

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

A. Project Information			
Building number, street name		Lot:	
65-5 Alt. 2nd FLR WOB		Lot/con.	
Municipality	Brampton	Postal code	Plan number/ other description
B. Individual who reviews and takes responsibility for design activities			
Name		Firm	
David DaCosta		gtaDesigns Inc.	
Street address		Unit no.	Lot/con.
2985 Drew Road, Suite 202			
Municipality	Postal code	Province	E-mail
Mississauga	L4T 0A4	Ontario	dave@gtadesigns.ca
Telephone number	Fax number	Cell number	
(905) 671-9800	(647) 494-9643	(416) 268-6820	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]			
☐ House ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ On-site Sewage Systems			
Description of designer's work		Model Certification	
		Project #:	PJ-00067
		Layout #:	JB-02447
Heating and Cooling Load Calculations		Builder	Highcastle Homes
Air System Design		Project	Riverwalk Phase 2
Residential mechanical ventilation Design Summary		Model	65-5 Alt. 2nd FLR WOB
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>July 29, 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-02447	
Building Location					
Address (Model): 65-5 Alt. 2nd FLR WOB			Site: Riverwalk Phase 2		
Model:			Lot:		
City and Province: Brampton			Postal code:		
Calculations based on					
Dimensional information based on:			N/A		
Attachment: Detached			Front facing: East/West		Assumed? Yes
No. of Levels: 3		Ventilated? Included	Air tightness: 1961- Present (ACH=3.57)		Assumed? Yes
Weather location: Brampton			Wind exposure: Sheltered		
HRV? VanEE		90H	Internal shading: Light-translucent		Occupants: 7
Sensible Eff. at -25C 62%		Apparent Effect. at -0C 70%	Units: Imperial		Area Sq ft: 5337
Sensible Eff. at -0C 60%					
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: **July 29, 2016**

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

Page 3

Project: **Riverwalk Phase 2**

Model: **65-5 Alt. 2nd FLR WOB**

System 1

Individual BCIN: 32964

David DaCosta

Project # **PJ-00067**
Layout # **JB-02447**

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	42,492 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	5.0 Ton
Level 2 Net Load	31,466 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC96-1205DNA	Model		Cond.-----	5.0
Level 3 Net Load	26,166 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	120000	Input Btu/h		Coil -----	5.0
Level 4 Net Load	1,339 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	115200	Output Btu/h			
Total Heat Loss	101,463 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	50,181 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	111,609 Btu/h	Heating Air Flow Proportioning Factor	0.0200 cfm/btuh	AFUE	96%	Blower Speed Selected:	#REF!	Blower Type	ECM
Building Volume Vb	67314 ft³	Cooling Air Flow Proportioning Factor	0.0404 cfm/btuh	Aux. Heat		(Brushless DC OBC 12.3.1.5.(2))			
Ventilation Load	3,998 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	2029 cfm	Cooling Check	2029 cfm
Ventilation PVC	111.3 cfm	S/A Temp	123 deg. F.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	53 deg. F.	Selected cfm>	2029 cfm	Cooling Air Flow Rate	2029 cfm

	Level 1										Level 2									
	1	2	3	4	5	6	35	36	37	38	7	8	9	10	11	12	13	14	15	16
S/A Outlet No.	BASE	BASE	BASE	BASE	LAND	BASE	BASE	BASE	BASE	BASE	KIT	KIT	DIN/LIV	DIN/LIV	DIN/LIV	PWD	DEN	DEN	FOY	FOY
Room Use	BASE	BASE	BASE	BASE	LAND	BASE	BASE	BASE	BASE	BASE	KIT	KIT	DIN/LIV	DIN/LIV	DIN/LIV	PWD	DEN	DEN	FOY	FOY
Btu/Outlet	4532	4532	4532	4532	1706	4532	4532	4532	4532	4532	3003	3003	2321	2321	2321	754	2148	2148	2822	2822
Heating Airflow Rate CFM	91	91	91	91	34	91	91	91	91	91	60	60	46	46	46	15	43	43	56	56
Cooling Airflow Rate CFM	39	39	39	39	3	39	39	39	39	39	93	93	98	98	98	12	86	86	53	53
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
Actual Duct Length	59	57	36	17	19	30	32	58	28	39	65	56	20	8	6	15	35	41	42	49
Equivalent Length	80	80	120	100	130	100	90	120	110	110	110	110	110	130	120	120	75	105	80	120
Total Effective Length	139	137	156	117	149	130	122	178	138	149	175	166	130	138	126	135	110	146	122	169
Adjusted Pressure	0.09	0.09	0.08	0.11	0.09	0.10	0.11	0.07	0.09	0.09	0.19	0.19	0.19	0.19	0.19	0.19	0.12	0.09	0.11	0.08
Duct Size Round	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	3	6	6	5	5
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	4x10	4x10	3x10	3x10
Trunk	C	B	B	D	B	E	A	B	A	F	C	B	A	A	D	D	D	E	E	F
	Level 3										Level 4									
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	39					
S/A Outlet No.	MAST	MAST	WIC	ENS 1	ENS 2	BED 2	BED 3	ENS 3	BED 4	BED 4	WIC 2	BED 5	BED 5	ENS 5	BED 6					
Room Use	MAST	MAST	WIC	ENS 1	ENS 2	BED 2	BED 3	ENS 3	BED 4	BED 4	WIC 2	BED 5	BED 5	ENS 5	BED 6					
Btu/Outlet	2135	2135	1017	1970	687	2853	2086	776	2054	2054	1302	2299	2299	2498	1339					
Heating Airflow Rate CFM	43	43	20	39	14	57	42	16	41	41	26	46	46	50	27					
Cooling Airflow Rate CFM	57	57	10	52	16	72	56	15	59	59	26	64	64	34	45					
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
Actual Duct Length	86	77	59	56	41	48	24	26	44	51	59	67	71	73	75					
Equivalent Length	150	100	100	110	100	90	160	110	100	110	140	130	120	140	110					
Total Effective Length	236	177	159	166	141	138	184	136	144	161	199	197	191	213	185					
Adjusted Pressure	0.06	0.07	0.08	0.08	0.09	0.09	0.07	0.10	0.09	0.08	0.07	0.07	0.07	0.06	0.07	0.19	0.19	0.19	0.19	0.19
Duct Size Round	6	6	4	5	3	6	5	3	5	5	4	6	6	5	5					
Outlet Size	4x10	4x10	3x10	3x10	3x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10
Trunk	G	C	B	B	A	A	A	D	D	E	F	F	F	F	G					

Return Branch And Grill Sizing											Return Trunk Duct Sizing					Supply Trunk Duct Sizing							
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	Trunk	CFM	Press.	Round	Rect. Size	Trunk	CFM	Press.	Round	Rect. Size		
Inlet Air Volume CFM	224	495	245	150	150	100	150	215	150	150													
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	2029	0.05	21.0	24x16	A	1231	0.06	17.0	26x10	22x12	
Actual Duct Length	23	17	29	60	48	75	47	23	48	46		Z	2029	0.05	21.0	34x12	28x14	B	844	0.06	14.5	24x8	18x10
Equivalent Length	110	125	165	170	195	155	180	75	155	185	50	Y	1560	0.05	19.0	34x10	26x12	C	418	0.06	11.5	14x8	12x10
Total Effective Length	133	142	194	230	243	230	227	98	203	231	50	X	550	0.05	13.0	18x8	14x10	D	798	0.06	14.5	24x8	18x10
Adjusted Pressure	0.09	0.08	0.06	0.05	0.05	0.05	0.05	0.12	0.06	0.05	0.24	W	250	0.05	9.5	10x8		E	546	0.06	12.5	18x8	14x10
Duct Size Round	8.0	11.5	9.5	8.0	8.0	6.0	8.0	8.0	8.0	8.0		V						F	315	0.06	10.0	12x8	10x10
Inlet Size	FLC	8	8	8	8	8	8	FLC	8	8		U						G	194	0.06	8.5	8x8	
" "	x	x	x	x	x	x	x	x	x	x	x	T						H					
Inlet Size		30	14	14	14	14	14		14	14		S						I					
												R						J					
Trunk	Z	Y	Z	W	X	W	Y	Y	X	Y		O						K					

2012 OBC

Builder: Highcastle Homes

Date: July 29, 2016

Project: Riverwalk Phase 2

Model: 65-5 Alt. 2nd FLR WOB

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: 5337

Project # PJ-00067
Layout # JB-02447

Level 1				BASE		LAND		A		A		A		A		A		A		A		A	
Run ft. exposed wall A	141	A		13	A			A		A		A		A		A		A		A		A	
Run ft. exposed wall B	79	B			B			B		B		B		B		B		B		B		B	
Ceiling height	2.9	AG		2.9	AG			2.9	AG			2.9	AG			2.9	AG			2.9	AG		
Floor area	1795	Area		194	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	409			38																			
Gross Exp Wall B	790																						
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	4	94	45																	
East/West	3.15	23.56	27.75																				
South	3.15	23.56	21.28	12	283	255																	
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	232		300	38																
Net exposed walls B	14.49	5.12	0.76	650	3329	493																	
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																						
	Heat Gain																						
Air Leakage	Heat Loss/Gain	0.5453	0.0499																				
Ventilation	Case 1		0.05																				
	Case 2		24.04																				
	Case 3	x	0.04																				
Heat Gain People			239																				
Appliances Loads	1 = .25 percent		8650	0.5		1081																	
Duct and Pipe loss			10%																				
Level 1 HL Total	42,492	Total HL for per room																					
Level 1 HG Total	8,718	Total HG per room x 1.3																					

Level 2		KIT		DIN/LIV		PWD		DEN		FOY		LAUN		FAM		A		A		A		A	
Run ft. exposed wall A	44	A		57	A		7	A	32	A	18	A	30	A	38	A	A	A	A	A	A	A	
Run ft. exposed wall B		B			B			B		B	B		B	B	B	B	B	B	B	B	B	B	
Ceiling height	11.0			11.0			11.0		11.0		26.0		11.0		11.0		11.0		11.0		11.0		
Floor area	608	Area		682	Area		104	Area	266	Area	75	Area	200	Area	307	Area	Area	Area	Area	Area	Area	Area	
Exposed Ceilings A	65	A			A			A		A		75	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	484			627			77		352		468		330		418								
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	13	306	147																	
East/West	3.15	23.56	27.75	51	1201	1415	28	660	777	64	1508	1776	50	1178	1387	3	71	34	30	707	339		
South	3.15	23.56	21.28	14	330	298	42	989	894	7	165	149							30	707	832		
Existing Windows	1.99	37.29	22.15																				
Skylight	2.03	36.55	88.23																				
Doors	3.01	24.65	3.65	8	197	29	17	419	62				25	616	91	21	518	77	358	1833	272		
Net exposed walls A	14.49	5.12	0.76	398	2038	302	540	2765	410	70	358	53	288	1475	219	393	2012	298	306	1567	232		
Net exposed walls B	8.50	8.73	1.29																				
Exposed Ceilings A	50.00	1.48	0.76	65	96	49							75	111	57				9	13	7		
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			4169			4833		523		2982		3918		2155		3260						
	Heat Gain				2241		2143		202		1994		1834		343		1450						
Air Leakage	Heat Loss/Gain	0.4018	0.0499	1675	112		1942	107	210	10	1198	99	1574	91	866	17	1310	72					
Ventilation	Case 1		0.04																				
	Case 2		24.04																				
	Case 3	x	0.04																				
Heat Gain People			239																				
Appliances Loads	1 = .25 percent		8650	0.5		1081	1.5	3244		0.5	1081				0.5	1081	0.5		1081				
Duct and Pipe loss			10%																				
Level 2 HL Total	31,466	Total HL for per room			6006		6963		754		4297		5644		3105		4697						
Level 2 HG Total	24,462	Total HG per room x 1.3			4616		7286		290		4263		2627		1897		3483						

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	101,463	btu/h
Total Heat Gain	50,181	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

Package: Package J
Project: Brampton
Model: 65-5 Alt. 2nd FLR WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

Location of Installation

Lot #	Plan #
Township	Brampton
Roll #	Permit #
Address	

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	6 @ 10.6 cfm	63.6 cfm
Other rooms	7 @ 10.6 cfm	74.2 cfm
Total		<u>233.2</u>

Builder

Name	
Highcastle Homes	
Address	
City	
Tel	Fax

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1 @ 31.8 cfm	31.8 cfm
Other bedrooms	5 @ 15.9 cfm	79.5 cfm
Total		<u>111.3</u>

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	90H	Base
146 cfm		Sones

Heat Recovery Ventilator

Make	VanEE
Model	90H
146 cfm high	75 cfm low
Sensible efficiency @ -25 deg C	62%
Sensible efficiency @ 0 deg C	60%

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 |

Supplemental Ventilation Capacity

Total ventilation capacity	233.2
Less principal exhaust capacity	111.3
REQUIRED supplemental vent. Capacity	<u>121.9</u> cfm

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 |

Supplemental Fans 9.32.3.5.

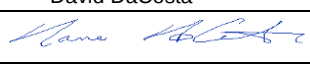
Location	cfm	Model	Sones
ENS 1	50	AER50C	0.5
ENS 2	50	AER50C	0.5
ENS 3	50	AER50C	0.5

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 July 29, 2016

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 |

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-02447

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
65-5 Alt. 2nd FLR WOB		
Municipality	Postal code	Reg. Plan number / other description
Brampton		

B. Compliance Option

☒ SB-12 Prescriptive [SB-12 - 2.1.1.]	A B C D E F G H I J K L M or 2.1.1.10 (Additions)	Package J
prescriptive trade-offs used (Specify 2.1.1.2. or 2.1.1.3. sentences being employed):		
☐ SB-12 Performance* [SB-12 - 2.1.2.]	* Attach energy performance calculations using an approved software	
☐ Energy Star®* [SB-12 - 2.1.3.]	* Attach Builder Option Package [BOP] form	
☐ EnerGuide 80® *	* House must be evaluated by NRCAN advisor and meet a rating of 80	

C. Project Design Conditions

Climatic Zone (SB-1):	Heating Equipment	Space Heating Fuel Source
☒ Zone 1 (< 5000 degree days)	☒ ≥ 90% AFUE	☒ Gas ☐ Propane ☐ Solid Fuel
☐ Zone 2 (≥ 5000 degree days)	☐ ≥ 78% < 90% AFUE	☐ Oil ☐ Electric ☐ Earth Energy

Windows+Skylights+Glass Doors	Other Building Conditions
Area of Walls = 547 m ²	☐ ICF Basement ☒ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 70 m ²	☐ ICF Above Grade ☐ Slab-on-ground
W,S & G % = 13%	

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

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

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

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

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

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

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

Name	BCIN	Signature
David DaCosta	32964	

Package: Project: Package J Brampton System: Model: System 1 65-5 Alt. 2nd FLR WOB

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.325	67314	74.2	29253

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.095	67314	11	1266

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	29253	26822	0.5453
Level 2	0.3		21841	0.4018
Level 3	0.2		18839	0.3105
Level 4	0		1289	0.0000

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

HG LEAK		Air Leakage Heat Gain	
	1266		0.0499
BUILDING CONDUCTIVE HEAT GAIN			25389

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	111.3	74.2	0.30	2676

Ventilation Heat Gain

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

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	2676	26822	0.05
Level 2	0.3		21841	0.04
Level 3	0.2		18839	0.03
Level 4	0		1289	0.00

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	1322	0.05	
Building	25389		

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier	
C	HL^T	(1-E) HRV	24.04	
1.08	74.2	0.30		

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		2676	0.04

Case 3

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain		Multiplier	
HGbvent	HG*1.3	1322		0.05	
1322	1				

Foundation Conductive Heatloss Level 1

3739 Watts 12757 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

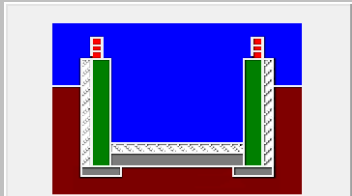
Envelope Air Leakage Calculator

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):	6.98			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1906.33			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			
Custom BDT Data:	ELA @ 10 Pa. ▼ 322.44 cm ²			
	3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	55.65		55.65	
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Heating Air Leakage Rate (ACH/H):		0.325		
Cooling Air Leakage Rate (ACH/H):		0.095		

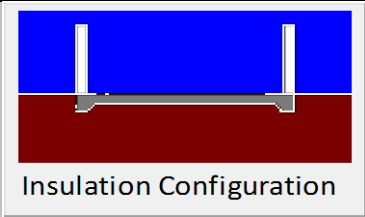
Residential Foundation Thermal Load Calculator

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):	24.22	 Insulation Configuration
Floor Width (m):	7.63	
Exposed Perimeter (m):	46.94	
Wall Height (m):	3.05	
Depth Below Grade (m):	2.16	
Window Area (m ²):	1.49	
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):		3415

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):	19.15	 Insulation Configuration
Width (m):	1.27	
Exposed Perimeter (m):	24.08	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		324



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Residential Mechanical Ventilation Record (W2)

CSA (F326) Mechanical Ventilation

July 6, 2015

Project Information

Project #: JB-02447 Site/Location: Brampton Notes:
Model/Add.: 65-5 Alt. 2nd FLR WOB Builder/Client: Highcastle Homes

Heating System/ Combustion Appliances	☒ Forced Air	☐ Non-Forced Air	Roll #:	Permit #:	Location	
	☐ Electric	☒ Gas	☐ Oil	☐ Other		Lot & Plan:
	☐ No Combustion Appliances No Depressurization Limit		Civic Address:		Builder	
	☒ Solid Fuel (Including Fireplace) 5 Pa. Depress. Limit		Name:	House ID#:		
	☐ Direct Vent (Sealed Combustion) No Depressurization Limit		Address:			
	☐ Positive Venting Induced Draft 5 Pa. Depress. Limit		City:	P.C.:		
☐ Natural Draft or B-Vent Atmospheric 5 Pa. Depress. Limit		Phone:	Fax:	Designer		
Lowest Depressurization Limit Pa.		Email Address:				
Exhaust Equipment	☒ Clothes Dryer(s) (150 CFM Default)		Name:	David DaCosta	HRAI #:	5190
	☐ Downdraft Cook Top (220 CFM Default)		Address: 2985 Drew Road, Suite 202			
Total Ventilation Capacity (TVC)	☒ Other (Exhaust) (Over 150 CFM)		City:	Mississauga		P.C.:
	Depressurization Test/Calc. Required? ☐ Yes ☐ No		Phone:	905-671-9800	Fax:	647-494-9643
	Basement & Master Bedroom 2 @ 20 CFM 40 CFM		Email Address: dave@gtadesigns.ca Other:			
	Other Bedrooms 5 @ 10 CFM 50 CFM		I certify this ventilation system design to be in accordance with:			
Bathrooms & Kitchen 6 @ 10 CFM 60 CFM		☒ CSA F326 M-91				
Other Hab. Rooms 7 @ 10 CFM 70 CFM		☐ R-2000				
Total Ventilation Capacity (TVC) 220 CFM		Signature: <i>David DaCosta</i> Date: July 6, 2015				
Exhaust Capacity	Minimum Continuous Exhaust		☐ Control Functioning ☐ Fans Operating and Clean			
	Kitchen(s) @ 60 CFM = CFM		☐ Filters Clean ☐ Flow Measuring Stations			
	Bathrooms(s) @ 20 CFM = CFM		☐ Dampers Accessible ☐ Insulated Ducts Sealed			
	Total CFM		☐ Drain Loop and Connection ☐ Label Supply/Exhaust Hood			
Minimum Intermittent Exhaust		☐ Distribution to all habitable rooms (non-forced air)				
Kitchen(s) 1 @ 100 CFM = 100 CFM		☐ Forced Air System ☐ Contin. Mode ☐ Interlocked				
Bathrooms(s) 5 @ 50 CFM = 250 CFM		☐ Kitchen Intake Grease Filter ☐ Kitchen Exh. 40" to Range				
Total 350 CFM		☐ Exhaust 4" Above Grade ☐ Supply 18" above Grade				
TVC System	Location: Base		☐ Supply Intake 6' from Exhaust (Recommended)			
	Manufacturer/Model: VanEE 90H HVI Listed		☐ Supply Intake 3' from Exhaust			
Design Airflow 146 CFM High 75 CFM Low		TVC System Supply Airflow Measured				
HRV/ERV 62 % Sensible Efficiency @ 0°C 124 watts		CFM High CFM Low				
HRV/ERV 60 % Sensible Efficiency @ -25°C 114 watts		TVC System Exhaust Airflow Measured				
		CFM High CFM Low				
Additional (Exhaust) Equipment	Location: Model: CFM: Sones:		Name:		HRAI:	
	Ens 1 AER50C 50 0.5		Address:			
	Ens 2 AER50C 50 0.5		City:		P.C.:	
	Ens 3 AER50C 50 0.5		Phone:		Fax:	
	Fan Manufacturer: Broan or Equiv. HVI Listed		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 #: 5190	Model/Address: 65-5 Alt. 2nd FLR WOB
Signature: <i>David DaCosta</i>	Date: July 6, 2015	Job #: JB-02447 Official Use:

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

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)

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

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

QUALIFICATION INFORMATION

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

David Da Costa

B.C.I.N. 32964

Signature of Designer

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

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

INSULATE DUCTS IN UNCONDITIONED SPACES R12

UNDERCUT ALL DOORS 1" MIN.

HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS.

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

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

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L4T 0A4 TEL: 905-671-9800
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

HEAT-LOSS	101,463	BTU/HR.
UNIT MAKE	AMANA	
UNIT MODEL	GMEC96-1205DNA	
UNIT HEATING INPUT	120,000	BTU/HR.
UNIT HEATING OUTPUT	115,200	BTU/HR.
A/C COOLING CAPACITY	5.0	TONS.
FAN SPEED	2029	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	5
1ST FLOOR	14	2	2
BASEMENT	10	2	

FLOOR PLAN: BASEMENT	
DRAWN BY: AM	CHECKED: DD
LAYOUT NO. JB-02447	DRAWING NO. M1
SQFT 5343	

OBC 2012

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

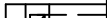
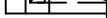
DATE: JULY 29, 2016

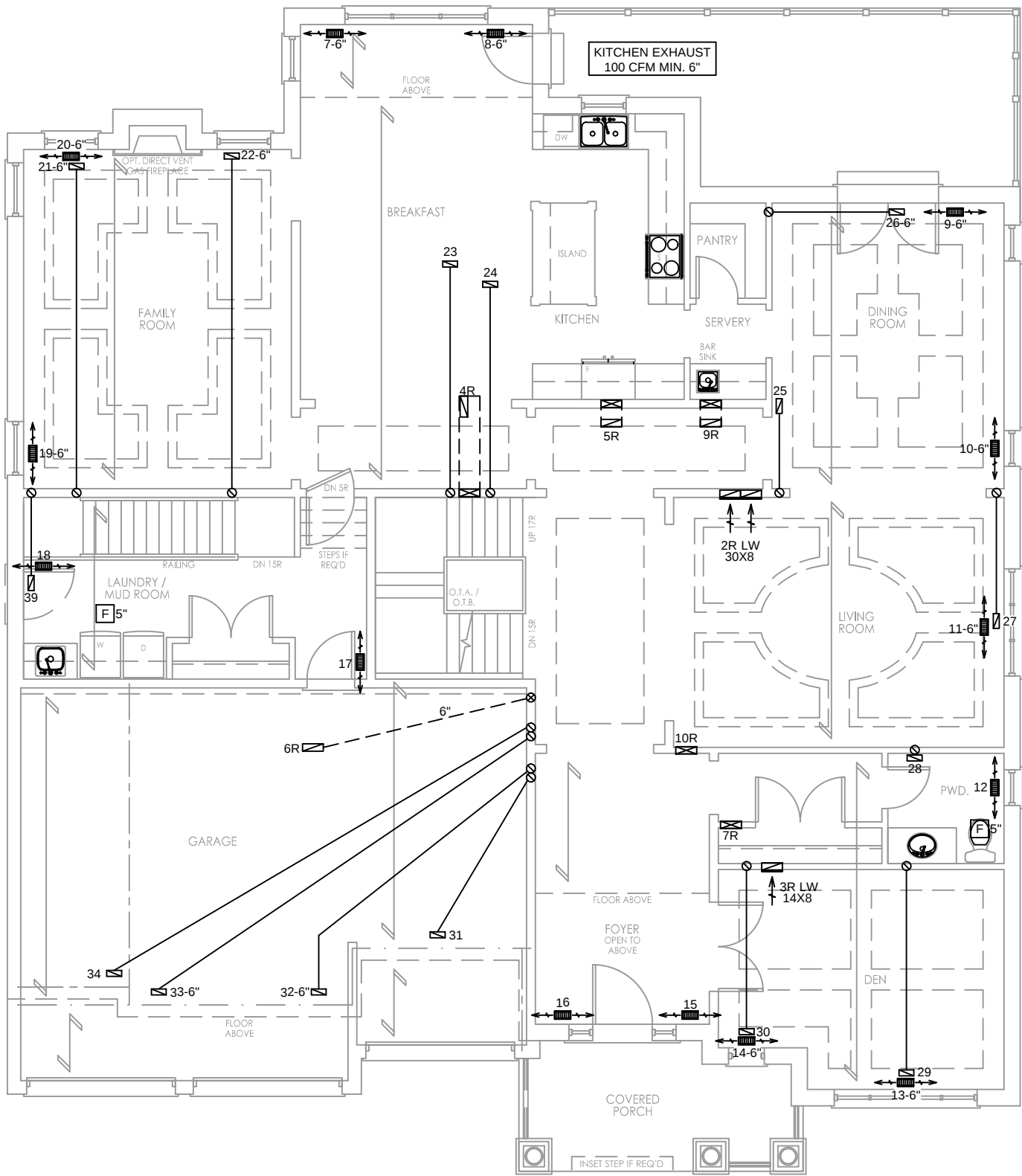
CLIENT: HIGHCASTLE HOMES

MODEL: 65-5 ALT. 2ND FLR WOB

PROJECT: RIVERWALK PHASE 2
BRAMPTON, ONT

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

	FLEX DUCT		LOW/HIGH WALL/KICK SUPPLY DIFFUSER		DUCT CONNECTION TO JOIST LINING		RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)	S.A.	SUPPLY AIR
	RIDIT ROUND DUCT		HRV EXHAUST GRILL		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN ROUND DUCT		RETURN AIR FROM BASEMENT SECOND FLOOR		THERMOSTAT
			VOLUME DAMPER						PRINCIPAL EXHAUST FAN SWITCH W/R & PRINCIPAL EXHAUST FAN



- CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED
- INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
- ALL DUCTWORK MUST BE SEALED TO CLASS A LEVEL AS PER OBC PART 6-6.2.4.3. (11)
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QUALIFICATION INFORMATION

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.
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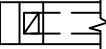
2985 DREW ROAD
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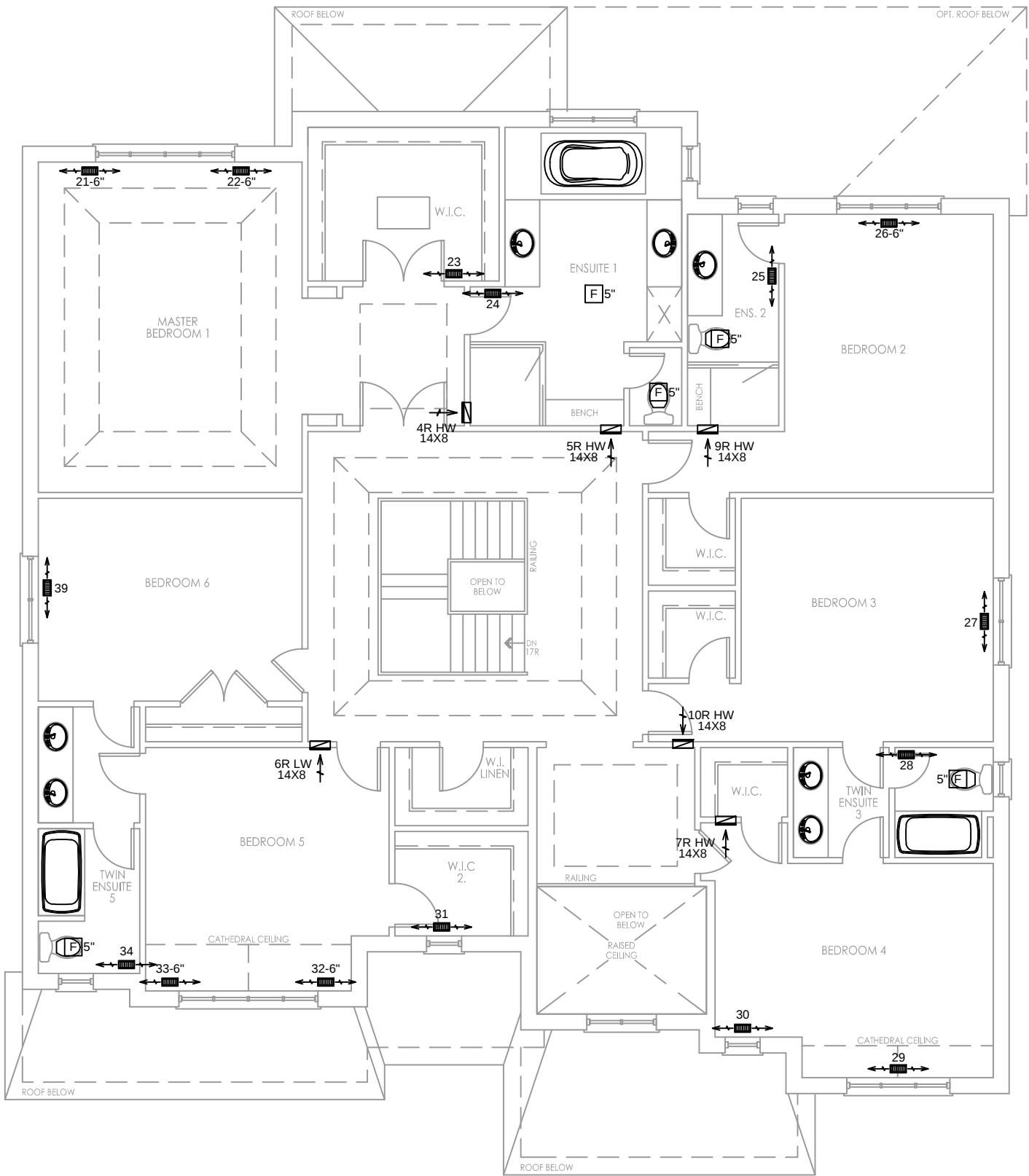
HEAT-LOSS	101,463	BTU/HR.
UNIT MAKE	AMANA	
UNIT MODEL	GMEC96-1205DNA	
UNIT HEATING INPUT	120,000	BTU/HR.
UNIT HEATING OUTPUT	115,200	BTU/HR.
A/C COOLING CAPACITY	5.0	TONS.
FAN SPEED	2029	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	5
1ST FLOOR	14	2	2
BASEMENT	10	2	

FLOOR PLAN: GROUND FLOOR		
DRAWN BY: AM	CHECKED: DD	SQFT: 5343
LAYOUT NO: JB-02447	DRAWING NO: M2	

DATE:	JULY 29, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	65-5 ALT. 2ND FLR WOB
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.  \$  	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)
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QUALIFICATION INFORMATION

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

Signature of Designer

OBC 2012

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

NOTES

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

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HEAT-LOSS	101,463	BTU/HR.
UNIT MAKE	AMANA	
UNIT MODEL	GMEC96-1205DNA	
UNIT HEATING INPUT	120,000	BTU/HR.
UNIT HEATING OUTPUT	115,200	BTU/HR.
A/C COOLING CAPACITY	5.0	TONS.
FAN SPEED	2029	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	5
1ST FLOOR	14	2	2
BASEMENT	10	2	

FLOOR PLAN: SECOND FLOOR

DRAWN BY: AM CHECKED: DD SQFT 5343

LAYOUT NO. JB-02447 DRAWING NO. M3

DATE: JULY 29, 2016

CLIENT: HIGHCASTLE HOMES

MODEL: 65-5 ALT. 2ND FLR WOB

PROJECT: RIVERWALK PHASE 2 BRAMPTON, ONT

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