


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.
Municipality VAUGHAN (WOODBIDGE)			Postal code
Plan number/ other description			Lot/con.
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: 5005 - KNIGHTSWOOD WOB Project: PINE VALLEY & TESTON	
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.			
September 12, 2018 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: PINE VALLEY & TESTON BUILDER: GOLD PARK HOMES TYPE: 5005 - KNIGHTSWOOD DATE: Sep-18 LO# 78981 GFA: 4478 WINTER NATURAL AIR CHANGE RATE 0.416 SUMMER NATURAL AIR CHANGE RATE 0.139 HEAT LOSS AT °F. 76 HEAT GAIN AT °F. 13 CSA-P280-12 SB-12 PACKAGE A1

ROOM USE	MBR	ENS	WIC	BED-3	BED-4	ENS-2	WIC-2	ENS-3	ENS-4	WIC-3
EXP. WALL	46	36	13	60	19	6	9	4	7	15
CLG. HT.	11	10	10	11	10	10	10	10	10	10
FACTORS										
GRS.WALL AREA	508	360	130	580	190	80	90	40	70	160
GLAZING										
NORTH	21.3	15.8	8	128	84	0	0	0	0	0
EAST	21.3	40.5	0	0	0	0	0	0	0	0
SOUTH	21.3	24.3	0	0	0	0	0	0	0	0
WEST	21.3	40.5	0	0	0	0	0	0	0	0
SKYLT.	37.2	101.5	0	0	0	0	0	0	0	0
DOORS	25.2	4.3	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	124	563	367	188	705	119	82	232
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	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	2.8	0.4	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS										
SLAB ON GRADE HEAT LOSS										
SUBTOTAL HT LOSS	3783	2583	1811	4342	1762	632	586	419	592	1075
SUB TOTAL HT GAIN										
LEVEL FACTOR / MUL TIPLIER	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35
AIR CHANGE HEAT LOSS	1341	919	483	1639	621	224	208	149	206	361
AIR CHANGE HEAT GAIN										
DUCT LOSS										
HEAT GAIN PEOPLE	2	0	0	1	1	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	5124	3512	2072	6470	2373	942	873	625	788	1456
TOTAL HT LOSS BTU/H										
TOTAL HT GAIN x 1.3 BTU/H	5289	2543	1608	6914	2708	348	180	188	425	1318

ROOM USE	LIB	DIN	KIT/GT	CAB	LAUN	PWD	FOY	MUD	WOB	BAS
EXP. WALL	31	32	87	46	0	6	36	18	65	175
CLG. HT.	11	11	11	11	10	11	11	12	10	10
FACTORS										
GRS.WALL AREA	341	352	967	485	0	55	385	216	860	1225
GLAZING										
NORTH	21.3	15.8	0	0	0	0	0	0	0	0
EAST	21.3	40.5	0	0	0	0	0	0	0	0
SOUTH	21.3	24.3	0	0	0	0	0	0	0	0
WEST	21.3	40.5	0	0	0	0	0	0	0	0
SKYLT.	37.2	101.5	0	0	0	0	0	0	0	0
DOORS	25.2	4.3	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.5	0.8	776	3463	583	46	323	1441	243	196
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.6	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	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	2.8	0.4	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS										
SLAB ON GRADE HEAT LOSS										
SUBTOTAL HT LOSS	2464	2143	7354	4886	274	507	3120	1380	1014	5860
SUB TOTAL HT GAIN										
LEVEL FACTOR / MUL TIPLIER	0.30	0.53	0.30	0.53	0.20	0.35	0.30	0.53	0.30	0.53
AIR CHANGE HEAT LOSS	1294	1125	3862	2566	97	286	1638	725	684	19126
AIR CHANGE HEAT GAIN										
DUCT LOSS										
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	3767	3288	11217	7462	408	773	4788	2104	7861	24886
TOTAL HT LOSS BTU/H										
TOTAL HT GAIN x 1.3 BTU/H	4386	2398	9440	7380	1122	317	784	1228	4300	2150

TOTAL HEAT GAIN BTU/H: 61921 TONS: 6.13 LOSS DUE TO VENTILATION LOAD BTU/H: 3181 STRUCTURAL HEAT LOSS: 97005 TOTAL COMBINED HEAT LOSS BTU/H: 400185

Michael O'Rourke

SITE NAME: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMESWOB
TYPE: 500S - KNIGHTSWOOD

DATE: Sep-18

GFA: 4478 LO# 79981

HEATING CFM 1955 COOLING CFM 1955
TOTAL HEAT LOSS 97,005
AIR FLOW RATE CFM 32.06AFUE = 96 %
INPUT (BTU/H) = 110,000
OUTPUT (BTU/H) = 106,000
DESIGN CFM = 1955
CFM @ 8" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	18	13	8
R/A	0	0	5	3	1

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

All S/A runs 5'x2' unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-2	ENS-3	MBR	ENS-4	LIB	DIN	KIT/GT	KIT/GT	KIT/GT	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	2.56	2.77	2.07	2.06	3.23	2.37	0.94	0.87	0.62	2.56	0.78	1.88	3.27	2.80	2.80	2.80	0.41	0.77	4.76	2.10	4.11	4.11	4.11	4.11
CFM PER RUN HEAT	52	56	42	42	65	48	19	18	13	52	16	38	66	57	57	57	8	16	96	42	83	83	83	83
RM GAIN MBH	2.64	2.25	1.61	2.30	2.98	2.71	0.35	0.18	0.19	2.64	0.43	2.19	2.40	2.36	2.36	2.36	1.12	0.32	0.78	1.23	0.81	0.81	0.81	0.81
CFM PER RUN COOLING	85	72	52	74	98	87	11	6	6	85	14	70	77	76	76	76	36	10	25	39	26	26	26	26
ADJUSTED PRESSURE	0.15	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	70	70	53	49	75	48	47	48	53	64	59	57	29	52	69	54	36	73	40	47	77	60	69	38
EQUIVALENT LENGTH	200	200	170	160	170	160	200	150	170	170	150	140	103	120	140	110	200	170	210	160	150	140	150	90
TOTAL EFFECTIVE LENGTH	270	270	223	209	245	208	247	198	223	234	209	197	132	172	209	164	236	243	250	207	227	200	219	128
ADJUSTED PRESSURE	0.05	0.06	0.07	0.07	0.06	0.07	0.06	0.06	0.07	0.06	0.07	0.08	0.12	0.09	0.07	0.1	0.07	0.06	0.06	0.08	0.06	0.07	0.07	0.11
ROUND DUCT SIZE	6	6	5	5	6	6	4	4	4	6	4	5	5	5	6	5	4	4	6	4	6	6	6	5
HEATING VELOCITY (ft/min)	265	266	308	308	331	245	218	207	149	265	184	279	485	419	291	419	92	184	489	482	423	423	423	609
COOLING VELOCITY (ft/min)	433	387	382	543	489	444	126	69	69	433	181	514	565	558	388	558	413	115	127	447	133	133	133	191
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10
TRUNK	D	C	E	G	F	E	E	G	G	D	E	F	E	D	B	C	G	A	F	C	A	B	D	E

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
ROOM NAME	BAS	BAS	BED-2	BED-2	BED-3	WIC-3	LIB	KIT/GT	CAB	CAB	CAB	ENS	ENS	BAS	BAS
RM LOSS MBH	4.11	4.11	2.06	2.06	3.23	1.46	1.46	2.80	2.48	2.48	2.48	0.37	0.37	4.11	4.11
CFM PER RUN HEAT	83	83	42	42	65	29	38	57	50	50	50	7	7	83	83
RM GAIN MBH	0.81	0.81	2.30	2.30	2.98	1.32	2.19	2.36	2.46	2.46	2.46	0.15	0.15	0.81	0.81
CFM PER RUN COOLING	26	26	74	74	96	42	70	76	79	79	79	5	5	26	26
ADJUSTED PRESSURE	0.15	0.15	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15
ACTUAL DUCT LGH	34	50	52	55	80	63	51	55	69	71	82	56	58	23	58
EQUIVALENT LENGTH	110	150	170	160	170	200	160	120	130	130	140	200	190	140	170
TOTAL EFFECTIVE LENGTH	144	200	222	215	250	263	211	175	219	201	222	256	248	163	228
ADJUSTED PRESSURE	0.1	0.07	0.07	0.07	0.06	0.06	0.06	0.09	0.07	0.08	0.07	0.06	0.06	0.09	0.06
ROUND DUCT SIZE	5	6	5	5	6	5	5	5	6	5	6	4	4	5	6
HEATING VELOCITY (ft/min)	609	423	308	308	331	213	279	419	255	367	255	80	80	609	423
COOLING VELOCITY (ft/min)	191	133	543	543	489	308	514	558	403	580	403	57	57	191	133
OUTLET GRILL SIZE	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10
TRUNK	G	F	G	G	F	F	F	B	A	A	A	C	C	E	C

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY
CFM	PRESS	DUCT	DUCT	(ft/min)	CFM	PRESS	DUCT	DUCT	(ft/min)	CFM	PRESS	DUCT	DUCT	(ft/min)	CFM	PRESS	DUCT	DUCT	(ft/min)
TRUNK A	249	0.06	9	10	8	0.06	12.9	20	8	662	0.06	20.3	38	596	TRUNK O	0	0.05	0	8
TRUNK B	197	0.07	7.9	8	443	0.05	20.3	38	10	1961	0.05	20.3	38	743	TRUNK P	0	0.05	0	8
TRUNK C	698	0.06	13.2	20	628	0.00	0	0	8	TRUNK H	0	0	0	0	TRUNK Q	0	0.05	0	8
TRUNK D	244	0.05	9.3	10	439	0.00	0	0	8	TRUNK I	0	0	0	0	TRUNK R	0	0.05	0	8
TRUNK E	1299	0.05	17.4	28	668	0.00	0	0	8	TRUNK J	0	0	0	0	TRUNK S	0	0.05	0	8
TRUNK F	414	0.06	10.8	14	532	0.00	0	0	8	TRUNK K	0	0	0	0	TRUNK T	0	0.05	0	8
										TRUNK L	0	0	0	0	TRUNK U	0	0.05	0	8
															TRUNK V	0	0.05	0	8
															TRUNK W	0	0.05	0	8
															TRUNK X	1630	0.05	18.9	32
															TRUNK Y	955	0.05	15.5	28
															TRUNK Z	480	0.05	12	16
															DROP	1955	0.05	20.3	24
																			18
																			652

TYPE: 5005 - KNIGHTSWOOD
SITE NAME: PINE VALLEY & TESTON

LO # 79981
WOB

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a) <input checked="" type="checkbox"/>	Direct vent (sealed combustion) only	
b) <input type="checkbox"/>	Positive venting induced draft (except fireplaces)	
c) <input type="checkbox"/>	Natural draft, B-vent or induced draft gas fireplace	
d) <input type="checkbox"/>	Solid Fuel (including fireplaces)	
e) <input type="checkbox"/>	No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/>	Forced Air
<input type="checkbox"/>	Non Forced Air
<input type="checkbox"/>	Electric Space Heat

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/>	I Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/>	II Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/>	III Any Type c) appliance	
<input type="checkbox"/>	IV Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/>	1 Exhaust only/Forced Air System	
<input type="checkbox"/>	2 HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/>	3 HRV Simplified/connected to forced air system	
<input type="checkbox"/>	4 HRV with Ducting/non forced air system	
<input type="checkbox"/>	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	7 @ 10.6 cfm	74.2 cfm
Other Rooms	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	222.6 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	67.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 65H	Location: BSMT		
155.0 cfm	3.0 sones		
<input checked="" type="checkbox"/>	HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
155.0 CFM	X 76 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	<input checked="" type="checkbox"/>	0.3
ENS-2	QTXEN050C	50	<input checked="" type="checkbox"/>	0.3
ENS-4	QTXEN050C	50	<input checked="" type="checkbox"/>	0.3
PWD	QTXEN050C	50	<input checked="" type="checkbox"/>	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155	cfm high	64 cfm low
75	% Sensible Efficiency	<input checked="" type="checkbox"/> 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:	September-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																																			
LO#: 79981	Model: 5005 - KNIGHTSWOOD	Builder: GOLD PARK HOMES	Date: 9/12/2018																																																																																
Volume Calculation		Air Change & Delta T Data																																																																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>House Volume</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Level</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bsmt</td> <td>2074</td> <td>10</td> <td>20740</td> </tr> <tr> <td>First</td> <td>2074</td> <td>11</td> <td>22814</td> </tr> <tr> <td>Second</td> <td>2409</td> <td>10</td> <td>24090</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>Total:</td> <td></td> <td></td> <td>67,644.0 ft³</td> </tr> <tr> <td>Total:</td> <td></td> <td></td> <td>1915.5 m³</td> </tr> </table>		House Volume	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Level				Bsmt	2074	10	20740	First	2074	11	22814	Second	2409	10	24090	Third	0	9	0	Fourth	0	9	0	Total:			67,644.0 ft³	Total:			1915.5 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">WINTER NATURAL AIR CHANGE RATE</th> </tr> <tr> <td colspan="2"></td> <td colspan="2">0.416</td> </tr> <tr> <th colspan="4">SUMMER NATURAL AIR CHANGE RATE</th> </tr> <tr> <td colspan="2"></td> <td colspan="2">0.139</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-20</td> <td>42</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>76</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE						0.416		SUMMER NATURAL AIR CHANGE RATE						0.139		Design Temperature Difference					Tin °C	Tout °C	ΔT °C	Winter DTDh	22	-20	42	Summer DTDc	24	31	7				ΔT °F				76				13
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Summer DTDc	24	31	7																																																																																
			ΔT °F																																																																																
			76																																																																																
			13																																																																																
5.2.3.1 Heat Loss due to Air Leakage																																																																																			
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																																																			
0.416	x	532.07	x																																																																																
		42 °C	x																																																																																
		1.2	x																																																																																
			=																																																																																
			11211 W																																																																																
			=																																																																																
			38253 Btu/h																																																																																
5.2.3.2 Heat Loss due to Mechanical Ventilation																																																																																			
$HL_{pairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																																			
155 CFM	x	76 °F	x																																																																																
		1.08	x																																																																																
		0.25	x																																																																																
			=																																																																																
			3181 Btu/h																																																																																
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																																			
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{qgr} + HL_{pgr}) \div (HL_{qclvl} + HL_{bgclvl})\}$																																																																																			
<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: (HLclvl)</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLclvl)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">38,253</td> <td>12,707</td> <td>1.505</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>21,853</td> <td>0.525</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>21,580</td> <td>0.355</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: (HLclvl)	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLclvl)	1	0.5	38,253	12,707	1.505	2	0.3	21,853	0.525	3	0.2	21,580	0.355	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 HLairve = 0</p>																																																																																			

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5005 - KNIGHTSWOOD	WOB	BUILDER: GOLD PARK HOMES
SFQT: 4478	LO# 79981	SITE: PINE VALLEY & TESTON

DESIGN ASSUMPTIONS

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

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:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	67644.0	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:	7.0 ft
LENGTH: 75.0 ft	WIDTH: 45.0 ft	EXPOSED PERIMETER:	175.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	65.0 ft

2012 OBC - COMPLIANCE PACKAGE

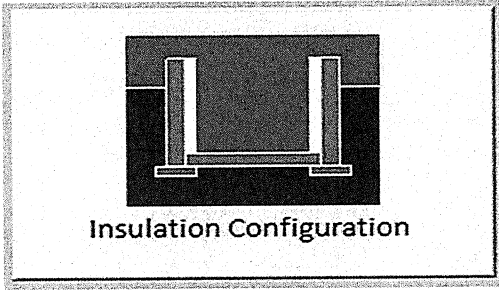
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 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

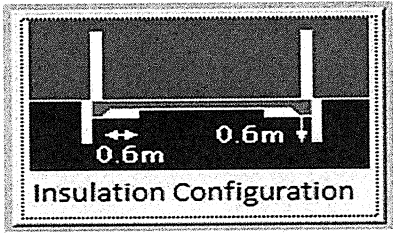
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	6.1	 Insulation Configuration
Floor Width (m):	13.7	
Exposed Perimeter (m):	53.3	
Wall Height (m):	3.0	
Depth Below Grade (m):	1.88	
Window Area (m ²):	1.1	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		941

TYPE: 5005 - KNIGHTSWOOD
LO# 79981

WOB

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		
Length (m):	3.0	
Width (m):	13.7	
Exposed Perimeter (m):	19.8	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		297

TYPE: 5005 - KNIGHTSWOOD
LO# 79981

WOB

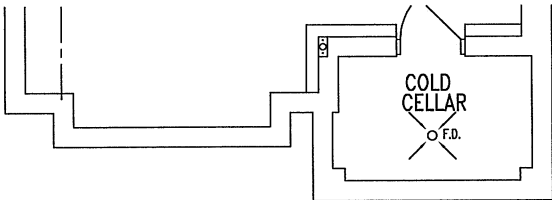
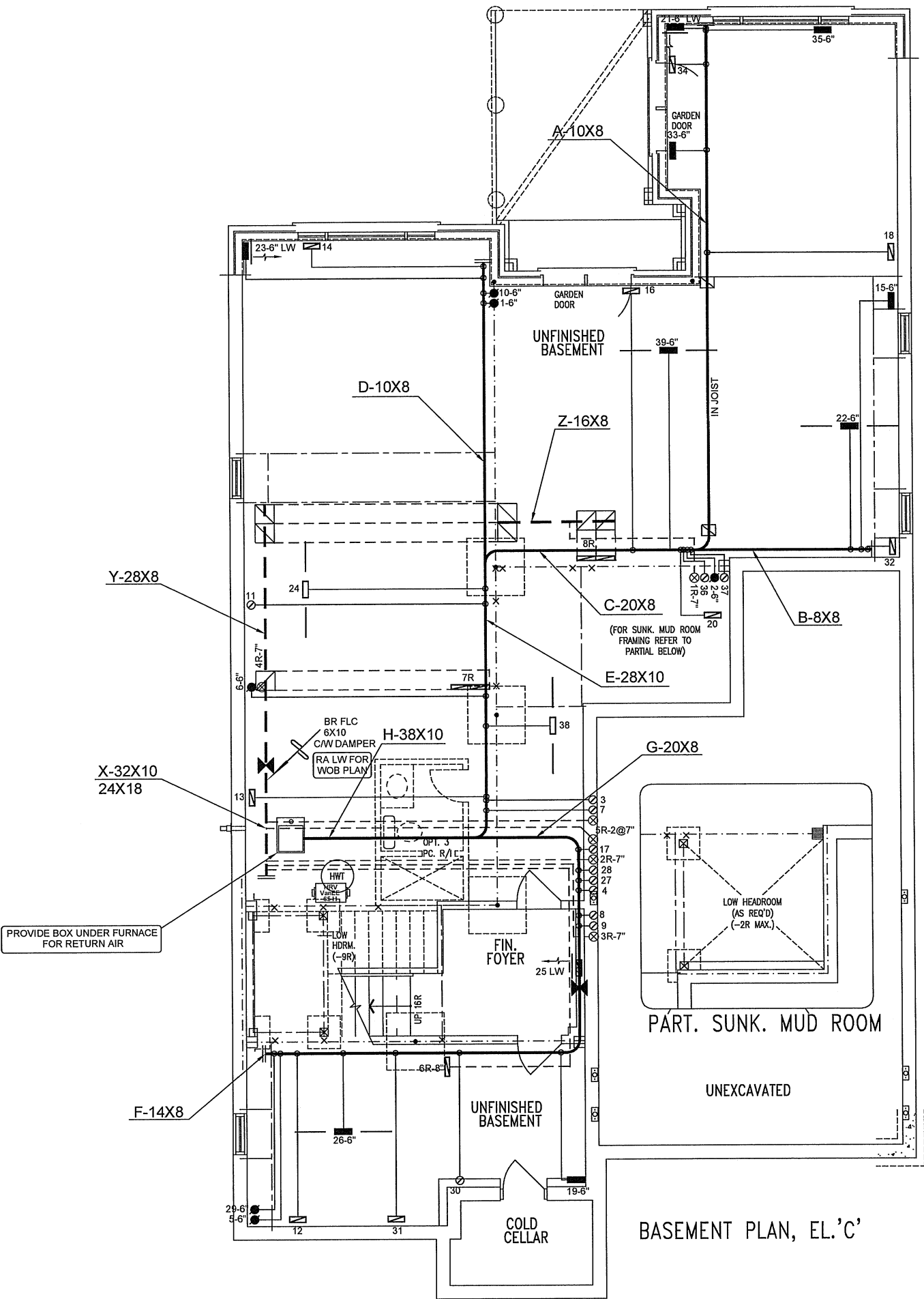
Air Infiltration Residential Load Calculator

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):	9.45			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1915.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2553.4 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	73.2	73.2		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.416			
Cooling Air Leakage Rate (ACH/H):	0.139			

TYPE: 5005 - KNIGHTSWOOD
LO# 79981

WOB



BASEMENT PLAN, EL.'A'

BASEMENT PLAN, EL.'C'

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.


CSA-F280-12

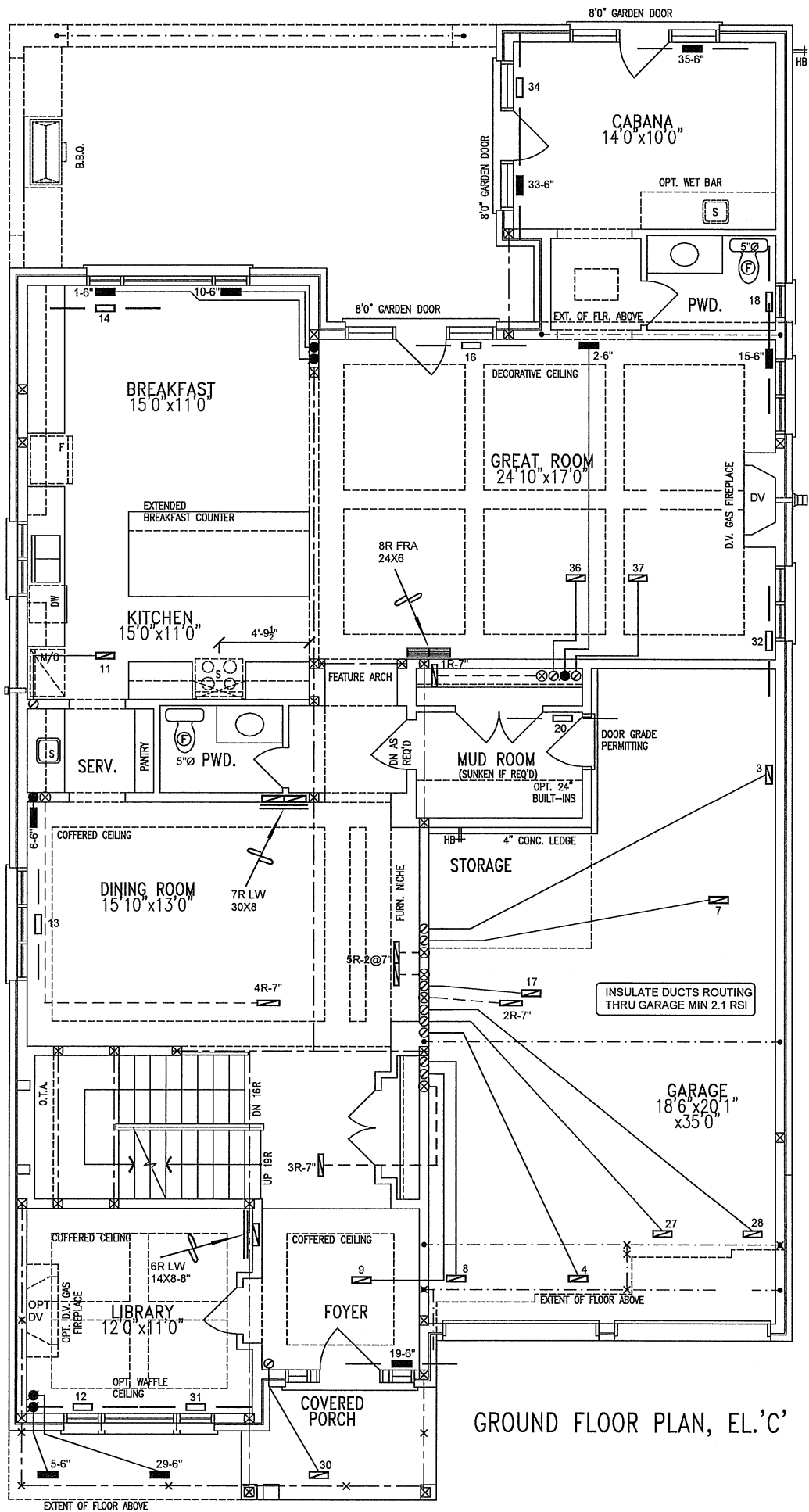
WOB

PACKAGE A1

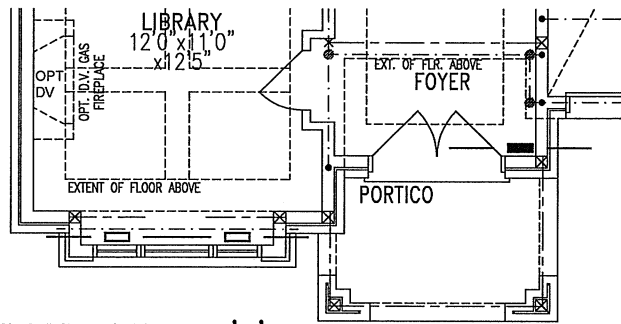
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE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

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Client		<div></div> <div>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</div>	HEAT LOSS 100185 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title <div>BASEMENT HEATING LAYOUT</div>		
Project Name PINE VALLEY & TESTON VAUGHAN, ONTARIO			MAKE LENNOX		3RD FLOOR						
			MODEL EL296UH110XE60C		2ND FLOOR		18	5			7
			INPUT 110 MBTU/H		1ST FLOOR		13	3	3		
KNIGHTSWOOD - WOB 5005 4472 sqft			OUTPUT 106 MBTU/H		BASEMENT		8	1	0	Date	SEPT/2018
		COOLING 5.0 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	1/8" = 1'-0"
		FAN SPEED 1955 cfm @ 0.6" w.c.								BCIN# 19669	
										LO#	79981



GROUND FLOOR PLAN, EL.'C'



GROUND FLOOR PLAN, EL.'A'

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.

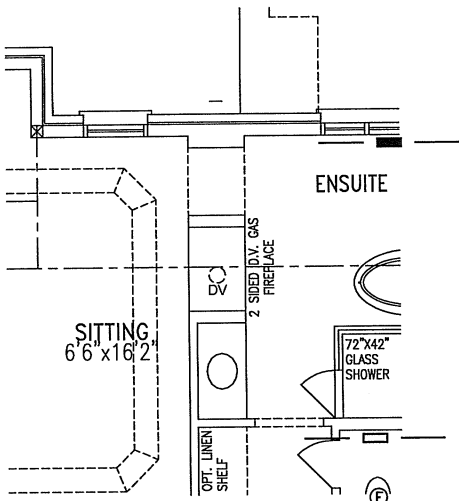
CSA-F280-12

WOB PACKAGE A1

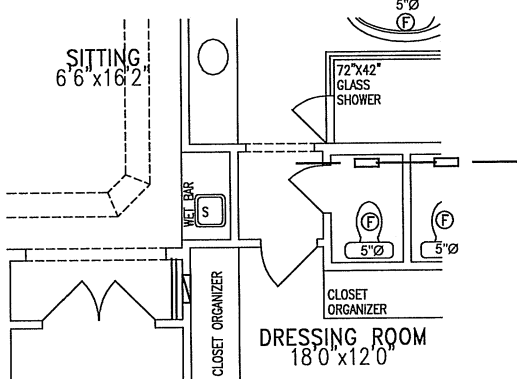
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

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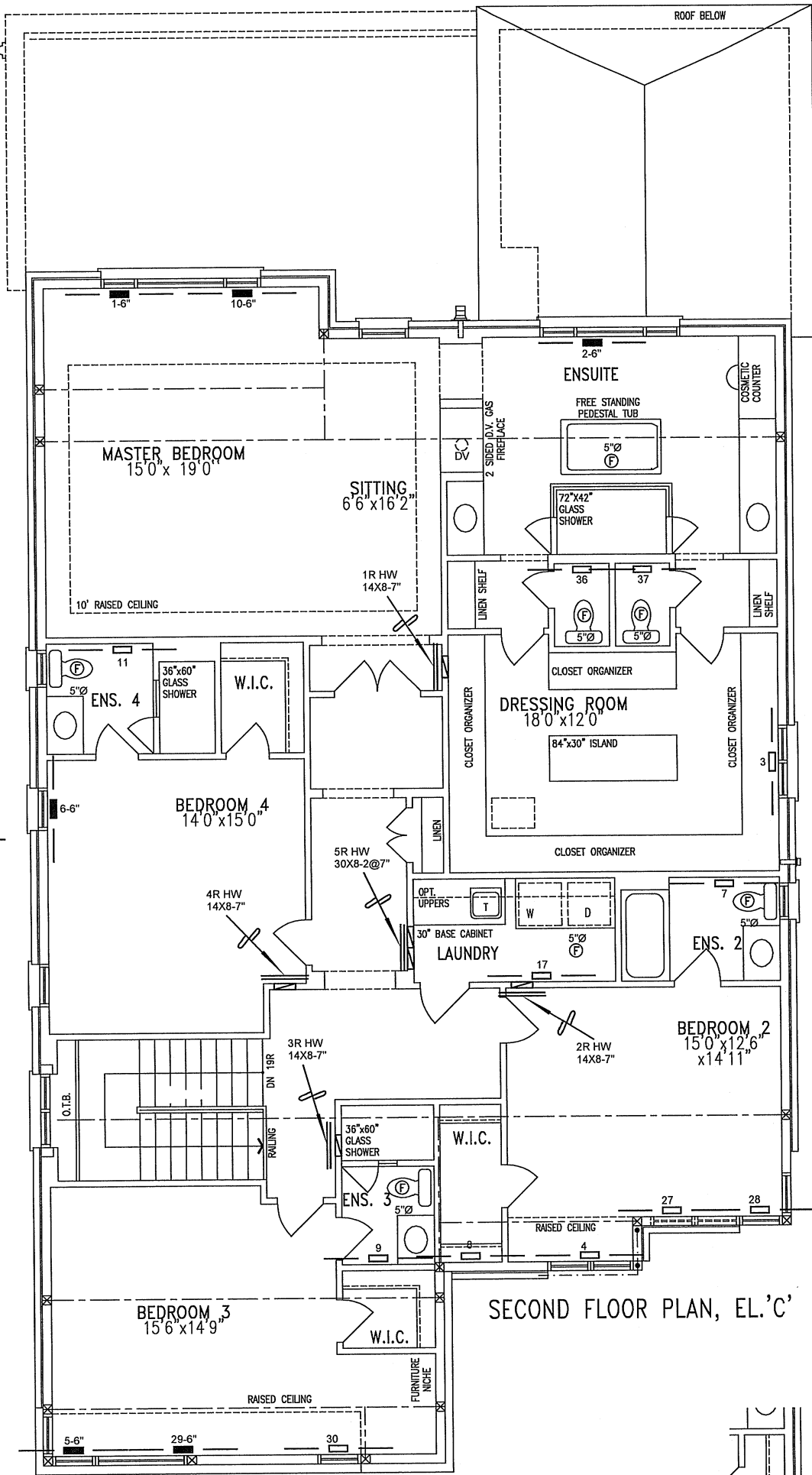
Client		<div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. 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.</div>	Sheet Title	
GOLDPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
KNIGHTSWOOD - WOB			BCIN# 19669	
5005	4472 sqft		LO#	79981



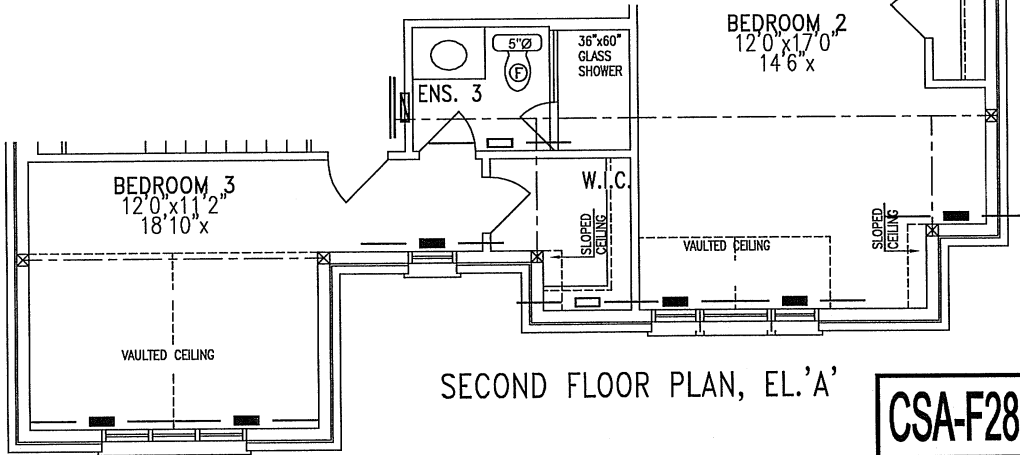
PART. SECOND FLOOR PLAN
OPT. SITTING AREA FIREPLACE



PART. SECOND FLOOR PLAN
OPT. SITTING AREA WET BAR



SECOND FLOOR PLAN, EL.'C'



SECOND FLOOR PLAN, EL.'A'

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.

CSA-F280-12

WOB PACKAGE A1

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
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GOLDPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2018
PINE VALLEY & TESTON VAUGHAN, ONTARIO			Scale	1/8" = 1'-0"
KNIGHTSWOOD - WOB			BCIN# 19669	
5005			LO#	79981
4472 sqft				