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: **40-6**		Lot:	0
		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	Project #:	15-34
Heating and Cooling Load Calculations	Builder	**Delpark Homes/Highcastle Homes**	
Air System Design	Project	**Northglen**	
Residential mechanical ventilation Design Summary	Model	**40-6**	
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.

March 11, 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 **Delpark Homes/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):	**40-6**	Site:	**Northglen**
Model:		Lot:	
City and Province:	**Newcastle (Bowmanville)**	Postal code:	

Calculations based on

Dimensional information based on:	**Anybody Design Dwgs Dated 7/Oct/2012**				
Attachment:	**Detached/Semi/Townhome**	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**		

Heating design conditions				Cooling design conditions			
Outdoor temp	**-4.0**	Indoor temp:	**72**	Outdoor temp	**86**	Indoor temp:	**75**
Mean soil temp	**50**			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**

gtaDesigns

Air System Design

Package D

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

Builder: Ipark Homes/Highcastle Hon | Date: March 11, 2015 | **System 1** | Project # 15-34

Project: Northglen | Model: 40-6

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

Individual BCIN: 32964 | David DaCosta | Page 3

DESIGN LOAD SPECIFICATIONS

Level 1 Net Load	14,111	btu/h
Level 2 Net Load	19,888	btu/h
Level 3 Net Load	12,735	btu/h
Level 4 Net Load	0	btu/h
Total Heat Loss	46,734	btu/h
Total Heat Gain	22,815	btu/h
Total Heat Loss + 10%	51,408	Btuh.
Building Volume Vb	28496	ft³
Ventilation Load	7,047	Btuh.
Ventilation PVC	75	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	0.0250	cfm/btuh
Cooling Air Flow Proportioning Facter	0.0422	cfm/btuh
R/A Temp	70	deg. F.
S/A Temp	116	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>>>	46	deg. F.

BOILER/WATER HEATER DATA:

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

A/C UNIT DATA:

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

Blower DATA:

Blower Speed Selected:	T4	Blower Type	ECM
		(Brushless DC OBC 12.3.1.5.(2))	
Heating Check	1170 cfm	Cooling Check	963 cfm
Selected cfm>	1170 cfm	Cooling Air Flow Rate	963 cfm

Level 1 Outlets

S/A Outlet No.	19	20	21	22										
Room Use	BASE	BASE	BASE	BASE										
Btu/Outlet	3528	3528	3528	3528										
Heating Airflow Rate CFM	88	88	88	88										
Cooling Airflow Rate CFM	8	8	8	8										
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	44	35	23	26										
Equivalent Length	170	150	115	105	90	90	90	90	90	90	90	90	90	90
Total Effective Length	214	185	138	131	90	90	90	90	90	90	90	90	90	90
Adjusted Pressure	0.06	0.07	0.09	0.10	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	6	6										
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10
Trunk	D	C	B	E										

Level 2 Outlets

S/A Outlet No.	11	12	13	14	15	16	17	18	23					
Room Use	KIT	KIT	GREAT	GREAT	LAUND	FOY	WIC 3	LIV/DIN	PLEN					
Btu/Outlet	2383	2383	2134	2134	3289	2085	1186	2637	1657					
Heating Airflow Rate CFM	60	60	53	53	82	52	30	66	41					
Cooling Airflow Rate CFM	95	95	71	71	83	49	23	89	8					
Duct Design Pressure	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Actual Duct Length	46	41	50	46	32	27	33	28	27					
Equivalent Length	140	140	170	600	145	135	145	115	175	90	90	90	90	90
Total Effective Length	186	181	220	646	177	162	178	143	202	90	90	90	90	90
Adjusted Pressure	0.07	0.07	0.06	0.02	0.07	0.08	0.07	0.09	0.06	0.06	0.14	0.14	0.14	0.14
Duct Size Round	6	6	6	7	6	5	4	6	5					
Outlet Size	4x10	4x10	4x10	4x10	4x10	3x10	3x10	4x10	3x10	4x10	4x10	4x10	4x10	4x10
Trunk	C	C	D	D	E	F	F	E	F					

Level 3 Outlets

S/A Outlet No.	1	2	3	4	5	6	7	8	9	10				
Room Use	MAST	MAST	WIC	COMP	BED 2	WIC 2	BED 3	BATH	BED 4	ENS				
Btu/Outlet	1339	1339	592	1126	2242	993	1642	607	1231	1625				
Heating Airflow Rate CFM	34	34	15	28	56	25	41	15	31	41				
Cooling Airflow Rate CFM	49	49	6	18	61	21	52	13	41	37				
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
Actual Duct Length	54	71	62	68	49	45	48	52	44	72				
Equivalent Length	220	160	180	160	165	155	145	215	155	170	90	90	90	90
Total Effective Length	274	231	242	228	214	200	193	267	199	242	90	90	90	90
Adjusted Pressure	0.05	0.06	0.05	0.06	0.06	0.07	0.07	0.05	0.07	0.05	0.14	0.14	0.14	0.14
Duct Size Round	5	5	3	4	6	4	5	4	5	5				
Outlet Size	3x10	3x10	3x10	3x10	4x10	3x10	3x10	3x10	3x10	3x10	4x10	4x10	4x10	4x10
Trunk	D	D	D	D	F	F	F	F	B	C				

Level 4 Outlets

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
Equivalent Length	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Total Effective Length	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Adjusted Pressure	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
Outlet Size	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10	4x10

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	140	105	150	407	150	177	41				
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	30	37	33	39	15	25	50				
Equivalent Length	185	185	140	185	145	165	210	70	70	70	70
Total Effective Length	215	222	173	224	160	190	260	70	70	70	70
Adjusted Pressure	0.05	0.05	0.07	0.05	0.07	0.06	0.05	0.17	0.17	0.17	0.17
Duct Size Round	7	6	8	12	8	7	5				
Inlet Size	8	8	8	8	8	FLC	FLC				
" "	x	x	x	x	x	x	x	x	x	x	x
Inlet Size	14	30	14	30	14						

Return Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
Drop	1170	0.05	17.0	24x12	
Z	1020	0.05	16.5	32x8	24x10
Y	584	0.05	13.5	20x8	16x10
X					
W					
V					
U					
T					
S					
R					
Q					

Supply Trunk Duct Sizing

Trunk	CFM	Press.	Round	Rect. Size	
A	1170	0.05	17.0	26x10	22x12
B	672	0.05	14.0	22x8	18x10
C	248	0.05	9.5	10x8	127
D	305	0.05	10.5	12x8	10x10
E	498	0.05	12.5	18x8	14x10
F	261	0.05	10.0	12x8	10x10
G					
H					
I					
J					
K					

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: Delpark Homes/Highcastle Homes | Date: March 11, 2015 | Weather Data Newcastle (Bowmanville) 44 -4.0 86 52 50 | Project # 15-34

2012 OBC | Project: Northglen | Model: 40-6 | System 1 | Heat Loss ^T 76 deg. F | Ht gain ^T 11 deg. F | GTA: 2517 | Page 4

Level 1

					BASE																									
Run ft. exposed wall A				140	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	AG		2	AG		2	AG		2	AG		2	AG		2	AG		2	AG		2	AG		2	AG	
Floor area				1070	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				280																										
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	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	10.88	6.99	1.01	250		253																								
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)				7002																									
Total Conductive: Heat Loss					7750																									
Total Conductive: Heat Gain						540																								
Air Leakage: Heat Loss/Gain		0.4237	0.0068		3283	4																								
Ventilation: Case 1	X	0.40	0.08		3078	43																								
Ventilation: Case 2		82.08	11.88																											
Ventilation: Case 3		0.18	0.08																											
Heat Gain People			239																											
Appliances Loads	1 =.25 percent		4150																											
Duct and Pipe loss			10%																											
Level 1 HL Total	14,111	Total HL for per room			14111																									
Level 1 HG Total	763	Total HG per room	x 1.3			763																								

Level 2

					KIT			GREAT			LAUND			FOY			WIC 3			LIV/DIN			PLEN							
Run ft. exposed wall A				34	A		29	A		21	A		12	A		9	A		17	A		30	A			A			A	
Run ft. exposed wall B					B			B			B			B			B			B			B			B			B	
Ceiling height				10			10			10			10			10			10			2			10		10		10	
Floor area				277	Area		209	Area		140	Area		27	Area		11	Area		312	Area		200	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		200	Flr			Flr			Flr	
Gross Exp Wall A				340			290			210			120			90			170			60								
Gross Exp Wall B																														
Components	R-Values	Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain		Loss	Gain
North Shaded	3.15	24.13	11.31				26	627	294	6	145	68																		
East/West	3.15	24.13	27.75	38	917	1054	30	724	832				24	579	666	10	241	277												
South	3.15	24.13	21.28	15	362	319													40	965	851									
Existing Windows	1.99	38.19	22.15																											
Skylight	2.03	37.44	88.23																											
Doors	3.01	25.25	3.65							42	1060	153	15	379	55															
Net exposed walls A	8.50	8.94	1.29	287	2566	371	234	2092	303	162	1448	210	81	724	105	80	715	104	130	1162	168	60	536	78						
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																			200	689	45						
Foundation Conductive Heatloss	Slab On Grade (x)		x																											
Total Conductive: Heat Loss					3845			3443			2654			1682			957			2127			1226							
Total Conductive: Heat Gain						1745			1429			431			826			381			1019			123						
Air Leakage: Heat Loss/Gain		0.1236	0.0068		475	12		426	10		328	3		208	6		118	3		263	7		152	1						
Ventilation: Case 1	X	0.12	0.08		446	139		399	114		308	34		195	66		111	30		247	81		142	10						
Ventilation: Case 2		82.08	11.88																											
Ventilation: Case 3		0.18	0.08																											
Heat Gain People			239																											
Appliances Loads	1 =.25 percent		4150	2		1556	1		1038	1		1038							1		519									
Duct and Pipe loss			10%																			1	138	13						
Level 2 HL Total	19,888	Total HL for per room			4766			4268			3289			2085			1186			2637			1657							
Level 2 HG Total	13,822	Total HG per room	x 1.3			4488			3367			1958			1166			538			2114			191						

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	46,734	btu/h
Total Heat Gain	22,815	btu/h

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

Heatloss/Gain Calculations CSA-F280-12

Builder: Delpark Homes/Highcastle Homes Date: March 11, 2015

Weather Data Newcastle (Bowmanville) 44 -4.0 86 52 50 Project # 15-34

2012 OBC Project: Northglen Model: 40-6 System 1 Heat Loss ^T 76 deg. F Ht gain ^T 11 deg. F GTA: 2517 Page 5

Level 3

	MAST	WIC	COMP	BED 2	WIC 2	BED 3	BATH	BED 4	ENS		
Run ft. exposed wall A	30 A	9 A	11 A	27 A	11 A	20 A	6 A	13 A	20 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	212 Area	73 Area	100 Area	163 Area	42 Area	133 Area	85 Area	115 Area	99 Area	Area	Area
Exposed Ceilings A	212 A	73 A	100 A	163 A	42 A	133 A	85 A	115 A	99 A	A	A
Exposed Ceilings B	B	B	B	B	B	B	B	B	B	B	B
Exposed Floors	Flr	Flr	Flr	Flr	20 Flr	Flr	Flr	Flr	Flr	Flr	Flr
Gross Exp Wall A	240	72	88	216	88	160	48	104	160		
Gross Exp Wall B											

Components	R-Values	Loss	Gain	MAST Loss	MAST Gain	WIC Loss	WIC Gain	COMP Loss	COMP Gain	BED 2 Loss	BED 2 Gain	WIC 2 Loss	WIC 2 Gain	BED 3 Loss	BED 3 Gain	BATH Loss	BATH Gain	BED 4 Loss	BED 4 Gain	ENS Loss	ENS Gain	Loss	Gain	Loss	Gain
North Shaded	3.15	24.13	11.31					16	386	181	8	193	90												
East/West	3.15	24.13	27.75	32	772	888					16	386	444	8	193	222	16	386	444			9	217	250						
South	3.15	24.13	21.28																	6	145	128	15	362	319	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																													
Net exposed walls A	15.13	5.02	0.73	208	1045	151	72	362	52	72	362	52	192	964	140	80	402	58	144	723	105	42	211	31	89	447	65	142	713	103				
Net exposed walls B	8.50	8.94	1.29																													
Exposed Ceilings A	50.00	1.52	0.76	212	322	161	73	111	55	100	152	76	163	248	124	42	64	32	133	202	101	85	129	65	115	175	87	99	150	75				
Exposed Ceilings B	22.86	3.32	1.66																													
Exposed Floors	22.05	3.45	0.23													20	69	5														
Foundation Conductive Heatloss																																
Total Conductive – Heat Loss					2139			473			900			1791			728			1312			485			984			1298					
Total Conductive – Heat Gain						1200			108			309			798			317			650			223			471			620					
Air Leakage – Heat Loss/Gain		0.1299	0.0068		278	8		61	1		117	2		233	5		95	2		170	4		63	2		128	3		169	4				
Ventilation – Case 1	X	0.1218	0.0796		261	96		58	9		110	25		218	64		89	25		160	52		59	18		120	38		158	49				
Ventilation – Case 2		82.08	11.88																													
Ventilation – Case 3		0.18	0.08																													
Heat Gain People			239	2		478							1		239				1		239				1		239							
Appliances Loads	1 =.25 percent		4150																													
Duct and Pipe loss			10%													1	82	34														
Level 3 HL Total	12,735	Total HL for per room			2678			592			1126			2242			993			1642			607			1231			1625					
Level 3 HG Total	8,229	Total HG per room x 1.3				2317			152			437			1438			492			1228			315			976			875				

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	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																															
Total Conductive – Heat Gain																															
Air Leakage – Heat Loss/Gain		0.0000	0.0068																												
Ventilation – Case 1	X	0.00	0.08																												
Ventilation – Case 2		82.08	11.88																												
Ventilation – Case 3		0.18	0.08																												
Heat Gain People			239																												
Appliances Loads	1 =.25 percent		4150																												
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	46,734	btu/h
Total Heat Gain	22,815	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: **Newcastle (Bowmanville)** **Model:** **40-6**

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 Homes/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	3	@	10	cfm	30	cfm
Bathrooms & Kitchen	4	@	10	cfm	40	cfm
Other rooms	4	@	10	cfm	40	cfm
			Total		150	

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1	@	30	cfm	30	cfm
Other bedrooms	3	@	15	cfm	45	cfm
			Total		75	

Principal Exhaust Fan Capacity

Make	Model	Location
Broan	684N	Ensuite
90 cfm		Sones

Heat Recovery Ventilator

Make		
Model		
	cfm high	cfm low
Sensible efficiency @ -25 deg C	0%	
Sensible efficiency @ 0 deg C	0%	

Supplemental Ventilation Capacity

Total ventilation capacity	150.0	
Less principal exhaust capacity	75.0	
REQUIRED supplemental vent. Capacity	75.0	cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
BATH	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	March 11, 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
40-6			
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 =	254 m²	% Windows+ 12%	☐ ICF Basement	☐ Walkout Basement	☐ Log/Post&Beam
Gross Window+ Area =	31 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: Newcastle (Bowmanville) **Model:** System 1 40-6

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.168	28496	76	6566

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.013	28496	11	76

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	6566	7750	0.4237
2	0.3		15934	0.1236
3	0.2		10109	0.1299
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	76	0.0068
BUILDING CONDUCTIVE HEAT GAIN	11190	

Levels this Dwelling
3

Air Leakage Calculations

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	75	76	1.00	6156

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.1	75	11	891

Vent

Case 1

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	6156	7750	0.40
2	0.3		15934	0.12
3	0.2		10109	0.12
4	0		0	0.00

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	891	0.08
Building	11190	

Case 1

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 2

Case 3

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	6156	0.18

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	891	0.08
891	1		

Case 3

Envelope Air Leakage Calculator

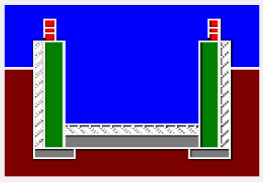
Supplemental tool for CAN/CSA-F280

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):	6.10
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	807.01
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: 0 / Total Exhaust: 37.5
Flue Size	
Flue #:	#1 / #2 / #3 / #4
Diameter (mm):	0 / 0 / 0 / 0
Envelope Air Leakage Rate	
Heating Air Leakage Rate (ACH/H):	**0.168**
Cooling Air Leakage Rate (ACH/H):	**0.013**

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):	14.46
Floor Width (m):	6.87
Exposed Perimeter (m):	42.67
Wall Height (m):	2.44
Depth Below Grade (m):	1.83
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):	**2052**



Insulation Configuration

H.V.A.C. SYMBOLS

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

	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
PE	W/R PRINCIPAL EXHAUST FAN

ABBREVIATIONS

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

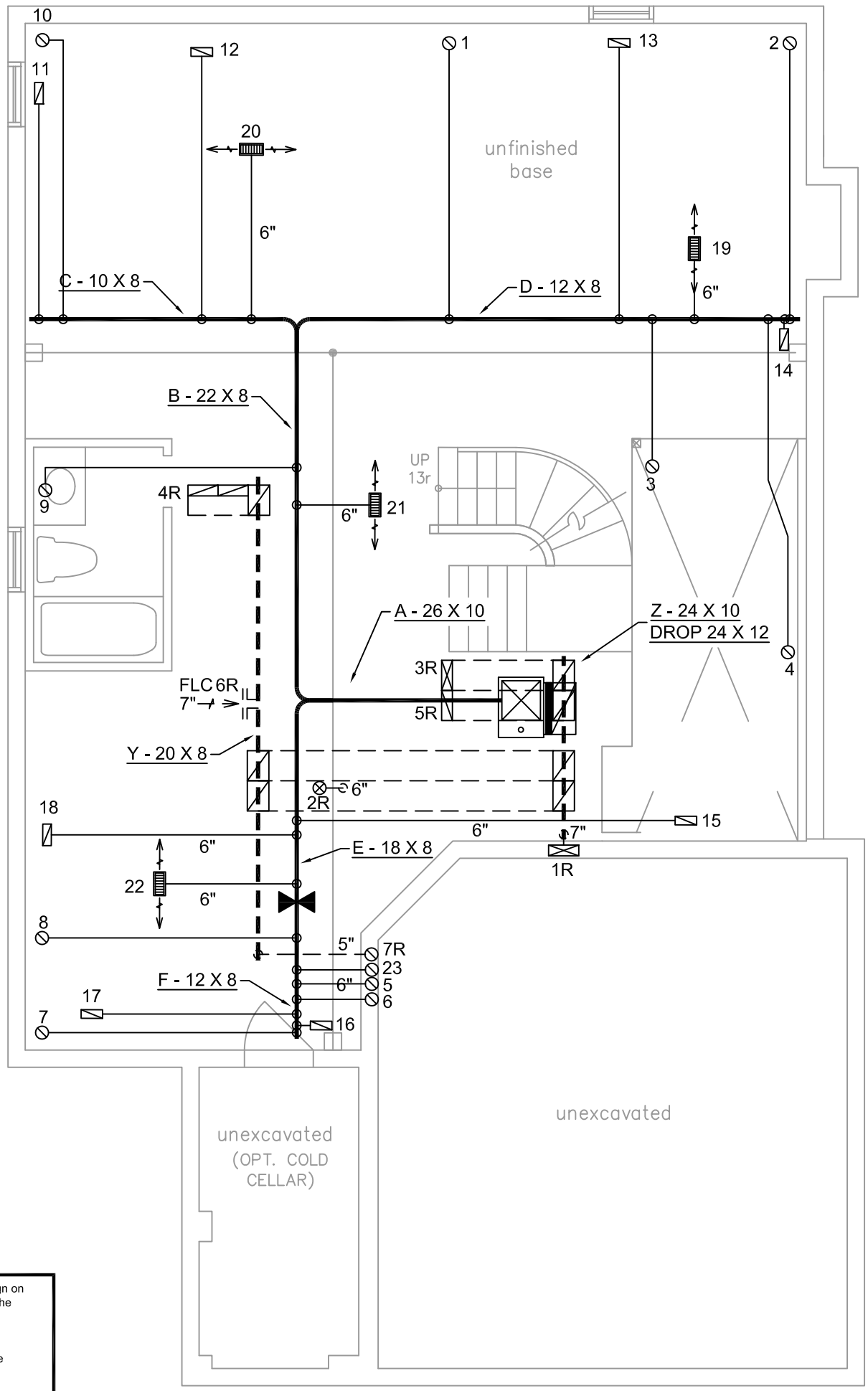
ZONE 1 COMPLIANCE
PACKAGE "D" REF. TABLE 2.1.1.2.A

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

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

CIRCULATION FAN SWITCH TO BE CENTRALLY LOCATED

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 ot Designer

OBC 2012

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	46,734 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	1170 CFM

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	3	2
1ST FLOOR	9	3	2
BASEMENT	4	1	

FLOOR PLAN:	BASEMENT
DRAWN BY	D. DACOSTA
SQFT	2517
LAYOUT NO.	15-34
DRAWING NO.	1/3

DATE:	MARCH 11, 2015
CLIENT:	DELPARK HOMES/HIGHCASTLE HOMES
PROJECT:	40-6 NORTHGLEN CLARINGTON, ON.
SCALE:	3/16" = 1"-0"

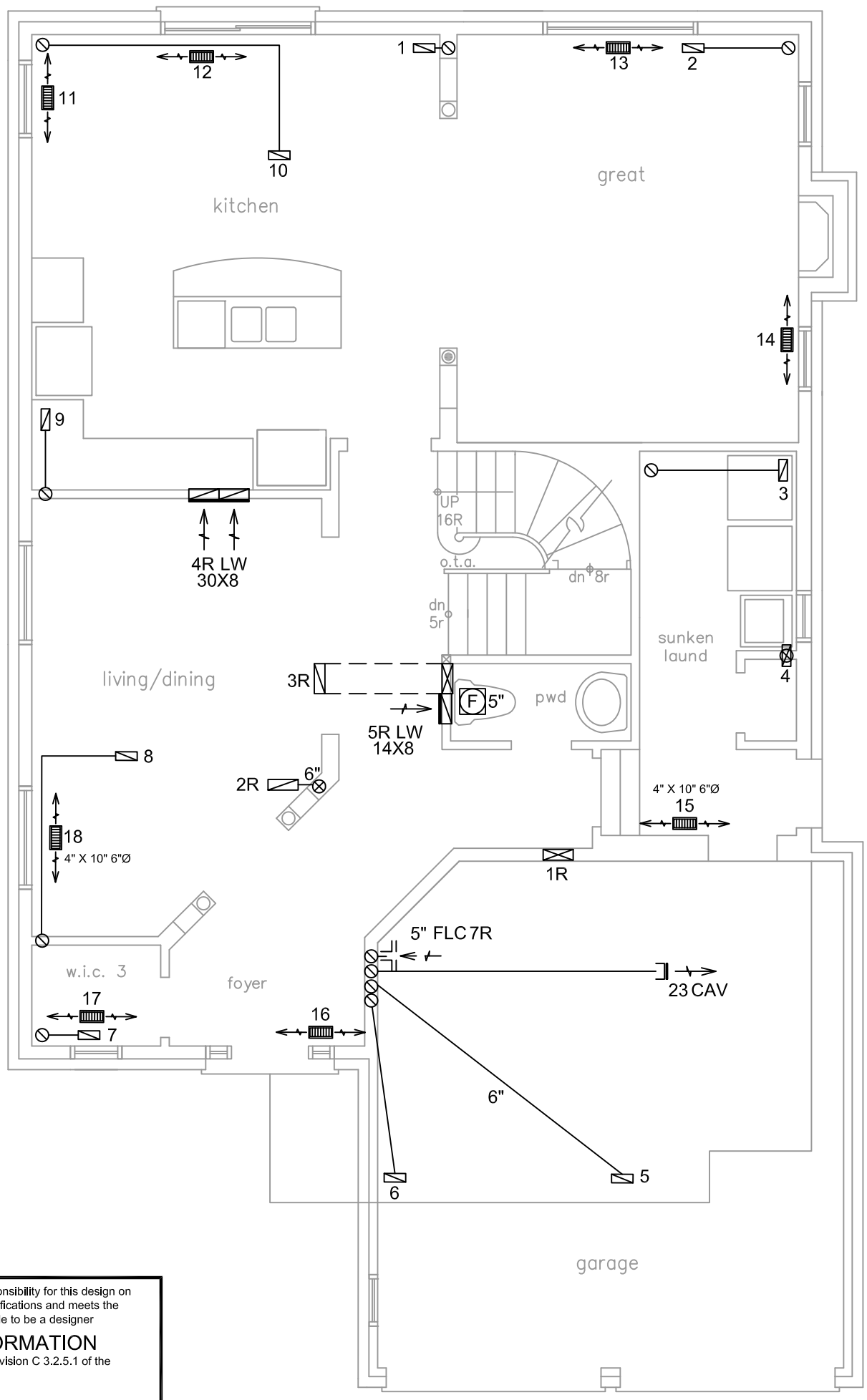
H.V.A.C. SYMBOLS

	FLEX DUCT
	RIDIT ROUND DUCT
	SUPPLY MAIN DUCT
	SUPPLY DIFFUSER
	LOW/HIGH WALL/KICK 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
PE	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 ot Designer

OBC 2012

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	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: 2517
LAYOUT NO.: 15-34
DRAWING NO.: 2/3

DATE: MARCH 11, 2015
CLIENT: DELPARK HOMES/HIGHCASTLE HOMES
PROJECT: 40-6 NORTHGLEN CLARINGTON, ON.
SCALE: 3/16" = 1"-0"

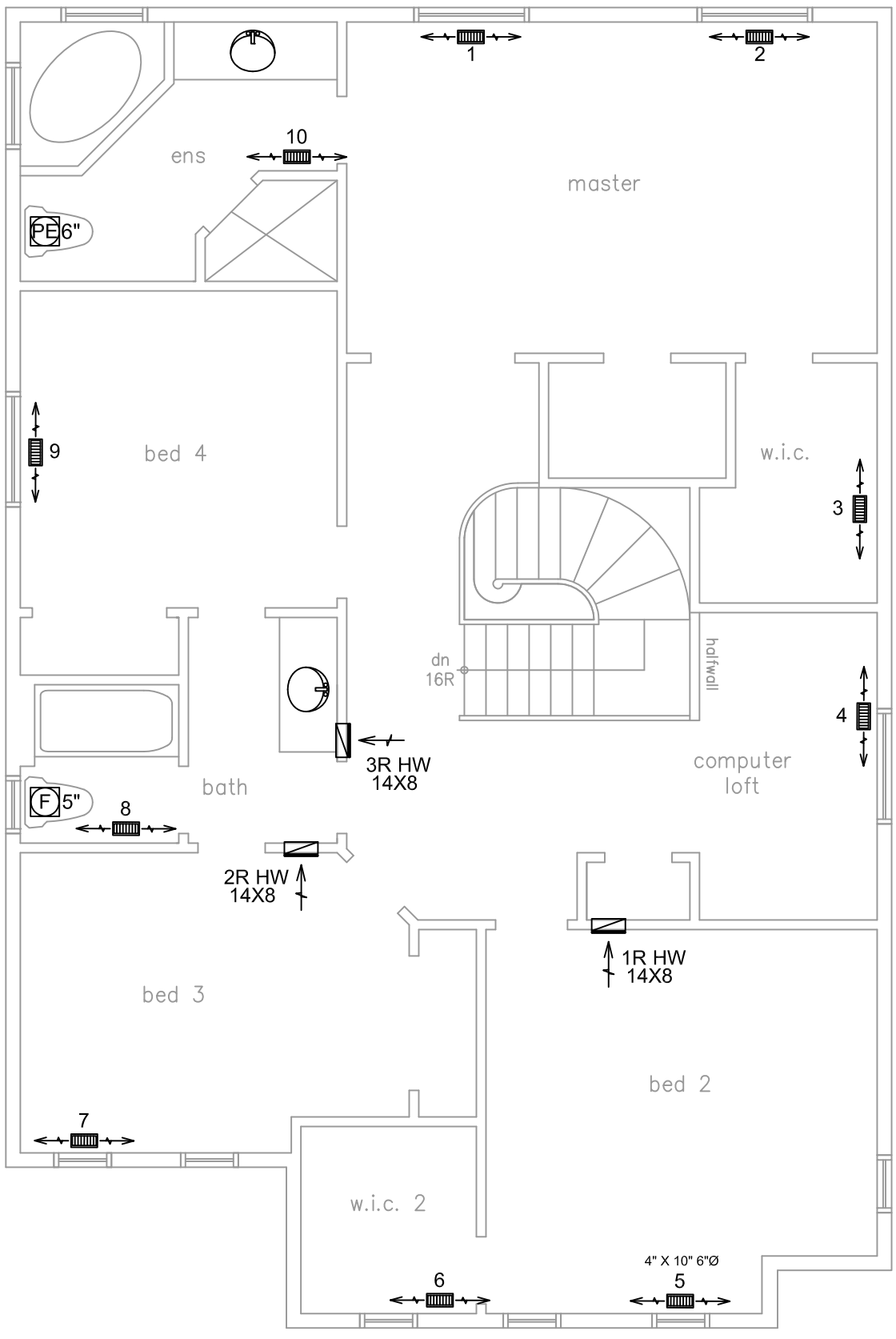
H.V.A.C. SYMBOLS

	FLEX DUCT
	RIDIT ROUND DUCT
	SUPPLY MAIN DUCT
	SUPPLY DIFFUSER
	LOW/HIGH WALL/KICK 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
PE	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 ot Designer

OBC 2012

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	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: 2517
LAYOUT NO.: 15-34
DRAWING NO.: 3/3

DATE: MARCH 11, 2015
CLIENT: DELPARK HOMES/HIGHCASTLE HOMES
PROJECT: 40-6 NORTHGLEN CLARINGTON, ON.
SCALE: 3/16" = 1"-0"