

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	2030		Lot/con.	
Municipality Richmond Hill	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design	n activities			
Name David DaCosta		Firm	gtaDesigns Inc.	
Street address 2985 Drew Road	d, Suite 202		Unit no.	Lot/con.
Municipality	Postal code	Province	E-mail	iano oo
Mississauga Telephone number	L4T 0A4 Fax number	Ontario	hvac@gtades Cell number	<u>signs.ca</u>
(905) 671-9800	ax number		Cell Humber	
C. Design activities undertaken by individual identified in Se	ction B. [Buil	ding Code Table 3.	5.2.1 of Division C]	
☐ House ☑ HVAC – Ho	ouse		■ Building Structural	
□ Small Buildings □ Building Set	rvices		☐ Plumbing – House	
	ighting and Pow	er	☐ Plumbing – All Building	
☐ Complex Buildings ☐ Fire Protect			☐ On-site Sewage System	
Description of designer's work Mod	lel Certification		Project #:	
Heating and Cooling Load Calculations Main	X	Builder	Layout #:	JB-09142
Heating and Cooling Load Calculations Main Air System Design Alternate	^	Project	EM Alr Systems King East Developm	
Residential mechanical ventilation Design Summary O.D. GFA	1839	Model	g _uet z etelepiii	
Residential System Design per CAN/CSA-F280-12		iviodei	Model 2030	
Residential New Construction - Forced Air		SB-12	Energy Star	
D. Declaration of Designer				
l David DaCosta	declare that (c	hoose one as appro	priate):	
(print name)				
☐ I review and take responsibility for the				
Division C of the Building Code. I an classes/categories.	n qualified, and t	ne firm is registered, in	the appropriate	
Individual BCIN:				
Firm PCINI			•	
Firm BCIN:				
	-		opriate category as an "other	
Individual BCIN:	3296	<u> </u>		
Basis for exempti	on from registrat	tion: [Division C 3.2.4.1. (4)	•
☐ The design work is exempt from the	registration and	qualification requireme	ents of the Building Code.	
Basis for exempti	on from registrat	ion and qualification:		
I certify that:				
The information contained in this schedule is true to the best of my	y 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:

Page 1

- 1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4. and 3.2.5.of Division C.
- Schedule 1 does not require to be completed a holder of a license, temporay license, or a certificate of authorization, issed by the
 Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to
 practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.



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

Page 2

Heat loss and gain calcula	ation summary sheet CSA-F280-M12 Standard
These documents issued for the use of	EM 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-09142
Building L	ocation
Address (Model): Model 2030	Site: King East Developments
Model:	Lot:
City and Province: Richmond Hill	Postal code:
Calculations	s based on
Dimensional information based on:	rchitectural 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: 1839
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	Sain Caculations based on CSA-F280-12 Effective R-Values
Notes: Residential New C	Construction - 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:
Addition Load, Julie 202	I d.A.



EM Air Systems

Builder:

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

Date:

September 15, 2023

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the

Page 3 PJ-00267 Project #

Project: King East D	Developm	ents		Model:			Model 2	2030				Sys	tem 1			uilding Co dividual B		32964	Man	. 1h	£		David DaCo	osta		oject # yout #	JB-	09142
DESIGN LOAD SPECIFICATION	S		I	AIR DISTR	RIBUTION	& PRESSU	JRE				F	URNACE/AI	R HANDLE	ER DATA:			E	BOILER/W	ATER HEAT	TER DAT	A:			1	A/C UNIT D	ATA:		
Level 1 Net Load	13.082 b	/b	-			Static Pre			0.5 "\		_	ake		Carrier				Make			т.			-	Carrier		2.0 T	
Level 1 Net Load	8.911 b					nt Pressur			0.225 "\			ake odel	FOC	Carrier C5B040E				viake Vlodel			1)	pe			Carrier Model:		2.0 1	on
Level 3 Net Load	7,247 b			Auditional Available I			е вгор		0.225 \			odei igh Input	393	40000	1410			vioaei nput Btu/i	_						woder: Cond		2.0	
Level 4 Net Load	,	itu/n itu/h			-		ive Length		300 ft			igh Output		39000				Dutput Btu/i							Coil		2.0	
Total Heat Loss	29,240 b			R/A Plenui		•	ive Length	1	0.138 "\			ign Output .s.p.		0.50		w.c.		Jutput Bit Min.Outpu			Α1	ΝH		,	,011		2.0	
												•		0.50			Ë	wiii.Outpu	t Btu/II		A		war DATA					
Total Heat Gain	18,573 b	itu/n		S/A Plenur					0.14 "\			ater Temp		000/	ae	eg. F.					Yellov		wer DATA:				014	
Duilding Valuma Vh	21613 f	.3		•		oportionin	•		0.0275 cf			FUE		98%				slower Sp	eed Selecte	a:		•			Blower Typ		CM	= (a))
Building Volume Vb Ventilation Load	1,069 E		,	Cooling Al	ir Flow Pr	oportionin	g Facter R/A Temp		0.0433 ct 70 d			ux. Heat B-12 Packag	no 1	Energy St	ior		,	Check	805 cfr		ool. Check		805 cf	im	(Brusnie	ess DC OE	SC 12.3.1.5	0.(2))
Ventilation PVC	63.6 c						S/A Temp		115 d			D-12 I ackaş	ac i	Lileigy of	iai		•	JIICCK _	003 CII		ooi. Cilecr	` -	003 C					
Supply Branch and Grill Sizing	63.6 0	ım		Diffuser lo	vee.	0.01 "			115 0	eg. r.	т.	emp. Rise>>		45 deg	. =			leat.	805 cfr	"	ooling		805 cf	im [Design Airf	low	805 cf	fm
Supply Branch and Grill Sizing				Jiiiusei io	-	0.01	w.c.					ellip. Kise>	" =	<u> 45</u> deg	j. r.			1eat. =	803 CII		ooming	=	803 CI		Jesigii Airii	iow =	803 CI	
O/A Contlet No	1	2	3	4		6	Level	1							8	9	40		40		Level	2						
S/A Outlet No.	-		-	•	5	-	-								-	-	10	11	12									
Room Use Btu/Outlet	REC 1627	REC 1627	OFF 1877	LAUN 1391	WR 2 174	F.BASE 3080	STOR 3305								GRT 1562	GRT K 1562	1817 1817	KIT/FAM 1817	FOY 2153									
Heating Airflow Rate CFM	1627	1627	1877 52	1391	1/4	3080 85	3305 91								43	1562	1817	1817	2153 59									
Cooling Airflow Rate CFM	45 24	45 24	52 18	38 2	0	00	91 6								43 80	43 80	50 88	50 88	59 54									
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	80 0.13	0.13	88 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	47	36	37	6	17	18	33	0.13	0.13	0.13	0.13	0.13	0.13	0.13	31	25	34	33	38	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Equivalent Length	90	70	110	100	110	110	90	70	70	70	70	70	70	70	100	80	90	33 80	36 120	70	70	70	70	70	70	70	70	70
Total Effective Length	137	106	147	106	127	128	123	70	70	70	70	70	70	70	131	105	124	113	158	70	70	70	70	70	70 70	70	70	70 70
Adjusted Pressure	0.09	0.12	0.09	0.12	0.10	0.10	0.11	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.10	0.12	0.10	0.12	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	5	4	5	4	2	6	6	0.13	0.13	0.13	0.13	0.13	0.13	0.13	6	6	6	6	5	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Outlet Size	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	C	C	D	C	A	В	В								D	D	A	A	В			12.10						
						_	Level	3							_	_					Level	4						
<u> </u>																												
S/A Outlet No.	13	14	15	16	17	18								•														
S/A Outlet No. Room Use	13 MAST	14 MAST	15 ENS	16 BED 3	17 BED 2	18 BATH								•														
Room Use	MAST	MAST	ENS	BED 3	BED 2	BATH								•														
Room Use Btu/Outlet	MAST 1106	MAST 1106	ENS 1575	BED 3 1543	BED 2 1767	BATH 150																						
Room Use Btu/Outlet Heating Airflow Rate CFM	MAST 1106 30	MAST 1106 30	ENS 1575 43	BED 3 1543 42	BED 2 1767 49	BATH 150 4	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
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM	MAST 1106 30 55	MAST 1106 30 55	ENS 1575 43 64	BED 3 1543 42 73	BED 2 1767 49 81	BATH 150 4 3	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
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure	MAST 1106 30 55 0.13	MAST 1106 30 55 0.13	ENS 1575 43 64 0.13	BED 3 1543 42 73 0.13	BED 2 1767 49 81 0.13	BATH 150 4 3 0.13	0.13	0.13 70	0.13	0.13 70	0.13	0.13	0 .13	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70	0.13 70
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length	MAST 1106 30 55 0.13 46	MAST 1106 30 55 0.13	ENS 1575 43 64 0.13 43	BED 3 1543 42 73 0.13 51	BED 2 1767 49 81 0.13 43	BATH 150 4 3 0.13 28																						
Room Use Btu/Outlet Heating Airflow Rate CFM Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length	MAST 1106 30 55 0.13 46 120	MAST 1106 30 55 0.13 52 130	ENS 1575 43 64 0.13 43 120	BED 3 1543 42 73 0.13 51 120	BED 2 1767 49 81 0.13 43 110	BATH 150 4 3 0.13 28 150	70	70	70	70	70	70	70	70	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	MAST 1106 30 55 0.13 46 120 166	MAST 1106 30 55 0.13 52 130 182	ENS 1575 43 64 0.13 43 120 163	BED 3 1543 42 73 0.13 51 120 171	BED 2 1767 49 81 0.13 43 110 153	BATH 150 4 3 0.13 28 150 178	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	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 Outlet Size	MAST 1106 30 55 0.13 46 120 166 0.08	MAST 1106 30 55 0.13 52 130 182 0.07	ENS 1575 43 64 0.13 43 120 163 0.08	BED 3 1543 42 73 0.13 51 120 171 0.08	BED 2 1767 49 81 0.13 43 110 153 0.08	BATH 150 4 3 0.13 28 150 178 0.07	70 70	70 70	70 70	70 70	70 70	70 70	70 70 0.19	70 70 0.19	70 70	70 70	70 70	70 70	70 70	70 70	70 70	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 1106 30 55 0.13 46 120 166 0.08 5	MAST 1106 30 55 0.13 52 130 182 0.07	ENS 1575 43 64 0.13 43 120 163 0.08 5	BED 3 1543 42 73 0.13 51 120 171 0.08 6	BED 2 1767 49 81 0.13 43 110 153 0.08 6	BATH 150 4 3 0.13 28 150 178 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	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	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 1106 30 55 0.13 46 120 166 0.08 5	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C	BED 2 1767 49 81 0.13 43 110 153 0.08 6	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A	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	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	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	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 Return Branch And Grill Sizing	MAST 1106 30 55 0.13 46 120 166 0.08 5 3x10 A	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10	BATH 150 4 3 0.13 28 150 178 0.07 2 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	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	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 1106 30 55 0.13 46 120 166 0.08 5	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C	BED 2 1767 49 81 0.13 43 110 153 0.08 6	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A	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	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	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
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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 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 Ret	70 70 0.19 4x10 curn Trunk	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 supply Trur	70 70 0.19 4x10 hk 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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B Grill Press 3R 105 0.12	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10	BATH 150 4 3 0.13 28 150 178 0.07 2 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 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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	70 70 0.19 4x10 upply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 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	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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C sure Loss 4R 140 0.12	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 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 Ret Tru	70 70 0.19 4x10 curn Trunk	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 <u>S</u>	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk 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 Actual Duct Length Equivalent Length	MAST 1106 30 55 0.13 46 120 166 0.08 5 3x10 A	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14	ENS 1575 43 64 0.13 43 120 163 0.08 5 3x10 B Grill Press 3R 105 0.12 36	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C sure Loss 4R 140 0.12 44	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12	70 70 0.19 4x10 7R 0.12	70 70 0.19 4x10 8R 0.12	70 70 0.19 4x10 9R 0.12	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Ret Tru Dro Z	70 70 0.19 4x10 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 <u>S</u> T	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 iize 10x10 10x7	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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Grill Press 3R 105 0.12 36 185	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C curre Loss 4R 140 0.12 44 180	BED 2 1767 49 81 0.13 43 1100 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 "	70 70 0.19 4x10 7R 0.12	70 70 0.19 4x10 8R 0.12	70 70 0.19 4x10 9R 0.12	70 70 0.19 4x10	70 70 0.19 4x10 11R 0.12	70 70 0.19 4x10 Ret Tru Dro Z Y	70 70 0.19 4x10 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 <u>S</u> T	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. \$	70 70 0.19 4x10 size 10x10 10x7 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 Equivalent Length Total Effective Length	MAST 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125 139	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Grill Press 3R 105 0.12 36 185 221	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C c sure Loss 4R 140 0.12 44 180 224	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 50	70 70 0.19 4x10 7R 0.12 50	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 Ret Tru Dro Z Y	70 70 0.19 4x10 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 <u>S</u> T	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193 0.06	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125 139 0.08	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Grill Press 3R 105 0.12 36 185 221 0.05	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C c sure Loss 4R 140 0.12 44 180 224 0.05	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 50	70 70 0.19 4x10 7R 0.12 50	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 Rete Tru Dro Z Y X W	70 70 0.19 4x10 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 <u>S</u> T	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193 0.06 8.5	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 145 125 139 0.08 10.5	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Srill Press 3R 105 0.12 36 185 221 0.05 6.0	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C cure Loss 4R 140 0.12 44 180 224 0.05 8.0	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 50	70 70 0.19 4x10 7R 0.12 50	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50	70 70 0.19 4x10 11R 0.12 50	70 70 0.19 4x10 Ret Tru Dro Z Y X W V	70 70 0.19 4x10 curn Trunk	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 <u>S</u> T A B C D E F	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 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	MAST 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193 0.06 8.5	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125 139 0.08 10.5 8	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Srill Press 3R 105 0.12 36 185 221 0.05 6.0	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C cure Loss 4R 140 0.12 44 180 224 0.05 8.0 8	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 0.24	70 70 0.19 4x10 7R 0.12 50 0.24	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50 50 0.24	70 70 0.19 4x10 11R 0.12 50 50 0.24	70 70 0.19 4x10 Rete Tru Dro Z Y X W V U	70 70 0.19 4x10 	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 S T A B C C D E F	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193 0.06 8.5 8 x	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125 139 0.08 10.5 8 x	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Srill Press 3R 105 0.12 36 185 221 0.05 6.0	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C sure Loss 4R 140 0.12 44 180 224 0.05 8.0 8 x	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 0.24	70 70 0.19 4x10 7R 0.12 50 0.24	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50 50 0.24	70 70 0.19 4x10 11R 0.12 50 50 0.24	70 70 0.19 4x10 Ret Tru Dro Z Y X W V U T	70 70 0.19 4x10 	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 S T A B C C D E F	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 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 1106 30 55 0.13 46 120 166 0.08 5 3x10 A 1R 180 0.12 23 170 193 0.06 8.5 8 x	MAST 1106 30 55 0.13 52 130 182 0.07 5 3x10 A 2R 380 0.12 14 125 139 0.08 10.5 8 x	ENS 1575 43 64 0.13 120 163 0.08 5 3x10 B Srill Press 3R 105 0.12 36 185 221 0.05 6.0	BED 3 1543 42 73 0.13 51 120 171 0.08 6 4x10 C sure Loss 4R 140 0.12 44 180 224 0.05 8.0 8 x	BED 2 1767 49 81 0.13 43 110 153 0.08 6 4x10 D	BATH 150 4 3 0.13 28 150 178 0.07 2 3x10 A 0.02 6R 0.12 50 0.24	70 70 0.19 4x10 7R 0.12 50 0.24	70 70 0.19 4x10 8R 0.12 50	70 70 0.19 4x10 9R 0.12 50	70 70 0.19 4x10 10R 0.12 50 50 0.24	70 70 0.19 4x10 11R 0.12 50 50 0.24	70 70 0.19 4x10 Ret Tru Dro Z Y X W V U T S	70 70 0.19 4x10 	70 70 0.19 4x10	70 70 0.19 4x10 mg Pr	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 S T A B C C D E F	70 70 0.19 4x10 supply Trur runk C.	70 70 0.19 4x10 hk Duct S CFM H	70 70 0.19 4x10 Sizing 1.CFM Pi 448 278 356	70 70 0.19 4x10 ress. F	70 70 0.19 4x10 Round 11.0 9.0 10.5	70 70 0.19 4x10 Rect. S 14x8 8x8 12x8	70 70 0.19 4x10 size 10x10 10x7 10x10	70 70 0.19



Total Heat Loss

Total Heat Gain

29,240 btu/h

18,573 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

Name 166te

David DaCosta

Energy Star

		Builder:	EM Air Sy	stems		-				•	5, 2023						Weather Dat	a	Richmond Hil	I 44	-5.8	88 20	50				PJ-0
012 OBC		Project:	King East Dev	elopmer	nts	N	lodel: _			Model 20	030			Syste	n 1		Heat Loss	`T 77.8 d	leg. F	Ht gain ^T	12.8	deg. F				roject # ayout #	JB-0
	Level 1				REC			OFF		LAUI	N	WR 2		F.BAS	Ε		STOR										
Run f	ft. exposed wall A			14			9 /			8 A		1 A		13 A		19 A		4	A	Α		Α		Α		Α	
	ft. exposed wall B				В		E	В		В		В		В		В		В		В		В		В		В	
	Ceiling height			7.5	AG		7.5	AG		7.5 AG		7.5 AG		7.5 AG		7.5 A	G	7.5 A	AG	7.5 AG		7.5 AG		7.5 AG		7.5 A	G
	Floor area			219			113 /			68 Area		43 Area		74 Area		84 A			Area	Area		Area	1	Area	1		rea
	xposed Ceilings A				Α			A		Α		Α		Α		Α		Α.		Α		Α		Α		Α	
Ex	xposed Ceilings B				В			В		В		В		В		В		В		В		В		В		В	
	Exposed Floors				Fir			Flr		Flr		Flr		Flr		FI	Ir	F	-Ir	Flr		Flr		Flr		FI	r
	Gross Exp Wall A			105			68			60		8		98		143											
	Gross Exp Wall B Components	B Values I	.oss Gain	-	Loss	Gain		Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain		oss Gain		oss Gain	Loss	Gain	Loss	s Gain	Los	s Gain		oss G
	North Shaded	4.00	19.45 11.7		LUSS	Gaiii	ו וֹ	LUSS	Gaiii	LUSS	Gain	LUSS	Gaiii	LUSS	Gaiii		USS Gaill	T [Joss Gaill	LUSS	Gain	LUSS	Gaiii	1	S Gaiii	7 – –	J35 G
	East/West	4.00	19.45 29.6				8	156	237																		
	South	4.00	19.45 22.6				-																				
WOB Windows	vs Including Doors	3.55	21.92 27.8																								
	Skylight	2.03	38.33 89.1	2																							
	Doors	4.00	19.45 3.2	21	408	67								21 408													
	et exposed walls A	20.84	3.73 0.6			52	60		37	60	37	8	5	77	47	143	1	B8									
	et exposed walls B	21.40	3.64 0.6																								
	xposed Ceilings A	59.22	1.31 0.6																								
Ex	xposed Ceilings B	27.65	2.81 1.4																								
	Exposed Floors	29.80	2.61 0.2	5	4044			781				07		4400			1648										
	luctive Heatloss Heat Loss			-	1214 1623			936		694 694		87 87		1128 1536			1648										
Conductive	Heat Gain				1023	119		930	274	03.	37	0,	5	1330	114			88									
Leakage	Heat Loss/Gain		0.9362 0.065	,	1519	8		876	18	650		81	0	1438			1543	6									
	Case 1		0.08 0.1		.0.0	Ŭ		0.0			_	0.					.0.10										
entilation	Case 2		16.80 13.8																								
	Case 3	х	0.07 0.1		112	12		65	28	48	8 4	6	0	106	12		114	9									
	Heat Gain People		23)																							
1	ricat Gairri copic																										
	Appliances Loads	1 =.25 pe	ercent 291	1.0		729																					
A D	Appliances Loads Duct and Pipe loss		109	5																							
D D Vel HL Total Vel HG Total	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2	Tot			3254 GRT	1128		1877 KIT/FAN	416 W	139 ²	56		7	3086	173			33		Δ							
D vel HL Total vel HG Total Run f	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 ft. exposed wall A ft. exposed wall B	Tot	109 tal HL for per roor	20	GRT	1128	11 <i>J</i>	KIT/FAN	vi	FOY 9 A B	56	A B		A B		A B	1:	A		A B 10.0		A B 10.0		A B 10.0		A B 10.0	
D vel HL Total vel HG Total Run f	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 ft. exposed wall A ft. exposed wall B Ceiling height	Tot	109 tal HL for per roor	20	GRT A B	1128	11 /	KIT/FAN A B	vi	FOY 9 A	56	A		A		A B 10.0	1:	A E 10.0								10.0	rea
puel HL Total rel HG Total Run f	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area	Tot	109 tal HL for per roor	20 .	GRT A B	1128	11 A E 10.0 455 A	KIT/FAN A B	vi	FOY 9 A B 15.0	56	A B 10.0		A B 10.0		A B 10.0	1:	A E 10.0	3 Area	B 10.0		B 10.0		B 10.0	1	10.0	rea
D D VIEL TOTAL RUN FIRM RUN FIRM RUN FIRM REX	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 Ift. exposed wall A ft. exposed wall B Ceiling height Floor area Exposed Ceilings B	Tot	109 tal HL for per roor	20 /	GRT A B Area A	1128	11 A E 10.0 455 A	KIT/FAM A B Area A	vi	FOY 9 A B 15.0 89 Area A B	56	A B 10.0 Area A B		A B 10.0 Area A B		10.0 AI A	1:	10.0 A A E	3 Area A 3	B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		10.0 A A B	rea
Purel HL Total el HG Total Run f	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 ft. exposed wall A ft. exposed wall B Ceiling height Floor area exposed Ceilings B Exposed Floors	Tot	109 tal HL for per roor	20 .	GRT A B Area A	1128	11 / E 10.0 455 / E 237 F	KIT/FAM A B Area A	м	FOY 9 A B 15.0 89 Area A B Fir	56	A B 10.0 Area A		A B 10.0 Area A		10.0 Ai	1:	10.0 A A E	3 Area A	B 10.0 Area A		B 10.0 Area A		B 10.0 Area A		10.0 A	rea
D D D D D D D D D D D D D D D D D D D	Appliances Loads Duct and Pipe loss 13,082 1,913 1,913 Level 2 Ift. exposed wall A ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A	Tot	109 tal HL for per roor	20 /	GRT A B Area A	1128	11 A E 10.0 455 A	KIT/FAM A B Area A	м	FOY 9 A B 15.0 89 Area A B	56	A B 10.0 Area A B		A B 10.0 Area A B		10.0 AI A	1:	10.0 A A E	3 Area A 3	B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	1	10.0 A A B	rea
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Net HALTO CONCLUSION OF THE PROPERTY OF THE PR	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 If. exposed wall A ft. 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 at exposed walls A texposed Ceilings A Exposed Ceilings A Exposed Floors South Existing Windows Skylight Doors et exposed walls A at exposed ceilings A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A	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	.0ss Gain 19.45 11.7 19.45 29.6 19.45 22.6 39.10 24.5 39.10 24.5 38.33 89.1 19.45 1.5 1.31 0.6 2.81 1.4 2.61 0.2 3.04 0.6 0.07 0.1 16.80 13.8 0.07 0.1 23 ercent 231	200 10.0 302 200 200 140 140 140 140	GRT A B B Area A B B Fir Loss 895 272 509 1676 1333	Gain 1364 45 84 1493 97	11 / E 10.0 / 455 / E 237 F 110 L	KIT/FAM A B B Area A B B Fir Loss 934 225 619 1778 1413	Gain 1424 37 54 1515 99 156 1094	FOY 9 A B 15.0 89 Area A B Fir 135 Loss 18 354 467 918	Gain 7 712 0 58 56 5 825 8 54	A B 10.0 Area A B Fir		A B 10.0 Area A B Fir	173	A B 10.0 A A B	1:	10.0 A A E F	3 Area A 3 Fir	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 A A B FI	rea r
Net HL Total Run f	Appliances Loads Duct and Pipe loss 13,082 1,913 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 B Exposed Floors Exp Wall B Components South Existing Windows Skylight Doors et exposed walls B Exposed Floors et exposed walls B Exposed Floors et exposed walls B Exposed Floors uctive Heatdoss Heat Gain Heat Loss/Gain Heat Gain People Appliances Loads Duct and Pipe loss	R-Values L 4.00 4.00 4.00 1.99 2.03 4.00 2.140 8.50 59.22 27.65 29.80	0.085 Gain 19.45 11.7 19.45 22.6 19.45 22.6 39.10 24.5 38.33 89.1 19.45 22.6 38.34 0.2 38.34 0.2 38.35 0.2 38.36 0.2 38.36 0.2 38.37 0.2 38.37 0.2 38.38 0.2 38.38 0.3 38.39 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0	20 10.0 302 200 200 140 140 140 150 150 150 150 150 150 150 150 150 15	GRT A B B Area A A B B B Flir LLoss 895 1676 1333	Gain 1364 45 84 1493 97 153 1094	11 / E 10.0 455 / E 237 F 110 1 48	KIT/FAN A B B Area A B B B Fir 934 225 619 1778 1413	Gain 1424 37 54 1515 99 156 1094	FOY 9 A B 15.0 89 Area A B Fir 135 Loss 467 467 918 818 818	Gain 7 712 0 58 8 56 5 825 8 54 0 85	A B 10.0 Area A B Fir		A B 10.0 Area A B Fir	173	A B 10.0 A A B	1:	10.0 A A E F	3 Area A 3 Fir	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 A A B FI	rea r
Net HALTO CONCLUSION OF THE PROPERTY OF THE PR	Appliances Loads Duct and Pipe loss 13,082 1,913 Level 2 If. exposed wall A ft. 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 at exposed walls A texposed Ceilings A Exposed Ceilings A Exposed Floors South Existing Windows Skylight Doors et exposed walls A at exposed ceilings A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A Exposed Floors Locate A Exposed Ceilings A Exposed Floors Locate A	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	.0ss Gain 19.45 11.7 19.45 29.6 19.45 22.6 39.10 24.5 39.10 24.5 38.33 89.1 19.45 1.5 1.31 0.6 2.81 1.4 2.61 0.2 3.04 0.6 0.07 0.1 16.80 13.8 0.07 0.1 23 ercent 231	200 10.0 302 200 200 140 140 140 140 140 140 140 140 140 1	GRT A B B Area A B B Fir Loss 895 272 509 1676 1333	Gain 1364 45 84 1493 97 153 1094	11 / E 10.0 455 / / 227 F 110 1 48 62 237	KIT/FAM A B B Area A B B Fir Loss 934 225 619 1778 1413	Gain 1424 37 54 1515 99 156 1094	FOY 9 A B 15.0 89 Area A B Fir 135 Loss 18 354 467 918	Gain 7 712 0 58 8 56 5 825 8 54 0 85	A B 10.0 Area A B Fir		A B 10.0 Area A B Fir	173	A B 10.0 A A B	1:	10.0 A A E F	3 Area A 3 Fir	B 10.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 A A B FI	rea r

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



29,240

18,573

btu/h

btu/h

Total Heat Loss

Total Heat Gain

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

		Builder:	EM Air	Systems	_	Date:	Se	ptember 1	5, 2023					Weatl	ner Data	Richmond Hill	44	-5.8 88	20	50				Page 5
2012 OBC		Project:	King East I	Developments		lodel:		Model 20	30			System	1	Heat	Loss ^T 77	'.8 deg. F	Ht gain ^T	12.8 deg	g. F			Projec Layou	.t #	PJ-00267 JB-09142
	Level 3	,		MAS	_	EI	vie.	BED		BED 2	!	ВАТН												
P.	un ft. exposed wall A			11 A		9 A	13	9 A		0 A		A		Α		Α	Α		Α		Α		Α	
	un ft. exposed wall B			В		В		В		В		В		В		В	В		В		В		B	
T Cu	Ceiling height			9.0		11.0		9.0	11.0			9.0	,	9.0	9	.0	9.0		9.0		9.0		9.0	
	Floor area			304 Area		110 Area		193 Area		9 Area		70 Area	•	Area	•	Area	Area	•	Area		Area		Area	
	Exposed Ceilings A			304 A		110 A		193 A		9 A		70 A		A		A	A		A		A		A	
i	Exposed Ceilings B			В		В		В		В		В		В		В	В		В		В		В	
	Exposed Floors			Flr		Fir		Flr		Fir		Flr		Flr		Flr	Flr		Flr		Flr		Fir	
	Gross Exp Wall A			99		99		81	110															
	Gross Exp Wall B																							
	Components	R-Values	Loss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss (Gain	Loss	Gain	Loss	Gain	Loss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
	North Shaded	4.00	19.45 1	1.73																				
	East/West	4.00		9.66 30 58	4 890	29 5	664 860	25 486	742 2	9 564	860													
	South	4.00	19.45 22	2.60																				
	Existing Windows	1.99	39.10 24	4.56																				
	Skylight	2.03		9.12																				
	Doors	4.00		3.20																				
	Net exposed walls A	21.40		0.60 69 25	1 41	70 2	254 42	56 204	33 8	1 294	48													
	Net exposed walls B	8.50		1.51																				
	Exposed Ceilings A	59.22		0.67 304 39	9 204	110 1	45 74	193 254	130 169	9 222	114	70 92	47											
	Exposed Ceilings B	27.65		1.44																				
	Exposed Floors	29.80	2.61	0.23																				
Foundation Con	nductive Heatloss																						_	
Total Conductive	Heat Loss			123			063	943		1081	4000	92											_	
Air Leakage	Heat Gain		25004		1135		976		905		1022		47											
Air Leakage	Heat Loss/Gain			0652 699	9 74		64	534	59	612	67	52	3											
Ventilation	Case 1			0.10 3.82																			_	
Ventuation	Case 2	x		0.10 8	5 117		67 100	65	93	75	105	6	-											
	Heat Gain People			239 2	478		67 100	1 00	239	1 75	239		3											
	Appliances Loads	1 =.25 p		239 2	470				239		233													
	Duct and Pipe loss	1 =.23		10% 1 19	3 161																			
Level HL Total		To	otal HL for per ro			15	575	1543		1767		150												
Level HG Total			HG per room x		2555		1482	10.0	1684		1863		71											
	, , , , ,									1												1		
-																								
	Level 4																							
р.,	un ft. exposed wall A			Α		Α		Α		Α		Α				Α	Α		Α		Α		Α	
Ru Du	un ft. exposed wall B			В		В		В		В		В		A B		В	B		В		В		В	
T Cu	Ceiling height					-				-						_								
	Floor area			_		Area		Area															Area	
	Exposed Ceilings A			Area						Area				Area		Area	Δrea		Area		Area			
				Area A						Area A		Area A		Area A		Area A	Area A		Area A		Area A			
	Exposed Ceilings B			Α		Α		Α		Α		Α		Α		Α	Α		Α		Α		Α	
	Exposed Ceilings B Exposed Floors					A B						A B				A B								
	Exposed Ceilings B Exposed Floors Gross Exp Wall A			A B		Α		A B		A B		Α		A B		Α	A B		A B		A B		A B	
	Exposed Floors			A B		A B		A B		A B		A B		A B		A B	A B		A B		A B		A B	
	Exposed Floors Gross Exp Wall A	R-Values	Loss Gain	A B Flr	Gain	A B		A B	Gain	A B	Gain	A B Fir	Gain	A B Fir	Gain	A B	A B	Gain	A B Fir	Gain	A B	Gain	A B	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B	4.00	19.45 1	A B Fir Loss	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components	4.00 4.00	19.45 1°	Loss 1.73	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South	4.00 4.00 4.00	19.45 1° 19.45 29 19.45 22	A B Fir Loss 1.73 9.66 2.60	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows	4.00 4.00 4.00 1.99	19.45 11 19.45 29 19.45 22 39.10 24	Loss 1.73 9.66 2.60 4.56	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	4.00 4.00 4.00 1.99 2.03	19.45 11 19.45 29 19.45 20 39.10 24 38.33 89	A B Fir Loss 1.73 9.66 2.60 4.56 9.12	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors	4.00 4.00 4.00 1.99 2.03 4.00	19.45 11 19.45 29 19.45 22 39.10 24 38.33 89 19.45 3	A B Fir Loss 1.73 9.66 2.60 4.56 9.12 3.20	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A	4.00 4.00 4.00 1.99 2.03 4.00 21.40	19.45 11 19.45 29 19.45 23 39.10 24 38.33 89 19.45 3	A B Fir Loss 1.73 9.66 2.260 4.56 9.12 3.3.20 0.660	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
N	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B	4.00 4.00 1.99 2.03 4.00 21.40 8.50	19.45 11 19.45 29 19.45 22 39.10 24 38.33 89 19.45 3 3.64 0	1.73 9.66 2.60 4.55 9.12 3.20 0.60 1.51	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
N	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Exposed Ceilings A	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	19.45 11 19.45 22 19.45 22 39.10 22 38.33 83 19.45 3.64 (6 9.15 4	A B Fir Loss 1.73 2.60 4.56 2.60 4.56 9.12 3.20 0.60 1.51	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
N	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 11 19.45 22 19.45 22 39.10 22 38.33 88 19.45 3.64 (6 9.15 1.31 (2.81	A B Fir Loss 1.73 9.66 2.260 4.56 9.12 3.320 0.60 1.51 0.67 1.444	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
N	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Floors	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	19.45 11 19.45 22 19.45 22 39.10 22 38.33 88 19.45 3.64 (6 9.15 1.31 (2.81	A B Fir Loss 1.73 2.60 4.56 2.60 4.56 9.12 3.20 0.60 1.51	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Floors Inductive Heatloss	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 11 19.45 22 19.45 22 39.10 22 38.33 88 19.45 3.64 (6 9.15 1.31 (2.81	A B Fir Loss 1.73 9.66 2.260 4.56 9.12 3.320 0.60 1.51 0.67 1.444	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
N	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed Cellings B Exposed Cellings B Exposed Floors anductive HeatLoss	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 11 19.45 22 19.45 22 39.10 22 38.33 88 19.45 3.64 (6 9.15 1.31 (2.81	A B Fir Loss 1.73 9.66 2.260 4.56 9.12 3.320 0.60 1.51 0.67 1.444	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Floors Inductive Heatloss Heat Gain	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 1: 19.45 2: 19.45 2: 39.10 2: 38.33 8: 19.45 3: 36.44 (9.15 4: 1.31 (2.61 4: 2.61 (1.61 4:	A B Fir Loss 1.73 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Exposed Cellings A Exposed Cellings A Exposed Cellings A Exposed Floors Inductive Heatloss Heat Loss Heat Loss Heat Loss/Gain	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 1: 19.45 2: 19.45 2: 39.10 2: 39.30 3: 19.45 3: 3.64 6: 9.15 3: 2.81 6: 0.0000 0.0000 0.0000	A B Fir Loss 1.73 Loss 9.66 2.60 4.56 9.3.20 0.60 1.51 0.67 1.44 0.23	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A Exposed Floors ductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Case 1	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 1: 19.45 2: 19.45 2: 39.10 2: 39.30 8: 19.45 5: 3.64 (9.15 - 1.31 2.61 (0.0000 0.00 0.00 (0.000 0.00 (A B Fir Loss 1.73 9.66 2.60 9.12 3.20 0.60 1.51 0.67 1.44 0.23	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive	Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Floors Inductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Case 1 Case 2	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 39.10 2: 38.33 8i 19.45 3: 3.64 (9.15 1.31 (2.81 2.61 (0.0000 0.00 0.00 (16.80 1:	A B Fir Loss 1.73 0.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23	Gain	A B Fir		A B Fir	Gain	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Sexposed Ceilings A Exposed Ceilings A Exposed Floors ductive Heatloss Heat Loss/Gain Heat Loss/Gain Case 1 Case 2 Case 3	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 1: 19.45 2: 19.45 2: 39.10 2: 39.30 3: 38.33 8: 19.45 3: 3.64 6: 9.15 2.81 2.61 6: 0.0000 0.00 6: 1.80 1: 0.07 6	A B Fir Loss 1.73 Loss 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Floors Inductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Heat Loss/Gain Heat Case 1 Case 2 Case 3 Heat Gain People	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 39.10 2- 38.33 8: 19.45 5: 3.64 (9.15 - 1.31 2.61 (0.0000 0.00 (16.80 1: 0.07 (A B Fir Loss 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 0.10 3.82 0.10 3.82 0.10 3.82 0.10 3.82 0.10 3.82	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage Ventilation	Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Heat Loss Heat Gain Heat Loss Gain Case 1 Case 2 Case 3 Heat Gain People Appliances Loads	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 39.10 2: 38.33 8: 19.45 3: 3.64 (9.15 1.31 (2.81 2.61 (0.0000 0.0 0.00 (0.00	A B Fir Loss 1.73 0.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 0.69 1.01 0.38 0.23 0.10 0.38 0.10 0.39 0.10 0.30 0.3	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage Ventilation	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Floors Inductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Heat Loss/Gain Heat Case 1 Case 2 Case 3 Heat Gain People	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 19.45 2: 39.10 2: 39.30 3: 38.33 8: 19.45 3: 3.64 6: 9.15 3: 2.81 6: 2.61 6: 0.0000 0.00 6: 16.80 1: 0.07 6: ercent 2	A B Fir Loss 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 0.652 0.10 3.382 0.10 239 0.10 239 0.10 239 0.10 0.239	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage Ventilation	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Floors Inductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Heat Loss/Gain Heat Gain People Appliances Loads Duct and Pipe loss 0	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 39.10 2: 38.31 3: 19.45 3: 36.44 6: 9.15	A B Fir Loss 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 9.652 0.10 3.82 0.10 3.82 0.10 3.82 0.10 0.80 0.10 0.80 0.80 0.80 0.80 0.80	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain
Foundation Con Total Conductive Air Leakage Ventilation	Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Ceilings A Exposed Floors Inductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Heat Loss/Gain Heat Gain People Appliances Loads Duct and Pipe loss 0	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 1: 19.45 2: 19.45 2: 19.45 2: 39.10 2: 39.30 3: 38.33 8: 19.45 3: 3.64 6: 9.15 3: 2.81 6: 2.61 6: 0.0000 0.00 6: 16.80 1: 0.07 6: ercent 2	A B Fir Loss 1.73 9.66 2.60 4.56 9.12 3.20 0.60 1.51 0.67 1.44 0.23 9.652 0.10 3.82 0.10 3.82 0.10 3.82 0.10 0.80 0.10 0.80 0.80 0.80 0.80 0.80	Gain	A B Fir		A B Fir	Gain	A B Flr	Sain	A B Fir	Gain	A B Fir	Gain	A B Fir	A B Flr	Gain	A B Fir	Gain	A B Fir	Gain	A B Flr	Gain

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:

Mane Alexa

David DaCosta

SB-12 Package Energy Star



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

System Design Option
Exhaust only / forced air system

HRV WITH DUCTING / forced air system

Part 6 design

HRV simplified connection to forced air system

HRV full ducting/not coupled to forced air system

1 2

3 x

4

Project # Layout #

David DaCosta

Page 6 PJ-00267 JB-09142

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 2030	
•	RESIDENTIAL MECHANICAL	VENTIL ATION DES	IGN SUMMARY	
	For systems serving one dwelling unit & co			
		-		
I at #	Location of Installation	Total V	entilation Capacity 9.32.3.3	3(1)
Lot #	Plan #	Bsmt & Master Bdrm	1 @ 21.2 cfm	
Township	Richmond Hill	Other Bedrooms Bathrooms & Kitchen	2 @ 10.6 cfm 5 @ 10.6 cfm	
Roll #	Permit #	Other rooms	5 @ 10.6 cfm Total	148.4 cfm
Address				
		Principal	Ventilation Capacity 9.32.3	3.4(1)
Name	Builder	Master bedroom	1 @ 31.8 cfm	n 31.8 cfm
Ivallic	EM Air Systems	Other bedrooms	2 @ 15.9 cfm	
Address	·		Total	63.6
City		Princ	cipal Exhaust Fan Capacity	,
Tel	Fax	Make	Model	Location
		VanEE	V150E75NS	Base
	Installing Contractor			
Name		127 cfm	80.0	0 Sones or Equiv.
Address		Н	leat Recovery Ventilator	
0		Make	VanEE	
City		Model	V150E75NS 127 cfm high	80 cfm low
Tel	Fax	Sensible efficiency @ Sensible efficiency @	-25 deg C	60% 75%
			ance HRV/ERV to within 10 p	
, , , , , ,	Combustion Appliances 9.32.3.1(1)	Supple	emental Ventilation Capaci	ty
a) <u>x</u> b)	Direct vent (sealed combustion) only Positive venting induced draft (except fireplaces)	Total ventilation capac	city	148.4
c)	Natural draft, B-vent or induced draft fireplaces	Less principal exhaus	,	63.6
d)	Solid fuel (including fireplaces)	REQUIRED suppleme	ental vent. Capacity	84.8 cfm
e)	No combustion Appliances			
		Sui	pplemental Fans 9.32.3.5.	
	Heating System	Location	cfm Model	Sones
х	Forced air	Ens	50 XB50	0.3
	Non forced air Electric space heat (if over 10% of heat load)	Bath	50 XB50	0.3
	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		Designer Certification	
IV —	Type I or II either electric space heat		is ventilation system has bee	en designed
Other	Type I, II or IV no forced air		e Ontario Building Code.	0

, ,		Certification In system has been wilding Code.	designed
Name	David Da	aCosta	
Signature	Mane	Mat	
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)

Page 7
Project # PJ-00267
Layout # JB-09142

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	acl Authority		
A l' 4'	NI	For use by Pfillor		E	
Application	No:		Model/Certification Nu	mber	
	Project Information				
Building nur	mber, street name			Unit number	Lot/Con
		Model 2030			
Municipality	Richmond Hill	Postal code	Reg. Plan number / otl	ner 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 perform	ance results using	an approved softwa	re (see guide)
V	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
~	Zone 1 (< 5000 degree days)	≥ 92% AFUE	✓ Gas	Propane	☐ Solid Fuel
	Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	Oil	☐ Electric	☐ Earth Energy
R	atio of Windows, Skylights & Glass (W, S	& G) to Wall Area		Other Building Ch	aracteristics
Area of	Walls = 350.6 m² or 3773.9 ft²		☐ Log/Post&Beam	☐ ICF Above	Grade
Alea Oi	Walls - 300.0 III 01 3773.9		☐ Slab-on-ground	│ │ Walkout Ba	sement
		W,S &G % = <u>6%</u>	☑ Air Conditioning	Combo Unit	ι
Area of W	$I, S \& G = 22.2 \text{ m}^2 \text{ or } 239.0 \text{ ft}^2$		☐ 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	mpliance
SB-1	2 Referenced Building Package (input desi	ign 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>	3 3,			

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-09142

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

The ar	nnual energy consumption u	using Subsection 3.1.1. SB-12 Ref	ference Building Pa	ckage is	GJ (1J=1000MJ)
The	annual energy consumption	n of this house as designed is		GJ	
The	software used to simulate tl	he annual energy use of the build	ing is:		
The build	ling is being designed using	g an air tightness baseline of:			
	OBC reference ACH, NLA	or NLR default values (no depres	ssurization test requ	ired)	
	Targeted ACH, NLA or NL	.R. Depressurization test to meet		ACH50 or NLR o	r NLA
	Reduction of overall therm is compared against (3.1.2		ouilding envelope is	not more than 25	% of the envelope of the compliance package it
	Standard Operating Cond	itions Applied (A-3.1.2.1 - 4.6.2)			
	Reduced Operating Condi	itions for Zero-rated homes Applie	ed (A-3.1.2.1 - 4.6.2	5)	
	On Site Renewable(s):	·			<u> </u>
		Other Types:			<u> </u>
F.	ENERGY STAR or R-20	000 Performance Design Veri	ification [Subsection	3.1.3. Other Accep	otable Compliance Methods]
					oplied to this building design result in the oplementary Standard SB12 (A-3.1.3.1).
		O Standard " technical requirement performance requirements of the			It in the building performance meeting or 1.3.1).
Perform	ance Energy Modeling Pr	ofessional			
Energy Ev	/aluator/Advisor/Rater/CEM Na	ame and company:	Accreditation or Eva	luator/Advisor/Rate	License #
	BUILDING KNOWLEDGE (CANADA		5506	
ENERG	Y STAR or R-2000				
Energy Ev	/aluator/Advisor/Rater/Name a	nd company:	Evaluator/Advisor/R	ater License #	
	ANGELA BUSTAMAN	ITE		5506	
G.	Designer(s) [name(s) & B	BCIN(s), if applicable, of person(s) pro	viding information her	ein to substantiate t	hat design meets building code]
Name	David DaCosta		32964	Signature	Mana Mit

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		RSI 3.08 (R 17.5)	Core Minimum			
Trails Above Crade	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			
(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			
Tomason (Inte / Entr)	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".



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Page 8 PJ-00267 Project # Layout # JB-09142

Vent

Case

Case

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

Air Leakage Calculations

Building Air Leakage Heat Loss				
В	LRairh	Vb	HL^T	HLleak
0.018	0.404	21613	77.8	12214

		Building	Air Leakag	e Heat Gair	n
	В	LRairh	Vb	HG^T	HG Leak
0.	.018	0.112	21613	12.8	558

	Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level	Building	Level Conductive	Air Leakage Heat Loss	
Level	Factor (LF)	Air	Heat Loss (HLclevel)	Multiplier	
Level 1	0.5		6524	0.9362	
Level 2	0.3	12214	4609	0.7951	
Level 3	0.2	12214	4313	0.5664	
Level 4	0		0	0.0000	

		Air Leakage Heat Gain
HG LEAK	558	0.0652
BUILDING CONDUCTIVE HEAT GAIN	8554	0.0632
Highoet Coiling Hoight	20.0	ET 0.14 M

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

Levels this Dwelling	
3	

Ventilation Calculations

			Ventila	tion Heat Loss	3
ent			Ventilatio	n Heat Loss	
>	С	PVC	HL^T	(1-E) HRV	HLbvent
	1.0	8 63.6	77.8	0.20	1069
				-	

Case 1

	٧	entilation I	Heat Gain
_			
С	PVC	HG^T	HGbvent
1.1	63.6	12.8	879
1.1			

Ventilation Heat Gain

Case 1

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

Case 3 Ventilation Heat Gain (Forced Air Systems)

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only			
LF	HLbvent	LVL Cond. HL	Multiplier
0.5		6524	0.08
0.3	1069	4609	0.07
0.2		4313	0.05

Case 1 - Exh	aust Only	Multiplier
HGbvent	879	0.10
Building 8554		0.10

Case 2
Ventilation Heat Loss (Direct Ducted Systems)

Level Level 1 Level 2 Level 3 Level 4

			Multiplier
C	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

Cust	. •		

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	1069	0.07

		Vent Heat Gain	Multiplier	
HGbvent	HG*1.3	879	0.10	
879	1	0/9	0.10	

Foundation Conductive Heatloss Level 1	Level 1	1627	Watts	5551	Btu/h
--	---------	------	-------	------	-------

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

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

Walk Out Basement Foundation Conductive Heatloss

Btu/h

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station	Description		
Province:	Ontario		
Region:	Richmond Hill		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shiel	ding		
Building Site:	Suburban, forest		
Walls:	Heavy ▼		
Flue:	Heavy ▼		
Highest Ceiling Height (m):	9.14		
Building Confi	guration		
Туре:	Semi-Detached		
Number of Stories:	Two		
Foundation:	Shallow		
House Volume (m³):	612.08		
Air Leakage/Ve	entilation		
Air Tightness Type:	Present (1961-) (ACH=3.57)		
	ELA @ 10 Pa. 322.44 cm ²		
Custom BDT Data:	3.57 ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply: Total Exhaust:		
, ,	31.8		
Flue #:	#1 #2 #3 #4		
Diameter (mm):	0 0 0 0		
Heating Air Leakage Rate (ACH/H):	0.404		
Cooling Air Leakage Rate (ACH/H):	0.112		

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weat	her Sta	tion 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):	16.38	
Floor Width (m):	3.43	
Exposed Perimeter (m):	19.51	
Wall Height (m):	2.74	
Depth Below Grade (m):	0.46	Insulation Configuration
Window Area (m²):	0.74	
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):		1627



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Effective R-Value Calculations

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

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

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



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

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

FLEX DUCT RIGID ROUND DUCT SLIPPLY DIFFLISER

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



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

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

R.A 1 F PE

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

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

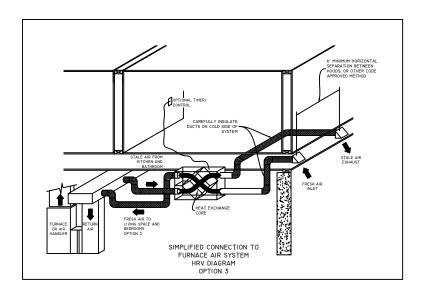
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

ENERGY STAR

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

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

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



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

QUALIFICATION INFORMATION

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

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

BUILDING CODE.

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO

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.



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L4T 0A4 TEL: 905-67I-9800 EMAIL: DAVE@GTADESIGNS.CA WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	BTU/HR.
29,240	
UNIT MAKE	OR EQUAL.
CARRIER	
UNIT MODEL	OR EQUAL.
59SC5B040EI4I0	
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	

	1 -	CNA	OL.	LINLIN	٠v
					_
# OF	RUNS	S/A	R/A	FANS	
3RD				H	
2ND	FLOOR	6	2	2	
IST FLOOR		5	I	2	
BASEMENT		7		2	∦
					1
FLOOR PLAN	BASEN	1ENT	-		
DRAWN BY:	CHECKED: DD	1839			
I AYOUT NO		DRAWIN	DRAWING NO		

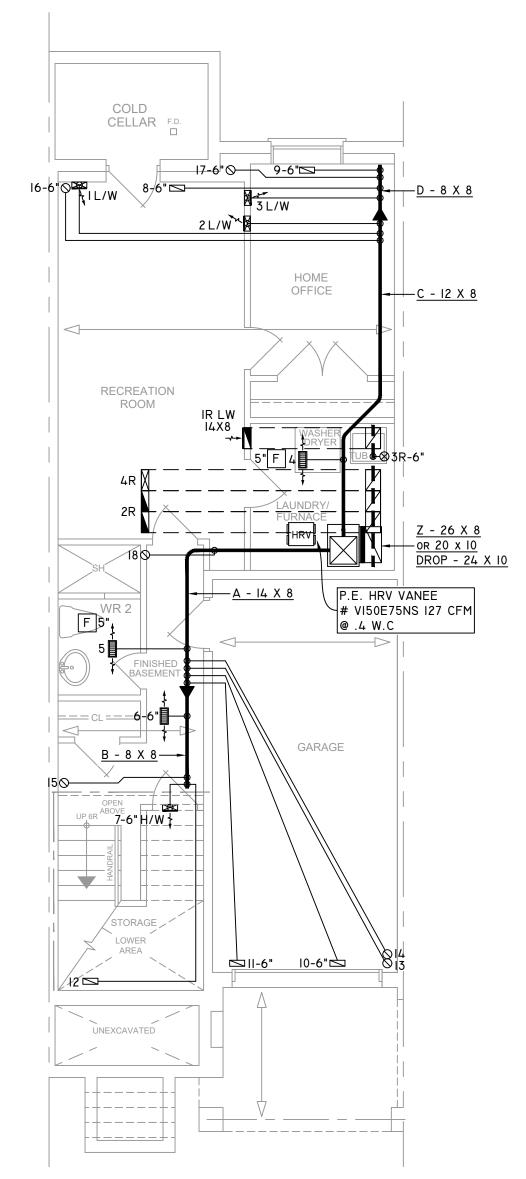
JB-09142

DRAWING NO

SEPTEMBER 15, 2023 EM AIR SYSTEMS MODEL: MODEL 2030 PROJECT: KING EAST **DEVELOPMENTS**

RICHMOND HILL, ONT.

3/16" = 1'-0"



BASEMENT FLOOR PLAN 'A'

OBC 2012

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



FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

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



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

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

R.A 1

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

CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

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

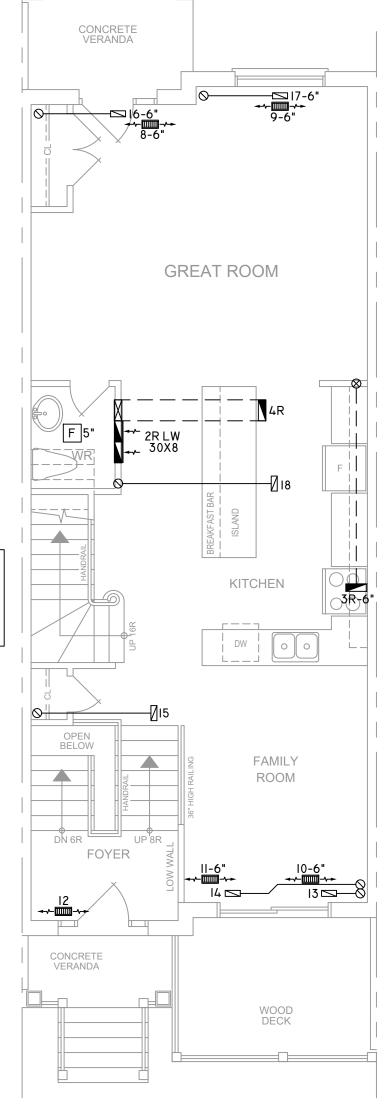
ENERGY STAR

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

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

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

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



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

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

B.C.I.N. 32964

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

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

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HEAT-LOSS 29,240	BTU/HR.
UNIT MAKE CARRIER	OR EQUAL.
UNIT MODEL 59SC5B040EI4-	OR EQUAL.
UNIT HEATING INPUT 40,000	BTU/HR.
UNIT HEATING OUTPUT 39,000	BTU/HR.
A/C COOLING CAPACITY 2.0	TONS.
FAN SPEED 805	CFM

PACKAGE "ENER					Œ	;`
# OF RU	NS	S/A	R/A	FANS		C
3RD FLO	OR					0
2ND FLO	0R	6	2	2		
IST FLOOR		5	I	2		2
BASEMENT		7	I	2		F
	OUND		OR			
	CKED: D	SQFT	183	9		L

M2

JB-09142

FIRST FLOOR PLAN 'A'

Y STAR" REF. TABLE 3.I.3. SEPTEMBER 15, 2023 CLIENT **EM AIR SYSTEMS** MODEL: MODEL 2030 PROJECT: KING EAST **DEVELOPMENTS**

ZONE I COMPLIANCE

OBC 2012

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

FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

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



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

4 \mathbf{x}

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

SUPPLY AIR R.A 1

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

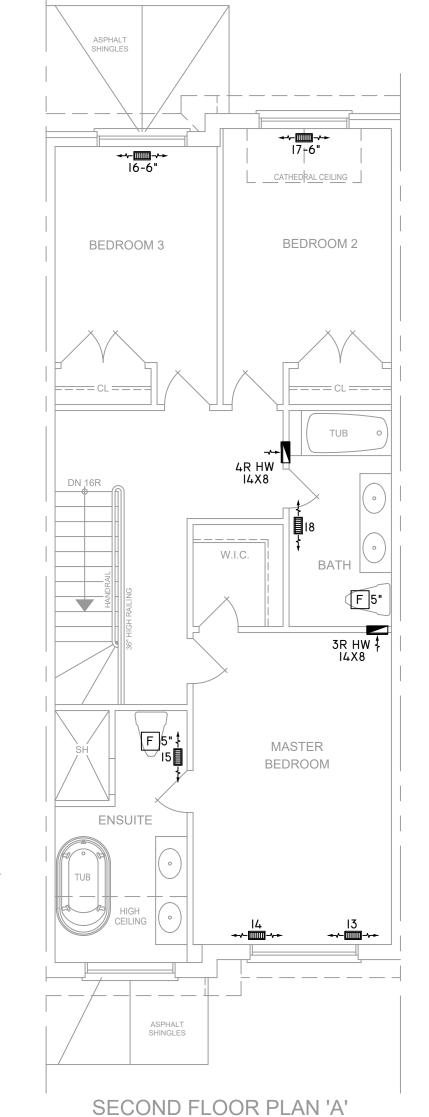
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

ENERGY STAR

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

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

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



MASTER TUB **BEDROOM** 13 14 **→**/-||||||-**─ ENSUITE** TORCH DOWN FLAT ROOF SECOND FLOOR PLAN 'B'

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

QUALIFICATION INFORMATION

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

B.C.I.N. 32964 SIGNATURE OF DESIGNER

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

SPECIFIED PROVIDE BALANCING DAMPERS ON ALL BRANCHES. ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)

INSULATE DUCTS IN UNCONDITIONED SPACES RI2 UNDERCUT ALL DOORS I" MIN. CONTRACTOR MUST WORK FROM APPROVED PLANS. ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE

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

GTADESIGNS

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

HEAT-LOSS 29,240	BTU/HR.
UNIT MAKE CARRIER	OR EQUAL.
UNIT MODEL 59SC5B040EI4	OR EQUAL.
UNIT HEATING INPUT 40,000	BTU/HR.
UNIT HEATING OUTPUT 39,000	BTU/HR.
a/c cooling capacity 2.0	TONS.
FAN SPEED 805	CFM

PACKAGE "ENER					?G
# OF RUNS S/A R/A FANS					
3RD I	FLOOR				H
2ND I	2ND FLOOR			2	
IST FLOOR		5	I	2	
BASEMENT		7	ı	2	H
FLOOR PLAN: SECOND FLOOR DRAWN BY: CHECKED: SOFT JL DD 1839					
LAYOUT NO.		DRAWING NO.		H	

JB-09142

M3

Y STAR" REF. TABLE 3.I.3. SEPTEMBER 15, 2023 CLIENT **EM AIR SYSTEMS** MODEL: MODEL 2030 PROJECT: KING EAST **DEVELOPMENTS** RICHMOND HILL, ONT.

3/16" = 1'-0"

OBC 2012

ZONE I COMPLIANCE