

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 BRAMPTON	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: 5004 Project: WEST RIVER SOUTH	
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 14, 2025			
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

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: BASEMENT	
Address: _____				Manufacturer: VANEE	
City: _____		Postal Code: _____		Model: VANEE V150H ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: 35 CFM High: 150 CFM	
3. Designer		Name: HVAC DESIGNS LTD.		Sones: ESP: 0.2 " w.c.	
Address: 375 FINLEY AVE				75 % Sensible Efficiency @ 0 °C @ 150 CFM	
City: AJAX		Postal Code: L1S 2E2		60 % Sensible Efficiency @ -25 °C @ 64 CFM	
Ph: 905-619-2300		Fax: 905-619-2375		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: 001820					
E-mail: info@hvacdesigns.ca					
4. Combustion Appliances				10. Other Ventilation Fans	
☒ a) Direct Vent		b) Induced Draft		Location: ENS Sones: .3	
c) Natural Draft		d) Solid Fuel Appliances		Manufacturer: BY CONTRACTOR	
e) No Combustion Appliances		CO Alarm Required		Model: BY CONTRACTOR HVI Rated	
5. Heating System				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
☒ Forced Air		Non-Forced Air		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Gas Propane Other				Circulation Fan Make-up Air Fan for	
Oil Electricity				Location: BATH Sones: .3	
6. Distribution System				Manufacturer: BY CONTRACTOR	
☒ Furnace Inline fan HRV/ERV				Model: BY CONTRACTOR HVI Rated	
7. Principal Ventilation System Design Option				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Balanced no heat recovery				Circulation Fan Make-up Air Fan for	
HRV/ERV with extended exhaust				Location: ENS-3 Sones: .3	
☒ HRV/ERV with simplified exhaust				Manufacturer: BY CONTRACTOR	
HRV/ERV with full ducting/not coupled to forced air				Model: BY CONTRACTOR HVI Rated	
HRV/ERV with no supplemental fans				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
(High speed must be at least 2.5 times the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Supplemental fans				Circulation Fan Make-up Air Fan for	
8. Principal Ventilation Capacity (PVC)				Location: W/R Sones: .3	
# of Bedrooms: 5 Required Exh Airflow: 90 CFM				Manufacturer: BY CONTRACTOR	
Supply Air Required: Yes ☒ No				Model: BY CONTRACTOR HVI Rated	
Mixed Air Temperature Calculation Required:				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Yes ☒ No				☒ Supplemental Fan Supply Fan for Principal Exhaust	
For a System coupled with a Forced Air Furnace:				Circulation Fan Make-up Air Fan for	
Furnace Blower Rate: 1530 CFM				11. Designer Consent	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				I MICHAEL O'ROURKE certify this ventilation	
CFM				system is designed to be in accordance with OBC-2024 9.32	
				Date: 4/14/2025 Signature: <i>Michael O'Rourke</i>	
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM) Note: Secondary suite ventilation system requires a separate design					

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 409.30 x 41 °C x 1.2 = 6777 W = 23122 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.109 x 409.30 x 6 °C x 1.2 = 327 W = 1114 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 74 °F x 1.08 x 0.25 = 1803 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 11 °F x 1.08 x 0.25 = 267 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	BUILDER: ROYAL PINE HOMES
SFQT: 3619	SITE: WEST RIVER SOUTH
LO# 107933	

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

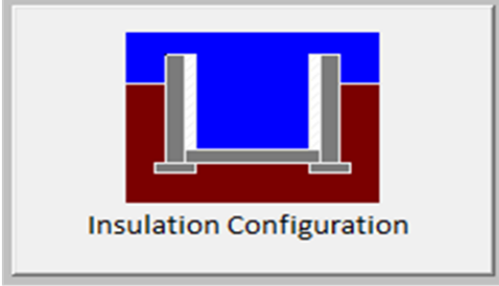
OBC - COMPLIANCE PACKAGE		Compliance Package SB-12 PERFORMANCE	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.70
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22+1.5	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		96%	-
HRV/ERV 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:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):		1888

TYPE: 5004
LO# 107933

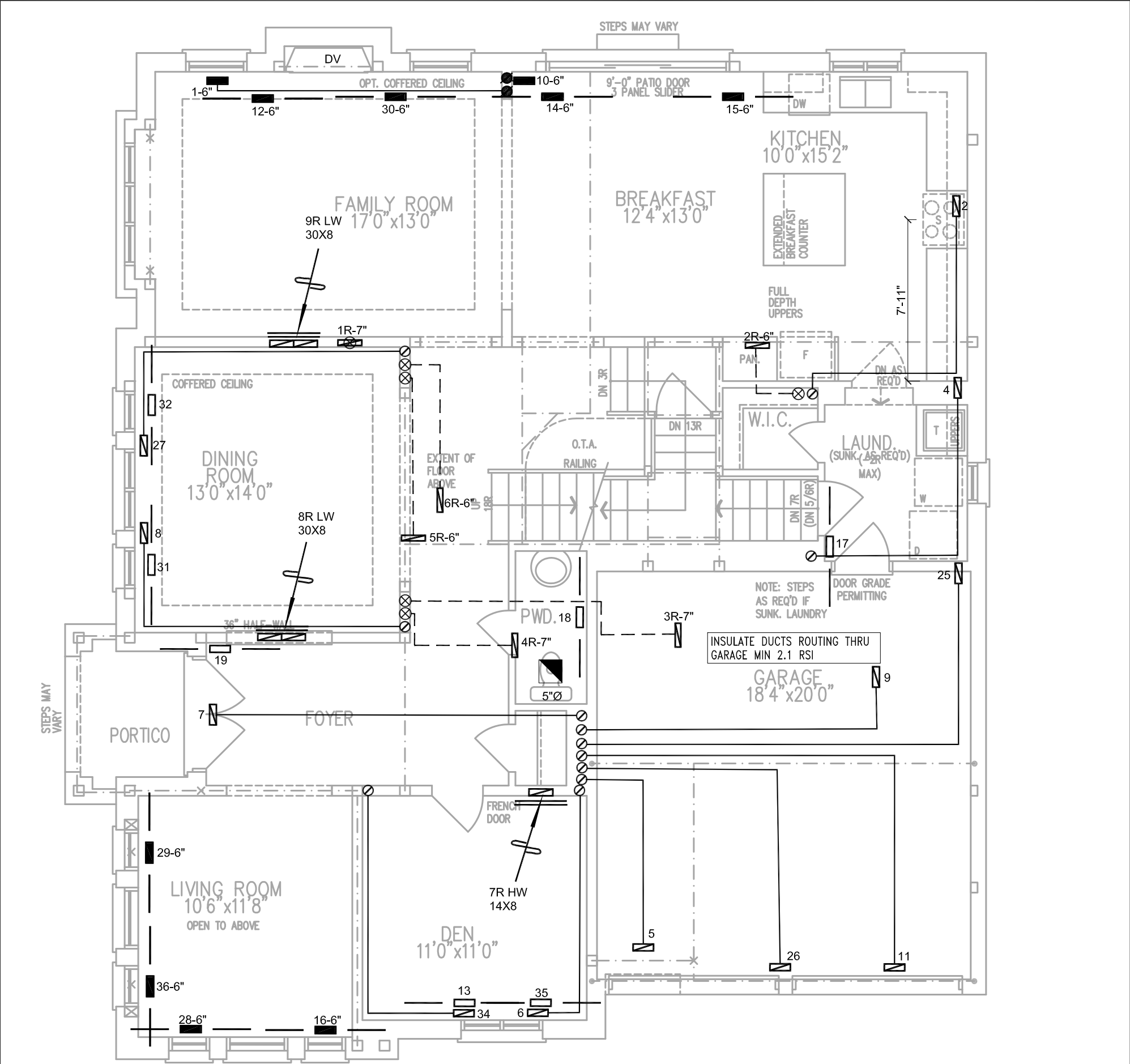
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
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):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	42.5	42.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: 5004

LO# 107933



GROUND FLOOR PLAN, EL. 'A'

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

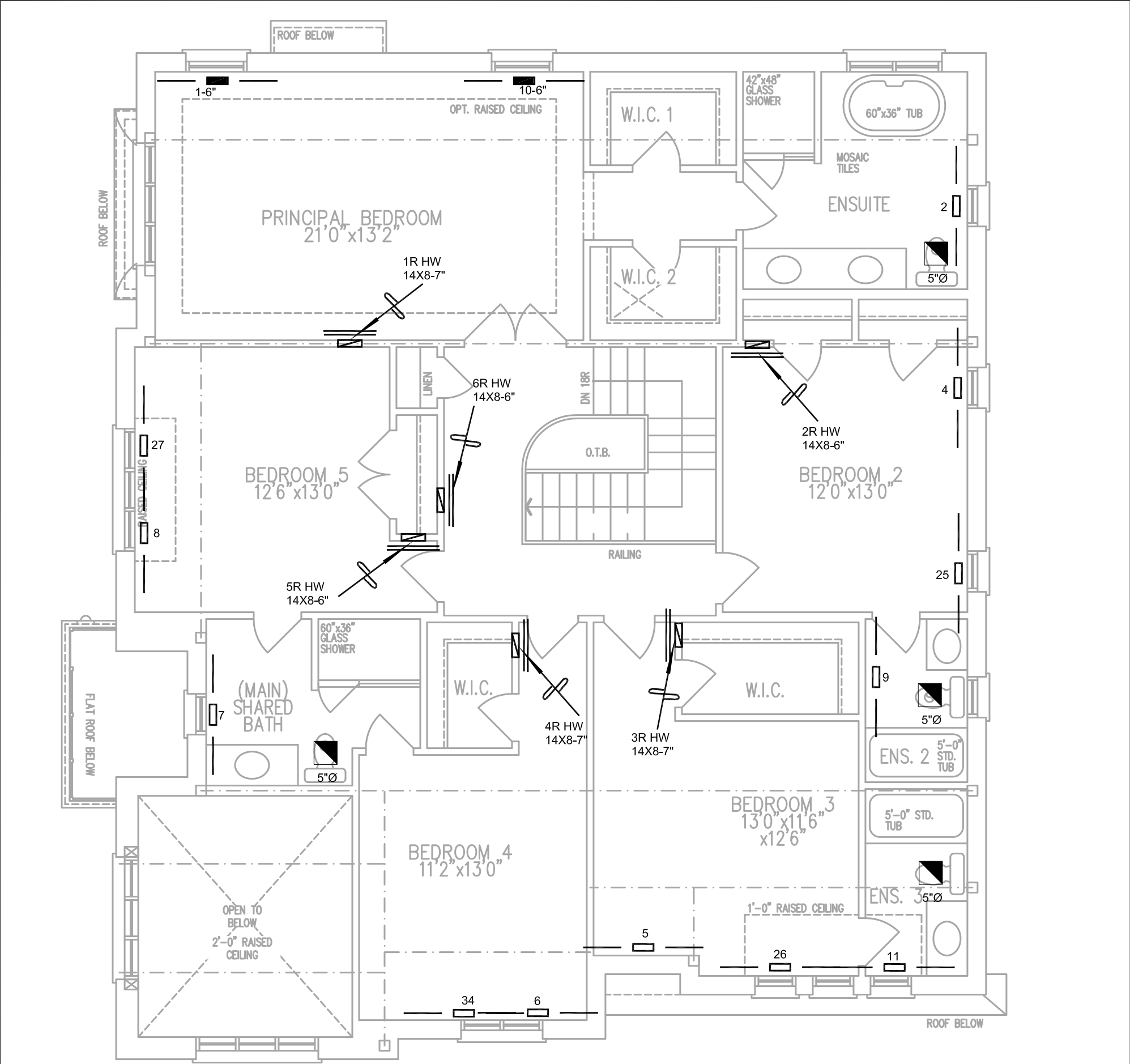
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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.

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.

SB-12 PERFORMANCE

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	MAR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
5004			BCIN# 19669	
3619 sqft			LO#	107933



SECOND FLOOR PLAN, EL. 'A'

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		
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Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@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	
Project Name									SECOND FLOOR HEATING LAYOUT	
WEST RIVER SOUTH BRAMPTON, ONTARIO									Date MAR/2025	
5004		3619 sqft		Scale 3/16" = 1'-0"						
				BCIN# 19669						
				LO#	107933					

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- 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: WEST RIVER SOUTH				WUB		GFA: 3619		DATE: Apr-25		WINTER NATURAL AIR CHANGE RATE 0.400		HEAT LOSS ΔT °F. 74		CSA-F280-12	
BUILDER: ROYAL PINE HOMES				TYPE: 5004				LO# 107934		SUMMER NATURAL AIR CHANGE RATE 0.130		HEAT GAIN ΔT °F. 11		SB-12 PERFORMANCE	
ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	ENS-3	DIN		
				42	24	15	13	16	6	20	8	16	20		
				9	9	9	9	9	9	9	9	9	11		
GRS.WALL AREA	GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155	22	457	340	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	32	665	781	0	0	0	0	0	0	0	0	56	1164
WEST	20.8	41.0	32	665	1314	22	457	903	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109	113	453	67	92	369	55	122
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	414	519	231	148	186	83	203	254	113	229	287	128	215
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	48	120	18	246	613	91	0
BASEMENT/CRAWL HEAT LOSS				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
SUBTOTAL HT LOSS				3108		1588			1284		1834		1216		523
SUB TOTAL HT GAIN					2512		1250			538		1320		1095	
LEVEL FACTOR / MULTIPLIER	0.20	0.43		0.20	0.43				0.20	0.43		0.20	0.43		0.20
AIR CHANGE HEAT LOSS				1335		682				552		788		522	
AIR CHANGE HEAT GAIN					150		74			32		79		65	
DUCT LOSS				0		0				184		262		0	
DUCT GAIN				0		0				137		219		0	
HEAT GAIN PEOPLE	240		2	480	0	0			1	240	1	240	1	240	1
HEAT GAIN APPLIANCES/LIGHTS				555		0				555		555		555	
TOTAL HT LOSS BTU/H				4444		2271				2020		2883		1738	
TOTAL HT GAIN x 1.3 BTU/H				4805		1721				1952		3136		2542	

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	FAM	DEN	BR/KT	LIV	LAUN	W/R	FOY					
				36	25	39	29	27	7	10					
				11	11	11	20	11	11	11					
GRS.WALL AREA	GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	0	0	8	166
WEST	20.8	41.0	42	873	1724	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	10	196	29	0	0	0	20	392	58	20
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	404	1620	240	266
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	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
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS				2980		1572			3218		5679		1687		309
SUB TOTAL HT GAIN					2910		1296			3514		6178		386	
LEVEL FACTOR / MULTIPLIER	0.30	0.45		0.30	0.45				0.30	0.45		0.30	0.45		0.30
AIR CHANGE HEAT LOSS				1340		707				1447		2554		759	
AIR CHANGE HEAT GAIN					173		77			209		368		23	
DUCT LOSS				0		0				0		0		0	
DUCT GAIN				0		0				0		0		0	
HEAT GAIN PEOPLE	240		0	0	0	0			0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				555		555				555		555		555	
TOTAL HT LOSS BTU/H				4320		2280				4665		8233		2446	
TOTAL HT GAIN x 1.3 BTU/H				4730		2507				5562		9231		1253	

TOTAL HEAT GAIN BTU/H: 48313 TONS: 4.03 LOSS DUE TO VENTILATION LOAD BTU/H: 1803 STRUCTURAL HEAT LOSS: 69216 TOTAL COMBINED HEAT LOSS BTU/H: 71019

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMESWUB
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 107934

HEATING CFM	1530	COOLING CFM	1530
TOTAL HEAT LOSS	69,216	TOTAL HEAT GAIN	48,046
AIR FLOW RATE CFM	22.1	AIR FLOW RATE CFM	31.84

furnace pressure	0.8
furnace filter	0.14
a/c coil pressure	0.34
available pressure for s/a & r/a	0.32

CARRIER

AFUE = 97 %

INPUT (BTU/H) = 80,000

OUTPUT (BTU/H) = **78,000**

FAN SPEED

LOW 0

MEDLOW 0

MEDIUM 0

MEDIUM HIGH 0

HIGH 1530

DESIGN CFM = **1530**

CFM @ .8" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	15	6
R/A	0	0	6	3	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.22	2.27	1.01	1.44	0.87	0.75	1.18	1.01	2.22	1.62	2.16	1.14	2.33	2.33	2.06	2.45	0.45	1.72	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	49	50	22	32	19	17	26	22	49	36	48	25	52	52	45	54	10	38	86	86	86	86
RM GAIN MBH.	2.40	1.72	0.98	1.57	1.27	0.48	1.32	0.34	2.40	0.96	2.36	1.25	2.78	2.78	2.31	1.25	0.06	1.01	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	76	55	31	50	40	15	42	11	76	31	75	40	89	89	73	40	2	32	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	5	5	4	5	4	6	5	6	5	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	367	252	235	140	195	191	252	250	264	245	184	265	265	229	396	115	436	438	438	438	438
COOLING VELOCITY (ft/min)	388	404	356	367	294	172	308	126	388	228	382	294	454	454	372	294	23	367	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	B	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	LIV	LIV	FAM	DIN	DIN	BAS	BED-4	DEN	LIV	BAS
RM LOSS MBH.	1.01	1.44	1.18	2.06	2.06	2.16	1.32	1.32	3.89	0.87	1.14	2.06	3.89
CFM PER RUN HEAT	22	32	26	45	45	48	29	29	86	19	25	45	86
RM GAIN MBH.	0.98	1.57	1.32	2.31	2.31	2.36	1.37	1.37	0.40	1.27	1.25	2.31	0.40
CFM PER RUN COOLING	31	50	42	73	73	75	44	44	13	40	40	73	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	200	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	272	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.06	0.07	0.08
ROUND DUCT SIZE	4	5	5	6	6	6	5	5	5	5	6	6	6
HEATING VELOCITY (ft/min)	252	235	191	229	229	245	213	213	438	140	184	229	438
COOLING VELOCITY (ft/min)	356	367	308	372	372	382	323	323	66	294	294	372	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	A	A	C

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	354	0.05	10.7	16	x	8	398	TRUNK G	0	0.00	0	0	8
TRUNK B	653	0.05	13.4	24	x	8	490	TRUNK H	0	0.00	0	0	8
TRUNK C	1027	0.05	15.9	30	x	8	616	TRUNK I	0	0.00	0	0	8
TRUNK D	1315	0.05	17.5	32	x	10	592	TRUNK J	0	0.00	0	0	8
TRUNK E	212	0.08	7.8	8	x	8	477	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9						BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	30	0	0	0	0	0	24

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: BASEMENT	
Address: _____				Manufacturer: VANEV	
City: _____		Postal Code: _____		Model: VANEV V150H ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: 35 CFM High: 150 CFM	
3. Designer		Name: HVAC DESIGNS LTD.		Sones: ESP: 0.2 " w.c.	
Address: 375 FINLEY AVE				75 % Sensible Efficiency @ 0 °C @ 150 CFM	
City: AJAX		Postal Code: L1S 2E2		60 % Sensible Efficiency @ -25 °C @ 64 CFM	
Ph: 905-619-2300		Fax: 905-619-2375		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: 001820					
E-mail: info@hvacdesigns.ca					
4. Combustion Appliances				10. Other Ventilation Fans	
☒ a) Direct Vent		b) Induced Draft		Location: ENS Sones: .3	
c) Natural Draft		d) Solid Fuel Appliances		Manufacturer: BY CONTRACTOR	
e) No Combustion Appliances		CO Alarm Required		Model: BY CONTRACTOR HVI Rated	
5. Heating System				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
☒ Forced Air		Non-Forced Air		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Gas Propane Other				Circulation Fan Make-up Air Fan for	
Oil Electricity				Location: BATH Sones: .3	
6. Distribution System				Manufacturer: BY CONTRACTOR	
☒ Furnace Inline fan HRV/ERV				Model: BY CONTRACTOR HVI Rated	
7. Principal Ventilation System Design Option				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Balanced no heat recovery				Circulation Fan Make-up Air Fan for	
HRV/ERV with extended exhaust				Location: ENS-3 Sones: .3	
☒ HRV/ERV with simplified exhaust				Manufacturer: BY CONTRACTOR	
HRV/ERV with full ducting/not coupled to forced air				Model: BY CONTRACTOR HVI Rated	
HRV/ERV with no supplemental fans				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
(High speed must be at least 2.5 times the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Supplemental fans				Circulation Fan Make-up Air Fan for	
8. Principal Ventilation Capacity (PVC)				Location: W/R Sones: .3	
# of Bedrooms: 5 Required Exh Airflow: 90 CFM				Manufacturer: BY CONTRACTOR	
Supply Air Required: Yes ☒ No				Model: BY CONTRACTOR HVI Rated	
Mixed Air Temperature Calculation Required:				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Yes ☒ No				☒ Supplemental Fan Supply Fan for Principal Exhaust	
For a System coupled with a Forced Air Furnace:				Circulation Fan Make-up Air Fan for	
Furnace Blower Rate: 1530 CFM				11. Designer Consent	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				I MICHAEL O'ROURKE certify this ventilation	
CFM				system is designed to be in accordance with OBC-2024 9.32	
				Date: 4/14/2025 Signature: <i>Michael O'Rourke</i>	
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM) Note: Secondary suite ventilation system requires a separate design					

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 107934		Model: 5004		Builder: ROYAL PINE HOMES																																																									
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Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																										
Bsmt	1622	10	16220																																																										
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.400 x 409.30 x 41 °C x 1.2 = 8108 W = 27665 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.130 x 409.30 x 6 °C x 1.2 = 390 W = 1330 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 74 °F x 1.08 x 0.25 = 1803 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 11 °F x 1.08 x 0.25 = 267 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																									
1	0.5	27,665	9,535	1.451																																																									
2	0.3		18,455	0.450																																																									
3	0.2		12,878	0.430																																																									
4	0		0	0.000																																																									
5	0		0	0.000																																																									
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	WUB	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 107934	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

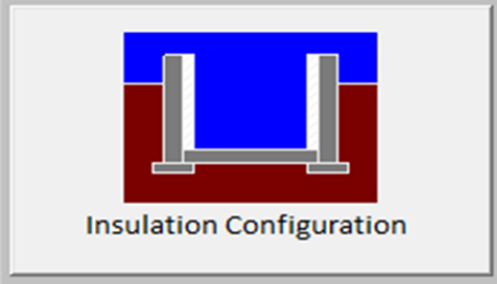
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

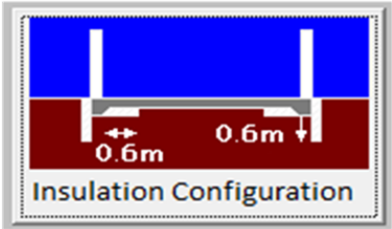
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	46.6	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1548

TYPE: 5004
LO# 107934

WUB

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	1.8	
Width (m):	5.8	
Exposed Perimeter (m):	9.4	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		95

TYPE: 5004
LO# 107934

WUB

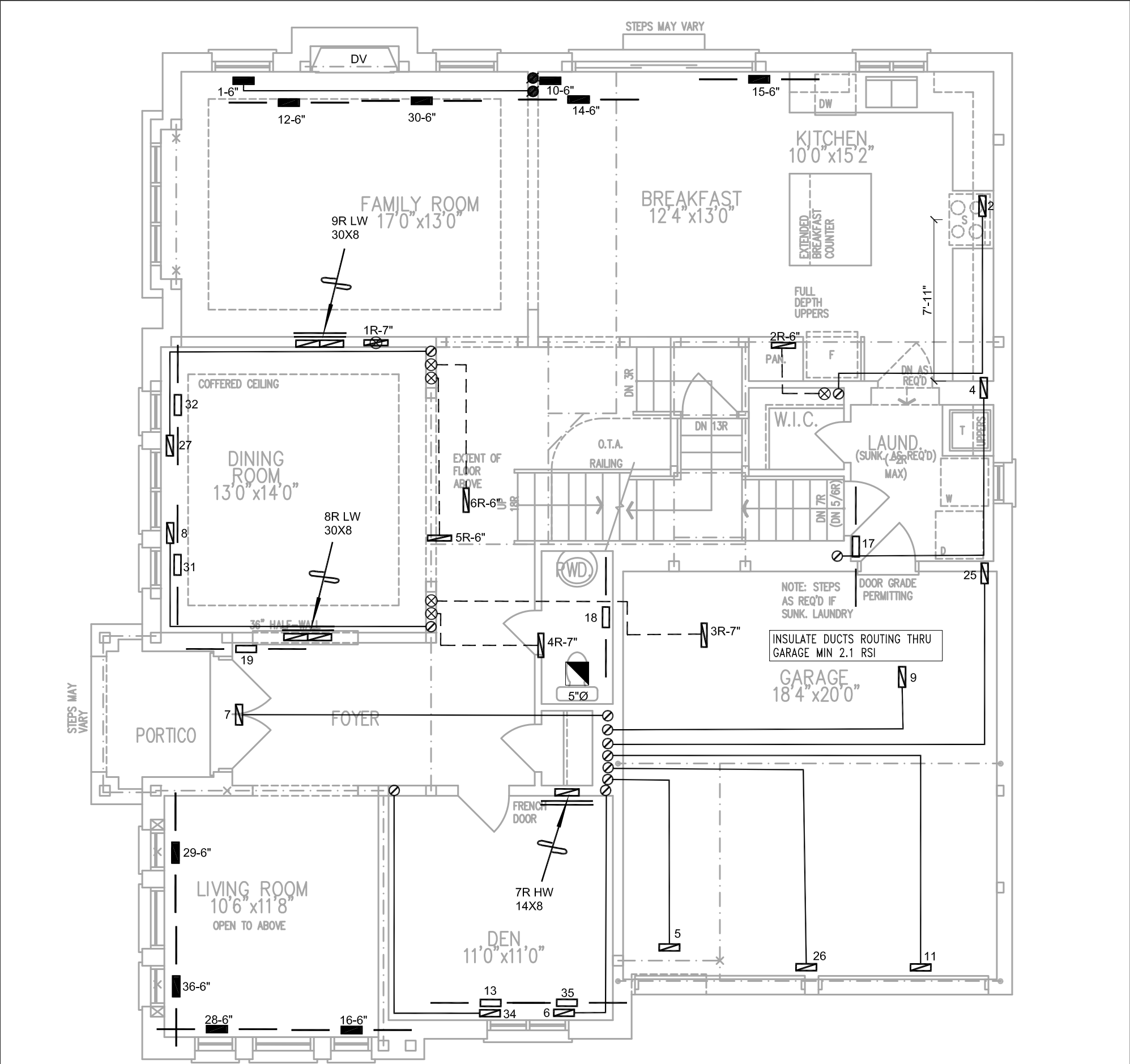
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
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):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	42.5	42.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.400			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: 5004
LO# 107934

WUB



GROUND FLOOR PLAN, EL. 'A'

WUB

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

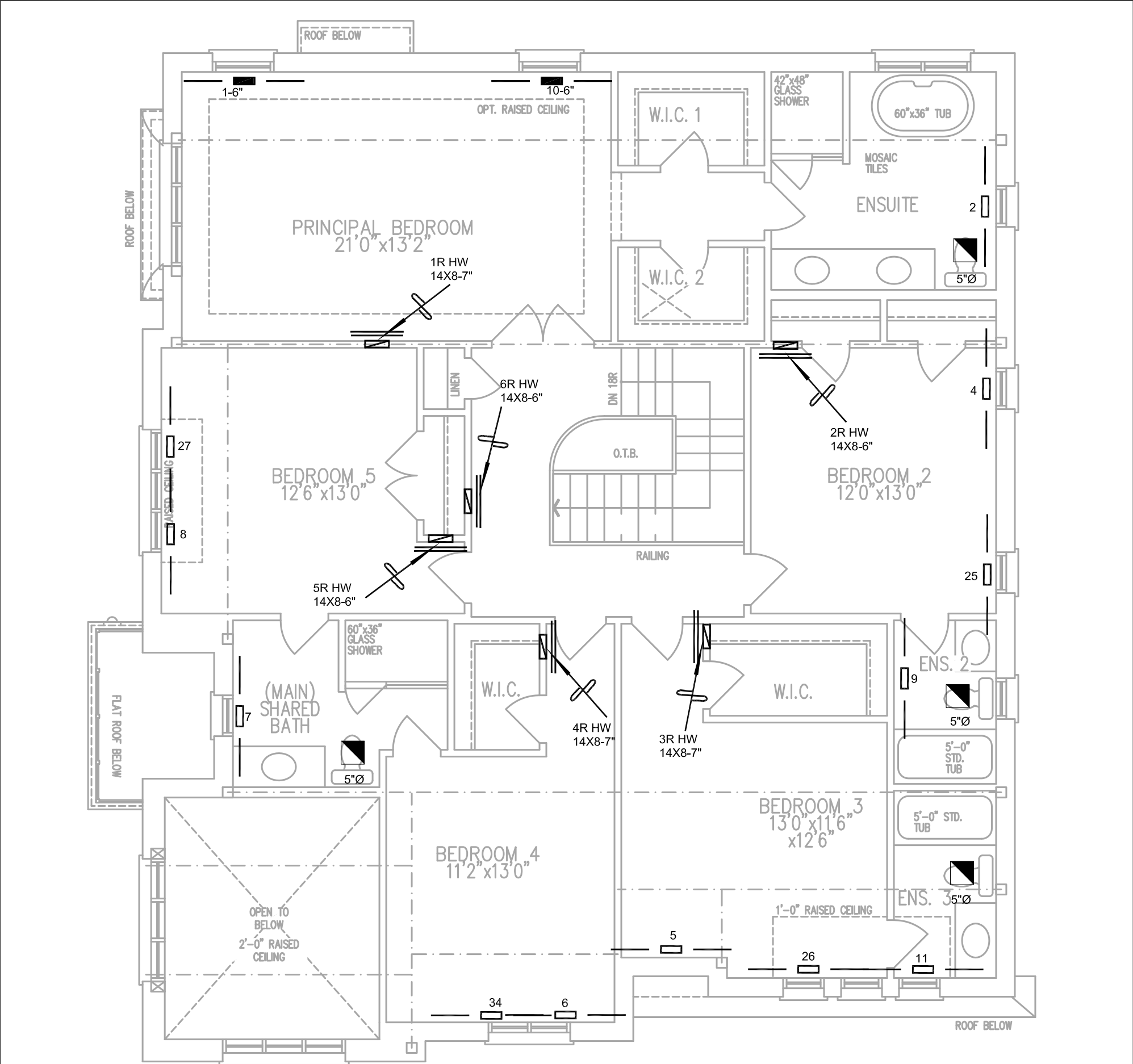
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I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.

Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

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	MAR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
5004 - WUB3619 sqft			BCIN# 19669	
			LO#	107934



SECOND FLOOR PLAN, EL. 'A'

WUB

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

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.

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.

SB-12 PERFORMANCE

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 HEATING LAYOUT	
Project Name			Date	MAR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
5004 - WUB			BCIN# 19669	
3619 sqft	LO# 107934			

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 BRAMPTON	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: 5004 OPT MAIN Project: WEST RIVER SOUTH	
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 15, 2025			
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: WEST RIVER SOUTH										OPT MAIN			DATE: Apr-25			WINTER NATURAL AIR CHANGE RATE 0.335						HEAT LOSS AT °F. 74		CSA-F280-12											
BUILDER: ROYAL PINE HOMES										TYPE: 5004			GFA: 3619			LO# 108320			SUMMER NATURAL AIR CHANGE RATE 0.109						HEAT GAIN AT °F. 11		SB-12 PERFORMANCE								
ROOM USE				MBR		ENS				BED-2		BED-3		BED-4		BATH		BED-5		ENS-2		ENS-3		DIN											
EXP. WALL				42		24				15		13		16		6		20		8		16		20											
CLG. HT.				9		9				9		9		9		9		9		9		9		11											
FACTORS																																			
GRS.WALL AREA		LOSS GAIN		378		216				135		117		144		54		180		72		144		220											
GLAZING				LOSS GAIN		LOSS GAIN				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN											
NORTH		20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0							
EAST		20.8	41.0	0	0	0	0	0	0		0	0	0	25	519	1026	22	457	903	0	0	0	12	249	493	0	0	0							
SOUTH		20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	56	1164	1366							
WEST		20.8	41.0	32	665	1314	22	457	903		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
SKYLT.		34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
DOORS		19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
NET EXPOSED WALL		4.0	0.6	314	1259	187	184	738	109		113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	
NET EXPOSED BSMT WALL ABOVE GR		3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED CLG		1.3	0.6	414	519	231	148	186	83		203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0	
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0		
EXPOSED FLOOR		2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS				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	
SUBTOTAL HT LOSS				3108		1588				1284		1834		1216		523		1655		642		1027		1821											
SUB TOTAL HT GAIN				2512		1250				538		1320		1095		348		1160		227		635		1464											
LEVEL FACTOR / MULTIPLIER		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.20 0.36		0.30 0.37											
AIR CHANGE HEAT LOSS		1116		570		461		658		437		188		594		230		369		672															
AIR CHANGE HEAT GAIN		152		75		33		80		66		21		70		14		38		88															
DUCT LOSS		0		0		175		249		0		0		0		87		140		0															
DUCT GAIN		0		0		142		224		240		0		0		24		67		0															
HEAT GAIN PEOPLE		240	2	480	0	0	1	240	1	240	1	240	1	240	0	0	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
HEAT GAIN APPLIANCES/LIGHTS		605		605		605		605		605		605		605		605		605		605		605		605		605		605		605		605		605	
TOTAL HT LOSS BTU/H		4224		2159		1920		2741		1653		710		2250		960		1536		2494															
TOTAL HT GAIN x 1.3 BTU/H		4873		1723		2025		3210		2609		480		2697		344		963		2804															

ROOM USE					FAM		ENS-4		BR/KT		IN-LAW		LAUN		W/R		FOY										BAS						
EXP. WALL					36		18		39		37		27		7		10										184						
CLG. HT.					11		11		11		20		11		11		11										10						
FACTORS																																	
GRS.WALL AREA			LOSS GAIN		396		198		429		740		297		77		110										1288						
GLAZING					LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN										LOSS GAIN						
NORTH			20.8	15.5	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0	0	0	0				
EAST			20.8	41.0	0	0	0	28	582	1149	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0	0	0	0	0				
SOUTH			20.8	24.4	41	852	1000	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	26	540	634	8	166	195	8	166				
WEST			20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	12	249	493	12	249				
SKYLT.			34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
DOORS			19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58	20	392			
NET EXPOSED WALL			4.0	0.6	313	1255	186	170	682	101	339	1360	202	564	2262	335	266	1067	158	77	309	46	64	257	38	0	0	0	0	0			
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	552	1939	288	552	1939				
EXPOSED CLG			1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS						0			0			0			0			0												6442			
SLAB ON GRADE HEAT LOSS						0			0			0			0			0															
SUBTOTAL HT LOSS						2980			1264			3218			6321			1687			309			1188						9188			
SUB TOTAL HT GAIN						2910			1250			3514			6273			386			46			730						1033			
LEVEL FACTOR / MULTIPLIER			0.30			0.37			0.30			0.37			0.30			0.37			0.30			0.37			0.50			1.26			
AIR CHANGE HEAT LOSS						1100			467			1188			2334			623			114			439						11561			
AIR CHANGE HEAT GAIN						176			76			212			379			23			3			44						62			
DUCT LOSS						0			0			0			0			0			0			0						0			
DUCT GAIN						0			0			0			0			0			0			0						0			
HEAT GAIN PEOPLE			240				0			0			0			1			240			0			0			0			0		
HEAT GAIN APPLIANCES/LIGHTS						605			0			605			605			605			0			0						605			
TOTAL HT LOSS BTU/H						4080			1730			4406			8655			2310			423			1627						20749			
TOTAL HT GAIN x 1.3 BTU/H						4799			1724			5631			9746			1319			63			1007						221			

TOTAL HEAT GAIN BTU/H:

48726

TONS: 4.06

LOSS DUE TO VENTILATION LOAD BTU/H: 3361

STRUCTURAL HEAT LOSS: 64626

TOTAL COMBINED HEAT LOSS BTU/H: 67987

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES

OPT MAIN
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108320

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 64,626 TOTAL HEAT GAIN 48,228
AIR FLOW RATE CFM 23.67 AIR FLOW RATE CFM 31.72

furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER
59SC6A080M21--20
FAN SPEED 80

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 78,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	14	6
R/A	0	0	6	3	1

plenium pressure s/a 0.17
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.15
r/a pressure 0.15
r/a grille press. Loss 0.02
adjusted pressure r/a 0.13

LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 0
HIGH 1530

DESIGN CFM = 1530
CFM @ .8" E.S.P.

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

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

RUN #	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.11	2.16	0.96	0.91	0.83	0.71	1.12	0.96	2.11	1.54	2.04	1.73	2.20	2.20	2.16	2.31	0.42	1.63	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	50	51	23	22	20	17	27	23	50	36	48	41	52	52	51	55	10	39	82	82	82	82
RM GAIN MBH.	2.44	1.72	1.01	1.07	1.30	0.48	1.35	0.34	2.44	0.96	2.40	1.72	2.82	2.82	2.44	1.32	0.06	1.01	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	55	32	34	41	15	43	11	77	31	76	55	89	89	77	42	2	32	12	12	12	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	5	4	5	4	6	5	6	5	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	255	374	264	252	147	195	198	264	255	264	245	301	265	265	260	404	115	447	418	418	418	418
COOLING VELOCITY (ft/min)	393	404	367	390	301	172	316	126	393	228	388	404	454	454	393	308	23	367	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	IN-LAW	BAS
RM LOSS MBH.	0.96	0.91	1.12	2.16	2.16	2.04	1.25	1.25	3.46	0.83	0.91	2.16	3.46
CFM PER RUN HEAT	23	22	27	51	51	48	30	30	82	20	22	51	82
RM GAIN MBH.	1.01	1.07	1.35	2.44	2.44	2.40	1.40	1.40	0.37	1.30	1.07	2.44	0.37
CFM PER RUN COOLING	32	34	43	77	77	76	44	44	12	41	34	77	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	220	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	292	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.05	0.07	0.08
ROUND DUCT SIZE	5	5	5	6	6	6	5	5	6	5	5	6	6
HEATING VELOCITY (ft/min)	169	162	198	260	260	245	220	220	418	147	162	260	418
COOLING VELOCITY (ft/min)	235	250	316	393	393	388	323	323	61	301	250	393	61
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	B	A	C

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	367	0.05	10.8	16	x	8	413	TRUNK G	0	0.00	0	0	8
TRUNK B	641	0.05	13.4	22	x	8	524	TRUNK H	0	0.00	0	0	8
TRUNK C	1037	0.05	16	30	x	8	622	TRUNK I	0	0.00	0	0	8
TRUNK D	1323	0.05	17.5	32	x	10	595	TRUNK J	0	0.00	0	0	8
TRUNK E	211	0.08	7.8	8	x	8	475	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	BR
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: <u>BASEMENT</u>	
Address: _____				Manufacturer: <u>VANEE</u>	
City: _____		Postal Code: _____		Model: <u>VANEE G2400H ECM</u> ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: <u>50 CFM</u> High: <u>210 CFM</u>	
3. Designer		Name: <u>HVAC DESIGNS LTD.</u>		Sones: ESP: <u>0.2 " w.c.</u>	
Address: <u>375 FINLEY AVE</u>				80 % Sensible Efficiency @ 0 °C @ <u>210</u> CFM	
City: <u>AJAX</u>		Postal Code: <u>L1S 2E2</u>		% Sensible Efficiency @ -25 °C @ <u>CFM</u>	
Ph: <u>905-619-2300</u>		Fax: <u>905-619-2375</u>		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: <u>001820</u>				10. Other Ventilation Fans	
E-mail: <u>info@hvacdesigns.ca</u>					
4. Combustion Appliances				Location: <u>ENS</u> Sones: <u>.3</u>	
☒ a) Direct Vent		b) Induced Draft		Manufacturer: <u>BY CONTRACTOR</u>	
c) Natural Draft		d) Solid Fuel Appliances		Model: <u>BY CONTRACTOR</u> HVI Rated	
e) No Combustion Appliances		CO Alarm Required		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
5. Heating System				☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Forced Air		Non-Forced Air		Circulation Fan Make-up Air Fan for	
☒ Gas Propane Other				Location: <u>BATH</u> Sones: <u>.3</u>	
Oil Electricity				Manufacturer: <u>BY CONTRACTOR</u>	
6. Distribution System				Model: <u>BY CONTRACTOR</u> HVI Rated	
☒ Furnace Inline fan HRV/ERV				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
7. Principal Ventilation System Design Option				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Exhaust only forced air distribution system				Circulation Fan Make-up Air Fan for	
(Circ. fan at least 5 times the capacity of the principal exhaust)				Location: <u>ENS-3</u> Sones: <u>.3</u>	
Balanced no heat recovery				Manufacturer: <u>BY CONTRACTOR</u>	
HRV/ERV with extended exhaust				Model: <u>BY CONTRACTOR</u> HVI Rated	
☒ HRV/ERV with simplified exhaust				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
HRV/ERV with full ducting/not coupled to forced air				☒ Supplemental Fan Supply Fan for Principal Exhaust	
HRV/ERV with no supplemental fans				Circulation Fan Make-up Air Fan for	
(High speed must be at least 2.5 times the principal exhaust)				Location: <u>W/R</u> Sones: <u>.3</u>	
Supplemental fans				Manufacturer: <u>BY CONTRACTOR</u>	
8. Principal Ventilation Capacity (PVC)				Model: <u>BY CONTRACTOR</u> HVI Rated	
# of Bedrooms: <u>6</u> Required Exh Airflow: <u>209.7 CFM</u>				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
Supply Air Required: Yes ☒ No				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Mixed Air Temperature Calculation Required:				Circulation Fan Make-up Air Fan for	
Yes ☒ No				11. Designer Consent	
For a System coupled with a Forced Air Furnace:				I MICHAEL O'ROURKE certify this ventilation	
Furnace Blower Rate: <u>1530</u> CFM				system is designed to be in accordance with OBC-2024 9.32	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				Date: <u>4/14/2025</u> Signature: <u>Michael O'Rourke</u>	
CFM					
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM) Note: Secondary suite ventilation system requires a separate design					

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 108320		Model: 5004		Builder: ROYAL PINE HOMES																																																									
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House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1622</td> <td>10</td> <td>16220</td> </tr> <tr> <td>First</td> <td>1622</td> <td>11</td> <td>17842</td> </tr> <tr> <td>Second</td> <td>1997</td> <td>9</td> <td>17973</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>52,035.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1473.5 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1622	10	16220	First	1622	11	17842	Second	1997	9	17973	Third	0	9	0	Fourth	0	9	0	Total:			52,035.0 ft³	Total:			1473.5 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.335</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.109</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </tbody> </table>			WINTER NATURAL AIR CHANGE RATE	0.335	SUMMER NATURAL AIR CHANGE RATE	0.109	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 409.30 x 41 °C x 1.2 = 6777 W = 23122 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.109 x 409.30 x 6 °C x 1.2 = 327 W = 1114 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 74 °F x 1.08 x 0.20 = 3361 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 11 °F x 1.08 x 0.20 = 498 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">23,122</td> <td>9,188</td> <td>1.258</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>18,788</td> <td>0.369</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>12,878</td> <td>0.359</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0						Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)	1	0.5	23,122	9,188	1.258	2	0.3	18,788	0.369	3	0.2	12,878	0.359	4	0	0	0.000	5	0	0	0.000																														
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					Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT MAIN	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108320	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

OBC - COMPLIANCE PACKAGE		Compliance Package SB-12 PERFORMANCE	
Component		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		96%	-
HRV/ERV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF		TE=94%	-

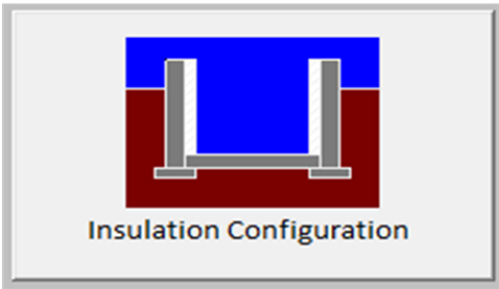
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):		1888

TYPE: 5004
LO# 108320

OPT MAIN

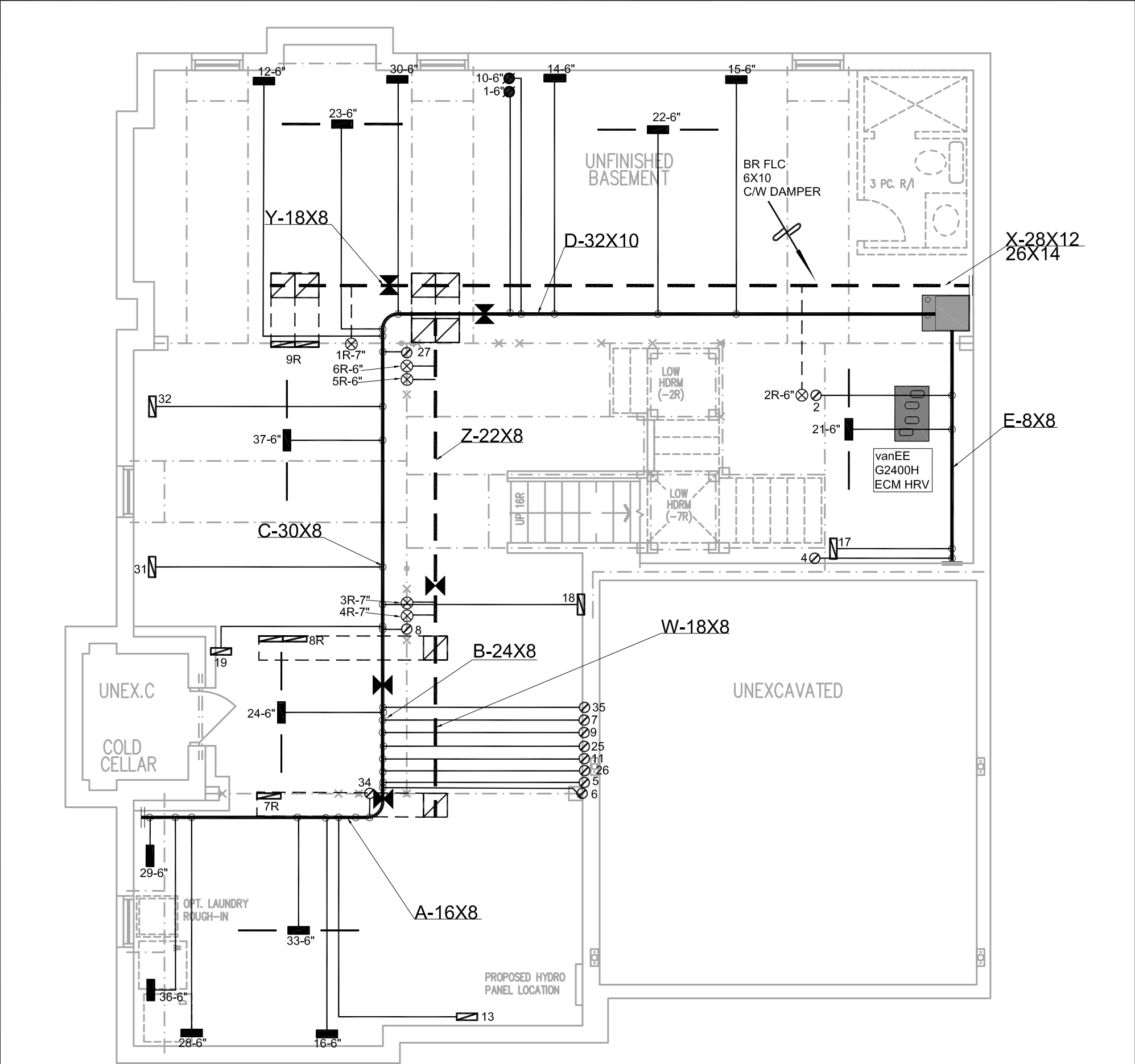
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

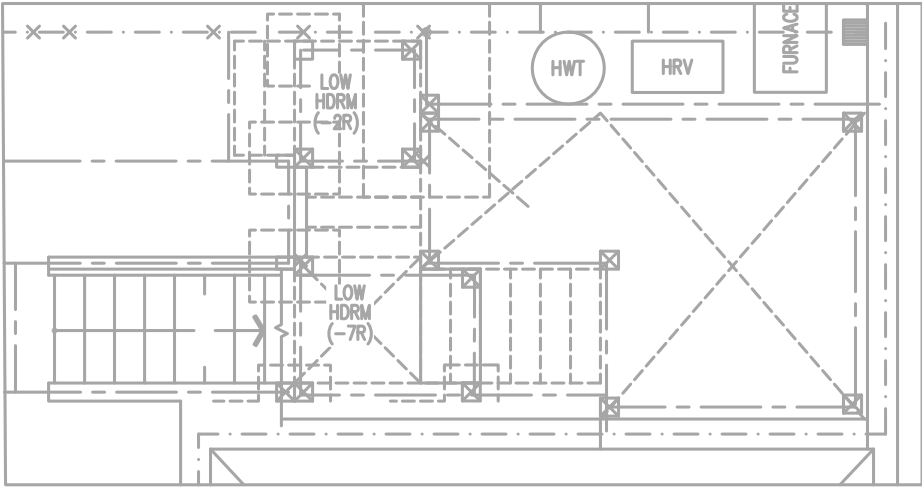
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	99.0	99.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: 5004
LO# 108320

OPT MAIN

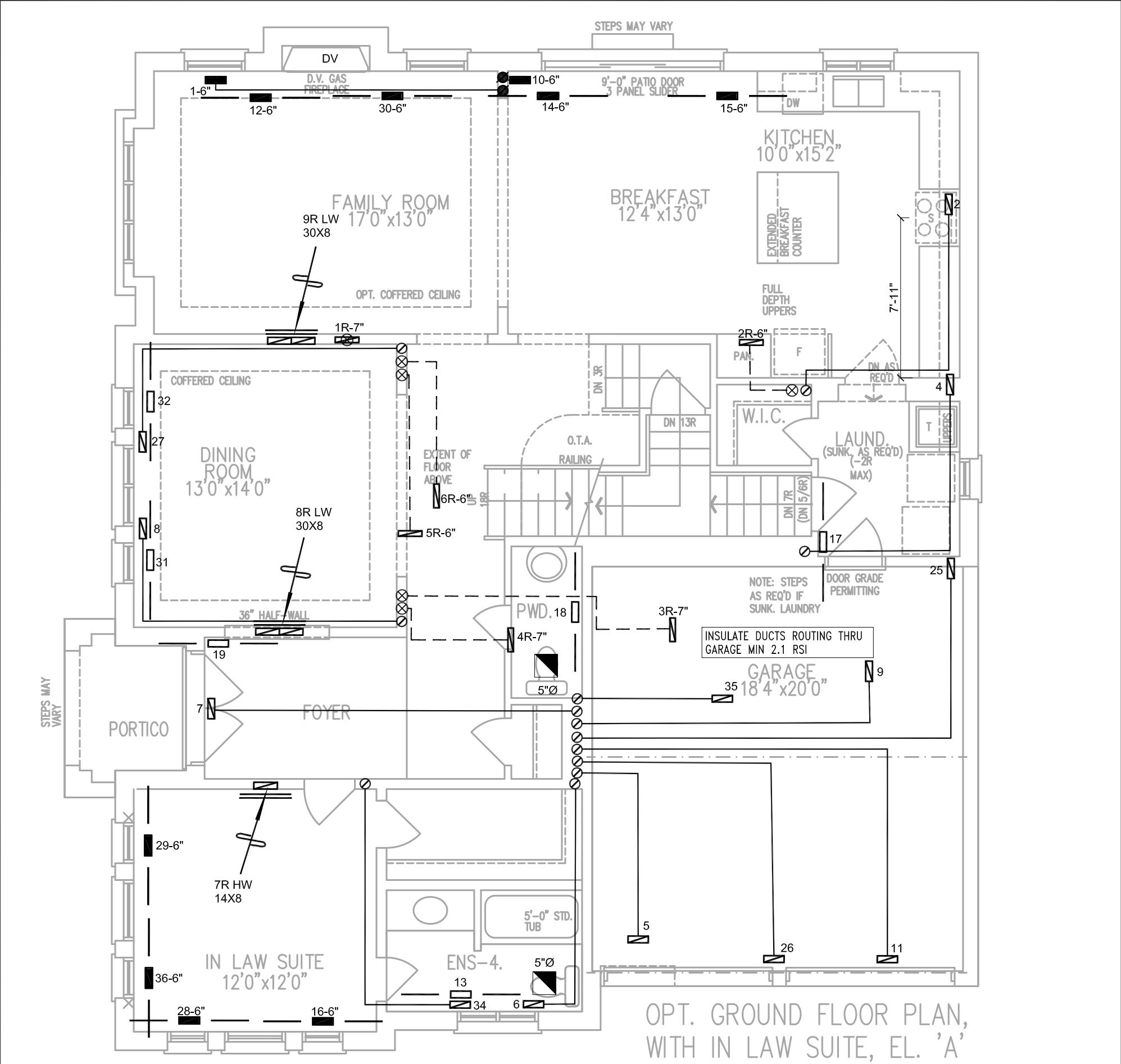


BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

HVAC LEGEND							3.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		2.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		1.		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		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.							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.		
Client		ROYAL PINE HOMES					SB-12 PERFORMANCE		
Project Name		WEST RIVER SOUTH BRAMPTON, ONTARIO					Sheet Title		
OPT MAIN 5004		3619 sqft					BASEMENT HEATING LAYOUT		
							Date		
							Scale		
							BCIN# 19669		
							LO# 108320		



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

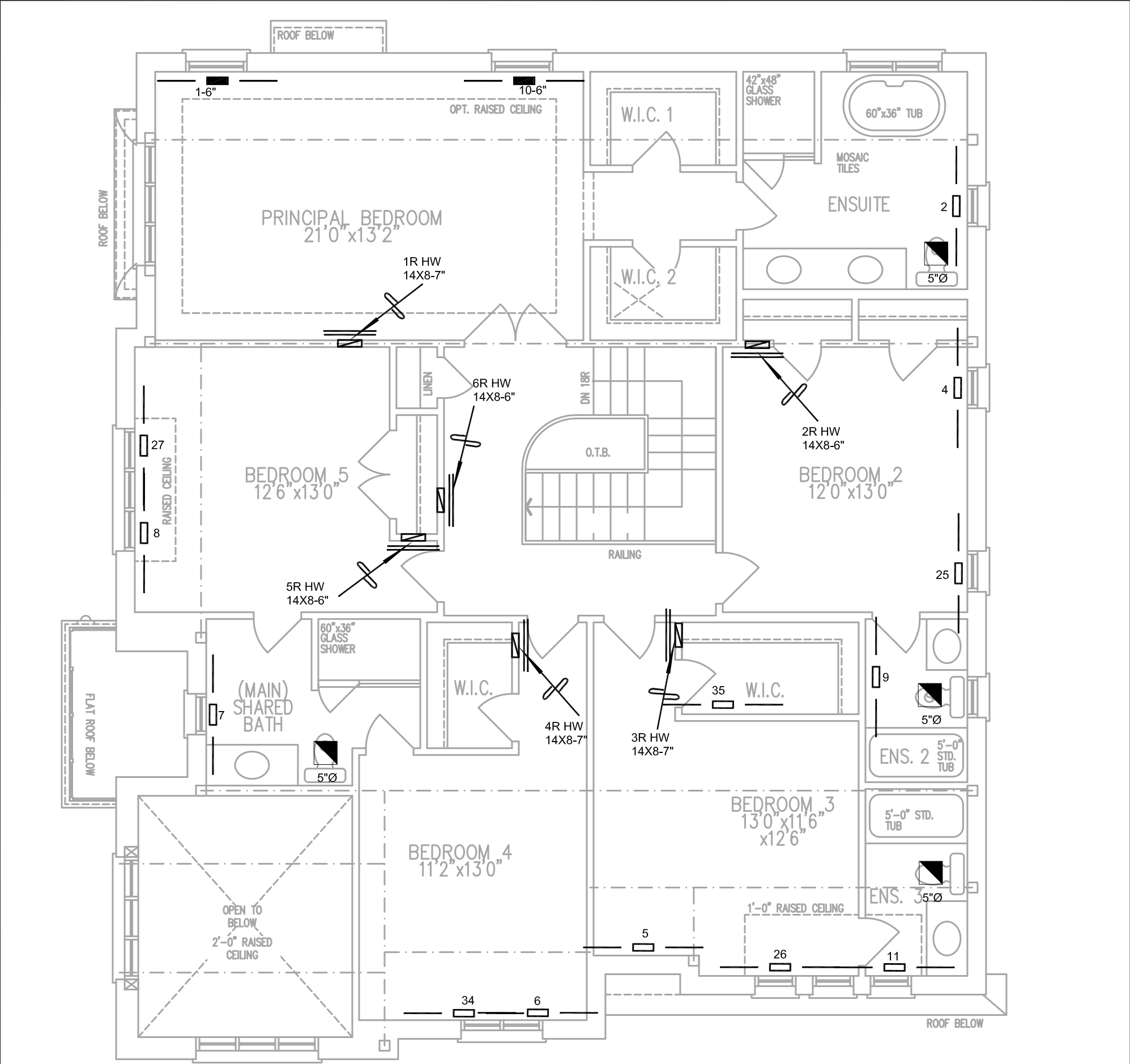
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I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.

Michael O'Rourke
Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

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 WEST RIVER SOUTH BRAMPTON, ONTARIO			Date	APR/2025
OPT MAIN 5004 3619 sqft			Scale	3/16" = 1'-0"
		BCIN# 19669		
		LO#	108320	



SECOND FLOOR PLAN, EL. 'A'

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

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.

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.

SB-12 PERFORMANCE

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	
Project Name			SECOND FLOOR HEATING LAYOUT	
ROYAL PINE HOMES			Date	APR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT MAIN 5004			BCIN# 19669	
3619 sqft			LO#	108320

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 BRAMPTON	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: 5004 OPT 2ND Project: WEST RIVER SOUTH	
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 15, 2025			
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: WEST RIVER SOUTH						OPT 2ND						DATE: Apr-25						WINTER NATURAL AIR CHANGE RATE 0.335						HEAT LOSS ΔT °F. 74						CSA-F280-12											
BUILDER: ROYAL PINE HOMES						TYPE: 5004						GFA: 3619						LO# 108319						SUMMER NATURAL AIR CHANGE RATE 0.109						HEAT GAIN ΔT °F. 11						SB-12 PERFORMANCE					
ROOM USE			MBR			ENS			BED-2			BED-3			BED-4			ENS-5			BED-5			ENS-2			ENS-3			DIN			ENS-4								
EXP. WALL			42			24			15			13			16			6			20			8			16			20			13								
CLG. HT.			9			9			9			9			9			9			9			9			9			11			9								
GRS.WALL AREA			FACTORS			216			135			117			144			54			180			72			144			220			117								
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN								
NORTH			20.8	15.5	0	0	0	10	208	155	22	457	340	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0	0	0								
EAST			20.8	41.0	0	0	0	0	0	0	0	0	26	540	1067	38	790	1560	0	0	0	0	0	0	0	12	249	493	0	0	0	22	457	903							
SOUTH			20.8	24.4	32	665	781	0	0	0	0	0	0	0	0	38	790	927	11	229	268	39	810	951	0	0	0	0	0	56	1164	1366	0	0	0						
WEST			20.8	41.0	32	665	1314	22	457	903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
SKYLT.			34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
DOORS			19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
NET EXPOSED WALL			4.0	0.6	314	1259	187	184	738	109	113	453	67	91	365	54	68	273	40	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	95	381	56				
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
EXPOSED CLG			1.3	0.6	450	564	251	184	231	103	239	300	133	265	332	148	167	209	93	92	115	51	259	325	144	54	68	30	54	68	30	0	0	93	117	52					
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	17	46	20	150	402	179	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0						
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	48	120	18	246	613	91	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0	0	0						
BASEMENT/CRAWL HEAT LOSS			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					
SUBTOTAL HT LOSS			3153			1634			1329			1895			2463			516			1701			642			1027			1821			955								
SUB TOTAL HT GAIN			2532			1270			558			1380			2799			345			1180			227			635			1464			1011								
LEVEL FACTOR / MULTIPLIER			0.20	0.30			0.20	0.30			0.20	0.30			0.20	0.30			0.20	0.30			0.20	0.30			0.20	0.30	0.30	0.41	0.20	0.30									
AIR CHANGE HEAT LOSS			952			493			401			572			744			156			513			194			310			753			288								
AIR CHANGE HEAT GAIN			130			65			29			71			144			18			61			12			33			75			52								
DUCT LOSS			0			0			173			247			0			0			0			84			134			0			0								
DUCT GAIN			0			0			138			225			0			0			0			24			67			0			0								
HEAT GAIN PEOPLE			240	2		480	0		1	240	1	240	1	240	1	240	0	0	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
HEAT GAIN APPLIANCES/LIGHTS			555			0			555			555			555			0			555			0			0			555			0								
TOTAL HT LOSS BTU/H			4105			2127			1904			2715			3207			672			2214			919			1471			2574			1243								
TOTAL HT GAIN x 1.3 BTU/H			4806			1736			1976			3211			4859			472			2645			341			955			2722			1382								

ROOM USE			FAM		DEN		BR/KT		LIV		LAUN		W/R		FOY										BAS	
EXP. WALL			36		25		39		29		27		7		10										184	
CLG. HT.			11		11		11		20		11		11		11										10	
FACTORS																										
GRS.WALL AREA	LOSS	GAIN	396		275		429		580		297		77		110										1288	
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	50	1039	2052	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	50	1039	1220	0	0	0	26	540	634					8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	12	249	493	
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	480	1925	285	266	1067	158	77	309	46	64	257	38	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	552	1939	288	
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS				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				
SUBTOTAL HT LOSS				2980		1572		3218		4003		1687		309		1188										
SUB TOTAL HT GAIN					2910		1296		3514		3558		386		46		730									
LEVEL FACTOR / MULTIPLIER		0.30	0.41			0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41					0.50	1.26	
AIR CHANGE HEAT LOSS				1232		650		1330		1655		697		128		491										
AIR CHANGE HEAT GAIN					150		67		181		183		20		2		38									
DUCT LOSS				0		0		0		0		0		0		0										
DUCT GAIN					0		0		0		0		0		0		0									
HEAT GAIN PEOPLE	240		0		0		0		0		0		0		0		0							0		
HEAT GAIN APPLIANCES/LIGHTS				555		555		555		555		555		0		0										
TOTAL HT LOSS BTU/H				4212		2223		4548		5658		2384		437		1680										
TOTAL HT GAIN x 1.3 BTU/H				4699		2493		5525		5584		1249		63		998										

TOTAL HEAT GAIN BTU/H: 48116 TONS: 4.01 LOSS DUE TO VENTILATION LOAD BTU/H: 1803 STRUCTURAL HEAT LOSS: 65042 TOTAL COMBINED HEAT LOSS BTU/H: 66845

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMESOPT 2ND
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108319

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 65,042 TOTAL HEAT GAIN 47,848
AIR FLOW RATE CFM 23.52 AIR FLOW RATE CFM 31.98furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER

AFUE = 97 %

59SC6A080M21--20

INPUT (BTU/H) = 80,000

FAN SPEED

OUTPUT (BTU/H) = 78,000

LOW 0

MEDLOW 0

MEDIUM 0

MEDIUM HIGH 0

HIGH 1530

DESIGN CFM = 1530
CFM @ .8" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	13	6
R/A	0	0	6	3	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.05	2.13	0.95	0.90	1.60	0.67	1.11	0.92	2.05	1.47	2.11	1.11	2.27	2.27	2.83	2.38	0.44	1.68	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	48	50	22	21	38	16	26	22	48	35	50	26	53	53	67	56	10	40	81	81	81	81
RM GAIN MBH.	2.40	1.74	0.99	1.07	2.43	0.47	1.32	0.34	2.40	0.95	2.35	1.25	2.76	2.76	2.79	1.25	0.06	1.00	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	77	56	32	34	78	15	42	11	77	31	75	40	88	88	89	40	2	32	11	11	11	11
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	6	4	5	4	6	5	6	5	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	245	367	252	241	194	184	191	252	245	257	255	191	270	270	342	411	115	459	413	413	413	413
COOLING VELOCITY (ft/min)	393	411	367	390	398	172	308	126	393	228	382	294	449	449	454	294	23	367	56	56	56	56
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	LIV	BED-3	FAM	DIN	DIN	BAS	BED-4	DEN	BAS	ENS-4
RM LOSS MBH.	0.95	0.90	1.11	2.83	0.90	2.11	1.29	1.29	3.46	1.60	1.11	3.46	1.24
CFM PER RUN HEAT	22	21	26	67	21	50	30	30	81	38	26	81	29
RM GAIN MBH.	0.99	1.07	1.32	2.79	1.07	2.35	1.36	1.36	0.36	2.43	1.25	0.36	1.38
CFM PER RUN COOLING	32	34	42	89	34	75	44	44	11	78	40	11	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	220	190	140	150	130	230	200	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	292	228	191	193	192	309	272	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.05	0.07	0.08	0.08	0.08	0.05	0.06	0.08	0.06
ROUND DUCT SIZE	5	5	5	6	5	6	5	5	6	6	5	6	5
HEATING VELOCITY (ft/min)	162	154	191	342	154	255	220	220	413	194	191	413	213
COOLING VELOCITY (ft/min)	235	250	308	454	250	382	323	323	56	398	294	56	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	B	C	C	C	A	A	A	C	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	343	0.05	10.6	16	x	8	386	TRUNK G	0	0.00	0	0	8
TRUNK B	611	0.05	13.1	22	x	8	500	TRUNK H	0	0.00	0	0	8
TRUNK C	1035	0.05	16	30	x	8	621	TRUNK I	0	0.00	0	0	8
TRUNK D	1318	0.05	17.5	32	x	10	593	TRUNK J	0	0.00	0	0	8
TRUNK E	209	0.08	7.8	8	x	8	470	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9	BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8
	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	30	30	0	24

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY for design and performance of residential ventilation systems to OBC 2024 - 9.32			
1. Location	Municipality: BRAMPTON Civic Address: _____		9. Principal Ventilation Fan HRV/ERV Central Inline Fan Bathroom Fan Location: BASEMENT Manufacturer: VANEE Model: VANEE V150H ☒ HVI Rated
2. Builder	Name: ROYAL PINE HOMES Address: _____ City: _____ Postal Code: _____ Ph: _____ Fax: _____		Design Airflow: Low: 35 CFM High: 150 CFM Sones: ESP: 0.2 "w.c."
3. Designer	Name: HVAC DESIGNS LTD. Address: 375 FINLEY AVE City: AJAX Postal Code: L1S 2E2 Ph: 905-619-2300 Fax: 905-619-2375 HRAI #: 001820 E-mail: info@hvacdsgns.ca		75 % Sensible Efficiency @ 0 °C @ 150 CFM 60 % Sensible Efficiency @ -25 °C @ 64 CFM (If HRV/ERV is used, the system must also comply with SB-12)
4. Combustion Appliances			10. Other Ventilation Fans
☒ a) Direct Vent b) Induced Draft ☐ c) Natural Draft d) Solid Fuel Appliances ☐ e) No Combustion Appliances CO Alarm Required			Location: ENS Sones: .3 Manufacturer: BY CONTRACTOR Model: BY CONTRACTOR HVI Rated Design Airflow: 50 CFM ESP: 0.2 "w.c." ☒ Supplemental Fan Supply Fan for Principal Exhaust Circulation Fan Make-up Air Fan for
5. Heating System			Location: ENS-5 Sones: .3 Manufacturer: BY CONTRACTOR Model: BY CONTRACTOR HVI Rated Design Airflow: 50 CFM ESP: 0.2 "w.c." ☒ Supplemental Fan Supply Fan for Principal Exhaust Circulation Fan Make-up Air Fan for
☒ Forced Air Non-Forced Air ☒ Gas Propane Other Oil Electricity			Location: ENS-3 Sones: .3 Manufacturer: BY CONTRACTOR Model: BY CONTRACTOR HVI Rated Design Airflow: 50 CFM ESP: 0.2 "w.c." ☒ Supplemental Fan Supply Fan for Principal Exhaust Circulation Fan Make-up Air Fan for
6. Distribution System			Location: W/R Sones: .3 Manufacturer: BY CONTRACTOR Model: BY CONTRACTOR HVI Rated Design Airflow: 50 CFM ESP: 0.2 "w.c." ☒ Supplemental Fan Supply Fan for Principal Exhaust Circulation Fan Make-up Air Fan for
7. Principal Ventilation System Design Option			11. Designer Consent
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust) Balanced no heat recovery HRV/ERV with extended exhaust ☒ HRV/ERV with simplified exhaust HRV/ERV with full ducting/not coupled to forced air HRV/ERV with no supplemental fans (High speed must be at least 2.5 times the principal exhaust) Supplemental fans			I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32 Date: 4/15/2025 Signature:
8. Principal Ventilation Capacity (PVC)			
# of Bedrooms: 5 Required Exh Airflow: 90 CFM Supply Air Required: Yes ☒ No Mixed Air Temperature Calculation Required: Yes ☒ No For a System coupled with a Forced Air Furnace: Furnace Blower Rate: 1530 CFM Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2): CFM			
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM) Note: Secondary suite ventilation system requires a separate design			

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 108319		Model: 5004		Builder: ROYAL PINE HOMES																																																									
				Date: 4/15/2025																																																									
Volume Calculation			Air Change & Delta T Data																																																										
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1622</td> <td>10</td> <td>16220</td> </tr> <tr> <td>First</td> <td>1622</td> <td>11</td> <td>17842</td> </tr> <tr> <td>Second</td> <td>1997</td> <td>9</td> <td>17973</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>52,035.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>1473.5 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1622	10	16220	First	1622	11	17842	Second	1997	9	17973	Third	0	9	0	Fourth	0	9	0	Total:			52,035.0 ft³	Total:			1473.5 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.335</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.109</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </tbody> </table>			WINTER NATURAL AIR CHANGE RATE	0.335	SUMMER NATURAL AIR CHANGE RATE	0.109	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 409.30 x 41 °C x 1.2 = 6777 W = 23122 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.109 x 409.30 x 6 °C x 1.2 = 327 W = 1114 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 74 °F x 1.08 x 0.25 = 1803 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 11 °F x 1.08 x 0.25 = 267 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																									
1	0.5	23,122	9,188	1.258																																																									
2	0.3		16,779	0.413																																																									
3	0.2		15,315	0.302																																																									
4	0		0	0.000																																																									
5	0		0	0.000																																																									
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108319	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

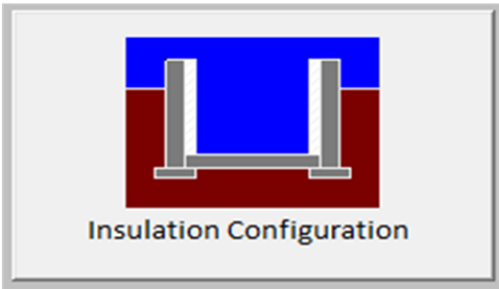
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):		1888

TYPE: 5004
LO# 108319

OPT 2ND

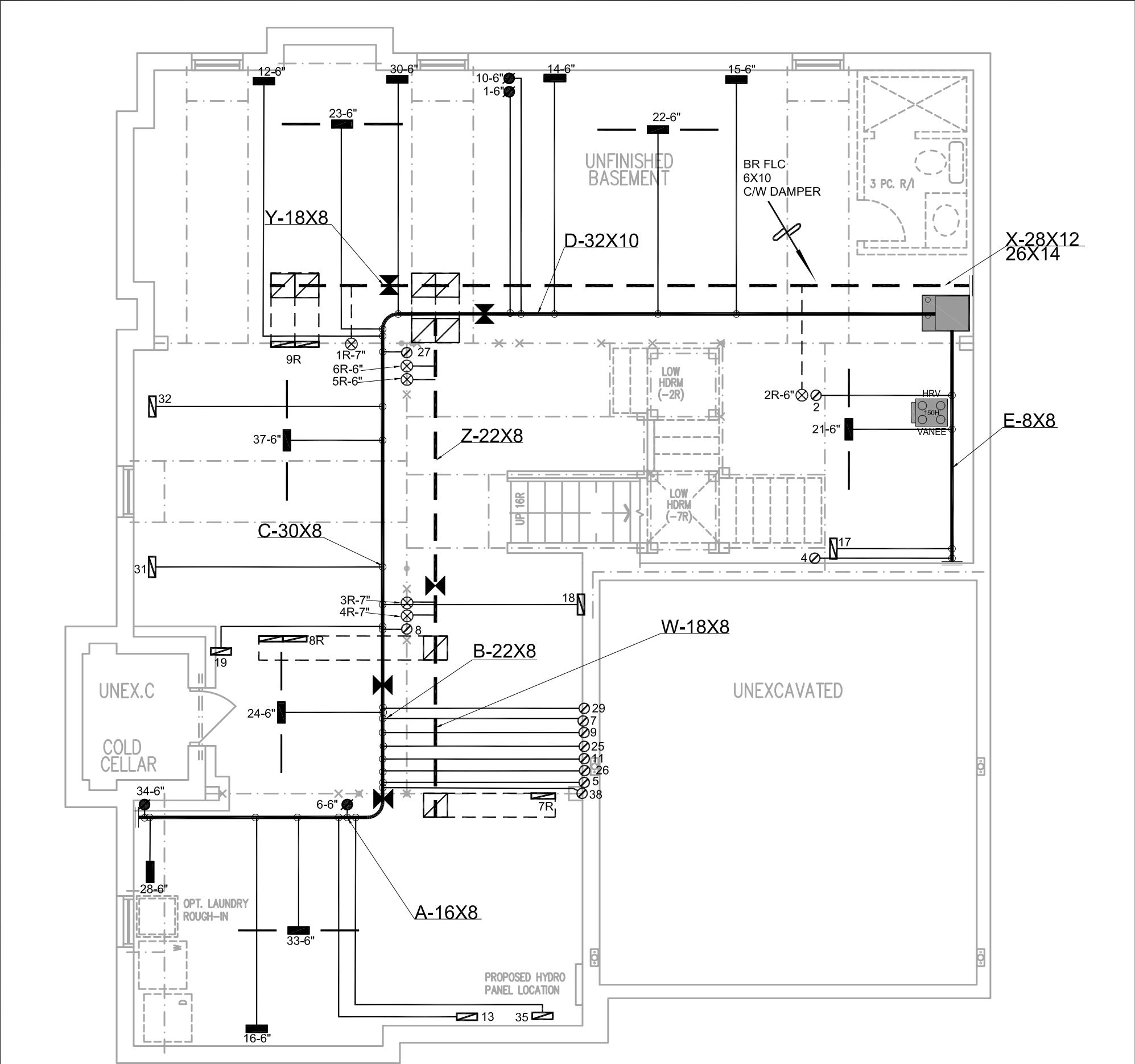
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

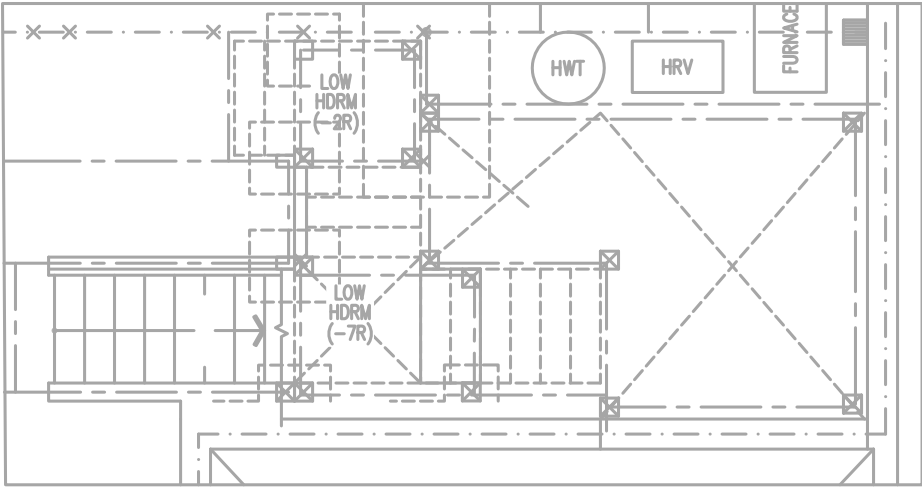
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	42.5	42.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: 5004
LO# 108319

OPT 2ND

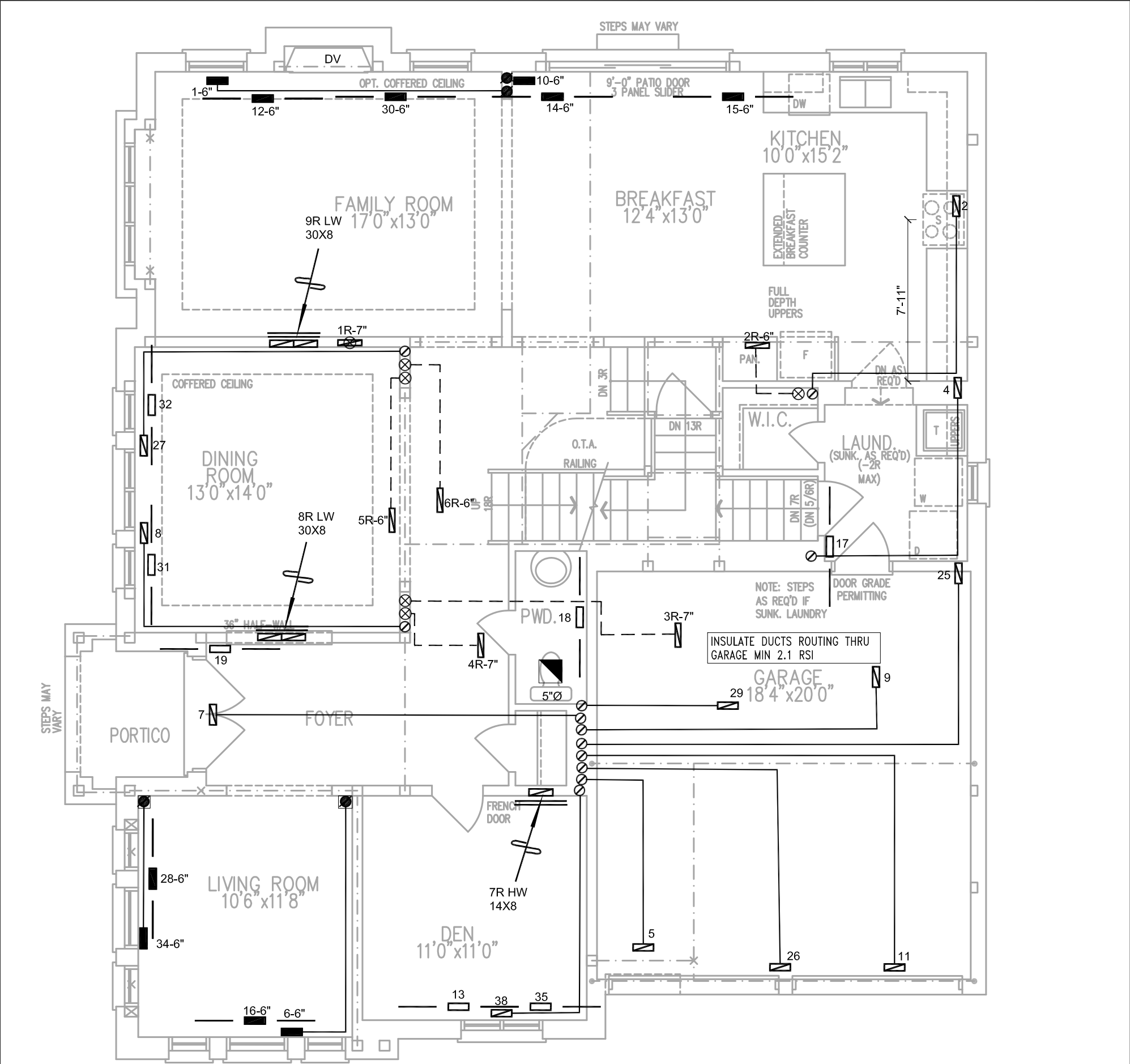


BASEMENT PLAN, EL. 'A'



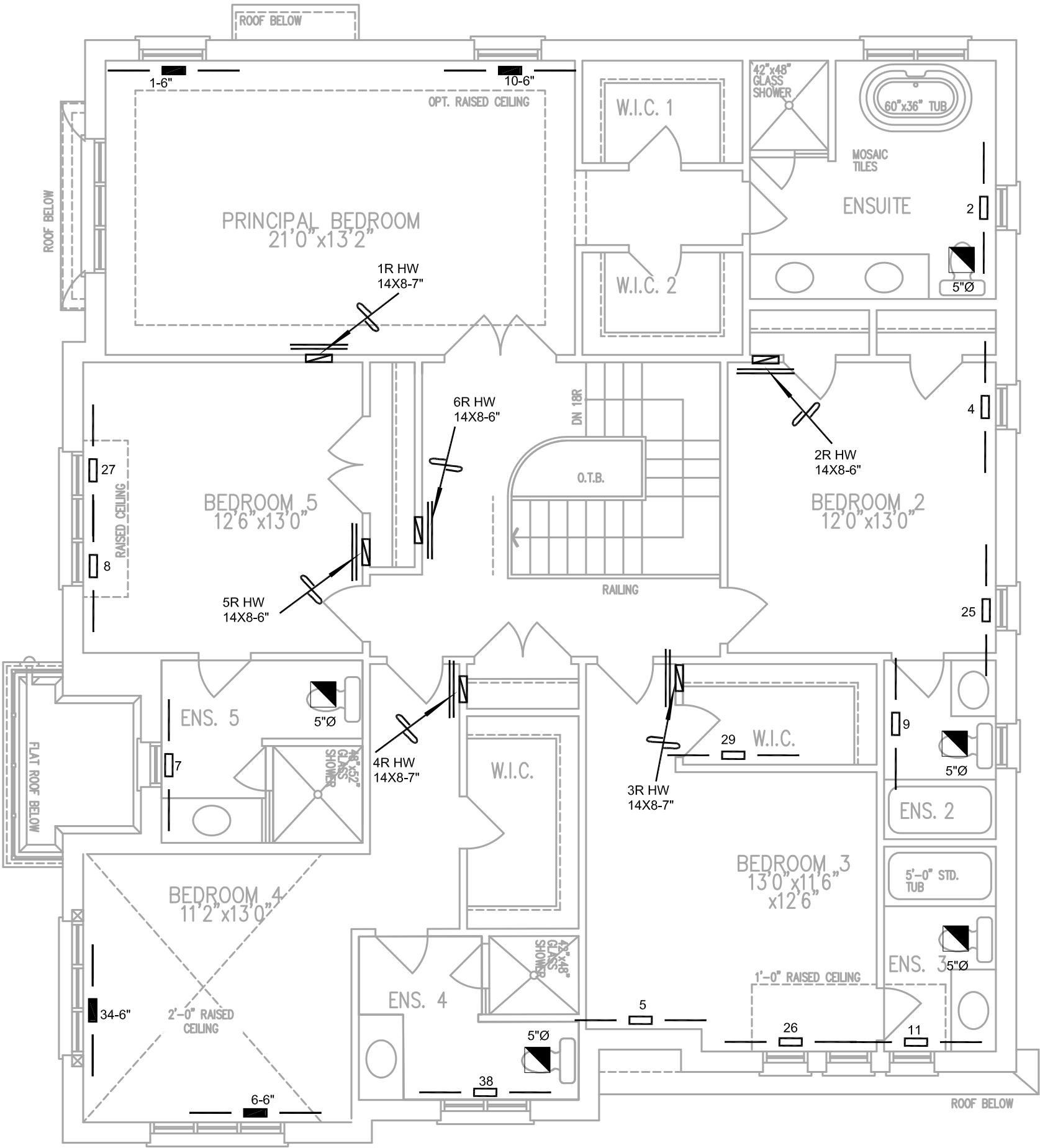
PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

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.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.
								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.						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.		
Client		375 Finley Ave. Suite 202 - Ajax, Ontario 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		HEAT LOSS 66845 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title
ROYAL PINE HOMES		HVADESIGNS LTD.		MAKE CARRIER		3RD FLOOR		BASEMENT HEATING LAYOUT
Project Name		WEST RIVER SOUTH BRAMPTON, ONTARIO		MODEL 59SC6A080M21--20		2ND FLOOR 16 6 5		Date
OPT 2ND 5004		3619 sqft		INPUT 80 MBTU/H		1ST FLOOR 13 3 2		Scale
				OUTPUT 78 MBTU/H		BASEMENT 6 1 0		BCIN# 19669
				COOLING 4.0 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		LO# 108319
				FAN SPEED 1530 cfm @ 0.6" w.c.				



GROUND FLOOR PLAN, EL. 'A'

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
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.						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.		SB-12 PERFORMANCE	
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	
Project Name										FIRST FLOOR HEATING LAYOUT	
WEST RIVER SOUTH BRAMPTON, ONTARIO										Date APR/2025	
OPT 2ND 5004										Scale 3/16" = 1'-0"	
3619 sqft						BCIN# 19669					
						LO# 108319					

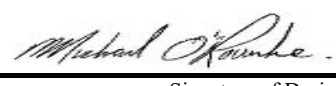


OPT. SECOND FLOOR PLAN,
WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

HVAC LEGEND								3.				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.				
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.				
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS				
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.						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.		SB-12 PERFORMANCE		
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		SECOND FLOOR HEATING LAYOUT	
Project Name									Date		APR/2025	
ROYAL PINE HOMES									Scale		3/16" = 1'-0"	
WEST RIVER SOUTH BRAMPTON, ONTARIO									BCIN# 19669			
OPT 2ND 5004									LO#		108319	
3619 sqft		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.										

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 BRAMPTON	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: 5004 OPT 2ND & MAIN Project: WEST RIVER SOUTH	
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 15, 2025			
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: WEST RIVER SOUTH										OPT 2ND & MAIN										DATE: Apr-25										WINTER NATURAL AIR CHANGE RATE 0.335										HEAT LOSS ΔT °F. 74										CSA-F280-12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
BUILDER: ROYAL PINE HOMES										TYPE: 5004										GFA: 3619										LO# 108321										SUMMER NATURAL AIR CHANGE RATE 0.109										HEAT GAIN ΔT °F. 11										SB-12 PERFORMANCE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES

OPT 2ND & MAIN
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108321

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 65,385 TOTAL HEAT GAIN 48,541
AIR FLOW RATE CFM 23.4 AIR FLOW RATE CFM 31.52

furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER
59SC6A080M21--20

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 78,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	13	6
R/A	0	0	6	3	1

plenium pressure s/a 0.17
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.15
r/a pressure 0.15
r/a grille press. Loss 0.02
adjusted pressure r/a 0.13

FAN SPEED 80
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 0
HIGH 1530

DESIGN CFM = 1530
CFM @ .8" E.S.P.

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

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

RUN #	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.08	2.16	0.97	0.92	1.63	0.68	1.12	0.93	2.08	1.49	2.06	0.87	2.23	2.23	3.21	2.33	0.43	1.64	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	49	51	23	21	38	16	26	22	49	35	48	20	52	52	75	55	10	38	81	81	81	81
RM GAIN MBH.	2.45	1.75	1.03	1.10	2.48	0.48	1.36	0.34	2.45	0.96	2.40	0.86	2.81	2.81	3.07	1.32	0.06	1.01	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	55	32	35	78	15	43	11	77	30	76	27	89	89	97	42	2	32	12	12	12	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	190	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	277	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.06	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	6	4	5	4	6	5	6	4	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	374	264	241	194	184	191	252	250	257	245	229	265	265	382	404	115	436	413	413	413	413
COOLING VELOCITY (ft/min)	393	404	367	402	398	172	316	126	393	220	388	310	454	454	495	308	23	367	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	BAS	ENS-4
RM LOSS MBH.	0.97	0.92	1.12	3.21	2.06	1.26	1.26	3.46	1.63	0.92	3.46	0.87
CFM PER RUN HEAT	23	21	26	75	48	29	29	81	38	21	81	20
RM GAIN MBH.	1.03	1.10	1.36	3.07	2.40	1.40	1.40	0.37	2.48	1.10	0.37	0.86
CFM PER RUN COOLING	32	35	43	97	76	44	44	12	78	35	12	27
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	190	140	150	130	200	220	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	228	191	193	192	279	292	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.06	0.05	0.08	0.06
ROUND DUCT SIZE	5	5	5	6	6	5	5	6	6	5	6	4
HEATING VELOCITY (ft/min)	169	154	191	382	245	213	213	413	194	154	413	229
COOLING VELOCITY (ft/min)	235	257	316	495	388	323	323	61	398	257	61	310
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	C	C	C	A	A	B	C	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	327	0.06	9.9	14	x	8	420	TRUNK G	0	0.00	0	0	8
TRUNK B	587	0.05	12.9	20	x	8	528	TRUNK H	0	0.00	0	0	8
TRUNK C	1003	0.05	15.8	28	x	8	645	TRUNK I	0	0.00	0	0	8
TRUNK D	1286	0.05	17.3	30	x	10	617	TRUNK J	0	0.00	0	0	8
TRUNK E	210	0.08	7.8	8	x	8	473	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9	BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	74	60	45	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	8
	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	30	30	0	24

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: BASEMENT	
Address: _____				Manufacturer: VANEER	
City: _____		Postal Code: _____		Model: VANEER G2400H ECM ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: 50 CFM High: 210 CFM	
3. Designer		Name: HVAC DESIGNS LTD.		Sones: ESP: 0.2 " w.c.	
Address: 375 FINLEY AVE				80 % Sensible Efficiency @ 0 °C @ 210 CFM	
City: AJAX		Postal Code: L1S 2E2		% Sensible Efficiency @ -25 °C @ CFM	
Ph: 905-619-2300		Fax: 905-619-2375		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: 001820					
E-mail: info@hvacdesigns.ca					
4. Combustion Appliances				10. Other Ventilation Fans	
☒ a) Direct Vent		b) Induced Draft		Location: ENS Sones: .3	
c) Natural Draft		d) Solid Fuel Appliances		Manufacturer: BY CONTRACTOR	
e) No Combustion Appliances		CO Alarm Required		Model: BY CONTRACTOR HVI Rated	
5. Heating System				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
☒ Forced Air		Non-Forced Air		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Gas Propane Other				Circulation Fan Make-up Air Fan for	
Oil Electricity				Location: ENS-5 Sones: .3	
6. Distribution System				Manufacturer: BY CONTRACTOR	
☒ Furnace Inline fan HRV/ERV				Model: BY CONTRACTOR HVI Rated	
7. Principal Ventilation System Design Option				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Balanced no heat recovery				Circulation Fan Make-up Air Fan for	
HRV/ERV with extended exhaust				Location: ENS-3 Sones: .3	
☒ HRV/ERV with simplified exhaust				Manufacturer: BY CONTRACTOR	
HRV/ERV with full ducting/not coupled to forced air				Model: BY CONTRACTOR HVI Rated	
HRV/ERV with no supplemental fans				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
(High speed must be at least 2.5 times the principal exhaust)				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Supplemental fans				Circulation Fan Make-up Air Fan for	
8. Principal Ventilation Capacity (PVC)				Location: W/R Sones: .3	
# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM				Manufacturer: BY CONTRACTOR	
Supply Air Required: Yes ☒ No				Model: BY CONTRACTOR HVI Rated	
Mixed Air Temperature Calculation Required:				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Yes ☒ No				☒ Supplemental Fan Supply Fan for Principal Exhaust	
For a System coupled with a Forced Air Furnace:				Circulation Fan Make-up Air Fan for	
Furnace Blower Rate: 1530 CFM				11. Designer Consent	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				I MICHAEL O'ROURKE certify this ventilation	
CFM				system is designed to be in accordance with OBC-2024 9.32	
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)				Date: 4/14/2025 Signature: <i>Michael O'Rourke</i>	
Note: Secondary suite ventilation system requires a separate design					

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 108321	Model: 5004	Builder: ROYAL PINE HOMES	Date: 4/15/2025																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1622</td><td>10</td><td>16220</td></tr> <tr><td>First</td><td>1622</td><td>11</td><td>17842</td></tr> <tr><td>Second</td><td>1997</td><td>9</td><td>17973</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>52,035.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1473.5 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1622	10	16220	First	1622	11	17842	Second	1997	9	17973	Third	0	9	0	Fourth	0	9	0	Total:			52,035.0 ft³	Total:			1473.5 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%; text-align: center;">0.335</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.109</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.335	SUMMER NATURAL AIR CHANGE RATE	0.109	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 409.30 x 41 °C x 1.2 = 6777 W = 23122 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 0.109 x 409.30 x 6 °C x 1.2 = 327 W = 1114 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 74 °F x 1.08 x 0.20 = 3361 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 11 °F x 1.08 x 0.20 = 498 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	23,122	9,188	1.258																																																								
2	0.3		18,067	0.384																																																								
3	0.2		14,361	0.322																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT 2ND & MAIN	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108321	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

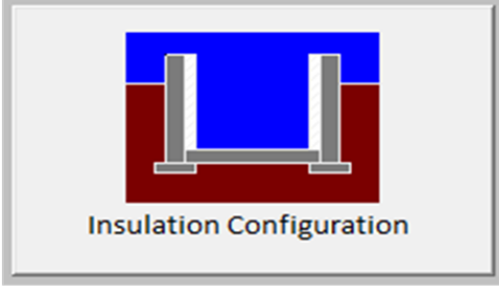
OBC - COMPLIANCE PACKAGE	Compliance Package	
	SB-12 PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement 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	96%	-
HRV/ERV 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:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
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):		1888

TYPE: 5004
LO# 108321

OPT 2ND & MAIN

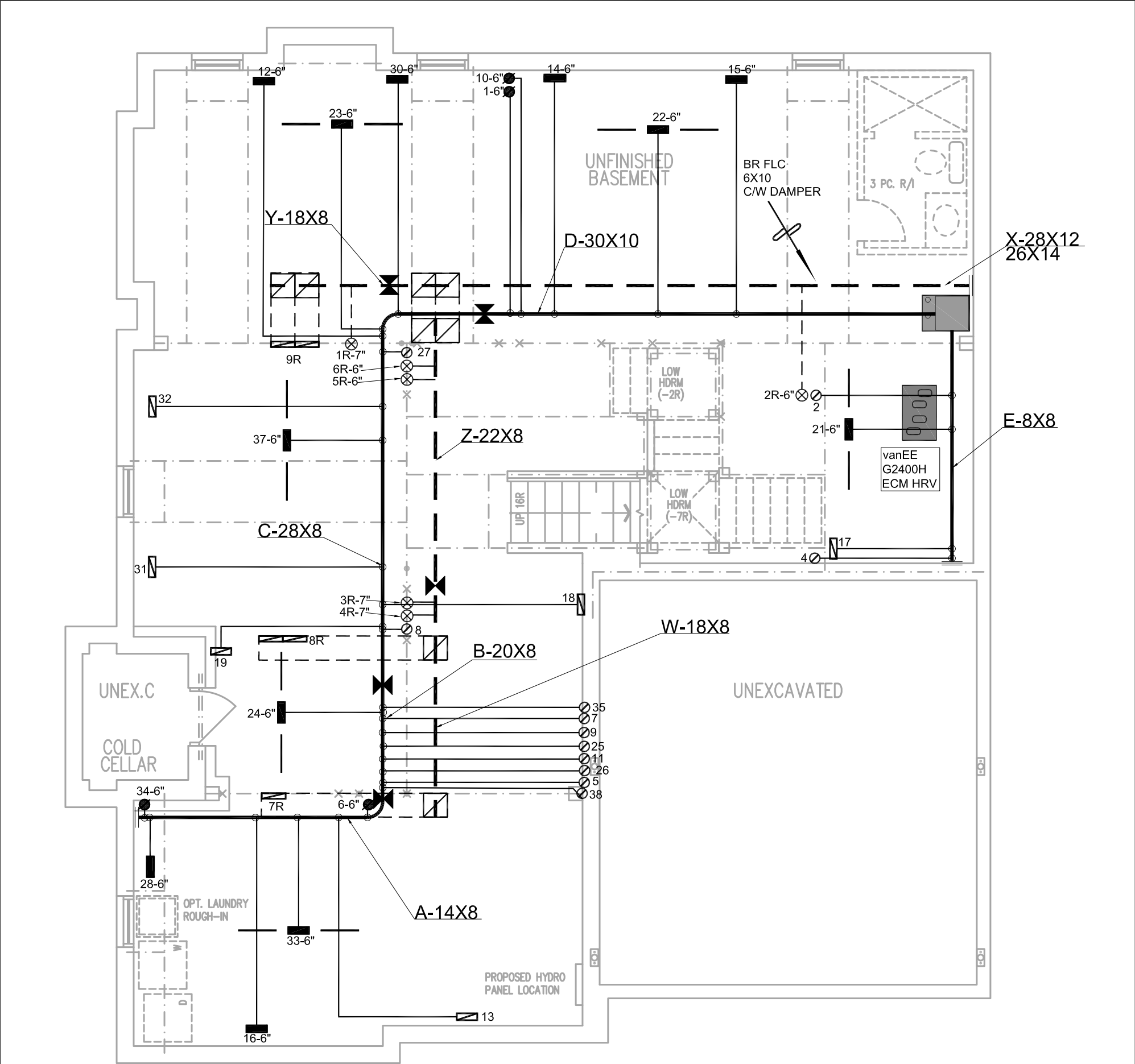
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

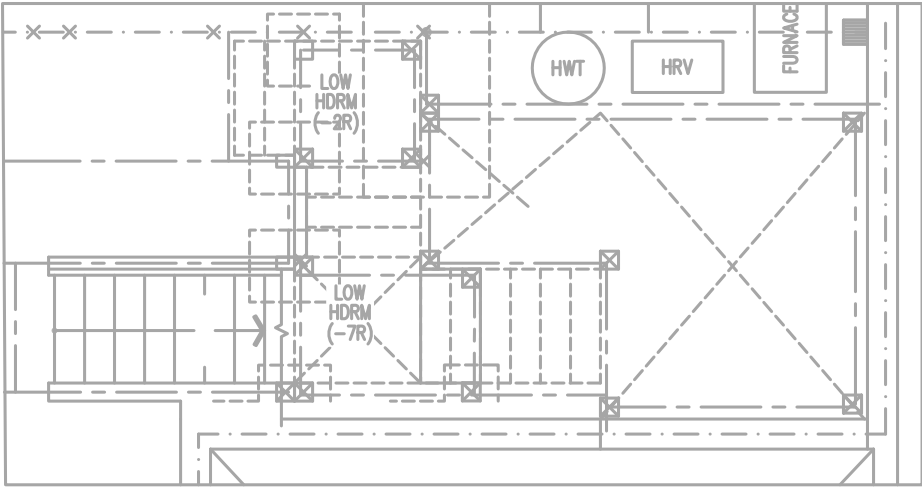
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	99.0	99.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: 5004
LO# 108321

OPT 2ND & MAIN

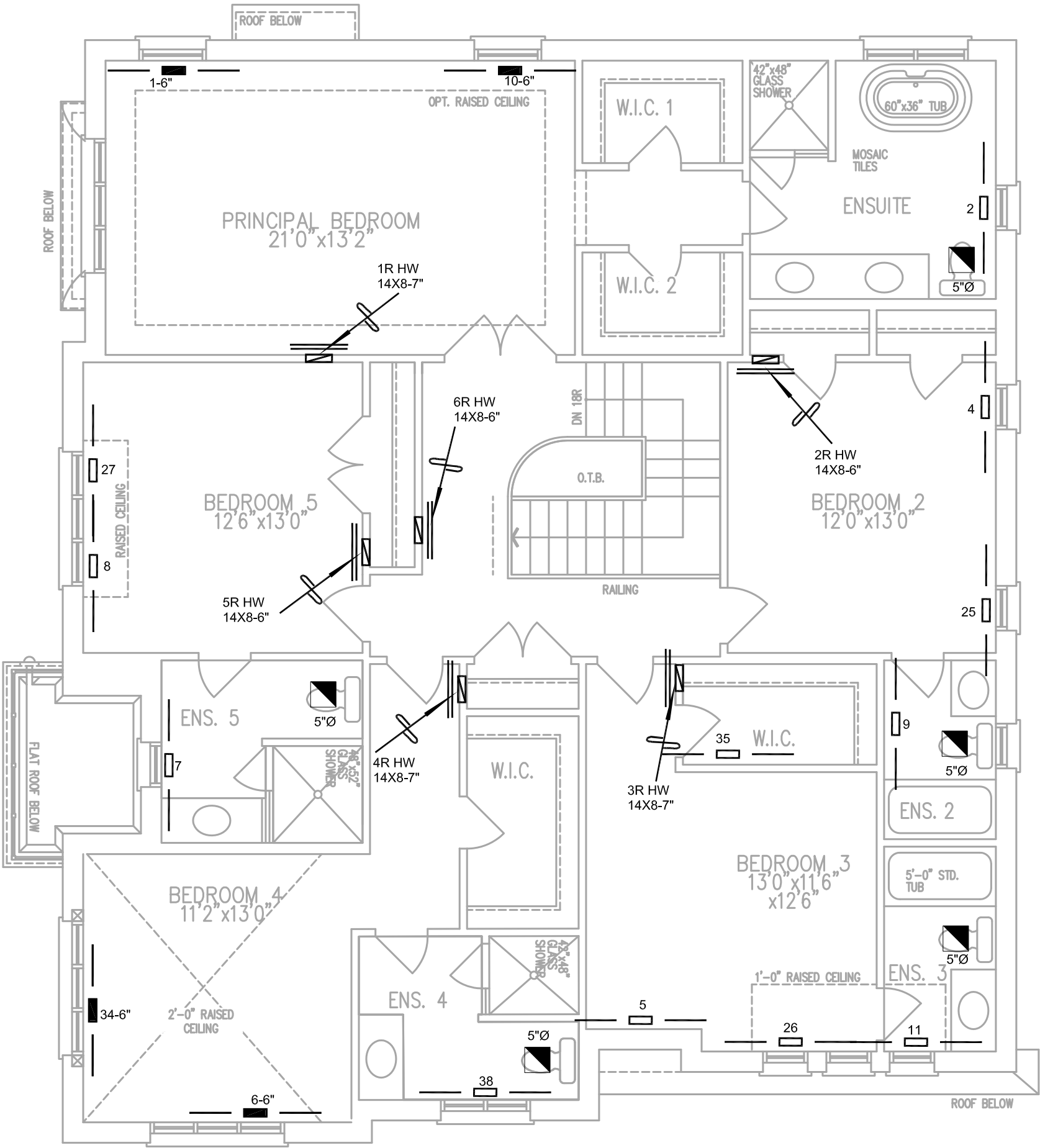


BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
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.						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.		SB-12 PERFORMANCE	
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 68746 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT	
						MAKE		2ND FLOOR		Date	
						CARRIER		15 6 5		APR/2025	
						MODEL		1ST FLOOR		Scale	
						59SC6A080M21--20		13 3 3		BCIN# 19669	
						INPUT		BASEMENT		LO#	
						80 MBTU/H		6 1 0		108321	
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					
78 MBTU/H											
COOLING											
4.0 TONS											
FAN SPEED											
1530 cfm @ 0.6" w.c.											
Project Name		WEST RIVER SOUTH		OPT 2ND & MAIN		5004		3619 sqft			
BRAMPTON, ONTARIO											



OPT. SECOND FLOOR PLAN,
WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
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.						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.		SB-12 PERFORMANCE	
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	
Project Name										SECOND FLOOR HEATING LAYOUT	
WEST RIVER SOUTH BRAMPTON, ONTARIO										Date	APR/2025
OPT 2ND & MAIN 5004										Scale	3/16" = 1'-0"
3619 sqft						BCIN# 19669		LO#	108321		

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 BRAMPTON	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: 5004 OPT 2ND & MAIN - WUB Project: WEST RIVER SOUTH	
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 15, 2025		 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

[illegible]

TOTAL COMBINED HEAT LOSS BTU/H: 73647

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES

OPT 2ND & MAIN - WUB
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108324

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 70,286 TOTAL HEAT GAIN 48,417
AIR FLOW RATE CFM 21.77 AIR FLOW RATE CFM 31.6

furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER

AFUE = 97 %

59SC6A080M21--20

INPUT (BTU/H) = 80,000

FAN SPEED

OUTPUT (BTU/H) = 78,000

LOW 0

DESIGN CFM = 1530

MEDLOW 0

CFM @ .8" E.S.P.

MEDIUM 0

MEDIUM HIGH 0

HIGH 1530

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	13	6
R/A	0	0	6	3	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.18	2.26	1.01	0.96	1.71	0.72	1.18	0.98	2.18	1.57	2.18	0.92	2.34	2.34	3.39	2.46	0.45	1.73	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	48	49	22	21	37	16	26	21	48	34	47	20	51	51	74	54	10	38	85	85	85	85
RM GAIN MBH.	2.46	1.76	1.03	1.11	2.49	0.48	1.37	0.35	2.46	0.97	2.42	0.87	2.57	2.57	3.09	1.32	0.06	0.87	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	78	56	33	35	79	15	43	11	78	31	76	27	81	81	98	42	2	27	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	190	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	277	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.06	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	6	4	5	4	6	5	6	4	5	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	245	360	252	241	189	184	191	241	245	250	240	229	374	260	377	396	115	436	433	433	433	433
COOLING VELOCITY (ft/min)	398	411	379	402	403	172	316	126	398	228	388	310	595	413	500	308	23	310	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	BAS	ENS-4
RM LOSS MBH.	1.01	0.96	1.18	3.39	2.18	1.33	1.33	3.89	1.71	0.96	3.89	0.92
CFM PER RUN HEAT	22	21	26	74	47	29	29	85	37	21	85	20
RM GAIN MBH.	1.03	1.11	1.37	3.09	2.42	1.41	1.41	0.41	2.49	1.11	0.41	0.87
CFM PER RUN COOLING	33	35	43	98	76	45	45	13	79	35	13	27
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	190	140	150	130	200	220	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	228	191	193	192	279	292	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.06	0.05	0.08	0.06
ROUND DUCT SIZE	5	5	5	6	6	5	5	6	6	5	6	4
HEATING VELOCITY (ft/min)	162	154	191	377	240	213	213	433	189	154	433	229
COOLING VELOCITY (ft/min)	242	257	316	500	388	330	330	66	403	257	66	310
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	C	C	C	A	A	B	C	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	327	0.06	9.9	14	x	8	420	TRUNK G	0	0.00	0	0	8
TRUNK B	588	0.05	12.9	20	x	8	529	TRUNK H	0	0.00	0	0	8
TRUNK C	1010	0.05	15.8	28	x	8	649	TRUNK I	0	0.00	0	0	8
TRUNK D	1293	0.05	17.4	30	x	10	621	TRUNK J	0	0.00	0	0	8
TRUNK E	210	0.08	7.8	8	x	8	473	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	BR
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: BASEMENT	
Address: _____				Manufacturer: VANEER	
City: _____		Postal Code: _____		Model: VANEER G2400H ECM ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: 50 CFM High: 210 CFM	
3. Designer		Name: HVAC DESIGNS LTD.		Sones: ESP: 0.2 " w.c.	
Address: 375 FINLEY AVE				80 % Sensible Efficiency @ 0 °C @ 210 CFM	
City: AJAX		Postal Code: L1S 2E2		% Sensible Efficiency @ -25 °C @ CFM	
Ph: 905-619-2300		Fax: 905-619-2375		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: 001820					
E-mail: info@hvacdesigns.ca					
4. Combustion Appliances				10. Other Ventilation Fans	
☒ a) Direct Vent		b) Induced Draft		Location: ENS Sones: .3	
c) Natural Draft		d) Solid Fuel Appliances		Manufacturer: BY CONTRACTOR	
e) No Combustion Appliances		CO Alarm Required		Model: BY CONTRACTOR HVI Rated	
5. Heating System				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
☒ Forced Air		Non-Forced Air		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Gas Propane Other				Circulation Fan Make-up Air Fan for	
Oil Electricity				Location: ENS-5 Sones: .3	
6. Distribution System				Manufacturer: BY CONTRACTOR	
☒ Furnace Inline fan HRV/ERV				Model: BY CONTRACTOR HVI Rated	
7. Principal Ventilation System Design Option				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust) Balanced no heat recovery HRV/ERV with extended exhaust				☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ HRV/ERV with simplified exhaust				Circulation Fan Make-up Air Fan for	
HRV/ERV with full ducting/not coupled to forced air HRV/ERV with no supplemental fans (High speed must be at least 2.5 times the principal exhaust) Supplemental fans				Location: ENS-3 Sones: .3	
8. Principal Ventilation Capacity (PVC)				Manufacturer: BY CONTRACTOR	
# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM				Model: BY CONTRACTOR HVI Rated	
Supply Air Required: Yes ☒ No				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
Mixed Air Temperature Calculation Required:				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Yes ☒ No				Circulation Fan Make-up Air Fan for	
For a System coupled with a Forced Air Furnace:				Location: W/R Sones: .3	
Furnace Blower Rate: 1530 CFM				Manufacturer: BY CONTRACTOR	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				Model: BY CONTRACTOR HVI Rated	
CFM				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
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				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	
				Design Airflow: 50 CFM ESP: 0.2 "w.c.	
				☒ Supplemental Fan Supply Fan for Principal Exhaust	
				Circulation Fan Make-up Air Fan for	
				Location: W/R Sones: .3	
				Manufacturer: BY CONTRACTOR	
				Model: BY CONTRACTOR HVI Rated	

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 108324	Model: 5004	Builder: ROYAL PINE HOMES	Date: 4/15/2025																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1622</td><td>10</td><td>16220</td></tr> <tr><td>First</td><td>1622</td><td>11</td><td>17842</td></tr> <tr><td>Second</td><td>1997</td><td>9</td><td>17973</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>52,035.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1473.5 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1622	10	16220	First	1622	11	17842	Second	1997	9	17973	Third	0	9	0	Fourth	0	9	0	Total:			52,035.0 ft³	Total:			1473.5 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%; text-align: center;">0.400</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.130</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.400	SUMMER NATURAL AIR CHANGE RATE	0.130	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.400 x 409.30 x 41 °C x 1.2 = 8108 W = 27665 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.130 x 409.30 x 6 °C x 1.2 = 390 W = 1330 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 74 °F x 1.08 x 0.20 = 3361 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 11 °F x 1.08 x 0.20 = 498 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																												
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})																																																								
1	0.5	27,665	9,535	1.451																																																								
2	0.3		18,049	0.460																																																								
3	0.2		14,361	0.385																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT 2ND & MAIN - WUB	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108324	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE	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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

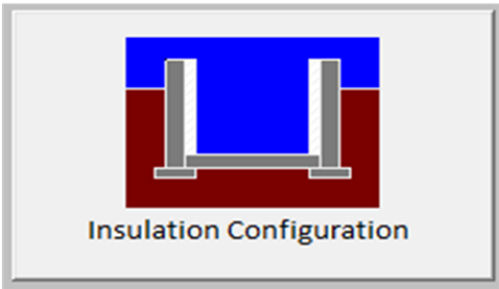
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

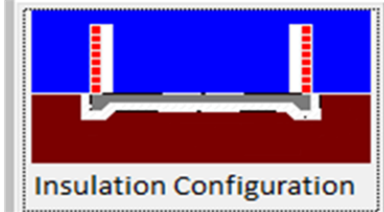
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	46.6	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1548

TYPE: 5004
LO# 108324

OPT 2ND & MAIN - WUB

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	1.8	 Insulation Configuration
Width (m):	5.8	
Exposed Perimeter (m):	9.4	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		95

TYPE: 5004
LO# 108324

OPT 2ND & MAIN - WUB

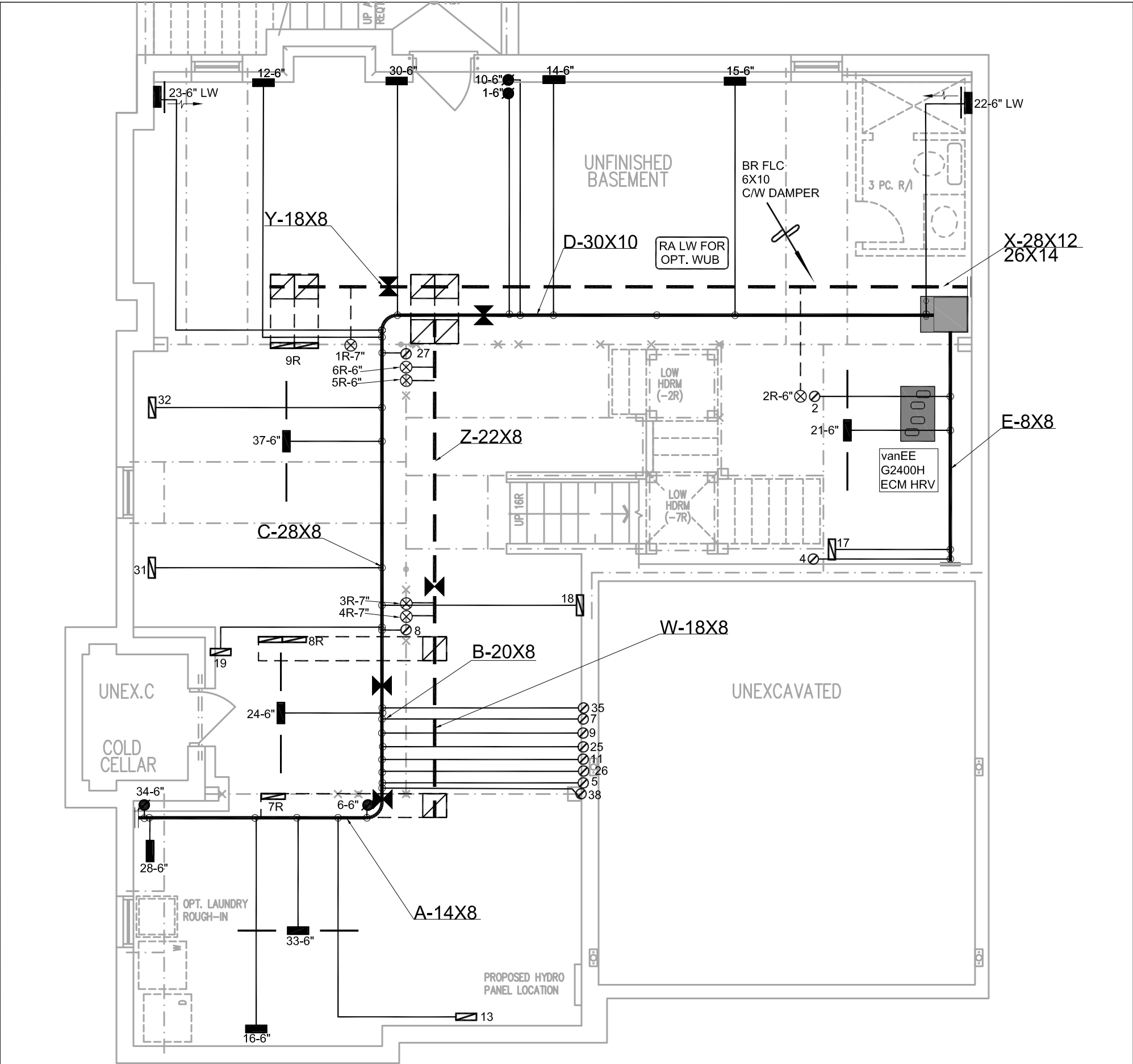
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

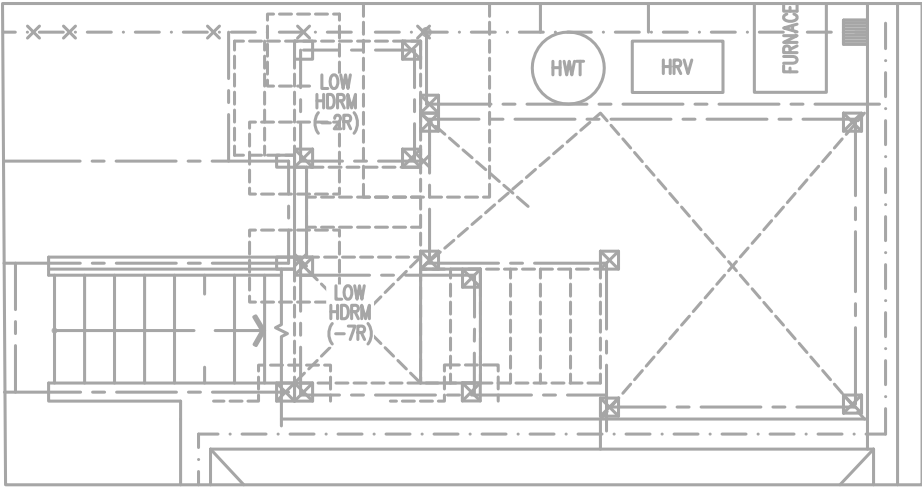
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	99.0	99.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.400			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: 5004
LO# 108324

OPT 2ND & MAIN - WUB



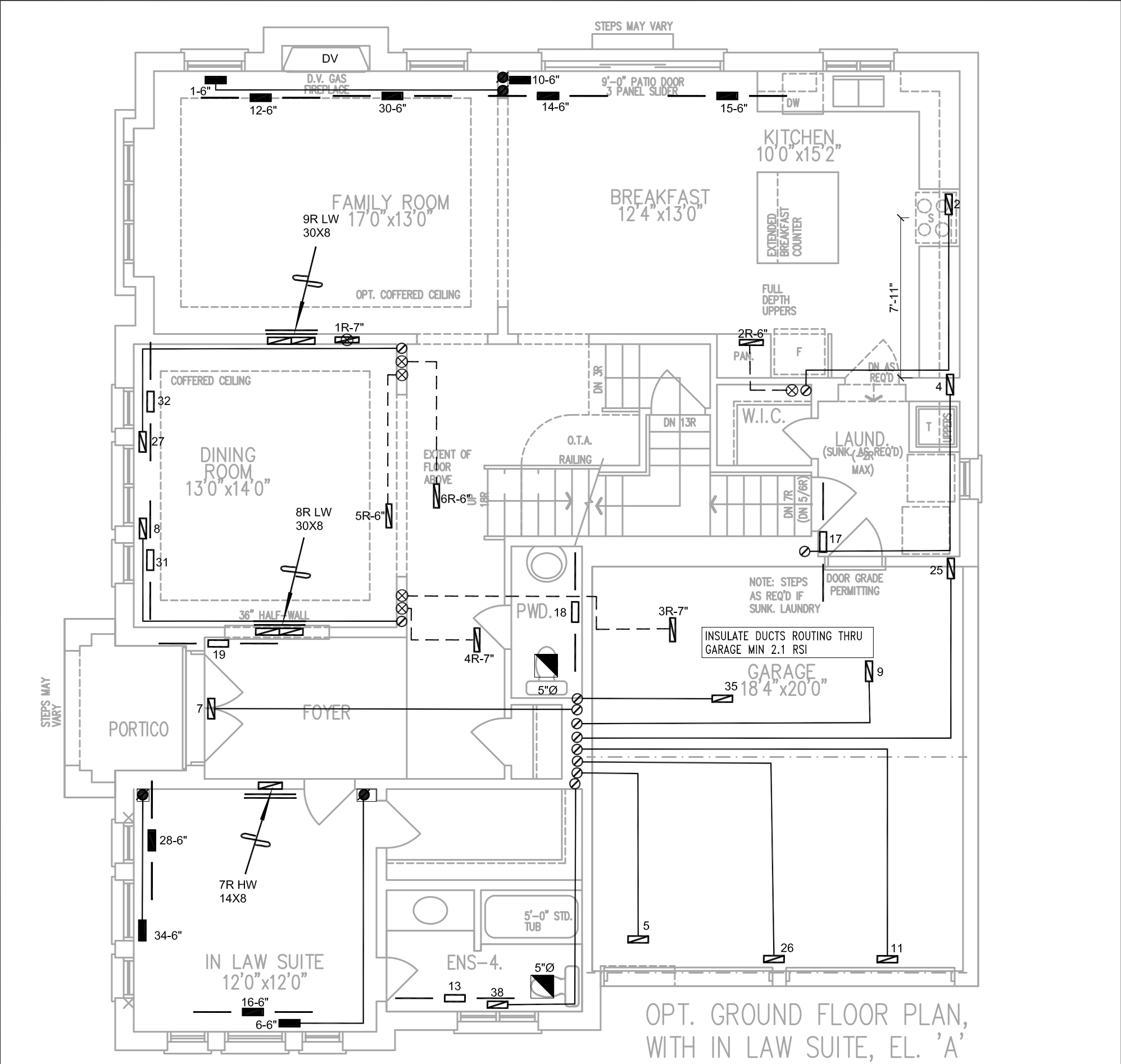
BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
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.						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.		SB-12 PERFORMANCE			
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 73647 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title	
Project Name ROYAL PINE HOMES WEST RIVER SOUTH BRAMPTON, ONTARIO OPT 2ND & MAIN - WUB 5004 3619 sqft						MAKE CARRIER		3RD FLOOR		BASEMENT HEATING LAYOUT	
						MODEL 59SC6A080M21--20		2ND FLOOR		15 6 5	
						INPUT 80 MBTU/H		1ST FLOOR		13 3 3	
						OUTPUT 78 MBTU/H		BASEMENT		6 1 0	
						COOLING 4.0 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 APR/2025	
FAN SPEED 1530 cfm @ 0.6" w.c.				Scale 3/16" = 1'-0"		BCIN# 19669					
						LO# 108324					



WUB

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

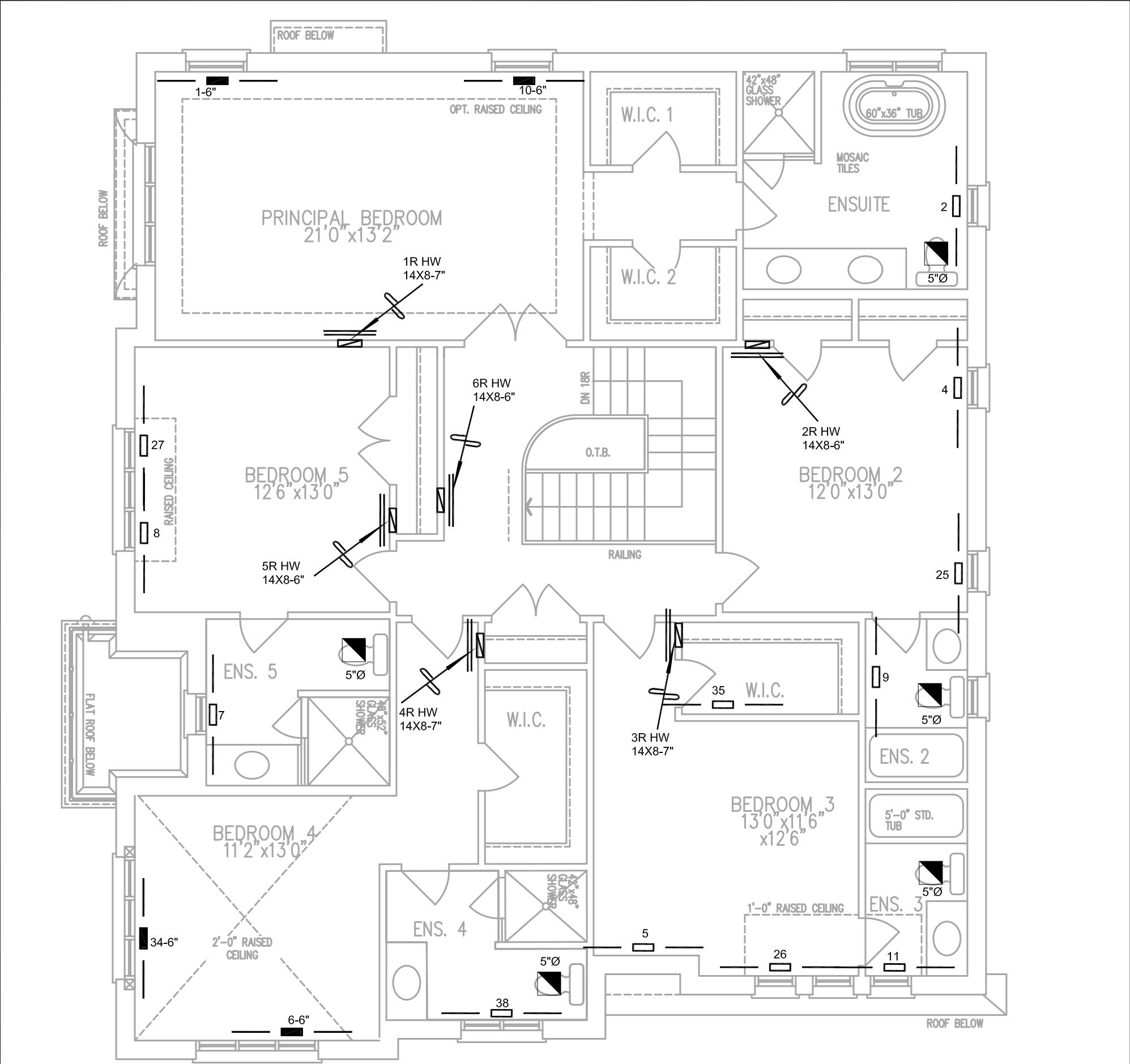
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I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.

Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

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	APR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO		Scale	3/16" = 1'-0"
OPT 2ND & MAIN - WUB 5004		BCIN# 19669	
3619 sqft		LO#	108324



OPT. SECOND FLOOR PLAN,
WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

WUB

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

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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.

SB-12 PERFORMANCE

Client	 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdsgns.ca Web: www.hvacdsgns.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	APR/2025
WEST RIVER SOUTH BRAMPTON, ONTARIO		Scale	3/16" = 1'-0"
OPT 2ND & MAIN - WUB 5004 3619 sqft		BCIN# 19669	
		LO#	108324

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 BRAMPTON	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: 5004 OPT MAIN - WUB Project: WEST RIVER SOUTH	
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 15, 2025		 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: WEST RIVER SOUTH										OPT MAIN - WUB										DATE: Apr-25										WINTER NATURAL AIR CHANGE RATE 0.400										HEAT LOSS ΔT °F. 74										CSA-F280-11																			
BUILDER: ROYAL PINE HOMES										TYPE: 5004										GFA: 3619										LO# 108323										SUMMER NATURAL AIR CHANGE RATE 0.130										HEAT GAIN ΔT °F. 11										SB-12 PERFORMANCE									
ROOM USE				MBR				ENS				BED-2		BED-3		BED-4		BATH				BED-5		ENS-2		ENS-3		DIN																																									
EXP. WALL				42				24				15		13		16		6				20		8		16		20																																									
CLG. HT.				9				9				9		9		9		9				9		9		9		11																																									
FACTORS																																																																					
GRS.WALL AREA		LOSS GAIN		378				216				135		117		144		54				180		72		144		220																																									
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN																																									
NORTH		20.8	15.5	0	0	0	10	208	155			22	457	340	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0																																					
EAST		20.8	41.0	0	0	0	0	0	0			0	0	0	25	519	1026	22	457	903	0	0	0	0	0	0	12	249	493	0	0	0																																					
SOUTH		20.8	24.4	32	665	781	0	0	0			0	0	0	0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	0	56	1164	1366																																				
WEST		20.8	41.0	32	665	1314	22	457	903			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
SKYLT.		34.1	100.3	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
DOORS		19.6	2.9	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
NET EXPOSED WALL		4.0	0.6	314	1259	187	184	738	109			113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98																																		
NET EXPOSED BSMT WALL ABOVE GR		3.5	0.5	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																			
EXPOSED CLG		1.3	0.6	414	519	231	148	186	83			203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0																																		
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	0	0			0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0																																		
EXPOSED FLOOR		2.5	0.4	0	0	0	0	0	0			48	120	18	246	613	91	0	0	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0																																			
BASEMENT/CRAWL HEAT LOSS				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																																			
SUBTOTAL HT LOSS				3108				1588				1284		1834		1216		523				1655		642		1027		1821																																									
SUB TOTAL HT GAIN				2512				1250				538		1320		1095		348				1160		227		635		1464																																									
LEVEL FACTOR / MULTIPLIER		0.20	0.43			0.20	0.43			0.20	0.43	0.20	0.43			0.20	0.43	0.20	0.43			0.20	0.43	0.20	0.43	0.30	0.44																																										
AIR CHANGE HEAT LOSS				1335				682				552		788		522		225				711		276		441		805																																									
AIR CHANGE HEAT GAIN				172				85				37		90		75		24				79		15		43		100																																									
DUCT LOSS				0				0				184		262		0		0				0		92		147		0																																									
DUCT GAIN				0				0				142		225		0		0				0		24		68		0																																									
HEAT GAIN PEOPLE		240		2	480	0	0			1	240	1	240	1	240	1	240	0	0	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0																																			
HEAT GAIN APPLIANCES/LIGHTS				605				0				605		605		605		0				605		0		0		605																																									
TOTAL HT LOSS BTU/H				4444				2271				2020		2883		1738		747				2367		1009		1616		2626																																									
TOTAL HT GAIN x 1.3 BTU/H				4899				1736				2031		3224		2620		483				2709		346		970		2819																																									

ROOM USE												FAM			ENS-4			BR/KT			IN-LAW			LAUN			W/R			FOY									WUB			BAS							
EXP. WALL												36			18			39			37			27			7			10									31			153							
CLG. HT.												11			11			11			20			11			11									10			10										
FACTORS																																																	
GRS.WALL AREA												396			198			429			740			297			77			110									310			1071							
GLAZING												LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN										
NORTH												20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EAST												20.8	41.0	0	0	0	0	28	582	1149	0	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH												20.8	24.4	41	852	1000	0	0	0	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	0	0	0	21	436	512	0	0	0	8	166	195	0	0	0	
WEST												20.8	41.0	42	873	1724	0	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.												34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS												19.6	2.9	0	0	0	0	0	0	0	10	196	29	0	0	0	0	20	392	58	0	0	0	0	25	489	73	20	392	58	20	392	58	20	392	58	20	392	58
NET EXPOSED WALL												4.0	0.6	313	1255	186	170	682	101	339	1360	202	564	2262	335	266	1067	158	77	309	46	64	257	38	278	1115	165	0	0	0	0	0	0	0	0	0	0	0	
NET EXPOSED BSMT WALL ABOVE GR												3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	459	1613	239	0	0	0	0	0	0	0	
EXPOSED CLG												1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG												2.7	1.2	0	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR												2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS												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							
SUBTOTAL HT LOSS												2980			1264			3218			6321			1687			309			1182			2082			7453			492			1534							
SUB TOTAL HT GAIN												2910			1250			3514			6273			386			46			623			716			492			1534										
LEVEL FACTOR / MULTIPLIER												0.30	0.44				0.30	0.44				0.30	0.44				0.30	0.44				0.30	0.44				0.50	1.45											
AIR CHANGE HEAT LOSS												1317			558			1422			2793			745			136			523			13832			83			605										
AIR CHANGE HEAT GAIN												199			85			240			429			26			3			43			0			0			0										
DUCT LOSS												0			0			0			0			0			0			0			0			0			0			0							
DUCT GAIN												0			0			0			0			0			0			0			0			0			0			0							
HEAT GAIN PEOPLE												240	0	0	0	0	0	0	0	0	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS												605			0			605			605			605			0			0			0			0			0			0							
TOTAL HT LOSS BTU/H												4297			1822			4640			9114			2432			445			1705			2082			21285			1534										
TOTAL HT GAIN x 1.3 BTU/H												4829			1737			5668			9811			1323			64			865			931			1534													

TOTAL HEAT GAIN BTU/H:

49097

TONS: 4.09

LOSS DUE TO VENTILATION LOAD BTU/H: 3361

STRUCTURAL HEAT LOSS: 69543

TOTAL COMBINED HEAT LOSS BTU/H: 72904

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES

OPT MAIN - WUB
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108323

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 69,543 TOTAL HEAT GAIN 48,599
AIR FLOW RATE CFM 22 AIR FLOW RATE CFM 31.48

furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER

AFUE = 97 %

59SC6A080M21--20

INPUT (BTU/H) = 80,000

OUTPUT (BTU/H) = 78,000

FAN SPEED

DESIGN CFM = 1530

CFM @ .8" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	14	6
R/A	0	0	6	3	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.22	2.27	1.01	0.96	0.87	0.75	1.18	1.01	2.22	1.62	2.15	1.82	2.32	2.32	2.28	2.43	0.45	1.71	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	49	50	22	21	19	16	26	22	49	36	47	40	51	51	50	54	10	38	86	86	86	86
RM GAIN MBH.	2.45	1.74	1.02	1.07	1.31	0.48	1.35	0.35	2.45	0.97	2.41	1.74	2.83	2.83	2.45	1.32	0.06	0.87	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	77	55	32	34	41	15	43	11	77	31	76	55	89	89	77	42	2	27	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	5	4	5	4	6	5	6	5	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	250	367	252	241	140	184	191	252	250	264	240	294	260	260	255	396	115	436	438	438	438	438
COOLING VELOCITY (ft/min)	393	404	367	390	301	172	316	126	393	228	388	404	454	454	393	308	23	310	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	B	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	IN-LAW	BAS
RM LOSS MBH.	1.01	0.96	1.18	2.28	2.28	2.15	1.31	1.31	3.89	0.87	0.96	2.28	3.89
CFM PER RUN HEAT	22	21	26	50	47	29	29	86	19	21	50	86	86
RM GAIN MBH.	1.02	1.07	1.35	2.45	2.45	2.41	1.41	1.41	1.31	1.07	2.45	0.41	0.41
CFM PER RUN COOLING	32	34	43	77	77	76	44	44	13	34	77	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	38	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	220	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	292	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.05	0.07	0.08
ROUND DUCT SIZE	5	5	5	6	6	6	5	5	5	5	6	6	6
HEATING VELOCITY (ft/min)	162	154	191	255	255	240	213	213	438	140	154	255	438
COOLING VELOCITY (ft/min)	235	250	316	393	393	388	323	323	66	301	250	393	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	B	A	C

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK A	364	0.05	10.8	16	x	8	410	TRUNK G	0	0.00	0	0	8
TRUNK B	661	0.05	13.5	24	x	8	496	TRUNK H	0	0.00	0	0	8
TRUNK C	1033	0.05	16	30	x	8	620	TRUNK I	0	0.00	0	0	8
TRUNK D	1319	0.05	17.5	32	x	10	594	TRUNK J	0	0.00	0	0	8
TRUNK E	212	0.08	7.8	8	x	8	477	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	565	0.05	12.7	18	x	8
TRUNK X	1530	0.05	18.5	28	x	12
TRUNK Y	490	0.05	12.1	18	x	8
TRUNK Z	715	0.05	13.9	22	x	8
DROP	1530	0.05	18.5	26	x	14

RETURN AIR #	1	2	3	4	5	6	7	8	9	0	0	0	0	0	0	BR
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location		Municipality: <u>BRAMPTON</u>		9. Principal Ventilation System	
Civic Address: _____				HRV/ERV Central Inline Fan Bathroom Fan	
2. Builder		Name: <u>ROYAL PINE HOMES</u>		Location: <u>BASEMENT</u>	
Address: _____				Manufacturer: <u>VANEE</u>	
City: _____		Postal Code: _____		Model: <u>VANEE G2400H ECM</u> ☒ HVI Rated	
Ph: _____		Fax: _____		Design Airflow: Low: <u>50 CFM</u> High: <u>210 CFM</u>	
3. Designer		Name: <u>HVAC DESIGNS LTD.</u>		Sones: ESP: <u>0.2 " w.c.</u>	
Address: <u>375 FINLEY AVE</u>				80 % Sensible Efficiency @ 0 °C @ <u>210</u> CFM	
City: <u>AJAX</u>		Postal Code: <u>L1S 2E2</u>		% Sensible Efficiency @ -25 °C @ <u>CFM</u>	
Ph: <u>905-619-2300</u>		Fax: <u>905-619-2375</u>		(If HRV/ERV is used, the system must also comply with SB-12)	
HRAI #: <u>001820</u>				10. Other Ventilation Fans	
E-mail: <u>info@hvacdesigns.ca</u>					
4. Combustion Appliances				Location: <u>ENS</u> Sones: <u>.3</u>	
☒ a) Direct Vent		b) Induced Draft		Manufacturer: <u>BY CONTRACTOR</u>	
c) Natural Draft		d) Solid Fuel Appliances		Model: <u>BY CONTRACTOR</u> HVI Rated	
e) No Combustion Appliances		CO Alarm Required		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
5. Heating System				☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Forced Air		Non-Forced Air		Circulation Fan Make-up Air Fan for	
☒ Gas Propane Other				Location: <u>BATH</u> Sones: <u>.3</u>	
Oil Electricity				Manufacturer: <u>BY CONTRACTOR</u>	
6. Distribution System				Model: <u>BY CONTRACTOR</u> HVI Rated	
☒ Furnace Inline fan HRV/ERV				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
7. Principal Ventilation System Design Option				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Exhaust only forced air distribution system				Circulation Fan Make-up Air Fan for	
(Circ. fan at least 5 times the capacity of the principal exhaust)				Location: <u>ENS-3</u> Sones: <u>.3</u>	
Balanced no heat recovery				Manufacturer: <u>BY CONTRACTOR</u>	
HRV/ERV with extended exhaust				Model: <u>BY CONTRACTOR</u> HVI Rated	
☒ HRV/ERV with simplified exhaust				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
HRV/ERV with full ducting/not coupled to forced air				☒ Supplemental Fan Supply Fan for Principal Exhaust	
HRV/ERV with no supplemental fans				Circulation Fan Make-up Air Fan for	
(High speed must be at least 2.5 times the principal exhaust)				Location: <u>W/R</u> Sones: <u>.3</u>	
Supplemental fans				Manufacturer: <u>BY CONTRACTOR</u>	
8. Principal Ventilation Capacity (PVC)				Model: <u>BY CONTRACTOR</u> HVI Rated	
# of Bedrooms: <u>6</u> Required Exh Airflow: <u>209.7 CFM</u>				Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
Supply Air Required: Yes ☒ No				☒ Supplemental Fan Supply Fan for Principal Exhaust	
Mixed Air Temperature Calculation Required:				Circulation Fan Make-up Air Fan for	
Yes ☒ No				11. Designer Consent	
For a System coupled with a Forced Air Furnace:				I MICHAEL O'ROURKE certify this ventilation	
Furnace Blower Rate: <u>1530</u> CFM				system is designed to be in accordance with OBC-2024 9.32	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):				Date: <u>4/14/2025</u> Signature: <u>Michael O'Rourke</u>	
CFM					
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM) Note: Secondary suite ventilation system requires a separate design					

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																	
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																	
LO#: 108323		Model: 5004		Builder: ROYAL PINE HOMES				Date: 4/15/2025																																																									
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House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1622</td> <td>10</td> <td>16220</td> </tr> <tr> <td>First</td> <td>1622</td> <td>11</td> <td>17842</td> </tr> <tr> <td>Second</td> <td>1997</td> <td>9</td> <td>17973</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2"></td> <td>Total:</td> <td>52,035.0 ft³</td> </tr> <tr> <td colspan="2"></td> <td>Total:</td> <td>1473.5 m³</td> </tr> </tbody> </table>					Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1622	10	16220	First	1622	11	17842	Second	1997	9	17973	Third	0	9	0	Fourth	0	9	0			Total:	52,035.0 ft³			Total:	1473.5 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 30%;">0.400</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.130</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>					WINTER NATURAL AIR CHANGE RATE	0.400	SUMMER NATURAL AIR CHANGE RATE	0.130	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage					6.2.6 Sensible Gain due to Air Leakage																																																												
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.400 x 409.30 x 41 °C x 1.2 = 8108 W = 27665 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.130 x 409.30 x 6 °C x 1.2 = 390 W = 1330 Btu/h																																																												
5.2.3.2 Heat Loss due to Mechanical Ventilation					6.2.7 Sensible heat Gain due to Ventilation																																																												
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 74 °F x 1.08 x 0.20 = 3361 Btu/h					$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 210 CFM x 11 °F x 1.08 x 0.20 = 498 Btu/h																																																												
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																																	
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*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																																	
								Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT MAIN - WUB	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108323	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE		Compliance Package SB-12 PERFORMANCE	
Component		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		96%	-
HRV/ERV Minimum Efficiency		75%	-
Domestic Hot Water Heater Minimum EF		TE=94%	-

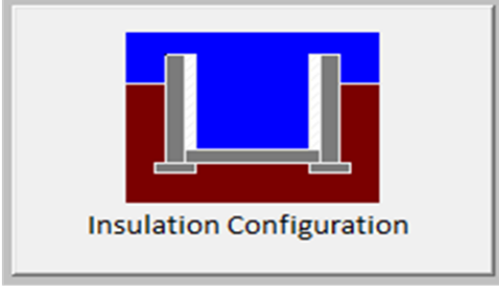
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	46.6	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1548

TYPE: 5004
LO# 108323

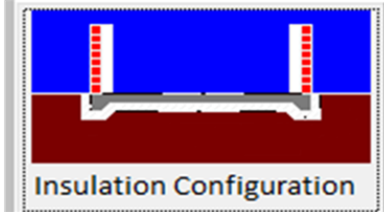
OPT MAIN - WUB

Michael O'Rourke BCIN #19669



Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	1.8	 Insulation Configuration
Width (m):	5.8	
Exposed Perimeter (m):	9.4	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		95

TYPE: 5004
LO# 108323

OPT MAIN - WUB

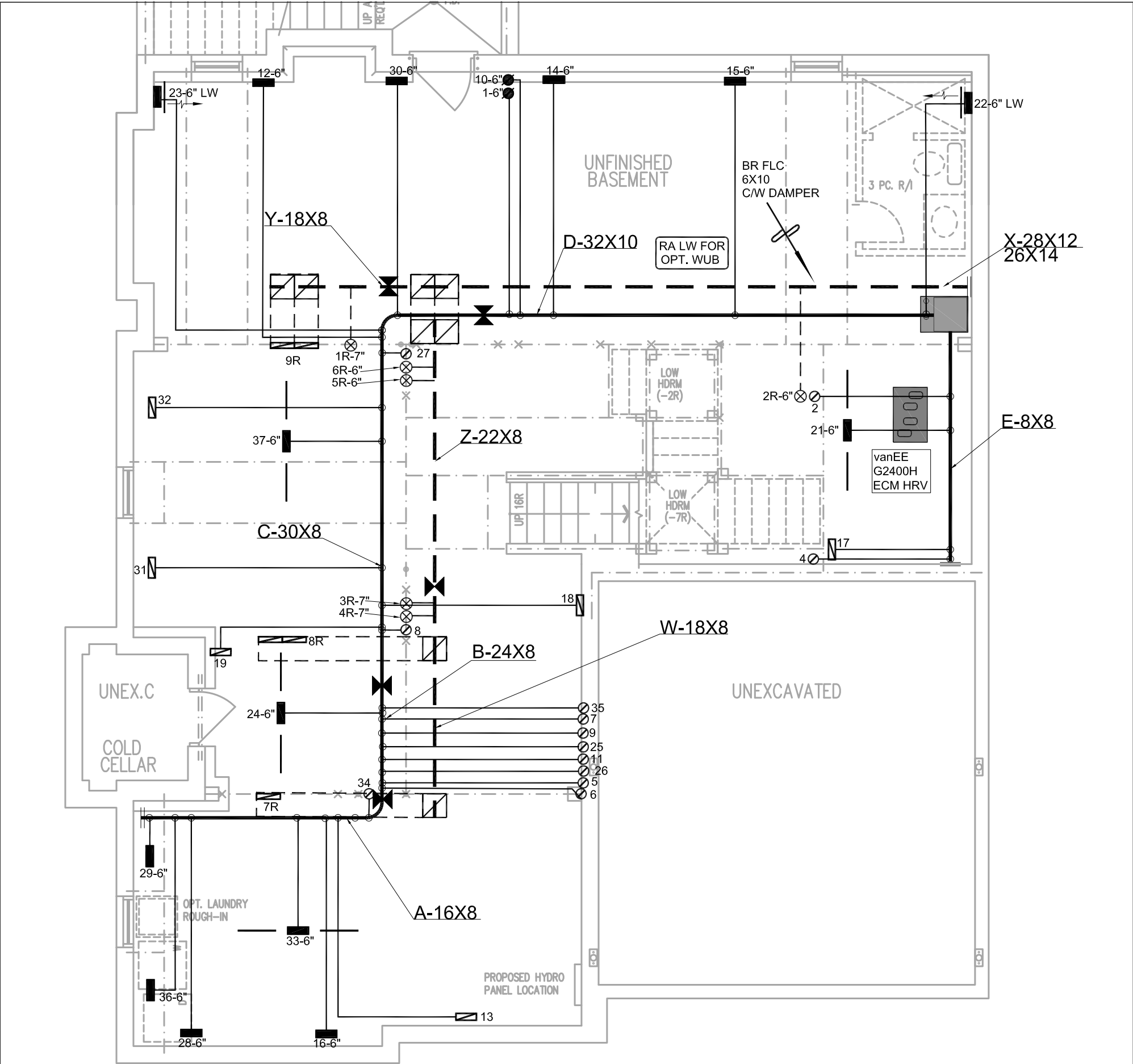
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

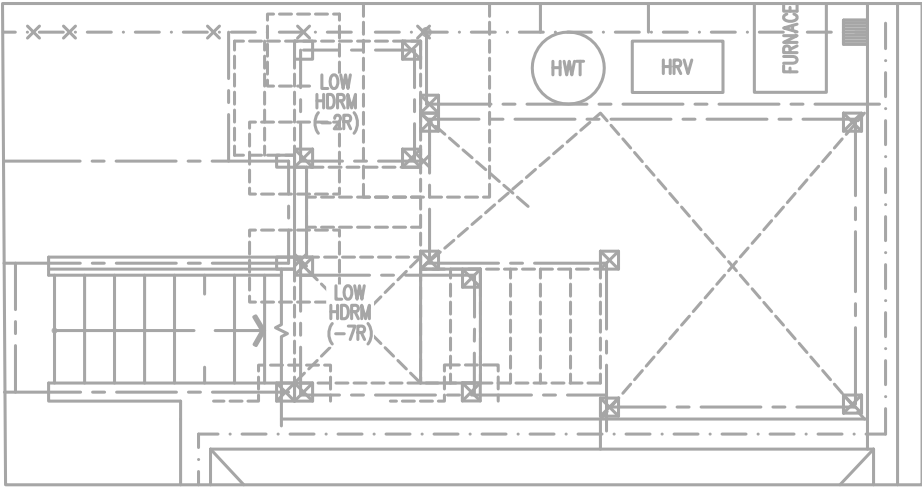
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	99.0	99.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.400			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: 5004
LO# 108323

OPT MAIN - WUB



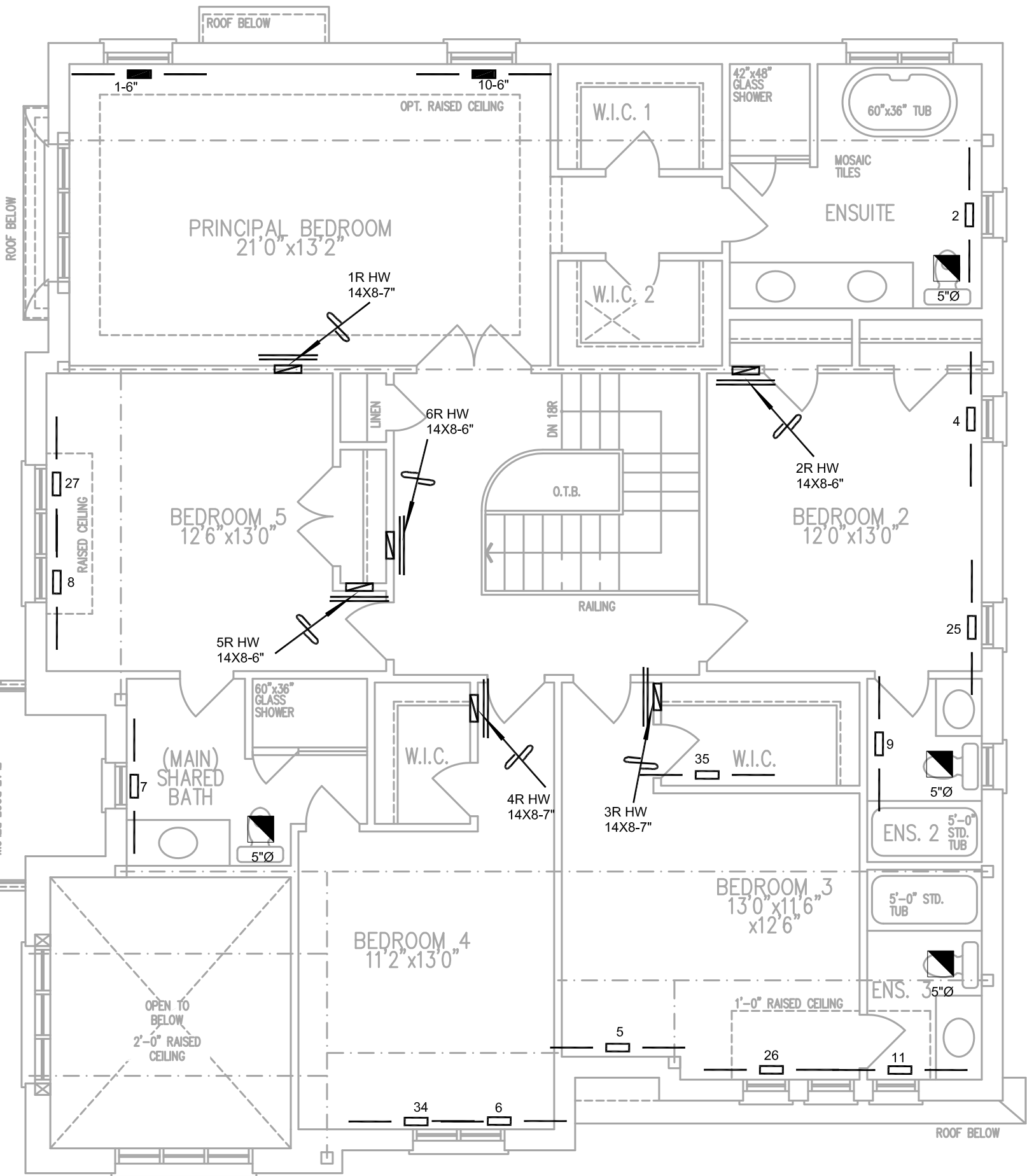
BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

HVAC LEGEND							3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		
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.							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.	SB-12 PERFORMANCE
Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services			HEAT LOSS 72904 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES					MAKE CARRIER		3RD FLOOR		BASEMENT HEATING LAYOUT	
					MODEL 59SC6A080M21--20		2ND FLOOR 15 6 4			
					INPUT 80 MBTU/H		1ST FLOOR 14 3 3			
					OUTPUT 78 MBTU/H		BASEMENT 6 1 0			
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.			COOLING 4.0 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 APR/2025	
WEST RIVER SOUTH BRAMPTON, ONTARIO					FAN SPEED 1530 cfm @ 0.6" w.c.		Scale 3/16" = 1'-0"			
							BCIN# 19669			
							LO#			
							108323			
OPT MAIN - WUB 5004										
3619 sqft										



SECOND FLOOR PLAN, EL. 'A'

WUB

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	DescriptionDate
	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.						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.	
Client		ROYAL PINE HOMES		Project Name		WEST RIVER SOUTH BRAMPTON, ONTARIO		OPT MAIN - WUB 5004	
3619 sqft		HVAACDESIGNS 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	
								SECOND FLOOR HEATING LAYOUT	
								Date APR/2025	
								Scale 3/16" = 1'-0"	
								BCIN# 19669	
								LO# 108323	

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 BRAMPTON	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: 5004 OPT 2ND - WUB Project: WEST RIVER SOUTH	
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 15, 2025			
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

TOTAL COMBINED HEAT LOSS BTU/H: 71763

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES

OPT 2ND - WUB
TYPE: 5004

DATE: Apr-25

GFA: 3619 LO# 108322

HEATING CFM 1530 COOLING CFM 1530
TOTAL HEAT LOSS 69,960 TOTAL HEAT GAIN 48,359
AIR FLOW RATE CFM 21.87 AIR FLOW RATE CFM 31.64

furnace pressure 0.8
furnace filter 0.14
a/c coil pressure 0.34
available pressure
for s/a & r/a 0.32

CARRIER
59SC6A080M21--20
FAN SPEED 80

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 78,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	13	6
R/A	0	0	6	3	1

plenium pressure s/a 0.17
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.15
r/a pressure 0.15
r/a grille press. Loss 0.02
adjusted pressure r/a 0.13

DESIGN CFM = 1530
CFM @ .8" E.S.P.
MEDIUM HIGH 0
HIGH 1530
TEMPERATURE RISE 47 °F

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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.15	2.22	1.00	0.95	1.68	0.70	1.16	0.96	2.15	1.54	2.23	1.18	2.40	2.40	2.99	2.52	0.46	1.78	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	47	49	22	21	37	15	25	21	47	34	49	26	53	53	65	55	10	39	85	85	85	85
RM GAIN MBH.	2.42	1.75	0.99	1.08	2.44	0.48	1.33	0.34	2.42	0.96	2.36	1.25	2.78	2.78	2.81	1.25	0.06	1.01	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	76	55	31	34	77	15	42	11	76	30	75	40	88	88	89	40	2	32	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	6	5	4	4	6	4	5	4	6	5	6	5	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	240	360	252	241	189	172	184	241	240	250	250	191	270	270	331	404	115	447	433	433	433	433
COOLING VELOCITY (ft/min)	388	404	356	390	393	172	308	126	388	220	382	294	449	449	454	294	23	367	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	LIV	BED-3	FAM	DIN	DIN	BAS	BED-4	DEN	BAS	ENS-4
RM LOSS MBH.	1.00	0.95	1.16	2.99	0.95	2.23	1.36	1.36	3.89	1.68	1.18	3.89	1.30
CFM PER RUN HEAT	22	21	25	65	21	49	30	30	85	37	26	85	28
RM GAIN MBH.	0.99	1.08	1.33	2.81	1.08	2.36	1.37	1.37	0.40	2.44	1.25	0.40	1.39
CFM PER RUN COOLING	31	34	42	89	34	75	43	43	13	77	40	13	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	220	190	140	150	130	230	200	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	292	228	191	193	192	309	272	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.05	0.07	0.08	0.08	0.08	0.05	0.06	0.08	0.06
ROUND DUCT SIZE	4	5	5	6	5	6	5	5	6	6	5	6	5
HEATING VELOCITY (ft/min)	252	154	184	331	154	250	220	220	433	189	191	433	206
COOLING VELOCITY (ft/min)	356	250	308	454	250	382	316	316	66	393	294	66	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	B	C	C	C	A	A	A	C	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	341	0.05	10.5	16	x 8 384
TRUNK B	609	0.05	13.1	22	x 8 498
TRUNK C	1036	0.05	16	30	x 8 622
TRUNK D	1321	0.05	17.5	32	x 10 594
TRUNK E	211	0.08	7.8	8	x 8 475
TRUNK F	0	0.00	0	0	x 8 0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x 8 0
TRUNK P	0	0.05	0	0	x 8 0
TRUNK Q	0	0.05	0	0	x 8 0
TRUNK R	0	0.05	0	0	x 8 0
TRUNK S	0	0.05	0	0	x 8 0
TRUNK T	0	0.05	0	0	x 8 0
TRUNK U	0	0.05	0	0	x 8 0
TRUNK V	0	0.05	0	0	x 8 0

RETURN AIR #	1	2	3	4	5	6	7	8	9	BR
AIR VOLUME	0	0	0	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	14	30	30	24

TRUNK W	565	0.05	12.7	18	x 8 565
TRUNK X	1530	0.05	18.5	28	x 12 656
TRUNK Y	490	0.05	12.1	18	x 8 490
TRUNK Z	715	0.05	13.9	22	x 8 585
DROP	1530	0.05	18.5	26	x 14 605

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location Municipality: <u>BRAMPTON</u>		9. Principal Ventilation Fan HRV/ERV Central Inline Fan Bathroom Fan	
Civic Address: _____		Location: <u>BASEMENT</u>	
2. Builder Name: <u>ROYAL PINE HOMES</u>		Manufacturer: <u>VANEE</u>	
Address: _____		Model: <u>VANEE V150H</u> ☒ HVI Rated	
City: _____ Postal Code: _____		Design Airflow: Low: <u>35 CFM</u> High: <u>150 CFM</u>	
Ph: _____ Fax: _____		Sones: _____ ESP: <u>0.2 " w.c.</u>	
3. Designer Name: <u>HVAC DESIGNS LTD.</u>		75 % Sensible Efficiency @ 0 °C @ <u>150 CFM</u>	
Address: <u>375 FINLEY AVE</u>		60 % Sensible Efficiency @ -25 °C @ <u>64 CFM</u>	
City: <u>AJAX</u> Postal Code: <u>L1S 2E2</u>		(If HRV/ERV is used, the system must also comply with SB-12)	
Ph: <u>905-619-2300</u> Fax: <u>905-619-2375</u>		10. Other Ventilation Fans	
HRAI #: <u>001820</u>		Location: <u>ENS</u> Sones: <u>.3</u>	
E-mail: <u>info@hvacdesigns.ca</u>		Manufacturer: <u>BY CONTRACTOR</u>	
4. Combustion Appliances		Model: <u>BY CONTRACTOR</u> HVI Rated	
☒ a) Direct Vent b) Induced Draft		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
☐ c) Natural Draft d) Solid Fuel Appliances		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☐ e) No Combustion Appliances CO Alarm Required		☐ Circulation Fan Make-up Air Fan for	
5. Heating System		Location: <u>ENS-5</u> Sones: <u>.3</u>	
☒ Forced Air Non-Forced Air		Manufacturer: <u>BY CONTRACTOR</u>	
☒ Gas Propane Other		Model: <u>BY CONTRACTOR</u> HVI Rated	
☐ Oil Electricity		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
6. Distribution System		☒ Supplemental Fan Supply Fan for Principal Exhaust	
☒ Furnace Inline fan HRV/ERV		☐ Circulation Fan Make-up Air Fan for	
7. Principal Ventilation System Design Option		Location: <u>ENS-3</u> Sones: <u>.3</u>	
Exhaust only forced air distribution system (Circ. fan at least 5 times the capacity of the principal exhaust)		Manufacturer: <u>BY CONTRACTOR</u>	
Balanced no heat recovery		Model: <u>BY CONTRACTOR</u> HVI Rated	
HRV/ERV with extended exhaust		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
☒ HRV/ERV with simplified exhaust		☒ Supplemental Fan Supply Fan for Principal Exhaust	
HRV/ERV with full ducting/not coupled to forced air		☐ Circulation Fan Make-up Air Fan for	
HRV/ERV with no supplemental fans		Location: <u>W/R</u> Sones: <u>.3</u>	
(High speed must be at least 2.5 times the principal exhaust)		Manufacturer: <u>BY CONTRACTOR</u>	
Supplemental fans		Model: <u>BY CONTRACTOR</u> HVI Rated	
8. Principal Ventilation Capacity (PVC)		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
# of Bedrooms: <u>5</u> Required Exh Airflow: <u>90 CFM</u>		☒ Supplemental Fan Supply Fan for Principal Exhaust	
Supply Air Required: Yes ☒ No		☐ Circulation Fan Make-up Air Fan for	
Mixed Air Temperature Calculation Required:		Location: <u>W/R</u> Sones: <u>.3</u>	
Yes ☒ No		Manufacturer: <u>BY CONTRACTOR</u>	
For a System coupled with a Forced Air Furnace:		Model: <u>BY CONTRACTOR</u> HVI Rated	
Furnace Blower Rate: <u>1530</u> CFM		Design Airflow: <u>50 CFM</u> ESP: <u>0.2 "w.c.</u>	
Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):		☒ Supplemental Fan Supply Fan for Principal Exhaust	
CFM		☐ Circulation Fan Make-up Air Fan for	
Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)		11. Designer Consent	
Note: Secondary suite ventilation system requires a separate design		I MICHAEL O'ROURKE certify this ventilation	
		system is designed to be in accordance with OBC-2024 9.32	
		Date: <u>4/14/2025</u> Signature: <u>Michael O'Rourke</u>	

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 108322		Model: 5004		Builder: ROYAL PINE HOMES																																																									
				Date: 4/15/2025																																																									
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																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.400 x 409.30 x 41 °C x 1.2 = 8108 W = 27665 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.130 x 409.30 x 6 °C x 1.2 = 390 W = 1330 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 74 °F x 1.08 x 0.25 = 1803 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 90 CFM x 11 °F x 1.08 x 0.25 = 267 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
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					Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5004	OPT 2ND - WUB	BUILDER: ROYAL PINE HOMES
SFQT: 3619	LO# 108322	SITE: WEST RIVER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE	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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

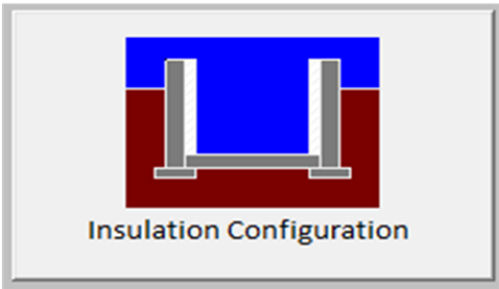
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

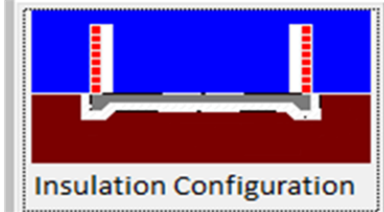
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.2	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	46.6	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1548

TYPE: 5004
LO# 108322

OPT 2ND - WUB

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	1.8	 Insulation Configuration
Width (m):	5.8	
Exposed Perimeter (m):	9.4	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		95

TYPE: 5004
LO# 108322

OPT 2ND - WUB

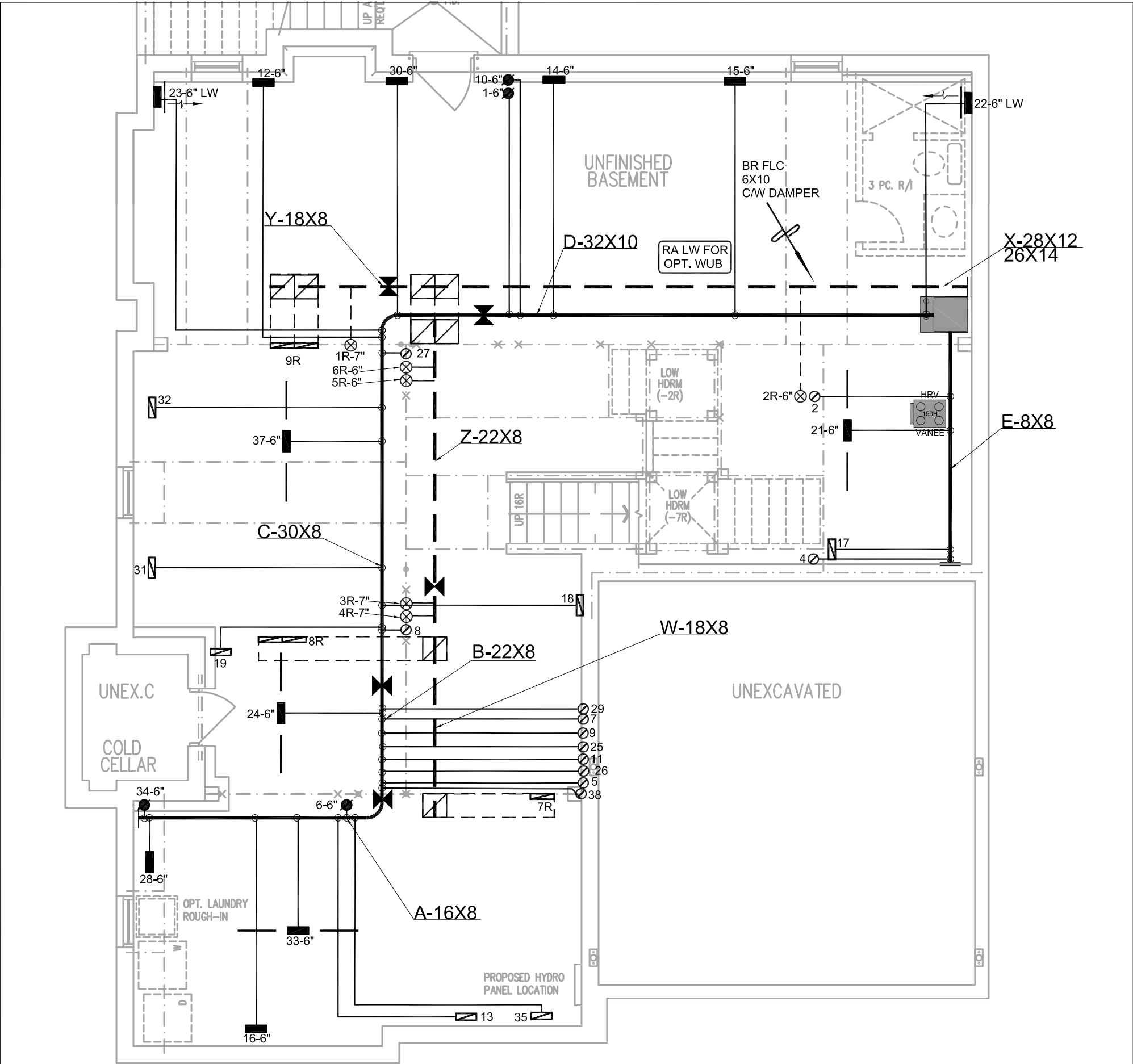
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

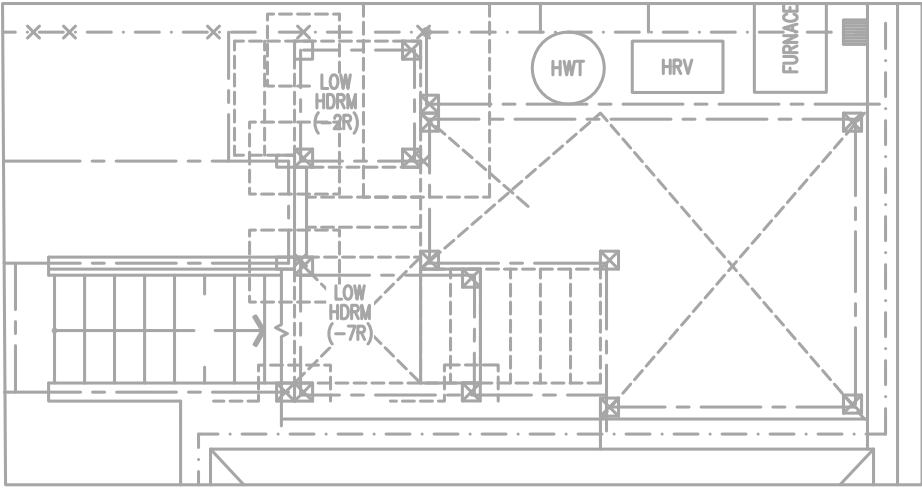
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.14			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1473.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	42.5	42.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.400			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: 5004
LO# 108322

OPT 2ND - WUB



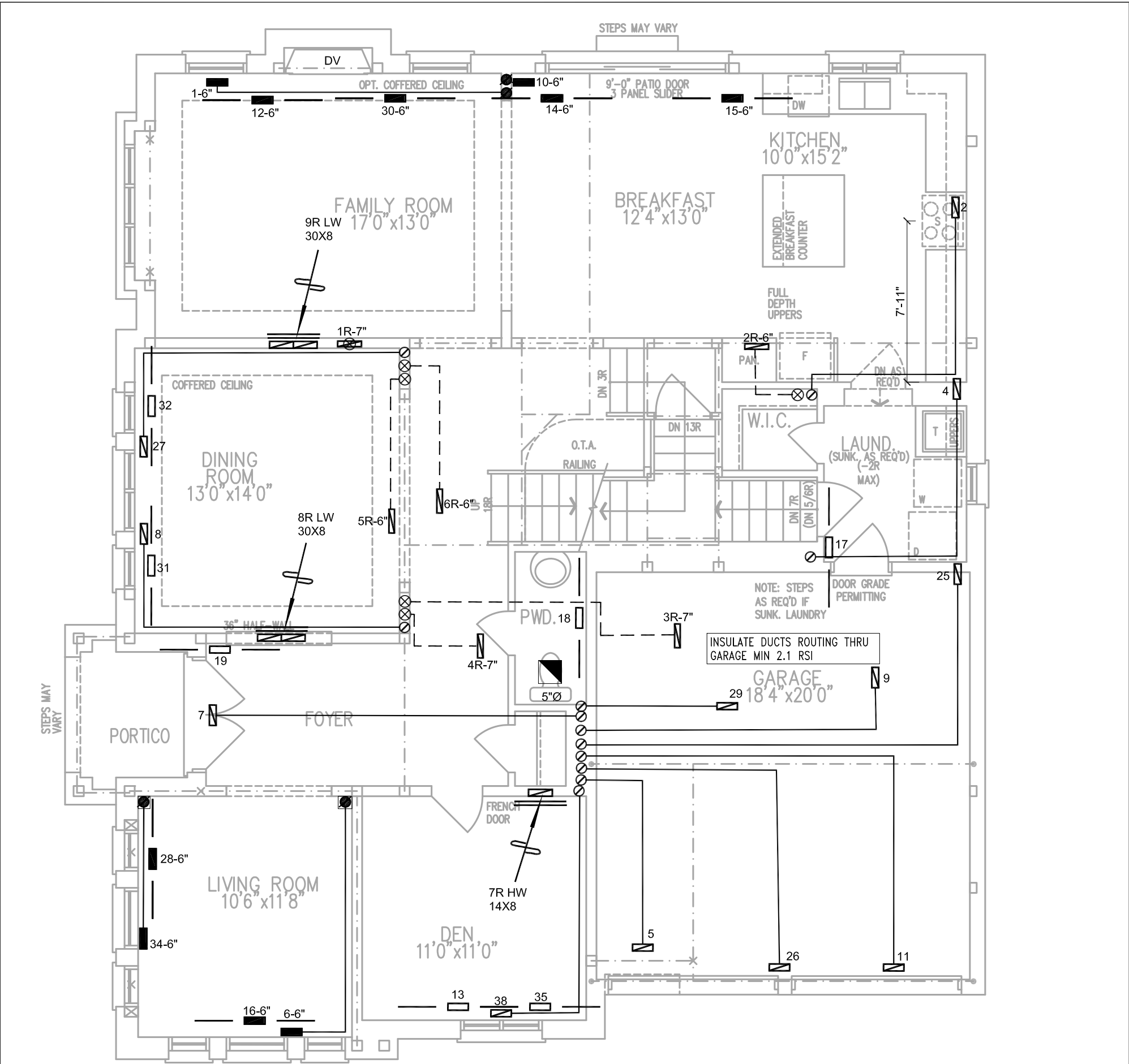
BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

HVAC LEGEND							3.					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.				
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.				
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description Date			
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS				
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.							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.		SB-12 PERFORMANCE			
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 71763 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		Date			
WEST RIVER SOUTH					CARRIER		16 6 5		APR/2025			
BRAMPTON, ONTARIO					MODEL		1ST FLOOR		Scale			
					59SC6A080M21--20		13 3 2		3/16" = 1'-0"			
					INPUT		BASEMENT		BCIN# 19669			
					80 MBTU/H		6 1 0		LO# 108322			
					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					
					78 MBTU/H							
					COOLING							
					4.0 TONS							
					FAN SPEED							
					1530 cfm @ 0.6" w.c.							
OPT 2ND - WUB		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.										
5004												
3619 sqft												



GROUND FLOOR PLAN, EL. 'A'

WUB

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

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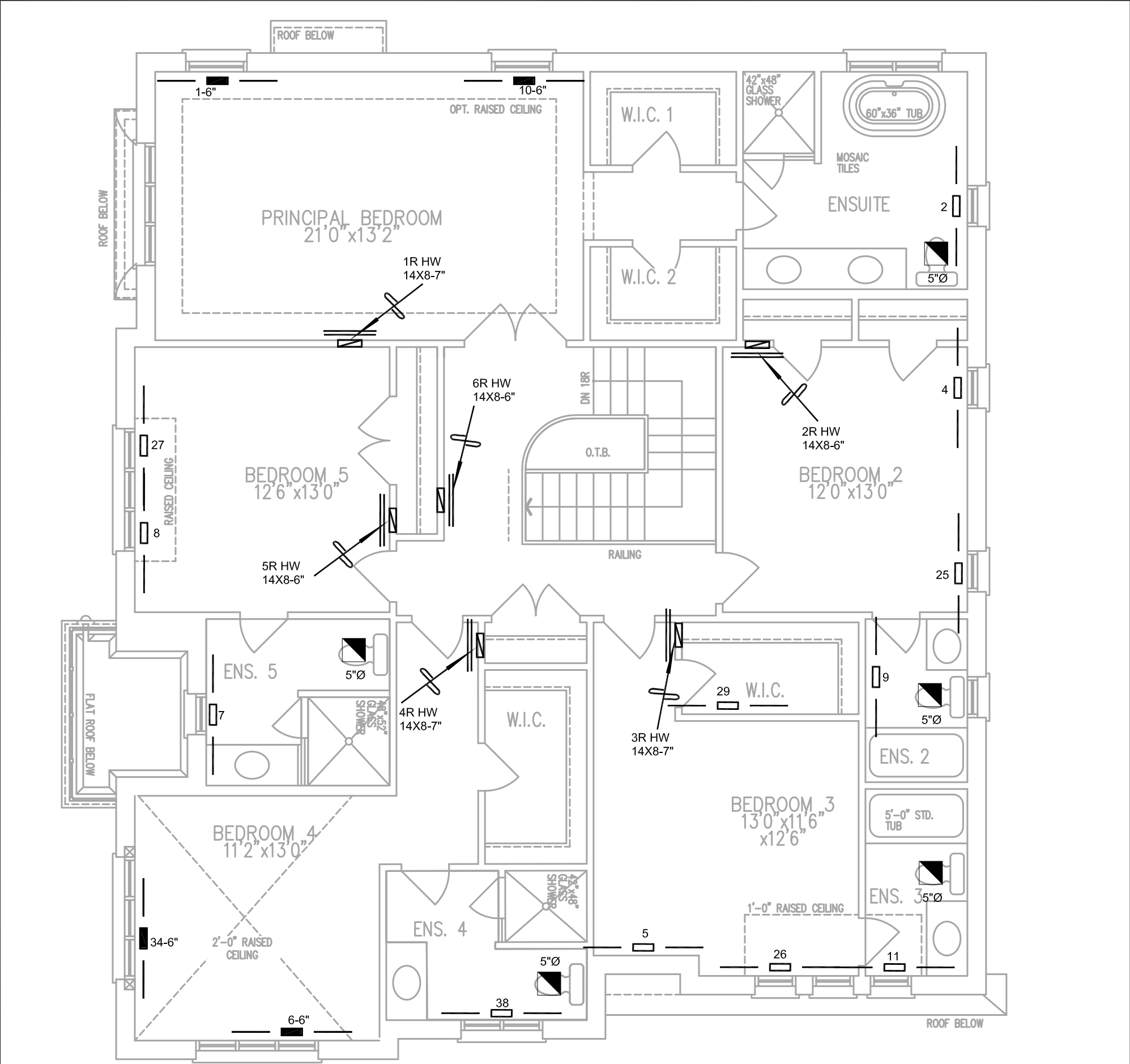
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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

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 WEST RIVER SOUTH BRAMPTON, ONTARIO			Date	APR/2025
OPT 2ND - WUB 5004 3619 sqft			Scale	3/16" = 1'-0"
		BCIN# 19669		
		LO#	108322	

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.



OPT. SECOND FLOOR PLAN,
WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

WUB

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	
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Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services 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.				SB-12 PERFORMANCE			
Project Name						SECOND FLOOR HEATING LAYOUT			
WEST RIVER SOUTH BRAMPTON, ONTARIO						Date APR/2025			
OPT 2ND - WUB 5004						Scale 3/16" = 1'-0"			
3619 sqft						BCIN# 19669			
						LO# 108322			