

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 87-4 WOB BLK 38			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	87-4 WOB BLK 38	
Residential System Design per CAN/CSA-F280-12		SB-12	Package J	
Residential New Construction - Forced Air				
D. Declaration of Designer				
I, <u>David DaCosta</u> declare that (choose one as appropriate): (print name) ☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____ ☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5 of Division C, of the Building Code. Individual BCIN: <u>32964</u> Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u> ☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification:				
I certify that: 1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm. <u>August 17, 2016</u> <u></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-02493	
Building Location					
Address (Model): 87-4 WOB BLK 38			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: 4289
Sensible Eff. at -0C 65%					
Heating design conditions			Cooling design conditions		
Outdoor temp -2.2	Indoor temp: 72	Mean soil temp 48	Outdoor temp 86	Indoor temp: 75	Latitude: 44
Above grade walls			Below grade walls		
Style A: As per Selected OBC SB12 Package J R 22			Style A: As per Selected OBC SB12 Package J R 12		
Style B: Existing Walls (When Applicable) R 12			Style B:		
Style C:			Style C:		
Style D:			Style D:		
Floors on soil			Ceilings		
Style A: As per Selected OBC SB12 Package J			Style A: As per Selected OBC SB12 Package J R 50		
Style B:			Style B: As per Selected OBC SB12 Package J R 31		
Exposed floors			Style C:		
Style A: As per Selected OBC SB12 Package J R 31			Doors		
Style B:			Style A: As per Selected OBC SB12 Package J R 3.01		
Windows			Style B:		
Style A: As per Selected OBC SB12 Package J R 3.15			Style C:		
Style B: Existing Windows (When Applicable) R 1.99			Skylights		
Style C:			Style A: As per Selected OBC SB12 Package J R 2.03		
Style D:			Style B:		
Attached documents: As per Shedule 1					
Notes: Residential New Construction - Forced Air					
Calculations performed by					
Name: David DaCosta			Postal code: L4T 0A4		
Company: gtaDesigns Inc.			Telephone: (905) 671-9800		
Address: 2985 Drew Road, Suite 202			Fax: (416) 268-6820		
City: Mississauga			E-mail dave@gtadesigns.ca		

Builder: **Highcastle Homes**

Date: **August 17, 2016**

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: **87-4 WOB BLK 38**

System 1

Individual BCIN: 32964

David DaCosta

Project # **PJ-00067**
Layout # **JB-02493**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	29,861 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	4.0 Ton
Level 2 Net Load	26,631 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-1004CNA	Model		Cond.-----	4.0
Level 3 Net Load	25,870 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	100000	Input Btu/h		Coil -----	4.0
Level 4 Net Load	2,123 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	96000	Output Btu/h			
Total Heat Loss	84,486 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	47,822 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	92,934 Btu/h	Heating Air Flow Proportioning Factor	0.0196 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	50620 ft³	Cooling Air Flow Proportioning Factor	0.0346 cfm/btuh	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.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	54 deg. F.	Selected cfm>	1653 cfm	Cooling Air Flow Rate	1653 cfm

	Level 1														Level 2													
S/A Outlet No.	1	2	3	4	5	6	34								7	8	9	10	11	12	13	14	15	16	33			
Room Use	BASE	BASE	BASE	BASE	BASE	LAND	BASE								KIT/FAM	KIT/FAM	KIT/FAM	DIN	DIN	FOY	LIV	LIV	MUD	DEN	KIT/FAM			
Btu/Outlet	4946	4946	4946	4946	4946	186	4946								2478	2478	2478	3116	3116	2848	1715	1715	1268	2941	2478			
Heating Airflow Rate CFM	97	97	97	97	97	4	97								48	48	48	61	61	56	34	34	25	58	48			
Cooling Airflow Rate CFM	52	52	52	52	52	0	52								77	77	77	81	81	62	72	72	7	61	77			
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13			
Actual Duct Length	26	23	21	50	20	17	32								28	22	31	27	35	33	41	50	30	35	12			
Equivalent Length	100	100	70	70	90	80	100	70	70	70	70	70	70	70	90	100	75	80	140	70	85	140	80	90	100			
Total Effective Length	126	123	91	120	110	97	132	70	70	70	70	70	70	70	118	122	106	107	175	103	126	190	110	125	112			
Adjusted Pressure	0.10	0.11	0.14	0.11	0.12	0.13	0.10	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.11	0.11	0.12	0.12	0.07	0.13	0.10	0.07	0.12	0.10	0.12			
Duct Size Round	6	6	6	6	6	2	6								6	6	6	6	6	5	6	6	4	6	5			
Outlet Size	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	3x10	4x10			
Trunk	C	A	E	B	E	A	E								A	E	F	E	A	A	B	C	C	C	F			

	Level 3														Level 3													
S/A Outlet No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32												
Room Use	MAST	MAST	ENS 2	BED 2	BED 2	BED 3	BED 3	ENS 3	BED 4	BED 5	BED 5	ENS 4	LAUN	WIC	WC	ENS 1												
Btu/Outlet	2257	2257	813	1650	1650	1480	1480	205	2767	3229	3229	1603	1905	1346	146	1977												
Heating Airflow Rate CFM	44	44	16	32	32	29	29	4	54	63	63	31	37	26	3	39												
Cooling Airflow Rate CFM	56	56	11	48	48	46	46	4	61	55	55	22	35	12	1	37												
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	45	48	30	46	47	51	61	44	56	67	77	69	51	55	39	45												
Equivalent Length	185	105	115	130	150	125	150	130	110	130	160	160	130	160	110	160	70	70	70	70	70	70	70					
Total Effective Length	230	153	145	176	197	176	211	174	166	197	237	229	181	215	149	205	70	70	70	70	70	70	70					
Adjusted Pressure	0.06	0.08	0.09	0.07	0.07	0.07	0.06	0.07	0.08	0.07	0.05	0.06	0.07	0.06	0.09	0.06	0.19	0.19	0.19	0.19	0.19	0.19	0.19					
Duct Size Round	5	6	3	5	5	5	5	2	6	6	6	4	5	4	2	5												
Outlet Size	3x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10					
Trunk	A	F	F	F	A	B	C	B	D	D	D	D	D	D	B	B												

Return Branch And Grill Sizing												Return Trunk Duct Sizing					Supply Trunk Duct Sizing						
Grill Pressure Loss												0.02 "w.c											
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	Trunk	CFM	Press.	Round	Rect. Size	Trunk	CFM	Press.	Round	Rect. Size		
Inlet Air Volume CFM	244	496	245	154	154	103	103	154															
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	Drop	1653	0.04	20.5	24x16	A	1064	0.05	16.5	32x8	24x10	
Actual Duct Length	9	14	22	33	21	55	56	44				Z	1408	0.04	19.0	34x10	26x12	B	722	0.05	14.5	24x8	18x10
Equivalent Length	190	165	90	155	165	250	255	195	50	50	50	Y	514	0.04	13.0	18x8	14x10	C	517	0.05	12.5	18x8	14x10
Total Effective Length	199	179	112	188	186	305	311	239	50	50	50	X					D	275	0.05	10.0	12x8	10x10	
Adjusted Pressure	0.06	0.07	0.10	0.06	0.06	0.04	0.04	0.05	0.24	0.24	0.24	W					E	589	0.07	12.5	18x8	14x10	
Duct Size Round	8.0	11.5	8.5	8.0	8.0	6.0	6.0	8.0				V					F	189	0.07	8.5	8x8	107	
Inlet Size	FLC	8	8	8	8	8	8	8				U					G						
" "	x	x	x	x	x	x	x	x	x	x	x	T					H						
Inlet Size	9X6	30	14	14	14	14	14	14				S					I						
												R					J						
Trunk	Z	Z		Y	Z	Y	Y	Y				O					K						

2012 OBC

Builder: Highcastle Homes

Date: August 17, 2016

Project: Riverwalk Phase 2

Model: 87-4 WOB BLK 38

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: 4289

Project # PJ-00067
Layout # JB-02493

Level 1				BASE		LAND																							
Run ft. exposed wall A				104	A	1 A		A		A		A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B				66	B	B		B		B		B		B		B		B		B		B		B		B		B	
Ceiling height				6.0	AG	6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG		6.0 AG	
Floor area				1003	Area	171 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				624		6																							
Gross Exp Wall B				594																									
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	6	141	128																				
WOB Windows				3.15	23.56	27.75	140	3298	3885																				
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	457		591	6		8																	
Net exposed walls B				14.49	5.12	0.76	454	2325	345																				
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 ()			11763		113																				
Total Conductive				Heat Loss			18044		113																				
				Heat Gain				5025		8																			
Air Leakage				Heat Loss/Gain	0.6031	0.0352	10882	177		68	0																		
Ventilation				Case 1		0.07																							
				Case 2		25.64	11.88																						
				Case 3	x	0.04	0.04																						
Heat Gain People						239																							
Appliances Loads				1 = 25 percent		6185	1.0		1546																				
Duct and Pipe loss						10%																							
Level 1 HL Total				29,861	Total HL for per room		29675		186																				
Level 1 HG Total				9,061	Total HG per room x 1.3				9051		11																		

Level 2				KIT/FAM		DIN		FOY		LIV		MUD		DEN		A		A		A		A		A		A	
Run ft. exposed wall A	71	A		63	A			9	A			28	A			9	A			25	A			A			A
Run ft. exposed wall B		B			B				B				B				B				B				B		B
Ceiling height	11.0			11.0				20.0				11.0				11.0				11.0				11.0			11.0
Floor area	817	Area		201	Area			59	Area			131	Area			Area				Area				Area			Area
Exposed Ceilings A	A			A				59	A			A				A				A				A			A
Exposed Ceilings B	B			B				B				B				B				B				B			B
Exposed Floors	Flr			Flr				Flr				Flr				Flr				Flr				Flr			Flr
Gross Exp Wall A	781			693				180				99				275											
Gross Exp Wall B																											
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31																								
East/West	3.15	23.56	27.75																								
South	3.15	23.56	21.28	120	2827	3330	52	1225	1443	39	919	1082	49	1154	1360					39	919	1082					
Existing Windows	1.99	37.29	22.15	52	1225	1107																					
Skylight	2.03	36.55	88.23																								
Doors	3.01	24.65	3.65					17	419	62				21	518	77											
Net exposed walls A	14.49	5.12	0.76	609	3119	462	641	3282	487	124	635	94	259	1326	197	78	399	59	236	1209	179						
Net exposed walls B	8.50	8.73	1.29																								
Exposed Ceilings A	50.00	1.48	0.76					59	88	45																	
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																										
	Heat Gain																										
Air Leakage	Heat Loss/Gain	0.3411	0.0352	2446	173		1537	68		703	45		846	55		313	5			726	44						
Ventilation	Case 1		0.04																								
	Case 2		25.64																								
	Case 3	x	0.04					85	55			103	66			38	6			88	54						
Heat Gain People			239																								
Appliances Loads	1 = 25 percent		6185	1.0		1546	1.0		1546			1.0		1546													
Duct and Pipe loss			10%																								
Level 2 HL Total	26,631	Total HL for per room		9913		8873		6232		2848		3429		4190		1268		190		2941		1767					
Level 2 HG Total	21,533	Total HG per room x 1.3																									

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	84,486	btu/h
Total Heat Gain	47,822	btu/h

2012 OBC	Builder: Highcastle Homes	Date: August 17, 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: 4289	Project #	PJ-00067
	Project: Riverwalk Phase 2	Model: 87-4 WOB BLK 38														Layout #	JB-02493

Level 3		MAST		ENS 2		BED 2		BED 3		ENS 3		BED 4		BED 5		ENS 4		LAUN		WIC													
Run ft. exposed wall A		40	A	10		A	28	A	24	A	A	16	A	42	A	16	A	15	A	16	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		9.0	9.0		10.0		9.0		9.0		10.0		9.0											
Floor area		443	Area	55		Area	296	Area	249	Area	111	Area	179	Area	302	Area	56	Area	79	Area	177	Area	Area										
Exposed Ceilings A		443	A	55		A	296	A	249	A	111	A	179	A	302	A	56	A	79	A	177	A	A										
Exposed Ceilings B		B		B			B		B		B		B		B		B		B		B		B										
Exposed Floors		Flr		Flr			Flr		Flr		Flr		173	Flr	300	Flr	56	Flr	76	Flr	Flr		Flr										
Gross Exp Wall A		400		90			252		216				173		300		56		76		160												
Gross Exp Wall B												144		420		144		135															
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											24	565	271																	
East/West	3.15	23.56	27.75	34	801	943		50	1178	1387	49	1154	1360			37	872	1027	9	212	250	18	424	499									
South	3.15	23.56	21.28	16	377	340	6	141	128					24	565	666																	
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	350	1792	266	84	430	64	202	1034	153	167	855	127	120	614	91	359	1838	273	135	691	102	117	599	89	160	819	121			
Net exposed walls B	8.50	8.73	1.29																														
Exposed Ceilings A	50.00	1.48	0.76	443	657	337	55	82	42	296	439	225	249	370	189	111	165	84	179	266	136	302	448	230	56	83	43	79	117	60	177	263	135
Exposed Ceilings B	22.86	3.25	1.66																														
Exposed Floors	22.05	3.37	0.23													173	582	39	300	1010	68	56	188	13	76	256	17						
Foundation Conductive Heatloss																																	
Total Conductive	Heat Loss			3627			653		2651		2379		165		2028		4733		1175		1396		1082										
	Heat Gain				1886		233		1766		1676		84		932		1868		407		666		256										
Air Leakage	Heat Loss/Gain	0.2028	0.0352	736	66		132	8	538	62	483	59	33	3	411	33	960	66	238	14	283	23	219	9									
Ventilation	Case 1		0.02																														
	Case 2		25.64	11.88																													
	Case 3	x	0.04	0.04																													
Heat Gain People			239	2	150	80	27	10	1	110	75	99	71	7	4	84	40	196	79	49	17	58	28	45	11								
Appliances Loads		1 =.25 percent	6185							239	1	239			1	239	1	239															
Duct and Pipe loss			10%																														
Level 3 HL Total	25,870	Total HL for per room		4514			813		3299		2960		205		2767		6458		1603		1905		1346										
Level 3 HG Total	16,125	Total HG per room x 1.3			3264		327		2785		2658		118		1769		3202		624		1019		359										

Level 3				WC		ENS 1		A		A		A		A		A		A		A		A	
Run ft. exposed wall A	2	A		22	A																		
Run ft. exposed wall B		B			B																		
Ceiling height	9.0			9.0																			
Floor area	17	Area		164	Area																		
Exposed Ceilings A	17	A		164	A																		
Exposed Ceilings B		B			B																		
Exposed Floors		Flr			Flr																		
Gross Exp Wall A	18			198																			
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	18	92	14	180	922	137														
Net exposed walls B	8.50	8.73	1.29																				
Exposed Ceilings A	50.00	1.48	0.76	17	25	13	164	243	125														
Exposed Ceilings B	22.86	3.25	1.66																				
Exposed Floors	22.05	3.37	0.23																				
Foundation Conductive Heatloss																							
Total Conductive	Heat Loss				117				1589														
	Heat Gain					27			761														
Air Leakage	Heat Loss/Gain	0.2028	0.0352		24	1			322	27													
Ventilation	Case 1		0.02	0.04																			
	Case 2		25.64	11.88																			
	Case 3	x	0.04	0.04																			
Heat Gain People			239																				
Appliances Loads	1 =.25 percent		6185																				
Duct and Pipe loss			10%																				
Level 4 HL Total	2,123		Total HL for per room		146				1977														
Level 4 HG Total	1,103		Total HG per room x 1.3			37				1066													

Total Heat Loss	84,486	btu/h
Total Heat Gain	47,822	btu/h

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

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

32964

David DaCosta

David DaCosta

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

Package: Package J
Project: Brampton
Model: 87-4 WOB BLK 38

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	HRV simplified connection to forced air system	x
4	HRV full ducting/not coupled to forced air system	
		Part 6 design

Total Ventilation Capacity 9.32.3.3(1)			
Bsmt & Master Bdrm	2 @ 21.2 cfm	42.4 cfm	
Other Bedrooms	4 @ 10.6 cfm	42.4 cfm	
Bathrooms & Kitchen	6 @ 10.6 cfm	63.6 cfm	
Other rooms	6 @ 10.6 cfm	63.6 cfm	
Total		212	

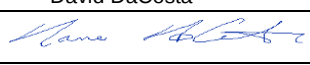
Principal Ventilation Capacity 9.32.3.4(1)			
Master bedroom	1 @ 31.8 cfm	31.8 cfm	
Other bedrooms	4 @ 15.9 cfm	63.6 cfm	
Total		95.4	

Principal Exhaust Fan Capacity			
Make	Model	Location	
VanEE	60H	Base	
107 cfm		Sones	

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

Supplemental Ventilation Capacity	
Total ventilation capacity	212.0
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	116.6 cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
ENS 1	50	AER50C	0.5
ENS 2	50	AER50C	0.5
ENS 3	50	AER50C	0.5
all fans HVI listed			
	Make	Broan	or Equiv.

Designer Certification			
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.			
Name	David DaCosta		
Signature			
HRAI #	5190	BCIN #	32964
Date	August 17, 2016		

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

Page 7
Project # PJ-00067
Layout # JB-02493

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 87-4 WOB BLK 38	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 = 533 m ²	☐ ICF Basement ☒ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 73 m ²	☐ ICF Above Grade ☐ Slab-on-ground
W,S & G % = 14%	

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

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

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

SB-12 Performance:
The annual energy consumption using Subsection 2.1.1. SB-12 Package _____ is _____ Gj (1 Gj = 1000MJ)
The annual energy consumption of this house as designed is _____ Gj
The software used to simulate the annual energy use of the building is: _____
The building is being designed using an air leakage of _____ air changes per hour @50Pa.

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

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

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

Name David DaCosta	BCIN 32964	Signature 
------------------------------	----------------------	--

Package: Project: Package J Brampton System: Model: System 1 87-4 WOB BLK 38

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.324	50620	74.2	21901

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.094	50620	11	939

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	21901	18157	0.6031
Level 2	0.3		19262	0.3411
Level 3	0.2		21596	0.2028
Level 3	0.2		21596	0.2028

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	
	939		0.0352
BUILDING CONDUCTIVE HEAT GAIN			26659

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	18157	0.07
Level 2	0.3		19262	0.04
Level 3	0.2		21596	0.02
Level 3	0.2		21596	0.02

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	1133	0.04	
Building	26659		

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

Ventilation Heat Loss (Forced Air Systems)

		HLbvent	Multiplier
Total Ventilation Load		2446	0.04

Case 3

Ventilation Heat Gain (Forced Air Systems)

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

Foundation Conductive Heatloss Level 1

3481 Watts 11876 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

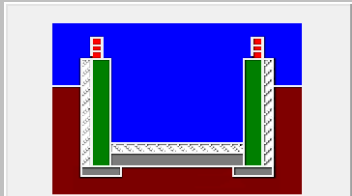
Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario ▼			
Region:	Brampton ▼			
Weather Station Location:	Open flat terrain, grass ▼			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest ▼			
Walls:	Heavy ▼			
Flue:	Heavy ▼			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m ³):	1433.56			
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):		0.324		
Cooling Air Leakage Rate (ACH/H):		0.094		

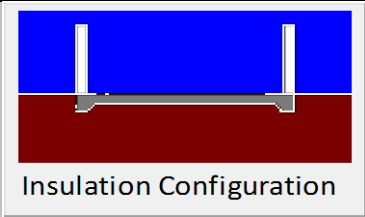
Residential Foundation Thermal Load Calculator

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):	14.66	 Insulation Configuration
Floor Width (m):	7.44	
Exposed Perimeter (m):	32.00	
Wall Height (m):	2.74	
Depth Below Grade (m):	0.91	
Window Area (m ²):	0.56	
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):		3200

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):	13.90	 Insulation Configuration
Width (m):	2.71	
Exposed Perimeter (m):	20.12	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		281

SUPPLY AIR
RETURN AIR
THERMOSTAT
PRINCIPAL EXHAUST FAN SWITCH
WIR & 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
HRV EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER

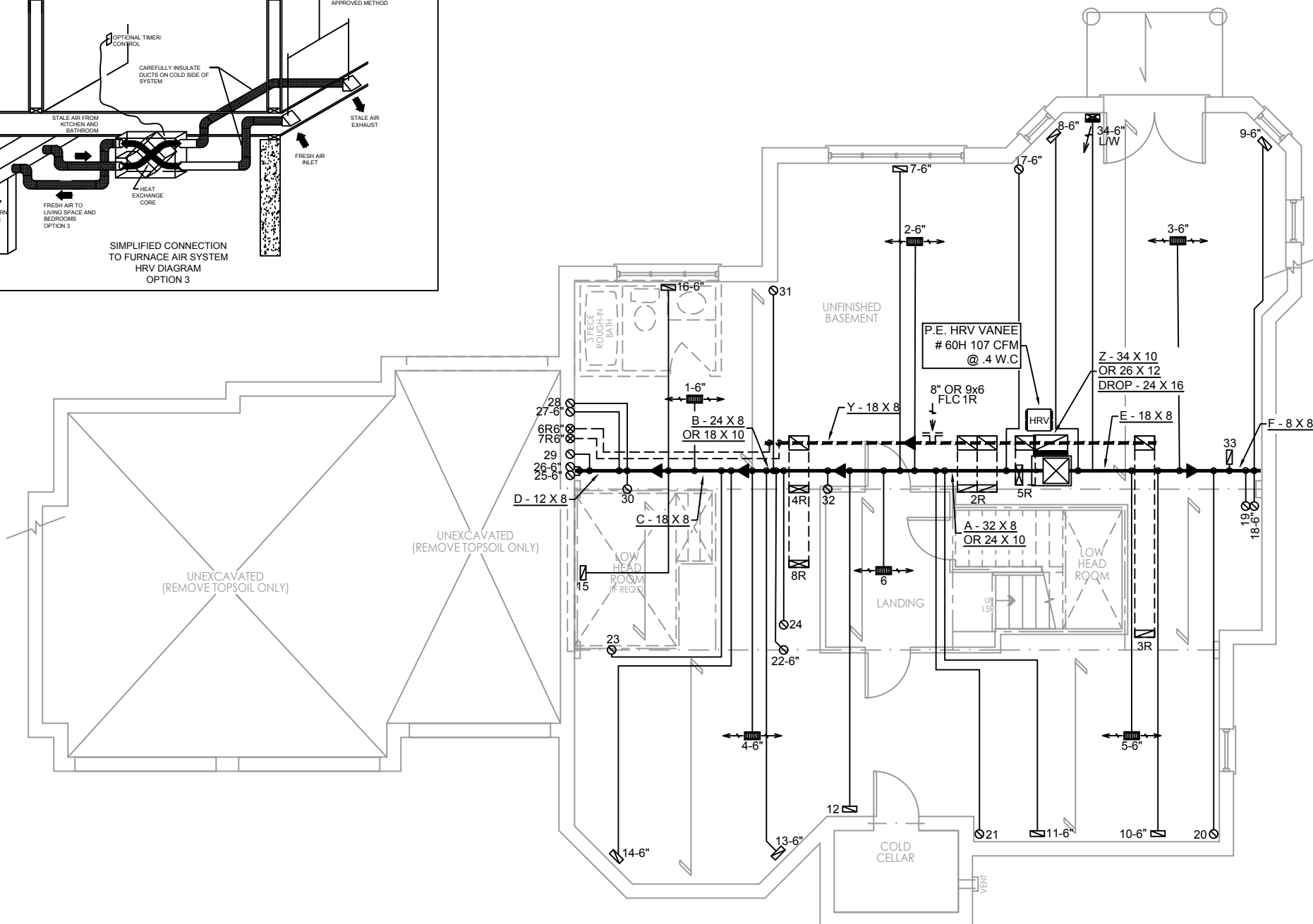
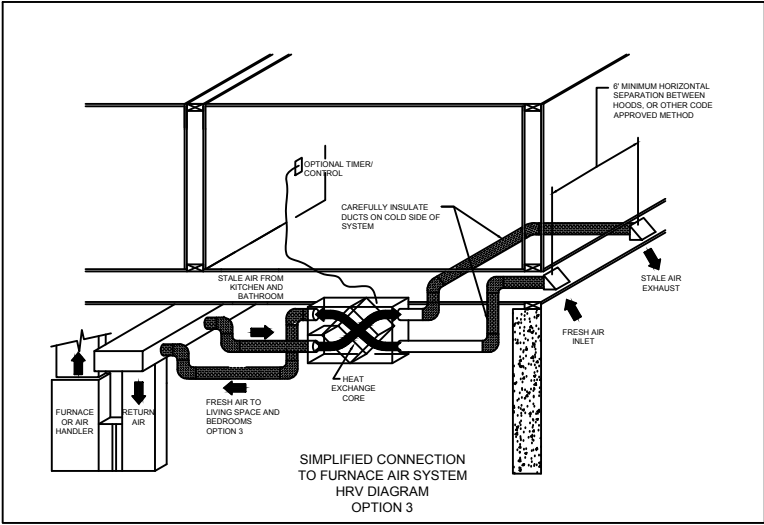
LOW/HIGH WALL/KICK
SUPPLY DIFFUSER
HRV EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER

FLEX DUCT
RIDIT ROUND DUCT
SUPPLY DIFFUSER

W

W

W



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.
HEATING CONTRACTOR MUST
WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS
ORIGINAL PLAN ARE NOT THE
RESPONSABILITY OF GTA
DESIGNS.
GTA DESIGNS MUST BE
CONSULTED IF KITCHEN
EXHAUST EXCEEDS 700 CFM
DEPRESSURIZATION MAY OCCUR
WITHIN THE DWELLING

gtaDesigns

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

HEAT-LOSS	BTU/HR.		
	84,486		
UNIT MAKE	AMANA		
UNIT MODEL	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	16	5	5
1ST FLOOR	11	2	2
BASEMENT	7	1	

DATE:	AUGUST 17, 2016		
CLIENT:	HIGHCASTLE HOMES		
MODEL:	87-4 WOB BLK 38		
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.		
SCALE:	1/8" = 1'-0"		
FLOOR PLAN:	BASEMENT		
DRAWN BY:	CHECKED:	SQFT	
JL	DD	4289	
LAYOUT NO.	DRAWING NO.		
JB-02493	M1		

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

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

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

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

S.A.
R.A.
⊕
⌘
⌘

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

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

LOWHIGH WALL/KICK
HRY EXHAUST GRILL
SUPPLY AIR PIPE RISER
VOLUME DAMPER

↔
↔
⊕
L

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

Signature of Designer

B.C.I.N. 32964

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

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



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web: www.gtadesigns.ca

HEAT-LOSS	BTU/HR.		
	84,486		
UNIT MAKE	AMANA		
UNIT MODEL	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	16	5	5
1ST FLOOR	11	2	2
BASEMENT	7	1	

DATE:	AUGUST 17, 2016				
CLIENT:	HIGHCASTLE HOMES				
MODEL:	87-4 WOB BLK 38				
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.				
SCALE:	1/8" = 1'-0"				
FLOOR PLAN:	GROUND FLOOR				
DRAWN BY:	CHECKED:	SQFT			
JL	DD	4289			
LAYOUT NO.	DRAWING NO.				
JB-02493	M2				



B.C.I.N. 32964

LAYOUT NO. JB-02493	DRAWING NO. M3
------------------------	-------------------

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