Schedule 1: Designer Information

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

A. Project Information

Building number, street name: **Model 2030**		Lot:	
		Lot/con.	
Municipality: **Richmond Hill**	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **David DaCosta**		Firm: **gtaDesigns Inc.**	
Street address: **2985 Drew Road, Suite 202**		Unit no.	Lot/con.
Municipality: **Mississauga**	Postal code: **L4T 0A4**	Province: **Ontario**	E-mail: hvac@gtadesigns.ca
Telephone number: **(905) 671-9800**	Fax number:	Cell number:	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ On-site Sewage Systems

Description of designer's work	**Model Certification**			**Project #:**	**PJ-00267**
				Layout #:	**JB-09142**
Heating and Cooling Load Calculations	**Main**	**X**	Builder	**EM Air Systems**	
Air System Design	**Alternate**		Project	**King East Developments**	
Residential mechanical ventilation Design Summary	**O.D. GFA**	**1839**	Model	**Model 2030**	
Residential System Design per CAN/CSA-F280-12					
Residential New Construction - Forced Air			SB-12	**Energy Star**	

D. Declaration of Designer

I David DaCosta declare that (choose one as appropriate):

(print name)

❑ 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: _____

☒ 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: **32964**

Basis for exemption from registration: **Division C 3.2.4.1. (4)**

❑ 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.

September 15, 2023

Date

Signature of Designer

NOTE:

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

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

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

These documents issued for the use of **EM Air Systems**

and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Layout No. **JB-09142**

Building Location

Address (Model):	**Model 2030**	Site:	**King East Developments**
Model:		Lot:	
City and Province:	**Richmond Hill**	Postal code:	

Calculations based on

Dimensional information based on: **Architectural Design Inc.Jun/2023**

Attachment:	**Townhome**		Front facing:	**East/West**	Assumed? **Yes**
No. of Levels:	**3**	Ventilated? **Included**	Air tightness:	**1961-Present (ACH=3.57)**	Assumed? **Yes**
Weather location:	**Richmond Hill**		Wind exposure:	**Sheltered**	
HRV?	**VanEE**	**V150E75NS**	Internal shading:	**Light-translucent**	Occupants: **4**
Sensible Eff. at -25C	**60%**	Apparent Effect. at -0C **80%**	Units:	**Imperial**	Area Sq ft: **1839**
Sensible Eff. at -0C	**75%**				

Heating design conditions

Outdoor temp **-5.8** Indoor temp: **72** Mean soil temp: **50**

Cooling design conditions

Outdoor temp **88** Indoor temp: **75** Latitude: **44**

Above grade walls

Style A: **As per OBC SB12 Energy Star R 22 + 5ci**

Style B:

Style C:

Style D:

Below grade walls

Style A: **As per OBC SB12 Energy Star R 20ci**

Style B:

Style C:

Style D:

Floors on soil

Style A: **As per Selected OBC SB12 Energy Star**

Style B:

Ceilings

Style A: **As per Selected OBC SB12 Energy Star R 60**

Style B: **As per Selected OBC SB12 Energy Star R 31**

Style C:

Exposed floors

Style A: **As per Selected OBC SB12 Energy Star R 31**

Style B:

Doors

Style A: **As per Selected OBC SB12 Energy Star R 4.00**

Style B:

Style C:

Windows

Style A: **As per Selected OBC SB12 Energy Star R 4.00**

Style B:

Style C:

Style D:

Skylights

Style A: **As per Selected OBC SB12 Energy Star R 2.03**

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**

Air System Design

SB-12 Energy Star

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

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

Builder: EM AIr Systems | Date: September 15, 2023 | **System 1**

Project: King East Developments | Model: Model 2030

Project # PJ-00267
Layout # JB-09142

DESIGN LOAD SPECIFICATIONS

Level 1 Net Load	13,082	btu/h
Level 2 Net Load	8,911	btu/h
Level 3 Net Load	7,247	btu/h
Level 4 Net Load	0	btu/h
Total Heat Loss	29,240	btu/h
Total Heat Gain	18,573	btu/h
Building Volume Vb	21613	ft³
Ventilation Load	1,069	Btuh.
Ventilation PVC	63.6	cfm
Supply Branch and Grill Sizing		

AIR DISTRIBUTION & PRESSURE

Equipment External Static Pressure	0.5	"w.c.
Additional Equipment Pressure Drop	0.225	"w.c.
Available Design Pressure	0.275	"w.c.
Return Branch Longest Effective Length	300	ft
R/A Plenum Pressure	0.138	"w.c.
S/A Plenum Pressure	0.14	"w.c.
Heating Air Flow Proportioning Factor	0.0275	cfm/btuh
Cooling Air Flow Proportioning Facter	0.0433	cfm/btuh
R/A Temp	70	deg. F.
S/A Temp	115	deg. F.
Diffuser loss	0.01	"w.c.

FURNACE/AIR HANDLER DATA:

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

BOILER/WATER HEATER DATA:

Make Type
Model
Input Btu/h
Output Btu/h
Min.Output Btu/h AWH

Blower DATA:

Blower Speed Selected: Yellow
Check 805 cfm Cool. Check 805 cfm
Heat. 805 cfm Cooling 805 cfm

A/C UNIT DATA:

Carrier 2.0 Ton
Model:
Cond.---------- 2.0
Coil ---------- 2.0

Blower Type ECM
(Brushless DC OBC 12.3.1.5.(2))
Design Airflow 805 cfm

Level 1

S/A Outlet No.	1	2	3	4	5	6	7								8	9	10	11	12								
Room Use	REC	REC	OFF	LAUN	WR 2	F.BASE	STOR								GRT	GRT	KIT/FAM	KIT/FAM	FOY								
Btu/Outlet	1627	1627	1877	1391	174	3080	3305								1562	1562	1817	1817	2153								
Heating Airflow Rate CFM	45	45	52	38	5	85	91								43	43	50	50	59								
Cooling Airflow Rate CFM	24	24	18	2	0	8	6								80	80	88	88	54								
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	47	36	37	6	17	18	33								31	25	34	33	38								
Equivalent Length	90	70	110	100	110	110	90	70	70	70	70	70	70	70	100	80	90	80	120	70	70	70	70	70	70	70	70
Total Effective Length	137	106	147	106	127	128	123	70	70	70	70	70	70	70	131	105	124	113	158	70	70	70	70	70	70	70	70
Adjusted Pressure	0.09	0.12	0.09	0.12	0.10	0.10	0.11	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.10	0.12	0.10	0.12	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	5	4	5	4	2	6	6								6	6	6	6	5								
Outlet Size	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	C	C	D	C	A	B	B								D	D	A	A	B								

Level 3

S/A Outlet No.	13	14	15	16	17	18																					
Room Use	MAST	MAST	ENS	BED 3	BED 2	BATH																					
Btu/Outlet	1106	1106	1575	1543	1767	150																					
Heating Airflow Rate CFM	30	30	43	42	49	4																					
Cooling Airflow Rate CFM	55	55	64	73	81	3																					
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	46	52	43	51	43	28																					
Equivalent Length	120	130	120	120	110	150	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	166	182	163	171	153	178	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.08	0.07	0.08	0.08	0.08	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	5	5	5	6	6	2																					
Outlet Size	3x10	3x10	3x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	B	C	D	A																					

Level 2

S/A Outlet No.	8	9	10	11	12																						
Room Use	GRT	GRT	KIT/FAM	KIT/FAM	FOY																						
Btu/Outlet	1562	1562	1817	1817	2153																						
Heating Airflow Rate CFM	43	43	50	50	59																						
Cooling Airflow Rate CFM	80	80	88	88	54																						
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	31	25	34	33	38																						
Equivalent Length	100	80	90	80	120	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	131	105	124	113	158	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.10	0.12	0.10	0.12	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	6	6	6	5																						
Outlet Size	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	D	D	A	A	B																						

Level 4

S/A Outlet No.																											
Room Use																											
Btu/Outlet																											
Heating Airflow Rate CFM																											
Cooling Airflow Rate CFM																											
Duct Design Pressure																											
Actual Duct Length																											
Equivalent Length																											
Total Effective Length																											
Adjusted Pressure																											
Duct Size Round																											
Outlet Size																											
Trunk																											

Return Branch And Grill Sizing

Grill Pressure Loss 0.02 "w.c

R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	180	380	105	140							
Duct Design Pressure	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Actual Duct Length	23	14	36	44							
Equivalent Length	170	125	185	180	50	50	50	50	50	50	50
Total Effective Length	193	139	221	224	50	50	50	50	50	50	50
Adjusted Pressure	0.06	0.08	0.05	0.05	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.5	10.5	6.0	8.0							
Inlet Size	8	8	8	8							
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	30	14	14							
Trunk	Z	Z	Z	Z							

Return Trunk Duct Sizing

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

Supply Trunk Duct Sizing

Trunk	C.CFM	H.CFM	Press.	Round	Rect. Size	
A	422	448	0.07	11.0	14x8	10x10
B	132	278	0.08	9.0	8x8	10x7
C	383	356	0.08	10.5	12x8	10x10
D	259	186	0.08	9.0	8x8	10x7
E						
F						
G						
H						
I						
J						
K						

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

Builder: EM Air Systems | Date: September 15, 2023 | Weather Data: Richmond Hill 44 -5.8 88 20 50 | Page 4

2012 OBC | Project: King East Developments | Model: Model 2030 | **System 1** | Heat Loss ^T 77.8 deg. F | Ht gain ^T 12.8 deg. F | Project # PJ-00267 | Layout # JB-09142

Level 1

	REC	OFF	LAUN	WR 2	F.BASE	STOR						
Run ft. exposed wall A	14 A	9 A	8 A	1 A	13 A	19 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	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG	7.5 AG
Floor area	219 Area	113 Area	68 Area	43 Area	74 Area	84 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	105	68	60	8	98	143						
Gross Exp Wall B												

Components		R-Values	Loss	Gain	REC Loss	REC Gain	OFF Loss	OFF Gain	LAUN Loss	LAUN Gain	WR 2 Loss	WR 2 Gain	F.BASE Loss	F.BASE Gain	STOR Loss	STOR 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			8 156	237																
South		4.00	19.45	22.60																				
WOB Windows Including Doors		3.55	21.92	27.86																				
Skylight		2.03	38.33	89.12																				
Doors		4.00	19.45	3.20	21 408	67							21 408	67										
Net exposed walls A		20.84	3.73	0.61	84	52	60	37	60	37	8	5	77	47	143	88								
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					1214		781		694		87		1128		1648									
Total Conductive	Heat Loss				1623		936		694		87		1536		1648									
	Heat Gain					119		274		37		5		114		88								
Air Leakage	Heat Loss/Gain		0.9362	0.0652	1519	8	876	18	650	2	81	0	1438	7	1543	6								
Ventilation	Case 1		0.08	0.10																				
	Case 2		16.80	13.82																				
	Case 3	x	0.07	0.10	112	12	65	28	48	4	6	0	106	12	114	9								
Heat Gain People				239																				
Appliances Loads		1 =.25 percent		2917	1.0	729																		
Duct and Pipe loss				10%																				
Level HL Total	13,082	Total HL for per room			3254		1877		1391		174		3080		3305									
Level HG Total	1,913	Total HG per room x 1.3				1128		416		56		7		173		133								

Level 2

	GRT	KIT/FAM	FOY									
Run ft. exposed wall A	20 A	11 A	9 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	10.0	10.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Floor area	302 Area	455 Area	89 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	237 Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	200	110	135									
Gross Exp Wall B												

Components		R-Values	Loss	Gain	GRT Loss	GRT Gain	KIT/FAM Loss	KIT/FAM Gain	FOY Loss	FOY 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	46 895	1364	48 934	1424	24 467	712														
South		4.00	19.45	22.60																				
Existing Windows		1.99	39.10	24.56																				
Skylight		2.03	38.33	89.12																				
Doors		4.00	19.45	3.20	14 272	45			18 350	58														
Net exposed walls A		21.40	3.64	0.60	140 509	84	62 225	37	93 338	56														
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			237 619	54																
Foundation Conductive Heatloss				x																				
Total Conductive	Heat Loss				1676		1778		1155															
	Heat Gain					1493		1515		825														
Air Leakage	Heat Loss/Gain		0.7951	0.0652	1333	97	1413	99	918	54														
Ventilation	Case 1		0.07	0.10																				
	Case 2		16.80	13.82																				
	Case 3	x	0.07	0.10	116	153	123	156	80	85														
Heat Gain People				239																				
Appliances Loads		1 =.25 percent		2917	1.5	1094	1.5	1094																
Duct and Pipe loss				10%			1 319	261																
Level HL Total	8,911	Total HL for per room			3124		3633		2153															
Level HG Total	9,003	Total HG per room x 1.3				3689		4061		1253														

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

SB-12 Package: Energy Star

Total Heat Loss	29,240	btu/h
Total Heat Gain	18,573	btu/h

GTADESIGNS

Heatloss/Gain Calculations CSA-F280-12

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

e-mail hvac@gtadesigns.ca

Builder: EM Air Systems | Date: September 15, 2023 | Weather Data: Richmond Hill 44 -5.8 88 20 50

2012 OBC | Project: King East Developments | Model: Model 2030 | **System 1**

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

Project # PJ-00267 | Layout # JB-09142

Level 3

	MAST		ENS		BED 3		BED 2		BATH											
Run ft. exposed wall A	11	A	9	A	9	A	10	A		A		A		A		A		A		A
Run ft. exposed wall B		B		B		B		B		B		B		B		B		B		B
Ceiling height	9.0		11.0		9.0		11.0		9.0		9.0		9.0		9.0		9.0		9.0	
Floor area	304	Area	110	Area	193	Area	169	Area	70	Area		Area		Area		Area		Area		Area
Exposed Ceilings A	304	A	110	A	193	A	169	A	70	A		A		A		A		A		A
Exposed Ceilings B		B		B		B		B		B		B		B		B		B		B
Exposed Floors		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr
Gross Exp Wall A	99		99		81		110													
Gross Exp Wall B																				

Components		R-Values	Loss	Gain	MAST Loss	MAST Gain	ENS Loss	ENS Gain	BED 3 Loss	BED 3 Gain	BED 2 Loss	BED 2 Gain	BATH Loss	BATH Gain										
North Shaded		4.00	19.45	11.73																				
East/West		4.00	19.45	29.66	30	584	890	29	564	860	25	486	742	29	564	860								
South		4.00	19.45	22.60																				
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	69	251	41	70	254	42	56	204	33	81	294	48								
Net exposed walls B		8.50	9.15	1.51																				
Exposed Ceilings A		59.22	1.31	0.67	304	399	204	110	145	74	193	254	130	169	222	114	70	92	47					
Exposed Ceilings B		27.65	2.81	1.44																				
Exposed Floors		29.80	2.61	0.23																				
Foundation Conductive Heatloss																								
Total Conductive	Heat Loss					1234			963			943			1081			92							
	Heat Gain						1135			976			905			1022			47					
Air Leakage	Heat Loss/Gain		0.5664	0.0652		699	74		546	64		534	59		612	67		52	3					
Ventilation	Case 1		0.05	0.10																				
	Case 2		16.80	13.82																				
	Case 3	x	0.07	0.10		85	117		67	100		65	93		75	105		6	5					
Heat Gain People				239	2		478				1		239	1		239								
Appliances Loads		1 =.25 percent		2917																				
Duct and Pipe loss				10%	1	193	161																	
Level HL Total	7,247	Total HL for per room				2211			1575			1543			1767			150						
Level HG Total	7,656	Total HG per room x 1.3					2555			1482			1684			1863			71					

Level 4

Run ft. exposed wall A	A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	B		B		B		B		B		B		B		B		B		B	
Ceiling height																				
Floor area	Area		Area		Area		Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	A		A		A		A		A		A		A		A		A		A	
Exposed Ceilings B	B		B		B		B		B		B		B		B		B		B	
Exposed Floors	Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A																				
Gross Exp Wall B																				

Components		R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain										
North Shaded		4.00	19.45	11.73																				
East/West		4.00	19.45	29.66																				
South		4.00	19.45	22.60																				
Existing Windows		1.99	39.10	24.56																				
Skylight		2.03	38.33	89.12																				
Doors		4.00	19.45	3.20																				
Net exposed walls A		21.40	3.64	0.60																				
Net exposed walls B		8.50	9.15	1.51																				
Exposed Ceilings A		59.22	1.31	0.67																				
Exposed Ceilings B		27.65	2.81	1.44																				
Exposed Floors		29.80	2.61	0.23																				
Foundation Conductive Heatloss																								
Total Conductive	Heat Loss																							
	Heat Gain																							
Air Leakage	Heat Loss/Gain		0.0000	0.0652																				
Ventilation	Case 1		0.00	0.10																				
	Case 2		16.80	13.82																				
	Case 3	x	0.07	0.10																				
Heat Gain People				239																				
Appliances Loads		1 =.25 percent		2917																				
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																						

Total Heat Loss	29,240 btu/h
Total Heat Gain	18,573 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

SB-12 Package

Energy Star

GTADESIGNS

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e-mail hvac@gtadesigns.ca

Project # PJ-00267
Layout # JB-09142

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 2030

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

Location of Installation

Lot #	Plan #
Township	Richmond Hill
Roll #	Permit #
Address	

Builder

Name	EM AIr Systems
Address	
City	
Tel	Fax

Installing Contractor

Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)

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

Heating System

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

House Type 9.32.3.1(2)

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

System Design Option

1		Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3	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	1	@	21.2	cfm	21.2	cfm
Other Bedrooms	2	@	10.6	cfm	21.2	cfm
Bathrooms & Kitchen	5	@	10.6	cfm	53	cfm
Other rooms	5	@	10.6	cfm	53	cfm
			Total		148.4	

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1	@	31.8	cfm	31.8	cfm
Other bedrooms	2	@	15.9	cfm	31.8	cfm
			Total		63.6	

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	V150E75NS	Base

127 cfm 80.0 Sones or Equiv.

Heat Recovery Ventilator

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

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

Supplemental Ventilation Capacity

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

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
Ens	50	XB50	0.3
Bath	50	XB50	0.3

all fans HVI listed Make Broan or Equiv.

Designer Certification

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name	David DaCosta		
Signature			
HRAI #	5190	BCIN #	32964
Date	September 15, 2023		

GTADESIGNS
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e-mail dave@gtadesigns.ca

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

Project # PJ-00267
Layout # JB-09142

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 2030			
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]

☐ SB-12 Performance* [SB-12 - 3.1.2.]	*Attach energy performance results using an approved software (see guide)
☑ ENERGY STAR®* [SB-12 - 3.1.3.]	*Attach Builder Option Package [BOP] form
☐ 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
☑ Zone 1 (< 5000 degree days)	☑ ≥ 92% AFUE	☑ Gas ☐ Propane ☐ Solid Fuel
☐ Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	☐ Oil ☐ Electric ☐ Earth Energy

Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		Other Building Characteristics
Area of Walls = 350.6 m² or 3773.9 ft²	W,S &G % = 6%	☐ Log/Post&Beam ☐ ICF Above Grade ☐ ICF Basement ☐ Slab-on-ground ☐ Walkout Basement ☑ Air Conditioning ☐ Combo Unit ☐ Air Sourced Heat Pump (ASHP) ☐ Ground Source Heat Pump (GSHP)
Area of W, S & G = 22.2 m² or 239.0 ft²		

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

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

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

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

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

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

Project # PJ-00267
Layout # JB-09142

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 #
BUILDING KNOWLEDGE CANADA	5506

ENERGY STAR or R-2000

Energy Evaluator/Advisor/Rater/Name and company:	Evaluator/Advisor/Rater License #
ANGELA BUSTAMANTE	5506

G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets building code]

Name	BCIN	Signature
David DaCosta	32964	

BUILDING KNOWLEDGE CANADA INC.
50 Fleming Drive, Unit # 6, Cambridge, ON, N1T 2B1
T | 1-800-267-6830
F | 519-658-6103 E | info@buildingknowledge.ca

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

ENERGY STAR HIGH EFFICIENCY HAUTE EFFICACITÉ

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

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

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e-mail hvac@gtadesigns.ca

Project # PJ-00267
Layout # JB-09142

Package: Energy Star **System:** System 1
Project: Richmond Hill **Model:** Model 2030

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.404	21613	77.8	12214

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.112	21613	12.8	558

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss (HLclevel)	Air Leakage Heat Loss Multiplier
Level 1	0.5	12214	6524	0.9362
Level 2	0.3		4609	0.7951
Level 3	0.2		4313	0.5664
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

		Air Leakage Heat Gain
HG LEAK	558	0.0652
BUILDING CONDUCTIVE HEAT GAIN	8554	

Levels this Dwelling
3

Highest Ceiling Height	30.0 FT	9.14 M

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	63.6	77.8	0.20	1069

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	63.6	12.8	879

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	1069	6524	0.08
Level 2	0.3		4609	0.07
Level 3	0.2		4313	0.05
Level 4	0		0	0.00

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	879	0.10
Building	8554	

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier
C	HL^T	(1-E) HRV	16.80
1.08	77.8	0.20	

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	13.82
1.08	12.8	

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	1069	0.07

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	879	0.10
879	1		

Foundation Conductive Heatloss Level 1	Level 1	1627	Watts	5551	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

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

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10

Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	9.14

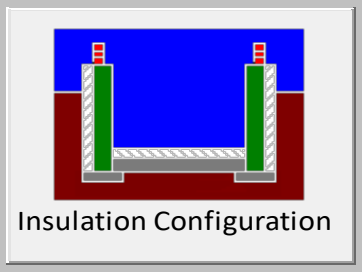
Building Configuration	
Type:	Semi-Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m^3):	612.08

Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa.	322.44	cm^2	
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:		
	31.8	31.8		
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Heating Air Leakage Rate (ACH/H):	**0.404**
Cooling Air Leakage Rate (ACH/H):	**0.112**

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	High conductivity: moist soil	
Water Table:	Normal (7-10 m, 23-33 Ft)	
Foundation Dimensions		
Floor Length (m):	**16.38**	 Insulation Configuration
Floor Width (m):	**3.43**	
Exposed Perimeter (m):	**19.51**	
Wall Height (m):	**2.74**	
Depth Below Grade (m):	**0.46**	
Window Area (m^2):	**0.74**	
Door Area (m^2):	**3.90**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1627**	

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Tel: 905-671-9800 email: hvac@gtadesigns.ca

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 RIGID ROUND DUCT SUPPLY DIFFUSER	LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE SUPPLY AIR PIPE RISER VOLUME DAMPER		DUCT CONNECTION TO JOIST LINING RETURN AIR PIPE RISER RETURN ROUND DUCT		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) RETURN AIR RISER UP TO FLOOR ABOVE RETURN AIR FROM BASEMENT SECOND FLOOR	S.A. R.A. T $ F PE	SUPPLY AIR RETURN AIR THERMOSTAT 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.9-11 CERTIFIED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

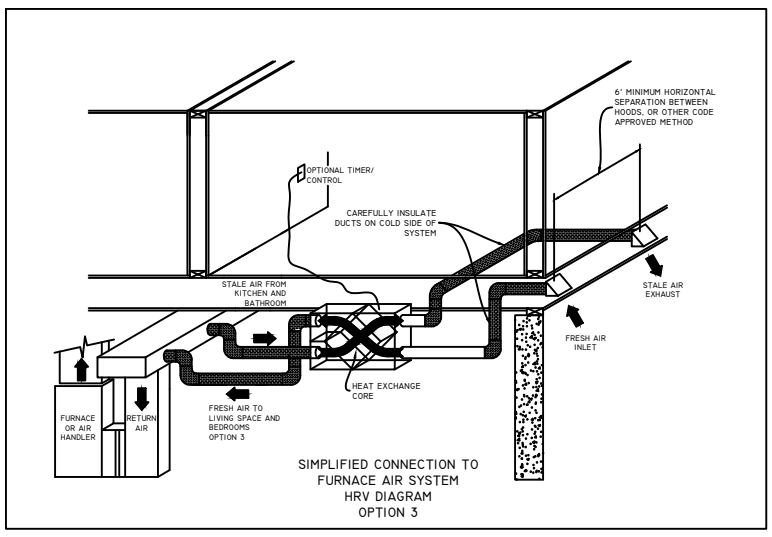
ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (11)

ENERGY STAR

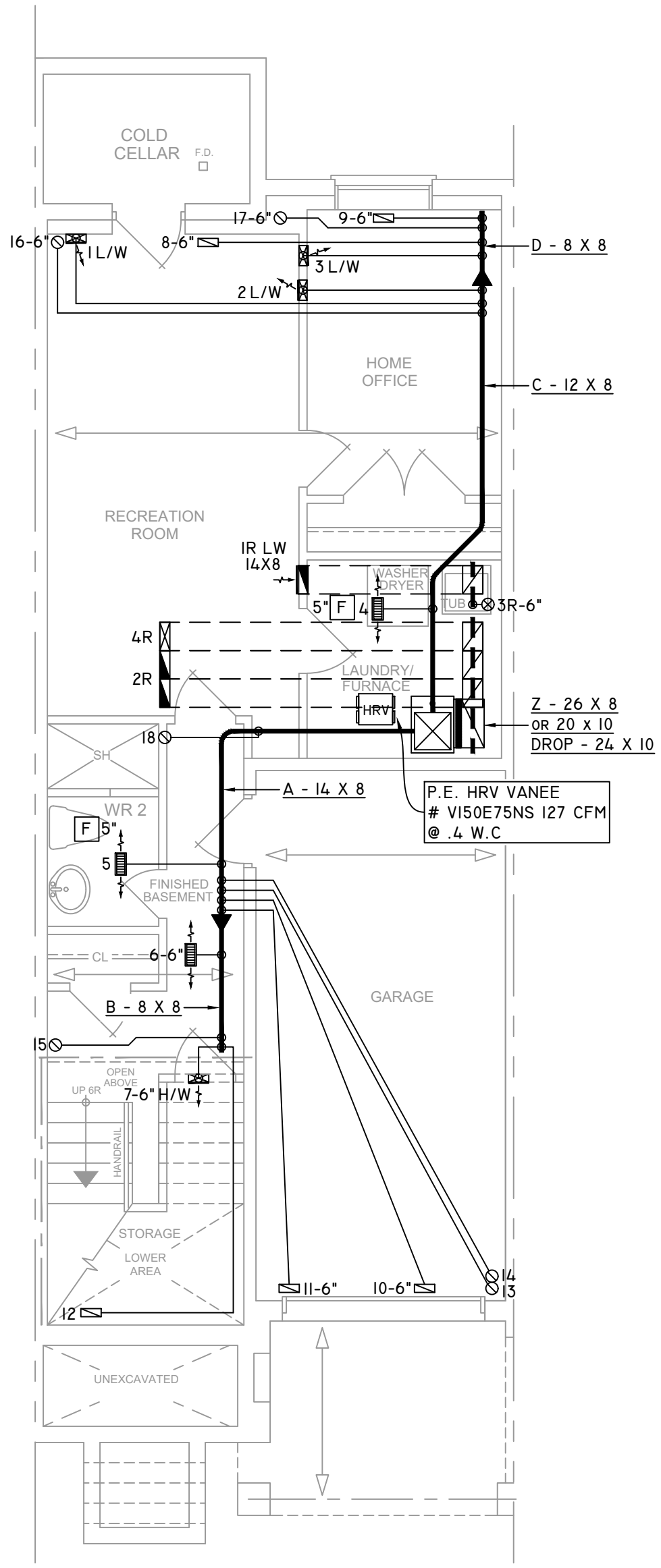
SEAL ALL JOINTS ON ANY DUCTWORK.
SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS

ENERGY STAR V12 STANDARD. ALL DUCTS SHALL BE LOCATED WITHIN HEATED BOUNDARY (4.7.2.2.)

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



SIMPLIFIED CONNECTION TO FURNACE AIR SYSTEM HRV DIAGRAM OPTION 3



BASEMENT FLOOR PLAN 'A'

OBC 2012

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

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

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 RI2 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.

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

HEAT-LOSS	29,240 BTU/HR.
UNIT MAKE	CARRIER OR EQUAL.
UNIT MODEL	59SC5B040E14--10 OR EQUAL.
UNIT HEATING INPUT	40,000 BTU/HR.
UNIT HEATING OUTPUT	39,000 BTU/HR.
A/C COOLING CAPACITY	2.0 TONS.
FAN SPEED	805 CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
1ST FLOOR	5	1	2
BASEMENT	7	1	2

FLOOR PLAN: BASEMENT		
DRAWN BY: JL	CHECKED: DD	SQFT 1839
LAYOUT NO. JB-09142		DRAWING NO. M1

DATE: SEPTEMBER 15, 2023
CLIENT: EM AIR SYSTEMS
MODEL: MODEL 2030
PROJECT: KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE: 3/16" = 1'-0"

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

CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

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

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

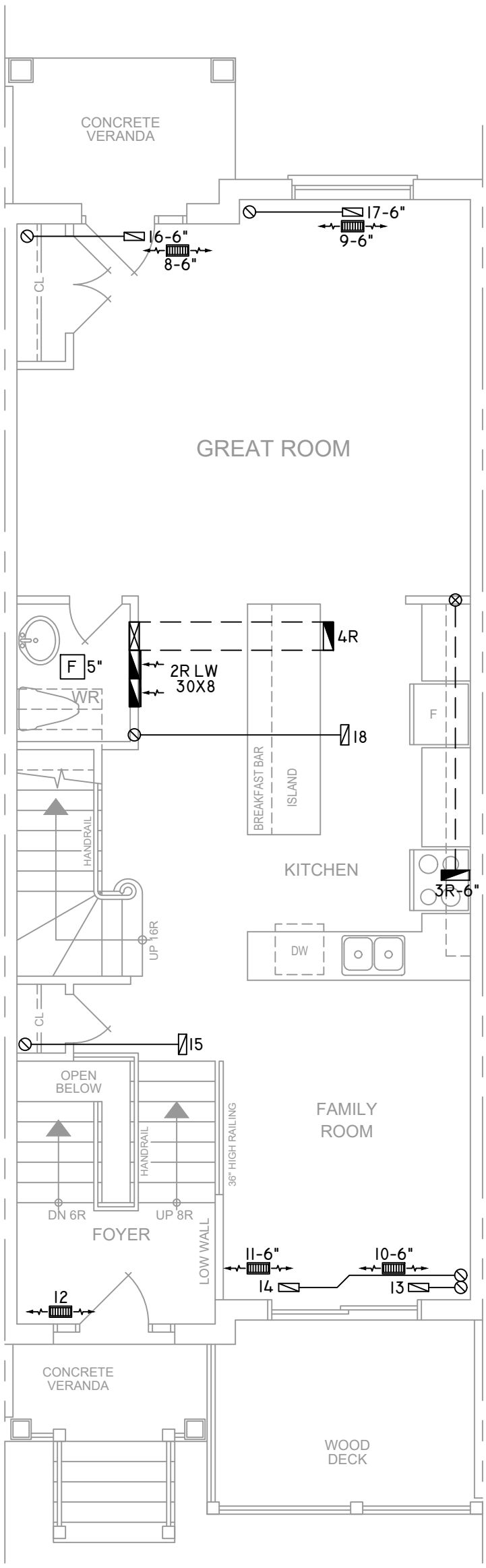
ENERGY STAR

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

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

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

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



FIRST FLOOR PLAN 'A'

OBC 2012

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

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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

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 RI2 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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EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	29,240 BTU/HR.
UNIT MAKE	CARRIER OR EQUAL.
UNIT MODEL	59SC5B040E14--10 OR EQUAL.
UNIT HEATING INPUT	40,000 BTU/HR.
UNIT HEATING OUTPUT	39,000 BTU/HR.
A/C COOLING CAPACITY	2.0 TONS.
FAN SPEED	805 CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
IST FLOOR	5	1	2
BASEMENT	7	1	2

FLOOR PLAN: GROUND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 1839
LAYOUT NO. JB-09142		DRAWING NO. M2

DATE:	SEPTEMBER 15, 2023
CLIENT:	EM AIR SYSTEMS
MODEL:	MODEL 2030
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	T	THERMOSTAT
			VOLUME DAMPER					$ F PE	PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. RI2

ALL R.A. STUD OPENINGS ON THE GROUND FLOOR AND SECOND FLOOR TO BE AT LEAST I4X5.5 AND I4X3.25 RESPECTIVELY

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

ENERGY STAR

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SEAL FURNACE VENTS, A/C PIPING AND HRV DUCTS AT EXTERIOR WALLS

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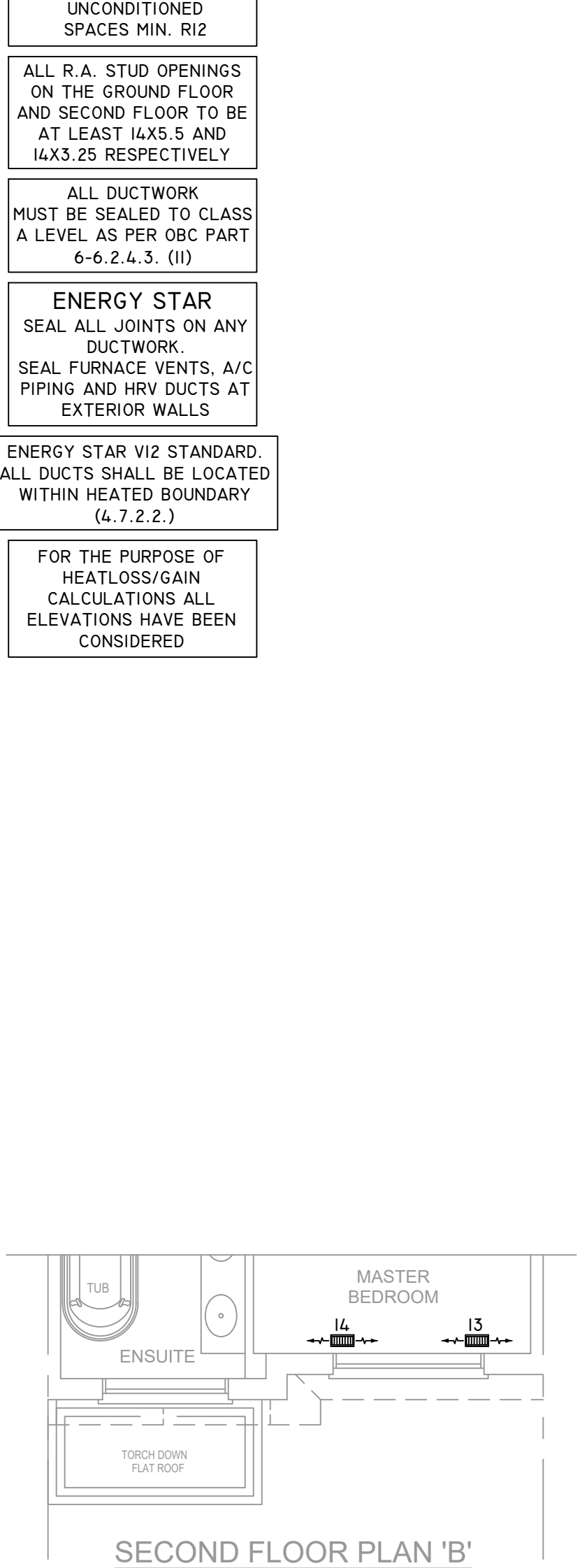
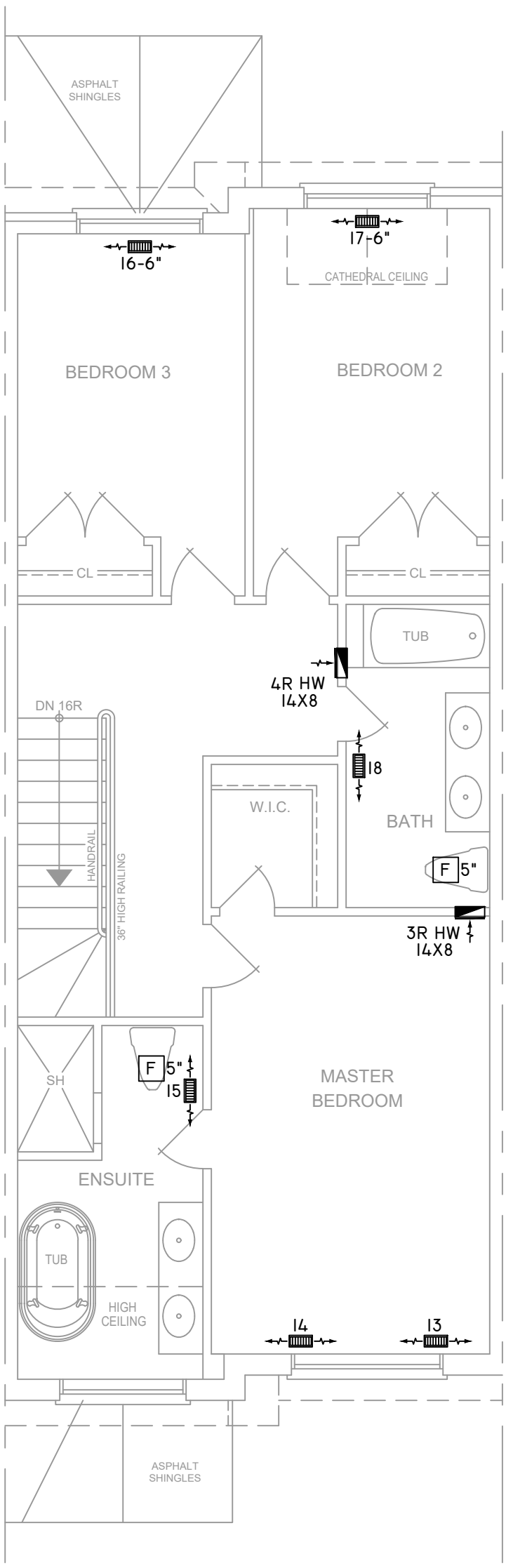
FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED



SECOND FLOOR PLAN 'B'



SECOND FLOOR PLAN 'A'

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

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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

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UNIT MAKE	CARRIER OR EQUAL.
UNIT MODEL	59SC5B040EI4--I0 OR EQUAL.
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UNIT HEATING OUTPUT	39,000 BTU/HR.
A/C COOLING CAPACITY	2.0 TONS.
FAN SPEED	805 CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	2	2
IST FLOOR	5	I	2
BASEMENT	7	I	2

FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 1839
LAYOUT NO. JB-09142		DRAWING NO. M3

DATE: SEPTEMBER I5, 2023
CLIENT: EM AIR SYSTEMS
MODEL: MODEL 2030
PROJECT: KING EAST DEVELOPMENTS RICHMOND HILL,ONT.
SCALE: 3/I6" = I'-0"