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		Unit no.	Lot/con.
Municipality	**Postal code**	**Plan number/ other description**	
BRAMPTON			

B. Individual who reviews and takes responsibility for design activities

Name		Firm	
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**	
Street address		**Unit no.**	**Lot/con.**
375 FINLEY AVE		**202**	**N/A**
Municipality	**Postal code**	**Province**	**E-mail**
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**
Telephone number	**Fax number**		**Cell number**
(905) 619-2300	**(905) 619-2375**		( )

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	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 38-10 THE COPLAND **Project:** ENCORE 2

D. Declaration of Designer

I **MICHAEL O'ROURKE** 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.of 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 Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 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.

October 17, 2019
Date

Michael O'Rourke
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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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SITE NAME: ENCORE 2 — THE COPLAND — DATE: Oct-19 — WINTER NATURAL AIR CHANGE RATE 0.325 — HEAT LOSS ΔT °F. 74 — CSA-F280-12
BUILDER: GOLD PARK HOMES — TYPE: 38-10 — GFA: 2885 — LO# 84183 — SUMMER NATURAL AIR CHANGE RATE 0.106 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2				T-BATH				
EXP. WALL			33			22				20			38			25			5				14				
CLG. HT.			9			9				9			9			9			9				9				
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	297			198				180			342			225			45				126				
GLAZING			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN			
NORTH	20.8	14.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EAST	20.8	38.5	32	665	1233	14	291	539		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
SOUTH	20.8	23.0	0	0	0	8	166	184		16	332	368	16	332	368	0	0	0	8	166	184		0	0	0		
WEST	20.8	38.5	0	0	0	0	0	0		0	0	0	48	997	1849	25	519	963	0	0	0		20	416	770		
SKYLT.	36.4	100.7	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
DOORS	24.7	3.7	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
NET EXPOSED WALL	4.4	0.6	265	1155	171	176	767	114		164	715	106	278	1211	180	200	871	129	37	161	24		106	462	68		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EXPOSED CLG	1.3	0.6	276	346	154	116	145	65		251	314	140	217	272	121	232	291	129	68	85	38		91	114	51		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		0	0	0	0	0	0	214	533	79	0	0	0		91	227	34		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0				0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0				0			
SUBTOTAL HT LOSS				2165			1369				1361			2813			2214			413				1218			
SUB TOTAL HT GAIN					1558			901				613			2517			1300			246				923			
LEVEL FACTOR / MULTIPLIER			0.20	0.27		0.20	0.27			0.20	0.27		0.20	0.27		0.20	0.27		0.20	0.27			0.20	0.27			
AIR CHANGE HEAT LOSS				588			372				370			764			602			112				331			
AIR CHANGE HEAT GAIN					102			59				40			164			85			16				60			
DUCT LOSS				0			0				0			0			282			0				155			
DUCT GAIN					0			0				0			0			238			0				98			
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0		0		0			
HEAT GAIN APPLIANCES/LIGHTS					755			0				755			755			755			0				0			
TOTAL HT LOSS BTU/H				2754			1741				1731			3577			3098			525				1704			
TOTAL HT GAIN x 1.3 BTU/H					3762			1248				2142			4778			3403			340				1406			

ROOM USE			LIV/DIN				KT/FM				LAUN			W/R			FOY			MUD				BAS			
EXP. WALL			23				69				12			18			40			26				176			
CLG. HT.			10				10				9			12			12			12				9			
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	230				690				108			216			480			312				1056			
GLAZING			LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	20.8	14.6	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		
EAST	20.8	38.5	0	0	0		109	2265	4198		0	0	0	0	0	0	0	0	0	0	0		7	145	270		
SOUTH	20.8	23.0	44	914	1011		0	0	0		0	0	0	0	0	0	0	0	0	0	0		4	83	92		
WEST	20.8	38.5	0	0	0		0	0	0		0	0	0	11	229	424	0	0	0	0	0		0	0	0		
SKYLT.	36.4	100.7	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0		0	0	0		
DOORS	24.7	3.7	20	493	73		10	247	37		0	0	0	0	0	0	47	1159	172	20	493	73	0	0	0		
NET EXPOSED WALL	4.4	0.6	166	723	107		571	2488	369		108	471	70	205	893	132	433	1887	280	292	1272	189	0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0					
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0		203	254	113	0	0	0	0	0	0	0	0	0	528	1855	275		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED FLOOR	2.5	0.4	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS				0				0				0			0			0			0				0			
SLAB ON GRADE HEAT LOSS				0				0				0			0			0			0				6227			
SUBTOTAL HT LOSS				2130				4999				725			1122			3045			1765				8310			
SUB TOTAL HT GAIN					1191				4604				183			556			451			262				637		
LEVEL FACTOR / MULTIPLIER			0.30	0.38			0.30	0.38			0.20	0.27		0.30	0.38		0.30	0.38		0.30	0.38							
AIR CHANGE HEAT LOSS				816				1915				197			430			1167			676		0.50	1.00			
AIR CHANGE HEAT GAIN					78				300				12			36			29			17			8341		
DUCT LOSS				0				0				0			0			0			0					42		
DUCT GAIN					0				0				0			0			0			0				0		
HEAT GAIN PEOPLE	240		0		0		0		0		0		0	0		0	0		0	0		0					0	
HEAT GAIN APPLIANCES/LIGHTS					755				755				755			0			0			0	0				0	
TOTAL HT LOSS BTU/H				2947				6914				922			1552			4212			2442					0	
TOTAL HT GAIN x 1.3 BTU/H					2630				7356				1234			770			625			362				16652		
																											881

TOTAL HEAT GAIN BTU/H: 31176 — TONS: 2.60 — LOSS DUE TO VENTILATION LOAD BTU/H: 1593 — STRUCTURAL HEAT LOSS: 50770 — TOTAL COMBINED HEAT LOSS BTU/H: 52363

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: ENCORE 2
BUILDER: GOLD PARK HOMES

THE COPLAND
TYPE: 38-10

DATE: Oct-19

GFA: 2885 LO# 84183

HEATING CFM	985	COOLING CFM	985
TOTAL HEAT LOSS	50,770	TOTAL HEAT GAIN	30,940
AIR FLOW RATE CFM	19.4	AIR FLOW RATE CFM	31.84

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

LENNOX
EL196UH070XE36B 70

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	985
MEDIUM HIGH	1110
HIGH	1275

AFUE = 96 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = 63,900

DESIGN CFM = 985
CFM @ .6 " E.S.P.

TEMPERATURE RISE 60 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	7	4
R/A	0	0	4	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	T-BATH	BED-2	BED-3	BED-4	ENS-2	BED-3	BED-4	MBR	T-BATH	LIV/DIN	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.38	1.74	0.85	1.73	1.79	1.55	0.52	1.79	1.55	1.38	0.85	2.95	2.30	2.30	2.30	0.92	1.55	4.21	2.44	4.16	4.16	4.16	4.16
CFM PER RUN HEAT	27	34	17	34	35	30	10	35	30	27	17	57	45	45	45	18	30	82	47	81	81	81	81
RM GAIN MBH.	1.88	1.25	0.70	2.14	2.39	1.70	0.34	2.39	1.70	1.88	0.70	2.63	2.45	2.45	2.45	1.23	0.77	0.63	0.36	0.22	0.22	0.22	0.22
CFM PER RUN COOLING	60	40	22	68	76	54	11	76	54	60	22	84	78	78	78	39	25	20	12	7	7	7	7
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	67	46	60	50	81	75	41	78	64	33	67	41	39	19	28	51	70	62	32	11	32	35	66
EQUIVALENT LENGTH	170	120	130	130	160	190	190	160	180	120	170	100	100	100	80	200	160	140	110	120	110	140	160
TOTAL EFFECTIVE LENGTH	237	166	190	180	241	265	231	238	244	153	237	141	139	119	108	251	230	202	142	131	142	175	226
ADJUSTED PRESSURE	0.07	0.1	0.09	0.1	0.07	0.06	0.07	0.07	0.07	0.11	0.07	0.11	0.12	0.14	0.16	0.07	0.07	0.08	0.12	0.12	0.11	0.09	0.07
ROUND DUCT SIZE	5	4	4	6	6	6	4	6	5	5	4	6	6	6	6	5	4	6	4	5	5	6	6
HEATING VELOCITY (ft/min)	198	390	195	173	178	153	115	178	220	198	195	291	229	229	229	132	344	418	539	595	595	413	413
COOLING VELOCITY (ft/min)	441	459	252	347	388	275	126	388	396	441	252	428	398	398	398	286	287	102	138	51	51	36	36
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10
TRUNK	C	D	B	C	A	B	C	A	B	E	B	C	D	E	E	C	A	A	C	E	D	C	A

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	263	0.07	8.8	8	x	8	592
TRUNK B	357	0.06	10.2	12	x	8	536
TRUNK C	631	0.06	12.7	18	x	8	631
TRUNK D	160	0.10	6.7	8	x	8	360
TRUNK E	985	0.06	15	26	x	8	682
TRUNK F	0	0.00	0	0	x	8	0

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	0	0.00	0	0	x	8	0
TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	985	0.05	15.7	28	x	8	633
TRUNK Y	585	0.05	12.9	20	x	8	527
TRUNK Z	235	0.05	9.2	10	x	8	423
DROP	985	0.05	15.7	24	x	10	591

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	85	85	75	75	350	155	0	0	0	0	0	0	0	0	0	160
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	64	68	73	91	41	70	1	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	165	195	255	230	185	175	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	229	263	328	321	226	245	1	1	1	1	1	1	1	1	1	163
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	6	6	6	9.8	7.5	0	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	14

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 38-10
SITE NAME: ENCORE 2

LO # 84183
THE COPLAND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

- [✓] Forced Air
- [ ] Non Forced Air
- [ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

- [✓] I — Type a) or b) appliance only, no solid fuel
- [ ] II — Type I except with solid fuel (including fireplaces)
- [ ] III — Any Type c) appliance
- [ ] IV — Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

- [ ] 1 — Exhaust only/Forced Air System
- [ ] 2 — HRV with Ducting/Forced Air System
- [✓] 3 — HRV Simplified/connected to forced air system
- [ ] 4 — HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	169.6	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY — 9.32.3.5.

Total Ventilation Capacity	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS

PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
ENS-2	FV-05-11VK1	50	✓	0.3
T-BATH	FV-05-11VK1	50	✓	0.3
W/R	FV-05-11VK1	50	✓	0.3

HEAT RECOVERY VENTILATOR — 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: GOLD PARK HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: October-19

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 84183 Model: 38-10 Builder: GOLD PARK HOMES Date: 10/17/2019

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1274	9	11466
First	1274	10	12740
Second	1611	9	14499
Third	0	9	0
Fourth	0	9	0
		Total:	38,705.0 ft³
		Total:	1096.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.325
SUMMER NATURAL AIR CHANGE RATE	0.106

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.325 x 304.45 x 41 °C x 1.2 = 4889 W

= 16683 Btu/h

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.106 x 304.45 x 6 °C x 1.2 = 236 W

= 804 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	16,683	8,310	1.004
2	0.3		13,062	0.383
3	0.2		12,279	0.272
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss
*For a balanced or supply only ventilation system HLairve = 0

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 38-10 THE COPLAND **BUILDER:** GOLD PARK HOMES
SFQT: 2885 **LO#** 84183 **SITE:** ENCORE 2

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	38705.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 56.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	176.0 ft

2012 OBC - COMPLIANCE PACKAGE	**Compliance Package A1**	
Component	**Nominal**	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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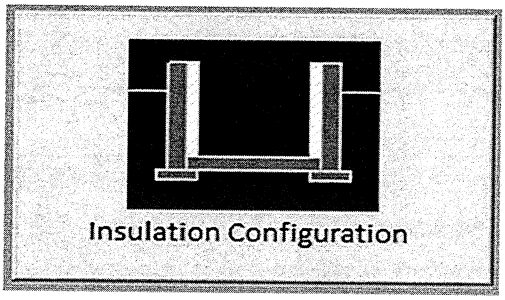
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	**17.1**	 Insulation Configuration
Floor Width (m):	**9.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**1.0**	
Door Area (m^2):	**0.0**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1824**	

TYPE: 38-10
LO# 84183

THE COPLAND

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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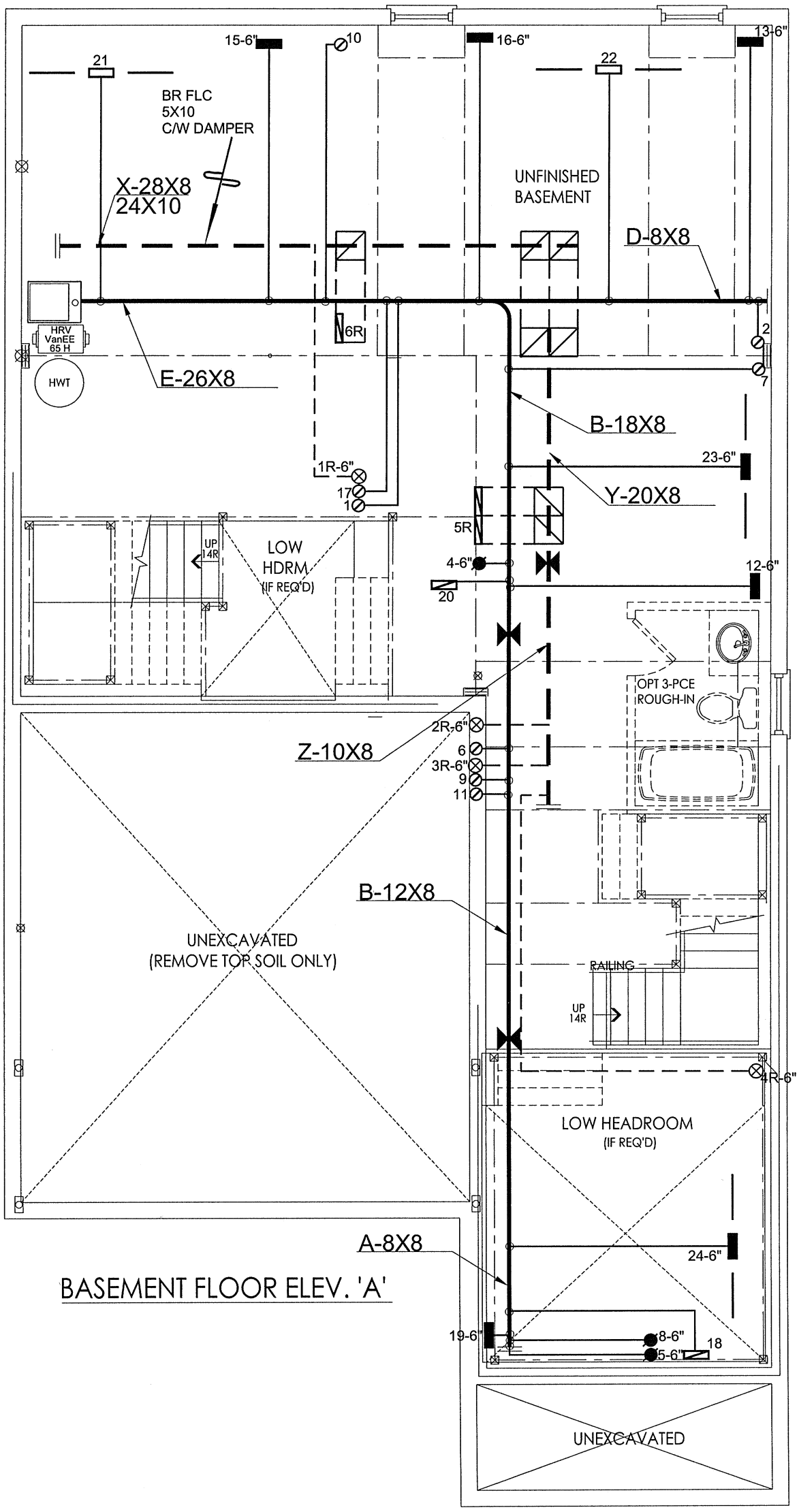
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

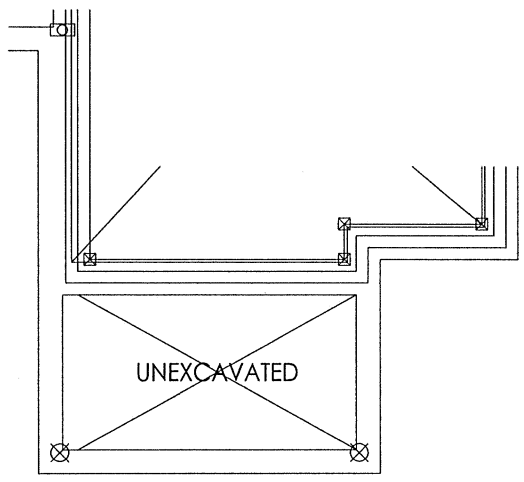
Weather Station Description			
Province:	Ontario		
Region:	Brampton		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	6.71		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m^3):	1096.0		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.		1461.0 cm^2
	3.57		ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust
	37.5		37.5
Flue Size			
Flue #:	#1	#2	#3 #4
Diameter (mm):	0	0	0 0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	**0.325**		
Cooling Air Leakage Rate (ACH/H):	**0.106**		

TYPE: 38-10
LO# 84183

THE COPLAND



BASEMENT FLOOR ELEV. 'A'



PARTIAL BASEMENT FLOOR ELEV. 'B'

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HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
ENCORE 2
BRAMPTON, ONTARIO

THE COPLAND
38-10 2885 sqft

HVAC DESIGNS LTD.
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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

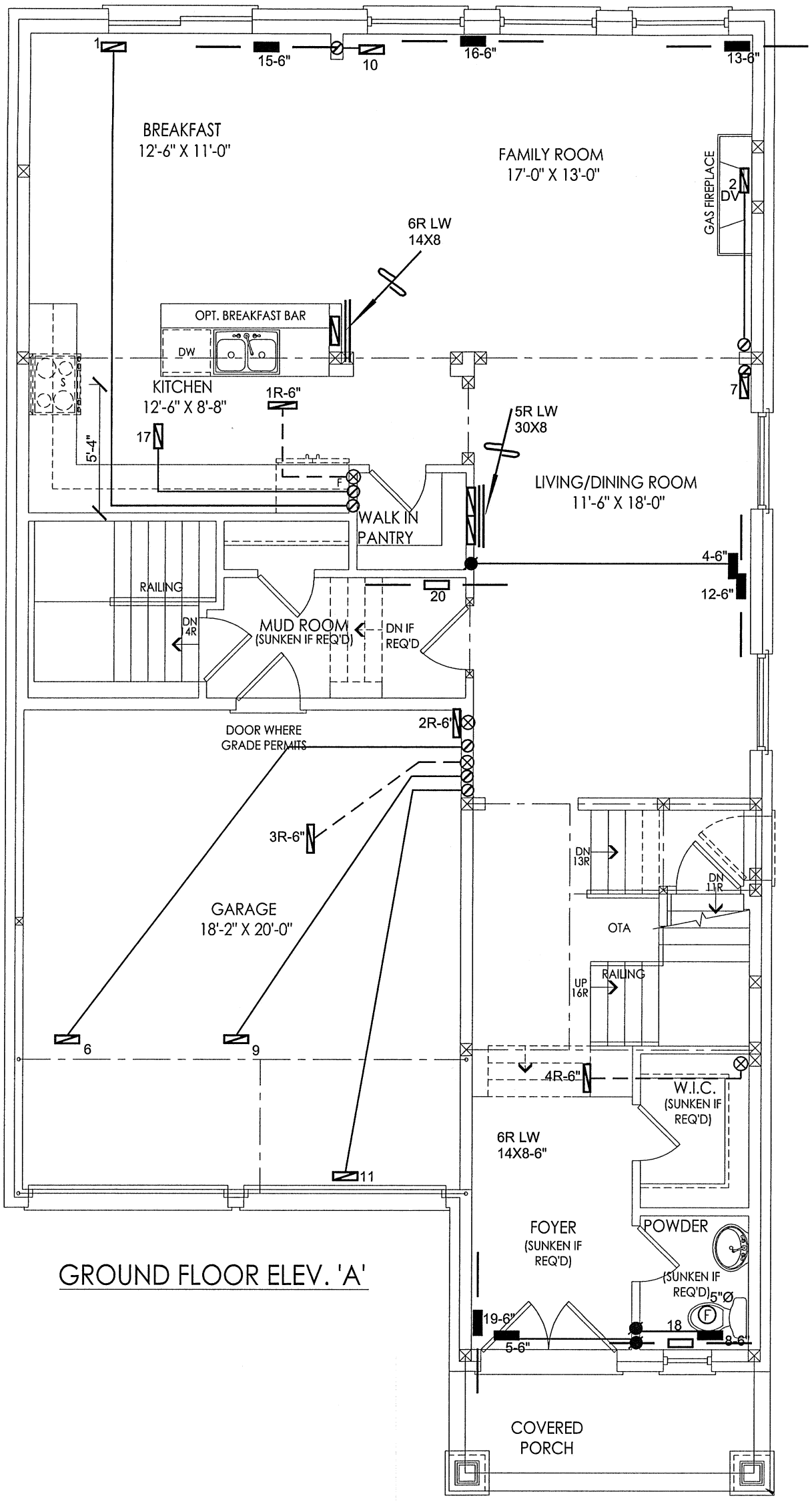
HEAT LOSS 52363 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL196UH070XE36B
INPUT	66 MBTU/H
OUTPUT	63.9 MBTU/H
COOLING	2.5 TONS
FAN SPEED	985 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	4	4
1ST FLOOR	7	2	2
BASEMENT	4	1	0

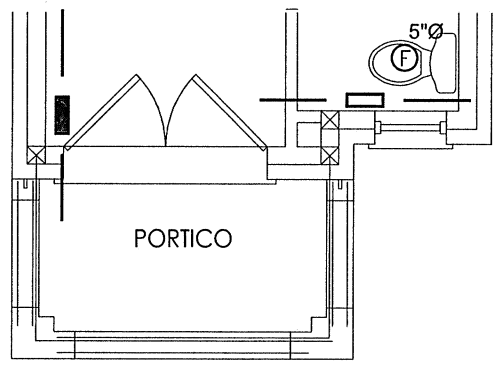
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date OCT/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 84183



GROUND FLOOR ELEV. 'A'



PARTIAL GROUND FLOOR ELEV. 'B'

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Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱	30"x8" RETURN AIR GRILLE	⊠	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
ENCORE 2
BRAMPTON, ONTARIO

THE COPLAND
38-10 2885 sqft

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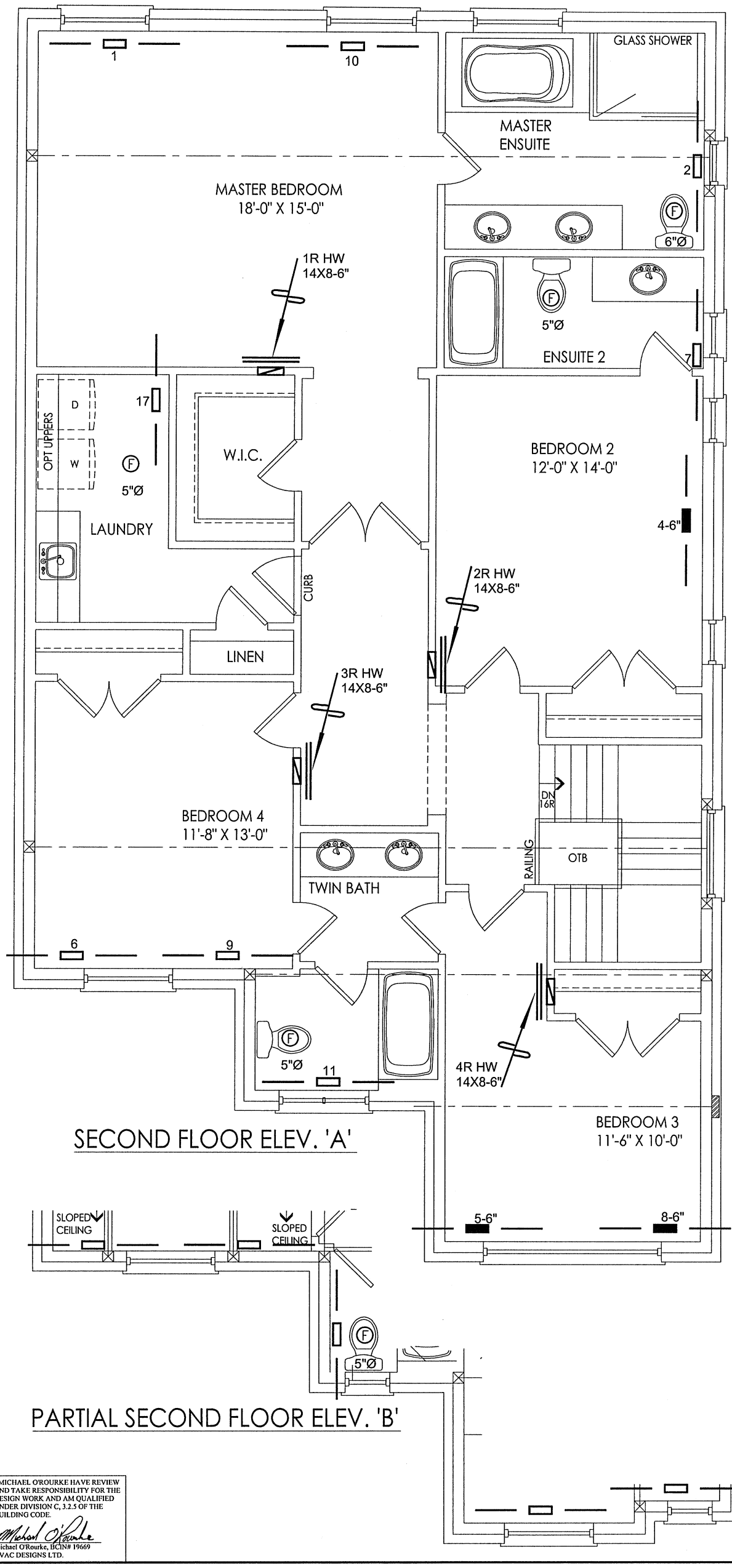
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date OCT/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 84183



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CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
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REVISIONS

Client
GOLD PARK HOMES

Project Name
ENCORE 2
BRAMPTON, ONTARIO

THE COPLAND
38-10 2885 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date OCT/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 84183