

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:	31
65-1 Lot 31		Lot/con.	
Municipality	Brampton	Postal code	Plan number/ other description
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	dave@gtadesigns.ca
Telephone number	Fax number	Cell number	
(905) 671-9800	(647) 494-9643	(416) 268-6820	
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-00067
		Layout #:	JB-02338
Heating and Cooling Load Calculations		Builder	Highcastle Homes
Air System Design		Project	Riverwalk Phase 2
Residential mechanical ventilation Design Summary		Model	65-1 Lot 31
Residential System Design per CAN/CSA-F280-12		SB-12	Package J
Residential New Construction - Forced Air			
D. Declaration of Designer			
I, <u>David DaCosta</u> 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: <u>32964</u> Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u> ☐ 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: - The information contained in this schedule is true to the best of my knowledge. - I have submitted this application with the knowledge and consent of the firm.			
<u>July 7, 2016</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 Highcastle Homes				Layout No.	
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.				JB-02338	
Building Location					
Address (Model): 65-1 Lot 31			Site: Riverwalk Phase 2		
Model:			Lot: 31		
City and Province: Brampton			Postal code:		
Calculations based on					
Dimensional information based on:			Highcastle Homes 28/June/2016		
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: Brampton			Wind exposure: Sheltered		
HRV? VanEE		60H	Internal shading: Light-translucent		Occupants: 6
Sensible Eff. at -25C 55%		Apparent Effect. at -0C 68%	Units: Imperial		Area Sq ft: 4009
Sensible Eff. at -0C 65%					
Heating design conditions			Cooling design conditions		
Outdoor temp -2.2 Indoor temp: 72 Mean soil temp 48			Outdoor temp 86 Indoor temp: 75 Latitude: 44		
Above grade walls			Below grade walls		
Style A: As per Selected OBC SB12 Package J R 22			Style A: As per Selected OBC SB12 Package J R 12		
Style B: Existing Walls (When Applicable) R 12			Style B:		
Style C:			Style C:		
Style D:			Style D:		
Floors on soil			Ceilings		
Style A: As per Selected OBC SB12 Package J			Style A: As per Selected OBC SB12 Package J R 50		
Style B:			Style B: As per Selected OBC SB12 Package J R 31		
Exposed floors			Style C:		
Style A: As per Selected OBC SB12 Package J R 31			Doors		
Style B:			Style A: As per Selected OBC SB12 Package J R 3.01		
Windows			Style B:		
Style A: As per Selected OBC SB12 Package J R 3.15			Style C:		
Style B: Existing Windows (When Applicable) R 1.99			Skylights		
Style C:			Style A: As per Selected OBC SB12 Package J R 2.03		
Style D:			Style B:		
Attached documents: As per Shedule 1					
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: (416) 268-6820		
City: Mississauga			E-mail dave@gtadesigns.ca		

Builder: **Highcastle Homes**

Date: **July 7, 2016**

Project: **Riverwalk Phase 2**

Model: **65-1 Lot 31**

System 1

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

Page 3
Project # PJ-00067
Layout # JB-02338

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	30,132 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	3.5 Ton
Level 2 Net Load	27,827 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC961004CNA	Model		Cond.-----	3.5
Level 3 Net Load	21,161 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	100000	Input Btu/h		Coil -----	3.5
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	96000	Output Btu/h			
Total Heat Loss	79,119 btu/h	R/A Plenum Pressure	0.138 "w.c.	E.s.p.	0.50 " W.C.	Min.Output Btu/h	AWH		
Total Heat Gain	39,864 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	87,031 Btu/h	Heating Air Flow Proportioning Factor	0.0209 cfm/btu/h	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	50324 ft³	Cooling Air Flow Proportioning Factor	0.0415 cfm/btu/h	Aux. Heat		(Brushless DC OBC 12.3.1.5.(2))			
Ventilation Load	3,580 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1653 cfm	Cooling Check	1653 cfm
Ventilation PVC	95.4 cfm	S/A Temp	124 deg. F.			Selected cfm>	1653 cfm	Cooling Air Flow Rate	1653 cfm
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	54 deg. F.				

	Level 1													Level 2													
S/A Outlet No.	1	2	3	4	5	6	7							8	9	10	11	12	13	14	15	16	17	18	19	20	21
Room Use	BASE	BASE	BASE	BASE	BASE	BASE	BASE							KIT	KIT	FAM	FAM	BED	BED	BATH	LAUN	LIV	LIV	FOY	EN/OFF	PWD	DIN
Btu/Outlet	4305	4305	4305	4305	4305	4305	4305							2580	2580	1435	1435	2183	2183	1478	1385	1849	1849	3373	3093	614	1790
Heating Airflow Rate CFM	90	90	90	90	90	90	90							54	54	30	30	46	46	31	29	39	39	70	65	13	37
Cooling Airflow Rate CFM	31	31	31	31	31	31	31							85	85	85	85	40	40	11	54	98	98	85	80	10	89
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	66	75	45	28	15	15	33							44	51	60	71	77	82	65	41	44	35	23	20	4	11
Equivalent Length	100	140	130	100	100	90	130	70	70	70	70	70	70	140	120	90	120	130	110	120	180	115	100	80	70	70	130
Total Effective Length	166	215	175	128	115	105	163	70	70	70	70	70	70	184	171	150	191	207	192	185	221	159	135	103	90	74	141
Adjusted Pressure	0.08	0.06	0.07	0.10	0.11	0.12	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.07	0.08	0.09	0.07	0.06	0.07	0.07	0.06	0.08	0.10	0.13	0.14	0.18	0.09
Duct Size Round	6	6	6	6	6	6	6							6	6	6	6	5	5	4	5	6	6	5	6	3	6
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	3x10	4x10	4x10	3x10	4x10	3x10	4x10	
Trunk	D	D	C	A	B	B	F							C	C	C	D	E	E	E	F	F	F	B	A	A	A

	Level 3												Level 4													
S/A Outlet No.	22	23	24	25	26	27	28	29	30	31	32	33														
Room Use	MAST	MAST	ENS	WC	WARD	ENS 4	BED 4	BED 4	BED 3	BED 3	TBATH	BED 2														
Btu/Outlet	1368	1368	2215	583	467	2105	2683	2683	2172	2172	718	2627														
Heating Airflow Rate CFM	29	29	46	12	10	44	56	56	45	45	15	55														
Cooling Airflow Rate CFM	46	46	28	6	7	27	72	72	53	53	14	65														
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	53	65	68	71	60	58	63	48	33	27	29	44														
Equivalent Length	190	130	160	130	120	160	150	110	100	110	120	140	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	243	195	228	201	180	218	213	158	133	137	149	184	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.05	0.07	0.06	0.06	0.07	0.06	0.06	0.08	0.10	0.09	0.09	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
Duct Size Round	5	5	5	3	3	5	6	6	5	5	3	6														
Outlet Size	3x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	C	C	D	D	C	F	F	F	B	A	A	B														

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	160	160	498	120	250	155	155	155			
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	25	16	58	17	42	39	48			
Equivalent Length	165	75	125	150	125	170	205	155	50	50	50
Total Effective Length	178	100	141	208	142	212	244	203	50	50	50
Adjusted Pressure	0.07	0.12	0.08	0.06	0.08	0.06	0.05	0.06	0.24	0.24	0.24
Duct Size Round	7.0	7.0	11.5	6.0	9.0	8.0	8.0	8.0			
Inlet Size	FLC	FLC	8	8	8	8	8	8			
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size			30	14	14	14	14	14			
Trunk	Y	Y	Y	X	Z	Y	Z	X			

Return Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
Drop		1653	0.05	19.5	24x14
Z		1653	0.05	19.5	36x10 28x12
Y		1248	0.06	17.0	26x10 22x12
X		275	0.06	9.5	10x8
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
A		1653	0.05	19.5	36x10 28x12
B		1388	0.05	18.5	32x10 26x12
C		685	0.05	14.0	22x8 18x10
D		390	0.06	11.0	14x8 10x10
E		122	0.06	7.5	8x8
F		352	0.06	10.5	12x8 10x10
G					
H					
I					
J					
K					

2012 OBC

Builder: Highcastle Homes

Date: July 7, 2016

Project: Riverwalk Phase 2

Model: 65-1 Lot 31

System 1

Weather Data Brampton 44 -2.2 86 20 48.2

Heat Loss ^T 74.2 deg. F Ht gain ^T 11 deg. F GTA: 4009

Project # PJ-00067
Layout # JB-02338

Level 1

BASE

Run ft. exposed wall A	207	A	A	A	A	A	A	A	A	A	A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height	3.9	AG	3.9	AG	3.9	AG	3.9	AG	3.9	AG	3.9	AG	3.9
Floor area	1865	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
Exposed Ceilings 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
Gross Exp Wall A	807												
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	3.15	23.56	11.31	3	71	34											
East/West	3.15	23.56	27.75	58	1366	1609											
South	3.15	23.56	21.28	12	283	255											
WOB Windows	3.15	23.56	28.32														
Skylight	2.03	36.55	88.23														
Doors	3.01	24.65	3.65	21	518	77											
Net exposed walls A	8.50	8.73	1.29	713		923											
Net exposed walls B	14.49	5.12	0.76														
Exposed Ceilings A	50.00	1.48	0.76														
Exposed Ceilings B	22.86	3.25	1.66														
Exposed Floors	22.05	3.37	0.23														
Foundation Conductive Heatloss	On Grade () or Above ()			13859													
Total Conductive	Heat Loss			16097													
	Heat Gain				2898												
Air Leakage	Heat Loss/Gain	0.8226	0.0575	13241	167												
Ventilation	Case 1		0.08		0.06												
	Case 2		25.64		11.88												
	Case 3	x	0.05		0.06												
Heat Gain People				795	165												
Appliances Loads	1 = 25 percent			0.5	851												
Duct and Pipe loss			10%														
Level 1 HL Total	30,132		Total HL for per room	30132													
Level 1 HG Total	5,305		Total HG per room x 1.3		5305												

Level 2

KIT

FAM

BED

BATH

LAUN

LIV

FOY

DEN/OFF

PWD

DIN

Run ft. exposed wall A	41	A	22	A	37	A	15	A	8	A	29	A	9	A	26	A	6	A	13	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
Ceiling height	10.0		10.0		12.0		12.0		13.0		10.0		19.0		10.0		10.0		10.0		10.0
Floor area	354	Area	229	Area	243	Area	57	Area	169	Area	196	Area	114	Area	119	Area	67	Area	313	Area	Area
Exposed Ceilings A	A	A	61	A	173	A	57	A	A	A	55	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
Exposed Floors	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	410		220		444		180		104		290		171		260		60		130		
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	3.15	23.56	11.31																		
East/West	3.15	23.56	27.75	64	1508	1776															
South	3.15	23.56	21.28																		
Existing Windows	1.99	37.29	22.15																		
Skylight	2.03	36.55	88.23																		
Doors	3.01	24.65	3.65	12	296	44															
Net exposed walls A	14.49	5.12	0.76	334	1710	254															
Net exposed walls B	8.50	8.73	1.29																		
Exposed Ceilings A	50.00	1.48	0.76																		
Exposed Ceilings B	22.86	3.25	1.66																		
Exposed Floors	22.05	3.37	0.23																		
Foundation Conductive Heatloss	On Grade () or Above ()																				
Total Conductive	Heat Loss			3514																	
	Heat Gain				2073																
Air Leakage	Heat Loss/Gain	0.4193	0.0575	1473	119																
Ventilation	Case 1		0.04		0.06																
	Case 2		25.64		11.88																
	Case 3	x	0.05		0.06																
Heat Gain People				174	118																
Appliances Loads	1 = 25 percent			0.5	851																
Duct and Pipe loss			10%																		
Level 2 HL Total	27,827		Total HL for per room	5161																	
Level 2 HG Total	22,774		Total HG per room x 1.3		4110																

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

Dave DaCosta

Dave DaCosta

SB-12 Package

Package J

Total Heat Loss	79,119	btu/h
Total Heat Gain	39,864	btu/h

2012 OBC

Builder: Highcastle Homes

Date: July 7, 2016

Project: Riverwalk Phase 2

Model: 65-1 Lot 31

System 1

Weather Data Brampton 44 -2.2 86 20 48.2

Heat Loss ^T 74.2 deg. F Ht gain ^T 11 deg. F GTA: 4009

Project #
Layout #

Level 3

	MAST	ENS	WC	WARD	ENS 4	BED 4	BED 3	TBATH	BED 2		
Run ft. exposed wall A	20 A	24 A	7 A	A	21 A	31 A	35 A	6 A	29 A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height	9.0	8.0	8.0	8.0	8.0	12.0	11.0	8.0	8.0	8.0	8.0
Floor area	359 Area	181 Area	28 Area	134 Area	72 Area	299 Area	256 Area	102 Area	202 Area	Area	Area
Exposed Ceilings A	359 A	181 A	28 A	134 A	72 A	299 A	256 A	102 A	202 A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	3 Flr	39 Flr	72 Flr	34 Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	180	192	56		168	372	385	48	232		
Gross Exp Wall B											

Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31																
East/West	3.15	23.56	27.75	26	612	721													
South	3.15	23.56	21.28																
Existing Windows	1.99	37.29	22.15																
Skylight	2.03	36.55	88.23																
Doors	3.01	24.65	3.65																
Net exposed walls A	14.49	5.12	0.76	154	789	117	175	896	133	52	266	39		160	819	121	318	1628	241
Net exposed walls B	8.50	8.73	1.29																
Exposed Ceilings A	50.00	1.48	0.76	359	533	273	181	269	138	28	42	21	134	199	102	72	107	55	299
Exposed Ceilings B	22.86	3.25	1.66																
Exposed Floors	22.05	3.37	0.23																
Foundation Conductive Heatloss																			
Total Conductive																			
Air Leakage	Heat Loss/Gain	0.3655	0.0575																
Ventilation	Case 1	0.03	0.06																
	Case 2	25.64	11.88																
	Case 3	x	0.05																
Heat Gain People			239	2	96	63		77	26		20	6		16	6		67	24	
Appliances Loads	1 =.25 percent		6806																
Duct and Pipe loss			10%																
Level 3 HL Total	21,161			2736				2215		583		467		2105		5366		4344	
Level 3 HG Total	11,785			2231				670		155		160		654		3460		2541	

Level 4

Run ft. exposed wall A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height																			
Floor area	Area	Area	Area	Area	Area	Area	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
Exposed Ceilings 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
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
North Shaded	3.15	23.56	11.31																
East/West	3.15	23.56	27.75																
South	3.15	23.56	21.28																
Existing Windows	1.99	37.29	22.15																
Skylight	2.03	36.55	88.23																
Doors	3.01	24.65	3.65																
Net exposed walls A	14.49	5.12	0.76																
Net exposed walls B	8.50	8.73	1.29																
Exposed Ceilings A	50.00	1.48	0.76																
Exposed Ceilings B	22.86	3.25	1.66																
Exposed Floors	22.05	3.37	0.23																
Foundation Conductive Heatloss																			
Total Conductive																			
Air Leakage	Heat Loss/Gain	0.0000	0.0575																
Ventilation	Case 1	0.00	0.06																
	Case 2	25.64	11.88																
	Case 3	x	0.05																
Heat Gain People			239																
Appliances Loads	1 =.25 percent		6806																
Duct and Pipe loss			10%																
Level 4 HL Total	0																		
Level 4 HG Total	0																		

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

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

32964

David DaCosta

David DaCosta

SB-12 Package

Package J

Total Heat Loss	79,119	btu/h
Total Heat Gain	39,864	btu/h

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

Individual BCIN: 32964

David DaCosta

David DaCosta

Package:

Package J

Project:

Brampton

Model:

65-1 Lot 31

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

For systems serving one dwelling unit & conforming to the Ontario Building Code, O.geg 159/93

Location of Installation

Lot #	Plan #
Township	Brampton
Roll #	Permit #
Address	

Builder

Name	Highcastle Homes
Address	
City	
Tel	Fax

Installing Contractor

Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)

a)	☒	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

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

House Type 9.32.3.1(2)

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

System Design Option

1	☐	Exhaust only / forced air system
2	☐	HRV WITH DUCTING / forced air system
3	☒	HRV simplified connection to forced air system
4	☐	HRV full ducting/not coupled to forced air system
		Part 6 design

Total Ventilation Capacity 9.32.3.3(1)

Bsmt & Master Bdrm	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Bathrooms & Kitchen	6 @ 10.6 cfm	63.6 cfm
Other rooms	6 @ 10.6 cfm	63.6 cfm
Total		<u>212</u>

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1 @ 31.8 cfm	31.8 cfm
Other bedrooms	4 @ 15.9 cfm	63.6 cfm
Total		<u>95.4</u>

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	60H	Base
107 cfm		Sones

Heat Recovery Ventilator

Make	VanEE
Model	60H
107 cfm high	53 cfm low
Sensible efficiency @ -25 deg C	55%
Sensible efficiency @ 0 deg C	65%

Supplemental Ventilation Capacity

Total ventilation capacity	212.0
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	<u>116.6</u> cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
ENS	50	AER50C	0.5
TBATH	50	AER50C	0.5
ENS 4	50	AER50C	0.5

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 *David DaCosta*

HRAI # 5190 BCIN # 32964

Date July 7, 2016

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643
e-mail dave@gtadesigns.ca

Page 7
Project # PJ-00067
Layout # JB-02338

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code

For use by Principal Authority

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

A. Project Information

Building number, street name	Unit number	Lot/Con
65-1 Lot 31		
Municipality	Postal code	Reg. Plan number / other description
Brampton		

B. Compliance Option

☒ SB-12 Prescriptive [SB-12 - 2.1.1.]	A B C D E F G H I J K L M or 2.1.1.10 (Additions)	Package J
prescriptive trade-offs used (Specify 2.1.1.2. or 2.1.1.3. sentences being employed):		
☐ SB-12 Performance* [SB-12 - 2.1.2.]	* Attach energy performance calculations using an approved software	
☐ Energy Star®* [SB-12 - 2.1.3.]	* Attach Builder Option Package [BOP] form	
☐ EnerGuide 80® *	* House must be evaluated by NRCAN advisor and meet a rating of 80	

C. Project Design Conditions

Climatic Zone (SB-1):	Heating Equipment	Space Heating Fuel Source
☒ Zone 1 (< 5000 degree days)	☒ ≥ 90% AFUE	☒ Gas ☐ Propane ☐ Solid Fuel
☐ Zone 2 (≥ 5000 degree days)	☐ ≥ 78% < 90% AFUE	☐ Oil ☐ Electric ☐ Earth Energy
Windows+Skylights+Glass Doors		Other Building Conditions
Area of Walls =	437 m ²	☐ ICF Basement ☐ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G =	51 m ²	☐ ICF Above Grade ☐ Slab-on-ground
W,S & G % = 12%		

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

Building Component	RSI / R values	Building Component	Efficiency Ratings
Thermal Insulation		Windows & Doors¹	
Ceiling with Attic Space	50	Windows/Sliding Glass Doors	1.8
Ceiling without Attic Space	31	Skylights	2.8
Exposed Floor	31	Mechanicals	
Walls Above Grade	22	Heating Equip.(AFUE or condensing type)	94%
Basement Walls	12	HRV Efficiency (SRE% at 0° C)	60%
Slab (all >600mm below grade)	x	DHW Heater (EF)	0.67
Slab (edge only ≤600mm below grade)	10	DWHR (CSA B55.1 Efficiency)	
Slab (all ≤600mm below grade, or heated)	10		

E. Performance Design Verification [complete applicable sections if SB-12 Performance, Energy Star or EnerGuide80 options used]

SB-12 Performance:
The annual energy consumption using Subsection 2.1.1. SB-12 Package _____ is _____ GJ (1 GJ = 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 leakage of _____ air changes per hour @50Pa.

Energy Star: Submit the BOP form with Energy Advisor's certification on completion.

Energy Star and EnerGuide80:
Evaluator/Advisor/Rater Name: _____ Evaluator/Advisor/Rater Licence #: _____

F. House Designer [name & BCIN, if applicable, of person providing information herein to substantiate that design meets building code]

Name	BCIN	Signature
David DaCosta	32964	

Package: Project: Package J Brampton System: Model: System 1 65-1 Lot 31

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.394	50324	74.2	26481

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.115	50324	11	1144

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss	Air Leakage Heat Loss Multiplier
Level 1	0.5	26481	16097	0.8226
Level 2	0.3		18946	0.4193
Level 3	0.2		14491	0.3655
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	
	1144		0.0575
BUILDING CONDUCTIVE HEAT GAIN			19885

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	95.4	74.2	0.32	2446

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	95.4	11	1133

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2446	16097	0.08
Level 2	0.3		18946	0.04
Level 3	0.2		14491	0.03
Level 4	0		0	0.00

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1133	0.06
Building	19885	

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

C	HL^T	(1-E) HRV	Multiplier
1.08	74.2	0.32	25.64

Case 2

Ventilation Heat Gain (Direct Ducted Systems)

C	HG^T	Multiplier
1.08	11	11.88

Case 3

Ventilation Heat Loss (Forced Air Systems)

HLbvent		Multiplier
Total Ventilation Load	2446	0.05

Case 3

Ventilation Heat Gain (Forced Air Systems)

Vent Heat Gain		Multiplier
HGbvent	HG*1.3	0.06
1133	1	

Foundation Conductive Heatloss Level 1

4062 Watts 13859 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

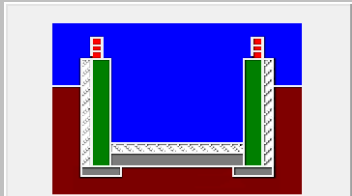
Envelope Air Leakage Calculator

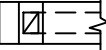
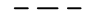
Supplemental tool for CAN/CSA-F280

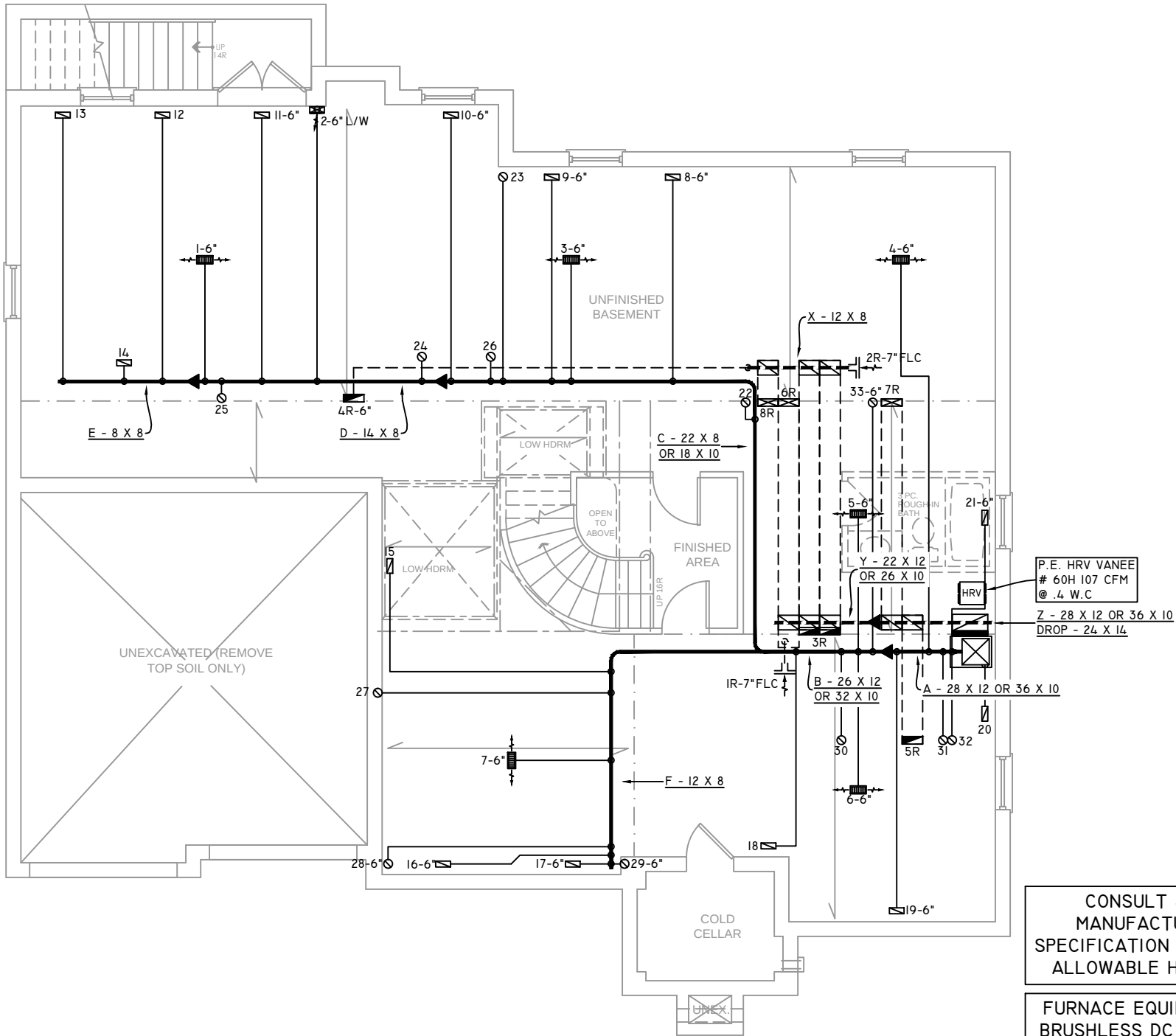
Weather Station Description				
Province:	Ontario ▼			
Region:	Brampton ▼			
Weather Station Location:	Open flat terrain, grass ▼			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest ▼			
Walls:	Heavy ▼			
Flue:	Heavy ▼			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1425.18			
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:	
	47.7		47.7	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.394		
Cooling Air Leakage Rate (ACH/H):		0.115		

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	▼
Region:	Brampton	▼
Site Description		
Soil Conductivity:	High conductivity: moist soil	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	24.46	 Insulation Configuration
Floor Width (m):	7.08	
Exposed Perimeter (m):	63.09	
Wall Height (m):	3.05	
Depth Below Grade (m):	1.86	
Window Area (m ²):	6.78	
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):		4062

	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



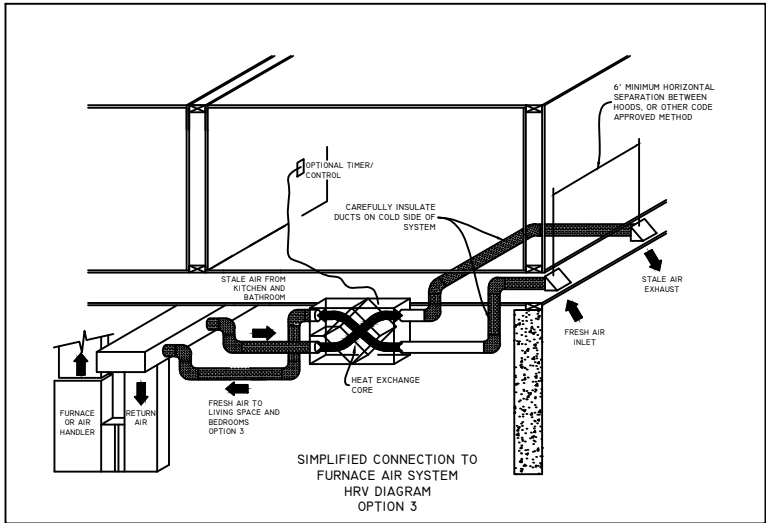
CONSULT JOIST MANUFACTURER'S SPECIFICATION REGARDING ALLOWABLE HOLE SIZE

FURNACE EQUIPPED WITH BRUSHLESS DC MOTOR AS PER OBC 12.3.1.5 (2)

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

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

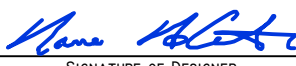
FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED



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 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.



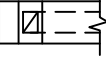
2985 DREW ROAD
SUITE 202,
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L4T 0A4 TEL: 905-671-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

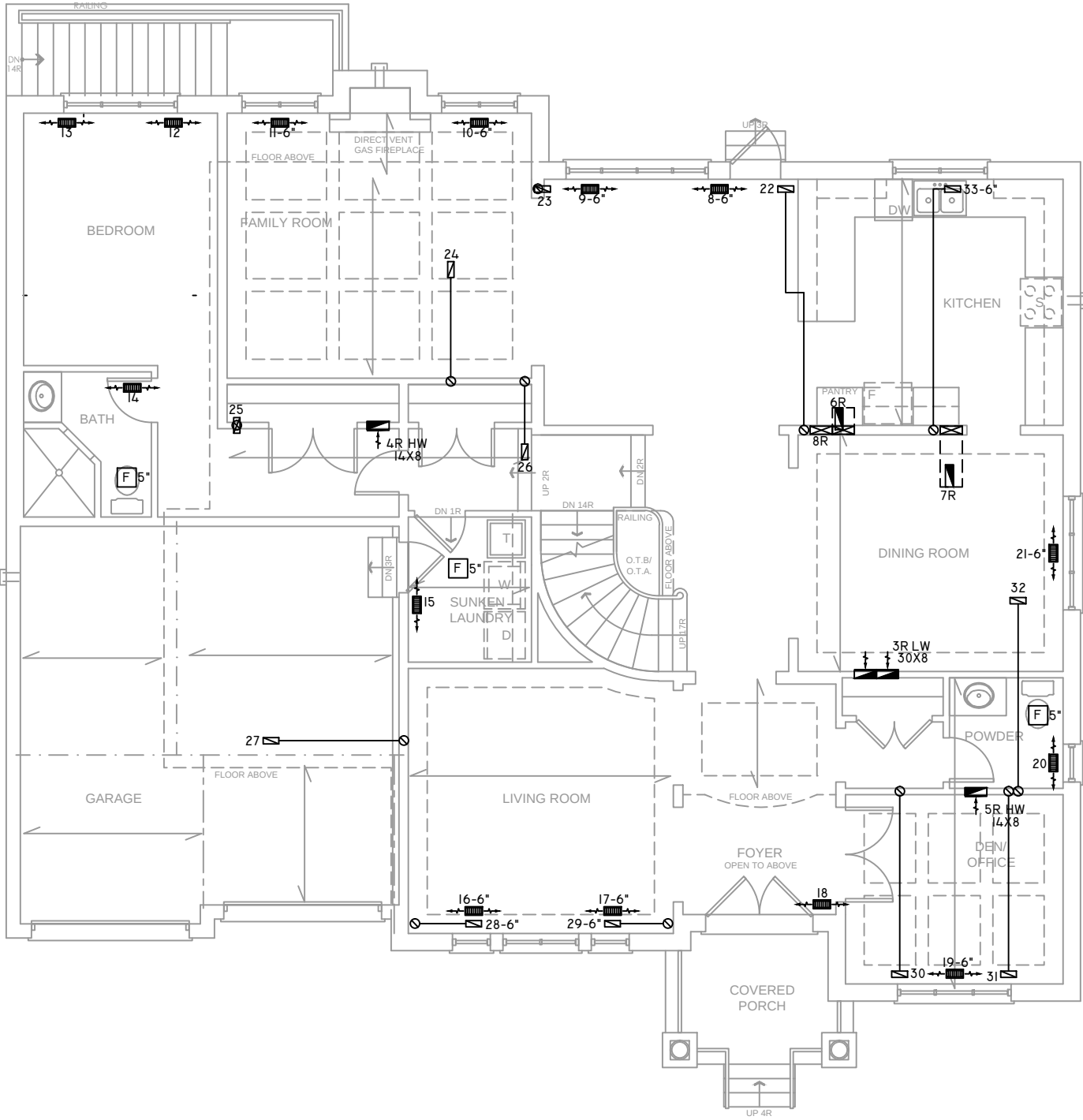
HEAT-LOSS	79,119	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC961004CNA	OR EQUAL.
UNIT HEATING INPUT	100,000	BTU/HR.
UNIT HEATING OUTPUT	96,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1653	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	3	4
1ST FLOOR	14	3	4
BASEMENT	7	2	

FLOOR PLAN:	BASEMENT
DRAWN BY:	AM
CHECKED:	DD
LAYOUT NO.	JB-02338
SQFT	4009
DRAWING NO.	MI

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	65-1 LOT 31
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT
SCALE:	1/8" = 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 VOLUME DAMPER		RETURN ROUND DUCT		RETURN AIR FROM BASEMENT SECOND FLOOR		THERMOSTAT
							PRINCIPAL EXHAUST FAN SWITCH		W/R & PRINCIPAL EXHAUST FAN



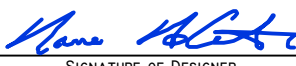
KITCHEN EXHAUST
100 CFM MIN. 6"

- CONSULT JOIST MANUFACTURER'S SPECIFICATION REGARDING ALLOWABLE HOLE SIZE
- CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED
- INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
- ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (II)
- FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED

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

SIGNATURE OF DESIGNER

ZONE I COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

OBC 2012

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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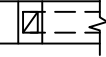
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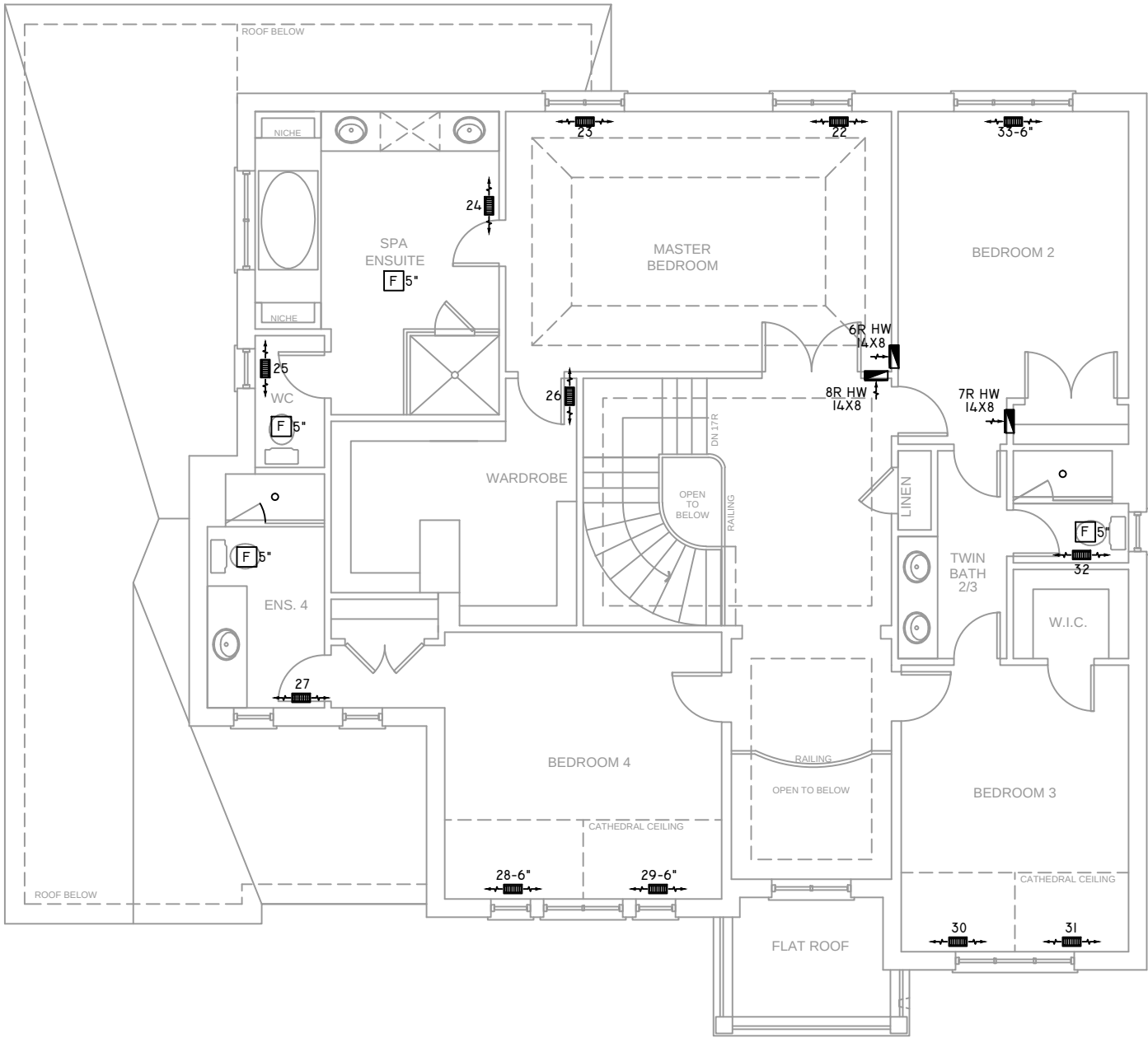
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UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC961004CNA	OR EQUAL.
UNIT HEATING INPUT	100,000	BTU/HR.
UNIT HEATING OUTPUT	96,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1653	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	3	4
1ST FLOOR	14	3	4
BASEMENT	7	2	

FLOOR PLAN:		
GROUND FLOOR		
DRAWN BY: AM	CHECKED: DD	SQFT 4009
LAYOUT NO. JB-02338	DRAWING NO. M2	

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	65-I LOT 31
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT
SCALE:	1/8" = 1'-0"

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



INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

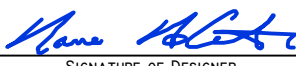
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DAVID DA COSTA  B.C.I.N. 32964

SIGNATURE OF DESIGNER

OBC 2012

ZONE I COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES

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



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L4T 0A4 TEL: 905-671-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	79,119	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC961004CNA	OR EQUAL.
UNIT HEATING INPUT	100,000	BTU/HR.
UNIT HEATING OUTPUT	96,000	BTU/HR.
A/C COOLING CAPACITY	3.5	TONS.
FAN SPEED	1653	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	3	4
1ST FLOOR	14	3	4
BASEMENT	7	2	

FLOOR PLAN: SECOND FLOOR		
DRAWN BY: AM	CHECKED: DD	SQFT 4009
LAYOUT NO. JB-02338	DRAWING NO. M3	

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	65-I LOT 31
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT
SCALE:	1/8" = 1'-0"