

SITE NAME: STAR TIME			TYPE: ELMBROOK 10A		DATE: Jan-17		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		HEAT GAIN AT °F.	
BUILDING: GREENPARK HOMES			GFA: 1928		LO# 71728		SUMMER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		HEAT GAIN AT °F.	
ROOM USE			ENS		BED-2		BED-3		BED-4		BATH	
EXP. WALL			MBR		BED-2		BED-3		BED-4		BATH	
CLG. HT.			8		12		30		15		9	
			9		10		10		10		9	
FACTORS			72		120		300		150		81	
GRS.WALL AREA			LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
GLAZING			0		18		18		0		0	
NORTH			21.3 16.9		383 304		383 304		0 0		0 0	
EAST			21.3 42.4		24 511		468 371		0 0		0 0	
SOUTH			21.3 25.8		18 383		447 891		33 702		12 255	
WEST			21.3 42.4		0 0		0 0		0 0		0 0	
SKYLT.			37.2 103.1		0 0		0 0		0 0		0 0	
DOORS			25.2 5.3		0 0		0 0		0 0		0 0	
NET EXPOSED WALL			4.5 0.9		278 1241		117 522		110 69		308 65	
NET EXPOSED BSMT WALL ABOVE GR			3.6 0.8		0 0		0 0		0 0		0 0	
EXPOSED CLG			1.3 0.6		252 323		169 217		108 90		116 58	
NO ATTIC EXPOSED CLG			2.7 1.4		40 110		55 137		69 0		0 0	
EXPOSED FLOOR			2.6 0.5		165 421		89 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		1644		2347		1441		679	
SUBTOTAL HT LOSS			2458		1906		1647		1619		632	
SUB TOTAL HT GAIN			0.20 0.26		0.20 0.26		0.20 0.26		0.20 0.26		0.20 0.26	
LEVEL FACTOR / MULTIPLIER			649		434		620		381		179	
AIR CHANGE HEAT LOSS			186		66		160		158		62	
AIR CHANGE HEAT GAIN			0		208		0		0		0	
DUCT LOSS			0		139		0		0		0	
DUCT GAIN			2		480		240		1		0	
HEAT GAIN PEOPLE			400		400		400		400		400	
HEAT GAIN APPLIANCES/LIGHTS			3107		2285		2967		1822		858	
TOTAL HT LOSS BTU/H			3863		1953		3181		3142		1427	
TOTAL HT GAIN x 1.3 BTU/H			1254		1254		1254		1254		1254	

ROOM USE	LVDN	FACTORS	KTIFM	WIR	FOY	LIBR	WOD	BAS
EXP. WALL	32	GRS.WALL AREA GLAZING FACTORS LOSS GAIN	38	8	14	38	20	156
CLG. HT.	10		10	10	10	10	9	9
	320		380	80	140	380	180	1161
	LOSS GAIN		LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	0		0	0	0	0	6	128
EAST	21.3		42.4	28	596	1189	123	101
SOUTH	21.3		25.8	82	1745	2115	11	234
WEST	21.3		42.4	0	0	0	0	0
SKYLT.	37.2		103.1	0	0	0	0	0
DOORS	25.2		5.3	0	0	0	0	0
NET EXPOSED WALL	4.5	0.9	270	1205	254	336	1499	316
NET EXPOSED BSMT WALL ABOVE GR	3.6	0.8	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.4	0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.5	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	3209
SUBTOTAL HT LOSS	2533		3546	542	1682	2436	538	4716
SUB TOTAL HT GAIN	2090		3557	532	582	1339	188	392
LEVEL FACTOR / MULTIPLIER	0.30	0.34	0.30	0.30	0.34	0.30	0.34	0.50
AIR CHANGE HEAT LOSS	871	1219	186	578	578	837		1.17
AIR CHANGE HEAT GAIN	203	346	52	52	57	130		6153
DUCT LOSS	0	0	0	0	0	0		56
DUCT GAIN	0	0	0	0	0	0		0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	400	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	3404	4765	400	728	2260	3273	538	10870
TOTAL HT GAIN x 1.3 BTU/H	3502	5595	5595	759	830	2431	244	582

TOTAL HEAT GAIN BTU/H:	23391	TONS:	2.45	LOSS DUE TO VENTILATION LOAD BTU/H:	2852
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TOTAL COMBINED HEAT LOSS BTU/H: 40682

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

SITE NAME: STAR TIME
BUILDER: GREENPARK HOMES

TYPE: ELMBROOK 10A

DATE: Jan-17

GFA: 1928 LO# 71728

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT GAIN 28,791
AIR FLOW RATE CFM 39,28

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	7	4
R/A	0	0	4	2	1

All S/A diffusers 4"x10" 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	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MBR	1.55	0.95	0.95	2.29	1.48	1.82	0.86	0.86	1.46	1.55	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
RM LOSS MBH	46	29	29	68	44	54	26	26	44	46	51	51	51	51	51	51	51	51	51	51	51	51	51	51
CFM PER RUN HEAT	1.93	1.25	1.25	1.98	1.59	3.14	1.42	1.42	1.59	1.93	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
RM GAIN MBH	76	49	49	78	62	123	56	56	62	76	69	69	69	69	69	69	69	69	69	69	69	69	69	69
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.15	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
ADJUSTED PRESSURE	0.11	0.09	0.09	0.08	0.07	0.08	0.08	0.08	0.07	0.09	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
EQUIVALENT LENGTH	130	150	150	160	190	170	170	170	180	160	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ACTUAL DUCT LGH	22	36	36	57	65	33	55	55	60	30	18	18	18	18	18	18	18	18	18	18	18	18	18	18
TOTAL EFFECTIVE LENGTH	152	186	186	217	255	183	225	225	240	190	118	118	118	118	118	118	118	118	118	118	118	118	118	118
ADJUSTED PRESSURE	0.11	0.09	0.09	0.08	0.07	0.08	0.08	0.08	0.07	0.09	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
ROUND DUCT SIZE	5	4	4	5	5	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HEATING VELOCITY (ft/min)	338	333	333	499	323	275	191	191	323	338	585	585	585	585	585	585	585	585	585	585	585	585	585	585
COOLING VELOCITY (ft/min)	558	562	562	573	455	627	411	411	455	558	792	792	792	792	792	792	792	792	792	792	792	792	792	792
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	D	D	D	B	A	C	B	B	A	C	C	C	B	B	D	D	D	B	B	A	D	C	A	B

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
RM LOSS MBH	46	29	29	68	44	54	26	26	44	46	51	51	51	51	51	51	51	51	51	51	51	51	51	51
CFM PER RUN HEAT	1.93	1.25	1.25	1.98	1.59	3.14	1.42	1.42	1.59	1.93	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
RM GAIN MBH	76	49	49	78	62	123	56	56	62	76	69	69	69	69	69	69	69	69	69	69	69	69	69	69
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.15	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
ADJUSTED PRESSURE	0.11	0.09	0.09	0.08	0.07	0.08	0.08	0.08	0.07	0.09	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
EQUIVALENT LENGTH	130	150	150	160	190	170	170	170	180	160	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ACTUAL DUCT LGH	22	36	36	57	65	33	55	55	60	30	18	18	18	18	18	18	18	18	18	18	18	18	18	18
TOTAL EFFECTIVE LENGTH	152	186	186	217	255	183	225	225	240	190	118	118	118	118	118	118	118	118	118	118	118	118	118	118
ADJUSTED PRESSURE	0.11	0.09	0.09	0.08	0.07	0.08	0.08	0.08	0.07	0.09	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
ROUND DUCT SIZE	5	4	4	5	5	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HEATING VELOCITY (ft/min)	338	333	333	499	323	275	191	191	323	338	585	585	585	585	585	585	585	585	585	585	585	585	585	585
COOLING VELOCITY (ft/min)	558	562	562	573	455	627	411	411	455	558	792	792	792	792	792	792	792	792	792	792	792	792	792	792
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	D	D	D	B	A	C	B	B	A	C	C	C	B	B	D	D	D	B	B	A	D	C	A	B

TRUNK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TRUNK A	271	0.07	8.9	10	10	8	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUNK B	591	0.07	11.9	16	16	8	665	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUNK C	827	0.07	13.5	22	22	8	677	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUNK D	302	0.08	9	10	10	8	544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUNK E	0	0.00	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUNK F	0	0.00	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	165	155	75	75	320	155	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	42	55	74	76	21	47	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	175	185	205	205	135	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	217	240	279	281	156	222	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.06	0.05	0.05	0.09	0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROUND DUCT SIZE	7.4	7.5	6	6	8.9	7.2	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: ELMBROOK 10A
SITE NAME: STAR TIME

LO # 71728

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	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	169.6 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
More than 5 - Part 6	TOTAL	79.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	169.6	cfm
Less Principal Ventil. Capacity	139	cfm
Required Supplemental Capacity	30.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	VANEE 60H-V+ Location: BSMT		
139.0 cfm	3.0 sones ☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
139.0 CFM	76 F	1.08	0.25

SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
BATH	QTXEN050C	50	☒	0.3
W/R	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 60H-V+	
139 cfm high	50 cfm low	
75 % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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

BUILDER: GREENPARK 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:	January-17

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																			
LO#: 71728		Model: ELMBROOK 10A		Builder: GREENPARK HOMES		Date: 1/12/2017																																																													
Volume Calculation				Air Change & Delta T Data																																																															
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> <tr> <td>Bsmt</td> <td>914</td> <td>9</td> <td>8226</td> </tr> <tr> <td>First</td> <td>914</td> <td>10</td> <td>9140</td> </tr> <tr> <td>Second</td> <td>1014</td> <td>9</td> <td>9126</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">Total:</td> <td></td> <td>26,492.0 ft³</td> </tr> <tr> <td colspan="2">Total:</td> <td></td> <td>750.2 m³</td> </tr> </table>				Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	914	9	8226	First	914	10	9140	Second	1014	9	9126	Third	0	9	0	Fourth	0	9	0	Total:			26,492.0 ft³	Total:			750.2 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">WINTER NATURAL AIR CHANGE RATE</td> <td>0.342</td> </tr> <tr> <td colspan="2">SUMMER NATURAL AIR CHANGE RATE</td> <td>0.122</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <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>-20</td> <td>42</td> </tr> <tr> <td>Summer DTDc</td> <td>22</td> <td>31</td> <td>9</td> </tr> <tr> <td></td> <td></td> <td></td> <td>16</td> </tr> </table>						WINTER NATURAL AIR CHANGE RATE		0.342	SUMMER NATURAL AIR CHANGE RATE		0.122	Design Temperature Difference				Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-20	42	Summer DTDc	22	31	9				16
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																																
Bsmt	914	9	8226																																																																
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5.2.3.1 Heat Loss due to Air Leakage				6.2.6 Sensible Gain due to Air Leakage																																																															
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$				$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																															
0.342 x 208.38 x 42 °C x 1.2 = 3607 W				= 0.122 x 208.38 x 9 °C x 1.2 = 271 W																																																															
= 12307 Btu/h				= 926 Btu/h																																																															
5.2.3.2 Heat Loss due to Mechanical Ventilation				6.2.7 Sensible heat Gain due to Ventilation																																																															
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$				$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																															
139 CFM x 76 °F x 1.08 x 0.25 = 2852 Btu/h				139 CFM x 16 °F x 1.08 x 0.25 = 600 Btu/h																																																															
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																			
$HL_{airrr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																			
<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: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">12,307</td> <td>5,254</td> <td>1.171</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>10,739</td> <td>0.344</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>9,323</td> <td>0.264</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: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	12,307	5,254	1.171	2	0.3	10,739	0.344	3	0.2	9,323	0.264	4	0	0	0.000	5	0	0	0.000	*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairrv = 0																																					
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)																																																															
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4	0		0	0.000																																																															
5	0		0	0.000																																																															

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: ELMBROOK 10A	BUILDER: GREENPARK HOMES
SFQT: 1928	LO# 71728
	SITE: STAR TIME

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

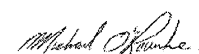
ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	26492.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED 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: 58.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	101.0 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	29.8
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	11.13
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	-

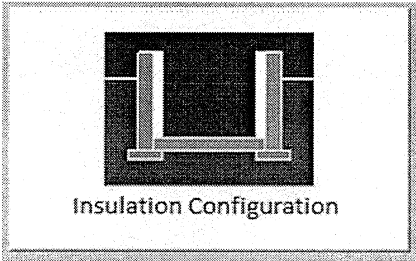
INDIVIDUAL BCIN: 19669

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):	17.7	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	30.8	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.8	
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):		940

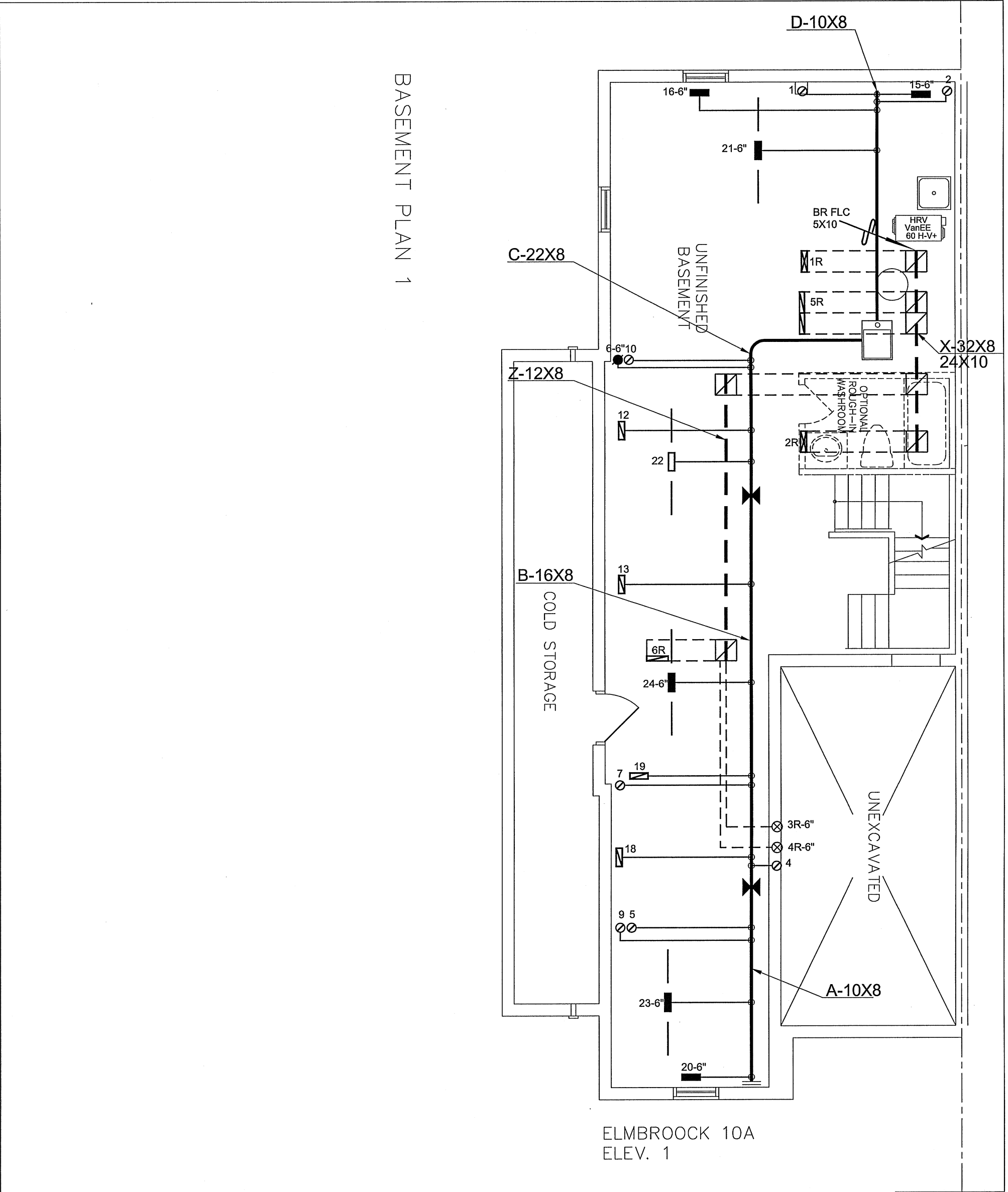
TYPE: ELMBROOK 10A
LO# 71728

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:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	750.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1000.0 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	65.6	65.6		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.342			
Cooling Air Leakage Rate (ACH/H):	0.122			

TYPE: ELMBROOK 10A
LO# 71728



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.

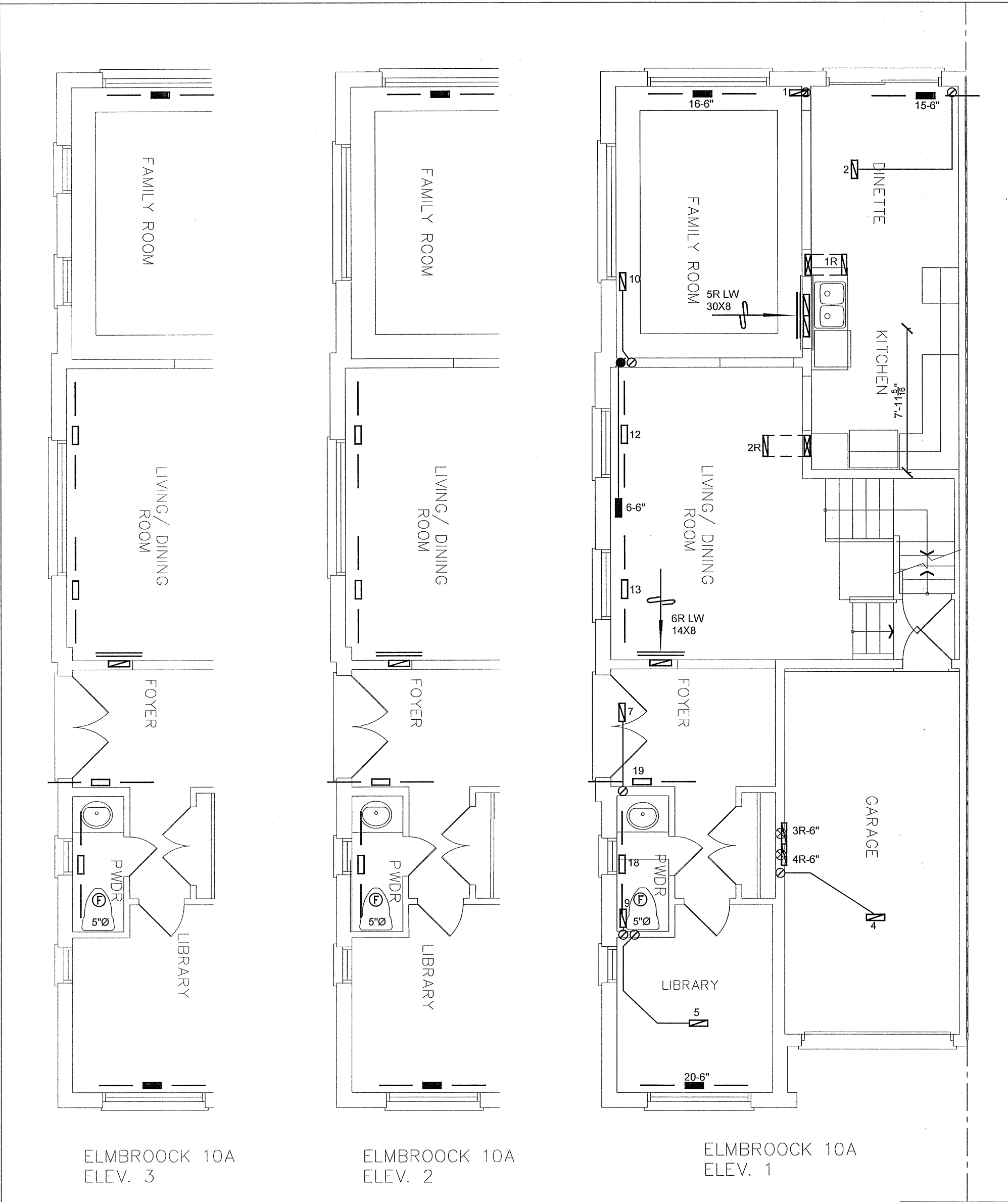
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
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		 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	HEAT LOSS 40682 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GREENPARK HOMES			MAKE AMEC960603BNA-60				BASEMENT HEATING LAYOUT		
Project Name			MODEL AMANA				Date		
STAR TIME VAUGHAN, ONTARIO			INPUT 60 MBTU/H				Scale		
			OUTPUT 57.6 MBTU/H	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			BCIN# 19669		
		COOLING 2.5 TONS				LO#			
ELMBROOK 10A 1928 sqft		FAN SPEED 1131 cfm @ 0.6" w.c.				71728			



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HVAC DESIGNS LTD.

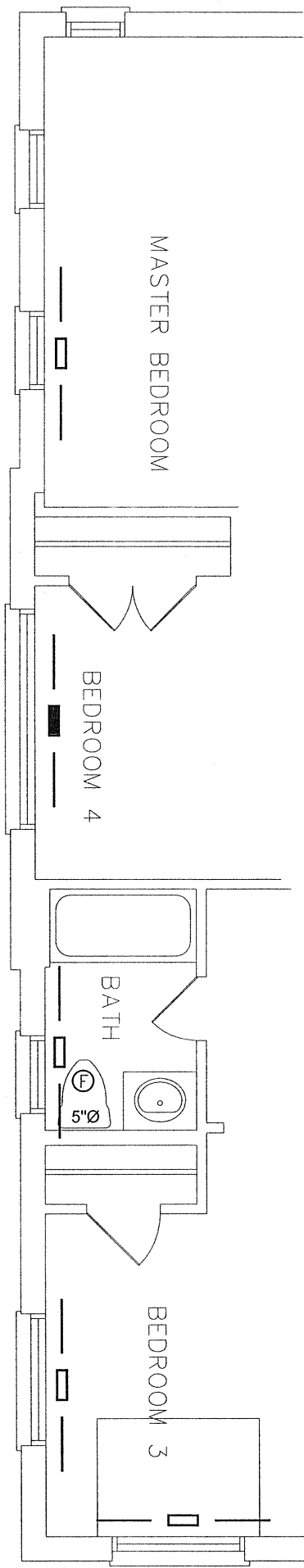
GROUND FLOOR PLAN 1

CSA-F280-12
PACKAGE A1

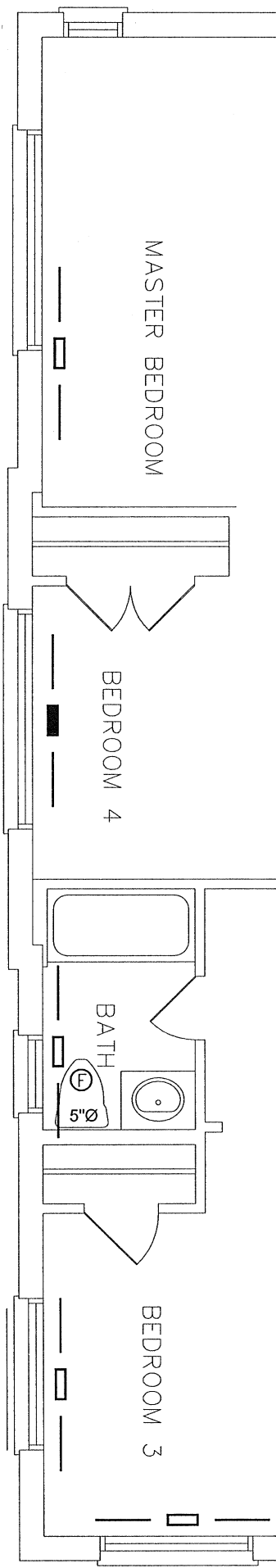
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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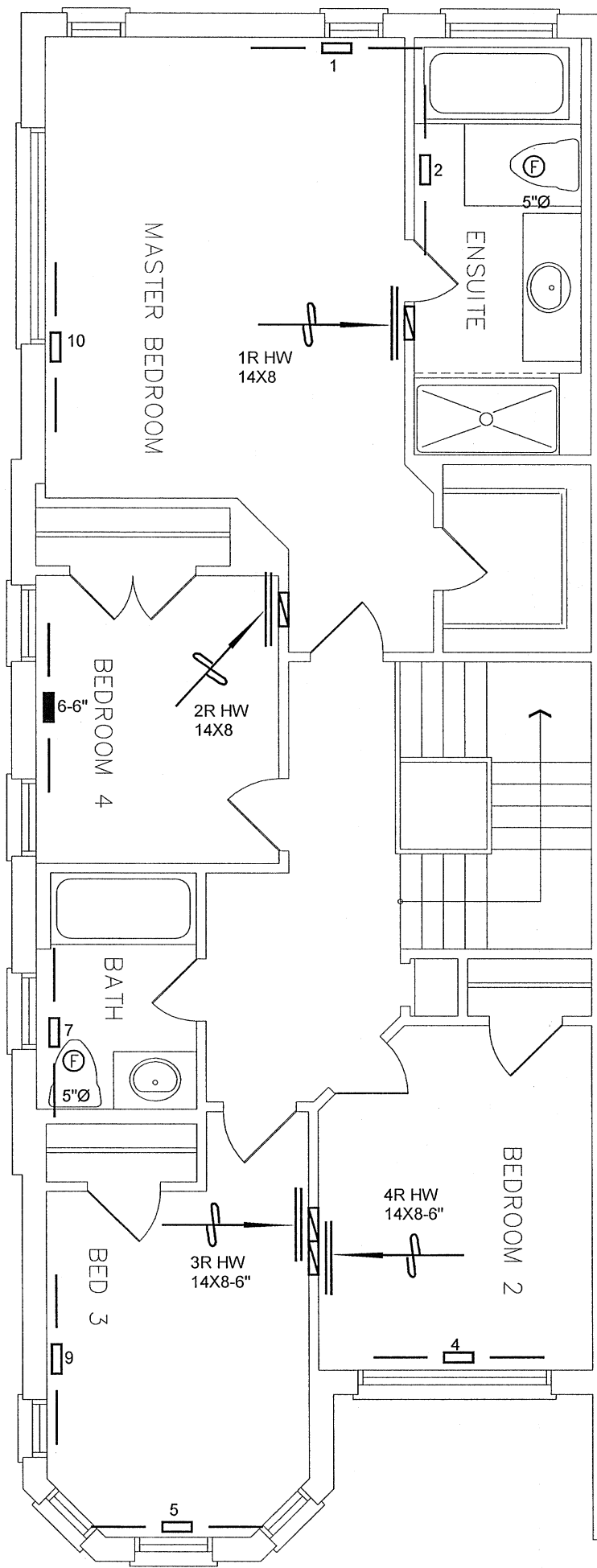
Client GREENPARK HOMES		 375 Finley Ave, Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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 STAR TIME VAUGHAN, ONTARIO			Date JAN/2017	
ELMBROOK 10A 1928 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 71728	



ELMBROOCK 10A
ELEV. 3



ELMBROOCK 10A
ELEV. 2



ELMBROOCK 10A
ELEV. 1

SECOND FLOOR PLAN 1

CSA-F280-12
PACKAGE A1

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

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
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							REVISIONS		

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Project Name STAR TIME VAUGHAN, ONTARIO			Date JAN/2017	
ELMBROOK 10A 1928 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	71728