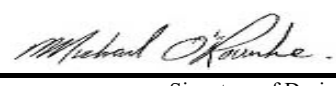


Schedule 1: Designer Information

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: 5003 CNR OPT 2ND Project: VALES OF HUMBER 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.			
March 23, 2022		 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: VALES OF HUMBER SOUTH										OPT 2ND			DATE: Mar-22			WINTER NATURAL AIR CHANGE RATE 0.234						HEAT LOSS ΔT °F. 74			CSA-F280-12					
BUILDER: ROYAL PINE HOMES										TYPE: 5003 CNR			GFA: 4066			LO# 95284			SUMMER NATURAL AIR CHANGE RATE 0.076						HEAT GAIN ΔT °F. 11			SB-12 PERFORMANCE		
ROOM USE				MBR		ENS				BED-2		BED-3		BED-4		ENS-2		ENS-3		MD/B5		BTH-4/5								
EXP. WALL				46		28				18		18		36		15		10		18		10								
CLG. HT.				10		9				9		10		11		9		9		9		9								
FACTORS																														
GRS.WALL AREA		LOSS GAIN		460		252				162		180		396		135		90		162		90								
GLAZING				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	22	457	340		24	499	371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EAST		20.8	41.0	0	0	0	0	0	0		0	0	0	44	914	1806	44	914	1806	0	0	0	13	270	534	0	0	0		
SOUTH		20.8	24.4	40	831	976	0	0	0		0	0	0	0	0	0	35	727	854	10	208	244	0	0	0	36	748	878		
WEST		20.8	41.0	46	956	1888	13	270	534		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		24.7	3.7	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		3.5	0.5	374	1297	192	217	752	112		138	478	71	136	472	70	317	1099	163	125	433	64	77	267	40	126	437	65		
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		
EXPOSED CLG		1.3	0.6	593	743	330	195	244	109		360	451	201	249	312	139	84	105	47	66	83	37	60	75	33	350	439	195		
NO ATTIC EXPOSED CLG		2.7	1.2	0	0	0	0	0	0		0	0	0	31	83	37	182	488	217	0	0	0	0	0	0	0	0	0		
EXPOSED FLOOR		2.5	0.4	0	0	0	0	0	0		80	199	30	280	697	103	0	0	0	66	164	24	60	149	22	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				3827		1724				1627		2478		3334		888		762		1623		940								
SUB TOTAL HT GAIN				3387		1094				672		2155		3087		369		629		1138		714								
LEVEL FACTOR / MULTIPLIER		0.20	0.22			0.20	0.22			0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	0.20	0.22	
AIR CHANGE HEAT LOSS				827		373				352		536		721		192		165		351		203								
AIR CHANGE HEAT GAIN				136		44				27		87		124		15		25		46		29								
DUCT LOSS				0		0				198		301		0		108		93		0		0								
DUCT GAIN				0		0				194		348		0		38		65		0		0								
HEAT GAIN PEOPLE		240		2	480	0	0			1	240	1	240	1	240	0	0	0	0	1	240	0	0							
HEAT GAIN APPLIANCES/LIGHTS				1002		0				1002		1002		1002		0		0		1002		0								
TOTAL HT LOSS BTU/H				4654		2097				2177		3315		4055		1188		1019		1974		1144								
TOTAL HT GAIN x 1.3 BTU/H				6507		1480				2776		4982		5789		549		935		3154		966								

ROOM USE					FAM				DIN				KT/DN				LIV				LIB				PWD				FOY				LND										BAS	
EXP. WALL					39				20				40				13				32				7				20				25								206			
CLG. HT.					11				11				11				11				11				11				20				11						10					
FACTORS																																												
GRS.WALL AREA	LOSS	GAIN			429				220				440				143				352				77				400				275						2060					
GLAZING					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	25	519	387				4	83	62						
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	1018	2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
SOUTH	20.8	24.4	0	0	0	0	48	997	1171	31	644	756	48	997	1171	28	582	683	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	166	195					
WEST	20.8	41.0	84	1745	3448	0	0	0	0	61	1267	2504	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	166	328						
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	0					
DOORS	24.7	3.7	0	0	0	0	0	0	0	10	247	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	740	110	25	616	91			20	493	73							
NET EXPOSED WALL	3.5	0.5	345	1196	177	172	596	88	338	1172	174	95	329	49	275	954	141	77	267	40	321	1113	165	225	780	116									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	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								
NO ATTIC EXPOSED CLG	2.7	1.2	10	27	12	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								
BASEMENT/CRAWL HEAT LOSS						0						0					0						0																					
SLAB ON GRADE HEAT LOSS						0						0					0						0																					
SUBTOTAL HT LOSS						2968						1594					2553				267			2967																				
SUB TOTAL HT GAIN												3330					1327							1916																				
LEVEL FACTOR / MULTIPLIER																																												
AIR CHANGE HEAT LOSS																																												
AIR CHANGE HEAT GAIN																																												
DUCT LOSS																																												
DUCT GAIN																																												
HEAT GAIN PEOPLE																																												
HEAT GAIN APPLIANCES/LIGHTS																																												
TOTAL HT LOSS BTU/H																																												
TOTAL HT GAIN x 1.3 BTU/H																																												

SITE NAME: VALES OF HUMBER SOUTH
BUILDER: ROYAL PINE HOMES

OPT 2ND
TYPE: 5003 CNR

DATE: Mar-22

GFA: 4066 LO# 95284

HEATING CFM 1930 COOLING CFM 1930
TOTAL HEAT LOSS 61,679 TOTAL HEAT GAIN 57,955
AIR FLOW RATE CFM 31.29 AIR FLOW RATE CFM 33.3

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

**CARRIER

AFUE = 97 %

59SP5A-80-20

INPUT (BTU/H) = 80,000

FAN SPEED

OUTPUT (BTU/H) = 78,000

LOW 0

DESIGN CFM = 1930

MEDLOW 1335

CFM @ .6" E.S.P.

MEDIUM 1140

MEDIUM HIGH 1600

HIGH 1930

TEMPERATURE RISE 37 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	12	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	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	MBR	BED-2	BED-3	BED-4	ENS-3	ENS-2	MD/B5	MBR	BTH-4/5	FAM	DIN	KT/DN	KT/DN	LIV	LIB	PWD	FOY	LND	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.55	1.05	1.55	2.18	1.66	1.35	1.02	1.19	0.99	1.55	1.14	1.97	2.12	2.21	2.21	1.76	1.70	0.35	1.97	2.55	2.93	2.93	2.93	2.93
CFM PER RUN HEAT	49	33	49	68	52	42	32	37	31	49	36	62	66	69	69	55	53	11	62	80	92	92	92	92
RM GAIN MBH.	2.17	0.74	2.17	2.78	2.49	1.93	0.94	0.55	1.58	2.17	0.97	3.11	3.01	3.00	3.00	2.95	2.57	0.05	1.57	2.11	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	72	25	72	92	83	64	31	18	53	72	32	104	100	100	100	98	86	2	52	70	12	12	12	12
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	55	31	64	27	82	93	96	82	57	58	69	27	49	31	42	58	68	20	69	10	15	42	13	40
EQUIVALENT LENGTH	140	100	170	130	150	210	200	160	170	160	200	140	170	110	120	150	130	140	140	150	100	130	130	180
TOTAL EFFECTIVE LENGTH	195	131	234	157	232	303	296	242	227	218	269	167	219	141	162	208	198	160	209	160	115	172	143	220
ADJUSTED PRESSURE	0.09	0.13	0.07	0.1	0.07	0.06	0.06	0.07	0.08	0.08	0.06	0.1	0.07	0.11	0.1	0.08	0.08	0.11	0.08	0.11	0.14	0.09	0.11	0.07
ROUND DUCT SIZE	6	4	6	6	6	6	5	5	5	6	5	6	6	6	6	6	6	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	250	379	250	347	265	214	235	272	228	250	264	316	337	352	352	280	270	126	455	587	469	469	469	469
COOLING VELOCITY (ft/min)	367	287	367	469	423	326	228	132	389	367	235	530	510	510	510	500	438	23	382	514	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	E	C	E	B	A	A	B	C	D	B	E	B	D	D	B	A	E	A	E	E	C	D	B

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BED-3	BED-4	FAM	LIB	FOY	BED-4	BAS	MD/B5	ENS
RM LOSS MBH.	2.93	1.66	1.35	1.97	1.70	1.97	1.35	2.93	0.99	1.05
CFM PER RUN HEAT	92	52	42	62	53	62	42	92	31	33
RM GAIN MBH.	0.37	2.49	1.93	3.11	2.57	1.57	1.93	0.37	1.58	0.74
CFM PER RUN COOLING	12	83	64	104	86	52	64	12	53	25
ADJUSTED PRESSURE	0.16	0.16	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.17
ACTUAL DUCT LGH.	55	91	75	28	76	61	85	67	61	20
EQUIVALENT LENGTH	130	150	200	120	130	150	170	130	230	130
TOTAL EFFECTIVE LENGTH	185	241	275	148	206	211	255	197	291	150
ADJUSTED PRESSURE	0.09	0.07	0.06	0.11	0.08	0.08	0.07	0.08	0.06	0.11
ROUND DUCT SIZE	6	6	6	6	6	5	6	6	5	4
HEATING VELOCITY (ft/min)	469	265	214	316	270	455	214	469	228	379
COOLING VELOCITY (ft/min)	61	423	326	530	438	382	326	61	389	287
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10
TRUNK	B	B	A	D	A	A	A	A	B	E

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK A	480	0.06	11.4	16	x	8	540	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	993	0.06	15	26	x	8	687	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	221	0.07	8.2	8	x	8	497	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1555	0.06	17.8	30	x	10	746	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	1930	0.06	19.3	34	x	10	817	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	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
TRUNK W	250	0.05	9.4	10	x	8	450
TRUNK X	1930	0.05	20.2	34	x	12	681
TRUNK Y	1105	0.05	16.4	32	x	8	622
TRUNK Z	480	0.05	12	16	x	8	540
DROP	1930	0.05	20.2	24	x	18	643

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
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	47	43	70	85	90	57	42	23	73	1	23
EQUIVALENT LENGTH	175	195	235	240	235	255	275	145	220	0	225
TOTAL EFFECTIVE LH	222	238	305	325	325	312	317	168	293	1	248
ADJUSTED PRESSURE	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.09	0.05	14.80	0.06
ROUND DUCT SIZE	8	7	7	7	7	7	10.1	9.8	7.5	0	9.3
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	8
	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	14	30	30	14	0	30

TYPE: 5003 CNR
SITE NAME: VALES OF HUMBER SOUTH

LO # 95284
OPT 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>212.0</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		<u>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>212</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>116.6</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	VANEE V150H		
Location:	BSMT		
<u>95.4</u> cfm	☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
BTH-4/5	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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

BUILDER:	
ROYAL PINE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	March-22

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

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 95284	Model: 5003 CNR	Builder: ROYAL PINE HOMES	Date: 2022-03-23																																																									
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>1880</td> <td>10</td> <td>18800</td> </tr> <tr> <td>First</td> <td>1880</td> <td>11</td> <td>20680</td> </tr> <tr> <td>Second</td> <td>2253</td> <td>9</td> <td>20277</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>59,757.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1692.1 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1880	10	18800	First	1880	11	20680	Second	2253	9	20277	Third	0	9	0	Fourth	0	9	0	Total:			59,757.0 ft³	Total:			1692.1 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;">0.234</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.076</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	0.234	SUMMER NATURAL AIR CHANGE RATE	0.076	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.234 x 470.04 x 41 °C x 1.2 = 5450 W = 18595 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.076 x 470.04 x 6 °C x 1.2 = 263 W = 896 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 74 °F x 1.08 x 0.25 = 1911 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 11 °F x 1.08 x 0.25 = 283 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 _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	18,595	8,259	1.126																																																								
2	0.3		16,921	0.330																																																								
3	0.2		17,204	0.216																																																								
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																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5003 CNR	OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 4066	LO# 95284	SITE: VALES OF HUMBER 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

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	59757.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 57.0 ft	WIDTH: 46.0 ft	EXPOSED PERIMETER:	206.0 ft

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

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
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 Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

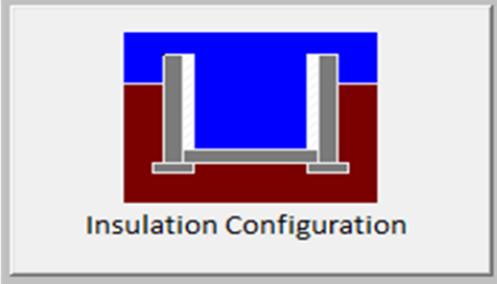
INDIVIDUAL BCIN: 19669

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):	17.4	 Insulation Configuration
Floor Width (m):	14.0	
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):		2154

TYPE: 5003 CNR
LO# 95284

OPT 2ND

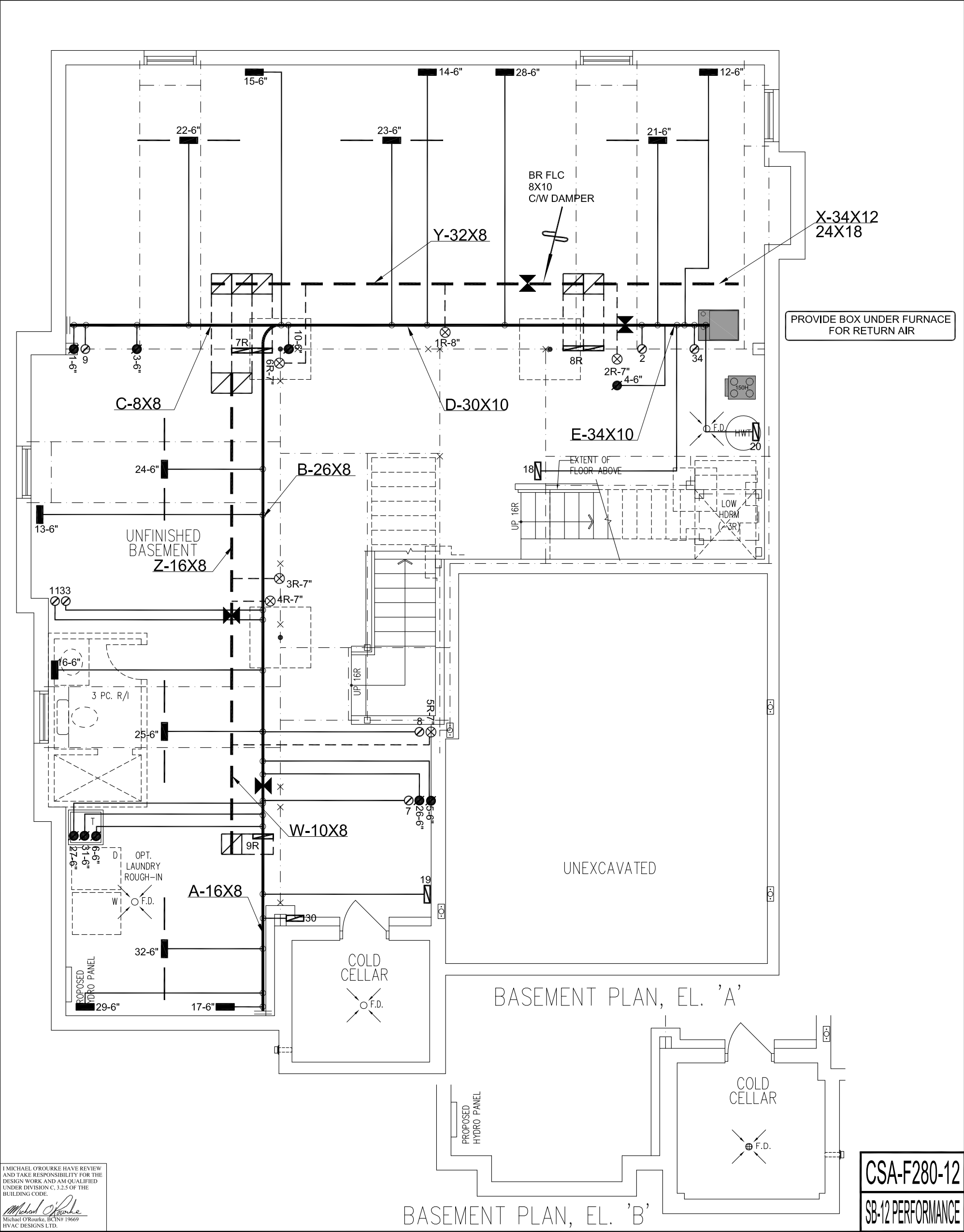
Air Infiltration Residential Load Calculator

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):	1692.1			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1579.6 cm ²	
	2.50		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	45.0		45.0	
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.234			
Cooling Air Leakage Rate (ACH/H):	0.076			

TYPE: 5003 CNR
LO# 95284

OPT 2ND



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Michael O'Rourke
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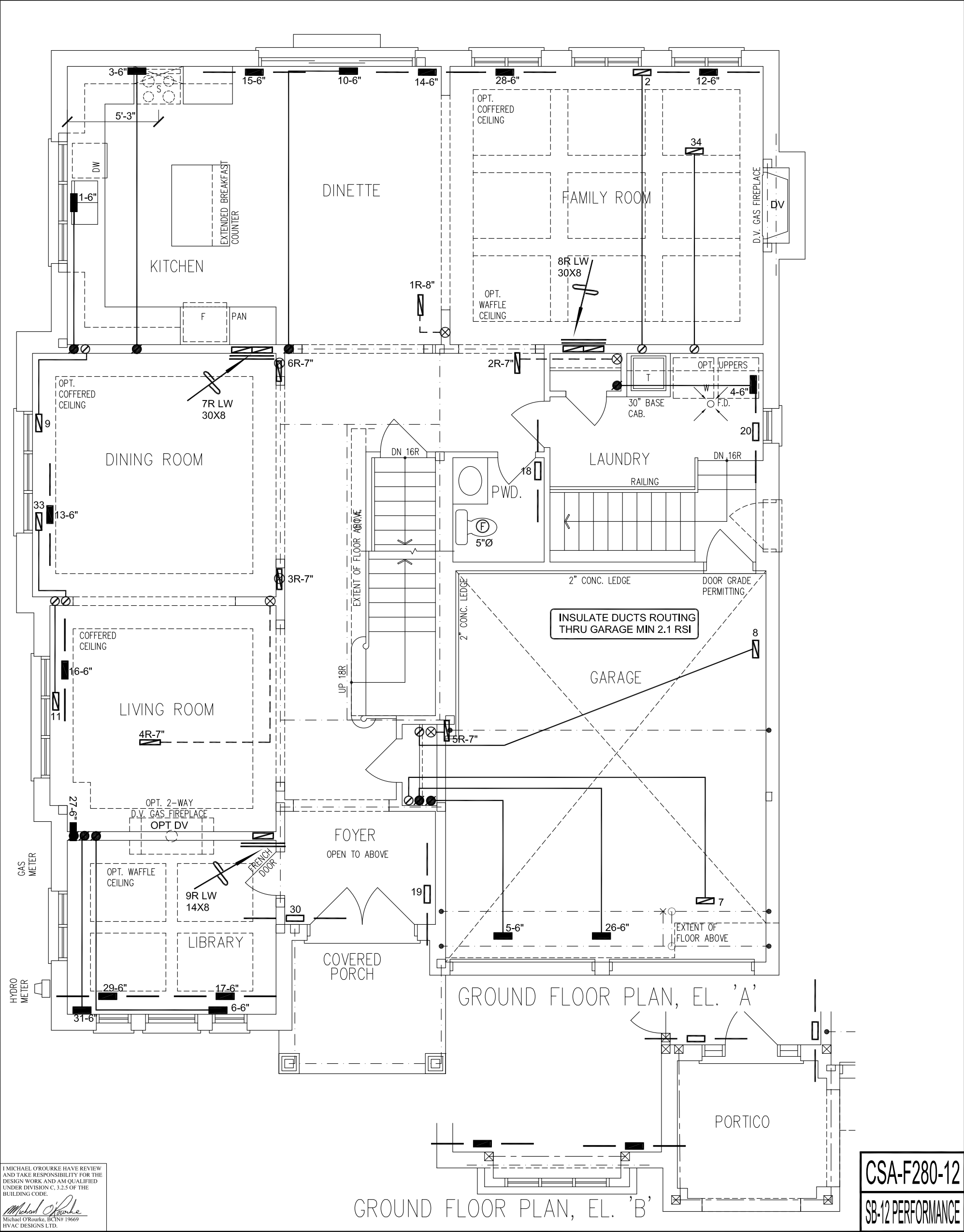
CSA-F280-12

SB-12 PERFORMANCE

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.	REVISED TO PERFORMANCE PATH	MAR/2022
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	HEAT LOSS 63590 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT	
ROYAL PINE HOMES			UNIT DATA		3RD FLOOR					
Project Name			MAKE CARRIER		2ND FLOOR 16 6 5					
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO			MODEL 59SP5A-80-20		1ST FLOOR 12 3 2					
			INPUT 80 MBTU/H		BASEMENT 6 1 0				Date	MAR/2022
		OUTPUT 78 MBTU/H		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				Scale	3/16" = 1'-0"	
		COOLING 5.0 TONS						BCIN# 19669		
		FAN SPEED 1930 cfm @ 0.6" w.c.								
OPT 2ND 5003 CNR		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.						LO#	95284	
4066 sqft										



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Michael O'Rourke, BCIN# 19669
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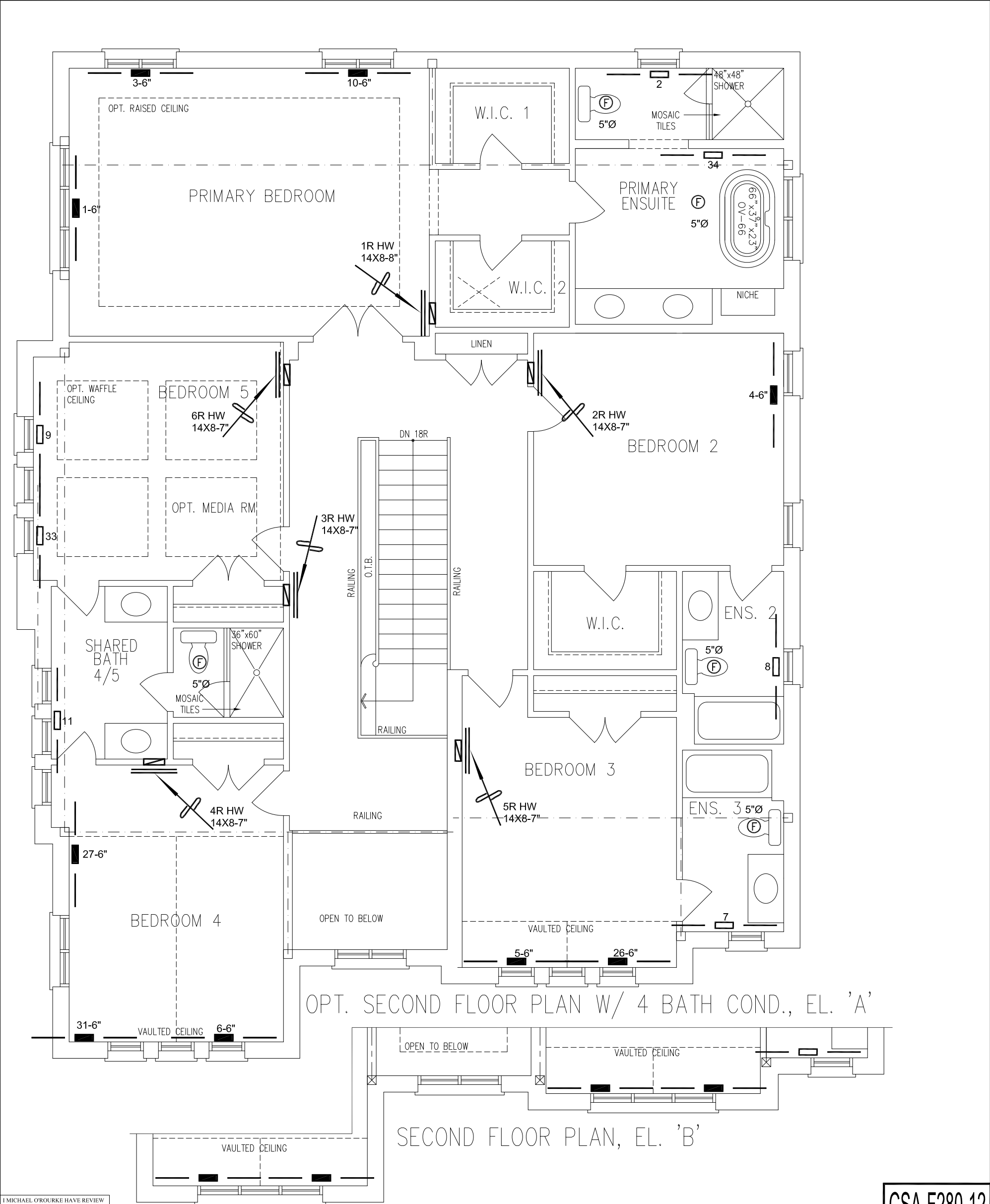
CSA-F280-12

SB-12 PERFORMANCE

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ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAR/2022
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
OPT 2ND 5003 CNR 4066 sqft			LO#	95284



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CSA-F280-12

SB-12 PERFORMANCE

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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	MAR/2022
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT 2ND 5003 CNR			BCIN# 19669	
4066 sqft			LO#	95284