

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 1			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	2	Cell number	
(905) 671-9800 C. Design activities undertaken by individual identified in Se	ction B. [Buil	Iding Code Table 3.		
☐ House ☑ HVAC – Ho	use		☐ Building Structural	
☐ Small Buildings ☐ Building Ser			☐ Plumbing – House	
☐ Large Buildings ☐ Detection, L	ighting and Pow	er	☐ Plumbing – All Buildings	s
☐ Complex Buildings ☐ Fire Protecti	on		☐ On-site Sewage System	ns
Description of designer's work Mod	el Certification		Project #:	PJ-00267
	.,	1 5 1	Layout #:	JB-09140
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	1598	,	King Last Developin	ents
Residential System Design per CAN/CSA-F280-12		Model	Model 1980	
Residential New Construction - Forced Air		SB-12	Energy Star	
D. Declaration of Designer				
l 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 exemption	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 cons	of the firm.			
September 15, 2023		Mare So		
Date		Signature of De	signer	

NOTE:

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- 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	for permit and/or construction are signed in red. JB-09140
Building L	ocation
Address (Model): Model 1980	Site: King East Developments
Model:	Lot:
City and Province: Richmond Hill	Postal code:
Calculations	based on
Dimensional information based on:	chitectural Design Inc.Jun/2023
Attachment: Townhome	Front facing: East/West Assumed? Yes
No. of Levels: 3 Ventilated? Included	Air tightness: 1961-Present (ACH=3.57) Assumed? Yes
Weather location: Richmond Hill	Wind exposure: Sheltered
HRV? VanEE V150E75NS	Internal shading: Light-translucent Occupants: 4
Sensible Eff. at -25C 60% Apparent Effect. at -0C 80%	Units: Imperial Area Sq ft: 1598
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/0	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
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

EM Air Systems September 15, 2023 Builder: Date:

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.**

Mane Alexo 32964

Page 3 Project # PJ-00267

System 1 Project: King East Developments Model 1980 Individual BCIN: David DaCosta Lavout # JB-09140 Model: AIR DISTRIBUTION & PRESSURE BOILER/WATER HEATER DATA: DESIGN LOAD SPECIFICATIONS FURNACE/AIR HANDLER DATA: A/C UNIT DATA: Level 1 Net Load 11,732 btu/h **Equipment External Static Pressure** 0.5 "w.c. Make Make 2.0 Ton Carrie Туре Carrier 59SC5B040E14--10 Level 2 Net Load 8,264 btu/h **Additional Equipment Pressure Drop** 0.225 "w.c. Model Model Model: Level 3 Net Load 6.603 btu/h **Available Design Pressure** 0.275 "w.c. **High Input** 40000 Input Btu/h Cond.-2.0 Return Branch Longest Effective Length 39000 Level 4 Net Load 0 btu/h 300 ft **High Output** Output Btu/h Coil ---2.0 " W C ΔWH 26 598 htm/h 0.138 "w.c. 0.50 Min.Output Btu/h Total Heat Loss R/A Plenum Pressure E.s.p. **Total Heat Gain** 18,547 btu/h S/A Plenum Pressure 0.14 "w.c. Water Temp deg. F. Blower DATA: Yellow Heating Air Flow Proportioning Factor 0.0303 cfm/btuh AFUE Blower Speed Selected: ECM 98% Blower Type 18642 ft³ (Brushless DC OBC 12.3.1.5.(2)) **Building Volume Vb** Cooling Air Flow Proportioning Factor 0.0434 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. **Design Airflow** 0.01 "w.c. Temp. Rise>>> Heat. 805 cfm Cooling 805 cfm 805 cfm Level 1 Level 2 S/A Outlet No 1 2 5 9 10 11 Room Use OFF OFF WR 2 F.BASE STOR GRT GRT FOY FAM FAN Btu/Outlet 2134 2134 1747 159 2701 2858 1657 1657 2048 1451 1451 **Heating Airflow Rate CFM** 65 65 53 82 87 50 50 62 44 44 35 35 82 82 69 85 85 Cooling Airflow Rate CFM 3 **Duct Design Pressure** 0.13 **Actual Duct Length** 27 37 17 18 23 19 26 37 31 33 Equivalent Length 70 110 130 120 120 110 70 70 70 70 70 70 70 70 80 90 110 90 100 70 70 70 70 70 70 70 70 70 Total Effective Length 97 147 135 137 138 133 70 70 70 70 70 70 70 70 99 116 147 121 133 70 70 70 70 70 70 70 70 70 **Adjusted Pressure** 0.13 0.09 0.10 0.09 0.09 0.10 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.13 0.11 0.09 0.11 0.10 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 **Duct Size Round** 5 2 **Outlet Size** 3x10 3x10 4x10 4x10 4x10 4x10 3x10 4x10 4x10 3x10 3x10 4x10 Trunk В C В Level 3 Level 4 S/A Outlet No. 12 13 14 15 16 17 Room Use MAST MAST BATH RFD 2 BFD 3 FNS Btu/Outlet 1038 1038 199 1452 1427 1447 **Heating Airflow Rate CFM** 31 31 6 44 43 54 71 Cooling Airflow Rate CFM 54 3 71 63 **Duct Design Pressure** 0.13 50 55 47 **Actual Duct Length** 46 21 41 **Equivalent Length** 140 130 170 150 160 110 70 190 176 191 205 207 151 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 0.07 0.07 0.07 0.06 0.06 0.09 0.19 **Duct Size Round** 5 5 Outlet Size 4x10 3x10 3x10 3x10 4x10 3x10 4x10 Trunk C R 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 178 382 105 140 **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 434 481 0.06 12.0 16x8 12x10 Drop 0.06 14.5 153 273 12 29 805 0.06 9.5 **Actual Duct Length** 43 Z 0.06 14.5 24 y 8 18x10 10v8 127 **Equivalent Length** 133 130 145 100 50 50 50 50 50 50 50 Υ С 372 323 0.06 11.0 14x8 10x10 50 **Total Effective Length** 145 137 188 129 50 50 50 50 50 50 х Adjusted Pressure 0.08 0.09 0.06 0.09 0.24 0.24 0.24 0.24 0.24 0.24 0.24 w **Duct Size Round** 8.0 10.0 6.0 7.0 ν G Inlet Size U т Inlet Size 14 30 14 14 s Trunk Z Q



Total Heat Loss

Total Heat Gain

26,598 btu/h

18,547 btu/h

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

		Builder:	EM Air Sys	tems	_	Date:		September	15, 2023		_		Wea	ther Data	Richme	ond Hill	44	-5.8 88	3 20	50				Page 4
2012 OBC		Project:	King East Deve	opments	м	odel:		Model	1980			System 1	Hea	at Loss ^T	77.8 deg. F	ı	Ht gain ^T	12.8 de	eg. F			Pr La	oject # yout #	PJ-00267 JB-09140
	Level 1		•	OF	•		AUN	WI		F.BASE	L	STOR											-	
	ft. exposed wall A			19 A		11 A		1 A		12 A		18 A	Α		Α		Α		Α		Α		Α	
Run	ft. exposed wall B			В		В		В		В		В	В		В		В		В		В		В	
	Ceiling height			7.5 AG 232 Area		7.5 AG	_	7.5 AG		7.5 AG		7.5 AG	7.5 AG		7.5 AG		7.5 AG		7.5 AG		7.5 AG		7.5 AG	
F	Floor area Exposed Ceilings A			232 Area A		86 Are	a	47 Area A		80 Area A		76 Area A	Area A		Area A		Area A		Area A		Area A		Are A	a
	Exposed Ceilings B			В		В		В		B		В	В		В		В		В		В		В	
	Exposed Floors			Flr		Flr		Flr		Flr		Fir	Fir		Fir		Flr		Flr		Flr		Flr	
	Gross Exp Wall A			143		83		8		90		135												
	Gross Exp Wall B	5 V 1 1	la :																					
	Components North Shaded	4.00	oss Gain 19.45 11.73	Loss	Gain	Los	s Gain	Loss	Gain	Loss	Gain	Loss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Los	s Gain
	East/West	4.00	19.45 29.66	12 23	3 356																			
	South	4.00	19.45 22.60		000																			
WOB Window	ws Including Doors	3.55	21.92 27.86																					
	Skylight	2.03	38.33 89.12																					
	Doors	4.00	19.45 3.20							21 408	67													
	et exposed walls A et exposed walls B	20.84	3.73 0.61 3.64 0.60	110	67	83	51	8	5	69	42	135 8	33											
	Exposed Ceilings A	59.22	1.31 0.67																					
	xposed Ceilings B	27.65	2.81 1.44																					
	Exposed Floors	29.80	2.61 0.23																					
Foundation Condu				154			897	1 1	82	978		1467												
Total Conductive	Heat Loss			219			897		82	1387		1467												
Air Leakage	Heat Gain		0.8747 0.0546	191	490		784 3		71 0	1212	110		5											
All Leakage	Heat Loss/Gain Case 1		0.09 0.10	191	6 27		784 3	ì	/ I U	1213		1283	3											
Ventilation	Case 2		16.80 13.82																					
ļ	Case 3	х	0.07 0.10	16	1 49		66 5	5	6 0	102	11	108	8											
	Hand Onlin Daniela		239																					
	Heat Gain People																							
	Appliances Loads	1 =.25 pe	rcent 2730	1.0	683																			
D	Appliances Loads Duct and Pipe loss		rcent 2730 10%				747		50	2704		2050												
	Appliances Loads	Tot	rcent 2730	1.0		1	747		59 7	2701	164	2858	24											
Level HL Total Level HG Total Run Run	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 Ift. exposed wall A f.t. exposed wall B Ceiling height Floor area Exposed Ceilings A	Tot	rcent 2730 10% al HL for per room	GR 19 A B 10.0 497 Area A	7 1623	9 A B 15.0 108 Are	76 FOY	FA 11 A B 10.0 128 Area	M	A B 10.0 Area A		A B 10.0 Area A	A B 10.0 Area A		A B 10.0 Area A		A B 10.0 Area A	1	A B 0.0 Area A		A B 10.0 Area A		A B 10.0 Are A	a
Level HL Total Level HG Total Run Run	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B	Tot	rcent 2730 10% al HL for per room	GR 19 A B 10.0 497 Area A B	7 1623	9 A B 15.0 108 Are A B	76 FOY	F/ 11 A B 10.0 128 Area A B	M	A B 10.0 Area A B		A B 10.0 Area A B	A B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	1	B 0.0 Area A B		B 10.0 Area A B		B 10.0 Are A B	a
Level HL Total Level HG Total Run Run EE	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors	Tot	rcent 2730 10% al HL for per room	GR 19 A B 10.0 497 Area A B 88 Fir	7 1623	9 A B 15.0 108 Are A B	76 FOY	F/ 11 A B 10.0 128 Area A B 128 Fir	M	A B 10.0 Area A		A B 10.0 Area A	A B 10.0 Area A		B 10.0 Area A		B 10.0 Area A	1	B 0.0 Area A		B 10.0 Area A		B 10.0 Are	a
Level HL Total Level HG Total Run Run E)	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B	Tot	rcent 2730 10% al HL for per room	GR 19 A B 10.0 497 Area A B	7 1623	9 A B 15.0 108 Are A B	76 FOY	F/ 11 A B 10.0 128 Area A B	M	A B 10.0 Area A B		A B 10.0 Area A B	A B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	1	B 0.0 Area A B		B 10.0 Area A B		B 10.0 Are A B	a
Level HL Total Level HG Total Run Run E)	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 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	Total I	orcent 2730 2730 All HL for per room HG per room x 1.3	GR 19 A B 10.0 497 Area A B 88 Fir	7 1623	9 A B 15.0 108 Are A B	OY	F/ 11 A B 10.0 128 Area A B 128 Fir	.M	A B 10.0 Area A B Fir		A B 10.0 Area A B	A B 10.0 Area A B	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B	1 Gain	B 0.0 Area A B	Gain	B 10.0 Area A B	Gain	B 10.0 Are A B	
Level HL Total Level HG Total Run Run E)	Appliances Loads Duct and Pipe loss 11,732 1,995 Level 2 If. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Gross Exp Wall B Components North Shaded	Total I Total I	2730 2730	GR 19 A B 10.0 497 Area A B 88 Fir 190	7 1623	9 A B 15.0 108 Are A B Fir 135	OY a	11 A B 10.0 128 Area A B 128 Fir 110	MM Gain	A B 10.0 Area A B Fir		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run E)	Appliances Loads Duct and Pipe loss 11,732 1,995 It. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall B Components North Shaded East/West	Total I	2730 10%	GR 19 A B 10.0 497 Area A B 88 Fir 190	7 1623	9 A B 15.0 108 Are A B Fir 135	OY	11 A B 10.0 128 Area A B 128 Fir 110	MM	A B 10.0 Area A B Fir		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
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Level HL Total Level HG Total Run Run E	Appliances Loads Duct and Pipe loss 11,732 1,995 It exposed wall A fit 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 Lu 4.00 4.00 4.00 4.00 1.99 2.03	oss Gain 19.45 11.73 19.45 22.60 39.10 22.60 38.33 89.12	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99	7 1623	9 A B 15.0 108 Are A B Fir 135	76 FOY a S Gain 642 978	11 A B 10.0 128 Area A B 128 Fir 110 Loss	MM Gain	A B 10.0 Area A B Fir		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
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Level HL Total Level HG Total Run Run ED Ne Ne ED	Appliances Loads Duct and Pipe loss 11,732 1,995 It. exposed wall A off. exposed wall A for exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A et exposed walls A	R-Values L. 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50	oss Gain 19.45 11.73 19.45 29.66 19.45 22.60 39.10 24.56 38.33 89.12 19.45 3.20 3.64 0.60 9.15 1.51	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99	Gain 1623	9 A 9 A 15.0 108 Are A B Fir 135	642 975	11 A B 10.0 128 Area A B 128 Fir 110 Loss 1 48 9	Gain 1424	A B 10.0 Area A B Fir		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run: E: Ne Ne E: E: E: Run Run: Run: Run: Run: Run: Run: Run:	Appliances Loads Duct and Pipe loss 11,732 1,995 It. exposed wall a It. 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 Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Ceilings B Exposed Floors	R-Values Lu 4.00 4.00 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50	oss Gain 19.45 11.73 19.45 22.60 39.10 22.60 39.10 24.63 38.33 89.12 19.45 3.20 3.64 0.60 9.15 1.51	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99	Gain Gain 2 1513 5 29 3 78	9 A 9 A 15.0 108 Are A B Fir 135	642 975	11 A B 10.0 128 Area A B 128 Fir 110 Loss 9 6 62 2	Gain 1424	A B 10.0 Area A B Fir		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
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Level HL Total Level HG Total Run Run E	Appliances Loads Duct and Pipe loss 11,732 1,995 It. 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 B et exposed Ceilings B Exposed Floors Gross Exp Wall B Existing Windows Skylight Doors et exposed walls A et exposed Ceilings A Exposed Ceilings B Exposed Floors functive Heatloss Heat Loss Heat Gain	R-Values L 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11.73 19.45 22.60 39.10 24.56 19.45 3.20 3.64 0.60 3.13 0.67 2.81 1.44 2.61 0.23	GR 19 A 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47	Gain 2 1513 5 29 3 78 0 20 9 1639	9 A B 15.0 108 Are A B Fir 135 Lot	FOY a S Gain 642 973 175 23338 56	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 0 48 9	Gain Gain 1424 25 37 34 29 93 1490	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run E Ne E Ne Foundation Condu	Appliances Loads Duct and Pipe loss 11,732 1,995 It. 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 Ceilings B Exposed Floors Letter Heatloss Heat Loss/Gain Heat Loss/Gain	R-Values L 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11.73 19.45 29.66 19.45 22.60 38.13 89.12 19.45 0.60 9.15 1.51 1.31 0.67 2.81 1.44 2.61 0.23 x	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47	Gain 2 1513 5 29 3 78 0 20 9 1639	9 A B 15.0 108 Are A B Fir 135 Lot	S Gain 975 1175 25 338 56	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 0 48 9	Gain 1424 25 37 34 29 93	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run E	Appliances Loads Duct and Pipe loss 11,732 1,995 It. 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 B et exposed Ceilings B Exposed Floors Gross Exp Wall B Existing Windows Skylight Doors et exposed walls A et exposed Ceilings A Exposed Ceilings B Exposed Floors functive Heatloss Heat Loss Heat Gain	R-Values L 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11.73 19.45 22.60 19.45 22.60 39.45 22.60 39.45 3.20 3.64 0.60 9.15 1.51 1.31 0.67 2.81 1.44 2.61 0.23 x 0.6996 0.0546 0.07 0.10	GR 19 A 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47	Gain 2 1513 5 29 3 78 0 20 9 1639	9 A B 15.0 108 Are A B Fir 135 Lot	FOY a S Gain 642 973 175 23338 56	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 0 48 9	Gain Gain 1424 25 37 34 29 93 1490	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run: En En En Foundation Conductive Air Leakage	Appliances Loads Duct and Pipe loss 11,732 1,995 It evel 2 If t. exposed wall A If t. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B exposed Ceilings B Exposed Floors It was a service wall B Exposed Floors It was a service was a service wall B Exposed Floors It was a service wa	R-Values L 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	oss Gain 19.45 11.73 19.45 22.60 19.45 22.60 39.45 22.60 39.45 3.20 3.64 0.60 9.15 1.51 1.31 0.67 2.81 1.44 2.61 0.23 x 0.6996 0.0546 0.07 0.10	GR 19 A 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47	Gain 2 1513 5 29 3 78 0 20 9 1639 8 90	9 A B 15.0 108 Are A B Fir 135 Lot	FOY a S Gain 642 973 175 23338 56	F/A B 10.0 128 Area A B 128 Fir 110 Loss 9 48 9 128 3 148 3	Gain Gain 1424 25 37 34 29 93 1490	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run: En En En Foundation Condu Total Conductive Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 11,732 1,995 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 exposed Ceilings B Exposed Floors Under the Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Floors Under the Shaded Exposed Ceilings B Exposed Floors Under the Shaded Exposed Floors Exposed Ceilings B Exposed Floors Exposed Floors Exposed Floors Exposed Ceilings B Exposed Floors Exposed Flo	R-Values Lu 4.00 4.00 4.00 4.00 2.03 4.00 2.03 2.03 2.03 2.03 4.00 21.40 8.50 59.22 27.65 29.80	oss Gain 19.45 11.73 19.45 22.60 19.45 22.60 39.10 22.60 39.15 1.31 0.67 1.3	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47 88 23 186 130 13	Gain Gain 1513 5 29 78 0 20 9 1639 9 90 7 164	9 A B 15.0 108 Are A B Fir 135 Lot	FOY a S Gain 642 973 175 29 338 56 155 1066 808 58	F/H 11 A B 10.0 128 Area A B 128 Fir 110 Loss 0 62 2 128 3 148 10 10	Gain 34 1424 25 37 34 29 34 29 31 1490 45 81 10 149	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run E F Ne Ne Total Foundation Conductive Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 11,732 1,995 It. exposed wall A off. 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 lings B Exposed Floors United the state of t	R-Values L. 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	oss Gain 19.45 11.73 19.45 11.73 19.45 29.66 19.45 22.60 38.13 99.12 19.45 3.20 3.64 0.60 9.15 1.51 1.31 0.67 2.81 1.44 2.61 0.23 x 0.6996 0.0546 0.07 0.10 1.80 13.82 0.07 0.10 239 rcent 2730	GR 19 A 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47 88 23 186 130	Gain 2 1513 5 29 3 78 0 20 9 1639 8 90	9 A B 15.0 108 Are A B Fir 135 Lot	FOY a S Gain 642 973 175 29 338 56 155 1066 808 58	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 0 48 9	Gain Gain 1424 25 37 34 29 33 1490 45 81 10 149 1024	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run: E: E: Fo Ne Ne Ne Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 11,732 1,995 It eyel 2 If exposed wall A If exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A et exposed walls A et exposed walls A et exposed walls B Exposed Floors to be the component of th	R-Values L. 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 7.65 29.80	oss Gain 19.45 11.73 19.45 29.66 19.45 22.60 39.10 24.56 38.33 89.12 19.45 1.51 1.31 0.67 2.81 1.44 2.61 0.23 0.6996 0.0546 0.07 0.10 16.80 13.82 0.607 0.10 16.80 13.82 rcent 2730	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47 47 88 23 186 130 130 1.5	Gain Gain 2 1513 5 29 7 8 0 20 9 1639 9 9 164 1024	9 A B 15.0 108 Are A B Fir 135	FOY a S Gain 642 975 175 25 175 26 1808 56 888 56	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 48 9 6 62 2 128 3 148 3 149 10 100 110 110 110 110 110 110 110 110 110	Gain Gain 1424 25 37 34 29 93 1490 45 81 10 149 1024 54 251	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	
Level HL Total Level HG Total Run Run E F Ne Ne Total Foundation Conductive Air Leakage Ventilation	Appliances Loads Duct and Pipe loss 11,732 1,995 It. exposed wall A off. 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 lings B Exposed Floors United the state of t	R-Values Li 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80 x	oss Gain 19.45 11.73 19.45 11.73 19.45 29.66 19.45 22.60 38.13 99.12 19.45 3.20 3.64 0.60 9.15 1.51 1.31 0.67 2.81 1.44 2.61 0.23 x 0.6996 0.0546 0.07 0.10 1.80 13.82 0.07 0.10 239 rcent 2730	GR 19 A B 10.0 497 Area A B 88 Fir 190 Loss 51 99 17 130 47 88 23 186 130 13	Gain Gain 2 1513 5 29 7 8 0 20 9 1639 9 9 164 1024	9 A B 15.0 108 Are A B Fir 135	FOY a S Gain 642 973 175 29 338 56 155 1066 808 58	F/ 11 A B 10.0 128 Area A B 128 Fir 110 Loss 9 48 9 128 3 148 10 15 12 2	Gain Gain 1424 25 37 34 29 93 1490 45 81 10 149 1024 54 251	A B 10.0 Area A B Fir Loss		A B B 10.0 Area A B Fir	A B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Are A B Fir	

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

Man 16Cot 2

David DaCosta

Energy Star



26,598

18,547

btu/h

btu/h

Total Heat Loss

Total Heat Gain

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

Man Hotel

David DaCosta

Energy Star

																		e-I	nail hvac	@gtades	igns.ca											
		Builder:	E	M Air Syste	ms	_	Date:		s	Septem	per 15,	2023		_				We	ther Data	Rie	hmond Hill	44	-	5.8 8	8 20	50			D:			Page 5
2012 OBC		Project:	King	East Develo	pments	'	Model:			Mod	lel 1980)		_		Systen	า 1	He	at Loss ^T	77.8 deg	. F	Ht gain '	т	12.8 d	leg. F				Lay	ject # out #	JB-	-0026 -0914
	Level 3				MA	ST		BATH			BED 2		BED	3		ENS																
	nft. exposed wall A				11 A		1	Α		10 A			9 A		8	ВА		Α		Α		Α			Α		Α			Α		
Run	ft. exposed wall B				В			В		В			В			В		В		В		В			В		В			В		
	Ceiling height Floor area				9.0 268 Area		9.0	Area		9.0 142 A	-03		.0 55 Area		11.0	7 Area		9.0 Area		9.0 Are	9	9.0 Ar	09		9.0 Area		9.0 A	rea		9.0 A	rea	
E	Exposed Ceilings A				268 A		70			142 A	cu		55 A			7 A		A		A		A	-u		A	•	A			A		
	Exposed Ceilings B				В			В		В			В			В		В		В		В			В		В			В		
	Exposed Floors				Flr		_	Fir		FI	r	_	Flr			Flr		Flr		Fir		FI	•		Flr		FI	Ir		FI	Ir	
	Gross Exp Wall A Gross Exp Wall B				99		9			90		8	31		88	В																
	Components	R-Values	Loss	Gain	Loss	Gain		Loss	Gain	Lo	ss (Gain	Loss	Gain		Loss	Gain	Loss	Gain	Los	s Gain	Lo	ss (Gain	Los	s Gain	Lo	oss (Gain	L	oss G	ain
	North Shaded	4.00	19.45	11.73																												
	East/West	4.00	19.45	29.66	30 5	84 890				25	486	742 2	25 48	36 742	29	9 564	860															
	South Existing Windows	4.00 1.99	19.45 39.10	22.60 24.56																												
	Skylight		38.33	89.12																												
	Doors		19.45	3.20																												
	et exposed walls A		3.64	0.60	69 2	51 41	9	33	5	65	236	39 5	56 20	04 33	59	9 214	35													_		
	et exposed walls B Exposed Ceilings A		9.15 1.31	1.51 0.67	268 3	52 180	70	92	47	142	187	95 15	55 20	04 104	97	7 127	65															
	Exposed Ceilings B		2.81	1.44		100	,,,	92	7,	172	.57	33 18	20	. 104	91	121	0.5															
	Exposed Floors		2.61	0.23																												
Foundation Cond																																
Total Conductive	Heat Loss Heat Gain				11	86 1111		125	52		909	876	89	93 879		906	961															
Air Leakage	Heat Loss/Gain		0.5242	0.0546	6	22 61		65			477	48	46			475	52															
	Case 1		0.05	0.10																												
Ventilation	Case 2		16.80	13.82		.=			-																							
	Case 3 Heat Gain People	х	0.07	0.10 239	2	87 111 478		9	5	1	67	87 239	1	239		67	96															
	Appliances Loads	1 =.25 p	percent	2730						•		200	•																			
	Duct and Pipe loss			10%		81 159																										
Level HL Total Level HG Total	6,603 7,271		otal HL for I HG per ro		20	76 2496		199	79		1452	1625	142	1630		1447	1442															
	Level 4 In ft. exposed wall A In ft. exposed wall B Ceiling height				A B			A B		A B			A B			A B		A B		A B		A B			A B		A B			A B		
	Floor area				Area			Area			ea		Area			Area		Area		Are	a	Ar	ea		Area	ı		rea			rea	
	Exposed Ceilings A				A			A		A			A			A		A		A		A			A		A			A		
E	Exposed Ceilings B Exposed Floors				B Flr			B Flr		B FI			B Flr			B Flr		B Flr		B Flr		B Fli			B Flr		B FI			B FI		
	Gross Exp Wall A				• • •			• ••					• • • •					• • •							• • •		• •					
	Gross Exp Wall B																															
	Components			Gain	Loss	Gain	1	Loss	Gain	L	oss (Gain	Loss	Gain	T	Loss	Gain	Loss	Gain	Los	s Gain	Lo	ss (Gain	Los	Gain	_ Lo	oss (Gain	Ľ	oss G	ain
	North Shaded East/West	4.00 4.00	19.45 19.45	11.73 29.66																												
	South	4.00	19.45	22.60																												
	Existing Windows		39.10	24.56																												
	Skylight Doors	2.03 4.00	38.33 19.45	89.12 3.20																												
Ne	et exposed walls A		3.64	0.60																												
Ne	et exposed walls B	8.50	9.15	1.51																												
	Exposed Ceilings A Exposed Ceilings B		1.31	0.67 1.44																												
E	Exposed Floors		2.81 2.61	0.23																												
Foundation Cond				,																												
Total Conductive	Heat Loss																															
Air Leakage	Heat Gain Heat Loss/Gain		0.0000	0.0546																												
-	Case 1		0.00	0.0340																												
Ventilation	Case 2		16.80	13.82																												
	Case 3		0.07	0.10																												
	Heat Gain People Appliances Loads		nercent	239 2730																												
	Duct and Pipe loss		u.n	10%																												
Level HL Total	0	T	otal HL for	per room																												
Level HG Total	0	Tota	I HG per ro	om x 1.3			J			L					L			L		1 L		1 L					_ L			L		
Tatal Haat Laas	00 500	Ī						I review	and take i	respons	ibility f	or the desi	gn work	and am q	ualifie	d in the a	opropriate	category	as an "othe	er designer	" under							Г	SF	B-12 Pa	ackage	

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

2

3 x

4

Project # Layout #

David DaCosta

Page 6 PJ-00267 JB-09140

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:	Energy Star		
Project:	Richmond Hill	Model:	Model 1980
	RESIDENTIAL MECHANICAL		
	For systems serving one dwelling unit & con	forming to the Ontario Building	Code, 0.reg 332/12
	Location of Installation	Total Ver	ntilation Capacity 9.32.3.3(1)
Lot #	Plan #	Bsmt & Master Bdrm	1 @ 21.2 cfm 21.2 cfm
Township	Richmond Hill	Other Bedrooms Bathrooms & Kitchen	2 @ 10.6 cfm 21.2 cfm 5 @ 10.6 cfm 53 cfm
Roll #	Permit #	Other rooms	4 @ 10.6 cfm 42.4 cfm Total 137.8
Address			
	Della	Principal V	entilation Capacity 9.32.3.4(1)
Name	Builder EM Alr Systems	Master bedroom Other bedrooms	1 @ 31.8 cfm 31.8 cfm 2 @ 15.9 cfm 31.8 cfm
Address	LIM All Systems	Other bedrooms	Total 63.6
City		Dringi	nel Eukaust Fan Canasity
Tel	Fax	Make	pal Exhaust Fan Capacity Model Location
		VanEE	V150E75NS Base
	Installing Contractor		
Name		127 cfm	80.0 Sones or Equiv.
Address			at Recovery Ventilator
City		Make Model	VanEE V150E75NS
Oity		1:	27 cfm high 80 cfm low
Tel	Fax	Sensible efficiency @ -2 Sensible efficiency @ 0	
	Openhanding Appliances 0.00.0 4(4)		nce HRV/ERV to within 10 percent of PVC
a) x b) c) d) e)	Combustion Appliances 9.32.3.1(1) 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 capacit Less principal exhaust of REQUIRED supplemen	capacity 63.6
		Supr	plemental Fans 9.32.3.5.
	Heating System	Location	cfm Model Sones
X	Forced air Non forced air Electric space heat (if over 10% of heat load)	Ens Bath	50 XB50 0.3 50 XB50 0.3
	House Type 9.32.3.1(2)		
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) Any type c) appliance	n.	esigner Certification
IV Other	Type I or II either electric space heat Type I, II or IV no forced air		ventilation system has been designed

	Designer Certification							
I hereby certify t	I hereby certify that this ventilation system has been designed							
in accordance w	ith the Ontario B	uildina Code.	•					
N1	D 11 D							
Name	David D	aCosta						
	11	166						
Signature	- cana	4000						
HRAI#	5190	BCIN#	32964					
1113/41#	HRAI# 5190 BCIN# 32964							
Date September 15, 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-09140

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	aal Authority							
A I' 4'	NI	For use by Pillicip	•							
Application	No:		Model/Certification Nu	mber						
	Project Information			T						
Building nur	mber, street name			Unit number	Lot/Con					
		Model 1980								
Municipality	Richmond Hill	Postal code	Reg. Plan number / otl	ner description						
В.	Prescriptive Compliance [indicate the build	I ding code compliance option	Leging employed in the	house design]						
	SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy perform	ance results using	an approved softwa	are (see guide)					
V	ENERGY STAR®* [SB-12 - 3.1.3.]	*Attach Builder Option I	Package [BOP] for	m						
	R-2000®* [SB-12 - 3.1.3.]	*Attach R-2000 HOT20	00 Report							
C.	Project Building Design Conditions									
	Climatic Zone (SB-1):	Heat. Equip. Efficiency		Space Heating F	uel Source					
V	Zone 1 (< 5000 degree days)	≥ 92% AFUE		Propane	☐ Solid Fuel					
	Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	☐ Oil	☐ Electric	☐ Earth Energy					
R	atio of Windows, Skylights & Glass (W, S	& G) to Wall Area		Other Building Ch	aracteristics					
Araa of	Walls = 317.7 m² or 3419.4 ft²		Log/Post&Beam	☐ ICF Above	Grade					
Area or	wais = <u>517.7</u> III or <u>5419.4</u> II		☐ Slab-on-ground	│ │ Walkout Ba	sement					
		W,S &G % = <u>7%</u>	☑ Air Conditioning	Combo Uni	t					
Area of W	$I, S \& G = 23.5 \text{ m}^2 \text{ or } 253.0 \text{ ft}^2$		☐ Air Sourced Hea	t Pump (ASHP)						
			☐ Ground Source I	Heat Pump (GSHP)						
SB-12 Pe	rformance Reference Building Design Pac	kage indicating the pres	criptive package to	be compared for co	ompliance					
SB-1	2 Referenced Building Package (input desi	gn package):								
D.	Building Specifications [provide values an	nd ratings of the energy efficie	ency components prop	osed, or attach ENERG	Y STAR BOP form]					
	<u> </u>		1 1							

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

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Page 8

Project # PJ-00267 Layout # JB-09140

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

The annual energy consumption using Subsection 3.1.1. SB-12 Ref The annual energy consumption of this house as designed is	· ·	ckage isGJ (1J=1000MJ)
The software used to simulate the annual energy use of the buildi	ng is:	- -
The building is being designed using an air tightness baseline of:		
☐ OBC reference ACH, NLA or NLR default values (no depres	surization 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 b is compared against (3.1.2.1.(6)).	uilding envelope is	not more than 25% of the 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 Applie	d (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	fication [Subsection	n 3.1.3. Other Acceptable Compliance Methods]
The NRCan "ENERGY STAR for New Homes Standard Ver building performance meeting or exceeding the prescriptive	sion 12.6 " technica	al requirements, applied to this building design result in the
The NRCan, "2012 R-2000 Standard " technical requirement exceeding the prescriptive performance requirements of the		0 0
Performance Energy Modeling Professional		
Energy Evaluator/Advisor/Rater/CEM Name and company:	Accreditation or Eva	aluator/Advisor/Rater License #
BUILDING KNOWLEDGE CANADA		5506
ENERGY STAR or R-2000		
Energy Evaluator/Advisor/Rater/Name and company:	Evaluator/Advisor/Ra	ater License #
ANGELA BUSTAMANTE		5506
G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) pro		
David DaCosta	32964	Signature Mane Alexander

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



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

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



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

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

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

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



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

Page 8 PJ-00267 Project # Layout # JB-09140

Package: **Energy Star** System: System 1 Project: **Richmond Hill** Model: **Model 1980**

Air Leakage Calculations **Building Air Leakage Heat Loss Building Air Leakage Heat Gain** LRairh Vb HL^T Vb HLleak LRairh HG^T HG Leak В В 0.018 0.404 18642 77.8 10535 0.018 0.112 18642 12.8 481 Levels Air Leakage Heat Loss/Gain Multiplier Table (Section 11) 2 3 4 1 Air Leakage Heat Loss Level Building Level Conductive (LF) (LF) (LF) (LF) Level Factor (LF) Air Heat Loss (HLclevel) Multiplier Level 1 6022 0.8747 1.0 0.5 0.5 0.6 0.4 0.6996 Level 2 0.3 4518 0.4 0.3 0.3 10535 4020 0.5242 Level 3 0.2 0.2 Level 4 0 0 0.0000 0.1 Levels this Dwelling Air Leakage Heat Gain **HG LEAK** 481 0.0546 3 **BUILDING CONDUCTIVE HEAT GAIN** 8810 30.0 FT 9.14 M **Highest Ceiling Height** Ventilation Calculations Ventilation Heat Gain Ventilation Heat Loss Vent Vent Ventilation Heat Loss Ventilation Heat Gain С PVC (1-E) HRV HLbvent ဂ PVC HG^T HGbvent 1.08 63.6 77.8 0.20 1069 1.1 63.6 12.8 879 Case 1 Case 1 Ventilation Heat Loss (Exhaust only Systems) Ventilation Heat Gain (Exhaust Only Systems) Case 1 - Exhaust Only Case 1 - Exhaust Only Multiplier Case HLbvent Level LF LVL Cond. HL **HGbvent** 879 Multiplier 0.10 Building Level 1 0.5 6022 0.09 8810 Level 2 0.3 4518 0.07 1069 Level 3 4020 0.2 0.05 Level 4 0 0 0.00 Case 2 Case 2 **Ventilation Heat Loss (Direct Ducted Systems)** Ventilation Heat Gain (Direct Ducted Systems) Case Case Multiplier Multiplier С (1-E) HRV С HG^T HL^T 16.80 13.82 1.08 0.20 1.08 77.8 12.8 Case 3 Case 3 Ventilation Heat Loss (Forced Air Systems) Ventilation Heat Gain (Forced Air Systems) 3 Case HLbvent Vent Heat Gain Multiplier Multiplier HGbvent HG*1.3 Total Ventilation Load 1069 0.07 879 0.10 879 Watts Foundation Conductive Heatloss Level 1 1457 4972 Level 1 Btu/h Foundation Conductive Heatloss Level 2 Level 2 Watts Btu/h

Slab on Grade Foundation Conductive Heatloss

Walk Out Basement Foundation Conductive Heatloss

Btu/h

Btu/h

Watts

Watts

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station	Description
Province:	Ontario
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shiel	lding
Building Site:	Suburban, forest ▼
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	9.14
Building Confi	guration
Type:	Semi-Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m³):	527.94
Air Leakage/Ve	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
0	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 D	escription	
Soil Conductivity:		High conductivity: moist soil ▼	
Water Table:		Normal (7-10 m, 23-33 Ft) ▼	
Fou	ındatio	n Dimensions	
Floor Length (m):	14.50		
Floor Width (m):	3.33		
Exposed Perimeter (m):	18.59		
Wall Height (m):	2.74		
Depth Below Grade (m):	0.46	Insulation Configuration	
Window Area (m²):	1.11		
Door Area (m²):	3.90		
	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): 1457			



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	

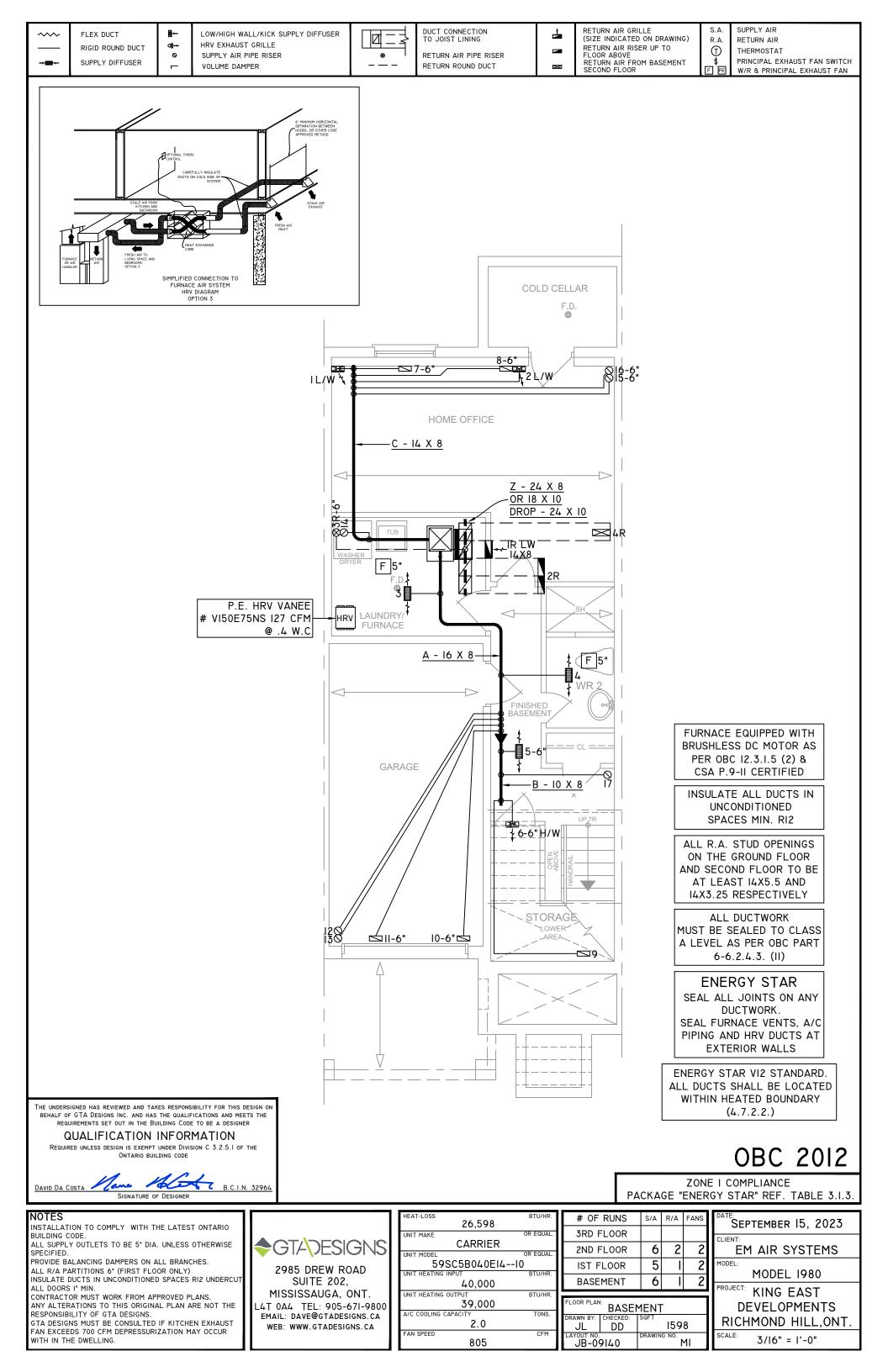


2985 Drew Road, Suite 202 Mississauga, Ontario L4T 0A4

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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		



FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

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

KITCHEN EXHAUST 100 CFM MIN. 6"

A MIN. OF 50 CFM OR

OTHERWISE NOTED AS PER 9.32.3.5



TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

DUCT CONNECTION

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) 4 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

 $\Diamond \bigcirc$ ALL OTHER FANS SHALL BE 0 3R-6' 0 0

CONCRETE VERANDA 15-6"□ 16-6∥□ ~~-**------**7-6" 8-6' **GREAT ROOM** \bowtie 2R LW 30X8 ISLAND KITCHEN #G I7 **□**→ **FAMILY** ROOM ₹ UP 8R DN^T6R 10-6" 11-6" **FOYER ⊐**12 CONCRETE **VERANDA** WOOD DECK

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.)

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

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

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.



	_==,===
	UNIT MAKE OR EQUAL.
◆GTADESIGNS	CARRIER
▼ ○ 1/ (>L0 ○ 10	SHIT HODEL
2985 DREW ROAD	59SC5B040EI4I0
	UNIT HEATING INPUT BTU/HR.
SUITE 202,	40,000
MISSISSAUGA, ONT.	UNIT HEATING OUTPUT BTU/HR.
L4T 0A4 TEL: 905-67I-9800	39,000
EMAIL: DAVE@GTADESIGNS.CA	A/C COOLING CAPACITY TONS.
WEB: WWW.GTADESIGNS.CA	2.0
	FAN SPEED CFM
	805

26,598

FA	CNA	GE	CINCK
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
IST FLOOR	5	I	2
BASEMENT	6	- 1	2
FLOOR PLAN: GROUND	FLO	OR	

DD

JB-09140

1598

M2

SEPTEMBER 15, 2023 CLIENT **EM AIR SYSTEMS** MODEL: **MODEL 1980** PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT.

3/16" = 1'-0"

FLEX DUCT
RIGID ROUND DUCT
SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER

HRV EXHAUST GRILLE
SUPPLY AIR PIPE RISER
VOLUME DAMPER



TO JOIST LINING

RETURN AIR PIPE RISER

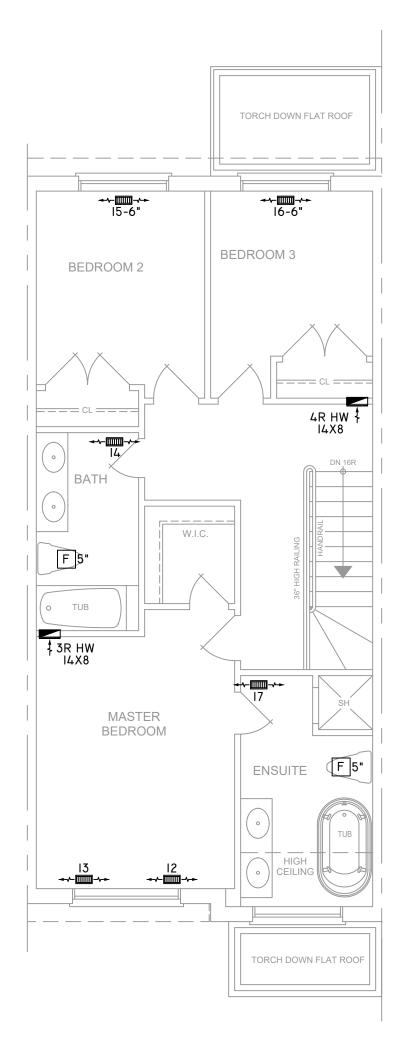
RETURN ROUND DUCT

DUCT CONNECTION

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

S.A. SUPPLY AIR
R.A. RETURN AIR
THERMOSTA
SERVICE OF THE SERVICE O

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.)

OBC 2012

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

SCALE:

NOTES

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

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

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.
26,598	
UNIT MAKE	OR EQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B040EI4	-10
UNIT HEATING INPUT	BTU/HR.
40,000	
UNIT HEATING OUTPUT	BTU/HR.
39,000	
A/C COOLING CAPACITY	TONS.
2.0	
FAN SPEED	CFM
805	

PA	CKA	GE "	ENER)(
# OF RUNS	S/A	R/A	FANS	I
3RD FLOOR				
2ND FLOOR	6	2	2	
IST FLOOR	5	I	2	
BASEMENT	6	I	2	
FLOOR PLAN: SECOND FLOOR DRAWN BY: I CHECKED: I SQFT				

JB-09140

1598

M3

TOTAL REF. TABLE 0.11.0.
SEPTEMBER 15, 2023
SEPTEMBER 13, 2023
CLIENT:
EM AIR SYSTEMS
MODEL:
MODEL 1980
PROJECT: KING EAST
DEVELOPMENTS
RICHMOND HILL ONT.

3/16" = 1'-0"