

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 33-3 Danebury 33-3 Opt. 2nd		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		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		Layout #
Heating and Cooling Load Calculations		Builder	Highcastle Homes	
Air System Design		Project	Northglen	
Residential mechanical ventilation Design Summary		Model	33-3 Danebury	
Residential System Design per CAN/CSA-F280-12			33-3 Opt. 2nd	
Residential New Construction - Forced Air		SB-12	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 7, 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 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.				15-34	
Building Location					
Address (Model): 33-3 Opt. 2nd			Site: Northglen		
Model: 33-3 Danebury			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: 4			
Sensible Eff. at -25C 0		Apparent Effect. at -0C 0		Units: Imperial Area Sq. ft 1515	
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: 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: <u>Highcastle Homes</u>		2015	April 7, 2015	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: <u>32964</u> <i>David DaCosta</i> David DaCosta		Project #	Page 3
Project: <u>Northglen</u>		Model: <u>33-3 Danebury</u> <u>33-3 Opt. 2nd</u>					Layout #	15-34

DESIGN LOAD SPECIFICATIONS	AIR DISTRIBUTION & PRESSURE	FURNACE/AIR HANDLER DATA:	BOILER/WATER HEATER DATA:	A/C UNIT DATA:
Level 1 Net Load 12,545 btu/h Level 2 Net Load 12,459 btu/h Level 3 Net Load 9,872 btu/h Level 4 Net Load 0 btu/h Total Heat Loss 34,876 btu/h Total Heat Gain 16,002 btu/h Total Heat Loss + 10% 38,364 Btu/h Building Volume Vb 18399 ft³ Ventilation Load 5,638 Btu/h. Ventilation PVC 60 cfm Supply Branch and Grill Sizing	Equipment External Static Pressure 0.5 "w.c. Additional Equipment Pressure Drop 0.225 "w.c. Available Design Pressure 0.275 "w.c. Return Branch Longest Effective Length 300 ft R/A Plenum Pressure 0.138 "w.c. S/A Plenum Pressure 0.14 "w.c. Heating Air Flow Proportioning Factor 0.0222 cfm/btuh Cooling Air Flow Proportioning Factor 0.0483 cfm/btuh R/A Temp 70 deg. F. S/A Temp 116 deg. F. Diffuser loss <u>0.01</u> "w.c.	Make Amana Model GMEC960402BNA Input Btu/h 40000 Output Btu/h 38400 E.s.p. 0.50 " W.C. Water Temp deg. F. AFUE 96% Aux. Heat SB-12 Package Package D Temp. Rise>>> <u>46</u> deg. F.	Make Type Model Input Btu/h Output Btu/h Min.Output Btu/h AWH Blower Speed Selected: W2 Heating Check <u>773</u> cfm Selected cfm> <u>773</u> cfm	Amana 1.5 Ton Cond.----- 1.5 Coil ----- 1.5 Blower Type ECM (Brushless DC OBC 12.3.1.5.(2)) Cooling Check <u>773</u> cfm Cooling Air Flow Rate <u>773</u> cfm

	Level 1 Outlets														Level 2 Outlets									
S/A Outlet No.	12	13	14	15											7	8	9	10	11	16				
Room Use	BASE	BASE	BASE	BASE											KIT	KIT	GREAT	PWD	FOY	PLEN				
Btu/Outlet	3136	3136	3136	3136											2253	2253	2734	1944	2179	1095				
Heating Airflow Rate CFM	70	70	70	70											50	50	61	43	48	24				
Cooling Airflow Rate CFM	8	8	8	8											76	76	88	44	72	5				
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	7	19	30	30											33	31	38	8	10	8				
Equivalent Length	130	100	90	140	90	90	90	90	90	90	90	90	90	150	120	140	110	105	140	90	90	90	90	90
Total Effective Length	137	119	120	170	90	90	90	90	90	90	90	90	90	183	151	178	118	115	148	90	90	90	90	90
Adjusted Pressure	0.09	0.11	0.11	0.08	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.07	0.09	0.07	0.11	0.11	0.09	0.14	0.14	0.14	0.14	0.14
Duct Size Round	5	5	5	6										6	6	6	4	5	4					
Outlet Size	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10
Trunk	A	A	A	B											A	B	B	C	C	C				

	Level 3 Outlets										Level 4 Outlets													
S/A Outlet No.	1	2	3	4	5	6																		
Room Use	MAST	LAUND	BED 2	BED 3	BATH	ENS																		
Btu/Outlet	2523	820	1682	2082	1063	1702																		
Heating Airflow Rate CFM	56	18	37	46	24	38																		
Cooling Airflow Rate CFM	93	68	57	68	45	48																		
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	46	25	24	20	39	56																		
Equivalent Length	120	140	150	110	130	135	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Total Effective Length	166	165	174	130	169	191	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	0.10	0.08	0.07	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	6	5	5	5	5																		
Outlet Size	4x10	4x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	B	A	C	C	A	B																		

Return Branch And Grill Sizing												Return Trunk Duct Sizing					Supply Trunk Duct Sizing				
R/A Inlet No.	1R	2R	3R	4R	5R	6R	7R	8R	9R	10R	11R	Trunk	CFM	Press.	Round	Rect. Size	Trunk	CFM	Press.	Round	Rect. Size
Inlet Air Volume CFM	93	140	140	265	115	20						Drop	773	0.05	14.5	24x10	A	574	0.07	12.5	18x8 14x10
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	Z	773	0.05	14.5	24x8 18x10	B	274	0.07	9.5	10x8 127
Actual Duct Length	36	18	17	15	9	6						Y					C	199	0.07	8.5	8x8 107
Equivalent Length	190	160	160	185	175	150	70	70	70	70	70	X					D				
Total Effective Length	226	178	177	200	184	156	70	70	70	70	70	W					E				
Adjusted Pressure	0.05	0.07	0.07	0.06	0.06	0.08	0.17	0.17	0.17	0.17	0.17	V					F				
Duct Size Round	6.0	7.0	7.0	2x7	7.0	5.0						U					G				
Inlet Size	8	8	8	6								T					H				
" "	x	x	x	x	x	x	x	x	x	x	x	S					I				
Inlet Size	14	14	14	30	FLC	FLC						R					J				
Trunk	Z	Z	Z	Z	Z	Z						Q					K				

2012 OBC	Builder: Highcastle Homes	Date: April 7, 2015	Weather Data Newcastle (Bowmanville) 44 -4.0 86 20 50	Project # Layout #	15-34
	Project: Northglen	Model: 33-3 Danebury 33-3 Opt. 2nd	Heat Loss ^T 76 deg. F	Ht gain ^T 11 deg. F	GTA: 1515

System 1

Level 1

BASE

Run ft. exposed wall A	124 A	A	A	A	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	B	B	B	B	B
Ceiling height	2.0 AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG	AG
Floor area	635 Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	248															
Gross Exp Wall B																

Components	R-Values	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	3	72	83											
South	3.15	24.13	21.28	6	145	128											
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	218		174											
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																
	Heat Gain																
Air Leakage	Heat Loss/Gain	0.5388	0.0314	3530	462	14											
Ventilation	Case 1	x	0.38	2462	43												
	Case 2		82.08														
	Case 3		0.22														
Heat Gain People			239														
Appliances Loads	1 =.25 percent		2730														
Duct and Pipe loss			10%														
Level 1 HL Total	12,545		Total HL per per room	12545													
Level 1 HG Total	675		Total HG per room x 1.3		675												

Level 2

KIT GREAT PWD FOY PLEN

Run ft. exposed wall A	50 A	26 A	19 A	25 A	23 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	B	B	B	B	B
Ceiling height	9.0	9.0	9.0	9.0	2.0											
Floor area	248 Area	205 Area	47 Area	116 Area	140 Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
Exposed Ceilings A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	140 Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	450	234	171	225	46											
Gross Exp Wall B																

Components	R-Values	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	15	362	319											
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	401	2014	292	194	974	141	145	728	105	204	1025	148	46	231
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																
	Heat Gain																
Air Leakage	Heat Loss/Gain	0.2414	0.0314	772	49			468	39	333	10	373	13	172	2		
Ventilation	Case 1	x	0.17	538	145			327	116			232	30				
	Case 2		82.08														
	Case 3		0.22														
Heat Gain People			239														
Appliances Loads	1 =.25 percent		2730														
Duct and Pipe loss			10%														
Level 2 HL Total	12,459		Total HL per per room	4506				2734		1944		2179		1	89	7	
Level 2 HG Total	7,503		Total HG per room x 1.3		3159				1828		913				1095		105

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	34,876	btu/h
Total Heat Gain	16,002	btu/h

2012 OBC	Builder: Highcastle Homes	Date: April 7, 2015	Weather Data	Newcastle (Bowmanville)	44	-4.0	86	20	50	Project #	15-34
	Project: Northglen	Model: 33-3 Danebury 33-3 Opt. 2nd	System 1	Heat Loss ^T	76 deg. F	Ht gain ^T	11 deg. F	GTA:	1515	Layout #	

Level 3		MAST		LAUND		BED 2		BED 3		BATH		ENS															
Run ft. exposed wall A	30	A		7	A	20	A	25	A	12	A	20	A	A		A		A		A		A		A		A	
Run ft. exposed wall B	B			B		B		B		B		B		B		B		B		B		B		B		B	
Ceiling height	8.0			8.0		8.0		8.0		8.0		8.0															
Floor area	200	Area		60	Area	133	Area	150	Area	99	Area	93	Area	Area		Area		Area		Area		Area		Area		Area	
Exposed Ceilings A	200	A		60	A	133	A	150	A	99	A	93	A	A		A		A		A		A		A		A	
Exposed Ceilings B	B			B		B		B		B		B		B		B		B		B		B		B		B	
Exposed Floors	Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A	240			56		160		200		96		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	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	24.13	11.31	21	507	583		14	338	388		18	434	499		9	217	192		18	434	499					
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	219	1100	159		43	216	31		146	733	106		182	914	132		87	437	63		142	713	103	
Net exposed walls B	8.50	8.94	1.29																								
Exposed Ceilings A	50.00	1.52	0.76	200	304	152		60	91	46		133	202	101		150	228	114		99	150	75		93	141	71	
Exposed Ceilings B	22.86	3.32	1.66																								
Exposed Floors	22.05	3.45	0.23																								
Foundation Conductive Heatloss																											
Total Conductive	Heat Loss				1911				621				1273				1576				805				1289		
	Heat Gain					894			353				596				746					330			673		
Air Leakage	Heat Loss/Gain		0.1889	0.0314	361	28		117	11		241	19		298	23		152	10		152	10			243	21		
Ventilation	Case 1	x	0.13	0.09	252	83		82	33		168	55		208	69		106	31		106	31			170	63		
	Case 2		82.08	11.88																							
	Case 3		0.22	0.09																							
Heat Gain People			239		2		478			1		239		1		239				0.5		341					
Appliances Loads	1 =.25 percent		2730			1.0		683																			
Duct and Pipe loss			10%																								
Level 3 HL Total	9,872		Total HL for per room		2523			820			1682			2082			1063							1702			
Level 3 HG Total	7,824		Total HG per room x 1.3			1928			1404			1181			1401			926						984			

Level 4				A		A		2015		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		A		A	
Run ft. exposed wall B	B			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		Area		Area	
Exposed Ceilings A	A			A		A		A		A		A		A		A		A		A		A		A		A	
Exposed Ceilings B	B			B		B		B		B		B		B		B		B		B		B		B		B	
Exposed Floors	Flr			Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr	
Gross Exp Wall A																											
Gross Exp Wall B																											
Components	R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	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	0.0314																							
Ventilation	Case 1	x	0.00	0.09																							
	Case 2		82.08	11.88																							
	Case 3		0.22	0.09																							
Heat Gain People			239																								
Appliances Loads	1 =.25 percent		2730																								
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																								

Total Heat Loss	34,876	btu/h
Total Heat Gain	16,002	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 D

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 D
System:
System 1
Project:
Newcastle (Bowmanville)
Model:
33-3 Opt. 2nd
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	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 @ 20 cfm	40 cfm	
Other Bedrooms	2 @ 10 cfm	20 cfm	
Bathrooms & Kitchen	4 @ 10 cfm	40 cfm	
Other rooms	2 @ 10 cfm	20 cfm	
Total			<u>120</u>

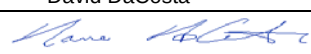
Principal Ventilation Capacity 9.32.3.4(1)			
Master bedroom	1 @ 30 cfm	30 cfm	
Other bedrooms	2 @ 15 cfm	30 cfm	
Total			<u>60</u>

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	120.0
Less principal exhaust capacity	60.0
REQUIRED supplemental vent. Capacity	<u>60.0</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			
HRAI #	5190	BCIN #	32964
Date	April 7, 2015		

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

Project #
Layout # 15-34

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	33-3 Danebury 33-3 Opt. 2nd	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 = 212 m²	☐ ICF Basement ☐ Walkout Basement ☐ Log/Post&Beam
Gross Window+ Area = 19 m²	☐ ICF Above Grade ☐ Slab-on-ground
% Windows+ 9%	

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:
Project:

Package D
Newcastle (Bowmanville)

System:
Model:

System 1
33-3 Opt. 2nd

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL ^{AT}	HL _{leak}
0.018	0.281	18399	76	7061

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG ^{AT}	HG _{Leak}
0.018	0.066	18399	11	240

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	7061	6552	0.5388
2	0.3		8775	0.2414
3	0.2		7475	0.1889
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	
	240		0.0314
BUILDING CONDUCTIVE HEAT GAIN			7663

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	60	76	1.00	4925	1.1	60	11	713		
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	713	0.09			
	1	0.5	4925	6552	0.38	Building	7663				
	2	0.3		8775	0.17						
	3	0.2		7475	0.13						
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		4925	0.22		HGbvent	HG*1.3	713	0.09		
						713	1				

Foundation Conductive Heatloss Level 1

1701 Watts 5805 Btu/h

Foundation Conductive Heatloss Level 2

Watts Btu/h

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

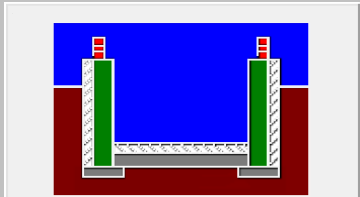
32964

David DaCosta

David DaCosta

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

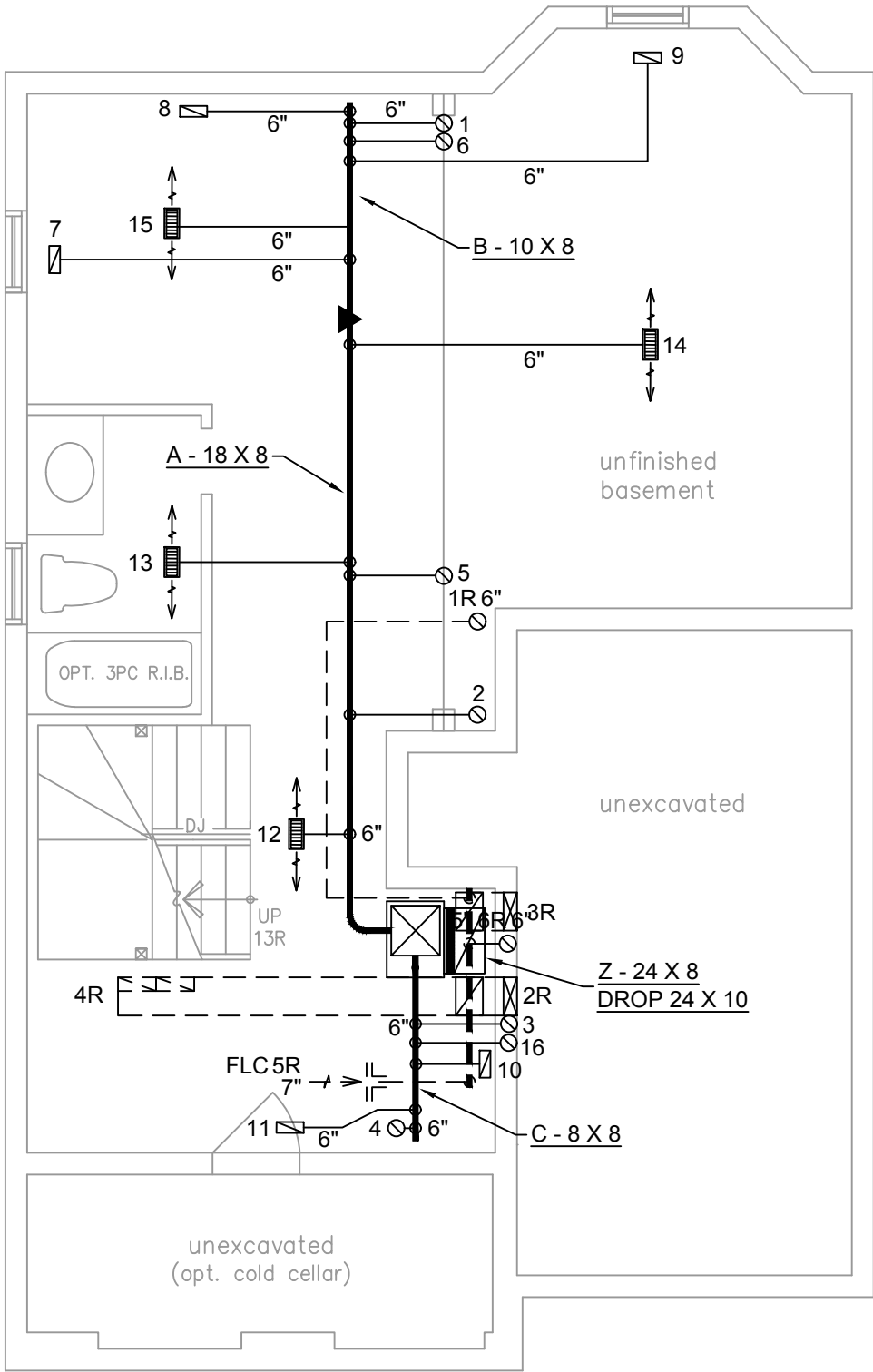
Weather Station Description		
Province:	Ontario	▼
Region:	Newcastle (Bowmanville)	▼
Site Description		
Soil Conductivity:	High conductivity: moist soil	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	14.95	 Insulation Configuration
Floor Width (m):	3.95	
Exposed Perimeter (m):	37.80	
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):		1701

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):	566.3 521.06			
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. ① \$ [E] [B]	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

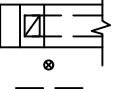
2985 DREW ROAD
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L4T 0A4 TEL: 416-268-6820
email: dave@gtadesigns.ca
web: www.gtadesigns.ca

HEAT-LOSS	34,876	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL
UNIT MODEL	GMEC960402BNA	OR EQUAL
UNIT HEATING INPUT	40,000	BTU/HR.
UNIT HEATING OUTPUT	38,400	BTU/HR.
A/C COOLING CAPACITY	1.5	TONS.
FAN SPEED	773	CFM

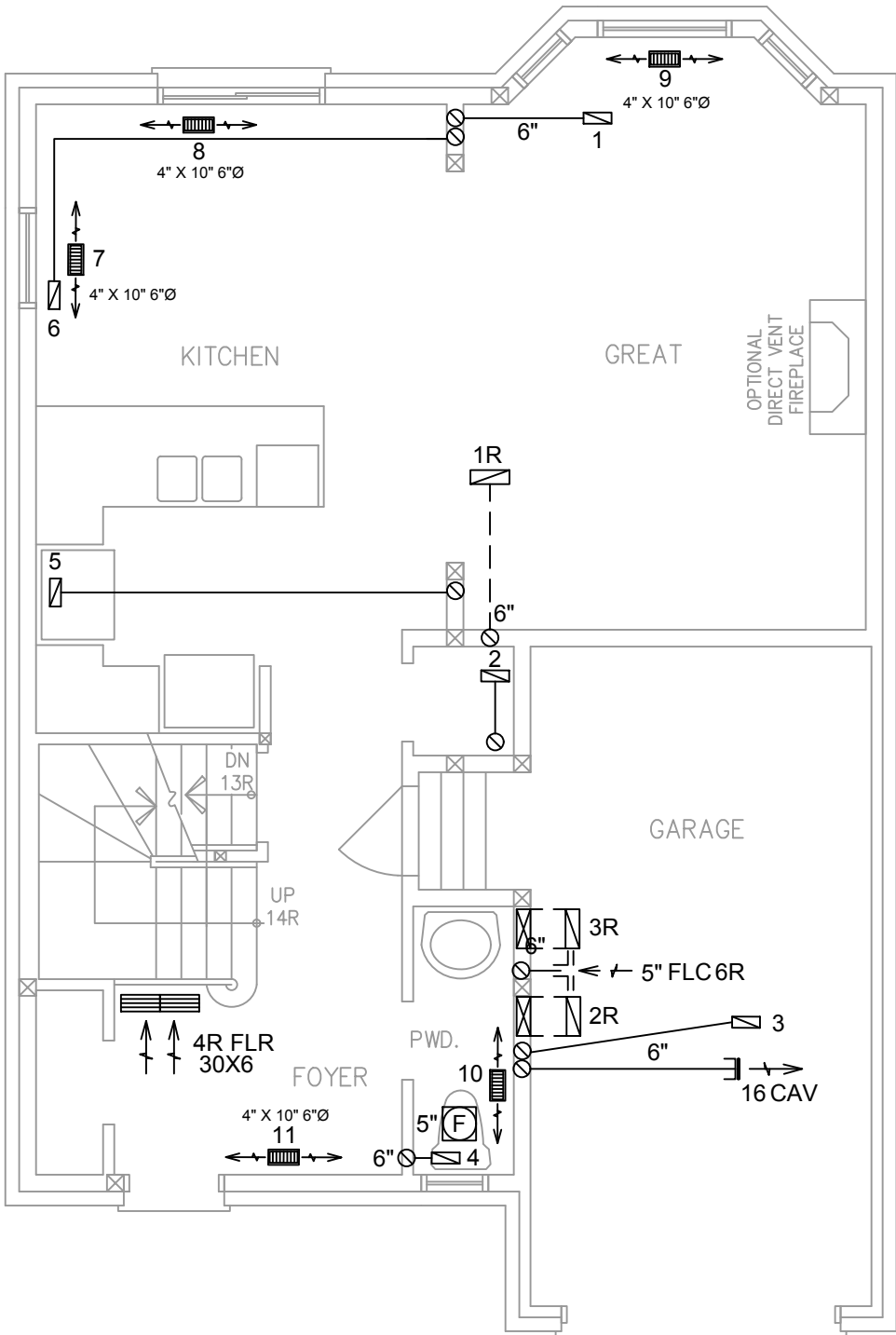
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	6	3	2
1ST FLOOR	6	2	2
BASEMENT	4	1	

FLOOR PLAN: BASEMENT	
DRAWN BY: RB	CHECKED: DD
LAYOUT NO. 15-34	SQFT 1515
	DRAWING NO. M1

DATE:	APRIL 7, 2015
CLIENT:	DELPARK HIGHCASTLE
MODEL:	33-3 OPT 2ND
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

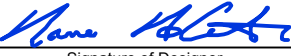
ALL DUCTWORK
MUST BE SEALED TO
CLASS A LEVEL AS PER
OBC PART 6-6.2.4.3. (11)

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QUALIFICATION INFORMATION

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David Da Costa



B.C.I.N. 32964

Signature of Designer

OBC 2012

ZONE 1 COMPLIANCE
PACKAGE "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.
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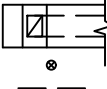
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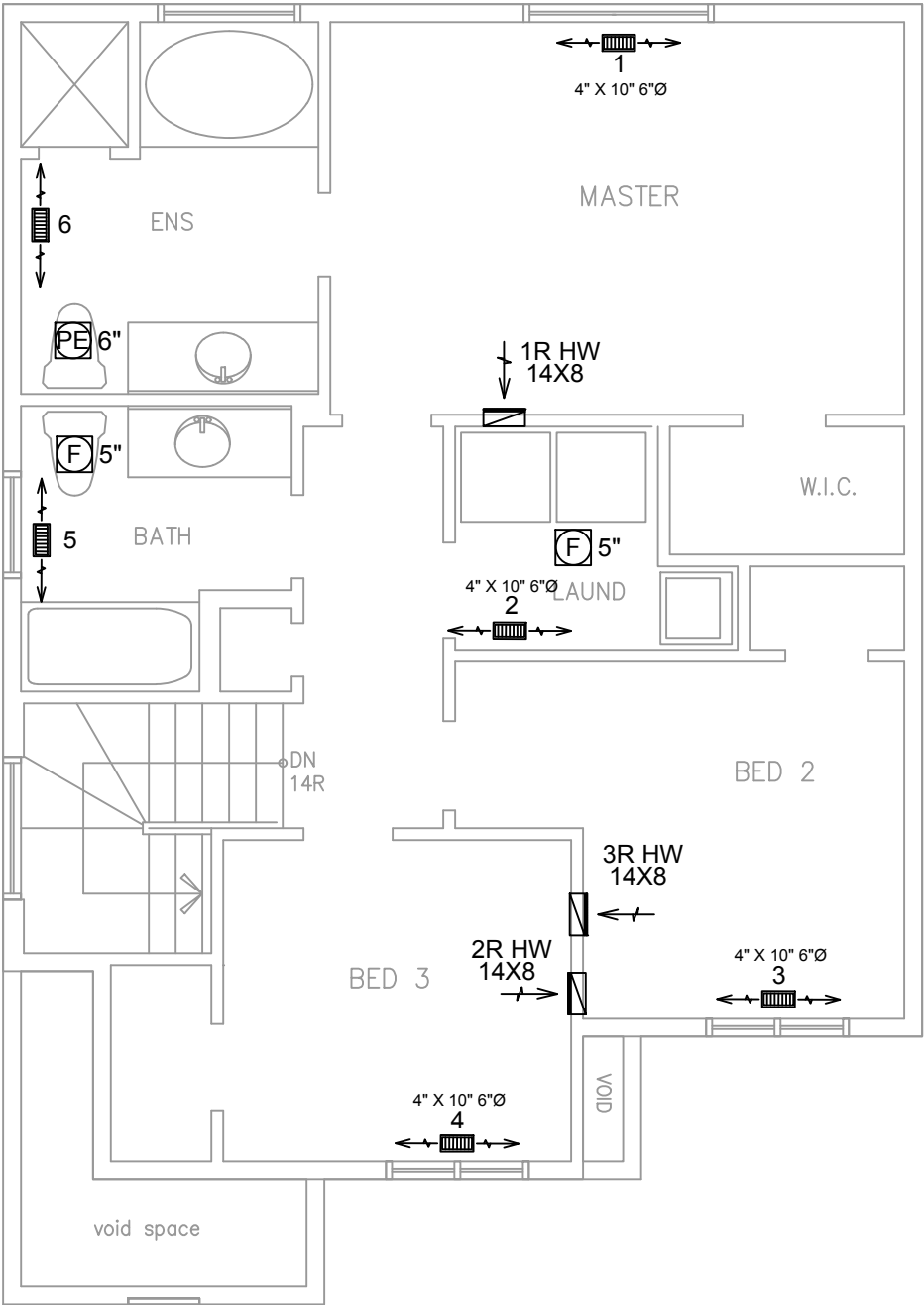
HEAT-LOSS	34,876	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960402BNA	OR EQUAL.
UNIT HEATING INPUT	40,000	BTU/HR.
UNIT HEATING OUTPUT	38,400	BTU/HR.
A/C COOLING CAPACITY	1.5	TONS.
FAN SPEED	773	CFM

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

FLOOR PLAN:		
GROUND FLOOR		
DRAWN BY:	CHECKED:	SQFT
RB	DD	1515
LAYOUT NO.	DRAWING NO.	
15-34	M2	

DATE:	APRIL 7, 2015
CLIENT:	DELPARK HIGHCASTLE
MODEL:	33-3 OPT 2ND
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.
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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	34,876	BTU/HR.
UNIT MAKE	AMANA	OR EQUAL.
UNIT MODEL	GMEC960402BNA	OR EQUAL.
UNIT HEATING INPUT	40,000	BTU/HR.
UNIT HEATING OUTPUT	38,400	BTU/HR.
A/C COOLING CAPACITY	1.5	TONS.
FAN SPEED	773	CFM

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

FLOOR PLAN: SECOND FLOOR	
DRAWN BY: RB	CHECKED: DD
LAYOUT NO. 15-34	SQFT 1515
	DRAWING NO. M3

DATE: APRIL 7, 2015

CLIENT: DELPARK HIGHCASTLE

MODEL: 33-3 OPT 2ND

PROJECT: NORTHGLEN CLARINGTON, ON.

SCALE: 3/16" = 1"-0"