


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

A. Project Information					
Building number, street name				Lot:	
Model 2890				Lot/con.	
Municipality		Postal code	Plan number/ other description		
Richmond Hill					
B. Individual who reviews and takes responsibility for design activities					
Name			Firm		
David DaCosta			gtaDesigns Inc.		
Street address			Unit no.	Lot/con.	
2985 Drew Road, Suite 202					
Municipality		Postal code	Province	E-mail	
Mississauga		L4T 0A4	Ontario	hvac@gtadesigns.ca	
Telephone number		Fax number		Cell number	
(905) 671-9800					
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]					
<input type="checkbox"/> House <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Structural <input type="checkbox"/> Small Buildings <input type="checkbox"/> Building Services <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Large Buildings <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> Complex Buildings <input type="checkbox"/> Fire Protection <input type="checkbox"/> On-site Sewage Systems					
Description of designer's work			Model Certification		Project #:
					PJ-00267
					Layout #:
					JB-09503
Heating and Cooling Load Calculations		Main	X	Builder	
Air System Design		Alternate		Project	
Residential mechanical ventilation Design Summary		O.D. GFA	2889	Model	
Residential System Design per CAN/CSA-F280-12				Model 2890	
Residential New Construction - Forced Air				SB-12	
				Energy Star	
D. Declaration of Designer					
<p>I, <u>David DaCosta</u> declare that (choose one as appropriate):</p> <p style="text-align: center;">(print name)</p> <p><input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.</p> <p style="text-align: right;">Individual BCIN: _____</p> <p style="text-align: right;">Firm BCIN: _____</p> <p><input checked="" type="checkbox"/> I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5 of Division C, of the Building Code.</p> <p style="text-align: right;">Individual BCIN: <u>32964</u></p> <p style="text-align: right;">Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u></p> <p><input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.</p> <p style="text-align: right;">Basis for exemption from registration and qualification: _____</p>					
I certify that:					
1. The information contained in this schedule is true to the best of my knowledge.					
2. I have submitted this application with the knowledge and consent of the firm.					
<u>June 24, 2024</u>					
Date			Signature of Designer		

NOTE:

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

Heat loss and gain calculation summary sheet				CSA-F280-M12 Standard Form No. 1	
These documents issued for the use of EM Air				Layout No.	
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.				JB-09503	
Building Location					
Address (Model): Model 2890			Site: King East Developments		
Model:			Lot:		
City and Province: Richmond Hill			Postal code:		
Calculations based on					
Dimensional information based on:			Architectural Design Inc. May/2024		
Attachment: Detached			Front facing: East/West		Assumed? Yes
No. of Levels: 3 Ventilated? Included			Air tightness: 1961-Present (ACH=3.57)		Assumed? Yes
Weather location: Richmond Hill			Wind exposure: Sheltered		
HRV? VanEE V150E75NS			Internal shading: Light-translucent		Occupants: 5
Sensible Eff. at -25C 60%		Apparent Effect. at -0C 80%		Units: Imperial Area Sq ft: 2889	
Sensible Eff. at -0C 75%					
Heating design conditions			Cooling design conditions		
Outdoor temp -5.8 Indoor temp: 72 Mean soil temp: 50			Outdoor temp 88 Indoor temp: 75 Latitude: 44		
Above grade walls			Below grade walls		
Style A: As per OBC SB12 Energy Star R 22 + 5ci			Style A: As per OBC SB12 Energy Star R 20ci		
Style B:			Style B:		
Style C:			Style C:		
Style D:			Style D:		
Floors on soil			Ceilings		
Style A: As per Selected OBC SB12 Energy Star			Style A: As per Selected OBC SB12 Energy Star R 60		
Style B:			Style B: As per Selected OBC SB12 Energy Star R 31		
Exposed floors			Style C:		
Style A: As per Selected OBC SB12 Energy Star R 31			Doors		
Style B:			Style A: As per Selected OBC SB12 Energy Star R 4.00		
Windows			Style B:		
Style A: As per Selected OBC SB12 Energy Star R 4.00			Style C:		
Style B:			Skylights		
Style C:			Style A: As per Selected OBC SB12 Energy Star R 2.03		
Style D:			Style B:		
Attached documents: As per Shedule 1		Heat Loss/Gain Caculations based on CSA-F280-12 Effective R-Values			
Notes: Residential New Construction - Forced Air					
Calculations performed by					
Name: David DaCosta			Postal code: L4T 0A4		
Company: gtaDesigns Inc.			Telephone: (905) 671-9800		
Address: 2985 Drew Road, Suite 202			Fax:		
City: Mississauga			E-mail hvac@gtadesigns.ca		

Builder: **EM Air**

Date: **June 24, 2024**

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 2890**

System 1

Individual BCIN: 32964

David DaCosta

Project # **PJ-00267**
Layout # **JB-09503**

DESIGN LOAD SPECIFICATIONS

Level 1 Net Load	15,606 btu/h
Level 2 Net Load	16,699 btu/h
Level 3 Net Load	19,904 btu/h
Level 4 Net Load	0 btu/h
Total Heat Loss	52,209 btu/h
Total Heat Gain	36,092 btu/h

Building Volume Vb	35663 ft³
Ventilation Load	1,336 Btu/h.
Ventilation PVC	79.5 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	0.0255 cfm/btuh
Cooling Air Flow Proportioning Factor	0.0369 cfm/btuh
R/A Temp	70 deg. F.
S/A Temp	110 deg. F.
Diffuser loss	0.01 "w.c.

FURNACE/AIR HANDLER DATA:

Make	Carrier
Model	59SC5B060E17--14
High Input	60000 BTU/h
High Output	58000 BTU/h
E.s.p.	0.50 " W.C.
Water Temp	deg. F.
Thermal Eff.	97%
Electric Heat	
Temp. Rise>>>	40 deg. F.

BOILER/WATER HEATER DATA:

Make	Type	Carrier	3.5 Ton
Model		Model:	
Input Btu/h		Cond.-----	3.5
Output Btu/h		Coil -----	3.5
Min.Output Btu/h	AWH		
Blower DATA:			
Blower Speed Selected:	Gray	Blower Type	ECM
		(Brushless DC OBC 12.3.1.5.(2))	
Check	1330 cfm	Cool. Check	1330 cfm
Heat.	1330 cfm	Cooling	1330 cfm
		Design Airflow	1330 cfm

A/C UNIT DATA:

	Level 1														Level 2												
S/A Outlet No.	1	2	3	4											5	6	7	8	9	10	11	12	13				
Room Use	BASE	BASE	BASE	BASE											KIT/GRT	KIT/GRT	KIT/GRT	FOY	LIV	LIV	LIV	LAUND	WR				
Btu/Outlet	3901	3901	3901	3901											2149	2149	2149	2422	1826	1826	1826	1793	560				
Heating Airflow Rate CFM	99	99	99	99											55	55	55	62	47	47	47	46	14				
Cooling Airflow Rate CFM	10	10	10	10											89	89	89	39	83	83	83	51	16				
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	14	33	28	52											20	42	34	29	45	53	56	15	5				
Equivalent Length	100	130	70	130	70	70	70	70	70	70	70	70	70	70	110	140	130	80	120	130	100	110	130	70	70	70	70
Total Effective Length	114	163	98	182	70	70	70	70	70	70	70	70	70	70	130	182	164	109	165	183	156	125	135	70	70	70	70
Adjusted Pressure	0.11	0.08	0.13	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.10	0.07	0.08	0.12	0.08	0.07	0.08	0.10	0.10	0.19	0.19	0.19	0.19
Duct Size Round	6	6	6	6											6	6	6	5	6	6	6	5	3				
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10
Trunk	A	B	A	D											A	B	B	B	C	D	D	A	A				

	Level 3													Level 4												
S/A Outlet No.	14	15	16	17	18	19	20	21	22	23	24	25	26													
Room Use	P.BED	P.BED	HALL	HALL	BED 2	BED 2	BED 2	BATH 2	BED 3	BED 3	BATH	BED 4	ENS													
Btu/Outlet	1631	1631	1287	1287	1568	1568	1568	1590	2059	2059	797	1508	1350													
Heating Airflow Rate CFM	42	42	33	33	40	40	40	41	52	52	20	38	34													
Cooling Airflow Rate CFM	65	65	61	61	65	65	65	33	45	45	19	53	25													
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	59	44	44	52	55	70	78	78	81	84	16	17	29													
Equivalent Length	160	130	120	160	150	130	140	120	110	140	160	100	100	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	219	174	164	212	205	200	218	198	191	224	176	117	129	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.06	0.07	0.08	0.06	0.06	0.07	0.06	0.07	0.07	0.06	0.07	0.11	0.10	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	6	6	6	6	6	6	5	6	6	4	6	4													
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	3x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	B	B	B	C	C	D	D	C	A	C	C	PTO	A													

Return Branch And Grill Sizing			Grill Pressure Loss				0.02 "w.c					
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	
Inlet Air Volume CFM	199	421	200	105	150	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	13	44	7	76	36	67	36					
Equivalent Length	75	135	90	185	180	180	185	50	50	50	50	
Total Effective Length	88	179	97	261	216	247	221	50	50	50	50	
Adjusted Pressure	0.13	0.07	0.12	0.05	0.05	0.05	0.05	0.24	0.24	0.24	0.24	
Duct Size Round	8.0	11.0	7.5	6.0	8.0	6.0	8.0					
Inlet Size	FLC	8	8	8	8	8	8					
" "	OR	x	x	x	x	x	x	x	x	x	x	
Inlet Size	9x6	30	14	14	14	14	14					
Trunk	Y	X	Z	X	Z	X	Z					

Return Trunk Duct Sizing					Supply Trunk Duct Sizing				
Trunk	CFM	Press.	Round	Rect. Size	Trunk	C.CFM	H.CFM	Press.	Round
Drop	1330	0.05	18.0	24x12	A	1277	1291	0.06	17.0
Z	1330	0.05	18.0	30x10	B	1031	891	0.06	16.0
Y	830	0.05	15.0	26x8	C	612	505	0.06	13.0
X	631	0.05	13.5	20x8	D	306	272	0.06	10.0
W				16x10	E				
V					F				
U					G				
T					H				
S					I				
R					J				
Q					K				

2012 OBC

Builder: EM Air

Date: June 24, 2024

Project: King East Developments

Model: Model 2890

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-09503

Level 1

Run ft. exposed wall A	161	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	2.0	AG	2.0	AG	2.0	AG	2.0	AG	2.0	AG	2.0	AG
Floor area	1125	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	322											
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	5	97	59											
East/West	4.00	19.45	29.66	15	292	445											
South	4.00	19.45	22.60														
WOB Windows Including Doors	4.00	19.45	27.86														
Skylight	2.03	38.33	89.12														
Doors	4.00	19.45	3.20	21	408	67											
Net exposed walls A	21.12	3.68	0.61	281		170											
Net exposed walls B	21.40	3.64	0.60														
Exposed Ceilings A	59.22	1.31	0.67														
Exposed Ceilings B	27.65	2.81	1.44														
Exposed Floors	29.80	2.61	0.23														
Foundation Conductive Heatloss																	
Total Conductive	Heat Loss			5381													
	Heat Gain			6179													
Air Leakage	Heat Loss/Gain	1.4840	0.0433	9169		32											
Ventilation	Case 1		0.11														
	Case 2		16.80														
	Case 3	x	0.04	258		41											
Heat Gain People			239														
Appliances Loads	1 = .25 percent		4759														
Duct and Pipe loss			10%														
Level HL Total	15,606		Total HL for per room	15606													
Level HG Total	1,059		Total HG per room x 1.3			1059											

Level 2

Run ft. exposed wall A	65	A	KIT/GRT	22	A	FOY	50	A	LIV	17	A	LAUND	6	A	WR	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	B	B	B	B	B	B
Ceiling height	10.0		10.0		10.0		10.0		11.0		10.0		10.0		10.0		10.0		10.0		10.0	
Floor area	504	Area	258	Area	224	Area	70	Area	58	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	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	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	650		220		500		187		60													
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
North Shaded	4.00	19.45	11.73	42	817	492															
East/West	4.00	19.45	29.66	71	1381	2106	18	350	534	60	1167	1780	9	175	267	9	175	267			
South	4.00	19.45	22.60							48	934	1085									
Existing Windows	1.99	39.10	24.56																		
Skylight	2.03	38.33	89.12																		
Doors	4.00	19.45	3.20				30	584	96				21	408	67						
Net exposed walls A	21.40	3.64	0.60	537	1952	321	172	625	103	392	1425	234	157	571	94	51	185	31			
Net exposed walls B	8.50	9.15	1.51																		
Exposed Ceilings A	59.22	1.31	0.67																		
Exposed Ceilings B	27.65	2.81	1.44																		
Exposed Floors	29.80	2.61	0.23																		
Foundation Conductive Heatloss			x																		
Total Conductive	Heat Loss			4150				1559			3526			1154			360				
	Heat Gain				2920				733		3099				428			297			
Air Leakage	Heat Loss/Gain		0.5118	2124	127			798	32		1804	134		591	19		184	13			
Ventilation	Case 1		0.04																		
	Case 2		16.80																		
	Case 3	x	0.04																		
Heat Gain People			239																		
Appliances Loads	1 =.25 percent		4759	2.0		2379				1.5	1785	0.5		595							
Duct and Pipe loss			10%																		
Level HL Total	16,699		Total HL for per room	6447				2422			5477			1793			560				
Level HG Total	16,871		Total HG per room x 1.3					1047			6749			1385			425				

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

David DaCosta

SB-12 Package

Energy Star

Total Heat Loss	52,209	btu/h
Total Heat Gain	36,092	btu/h

2012 OBC

Builder: EM Air

Date: June 24, 2024

Project: King East Developments

Model: Model 2890

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-09503

Level 3

Run ft. exposed wall A	32 A	11 A	33 A	12 A	33 A	12 A	21 A	13 A	A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height	11.0	13.0	11.0	9.0	11.0	9.0	9.0	9.0	9.0	9.0	9.0
Floor area	273 Area	287 Area	275 Area	119 Area	244 Area	65 Area	130 Area	115 Area	Area	Area	Area
Exposed Ceilings A	273 A	287 A	275 A	119 A	244 A	65 A	130 A	115 A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	44 Flr	113 Flr	237 Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	352	143	363	108	363	108	189	117			
Gross Exp Wall B											

Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	4.00	19.45	11.73																		
East/West	4.00	19.45	29.66	57	1109	1691	70	1362	2076	70	1362	2076	48	934	1085	18	350	407	42	817	949
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	295	1072	176	73	265	44	245	891	147	90	327	54	321	1167	192	99	360	59
Net exposed walls B	8.50	9.15	1.51																		
Exposed Ceilings A	59.22	1.31	0.67	273	359	183	287	377	193	275	361	185	119	156	80	244	321	164	65	85	44
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	0.2429	0.0433																		
Ventilation	Case 1	0.02	0.06																		
	Case 2	16.80	13.82																		
	Case 3	x	0.04																		
Heat Gain People			239	2	106	115		84	129	1	153	196		47	32	1	122	76		26	21
Appliances Loads	1 =.25 percent		4759																		
Duct and Pipe loss			10%																		
Level HL Total	19,904		Total HL for per room	3262			2574			4704			1590			4118			797		1508
Level HG Total	18,161		Total HG per room x 1.3		3552			3305			5316				883					529	1428

Level 4

Run ft. exposed wall 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
Ceiling height											
Floor 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
Exposed Ceilings 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
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
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	0.0433																		
Ventilation	Case 1	0.00	0.06																		
	Case 2	16.80	13.82																		
	Case 3	x	0.04																		
Heat Gain People			239																		
Appliances Loads	1 =.25 percent		4759																		
Duct and Pipe loss			10%																		
Level HL Total	0		Total HL for per room																		
Level HG Total	0		Total HG per room x 1.3																		

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

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

32964

David DaCosta

David DaCosta

SB-12 Package

Energy Star

Total Heat Loss	52,209	btu/h
Total Heat Gain	36,092	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 2890**

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
Address	
City	
Tel	Fax

Installing Contractor	
Name	
Address	
City	
Tel	Fax

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

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

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

System Design Option		
1	x	Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3	x	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	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	4 @	10.6 cfm	42.4	cfm
Total			169.6	

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	

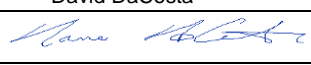
Principal Exhaust Fan Capacity			
Make	Model	Location	
VanEE	V150E75NS	Base	
127 cfm		80.0 Sones	or Equiv.

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	169.6
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	90.1 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	June 24, 2024		



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L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643
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-09503

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	Model 2890	Unit number	Lot/Con
Municipality Richmond Hill	Postal code	Reg. Plan number / other description	

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

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

C. Project Building Design Conditions

Climatic Zone (SB-1):	Heat. Equip. Efficiency	Space Heating Fuel Source
<input checked="" type="checkbox"/> Zone 1 (< 5000 degree days)	<input checked="" type="checkbox"/> ≥ 92% AFUE	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel
<input type="checkbox"/> Zone 2 (≥ 5000 degree days)	<input type="checkbox"/> ≥ 84% < 92% AFUE	<input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area	Other Building Characteristics	
Area of Walls = 100 m ² or 1076.4 ft ²	<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement	
Area of W, S & G = 15 m ² or 161.5 ft ²	<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)		

SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance

SB-12 Referenced Building Package (input design package):

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

Building Component	Minimum RSI/R-Values or Maximum U-Value ¹		Building Component	Efficiency Ratings
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value ⁽¹⁾ or ER rating	
Ceiling with Attic Space	60	59.22	Windows/Sliding Glass Doors	1.4
Ceiling without Attic Space	31	27.65	Skylights	2.8
Exposed Floor	31	29.80	Mechanicals	
Walls Above Grade	22 +5.0ci	21.40	Heating Equip.(AFUE)	96%
Basement Walls	20.0ci	21.12	HRV Efficiency (SRE% at 0°C)	75%
Slab (all >600mm below grade)	x	x	DHW Heater (EF)	0.95
Slab (edge only ≤600mm below grade)	10	11.13	DWHR (CSA B55.1 (min. 42% efficiency))	42.0% #Showers 2
Slab (all ≤600mm below grade, or heated)	10	11.13	Combined Heating System	

(1) U value to be provided in either W/(m²·K) or Btu/(h·ft²·F) but not both.



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

Page 8
Project # PJ-00267
Layout # JB-09503

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: _____ Accreditation or Evaluator/Advisor/Rater License # _____

ENERGY STAR or R-2000

Energy Evaluator/Advisor/Rater/Name and company: _____

Angela Bustamante, Building Knowledge Canada

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

Building Component	Core / Option	BOP Selection Description	BOP Option Credits	Measure Selected (Check)	Nominal Efficiency Values (Optional)	Notes (Optional)
				✓		
Ceilings Below Attic	Core	RSI 10.43 (R 59.2)	Core Minimum	✓	R60	
	Option	N/A	n/a			
Cathedral Ceilings and Flat Roofs	Core	RSI 4.87 (R 27.7)	Core Minimum	✓	R31	
	Option	N/A	n/a			
Ceilings Below Attic and Cathedral Ceilings/Flat Roofs	Option	N/A	n/a			
Walls Above Grade	Core	RSI 3.08 (R 17.5)	Core Minimum			
	Option	RSI 3.72 (R 21.1)	0.7	✓	R22+R5	
Floors Over Unheated Spaces	Core	RSI 5.25 (29.8)	Core Minimum	✓	R31	
Foundation Walls Below or in Contact with the Ground	Core	RSI 3.72 (R 21.1) below grade	Core Minimum	✓	R20 blanket	
	Option	N/A	n/a			
Unheated Floors on Ground Above Frost Line	Core	RSI 1.96 (R 11.1)	Core Minimum	✓	R10 if applicable	
Unheated Floors on Ground Below Frost Line	Option	N/A	n/a			
Heated Floors on Ground	Core	N/A	n/a			
Slabs on Grade with Integral Footing	Core	N/A	n/a			
Windows (Fenestrations)	Core	ENERGY STAR Zone 2 UV1.4 and/or ER29	Core Minimum	✓	Zone 2	
	Option	N/A	n/a			
	Core	Total area of all windows to max. 20% of above grade wall area.	Core Minimum	✓		
Fireplace	Core	Gas fireplace spark ignition if installed	#N/A	✓		
Space Heating	Core	Min. 96% AFUE ENERGY STAR fuel fired furnace	Core Minimum	✓		
	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 2890

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.367	35663	77.8	18339

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.104	35663	12.8	851

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	18339	6179	1.4840
Level 2	0.3		10749	0.5118
Level 3	0.2		15103	0.2429
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	
	851		
BUILDING CONDUCTIVE HEAT GAIN		19642	0.0433

Levels this Dwelling	
3	

Highest Ceiling Height		27.0 FT	8.23 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	0.06		
	Level 1	0.5	1336	6179	0.11	Building	19642			
	Level 2	0.3		10749	0.04					
	Level 3	0.2		15103	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	0.04		HGbvent	HG*1.3	1099	0.06	
						1099	1			

Foundation Conductive Heatloss Level 1	Level 1	1577	Watts	5381	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

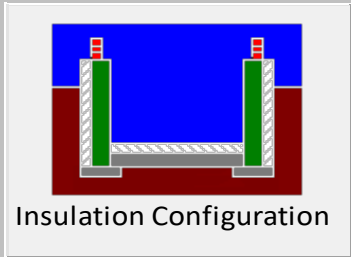
Envelope Air Leakage Calculator

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):	8.23			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1009.98			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa. ▼ 322.44 cm ²			
	3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	39.75		39.75	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.367		
Cooling Air Leakage Rate (ACH/H):		0.104		

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario ▼	
Region:	Richmond Hill ▼	
Site Description		
Soil Conductivity:	High conductivity: moist soil ▼	
Water Table:	Normal (7-10 m, 23-33 Ft) ▼	
Foundation Dimensions		
Floor Length (m):	19.05	 <p>Insulation Configuration</p>
Floor Width (m):	5.49	
Exposed Perimeter (m):	49.07	
Wall Height (m):	2.74	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.86	
Door Area (m ²):	1.95	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1577



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Effective R-Value Calculations

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

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

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



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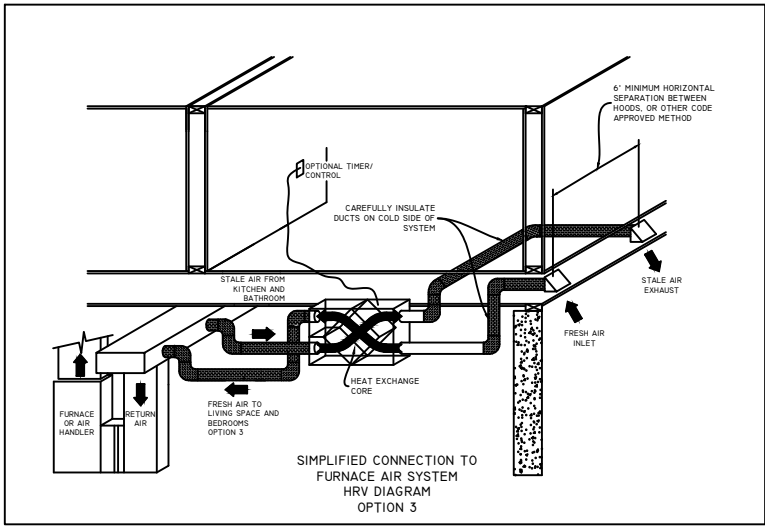
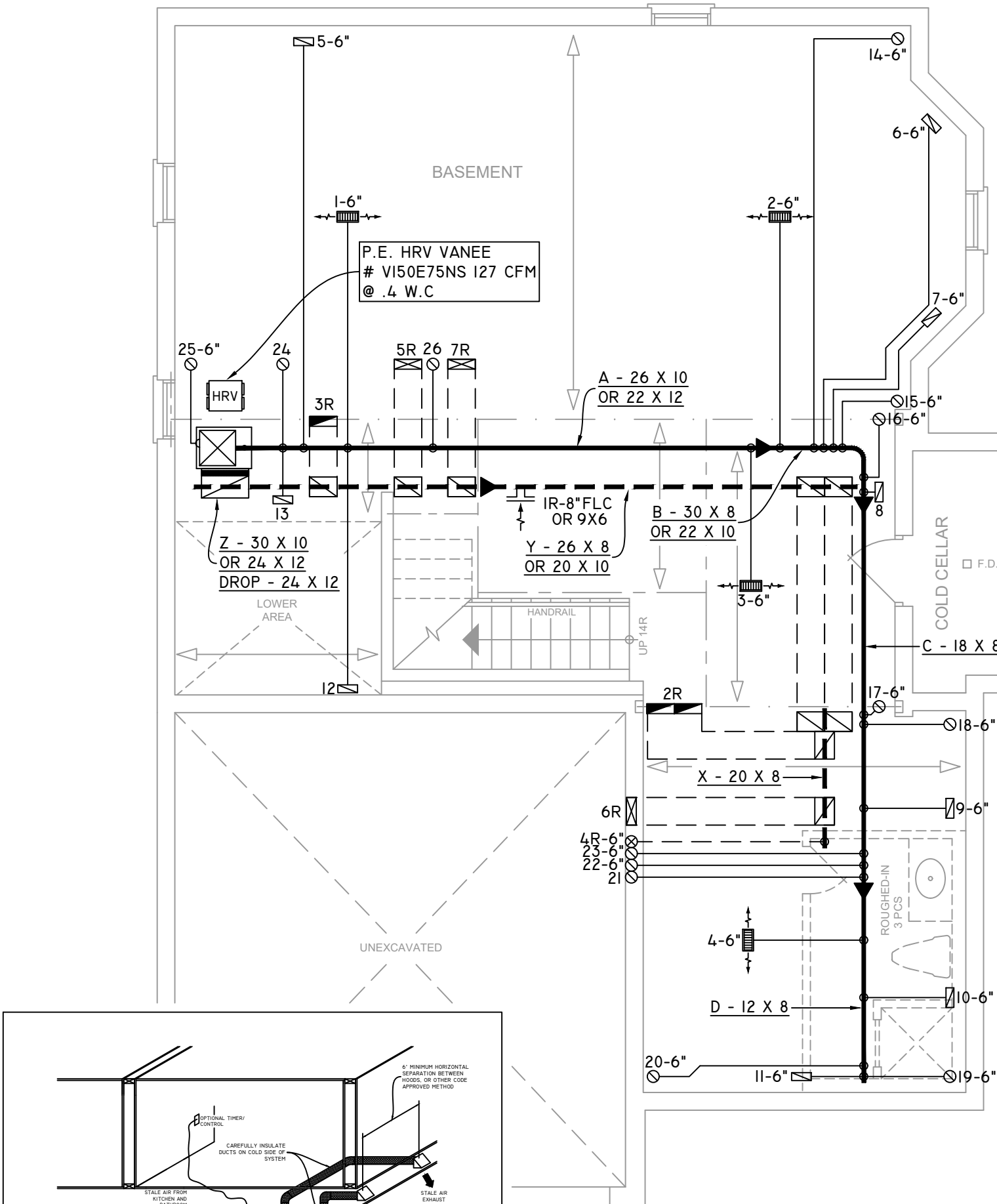
Effective R-Value – Exposed Ceiling with Attic

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

Effective R-Value – Exposed Ceiling with Flat Roofs

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

	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.)

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'

OBC 2012

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

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

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

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

CONTRACTOR MUST WORK FROM APPROVED PLANS.

ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSIBILITY OF GTA DESIGNS.

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





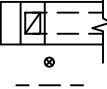













2985 DREW ROAD
SUITE 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 905-671-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

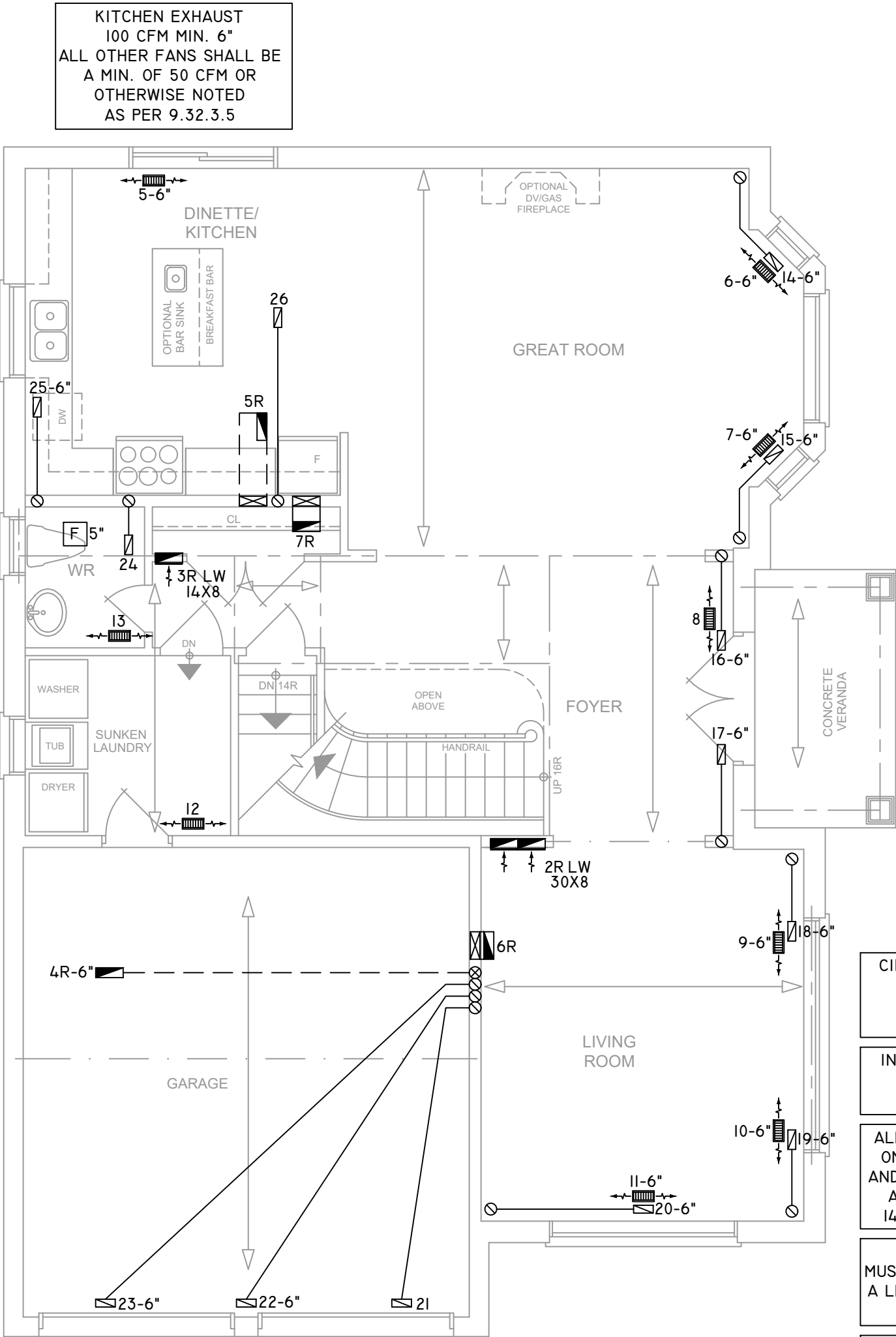
HEAT-LOSS	52,209	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

FLOOR PLAN:	BASEMENT
DRAWN BY:	JL
CHECKED:	DD
LAYOUT NO.	JB-09503
SQFT	2889
DRAWING NO.	MI

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
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



- 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'

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.





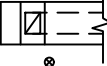













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WEB: WWW.GTADESIGNS.CA

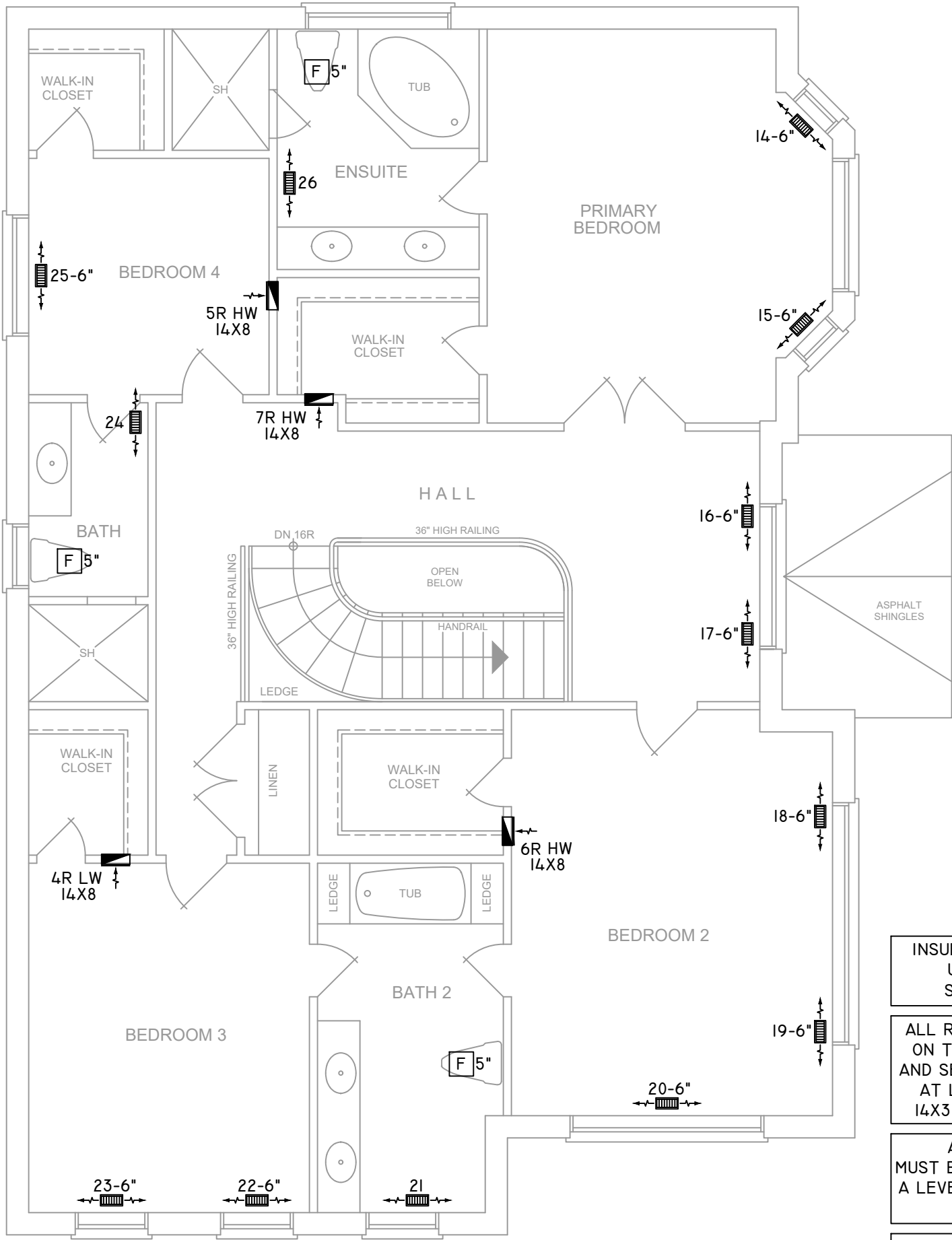
HEAT-LOSS	52,209	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

FLOOR PLAN:	
GROUND FLOOR	
DRAWN BY: JL	CHECKED: DD
LAYOUT NO. JB-09503	SQFT 2889
	DRAWING NO. M2

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
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



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

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



















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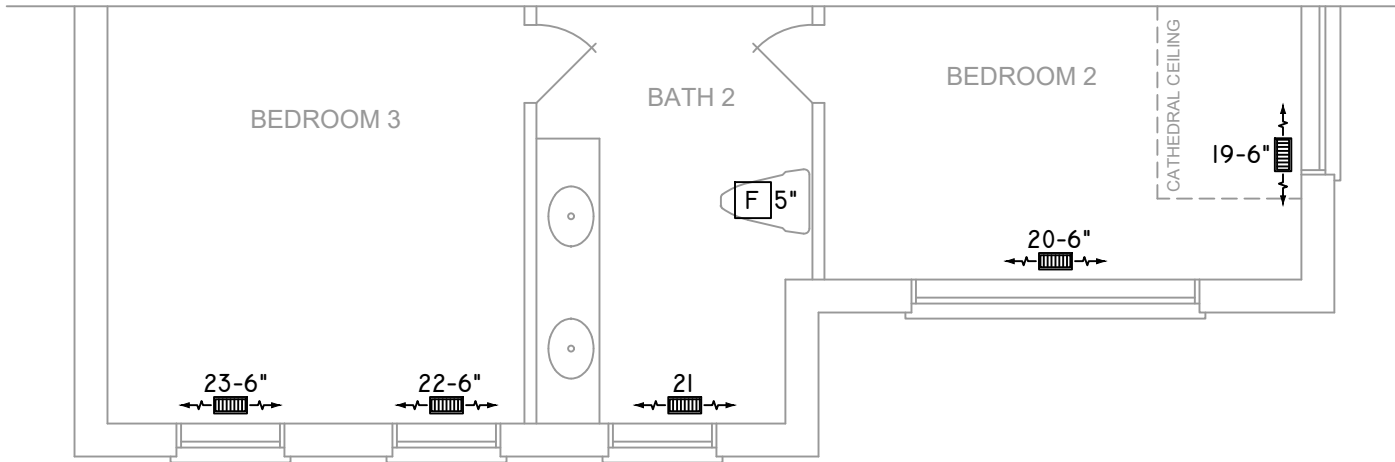
HEAT-LOSS	52,209	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

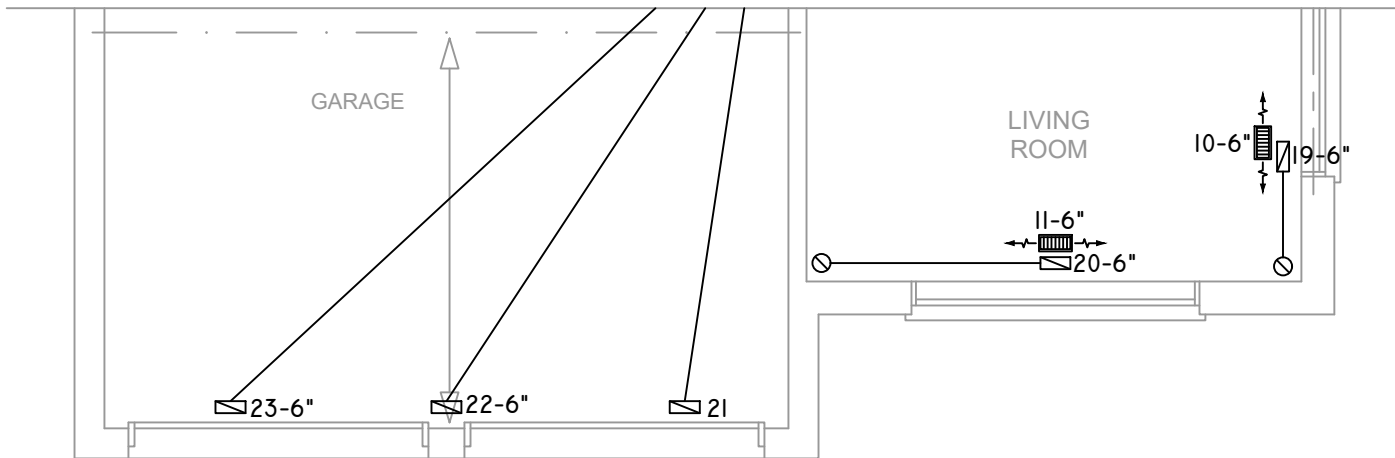
FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 2889
LAYOUT NO. JB-09503	DRAWING NO. M3	

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"

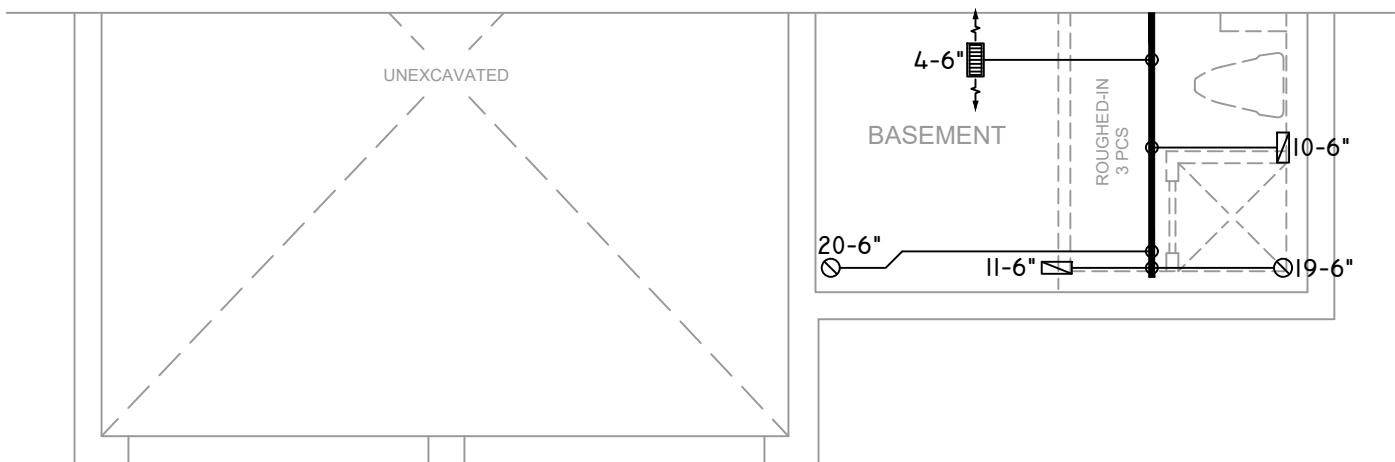
	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN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



SECOND FLOOR PLAN 'B'



FIRST FLOOR PLAN 'B'



BASEMENT FLOOR PLAN 'B'

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.

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**GTADESIGNS**



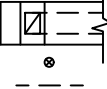













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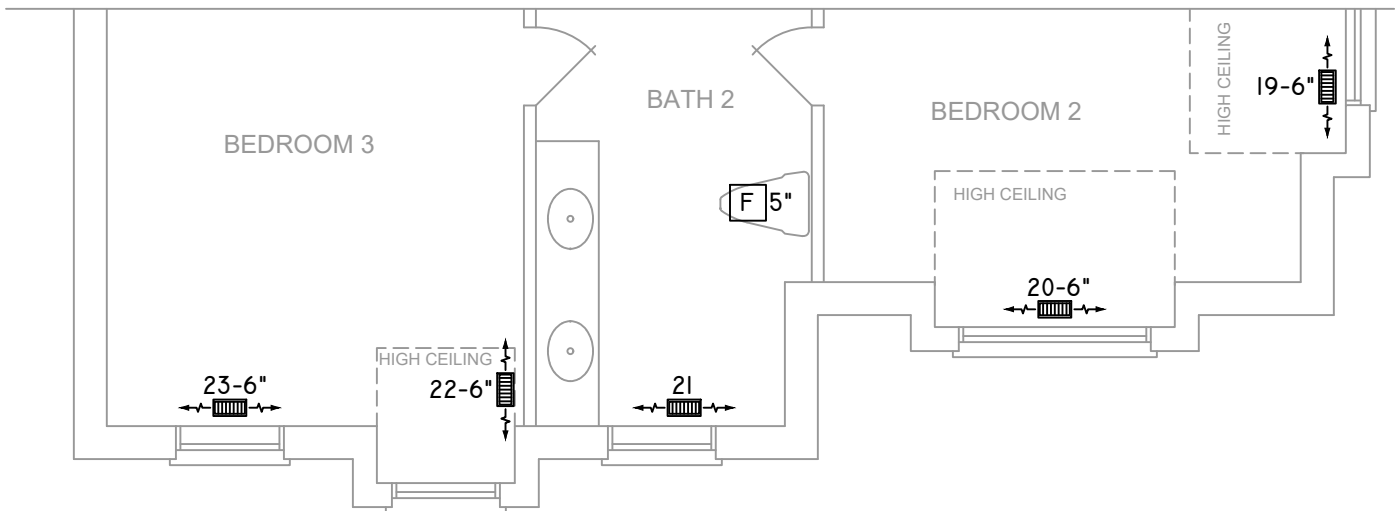
HEAT-LOSS	52,209	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

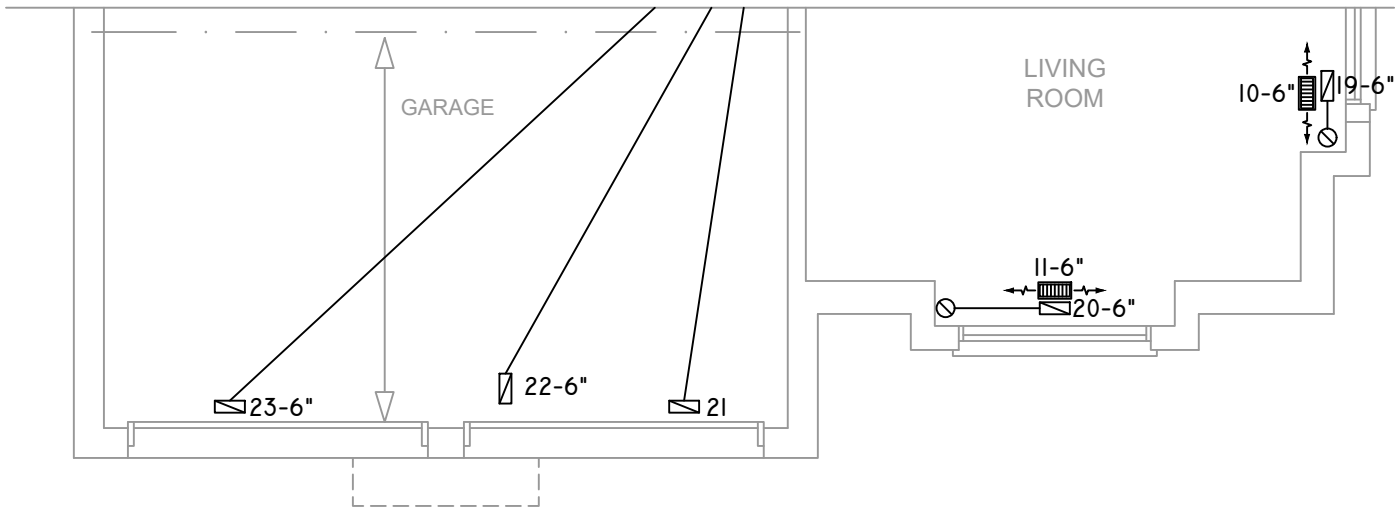
FLOOR PLAN: PARTIAL PLAN(S)		
DRAWN BY: JL	CHECKED: DD	SQFT 2889
LAYOUT NO. JB-09503	DRAWING NO. M4	

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL, ONT.
SCALE:	3/16" = 1'-0"

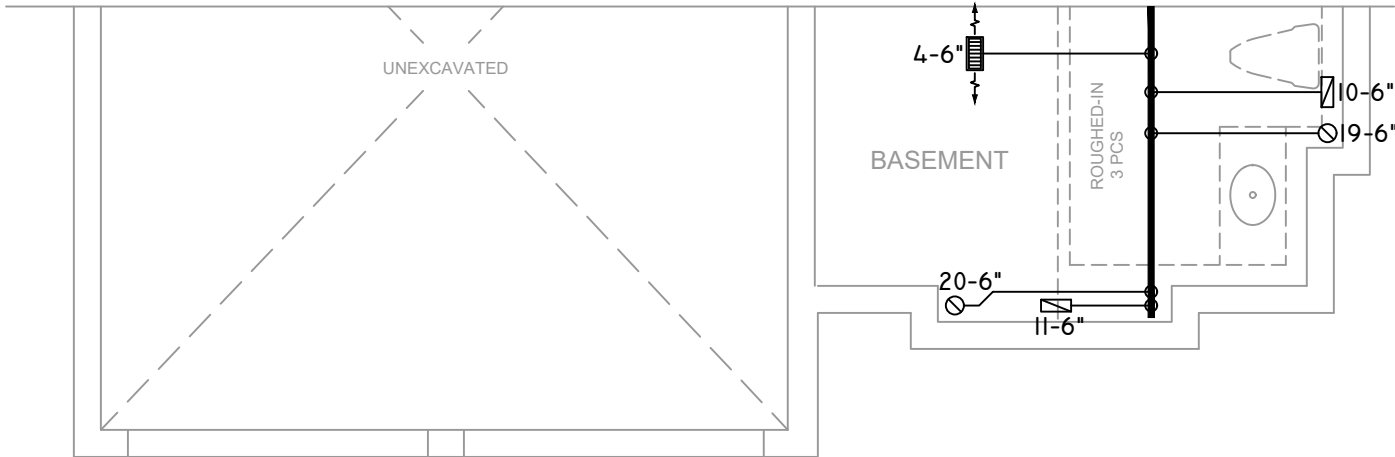
	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN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



SECOND FLOOR PLAN 'C'



FIRST FLOOR PLAN 'C'



BASEMENT FLOOR PLAN 'C'

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.

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**GTADESIGNS**



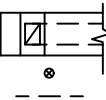














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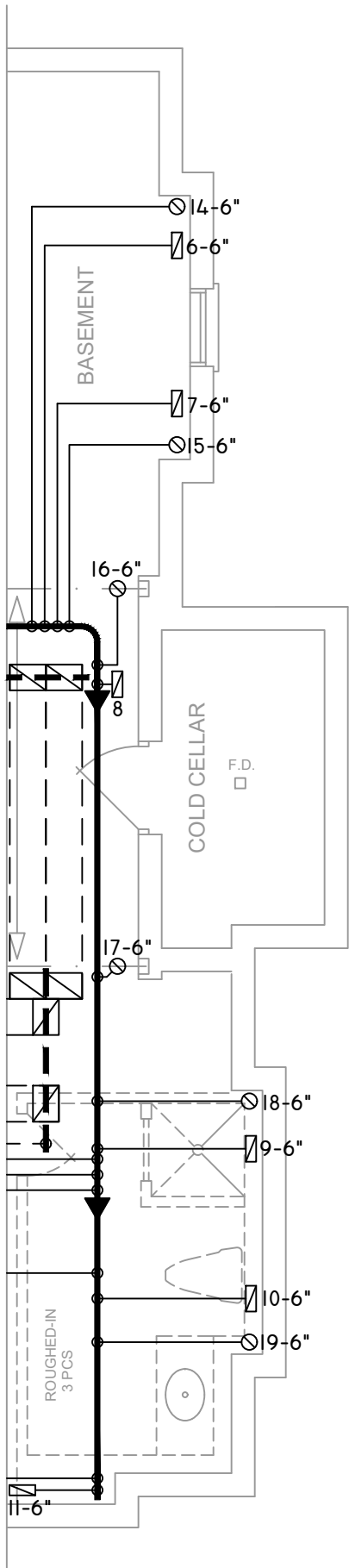
HEAT-LOSS	52,209	BTU/HR.
UNIT MAKE	CARRIER	OR EQUAL.
UNIT MODEL	59SC5B060E17--14	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	58,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

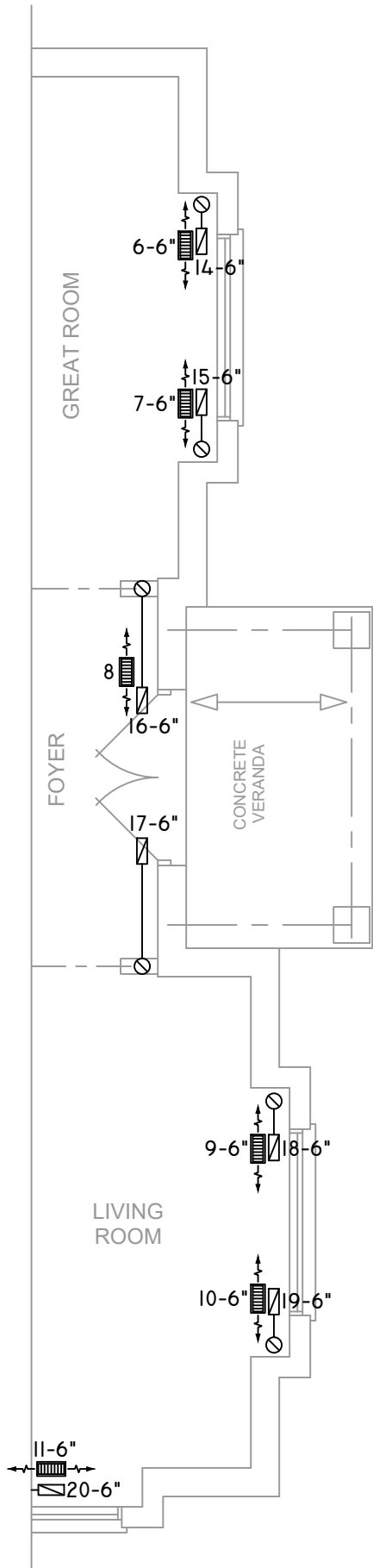
FLOOR PLAN: PARTIAL PLAN(S)		
DRAWN BY: JL	CHECKED: DD	SQFT 2889
LAYOUT NO. JB-09503	DRAWING NO. M6	

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL, ONT.
SCALE:	3/16" = 1'-0"

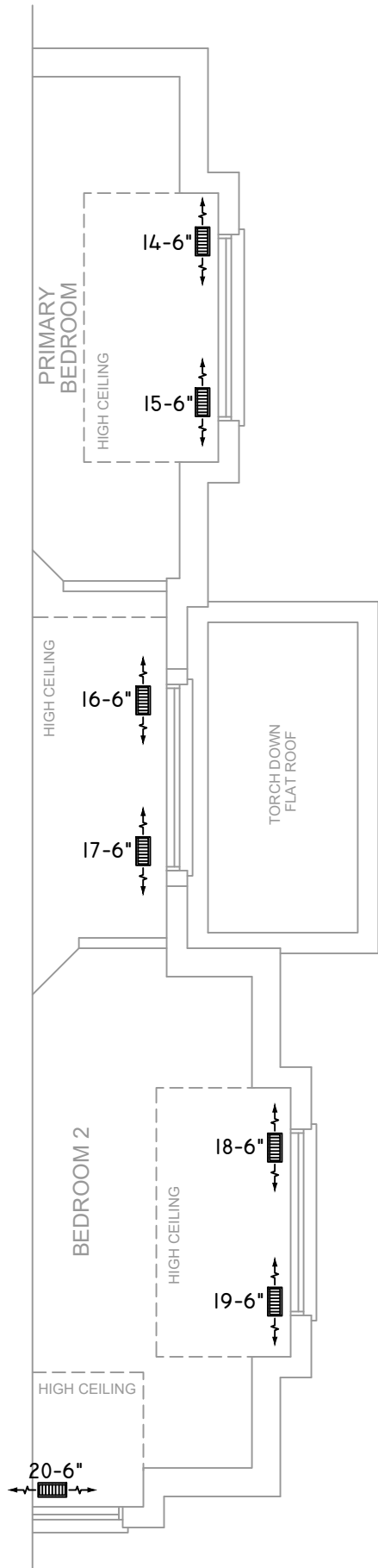
	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN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



BASEMENT FLOOR PLAN 'C'



FIRST FLOOR PLAN 'C'



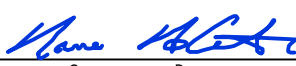
SECOND FLOOR PLAN 'C'

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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.

NOTES
INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
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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.
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HEAT-LOSS	52,209	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	3.5	TONS.
FAN SPEED	1330	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	4	3
1ST FLOOR	9	2	2
BASEMENT	4	1	

FLOOR PLAN:		
PARTIAL PLAN(S)		
DRAWN BY: JL	CHECKED: DD	SQFT 2889
LAYOUT NO. JB-09503	DRAWING NO. M7	

DATE:	JUNE 14, 2024
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2890
PROJECT:	KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE:	3/16" = 1'-0"