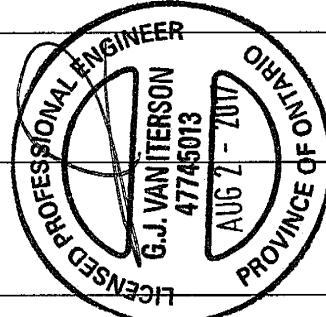


SITE NAME: RUSSEL GARDENS
BUILDING: GREENPARK
DATE: Jul-17
LO# 75064
TYPE: DEWBERRY 1
GFA: 2324
WINTER NATURAL AIR CHANGE RATE 0.527
SUMMER NATURAL AIR CHANGE RATE 0.210
HEAT LOSS AT °F. 71
HEAT GAIN AT °F. 18
CSA-F280-12
SB-12 PACKAGE A4

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	BED-2	BED-3	BATH	WINTER NATURAL AIR CHANGE RATE 0.527	SUMMER NATURAL AIR CHANGE RATE 0.210	HEAT LOSS AT °F. 71	HEAT GAIN AT °F. 18	CSA-F280-12 SB-12 PACKAGE A4
GRS.WALL AREA GLAZING	207	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN					
NORTH	19.8	17.4	0	0	0	0					
EAST	19.8	43.0	30	593	1289	0					
SOUTH	19.8	26.3	0	0	0	0					
WEST	19.8	43.0	0	0	0	0					
SKYLT.	34.6	104.0	0	0	0	0					
DOORS	23.5	5.9	20	469	118	0					
NET EXPOSED WALL	3.3	0.8	157	518	131	0					
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.8	0	0	0	0					
EXPOSED CLG	1.2	0.7	280	334	188	90					
NO ATTIC EXPOSED CLG	2.6	1.4	0	0	0	0					
EXPOSED FLOOR	2.4	0.6	0	0	0	0					
BASEMENT/CRAWL HEAT LOSS											
SLAB ON GRADE HEAT LOSS											
SUBTOTAL HT LOSS		1914	107	1051	1442	95					
SUB TOTAL HT GAIN		0.10	0.45	0.10	0.45	0.10					
LEVEL FACTOR / MULTIPLIER		865	48	475	445	43					
AIR CHANGE HEAT LOSS		352	12	239	294	11					
AIR CHANGE HEAT GAIN		0	0	0	0	0					
DUCT LOSS		0	0	0	0	0					
DUCT GAIN		0	0	0	0	0					
HEAT GAIN PEOPLE	240	2	480	0	240	0					
HEAT GAIN APPLIANCES/LIGHTS		2779	519	519	519	519					
TOTAL HT LOSS BTU/H		3999	156	1527	1429	138					
TOTAL HT GAIN x 1.3 BTU/H			770	2820	3244	759					

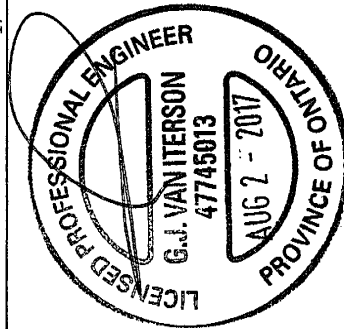
ROOM USE	EXP. WALL CLG. HT.	L/VDN	KIT	GRT	LAUN	FOY	BAS
GRS.WALL AREA GLAZING	230	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	19.8	17.4	0	0	0	0	0
EAST	19.8	43.0	46	909	1376	10	0
SOUTH	19.8	26.3	0	0	0	0	0
WEST	19.8	43.0	0	0	0	0	0
SKYLT.	34.6	104.0	0	0	0	0	0
DOORS	23.5	5.9	0	0	0	0	0
NET EXPOSED WALL	3.3	0.8	174	574	145	20	40
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.8	0	0	0	0	0
EXPOSED CLG	1.2	0.7	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.4	0	0	0	0	0
EXPOSED FLOOR	2.4	0.6	140	332	84	0	0
BASEMENT/CRAWL HEAT LOSS							
SLAB ON GRADE HEAT LOSS							
SUBTOTAL HT LOSS		1714	1815	1788	911	914	2992
SUB TOTAL HT GAIN		0.20	1.06	0.30	0.30	0.30	0.40
LEVEL FACTOR / MULTIPLIER		1823	1931	2786	1420	1425	7509
AIR CHANGE HEAT LOSS		537	449	401	47	72	143
AIR CHANGE HEAT GAIN		0	375	0	0	0	0
DUCT LOSS		0	0	0	0	0	0
DUCT GAIN		0	0	0	0	0	0
HEAT GAIN PEOPLE	240	1	480	0	240	0	0
HEAT GAIN APPLIANCES/LIGHTS		3537	519	519	519	519	519
TOTAL HT LOSS BTU/H		5109	4121	4574	2331	2339	10501
TOTAL HT GAIN x 1.3 BTU/H			4537	3757	1035	555	1773



A/C SIZE	2.5	TONS
A/C SIZE	30000	BTU/H

[illegible]

INDIVIDUAL BCIN: 19669
Michael O'Rourke



TYPE: DEWBERRY 1
SITE NAME: RUSSEL GARDENS

LO # 75064

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	2 @ 10.6 cfm	21.2 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL	159.0 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	63.6	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	139	cfm
Required Supplemental Capacity	20.0	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	X 71 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒

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	
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



HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** DEWBERRY 1
SFQT: 2324**LO#** 75064**BUILDER:** GREENPARK
SITE: RUSSEL GARDENS**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	70

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:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	28203.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 36.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	48.0 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



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 SUMMITTED WITH PERMIT APPLICATION

DATE: July-17
PROJECT LOCATION RUSSEL GARDENS
BUILDER: GREENPARK
MODEL: DEWBERRY 1

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	36083	btu/r	Heat Loss Calculation Attached ☒
Total Design Load (Heat Loss + 10%)	39691	btu/h	(see HVAC drawings)

SECTION II

Domestic hot water demand summary			
Total Calculated Hot Water Demand	27	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 70e
Input	76,000 Btu/H	Coil rating	41,000 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	3	# of shower heads	2	# 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

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

INDIVIDUAL BCIN: 19669
Michael O'Rourke

BCIN# 19669

MODEL: DEWBERRY 1

Table 2

	A		X	B	=	C
Activity	Avg. Hot Water per			Times used in		Liters Used
	Isage (liters)			Peak Hour		Peak Hour
	Hi-Flow	Low-Flow				
	(Old)	(New)				
Shower ~ 5 min	54	15	X		=	0
~ 10 min	110	27	X	2	=	54
~ 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	2	=	20
Shampooing Hair	15		X	2	=	30
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	=	104
				Total	usgal	27.456

* 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

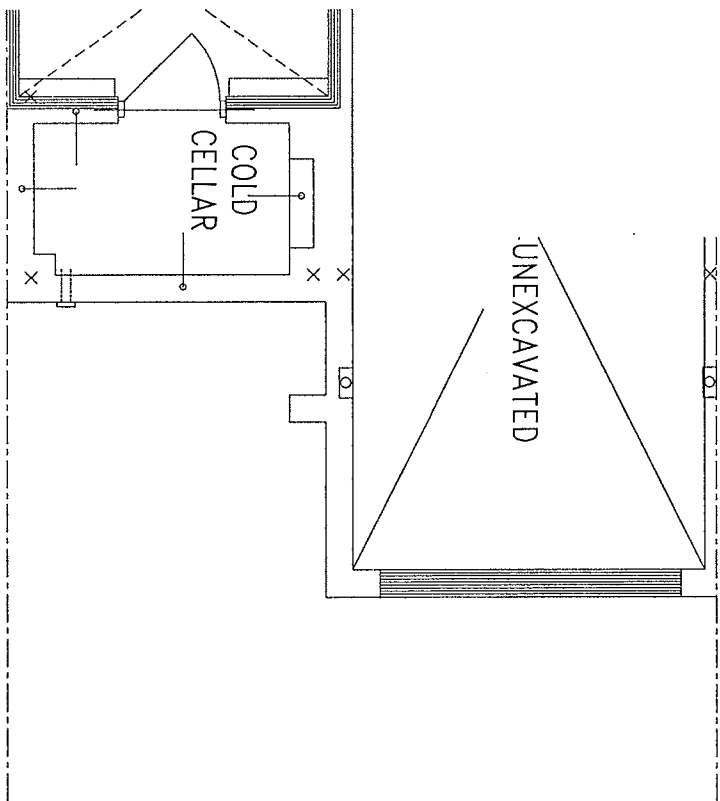



DUCT SIZE	MAXIMUM LENGTH	NO. OF TAKE OFFS
4"	20'	2
5"	30'	4
6"	50'	10
7"	60'	16
8"	70'	24
10"	100'	29

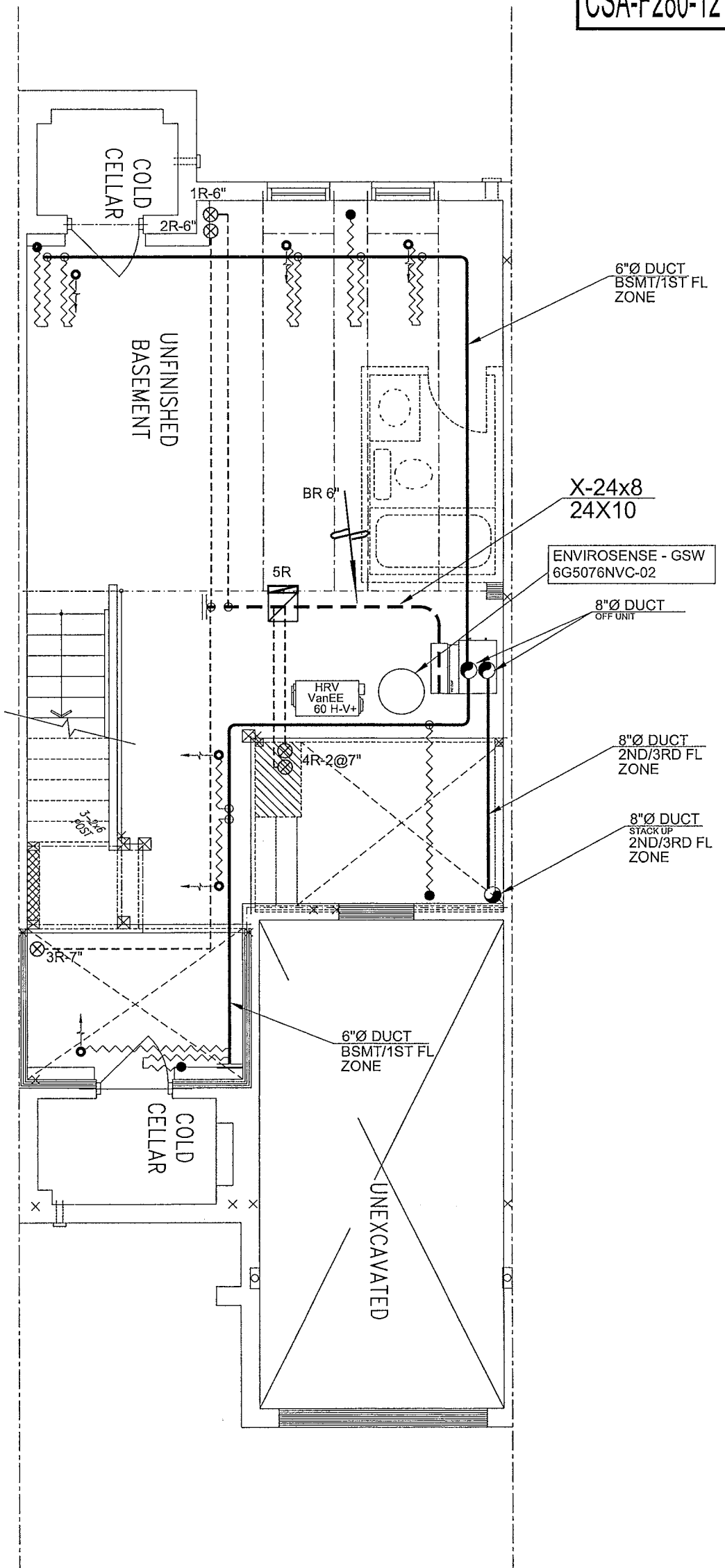
HVAC LEGEND

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

BASEMENT PLAN ELEVATION '2'



BASEMENT PLAN ELEVATION '1'



- ## 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 1	36,083	39,691	MAXAIR-70e P2-2 ZONE	41,000 @ 130°F	GSW 6G5076NVC-02	76,000	29,026	MA30-70	2.5

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Project Name
RUSSEL GARDENS
HAMILTON, ONTARIO

DEWBERRY 1	2324 sqft
------------	-----------

HVA DESIGNS 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

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

BASEMENT HEATING LAYOUT

Date JULY/2017

Scale $3/16" = 1'-0"$

BCIN# 19669

LO# 75064

LOCATE CENTER OF OUTLET
min 8" FROM WALLS



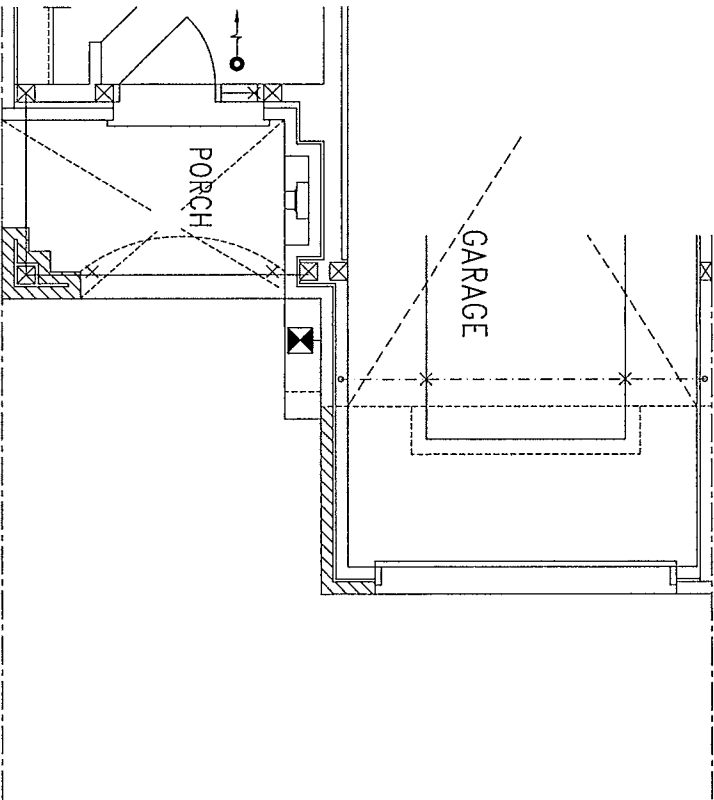
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

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

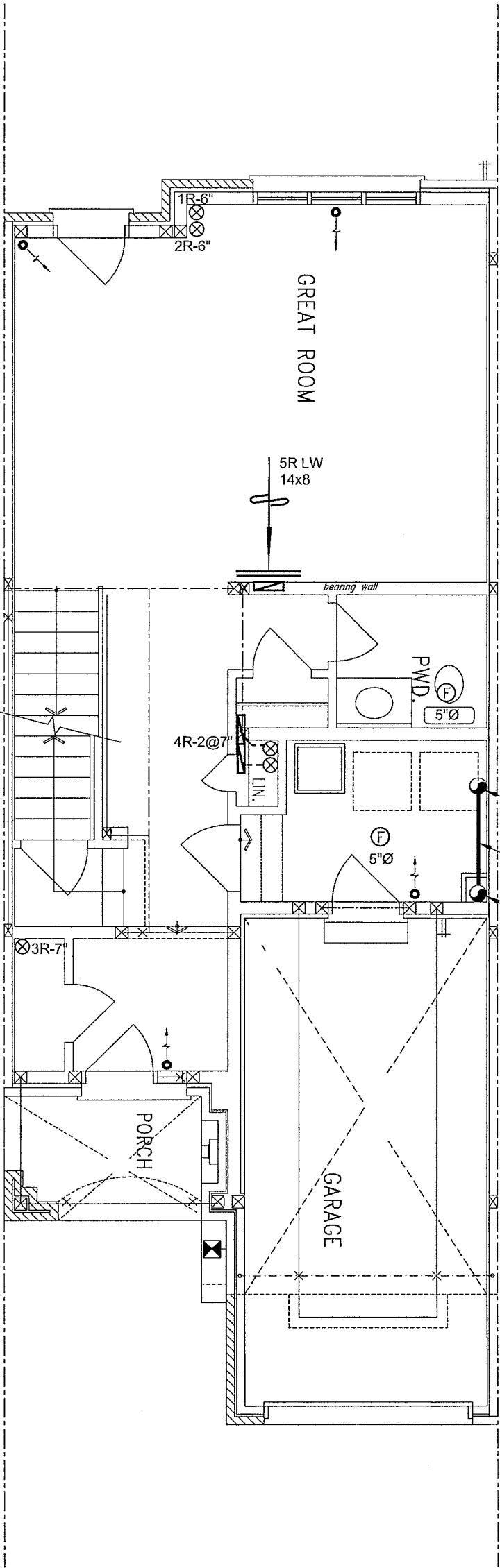
HVAC LEGEND

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

ENTRY LEVEL PLAN ELEVATION '2'



ENTRY LEVEL PLAN ELEVATION '1'



PACKAGE A4
CSA-F280-12

- 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 1 2324 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.



Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**

Date JULY/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 75064

LOCATE CENTER OF OUTLET
min 8" FROM WALLS



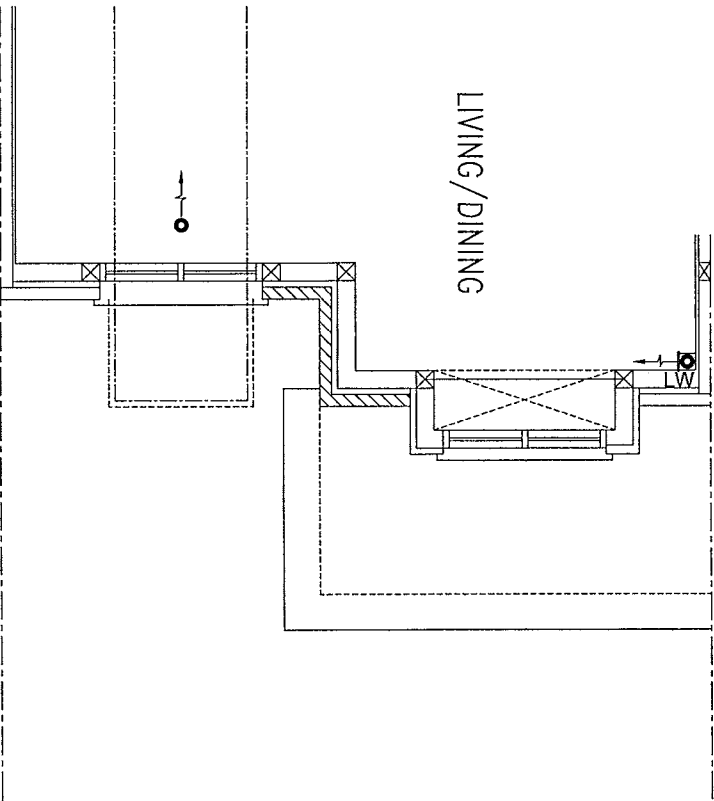
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

DUCT SIZE	MAXIMUM LENGTH	NO. OF TAKE OFFS
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6"	50'	10
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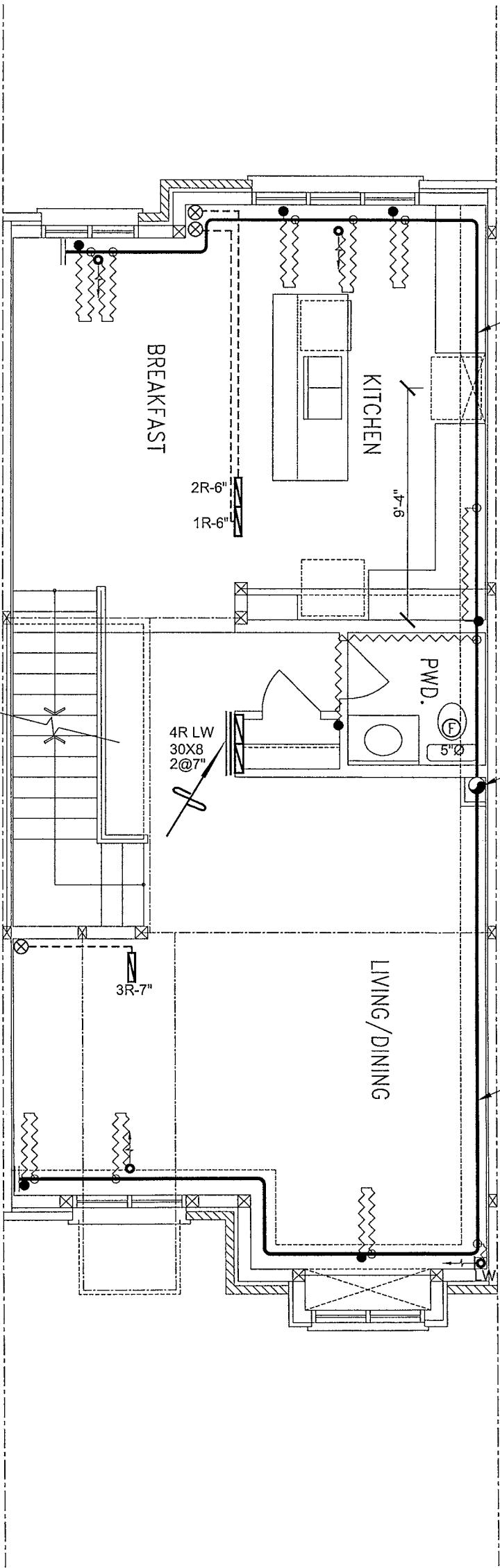
HVAC LEGEND

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

MAIN FLOOR PLAN ELEVATION '2'



MAIN FLOOR PLAN ELEVATION '1'



PACKAGE A4
CSA-F280-12

6"Ø DUCT

8"Ø DUCT
STACK DN
2ND/3RD FL
ZONE

6"Ø DUCT

- 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 1 2324 sqft

HVACDESIGNS LTD.

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Sheet Title
SECOND FLOOR
HEATING
LAYOUT

Date JULY/2017

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 75064

LOCATE CENTER OF OUTLET
min 8" FROM WALLS

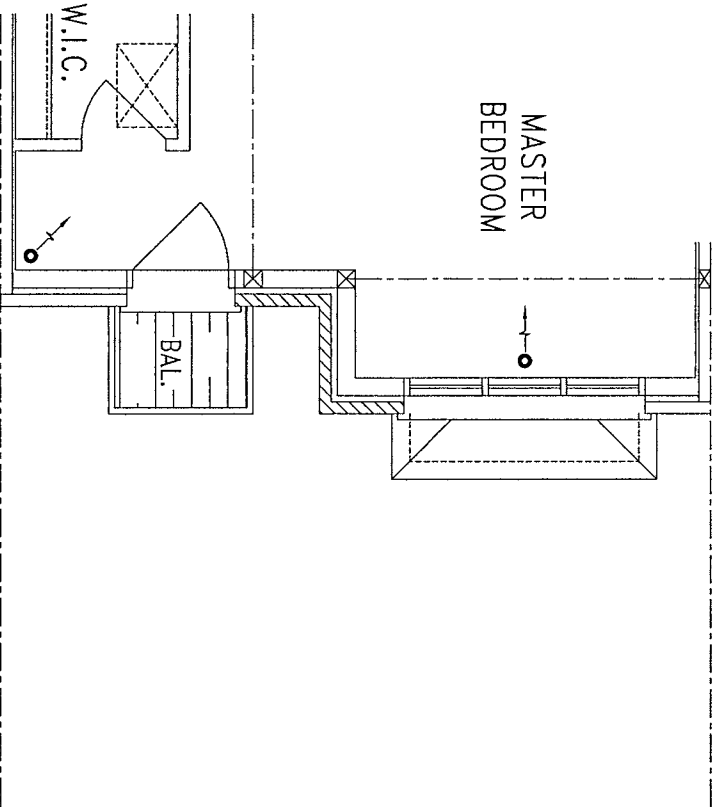
MAXIMUM ALLOWABLE
TRUNK DUCT LENGTH

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

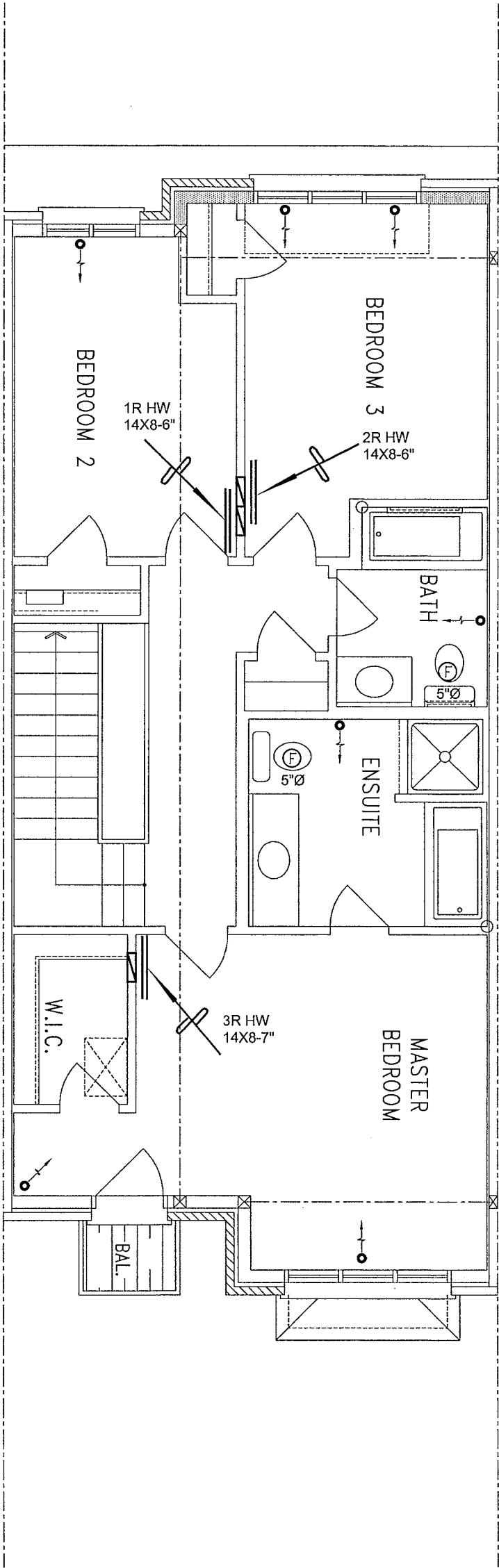
HVAC LEGEND

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

UPPER FLOOR PLAN ELEVATION '2'



UPPER 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		 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		Sheet Title THIRD FLOOR HEATING LAYOUT		
Project Name RUSSEL GARDENS HAMILTON, ONTARIO				Date JULY/2017	Scale 3/16" = 1'-0"	
DEWBERRY 1 2324 sqft		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.		BCIN# 19669		
				LO#	75064	