

## **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			Lot:				
Model 203			Lot/con.				
Municipality Richmond Hill	Postal code	Plan number/ other description					
B. Individual who reviews and takes responsibility for design	n activities						
Name David DaCosta		Firm	gtaDesigns Inc.				
Street address 2985 Drew Road	I, Suite 202		Unit no.	Lot/con.			
Municipality Mississauga	Postal code L4T 0A4	Province Ontario	E-mail hvac@gtades	igns.ca			
Telephone number	Fax number	- Cinario	Cell number				
(905) 671-9800 C. Design activities undertaken by individual identified in Se	ction B. [Buil	ding Code Table 3.	5.2.1 of Division C]				
☐ House ☐ HVAC – Ho ☐ Small Buildings ☐ Building Ser			<ul><li>Building Structural</li><li>Plumbing – House</li></ul>				
-	ighting and Pow	or	☐ Plumbing – All Building:				
☐ Complex Buildings ☐ Fire Protection, ☐		CI .	☐ On-site Sewage System				
Description of designer's work Mod	el Certification		Project #:	PJ-00267			
			Layout #:	JB-09143			
Heating and Cooling Load Calculations Main	Х	Builder	EM Alr Systems				
Air System Design Alternate	4040	Project	King East Developm	ents			
Residential mechanical ventilation Design Summary O.D. GFA Residential System Design per CAN/CSA-F280-12	1846	Model	Model 2030EN				
Residential New Construction - Forced Air		SB-12	Energy Star				
D. Declaration of Designer		•	<u> </u>				
David DaCosta declare that (choose one as appropriate):							
(print name)							
☐ I review and take responsibility for th							
Division C of the Building Code. I am classes/categories.	ı qualified, and t	he firm is registered, in	the appropriate				
Individual BCIN:							
Firm BCIN:			•				
,			1				
	-		opriate category as an "other				
Individual BCIN:	3296	64					
Basis for exemption	on from registra	tion: E	Division C 3.2.4.1. (4)				
☐ The design work is exempt from the	registration and	qualification requireme	ents of the Building Code.				
Basis for exempti	on from registra	tion and qualification:					
I certify that:							
The information contained in this schedule is true to the best of my	knowledge.						
I have submitted this application with the knowledge and consent of	of the firm.						
September 18, 2023		Mane Sto		,			
Date		Signature of De	signer				

NOTE:

Page 1

- 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 qualifications under Subsections 3.2.4. and 3.2.5.of Division C.
- 2. Schedule 1 does not require to be completed a holder of a license, temporary license, or a certificate of authorization, issed 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 licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.



2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 e-mail hvac@gtadesigns.ca

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Heat loss and gain calcula	tion summary sheet CSA-F280-M12 Standard
These documents issued for the use of	M Air Systems Layout No.
and may not be used by any other persons without authorization. Documents	for permit and/or construction are signed in red. JB-09143
Building L	ocation
Address (Model): Model 2030EN	Site: King East Developments
Model:	Lot:
City and Province: Richmond Hill	Postal code:
Calculations	based on
Dimensional information based on:	chitectural Design Inc.Jun/2023
Attachment: Townhome	Front facing: East/West Assumed? Yes
No. of Levels: 3 Ventilated? Included	Air tightness: 1961-Present (ACH=3.57) Assumed? Yes
Weather location: Richmond Hill	Wind exposure: Sheltered
HRV? VanEE V150E75NS	Internal shading: Light-translucent Occupants: 4
Sensible Eff. at -25C 60% Apparent Effect. at -0C 80%	Units: Imperial Area Sq ft: 1846
Sensible Eff. at -0C 75%	
Heating design conditions	Cooling design conditions
Outdoor temp -5.8 Indoor temp: 72 Mean soil temp: 50	Outdoor temp 88 Indoor temp: 75 Latitude: 44
Above grade walls	Below grade walls
Style A: As per OBC SB12 Energy Star R 22 + 5ci	Style A: As per OBC SB12 Energy Star R 20ci
Style B:	Style B:
Style C:	Style C:
Style D:	Style D:
Floors on soil	Ceilings
Style A: As per Selected OBC SB12 Energy Star	Style A: As per Selected OBC SB12 Energy Star R 60
Style B:	Style B: As per Selected OBC SB12 Energy Star R 31
Exposed floors	Style C:
Style A: As per Selected OBC SB12 Energy Star R 31	Doors
Style B:	Style A: As per Selected OBC SB12 Energy Star R 4.00
Windows	Style B:
Style A: As per Selected OBC SB12 Energy Star R 4.00	Style C:
Style B:	Skylights 5 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
Style C:	Style A: As per Selected OBC SB12 Energy Star R 2.03
Style D:  Attached documents: As per Shedule 1 Heat Leas (C	Style B: ain Caculations based on CSA-F280-12 Effective R-Values
<u>'</u>	onstruction - Forced Air
Calculations p	
Name: David DaCosta	Postal code: L4T 0A4
Company: gtaDesigns Inc.	Telephone: (905) 671-9800
Address: 2985 Drew Road, Suite 202	Fax:
City: Mississauga	E-mail hvac@gtadesigns.ca
,	0



Builder:

**EM Air Systems** 

Date:

### Air System Design

**SB-12 Energy Star** September 18, 2023

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 e-mail hvac@gtadesigns.ca

I review and take responsibility for the design work and am qualified in the

appropriate category as an "other designer" under Division C subsection 3.2.5. of the **Building Code.** 

Project # PJ-00267 David DaCosta Lavout #

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System 1 Mane Alexo Project: King East Developments Model 2030EN Individual BCIN: 32964 JB-09143 Model: AIR DISTRIBUTION & PRESSURE BOILER/WATER HEATER DATA: DESIGN LOAD SPECIFICATIONS FURNACE/AIR HANDLER DATA: A/C UNIT DATA: Level 1 Net Load 13,685 btu/h **Equipment External Static Pressure** 0.5 "w.c. Make Make 2.0 Ton Carrie Туре Carrier Level 2 Net Load 10,942 btu/h **Additional Equipment Pressure Drop** 0.225 "w.c. Model 59SC5B040E14--10 Model Model: Level 3 Net Load 9.359 btu/h **Available Design Pressure** 0.275 "w.c. **High Input** 40000 Input Btu/h Cond.-2.0 Return Branch Longest Effective Length 39000 Level 4 Net Load 0 btu/h 300 ft **High Output** Output Btu/h Coil ---2.0 " W C ΔWH 33.986 btu/h 0.138 "w.c. 0.50 Min.Output Btu/h Total Heat Loss R/A Plenum Pressure E.s.p. **Total Heat Gain** 21,485 btu/h S/A Plenum Pressure 0.14 "w.c. deg. F. Blower DATA: Yellow **Heating Air Flow Proportioning Factor** 0.0237 cfm/btuh AFUE Blower Speed Selected: ECM 98% Blower Type 21315 ft<sup>3</sup> (Brushless DC OBC 12.3.1.5.(2)) **Building Volume Vb** Cooling Air Flow Proportioning Factor 0.0375 cfm/btuh Aux. Heat Ventilation Load 1.069 Btuh. SB-12 Package Check Cool. Check 805 cfm R/A Temp 70 dea. F. **Energy Star** 805 cfm Ventilation PVC 63.6 cfm S/A Temp 115 deg. F. Supply Branch and Grill Sizing Diffuser loss 45 deg. F. Heat. 805 cfm 0.01 "w.c. Temp. Rise>>> Cooling 805 cfm Design Airflow 805 cfm Level 1 Level 2 S/A Outlet No 1 2 3 5 9 10 11 12 13 Room Use REC REC OFF LAUN F.BASE STOR GRT GRT WR KIT FAM FOY Btu/Outlet 2283 2283 1237 840 1237 2762 3044 1951 1951 572 1276 2408 2785 **Heating Airflow Rate CFM** 54 54 29 20 29 65 72 46 46 14 30 57 66 30 30 15 12 79 79 13 41 108 51 Cooling Airflow Rate CFM 2 **Duct Design Pressure** 0.13 **Actual Duct Length** 34 46 37 17 18 23 25 31 11 14 34 38 Equivalent Length 72 80 110 100 100 110 90 70 70 70 70 70 70 70 80 100 120 110 80 120 70 70 70 70 70 70 70 70 Total Effective Length 106 126 147 106 117 128 113 70 70 70 70 70 70 70 105 131 131 124 114 158 70 70 70 70 70 70 70 70 **Adjusted Pressure** 0.12 0.10 0.09 0.12 0.11 0.10 0.12 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.12 0.10 0.10 0.10 0.11 0.08 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 **Duct Size Round** 5 3 3 **Outlet Size** 3x10 3x10 3x10 3x10 4x10 4x10 4x10 4x10 3x10 3x10 4x10 3x10 3x10 4x10 Trunk D D В Level 3 Level 4 S/A Outlet No. 14 15 16 17 18 19 Room Use MAST MAST FNS BFD 3 BFD 2 **RATH** Btu/Outlet 1495 1495 2193 2334 1710 132 **Heating Airflow Rate CFM** 35 35 52 55 41 3 64 64 68 Cooling Airflow Rate CFM 60 70 3 **Duct Design Pressure** 0.13 53 **Actual Duct Length** 46 51 51 28 **Equivalent Length** 110 102 100 110 110 150 70 178 70 156 153 143 161 163 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 Total Effective Length 70 70 Adjusted Pressure 0.08 0.08 0.09 0.08 0.08 0.07 0.19 **Duct Size Round** 5 5 Outlet Size 4x10 3x10 3x10 3x10 4x10 3x10 4x10 Trunk C D Return Branch And Grill Sizing **Grill Pressure Loss** 0.02 "w.c **Return Trunk Duct Sizing** Supply Trunk Duct Sizing R/A Inlet No 1R 2R 3R 4R 5R 6R 7R 8R 9R 10R 11R Trunk CFM Press. Round Rect. Size Trunk C.CFM H.CFM Press. Round Rect. Size Inlet Air Volume CFM 162 398 105 140 **Duct Design Pressure** 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 805 24x10 431 459 0.07 11.5 14x8 12x10 Drop 0.05 15.0 126 255 23 44 805 0.05 15.0 0.08 a n **Actual Duct Length** 14 36 Z 26v8 20v10 RYR 10y7 **Equivalent Length** 170 125 185 180 50 50 50 50 50 50 50 Υ C 373 345 0.08 10.0 12x8 10x10 **Total Effective Length** 193 139 221 224 50 50 50 50 50 50 50 х 243 162 0.08 9.0 8x8 10x7 Adjusted Pressure 0.06 0.08 0.05 0.05 0.24 0.24 0.24 0.24 0.24 0.24 0.24 w **Duct Size Round** 8.0 10.5 6.0 8.0 ν G Inlet Size U т Inlet Size 14 30 14 14 s Trunk Z Q



Total Heat Loss

Total Heat Gain

33,986 btu/h

21,485 btu/h

### Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800

e-mail hvac@gtadesigns.ca

		Builder:	EM Air S	/stems			Date:		оор.	tember 18,	2023		_			Weather	Data Richn	nond Hill 4	14 -	5.8 88	20	50			F
2012 OBC		Project:	King East De	/elopme	nts		lodel:		M	lodel 2030l	EN .			System	ı	Heat Los	s ^T 77.8 deg. F	Ht gain	^T	12.8 deg	. F			Projec Layou	
	Level 1				REC			OFF		LAUN		WR 2		F.BASE	•	STOR									
Run	ft. exposed wall A			32			9 A		1	8 A		9 A		19 A	29		Α		Α.		Α		Α		Α
	ft. exposed wall B				В		В			В		В		В		В	В				В		В		В
	Ceiling height			7.5	AG		7.5 A	AG	7.5	5 AG	7	.5 AG		7.5 AG	7.5	AG	7.5 AG	7.5	AG	7.	5 AG		7.5 AG		7.5 AG
	Floor area			203	Area		113 A	Area	68	8 Area		10 Area		78 Area	84	Area	Area		Area		Area		Area		Area
E	Exposed Ceilings A				Α		Α			Α		Α		Α		Α	Α		4		Α		Α		Α
	Exposed Ceilings B				В		В	3		В		В		В		В	В		3		В		В		В
	Exposed Floors				Flr		F	-Ir		Flr		Flr		Flr		Flr	Fir		-Ir		Flr		Fir		Flr
	Gross Exp Wall A			240			68		60	0		88		143	218										
	Gross Exp Wall B																								
	Components				Loss	Gain	L	.oss G	ain	Loss	Gain	Loss	Gain	Loss G	ain	Loss Ga	in Loss	Gain L	oss G	ain	Loss	Gain	Loss	Gain	Loss G
	North Shaded	4.00	19.45 11.	3																					
	East/West	4.00	19.45 29.				8	156	237																
	South	4.00	19.45 22.		233	271						8 156	181												
WOB Window	ws Including Doors	3.55	21.92 27.																						
	Skylight	2.03	38.33 89.																						
	Doors	4.00	19.45 3.3		408									21 408	67										
Ne	et exposed walls A	20.84	3.73 0.0			127	60		37 60	0	37	60	37	122	75 218		134								
	et exposed walls B	21.40	3.64 0.0																						
	Exposed Ceilings A	59.22	1.31 0.0																						
E	Exposed Ceilings B	27.65	2.81 1.																						
Formdoti 0- 1	Exposed Floors	29.80	2.61 0.:	3	1787			503		447		503		1061		1619									
Foundation Cond	Heat Loss			-	1787 2429			503 658		447		503 658		1061		1619 1619									
otal Conductive	Heat Loss Heat Gain				2429	466		638	274	447	37	658	217	1469	142	1019	134								
Air Leakage	Heat Loss/Gain		0.8272 0.05	7	2009			544	14	370	2	544	11	1216	7	1340	7								
All Leakage	Case 1		0.07 0.0		2009	24		344	14	3/0	-	344	- "	1210		1340	-								
Ventilation	Case 2		16.80 13.	-																					
Ventuation	Case 3	х	0.05		127	38		34	22	23	3	34	18	77	11	85	11								
	Heat Gain People	^	2:			- 50		34		20	J	34	.0		•••	00	••								
		1 - 25 no	rcent 28	7 10																					
	Appliances Loads	1 =.25 per	rcent 28			719																			
	Appliances Loads Duct and Pipe loss		10	%	4565			1237		840		1237		2762		3044									
Level HL Total Level HG Total	Appliances Loads Duct and Pipe loss 13,685 2,802  Level 2	Tota		% m 3	4565 GRT			1237 WR	403	840 KIT	54	1237	320	2762 FOY	209	3044	197								
	Appliances Loads Duct and Pipe loss 13,865 2,802  Level 2 Ift. exposed wall A of t. exposed wall B Ceiling height Floor area Exposed Ceilings A	Tota	10 al HL for per roo	35 10.0 297	GRT		6 A B 10.0 30 A	WR A 3 Area	1:	КІТ 3 А В	10	FAM 10 A B		FOY 20 A B 15.0 89 Area A	10.0	A B Area A	A B 10.0 Area A	10.0 <i>J</i>	3 Area A	10.	Area A		A B 10.0 Area A B	1	A B 0.0 Area A B
[Level HL Total Level HG Total Run Run	Appliances Loads Duct and Pipe loss 13,685 2,802  Level 2  If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B	Tota	10 al HL for per roo	35 10.0 297	GRT A B Area A		6 A B 10.0 30 A	WR A B Area A	1: 10.0 310	KIT 3 A B 0 6 Area A	10 10	FAM 10 A B .0 00 Area A B		FOY 20 A B 15.0 89 Area	10.0	A B Area A B	A B 10.0 Area A B	10.0 , , , , ,	3 Area A 3	10.	B 0 Area		B 10.0 Area A B	1	B D.0 Area A B
Level HL Total Level HG Total Run Run E E	Appliances Loads Duct and Pipe loss 13,865 2,802  Level 2 Ift. exposed wall A of t. exposed wall B Ceiling height Floor area Exposed Ceilings A	Tota	10 al HL for per roo	35 10.0 297	GRT A B Area A		6 A B 10.0 30 A A B	WR A B Area A	1: 10.0 310	KIT 3 A B 0 6 Area A B 7 Fir	10 10	FAM 10 A B .0 00 Area A B		FOY 20 A B 15.0 89 Area A B	10.0	A B Area A	A B 10.0 Area A	10.0 , , , , ,	3 Area A	10.	B 0 Area A B		B 10.0 Area A	1	B D.0 Area A
Level HL Total Level HG Total  Run Run E	Appliances Loads Duct and Pipe loss 13,685 2,802  It. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors	Tota	10 al HL for per roo	35 10.0 297	GRT A B Area A		6 A B 10.0 30 A A B	WR A B Area A	1: 10.0 310	KIT 3 A B 0 6 Area A B 7 Fir	10 10	FAM 10 A B .0 00 Area A B		FOY 20 A B 15.0 89 Area A B Fir	10.0	A B Area A B	A B 10.0 Area A B	10.0 , , , , ,	3 Area A 3	10.	B 0 Area A B		B 10.0 Area A B	1	B D.0 Area A B
Level HL Total Level HG Total  Run Run E	Appliances Loads Duct and Pipe loss 13,865 2,802  Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A	Total F	al HL for per roo HG per room x 1	35 10.0 297	GRT A B Area A B		6 A B 10.0 30 A A B F	WR A 3 Area A 3 Fir	1: 10.0 310	KIT 3 A B 0 6 Area A B 7 Fir	10 10	FAM 10 A B .0 10 Area A B 100 Fir		FOY 20 A B 15.0 89 Area A B Fir	10.0	A B Area A B	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir	10.	B 0 Area A B	Gain	B 10.0 Area A B Fir	1 Gain	B D.0 Area A B
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E E E E E E E E E E E E E E E E E E E	Appliances Loads Duct and Pipe loss 13,685 2,802  If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall B Components North Shaded East/West	Total F Total F	DSS Gain 19.45 11: 19.45 29:	35 10.0 297 350	GRT A B Area A B Fir Loss	1620 Gain	6 A B 10.0 30 A A B F 60 L	WR A A Area A B Cir	1: 10.0 31( 12: 13( ain	KIT 3 A B 0 6 Area A B 7 Fir	10 10 10 10 10 Gain	FAM 10 A B .0 10 Area A B 100 Fir		FOY 20 A B 15.0 89 Area A B Fir	10.0	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
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evel HL Total evel HG Total Run Run E E	Appliances Loads Duct and Pipe loss 13,885 2,802  It. exposed wall A Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows	R-Values Lc 4.00 4.00 4.00 4.00	DBS Gain 19.45 11. 19.45 29. 19.45 22. 39.10 24.	35 10.0 297 350 36 46 0 15	GRT A B Area A B Fir Loss	1620 Gain	6 A B 10.0 30 A A B F 60 L	WR A A Area A B Cir	1: 10.0 31( 12: 13( ain	KIT 3 A B 0 6 Area A B 7 Fir	10 10 10 10 10 Gain	FAM  B  00  A  B  00  Area  A  B  00  Fir	Sain	FOY 20 A B 15.0 89 Area A B Fir 300	10.0	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
cevel HL Total vel HG Total  Run Run E	Appliances Loads Duct and Pipe loss 13,685 2,802  If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	R-Values Lc 4.00 4.00 4.00 1.99 2.03	DSS Gain 19.45 11. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 39.10 24.	35 10.0 297 350 36 6 46 6 15 6 2	GRT A B Area A B Fir Loss	Gain 1364 339	6 A B 10.0 30 A A B F 60 L	WR A A Area A B Cir	1: 10.0 31( 12: 13( ain	KIT 3 A B 0 6 Area A B 7 Fir	10 10 10 10 10 Gain	FAM  B  00  A  B  00  Area  A  B  00  Fir	Sain	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
vel HL Total vel HG Total Run Run E E	Appliances Loads Duct and Pipe loss 13,685 2,802  It. exposed wall a 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors	R-Values Lt 4.00 4.00 4.00 1.99 2.03	DSS Gain 19.45 11. 19.45 22. 39.10 24. 38.33 89.	35 10.0 297 350 36 6 46 0 15 6	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B Area A A A B B B B B B B B B B B B B B B B	1: 10.1 31( 12: 13( 13)	KIT 3 A B 0 6 Area A B 7 Fir 0	10 1( 11 11 10 Sain	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 18 934	3ain 1424	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
cel HL Total vel HG Total  Run Run  E	Appliances Loads Duct and Pipe loss 13,685 2,802  It. evel 2 If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A	R-Values Lc 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40	DSS Gain 19.45 11. 19.45 29. 19.45 22. 39.10 24. 38.33 89. 19.45 3.3.	350 350 350 366 460 615 620 1400 275	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A B Cir	1: 10.0 31( 12: 13( ain	KIT 3 A B 0 6 Area A B 7 Fir 0	10 1( 11 11 10 Sain	FAM  B  00  A  B  00  Area  A  B  00  Fir	3ain 1424	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
E E E E E E E E E E E E E E E E E E E	Appliances Loads Duct and Pipe loss 13,685 2,802  If. exposed wall a If. exposed wall a If. exposed cellings a Exposed Cellings B Exposed Floors Gross Exp Wall a Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls a et exposed walls a	R-Values Lc 4.00 4.00 4.00 4.00 2.03 4.00 2.14 8.50	DSS Gain 19.45 11. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 3. 38.33 89. 19.45 3. 36.4 0.	35 10.0 297 350 350 10.0 297 350 15 6 6 2 2 0 0 1 1	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B TIr Coss G	1: 10.1 31( 12: 13( 13)	KIT 3 A B 0 6 Area A B 7 Fir 0	10 1( 11 11 10 Sain	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 18 934	3ain 1424	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run	Appliances Loads Duct and Pipe loss 13,685 2,802  It. exposed wall a 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B et exposed walls B Exposed walls B Exposed Ceilings A	R-Values Lt 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	DSS Gain 19.45 11. 19.45 22. 39.10 24. 38.33 89. 3.64 0. 9.15 1. 13.1 0.	350 350 350 350 366 606 607 227 350 37 37 37 37 37 37 37 37 37 37 37 37 37	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B TIr Coss G	1: 10.1 31( 12: 13( 13)	KIT 3 A B 0 6 Area A B 7 Fir 0	10 1( 11 11 10 Sain	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 18 934	3ain 1424	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run	Appliances Loads Duct and Pipe loss 13,685 2,802  It evel 2 If exposed wall A If exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A Exposed Ceilings A	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gain 19.45 11: 19.45 29: 19.45 29: 19.45 29: 19.45 3: 39.10 24: 38.33 89: 19.45 3: 3.64 00: 9.15 1. 1.31 0.	350 297 350 10.0 297 350 15 15 15 15 15 15 15 15 15 15 15 15 15	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B TIr Coss G	1: 10.0 31( 12: 13( 13) 203	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss	10 11 11 11 33ain	FAM 10 A B .0 100 Area A B 100 Area A B 100 Fir 100 100 100 100 100 100 100 100 100 10	31	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run	Appliances Loads Duct and Pipe loss 13,685 2,802  If. exposed wall a If. exposed wall a If. exposed ceilings a Exposed Ceilings B Exposed Floors Gross Exp Wall a Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Ceilings B Exposed Floors	R-Values Lt 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	DSS Gain 19.45 11. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 3. 38.33 89. 19.45 3. 36.4 0. 2.81 1. 2.81 1.	350 297 350 10.0 297 350 15 15 15 15 15 15 15 15 15 15 15 15 15	GRT A B Area A B Fir Loss	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B TIr Coss G	1: 10.1 31( 12: 13( 13)	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss	10 1( 11 11 10 Sain	FAM 10 A B .0 100 Area A B 100 Area A B 100 Fir 100 100 100 100 100 100 100 100 100 10	3ain 1424	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Run Run Run E E	Appliances Loads Duct and Pipe loss 13,885 2,802  It. exposed vall A for exposed vall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed valls A et exposed Vallings A Exposed Ceilings A Exposed Floors Luctive Heatloss	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gain 19.45 11: 19.45 29: 19.45 29: 19.45 29: 19.45 3: 39.10 24: 38.33 89: 19.45 3: 3.64 00: 9.15 1. 1.31 0.	350 297 350 10.0 297 350 15 15 15 15 15 15 15 15 15 15 15 15 15	GRT A B Area A B Fir Loss 895 292 1000	Gain  1364 339	6 A B 10.0 30 A B F 60 L	WR A A A A A A A A A A A A A A A A A A A	1: 10.0 31( 12: 13( 13) 203	KIT 3 A B 0 6 Area A B 7 Fir 0 Loss 7 332	10 11 11 11 33ain	FAM 10 A B .0 10 Area A B 100 Fir 100 100 100 100 100 100 100 100 100 10	31	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run	Appliances Loads Duct and Pipe loss 13,685 2,802  In t. exposed wall a Int. exposed wall B Celling height Floor area Exposed Cellings A Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Cellings A Exposed Floors Substantial Windows Skylight Doors et exposed walls B Exposed Cellings A Exposed Cellings B Exposed Floors Substantial B Exposed Floors	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gain 19.45 11. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 3. 38.33 89. 19.45 3. 36.4 0. 2.81 1. 2.81 1.	350 297 350 10.0 297 350 15 15 15 15 15 15 15 15 15 15 15 15 15	GRT A B Area A B Fir Loss	Gain 1364 339 455 164	6 A B 10.0 30 A B F 60 L	WR A A Area A A B B TIr Coss G	10.1 310 12: 130 311 203 31 130	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss	10 11 11 11 11 10 Sain	FAM 10 A B .0 100 Area A B 100 Area A B 100 Fir 100 100 100 100 100 100 100 100 100 10	31 23	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Ne Ne E E Dundation Cond al Conductive	Appliances Loads Duct and Pipe loss 13,685 2,802  If. exposed wall a If. exposed wall a If. exposed ceilings a Exposed Ceilings B Exposed Floors Gross Exp Wall a Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls a et exposed walls a Exposed Ceilings a Exposed Floors If wall a load wall a Exposed wall a Exposed wall a Exposed wall a Exposed ceilings a Exposed Ceilings B Exposed Floors Incomponents Incompon	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gain 19.45 11. 19.45 22. 39.10 24. 39.10 24. 31.36 0. 2.81 1. 1.31 0. 2.81 1.	350 10.0 297 350 3 3 6 6 46 6 15 12 2 0 1 14 4 3 3 3 4 4 4 4 3 3	GRT A B Area A B B Flir Loss 895 292 272 1000	Gain 1364 339 45 164	6 A B 10.0 30 A B F 60 L	WR A 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1: 10.0 316 12: 136 ain 203 31 136 12:	KIT 3 A B 0 6 Area A B 7 Fir 0 Loss 7 332 804	10 11 11 11 33ain	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 Loss .00 188 934 .00 189 .00 188 .00 18	31 23 1478	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Ne Ne E E Dundation Cond al Conductive	Appliances Loads Duct and Pipe loss 13,685 2,802  In t. exposed wall a Int. exposed wall B Celling height Floor area Exposed Cellings A Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Cellings A Exposed Floors Substantial Windows Skylight Doors et exposed walls B Exposed Cellings A Exposed Cellings B Exposed Floors Substantial B Exposed Floors	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11: 19.45 29: 19.45 29: 19.45 33: 3.64 0. 2.81 1. 2.61 0.  x 0.5344 0.05344 0.055	350 350 350 350 350 350 350 350 350 350	GRT A B Area A B Fir Loss 895 292 1000	Gain 1364 339 45 164	6 A B 10.0 30 A B F 60 L	WR A A A A A A A A A A A A A A A A A A A	10.1 310 12: 130 311 203 31 130	KIT 3 A B 0 6 Area A B 7 Fir 0 Loss 7 332	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 10 Area A B 100 Fir 100 100 100 100 100 100 100 100 100 10	31 23	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Run Ne E  coundation Cond tal Conductive Air Leakage	Appliances Loads Duct and Pipe loss 13,685 2,802  Inf. exposed wall a Inf. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Floors Inf. exposed wall B Exposed Floors Inf. exposed wall B Exposed Floors Inf. exposed wall B Exposed Floors Inf. exposed walls B Exposed Ceilings B Exposed Floors Inf. exposed Walls Inf. exposed Wall	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gain 19.45 11. 19.45 12. 19.45 22. 33.10 24. 33.10 24. 33.40 0.05 1.31 0.0 2.81 1. 2.81 0. 2.81 0. 3.64 0.0	350 10.0 297 350 350 10.0 297 350 10.0 275 10.0	GRT A B Area A B B Flir Loss 895 292 272 1000	Gain 1364 339 45 164	6 A B 10.0 30 A B F 60 L	WR A 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1: 10.0 316 12: 136 ain 203 31 136 12:	KIT 3 A B 0 6 Area A B 7 Fir 0 Loss 7 332 804	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 Loss .00 188 934 .00 189 .00 188 .00 18	31 23 1478	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Ne Ne Leading Conductive Air Leakage	Appliances Loads Duct and Pipe loss 13,885 2,802  It. exposed vall A for exposed vall B Celling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Existing Windows Skylight Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Components North Shaded East/West South Existing Windows Skylight Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Floors Unctive Heatloss Heat Loss Heat Loss Heat Gain Heat Loss/Gain Case 2	R-Values Lc 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	DSS Gain 19.45 11. 19.45 22. 39.10 24. 38.33 89. 19.45 3. 3.64 0. 19.45 3. 2.61 0. 2.81 1. 1.31 0. 2.81 1. 1.31 0. 3.64 0.05 0.05 0.05 0.05 0.05 0.05 0.05	350 350 350 350 350 350 350 350 350 350	GRT A B Area A B Fir Loss 895 292 272 1000 2459 1314	Gain 1364 339 45 164	6 A A B F F F 51	WR A 3 3 4 4 rea A 5 3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11: 10.0 31( 12: 13( 31) 203 31 13( 12: 234 12	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss 7 332 804 430	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss  188 934  1384 740	31 23 1478 75	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run  Ne E E  Dundation Cond al Conductive Air Leakage	Appliances Loads Duct and Pipe loss 13,685 2,802  It. evel 2 If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A et exposed walls A et exposed walls B Exposed Floors et exposed floors telephosed walls B Exposed Floors Exposed Floors Exposed Floors Letter Heat Loss Case 1 Case 2 Case 3	R-Values LC 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11: 19.45 29: 19.45 29: 19.45 3. 3.64 0. 9.15 1. 1.31 0. 2.81 1. 2.61 0.  x  0.5344 0.05 0.05 0.0	350 350 350 350 350 350 350 350 350 350	GRT A B Area A B B Flir Loss 895 292 272 1000	Gain 1364 339 45 164	6 A A B F F F 51	WR A 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1: 10.0 316 12: 136 ain 203 31 136 12:	KIT 3 A B 0 6 Area A B 7 Fir 0 Loss 7 332 804	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 10 Area A B .00 Fir .00 Loss .00 Loss .00 188 934 .00 189 .00 188 .00 18	31 23 1478	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run	Appliances Loads Duct and Pipe loss 13,685 2,802  If the exposed wall a fith exposed wall a fith exposed wall a fith exposed cellings a fix exposed Cellings a f	R-Values Lc 4.00 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65 29.80	DSS Gain 19.45 11. 19.45 22. 39.10 24. 39.10 24. 39.10 2. 19.45 22. 39.10 24. 39.10 24. 30.36 0. 36.4 0. 2.81 1. 2.61 0. 0.5344 0.05 0.05 0.0 16.80 13. 0.05 0.0	350 10.0 297 350 10.0 297 350 10.0 15 10.0 275 10.0 17 10.0 275 10.0 17 10.0 1	GRT A B Area A B Fir Loss 895 292 272 1000 2459 1314	Gain 1364 339 45 164	6 A A B F F F 51	WR A 3 3 4 4 rea A 5 3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10.1 316 12: 136 31 136 31 136 12: 234 12	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss 7 332 804 430	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 100 Area A B .0 100 Area A B .0 100 Fir .0 100 100 100 100 100 100 100 100 100	31 23 1478 75	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Ne E  oundation Cond tal Conductive Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 13,885 2,802  It. eyel 2 If. exposed wall A for exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A et exposed walls A et exposed ceilings A Exposed Ceilings B Exposed Floors Survive Heatloss Heat Loss Heat Case Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People	R-Values Lc 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	DSS Gain 19.45 11. 19.45 29. 19.45 29. 19.45 29. 19.45 29. 19.45 3. 3.64 0.0 2.61 0. 2.61 0. 0.5344 0.055 0. 16.80 13. 0.05 0.0	350 350 350 350 350 350 350 350 350 350	GRT A B Area A B Fir Loss 895 292 272 1000 2459 1314	Gain 1364 339 45 164	6 A A B F F F 51	WR A 3 3 4 4 rea A 5 3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11: 10.0 31( 12: 13( 31) 203 31 13( 12: 234 12	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss 7 332 804 430	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 100 Area A B .0 100 Area A B .0 100 Fir .0 100 100 100 100 100 100 100 100 100	31 23 1478 75 120	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir
Run Run Ne E Coundation Cond tal Conductive Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 13,685 2,802  If the exposed wall a fith exposed wall a fith exposed wall a fith exposed cellings a fix exposed Cellings a f	R-Values Lc 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80	DSS Gain 19.45 11. 19.45 22. 39.10 24. 38.33 89. 19.45 3. 3.64 0. 9.15 1. 19.45 2. 19.45 22. 39.10 24. 38.33 89. 19.45 3. 3.64 0. 9.15 1. 10.05 0.05 0.0 16.80 13. 0.05 0.0	350 10.0 297 350 350 10.0 297 350 10.0 297 10.0 207 10.0 207 10.0 207 10.0 207 10.0 207 10.0 207 10.0	GRT A B Area A B Fir Loss 895 292 272 1000 2459 1314	Gain 1364 339 45 164	6 A A B F F F 51	WR A 3 3 4 4 rea A 5 3 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10.1 316 12: 136 31 136 31 136 12: 234 12	KIT 3 A B 0 0 6 Area A B 7 Fir 0 Loss 7 332 804 430	100 110 110 110 110 110 110 110 110 110	FAM 10 A B .0 10 Area A B .0 10 Fir 10 Loss  11 1384  740  73	1424 31 23 1478 75 120 360	FOY 20 A B 15.0 89 Area A B Fir 300 Loss G 24 467 18 350 258 938	10.0 ain 712 58 154	A B Area A B Fir	A B 10.0 Area A B Fir	10.0 // // E	3 Area A 3 Fir		B O Area A B Fir	Gain	B 10.0 Area A B Fir		B D.0 Area A B Fir

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under 32964

Division C subsection 3.2.5. of the Building Code. Individual BCIN:

Man 16Cot 2

David DaCosta

**Energy Star** 



33,986

21,485

btu/h

btu/h

Total Heat Loss

Total Heat Gain

#### Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800

e-mail hvac@gtadesigns.ca

	Builder:	EM Air Systems	<u> </u>	Date:	September 18, 20	23		Weather Data	Richmond Hi	II 44	-5.8 88 20 5	60	Page 5
2012 OBC	Project:	King East Developm	ents	Model:	Model 2030EN		System 1	Heat Loss ^	T 77.8 deg. F	Ht gain ^T	12.8 deg. F		Project # PJ-00267 Layout # JB-09143
Level 3			MAST 1 A	ENS 23 A	BED 3 30 A	BED 2	BATH A	A	Α	A	Α	A	Α
Run ft. exposed wall B		2	B	23 A B	30 A B	12 A B	В	B	B	В	В В	B	В
Ceiling height		9.0	_	11.0	9.0	11.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Floor area			1 Area	105 Area	193 Area	169 Area	70 Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A		301	1 A	105 A	193 A	169 A	70 A	Α	Α	Α	Α	Α	A
Exposed Ceilings B			B	В 51-	В	B 7.5%	B	B	B	B	В	В	B
Exposed Floors Gross Exp Wall A		189	Fir	Flr 253	Fir 270	7 Flr 132	Flr	Fir	Fir	Fir	Flr	Fir	Flr
Gross Exp Wall B		10.	•	200	210	102							
Components	R-Values L	oss Gain	Loss Gain	Loss	Gain Loss Gai	n Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss	Gain Loss (	Gain Loss (	Gain Loss Gain
North Shaded	4.00	19.45 11.73											
East/West South	4.00 4.00	19.45 29.66 36 19.45 22.60 16	6 700 106 6 311 36		890 25 486	742 30 584 89	00						
Existing Windows	1.99	39.10 24.56	311 30										
Skylight	2.03	38.33 89.12											
Doors	4.00	19.45 3.20											
Net exposed walls A	21.40	3.64 0.60 137	7 498 8	2 223 811	133 245 891	147 102 371 6	i1						
Net exposed walls B Exposed Ceilings A	8.50 59.22	9.15 1.51 1.31 0.67 301	1 395 20	105 138	71 193 254	130 169 222 11	4 70 92 47						
Exposed Ceilings A  Exposed Ceilings B	27.65	2.81 1.44	1 395 20	105 136	71 193 234	130 109 222 11	4 70 92 47						
Exposed Floors		2.61 0.23				7 18	2						
Foundation Conductive Heatloss													
Total Conductive Heat Loss			1905	1532	1631	1195 018 106	92						
Heat Gain Air Leakage Heat Loss/Gain		0.3792 0.0507	722 8		55 618		66 47 64 35 2						
Case 1		0.03 0.08		00.	0.0	02							
Ventilation Case 2		16.80 13.82											
Case 3	x	0.05 0.08	100 13			82 63 8							
Heat Gain People Appliances Loads	1 =.25 pe	239 2 rcent 2877	2 47	1	1	239 1 23	19						
Duct and Pipe loss	1 =.25 pe	10%	1 263 21	,									
Level HL Total 9,359	Tot	al HL for per room	2990	2193	2334	1710	132						
Level HG Total 8,792	Total	HG per room x 1.3	342	<u>'</u>	1609	808 187	9 69						
Level 4													
Run ft. exposed wall A			Α	Α	Α	Α	Α	Α	Α	Α	A	Α	A
Run ft. exposed wall B			В	В	В	В	В	В	В	В	В	В	В
Ceiling height Floor area			Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A			A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B			В	В	В	В	В	В	В	В	В	В	В
Exposed Floors			Flr	Fir	Flr	Flr	Flr	Flr	Fir	Flr	Flr	Flr	Fir
Gross Exp Wall A Gross Exp Wall B													
Components	R-Values L	oss Gain	Loss Gain	Loss	Gain Loss Gai	n Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss	Gain Loss (	Gain Loss (	Sain Loss Gain
North Shaded	4.00	19.45 11.73		1					T	T [			
East/West	4.00	19.45 29.66											
South Existing Windows	4.00	19.45 22.60											
Existing Windows Skylight	1.99 2.03	39.10 24.56 38.33 89.12											
Doors	4.00	19.45 3.20											
Net exposed walls A	21.40	3.64 0.60											
Net exposed walls B	8.50	9.15 1.51											
Exposed Ceilings A Exposed Ceilings B	59.22 27.65	1.31 0.67 2.81 1.44											
Exposed Ceilings B	29.80	2.61 0.23											
Foundation Conductive Heatloss													
Total Conductive Heat Loss													
Air Leakage Heat Loss/Gain		0.0000 0.0507											
Case 1		0.000 0.0507											
Ventilation Case 2		16.80 13.82											
Case 3	х	0.05 0.08											
Heat Gain People Appliances Loads	4 - 05	239											
Appliances Loads	1 =.25 pe												
		10%											
Duct and Pipe loss  Level HL Total 0	Tot	10% al HL for per room											
Duct and Pipe loss													

Division C subsection 3.2.5. of the Building Code. Individual BCIN:

Mane Maleta

David DaCosta

**Energy Star** 



2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 e-mail hvac@gtadesigns.ca

Project # Layout #

David DaCosta

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I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the Building Code. Individual BCIN: 32964 Mana Hotel

System Design Option Exhaust only / forced air system

HRV WITH DUCTING / forced air system

Part 6 design

HRV simplified connection to forced air system

HRV full ducting/not coupled to forced air system

2

3 Х

4

Package: Project:	Energy Star Richmond Hill	Model:	Model 2030EN	
	RESIDENTIAL MECHANICAL			
	For systems serving one dwelling unit & con	nforming to the Untario Building	Code, U.reg 332/12	
	Location of Installation	Total Ve	entilation Capacity 9.32.3.3(1)	
Lot #	Plan #	Bsmt & Master Bdrm	1 @ 21.2 cfm 21.2 cfm	
Township	Richmond Hill	Other Bedrooms Bathrooms & Kitchen	2 @ 10.6 cfm 21.2 cfm 5 @ 10.6 cfm 53 cfm	
Roll #	Permit #	Other rooms	5 @ 10.6 cfm <u>53</u> cfm Total <u>148.4</u>	
Address				
		Principal \	Ventilation Capacity 9.32.3.4(1)	
Nomo	Builder	Moster hadroom	1 @ 21 9 ofm 21 9 ofm	
Name	EM Alr Systems	Master bedroom Other bedrooms	1 @ 31.8 cfm 31.8 cfm 2 @ 15.9 cfm 31.8 cfm	
Address			Total 63.6	
City				
T <sub>0</sub>	Fax	Princi Make	ipal Exhaust Fan Capacity  Model Location	
Tel	гах	VanEE	V150E75NS Base	
	Installing Contractor	Vallee	V 100E70NO Dase	
Name	motuming contracts.	127 cfm	80.0 Sones or E	quiv.
Address		He	eat Recovery Ventilator	
		Make	VanEE	
City		Model	V150E75NS 127 cfm high 80 cfm le	O14/
Tel	Fax	Sensible efficiency @ - Sensible efficiency @ (	-25 deg C <u>60%</u>	Ow
			ance HRV/ERV to within 10 percent of PVC	
	Combustion Appliances 9.32.3.1(1)		mental Ventilation Capacity	
a) x b) c) d) e)	Direct vent (sealed combustion) only Positive venting induced draft (except fireplaces) Natural draft, B-vent or induced draft fireplaces Solid fuel (including fireplaces) No combustion Appliances	Total ventilation capaci Less principal exhaust REQUIRED supplemer	capacity 63.6	
		Sun	pplemental Fans 9.32.3.5.	
	Heating System	Location	cfm Model Sones	
X	Forced air Non forced air Electric space heat (if over 10% of heat load)	Ens Bath	50 XB50 0.3 50 XB50 0.3	
l x	House Type 9.32.3.1(2) Type a) or b) appliances only, no solid fuel	all fans HVI listed	Make Broan or Equiv.	
II	Type I except with solid fuel (including fireplace)			
III L	Any type c) appliance		Designer Certification	
IV Other	Type I or II either electric space heat Type I, II or IV no forced air		s ventilation system has been designed Ontario Building Code.	

Designer Certification  I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.						
Name	David D	aCosta				
Signature	Mane	Met				
HRAI#	5190	BCIN#	32964			
Date September 18, 2023						



# Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643 e-mail dave@gtadesigns.ca (Building Code Part 9, Residential)

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Project # PJ-00267
Layout # JB-09143

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 you by Dring	inal Authority				
		For use by Princ	. ,				
Application	No:		Model/Certification Nu	ımber			
	Project Information						
Building nur	mber, street name			Unit number	Lot/Con		
		Model 2030EN					
Municipality	Richmond Hill	Postal code	Reg. Plan number / ot	her description			
В.	Prescriptive Compliance [indicate the build	ding code compliance option	l n being employed in the	e house design]			
	SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy perforn	nance results using	an approved softwa	are (see guide)		
<b>V</b>	ENERGY STAR®* [SB-12 - 3.1.3.] *Attach Builder Option Package [BOP] form						
	R-2000®* [SB-12 - 3.1.3.]	*Attach R-2000 HOT2	000 Report				
C.	Project Building Design Conditions						
	Climatic Zone (SB-1):	Heat. Equip. Efficiency	Space Heating Fuel Source				
<b>4</b>	Zone 1 (< 5000 degree days)	≥ 92% AFUE	☑ Gas	☐ Propane	Solid Fuel		
	Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	☐ Oil	☐ Electric	☐ Earth Energy		
R	atio of Windows, Skylights & Glass (W, S	& G) to Wall Area		Other Building Ch	aracteristics		
A	Malla - 245 5 m² - 2740 0 #2		☐ Log/Post&Beam	☐ ICF Above	Grade		
Area or	Walls = <u>345.5</u> m² or <u>3718.9</u> ft²		☐ Slab-on-ground	│ │ Walkout Ba	asement		
		W,S &G % = <u>8%</u>	☑ Air Conditioning	Combo Uni	t		
Area of W	$I_1$ , S & G = $28.52$ m <sup>2</sup> or $307.0$ ft <sup>2</sup>		☐ Air Sourced Hea	at Pump (ASHP)			
	<u> </u>		☐ Ground Source Heat Pump (GSHP)				
SB-12 Pe	rformance Reference Building Design Pac	kage indicating the pre	scriptive package to	be compared for co	ompliance		
SB-12 Referenced Building Package (input design package):							
D.	D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form]						
	J - prominent promine tallage and	g g, ee	,	,			

Building Component	Minimum RSI/R-Values or Maximum U-Value <sup>1</sup>		Building Component	Efficiency Ratings	
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value (1) or ER rating		
Ceiling with Attic Space	60	59.22	Windows/Sliding Glass Doors	1.4	
Ceiling without Attic Space	31	27.65	Skylights	2.8	
Exposed Floor	31	29.80	Mechanicals		
Walls Above Grade	22 +5.0ci	21.40	Heating Equip.(AFUE)	96%	
Basement Walls	20.0ci	20.84	HRV Efficiency (SRE% at 0°C)	75%	
Slab (all >600mm below grade)	х	х	DHW Heater (EF)	0.95	
Slab (edge only ≤600mm below grade)	10	11.13	DWHR (CSA B55.1 (min. 42% efficiency))	42.0% #Showers 2	
Slab (all ≤600mm below grade, or heated)	10	11.13	Combined Heating System		

<sup>(1)</sup> U value to be provided in either W/(m²·K) or Btu/(h·ft·F) but not both.



# **Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods**

(Building Code Part 9, Residential)

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Project #

PJ-00267 JB-09143 Layout #

#### 2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643 e-mail dave@gtadesigns.ca

E.	Project Design Verification [Subsection 3.1.2. Performance	e Compliance]					
The ar	nnual energy consumption using Subsection 3.1.1. SB-12 Refe	erence Building Pac	kage is	GJ (1J=1000MJ)			
The	The annual energy consumption of this house as designed is GJ						
The	software used to simulate the annual energy use of the building	ng is:					
The build	ding is being designed using an air tightness baseline of:						
	OBC reference ACH, NLA or NLR default values (no depress	surization test requi	ired)				
	Targeted ACH, NLA or NLR. Depressurization test to meet		ACH50 or NLR or NLA				
	Reduction of overall thermal performance of the proposed building envelope is not more than 25% of the envelope of the compliance package it is compared against (3.1.2.1.(6)).						
	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 - 4.6.2.5)						
	O4 T						
F.	ENERGY STAR or R-2000 Performance Design Verif	fication [Subsection	3.1.3. Other Acceptable Compl	iance Methods]			
	The NRCan "ENERGY STAR for New Homes Standard Vers building performance meeting or exceeding the prescriptive						
	The NRCan, "2012 R-2000 Standard" technical requirements exceeding the prescriptive performance requirements of the			lding performance meeting or			
Perform	ance Energy Modeling Professional						
Energy E	valuator/Advisor/Rater/CEM Name and company:	Accreditation or Eval	uator/Advisor/Rater License #				
	BUILDING KNOWLEDGE CANADA		5506				
ENERG	Y STAR or R-2000						
Energy E	valuator/Advisor/Rater/Name and company:	Evaluator/Advisor/Ra	ater License #				
	ANGELA BUSTAMANTE		5506				
G.	G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets building code]						
Name		BCIN	Signature				
	David DaCosta	32964	Mane	166 <del>16</del>			

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



50 Fleming Drive, Unit # 6, Cambridge, ON, N1T 2B1

ENERGY STAR® for New Homes Version Ontario 17.1 Revision 2 BOP Form Zone 1 Ontario



T | 1-800-267-6830 F | 519-658-6103 E | nfo@buildingknowledge.ca

General Details		House Details	
Performance or Prescriptive :	Prescriptive	ESEnrolment ID:	
Attached or Detached or MURB:	Attached	Site/Phase:	KING EAST PH 2&3
Province / Territory :	ON	LOT :	
Zone :	Zone 1 Heating Degree Days	Street # and Name:	
Service Organization (SO) number :	55 - Enerquality	Street Type:	
Builder number :	TBD	City:	RICHMOND HILL
Builder Name:	PLAZACORP	Postal Code (or FSA) :	
		Model:	ALL MODELS
		Third Party Evaluator:	BUILDING KNOWLEDGE CANADA
Supplementa	ry Information	Evaluator Name:	ANGELA BUSTAMANTE
		Evaluator Number:	5506

Building Component	Core / Option	BOP Selection Description	BOP Option Credits	Measure Selected (Check) √	Nominal Efficiency Values (Optional)	Notes (Optional)
Ceilings Below Attic	Core	RSI 10.43 (R 59.2)	Core Minimum	√	R60	
-		N/A	n/a			
Cathedral Ceilings and Flat Roofs	Core Option	RSI 4.87 (R 27.7) N/A	Core Minimum n/a	√	R31	
Ceilings Below Attic and Cathedral Ceilings/Flat Roofs	Option	N/A	n/a			
Walls Above Grade	Core	RSI 3.08 (R 17.5)	Core Minimum			
Walls Above Grade	Option	RSI 3.72 (R 21.1)	0.7	√	R22+R5	
Floors Over Unheated Spaces	Core	RSI 5.25 (29.8)	Core Minimum	√	R31	
Foundation Walls Below or in Contact	Core	RSI 3.72 (R 21.1) below grade	Core Minimum	√	R20 blanket	
with the Ground	Option	N/A	n/a			
Unheated Floors on Ground Above Frost Line	Core	RSI 1.96 (R 11.1)	Core Minimum	√	R10 if applicable	
Unheated Floors on Ground Below Frost Line	Option	N/A	n/a			
Heated Floors on Ground	Core	N/A	n/a			
Slabs on Grade with Integral Footing	Core	N/A	n/a			
	Core	ENERGY STAR Zone 2 UV1.4 and/or ER29	Core Minimum	√	Zone 2	
Windows (Fenestrations)	Option	N/A	n/a			
Wildows (Tellestrations)	Core	Total area of all windows to max. 20% of above grade wall area.	Core Minimum	√		
Fireplace	Core	Gas fireplace spak ignition if installed	#N/A	√		
Space Heating	Core	Min. 96% AFUE ENERGY STAR fuel fired furnace	Core Minimum	√		COOLING - ASHP
	Req'd	Supply ducts and 1m return sealed	Required	√		
Domestic Water Heating	Core	Instantaneous min. EF or UEF 0.80 Tank EF or UEF 0.80 (direct vent (sealed))	Core Minimum			
	Option	Instantaneous condensing min. UEF 0.95	0.4	√		
Drain Water Heat Recovery	Option	≥ 42% to ≤ 54% - two showers	0.3	√	42%	
Airtightness	Core Option	Level 1 (DT 2.5ach / 0.18 nlr) (AT 3.0ach/0.26nlr) N/A	Core Minimum n/a	√		
Ventilation (HRV / ERV)		65% SRE @0 °C and 55% SRE @ -25 °C	Core Minimum			
	Option Rea'd	≥75% SRE @ 0 °C Interconnected to the Furnace Fan	0.2 Required	√ √		
	Rea'd	HRV balanced	Required	V		
		SRE ≥75% SRE @ 0 °C, ≥ 0.57 L/s/W	0.1 Core Minimum	√		
Electrical Savings	Core Option	75% ENERGY STAR lighting 100% ENERGY STAR lighting	0.1	√		
ENERGY STAR Certified Appliances	Option	• •	n/a	,		

NOTE: Thermal resistance values under "BOP Selection Description" are listed in effective values, unless indicated with "nominal".



2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 e-mail hvac@gtadesigns.ca

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Package: **Energy Star** System: System 1 **Richmond Hill** Model:

Project: Model 2030EN Air Leakage Calculations **Building Air Leakage Heat Loss Building Air Leakage Heat Gain** LRairh Vb HL^T Vb HLleak LRairh HG^T HG Leak В В 0.018 0.404 21315 77.8 12046 0.018 0.112 21315 12.8 550 Levels Air Leakage Heat Loss/Gain Multiplier Table (Section 11) 2 3 4 1 Building Air Leakage Heat Loss Level Level Conductive (LF) (LF) (LF) (LF) Level Factor (LF) Air Heat Loss (HLclevel) Multiplier Level 1 7281 0.8272 1.0 0.5 0.5 0.6 0.4 0.5344 Level 2 0.3 6762 0.4 0.3 0.3 12046 6354 0.3792 Level 3 0.2 0.2 Level 4 0 0 0.0000 0.1 Levels this Dwelling Air Leakage Heat Gain **HG LEAK** 550 0.0507 3 **BUILDING CONDUCTIVE HEAT GAIN** 10862 30.0 FT 9.14 M **Highest Ceiling Height** Ventilation Calculations **Ventilation Heat Gain** Ventilation Heat Loss Vent Vent Ventilation Heat Loss Ventilation Heat Gain С PVC (1-E) HRV HLbvent ဂ PVC HG^T HGbvent 1.08 63.6 77.8 0.20 1069 1.1 63.6 12.8 879 Case 1 Case 1 Ventilation Heat Loss (Exhaust only Systems) Ventilation Heat Gain (Exhaust Only Systems) Case 1 - Exhaust Only Case 1 - Exhaust Only Multiplier Case HLbvent Level LF LVL Cond. HL HGbvent 879 Multiplier 0.08 Building 10862 Level 1 0.5 7281 0.07 Level 2 0.3 6762 0.05 1069 Level 3 0.2 6354 0.03 Level 4 0 0 0.00 Case 2 Case 2 **Ventilation Heat Loss (Direct Ducted Systems)** Ventilation Heat Gain (Direct Ducted Systems) Case Case Multiplier Multiplier С (1-E) HRV С HG^T HL^T 16.80 13.82 1.08 0.20 1.08 77.8 12.8 Case 3 Case 3 Ventilation Heat Loss (Forced Air Systems) Ventilation Heat Gain (Forced Air Systems) 3 Case HLbvent Vent Heat Gain Multiplier Multiplier HGbvent HG\*1.3 Total Ventilation Load 1069 0.05 879 0.08 879 Watts Foundation Conductive Heatloss Level 1 1735 5919 Level 1 Btu/h Foundation Conductive Heatloss Level 2 Level 2 Watts Btu/h Slab on Grade Foundation Conductive Heatloss Watts Btu/h **Walk Out Basement Foundation Conductive Heatloss** Watts Btu/h

# **Envelope Air Leakage Calculator**

Supplemental tool for CAN/CSA-F280

Weather Station	Description
Province:	Ontario 🔻
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shiel	ding
Building Site:	Suburban, forest ▼
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	9.14
Building Confi	guration
Туре:	Semi-Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m³):	603.64
Air Leakage/Ve	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
Custom BDT Data:	ELA @ 10 Pa. 322.44 cm <sup>2</sup>
Cusioni Do i Daia.	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply: Total Exhaust:
	31.8
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Heating Air Leakage Rate (ACH/H):	0.404
Cooling Air Leakage Rate (ACH/H):	0.112

# **Residential Foundation Thermal Load Calculator**

Supplemental tool for CAN/CSA-F280

Weather Station Description						
Province:		Ontario				
Region:		Richmond Hill				
Site Description						
Soil Conductivity:		High conductivity: moist soil ▼				
Water Table:		Normal (7-10 m, 23-33 Ft) ▼				
Fou	ındatio	n Dimensions				
Floor Length (m):	16.26					
Floor Width (m):	3.40					
Exposed Perimeter (m):	32.31					
Wall Height (m):	2.74					
Depth Below Grade (m):	0.46	Insulation Configuration				
Window Area (m²):	2.60					
Door Area (m²):	3.90					
	Radi	ant Slab				
Heated Fraction of the Slab:	0					
Fluid Temperature (°C):	33					
Design Months						
Heating Month	1					
	Foundation Loads					
Heating Load (Watts):		1735				



## 2985 Drew Road, Suite 202 Mississauga, Ontario L4T 0A4

Tel: 905-671-9800 email: hvac@gtadesigns.ca

### **Effective R-Value Calculations**

Effective R-Value - Above Grade Walls					
Insulation	R22+5ci				
Exterior Air Film	0.17				
Hollow Vinyl Siding	0.62				
Continuous Insulation	5.00				
Effective Cavity Insulation	14.49				
Drywall	0.44				
Interior Air Film	0.68				
Effective R-Value	21.40				

Effective R-Value - Below Grade Walls					
Insulation	R20ci				
Concrete Foundation	0.44				
Interior Air Film	0.68				
Continuous Insulation	20.0				
Effective R-Value	21.12				

Effective R-Value – Exposed Floors					
Insulation	R31				
Exterior Air Film	0.17				
Effective Cavity Insulation	28.72				
Interior Air Film	0.91				
Continuous Insulation	0.00				
Effective R-Value	29.80				



# 2985 Drew Road, Suite 202 Mississauga, Ontario L4T 0A4

Tel: 905-671-9800 email: hvac@gtadesigns.ca

Effective R-Value – Exposed Ceiling with Attic				
Insulation	R60			
Exterior Air Film	0.17			
Effective Insulation	58.61			
Drywall	0.44			
Effective R-Value	59.22			

Effective R-Value – Exposed Ceiling with Flat Roofs					
Insulation	R31				
Exterior Air Film	0.17				
Effective Insulation	27.04				
Drywall	0.44				
Effective R-Value	27.65				

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE **a**]-+ 0 SUPPLY AIR PIPE RISER VOLUME DAMPER

8

DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) ė RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT

R.A. 1

SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN

FURNACE EQUIPPED WITH BRUSHLESS DC MOTOR AS PER OBC 12.3.1.5 (2) & CSA P.9-II CERTIFIED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

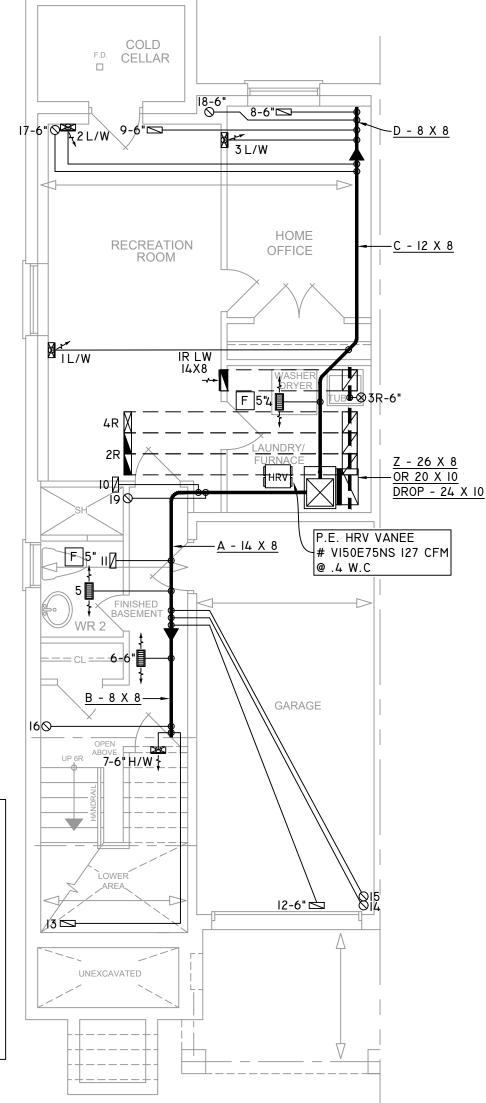
ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY

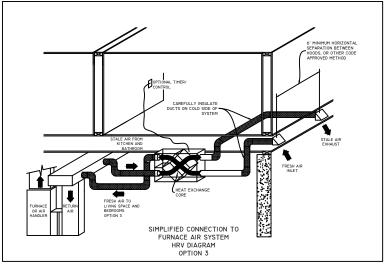
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

### **ENERGY STAR**

SEAL ALL JOINTS ON ANY DUCTWORK. SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS

ENERGY STAR VI2 STANDARD. ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)





THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON BEHALF OF GTA DESIGNS INC. AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE BUILDING CODE TO BE A DESIGNER

# QUALIFICATION INFORMATION

REQUIRED UNLESS DESIGN IS EXEMPT UNDER DIVISION C 3.2.5.1 OF THE ONTARIO BUILDING CODE

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE

SPECIFIED PROVIDE BALANCING DAMPERS ON ALL BRANCHES. ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)
INSULATE DUCTS IN UNCONDITIONED SPACES RI2 UNDERCUT

ALL DOORS I" MIN. CONTRACTOR MUST WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE

RESPONSIBILITY OF GTA DESIGNS. GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING.

GTADESIGNS

2985 DREW ROAD SUITE 202, MISSISSAUGA, ONT.

L4T 0A4 TEL: 905-671-9800 EMAIL: DAVE@GTADESIGNS.CA WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	BTU/HR.
33,986	BTU/HR.
UNIT MAKE	OR FQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B040EI4	·10
UNIT HEATING INPUT	BTU/HR.
40,000	
UNIT HEATING OUTPUT	BTU/HR.
39,000	
A/C COOLING CAPACITY	TONS.
2.0	
FAN SPEED	CFM
805	

	PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.						
# OF RU	NS	S/A	R/A	FANS	SEPTEMBER 18, 2023		
3RD FLO	ΛD				GET TETIBER 10; EGEG		
JIND I LO	OIN				CLIENT:		
2ND FLO	OR	6	2	2	EM AIR SYSTEMS		
IST FLOOR		6	ı	2	MODEL:		
10111200					MODEL 2030EN		
BASEMEN	NΤ	7	1	2	TIODEL ZOSOLIV		
DASCITENT / I Z			'		PROJECT: KING EAST		
					NING EAST		
FLOOR PLAN: BASEMENT					DEVELOPMENTS		
DRAWN BY: I CHECKED: I SOFT					DIGUNAL DIGUIT		

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JB-09143

OBC 2012

ZONE I COMPLIANCE

PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT. 3/16" = 1'-0"

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE **a**]--0 SUPPLY AIR PIPE RISER VOLUME DAMPER



DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) 4 RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT SECOND FLOOR  $\boxtimes$ 

R.A 1

SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN

CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

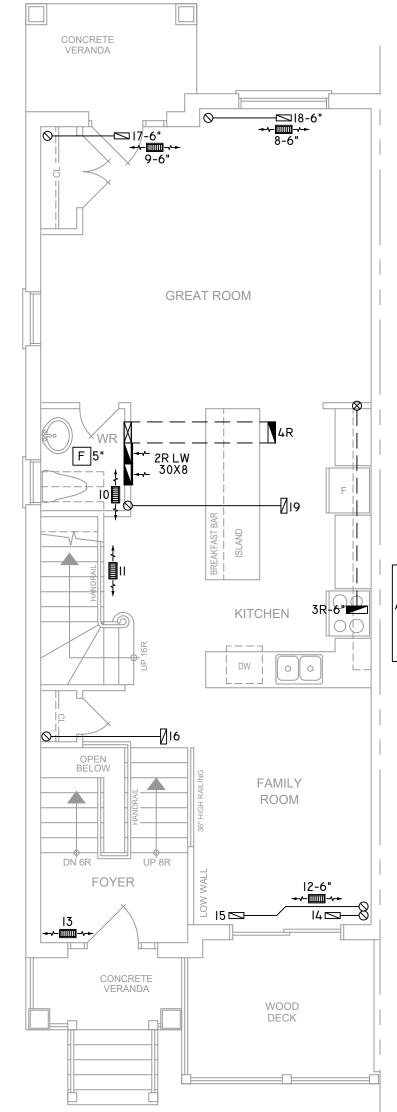
ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY

ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

# **ENERGY STAR**

SEAL ALL JOINTS ON ANY DUCTWORK. SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS

ENERGY STAR VI2 STANDARD. ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)



KITCHEN EXHAUST 100 CFM MIN. 6" ALL OTHER FANS SHALL BE A MIN. OF 50 CFM OR OTHERWISE NOTED AS PER 9.32.3.5

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON BEHALF OF GTA DESIGNS INC. AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE BUILDING CODE TO BE A DESIGNER

QUALIFICATION INFORMATION Required unless design is exempt under Division C 3.2.5.1 of the  $$\operatorname{\textsc{Ontario}}$$  building code

B.C.I.N. 32964

WITH IN THE DWELLING.

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE

PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY) INSULATE DUCTS IN UNCONDITIONED SPACES RI2 UNDERCUT ALL DOORS I" MIN.

RESPONSIBILITY OF GTA DESIGNS. GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST

CONTRACTOR MUST WORK FROM APPROVED PLANS. ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR

**♦GTADESIGNS** 

2985 DREW ROAD

SUITE 202, MISSISSAUGA, ONT. L4T 0A4 TEL: 905-671-9800 EMAIL: DAVE@GTADESIGNS.CA WEB: WWW.GTADESIGNS.CA

HEAT-LOSS BTU/HR. 33,986	
UNIT MAKE OR EQUAL.  CARRIER	╟
UNIT MODEL OR EQUAL. 59SC5B040E1410	╟
UNIT HEATING INPUT BTU/HR. 40,000	lt
UNIT HEATING OUTPUT BTU/HR. 39,000	][
a/c cooling capacity tons.  2.0	╟
FAN SPEED CFM 805	

	PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.					
# OF RU		S/A	R/A	FANS	SEPTEMBER 18, 2023	
3RD FLO		6	2	2	CLIENT: EM AIR SYSTEMS	
IST FLO	OR	6	I	2	MODEL 2030EN	
BASEMEN	٧T	7	I	2	PROJECT: KING EAST	
FLOOR PLAN: GROUND FLOOR					DEVELOPMENTS	

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ZONE I COMPLIANCE

OBC 2012

RICHMOND HILL, ONT. 3/16" = 1'-0"

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE **a**]-+ 0 SUPPLY AIR PIPE RISER VOLUME DAMPER



DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) 4 RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT SECOND FLOOR  $\boxtimes$ 

R.A 1

SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

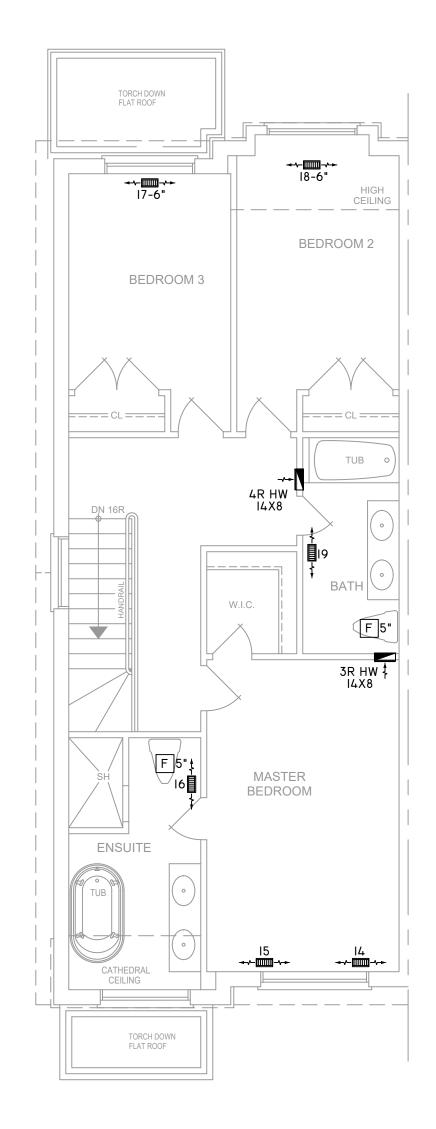
ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY

ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

### ENERGY STAR

SEAL ALL JOINTS ON ANY DUCTWORK. SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS

ENERGY STAR VI2 STANDARD. ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)



THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON BEHALF OF GTA DESIGNS INC. AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE BUILDING CODE TO BE A DESIGNER

QUALIFICATION INFORMATION REQUIRED UNLESS DESIGN IS EXEMPT UNDER DIVISION C 3.2.5.1 OF THE ONTARIO BUILDING CODE

B.C.I.N. 32964

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE

SPECIFIED. PROVIDE BALANCING DAMPERS ON ALL BRANCHES. ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY) INSULATE DUCTS IN UNCONDITIONED SPACES RI2 UNDERCUT

ALL DOORS I" MIN. CONTRACTOR MUST WORK FROM APPROVED PLANS. ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE

RESPONSIBILITY OF GTA DESIGNS. GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING.



2985 DREW ROAD SUITE 202, MISSISSAUGA, ONT. L4T 0A4 TEL: 905-671-9800 EMAIL: DAVE@GTADESIGNS.CA

WEB: WWW.GTADESIGNS.CA

HEAT-LOSS BTU/HR.	# OF RUNS
33,986	
UNIT MAKE OR EQUAL.	3RD FL00
CARRIER  UNIT MODEL OR EQUAL.	2ND FL00
SITT TIOBLE	
59SC5B040E1410	IST FLOOF
UNIT HEATING INPUT BTU/HR.	DACEMENT
40,000	BASEMEN
UNIT HEATING OUTPUT BTU/HR.	
39,000	FLOOR PLAN: SFCC
A/C COOLING CAPACITY TONS.	DRAWN BY: CHECKE
2.0	JL DD
FAN SPEED CFM 805	JB-09143

	PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.					
# OF RU	NS	S/A	R/A	FANS	SEPTEMBER 18, 2023	
3DD ELO	ΛD				DET TETIBER TO, EVE	
3RD FLOOR					CLIENT:	
2ND FLO	OR	6	2	2	EM AIR SYSTEMS	
IST FLOOR		6	-	2	MODEL:	
		6	ı		MODEL 2030EN	
DACEMEN	J.T.	7	1	2	MODEL ZOSUEN	
BASEMEN	N I	/	ı		PROJECT: KING FACT	
					PROJECT: KING EAST	
FLOOR PLAN:					DEVELOPMENTS	
SECOND FLOOR					II DEVELORMENTS	
DDAWN DV. CHECKED. SOFT					II	

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ZONE I COMPLIANCE

OBC 2012

PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT. 3/16" = 1'-0"