

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 65-2-B WOD			Lot:	
			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 #:
				Layout #:
Heating and Cooling Load Calculations		Builder	Highcastle Homes	
Air System Design		Project	Riverwalk Phase 2	
Residential mechanical ventilation Design Summary		Model	65-2-B WOD	
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 16, 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-02516	
Building Location					
Address (Model): 65-2-B WOD			Site: Riverwalk Phase 2		
Model:			Lot:		
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: 6	
Sensible Eff. at -25C 55%	Apparent Effect. at -0C 68%	Units: Imperial		Area Sq ft: 4200	
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 3.55	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		

SB-12 Package J

Builder: **Highcastle Homes**

Date: **August 16, 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.

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Project: **Riverwalk Phase 2**

Model: **65-2-B WOD**

System 1

Individual BCIN: 32964

David DaCosta

Project # **PJ-00067**
Layout # **JB-02516**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	29,162 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	4.0 Ton
Level 2 Net Load	29,402 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-1004CNA	Model		Cond.-----	4.0
Level 3 Net Load	21,023 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	100000	Input Btu/h		Coil -----	4.0
Level 4 Net Load	3,301 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	96000	Output Btu/h			
Total Heat Loss	82,887 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	46,880 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	91,175 Btu/h	Heating Air Flow Proportioning Factor	0.0199 cfm/btu/h	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	52155 ft³	Cooling Air Flow Proportioning Factor	0.0353 cfm/btu/h	Aux. Heat		(Brushless DC OBC 12.3.1.5.(2))			
Ventilation Load	3,580 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1653 cfm	Cooling Check	1653 cfm
Ventilation PVC	95.4 cfm	S/A Temp	124 deg. F.	Temp. Rise>>>	54 deg. F.	Selected cfm>	1653 cfm	Cooling Air Flow Rate	1653 cfm
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.						

	Level 1														Level 2										
S/A Outlet No.	24	25	26	27	28	29									13	14	15	16	17	18	19	20	21	22	23
Room Use	BASE	BASE	BASE	BASE	BASE	BASE									LAUND	KIT	KIT	FAM	FAM	DIN	FOY	LIV	LIV	DEN	PWD
Btu/Outlet	4860	4860	4860	4860	4860	4860									4353	2971	2971	2725	2725	3192	1637	2316	2316	3269	925
Heating Airflow Rate CFM	97	97	97	97	97	97									87	59	59	54	54	64	33	46	46	65	18
Cooling Airflow Rate CFM	35	35	35	35	35	35									83	86	86	104	104	66	66	89	89	84	5
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		
Actual Duct Length	33	34	36	47	49	64									24	45	36	38	45	54	57	74	74	79	69
Equivalent Length	80	100	120	120	110	120	70	70	70	70	70	70	70	70	100	90	80	130	110	130	110	100	110	140	130
Total Effective Length	113	134	156	167	159	184	70	70	70	70	70	70	70	70	124	135	116	168	155	184	167	174	184	219	199
Adjusted Pressure	0.12	0.10	0.08	0.08	0.08	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.10	0.10	0.11	0.08	0.08	0.07	0.08	0.07	0.07	0.06	
Duct Size Round	6	6	6	6	6	6									6	6	6	6	6	6	5	6	6	6	4
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10
Trunk	H	B	C	D	D	G									H	B	B	C	C	D	D	G	G	F	F

	Level 3														Level 3															
S/A Outlet No.	1	2	3	4	5	6	7	8	9	10	11	12	30		31	32														
Room Use	MAST	MAST	BED 2	BATH 2	BED 5	T BATH	BED 4	BED 4	WIC 2	WIC	ENS	ENS	BATH 3		BED 3	BED 3														
Btu/Outlet	1647	1647	2453	1246	3418	1078	1951	1951	1696	871	1128	1128	806		1650	1650														
Heating Airflow Rate CFM	33	33	49	25	68	22	39	39	34	17	23	23	16		33	33														
Cooling Airflow Rate CFM	58	58	61	17	86	20	40	40	29	7	22	22	25		48	48														
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	52	52	66	77	91	87	97	105	32	28	37	39	48		59	55														
Equivalent Length	110	120	130	110	160	140	150	160	150	140	130	110	160	70	130	100	70	70	70	70	70	70	70	70	70	70				
Total Effective Length	162	172	196	187	251	227	247	265	182	168	167	149	208	70	189	155	70	70	70	70	70	70	70	70	70	70				
Adjusted Pressure	0.08	0.08	0.07	0.07	0.05	0.06	0.05	0.05	0.07	0.08	0.08	0.09	0.06	0.19	0.07	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19				
Duct Size Round	5	5	5	4	6	4	5	5	4	3	4	4	4		5	5														
Outlet Size	3x10	3x10	3x10	3x10	4x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10				
Trunk	H	B	C	D	F	F	F	F	H	H	H	H	C		C	C														

Return Branch And Grill Sizing	Grill Pressure Loss 0.02 "w.c.										
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	150	100	100	100	361	362	200	280			
Duct Design Pressure	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Actual Duct Length	52	63	46	64	43	31	49	15			
Equivalent Length	195	155	155	195	165	130	170	155	50	50	50
Total Effective Length	247	218	201	259	208	161	219	170	50	50	50
Adjusted Pressure	0.05	0.05	0.06	0.05	0.06	0.07	0.05	0.07	0.24	0.24	0.24
Duct Size Round	8.0	6.0	6.0	6.0	10.5	10.5	9.0	8.0			
Inlet Size	8	8	8	8	8	8	8	FLC			
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	30	14	14	30	30	14	9X6			
Trunk	Z	Y	Z	Y	Y	Z	Y	Z			

Return Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
Drop		1653	0.05	19.5	24x14
Z		1653	0.05	19.5	36x10 28x12
Y		761	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		1339	0.05	18.0	30x10 24x12
B		248	0.08	9.0	8x8 10x7
C		1091	0.05	16.5	32x8 24x10
D		755	0.05	14.5	24x8 18x10
E					
F		251	0.05	9.5	10x8 127
G		189	0.07	8.5	8x8 107
H		313	0.07	10.0	12x8 10x10
I					
J					
K					

2012 OBC	Builder: Highcastle Homes	Date: August 16, 2016	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: 4200	Project # PJ-00067	Layout # JB-02516
	Project: Riverwalk Phase 2	Model: 65-2-B WOD							

Level 1				BASE															
Run ft. exposed wall A	229	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
Floor area	1860	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	916																		
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	3.55	20.90	10.91	3	63	33													
East/West	3.55	20.90	27.35	15	314	410													
South	3.55	20.90	20.89	9	188	188													
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	868		1123													
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				15705														
	Heat Gain				16788														
Air Leakage	Heat Loss/Gain	0.6938	0.0390			1831													
Ventilation	Case 1		0.07		11648		71												
	Case 2		25.64																
	Case 3	x	0.04																
Heat Gain People					726		81												
Appliances Loads	1 = 25 percent																		
Duct and Pipe loss			10%																
Level 1 HL Total	29,162	Total HL for per room			29162														
Level 1 HG Total	5,931	Total HG per room x 1.3				5931													

Level 2				KIT		FAM		DIN		FOY		LIV		DEN		PWD		LAUND		A		A		A		
Run ft. exposed wall A				47 A		34 A		26 A		8 A		29 A		27 A		12 A		39 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				485 Area		252 Area		325 Area		118 Area		156 Area		127 Area		75 Area		167 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				517		374		286		88		319		297		132		429								
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		3.55	20.90	10.91	11	230	120										11	230	120							
East/West		3.55	20.90	27.35	70	1463	1915	75	1568	2052			47	982	1286	55	1150	1504								
South		3.55	20.90	20.89	14	293	292	56	1170	1170	55	1150	1149	20	418	418	64	1338	1337							
Existing Windows		1.99	37.29	22.15																						
Skylight		2.03	36.55	88.23																						
Doors		3.01	24.65	3.65	10	247	37						22	542	80											
Net exposed walls A		14.49	5.12	0.76	412	2110	313	243	1244	184	231	1183	175	46	236	35	208	1065	158	242	1239	184	132	676	100	
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 ()		x																						
Total Conductive	Heat Loss				4342				3982			2332		1196			3385		2389		676			3181		
	Heat Gain					2677				3406		1324			533				2780			100			873	
Air Leakage	Heat Loss/Gain		0.3253	0.0390	1412	104			1296	133		759	52		389	21		1101	108		777	66		220	4	
Ventilation	Case 1		0.03	0.04																						
	Case 2		25.64	11.88																						
	Case 3	x	0.04	0.04																						
Heat Gain People					188	118			172	151		101	59		52	24		146	123		103	75		29	4	
Appliances Loads		1 = 25 percent																								
Duct and Pipe loss					0.5				0.5					0.5			0.5						0.5			
Level 2 HL Total		29,402	Total HL for per room			5942			5450			3192		1637			4633		3269		925			4353		
Level 2 HG Total		24,431	Total HG per room x 1.3				4887			5913		1865			1868		5033			2377			141		2347	

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	82,887	btu/h
Total Heat Gain	46,880	btu/h

2012 OBC	Builder: Highcastle Homes	Date: August 16, 2016	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: 4200	Project #	PJ-00067
	Project: Riverwalk Phase 2	Model: 65-2-B WOD														Layout #	JB-02516

Level 3				MAST		BATH 3		BED 2		BATH 2		BED 5		T BATH		BED 4		WIC 2		WIC		ENS													
Run ft. exposed wall A				25	A	7	A	A	24	A	17	A	41	A	6	A	25	A	16	A	8	A	26	A											
Run ft. exposed wall B				B		B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B												
Ceiling height				8.0		8.0		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0													
Floor area				350	Area	55	Area	Area	260	Area	82	Area	196	Area	73	Area	250	Area	65	Area	118	Area	156	Area											
Exposed Ceilings A				350	A	55	A	A	260	A	82	A	196	A	73	A	250	A	65	A	118	A	156	A											
Exposed Ceilings B				B		B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B											
Exposed Floors				Flr		Flr		Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr												
Gross Exp Wall A				200		56			192		136		328		48		200		128		64		208												
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		3.55	20.90	10.91	9	188	98														7	146	76												
East/West		3.55	20.90	27.35	45	941	1231	16	334	438											21	439	574												
South		3.55	20.90	20.89	9	188	188				33	690	689	9	188	188																			
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	137	702	104	40	205	30		159	814	121	127	650	96	286	1465	217	38	195	29	168	860	128	114	584	87	64	328	49	180	922	137
Net exposed walls B		8.50	8.73	1.29																															
Exposed Ceilings A		50.00	1.48	0.76	350	519	266	55	82	42		260	386	198	82	122	62	196	291	149	73	108	55	250	371	190	65	96	49	118	175	90	156	232	119
Exposed Ceilings B		22.86	3.25	1.66																															
Exposed Floors		22.05	3.37	0.23																															
Foundation Conductive Heatloss																																			
Total Conductive	Heat Loss				2538			621			1890		960		2633		758		2741		1192		671		1738										
	Heat Gain					1887		510		1008		347		1515		374		1250		534		150		906											
Air Leakage	Heat Loss/Gain		0.2548	0.0390	647	74		158	20		482	39	245	14	671	59	193	15	699	49	304	21	171	6	443	35									
Ventilation	Case 1		0.03	0.04																															
	Case 2		25.64	11.88																															
	Case 3	x	0.04	0.04																															
Heat Gain People				239	2	110	83	27	23		82	45	239	1	114	67	33	17	1	119	55	52	24	29	7	75	40								
Appliances Loads		1 =.25 percent	6877																																
Duct and Pipe loss				10%																															
Level 3 HL Total		21,023	Total HL per room		3294			806	718		2453		1246		3418		1078		3903		1696		871		2257										
Level 3 HG Total		13,806	Total HG per room x 1.3			3279				1730		488		2444		576		2264		821		211		1276											

Level 3				BED 3																			
Run ft. exposed wall A	27	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	8.0			8.0		8.0		8.0		8.0		8.0		8.0		8.0		8.0		8.0		8.0	
Floor area	245	Area			Area		Area		Area		Area		Area		Area		Area		Area		Area		Area
Exposed Ceilings A	245	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	216																						
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	3.55	20.90	10.91																				
East/West	3.55	20.90	27.35	32	669	875																	
South	3.55	20.90	20.89	36	752	752																	
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	148	758	112																	
Net exposed walls B	8.50	8.73	1.29																				
Exposed Ceilings A	50.00	1.48	0.76	245	364	186																	
Exposed Ceilings B	22.86	3.25	1.66																				
Exposed Floors	22.05	3.37	0.23																				
Foundation Conductive Heatloss																							
Total Conductive	Heat Loss			2543																			
	Heat Gain				1926																		
Air Leakage	Heat Loss/Gain	0.2548	0.0390	648	75																		
Ventilation	Case 1		0.03																				
	Case 2		25.64																				
	Case 3	x	0.04																				
Heat Gain People			239																				
Appliances Loads	1 =.25 percent		6877																				
Duct and Pipe loss			10%																				
Level 4 HL Total	3,301			3301																			
Level 4 HG Total	2,712				2712																		

Total Heat Loss	82,887	btu/h
Total Heat Gain	46,880	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

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

Individual BCIN: 32964

David DaCosta

David DaCosta

Package: Package J
Project: Brampton Model: 65-2-B WOD

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

Location of Installation

Lot #	Plan #
Township	Brampton
Roll #	Permit #
Address	

Builder

Name	Highcastle Homes
Address	
City	
Tel	Fax

Installing Contractor

Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)

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

Heating System

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

House Type 9.32.3.1(2)

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

System Design Option

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

Total Ventilation Capacity 9.32.3.3(1)

Bsmt & Master Bdrm	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm
Bathrooms & Kitchen	6 @ 10.6 cfm	63.6 cfm
Other rooms	5 @ 10.6 cfm	53 cfm
Total		<u>201.4</u>

Principal Ventilation Capacity 9.32.3.4(1)

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

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	60H	Base
107 cfm		Sones

Heat Recovery Ventilator

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

Supplemental Ventilation Capacity

Total ventilation capacity	201.4
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	<u>106.0</u> cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
Bath	50	AER50C	0.5
Pwd	50	AER50C	0.5
T.Bath	50	AER50C	0.5

all fans HVI listed Make Broan or Equiv.

Designer Certification

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

Name David DaCosta

Signature *David DaCosta*

HRAI # 5190 BCIN # 32964

Date August 16, 2016

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

Page 7
Project # PJ-00067
Layout # JB-02516

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 65-2-B WOD	Unit number	Lot/Con
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 = 477 m ²	☐ ICF Basement ☐ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 77 m ²	☐ ICF Above Grade ☐ Slab-on-ground
W,S & G % = 16%	

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	1.6
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 David DaCosta	BCIN 32964	Signature 
------------------------------	----------------------	--

Package: Project: Package J Brampton System: Model: System 1 65-2-B WOD

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.334	52155	74.2	23296

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.097	52155	11	999

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	23296	16788	0.6938
Level 2	0.3		21484	0.3253
Level 3	0.2		18285	0.2548
Level 3	0.2		18285	0.2548

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	
	999		0.0390
BUILDING CONDUCTIVE HEAT GAIN			25617

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

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

Ventilation Heat Gain

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

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2446	16788	0.07
Level 2	0.3		21484	0.03
Level 3	0.2		18285	0.03
Level 3	0.2		18285	0.03

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	1133	0.04	
Building	25617		

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		2446	0.04

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain		Multiplier	
HGbvent	HG*1.3	1133		0.04	
1133	1				

Foundation Conductive Heatloss Level 1

4603 Watts 15705 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

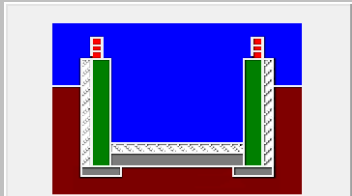
Envelope Air Leakage Calculator

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):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m ³):	1477.03			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa. ▼ 322.44 cm ²			
	3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	47.7		47.7	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.334		
Cooling Air Leakage Rate (ACH/H):		0.097		

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):	28.93	 Insulation Configuration
Floor Width (m):	5.97	
Exposed Perimeter (m):	69.80	
Wall Height (m):	3.05	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.51	
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):		4603

S.A.
R.A.
THERMOSTAT
PRINCIPAL EXHAUST FAN SWITCH
WIR & PRINCIPAL EXHAUST FAN

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

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

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

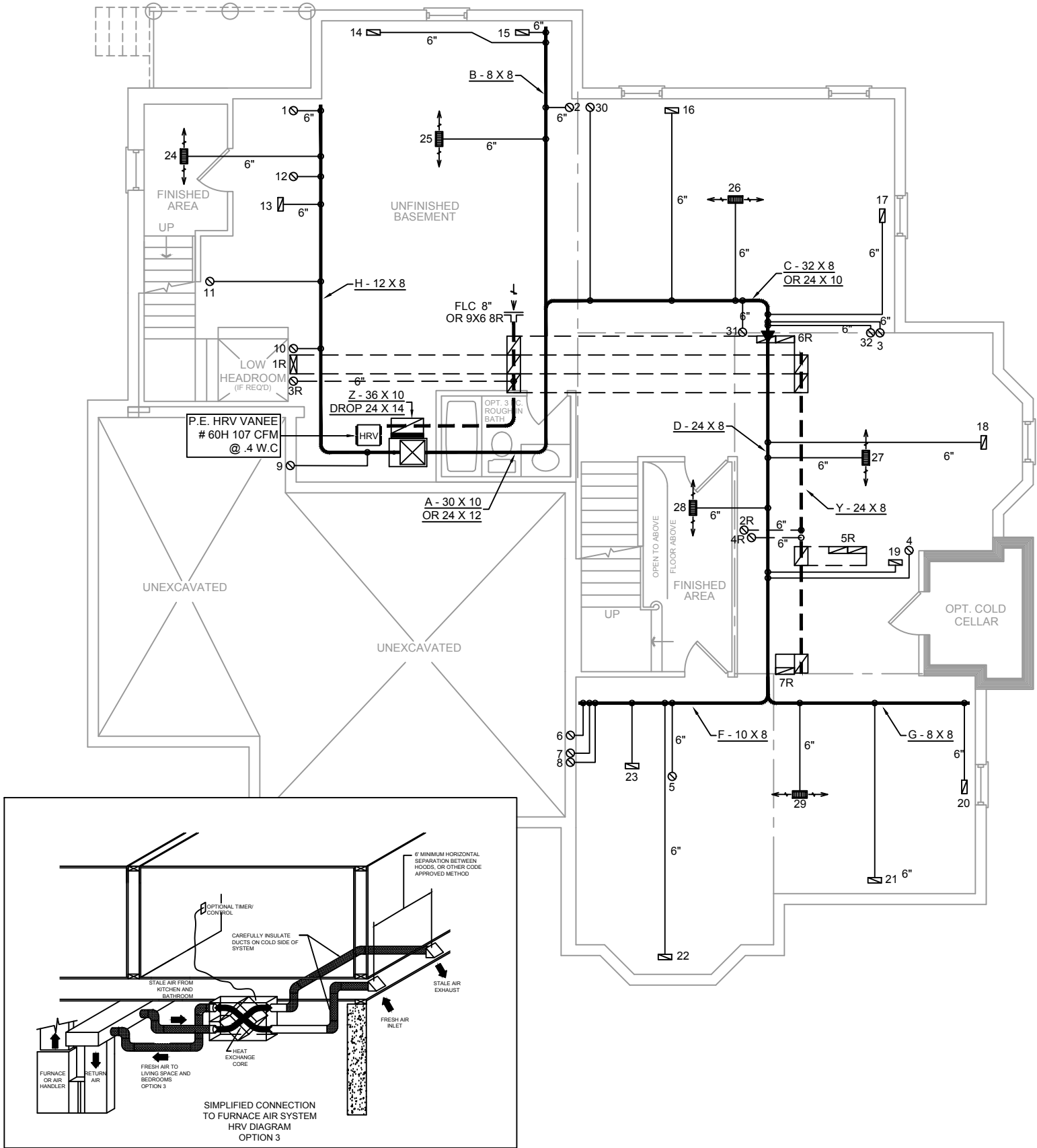
FLEX DUCT
RIDIT ROUND DUCT
SUPPLY DIFFUSER

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



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)

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.

CONTRACTOR MUST WORK FROM APPROVED PLANS.

ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSIBILITY OF GTA DESIGNS.

GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST EXCEEDS 700 CFM

DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING.



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

HEAT-LOSS	BTU/HR.		
	82,887		
UNIT MAKE	OR EQUAL.		
	AMANA		
UNIT MODEL	OR EQUAL.		
	GMEC96-1004CNA		
UNIT HEATING INPUT	BTU/HR.		
	100,000		
UNIT HEATING OUTPUT	BTU/HR.		
	96,000		
A/C COOLING CAPACITY	TONS.		
	4.0		
FAN SPEED	CFM		
	1653		
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	4	5
1ST FLOOR	11	3	2
BASEMENT	6	2	

DATE:	AUGUST 16, 2016		
CLIENT:	HIGHCASTLE HOMES		
MODEL:	65-2-B WOD		
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE:	1/8" = 1'-0"		
FLOOR PLAN:	BASEMENT		
DRAWN BY:	CHECKED:	SQFT	
JL	DD	4200	
LAYOUT NO.	DRAWING NO.		
JB-02516	M1		

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

S.A.
R.A.
T
F

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

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

LOW/HIGH WALL/KICK SUPPLY DIFFUSER
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SUPPLY AIR PIPE RISER
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FLEX DUCT
RIDIT ROUND DUCT
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QUALIFICATION INFORMATION

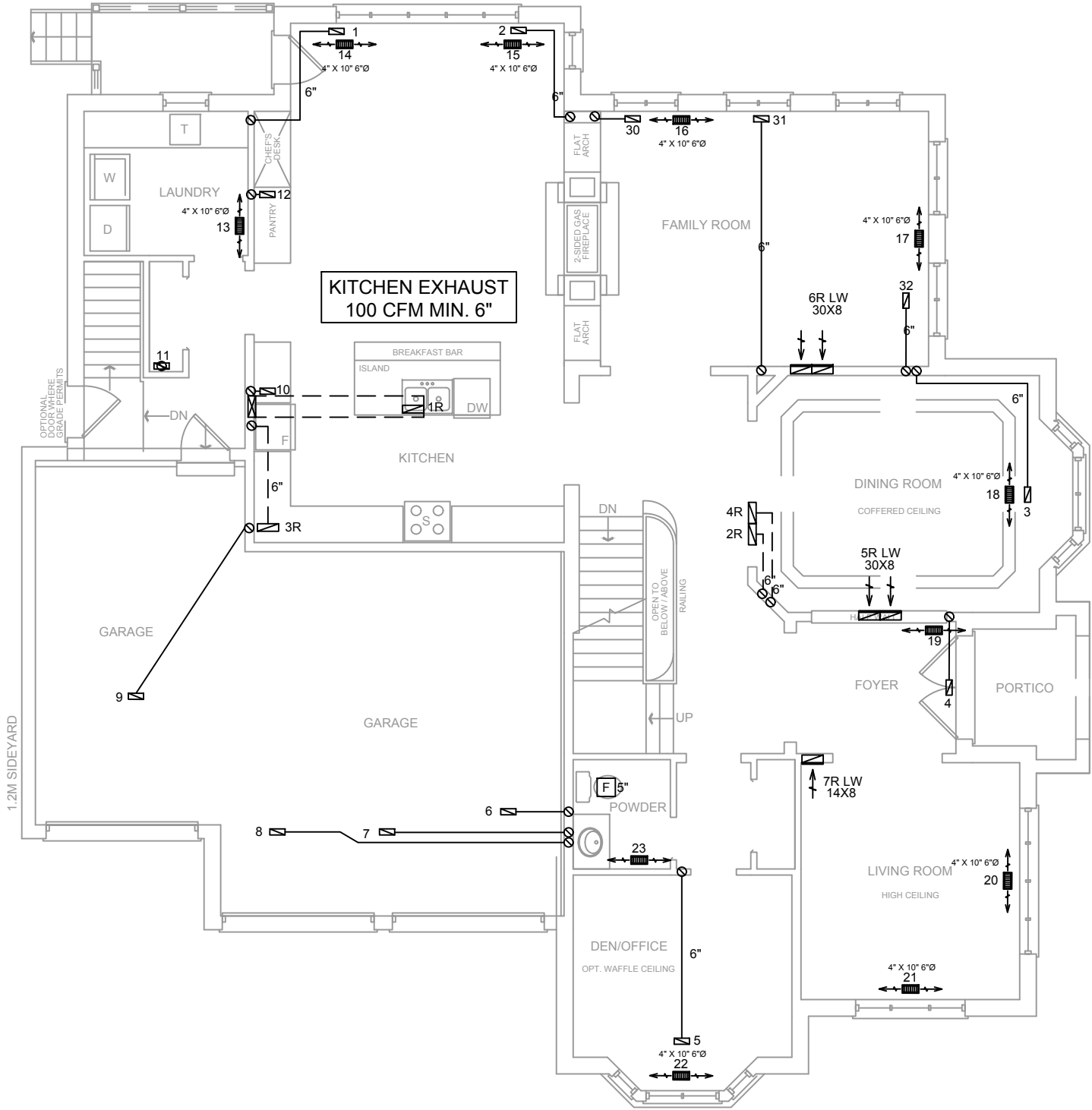
Required unless design is exempt under Division C 3.2.5.1 of the Ontario building code

David Da Costa



B.C.I.N. 32964

Signature of Designer



- 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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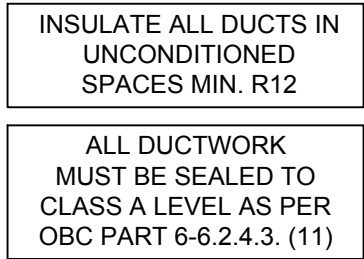
DEPRESSURIZATION MAY OCCUR WITHIN THE DWELLING.



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HEAT-LOSS	BTU/HR.		
82,887			
UNIT MAKE	OR EQUAL.		
AMANA			
UNIT MODEL	OR EQUAL.		
GMEC96-1004CNA			
UNIT HEATING INPUT	BTU/HR.		
100,000			
UNIT HEATING OUTPUT	BTU/HR.		
96,000			
A/C COOLING CAPACITY	TONS.		
4.0			
FAN SPEED	CFM		
1653			
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	4	5
1ST FLOOR	11	3	2
BASEMENT	6	2	

DATE:		AUGUST 16, 2016	
CLIENT:		HIGHCASTLE HOMES	
MODEL:		65-2-B WOD	
PROJECT:		RIVERWALK PHASE 2 BRAMPTON,ONT.	
SCALE:		1/8" = 1'-0"	
FLOOR PLAN:		GROUND FLOOR	
DRAWN BY:	CHECKED:	SQFT	
JL	DD	4200	
LAYOUT NO.		DRAWING NO.	
JB-02516		M2	



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

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

DATE: AUGUST 16, 2016		
CLIENT: HIGHCASTLE HOMES		
MODEL: 65-2-B WOD		
PROJECT: RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE: 1/8" = 1'-0"		
FLOOR PLAN: SECOND FLOOR		
DRAWN BY: JL	CHECKED: DD	SQFT 4200
LAYOUT NO. JB-02516		DRAWING NO. M3