

A. Project Information			
Building number, street name			Lot:
50-1 WOB			Lot/con.
Municipality	Brampton	Postal code	Plan number/ other description
B. Individual who reviews and takes responsibility for design activities			
Name	David DaCosta	Firm	gtaDesigns Inc.
Street address		2985 Drew Road, Suite 202	Unit no. / Lot/con.
Municipality	Mississauga	Postal code L4T 0A4	Province Ontario E-mail dave@gtadesigns.ca
Telephone number (905) 671-9800		Fax number (647) 494-9643	Cell number (416) 268-6820
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]			
☐ House ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ On-site Sewage Systems			
Description of designer's work		Model Certification	Project #: PJ-00067 Layout #: JB-02326
Heating and Cooling Load Calculations		Builder	Highcastle Homes
Air System Design		Project	Riverwalk Phase 2
Residential mechanical ventilation Design Summary		Model	50-1 WOB
Residential System Design per CAN/CSA-F280-12		SB-12	Package J
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 7, 2016</u> Date		 _____ Signature of Designer	

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1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 does not require to be completed a holder of a license, 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-02326	
Building Location					
Address (Model): 50-1 WOB			Site: Riverwalk Phase 2		
Model:			Lot:		
City and Province: Brampton			Postal code:		
Calculations based on					
Dimensional information based on:			Highcastle Homes 28/June/2016		
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		40H+	Internal shading: Light-translucent		Occupants: 5
Sensible Eff. at -25C 55%		Apparent Effect. at -0C 72%	Units: Imperial		Area Sq ft: 3039
Sensible Eff. at -0C 66%					
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 7, 2016**

Project: **Riverwalk Phase 2**

Model: **50-1 WOB**

System 1

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

Individual BCIN: 32964

David DaCosta

David DaCosta

Project # **PJ-00067**
Layout # **JB-02326**

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DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	28,670 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	3.0 Ton
Level 2 Net Load	19,023 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC960803BNA	Model		Cond.-----	3.0
Level 3 Net Load	17,694 btu/h	Available Design Pressure	0.275 "w.c.	Input Btu/h	80000	Input Btu/h		Coil -----	3.0
Level 4 Net Load	0 btu/h	Return Branch Longest Effective Length	300 ft	Output Btu/h	76800	Output Btu/h			
Total Heat Loss	65,387 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	32,844 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	71,926 Btu/h	Heating Air Flow Proportioning Factor	0.0179 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	34384 ft³	Cooling Air Flow Proportioning Factor	0.0357 cfm/btuh	Aux. Heat				(Brushless DC OBC 12.3.1.5.(2))	
Ventilation Load	2,728 Btu/h.	R/A Temp	70 deg. F.	SB-12 Package	Package J	Heating Check	1172 cfm	Cooling Check	1172 cfm
Ventilation PVC	79.5 cfm	S/A Temp	131 deg. F.						
Supply Branch and Grill Sizing		Diffuser loss	0.01 "w.c.	Temp. Rise>>>	61 deg. F.	Selected cfm>	1172 cfm	Cooling Air Flow Rate	1172 cfm

	Level 1														Level 2													
S/A Outlet No.	17	18	19	20	21	22								10	11	12	13	14	15	16								
Room Use	BASE	BASE	BASE	BASE	BASE	BASE								LAUN	KIT	KIT	FAM	DIN	LIV	FOY								
Btu/Outlet	4778	4778	4778	4778	4778	4778								2866	2101	2101	3120	2580	3028	3227								
Heating Airflow Rate CFM	86	86	86	86	86	86								51	38	38	56	46	54	58								
Cooling Airflow Rate CFM	32	32	32	32	32	32								76	63	63	95	70	72	67								
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	41	22	20	42	40	28								48	43	34	23	5	52	57								
Equivalent Length	110	90	120	110	90	130	70	70	70	70	70	70	70	80	120	140	110	130	110	90	70	70	70	70	70			
Total Effective Length	151	112	140	152	130	158	70	70	70	70	70	70	70	128	163	174	133	135	162	147	70	70	70	70	70			
Adjusted Pressure	0.09	0.12	0.09	0.09	0.10	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.10	0.08	0.07	0.10	0.10	0.08	0.09	0.19	0.19	0.19	0.19	0.19			
Duct Size Round	6	6	6	6	6	6								6	6	6	6	6	6	6								
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10			
Trunk	B	A	C	D	A	B								B	B	B	A	A	D	C								

	Level 3										Level 4													
S/A Outlet No.	1	2	3	4	5	6	7	8	9															
Room Use	MAST	MAST	ENS	BED 2	ENS 2	BED 3	BED 3	S.ENS	BED 4															
Btu/Outlet	1997	1997	1456	2794	2060	1986	1986	1150	2268															
Heating Airflow Rate CFM	36	36	26	50	37	36	36	21	41															
Cooling Airflow Rate CFM	78	78	25	81	55	40	40	27	50															
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	42	35	28	62	57	46	48	55	61															
Equivalent Length	100	120	150	130	120	110	120	110	120	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Total Effective Length	142	155	178	192	177	156	168	165	181	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Adjusted Pressure	0.09	0.08	0.07	0.07	0.07	0.08	0.08	0.08	0.07	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
Duct Size Round	6	6	4	6	5	6	6	4	6															
Outlet Size	4x10	4x10	3x10	4x10	3x10	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	
Trunk	A	A	A	D	C	C	C	B	B															

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	155	155	102	380	210	170					
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	45	24	44	19	25	15					
Equivalent Length	235	155	200	165	165	110	50	50	50	50	50
Total Effective Length	280	179	244	184	190	125	50	50	50	50	50
Adjusted Pressure	0.04	0.07	0.05	0.06	0.06	0.09	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.5	7.5	6.0	11.0	9.0	7.0					
Inlet Size	8	8	8	8	8	FLC					
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	14	14	30	14						
Trunk	Z	Z	Y	Z	Y	Y					

Return Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
Drop		1172	0.04	18.0	24x12
Z		1172	0.04	18.0	30x10 24x12
Y		482	0.05	12.5	18x8 14x10
X					
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
A		730	0.07	13.5	20x8 16x10
B		359	0.07	10.5	12x8 10x10
C		442	0.07	11.0	14x8 10x10
D		190	0.07	8.5	8x8
E					
F					
G					
H					
I					
J					
K					

2012 OBC

Builder: Highcastle Homes

Date: July 7, 2016

Project: Riverwalk Phase 2

Model: 50-1 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: 3039

Project # PJ-00067
Layout # JB-02326

Level 1				BASE															
Run ft. exposed wall A	121	A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	48	B		B		B		B		B		B		B		B		B	
Ceiling height	5.0	AG		5.0	AG	5.0	AG	5.0	AG	5.0	AG	5.0	AG	5.0	AG	5.0	AG	5.0	AG
Floor area	1164	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	605																		
Gross Exp Wall B	384																		
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31																
East/West	3.15	23.56	27.75	3	71	83													
South	3.15	23.56	21.28																
WOB Windows	3.15	23.56	27.75	101	2379	2802													
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	480		621													
Net exposed walls B	14.49	5.12	0.76	283	1449	215													
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 ()			15820															
Total Conductive	Heat Loss			20237															
	Heat Gain				3798														
Air Leakage	Heat Loss/Gain	0.3795	0.0379	7679	144														
Ventilation	Case 1		0.04		0.05														
	Case 2		22.44		11.88														
	Case 3	x	0.04		0.05	754	207												
Heat Gain People			239																
Appliances Loads	1 = .25 percent		4949																
Duct and Pipe loss			10%																
Level 1 HL Total	28,670	Total HL for per room		28670															
Level 1 HG Total	5,394	Total HG per room x 1.3			5394														

Level 2		LAUN		KIT		FAM		DIN		LIV		FOY		A		A		A		A		A																							
Run ft. exposed wall A		25 A		38 A		30 A		18 A		27 A		30 A		A		A		A		A		A																							
Run ft. exposed wall B		B		B		B		B		B		B		B		B		B		B		B																							
Ceiling height		12.0		10.0		10.0		10.0		10.0		10.0		10.0		10.0		10.0		10.0		10.0																							
Floor area		143 Area		304 Area		208 Area		253 Area		200 Area		136 Area		Area		Area		Area		Area		Area																							
Exposed Ceilings A		A		A		4 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		300		380		300		180		270		300																																	
Gross Exp Wall B																																													
Components				R-Values		Loss		Gain		Loss		Gain		Loss		Gain		Loss		Gain		Loss		Gain																					
North Shaded				3.15		23.56		11.31		8		188		90																															
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		21		518		77																															
Net exposed walls A				14.49		5.12		0.76		271		1388		206		319		1634		242		260		1331		197		129		661		98		225		1152		171		257		1316		195	
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						2094																																			
				Heat Gain								373																																	
Air Leakage				Heat Loss/Gain		0.3315		0.0379		694		14				1018		73				756		50				625		31				733		54		782		29					
Ventilation				Case 1		0.04		0.05																																					
				Case 2		22.44		11.88																																					
				Case 3		x		0.04		0.05		78		20				114		105				85		71				70		44				82		77		88		41			
Heat Gain People								239																																					
Appliances Loads				1 = .25 percent		4949				1.0				1237		0.5		619		0.5		619		0.5		619																			
Duct and Pipe loss						10%																																							
Level 2 HL Total				19,023		Total HL for per room				2866						4203				3120				2580				3028				3227				1886									
Level 2 HG Total				14,215		Total HG per room x 1.3						2138				3552				2665				1959				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. Individual BCIN:

32964

Dave DaCosta

Dave DaCosta

SB-12 Package

Package J

Total Heat Loss	65,387	btu/h
Total Heat Gain	32,844	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

Package: Package J
Project: Brampton Model: 50-1 WOB

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	3 @ 10.6 cfm	31.8 cfm
Bathrooms & Kitchen	5 @ 10.6 cfm	53 cfm
Other rooms	4 @ 10.6 cfm	42.4 cfm
Total		<u>169.6</u>

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1 @ 31.8 cfm	31.8 cfm
Other bedrooms	3 @ 15.9 cfm	47.7 cfm
Total		<u>79.5</u>

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	40H+	Base
80 cfm		Sones

Heat Recovery Ventilator

Make	VanEE	
Model	40H+	
	80 cfm high	40 cfm low
Sensible efficiency @ -25 deg C		55%
Sensible efficiency @ 0 deg C		66%

Supplemental Ventilation Capacity

Total ventilation capacity	169.6
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	<u>90.1</u> cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
S.ENS	50	AER50C	0.5
PWD	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 July 7, 2016

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

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Project # PJ-00067
Layout # JB-02326

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
50-1 WOB		
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 = 385 m ²	☐ ICF Basement ☒ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 46 m ²	☐ ICF Above Grade ☐ Slab-on-ground
W,S & G % = 12%	

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 
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Package: Package J System: System 1
Project: Brampton Model: 50-1 WOB

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.334	34384	74.2	15358

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.097	34384	11	659

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	15358	20237	0.3795
Level 2	0.3		13898	0.3315
Level 3	0.2		13758	0.2233
Level 4	0		0	0.0000

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

HG LEAK		Air Leakage Heat Gain	
	659		0.0379
BUILDING CONDUCTIVE HEAT GAIN			17372

Levels this Dwelling	
3	

Ventilation Calculations

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	79.5	74.2	0.28	1784

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	79.5	11	944

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
Level 1	0.5	1784	20237	0.04
Level 2	0.3		13898	0.04
Level 3	0.2		13758	0.03
Level 4	0		0	0.00

Case 1

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier	
HGbvent	944	0.05	
Building	17372		

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier	
C	HL^T	(1-E) HRV	22.44	
1.08	74.2	0.28		

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		1784	0.04

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain		Multiplier
HGbvent	HG*1.3	944		0.05
944	1			

Foundation Conductive Heatloss Level 1

3320 Watts 11327 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

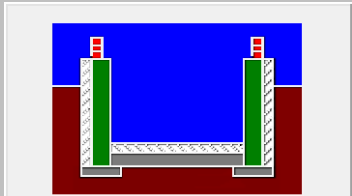
Envelope Air Leakage Calculator

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):	973.75			
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:	
	39.75		39.75	
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		

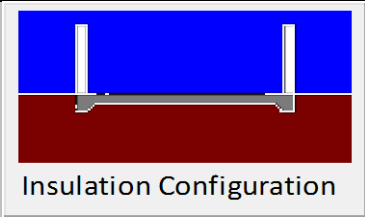
Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

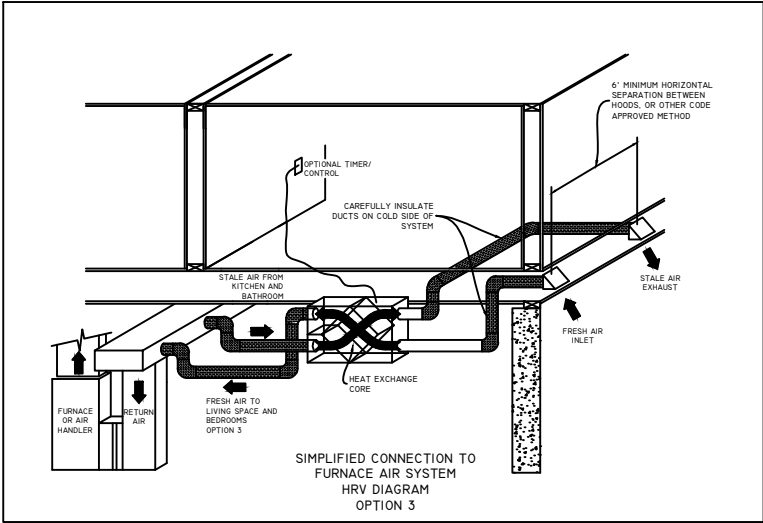
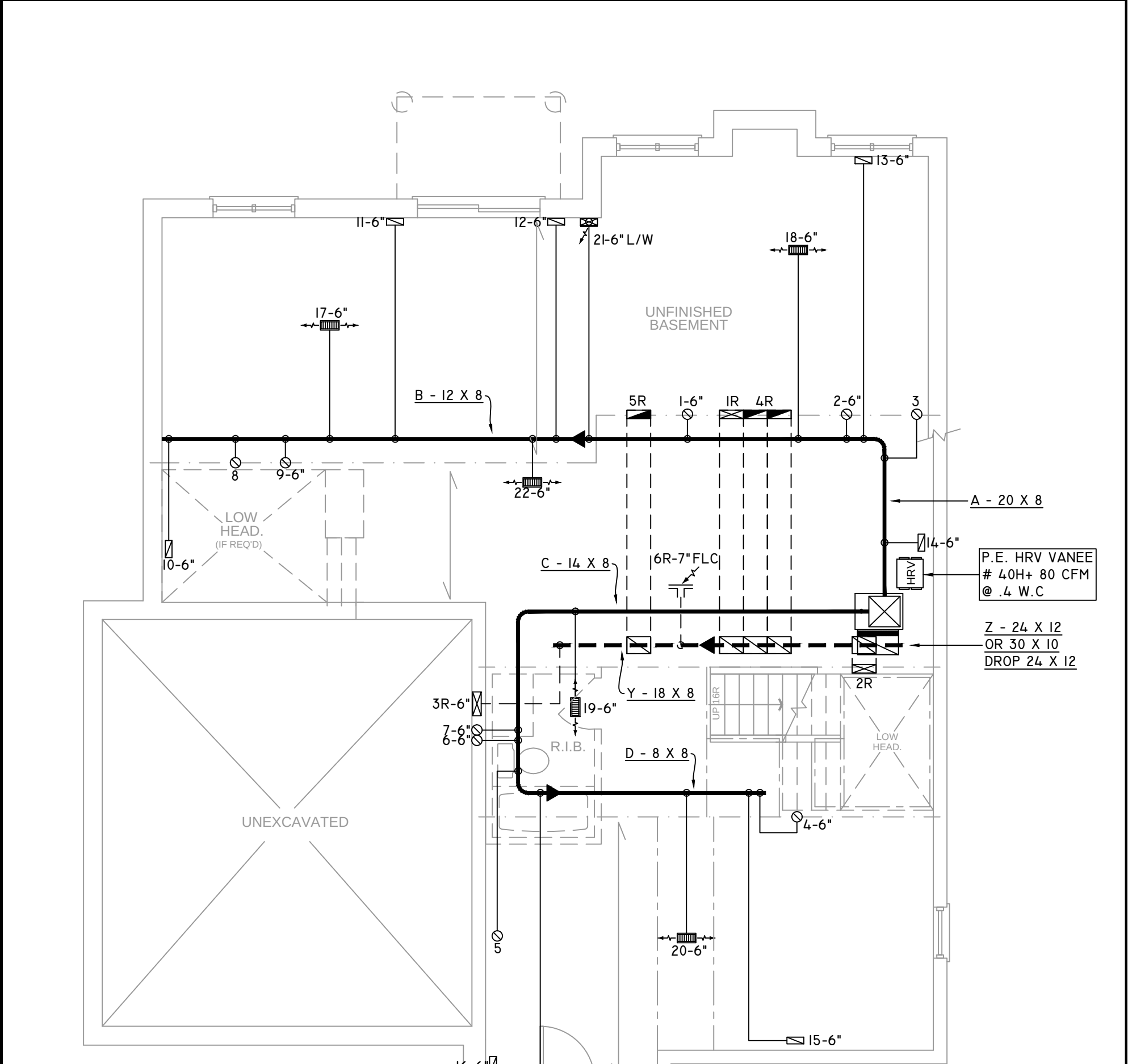
Weather Station Description		
Province:	Ontario	▼
Region:	Brampton	▼
Site Description		
Soil Conductivity:	High conductivity: moist soil	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	18.11	 Insulation Configuration
Floor Width (m):	5.97	
Exposed Perimeter (m):	36.88	
Wall Height (m):	2.44	
Depth Below Grade (m):	0.91	
Window Area (m ²):	0.28	
Door Area (m ²):	1.95	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		3130

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):	12.43	 Insulation Configuration
Width (m):	0.67	
Exposed Perimeter (m):	14.63	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		190

	FLEX DUCT RIGID ROUND DUCT SUPPLY DIFFUSER		LOW/HIGH WALL/KICK SUPPLY DIFFUSER HRV EXHAUST GRILLE 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
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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

- 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. (II)
- FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED
- CONSULT JOIST MANUFACTURER'S SPECIFICATION REGARDING ALLOWABLE HOLE SIZE
- FURNACE EQUIPPED WITH BRUSHLESS DC MOTOR AS PER OBC 12.3.1.5 (2)

OBC 2012

ZONE I 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.

PROVIDE BALANCING DAMPERS ON ALL BRANCHES.

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 FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING.

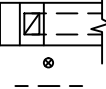
2985 DREW ROAD
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L4T 0A4 TEL: 416-268-6820
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

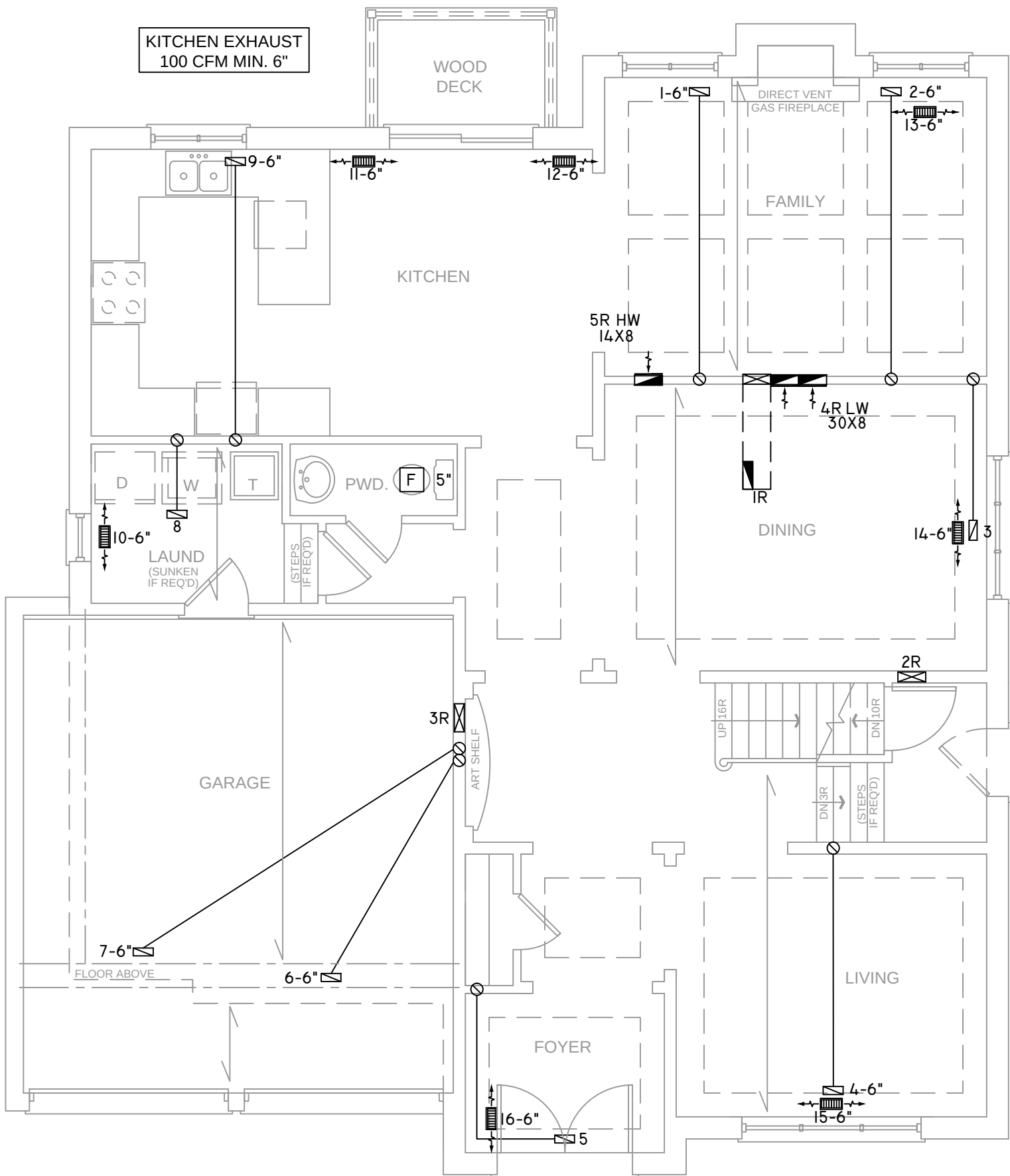
HEAT-LOSS	65,387	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960803BNA	OR EQUAL.
UNIT HEATING INPUT	80,000	BTU/HR.
UNIT HEATING OUTPUT	76,800	BTU/HR.
A/C COOLING CAPACITY	3.0	TONS.
FAN SPEED	1172	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	3
1ST FLOOR	7	2	2
BASEMENT	6	1	

FLOOR PLAN:	BASEMENT
DRAWN BY:	AM
CHECKED:	DD
LAYOUT NO.	JB-02326
SQFT	3039
DRAWING NO.	MI

DATE:	JULY 6, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-I WOB
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.
SCALE:	3/16" = 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
	RIGID ROUND DUCT		HRV EXHAUST GRILLE		RETURN AIR PIPE RISER		RETURN AIR RISER UP TO FLOOR ABOVE	R.A.	RETURN AIR
	SUPPLY DIFFUSER		SUPPLY AIR PIPE RISER		RETURN ROUND DUCT		RETURN AIR FROM BASEMENT SECOND FLOOR		THERMOSTAT
			VOLUME DAMPER						PRINCIPAL EXHAUST FAN SWITCH
									W/R & PRINCIPAL EXHAUST FAN



INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12

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

CONSULT JOIST MANUFACTURER'S SPECIFICATION REGARDING ALLOWABLE HOLE SIZE

CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

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DAVID DA COSTA



B.C.I.N. 32964

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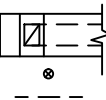
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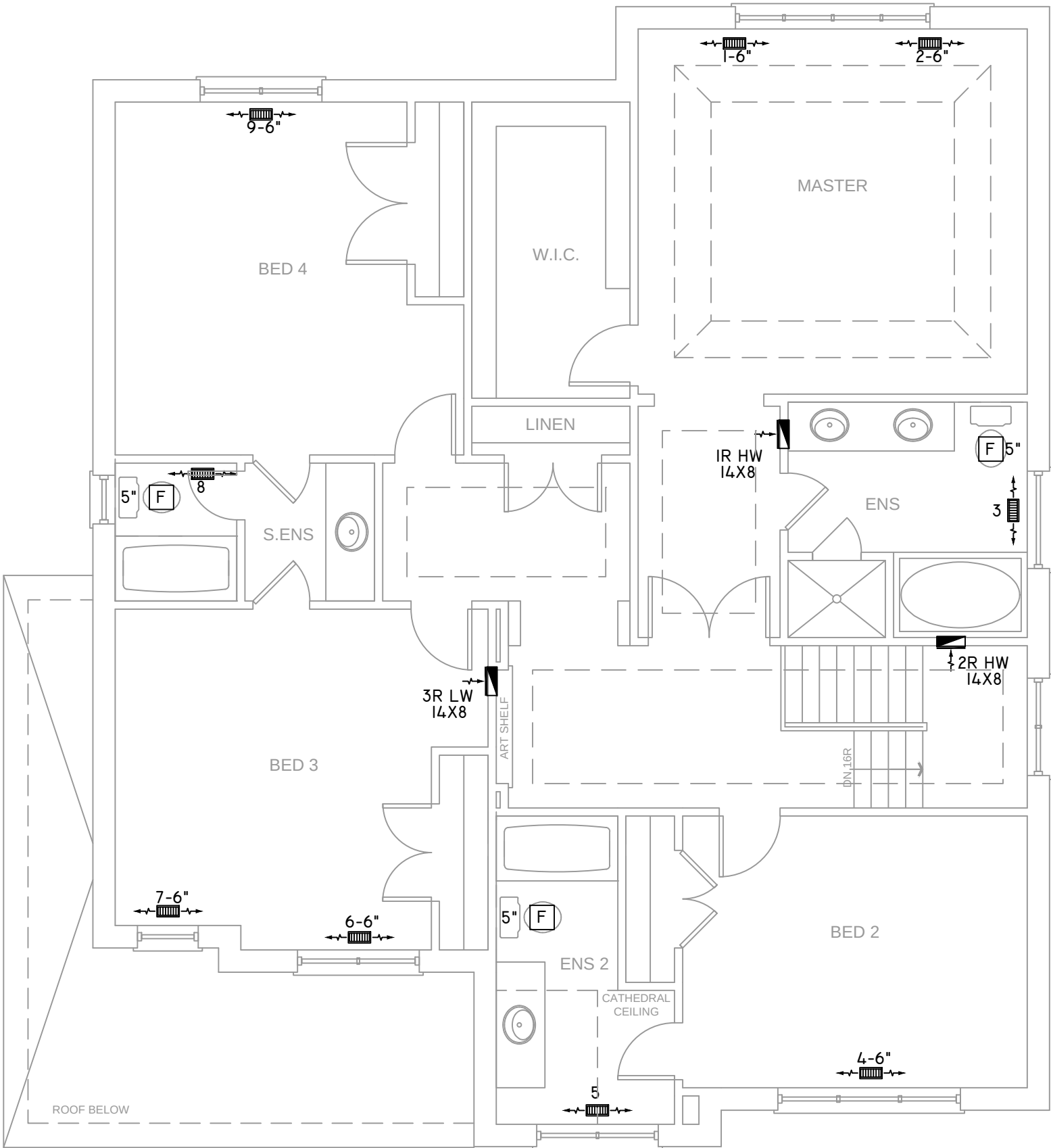
HEAT-LOSS	65,387	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960803BNA	OR EQUAL.
UNIT HEATING INPUT	80,000	BTU/HR.
UNIT HEATING OUTPUT	76,800	BTU/HR.
A/C COOLING CAPACITY	3.0	TONS.
FAN SPEED	1172	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	3
1ST FLOOR	7	2	2
BASEMENT	6	1	

FLOOR PLAN: GROUND FLOOR		
DRAWN BY: AM	CHECKED: DD	SQFT 3039
LAYOUT NO. JB-02326	DRAWING NO. M2	

DATE:	JULY 6, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-I WOB
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT.
SCALE:	3/16" = 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
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	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



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SIGNATURE OF DESIGNER

OBC 2012

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FAN SPEED	1172	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	3	3
1ST FLOOR	7	2	2
BASEMENT	6	1	

FLOOR PLAN:		SECOND FLOOR
DRAWN BY:	CHECKED:	SQFT
AM	DD	3039
LAYOUT NO.	DRAWING NO.	
JB-02326	M3	

DATE:	JULY 6, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-I WOB
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.
SCALE:	3/16" = 1'-0"