

Schedule 1: Designer Information

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

HVAC

A. Project Information			
Building number, street name <u>Unassigned</u>		Unit no.	Lot/con. <u>111</u>
Municipality BRAMPTON	Postal code	Plan number/ other description <u>43M-2039</u>	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ 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: 38-8 - CNR OPT GROUND - LOT 111 Project: ENCORE	
D. Declaration of Designer			
I <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
☐ 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 Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
November 22, 2019		 Signature of Designer	
Date			

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- 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.

Application for a Permit Construct or Demolish – Effective January 1, 2015

20-205034
FILE COPY

SITE NAME: ENCORE
BULDR: GOLD PARK HOMES
TYPE: 3B-3 - CHN
GFA: 3829
DATE: Nov-19
WINTER NATURAL AIR CHANGE RATE 0.409
SUMMER NATURAL AIR CHANGE RATE 0.133

ROOM USE	MR	ENS	WIC	BED-2	BED-3	BED-4	BATH	HALL	ENS-2	REC	SB-12
ROOM USE	MR	ENS	WIC	BED-2	BED-3	BED-4	BATH	HALL	ENS-2	REC	SB-12
EXP. WALL	38	8	7	25	11	29	8	38	6	81	10
CLG. HT.	10	9	9	9	9	9	10	9	9	10	10
FACTORS	380	72	63	225	99	281	80	342	54	810	330
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	0	0	0	0	0	0	0	0	0	0	0
EAST	0	0	0	0	0	0	0	0	0	0	0
WEST	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	0	0	0	0	0	0	0	0	0	0	0
DOORS	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
NET EXPOSED BSWT WALL ABOVE GR	3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
EXPOSED CLG	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
NO ATTIC EXPOSED CLG	2.7	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
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0
SUB TOTAL HT LOSS	2556	747	467	1870	1072	1975	479	2280	530	4938	2062
LEVEL FACTOR / MULT.PLIER	0.10	0.22	0.10	0.22	0.10	0.22	0.10	0.22	0.10	0.22	0.10
AIR CHANGE HEAT LOSS	553	164	103	346	236	433	105	502	117	4945	2040
AIR CHANGE HEAT GAIN	104	21	8	57	45	102	7	89	30	138	88
DUCT LOSS	312	0	0	192	168	266	0	0	0	0	0
HEAT GAIN PEOPLE	294	0	0	188	168	266	0	0	0	0	0
HEAT GAIN APPLANCES/LIGHTS	480	0	0	240	240	240	0	0	0	0	0
TOTAL HT LOSS BTU/H	652	0	0	652	652	652	0	652	652	652	652
TOTAL HT GAIN x 1.3 BTU/H	3430	911	570	2107	1439	2550	584	2781	711	9943	4102
TOTAL HT GAIN x 1.3 BTU/H	4206	475	175	2595	2404	3204	161	2868	754	3965	3158
ROOM USE	LIV	KITCHEN	LAUN	W/R	FOY	DEH	ENS-3	BAS			
EXP. WALL	32	78	9	9	30	15	10	162			
CLG. HT.	9	9	9	9	15	9	10	9			
FACTORS	288	702	0	81	450	135	100	972			
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			
NORTH	0	0	0	0	0	0	0	0			
EAST	0	0	0	0	0	0	0	0			
WEST	0	0	0	0	0	0	0	0			
SKYL.T.	0	0	0	0	0	0	0	0			
DOORS	0	0	0	0	0	0	0	0			
NET EXPOSED WALL	4.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6			
NET EXPOSED BSWT WALL ABOVE GR	3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
EXPOSED CLG	1.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6			
NO ATTIC EXPOSED CLG	2.7	0	0	0	0	0	0	0			
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0			
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0			
SUB TOTAL HT LOSS	3112	5070	159	517	4320	1275	731	492			
LEVEL FACTOR / MULT.PLIER	0.20	0.36	0.20	0.36	0.20	0.36	0.20	0.36			
AIR CHANGE HEAT LOSS	1106	1802	57	184	1536	453	724	1027.8			
AIR CHANGE HEAT GAIN	137	286	1	18	262	60	30	33			
DUCT LOSS	422	687	0	0	0	0	0	0			
HEAT GAIN PEOPLE	304	562	0	0	0	0	0	0			
HEAT GAIN APPLANCES/LIGHTS	692	652	0	0	0	0	0	0			
TOTAL HT LOSS BTU/H	4640	7580	0	0	0	0	0	0			
TOTAL HT GAIN x 1.3 BTU/H	4340	8034	238	701	5856	1902	1455	16300			
TOTAL HT GAIN x 1.3 BTU/H	47521	7191	755								

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
JAN 24 2020
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

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.

INDIVIDUAL BCIN: 25659 MICHAEL O'ROURKE

STRUCTURAL HEAT LOSS: 69880 TOTAL COMBINED HEAT LOSS BTU/H: 71791

TONS: 3.96 LOSS DUE TO VENTILATION LOAD BTU/H: 1911

47521

SITE NAME: ENCORE
 BUILDER: GOLD PARK HOMES

 OPT GROUND - LOT 111
 TYPE: 38-8 - CNR

DATE: Nov-19

GFA: 3829 LO# 84504

 HEATING CFM 1525
 TOTAL HEAT LOSS 69,880
 AIR FLOW RATE CFM 21.82
 COOLING CFM 1525
 TOTAL HEAT GAIN 47,238
 AIR FLOW RATE CFM 32.28

 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
 EL296UH090XE48C 90
 FAN SPEED
 LOW 0
 MEDLOW 0
 MEDIUM 1105
 MEDIUM HIGH 1255
 HIGH 1525

 AFUE = 96 %
 INPUT (BTU/H) = 88,000
 OUTPUT (BTU/H) = 85,000

 DESIGN CFM = 1525
 CFM @ .5" E.S.P.

TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	11	10	5	4
R/A	0	5	2	1	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	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-4	HALL	MBR	ENS-2	LIV	LIV	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	DEN	REC	REC	BED-5	ENS-3
RM LOSS MBH.	1.72	0.91	0.57	2.11	1.44	1.32	0.58	1.32	2.78	1.72	0.71	2.32	2.32	2.52	2.52	2.52	0.24	0.70	2.93	1.90	3.31	3.31	4.10	1.45
CFM PER RUN HEAT	37	20	12	48	31	29	13	29	81	37	16	51	51	55	55	55	5	15	64	41	72	72	89	32
RM GAIN MBH.	2.10	0.47	0.17	2.70	2.40	1.90	0.15	1.90	2.87	2.10	0.75	2.17	2.17	2.68	2.68	2.68	0.97	0.40	2.98	1.48	1.32	1.32	3.16	0.68
CFM PER RUN COOLING	68	15	6	87	78	61	5	61	93	68	24	70	70	86	86	86	31	13	96	48	43	43	102	22
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	81	42	92	71	52	64	54	68	44	63	59	63	51	69	68	60	45	42	45	37	28	24	37	19
EQUIVALENT LENGTH	180	200	200	170	200	170	140	180	200	200	190	170	180	160	160	150	160	190	140	160	100	120	90	130
TOTAL EFFECTIVE LENGTH	261	242	292	241	252	234	194	248	244	263	249	233	231	229	228	210	205	232	185	197	128	144	127	149
ADJUSTED PRESSURE	0.07	0.07	0.06	0.07	0.07	0.07	0.09	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.09	0.09	0.13	0.12	0.13	0.12
ROUND DUCT SIZE	6	4	4	6	6	5	4	5	6	6	4	6	6	6	6	6	6	4	6	5	5	5	6	4
HEATING VELOCITY (ft/min)	189	229	138	235	158	213	149	213	311	189	184	260	260	280	280	280	57	172	326	301	529	529	454	367
COOLING VELOCITY (ft/min)	347	172	69	444	398	448	57	448	474	347	275	357	357	438	438	438	356	149	489	352	316	316	520	252
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10
TRUNK	A	B	A	C	C	B	C	A	C	A	B	A	B	A	C	C	B	C	E	C	H	G	G	E

RUN #	25	26	27	28	29	30
ROOM NAME	BAS	BAS	BAS	BAS	FOY	REC
RM LOSS MBH.	4.57	4.57	4.57	4.57	2.93	3.31
CFM PER RUN HEAT	100	100	100	100	64	72
RM GAIN MBH.	0.19	0.19	0.19	0.19	2.96	1.32
CFM PER RUN COOLING	6	6	6	6	96	43
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.17
ACTUAL DUCT LGH.	26	23	26	35	51	30
EQUIVALENT LENGTH	120	120	120	120	150	120
TOTAL EFFECTIVE LENGTH	146	143	146	155	201	150
ADJUSTED PRESSURE	0.11	0.11	0.11	0.1	0.08	0.11
ROUND DUCT SIZE	6	6	6	6	6	5
HEATING VELOCITY (ft/min)	510	510	510	510	326	529
COOLING VELOCITY (ft/min)	31	31	31	31	489	316
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10
TRUNK	G	H	G	E	E	E

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA

JAN 24 2020

ATTACHED NOTES ARE PART
OF REVIEWED DRAWINGS
ALL WORK MUST COMPLY WITH OBC

SUPPLY AIR TRUNK SIZE

TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	221 0.06	8.6	10	398
TRUNK B	342 0.06	10.1	16	385
TRUNK C	317 0.07	9.4	14	408
TRUNK D	659 0.06	12.9	24	494
TRUNK E	332 0.08	9.3	10	598
TRUNK F	991 0.06	15	30	595

RETURN AIR TRUNK SIZE

TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0 0.05	0	0	0
TRUNK P	0 0.05	0	0	0
TRUNK Q	0 0.05	0	0	0
TRUNK R	0 0.05	0	0	0
TRUNK S	0 0.05	0	0	0
TRUNK T	0 0.05	0	0	0
TRUNK U	0 0.05	0	0	0
TRUNK V	0 0.05	0	0	0
TRUNK W	0 0.05	0	0	0
TRUNK X	1525 0.05	18.5	32	686
TRUNK Y	500 0.05	12.2	18	500
TRUNK Z	0 0.05	0	0	0
DROP	1525 0.05	18.5	24	654

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	75	75	95	120	120	230	260	360	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	87	85	45	83	58	80	66	19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	230	225	140	185	185	205	140	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	317	310	185	248	243	265	206	159	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.08	0.06	0.06	0.06	0.07	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6	6	5.8	6.8	6.8	8.7	8.8	9.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	14	14	14	14	14	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 38-8 - CNR
SITE NAME: ENCORE

LO # 84504
OPT GROUND - LOT 111

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	190.8	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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY

9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT
95.4 cfm 3.0 sones ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	74 F	1.08	0.25

SUPPLEMENTAL FANS

PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
BATH	FV-05-11VK1	50	✓	0.3
ENS-2	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 #:

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:

HRAI #

001820

Date:

November-19

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.
INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 84504

Model: 38-8 - CNR

Builder: GOLD PARK HOMES

Date: 11/22/2019

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1078	9	9702
First	1078	10	10780
Second	1489	9	13401
Third	1489	9	13401
Fourth	0	9	0
Total:			47,284.0 ft³
Total:			1338.9 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.409
SUMMER NATURAL AIR CHANGE RATE	0.133

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

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

$$0.409 \times 371.93 \times 41^\circ\text{C} \times 1.2 = 7531 \text{ W}$$

$$= 25694 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.133 \times 371.93 \times 6^\circ\text{C} \times 1.2 = 362 \text{ W}$$

$$= 1235 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$95 \text{ CFM} \times 74^\circ\text{F} \times 1.08 \times 0.25 = 1911 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

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

$$95 \text{ CFM} \times 11^\circ\text{F} \times 1.08 \times 0.25 = 283 \text{ Btu/h}$$

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

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

Level	Level Factor (LF)	HLairv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.4	25,694	8,022	1.281
2	0.3		7,791	0.989
3	0.2		14,454	0.356
4	0.1		11,675	0.220
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss

*For a balanced or supply only ventilation system HLairv = 0

CITY OF BRAMPTON
 BUILDING DIVISION
 REVIEWED BY: S. HANNA
 JAN 24 2021
 ATTACHED NOTES ARE PART
 OF REVIEWED DRAWINGS
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 38-8 - CNR	OPT GROUND - LOT 111	BUILDER: GOLD PARK HOMES
SFQT: 3829	LO# 84504	SITE: ENCORE

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):	4
FRONT FACES:	EAST	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 (ft³):	47284.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 49.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	162.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
 Ceiling Without Attic Space Minimum RSI (R)-Value
 Exposed Floor Minimum RSI (R)-Value
 Walls Above Grade Minimum RSI (R)-Value
 Basement Walls Minimum RSI (R)-Value
 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
 Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
 Windows and Sliding Glass Doors Maximum U-Value
 Skylights Maximum U-Value
 Space Heating Equipment Minimum AFUE
 HRV Minimum Efficiency
 Domestic Hot Water Heater Minimum EF

CITY OF BRAMPTON
 BUILDING DIVISION
 REVIEWED BY: S. HANNA

JAN 24 2020

ATTACHED NOTES ARE PART
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 COMPLY WITH OBC

Compliance Package**A1**

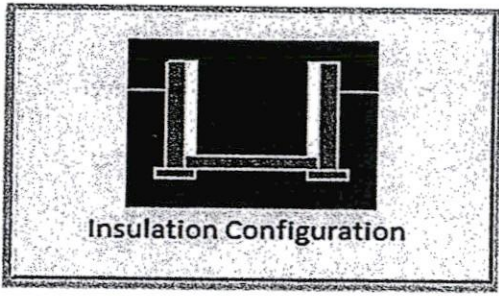
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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):	14.9	
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):	1.1	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1633	

TYPE: 38-8 - CNR
LO# 84504

OPT GROUND - LOT 111

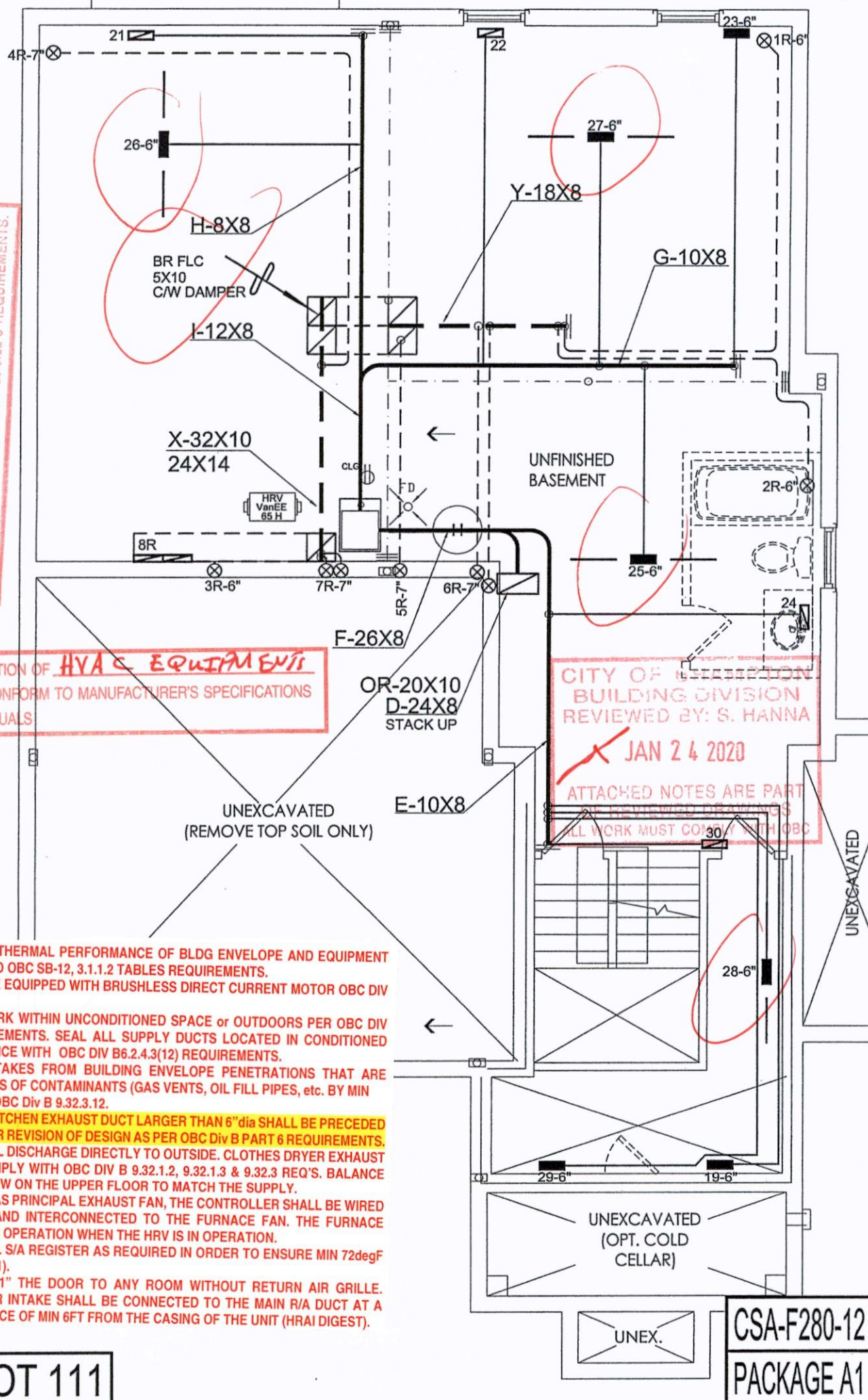
Air Infiltration Residential Load Calculator

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):	9.45		
Building Configuration			
Type:	Detached		
Number of Stories:	Three		
Foundation:	Full		
House Volume (m ³):	1338.9		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1784.8 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
		#4	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.409		
Cooling Air Leakage Rate (ACH/H):	0.133		

TYPE: 38-8 - CNR
LO# 84504

OPT GROUND - LOT 111



THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH OBC DIV. B, 9.33.4 REQUIREMENTS.

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3 REQUIREMENTS.

INSTALLATION OF ~~HVAC EQUIPMENT~~
SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS
AND MANUALS.

CITY OF MIAMI
BUILDING DIVISION
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JAN 24 2020

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ENSURE THAT MIN THERMAL PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT SHALL CONFORM TO OBC SB-12, 3.1.1.2 TABLES REQUIREMENTS. FURNACE SHALL BE EQUIPPED WITH BRUSHLESS DIRECT CURRENT MOTOR OBC DIV B 12.3.1.5.

SEAL ALL DUCTWORK WITHIN UNCONDITIONED SPACE or OUTDOORS PER OBC DIV B6.2.4.3(11) REQUIREMENTS. SEAL ALL SUPPLY DUCTS LOCATED IN CONDITIONED SPACE IN COMPLIANCE WITH OBC DIV B6.2.4.3(12) REQUIREMENTS.

SEPARATE ANY INTAKES FROM BUILDING ENVELOPE PENETRATIONS THAT ARE POTENTIAL SOURCES OF CONTAMINANTS (GAS VENTS, OIL FILL PIPES, etc. BY MIN 900mm (2FT 11IN) – OBC Div B 9.32.3.12.

INSTALLATION OF KITCHEN EXHAUST DUCT LARGER THAN 6" dia SHALL BE PRECEDED BY APPLICATION FOR REVISION OF DESIGN AS PER OBC Div B PART 6 REQUIREMENTS. EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST SYSTEM SHALL COMPLY WITH OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE THE RETURN AIRFLOW ON THE UPPER FLOOR TO MATCH THE SUPPLY.

WHEN HRV IS USED AS PRINCIPAL EXHAUST FAN, THE CONTROLLER SHALL BE WIRED TO THE HRV UNIT AND INTERCONNECTED TO THE FURNACE FAN. THE FURNACE BLOWER MUST BE IN OPERATION WHEN THE HRV IS IN OPERATION.

INSTALL ADDITIONAL S/A REGISTER AS REQUIRED IN ORDER TO ENSURE MIN 72degF
- OBC DIV B 9.33.3.1(1).

UNDERCUT BY MIN 1" THE DOOR TO ANY ROOM WITHOUT RETURN AIR GRILLE. ENSURE RETURN AIR INTAKE SHALL BE CONNECTED TO THE MAIN R/A DUCT AT A HORIZONTAL DISTANCE OF MIN 6FT FROM THE CASING OF THE UNIT (HRAI DIGEST).

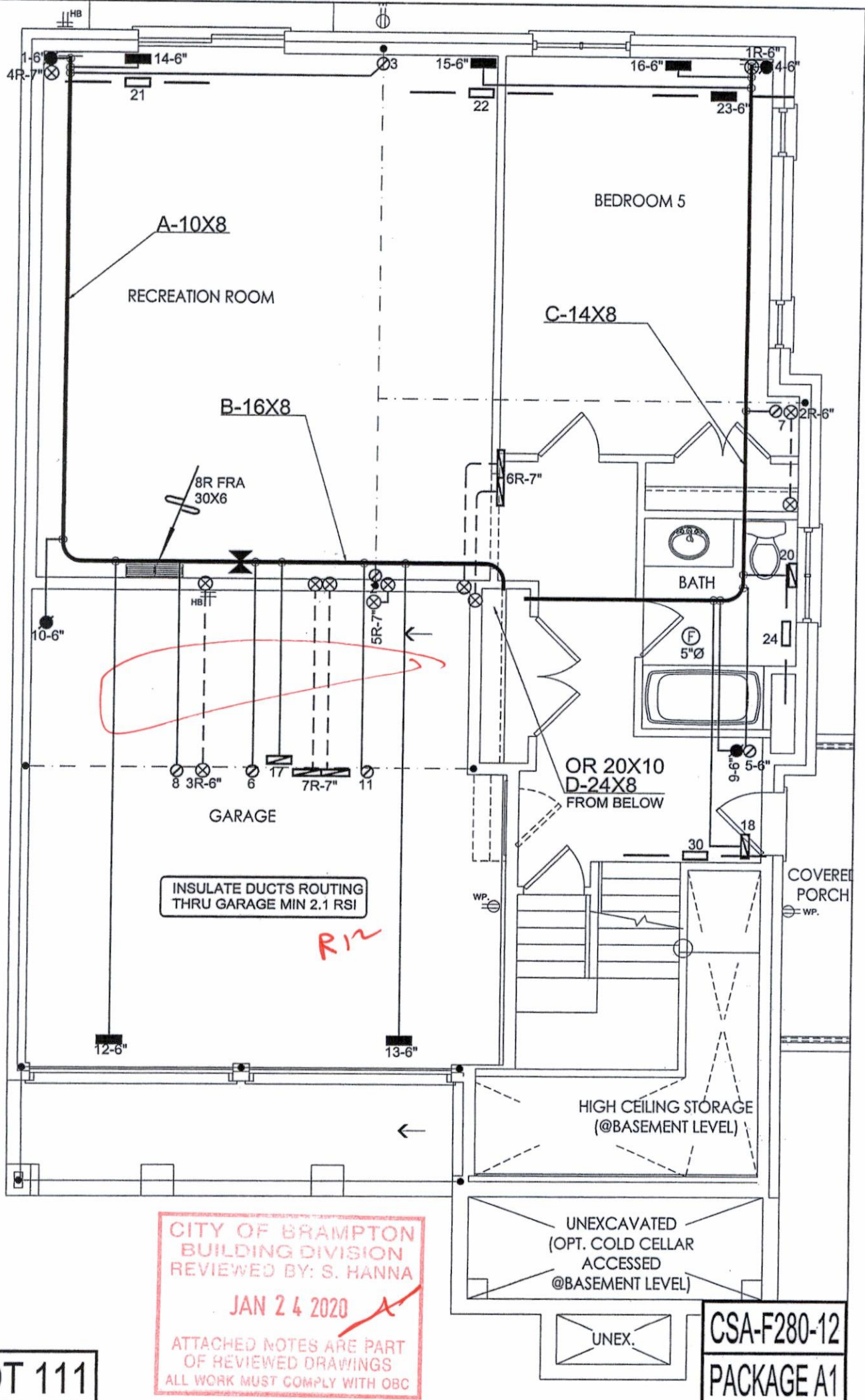
I, MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.



Michael O'Rourke, BCIN# 19609
HVAC DESIGNERS LTD.

LOT 111

HVAC DESIGNS LTD.																			
HVAC LEGEND																			
SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		3.							
SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION		2.							
		FLOOR SUPPLY AIR GRILLE				6" SUPPLY AIR BOOT ABOVE				14"x8" RETURN AIR GRILLE		1.							
		FLOOR SUPPLY AIR GRILLE 6" BOOT				SUPPLY AIR STACK FROM 2nd FLOOR				30"x8" RETURN AIR GRILLE		No. Description Date							
		SUPPLY AIR BOOT ABOVE				6" SUPPLY AIR STACK 2nd FLOOR				FRA- FLOOR RETURN AIR GRILLE		REDUCER							
										REVISIONS									
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.® AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.																			
Client		GOLD PARK HOMES		HVACDESIGNS LTD. 375 Finley Ave, Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: mike@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services		HEAT LOSS 71791 BTU/H		# OF RUNS		S/A		R/A		FANS		Sheet Title			
Project Name						UNIT DATA		3RD FLOOR		11		5		3		BASEMENT HEATING LAYOUT			
		ENCORE BRAMPTON, ONTARIO				MAKE		LENNOX		2ND FLOOR		10		2		3			
						MODEL		EL296UH090XE48C		1ST FLOOR		5		1		1			
						INPUT		88 MBTUH		BASEMENT		4		1		0			
						OUTPUT		85 MBTUH		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5/8 UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS									
		OPT. GROUND - CNR 38-8 - LOT 111 4401 sqft				COOLING		4.0 TONS								Date		NOV/2019	
						FAN SPEED		1595 cfm @ 1/2" WG								Scale		3/16" = 1'-0"	
						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.										BCIN# 19669			
																LO#		84504	



1 MICHAEL O'BROUKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.
Michael O'Brooke, I.C.D. 1969
HVAC DESIGNS LTD.

LOT 111

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 24 2020
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UNEXCAVATED
(OPT. COLD CELLAR
ACCESSED
@BASEMENT LEVEL)
UNEX.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

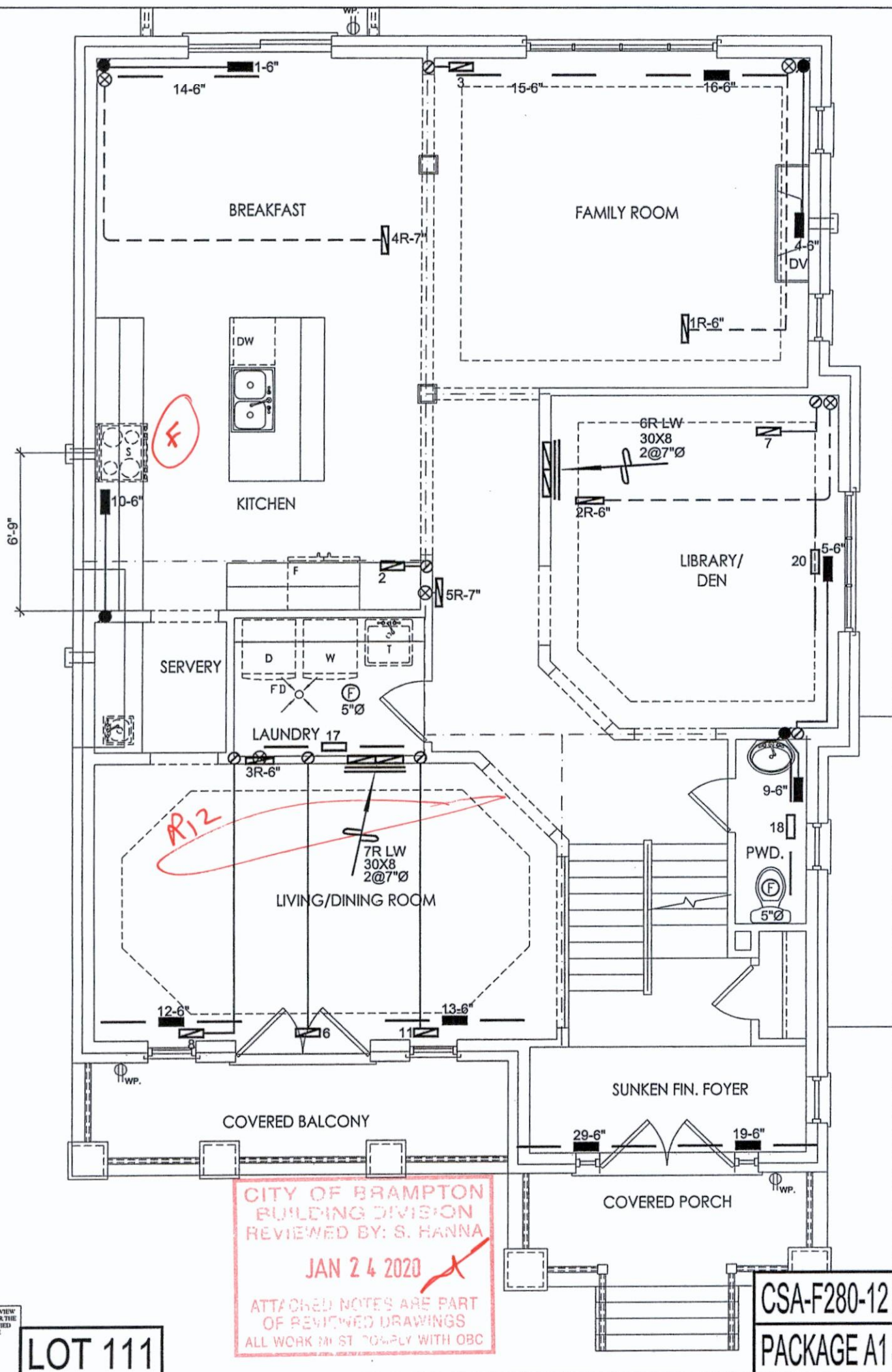
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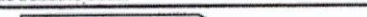
Client
GOLD PARK HOMES
Project Name
ENCORE
BRAMPTON, ONTARIO
OPT. GROUND - CNR
38-8 - LOT 111 4401 sqft

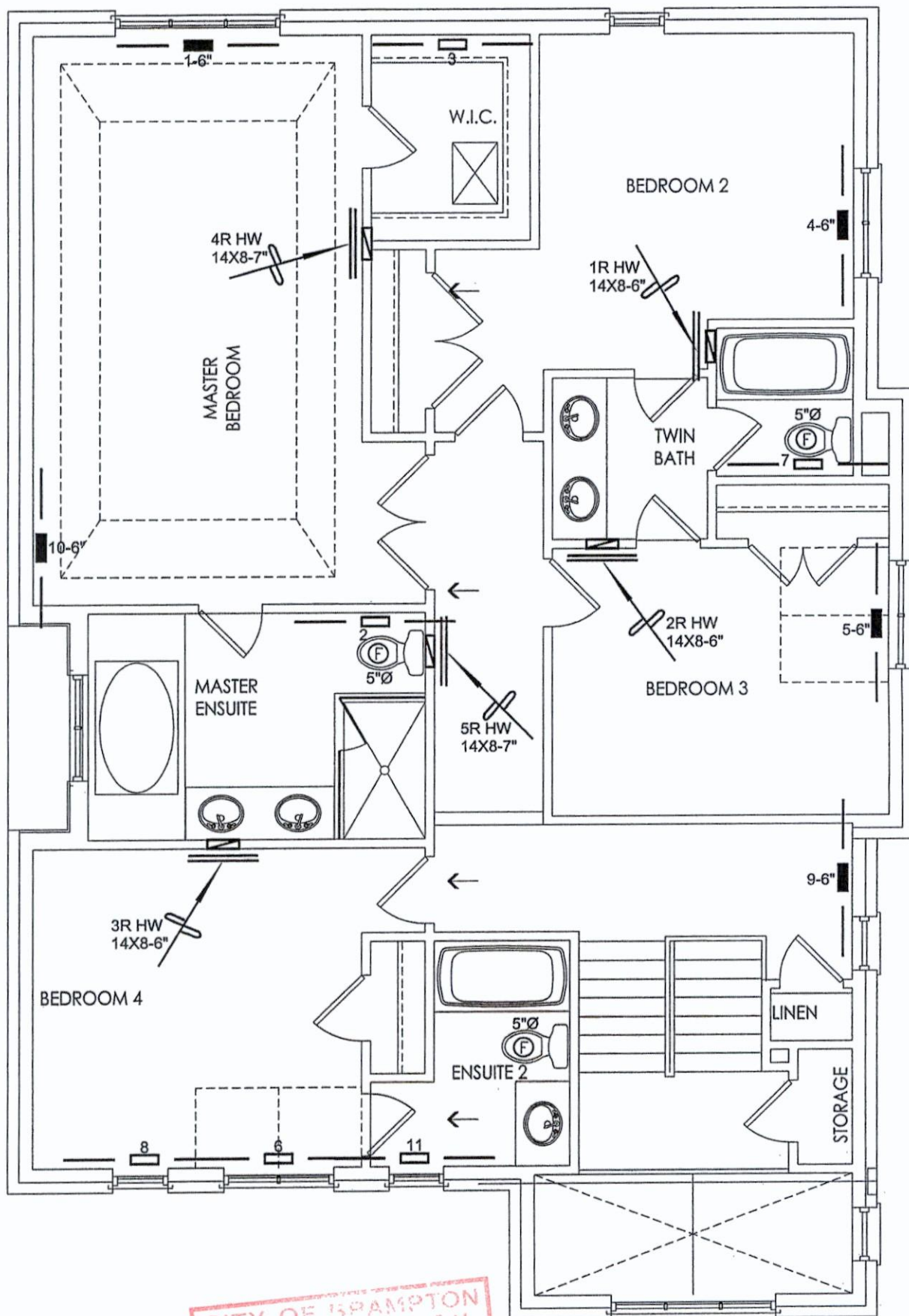
HVAC DESIGNS LTD.
375 Finley Ave, Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: mike@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services
Installation to comply with the latest Ontario Building Code. All supply branch 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.

Sheet Title
FIRST FLOOR
HEATING
LAYOUT
Date NOV/2019
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 84504

REVISIONS
No. Description Date
1.
2.
3.



Client GOLD PARK HOMES	 375 Finley Ave, Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: mike@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services	Short Title SECOND FLOOR HEATING LAYOUT
Project Name ENCORE BRAMPTON, ONTARIO		Date NOV/2019
OPT. GROUND - CNR 38-8 - LOT 111 4401 sqft	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.	Scale 3/16" = 1'-0" BCIN# 19669
		LO# 84504



CITY OF BRAMPTON
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CSA-F280-12
PACKAGE A1

LOT 111

I MICHAEL O'ROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK, AND AM QUALIFIED
UNDER DIVISION C, 3.2.3 OF THE
BUILDING CODE.

Michael O'Rourke, BCMA 1969
HVAC DESIGNS LTD.

HVAC LEGEND								3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date	

REVISIONS

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Client		HVACDESIGNS LTD. 375 Finley Ave, Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: mike@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing In Residential Mechanical Design Services	Sheet Title	
GOLD PARK HOMES			THIRD FLOOR HEATING LAYOUT	
Project Name		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.	Date	NOV/2019
ENCORE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT. GROUND - CNR 38-8 - LOT 111 4401 sqft			BCIN# 19669	
			LO#	84504