

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		33-5 Thornbury 33-5 Opt. 4 Bed.		Lot: Lot/con.
Municipality	Newcastle (Bowmanville)	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities				
Name		David DaCosta		
Street address		2985 Drew Road, Suite 202		
Municipality	Mississauga	Postal code	L4T 0A4	Province Ontario
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		Layout #
Heating and Cooling Load Calculations		Builder	Delpark Highcastle	
Air System Design		Project	Northglen	
Residential mechanical ventilation Design Summary		Model	33-5 Thornbury	
Residential System Design per CAN/CSA-F280-12		SB-12	33-5 Opt. 4 Bed. Package D	
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>April 15, 2015</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 Delpark Highcastle				Layout No.	
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.				JB-00024	
Building Location					
Address (Model): 33-5 Opt. 4 Bed.			Site: Northglen		
Model: 33-5 Thornbury			Lot:		
City and Province: Newcastle (Bowmanville)			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: Newcastle (Bowmanville)		Wind exposure: Shelterd			
HRV?		Internal shading: Light-translucent Occupants: 5			
Sensible Eff. at -25C 0		Apparent Effect. at -0C 0		Units: Imperial Area Sq. ft 1762	
Heating design conditions			Cooling design conditions		
Outdoor temp: -4.0 Indoor temp: 72 Mean soil temp: 50			Outdoor temp: 86 Indoor temp: 75 Latitude: 44		
Above grade walls			Below grade walls		
Style A: As per Selected OBC SB12 Package D R 24			Style A: As per Selected OBC SB12 Package D R 20		
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 D			Style A: As per Selected OBC SB12 Package D R 50		
Style B:			Style B: As per Selected OBC SB12 Package D R 31		
Exposed floors			Style C:		
Style A: As per Selected OBC SB12 Package D R 31			Doors		
Style B:			Style A: As per Selected OBC SB12 Package D R 3.01		
Windows			Style B:		
Style A: As per Selected OBC SB12 Package D 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 D R 2.03		
Style D:			Style B:		
Attached documents: As per Shedule 1					
Notes:					
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: Delpark Highcastle

2015 April 15, 2015

Project: Northglen

Model: 33-5 Thornbury
33-5 Opt. 4 Bed.

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

Project # PJ-00022
Layout # JB-00024

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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	14,048	btu/h		Equipment External Static Pressure	0.5	"w.c.		Make	Amana			Make	Type	Amana	2.0	Ton			
Level 2 Net Load	13,779	btu/h		Additional Equipment Pressure Drop	0.225	"w.c.		Model	GMEC960603BNA			Model		Cond.-----	2.0				
Level 3 Net Load	11,237	btu/h		Available Design Pressure	0.275	"w.c.		Input Btu/h	60000			Input Btu/h		Coil -----	2.0				
Level 4 Net Load	0	btu/h		Return Branch Longest Effective Length	300	ft		Output Btu/h	57600			Output Btu/h							
Total Heat Loss	39,064	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	18,203	btu/h		S/A Plenum Pressure	0.14	"w.c.		Water Temp		deg. F.		Blower DATA:							
Total Heat Loss + 10%	42,970	Btu/h		Heating Air Flow Proportioning Factor	0.0273	cfm/btuh		AFUE	96%			Blower Speed Selected:	W2	Blower Type	ECM				
Building Volume Vb	21244	ft³		Cooling Air Flow Proportioning Factor	0.0529	cfm/btuh		Aux. Heat						(Brushless DC OBC 12.3.1.5.(2))					
Ventilation Load	7,047	Btu/h		R/A Temp	70	deg. F.		SB-12 Package	Package D			Heating Check	1066	cfm	Cooling Check	963	cfm		
Ventilation PVC	75	cfm		S/A Temp	120	deg. F.													
Supply Branch and Grill Sizing				Diffuser loss	0.01	"w.c.		Temp. Rise>>>	50	deg. F.		Selected cfm>	1066	cfm	Cooling Air Flow Rate	963	cfm		

	Level 1 Outlets													Level 2 Outlets													
S/A Outlet No.	14	15	16	17										7	8	9	10	11	12	13							
Room Use	BASE	BASE	BASE	BASE										KIT	KIT	GREAT	FOY	FORM	PWD	PLEN							
Btu/Outlet	3512	3512	3512	3512										2231	2231	2737	2178	2780	527	1095							
Heating Airflow Rate CFM	96	96	96	96										61	61	75	59	76	14	30							
Cooling Airflow Rate CFM	10	10	10	10										90	90	96	92	81	58	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		
Actual Duct Length	11	15	29	49										53	54	41	14	17	5	13							
Equivalent Length	120	130	90	140	90	90	90	90	90	90	90	90	90	150	150	100	120	100	140	150	90	90	90	90	90		
Total Effective Length	131	145	119	189	90	90	90	90	90	90	90	90	90	203	204	141	134	117	145	163	90	90	90	90	90		
Adjusted Pressure	0.10	0.09	0.11	0.07	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.06	0.06	0.09	0.10	0.11	0.09	0.08	0.14	0.14	0.14	0.14	0.14		
Duct Size Round	6	6	6	6										6	6	6	6	6	5	4							
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10		
Trunk	C	A	A	B										B	B	B	A	C	A	C							

	Level 3 Outlets													Level 4 Outlets												
S/A Outlet No.	1	2	3	4	5	6	18																			
Room Use	MAST	BED 2	BED 3	BED 4	BATH	ENS	MAST																			
Btu/Outlet	1876	1301	2038	1552	957	1637	1876																			
Heating Airflow Rate CFM	51	35	56	42	26	45	51																			
Cooling Airflow Rate CFM	74	55	70	64	40	35	74																			
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	30	31	64	65	64	25	25																			
Equivalent Length	140	140	130	120	140	160	110	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	
Total Effective Length	170	171	194	185	204	185	135	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	
Adjusted Pressure	0.08	0.08	0.07	0.07	0.06	0.07	0.10	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Duct Size Round	6	5	6	6	5	5	6																			
Outlet Size	4x10	3x10	4x10	4x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	
Trunk	C	A	B	B	A	C	C																			

Return Branch And Grill Sizing		Grill Pressure Loss				0.02 "w.c.					
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R
Inlet Air Volume CFM	145	105	105	145	176	180	180	30			
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	44	45	59	7	14	23	6			
Equivalent Length	210	210	185	145	160	185	230	95	70	70	70
Total Effective Length	241	254	230	204	167	199	253	101	70	70	70
Adjusted Pressure	0.05	0.05	0.05	0.06	0.07	0.06	0.05	0.12	0.17	0.17	0.17
Duct Size Round	6.0	6.0	6.0	7.0	8.0	8.0	7.0	5.0			
Inlet Size	8	8	8	8	8	8	8	FLC			
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	14	14	14	14	14					
Trunk	Z	Y	Y	Y	Z	Z	Y	Z			

Return Trunk Duct Sizing				
Trunk	CFM	Press.	Round	Rect. Size
Drop	1066	0.05	16.5	24x10
Z	1066	0.05	16.5	32x8 24x10
Y	535	0.05	13.0	18x8 14x10
X				
W				
V				
U				
T				
S				
R				
Q				

Supply Trunk Duct Sizing				
Trunk	CFM	Press.	Round	Rect. Size
A	717	0.06	14.0	22x8 18x10
B	390	0.06	11.0	14x8 10x10
C	349	0.06	10.5	12x8 10x10
D				
E				
F				
G				
H				
I				
J				
K				

2012 OBC	Builder: Delpark Highcastle	Date: April 15, 2015	Weather Data Newcastle (Bowmanville) 44 -4.0 86 20 50	Project # PJ-00022
	Project: Northglen	Model: 33-5 Thornbury 33-5 Opt. 4 Bed.	Heat Loss ^T 76 deg. F	Layout # JB-00024
		System 1	Ht gain ^T 11 deg. F	GTA: 1762

Level 1				BASE															
Run ft. exposed wall A	127	A		A		A		A		A		A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B	
Ceiling height	2.0	AG		AG		AG		AG		AG		AG		AG		AG		AG	
Floor area	763	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	254																		
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	24.13	11.31																
East/West	3.15	24.13	27.75	6	145	166													
South	3.15	24.13	21.28	3	72	64													
Existing Windows	1.99	38.19	22.15																
Skylight	2.03	37.44	88.23																
Doors	3.01	25.25	3.65	21	530	77													
Net exposed walls A	13.79	5.51	0.80	224		179													
Net exposed walls B	8.50	8.94	1.29																
Exposed Ceilings A	50.00	1.52	0.76																
Exposed Ceilings B	22.86	3.32	1.66																
Exposed Floors	22.05	3.45	0.23																
Foundation Conductive Heatloss	Slab On Grade (x)			6146															
Total Conductive	Heat Loss			6894															
	Heat Gain				486														
Air Leakage	Heat Loss/Gain	0.5913	0.0335	4076	16														
Ventilation	Case 1	x	0.45	3078	52														
	Case 2		82.08																
	Case 3		0.25																
	Heat Gain People		239																
Appliances Loads	1 = .25 percent		3118																
Duct and Pipe loss			10%																
Level 1 HL Total	14,048	Total HL per per room		14048															
Level 1 HG Total	721	Total HG per room x 1.3			721														

Level 2				KIT GREAT FOY FORM PWD PLEN															
Run ft. exposed wall A	44	A		31	A		15	A		27	A		8	A		26	A		A
Run ft. exposed wall B	B			B			B		B		B		B		B		B		B
Ceiling height	9.0			9.0			9.0		9.0		9.0		9.0		2.0				
Floor area	263	Area		225	Area		50	Area		93	Area		85	Area		125	Area		Area
Exposed Ceilings A	A			A			A		A		A		A		A		Area		Area
Exposed Ceilings B	B			B			B		B		B		B		B		B		B
Exposed Floors	Flr			Flr			Flr		Flr		Flr		Flr		125	Flr	Flr		Flr
Gross Exp Wall A	396			279			135		243		72		52						
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	24.13	11.31																
East/West	3.15	24.13	27.75	34	820	943													
South	3.15	24.13	21.28																
Existing Windows	1.99	38.19	22.15																
Skylight	2.03	37.44	88.23																
Doors	3.01	25.25	3.65	21	530	77													
Net exposed walls A	15.13	5.02	0.73	341	1713	248													
Net exposed walls B	8.50	8.94	1.29																
Exposed Ceilings A	50.00	1.52	0.76																
Exposed Ceilings B	22.86	3.32	1.66																
Exposed Floors	22.05	3.45	0.23																
Foundation Conductive Heatloss	Slab On Grade (x)																		
Total Conductive	Heat Loss			3063															
	Heat Gain				1268														
Air Leakage	Heat Loss/Gain	0.2602	0.0335	797	43														
Ventilation	Case 1	x	0.20	602	137														
	Case 2		82.08																
	Case 3		0.25																
	Heat Gain People		239																
Appliances Loads	1 = .25 percent		3118	1.5		1169													
Duct and Pipe loss			10%																
Level 2 HL Total	13,779	Total HL per per room		4462															
Level 2 HG Total	9,679	Total HG per room x 1.3			3401														

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 D

Total Heat Loss	39,064	btu/h
Total Heat Gain	18,203	btu/h

2012 OBC	Builder: Delpark Highcastle	Date: April 15, 2015	Weather Data	Newcastle (Bowmanville)	44	-4.0	86	20	50	Heat Loss ^T	76 deg. F	Ht gain ^T	11 deg. F	GTA:	1762	Project #	PJ-00022
	Project: Northglen	Model: 33-5 Thornbury 33-5 Opt. 4 Bed.														Layout #	JB-00024

System 1

Level 3				MAST	BED 2	BED 3	BED 4	BATH	ENS												
Run ft. exposed wall A	38	A		11	A	24	A	17	A	13	A	20	A	A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B		B	
Ceiling height	8.0			8.0		8.0		8.0		8.0		8.0									
Floor area	247	Area		137	Area	150	Area	100	Area	119	Area	98	Area	Area		Area		Area		Area	
Exposed Ceilings A	247	A		137	A	150	A	100	A	119	A	98	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	304			88		192		136		104		160									
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
North Shaded	3.15	24.13	11.31																		
East/West	3.15	24.13	27.75	33	796	916		16	386	444		16	386	444		8	193	222			
South	3.15	24.13	21.28																		
Existing Windows	1.99	38.19	22.15																		
Skylight	2.03	37.44	88.23																		
Doors	3.01	25.25	3.65																		
Net exposed walls A	15.13	5.02	0.73	271	1361	197	72	362	52	176	884	128	120	603	87	104	522	76	152	764	111
Net exposed walls B	8.50	8.94	1.29																		
Exposed Ceilings A	50.00	1.52	0.76	247	375	188	137	208	104	150	228	114	100	152	76	119	181	90	98	149	74
Exposed Ceilings B	22.86	3.32	1.66																		
Exposed Floors	22.05	3.45	0.23																		
Foundation Conductive Heatloss																					
Total Conductive	Heat Loss			2533		956		1498		1141		703		1105							
	Heat Gain				1300	497		686		607		166		407							
Air Leakage	Heat Loss/Gain	0.2054	0.0335	520	44	196	17	308	23	234	20	144	6	227	14						
Ventilation	Case 1	x	0.16	393	140	148	53	232	74	177	65	109	18	171	44						
	Case 2		82.08																		
	Case 3		0.25																		
Heat Gain People			239	2		478	1		239	1		239	1		239						
Appliances Loads	1 =.25 percent		3118									0.5		390							
Duct and Pipe loss	10%			1	305	192								1	133	45					
Level 3 HL Total	11,237	Total HL for per room		3752		1301		2038		1552		957		1637							
Level 3 HG Total	7,803	Total HG per room x 1.3			2800		1048		1328		1212		753		662						

Level 4				A	A	2015	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Run ft. exposed wall A				B			B		B		B		B		B		B		B		B
Run ft. exposed wall B																					
Ceiling height																					
Floor area	Area			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																					
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
North Shaded	3.15	24.13	11.31																		
East/West	3.15	24.13	27.75																		
South	3.15	24.13	21.28																		
Existing Windows	1.99	38.19	22.15																		
Skylight	2.03	37.44	88.23																		
Doors	3.01	25.25	3.65																		
Net exposed walls A	15.13	5.02	0.73																		
Net exposed walls B	8.50	8.94	1.29																		
Exposed Ceilings A	50.00	1.52	0.76																		
Exposed Ceilings B	22.86	3.32	1.66																		
Exposed Floors	22.05	3.45	0.23																		
Foundation Conductive Heatloss																					
Total Conductive	Heat Loss																				
	Heat Gain																				
Air Leakage	Heat Loss/Gain	0.0000	0.0335																		
Ventilation	Case 1	x	0.00																		
	Case 2		82.08																		
	Case 3		0.25																		
Heat Gain People			239																		
Appliances Loads	1 =.25 percent		3118																		
Duct and Pipe loss	10%																				
Level 4 HL Total	0	Total HL for per room																			
Level 4 HG Total	0	Total HG per room x 1.3																			

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

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

32964



David DaCosta

SB-12 Package

Package D

Total Heat Loss	39,064	btu/h
Total Heat Gain	18,203	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 D** System: **System 1**
Project: **Newcastle (Bowmanville)** Model: **33-5 Opt. 4 Bed.**

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	Newcastle (Bowmanville)
Roll #	Permit #
Address	

Builder	
Name	Delpark Highcastle
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	@	20	cfm 40 cfm
Other Bedrooms	3	@	10	cfm 30 cfm
Bathrooms & Kitchen	4	@	10	cfm 40 cfm
Other rooms	2	@	10	cfm 20 cfm
Total				<u>130</u>

Principal Ventilation Capacity 9.32.3.4(1)				
Master bedroom	1	@	30	cfm 30 cfm
Other bedrooms	3	@	15	cfm 45 cfm
Total				<u>75</u>

Principal Exhaust Fan Capacity		
Make	Model	Location
Broan	684N	Ensuite
90 cfm		2.5 Sones

Heat Recovery Ventilator		
Make		
Model		
	cfm high	0 cfm low
Sensible efficiency @ -25 deg C		0
Sensible efficiency @ 0 deg C		0

Supplemental Ventilation Capacity		
Total ventilation capacity		130.0
Less principal exhaust capacity		75.0
REQUIRED supplemental vent. Capacity		<u>55.0</u> cfm

Supplemental Fans 9.32.3.5.			
Location	cfm	Model	Sones
Ens	50	770	2.5
Pwd	50	770	2.5
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	<i>David DaCosta</i>		
HRAI #	5190	BCIN #	32964
Date	April 15, 2015		

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-00022
Layout # JB-00024

This form is used to summarize the energy efficiency design of the project. Information on completing this form is on the reverse

For use by Principal Authority

Application No:	Model/Certification Number
-----------------	----------------------------

A. Project Information

Building number, street name	33-5 Thornbury 33-5 Opt. 4 Bed.	Unit number	Lot/Con
Municipality	Newcastle (Bowmanville)	Postal code	Reg. Plan number / other description

B. Compliance Option

☒ SB-12 Prescriptive [SB-12 - 2.1.1.]	Table: Package: A B C D E F G H I J K L M	Package D
☐ SB-12 Performance* [SB-12 - 2.1.2.]	* Attach energy performance calculations using an approved software	
☐ Energy Star®* [SB-12 - 2.1.3.]	* Attach 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		
Gross Wall Area =	224 m²	% Windows+	9%	☐ ICF Basement
Gross Window+ Area =	21 m²			☐ Walkout Basement
				☐ Log/Post&Beam
				☐ ICF Above Grade
				☐ Slab-on-ground

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	24	Space Heating Equip. ²	94%
Basement Walls	20	HRV Efficiency (%)	0%
Slab (all >600mm below grade)	x	DHW Heater (EF)	0.67
Slab (edge only ≤600mm below grade)	10	NOTES	
Slab (all ≤600mm below grade, or heated)	10	1. Provide U-Value in W/m2.K, or ER rating	
		2. Provide AFUE or indicate if condensing type combined system used	

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: BOP form attached. The house will be labeled on completion by:

Energy Star and EnerGuide80:

Evaluator/Advisor/Rater Name: _____ Evaluator/Advisor/Rater Licence #: _____

F. Designers [names of designers who are responsible for the building code design and whose plans accompany the permit application]

Architectural	Mechanical
	David DaCosta 

Package: **Package D** System: **System 1**
Project: **Newcastle (Bowmanville)** Model: **33-5 Opt. 4 Bed.**

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL ^{AT}	HL _{leak}
0.018	0.281	21244	76	8152

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG ^{AT}	HG _{Leak}
0.018	0.066	21244	11	278

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air	Level Conductive Heat Loss	Air Leakage Heat Loss Multiplier
1	0.5	8152	6894	0.5913
2	0.3		9400	0.2602
3	0.2		7937	0.2054
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	
	278		0.0335
BUILDING CONDUCTIVE HEAT GAIN		8276	

Levels this Dwelling	
3	

Ventilation Calculations

Vent	Ventilation Heat Loss					Ventilation Heat Gain				Vent	
	Ventilation Heat Loss					Ventilation Heat Gain					
	C	PVC	HL^T	(1-E) HRV	HLbvent	C	PVC	HG^T	HGbvent		
	1.08	75	76	1.00	6156	1.1	75	11	891		
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	891	0.11			
	1	0.5	6156	6894	0.45	Building	8276				
	2	0.3		9400	0.20						
	3	0.2		7937	0.16						
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	82.08		C	HG^T	11.88			
	1.08	76	1.00			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		6156	0.25		HGbvent		HG*1.3	891	0.11	
						891		1			

Foundation Conductive Heatloss Level 1

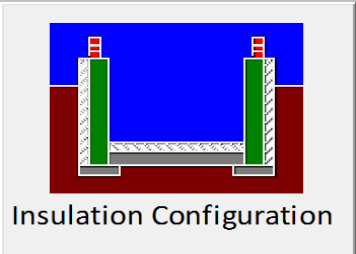
1801 Watts 6146 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

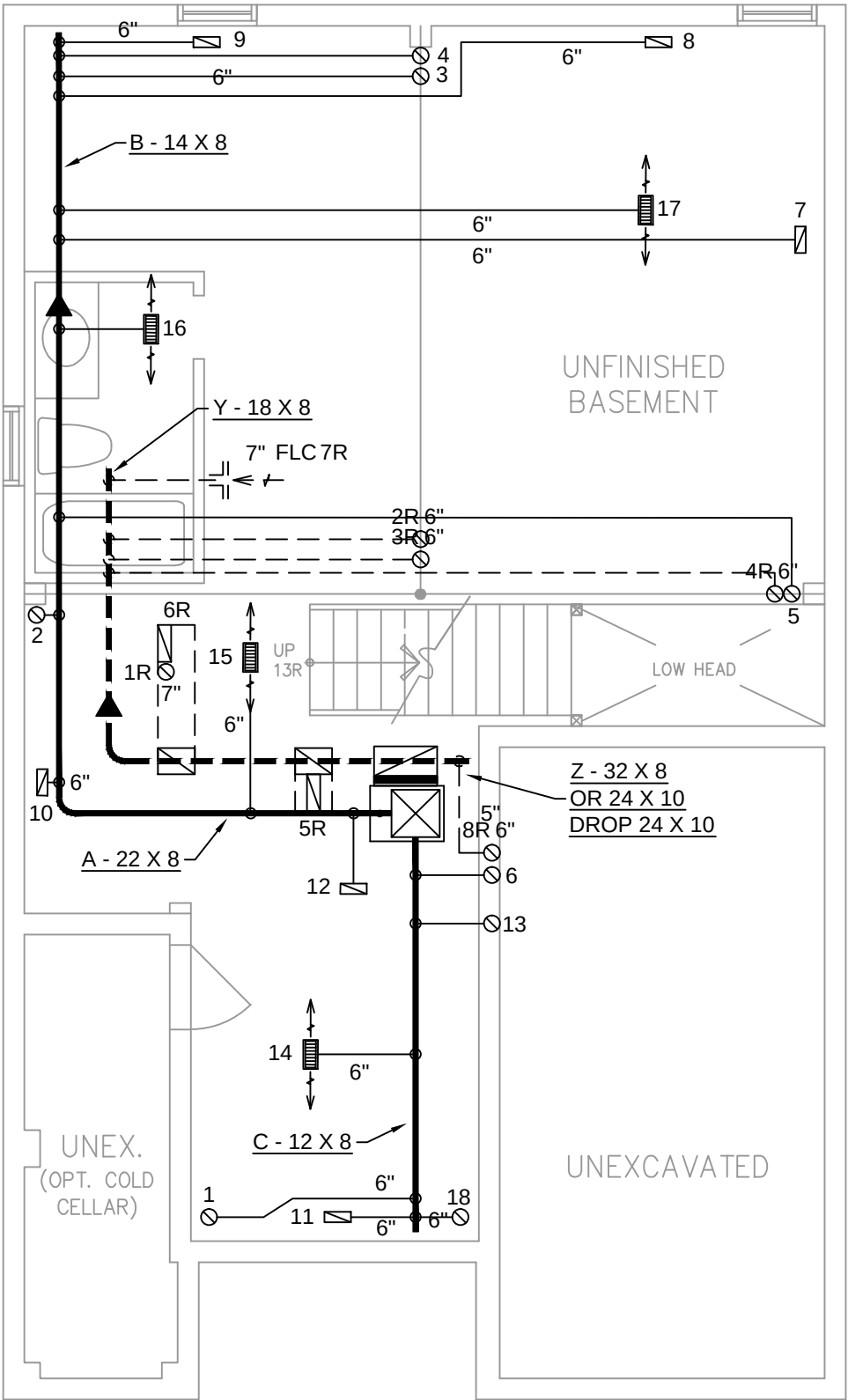
Weather Station Description		
Province:	Ontario	▼
Region:	Newcastle (Bowmanville)	▼
Site Description		
Soil Conductivity:	High conductivity: moist soil	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	14.45	 Insulation Configuration
Floor Width (m):	4.91	
Exposed Perimeter (m):	38.71	
Wall Height (m):	2.74	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.84	
Door Area (m ²):	1.95	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	23	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1801

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario ▼			
Region:	Newcastle (Bowmanville) ▼			
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):	5.79			
Building Configuration				6.4
Type:	Detached ▼			
Number of Stories:	Two ▼			
Foundation:	Full ▼			
House Volume (m ³):	566.3 601.63			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57) ▼			
Custom BDT Data:	ELA @ 10 Pa. ▼ 185.83 cm ² 3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	30		30	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Envelope Air Leakage Rate				
Heating Air Leakage Rate (ACH/H):		0.281		
Cooling Air Leakage Rate (ACH/H):		0.066		

	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
--	--	--	---	--	---	--	---	------------------	---



ALL DUCTWORK
MUST BE SEALED TO
CLASS A LEVEL AS PER
OBC PART 6-6.2.4.3. (11)

FURNACE EQUIPPED WITH
BRUSHLESS DC MOTOR AS
PER OBC 12.3.1.5 (2)

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 1 COMPLIANCE
PACKAGE "D" REF. TABLE 2.1.1.2.A

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

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

INSULATE DUCTS IN UNCONDITIONED SPACES R12

UNDERCUT ALL DOORS 1" MIN.

HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS.

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

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

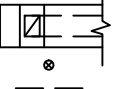
2985 DREW ROAD
SUITE 202,
MISSISSAUGA, ONT.
L4T 0A4 TEL: 416-268-6820
email: dave@gtadesigns.ca
web: www.gtadesigns.ca

HEAT-LOSS	39,064	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960603BNA	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	57,600	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	1,066	CFM

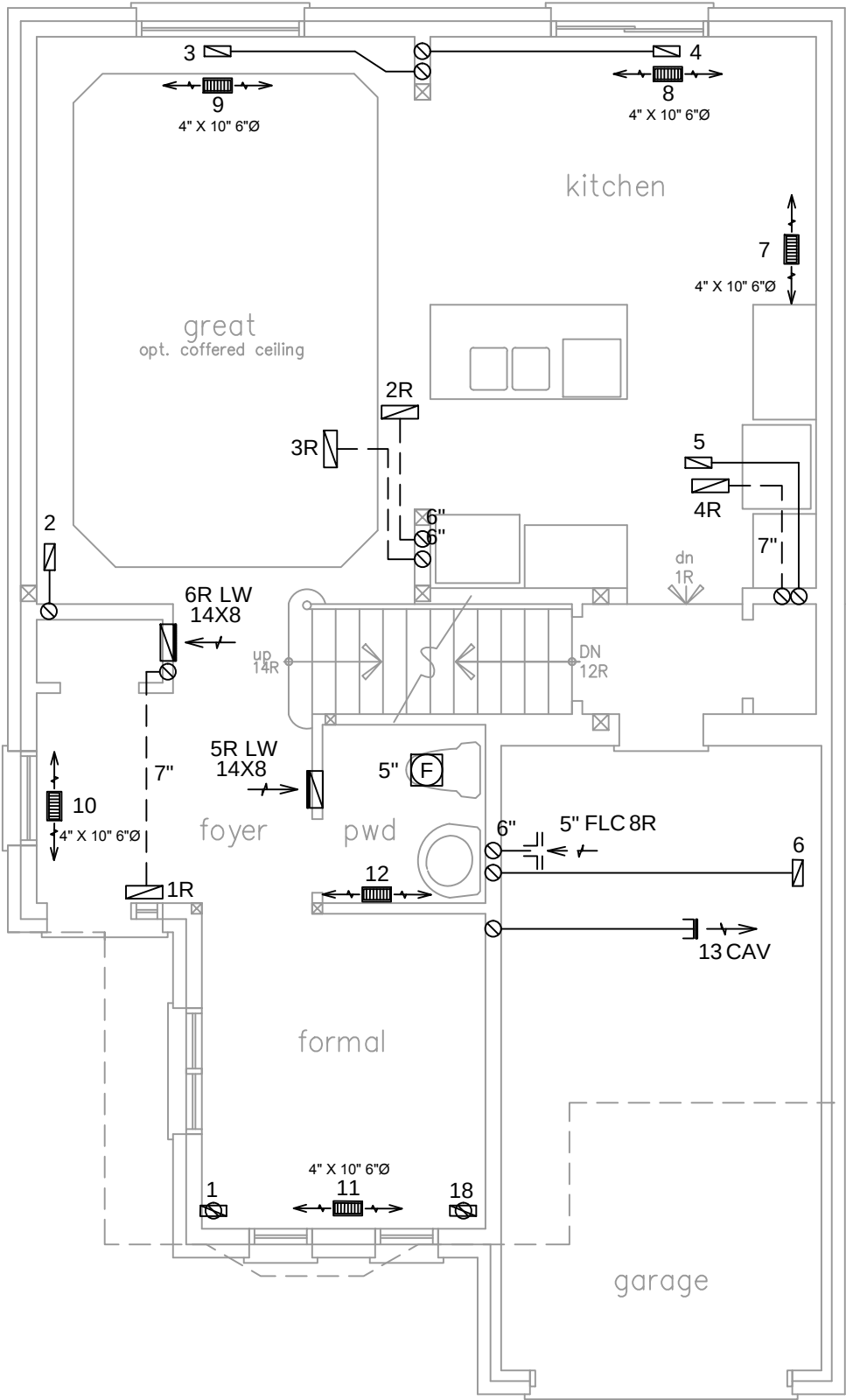
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	7	4	2
1ST FLOOR	7	3	2
BASEMENT	4	1	

FLOOR PLAN: BASEMENT	
DRAWN BY: RB	CHECKED: DD
LAYOUT NO. JB-00024	DRAWING NO. M1

DATE:	APRIL 15, 2015
CLIENT:	DELPARK HIGHCASTLE
MODEL:	33-5 OPT. 4 BED.
PROJECT:	NORTHGLEN CLARINGTON, ON.
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
	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)

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

QUALIFICATION INFORMATION

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

David Da Costa



Signature of Designer

B.C.I.N. 32964

OBC 2012

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

NOTES

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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.
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 **gtaDesigns**

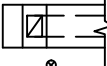
2985 DREW ROAD
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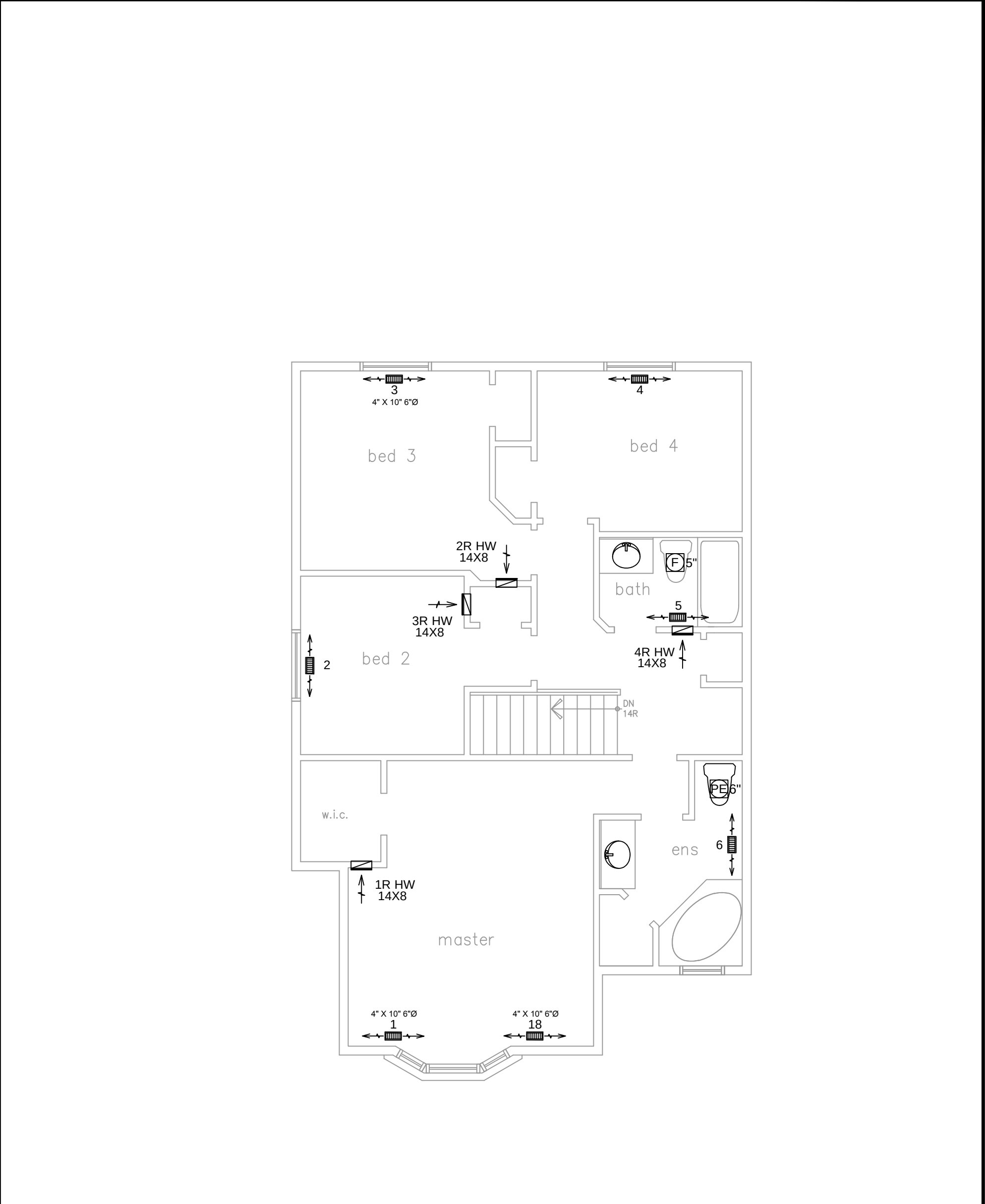
HEAT-LOSS	39,064	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960603BNA	OR EQUAL.
UNIT HEATING INPUT	60,000	BTU/HR.
UNIT HEATING OUTPUT	57,600	BTU/HR.
A/C COOLING CAPACITY	2.0	TONS.
FAN SPEED	1,066	CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	7	4	2
1ST FLOOR	7	3	2
BASEMENT	4	1	

FLOOR PLAN:	GROUND FLOOR
DRAWN BY:	RB
CHECKED:	DD
SQFT	1,762
LAYOUT NO.	JB-00024
DRAWING NO.	M2

DATE:	APRIL 15, 2015
CLIENT:	DELPARK HIGHCASTLE
MODEL:	33-5 OPT. 4 BED.
PROJECT:	NORTHGLEN CLARINGTON, ON.
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
	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



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 1 COMPLIANCE

PACKAGE "D" REF. TABLE 2.1.1.2.A

NOTES

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



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HEAT-LOSS	39,064	BTU/HR.	# OF RUNS	S/A	R/A	FANS	DATE:	APRIL 15, 2015
UNIT MAKE	AMANA	OR EQUAL.	3RD FLOOR				CLIENT:	DELPARK HIGHCASTLE
UNIT MODEL	GMEC960603BNA	OR EQUAL.	2ND FLOOR	7	4	2	MODEL:	33-5 OPT. 4 BED.
UNIT HEATING INPUT	60,000	BTU/HR.	1ST FLOOR	7	3	2	PROJECT:	NORTHGLEN CLARINGTON, ON.
UNIT HEATING OUTPUT	57,600	BTU/HR.	BASEMENT	4	1		SCALE:	3/16" = 1"-0"
A/C COOLING CAPACITY	2.0	TONS.	FLOOR PLAN: SECOND FLOOR					
FAN SPEED	1,066	CFM	DRAWN BY: RB	CHECKED: DD	SQFT	1,762		
			LAYOUT NO. JB-00024	DRAWING NO. M3				