



CITY OF BRAMPTON – BUILDING DIVISION

<u>HVAC DESIGNS</u>			
APPLICATION NO.:	19-567628 000 00 CM	FOLDER TYP.:	CM
DESCRIPTION OF PROJECT:	PLAN M2039	SUB TYP.:	Semi Detached Dwelling
BUILDERS NAME:	GOLD PARK HOMES		
PLAN NUMBER:		MODEL NAME:	2017/SD-10

CERTIFIED MODEL DOCUMENTS		
PAGES:	DESCRIPTION OF DOCUMENTS	
D	HVAC LAYOUTS / HVAC CALCULATIONS	
	ELEVATION	DESCRIPTION (I.E. OPTIONS):
2	A, B, C, D	4BR
ENTERED BY:	Monica Crisan	DATE: 2019/12/13

WATER PIPE SIZING AND PLUMBING DATA SHEET
CERTIFIED MODEL WITH ONE DWELLING UNIT
THIS TABLE IS APPLICABLE FOR A HOUSE AFTER DECEMBER 31, 2017

Builder Name: Fieldwalk Investments Inc.
Certified Model Name: SD-10
Optional Floor Layout:
Application No.:

The Ontario Building Code Div. B, 7.6.3 regulates size and capacity of pipes for a new house. Please enter the number of individual fixtures as listed and bathroom groups⁽⁶⁾ or powder room groups⁽⁷⁾ per floor. The fixture units and required minimum size of water service will automatically be calculated.

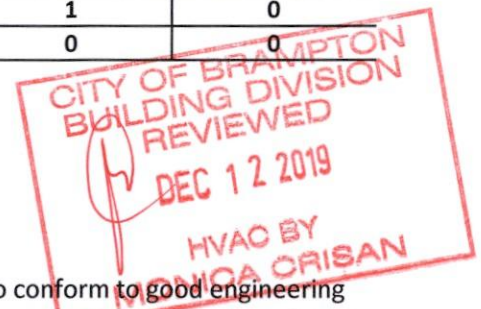
Description	Basement Floor	First Floor	Second Floor	Third Floor
	Qty.	Qty.	Qty.	Qty.
Bathroom group ⁽⁶⁾	1	0	3 2	0
Bidet	0	0	0	0
Extra Shower	0	0	1 0	0
Lav	0	1	2	
Bar Sink	0	0	0	0
Powder room ⁽⁷⁾	0	1	0	0
Kitchen Sink	0	1	0	0
Dishwasher	0	1	0	0
Laundry Tub	0	0	1	0
Washing Machine	0	0	1	0
Hose Bib	0	2	0	0

Total Fixture Units 27.9

Minimum Diameter of Water Service Pipe
Required from the Property Line to the 1
House (Inch)

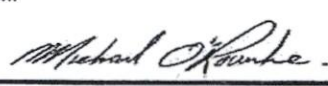
Notes:

- (1) A potable water system shall be designed, constructed and installed to conform to good engineering practice appropriate to the circumstances, such as that described in the ASHRAE Handbooks and ASPE Data Books.
- (2) No water system between the point of connection with the water service pipe or the water meter and the first branch that supplies a water heater that serves more than one fixture shall be less than ¾ in. in size.
- (3) The minimum water pressure at the entry to the building is 200 kPa, and the total maximum length of the water system is 90 m.
- (4) In a hot water distribution system of a developed length of more than 30 m from the HWT to the farthest fixture or supplying more than 4 storeys, the water temperature shall be maintained by, (a) recirculation, or (b) a self-regulating heat tracing system.
- (5) Where piping may be exposed to freezing conditions, it shall be protected from the effects of freezing.
- (6) A bathroom group consists of 1 water closet, 1 lavatory, and 1 bathtub (with or without showerhead)
- (7) A powder room group consists of 1 water closet and 1 lavatory.



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 BRAMPTON	Postal code	Plan number/ other description 43M-2039		
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@hvacdesigns.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]				
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings </div> <div style="width: 30%;"> <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection </div> <div style="width: 30%;"> <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> On-site Sewage Systems </div> </div>				
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12			Model: SD-10 THE STRAVINSKY Project: ENCORE 2	
D. Declaration of Designer				
I <u>MICHAEL O'ROURKE</u> (print name)			declare that (choose one as appropriate):	
<input type="checkbox"/> 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: _____				
<input checked="" type="checkbox"/> 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>				
<input type="checkbox"/> 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			 Signature of Designer	

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

SITE NAME: ENCORE 2				THE STRAVINSKY				DATE: Oct-19				WINTER NATURAL AIR CHANGE RATE 0.336				HEAT LOSS ΔT °F. 74				CSA-F280-12			
BUILDER: GOLD PARK HOMES				TYPE: SD-10				LO# 84186				SUMMER NATURAL AIR CHANGE RATE 0.105				HEAT GAIN ΔT °F. 11				SB-12 PACKAGE A1			
ROOM USE				MBR				ENS				BED-2				BED-3				BED-4			
EXP. WALL				32				11				11				34				13			
CLG. HT.				9				9				9				9				9			
FACTORS																							
GRS.WALL AREA				288				99				306				117				0			
GLAZING				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN				LOSS GAIN			
NORTH				20.8 15.5 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
EAST				20.8 41.0 0 0 0 0 0 0				28 540 1067 38 789 1580 0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
SOUTH				20.8 24.4 0 0 0 0 0 0				0 0 0 0 0 0 0 0				16 332 390 16 332 390 0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
WEST				20.8 41.0 32 865 1314 14 291 575				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
SKYL.T.				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 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 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
NET EXPOSED WALL				4.4 0.6 256 1115 165 85 370 55				73 318 47 252 1098 163 101 440 65 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 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 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
EXPOSED CLG				1.3 0.6 276 346 154 105 132 59				137 172 76 233 292 130 146 183 81 59 74 33				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0				0 0 0 0 0 0 0 0			
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 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				130 324 48 0 0 0 0 0 0 0 46 115 17				0 0 0 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			
SLAB ON GRADE HEAT LOSS				0				0				0				0				0			
SUBTOTAL HT LOSS				2126				793				1354				2512				955			
SUB TOTAL HT GAIN				1633				688				1239				2243				537			
LEVEL FACTOR / MULTIPLIER				0.20 0.32				0.20 0.32				0.20 0.32				0.20 0.32				0.20 0.32			
AIR CHANGE HEAT LOSS				681				254				434				805				306			
AIR CHANGE HEAT GAIN				109				46				83				150				36			
DUCT LOSS				0				0				179				0				0			
DUCT GAIN				0				0				212				0				0			
HEAT GAIN PEOPLE				240 2				480 0				1 240 1				240 1				0 240 0			
HEAT GAIN APPLIANCES/LIGHTS				561				0				561				561				561			
TOTAL HT LOSS BTU/H				2807				1047				1966				3316				1261			
TOTAL HT GAIN x 1.3 BTU/H				3618				954				3035				4152				1786			

ROOM USE			KT/GT			LAUN			W/R			FOY												BAS		
EXP. WALL			58			0			14			18												117		
CLG. HT.			10			9			11			11												9		
FACTORS																										
GRS.WALL AREA			580			0			154			198												702		
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN												LOSS GAIN		
NORTH			20.8 15.5			0 0 0			0 0 0			0 0 0			0 0 0									0 0 0		
EAST			20.8 41.0			0 0 0			0 0 0			0 0 0			0 0 0									0 0 0		
SOUTH			20.8 24.4			40 831 976			0 0 0			5 104 205			7 145 287									7 145 171		
WEST			20.8 41.0			81 1683 3325			0 0 0			0 0 0			0 0 0									4 83 164		
SKYL.T.			36.4 100.7			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		
NET EXPOSED WALL			4.4 0.6			459 2000 296			0 0 0			149 649 96			131 571 85									0 0 0		
NET EXPOSED BSMT WALL ABOVE GR			3.5 0.6			0 0 0			0 0 0			0 0 0			0 0 0									0 0 0		
EXPPOSED CLG			1.3 0.6			0 0 0			73 91 41			0 0 0			0 0 0									351 1233 183		
NO ATTIC EXPOSED CLG			2.7 1.2			0 0 0			0 0 0			0 0 0			0 0 0									0 0 0		
EXPPOSED FLOOR			2.5 0.4			0 0 0			0 0 0			0 0 0			0 0 0									0 0 0		
BASEMENT/CRAWL HEAT LOSS						0			0			0			0									4004		
SLAB ON GRADE HEAT LOSS						0			0			0			0											
SUBTOTAL HT LOSS						4514			91			753			2196									5466		
SUB TOTAL HT GAIN						4597			41			301			691									518		
LEVEL FACTOR / MULTIPLIER			0.30 0.52			0.20 0.32			0.30 0.52			0.30 0.52												0.50 1.17		
AIR CHANGE HEAT LOSS			2331			29			389			1134												6422		
AIR CHANGE HEAT GAIN						3			20			40												35		
DUCT LOSS			0			0			0			0												0		
DUCT GAIN			0			0			0			0												0		
HEAT GAIN PEOPLE			240			0			0			0			0									0		
HEAT GAIN APPLIANCES/LIGHTS						0			0			0			0									0		
TOTAL HT LOSS BTU/H						661			561			0			0									561		
TOTAL HT GAIN x 1.3 BTU/H						6845			121			1142			3329									11888		
						7105			785			418			820									1447		

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
DEC 12 2019
HVAC BY
MONICA CRISAN

SITE NAME: ENCORE 2
BUILDER: GOLD PARK HOMES

THE STRAVINSKY
TYPE: SD-10

DATE: Oct-19

GFA: 2123 LO# 84186

HEATING CFM 800 COOLING CFM 800
TOTAL HEAT LOSS 33,995 TOTAL HEAT GAIN 24,197
AIR FLOW RATE CFM 23.53 AIR FLOW RATE CFM 33.06

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

LENNOX
EL196UH045XE24B 45
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 685
MEDIUM HIGH 800
HIGH 890

AFUE = 96 %
INPUT (BTU/H) = 44,000
OUTPUT (BTU/H) = 42,800

DESIGN CFM = 800
CFM @ 0" E.S.P.

TEMPERATURE RISE 50 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	5	4
R/A	0	0	4	1	1

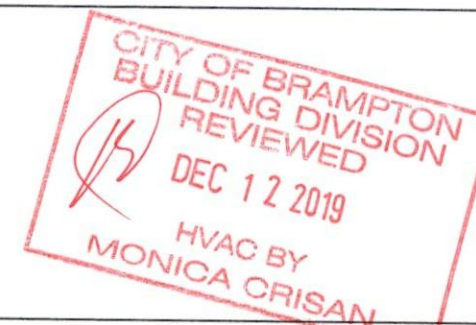
All S/A diffusers 4"x10" unless noted otherwise on layout.

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

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

RUN #	1	2	4	5	6	7	8	10	12	13	14	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-3	MBR	KT/GT	KT/GT	KT/GT	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	1.40	1.05	1.97	1.66	1.26	0.27	1.66	1.40	2.28	2.28	2.28	0.12	1.14	3.33	2.97	2.97	2.97	2.97
CFM PER RUN HEAT	33	25	46	39	30	6	39	33	54	54	54	3	27	78	70	70	70	70
RM GAIN MBH	1.81	0.95	3.04	2.08	1.79	0.08	2.08	1.81	2.37	2.37	2.37	0.79	0.42	0.82	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	60	32	100	69	59	3	69	60	78	78	78	26	14	27	12	12	12	12
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	48	33	44	54	41	34	51	35	20	28	20	36	41	34	15	31	21	38
EQUIVALENT LENGTH	120	120	170	180	160	180	180	100	160	130	120	140	160	120	140	130	130	160
TOTAL EFFECTIVE LENGTH	168	153	214	234	201	214	231	135	180	158	140	176	201	154	155	161	151	198
ADJUSTED PRESSURE	0.1	0.11	0.08	0.07	0.09	0.08	0.07	0.13	0.1	0.11	0.12	0.1	0.09	0.11	0.11	0.11	0.11	0.09
ROUND DUCT SIZE	5	4	6	6	6	4	6	5	5	5	5	4	4	5	5	5	5	5
HEATING VELOCITY (ft/min)	242	287	235	199	153	69	199	242	396	396	396	34	310	573	514	514	514	514
COOLING VELOCITY (ft/min)	441	367	510	352	301	34	352	441	573	573	573	298	161	198	88	88	88	88
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	A	A	B	A	A	C	C	C	C	B	A	A	C	C	B	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	305	0.07	9.3	10	x 8 549
TRUNK B	408	0.07	10.4	14	x 8 525
TRUNK C	393	0.10	9.3	10	x 8 707
TRUNK D	0	0.00	0	0	x 8 0
TRUNK E	0	0.00	0	0	x 8 0
TRUNK F	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	800	0.05	14.5	24	x 8 600
TRUNK Y	680	0.05	13.7	22	x 8 556
TRUNK Z	265	0.05	9.6	10	x 8 477
DROP	800	0.05	14.5	24	x 10 480

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	115	115	75	75	300	0	0	0	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.	69	54	55	58	34	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	195	235	240	225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	254	249	290	298	259	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.06	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	14.80	14.80	14.80
ROUND DUCT SIZE	6.7	6.7	6	6	9.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SD-10
SITE NAME: ENCORE 2

LO # 84186
THE STRAVINSKY

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	4	@ 10.6 cfm	42.4	cfm
Other Rooms	3	@ 10.6 cfm	31.8	cfm
Table 9.32.3.A.		TOTAL	148.4	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	148.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	68.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANE 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	<input checked="" type="checkbox"/>	0.3
BATH	FV-05-11VK1	50	<input checked="" type="checkbox"/>	0.3
W/R	FV-05-11VK1	50	<input checked="" type="checkbox"/>	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.
Model: VANE 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 #:

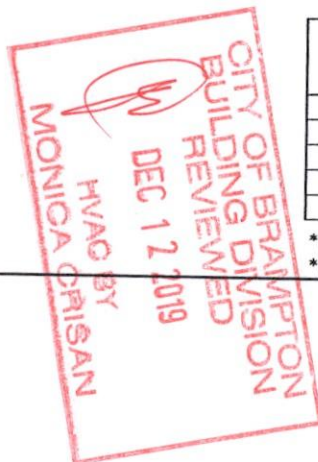
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
DEC 12 2019

INSTALLING CONTRACTOR
Name:
Address:
City:
Telephone #: Fax #:

HVAC BY
MONICA CRISAN

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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 84186		Model: SD-10		Builder: GOLD PARK HOMES																																																								
Volume Calculation			Date: 10/17/2019																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>968</td><td>9</td><td>8712</td></tr> <tr><td>First</td><td>968</td><td>10</td><td>9680</td></tr> <tr><td>Second</td><td>1155</td><td>9</td><td>10395</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>28,787.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>815.2 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	968	9	8712	First	968	10	9680	Second	1155	9	10395	Third	0	9	0	Fourth	0	9	0	Total:			28,787.0 ft³	Total:			815.2 m³	Air Change & Delta T Data <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>WINTER NATURAL AIR CHANGE RATE</td> <td>0.336</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.105</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.336	SUMMER NATURAL AIR CHANGE RATE	0.105	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.336 x 226.43 x 41 °C x 1.2 = 3764 W</p> <p>= 12844 Btu/h</p>			6.2.6 Sensible Gain due to Air Leakage $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.105 x 226.43 x 6 °C x 1.2 = 175 W</p> <p>= 596 Btu/h</p>																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation $HL_{vailb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h</p>			6.2.7 Sensible heat Gain due to Ventilation $HL_{vailb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h</p>																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.5</td><td rowspan="5" style="text-align: center;">12,844</td><td>5,466</td><td>1.175</td></tr> <tr><td>2</td><td>0.3</td><td>7,462</td><td>0.516</td></tr> <tr><td>3</td><td>0.2</td><td>8,020</td><td>0.320</td></tr> <tr><td>4</td><td>0</td><td>0</td><td>0.000</td></tr> <tr><td>5</td><td>0</td><td>0</td><td>0.000</td></tr> </tbody> </table>					Level	Level Factor (LF)	HLairbv 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	12,844	5,466	1.175	2	0.3	7,462	0.516	3	0.2	8,020	0.320	4	0	0	0.000	5	0	0	0.000																														
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<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairv = 0</p>																																																												



HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SD-10	THE STRAVINSKY	BUILDER: GOLD PARK HOMES
SFQT: 2123	LO# 84186	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:	ATTACHED	# OF STORIES (+BASEMENT):	3
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):	28787.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 48.0 ft	WIDTH: 25.0 ft	EXPOSED PERIMETER:	117.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

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	-

**Compliance Package
A1****Nominal Min. Eff.**

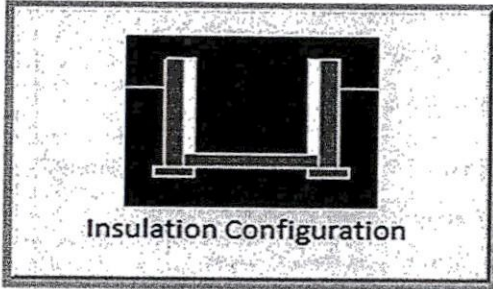
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
DEC 12 2019
HVAC BY
MONICA CRISAN

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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):	14.6	 Insulation Configuration
Floor Width (m):	7.6	
Exposed Perimeter (m):	35.7	
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):		1173

TYPE: SD-10
LO# 84186

THE STRAVINSKY



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:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	815.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1086.6 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):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.105			

TYPE: SD-10
LO# 84186THE STRAVINSKY
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED
DEC 12 2019
HVAC BY
MONICA CRISAN

Energy Efficiency Design Summary: Prescriptive Method

(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the prescriptive method described in Subsection 3.1.1. of SB-12. This form is applicable where the ratio of gross area of windows/sidelights/skylights/glazing in doors and sliding glass doors to the gross area of peripheral walls is not more than 22%.

For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number SD-10 'A'	Lot/Con
Municipality BRAMPTON	Postal code	Reg. Plan number / other description	

B. Prescriptive Compliance [indicate the building code compliance package being employed in this house design]

SB-12 Prescriptive (input design package): Package: <u>A1</u>	Table: <u>3.1.1.2.A</u>
---	-------------------------

C. Project Design Conditions

Climatic Zone (SB-1):	Heating Equipment Efficiency	Space Heating Fuel Source
<input checked="" type="checkbox"/> Zone 1 (< 5000 degree days)	<input checked="" type="checkbox"/> ≥ 92% AFUE	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel
<input type="checkbox"/> Zone 2 (≥ 5000 degree days)	<input type="checkbox"/> ≥ 84% < 92% AFUE	<input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		Other Building Characteristics
Area of walls = <u>261.70</u> m ² or <u>2,816.92</u> ft ²		<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement <input type="checkbox"/> Slab-on-ground <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit <input type="checkbox"/> Air Sourced Heat Pump (ASHP) <input type="checkbox"/> Ground Sourced Heat Pump (GSHP)
W, S & G % = <u>9.77</u> Utilize window averaging: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Area of W, S & G = <u>25.57</u> m ² or <u>275.28</u> ft ²		

D. Building Specifications [provide values and ratings of the energy efficiency components proposed]

Energy Efficiency Substitutions				
<input type="checkbox"/> ICF (3.1.1.2.(5) & (6) / 3.1.1.3.(5) & (6)) <input type="checkbox"/> Combined space heating and domestic water heating systems (3.1.1.2.(7) / 3.1.1.3.(7))				
<input type="checkbox"/> Airtightness substitution(s) Airtightness test required (Refer to Design Guide Attached)				
<input type="checkbox"/> Table 3.1.1.4.B Required: _____ Permitted Substitution: _____ <input type="checkbox"/> Table 3.1.1.4.C Required: _____ Permitted Substitution: _____		Required: _____ Permitted Substitution: _____		
Building Component	Minimum RSI / R values or Maximum U-Value ⁽¹⁾	Effective	Building Component	Efficiency Ratings
Thermal Insulation				
Ceiling with Attic Space	60	59.22	Windows & Doors Provide U-Value ⁽¹⁾ or ER rating	
Ceiling without Attic Space	31	27.65	Windows/Sliding Glass Doors	0.28
Exposed Floor	31	29.80	Skylights/Glazed Roofs	0.49
Walls Above Grade	22	17.03	Mechanicals	
Basement Walls	20 ci	21.12	Heating Equip.(AFUE)	96%
Slab (all >600mm below grade)	-	-	HRV Efficiency (SRE% at 0°C)	75%
Slab (edge only ≤600mm below grade)	10		DHW Heater (EF)	0.80
Slab (all ≤600mm below grade, or heated)	10	11.13	DWHR (CSA B55.1 (min. 42% efficiency))	# Showers <u>2</u>
			Combined Heating System	

(1) U value to be provided in either W/(m²•K) or Btu/(h•ft²•F) but not both.

E. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets the building code]

Qualified Designer Declaration of designer to have reviewed and take responsibility for the design work.		
Name Jorge Moreno	BCIN 47245	Signature

Energy Efficiency Design Summary: Prescriptive Method

(Building Code Part 9, Residential)

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For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number SD-10 'B'	Lot/Con
Municipality BRAMPTON	Postal code	Reg. Plan number / other description	

B. Prescriptive Compliance [indicate the building code compliance package being employed in this house design]

SB-12 Prescriptive (input design package): Package: A1 Table: 3.1.1.2.A

C. Project Design Conditions

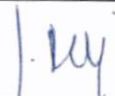
Climatic Zone (SB-1): <input checked="" type="checkbox"/> Zone 1 (< 5000 degree days) <input type="checkbox"/> Zone 2 (≥ 5000 degree days)	Heating Equipment Efficiency <input checked="" type="checkbox"/> ≥ 92% AFUE <input type="checkbox"/> ≥ 84% < 92% AFUE	Space Heating Fuel Source <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel <input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area Area of walls = 261.83 m ² or 2,818.27 ft ² W, S & G % = 9.71 Area of W, S & G = 25.43 m ² or 273.71 ft ² Utilize window averaging: <input type="checkbox"/> Yes <input type="checkbox"/> No		Other Building Characteristics <input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement <input type="checkbox"/> Slab-on-ground <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit <input type="checkbox"/> Air Sourced Heat Pump (ASHP) <input type="checkbox"/> Ground Sourced Heat Pump (GSHP)

D. Building Specifications [provide values and ratings of the energy efficiency components proposed]

Energy Efficiency Substitutions				
<input type="checkbox"/> ICF (3.1.1.2.(5) & (6) / 3.1.1.3.(5) & (6))				
<input type="checkbox"/> Combined space heating and domestic water heating systems (3.1.1.2.(7) / 3.1.1.3.(7))				
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Airtightness test required (Refer to Design Guide Attached)		Table 3.1.1.4.B Required: Permitted Substitution: HVAO BY MONICA CRISAN		
Table 3.1.1.4.C Required: Permitted Substitution:		Required: Permitted Substitution:		
Building Component	Minimum RSI / R values or Maximum U-Value ⁽¹⁾		Building Component	Efficiency Ratings
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value ⁽¹⁾ or ER rating	
Ceiling with Attic Space	60	59.22	Windows/Sliding Glass Doors	0.28
Ceiling without Attic Space	31	27.65	Skylights/Glazed Roofs	0.49
Exposed Floor	31	29.80	Mechanicals	
Walls Above Grade	22	17.03	Heating Equip.(AFUE)	96%
Basement Walls	20 ci	21.12	HRV Efficiency (SRE% at 0°C)	75%
Slab (all >600mm below grade)	-	-	DHW Heater (EF)	0.80
Slab (edge only ≤600mm below grade)	10		DWHR (CSA B55.1 (min. 42% efficiency))	# Showers ²
Slab (all ≤600mm below grade, or heated)	10	11.13	Combined Heating System	

(1) U value to be provided in either W/(m²·K) or Btu/(h·ft²·F) but not both.

E. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets the building code]

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Name Jorge Moreno	BCIN 47245	Signature 

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For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number SD-10 'C'	Lot/Con
Municipality BRAMPTON	Postal code	Reg. Plan number / other description	

B. Prescriptive Compliance [indicate the building code compliance package being employed in this house design]

SB-12 Prescriptive (input design package): Package: <u>A1</u> Table: <u>3.1.1.2.A</u>
--

C. Project Design Conditions

Climatic Zone (SB-1):	Heating Equipment Efficiency	Space Heating Fuel Source
<input checked="" type="checkbox"/> Zone 1 (< 5000 degree days)	<input checked="" type="checkbox"/> ≥ 92% AFUE	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel
<input type="checkbox"/> Zone 2 (≥ 5000 degree days)	<input type="checkbox"/> ≥ 84% < 92% AFUE	<input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		Other Building Characteristics
Area of walls = <u>268.85</u> m ² or <u>2,893.92</u> ft ²		<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement <input type="checkbox"/> Slab-on-ground <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit <input type="checkbox"/> Air Sourced Heat Pump (ASHP) <input type="checkbox"/> Ground Sourced Heat Pump (GSHP)
W, S & G % = <u>9.66</u> Utilize window averaging: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Area of W, S & G = <u>25.98</u> m ² or <u>279.62</u> ft ²		

D. Building Specifications [provide values and ratings of the energy efficiency components proposed]

Energy Efficiency Substitutions				
<input type="checkbox"/> ICF (3.1.1.2.(5) & (6) / 3.1.1.3.(5) & (6)) <input type="checkbox"/> Combined space heating and domestic water heating systems (3.1.1.2.(7) / 3.1.1.3.(7))				
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<input type="checkbox"/> Table 3.1.1.4.C Required: _____ Permitted Substitution: _____				
Required: _____		Permitted Substitution: _____		
Building Component	Minimum RSI / R values or Maximum U-Value ⁽¹⁾		Building Component	Efficiency Ratings
	Nominal	Effective	Windows & Doors	Provide U-Value ⁽¹⁾ or ER rating
Thermal Insulation			Windows/Sliding Glass Doors	0.28
Ceiling with Attic Space	60	59.22	Skylights/Glazed Roofs	0.49
Ceiling without Attic Space	31	27.65	Mechanicals	
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Basement Walls	20 ci	21.12	DHW Heater (EF)	0.80
Slab (all >600mm below grade)	-	-	DWHR (CSA B55.1 (min. 42% efficiency))	# Showers ²
Slab (edge only ≤600mm below grade)	10		Combined Heating System	
Slab (all ≤600mm below grade, or heated)	10	11.13		

(1) U value to be provided in either W/(m²·K) or Btu/(h·ft²·F) but not both.

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Energy Efficiency Design Summary: Prescriptive Method

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For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number SD-10 'D'	Lot/Con
Municipality BRAMPTON	Postal code	Reg. Plan number / other description	

B. Prescriptive Compliance [indicate the building code compliance package being employed in this house design]

SB-12 Prescriptive (input design package): Package: <u>A1</u> Table: <u>3.1.1.2.A</u>

C. Project Design Conditions

Climatic Zone (SB-1):	Heating Equipment Efficiency	Space Heating Fuel Source
<input checked="" type="checkbox"/> Zone 1 (< 5000 degree days)	<input checked="" type="checkbox"/> ≥ 92% AFUE	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel
<input type="checkbox"/> Zone 2 (≥ 5000 degree days)	<input type="checkbox"/> ≥ 84% < 92% AFUE	<input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		Other Building Characteristics
Area of walls = <u>261.70</u> m ² or <u>2,816.92</u> ft ²		<input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement <input type="checkbox"/> Slab-on-ground <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit <input type="checkbox"/> Air Sourced Heat Pump (ASHP) <input type="checkbox"/> Ground Sourced Heat Pump (GSHP)
W, S & G % = <u>10.27</u> Utilize window averaging: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Area of W, S & G = <u>26.88</u> m ² or <u>289.37</u> ft ²		

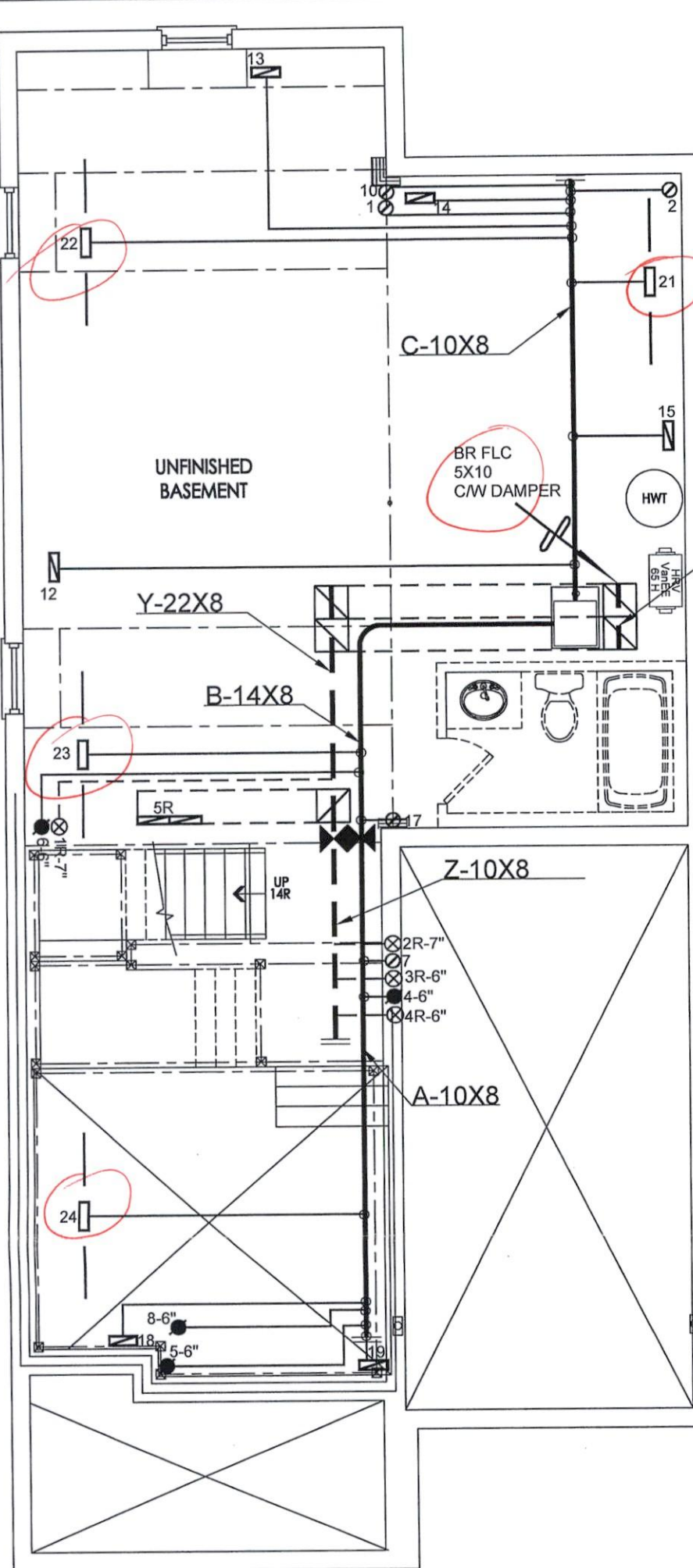
D. Building Specifications [provide values and ratings of the energy efficiency components proposed]

Energy Efficiency Substitutions				
<input type="checkbox"/> ICF (3.1.1.2.(5) & (6) / 3.1.1.3.(5) & (6)) <input type="checkbox"/> Combined space heating and domestic water heating systems (3.1.1.2.(7) / 3.1.1.3.(7)) <input type="checkbox"/> Airtightness substitution(s)				
Airtightness test required (Refer to Design Guide Attached)		Table 3.1.1.4.B Required: _____ Permitted Substitution: _____ Table 3.1.1.4.C Required: _____ Permitted Substitution: _____ Required: _____ Permitted Substitution: _____		
Building Component	Minimum RSI / R values or Maximum U-Value ⁽¹⁾		Building Component	Efficiency Ratings
Thermal Insulation	Nominal	Effective	Windows & Doors Provide U-Value ⁽¹⁾ or ER rating	
Ceiling with Attic Space	60	59.22	Windows/Sliding Glass Doors	0.28
Ceiling without Attic Space	31	27.65	Skylights/Glazed Roofs	0.49
Exposed Floor	31	29.80	Mechanicals	
Walls Above Grade	22	17.03	Heating Equip.(AFUE)	96%
Basement Walls	20 ci	21.12	HRV Efficiency (SRE% at 0° C)	75%
Slab (all >600mm below grade)	-	-	DHW Heater (EF)	0.80
Slab (edge only ≤600mm below grade)	10		DWHR (CSA B55.1 (min. 42% efficiency))	# Showers <u>2</u>
Slab (all ≤600mm below grade, or heated)	10	11.13	Combined Heating System	

(1) U value to be provided in either W/(m²•K) or Btu/(h•ft²•F) but not both.

E. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets the building code]

Qualified Designer Declaration of designer to have reviewed and take responsibility for the design work.		
Name Jorge Moreno	BCIN 47245	Signature



INSTALLATION OF _____
SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS
AND MANUALS

MIRRORED MECHANICAL

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN
COMPLIANCE WITH OBC DIV. B, 6.2.1.6, 9.32.3.6(3), 9.32.3.11
AND HRAI DIGEST REQUIREMENTS.

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).

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.

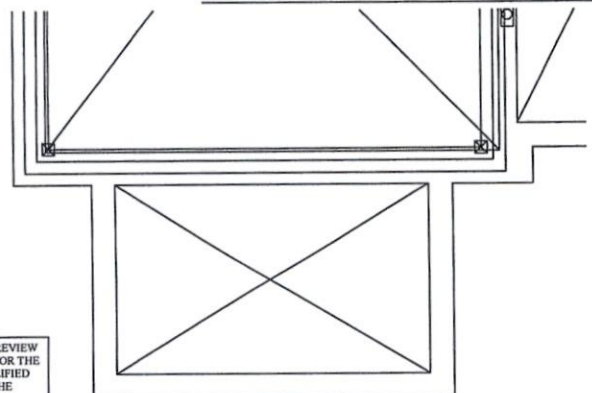
CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED

DEC 12 2019

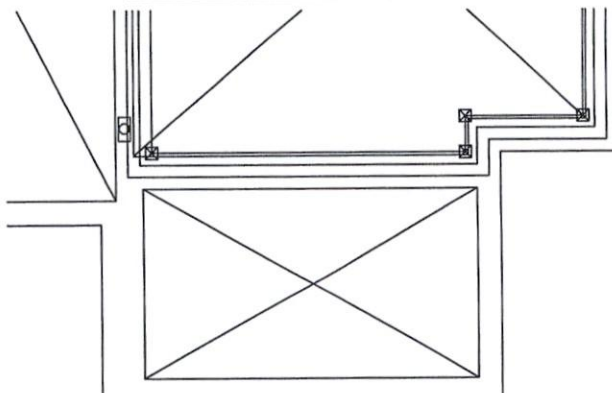
HVAC BY
MONICA CRISAN

BASEMENT FLOOR ELEV 'A'

BASEMENT FLOOR ELEV 'B'



PARTIAL BASEMENT FLOOR ELEV 'C'



PARTIAL BASEMENT FLOOR ELEV 'D'

CSA-F280-12
PACKAGE A1

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

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

HVAC LEGEND						3.	
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	

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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

Project Name

**ENCORE 2
BRAMPTON, ONTARIO**

**THE STRAVINSKY
SD-10**

2123 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: info@hvacdsgns.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.

HEAT LOSS 35588 BTU/H
UNIT DATA

MAKE
LENNOX

MODEL
EL196UH045XE24B

INPUT 44 MBTU/H

OUTPUT 42.8 MBTU/H

COOLING 2.0 TONS

FAN SPEED 800 cfm @ 0.6" w.c.

OF RUNS S/A R/A FANS

	3RD FLOOR	2ND FLOOR	1ST FLOOR	BASEMENT
S/A		9	5	4
R/A		4	1	1
FANS		3	2	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

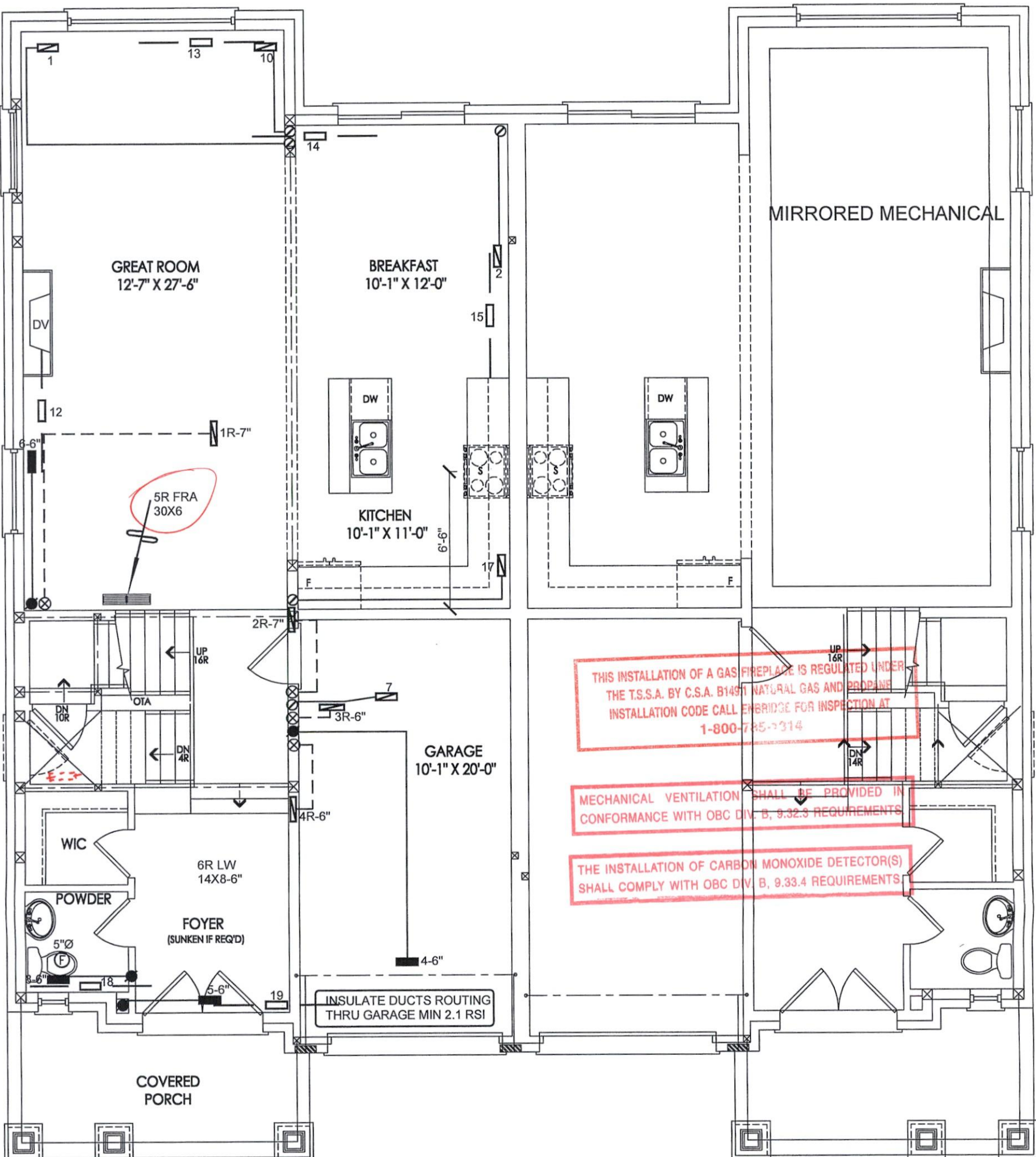
**BASEMENT
HEATING
LAYOUT**

Date
OCT/2019

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 84186



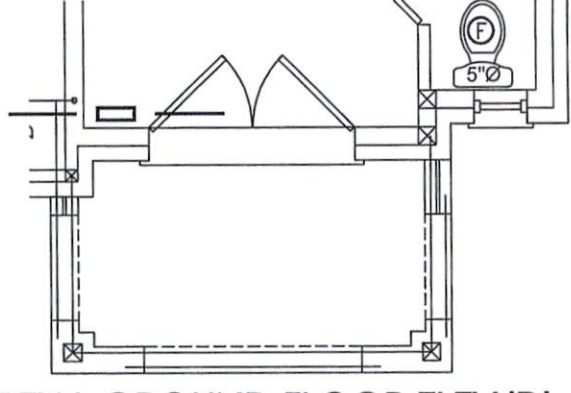
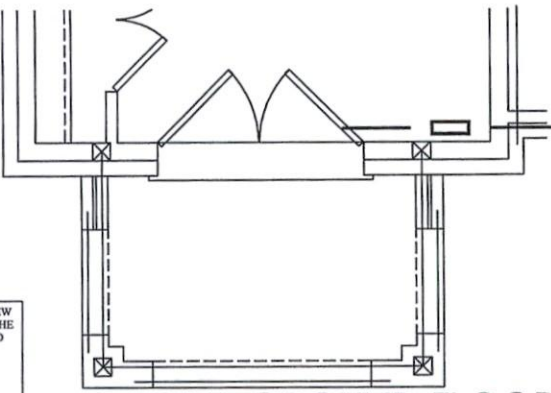
THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A. BY C.S.A. B149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-785-3314

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

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

GROUND FLOOR ELEV 'A'

GROUND FLOOR ELEV 'B'



PARTIAL GROUND FLOOR ELEV 'C'

PARTIAL GROUND FLOOR ELEV 'D'

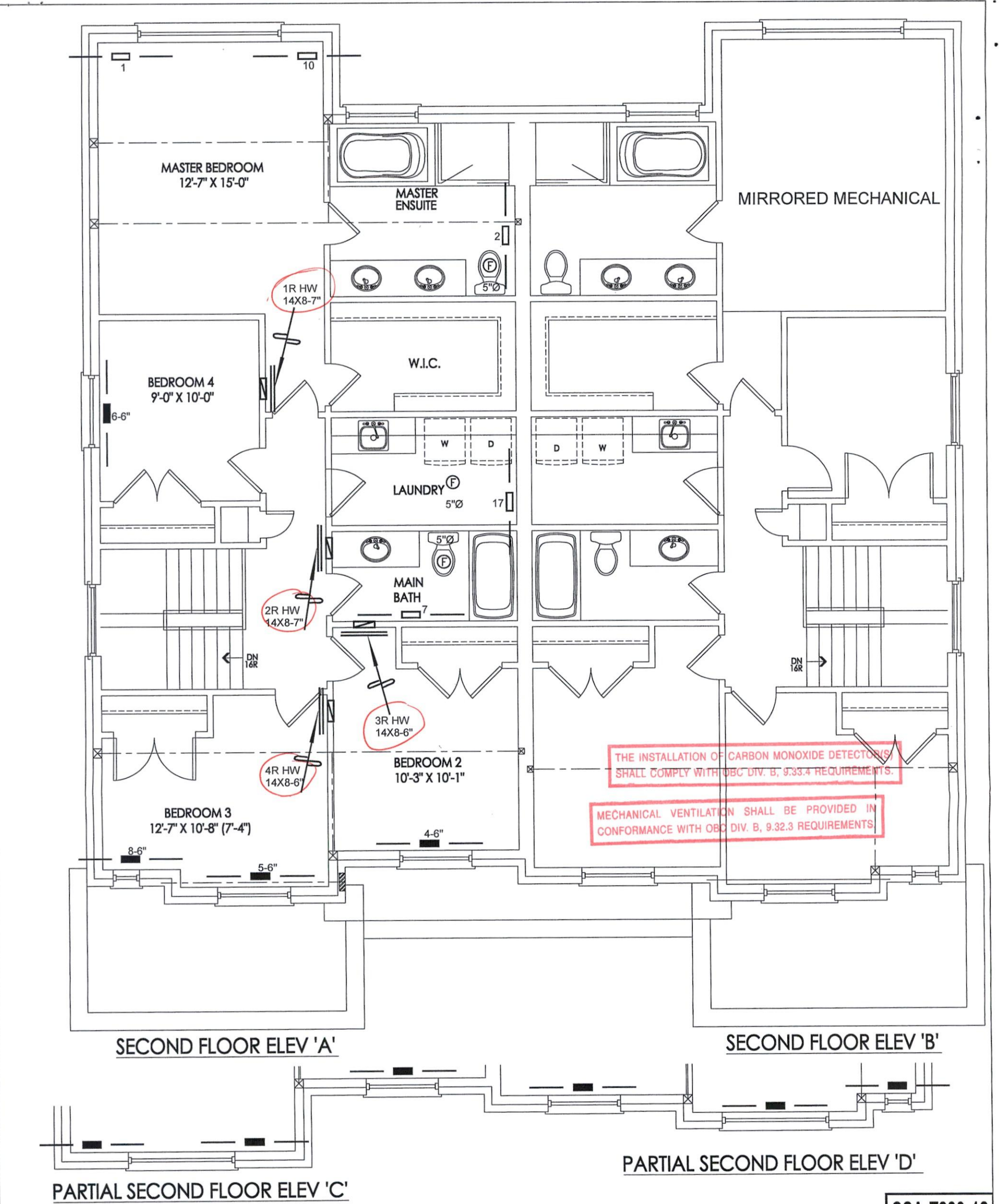
CSA-F280-12
PACKAGE A1

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

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

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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: info@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services	 DEC 12 2019 HVAC BY MONICA CRISAN	Sheet Title FIRST FLOOR HEATING LAYOUT		
Project Name ENCORE 2 BRAMPTON, ONTARIO				Date OCT/2019	Scale 3/16" = 1'-0"	
THE STRAVINSKY SD-10		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		
2123 sqft				LO#	84186	



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

CSA-F280-12
PACKAGE A1

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

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Client

GOLD PARK HOMES

Project Name

**ENCORE 2
BRAMPTON, ONTARIO**

**THE STRAVINSKY
SD-10**

2123 sqft

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**CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED**

DEC 12 2019

**HVAC BY
MONICA CRISAN**

Sheet Title

**SECOND FLOOR
HEATING
LAYOUT**

Date **OCT/2019**

Scale **3/16" = 1'-0"**

BCIN# **19669**

LO# **84186**