

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:	
65-4			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-00862
Heating and Cooling Load Calculations		Builder	Highcastle Homes	
Air System Design		Project	Riverwalk Phase 2	
Residential mechanical ventilation Design Summary		Model	65-4	
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: 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>August 6, 2015</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-00862	
Building Location					
Address (Model): 65-4			Site: Riverwalk Phase 2		
Model:			Lot:		
City and Province: Brampton			Postal code:		
Calculations based on					
Dimensional information based on:			n/a		
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: Shelterd			
HRV? VanEE 40H+		Internal shading: Light-translucent Occupants: 5			
Sensible Eff. at -25C 55%		Apparent Effect. at -0C 72%		Units: Imperial Area Sq. ft 4193	
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**

2015

August 6, 2015

Project: **Riverwalk Phase 2**

Model: **65-4**

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-00862**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	23,177 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	3.5 Ton
Level 2 Net Load	24,650 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-1004CNA	Model		Cond.-----	3.5
Level 3 Net Load	18,701 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	66,529 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	36,215 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Total Heat Loss + 10%	73,182 Btu/h	Heating Air Flow Proportioning Factor	0.0248 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	53406 ft³	Cooling Air Flow Proportioning Factor	0.0353 cfm/btuh	Aux. Heat				(Brushless DC OBC 12.3.1.5.(2))	
Ventilation Load	2,574 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1653 cfm	Cooling Check	1280 cfm
Ventilation PVC	75 cfm	S/A Temp	124 deg. F.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	54 deg. F.	Selected cfm>	1653 cfm	Cooling Air Flow Rate	1280 cfm

S/A Outlet No.	Level 1 Outlets												Level 2 Outlets											
	21	22	23	24	25	26							11	12	13	14	15	16	17	18	19	20		
Room Use	BASE	BASE	BASE	BASE	BASE	BASE							FAM	FAM	KIT	KIT	DIN	LIV	FOY	FOY	DEN	LAUND		
Btu/Outlet	3863	3863	3863	3863	3863	3863							1717	1717	2877	2877	2058	3269	2066	2066	3190	2812		
Heating Airflow Rate CFM	96	96	96	96	96	96							43	43	71	71	51	81	51	51	79	70		
Cooling Airflow Rate CFM	9	9	9	9	9	9							76	76	84	84	80	81	86	86	81	99		
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	48	32	18	35	39	30							57	50	42	35	6	30	37	44	51	47		
Equivalent Length	110	100	130	100	90	140	90	90	90	90	90	90	100	130	140	110	160	130	110	140	140	140	90	90
Total Effective Length	158	132	148	135	129	170	90	90	90	90	90	90	157	180	182	145	166	160	147	184	191	187	90	90
Adjusted Pressure	0.08	0.10	0.09	0.10	0.10	0.08	0.14	0.14	0.14	0.14	0.14	0.14	0.08	0.07	0.07	0.09	0.08	0.08	0.09	0.07	0.07	0.07	0.14	0.14
Duct Size Round	6	6	6	6	6	6							6	6	6	6	6	6	6	6	6	6		
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	B	A	A	C	C	C							B	B	B	A	C	C	C	D	D	D		

S/A Outlet No.	Level 3 Outlets										Level 4 Outlets													
	1	2	3	4	5	6	7	8	9	10														
Room Use	MAST	MAST	ENS 2	BED 2	BED 3	S.ENS	S.ENS	BED 4	ENS	ENS														
Btu/Outlet	1810	1810	739	2625	2612	1949	1949	2866	1170	1170														
Heating Airflow Rate CFM	45	45	18	65	65	48	48	71	29	29														
Cooling Airflow Rate CFM	44	44	14	60	61	26	26	65	26	26														
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	42	38	26	53	61	61	69	69	65	52														
Equivalent Length	140	170	170	140	130	120	110	120	150	110	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Total Effective Length	182	208	196	193	191	181	179	189	215	162	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Adjusted Pressure	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.08	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Duct Size Round	5	5	4	6	6	5	5	6	4	4														
Outlet Size	3x10	3x10	3x10	4x10	4x10	3x10	3x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	C	C	D	D	D	B	B	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	150	100	150	150	423	200	200	280			
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	32	48	55	35	8	37	14	27			
Equivalent Length	215	175	205	215	145	190	145	130	70	70	70
Total Effective Length	247	223	260	250	153	227	159	157	70	70	70
Adjusted Pressure	0.05	0.05	0.05	0.05	0.08	0.05	0.07	0.07	0.17	0.17	0.17
Duct Size Round	8.0	6.0	8.0	8.0	10.5	9.0	8.5	8.0			
Inlet Size	8	8	8	8	8	8	8	FLC			
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	14	14	14	30	14	14				
Trunk	Z	Y	X	Y	Z	X	Y	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	1080	0.05	16.5	32x8	24x10
X	630	0.05	13.5	20x8	
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing					
Trunk	CFM	Press.	Round	Rect. Size	
A	735	0.06	14.0	22x8	18x10
B	353	0.06	10.5	12x8	
C	917	0.07	14.5	24x8	18x10
D	362	0.07	10.5	12x8	10x10
E					
F					
G					
H					
I					
J					
K					

2012 OBC

Builder: Highcastle Homes

Date: August 6, 2015

Project: Riverwalk Phase 2

Model: 65-4

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: 4193

Project # PJ-00067
Layout # JB-00862

Level 1

BASE

Run ft. exposed wall A	194	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
Ceiling height	2.0	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG
Floor area	1912	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
Exposed Ceilings 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
Gross Exp Wall A	388																
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														
East/West	3.15	23.56	27.75	12	283	333											
South	3.15	23.56	21.28	12	283	255											
Existing Windows	1.99	37.29	22.15														
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	343		444											
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	Slab On Grade (x)			10725													
Total Conductive	Heat Loss			11808													
	Heat Gain				1109												
Air Leakage	Heat Loss/Gain	0.9235	0.0540	10904		60											
Ventilation	Case 1		0.07														
	Case 2		22.44														
	Case 3	x	0.04														
Heat Gain People				465		57											
Appliances Loads	1 =.25 percent																
Duct and Pipe loss																	
Level 1 HL Total	23,177			23177													
Level 1 HG Total	1,593					1593											

Level 2

FAM

KIT

DIN

LIV

FOY

DEN

MUD/LAUND

Run ft. exposed wall A	30	A	47	A	16	A	24	A	15	A	23	A	28	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
Ceiling height	11.0		11.0		11.0		11.0		17.0		11.0		11.0				
Floor area	345	Area	478	Area	309	Area	202	Area	142	Area	203	Area	179	Area	Area	Area	Area
Exposed Ceilings A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	330		517		176		264		255		253		308				
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	40				942	1110	77				1814	2137	30				707	638	52				1225	1443	52				1225	1443	52				1225	1443
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	290				1485	220	440	2253	334	146	748	111	212	1086	161					177	906	134	201	1029	153	287	1470	218								
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				Slab On Grade (x)		x																																				
Total Conductive		Heat Loss																																								
		Heat Gain																																								
Air Leakage		Heat Loss/Gain		0.3756		0.0540																																				
Ventilation		Case 1		0.03		0.05																																				
		Case 2		22.44		11.88																																				
		Case 3		x		0.04		0.05																																		
Heat Gain People						239																																				
Appliances Loads				1 =.25 percent		7290		1.0		1822		0.5		911		0.5		911				1.0		1822				1.0		1822												
Duct and Pipe loss				10%																																						
Level 2 HL Total		24,650				Total HL for per room		3434				5755		4734		2058		3269		2304		4133		3190		2812		2792														
Level 2 HG Total		23,544				Total HG per room x 1.3		4280				4734		2261								4881		2292		2792																

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

Package J

Total Heat Loss	66,529	btu/h
Total Heat Gain	36,215	btu/h

2012 OBC	Builder: Highcastle Homes	Date: August 6, 2015	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: 4193	Project # PJ-00067	Layout # JB-00862
	Project: Riverwalk Phase 2	Model: 65-4															

Level 3		MAST		ENS 2		BED 2		BED 3		S.ENS		BED 4		ENS											
Run ft. exposed wall A		34	A	6 A		27 A		26 A		32 A		31 A		19 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		8.0		8.0		8.0		8.0		8.0		8.0		8.0											
Floor area		528 Area		100 Area		279 Area		300 Area		191 Area		238 Area		334 Area		Area		Area		Area		Area		Area	
Exposed Ceilings A		528 A		100 A		279 A		300 A		191 A		238 A		334 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		272		48		216		208		256		248		152											
Gross Exp Wall B																									
Components		R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	
North Shaded		3.15	23.56	11.31																					
East/West		3.15	23.56	27.75	26	612	721				22	518	610	22	518	610	20	471	555	26	612	721	24	565	666
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	246	1260	187	40	205	30	194	993	147	186	952	141	236	1209	179	222	1137	169	128	655	97
Net exposed walls B		8.50	8.73	1.29																					
Exposed Ceilings A		50.00	1.48	0.76	528	784	401	100	148	76	279	414	212	300	445	228	191	283	145	238	353	181	334	496	254
Exposed Ceilings B		22.86	3.25	1.66																					
Exposed Floors		22.05	3.37	0.23													191	643	43						
Foundation Conductive Heatloss																									
Total Conductive	Heat Loss				2656			542		1926			1916				2606			2102			1716		
	Heat Gain					1309		277		970			980					923		1071			1017		
Air Leakage	Heat Loss/Gain		0.3240	0.0540	860	71		175	15	624	52		621	53			844	50		681	58		556	55	
Ventilation	Case 1		0.02	0.05																					
	Case 2		22.44	11.88																					
	Case 3	x	0.04	0.05																					
Heat Gain People				239	2	105	67		21	14	1	76	50	1	76	50	103	47		83	55		68	52	
Appliances Loads		1 =.25 percent		7290																					
Duct and Pipe loss				10%													1	345	92						
Level 3 HL Total		18,701	Total HL for per room		3621			739		2625			2612				3898			2866			2340		
Level 3 HG Total		11,077	Total HG per room x 1.3			2503		397		1704			1718				1445			1849			1461		

Level 4																			
Run ft. exposed wall A	A	A	2015	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
Ceiling height																			
Floor 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
Exposed Ceilings 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
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	Heat Loss																		
	Heat Gain																		
Air Leakage	Heat Loss/Gain	0.0000	0.0540																
Ventilation	Case 1		0.00																
	Case 2		22.44																
	Case 3	x	0.04																
Heat Gain People			239																
Appliances Loads	1 =.25 percent		7290																
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

SB-12 Package

Package J

Total Heat Loss	66,529	btu/h
Total Heat Gain	36,215	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:

65-4

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 @ 20 cfm	40 cfm	
Other Bedrooms	3 @ 10 cfm	30 cfm	
Bathrooms & Kitchen	5 @ 10 cfm	50 cfm	
Other rooms	5 @ 10 cfm	50 cfm	
Total		170	

Principal Ventilation Capacity 9.32.3.4(1)			
Master bedroom	1 @ 30 cfm	30 cfm	
Other bedrooms	3 @ 15 cfm	45 cfm	
Total		75	

Principal Exhaust Fan Capacity		
Make	Model	Location
VanEE	40H+	Base
80 cfm		Sones

Heat Recovery Ventilator	
Make	VanEE
Model	40H+
80 cfm high	40 cfm low
Sensible efficiency @ -25 deg C	55%
Sensible efficiency @ 0 deg C	63%

Supplemental Ventilation Capacity	
Total ventilation capacity	170.0
Less principal exhaust capacity	75.0
REQUIRED supplemental vent. Capacity	95.0 cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
S.Ens	50	770	2.5
Pwd.	50	770	2.5
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	<i>David DaCosta</i>		
HRAI #	5190	BCIN #	32964
Date	August 6, 2015		

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-00862

This form is used to summarize the energy efficiency design of the project. Information on completing this form is on the reverse

For use by Principal Authority

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

A. Project Information

Building number, street name	Unit number	Lot/Con
65-4		
Municipality	Postal code	Reg. Plan number / other description
Brampton		

B. Compliance Option

☒ SB-12 Prescriptive [SB-12 - 2.1.1.]	Table: Package: A B C D E F G H I J K L M	Package J
☐ SB-12 Performance* [SB-12 - 2.1.2.]	* Attach energy performance calculations using an approved software	
☐ Energy Star®* [SB-12 - 2.1.3.]	* Attach 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
Gross Wall Area = 361 m²	☐ ICF Basement ☐ Walkout Basement ☐ Log/Post&Beam
Gross Window+ Area = 44 m²	☐ ICF Above Grade ☐ Slab-on-ground
% Windows+ 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	Space Heating Equip. ²	94%
Basement Walls	12	HRV Efficiency (%)	60%
Slab (all >600mm below grade)	x	DHW Heater (EF)	0.67
Slab (edge only ≤600mm below grade)	10	NOTES	
Slab (all ≤600mm below grade, or heated)	10	1. Provide U-Value in W/m2.K, or ER rating	
		2. Provide AFUE or indicate if condensing type combined system used	

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: BOP form attached. The house will be labeled on completion by:
Energy Star and EnerGuide80:
Evaluator/Advisor/Rater Name: _____ Evaluator/Advisor/Rater Licence #: _____

F. Designers [names of designers who are responsible for the building code design and whose plans accompany the permit application]

Architectural	Mechanical
	David DaCosta 

Package: Package J System: System 1
Project: Brampton Model: 65-4

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL ^Δ T	HL _{leak}
0.018	0.306	53406	74.2	21809

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG ^Δ T	HG Leak
0.018	0.089	53406	11	943

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss	Air Leakage Heat Loss Multiplier
1	0.5	21809	11808	0.9235
2	0.3		17421	0.3756
3	0.2		13464	0.3240
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	
	943		0.0540
BUILDING CONDUCTIVE HEAT GAIN		17447	

Levels this Dwelling	
3	

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	75	74.2	0.28	1683	1.1	75	11	891		
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	891	0.05			
	1	0.5	1683	11808	0.07	Building	17447				
	2	0.3		17421	0.03						
	3	0.2		13464	0.02						
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	22.44		C	HG^T	11.88			
	1.08	74.2	0.28			1.08	11				
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		1683	0.04		HGbvent		HG*1.3	891	0.05	
						891		1			

Foundation Conductive Heatloss Level 1

3143 Watts 10725 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

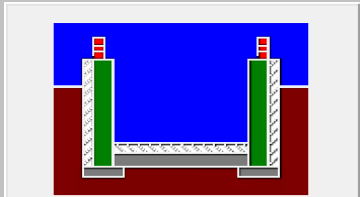
Envelope Air Leakage Calculator

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):	6.40			
Building Configuration				6.4
Type:	Detached ▼			
Number of Stories:	Two ▼			
Foundation:	Full ▼			
House Volume (m ³):	566.3 1512.46			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 185.83 cm ² 3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	37.5		37.5	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Envelope Air Leakage Rate				
Heating Air Leakage Rate (ACH/H):		0.306		
Cooling Air Leakage Rate (ACH/H):		0.089		

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):	21.18	 Insulation Configuration
Floor Width (m):	8.39	
Exposed Perimeter (m):	59.13	
Wall Height (m):	2.74	
Depth Below Grade (m):	2.13	
Window Area (m ²):	2.23	
Door Area (m ²):	1.95	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	23	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		3143

SUPPLY AIR
RETURN AIR
THERMOSTAT
PRINCIPAL EXHAUST FAN SWITCH
WIR & PRINCIPAL EXHAUST FAN

S.A.
R.A.
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RETURN AIR GRILLE
(SIZE INDICATED ON DRAWING)
RETURN AIR RISER UP TO
FLOOR ABOVE
RETURN AIR FROM BASEMENT
SECOND FLOOR

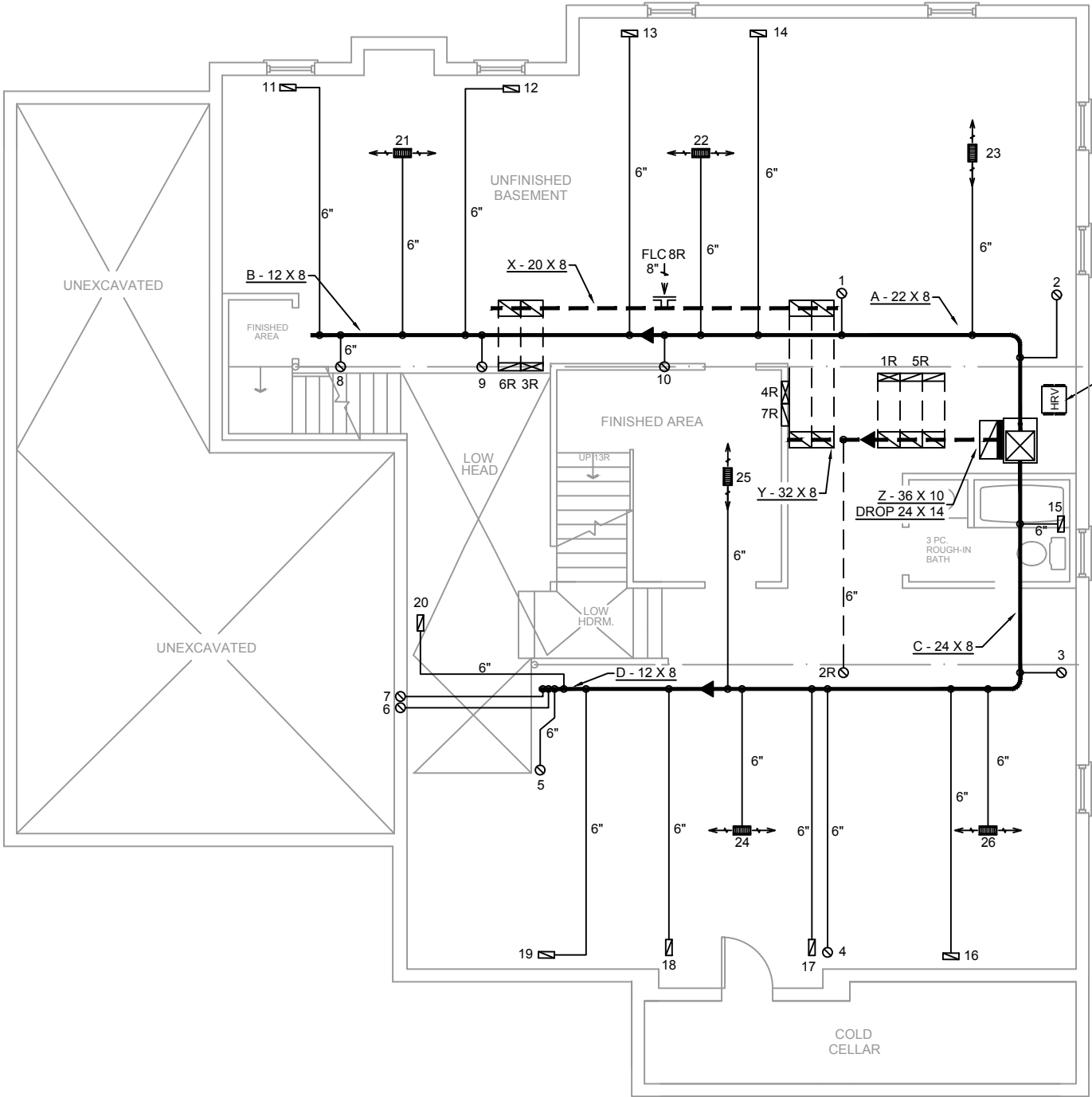
DUCT CONNECTION
TO JOIST LINING
RETURN AIR PIPE RISER
RETURN ROUND DUCT

LOW/HIGH WALL/KICK
HRV EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER

Ⓢ
Ⓡ
Ⓣ
Ⓦ
Ⓟ

FLEX DUCT
RIDIT ROUND DUCT
SUPPLY DIFFUSER

Ⓢ
Ⓡ
Ⓣ
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Ⓟ



P.E. HRV VANEE
40H+ 80 CFM
@ .4 W.C

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

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

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

OBC 2012

ZONE 1 COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES
INSTALLATION TO COMPLY WITH
THE LATEST ONTARIO BUILDING
CODE.
ALL SUPPLY OUTLETS TO BE 5"
DIA. UNLESS OTHERWISE
SPECIFIED.
ALL R/A PARTITIONS 6" (FIRST
FLOOR ONLY)
INSULATE DUCTS IN
UNCONDITIONED SPACES R12
UNDERCUT ALL DOORS 1" MIN.
HEATING CONTRACTOR MUST
WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS
ORIGINAL PLAN ARE NOT THE
RESPONSABILITY OF GTA
DESIGNS.
GTA DESIGNS MUST BE
CONSULTED IF KITCHEN
EXHAUST EXCEEDS 700 CFM
DEPRESSURIZATION MAY OCCUR
WITHIN THE DWELLING

gtaDesigns

2985 DREW ROAD
SUITE 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 416-268-6820
e-mail: dave@gtadesigns.ca
web: www.gtadesigns.ca

HEAT-LOSS	66,529			BTU/HR.
UNIT MAKE	AMANA			
UNIT MODEL	GMEC96-1004CNA			
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	10	4	4	
1ST FLOOR	10	3	3	
BASEMENT	6	1		

DATE:	AUGUST 06, 2015		
CLIENT:	HIGHCASTLE HOMES		
MODEL:	65-4		
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE:	1/8" = 1'-0"		
FLOOR PLAN:	BASEMENT		
DRAWN BY:	CHECKED:	SQFT	
RB	DD	4193	
LAYOUT NO.	DRAWING NO.		
JB-00862	M1		

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

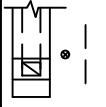
David Da Costa  B.C.I.N. 32964
Signature of Designer

SUPPLY AIR
RETURN AIR
THERMOSTAT
PRINCIPAL EXHAUST FAN SWITCH
W/R & PRINCIPAL EXHAUST FAN

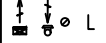
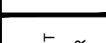
S.A.
R.A.
⊙
Ⓢ
Ⓟ

RETURN AIR GRILLE
(SIZE INDICATED ON DRAWING)
RETURN AIR RISER UP TO
FLOOR ABOVE
RETURN AIR FROM BASEMENT
SECOND FLOOR

DUCT CONNECTION
TO JOIST LINING
RETURN AIR PIPE RISER
RETURN ROUND DUCT

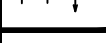
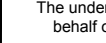


LOW/HIGH WALL/KICK SUPPLY DIFFUSER
HRYV EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER



FLEX DUCT
RIDIT ROUND DUCT
SUPPLY DIFFUSER

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QUALIFICATION INFORMATION

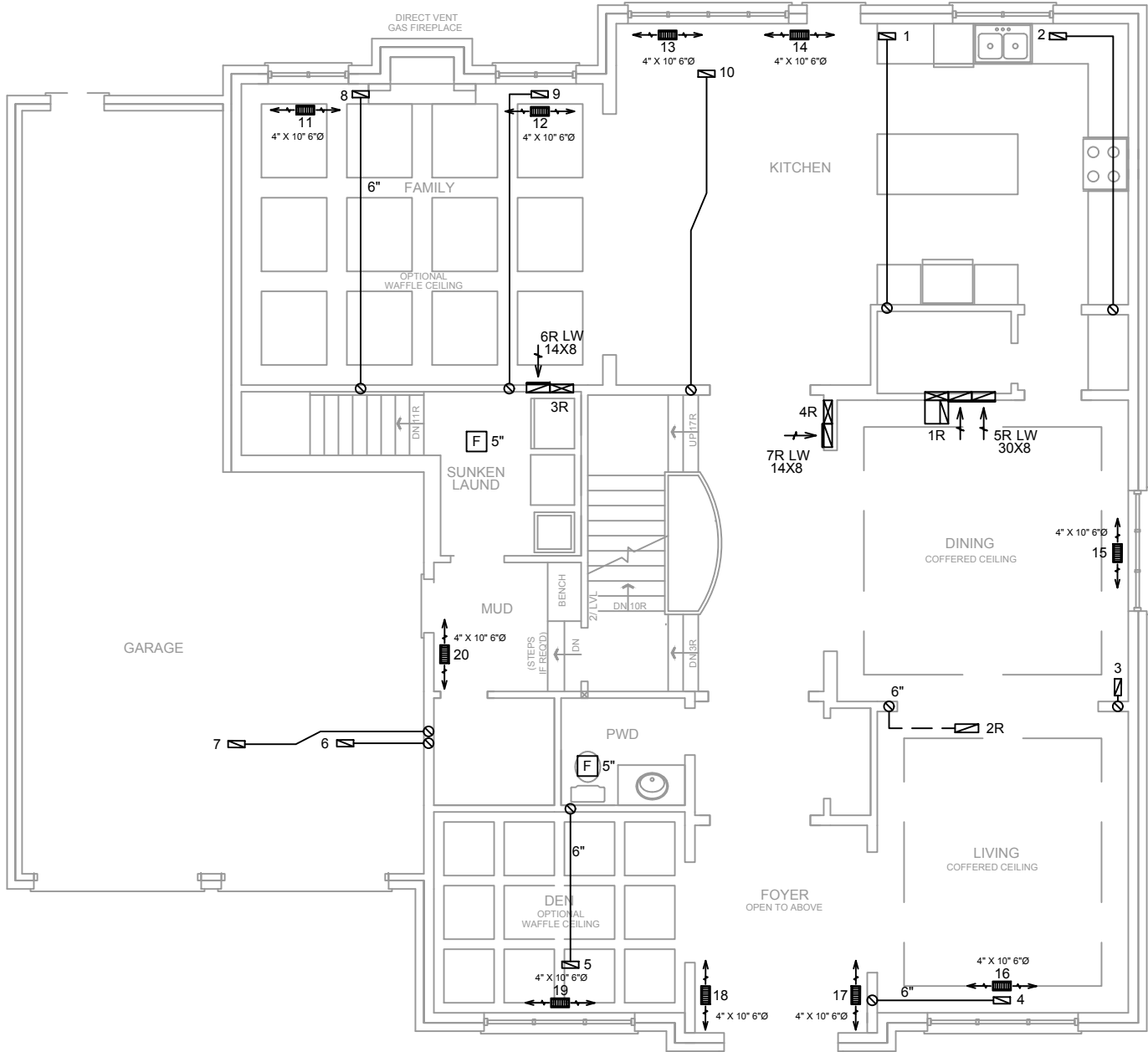
Required unless design is exempt under Division C 3.2.5.1 of the Ontario building code

David Da Costa



B.C.I.N. 32964

Signature of Designer



KITCHEN EXHAUST
100 CFM MIN. 6"

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. (11)

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

OBC 2012

ZONE 1 COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

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

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

HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS. ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSABILITY OF GTA DESIGNS.

GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING



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web: www.gtadesigns.ca

HEAT-LOSS	66,529			BTU/HR.
UNIT MAKE	AMANA			
UNIT MODEL	GMEC96-1004CNA			
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	10	4	4	
1ST FLOOR	10	3	3	
BASEMENT	6	1		

DATE:	AUGUST 06, 2015		
CLIENT:	HIGHCASTLE HOMES		
MODEL:	65-4		
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE:	1/8" = 1'-0"		
FLOOR PLAN:	GROUND FLOOR		
DRAWN BY:	CHECKED:	SQFT	
RB	DD	4193	
LAYOUT NO.	DRAWING NO.		
JB-00862	M2		

S.A.
R.A.
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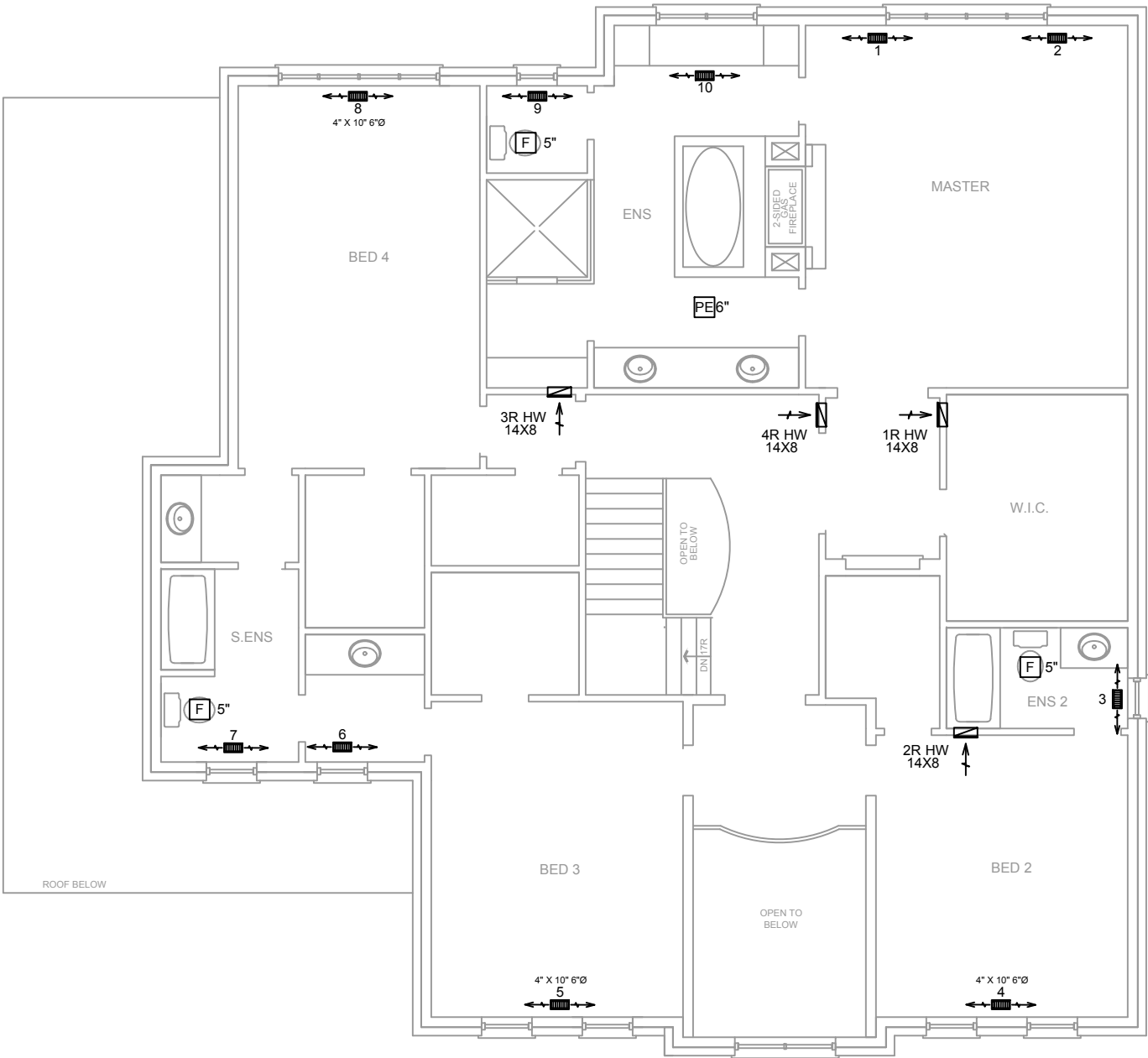
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FLOOR ABOVE
RETURN AIR FROM BASEMENT
SECOND FLOOR

DUCT CONNECTION
TO JOIST LINING
RETURN AIR PIPE RISER
RETURN ROUND DUCT

LOW/HIGH WALL/KICK SUPPLY DIFFUSER
HRV EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER

FLEX DUCT
RIDIT ROUND DUCT
SUPPLY DIFFUSER

SUPPLY AIR
RETURN AIR
THERMOSTAT
PRINCIPAL EXHAUST FAN SWITCH
W/R & PRINCIPAL EXHAUST FAN



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. (11)

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

OBC 2012

ZONE 1 COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

NOTES
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INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" MIN.
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ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSABILITY OF GTA DESIGNS.
GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING

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HEAT-LOSS	66,529			BTU/HR.
UNIT MAKE	AMANA			
UNIT MODEL	GMEC96-1004CNA			
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UNIT HEATING OUTPUT	96,000			BTU/HR.
A/C COOLING CAPACITY	3.5			TONS.
FAN SPEED	1653			
	# OF RUNS	S/A	R/A	FANS
3RD FLOOR				
2ND FLOOR	10	4	4	
1ST FLOOR	10	3	3	
BASEMENT	6	1		

DATE:	AUGUST 06, 2015		
CLIENT:	HIGHCASTLE HOMES		
MODEL:	65-4		
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE:	1/8" = 1'-0"		
FLOOR PLAN:	SECOND FLOOR		
DRAWN BY:	CHECKED:	SQFT	
RB	DD	4193	
LAYOUT NO.	DRAWING NO.		
JB-00862	M3		

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



A circuit diagram enclosed in a rectangular box. It contains three components connected in series: a resistor (represented by a zigzag line), a straight wire (represented by a vertical line), and a battery (represented by a rectangle with a vertical line through its center).

OBC 2012

ZONE 1 COMPLIANCE
PACKAGE "J" REF. TABLE 2.1.1.2.A

LAYOUT NO. JB-00862	DRAWING NO. M4
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