

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 2350			Lot/con.					
Richmond Hill	Postal code	description						
B. Individual who reviews and takes responsibility for design	n activities							
Name David DaCosta		Firm	gtaDesigns Inc.					
Street address 2985 Drew Road	l, Suite 202		Unit no.	Lot/con.				
Municipality Mississauga	Postal code L4T 0A4	Province Ontario	E-mail hvac@gtades	ions ca				
Telephone number	Fax number	Omario	Cell number	. <u>.g</u>				
(905) 671-9800 C. Design activities undertaken by individual identified in Se	ction R [Ruil	ding Codo Tablo 3	5.2.1 of Division Cl					
C. Design activities undertaken by murvidual identified in Se	Ction B. [Buil	ding Code Table 3.	3.2.1 Of Division C					
☐ House ☑ HVAC – Ho			☐ Building Structural					
☐ Small Buildings ☐ Building Ser			☐ Plumbing – House					
☐ Large Buildings ☐ Detection, Li ☐ Complex Buildings ☐ Fire Protecti	ighting and Pow	er	☐ Plumbing – All Building☐ On-site Sewage System					
	el Certification		Project #:					
Description of designer's work	ei Ceitilication		Layout #:	JB-09089				
Heating and Cooling Load Calculations Main	Х	Builder	EM Air Systems					
Air System Design Alternate		Project	King East Developm					
Residential mechanical ventilation Design Summary O.D. GFA	2343	Model	Madal 2250 WOS	,				
Residential System Design per CAN/CSA-F280-12 Residential New Construction - Forced Air		SB-12	Model 2350 WOE Energy Star	3				
D. Declaration of Designer		02 .2	Life gy Clai					
(print name) I review and take responsibility for th Division C of the Building Code. I am classes/categories. Individual BCIN: Firm BCIN:	e design work o n qualified, and t	he firm is registered, in	tered under subsection 3.2.4 the appropriate					
	.2.5 of Division (C, of the Building Code						
Individual BCIN:	3296							
Basis for exemption	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 exemption	on from registra	tion and qualification:						
I certify that:								
The information contained in this schedule is true to the best of my	-							
I have submitted this application with the knowledge and consent of	of the firm.							
July 31, 2023		Mare So	-6					
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

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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										
	Location									
Address (Model): Model 2350 WOB	Site: King East Developments									
Model:	Lot:									
City and Province: Richmond Hill	Postal code:									
Calculations	based on									
	chitectural Design Inc.Mar/2023									
Attachment: Detached	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: 5									
Sensible Eff. at -25C 60% Apparent Effect. at -0C 80%	Units: Imperial Area Sq ft: 2343									
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									
Style C:	Style A: As per Selected OBC SB12 Energy Star R 2.03									
Style D:	Style B:									
Attached documents: As per Shedule 1 Heat Loss/G	ain Caculations based on CSA-F280-12 Effective R-Values									
Notes: Residential New C	onstruction - Forced Air									
Calculations p	erformed by									
Name: David DaCosta	Postal code: L4T 0A4									
Company: gtaDesigns Inc.	Telephone: (905) 671-9800									
	Fax:									
Address: 2985 Drew Road, Suite 202	rax.									



Builder:

EM Air Systems

Air System Design

July 31, 2023

Date:

SB-12 Energy Star 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

Page 3 Project #

PJ-00267 **Building Code.** System 1 Mane Alexo Project: King East Developments Model 2350 WOB Individual BCIN: 32964 David DaCosta Lavout # JB-09089 Model: AIR DISTRIBUTION & PRESSURE BOILER/WATER HEATER DATA: DESIGN LOAD SPECIFICATIONS FURNACE/AIR HANDLER DATA: A/C UNIT DATA: Level 1 Net Load 17,442 btu/h **Equipment External Static Pressure** 0.5 "w.c. Make Make 2.5 Ton Carrie Туре Carrier Level 2 Net Load 13,439 btu/h **Additional Equipment Pressure Drop** 0.225 "w.c. Model 59SC5B060E17--14 Model Cond.-2.5 Level 3 Net Load 14.016 btu/h **Available Design Pressure** 0.275 "w.c. Input Btu/h 60000 Input Btu/h Coil -2.5 Return Branch Longest Effective Length 58000 Level 4 Net Load 300 ft Output Btu/h Output Btu/h 0 btu/h 44 897 htu/h " W C ΔWH 0.138 "w.c. 0.50 Min.Output Btu/h Total Heat Loss R/A Plenum Pressure E.s.p. Blower DATA: **Total Heat Gain** 26,237 btu/h S/A Plenum Pressure 0.14 "w.c. deg. F. Orange **Heating Air Flow Proportioning Factor** AFUE Blower Speed Selected: ECM 0.0205 cfm/btuh 97% Blower Type 29016 ft³ (Brushless DC OBC 12.3.1.5.(2)) **Building Volume Vb** Cooling Air Flow Proportioning Factor 0.0351 cfm/btuh Aux. Heat Ventilation Load 1.336 Btuh. Check 920 cfm Cool. Check 920 cfm R/A Temp 70 dea. F. SB-12 Package **Energy Star** Ventilation PVC 79.5 cfm S/A Temp 128 deg. F. Supply Branch and Grill Sizing Diffuser loss 0.01 "w.c. Temp. Rise>>> 58 deg. F. Heat. 920 cfm Cooling 920 cfm Design Airflow 920 cfm Level 1 Level 2 S/A Outlet No 2 5 10 11 Room Use BASE BASE KIT/GRT KIT/GRT DIN FOY WR STUDY Btu/Outlet 3870 3870 3870 2915 2915 3002 3002 1935 3261 876 1363 **Heating Airflow Rate CFM** 79 79 79 60 60 62 62 40 67 18 28 36 36 83 36 Cooling Airflow Rate CFM 36 96 14 63 **Duct Design Pressure** 0.13 **Actual Duct Length** 35 30 37 12 27 27 35 34 29 31 Equivalent Length 100 90 90 110 100 70 70 70 70 70 70 70 70 70 80 110 100 90 130 80 70 70 70 70 70 70 70 70 Total Effective Length 135 120 127 122 127 70 70 70 70 70 70 70 70 107 145 134 119 161 85 70 70 70 70 70 70 70 70 70 Adjusted Pressure 0.10 0.11 0.10 0.11 0.10 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.12 0.09 0.10 0.11 0.08 0.15 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 **Duct Size Round** 5 **Outlet Size** 4x10 3x10 4x10 4x10 3x10 3x10 3x10 4x10 4x10 3x10 4x10 Trunk D D C G C G Level 3 Level 4 S/A Outlet No. 12 13 15 20 21 22 14 16 17 18 19 Room Use MAST MAST FNS RATH I AUN RFD 4 RFD 4 BATH2 VAN BFD 3 RFD 2 Btu/Outlet 1548 1548 1313 665 701 1691 1691 176 634 2856 1193 32 **Heating Airflow Rate CFM** 32 27 14 14 35 35 13 59 24 46 46 43 Cooling Airflow Rate CFM 30 10 53 43 2 15 86 39 **Duct Design Pressure** 0.13 50 **Actual Duct Length** 46 42 47 41 47 42 32 36 31 **Equivalent Length** 140 140 160 130 140 100 90 120 110 100 120 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 152 151 186 182 207 171 190 147 132 70 70 70 70 70 70 70 70 70 70 70 70 70 70 Total Effective Length 144 136 70 70 70 Adjusted Pressure 0.07 0.07 0.06 0.08 0.07 0.09 0.10 0.09 0.09 0.10 0.09 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 **Duct Size Round** 5 5 5 2 Outlet Size 3x10 3x10 3x10 3x10 3x10 3x10 3x10 3x10 3x10 4x10 3x10 4x10 Trunk D G 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 179 336 105 150 150 **Duct Design Pressure** 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 920 0.05 15.5 24x10 920 921 0.06 15.0 26x8 20x10 Drop 815 607 544 13.0 22 52 38 46 0.05 15.0 0.06 18v8 14v10 **Actual Duct Length** 6 Z 26**y**8 20v10 **Equivalent Length** 75 165 115 135 200 50 50 50 50 50 50 Υ 636 0.05 13.5 20x8 16x10 C 217 197 0.07 8.5 8x8 107 **Total Effective Length** 81 187 167 173 246 50 50 50 50 50 50 х 390 347 0.06 11.0 14x8 10x10 0.15 Adjusted Pressure 0.06 0.07 0.07 0.05 0.24 0.24 0.24 0.24 0.24 0.24 w 176 95 0.06 8.5 107 8x8 **Duct Size Round** 8.0 10.5 6.0 7.5 8.0 250 349 0.08 10.0 12x8 10x10 FLC 142 203 0.08 8.5 107 Inlet Size U 8x8 OR Inlet Size 9x6 30 14 14 14 s Trunk Q



Total Heat Loss

Total Heat Gain

26,237 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:	EN	VI Air Syst	ems			Date:			July 3	1, 2023					We	ather Data	Richn	mond Hill	44	-5.8	88 20	50				Page 4
2012 OBC		Project:	King E	ast Devel	opmen	ıts	м	lodel:			Model 2	350 WOB		_	5	System 1	He	eat Loss ^1	T 77.8 deg. F		Ht gain ^T	12.8	deg. F				oject # Iyout #	PJ-00267 JB-09089
	Level 1					BASE			F.ARE	Δ																		
Run	ft. exposed wall A				62 A			48		_	Α		Α			Α	Α		Α		Α		Α		Α		Α	
	ft. exposed wall B				32 E				В		В		B			В	B		B		B		В		В		В	
	Ceiling height				6.0			6.0			6.0 AG		6.0 AG			AG	6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 A	3
	Floor area				713				Area		Are	а	Area			Area	Area	ı	Area		Area		Area		Area		AI AI	
Ex	xposed Ceilings A				,				A		A	-	A			A	A		A		A		A		A		A	ou .
	xposed Ceilings B					В			В		В		В			В	В		В		В		В		В		В	
	Exposed Floors					Flr			Flr		Flr		Flr			Fir	Flr		Fir		Flr		Flr		Flr		FI	,
	Gross Exp Wall A				372			288																				
	Gross Exp Wall B				288																							
	Components	R-Values	Loss G	Bain	L	Loss	Gain		Loss	Gain	Los	s Gain	Loss	Gain		Loss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Lo	ss Gain
	North Shaded	4.00	19.45	11.73	10	195	117																					
	East/West	4.00	19.45	29.66																								
	South	4.00	19.45	22.60	5	97	113																					
WOB Windows	s Including Doors	4.00	19.45	27.86	53	1031	1477																					
	Skylight	2.03	38.33	89.12																								
	Doors	4.00	19.45	3.20				21	408																			
	t exposed walls A	20.84	3.73	0.61	357		219	267		164																		
	t exposed walls B	21.40	3.64	0.60	235	854	141																					
	xposed Ceilings A	59.22	1.31	0.67																								
Ex	xposed Ceilings B	27.65	2.81	1.44																								
	Exposed Floors	29.80	2.61	0.23																								
Foundation Condu						3908			2647																			
Total Conductive	Heat Loss					6085			3056																			
	Heat Gain						2067			231																		
Air Leakage	Heat Loss/Gain		0.8596	0.0552		5230	114		2627	13																		
	Case 1		0.07	0.08																								
Ventilation	Case 2		16.80	13.82																								
	Case 3	х	0.05	0.08		296	173		149	19																		
	Heat Gain People			239																								
	Appliances Loads	1 =.25 p	ercent	3846																								
	Ouct and Pipe loss			10%					5004																			
Level HL Total Level HG Total	17,442 3,402		otal HL for p			11611	3060		5831	342																		
Level HG Total	3,402	TOLA	HG per roo	JIII X 1.3	L		3000	L		342					J 1						1						1 L	
				_																								
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	Level 2					KIT/GR	т		DIN		ı	FOY	v	/R		STUDY												
Run	Level 2				57 4		т	26			. F 29 A	FOY	11 A	/R	18		A		A		A		A		A		A	
	ft. exposed wall A ft. exposed wall B				57 A	A	т				29 A B	FOY	11 A B	/R			В		В		В		В		В		В	
	ft. exposed wall A ft. exposed wall B Ceiling height				57 A E 10.0	A B	т	10.0	A B		29 A B 10.0		11 A B 10.0		10.0	A B							A B 10.0					
Run	ft. exposed wall A ft. exposed wall B Ceiling height Floor area				57 A	A B	т	10.0	Α		29 A B		11 A B		10.0	Α	В	ı	В		В		B 10.0 Area		В	ı	В	ea
Run i	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A				57 A 10.0 408 A	A B Area A	т	10.0 162	A B Area A		29 A B 10.0 137 Are		11 A B 10.0 24 Area A		10.0 201	A B Area A	B 10.0 Area A	ı	B 10.0 Area A		B 10.0 Area A		B 10.0 Area A		B 10.0 Area A	ı	10.0 Aı A	ea
Run i	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B				57 A 10.0 408 A	A B Area A B	т	10.0 162	A B Area A B		29 A B 10.0 137 Are A B		11 A B 10.0 24 Area A B		10.0 201	A B Area A B	B 10.0 Area A B	ı	B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	ı	10.0 Ar A B	
Run i Ex Ex	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors				57 A 10.0 408 A E	A B Area A	т	10.0 162	A B Area A		29 A B 10.0 137 Are A B Fir		11 A B 10.0 24 Area A B Fir		10.0 201	A B Area A B Fir	B 10.0 Area A	1	B 10.0 Area A		B 10.0 Area A		B 10.0 Area A		B 10.0 Area A	ı	10.0 Aı A	
Run t Ex Ex	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors Gross Exp Wall A				57 A 10.0 408 A	A B Area A B	т	10.0 162	A B Area A B		29 A B 10.0 137 Are A B		11 A B 10.0 24 Area A B		10.0 201	A B Area A B Fir	B 10.0 Area A B	1	B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	ı	10.0 Ar A B	
Run t Ex Ex	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B				57 A 10.0 408 A E 570	A B Area A B Fir		10.0 162 260	A B Area A B Fir		29 A B 10.0 137 Are A B Fir 290	a	11 A B 10.0 24 Area A B Fir 110		10.0 201 180	A B Area A B Fir	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
Run t Ex Ex	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Teilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components			Gain	57 A 10.0 408 A E 570	A B Area A B Fir	T	10.0 162 260	A B Area A B Fir		29 A B 10.0 137 Are A B Fir	a	11 A B 10.0 24 Area A B Fir 110		10.0 201 180	A B Area A B Fir	B 10.0 Area A B		B 10.0 Area A B	Gain	B 10.0 Area A B	Gain	B 10.0 Area A B	Gain	B 10.0 Area A B		B 10.0 Ai A B FI	
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Run i	ft. exposed wall A ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Cellings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South	4.00 4.00 4.00	19.45 19.45 19.45	Sain 11.73 29.66 22.60	57 # 10.0 408 # 570 L	A B Area A B Fir	Gain 2729	10.0 162 260	A B Area A B Fir		29 A B 10.0 137 Are A B Fir 290	a s Gain	11 A B 10.0 24 Area A B Fir 110		10.0 201 180	A B Area A B B FIr	B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
Run i	ft. exposed wall A ft. exposed wall B Ceiling height Floor area exposed Ceilings A exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows	4.00 4.00 4.00 1.99	19.45 19.45 19.45 39.10	Sain 11.73 29.66 22.60 24.56	57 # 10.0 408 # 570 L	A Area A B Fir Loss	Gain 2729	10.0 162 260	A B Area A B Fir		29 A B 10.0 137 Are A B Fir 290	a s Gain	11 A B 10.0 24 Area A B Fir 110	s Gain	10.0 201 180	A B Area A B B FIr	B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
Run i	ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components 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 83.12	57 / E 10.0 408 / E 570 L	A Area A B Fir Loss	Gain 2729	10.0 162 260	A B Area A B Fir		29 A B 10.0 137 Are A B Fir 290 Los	a ss Gain 272 4	11 A B 10.0 24 Area A B Fir 110 Loss 15 9 1	s Gain	10.0 201 180	A B Area A B B FIr	B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
Run i	ft. exposed wall A ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors Gross Exp Wall A Components 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	Sain 11.73 29.66 22.60 24.56 89.12 3.20	57 A E 10.0 408 A A E E F 570 L 12	A B Area A B Fir Loss 1789 233	Gain 2729 271	10.0 162 260 16	A B Area A B Fir Loss 311	188	29 A B 10.0 137 Are A B Fir 290 Los 14	a ss Gain 272 4	11 A B 10.0 24 Area A B Fir 110 Loss 15 9 1	Gain 75 203	10.0 201 180	A B Area A B B FIr Loss Gain 233 271	B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
Run i	ft. exposed wall A ft. exposed wall A ft. exposed wall B Ceiling height Floor area exposed Ceilings A kposed 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	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	3ain 11.73 29.66 22.60 24.56 89.12 3.20 0.60	57 A E 10.0 408 A A E E F 570 L 12	A Area A B Fir Loss	Gain 2729	10.0 162 260	A B Area A B Fir Loss 311	188	29 A B 10.0 137 Are A B Fir 290 Los 14	a ss Gain 272 4	11 A B 10.0 24 Area A B Fir 110 Loss 15 9 1	s Gain	10.0 201 180	A B Area A B B FIr Loss Gain 233 271	B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Ai A B FI	,
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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:

Man 16Cot 2

David DaCosta

SB-12 Package **Energy Star**



44,897

26,237

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:	F	M Air Syst	ems		Date:			July 31, 2	023						We	ather Dat	a	Richmond H	ill	44	-5.8	88 20	50				Page 5
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2012 OBC		Project:	King I	East Devel	opments		Model:		N.	odel 2350	WOB		_	,	Systen	11	H	eat Loss '	T 77.8 c	deg. F	Ht ga	in ^T	12.8	deg. F			L	ayout #	JB-09089
	Level 3				MAS	т		ENS		BAT	н	LA	JN		BED 4		ВА	TH2		VAN		BED 3			BED 2				
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Ru	n ft. exposed wall B Ceiling height				B 11.0		9.0	В	,	B).0		9.0		9.0	В		9.0		9.0	3	11.0	В		9.0		9.0		9.0	
	Floor area				310 Area		92 /			64 Area		56 Area		236	Area		32 Area	1	32 /		213	Area		175 Ar	ea	Are	a		rea
	Exposed Ceilings A				310 A		92 /			64 A		56 A		236			32 A		32 /		213			175 A		A		A	
	Exposed Ceilings B Exposed Floors				B Flr			B Flr		B Flr		B 14 Flr		204	B Flr		B 29 Flr		29 I	3 Flr		B Flr		B Fl	,	B Fir		B F	
	Gross Exp Wall A				374		171			72		72		243					54		330			108					
	Gross Exp Wall B Components	P-Values	Loss	Gain	Loss	Gain		Loss	Gain	Loss	Gain	Loss	Gain		Loss	Gain	Los	s Gain		oss Gain		Loss	Gain	1.0	ss Gain	Los	s Gain		oss Gain
	North Shaded	4.00		11.73	LUSS	Gaiii	Ì	LUSS	Gaiii	9 17			75 100	6	LUSS	Gaiii	LUS	S Gaiii	T i	LUSS Gaill		LUSS	Gaiii		iss Gairi		S Gain	T Ē	JSS Gaill
	East/West	4.00		29.66	32 622	949	14	272	415					30		890			7	136 2			1038	4.0					
	South Existing Windows	4.00 1.99		22.60 24.56										4	78	90					4	78	90	16	311 3	62			
	Skylight	2.03	38.33	89.12																									
	Doors	4.00		3.20	240 4040	200	457	F74	0.4		20		20		700	405			47	474	20 204	4050	474	00	224				
	Net exposed walls A Net exposed walls B	21.40 8.50	3.64 9.15	0.60 1.51	342 1243	205	157	571	94	63 22	9 38	63 2	29 38	209	760	125			47	171	28 291	1058	174	92	334	55			
	Exposed Ceilings A	59.22		0.67	310 407	208	92	121	62	64 8	4 43	56	74 38	236	310	159	32	42 2	22 32	42	22 213	280	143	175	230 1	18			
	Exposed Ceilings B Exposed Floors	27.65 29.80		1.44 0.23								14	37 :	3 204	533	47	29	76	7 29	76	7								
Foundation Con	ductive Heatloss	25.00	2.01	0.23										204		7,			- 20		,								
Total Conductive	Heat Loss Heat Gain				2273	1362		964	571	48	186	5	14 184		2264	1310		118	28	425	64	2096	1446		876	34			
Air Leakage	Heat Loss/Gain		0.3137	0.0552	713			302	31	15		1	61 10		710	72		37	28		15	658	1446			29			
	Case 1		0.03	0.08																									
Ventilation	Case 2 Case 3	х	16.80 0.05	13.82 0.08	111	114		47	48	2	4 16		25 1	5	110	110		6	2	21	22	102	121		43	45			
	Heat Gain People	^	0.00	239	2	478		7,	40		10			1	110	239			-		1	102	239	1		39			
	Appliances Loads	1 =.25	percent	3846								1.0	96	1		455													
Level HL Total	Duct and Pipe loss 14,016	Т	otal HL for	10% per room	3097	7		1313		66	5	7	01	1	297 3381	155	1	15 176	3 1	56 634	26	2856			1193				
Level HG Total	11,756		al HG per ro			2638			845		276		1522	2		2452			45		25		2451		11	02			
	Level 4																												
Ru	n ft. exposed wall A				Α			Α		Α		Α			Α		Α		,	Δ.		Α		Α		Α		А	
	n ft. exposed wall B				В			В		В		В			В		В			3		В		В		В		В	
	Ceiling height Floor area				Area			Area		Area		Area			Area		Area			Area		Area		Ar	02	Are		^	rea
	Exposed Ceilings A				A			A		A		A			A		A	•		4 4		A		A	Ca	A	a	Ā	
	Exposed Ceilings B				В			В		В		В			В		В			3		В		В		В		В	
	Exposed Floors Gross Exp Wall A				Flr			Fir		Flr		Flr			Flr		Flr			Flr		Flr		Fl	r	Flr		F	ır
	Gross Exp Wall B																												
	Components			Gain	Loss	Gain	1 [Loss	Gain	Loss	Gain	Loss	Gain	7	Loss	Gain	Los	s Gain		oss Gain	_	Loss	Gain	Lo	ss Gain	Lo	s Gain		oss Gain
	North Shaded East/West	4.00		11.73 29.66																									
	South	4.00	19.45	22.60																									
	Existing Windows Skylight	1.99 2.03		24.56 89.12																									
	Doors	4.00	19.45	3.20																									
	Net exposed walls A	21.40	3.64	0.60																									
	Net exposed walls B Exposed Ceilings A	8.50 59.22	9.15 1.31	1.51 0.67																									
	Exposed Ceilings B	27.65	2.81	1.44																									
Foundation Con	Exposed Floors ductive Heatloss	29.80	2.61	0.23																									
Total Conductive	Heat Loss																												
	Heat Gain		0.0000	0.0550																									
Air Leakage	Heat Loss/Gain Case 1		0.0000	0.0552 0.08																									
Ventilation	Case 2		16.80	13.82																									
	Case 3 Heat Gain People	X	0.05	0.08 239																									
	Appliances Loads	1 =.25	percent	3846																									
Level HL Total	Duct and Pipe loss		-4-117	10%																									
Level HL Total	0	Tota	otal HL for al HG per ro	om x 1.3																									
		. 34											-	_						I			1		1		<u> </u>		
								l review	and take re	snonsihili	ty for the de	sian work	and am d	ualified	in the a	nronriate	category	as an "of	her design	ner" under								SB-12 Pa	ackage

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:

Mana Haland ?

David DaCosta

SB-12 Package Energy Star



Exhaust only / forced air system

Part 6 design

HRV WITH DUCTING / forced air system

HRV simplified connection to forced air system

HRV full ducting/not coupled to forced air system

2

3 x

4

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

Project # Layout #

David DaCosta

32964

BCIN#

Page 6 PJ-00267 JB-09089

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

Package: Project:	Energy Star Richmond Hill	Model:	Model 2350 WO)B
	RESIDENTIAL MECHANICAL For systems serving one dwelling unit & col			
		7.17		
Lot #	Location of Installation Plan #	Total ve	entilation Capacity 9.32.3.3(1)
Township		Bsmt & Master Bdrm Other Bedrooms	2 @ 21.2 cfm 3 @ 10.6 cfm	
Township	Richmond Hill	Bathrooms & Kitchen	5 @ 10.6 cfm	
Roll #	Permit #	Other rooms	4 @ 10.6 cfm Total	
Address				
		Principal \	Ventilation Capacity 9.32.3.	4(1)
NI a sa a	Builder	Martinhadraam		04.0 ofm
Name	EM Alr Systems	Master bedroom Other bedrooms	1 @ 31.8 cfm 3 @ 15.9 cfm	
Address	Em / m Ojotoo	0.000 800.0000	Total	79.5
City		Princ	ipal Exhaust Fan Capacity	
Tel	Fax	Make	Model	Location
		VanEE	V150E75NS	Base
	Installing Contractor		00.0	<u> </u>
Name		127 cfm		Sones or Equiv.
Address			eat Recovery Ventilator	
City		Make Model	VanEE V150E75NS	
		1	127 cfm high	80 cfm low
Tel	Fax	Sensible efficiency @ - Sensible efficiency @ 0		60% 75%
			ance HRV/ERV to within 10 p	
	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	169.6 79.5 90.1 cfm
		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 50 XB50	0.3 0.3
	Harras Tima 0 22 2 4/2)			
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.
11	Type I except with solid fuel (including fireplace)			
III	Any type c) appliance		Designer Certification	
IV Other	Type I or II either electric space heat Type I, II or IV no forced air	I hereby certify that this in accordance with the	s ventilation system has been Ontario Building Code.	ı designed
	System Design Option	Name	David DaCosta	

Signature

HRAI#

Date

5190

July 31, 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-09089

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	No:		Model/Certification Nur	mber							
A.	Project Information										
Building nu	mber, street name			Unit number	Lot/Con						
		Model 2350 WOB									
Municipality	Richmond Hill	Postal code	Reg. Plan number / oth	ner description							
В.	Prescriptive Compliance [indicate the building code compliance option being employed in the house design]										
	SB-12 Performance* [SB-12 - 3.1.2.] *Attach energy performance results using an approved software (see guide)										
	OB 12 FORTHANDO [OB 12 FO. 1.2.]	Attach onergy performe		an approved continu	e (eee galae)						
✓	ENERGY STAR®* [SB-12 - 3.1.3.]	*Attach Builder Option F	Package [BOP] for	m							
		7 titaon Bandor Option 1	denage [BOT] Ten								
	R-2000®* [SB-12 - 3.1.3.]	*Attach R-2000 HOT200	00 Report								
	1	/									
C.	Project Building Design Conditions										
	Climatic Zone (SB-1):	Heat. Equip. Efficiency		Space Heating Fu	iel Source						
✓	Zone 1 (< 5000 degree days)	≥ 92% AFUE	✓ Gas	Propane	Solid Fuel						
	Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	Oil	Electric	Earth Energy						
R	Ratio of Windows, Skylights & Glass (W, S	& G) to Wall Area		Other Building Cha	racteristics						
Aroa of	Walls = 351.3 m² or 3781.9 ft²		☐ Log/Post&Beam	☐ ICF Above G	Grade						
Alea Ul	Walls - <u>331.3</u> III 01 <u>3701.9</u> II		☐ Slab-on-ground	√ Walkout Bas	sement						
		W,S &G % = <u>10%</u>	☑ Air Conditioning	Combo Unit							
Area of W	$V, S \& G = 35.58 \text{ m}^2 \text{ or } 383.0 \text{ ft}^2$		☐ Air Sourced Heat Pump (ASHP)								
	☐ Ground Source Heat Pump (GSHP)										
SB-12 Pe	B-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance										
CD 4	OD 40 Defended at Delition Decision (Control of Control										
3B- 1	12 Referenced Building Package (input desi	gn раскаде).									
D.	. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form]										

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 PJ-00267

Project # PJ-00267 Layout # JB-09089

E. Project Design Verification [Subsection 3.1.2. Performance Compliance]

The ar	nnual energy consumption using Subsection 3.1.1. SB-12 Ref	ference Building Pa	ckage is	GJ (1J=1000MJ)
The	annual energy consumption of this house as designed is		_GJ	
The	software used to simulate the annual energy use of the build	ing is:		
The build	ling is being designed using an air tightness baseline of:			
	OBC reference ACH, NLA or NLR default values (no depres	ssurization test requ	uired)	
	Targeted ACH, NLA or NLR. Depressurization test to meet		ACH50 or NLR or NLA	
	Reduction of overall thermal performance of the proposed by is compared against (3.1.2.1.(6)).	ouilding envelope is	not more than 25% of the	ne envelope of the compliance package it
	Standard Operating Conditions Applied (A-3.1.2.1 - 4.6.2)			
	Reduced Operating Conditions for Zero-rated homes Applied	ed (A-3.1.2.1 - 4.6.2	.5)	
	On Site Renewable(s): Solar:			
	Other Types:			
F.	ENERGY STAR or R-2000 Performance Design Veri	ification [Subsection	n 3.1.3. Other Acceptable	Compliance Methods]
	The NRCan "ENERGY STAR for New Homes Standard Verbuilding performance meeting or exceeding the prescriptive			
	The NRCan, "2012 R-2000 Standard" technical requirement exceeding the prescriptive performance requirements of the		0 0	0.
Perform	ance Energy Modeling Professional			
Energy Ev	/aluator/Advisor/Rater/CEM Name and company:	Accreditation or Eva	lluator/Advisor/Rater Licen	se#
	BUILDING KNOWLEDGE CANADA		5506	
ENERG	Y STAR or R-2000			
Energy Ev	/aluator/Advisor/Rater/Name and company:	Evaluator/Advisor/R	ater License #	
	ANGELA BUSTAMANTE		5506	
G.	Designer(s) [name(s) & BCIN(s), if applicable, of person(s) pro	viding information her		sign meets building code]
Name		BCIN	Signature	
	David DaCosta	32964	10	are Alt

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:	Detached	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	
3	Option	N/A	n/a			
Cathedral Ceilings and Flat Roofs	Core	RSI 4.87 (R 27.7)	Core Minimum	√	R31	
	Option	N/A	n/a			
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			
Williams (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	√		
	Reg'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		Level 1 (DT 2.5ach / 0.18 nlr) (AT 3.0ach/0.26nlr)	Core Minimum	√		
-	Option		n/a			
Ventilation (HRV / ERV)	Core Option	65% SRE @0 °C and 55% SRE @ -25 °C ≥75% SRE @ 0 °C	Core Minimum 0,2	√		
		Interconnected to the Furnace Fan	0.2 Required	v V		
	Rea'd	HRV balanced	Required	V		
	Electrical	SRE ≥75% SRE @ 0 °C, ≥ 0.57 L/s/W	0.1	√		
Electrical Savings		75% ENERGY STAR lighting	Core Minimum			
Licetical Savings	Option	100% ENERGY STAR lighting	0.1	√		
ENERGY STAR Certified Appliances	Option	N/A	n/a			

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



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Page 8 Project # PJ-00267 Layout # JB-09089

Package: Energy Star System: System 1
Project: Richmond Hill Model: Model 2350 WOE

Proj	ect:			chmond F				odel:			Model 23			
					Air	Leaka	ge Ca	lculation	ons					
		-	Quilding A	Air Leakage	∐oat Loss		1 I			Building	Air Leakag	o Hoat Ga	in	
		В	LRairh	Vb	HL^T	HLleak			В	LRairh	Vb	HG^T	HG Leak	
		0.018	0.387	29016	77.8	15714]		0.018	0.108	29016	12.8	725	
											Lev	/els		1
		Δir I eak	ane Heat	Loss/Gain I	Multiplier T	able (Sectio	n 11)		1	1	2	3	4	
	Level		Building	Level Cor		•	kage Hea	at Loss						
	Level 1	Factor (LF) 0.5	Air	Heat Loss 91			Multiplier 0.8596	r		(LF)	(LF) 0.6	(LF) 0.5	(LF) 0.4	
	Level 2	0.3	15714	83			0.5666			1.0	0.4	0.3	0.3	
	Level 3 Level 4	0.2	13714	100			0.3137		4			0.2	0.2 0.1	
	Level 4	0							_				'	
		HG LE	AK		725	Air Lea	kage Hea	at Gain	-		Levels this	_		
	BUILE	DING CONDUC	TIVE HEA	T GAIN	13134		0.0552		_		•	3		
		Highest Ceili	ng Height	İ	28.0	FT	8.53	М						
					Ve	entilatio	n Cal	culatio	ns					
			Ventilati	ion Heat Loss						Ventila	ation Heat G	ain		
Vent		V	entilation	Heat Loss]		\	entilation I	Heat Gain		1	Vent
$ \tilde{r} $	С	PVC	HL^T	(1-E) HRV	HLI	bvent		С	PVC	HG^T	HGb	vent		>
	1.08	79.5	77.8	0.20	1:	336]	1.1	79.5	12.8	10	99]	
			Cas	e 1							Case 1			
-		Ventilatio	n Heat Los	ss (Exhaust or	nly Systems)				Venti	ation Heat G	iain (Exhaust	Only Syste	ms)	-
_		С	ase 1 - Ex	chaust Only]	Ca	se 1 - Exh	aust Only	Multi	iplier	1	_
Case	Level		HLbvent	LVL Co		Multiplier			Gbvent	1099	0.	08		Case
ပိ	Level 1 Level 2	0.5	4226	914 833		0.07 0.05	1 1	Ь	uilding	13134			_	Ö
	Level 3	0.2	1336	100		0.03								
	Level 4					0.00	1							
		Manathatia	Cas			.				-#: U4 C	Case 2			-
2		ventilatio	n neat Los	s (Direct Duct	eu systems.)			venui	ation Heat G	ain (Direct D	ucted Syste	emsj	2
Case			4 =\ 115\/	Multi	plier						Multi	iplier		Case
ပိ	1.08	HL^T (1-E) HRV 0.20	16.	80				1.08	HG^T 12.8	13	.82		ပိ
			Cas	e 3							Case 3			_
3		Ventilati	ion Heat Lo	oss (Forced A	r Systems)				Vent	ilation Heat	Gain (Forced	l Air System	ıs)	3
			HLb	vent	Mul	tiplier	1 l				Vent He	eat Gain	Multiplier	ase
Case	Total Ver	ntilation Load	13	336	0	.05		Н	Gbvent 1099	HG*1.3	10	99	0.08	Ca
Щ														
Fou	undation Co	onductive He	eatloss	Level 1		Leve	1	177	78	Watts	60	67	Btu/h	
Fou	undation Co	onductive He	eatloss I	Level 2		Leve	12			Watts			Btu/h	
Sla	b on Grade	Foundation	Condu	ctive Heat	loss					Watts			Btu/h	
Wa	lk Out Base	ement Found	lation C	onductive	Heatlos	is		14	3	Watts	48	88	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 Shie	lding
Building Site:	Suburban, forest
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	8.53
Building Confi	guration
Type:	Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m³):	821.73
Air Leakage/Ve	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
	ELA @ 10 Pa. 322.44 cm²
Custom BDT Data:	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply: Total Exhaust:
(23).	39.75
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Heating Air Leakage Rate (ACH/H):	0.387
Cooling Air Leakage Rate (ACH/H):	0.108

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):	16.06				
Floor Width (m):	5.13				
Exposed Perimeter (m):	33.53				
Wall Height (m):	2.74				
Depth Below Grade (m):	0.91	Insulation Configuration			
Window Area (m²):	1.39				
Door Area (m²):	1.95				
	Radi	ant Slab			
Heated Fraction of the Slab:	0				
Fluid Temperature (°C):	33				
	Desig	n Months			
Heating Month 1					
	Founda	ation Loads			
Heating Load (Watts):		1778			

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario T			
Region:	gion: Richmond Hill			
Site Description				
Soil Conductivity:		High conductivity: moist soil ▼		
Water Table:		Normal (7-10 m, 23-33 Ft)		
	Floor D	imensions		
Length (m):	8.53			
Width (m):	0.61			
Exposed Perimeter (m):	9.75	Insulation Configuration		
	Radi	ant Slab		
Heated Fraction of the Slab:	0			
Fluid Temperature (°C):	33			
	Desig	n Months		
Heating Month	1			
Foundation Loads				
Heating Load (Watts): 143				



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	

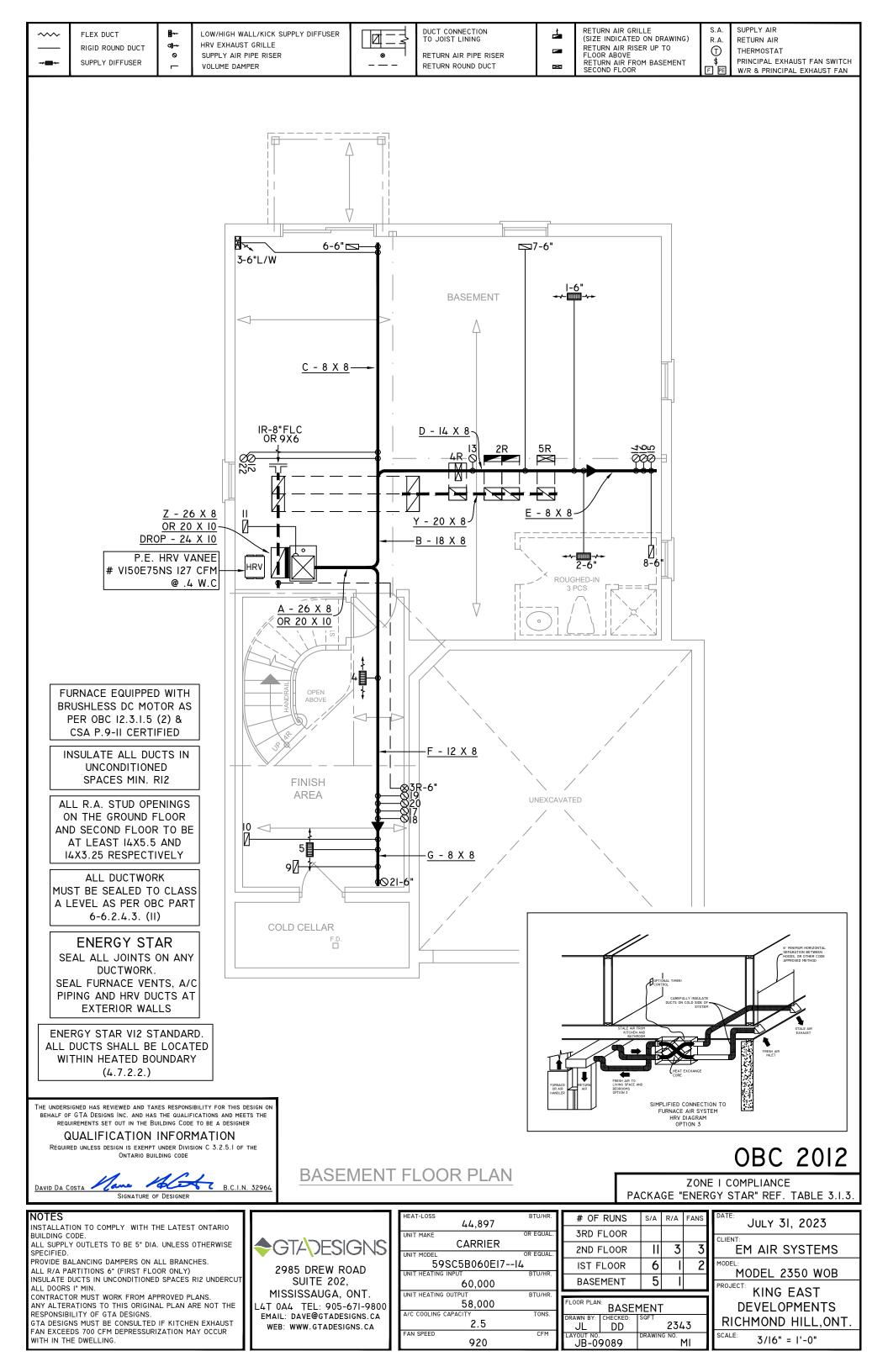


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Effective R-Value – Exposed Ceiling with Attic		
Insulation	R60	
Exterior Air Film	0.17	
Effective Insulation	58.61	
Drywall	0.44	
Effective R-Value	59.22	

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		



RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) SUPPLY AIR DUCT CONNECTION FLEX DUCT LOW/HIGH WALL/KICK SUPPLY DIFFUSER 4 TO JOIST LINING R.A RETURN AIR HRV EXHAUST GRILLE RETURN AIR RISER UP TO FLOOR ABOVE RIGID ROUND DUCT **a**)--1 THERMOSTAT 0 SUPPLY AIR PIPE RISER RETURN AIR PIPE RISER 8 PRINCIPAL EXHAUST FAN SWITCH SUPPLY DIFFUSER RETURN AIR FROM BASEMENT SECOND FLOOR RETURN ROUND DUCT VOLUME DAMPER \mathbf{x} W/R & PRINCIPAL EXHAUST FAN BALCONY **□**|2 13 🔛 6-6" 7-6" COFFERED CEILING KITCHEN EXHAUST 100 CFM MIN. 6" ALL OTHER FANS SHALL BE A MIN. OF 50 CFM OR OTHERWISE NOTED **GREAT ROOM** KITCHEN/ AS PER 9.32.3.5 DINETTE 5R | |15 STUDY DINING 8-6" **ROOM** COFFERED CEILING Ī6 3R-6" CIRCULATION PRINCIPAL BELOW ABOVE FAN SWITCH TO BE CENTRALLY LOCATED INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2 **8**∏19 ALL R.A. STUD OPENINGS ∖F /5" ≥20 ON THE GROUND FLOOR **GARAGE FOYER** AND SECOND FLOOR TO BE IO WR AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY ALL DUCTWORK 21√6"□

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 $$\operatorname{\textsc{Ontario}}$$ building code

B.C.I.N. 32964

FIRST FLOOR PLAN

HEAT-LOSS

OBC 2012

ZONE I COMPLIANCE PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.

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.

CONCRETE **VERANDA**

SUITE 202, MISSISSAUGA, ONT.

UNIT MAKE	OR EQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B060EI7I	4
UNIT HEATING INPUT	BTU/HR.
60,000	
UNIT HEATING OUTPUT	BTU/HR.
58,000	
A/C COOLING CAPACITY	TONS.
2.5	
FAN SPEED	CFM
920	

44,897

# OF RUNS	S/A	R/A	FANS	Ī
3RD FLOOR				
2ND FLOOR	Ш	3	3	
IST FLOOR	6		2	
BASEMENT	5	١		
				il

GROUND FLOOR 2343 DD M2 JB-09089

CLIENT EM AIR SYSTEMS MODEL: MODEL 2350 WOB PROJECT: KING EAST

JULY 31, 2023

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

2985 DREW ROAD

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

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE oll⊶ 0 SUPPLY AIR PIPE RISER VOLUME DAMPER



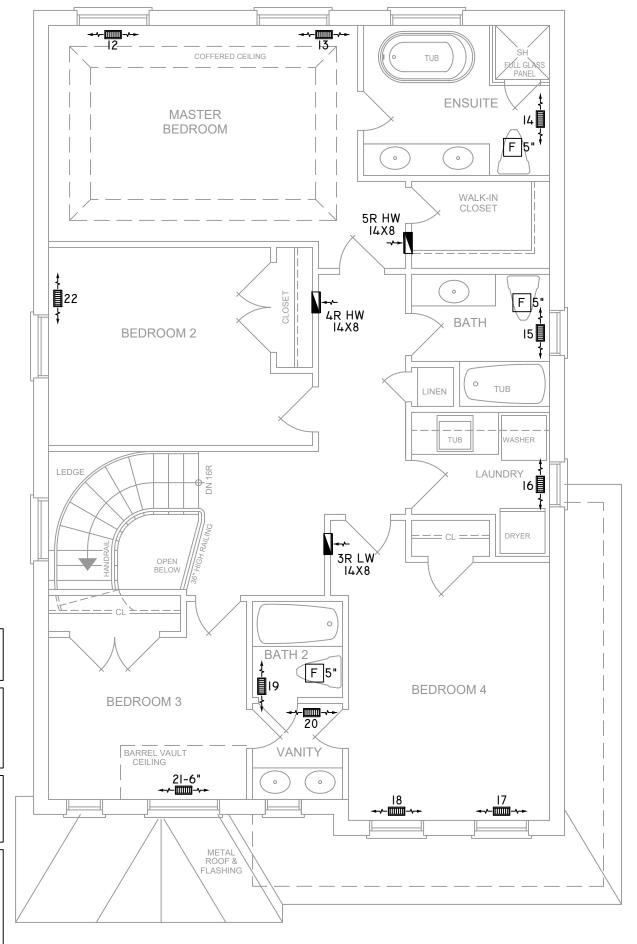
DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

4 \mathbf{x}

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

SUPPLY AIR R.A 1

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

SECOND FLOOR PLAN 'A'

HEAT-LOSS

OBC 2012

ZONE I COMPLIANCE PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.

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	B I U/HR.
44,8	97
UNIT MAKE	OR EQUAL.
CARR	. —
UNIT MODEL	OR EQUAL.
59SC5B06	0EI7I4
UNIT HEATING INPUT	BTU/HR.
60,0	00
UNIT HEATING OUTPUT	BTU/HR.
58,0	00
A/C COOLING CAPACITY	TONS.
2.5	
FAN SPEED	CFM
920	0

				=
# OF RUNS	S/A	R/A	FANS	Γ
3RD FLOOR				ŀ
2ND FLOOR		3	3	
IST FLOOR	6	I	2	Ī
BASEMENT	5	I		ŀ
FLOOR PLAN:				ı

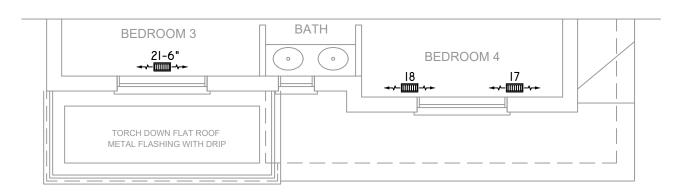
BASEMENT		5	I	
R PLAN:				
SECOND FLOOR				
/N BY:	CHECKED:	SQFT	2343	
UT NO. DRAWING NO.				
R-09089			M3	

DRAW

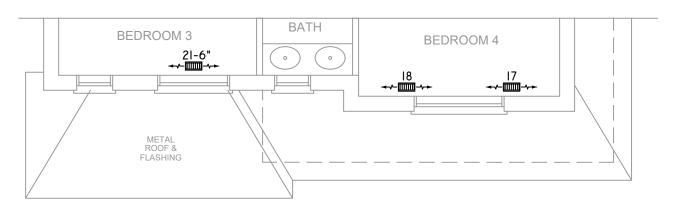
JULY 31, 2023
CLIENT: EM AIR SYSTEMS
MODEL 2350 WOB

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

DUCT CONNECTION TO JOIST LINING RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) FLEX DUCT LOW/HIGH WALL/KICK SUPPLY DIFFUSER 4 R.A HRV EXHAUST GRILLE ₫-+ RETURN AIR RISER UP TO FLOOR ABOVE RIGID ROUND DUCT 1 0 SUPPLY AIR PIPE RISER 8 RETURN AIR PIPE RISER RETURN AIR FROM BASEMENT SECOND FLOOR SUPPLY DIFFUSER RETURN ROUND DUCT VOLUME DAMPER \boxtimes



SECOND FLOOR PLAN 'C'



SECOND FLOOR PLAN 'B'

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

Ine 1666 B.C.I.N. 32964

OBC 2012

JULY 31, 2023

EM AIR SYSTEMS

3/16" = 1'-0"

SUPPLY AIR

RETURN AIR

THERMOSTAT

PRINCIPAL EXHAUST FAN SWITCH

W/R & PRINCIPAL EXHAUST FAN

ZONE I COMPLIANCE PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.

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	BTU/HR.
44,897	
UNIT MAKE	OR EQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B060EI7	
UNIT HEATING INPUT	BTU/HR.
60,000	
UNIT HEATING OUTPUT	BTU/HR.
58,000	
A/C COOLING CAPACITY	TONS.
2.5	
FAN SPEED	CFM
920	

• • • •			•	
DATE:	FANS	R/A	S/A	# OF RUNS
CLIENT:				3RD FLOOR
E	3	3	Ш	2ND FLOOR
MODEL:	2	I	6	IST FLOOR
PROJEC		- 1	5	BASEMENT
	FLOOR PLAN: PARTIAL PLAN(S)			

DD

JB-09089

2343

M4

	MODEL:				
	MODEL 2350 WOB				
	PROJECT: KING EAST				
ı	MING LAST				
	DEVELOPMENTS				
	RICHMOND HILL,ONT.				