

NOT THE GRANTING OF A PERMIT NOR REVIEWING OF SPECS
& DRAWINGS NOR INSPECTIONS MADE DURING INSTALLATION
BY THE OFFICIAL HAVING JURISDICTION SHALL RELIEVE THE
OWNER FROM REQUIREMENTS OF THE ONTARIO BUILDING
CODE AND ANY OTHER REFERENCED REQUIREMENTS.

Block 122 Units 37 to 42

SITE NAME: BARLASSINA										DATE: Aug-22										WINTER NATURAL AIR CHANGE RATE 0.319										HEAT LOSS ΔT °F. 72										CSA-F280-12																													
BUILDER: GREENPARK HOMES										TYPE: WILLOW 12										GFA: 2330										LO# 98656										SUMMER NATURAL AIR CHANGE RATE 0.085										HEAT GAIN ΔT °F. 9										SB-12 PACKAGE A1									
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		MEDIA		BATH																																																							
EXP. WALL		33		15		7		11		37		0		18																																																							
CLG. HT.		9		9		9		9		9		9		9																																																							
FACTORS																																																																					
GRS.WALL AREA		LOSS GAIN		297		135		63		533		0		162																																																							
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN																																									
NORTH		20.3	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																								
EAST		20.3	40.5	0	0	0	0	0	0	0	0	18	365	730	36	730	1460	0	0	0	0	0	0	0	0	0	0	0	0																																								
SOUTH		20.3	23.9	24	487	573	0	0	0	12	243	287	0	0	0	24	487	573	0	0	0	30	608	717	0	0	0	0	0																																								
WEST		20.3	40.5	27	547	1095	18	365	730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
SKYLT.		35.5	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
DOORS		19.1	2.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
NET EXPOSED WALL		4.3	0.5	246	1046	133	117	497	63	51	217	28	81	344	44	273	1161	147	0	0	0	132	561	71	0	0	0	0																																									
NET EXPOSED BSMT WALL ABOVE GR		3.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
EXPOSED CLG		1.2	0.5	238	291	125	152	186	80	56	68	30	176	215	93	195	238	103	256	313	135	143	175	75	0	0	0	0																																									
NO ATTIC EXPOSED CLG		2.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
EXPOSED FLOOR		2.4	0.3	0	0	0	0	0	0	0	0	0	176	428	54	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
BASEMENT/CRAWL HEAT LOSS																																																																					
SLAB ON GRADE HEAT LOSS																																																																					
SUBTOTAL HT LOSS				2371		1048		529		1352		2615		313		1344																																																					
SUB TOTAL HT GAIN				1926		873		344		921		2283		135		863																																																					
LEVEL FACTOR / MULTIPLIER		0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26																																																		
AIR CHANGE HEAT LOSS				613		271		137		350		676		81		348																																																					
AIR CHANGE HEAT GAIN				75		34		13		36		89		5		33																																																					
DUCT LOSS				0		0		0		170		0		0		0																																																					
DUCT GAIN				0		0		0		168		0		0		0																																																					
HEAT GAIN PEOPLE		240		2	480	0	0	0	0	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																									
HEAT GAIN APPLIANCES/LIGHTS				482		0		0		482		482		482		482																																																					
TOTAL HT LOSS BTU/H				2984		1319		665		1872		3292		394		1692																																																					
TOTAL HT GAIN x 1.3 BTU/H				3852		1179		464		2400		4022		809		1166																																																					

ROOM USE			L/D		KT/BF		FAM		LAUN		W/R		FOY		MUD										BAS	
EXP. WALL			50		16		33		8		14		18		5										133	
CLG. HT.			10		10		10		9		10		10		10										9	
FACTORS																										
GRS.WALL AREA	LOSS	GAIN	500		160		330		72		140		180		50										798	
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.3	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.3	40.5	34	689	1378	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	81	162
SOUTH	20.3	23.9	30	608	717	0	0	0	45	912	1075	12	243	287	15	304	358	30	608	717	0	0	0	8	162	191
WEST	20.3	40.5	0	0	0	15	304	608	36	730	1460	0	0	0	0	0	0	0	0	0	0	0	4	81	162	
SKYLT.	35.5	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOORS	19.1	2.4	0	0	0	20	382	49	0	0	0	0	0	0	0	0	0	18	344	44	20	382	49	21	401	51
NET EXPOSED WALL	4.3	0.5	436	1854	236	125	531	68	249	1059	135	60	255	32	125	531	68	132	561	71	30	128	16	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	399	1368	174	
EXPOSED CLG	1.2	0.5	0	0	0	0	0	0	0	0	0	98	120	52	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EXPOSED FLOOR	2.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS																										
SLAB ON GRADE HEAT LOSS																										
SUBTOTAL HT LOSS					3151		1218			2701			618			835			1513			510				
SUB TOTAL HT GAIN						2331		724			2669		371			426			832			65				740
LEVEL FACTOR / MULTIPLIER			0.30	0.40		0.30	0.40		0.30	0.40		0.20	0.26		0.30	0.40		0.30	0.40		0.30	0.40		0.50	1.03	
AIR CHANGE HEAT LOSS					1255		485			1075			160			333			603			203				6589
AIR CHANGE HEAT GAIN						90		28			104		14			17			32			3				29
DUCT LOSS						0		0			0		0			0			0			0				0
DUCT GAIN						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						482		482			0		482			0			0			482				482
TOTAL HT LOSS BTU/H					4406		1702			3776			778			1168			2116			713				12989
TOTAL HT GAIN x 1.3 BTU/H						3775		1605			3605		1128			575			1123			714				1627

TOTAL HEAT GAIN BTU/H:

28203

TONS: 2.35

LOSS DUE TO VENTILATION LOAD BTU/H: 1243

STRUCTURAL HEAT LOSS: 39866

TOTAL COMBINED HEAT LOSS BTU/H: 41109



SITE NAME: BARLASSINA

BUILDER: GREENPARK HOMES

TYPE: WILLOW 12

DATE: Aug-22

GFA: 2330

LO# 98656

HEATING CFM 928 COOLING CFM 928
TOTAL HEAT LOSS 39,866 TOTAL HEAT GAIN 28,045
AIR FLOW RATE CFM 23.28 AIR FLOW RATE CFM 33.09

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

#GOODMAN
GMEC960603BNA 60

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	4
R/A	0	0	4	1	1

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.01 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.17 adjusted pressure r/a 0.15

MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = 928
CFM @ .6" E.S.P.

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

All S/A runs 5"Ø 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	BATH	BED-2	BED-3	MEDIA	BATH	BED-2	BED-3	MBR	L/D	WIC	L/D	FAM	FAM	KT/BF	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.49	1.32	0.85	0.94	1.65	0.39	0.85	0.94	1.65	1.49	2.20	0.67	2.20	1.89	1.89	1.70	0.78	1.17	2.12	0.71	3.25	3.25	3.25	3.25
CFM PER RUN HEAT	35	31	20	22	38	9	20	22	38	35	51	15	51	44	44	40	18	27	49	17	76	76	76	76
RM GAIN MBH.	1.93	1.18	0.58	1.20	2.01	0.81	0.58	1.20	2.01	1.93	1.89	0.46	1.89	1.80	1.80	1.61	1.13	0.58	1.12	0.71	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	64	39	19	40	67	27	19	40	67	64	62	15	62	60	60	53	37	19	37	24	13	13	13	13
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	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	50	40	42	47	55	37	35	49	68	40	45	33	42	26	33	25	46	33	24	12	29	18	22	39
EQUIVALENT LENGTH	180	180	150	210	180	190	220	190	220	140	110	220	120	100	90	110	150	90	140	150	90	110	130	120
TOTAL EFFECTIVE LENGTH	230	220	192	257	235	227	255	239	288	180	155	253	162	126	123	135	196	123	164	162	119	128	152	159
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.07	0.08	0.07	0.07	0.06	0.1	0.11	0.07	0.11	0.14	0.14	0.13	0.09	0.14	0.1	0.11	0.14	0.13	0.11	0.11
ROUND DUCT SIZE	6	4	4	5	6	4	4	5	6	5	5	4	5	5	5	5	4	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	178	356	229	162	194	103	229	162	194	257	374	172	374	323	323	294	207	310	562	195	558	558	558	558
COOLING VELOCITY (ft/min)	326	447	218	294	342	310	218	294	342	470	455	172	455	441	441	389	424	218	424	275	95	95	95	95
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	B	A	A	B	B	A	A	C	A	B	A	D	D	C	B	B	B	D	D	D	B	A

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	298	0.06	9.6	12	x 8	447	TRUNK G	0	0.00	0	0 x 8 0
TRUNK B	532	0.06	11.9	16	x 8	599	TRUNK H	0	0.00	0	0 x 8 0
TRUNK C	141	0.07	7	8	x 8	317	TRUNK I	0	0.00	0	0 x 8 0
TRUNK D	398	0.07	10.3	12	x 8	597	TRUNK J	0	0.00	0	0 x 8 0
TRUNK E	0	0.00	0	0	x 8	0	TRUNK K	0	0.00	0	0 x 8 0
TRUNK F	0	0.00	0	0	x 8	0	TRUNK L	0	0.00	0	0 x 8 0

RETURN AIR TRUNK SIZE

REPORT AIR FLOW						
ITY	TRUNK	STATIC	ROUND	RECT		VELOCITY
(n)	CFM	PRESS.	DUCT	DUCT		(ft/min)
	TRUNK O	0	0.05	0	0	x 8 0
	TRUNK P	0	0.05	0	0	x 8 0
	TRUNK Q	0	0.05	0	0	x 8 0
	TRUNK R	0	0.05	0	0	x 8 0
	TRUNK S	0	0.05	0	0	x 8 0
	TRUNK T	0	0.05	0	0	x 8 0
	TRUNK U	0	0.05	0	0	x 8 0
	TRUNK V	0	0.05	0	0	x 8 0
	TRUNK W	0	0.05	0	0	x 8 0
	TRUNK X	928	0.05	15.3	28	x 8 597
3	TRUNK Y	350	0.05	10.6	14	x 8 450
5	TRUNK Z	0	0.05	0	0	x 8 0
	DROP	928	0.05	15.3	24	x 10 557

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AIR VOLUME	120	120	115	115	330	0	0	0	0	0	0	0	0	0	0	128
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
ACTUAL DUCT LGH.	65	49	55	61	20	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	140	185	225	230	135	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	205	234	280	291	155	1	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.06	0.05	0.05	0.10	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.6	6.8	7	7	8.8	0	0	0	0	0	0	0	0	0	0	6.1
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	0	0	0	0	0	0	0	0	0	0	14

TYPE: WILLOW 12
SITE NAME: BARLASSINA

LO # 98656

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>5</u> @ 10.6 cfm	<u>53.0</u> cfm
Table 9.32.3.A.	TOTAL	<u>159.0</u> 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		<u>63.6</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>159</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>95.4</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE V150H
Location:	BSMT
<u>63.6</u> cfm	<input checked="" type="checkbox"/> HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	X 72 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
BATH	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
W/R	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency @ 32 deg F (0 deg C)	<input checked="" type="checkbox"/> HVI Approved	

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:	August-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 98656	Model: WILLOW 12	Builder: GREENPARK HOMES	Date: 2022-08-31																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1088</td> <td>9</td> <td>9792</td> </tr> <tr> <td>First</td> <td>1088</td> <td>10</td> <td>10880</td> </tr> <tr> <td>Second</td> <td>1242</td> <td>9</td> <td>11178</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>31,850.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>901.9 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1088	9	9792	First	1088	10	10880	Second	1242	9	11178	Third	0	9	0	Fourth	0	9	0	Total:			31,850.0 ft³	Total:			901.9 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.319</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.085</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-18</td> <td>40</td> <td>72</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>29</td> <td>5</td> <td>9</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.319	SUMMER NATURAL AIR CHANGE RATE	0.085	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-18	40	72	Summer DTDc	24	29	5	9
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.319 x 250.53 x 40 °C x 1.2 = 3862 W</p> <p>= 13178 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.085 x 250.53 x 5 °C x 1.2 = 130 W</p> <p>= 444 Btu/h</p>																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM x 72 °F x 1.08 x 0.25 = 1243 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM x 9 °F x 1.08 x 0.25 = 158 Btu/h</p>																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})																																																								
1	0.5	13,178	6,400	1.030																																																								
2	0.3		9,927	0.398																																																								
3	0.2		10,190	0.259																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
<p>*HLairbv = Air leakage heat loss + ventilation heat loss</p> <p>*For a balanced or supply only ventilation system HLairve = 0</p>																																																												
				<p>Michael O'Rourke BCIN# 19669</p>																																																								

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** WILLOW 12**BUILDER:** GREENPARK HOMES**SFQT:** 2330**LO#** 98656**SITE:** BARLASSINA**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	0	OUTDOOR DESIGN TEMP.	84
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

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 (ft ³):	31850.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 57.0 ft	WIDTH: 26.0 ft	EXPOSED PERIMETER:	133.0 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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

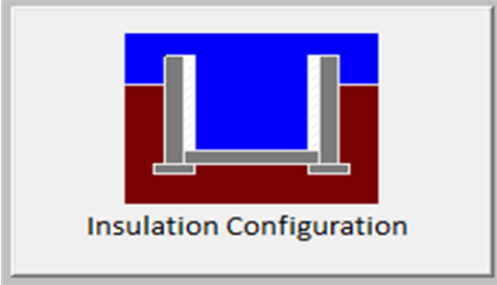
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Cambridge	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	17.4	 Insulation Configuration
Floor Width (m):	7.9	
Exposed Perimeter (m):	40.5	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.5	
Door Area (m ²):	2.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1262

TYPE: WILLOW 12

LO# 98656

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Cambridge			
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):	901.9			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1202.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.319			
Cooling Air Leakage Rate (ACH/H):	0.085			

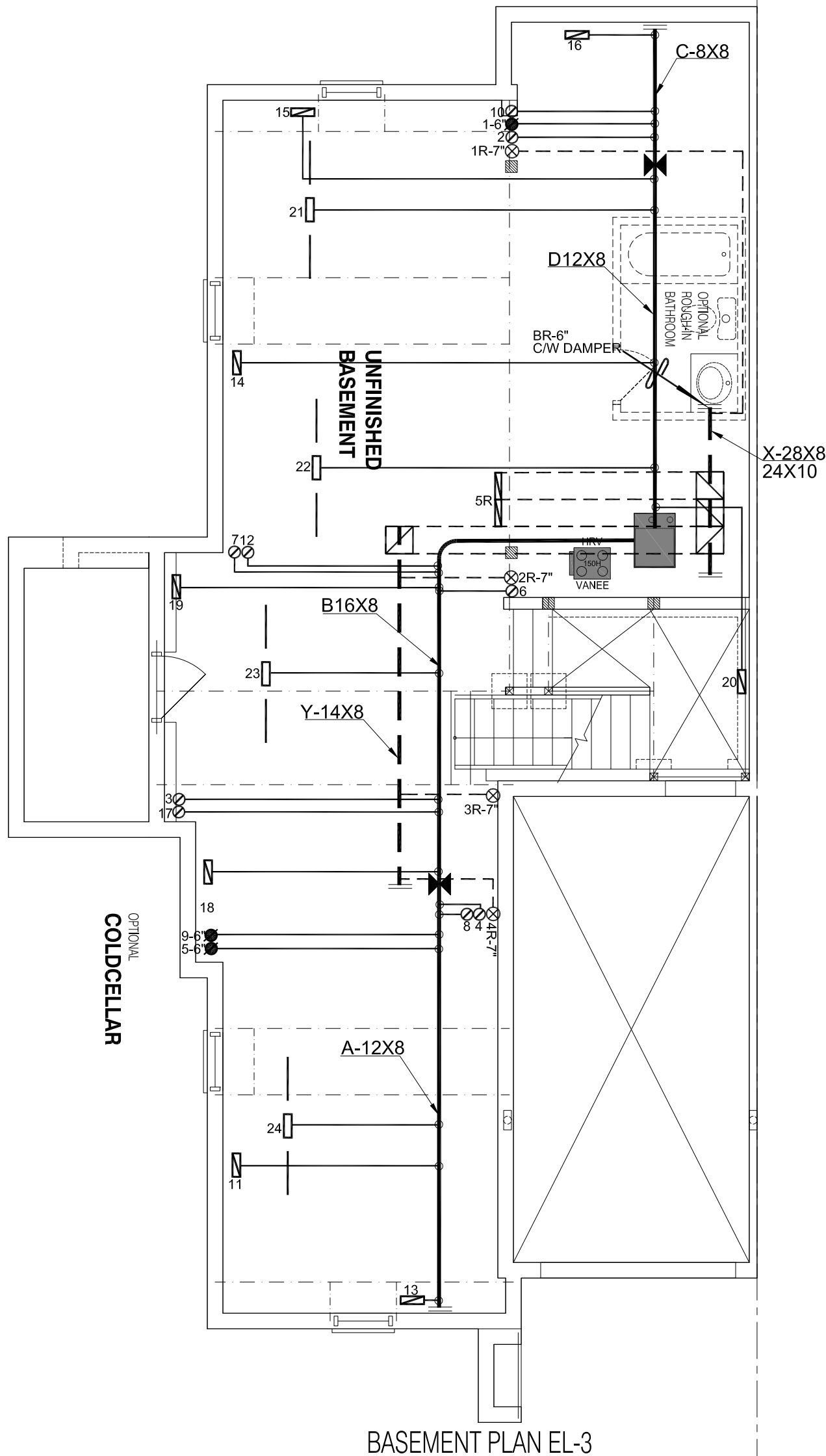
TYPE: WILLOW 12

LO# 98656

Michael O'Rourke BCIN# 19669



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BY THE OFFICIAL HAVING JURISDICTION SHALL RELIEVE THE
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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

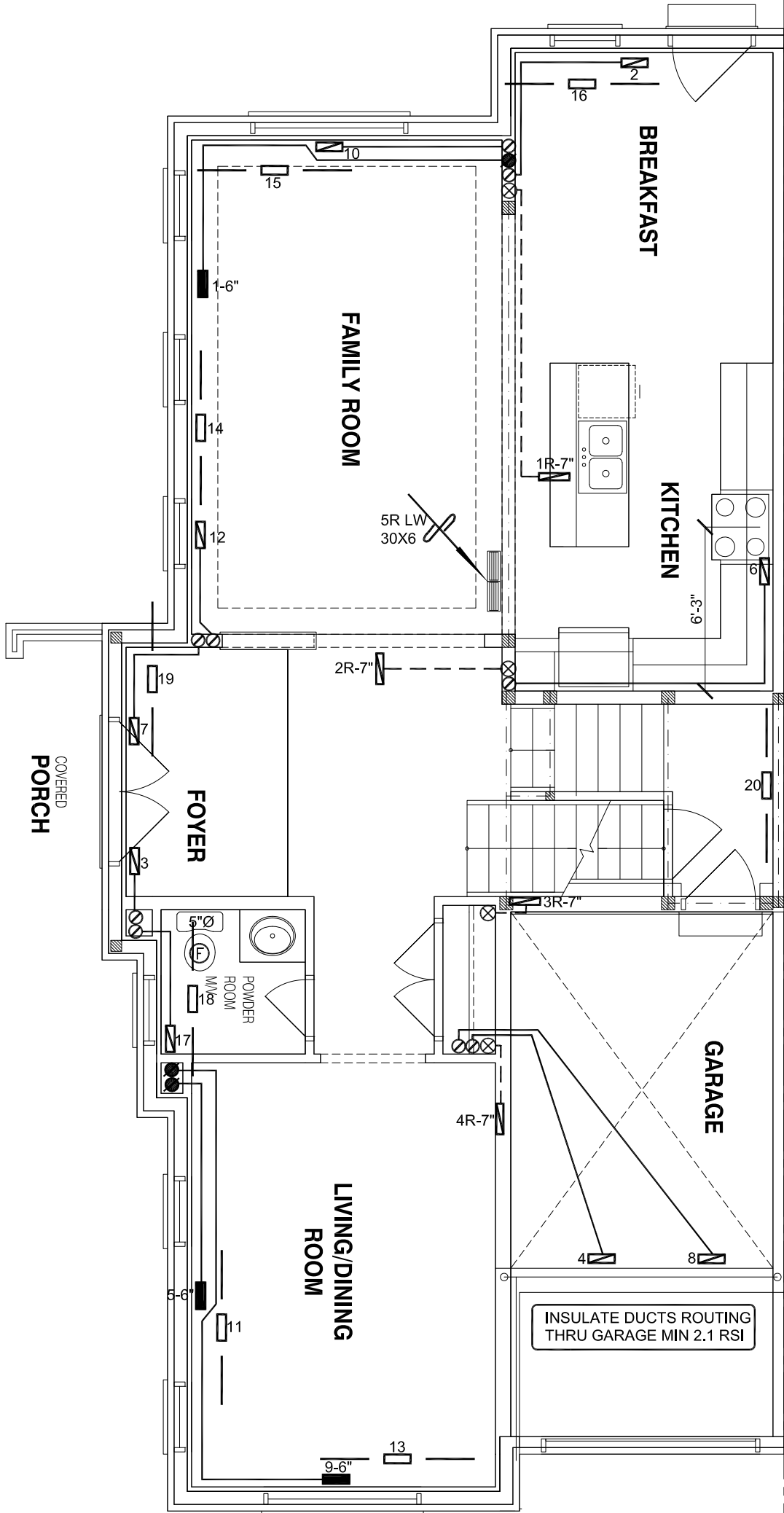
PACKAGE A1

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

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Client		<div><div><div>HVAC</div><div>DESIGNS</div></div><div>LTD.</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 41109 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
GREENPARK HOMES			MAKE	GOODMAN	3RD FLOOR			BASEMENT HEATING LAYOUT	
Project Name BARLASSINA CAMBRIDGE, ONTARIO			MODEL	GMEC960603BNA	2ND FLOOR	12	4	3	Date AUG/2022
Block 122 Units 37 to 42			INPUT	60 MBTU/H	1ST FLOOR	8	1	2	
			OUTPUT	57.6 MBTU/H	BASEMENT	4	1	0	
WILLOW 12 2330 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				BCIN# 19669	
		FAN SPEED	928 cfm @ 0.6" w.c.					LO#	98656

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FIRST FLOOR PLAN EL-3

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

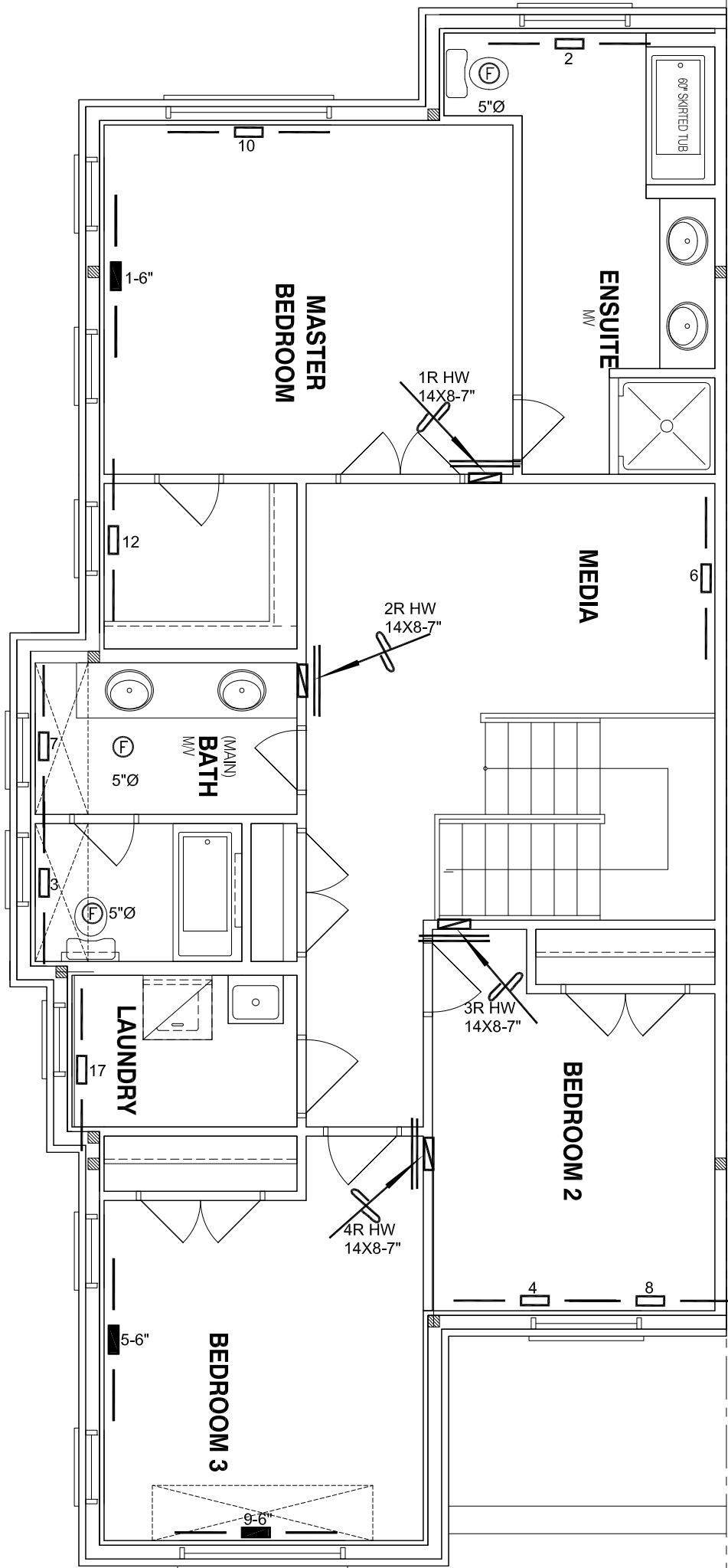
PACKAGE A1

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GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Block 122 Units 37 to 42			BCIN# 19669	
WILLOW 12	2330 sqft		LO#	98656

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SEC. FLOOR PLAN EL-3

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

CSA-F280-12

PACKAGE A1

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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Block 122 Units 37 to 42			BCIN# 19669	
WILLOW 12	2330 sqft		LO#	98656