

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:	11
87-2-B-WOD Lot 11		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-02490
Heating and Cooling Load Calculations		Builder	Highcastle Homes
Air System Design		Project	Riverwalk Phase 2
Residential mechanical ventilation Design Summary		Model	87-2-B-WOD Lot 11
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 17, 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-02490	
Building Location					
Address (Model): 87-2-B-WOD Lot 11			Site: Riverwalk Phase 2		
Model:			Lot: 11		
City and Province: Brampton			Postal code:		
Calculations based on					
Dimensional information based on: Highcastle Homes					
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: 7
Sensible Eff. at -25C 55%		Apparent Effect. at -0C 68%	Units: Imperial		Area Sq ft: 6402
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: **August 17, 2016**

Project: **Riverwalk Phase 2**

Model: **87-2-B-WOD Lot 11**

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

David DaCosta

Project # **PJ-00067**
Layout # **JB-02490**

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DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	20,315 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	2.5 Ton
Level 2 Net Load	16,440 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-0803BNA	Model		Cond.-----	2.5
Level 3 Net Load	21,118 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	80000	Input Btu/h		Coil -----	2.5
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	76800	Output Btu/h			
Total Heat Loss	57,872 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	29,399 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	63,659 Btu/h	Heating Air Flow Proportioning Factor	0.0203 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	39378 ft³	Cooling Air Flow Proportioning Factor	0.0357 cfm/btuh	Aux. Heat				(Brushless DC OBC 12.3.1.5.(2))	
Ventilation Load	4,176 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1172 cfm	Cooling Check	1049 cfm
Ventilation PVC	111.3 cfm	S/A Temp	131 deg. F.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	61 deg. F.	Selected cfm>	1172 cfm	Cooling Air Flow Rate	1049 cfm

	Level 1														Level 2													
S/A Outlet No.	1	2	3	4	5									6	7	8	9	10	11	12	13							
Room Use	BASE	BASE	BASE	BASE	BASE									DEN	DEN	PWD	FOY	LIV	LIV	LIV	DIN							
Btu/Outlet	4063	4063	4063	4063	4063									2981	2981	753	2330	1891	1891	1891	1725							
Heating Airflow Rate CFM	82	82	82	82	82									60	60	15	47	38	38	38	35							
Cooling Airflow Rate CFM	7	7	7	7	7									81	81	10	31	91	91	91	39							
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13			
Actual Duct Length	22	21	44	18	28									55	45	45	38	28	22	26	5							
Equivalent Length	70	120	70	100	100	70	70	70	70	70	70	70	70	130	100	130	70	100	80	90	110	70	70	70	70			
Total Effective Length	92	141	114	118	128	70	70	70	70	70	70	70	70	185	145	175	108	128	102	116	115	70	70	70	70			
Adjusted Pressure	0.14	0.09	0.11	0.11	0.10	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.07	0.09	0.07	0.12	0.10	0.13	0.11	0.11	0.19	0.19	0.19	0.19			
Duct Size Round	6	6	6	6	6									6	6	3	4	6	6	6	4							
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10			
Trunk	D	B	A	B	D									B	B	A	B	C	C	C	D							

	Level 3											Level 4												
S/A Outlet No.	14	15	16	17	18	19	20	21	22															
Room Use	BED 4	BED 4	ENS 4	BED 5	BED 5	BED 5	ENS 5	BED 2	BED 2															
Btu/Outlet	3335	3335	805	2365	2365	2365	95	3226	3226															
Heating Airflow Rate CFM	68	68	16	48	48	48	2	65	65															
Cooling Airflow Rate CFM	83	83	13	71	71	71	2	51	51															
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	64	54	52	46	54	66	40	26	32															
Equivalent Length	130	110	120	130	155	165	120	120	90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	194	164	172	176	209	231	160	146	122	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.07	0.08	0.08	0.07	0.06	0.06	0.08	0.09	0.11	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	3	6	6	6	2	5	5															
Outlet Size	4x10	4x10	3x10	4x10	4x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	A	C	C	C	D	D	D															

Return Branch And Grill Sizing	Grill Pressure Loss											0.02 "w.c.
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	
Inlet Air Volume CFM	210	245	243	158	158	158						
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	9	20	32	40	40	25						
Equivalent Length	110	150	160	185	150	185	50	50	50	50	50	
Total Effective Length	119	170	192	225	190	210	50	50	50	50	50	
Adjusted Pressure	0.10	0.07	0.06	0.05	0.06	0.06	0.24	0.24	0.24	0.24	0.24	
Duct Size Round	8.0	9.0	9.5	8.5	8.0	8.0						
Inlet Size	FLC	8	8	8	8	8						
" "	x	x	x	x	x	x	x	x	x	x	x	
Inlet Size	9X6	14	14	14	14	14						
Trunk	Z	Z				Z						

Return Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
Drop		1172	0.05	17.0	24x12
Z		613	0.06	13.0	18x8 14x10
Y					
X					
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
A		840	0.06	14.5	24x8 18x10
B		591	0.06	13.0	18x8 14x10
C		259	0.06	9.5	10x8 12x8
D		332	0.08	10.0	12x8 10x10
E					
F					
G					
H					
I					
J					
K					

2012 OBC

Builder: Highcastle Homes

Date: August 17, 2016

Project: Riverwalk Phase 2

Model: 87-2-B-WOD Lot 11

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: 6402

Project # PJ-00067
Layout # JB-02490

Level 1				BASE															
Run ft. exposed wall A	111	A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B	
Ceiling height	4.0	AG		4.0	AG	4.0	AG	4.0	AG	4.0	AG	4.0	AG	4.0	AG	4.0	AG	4.0	AG
Floor area	1215	Area		Area		Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	A			A		A		A		A		A		A		A		A	
Exposed Ceilings B	B			B		B		B		B		B		B		B		B	
Exposed Floors	Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A	444																		
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	3	71	64													
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	420		544													
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 ()																		
Total Conductive	Heat Loss			9841															
	Heat Gain			10429		684													
Air Leakage	Heat Loss/Gain	0.8693	0.0539	9066		37													
Ventilation	Case 1		0.14																
	Case 2		25.64																
	Case 3	x	0.08																
Heat Gain People			239	819		63													
Appliances Loads	1 = 25 percent		5194																
Duct and Pipe loss			10%																
Level 1 HL Total	20,315	Total HL for per room		20315															
Level 1 HG Total	1,019	Total HG per room x 1.3				1019													

Level 2				DEN PWD FOY LIV DIN															
Run ft. exposed wall A	47	A		6	A	10	A	38	A	19	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	11.0			11.0		11.0		11.0		11.0		11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Floor area	371	Area		66	Area	177	Area	332	Area	338	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A			A		A		A		A		Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings B	B			B		B		10	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	517			66		110		418		209									
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	57	1343	1582		7	165	149									
Existing Windows	1.99	37.29	22.15																
Skylight	2.03	36.55	88.23					31	764	113									
Doors	3.01	24.65	3.65					64	328	49									
Net exposed walls A	14.49	5.12	0.76	460	2356	349		59	302	45									
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			3698															
	Heat Gain					1931				194									
Air Leakage	Heat Loss/Gain	0.5333	0.0539	1972		104				249		10							
Ventilation	Case 1		0.08							771		31							
	Case 2		25.64																
	Case 3	x	0.08							114		53							
Heat Gain People			239	291		177				37		18							
Appliances Loads	1 = 25 percent		5194																
Duct and Pipe loss			10%																
Level 2 HL Total	16,440	Total HL for per room		5961						753									
Level 2 HG Total	14,445	Total HG per room x 1.3				4564				289									

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	57,872	btu/h
Total Heat Gain	29,399	btu/h

2012 OBC	Builder: Highcastle Homes	Date: August 17, 2016	System 1	Weather Data	Brampton	44	-2.2	86	20	48.2	Project #	PJ-00067
	Project: Riverwalk Phase 2	Model: 87-2-B-WOD Lot 11		Heat Loss ^T	74.2 deg. F	Ht gain ^T	11 deg. F	GTA:	6402	Layout #	JB-02490	JB-02490

Level 3				BED 4			ENS 4			BED 5			ENS 5			BED 2			A			A			A			A			A		
Run ft. exposed wall A				54 A			9 A			47 A			A			39 A			A			A			A			A			A		
Run ft. exposed wall B				B			B			B			B			B			B			B			B			B			B		
Ceiling height				10.0			9.0			10.0			9.0			10.0			9.0			9.0			9.0			9.0			9.0		
Floor area				538 Area			48 Area			576 Area			49 Area			380 Area			Area			Area			Area			Area			Area		
Exposed Ceilings A				538 A			48 A			576 A			49 A			380 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			380 Flr			Flr			Flr			Flr			Flr			Flr		
Gross Exp Wall A				540			81			470						390																	
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	Loss	Gain	Loss	Gain			
North Shaded				3.15	23.56	11.31									6	141	68																
East/West				3.15	23.56	27.75	63	1484	1748			97	2285	2691			30	707	832														
South				3.15	23.56	21.28	20	471	426	7	165	149	20	471	426																		
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	457	2340	347	74	379	56	353	1808	268			354	1813	269													
Net exposed walls B				8.50	8.73	1.29																											
Exposed Ceilings A				50.00	1.48	0.76	538	798	409	48	71	36	576	855	438	49	73	37	380	564	289												
Exposed Ceilings B				22.86	3.25	1.66																											
Exposed Floors				22.05	3.37	0.23												380	1279	86													
Foundation Conductive Heatloss																																	
Total Conductive		Heat Loss					5094			615		5418		73		4503																	
		Heat Gain						2929		242		3823		37		1544																	
Air Leakage		Heat Loss/Gain		0.2309	0.0539		1176	158		142	13	1251	206	17	2	1040	83																
Ventilation		Case 1			0.04	0.09																											
		Case 2			25.64	11.88																											
		Case 3		x	0.08	0.09																											
Heat Gain People						239	1	400	269		48	22	1	426	350	6	3	1	354	142													
Appliances Loads				1 =.25 percent		5194																											
Duct and Pipe loss						10%											1	554	178														
Level 3 HL Total		21,118		Total HL for per room				6670			805		7095		95		6451																
Level 3 HG Total		13,935		Total HG per room x 1.3					4673			360		6004		55		2842															

Level 4				A			A			A			A			A			A			A			A			A			A		
Run ft. exposed wall A	A			A			A			A			A			A			A			A			A			A			A		
Run ft. exposed wall B	B			B			B			B			B			B			B			B			B			B			B		
Ceiling height																																	
Floor area	Area			Area			Area			Area			Area			Area			Area			Area			Area			Area			Area		
Exposed Ceilings A	A			A			A			A			A			A			A			A			A			A			A		
Exposed Ceilings B	B			B			B			B			B			B			B			B			B			B			B		
Exposed Floors	Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr		
Gross Exp Wall A																																	
Gross Exp Wall B																																	
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	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	0.0539																														
Ventilation	Case 1		0.00																														
	Case 2		25.64																														
	Case 3	x	0.08																														
Heat Gain People			239																														
Appliances Loads	1 =.25 percent		5194																														
Duct and Pipe loss			10%																														
Level 4 HL Total	0																																
Level 4 HG Total	0																																

Total Heat Loss	57,872	btu/h
Total Heat Gain	29,399	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

Package: Project: Package J Brampton System: Model: System 1 87-2-B-WOD Lot 11

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.345	39378	74.2	18132

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.100	39378	11	778

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	18132	10429	0.8693
Level 2	0.3		10199	0.5333
Level 3	0.2		15703	0.2309
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	
	778		0.0539
BUILDING CONDUCTIVE HEAT GAIN			14424

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	111.3	74.2	0.32	2854

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	111.3	11	1322

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2854	10429	0.14
Level 2	0.3		10199	0.08
Level 3	0.2		15703	0.04
Level 4	0		0	0.00

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	1322	0.09	
Building	14424		

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	2854	0.08

Case 3

Ventilation Heat Gain (Forced Air Systems)

Vent Heat Gain		Multiplier
HGbvent	HG*1.3	1322
1322	1	

Foundation Conductive Heatloss Level 1

2884 Watts 9841 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

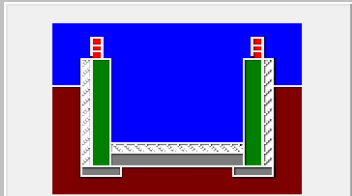
Envelope Air Leakage Calculator

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):	7.32			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m ³):	1115.18			
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:	
	55.65		55.65	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.345		
Cooling Air Leakage Rate (ACH/H):		0.100		

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):	19.30	 Insulation Configuration
Floor Width (m):	5.85	
Exposed Perimeter (m):	33.83	
Wall Height (m):	2.74	
Depth Below Grade (m):	1.52	
Window Area (m ²):	0.28	
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):		2884

SB-12 Package J

Builder: **Highcastle Homes**

Date: **August 17, 2016**

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

Page 3

Project: **Riverwalk Phase 2**

Model: **87-2-B-WOD Lot 11**

System 2

Individual BCIN: 32964

David DaCosta

Project # **PJ-00067**
Layout # **JB-02490**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	24,495 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	2.5 Ton
Level 2 Net Load	18,821 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-0803BNA	Model		Cond.-----	2.5
Level 3 Net Load	14,767 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	80000	Input Btu/h		Coil -----	2.5
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	76800	Output Btu/h			
Total Heat Loss	58,083 btu/h	R/A Plenum Pressure	0.138 "w.c.	E.s.p.	0.50 " W.C.	Min.Output Btu/h	AWH		
Total Heat Gain	28,154 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	63,891 Btu/h	Heating Air Flow Proportioning Factor	0.0202 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	43336 ft³	Cooling Air Flow Proportioning Factor	0.0373 cfm/btuh	Aux. Heat				(Brushless DC OBC 12.3.1.5.(2))	
Ventilation Load	4,176 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1172 cfm	Cooling Check	1049 cfm
Ventilation PVC	111.3 cfm	S/A Temp	131 deg. F.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	61 deg. F.	Selected cfm>	1172 cfm	Cooling Air Flow Rate	1049 cfm

	Level 1														Level 2														
S/A Outlet No.	1	2	3	4	5	21									6	7	8	9	10	11	12								
Room Use	BASE	BASE	BASE	BASE	BASE	STAIR									KIT	KIT	FAM	FAM	FAM	MUD	LAUN								
Btu/Outlet	4301	4301	4301	4301	4301	2991									3011	3011	2212	2212	2212	2704	3457								
Heating Airflow Rate CFM	87	87	87	87	87	60									61	61	45	45	45	55	70								
Cooling Airflow Rate CFM	35	35	35	35	35	6									84	84	89	89	89	14	76								
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	12	26	46	39	59	60									41	53	52	68	58	10	16								
Equivalent Length	110	80	110	100	110	120	70	70	70	70	70	70	70	130	90	130	90	80	100	80	70	70	70	70	70	70			
Total Effective Length	122	106	156	139	169	180	70	70	70	70	70	70	70	171	143	182	158	138	110	96	70	70	70	70	70	70			
Adjusted Pressure	0.11	0.12	0.08	0.09	0.08	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.08	0.09	0.07	0.08	0.09	0.12	0.14	0.19	0.19	0.19	0.19	0.19	0.19			
Duct Size Round	6	6	6	6	6	5									6	6	6	6	6	5	5								
Outlet Size	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10			
Trunk	A	A	B	B	C	C									B	B	C	C	C	A	A								

	Level 3										Level 4															
S/A Outlet No.	13	14	15	16	17	18	19	20																		
Room Use	MAST	MAST	BED 3	ENS 3	ENS 2	BED 6	WC	ENS																		
Btu/Outlet	2203	2203	2693	1329	768	3248	722	1601																		
Heating Airflow Rate CFM	44	44	54	27	15	66	15	32																		
Cooling Airflow Rate CFM	62	62	68	19	6	65	14	44																		
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Actual Duct Length	62	70	72	83	27	27	42	51																		
Equivalent Length	140	120	90	120	150	170	110	90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	
Total Effective Length	202	190	162	203	177	197	152	141	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	
Adjusted Pressure	0.06	0.07	0.08	0.06	0.07	0.07	0.09	0.09	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	4	3	6	3	5																		
Outlet Size	4x10	4x10	4x10	3x10	3x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	
Trunk	B	B	B	C	A	A	A	A																		

Return Branch And Grill Sizing												Return Trunk Duct Sizing					Supply Trunk Duct Sizing					
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	Trunk	CFM	Press.	Round	Rect. Size	Trunk	CFM	Press.	Round	Rect. Size	
Inlet Air Volume CFM	250	448	158	158	158							Drop	1172	0.05	17.0	24x12	A	1172	0.06	16.5	32x8	24x10
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	Z	1172	0.05	17.0	26x10	B	746	0.06	14.0	22x8	18x10
Actual Duct Length	10	48	25	57	61							Y	764	0.05	14.5	24x8	C	308	0.06	10.0	12x8	10x10
Equivalent Length	110	155	105	150	180	50	50	50	50	50	50	X					D					
Total Effective Length	120	203	130	207	241	50	50	50	50	50	50	W					E					
Adjusted Pressure	0.10	0.06	0.09	0.06	0.05	0.24	0.24	0.24	0.24	0.24	0.24	V					F					
Duct Size Round	8.0	11.5	7.5	8.0	8.5							U					G					
Inlet Size	FLC	8	8	8	8							T					H					
" "	x	x	x	x	x	x	x	x	x	x	x	S					I					
Inlet Size	9X6	30	14	14	14							R					J					
Trunk	Z	Y	Z	Y	Y							O					K					



2012 OBC	Builder: Highcastle Homes	Date: August 17, 2016	System 2	Weather Data	Brampton	44	-2.2	86	20	48.2	Heat Loss ^T	74.2 deg. F	Ht gain ^T	11 deg. F	GTA:	6402	Project #	PJ-00067
	Project: Riverwalk Phase 2	Model: 87-2-B-WOD Lot 11															Layout #	JB-02490

Level 3				MAST		BED 3		ENS 3		ENS 2		BED 6		WC		ENS													
Run ft. exposed wall A	24	A		21	A	15	A	8	A	27	A	7	A	9	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	B	B
Ceiling height	10.0			9.0		9.0		9.0		9.0		10.0		9.0		9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Floor area	679	Area		275	Area	52	Area	67	Area	252	Area	24	Area	188	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	679	A		275	A	52	A	67	A	252	A	24	A	188	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B	B			B		B		B		B		B		B		B	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr			Flr		Flr		Flr		15	Flr	20	Flr	Flr		Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	240			189		135		72		270		63		81															
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	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31	40	942	1110	24	565	666	7	165	194	20	471	555	7	165	194	21	495	583								
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	200	1024	152	165	845	125	128	655	97	72	369	55	250	1280	190	56	287	43	60	307	46					
Net exposed walls B	8.50	8.73	1.29																										
Exposed Ceilings A	50.00	1.48	0.76	679	1008	516	275	408	209	52	77	40	67	99	51	252	374	192	24	36	18	188	279	143					
Exposed Ceilings B	22.86	3.25	1.66																										
Exposed Floors	22.05	3.37	0.23									15	50	3	20	67	5												
Foundation Conductive Heatloss																													
Total Conductive	Heat Loss			2974				1818		898		519		2193		487		1081											
	Heat Gain				1778		1000		331		109		941		255		771												
Air Leakage	Heat Loss/Gain	0.4003	0.0668	1191	119		728	67	359	22	208	7	878	63	195	17	433	52											
Ventilation	Case 1		0.06																										
	Case 2		25.64																										
	Case 3	x	0.08																										
Heat Gain People			239	2	241	183	1	147	103	73	34	42	11	177	97	39	26	87	80										
Appliances Loads	1 = .25 percent		5710		478		239							239															
Duct and Pipe loss			10%																										
Level 3 HL Total	14,767		Total HL for per room	4405			2693		1329		768		3248		722		1601												
Level 3 HG Total	9,129		Total HG per room x 1.3		3325		1832		503		166		1742		388		1173												

Level 4				A		A		A		A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall A	A			A		A		A		A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall 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	
Exposed Ceilings 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	
Exposed Floors	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	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	0.0668																										
Ventilation	Case 1		0.00																										
	Case 2		25.64																										
	Case 3	x	0.08																										
Heat Gain People			239																										
Appliances Loads	1 = .25 percent		5710																										
Duct and Pipe loss			10%																										
Level 4 HL Total	0		Total HL for per room																										
Level 4 HG Total	0		Total HG per room x 1.3																										

Total Heat Loss	58,083	btu/h
Total Heat Gain	28,154	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

Package J

Package: Package J System: System 2
Project: Brampton Model: 87-2-B-WOD Lot 11

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.345	43336	74.2	19954

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.100	43336	11	856

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	19954	13431	0.7428
Level 2	0.3		11874	0.5041
Level 3	0.2		9969	0.4003
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	
	856		0.0668
BUILDING CONDUCTIVE HEAT GAIN		12813	

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	111.3	74.2	0.32	2854

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	111.3	11	1322

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2854	13431	0.11
Level 2	0.3		11874	0.07
Level 3	0.2		9969	0.06
Level 4	0		0	0.00

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	1322	0.10	
Building	12813		

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

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

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	11.88
1.08	11	

Case 3

Ventilation Heat Loss (Forced Air Systems)

		HLbvent	Multiplier
Total Ventilation Load	2854		0.08

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	1322	0.10
1322	1		

Foundation Conductive Heatloss Level 1

3605 Watts 12301 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

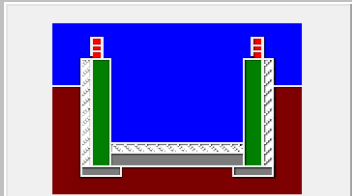
Envelope Air Leakage Calculator

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):	7.32			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Slab-on-Grade			
House Volume (m ³):	1227.28			
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:	
	55.65		55.65	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.345		
Cooling Air Leakage Rate (ACH/H):		0.100		

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):	25.55	 Insulation Configuration
Floor Width (m):	5.54	
Exposed Perimeter (m):	45.72	
Wall Height (m):	2.74	
Depth Below Grade (m):	1.52	
Window Area (m ²):	4.46	
Door Area (m ²):	0.00	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		3605

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: Package J
Project: Brampton
Model: 87-2-B-WOD Lot 11

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	5 @ 10.6 cfm	53 cfm
Bathrooms & Kitchen	7 @ 10.6 cfm	74.2 cfm
Other rooms	6 @ 10.6 cfm	63.6 cfm
Total		<u>233.2</u>

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1 @ 31.8 cfm	31.8 cfm
Other bedrooms	5 @ 15.9 cfm	79.5 cfm
Total		<u>111.3</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	233.2
Less principal exhaust capacity	111.3
REQUIRED supplemental vent. Capacity	<u>121.9</u> cfm

Supplemental Fans 9.32.3.5.

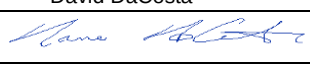
Location	cfm	Model	Sones
Ens 1	50	AER50C	0.5
Ens 2	50	AER50C	0.5
Ens 3	50	AER50C	0.5

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 

HRAI # 5190 BCIN # 32964

Date August 17, 2016



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

Residential Mechanical Ventilation Record (W2)

CSA (F326) Mechanical Ventilation

Project # PJ-00067
Layout # JB-02490

Project Information

Project #: Riverwalk Phase 2 Site/Location: Brampton Notes:
Model/Add.: 87-2-B-WOD Lot 11 Builder/Client: Highcastle Homes

Heating System/ Combustion Appliances	☒ Forced Air	☐ Non-Forced Air	Roll #:	Permit #:	Location		
	☐ Electric	☒ Gas	☐ Oil	☐ Other		Lot & Plan:	
	☐ No Combustion Appliances		No Depressurization Limit			Civic Address:	
	☐ Solid Fuel (Including Fireplace)		5 Pa. Depress. Limit			Name: House ID#:	
Exhaust Equipment	☒ Direct Vent (Sealed Combustion)		No Depressurization Limit		Builder		
	☐ Positive Venting Induced Draft		5 Pa. Depress. Limit			Address: City: P.C.:	
	☐ Natural Draft or B-Vent Atmospheric		5 Pa. Depress. Limit			Phone: Fax:	
	Lowest Depressurization Limit		Pa.			Email Address:	
Total Ventilation Capacity (TVC)	☒ Clothes Dryer(s)		(150 CFM Default)		Designer		
	☐ Downdraft Cook Top		(220 CFM Default)			Name: David DaCosta HRAI #: 5190	
	☐ Other (Exhaust)		(Over 150 CFM)			Address: 2985 Drew Road, Suite 202	
	Depressurization Test/Calc. Required?		☐ Yes	☒ No		City: Mississauga P.C.:	
Exhaust Capacity	Basement & Master Bedroom		2 @ 20 CFM	42 CFM	Installation Checklist		
	Other Bedrooms		5 @ 10 CFM	53 CFM		Name: David DaCosta HRAI #: 5190	
	Bathrooms & Kitchen		7 @ 10 CFM	74 CFM		Address: 2985 Drew Road, Suite 202	
	Other Hab. Rooms		6 @ 10 CFM	64 CFM		City: Mississauga P.C.:	
Total Ventilation Capacity (TVC)		233 CFM		Phone: 905-671-9800 Fax: 647-494-9643			
TVC System	Minimum Continuous Exhaust				Measured TVC System		
	Kitchen(s) @ 60 CFM =		CFM			Email Address: dave@gtadesigns.ca Other:	
	Bathrooms(s) @ 20 CFM =		CFM			I certify this ventilation system design to be in accordance with: ☒ CSA F326 M-91 ☐ R-2000 Signature: <i>David DaCosta</i> Date: January 0, 1900	
	Total		CFM				
Additional (Exhaust) Equipment	Minimum Intermittent Exhaust				Installer		
	Kitchen(s) 1 @ 100 CFM =		100 CFM			☐ Control Functioning	☐ Fans Operating and Clean
	Bathrooms(s) 6 @ 50 CFM =		300 CFM			☐ Filters Clean	☐ Flow Measuring Stations
	Total		400 CFM			☐ Dampers Accessible	☐ Insulated Ducts Sealed
Location: Base		Manufacturer/Model: VanEE 60H HVI Listed		TVC System Supply Airflow Measured			
Design Airflow 107 CFM High 53 CFM Low		HRV/ERV 65 % Sensible Efficiency @ 0°C watts		CFM High CFM Low			
HRV/ERV 55 % Sensible Efficiency @ -25°C watts				TVC System Exhaust Airflow Measured			
				CFM High CFM Low			
Location: Model: CFM: Sones:		Name: HRAI:		Address:			
Ens 1 AER50C 50 2.5		City: P.C.:		Phone: Fax:			
Ens 2 AER50C 50 2.5		Email Address:		I Certify this Ventilation System install to be in Accordance with: CSA F326 M-91 R-2000 Signature: _____ Date: _____			
Ens 3 AER50C 50 2.5		Fan Manufacturer: Broan or Equiv. HVI Listed					

Prepared By: David DaCosta	HRAI #: 5190	Model/Address: 87-2-B-WOD Lot 11
Signature: <i>David DaCosta</i>	Date: August 17, 2016	Job #: Riverwalk Phase Official Use:

Project Information

Project #: JB-02490 Site/Location: Brampton Notes:
Model/Add.: 87-2-B-WOD Lot 11 Builder/Client: Highcastle Homes

Floor Area

Total Floor Area: 6402 ft²

(Total Heated Floor Area Including Basement; Count Crawl Space as 1/2 actual Area)

Assumed Air Changes Per Hour at 50 Pascal's

Tight R-2000	0.5	ACH	Typical R-2000	1.0	ACH	Prairies/North (New)	1.0	ACH
Atlantic (New)	1.5	ACH	Other Provinces (New)	1.4	ACH	Older Homes	2.5	ACH
or actual test						House ACH50	<u>1.4</u>	

Combustion Appliance Depressurization Limit

If Spillage Susceptible	-5	Pa.	Flow Factor	0.022	Depressurization Limit @ TVCC	-5	Pa.
If Non-Spillage Susceptible	-10	Pa.	Flow Factor	0.037			
					Flow Factor	<u>0.022</u>	

Allowable Net Exhaust

Floor Area (301) 6402 ft² x ACH50 (302) 1.4 x Flow Factor (304) 0.022 = 197 CFM
Allowable Net Exhaust @ TVCC

Actual Net Exhaust

TVCC Exhaust	<u>233</u>	CFM
minus		
TVCC Supply	<u>107</u>	CFM
Actual Net Exhaust @ TVCC	<u>126</u>	CFM

Note: If Supply is greater than Exhaust, use worksheet # W-3B

Required Make-Up Air Flow

Actual Net Exhaust @ TVCC (Line 308)	<u>126</u>	CFM
minus		
Allowable Net Exhaust @ TVCC (Line 305)	<u>197</u>	CFM
Required Make-Up Airflow @ TVCC	<u>0</u>	CFM
At Depressurization Limit (Line 303)	<u>-5</u>	Pa.

Description of Make-Up Air System

Make-Up Air is not Required

On-Site Depressurization Test

☐ Required ☒ Not Required

Prepared By: David DaCosta	HRAI #: 5190	Model/Address: 87-2-B-WOD Lot 11
Signature: 	Date: August 17, 2016	Job #: JB-02490 Official Use:

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-02490

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
87-2-B-WOD Lot 11		
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 = 598 m ²	W,S & G % = 11%	☐ ICF Basement ☐ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 68 m ²		☐ ICF Above Grade ☐ Slab-on-ground

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.

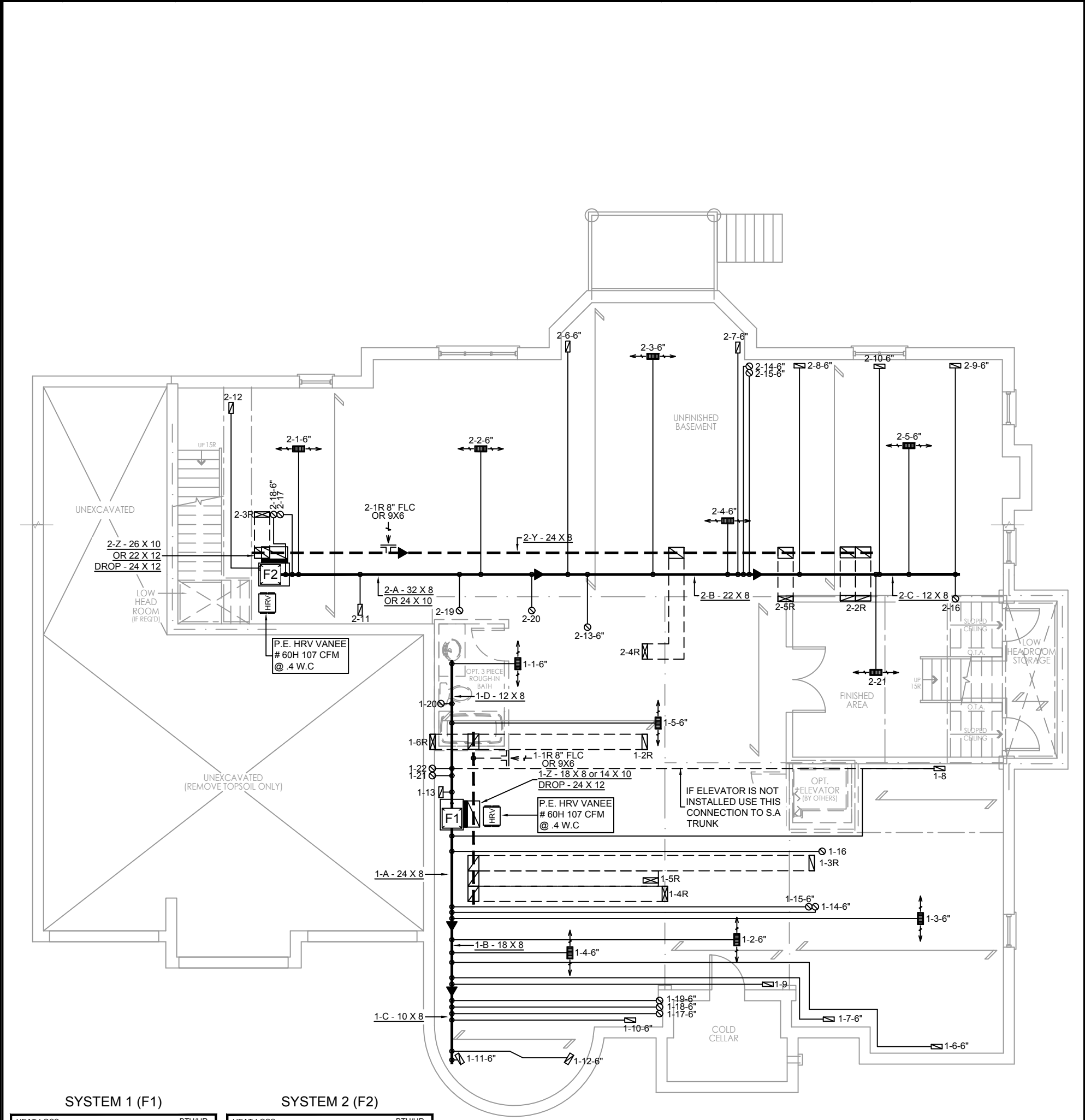
Energy Star: Submit the BOP form with Energy Advisor's certification on completion.

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

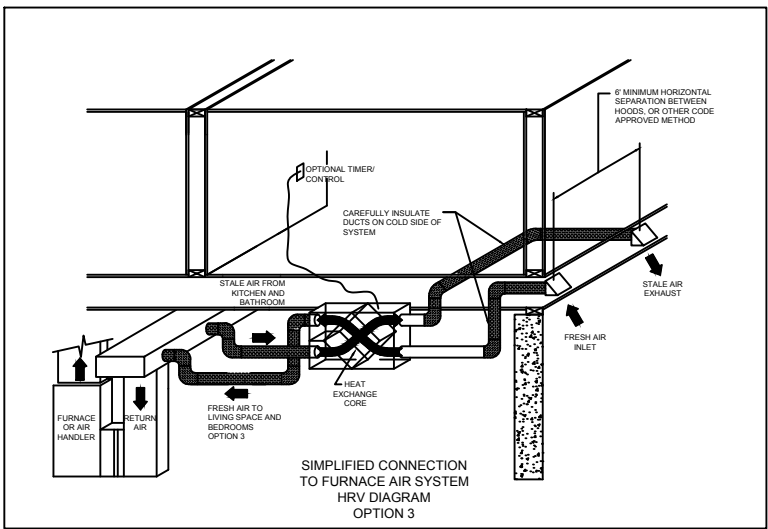
F. House Designer [name & BCIN, if applicable, of person providing information herein to substantiate that design meets building code]

Name	BCIN	Signature
David DaCosta	32964	

	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIDIT 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



SYSTEM 1 (F1)		SYSTEM 2 (F2)	
HEAT-LOSS	BTU/HR.	HEAT-LOSS	BTU/HR.
57,872		58,083	
UNIT MAKE		UNIT MAKE	
AMANA		AMANA	
UNIT MODEL		UNIT MODEL	
GMEC96-0803BNA		GMEC96-0803BNA	
UNIT HEATING INPUT	BTU/HR.	UNIT HEATING INPUT	BTU/HR.
80,000		80,000	
UNIT HEATING OUTPUT	BTU/HR.	UNIT HEATING OUTPUT	BTU/HR.
76,800		76,800	
A/C COOLING CAPACITY	TONS.	A/C COOLING CAPACITY	TONS.
2.5		2.5	
FAN SPEED	CFM	FAN SPEED	CFM
1172		1172	



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. (11)

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.

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 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	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	6	6
1ST FLOOR	15	3	2
BASEMENT	11	2	

FLOOR PLAN: BASEMENT		
DRAWN BY: JL	CHECKED: DD	SOFT 6402
LAYOUT NO. JB-02490	DRAWING NO. M1	

OBC 2012

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

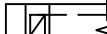
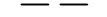
DATE: **AUGUST 17, 2016**

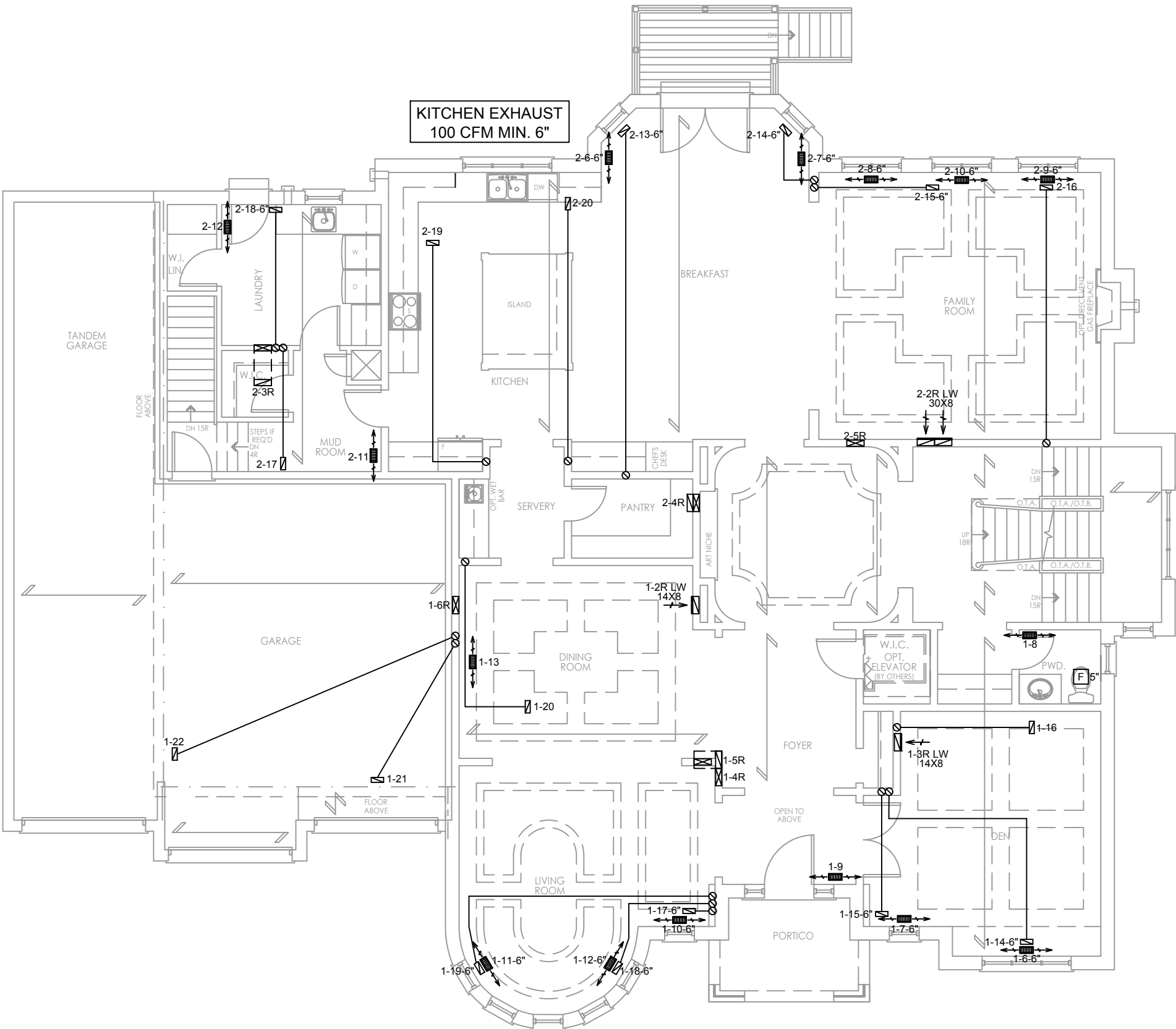
CLIENT: **HIGHCASTLE HOMES**

MODEL: **87-2-B-WOD LOT 11**

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
	RIDIT ROUND DUCT		HRV EXHAUST GRILL		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN ROUND DUCT		RETURN AIR FROM BASEMENT SECOND FLOOR		THERMOSTAT
			VOLUME DAMPER						PRINCIPAL EXHAUST FAN SWITCH
									W/R & PRINCIPAL EXHAUST FAN



CIRCULATION PRINCIPAL
FAN SWITCH
TO BE CENTRALLY
LOCATED

INSULATE ALL DUCTS IN
UNCONDITIONED
SPACES MIN. R12

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

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QUALIFICATION INFORMATION

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

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.
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gtaDesigns

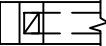
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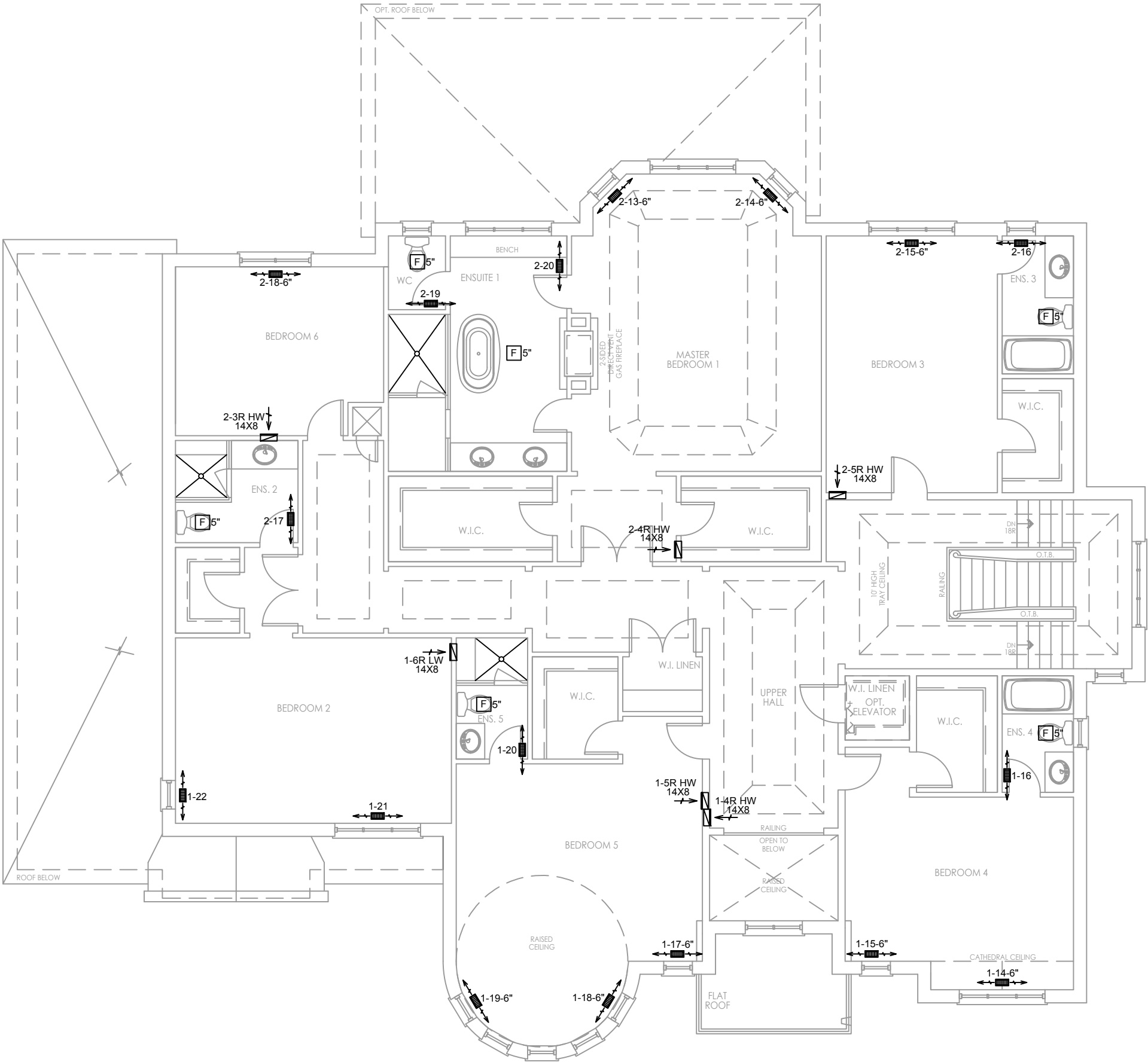
HEAT-LOSS	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	6	6
1ST FLOOR	15	3	2
BASEMENT	11	2	

FLOOR PLAN:	GROUND FLOOR
DRAWN BY:	JL
CHECKED:	DD
LAYOUT NO.	JB-02490
SQFT	6402
DRAWING NO.	M2

DATE:	AUGUST 17, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	87-2-B-WOD LOT 11
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT
SCALE:	1/8" = 1'-0"

 FLEX DUCT	 RIDIT ROUND DUCT	 SUPPLY DIFFUSER	 LOW/HIGH WALL/KICK SUPPLY DIFFUSER	 HRV EXHAUST GRILL	 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.   F PE	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)

The undersigned has reviewed and takes responsibility for this design on behalf of GTA Designs Inc. and has the qualifications and meets the requirements set out in the Building Code to be a designer

QUALIFICATION INFORMATION

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

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

OBC 2012

ZONE 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 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	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	17	6	6
1ST FLOOR	15	3	2
BASEMENT	11	2	

FLOOR PLAN: SECOND FLOOR	
DRAWN BY: JL	CHECKED: DD
LAYOUT NO. JB-02490	DRAWING NO. 6402 M3

DATE: AUGUST 17, 2016
CLIENT: HIGHCASTLE HOMES
MODEL: 87-2-B-WOD LOT 11
PROJECT: RIVERWALK PHASE 2 BRAMPTON, ONT
SCALE: 1/8" = 1'-0"