

### **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 2				Lot/con.	
Municipality Richmond Hill		Postal code	Plan number/ othe description	er		
B. Individual who reviews and takes responsibili	ty for desigr	n activities				
Name David DaCo	osta		Firm		gtaDesigns Inc.	
	85 Drew Road					Lot/con.
Municipality  Mississauga		Postal code L4T 0A4	Province Ontario	E	E-mail <u>hvac@gtadesi</u>	gns.ca
Telephone number (905) 671-9800		Fax number		(	Cell number	
C. Design activities undertaken by individual ide	ntified in Se	ction B. [Buil	ding Code Tabl	le 3.5	.2.1 of Division C]	
☐ House ☒	HVAC – Ho	use			■ Building Structural	
☐ Small Buildings ☐	Building Ser	vices			☐ Plumbing – House	
☐ Large Buildings ☐	Detection, L	ighting and Pow	er		Plumbing – All Buildings	3
☐ Complex Buildings ☐	Fire Protecti	ion			On-site Sewage System	S
Description of designer's work	Mod	el Certification			Project #:	PJ-00267
Heating and Cooling Load Coloulations	Main	Х	Builder		Layout #:	JB-09054
Heating and Cooling Load Calculations Air System Design	Alternate	^	Project		EM Alr Systems King East Developme	ents
Residential mechanical ventilation Design Summary	O.D. GFA	2665	Model		g	
Residential System Design per CAN/CSA-F280-12					Model 2670	
Residential New Construction - Forced Air  D. Declaration of Designer			SB-12		Energy Star	
Division C of the Build classes/categories.  Ind  Firr  I review and take residesigner" under substituted by the build be assumed by the build be assumed by the building by the building building by the building building building by the building b	onsibility for th ling Code. I am ividual BCIN: m BCIN: ponsibility for the ection 3.2.5 of ividual BCIN: sis for exemption	he design work on qualified, and the design and a Division C, of the many on from registration and	m qualified in the a e Building Code.  ida  qualification requires	egisted, in t	ered under subsection 3.2.4	
Base I certify that:  1. The information contained in this schedule is true to 2. I have submitted this application with the knowledge  July 28, 2023  Date	the best of my	/ knowledge.	Signature of	14c		

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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Building Location  Address (Model): Model 2670 Site: King East Developments  Calculations based on  Dimensional information based on:  Attachment: Detached Front facing: East/West Assumed?  No. of Levels: 3 Ventilated? Included Air tightness: 1961-Present (ACH=3.57) Assumed?  Weather location: Richmond Hill Wind exposure: Sheltered  HRV? VanEE V150E75NS Internal shading: Light-translucent Occupants: 5 Sensible Eff. at -0C 75% Apparent Effect. at -0C 80% Units: Imperial Area Sq ft: 2665 Sensible Eff. at -0C 75% Below grade walls  Style A: As per OBC SB12 Energy Star R 22 + 5ci Style B: Style B: Style B: Style B: Style B: As per Selected OBC SB12 Energy Star R Style B: St	
Building Location  Address (Model): Model 2670 Site: King East Developments  Model: Lot:  City and Province: Richmond Hill Postal code:  Calculations based on  Dimensional information based on: Architectural Design Inc.Mar/2023  Attachment: Detached Front facing: East/West Assumed?  No. of Levels: 3 Ventilated? Included Air tightness: 1961-Present (ACH=3.57) Assumed?  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: 2665  Sensible Eff. at -0C 75%   Heating design conditions  Outdoor temp -5.8 Indoor temp: 72 Mean soil temp: 50 Outdoor temp 88 Indoor temp: 75 Latitude: 44  Above grade walls  Style A: As per OBC SB12 Energy Star R 22 + 5ci Style A: As per OBC SB12 Energy Star R  Style B: Style C:  Style D: Floors on soil Ceilings  Style A: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R  Style B: As per Selected OBC SB12 Energy Star R	
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Outdoor temp -5.8 Indoor temp: 72 Mean soil temp: 50 Outdoor temp 88 Indoor temp: 75 Latitude: 44  Above grade walls  Style A: As per OBC SB12 Energy Star R 22 + 5ci Style A: As per OBC SB12 Energy Star R  Style B: Style B: Style C: Style D:   Floors on soil Ceilings  Style A: As per Selected OBC SB12 Energy Star R  Style B: Style C: Style B:	
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Style B: Style B: As per Selected OBC SB12 Energy Star R  Exposed floors Style C:	
Exposed floors Style C:	60
· ·	31
Style A: As per Selected ORC SR12 Energy Star P 21	
Cityle C. As per defected OBC 3D12 Ellergy Star R 31 DUUIS	
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:	$\neg \neg$
Attached documents: As per Shedule 1 Heat Loss/Gain Caculations based on CSA-F280-12 Effective R-Values	
Notes: Residential New Construction - Forced Air	
Calculations performed 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	



EM Air Systems

Date:

Builder:

### Air System Design

**Energy Star** SB-12

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 July 28, 2023

Project # PJ-00267 System 1

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Project: King East D	Developn	nents	ı	Model:			Model	2670				Sy	stem 1		- Ii	ndividual I	BCIN:	32964	Man	ne 14	£.		David DaCo	osta		yout #	JB-	-09054
DESIGN LOAD SPECIFICATION	IS		A	IR DISTR	IBUTION &	& PRESSU	JRE				F	URNACE/	AIR HANI	DLER DAT	A:		E	BOILER/W	ATER HEA	TER DA	TA:			A	A/C UNIT D	ATA:		
																<u>-</u>							<u></u>					<u>-</u>
Level 1 Net Load	14,988 b				t External				0.5 '			Make 	_	Carri				Make			T	ype			Carrier		2.5 T	on
Level 2 Net Load	15,125 b				Equipme		re Drop		0.225 '			Model		9SC5B060				Model							Cond		2.5	
Level 3 Net Load	13,575 b				Design Pre				0.275 '			nput Btu/h		6000				Input Btu/I						(	Coil		2.5	
Level 4 Net Load		otu/h			anch Long		ive Lengtl	h	300 f			Output Btu	/h	5800				Output Btu										
Total Heat Loss	43,688 b				m Pressur				0.138 '			.s.p.		0.50		w.c.	ď	Min.Outpu	t Btu/h		A	WH						
Total Heat Gain	26,489 k	otu/h	S	/A Plenur	n Pressur	е			0.14 '		V	Vater Tem	р		d	eg. F.	L						wer DATA	:				
			Н	leating Ai	r Flow Pro	portionin	g Factor		0.0211	fm/btuh	4	AFUE		97%	•			Blower Sp	eed Selecte	ed:	Orang	je		E	Blower Typ	e E	СМ	
Building Volume Vb	33120 f		C	cooling Ai	ir Flow Pro	portionin	g Facter		0.0347	cfm/btuh	4	Aux. Heat													(Brushle	ess DC OE	3C 12.3.1.	5.(2))
Ventilation Load	1,336 E	Btuh.				F	R/A Temp		70 d	deg. F.	S	B-12 Pack	cage	Energy	Star		(	Check	920 cf	fm (	Cool. Chec	k _	920 c	fm				
Ventilation PVC	79.5 0	cfm					S/A Temp		128 (	deg. F.																		
Supply Branch and Grill Sizing			D	iffuser lo	ss _	0.01	'w.c.				Т	Temp. Rise	*>>>	<u>58</u> d	eg. F.		ŀ	Heat.	920 cf	fm (	Cooling	=	920 c	fm [	Design Airf	low _	<u>920</u> c	fm
							Leve	el 1													Level	2						
S/A Outlet No.	1	2	3	4											5	6	7	8	9	10	11							
Room Use	BASE	BASE	BASE	F.AREA											KIT	KIT	FAM	LAUN	FOY	FOY	GRT							
Btu/Outlet	3628	3628	3628	4105											1540	1540	2808	2095	2373	2373	2397							
Heating Airflow Rate CFM	76	76	76	86											32	32	59	44	50	50	50							
Cooling Airflow Rate CFM	13	13	13	7											85	85	96	66	57	57	89							
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	28	37	15	20											38	33	34	5	24	31	21							
Equivalent Length	80	70	130	120	70	70	70	70	70	70	70	70	70	70	140	120	80	70	100	110	120	70	70	70	70	70	70	70
Total Effective Length	108	107	145	140	70	70	70	70	70	70	70	70	70	70	178	153	114	75	124	141	141	70	70	70	70	70	70	70
Adjusted Pressure	0.12	0.12	0.09	0.09	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.07	0.08	0.11	0.17	0.10	0.09	0.09	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6.12	6	6	6.05	0.10	0.10	0.15	0.15	0.15	0.15	0.10	0.15	0.15	0.15	6	6	6	5	5	5	6	0.15	0.15	0.15	0.15	0.15	0.10	0.15
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	Δ.	Δ	C						12.10		12.0			В	B	В	Δ	C	C	Δ							
Trunk																												
							Leve	13													l evel	4						
S/A Outlet No	12	13	14	15	16	17	Leve		20	21											Level	4						
S/A Outlet No.	12 MAST	13 MAST	14 ENS	15 WIC	16 BED 2	17 BATH	18	19	20 BATH2	21 BED 4											Level	4						
Room Use	MAST	MAST	ENS	WIC	BED 2	BATH	18 BED 3	19 BED 3	BATH2	BED 4											Level	4						
Room Use Btu/Outlet	MAST 1589	MAST 1589	ENS 1552	WIC 443	BED 2 1105	BATH 882	18 BED 3 2100	19 BED 3 2100	BATH2 937	BED 4 1278											Level	4						
Room Use Btu/Outlet Heating Airflow Rate CFM	MAST 1589 33	MAST 1589 33	ENS 1552 33	WIC 443 9	BED 2 1105 23	BATH 882 19	18 BED 3 2100 44	19 BED 3 2100 44	937 20	BED 4 1278 27											Level	4						
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM	MAST 1589 33 52	MAST 1589 33 52	ENS 1552 33 36	WIC 443 9 4	BED 2 1105 23 28	BATH 882 19 12	18 BED 3 2100 44 50	19 BED 3 2100 44 50	937 20 18	BED 4 1278 27 39	2.42	242	0.40	0.40	2.42	242	0.40	0.40	0.40	0.40			0.40	0.40	0.40	2.40	2.42	0.10
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure	MAST 1589 33 52 0.13	MAST 1589 33 52 0.13	ENS 1552 33 36 0.13	WIC 443 9 4 0.13	BED 2 1105 23 28 0.13	882 19 12 0.13	18 BED 3 2100 44 50 0.13	19 BED 3 2100 44 50 0.13	937 20 18 0.13	BED 4 1278 27 39 0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length	MAST 1589 33 52 0.13	MAST 1589 33 52 0.13 44	ENS 1552 33 36 0.13 55	WIC 443 9 4 0.13 39	BED 2 1105 23 28 0.13 32	882 19 12 0.13 24	18 BED 3 2100 44 50 0.13	19 BED 3 2100 44 50 0.13 39	937 20 18 0.13 26	BED 4 1278 27 39 0.13 46											0.13	0.13						
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length	MAST 1589 33 52 0.13 52 110	MAST 1589 33 52 0.13 44 90	ENS 1552 33 36 0.13 55	WIC 443 9 4 0.13 39 110	BED 2 1105 23 28 0.13 32 130	882 19 12 0.13 24 190	18 BED 3 2100 44 50 0.13 44 160	19 BED 3 2100 44 50 0.13 39 150	937 20 18 0.13 26 170	BED 4 1278 27 39 0.13 46 130	70	70	70	70	70	70	70	70	70	70	0.13 70	0.13	70	70	70	70	70	70
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length	MAST 1589 33 52 0.13 52 110	MAST 1589 33 52 0.13 44 90 134	ENS 1552 33 36 0.13 55 130 185	WIC 443 9 4 0.13 39 110 149	BED 2 1105 23 28 0.13 32 130 162	BATH 882 19 12 0.13 24 190 214	18 BED 3 2100 44 50 0.13 44 160 204	19 BED 3 2100 44 50 0.13 39 150	937 20 18 0.13 26 170 196	BED 4 1278 27 39 0.13 46 130 176	70 <b>70</b>	70 <b>70</b>	70 <b>70</b>	70 70	70 70	70 70	70 70	70 70	70 70	70 70	0.13 70 70	0.13 70 70	70 70	70 70	70 70	70 70	70 70	70 70
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure	MAST 1589 33 52 0.13 52 110	MAST 1589 33 52 0.13 44 90 134 0.10	ENS 1552 33 36 0.13 55 130 185 0.07	WIC 443 9 4 0.13 39 110	BED 2 1105 23 28 0.13 32 130 162 0.08	BATH 882 19 12 0.13 24 190 214 0.06	18 BED 3 2100 44 50 0.13 44 160 204	19 BED 3 2100 44 50 0.13 39 150 189 0.07	937 20 18 0.13 26 170 196 0.07	BED 4 1278 27 39 0.13 46 130 176 0.07	70	70	70	70	70	70	70	70	70	70	0.13 70	0.13	70	70	70	70	70	70
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round	MAST 1589 33 52 0.13 52 110 162 0.08 5	MAST 1589 33 52 0.13 44 90 134 0.10	ENS 1552 33 36 0.13 55 130 185 0.07	WIC 443 9 4 0.13 39 110 149 0.09	BED 2 1105 23 28 0.13 32 130 162 0.08 4	BATH 882 19 12 0.13 24 190 214 0.06 4	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6	937 20 18 0.13 26 170 196 0.07	BED 4 1278 27 39 0.13 46 130 176 0.07	70 70 0.19	70 70 0.19	70 70 0.19	70 70	70 70 0.19	70 70 0.19	70 70 0.19	70 70	70 70 0.19	70 70 0.19	0.13 70 70	0.13 70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70	70 70	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size	MAST 1589 33 52 0.13 52 110 162 0.08 5	MAST 1589 33 52 0.13 44 90 134 0.10 5	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10	WIC 443 9 4 0.13 39 110 149 0.09	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6	937 20 18 0.13 26 170 196 0.07 4 3x10	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10	70 <b>70</b>	70 <b>70</b>	70 <b>70</b>	70 70	70 70	70 70	70 70	70 70	70 70	70 70	0.13 70 70	0.13 70 70	70 70	70 70	70 70	70 70	70 70	70 70
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round	MAST 1589 33 52 0.13 52 110 162 0.08 5	MAST 1589 33 52 0.13 44 90 134 0.10	ENS 1552 33 36 0.13 55 130 185 0.07	WIC 443 9 4 0.13 39 110 149 0.09	BED 2 1105 23 28 0.13 32 130 162 0.08 4	BATH 882 19 12 0.13 24 190 214 0.06 4	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6	937 20 18 0.13 26 170 196 0.07	BED 4 1278 27 39 0.13 46 130 176 0.07	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	0.13 70 70 0.19	0.13 70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size	MAST 1589 33 52 0.13 52 110 162 0.08 5	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6	937 20 18 0.13 26 170 196 0.07 4 3x10	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10	70 70 0.19	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19	70 70 0.19 4x10	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19 4x10	0.13 70 70 0.19	0.13 70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk	MAST 1589 33 52 0.13 52 110 162 0.08 5	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6	937 20 18 0.13 26 170 196 0.07 4 3x10	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10	70 70 0.19	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19	70 70 0.19	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10 Supply Tru	0.13 70 70 0.19 4x10	70 70 0.19 4x10 Sizing	70 70 0.19 4x10	70 70 0.19	70 70 0.19	70 70 0.19 4x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No.	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10 Supply Tru	0.13 70 70 0.19 4x10	70 70 0.19 4x10 Sizing	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10	70 70 0.19 4x10 <u>R</u> T	70 70 0.19 4x10 deturn Tru	70 70 0.19 4x10	70 70 0.19 4x10 zing F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10 Supply Tru	0.13 70 70 0.19 4x10 nk Duct S	70 70 0.19 4x10 Sizing	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B  2R 402 0.12	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12	WIC 443 9 4 0.13 39 110 149 0.09 3 3 3x10 A	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10	70 70 0.19 4x10 <u>R</u> T	70 70 0.19 4x10 Return Tru runk	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10 Supply Tru Trunk C	0.13 70 70 0.19 4x10 nk Duct \$	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B  1R 158 0.12 7	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A ure Loss 4R 105 0.12 40	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C 0.02	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10	70 70 0.19 4x10 <u>R</u> T	70 70 0.19 4x10 Return Tru frunk	70 70 0.19 4x10	70 70 0.19 4x10 zing F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10 Supply Tru Trunk C	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B  1R 158 0.12 7 170	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A ure Loss 4R 105 0.12 40 195	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A 5R 150 0.12 30 140	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C 6R 0.12	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12	70 70 0.19 4x10 R T D Z	70 70 0.19 4x10 eturn Tru runk	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10  Supply Tru Trunk C A B C	0.13 70 70 0.19 4x10 nk Duct \$	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Equivalent Length Total Effective Length	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B 1R 158 0.12 7 170 177	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B 2R 402 0.12 9 180 189	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140 189	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A ure Loss 4R 105 0.12 40 195 235	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A 5R 150 0.12 30 140 170	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 R T D Z Z	70 70 0.19 4x10 eturn Tru runk	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10  Supply Tru Trunk C A B C D	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B 1R 158 0.12 7 170 177 0.07	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B 2R 402 0.12 9 180 189 0.06	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140 189 0.06	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A ure Loss 4R 105 0.12 40 195 235 0.05	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A 5R 150 0.12 30 140 170 0.07	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C 6R 0.12	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C	19 BED 3 2100 44 50 0.13 39 150 0.07 6 4x10 C	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12	70 70 0.19 4x10 R T D Z Z Y	70 70 0.19 4x10  Return Tru runk  Prop	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13 70 70 0.19 4x10  Supply Tru Trunk C A B C C D	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B  1R 158 0.12 7 170 177 0.07 7.0	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B 2R 402 0.12 9 180 189 0.06 11.0	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140 189 0.06 6.0	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A  ure Loss 4R 105 0.12 40 195 235 0.05 6.0	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A 5R 150 0.12 30 140 170 0.07 7.5	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 R T D Z Y X W	70 70 0.19 4x10 Return Tru rrunk	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13  70  70  0.19  4x10  Supply Tru  Trunk C  A  B  C  D  E	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Inlet Size	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B 1R 158 0.12 7 170 177 0.07	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B 2R 402 0.12 9 180 0.06 11.0	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B 3R 105 0.12 49 140 189 0.06 6.0 8	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A ure Loss 4R 105 0.12 40 195 235 0.05	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A  5R 150 0.12 30 140 170 0.07 7.5 8	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 <u>R</u> T D Z Z Y X W V U	70 70 0.19 4x10  Return Tru runk  Prop	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13  70  70  0.19  4x10  Supply Tru  Trunk C  A  B  C  D  E	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B  1R 158 0.12 7 170 177 0.07 7.0	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B  2R 402 0.12 9 180 189 0.06 11.0 8 x	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140 189 0.06 6.0 8	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A  ure Loss 4R 105 0.12 40 195 235 0.05 6.0	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A  5R 150 0.12 30 140 170 0.07 7.5 8 x	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 R T D Z Y X W V U	70 70 0.19 4x10  Return Tru Trunk  Prop	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13  70  70  0.19  4x10  Supply Tru  Trunk C  A  B  C  D  E	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Inlet Size Round Inlet Size	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B 1R 158 0.12 7 170 177 0.07 7.0 FLC	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B 2R 402 0.12 9 180 0.06 11.0	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B 3R 105 0.12 49 140 189 0.06 6.0 8	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A  ure Loss 4R 105 0.12 40 195 235 0.05 6.0 8	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A  5R 150 0.12 30 140 170 0.07 7.5 8	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50 0.24	70 70 0.19 4x10 R T D Z Z Y X W V U	70 70 0.19 4x10  Axton  Axton	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13  70  70  0.19  4x10  Supply Tru  Trunk C  A  B  C  D  E	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk  Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Inlet Size " "	MAST 1589 33 52 0.13 52 110 162 0.08 5 3x10 B 1R 158 0.12 7 170 177 0.07 7.0 FLC	MAST 1589 33 52 0.13 44 90 134 0.10 5 3x10 B  2R 402 0.12 9 180 189 0.06 11.0 8 x	ENS 1552 33 36 0.13 55 130 185 0.07 4 3x10 B Grill Pressi 3R 105 0.12 49 140 189 0.06 6.0 8	WIC 443 9 4 0.13 39 110 149 0.09 3 3x10 A  ure Loss 4R 105 0.12 40 195 235 0.05 6.0 8 x	BED 2 1105 23 28 0.13 32 130 162 0.08 4 3x10 A  5R 150 0.12 30 140 170 0.07 7.5 8 x	BATH 882 19 12 0.13 24 190 214 0.06 4 3x10 C	18 BED 3 2100 44 50 0.13 44 160 204 0.06 6 4x10 C 7R 0.12 50 50	19 BED 3 2100 44 50 0.13 39 150 189 0.07 6 4x10 C  8R 0.12 50 50	BATH2 937 20 18 0.13 26 170 196 0.07 4 3x10 C	BED 4 1278 27 39 0.13 46 130 176 0.07 5 3x10 A	70 70 0.19 4x10 11R 0.12 50 0.24	70 70 0.19 4x10 R T D Z Y X W V U	70 70 0.19 4x10  Axtonian Truk  Propp  Trunk  Trunk  Trunk	70 70 0.19 4x10	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	0.13  70  70  0.19  4x10  Supply Tru  Frunk C  A  B  C  D  E  F  G  H	0.13 70 70 0.19 4x10  nk Duct S .CFM H	70 70 0.19 4x10 Sizing H.CFM P	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 Size 14x10 10x10	70 70 0.19



43,688 btu/h

26,489 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 16Cot 2

32964

David DaCosta

**Energy Star** 

		Builder:	EM Air Sy	stems	_	Date:		J	July 28, 20	23					Wea	ther Data	Rich	mond Hill	44	-5.8 8	88 20	50				Pag
2012 OBC		Project:	King East Dev	elopments		Model:			Model 267	0		.	Syster	n 1	Hea	at Loss ^T	77.8 deg. F		Ht gain ^T	12.8 c	leg. F				oject # yout #	PJ-002 JB-090
	Level 1 ft. exposed wall A ft. exposed wall B Ceiling height			BAS 115 A B 4.0 AG	Ε	37 A B 4.0 A	G	4.0	A B O AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG		A B 4.0 AG	
Fx	Floor area xposed Ceilings A			979 Area A		148 A			Area A		Area A		Area A		Area A		Area A		Area A		Area A		Area A		Area A	а
	xposed Ceilings B			В		В			В		В		В		В		В		В		В		В		В	
	Exposed Floors			Flr		FI			Flr		Flr		Flr		Flr		Fir		Flr		Flr		Flr		Flr	
	Gross Exp Wall A			460		148																				
	Gross Exp Wall B	D Value II	lo-:-	1	0-!		0-	_1		0-!		0-1-		0-!		0-1		0-!		0-1		0-!		0-1-		- 0-!-
	Components North Shaded	4.00	oss Gain 19.45 11.73	Loss 5 9	Gain 7 59		oss G	ain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Los	s Gair
	East/West	4.00	19.45 29.66																							
	South	4.00	19.45 22.60																							
WOB Windows	s Including Doors	3.55	21.92 27.86																							
	Skylight	2.03	38.33 89.12			04	400	67																		
Not	Doors et exposed walls A	4.00 20.84	19.45 3.20 3.73 0.61		270	21 127	408	78																		
	et exposed walls B	21.40	3.64 0.60		270	127		70																		
	xposed 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																							
oundation Condu		1		472			1519																			
tal Conductive	Heat Loss Heat Gain			511	738		1928	145																		
Air Leakage	Heat Loss/Gain		1.0792 0.0554	551			2081	8																		
	Case 1		0.09 0.09				200.																			
/entilation	Case 2		16.80 13.82																							
	Case 3	х	0.05 0.09		5 64		96	13																		
	Heat Gain People																									
		'	239																							
Α	Appliances Loads	1 =.25 pe	ercent 4459																							
A Di	Appliances Loads Ouct and Pipe loss		ercent 4459 10%		3		4105																			
evel HL Total evel HG Total	Appliances Loads Duct and Pipe loss 14,988 1,312	Tot	ercent 4459	1088 KIT	1096		4105 FAM	216	LAUN		FOY		GRT													
Austria Austri	Appliances Loads  14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors	Tot	ercent 4459 10% tal HL for per room	32 A B 10.0 253 Area A B Fir	1096	34 A B 10.0 256 A B	FAM	2: 11.( 13(	3 A B 0 0 Area A B Fir		25 A B 21.0 102 Area A B Fir		33 A B 10.0 372 Area A B Fir		A B 10.0 Area A B Fir		A B 10.0 Area A B Fir		A B 10.0 Area A B Fir		A B 10.0 Area A B Fir		A B 10.0 Area A B Fir		A B 10.0 Area A B Fir	a
A Di	Appliances Loads Duct and Pipe loss 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors Gross Exp Wall A	Tot	ercent 4459 10% tal HL for per room	32 A B 10.0 253 Area A B	1096	34 A B 10.0 256 A A B	FAM	2:	3 A B 0 0 Area A B Fir		25 A B 21.0 102 Area A B		33 A B 10.0 372 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	a
A Do	Appliances Loads  14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings A xposed Ceilings B Exposed Floors Gross Exp Wall B Gross Exp Wall B	Total	445st	32 A B 10.0 253 Area A B Fir	1096	34 A B 10.0 256 A A B FI 340	FAM rea	2: 11.0 130 25:	3 A B 0 0 Area A B Fir		25 A B 21.0 102 Area A B Fir 525		33 A B 10.0 372 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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
A Do	Appliances Loads  14,988 1,312  Level 2 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	Total	rcent 4455 10% tal HL for per room HG per room x 1.3	1088  KIT 32 A B 10.0 253 Area A B Fir 320	1096	34 A B 10.0 256 A A B FI 340	FAM rea	2: 11.0 130 25: ain	3 A B 0 O O Area A B Fir 3	Gain	25 A B 21.0 102 Area A B Fir 525		33 A B 10.0 372 Area A B Fir		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	Gain	B 10.0 Area A B	Gain	B 10.0 Area A B	
A Do	Appliances Loads Duct and Pipe loss 14,988 1,312  ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West	Total  Total  R-Values L  4.00  4.00	Main	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	1096	34 A B 10.0 256 A A B FI 340	FAM rea	2: 11.0 130 25: ain	3 A B 0 0 Area A B Fir 3		25 A B 21.0 102 Area A B Fir 525	Gain	33 A B 10.0 372 Area A B Fir 330 Loss	Gain	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr	Appliances Loads Duct and Pipe loss 14,988 1,312  Level 2 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	R-Values L 4.00 4.00 4.00	.oss   Gain   19.45   19.45   19.45   19.45   19.45   19.45   19.45   22.66   19.45   22.66   19.45   22.66   19.45   22.66	KIT 32 A B 10.0 253 Area A B Fir 320 Loss 56 108	1096	34 A B 10.0 256 A A B FI 340	FAM rea	23 11.0 130 253 <u>ain</u>	3 A B 0 O O Area A B Fir 3	Gain	25 A B 21.0 102 Area A B Fir 525	Gain	33 A B 10.0 372 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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr	Appliances Loads 14,988 1,312  Level 2 It exposed wall A ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows	Total	noss Gain 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 22.66 39.10 24.56	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	1096	34 A B 10.0 256 A A B FI 340	FAM rea	23 11.0 130 253 <u>ain</u>	3 A B 0 O O Area A B Fir 3	Gain	25 A B 21.0 102 Area A B Fir 525	Gain	33 A B 10.0 372 Area A B Fir 330 Loss	Gain	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr	Appliances Loads Duct and Pipe loss 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Cellings A xposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	R-Values L 4.00 4.00 4.00 1.99	oss Gain 19.45 11.43 19.45 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 29.63 39.10 24.56 38.33 89.12	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	1096	34 A B 10.0 256 A A B FI 340	FAM rea	25: 11.0 25: ain	3 A B B 0 0 Area A B Fir 3 Loss 175	Gain 106	25 A B 21.0 102 Area A B Fir 525 Loss	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr	Appliances Loads Duct and Pipe loss 14,988 1,312  Level 2 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 Doors	R-Values L 4.00 4.00 4.00 1.99 2.03	oss Gain 19.45  0.98  Oss Gain 19.45 19.45 19.45 22.66 39.10 24.55 38.33 89.12 19.45 3.26	1088  KIT 32 A B 10.0 253 Area A B Fir 320  Loss 56 108	Gain 9 1661	34 A B 10.0 256 Ai B FI 340 Ld	rea Ir oss G:	2: 11.131 136 25: ain	3 A B 0 0 Area A B Fir 3 Loss 175	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 64 1245	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Purel HL Total el HG Total el	Appliances Loads 14,988 1,312  Level 2 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 Doors et exposed walls A	R-Values L 4.00 4.00 4.00 1.99	oss Gain 19.45 11.43 19.45 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 29.63 39.10 24.56 38.33 89.12	32 A B 10.0 253 Area A B Fir 320 Loss 264 964 964	Gain 9 1661	34 A B 10.0 256 Ai A B Fi 340 Lc	FAM rea	25: 11.0 25: ain	3 A B B 0 0 Area A B Fir 3 Loss Loss 175	Gain 106	25 A B 21.0 102 Area A B Fir 525 Loss	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
A Public Property of the Prope	Appliances Loads  14,988 1,312  Level 2 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 Doors et exposed walls B et xposed walls B et xposed walls A bet xposed walls A et xposed walls A et xposed walls A et xposed walls A et xposed walls A	R-Values L 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	oss Gain 19.45 19.45 19.45 19.45 19.45 29.63 39.30 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.11 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 38.40 38.41 38.	KIT 32 A B 10.0 253 Area A B Fir 320 Loss 56 108	Gain 9 1661	34 A B 10.0 256 Ai B FI 340 Ld	rea Ir oss G:	2: 11.131 136 25: ain	3 A B 0 0 Area A B Fir 3 Loss 175	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 64 1245	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
A property of the property of	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A te exposed walls A te exposed walls A synosed Ceilings A xposed Ceilings A xposed Ceilings A xposed Ceilings B xposed Ceilings B xposed Ceilings B	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 11.945 11.945 19.45 19.45 19.45 19.45 29.66 19.45 29.61 38.30 39.10 24.61 38.41 38.43 38.41 24.61 38.41 3	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	Gain 9 1661	34 A B 10.0 256 Ai B FI 340 Ld	rea Ir oss G:	2: 11.131 136 25: ain	3 A B 0 0 Area A B Fir 3 Loss 175	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 64 1245	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
EX	Appliances Loads Juct and Pipe loss 14,988 1,312  Level 2 ft. exposed wall a ft. exposed wall a ft. exposed wall a Ceiling height Floor area xposed Ceilings a Exposed Floors Gross Exp Wall a Components North Shaded East/West South Existing Windows Skylight Doors te xposed walls a te exposed walls B xposed Ceilings A xposed Ceilings A	R-Values L 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	oss Gain 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 29.64 39.10 24.56 39.10 24.56 38.33 38.91 19.45 29.61 1.17 3.61 2.61 3.61 2.61 1.61	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	Gain 9 1661	34 A B 10.0 256 Ai B FI 340 Ld	rea Ir oss G:	2: 11.131 136 25: ain	3 A B 0 0 Area A B Fir 3 Loss 175	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 64 1245	Gain 1898	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr Run fr Run fr Run fr Run fr Ex Ex C C C U Net Ex Ex Ex U Net Ex	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall A ft. exposed wall A xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A te exposed walls A xposed Ceilings B Exposed Floors uctive Heatloss	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 11.945 11.945 19.45 19.45 19.45 19.45 29.66 19.45 29.61 38.30 39.10 24.61 38.41 38.43 38.41 24.61 38.41 3	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	Gain 9 1661 0 158	34 A B 10.0 256 Ai B FI 340 Ld	FAM  rea  1r  778  1091	2: 11.131 136 25: ain	3 A B 0 0 0 Area A B Fir 3 Loss 175 1 408 3 811	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 1245 146 1621	Gain 1898 48 267	33 A B B 10.0 B 10.0 C A B Fir 330 C C S 486 305 1105	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr Run fr Run fr Run fr Run fr Ex Ex C C C U Net Ex Ex Ex U Net Ex	Appliances Loads Juct and Pipe loss 14,988 1,312  Level 2 ft. exposed wall a ft. exposed wall a ft. exposed wall a Ceiling height Floor area xposed Ceilings a Exposed Floors Gross Exp Wall a Components North Shaded East/West South Existing Windows Skylight Doors te xposed walls a te exposed walls B xposed Ceilings A xposed Ceilings A	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 29.64 39.10 24.56 39.10 24.56 38.33 38.91 19.45 29.61 1.17 3.61 2.61 3.61 2.61 1.61	32 A B 10.0 253 Area A B Fir 320 Loss 56 108	Gain 9 1661 0 158	34 A B 10.0 256 Ai B FI 340 Ld	FAM  rea  778  1091	2: 11.131 136 25: ain	3 A B 0 0 Area A B Fir 3 Loss 175	Gain 106 67	25 A B 21.0 102 Area A B Fir 525 Loss 64 1245	Gain 1898 48 267	33 A B 10.0 372 Area A B Fir 330 Loss	Gain 565	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr Ru	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors at exposed Walls B xposed Ceilings A Exposed Floors et exposed walls B xposed Ceilings A xposed Ceilings B Exposed Hoors et exposed walls B xposed Ceilings B Exposed Floors uctive Heatloss Heat Loss	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 19.45 19.45 19.45 19.45 19.45 29.66 19.45 29.64 39.10 24.56 39.10 24.56 38.33 38.91 19.45 29.61 1.17 3.61 2.61 3.61 2.61 1.61	1088  KIT 32 A B 10.0 253 Area A B Fir 320  Loss 56 108	Gain 9 1661 0 158	34 A B 10.0 256 Ai B FI 340 Ld	FAM  rea  778  1091	25: 11.6 25: 25: 1186 22:	3 A B 0 0 0 Area A B Fir 3 Loss 175 1 408 3 811	Gain 106 67 133	25 A B 21.0 102 Area A B Fir 525 Loss 1245 146 1621	Gain 1898 48 267	33 A B B 10.0 B 10.0 C A B Fir 330 C C S 486 305 1105	Gain 565 182 748	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr Ru	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors at exposed walls B xposed Ceilings A texposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls B xposed Ceilings B Exposed Floors ut exposed walls C xposed Floors ut exposed walls C xposed Floors ut exposed Ceilings B Exposed Floors ut exposed Ceilings B Exposed Floors ut exposed Ceilings B Exposed Floors ut exposed Ceilings B Case 1	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 29.66 38.33 89.12 19.45 38.33 89.12 19.45 2.81 1.31 0.63 2.81 1.44 2.61 0.23 x  0.4529 0.0554 0.04	32 A B 10.0 253 Area A B Fir 320 Loss 56 108 264 96	Gain 9 1661 0 158	34 A B 10.0 256 Ai B FI 340 Ld	FAM	2: 11.1 13.0 25: ain 1186 2: 179 22:	3 A B 0 0 0 Area A B Fir 3 Loss 175 1 408 3 811 1394	Gain 106 67 133	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621	Gain 1898 48 267	33 A B B 10.0 B 10.0 C A B Fir 3330 Loss Loss 110000 11000 11000 11000 11000 11000 110000 110000 110000 110000 110000 11000 110000 110000 110000 110000 110000 110000 110000 1100000	Gain 565 182 748	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Run fr Ru	Appliances Loads Juct and Pipe loss 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B te exposed Walls B Exposed Floors Gross Exp Wall B Exposed Floors Gross Exp Wall B Exposed Floors te exposed walls B Exposed Ceilings A xposed Ceilings B Exposed Floors uctive Heatloss Heat Loss/Gain Heat Loss/Gain Heat Loss/Gain Case 2	R-Values L 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 19.45 19.45 19.45 19.45 19.45 20.66 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 24.56 39.10 38.30 38.41 38.	32 A B 10.0 253 Area A B Fir 320 Loss 56 108 264 96	Gain 9 1661 0 158 9 1819 8 101	34 A B 10.0 256 Ai B FI 340 Ld	FAM  rea  10055 Gi  778  1091  1869  846	2: 11.1 130 25: ain 1186 179 22:	3 A B B 0 0 0 Area A B Fir 3 Loss 175 1 408 3 811 1394 631	Gain 106 67 133 306 17	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621 3158 1430	Gain  1898  48 267	33 A B B 10.0 372 Area A B Fir 330 Loss 1109 1595 722	Gain 565 182 748 41	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Purel HL Total rel HG Total rel	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area xposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A te exposed walls A te exposed ceilings B Exposed Floors Exp Wall A Gross Exp Wall B Components Skylight Doors et exposed walls B Exposed Floors et exposed walls B Exposed Floors et exposed walls B Exposed Floors tet exposed Heat Loss Heat Loss Heat Loss Heat Loss Heat Loss Case 1 Case 2 Case 3	R-Values L 4.00 4.00 4.00 2.03 4.00 21.40 8.50 59.22 27.65	oss Gain 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 20.61 38.33 39.11 19.45 32.63 38.31 19.45 32.61 38.41 2.61 0.65 2.81 1.44 2.61 0.22 0.4529 0.055 0.04 0.050 0.05	32 A B 10.0 253 Area A B Fir 320 Loss 56 108 264 96	Gain 9 1661 0 158 9 1819 8 101	34 A B 10.0 256 Ai B FI 340 Ld	FAM	2: 11.1 13.0 25: ain 1186 2: 179 22:	3 A B 0 0 0 Area A B Fir 3 Loss 175 1 408 3 811 1394	Gain 106 67 133 306 17	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621	Gain  1898  48 267	33 A B B 10.0 B 10.0 C A B Fir 3330 Loss Loss 110000 11000 11000 11000 11000 11000 110000 110000 110000 110000 110000 11000 110000 110000 110000 110000 110000 110000 110000 1100000	Gain 565 182 748 41	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Net	Appliances Loads Duct and Pipe loss 14,988 1,312  ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Cellings A xposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors at exposed walls B xposed Cellings A texposed Valls B xposed Cellings B Exposed Heat Loss the texposed walls B xposed Cellings B Exposed Floors uctive Heatloss Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People	R-Values L 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80	oss Gain  19.45  19.45  19.45  19.45  19.45  19.45  19.45  29.66  39.33  39.12  3.64	32 A B 10.0 253 Area A B Fir 320 Loss 56 108 204 96	Gain 9 1661 0 158 9 1819 101 2 157	34 A A B 10.0 256 A A B FI 340 L.(	FAM  rea  10055 Gi  778  1091  1869  846	2: 11.1.130 25: ain 1186 179 22: 1366 76	3 A B B 0 0 0 Area A B Fir 3 Loss 9 175 1 408 3 811 1394 631 70	Gain 106 67 133 306 17	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621 3158 1430	Gain  1898  48 267	33 A B B 10.0 B 10.0 B 10.0 C A B Fir 3330 Loss Loss 25 486 722 86	Gain 565 182 748 41 65	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Per le la	Appliances Loads 14,988 1,312  Level 2 ft. exposed wall A ft. exposed wall A ft. exposed wall A ft. exposed ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A te exposed walls A to exposed ceilings A xposed Ce	R-Values L 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  19.45  19.45  19.45  19.45  19.45  19.45  29.66  39.33  39.12  19.45  39.33  39.12  19.45  2.61  3.64  0.61  0.055  0.055  0.056  0.056  0.056  0.056  0.056  0.056  0.056	32 A B 10.0 253 Area A B Fir 320 Loss 56 108 264 96 204 92 10 1.5	Gain 9 1661 0 158 9 1819 8 101	34 A A B 10.0 256 A A B FI 340 L.(	FAM  rea  10055 Gi  778  1091  1869  846	2: 11.1 130 25: ain 1186 179 22:	3 A B B 0 0 0 Area A B Fir 3 Loss 9 175 1 408 3 811 1394 631 70	Gain 106 67 133 306 17	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621 3158 1430	Gain  1898  48 267	33 A B B 10.0 372 Area A B Fir 330 Loss 1109 1595 722	Gain 565 182 748 41	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	
Per le la	Appliances Loads Duct and Pipe loss 14,988 1,312  ft. exposed wall A ft. exposed wall B Celling height Floor area xposed Cellings A xposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors at exposed walls B xposed Cellings A texposed Valls B xposed Cellings B Exposed Heat Loss the texposed walls B xposed Cellings B Exposed Floors uctive Heatloss Heat Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People	R-Values L 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 11.37 19.45 19.45 19.45 19.45 19.45 22.60 19.45 22.61 23.34 0.60 2.31 1.31 0.62 2.81 1.44 2.61 0.23 0.4529 0.055 0.00 0.00 0.005	SE TOUR SE TOU	Gain 9 1661 0 158 9 1819 8 101 2 157	34 A A B 10.0 256 A A B FI 340 L.(	rea lr r778 1091 1869 846 93 2808	2: 11.1.130 25: ain 1186 179 22: 1366 76	3 A B B 0 0 0 Area A B Fir 3 Loss 9 175 1 408 3 811 1394 631 70	Gain 106 67 133 306 17	25 A B B 21.0 102 Area A B Fir 525 Loss 64 1245 446 1621 3158 1430	Gain  1898  48 267	33 A B B 10.0 B 10.0 B 10.0 C A B Fir 3330 Loss Loss 25 486 722 86	Gain 565 182 748 41 65	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	Gain	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir	

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



Total Heat Loss

**Total Heat Gain** 

43,688

26,489

tu/h

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

EM Air Systems July 28, 2023 Weather Data Richmond Hill 44 -5.8 88 20 Page 5 Project # P.I-00267 System 1 2012 OBC Heat Loss ^T 77.8 deg. F Project: King East Developments Model: Model 2670 Ht gain ^T 12.8 deg. F Layout # JB-09054 Level 3 MAST ENS WIC BED 2 BATH BED 3 BATH2 BED 4 Run ft. exposed wall A 32 A 19 A 7 A 11 A 8 A 32 A 12 A 14 A Run ft. exposed wall B В В В R В В R В В В Ceiling height 11.0 9.0 9.0 11.0 9.0 9.0 9.0 318 Area 73 Area 150 Area 109 Area 116 Area 172 Area Floor area 92 Area 242 Area Area Area Area **Exposed Ceilings A** 318 A 92 A 73 A 150 A 109 A 242 A 116 A 172 A Α Α Exposed Ceilings B В В В Exposed Floors Flr Flr Flr Flr 38 Flr 222 Flr Flr Flr Flr Flr Flr Gross Exp Wall A 352 99 72 352 108 126 Gross Exp Wall B Gain Components R-Values Loss Gain Loss Gain Loss Loss Loss Loss Gain Loss Loss Gain Loss Loss Loss Loss North Shaded 4.00 19.45 11.73 214 129 16 311 188 175 106 19.45 778 14 272 415 40 778 1186 East/West 4.00 29.66 1186 South 4.00 19.45 22.60 175 203 16 311 362 **Existing Windows** 1.99 39.10 24.56 Skylight 2.03 38.33 89.12 Doors 4.00 19.45 3.20 Net exposed walls A 21.40 3.64 0.60 312 1134 187 146 531 87 63 229 38 83 302 50 63 229 38 312 1134 187 99 360 59 110 400 Net exposed walls B 8.50 9.15 1.51 Exposed Ceilings A 59.22 1.31 0.67 318 418 214 92 121 62 73 150 197 101 109 143 73 242 318 163 116 152 172 226 116 Exposed Ceilings B 27.65 2.81 1.44 Exposed Floors 29.80 2.61 0.23 38 99 222 580 51 Foundation Conductive Heatloss Heat Loss 2330 1138 325 810 646 2810 687 937 **Total Conductive** Heat Gain 1587 338 225 1586 341 543 Air Leakage Heat Loss/Gain 0.3138 0.0554 731 88 357 38 102 254 19 203 12 882 216 294 Case 1 0.03 0.09 Ventilation Case 2 16.80 13.82 Case 3 0.05 0.09 116 137 57 60 40 32 140 137 34 **Heat Gain People** 239 478 239 239 239 Appliances Loads 4459 369 183 **Duct and Pipe loss** 10% 3177 1552 Level HL Total 13,575 Total HL for per room 882 4201 937 1278 Level HG Total Total HG per room x 1.3 2976 1029 129 812 334 2902 506 1117 Level 4 Run ft. exposed wall A Run ft. exposed wall B Ceiling height Area Area Area Floor area Area Area Area **Area** Area Area Area Area **Exposed Ceilings A** Exposed Ceilings B В В В В В В В В В Exposed Floors Flr Gross Exp Wall A Gross Exp Wall B Components R-Values Loss Gain Loss Gain Gain Gain Gain Loss Gain Loss Loss Loss Loss Loss Loss Loss North Shaded 4.00 19.45 11.73 East/West 4.00 19.45 29.66 South 4.00 19.45 22.60 **Existing Windows** 1.99 39.10 24.56 Skylight 2.03 38.33 89.12 Doors 4 00 19 45 3 20 Net exposed walls A 21.40 3.64 0.60 Net exposed walls B 8.50 9.15 1.51 **Exposed Ceilings A** 59.22 1.31 0.67 Exposed Ceilings B 27.65 2.81 1.44 Exposed Floors 29.80 2.61 0.23 Foundation Conductive Heatloss Heat Loss **Total Conductive** Heat Gain Air Leakage 0.0000 0.0554 Heat Loss/Gain Case 1 0.00 0.09 Ventilation 16.80 13.82 Case 3 0.05 0.09 Heat Gain People 239 **Appliances Loads** 4459 10% **Duct and Pipe loss** Level HL Total Total HL for per room Total HG per room x 1.3 Level HG Total

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:

Name Malest ?

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-09054

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 2670	)
	RESIDENTIAL MECHANICAL For systems serving one dwelling unit & co.			
		7.11		
Lot #	Location of Installation Plan #	Total ver	ntilation Capacity 9.32.3.	3(1)
LOI #	1 Kari 11	Bsmt & Master Bdrm	2 @ 21.2 cfr	m 42.4 cfm
Township	Richmond Hill	Other Bedrooms	3 @ 10.6 cfr	
Roll #	Permit #	Bathrooms & Kitchen Other rooms	5 @ 10.6 cfr 4 @ 10.6 cfr	
			Total	169.6
Address				<del></del>
		Principal V	/entilation Capacity 9.32.	2 4/1)
	Builder	Fillicipal v	entilation Gapacity 5.52.	.3.4(1)
Name		Master bedroom	1 @ 31.8 cfr	
^ ddrocc	EM Alr Systems	Other bedrooms	3 @ 15.9 cfr	
Address			Total	<u>79.5</u>
City				
			pal Exhaust Fan Capacit	
Tel	Fax	Make	Model	Location
		VanEE	V150E75NS	Base
	Installing Contractor		••••	2000
Name		127 cfm	80	.0 Sones or Equiv.
Address		Но	at Recovery Ventilator	
Auuress		Make	VanEE	
City		Model	V150E75NS	
Tel	Fax	12 Sensible efficiency @ -2	27 cfm high	80 cfm low 60%
l ei	Гал	Sensible efficiency @ 0		<u>60%</u> 75%
			nce HRV/ERV to within 10	
, , ,	Combustion Appliances 9.32.3.1(1)	Suppler	mental Ventilation Capac	city
a) x b)	Direct vent (sealed combustion) only Positive venting induced draft (except fireplaces)	Total ventilation capacit	h.	169.6
c)	Natural draft, B-vent or induced draft fireplaces	Less principal exhaust of	•	79.5
d)	Solid fuel (including fireplaces)	REQUIRED supplemen		90.1 cfm
e)	No combustion Appliances			
		Sun	plamantal Eans 0 22 2 5	
	Heating System	Location	plemental Fans 9.32.3.5. cfm Model	Sones
х	Forced air	Ens	50 XB50	0.3
	Non forced air	Bath	50 XB50	0.3
	Electric space heat (if over 10% of heat load)			
<u> </u>		1		
	House Type 9.32.3.1(2)	ı <b>İ</b>		
l x	Type a) or b) appliances only, no solid fuel	all fans HVI listed	Make Broan	or Equiv.
	Type I except with solid fuel (including fireplace)			
III	Any type c) appliance Type I or II either electric space heat		Designer Certification ventilation system has be	on decianed
Other	Type I, II or IV no forced air	in accordance with the 0		en designed
	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
			55	
	System Design Option	Name	David DaCosta	

Signature

HRAI#

Date

5190

July 28, 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-09054

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	,							
Application	No:		Model/Certification Nu	mber						
A.	Project Information									
Building nur	mber, street name			Unit number	Lot/Con					
		Model 2670								
Municipality	Richmond Hill	Postal code	Reg. Plan number / other description							
B.	Prescriptive Compliance [indicate the build	ding code compliance option	being employed in the	house design]						
	SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy performa	ance results using	an approved softwa	re (see guide)					
<b>V</b>	ENERGY STAR®* [SB-12 - 3.1.3.]	*Attach Builder Option F	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					
<b>V</b>	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					
۸ و	Malla - 245 5 m² - 2740 0 #2		☐ Log/Post&Beam	☐ ICF Above	Grade					
Area or	Walls = $345.5$ m <sup>2</sup> or $3718.9$ ft <sup>2</sup>		☐ Slab-on-ground	│ │ Walkout Ba	sement					
		W,S &G % = <u>10%</u>	☑ Air Conditioning	Combo Unit	t					
Area of W	$I, S \& G = 34.28 \text{ m}^2 \text{ or } 369.0 \text{ ft}^2$		☐ 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	d ratings of the energy efficie	ncv components prop	osed, or attach ENERG	Y STAR BOP forml					
	J - prominent promine tande and	3 3)	,	,						

Building Component		SI/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	

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



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

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 # JB-09054 Layout #

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

The ar	nnual energy consumption using Subsection 3.1.1. SB-12 Ref	erence Building Pa	ckage is	GJ (1J=1000MJ)
The	annual energy consumption of this house as designed is		GJ	
The	software used to simulate the annual energy use of the buildi	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	ired)	
	Targeted ACH, NLA or NLR. Depressurization test to meet		ACH50 or NLR or NLA	
	Reduction of overall thermal performance of the proposed bis compared against (3.1.2.1.(6)).	ouilding envelope is	not more than 25% of the env	elope 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	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	fication [Subsection	n 3.1.3. Other Acceptable Complia	ance Methods]
	The NRCan "ENERGY STAR for New Homes Standard Ver building performance meeting or exceeding the prescriptive			
	The NRCan, "2012 R-2000 Standard" technical requirement exceeding the prescriptive performance requirements of the	, II	0 0	ding performance meeting or
Perform	ance Energy Modeling Professional			
Energy E	valuator/Advisor/Rater/CEM Name and company:	Accreditation or Eva	luator/Advisor/Rater License #	
1	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	ein to substantiate that design me	eets building code]
Name		BCIN	Signature	
	David DaCosta	32964	Mane	166

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	<b>√</b>		
		Interconnected to the Furnace Fan	0.2 Required	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".



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

Page 8 Project # PJ-00267 Layout # JB-09054

Package: **Energy Star** System: System 1 Project: Richmond Hill Model: **Model 2670** 

Air Leakage Calculations

Building Air Leakage Heat Loss												
B LRairh Vb HL^T HLleak												
0.018 0.328 33120 77.8 15195												

Building Air Leakage Heat Gain											
B LRairh Vb HG^T HG Leak											
0.018 0.092 33120 12.8 706											

2

(LF)

0.6

0.4

1 (LF)

1.0

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)					
Level	Level	Building	Level Conductive	Air Leakage Heat Loss	
Factor	Factor (LF)	Air	Heat Loss (HLclevel)	Multiplier	
Level 1	0.5		7040	1.0792	
Level 2	0.3	15195	10065	0.4529	
Level 3	0.2	13193	9684	0.3138	
Level 4	0		0	0.0000	

		Air Lea	kage Heat Gain
HG LEAK	706		0.0554
BUILDING CONDUCTIVE HEAT GAIN 1		0.0554	
•	-		
Highest Ceiling Height	23.0	FT	7.01 M

Levels this Dwe	lling
3	

Levels

3

(LF)

0.5

0.3

(LF)

0.4

0.3 0.2 0.1

Vent

Case

Case

Ventilation	Calculations

	ventilation Heat Loss					
ent			Ventilatio	n Heat Loss		
D	Ventilation Heat Loss					
1	С	PVC	HL^T	(1-E) HRV	HLbvent	
	1.08	79.5	77.8	0.20	1336	
				•		

Ventilation Heat Gain					
C PVC HG^T HGbvent					
1.1	79.5	12.8	1099		

**Ventilation Heat Gain** 

Case 1

Case 2 **Ventilation Heat Gain (Direct Ducted Systems)** 

Case 3

Ventilation Heat Gain (Forced Air Systems)

Ventilation Heat Loss (Exhaust only Systems)
--

eat Loss (Exhaust only Systems)	Ventilation Heat Gain (Exhaust Only Systems)
, -,,	(======================================

Case 1 - Exhaust Only					
Level	Level LF HLbvent LVL Cond. HL Multipli				
Level 1	0.5		7040	0.09	
Level 2	0.3	1336	10065	0.04	
Level 3	0.2	1330	9684	0.03	
Level 4	0		0	0.00	

Case 2

Case 1

Case 1 - Exh	aust Only	Multiplier
HGbvent	1099	0.09
Building	12735	0.03
•		

Ventilation Heat Loss (Di	rect Ducted Systems)	

			Multiplier
С	HL^T	(1-E) HRV	16.80
1.08	77.8	0.20	10.00

		Multiplier
С	HG^T	13.82
1.08	12.8	13.02

Cd	se	3	

Ventilation Heat Loss (Forced Air Systems)
--

	HLbvent	Multiplier
Total Ventilation Load	1336	0.05

				_	C
					1
		Vent Heat Gain	Multiplier		3
vent	HG*1.3	1099	0.09		(
00		1099	0.09		C

Foundation Conductive Heatloss Level 2	Level 2	Watts	Btu/h
--	---------	-------	-------

#### Slab on Grade Foundation Conductive Heatloss Watts Btu/h

32964

HGb

1099

Btu/h

# **Envelope Air Leakage Calculator**

Supplemental tool for CAN/CSA-F280

Weather Station	Description
Province:	Ontario <b>v</b>
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shie	elding
Building Site:	Suburban, forest ▼
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	7.01
Building Conf	iguration
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m³):	937.96
Air Leakage/V	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:
	39.75
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Heating Air Leakage Rate (ACH/H):	0.328
Cooling Air Leakage Rate (ACH/H):	0.092

# **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):	17.02			
Floor Width (m):	6.15			
Exposed Perimeter (m):	46.33			
Wall Height (m):	2.74			
Depth Below Grade (m):	1.52	Insulation Configuration		
Window Area (m²):	1.86			
Door Area (m²):	1.95			
	Radi	ant Slab		
Heated Fraction of the Slab:	0			
Fluid Temperature (°C):	33			
Design Months				
Heating Month	1			
	Founda	ation Loads		
Heating Load (Watts): 1829				



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

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

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

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

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

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



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

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

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

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

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) SUPPLY AIR DUCT CONNECTION TO JOIST LINING LOW/HIGH WALL/KICK SUPPLY DIFFUSER FLEX DUCT RETURN AIR HRV EXHAUST GRILLE **al**→ 0 RETURN AIR RISER UP TO FLOOR ABOVE RIGID ROUND DUCT 1 THERMOSTAT SUPPLY AIR PIPE RISER RETURN AIR PIPE RISER 8 PRINCIPAL EXHAUST FAN SWITCH SUPPLY DIFFUSER RETURN AIR FROM BASEMENT VOLUME DAMPER RETURN ROUND DUCT 5-6"□ **□** 7-6" -<u>B - I4 X 8</u> 2-6" 15 **(**> 4R-6"⊗¬ 210 <u>- 18 X 8</u> BASEMENT 16⊘-2R II-6" 3-6" P.E. HRV VANEE # VI50E75NS I27 CFM @ .4 W.C FURNACE EQUIPPED WITH BRUSHLESS DC MOTOR AS <u>Z - 26 X 8</u> PER OBC 12.3.1.5 (2) & 20 ♦ OR 20 X 10 CSA P.9-II CERTIFIED DROP - 24 X I0 INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2 ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE -6" C - 12 X 8 AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY UNEXCAVATED FINISH ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II) 10 🖂 ENERGY STAR SEAL ALL JOINTS ON ANY DUCTWORK. COLD CELLAR 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.)SIMPLIFIED CONNECTION TO THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON FURNACE AIR SYSTEM
HRV DIAGRAM
OPTION 3 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 **OBC 2012** ONTARIO BUILDING CODE **BASEMENT FLOOR PLAN** ZONE I COMPLIANCE

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE SPECIFIED PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

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

CONTRACTOR MUST WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE

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

GTADESIGNS

2985 DREW ROAD SUITE 202

00.12 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 905-67I-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	BTU/HR.
43,688	
UNIT MAKE	OR EQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B060EI7	14
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	

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	3	3
IST FLOOR	7	I	2
BASEMENT	4	- 1	
FLOOR PLAN: BASEMENT			

DD

JB-09054

2665

МІ

JULY 28, 2023 CLIENT EM AIR SYSTEMS MODEL: MODEL 2670 PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT.

3/16" = 1'-0"

PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.

FLEX DUCT
RIGID ROUND DUCT
SUPPLY DIFFUSER

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

0

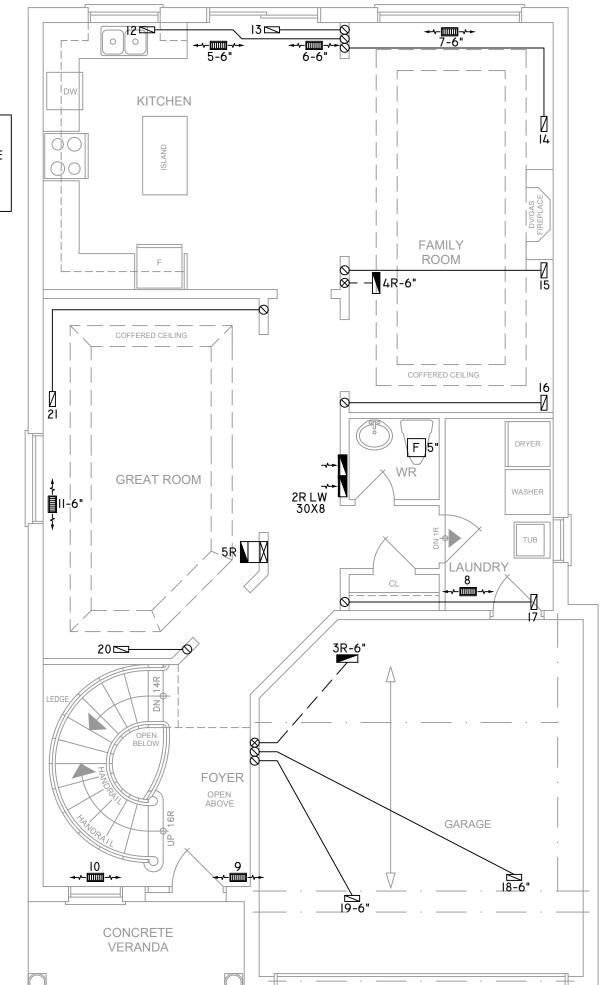
**□** 

DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT RETURN (SIZE III RETURN FLOOR

RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT SECOND FLOOR S.A. R.A. T

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

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



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.)

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

ONTANO BOLDING CODE

DAVID DA COSTA Mane 1866 B.C.I.N. 32964

FIRST FLOOR PLAN

OBC 2012

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

#### NOTES

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.

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

43.688	IL
UNIT MAKE OR EQUAL.	H
CARRIER	Iŀ
UNIT MODEL OR EQUAL.	H
59SC5B060EI7I4	lŀ
UNIT HEATING INPUT BTU/HR.	Iŀ
60,000	Ш
UNIT HEATING OUTPUT BTU/HR.	15
58,000	П
A/C COOLING CAPACITY TONS.	11
2.5	Ш
FAN SPEED CFM	lŀ
920	Ш

# OF RUNS	S/A	R/A	FANS	Ī	D
3RD FLOOR					С
2ND FLOOR	10	3	3		
IST FLOOR	7	I	2		М
BASEMENT	4	-			Ρ
FLOOR PLAN: GROUND	FI 0	0R			

DD

JB-09054

2665

M2

ı	CLIENT:
	EM AIR SYSTEMS
	MODEL 2670
] 1	KING EAST
ı	DEVELOPMENTS

JULY 28, 2023

KING EAST
DEVELOPMENTS
RICHMOND HILL,ONT.

3/16" = 1'-0"

FLEX DUCT
RIGID ROUND DUCT
SUPPLY DIFFUSER

LOW/HIGH WALL/KICK SUPPLY DIFFUSER

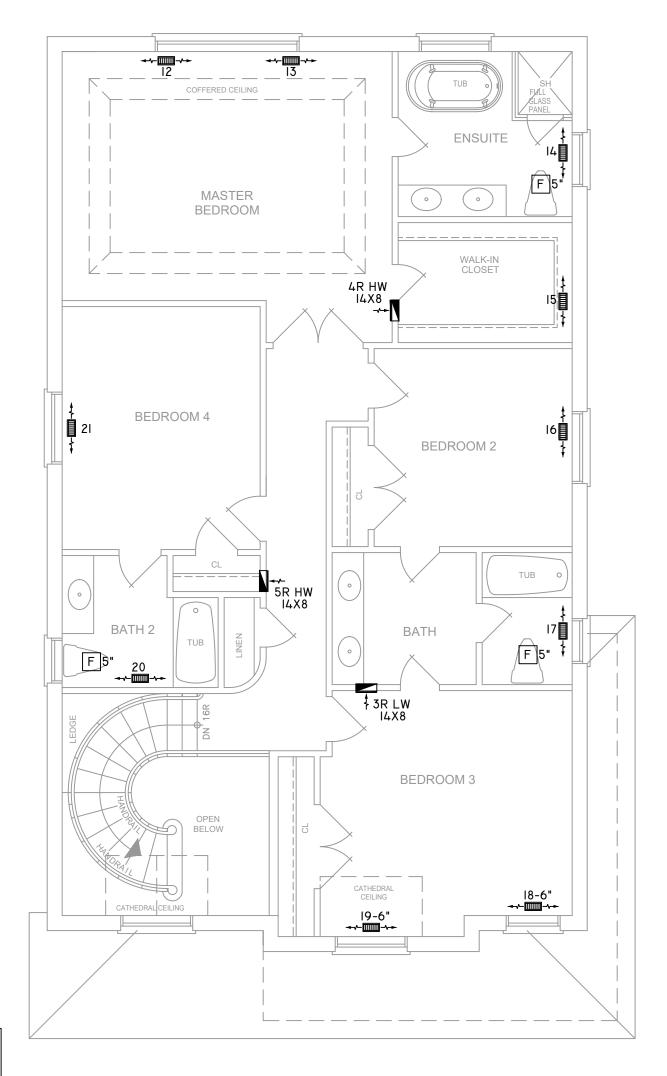
HRV EXHAUST GRILLE
SUPPLY AIR PIPE RISER
VOLUME DAMPER



DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT RETURN AIR GRILLE
(SIZE INDICATED ON DRAWING)
RETURN AIR RISER UP TO
FLOOR ABOVE
RETURN AIR FROM BASEMENT
SECOND FLOOR

S.A. R.A. T

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



INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

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

# ENERGY STAR

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

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

The undersigned has reviewed and takes responsibility for this design on behalf of GTA Designs Inc. and has the qualifications and meets the requirements set out in the Building Code to be a designer

#### QUALIFICATION INFORMATION

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

DAVID DA COSTA Mane 1866 B.C.I.N. 32964

# SECOND FLOOR PLAN 'A'

HEAT-LOSS

OBC 2012

JULY 28, 2023

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

CLIENT

#### NOTES

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

UNIT MAKE	OR EQUAL.
CARRIER	
0, 11111211	
UNIT MODEL	OR EQUAL.
59SC5B060EI7	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	

43,688

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	3	3
IST FLOOR	7	I	2
BASEMENT	4	I	
FLOOR PLAN: SECOND FLOOR			

DD

JB-09054

2665

M3

EM AIR SYSTEMS

MODEL: MODEL 2670

PROJECT:
KING EAST
DEVELOPMENTS
RICHMOND HILL,ONT.

3/16" = 1'-0"

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

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

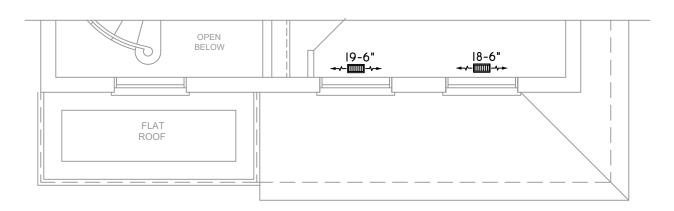


DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

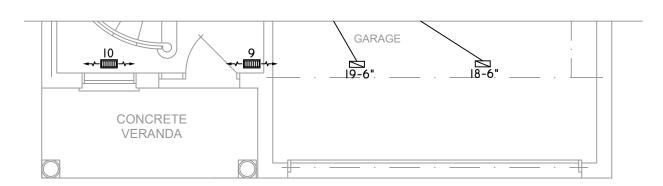
RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) 4 RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT SECOND FLOOR  $\mathbf{x}$ 

S.A R.A 1

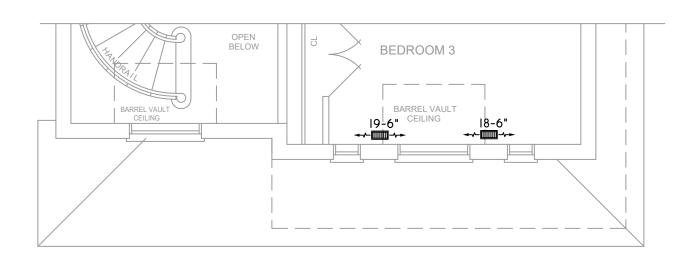
SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN



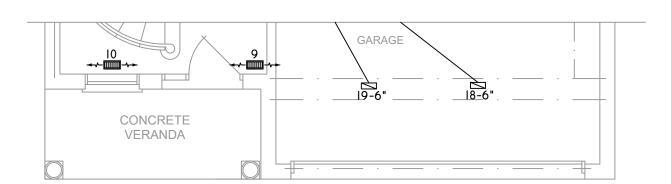
## SECOND FLOOR PLAN 'C'



# FIRST FLOOR PLAN 'C'



# SECOND FLOOR PLAN 'B'



### FIRST 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

B.C.I.N. 32964

**OBC 2012** 

JULY 28, 2023

**EM AIR SYSTEMS** 

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

## NOTES

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

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2985 DREW ROAD L4T

SUITE 202,
MISSISSAUGA, ONT.
_4T 0A4 TEL: 905-67I-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	BTU/HR.
43,688	
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	
· ·	

DATE:	FANS	R/A	S/A	# OF RUNS
CLIENT				3RD FLOOR
E	3	3	10	2ND FLOOR
MODEL:	2	I	7	IST FLOOR
PROJEC		- 1	4	BASEMENT
		۱(S)	PLAN	FLOOR PLAN: PARTIAL

JL

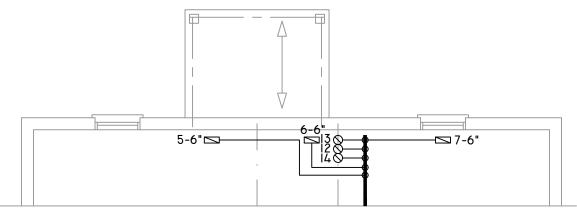
JB-09054

DD

/ 1 2	MODEL 2670
4 1	PROJECT: KING EAST
PLAN(S)	DEVELOPMENTS
2665	RICHMOND HILL,ONT.
PRAWING NO. M4	SCALE: 3/16" = 1'-0"

Μ4

DUCT CONNECTION TO JOIST LINING RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) SUPPLY AIR FLEX DUCT LOW/HIGH WALL/KICK SUPPLY DIFFUSER 4 RETURN AIR R.A HRV EXHAUST GRILLE ₫~ RETURN AIR RISER UP TO FLOOR ABOVE RIGID ROUND DUCT 1 THERMOSTAT 0 SUPPLY AIR PIPE RISER 8 RETURN AIR PIPE RISER SUPPLY DIFFUSER RETURN AIR FROM BASEMENT SECOND FLOOR PRINCIPAL EXHAUST FAN SWITCH RETURN ROUND DUCT VOLUME DAMPER  $\boxtimes$ W/R & PRINCIPAL EXHAUST FAN WOOD DECK 12 13 🖂 <del>~</del>~-**□□□**-√-7-6" <del>---</del>8 0 0 **⊷**===-→ 5-6" 6-6" COFFERED CEILING **KITCHEN** FIRST FLOOR PLAN WITH DECK OPTIONAL



BASEMENT FLOOR PLAN WITH DECK OPTIONAL

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

DAVID DA COSTA

SIGNATURE OF DESIGNER

B.C.I.N. 32964

# OBC 2012

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

#### NOTES

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.

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ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)
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HEAT-LUSS	BIU/HK.
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CARRIER	
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FAN SPEED	CFM
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# OF RUNS	S/A	R/A	FANS	
3RD FLOOR				
2ND FLOOR	10	3	3	
IST FLOOR	7	١	2	
BASEMENT	4	-		
FLOOR PLAN: PARTIAL PLAN(S)				

2665

M5

CHECKED

DD

JB-09054

JULY 28, 2023
CLIENT: EM AIR SYSTEMS
MODEL 2670
PROJECT:

KING EAST
DEVELOPMENTS
RICHMOND HILL,ONT.

SCALE: 3/16" = 1'-0"