

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 49 to 54

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 2										GFA: 1795										LO# 98654										SUMMER NATURAL AIR CHANGE RATE 0.085										HEAT GAIN ΔT °F. 9										SB-12 PACKAGE A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
ROOM USE		EXP. WALL		CLG. HT.		FACTORS		LOSS		GAIN		108		LOSS		GAIN		72		LOSS		GAIN		0		LOSS		GAIN		90		LOSS		GAIN		144		LOSS		GAIN		0		LOSS		GAIN		0		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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

ROOM USE					K/L/D				LAUN		PWD		FOY		MUD								BAS			
EXP. WALL					42				0		11		26		17								93			
CLG. HT.					10				9		10		10		10								9			
FACTORS																										
GRS.WALL AREA	LOSS	GAIN			420				0		110		260		170								558			
GLAZING					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	
EAST	20.3	40.5			0		0		0		0		0		14		284		568		0		0		0	
SOUTH	20.3	23.9			0		0		0		0		0		0		0		0		0		0		0	
WEST	20.3	40.5			44		892		1784		0		0		0		0		0		0		0		0	
SKYLT.	35.5	99.8			0		0		0		0		0		0		0		0		0		0		0	
DOORS	19.1	2.4			10		191		24		0		0		11		210		27		20		382		49	
NET EXPOSED WALL	4.3	0.5			366		1556		198		0		0		110		468		59		235		999		127	
NET EXPOSED BSMT WALL ABOVE GR	3.4	0.4			0		0		0		0		0		0		0		0		0		0		0	
EXPOSED CLG	1.2	0.5			0		0		0		42		51		22		0		0		0		0		0	
NO ATTIC EXPOSED CLG	2.6	1.1			0		0		0		0		0		0		0		0		0		0		0	
EXPOSED FLOOR	2.4	0.3			0		0		0		24		58		7		0		0		0		0		0	
BASEMENT/CRAWL HEAT LOSS					0						0						0								2815	
SLAB ON GRADE HEAT LOSS					0						0						0									
SUBTOTAL HT LOSS					2639						110						468						1493		1020	
SUB TOTAL HT GAIN							2006				30				59				721				130			
LEVEL FACTOR / MULTIPLIER	0.30	0.52			0.30		0.52				0.20		0.33				0.30		0.52				0.30		0.52	
AIR CHANGE HEAT LOSS					1369						36						243						775		529	
AIR CHANGE HEAT GAIN							124				2				4				45				8			
DUCT LOSS					0						15				0				0				0			
DUCT GAIN					0						49				0				0				0			
HEAT GAIN PEOPLE	240				0		0		0		0		0		0		0		0		0		0		0	
HEAT GAIN APPLIANCES/LIGHTS					459						459				0				0				0		459	
TOTAL HT LOSS BTU/H					4008						161				710				2268				1549			
TOTAL HT GAIN x 1.3 BTU/H					3365						701				82				996				179			

TOTAL HEAT GAIN BTU/H:

17474

TONS: 1.46

LOSS DUE TO VENTILATION LOAD BTU/H: 1243

STRUCTURAL HEAT LOSS: 26205

TOTAL COMBINED HEAT LOSS BTU/H: 27449



SITE NAME: BARLASSINA

BUILDER: GREENPARK HOMES

TYPE: WILLOW 2

DATE: Aug-22

GFA: 1795

LO# 98654

HEATING CFM 614 COOLING CFM 614
TOTAL HEAT LOSS 26,205 TOTAL HEAT GAIN 17,316
AIR FLOW RATE CFM 23.43 AIR FLOW RATE CFM 35.46

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

#GOODMAN
GMEC960302BNA 30

AFUE = 96 %
INPUT (BTU/H) = 30,000
OUTPUT (BTU/H) = 28,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	5	3
R/A	0	0	4	1	1

plenium pressure s/a 0.18
max s/a dif press. loss 0.01
min adjusted pressure s/a 0.17

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

FAN SPEED
LOW
MEDLOW
MEDIUM 614
MEDIUM HIGH
HIGH 895

DESIGN CFM = 614
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	14	15	17	18	19	20	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	MEDIA	BATH	BED-2	BED-3	MBR	K/L/D	K/L/D	LAUN	PWD	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	0.95	1.24	0.19	1.05	0.96	0.83	0.24	1.05	0.96	0.95	2.00	2.00	0.16	0.71	2.27	1.55	3.03	3.03	3.03
CFM PER RUN HEAT	22	29	5	25	22	19	6	25	22	22	47	47	4	17	53	36	71	71	71
RM GAIN MBH.	1.64	1.14	0.05	1.36	1.37	0.94	0.07	1.36	1.37	1.64	1.68	1.68	0.70	0.08	1.00	0.18	0.35	0.35	0.35
CFM PER RUN COOLING	58	41	2	48	48	33	3	48	48	58	60	60	25	3	35	6	12	12	12
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
ACTUAL DUCT LGH.	42	35	23	59	51	29	20	55	56	40	26	28	18	29	41	23	28	14	27
EQUIVALENT LENGTH	200	170	200	170	150	130	170	180	170	190	100	90	150	100	130	130	90	140	90
TOTAL EFFECTIVE LENGTH	242	205	223	229	201	159	190	235	226	230	126	118	168	129	171	153	118	154	117
ADJUSTED PRESSURE	0.07	0.08	0.08	0.08	0.09	0.11	0.09	0.07	0.08	0.07	0.14	0.15	0.1	0.13	0.1	0.11	0.15	0.11	0.15
ROUND DUCT SIZE	5	4	4	5	5	5	4	5	5	5	5	5	4	4	5	4	5	5	5
HEATING VELOCITY (ft/min)	162	333	57	184	162	140	69	184	162	162	345	345	46	195	389	413	521	521	521
COOLING VELOCITY (ft/min)	426	470	23	352	352	242	34	352	352	426	441	441	287	34	257	69	88	88	88
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	C	A	A	B	B	A	A	C	C	C	B	B	A	B	C	C	B

RUN #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	20	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	MEDIA	BATH	BED-2	BED-3	MBR	K/L/D	K/L/D	LAUN	PWD	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	0.95	1.24	0.19	1.05	0.96	0.83	0.24	1.05	0.96	0.95	2.00	2.00	0.16	0.71	2.27	1.55	3.03	3.03	3.03
CFM PER RUN HEAT	22	29	5	25	22	19	6	25	22	22	47	47	4	17	53	36	71	71	71
RM GAIN MBH.	1.64	1.14	0.05	1.36	1.37	0.94	0.07	1.36	1.37	1.64	1.68	1.68	0.70	0.08	1.00	0.18	0.35	0.35	0.35
CFM PER RUN COOLING	58	41	2	48	48	33	3	48	48	58	60	60	25	3	35	6	12	12	12
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
ACTUAL DUCT LGH.	42	35	23	59	51	29	20	55	56	40	26	28	18	29	41	23	28	14	27
EQUIVALENT LENGTH	200	170	200	170	150	130	170	180	170	190	100	90	150	100	130	130	90	140	90
TOTAL EFFECTIVE LENGTH	242	205	223	229	201	159	190	235	226	230	126	118	168	129	171	153	118	154	117
ADJUSTED PRESSURE	0.07	0.08	0.08	0.08	0.09	0.11	0.09	0.07	0.08	0.07	0.14	0.15	0.1	0.13	0.1	0.11	0.15	0.11	0.15
ROUND DUCT SIZE	5	4	4	5	5	5	4	5	5	5	5	5	4	4	5	4	5	5	5
HEATING VELOCITY (ft/min)	162	333	57	184	162	140	69	184	162	162	345	345	46	195	389	413	521	521	521
COOLING VELOCITY (ft/min)	426	470	23	352	352	242	34	352	352	426	441	441	287	34	257	69	88	88	88
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	C	A	A	B	B	A	A	C	C	C	B	B	A	B	C	C	B

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	RETURN AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY
	CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	147	0.07	7.1	8	x 8	331	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK B	300	0.07	9.2	12	x 8	450	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK C	314	0.07	9.4	10	x 8	565	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK D	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK E	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK F	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	20	21	22	23
AIR VOLUME	75	65	65	75	250	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
ACTUAL DUCT LGH.	44	63	62	62	11	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	215	230	225	185	175	0	0	0	0	0	0	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	259	293	287	247	186	1	1	1	1	1	1	1	1	1	1	1	1	1	234
ADJUSTED PRESSURE	0.06	0.05	0.05	0.06	0.08	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	5.7	5.7	5.7	5.7	8.3	0	0	0	0	0	0	0	0	0	0	0	0	0	6
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
INLET GRILL SIZE	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	24	0	0	0	0	0	0	0	0	0	0	0	0	0	14

TYPE: WILLOW 2
SITE NAME: BARLASSINA

LO # 98654

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	<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	☒ 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	☒	3.5
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
LAUN	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	50	☒	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	☒ 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:	August-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 98654		Model: WILLOW 2		Builder: GREENPARK HOMES																																																									
Date: 2022-08-30																																																													
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>733</td> <td>9</td> <td>6597</td> </tr> <tr> <td>First</td> <td>733</td> <td>10</td> <td>7330</td> </tr> <tr> <td>Second</td> <td>1062</td> <td>9</td> <td>9558</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>23,485.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>665.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	733	9	6597	First	733	10	7330	Second	1062	9	9558	Third	0	9	0	Fourth	0	9	0	Total:			23,485.0 ft³	Total:			665.0 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																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.319 x 184.73 x 40 °C x 1.2 = 2848 W = 9717 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.085 x 184.73 x 5 °C x 1.2 = 96 W = 327 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 72 °F x 1.08 x 0.25 = 1243 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 9 °F x 1.08 x 0.25 = 158 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
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 / HLlevel)																																																									
1	0.5	9,717	4,235	1.147																																																									
2	0.3		5,619	0.519																																																									
3	0.2		5,854	0.332																																																									
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 HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: WILLOW 2	BUILDER: GREENPARK HOMES
SFQT: 1795	SITE: BARLASSINA
LO# 98654	

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):	23485.0	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: 55.0 ft	WIDTH: 17.0 ft	EXPOSED PERIMETER:	93.0 ft

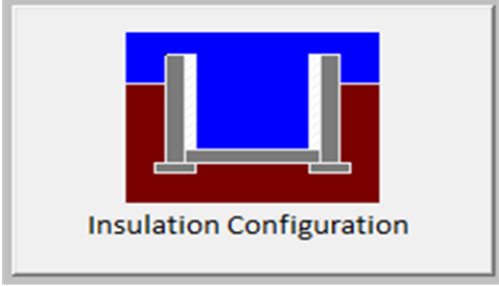
2012 OBC - COMPLIANCE PACKAGE

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):	16.8	 Insulation Configuration
Floor Width (m):	5.2	
Exposed Perimeter (m):	28.3	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.4	
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):		825

TYPE: WILLOW 2

LO# 98654

Air Infiltration Residential Load Calculator

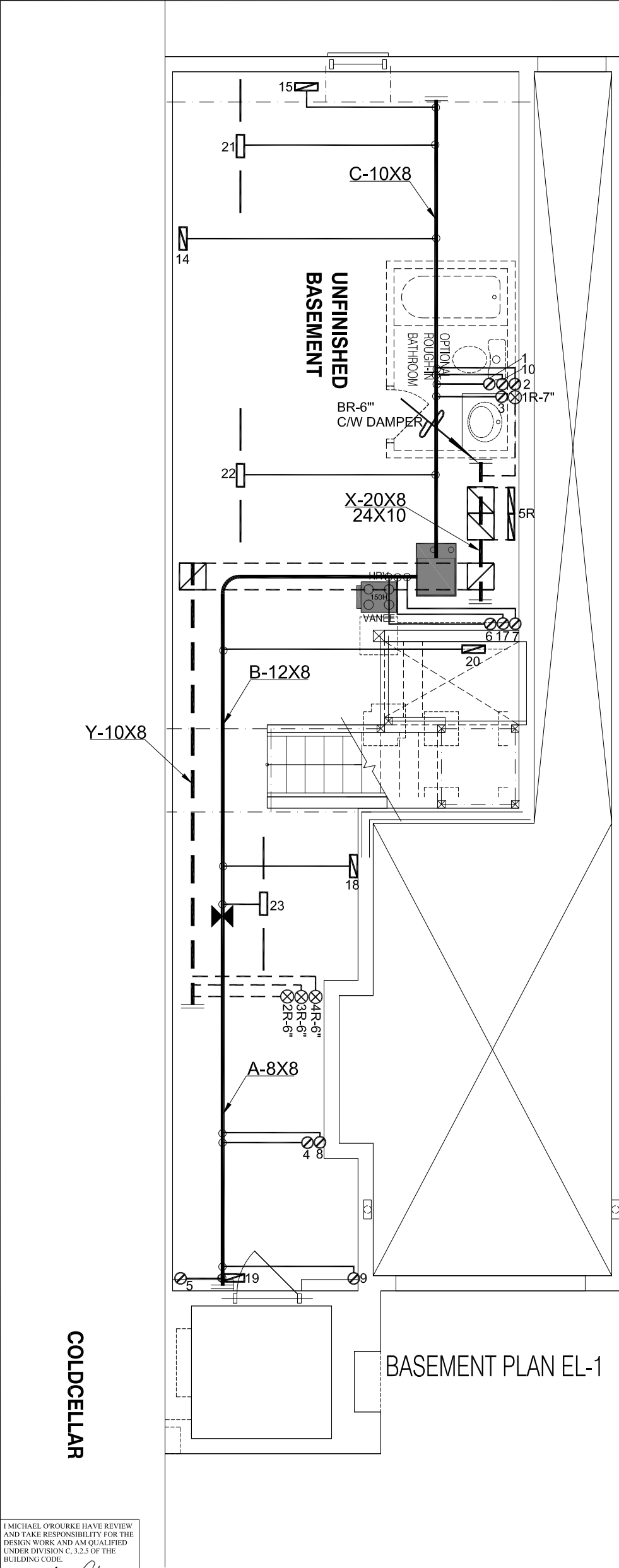
Supplemental tool for CAN/CSA-F280

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):	665.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	886.5 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 2

LO# 98654

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.



COLDCELLAR

BASEMENT PLAN EL-3

COLDCELLAR

BASEMENT PLAN EL-2

CSA-F280-12
PACKAGE A1

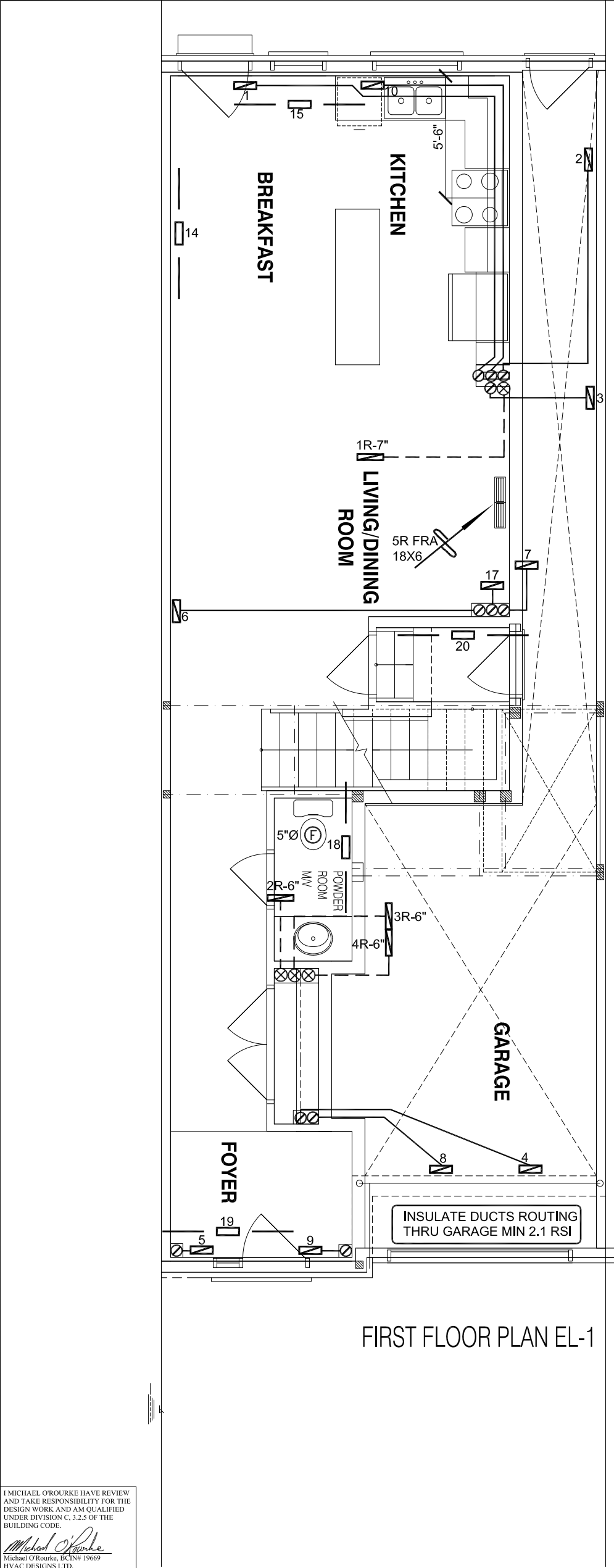
I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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

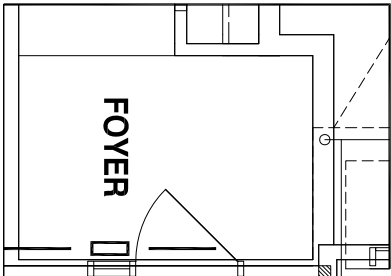
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	HEAT LOSS 27449 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
GREENPARK HOMES			MAKE	GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name			MODEL	GMEC960302BNA	2ND FLOOR	11	4	3		
BARLASSINA CAMBRIDGE, ONTARIO			INPUT	30 MBTU/H	1ST FLOOR	5	1	2	Date	/2022
Block 122 Units 49 to 54			OUTPUT	28.8 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				Scale	3/16" = 1'-0"
WILLOW 2 1795 sqft		COOLING	1.5 TONS	BCIN# 19669						
		FAN SPEED	614 cfm @ 0.6" w.c.	LO# 98654						

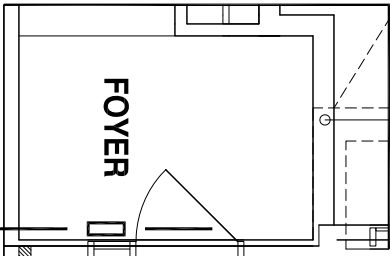
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.



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FIRST FLOOR PLAN EL-3



FIRST FLOOR PLAN EL-2

FIRST FLOOR PLAN EL-1

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

CSA-F280-12

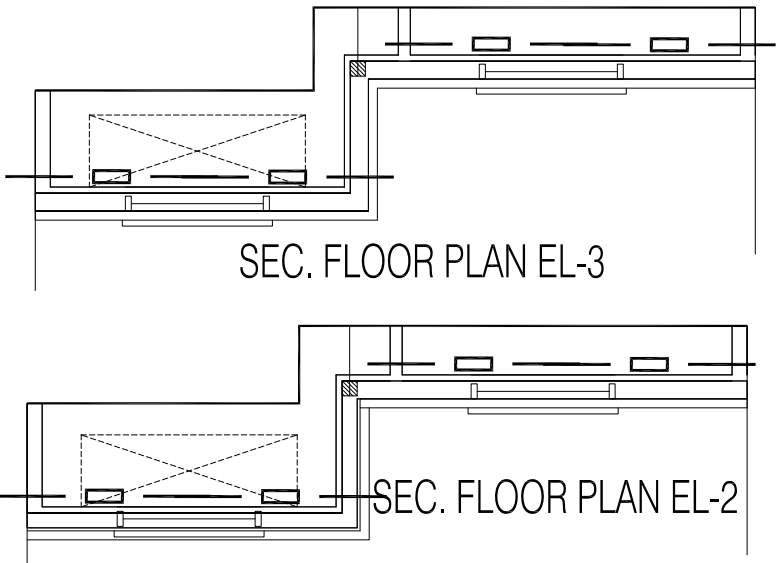
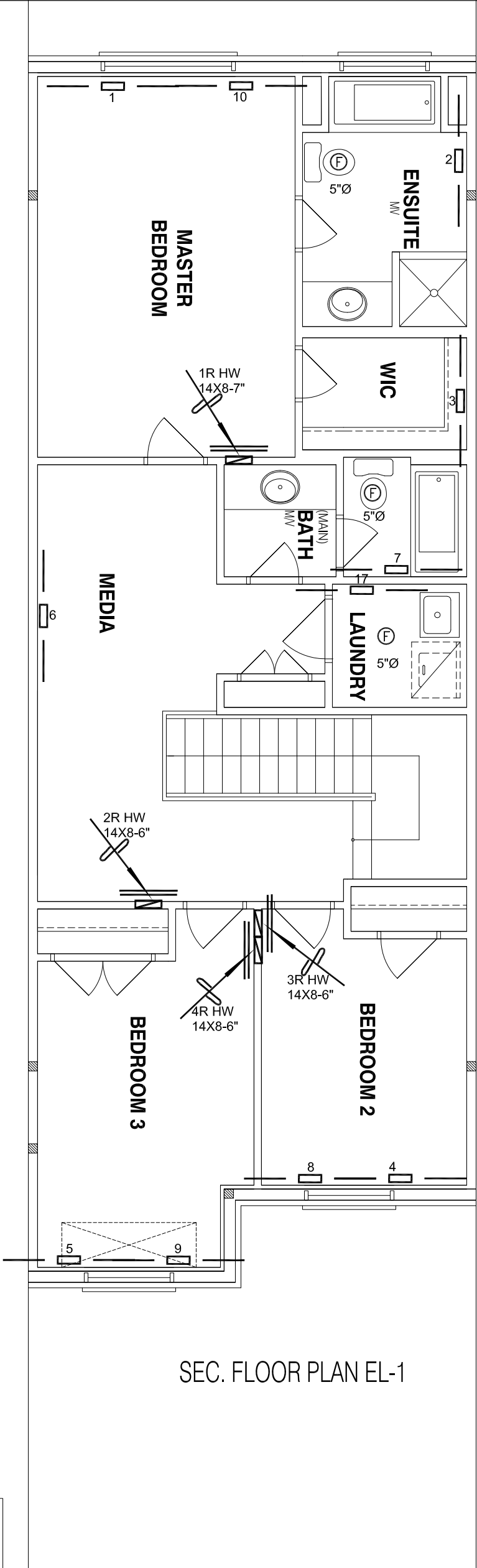
PACKAGE A1

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

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GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Block 122 Units 49 to 54			BCIN# 19669	
WILLOW 2	1795 sqft		LO#	98654

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Michael O'Rourke
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	/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Block 122 Units 49 to 54			BCIN# 19669	
WILLOW 2	1795 sqft		LO#	98654