

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 3400			Lot/con.	
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	I, Suite 202		Unit no.	Lot/con.
Municipality Mississauga	Postal code L4T 0A4	Province Ontario	E-mail hvac@gtades	igns ca
Telephone number	Fax number	Ontario	Cell number	<u>igno.oa</u>
(905) 671-9800				
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	use		☐ Building Structural	
☐ Small Buildings ☐ Building Ser	vices		☐ Plumbing – House	
	ighting and Pow	er	☐ Plumbing – All Building	
☐ Complex Buildings ☐ Fire Protecti			☐ On-site Sewage System	
Description of designer's work Mod	el Certification		Project #:	
Heating and Cooling Load Calculations Main	Х	Builder	Layout #: EM Air Systems	JB-09093
Air System Design Alternate	^	Project	King East Developm	
Residential mechanical ventilation Design Summary O.D. GFA	3415	Model	Madal 2400 WOF	
Residential System Design per CAN/CSA-F280-12 Residential New Construction - Forced Air		SB-12	Model 3400 WOE Energy Star	3
D. Declaration of Designer		0B 12	Lifergy otal	
David DaCosta (print name) I review and take responsibility for th Division C of the Building Code. I am classes/categories. Individual BCIN: Firm BCIN:	e design work o		tered under subsection 3.2.4	
☑ I review and take responsibility for the designer" under subsection 3.2.5 of Individual BCIN:	•	e Building Code.	opriate category as an "other	
Basis for exemption	on from registra	tion: <u>E</u>	Division C 3.2.4.1. (4)	,
☐ The design work is exempt from the	registration and	qualification requireme	ents of the Building Code.	
Basis for exemption	on from registrat	ion and qualification:		
I certify that: 1. The information contained in this schedule is true to the best of my 2. I have submitted this application with the knowledge and consent of	-			
July 31, 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

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Heat loss and gain calcula	tion summary sheet CSA-F280-M12 Standard
These documents issued for the use of	M Air Systems Layout No.
and may not be used by any other persons without authorization. Documents	for permit and/or construction are signed in red. JB-09093
Building L	ocation
Address (Model): Model 3400 WOB	Site: King East Developments
Model:	Lot:
City and Province: Richmond Hill	Postal code:
Calculations	based on
Dimensional information based on:	chitectural Design Inc.Mar/2023
Attachment: Detached	Front facing: East/West Assumed? Yes
No. of Levels: 3 Ventilated? Included	Air tightness: 1961-Present (ACH=3.57) Assumed? Yes
Weather location: Richmond Hill	Wind exposure: Sheltered
HRV? VanEE V150E75NS	Internal shading: Light-translucent Occupants: 5
Sensible Eff. at -25C 60% Apparent Effect. at -0C 80%	Units: Imperial Area Sq ft: 3415
Sensible Eff. at -0C 75%	
Heating design conditions	Cooling design conditions
Outdoor temp -5.8 Indoor temp: 72 Mean soil temp: 50	Outdoor temp 88 Indoor temp: 75 Latitude: 44
Above grade walls	Below grade walls
Style A: As per OBC SB12 Energy Star R 22 + 5ci	Style A: As per OBC SB12 Energy Star R 20ci
Style B:	Style B:
Style C:	Style C:
Style D:	Style D:
Floors on soil	Ceilings
Style A: As per Selected OBC SB12 Energy Star	Style A: As per Selected OBC SB12 Energy Star R 60
Style B:	Style B: As per Selected OBC SB12 Energy Star R 31
Exposed floors	Style C:
Style A: As per Selected OBC SB12 Energy Star R 31	Doors
Style B:	Style A: As per Selected OBC SB12 Energy Star R 4.00
Windows	Style B:
Style A: As per Selected OBC SB12 Energy Star R 4.00	Style C:
Style B:	Skylights
Style C:	Style A: As per Selected OBC SB12 Energy Star R 2.03
Style D:	Style B:
Attached documents: As per Shedule 1 Heat Loss/G	ain Caculations based on CSA-F280-12 Effective R-Values
Notes: Residential New C	onstruction - Forced Air
Calculations p	erformed by
Name: David DaCosta	Postal code: L4T 0A4
Company: gtaDesigns Inc.	Telephone: (905) 671-9800
Address: 2985 Drew Road, Suite 202	Fax:
City: Mississauga	E-mail hvac@gtadesigns.ca



EM Air Systems

Builder:

Air System Design

Energy Star SB-12

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

Date: July 31, 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

Project #

PJ-00267

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Project: King East I	Developm	nents		Model:		N	lodel 34	00 WOB				Sy	stem 1	1	_	ndividual	BCIN:	32964	Man	ne A	A	D	David DaCo	osta		yout #		09093
DESIGN LOAD SPECIFICATION	s		1	AIR DISTR	IBUTION	& PRESSU	JRE				F	URNACE/A	AIR HANI	DLER DATA	A :			BOILER/V	VATER HEA	TER DAT	ГА:				A/C UNIT D	DATA:		
Level 1 Net Load	23,710 l	otu/h			t External				0.5 "	w.c.	_	ake		Carrie				Make				ype		_	Carrier	,,,,,	3.0 T	on
Level 2 Net Load	17,769 k				Equipme				0.225 "			lodel	5	59SC5B080				Model				,,,,			Cond		3.0	
Level 3 Net Load	18,511 k				Design Pre				0.275 "			put Btu/h		8000				Input Btu	h						Coil		3.0	
Level 4 Net Load	0 1	tu/h			anch Long		ive Lengtl	h	300 f	t	0	utput Btu/	'h	7800	0			Output B	u/h									
Total Heat Loss	59,990 b	tu/h	F	R/A Plenui	m Pressur	е			0.138 "	w.c.	E	.s.p.		0.50		w.c.		Min.Outp	ut Btu/h		A	WH						
Total Heat Gain	32,407 k	tu/h	5	S/A Plenur	n Pressur	е			0.14 "	w.c.	W	ater Temp)		d	leg. F.						Blo	wer DATA	:				
			H	leating Ai	r Flow Pro	portionin	g Factor		0.0198 c	fm/btuh	Α	FUE		98%				Blower S	eed Selecte	ed:	Blue)			Blower Typ	e E	СМ	
Building Volume Vb	42327 f	t³	(Cooling Ai	ir Flow Pro	portionin	g Facter		0.0366	fm/btuh	А	ux. Heat													(Brushle	ess DC OE	C 12.3.1.	5.(2))
Ventilation Load	1,336 E	Btuh.				F	R/A Temp		70 d	leg. F.	s	B-12 Pack	age	Energy	Star			Check	1185 cf	fm (Cool. Chec	k _	1185 cf	im				
Ventilation PVC	79.5	fm:					S/A Temp		131 d	leg. F.																		
Supply Branch and Grill Sizing				Diffuser lo	ss _	0.01 "	w.c.				T	emp. Rise:	>>> _	61 d	eg. F.			Heat.	1185 cf	fm (Cooling	-	1185 ct	im Γ	Design Airf	low _	1185 c	m
							Leve	el 1													Level	2						
S/A Outlet No.	1	2	3	4	26										5	6	7	8	9	10	11	12	13					
Room Use	BASE	BASE	BASE	BASE	BASE										KIT	KIT	LIV/DIN	LIV/DIN	WR	FOY	MUD	STUDY	FAM					
Btu/Outlet	4742	4742	4742	4742	4742										1721	1721	2357	2357	549	2521	2034	1346	3164					
Heating Airflow Rate CFM	94	94	94	94	94										34	34	47	47	11	50	40	27	62					
Cooling Airflow Rate CFM	32	32	32	32	32										82	82	76	76	12	33	15	86	108					
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	44	32	18	29	48										40	46	35	25	33	40	11	21	41					
Equivalent Length	100	110	90	130	90	70	70	70	70	70	70	70	70	70	120	110	70	80	120	110	120	90	90	70	70	70	70	70
Total Effective Length	144	142	108	159	138	70	70	70	70	70	70	70	70	70	160	156	105	105	153	150	131	111	131	70	70	70	70	70
Adjusted Pressure	0.09	0.09	0.12	0.08	0.09	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	80.0	0.08	0.12	0.12	0.08	0.09	0.10	0.12	0.10	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	6	6	6	6										6	6	5		3	5	4	6	6					
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10		3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	D	С	A	E	С			10							D	D	В	A	E	E	A	B	С					
S/A Outlet No.	14	15	16	17	18	19	Leve 20	21	22	23	24	25									Level	4						
Room Use	P.BED	P.BED	ENS	BED 2	BATH	MEDIA	MEDIA	BED 3	BED 3	LAUN	BATH2	BED 4																
Btu/Outlet	1650	1650	1884	1162	731	2322	2322	2224	2224	202	849	1292																
Heating Airflow Rate CFM			37	23	14	46	46	44	44	4	17	26																
	33	33																										
_	33 50	33 50		39		55	55		52	2	11	33																0.13
Cooling Airflow Rate CFM	50 0.13	50	39		16 0.13	55 0.13	55 0.13	52	52 0.13		11 0.13	33 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	
_	50			39	16	55 0.13 53			52 0.13 47	2 0.13 14	11 0.13 23	33 0.13 32	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	
Cooling Airflow Rate CFM Duct Design Pressure	50 0.13	50 0.13	39 0.13	39 0.13	16 0.13	0.13	0.13	52 0.13	0.13	0.13	0.13	0.13	0.13 70	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	70
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length	50 0.13 57	50 0.13 50	39 0.13 65	39 0.13 42	16 0.13 35	0.13 53	0.13 45	52 0.13 43	0.13 47	0.13 14	0.13 23	0.13 32						70										70 70
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length	50 0.13 57 120	50 0.13 50 100	39 0.13 65 110	39 0.13 42 100	16 0.13 35 90	0.13 53 120	0.13 45 110	52 0.13 43 160	0.13 47 170	0.13 14 130	0.13 23 120	0.13 32 120	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length	50 0.13 57 120 177	50 0.13 50 100 150	39 0.13 65 110 175	39 0.13 42 100 142	16 0.13 35 90 125	0.13 53 120 173	0.13 45 110 155	52 0.13 43 160 203	0.13 47 170 217	0.13 14 130 144	0.13 23 120 143	0.13 32 120 152	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
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure	50 0.13 57 120 177 0.07	50 0.13 50 100 150 0.09	39 0.13 65 110 175 0.07	39 0.13 42 100 142	16 0.13 35 90 125 0.10	0.13 53 120 173	0.13 45 110 155 0.08	52 0.13 43 160 203 0.06	0.13 47 170 217	0.13 14 130 144 0.09	0.13 23 120 143 0.09	0.13 32 120 152	70 70	70 70	70 70	70 70	70 70	70 70 0 0.19	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70 70	70
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round	50 0.13 57 120 177 0.07	50 0.13 50 100 150 0.09 5	39 0.13 65 110 175 0.07	39 0.13 42 100 142 0.09	16 0.13 35 90 125 0.10 3	0.13 53 120 173 0.08 6	0.13 45 110 155 0.08 6	52 0.13 43 160 203 0.06 6	0.13 47 170 217 0.06 6	0.13 14 130 144 0.09	0.13 23 120 143 0.09 3	0.13 32 120 152 0.09 4	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 0.19
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk	50 0.13 57 120 177 0.07 5 3x10	50 0.13 50 100 150 0.09 5 3x10	39 0.13 65 110 175 0.07 5 3x10	39 0.13 42 100 142 0.09 4 3x10 B	16 0.13 35 90 125 0.10 3	0.13 53 120 173 0.08 6 4x10	0.13 45 110 155 0.08 6 4x10	52 0.13 43 160 203 0.06 6 4x10	0.13 47 170 217 0.06 6 4x10	0.13 14 130 144 0.09 2 3x10	0.13 23 120 143 0.09 3 3x10	0.13 32 120 152 0.09 4 3x10 B	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 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B	16 0.13 35 90 125 0.10 3 3x10 A	0.13 53 120 173 0.08 6 4x10 E	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10 eturn Tru	70 70 0.19 4x10 unk Duct Si	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 Tru	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 0.19
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.	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B	16 0.13 35 90 125 0.10 3 3x10 A	0.13 53 120 173 0.08 6 4x10 E	0.13 45 110 155 0.08 6 4x10	52 0.13 43 160 203 0.06 6 4x10	0.13 47 170 217 0.06 6 4x10	0.13 14 130 144 0.09 2 3x10	0.13 23 120 143 0.09 3 3x10	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10	70 70 0.19 4x10 unk Duct Si	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 Supply Tru	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 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B ure Loss	16 0.13 35 90 125 0.10 3 3x10 A	0.13 53 120 173 0.08 6 4x10 E	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10 eturn Tru	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing P	70 70 0.19 4x10	70 70 0.19 4x10 Round	70 70 0.19 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trui	70 70 0.19 4x10 nk Duct S	70 70 0.19 4x10 Sizing	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12	16 0.13 35 90 125 0.10 3 3x10 A	0.13 53 120 173 0.08 6 4x10 E 0.02 "	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10 eturn Tru	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM P	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect.	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Supply Tru	70 70 0.19 4x10 nk Duct S	70 70 0.19 4x10 Sizing 1.CFM P	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. S	70 70 0.19 4x10	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B ure Loss	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12	0.13 53 120 173 0.08 6 4x10 E 0.02 "	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10 eturn Tru	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing P	70 70 0.19 4x10	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trui	70 70 0.19 4x10 nk Duct S	70 70 0.19 4x10 Sizing 1.CFM P	70 70 0.19 4x10	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. S 24x8 20x8	70 70 0.19 4x10 iize 18x10 16x10	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45	16 0.13 35 90 125 0.10 3 3x10 A	0.13 53 120 173 0.08 6 4x10 E 0.02 "	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B	70 70 0.19 4x10 eturn Tru	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trunk C	70 70 0.19 4x10 nk Duct S .CFM H	70 70 0.19 4x10 Sizing 1.CFM P	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round	70 70 0.19 4x10 Rect. S	70 70 0.19 4x10	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D srill Press 3R 171 0.12 10 165 175	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A	0.13 23 120 143 0.09 3 3x10 A	0.13 32 120 152 0.09 4 3x10 B Rt Tr	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trunk C	70 70 0.19 4x10 nk Duct S .CFM H 895 742 272	70 70 0.19 4x10 Sizing 1.CFM P 852 636 315	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8	70 70 0.19 4x10 size 18x10 16x10 10x10	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C	39 0.13 65 110 175 0.07 5 3x10 D Grill Press 3R 171 0.12 10 165 175 0.07	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115 160 0.07	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140 169 0.07	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165 203	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A 10R 0.12	0.13 23 120 143 0.09 3 3x10 A 11R 0.12	0.13 32 120 152 0.09 4 3x10 B Ref Tr Dr Z Y X	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Truit Frunk C	70 70 0.19 4x10 hnk Duct S .CFM H 895 742 272 236	70 70 0.19 4x10 Sizing H.CFM P 852 636 315 199	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5 10.0 9.0	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8 8x8	70 70 0.19 4x10 4x10 18x10 16x10 10x10 10x7	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C 2R 375 0.12 21 125 146 0.08	39 0.13 65 110 175 0.07 5 3x10 D srill Press 3R 171 0.12 10 165 175	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140 169	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165 203 0.06	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A 10R 0.12	0.13 23 120 143 0.09 3 3x10 A 11R 0.12	0.13 32 120 152 0.09 4 3x10 B Reference of the control of the cont	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Truit Frunk C	70 70 0.19 4x10 hnk Duct S .CFM H 895 742 272 236	70 70 0.19 4x10 Sizing H.CFM P 852 636 315 199	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5 10.0 9.0	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8 8x8	70 70 0.19 4x10 4x10 18x10 16x10 10x10 10x7	70 0.19
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	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C 2R 375 0.12 21 125 146 0.08 10.0	39 0.13 65 110 175 0.07 8.0	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115 160 0.07 6.0	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140 169 0.07 7.5	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165 203 0.06 8.0	0.13 45 110 155 0.08 6 4x10 E	52 0.13 43 160 203 0.06 6 4x10 E	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A 10R 0.12	0.13 23 120 143 0.09 3 3x10 A 11R 0.12	0.13 32 120 152 0.09 4 3x10 B Real Tr Dr Z Y X W V	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trunk C A A C C C C C C C C C C C C C C C C	70 70 0.19 4x10 hnk Duct S .CFM H 895 742 272 236	70 70 0.19 4x10 Sizing H.CFM P 852 636 315 199	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5 10.0 9.0	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8 8x8	70 70 0.19 4x10 4x10 18x10 16x10 10x10 10x7	70 0.19
Cooling Airflow Rate CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Outlet Size Trunk Return Branch And Grill Sizing R/A Inlet No. Inlet Air Volume CFM Duct Design Pressure Actual Duct Length Equivalent Length Total Effective Length Adjusted Pressure Duct Size Round Inlet Size Round Inlet Size	50 0.13 57 120 177 0.07 5 3x10 C	50 0.13 50 100 150 0.09 5 3x10 C 2R 375 0.12 21 125 146 0.08 10.0 8	39 0.13 65 110 175 0.07 8.0 81 171 0.12 10 165 0.07 8.0 8	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115 160 0.07 6.0 8	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140 169 0.07 7.5 8	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165 203 0.06 8.0	0.13 45 110 155 0.08 6 4x10 E 7R 0.12 50 0.24	52 0.13 43 160 203 0.06 6 4x10 E 8R 0.12 50 0.24	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A 10R 0.12 50 0.24	0.13 23 120 143 0.09 3 3x10 A 11R 0.12 50 0.24	0.13 32 120 152 0.09 4 3x10 B Ref Tr Dr Z Y X W V U	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trunk C A 3 3 5 5 6	70 70 0.19 4x10 hnk Duct S .CFM H 895 742 272 236	70 70 0.19 4x10 Sizing H.CFM P 852 636 315 199	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5 10.0 9.0	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8 8x8	70 70 0.19 4x10 4x10 18x10 16x10 10x10 10x7	70 0.19
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 " "	50 0.13 57 120 177 0.07 5 3x10 C 1R 234 0.12 8 155 163 0.07 8.0 FLC OR	50 0.13 50 100 150 0.09 5 3x10 C 2R 375 0.12 21 125 146 0.08 8 x	39 0.13 65 110 175 0.07 5 3x10 D 6rill Press 3R 171 0.12 10 165 175 0.07 8.0 8	39 0.13 42 100 142 0.09 4 3x10 B ure Loss 4R 105 0.12 45 115 160 0.07 6.0 8 x	16 0.13 35 90 125 0.10 3 3x10 A 5R 150 0.12 29 140 169 0.07 7.5 8	0.13 53 120 173 0.08 6 4x10 E 0.02 " 6R 150 0.12 38 165 203 0.06 8.0 8	0.13 45 110 155 0.08 6 4x10 E 7R 0.12 50 0.24	52 0.13 43 160 203 0.06 6 4x10 E 8R 0.12 50 0.24	0.13 47 170 217 0.06 6 4x10 E	0.13 14 130 144 0.09 2 3x10 A 10R 0.12 50 0.24	0.13 23 120 143 0.09 3 3x10 A 11R 0.12 50 0.24	0.13 32 120 152 0.09 4 3x10 B Ref Tr Dr Z Y W V U T	70 70 0.19 4x10 eturn Tru unk	70 70 0.19 4x10 unk Duct Si	70 70 0.19 4x10 zing FM F	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 16.5	70 70 70 0.19 4x10 Rect. 30x8	70 70 0.19 4x10 Size	70 70 0.19 4x10	70 70 0.19 4x10 Supply Trunk C A 3 3 5 5 6	70 70 0.19 4x10 hnk Duct S .CFM H 895 742 272 236	70 70 0.19 4x10 Sizing H.CFM P 852 636 315 199	70 70 0.19 4x10 Press. F	70 70 0.19 4x10 Round 14.5 13.5 10.0 9.0	70 70 0.19 4x10 Rect. S 24x8 20x8 12x8 8x8	70 70 0.19 4x10 4x10 18x10 16x10 10x10 10x7	70 0.19



Total Heat Loss

Total Heat Gain

59,990 btu/h

32,407 btu/h

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

		Builder:	EM A	r Systen	15		Date	::		July 31, 2	023		_			Weath	er Data	Richm	ond Hill	44	-5.8	88 20	50				Pa
2012 OBC		Project:	King East	Develop	ments	_	Mode	l:	ı	Model 3400	WOB			System 1		Heat I	oss ^T	7.8 deg. F	Ht ç	gain ^T	12.8	deg. F				ject # rout #	PJ-00 JB-09
	Level 1					ASE																					
Pun	ft. exposed wall A				152 A	·OL		Α		Α		Α		Α		Α		Α		Α		Α		Α		Α	
	ft. exposed wall B				34 B			В		B		B		В		B		В		В		B		B		В	
Run										6.0 AG		_	_	_		.0 AG		_	_	i.O AG		_		_			
	Ceiling height				6.0 AG		ъ.	0 AG				6.0 AG	6	.0 AG	ъ.			6.0 AG	6			6.0 AG		6.0 AG		6.0 AG	
_	Floor area			13	397 Area	ı		Area		Area		Area		Area		Area		Area		Area		Area		Area		Area	a
	Exposed Ceilings A				Α			Α		Α		Α		Α		Α		Α		Α		Α		Α		Α	
E	Exposed Ceilings B				В			В		В		В		В		В		В		В		В		В		В	
	Exposed Floors				Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Fir	
	Gross Exp Wall A				912																						
	Gross Exp Wall B			3	306																						
	Components	R-Values Lo	oss Gair		Los	Gai	1	Loss	Gain	Loss	Gain	Loss	Gain	Loss G	iin	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	s Ga
	North Shaded	4.00	19.45	1.73	10	195	117																				
	East/West	4.00	19.45	29.66																							
	South	4.00			15	292	339																				
WOB Window	ws Including Doors	4.00					783																				
	Skylight	2.03		39.12																							
	Doors	4.00	19.45		21	108	67																				
N-																											
Ne	et exposed walls A	20.84	3.73		366		532																				
	et exposed walls B	21.40	3.64		242	380	145																				
	Exposed Ceilings A	59.22	1.31	0.67																							
Ex	xposed Ceilings B	27.65	2.81	1.44																							
	Exposed Floors	29.80	2.61	0.23																							
undation Condu	ductive Heatloss				8	783																					
	Heat Loss					302																					
I Conductive	Heat Gain						983																				
Leakage	Heat Loss/Gain		0.9711 0	0672	11-		201																				
	Case 1			0.07																							
entilation	Case 2			3.82																							
illiation																											
	Case 3	X	0.04	0.07		146	209																				
	Heat Gain People			239																							
	Appliances Loads	1 =.25 pe	rcent	5681																							
C	Duct and Pipe loss			10%																							
vel HL Total	Duct and Pipe loss 23,710 4,410	Tota	al HL for per HG per room	10% oom			410																				
Evel HL Total evel HG Total Run	Duct and Pipe loss 23,710 4,410 Level 2 ff. exposed wall A	Tota	al HL for per	10% oom x 1.3	32 A			LIV/DIN 7 A	1	WR 5 A		FOY 24 A		MUD 20 A	1	STUDY	,	FAM 34 A		A		A		A			
vel HL Total vel HG Total Run	Duct and Pipe loss 23,710 4,410 Level 2 ift. exposed wall A ift. exposed wall B	Tota	al HL for per	10% oom x 1.3	32 A B	4	5	7 A B		5 A B		24 A B		20 A B		1 A B		34 A B		В		В		В		В	
vel HL Total vel HG Total	Duct and Pipe loss 23,710 4,410 Level 2 ift. exposed wall A ift. exposed wall B Ceiling height	Tota	al HL for per	10% oom x 1.3	32 A B	LIT 4	5 10.	7 A B 0	1	5 A B 0.0		24 A B 10.0	10	20 A B .0	10.	1 A B .0		34 A B 0.0	10	B 0.0		B 10.0		B 10.0		B 10.0	
C vel HL Total vel HG Total Run Run	Duct and Pipe loss 23,710 4,410 Level 2 ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area	Tota	al HL for per	10% oom x 1.3	32 A B	LIT 4	5 10.	7 A B	1	5 A B		24 A B	10	20 A B	10.	1 A B		34 A B	10	B 0.0 Area		В		В		В	a
vel HL Total vel HG Total Run Run	Duct and Pipe loss 23,710 4,410 Level 2 ift. exposed wall A ift. exposed wall B Ceiling height	Tota	al HL for per	10% oom x 1.3	32 A B	LIT 4	5 10.	7 A B 0	1	5 A B 0.0		24 A B 10.0	10	20 A B .0	10.	1 A B .0		34 A B 0.0	10	B 0.0		B 10.0		B 10.0		B 10.0 Area A	a
vel HL Total vel HG Total Run Run	Duct and Pipe loss 23,710 4,410 Level 2 If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings A	Tota	al HL for per	10% oom x 1.3	32 A B 0.0 259 Area	LIT 4	5 10.	7 A B 0 9 Area	1	5 A B 0.0 28 Area		24 A B 10.0 70 Area	10	20 A B .0 90 Area	10.	1 A B .0 I5 Area		34 A B 0.0 270 Area	10	B 0.0 Area		B 10.0 Area		B 10.0 Area		B 10.0 Area	ea
c vel HL Total rel HG Total Run Run	Duct and Pipe loss 23,710 4,410 Level 2 If. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B	Tota	al HL for per	10% oom x 1.3	32 A B 0.0 259 Area	LIT 4	5 10.	7 A B 0 9 Area A	1	5 A B 0.0 28 Area A		24 A B 10.0 70 Area A	10	20 A B .0 90 Area A	10.	1 A B .0 S Area A		34 A B 0.0 270 Area A	10	B 0.0 Area A		B 10.0 Area A		B 10.0 Area A		B 10.0 Area A	ea.
el HL Total lel HG Total Run Run E:	Level 2 1 ft. exposed wall B Celling height Floor area Exposed Ceilings B Exposed Floors	Tota	al HL for per	10% oom x 1.3	32 A B 0.0 259 Area A B Fir	LIT 4	5 10. 51	7 A B O 9 Area A B Fir	1	5 A B 0.0 28 Area A B Fir		24 A B 10.0 70 Area A B Fir	10 9	20 A B .0 00 Area A B Fir	10. 14	1 A B .0 IS Area A B Fir		34 A B 0.0 270 Area A B Fir	10	B I.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	ea.
ES	Duct and Pipe loss 23,710 4,410 Level 2 If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A	Tota	al HL for per	10% oom x 1.3	32 A B 0.0 259 Area A B	LIT 4	5 10.	7 A B O 9 Area A B Fir	1	5 A B 0.0 28 Area A B		24 A B 10.0 70 Area A B	10	20 A B .0 00 Area A B Fir	10.	1 A B .0 IS Area A B Fir		34 A B 0.0 270 Area A B	10	B I.0 Area A B		B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	aa
E E E E E E E E E E E E E E E E E E E	Duct and Pipe loss 23,710 4,410 Level 2 If. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B	Total F	al HL for per HG per room	10% oom x 1.3	32 A B 0.0 259 Area A B Fir	ATT	5 10. 51	7 A B 0 9 Area A B Fir	1	5 A B 0.0 28 Area A B Flr 50	Gain	24 A B 10.0 70 Area A B Fir 240	10	20 A B .0 00 Area A B Fir	10. 14	1 A B 0 IS Area A B Fir		34 A B 0.0 270 Area A B Fir		B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
E E	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components	Total F	al HL for per HG per room	10% oom x 1.3	32 A B 0.0 259 Area A B Fir	ATT	5 10. 51	7 A B 0 9 Area A B Fir	1	5 A B 0.0 28 Area A B Flr 50	Gain	24 A B 10.0 70 Area A B Fir 240	10 9 20 Gain	20 A B .0 00 Area A B Fir 00	10. 14 11	1 A B 0 IS Area A B Fir 0	Gain	34 A B 0.0 270 Area A B Fir	10	B I.0 Area A B	Gain	B 10.0 Area A B		B 10.0 Area A B		B 10.0 Area A B	
E E	Duct and Pipe loss 23,710 4,410 Level 2 If t. exposed wall A If. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded	Total I	al HL for per IG per room	10% oom x 1.3	32 A B 0.0 259 Area A B Fir 320	ATT STATE OF THE S	57 10. 51	7 A B 0 9 Area A B Fir	1	5 A B 0.0 28 Area A B Flr 50	Gain	24 A B 10.0 70 Area A B Fir 240	10 9 20 Gain	20 A B .0 00 Area A B Fir	10. 14 11	1 A B 0 IS Area A B Fir	Gain	34 A B 0.0 270 Area A B Fir 340	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
E E	Level 2 1ft. exposed wall A 1ft. exposed wall B Celling height Floor area Exposed Cellings B Exposed Floors Gross Exp Wall B Components North Shaded East/West	Total I Total I R-Values L 4.00	al HL for per HG per room	10% oom x 1.3	32 A B 0.0 259 Area A B Fir 320	ATT STATE OF THE S	57 10. 51	7 A B 0 9 Area A B Fir 0 Loss	1 Gain	5 A B 0.0 28 Area A B FIr 50 Loss		24 A B 10.0 70 Area A B Fir 240	10 9 20 Gain	20 A B .0 00 Area A B Fir 00	10. 14 11	1 A B 0 IS Area A B Fir 0	Gain	34 A B 0.0 270 Area A B Fir	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E: HL Total	Duct and Pipe loss 23,710 4,410 4,410 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South	Total I	al AlL for per HG per room Doss Gair 19.45 19.45	10% oom x 1.3	32 A B 0.0 259 Area A B Fir 320	ATT STATE OF THE S	57 10. 51	7 A B 0 9 Area A B Fir 0 Loss	1	5 A B 0.0 28 Area A B Flr 50		24 A B 10.0 70 Area A B Fir 240	10 9 20 Gain	20 A B .0 00 Area A B Fir 00	10. 14 11	1 A B 0 IS Area A B Fir 0	Gain	34 A B 0.0 270 Area A B Fir 340	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E: HL Total	Duct and Pipe loss 23,710 4,410 4,410 If t. exposed wall A If t. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows	R-Values Lc 4.00 4.00 4.00	al HL for per HG per room 19.45 19.45 19.45 19.45 19.45	10% oom x 1.3	32 A B 0.0 259 Area A B Fir 320	ATT STATE OF THE S	57 10. 51	7 A B 0 9 Area A B Fir 0 Loss	1 Gain	5 A B 0.0 28 Area A B FIr 50 Loss		24 A B 10.0 70 Area A B Fir 240	10 9 20 Gain	20 A B .0 00 Area A B Fir 00	10. 14 11	1 A B 0 IS Area A B Fir 0	Gain	34 A B 0.0 270 Area A B Fir 340	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E: HL Total	Level 2 1ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	R-Values Lc 4.00 4.00 4.00 1.99 2.03	al HL for per HG per room HG per room 19.45 19.45 19.45 39.10	10% oom x 1.3 1.73 29.66 22.60 24.56 39.12	32 A B 0.0 259 Area A B Fir 320	ATT STATE OF THE S	57 10. 51 57 1	7 A B 0 0 9 Area A B Fir 0 Loss 4 4 467	Gain 542	5 A B 0.0 28 Area A B FIr 50 Loss		24 A B 10.0 70 Area A B Fir 240 Loss	10 9 20 Gain 415	20 A B .0 00 Area A B Fir 00 Loss G	10. 14 11 11 1106 2	1 A B 0 IS Area A B Fir 0	Gain	34 A B 0.0 270 Area A B Fir 340	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E:	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors	R-Values Lt 4.00 4.00 4.00 1.99 2.03	oss Gair 19.45 19.45 19.45 19.45 39.10 38.33	10% oom x 1.3 1 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2 2 2 3 2	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542 67	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E:	Duct and Pipe loss 23,710 4,410 4,410 If t. exposed wall A If t. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A	R-Values L. (4.00 4.00 4.00 4.00 4.00 21.40 21.40	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 19.45 38.30 19.45	10% oom x 1.3 11.73 19.66 12.60 14.56 19.12 0.66 12.00 0.60 12.00	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542 67	5 A B 0.0 28 Area A B FIr 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	1 A B 0 IS Area A B Fir 0	Gain 293	34 A B 0.0 270 Area A B Fir 340	Gain	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Level 2 1ft. exposed wall A 1ft. exposed wall B Celling height Floor area 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 A et exposed walls A	R-Values Lot 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50	DSS Gair 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 9.15	10% oom x 1.3 1.73 1.73 1.73 2.260 24.56 1.93.12 3.20 1.51	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Duct and Pipe loss 23,710 4,410 4,410 If t. exposed wall A If t. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A	R-Values L. (4.00 4.00 4.00 4.00 4.00 21.40 21.40	al HL for per HG per room 19.45 19.45 19.45 19.45 39.10 38.33 38.30 19.45 19.45 19.45 19.45	10% oom x 1.3 11.73 19.66 12.60 14.56 19.12 0.60 2	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Run Run E: E:	Level 2 1ft. exposed wall A 1ft. exposed wall B Celling height Floor area 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 A et exposed walls A	R-Values Lot 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50	al HL for per HG per room 19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31	10% oom x 1.3 1.73 1.73 1.73 1.73 1.73 1.73 1.73	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Run Run E: E:	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings B	R-Values Lt. 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22	al HL for per HG per room 19.45 19.45 19.45 19.45 39.10 38.33 38.30 19.45 19.45 19.45 19.45	10% oom x 1.3 1 1 2 2 3 2 1 1 1 7 3 2 9 6 6 1 2 2 6 0 6 0 1 9 1 2 3 2 0 0 6 0 1 5 1 1 1 5 1	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run E:	Duct and Pipe loss 23,710 4,410 4,410 If t. exposed wall A If t. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A et exposed walls A et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Ceilings B Exposed Ceilings B	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gair 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.81 2.81 2.81	10% oom x 1.3 1.73 1.73 1.73 1.73 1.73 1.73 1.73	32 A B 0.0 A A B Fir 320 Loss	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 0 9 Area A B Fir 0 Loss 4 467 1 408 5 1909	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	10 9 20 Gain 415	20 A B B 10 Area A B Fir 10 Loss G: 175 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B B 10.0 B 10.0 C A Fa A B Fir A 10.0 C A 1	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run E: Net Historial	Level 2 1ft. exposed wall A 1ft. 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 Sylight Doors et exposed walls A et exposed walls A et exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Floors	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gair 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.81 2.81 2.81	10% oom x 1.3 1.1.73 1.1.73 1.2.60 24.56 1.51 0.60 1.51 0.60 1.51 0.60 2.3	32 A B 0.0 O A A B Fir Loss 20 Loss 11 11 11 11 11 11 11 11 11 11 11 11 1	4 GIT S Gain 5 G	57 10. 51 57 1	7 A B 0 9 Area A B Fir 0 Loss 4 467	Gain 542	5 A B 8 10.0 28 Area A B Fir 50 Loss	5 203 9 25	24 A B 10.0 70 Area A B Fir 240 Loss 14 272	10 9 20 Gain 415	20 A B B 0 A B B Fir 100 Loss G: 9 175	10. 14 11 11 106 2	11 A B	Gain 293	34 A B 0.0 270 Area A B Fir 340 Loss	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Run Run E:	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A Ift. 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 Existing Windows Skylight Exposed Walls A exposed walls A exposed walls A exposed walls A exposed Ceilings B Exposed Ceilings A	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gair 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.81 2.81 2.81	10% oom x 1.3 1.1.73 1.1.73 1.2.60 24.56 1.51 0.60 1.51 0.60 1.51 0.60 2.3	32 A B 0.0 O A A B Fir Loss 20 Loss 11 11 11 11 11 11 11 11 11 11 11 11 1	S Gain 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 10. 51 57 1	7 A B 0 0 9 Area A B Fir 0 Loss 4 467 1 408 5 1909	Gain 542	5 A B 0.0 28 Area A B Fir 50 Loss 41 149	5 203 9 25	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	10 9 20 Gain 415	20 A B B 10 Area A B Fir 10 Loss G: 175 9 175	10. 14 11 11 106 2	1 A B B 15 Area A B Fir 0 Loss 486	Gain 293	34 A B B 10.0 B 10.0 C A Fa A B Fir A 10.0 C A 1	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Level 2 1ft. exposed wall A 1ft. 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 Skylight Doors et exposed walls A at exposed walls A Exposed Ceilings B Exposed Ceilings B Exposed Floors South Existing Windows Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings A ixposed Ceilings A ixposed Ceilings A ixposed Floors iuctive Heatloss Heat Loss Heat Gain	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 33.33 19.45 3.64 9.15 1.31 2.81 2.61	10% oom x 1.3 1 2 2 3 3 2 1 1 1 7 3 3 2 9 6 6 1 2 5 0 9 1 1 2 1 3 2 0 6 1 1 5 1 0 6 7 1 0 6 7 1 0 4 2 3 3 2 0 6 1 5 1 1 4 4 0 0 2 3 3 4 4 5 6 6 1 5 1 1 4 4 4 0 0 2 3 3 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	32 A B B 0.00 A B Fir Los	Gain 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 51 57 57 57 57 57 57 57 57 57 57 57 57 57	7 A B 0 9 Area A B Fir 0 Loss 4 4467 1 408 5 1909	542 67 314	5 A B 8 10.0 28 Area A B Fir 50 Loss 175 41 149	5 203 9 25 4 228	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	20 Gain 415 80 2 120 11	20 A B B 10 Area A B Fir 10 Loss G: 175 9 175	10. 14 11 11 106 2 67 102 8	1 A B B 15 Area A B Fir 0 Loss 486	Gain 293 51 344	34 A B B 0.0 P 270 Area A B Fir 340 Loss 1091 1091	Gain 1186	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Level 2 1ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Existing Windows Skylight Doors et exposed walls B Exposed Ceilings B Exposed Floors ductive Heatloss Heat Loss	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 33.33 19.45 3.64 9.15 1.31 2.81 2.61	10% oom x 1.3 1.1.73 1.1.73 1.2.60 24.56 1.51 0.60 1.51 0.60 1.51 0.60 2.3	32 A B B 0.00 A B Fir Los	Gain 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 51 57 57 57 57 57 57 57 57 57 57 57 57 57	7 A B 0 0 9 Area A B Fir 0 Loss 4 467 1 408 5 1909	Gain 542 67 314	5 A B 0.0 28 Area A B Fir 50 Loss 41 149	5 203 9 25 4 228	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	10	20 A B 00 Area A B Flir 00 Loss Gi 9 175 120 1202	10. 14 11 11 106 2 67 102 8	1 A B B 1.0	Gain 293 51	34 A B B 10.0 B 10.0 C A Fa A B Fir A 10.0 C A 1	1186 179	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Level 2 1ft. exposed wall A 1ft. exposed wall B Celling helght Floor area Exposed Cellings B 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 Gross Exp Wall B Exposed Floors Gross Exp Wall B Exposed Walls B Exposed Walls B Exposed Vellings B Exposed Floors Juctive Heatloss Heat Loss Heat Loss Heat Gain Losse 1	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	Bass Gair 19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	10% oom 11.73 11.73 19.66 12.60 14.56 14.5	32 A B B 0.00 A B Fir Los	Gain 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 51 57 57 57 57 57 57 57 57 57 57 57 57 57	7 A B 0 9 Area A B Fir 0 Loss 4 4467 1 408 5 1909	Gain 542 67 314	5 A B 8 10.0 28 Area A B Fir 50 Loss 175 41 149	5 203 9 25 4 228	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	10	20 A B 00 Area A B Flir 00 Loss Gi 9 175 120 1202	10. 14 11 11 106 2 67 102 8	1 A B B 1.0	Gain 293 51 344	34 A B B 0.0 P 270 Area A B Fir 340 Loss 1091 1091	1186 179	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run	Level 2 1ft. exposed wall A 1ft. 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 Skylight Doors et exposed walls A et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Floors south Existing Windows Skylight Doors et exposed walls B Exposed Ceilings B Exposed Ceilings B Exposed Floors ductive Heatloss Heat Loss Heat Gain Heat Loss/Gain Losse 2	R-Values Lt. 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 38.33 19.45 19.45 2.61 2.61 0.6552 0.04	10% oom x 1.3 11.73 11.73 11.73 12.00 12.0	32 A B B 0.0.0 A B Fir Size Size Size Size Size Size Size Size	3 Gai 11770 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 57 57 57 57 57 57 57 57 57 57 57 57 5	7 A B 0 0 9 Area A B Fir 0 Loss Loss 4 467 1 408 5 1909 2784 1824	67 314 924 62	5 A B B 10.0 28 Area A B Fir 50 Loss 175 41 149 324 212	5 203 9 25 4 228 15	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731 1489 976	20 Gain 415 80 2 120 17 615 41	20 A B 00 Area A B Flir 00 Loss G: 21 408 21 408 21 1202 787	10. 14 11 11 106 2 67 102 8	1 A B B 1.0	Gain 293 51 51 344 23	34 A B B 0.0 P 270 Area A B Fir 340 C S S S S S S S S S S S S S S S S S S	1186 179 1366 92	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Ne E: E: undation Conductive r Leakage entilation	Duct and Pipe loss 23,710 4,410 4,410 Level 2 If t. exposed wall A If t. exposed wall B Celling height Floor area Exposed Cellings B 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 A et exposed walls A Exposed Cellings A Exposed Floors Juctive Heatloss Heat Loss Heat Loss/Gain Heat Loss/Gain Case 1 Case 2 Case 3	R-Values Lt 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65	Bass Gair 19.45 19.45 19.45 19.45 39.10 38.33 19.45 3.64 9.15 1.31 2.81 2.61	10% oom x 1.3 1.1.73 1.	32 A B B 0.0.0 A B Fir Size Size Size Size Size Size Size Size	3 Gai 11770 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	57 51 57 57 57 57 57 57 57 57 57 57 57 57 57	7 A B 0 9 Area A B Fir 0 Loss 4 4467 1 408 5 1909	Gain 542 67 314	5 A B 8 10.0 28 Area A B Fir 50 Loss 175 41 149	5 203 9 25 4 228 15	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731	20 Gain 415 80 2 120 17 615 41	20 A B 00 Area A B Flir 00 Loss Gi 9 175 120 1202	10. 14 11 11 106 2 67 102 8	1 A B B 1.0	Gain 293 51 344	34 A B B 0.0 P 270 Area A B Fir 340 Loss 1091 1091	1186 179	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Ne Ne Ne Conductive r Leakage entilation	Level 2 1ft. exposed wall A 1ft. exposed wall B Celling height Floor area Exposed Ceilings B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylingsh Doors et exposed walls B Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylingsh Doors et exposed walls B Exposed Ceilings A Exposed Ceilings A Exposed Glings B Exposed Floors functive Heatloss Heat Loss Heat Gain Heat Loss/Gain Heat Loss/Gain Case 1 Case 2 Case 3 Heat Gain People	R-Values Lc 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.61 2.61 0.6552 0.04 0.04	10% oom x 1.3 1 1.73 19.66 192.60 12.60 14.56 19.12 1.44 10.23 (Co. 10.07 13.82 10.07 13.8	32 A B 0 0.0 A B Fir 1220 Loss 2265 11	S Gaii S Gaii 1 1 1 1 1 1 1 1 1 1 1 1	55 5 10.0 10.0 51 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 A B 0 0 9 Area A B Fir 0 Loss Loss 4 467 1 408 5 1909 2784 1824 105	67 314 924 62 65	5 A B B 10.0 28 Area A B Fir 50 Loss 175 41 149 324 212	5 203 9 25 4 228 15	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731 1489 976	20 Gain 415 80 2 120 17 615 41	20 A B 00 Area A B Flir 00 Loss G: 21 408 21 408 21 1202 787	10. 14 11 11 106 2 67 102 8 274 18 19	1 A B B 1.0	Gain 293 51 344 23 24	34 A B B 10.0 P	1186 179 1366 92	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Ne E: E: Landation Conductive r Leakage entilation	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A Exposed Ceilings B Exposed Ceilings B Exposed Walls B Exposed Floors et exposed Walls B Exposed Ceilings B Exposed Floors ductive Heatloss Heat Loss Heat Loss Heat Gain Loss 1 Case 1 Case 2 Loss 2 Heat Gain People	R-Values Lt. 4.00 4.00 4.00 4.00 1.99 2.03 4.00 21.40 8.50 59.22 27.65 29.80	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.61 2.61 0.6552 0.04 0.04	10% oom x 1.3 1.73 1.73 1.73 1.73 1.73 1.73 1.73	32 A B B 0.0.0 A B Fir Size Size Size Size Size Size Size Size	S Gaii S Gaii 1 1 1 1 1 1 1 1 1 1 1 1	57 57 57 57 57 57 57 57 57 57 57 57 57 5	7 A B 0 0 9 Area A B Fir 0 Loss Loss 4 467 1 408 5 1909 2784 1824 105	67 314 924 62	5 A B B 10.0 28 Area A B Fir 50 Loss 175 41 149 324 212	5 203 9 25 4 228 15	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731 1489 976	20 Gain 415 80 2 120 17 615 41	20 A B 00 Area A B Flir 00 Loss G: 21 408 21 408 21 1202 787	10. 14 11 11 106 2 67 102 8	1 A B B 1.0	Gain 293 51 344 23 24	34 A B B 0.0 P 270 Area A B Fir 340 C S S S S S S S S S S S S S S S S S S	1186 179 1366 92	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Run Run CE: E: E	Level 2 1ft. exposed wall A 1ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls B Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors steyposed valls B Exposed Floors det exposed walls B Exposed Floors stuctive Heatloss Heat Gain Heat Loss Heat Gain Case 1 Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss	R-Values Ld 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80	al AlL for per HG per room Dess Gair 19.45 19.45 19.45 19.45 3.64 3.63 19.45 2.81 2.61 0.6552 0.04 16.80 0.04	10% oom x 1.3 1 1 2 2 3 3 2 1 1 1.73 1 2 9.66 1 2 2 6 0 1 1.51 1 2 2 3 2 0 1 1 2 1 2 3 2 0 1 2 3 2 3 2 3 2 3 2 3 3 2 3 3 3 3 3 3 3	32 A B 0.00 Arei A B Fir 1220 Loss 1:	4 4 5 6 6 6 6 6 6 6 6 6	55 5 10.0 10.0 51 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 A B B 0 9 Area A B Fir 0 Loss Loss 4 467 1 1 408 5 1909 2784 1824 105 5	67 314 924 62 65	5 A B B 10.0 28 Area A B FIr 50 Loss 41 149 324 212	228 2 215 2 16	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731 1489 976	20 Gain 415 80 2 120 17 615 41	20 A B B B 10 Area A B Fir 10 Example 1	10. 14 11 11 106 2 67 102 8 274 18 19	1 A B B 1.0 B 1.5 Area A B Fir 0 Loss 1.5 486 1.5 309 1.5 309 1.5 309 1.5 300	Gain 293 51 344 23 24	34 A B B 10.0 P	1186 179 1366 92	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	
Run Run Run Ne E: E: undation Conductive ir Leakage entilation	Duct and Pipe loss 23,710 4,410 Level 2 Ift. exposed wall A Ift. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors et exposed walls A Exposed Ceilings B Exposed Ceilings B Exposed Walls B Exposed Floors et exposed Walls B Exposed Ceilings B Exposed Floors ductive Heatloss Heat Loss Heat Loss Heat Gain Loss 1 Case 1 Case 2 Loss 2 Heat Gain People	R-Values Lc 4.00 4.00 4.00 4.00 2.03 4.00 2.140 8.50 59.22 27.65 29.80 x 1 = .25 pei	DSS Gair 19.45 19.45 19.45 19.45 19.45 19.45 39.10 36.33 19.45 3.64 2.61 2.61 0.6552 0.04 0.04	10% oom 10% oo	32 A B 0.00 Arei A B Fir 1220 Loss 1:	S Gaii 3 333 1 77 1 1442	55 5 10.0 10.0 51 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 A B 0 0 9 Area A B Fir 0 Loss Loss 4 467 1 408 5 1909 2784 1824 105	67 314 924 62 65	5 A B B 10.0 28 Area A B Fir 50 Loss 175 41 149 324 212	228 2 215 2 16	24 A B 10.0 70 Area A B Fir 240 Loss 14 272 25 486 201 731 1489 976	20 Gain 415 80 2 120 17 615 41	20 A B 00 Area A B Flir 00 Loss G: 21 408 21 408 21 1202 787	10. 14 11 11 106 2 67 102 8 274 18 19	1 A B B 1.0	Gain 293 51 344 23 24	34 A B B 10.0 P	1186 179 1366 92	B I.0 Area A B Fir	Gain	B 10.0 Area A B Fir		B 10.0 Area A B Fir		B 10.0 Area A B Fir	

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

Energy Star



59,990

32,407

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:	Е	M Air System	ıs	_	Date:		July	31, 2023		_			Weat	her Data	Richmond Hil	44	-5.8	88 20	50				Page 5
2012 OBC		Project: _	King E	East Develop	ments	N	lodel:		Model :	3400 WOB			System	1 1	Hea	t Loss ^T 7	7.8 deg. F	Ht gain ^T	12.8	deg. F			Pr L:	oject # ayout #	PJ-00267 JB-09093
	Level 3				P.BEI	n		ENS .		BED 2	BATH		MEDIA		BED	3	LAUN	BATI	12		BED 4				
Run ft. expo					40 A		27 A		12 A		8 A		45 A	•	34 A	•	A	9 A	-	12 A		Α		А	
Run ft. expo	sed wall R				В		В.		В.		В		В		В		B	В		В.		В		В	
	iling height				9.0		9.0		9.0		9.0		11.0		11.0		9.0	9.0		9.0		9.0		9.0	
	Floor area				26 Area		167 Are	а	145 Ar	ea	93 Area		381 Area		244 Area		59 Area	71 Area		168 Ar	rea		rea	Ar	ea
	Ceilings A				26 A		167 A	_	145 A		93 A		381 A		244 A		59 A	71 A		168 A		A		A	
	Ceilings B				В		В		В		В		В		В		В	В		В		В		В	
	sed Floors				Flr		Flr		FI	r	Flr		72 Flr		244 Flr		26 Flr	31 Flr		FI	r	FI	r	Fli	
	Exp Wall A			3	60		243		108		72		495		374			81		108					
	Exp Wall B																								
Co	omponents R	R-Values L	Loss	Gain	Loss	Gain	Los	s Gain	Lo	oss Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss Gain	Loss	Gain	Lo	oss Gain	n Lo	oss Gain	Lo	ss Gain
Nor	rth Shaded	4.00	19.45	11.73														9 17	106	20	389 2	235			
	East/West	4.00	19.45	29.66	32 622	949	16	311 47	5				38 739	1127	38 739	1127									
	South	4.00	19.45	22.60					16	311 3	62 9 175	203	16 311	362											
Existing	g Windows	1.99	39.10	24.56																					
	Skylight	2.03	38.33	89.12																					
	Doors	4.00	19.45	3.20																					
	sed walls A	21.40	3.64		28 1192	196	227	825 13	6 92	334	55 63 229	38	441 1603	264	336 122	2 201		72 26	2 43	88	320	53			
	sed walls B	8.50	9.15	1.51																					
	Ceilings A	59.22	1.31		26 560	286	167	219 11	2 145	190	97 93 122	63	381 501	256	244 32	1 164	59 78 4	71 9	48	168	221 1	113			
	Ceilings B	27.65	2.81	1.44																					
	sed Floors	29.80	2.61	0.23									72 188	16	244 63	7 56	26 68	31 8	7						
Foundation Conductive H																	4								
	Heat Loss				2375		1	356		836	526	224	3342	2025	2918		145	61			930				
	Heat Gain		0.3516		835	1432		72			14 35 185	304		2025	400	1548	51		203		4	100			
All Leakage Heat	Loss/Gain Case 1		0.3516	0.0672	833	96		477 4	9	294	35 185	20	1175	136	1020	5 104	51	21:	14		327	27			
Ventilation	Case 1		16.80	13.82																					
Vendiadon	Case 2	x	0.04	0.07	90	100		51 5	1	32	36 20	21	126	142	110	108	- 5	3 2	14		35	28			
Heat G	ain People	^	0.04	239	2	478		31 3	1		39	21	120	142	1	239	3	, 2	, 14	1		239			
	nces Loads	1 =.25 pc	ercent	5681	-											200									
	d Pipe loss			10%											1 394	4 179									
	8,511	То	tal HL for		3299)	1	884		1162	731		4643		4449		202	84)		1292				
Level HG Total 12	2,420	Total	HG per ro	om x 1.3		2738		106	8	10	71	449		2994		2831	6	7	301		9	902			
	l evel 4																								
Run ft. evno	Level 4				Δ		Δ		Δ		Δ		Δ		Δ		Δ	Δ		Δ		Δ		Δ	
Run ft. expo	sed wall A				A B		A B		A B		A B		A B		A B		A B	A B		A B		A B		A B	
Run ft. expo	osed wall A osed wall B				A B		A B		A B		A B		A B		A B		A B	A B		A B		A B		A B	
Run ft. expo	sed wall A							a	В	rea			A B Area		A B Area			A B Area		В	rea	В	rea		ea
Run ft. expo	osed wall A osed wall B iling height Floor area				B Area		B Are	a	B Ar		B Area		B Area		B Area		B Area	B Area		B Ar	rea	В	rea	B Ar	ea
Run ft. expo Ceil Exposed	osed wall A osed wall B iling height Floor area Ceilings A				В		B Are A	a	B Ar A		В		B Area A		B Area A		B Area A	B Area A		B Ar A	rea	B A	rea	B Ar A	ea
Run ft. expo Ceil Exposed Exposed	osed wall A osed wall B iling height Floor area Ceilings A Ceilings B				B Area A		B Are	a	B Ar		B Area A		B Area		B Area		B Area	B Area		B Ar	rea	B	rea	B Ar	
Run ft. expo Ceil Exposed Exposed Expos Gross E	osed wall A osed wall B iling height Floor area Ceilings A Ceilings B osed Floors Exp Wall A				B Area A B		B Are A B	a	B Ar A B		B Area A B		B Area A B		B Area A B		B Area A B	B Area A B		B Ar A B	rea	B A A B	rea	B Ar A B	
Run ft. expo Ceil Exposed Exposed Expos Gross E Gross E	osed wall A osed wall B iling height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B				B Area A B		B Are A B Fir		B Ar A B Fl	r	B Area A B Fir		B Area A B Fir		B Area A B Fir		B Area A B Fir	B Area A B Fir		B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Expos Gross E Gross E	osed wall A osed wall B illing height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B			Gain	B Area A B	Gain	B Are A B		B Ar A B Fl		B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B	Gain	B Area A B	B Area A B	Gain	B Ar A B Fl	rea	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Expose Gross E Coo	osed wall A osed wall B illing height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B omponents F rth Shaded	4.00	19.45	11.73	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Expose Gross E Gross E Co	osed wall A osed wall B illing height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B omponents F rth Shaded East/West	4.00 4.00	19.45 19.45	11.73 29.66	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Expose Gross E Gross E Co	osed wall A osed wall B diling height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B omponents F rth Shaded East/West South	4.00 4.00 4.00	19.45 19.45 19.45	11.73 29.66 22.60	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Expose Gross E Gross E Co	osed wall A osed wall B illing height Floor area Ceilings A Ceilings B osed Floors Exp Wall B omponents F rth Shaded East/West South g 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	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Expose Gross E Gross E Co	osed wall A osed wall B liling height Floor area Ceilings A Ceilings B sed Floors Exp Wall A Exp Wall B omponents F rth Shaded East/West South g 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 89.12	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Cell Exposed Exposed Exposed Exposes Gross E Gross E Co Nor	osed wall A osed wall B liling height Floor area Ceilings A Ceilings B ssed Floors Exp Wall B omponents F rth Shaded EastWest South g 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 89.12 3.20	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Cross E Gross E Co Nor	osed wall A osed wall B liling height Floor area Ceilings A Ceilings B osed Floors Exp Wall A Exp Wall B omponents Frth Shaded EastWest South g Windows Skylight Doors sed walls A	4.00 4.00 4.00 1.99 2.03 4.00 21.40	19.45 19.45 19.45 39.10 38.33 19.45 3.64	11.73 29.66 22.60 24.56 89.12 3.20 0.60	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Fxposes Gross E Gross E Co Nor Existing Net expos	osed wall A osed wall B liling height Floor area Ceilings A Ceilings B ssed Floors Exp Wall A Exp Wall A Exp Wall B omponents F rth Shaded EastWest South g Windows Skylight Doors sed walls A sed 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 89.12 3.20 0.60 1.51	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Cell Exposed Exposed Exposed Exposed Gross E Gross E Co Nor Nor Existing Net expos Net expose	osed wall A osed wall B illing height Floor area Ceilings A Ceilings A Sep Wall B omponents Frth Shaded EastWest South Doors Skylight Doors Sed walls A Seed walls B Ceilings B	4.00 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 89.12 3.20 0.60 1.51 0.67	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Cross E Gross E Co Nor Existing Net expos Net exposed Exposed Exposed	osed wall A sed wall B liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B sed Floors Exp Wall B mponents F South g Windows Skylight Doors sed walls A sed walls B Ceilings A Ceilings B Ceilings A	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 89.12 3.20 0.60 1.51 0.67	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo Ceil Exposed Exposed Exposed Exposes Gross E Gross E Co Nor Existing Net expos Exposed Exposed Exposed	osed wall A ssed wall B liling height liling height Floor area Ceilings A Ceilings A Exp Wall A Exp Wall A Exp Wall B omponents F Th Shaded East/West South g Windows Skylight Doors sed walls A sed Sed Floors	4.00 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 89.12 3.20 0.60 1.51 0.67	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposes Gross E Co Nor Existing Net expose Exposed Exposed Exposed Exposed	osed wall A osed wall A posed wall B illing height Floor area (Ceilings A Ceilings B seed Floors Exp Wall A Exp Wall B omponents R Exp Wall B omponents R Exp West South q Windows Skylight Doors seed walls A ceilings B seed Floors lead for the seed walls A Ceilings B seed Floors lead for the seed walls B Ceilings B seed Floors seed floors	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 89.12 3.20 0.60 1.51 0.67	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Expose Gross E Gross E Co Nor Existing Net expos Exposed Exposed Exposed Exposed Exposed Exposed Foundation Conductive H Total Conductive	osed wall A ssed wall B liling height Floor area Ceilings A Ceilings A Ceilings B ssed Floors Exp Wall B mponents F South J Windows Skylight Doors sed walls A sed walls B Ceilings A Ceilings B Ceilings A Ceilings B Ceilings A Ceilings B Sed Floors Heat Loss Heat Loss	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 89.12 3.20 0.60 1.51 0.67	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposes Gross E Co Nor Existing Net expose Exposed Exposed Exposed Exposed Exposed Exposed Exposed Total Conductive	osed wall A ssed wall B liling height liling	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	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Exposed Exposed Exposed Exposed Existing Net expose Exposed	osed wall A sed wall B liling height Floor area (Ceilings A Ceilings B sed Floors Exp Wall B mponents R Exp Wall B mponents R South g Windows Skylight Doors sed walls A Ceilings B sed Floors led walls A Ceilings B sed Floors led walls B Ceilings B sed Floors led walls B Ceilings B sed Floors leatoss Heat Loss Heat Loss Heat Loss Loss/Gain	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	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Exposed Exposed Exposed Existing Net exposed	osed wall A ssed wall B liling height liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B Sed Floors Exp Wall A Exp Wall B Doponents F South Q Windows Skylight Doors Sed walls A Sed walls B Ceilings A Ceilings B Ceilings A Ceilings A Sed walls B Sed Floors Leatioss Heat Gain Leoss/Gain Case 1	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	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Foress E Gross E Gross E Co Nor Existing Net exposed Exposed Exposed Exposed Exposed Exposed Total Conductive H Total Conductive Air Leakage Heat	posed wall A speed wall B liling height lili	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 2.61 0.0000 0.000 16.80	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Gross E Gross E Co Nor Existing Net expos Exposed Exposed Exposed Exposed Exposed Total Conductive H Total Conductive Air Leakage Heat Ventilation	osed wall A sed wall B liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B sed Floors Exp Wall B mponents South By Windows Skylight Doors Sed walls A Ceilings B Ceilings B Ceilings A Ceilings B Ceilings A Ceilings A Ceilings B Ceilings B Ceilings B Ceilings A Ceilings A Ceilings A Ceilings A Ceilings A Ceilings B Ceilings A Ceilings B Ceilings B Ceilings B Ceilings A Ceilings A Ceilings B Ceilings B Ceilings A Ceilings B Ceilings	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	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Foress E Gross E Gross E Existing Net exposed Expo	osed wall A ssed wall B liling height liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B Sed Floors Exp Wall A Exp Wall B Sed Floors Exp Wall B Sed Walls A Sed Walls A Sed Walls B Ceilings A Ceilings B Sed Floors	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 2.61 0.0000 0.00 16.80 0.04	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23 0.067 1.023	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Exposed Gross E Co Nor Existing Net expose Exposed Expose	osed wall A bessed will B billing height Floor area (Ceilings A Ceilings B seed Floors Exp Wall A Exp Wall B omponents R forth Shaded EastWest South q Windows Skylight Doors seed walls A ceilings B seed Floors leadings B seed Floors leadings B leadings	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 2.61 0.0000 0.00 16.80 0.04	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 0.67 1.44 0.23	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Exposed Gross E Co Nor Existing Net exposed Expos	osed wall A ssed wall B liling height liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B Sed Floors Exp Wall A Exp Wall B Sed Floors Exp Wall B Sed Walls A Sed Walls A Sed Walls B Ceilings A Ceilings B Sed Floors	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 2.61 0.0000 0.00 16.80 0.04	11.73 29.66 22.60 24.56 89.12 3.20 0.60 1.51 1.44 0.23 0.0672 0.07 13.82 0.07 239 5681 10%	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Exposed Fores E Gross E Co Nor Existing Net expos Exposed Exposed Exposed Exposed Exposed Ventilation Heat G Applian Duct and	osed wall A sed wall B liling height Floor area Ceilings A Ceilings A Ceilings A Exp Wall B sed Floors Exp Wall B mponents R South g Windows Skylight Doors sed walls A Ceilings A Ceilings B Sed Floors Edwalls A Ceilings B Heat Coss Heat Gain Loss/Gain Case 1 Case 2 Case 3 Case 1 Case 1 Case Case 1 Case Case 1 Case Case 1 Case Case 3	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 2.61 0.0000 0.00 16.80 0.04	11.73 29.66 22.60 24.56 89.12 0.60 1.51 0.67 1.44 0.23 0.0672 0.0672 0.07 13.82 0.07 239 5681	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	rea	B Ar A B Fli	
Run ft. expo- Ceil Exposed Exposed Exposed Exposed Fyoral Gross E Gross E Gross E Existing Net expos Exposed	osed wall A seed wall B liling height liling height Floor area Ceilings A Ceilings A Ceilings A Ceilings A Exp Wall B mponents Frith Shaded East/West South g Windows Skylight Doors sed walls B Ceilings A Ceilings B Ceilings A Ceili	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 0.0000 0.00 16.80 0.04 ercent	11.73 29.66 22.60 24.56 89.12 0.60 1.51 0.67 1.44 0.23 0.0672 0.0672 0.07 13.82 0.07 239 5681	B Area A B Fir	Gain	B Are A B Fir		B Ar A B Fl	r	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	Gain	B Area A B Fir	B Area A B Fir	Gain	B Ar A B Fl	rea r	B A A B Fi	r SSS Gain	B Ar A B Fli	ss Gain

32964

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

Mana Malesta

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

2

3 x

Project # Layout # Page 6 PJ-00267 JB-09093

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: Project:	Energy Star Richmond Hill	Model:	Model 3400 WOB	
1 Toject.				
	RESIDENTIAL MECHANICAL			
	For systems serving one dwelling unit & con	iorming to the Ontario Building) Code, 0.reg 332/12	
	Location of Installation	Total Ve	entilation Capacity 9.32.3.3(1)	
Lot #	Plan #	Bsmt & Master Bdrm		42.4 cfm
Township	Richmond Hill	Other Bedrooms Bathrooms & Kitchen	3 @ 10.6 cfm 3 5 @ 10.6 cfm	31.8 cfm 53 cfm
Roll #	Permit #	Other rooms		63.6 cfm 90.8
Address				
		Principal	Ventilation Capacity 9.32.3.4(1)	
Name	Builder	Master bedroom	1 @ 31.8 cfm 3	31.8 cfm
IName	EM AIr Systems	Other bedrooms		47.7 cfm
Address	2,711			79.5
City				
Tel	Fax	Princ Make	cipal Exhaust Fan Capacity Model Loca	ition
161	Гал	VanEE	V150E75NS Base	
	Installing Contractor	Valice	VISUE/SINS Base	,
Name	mouning connector	127 cfm	80.0 Sone	es or Equiv.
Address		Н	eat Recovery Ventilator	
		Make	VanEE	
City		Model	V150E75NS	00 - ()
Tel	Fax	Sensible efficiency @	127 cfm high -25 deg C	80 cfm low 60%
		Sensible efficiency @		75%
			ance HRV/ERV to within 10 percen	t of PVC
, I	Combustion Appliances 9.32.3.1(1)	Supple	emental Ventilation Capacity	
a) x b) c)	Direct vent (sealed combustion) only Positive venting induced draft (except fireplaces) Natural draft, B-vent or induced draft fireplaces	Total ventilation capac Less principal exhaust	t capacity	90.8 79.5
d) e)	Solid fuel (including fireplaces) No combustion Appliances	REQUIRED suppleme	ntal vent. Capacity 1	11.3 cfm
		C	onlemental Fana 0.22.2 F	
	Heating System	Location	oplemental Fans 9.32.3.5. cfm Model	Sones
х	Forced air	Ens	50 XB50	0.3
	Non forced air	Bath	50 XB50	0.3
	Electric space heat (if over 10% of heat load)	Bath 2	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 Ed	quiv.
II I	Type I except with solid fuel (including fireplace)			•
III 🔲	Any type c) appliance		Designer Certification	
IV Other	Type I or II either electric space heat Type I, II or IV no forced air	, ,	s ventilation system has been desiç e Ontario Building Code.	gned

	Designer	Certification	
I hereby certify t	hat this ventilatio	n system has been	designed
in accordance w	rith the Ontario B	uilding Code.	
		_	
Name	David D	aCosta	
	47	1600	
Signature	7 6 20100	. 400	•
HRAI#	5190	BCIN #	32964
Date	July 31	, 2023	



Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643 e-mail dave@gtadesigns.ca (Building Code Part 9, Residential)

Project # PJ-00267 Layout # JB-09093

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the Performance or Other Acceptable Compliance Methods described in Subsections 3.1.2. and 3.1.3. of SB-12,

This form must accurately reflect the information contained on the drawings and specifications being submitted. Refer to Supplementary Standard SB-12 for details about building code compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website or the municipal building department.

		For use by Princip	al Authority		
Application	No:		Model/Certification Nu	mber	
A.	Project Information				
Building nur	mber, street name			Unit number	Lot/Con
		Model 3400 WOB			
Municipality	Richmond Hill	Postal code	Reg. Plan number / oth	ner description	
В.	Prescriptive Compliance [indicate the build	ding code compliance option	I being employed in the	house design]	
	SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy performa	ance results using	an approved softwa	are (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
Aron of	Walls = 454.2 m² or 4888.9 ft²		☐ Log/Post&Beam	☐ ICF Above	Grade
Alea Ul	Walls - 434.2 III 01 4000.9 It		☐ Slab-on-ground	√ Walkout Ba	sement
		W,S &G % = <u>9%</u>	☑ Air Conditioning	Combo Uni	t
Area of W	$I, S \& G = 42.64 \text{ m}^2 \text{ or } 459.0 \text{ ft}^2$		☐ Air Sourced Hea	t Pump (ASHP)	· ·
			☐ Ground Source H	Heat Pump (GSHP)	
SB-12 Pe	rformance Reference Building Design Pac	kage indicating the pres	criptive package to	be compared for co	ompliance
SB-1	2 Referenced Building Package (input desi	gn package):			
D.	Building Specifications [provide values an	d ratings of the energy efficie	ency components prop	osed, or attach ENERG	Y STAR BOP form]
	- · · · · · · · · · · · · · · · · · · ·				·

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

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



Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643 e-mail dave@gtadesigns.ca

(Building Code Part 9, Residential)

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Project # Layout # JB-09093

Project Design Verification [Subsection 3.1.2. Performance Compliance] The annual energy consumption using Subsection 3.1.1. SB-12 Reference Building Package is GJ (1J=1000MJ) The annual energy consumption of this house as designed is The software used to simulate the annual energy use of the building is: The building is being designed using an air tightness baseline of: OBC reference ACH, NLA or NLR default values (no depressurization test required) Targeted ACH, NLA or NLR. Depressurization test to meet ACH50 or NLR or NLA Reduction of overall thermal performance of the proposed building envelope is not more than 25% of the envelope of the compliance package it is compared against (3.1.2.1.(6)). Standard Operating Conditions Applied (A-3.1.2.1 - 4.6.2) Reduced Operating Conditions for Zero-rated homes Applied (A-3.1.2.1 - 4.6.2.5) On Site Renewable(s): Other Types: ENERGY STAR or R-2000 Performance Design Verification [Subsection 3.1.3. Other Acceptable Compliance Methods] The NRCan "ENERGY STAR for New Homes Standard Version 12.6" technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1). The NRCan, "2012 R-2000 Standard" technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1). Performance Energy Modeling Professional Energy Evaluator/Advisor/Rater/CEM Name and company: Accreditation or Evaluator/Advisor/Rater License # **BUILDING KNOWLEDGE CANADA** 5506 **ENERGY STAR or R-2000** Energy Evaluator/Advisor/Rater/Name and company: Evaluator/Advisor/Rater License # ANGELA BUSTAMANTE 5506 G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets building code]

Name **BCIN** Signature Mane Holet 32964 David DaCosta

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



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

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



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

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

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

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



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Page 8
Project # PJ-00267
Layout # JB-09093

System: Model: System 1 Model 3400 WOB Energy Star Richmond Hill Package: Project:

Air Leakage Ca	alculations	
Building Air Leakage Heat Loss B LRairh Vb HL^T HLleak 0.018 0.387 42327 77.8 22922	Building Air Leakage Heat Gain B LRairh Vb HG^T HG Leak 0.018 0.108 42327 12.8 1057	
Air Leakage Heat Loss/Gain Multiplier Table (Section 11) Level	1.0 0.6 0.5 0.4 1.0 0.4 0.3 0.3 0.2 0.2 0.1 Eat Gain Levels this Dwelling 3	
Ventilation Ca	ICUIATIONS Ventilation Heat Gain	
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	Vent
Case 1	Case 1	
Case 1 - Exhaust Only	Case 1 - Exhaust Only Multiplier HGbvent 1099 Building 15718 New York Waltiplier Output Description: HGxhaust Only Multiplier Output Description: Description: Output Description: Output Description: Output Description: Output Description: Output Description: Output Description: Description: Output Descript	Case 1
Case 2	Case 2	
Ventilation Heat Loss (Direct Ducted Systems)	Ventilation Heat Gain (Direct Ducted Systems)	
C HL^T (1-E) HRV 16.80	C HG^T 13.82	Case 2
Case 3	Case 3	
Ventilation Heat Loss (Forced Air Systems) HLbvent Multiplier Total Ventilation Load 1336 0.04	Ventilation Heat Gain (Forced Air Systems) Vent Heat Gain Multiplier HGbvent HG*1.3 1099 0.07	Case 3
Foundation Conductive Heatloss Level 1 Level 1	2422 Watts 8263 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	152 Watts 520 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 Confi	iguration
Type:	Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m³):	1198.70
Air Leakage/Vo	entilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
0 / 007.0 /	ELA @ 10 Pa. 322.44 cm ²
Custom BDT Data:	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply: Total Exhaust:
	39.75
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Heating Air Leakage Rate (ACH/H):	0.387
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):	21.91		
Floor Width (m):	5.67		
Exposed Perimeter (m):	46.33		
Wall Height (m):	2.74		
Depth Below Grade (m):	0.91	Insulation Configuration	
Window Area (m²):	2.32		
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):		2422	



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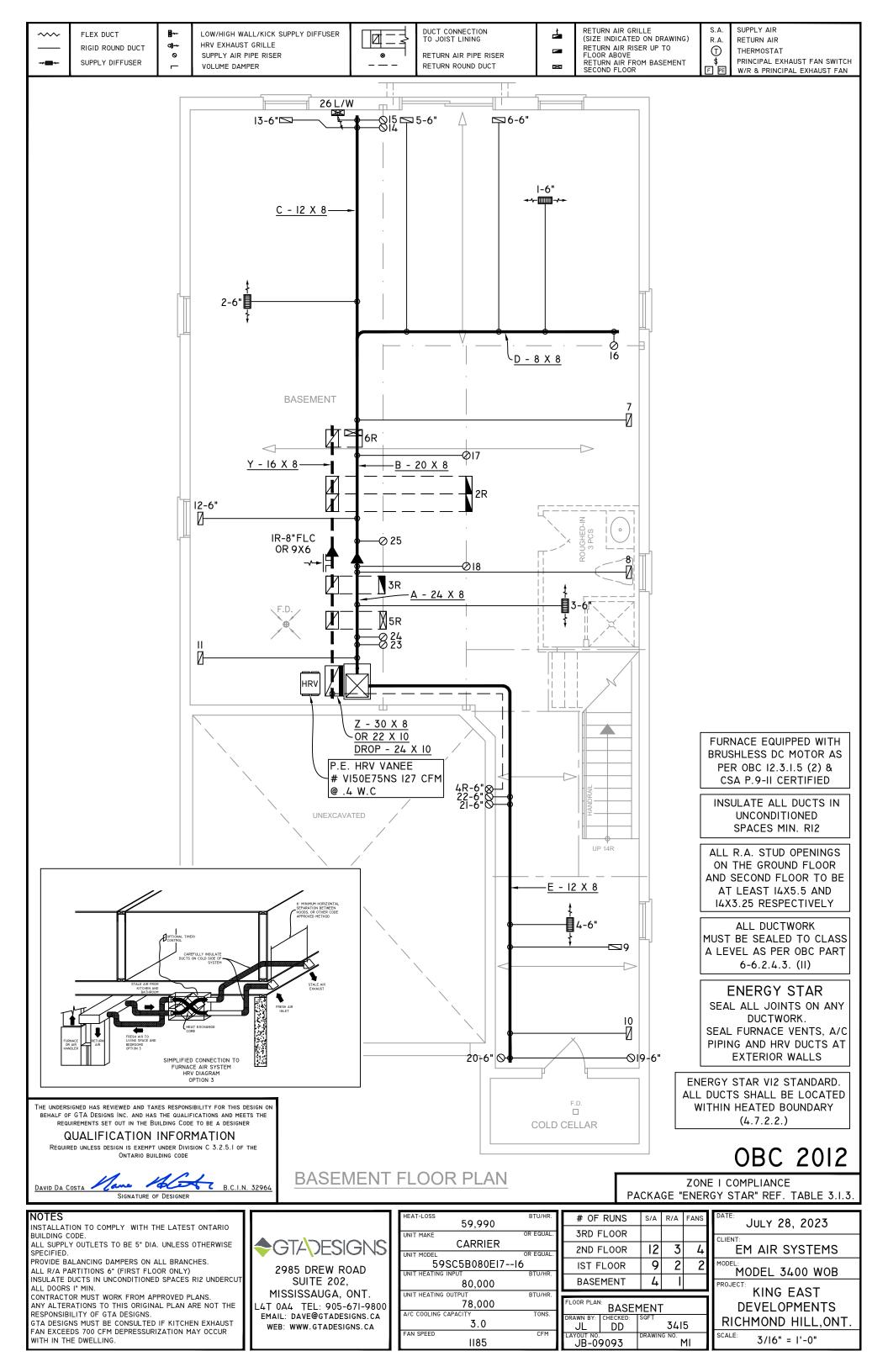
Effective R-Value – Exposed Ceiling with Attic			
Insulation	R60		
Exterior Air Film	0.17		
Effective Insulation	58.61		
Drywall	0.44		
Effective R-Value	59.22		

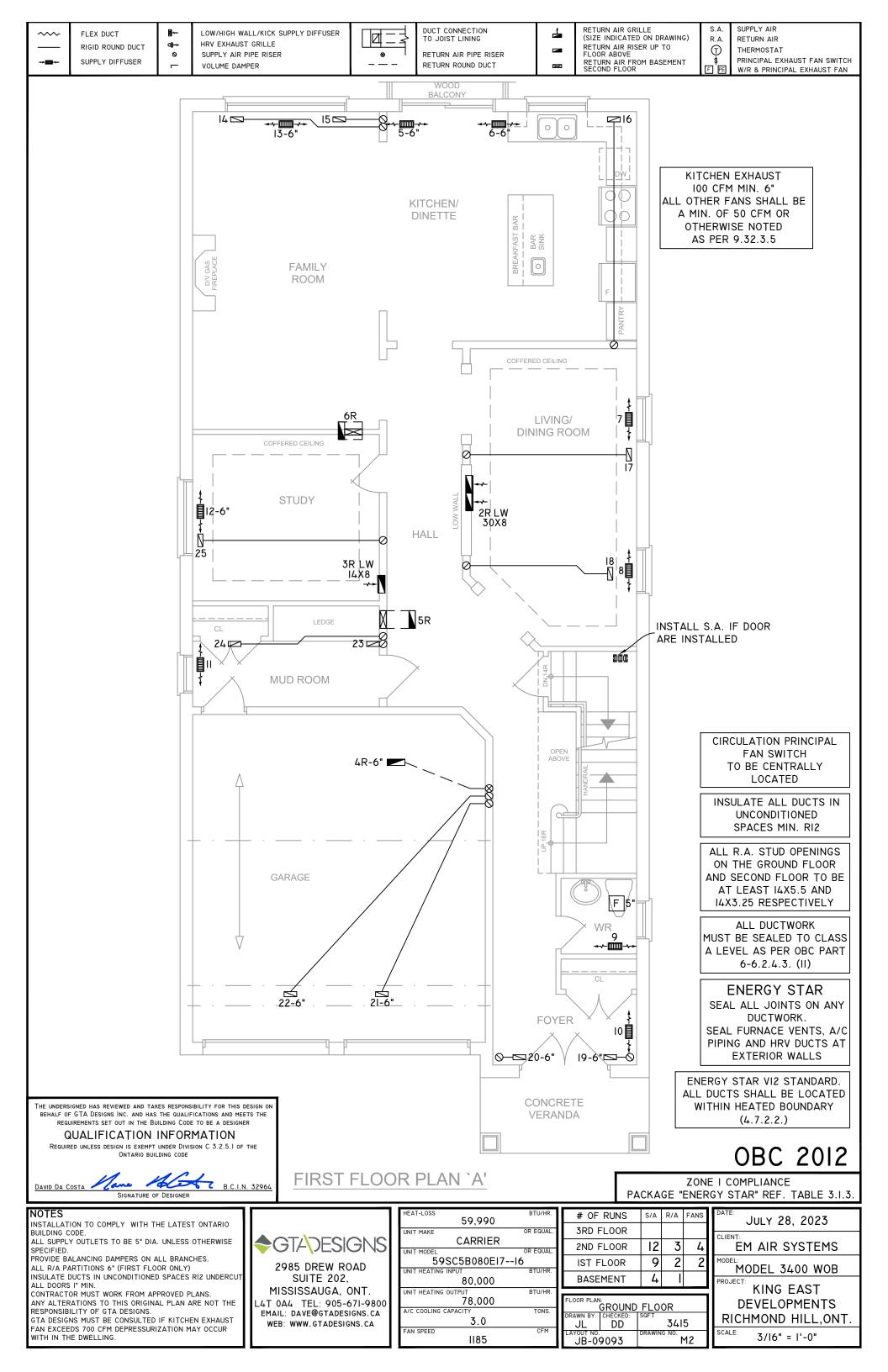
Effective R-Value – Exposed Ceiling with Flat Roofs			
Insulation	R31		
Exterior Air Film	0.17		
Effective Insulation	27.04		
Drywall	0.44		
Effective R-Value	27.65		

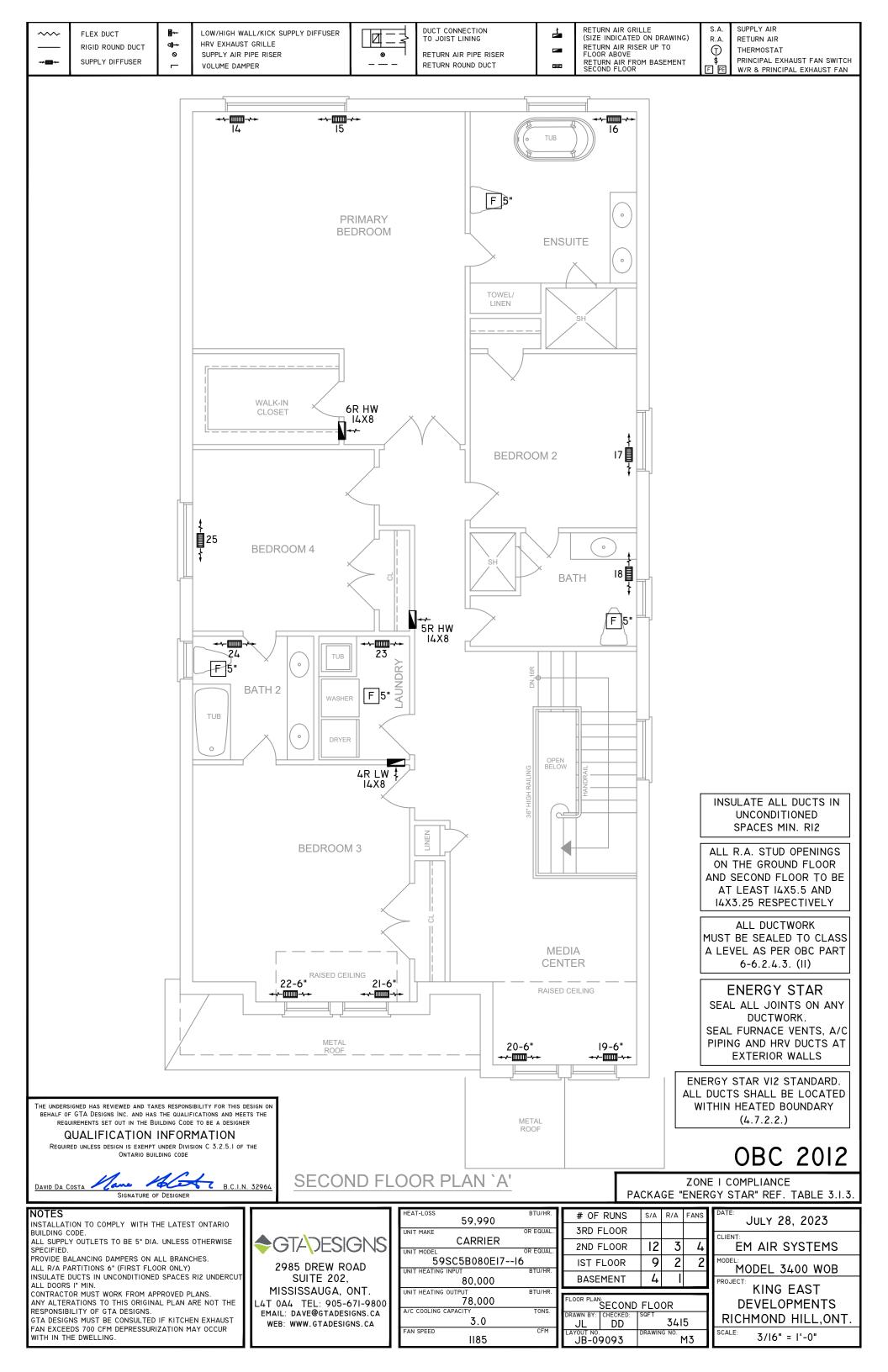
Residential Slab on Grade Thermal Load Calculator

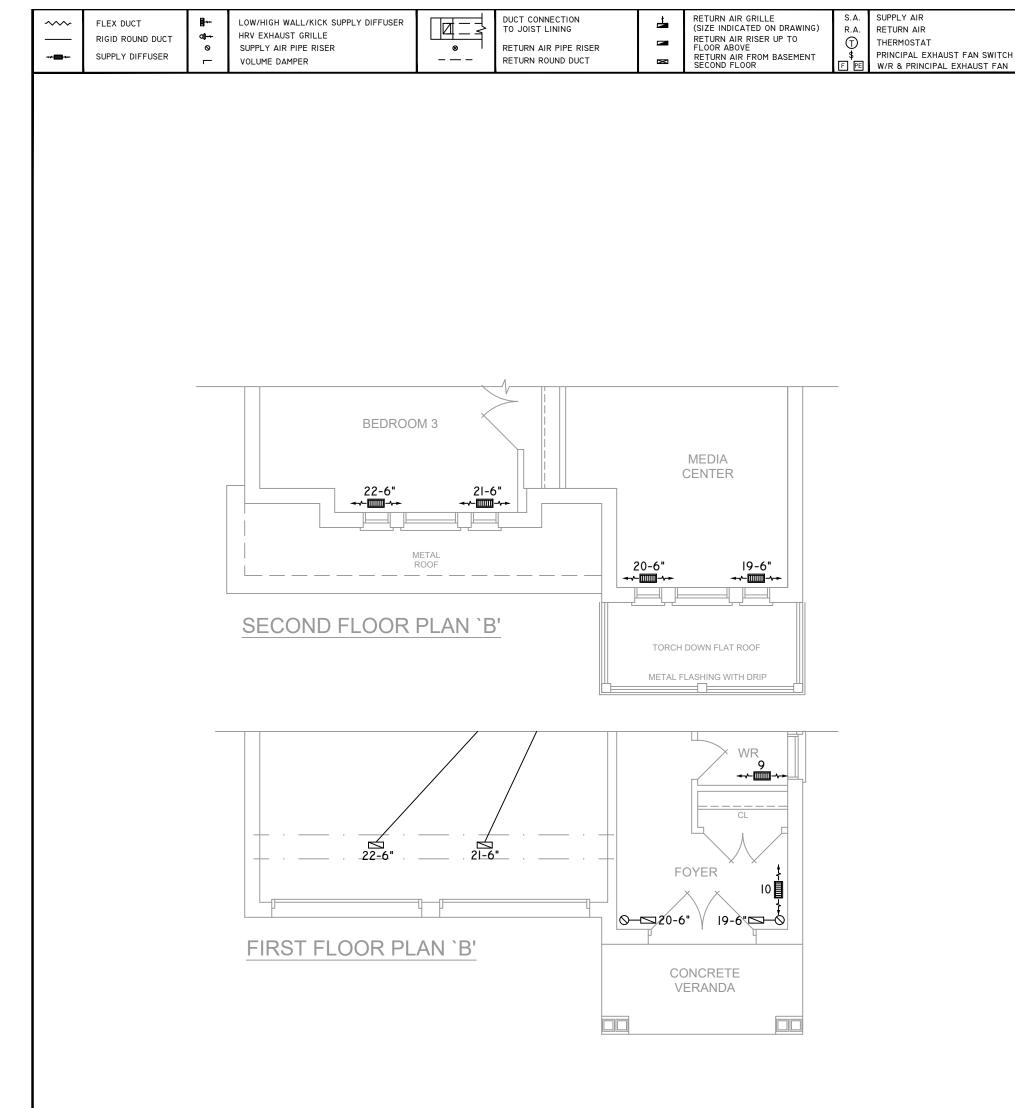
Supplemental tool for CAN/CSA-F280

Weat	her Sta	tion Description
Province:		Ontario V
Region:		Richmond Hill
	Site D	escription
Soil Conductivity:		High conductivity: moist soil ▼
Water Table:		Normal (7-10 m, 23-33 Ft)
	Floor D	imensions
Length (m):	8.99	
Width (m):	0.61	
Exposed Perimeter (m):	10.36	Insulation Configuration
	Radi	ant Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Desig	n Months
Heating Month	1	
	Founda	tion Loads
Heating Load (Watts):		152









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

QUALIFICATION INFORMATION

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

B.C.I.N. 32964

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

PROVIDE BALANCING DAMPERS ON ALL BRANCHES. ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY) INSULATE DUCTS IN UNCONDITIONED SPACES RI2 UNDERCUT

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

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



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. 59.990	" OF DUNO
	# OF RUNS
UNIT MAKE OR EQUAL.	3RD FLOOR
CARRIER UNIT MODEL OR EQUAL.	2ND FLOOR
59SC5B080E1716	IST FLOOR
UNIT HEATING INPUT BTU/HR. 80,000	BASEMENT
UNIT HEATING OUTPUT BTU/HR. 78,000	FLOOR PLAN: PARTIA
A/C COOLING CAPACITY TONS. 3.0	DRAWN BY: CHECKED JL DD
FAN SPEED CFM	JB-09093

		РΑ	CKA	GE "	ENER	GY STAR" REF. TABLE 3.1.3.	
	# OF RUI		S/A	R/A	FANS	NS JULY 28, 2023	
	3RD FLOO		12	12 3 4 CLIENT: EM AIR SYS	CLIENT: EM AIR SYSTEMS		
	IST FLOO		9	2	2	MODEL 3400 WOB	
	BASEMEN	NΤ	4	I		PROJECT: KING EAST	
FLOOR PLAN: PARTIAL PLAN(S)			۱(S)	DEVELOPMENTS			
İ	DRAWN BY: CHECKED: SQFT				_	BICHMOND HILL ONT	

3415

M4

OBC 2012

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

ZONE I COMPLIANCE