

### **Schedule 1: Designer Information**

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A.	Pro	ject Information						
Build	ing r	number, street name	Northo	glen			Unit no.	Lot/con.
N 4		56 ·	40-4		International	/ - th		
Muni	cıpaı	Bow Bow	vmanville	Postal code	Plan number/ description	otner		
		vidual who reviews an	d takes responsibility for desig	gn activities				
Nam	е		David Da Costa		Firm		GTA Designs Inc	c.
Stree	et ad	dress	2984 Drew Roa	d, Suite 202			Unit no.	Lot/con.
Muni	cipal	ity	Mississauga	Postal code L4T 0A4	Province Ontari	io	E-mail <u>dave@gtade</u> :	signs.ca
Telep	ohon	e number		Fax number			Cell number	
C	Das	905-67	1-9800 en by individual identified in S		7-494-9643 uilding Code	Table 3	R 5 2 1 of Division Cl	
0.	DCS	ngir activities undertak	cir by marviadar identifica in o	Cotion B. [Bo	manig oouc	Table	5.5.2.1 OF DIVISION O	
		House	⊠ HVAC – H				☐ Building Structural	
	_	Small Buildings	☐ Building Se				☐ Plumbing – House	
		Large Buildings Complex Buildings	<ul><li>Detection,</li><li>Fire Protection</li></ul>	Lighting and Po	wer		<ul><li>☐ Plumbing – All Building</li><li>☐ On-site Sewage System</li></ul>	
_		·						
		tion of designer's work and Cooling Load Calcula		del Certification	n Builder		Project # Highcastle Home	
	_	m Design	ations		Project		Bowmanville	#5
Resi	dent	ial mechanical ventilatior	n Design Summary		Model		Northglen	
Resi	dent	ial System Design per CA	AN/CSA-F280-12				40-4	
D.	Doc	laration of Designer			SB-12		Package D	
<i>D</i> .	Dec		David Davasta	-11 414 /-	-h			
		' <u></u>	David Dacosta	declare that (	cnoose one a	is appro	priate):	
			(print name)					
			I review and take responsibility for 3.2.4 Division C of the Building Coclasses/categories.  Individual BCIN:	de. I am qualified		•		
			Firm BCIN:				1	
			i iiii boilv.				•	
		$\boxtimes$	I review and take responsibility for "other designer" under subsection					
			Individual BCIN	329	64			
			Basis for exemp	tion from registr	ration:		Division C 3.2.4.1. (4)	<b>-</b>
			The design work is exempt from the	e registration an	d qualification	requirem	nents of the Building Code.	
			Basis for exemp	otion from registr	ation and quali	ification:		
l cert 1. 2.		he information contained in have submitted this applica	n this schedule is true to the best of n tion with the knowledge and consen		Mane	14	Cota	
		<u> </u>	Posto					_
			Date		Signati	ture of Des	signet	

### 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 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.

## **Envelope Air Leakage Calculator**

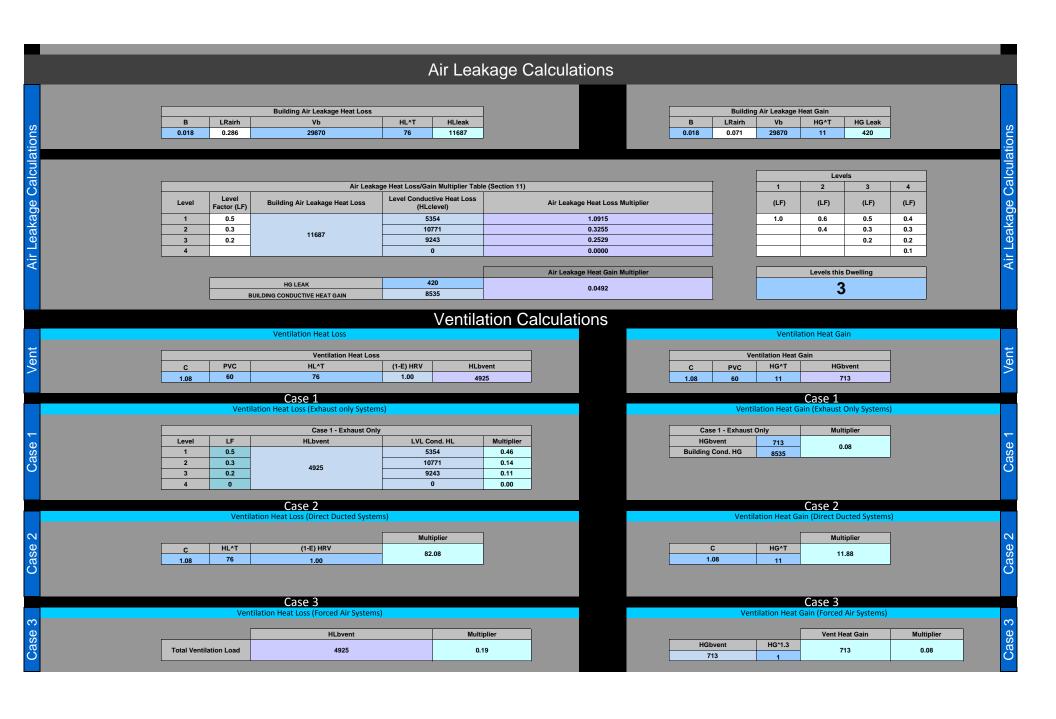
Supplemental tool for CAN/CSA-F280

Weather Station De	scription
Province:	Ontario
Region:	Oshawa ▼
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shieldi	ng
Building Site:	Suburban, forest
Walls:	Heavy ▼
Flue:	Heavy ▼
Highest Ceiling Height (m):	6.10
Building Configu	ration
Type:	Detached
Number of Stories:	Two Full
Foundation:	Full
House Volume (m³):	845.92
Air Leakage/Vent	ilation
Air Tightness Type:	Present (1961-) (ACH=3.57)
Curata va DDT Data:	ELA @ 10 Pa. 860.26 cm <sup>2</sup>
Custom BDT Data:	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	otal Supply: Total Exhaust:
	37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Envelope Air Leaka	ige Rate
Heating Air Leakage Rate (ACH/H):	0.286
Cooling Air Leakage Rate (ACH/H):	0.071

## **Residential Foundation Thermal Load Calculator**

Supplemental tool for CAN/CSA-F280

Weat	her Sta	tion Description
Province:	Ontario	▼
Region:	Oshawa	▼
	Site D	escription
Soil Conductivity:	Normal co	nductivity: dry sand, loam, clay
Water Table:	Normal (	7-10 m, 23-33 Ft)
For	undatio	on Dimensions
Floor Length (m):	15.55	
Floor Width (m):	6.09	
Exposed Perimeter (m):	43.28	
Wall Height (m):	2.44	
Depth Below Grade (m):	1.83	Insulation Configuration
Window Area (m²):	0.84	
Door Area (m²):	1.95	
	Radi	ant Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Desig	n Months
Heating Month	1	
	Founda	ation Loads
Heating Load (Watts):		1350





### Air System Design

Package D

February 13, 2015

2986 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 Builder: **Highcastle Homes** Date: Project # 15-34 appropriate category as an "other designer" under Division C subsection Northglen 3.2.5. of the Building Code. System 1 40-4 Individual BCIN: 32967 Mana Hotel **David DaCosta** Page 2 Project: Bowmanville Model: AIR DISTRIBUTION & PRESSURE A/C UNIT DATA: DESIGN LOAD SPECIFICATIONS FURNACE/AIR HANDLER DATA: BOILER/WATER HEATER DATA: 12.236 btu/h 0.5 "w.c. Make Level 1 Net Load **Equipment External Static Pressure** Make 2.0 Ton Amana Type Amana Level 2 Net Load 16,368 btu/h Additional Equipment Pressure Drop 0.225 "w.c. Model GMEC960603BNA Model 2.0 Cond.--Level 3 Net Load 13,374 btu/h **Available Design Pressure** 0.275 "w.c. Input Btu/h 60000 Input Btu/h Coil -----2.0 Level 4 Net Load 0 btu/h Return Branch Longest Effective Length 300 ft Output Btu/h 57600 Output Btu/h **Total Heat Loss** 41.978 btu/h R/A Plenum Pressure 0.138 "w.c. E.s.p. 0.50 " W.C. Min.Output Btu/h AWH **Total Heat Gain** 19,811 btu/h S/A Plenum Pressure 0.14 "w.c. Water Temp deg. F. Blower DATA: **Heating Air Flow Proportioning Factor** Blower Speed Selected: W2 **ECM** Ventilation PVC 60 cfm 0.0279 cfm/btuh AFUE 96% Blower Type Cooling Air Flow Proportioning Facter **Building Volume Vb** 29870 ft3 0.0486 cfm/btuh Aux. Heat Total Heat Loss + 10% 46.176 Btuh. R/A Temp 70 deg. F. SB-12 Package Package D **Heating Check** 1170 cfm Cooling Check 963 cfm S/A Temp 116 deg. F. 1170 W2 Supply Branch and Grill Sizing Diffuser loss 0.01 "w.c. Temp. Rise>>> 46 deg. F. Selected cfm> **Cooling Air Flow Rate** 963 cfm Level 1 Outlests Level 2 Outlets S/A Outlet No. 20 21 12 13 15 11 Room Use BASE BASE BASE BASE KIT LAUND FOY **PWD** LIV GREAT PLEN DIN Btu/Outlet 3059 3059 3059 3059 2567 1783 2412 1148 1784 2740 1367 2567 **Outlet Airflow Rate CFM** 85 85 85 50 32 50 76 38 72 85 72 67 Cooling Airflow Rate CFM 9 9 9 126 50 41 56 75 98 6 126 **Duct Design Pressure** 0.13 **Actual Duct Length** 19 32 25 36 33 5 39 41 30 38 36 3 110 100 Equivalent Length 120 110 165 90 90 90 90 90 90 90 90 90 90 90 130 135 155 100 145 100 90 90 90 90 90 90 90 **Total Effective Length** 129 152 135 201 90 90 90 90 90 90 90 90 90 123 135 174 196 130 138 181 103 90 90 90 90 90 90 Adjusted Pressure 0.10 0.09 0.10 0.06 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.11 0.10 0.07 0.07 0.10 0.09 0.07 0.13 0.14 0.14 0.14 0.14 0.14 0.14 **Duct Size Round** 6 5 5 5 5 **Outlet Size** 4x10 4x10 4x10 3x10 3x10 4x10 3x10 3x10 3x10 4x10 3x10 3x10 3x10 3x10 3x10 3x10 3x10 3x10 4x10 3x10 3x10 4x10 4x10 4x10 3x10 3x10 3x10 3x10 Trunk D PTO R C D D D C

						Le	evel 3 Out	lets												L	_evel 4 O	utlets						
S/A Outlet No.	1	3	4	5	6	7	8	9	2																			
Room Use	MAST	ENS	BATH	BED 2	WIC 2	BED 3	BED 4	STAIR	WIC																			
Btu/Outlet	1618	1918	560	2259	700	2330	1336	1035	1618																			
Outlet Airflow Rate CFM	65	53	16	63	20	65	37	29	25																			
Cooling Airflow Rate CFM	65	35	10	56	18	64	47	19	35																			
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	46	21	15	58	51	52	40	15	33																			
Equivalent Length	110	120	140	125	115	105	130	90	100	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Total Effective Length	156	141	155	183	166	157	170	105	133	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Adjusted Pressure	0.08	0.09	0.08	0.07	0.08	0.08	0.08	0.12	0.10	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Duct Size Round	6	5	5	6	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Outlet Size	4x10	3x10	3x10	4x10	3x10	4x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10	3x10
Trunk	В	Α	Α	D	D	D	В	PTO	Α																			

Return Branch And Grill Sizing		G	Frill Pres	sure 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	105	105	160	429	40	171				
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	34	39	63	58	9	43	23				
Equivalent Length	175	170	185	160	130	190	95	70	70	70	70
Total Effective Length	209	209	248	218	139	233	118	70	70	70	70
Adjusted Pressure	0.06	0.06	0.05	0.05	0.08	0.05	0.10	0.17	0.17	0.17	0.17
Duct Size Round	7	6	6	7	2x8	5	7				
Inlet Size	8	8	8	8	8	8	FLC				
" "	х	х	х	х	х	х	х	х	х	х	х
Inlet Size	14	14	14	14	30	14					

Trunk	CFM	Press.	Round	Rect. Size
Drop	1170	0.05	17.0	24x12
Z	1170	0.05	17.0	26x10
Υ	476	0.05	12.0	16x8
X	305	0.05	10.5	12x8
W				
V				
U				
Т				
S				
R				
Q				

Supply Trunk Du Trunk	CFM	Press.	Round	Rect.	Size
A B C D E F G H I J K	1070 264 505 370	0.06 0.06 0.06 0.06	16.0 9.5 12.0 11.0	30x8 10x8 16x8 14x8	22x10

#### 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

									e-mail dave@gta	iucsigns.ca				
	Builder:	Highcastle Homes	_ Da	ate:	February 13, 2015			•					Pro	ject # 15-34
2242.272					Northglen		System 1							
2012 OBC	Project:	Bowmanville	_ Mod	del:	40-4		Oystelli i	Heat Loss ^T	76 deg. F	Ht gain ^T	11 deg. F	GTA: 2337		Page 3
Level 1		BASE												
Run ft. exposed wall A		142 A		Α	Α	Α	Α	Α	Α	Α	Α		Α	Α
Run ft. exposed wall B		В		В	В	В	B	В	В	В	В		В	В
Ceiling height		2 AG		2 AG	2 AG	2 AG	2 AG	2 AG	2 AG	2 AG	2 AG		AG	2 AG
Floor area		1019 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		В		В	В	В	В	В	В	В	В		В	В
Exposed Floors		Fir		Fir	Fir	Fir	Fir	Flr	Fir	Flr	Flr		Fir	Fir
Gross Exp Wall A		284												
Gross Exp Wall B														
	R-Values Loss	Gain Loss	Gain	Loss Gai	n Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss	Gain Loss	Gain	Loss Gain	Loss Gain
North Shaded														
East/West			83											
South														
Existing Windows														
Skylight	2.03 37.4													
Doors			77											
Net exposed walls A			203											
Net exposed walls B	8.50 8.9	1.29												
Exposed Ceilings A	50.00 1.5	2 0.76												
Exposed Ceilings B														
Exposed Floors														
Foundation Conductive Heatloss	Slab On Grade (x													
Total Conductive Heat Loss		5354												
Heat Gain			490											
Air Leakage Heat Loss/Gain	1.091	5 0.0492 5843	24											
Case 1	0.4	6 0.08												
Ventilation Case 2	82.0	8 11.88												
Case 3	x 0.1	9 0.08 1039	41											
Heat Gain People		239												
Appliances Loads	1 =.25 percent	4376												
Duct and Pipe loss	3	10%												
Level 1 HL Total 12,236	Total HL f	or per room 12236												
Level 1 HG Total 722	Total HG per	4.0	722											
Level 1110 Total 122	Total no per	room x 1.3	722											
Level 1 110 Total 122	Total HG per	room x 1.3	122											
								00547						
Level 2		KIT/DI	N	LAUND	FOY	PWD	LIV	GREAT	PLEN					
Level 2 Run ft. exposed wall A		KIT/DI	N	13 A	15 A	12 A	15 A	26 A	30 A	A	A			A A
Level 2 Run ft. exposed wall A Run ft. exposed wall B		43 A B	N	13 A B	15 A B	12 A B	15 A B	26 A B	30 A B	В	В		A B	В
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height		KIT/DI 43 A B 10	N	13 A B 10	15 A B 10	12 A B 10	15 A B 10	26 A B 10	30 A B 2	10 B	10	10	В	10 B
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area		KIT/DI 43 A B 10 410 Area	N	13 A B 10 43 Area	15 A B 10 92 Area	12 A B 10 33 Area	15 A B 10 196 Area	26 A B 10 197 Area	30 A B 2 180 Area	B 10 Area	B 10 Area	10	B Area	B 10 Area
Level 2 Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A		KIT/DI 43 A B 10 410 Area 60 A	N	13 A B 10 43 Area A	15 A B 10 92 Area A	12 A B 10 33 Area A	15 A B 10 196 Area A	26 A B 10 197 Area A	30 A B 2 180 Area A	B 10 Area A	10 Area	10	B Area A	B 10 Area A
Level 2 Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B		KIT/DI 43 A B 10 410 Area 60 A B	N	13 A B 10 43 Area A B	15 A B 10 92 Area A B	12 A B 10 33 Area A B	15 A B 10 196 Area A B	26 A B 10 197 Area A B	30 A B 2 180 Area A B	B 10 Area A B	10 Area A B	10	B Area A B	B 10 Area A B
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings B Exposed Floors		43 A B 10 410 Area 60 A B Fir	N	13 A B 10 43 Area A B FIr	15 A B 10 92 Area A B Fir	12 A B 10 33 Area A B Fir	15 A B 10 196 Area A B Fir	26 A B 10 197 Area A B Fir	30 A B 2 180 Area A B 180 Fir	B 10 Area A	10 Area	10	B Area A	B 10 Area A
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A		KIT/DI 43 A B 10 410 Area 60 A B	N	13 A B 10 43 Area A B	15 A B 10 92 Area A B	12 A B 10 33 Area A B	15 A B 10 196 Area A B	26 A B 10 197 Area A B	30 A B 2 180 Area A B	B 10 Area A B	10 Area A B	10	B Area A B	B 10 Area A B
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B		43 A B 10 410 Area 60 A B Fir	N 1	13 A B 10 43 Area A B Fir	15 A B 10 92 Area A B Fir	12 A B 10 33 Area A B Fir	15 A B 10 196 Area A B Fir	26 A B 10 197 Area A B Fir	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components	R-Values Loss	KIT/DI 43 A B 10 410 Area 60 A B Fir 430	N Gain	13 A B 10 43 Area A B Fir 130	15 A B 10 92 Area A B Flr 150	12 A B 10 33 Area A B Fir	15 A B 10 196 Area A B Fir	26 A B 10 197 Area A B Fir	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B	B 10 Area A B
Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Gross Exp Wall B Components North Shaded	R-Values   Loss	KIT/DI  43 A  B  10  410 Area 60 A  B  Fir  430  Gain  Loss 3 11.31 22 531	N Gain 249	13 A B 10 43 Area A B Fir	15 A B 10 92 Area A B Flr 150 n Loss Gain	12 A B 10 33 Area A B Fir 120 Loss Gain	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260 Loss Gain	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Level 2 Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West	R-Values Loss 3.15 24.1 3.15 24.1	KIT/DI 43 A B 10 410 Area 60 A B Fir 430  Gain 11.31 22 531 3 27.75 37 893	N Gain 249	13 A B 10 43 Area A B Fir 130	15 A B 10 92 Area A B Fir 150 n Loss Gain	12 A B 10 33 Area A B Fir	15 A B 10 196 Area A B Flr 150 Loss Gain	26 A B 10 197 Area A B Flr 260 Loss Gain	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1	KIT/DI 43 A B 10 410 Area 60 A B Fir 430  Gain 11.31 22 531 3 27.75 3 21.28	N Gain 249	13 A B 10 43 Area A B Fir 130	15 A B 10 92 Area A B Flr 150 n Loss Gain	12 A B 10 33 Area A B Fir 120 Loss Gain	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Flr 260 Loss Gain	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South	R-Values Loss 3.15 24.1 3.15 24.1 1.99 38.1	KIT/DI  43 A B 10 410 Area 60 A B Fir 430  Gain 227.75 3 11.31 22.775 37 893 3 27.75 37 893	N Gain 249	13 A B 10 43 Area A B Fir 130	15 A B 10 92 Area A B Flr 150 n Loss Gain	12 A B 10 33 Area A B Fir 120 Loss Gain	15 A B 10 196 Area A B Flr 150 Loss Gain	26 A B 10 197 Area A B Flr 260 Loss Gain	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Level 2 Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight	R-Values Loss 3.15 24.1 3.15 24.1 3.19 33.4 2.03 37.4	KIT/DI 43 A B 10 410 Area 60 A B Fir 430  Gain 21.31 22 3 27.75 3 21.28 9 22.15 4 88.23	Gain 249 1027	13 A B 10 10 43 Area A B Fir 130 Loss Gai 5 121	15 A B 10 92 Area A B Fir 150 n Loss Gain 57	12 A B 10 33 Area A B Fir 120 Loss Gain	15 A B 10 196 Area A B Flr 150 Loss Gain	26 A B 10 197 Area A B Flr 260 Loss Gain	30 A B 2 180 Area A B 180 Fir	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.19 38.1 2.03 37.4 3.01 25.2	KIT/DI   43 A B   10	Gain 249 1027	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B B 180 Flr 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 38.1 2.03 37.4 3.01 25.2 15.13 5.6	KIT/DI   43 A B   10   410 Area   60 A   B   Fir   430	Gain 249 1027	13 A B 10 10 43 Area A B Fir 130 Loss Gai 5 121	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120 Loss Gain	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B B 180 Flr 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.3 1.99 37.4 3.01 25.2 8.50 8.5	KIT/DI 43 A B 10 410 Area 60 A B Fir 430    Gain 3	Gain 249 1027	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B B 180 Flr 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Net exposed walls B Exposed Ceilings A	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.3 1.99 38.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.50	KIT/DI   43 A B   10	Gain 249 1027	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B B 180 Flr 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Net exposed Ceilings A Exposed Ceilings A	R-Values Loss 3.15 24.1 3.15 24.1 1.99 38.1 2.03 37.4 3.01 25.6 8.50 8.50 8.50 1.5 22.86 3.3	KIT/DI   43 A B   10	Gain 249 1027	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B 180 Fir 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.01 25.2 3.01 25.2 5.00 1.5 22.86 3.3	KIT/DI   43 A B   10   410 Area   60 A B   Fir   430     22   531   3   27.75   37   22.15   4   88.23   15   3.65   2   0.73   371   1864   1.29   2   0.76   60   91   1.66   2   0.22	Gain 249 1027	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3:	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22	15 A B 10 196 Area A B Fir 150 Loss Gain	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721	30 A B 2 180 Area A B 180 Fir 60  Loss Gain	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Floors Foundation Conductive Heatloss	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.01 25.2 15.13 5.0 8.50 8.9 50.00 1.5 22.86 3.3 Slab On Grade (x	Cain   Case	Gain 249 1027 1027 46	13 A B B 10 43 Area A B Flr 130 Loss Gai 5 121 21 530 104 522	15 A B 10 92 Area A B Flr 150  n Loss Gain 57 14 338 3: 77 28 77 76 108 542	12 A B 10 33 Area A B Fir 120  Loss Gain  88 8 193 22  79 112 563 8	15 A B 10 196 Area A B Fir 150 Loss Gain  22 531 468  128 643 93	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170	30 A B 2 180 Area A B B 180 Flr 60  Loss Gain  60 301	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Net exposed Ceilings A Exposed Ceilings A Exposed Floors Foundation Conductive Heat Loss	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 38.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.50 8.50 8.5 22.86 3.3 22.86 3.3 Slab On Grade (x	KIT/DI   43 A B   10   410 Area   60 A B   Fir   430     22   531   3   27.75   37   22.15   4   88.23   15   3.65   2   0.73   371   1864   1.29   2   0.76   60   91   1.66   2   0.22	Gain 249 1027 270 1	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530 104 522	15 A B 10 92 Area A A B Fir 150 n Loss Gain 57 14 338 3: 77 28 707 1: 76 108 542	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721 234 1175 170	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Ceilings B Exposed Floors Foundation Conductive Heatloss Total Conductive	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 37.4 1.99 37.4 3.01 25.2 15.13 5.0 8.50 8.5 50.00 1.5 22.86 3.3 22.86 3.3 Slab On Grade (x	Cain   Cas   Cas	Gain 249 1027 270 1	13 A B B 10   43 Area A B Fir   130   Loss Gai   5	15 A B 10 92 Area A A B Fir 150  n Loss Gain 57 14 338 3: 77 28 707 11 1587 209	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8	15 A B 10 196 Area A B Fir 150 Loss Gain 22 531 468 128 643 93	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721 234 1175 170	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900	B 10 Area A B Fir	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall A Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Floors Foundation Conductive Heatloss Total Conductive Heat Loss Heat Loss/Gain	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 38.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.9 50.00 1.5 22.86 3.3 Slab On Grade (x	Case	Gain 249 1027 270 1	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530 104 522	15 A B 10 92 Area A A B Fir 150  n Loss Gain 57 14 338 3: 77 28 707 11 1587 209	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8	15 A B 10 196 Area A B Fir 150 Loss Gain 22 531 468 128 643 93	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721 234 1175 170	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings B Exposed Floors Foundation Conductive Heat Cain Air Leakage Heat Loss/Gain All Floor area Case 1	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 38.1 1.99 38.1 2.03 37.2 15.13 5.0 8.50 8.50 8.50 8.5 50.00 1.5 22.86 3.3 22.86 3.3 Slab On Grade (x	Cain   Case	Gain 249 1027 270 1	13 A B B 10   43 Area A B Fir   130   Loss Gai   5	15 A B 10 92 Area A A B Fir 150  n Loss Gain 57 14 338 3: 77 28 707 11 1587 209	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8	15 A B 10 196 Area A B Fir 150 Loss Gain 22 531 468 128 643 93	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721 234 1175 170	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Floors Foundation Conductive Heatloss Total Conductive Heat Gain Air Leakage Heat Loss/Gain Ventilation Case 2	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 1.99 37.4 3.01 25.2 8.50 8.5 50.00 1.5 22.86 3.3 22.86 3.3 22.86 3.3 22.86 3.3 22.86 3.3 8 Slab On Grade (x	Cain   Loss   Rit   Area   A	Gain 249 1027 270 46 46 1591 78	13 A B B 10   43 Area A B Fir   130    Loss Gai   5	15 A B 10 92 Area A A B Fir 150 14 338 3: 77 28 707 11 76 108 542 1587 209 10 517	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8 69 756 30 28 246 1	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721  234 1175 170  1803 892 587 44	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900 293	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall A Ceiling height Floor area Exposed Ceilings A Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Floors Foundation Conductive Heatloss Total Conductive Heat Loss Total Conductive Heat Loss/Gain Air Leakage Heat Loss/Gain Case 1 Ventilation Case 2 Case 3	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.01 25.2 15.13 5.0 8.50 8.9 50.00 1.5 22.86 3.3 Slab On Grade (x	California   Cal	Gain 249 1027 270 46 1591 78	13 A B B 10   43 Area A B Fir   130   Loss Gai   5	15 A B 10 92 Area A A B Fir 150 14 338 3: 77 28 707 11 76 108 542 1587 209 10 517	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28	26 A B 10 197 Area A B Fir 260  Loss Gain 26 627 721  234 1175 170  1803 892 587 44	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Net exposed Walls A Exposed Ceilings B Exposed Ceilings B Exposed Floors Foundation Conductive Heat Gain Air Leakage Heat Loss/Gain Case 1 Ventilation Case 2 Case 3 Heat Gain People	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.19 38.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.50 8.50 8.50 22.86 3.3 22.86 3.3 Slab On Grade (x	Cain	Gain 249 1027 46 46 1591 78	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530 104 522 1173 382 228	15 A B 10 92 Area A A B Flr 150  n Loss Gain 57 14 338 3: 77 28 707 10 1587 209 1587 17 308	12 A B 10 33 Area A B Fir 120  Loss Gain  88 8 193 22  02 79 112 563 8  756 69 30 28 246 1  48 147 2	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28 228 47	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170  1803 892 587 44 350 74	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900 293	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Ceilings A Exposed Ceilings B Exposed Ceilings B Exposed Floors Foundation Conductive Heatloss Total Conductive Heat Gain Air Leakage Heat Loss/Gain Ventilation Case 2 Case 3 Heat Gain People	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 38.1 2.03 37.4 3.01 25.2 8.50 8.5 50.00 1.5 22.86 3.3 22.86 3.3 Slab On Grade (x 0.325 0.01 8.2.0 1 = .25 percent	Cain   Case	Gain 249 1027 270 46 46 1591 78	13 A B B 10 43 Area A B Fir 130 Loss Gai 5 121 21 530 104 522 1173 382 228	15 A B 10 92 Area A A B Fir 150 14 338 3: 77 28 707 11 76 108 542 1587 209 10 517	12 A B 10 33 Area A B Fir 120  Loss Gain 88 8 193 22 79 112 563 8 69 756 30 28 246 1	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28 228 47	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170  1803 892 587 44 350 74	30 A B 2 180 Area A B 180 Fir 60  Loss Gain  60 301  180 598 900 293	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall A Ceiling height Floor area Exposed Ceilings A Exposed Ceilings B Exposed Floors Gross Exp Wall B Components North Shaded EastWest South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings A Exposed Floors Foundation Conductive Heatloss Total Conductive Heat Loss Total Conductive Heat Cain Air Leakage Ventilation Case 1 Ventilation Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 36.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.9 50.00 1.6 22.86 3.3 Slab On Grade (x  0.325 0.1 8.22.8	Case	Gain 249 1027 46 1591 78 133 2188	13 A B B 10   43 Area A B Fir   130    Loss Gai   5	15 A B 10 92 Area A B FIr 150    n Loss Gain   57 14 338 3.   77 28 707 11 76 108 542    209 10 517   17 308   547	12 A B 10 33 Area A B Fir 120  Loss Gain  02 79 112 563 8  756 30 28 246 1 48 147 2	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28 228 47 1 547	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170  1803 892 587 44  350 74 1 547	30 A B 2 2 180 Area A B 180 Flr 60  Loss Gain  60 301  180 598 900 293 175	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings B Exposed Floors Total Conductive Heat Gain Air Leakage Heat Loss/Gain Air Leakage Heat Gain People Appliances Loads Duct and Pipe loss Level 2 HL Total  Revosed wall R Revosed Revisions Foundation Conductive Heat Gain Air Leakage Heat Loss/Gain Case 2 Case 3 Heat Gain People Appliances Loads Duct and Pipe loss Level 2 HL Total 16,368	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 3.15 24.1 3.15 25.0 1.99 38.1 2.03 37.4 3.01 25.2 15.13 5.0 2.2.86 3.3 22.86 3.3	Cain   Case	Gain 249 1027 46 46 133 2188	13 A B B 10   43 Area A B Fir   130    Loss Gai   5	15 A B 10 92 Area A A B Flr 150  n Loss Gain 57 14 338 3: 77 28 707 1: 76 108 542  209 10 517 17 308	12 A B 10 33 Area A B Fir 120  Loss Gain  88 8 193 22  02 79 112 563 8  756 99 30 28 246 1  48 147 2 1 54	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28  228 47 1 547	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170  1803 892 587 44  350 74 1 547	30 A B 2 2 180 Area A B 180 Flr 60  Loss Gain  60 301  180 598  900  293  175	B 10 Area A B Fir  Loss 44  39  83 4	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir
Run ft. exposed wall A Run ft. exposed wall A Run ft. exposed wall B Ceiling height Floor area Exposed Ceilings A Exposed Floors Gross Exp Wall A Gross Exp Wall B Components North Shaded East/West South Existing Windows Skylight Doors Net exposed walls A Net exposed walls A Exposed Ceilings B Exposed Ceilings A Exposed Ceilings A Exposed Floors Foundation Conductive Heat Gain Air Leakage Heat Loss/Gain Air Leakage Heat Gain Air Leakage Case 3 Heat Gain People Appliances Loads Duct and Pipe loss Level 2 HL Total 16,368	R-Values Loss 3.15 24.1 3.15 24.1 3.15 24.1 1.99 36.1 2.03 37.4 3.01 25.2 15.13 5.0 8.50 8.9 50.00 1.6 22.86 3.3 Slab On Grade (x  0.325 0.1 8.22.8	Cain   Case	Gain 249 1027 46 1591 78 133 2188	13 A B B 10   43 Area A B Fir   130    Loss Gai   5	15 A B 10 92 Area A B FIr 150    n Loss Gain   57 14 338 3.   77 28 707 11 76 108 542    209 10 517   17 308   547	12 A B 10 33 Area A B Fir 120  Loss Gain  88 8 193 22  02 79 112 563 8  756 69 30 28 246 1  48 147 2 1 54	15 A B 10 196 Area A B Fir 150  Loss Gain  22 531 468  128 643 93  1174 561 382 28  228 47 1 547	26 A B 10 197 Area A B Fir 260  Loss Gain  26 627 721  234 1175 170  1803 892 587 44  350 74 1 547	30 A B 2 2 180 Area A B 180 Flr 60  Loss Gain  60 301  180 598  900  293  175	B 10 Area A B Fir Loss 44	B 10 Area A B Fir	10	B Area A B Fir	B Area A B Fir

 Total Heat Loss
 41,978

 Total Heat Gain
 19,811

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





### Heatloss/Gain Calculations CSA-F280-12

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

	0										e-mail dave@gtad	designs.ca				
		Builder: H	Highcastle Homes		Date:	Februa	ry 13, 2015			_					Project #	15-34
2012 OBC		Project:	Bowmanville		odel:		rthglen 40-4		System 1	Heat Loss ^T	76 deg. F	Ht gain ^T	11 deg. F GTA	A: 2337		Page 4
2012 000		Froject.	Bowillaliville										ii deg. r Gi A	1: 2337		Page 4
Bun 6	Level 3		24	MAST	ENS 24 A		BATH	BED 2	WIC 2	BED 3	BED 4	STAIR 7 A				
	t. exposed wall A t. exposed wall B		34 /		24 A B	4 A B		25 A B	7 A B	26 A B	11 A B	7 А	A B	A B	A B	
	Ceiling height		8		8	8		8	8	8	8	8	8	8	8	
	Floor area		321		112 Area	86 Ar		90 Area	58 Area	196 Area	153 Area	160 Area	Area	Area	Area	
	posed Ceilings A		321		112 A	86 A		90 A	58 A	196 A	153 A	160 A	A	A	A	
EX	posed Ceilings B Exposed Floors			B Flr	B Flr	B FI		B Fir	B Flr	B Flr	B Flr	B Flr	B Fir	B Fir	B Flr	
	Gross Exp Wall A		272		192	32		00	56	208	88	56				
	Gross Exp Wall B	D Valorall and	Io-i-	0-1-		0	0-!		Lara Oria	Lana Onio	Lana Onio		.i		0-1	0-!
	Components North Shaded	R-Values Loss 3.15 24.13		Loss Gain	Loss	Gain Lo	oss Gain 121 57	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Ga	ain Loss Gair 113	n Loss	Gain Loss	Gain
	East/West	3.15 24.13	27.75 20	483 555	10 241	277			6 145 16	6 14 338 388						
	South	3.15 24.13						14 338 29	8		13 314 27	7				
	Existing Windows Skylight	1.99 38.19 2.03 37.44														
	Doors	3.01 25.25														
	exposed walls A	15.13 5.02		1266 183	182 914	132 27	136 20 1	86 934 13	5 50 251 3	6 194 974 141	75 377 5	5 46 231	33			
	exposed walls B posed Ceilings A	8.50 8.94 50.00 1.52		488 244	112 170	85 86	131 65 1	90 289 14	4 58 88 4	4 196 298 149	153 233 11	6 160 243	122			
	posed Ceilings B	22.86 3.32				33		200		1.00	.00 200					
	Exposed Floors	22.86 3.32	0.22													
Foundation Condu	Heat Loss			2236	1326		387	1561	484	1610	923	716				
Total Conductive	Heat Gain			982		495	142	57	8 24	7 678	44		268			
Air Leakage	Heat Loss/Gain	0.2529		566 48	335	24	98 7	395 2	8 122 1	2 407 33	233 2	22 181	13			
Ventilation	Case 1 Case 2	0.1066 82.08														
	Case 3	x 0.19		434 82	257	41	75 12	303 4					22			
	Heat Gain People Appliances Loads		239 2 4376	478				1 23	9	1 239	1 23	19				
	uct and Pipe loss	1 =.25 percent	10%													
Level 3 HL Total	13,374	Total HL fo		3236	1918		560	2259	700	2330	1336	1035				
Level 3 HG Total	7,204	Total HG per i	room x 1.3	2068		729	208	116	1 36	4 1310	97	0	395			
	Laval 4															
Run f	Level 4 t. exposed wall A			Δ	Α	А		Α	Α	Α	Α	Α	Α	Α	Α	
	t. exposed wall B		í	A B	В	B		В	B	B	B	В	В	В	B	
	Ceiling height															
Ev	Floor area posed Ceilings A			Area A	Area A	Ar A	rea	Area A	Area A	Area A	Area A	Area A	Area A	Area A	Area A	
	posed Ceilings B			В	B	B		B	B	B	B	B	B	B	B	
	Exposed Floors		1	Fir	Flr	FI	r	Fir	Fir	Fir	Fir	Flr	Fir	Flr	Fir	
	Gross Exp Wall A Gross Exp Wall B															
		R-Values Loss	Gain	Loss Gain	Loss	Gain Lo	oss Gain	Loss Gain	Loss Gain	Loss Gain	Loss Gain	Loss G	ain Loss Gair	n Loss	Gain Loss	Gain
	North Shaded	3.15 24.13														
	East/West South	3.15 24.13 3.15 24.13														
Е	Existing Windows	1.99 38.19														
	Skylight	2.03 37.44														
Net	Doors exposed walls A	3.01 25.25 15.13 5.02														
	exposed walls B	8.50 8.94														
	posed Ceilings A															
Ex	posed Ceilings B Exposed Floors	22.86 3.32 22.86 3.32														
Foundation Condu		3.32	VIZE													
Total Conductive	Heat Loss Heat Gain															
Air Leakage	Heat Gain Heat Loss/Gain	0.0000	0.0492													
	Case 1	0.00	0.08													
Ventilation	Case 2 Case 3															
	Heat Gain People		239													
		1 =.25 percent	4376													
Level 4 HL Total	uct and Pipe loss 0	Total HL fo	10%													
Level 4 HG Total	0	Total HG per roo														
_								-	_	_			_	_		

Total Heat Loss 41,978 total Heat Gain 19,811

Package D



Part 6 design

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 Northglen Project: **Bowmanville** Model: 40-4 Page RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY For systems serving one dwelling unit & conforming to the Ontario Building Code, O.geg 159/93 Location of Installation Total Ventilation Capacity 9.32.3.3(1) Lot # Plan # Bsmt & Master Bdrm 2 @ 20 cfm 40 cfm Township 2 @ 10 cfm 20 cfm Other Bedrooms Bowmanville Bathrooms & Kitchen 4 @ cfm 10 cfm 40 Roll # Permit # Other rooms 4 @ 10 cfm 40 cfm Total 140 Address Principal Ventilation Capacity 9.32.3.4(1) Builder Master bedroom @ 30 cfm 30 cfm Name 1 Highcastle Homes Other bedrooms @ 15 cfm 30 cfm 2 Address Total 60 City **Principal Exhaust Fan Capacity** Tel Fax Make Location 684N Broan Ens **Installing Contractor** Name 90 cfm 2.5 Sones Address Heat Recovery Ventilator Make City Model cfm high cfm low Sensible efficiency @ -25 deg C 0% Tel Fax HRV is HVI listed Combustion Appliances 9.32.3.1(1) Supplemental Ventilation Capacity Direct vent (sealed combustion) only a) Positive venting induced draft (except fireplaces) Total ventilation capacity 140.0 b) Natural draft. B-vent or induced draft fireplaces C) Less principal exhaust capacity 60.0 d) Solid fuel (including fireplaces) REQUIRED supplemental vent. Capacity 80.0 cfm e) No combustion Appliances Supplemental Fans 9.32.3.5. **Heating System** Location Model Sones Bath 50 770 2.5 Forced air Non forced air Pwd 50 770 2.5 Electric space heat (if over 10% of heat load) House Type 9.32.3.1(2) Type a) or b) appliances only, no solid fuel all fans HVI listed Make Broan or Equiv. Type I except with solid fuel (including fireplace) Ш Ш Any type c) appliance **Designer Certification** Type I or II either electric space heat I٧ I hereby certify that this ventilation system has been designed Other Type I, II or IV no forced air in accordance with the Ontario Building Code. System Design Option Name David Da Costa Exhaust only / forced air system Marie Hotel HRV WITH DUCTING / forced air system 2 Signature 3 HRV simplified connection to forced air system 4 HRV full ducting/not coupled to forced air system HRAI# 5190 BCIN# 32964

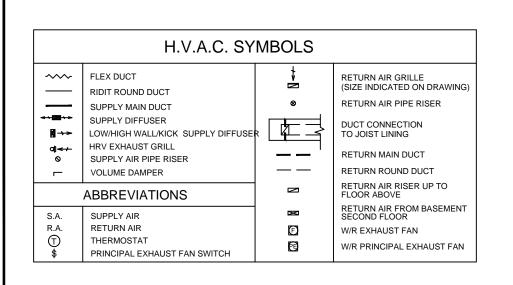
Date

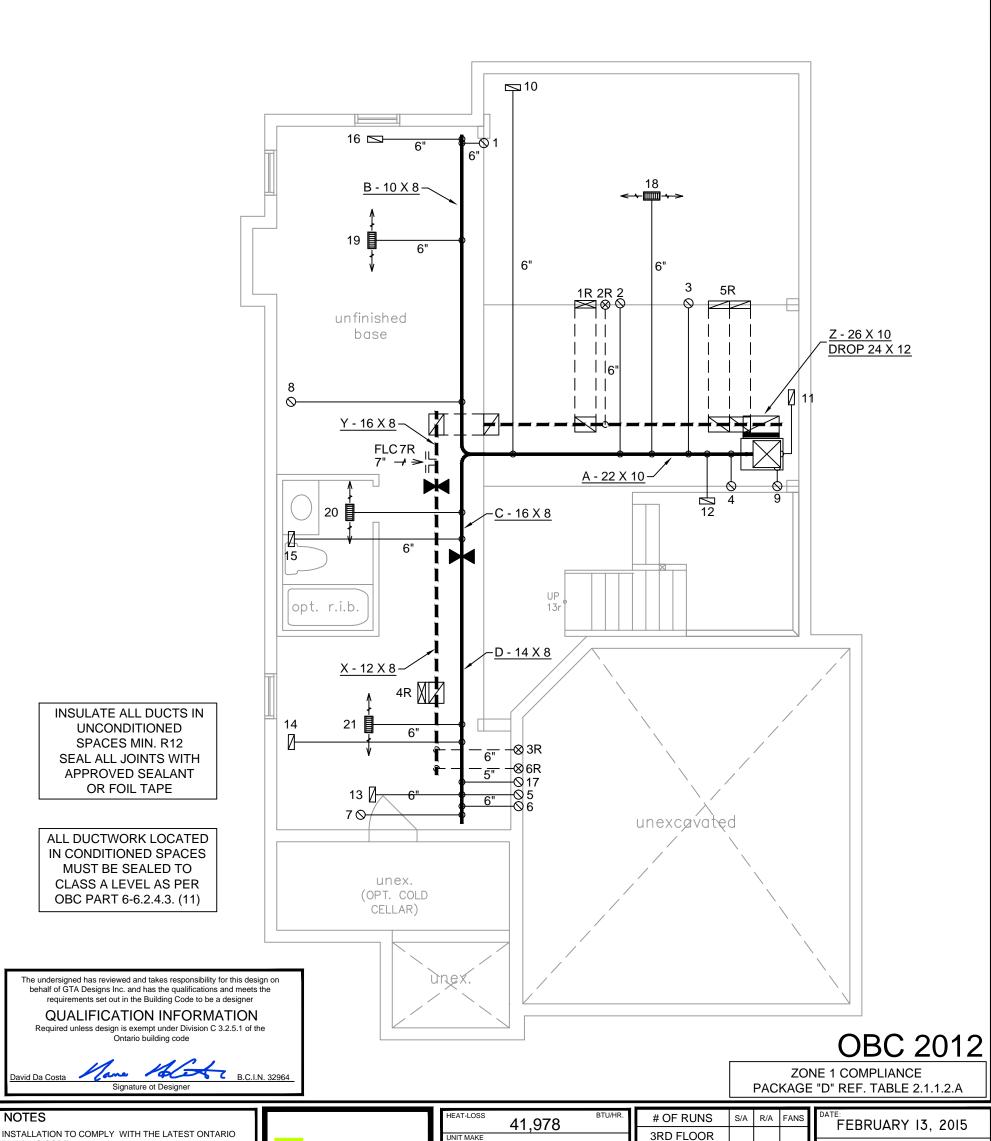
February 13, 2015



# Energy Efficiency Design Summary (Part 9 Residential)

I his form is used to	summanze the e	nergy et			project. Information	on comp	eung mis i	OHI IS OH I	ine reverse		
Application No:			i oi u	22 27 1 11101	Model/Certification Number						
Application No.					Wodel/ Octanication (Van	ibci					
A Duale at Informatio											
A. Project Information  Building number, street name	on		Ne	orthglen		Unit numb	er	Lot/Con			
			140	40-4							
Municipality Bower			Postal code		Reg. Plan number / other description						
Bowmar	iville					•					
B. Compliance Option	n .										
☑ SB-12 Prescriptive		.1		Table:	Package: A B (	DEF	GHI	JKLM	Package D		
☐ SB-12 Performand	-	-		* Attach	energy performance						
☐ Energy Star®* [SE					BOP form			, ,,			
☐ EnerGuide 80® *	<u> </u>			* House i	must be evaluated	by NRCa	n advisor	and meet	a rating of 80		
C. Project Design Co	onditions			l							
Climatic Zone (SB		Heat	ing Equip	ment		Space F	leating Fu	el Source			
☑ Zone 1 (< 5000 degree	e days)	<b>V</b>	≥ 90% AF	UE	☑ Gas		Propane		Solid Fuel		
Zone 2 (≥ 5000 degree	e days)	≥ 78% < 9	0% AFUE	☐ Oil		Electric		Earth Energy			
Windows	+Skylights+Glas	s Doors	<b>3</b>			Other B	uilding Co	onditions			
Gross Wall Area =	250 m <sup>2</sup>				☐ ICF Basement		Walkout B		☐ Log/Post&Beam		
Gross Window+ Area =	22 m²	% \	Windows+	<u>9%</u>	☐ ICF Above Grade		Slab-on-gr	round	-		
D. Building Speci		e values	and ratings	of the ener	gy efficiency componer	nts propose	ed, or attach	Energy Sta	ar BOP form]		
Building Con	nponent		RSI / R	values	Buildi	ing Com	ponent		Efficiency		
Thermal Insulation					Windows & Door						
Ceiling with Attic Space			5	50	Windows/Sliding (	1.8					
Ceiling without Attic Space			(3)	31	Skylights	2.8					
Exposed Floor			3	31	Mechanicals						
Walls Above Grade			2	24	Space Heating Eq	uip.²			94%		
Basement Walls			2	20	HRV Efficiency (%	o)					
Slab (all >600mm below gra	de)		:	Х	DHW Heater (EF)				0.67		
Slab (edge only ≤600mm be	elow grade)		1	0	NOTES  1. Provide U-Value in	\M/m2 K o	r ER rating				
Slab (all ≤600mm below gra	de, or heated)			0	2. Provide AFUE or in			ne combine	ed system used		
E. Performance D		ion [con									
SB-12 Performance:		-									
The annual energy consumption	on using Subsect	on 2.1.1	. SB-12 Pa	ackage	is	Gj (1 (	Sj =1000Mj	j)			
The annual energy consumption	on of this house a	s design	ed is	Gj							
The software used to simulate		_		ng is:				_			
The building is being designed	using an air leak	age of _	air	changes pe	er hour @50Pa.						
Energy Star: BOP form attach		II be lab	eled on co	mpletion by	<i>y</i> :						
Energy Star and EnerGuide80	):										
Evaluator/Advisor/Rater Name:					Evaluator/Advisor/Rate	r Licence #:					
	mes of designers w	/ho are re	sponsible f	or the buildi	ng code design and wh	nose plans	accompany	the permit	application]		
Architectural					Mechanical  David DaCo		11	1 ,	101		





**AMANA** 

GMEC960603BNA

60,000

57,600

2.0

1,170

2

2

PROJECT:

HIGHCASTLE HOMES

40-4

NORTHGLEN

BOWMANVILLE, ON.

3/16" = 1"-0"

9 4

8 2

.2337 RAWING NO. . . .

1/3

BASEMENT

2ND FLOOR

1ST FLOOR

BASEMENT

D. DACOSTA

15-34

FLOOR PLAN:

BTU/HR.

CFM

gtaDesigns

2985 DREW ROAD

SUITE 202,

MISSISSAUGA, ONT.

L4T 0A4 TEL: 416-268-6820

email: dave@gtadesigns.ca

web: www.gtadesigns.ca

ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE

HEATING CONTRACTOR MUST WORK FROM APPROVED

ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE

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

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

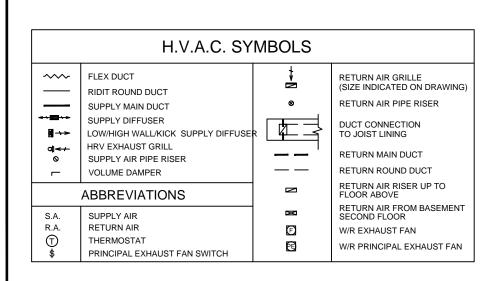
RESPONSABILITY OF GTA DESIGNS.

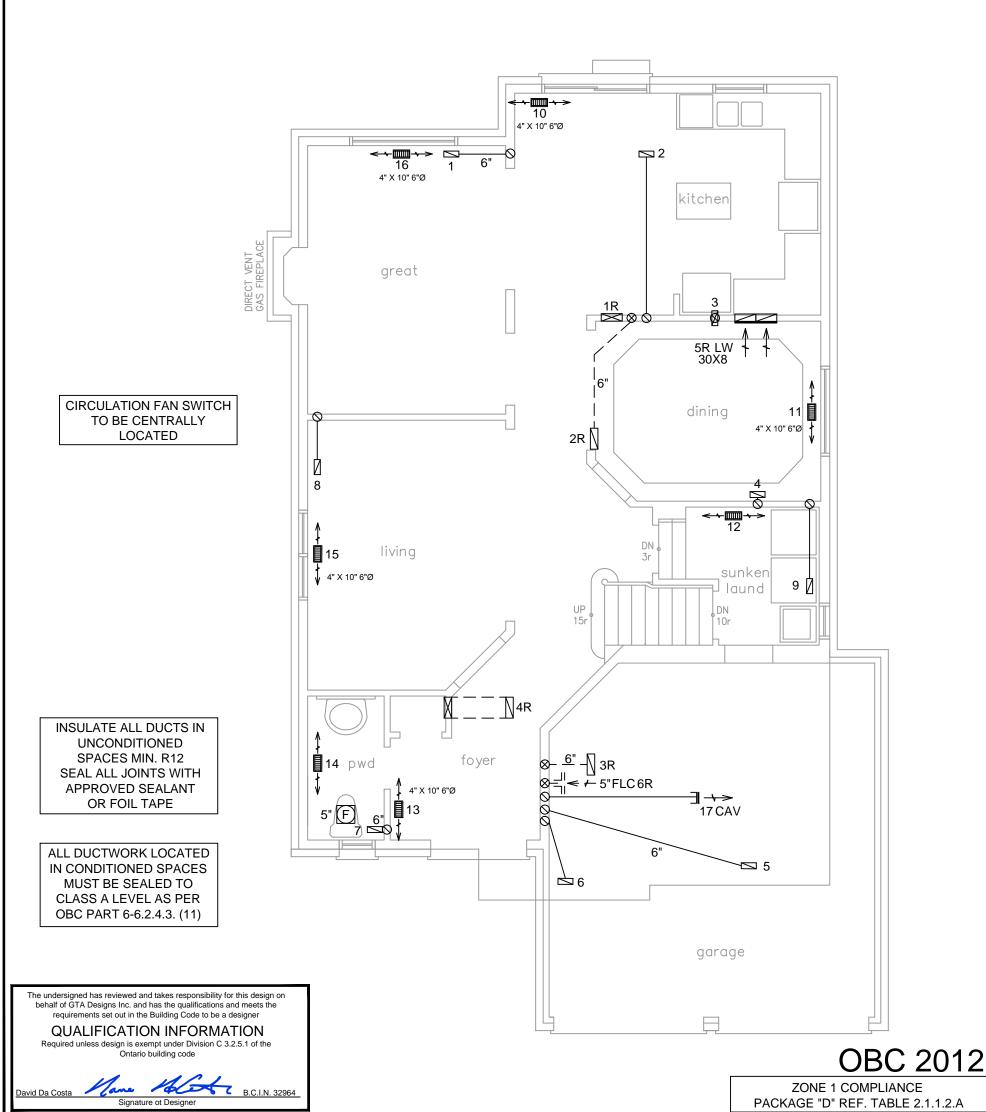
INSULATE DUCTS IN UNCONDITIONED SPACES R12 UNDERCUT ALL DOORS 1" MIN.

GTA DESIGNS MUST BE CONSULTED IF KITCHEN

SPECIFIED

PLANS.





### NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO

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## 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

FEBRUARY 13, 2015

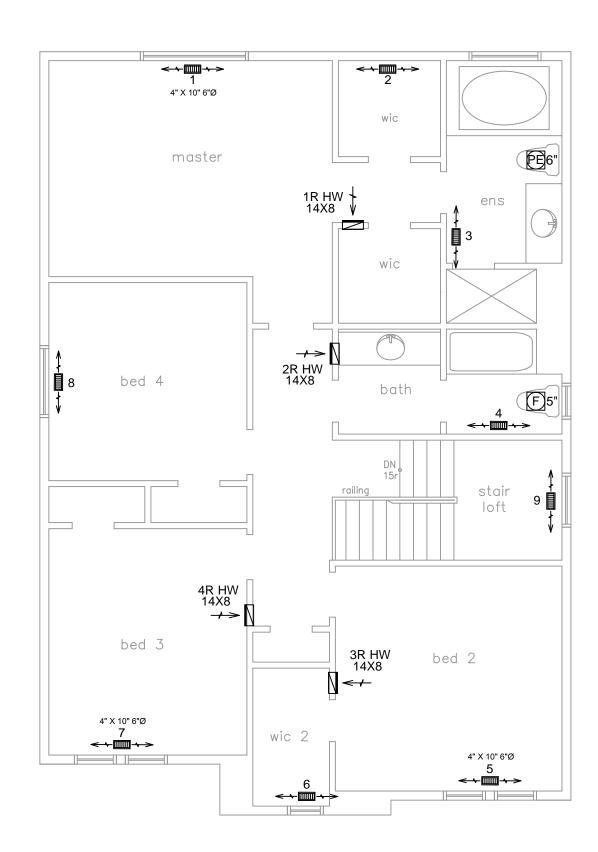
CLIENT:
HIGHCASTLE HOMES

40-4 NORTHGLEN BOWMANVILLE, ON.

3/16" = 1"-0"

PROJECT

H.V.A.C. SYMBOLS											
	FLEX DUCT RIDIT ROUND DUCT SUPPLY MAIN DUCT SUPPLY DIFFUSER LOW/HIGH WALL/KICK SUPPLY DIFFUSE 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								
	ABBREVIATIONS		RETURN AIR RISER UP TO FLOOR ABOVE								
S.A. R.A. T	SUPPLY AIR RETURN AIR THERMOSTAT PRINCIPAL EXHAUST FAN SWITCH	<b>E</b>	RETURN AIR FROM BASEMENT SECOND FLOOR W/R EXHAUST FAN W/R PRINCIPAL EXHAUST FAN								



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)

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

B.C.I.N. 32964
Signature ot Designer David Da Costa

### **OBC 2012**

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

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

171010102			
# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR			
1ST FLOOR			
BASEMENT			
FLOOR PLAN: SECOND FLOOR			
DRAWN BY	SQFT		

D. DACOSTA

15-34

R	
2337	sc
NO. 3/3	SC

FEBRUARY 13, 2015 HIGHCASTLE HOMES PROJECT: 40-4 NORTHGLEN

BOWMANVILLE, ON.

3/16" = 1"-0"