

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 50-2 WOB Lot 37			Lot: 37
Municipality Brampton			Postal code L4T 0A4
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	
Heating and Cooling Load Calculations Air System Design Residential mechanical ventilation Design Summary Residential System Design per CAN/CSA-F280-12 Residential New Construction - Forced Air		Project #:	PJ-00067
		Layout #:	JB-02339
		Builder	Highcastle Homes
		Project	Riverwalk Phase 2
		Model	50-2 WOB Lot 37
		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	

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-02339	
Building Location					
Address (Model): 50-2 WOB Lot 37			Site: Riverwalk Phase 2		
Model:			Lot: 37		
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: 3234
Sensible Eff. at -0C 63%					
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: **50-2 WOB Lot 37**

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

Page 3
Project # PJ-00067
Layout # JB-02339

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION & PRESSURE		FURNACE/AIR HANDLER DATA:		BOILER/WATER HEATER DATA:		A/C UNIT DATA:	
Level 1 Net Load	32,097 btu/h	Equipment External Static Pressure	0.5 "w.c.	Make	Amana	Make	Type	Amana	3.0 Ton
Level 2 Net Load	20,929 btu/h	Additional Equipment Pressure Drop	0.225 "w.c.	Model	GMEC960803BNA	Model		Cond.-----	3.0
Level 3 Net Load	18,884 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	71,910 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	34,803 btu/h	S/A Plenum Pressure	0.14 "w.c.	Water Temp	deg. F.	Blower DATA:			
Combo System HL + 10%	79,101 Btu/h	Heating Air Flow Proportioning Factor	0.0163 cfm/btuh	AFUE	96%	Blower Speed Selected:	W2	Blower Type	ECM
Building Volume Vb	37100 ft³	Cooling Air Flow Proportioning Factor	0.0337 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

S/A Outlet No.	Level 1												Level 2											
	1	2	3	4	5	6							7	8	9	10	11	12	13	14	15	16		
Room Use	BASE	BASE	BASE	BASE	BASE	BASE							KIT	KIT	KIT	FAM	FAM	MUD	FOY	LIV/DIN	LIV/DIN	PWD		
Btu/Outlet	5350	5350	5350	5350	5350	5350							1992	1992	1992	2474	2474	2716	2921	1890	1890	589		
Heating Airflow Rate CFM	87	87	87	87	87	87							32	32	32	40	40	44	48	31	31	10		
Cooling Airflow Rate CFM	32	32	32	32	32	32							68	68	68	84	84	19	33	70	70	8		
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	53	55	54	50	22	38							55	63	53	55	68	59	33	39	36	5		
Equivalent Length	90	140	140	90	80	90	70	70	70	70	70	70	90	120	150	150	165	130	120	100	70	70	70	70
Total Effective Length	143	195	194	140	102	128	70	70	70	70	70	70	145	183	203	205	233	189	153	139	106	75	70	70
Adjusted Pressure	0.09	0.07	0.07	0.09	0.13	0.10	0.19	0.19	0.19	0.19	0.19	0.19	0.09	0.07	0.06	0.06	0.06	0.07	0.08	0.09	0.12	0.17	0.19	0.19
Duct Size Round	6	6	6	6	6	6							6	6	6	6	6	5	5	5	5	2		
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10
Trunk	D	E	C	B	F	G							C	C	C	E	E	D	G	G	F	A		

	Level 3												Level 4																
S/A Outlet No.	17	18	19	20	21	22	23	24	25	26	27	28																	
Room Use	MAST	MAST	BED 4	ENS 3	BED 3	WIC	BED 2	ENS 2	LAUN	ENS	WC	WIC 2																	
Btu/Outlet	1866	1866	1981	1778	2778	774	3053	1122	1073	1389	569	635																	
Heating Airflow Rate CFM	30	30	32	29	45	13	50	18	17	23	9	10																	
Cooling Airflow Rate CFM	49	49	35	22	69	5	67	20	48	20	14	6																	
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	61	73	51	57	50	48	42	22	63	76	93	68																	
Equivalent Length	140	140	100	150	140	135	140	110	150	160	150	120	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	
Total Effective Length	201	213	151	207	190	183	182	132	213	236	243	188	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	
Adjusted Pressure	0.06	0.06	0.09	0.06	0.07	0.07	0.07	0.10	0.06	0.06	0.05	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	0.19	0.19	
Duct Size Round	5	5	4	4	6	3	6	3	5	4	3	3																	
Outlet Size	3x10	3x10	3x10	3x10	4x10	3x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	
Trunk	E	D	B	F	F	G	G	F	C	C	C	E																	

Return Branch And Grill Sizing	Grill Pressure Loss										
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	250	402	105	155	105	155					
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	31	46	47	49	51	58					
Equivalent Length	90	180	180	140	205	225	50	50	50	50	50
Total Effective Length	121	226	227	189	256	283	50	50	50	50	50
Adjusted Pressure	0.10	0.05	0.05	0.06	0.05	0.04	0.24	0.24	0.24	0.24	0.24
Duct Size Round	8.0	11.5	6.0	8.0	6.0	8.5					
Inlet Size	FLC	8	8	8	8	8					
" "	or	x	x	x	x	x	x	x	x	x	x
Inlet Size	9x6	30	14	14	14	14					
Trunk	Y	Y	Z	Z	Z	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		807	0.04	15.5	28x8 22x10
X					
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing	Trunk	CFM	Press.	Round	Rect. Size
A		1173	0.05	17.0	26x10 22x12
B		724	0.05	14.5	24x8 18x10
C		234	0.05	9.5	10x8
D		371	0.06	11.0	14x8 10x10
E		209	0.06	9.0	8x8 10x7
F		439	0.06	11.5	14x8 12x10
G		228	0.07	9.0	8x8 10x7
H					
I					
J					
K					

2012 OBC

Builder: Highcastle Homes

Date: July 7, 2016

Project: Riverwalk Phase 2

Model: 50-2 WOB Lot 37

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: 3234

Project # PJ-00067
Layout # JB-02339

Level 1				BASE															
Run ft. exposed wall A	133	A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	46	B		B		B		B		B		B		B		B		B	
Ceiling height	5.7	AG		AG		AG		AG		AG		AG		AG		AG		AG	
Floor area	1288	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	758																		
Gross Exp Wall B	368																		
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																
South	3.15	23.56	21.28	8	188	170													
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	628		813													
Net exposed walls B	14.49	5.12	0.76	267	1367	203													
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 ()			17587															
Total Conductive	Heat Loss			22039															
	Heat Gain				4065														
Air Leakage	Heat Loss/Gain	0.4214	0.0437	9286		178													
Ventilation	Case 1		0.04			0.05													
	Case 2		22.44			11.88													
	Case 3	x	0.03			0.05													
	Heat Gain People			771		211													
Appliances Loads	1 = .25 percent					239													
Duct and Pipe loss						5370													
						10%													
Level 1 HL Total	32,097			32097															
Level 1 HG Total	5,789					5789													

Level 2				KIT FAM MUD FOY LIV/DIN PWD															
Run ft. exposed wall A	55	A		41	A		22	A		24	A		32	A		6	A		
Run ft. exposed wall B		B			B			B			B			B			B		
Ceiling height	10.0			10.0			11.0			10.0			10.0			10.0			
Floor area	576	Area		308	Area		83	Area		128	Area		188	Area		79	Area		
Exposed Ceilings A	A			55	A			A			A		18	A			A		
Exposed Ceilings B	B				B			B			B			B			B		
Exposed Floors	Flr			Flr			Flr			Flr			Flr			Flr			
Gross Exp Wall A	550			410			242			240			320			60			
Gross Exp Wall B																			
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31																
East/West	3.15	23.56	27.75																
South	3.15	23.56	21.28	64	1508	1776		72	1696	1998		15	353	170		16	377	444	
Existing Windows	1.99	37.29	22.15	13	306	277						45	1060	1249		10	236	213	
Skylight	2.03	36.55	88.23													6	141	128	
Doors	3.01	24.65	3.65																
Net exposed walls A	14.49	5.12	0.76	473	2422	359		338	1731	257		206	1055	156		196	1004	149	
Net exposed walls B	8.50	8.73	1.29													265	1357	201	
Exposed Ceilings A	50.00	1.48	0.76													18	27	14	
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			4236															
	Heat Gain				2412														
Air Leakage	Heat Loss/Gain	0.3755	0.0437	1591		105													
Ventilation	Case 1		0.04																
	Case 2		22.44																
	Case 3	x	0.03																
	Heat Gain People			148		125													
Appliances Loads	1 = .25 percent																		
Duct and Pipe loss																			
Level 2 HL Total	20,929			5975															
Level 2 HG Total	17,004					6052													

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	71,910	btu/h
Total Heat Gain	34,803	btu/h

2012 OBC	Builder: Highcastle Homes	Date: July 7, 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: 3234	Project # P3-00067	Layout # JB-02339
	Project: Riverwalk Phase 2	Model: 50-2 WOB Lot 37															

Level 3	MAST	BED 4	ENS 3	BED 3	WIC	BED 2	ENS 2	LAUN	ENS	WC	WIC 2
Run ft. exposed wall A	33 A	11 A	18 A	11 A	13 A	27 A	10 A	10 A	17 A	6 A	9 A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height	9.0	8.0	8.0	11.0	8.0	11.0	9.0	9.0	8.0	8.0	8.0
Floor area	415 Area	219 Area	71 Area	222 Area	43 Area	187 Area	110 Area	97 Area	115 Area	18 Area	81 Area
Exposed Ceilings A	415 A	219 A	71 A	222 A	43 A	187 A	110 A	97 A	115 A	18 A	81 A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	84 Flr	71 Flr	133 Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	297	88	144	121	104	297	90	90	136	48	72
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								
East/West	3.15	23.56	27.75	40	942	1110					
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	257	1316	195	70	358	53	135	691
Net exposed walls B	8.50	8.73	1.29								
Exposed Ceilings A	50.00	1.48	0.76	415	616	315	219	325	166	71	105
Exposed Ceilings B	22.86	3.25	1.66								
Exposed Floors	22.05	3.37	0.23								
Foundation Conductive Heatloss											
Total Conductive	Heat Loss			2874				1390		1248	
	Heat Gain				1620			442		422	
Air Leakage	Heat Loss/Gain	0.2635	0.0437	757	71			366	19	329	18
Ventilation	Case 1	0.03	0.05								
	Case 2	22.44	11.88								
	Case 3	x	0.03	101	84			49	23	44	22
Heat Gain People			239	2	478			1	239	1	68
Appliances Loads	1 =.25 percent		5370								
Duct and Pipe Loss			10%								
Level 3 HL Total	18,884			3732				1981		1778	
Level 3 HG Total	12,010				2929				1029		656

Level 4	A	A	A	A	A	A	A	A	A	A	A
Run ft. exposed wall A	A	A	A	A	A	A	A	A	A	A	A
Run ft. exposed wall B	B	B	B	B	B	B	B	B	B	B	B
Ceiling height											
Floor area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A											
Gross Exp Wall B											
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	23.56	11.31								
East/West	3.15	23.56	27.75								
South	3.15	23.56	21.28								
Existing Windows	1.99	37.29	22.15								
Skylight	2.03	36.55	88.23								
Doors	3.01	24.65	3.65								
Net exposed walls A	14.49	5.12	0.76								
Net exposed walls B	8.50	8.73	1.29								
Exposed Ceilings A	50.00	1.48	0.76								
Exposed Ceilings B	22.86	3.25	1.66								
Exposed Floors	22.05	3.37	0.23								
Foundation Conductive Heatloss											
Total Conductive	Heat Loss										
	Heat Gain										
Air Leakage	Heat Loss/Gain	0.0000	0.0437								
Ventilation	Case 1	0.00	0.05								
	Case 2	22.44	11.88								
	Case 3	x	0.03								
Heat Gain People			239								
Appliances Loads	1 =.25 percent		5370								
Duct and Pipe Loss			10%								
Level 4 HL Total	0										
Level 4 HG Total	0										

Total Heat Loss	71,910	btu/h
Total Heat Gain	34,803	btu/h

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

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

32964



David DaCosta

SB-12 Package

Package J

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

Individual BCIN: 32964



David DaCosta

Package: Package J
Project: Brampton
Model: 50-2 WOB Lot 37

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		169.6	

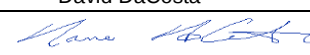
Principal Ventilation Capacity 9.32.3.4(1)			
Master bedroom	1 @ 31.8 cfm	31.8 cfm	
Other bedrooms	3 @ 15.9 cfm	47.7 cfm	
Total		79.5	

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		63%	

Supplemental Ventilation Capacity	
Total ventilation capacity	169.6
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	90.1 cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
ENS	50	AER50C	0.5
ENS 2	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 7, 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-02339

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 50-2 WOB Lot 37	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 = 412 m ²	☐ ICF Basement ☒ Walkout Basement ☐ Log/Post&Beam
Area of W,S&G = 48 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 
------------------------------	----------------------	--

Package: Package J System: System 1
Project: Brampton Model: 50-2 WOB Lot 37

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL ^{AT}	HL ^{leak}
0.018	0.375	37100	74.2	18573

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG ^{AT}	HG ^{Leak}
0.018	0.108	37100	11	796

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	18573	22039	0.4214
Level 2	0.3		14838	0.3755
Level 3	0.2		14096	0.2635
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	
	796		0.0437
BUILDING CONDUCTIVE HEAT GAIN		18222	

Levels this Dwelling	
3	

Ventilation Calculations

Vent	Ventilation Heat Loss					Ventilation Heat Gain				Vent
	Ventilation Heat Loss					Ventilation Heat Gain				
	C	PVC	HL^AT	(1-E) HRV	HLbvent	C	PVC	HG^AT	HGbvent	
	1.08	79.5	74.2	0.28	1784	1.1	79.5	11	944	

Case 1					Case 1						
Case 1	Ventilation Heat Loss (Exhaust only Systems)					Ventilation Heat Gain (Exhaust Only Systems)					Case 1
	Case 1 - Exhaust Only					Case 1 - Exhaust Only		Multiplier			
	Level	LF	HLbvent	LVL Cond. HL	Multiplier	HGBvent	944	0.05			
	Level 1	0.5	1784	22039	0.04	Building	18222				
	Level 2	0.3		14838	0.04						
	Level 3	0.2		14096	0.03						
Level 4	0	0		0.00							

Case 2					Case 2				
Case 2	Ventilation Heat Loss (Direct Ducted Systems)				Ventilation Heat Gain (Direct Ducted Systems)				Case 2
				Multiplier				Multiplier	
	C	HL^T	(1-E) HRV	22.44	C	HG^T	11.88		
	1.08	74.2	0.28		1.08	11			

Case 3				Case 3				
Case 3	Ventilation Heat Loss (Forced Air Systems)			Ventilation Heat Gain (Forced Air Systems)			Case 3	
		HLbvent	Multiplier			Vent Heat Gain		Multiplier
	Total Ventilation Load	1784	0.03	HGbvent	HG*1.3	944		0.05
				944	1			

Foundation Conductive Heatloss Level 1		3830	Watts	13067	Btu/h
Foundation Conductive Heatloss Level 2			Watts		Btu/h

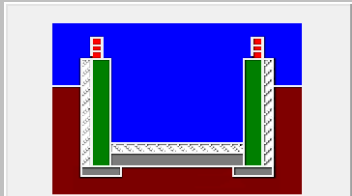
Envelope Air Leakage Calculator

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):	8.23			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Shallow			
House Volume (m ³):	1050.67			
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):		0.375		
Cooling Air Leakage Rate (ACH/H):		0.108		

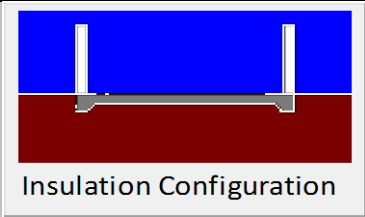
Residential Foundation Thermal Load Calculator

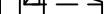
Supplemental tool for CAN/CSA-F280

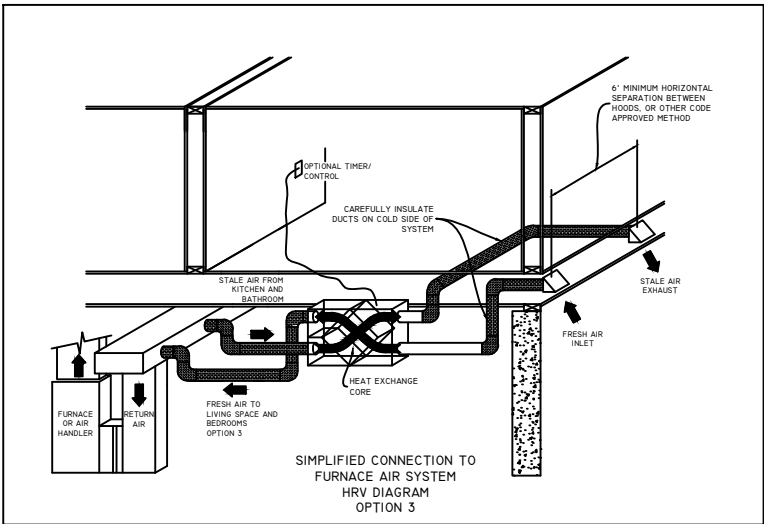
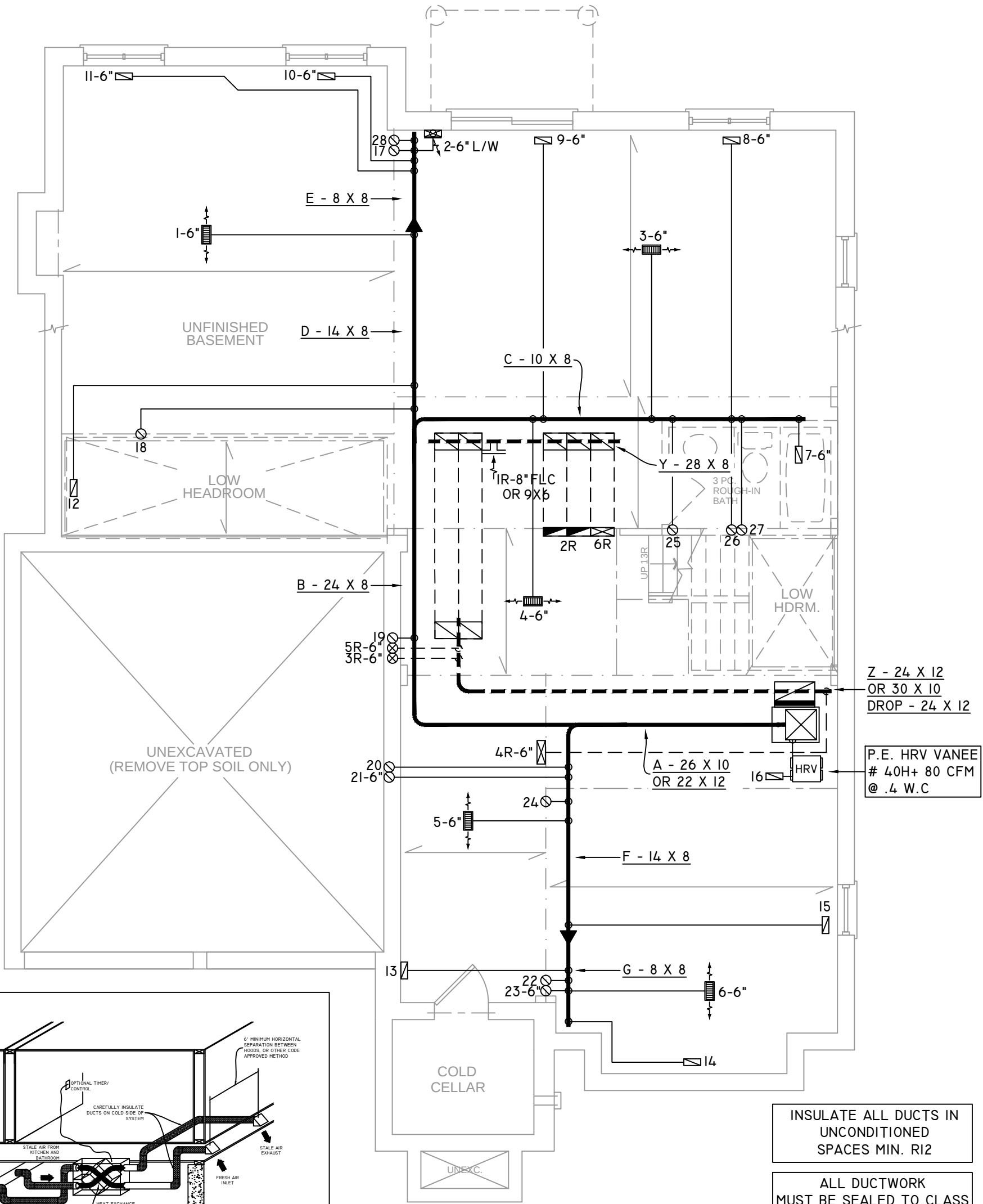
Weather Station Description		
Province:	Ontario	▼
Region:	Brampton	▼
Site Description		
Soil Conductivity:	High conductivity: moist soil	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	20.33	 Insulation Configuration
Floor Width (m):	5.89	
Exposed Perimeter (m):	40.54	
Wall Height (m):	2.44	
Depth Below Grade (m):	0.70	
Window Area (m ²):	0.74	
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):		3649

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):	12.28	 Insulation Configuration
Width (m):	0.52	
Exposed Perimeter (m):	14.02	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		181

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



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.



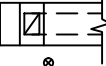
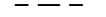
2985 DREW ROAD
SUITE 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 416-268-6820
EMAIL: DAVE@GTADESIGNS.CA
WEB: WWW.GTADESIGNS.CA

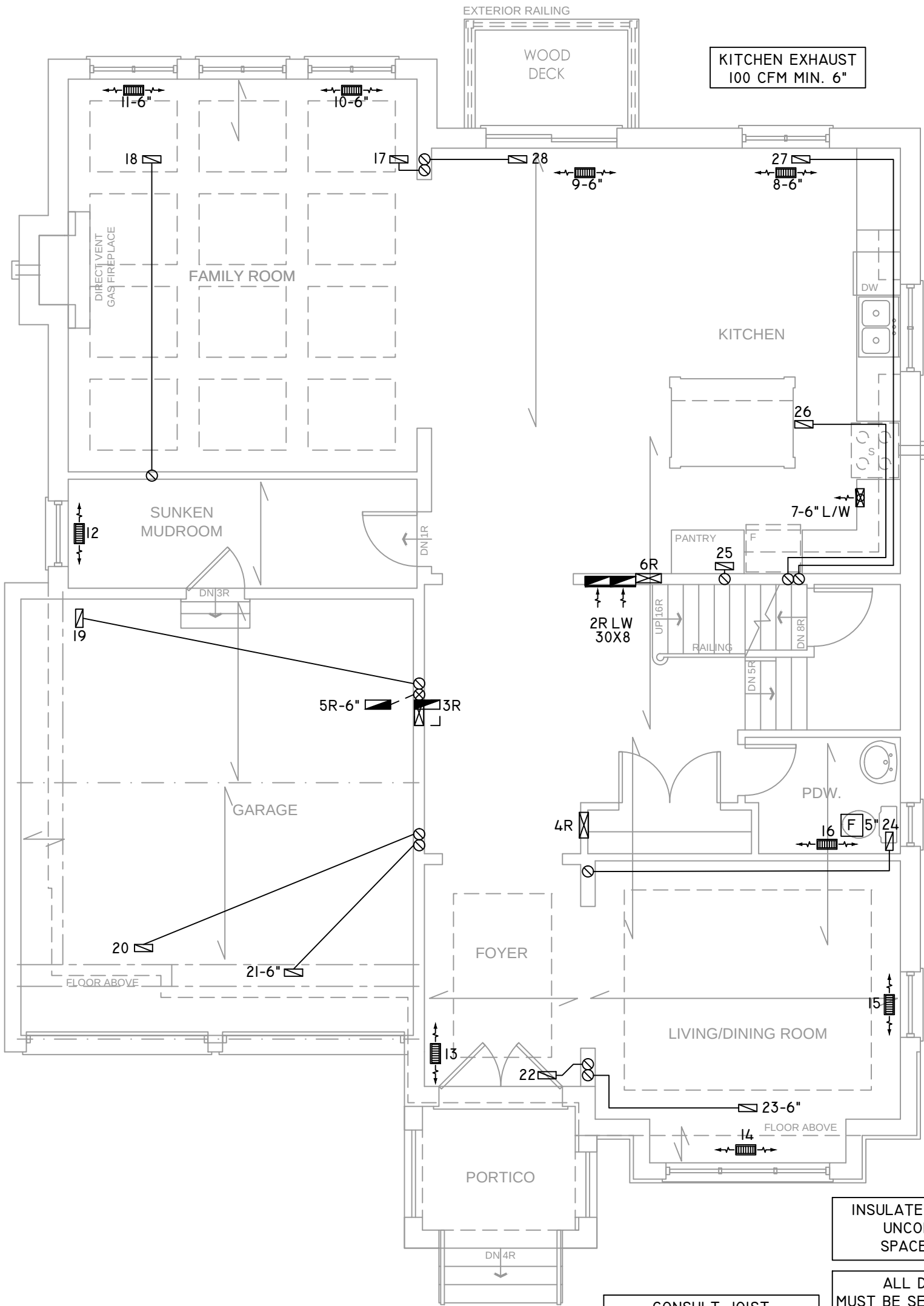
HEAT-LOSS	71,910	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960803BNA	OR EQUAL.
UNIT HEATING INPUT	80,000	BTU/HR.
UNIT HEATING OUTPUT	76,800	BTU/HR.
A/C COOLING CAPACITY	3.0	TONS.
FAN SPEED	1172	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	4	4
1ST FLOOR	10	1	2
BASEMENT	6	1	

FLOOR PLAN: BASEMENT	
DRAWN BY: AM	CHECKED: DD
LAYOUT NO. JB-02339	SQFT 3234
	DRAWING NO. MI

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-2 WOB LOT 37
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



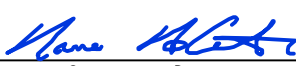
- INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
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- FOR THE PURPOSE OF HEATLOSS/GAIN CALCULATIONS ALL ELEVATIONS HAVE BEEN CONSIDERED

- CONSULT JOIST MANUFACTURER'S SPECIFICATION REGARDING ALLOWABLE HOLE SIZE
- CIRCULATION PRINCIPAL FAN SWITCH TO BE CENTRALLY LOCATED

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON BEHALF OF GTA DESIGNS INC. AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE BUILDING CODE TO BE A DESIGNER

QUALIFICATION INFORMATION

REQUIRED UNLESS DESIGN IS EXEMPT UNDER DIVISION C 3.2.5.1 OF THE ONTARIO BUILDING CODE

DAVID DA COSTA  B.C.I.N. 32964

SIGNATURE OF DESIGNER

OBC 2012

ZONE 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.



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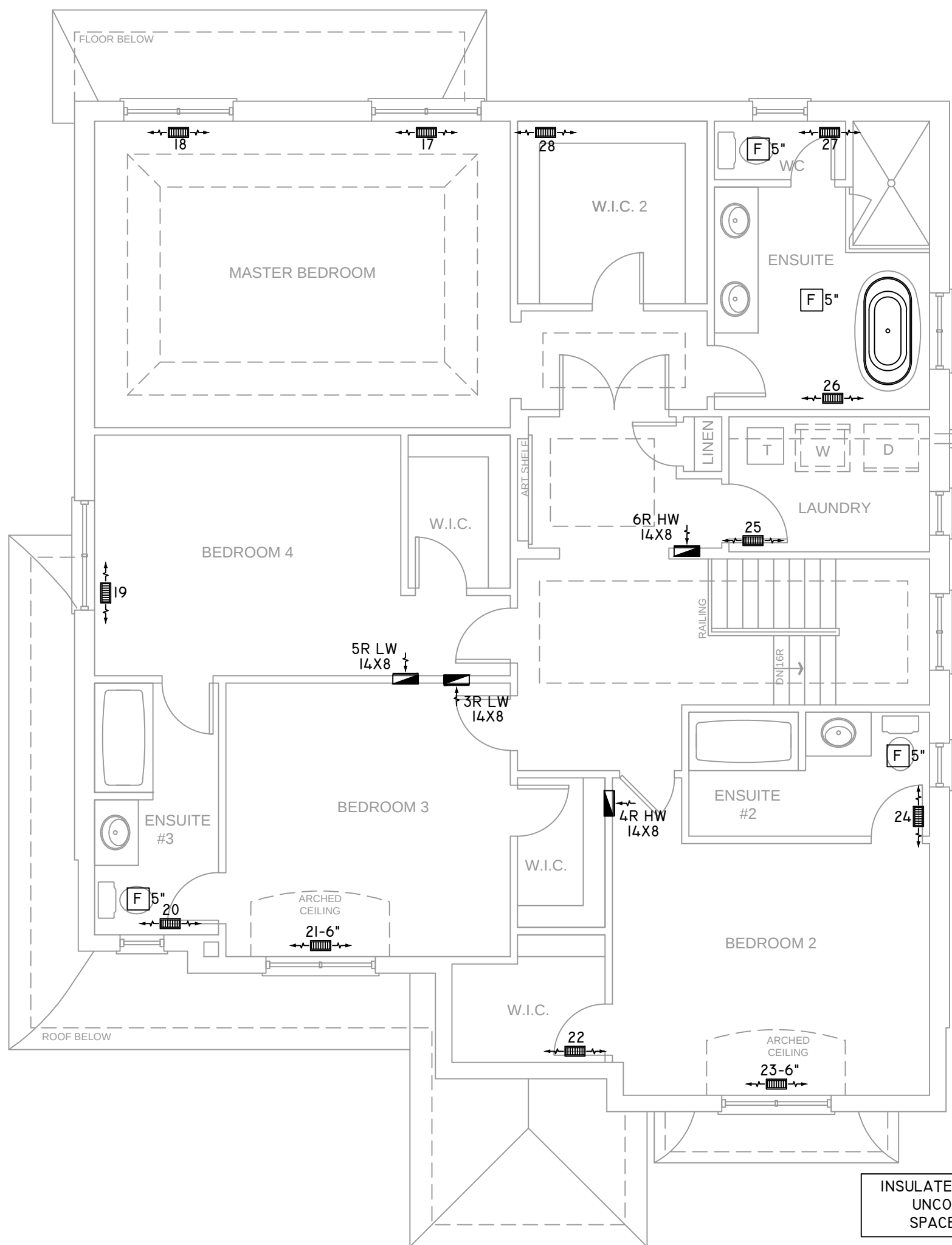
HEAT-LOSS	71,910	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960803BNA	OR EQUAL.
UNIT HEATING INPUT	80,000	BTU/HR.
UNIT HEATING OUTPUT	76,800	BTU/HR.
A/C COOLING CAPACITY	3.0	TONS.
FAN SPEED	1172	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	4	4
1ST FLOOR	10	1	2
BASEMENT	6	1	

FLOOR PLAN:	
DRAWN BY:	CHECKED:
AM	DD
LAYOUT NO.	DRAWING NO.
JB-02339	M2

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-2 WOB LOT 37
PROJECT:	RIVERWALK PHASE 2 BRAMPTON, ONT.
SCALE:	3/16" = 1'-0"

  	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.   	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. (II)

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

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN ON
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SIGNATURE OF DESIGNER

OBC 2012

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

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

HEAT-LOSS	71,910	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	12	4	4
1ST FLOOR	10	1	2
BASEMENT	6	1	

FLOOR PLAN:		
SECOND FLOOR		
DRAWN BY:	CHECKED:	SQFT
AM	DD	3234
LAYOUT NO.	DRAWING NO.	
JB-02339	M3	

DATE:	JULY 7, 2016
CLIENT:	HIGHCASTLE HOMES
MODEL:	50-2 WOB LOT 37
PROJECT:	RIVERWALK PHASE 2 BRAMPTON,ONT.
SCALE:	3/16" = 1'-0"