

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 2700			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			Unit no.	Lot/con.
Municipality Mississauga	Postal code L4T 0A4	Province Ontario	E-mail hvac@gtades	signs.ca
Telephone number (905) 671-9800	Fax number	l	Cell number	
C. Design activities undertaken by individual identified in Se	ction B. [Buil	lding Code Table 3	.5.2.1 of Division C]	
☐ House ☑ HVAC – Ho	use		☐ Building Structural	
☐ Small Buildings ☐ Building Ser	vices		☐ Plumbing – House	
	ighting and Pow	er	☐ Plumbing – All Building	s
☐ Complex Buildings ☐ Fire Protecti	ion		☐ On-site Sewage System	ns
Description of designer's work Mod	el Certification		Project #:	
Heating and Cooling Load Calculations Main	X	Builder	Layout #:	JB-09156
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 Residential System Design per CAN/CSA-F280-12	2700	Model	Model 2700 WO	
Residential New Construction - Forced Air		SB-12	Energy Star	,
D. Declaration of Designer				
I David DaCosta (print name)	declare that (c	choose one as appro	opriate):	
☐ I review and take responsibility for th Division C of the Building Code. I am classes/categories. Individual BCIN:				
Firm BCIN:			_	
☑ I review and take responsibility for t designer" under subsection 3.2.5 of	•	•	opriate category as an "other	
Individual BCIN:	3296	64		
Basis for exempti	on from registra	tion:	Division C 3.2.4.1. (4)	•
☐ The design work is exempt from the	registration and	qualification requirement	ents of the Building Code.	
Basis for exemption	on from registra	tion and qualification:		
I certify that:				
The information contained in this schedule is true to the best of my	/ knowledge.			
I have submitted this application with the knowledge and consent of	of the firm.			
September 21, 2023		Mare 14		
Date		Signature of De	esigner	

NOTE:

Page 1

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



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

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These documents issued for the use of and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red. Building Location	Heat loss and gain calcula	ation summary sheet CSA-F280-M12 Standard
Building Location Site: King East Developments Site: King East Developments	These documents issued for the use of	
Address (Model): Model 2700 WOB	and may not be used by any other persons without authorization. Documents	for permit and/or construction are signed in red. JB-09156
Address (Model): Model 2700 WOB Site: King East Developments Lot	Building L	ocation
Postal code: Calculations Postal code:		T
Calculations based on: Architectural Design Inc.Feb/2023 Attachment: Detached Front facing: East/West Assumed? Yes No. of Levels: 3 Ventilated? Included Air tightness: 1961-Present (ACH=3.57) Assumed? Yes Weather location: Richmond Hill Wind exposure: Sheltered HRV? VanE V150E75NS Internal shading: Light-translucent Occupants: 5 Sensible Eff. at -25C 60% Apparent Effect. at -0C 80% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Units: Imperial Area Sq ft: 2700 Style B: Style	Model:	Lot:
Dimensional information based on: Architectural Design Inc.Feb/2023	City and Province: Richmond Hill	Postal code:
Attachment: Detached	Calculations	based on
No. of Levels: 3	Dimensional information based on:	rchitectural Design Inc.Feb/2023
Weather location: Richmond Hill Wind exposure: Sheltered	Attachment: Detached	Front facing: East/West Assumed? Yes
HRV?	No. of Levels: 3 Ventilated? Included	Air tightness: 1961-Present (ACH=3.57) Assumed? Yes
Sensible Eff. at -25C 60% Apparent Effect. at -0C 80% Units: Imperial Area Sq ft: 2700 Sensible Eff. at -0C 75% Heating design conditions Cuidoor 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 20 Style B: Style D: Floors on soil Ceilings Style A: As per Selected OBC SB12 Energy Star Style B: As per Selected OBC SB12 Energy Star R 31 Style B: As per Selected OBC SB12 Energy Star R 31 Exposed floors Style A: As per Selected OBC SB12 Energy Star R 31 Style A: As per Selected OBC SB12 Energy Star R 31 Style B: Style B: Style C: Style B: Style B: As per Selected OBC SB12 Energy Star R 31 Doors Style B: Style B	Weather location: Richmond Hill	Wind exposure: Sheltered
Sensible Eff. at -0C 75% Heating design conditions Cooling design conditions	HRV? VanEE V150E75NS	Internal shading: Light-translucent Occupants: 5
Heating design conditions Cutdoor temp -5.8	Sensible Eff. at -25C 60% Apparent Effect. at -0C 80%	Units: Imperial Area Sq ft: 2700
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 20 Style B: Style B: Style C: Style C: Style A: As per Selected OBC SB12 Energy Star R 20 Style B: Style D: Ceilings Style A: As per Selected OBC SB12 Energy Star Style B: As per Selected OBC SB12 Energy Star R 31 Exposed floors Style B: Style B: Style B: Style B: As per Selected OBC SB12 Energy Star R 31 Exposed GBC SB12 Energy Star R 31 Doors Style B: S	Sensible Eff. at -0C 75%	
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Style D: 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	Style B:	Skylights
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	Style C:	Style A: As per Selected OBC SB12 Energy Star R 2.03
Notes: Residential New Construction - Forced Air Calculations performed by	Style D:	Style B:
Calculations performed by	Attached documents: As per Shedule 1 Heat Loss/0	eain Caculations based on CSA-F280-12 Effective R-Values
·	Notes: Residential New C	onstruction - Forced Air
Name: David DaCosta Postal code: L4T 0A4	Calculations p	erformed by
<u> </u>	Name: David DaCosta	Postal code: L4T 0A4
Company: gtaDesigns Inc. Telephone: (905) 671-9800	Company: gtaDesigns Inc.	Telephone: (905) 671-9800
Address: 2985 Drew Road, Suite 202 Fax:	Address: 2985 Drew Road, Suite 202	Fax:
City: Mississauga E-mail hvac@gtadesigns.ca	City: Mississauga	E-mail hvac@gtadesigns.ca



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 21, 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 Building Code.

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Part	Project: King East [Developm	ents		Model:		N	Model 270	00 WOB				Sy	stem 1	ı		Building C		32964	. Man	n /4	l et i		David DaCo	sta		ject # yout #		-00267 -09156
Mathitation	DESIGN LOAD SPECIFICATION	S		1	AIR DISTR	RIBUTION	& PRESS	URE				F	URNACE/	AIR HAN	DLER DA	ГА:			BOILER/	WATER HEA	TER DA	TA:			[A/C UNIT D	ATA:		
Mathematic Mat	Level 2 Net Load	14,748 b	tu/h	,	Additional	I Equipme	ent Pressu			0.225 "\	w.c.	N	Model	5	59SC5B06	0E1714			Model	u/h		ту	/pe			Model:			on
Mathitan	Level 4 Net Load	0 b	tu/h	F	Return Bra	anch Lon	gest Effec	tive Length	1	300 ft		Н	ligh Outpu	t	580	00			Output E	Btu/h						Coil		2.5	
Paris Pari	Total Heat Loss	48,687 b	tu/h	F	R/A Plenu	m Pressu	re			0.138 "\	w.c.	E	.s.p.		0.5	0 "	W.C.		Min.Outp	out Btu/h		A۱							
Mathematic lange 1.14 1.15 1.	Total Heat Gain	27,477 k	tu/h)			leg. F.							ower DATA:					
Part	Building Volume Vb	32411 f	t³		•		•	•							97	%			Blower S	Speed Selecte	ed:	Orang	je						5.(2))
Part	Ventilation Load	1,336 E	Btuh.					R/A Temp		70 d	eg. F.	s	B-12 Pack	age	Energy	/ Star			Check	920 cf	m (Cool. Check	k	920 cf	m				
Mathematical Math	Ventilation PVC	79.5 c	fm					S/A Temp		128 d	eg. F.									·			_						
Mathematical Control of Math	Supply Branch and Grill Sizing			I	Diffuser lo	oss _	0.01	"w.c.				Т	emp. Rise	>>> _	58	deg. F.			Heat.	<u>920</u> cf	m (Cooling		920 cf	m	Design Airf	low	<u>920</u> c	:fm
Mathematic Mat								Leve	11													Level	2						
Mathematic Name Mathematic	S/A Outlet No.	1	2	3	4	5										6	7	8	9	10	11	12							
Mathematical Mat	Room Use				BASE	F.AREA											KIT/FAM P	KIT/FAM	LAUN	FOY	WR	GRT							
Color Decision Processor Color Color Decision Processor Color Decis	Btu/Outlet	4532	4532	4532	4532	1044										2062	2062	2062	2001	2779	586	3195							
Part	Heating Airflow Rate CFM	86	86	86	86	20										39	39	39	38	53	11	60							
Action Lethorship	Cooling Airflow Rate CFM	30	30	30	30	2										78	78	78	61	40	12	92							
Equipment Figure	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
Trial Process Final Process Fi	Actual Duct Length	42	42	8	15	8										48	41	44	43	24	13	8							
Ministrian Min	Equivalent Length	140	150	110	90	120	70	70	70	70	70	70	70	70	70	110	90	100	110	70	100	130	70	70	70	70	70	70	70
Dark Review Fig.	Total Effective Length	182	192	118	105	128	70	70	70	70	70	70	70	70	70	158	131	144	153	94	113	138	70	70	70	70	70	70	70
Mile	Adjusted Pressure	0.07	0.07	0.11	0.12	0.10	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.08	0.10	0.09	0.08	0.14	0.12	0.09	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Triange Tria	Duct Size Round	6	6	6	6	3										6	6	6	5	5	3	6							
Second Line	Outlet Size	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Section Sect	Trunk	В	В	Α	С	Α										В	В	В	Α	C	С								
Rounding May Reful	<u> </u>																					Level	4						
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Equivalent Length 140 110 140 140 130 100 130 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
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Adjusted Pressure 0.06 0.08 0.07 0.08 0.07 0.08 0.09 0.08 0.09 0.08 0.09 0.08 0.09 0.09																													
Duel Size Round 6 4 4 6 4 6 4 6 4 6 4 6 4 6 4 8 6 4 8 6 4 8 8 8 8	•																												
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Return Branch And Grill Sizing Special Pressure Special				-	-			-		4×10	4×10	4×10	4v10	4×10	4v10	4×10	4×10	4×10	4×10	4v10	4v10	4v10	4v10	4×10	4v10	4×10	4×10	4v10	4v10
Return Branch And Grill Sizing Rotation Branch And Grill Sizing Significant Free North And Grill Sizing Sig								Δ		4210	4210	4210	47.10	4810	43.10	4210	4810	4210	4210	40	4410	4210	44.10	4210	44.10	4210	47.10	4410	4210
R/A Inlet No. 1R 2R 3R 4R 5R 6R 7R 8R 9R 10R 11R Trunk CFM Press. Round Rect. Size Trunk C.CFM H.CFM Press. Round Rect. Size Trunk C.CFM H.CFM Press. Round Rect. Size Inlet Air Volume CFM 181 424 105 105 105 105 105 105 105 105 105 105	Trum																												
Find Lair Volume CFM 181 424 105													_								-								
Duct Design Pressure 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12							6R	7R	8R	9R	10R	11R	T	runk	(CFM F	Press. R	Round	Rec	t. Size		Trunk C.	.CFM	H.CFM P	ress.	Round	Rect.	Size	
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Duct Size Round 8.0 11.5 6.0 6.0 6.0 6.0 V F Inlet Size FLC 8 9 9 9 9 9	•																					_							
Inlet Size FLC 8 <t< td=""><td>•</td><td></td><td></td><td>0.07</td><td></td><td></td><td>0.24</td><td>0.24</td><td>0.24</td><td>0.24</td><td>0.24</td><td>0.24</td><td>W</td><td>'</td><td></td><td></td><td></td><td></td><td></td><td></td><td>- 1</td><td>E</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	•			0.07			0.24	0.24	0.24	0.24	0.24	0.24	W	'							- 1	E							
" " OR X X X X X X X X X X X X X X X X I T H Inlet Size 9x6 30 14 14 14 14		8.0	11.5	6.0	6.0	6.0							V								- 1	F							
Inlet Size 9x6 30 14 14 14 14 15 S I S J	Inlet Size		8	8	8	8							U								(G							
R J	" "	OR	x	x	x	x	x	x	x	x	x	x	Т								ı	Н							
	Inlet Size	9x6	30	14	14	14							s								-	I							
<u>Trunk</u> <u>z z z z Q </u>													R									J							
	Trunk	Z	Z	Z	Z								Q								_	K							



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 A	r Syster	ms		D	Date:		Se	eptember 21	, 2023				Weath	ner Data	Richmond Hil	I 44	-5.8 88	3 20	50				Page 4
2012 OBC		Project:	King East	Develop	pments		Мо	odel:		N	Model 2700 \	WOB			System 1	Heat	Loss ^T 7	7.8 deg. F	Ht gain ^T	12.8 de	eg. F			Proje Layo		J-00267 B-09156
	Level 1				-	BASE			F.AREA																	
Run	ft. exposed wall A				116 A			10 A			Α		Α		Α	Α		Α	Α		Α		Α		Α	
	ft. exposed wall B				33 B			В			В		B		В	B		B	В		В		В		В	
Kuii																										
	Ceiling height				6.0 AG			6.0 A		'	6.0 AG		6.0 AG	6	.0 AG	6.0 AG	,	6.0 AG	6.0 AG		6.0 AG		6.0 AG		6.0 AG	
	Floor area			!	925 Are	ea		116 A	Area		Area		Area		Area	Area		Area	Area		Area		Area		Area	
E	Exposed Ceilings A				Α			Α	4		Α		Α		Α	Α		Α	Α		Α		Α		Α	
	Exposed Ceilings B				В			В	3		В		В		В	В		В	В		В		В		В	
_	Exposed Floors				Fir				- Ir		Fir		Flr		Fir	Flr		Flr	Flr		Flr		Fir		Flr	
								60			• • •							• • •			• • •		• • •		• • •	
	Gross Exp Wall A				696			60																		
	Gross Exp Wall B				297																					
	Components	R-Values L	oss Gair	1	Lo	ss Ga	in	L	.oss G	ain	Loss	Gain	Loss	Gain	Loss Gain	Loss	Gain	Loss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
	North Shaded	4.00	19.45	11.73	5	97	59																			
	East/West	4.00	19.45	29.66																						
	South				10	195	226																			
		4.00		22.60																						
WOB Window	ws Including Doors	4.00			53	1031	1477																			
	Skylight	2.03	38.33	89.12																						
	Doors	4.00	19.45	3.20	21	408	67																			
Ne	et exposed walls A	20.84	3.73		660		405	60		37																
	et exposed walls B	21.40	3.64			887	146			٠.																
		-				301	140																			
	xposed Ceilings A	59.22	1.31	0.67																						
E	xposed Ceilings B	27.65	2.81	1.44																						
	Exposed Floors	29.80	2.61	0.23												1 1				11						
Foundation Cond	ductive Heatloss					6786			542																	
	Heat Loss					9404			542																	
Total Conductive	Heat Gain						2380			37																
Ala I autono			0.0004						470	31																
Air Leakage	Heat Loss/Gain			.0600		8298	143		478	2																
	Case 1		0.07	0.08																						
Ventilation	Case 2		16.80	13.82																						
	Case 3	х	0.05	0.08		427	194		25	3																
	Heat Gain People			239																						
	Appliances Loads	1 =.25 pe	rcont	4352																						
		1 =.25 pe	ii Ceiii																							
	Duct and Pipe loss			10%																						
Level HL Total Level HG Total	19,173 3,586		tal HL for per HG per room		1	8129	3531		1044	55																
	Level 2				69 A	T/FAM		16 A			FOY 27 A		WR 6 A		GRT I1 A	A		A	A		A		A		A	
	ft. exposed wall A				69 A B	T/FAM		16 A B	4		27 A B		6 A B		11 A B	В		В	В		В		В		В	
	ft. exposed wall A			1	69 A	T/FAM		16 A	4		27 A	1	6 A	. 10	11 A B		1			1				1		
	n ft. exposed wall A n ft. exposed wall B Ceiling height				69 A B			16 A B 13.0	A 3	1	27 A B 0.0	1	6 A B 10.0	10	11 А В .0	B 10.0	1	B 0.0	B 10.0	1	B 0.0		B 10.0	1	B 10.0	
Run	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area				69 A B 10.0 573 Are			16 A B 13.0 67 A	A 3 Area	1	27 A B 0.0 88 Area	1	6 A B 10.0 31 Area	10	11 A B .0 96 Area	B 10.0 Area	11	B 0.0 Area	B 10.0 Area	1	B 0.0 Area		B 10.0 Area	1	B 10.0 Area	
Run	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area Exposed Ceilings A				69 A B 10.0 573 Are			16 A B 13.0 67 A A	A Area A	1	27 A B 0.0 88 Area A	1	6 A B 10.0 31 Area A	10	11 A B .0 96 Area A	B 10.0 Area A	11	B 0.0 Area A	B 10.0 Area A	1	B 0.0 Area A		B 10.0 Area A	1	B 10.0 Area A	
Run	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B				69 A B 10.0 573 Are A B	ea		16 A B 13.0 67 A A B	A 3 Area A 3	1	27 A B 0.0 88 Area A B	1	6 A B 10.0 31 Area A B	10	11 A B .0 06 Area A B	B 10.0 Area A B	1	B 0.0 Area A B	B 10.0 Area A B	1	B 0.0 Area A B		B 10.0 Area A B	1	B 10.0 Area A B	
Run E E	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors			!	69 A B 10.0 573 Are A B Fir	ea		16 A B 13.0 67 A A B	A 3 Area A 3	1	27 A B 0.0 88 Area A B Fir	1	6 A B 10.0 31 Area A B Fir	10 29	11 A B .0 06 Area A B	B 10.0 Area A	11	B 0.0 Area A	B 10.0 Area A	1	B 0.0 Area A		B 10.0 Area A	1	B 10.0 Area A	
Run E E	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A			!	69 A B 10.0 573 Are A B	ea		16 A B 13.0 67 A A B	A 3 Area A 3	1	27 A B 0.0 88 Area A B	1	6 A B 10.0 31 Area A B	10	11 A B .0 06 Area A B	B 10.0 Area A B	11	B 0.0 Area A B	B 10.0 Area A B	1	B 0.0 Area A B		B 10.0 Area A B	1	B 10.0 Area A B	
Run E E	nft. exposed wall A nft. exposed wall B Ceilling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall A				69 A B 10.0 573 Are A B Fir	ea		16 A B 13.0 67 A A B Fi 208	A Area A B Fir	11	27 A B 0.0 88 Area A B Fir		6 A B 10.0 31 Area A B Fir	10 2: 4:	11 A B .0 .0 66 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run E E	n ft. exposed wall A n ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A	R-Values L	oss Gair		69 A B 10.0 573 Are A B Fir	ea		16 A B 13.0 67 A A B Fi 208	A Area A B Fir	1	27 A B 0.0 88 Area A B Fir	1 Gain	6 A B 10.0 31 Area A B Fir	10 29	11 A B .0 06 Area A B	B 10.0 Area A B Fir	1 ^l Gain	B 0.0 Area A B	B 10.0 Area A B	1 Gain	B 0.0 Area A B Fir	Gain	B 10.0 Area A B	1 Gain	B 10.0 Area A B Fir	Gain
Run E E	nft. exposed wall A nft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components				69 A B 10.0 573 Are A B Fir	ea		16 A B 13.0 67 A A B Fi 208	A Area A B Fir	11	27 A B 0.0 88 Area A B Fir		6 A B 10.0 31 Area A B Fir	10 2: 4:	11 A B .0 .0 66 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	nft. exposed wall A nft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded	4.00	19.45	11.73	69 A B 10.0 573 Are A B Fir 690	ea ss Ga	iin	16 A B 13.0 67 A A B F 208	A Area A B Fir	10 2 ain 106	27 A B 0.0 88 Area A B Fir 270	Gain	6 A B 10.0 31 Area A B Fir	10 2: 4:	11 A B .0 .0 66 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	nft. exposed wall A nft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West	4.00 4.00	19.45 19.45	11.73	69 A B 10.0 573 Are A B Fir 690	ea ss Ga		16 A B 13.0 67 A A B F 208	A Area A B Fir	10 2 ain 106	27 A B 0.0 88 Area A B Fir	Gain	6 A B 10.0 31 Area A B Fir 60 Loss	10 2: 4 Sain	11 A B .0 16 Area A B Fir 10 Loss Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	nft. exposed wall A nft. exposed wall A nft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South	4.00 4.00 4.00	19.45 19.45 19.45	11.73 29.66 22.60	69 A B 10.0 573 Are A B Fir 690	ea ss Ga	iin	16 A B 13.0 67 A A B F 208	A Area A B Fir	10 2 ain 106	27 A B 0.0 88 Area A B Fir 270	Gain	6 A B 10.0 31 Area A B Fir	10 2: 4 Sain	11 A B .0 .0 66 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	nft. exposed wall A nft. exposed wall A nft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows	4.00 4.00 4.00 1.99	19.45 19.45 19.45 39.10	11.73 29.66 22.60 24.56	69 A B 10.0 573 Are A B Fir 690	ea ss Ga	iin	16 A B 13.0 67 A A B F 208	A Area A B Fir	10 2 ain 106	27 A B 0.0 88 Area A B Fir 270	Gain	6 A B 10.0 31 Area A B Fir 60 Loss	10 2: 4 Sain	11 A B .0 16 Area A B Fir 10 Loss Gain	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	4.00 4.00 4.00 1.99 2.03	19.45 19.45 19.45 39.10 38.33	11.73 29.66 22.60 24.56 39.12	69 A B 10.0 573 Are A B Fir 690	ea ss Ga	iin	16 A B 13.0 67 A A B F 208	AArea AArea ABBEIT	2 ain 106	27 A B 0.0 88 Area A B Fir 270 Loss	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss	10 2: 4 Sain	11 A B .0 16 Area A B Fir 10	B 10.0 Area A B Fir		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run	oft. exposed wall A oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors	4.00 4.00 4.00 1.99 2.03 4.00	19.45 19.45 19.45 39.10 38.33 19.45	11.73 29.66 22.60 24.56 39.12 3.20	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 LL 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 3-3-3-1- 203 :	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run	oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	4.00 4.00 4.00 1.99 2.03	19.45 19.45 19.45 39.10 38.33	11.73 29.66 22.60 24.56 39.12 3.20	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208	AArea AArea ABBEIT	106 106	27 A B 0.0 88 Area A B Fir 270 Loss	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss	10 2: 4 Sain	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run	aft. exposed wall A tf. exposed wall A tf. exposed wall B Celling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A	4.00 4.00 4.00 1.99 2.03 4.00	19.45 19.45 19.45 39.10 38.33 19.45	11.73 29.66 22.60 24.56 39.12 3.20	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 LL 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 3-3-3-1- 203 :	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E	oft. exposed wall A oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15	11.73 29.66 22.60 24.56 39.12 3.20 0.60	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 LL 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 3-3-3-1- 203 :	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Ne Ne	oft. exposed wall A oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings A	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 0.67	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 L 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 3-3-3-1- 203 :	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Ne Ne	aft. exposed wall A tf. exposed wall A tf. exposed wall B Celling height Floor area Exposed Cellings A Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed Cellings A et exposed Cellings B Exposed Cellings B Exposed Cellings B Exposed Cellings B	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 0.67	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 L 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Not Not Not E E	Inft. exposed wall A Inft. exposed wall A Inft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Floors	4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23	69 A B 10.0 573 Are A B Fir 690 Lo	ea	uin 2432	16 A B 13.0 67 A A B F 208 L 9	A Area A A B B B B B B B B B B B B B B B B B	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593	6 A B 10.0 31 Area A B Fir 60 Loss 0	4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E NN NN E E E Foundation Cond	oft. exposed wall A oft. exposed wall A oft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings A Exposed Ceilings B Exposed Ceilings B Exposed Ceilings A Exposed Floors B Expose	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 0.67	69 A B 10.0 573 Ard A B FIr 690 Lo:	ss Ga 11595 :	uin 2432	16 A B 13.0 67 A A B F 208 L 9	A A A A A A A A A A A A A A A A A A A	106 106	27 A B 0.0 88 Area A B Fir 270 Loss 20 389 26 506 814	Gain 593	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185	4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4	11 A B B -0 16 Area A B Fir 10 10 Loss Gain 67 67 68 67 67 68 68 67 68 68 68 68 68 68 68 68 68 68 68 68 68	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Not Not Not E E	and the exposed wall A and the exposed wall B celling height Floor area exposed Cellings A exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B exposed Cellings A et exposed walls B Exposed Floors Such Peat Loss Heat Loss Heat Loss	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23	69 A B 10.0 573 Ard A B FIr 690 Lo:	ss Ga 1595 :	364	16 A B 13.0 67 A A B F 208 L 9	A Area A A B B B B B B B B B B B B B B B B B	106 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	27 A B 0.0 88 Area A B Fir 270 Loss 20 389	Gain 593 83 134	6 A B 10.0 31 Area A B Fir 60 Loss 0	100 2: 4: 4: 33in 3: 3: 3: 3: 3: 3: 3: 3: 3: 3: 3: 3: 3:	11 A B 0.0 16 Area A B Filr 10 Loss Gain 500 584 679 300 1381 222	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
No. No. No. No. No. No. No. Toundation Cond	oft. exposed wall A oft. exposed wall A celling height Floor area Exposed Cellings A Exposed Floors Gross Exp Wall A Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed Walls A Exposed Cellings B Exposed Cellings B Exposed Floors Suctive Heat Coss Heat Loss Heat Gain	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 0.67 1.44 0.23	69 A B 10.0 573 Ard A B Fir 690 Lo	ea ss Ga 1595 :	364 2796	16 A B 13.0 67 A A B F 208 L 9	A 3 Area A 3 B 5 Fir	106 279	27 A B B 0.0 888 Area A B Fir 270 Loss 20 389 26 506 224 814	Gain 593 83 134 810	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360	10 2: 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
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Run E E Note Note Total Conductive Air Leakage	Inf. exposed wall A Inf. exposed wall A Inf. 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 Walls Exposed Ceilings A Exposed Ceilings B Exposed Floors Suctive Heat Coss Heat Loss/Gain Heat Loss/Gain Heat Loss/Gain Case 2	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 0.67 1.44 0.23 x	69 A B B 110.0 573 Ara A B Fir Fir 6690 Lo	SSS Ga :: 11595 :: 122210 :: 133805 :: 122209	364 364 168	16 A B 13.0 67 A A B F 208 L 9	A A A A A A A A A A A A A A A A A A A	200 200 200 279 17	27 A B 0.0 88 Area A B Fir 270 Loss 20 389 26 506 224 814	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360 209	203 : 31 31 31 234 14	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Note Note E Foundation Cond Total Conductive Air Leakage	Ift. exposed wall A Ift. exposed wall A Ift. exposed wall B Celling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Floors Suctive Heatloss Heat Loss Heat Gain Less Gain Case 1 Case 2 Case 3	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	11.73 29.66 22.60 24.56 39.12 3.20 0.60 1.51 1.44 0.23 x	69 A B B 110.0 573 Ara A B Fir Fir 6690 Lo	SSS Ga :: 11595 :: 122210 :: 133805 :: 122209	364 2796	16 A B 13.0 67 A A B F 208 L 9	A 3 Area A 3 B 5 Fir	106 279	27 A B B 0.0 888 Area A B Fir 270 Loss 20 389 26 506 224 814	Gain 593 83 134 810	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360	10 2: 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Note Note Note Note Note Note Note Note	of the exposed wall A of the exposed wall A celling height Floor area Exposed Cellings A Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Cellings A et exposed Walls B Exposed Floors Juctive Heatloss Heat Loss Heat Gain Heat Loss/Gain 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 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5805 0.04 16.80	11.73 29.66 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	69 A B B 110.0 S 120 A B Fir 690 Lo 608 : :	SSS Ga 22210 22210 22209 173	364 22796 168	16 A B 13.0 67 A A B B F 208 L L 1778	A 3 3 3 4 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	279 17	27 A B 0.0 88 Area A B Fir 270 Loss 20 389 26 506 224 814	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360 209	100 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Net E E E Foundation Cond Total Conductive Air Leakage Ventilation	Inf. exposed wall A Inf. exposed wall A Inf. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Floors Juctive Heatloss Heat Loss/Gain Heat Loss/Gain Case 2 Case 3 Leas 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 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5805 0.04 16.80	11.73 29.66 22.50 24.56 89.12 0.60 1.51 0.67 1.44 0.23 x 0.08 13.82 0.08	69 A B B 110.0 573 Ara A B Fir Fir 6690 Lo	SSS Ga 22210 22210 22209 173	364 364 168	16 A B 13.0 67 A A B F 208 L 9	A 3 3 3 4 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	200 200 200 279 17	27 A B 0.0 88 Area A B Fir 270 Loss 20 389 26 506 224 814	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360 209	100 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Number of the state of the stat	and the exposed wall A and the exposed wall B celling height Floor area Exposed Cellings A Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B exposed Cellings B Exposed Floors Sexposed Cellings B Exposed Floors Heat Coss Heat Gain Heat Loss/Gain Heat Case 1 Case 2 Case 3 Heat Gain People Appliances Loads Att. 15 Case 1 Case 3 Cas	4.00 4.00 1.99 2.03 4.00 21.40 8.50 22.2 27.65 29.80	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5805 0.04 16.80 0.05	11.73 29.66 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	69 A B B 10.0 For a B B Fire Series S	Gasss Gass Gasss Gass Gasss Gasss Gasss Gass Gas Ga	364 22796 168	16 A B 13.0 67 A A B B F 208 L L 1778	A 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	279 17	27 A B B 0.0 88 Area A B Fir 2770 Loss 20 389 26 506 814 1709 992 78	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 0 175 1 185 360 209	100 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	11 A B B 10 Area A B Filr 10 Loss Gain 10 584 677 10 1965 90 1141 5 1965 90 1141 5	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Net E E E Foundation Cond Total Conductive Air Leakage Ventilation	Inf. exposed wall A Inf. exposed wall A Inf. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Floors Juctive Heatloss Heat Loss/Gain Heat Loss/Gain Case 2 Case 3 Leas Gain People Appliances Loads	4.00 4.00 1.99 2.03 4.00 21.40 8.50 22.2 27.65 29.80	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5805 0.04 16.80	11.73 29.66 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 x	69 A B B 10.0 For a B B Fire Series S	SSS Ga 22210 22210 22209 173	364 22796 168	16 A B 13.0 67 A A B B F 208 L L 1778	A 3 3 3 4 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	279 17	27 A B 0.0 88 Area A B Fir 270 Loss 20 389 26 506 224 814	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 9 175 51 185 360 209	100 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	11 A B B	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Run E E Note Note Note Air Leakage Ventilation	and the exposed wall A and the exposed wall B celling height Floor area Exposed Cellings A Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed Walls B Exposed Floors Heat Gain Heat Loss Heat Gain Heat Loss Gain Heat Gain Heat Gain People Appliances Loads Duct and Pipe loss Lating People Suctive Hoat Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss Lating People Suctive Hoats Suctive Heat Gain People Appliances Loads Duct and Pipe loss 14,748	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80 x	19.45 19.45 19.45 39.10 38.31 38.33 19.45 3.64 9.15 1.31 2.61 2.61 0.5805 0.04 16.80 0.05	11.73 22.66 22.60 24.56 33.20 0.60 1.51 1.44 0.23 0.60 0.08 13.82 0.60 0.08 13.82 239 4352	69 A B B 10.0 For a B B Fire Series S	ss Ga 11595 :: 22210 :: 173 :: 6187	2432 364 2796 168 228 22176	16 A B 13.0 67 A A B B F 208 L L 1778	A 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	106 2 279 17 23 1088	27 A B B 0.0 88 Area A B Fir 2770 Loss 20 389 26 506 814 1709 992 78	Sain 593 83 134 810 49 66	6 A B B 10.0 31 Area A B Fir 60 Loss 0 175 1 185 360 209	203 : 31 31 31 41 19 1	11 A B B 10 16 Area A B Fiir 10 10 Loss Gain 10 10 1381 22' 11965 900 1141 5 11965 900 1141 5 11965 900 1141 5	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain
Number of the state of the stat	and the exposed wall A and the exposed wall B celling height Floor area Exposed Cellings A Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B exposed Cellings B Exposed Floors Sexposed Cellings B Exposed Floors Heat Coss Heat Gain Heat Loss/Gain Heat Case 1 Case 2 Case 3 Heat Gain People Appliances Loads Att. 15 Case 1 Case 3 Cas	4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80 x	19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61 0.5805 0.04 16.80 0.05	11.73 22.66 22.60 24.56 33.20 0.60 1.51 1.44 0.23 0.60 0.08 13.82 0.60 0.08 13.82 239 4352	69 A B B 10.0 For a B B Fire Series S	ss Ga 11595 :: 22210 :: 173 :: 6187	364 22796 168	16 A B 13.0 67 A A B B F 208 L L 1778	A 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	279 17	27 A B B 0.0 88 Area A B Fir 2770 Loss 20 389 26 506 814 1709 992 78	Sain 593 83 134 810 49	6 A B B 10.0 31 Area A B Fir 60 Loss 0 175 1 185 360 209	100 2: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	11 A B B 10 Area A B Filr 10 Loss Gain 10 584 677 10 1965 90 1141 5 1965 90 1141 5	B 10.0 Area A B Fir Loss		B 0.0 Area A B Fir	B 10.0 Area A B Fir		B 0.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	Gain

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under 32964

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

Man 16Cot 2

David DaCosta

SB-12 Package **Energy Star**



48,687

27,477

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		September 2	1 2022				Weather Da	ata Richmond Hil	I 44	-5.8 88 20	50			Page 5
	Builder.	LIN All Systems	_ Date				•	Contain 4				• •••	-5.0 60 20	30		Project #	PJ-00267
2012 OBC	Project:	King East Developments	Model:		Model 2700	WOB		System 1		Heat Loss	s ^T 77.8 deg. F	Ht gain ^T	12.8 deg. F			Layout #	JB-09156
Level 3 Run ft. exposed wall A Run ft. exposed wall B	<u>.</u>	MA: 34 A B	11	В	BED 24 A B	11 A B		BED 3 29 A B		BATH 2 4 A B	BED 2 11 A B	ENS 25 A B	A B		A B	A	
Ceiling height Floor area		9.0 302 Area	9.0	Area	9.0 180 Area	9.0 93 Area		9.0 180 Area	9.0	0 0 Area	9.0 151 Area	9.0 135 Area	9.0 Area	9.	0 Area	9.0	rea
Exposed Ceilings A		302 Area 302 A	257		180 Area	93 A ea		180 A		O Alea	151 A	135 Area 135 A	A		Area	A	
Exposed Ceilings B		В		В	В	В		В		В	В	В	В		В	В	
Exposed Floors Gross Exp Wall A		Flr 306	99	Flr	180 Flr 216	93 Flr 99		9 Flr 261	120	Flr 6	Flr 99	Flr 225	Fir		Flr	F	ır
Gross Exp Wall B																	
Components North Shaded	R-Values L 4.00	oss Gain Loss 19.45 11.73	Gain 11	Loss Gain	Loss 129	Gain Loss	Gain	Loss Gain	1	Loss Gair	n Loss Gain	Loss	Gain Loss	Gain	Loss Gai	n L	oss Gain
East/West	4.00	19.45 29.66 24 46			25 486	6 742 15 292	445	33 642 9	979			24 467	712				
South Existing Windows	4.00 1.99	19.45 22.60 39.10 24.56								9 175	203 16 311 36	2					
Skylight	2.03	38.33 89.12															
Doors	4.00	19.45 3.20	- 400 00	200	50 404 60	444 04 005		200 200 4	100 44	405	70 00 000 5	0 004 704	400				
Net exposed walls A Net exposed walls B	21.40 8.50	3.64 0.60 282 102 9.15 1.51	5 169 88	320	53 191 694	4 114 84 305	50	228 829 1	136 11	7 425	70 83 302 5	0 201 731	120				
Exposed Ceilings A	59.22	1.31 0.67 302 39	7 203 257	338 1	173 180 230	6 121 93 122	63	180 236 1	121 9	0 118	60 151 198 10	1 135 177	91				
Exposed Ceilings B Exposed Floors	27.65 29.80	2.81 1.44 2.61 0.23	60	157	14 180 470	0 41 93 243	21	9 23	2								
Foundation Conductive Heatloss																	
Total Conductive Heat Loss Heat Gain		188	1083	1028	188	1018 962	579	1731	238	719	334 811 51:	1375	923				
Air Leakage Heat Loss/Gain		0.3375 0.0600 63			22 63		35		74		20 274 3		55				
Ventilation Case 1		0.03 0.08 16.80 13.82															
Case 3	x	0.05 0.08	6 88	47	30 80		47		101	33	27 37 43		75				
Heat Gain People Appliances Loads	1 =.25 pe	239 2 ercent 4352	478		1	239		1 2	239		1 23	9					
Duct and Pipe loss	1 =.25 pe	10%			1 25:	2 126 1 129	58										
Level HL Total 14,766 Level HG Total 10,778		ral HL for per room HG per room x 1.3	2229	1422	286	1984	934	2393	148	994	495 1122 1073	1901	1369				
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B		A B Area A B		A B Area A B	A B Area A B	A B Area A B		A B Area A B		A B Area A B	A B Area A B	A B Area A B	A B Area A B		A B Area A	A B	rea
Exposed Floors Gross Exp Wall A Gross Exp Wall B Components	R-Values L	Fir oss Gain Loss	Gain	Fir Loss Gain	Flr n Loss	Flr Gain Loss	Gain	Fir Loss Gain	1	Fir Loss Gair	Flr n Loss Gain	Fir	Fir Gain Loss	Gain	Flr Loss Gai	n L	ir oss Gain
North Shaded	4.00	19.45 11.73															
East/West South	4.00 4.00	19.45 29.66 19.45 22.60															
Existing Windows	1.99	39.10 24.56															
Skylight Doors	2.03 4.00	38.33 89.12 19.45 3.20															
Net exposed walls A	21.40	3.64 0.60															
Net exposed walls B Exposed Ceilings A	8.50 59.22	9.15 1.51 1.31 0.67															
Exposed Ceilings B	27.65	2.81 1.44															
Exposed Floors Foundation Conductive Heatloss	29.80	2.61 0.23															
Total Conductive Heat Loss																	
Heat Gain Air Leakage Heat Loss/Gain		0.0000 0.0600															
Case 1		0.00 0.08															
Ventilation Case 2		16.80 13.82															
Case 3 Heat Gain People	x	0.05 0.08 239															
Appliances Loads	1 =.25 pe	rcent 4352															
Duct and Pipe loss Level HL Total 0	Tot	10% al HL for per room															
Level HG Total 0		HG per room x 1.3															
40 607	Ī			I review and t	take responsibilit	y for the design work an	nd am qu	alified in the approp	oriate cat	tegory as an "o	other designer" under					SB-12 P	ackage

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

Man Hotel

David DaCosta

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

Project # Layout # Page 6 PJ-00267 JB-09156

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under

Division C subsection 3.2.5. of the Building Code. Individual BCIN: 32964 for David DaCosta

Package:	Energy Star								
Project:	Richmond Hill		Model:		Mode	l 2700	WO	В	
	RESIDENTIAL MECHANICAL	VFI	NTII ATION DE	SIGN S	UMN	IΔRY	,		
	For systems serving one dwelling unit & co				_				
	, ,		<u> </u>	,	<u> </u>				
	Location of Installation	1 F	Total	Ventilation	ո Capac	ity 9.32	2.3.3(1)	
Lot #	Plan #		Bsmt & Master Bdrm	n		21.2		42.4	-
Township	Richmond Hill		Other Bedrooms Bathrooms & Kitcher	n		10.6 10.6	cfm	31.8 53	ctm cfm
Roll #	Permit #]	Other rooms		4 @			42.4 169.6	-
Address] <u>L</u>							
		. F	Principa	al Ventilat	on Cap	acity 9.	32.3.	4(1)	
Name	Builder	4	Master bedroom		1 @	31.8	ofm	31.8	ofm
IName	EM Alr Systems		Other bedrooms			15.9		47.7	
Address						Total		79.5	
City			Pri	ncipal Exh	aust Fa	n Capa	city		
Tel	Fax	1	Make	-	Mode			Location	
		<u> </u>	VanEE	\	/150E75	SNS		Base	
Mana	Installing Contractor	4	407				00.0	0	
Name			127 cfm				80.0	Sones	or Equiv.
Address		1 6		Heat Reco	very Ve	entilato	r		
			Make		VanE	E			
City			Model	127 cfm	V150E7	5NS		90	cfm low
Tel	Fax		Sensible efficiency @	@ -25 deg				60% 75%	, <u>)</u>
		- L	Note: Installer to ba		V/ERV to	o within	10 pe	ercent of F	PVC
, ,	Combustion Appliances 9.32.3.1(1)	1 F	Supp	plemental	Ventilat	ion Ca	oacity	/	
a) x b) c) d) e)	Direct vent (sealed combustion) only Positive venting induced draft (except fireplaces) Natural draft, B-vent or induced draft fireplaces Solid fuel (including fireplaces) No combustion Appliances		Total ventilation cap Less principal exhau REQUIRED supplen	ust capacity		ity		169.6 79.5 90.1	cfm
] [S	Supplemen	tal Fans	9.32.3	.5.		
	Heating System	1	Location		m	Mode		Sone	
X	Forced air Non forced air Electric space heat (if over 10% of heat load)		Ens Bath		0 0	XB50 XB50		0.3 0.3	
I X	House Type 9.32.3.1(2) Type a) or b) appliances only, no solid fuel Type I except with solid fuel (including fireplace)] L	all fans HVI listed	Mak	e Bro	an		or Equiv.	
III	Any type c) appliance			Designe					
IV Other	Type I or II either electric space heat Type I, II or IV no forced air		I hereby certify that t in accordance with the	this ventila	ion syste	em has	been	designed	

Designer Certification											
I hereby certify th	I hereby certify that this ventilation system has been designed										
in accordance wi	th the Ontario B	uilding Code.	-								
Name	David D	aCosta									
	47	1660									
Signature	- Earne	40 6 2									
HRAI#	5190	BCIN #	32964								
Date	September	21, 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)

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Project # PJ-00267
Layout # JB-09156

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 Principal Authority											
A l' 4'	NI		or use by Fillicip									
Application	No:			Model/Certification Nur	mber							
	Project Information						T					
Building nur	mber, street name				Unit numbe	er	Lot/Con					
		Mode	I 2700 WOB									
Municipality	Richmond Hill	Po	ostal code	Reg. Plan number / oth	ner descript	ion						
B.	Prescriptive Compliance [indicate the build	ding code co	ompliance option l	peing employed in the	house des	ign]						
	☐ SB-12 Performance* [SB-12 - 3.1.2.] *Attach energy performance results using an approved software (see guide)											
V	✓ ENERGY STAR®* [SB-12 - 3.1.3.] *Attach Builder Option Package [BOP] form											
	R-2000®* [SB-12 - 3.1.3.]	*Attach R	-2000 HOT200	00 Report								
C.	Project Building Design Conditions											
	Climatic Zone (SB-1):	Heat. Equ	uip. Efficiency		Space	Heating Fu	uel Sourc	е				
V	Zone 1 (< 5000 degree days)		AFUE	✓ Gas		Propane		Solid Fuel				
	Zone 2 (≥ 5000 degree days)	□ ≥ 849	% < 92% AFUE	☐ Oil		Electric		Earth Energy				
R	atio of Windows, Skylights & Glass (W, S	& G) to Wa	III Area		Other E	Building Cha	aracterist	ics				
Area of	Walls = 382.9 m² or 4121.9 ft²			Log/Post&Beam		ICF Above (Grade	☐ ICF Basement				
Area or	Walls = <u>382.9</u> m² or <u>4121.9</u> ft²			☐ Slab-on-ground		Walkout Bas	sement					
		W,S &0	3 % = <u>9%</u>	☑ Air Conditioning	1.1	Combo Unit						
Area of W	$I, S \& G = 34.84 \text{ m}^2 \text{ or } 375.0 \text{ ft}^2$			☐ Air Sourced Heat	t Pump (AS	SHP)						
	☐ Ground Source Heat Pump (GSHP)											
SB-12 Pe	-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance											
SB-1	SB-12 Referenced Building Package (input design package):											
D.	Building Specifications [provide values an	nd ratings of	the energy efficie	ncy components propo	osed, or at	tach ENERG	Y STAR BO	OP form]				
	<u> </u>				•			-				

Building Component		I/R-Values or n U-Value¹	Building Component	Efficiency Ratings
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value ⁽¹⁾ or ER rating	
Ceiling with Attic Space	60	59.22	Windows/Sliding Glass Doors	1.4
Ceiling without Attic Space	31	27.65	Skylights	2.8
Exposed Floor	31	29.80	Mechanicals	
Walls Above Grade	22 +5.0ci	21.40	Heating Equip.(AFUE)	96%
Basement Walls	20.0ci	20.84	HRV Efficiency (SRE% at 0°C)	75%
Slab (all >600mm below grade)	х	х	DHW Heater (EF)	0.95
Slab (edge only ≤600mm below grade)	10	11.13	DWHR (CSA B55.1 (min. 42% efficiency))	42.0% #Showers 2
Slab (all ≤600mm below grade, or heated)	10	11.13	Combined Heating System	

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



Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

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Project # PJ-00267 Layout # JB-09156

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

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

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 Option	RSI 4.87 (R 27.7) N/A	Core Minimum n/a	√	R31	
Ceilings Below Attic and Cathedral Ceilings/Flat Roofs	Option	N/A	n/a			
Walls Above Grade	Core Option	RSI 3.08 (R 17.5) RSI 3.72 (R 21.1)	Core Minimum 0.7	√	R22+R5	
Floors Over Unheated Spaces	Core	RSI 5.25 (29.8)	Core Minimum	√	R31	
Foundation Walls Below or in Contact with the Ground	Core Option	RSI 3.72 (R 21.1) below grade N/A	Core Minimum n/a	√	R20 blanket	
Unheated Floors on Ground Above Frost Line	Core	RSI 1.96 (R 11.1)	Core Minimum	√	R10 if applicable	
Unheated Floors on Ground Below Frost Line	Option	N/A	n/a			
Heated Floors on Ground	Core	N/A	n/a			
Slabs on Grade with Integral Footing	Core	N/A	n/a			
	Core	ENERGY STAR Zone 2 UV1.4 and/or ER29	Core Minimum	√	Zone 2	
Windows (Fenestrations)	Option	N/A	n/a			
Wildows (Tellestrations)	Core	Total area of all windows to max. 20% of above grade wall area.	Core Minimum	√		
Fireplace	Core	Gas fireplace spak ignition if installed	#N/A	√		
Space Heating	Core	Min. 96% AFUE ENERGY STAR fuel fired furnace	Core Minimum	√		
	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	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			
ventuation (HRV / ERV)	Option	≥75% SRE @ 0 °C	0.2	√.		
		Interconnected to the Furnace Fan	Required	√,		
-		HRV balanced SRE ≥75% SRE @ 0 °C, ≥ 0.57 L/s/W	Required 0.1	√ √		
	Core	75% ENERGY STAR lighting	Core Minimum	V		
Electrical Savings		100% ENERGY STAR lighting	0.1	√		·
ENERGY STAR Certified Appliances	Option	N/A	n/a			

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



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Layout # JB-09156

Energy Star Richmond Hill System: Model: System 1 Model 2700 WOR Package:

Project	t: Richmond Hill	Model: Model 2700 WOB
	Air Leakage Ca	Calculations
	Building Air Leakage Heat Loss B LRairh Vb HL^T HLleak 0.018 0.387 32411 77.8 17552	Building Air Leakage Heat Gain B LRairh Vb HG^T HG Leak 0.018 0.108 32411 12.8 809
╟		Levels
	Air Leakage Heat Loss/Gain Multiplier Table (Section 11)	1 2 3 4
	Level Level Building Level Conductive Air Leakage He Factor (LF) Air Heat Loss (HLclevel) Multiplie	Heat Loss (LF) (LF) (LF)
	Level 1 0.5 9946 0.8824 Level 2 0.3 17552 9070 0.5805 Level 3 0.2 17552 10402 0.3375	0.4 0.3 0.3
	Level 3 0.2 10402 0.3375 Level 4 0 0 0.0000	
	Air Leakage He	
		53 M
	Ventilation Ca	alculations
	Ventilation Heat Loss	Ventilation Heat Gain
Vent	Ventilation Heat Loss C 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
	Case 1	Case 1
	Ventilation Heat Loss (Exhaust only Systems)	Ventilation Heat Gain (Exhaust Only Systems)
Case 1	Case 1 - Exhaust Only Level LF HLbvent LVL Cond. HL Multiplier Level 1 0.5 9946 0.07 Level 2 0.3 9070 0.04 Level 3 0.2 10402 0.03 Level 4 0 0 0.00	Case 1 - Exhaust Only Multiplier HGbvent 1099 Building 13497 0.08
	Case 2	Case 2
2	Ventilation Heat Loss (Direct Ducted Systems)	Ventilation Heat Gain (Direct Ducted Systems)
Case	C HL^T (1-E) HRV 1.08 77.8 0.20 16.80	Multiplier Φ Θ Θ Θ Θ Θ Θ Θ Θ Θ
	Case 3	Case 3
8	Ventilation Heat Loss (Forced Air Systems)	Ventilation Heat Gain (Forced Air Systems)
Case	Total Ventilation Load 1336 0.05	Vent Heat GainMultiplierHGbventHG*1.310990.08
Found	dation Conductive Heatloss Level 1 Level 1	2000 Watts 6824 Btu/h
Found	dation Conductive Heatloss Level 2 Level 2	Watts Btu/h
Slab	on Grade Foundation Conductive Heatloss	Watts Btu/h
Walk	Out Basement Foundation Conductive Heatloss	148 Watts 504 Btu/h

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station	Description
Province:	Ontario $lacksquare$
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shie	lding
Building Site:	Suburban, forest ▼
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	8.53
Building Conf	iguration
Type:	Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m³):	917.88
Air Leakage/V	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
Custom BDT Data:	322.44 cm ² 3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply: Total Exhaust: 39.75 39.75
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Heating Air Leakage Rate (ACH/H):	0.387
Cooling Air Leakage Rate (ACH/H):	0.108

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description			
Province:		Ontario	
Region:		Richmond Hill	
	Site D	escription	
Soil Conductivity:		High conductivity: moist soil ▼	
Water Table:		Normal (7-10 m, 23-33 Ft) ▼	
Fou	ındatio	n Dimensions	
Floor Length (m):	18.75		
Floor Width (m):	4.88		
Exposed Perimeter (m):	38.40		
Wall Height (m):	2.74		
Depth Below Grade (m):	0.91	Insulation Configuration	
Window Area (m²):	1.39		
Door Area (m²):	1.95		
	Radi	ant Slab	
Heated Fraction of the Slab:	0		
Fluid Temperature (°C):	33		
Desig		n Months	
Heating Month	1		
	Founda	ation Loads	
Heating Load (Watts):	Heating Load (Watts): 2000		

Residential Slab on Grade 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)	
	Floor D	Pimensions	
Length (m):	8.69		
Width (m):	0.61	- 	
Exposed Perimeter (m):	10.06	Insulation Configuration	
	Radi	ant Slab	
Heated Fraction of the Slab:	0		
Fluid Temperature (°C):	33		
	Desig	n Months	
Heating Month			
Foundation Loads			
Heating Load (Watts):		148	



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

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

Effective R-Value Calculations

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

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

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

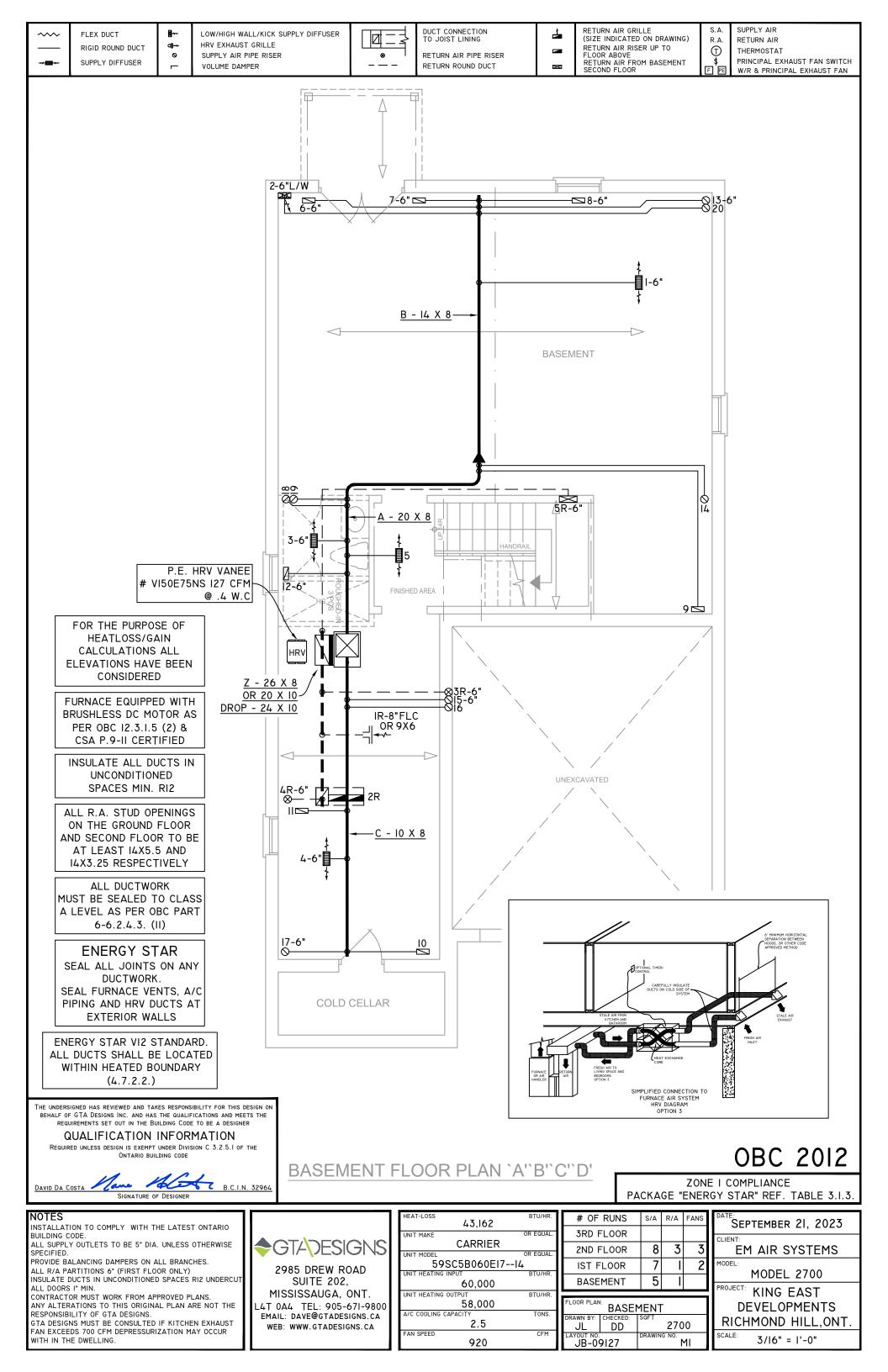


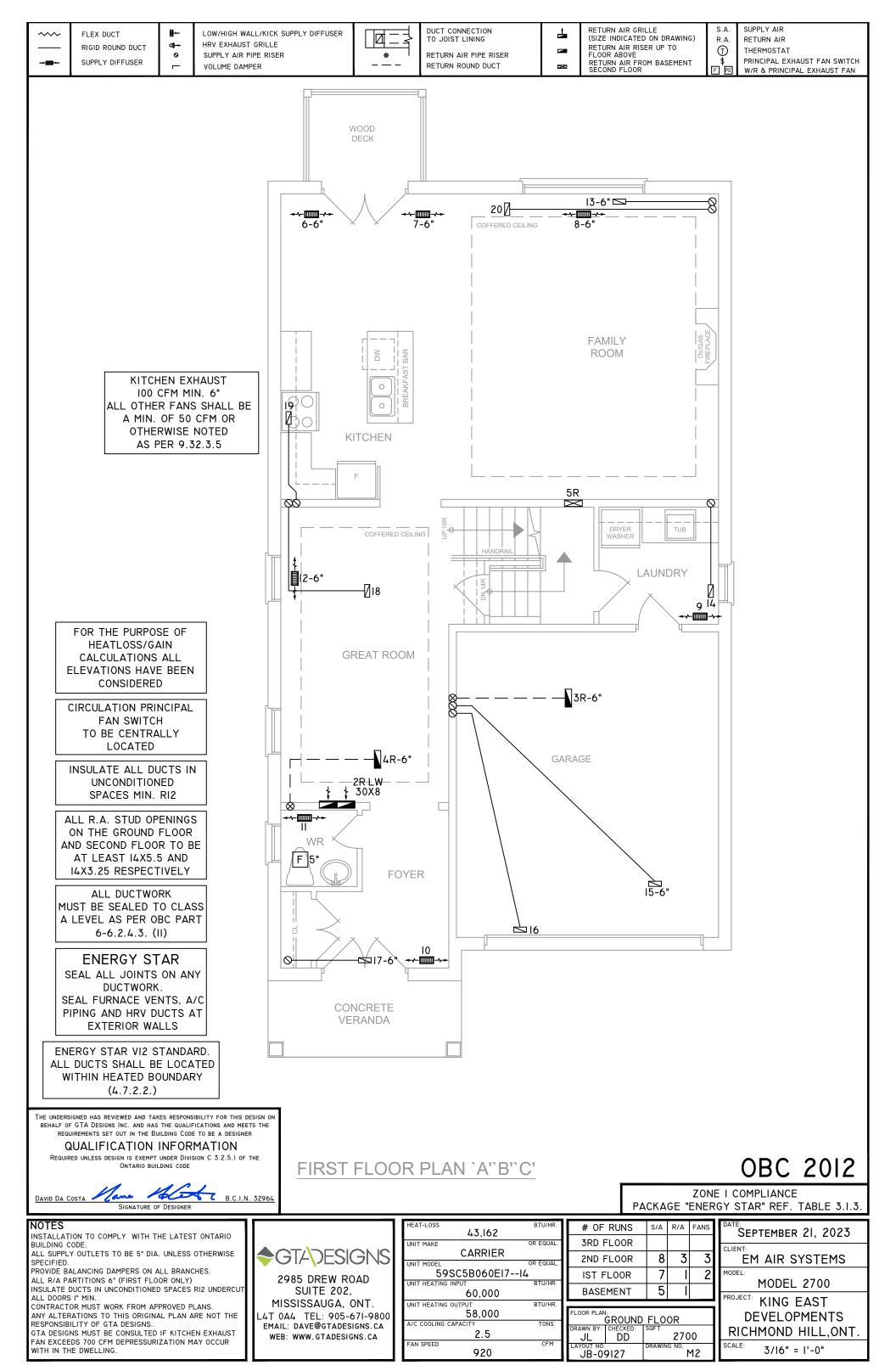
2985 Drew Road, Suite 202 Mississauga, Ontario L4T 0A4

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

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

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





FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER

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

8

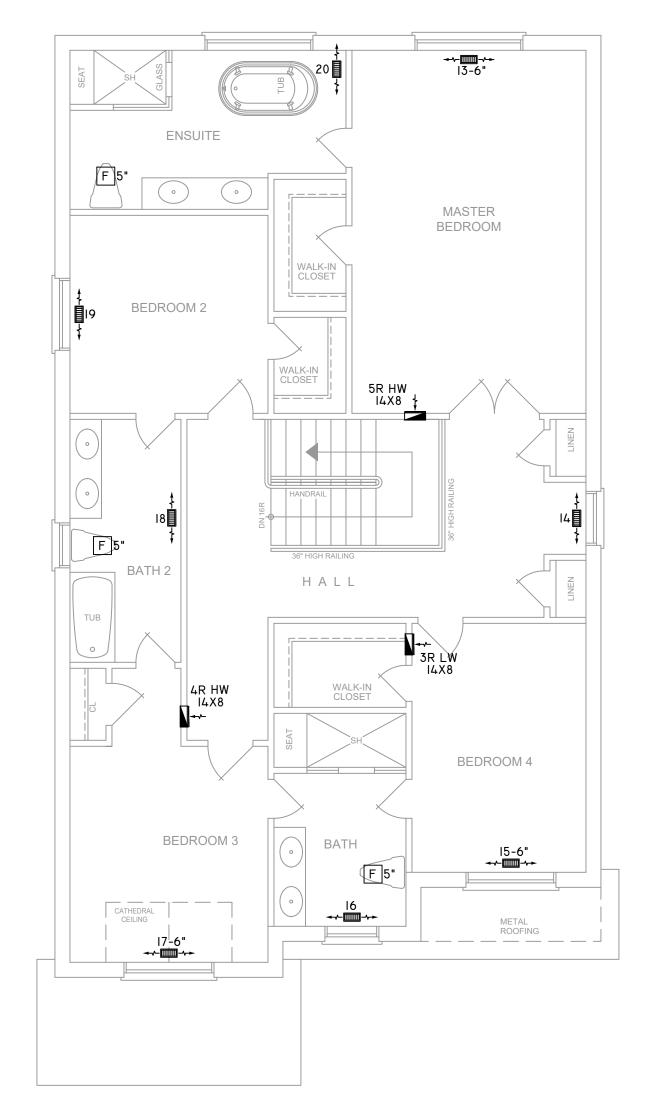
TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

DUCT CONNECTION

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

R.A 1

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



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

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

Ane 166 B.C.I.N. 32964

SECOND FLOOR PLAN 'A'B'C'

OBC 2012

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

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

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

CONTRACTOR MUST WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSIBILITY OF GTA DESIGNS. GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST

FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING.



2985 DREW ROAD SUITE 202,

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

HEAT-LOSS	BTU/HR.
43,162	
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	8	3	3
IST FLOOR	7	I	2
BASEMENT	5	I	
FLOOR PLAN: SECOND FLOOR			

2700

M3

CHECKED

DD

JB-09127

SEPTEMBER 21, 2023 CLIENT **EM AIR SYSTEMS** MODEL MODEL 2700 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 ₫~ 0 SUPPLY AIR PIPE RISER VOLUME DAMPER



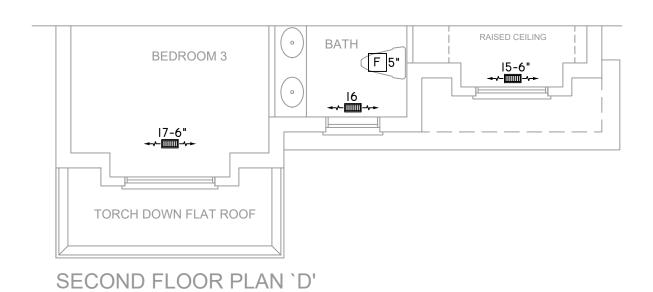
DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT

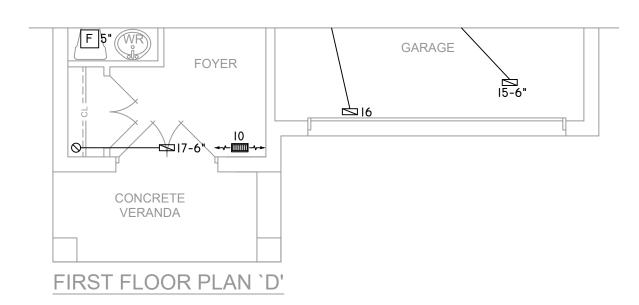
4 \boxtimes

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

R.A 1

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





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

Ane 16 B.C.I.N. 32964

OBC 2012

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

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

SPECIFIED.
PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

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

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

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



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

43,162	BTO/FIK.		
UNIT MAKE	OR EQUAL.		
CARRIER			
UNIT MODEL	OR EQUAL.		
59SC5B060EI7I4			
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			

ГА	CNA	GL	LINL	(6) 3)		
# OF RUNS	S/A	R/A	FANS	DATE:		
3RD FLOOR				CLIENT		
2ND FLOOR	8	3	3			
IST FLOOR	7		2	MODEL	:	
BASEMENT	5	- 1			_	
BAGETTERT	Ū			PROJEC	2	
FLOOR PLAN: PARTIAL PLAN(S)						
JL CHECKED: DD	SQFT	270	00	RIC	_	
LAVOUT NO	DDAWIN	CNO		CCALE.		

JB-09127

M4

4	SEPTEMBER 21, 2023			
	CLIENT:			
5	EM AIR SYSTEMS			
)	MODEL:			
4	MODEL 2700			
ı				
┛	PROJECT: KING EAST			
	DEVELOPMENTS			
ı	RICHMOND HILL,ONT.			

3/16" = 1'-0"