

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 <b>Model 2665 WOB</b>				Lot: 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>					
<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					
<b>Description of designer's work</b>				<b>Model Certification</b>	
Heating and Cooling Load Calculations Air System Design Residential mechanical ventilation Design Summary Residential System Design per CAN/CSA-F280-12 Residential New Construction - Forced Air				Project #: <b>PJ-00267</b>	
				Layout #: <b>JB-09149</b>	
				Builder	<b>EM Air Systems</b>
				Project	<b>King East Developments</b>
				Model	<b>Model 2665 WOB</b>
				SB-12	<b>Energy Star</b>
<b>D. Declaration of Designer</b>					
I, <u>David DaCosta</u> declare that (choose one as appropriate): (print name)					
<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. Individual BCIN: _____ Firm BCIN: _____					
<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. Individual BCIN: <u>32964</u> Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u>					
<input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification:					
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 19, 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 <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-09149</b>	
<b>Building Location</b>					
Address (Model): <b>Model 2665 WOB</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.Feb/2023</b>		
Attachment: <b>Detached</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>5</b>
Sensible Eff. at -25C <b>60%</b>		Apparent Effect. at -0C <b>80%</b>		Units: <b>Imperial</b>	Area Sq ft: <b>2671</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 19, 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.

Page 3

Project: **King East Developments**

Model: **Model 2665 WOB**

**System 1**

Individual BCIN: 32964

David DaCosta

Project # **PJ-00267**  
Layout # **JB-09149**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	18,738 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Carrier	Make	Type	Carrier	2.5 Ton
Level 2 Net Load	14,777 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	59SC5B060E17--14	Model		Model:	
Level 3 Net Load	15,149 btu/h	Available Design Pressure	0.275 "w.c.	High Input	60000	Input Btu/h		Cond.-----	2.5
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	High Output	58000	Output Btu/h		Coil -----	2.5
Total Heat Loss	48,664 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	28,610 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Building Volume Vb	32487 ft³	Heating Air Flow Proportioning Factor	0.0189 cfm/btuh	AFUE	97%	Blower Speed Selected:	Orange	Blower Type	ECM
Ventilation Load	1,336 Btuh.	Cooling Air Flow Proportioning Factor	0.0322 cfm/btuh	Aux. Heat		(Brushless DC OBC 12.3.1.5.(2))			
Ventilation PVC	79.5 cfm	R/A Temp	70 deg. F.	SB-12 Package	Energy Star	Check	920 cfm	Cool. Check	920 cfm
Supply Branch and Grill Sizing		S/A Temp	128 deg. F.	Temp. Rise>>>	58 deg. F.	Heat.	920 cfm	Cooling	920 cfm
		Diffuser loss	0.01 "w.c.						

	Level 1														Level 2													
S/A Outlet No.	1	2	3	4											5	6	7	8	9	10								
Room Use	BASE	BASE	BASE	F.AREA											KIT	KIT	FAM	LAUN	FOY	GRT								
Btu/Outlet	5103	5103	5103	3429											1607	1607	2980	2404	3338	2841								
Heating Airflow Rate CFM	96	96	96	65											30	30	56	45	63	54								
Cooling Airflow Rate CFM	39	39	39	6											66	66	87	61	42	87								
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			
Actual Duct Length	27	31	36	42											33	27	30	12	49	38								
Equivalent Length	110	100	130	120	70	70	70	70	70	70	70	70	70	70	110	120	90	90	100	130	70	70	70	70	70			
Total Effective Length	137	131	166	162	70	70	70	70	70	70	70	70	70	70	143	147	120	102	149	168	70	70	70	70	70			
Adjusted Pressure	0.09	0.10	0.08	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.09	0.09	0.11	0.13	0.09	0.08	0.19	0.19	0.19	0.19	0.19			
Duct Size Round	6	6	6	5											6	6	6	5	5	6								
Outlet Size	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10			
Trunk	E	C	D	F											C	C	E	A	F	D								

	Level 3												Level 4											
S/A Outlet No.	11	12	13	14	15	16	17	18	19	20	21													
Room Use	MAST	MAST	BED 2	BATH 2	BED 3	BED 3	WIC 3	COMP	BATH	BED 4	ENS													
Btu/Outlet	1528	1528	1111	936	1555	1555	741	2920	647	1028	1600													
Heating Airflow Rate CFM	29	29	21	18	29	29	14	55	12	19	30													
Cooling Airflow Rate CFM	43	43	26	10	43	43	18	84	14	33	32													
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	44	35	18	64	67	63	59	68	45	44	49													
Equivalent Length	100	120	100	180	170	160	150	130	110	120	130	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	144	155	118	244	237	223	209	198	155	164	179	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.09	0.08	0.11	0.05	0.05	0.06	0.06	0.07	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	
Duct Size Round	5	5	4	4	5	5	4	6	3	4	4													
Outlet Size	3x10	3x10	3x10	3x10	3x10	3x10	3x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	E	E	A	F	F	F	F	F	C	D	D													

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	178	382	105	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	15	19	65	38	38						
Equivalent Length	110	130	165	140	160	50	50	50	50	50	50
Total Effective Length	125	149	230	178	198	50	50	50	50	50	50
Adjusted Pressure	0.09	0.08	0.05	0.07	0.06	0.24	0.24	0.24	0.24	0.24	0.24
Duct Size Round	7.0	10.5	6.0	6.0	8.0						
Inlet Size	FLC	8	8	8	8						
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size		30	14	14	14						
Trunk	Y	Y	Y	Z							

Return Trunk Duct Sizing				
Trunk	CFM	Press.	Round	Rect. Size
Drop	920	0.05	15.5	24x10
Z	770	0.05	14.5	24x8 18x10
Y	665	0.05	14.0	22x8 18x10
X				
W				
V				
U				
T				
S				
R				
Q				

Supply Trunk Duct Sizing						
Trunk	C.CFM	H.CFM	Press.	Round	Rect. Size	
A	921	920	0.05	15.5	28x8	22x10
B	587	580	0.07	12.5	18x8	14x10
C	375	369	0.07	10.5	12x8	10x10
D	191	200	0.07	8.5	8x8	107
E	212	211	0.08	8.5	8x8	107
F	247	274	0.05	10.0	12x8	10x10
G						
H						
I						
J						
K						

<b>Total Heat Loss</b>	<b>48,664</b>	btu/h
<b>Total Heat Gain</b>	<b>28,610</b>	btu/h

2012 OBC	Builder: EM Air Systems	Date: September 19, 2023	System 1	Weather Data	Richmond Hill	44	-5.8	88	20	50	Project #	PJ-00267
	Project: King East Developments	Model: Model 2665 WOB		Heat Loss ^T	77.8 deg. F	Ht gain ^T	12.8 deg. F				Layout #	JB-09149

Level 3				MAST		BED 2		BATH 2		BED 3		WIC 3		COMP		BATH		BED 4		ENS		A		A	
Run ft. exposed wall A				37	A	11	A	6	A	26	A	6	A	33	A	7	A	10	A	23	A		A		A
Run ft. exposed wall B					B		B		B		B		B		B		B		B		B		B		B
Ceiling height				9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0		9.0	
Floor area				386	Area	149	Area	72	Area	144	Area	35	Area	276	Area	76	Area	128	Area	121	Area		Area		Area
Exposed Ceilings A				386	A	149	A	72	A	144	A	35	A	276	A	76	A	128	A	121	A		A		A
Exposed Ceilings B					B		B		B		B		B		B		B		B		B		B		B
Exposed Floors					Flr		Flr		72 Flr		144 Flr		35 Flr		74 Flr		Flr		Flr		Flr		Flr		Flr
Gross Exp Wall A				333		99		54		234		54		297		63		90		207					
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	32	622	949	16	311	188	9	175	106	41	797	1216	10	195	297	31	603	919		
South			4.00	19.45	22.60																				
Existing Windows			1.99	39.10	24.56													9	175	203	16	311	362	16	311
Skylight			2.03	38.33	89.12																				
Doors			4.00	19.45	3.20																				
Net exposed walls A			21.40	3.64	0.60	301	1094	180	83	302	50	45	164	27	193	702	115	44	160	26	266	967	159	54	196
Net exposed walls B			8.50	9.15	1.51																				
Exposed Ceilings A			59.22	1.31	0.67	386	507	259	149	196	100	72	95	48	144	189	97	35	46	24	276	363	185	76	100
Exposed Ceilings B			27.65	2.81	1.44																				
Exposed Floors			29.80	2.61	0.23																				
Foundation Conductive Heatloss																									
Total Conductive			Heat Loss			2224			809		621		2064		492		2126		471		748		1165		
			Heat Gain				1389		337		197		1461		354		1281		287		492		670		
Air Leakage			Heat Loss/Gain	0.3282	0.0567	730		79	265	19	204	11	678	83	161	20	698	73	155	16	246	28	382	38	
Ventilation			Case 1	0.02	0.08																				
			Case 2	16.80	13.82																				
			Case 3	x	0.05	0.08																			
Heat Gain People					239	2	101	107	37	26	28	15	94	112	22	27	97	98	21	22	34	38	53	51	
Appliances Loads			1 =.25 percent		4366				239				239								1	239			
Duct and Pipe loss					10%					1	83	20	1	274	170	1	65	35	0.5		546				
Level HL Total			15,149			3055			1111		936		316	3110	2685		741		568		2920		647		1028
Level HG Total			12,087				2667		808				316		2685				568		2597		423		1036

Level 4				A	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
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															
Air Leakage	Heat Loss/Gain	0.0000	0.0567												
Ventilation	Case 1	0.00	0.08												
	Case 2	16.80	13.82												
	Case 3	x	0.05												
Heat Gain People			239												
Appliances Loads	1 =.25 percent		4366												
Duct and Pipe loss			10%												
Level HL Total	0														
Level HG Total	0														

Total Heat Loss	48,664	btu/h
Total Heat Gain	28,610	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

David DaCosta

SB-12 Package

Energy Star

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

**Package:** Energy Star  
**Project:** Richmond Hill  
**Model:** Model 2665 WOB

## 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) <input checked="" type="checkbox"/>	Direct vent (sealed combustion) only
b) <input type="checkbox"/>	Positive venting induced draft (except fireplaces)
c) <input type="checkbox"/>	Natural draft, B-vent or induced draft fireplaces
d) <input type="checkbox"/>	Solid fuel (including fireplaces)
e) <input type="checkbox"/>	No combustion Appliances

Heating System	
<input checked="" type="checkbox"/>	Forced air
<input type="checkbox"/>	Non forced air
<input type="checkbox"/>	Electric space heat (if over 10% of heat load)

House Type 9.32.3.1(2)	
I <input checked="" type="checkbox"/>	Type a) or b) appliances only, no solid fuel
II <input type="checkbox"/>	Type I except with solid fuel (including fireplace)
III <input type="checkbox"/>	Any type c) appliance
IV <input type="checkbox"/>	Type I or II either electric space heat
Other <input type="checkbox"/>	Type I, II or IV no forced air

System Design Option	
1 <input type="checkbox"/>	Exhaust only / forced air system
2 <input type="checkbox"/>	HRV WITH DUCTING / forced air system
3 <input checked="" type="checkbox"/>	HRV simplified connection to forced air system
4 <input type="checkbox"/>	HRV full ducting/not coupled to forced air system
<input type="checkbox"/>	Part 6 design

Total Ventilation Capacity 9.32.3.3(1)			
Bsmt & Master Bdrm	2 @ 21.2 cfm	42.4 cfm	
Other Bedrooms	3 @ 10.6 cfm	31.8 cfm	
Bathrooms & Kitchen	5 @ 10.6 cfm	53 cfm	
Other rooms	5 @ 10.6 cfm	53 cfm	
Total		180.2	

Principal Ventilation Capacity 9.32.3.4(1)			
Master bedroom	1 @ 31.8 cfm	31.8 cfm	
Other bedrooms	3 @ 15.9 cfm	47.7 cfm	
Total		79.5	

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	180.2
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	100.7 cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
Ens	50	XB50	0.3
Bath	50	XB50	0.3
Bath 2	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	<i>David DaCosta</i>		
HRAI #	5190	BCIN #	32964
Date	September 19, 2023		



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L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643  
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## Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods (Building Code Part 9, Residential)

Page 7  
Project # PJ-00267  
Layout # JB-09149

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 2665 WOB		
Municipality	Postal code	Reg. Plan number / other description
Richmond Hill		

### 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>362.2</u> m <sup>2</sup> or <u>3898.9</u> ft <sup>2</sup>	<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement	
Area of W, S & G = <u>38.55</u> m <sup>2</sup> or <u>415.0</u> ft <sup>2</sup>	<input type="checkbox"/> Slab-on-ground <input checked="" type="checkbox"/> Walkout Basement	
	<input checked="" type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit	
	<input type="checkbox"/> Air Sourced Heat Pump (ASHP)	
<input type="checkbox"/> Ground Source Heat Pump (GSHP)		

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 <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-09149

**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](mailto: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 :	<b>Prescriptive</b>	ESEnrolment ID:	
Attached or Detached or MURB :	<b>Detached</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	✓		
	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 2665 WOB**

## Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.387	32487	77.8	17593

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.108	32487	12.8	811

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	17593	9508	0.9252
Level 2	0.3		9085	0.5809
Level 3	0.2		10720	0.3282
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		811	Air Leakage Heat Gain	
BUILDING CONDUCTIVE HEAT GAIN		14311	0.0567	

Levels this Dwelling	
3	

Highest Ceiling Height		28.0 FT	8.53 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	79.5	77.8	0.20	1336	1.1	79.5	12.8	1099	
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	1099	0.08		
	Level 1	0.5	1336	9508	0.07	Building	14311			
	Level 2	0.3		9085	0.04					
	Level 3	0.2		10720	0.02					
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		1336	0.05		HGbvent	HG*1.3	1099	0.08	
						1099	1			

Foundation Conductive Heatloss Level 1	Level 1	1834	Watts	6258	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		144	Watts	490	Btu/h

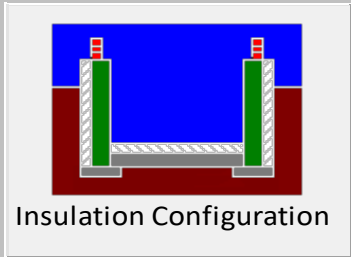
# Envelope Air Leakage Calculator

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):	8.53			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m <sup>3</sup> ):	920.03			
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:	
	39.75		39.75	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.387		
Cooling Air Leakage Rate (ACH/H):		0.108		

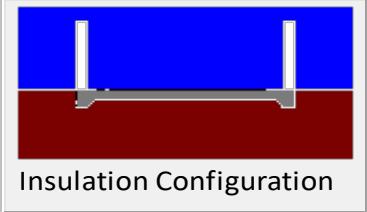
# Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario ▼	
Region:	Richmond Hill ▼	
Site Description		
Soil Conductivity:	High conductivity: moist soil ▼	
Water Table:	Normal (7-10 m, 23-33 Ft) ▼	
Foundation Dimensions		
Floor Length (m):	18.06	 <p>Insulation Configuration</p>
Floor Width (m):	5.10	
Exposed Perimeter (m):	28.65	
Wall Height (m):	2.74	
Depth Below Grade (m):	0.91	
Window Area (m <sup>2</sup> ):	1.39	
Door Area (m <sup>2</sup> ):	1.95	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1834

# Residential Slab on Grade 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)	▼
Floor Dimensions		
Length (m):	9.21	 Insulation Configuration
Width (m):	0.54	
Exposed Perimeter (m):	9.75	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		144



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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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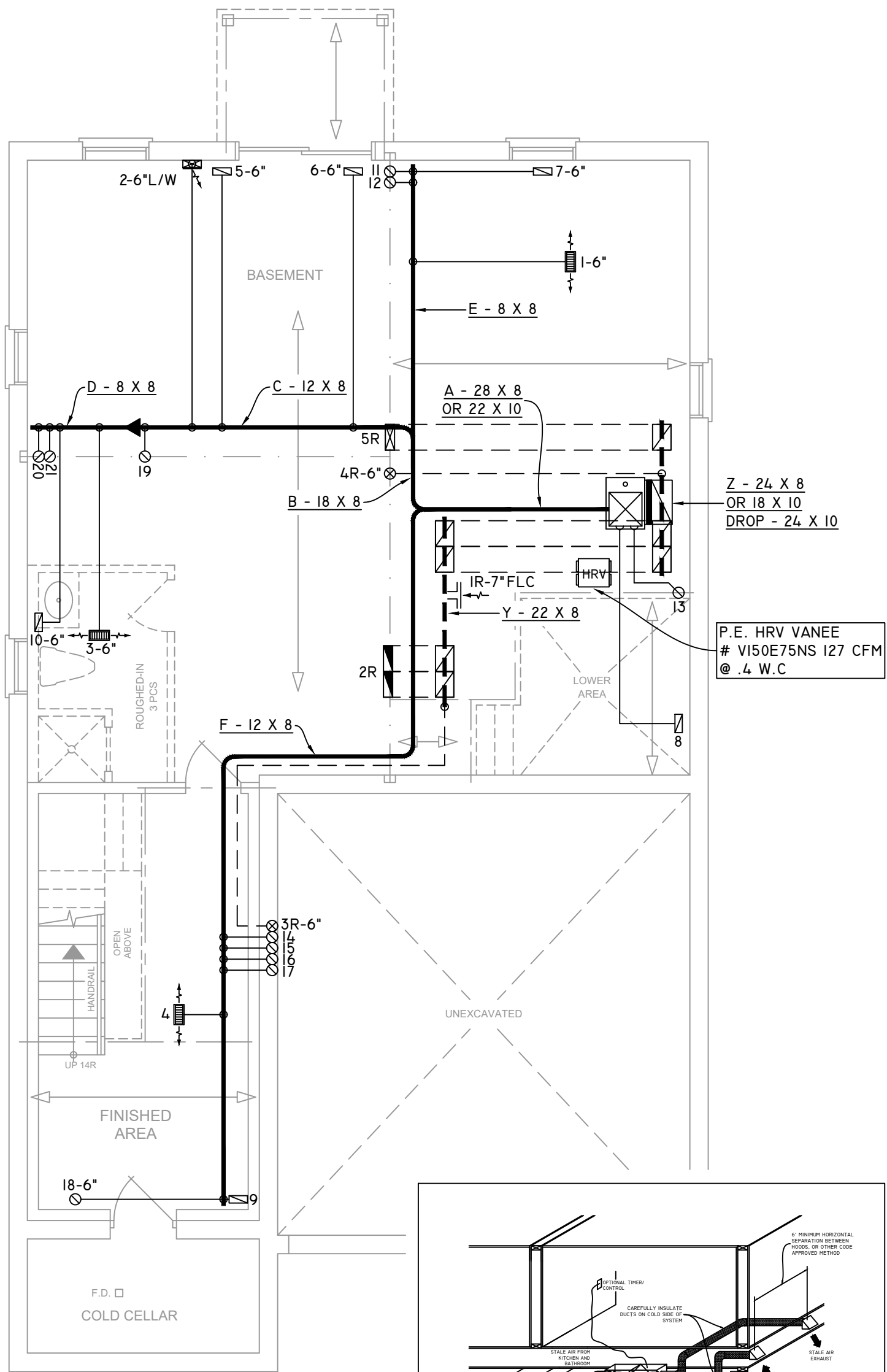
Effective R-Value – Exposed Ceiling with Attic

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



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

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

BASEMENT FLOOR PLAN 'A', 'B', 'C', 'D'

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

















HEAT-LOSS	48,664	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	2.5	TONS.
FAN SPEED	920	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	3	3
1ST FLOOR	6	1	2
BASEMENT	4	1	

FLOOR PLAN:	BASEMENT
DRAWN BY:	JL
CHECKED:	DD
SQFT	2671
LAYOUT NO.	JB-09149
DRAWING NO.	MI

DATE:	SEPTEMBER 19, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2665 WOB
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 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

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

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

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.)

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

## FIRST FLOOR PLAN 'A' 'D'

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.



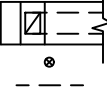













  
**2985 DREW ROAD  
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MISSISSAUGA, ONT.  
L4T 0A4 TEL: 905-671-9800  
EMAIL: DAVE@GTADESIGNS.CA  
WEB: WWW.GTADESIGNS.CA**

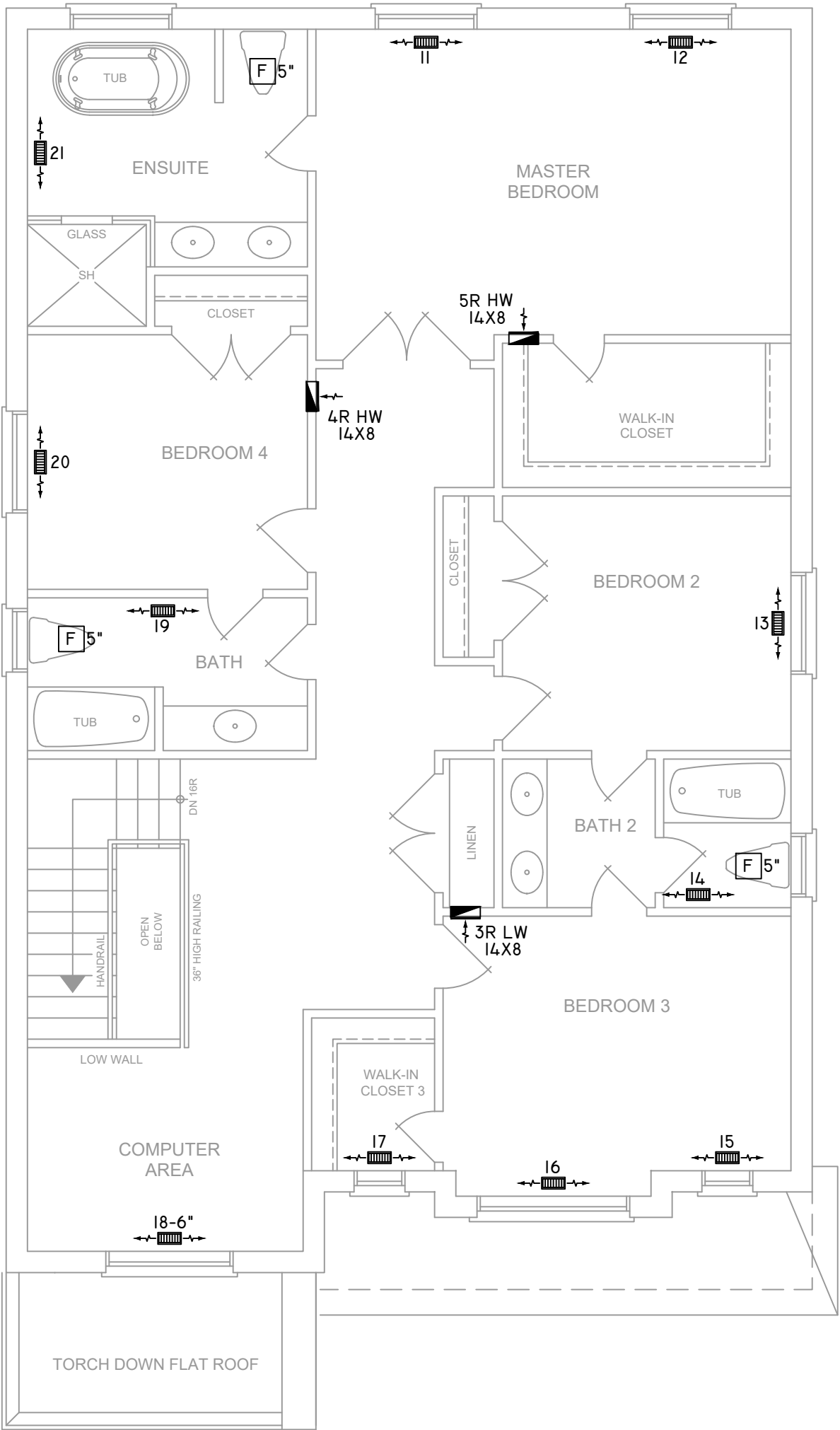
HEAT-LOSS	48,664	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060EI7--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	2.5	TONS.
FAN SPEED	920	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	3	3
1ST FLOOR	6	1	2
BASEMENT	4	1	

FLOOR PLAN: GROUND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 2671
LAYOUT NO. JB-09149	DRAWING NO. M2	

DATE:	SEPTEMBER 19, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2665 WOB
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 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



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

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.)

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DAVID DA COSTA  B.C.I.N. 32964  
SIGNATURE OF DESIGNER

## SECOND FLOOR PLAN 'A'

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.  
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FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR  
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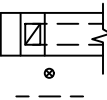











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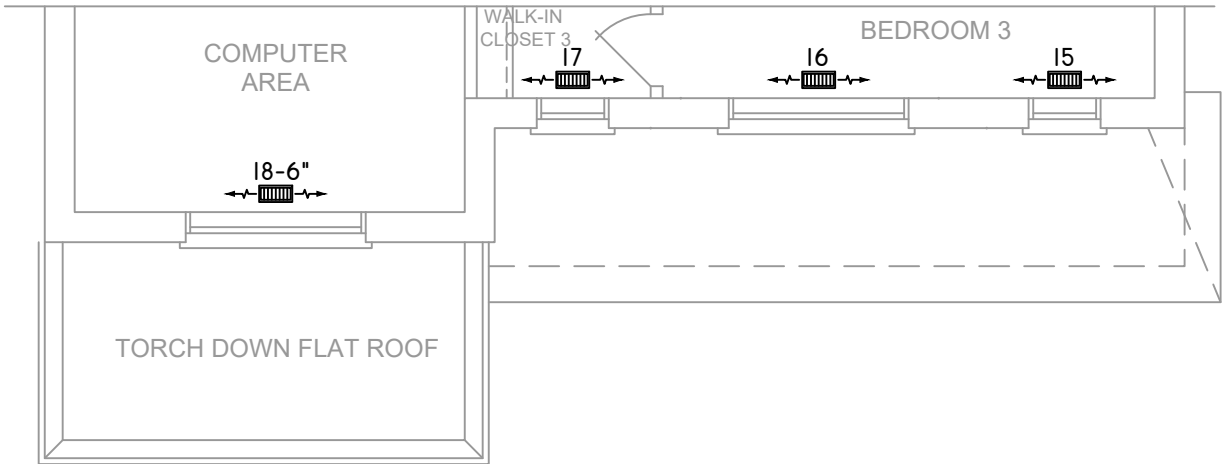
HEAT-LOSS	48,664	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	2.5	TONS.
FAN SPEED	920	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	3	3
1ST FLOOR	6	1	2
BASEMENT	4	1	

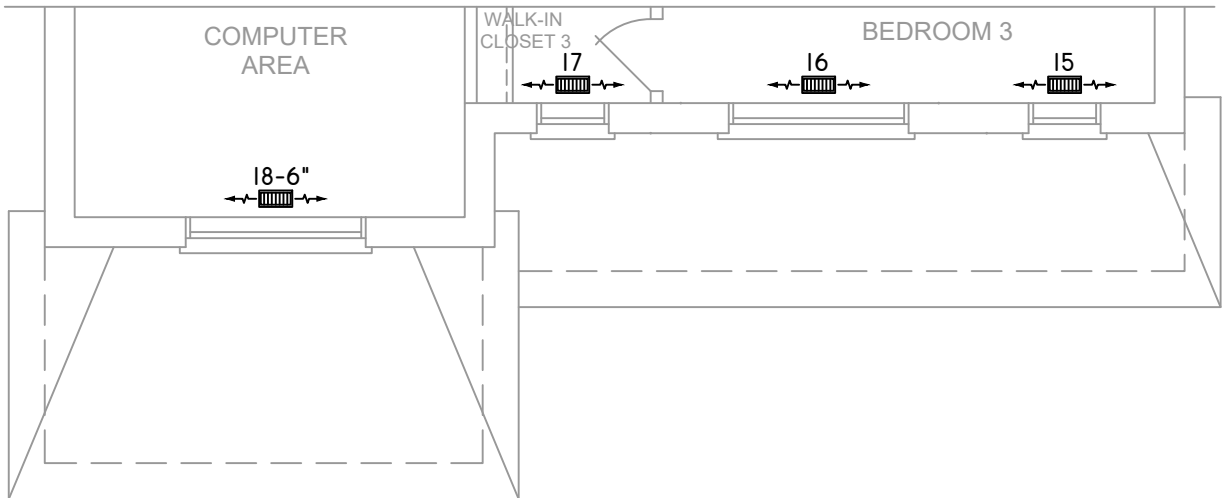
FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 2671
LAYOUT NO. JB-09149	DRAWING NO. M3	

DATE:	SEPTEMBER 19, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2665 WOB
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL, ONT.
SCALE:	3/16" = 1'-0"

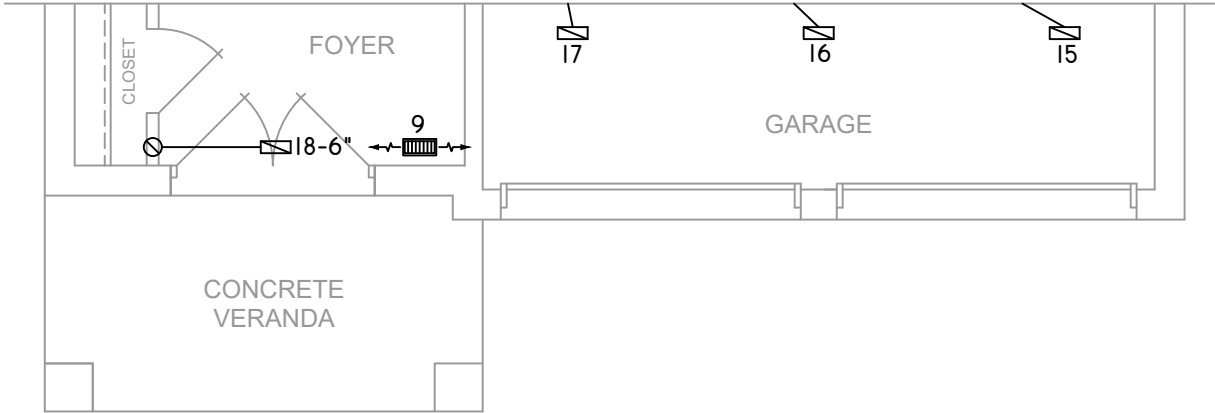
	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR PIPE RISER		RETURN ROUND DUCT		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A. R.A. T \$ F PE	SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN
	RIGID ROUND DUCT		HRV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



SECOND FLOOR PLAN `C'



SECOND FLOOR PLAN `B'




FIRST FLOOR PLAN `B' `C'

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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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CONTRACTOR MUST WORK FROM APPROVED PLANS.  
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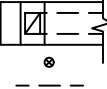













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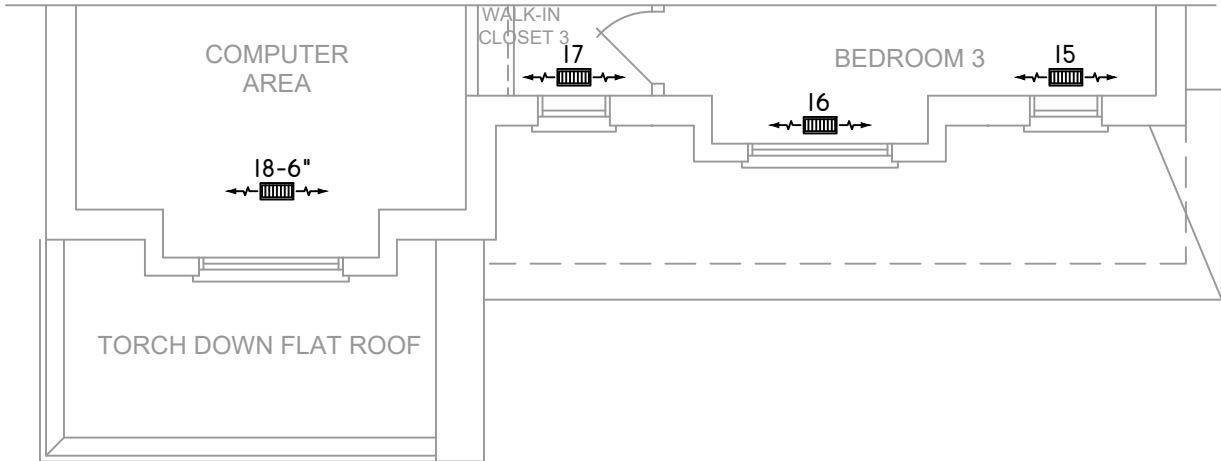
HEAT-LOSS	48,664	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
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FAN SPEED	920	CFM

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3RD FLOOR			
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BASEMENT	4	1	

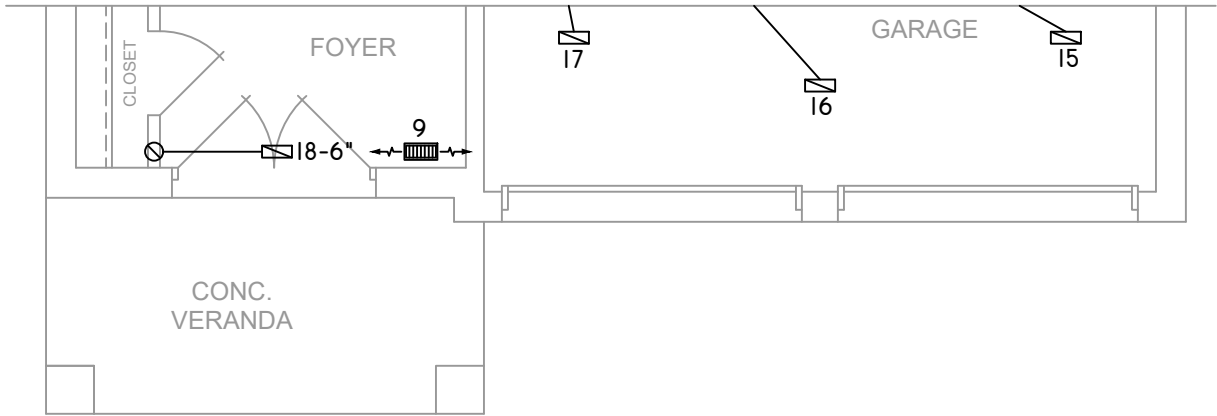
FLOOR PLAN:		
PARTIAL PLAN(S)		
DRAWN BY:	CHECKED:	SQFT
JL	DD	2671
LAYOUT NO.	DRAWING NO.	
JB-09149	M4	

DATE:	SEPTEMBER 19, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2665 WOB
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 GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
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	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



SECOND FLOOR PLAN 'D'




FIRST FLOOR PLAN 'D'

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DAVID DA COSTA



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SIGNATURE OF DESIGNER

OBC 2012

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# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	3	3
1ST FLOOR	6	1	2
BASEMENT	4	1	

FLOOR PLAN:		
PARTIAL PLAN(S)		
DRAWN BY:	CHECKED:	SQFT
JL	DD	2671
LAYOUT NO.	DRAWING NO.	
JB-09149	M5	

DATE:	SEPTEMBER 19, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2665 WOB
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"