


Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

<b>A. Project Information</b>					
Building number, street name				Lot:	
<b>Model 2030S</b>				Lot/con.	
Municipality <b>Richmond Hill</b>		Postal code	Plan number/ other description		
<b>B. Individual who reviews and takes responsibility for design activities</b>					
Name <b>David DaCosta</b>		Firm <b>gtaDesigns Inc.</b>			
Street address <b>2985 Drew Road, Suite 202</b>				Unit no.	Lot/con.
Municipality <b>Mississauga</b>		Postal code <b>L4T 0A4</b>	Province <b>Ontario</b>	E-mail <a href="mailto:hvac@gtadesigns.ca">hvac@gtadesigns.ca</a>	
Telephone number <b>(905) 671-9800</b>		Fax number		Cell number	
<b>C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]</b>					
<div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"><input type="checkbox"/> House</div> <div style="width: 33%;"><input checked="" type="checkbox"/> HVAC – House</div> <div style="width: 33%;"><input type="checkbox"/> Building Structural</div> <div style="width: 33%;"><input type="checkbox"/> Small Buildings</div> <div style="width: 33%;"><input type="checkbox"/> Building Services</div> <div style="width: 33%;"><input type="checkbox"/> Plumbing – House</div> <div style="width: 33%;"><input type="checkbox"/> Large Buildings</div> <div style="width: 33%;"><input type="checkbox"/> Detection, Lighting and Power</div> <div style="width: 33%;"><input type="checkbox"/> Plumbing – All Buildings</div> <div style="width: 33%;"><input type="checkbox"/> Complex Buildings</div> <div style="width: 33%;"><input type="checkbox"/> Fire Protection</div> <div style="width: 33%;"><input type="checkbox"/> On-site Sewage Systems</div> </div>					
<b>Description of designer's work</b>		<b>Model Certification</b>		<b>Project #:</b>	
				<b>PJ-00267</b>	
				<b>Layout #:</b>	
				<b>JB-09144</b>	
Heating and Cooling Load Calculations		Main	X	Builder	
Air System Design		Alternate		Project	
Residential mechanical ventilation Design Summary		O.D. GFA	1876	Model	
Residential System Design per CAN/CSA-F280-12				Model 2030S	
Residential New Construction - Forced Air				SB-12	
				Energy Star	
<b>D. Declaration of Designer</b>					
<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="margin-left: 150px;">Individual BCIN: _____</p> <p style="margin-left: 150px;">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="margin-left: 150px;">Individual BCIN: <u>32964</u></p> <p style="margin-left: 150px;">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="margin-left: 150px;">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>September 20, 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.

<b>Heat loss and gain calculation summary sheet</b>				CSA-F280-M12 Standard Form No. 1	
These documents issued for the use of <b>EM Air Systems</b>				Layout No.	
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.				<b>JB-09144</b>	
<b>Building Location</b>					
Address (Model): <b>Model 2030S</b>			Site: <b>King East Developments</b>		
Model:			Lot:		
City and Province: <b>Richmond Hill</b>			Postal code:		
<b>Calculations based on</b>					
Dimensional information based on:			<b>Architectural Design Inc. Jun/2023</b>		
Attachment: <b>Townhome</b>			Front facing: <b>East/West</b>		Assumed? <b>Yes</b>
No. of Levels: <b>3</b> Ventilated? <b>Included</b>			Air tightness: <b>1961-Present (ACH=3.57)</b>		Assumed? <b>Yes</b>
Weather location: <b>Richmond Hill</b>			Wind exposure: <b>Sheltered</b>		
HRV? <b>VanEE</b> <b>V150E75NS</b>			Internal shading: <b>Light-translucent</b>		Occupants: <b>4</b>
Sensible Eff. at -25C <b>60%</b>		Apparent Effect. at -0C <b>80%</b>		Units: <b>Imperial</b>	Area Sq ft: <b>1876</b>
Sensible Eff. at -0C <b>75%</b>					
<b>Heating design conditions</b>			<b>Cooling design conditions</b>		
Outdoor temp <b>-5.8</b> Indoor temp: <b>72</b> Mean soil temp: <b>50</b>			Outdoor temp <b>88</b> Indoor temp: <b>75</b> Latitude: <b>44</b>		
<b>Above grade walls</b>			<b>Below grade walls</b>		
Style A: <b>As per OBC SB12</b> <b>Energy Star</b> <b>R 22 + 5ci</b>			Style A: <b>As per OBC SB12</b> <b>Energy Star</b> <b>R 20ci</b>		
Style B:			Style B:		
Style C:			Style C:		
Style D:			Style D:		
<b>Floors on soil</b>			<b>Ceilings</b>		
Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b>			Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 60</b>		
Style B:			Style B: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 31</b>		
<b>Exposed floors</b>			Style C:		
Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 31</b>			<b>Doors</b>		
Style B:			Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 4.00</b>		
<b>Windows</b>			Style B:		
Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 4.00</b>			Style C:		
Style B:			<b>Skylights</b>		
Style C:			Style A: <b>As per Selected OBC SB12</b> <b>Energy Star</b> <b>R 2.03</b>		
Style D:			Style B:		
Attached documents: <b>As per Shedule 1</b>		<b>Heat Loss/Gain Caculations based on CSA-F280-12 Effective R-Values</b>			
Notes: <b>Residential New Construction - Forced Air</b>					
<b>Calculations performed by</b>					
Name: <b>David DaCosta</b>			Postal code: <b>L4T 0A4</b>		
Company: <b>gtaDesigns Inc.</b>			Telephone: <b>(905) 671-9800</b>		
Address: <b>2985 Drew Road, Suite 202</b>			Fax:		
City: <b>Mississauga</b>			E-mail <b>hvac@gtadesigns.ca</b>		

Builder: **EM Air Systems**

Date: **September 20, 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 2030S**

**System 1**

Individual BCIN: 32964

David DaCosta

Project # **PJ-00267**  
Layout # **JB-09144**

## DESIGN LOAD SPECIFICATIONS

Level 1 Net Load	13,810 btu/h
Level 2 Net Load	11,033 btu/h
Level 3 Net Load	9,193 btu/h
Level 4 Net Load	0 btu/h
Total Heat Loss	34,036 btu/h
Total Heat Gain	21,227 btu/h
Building Volume Vb	21598 ft³
Ventilation Load	1,069 Btu/h.
Ventilation PVC	63.6 cfm
Supply Branch and Grill Sizing	

## AIR DISTRIBUTION & PRESSURE

Equipment External Static Pressure	0.5 "w.c.
Additional Equipment Pressure Drop	0.225 "w.c.
Available Design Pressure	0.275 "w.c.
Return Branch Longest Effective Length	300 ft
R/A Plenum Pressure	0.138 "w.c.
S/A Plenum Pressure	0.14 "w.c.
Heating Air Flow Proportioning Factor	0.0237 cfm/btuh
Cooling Air Flow Proportioning Factor	0.0379 cfm/btuh
R/A Temp	70 deg. F.
S/A Temp	115 deg. F.
Diffuser loss	0.01 "w.c.

## FURNACE/AIR HANDLER DATA:

Make	Carrier
Model	59SC5B040E14--10
High Input	40000
High Output	39000
E.s.p.	0.50 " W.C.
Water Temp	deg. F.
AFUE	98%
Aux. Heat	
SB-12 Package	Energy Star
Temp. Rise>>>	45 deg. F.

## BOILER/WATER HEATER DATA:

Make	Type	Carrier	2.0 Ton
Model		Model:	
Input Btu/h		Cond.-----	2.0
Output Btu/h		Coil -----	2.0
Min.Output Btu/h	AWH		
Blower Speed Selected:	Yellow	Blower Type	ECM
Check	805 cfm	Cool. Check	805 cfm
Heat.	805 cfm	Cooling	805 cfm
Design Airflow	805 cfm		

## A/C UNIT DATA:

Blower DATA:	
Blower Type	ECM
(Brushless DC OBC 12.3.1.5.(2))	

	Level 1														Level 2															
S/A Outlet No.	1	2	3	4	5	6	7								8	9	10	11	12	13										
Room Use	REC	REC	OFF	LAUN	WR 2	F.BASE	STOR								GRT	GRT	WR	KIT	FAM	FOY										
Btu/Outlet	2249	2249	1248	848	1354	2785	3076								1985	1985	574	1284	2415	2792										
Heating Airflow Rate CFM	53	53	30	20	32	66	73								47	47	14	30	57	66										
Cooling Airflow Rate CFM	31	31	15	2	12	8	7								81	81	13	42	110	52										
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				
Actual Duct Length	34	46	37	6	17	18	23								25	31	11	14	34	38										
Equivalent Length	72	80	110	100	100	110	90	70	70	70	70	70	70	70	80	100	120	110	80	120	70	70	70	70	70	70				
Total Effective Length	106	126	147	106	117	128	113	70	70	70	70	70	70	70	105	131	131	124	114	158	70	70	70	70	70	70				
Adjusted Pressure	0.12	0.10	0.09	0.12	0.11	0.10	0.12	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.12	0.10	0.10	0.10	0.11	0.08	0.19	0.19	0.19	0.19	0.19	0.19				
Duct Size Round	5	5	4	3	4	6	6								6	6	3	4	6	5										
Outlet Size	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10				
Trunk	C	C	D	C	A	B	B								D	D	A	A	A	B										

	Level 3							Level 4																
S/A Outlet No.	14	15	16	17	18	19																		
Room Use	MAST	MAST	ENS	BED 3	BED 2	BATH																		
Btu/Outlet	1437	1437	2196	2424	1567	133																		
Heating Airflow Rate CFM	34	34	52	57	37	3																		
Cooling Airflow Rate CFM	60	60	60	69	69	3																		
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
Actual Duct Length	46	51	43	51	53	28																		
Equivalent Length	110	102	100	110	110	150	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	156	153	143	161	163	178	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.08	0.08	0.09	0.08	0.08	0.07	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	5	5	5	6	6	2																		
Outlet Size	3x10	3x10	3x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	B	C	D	A																		

Return Branch And Grill Sizing	Grill Pressure Loss										
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	162	398	105	140							
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	23	14	36	44							
Equivalent Length	170	125	185	180	50	50	50	50	50	50	50
Total Effective Length	193	139	221	224	50	50	50	50	50	50	50
Adjusted Pressure	0.06	0.08	0.05	0.05	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.0	10.5	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	Z							

Return Trunk Duct Sizing	CFM	Press.	Round	Rect. Size
Trunk				
Drop	805	0.05	15.0	24x10
Z	805	0.05	15.0	26x8 20x10
Y				
X				
W				
V				
U				
T				
S				
R				
Q				

Supply Trunk Duct Sizing	C.CFM	H.CFM	Press.	Round	Rect. Size
Trunk					
A	426	461	0.07	11.5	14x8 12x10
B	127	257	0.08	9.0	8x8 10x7
C	379	344	0.08	10.5	12x8 10x10
D	246	160	0.08	9.0	8x8 10x7
E					
F					
G					
H					
I					
J					
K					

2012 OBC

Builder: EM Air Systems

Date: September 20, 2023

Project: King East Developments

Model: Model 2030S

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-09144

## Level 1

Run ft. exposed wall A	31 A	REC	9 A	LAUN	10 A	F.BASE	29 A	A	A	A	A	A
Run ft. exposed wall 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	210 Area	120 Area	68 Area	44 Area	76 Area	83 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	233	68	60	75	143	218						
Gross Exp Wall B												

Components	R-Values	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														
WOB Windows Including Doors	3.55	21.92	27.86														
Skylight	2.03	38.33	89.12														
Doors	4.00	19.45	3.20														
Net exposed walls A	20.84	3.73	0.61														
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																	
Air Leakage	Heat Loss/Gain	0.8335	0.0525														
Ventilation	Case 1	0.07	0.08														
	Case 2	16.80	13.82														
	Case 3	x	0.05	0.08													
Heat Gain People			239														
Appliances Loads	1 = 25 percent		2917														
Duct and Pipe loss			10%														
Level HL Total	13,810			4498		1248		848		1354		2785		3076			
Level HG Total	2,821				1628				54		328		209		197		

## Level 2

Run ft. exposed wall A	36 A	GRT	6 A	WR	13 A	KIT	10 A	FAM	20 A	FOY	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	B	B	B
Ceiling height	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Floor area	314 Area	30 Area	316 Area	100 Area	89 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	A	A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	128 Flr	100 Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	360	60	130	100	300												
Gross Exp Wall B																	

Components	R-Values	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			x														
Total Conductive																	
Air Leakage	Heat Loss/Gain	0.5384	0.0525														
Ventilation	Case 1	0.05	0.08														
	Case 2	16.80	13.82														
	Case 3	x	0.05	0.08													
Heat Gain People			239														
Appliances Loads	1 = 25 percent		2917														
Duct and Pipe loss			10%														
Level HL Total	11,033			3970		574		1284		1106		2792		1363			
Level HG Total	9,962				4254												

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

Name: [Signature]

David DaCosta

SB-12 Package

Energy Star

Total Heat Loss	34,036	btu/h
Total Heat Gain	21,227	btu/h

2012 OBC

Builder: EM Air Systems

Date: September 20, 2023

Project: King East Developments

Model: Model 2030S

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-09144

Level 3				MAST		ENS		BED 3		BED 2		BATH											
Run ft. exposed wall A	21	A				23	A	31	A	10	A	A		A		A		A		A		A	
Run ft. exposed wall B	B					B		B		B		B		B		B		B		B		B	
Ceiling height	9.0					11.0		9.0		11.0		9.0		9.0		9.0		9.0		9.0		9.0	
Floor area	301	Area				105	Area	201	Area	170	Area	70	Area	Area		Area		Area		Area		Area	
Exposed Ceilings A	301	A				105	A	201	A	170	A	70	A	A		A		A		A		A	
Exposed Ceilings B	B					B		B		B		B		B		B		B		B		B	
Exposed Floors	Flr					Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A	189					253		279		110													
Gross Exp Wall B																							
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																				
East/West	4.00	19.45	29.66	30	584	890		29	564	860		25	486	742		29	564	860					
South	4.00	19.45	22.60	16	311	362																	
Existing Windows	1.99	39.10	24.56																				
Skylight	2.03	38.33	89.12																				
Doors	4.00	19.45	3.20																				
Net exposed walls A	21.40	3.64	0.60	143	520	86		224	814	134		254	923	152	81	294	48						
Net exposed walls B	8.50	9.15	1.51																				
Exposed Ceilings A	59.22	1.31	0.67	301	395	202		105	138	71		201	264	135	170	223	114	70	92	47			
Exposed Ceilings B	27.65	2.81	1.44																				
Exposed Floors	29.80	2.61	0.23																				
Foundation Conductive Heatloss																							
Total Conductive	Heat Loss				1810				1516				1674				1082		92				
	Heat Gain					1539			1065				1029				1023		47				
Air Leakage	Heat Loss/Gain	0.3954	0.0525		716	81			600	56			662	54			428	54	36	2			
Ventilation	Case 1		0.03	0.08																			
	Case 2		16.80	13.82																			
	Case 3	x	0.05	0.08		95	127		80	88			88	85		57	85	5	4				
Heat Gain People			239		2		478					1		239		1		239					
Appliances Loads	1 =.25 percent		2917																				
Duct and Pipe loss			10%		1	253	202																
Level HL Total	9,193				2874				2196				2424				1567		133				
Level HG Total	8,444					3155			1571				1828				1820		69				

Level 4																							
Run ft. exposed wall 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	
Ceiling height																							
Floor area	Area					Area		Area		Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	A					A		A		A		A		A		A		A		A		A	
Exposed Ceilings B	B					B		B		B		B		B		B		B		B		B	
Exposed Floors	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
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	0.0525																				
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		2917																				
Duct and Pipe loss			10%																				
Level HL Total	0																						
Level HG Total	0																						

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	34,036	btu/h
Total Heat Gain	21,227	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 2030S

## 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	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	

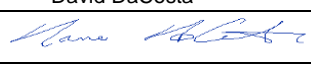
Principal Exhaust Fan Capacity				
Make	Model	Location		
VanEE	V150E75NS	Base		
127 cfm		80.0 Sones	or Equiv.	

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	September 20, 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-09144

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
<b>Model 2030S</b>		
Municipality <b>Richmond Hill</b>	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>345.2</u> m <sup>2</sup> or <u>3715.9</u> ft <sup>2</sup>	<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>27.78</u> m <sup>2</sup> or <u>299.0</u> ft <sup>2</sup>		
W, S & G % = <u>8%</u>		

<b>SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance</b>
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 <sup>1</sup>		Building Component	Efficiency Ratings
<b>Thermal Insulation</b>	Nominal	Effective	<b>Windows &amp; Doors</b> Provide U-Value <sup>(1)</sup> 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	<b>Mechanicals</b>	
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/(m<sup>2</sup>·K) or Btu/(h·ft<sup>2</sup>·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-09144

**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

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



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

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	✓		<b>COOLING - ASHP</b>
	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 2030S**

## Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.404	21598	77.8	12206

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.112	21598	12.8	558

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss (HLclevel)	Air Leakage Heat Loss Multiplier
Level 1	0.5	12206	7322	0.8335
Level 2	0.3		6801	0.5384
Level 3	0.2		6174	0.3954
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	
	558		0.0525
BUILDING CONDUCTIVE HEAT GAIN			
	10632		

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	7322	0.07	Building	10632				
	Level 2	0.3		6801	0.05						
	Level 3	0.2		6174	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	1747	Watts	5960	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

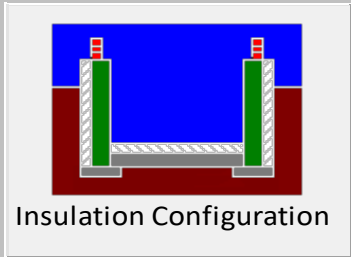
# Envelope Air Leakage Calculator

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 <sup>3</sup> ):	611.66			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa. ▼ 322.44 cm <sup>2</sup>			
	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):	16.41	 <p>Insulation Configuration</p>
Floor Width (m):	3.40	
Exposed Perimeter (m):	32.31	
Wall Height (m):	2.74	
Depth Below Grade (m):	0.46	
Window Area (m <sup>2</sup> ):	2.60	
Door Area (m <sup>2</sup> ):	3.90	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1747



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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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

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Effective R-Value – Exposed Ceiling with Attic

Insulation	R60
Exterior Air Film	0.17
Effective Insulation	58.61
Drywall	0.44
Effective R-Value	59.22

Effective R-Value – Exposed Ceiling with Flat Roofs

Insulation	R31
Exterior Air Film	0.17
Effective Insulation	27.04
Drywall	0.44
Effective R-Value	27.65

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

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

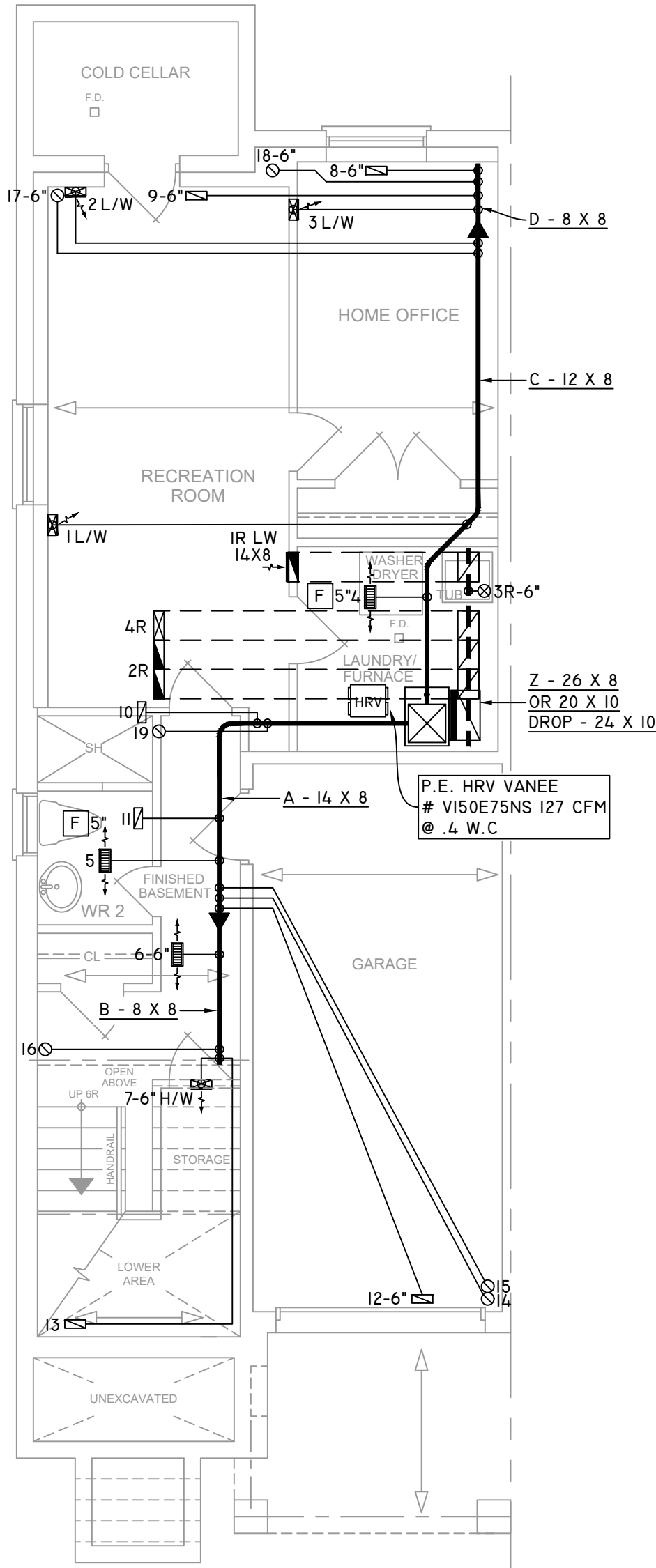
ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST 14X5.5 AND 14X3.25 RESPECTIVELY

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.)

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



BASEMENT FLOOR PLAN 'A'

OBC 2012

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

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.





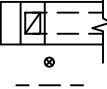







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EMAIL: DAVE@GTADESIGNS.CA  
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	34,036	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B040E14--10	OR EQUAL.
UNIT HEATING INPUT	40,000	BTU/HR.
UNIT HEATING OUTPUT	39,000	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	805	CFM

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

FLOOR PLAN:	BASEMENT
DRAWN BY:	JL
CHECKED:	DD
SQFT	1876
LAYOUT NO.	JB-09144
DRAWING NO.	MI

DATE:	SEPTEMBER 20, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2030S
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. R.A. T \$ F PE	SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN
	RIGID ROUND DUCT		HRV EXHAUST GRILLE								RETURN AIR RISER UP TO FLOOR ABOVE		
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER								RETURN AIR FROM BASEMENT SECOND FLOOR		

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

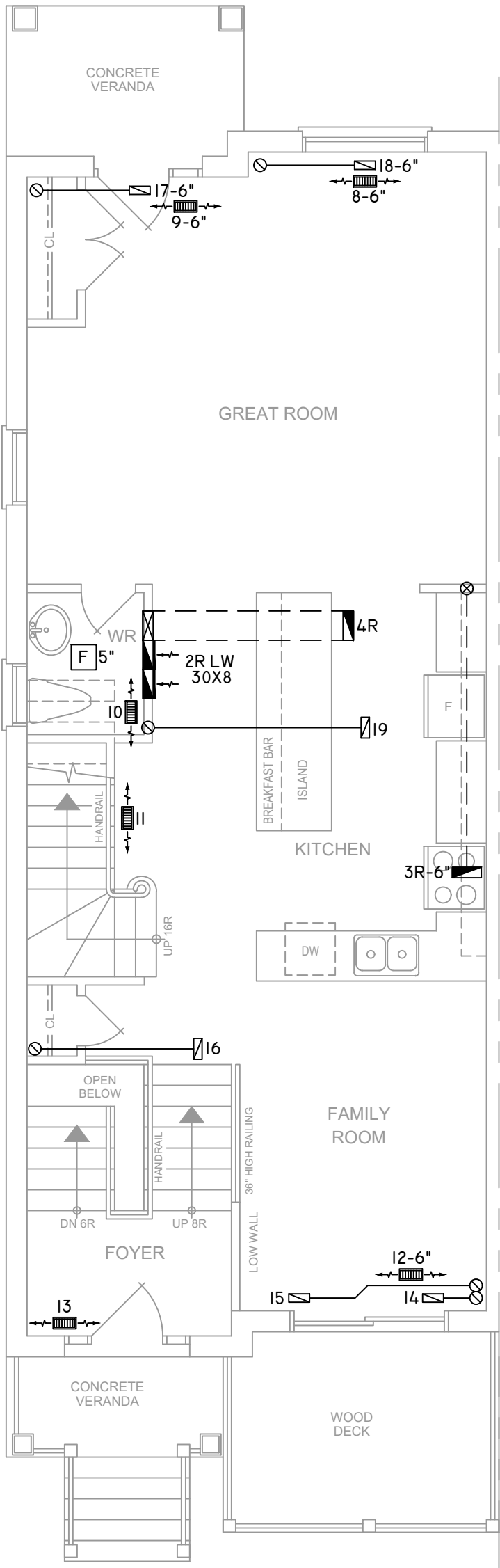
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)

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

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

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

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

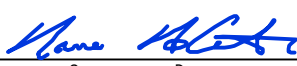


FIRST FLOOR PLAN 'A'

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.



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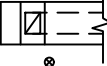











HEAT-LOSS	34,036	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B040EI4--10	OR EQUAL.
UNIT HEATING INPUT	40,000	BTU/HR.
UNIT HEATING OUTPUT	39,000	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	805	CFM

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

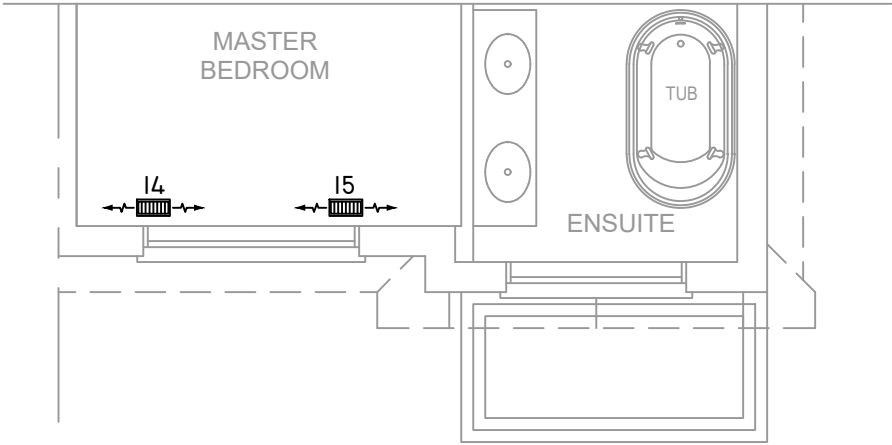
FLOOR PLAN: GROUND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 1876
LAYOUT NO. JB-09144	DRAWING NO. M2	

DATE:	SEPTEMBER 20, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2030S
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"

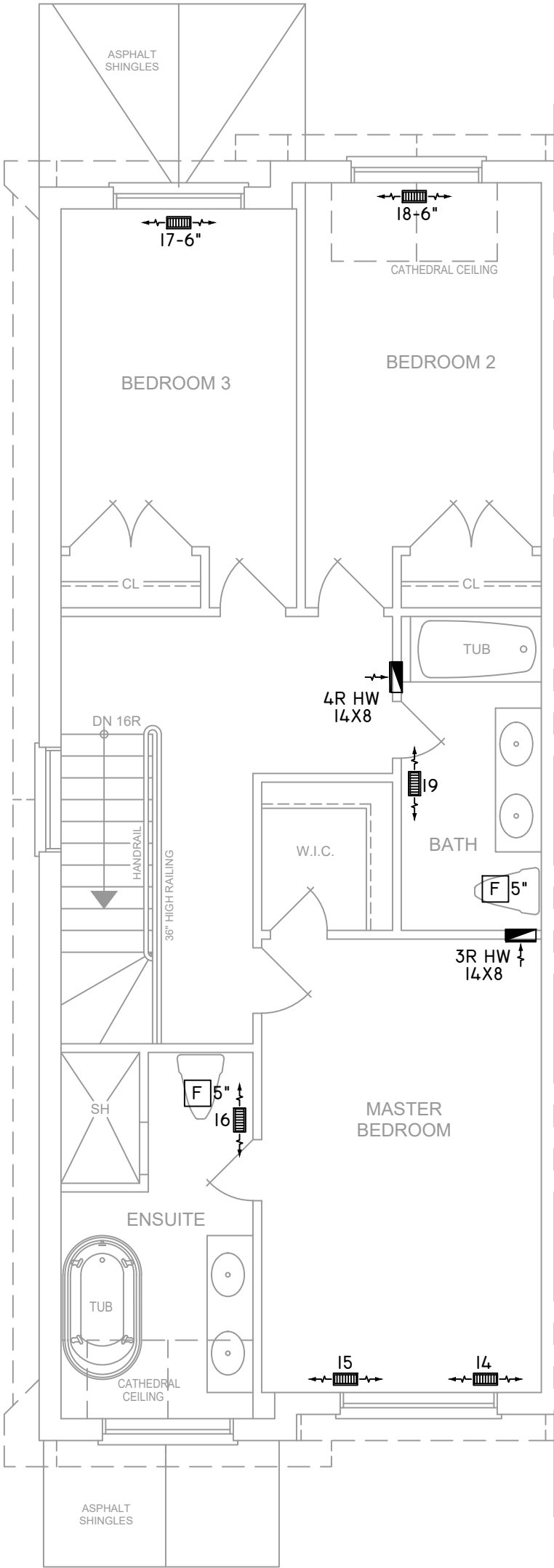


	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR PIPE RISER		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR ROUND DUCT		RETURN AIR RISER UP TO FLOOR ABOVE		RETURN AIR FROM BASEMENT SECOND FLOOR	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER 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 V12 STANDARD.  
ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)
- FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED



SECOND FLOOR PLAN 'B'




SECOND FLOOR PLAN 'A'

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QUALIFICATION INFORMATION

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

SIGNATURE OF DESIGNER

OBC 2012

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

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A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	805	CFM

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

FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 1876
LAYOUT NO. JB-09144	DRAWING NO. M3	

DATE:	SEPTEMBER 20, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2030S
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"