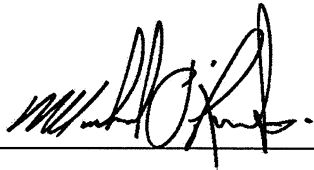


Schedule 1: Designer Information

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 KLEINBURG	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 ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 25-10 – OPT 2 ND – WOB Project: HUNTINGTON & NASHVILLE	
D. Declaration of Designer			
I <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name) ☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____ ☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of 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.			
<u>November 3, 2016</u> 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.

SITE NAME:	HUNTINGTON & NASHVILLE	OPT 2ND FL	GFA: 2119	DATE: Nov-16	WINTER NATURAL AIR CHANGE RATE	AIR CHANGE RATE	0.322	HEAT LOSS AT °F.	76	CSA-F280-0-
BUILDER:	GOLD PARK HOMES	TYPE: 26-10 WOB	BED-2	BED-3	LO#	BED-4	BATH	SUMMER NATURAL AIR CHANGE RATE	0.098	SB-12 PACKAGE
ROOM USE	MBR	ENS	WC	BED-2	BED-3	BED-4	BATH			
EXP. WALL CLG. HT.	39' 10	34 10	7 9	25 10	21 9	22 9	12 9			
FACTORS										
GRS.WALL AREA	390	323	63	260	189	198	108			
GLAZING NORTH	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			
EAST	0 0	8 193	0 0	0 0	0 0	0 0	0 0			
WEST	0 0	0 0	0 0	16 385	688 16 385	688 0 0	0 0			
SKYLT.	0 0	8 193	0 0	0 0	0 0	14 337	6 145			
DOORS	0 0	20 482	0 0	0 0	0 0	0 0	0 0			
NET EXPOSED WALL	3.5 0.7	287 991	206 63	234 808	168 173	598 124 184	352 73 102			
NET EXPOSED BSMT WALL ABOVE GR	6.3 1.3	0 0	0 0	0 0	0 0	0 0	0 0			
EXPOSED CLG	1.6 0.3	86 429	64 49	160 228	113 135	205 102 190	82 41 54			
NO A TITC EXPOSED CLG	2.6 1.2	0 48	118 69	0 0	0 0	0 0	0 0			
EXPOSED FLOOR	2.6 0.5	324 794	165 15	0 0	0 0	0 0	8 20			
BASEMENT/CRAWL HEAT LOSS	0 0	0 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 0	0 0			
SUBTOTAL HT LOSS	3253	2142	292	1422	1188	1262	593			
SUB TOTAL HT GAIN	0.20	1546	82	0.20	0.24	0.20	0.20			
LEVEL FACTOR / MULTIFIER	0.24	0.20	0.24	0.24	0.24	0.24	0.24			
AIR CHANGE HEAT LOSS	767	606	69	335	280	297	141			
AIR CHANGE HEAT GAIN	171	135	7	85	80	56	24			
DUCT LOSS	402	265	0	0	0	0	74			
DUCT GAIN	316	168	0	0	0	0	30			
HEAT GAIN PEOPLE	2	480	0	1	240	1	0			
HEAT GAIN APPLIANCES/LIGHTS	556	0	0	556	556	556	0			
TOTAL HT LOSS BTU/H	4422	2912	381	1757	1468	1559	814			
TOTAL HT GAIN x 1.3 BTU/H	4526	2404	116	2404	2326	1945	429			

ROOM USE	FACTORS		DIN		KTIFM		LAUN		WR		FOY		WOB		BAS
EXP. WALL CLG. HT.	GRS.WALL AREA	LOSS\$ GAIN	370	LOSS GAIN	670	LOSS GAIN	63	LOSS GAIN	120	LOSS GAIN	570	LOSS GAIN	261	LOSS GAIN	1071
GLAZING															
NORTH	24.1	17.4	0	0	0	0	0	0	0	0	0	0	67	1614	9
EAST	24.1	43.0	0	0	84	2024	3610	0	0	0	0	0	0	0	0
SOUTH	24.1	26.3	20	482	526	20	482	526	0	0	16	385	421	0	0
WEST	24.1	43.0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	37.6	103.1	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.2	5.2	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.7	360	1209	261	586	1955	406	120	415	86	494	1707	355	105
NET EXPOSED BSMT WALL ABOVE GR	6.3	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.5	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0
NO A T T I C EXPOSED CLG	2.5	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	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	0	0
SUB TOTAL HT LOSS			1691			4461		437	415		3607		208		5669
SUB TOTAL HT GAIN						4543		0					2667		8956
LEVEL FACTOR / MUL TIPLIER			0.30	0.37	0.30	0.37	0.20	0.24	0.30	0.37	0.30	0.37			795
AIR CHANGE HEAT LOSS			623		1643		103		163		1328			0.50	0.54
AIR CHANGE HEAT GAIN				68		397		22		8		95		6243	186
DUCT LOSS			0		0		0	0	0	0	0	0			0
DUCT GAIN			0	0	0	0	0	0	0	0	0	0			0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				556		556		556		0		0		0	0
TOTAL HT LOSS BTU/H			2314			6103		540		557		4935		2875	15199
TOTAL HT GAIN x 1.3 BTU/H			1822			7144		1071		122		1542		1744	1276

TOTAL HEAT GAIN BTU/H:

TONS: 2.45

LOSS DUE TO VENTILATION LOAD BTU/H: 2612

STRUCTURAL HEAT LOSS: 45827

TOTAL COMBINED HEAT LOSS BTU/H: 48439

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: 196669

MICHAEL O'ROURKE

SITE NAME: HUNTINGTON & NASHVILLE
BUILDER: GOLD PARK HOMES

OPT 2ND FL
TYPE: 25-10 WOB

GFA: 2119 LO# 70853

DATE: Nov-16

HEATING CFM	995	COOLING CFM	995
TOTAL HEAT LOSS	45,827	TOTAL HEAT GAIN	28,871
AIR FLOW RATE CFM	21.71	AIR FLOW RATE CFM	34.46

EL195UH070XE36B
FAN SPEED
LOW 0
MEDIUM 995
HIGH 1200

LENNOX 70

AFUE = 95.0 %
INPUT (BTU/H) = 66,000
OUTPUT (BTU/H) = 63,000

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Bas	Bas	Bas	Bas	Bas	Bas	Bas	Bas	Bas	Bas

All S/A diffusers 4" x 10" unless noted otherwise on layout.
All S/A runs 5" Ø unless noted otherwise on layout.

ROOM NAME	1	2	3	4	5	6	7	8	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	BED-2	BED-3	BED-4	ENS	MBR	MBR	BATH	WIC	DIN	KT/FM	KT/FM	KT/FM	LAUN	W/R	FOY	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	1.76	1.47	1.56	2.91	2.21	2.21	0.81	0.36	2.31	2.03	2.03	2.03	0.54	0.57	4.94	3.61	3.61	3.61	3.61	3.61
CFM PER RUN HEAT	38	32	34	63	48	48	18	8	50	44	44	44	12	12	107	78	78	78	78	78
RM GAIN MBH	2.40	2.33	1.95	2.40	2.26	2.26	0.43	0.12	1.82	2.38	2.38	2.38	1.07	0.12	1.54	0.60	0.60	0.60	0.60	0.60
CFM PER RUN COOLING	83	80	67	83	78	78	15	4	63	82	82	82	37	4	53	21	21	21	21	21
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.15	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	140	140	140	110	180	170	160	190	180	140	140	140	220	190	140	160	150	190	150	150
TOTAL EFFECTIVE LENGTH	196	195	208	158	230	217	193	223	201	177	183	172	254	208	178	207	172	172	186	186
ADJUSTED PRESSURE	0.08	0.09	0.08	0.1	0.07	0.08	0.09	0.08	0.09	0.09	0.09	0.09	0.09	0.08	0.09	0.08	0.1	0.08	0.09	0.09
ROUND DUCT SIZE	6	5	5	5	6	5	4	4	5	5	5	5	4	4	6	5	5	5	5	5
HEATING VELOCITY (ft/min)	194	235	250	463	245	352	207	92	367	323	323	323	138	138	546	573	573	573	573	573
COOLING VELOCITY (ft/min)	423	587	492	609	398	573	172	46	463	602	602	602	424	46	270	154	154	154	154	154
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	C	C	C	B	C	B	A	A	A	B	C	C	A	B	B	B	C

ROOM NAME	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
ROOM NAME	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
CFM PER RUN HEAT	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
RM GAIN MBH	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
CFM PER RUN COOLING	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TOTAL EFFECTIVE LENGTH	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219	219
ADJUSTED PRESSURE	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
ROUND DUCT SIZE	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573	573
COOLING VELOCITY (ft/min)	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154	154
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE																										
TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)																				
TRUNK A	314	0.08	9.1	10	x	8	565	0	0.00	0	0	0	0	8	0	0.06	0	0	0	TRUNK O	0	0.06	0	0	8	0													
TRUNK B	616	0.08	11.7	16	x	8	693	0	0.00	0	0	0	0	x	0	0.06	0	0	0	TRUNK P	0	0.06	0	0	8	0													
TRUNK C	376	0.07	10.1	12	x	8	564	0	0.00	0	0	0	0	x	0	0.06	0	0	0	TRUNK Q	0	0.06	0	0	8	0													
TRUNK D	0	0.00	0	0	x	8	0	0	0.00	0	0.00	0	0	x	0	0.06	0	0	0	TRUNK R	0	0.06	0	0	8	0													
TRUNK E	0	0.00	0	0	x	8	0	0	0.00	0	0.00	0	0	x	0	0.06	0	0	0	TRUNK S	0	0.06	0	0	8	0													
TRUNK F	0	0.00	0	0	x	8	0	0	0.00	0	0.00	0	0	x	0	0.06	0	0	0	TRUNK T	0	0.06	0	0	8	0													
																				TRUNK U	0	0.06	0	0	8	0	0	0	8	0	0	0	8	0	0	0	8	0	
																				TRUNK V	0	0.06	0	0	8	0	0	0	8	0	0	0	8	0	0	0	8	0	
																				TRUNK W	0	0.06	0	0	8	0	0	0	8	0	0	0	8	0	0	0	8	0	
																				TRUNK X	995	0.06	15	26	x	8	689	0	0.06	0	0	8	0	0	0	0	8	0	
																				TRUNK Y	305	0.06	9.7	12	x	8	458	0	0.06	0	0	8	0	0	0	0	8	0	
																				TRUNK Z	0	0.06	0	0	8	0	0	0	8	0	0	0	8	0	0	0	8	0	
																				DROP	995	0.06	15	24	x	10	597	0	0.06	0	0	10	0	0	0	0	10	0	
																				BR																			

TYPE: 25-10 WOB
SITE NAME: HUNTINGTON & NASHVILLE

LO # 70653
OPT 2ND FL

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	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL	159.0 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	
More than 5 - Part 6	TOTAL	79.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	86	cfm
Required Supplemental Capacity	73.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 40H+	Location: BSMT		
86.0 cfm	3.0 sones		
☒	HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
86.0 CFM	X 76 F	X 1.08	X 0.37

SUPPLEMENTAL FANS		NUTONE
Location	Model	cfm
ENS	QTXEN050C	50
BATH	QTXEN050C	50
W/R	QTXEN050C	50

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 40H+		
86 cfm high	37 cfm low	
63 % Sensible Efficiency	☒	HVI Approved
@ 32 deg F (0 deg C)		

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

BUILDER:		GOLD PARK HOMES
Name:		
Address:		
City:		
Telephone #:	Fax #:	

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

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	November-16

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 25-10 WOB	OPT 2ND FL	BUILDER: GOLD PARK HOMES
SFQT: 2119	LO# 70653	SITE: HUNTINGTON & NASHVILLE

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-4	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	72

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	28517.3	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: 63.0 ft	WIDTH: 19.0 ft	EXPOSED PERIMETER:	135.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	29.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package
	J
Ceiling with Attic Space Minimum RSI (R)-Value	50
Ceiling Without Attic Space Minimum RSI (R)-Value	31
Exposed Floor Minimum RSI (R)-Value	31
Walls Above Grade Minimum RSI (R)-Value	22
Basement Walls Minimum RSI (R)-Value	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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10
Windows and Sliding Glass Doors Maximum U-Value	1.8
Skylights Maximum U-Value	2.8
Space Heating Equipment Minimum AFUE	0.94
HRV Minimum Efficiency	60%
Domestic Hot Water Heater Minimum EF	0.67

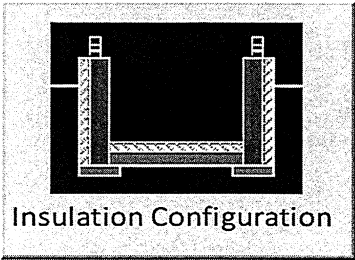
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	▼
Region:	Vaughan (Woodbridge)	▼
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	▼
Water Table:	Normal (7-10 m, 23-33 Ft)	▼
Foundation Dimensions		
Floor Length (m):	19.2	 Insulation Configuration
Floor Width (m):	5.8	
Exposed Perimeter (m):	41.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.8	
Window Area (m ²):	7.8	
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):	1661	

50

2.6 127.2

133.1

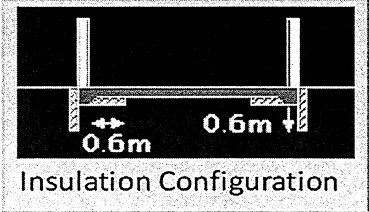
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			▼
Region:	Vaughan (Woodbridge)			▼
Weather Station Location:	Open flat terrain, grass			▼
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			▼
Walls:	Heavy			▼
Flue:	Heavy			▼
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Detached			▼
Number of Stories:	Two			▼
Foundation:	Full			▼
House Volume (m ³):	674.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (ACH=3.57)			▼
Custom BDT Data:	ELA @ 10 Pa. ▼ 716.42 cm ² 3.57 ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply:		Total Exhaust:	
	0		0	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Change Rate (ACH/H):			0.322	
Cooling Air Change Rate (ACH/H):			0.098	

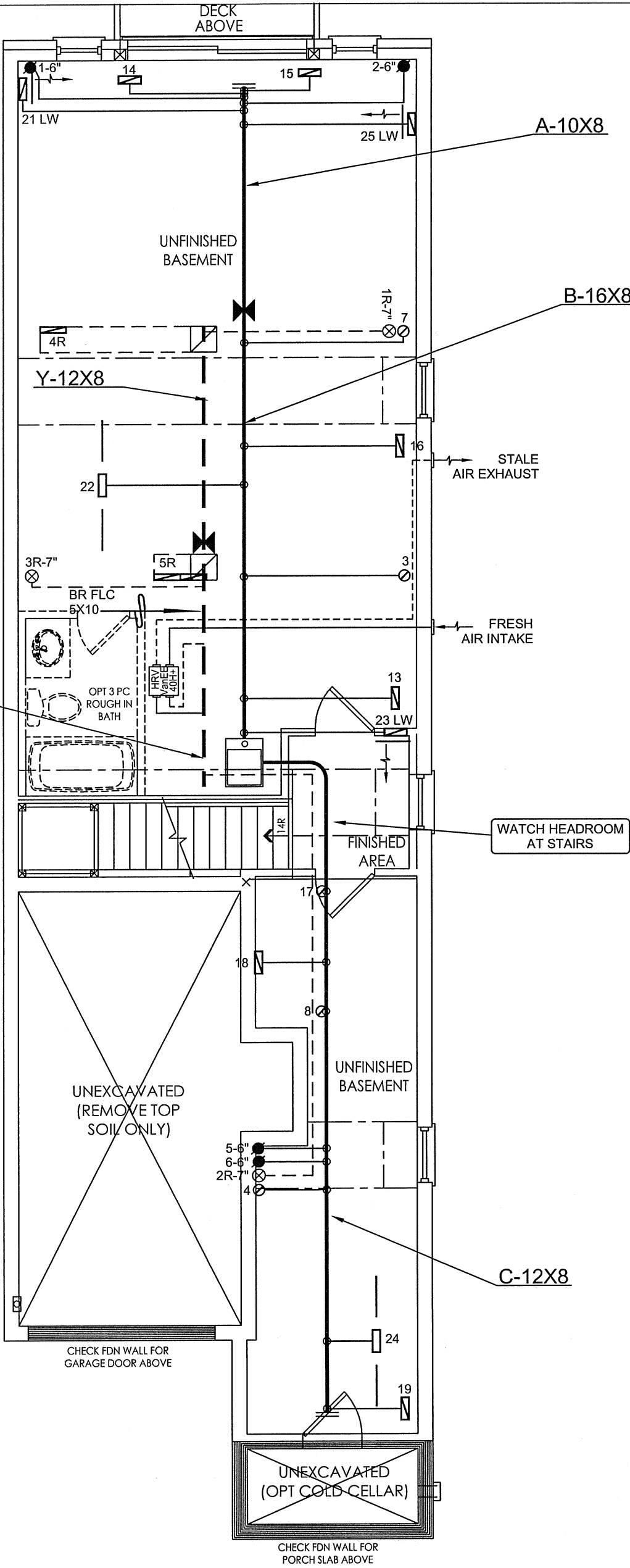
Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

?	Weather Station Description		
	Province:	Ontario	▼
	Region:	Vaughan (Woodbridge)	▼
?	Site Description		
	Soil Conductivity:	Normal conductivity: dry sand, loam, clay ▼	
	Water Table:	Normal (7-10 m, 23-33 Ft) ▼	
?	Floor Dimensions		
	Length (m):	1.5	
	Width (m):	5.8	
	Exposed Perimeter (m):	8.8	
?	Radiant Slab		
	Heated Fraction of the Slab:	0	
	Fluid Temperature (°C):	33	
	Design Month		
	Heating Month	1	
?	Results		
	Heating Load (Watts):		61

14.6

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																									
Formula Sheet (For Air Leakage / Ventilation Calculation)																																									
LO#: 70653		Model: 25-10 WOB		Builder: GOLD PARK HOMES		OPT 2ND FL		Date: 11/3/2016																																	
Volume Calculation																																									
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>House Volume Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>944</td> <td>9</td> <td>8496</td> </tr> <tr> <td>First</td> <td>944</td> <td>10</td> <td>9440</td> </tr> <tr> <td>Second</td> <td>1175.7</td> <td>9</td> <td>10581.3</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="2" style="text-align: right;">Total:</td> <td></td> <td>28,517.3 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>807.5 m³</td> </tr> </tbody> </table>										House Volume Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	944	9	8496	First	944	10	9440	Second	1175.7	9	10581.3	Third	0	9	0	Fourth	0	9	0	Total:			28,517.3 ft³	Total:			807.5 m³
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5.2.3.1 Heat Loss due to Air Leakage																																									
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																									
0.322	x	224.31	x	42 °C	x	1.2	=	3660 W																																	
								=	12486 Btu/h																																
5.2.3.2 Heat Loss due to Mechanical Ventilation																																									
$HL_{pairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																									
86 CFM	x	76 °F	x	1.08	x	0.37	=	2612 Btu/h																																	
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																									
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																									
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*HLairbv = Air leakage heat loss + ventilation heat loss **For a balanced or supply only ventilation system HLairve = 0																																									



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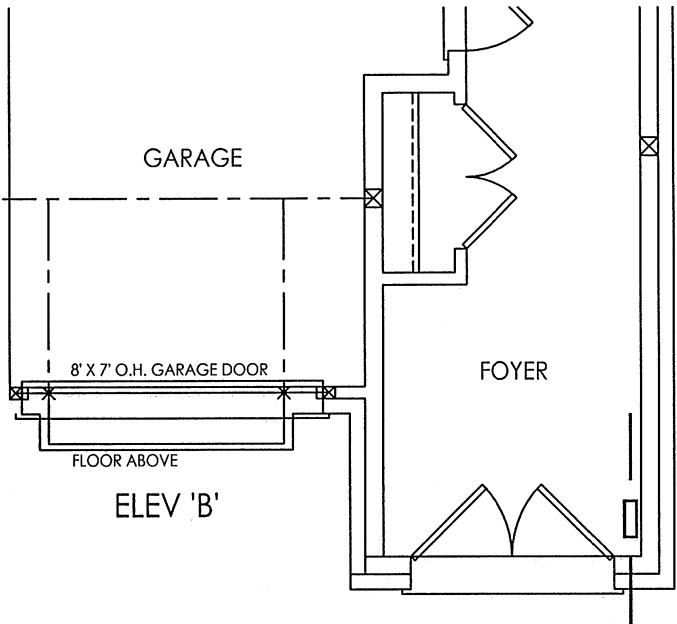
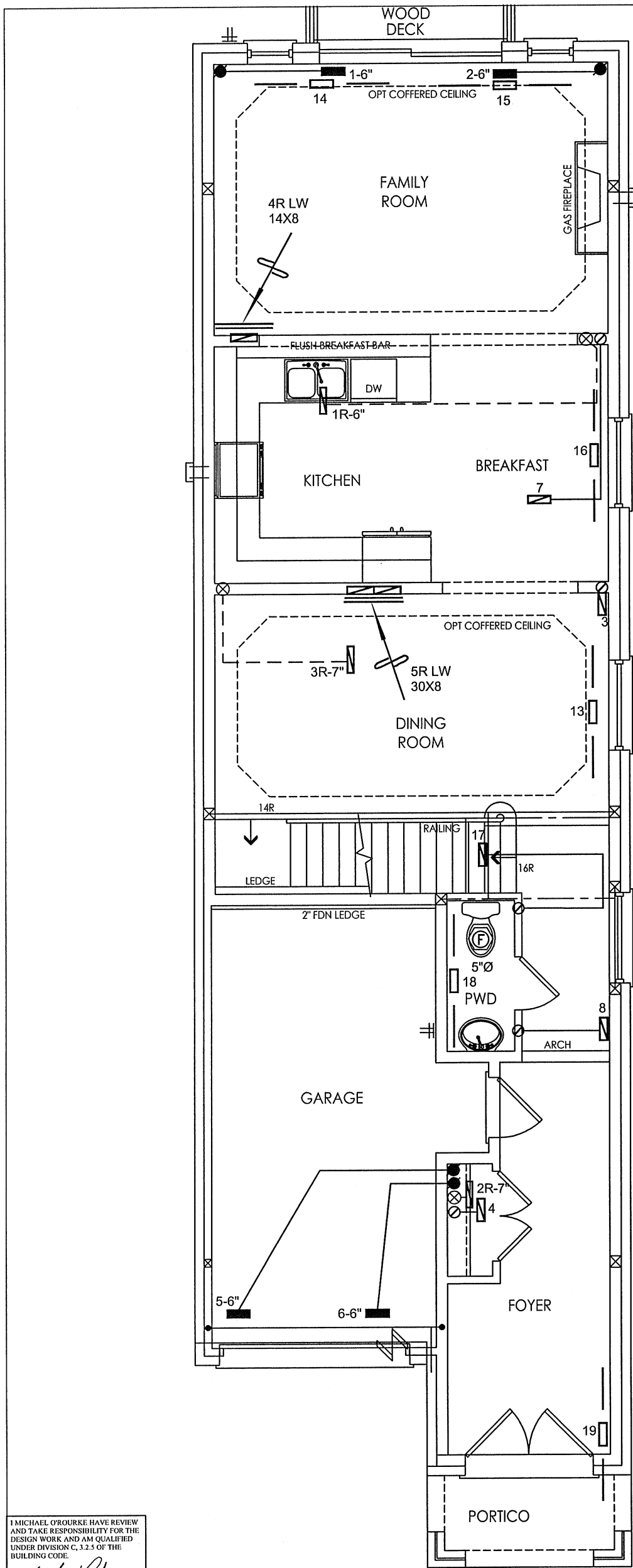
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

WOB
CSA-F280-12
PACKAGE J

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.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date
REVISIONS								

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Client		 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 48439 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title		
GOLD PARK HOMES			MAKE	LENNOX	3RD FLOOR					BASEMENT HEATING LAYOUT	
Project Name			MODEL	EL195UH070XE36B-70	2ND FLOOR		9	3	3		
HUNTINGTON & NASHVILLE KLEINBURG, ONTARIO			INPUT	66 MBTU/H	1ST FLOOR		6	2	2		
OPT 2ND FL 25-10 WOB			OUTPUT	63 MBTU/H	BASEMENT		5	1	0	Date	NOV/2016
2119 sqft			COOLING	2.5 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"
			FAN SPEED	995 cfm @ 0.6" w.c.						BCIN# 19669	
									LO#	70653	



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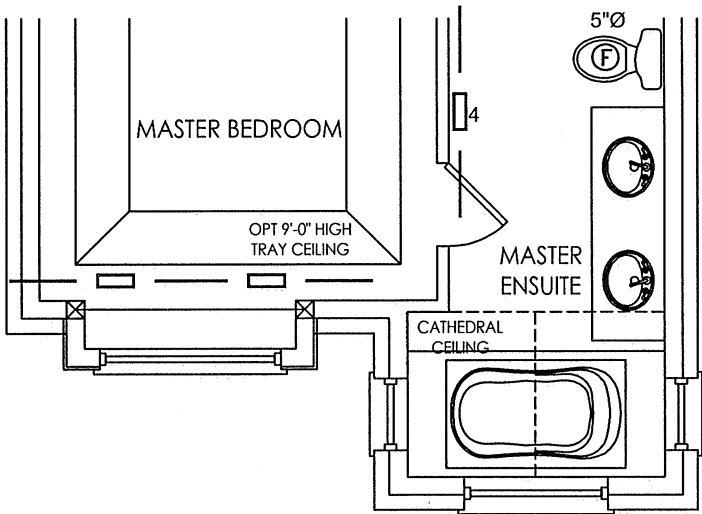
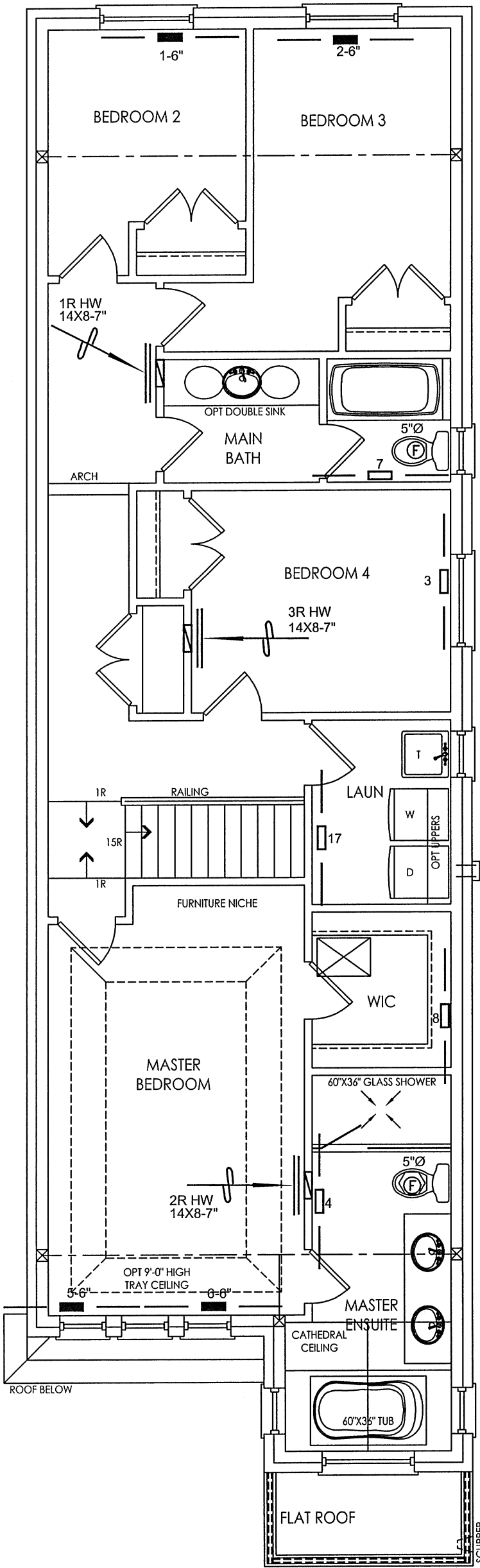
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Client GOLD PARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply 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	
Project Name HUNTINGTON & NASHVILLE KLEINBURG, ONTARIO			Date NOV/2016	
OPT 2ND FL 25-10 WOB			Scale 3/16" = 1'-0"	
2119 sqft			BCIN# 19669	
			LO#	70653



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WOB
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Client
GOLD PARK HOMES

Project Name
HUNTINGTON & NASHVILLE
KLEINBURG, ONTARIO

OPT 2ND FL
25-10 WOB

2119 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@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
SECOND FLOOR
HEATING
LAYOUT

Date
NOV/2016

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 70653