 LOSS 0 0	0	0	10 323 LOSS 0 0	0	0	9 126 LOSS 0 0	0 0	0	10 141 LOSS 0 0	0 0	0	10 101 LOSS 0 0	0	0	35 10 354 LOSS 0	0	20 10 202 LOSS GAI 0 0 0 0 0 0	V				3	10 1176 LOSS 65 65	48 125
GRS.WALL AREA GLAZING NORTH EAST SOUTH	21.8 21.8 21.8 21.8	16.0 41.6 24.9				0	10 606 LOSS 0 0	0 0 0	0 0 0	10 323 LOSS 0 0	0 0 0	0 36	9 126 LOSS 0 0 784	0 0 896	0	10 141 LOSS 0 0	0 0 0	0 0 9	10 101 LOSS 0 0 196	0 0 224	0	35 10 354 LOSS 0 0	0 0 0	20 10 202 LOSS GAI 0 0 0 0 0 0	7				3	10 1176 LOSS 65 65 131	48 125 149
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST	21.8 21.8 21.8 21.8 21.8	16.0 41.6 24.9 41.6				0 0 60	10 606 LOSS 0 0 0	0 0 0 2493	0 0 0 48	10 323 LOSS 0 0	0 0 0 1994	0 36 0	9 126 LOSS 0 0 784 0	0 0	0 0	10 141 LOSS 0 0 0	0 0 0	0 0 9 0	101 LOSS 0 0 196	0 0 224 0	0 0 22	35 10 354 LOSS 0 0 0 479	0 0 0 914	20 10 202 LOSS GAI 0 0 0 0 0 0 0 0 0	ч				3	10 1176 LOSS 65 65	48 125 149 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT.	21.8 21.8 21.8 21.8 21.8 35.8	16.0 41.6 24.9 41.6 101.2				0 0 60 0	10 606 LOSS 0 0 0 1307	0 0 0 2493 0	0 0 0 48 0	323 LOSS 0 0 0 1046	0 0 0 1994 0	0 36 0	9 126 LOSS 0 0 784 0	0 0 896 0	0 0 0	10 141 LOSS 0 0 0 0	0 0 0 0	0 0 9 0	101 LOSS 0 0 196 0	0 0 224 0	0 0 22 0	35 10 354 LOSS 0 0 0 479 0	0 0 0 914 0	20 10 202 LOSS GAI 0 0 0 0 0 0 0 0 0 0 0 0	4				3 6 0	10 1176 LOSS 65 65 131 0	48 125 149 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS	21.8 21.8 21.8 21.8 21.8 35.8 25.8	16.0 41.6 24.9 41.6 101.2 4.3				0 0 60 0	10 606 LOSS 0 0 0 1307 0	0 0 0 2493 0	0 0 0 48 0	10 323 LOSS 0 0 0 1046	0 0 0 1994 0	0 36 0 0	9 126 LOSS 0 0 784 0 0	0 0 896 0 0	0 0 0 0 0	10 141 LOSS 0 0 0 0 0	0 0 0 0 0	0 9 0 0	101 LOSS 0 0 196	0 0 224 0	0 0 22 0 40	35 10 354 LOSS 0 0 0 479 0 1034	0 0 0 914 0 170	20 10 202 LOSS GAI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	N.				3 6 0	10 1176 LOSS 65 65 131 0 0 517	48 125 149 0 0 85
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL	21.8 21.8 21.8 21.8 21.8 25.8 4.2	16.0 41.6 24.9 41.6 101.2				0 0 60 0	10 606 LOSS 0 0 0 1307	0 0 0 2493 0	0 0 0 48 0	323 LOSS 0 0 0 1046 0	0 0 1994 0 0	0 36 0 0 0	9 126 LOSS 0 0 784 0	0 0 896 0	0 0 0 0 0 0	10 141 LOSS 0 0 0 0	0 0 0 0	0 9 0 0 0 92	10 101 LOSS 0 0 196 0	0 0 224 0 0	0 0 22 0 40 292	35 10 354 LOSS 0 0 0 479 0	0 0 914 0 170 202	20 10 202 LOSS GAI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126	N				3 6 0 0 20	10 1176 LOSS 65 65 131 0 517	48 125 149 0 0 85
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				0 0 60 0 0 546	10 606 LOSS 0 0 0 1307 0 0 2296	0 0 0 2493 0 0 378	0 0 0 48 0 0 275	323 LOSS 0 0 0 1046 0 0	0 0 1994 0 0 190	0 36 0 0 0 90	9 126 LOSS 0 0 784 0 0 0 378	0 0 896 0 0 0 62	0 0 0 0 0	10 141 LOSS 0 0 0 0 0 0 595	0 0 0 0 0 0	0 9 0 0	101 LOSS 0 0 196 0 0 0	0 0 224 0 0 0	0 0 22 0 40	35 10 354 LOSS 0 0 0 479 0 1034 1226	0 0 0 914 0 170	20 10 10 10 10 10 10 10 10 10 10 10 10 10	V .				3 6 0 0 20	10 1176 LOSS 65 65 131 0 517	48 125 149 0 0 85
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0	0 0 2493 0 0 378 0	0 0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0	0 0 1994 0 0 190 0	0 36 0 0 0 90 0	9 126 LOSS 0 0 784 0 0 0 378 0	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 0 0 595 0 0	0 0 0 0 0 0 0 98 0	0 0 9 0 0 0 0 92	101 LOSS 0 0 196 0 0 387 0	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0	0 0 914 0 170 202 0	20 10 10 202 202 203 GAI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4				3 6 0 0 20 0 504	10 1176 LOSS 65 65 131 0 517 0 1857	48 125 149 0 0 85 0 305
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0	0 0 2493 0 0 378 0	0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0 0	0 0 1994 0 0 190 0	0 36 0 0 0 90 0 125	9 126 LOSS 0 0 784 0 0 378 0 164	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 0 0 595 0 0 0	0 0 0 0 0 0 98 0	0 0 9 0 0 0 92 0	10 101 LOSS 0 0 196 0 0 0 387 0	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0	0 0 914 0 170 202 0 0	20		OF	RICH	MOND H	3 6 0 0 20 0 504	10 1176 LOSS 65 65 131 0 517 0 1857	48 125 149 0 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMIT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0	0 0 2493 0 0 378 0	0 0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0	0 0 1994 0 0 190 0	0 36 0 0 0 90 0	9 126 LOSS 0 0 784 0 0 378 0 164 0	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 0 595 0 0 0	0 0 0 0 0 0 0 98 0	0 0 9 0 0 0 0 92	101 LOSS 0 0 196 0 0 387 0 0	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0	0 0 914 0 170 202 0	202 LOSS GAI 0	СІТҮ			MOND H	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 0 517 0 1857 0	48 125 149 0 0 85 0 305
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED SHWT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0	0 0 2493 0 0 378 0	0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0 0 0	0 0 1994 0 0 190 0	0 36 0 0 0 90 0 125	9 126 LOSS 0 0 784 0 0 378 0 164 0	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 595 0 0 0 0	0 0 0 0 0 0 98 0	0 0 9 0 0 0 92 0	101 LOSS 0 0 196 0 0 387 0 0 0	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	20 10 10 10 10 10 10 10 10 10 10 10 10 10	СІТҮ			MOND H	3 6 0 0 20 0 504 0	10 1176 LOSS 65 65 131 0 517 0 1857	48 125 149 0 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0	0 0 2493 0 0 378 0	0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0 0 0 0	0 0 1994 0 0 190 0	0 36 0 0 0 90 0 125	9 126 LOSS 0 0 784 0 0 378 0 164 0 0	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 0 595 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 98 0	0 0 9 0 0 0 92 0	101 LOSS 0 0 196 0 0 387 0 0 0	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	20 10 10 202 202 203 GAI 0 0 0 0 0 0 0 0 0 0 20 517 85 182 765 126 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	СІТҮ				3 6 0 0 20 0 504 0	10 1176 LOSS 65 65 131 0 0 517 0 1857 0	48 125 149 0 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0	0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 1157 0 0 0	0 0 1994 0 0 190 0 0	0 36 0 0 0 90 0 125	9 126 LOSS 0 0 784 0 0 378 0 164 0	0 0 896 0 0 62 0 73 0	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 595 0 0 0 0	0 0 0 0 0 0 98 0 0	0 0 9 0 0 0 92 0	101 LOSS 0 0 196 0 0 387 0 0 0	0 0 224 0 0 0 64 0 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0	0 0 914 0 170 202 0 0	202 LOSS GAI 0	CITY B	UILD	ING [DIVISION	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 0 517 0 1857 0	48 125 149 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED EAST EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 1307 0 2296 0 0 0 0 0 3603	0 0 2493 0 0 378 0	0 0 48 0 0 275 0 0	10 323 LOSS 0 0 1046 0 1157 0 0 0 2203	0 0 1994 0 0 190 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 784 0 0 378 0 164 0 0 0	0 0 896 0 0 0 62 0 73	0 0 0 0 0 141 0 0	10 141 LOSS 0 0 0 0 0 0 595 0 0 0 0 595	0 0 0 0 0 0 98 0	0 0 9 0 0 92 0 0	101 LOSS 0 0 196 0 0 387 0 0 0 0 0 0 583	0 0 224 0 0 0 64 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 914 0 170 202 0 0	200 100 100 100 100 100 100 100 100 100	CITY B	UILD	ING [DIVISION	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 182 1857 0 0 5708	48 125 149 0 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG NO ATTIC EXPOSED CLG SEXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0	10 323 LOSS 0 0 1046 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 190 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 784 0 0 0 378 0 164 0 0 0	0 0 896 0 0 62 0 73 0	0 0 0 0 0 141 0	10 141 LOSS 0 0 0 0 0 0 595 0 0 0 595 0 0 0 595	0 0 0 0 0 0 98 0 0	0 0 9 0 0 0 92 0	101 LOSS 0 0 1996 0 0 0 387 0 0 0 0 0 583 0.30	0 0 224 0 0 0 64 0 0	0 0 22 0 40 292 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 2739 0.30	0 0 914 0 170 202 0 0	200 100 100 100 100 100 100 100 100 100	CITY B	UILD	ING [3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED SED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 1307 0 2296 0 0 0 0 0 3603	0 0 2493 0 0 378 0 0 0	0 0 48 0 0 275 0 0	10 323 LOSS 0 0 1046 0 1157 0 0 0 2203	0 0 1994 0 0 190 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 784 0 0 378 0 164 0 0 0	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0	10 141 LOSS 0 0 0 0 0 0 595 0 0 0 0 595	0 0 0 0 0 0 98 0 0 0	0 0 9 0 0 92 0 0	101 LOSS 0 0 196 0 0 387 0 0 0 0 0 0 583	0 0 224 0 0 0 64 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 914 0 170 202 0 0 0	200 100 100 100 100 100 100 100 100 100	CITY B	UILD	ING [DIVISION	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 182 1857 0 0 5708	48 125 149 0 0 85 0 305 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED SED EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 2493 0 0 378 0 0	0 0 48 0 0 275 0 0	10 323 LOSS 0 0 0 1046 0 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 190 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 0 784 0 0 0 378 0 0 164 0 0 0 1327	0 0 896 0 0 62 0 73 0	0 0 0 0 0 141 0 0	10 141 LOSS 0 0 0 0 0 595 0 0 0 595 0 0 181	0 0 0 0 0 0 98 0 0	0 0 9 0 0 92 0 0	101 LOSS 0 0 0 196 0 0 0 387 0 0 0 0 0 583 0 30,30	0 0 224 0 0 0 64 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 914 0 170 202 0 0	200 100 100 100 100 100 100 100 100 100	CITY B	VILD 8/	ING [2021	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 85 0 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED EBMY WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT COSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 2493 0 0 378 0 0 0	0 0 48 0 0 275 0 0	10 323 LOSS 0 0 1046 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 190 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 784 0 0 0 378 0 164 0 0 0	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0	10 141 LOSS 0 0 0 0 0 0 595 0 0 0 595 0 0 0 595	0 0 0 0 0 0 98 0 0 0	0 0 9 0 0 92 0 0	101 LOSS 0 0 1996 0 0 0 387 0 0 0 0 0 583 0.30	0 0 2224 0 0 0 64 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 2739 0.30	0 0 914 0 170 202 0 0 0	200 100 100 100 100 100 100 100 100 100	CITY B	VILD 8/	ING [2021	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 0 85 0 305 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BAMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0 0	10 606 LOSS 0 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 0 2493 0 0 378 0 0 0 0	0 0 48 0 0 275 0 0 0	10 323 LOSS 0 0 0 1046 0 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 190 0 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 0 784 0 0 0 378 0 0 164 0 0 0 1327	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0 0	10 141 LOSS 0 0 0 0 0 595 0 0 0 595 0 0 181	0 0 0 0 0 0 0 98 0 0 0 0	0 9 0 0 0 92 0 0 0	101 LOSS 0 0 0 196 0 0 0 387 0 0 0 0 0 583 0 30,30	0 0 2224 0 0 0 64 0 0 0 0	0 0 222 0 40 2922 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 0 914 0 170 202 0 0 0 0	200 100 100 100 100 100 100 100 100 100	СІТҮ	OILD 8/ RE	ing in 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1	2021	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 0 85 0 305 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0	10 606 LOSS 0 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 0 2493 0 0 378 0 0 0 0 0	0 0 48 0 0 275 0 0	10 323 LOSS 0 0 0 1046 0 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 1990 0 0 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 0 784 0 0 0 378 0 0 164 0 0 0 1327	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0	10 141 LOSS 0 0 0 0 0 595 0 0 0 595 0 0 181	0 0 0 0 0 0 0 98 0 0 0 0	0 0 9 0 0 92 0 0	101 LOSS 0 0 0 196 0 0 0 387 0 0 0 0 0 583 0 30,30	0 0 2224 0 0 0 64 0 0 0 0	0 0 22 0 40 292 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 914 0 170 202 0 0 0 0 0	202 LOSS GAI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CITY BI O	OILD 8/ RE	ing in 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1	2021	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 0 85 0 305 0 0 712
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN APPLIANCES/LIGHTS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0 0	10 606 LOSS 0 0 1307 0 0 2296 0 0 0 3603 0.30 1096	0 0 0 2493 0 0 378 0 0 0 0	0 0 48 0 0 275 0 0 0	10 323 LOSS 0 0 1046 0 0 1157 0 0 0 2203 0.30 670	0 0 1994 0 0 190 0 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 784 0 0 0 378 0 164 0 0 0 1327 0.16 212	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0 0	10 141 LOSS 0 0 0 0 595 0 0 0 595 0 0 0 181	0 0 0 0 0 0 0 98 0 0 0 0	0 9 0 0 0 92 0 0 0	101 LOSS 0 0 0 196 0 0 0 387 0 0 0 0 583 0 .30 177 0	0 0 2224 0 0 0 64 0 0 0 0	0 0 222 0 40 2922 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 2739 0.30 833 0	0 0 0 914 0 170 202 0 0 0 0	200 100 100 100 100 100 100 100 100 100	CITY BI O	OILD 8/ RE	ing in 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1	2021	3 6 0 0 20 0 504 0	10 1176 LOSS 65 65 131 0 0 517 0 1857 0 0 5708 8342 0 0,67 5579	48 125 149 0 0 85 0 305 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG EXPOSED CLG EXPOSED CLG SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 0 60 0 0 546 0 0 0	10 606 LOSS 0 0 0 0 1307 0 0 2296 0 0 0 0 0 3603	0 0 0 2493 0 0 378 0 0 0 0 0	0 0 48 0 0 275 0 0 0	10 323 LOSS 0 0 0 1046 0 0 0 1157 0 0 0 0 2203	0 0 1994 0 0 1990 0 0 0 0 0	0 36 0 0 0 90 0 125 0	9 126 LOSS 0 0 0 784 0 0 0 378 0 0 164 0 0 0 1327	0 0 896 0 0 0 62 0 73 0 0	0 0 0 0 0 141 0 0 0	10 141 LOSS 0 0 0 0 0 595 0 0 0 595 0 0 181	0 0 0 0 0 0 0 98 0 0 0 0	0 9 0 0 0 92 0 0 0	101 LOSS 0 0 0 196 0 0 0 387 0 0 0 0 0 583 0 30,30	0 0 2224 0 0 0 64 0 0 0 0	0 0 222 0 40 2922 0 0 0	35 10 354 LOSS 0 0 0 479 0 1034 1226 0 0 0 0 2739	0 0 914 0 170 202 0 0 0 0 0	202 LOSS GAI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CITY BI O Per:_	OILD 8/ RE	ing in 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1	2021	3 6 0 0 20 0 504 0	1176 LOSS 65 65 131 0 517 0 1857 0 5708 8342	48 125 149 0 0 85 0 305 0 0 712

TOTAL HEAT GAIN BTU/H:

35161

TONS: 2.93

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 45124

TOTAL COMBINED HEAT LOSS BTU/H: 46794

Mehal Oxombe.



SITE NAME: CENTREFIELD (WEST GORMLEY) BUILDER: ROYAL PINE HOMES												DATE: Jun-21						2602	LO#	91329				
HEATING CFM TOTAL HEAT LOSS AIR FLOW RATE CFM	45,124 24.71		TOTAL F	LING CFM IEAT GAIN RATE CFM	34,886 31.96	·	а	furı a/c coil vailable	pressure nace filter pressure pressure s/a & r/a	0.6 0.05 0.2 0.35								O60-14V I SPEED LOW	CARRIE 60 930	R	OUTPUT	AFUE = (BTU/H) = (BTU/H) =	60,000 58,000	
RUN COUNT S/A R/A R/A All S/A diffusers 4"x10" unl All S/A runs 5"Ø unless not	4th 0 0 ess note ted other	3rd 0 0 d otherwise on la	2nd 13 5 se on lay ayout.	1st 8 1 out.	8as 4 1		max	s/a dif p	essure s/a ress. loss essure s/a	0.18 0.02 0.16		grille pre	pressure ess. Loss ssure r/a	0.17 0.02 0.15				EDLOW MEDIUM JM HIGH HIGH	1050 1115 1245 1520	т		IGN CFM = CFM @ . TURE RISE	6 " E.S.P.	- _ °F
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 (ff/min) COOLING VELOCITY (ff/min) OUTLET GRILL SIZE TRUNK	1 MBR 1.38 34 1.95 62 0.17 41 130 171 5 250 455 3X10 A	2 ENS 1.70 42 1.58 50 0.17 54 210 264 0.07 5 308 367 3X10 A	3 WIC 0.47 12 0.13 4 0.17 46 130 176 0.1 4 138 46 3X10 D	4 BED-2 1.47 36 2.18 70 0.17 73 200 273 0.06 6 184 357 4X10 B	5 BED-3 1.93 48 2.81 90 0.16 67 160 227 0.07 6 459 4X10 C	6 BED-4 1.70 42 1.88 60 0.17 19 120 139 0.12 6 214 306 4X10 D	7 ENS-2 1.05 26 1.10 35 0.17 60 150 210 0.08 4 298 402 3X10 C	8 BED-2 1.47 36 2.18 70 0.17 78 200 278 0.06 6 184 357 4X10 B	9 BED-3 1.93 48 2.81 90 0.16 69 180 249 0.07 6 245 459 4X10 C	10 MBR 1.38 34 1.95 62 0.17 33 140 173 0.1 5 250 455 3X10 A	11 S-BATH 0.42 10 0.18 6 0.17 55 190 245 0.07 4 115 69 3X10 C	12 GRT 2.35 58 2.30 73 0.17 30 140 170 0.1 5 426 536 3X10 A	13 GRT 2.35 58 2.30 73 0.17 37 150 187 0.09 5 426 536 3X10 A	14 KIT 1.44 35 1.83 59 0.17 32 150 182 0.09 5 257 433 3X10 A	15 KIT 1.44 35 1.83 59 0.17 26 120 146 0.12 5 257 433 3X10 A	16 S-BATH 0.42 10 0.18 6 0.17 54 200 254 0.07 4 115 69 3X10 C	17 DEN 1.54 38 2.10 67 0.17 40 160 200 0.09 5 279 492 3X10 D	18 PWD 0.76 19 0.39 12 0.17 48 170 218 0.08 4 218 138 3X10 B	19 FOY 3.57 88 1.75 56 0.16 60 150 210 0.08 6 449 286 4X10 B	20 MUD 1.67 41 0.98 31 0.17 21 160 181 0.1 4 470 356 3X10 C	21 BAS 3.48 86 0.42 13 0.16 31 160 191 0.08 6 438 66 4X10 A	22 BAS 3.48 86 0.42 13 0.16 25 170 195 0.08 438 66 4X10 A	23 BAS 3.48 86 0.42 13 0.16 25 160 185 0.09 6 438 66 4X10 C	24 BAS 3.48 86 0.42 13 0.16 43 160 203 0.08 6 4318 66 4X10 B
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 (ffmin) COOLING VELOCITY (ffmin) OUTLET GRILL SIZE TRUNK	25 LAUN 0.78 19 0.83 26 0.17 27 170 197 0.09 4 218 298 3X10 C																							
SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT			VELOCITY	RETURN	AIR TRUNK	K SIZE STATIC	ROUND	RECT			VELOCITY
TRUNK A TRUNK B TRUNK C TRUNK D TRUNK E TRUNK F	468 265 553 1113 0	0.07 0.06 0.06 0.06 0.00 0.00	10.9 9.2 12.1 15.7 0	14 10 18 28 0	x x x x x	8 8 8 8	(ft/min) 602 477 553 716 0		TRUNK G TRUNK H TRUNK I TRUNK J TRUNK K TRUNK L	0 0 0 0 0 0	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0 0 0 0 0 0	0 0 0 0 0 0	x x x x x	8 8 8 8 8	(ft/min) 0 0 0 0 0 0	TRUNK O TRUNK P TRUNK Q TRUNK R TRUNK S TRUNK T TRUNK U TRUNK V	0 0 0 0 0	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	0	O O O		8 8 8 8 8 8	(ft/min) 0 0 0 0 0 0
RETURN AIR # AIR VOLUME PLENUM PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LH ADJUSTED PRESSURE ROUND DUCT SIZE INLET GRILL SIZE	1 0 120 0.15 49 240 289 0.05 7.1 8 X	2 0 120 0.15 58 235 293 0.05 7.1 8 X	3 0 120 0.15 78 250 328 0.05 7.1 8 X	4 0 120 0.15 75 245 320 0.05 7.1 8 X	5 0 85 0.15 69 205 274 0.05 6.3 8 X	6 0 380 0.15 26 155 181 0.08 9.8 8 X 30	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	170 0.15 14 135 149 0.10 6.8 8 X 14	TRUNK W TRUNK X TRUNK Y TRUNK Z DROP	1115 380 0 1115 Per:	0.05 0.05 0.05 0.05 0.05	0 16.4 11 0 16.4	32 14 12/El	D × vitt	8 8 8 8 10	0 627 489 0 669



TYPE: 38-13 CENTREFIELD (WEST GORMLEY) SITE NAME:

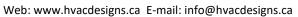
91329 OPT 2ND RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

LO#

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL VEN	ITILATION CAPACITY			9.32.3.5.
a)		Total Ventilation Capac	city	169.6	_	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. C	Capacity	79.5	_	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplementa	l Capacity	90.1	_	cfm
d) Solid Fuel (including fireplaces)						
e) No Combustion Appliances		PRINCIPAL EXHAUST Model:	VANEE 65H	Location:	BSMT	
HEATING SYSTEM			ofm	LUCATION.		Approved
Forced Air Non Forced Air			HEAT LOSS CALCULATION	1	7 11017	трргочец
Noil Torced All		CFM	ΔT °F	FACTOR	%	LOSS
Electric Space Heat		79.5 CFM	X 78 F X	1.08	Х	0.25
		SUPPLEMENTAL FAM		ALLING CON		
HOUSE TYPE	9.32.1(2)	Location ENS	Model BY INSTALLING CONTRACTOR	cfm 50	HVI S	3.5
		ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
Type a) or b) appliance only, no solid fuel		S-BATH	BY INSTALLING CONTRACTOR	50	✓ ✓	3.5
II Type I except with solid fuel (including fireplaces)	PWD	BY INSTALLING CONTRACTOR	50	1 * 1	3.5
		HEAT RECOVERY VE			,	9.32.3.11.
III Any Type c) appliance		Model: 155	VANEE 65H cfm high	64	cf	m low
IV Type I, or II with electric space heat		193	g			
Other: Type I, II or IV no forced air		75	% Sensible Efficiency @ 32 deg F (0 deg C)		✓ HVI	Approved
		LOCATION OF INSTA	LLATION			
SYSTEM DESIGN OPTIONS	O.N.H.W.P.					
1 Exhaust only/Forced Air System		Lot:		Concession		
I Exhaust only/1 orded All Gystelli		Township		Plan:		
2 HRV with Ducting/Forced Air System		Address				
3 HRV Simplified/connected to forced air system		Address Roll #		Building Perr	nit #	
4 HRV with Ducting/non forced air system				building Fen	11IC #	
Part 6 Design		BUILDER:	ROYAL PINE HOMES			
		Name:				
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:				
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:				
Other Bedrooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Telephone #:		Fax#:		
Kitchen & Bathrooms5 @ 10.6 cfm53	cfm	INSTALLING CONTRA	ACTOR			
Other Rooms 4 @ 10.6 cfm 42.4	cfm	Name:				
Table 9.32.3.A. TOTAL <u>169.6</u>	cfm	Address:				
		City:				
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)	Telephone #:	CITY OF RICH	FAX#ND	HILL	
1 Bedroom 31.8	cfm		BUIL DING			
2 Bedroom 47.7	cfm		ventilation system has been o	designed	1	
3 Bedroom 63.6	cfm	in accordance with the Name:	Ontario Building Code. HVAC Designs Ltd.	ZUZ	1	
4 Bedroom 79.5	cfm	Signature:	R Miller	1 Ofante	۷.	
5 Bedroom 95.4	cfm	HRAI#	Per: danie	001820vit	<u> </u>	
TOTAL 79.5 cfm		Date:	<u></u>	June-21		_
I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUAL	IFIED IN THE AP		THER DESIGNER" UNDER DIVISION C	, 3.2.5 OF THE BU	ILDING CODE.	



			CSA F2	80-12 Residential Hea	t Loss and Heat Gain	Calculations				
			Form	nula Sheet (For Air Lea	kage / Ventiliation C	alculation)				
LO#: 91329 Model: 38-13 Builder: I					: ROYAL PINE HOMES	·			Date:	2021-06-21
		Volume Calculation	on				Air Change & Del	ta T Data		
				=						1
louse Volume		1					TURAL AIR CHAN		0.227	
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)			SUMMER NA	TURAL AIR CHAN	IGE RATE	0.071	
Bsmt	1078	10	10780							
First Second	1078 1524	10 9	10887.8 13716				Docian T	emperature Diff	oronco	
Third	0	9	0	1			Tin °C	Tout °C	ΔT°C	ΔT °F
Fourth	0	9	0	-		Winter DTDh	22	-21	43	78
		Total:	35,383.8 ft ³	†		Summer DTDc	24	31	7	13
		Total:	1002.0 m³				1			
		•		_						
	5.2.3	3.1 Heat Loss due to A	ir Leakage			6.2.6	Sensible Gain due	to Air Leakage		
		17					17			
	$HL_{aimb} =$	$LR_{airh} \times \frac{V_b}{3.6} \times I_b$	$DTD_b \times 1.2$		Н	$G_{salb} = LR_{airc} \times$	$\langle \frac{v_b}{} \times DTD_a \rangle$	× 1.2		
		3.0								r
0.227	x <u>278.32</u>	x <u>43 °C</u>	x <u>1.2</u>	= 3270 W	= <u>0.071</u> x <u>278.32</u> x <u>7 °C</u> x <u>1.2</u> = <u>168 W</u>					
				44450 0: //						/·
				= 11158 Btu/h					=	573 Btu/h
	5.2.3.2 He	at Loss due to Mecha	nical Ventilation			6.2.7 Sei	nsible heat Gain	due to Ventilatio	n	
	$HL_{vairb} =$	$PVC \times DTD_h \times$	$1.08 \times (1-E)$		HL	$_{vairb} = PVC \times D$	$TD_h \times 1.08 \times$	(1-E)		
80 CFM	x 78 °F	x 1.08	x 0.25	= 1670 Btu/h	80 CFM	x <u>13 °F</u>	x 1.08	x 0.25	. =	275 Btu/h
			5.2.3.3 Calcula	tion of Air Change Heat L	oss for Each Room (Flo	or Multiplier Section)				
		***				(,,,)2			
		HL_{α}	_{iirr} = Level Fact	$or \times HL_{airbv} \times \{(H_{airbv}) \times \{$	$L_{agcr} + HL_{bgcr}) \div$	$(HL_{agclevel} + HL_{eq})$	bgclevel)}			
				HLairve Air Leakage +	Level Conductive Heat	Air Lookaga Haat Lo	os Multiplion (LE)			
		Level	Level Factor (LF)	Ventilation Heat Loss	Loss: (HL _{clevel})	HLairby / H				
				(Btu/h)	LOSS: (FIL _{clevel})	HLAIFDV / I	-Lievei)	CITY OF R	CHMO	ID HILL
		1	0.5		8,342	0.66	9			
		2	0.3		11,005	0.30	4	ROILDI	NG DIVI	SIUN
		3	0.2	11,158	13,941	0.16		00/	4 / 6 -	
		4	0	_	0	0.00		⊥ ()8/1	1/20	121
		5	0		0	0.00	0		1/20	- '
		*HLairbv = A	Air leakage heat loss	+ ventilation heat loss						
		*For a balar	nced or supply only v	entilation system HLairve	= 0			DE	CEIVE	ח
									OLIVE	
								Per:da	nielle.de	vitt





HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	38-13		OPT 2ND	BUILDER: ROYAL PINE HOME	S
SFQT:	2602		91329	SITE: CENTREFIELD (WES	-
DESIGN A	ASSUMPTIONS				
HEATING OUTDOO	R DESIGN TEMP.		°F -6	COOLING OUTDOOR DESIGN TEMP.	°F 88
	DESIGN TEMP.		72	INDOOR DESIGN TEMP. (MAX 75°F)	75
BUILDING	G DATA				
ATTACHN	ΛΕΝΤ:	[DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FA	ACES:		EAST	ASSUMED (Y/N):	Υ
AIR CHAN	IGES PER HOUR:		2.50	ASSUMED (Y/N):	Υ
AIR TIGH	TNESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXI	POSURE:	S	HELTERED	ASSUMED (Y/N):	Υ
HOUSE V	OLUME (ft³):		35383.8	ASSUMED (Y/N):	Υ
INTERNAI	L SHADING:	BLINDS/	CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR	LIGHTING LOAD (Btu,	/h/ft²):	1.45	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDAT	TION CONFIGURATION	I	BCIN_1	DEPTH BELOW GRADE:	7.0 f
LENGTH:	53.0 ft	WIDTH:	31.0 ft	EXPOSED PERIMETER:	168.0 f

2012 OBC - COMPLIANCE PACKAGE			
		Compliance	Package
Component		SB-12 PERF	ORMANCE
		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	18.50
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	CITY OF RIC	10 L	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	BUILDING		11.13
Windows and Sliding Glass Doors Maximum U-Value	BUILDING	1.6	-
Skylights Maximum U-Value	N8/11	/275/2	-
Space Heating Equipment Minimum AFUE	00/11	0.96	-
HRV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF	REC	TE=94%	-
	Per:dani	elle.devitt_	
INDIVIDUAL BCIN: 19669	net + 1	00/1	
MICHAEL O'ROURKE	Millsebard (Hounte.	



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

We	ather Statio	on Description			
Province:	Ontario				
Region:	Richmond F				
	Site Des	cription			
Soil Conductivity:	Normal con	ductivity: dry sand, loam, clay			
Water Table:	Normal (7-1	.0 m, 23-33 ft)			
Foundation Dimensions					
Floor Length (m):	16.2				
Floor Width (m):	9.4				
Exposed Perimeter (m):	0.0				
Wall Height (m):	3.0				
Depth Below Grade (m):	2.13 Insulation Configuration				
Window Area (m²):	1.1				
Door Area (m²):	1.9				
	Radian	t Slab			
Heated Fraction of the Slab:	0				
Fluid Temperature (°C):	33				
	Design N	Months			
Heating Month	1				
	Foundation	on Loads CITY OF RICHMOND HILL			
Heating Load (Watts):		1672 08/11/2021			
TYPE: 38-13 LO# 91329	OP	PT 2ND RECEIVED Per:danielle.devitt			



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			
Lo	ocal Shielding			
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.74			
Buildi	ing Configuration			
Туре:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m³):	1002.0			
Air Lea	akage/Ventilation			
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 935.3 cm²			
	2.50 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply Total Exhaust			
	37.5 37.5			
	Flue Size			
Flue #:	#1 #2 #3 #4			
Diameter (mm):	0 0 0 0			
Natura	l Infiltration Rates			
Heating Air Leakage Rate (AC	:н/н): 0 <mark>.227</mark>			
Cooling Air Leakage Rate (AC	H/H): 0.071 OF RICHMOND HILL UILDING DIVISION			

TYPE: 38-13 **LO#** 91329

OPT 2ND8/11/2021

RECEIVED
Per:____danielle.devitt_

Richmond Hill

City of Richmond Hill Building Division

REVIEWED

Bv: PxV

____Date:_SEP/10/2021

Building Permit #: ____BP#-2021-50829

All construction shall comply with the Ontario Building Code and all other applicable statutory regulations. The reviewed documents must be kept on site at all times.

Building inspection line: 905-771-5465 (24 hr) buildinginspections @richmondhill.ca Building inquiry line 905-771-8810 building @richmondhill.ca

Ensure that R-Values and U-Values used for 10 loss and heat gain calculations are consistent with the values specified by SB-12 Performance Compliance:

BETTER THAN CODE/AIR TIGHTNESS TEST and the values used for architectural design.

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

Volume control dampers to all branches to be installed per OBC 2012, Div.B, 6.2.4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)

Combustion air supply shall be provided to the furnace and hot water tank.

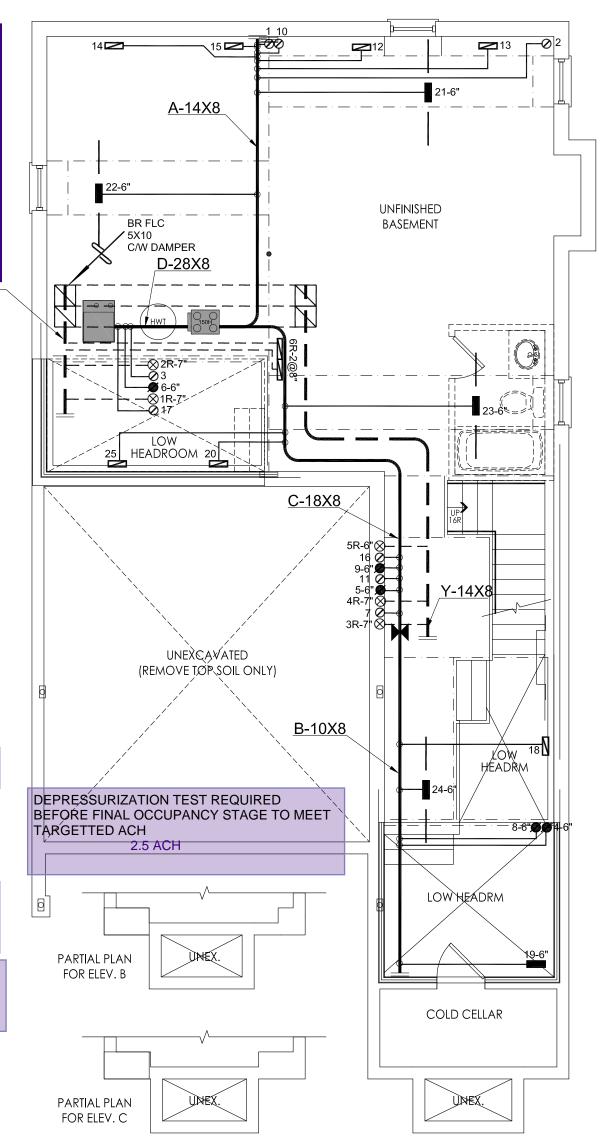
HRV installation, testing, startup and commissioning shall be in compliance with OBC 2012, Div.B 9.32.3.11, 9.32.3.11(7)&(10)

HRV duct connection shall be in compliance with OBC 2012 Div.B 9.32.3.6(3) & 9.32.3.4(7).

For simplified HRV/ERV installation, with stale air and fresh air connected to return air plenum, stale air intake and fresh air supply shall be separated minimum 3' or as recommended by HRV/ERV Manufacturer.

Supply air grill at finished basement shall be at low level. Return air grill for finished or unfinished basement shall be at low level. HRAI digest 2005, clause 7.7(3).

Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.



BASEMENT FLOOR PLAN FLEV 'A'. 'B' & 'C

I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.

Michael Officer

SB-12 PERFORMANCE

HVAC LEGEND								3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u> </u>	30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No. Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER	REVISIONS	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

375 Finley Ave. Suite 202 - Ajax, Ontario

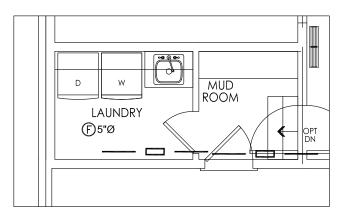
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper.
Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

	SS 46794		# OF RUNS	S/Á	R/A	FANS	Sheet T			
	JN I T DATA		3RD FLOOR				j t	BASE	MENT	
MAKE (CARRIER		2ND FLOOR	213 (<u>.</u> 5=1	\3 F	-D		TING	
MODEL 59TI	N6B-060-14	·V	1SPELOOR	&a	niell	e3de	vitt	LAY	OUT	
INPUT	60	MBTU/H	BASEMENT	4_	1	0_	Date	JUN	E/2021	
OUTPUT		MBTU/H	ALL S/A DIFFU	SERS	4 "x10		Scale	3/16"	= 1'-0"	
COOLING	58		UNLESS NOTED OTHERWISE BCIN#				# 19669			
COOLING	3.0	TONS	UNI ESS NOTED OTHERWISE							
FAN SPEED	1115	cfm @	ON LAYOUT. UNDERCUT LO# 9				91329			

38-13 - OPT 2ND 2602 sqft

Kitchen hood exhaust duct shall be provided as per OBC 2012, Div.B 9.32.3.10, 9.32.3.5(2).



PARTIAL OPT GROUND FLOOR PLAN ELEV. 'A', 'B' & 'C' w/ LAUNDRY

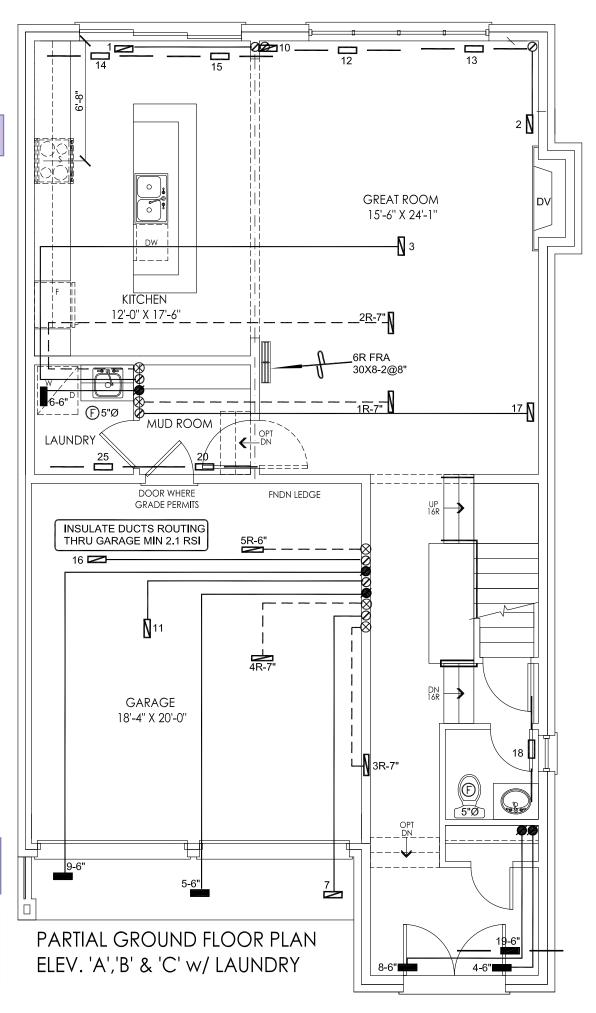
Laundry dryer exhaust duct shall be provided as per OBC 2012 Div.B 6.2.3.8(7).

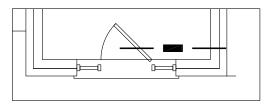
Penetration of Air Barrier System by ducts, wires, conduits or building materials shall be sealed as per OBC 2012, Div.B 9.25.3.3.(9) & (10).

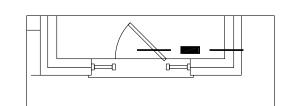
Exterior insulation effective R-Value for wall, roof or exposed floor shall be maintained at the respective location where duct or sanitary pipes are routed inside exterior envelope.

Minimum R-12 Insulation Value required for ducts installed at unheated or exposed condition (OBC 2012 Div.B 6.2.4.3(10) and seal the ducts as per 6.2.4.3(11) & HRAI Digest 2005, Clause 4.5.

Space between studs and joists used as return ducts shall be separated from unused portion as per OBC 2012 Div.B 6.2.4.7(6)







GROUND FLOOR PLAN ELEV 'B' GROUND FLOOR PLAN ELEV 'C'

CSA-F280-12 SB-12 PERFORMANCE

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR	<u> </u>	30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No. Description	Date
	SUPPLY AIR BOOT ABOVE 6" SUPPLY AIR STACK 2nd FLOOR FRA- FLOOR RETURN AIR GRILLE REDUCER						REVISIONS		

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ROYAL PINE HOMES

ONTARIO BUILDING CODE.

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

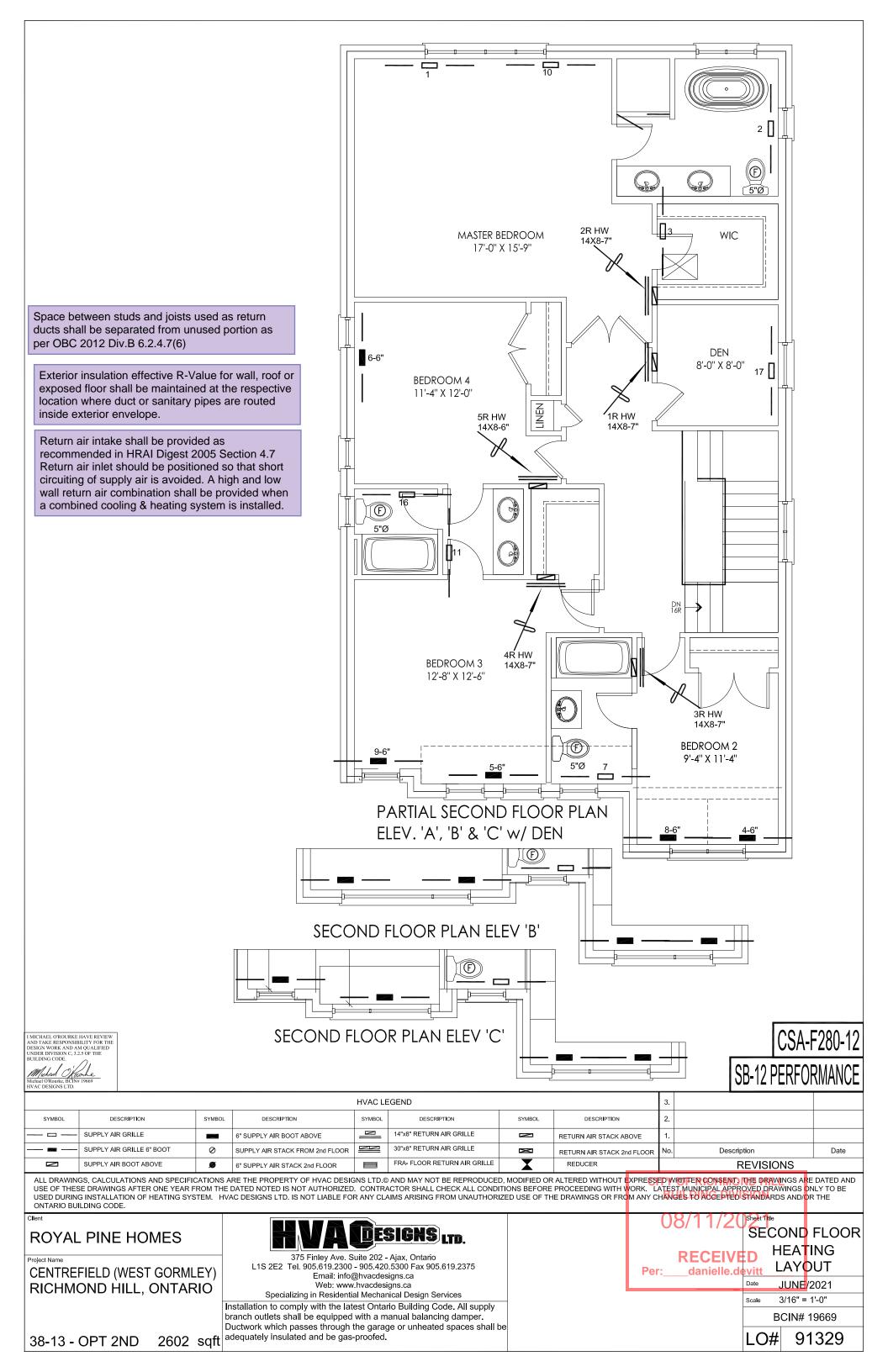
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

FIRST FLOOR **HEATING** RECEIVED LAYOUT _danielle.d JUNE/2021 3/16" = 1'-0" BCIN# 19669 91329 LO#

38-13 - OPT 2ND 2602 sqft



Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the Performance or Other Acceptable Compliance Methods described in Subsections 3.1.2. and 3.1.3. of SB-12,

This form must accurately reflect the information contained on the drawings and specifications being submitted. Refer to Supplementary Standard SB-12 for details about building code compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website or the municipal building department.

For use by Principal Authority

Model/Certification Number

A. Project Information							
Model Type 38-13			Unit number	Lot/Con			
Municipality	Postal code F	eg. Plan number / other descrip	tion				
Richmond Hill							
B. Compliance Option [indicate the	building code compliance option	being employed in this ho	ouse design]				
■ SB-12 Performance* [SB-12 - 3.1.2.	* Attach energy perfor	mance results using	an approved sof	tware (see guide)			
☐ <i>ENERGY STAR</i> ®* [SB-12 - 3.1.3.]	* Attach Builder Optio	n Package [BOP] for	m				
☐ R-2000® *[SB-12 - 3.1.3.]	* Attach R-2000 HOT	2000 Report	000 Report				
C. Project Building Design Con	ditions						
	eating Equipment Efficien	cy Space Heating Fu	el Source				
	≥ 92% AFUE		Propane	□ Solid Fuel			
□ Zone 2 (≥ 5000 degree days) □	≥ 84% < 92% AFUE	□ Oil □	Electric	□ Earth Energy			
Ratio of Windows, Skylights & Glass (W	, S & G) to Wall Area		Other Building Characteristics				
Area of walls = $326.50 \text{ m}^2 \text{ or}$ ft ²		□ Log/Post&Beam□ Slab-on-ground		ade □ ICF Basement ment			
	W. S & G % = 11.47	☐ Air Conditioning	□ Combo Unit				
27.46		□ Air Source Heat	Pump (ASHP)				
Area of W, S & G = $\frac{37.46}{m^2}$ orft ²		☐ Ground Source I	Heat Pump (GSHF	P)			
SB-12 Performance Reference Building	Design Package indicating	the prescriptive pack	cage to be compa	red for compliance			
SB-12 Referenced Building Package (i	nput design package): P	ackage: A1	Table:	3.1.1.2.A			

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form

Building Component		SI / R values n U-Value ⁽¹⁾	Building	Component	Efficiency Ratings
Thermal Insulation	Nominal	Effective	Windows & Doo	rs Provide U-Value ⁽¹⁾ or ER	rating
Ceiling with Attic Space	R60		Windows/Sliding	Glass Poors RICHMO	N±149ILL
Ceiling without Attic Space	R31		Skylights/Glazed	Roofs BUILDING DIV	IN/AON
Exposed Floor	R31		Mechanicals	00/44/2	024
Walls Above Grade	R22+R1.5ci		Heating Equip.(AF	UE) UO/ 11/2	96% AFUE
Basement Walls	R20ci		HRV Efficiency (S	RE% at 0°C)	75%
Slab (all >600mm below grade)	N/A		DHW Heater (EF)	Dan danialla a	0.90 EF
Slab (edge only ≤600mm below grade)	N/A		DWHR (CSA B55.1	(min. 42% efficiency))	42 # Showers_2
Slab (all ≤600mm below grade, or heated)	N/A		Combined Space	/ Dom. Water Heating	N/A

⁽¹⁾ U value to be provided in either W/(m²•K) or Btu/(h•ft²•F) but not both.

Application No:

E. Performance Design Verification [Subsection 3.1.2. Per	formance Compliance]	
The annual energy consumption using Subsection 3.1.1. SB	-12 Reference Building	Package is 151.46 GJ (1 GJ =1000MJ)
The annual energy consumption of this house as designed is	s 118.36 GJ	
The software used to simulate the annual energy use of the	building is: REMRATE	E 16.0.2 Canada
The building is being designed using an air tightness baselir	ne of:	
☐ OBC reference ACH, NLA or NLR default values (no	depressurization test re	equired)
■ Targeted ACH, NLA or NLR. Depressurization test to	meet 2.5 AC	H50 or NLR or NLA
Reduction of overall thermal performance of the property envelope of the compliance package it is compared.	• .	e is not more than 25% of the
☐ Standard Operating Conditions Applied (A-3.1.2.1 - 4	.6.2)	
☐ Reduced Operating Conditions for Zero-rated homes	Applied (A-3.1.2.1 - 4.6	3.2.5)
☐ On Site Renewable(s): Solar:		
Other Types:		
F. ENERGY STAR or R-2000 Performance Design V	erification [Subsection	3.1.3. Other Acceptable Compliance Methods]
☐ The NRCan "ENERGY STAR for New Homes Standard design result in the building performance meeting or ex Supplementary Standard SB12 (A-3.1.3.1).	d Version 12.6 " technic	al requirements, applied to this building
☐ The NRCan, "2012 R-2000 Standard " technical require performance meeting or exceeding the prescriptive pe (A-3.1.3.1).		
Performance Energy Modeling Professional		
Energy Evaluator/Advisor/Rater/CEM Name and company:	Accreditation or Evaluator	/Advisor/Rater License #
John B Godden/Clearsphere Consulting	08	
ENERGY STAR or R-2000		
Energy Evaluator/Advisor/Rater/ Name and company:	Evaluator/Advisor/Rater L	icense #
G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) prov	iding information herein to su	bstantiate that design meets the building code]
Qualified Designer: Declaration of designer to have reviewed and take		
Name	BCIN	Signature

Qualified Designer: Declaration of designer to have reviewed and take responsibility for the design work.					
Name	BCIN	Signature			
MARTHA SANDOVAL	103017	Watter-			

Form authorized by OHBA, OBOA, LMCBO. Revised December 1, 2016

CITY OF RICHMOND HILL BUILDING DIVISION

08/11/2021

RECEIVED

Per:____danielle.devitt_

Guide to the Energy Efficiency Design Summary Form for Performance & Other Acceptable Compliance Methods

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

- <u>SB-12 Performance</u> refers to the method of compliance in Subsection 3.1.2. of SB-12. Using this approach the designer must use recognized energy simulation software (such as HOT2000 V10.51 or newer), and submit documents which show that the annual energy use of the proposed building is equal to or less than a prescriptive (referenced) building package.
- <u>ENERGY STAR</u> houses must be designed to <u>ENERGY STAR</u> requirements and verified on completion by a licensed energy evaluator and/or service organization. The <u>ENERGY STAR</u> BOP form must be submitted with the permit documents.
- *R-2000* houses must be designed to the *R-2000 Standard* and verified on completion by a licensed energy evaluator and/or service organization. The HOT2000 report must be submitted with the permit documents.

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1 Windows, Skylights and Glass Doors: If the ratio of the total gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 3.1.1.1. of SB-12 for further details.

Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which <u>SB-12 Prescriptive</u> compliance package table applies. Other Building Conditions: These construction conditions affect SB-12 Prescriptive compliance requirements.

D. Building Specifications

Thermal Insulation: Indicate the RSI or R-value being proposed where they apply to the house design. Refer to SB-12 for further details.

E. Performance Design Summary

A summary of the performance design applicable only to the SB-12 Performance option.

F. ENERGY STAR or R-2000 Performance Method

Design to ENERGY STAR or R-2000 Standards.

G. House Designer

The building code requires designers providing information about whether a building complies with the building code to have a BCIN. Exemptions apply to architects, engineers and owners designing their own house.

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES

All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered.

The air leakage rates in Table 3.1.2.1. are not requirements. The Table is not intended to require or suggest that the building meet those airtightness targets. They are provided only as default or reference values for the purpose of annual energy simulations, should the builder/owner decide to perform such simulations. They are given in three different metrics; ACH, NLA, NLR. Any one of them can be used. They can be used as a default values for both a reference and proposed building or, where an air leakage test is conducted and credit for airtightness is claimed, the airtightness values in Table 3.1.2.1. can be used for the reference building and the actual leakage rates obtained from the air leakage test can be used as inputs for the proposed building.

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)			BUIL	DING DIVISION	
Detached dwelling	3.0 ACH50	NLA 2.12 cm ² /m ²		NLR 1.32 L/s/m ²	
Attached dwelling	3.5 ACH50	NLA 2.27 cm ² /m ²	U8	/ NLR 1/43 1/5/m² 1	

The building code requires that a blower door test be conducted to verify the air tightness of the house during construction if the <u>SB-12 Performance</u> option is used and an air tightness of less than 3.0 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of detached houses, or 3.5 ACH @ 50 Pa (or NLR equivalent) in the case of attached houses is necessary to meet the required energy efficiency standardical edevitt

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

ENERGY STAR and R-2000 may issue labels for new homes constructed under their energy efficiency programs. The building code does not currently regulate or require new home labeling.

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2

Code Compliance Certificate

Project Title: Model 38-13 - Proposed

Report Date June 21, 2021

Data Filename Model 38-13 - Proposed.blg

Energy Code OBC SB-12 Performance Compliance Ontario 2017

Location Toronto, ON_CAN

Construction Type Single-family detached

Heating Type Natural Gas
Heating Degree Days <5000 HDD-Zone 1

Conditioned Area (sq ft) 3675 Conditioned Volume (cubic ft) 35523 Insulated Shell Area (sq ft) 8204

Construction Site Owner Builder HERS Rater

Model 38-13 - Proposed Royal Pine Homes Royal Pine Homes Clearsphere Consulting

Richmond Hill, Model 38-13 - Proposed 3550 Langstaff Road, Suite 200 John Godden Richmond Hill, Woodbridge, Ontario L4L 9G3 416-481-4218

Annual Energy Consumption KWH GJ

Reference Home Package A1

Proposed House Better Than Code

127711	
42073.18	151.46
32877.41	118.36
21.9%	

SB-12 Performance Compliance: PASS

The Design Home total annual consumption is less than or equal to the Reference Home.

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Ceilings			
Roof 1: Std-R60, Attic G2******	1521	20.0	40.0
Above-Grade Walls			
AG Wall 1: Std R22 G2 + 1.5 @16********	3089	22.0	1.5
Joist 1: Cond -> ambient	340	22.0	1.5
Window 1: U=0.282, SHGC 0.45*******	390	CITY OF RICHMO	OND HILB.5
Door 1: R6******	9	BUILDING DIV	VISION 6.0
Door 2: Code	18	08/11/2	024 4.0
Floors Over Garage		00/11/2	021
Floor 1: Std-R31 G2******	453	31.0	0.0
Basement Walls		RECEIV	
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REM/Rate - Residential Energy Analysis and Rating Software v16.0.2

Code Compliance Certificate

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Wall 1: Std-R-20 Blanket G2******	1693	0.0	20.0
Window 2: U=0.282, SHGC 0.45********	13		3.5
Door 3	17		4.0
Mechanical Equipment	Name/Type	Size/Input	Efficiency
Heating: Fuel-fired air distribution	96 AFUE Gas ECM 64k*******	64.0 kBtuh	96.0 AFUE
Water Heating: Conventional, Gas	50 gal. 0.90 EF Gas*******	50 gal	0.90 EF
HRV/ERV		66.0 CFM	75.0% sen/ 0.0% tot

Drain Water Heat Recovery

2 of 2 Showers connected and 42.0% unit efficiency

Air Exchange

2.50 ACH50 or: 0.18 CFM50/sf

Efficient Lighting

90.0% Interior, 90.0% Exterior, 0.0% Garage

Renewables

N/A

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Property

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Richmond Hill,

Weather: Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization

Clearsphere Consulting

416-481-4218 John Godden

Builder

Royal Pine Homes

HERS

Projected Rating June 21, 2021 Rating No:N/A Rater ID:0001

Property/Builder Information

Building Name Owner's Name **Property Address**

City, St, Zip

Phone Number

Model 38-13 - Proposed

Royal Pine Homes

Model 38-13 - Proposed

Richmond Hill.

Builder's Name

Phone Number

Fmail Address

Plan/Model Name Community/Development

Identifier/Other

Royal Pine Homes

Model

Centerfiled

Organization Information

Organization Name

Address

Website

City, St, Zip

Phone Number

Clearsphere Consulting

1632 O'Connor Dr.

Toronto, ON_CAN M4B 3P4

416-481-4218

www.clearsphere.ca

Rating/RESNET Information

Provider ID Sample Set ID

Registry ID

Registry Date Registered

Rater's Name

Rater's ID

Rater's Email

Last Field Insp Rating Type Reason for Rating Rating Number Rating Permit Date 2006-001

00000000

John Godden

0001

June 21, 2021 Projected Rating **New Home**

N/A 11/22/2019

howard@clearsphere.ca CITY OF RICHMOND HILL **BUILDING DIVISION**

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This information does not constitute any warranty of energy costs or savings.

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General Building Information

Area of Conditioned. Space(sq ft) 3675 Volume of Conditioned. Space 35523 Year Built 2021

Housing Type Single-family detached

Level Type(Apartments Only) None Floors on or Above-Grade Number of Bedrooms

Foundation Type Conditioned basement

Foundation is w/in Infiltration Volume: N/A **Enclosed Crawl Space Type** N/A Number of Stories Including Conditioned Basement 3 Thermal Boundary Location N/A

Foundation wa	ii iiiioi iiiatioii							
Name	Library Entry	Location	Length(ft)	Total Height(ft)	Depth Below Grade(ft)	Height Above Grade(ft)	Uo Value Combo*	Uo Value (wall only)
Foundation Wall	Std-R-20 Blanket	Cond->ambient/gr	r 171.00	10.08	9.08	1.00	0.034	0.048

^{*} Uo Value Combo combines wall, airfilm, and soil path

Foundation Wall Library List

Foundation Wall: Std-R-20 Blanket G2*******

Solid concrete or stone Type

Thickness(in) 8.0 Studs None

Interior Insulation

Continuous R-Value 20.0 0.0 Frame Cavity R-Value Cavity Insulation Grade

0.00 ft from top of wall Ins top Ins Bottom

Exterior Insulation

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0.00 ft from bottom of wall

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Foundation Wall Library List

R-Value 0.0

Ins top 0.00 ft from top of wall lns bottom 0.00 ft below grade

Note

Slab Floor Information							
Name	Library Entry	Area(sq ft)	Depth Below	Full	Exposed	On-Grade	
			Grade(ft)	Perimeter(Tt)	Perimeter(ft)	Perimeter(ft)	
Slab	Uninsulated*******	1077	9.08	171	171	0	

Slab Floor Library List

Slab Floor: Uninsulated********

Slab CoveringCarpetPerimeter Insulation (R-Value)0.0Perimeter Insulation Depth (ft)0.0Under-Slab Insulation (R-Value)0.0Under-Slab Insulation Width (ft)0.0Slab Insulation Grade3Radiant SlabNo

Note

Frame Floor Information						
Name	Library Entry	Location	Area(sq ft)	Uo Value		
Exposed Floor	Std-R31 G2******	Btwn cond & garage	453	0.039		

Frame Floor Library List

Floor: Std-R31 G2******

Information From Quick Fill Screen

Continous Insulation R-Value

Cavity Insulation R-Value

31.0

Cavity Insulation Thickness (in.)

Cavity Insulation Grade

2

Joist Size (w x h, in)

1.5 x 9.5

Joist Spacing (in oc)

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Frame Floor Library List

Framing Factor - (default) 0.1300
Floor Covering CARPET

Note

Rim and Band Joist Information

Name	Location	Area(sq ft)	Continuous Ins	Framed Cavity Ins	Cavity Ins Thk(in)	Joist Spacing	Insulation Grade	Uo Value
Rim Band Joist	Cond -> ambient	340.20	1.5	22.0	5.5	16.0	2	0.049

ΛΙ				
Abov	'e-(al	rade	e w	าลแ

riboro craao mar	•				
Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	Std R22 G2 + 1.5	Cond -> ambient	Medium	3088.70	0.053

Above-Grade Wall Library List

Above-Grade Wall: Std R22 G2 + 1.5

@16*******

Information From Quick Fill Screen

Wall Construction Type Std Frame w/Brick Veneer

Continuous Insulation (R-Value) 1.5

Frame Cavity Insulation (R-Value) 22.0

Frame Cavity Insulation Thickness (in) 5.5

Frame Cavity Insulation Grade 2

Stud Size (w x d, in) 1.5 x 5.5

Stud Size (W x d, in)

Stud Spacing (in o.c.)

Framing Factor - (default)

Gypsum Thickness (in)

1.5 x 5

0.2300

0.2300

Note

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Window Information

Name Wall Orient U-Value SHGC Area Depth To Top
Assignment (sqft) (ft)

Interior Adjacent

To Btm Winter Summer Winter Summer

(ft) Shading Shading Shading

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Royal Pine Homes
Model 38-13 - Proposed
Richmond Hill,

Weather:Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization Clearsphere Consulting 416-481-4218 John Godden

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June 21, 2021
Rating No:N/A
Rater ID:0001

Window Ir	nformation											
						(Overhang		Inte	rior	Adja	cent
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	5.50	5.0	1.5	2.5	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	18.70	5.0	2.5	9.5	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	12.00	5.0	2.5	9.3	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	30.00	1.3	1.0	7.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	97.50	1.3	1.0	8.5	0.85	0.70	None	None
Left	FndWall 1	West	0.282	0.450	3.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	8.70	1.3	1.8	6.1	0.85	0.70	None	None
back	FndWall 1	North	0.282	0.450	3.33	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	60.00	0.0	0.0	0.0	0.85	0.70	None	None
back Sliding	AGWall 1	North	0.282	0.450	72.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	56.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	FndWall 1	East	0.282	0.450	6.70	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	11.60	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	8.70	1.3	1.8	6.1	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	9.30	1.3	1.8	6.4	0.85	0.70	None	None

Door Informat	tion					
Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	R6*****	AGWall 1	8.5	0.144	6.0	No
garage	Code*	AGWall 1	18.2	0.203	4.0	No
Cold Cellar	Code*	FndWall 1	17.1	0.203	4.0	No

Roof Info	rmation					
Name	Library Entry	Ceiling Area(sq ft)	Roof Area(sq ft)	Exterior Color	Radiant Barrier	Type Uo Value Cement or Roof Tile CITY OF RICHMONAYTILES Ventilation
Ceiling-with attic	Std-R60, Attic G2******	1521.00	1901.25	Medium	No	AtticBUILDING DIVISION No No No
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Roof Library List

Ceiling: Std-R60, Attic G2******

Information From Quick Fill Screen

Continous Insulation (R-Value) 40.0 Cavity Insulation (R-Value) 20.0 Cavity Insulation Thickness (in) 9.5 Cavity Insulation Grade 2 Gypsum Thickness (in) 0.500 Insulated Framing Size(w x h, in) 1.5 x 3.5 Insulated Framing Spacing (in o.c.) 24.0 Framing Factor - (default) 0.1100 Ceiling Type Attic

Note

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Mechanical Equipment

Number of Mechanical Systems2Heating SetPoint(F)72.0Heating Setback ThermostatPresentCooling SetPoint(F)75.0Cooling Setup ThermostatPresentDHW SetPoint(F)125.0

Heat: 96 AFUE Gas ECM 64k********

SystemType Fuel-fired air distribution

Fuel Type Natural gas
Rated Output Capacity (kBtuh) 64.0
Seasonal Equipment Efficiency 96.0 AFUE
Auxiliary Electric 200 Watts

Note

Number Of Units

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

DHW: 50 gal. 0.90 EF Gas*******

Water Heater Type Conventional
Fuel Type Natural gas
Energy Factor 0.90
Recovery Efficiency 0.90
Water Tank Size (gallons) 50
Extra Tank Insulation (R-Value) 0.0

Note

Number Of Units 1

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

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DHW Efficiencies

All bath faucets & showers <= 2gpm false
All DHW pipes fully insulated >= R-3 false

Recirculation type None (standard system)

Farthest fixture to DHW heater 70 TOTAL Pipelength for longest DHW run 100 DWHR unit present? true DWHR unit efficiency per CSA 55.1 42.00 DWHR preheats cold supply for shower false DWHR preheats hot supply for shower true 2 Number showerheads in home Number showers connected to DWHR 2

DHW Diagnostics

dhwGpd 58.83 1.00 peRatio dishwasherGpd 5.10 clothesWasherHotWaterGPD 4.48 **EDeff** 1.00 32.00 ewaste 54.00 tmains dwhrWhInletTempAdj 8.44 pumpConsKwh 0.00 pumpConsMmbtu 0.00

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Duct Systems

Name

Conditioned Floor Area(sq ft) 3675.0

of Returns

Cooling System N/A
Supply Duct Surface Area(sq ft) 744.2
Return Duct Surface Area(sq ft) 689.1
No bldg cavities used as ducts FALSE

Туре	Location	Percent Location	R-Value
Supply	Conditioned space	100.0	0.0
Return	Conditioned space	100.0	0.0

Test Exemptions

IECCTRUERESNET 2019TRUEENERGY STAR LtOTRUE

Duct Leakage

Input Type Measured

Test Type Total Duct Leakage
Duct Test Stage Postconstruction Test

LtO (based on Total DL)

Total Duct Leakage

Supply & Return

Not Applicable

0.00 CFM @ 25 Pascals

Supply Only 0.00 CFM @ 25 Pascals
Return Only 0.00 CFM @ 25 Pascals

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Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type Blower door

Heating Season Infiltration Value 2.50 ACH @ 50 Pascals Cooling Season Infiltration Value 2.50 ACH @ 50 Pascals

Shelter Class 4
Code Verification Tested

Mechanical Ventilation for IAQ

Type Balanced
Unable to Measure Mechanical Ventilation FALSE
Rate(cfm) 66
Adjusted Sensible Recovery Efficiency(%) 75.00
Adjusted Total Recovery Efficiency(%) 0.00
Hours per Day 24.0
Fan Power (watts) 64.00
ECM Fan Motor false

Ventilation Strategy for Cooling

Cooling Season Ventilation Natural Ventilation

Good Air Exchange for Multi-Family NA

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Lights and Appliances

Rating/RESNET audit

Ceiling Fan CFM / Watt 0.00 Refrigerator kWh/yr 691

Refrigerator Location Conditioned
Range/Oven Fuel Type Electric
Induction Range No
Convection Oven No

Dishwasher

Energy Factor 0.46
Dishwasher kWh/yr 0
Place Setting Capacity 12

Clothes Dryer

Fuel Type Electric
Location Conditioned

Moisture Sensing No CEF 2.62

Clothes Washer

Location Conditioned

 LER (kWh/yr)
 704

 IMEF
 0.331

 Capacity (CU.Ft)
 2.874

 Electricity Rate
 0.08

 Gas Rate
 0.58

 Annual Gas Cost
 23.00

Qualifying Light Fixtures

Interior Lights % 0.0
Exterior Lights % 0.0
Garage Lights % 0.0
Interior LEDs % 90.0
Exterior LEDs % 90.0
Garage LEDs % 0.0

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Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the Performance or Other Acceptable Compliance Methods described in Subsections 3.1.2. and 3.1.3. of SB-12,

This form must accurately reflect the information contained on the drawings and specifications being submitted. Refer to Supplementary Standard SB-12 for details about building code compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website or the municipal building department.

For use by Principal Authority

Model/Certification Number

A. Project Information						
Model Type 38-13			Unit number	Lot/Con		
Municipality	Postal code F	eg. Plan number / other descrip	tion			
Richmond Hill						
B. Compliance Option [indicate the	building code compliance option	being employed in this ho	ouse design]			
■ SB-12 Performance* [SB-12 - 3.1.2.	* Attach energy perfor	mance results using	an approved sof	tware (see guide)		
☐ <i>ENERGY STAR</i> ®* [SB-12 - 3.1.3.]	* Attach Builder Optio	n Package [BOP] for	m			
☐ R-2000® *[SB-12 - 3.1.3.]	* Attach R-2000 HOT	2000 Report	00 Report			
C. Project Building Design Con	ditions					
	eating Equipment Efficien	cy Space Heating Fu	el Source			
	≥ 92% AFUE		Propane	□ Solid Fuel		
□ Zone 2 (≥ 5000 degree days) □	≥ 84% < 92% AFUE	□ Oil □	Electric	□ Earth Energy		
Ratio of Windows, Skylights & Glass (W	, S & G) to Wall Area	Other Building Ch				
Area of walls = $326.50 \text{ m}^2 \text{ or}$ ft ²		□ Log/Post&Beam□ Slab-on-ground		ade □ ICF Basement ment		
	W. S & G % = 11.47	☐ Air Conditioning	□ Combo Unit			
27.46		□ Air Source Heat	Pump (ASHP)			
Area of W, S & G = $\frac{37.46}{m^2}$ orft ²		☐ Ground Source I	Heat Pump (GSHF	P)		
SB-12 Performance Reference Building	Design Package indicating	the prescriptive pack	cage to be compa	red for compliance		
SB-12 Referenced Building Package (i	nput design package): P	ackage: A1	Table:	3.1.1.2.A		

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form

Building Component	Minimum RSI / R values or Maximum U-Value ⁽¹⁾		Building Component	Efficiency Ratings	
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value ⁽¹⁾ or ER	rating	
Ceiling with Attic Space	R60		Windows/Sliding Glass Doors	U=1.6	
Ceiling without Attic Space	R31		Skylights/Glazed Roofs N/A		
Exposed Floor	R31		Mechanicals		
Walls Above Grade	R22+R1.5ci		Heating Equip.(AFUE) 96% AFUE		JE
Basement Walls	R20ci		HRV Efficiency (SRE% at 0°C)	75%	
Slab (all >600mm below grade)	N/A		DHW Heater (EF)	0.90 EF	
Slab (edge only ≤600mm below grade)	N/A		DWHR (CSA B55.1 (min. 42% efficiency))	42	# Showers_2_
Slab (all ≤600mm below grade, or heated)	N/A		Combined Space / Dom. Water Heating	N/A	

⁽¹⁾ U value to be provided in either W/(m²•K) or Btu/(h•ft²•F) but not both.

Application No:

E. P	erformance Design Verification [Subsection 3.1.2. F	Performance Compliance]	
The	annual energy consumption using Subsection 3.1.1. S	B-12 Reference Building	Package is 151.46 GJ (1 GJ =1000MJ)
The	annual energy consumption of this house as designed	l isGJ	
The	software used to simulate the annual energy use of th	e building is: REMRAT	E 16.0.2 Canada
The	building is being designed using an air tightness base	line of:	
	OBC reference ACH, NLA or NLR default values (n	o depressurization test r	equired)
■	Targeted ACH, NLA or NLR. Depressurization test	to meet 2.5 AC	CH50 or NLR or NLA
	Reduction of overall thermal performance of the prenounce of the compliance package it is compare		pe is not more than 25% of the
	Standard Operating Conditions Applied (A-3.1.2.1 -	4.6.2)	
	Reduced Operating Conditions for Zero-rated home	es Applied (A-3.1.2.1 - 4.	6.2.5)
	On Site Renewable(s): Solar:		
	Other Types:		
F. E	NERGY STAR or R-2000 Performance Design The NRCan "ENERGY STAR for New Homes Standard design result in the building performance meeting or Supplementary Standard SB12 (A-3.1.3.1). The NRCan, "2012 R-2000 Standard" technical require performance meeting or exceeding the prescriptive process.	ard Version 12.6" technic exceeding the prescription	cal requirements, applied to this building we performance requirements of the building design result in the building
Perfo	ormance Energy Modeling Professional		
Energy	/ Evaluator/Advisor/Rater/CEM Name and company:	Accreditation or Evaluator	-/Advisor/Rater License #
John	B Godden/Clearsphere Consulting	08	
ENE	RGY STAR or R-2000		
Energy	r Evaluator/Advisor/Rater/ Name and company:	Evaluator/Advisor/Rater I	License #
G.	Designer(s) [name(s) & BCIN(s), if applicable, of person(s) pr	oviding information herein to si	ubstantiate that design meets the building codel
	fied Designer: Declaration of designer to have reviewed and take		
Name		BCIN	Signature
MAR	THA SANDOVAL	103017	a Dattor

Form authorized by OHBA, OBOA, LMCBO. Revised December 1, 2016

Guide to the Energy Efficiency Design Summary Form for Performance & Other Acceptable Compliance Methods

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

- <u>SB-12 Performance</u> refers to the method of compliance in Subsection 3.1.2. of SB-12. Using this approach the designer must use recognized energy simulation software (such as HOT2000 V10.51 or newer), and submit documents which show that the annual energy use of the proposed building is equal to or less than a prescriptive (referenced) building package.
- <u>ENERGY STAR</u> houses must be designed to <u>ENERGY STAR</u> requirements and verified on completion by a licensed energy evaluator and/or service organization. The <u>ENERGY STAR</u> BOP form must be submitted with the permit documents.
- *R-2000* houses must be designed to the *R-2000 Standard* and verified on completion by a licensed energy evaluator and/or service organization. The HOT2000 report must be submitted with the permit documents.

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1 Windows, Skylights and Glass Doors: If the ratio of the total gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 3.1.1.1. of SB-12 for further details.

Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which <u>SB-12 Prescriptive</u> compliance package table applies. Other Building Conditions: These construction conditions affect SB-12 Prescriptive compliance requirements.

D. Building Specifications

Thermal Insulation: Indicate the RSI or R-value being proposed where they apply to the house design. Refer to SB-12 for further details.

E. Performance Design Summary

A summary of the performance design applicable only to the SB-12 Performance option.

F. ENERGY STAR or R-2000 Performance Method

Design to ENERGY STAR or R-2000 Standards.

G. House Designer

The building code requires designers providing information about whether a building complies with the building code to have a BCIN. Exemptions apply to architects, engineers and owners designing their own house.

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES

All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered.

The air leakage rates in Table 3.1.2.1. are not requirements. The Table is not intended to require or suggest that the building meet those airtightness targets. They are provided only as default or reference values for the purpose of annual energy simulations, should the builder/owner decide to perform such simulations. They are given in three different metrics; ACH, NLA, NLR. Any one of them can be used. They can be used as a default values for both a reference and proposed building or, where an air leakage test is conducted and credit for airtightness is claimed, the airtightness values in Table 3.1.2.1. can be used for the reference building and the actual leakage rates obtained from the air leakage test can be used as inputs for the proposed building.

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)

Detached dwelling	3.0 ACH50	NLA 2.12 cm ² /m ²	NLR 1.32 L/s/m ²
Attached dwelling	3.5 ACH50	NLA 2.27 cm ² /m ²	NLR 1.44 L/s/m ²

The building code requires that a blower door test be conducted to verify the air tightness of the house during construction if the <u>SB-12 Performance</u> option is used and an air tightness of less than 3.0 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of detached houses, or 3.5 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of attached houses is necessary to meet the required energy efficiency standard.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

ENERGY STAR and R-2000 may issue labels for new homes constructed under their energy efficiency programs. The building code does not currently regulate or require new home labeling.

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2

Code Compliance Certificate

Project Title: Model 38-13 - Proposed

Report Date June 21, 2021

Data Filename Model 38-13 - Proposed.blg

Energy Code OBC SB-12 Performance Compliance Ontario 2017

Location Toronto, ON_CAN

Construction Type Single-family detached

Heating Type Natural Gas

Heating Degree Days <5000 HDD-Zone 1

Conditioned Area (sq ft) 3675 Conditioned Volume (cubic ft) 35523 Insulated Shell Area (sq ft) 8204

Construction Site Owner Builder HERS Rater

Model 38-13 - Proposed Royal Pine Homes Royal Pine Homes Clearsphere Consulting

Richmond Hill, Model 38-13 - Proposed 3550 Langstaff Road, Suite 200 John Godden Richmond Hill, Woodbridge, Ontario L4L 9G3 416-481-4218

Annual Energy Consumption KWH GJ

Reference Home Package A1

Proposed House Better Than Code

42073.18	151.46
32877.41	118.36
21.9%	

SB-12 Performance Compliance: PASS

The Design Home total annual consumption is less than or equal to the Reference Home.

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Ceilings			,
Roof 1: Std-R60, Attic G2******	1521	20.0	40.0
Above-Grade Walls			
AG Wall 1: Std R22 G2 + 1.5 @16********	3089	22.0	1.5
Joist 1: Cond -> ambient	340	22.0	1.5
Window 1: U=0.282, SHGC 0.45*******	390		3.5
Door 1: R6******	9		6.0
Door 2: Code	18		4.0
Floors Over Garage			
Floor 1: Std-R31 G2******	453	31.0	0.0
Basement Walls			

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2

Code Compliance Certificate

Building Summary	Gross Area or	Continuous	
Assembly	Perimeter	Cavity R-Value	R-Value
Wall 1: Std-R-20 Blanket G2******	1693	0.0	20.0
Window 2: U=0.282, SHGC 0.45*******	13		3.5
Door 3	17		4.0
Mechanical Equipment	Name/Type	Size/Input	Efficiency
Heating: Fuel-fired air distribution	96 AFUE Gas ECM 64k*******	64.0 kBtuh	96.0 AFUE
Water Heating: Conventional, Gas	50 gal. 0.90 EF Gas*******	50 gal	0.90 EF
HRV/ERV		66.0 CFM	75.0% sen/ 0.0% tot

Drain Water Heat Recovery

2 of 2 Showers connected and 42.0% unit efficiency

Air Exchange

2.50 ACH50 or: 0.18 CFM50/sf

Efficient Lighting

90.0% Interior, 90.0% Exterior, 0.0% Garage

Renewables

N/A

Property

Royal Pine Homes Model 38-13 - Proposed

Richmond Hill,

Weather: Toronto, ON_CAN Model 38-13 - Proposed

Model 38-13 - Proposed Model 38-13 - Proposed.blg

Organization

Clearsphere Consulting

416-481-4218 John Godden

Builder

Royal Pine Homes

HERS

Projected Rating June 21, 2021 Rating No:N/A Rater ID:0001

Property/Builder Information

Building Name Owner's Name Property Address

City, St, Zip

Phone Number

Model 38-13 - Proposed

Royal Pine Homes

Model 38-13 - Proposed

Richmond Hill,

Builder's Name

Phone Number

Email Address

Plan/Model Name Community/Development

Identifier/Other

Royal Pine Homes

Model

Centerfiled

Organization Information

Organization Name

Address

Website

City, St, Zip

Phone Number

Clearsphere Consulting 1632 O'Connor Dr.

Toronto, ON_CAN M4B 3P4

416-481-4218

www.clearsphere.ca

Rating/RESNET Information

Provider ID Sample Set ID

Registry ID

Registry Date Registered

Rater's Name

Rater's ID

Rater's Email

Last Field Insp

Reason for Rating Rating Number

Rating Type

John Godden

2006-001

00000000

0001

howard@clearsphere.ca

June 21, 2021

Projected Rating
New Home

NI /A

11/22/2019

Rating Permit Date

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2 Canada

This information does not constitute any warranty of energy costs or savings. © 1985-2020 NORESCO, Boulder, Colorado.

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General Building Information

Area of Conditioned. Space(sq ft) 3675
Volume of Conditioned. Space 35523
Year Built 2021

Housing Type Single-family detached

Level Type(Apartments Only)NoneFloors on or Above-Grade2Number of Bedrooms4

Foundation Type Conditioned basement

Foundation is w/in Infiltration Volume:

N/A
Enclosed Crawl Space Type

N/A
Number of Stories Including Conditioned Basement

Thermal Boundary Location

N/A

Foundation Wall Information

. oundation ma								
Name	Library Entry	Location	Length(ft)	Total Height(ft)	Depth Below Grade(ft)	Height Above Grade(ft)	Uo Value Combo*	Uo Value (wall only)
Foundation Wall	Std-R-20 Blanket G2******	Cond->ambient/grr	171.00	10.08	9.08	1.00	0.034	0.048

^{*} Uo Value Combo combines wall, airfilm, and soil path

Foundation Wall Library List

Foundation Wall: Std-R-20 Blanket G2*******

Type Solid concrete or stone

Thickness(in) 8.0 Studs None

Interior Insulation

Continuous R-Value 20.0 Frame Cavity R-Value 0.0 Cavity Insulation Grade 2

Ins top 0.00 ft from top of wall
Ins Bottom 0.00 ft from bottom of wall

Exterior Insulation

Property

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Foundation Wall Library List

R-Value 0.0

Ins top 0.00 ft from top of wall on the bottom 0.00 ft below grade

Note

Slab Floor Information										
Name	Library Entry	Area(sq ft)	Depth Below Grade(ft)	Full Perimeter(ft)	Exposed Perimeter(ft)	On-Grade Perimeter(ft)				
Slab	Uninsulated*******	1077	9.08	171	171	0				

Slab Floor Library List

Slab Floor: Uninsulated********

Slab CoveringCarpetPerimeter Insulation (R-Value)0.0Perimeter Insulation Depth (ft)0.0Under-Slab Insulation (R-Value)0.0Under-Slab Insulation Width (ft)0.0Slab Insulation Grade3Radiant SlabNo

Note

Frame Floor InformationNameLibrary EntryLocationArea(sq ft)Uo ValueExposed FloorStd-R31 G2********Btwn cond & garage4530.039

Frame Floor Library List

Floor: Std-R31 G2******

Information From Quick Fill Screen

Continous Insulation R-Value 0.0
Cavity Insulation R-Value 31.0
Cavity Insulation Thickness (in.) 9.5
Cavity Insulation Grade 2
Joist Size (w x h. in) 1.5 x 9

Joist Size (w x h, in) 1.5 x 9.5 Joist Spacing (in oc) 16.0

Property

Royal Pine Homes Model 38-13 - Proposed Richmond Hill,

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Frame Floor Library List

Framing Factor - (default) 0.1300
Floor Covering CARPET

Note

Rim and Band Joist Information

rama dina bama .								
Name	Location	Area(sq ft)	Continuous		Cavity Ins	Joist	Insulation	Uo Value
			Ins	Cavity Ins	Thk(in)	Spacing	Grade	
Rim Band Joist	Cond ->	340.20	1.5	22.0	5.5	16.0	2	0.049
	ambient							

Above-	Grade	բ Wall
ADOVC-	OI au	o vvan

Above Grade War	•				
Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	Std R22 G2 + 1.5 @16*******	Cond -> ambient	Medium	3088.70	0.053

Above-Grade Wall Library List

Above-Grade Wall: Std R22 G2 + 1.5

@16*******

Information From Quick Fill Screen

Wall Construction Type Std Frame w/Brick Veneer

Continuous Insulation (R-Value)1.5Frame Cavity Insulation (R-Value)22.0Frame Cavity Insulation Thickness (in)5.5Frame Cavity Insulation Grade2Stud Size (w x d, in)1.5 x 5.5

Stud Spacing (in o.c.)

Framing Factor - (default)

Gypsum Thickness (in)

1.3 x 3

1.6 0

0.2300

Note

Window Information												
							Overhang		Inte	rior	Adja	cent
Name	Wall	Orient	U-Value	SHGC	Area	Depth	То Тор	To Btm	Winter	Summer	Winter	Summer
	Assignment				(sqft)	(ft)	(ft)	(ft)	Shading	Shading	Shading	Shading

Property
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Model 38-13 - Proposed
Richmond Hill,

Weather:Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization Clearsphere Consulting 416-481-4218 John Godden

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Projected Rating
June 21, 2021
Rating No:N/A
Rater ID:0001

window ii	nformation											
						(Overhang		Interior		Adjacent	
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	5.50	5.0	1.5	2.5	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	18.70	5.0	2.5	9.5	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	12.00	5.0	2.5	9.3	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	30.00	1.3	1.0	7.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	97.50	1.3	1.0	8.5	0.85	0.70	None	None
Left	FndWall 1	West	0.282	0.450	3.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	8.70	1.3	1.8	6.1	0.85	0.70	None	None
back	FndWall 1	North	0.282	0.450	3.33	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	60.00	0.0	0.0	0.0	0.85	0.70	None	None
back Sliding	AGWall 1	North	0.282	0.450	72.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	56.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	FndWall 1	East	0.282	0.450	6.70	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	11.60	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	8.70	1.3	1.8	6.1	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	9.30	1.3	1.8	6.4	0.85	0.70	None	None

Door Informat	ion					
Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	R6*****	AGWall 1	8.5	0.144	6.0	No
garage	Code*	AGWall 1	18.2	0.203	4.0	No
Cold Cellar	Code*	FndWall 1	17.1	0.203	4.0	No

Roof Information											
Name	Library Entry	Ceiling Area(sq ft)	Roof Area(sq ft)	Exterior Color	Radiant Barrier	Туре	Uo Value	Cement or Clay Tiles	Roof Tile Ventilation		
Ceiling-with attic	Std-R60, Attic G2*****	1521.00	1901.25	Medium	No	Attic	0.017	No	No		

Property

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Projected Rating June 21, 2021 Rating No:N/A Rater ID:0001

Roof Library List

Ceiling: Std-R60, Attic G2******

Information From Quick Fill Screen

40.0 Continous Insulation (R-Value) Cavity Insulation (R-Value) 20.0 Cavity Insulation Thickness (in) 9.5 Cavity Insulation Grade 2 Gypsum Thickness (in) 0.500 Insulated Framing Size(w x h, in) 1.5 x 3.5 Insulated Framing Spacing (in o.c.) 24.0 Framing Factor - (default) 0.1100 Ceiling Type Attic

Note

Property

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Mechanical Equipment

Number of Mechanical Systems2Heating SetPoint(F)72.0Heating Setback ThermostatPresentCooling SetPoint(F)75.0Cooling Setup ThermostatPresentDHW SetPoint(F)125.0

Heat: 96 AFUE Gas ECM 64k********

SystemType Fuel-fired air distribution

Fuel Type Natural gas
Rated Output Capacity (kBtuh) 64.0
Seasonal Equipment Efficiency 96.0 AFUE
Auxiliary Electric 200 Watts

Note

Number Of Units

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

DHW: 50 gal. 0.90 EF Gas*******

Water Heater Type Conventional
Fuel Type Natural gas
Energy Factor 0.90
Recovery Efficiency 0.90
Water Tank Size (gallons) 50
Extra Tank Insulation (R-Value) 0.0

Note

Number Of Units 1

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

Property

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DHW Efficiencies

All bath faucets & showers <= 2gpm false
All DHW pipes fully insulated >= R-3 false

Recirculation type None (standard system)

70 Farthest fixture to DHW heater TOTAL Pipelength for longest DHW run 100 DWHR unit present? true DWHR unit efficiency per CSA 55.1 42.00 DWHR preheats cold supply for shower false DWHR preheats hot supply for shower true 2 Number showerheads in home Number showers connected to DWHR 2

DHW Diagnostics

dhwGpd 58.83 1.00 peRatio dishwasherGpd 5.10 clothesWasherHotWaterGPD 4.48 **EDeff** 1.00 ewaste 32.00 54.00 tmains dwhrWhInletTempAdj 8.44 pumpConsKwh 0.00 pumpConsMmbtu 0.00

Property

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Richmond Hill,

Weather:Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization

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Duct Systems

Name

Conditioned Floor Area(sq ft) 3675.0

of Returns

Cooling System N/A
Supply Duct Surface Area(sq ft) 744.2
Return Duct Surface Area(sq ft) 689.1
No bldg cavities used as ducts FALSE

TypeLocationPercent LocationR-ValueSupplyConditioned space100.00.0ReturnConditioned space100.00.0

Test Exemptions

IECCTRUERESNET 2019TRUEENERGY STAR LtOTRUE

Duct Leakage

Input Type Measured

Test Type Total Duct Leakage
Duct Test Stage Postconstruction Test

LtO (based on Total DL)

Total Duct Leakage

Supply & Return

Not Applicable

0.00 CFM @ 25 Pascals

Supply Only 0.00 CFM @ 25 Pascals
Return Only 0.00 CFM @ 25 Pascals

Property

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Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type Blower door

Heating Season Infiltration Value 2.50 ACH @ 50 Pascals Cooling Season Infiltration Value 2.50 ACH @ 50 Pascals

Shelter Class 4
Code Verification Tested

Mechanical Ventilation for IAQ

Type Balanced
Unable to Measure Mechanical Ventilation FALSE
Rate(cfm) 66
Adjusted Sensible Recovery Efficiency(%) 75.00
Adjusted Total Recovery Efficiency(%) 0.00
Hours per Day 24.0
Fan Power (watts) 64.00
ECM Fan Motor false

Ventilation Strategy for Cooling

Cooling Season Ventilation Natural Ventilation

Good Air Exchange for Multi-Family NA

Property

Royal Pine Homes Model 38-13 - Proposed Richmond Hill,

Weather: Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization

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Lights and Appliances

Rating/RESNET audit

Ceiling Fan CFM / Watt 0.00
Refrigerator kWh/yr 691

Refrigerator Location Conditioned
Range/Oven Fuel Type Electric
Induction Range No
Convection Oven No

Dishwasher

Energy Factor 0.46
Dishwasher kWh/yr 0
Place Setting Capacity 12

Clothes Dryer

Fuel Type Electric
Location Conditioned

Moisture Sensing No CEF 2.62

Clothes Washer

Location Conditioned

 LER (kWh/yr)
 704

 IMEF
 0.331

 Capacity (CU.Ft)
 2.874

 Electricity Rate
 0.08

 Gas Rate
 0.58

 Annual Gas Cost
 23.00

Qualifying Light Fixtures

Interior Lights % 0.0
Exterior Lights % 0.0
Garage Lights % 0.0
Interior LEDs % 90.0
Exterior LEDs % 90.0
Garage LEDs % 0.0

Property Royal Pine Homes Model 38-13 - Proposed

Richmond Hill,

Weather: Toronto, ON_CAN Model 38-13 - Proposed Model 38-13 - Proposed.blg Organization

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CITY OF RICHMOND HILL **BUILDING DIVISION**

09/01/2021

RECEIVED jocelyn.aguilar_

Projected Rating: June 21, 2021

Rating No:N/A Rater ID:0001

HERS

Property/Builder Information

Building Name Owner's Name **Property Address**

City, St, Zip

Phone Number

Model 38-13 - Proposed

Royal Pine Homes

Model 38-13 - Proposed

Richmond Hill.

Builder's Name **Royal Pine Homes**

Phone Number **Fmail Address**

Plan/Model Name Community/Development

Identifier/Other

Model

Centerfiled

Organization Information

Organization Name

City, St, Zip

Address

Phone Number

Website

Clearsphere Consulting

1632 O'Connor Dr.

Toronto, ON_CAN M4B 3P4

416-481-4218

www.clearsphere.ca

Rating/RESNET Information

Provider ID Sample Set ID

Registry ID

Registry Date Registered

Rater's Name

Rater's ID

Rater's Email

John Godden 0001

2006-001

00000000

howard@clearsphere.ca

Last Field Insp June 21, 2021 Projected Rating Rating Type **New Home** Reason for Rating

Rating Number

Rating Permit Date 11/22/2019

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2 Canada

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Model 38-13 - Proposed
Richmond Hill,

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Builder Royal Pine Homes CITY OF RICHMOND HILL BUILDING DIVISION

09/01/2021

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Projected Rating: June 21, 2021 Rating No:N/A Rater ID:0001

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General Building Information

Area of Conditioned. Space(sq ft) 3675

Volume of Conditioned. Space 35523

Year Built 2021

Housing Type Single-family detached

Level Type(Apartments Only)

Floors on or Above-Grade

Number of Bedrooms

4

Foundation Type Conditioned basement

Foundation is w/in Infiltration Volume:

N/A

Enclosed Crawl Space Type

N/A

Number of Stories Including Conditioned Basement

Thermal Boundary Location

N/A

Foundation Wall Information

Name	Library Entry	Location	Length(ft)	Total	Depth	Height	Uo Value	Uo Value
				Height(ft)	Below	Above	Combo*	(wall only)
					Grade(ft)	Grade(ft)		
Foundation Wall	N/A	Cond->ambient/grr	171.00	10.08	9.08	1.00	0.047	N/A

^{*} Uo Value Combo combines wall, airfilm, and soil path

Slab Floor Information

Name	Library Entry	Area(sq ft)	Depth Below Grade(ft)	Full Perimeter(ft)	Exposed Perimeter(ft)	On-Grade Perimeter(ft)
Slab	(Under R-0.0; Per R-0.0; Per depth-0.00)	1077	9.08	171	171	0

Frame Floor Information

Name	Library Entry	Location	Area(sq ft)	Uo Value
Exposed Floor	N/A	Btwn cond & garage	453	0.047

Rim and Band Joist Information

Name	Location	Area(sq ft)	Continuous Ins	Framed Cavity Ins	Cavity Ins Thk(in)	Joist Spacing	Insulation Grade	Uo Value
Rim Band Joist	Cond -> ambient	340.20	N/A	N/A	N/A	N/A	1	0.065

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2 Canada

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Above-Grade	Wall				
Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	[frame wall]	Cond -> ambient	Medium	3088.70	0.065

Window II	nformation											
							Overhang	ı	Interior		Adjacent	
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.280	0.450	5.50	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	18.70	0.0	0.0	0.0	0.83	0.83	None	None
front door	AGWall 1	South	0.280	0.450	12.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	30.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	97.50	0.0	0.0	0.0	0.83	0.83	None	None
Left	FndWall 1	West	0.280	0.450	3.30	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
back	FndWall 1	North	0.280	0.450	3.33	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	60.00	0.0	0.0	0.0	0.83	0.83	None	None
back Sliding	AGWall 1	North	0.280	0.450	72.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	56.00	0.0	0.0	0.0	0.83	0.83	None	None
Right	FndWall 1	East	0.280	0.450	6.70	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	11.60	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	9.30	0.0	0.0	0.0	0.83	0.83	None	None

Door Information	n					
Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	N/A	AGWall 1	8.5	0.250	N/A	N/A
garage	N/A	AGWall 1	18.2	0.250	N/A	N/A
Cold Cellar	N/A	FndWall 1	17.1	0.250	N/A	N/A

Roof In	formation								
Name	Library	Ceiling	Roof	Exterior	Radiant	Type	Uo Value		Roof Tile
	Entry	Area(sq ft)	Area(sq ft)	Color	Barrier			Clay Tiles	Ventilation

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Roof In	Roof Information													
Name	Library Entry	Ceiling Area(sq ft)	Roof Area(sq ft)	Exterior Color	Radiant Barrier	Туре	Uo Value	Cement or Clay Tiles	Roof Tile Ventilation					
Ceiling-w attic	rith N/A	1521.00	1901.25	Medium	No	Attic	0.017	No	No					

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June 21, **2**021

Rating No:N/A

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Mechanical Equipment

Number of Mechanical Systems 3
Heating SetPoint(F) 72.0

Heating Setback Thermostat

Cooling SetPoint(F)

Cooling Setup Thermostat

DHW SetPoint(F)

Not Present

125.0

Heat: 96 AFUE Gas ECM 64k********

SystemType Fuel-fired air distribution

Fuel Type Natural gas
Rated Output Capacity (kBtuh) 41.0
Seasonal Equipment Efficiency 96.0 AFUE
Auxiliary Electric 371 Watts

Note

Number Of Units

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

DHW: Reference DHW

Water Heater Type Conventional
Fuel Type Natural gas
Energy Factor 0.80
Recovery Efficiency 0.80
Water Tank Size (gallons) 50
Extra Tank Insulation (R-Value) 0.0

Note

Number Of Units 1

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

Cool: ***Code Generated Cooling***

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Rating No:N/A Rater ID:0001

HERS

Mechanical Equipment

System Type Air conditioner
Fuel Type Electric
Rated Output Capacity (kBtuh) 19.2
Seasonal Equipment Efficiency 13.0 SEER
Sensible Heat Fraction (SHF) 0.70

Note

Number Of Units

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

DHW Efficiencies

All bath faucets & showers <= 2gpm false
All DHW pipes fully insulated >= R-3 false

Recirculation type None (standard system)

TOTAL Pipelength for longest DHW run 100 100 refPipeL refLoopL 180 DWHR unit present? true 42.00 DWHR unit efficiency per CSA 55.1 DWHR preheats cold supply for shower false true DWHR preheats hot supply for shower Number showerheads in home 2 Number showers connected to DWHR 2

DHW Diagnostics Canada Package A1 Reference

 dhwGpd
 58.83

 peRatio
 1.00

 EDeff
 1.00

 ewaste
 32.00

 tmains
 54.00

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Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type Blower door

Heating Season Infiltration Value 0.26 CFM50/sf shell Cooling Season Infiltration Value 0.26 CFM50/sf shell

Shelter Class 4
Code Verification Tested

Mechanical Ventilation for IAQ

Type Balanced
Unable to Measure Mechanical Ventilation FALSE
Rate(cfm) 66
Adjusted Sensible Recovery Efficiency(%) 75.00
Adjusted Total Recovery Efficiency(%) 0.00
Hours per Day 24.0
Fan Power (watts) 70.40
ECM Fan Motor false

Ventilation Strategy for Cooling

Cooling Season Ventilation Natural Ventilation

Good Air Exchange for Multi-Family NA

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Lights and Appliances

Rating/RESNET audit

Ceiling Fan CFM / Watt 0.00
Refrigerator kWh/yr 691

Refrigerator Location Conditioned
Range/Oven Fuel Type Electric
Induction Range No
Convection Oven No

Dishwasher

Energy Factor 0.46
Dishwasher kWh/yr 0
Place Setting Capacity 12

Clothes Dryer

Fuel Type Electric
Location Conditioned

Moisture Sensing No CEF 2.62

Clothes Washer

Location Conditioned

 LER (kWh/yr)
 704

 IMEF
 0.331

 Capacity (CU.Ft)
 2.874

 Electricity Rate
 0.08

 Gas Rate
 0.58

 Annual Gas Cost
 23.00

Qualifying Light Fixtures

Interior Lights % 0.0
Exterior Lights % 0.0
Garage Lights % 0.0
Interior LEDs % 0.0
Exterior LEDs % 0.0
Garage LEDs % 0.0