Schedule 1: Designer Information

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

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	**Postal code**	**Plan number/ other description**		
VAUGHAN (WOODBRIDGE)				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			Unit no.	Lot/con.
375 FINLEY AVE			**202**	**N/A**
Municipality	Postal code	Province	E-mail	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	Fax number		Cell number	
(**905**) **619-2300**	(**905**) **619-2375**		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ 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:** 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR **Project:** PINE VALLEY & TESTON

D. Declaration of Designer

I **MICHAEL O'ROURKE** declare that (choose one as appropriate):
(print name)

❑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____
Firm BCIN: _____

☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ 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.

February 25, 2020
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. 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.
2. 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.

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: PINE VALLEY & TESTON | OPT. 5 BED - WOB - OPT SERV STAIR | DATE: Feb-20 | WINTER NATURAL AIR CHANGE RATE 0.407 | HEAT LOSS ΔT °F. 76 | CSA-F280-12
BUILDER: GOLD PARK HOMES | TYPE: 4202- ROSEDALE | GFA: 3700 | LO# 85452 | SUMMER NATURAL AIR CHANGE RATE 0.137 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			BED-5			ENS-3			ENS-4/5				
EXP. WALL			34			37				12			36			16			0			13			9			6				
CLG. HT.			10			9				9			9			9			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	340			333				108			324			144			0			117			81			54				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		
NORTH	21.3	16.0	0	0	0	0	0	0		18	383	288	0	0	0	0	0	0	0	0	0	0	0	0	9	192	144	0	0	0		
EAST	21.3	41.6	0	0	0	0	0	0		0	0	0	53	1128	2202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	21.3	24.9	0	0	0	0	0	0		0	0	0	0	0	0	38	809	946	0	0	0	18	383	448	0	0	0	0	0	0		
WEST	21.3	41.6	54	1149	2244	18	383	748		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	37.2	101.5	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		
DOORS	25.2	4.3	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		
NET EXPOSED WALL	4.5	0.8	286	1276	215	315	1406	237		90	402	68	271	1209	204	106	473	80	0	0	0	99	442	74	72	321	54	54	241	41		
NET EXPOSED BSMT WALL ABOVE GR	3.6	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		
EXPOSED CLG	1.3	0.6	285	366	167	210	270	123		228	293	134	280	359	165	240	308	141	104	133	61	182	234	107	45	58	26	84	108	49		
NO ATTIC EXPOSED CLG	2.7	1.3	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		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		144	367	62	280	714	120	0	0	0	104	265	45	0	0	0	45	115	19	0	0	0		
BASEMENT/CRAWL HEAT LOSS			0			0				0			0			0			0			0			0			0				
SLAB ON GRADE HEAT LOSS			0			0				0			0			0			0			0			0			0				
SUBTOTAL HT LOSS			2791			2058				1445			3411			1590			399			1058			685			349				
SUB TOTAL HT GAIN					2626			1108				551			2691			1167			106			630			244			90		
LEVEL FACTOR / MULTIPLIER			0.20	0.35		0.20	0.35			0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35			
AIR CHANGE HEAT LOSS				973			718				504			1189			554			139			369			239			122				
AIR CHANGE HEAT GAIN					228			96				48			233			101			9			55			21			8		
DUCT LOSS				0			0				195			460			0			54			0			92			0			
DUCT GAIN					0			0				160			392			0			11			0			26			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					758			0				758			758			758			0			758			0			0		
TOTAL HT LOSS BTU/H				3765			2776				2143			5060			2144			592			1428			1017			470			
TOTAL HT GAIN x 1.3 BTU/H					5319			1565				2283			5608			2945			164			2186			379			127		

ROOM USE			DIN			KT/GT			LAUN			PWD			FOY			MUD			WIC				WOB			BAS		
EXP. WALL			17			100			32			16			59			17			6				43			159		
CLG. HT.			11			11			9			12			11			12			9				10			10		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	187			1100			288			192			649			204			54				430			1113		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	21.3	16.0	0	0	0	10	213	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	553	415	0	0	0
EAST	21.3	41.6	0	0	0	0	0	0	41	872	1704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	21.3	24.9	34	724	847	29	617	722	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	21.3	41.6	0	0	0	123	2617	5111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	2085	4072	0	0	0
SKYLT.	37.2	101.5	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
DOORS	25.2	4.3	0	0	0	10	252	43	0	0	0	0	0	0	57	1439	242	20	505	85	0	0	0		20	505	85	20	505	85
NET EXPOSED WALL	4.5	0.8	153	683	115	928	4141	697	247	1102	186	192	857	144	592	2642	445	184	821	138	54	241	41		286	1276	215	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.6	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	477	1716	289
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	388	498	228	0	0	0	0	0	0	0	0	0	84	108	49		0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	30	82	38	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	214	36		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0			0							2560		
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0			0				552					
SUBTOTAL HT LOSS			1406			7841			2555			857			4081			1326			563				4972			4782		
SUB TOTAL HT GAIN					962			6733			2155			144			687			223			126			4787			374	
LEVEL FACTOR / MULTIPLIER			0.30	0.57		0.30	0.57		0.20	0.35		0.30	0.57		0.30	0.57		0.30	0.57		0.20	0.35						0.50	1.51	
AIR CHANGE HEAT LOSS				802			4470			891			488			2326			766			196						14737		
AIR CHANGE HEAT GAIN					83			583			187			13			60			19			11						447	
DUCT LOSS				0			0			0			0			0			0			76						0		
DUCT GAIN					0			0			0			0			0			0			14						0	
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	0		0	0		0	0		0	0		0		0		0	0		0	
HEAT GAIN APPLIANCES/LIGHTS					758			758			758			0			0			0			0						758	
TOTAL HT LOSS BTU/H				2208			12311			3446			1345			6407			2082			835				5523			19518	
TOTAL HT GAIN x 1.3 BTU/H					2343			10496			4029			204			971			316			196				6224			2053

TOTAL HEAT GAIN BTU/H: 47944 | TONS: 4.00 | LOSS DUE TO VENTILATION LOAD BTU/H: 3181 | STRUCTURAL HEAT LOSS: 73071 | TOTAL COMBINED HEAT LOSS BTU/H: 76251

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

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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SITE NAME: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMES

OPT. 5 BED - WOB - OPT SERV STAIR
TYPE: 4202- ROSEDALE   DATE: Feb-20   GFA: 3700   LO# 85452

HEATING CFM	1525	COOLING CFM	1525
TOTAL HEAT LOSS	73,071	TOTAL HEAT GAIN	47,409
AIR FLOW RATE CFM	20.87	AIR FLOW RATE CFM	32.17

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

^LENNOX
EL296UH090XE48C 90

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	1105
MEDIUM HIGH	1255
HIGH	1525

AFUE = 96 %
INPUT (BTU/H) = 88,000
OUTPUT (BTU/H) = **85,000**
DESIGN CFM = **1525**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	9	6
R/A	0	0	6	2	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	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-5	ENS-2	LAUN	ENS-3	MBR	BED-4	DIN	KT/GT	KT/GT	KT/GT	KT/GT	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.88	1.39	1.39	2.14	1.69	1.43	0.59	1.72	1.02	1.88	2.14	2.21	3.08	3.08	3.08	3.08	1.35	3.20	2.08	4.17	4.17	4.17	4.17
CFM PER RUN HEAT	39	29	29	45	35	30	12	36	21	39	45	46	64	64	64	64	28	67	43	87	87	87	87
RM GAIN MBH.	2.66	0.78	0.78	2.28	1.87	2.19	0.16	2.01	0.38	2.66	2.95	2.34	2.62	2.62	2.62	2.62	0.20	0.49	0.32	1.38	1.38	1.38	1.38
CFM PER RUN COOLING	86	25	25	73	60	70	5	65	12	86	95	75	84	84	84	84	7	16	10	44	44	44	44
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	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.	62	53	61	60	49	25	48	55	48	67	23	10	43	47	46	57	22	42	59	45	65	13	36
EQUIVALENT LENGTH	160	150	130	190	150	140	190	190	160	180	190	150	130	130	130	130	160	150	110	160	140	120	130
TOTAL EFFECTIVE LENGTH	222	203	191	250	199	165	238	245	208	247	213	160	173	177	176	187	182	192	169	205	205	133	166
ADJUSTED PRESSURE	0.07	0.08	0.09	0.07	0.09	0.1	0.07	0.07	0.08	0.07	0.08	0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.1	0.08	0.08	0.12	0.1
ROUND DUCT SIZE	**6**	4	4	**6**	5	**6**	4	5	4	**6**	**6**	**6**	5	5	5	5	4	5	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	199	333	333	229	257	153	138	264	241	199	229	235	470	470	470	470	321	492	493	444	444	444	444
COOLING VELOCITY (ft/min)	438	287	287	372	441	357	57	477	138	438	484	382	617	617	617	617	80	117	115	224	224	224	224
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	A	A	E	E	C	E	D	E	C	E	C	A	A	B	B	E	D	C	A	B	C	D

RUN #	25	26	27	28	30	31	32	33
ROOM NAME	BED-3	LAUN	BAS	FOY	WIC	BED-3	BAS	ENS-4/5
RM LOSS MBH.	1.69	1.72	4.17	3.20	0.84	1.69	4.17	0.47
CFM PER RUN HEAT	35	36	87	67	17	35	87	10
RM GAIN MBH.	1.87	2.01	1.38	0.49	0.20	1.87	1.38	0.13
CFM PER RUN COOLING	60	65	44	16	6	60	44	4
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17
ACTUAL DUCT LGH.	45	57	33	40	53	58	22	39
EQUIVALENT LENGTH	140	150	180	150	180	160	120	140
TOTAL EFFECTIVE LENGTH	185	207	213	190	233	218	142	179
ADJUSTED PRESSURE	0.09	0.08	0.08	0.09	0.07	0.08	0.11	0.1
ROUND DUCT SIZE	5	5	**6**	5	4	5	**6**	4
HEATING VELOCITY (ft/min)	257	264	444	492	195	257	444	115
COOLING VELOCITY (ft/min)	441	477	224	117	69	441	224	46
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10
TRUNK	E	D	D	D	C	E	C	C

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	273	0.08	8.6	8	x	8	614
TRUNK B	215	0.08	7.9	8	x	8	484
TRUNK C	886	0.07	13.9	22	x	8	725
TRUNK D	380	0.07	10.1	12	x	8	570
TRUNK E	636	0.07	12.2	18	x	8	636
TRUNK F	0	0.00	0	0	x	8	0
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1165	0.06	16	32	x	8	655
TRUNK Y	430	0.06	11	14	x	8	553
TRUNK Z	920	0.06	14.6	24	x	8	690
DROP	1525	0.06	17.7	24	x	14	654

RETURN AIR #	1	2	3	4	5	6	7	8								BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	130	130	130	360	300	50	50	0	0	0	0	0	0	0	245
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	61	69	49	53	30	52	60	57	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	165	145	185	185	140	205	205	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	236	234	194	238	215	192	265	262	1	1	1	1	1	1	1	159
ADJUSTED PRESSURE	0.06	0.06	0.08	0.06	0.07	0.08	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7	7	6.5	7	9.9	8.9	4.9	4.9	0	0	0	0	0	0	0	8
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	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	30	30	14	14	0	0	0	0	0	0	0	24

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

Michael O'Rourke. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4202- ROSEDALE LO # 85452
SITE NAME: PINE VALLEY & TESTON OPT. 5 BED - WOB - OPT SERV STAIR

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE 9.32.1(2)

- [✓] I Type a) or b) appliance only, no solid fuel
- [ ] II Type I except with solid fuel (including fireplaces)
- [ ] III Any Type c) appliance
- [ ] IV Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS O.N.H.W.P.

- [ ] 1 Exhaust only/Forced Air System
- [ ] 2 HRV with Ducting/Forced Air System
- [✓] 3 HRV Simplified/connected to forced air system
- [ ] 4 HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	4	@ 10.6 cfm	42.4	cfm
Table 9.32.3.A.		TOTAL	190.8	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	35.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

155.0 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
155.0 CFM	X	76 F	X	1.08	X	0.25

SUPPLEMENTAL FANS NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
ENS-2	QTXEN050C	50	✓	0.3
ENS-4/5	QTXEN050C	50	✓	0.3
PWD	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: GOLD PARK 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: Michael O'Rourke.

HRAI # 001820

Date: February-20

I REVIEW AND TAKE RESPONIBILITY 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

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 85452 Model: 4202- ROSEDALE Builder: GOLD PARK HOMES Date: 2/25/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1647	10	16470
First	1647	11	18117
Second	2076	9	18684
Third	0	9	0
Fourth	0	9	0
		Total:	53,271.0 ft³
		Total:	1508.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.407
SUMMER NATURAL AIR CHANGE RATE	0.137

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-20	42	76
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.407 x 419.02 x 42 °C x 1.2 = 8638 W

= **29473 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.137 x 419.02 x 7 °C x 1.2 = 488 W

= **1665 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

155 CFM x 76 °F x 1.08 x 0.25 = **3181 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

155 CFM x 13 °F x 1.08 x 0.25 = **536 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	29,473	9,753	1.511
2	0.3		15,512	0.570
3	0.2		16,904	0.349
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STA **BUILDER:** GOLD PARK HOMES
SFQT: 3700 **LO#** 85452 **SITE:** PINE VALLEY & TESTON

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-4	OUTDOOR DESIGN TEMP.	88
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:	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):	53271.0	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: 68.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	159.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	43.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package A1**	
	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	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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Ajax ON, L1S 2E2
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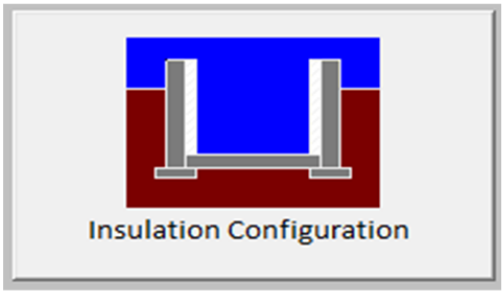
Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	**4.6**	 Insulation Configuration
Floor Width (m):	**10.1**	
Exposed Perimeter (m):	**48.5**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**1.79**	
Window Area (m^2):	**0.0**	
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):	**750**	

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

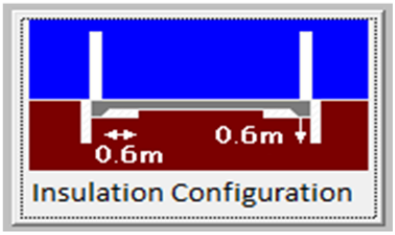
LO# 85452

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Length (m):	**1.5**	
Width (m):	**10.1**	
Exposed Perimeter (m):	**13.1**	

Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	

Results	
Heating Load (Watts):	**162**

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

LO# 85452

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Vaughan (Woodbridge)
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):	1508.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2010.8 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 73.2 / Total Exhaust 73.2
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.407**
Cooling Air Leakage Rate (ACH/H):	**0.137**

TYPE: 4202- ROSEDALE OPT. 5 BED - WOB - OPT SERV STAIR

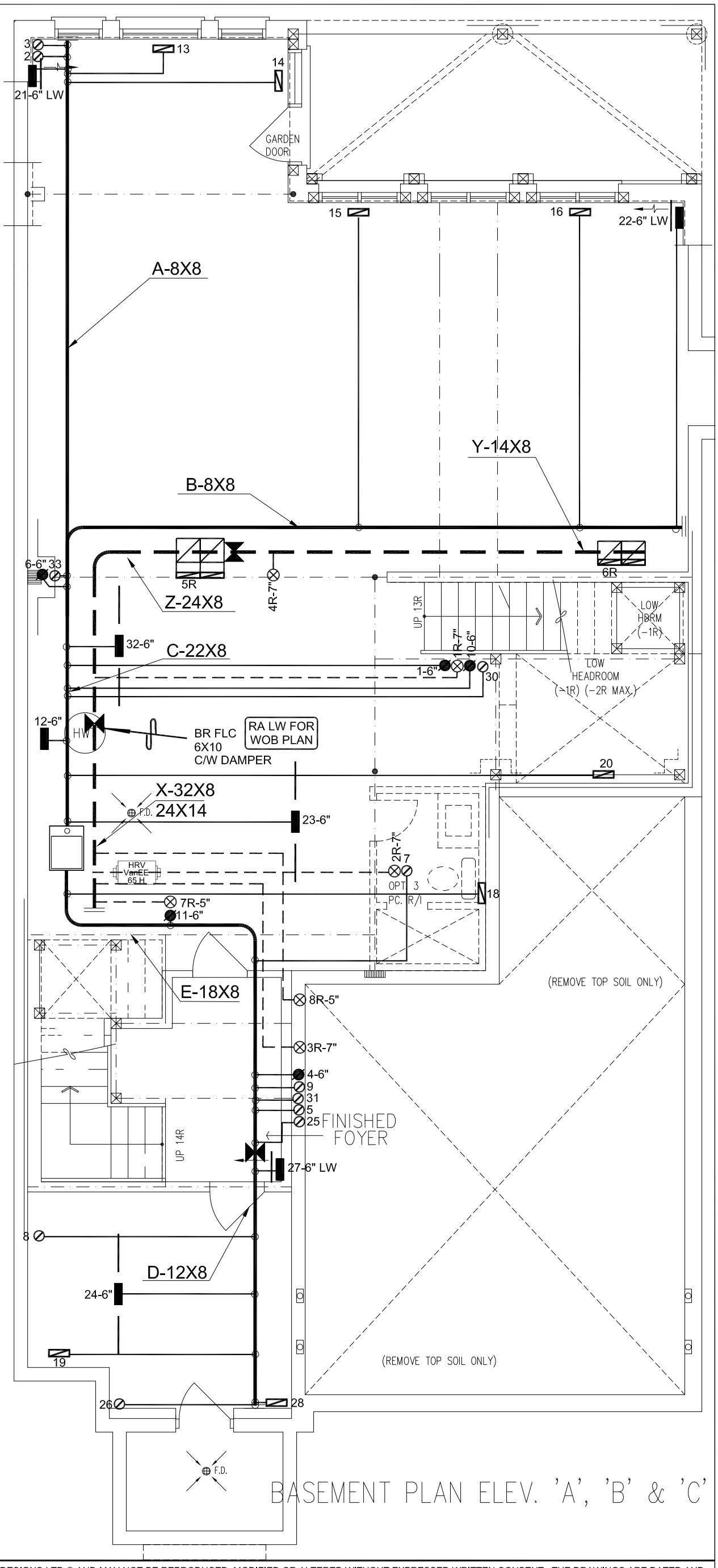
LO# 85452

CSA-F280-12 WOB

PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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



BASEMENT PLAN ELEV. 'A', 'B' & 'C'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		6" SUPPLY AIR STACK 2nd FLOOR		14"x8" RETURN AIR GRILLE
	DESCRIPTION		DESCRIPTION		DESCRIPTION
	REDUCER		RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR

REVISIONS			
No.	Description		Date
1.			
2.			
3.			

Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 sqft

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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 76251 BTU/H	
UNIT DATA	
MAKE	LENNOX
MODEL	EL296UH090XE48C
INPUT	88 MBTU/H
OUTPUT	85 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1525 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	9	2	2
BASEMENT	6	1	0

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

Sheet Title

BASEMENT HEATING LAYOUT

Date FEB/2020

Scale 3/16" = 1'-0"

BCIN# 19669

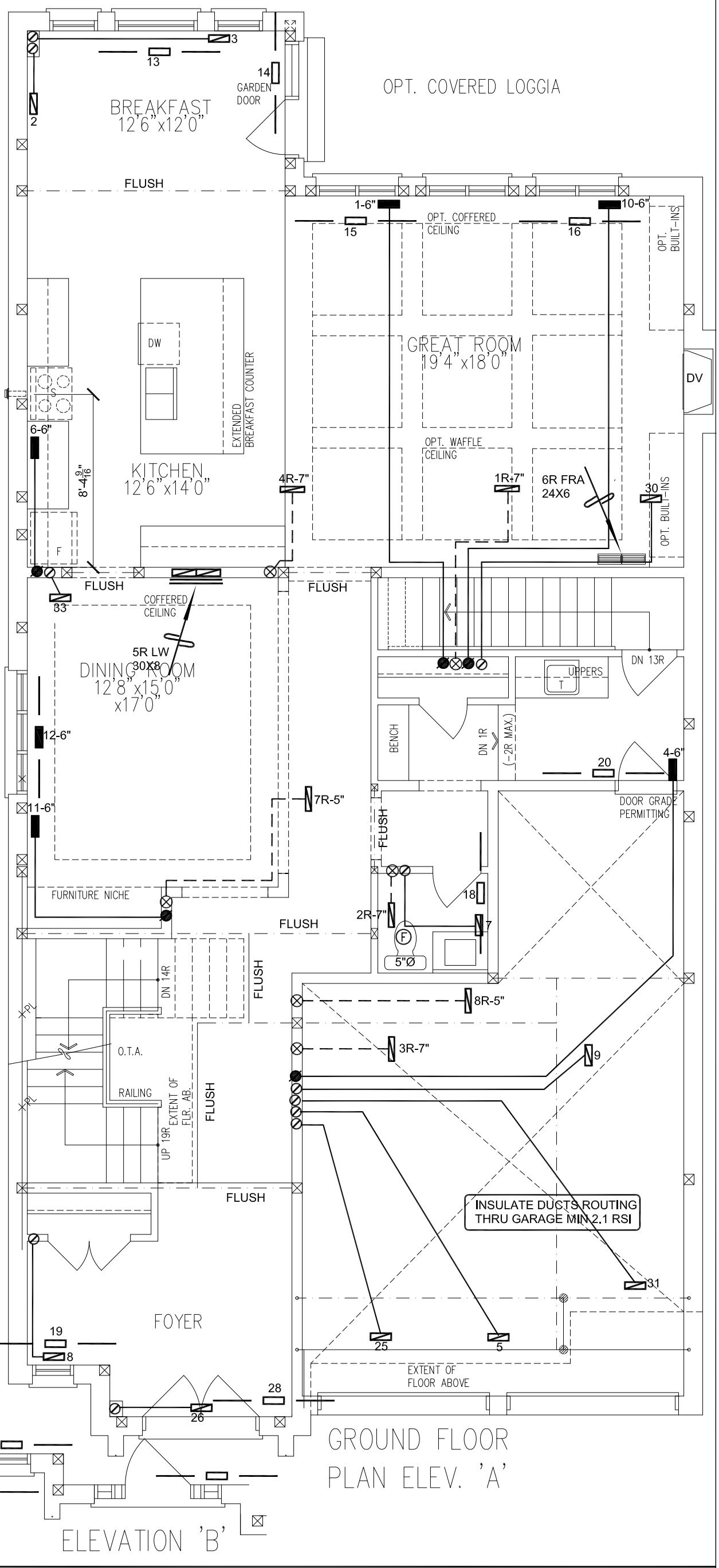
LO# 85452

CSA-F280-12 WOB

PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE				RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

No.	Description	Date
1.		
2.		
3.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 sqft

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

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85452

CSA-F280-12 WOB

PACKAGE A1

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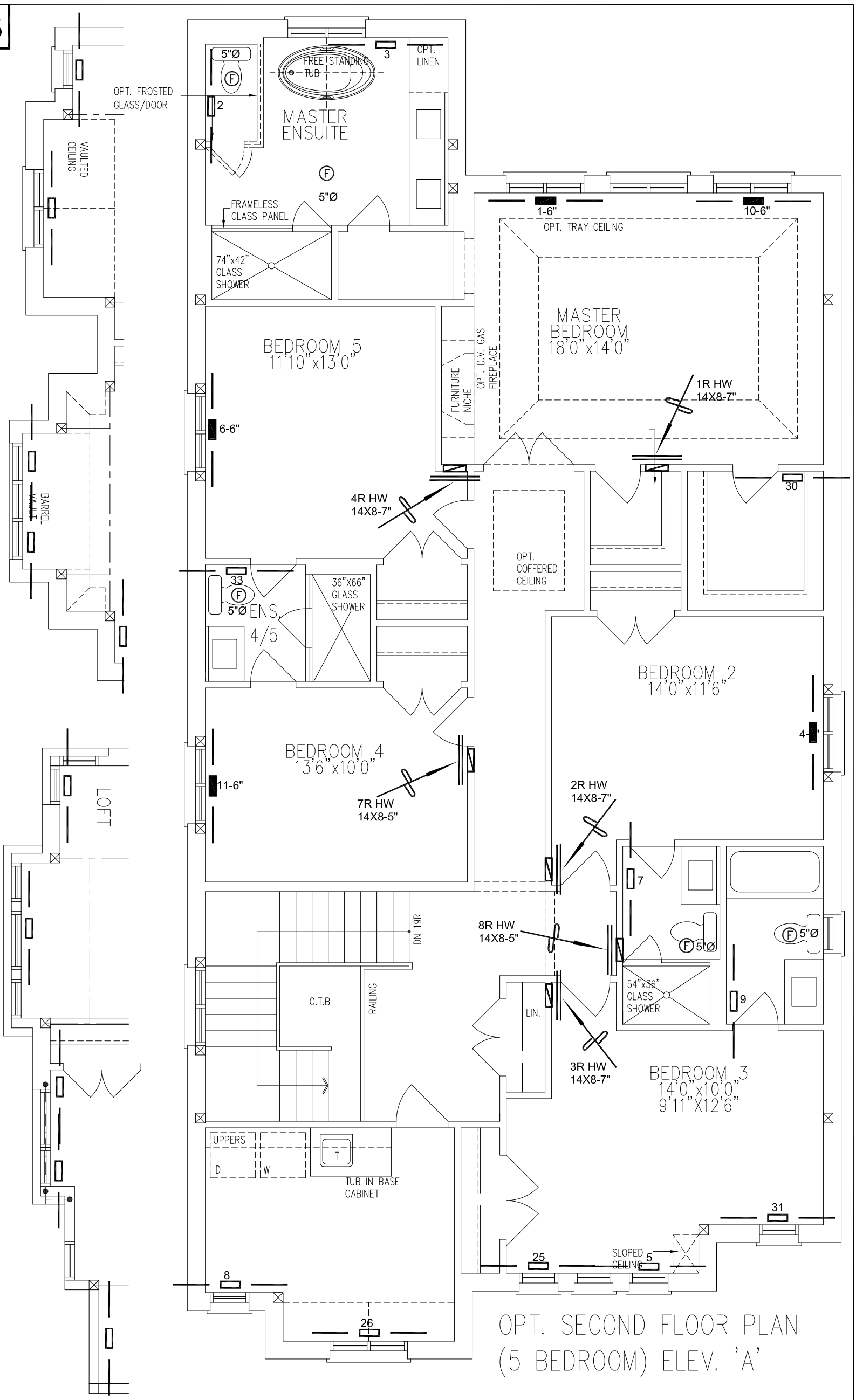
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

PARTIAL SECOND FLOOR PLAN – ELEVATION 'B'

PARTIAL SECOND FLOOR PLAN – ELEVATION 'C'



HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE
					RETURN AIR STACK ABOVE
					RETURN AIR STACK 2nd FLOOR
					REDUCER

No.	Description	Date
1.		
2.		
3.		

REVISIONS

Client
GOLD PARK HOMES

Project Name
PINE VALLEY & TESTON
VAUGHAN, ONTARIO
OPT SERV STAIR
ROSEDALE - OPT 5 BED
4202 - WOB 3700 sqft

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

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date FEB/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 85452