gtaDesigns

Schedule 1: Designer Information

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	**The Lincoln Lot 62 B** **Unit 40-1 Alt. Layout 9'-0" Ceilings**	Lot:	62 B
		Lot/con.	
Municipality: **Clarington, ON**	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **David DaCosta**		Firm: **gtaDesigns Inc.**	
Street address: **2985 Drew Road, Suite 202**		Unit no.	Lot/con.
Municipality: **Mississauga**	Postal code: **L4T 0A4**	Province: **Ontario**	E-mail: dave@gtadesigns.ca
Telephone number: **(905) 671-9800**	Fax number: **(647) 494-9643**	Cell number: **(416) 268-6820**	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ On-site Sewage Systems

Description of designer's work	**Model Certification**		**Project #:** **15-34**
Heating and Cooling Load Calculations	Builder	**Highcastle Homes**	
Air System Design	Project	**Northglen**	
Residential mechanical ventilation Design Summary	Model	**The Lincoln Lot 62 B** **Unit 40-1 Alt. Layout 9'-0" Ceilings**	
Residential System Design per CAN/CSA-F280-12			
Residential New Construction - Forced Air	SB-12	**Package D**	

D. Declaration of Designer

I David DaCosta 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: **32964**

Basis for exemption from registration: **Division C 3.2.4.1. (4)**

❑ 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.

April 15, 2015

Date

Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4 . and 3.2.5.of Division C.
2. Schedule 1 does not require to be completed a holder of a license, temporay license, or a certificate of authorization, issed by the Ontario Associstion 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.

gtaDesigns

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

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

These documents issued for the use of **Highcastle Homes** and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Project No. **15-34**

Building Location

Address (Model):	**Unit 40-1 Alt. Layout 9'-0" Ceilings**	Site:	**Northglen**
Model:	**The Lincoln Lot 62 B**	Lot:	**62 B**
City and Province:	**Clarington, ON**	Postal code:	

Calculations based on

Dimensional information based on: **Cassidy & co. Dwgs Dated 18/Dec/2014**

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**			Wind exposure:	**Shelterd**
HRV?	**Broan**		**684N**	Internal shading:	**Light-translucent** Occupants: **3**
Recovery % at -25C	**0**	Recovery % at -0C	**0**	Units:	**Imperial**

Heating design conditions

Outdoor temp **-4.0** Indoor temp: **72** Mean soil temp **48**

Cooling design conditions

Outdoor temp **86** Indoor temp: **75** Latitude: **44**

Above grade walls

Style A:	**As per Selected OBC SB12**	**Package D**	**R 24**
Style B:	**Existing Walls (When Applicable)**		**R 12**
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12**	**Package D**	**R 20**
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	**Package D**	
Style B:			

Ceilings

Style A:	**As per Selected OBC SB12**	**Package D**	**R 50**
Style B:	**As per Selected OBC SB12**	**Package D**	**R 31**
Style C:			

Exposed floors

Style A:	**As per Selected OBC SB12**	**Package D**	**R 31**
Style B:			

Doors

Style A:	**As per Selected OBC SB12**	**Package D**	**R 3.01**
Style B:			
Style C:			

Windows

Style A:	**As per Selected OBC SB12**	**Package D**	**R 3.15**
Style B:	**Existing Windows (When Applicable)**		**R 1.99**
Style C:			
Style D:			

Skylights

Style A:	**As per Selected OBC SB12**	**Package D**	**R 2.03**
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**

Air System Design

Package D

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

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

Builder: Highcastle Homes | Date: April 15, 2015 | Project # 15-34
Project: Northglen | Model: The Lincoln Lot 62 B Unit 40-1 Alt. Layout 9'-0" Ceilings | System 1 | Page 3

DESIGN LOAD SPECIFICATIONS

Level 1 Net Load	15,925	btu/h
Level 2 Net Load	20,394	btu/h
Level 3 Net Load	7,833	btu/h
Level 4 Net Load	0	btu/h
Total Heat Loss	44,152	btu/h
Total Heat Gain	18,015	btu/h
Total Heat Loss + 10%	48,568	Btuh.
Building Volume Vb	28776	ft³
Ventilation Load	4,228	Btuh.
Ventilation PVC	45	cfm
Supply Branch and Grill Sizing		

AIR DISTRIBUTION & PRESSURE

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	0.0241	cfm/btuh
Cooling Air Flow Proportioning Facter	0.0535	cfm/btuh
R/A Temp	70	deg. F.
S/A Temp	120	deg. F.
Diffuser loss	0.01	"w.c.

FURNACE/AIR HANDLER DATA:

Make	Amana	
Model	GMEC960603BNA	
Input Btu/h	60000	
Output Btu/h	57600	
E.s.p.	0.50	" W.C.
Water Temp		deg. F.
AFUE	96%	
Aux. Heat		
SB-12 Package	Package D	
Temp. Rise>>>	50	deg. F.

BOILER/WATER HEATER DATA:

Make Type
Model
Input Btu/h
Output Btu/h
Min.Output Btu/h AWH

Blower DATA:

Blower Speed Selected: T5
Heating Check 1066 cfm
Selected cfm> 1066 cfm

A/C UNIT DATA:

Amana	2.0 Ton
Cond.----------	2.0
Coil ----------	2.0

Blower Type ECM
(Brushless DC OBC 12.3.1.5.(2))
Cooling Check 963 cfm
Cooling Air Flow Rate 963 cfm

Level 1 Outlets / Level 2 Outlets

S/A Outlet No.	15	16	17	18											4	5	6	7	8	9	10	11	12	13	14			
Room Use	BASE	BASE	BASE	BASE											KIT/GRT	KIT/GRT	KIT/GRT	MAST	MAST	ENS	LAUND	LIV/DIN	LIV/DIN	FOY	PWD			
Btu/Outlet	3981	3981	3981	3981											2266	2266	2266	1408	1408	2004	1130	1912	1912	3172	650			
Heating Airflow Rate CFM	96	96	96	96											55	55	55	34	34	48	27	46	46	77	16			
Cooling Airflow Rate CFM	12	12	12	12											91	91	91	43	43	25	46	78	78	157	46			
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
Actual Duct Length	36	24	17	33											43	39	32	30	37	10	13	25	34	35	20			
Equivalent Length	125	110	110	115	90	90	90	90	90	90	90	90	90	90	115	105	100	120	130	130	120	100	125	105	140	90	90	90
Total Effective Length	161	134	127	148	90	90	90	90	90	90	90	90	90	90	158	144	132	150	167	140	133	125	159	140	160	90	90	90
Adjusted Pressure	0.08	0.10	0.10	0.09	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.08	0.09	0.10	0.09	0.08	0.09	0.10	0.10	0.08	0.08	0.09	0.08	0.14	0.14
Duct Size Round	6	6	6	6											6	6	6	5	5	6	5	6	6	6	5			
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	3x10	4x10	4x10	4x10	3x10	4x10	4x10	4x10
Trunk	B	A	C	D											B	B	A	A	A	A	C	C	D	D	C			

Level 3 Outlets / Level 4 Outlets

S/A Outlet No.	1	2	3																									
Room Use	LOFT	BED 3	BATH																									
Btu/Outlet	3744	3431	658																									
Heating Airflow Rate CFM	90	83	16																									
Cooling Airflow Rate CFM	63	55	7																									
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
Actual Duct Length	25	27	20																									
Equivalent Length	150	160	150	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Total Effective Length	175	187	170	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Adjusted Pressure	0.07	0.07	0.08	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	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Duct Size Round	6	6	5																									
Outlet Size	4x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	C	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	160	160	160	420	166						
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	27	31	17	45	9						
Equivalent Length	160	160	165	125	135	70	70	70	70	70	70
Total Effective Length	187	191	182	170	144	70	70	70	70	70	70
Adjusted Pressure	0.06	0.06	0.06	0.07	0.08	0.17	0.17	0.17	0.17	0.17	0.17
Duct Size Round	7	7	7	2x8	7						
Inlet Size	8	8	8	8	8						
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	14	14	30	14						

Return Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
Drop	1066	0.05	16.5	24x10	
X	1066	0.05	16.5	32x8	24x10
Y	580	0.05	13.0	18x8	14x10
Z	420	0.05	11.5	14x8	12x10
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
A	473	0.06	12.0	16x8	12x10
B	206	0.06	8.5	8x8	107
C	593	0.06	13.0	18x8	14x10
D	219	0.06	9.0	8x8	10x7
E					
F					
G					
H					
I					
J					
K					

gtaDesigns

Heatloss/Gain Calculations CSA-F280-12

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e-mail dave@gtadesigns.ca

Builder: Highcastle Homes | Date: April 15, 2015 | Weather Data: Newcastle 44 -4.0 86 52 48.2 | Project # 15-34

2012 OBC | Project: Northglen | Model: The Lincoln Lot 62 B Unit 40-1 Alt. Layout 9'-0" Ceilings | **System 1** | Heat Loss ^T 76 deg. F | Ht gain ^T 11 deg. F | GTA: 2119 | Page 4

Level 1

		BASE																							
Run ft. exposed wall A		187	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
Ceiling height		2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG	2	AG
Floor area		1355	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
Exposed Ceilings 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
Gross Exp Wall A		374																							
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	3	72	34																								
East/West		3.15	24.13	27.75	3	72	83																								
South		3.15	24.13	21.28	9	217	192																								
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	338		270																								
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)				7416																									
Total Conductive	Heat Loss					8308																									
	Heat Gain						655																								
Air Leakage	Heat Loss/Gain		0.6946	0.0235		5771	15																								
Ventilation	Case 1	X	0.22	0.06		1847	42																								
	Case 2		82.08	11.88																											
	Case 3		0.13	0.06																											
Heat Gain People				239																											
Appliances Loads		1 =.25 percent		4148																											
Duct and Pipe loss				10%																											
Level 1 HL Total	15,925	Total HL for per room				15925																									
Level 1 HG Total	927	Total HG per room		x 1.3			927																								

Level 2

		KIT/GRT		MAST		ENS		LAUND		LIV/DIN		FOY		PWD											
Run ft. exposed wall A		38	A	34	A	26	A	9	A	40	A	25	A	7	A		A		A		A		A		A
Run ft. exposed wall B			B		B		B		B		B		B		B		B		B		B		B		B
Ceiling height		18		10		10		10		10		10		10		10		10		10		10		10	
Floor area		456	Area	232	Area	118	Area	65	Area	291	Area	78	Area	84	Area		Area		Area		Area		Area		Area
Exposed Ceilings A		267	A	163	A	13	A		A	228	A	78	A		A		A		A		A		A		A
Exposed Ceilings 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
Gross Exp Wall A		684		340		260		90		400		250		70											
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							12	290	136							16	386	181	8	193	90						
East/West		3.15	24.13	27.75	64	1544	1776	12	290	333										25	603	694									
South		3.15	24.13	21.28	11	265	234										32	772	681												
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				15	379	55									
Net exposed walls A		15.13	5.02	0.73	609	3059	443	328	1648	238	248	1246	180	69	347	50	368	1849	268	194	974	141	62	311	45						
Net exposed walls B		8.50	8.94	1.29																											
Exposed Ceilings A		50.00	1.52	0.76	267	406	203	163	248	124	13	20	10				228	347	173	78	119	59									
Exposed Ceilings B		22.86	3.32	1.66																											
Exposed Floors		22.05	3.45	0.23																											
Foundation Conductive Heatloss		Slab On Grade (x)		x																											
Total Conductive	Heat Loss					5274			2185			1555			877			2967			2461			504							
	Heat Gain						2656			695			326			127			1122			1130			136						
Air Leakage	Heat Loss/Gain		0.2188	0.0235		1154	62		478	16		340	8		192	3		649	26		538	27		110	3						
Ventilation	Case 1	X	0.07	0.06		369	172		153	45		109	21		61	8		208	73		172	73		35	9						
	Case 2		82.08	11.88																											
	Case 3		0.13	0.06																											
Heat Gain People				239				2		478																					
Appliances Loads		1 =.25 percent		4148	1		1037							1		518	1		1037	1		1037	1		518						
Duct and Pipe loss				10%																											
Level 2 HL Total	20,394	Total HL for per room				6798			2816			2004			1130			3824			3172			650							
Level 2 HG Total	14,771	Total HG per room		x 1.3			5105			1605			461			854			2935			2946			866						

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

Total Heat Loss	44,152	btu/h
Total Heat Gain	18,015	btu/h

Package D

gtaDesigns

Heatloss/Gain Calculations CSA-F280-12

2985 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800 Fax: 647-494-9643

e-mail dave@gtadesigns.ca

Builder: Highcastle Homes | Date: April 15, 2015 | Weather Data: Newcastle 44 -4.0 86 52 48.2 | Project # 15-34

2012 OBC | Project: Northglen | Model: The Lincoln Lot 62 B Unit 40-1 Alt. Layout 9'-0" Ceilings | **System 1** | Heat Loss ^T 76 deg. F | Ht gain ^T 11 deg. F | GTA: 2119 | Page 5

Level 3

			LOFT		BED 3		BATH																	
Run ft. exposed wall A			36	A	37	A	8	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			8		8		8		8		8		8		8		8		8		8		8	
Floor area			327	Area	207	Area	53	Area		Area		Area		Area		Area		Area		Area		Area		Area
Exposed Ceilings A			327	A	207	A	53	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	19	Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr		Flr
Gross Exp Wall A			288		296		64																	
Gross Exp Wall B																								

Components		R-Values	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain
North Shaded		3.15	24.13	11.31			12	290	136															
East/West		3.15	24.13	27.75																				
South		3.15	24.13	21.28	18	434	383																	
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	270	1356	196	284	1427	206	64	321	47											
Net exposed walls B		8.50	8.94	1.29																				
Exposed Ceilings A		50.00	1.52	0.76	327	497	249	207	315	157	53	81	40											
Exposed Ceilings B		22.86	3.32	1.66																				
Exposed Floors		22.05	3.45	0.23				19	65	4														
Foundation Conductive Heatloss																								
Total Conductive	Heat Loss					2288			2096			402												
	Heat Gain						828			504			87											
Air Leakage	Heat Loss/Gain			0.4823	0.0235	1103	19		1011	12		194	2											
Ventilation	Case 1	X	0.1544	0.0647		353	54		324	33		62	6											
	Case 2		82.08	11.88																				
	Case 3		0.13	0.06																				
Heat Gain People				239				1		239														
Appliances Loads		1 =.25 percent		4148																				
Duct and Pipe loss				10%																				
Level 3 HL Total	7,833	Total HL for per room				3744			3431			658												
Level 3 HG Total	2,317	Total HG per room x 1.3					1171			1023			123											

Level 4

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	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	0.0235																			
Ventilation	Case 1	X	0.00	0.06																				
	Case 2		82.08	11.88																				
	Case 3		0.13	0.06																				
Heat Gain People				239																				
Appliances Loads		1 =.25 percent		4148																				
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	44,152	btu/h
Total Heat Gain	18,015	btu/h

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the Building Code. Individual BCIN: 32964

David DaCosta

Package D

gtaDesigns

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

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: **Clarington, ON**

Model: **The Lincoln Lot 62 B**
Unit 40-1 Alt. Layout 9'-0" Ceilings

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	Clarington, ON
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)	x	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

	x	Forced air
		Non forced air
		Electric space heat (if over 10% of heat load)

House Type 9.32.3.1(2)

I	x	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	X	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	1	@	10	cfm	10	cfm
Bathrooms & Kitchen	4	@	10	cfm	40	cfm
Other rooms	6	@	10	cfm	60	cfm
				Total	150	

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1	@	30	cfm	30	cfm
Other bedrooms	1	@	15	cfm	15	cfm
				Total	45	

Principal Exhaust Fan Capacity

Make	Model	Location
Broan	684N	Ens
90 cfm		Sones

Heat Recovery Ventilator

Make	Broan	
Model	684N	
	90 cfm high	cfm low
HRV is HVI listed	Sensible efficiency @ -25 deg C	0
	Sensible Apparent efficiency @ -25 (	0

Supplemental Ventilation Capacity

Total ventilation capacity	150.0	
Less principal exhaust capacity	45.0	
REQUIRED supplemental vent. Capacity	105.0	cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
Bath	50	770	2.5
Pwd	50	770	2.5
Laund	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 15, 2015		

Energy Efficiency Design Summary
(Part 9 Residential)

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

Project # **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		Unit number	Lot/Con
	The Lincoln Lot 62 B **Unit 40-1 Alt. Layout 9'-0" Ceilings**		
Municipality	**Postal code**	**Reg. Plan number / other description**	
Clarington, ON			

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 =	289 m²	% Windows+ 7%	☐ ICF Basement	☐ Walkout Basement	☐ Log/Post&Beam
Gross Window+ Area =	21 m²		☐ 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
Thermal Insulation		**Windows & Doors**[1]	
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 1. Provide U-Value in W/m2.K, or ER rating	
Slab (all ≤600mm below grade, or heated)	10	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

gtaDesigns

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

Project: **Clarington, ON** **Model:** **Unit 40-1 Alt. Layout 9'-0" Ceilings**

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.293	28776	76	11541

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.034	28776	11	194

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	11541	8308	0.6946
2	0.3		15824	0.2188
3	0.2		4786	0.4823
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

		Air Leakage Heat Gain
HG LEAK	194	0.0235
BUILDING CONDUCTIVE HEAT GAIN	8264	

Levels this Dwelling
3

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	45	76	1.00	3694

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	45	11	535

Case 1

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	3694	8308	0.22
2	0.3		15824	0.07
3	0.2		4786	0.15
4	0		0	0.00

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	535	0.06
Building	8264	

Case 2

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier
C	HL^T	(1-E) HRV	82.08
1.08	76	1.00	

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	11.88
1.08	11	

Case 3

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	3694	0.13

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	535	0.06
535	1		

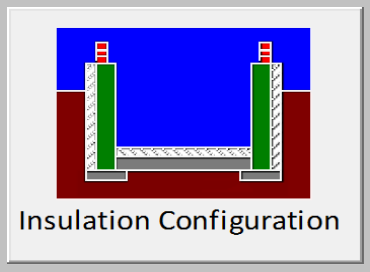
Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Newcastle			
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):	8.53			
Building Configuration				
Type:	Detached			
Number of Stories:	One & Half			
Foundation:	Full			
House Volume (m^3):	814.94			
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:		
	0	22.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Envelope Air Leakage Rate				
Heating Air Leakage Rate (ACH/H):	**0.293**			
Cooling Air Leakage Rate (ACH/H):	**0.034**			

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Newcastle	
Site Description		
Soil Conductivity:	High conductivity: moist soil	
Water Table:	Normal (7-10 m, 23-33 Ft)	
Foundation Dimensions		
Floor Length (m):	**23.03**	 Insulation Configuration
Floor Width (m):	**5.47**	
Exposed Perimeter (m):	**57.00**	
Wall Height (m):	**2.44**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**1.39**	
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):	**2173**	

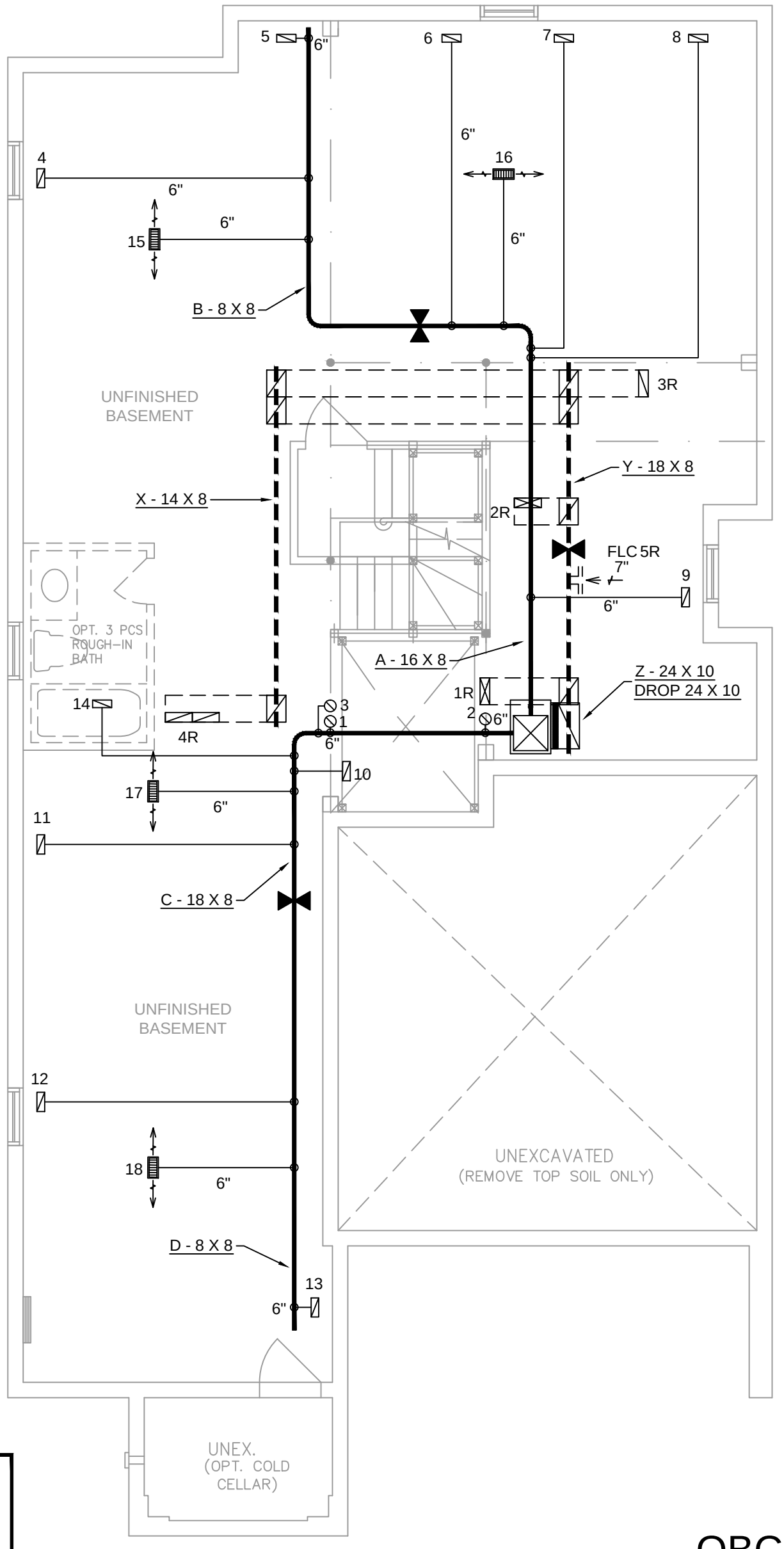
H.V.A.C. SYMBOLS

	FLEX DUCT
	RIDIT ROUND DUCT
	SUPPLY MAIN DUCT
	SUPPLY DIFFUSER
	LOW/HIGH WALL SUPPLY DIFFUSER
	HRV EXHAUST GRILL
	SUPPLY AIR PIPE RISER
	VOLUME DAMPER

ABBREVIATIONS

S.A.	SUPPLY AIR
R.A.	RETURN AIR
T	THERMOSTAT
$	PRINCIPAL EXHAUST FAN SWITCH

	RETURN AIR GRILLE (SIZE INDICATED ON DRAWING)
	RETURN AIR PIPE RISER
	DUCT CONNECTION TO JOIST LINING
	RETURN MAIN DUCT
	RETURN ROUND DUCT
	RETURN AIR RISER UP TO FLOOR ABOVE
	RETURN AIR FROM BASEMENT SECOND FLOOR
F	W/R EXHAUST FAN
PF	W/R PRINCIPAL EXHAUST FAN



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

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12 SEAL ALL JOINTS WITH APPROVED SEALANT OR FOIL TAPE

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

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

HEAT-LOSS	51,510 BTU/HR.
UNIT MAKE	AMANA
UNIT MODEL	GMEC960603BNA
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	3	2	1
1ST FLOOR	11	2	4
BASEMENT	4	1	

FLOOR PLAN:	BASEMENT		
DRAWN BY	D. DACOSTA	SQFT.	2,119
LAYOUT NO.	15-34	DRAWING NO.	1/3

DATE: MARCH 4, 2015
CLIENT: HIGHCASTLE HOMES
PROJECT: 40-I 9" CEILINGS WITH LOFT NORTHGLEN CLARINGTON, ON.
SCALE: 3/16" = I"-0"

H.V.A.C. SYMBOLS

	FLEX DUCT
	RIDIT ROUND DUCT
	SUPPLY MAIN DUCT
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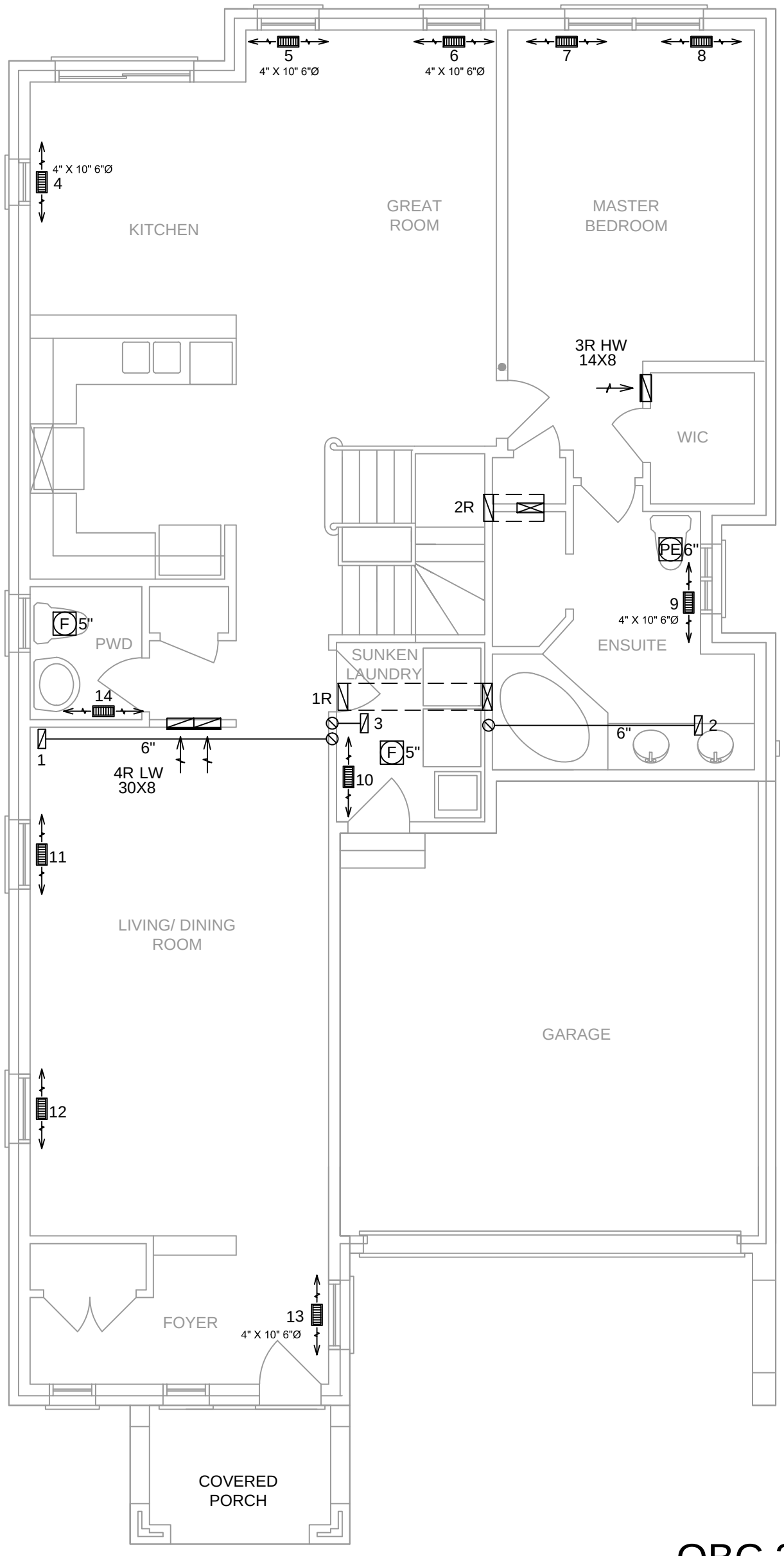
F	W/R EXHAUST FAN
PE	W/R PRINCIPAL EXHAUST FAN



CIRCULATION FAN SWITCH TO BE CENTRALLY LOCATED

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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12 SEAL ALL JOINTS WITH APPROVED SEALANT OR FOIL TAPE

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QUALIFICATION INFORMATION

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

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

Signature ot Designer

OBC 2012

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

NOTES

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HEAT-LOSS	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

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

FLOOR PLAN: GROUND FLOOR
DRAWN BY: D. DACOSTA
SQFT: 2,119
LAYOUT NO.: 15-34
DRAWING NO.: 2/3

DATE: MARCH 4, 2015
CLIENT: HIGHCASTLE HOMES
PROJECT: 40-I 9" CEILINGS WITH LOFT NORTHGLEN CLARINGTON, ON.
SCALE: 3/16" = I"-0"

H.V.A.C. SYMBOLS

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	RIDIT ROUND DUCT
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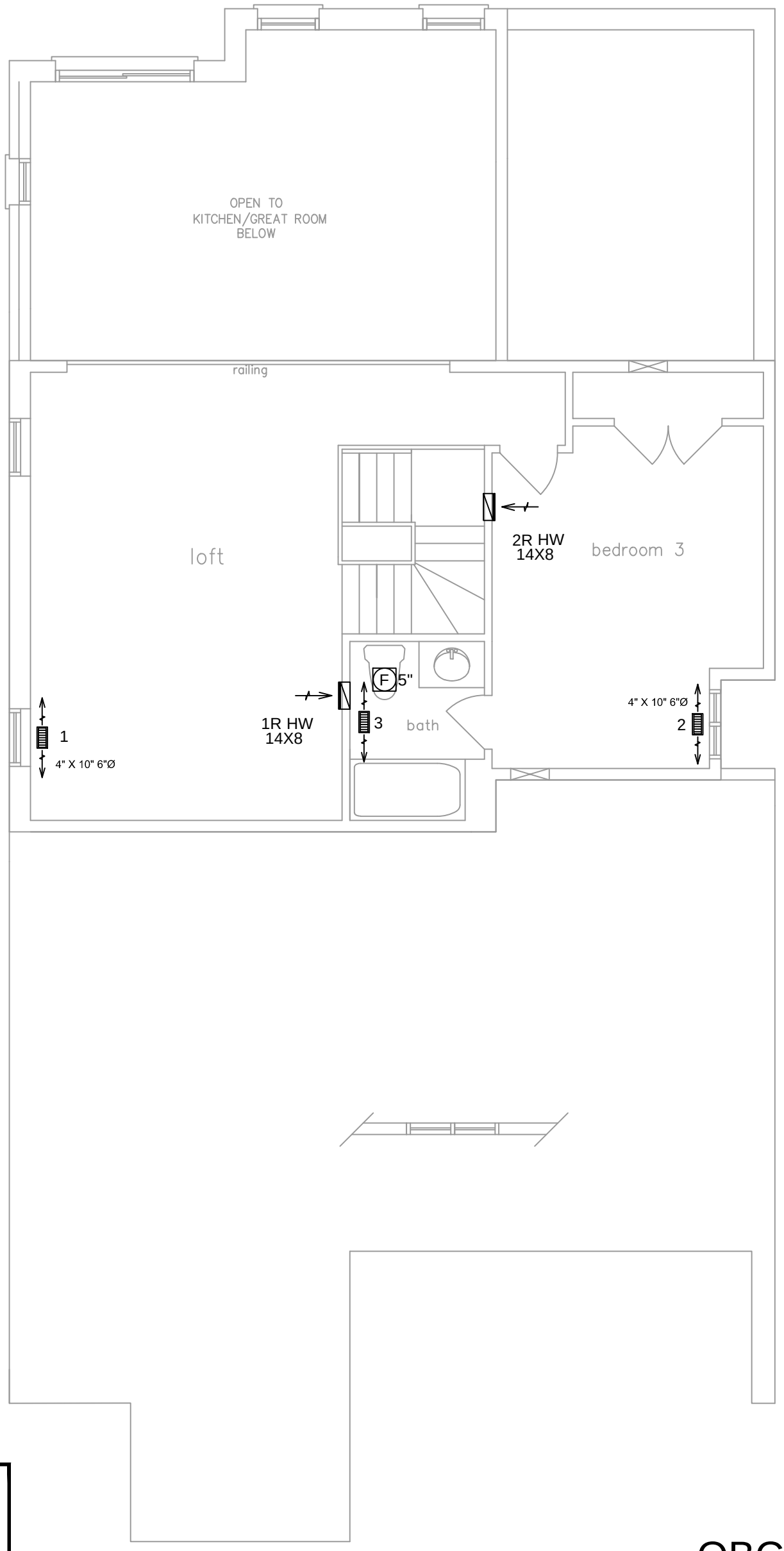
F	W/R EXHAUST FAN
PE	W/R PRINCIPAL EXHAUST FAN



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

INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12 SEAL ALL JOINTS WITH APPROVED SEALANT OR FOIL TAPE

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QUALIFICATION INFORMATION

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

Signature ot Designer

OBC 2012

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

NOTES

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web: www.gtadesigns.ca

HEAT-LOSS	BTU/HR.
UNIT MAKE	
UNIT MODEL	
UNIT HEATING INPUT	BTU/HR.
UNIT HEATING OUTPUT	BTU/HR.
A/C COOLING CAPACITY	TONS.
FAN SPEED	CFM

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

FLOOR PLAN: SECOND FLOOR
DRAWN BY: D. DACOSTA
SQFT: 2,119
LAYOUT NO.: 15-34
DRAWING NO.: 3/3

DATE: MARCH 4, 2015
CLIENT: HIGHCASTLE HOMES
PROJECT: 40-I 9" CEILINGS WITH LOFT NORTHGLEN CLARINGTON, ON.
SCALE: 3/16" = I"-0"