

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2009 Project: CENTREFIELD (WEST GORMLEY)	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
April 21, 2021		 Signature of Designer	
Date			

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

SITE NAME: CENTREFIELD (WEST GORMLEY) DATE: Apr-21 WINTER NATURAL AIR CHANGE RATE 0.236 HEAT LOSS AT °F. 78 CSA-F280-12
BUILDER: ROYAL PINE HOMES LO# 87532 SUMMER NATURAL AIR CHANGE RATE 0.072 HEAT GAIN AT °F. 13 SB-12 PERFORMANCE

ROOM USE	MBR	ENS	TYPE: 2009	GFA: 1660	DATE: Apr-21	WINTER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F.	CSA-F280-12
EXP. WALL CLG. HT.	14	6			LO# 87532	0.236	78	SB-12 PERFORMANCE
FACTORS								
GRS.WALL AREA	126	54						
GLAZING	LOSS	GAIN						
NORTH	0	0						
EAST	0	0						
SOUTH	0	0						
WEST	28	0						
SKYL.T.	610	1163						
DOORS	0	0						
NET EXPOSED WALL	4.2	98						
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6						
EXPOSED CLG	1.3	0.6						
NO ATTIC EXPOSED CLG	2.8	1.3						
EXPOSED FLOOR	2.6	0.4						
BASEMENT/CRAWL HEAT LOSS	0	0						
SLAB ON GRADE HEAT LOSS	0	0						
SUBTOTAL HT LOSS	1524	488						
SUB TOTAL HT GAIN	1456	451						
LEVEL FACTOR / MULTIPLIER	0.20	0.28						
AIR CHANGE HEAT LOSS	426	136						
AIR CHANGE HEAT GAIN	0	0						
DUCT GAIN	0	0						
DUCT GAIN PEOPLE	2	480						
HEAT GAIN APPLIANCES/LIGHTS	889	0						
TOTAL HT LOSS BTU/H	1950	624						
TOTAL HT GAIN x 1.3 BTU/H	3778	619						

ROOM USE	K/B/G	PWD	FOY	BAS
EXP. WALL CLG. HT.	23	12	30	66
FACTORS				
GRS.WALL AREA	232	133	333	462
GLAZING	LOSS	GAIN	LOSS	GAIN
NORTH	0	0	0	0
EAST	0	0	0	0
SOUTH	8	0	25	0
WEST	174	0	545	0
SKYL.T.	1699	0	1039	0
DOORS	0	0	0	0
NET EXPOSED WALL	146	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	615	0	0	0
EXPOSED CLG	101	0	0	0
NO ATTIC EXPOSED CLG	31	0	0	0
EXPOSED FLOOR	87	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0
SUBTOTAL HT LOSS	2576	993	2706	2143
SUB TOTAL HT GAIN	3580	163	1394	3542
LEVEL FACTOR / MULTIPLIER	0.30	0.36	0.30	0.50
AIR CHANGE HEAT LOSS	938	362	985	108
AIR CHANGE HEAT GAIN	0	0	0	3809
DUCT LOSS	0	0	0	0
DUCT GAIN	0	0	0	0
HEAT GAIN PEOPLE	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	889	0	0	0
TOTAL HT LOSS BTU/H	3514	1355	3691	7350
TOTAL HT GAIN x 1.3 BTU/H	6070	224	1914	1836

TOTAL HEAT GAIN BTU/H: 22891 TONS: 1.89 LOSS DUE TO VENTILATION LOAD BTU/H: 1336 STRUCTURAL HEAT LOSS: 23319 TOTAL COMBINED HEAT LOSS BTU/H: 24655

Michael O'Rourke

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

TYPE: 2009

DATE: Apr-21

GFA: 1660 LO# 87532

HEATING CFM	820	COOLING CFM	820
TOTAL HEAT LOSS	23,319	TOTAL HEAT GAIN	22,471
AIR FLOW RATE CFM	35.16	AIR FLOW RATE CFM	36.49

furnace pressure	0.05
a/c coil pressure	0.2
available pressure	0.35

max s/a diff pressure	0.05	
furnace filter		
a/c coil pressure	0.2	
available pressure		
for s/a & r/a	0.35	
plenum pressure s/a	0.18	r/a pressure
max s/a diff press. loss	0.03	r/a grille press. Loss
min adjusted pressure s/a	0.15	adjusted pressure r/a

59TN6A-060-14V **CARRIER AFUE = 97 %
FAN SPEED 60 INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	5	3
R/A	0	0	4	1	1

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

All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	ROOM NAME		1	2	4	5	6	7	8	10	14	15	18	19	20	21	23	24																
	MBR	ENS																																
RM LOSS MBH	0.98	0.62	34	22	1.10	1.15	1.03	1.10	39	0.98	1.76	1.76	1.35	1.85	1.85	2.45	2.45	BAS																
	CFM PER RUN HEAT	39			41	11	39	62											62	48	65	65	86	86	BAS									
	RM GAIN MBH	1.89			0.62	1.85	2.11	0.10											1.85	1.89	3.04	3.04	0.22	0.96	0.96	0.61	0.61	0.61	0.61	BAS				
CFM PER RUN COOLING	69	23	68	77	77	4	68	69	189	34	111	111	8	35	35	22	22	22																
	ADJUSTED PRESSURE	0.17																	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	
	ACTUAL DUCT LGH	33																	26	52	53	30	47	39	140	140	22	36	38	18	14	33	33	33
EQUIVALENT LENGTH	110	170	150	190	180	140	170	177	179	179	193	169	182	146	148	178	194	153																
	TOTAL EFFECTIVE LENGTH	143																	196	202	243	230	170	140	130	170	150	160	110	110	180	120	120	
	ADJUSTED PRESSURE	0.12																	0.09	0.09	0.07	0.07	0.1	0.1	0.1	0.1	0.08	0.09	0.09	0.12	0.12	0.09	0.08	0.11
ROUND DUCT SIZE	5	4	5	6	6	4	5	5	5	5	6	6	5	5	5	6	6	6																
	HEATING VELOCITY (ft/min)	250																	252	286	209	209	126	286	250	316	316	352	477	477	438	438	438	438
	COOLING VELOCITY (ft/min)	507																	264	499	393	393	46	499	507	566	566	59	257	257	112	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	B	3X10	A	3X10	3X10	3X10	3X10	4X10	4X10	3X10	A	3X10	4X10	4X10	4X10																
	TRUNK	C																	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	

ROOM NAME	ROOM #
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										RETURN AIR TRUNK SIZE									
TRUNK					VELOCITY (ft/min)					TRUNK					VELOCITY (ft/min)				
TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY					
TRUNK A	298	0.07	9.2	10	8	536	0	0	8	TRUNK G	0	0.00	0	0	8				
TRUNK B	435	0.07	10.6	14	8	559	0	0	8	TRUNK H	0	0.00	0	0	8				
TRUNK C	386	0.08	9.8	12	8	579	0	0	8	TRUNK I	0	0.00	0	0	8				
TRUNK D	0	0.00	0	0	8	0	0	0	8	TRUNK J	0	0.00	0	0	8				
TRUNK E	0	0.00	0	0	8	0	0	0	8	TRUNK K	0	0.00	0	0	8				
TRUNK F	0	0.00	0	0	8	0	0	0	8	TRUNK L	0	0.00	0	0	8				

[illegible]

TYPE: 2009
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87532

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>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>137.8</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>137.8</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>74.2</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>63.6</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	ΔT °F
63.6 CFM	X 78 F
FACTOR	% LOSS
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
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5
B-BATH	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</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:		ROYAL PINE 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:	
HRAI #	001820
Date:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																					
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																					
LO#: 87532	Model: 2009	Builder: ROYAL PINE HOMES	Date: 4/21/2021																																																																		
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5.2.3.1 Heat Loss due to Air Leakage																																																																					
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$																																																																					
0.236	x	182.17	x																																																																		
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5.2.3.2 Heat Loss due to Mechanical Ventilation																																																																					
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																					
64 CFM	x	78 °F	x																																																																		
		1.08	x																																																																		
		0.25	=																																																																		
		1336 Btu/h																																																																			
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																					
$HL_{airrr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																					
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																																					

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2009	BUILDER: ROYAL PINE HOMES
SFQT: 1660	SITE: CENTREFIELD (WEST GORMLEY)
LO# 87532	

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	23159.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.85	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	66.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
SB-12 PERFORMANCE****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

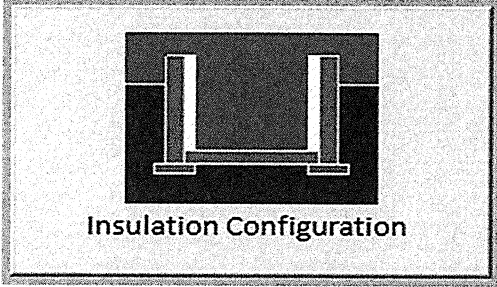
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

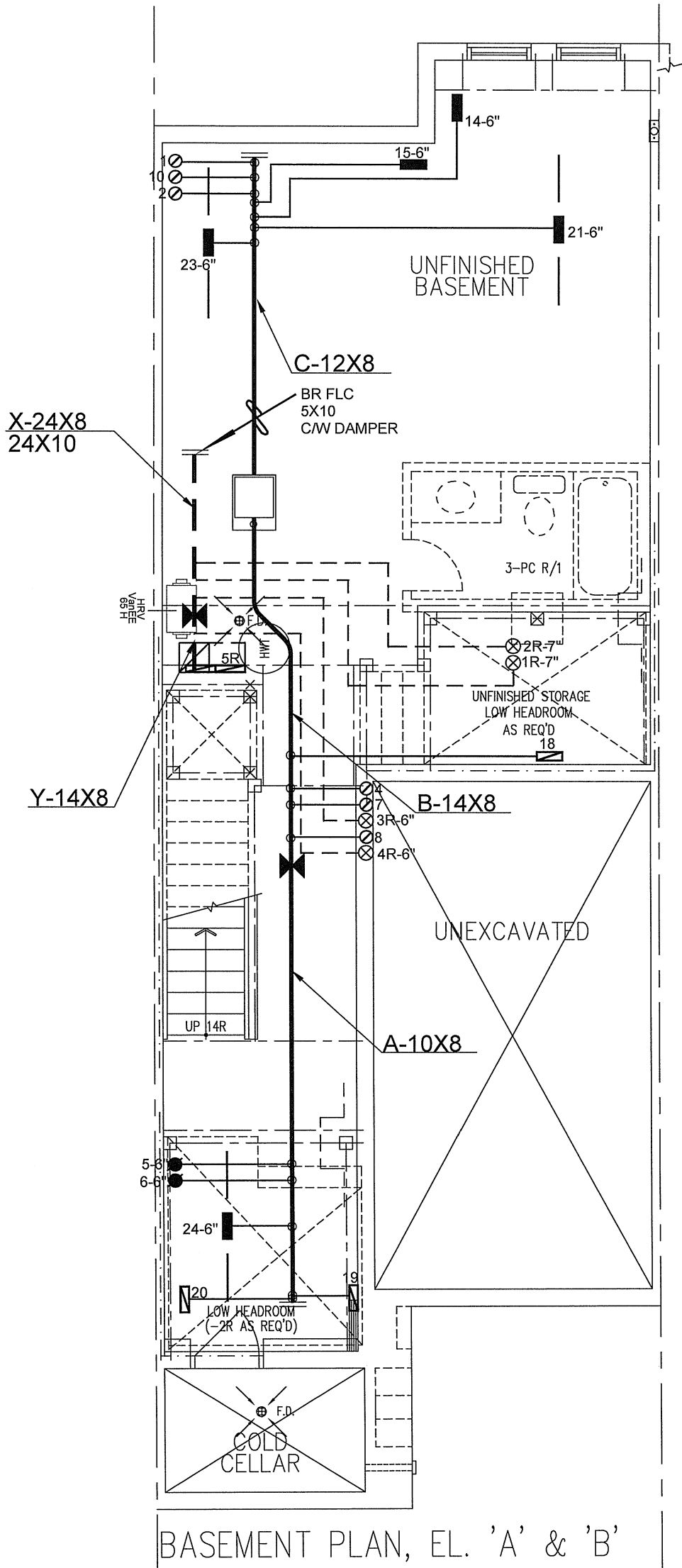
Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.8	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	20.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.7	
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):		628

TYPE: 2009
LO# 87532

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	6.74			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	655.8			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	612.2 cm ²		
	2.50	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):	0.236			
Cooling Air Leakage Rate (ACH/H):	0.072			



BASEMENT PLAN, EL. 'A' & 'B'

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.

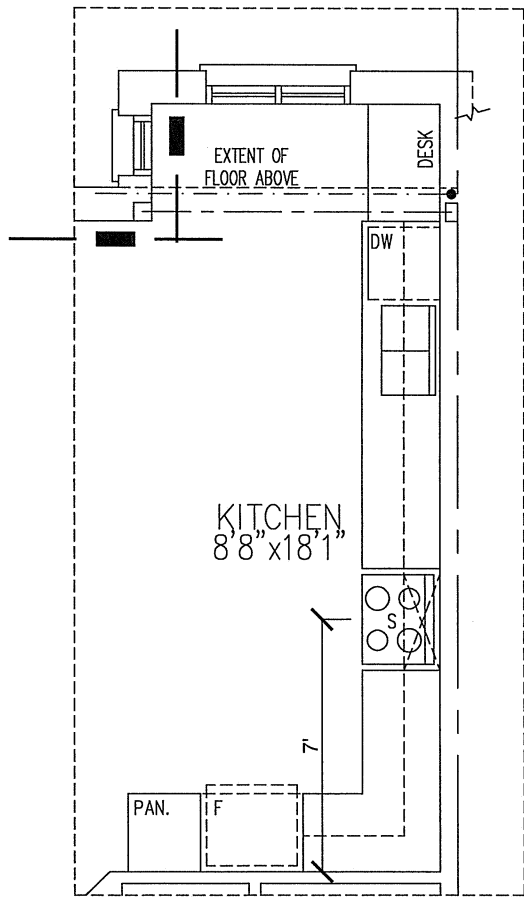
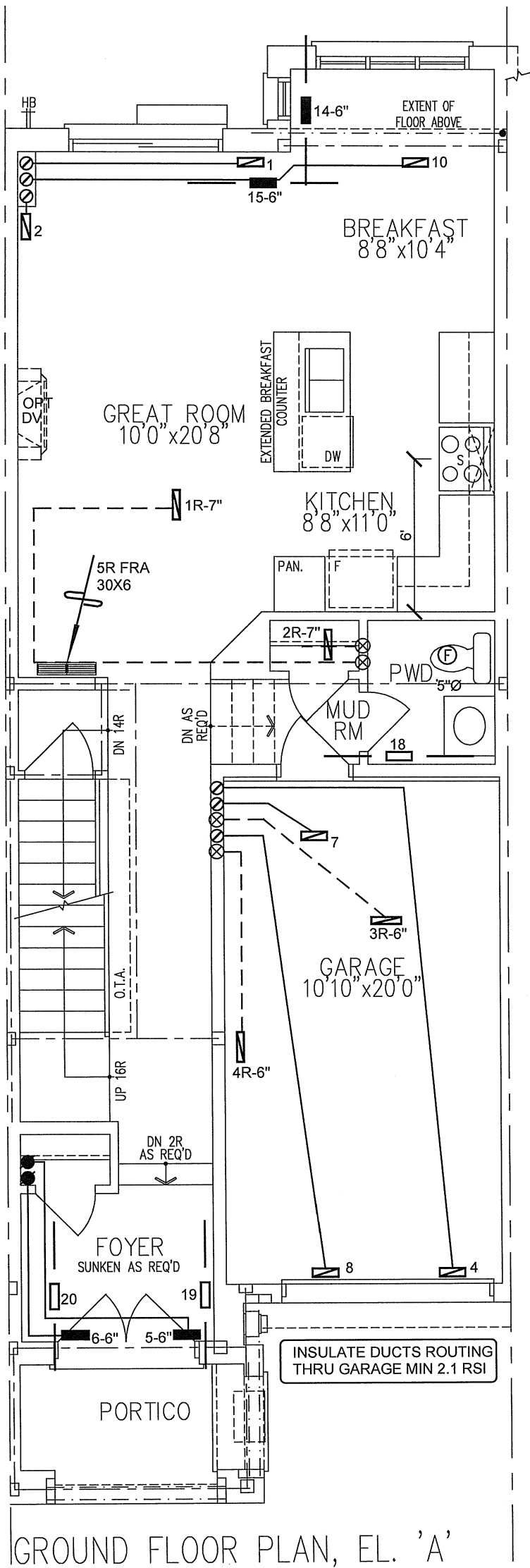
CSA-F280-12

SB-12 PERFORMANCE

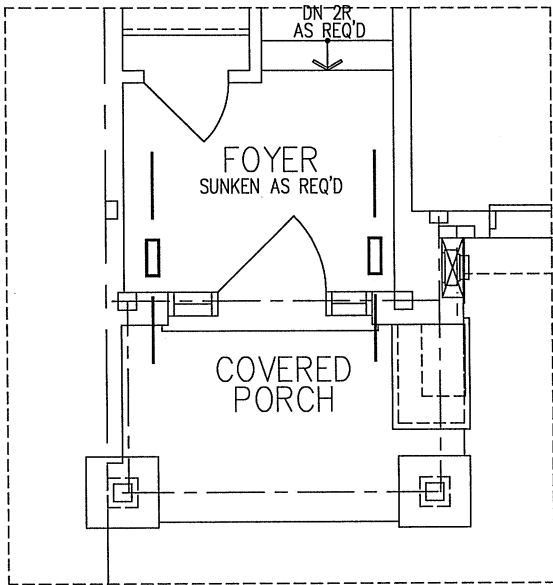
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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 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.	HEAT LOSS 24655 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title						
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR				BASEMENT HEATING LAYOUT						
Project Name			MAKE		2ND FLOOR		8	4			2				
CENTREFIELD (WEST GORMLEY)			MODEL		1ST FLOOR		5	1			2				
RICHMOND HILL, ONTARIO			INPUT		BASEMENT		3	1	0	Date	SEPT/2020				
2009			OUTPUT		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"		
1660 sqft			COOLING									TONS		BCIN# 19669	
			FAN SPEED									cfm @ 0.6" w.c.		LO# 87532	
			820												



PART. GROUND FLOOR PLAN
- OPT. KITCHEN LAYOUT



GROUND FLOOR PLAN, EL. 'B'

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

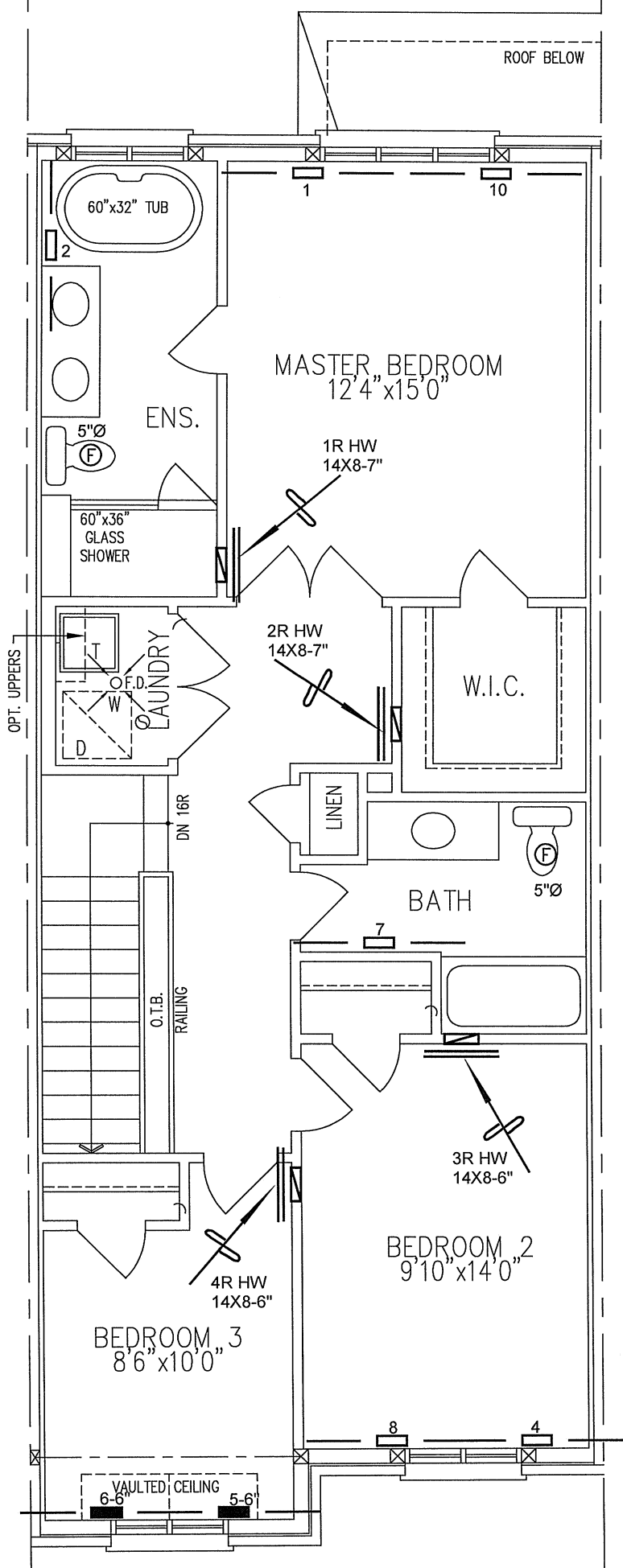
SB-12 PERFORMANCE

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	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		

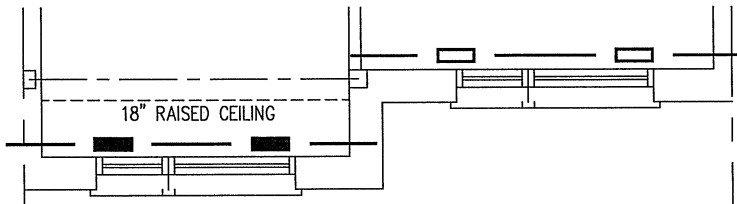
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Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date SEPT/2020	
2009			Scale 3/16" = 1'-0"	
1660 sqft			BCIN# 19669	
			LO#	87532
		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.		

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.



SECOND FLOOR PLAN, EL. 'A'



SECOND FLOOR PLAN, EL. 'B'

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

SB-12 PERFORMANCE

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	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		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	
ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2020
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
			LO#	87532
2009	1660 sqft			

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other description		
RICHMOND HILL				
B. Individual who reviews and takes responsibility for design activities				
Name		Firm		
MICHAEL O'ROURKE		HVAC DESIGNS LTD.		
Street address			Unit no.	Lot/con.
375 FINLEY AVE			202	N/A
Municipality	Postal code	Province	E-mail	
AJAX	L1S 2E2	ONTARIO	info@hvacdesigns.ca	
Telephone number	Fax number	Cell number		
(905) 619-2300	(905) 619-2375	()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems				
Description of designer's work			Model: 2009 END	
HEAT LOSS / GAIN CALCULATIONS				
DUCT SIZING				
RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY			Project: CENTREFIELD (WEST GORMLEY)	
RESIDENTIAL SYSTEM DESIGN per CSA-F280-12				
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate):				
(print name)				
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.				
Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.				
Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
April 21, 2021				
Date			Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: CENTREFIELD (WEST GORMLEY)										DATE: Apr-21		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		CSA-F200-12	
BUILDER: ROYAL PINE HOMES										LO# 87536		0.236		13		SB-12 PERFORMANCE	
TYPE: 2009 END										GFA: 1700		SUMMER NATURAL AIR CHANGE RATE		0.072			
ROOM USE	EXP. WALL CLG. HT.	IMBR	ENS	BED-2	BED-3	PWD	FOY	BATH									
GRS.WALL AREA	FACTORS	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN								
GLAZING		117	234	90	460	0	0	0	0								
NORTH	21.8 16.0	0	0	0	0	0	0	0	0								
EAST	21.8 41.6	0	0	0	0	0	0	0	0								
SOUTH	21.8 24.9	0	0	0	0	0	0	0	0								
WEST	21.8 41.6	28	610	0	0	0	0	0	0								
SKYLT.	35.8 101.2	0	0	0	0	0	0	0	0								
DOORS	25.8 4.3	0	0	0	0	0	0	0	0								
NET EXPOSED WALL	4.2 0.7	89	374	62	261	43	411	1728	284								
NET EXPOSED BSMT WALL ABOVE GR	3.7 0.6	0	0	0	0	0	0	0	0								
EXPOSED CLG	1.3 0.6	382	502	225	78	103	46	177	233	104	200	263	118	77	101	45	
NO ATTIC EXPOSED CLG	2.8 1.3	0	0	0	0	0	0	0	0	0	20	56	25	0	0	0	
EXPOSED FLOOR	2.6 0.4	0	0	0	0	0	0	177	482	76	21	55	9	50	131	21	
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		1486	1245	1565	3170	2256		232									
SUB TOTAL HT GAIN		1450	575	1386	0.20	0.20	0.20	0.20	0.20								
LEVEL FACTOR / MULTIPLIER		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20								
AIR CHANGE HEAT LOSS		302	253	318	643	107		47									
AIR CHANGE HEAT GAIN		69	27	66	381	353		28									
DUCT LOSS		0	0	188	262	240		7									
DUCT GAIN		0	0	0	0	0		0									
HEAT GAIN PEOPLE	240	2	480	1	240	923		0									
HEAT GAIN APPLIANCES/LIGHTS		923	0	923	4194	5042		307									
TOTAL HT LOSS BTU/H		1788	1497	2071	3740												
TOTAL HT GAIN x 1.3 BTU/H		3788	784					100									

ROOM USE	EXP. WALL CLG. HT.	FACTORS	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
GRS.WALL AREA	FACTORS	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS
GLAZING		117	234	90	460	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH	21.8 16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8 41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8 24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.8 41.6	28	610	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	35.8 101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.8 4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.2 0.7	89	374	62	261	43	411	1728	284	20	517	35	40	1034	170	20	517	85
NET EXPOSED BSMT WALL ABOVE GR	3.7 0.6	0	0	0	0	0	0	0	0	113	476	78	446	1874	308	0	0	0
EXPOSED CLG	1.3 0.6	382	502	225	78	103	46	177	233	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.8 1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.6 0.4	0	0	0	0	0	0	177	482	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS		1486	1245	1565	3170	2256		232		993	163	3452	1517	336	1238	204	336	1238
SUB TOTAL HT GAIN		1450	575	1386	0.20	0.20	0.20	0.20	0.20	0.30	0.26	0.30	0.26	0.50	0.70	654	0.50	0.70
LEVEL FACTOR / MULTIPLIER		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	257	893	893	72	3904	3904	31	3904	3904
AIR CHANGE HEAT LOSS		302	253	318	643	107		47		0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN		69	27	66	381	353		28		0	0	0	0	0	0	0	0	0
DUCT LOSS		0	0	188	262	240		7		0	0	0	0	0	0	0	0	0
DUCT GAIN		0	0	0	0	0		0		0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	2	480	1	240	923		0		1250	222	4345	2066	9502	9502	881	9502	881
HEAT GAIN APPLIANCES/LIGHTS		923	0	923	4194	5042		307										
TOTAL HT LOSS BTU/H		1788	1497	2071	3740													
TOTAL HT GAIN x 1.3 BTU/H		3788	784					100										

TOTAL HEAT GAIN BTU/H: 24684 TONS: 2.05 LOSS DUE TO VENTILATION LOAD BTU/H: 1336 STRUCTURAL HEAT LOSS: 30760 TOTAL COMBINED HEAT LOSS BTU/H: 32096

Michael O'Rourke

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

TYPE: 2009 END

DATE: Apr-21

GFA: 1700 LO# 87536

HEATING CFM 820 COOLING CFM 820
TOTAL HEAT LOSS 30,760 TOTAL HEAT GAIN 24,364
AIR FLOW RATE CFM 26.66 AIR FLOW RATE CFM 33.66

****CARRIER**
59TNGA-060-14V 60
FAN SPEED LOW 820
MEDIUM 0
HIGH 1520
DESIGN CFM = 820
CFM @ .6" E.S.P.
AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	8	6
R/A	0	0	0	4	1

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	BED-2	BED-3	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	K/B/G	K/B/G	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	FOY	BAS	BAS	BAS	BAS
	RM LOSS MBH	0.89	1.50	1.04	1.04	1.04	0.31	1.04	0.89	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.25	2.17	2.17	2.17	3.17	3.17	3.17	24
	CFM PER RUN HEAT	24	40	28	56	56	8	28	24	52	52	52	52	52	52	52	52	33	58	58	58	84	84	84	84
	RM GAIN MBH	1.90	0.78	1.87	2.52	2.52	0.10	1.87	1.90	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	0.22	1.03	1.03	1.03	0.30	0.30	0.30	0.30
	CFM PER RUN COOLING	64	26	63	85	85	3	63	64	87	87	87	87	87	87	87	87	7	35	35	35	10	10	10	10
	ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
	ACTUAL DUCT LGH.	28	38	52	53	50	30	47	34	4	23	19	19	19	19	19	19	22	36	36	39	25	15	33	33
	EQUIVALENT LENGTH	110	170	150	190	180	140	130	140	140	150	170	150	150	150	150	150	160	110	110	120	120	130	130	130
	TOTAL EFFECTIVE LENGTH	138	208	202	243	230	230	170	177	174	154	193	169	169	169	169	169	182	146	146	149	145	145	153	153
	ADJUSTED PRESSURE	0.12	0.08	0.09	0.07	0.07	0.07	0.1	0.1	0.1	0.11	0.08	0.1	0.1	0.1	0.1	0.1	0.09	0.12	0.12	0.12	0.11	0.11	0.11	0.11
ROUND DUCT SIZE	5	4	5	6	6	6	4	5	5	6	6	6	6	6	6	6	4	5	5	5	6	6	6	6	
HEATING VELOCITY (ft/min)	176	459	206	286	286	286	92	206	176	265	265	265	265	265	265	265	379	426	426	426	428	428	428	428	
	470	298	463	433	433	433	34	463	470	444	444	444	444	444	444	444	80	257	257	257	51	51	51	51	
	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	
OUTLET GRILL SIZE	C	C	B	A	A	A	B	B	C	B	B	C	C	C	C	C	B	B	A	A	C	C	C	C	
	C	C	B	A	A	A	B	B	C	B	B	C	C	C	C	C	B	B	A	A	C	C	C	C	
	C	C	B	A	A	A	B	B	C	B	B	C	C	C	C	C	B	B	A	A	C	C	C	C	

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										RETURN 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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)					
TRUNK A	0.07	9.4	10	8	TRUNK G	0.00	0	0	8	TRUNK O	0.05	0	0	8					
TRUNK B	0.07	10.8	14	8	TRUNK H	0.00	0	0	8	TRUNK P	0.05	0	0	8					
TRUNK C	0.08	9.6	10	8	TRUNK I	0.00	0	0	8	TRUNK Q	0.05	0	0	8					
TRUNK D	0.00	0	0	8	TRUNK J	0.00	0	0	8	TRUNK R	0.05	0	0	8					
TRUNK E	0.00	0	0	8	TRUNK K	0.00	0	0	8	TRUNK S	0.05	0	0	8					
TRUNK F	0.00	0	0	8															

	1	2	3	4	5		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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	95	115	75	75	340		0	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.	64	47	56	55	21		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	205	165	245	175	150		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	269	212	301	230	171		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.07	0.05	0.06	0.09		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	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6.2	6.5	6	5.7	9.1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NLET GRILL SIZE	8	8	8	8	6		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NLET GRILL SIZE	14	14	14	14	30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
																								</	

TYPE: 2009 END
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87536

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	2 @ 10.6 cfm	21.2 cfm
Table 9.32.3.A.	TOTAL	137.8 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	137.8	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	74.2	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE 65H	Location: BSMT
63.6 cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	X 78 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
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5
B-BATH	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 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: ROYAL PINE 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																											
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																											
LO#: 87536		Model: 2009 END		Builder: ROYAL PINE HOMES		Date: 4/21/2021																																																																					
Volume Calculation				Air Change & Delta T Data																																																																							
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5.2.3.1 Heat Loss due to Air Leakage				6.2.6 Sensible Gain due to Air Leakage																																																																							
$HL_{air-b} = LR_{air-h} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$				$HG_{salb} = LR_{air-c} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																																							
0.236 x 186.74 x 43 °C x 1.2 = 2289 W				= 0.072 x 186.74 x 7 °C x 1.2 = 114 W																																																																							
= 7808 Btu/h				= 389 Btu/h																																																																							
5.2.3.2 Heat Loss due to Mechanical Ventilation				6.2.7 Sensible heat Gain due to Ventilation																																																																							
$HL_{vair-b} = PVC \times DTD_h \times 1.08 \times (1 - E)$				$HL_{vair-b} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																							
64 CFM x 78 °F x 1.08 x 0.25 = 1336 Btu/h				64 CFM x 13 °F x 1.08 x 0.25 = 220 Btu/h																																																																							
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																											
$HL_{airr} = Level Factor \times HL_{air-bv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																											
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																																											

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2009 END**SFQT:** 1700**LO#** 87536**BUILDER:** ROYAL PINE HOMES**SITE:** CENTREFIELD (WEST GORMLEY)**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	23741.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	112.0 ft

2012 OBC - COMPLIANCE PACKAGE		
Component	Compliance Package SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

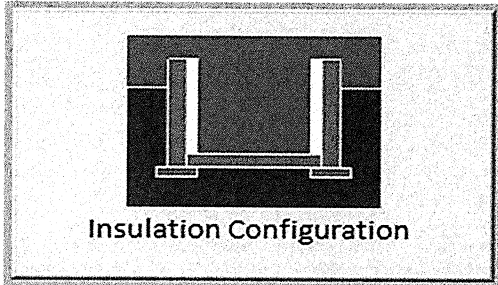
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

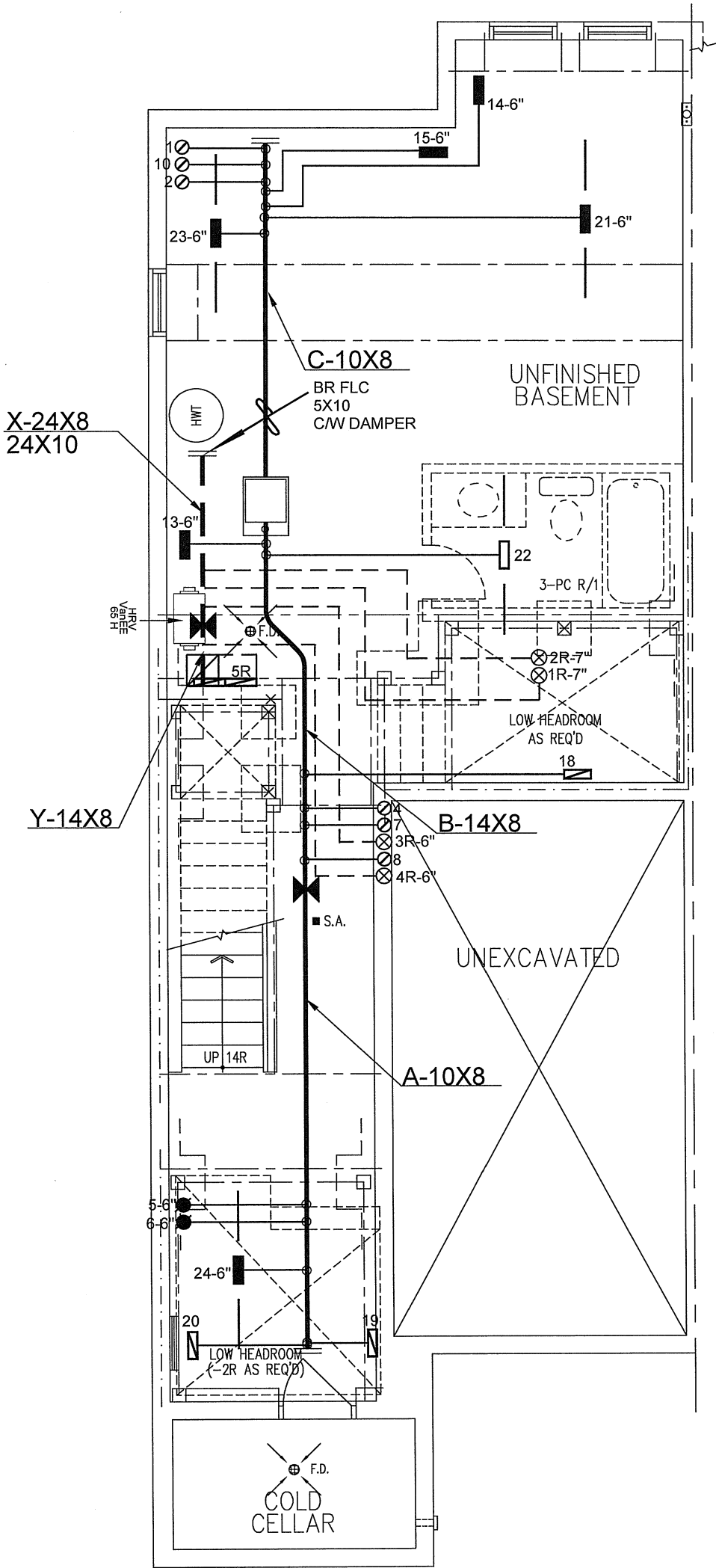
Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.8	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	34.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.9	
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):		1062

TYPE: 2009 END
LO# 87536

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	6.74			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	672.3			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	627.6 cm ²		
	2.50	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):	0.236			
Cooling Air Leakage Rate (ACH/H):	0.072			



BASEMENT PLAN, EL. 'A' & 'B'
- END COND.

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.

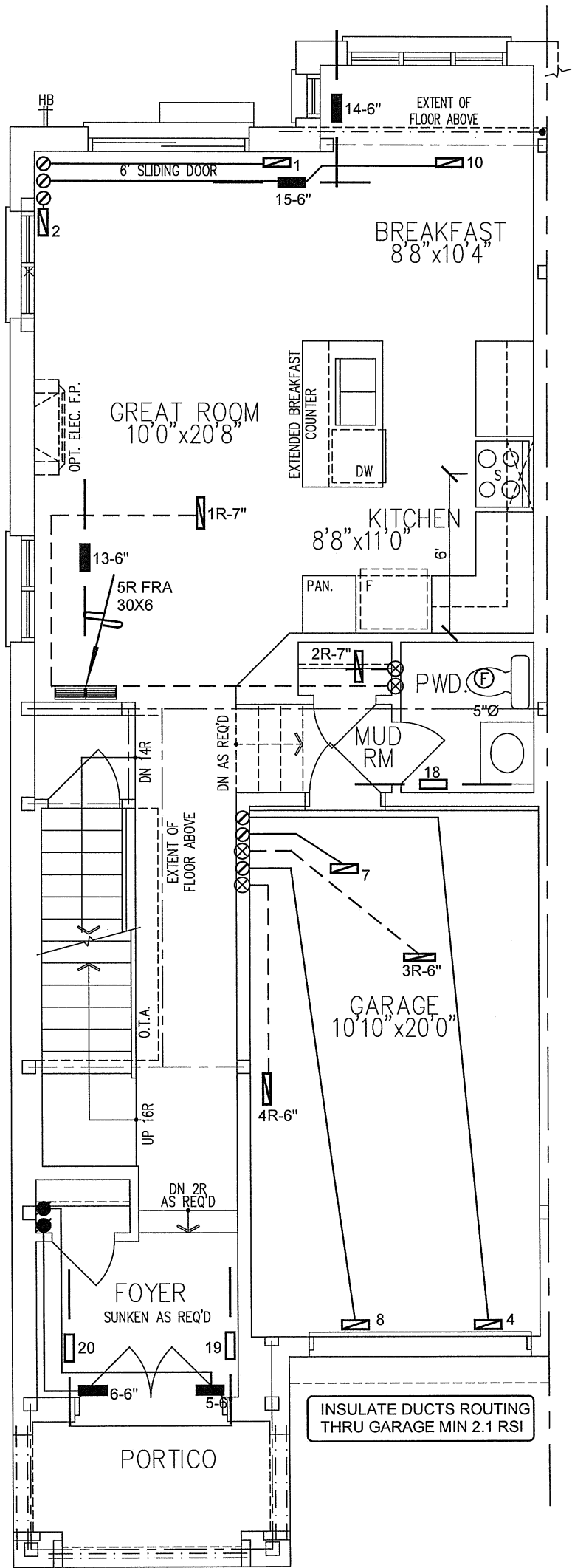
CSA-F280-12

SB-12 PERFORMANCE

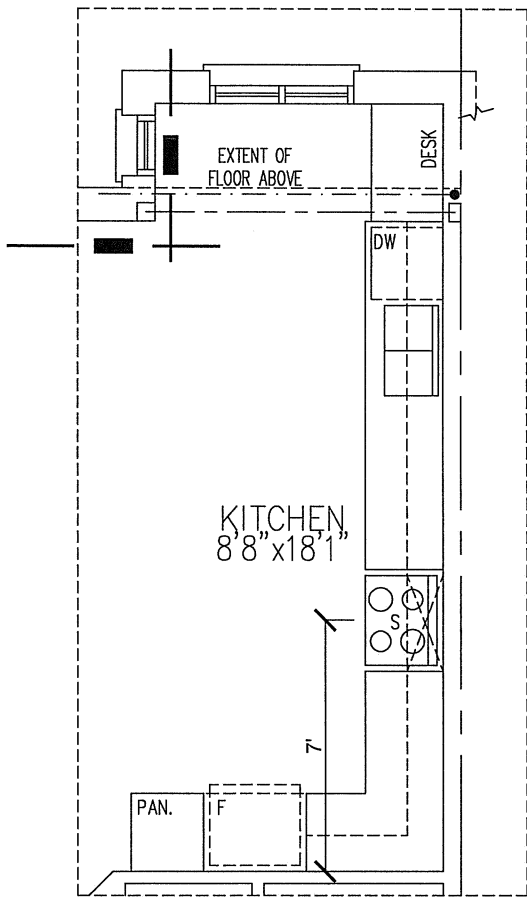
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		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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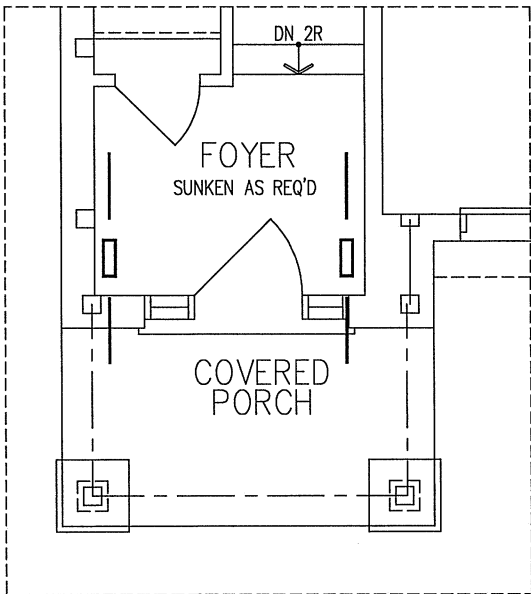
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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.	HEAT LOSS 32096 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title			
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR					BASEMENT HEATING LAYOUT		
			MAKE CARRIER		2ND FLOOR		8	4	2			
			MODEL 59TN6A-060-14V		1ST FLOOR		6	1	2			
			INPUT 60 MBTU/H		BASEMENT		3	1	0			
Project Name			OUTPUT 58 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						Date SEPT/2020	
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			COOLING 2.0 TONS								Scale 3/16" = 1'-0"	
			FAN SPEED 820 cfm @ 0.6" w.c.								BCIN# 19669	
2009 END		1700 sqft		LO# 87536								



GROUND FLOOR PLAN,
EL. 'A' – END



PART. GROUND FLOOR PLAN
– OPT. KITCHEN LAYOUT



GROUND FLOOR PLAN, EL.
'B' – END

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.

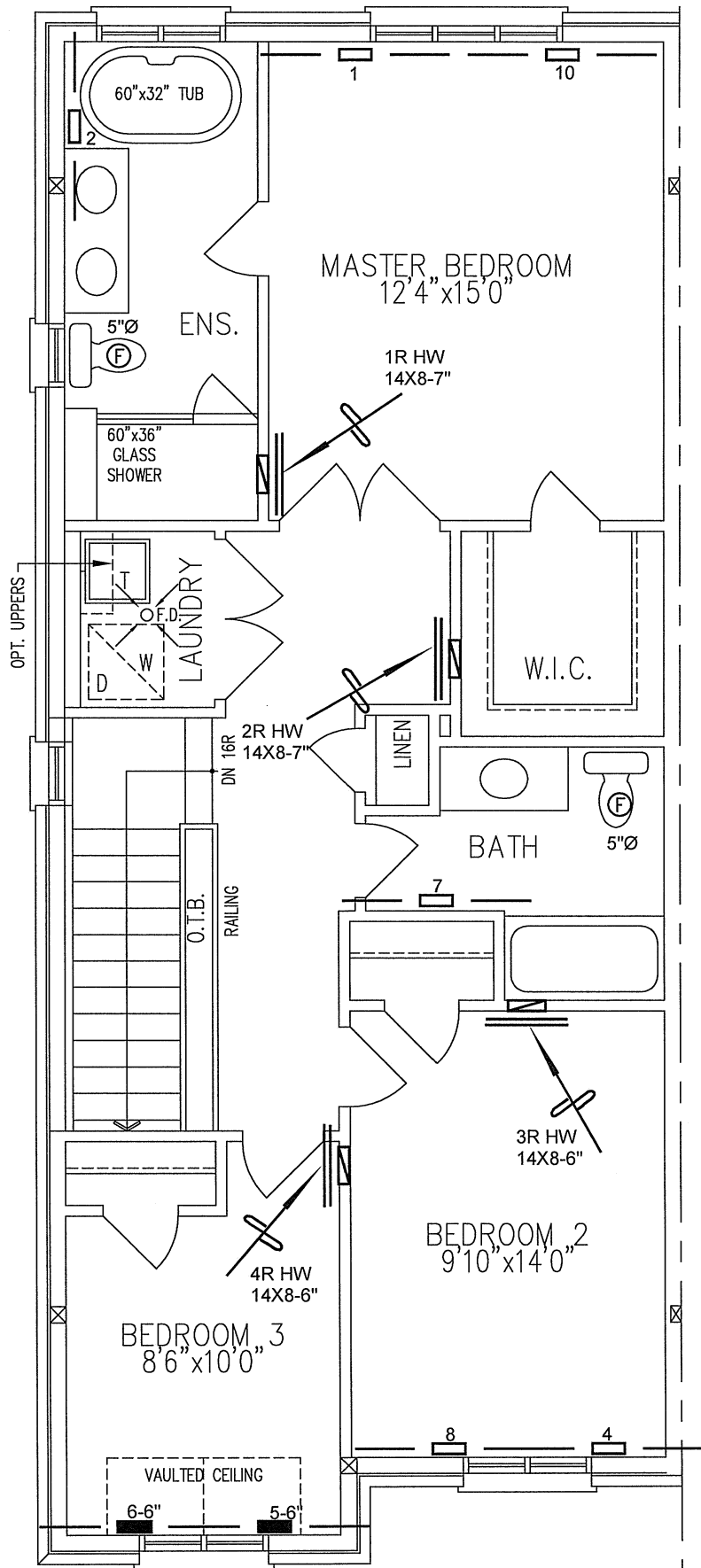
CSA-F280-12

SB-12 PERFORMANCE

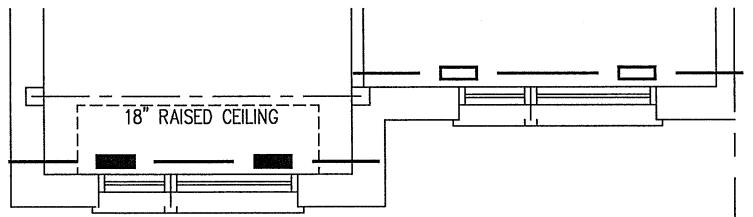
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		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		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client		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	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Date	SEPT/2020
			Scale	3/16" = 1'-0"
			BCIN# 19669	
2009 END			LO#	87536
1700 sqft				



SECOND FLOOR PLAN, EL.
'A1/A2' - END



SECOND FLOOR PLAN, EL.
'B' - END

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

SB-12 PERFORMANCE

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	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 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	
ROYAL PINE HOMES			SECOND FLOOR	
Project Name			HEATING	
CENTREFIELD (WEST GORMLEY)			LAYOUT	
RICHMOND HILL, ONTARIO			Date	SEPT/2020
		Scale	3/16" = 1'-0"	
		BCIN# 19669		
2009 END	1700 sqft	LO#	87536	

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.		
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A	
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems				
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2009 FIN BSMT Project: CENTREFIELD (WEST GORMLEY)		
D. Declaration of Designer				
I <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):		
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
April 21, 2021 Date		 Signature of Designer		

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d). of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

SITE NAME: CENTREFIELD (WEST GORMLEY)				FIN BSMT		DATE: Apr-21		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F		CSA-F280-12	
BUILDER: ROYAL PINE HOMES				TYPE: 2009		LO# 87533		0.236		78		SB-12 PERFORMANCE	
ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	BED-2		BED-3		BATH		B-BATH	
GRS.WALL AREA	GLAZING	LOSS	GAIN	126	54	10	90	15	150	0	0	0	0
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0
EAST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.8	24.9	0	0	0	28	610	36	784	0	0	0	0
WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0
SKYL.T.	35.8	101.2	0	0	0	0	0	0	0	0	0	0	0
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.2	0.7	98	412	68	62	261	43	114	479	79	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	382	502	225	177	233	104	200	263	118	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	20	56	25	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	177	462	76	21	55	9	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				1524	488	1565	1386	0.20	0.28	1726	67	175	0
SUB TOTAL HT GAIN				1456	451	0.20	0.28	0.20	0.28	0.50	1.08	175	0
LEVEL FACTOR / MULTIPLIER				0.20	0.28	438	78	458	97	65	188	0	0
AIR CHANGE HEAT LOSS				426	136	200	262	210	298	30	7	0	0
AIR CHANGE HEAT GAIN				81	25	1	240	1	240	0	0	0	0
DUCT LOSS				0	0	2204	913	2305	913	0	0	0	0
DUCT GAIN				0	0					326	101	364	0
HEAT GAIN PEOPLE	240			2	480								
HEAT GAIN APPLIANCES/LIGHTS				913	0								
TOTAL HT LOSS BTU/H				1950	624								
TOTAL HT GAIN x 1.3 BTU/H				3809	619								

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	K/B/G	PWD	FOY	BAS	
GRS.WALL AREA	GLAZING	LOSS	GAIN	232	133	333	462	LOSS
NORTH	21.8	16.0	0	0	0	0	0	0
EAST	21.8	41.6	0	0	0	0	0	0
SOUTH	21.8	24.9	8	174	0	25	545	1039
WEST	21.8	41.6	78	1689	0	0	0	0
SKYL.T.	35.8	101.2	0	0	0	0	0	0
DOORS	25.8	4.3	0	0	0	0	0	0
NET EXPOSED WALL	4.2	0.7	146	615	20	517	85	40
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	113	476	78	268
EXPOSED CLG	1.3	0.6	0	0	0	0	0	1127
NO ATTIC EXPOSED CLG	2.8	1.3	31	87	0	0	0	185
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	170
BASEMENT/CRAWL HEAT LOSS								198
SLAB ON GRADE HEAT LOSS								729
SUBTOTAL HT LOSS				2576	993	2706	1968	120
SUB TOTAL HT GAIN				3580	163	1394	3367	496
LEVEL FACTOR / MULTIPLIER				0.30	0.36	0.30	0.50	1.08
AIR CHANGE HEAT LOSS				938	362	985	3620	85
AIR CHANGE HEAT GAIN				200	9	78	0	28
DUCT LOSS				0	0	0	0	0
DUCT GAIN				0	0	0	0	0
HEAT GAIN PEOPLE	240			0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				0	0	0	0	0
TOTAL HT LOSS BTU/H				3514	1355	3691	6887	913
TOTAL HT GAIN x 1.3 BTU/H				6101	224	1914	6887	1857

TOTAL HEAT GAIN BTU/H: 22853 TONS: 1.90 LOSS DUE TO VENTILATION LOAD BTU/H: 1336 STRUCTURAL HEAT LOSS: 23319 TOTAL COMBINED HEAT LOSS BTU/H: 24655

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMES

FIN BSMT
TYPE: 2009

GFA: 1660 LO# 87533

DATE: Apr-21

LO# 87533

HEATING CFM	820	COOLING CFM	820
TOTAL HEAT LOSS	23,319	TOTAL HEAT GAIN	22,633
AIR FLOW RATE CFM	35.16	AIR FLOW RATE CFM	36.23

furnace pressure	0.05
a/c coil pressure	0.2
available pressure	

59TN6A-060-14V 60
FAN SPEED

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	5	4
R/A	0	0	4	1	1

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

All S/A runs 5"Ø unless noted otherwise on layout.

	1	2	4	5	6	7	8	10	14	15	18	19	20	21	22	23	24
RUN #																	
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH.	0.98	0.62	1.10	1.15	1.15	0.33	1.10	0.98	1.76	1.76	1.35	1.85	1.85	2.33	2.33	2.33	2.33
CFM PER RUN HEAT	34	22	39	41	41	11	39	34	62	62	48	65	65	82	13	82	82
RM GAIN MBH.	1.90	0.62	1.87	2.13	2.13	0.10	1.87	1.90	3.05	3.05	0.22	0.96	0.96	0.62	0.00	0.62	0.62
CFM PER RUN COOLING	69	22	68	77	77	4	68	69	111	111	8	35	35	23	0	23	23
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.15	0.15	0.17	0.17	0.17	0.16	0.17	0.16	0.16
ACTUAL DUCT LGH.	33	26	52	53	50	30	47	39	23	19	22	36	39	31	11	24	33
EQUIVALENT LENGTH	110	170	150	190	180	140	130	140	170	150	160	110	110	160	140	180	120
TOTAL EFFECTIVE LENGTH	143	196	202	243	230	170	177	179	193	169	182	146	149	191	151	204	153
ADJUSTED PRESSURE	0.12	0.09	0.09	0.07	0.07	0.1	0.1	0.1	0.08	0.09	0.09	0.12	0.12	0.08	0.11	0.08	0.11
ROUND DUCT SIZE	5	4	5	6	6	4	5	5	6	6	5	5	5	6	4	6	6
HEATING VELOCITY (ft/min)	250	252	286	209	209	126	286	250	316	316	352	477	477	418	149	418	418
COOLING VELOCITY (ft/min)	507	252	499	393	393	46	499	507	566	566	59	257	257	0	117	117	117
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10
TRUNK	C	C	B	A	A	B	B	C	C	C	B	A	A	C	R	C	C

[illegible]

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK		STATIC PRESS.		ROUND DUCT		RECT DUCT		VELOCITY (ft/min)		TRUNK CFM		STATIC PRESS.		ROUND DUCT		RECT DUCT		VELOCITY (ft/min)	
TRUNK A	294	0.07	9.2	10				8	X	TRUNK G	0	0.00	0					8	X
TRUNK B	444	0.07	10.7	14				8	X	TRUNK H	0	0.00	0					8	X
TRUNK C	378	0.08	9.7	12				8	X	TRUNK I	0	0.00	0					8	X
TRUNK D	0		0	0				8	X	TRUNK J	0	0.00	0					8	X
TRUNK E	0	0.00	0	0				8	X	TRUNK K	0	0.00	0					8	X
TRUNK F	0	0.00	0	0				8	X	TRUNK L	0	0.00	0					8	X
TRUNK G	0	0.05	0	0				8	X	TRUNK M	0	0.05	0					8	X
TRUNK H	0	0.05	0	0				8	X	TRUNK N	0	0.05	0					8	X
TRUNK I	0	0.05	0	0				8	X	TRUNK O	0	0.05	0					8	X
TRUNK J	0	0.05	0	0				8	X	TRUNK P	0	0.05	0					8	X
TRUNK K	0	0.05	0	0				8	X	TRUNK Q	0	0.05	0					8	X
TRUNK L	0	0.05	0	0				8	X	TRUNK R	0	0.05	0					8	X
TRUNK M	0	0.05	0	0				8	X	TRUNK S	0	0.05	0					8	X
TRUNK N	0	0.05	0	0				8	X	TRUNK T	0	0.05	0					8	X
TRUNK O	0	0.05	0	0				8	X	TRUNK U	0	0.05	0					8	X
TRUNK P	0	0.05	0	0				8	X	TRUNK V	0	0.05	0					8	X
TRUNK Q	0	0.05	0	0				8	X	TRUNK W	0	0.05	0					8	X
TRUNK R	0	0.05	0	0				8	X	TRUNK X	0	0.05	0					8	X
TRUNK S	0	0.05	0	0				8	X	TRUNK Y	0	0.05	0					8	X
TRUNK T	0	0.05	0	0				8	X	TRUNK Z	0	0.05	0					8	X

[illegible]

TYPE: 2009
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87533
FIN BSMT

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	6 @ 10.6 cfm	63.6 cfm
Other Rooms	2 @ 10.6 cfm	21.2 cfm
Table 9.32.3.A.	TOTAL	148.4 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	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANE 65H	Location: BSMT		
63.6 cfm	☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	$\Delta T \cdot F$	FACTOR	% LOSS
63.6 CFM	X 78 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
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5
B-BATH	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 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:		ROYAL PINE 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																			
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																			
LO#: 87533	Model: 2009	Builder: ROYAL PINE HOMES	Date: 4/21/2021																																																																
Volume Calculation		Air Change & Delta T Data																																																																	
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5.2.3.1 Heat Loss due to Air Leakage		6.2.6 Sensible Gain due to Air Leakage																																																																	
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$		$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																																	
0.236	x 182.17 x 43 °C x 1.2 =	0.072	x 182.17 x 7 °C x 1.2 =																																																																
	= 2232 W		= 111 W																																																																
	= 7617 Btu/h		= 380 Btu/h																																																																
5.2.3.2 Heat Loss due to Mechanical Ventilation		6.2.7 Sensible heat Gain due to Ventilation																																																																	
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$		$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																	
64 CFM	x 78 °F x 1.08 x 0.25 =	64 CFM	x 13 °F x 1.08 x 0.25 =																																																																
	= 1336 Btu/h		= 220 Btu/h																																																																
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																			
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclvl} + HL_{bgclvl})\}$																																																																			
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*HL_{airbv} = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system H_{laire} = 0																																																																			

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2009	FIN BSMT	BUILDER: ROYAL PINE HOMES
SFQT: 1660	LO# 87533	SITE: CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	23159.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.90	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	66.0 ft

2012 OBC - COMPLIANCE PACKAGE

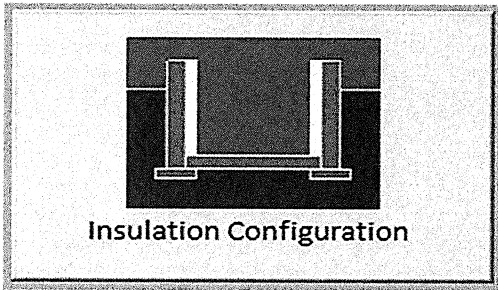
Component	Compliance Package SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.8	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	20.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.7	
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):		628

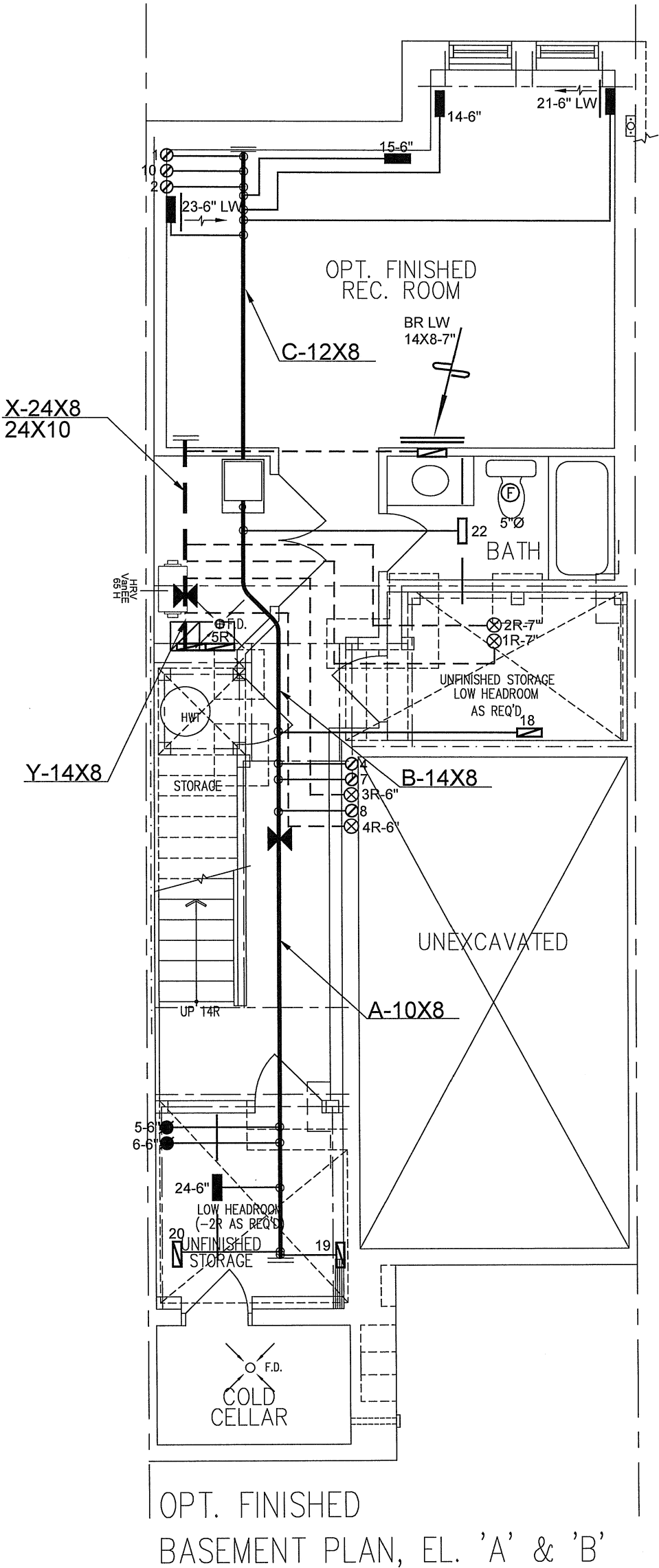
TYPE: 2009
LO# 87533

FIN BSMT

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	6.74			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	655.8			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	612.2 cm ²		
	2.50	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):	0.236			
Cooling Air Leakage Rate (ACH/H):	0.072			



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.

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

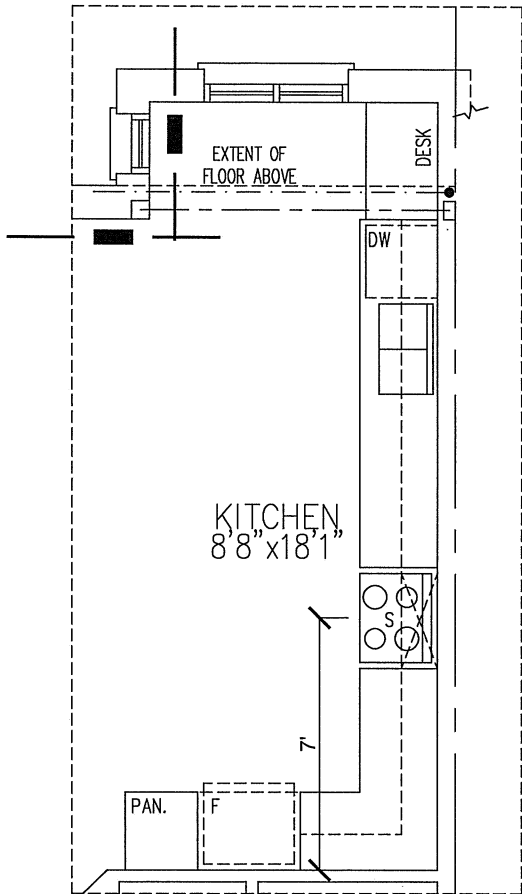
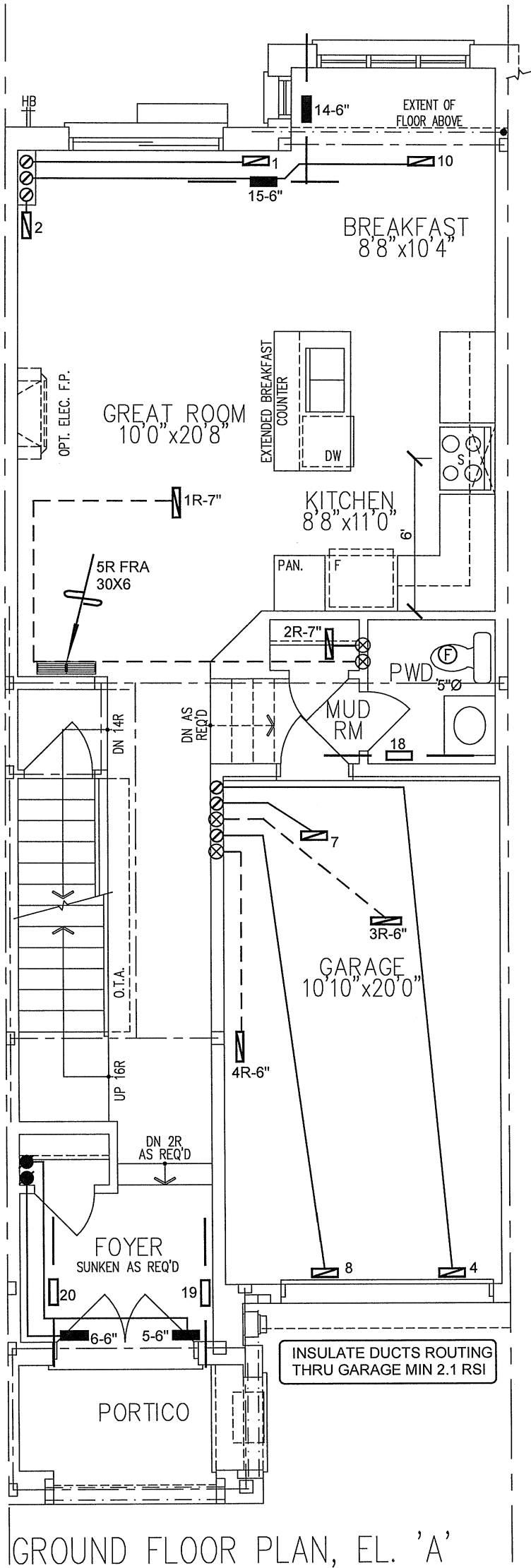
CSA-F280-12

SB-12 PERFORMANCE

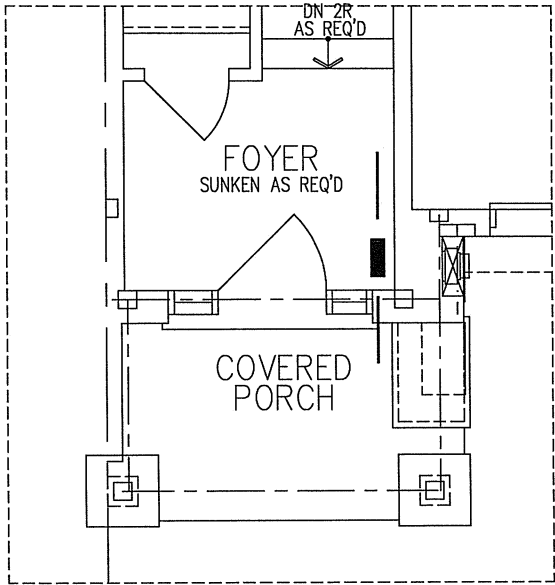
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2. REVISED AS PER ARCHITECTURALS APR/2021
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1. REVISED TO PERFORMANCE SEPT/2020
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date
REVISIONS								

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client ROYAL PINE HOMES		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.	HEAT LOSS 24655 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT	
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MAKE CARRIER		3RD FLOOR				
			MODEL 59TN6A-060-14V		2ND FLOOR				
			INPUT 60 MBTU/H		1ST FLOOR				
			OUTPUT 58 MBTU/H		BASEMENT				
FIN BSMT 2009		COOLING 2.0 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			Date SEPT/2020		
1660 sqft		FAN SPEED 820 cfm @ 0.6" w.c.					Scale 3/16" = 1'-0"		
							BCIN# 19669		
							LO# 87533		



PART. GROUND FLOOR PLAN
– OPT. KITCHEN LAYOUT



GROUND FLOOR PLAN, EL. 'B'

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.

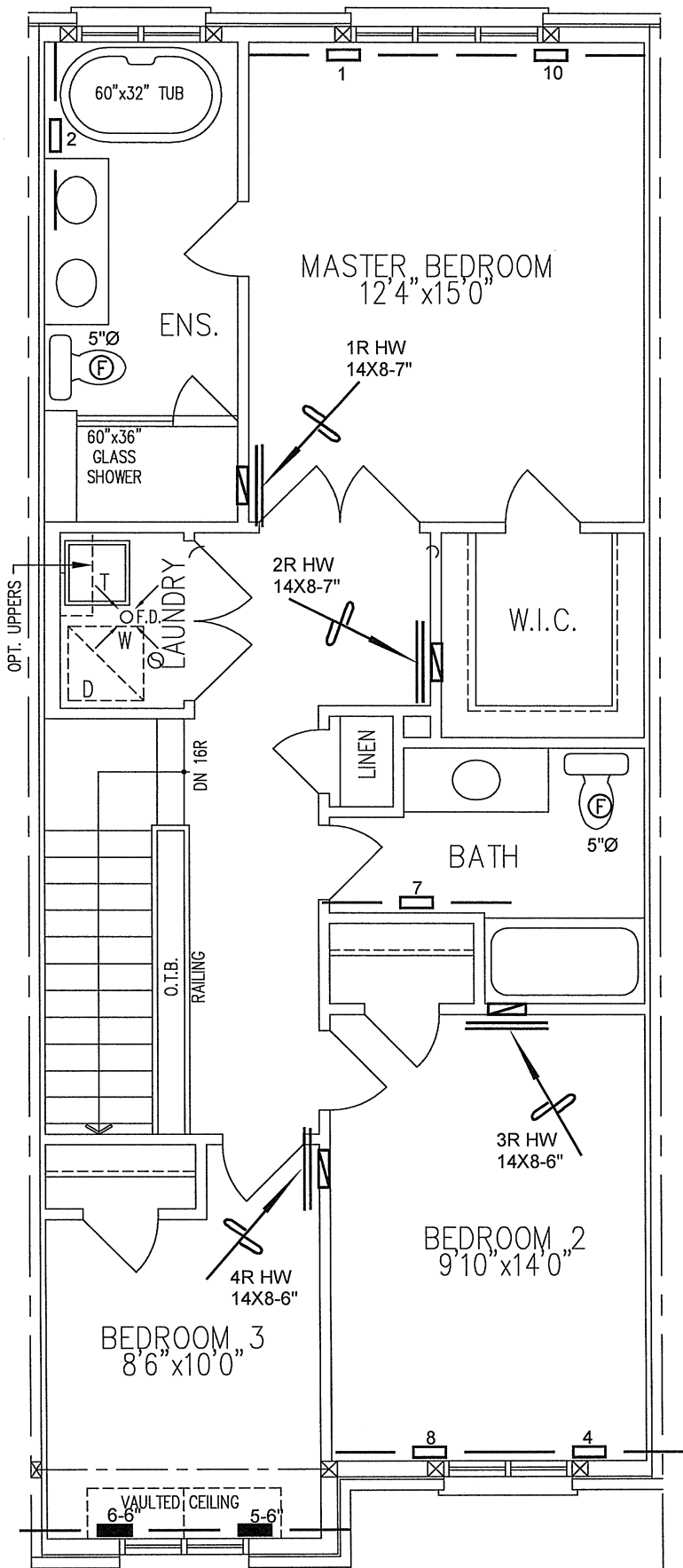
CSA-F280-12

SB-12 PERFORMANCE

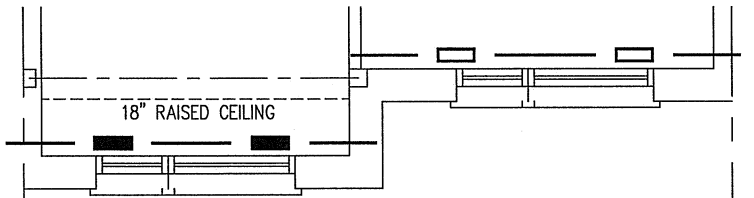
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS
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	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	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 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	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2020
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
FIN BSMT			BCIN# 19669	
2009			LO#	87533
1660 sqft				



SECOND FLOOR PLAN, EL. 'A'



SECOND FLOOR PLAN, EL. 'B'

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
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Client
ROYAL PINE HOMES

Project Name
CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

FIN BSMT
2009

1660 sqft

HVACDESIGNS LTD.

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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.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	
SECOND FLOOR HEATING LAYOUT	
Date	SEPT/2020
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	87533

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality RICHMOND HILL	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.		
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A	
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems				
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2009 END FIN BSMT Project: CENTREFIELD (WEST GORMLEY)		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)				
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
April 21, 2021		 Signature of Designer		
Date				

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: CENTREFIELD (WEST GORMLEY)										FIN BSMIT		DATE: Apr-21		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		CSA-F280-12	
BUILDER: ROYAL PINE HOMES										TYPE: 2009 END		GFA: 1700		LO# 87537		SUMMER NATURAL AIR CHANGE RATE		SB-12 PERFORMANCE	
ROOM USE		IMBR		ENS		BED-2		BED-3		BATH		B-BATH							
EXP. WALL		13	26	26	10	46	10	46	0	0	0	0	0	0	0	0	0		
CLG. HT.		9	9	9	9	10	9	10	10	9	9	10	10	10	10	10	10		
FACTORS		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN			
GRS.WALL AREA		117	234	234	90	460	90	460	0	0	0	0	0	0	0	0	0		
GLAZING		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN		LOSS		GAIN			
NORTH		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EAST		0	0	0	28	610	0	0	36	784	0	0	0	0	0	0	0		
SOUTH		0	0	0	0	0	0	13	283	324	0	0	0	0	0	0	0		
WEST		28	610	196	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.		35.8	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DOORS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
NET EXPOSED WALL		4.2	89	374	62	261	43	411	1728	284	0	0	0	0	0	0	0		
NET EXPOSED BEMT WALL ABOVE GR		3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG		1.3	382	502	177	233	104	200	263	118	77	101	45	0	0	0	0		
NO ATTIC EXPOSED CLG		2.8	0	0	0	0	0	20	56	25	0	0	0	0	0	0	0		
EXPOSED FLOOR		2.6	0	0	177	462	76	21	55	9	50	131	21	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SUBTOTAL HT LOSS		1486	1245	575	1565	3170	1386	2256	232	67	289	289	289	289	289	289	289		
SUB TOTAL HT GAIN		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20		
LEVEL FACTOR / MULTIPLIER		302	253	27	318	643	66	107	47	3	0	0	0	0	0	0	0		
AIR CHANGE HEAT LOSS		0	69	0	188	381	262	353	28	7	0	0	0	0	0	0	0		
AIR CHANGE HEAT GAIN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DUCT LOSS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DUCT GAIN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
HEAT GAIN PEOPLE		2	480	0	1	240	240	1	923	307	0	0	0	0	0	0	0		
HEAT GAIN APPLIANCES		1788	3798	1497	2071	4194	923	5042	4194	100	0	0	0	0	0	0	0		
TOTAL HT LOSS BTU/H		1788	3798	1497	2071	4194	923	5042	4194	100	0	0	0	0	0	0	0		
TOTAL HT GAIN x 1.3 BTU/H		1788	3798	1497	2071	4194	923	5042	4194	100	0	0	0	0	0	0	0		

SITE NAME: CENTREFIELD (WEST GORMLEY)
BUILDER: ROYAL PINE HOMESFIN BSMIT
TYPE: 2009 END

GFA: 1700 LO# 87537

DATE: Apr-21

HEATING CFM 820 COOLING CFM 820
TOTAL HEAT LOSS 30,760 TOTAL HEAT GAIN 24,364
AIR FLOW RATE CFM 26.66 AIR FLOW RATE CFM 33.66

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	6	4
R/A	0	0	4	1	1

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	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH	0.89	1.50	1.04	2.10	2.10	2.10	0.31	1.04	0.89	1.94	1.94	1.94	1.25	2.17	2.17	3.00	0.49	3.00	3.00
CFM PER RUN HEAT	24	40	28	56	56	56	8	28	24	52	52	52	33	58	58	80	13	80	80
RM GAIN MBH	1.90	0.78	1.87	2.52	2.52	2.52	0.10	1.87	1.90	2.57	2.57	2.57	0.22	1.03	1.03	0.30	0.00	0.30	0.30
CFM PER RUN COOLING	64	26	63	85	85	85	3	63	64	87	87	87	7	35	35	10	0	10	10
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	28	38	52	53	50	50	30	47	34	4	23	19	22	36	39	31	11	24	33
EQUIVALENT LENGTH	110	170	150	190	190	180	140	130	140	150	170	150	160	110	110	160	140	180	120
TOTAL EFFECTIVE LENGTH	138	208	202	243	230	230	170	177	174	154	193	169	182	146	149	191	151	204	153
ADJUSTED PRESSURE	0.12	0.08	0.09	0.07	0.07	0.07	0.1	0.1	0.1	0.11	0.08	0.1	0.09	0.12	0.12	0.09	0.11	0.08	0.11
ROUND DUCT SIZE	5	4	5	6	6	6	4	5	5	6	6	6	4	5	5	6	4	6	6
HEATING VELOCITY (ft/min)	176	459	206	286	286	286	92	206	176	265	265	265	379	426	426	408	149	408	408
COOLING VELOCITY (ft/min)	470	298	463	433	433	433	34	463	470	444	444	444	80	257	257	51	0	51	51
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10
TRUNK	C	C	B	A	A	A	B	B	C	B	C	C	B	A	A	C	B	C	A

RUN #	1	2	3	4	5	6	7	8	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH	0.89	1.50	1.04	2.10	2.10	2.10	0.31	1.04	0.89	1.94	1.94	1.94	1.25	2.17	2.17	3.00	0.49	3.00	3.00
CFM PER RUN HEAT	24	40	28	56	56	56	8	28	24	52	52	52	33	58	58	80	13	80	80
RM GAIN MBH	1.90	0.78	1.87	2.52	2.52	2.52	0.10	1.87	1.90	2.57	2.57	2.57	0.22	1.03	1.03	0.30	0.00	0.30	0.30
CFM PER RUN COOLING	64	26	63	85	85	85	3	63	64	87	87	87	7	35	35	10	0	10	10
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	28	38	52	53	50	50	30	47	34	4	23	19	22	36	39	31	11	24	33
EQUIVALENT LENGTH	110	170	150	190	190	180	140	130	140	150	170	150	160	110	110	160	140	180	120
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HEATING VELOCITY (ft/min)	176	459	206	286	286	286	92	206	176	265	265	265	379	426	426	408	149	408	408
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OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10
TRUNK	C	C	B	A	A	A	B	B	C	B	C	C	B	A	A	C	B	C	A

RUN #	1	2	3	4	5	6	7	8	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH	0.89	1.50	1.04	2.10	2.10	2.10	0.31	1.04	0.89	1.94	1.94	1.94	1.25	2.17	2.17	3.00	0.49	3.00	3.00
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CFM PER RUN COOLING	64	26	63	85	85	85	3	63	64	87	87	87	7	35	35	10	0	10	10
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17
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ADJUSTED PRESSURE	0.12	0.08	0.09	0.07	0.07	0.07	0.1	0.1	0.1	0.11	0.08	0.1	0.09	0.12	0.12	0.09	0.11	0.08	0.11
ROUND DUCT SIZE	5	4	5	6	6	6	4	5	5	6	6	6	4	5	5	6	4	6	6
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OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10
TRUNK	C	C	B	A	A	A	B	B	C	B	C	C	B	A	A	C	B	C	A

RUN #	1	2	3	4	5	6	7	8	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	BED-2	MBR	K/B/G	K/B/G	K/B/G	PWD	FOY	FOY	BAS	B-BATH	BAS	BAS
RM LOSS MBH	0.89	1.50	1.04	2.10	2.10	2.10	0.31	1.04	0.89	1.94	1.94	1.94	1.25	2.17	2.17	3.00	0.49	3.00	3.00
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CFM PER RUN COOLING	64	26	63	85	85	85	3	63	64	87	87	87	7	35	35	10	0	10	10
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17
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TRUNK	C	C	B	A	A	A	B	B	C	B	C	C	B	A	A	C	B	C	A

TYPE: 2009 END
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87537
FIN BSMT

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	6 @ 10.6 cfm	63.6 cfm
Other Rooms	2 @ 10.6 cfm	21.2 cfm
Table 9.32.3.A.	TOTAL	148.4 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	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
63.6 cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	X 78 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
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5
B-BATH	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 cfm high	64 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: ROYAL PINE 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																															
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																															
LO#: 87537	Model: 2009 END	Builder: ROYAL PINE HOMES	Date: 4/21/2021																																																																												
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6.2.6 Sensible Gain due to Air Leakage																																																																															
$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$																																																																															
0.236	x	186.74	x																																																																												
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6.2.7 Sensible heat Gain due to Ventilation																																																																															
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$																																																																															
64 CFM	x	78 °F	x																																																																												
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5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																															
$HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																															
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																																															

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2009 END	FIN BSMT	BUILDER: ROYAL PINE HOMES
SFQT: 1700	LO# 87537	SITE: CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	23741.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 52.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	112.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
SB-12 PERFORMANCE****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	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	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

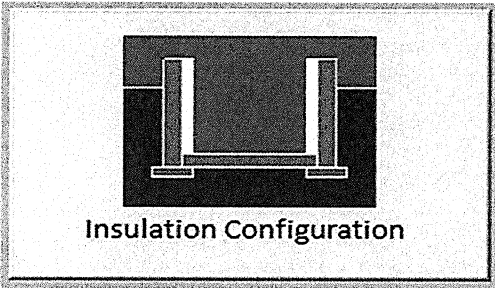
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Richmond Hill	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.8	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	34.1	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.9	
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):		1062

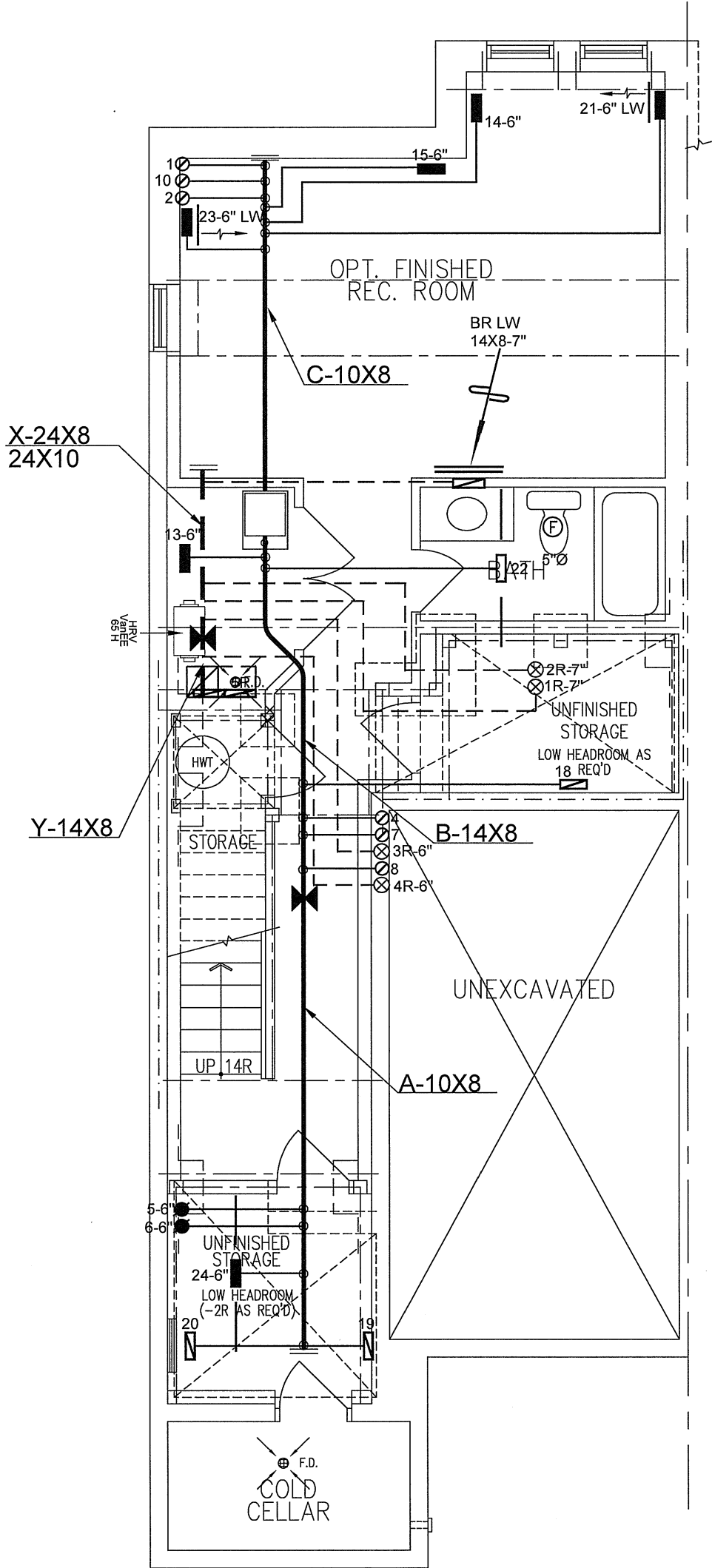
TYPE: 2009 END
LO# 87537

FIN BSMT

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Richmond Hill			
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):	6.74			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	672.3			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	627.6 cm ²		
	2.50	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):	0.236			
Cooling Air Leakage Rate (ACH/H):	0.072			



OPT. FINISHED BASEMENT PLAN,
EL. 'A' & 'B' – END COND.

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.

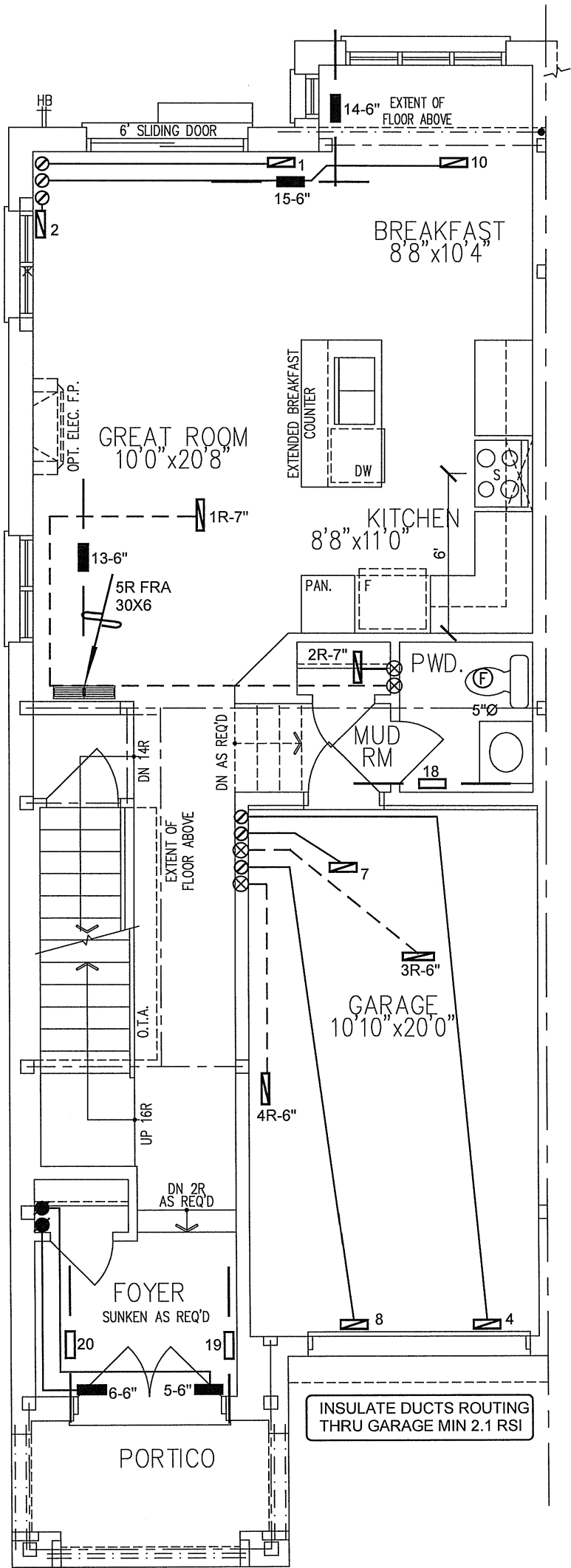
CSA-F280-12

SB-12 PERFORMANCE

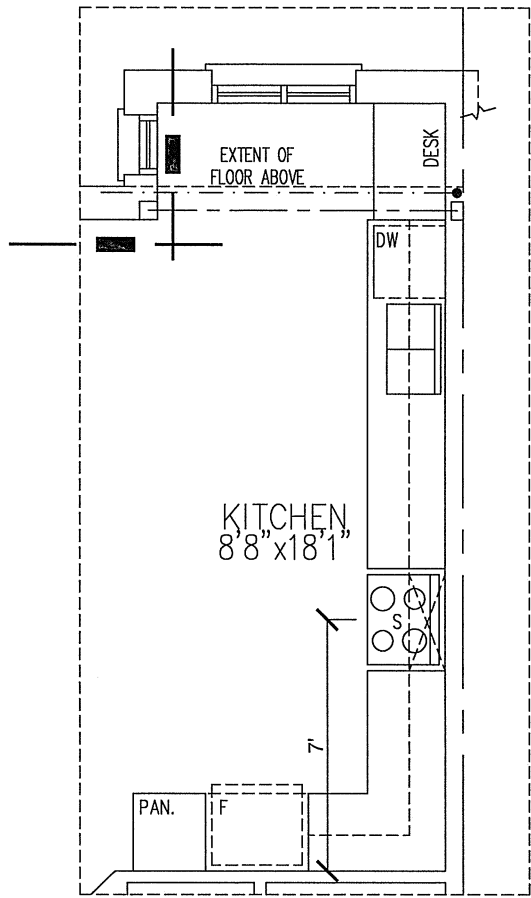
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT		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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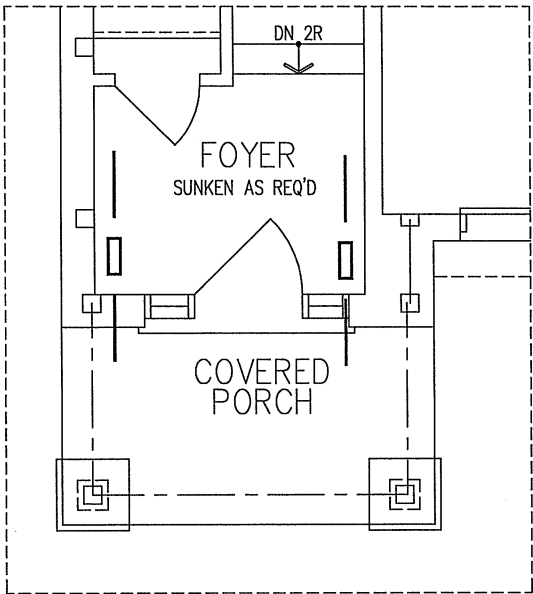
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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.	HEAT LOSS 32096 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title			
ROYAL PINE HOMES			MAKE CARRIER		3RD FLOOR					BASEMENT HEATING LAYOUT		
Project Name CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			MODEL 59TN6A-060-14V		2ND FLOOR		8	4	2			
FIN BSMT 2009 END			INPUT 60 MBTU/H		1ST FLOOR		6	1	2			
1700 sqft			OUTPUT 58 MBTU/H		BASEMENT		4	1	1	Date	SEPT/2020	
			COOLING 2.0 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						Scale	3/16" = 1'-0"
			FAN SPEED 820 cfm @ 0.6" w.c.								BCIN# 19669	
											LO#	87537



GROUND FLOOR PLAN,
EL. 'A' – END



PART. GROUND FLOOR PLAN
– OPT. KITCHEN LAYOUT



GROUND FLOOR PLAN, EL.
'B' – END

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, BCIN# 19669
HVAC DESIGNS LTD.

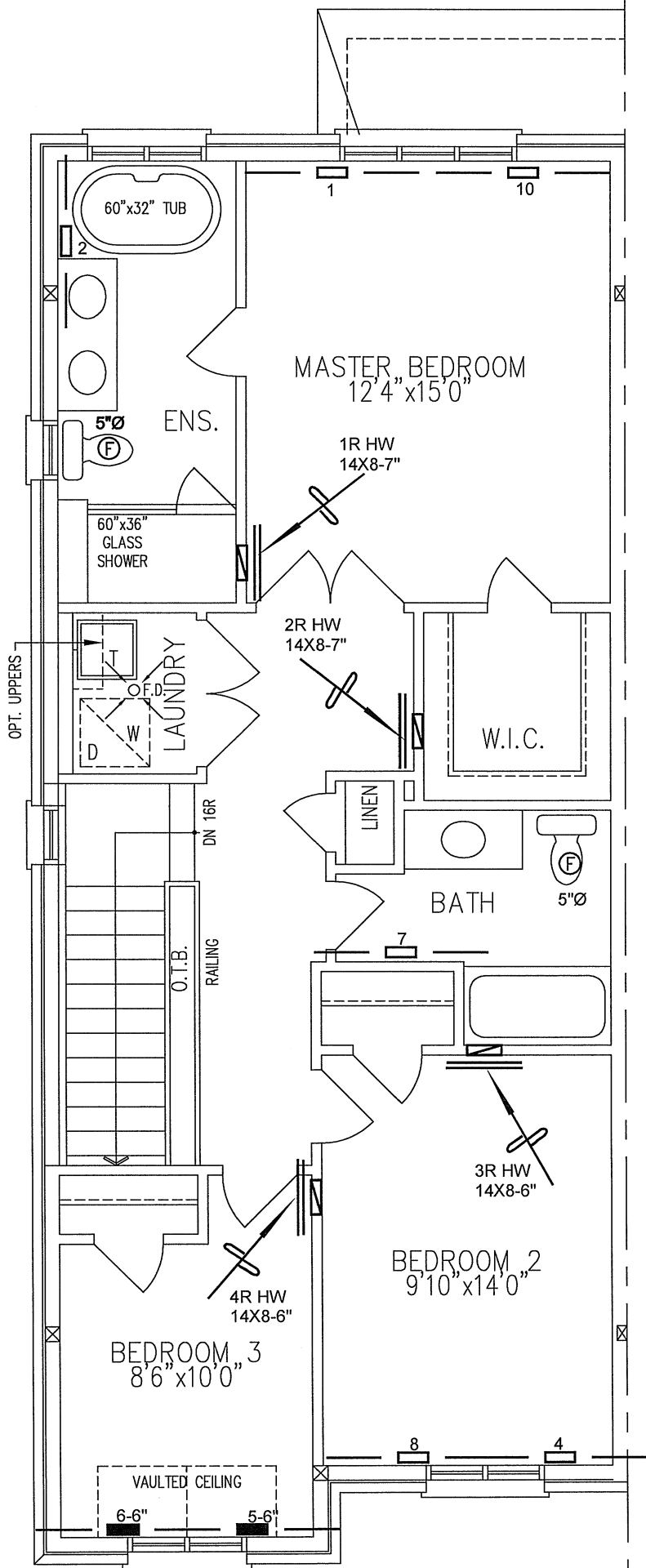
CSA-F280-12

SB-12 PERFORMANCE

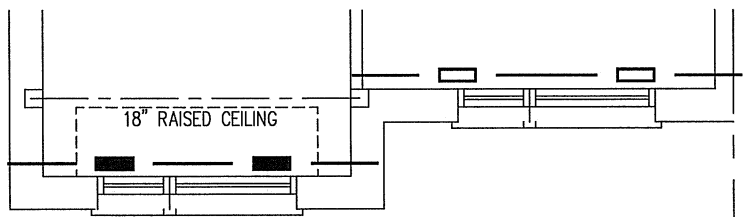
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name		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.	Date	SEPT/2020
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
FIN BSMT 2009 END			BCIN# 19669	
1700 sqft			LO#	87537



SECOND FLOOR PLAN, EL.
'A1/A2' - END



SECOND FLOOR PLAN, EL.
'B' - END

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

SB-12 PERFORMANCE

HVAC LEGEND								3.		
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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	SEPT/2020
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO			Scale	3/16" = 1'-0"
FIN BSMT			BCIN# 19669	
2009 END			LO#	87537
1700 sqft				