Schedule 1: Designer Information

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

A. Project Information

Building number, street name: **87-2-C-WOB Lot 6**		Lot:	6
		Lot/con.	
Municipality: **Brampton**	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **David DaCosta**		Firm: **gtaDesigns Inc.**	
Street address: **2985 Drew Road, Suite 202**		Unit no.	Lot/con.
Municipality: **Mississauga**	Postal code: **L4T 0A4**	Province: **Ontario**	E-mail: dave@gtadesigns.ca
Telephone number: **(905) 671-9800**	Fax number: **(647) 494-9643**	Cell number: **(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-02492**

Heating and Cooling Load Calculations	Builder	**Highcastle Homes**
Air System Design	Project	**Riverwalk Phase 2**
Residential mechanical ventilation Design Summary **Residential System Design per CAN/CSA-F280-12**	Model	**87-2-C-WOB Lot 6**
Residential New Construction - Forced Air	SB-12	**Package J**

D. Declaration of Designer

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

(print name)

❑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____

Firm BCIN: _____

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

Individual BCIN: **32964**

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

❑ The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification:

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

August 17, 2016
Date

Signature of Designer

NOTE:

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

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

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

These documents issued for the use of **Highcastle Homes** and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Layout No. **JB-02492**

Building Location

Address (Model):	**87-2-C-WOB Lot 6**	Site:	**Riverwalk Phase 2**
Model:		Lot:	**6**
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

Outdoor temp	**-2.2**	Indoor temp:	**72**	Mean soil temp	**48**

Cooling design conditions

Outdoor temp	**86**	Indoor temp:	**75**	Latitude:	**44**

Above grade walls

Style A:	**As per Selected OBC SB12 Package J**	**R**	**22**
Style B:	**Existing Walls (When Applicable)**	**R**	**12**
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12 Package J**	**R**	**12**
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12 Package J**		
Style B:			

Exposed floors

Style A:	**As per Selected OBC SB12 Package J**	**R**	**31**
Style B:			

Windows

Style A:	**As per Selected OBC SB12 Package J**	**R**	**3.15**
Style B:	**Existing Windows (When Applicable)**	**R**	**1.99**
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12 Package J**	**R**	**50**
Style B:	**As per Selected OBC SB12 Package J**	**R**	**31**
Style C:			

Doors

Style A:	**As per Selected OBC SB12 Package J**	**R**	**3.01**
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12 Package J**	**R**	**2.03**
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**

Air System Design

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

SB-12 Package J

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

Project # PJ-00067
Layout # JB-02492

Builder: Highcastle Homes
Date: August 17, 2016
Project: Riverwalk Phase 2
Model: 87-2-C-WOB Lot 6

System 1

DESIGN LOAD SPECIFICATIONS		
Level 1 Net Load	21,480	btu/h
Level 2 Net Load	16,337	btu/h
Level 3 Net Load	21,689	btu/h
Level 4 Net Load	0	btu/h
Total Heat Loss	59,506	btu/h
Total Heat Gain	28,767	btu/h
Combo System HL + 10%	65,457	Btuh.
Building Volume Vb	38008	ft³
Ventilation Load	4,176	Btuh.
Ventilation PVC	111.3	cfm
Supply Branch and Grill Sizing		

AIR DISTRIBUTION & PRESSURE		
Equipment External Static Pressure	0.5	"w.c.
Additional Equipment Pressure Drop	0.225	"w.c.
Available Design Pressure	0.275	"w.c.
Return Branch Longest Effective Length	300	ft
R/A Plenum Pressure	0.138	"w.c.
S/A Plenum Pressure	0.14	"w.c.
Heating Air Flow Proportioning Factor	0.0197	cfm/btuh
Cooling Air Flow Proportioning Facter	0.0365	cfm/btuh
R/A Temp	70	deg. F.
S/A Temp	131	deg. F.
Diffuser loss	0.01	"w.c.

FURNACE/AIR HANDLER DATA:		
Make	Amana	
Model	GMEC96-0803BNA	
Input Btu/h	80000	
Output Btu/h	76800	
E.s.p.	0.50	" W.C.
Water Temp		deg. F.
AFUE	96%	
Aux. Heat		
SB-12 Package	Package J	
Temp. Rise>>>	61	deg. F.

BOILER/WATER HEATER DATA:		
Make	Type	
Model		
Input Btu/h		
Output Btu/h		
Min.Output Btu/h	AWH	

Blower DATA:			
Blower Speed Selected:	W2	Blower Type	ECM
		(Brushless DC OBC 12.3.1.5.(2))	
Heating Check	1172 cfm	Cooling Check	1049 cfm
Selected cfm>	1172 cfm	Cooling Air Flow Rate	1049 cfm

A/C UNIT DATA:		
Amana	2.5	Ton
Cond.----------	2.5	
Coil ----------	2.5	

Level 1														
S/A Outlet No.	1	2	3	4	5									
Room Use	BASE	BASE	BASE	BASE	BASE									
Btu/Outlet	4296	4296	4296	4296	4296									
Heating Airflow Rate CFM	85	85	85	85	85									
Cooling Airflow Rate CFM	9	9	9	9	9									
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
Actual Duct Length	22	21	44	18	28									
Equivalent Length	70	120	70	100	100	70	70	70	70	70	70	70	70	70
Total Effective Length	92	141	114	118	128	70	70	70	70	70	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	0.19
Duct Size Round	6	6	6	6	6									
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	D	B	A	B	D									

Level 2														
S/A Outlet No.	6	7	8	9	10	11	12	13						
Room Use	DEN	DEN	PWD	FOY	LIV	LIV	LIV	DIN						
Btu/Outlet	3227	3227	756	2424	1657	1657	1657	1733						
Heating Airflow Rate CFM	64	64	15	48	33	33	33	34						
Cooling Airflow Rate CFM	68	68	11	40	86	86	86	38						
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
Actual Duct Length	55	45	45	38	28	22	26	5						
Equivalent Length	130	100	130	70	100	80	90	110	70	70	70	70	70	70
Total Effective Length	185	145	175	108	128	102	116	115	70	70	70	70	70	70
Adjusted Pressure	0.07	0.09	0.07	0.12	0.10	0.13	0.11	0.11	0.19	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	5	3	5	6	6	6	4						
Outlet Size	4x10	3x10	3x10	3x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	B	B	A	B	C	C	C	D						

Level 3														
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	3127	3127	801	2299	2299	2299	95	3821	3821					
Heating Airflow Rate CFM	62	62	16	45	45	45	2	75	75					
Cooling Airflow Rate CFM	82	82	13	71	71	71	2	63	63					
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
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
Total Effective Length	194	164	172	176	209	231	160	146	122	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
Duct Size Round	6	6	3	6	6	6	2	6	5					
Outlet Size	4x10	4x10	3x10	4x10	4x10	4x10	3x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	A	C	C	C	D	D	D					

Level 4														
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
Equivalent Length	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	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
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10

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	816	0.06	14.5	24x8	18x10
B	578	0.06	12.5	18x8	14x10
C	234	0.06	9.0	8x8	10x7
D	356	0.08	10.0	12x8	10x10
E					
F					
G					
H					
I					
J					
K					

GTADESIGNS

Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643

e-mail dave@gtadesigns.ca

Builder: Highcastle Homes   Date: August 17, 2016   Weather Data Brampton 44 -2.2 86 20 48.2

2012 OBC   Project: Riverwalk Phase 2   Model: 87-2-C-WOB Lot 6   **System 1**   Heat Loss ^T 74.2 deg. F   Ht gain ^T 11 deg. F   GTA: 6402   Project # PJ-00067   Layout # JB-02492

Level 1

Level 1	BASE										
Run ft. exposed wall A	102 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	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG	5.5 AG
Floor area	1159 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	561										
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
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	537		695																				
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 Abo				10888																					
Total Conductive Heat Loss					11476																					
Total Conductive Heat Gain						836																				
Air Leakage Heat Loss/Gain		0.7961	0.0557		9136	47																				
Ventilation Case 1		0.12	0.09																							
Ventilation Case 2		25.64	11.88																							
Ventilation Case 3	x	0.08	0.09		868	79																				
Heat Gain People			239																							
Appliances Loads	1 =.25 percent		5017																							
Duct and Pipe loss			10%																							
Level 1 HL Total	21,480	Total HL for per room			21480																					
Level 1 HG Total	1,249	Total HG per room x 1.3				1249																				

Level 2

Level 2	DEN	PWD	FOY	LIV	DIN						
Run ft. exposed wall A	43 A	6 A	10 A	33 A	19 A	A	A	A	A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Floor area	351 Area	66 Area	177 Area	297 Area	338 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	10 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	473	66	110	363	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	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31																											
East/West	3.15	23.56	27.75	34	801	943				21	495	583	64	1508	1776															
South	3.15	23.56	21.28				7	165	149																					
Existing Windows	1.99	37.29	22.15																											
Skylight	2.03	36.55	88.23																											
Doors	3.01	24.65	3.65	48	1183	175				28	690	102																		
Net exposed walls A	14.49	5.12	0.76	391	2002	297	59	302	45	61	312	46	299	1531	227	209	1070	159												
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										10	32	17															
Exposed Floors	22.05	3.37	0.23																											
Foundation Conductive Heatloss	On Grade ( ) or Abo		x																											
Total Conductive Heat Loss					3986			467			1497			3071			1070													
Total Conductive Heat Gain						1416			194			731			2019			159												
Air Leakage Heat Loss/Gain		0.5432	0.0557		2165	79		254	11		813	41		1668	112		581	9												
Ventilation Case 1		0.08	0.09																											
Ventilation Case 2		25.64	11.88																											
Ventilation Case 3	x	0.08	0.09		302	133		35	18		113	69		232	190		81	15												
Heat Gain People			239																											
Appliances Loads	1 =.25 percent		5017	1.0		1254							2.5		3135	0.5		627												
Duct and Pipe loss			10%																											
Level 2 HL Total	16,337	Total HL for per room			6453			756			2424			4972			1733													
Level 2 HG Total	13,275	Total HG per room x 1.3				3746			290			1093			7094			1052												

Total Heat Loss	59,506	btu/h
Total Heat Gain	28,767	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

GTADESIGNS

Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643

e-mail dave@gtadesigns.ca

2012 OBC

Builder: Highcastle Homes Date: August 17, 2016

Project: Riverwalk Phase 2 Model: 87-2-C-WOB Lot 6

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-02492

Level 3

				BED 4			ENS 4			BED 5			ENS 5			BED 2																
Run ft. exposed wall A				50	A		9	A		47	A			A		51	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				518	Area		48	Area		532	Area		49	Area		415	Area			Area			Area			Area			Area			Area
Exposed Ceilings A				518	A		48	A		532	A		49	A		415	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		405	Flr			Flr			Flr			Flr			Flr			Flr
Gross Exp Wall A				500			81			470						510																
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	60	1413	1665				94	2214	2608				42	989	1165													
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	420	2151	319	74	379	56	356	1823	270				468	2397	355													
Net exposed walls B		8.50	8.73	1.29																												
Exposed Ceilings A		50.00	1.48	0.76	518	769	394	48	71	36	532	789	404	49	73	37	415	616	315													
Exposed Ceilings B		22.86	3.25	1.66																												
Exposed Floors		22.05	3.37	0.23													405	1363	92													
Foundation Conductive Heatloss																																
Total Conductive	Heat Loss					4804			615			5298			73			5365														
	Heat Gain						2803			242			3708			37			1928													
Air Leakage	Heat Loss/Gain		0.2262	0.0557		1087	156		139	13		1198	207		16	2		1214	107													
Ventilation	Case 1		0.04	0.09																												
	Case 2		25.64	11.88																												
	Case 3	x	0.08	0.09		363	263		47	23		401	348		6	3		406	181													
Heat Gain People				239	1		239				1		239				1		239													
Appliances Loads		1 =.25 percent		5017																												
Duct and Pipe loss				10%													1	658	217													
Level 3 HL Total	21,689	Total HL for per room				6254			801			6897			95			7642														
Level 3 HG Total	14,243	Total HG per room x 1.3					4500			361			5853			56			3474													

Level 4

Run ft. exposed wall A					A			A			A			A			A			A			A			A			A			A
Run ft. exposed wall B					B			B			B			B			B			B			B			B			B			B
Ceiling height																																
Floor area					Area			Area			Area			Area			Area			Area			Area			Area			Area			Area
Exposed Ceilings A					A			A			A			A			A			A			A			A			A			A
Exposed Ceilings B					B			B			B			B			B			B			B			B			B			B
Exposed Floors					Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr			Flr
Gross Exp Wall A																																
Gross Exp Wall B																																
Components		R-Values	Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		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	0.0557																												
Ventilation	Case 1		0.00	0.09																												
	Case 2		25.64	11.88																												
	Case 3	x	0.08	0.09																												
Heat Gain People				239																												
Appliances Loads		1 =.25 percent		5017																												
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	59,506	btu/h
Total Heat Gain	28,767	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

GTADESIGNS

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

Project # PJ-00067
Layout # JB-02492

Package: Package J **System:** System 1
Project: Brampton **Model:** 87-2-C-WOB Lot 6

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.360	38008	74.2	18272

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.104	38008	11	784

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	18272	11476	0.7961
Level 2	0.3		10092	0.5432
Level 3	0.2		16154	0.2262
Level 4	0		0	0.0000

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

		Air Leakage Heat Gain
HG LEAK	784	0.0557
BUILDING CONDUCTIVE HEAT GAIN	14072	

Levels this Dwelling
3

Ventilation Calculations

Vent

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

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2854	11476	0.12
Level 2	0.3		10092	0.08
Level 3	0.2		16154	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	14072	

Case 2

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

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

Case 2

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	11.88
1.08	11	

Case 3

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	0.09
1322	1		

Foundation Conductive Heatloss Level 1	3191	Watts	10888	Btu/h

Foundation Conductive Heatloss Level 2	Watts	Btu/h

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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):	7.77
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Shallow
House Volume (m^3):	1076.39
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: 55.65 Total Exhaust: 55.65

Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

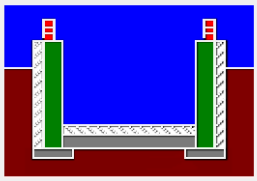
Heating Air Leakage Rate (ACH/H):	**0.360**
Cooling Air Leakage Rate (ACH/H):	**0.104**

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton

Site Description	
Soil Conductivity:	High conductivity: moist soil
Water Table:	Normal (7-10 m, 23-33 Ft)

Foundation Dimensions		
Floor Length (m):	17.69	 Insulation Configuration
Floor Width (m):	6.09	
Exposed Perimeter (m):	31.09	
Wall Height (m):	2.74	
Depth Below Grade (m):	1.07	
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):	**3191**

Air System Design

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

SB-12 Package J

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Individual BCIN: 32964 David DaCosta

Project # PJ-00067
Layout # JB-02492

Builder: Highcastle Homes
Date: August 17, 2016
Project: Riverwalk Phase 2
Model: 87-2-C-WOB Lot 6

System 2

DESIGN LOAD SPECIFICATIONS		
Level 1 Net Load	31,414	btu/h
Level 2 Net Load	18,941	btu/h
Level 3 Net Load	14,822	btu/h
Level 4 Net Load	0	btu/h
Total Heat Loss	65,177	btu/h
Total Heat Gain	30,938	btu/h
Combo System HL + 10%	71,695	Btuh.
Building Volume Vb	43336	ft³
Ventilation Load	4,176	Btuh.
Ventilation PVC	111.3	cfm
Supply Branch and Grill Sizing		

AIR DISTRIBUTION & PRESSURE		
Equipment External Static Pressure	0.5	"w.c.
Additional Equipment Pressure Drop	0.225	"w.c.
Available Design Pressure	0.275	"w.c.
Return Branch Longest Effective Length	300	ft
R/A Plenum Pressure	0.138	"w.c.
S/A Plenum Pressure	0.14	"w.c.
Heating Air Flow Proportioning Factor	0.0180	cfm/btuh
Cooling Air Flow Proportioning Facter	0.0379	cfm/btuh
R/A Temp	70	deg. F.
S/A Temp	131	deg. F.
Diffuser loss	0.01	"w.c.

FURNACE/AIR HANDLER DATA:		
Make	Amana	
Model	GMEC96-0803BNA	
Input Btu/h	80000	
Output Btu/h	76800	
E.s.p.	0.50	" W.C.
Water Temp		deg. F.
AFUE	96%	
Aux. Heat		
SB-12 Package	Package J	
Temp. Rise>>>	61	deg. F.

BOILER/WATER HEATER DATA:		
Make	Type	
Model		
Input Btu/h		
Output Btu/h		
Min.Output Btu/h	AWH	

Blower DATA:			
Blower Speed Selected:	W2	Blower Type	ECM
		(Brushless DC OBC 12.3.1.5.(2))	
Heating Check	1172 cfm	Cooling Check	1172 cfm
Selected cfm>	1172 cfm	Cooling Air Flow Rate	1172 cfm

A/C UNIT DATA:		
Amana	3.0	Ton
Cond.----------	3.0	
Coil ----------	3.0	

Level 1

S/A Outlet No.	1	2	3	4	5	21
Room Use	BASE	BASE	BASE	BASE	BASE	STAIR
Btu/Outlet	5147	5147	5147	5147	5147	5679
Heating Airflow Rate CFM	93	93	93	93	93	102
Cooling Airflow Rate CFM	61	61	61	61	61	8
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	12	26	46	39	59	58
Equivalent Length	110	80	110	100	110	120
Total Effective Length	122	106	156	139	169	178
Adjusted Pressure	0.11	0.12	0.08	0.09	0.08	0.07
Duct Size Round	6	6	6	6	6	6
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	B	B	C	C

Level 2

S/A Outlet No.	6	7	8	9	10	11	12									
Room Use	KIT	KIT	FAM	FAM	FAM	MUD	LAUN									
Btu/Outlet	3031	3031	2227	2227	2227	2721	3479									
Heating Airflow Rate CFM	54	54	40	40	40	49	63									
Cooling Airflow Rate CFM	83	83	87	87	87	14	75									
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
Actual Duct Length	41	53	52	68	58	10	16									
Equivalent Length	130	90	130	90	80	100	80	70	70	70	70	70	70	70	70	70
Total Effective Length	171	143	182	158	138	110	96	70	70	70	70	70	70	70	70	70
Adjusted Pressure	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	0.19	0.19	0.19
Duct Size Round	6	6	6	6	6	5	5									
Outlet Size	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	B	B	C	C	C	A	A									

Level 3

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	2211	2211	2703	1334	771	3260	724	1607								
Heating Airflow Rate CFM	40	40	49	24	14	59	13	29								
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
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
Total Effective Length	202	190	162	203	177	197	152	141	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
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
Trunk	B	B	B	C	A	A	A	A								

Level 4

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
Equivalent Length	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	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
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10

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	250	448	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	10	48	25	57	61						
Equivalent Length	110	155	105	150	180	50	50	50	50	50	50
Total Effective Length	120	203	130	207	241	50	50	50	50	50	50
Adjusted Pressure	0.10	0.06	0.09	0.06	0.05	0.24	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.0	11.5	7.5	8.0	8.5						
Inlet Size	FLC	8	8	8	8						
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	9X6	30	14	14	14						
Trunk	Z	Y	Z	Y	Y						

Return Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
Drop	1172	0.05	17.0	24x12	
Z	1172	0.05	17.0	26x10	22x12
Y	764	0.05	14.5	24x8	18x10
X					
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
A	1172	0.06	16.5	32x8	24x10
B	761	0.06	14.0	22x8	18x10
C	339	0.06	10.5	12x8	10x10
D					
E					
F					
G					
H					
I					
J					
K					

Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643

e-mail dave@gtadesigns.ca

2012 OBC

Builder: Highcastle Homes | Date: August 17, 2016

Project: Riverwalk Phase 2 | Model: 87-2-C-WOB Lot 6

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

Layout # JB-02492

Level 1

				BASE		STAIR																							
Run ft. exposed wall A				55	A	20	A		A		A		A		A		A		A		A		A		A		A		A
Run ft. exposed wall B				75	B		B		B		B		B		B		B		B		B		B		B		B		B
Ceiling height				5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG	5.5	AG
Floor area				1051	Area	249	Area		Area		Area		Area		Area		Area		Area		Area		Area		Area		Area		Area
Exposed Ceilings A					A		A		A		A		A		A		A		A		A		A		A		A		A
Exposed Ceilings B					B		B		B		B		B		B		B		B		B		B		B		B		B
Exposed Floors					Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr
Gross Exp Wall A				303		110																							
Gross Exp Wall B				675																									
Components	R-Values	Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain
North Shaded	3.15	23.56	11.31																										
East/West	3.15	23.56	27.75																										
South	3.15	23.56	21.28	6	141	128																							
WOB Windows	3.15	23.56	27.75	124	2921	3441																							
Skylight	2.03	36.55	88.23																										
Doors	3.01	24.65	3.65	18	444	66																							
Net exposed walls A	8.50	8.73	1.29	155		200	110		142																				
Net exposed walls B	14.49	5.12	0.76	551	2822	418																							
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 Abo				9767			3551																					
Total Conductive: Heat Loss					16094			3551																					
Total Conductive: Heat Gain						4252			142																				
Air Leakage: Heat Loss/Gain		0.5302	0.0588		8534	250		1883	8																				
Ventilation: Case 1		0.07	0.09																										
Ventilation: Case 2		25.64	11.88																										
Ventilation: Case 3	x	0.07	0.09		1107	370		244	12																				
Heat Gain People			239																										
Appliances Loads	1 =.25 percent		5427	1.0		1357																							
Duct and Pipe loss			10%																										
Level 1 HL Total	31,414	Total HL for per room			25735			5679																					
Level 1 HG Total	8,310	Total HG per room	x 1.3			8098			212																				

Level 2

				KIT		FAM			MUD			LAUN																	
Run ft. exposed wall A				37	A	51	A	23	A		29	A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B					B		B		B			B		B		B		B		B		B		B		B		B	
Ceiling height				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				658	Area	509	Area	122	Area		147	Area		Area		Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A					A	4	A		A			A		A		A		A		A		A		A		A		A	
Exposed Ceilings B					B		B		B			B		B		B		B		B		B		B		B		B	
Exposed Floors					Flr		Flr		Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A				407		561		253			319																		
Gross Exp Wall B																													
Components	R-Values	Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain
North Shaded	3.15	23.56	11.31																										
East/West	3.15	23.56	27.75	74	1743	2053	60	1413	1665				17	400	472														
South	3.15	23.56	21.28				11	259	234																				
Existing Windows	1.99	37.29	22.15																										
Skylight	2.03	36.55	88.23																										
Doors	3.01	24.65	3.65	18	444	66				21	518	77	12	296	44														
Net exposed walls A	14.49	5.12	0.76	315	1613	239	490	2509	372	232	1188	176	290	1485	220														
Net exposed walls B	8.50	8.73	1.29																										
Exposed Ceilings A	50.00	1.48	0.76				4	6	3																				
Exposed Ceilings B	22.86	3.25	1.66																										
Exposed Floors	22.05	3.37	0.23																										
Foundation Conductive Heatloss	On Grade ( ) or Abo		x																										
Total Conductive: Heat Loss					3800			4188			1706			2181															
Total Conductive: Heat Gain						2358			2274			253			736														
Air Leakage: Heat Loss/Gain		0.5263	0.0588		2000	139		2204	134		898	15		1148	43														
Ventilation: Case 1		0.07	0.09																										
Ventilation: Case 2		25.64	11.88																										
Ventilation: Case 3	x	0.07	0.09		261	205		288	198		117	22		150	64														
Heat Gain People			239																										
Appliances Loads	1 =.25 percent		5427	0.5		678	2.0		2713				0.5		678														
Duct and Pipe loss			10%																										
Level 2 HL Total	18,941	Total HL for per room			6061			6680			2721			3479															
Level 2 HG Total	13,663	Total HG per room	x 1.3			4394			6914			377			1978														

Total Heat Loss	65,177	btu/h
Total Heat Gain	30,938	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

GTADESIGNS

Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643

e-mail dave@gtadesigns.ca

2012 OBC

Builder: Highcastle Homes Date: August 17, 2016

Project: Riverwalk Phase 2 Model: 87-2-C-WOB Lot 6

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
Layout # JB-02492

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	
Run ft. exposed wall B				B	B	B	B	B	B	B	B	B	B	B	
Ceiling height				10.0	9.0	9.0	9.0	10.0	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	
Exposed Ceilings A				679 A	275 A	52 A	67 A	252 A	24 A	188 A	A	A	A	A	
Exposed Ceilings B				B	B	B	B	B	B	B	B	B	B	B	
Exposed Floors				Flr	Flr	Flr	15 Flr	20 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
North Shaded		3.15	23.56	11.31											
East/West		3.15	23.56	27.75	40 942 1110	24 565 666	7 165 194	20 471 555	7 165 194	21 495 583					
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		0.4180	0.0588	1243 105	760 59	375 19	217 6	916 55	204 15	452 45				
Ventilation	Case 1		0.06	0.09											
	Case 2		25.64	11.88											
	Case 3	x	0.07	0.09	205 155	125 87	62 29	36 9	151 82	34 22	74 67				
Heat Gain People				239	2 478	1 239			1 239						
Appliances Loads		1 =.25 percent		5427											
Duct and Pipe loss				10%											
Level 3 HL Total	14,822	Total HL for per room			4422	2703	1334	771	3260	724	1607				
Level 3 HG Total	8,966	Total HG per room x 1.3			3269	1801	493	162	1712	380	1149				

Level 4

Run ft. exposed wall A				A	A	A	A	A	A	A	A	A	A	A	
Run ft. exposed wall B				B	B	B	B	B	B	B	B	B	B	B	
Ceiling height															
Floor area				Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	
Exposed Ceilings A				A	A	A	A	A	A	A	A	A	A	A	
Exposed Ceilings B				B	B	B	B	B	B	B	B	B	B	B	
Exposed Floors				Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	
Gross Exp Wall A															
Gross Exp Wall B															
Components		R-Values	Loss	Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	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	0.0588											
Ventilation	Case 1		0.00	0.09											
	Case 2		25.64	11.88											
	Case 3	x	0.07	0.09											
Heat Gain People				239											
Appliances Loads		1 =.25 percent		5427											
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	65,177	btu/h
Total Heat Gain	30,938	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

GTADESIGNS

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e-mail dave@gtadesigns.ca

Project # PJ-00067
Layout # JB-02492

Package: Package J **System:** System 2
Project: Brampton **Model:** 87-2-C-WOB Lot 6

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.360	43336	74.2	20834

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.104	43336	11	894

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	20834	19646	0.5302
Level 2	0.3		11874	0.5263
Level 3	0.2		9969	0.4180
Level 4	0		0	0.0000

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

		Air Leakage Heat Gain
HG LEAK	894	0.0588
BUILDING CONDUCTIVE HEAT GAIN	15200	

Levels this Dwelling
3

Ventilation Calculations

Vent

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

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2854	19646	0.07
Level 2	0.3		11874	0.07
Level 3	0.2		9969	0.06
Level 4	0		0	0.00

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1322	0.09
Building	15200	

Case 2

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

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	2854	0.07

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	1322	0.09
1322	1		

Foundation Conductive Heatloss Level 1	3903	Watts	13318	Btu/h

Foundation Conductive Heatloss Level 2	Watts	Btu/h

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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):	7.77
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Shallow
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: 55.65 Total Exhaust: 55.65

Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

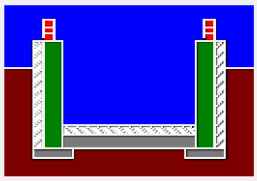
Heating Air Leakage Rate (ACH/H):	**0.360**
Cooling Air Leakage Rate (ACH/H):	**0.104**

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton

Site Description	
Soil Conductivity:	High conductivity: moist soil
Water Table:	Normal (7-10 m, 23-33 Ft)

Foundation Dimensions		
Floor Length (m):	24.29	 Insulation Configuration
Floor Width (m):	4.97	
Exposed Perimeter (m):	22.86	
Wall Height (m):	2.74	
Depth Below Grade (m):	1.07	
Window Area (m^2):	0.56	
Door Area (m^2):	1.67	

Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	

Design Months		
Heating Month	1	

Foundation Loads	
Heating Load (Watts):	**3598**

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 Ft)	
Floor Dimensions		
Length (m):	20.00	Insulation Configuration
Width (m):	1.04	
Exposed Perimeter (m):	22.86	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**305**	

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e-mail dave@gtadesigns.ca

Project # PJ-00067
Layout # JB-02492

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-C-WOB Lot 6

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

Heating System

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

House Type 9.32.3.1(2)

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

System Design Option

1		Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3	x	HRV simplified connection to forced air system
4		HRV full ducting/not coupled to forced air system
	x	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		233.2	

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		111.3	

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	121.9	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		

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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-02492

Project Information

Project #: Riverwalk Phase 2 | Site/Location: Brampton | Notes:
Model/Add.: 87-2-C-WOB Lot 6 | Builder/Client: Highcastle Homes

Heating System/ Combustion appliances

- [x] Forced Air
- [ ] Non-Forced Air
- [ ] Electric
- [x] Gas
- [ ] Oil
- [ ] Other
- [ ] No Combustion Appliances — No Depressurization Limit
- [ ] Solid Fuel (Including Fireplac — 5 Pa. Depress. Limit
- [x] Direct Vent (Sealed Combustion) — No Depressurization Limit
- [ ] Positive Venting Induced Draft — 5 Pa. Depress. Limit
- [ ] Natural Draft or B-Vent Atmospheric — 5 Pa. Depress. Limit

Lowest Depressurization Limit Pa.

Exhaust Equipment

- [x] Clothes Dryer(s) (150 CFM Default)
- [ ] Downdraft Cook Top (220 CFM Default)
- [ ] Other (Exhaust) (Over 150 CFM)

Depressurization Test/Calc. Required? [ ] Yes [x] No

Total Ventilation Capacity (TVC)

Basement & Master Bedroom	2	@	20 CFM	42	CFM
Other Bedrooms	5	@	10 CFM	53	CFM
Bathrooms & Kitchen	7	@	10 CFM	74	CFM
Other Hab. Rooms	6	@	10 CFM	64	CFM
Total Ventilation Capacity (TVC)				233	CFM

Exhaust Capacity

Minimum Continuous Exhaust

Kitchen(s)		@	60 CFM	=	CFM
Bathrooms(s)		@	20 CFM	=	CFM
			Total		CFM

Minimum Intermittent Exhaust

Kitchen(s)	1	@	100 CFM	=	100 CFM
Bathrooms(s)	6	@	50 CFM	=	300 CFM
			Total		400 CFM

TVC System

Location: Base
Manufacturer/Model: VanEE 60H HVI Listed
Design Airflow 107 CFM High 53 CFM Low
HRV/ERV 65 % Sensible Efficiency @ 0°C watts
HRV/ERV 55 % Sensible Efficiency @ -25°C watts

Additional (Exhaust) Equipment

Location:	Model:	CFM:	Sones:
Ens 1	AER50C	50	2.5
Ens 2	AER50C	50	2.5
Ens 3	AER50C	50	2.5

Fan Manufacturer: Broan or Equiv. HVI Listed

Location

Roll #: | Permit #:
Lot & Plan:
Civic Address:

Builder

Name: | House ID#:
Address:
City: | P.C.:
Phone: | Fax:
Email Address:

Designer

Name: David DaCosta | HRAI #: 5190
Address: 2985 Drew Road, Suite 202
City: Mississauga | P.C.:
Phone: 905-671-9800 | Fax: 647-494-9643
Email Address: dave@gtadesigns.ca | Other:

I certify this ventilation system design to be in accordance with:

- [x] CSA F326 M-91
- [ ] R-2000

Signature: Date: January 0, 1900

Installation Checklist

- [ ] Control Functioning
- [ ] Fans Operating and Clean
- [ ] Filters Clean
- [ ] Flow Measuring Stations
- [ ] Dampers Accessible
- [ ] Insulated Ducts Sealed
- [ ] Drain Loop and Connection
- [ ] Label Supply/Exhaust Hood
- [ ] Distribution to all habitable rooms (non-forced air)
- [ ] Forced Air System
- [ ] Contin. Mode
- [ ] Interlocked
- [ ] Kitchen Intake Grease Filter
- [ ] Kitchen Exh. 40 " to Range
- [ ] Exhaust 4" Above Grade
- [ ] Supply 18" above Grade
- [ ] Supply Intake 6' from Exhaust (Recommended)
- [ ] Supply Intake 3' from Exhaust

Measured TVC System

TVC System Supply Airflow Measured
CFM High CFM Low
TVC System Exhaust Airflow Measured
CFM High CFM Low

Installer

Name: | HRAI:
Address:
City: | P.C.:
Phone: | Fax:
Email Address:

I Certify this Ventilation System install to be in Accordance with:
CSA F326 M-91
R-2000
Signature: Date:

Prepared By:	David DaCosta	HRAI #:	2016-08-17	Model/Address:	87-2-C-WOB Lot 6
Signature:		Date:	August 17, 2016	Job #: erwalk Phas	Official Use:

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Total Ventilation Capacity Condition (W-3A)

CSA (F326) Mechanical Ventilation

Project # PJ-00067
Layout # JB-02492

Project Information

Project #:	JB-02492	Site/Location:	Brampton	Notes:	
Model/Add.:	87-2-C-WOB Lot 6	Builder/Client:	Highcastle Homes		

	Line #
Floor Area	
Total Floor Area: 6402 ft²	301
(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 1.4	302
Combustion Appliance Depressurization Limit	
If Spillage Susceptible -5 Pa. Flow Factor 0.022; Depressurization Limit @ TVCC -5 Pa.	303
If Non-Spillage Susceptible -10 Pa. Flow Factor 0.037	
Flow Factor 0.022	304
Allowable Net Exhaust	
Floor Area (301) 6402 ft² x ACH50 (302) 1.4 x Flow Factor (304) 0.022 = _____	305
Allowable Net Exhaust @ TVCC 197 CFM	
Actual Net Exhaust	
TVCC Exhaust 233 CFM	306
minus	
TVCC Supply 107 CFM	307
Actual Net Exhaust @ TVCC 126 CFM	308
Note: If Supply is greater than Exhaust, use worksheet # W-3B	
Required Make-Up Air Flow	
Actual Net Exhaust @ TVCC (Line 308) 126 CFM	
minus	
Allowable Net Exhaust @ TVCC (Line 305) 197 CFM	
Required Make-Up Airflow @ TVCC 0 CFM	309
At Depressurization Limit (Line 303) -5 Pa.	
Description of Make-Up Air System	
Make-Up Air is not Required	
On-Site Depressurization Test ☐ Required ☑ Not Required	310

Prepared By:	David DaCosta	HRAI #:	5190	Model/Address:	87-2-C-WOB Lot 6
Signature:		Date:	August 17, 2016	Job #: JB-02492	Official Use:

Energy Efficiency Design Summary
(Building Code Part 9 Residential)

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e-mail dave@gtadesigns.ca

Project # PJ-00067
Layout # JB-02492

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-C-WOB Lot 6			
Municipality **Brampton**	Postal code	Reg. Plan number / other description	

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 =	607 m²	W,S &G % = 11%	☐ ICF Basement	☑ Walkout Basement	☐ Log/Post&Beam
Area of W,S&G =	65 m²		☐ 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 & Doors[1]**	
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*:**

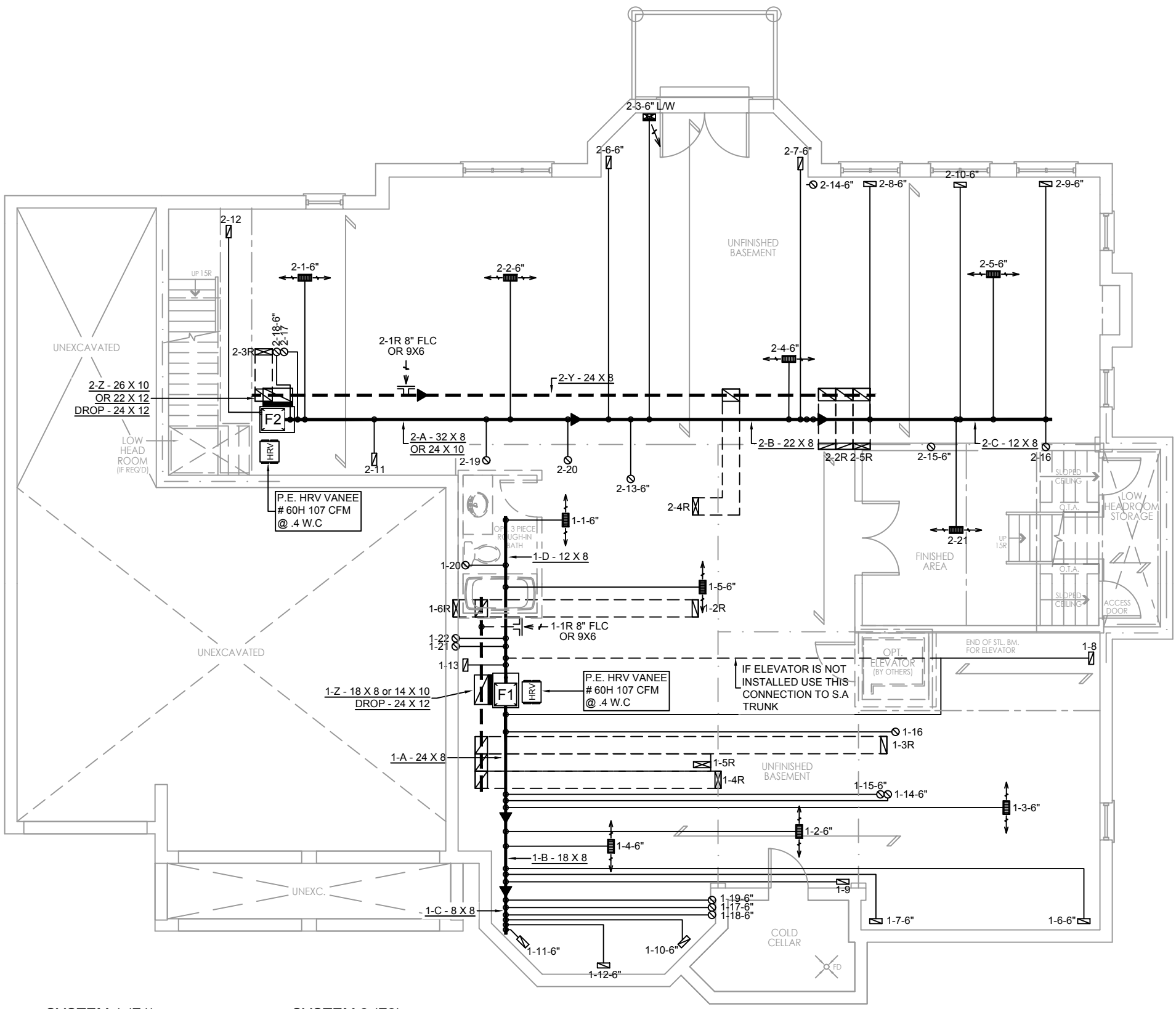
Evaluator/Advisor/Rater Name: Evaluator/Advisor/Rater Licence #:

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

Name	BCIN	Signature
David DaCosta	32964	

Form authorized by OHBA, OBOA, LMCBO. November 27, 2013

	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. SUPPLY AIR R.A. RETURN AIR T THERMOSTAT $ PRINCIPAL EXHAUST FAN SWITCH F PE W/R & PRINCIPAL EXHAUST FAN

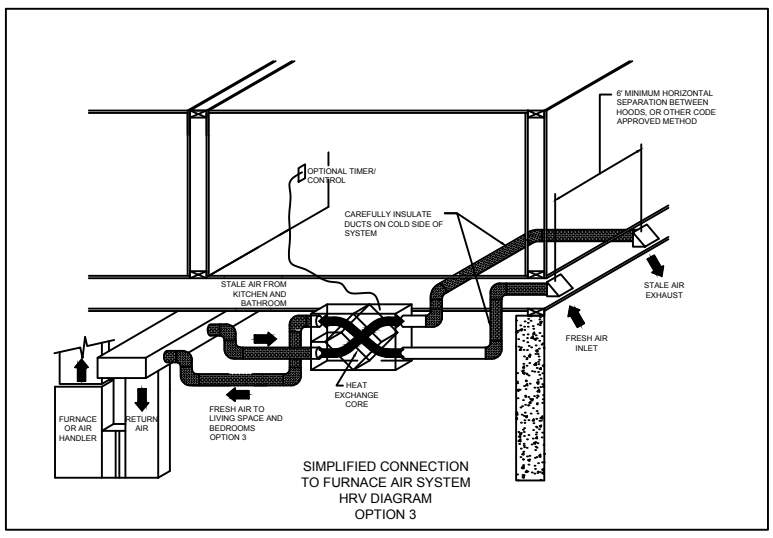


SYSTEM 1 (F1)

HEAT-LOSS	59,506 BTU/HR.
UNIT MAKE	AMANA
UNIT MODEL	GMEC96-0803BNA
UNIT HEATING INPUT	80,000 BTU/HR.
UNIT HEATING OUTPUT	76,800 BTU/HR.
A/C COOLING CAPACITY	2.5 TONS.
FAN SPEED	1172 CFM

SYSTEM 2 (F2)

HEAT-LOSS	65,117 BTU/HR.
UNIT MAKE	AMANA
UNIT MODEL	GMEC96-0803BNA
UNIT HEATING INPUT	80,000 BTU/HR.
UNIT HEATING OUTPUT	76,800 BTU/HR.
A/C COOLING CAPACITY	3.0 TONS.
FAN SPEED	1172 CFM



SIMPLIFIED CONNECTION TO FURNACE AIR SYSTEM HRV DIAGRAM OPTION 3

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

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 EXHUAST 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

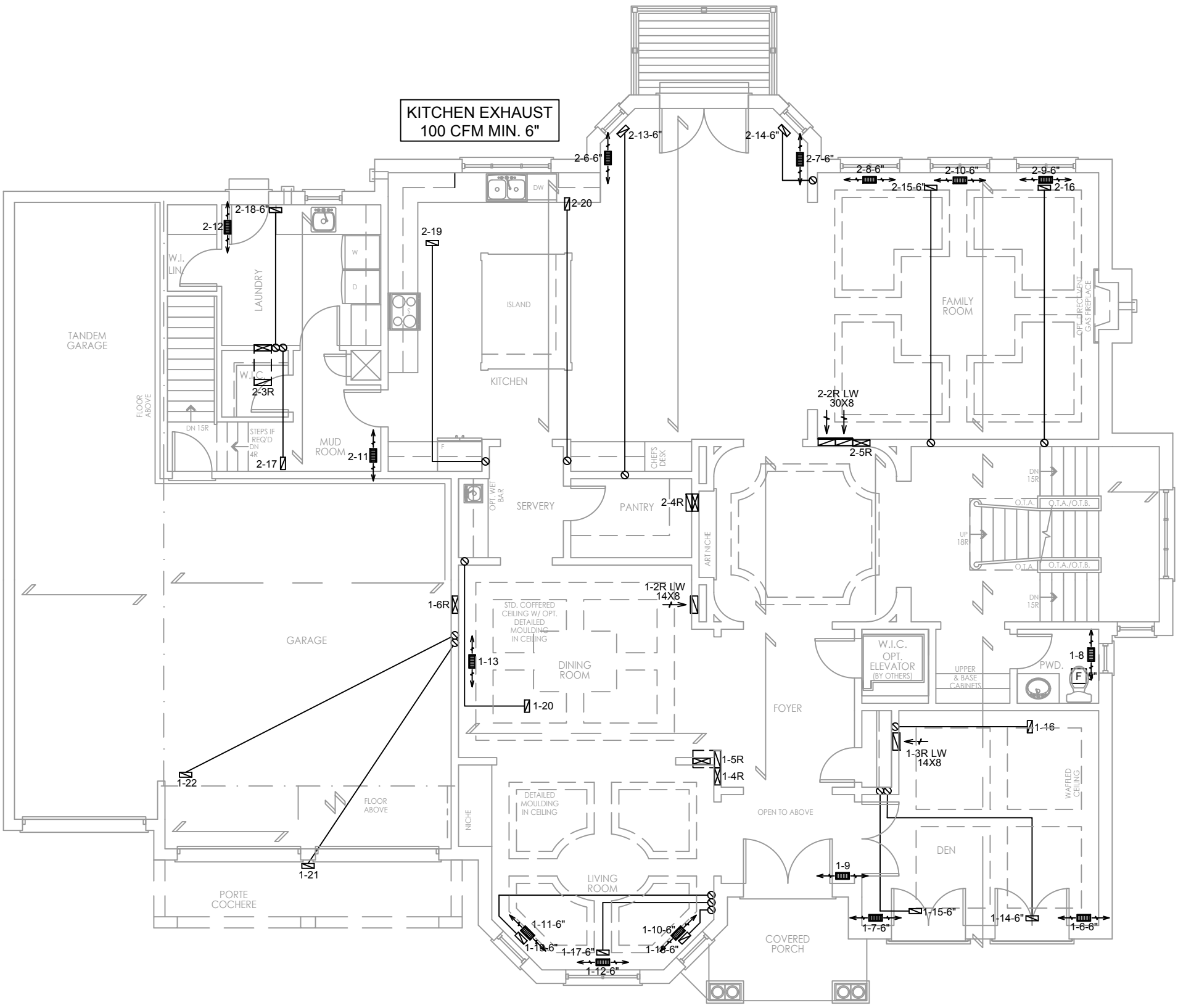
HEAT-LOSS	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

# 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	SQFT 6402
LAYOUT NO. JB-02492		DRAWING NO. M1

DATE:	AUGUST 17, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	87-2-C-WOB LOT 6
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. T $ F PE	SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN



CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

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

OBC 2012

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

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QUALIFICATION INFORMATION

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

David Da Costa B.C.I.N. 32964

Signature of Designer

NOTES

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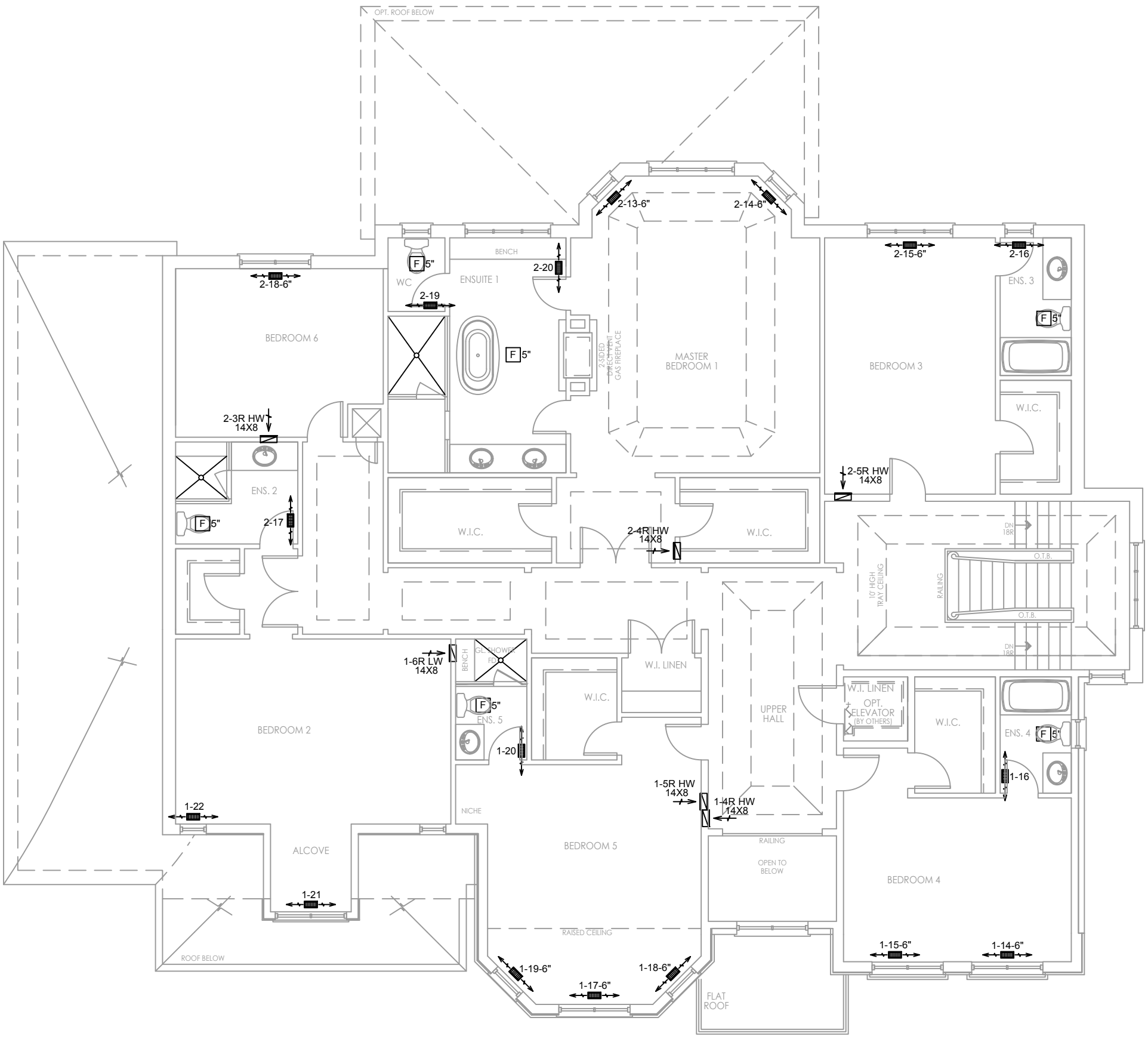
HEAT-LOSS	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

# 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 | SQFT 6402
LAYOUT NO. JB-02492 | DRAWING NO. M2

DATE: AUGUST 17, 2016
CLIENT: HIGHCASTLE HOMES
MODEL: 87-2-C-WOB LOT 6
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. T $ 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)

OBC 2012

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

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David Da Costa — B.C.I.N. 32964

Signature of Designer

NOTES

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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: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 6402
LAYOUT NO. JB-02492		DRAWING NO. M3

DATE: AUGUST 17, 2016

CLIENT: HIGHCASTLE HOMES

MODEL: 87-2-C-WOB LOT 6

PROJECT: RIVERWALK PHASE 2 BRAMPTON, ONT

SCALE: 1/8" = 1"-0"