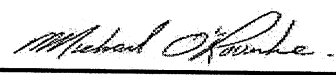


Schedule 1: Designer Information

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		
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]				
☐ 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: CELESTIAL 2 OPT 5 BED Project: GRANELLI HOME CORP		
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.				
June 18, 2018		 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

SITE NAME: GRANELLI HOME CORP
BUILDER: GREENYORK HOMES

ROOM USE EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	HEAT LOSS AT °F. HEAT GAIN AT °F.	DATE: Jun-18 LO# 78996	WINTER NATURAL AIR CHANGE RATE SUMMER NATURAL AIR CHANGE RATE	0.314 0.101	CSA-F280-12 SB-12 PACKAGE A1
GRS.WALL AREA GLAZING	396	189	63	270	342	135	63	144	45					
NORTH	0	0	0	0	0	0	0	0	0					
EAST	0	0	0	0	0	0	0	0	0					
SOUTH	0	0	0	0	0	0	0	0	0					
WEST	0	0	0	0	0	0	0	0	0					
SKYL.T.	0	0	0	0	0	0	0	0	0					
DOORS	0	0	0	0	0	0	0	0	0					
NET EXPOSED WALL	165	719	136	250	304	115	53	134	37					
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0					
EXPOSED CLG	1.3	0.6	459	575	279	110	138	67	123					
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0					
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0					
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0					
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0					
SUBTOTAL HT LOSS	2941	1355	432	2089	2415	1161	614	1055	590					
SUBTOTAL HT GAIN	0.20	0.28	0.20	0.28	0.20	0.28	0.20	0.28	0.20					
LEVEL FACTOR / MULTIPLIER	836	385	123	594	687	330	175	300	168					
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0					
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0					
DUCT LOSS	0	0	0	0	0	0	0	0	0					
DUCT GAIN	0	0	0	0	0	0	0	0	0					
HEAT GAIN PEOPLE	2	480	0	1	240	1	0	0	44					
HEAT GAIN APPLIANCES/LIGHTS	507	0	0	507	507	507	0	507	0					
TOTAL HT LOSS BTU/H	3777	1741	555	2951	3102	1491	789	1355	833					
TOTAL HT GAIN x 1.3 BTU/H	3891	1266	180	2764	3460	1890	490	1615	527					

ROOM USE EXP. WALL CLG. HT.	LV/DN	LIBR	KIT	FAM	LAUN	WIR	FOY	MUD	WUP	BAS	TOTAL COMBINED HEAT LOSS BTU/H: 61718
GRS.WALL AREA GLAZING	385	242	495	407	72	77	363	465	180	1116	
NORTH	0	0	0	0	0	0	0	0	0	0	
EAST	0	0	0	0	0	0	0	0	0	0	
SOUTH	0	0	0	0	0	0	0	0	0	0	
WEST	0	0	0	0	0	0	0	0	0	0	
SKYL.T.	0	0	0	0	0	0	0	0	0	0	
DOORS	0	0	0	0	0	0	0	0	0	0	
NET EXPOSED WALL	4.4	0.8	334	1455	275	208	906	171	394	1717	
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0	0	
EXPOSED CLG	3.5	0.7	0	0	0	0	0	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS	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	
SUBTOTAL HT LOSS	2515	1613	3912	2752	881	500	2492	2432	0	6467	
SUBTOTAL HT GAIN	0.30	0.36	0.30	0.36	0.20	0.36	0.30	0.36	0.30	0.36	
LEVEL FACTOR / MULTIPLIER	895	574	1392	980	250	178	887	865	225	9253	
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	
DUCT GAIN	0	0	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	507	507	507	507	507	507	507	507	507	507	
TOTAL HT LOSS BTU/H	3410	2187	5304	3732	1244	678	3379	3297	1190	18871	
TOTAL HT GAIN x 1.3 BTU/H	2624	2628	5913	3419	1193	387	932	1303	292	19871	

TOTAL HEAT GAIN BTU/H: 37205

TONS: 3.10

LOSS DUE TO VENTILATION LOAD BTU/H: 1835

STRUCTURAL HEAT LOSS: 59883

TOTAL COMBINED HEAT LOSS BTU/H: 61718

Michael O'Rourke

INDIVIDUAL BCIN: 13669

MICHAEL O'ROURKE

SITE NAME: GRANELLI HOME CORP
BUILDER: GREENYORK HOMES

OPT 5 BED
TYPE: CELESTIAL 2

DATE: Jun-18

GFA: 3289 LO# 78996

HEATING CFM 1200
TOTAL HEAT LOSS 59,883
AIR FLOW RATE CFM 20.04

COOLING CFM 1200
TOTAL HEAT GAIN 36,860
AIR FLOW RATE CFM 32.56

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 78,000

#CARRIER
59SP5A-80-16
FAN SPEED 80

LOW 0
MEDLOW 975
MEDIUM 1200
HIGH 1370
HIGH 1540

DESIGN CFM = 1200
CFM @ 8" E.S.P.

r/a pressure 0.17
r/a grille press. loss 0.02
adjusted pressure r/a 0.15

plenum pressure s/a 0.18
max s/a dir press. loss 0.02
min adjusted pressure s/a 0.16

TEMPERATURE RISE 60 °F

ROOM #	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	BED-5	BATH	BED-2	BED-3	ENS-2	LV/DN	LIBR	KIT	KIT	FAM	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.89	1.74	0.56	1.48	1.55	1.49	1.48	0.79	1.48	1.55	0.83	3.41	2.19	2.65	2.65	1.87	1.24	0.68	3.38	3.30	5.02	5.02	5.02	5.02
CFM PER RUN HEAT	38	35	11	30	31	30	30	16	30	31	17	68	44	53	53	37	25	14	68	66	101	101	101	101
RM GAIN MBH.	1.95	1.27	0.18	1.38	1.73	1.89	1.38	0.49	1.38	1.73	1.95	2.62	2.63	2.96	2.96	1.71	1.19	0.39	0.93	1.30	0.57	0.57	0.57	0.57
CFM PER RUN COOLING	63	41	6	45	56	62	45	16	45	56	63	85	86	96	96	56	39	13	30	42	19	19	19	19
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	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	65	38	29	50	55	33	63	39	63	53	78	10	36	31	41	40	41	23	46	37	21	45	17	39
EQUIVALENT LENGTH	160	160	150	200	200	200	200	200	200	140	150	180	130	150	140	150	160	200	160	190	190	150	150	160
TOTAL EFFECTIVE LENGTH	225	198	179	200	255	233	203	239	233	193	228	190	166	181	181	190	201	223	206	227	201	235	167	199
ADJUSTED PRESSURE	0.08	0.09	0.1	0.09	0.07	0.07	0.08	0.08	0.08	0.09	0.08	0.09	0.1	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.07	0.1	0.08
ROUND DUCT SIZE	5	4	4	4	5	5	5	4	5	5	5	6	6	6	6	5	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	279	402	126	344	228	220	220	184	220	228	195	347	224	270	270	270	287	161	499	485	515	515	515	515
COOLING VELOCITY (ft/min)	463	470	69	516	411	455	330	411	463	411	229	433	438	489	470	470	447	149	220	308	97	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	B	D	C	C	D	C	C	C	A	D	D	C	B	A	D	C	C	D	B	A	D	C

ROOM #	26	27
ROOM NAME	FAM	BED-5
RM LOSS MBH.	1.87	1.35
CFM PER RUN HEAT	37	27
RM GAIN MBH.	1.71	1.61
CFM PER RUN COOLING	56	53
ADJUSTED PRESSURE	0.17	0.17
ACTUAL DUCT LGH.	39	19
EQUIVALENT LENGTH	170	190
TOTAL EFFECTIVE LENGTH	209	209
ADJUSTED PRESSURE	0.08	0.08
ROUND DUCT SIZE	5	5
HEATING VELOCITY (ft/min)	272	198
COOLING VELOCITY (ft/min)	411	389
OUTLET GRILL SIZE	3X10	3X10
TRUNK	A	B

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	251	0.07	8.6	10	452	0	0.00	0	0	0
TRUNK B	531	0.07	11.4	16	597	0	0.00	0	0	0
TRUNK C	335	0.07	9.6	10	603	0	0.00	0	0	0
TRUNK D	672	0.07	12.5	18	672	0	0.00	0	0	0
TRUNK E	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0

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	175	95	75	75	400	175	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
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.	50	43	56	62	30	40	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	135	175	215	255	145	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	185	218	271	317	175	190	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.08	0.07	0.05	0.05	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROUND DUCT SIZE	7.3	6	6	6	9.9	7.3	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	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: CELESTIAL 2
SITE NAME: GRANELLI HOME CORP

LO # 78996
OPT 5 BED

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	5 @ 10.6 cfm	53 cfm
Other Rooms	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: LIFE BREATH RNC5-HEX	Location: BSMT
95.4 cfm	3.0 sones
☒	HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	ΔT °F
95.4 CFM	74 F
X	X
FACTOR	% LOSS
1.08	X
	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
ENS-2	QTXEN050C	50	☒
W/R	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: LIFE BREATH RNC5-HEX		
108	cfm high	59 cfm low
76	% Sensible Efficiency	☒ HVI Approved
	@ 32 deg F (0 deg C)	

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER: GREENYORK 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: CELESTIAL 2	OPT 5 BED	BUILDER: GREENYORK HOMES
SFQT: 3289	LO# 78996	SITE: GRANELLI HOME CORP

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	DETACHED	# 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:	UNSHelterED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	46134.0	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: 56.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	186.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package A1	
	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	-

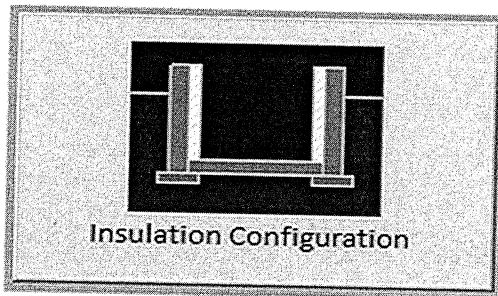
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.5	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1895

TYPE: CELESTIAL 2
LO# 78996

OPT 5 BED

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:	Very heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1306.4			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1741.4 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	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.314			
Cooling Air Leakage Rate (ACH/H):	0.101			

TYPE: CELESTIAL 2
LO# 78996

OPT 5 BED

TYPE: CELESTIAL 2
SITE NAME: GRANELLI HOME CORP

LO # 78996
OPT 5 BED

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	5 @ 10.6 cfm	53 cfm
Other Rooms	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: LIFE BREATH RNC5-HEX	Location: BSMT
95.4 cfm	3.0 sones
☒	HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	ΔT °F
95.4 CFM	74 F
X	X
FACTOR	% LOSS
1.08	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
ENS-2	QTXEN050C	50	☒
W/R	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: LIFE BREATH RNC5-HEX		
108 cfm high	59 cfm low	
76 % Sensible Efficiency	☒	HVI Approved
@ 32 deg F (0 deg C)		

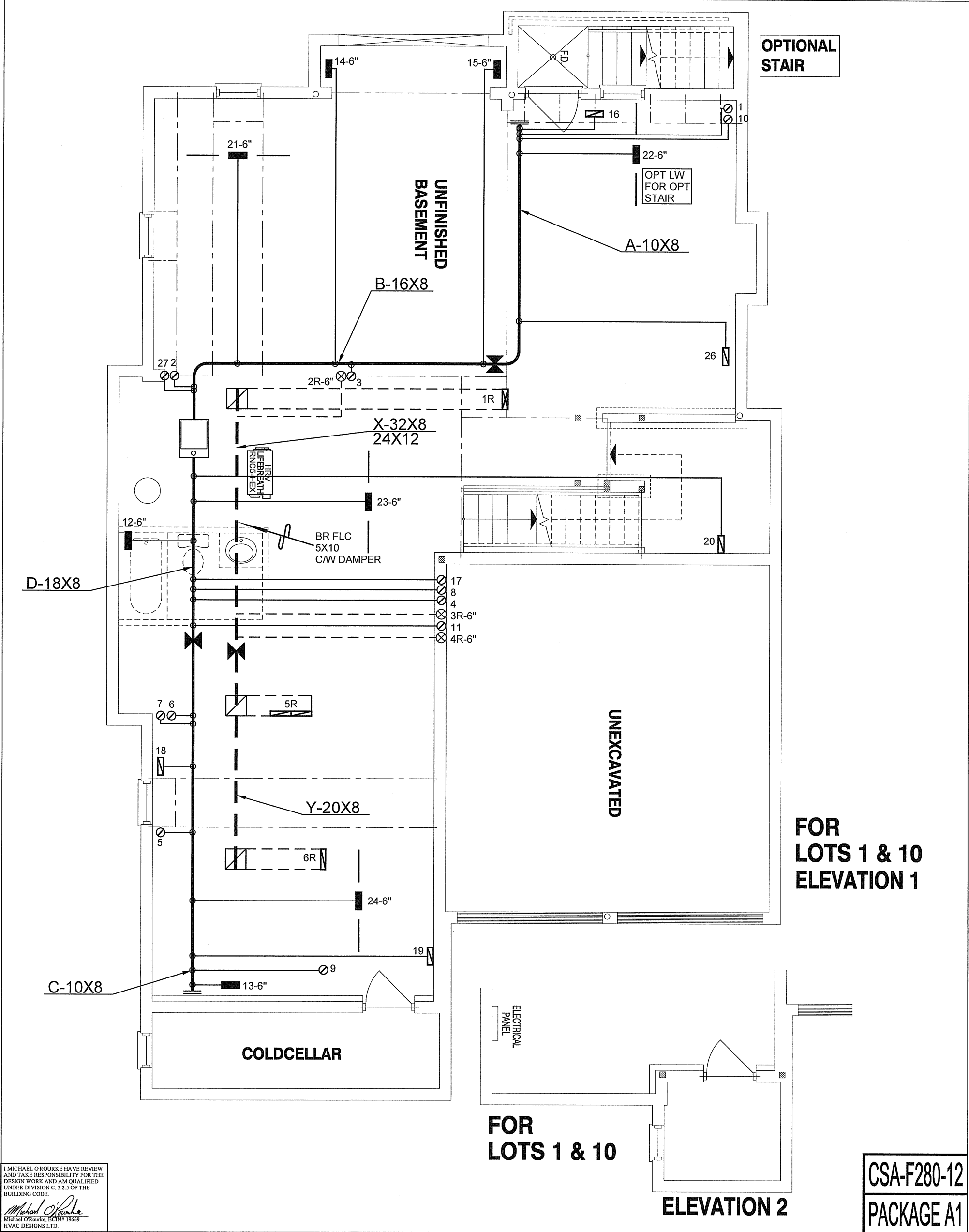
LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER: GREENYORK 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																			
LO#: 78996	Model: CELESTIAL 2	Builder: GREENWORK HOMES	Date: 6/18/2018																																																																
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5.2.3.1 Heat Loss due to Air Leakage		6.2.6 Sensible Gain due to Air Leakage																																																																	
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.314 x 362.88 x 41 °C x 1.2 = 5638 W = 19236 Btu/h		$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.101 x 362.88 x 8 °C x 1.2 = 341 W = 1165 Btu/h																																																																	
5.2.3.2 Heat Loss due to Mechanical Ventilation		6.2.7 Sensible heat Gain due to Ventilation																																																																	
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 74 °F x 1.08 x 0.24 = 1835 Btu/h		$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 14 °F x 1.08 x 0.24 = 346 Btu/h																																																																	
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																			
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HLclevel)</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">19,236</td> <td>10,443</td> <td>0.921</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>16,215</td> <td>0.356</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>13,533</td> <td>0.284</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> </table>				Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HLclevel)	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	19,236	10,443	0.921	2	0.3	16,215	0.356	3	0.2	13,533	0.284	4	0	0	0.000	5	0	0	0.000																																						
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																																			



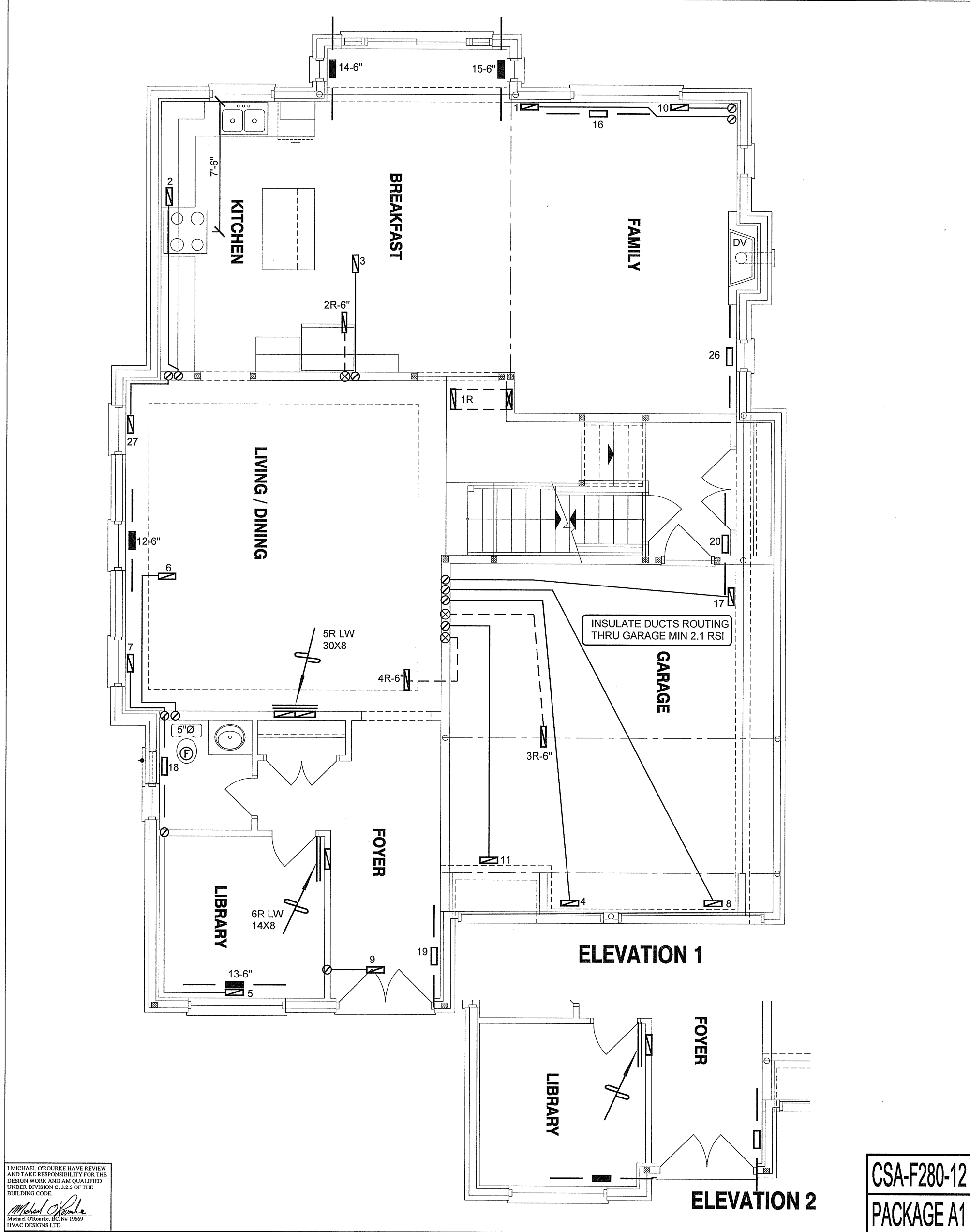
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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 GREENYORK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@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.	HEAT LOSS 61718 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title				
Project Name GRANELLI HOMES CORP BRAMPTON, ONTARIO			MAKE	CARRIER		3RD FLOOR				BASEMENT HEATING LAYOUT			
			MODEL	59SP5A-80-16-80		2ND FLOOR		13	4			3	
			INPUT	80	MBTU/H	1ST FLOOR		9	2			2	
			OUTPUT	78	MBTU/H	BASEMENT		4	1	0	Date	JUNE/2018	
			COOLING	3.0	TONS	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						Scale	3/16" = 1'-0"
OPT 5 BED CELESTIAL 2 3289 sqft		FAN SPEED	1200	cfm @ 0.6" w.g.	BCIN# 19669						LO#	78996	



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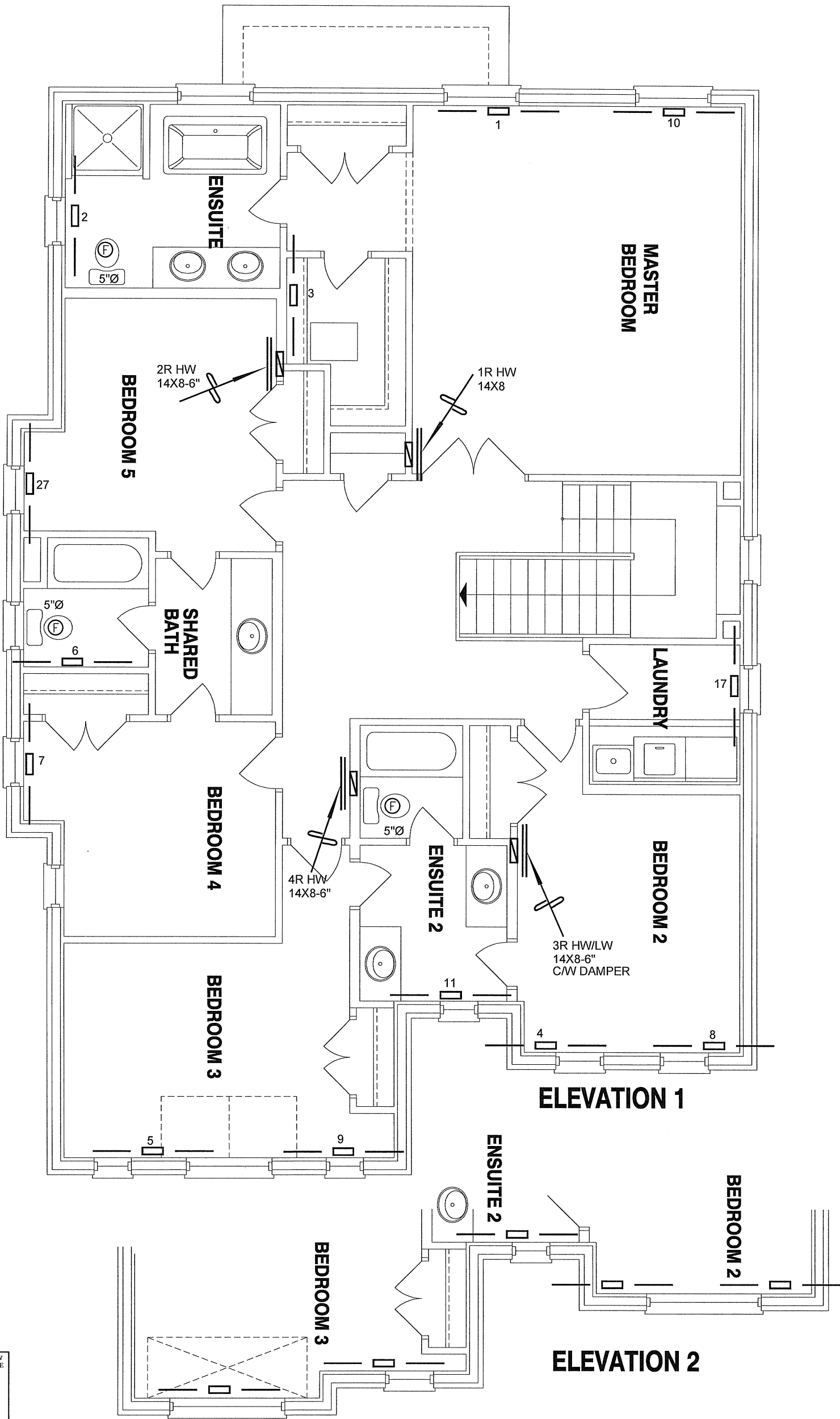
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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.		
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Project Name GRANELLI HOMES CORP BRAMPTON, ONTARIO			Date JUNE/2018	
OPT 5 BED CELESTIAL 2 3289 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 78996	



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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
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Project Name GRANELLI HOMES CORP BRAMPTON, ONTARIO			Date JUNE/2018	
OPT 5 BED CELESTIAL 2 3289 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
		LO#	78996	