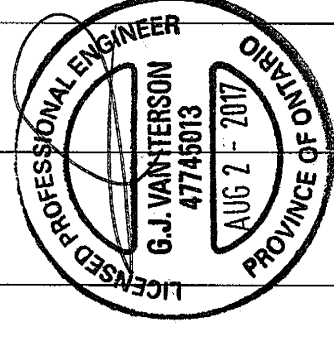


SITE NAME: RUSSEL GARDEN
BUILDER: GERENPARK HOMES
TYPE: DEWBERRY 2ES
DATE: Jul-17
LO# 75066
GFA: 2608
WINTER NATURAL AIR CHANGE RATE 0.488
HEAT LOSS AT °F. 71
HEAT GAIN AT °F. 16
CSA-F280-12
SB-12 PACKAGE A4

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH		
GRS.WALL AREA	133	14	19	9	31	24	9	0		
GLAZING	19.8	0	0	0	0	0	0	0		
NORTH	19.8	0	0	0	0	0	0	0		
EAST	19.8	0	0	0	0	0	0	0		
SOUTH	19.8	0	0	0	0	0	0	0		
WEST	19.8	0	0	0	0	0	0	0		
SKYLT.	34.6	0	0	0	0	0	0	0		
DOORS	23.5	0	0	0	0	0	0	0		
NET EXPOSED WALL	3.3	0	0	0	0	0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.3	0	0	0	0	0	0	0		
EXPOSED CLG	1.2	0	0	0	0	0	0	0		
NO ATTIC EXPOSED CLG	2.6	0	0	0	0	0	0	0		
EXPOSED FLOOR	2.4	0	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	0		
SUBTOTAL HT LOSS	1195	1488	1231	364	1665	1452	726	53		
LEVEL FACTOR / MULTIPLIER	0.10	0.29	0.10	0.29	0.10	0.29	0.10	0.29		
AIR CHANGE HEAT LOSS	349	190	359	106	486	424	212	27		
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0		
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		
HEAT GAIN APPLIANCES/LIGHTS	628	0	0	0	0	0	0	0		
TOTAL HT LOSS BTU/H	1544	0	1591	470	2151	1876	937	120		
TOTAL HT GAIN x 1.3 BTU/H	3622	0	1555	163	3459	2240	1990	73		

ROOM USE	EXP. WALL CLG. HT.	LVDN	KIT	GRT	WIC-2	WIR	FOY			
GRS.WALL AREA	470	470	470	450	60	60	374			
GLAZING	19.8	0	0	0	0	0	0			
NORTH	19.8	0	0	0	0	0	0			
EAST	19.8	0	0	0	0	0	0			
SOUTH	19.8	0	0	0	0	0	0			
WEST	19.8	0	0	0	0	0	0			
SKYLT.	34.6	0	0	0	0	0	0			
DOORS	23.5	0	0	0	0	0	0			
NET EXPOSED WALL	3.3	0	0	0	0	0	0			
NET EXPOSED BSMT WALL ABOVE GR	3.3	0	0	0	0	0	0			
EXPOSED CLG	1.2	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	2.6	0	0	0	0	0	0			
EXPOSED FLOOR	2.4	0	0	0	0	0	0			
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0			
SUBTOTAL HT LOSS	3229	2728	2570	2136	379	379	2542			
LEVEL FACTOR / MULTIPLIER	0.20	0.66	0.30	0.99	0.30	0.30	0.30			
AIR CHANGE HEAT LOSS	2127	1797	2632	2632	374	374	2506			
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0			
DUCT LOSS	536	0	0	0	0	0	0			
DUCT GAIN	413	0	0	0	0	0	0			
HEAT GAIN PEOPLE	240	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS	628	0	0	0	0	0	0			
TOTAL HT LOSS BTU/H	5892	4525	5302	5302	753	753	5048			
TOTAL HT GAIN x 1.3 BTU/H	5903	5131	3947	3947	468	468	1168			



TYPE: DEWBERRY 2ES
SITE NAME: RUSSEL GARDEN

LO # 75066

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	5 @ 10.6 cfm	53 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	180.2 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	180.2	cfm
Less Principal Ventil. Capacity	139	cfm
Required Supplemental Capacity	41.2	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	71 F	1.08	X	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

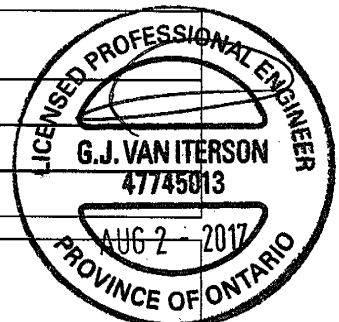
HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 60H-V+		
139 cfm high	50 cfm low	
75 % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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

BUILDER: GERENPARK 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:	July-17





375 Finley Ave, Suite 202
 Ajax, Ontario L1S 2E2
 Tel-905-619-2300 Fax-905-619-2375
 Web: www.hvacdesigns.ca E-mail info@hvacdesigns.ca

INTERGRATED COMBO HEATING SYSTEM
 EQUIPMENT SELECTION SUMMARY AND APPLICATION FORM
 THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH PERMIT APPLICATION

DATE: July-17
 PROJECT LOCATION RUSSEL GARDEN
 BUILDER: GERENPARK HOMES
 MODEL: DEWBERRY 2ES

BCIN# 19669

0

SYSTEM DESIGNER
 PRINT NAME
 COMPANY NAME

Micahel O'Rourke

HRAI Certificate Number

001820



SECTION I

Building heating load summary

Total Calculated Heat Loss	46649	btu/r	Heat Loss Calculation Attached	☒
Total Design Load (Heat Loss + 10%)	51314	btu/h	(see HVAC drawings)	

SECTION II

Domestic hot water demand summary

Total Calculated Hot Water Demand	0 US/gal.	Hot Water Demand Calculation Attached	☒
Demand load includes fixtures listed in schedule A			

SECTION III

Equipment selction summary

Water Heater	GSW	Air Handler	Air Max
Make & Model #	6G5076NVC-02	Make & Model #	MaxAir 100e
Input	76,000 Btu/H	Coil rating	53,500 Btu/H @ 130 °F
Storage capacity	50 US/gal.	HRAI HWT/Coil sizing form attached	☐
Recovery	90%		

NOTICE TO APPLICATION/ OWNER Re: System operation and limitations

The system described on this form has been designed to accommodate the specific domestic hot water and comfort heating demands of this building at the time of application as specified in schedule A. Any additional demands (such as adding a washroom) placed on the combo system must be evaluted to determine if the system is capable of supplying the additional load. Additional demands that have not been properly evaluated can have a severe effect on the proper operation of the system.

Schedule A

Proposed number of occupants	4	# of shower heads	0	# of bathrooms	4
High demand fixtures	No ☒	Yes ☐	If yes - list		

I hereby acknowledge I have read and understand the above notice concerning the limitations of the combo system and acknowledge the information. I have provided on this form is accurate to the best of my understanding.

Signature of Applicant

Michael O'Rourke

Also print name

Michael O'Rourke

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE

Michael O'Rourke

INDIVIDUAL BCIN: 19669
 Michael O'Rourke

BCIN# 19669

MODEL: DEWBERRY 2ES

Table 2

	A		X	B	=	C
Activity	Avg. Hot Water per			Times used in		Liters Used
	Usage (liters)			Peak Hour		Peak Hour
	Hi-Flow	Low-Flow				
	(Old)	(New)				
Shower ~ 5 min	54	15	X		=	0
~ 10 min	110	27	X	0	=	0
~ 15 min	160	40	X		=	0
Reg. Bath ~ 1/2 full	76		X		=	0
Whirlpool ~ sm.	*		X		=	
~ Med.	*		X		=	
~ Lge.	*		X		=	
Personal Use	10		X	0	=	0
Shampooing Hair	15		X	0	=	0
Clothes Washing						
~ Hot / Warm	121		X		=	0
~ Warm / Warm	90		X		=	0
~ Warm / Cold	60		X		=	0
~ Cold / Cold	Nil		X		=	
Hand Dishwashing	15		X		=	0
Automatic						
Dishwasher	53		X		=	0
Food Preparation	19		X		=	0
				Total	=	0
				Total usgal		0

* Special sizing consideration are required; consult whirlpool manufacturer's specifications.

4.2.2 Space Heating Requirements

The maximum available energy for space heating is equal to the effective water heater output (EWHO). For proper system operation, the water heater should have an effective output that is at least 20% greater than the air handler output.

To determine the effective water heater output:

$$\text{EWHO} = (\text{Burner input}) \times (\text{Recovery Efficiency}) = 68,400$$

therefore:

$$\text{Energy Available for Space Heating} = \frac{\text{EWHO}}{1.2} = 57,000$$

$$\text{Burner Input required for Space Heating} = \frac{\text{Air Handler Output} \times 1.2}{\text{Recovery Efficiency}}$$

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE
INDIVIDUAL BCIN: 19669

Michael O'Rourke




HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** DEWBERRY 2ES**SFQT:** 2608**LO#** 75066**BUILDER:** GERENPARK HOMES**SITE:** RUSSEL GARDEN**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	72

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	4.55	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	UNSHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	31836.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.8 ft
LENGTH: 42.0 ft	WIDTH: 38.0 ft	EXPOSED PERIMETER:	109.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
Ceiling Without Attic Space Minimum RSI (R)-Value
Exposed Floor Minimum RSI (R)-Value
Walls Above Grade Minimum RSI (R)-Value
Basement Walls Minimum RSI (R)-Value
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
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
Windows and Sliding Glass Doors Maximum U-Value
Skylights Maximum U-Value
Space Heating Equipment Minimum AFUE
HRV Minimum Efficiency
Domestic Hot Water Heater Minimum EF

**Compliance Package
A4**

Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22 + 5 ci	21.40
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.67	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

LOCATE CENTER OF OUTLET
min 8" FROM WALLS

PACKAGE A4
CSA-F280-12

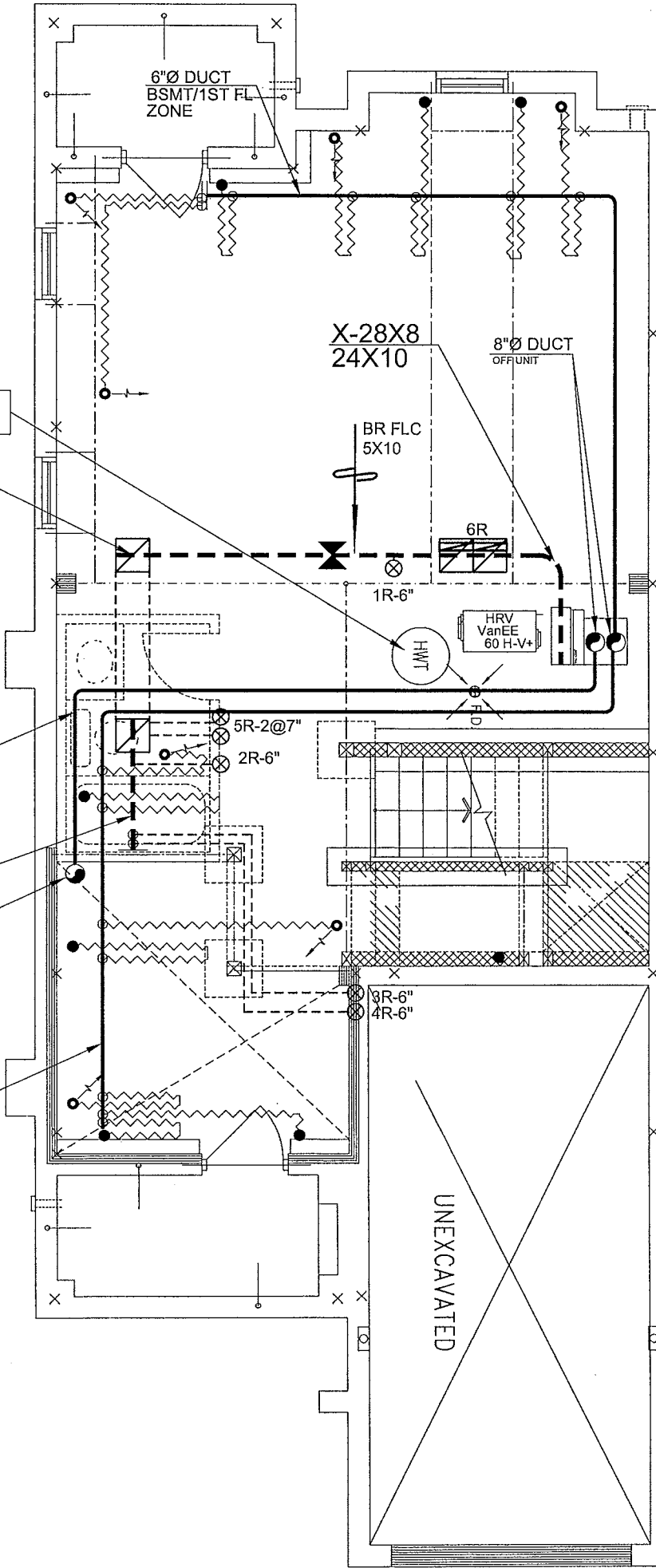
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

DUCT SIZE	MAXIMUM LENGTH	NO. OF TAKE OFFS
4"	20'	2
5"	30'	4
6"	50'	10
7"	60'	16
8"	70'	24
10"	100'	29

HVAC LEGEND

	OUTLET BY AIRMAX
	DUAL OUTLET BY AIRMAX
	DUCTWORK
	FLEX DUCT
	RETURN AIR GRILLE

BASEMENT PLAN ELEVATION '1'



- i. INSTALLATION TO COMPLY WITH THE LATEST EDITIONS OF THE ONTARIO BUILDING CODE AND AIRMAX DESIGN AND INSTALLATION MANUALS
- ii. VENT HOT WATER TANK OR BOILER TO MANUFACTURERS SPECS & ALL LOCAL CODES
- iii. COMBUSTION AIR INTAKE (INSTALL per ALL LOCAL CODES)
- iv. MAXIMUM TEMPERATURE of HOT WATER SUPPLIED TO PLUMBING FIXTURES SHALL NOT EXCEED 120°F or 49°C
- v. CONTRACTOR SHALL SEAL SUPPLY DUCT JOINTS AND GORES WITH AN APPROVED SEALANT

UNIT EQUIPMENT SUMMARY

UNIT	HEAT LOSS	REQUIRED HEAT LOSS (HEAT LOSS + 10%)	AIR HANDLER MODEL (AIRMAX)	HEAT OUTPUT (BTU/H @ TEMP)	HEAT SOURCE (HOT WATER TANK / BOILER)	HEAT SOURCE INPUT (BTU/H)	HEAT GAIN LOAD (BTU/H)	A/C SLAB COIL (MODEL) c/w TX VALVE	A/C CONDENSER SIZE (TONS)
DEWBERRY 2ES	46,649	51,314	MAXAIR-100e P2-2 ZONE	53,500 @ 130°F	GSW 6G5076NVC-02	76,000	33,126	MA36-100	3.0

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Client

GREENPARK HOMES

Project Name

RUSSEL GARDENS
HAMILTON, ONTARIO

DEWBERRY 2ES 2608 sqft

HVACDESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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

PROFESSIONAL ENGINEER
G.J. VAN ITTERSON
47745013
AUG 2 - 2017
PROVINCE OF ONTARIO

Sheet Title

BASEMENT
HEATING
LAYOUT

Date

JULY/2017

Scale

3/16" = 1'-0"

BCIN# 19669

LO# 75066

LOCATE CENTER OF OUTLET
min 8" FROM WALLS

PACKAGE A4
CSA-F280-12

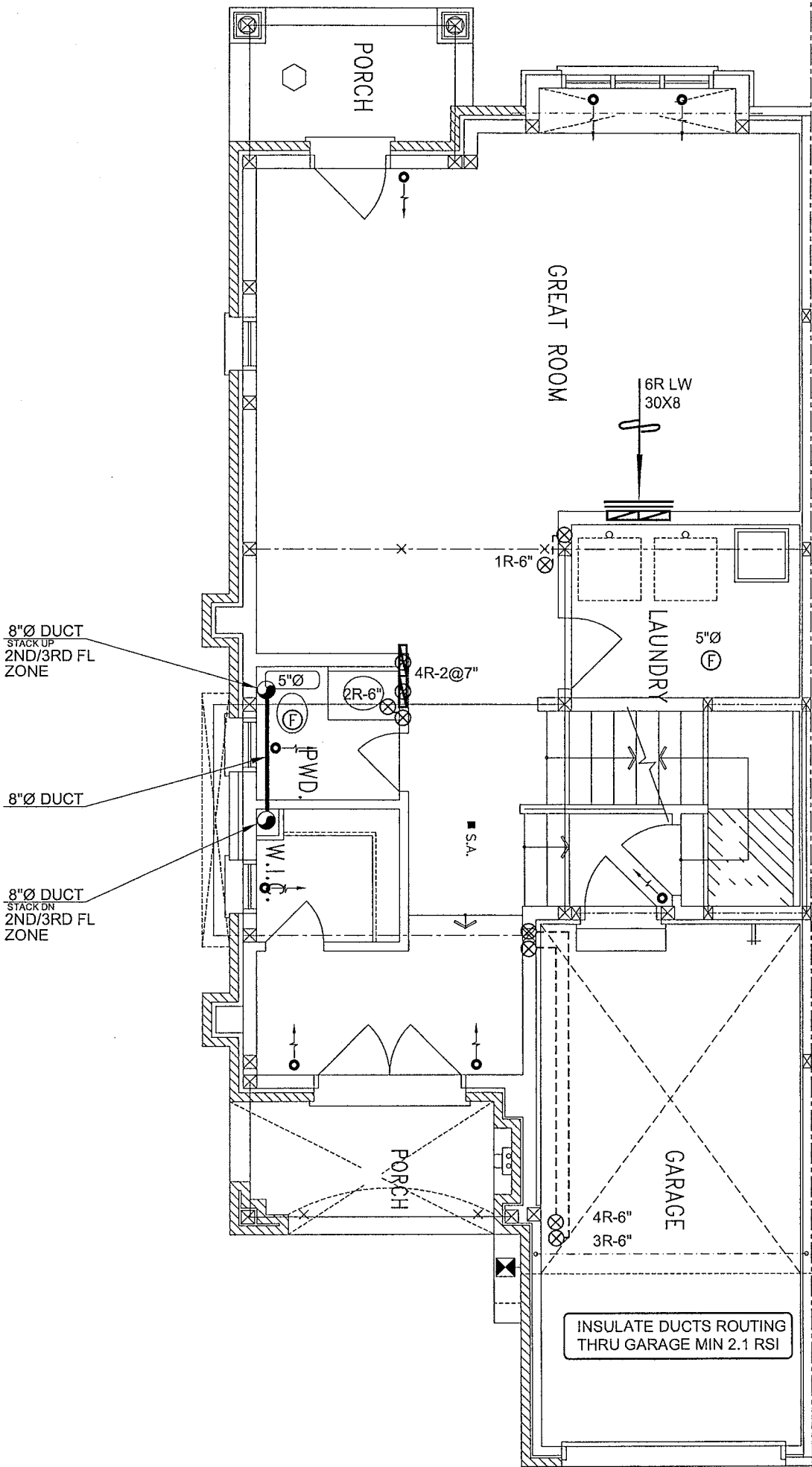
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

DUCT SIZE	MAXIMUM LENGTH	NO. OF TAKE OFFS
4"	20'	2
5"	30'	4
6"	50'	10
7"	60'	16
8"	70'	24
10"	100'	29

HVAC LEGEND

	OUTLET BY AIRMAX
	DUAL OUTLET BY AIRMAX
	DUCTWORK
	FLEX DUCT
	RETURN AIR GRILLE

ENTRY LEVEL PLAN ELEVATION '1'



- i. INSTALLATION TO COMPLY WITH THE LATEST EDITIONS OF THE ONTARIO BUILDING CODE AND AIRMAX DESIGN AND INSTALLATION MANUALS
- ii. VENT HOT WATER TANK OR BOILER TO MANUFACTURERS SPECS & ALL LOCAL CODES
- iii. COMBUSTION AIR INTAKE (INSTALL per ALL LOCAL CODES)
- iv. MAXIMUM TEMPERATURE of HOT WATER SUPPLIED TO PLUMBING FIXTURES SHALL NOT EXCEED 120°F or 49°C
- v. CONTRACTOR SHALL SEAL SUPPLY DUCT JOINTS AND GORES WITH AN APPROVED SEALANT

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS
HAMILTON, ONTARIO**

DEWBERRY 2ES 2608 sqft

HVACDESIGNS LTD.
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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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**

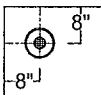
Date JULY/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 75066

LOCATE CENTER OF OUTLET
min 8" FROM WALLS



PACKAGE A4
CSA-F280-12

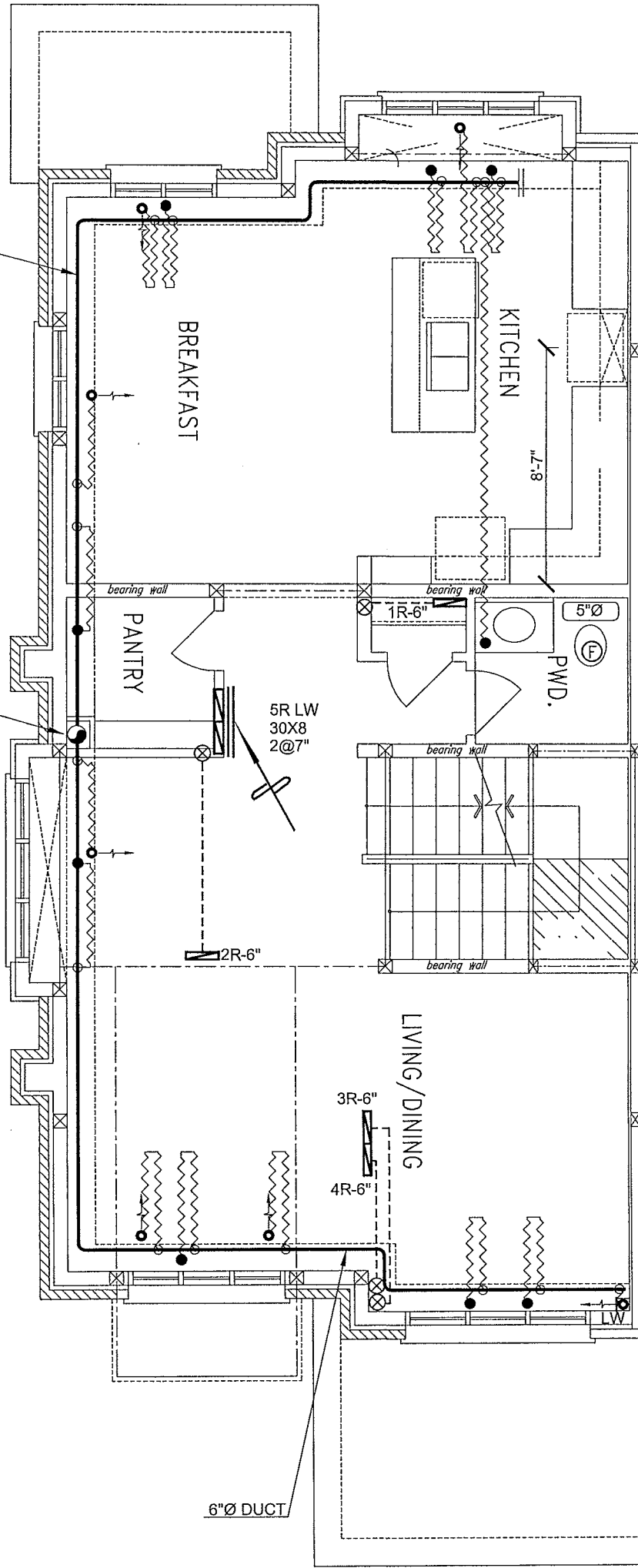
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

DUCT SIZE	MAXIMUM LENGTH	NO. OF TAKE OFFS
4"	20'	2
5"	30'	4
6"	50'	10
7"	60'	16
8"	70'	24
10"	100'	29

HVAC LEGEND

	OUTLET BY AIRMAX
	DUAL OUTLET BY AIRMAX
	DUCTWORK
	FLEX DUCT
	RETURN AIR GRILLE

MAIN FLOOR PLAN ELEVATION '1'



- INSTALLATION TO COMPLY WITH THE LATEST EDITIONS OF THE ONTARIO BUILDING CODE AND AIRMAX DESIGN AND INSTALLATION MANUALS
- VENT HOT WATER TANK OR BOILER TO MANUFACTURERS SPECS & ALL LOCAL CODES
- COMBUSTION AIR INTAKE (INSTALL per ALL LOCAL CODES)
- MAXIMUM TEMPERATURE of HOT WATER SUPPLIED TO PLUMBING FIXTURES SHALL NOT EXCEED 120°F or 49°C
- CONTRACTOR SHALL SEAL SUPPLY DUCT JOINTS AND GORES WITH AN APPROVED SEALANT

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS
HAMILTON, ONTARIO**

DEWBERRY 2ES 2608 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title	SECOND FLOOR HEATING LAYOUT
Date	JULY/2017
Scale	3/16" = 1'-0"
BCIN#	19669
LO#	75066