

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 20			Lot/con.	
Municipality Richmond Hill	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design	n activities	T		
Name David DaCosta		Firm	gtaDesigns Inc.	
Street address 2985 Drew Road			Unit no.	Lot/con.
Municipality Mississauga	Postal code L4T 0A4	Province Ontario	E-mail hvac@gtades	igns.ca
Telephone number	Fax number		Cell number	
(905) 671-9800 C. Design activities undertaken by individual identified in Se	ction B. [Buil	lding Code Table 3.	5.2.1 of Division C]	
☐ House ☑ HVAC – Ho	use		☐ Building Structural	
☐ Small Buildings ☐ Building Ser	vices		☐ Plumbing – House	
☐ Large Buildings ☐ Detection, L	ighting and Pow	er	☐ Plumbing – All Buildings	S
☐ Complex Buildings ☐ Fire Protecti	ion		☐ On-site Sewage System	ns
Description of designer's work Mod	el Certification		Project #:	PJ-00267
Waite Louis Louis Main		D. S	Layout #:	JB-09144
Heating and Cooling Load Calculations Main Air System Design Alternate	Х	Builder Project	EM Alr Systems King East Developm	
Residential mechanical ventilation Design Summary O.D. GFA	1876	,	King Last Developin	CITCS
Residential System Design per CAN/CSA-F280-12		Model	Model 2030S	
Residential New Construction - Forced Air		SB-12	Energy Star	
D. Declaration of Designer				
David DaCosta	declare that (c	choose one as appro	priate):	
(print name)				
☐ I review and take responsibility for th Division C of the Building Code. I am classes/categories.				
Individual BCIN:				
Firm BCIN:			•	
☑ I review and take responsibility for t designer" under subsection 3.2.5 of	-		• opriate category as an "other	
Individual BCIN:	3296	64		
Basis for exempti	on from registra	tion:	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 the control of the cont	of the firm.			
September 20, 2023		Mane A.	of the second	
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.
- Schedule 1 does not require to be completed a holder of a license, temporay 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

Page 2

Heat loss and gai	n calcula	tion summary sheet CSA-F280-M12 Standa
These documents issued for the use of	E	M Air Systems Layout No.
and may not be used by any other persons without authorizati		
	Building L	
Address (Model): Model 2030S		Site: King East Developments
Model:		Lot:
City and Province: Richmond Hill		Postal code:
С	alculations	based on
Dimensional information based on:	Ar	chitectural Design Inc.Jun/2023
Attachment: Townhome		Front facing: East/West Assumed? Yes
No. of Levels: 3 Ventilated? Included	I	Air tightness: 1961-Present (ACH=3.57) Assumed? Yes
Weather location: Richmond Hill		Wind exposure: Sheltered
HRV? VanEE V150	E75NS	Internal shading: Light-translucent Occupants: 4
Sensible Eff. at -25C 60% Apparent Effect. at -0	C 80%	Units: Imperial Area Sq ft: 1876
Sensible Eff. at -0C 75%		
Heating design conditions		Cooling design conditions
Outdoor temp -5.8 Indoor temp: 72 Mean soil temp	o: 50	Outdoor temp 88 Indoor temp: 75 Latitude: 44
Above grade walls		Below grade walls
Style A: As per OBC SB12 Energy Star R 2	2 + 5ci	Style A: As per OBC SB12 Energy Star R 20
Style B:		Style B:
Style C:		Style C:
Style D:		Style D:
Floors on soil		Ceilings
Style A: As per Selected OBC SB12 Energy Sta	r	Style A: As per Selected OBC SB12 Energy Star R
Style B:		Style B: As per Selected OBC SB12 Energy Star R
Exposed floors		Style C:
Style A: As per Selected OBC SB12 Energy Sta	r R 31	Doors
Style B:		Style A: As per Selected OBC SB12 Energy Star R 4.
Windows		Style B:
Style A: As per Selected OBC SB12 Energy Sta	r R 4.00	Style C:
Style B:		Skylights
Style C:		Style A: As per Selected OBC SB12 Energy Star R 2.
Style D:		Style B:
Attached documents: As per Shedule 1	Heat Loss/G	ain Caculations based on CSA-F280-12 Effective R-Values
Notes: Res	idential New C	onstruction - Forced Air
Ca	Iculations p	erformed by
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



Air System Design

SB-12 Energy Star

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

September 20, 2023

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

EM Air Systems Builder: Date: Page 3 appropriate category as an "other designer" under Division C subsection 3.2.5. of the Project # PJ-00267 **Building Code.** System 1 Mane Alexo Project: King East Developments Model 2030S Individual BCIN: 32964 David DaCosta Lavout # JB-09144 Model: AIR DISTRIBUTION & PRESSURE BOILER/WATER HEATER DATA: DESIGN LOAD SPECIFICATIONS FURNACE/AIR HANDLER DATA: A/C UNIT DATA: Level 1 Net Load 13,810 btu/h **Equipment External Static Pressure** 0.5 "w.c. Make Make 2.0 Ton Carrie Туре Carrier 59SC5B040E14--10 Level 2 Net Load 11,033 btu/h **Additional Equipment Pressure Drop** 0.225 "w.c. Model Model Model: Level 3 Net Load 9,193 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 300 ft **High Output** Output Btu/h Coil ---2.0 0 btu/h " W C ΔWH 34.036 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** 21,227 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 21598 ft³ (Brushless DC OBC 12.3.1.5.(2)) **Building Volume Vb** Cooling Air Flow Proportioning Factor 0.0379 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 2249 2249 1248 848 1354 2785 3076 1985 1985 574 1284 2415 2792 **Heating Airflow Rate CFM** 53 53 30 20 32 66 73 47 47 14 30 57 66 31 31 15 12 81 13 42 110 52 Cooling Airflow Rate CFM 2 81 **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 1437 1437 2196 2424 1567 133 **Heating Airflow Rate CFM** 34 34 52 57 37 3 60 60 69 Cooling Airflow Rate CFM 60 69 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 426 461 0.07 11.5 14x8 12x10 Drop 0.05 15.0 127 257 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 379 344 0.08 10.5 12x8 10x10 **Total Effective Length** 193 139 221 224 50 50 50 50 50 50 50 х 246 160 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

34,036 btu/h

21,227 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

Column			Builder:	EM	1 Air Syste	ems		1	Date:			Septembe	r 20, 2023			_			W	eather Data	n Richm	nond Hill	44	-5.8	38 20	50					Page 4
March Marc	2012 OBC		Project:	King Ea	ast Develo	pmen	ıts	м	lodel:			Model	2030S				Syste	em 1	1	leat Loss ^	T 77.8 deg. F	н	t gain ^T	12.8	deg. F				Project Layou	:#P t#J	
Part																															
Part													AUN		WR 2			SE		TOR											
The proper control of																							A		A					A	
Part	Run														_													_			
Express Chairpy A													_																,		
Part	_												1		ea					a								ea			
Second Proof Seco																															
Control Cont	-														r													r			
Column C							-			-					-																
Horse Habors 402 74.6 72.7 7.0 7																															
March Marc					ain	L	_oss (Gain	L	oss (Gain	Los	s Gain	Lo	oss G	ain	Loss	Gain	Lo	ss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Lo	ss Ga	ain	Loss	Gain
March Marc																															
West									8	156	237																				
Section Sect	Web W. I					12	233	271						8	156	181															
Second Conting No. 1986 20.0 2	WOB Window																														
Metapose with No. 2004 273 280						21	408	67									21 4	18 67													
Second part B. 24-06 John J	N						700		60		37	60	37	7 67					218	13	4										
Exposed Collings A 9322 134 047 174 174 175 17											, , , , , , , , , , , , , , , , , , ,						_	,,,		"											
Exposed Catings As 2745 224 144 145 156 146 156 146 156																															
Exposed Prioring 2980 246 0.27 0.2			27.65	2.81	1.44																										
Test Condition Month Long M		Exposed Floors	29.80	2.61	0.23																										
March Marc	Foundation Cond		-																												
March Marc	Total Conductive						2385		_	662	6-1				718	200	14												_		
Case	Air Loakage			0.0225	0.0525		1000			EE^					500		40				4										
Verificial Casa 1,66 1,32 1,66 1,32 1,6 1,5	All Leakage						1988	24		552	14		3/3	2	598	12	12	51 /		1359	'										
Heat Call People March People March People March People March Marc	Ventilation																														
Agginame Labels 1-29 process 2917 10 179 1489 1629 1284 449 848 54 1354 228 2785 200 3076 197 1 1 1 1 1 1 1 1 1			х				126	38		35	23		24 3	3	38	18		78 12		86 1	1										
Control Cont		Heat Gain People			239																										
Level H O Total 1,2421 Total H (For per norm 1,2421 1,7041 H (For per norm 1,1421 1,242 1,244 1,244 1,245		Appliances Loads	1 =.25 p	ercent	2917	1.0		729																							
Level 2																															
Level 2 Rort N. appeard small A			To	tal HL for po	er room		4498			1248		/			1354		27														
Runft exposed wall A Runt. exposed wall B Runt. exposed wall A Runt. exposed wall B Runt. exp	2010. 110 1010.	2,02 :	· otai	po				.020			-10-1					020		200						' '	L		1 —			L	1
Runft exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A																															
Runft exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well B A Sunt. exposed well A Runt. exposed well A		Level 2					GRT			WR		,	αт		FAM		FC	Υ													
Runt. texposed wall E F F F F F F F F F	Run		ļ			36 A			6 A										Α		Α		Α		Α		Α			Α	
Figure 1	Run	n ft. exposed wall B				E	3		В	3		В		В			В		В		В		В				В			В	
Exposed Cellings B																1													10		
Exposed Collings B													1							a											
Exposed Floors Fire																															
Gross Exp Wall North Shaded 4.00 19.45 19.75 20.00 19.5	E						_					В		В																	
Components RValues Los Gain Los							-Ir		F'	-Ir																				Flr	
Components R-Values Loss Gain Loss															r		Flr						Flr		Flr		Flr	т			
North Shaded															r	;	Flr						Fir		Flr		Fir	r			
EastWest 4.00 19.45 29.66 48 895 1364 75 20.05 20.05 2			R-Values I	oss G	ain		.oss (Gain	60			130	s Gain	100			Fir 300	Gain	Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
South 4.00 19.45 22.60 15 292 339 9 175 203							.oss (Gain	60			130	s Gain	100			Fir 300	Gain	Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Skylight 2.03 38.33 89.12		North Shaded	4.00	19.45	11.73	1 46			60	Loss (130	s Gain	100 Lo	oss Ga	ain	Fir 300 Loss		Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Doors 4.00 19.45 3.20 14 272 45 185 31 130 473 78 52 189 31 258 938 154		North Shaded East/West South	4.00 4.00 4.00	19.45 19.45 19.45	11.73 29.66 22.60	1 46	895	1364	60 Li	Loss (Gain	130	s Gain	100 Lo	oss Ga	ain	Fir 300 Loss		Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Net exposed walls A 21.40 3.64 0.60 285 1036 170 51 185 31 130 473 78 52 189 31 258 938 154		North Shaded East/West South Existing Windows	4.00 4.00 4.00 1.99	19.45 19.45 19.45 39.10	11.73 29.66 22.60 24.56	1 46	895	1364	60 Li	Loss (Gain	130	s Gain	100 Lo	oss Ga	ain	Fir 300 Loss		Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Net exposed walls 8		North Shaded East/West South Existing Windows Skylight	4.00 4.00 4.00 1.99 2.03	19.45 19.45 19.45 39.10 38.33	11.73 29.66 22.60 24.56 89.12	46 15	895 292	1364 339	60 Li	Loss (Gain	130	s Gain	100 Lo	oss Ga	1424	Fir 300 Loss 24 4	712	Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Exposed Ceilings A 59.22 1.31 0.67 Exposed Ceilings B 27.65 2.81 1.44 Exposed Floors 29.80 2.61 0.23 Foundation Conductive Heatloss Total Conductive Heat Loss		North Shaded East/West South Existing Windows Skylight Doors	4.00 4.00 4.00 1.99 2.03 4.00	19.45 19.45 19.45 39.10 38.33 19.45	11.73 29.66 22.60 24.56 89.12 3.20	46 15	895 292 272	1364 339 45	9	Loss (Gain 203	Los:		100 Lc	934	1424	Fir 300 Loss 24 4	57 712 50 58	Fir	ss Gain	Flr	Gain		Gain		Gain			iain		Gain
Exposed Ceilings B 27.65 2.81 1.44	Ne	North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A	4.00 4.00 4.00 1.99 2.03 4.00 21.40	19.45 19.45 19.45 39.10 38.33 19.45 3.64	11.73 29.66 22.60 24.56 89.12 3.20 0.60	46 15	895 292 272	1364 339 45	9	Loss (Gain 203	Los:		100 Lc	934	1424	Fir 300 Loss 24 4	57 712 50 58	Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Exposed Floors 29.80 2.61 0.23	No No	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls B	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51	46 15	895 292 272	1364 339 45	9	Loss (Gain 203	Los:		100 Lc	934	1424	Fir 300 Loss 24 4	57 712 50 58	Fir	ss Gain	Flr	Gain		Gain		Gain			ain		Gain
Foundation Conductive Heatloss X 2495 360 807 1384 1755	No No E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls B Exposed Ceilings A	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67	46 15	895 292 272	1364 339 45	9	Loss (Gain 203	Los:		100 Lc	934	1424	Fir 300 Loss 24 4	57 712 50 58	Fir	ss Gain	Flr	Gain		Gain		Gain			iain		Gain
Heat Gain	No No E E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls B Exposed Ceilings A Exposed Floors	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67	46 15	895 292 272	1364 339 45	9	Loss (203 31	130 Loss	473 78	100 Lo	934 189	1424 31 :	Fir 300 Loss 24 4	57 712 50 58	Fir	ss Gain	Flr	Gain		Gain		Gain			iain		Gain
Heat Gain 0.5384 0.0525 1343 101 194 12 434 6 745 78 945 48	No No E E	North Shaded East/West South Existing Windows. Skylight Doors let exposed walls A Exposed Ceillings A Exposed Ceilings A Exposed Ceilings A of the control o	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44	46 15	895 292 272 1036	1364 339 45	9	175 185	203 31	130 Loss 130 4	473 78 334 29	100 Lo	934 189 261	1424 31 :	Loss 24 4 18 3 258 9	57 712 50 58 88 154	Fir	ss Gain	Flr	Gain		Gain		Gain			iain		Gain
Case 1 0.05 0.08 Case 2 16.00 13.82 Case 3 x 0.05 0.08 Case 3 x 0.05 Case 3	No No E E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed Ceilings A Exposed Ceilings B Exposed Floors ductive HeatLoss Heat Loss	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44	46 15	895 292 272 1036	1364 339 45 170	9	175 185	203 31	130 Loss 130 4	473 78 334 29 807	100 Lo	934 189 261	31 :	Loss 24 4 18 3 258 9	57 712 50 58 88 154	Fir	ss Gain	Flr	Gain		Gain		Gain			iain		Gain
Case 2 16.80 13.82	No. No. No. E E E Foundation Cond. Total Conductive	North Shaded East/West South Existing Windows. Skylight Doors Net exposed walls A let exposed walls B Exposed Cellings A Exposed Cellings A Exposed Floors ductive Heatloss Heat Loss Heat Gain	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23	46 15	895 292 272 1036	1364 339 45 170	9	175 185	203 31	130 Loss:	473 78 334 29 307	100 Lo	934 189 261 1384	31 : 23	Loss 24 4 18 3 258 9	57 712 50 58 38 154	Fir	ss Gain	Flr	Gain		Gain		Gain			sain		Gain
Case 3 x 0.05 0.08 131 159 19 19 42 9 73 122 92 76	No. No. No. E E E Foundation Cond. Total Conductive	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed ceilings A Exposed Ceilings A Exposed Ceilings A Heat Loss Heat Loss Heat Gain Heat Loss/Gain	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	46 15	895 292 272 1036	1364 339 45 170	9	175 185	203 31	130 Loss:	473 78 334 29 307	100 Lo	934 189 261 1384	31 : 23	Loss 24 4 18 3 258 9	57 712 50 58 38 154	Fir	SS Gain	Flr	Gain		Gain		Gain			iain		Gain
Heat Gain People 239 1.5 1094 1.0 729 0.5 365	No. No. E E E E E E E E E E E E E E E E E E E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed Ceilings A Exposed Ceilings B Exposed Floors ductive Heatloss Heat Gain Heat Loss/Gain Case 1	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 39.10 39.13 19.45 3.64 9.15 1.31 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	46 15	895 292 272 1036	1364 339 45 170	9	175 185	203 31	130 Loss:	473 78 334 29 307	100 Lo	934 189 261 1384	31 : 23	Loss 24 4 18 3 258 9	57 712 50 58 38 154	Fir	SS Gain	Flr	Gain		Gain		Gain			iain		Gain
Appliances Loads 1 = .25 percent 2917 1.5 1094 1.0 729 0.5 365 3	No. No. E E E E E E E E E E E E E E E E E E E	North Shaded East/West South Existing Windows. Skylight Doors let exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Floors ductive Heatloss Heat Loss Heat Loss Heat Loss Heat Gain Case 1 Case 2	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	46 15	895 292 272 1036 2495	1364 339 45 170	9	175 185 360 194	203 31 234 12	130 Los:	78 334 29 807 107	100 Lo	934 189 261 1384 745	31 : 23 1478 78	Loss 24 4 18 3 258 9	57 712 50 58 88 154 55 924 15 48	Fir	ss Gain	Flr	Gain		Gain		Gain			kain		Gain
Duct and Pipe loss 10% Level HL Total 11,033 Total HL for per room 3970 574 1284 2415 2792 1363 Level HG Total 9,962 Total HG per room x 1.3 4254 345 1106 2894 1363	No. No. E E E E E E E E E E E E E E E E E E E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls B. Exposed Ceilings A Exposed Ceilings A Exposed Floors ductive Heatloss Heat Loss Heat Loss Heat Loss Case 1 Case 2 Case 2	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	46 15	895 292 272 1036 2495	1364 339 45 170	9	175 185 360 194	203 31 234 12	130 Los:	78 334 29 807 107	100 Lo	934 189 261 1384 745	31 : 23 1478 78	Loss 24 4 18 3 258 9	57 712 50 58 88 154 55 924 15 48	Fir	SS Gain	Flr	Gain		Gain		Gain			hain		Gain
Level HG Total 9,962 Total HG per room x 1.3 4254 345 1106 2894 1363	No. No. E E E E E E E E E E E E E E E E E E E	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls B Exposed Ceilings A Exposed Floors ductive Heatloss Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5384 0.05 16.80	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x 0.0525 0.08 13.82 0.08	46 15 14 285	895 292 272 1036 2495	1364 339 45 170 1919 101	9	175 185 360 194	203 31 234 12	130 Loss 130	78 3334 29 307 107 434 6	100 Lc	934 189 261 1384 745	31 23 23 1478 78 122	Loss 24 4 18 3 258 9	57 712 50 58 88 154 55 924 15 48	Fir	ss Gain	Flr	Gain		Gain		Gain			sain		Gain
	No.	North Shaded East/West South Existing Windows Skylight Doors let exposed walls A let exposed walls A let exposed ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Floors ductive Heatloss Heat Loss Heat Loss/Gain Heat Loss/Gain Case 1 Case 3 Heat Gain People Appliances Loase 3 Augustee Appliances Loase 1 Appliances Loase 1 Appliances Loase 2 Appliances Loase 3 Augustee Auguste	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5384 0.05 16.80 0.05	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x 0.0525 0.08 13.82 0.08 239 2917 10%	46 15 14 285	895 292 272 1036 2495 1343	1364 339 45 170 1919 101	9	175 185 360 194	203 31 234 12	130 Loss 130 128	107 107 134 42 5 725	100 Lo	934 189 261 1384 745 73	31 : 23 1478 78 122 365	Loss 24 4 4 18 3 258 9 177 9	57 712 50 58 50 58 88 154 154 55 924 48 92 76	Fir	SS Gain	Flr	Gain		Gain		Gain			sain		Gain
	No.	North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A let exposed walls B Exposed Cellings B Exposed Cellings B Exposed Floors ductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80 x	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.61 0.5384 0.05 16.80 0.05	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x 0.0525 0.08 13.82 0.08 239 2917 10% er room	46 15 14 285	895 292 272 1036 2495 1343	1364 339 45 170 1919 101 159	9 51	175 185 360 194	203 31 234 12	130 Loss 130 128	78 3334 29 307 100 4334 6 42 5 729	100 Lo	934 189 261 1384 745 73 213 2415	31 23 23 1478 78 122 365 184	Loss 24 4 4 18 3 258 9 177 9	57 712 50 58 88 154 55 924 15 48	Fir	SS Gain	Flr	Gain		Gain		Gain			sain		Gain
	No.	North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A let exposed walls B Exposed Cellings B Exposed Cellings B Exposed Floors ductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80 x	19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.61 0.5384 0.05 16.80 0.05	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x 0.0525 0.08 13.82 0.08 239 2917 10% er room	46 15 14 285	895 292 272 1036 2495 1343	1364 339 45 170 1919 101 159	9 51	175 185 360 194	203 31 234 12	130 Loss 130 128	78 3334 29 307 100 4334 6 42 5 729	100 Lo	934 189 261 1384 745 73 213 2415	31 23 23 1478 78 122 365 184	Loss 24 4 4 18 3 258 9 177 9	57 712 50 58 88 154 55 924 15 48	Fir	ss Gain	Flr	Gain		Gain		Gain			sain		Gain

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

Name Alak

David DaCosta

SB-12 Package Energy Star



34,036

21,227

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

							Date:					23														
		Builder:	EM A	Systems		-	Date.			September	20, 202			Γ		_	Weat	her Data	Richmond I	Hill 44	-5.8	88 20	50		Project	t# F
012 OBC		Project:	King East	Developm	ients	^	Model:			Model 2	2030S				Systen	າ 1	Hea	t Loss ^T	77.8 deg. F	Ht gain ^T	12.8	deg. F			Layout	
	Level 3				MAS	т		ENS			D 3		BED 2		BATH											
	ft. exposed wall A			2	21 A		23			31 A		10			A		A		A	A		A		A		A
Run	ft. exposed wall B			_	В			В		В			В		В		В		В	В		В		В		В
	Ceiling height			9.0			11.0			9.0		11.0			9.0 70 Area		9.0		9.0	9.0		9.0		9.0	9	9.0 Area
_	Floor area Exposed Ceilings A				01 Area 01 A		105	Area ^		201 Area 201 A	l	170	Area ^		70 Area 70 A		Area A		Area A	Area A		Area A		Area A		Area A
	Exposed Ceilings B			50	В			В		В			В		В		В		В	В		В		В		В
_	Exposed Floors				Flr			Flr		Flr			Flr		Flr		Flr		Flr	Fir		Fir		Fir		Flr
	Gross Exp Wall A			18			253			279		110														
	Gross Exp Wall B																									
	Components				Loss	Gain	7	Loss	Gain	Loss	Gai	n	Loss	Gain	Loss	Gain	Loss	Gain	Loss Gair	n Loss	Gain	Loss	Gain	Loss	Gain	Loss
	North Shaded	4.00		1.73					200	05 4		7 40 00	504													
	East/West South	4.00			584 6 311			564	860	25 4	186	742 29	564	860												
	Existing Windows	1.99		4.56	311	302																				
	Skylight	2.03		9.12																						
	Doors	4.00	19.45	3.20																						
Ne	et exposed walls A	21.40	3.64	0.60 14	13 520	86	224	814	134	254 9	23	152 81	294	48												
	et exposed walls B	8.50	9.15	1.51	4																					
	xposed Ceilings A	59.22	1.31	0.67 30	395	5 202	105	138	71	201 2	264	135 170	223	114	70 92	47										
E	xposed Ceilings B	27.65	2.81	1.44	4	4																				
ndation Cond	Exposed Floors ductive Heatloss	29.80	2.61	0.23																						
	Heat Loss		-		1810	0		1516		16	74		1082		92											
Conductive	Heat Gain					1539			1065			029		1023	,-	47										
Leakage	Heat Loss/Gain		0.3954 0	0525	716			600		6	62	54	428	54	36	2										
	Case 1		0.03	80.0																						
entilation	Case 2			3.82																						
	Case 3	X	0.05	0.08	95			80	88		88	85	57	85	5	4										
					2	478				11				239												
	Heat Gain People	4 05				1				- 1		239 1														
	Appliances Loads	1 =.25 p	ercent	2917	1 253							239 1		200												
vel HL Total	Appliances Loads Duct and Pipe loss 9,193	To	tal HL for per	2917 10% oom	1 253 2874	3 202 4		2196	4574	24	124		1567		133											
	Appliances Loads Duct and Pipe loss	To		2917 10% oom		3 202		2196	1571	24	124	828	1567	1820	133	69										
vel HL Total	Appliances Loads Duct and Pipe loss 9,193	To	tal HL for per	2917 10% oom		3 202 4		2196	1571	24	124		1567		133											
el HL Total el HG Total	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4	To	tal HL for per	2917 10% oom	2874	3 202 4			1571		124	828														
I el HL Total el HG Total Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 If. exposed wall A	To	tal HL for per	2917 10% oom	2874 A	3 202 4		A	1571	A	124	828	A		A		A		A	A		A		A		A
I el HL Total el HG Total Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 ft. exposed wall A ft. exposed wall B	To	tal HL for per	2917 10% oom	2874	3 202 4			1571		124	828					A B		A B	A B		A B		A B		A B
I el HL Total el HG Total Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 1ft. exposed wall A Ceiling height	To	tal HL for per	2917 10% oom	2874 A B	3 202 4		A B	1571	A B	124	828	A B		A B		В		В	В		В		В		В
I el HL Total el HG Total Run Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 1ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area	To	tal HL for per	2917 10% oom	A B Area	3 202 4		A B	1571	A B Area	124	828	A B		A B Area		B Area		B Area	B Area		B Area		B Area		B Area
I el HL Total el HG Total Run Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings A	To	tal HL for per	2917 10% oom	2874 A B	3 202 4		A B Area A	1571	A B Area A	124	828	A B		A B Area A		B Area A		B Area A	B Area A		B Area A		B Area A		B Area A
I el HL Total el HG Total Run Run	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 1ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area	To	tal HL for per	2917 10% oom	A B Area A	3 202 4		A B	1571	A B Area	124	828	A B Area A		A B Area		B Area		B Area	B Area		B Area		B Area		B Area
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 If. exposed wall A If. exposed wall B Celling height Floor area Exposed Cellings A Exposed Cellings A Exposed Floors Gross Exp Wall A	To	tal HL for per	2917 10% oom	A B Area A B	3 202 4		A B Area A B	1571	A B Area A B	124	828	A B Area A B		A B Area A B		B Area A B		B Area A B	B Area A B		B Area A B		B Area A B		B Area A B
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B	Total	tal HL for per HG per room	2917 10% com x 1.3	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir		B Area A B Fir	B Area A B Fir		B Area A B Fir		B Area A B Fir		B Area A B Fir
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components	Total Total	tal HL for per HG per room	2917 10% coom x 1.3	A B Area A B	3 202 4		A B Area A B Fir	1571	A B Area A B	124	828	A B Area A B Fir		A B Area A B Fir		B Area A B	Gain	B Area A B	B Area A B Fir	Gain	B Area A B	Gain	B Area A B Fir	Gain	B Area A B
el HL Total el HG Total Run Run E E	Appliances Loads 9,193 8,444 Level 4 1f. exposed wall A f. exposed wall A Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded	Total Total	tal HL for per HG per room	2917 10% 00m x 1.3	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A 1ft. exposed wall B Ceilling height Floor area Exposed Ceillings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West	Total Total R-Values I 4.00 4.00	tal HL for per HG per room Oss Gain 19.45	2917 10% oom x 1.3	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 Ift. exposed wall A Ift. 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	R-Values I 4.00 4.00 4.00 4.00	Loss Gair 19.45 19.45	2917 10% oom x 1.3 1.73 9.66 2.60	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
il HL Total Il HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 It. exposed wall A 1ft. exposed wall A 1ft. exposed wall B Ceilling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows	Total Total R-Values I 4.00 4.00	Loss Gair 19.45 19.45 19.45 33.10	2917 10% oom x 1.3	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 Level 4 Ift. exposed wall A Ift. 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 I 4.00 4.00 4.00 1.99 2.03 4.00	Loss Gain 19.45 19.45 19.45 39.10 38.33 19.45	2917 10% ooom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 It. evel 4 If. exposed wall A If. 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 et exposed very services of the components South Existing Vindows Skylight	R-Values 1	Loss Gair 19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64	2917 10% oom x 1.3 1.73 9.66 2.4.56 9.12 3.20 0.60	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I HL Total H HG Total Run Run E E N N N N N N	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A In ft. exposed wall B Celling height Floor area Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B	R-Values 1 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50	Loss Gair 19.45 19.45 19.45 19.45 33.10 38.33 19.45 36.4 9.15	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I HL Total I HG Total Run Run I HG Total Run	Appliances Loads Duct and Pipe loss 9,193 8,444 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 A et exposed walls B Exposed Walls B Exposed Veilings A	R-Values I 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	Loss Gain 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31	2917 10% coom x 1.3 1.73 9.266 9.260 4.56 9.320 0.60 1.51	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I HL Total I HG Total Run Run I HG Ni Run	Appliances Loads Duct and Pipe loss 9,193 8,444 If Level 4 If exposed wall A If exposed wall A If exposed ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A 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 Exposed Ceilings A	R-Values 4.00	000 Gain 19.45 19.	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I I HL Total I HG Total Run Run I HG William Run Run I HG William Run	Appliances Loads Duct and Pipe loss 9,193 8,444 If. exposed wall A 1f. 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 et exposed Walls B Exposed Floors	R-Values I 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	Loss Gain 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31	2917 10% coom x 1.3 1.73 9.266 9.260 4.56 9.320 0.60 1.51	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I HL Total I HG Total Run Run I HG Total Run Run E E	Appliances Loads Duct and Pipe loss 9,193 8,444 If Level 4 If exposed wall A If exposed wall A If exposed ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A 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 Exposed Ceilings A	R-Values 4.00	000 Gain 19.45 19.	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
I HL Total I HG Total Run Run Ni	Appliances Loads Duct and Pipe loss 9,193 8,444 If. exposed wall 8 ft. exposed wall 8 Ceiling height Floor area Exposed Ceilings 8 Exposed Floors Gross Exp Wall 8 Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls 8 exposed Ceilings 8 Exposed Floors Gross Exp Wall 8 Across Exp Wall 8 Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls 8 exposed Ceilings A Exposed Ceilings B Exposed Floors fuctive Heatloss Heat Loss Heat Gain	R-Values 4.00	Loss Gain 19.45 19.45 19.45 19.45 19.45 19.45 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
BI HL Total BI HG Total Run Run Nith Nith Ne E E E Indiation Cond	Appliances Loads Duct and Pipe loss 9,193 8,444 It. exposed wall A 1ft. exposed wall A 1ft. 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 A et exposed floors ucceptable walls A et exposed Ceilings B Exposed Floors ucceptable walls A et exposed Heat Loss Heat Loss Heat Loss/Gain	R-Values 4.00	Loss Gain 19.45 19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% 000m x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
BI HL Total Run Run Run Ni Ni Ni Ni Conductive Leakage	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Wall A In ft. exposed Ceilings B In ft. exposed Floors In ft. exposed Ceilings B In ft. exposed Floors In ft. exposed Ceilings B In ft. expo	R-Values 1 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80	Loss Gair 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total el HG Total Run Run No.	Appliances Loads Duct and Pipe loss 9,193 8,444 If. exposed wall 8 Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Ceilings A Axposed Ceilings A Exposed Floors Skylight Lexiting Windows Skylight Doors et exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Floors Suctive Heatloss Heat Loss/Gain Heat Loss/Gain Heat Loss/Gain	R-Values I 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	Loss Gain 19.45 19.45 19.45 19.45 19.45 19.45 19.45 39.10 38.33 19.45 1.31 2.81 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.41 0.23	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el el HL Total el HG Total el	Appliances Loads Duct and Pipe loss 9,193 8,444 It. evel 4 If. exposed wall A If. 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 et exposed walls A et exposed walls A et exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Floors util the Components Load B Exposed Floors Load B Exposed Floors Load B Exposed Floors Load B Exposed Ceilings B Exposed Floors Load B Exposed Floors Load B Exposed Ceilings B Exposed Ceilings B Exposed Floors Load B Exposed Floors Load B Exposed Ceilings B Exposed G Exposed Ceilings B Exposed Floors Load B Exposed Ceilings B Exposed Ceilings B Exposed Floors Load B Exposed Ceilings B Exposed G Exposed Ceilings B Exposed G Exposed Ceilings B Exposed G Exposed Ceilings B Exposed Ceilings B Exposed Ceilings B Exposed Ceilings B Exposed G Exposed Ceilings B Exposed Ce	R-Values I 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	Loss Gain 19.45 19.45 19.45 19.45 19.45 19.45 19.45 39.10 38.33 19.45 1.31 2.81 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el el HL Total el HG Total el HG Total el HG Total Run Run Run Nit Nit Nit Nit Conductive r Leakage	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Wall B In ft. exposed Ceilings A In ft. exposed Floors I	R-Values 1 4.00 4.00 4.00 4.00 2.03 4.00 2.13 2.03 2.05 59.22 27.65 29.80	Loss Gain 19.45 19.45 19.45 19.45 33.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 2.60 4.51 3.20 0.60 1.51 0.67 1.44 0.23	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el HL Total el HG Total el HG Total Run Run No No No E E E undation Cond I Conductive r Leakage	Appliances Loads Duct and Pipe loss 9,193 8,444 It. exposed wall A fit. exposed wall A fit. 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 lings A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Floors Unclude the Appliance Consention Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People Appliances Loads	R-Values 1 4.00 4.00 4.00 4.00 2.03 4.00 2.13 2.03 2.05 59.22 27.65 29.80	Loss Gain 19.45 19.45 19.45 19.45 33.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% 000m x 1.3 1.73 9.66 2.260 4.56 9.12 3.20 0.67 1.44 0.23 0.525 0.08 2.39 2.917	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir
el el HL Total al HG Total al HG Total Run Run No No E E E andation Cond Conductive r Leakage	Appliances Loads Duct and Pipe loss 9,193 8,444 In ft. exposed wall A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Ceilings A In ft. exposed Wall B In ft. exposed Ceilings A In ft. exposed Floors I	R-Values I 4.00 4.00 4.00 1.99 2.03 4.00 8.50 59.22 27.65 29.80 x x	Loss Gain 19.45 19.45 19.45 19.45 33.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	2917 10% oom x 1.3 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 5525 0.08 3.82 0.08 2.39 10%	A B Area A B Fir	3 202 4 3155		A B Area A B Fir		A B Area A B Fir	124	828	A B Area A B Fir	1820	A B Area A B Fir	69	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir

Mane Maleta

David DaCosta

Energy Star

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



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

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

1 2

3 x

Project # Layout # Page 6 PJ-00267 JB-09144

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 for David DaCosta

Package: Project:	Energy Star Richmond Hill	Model:	Model 2030	<u> </u>
110,000.				
	RESIDENTIAL MECHANICAL For systems serving one dwelling unit & col			
	Tor Systems solving one arrowing and a sol	monning to the oritane ban	laing 5000, 5.10g 552/12	
	Location of Installation	Tota	al Ventilation Capacity 9.32.3.	.3(1)
Lot #	Plan #	Bsmt & Master Bd		-
Township	Richmond Hill	Other Bedrooms Bathrooms & Kitch	2 @ 10.6 cf nen 5 @ 10.6 cf	
Roll #	Permit #	Other rooms	5 @ 10.6 cf Total	m 53 cfm 148.4
Address				
		Princi	ipal Ventilation Capacity 9.32.	.3.4(1)
Name	Builder	Master bedroom	1 @ 31.8 cf	m 31.8 cfm
Name	EM Alr Systems	Other bedrooms	1 @ 31.8 cf 2 @ 15.9 cf	
Address	-7-		Total	63.6
City			Principal Exhaust Fan Capacit	tv
Tel	Fax	Make	Model	Location
		VanEE	V150E75NS	Base
	Installing Contractor]		
Name		127 cfm	80	0.0 Sones or Equiv.
Address			Heat Recovery Ventilator	
Addicoo		Make	VanEE	_
City		Model	V150E75NS	
Tel	Fax	Sensible efficiency	127 cfm high	80 cfm low 60%
	1 ux	Sensible efficiency		<u>75%</u>
			balance HRV/ERV to within 10	•
2) X	Combustion Appliances 9.32.3.1(1) Direct vent (sealed combustion) only	Su	pplemental Ventilation Capac	city
a) <u>x</u> b)	Positive venting induced draft (except fireplaces)	Total ventilation ca	apacity	148.4
c)	Natural draft, B-vent or induced draft fireplaces	Less principal exha	aust capacity	63.6
d)	Solid fuel (including fireplaces)	REQUIRED supple	emental vent. Capacity	<u>84.8</u> cfm
e)	No combustion Appliances			
			Supplemental Fans 9.32.3.5.	
	Heating System	Location	cfm Model	Sones
х	Forced air	Ens	50 XB50	0.3
	Non forced air Electric space heat (if over 10% of heat load)	Bath	50 XB50	0.3
	Liebtile Space near (ii over 10% of near lead)]		
	House Type 9.32.3.1(2)	1		
l x	Type a) or b) appliances only, no solid fuel	all fans HVI listed	Make Broan	or Equiv.
	Type I except with solid fuel (including fireplace)			
III	Any type c) appliance Type I or II either electric space heat	I hereby certify tha	Designer Certification at this ventilation system has be	en designed
Other	Type I, II or IV no forced air		at this ventilation system has be n the Ontario Building Code.	en designed
	.,,,	1		

	Designer (Certification	
I hereby certify t	hat this ventilatio	n system has been	designed
in accordance w	rith the Ontario B	uilding Code.	
Name	David D	aCosta	
	41	166	
Signature	- cane	4000	
HRAI#	5190	BCIN #	32964
	•		
Date	September	20, 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)

Project # PJ-00267 Layout # JB-09144

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 Princip	al Authority				
Application	Ne		i or ase by i illicip	Model/Certification Nur				
Application	NO:			Model/Certification Nur	mber			
_								
	Project Information						T	
Building nur	mber, street name				Unit numb	er	Lot/Con	
			del 2030S					
Municipality	Richmond Hill	P	ostal code	Reg. Plan number / oth	ner descript	ion		
B.	Prescriptive Compliance [indicate the build	ding code c	ompliance option l	being employed in the	house des	sign]		
	SB-12 Performance* [SB-12 - 3.1.2.]	*Attach e	nergy performa	ance results using	an appro	oved softwa	re (see g	uide)
V	ENERGY STAR®* [SB-12 - 3.1.3.]	*Attach B	Builder Option F	Package [BOP] for	m			
	R-2000®* [SB-12 - 3.1.3.]	*Attach R	R-2000 HOT200	00 Report				
C.	Project Building Design Conditions							
	Climatic Zone (SB-1):	Heat. Eq	uip. Efficiency		Spac	e Heating F	uel Sourc	e e
~	Zone 1 (< 5000 degree days)		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 Wa	all Area		Other E	Building Cha	aracterist	ics
Area of	Walls = 345.2 m² or 3715.9 ft²			Log/Post&Beam		ICF Above 0	Grade	☐ ICF Basement
Area or	Walls = <u>345.2</u> m ² or <u>3715.9</u> ft ²			☐ Slab-on-ground	1.1	Walkout Ba	sement	
		W,S &	G % = <u>8%</u>	☑ Air Conditioning	1.1	Combo Unit		
Area of W	$I, S \& G = 27.78 \text{ m}^2 \text{ or } 299.0 \text{ ft}^2$			☐ Air Sourced Heat	t Pump (A	SHP)		
				☐ Ground Source F	Heat Pump	(GSHP)		
SB-12 Pe	rformance Reference Building Design Pac	kage indic	cating the preso	criptive package to	be com	pared for co	mpliance	
SB-1	2 Referenced Building Package (input desi	ign package	·):					
D.	Building Specifications [provide values an	nd ratings of	the energy efficie	ncy components propo	osed, or at	tach ENERG	Y STAR BO	DP form]
	<u> </u>				•			-

Building Component	-	I/R-Values or n U-Value¹	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	

⁽¹⁾ 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

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)

Page 8

Project # PJ-00267 Layout # JB-09144

E. Project Design Verification [Subsection 3.1.2. Performance Compliance] The annual energy consumption using Subsection 3.1.1. SB-12 Reference Buildi

The ar	nual energy consumption us	sing Subsection 3.1.1. SB-12 Ref	erence Building Pa	ckage is	GJ (1J=1000MJ)
The	annual energy consumption	of this house as designed is		GJ	
The	software used to simulate the	e annual energy use of the buildi	ng is:		
The build	ling is being designed using	an air tightness baseline of:			
	OBC reference ACH, NLA	or NLR default values (no depres	surization test requ	ired)	
	Targeted ACH, NLA or NLF	R. Depressurization test to meet		ACH50 or NLR or NLA	
	Reduction of overall thermal is compared against (3.1.2.		uilding envelope is	not more than 25% of the e	nvelope of the compliance package it
	Standard Operating Condit	ions Applied (A-3.1.2.1 - 4.6.2)			
	Reduced Operating Condition	ions for Zero-rated homes Applie	d (A-3.1.2.1 - 4.6.2	5)	
		·			
		Other Types:			
F.	ENERGY STAR or R-20	00 Performance Design Veri	fication [Subsection	n 3.1.3. Other Acceptable Com	oliance Methods]
		AR for New Homes Standard Vering or exceeding the prescriptive			0 0
		Standard " technical requirement performance requirements of the			uilding performance meeting or
Perform	ance Energy Modeling Pro	ofessional			
Energy Ev	/aluator/Advisor/Rater/CEM Nar	me and company:	Accreditation or Eva	luator/Advisor/Rater License #	
	BUILDING KNOWLEDGE CA	ANADA		5506	
ENERG	Y STAR or R-2000				
Energy Ev	/aluator/Advisor/Rater/Name an	d company:	Evaluator/Advisor/R	ater License #	
	ANGELA BUSTAMANT	TE .		5506	
G.	Designer(s) [name(s) & BC	CIN(s), if applicable, of person(s) pro	viding information her	ein to substantiate that design	meets building code]
Name			BCIN	Signature	
	David DaCosta		32964	Mane	Alex

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			
Windows (Tenestrations)	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

Page 8 Project # PJ-00267 Layout # JB-09144

Package: **Energy Star** System: System 1 Model: Project: Richmond Hill Model 2030S

roject:		Ri	chmond I	Hill		Model:				Model	2030S		
				Air	Leakage	Calcul	ations	3					
		Building A	Air Leakage	Heat Loss					Building	Air Leakag	je Heat Gai	in	
	B 0.018	0.404	Vb 21598	HL^T 77.8	HLleak 12206			B 018	LRairh 0.112	Vb 21598	HG^T 12.8	HG Leak 558	
						<u> </u>				Le	vels		
	Air Lea	akage Heat	Loss/Gain	Multiplier 1	Table (Section 1	1)			1	2	3	4	
Lev	el Level Factor (LF)	Building Air		nductive (HLclevel)		e Heat Loss tiplier	S		(LF)	(LF)	(LF)	(LF)	
Leve	11 0.5		73	322 301	3.0	3335 384		F	1.0	0.6 0.4	0.5 0.3	0.4	
Leve		12206		74		3954		F		0.4	0.3	0.3	
Leve	el 4 0			0	0.0	0000						0.1	
					Air Leakag	e Heat Gair	1			Levels thi	s Dwelling		
BU	HG L JILDING CONDU		T GAIN	558 10632)525				;	3		
	Highest Ce	iling Heigh	t	30.0	FT	9.14 M							
Š				Ve	entilation	Calcula	ations						
		Ventilat	ion Heat Los	s					Ventila	ition Heat G	ain		
		Ventilation	n Heat Loss					Ve	ntilation I	leat Gain			
1.0		HL^T 77.8	(1-E) HRV 0.20	HL 1	bvent 069			3.6	HG^T 12.8		ovent 79		
		Cas	e 1							Case 1			
	Ventila	tion Heat Lo	ss (Exhaust o	nly Systems)			,	Ventilat	tion Heat G	ain (Exhaus	t Only Syste	ms)	
		Case 1 - Ex	xhaust Only	у			Case 1	- Exha	ust Only	Mult	iplier		
Leve	el 1 0.5	HLbvent	73	ond. HL	Multiplier 0.07		HGbve Buildi		879 10632	0.	.08		
Leve Leve Leve	13 0.2	1069	61	301 74 0	0.05 0.03 0.00								
	·	Cas	e 2							Case 2			
	Ventilat	ion Heat Los	s (Direct Duc	ted Systems)			/entilat	ion Heat G	ain (Direct D	oucted Syste	ms)	
C 1.0		(1-E) HRV 0.20		iplier 5.80			C 1.08	3	HG^T 12.8		iplier 3.82		
		Cas	e 3							Case 3			
	Ventil	ation Heat L	oss (Forced A	ir Systems)				Ventil	ation Heat	Gain (Force	d Air System	is)	
′													

						
Foundation Conductive Heatloss Level 1	Level 1	1747	Watts	5960	Btu/h	
Foundation Conductive Heatloss Level 2	Level 2		Watts		Btu/h	
Slab on Grade Foundation Conductive Heatloss			Watts		Btu/h	

HGbvent

879

Mare Matt

HG*1.3

HLbvent

1069

Vent Heat Gain

879

Multiplier

0.08

Total Ventilation Load

Multiplier

0.05

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station	Description
Province:	Ontario $lacksquare$
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):	611.66
Air Leakage/Ve	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
	ELA @ 10 Pa. 322.44 cm ²
Custom BDT Data:	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	on Dimensions					
Floor Length (m):	16.41						
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	iant Slab					
Heated Fraction of the Slab:	0						
Fluid Temperature (°C):	33						
	Desig	n Months					
Heating Month	1						
	Founda	ation Loads					
Heating Load (Watts): 1747							



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 SLIPPLY DIFFLISER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE 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) 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 **I4X3.25 RESPECTIVELY**

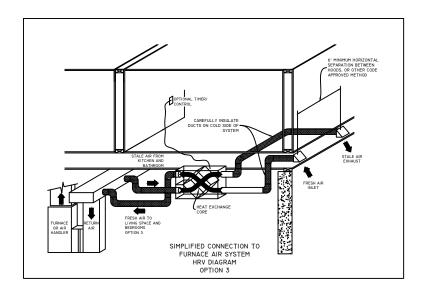
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

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.)

FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL **ELEVATIONS HAVE BEEN** CONSIDERED



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

♦GTA\DESIGNS

2985 DREW ROAD SUITE 202,

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

HEAT-LOSS 34,036 OR FOLIAL **CARRIER** OR FOLIAL 59SC5B040EI4--I0 40,000 39,000 TONS 2.0 FAN SPEED CFM 805

PACKAGE "ENERGY STAR" REF. TABLE 3.1.3. # OF RUNS S/A R/A FANS 3RD FLOOR 2 2ND FLOOR 6 IST FLOOR 6 2 **BASEMENT** 2 **BASEMENT** 1876 DD JL

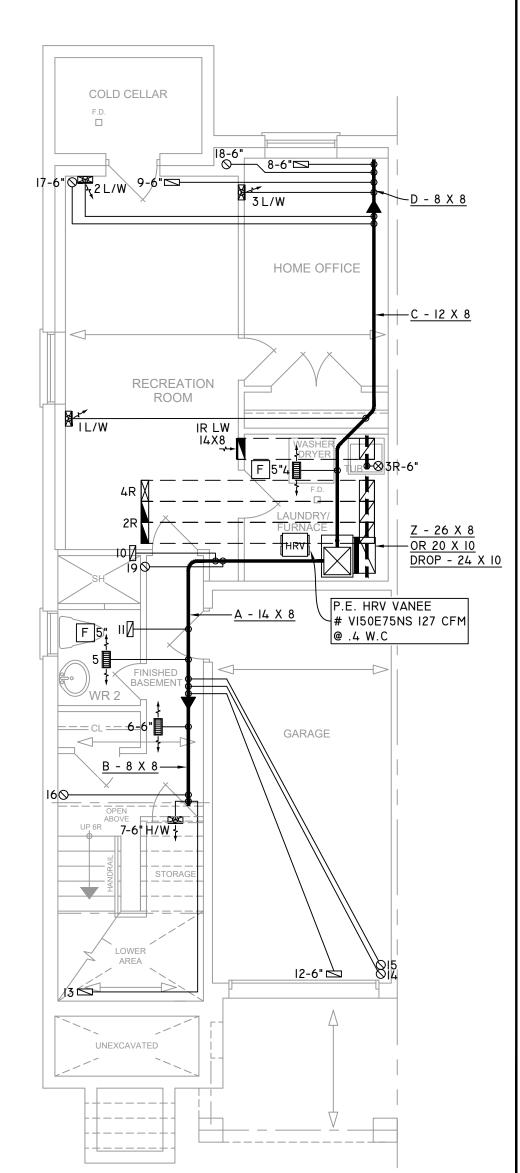
JB-09144

DRAWING NO

ΜI

SEPTEMBER 20, 2023 EM AIR SYSTEMS MODEL MODEL 2030S PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT.

3/16" = 1'-0"



BASEMENT FLOOR PLAN 'A'

OBC 2012

ZONE I COMPLIANCE

ALL DOORS I" MIN.

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

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.

MISSISSAUGA, ONT. WEB: WWW.GTADESIGNS.CA FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

0

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE SUPPLY AIR PIPE RISER VOLUME DAMPER



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

4 \boxtimes

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

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)

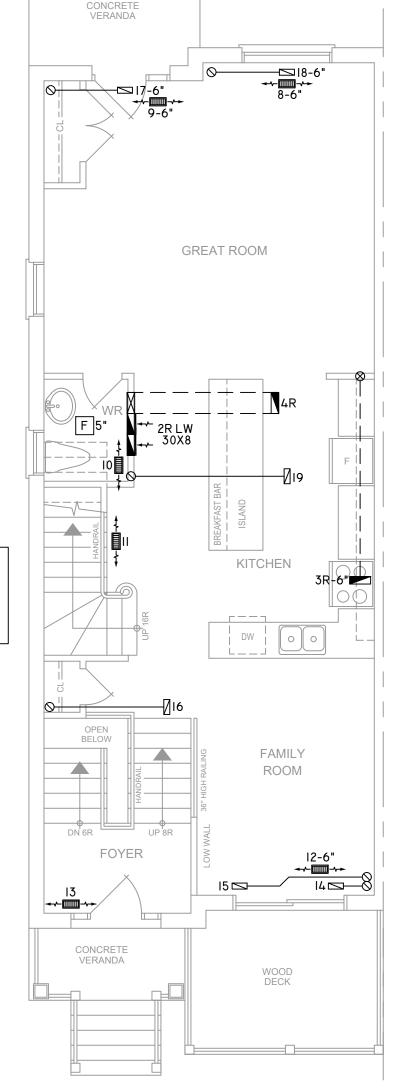
ENERGY STAR

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.)

FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL **ELEVATIONS HAVE BEEN** CONSIDERED

> 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 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

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

34,036 **CARRIER** 59SC5B040EI4--I0 RTU/HR 40,000 39,000 TONS 2.0 FAN SPEED CFM 805

FIRST FLOOR PLAN 'A'

I COMPLIANCE GY STAR" REF.	РА						
DATE:	FANS	R/A	S/A	OF RUNS	# 0F		
SEPTEMBER	1 ANS	IVA	3/A				
CLIENT:				3RD FLOOR			
EM AIR S	2	2	6	ND FLOOR			
MODEL:	2	I	6	ST FLOOR			
	2	1	7	ASEMENT			
PROJECT: KING E	BAGENERY 7 1 E						
DEVELOF		FLOOR PLAN: GROUND FLOOR					
RICHMOND	6	187					

M2

JB-09144

GY STAR" REF. TABLE 3.I.3. SEPTEMBER 20, 2023 CLIENT **EM AIR SYSTEMS** MODEL: MODEL 2030S PROJECT: KING EAST **DEVELOPMENTS**

OBC 2012

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

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

oll⊶ 0

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE SUPPLY AIR PIPE RISER VOLUME DAMPER



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

4 \boxtimes

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

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

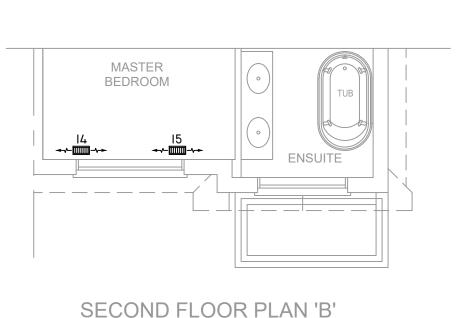
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

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.)

FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL **ELEVATIONS HAVE BEEN** CONSIDERED



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

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.



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

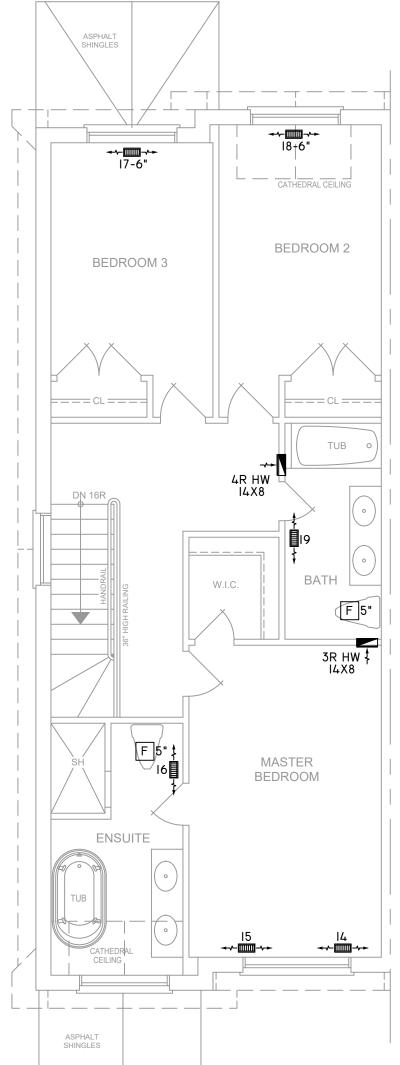
HEAT-LOSS 34,036	BTU/HR.
UNIT MAKE CARRIER	OR EQUAL.
UNIT MODEL 59SC5B040E14	OR EQUAL.
UNIT HEATING INPUT 40,000	BTU/HR.
UNIT HEATING OUTPUT 39,000	BTU/HR.
a/c cooling capacity 2.0	TONS.
FAN SPEED 805	CFM

		PACKAGE "ENERGY STAR" REF. TABLE 3.1.3								
# OF	# OF RUNS		S/A	R/A	FANS	I	SEPTEMBER 20, 2023			
3RD F		ND				H	02: :2::B2:: 20; 2020			
JKD I	LU	JK				H	CLIENT:			
OND I		<u> </u>	6	2	2	П				
2ND FLOOR		0		4	П	EM AIR SYSTEMS				
IST FLOOR		6	1	2	П	MODEL:				
131 1 LOOK		0		<u>^</u>	П	MODEL 2030S				
DACEMENT		7		2	П	MODEL 20303				
BASEMENT		'		<u>^</u>	H	PROJECT: KING FACT				
						31	PROJECT: KING EAST			
FLOOR PLAN:						П	DEVEL ODMENTO			
SECOND FLOOR				П	DEVELOPMENTS					
DRAWN BY:	CHEC	KED:	SQFT			ı	RICHMOND HILL,ONT.			
JL	l D	DΙ		1876		ı	RICHITOND HILL, ON [.			
	_	_								

M3

JB-09144

3/16" = 1'-0"



SECOND FLOOR PLAN 'A'

OBC 2012

ZONE I COMPLIANCE