


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 2225S				Lot/con.	
Municipality		Postal code	Plan number/ other description		
Richmond Hill					
B. Individual who reviews and takes responsibility for design activities					
Name			Firm		
David DaCosta			gtaDesigns Inc.		
Street address			Unit no.	Lot/con.	
2985 Drew Road, Suite 202					
Municipality		Postal code	Province	E-mail	
Mississauga		L4T 0A4	Ontario	hvac@gta designs.ca	
Telephone number		Fax number		Cell number	
(905) 671-9800					
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]					
<input type="checkbox"/> House <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Structural <input type="checkbox"/> Small Buildings <input type="checkbox"/> Building Services <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Large Buildings <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> Complex Buildings <input type="checkbox"/> Fire Protection <input type="checkbox"/> On-site Sewage Systems					
Description of designer's work			Model Certification		Project #:
					PJ-00267
					Layout #:
					JB-09145
Heating and Cooling Load Calculations		Main	X	Builder	
Air System Design		Alternate		Project	
Residential mechanical ventilation Design Summary		O.D. GFA	2186	Model	
Residential System Design per CAN/CSA-F280-12				Model 2225S	
Residential New Construction - Forced Air				SB-12	Energy Star
D. Declaration of Designer					
<p>I, <u>David DaCosta</u> declare that (choose one as appropriate):</p> <p style="text-align: center;">(print name)</p> <p><input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.</p> <p style="text-align: right;">Individual BCIN: _____</p> <p style="text-align: right;">Firm BCIN: _____</p> <p><input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5 of Division C, of the Building Code.</p> <p style="text-align: right;">Individual BCIN: <u>32964</u></p> <p style="text-align: right;">Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u></p> <p><input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.</p> <p style="text-align: right;">Basis for exemption from registration and qualification: _____</p>					
I certify that:					
1. The information contained in this schedule is true to the best of my knowledge.					
2. I have submitted this application with the knowledge and consent of the firm.					
<u>October 4, 2023</u>					
Date			Signature of Designer		

NOTE:

- 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, temporary license, or a certificate of authorization, issued 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.

Heat loss and gain calculation summary sheet				CSA-F280-M12 Standard Form No. 1	
These documents issued for the use of EM Air Systems				Layout No.	
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.				JB-09145	
Building Location					
Address (Model): Model 2225S			Site: King East Developments		
Model:			Lot:		
City and Province: Richmond Hill			Postal code:		
Calculations based on					
Dimensional information based on:			Architectural Design Inc. Jun/2023		
Attachment: Townhome			Front facing: East/West		Assumed? Yes
No. of Levels: 3 Ventilated? Included			Air tightness: 1961-Present (ACH=3.57)		Assumed? Yes
Weather location: Richmond Hill			Wind exposure: Sheltered		
HRV? VanEE V150E75NS			Internal shading: Light-translucent		Occupants: 4
Sensible Eff. at -25C 60%		Apparent Effect. at -0C 80%		Units: Imperial	Area Sq ft: 2186
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/Gain Caculations based on CSA-F280-12 Effective R-Values			
Notes: Residential New Construction - Forced Air					
Calculations performed by					
Name: David DaCosta			Postal code: L4T 0A4		
Company: gtaDesigns Inc.			Telephone: (905) 671-9800		
Address: 2985 Drew Road, Suite 202			Fax:		
City: Mississauga			E-mail hvac@gtadesigns.ca		

Builder: **EM Air Systems**

Date: **October 4, 2023**

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

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Project: **King East Developments**

Model: **Model 2225S**

System 1

Individual BCIN: 32964

David DaCosta

Project # **PJ-00267**
Layout # **JB-09145**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	16,013 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Carrier	Make	Type	Carrier	2.0 Ton
Level 2 Net Load	11,814 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	59SC5B060E17--14	Model		Model:	
Level 3 Net Load	10,458 btu/h	Available Design Pressure	0.275 "w.c.	High Input	60000	Input Btu/h		Cond.-----	2.0
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	High Output	58000	Output Btu/h		Coil -----	2.0
Total Heat Loss	38,284 btu/h	R/A Plenum Pressure	0.138 "w.c.	E.s.p.	0.50 " W.C.	Min.Output Btu/h	AWH		
Total Heat Gain	22,047 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Building Volume Vb	25144 ft³	Heating Air Flow Proportioning Factor	0.0225 cfm/btuh	AFUE	97%	Blower Speed Selected:	Blue	Blower Type	ECM
Ventilation Load	1,069 Btuh.	Cooling Air Flow Proportioning Factor	0.0390 cfm/btuh	Aux. Heat		(Brushless DC OBC 12.3.1.5.(2))			
Ventilation PVC	63.6 cfm	R/A Temp	70 deg. F.	SB-12 Package	Energy Star	Check	860 cfm	Cool. Check	860 cfm
Supply Branch and Grill Sizing		S/A Temp	132 deg. F.	Temp. Rise>>>	62 deg. F.	Heat.	860 cfm	Cooling	860 cfm
		Diffuser loss	0.01 "w.c.						

	Level 1														Level 2													
	1	2	3	4	5	6	7								8	9	10	11	12	13	14							
S/A Outlet No.	REC	REC	OFF	LAUN	BATH2	F.BASE	STOR								GRT	GRT	WR	KIT	FAM	FAM	FOY							
Room Use	2852	2852	1443	111	1115	4407	3233								1756	1756	600	1522	1720	1720	2739							
Btu/Outlet	64	64	32	3	25	99	73								39	39	13	34	39	39	62							
Heating Airflow Rate CFM	39	39	23	0	3	21	8								64	64	14	64	72	72	53							
Cooling Airflow Rate CFM	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
Duct Design Pressure	30	46	44	8	11	27	31								31	36	20	6	40	39	43							
Actual Duct Length	100	70	110	110	120	90	90	70	70	70	70	70	70	70	70	90	90	130	110	100	110	70	70	70	70	70	70	70
Equivalent Length	130	116	154	118	131	117	121	70	70	70	70	70	70	70	101	126	110	136	150	139	153	70	70	70	70	70	70	70
Total Effective Length	0.10	0.11	0.08	0.11	0.10	0.11	0.11	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.13	0.10	0.12	0.10	0.09	0.09	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Adjusted Pressure	5	5	4	2	4	6	6								5	5	3	5	6	6	6							
Duct Size Round	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Outlet Size	C	C	D	C	A	B	B								D	D	C	A	A	A	B							
Trunk	Level 3														Level 4													
S/A Outlet No.	15	16	17	18	19	20																						
Room Use	P.BED	P.BED	BED 2	BED 3	BATH	ENS																						
Btu/Outlet	2299	2299	1733	1976	834	1318																						
Heating Airflow Rate CFM	52	52	39	44	19	30																						
Cooling Airflow Rate CFM	74	74	66	59	18	34																						
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	52	55	48	54	30	43																						
Equivalent Length	140	140	100	120	100	160	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	192	195	148	174	130	203	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.07	0.07	0.09	0.07	0.10	0.06	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	6	6	6	3	4																						
Outlet Size	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	D	D	C	A																						

Return Branch And Grill Sizing	Grill Pressure Loss										0.02 "w.c.
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	180	425	105	150							
Duct Design Pressure	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Actual Duct Length	16	17	48	37							
Equivalent Length	125	170	125	180	50	50	50	50	50	50	50
Total Effective Length	141	187	173	217	50	50	50	50	50	50	50
Adjusted Pressure	0.08	0.06	0.07	0.05	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.0	11.5	6.0	8.0							
Inlet Size	8	8	8	8							
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	30	14	14							
Trunk	Z	Z		Z							

Return Trunk Duct Sizing	CFM	Press.	Round	Rect. Size
Trunk				
Drop	860	0.05	15.5	24x10
Z	755	0.05	14.5	24x8 18x10
Y				
X				
W				
V				
U				
T				
S				
R				
Q				

Supply Trunk Duct Sizing	CFM	Press.	Round	Rect. Size
Trunk				
A	476	502	0.06	12.0 16x8 12x10
B	82	233	0.08	8.5 8x8 107
C	385	358	0.07	10.5 12x8 10x10
D	276	195	0.07	9.5 10x8 127
E				
F				
G				
H				
I				
J				
K				

2012 OBC

Builder: EM Air Systems

Date: October 4, 2023

Project: King East Developments

Model: Model 2225S

System 1

Weather Data Richmond Hill 44 -5.8 88 20 50

Heat Loss ^T 77.8 deg. F Ht gain ^T 12.8 deg. F

Project # PJ-00267
Layout # JB-09145

Level 1

Run ft. exposed wall A	39 A	REC	9 A	OFF	1 A	LAUN	10 A	BATH2	30 A	F.BASE	29 A	STOR	A	A	A	A	A	A
Run ft. exposed wall B	B		B		B		B		B		B		B	B	B	B	B	B
Ceiling height	7.5 AG		7.5 AG		7.5 AG		7.5 AG		7.5 AG		7.5 AG		7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG
Floor area	255 Area		148 Area		92 Area		54 Area		111 Area		70 Area		Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A		A		A		A		A		A		A	A	A	A	A	A
Exposed Ceilings B	B		B		B		B		B		B		B	B	B	B	B	B
Exposed Floors	Flr		Flr		Flr		Flr		Flr		Flr		Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	293		68		8		75		225		218							
Gross Exp Wall B																		

Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																
East/West	4.00	19.45	29.66																
South	4.00	19.45	22.60	16	311	362				8	156	181							
WOB Windows Including Doors	3.55	21.92	27.86																
Skylight	2.03	38.33	89.12																
Doors	4.00	19.45	3.20	21	408	67				21	408	67							
Net exposed walls A	20.84	3.73	0.61	256		157	56		34	8		5	75	46	196	120	218		134
Net exposed walls B	21.40	3.64	0.60																
Exposed Ceilings A	59.22	1.31	0.67																
Exposed Ceilings B	27.65	2.81	1.44																
Exposed Floors	29.80	2.61	0.23																
Foundation Conductive Heatloss																			
Total Conductive																			
Heat Loss																			
Heat Gain																			
Air Leakage	Heat Loss/Gain	0.8358	0.0613	2531	36		640	24	49	0	495	3	1955	23	1434	8			
Ventilation	Case 1	0.06	0.08																
Case 2	16.80	13.82																	
Case 3	x	0.05	0.08	145	49		37	32	3	0	28	4	112	31	82	11			
Heat Gain People			239																
Appliances Loads	1 = 25 percent		3396	1.0		849													
Duct and Pipe loss	10%																		
Level HL Total	16,013			5703			1443		111		1115		4407		3233				
Level HG Total	3,377				1975			580		7		69		548		199			

Level 2

Run ft. exposed wall A	35 A	GRT	6 A	WR	17 A	KIT	18 A	FAM	18 A	FOY	A	A	A	A	A	A	A	A
Run ft. exposed wall B	B		B		B		B		B		B	B	B	B	B	B	B	B
Ceiling height	10.0		10.0		10.0		10.0		15.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Floor area	358 Area		34 Area		282 Area		229 Area		67 Area		Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A		A		A		A		A		A	A	A	A	A	A	A	A
Exposed Ceilings B	B		B		B		B		B		B	B	B	B	B	B	B	B
Exposed Floors	Flr		Flr		47 Flr		180 Flr		180 Flr		Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	350		60		170		180		270									
Gross Exp Wall B																		

Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																
East/West	4.00	19.45	29.66	42	817	1246				48	934	1424	24	467	712				
South	4.00	19.45	22.60																
Existing Windows	1.99	39.10	24.56																
Skylight	2.03	38.33	89.12																
Doors	4.00	19.45	3.20	11	214	35				18	350	58							
Net exposed walls A	21.40	3.64	0.60	297	1080	178	51	185	31	159	578	95	132	480	79	228	829	136	
Net exposed walls B	8.50	9.15	1.51																
Exposed Ceilings A	59.22	1.31	0.67																
Exposed Ceilings B	27.65	2.81	1.44																
Exposed Floors	29.80	2.61	0.23																
Foundation Conductive Heatloss			x																
Total Conductive																			
Heat Loss																			
Heat Gain																			
Air Leakage	Heat Loss/Gain	0.6165	0.0613	1301	89		222	14	564	22	1161	95		1015	55				
Ventilation	Case 1	0.05	0.08																
Case 2	16.80	13.82																	
Case 3	x	0.05	0.08	101	121		17	19	44	29	90	128		79	75				
Heat Gain People			239																
Appliances Loads	1 = 25 percent		3396	1.0		849			1.0		849		1.0		849				
Duct and Pipe loss	10%																		
Level HL Total	11,814			3513			600		1522		1631		3711		2739				
Level HG Total	10,311				3273			348						1347					

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

David DaCosta

David DaCosta

SB-12 Package

Energy Star

Total Heat Loss	38,284	btu/h
Total Heat Gain	22,047	btu/h

2012 OBC

Builder: EM Air Systems

Date: October 4, 2023

Project: King East Developments

Model: Model 2225S

System 1

Weather Data Richmond Hill 44 -5.8 88 20 50

Heat Loss ^T 77.8 deg. F Ht gain ^T 12.8 deg. F

Project # PJ-00267
Layout # JB-09145

Level 3				P.BED		BED 2		BED 3		BATH		ENS		A		A		A		A		A		A	
Run ft. exposed wall A	39	A		12	A	26	A	10	A	13	A	A		A		A		A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B		B		B		B	
Ceiling height	11.0			11.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0	
Floor area	407	Area		235	Area	141	Area	77	Area	122	Area	Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	407	A		235	A	141	A	77	A	122	A	A		A		A		A		A		A		A	
Exposed Ceilings B	B			B		B		B		B		B		B		B		B		B		B		B	
Exposed Floors	6	Flr		7	Flr		Flr		Flr		Flr	Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A	429			132		234		90		117															
Gross Exp Wall B																									
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																						
East/West	4.00	19.45	29.66	48	934	1424	24	467	712	20	389	593	9	175	203	20	389	452							
South	4.00	19.45	22.60																						
Existing Windows	1.99	39.10	24.56																						
Skylight	2.03	38.33	89.12																						
Doors	4.00	19.45	3.20																						
Net exposed walls A	21.40	3.64	0.60	381	1385	228	108	393	65	214	778	128	81	294	48	97	353	58							
Net exposed walls B	8.50	9.15	1.51																						
Exposed Ceilings A	59.22	1.31	0.67	407	535	274	235	309	158	141	185	95	77	101	52	122	160	82							
Exposed Ceilings B	27.65	2.81	1.44																						
Exposed Floors	29.80	2.61	0.23	6	16	1	7	18	2																
Foundation Conductive Heatloss																									
Total Conductive	Heat Loss				2869			1186		1352		571		902											
	Heat Gain					1926		936		816		304		592											
Air Leakage	Heat Loss/Gain	0.4131	0.0613		1185	118		490	57	559	50	236	19	373	36										
Ventilation	Case 1		0.03	0.08																					
	Case 2		16.80	13.82																					
	Case 3	x	0.05	0.08																					
	Heat Gain People			239	2	138	160	57	78	65	68	27	25	43	49										
Appliances Loads	1 =.25 percent		3396																						
Duct and Pipe loss			10%		1	405	240																		
Level HL Total	10,458	Total HL for per room			4597			1733		1976		834		1318											
Level HG Total	8,359	Total HG per room x 1.3				3800			1703		1524		452		881										

Level 4				A		A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall A	A			A		A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B		B		B		B	
Ceiling height																									
Floor area	Area			Area		Area		Area		Area		Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	A			A		A		A		A		A		A		A		A		A		A		A	
Exposed Ceilings B	B			B		B		B		B		B		B		B		B		B		B		B	
Exposed Floors	Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A																									
Gross Exp Wall B																									
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																						
East/West	4.00	19.45	29.66																						
South	4.00	19.45	22.60																						
Existing Windows	1.99	39.10	24.56																						
Skylight	2.03	38.33	89.12																						
Doors	4.00	19.45	3.20																						
Net exposed walls A	21.40	3.64	0.60																						
Net exposed walls B	8.50	9.15	1.51																						
Exposed Ceilings A	59.22	1.31	0.67																						
Exposed Ceilings B	27.65	2.81	1.44																						
Exposed Floors	29.80	2.61	0.23																						
Foundation Conductive Heatloss																									
Total Conductive	Heat Loss																								
	Heat Gain																								
Air Leakage	Heat Loss/Gain	0.0000	0.0613																						
Ventilation	Case 1		0.00	0.08																					
	Case 2		16.80	13.82																					
	Case 3	x	0.05	0.08																					
	Heat Gain People			239																					
Appliances Loads	1 =.25 percent		3396																						
Duct and Pipe loss			10%																						
Level HL Total	0	Total HL for per room																							
Level HG Total	0	Total HG per room x 1.3																							

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

David DaCosta

David DaCosta

SB-12 Package

Energy Star

Total Heat Loss	38,284	btu/h
Total Heat Gain	22,047	btu/h

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



David DaCosta

Package: Energy Star
Project: Richmond Hill

Model: Model 2225S

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

For systems serving one dwelling unit & conforming to the Ontario Building Code, O.reg 332/12

Location of Installation	
Lot #	Plan #
Township	Richmond Hill
Roll #	Permit #
Address	

Builder	
Name	EM Air Systems
Address	
City	
Tel	Fax

Installing Contractor	
Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)		
a)	x	Direct vent (sealed combustion) only
b)		Positive venting induced draft (except fireplaces)
c)		Natural draft, B-vent or induced draft fireplaces
d)		Solid fuel (including fireplaces)
e)		No combustion Appliances

Heating System		
x	Forced air	Non forced air
		Electric space heat (if over 10% of heat load)

House Type 9.32.3.1(2)		
I	x	Type a) or b) appliances only, no solid fuel
II		Type I except with solid fuel (including fireplace)
III		Any type c) appliance
IV		Type I or II either electric space heat
Other		Type I, II or IV no forced air

System Design Option		
1	x	Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3		HRV simplified connection to forced air system
4		HRV full ducting/not coupled to forced air system
		Part 6 design

Total Ventilation Capacity 9.32.3.3(1)				
Bsmt & Master Bdrm	1 @	21.2 cfm	21.2 cfm	
Other Bedrooms	2 @	10.6 cfm	21.2 cfm	
Bathrooms & Kitchen	5 @	10.6 cfm	53 cfm	
Other rooms	5 @	10.6 cfm	53 cfm	
Total			148.4	

Principal Ventilation Capacity 9.32.3.4(1)				
Master bedroom	1 @	31.8 cfm	31.8 cfm	
Other bedrooms	2 @	15.9 cfm	31.8 cfm	
Total			63.6	

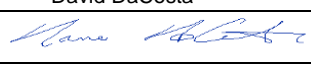
Principal Exhaust Fan Capacity				
Make	Model		Location	
VanEE	V150E75NS		Base	
127 cfm			80.0 Sones	or Equiv.

Heat Recovery Ventilator			
Make	VanEE		
Model	V150E75NS		
	127 cfm high		80 cfm low
Sensible efficiency @ -25 deg C			60%
Sensible efficiency @ 0 deg C			75%

Note: Installer to balance HRV/ERV to within 10 percent of PVC

Supplemental Ventilation Capacity		
Total ventilation capacity	148.4	
Less principal exhaust capacity	63.6	
REQUIRED supplemental vent. Capacity	84.8	cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
Ens	50	XB50	0.3
Bath	50	XB50	0.3
all fans HVI listed		Make	Broan or Equiv.

Designer Certification			
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.			
Name	David DaCosta		
Signature			
HRAI #	5190	BCIN #	32964
Date	October 4, 2023		



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e-mail dave@gtadesigns.ca

Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods (Building Code Part 9, Residential)

Page 7
Project # PJ-00267
Layout # JB-09145

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

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

For use by Principal Authority

Application No:	Model/Certification Number
-----------------	----------------------------

A. Project Information

Building number, street name	Unit number	Lot/Con
Model 2225S		
Municipality Richmond Hill	Postal code	Reg. Plan number / other description

B. Prescriptive Compliance [indicate the building code compliance option being employed in the house design]

<input type="checkbox"/> SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy performance results using an approved software (see guide)
<input checked="" type="checkbox"/> ENERGY STAR** [SB-12 - 3.1.3.]	*Attach Builder Option Package [BOP] form
<input type="checkbox"/> R-2000** [SB-12 - 3.1.3.]	*Attach R-2000 HOT2000 Report

C. Project Building Design Conditions

Climatic Zone (SB-1):	Heat. Equip. Efficiency	Space Heating Fuel Source
<input checked="" type="checkbox"/> Zone 1 (< 5000 degree days)	<input checked="" type="checkbox"/> ≥ 92% AFUE	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel
<input type="checkbox"/> Zone 2 (≥ 5000 degree days)	<input type="checkbox"/> ≥ 84% < 92% AFUE	<input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area	Other Building Characteristics	
Area of Walls = <u>415.9</u> m ² or <u>4476.9</u> ft ²	<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement <input type="checkbox"/> Slab-on-ground Walkout Basement <input checked="" type="checkbox"/> Air Conditioning Combo Unit <input type="checkbox"/> Air Sourced Heat Pump (ASHP) <input type="checkbox"/> Ground Source Heat Pump (GSHP)	
Area of W, S & G = <u>27.03</u> m ² or <u>291.0</u> ft ²		
W, S & G % = <u>6%</u>		

SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance
SB-12 Referenced Building Package (input design package):

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form]

Building Component	Minimum RSI/R-Values or Maximum U-Value ¹		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)	x	x	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·ft²·F) but not both.



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Energy Efficiency Design Summary:
Performance & Other Acceptable Compliance Methods
(Building Code Part 9, Residential)

Page 8
Project # PJ-00267
Layout # JB-09145

E. 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 _____ GJ

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): Solar: _____
Other Types: _____

F. 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: BUILDING KNOWLEDGE CANADA
Accreditation or Evaluator/Advisor/Rater License #: 5506

ENERGY STAR or R-2000

Energy Evaluator/Advisor/Rater/Name and company: ANGELA BUSTAMANTE
Evaluator/Advisor/Rater License #: 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
David DaCosta	32964	



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

T | 1-800-267-6830

F | 519-658-6103 E | info@buildingknowledge.ca

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



General Details		House Details	
Performance or Prescriptive :	Prescriptive	ESEnrolment ID:	
Attached or Detached or MURB :	Attached	Site/Phase:	KING EAST PH 2&3
Province / Territory :	ON	LOT :	
Zone :	Zone 1 Heating Degree Days	Street # and Name:	
Service Organization (SO) number :	55 - Enerquality	Street Type:	
Builder number :	TBD	City :	RICHMOND HILL
Builder Name:	PLAZACORP	Postal Code (or FSA) :	
		Model:	ALL MODELS
Supplementary Information		Third Party Evaluator:	BUILDING KNOWLEDGE CANADA
		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	
	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			
	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 with the Ground	Core	RSI 3.72 (R 21.1) below grade	Core Minimum	✓	R20 blanket	
	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			
Windows (Fenestrations)	Core	ENERGY STAR Zone 2 UV1.4 and/or ER29	Core Minimum	✓	Zone 2	
	Option	N/A	n/a			
	Core	Total area of all windows to max. 20% of above grade wall area.	Core Minimum	✓		
Fireplace	Core	Gas fireplace spark ignition if installed	#N/A	✓		
Space Heating	Core	Min. 96% AFUE ENERGY STAR fuel fired furnace	Core Minimum	✓		COOLING - ASHP
	Req'd	Supply ducts and 1m return sealed	Required	✓		
Domestic Water Heating	Core	Instantaneous min. EF or UEF 0.80 Tank EF or UEF 0.80 (direct vent (sealed))	Core Minimum			
	Option	Instantaneous condensing min. UEF 0.95	0.4	✓		
Drain Water Heat Recovery	Option	≥ 42% to ≤ 54% - two showers	0.3	✓	42%	
Airtightness	Core	Level 1 (DT 2.5ach / 0.18 nlr) (AT 3.0ach/0.26nlr)	Core Minimum	✓		
	Option	N/A	n/a			
Ventilation (HRV / ERV)	Core	65% SRE @0 °C and 55% SRE @ -25 °C	Core Minimum			
	Option	≥75% SRE @ 0 °C	0.2	✓		
	Req'd	Interconnected to the Furnace Fan	Required	✓		
	Req'd	HRV balanced	Required	✓		
Electrical Savings	Electrical	SRE ≥75% SRE @ 0 °C, ≥ 0.57 L/s/W	0.1	✓		
	Core	75% ENERGY STAR lighting	Core Minimum			
	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".

Total BOP Option Credits (Must be ≥ 1.8 Credits)

1.8

Package:
Project:
Energy Star
Richmond Hill
System:
Model:
System 1
Model 2225S

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL ^{AT}	HL ^{leak}
0.018	0.404	25144	77.8	14210

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG ^{AT}	HG ^{Leak}
0.018	0.112	25144	12.8	649

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss (HL ^{clevel})	Air Leakage Heat Loss Multiplier
Level 1	0.5	14210	8500	0.8358
Level 2	0.3		6915	0.6165
Level 3	0.2		6880	0.4131
Level 4	0		0	0.0000

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

HG LEAK		Air Leakage Heat Gain	
	649		0.0613
BUILDING CONDUCTIVE HEAT GAIN			
	10599		

Levels this Dwelling	
	3

Highest Ceiling Height		30.0 FT	9.14 M
------------------------	--	---------	--------

Ventilation Calculations

Vent	Ventilation Heat Loss					Ventilation Heat Gain				Vent	
	Ventilation Heat Loss					Ventilation Heat Gain					
	C	PVC	HL^T	(1-E) HRV	HLbvent	C	PVC	HG^T	HGbvent		
	1.08	63.6	77.8	0.20	1069	1.1	63.6	12.8	879		
Case 1						Case 1					
Case 1	Ventilation Heat Loss (Exhaust only Systems)					Ventilation Heat Gain (Exhaust Only Systems)					Case 1
	Case 1 - Exhaust Only					Case 1 - Exhaust Only		Multiplier			
	Level	LF	HLbvent	LVL Cond. HL	Multiplier	HGbvent	879	0.08			
	Level 1	0.5	1069	8500	0.06	Building	10599				
	Level 2	0.3		6915	0.05						
	Level 3	0.2		6880	0.03						
Level 4	0	0		0.00							
Case 2						Case 2					
Case 2	Ventilation Heat Loss (Direct Ducted Systems)					Ventilation Heat Gain (Direct Ducted Systems)					Case 2
				Multiplier				Multiplier			
	C	HL^T	(1-E) HRV	16.80		C	HG^T	13.82			
	1.08	77.8	0.20			1.08	12.8				
Case 3						Case 3					
Case 3	Ventilation Heat Loss (Forced Air Systems)					Ventilation Heat Gain (Forced Air Systems)					Case 3
			HLbvent	Multiplier				Vent Heat Gain	Multiplier		
	Total Ventilation Load		1069	0.05		HGbvent	HG*1.3	879	0.08		
						879	1				

Foundation Conductive Heatloss Level 1	Level 1	2047	Watts	6983	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			Watts		Btu/h

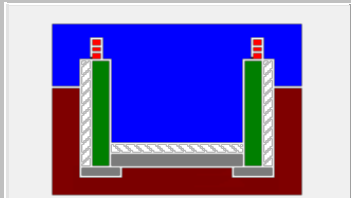
Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Semi-Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m ³):	712.08			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa. 322.44 cm ²			
	3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	31.8		31.8	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H): 0.404				
Cooling Air Leakage Rate (ACH/H): 0.112				

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario ▼	
Region:	Richmond Hill ▼	
Site Description		
Soil Conductivity:	High conductivity: moist soil ▼	
Water Table:	Normal (7-10 m, 23-33 Ft) ▼	
Foundation Dimensions		
Floor Length (m):	19.96	 <p>Insulation Configuration</p>
Floor Width (m):	3.36	
Exposed Perimeter (m):	35.97	
Wall Height (m):	2.74	
Depth Below Grade (m):	0.46	
Window Area (m ²):	3.34	
Door Area (m ²):	3.90	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		2047



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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

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

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

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

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

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

MECHANICAL LAYOUT DETAILS:



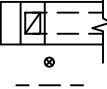









- Rooms: HOME OFFICE, RECREATION ROOM, CLOSET, WASH/DRYER, TUB, BATH 2, GARAGE, FINISHED AREA, LOWER AREA, UNEXCAVATED.
- Ductwork: D - 10 X 8, C - 12 X 8, Z - 24 X 8 OR 18 X 10 DROP - 24 X 10, A - 16 X 8, B - 8 X 8, 7-6" H/W STORAGE, 16-6", 12-6", 13-6", 15-6", 14-6", 3R-6" 20, 6-6", 3 L/W, 2 L/W, 1 L/W, 17-6", 18-6", 19, 10, 2R, 4R, 5, 5".
- HRV: P.E. HRV VANE # VI50E75NS 127 CFM @ .4 W.C.
- Furnace/Air Handler: FURNACE OR AIR HANDLER, RETURN AIR, FRESH AIR INLET, HEAT EXCHANGE CORE.
- Other: F.D., COLD CELLAR, SH, F 5", IR LW 14X8, OPEN ABOVE UP 6R, HANDRAIL.

DETAIL INSET: SIMPLIFIED CONNECTION TO FURNACE AIR SYSTEM HRV DIAGRAM OPTION 3

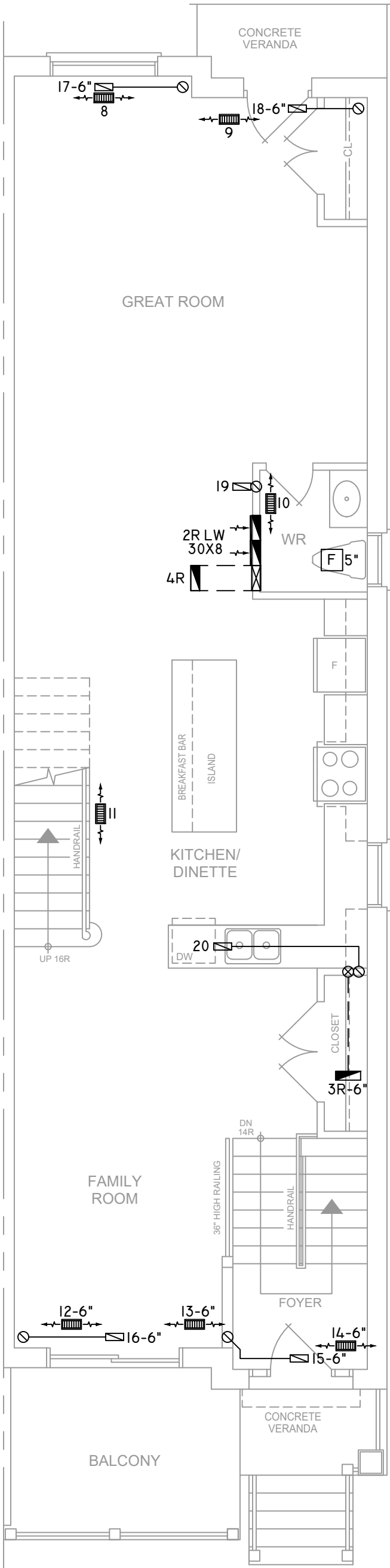
Labels in inset: OPTIONAL TIMER/CONTROL, CAREFULLY INSULATE DUCTS ON COLD SIDE OF SYSTEM, 6" MINIMUM HORIZONTAL SEPARATION BETWEEN HOODS, OR OTHER CODE APPROVED METHOD, STALE AIR FROM KITCHEN AND BATHROOM, STALE AIR EXHAUST, FRESH AIR INLET, FURNACE OR AIR HANDLER, RETURN AIR, FRESH AIR TO LIVING SPACE AND BEDROOMS OPTION 3, HEAT EXCHANGE CORE.

TABLE 3.1.3. ZONE 1 COMPLIANCE
PACKAGE "ENERGY STAR" REF. TABLE 3.1.3.

--	--	--	--	--

	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR PIPE RISER		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR ROUND DUCT		RETURN AIR RISER UP TO FLOOR ABOVE		RETURN AIR FROM BASEMENT SECOND FLOOR	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER							T	THERMOSTAT
			VOLUME DAMPER							\$	PRINCIPAL EXHAUST FAN SWITCH
										F	W/R & PRINCIPAL EXHAUST FAN
										PE	

- CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED
- INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
- ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY
- ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)
- ENERGY STAR
SEAL ALL JOINTS ON ANY DUCTWORK.
SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS
- ENERGY STAR V12 STANDARD.
ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)




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

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

QUALIFICATION INFORMATION

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

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

SIGNATURE OF DESIGNER

OBC 2012

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

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE SPECIFIED.

PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)

INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" 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.





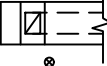














2985 DREW ROAD
SUITE 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 905-671-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	38,284	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	860	CFM

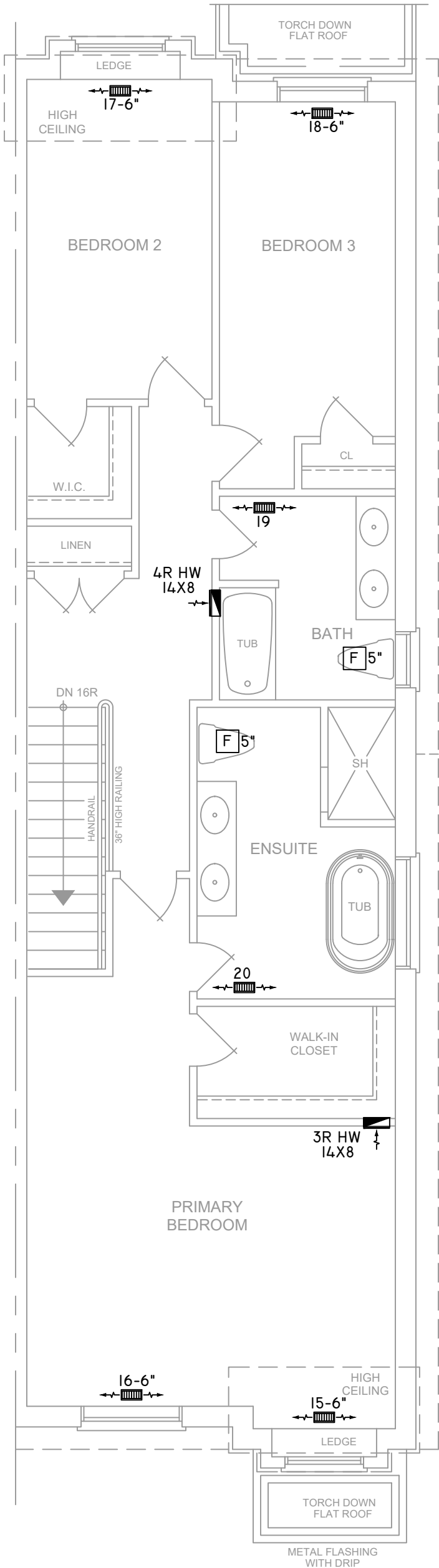
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
1ST FLOOR	7	1	2
BASEMENT	7	1	2

FLOOR PLAN:		
GROUND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 2186
LAYOUT NO. JB-09145	DRAWING NO. M2	

DATE:	OCTOBER 4, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2225S
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"

	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR PIPE RISER		RETURN ROUND DUCT		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		SUPPLY AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE		RETURN AIR FROM BASEMENT SECOND FLOOR		RETURN AIR FROM BASEMENT SECOND FLOOR	R.A.	RETURN AIR
	SUPPLY DIFFUSER		VOLUME DAMPER										THERMOSTAT
													PRINCIPAL EXHAUST FAN SWITCH
													W/R & PRINCIPAL EXHAUST FAN


- INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
- ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY
- ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)
- ENERGY STAR
SEAL ALL JOINTS ON ANY DUCTWORK.
SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS
- ENERGY STAR VI2 STANDARD.
ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)



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

QUALIFICATION INFORMATION

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

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

SIGNATURE OF DESIGNER

OBC 2012

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

NOTES
INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE SPECIFIED.
PROVIDE BALANCING DAMPERS ON ALL BRANCHES.
ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)
INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" MIN.
CONTRACTOR MUST WORK FROM APPROVED PLANS.
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GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING.



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UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	860	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
1ST FLOOR	7	1	2
BASEMENT	7	1	2

FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 2186
LAYOUT NO. JB-09145	DRAWING NO. M3	

DATE:	OCTOBER 4, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2225S
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"