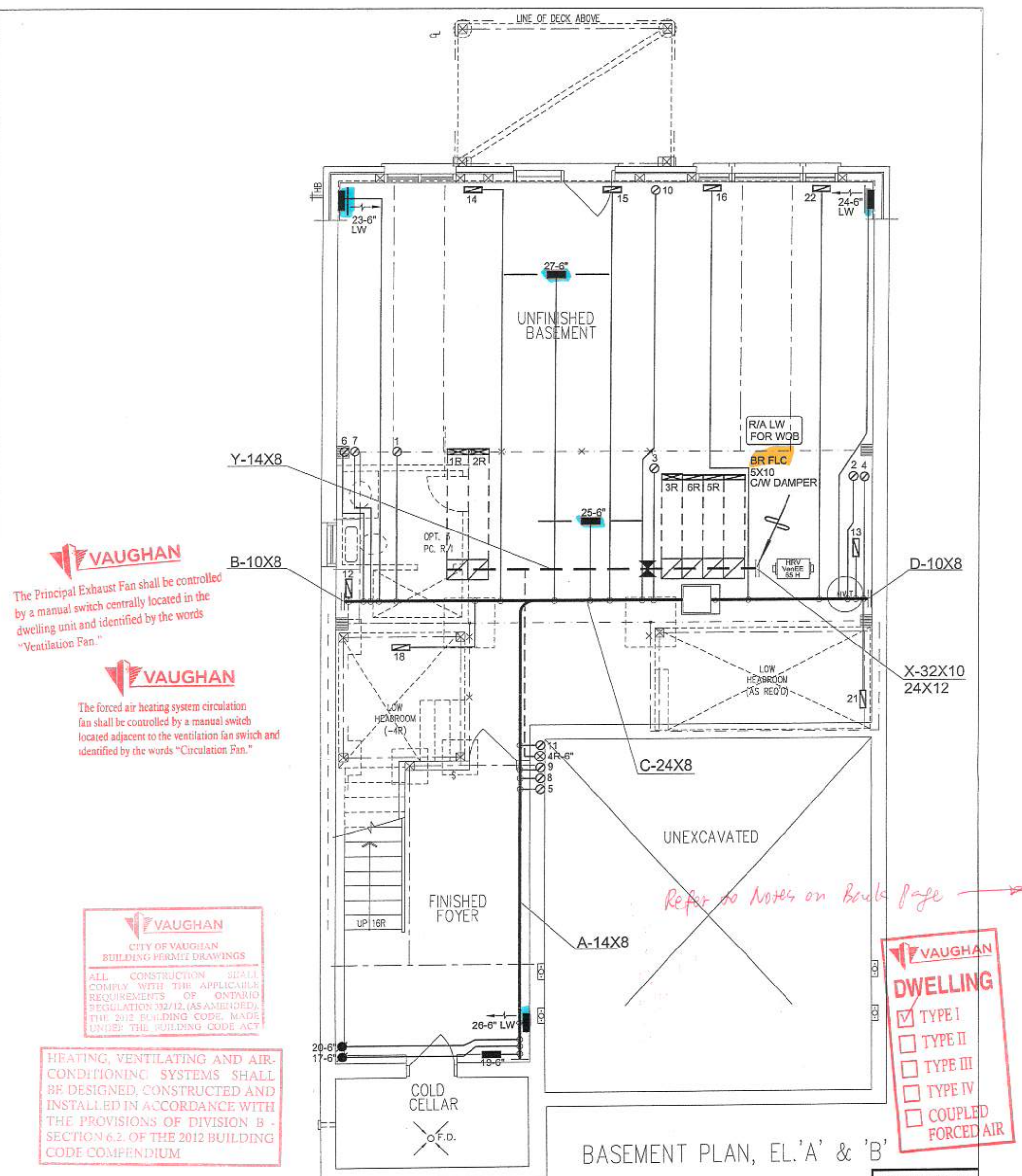




VAUGHAN

The Principal Exhaust Fan shall be controlled by a manual switch centrally located in the dwelling unit and identified by the words "Ventilation Fan."

VAUGHAN

The forced air heating system circulation fan shall be controlled by a manual switch located adjacent to the ventilation fan switch and identified by the words "Circulation Fan."

VAUGHAN

CITY OF VAUGHAN
BUILDING PERMIT DRAWINGS

ALL CONSTRUCTION SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF ONTARIO REGULATION 332/12, (AS AMENDED), THE 2012 BUILDING CODE, MADE UNDER THE BUILDING CODE ACT

HEATING, VENTILATING AND AIR-CONDITIONING SYSTEMS SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF DIVISION B - SECTION 6.2. OF THE 2012 BUILDING CODE COMPENDIUM

VAUGHAN

DWELLING

☒ TYPE I
☐ TYPE II
☐ TYPE III
☐ TYPE IV
☐ COUPLED FORCED AIR

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

CSA-F280-12
WOB PACKAGE A1

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.

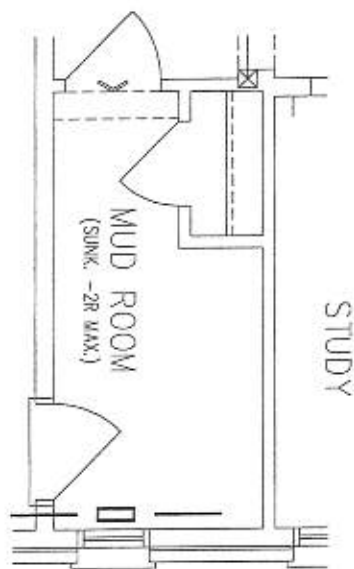
Michael O'Rourke
Michael O'Rourke, UENR 19959
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	FLOOR SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2ND FLOOR		30"x8" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2ND FLOOR		FRA- FLOOR RETURN AIR GRILLE	1.	
					REDUCER	No.	Description

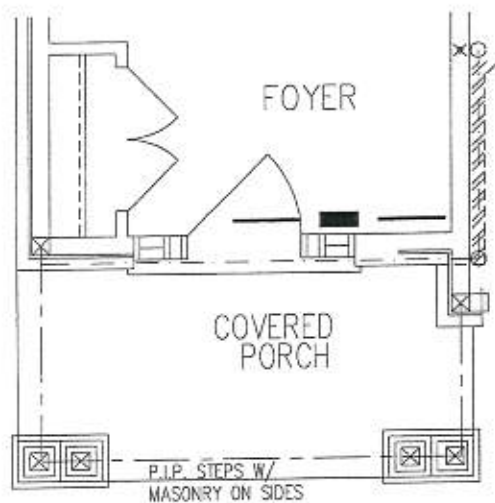
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS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

Client: GOLD PARK HOMES Project Name: PINE VALLEY & TESTON VAUGHAN, ONTARIO THE SUMMERDALE - WOB 4001 2840 sqft	HVAC DESIGNS LTD. 375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel: 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca 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 58764 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT Date OCT/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 80230
		MAKE LENNOX	MODEL EL296UH090XE48C	INPUT 88 MBTUH	OUTPUT 85 MBTUH	COOLING 3.5 TONS	FAN SPEED 1255 cfm @ 0.5" w.c.

PART, GROUND FLOOR MUDROOM FOR OPT.
SECOND FLOOR LAUNDRY



STUDY

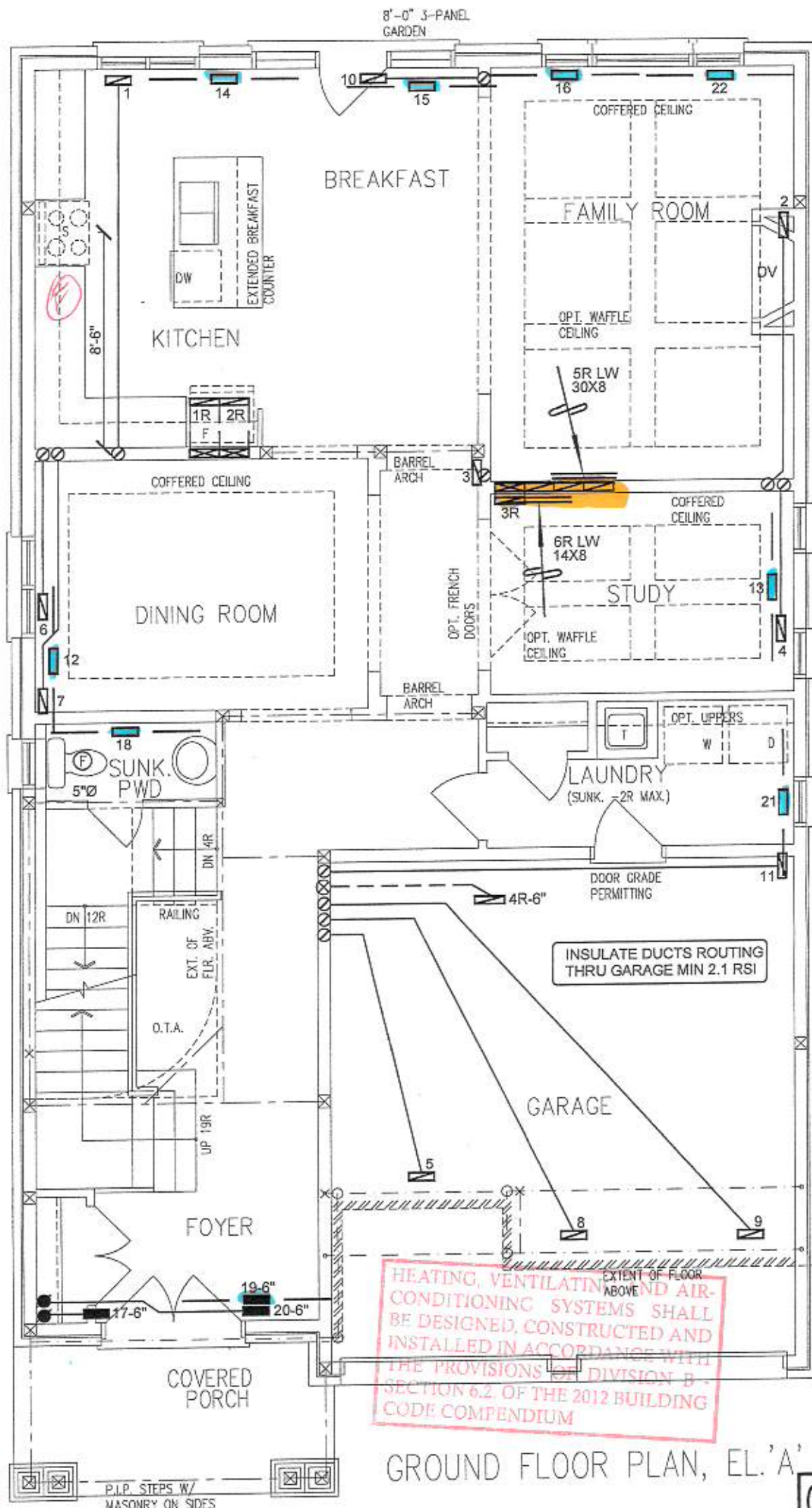


FOYER

COVERED PORCH

P.I.P. STEPS W/
MASONRY ON SIDES

GROUND FLOOR PLAN, EL.'B'



GROUND FLOOR PLAN, EL.'A'

CSA-F280-12

WOB PACKAGE A1

HVAC LEGEND

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

No.	Description	Date
3.		
2.		
1.		
No.	Description	Date

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Client

GOLD PARK HOMES

Project Name

PINE VALLEY & TESTON

VAUGHAN, ONTARIO

THE SUMMERDALE - WOB

4001

2840 sqft

HVAC DESIGNS LTD.

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

FIRST FLOOR

HEATING

LAYOUT

Date

OCT/2018

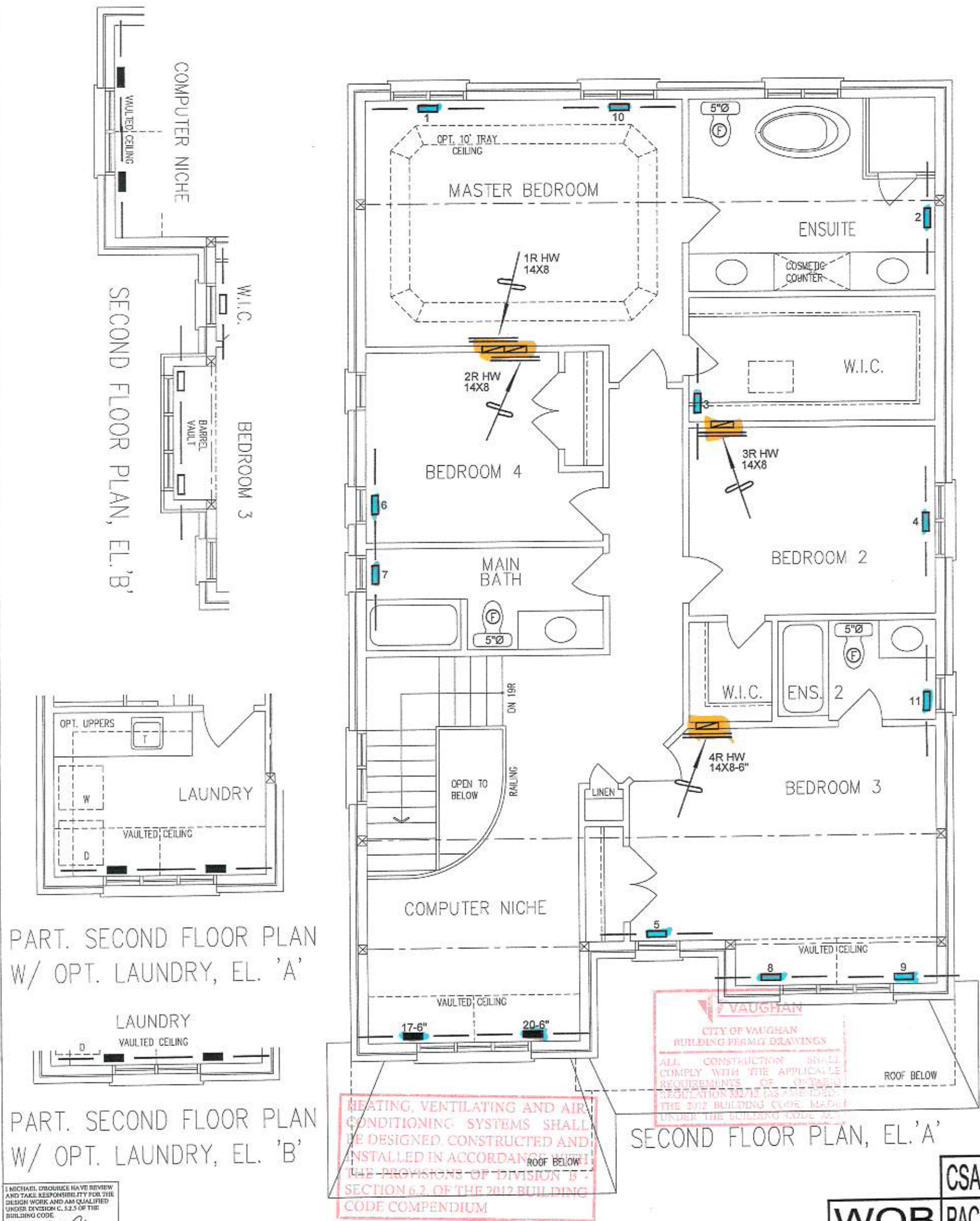
Scale

3/16" = 1'-0"

BCIN# 19669

LO#

80230



I HEREBY CERTIFY THAT I 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.

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

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

Client

GOLD PARK HOMES

Project Name

**PINE VALLEY & TESTON
VAUGHAN, ONTARIO**

**THE SUMMERDALE - WOB
4001**

2840 sqft

HVAC DESIGNS LTD.

375 Finley Ave - Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca

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

OCT/2018

Scale

3/16" = 1'-0"

BCIN# 19669

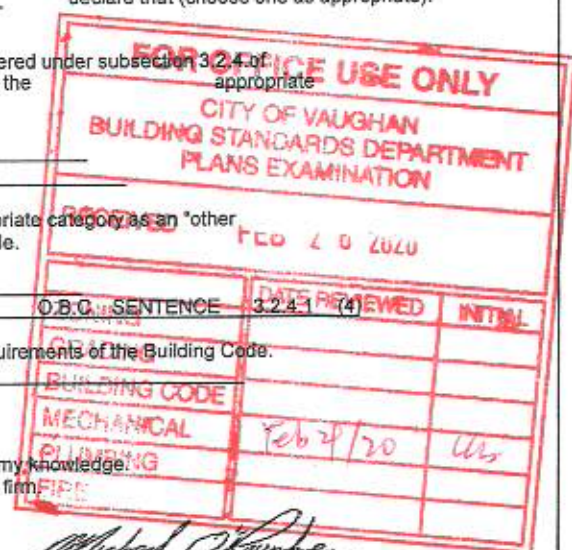
LO#

80230

20-120001-GLD-00-CM

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 VAUGHAN (WOODBIDGE)	Postal code	Plan number/ other description 65 M-4647	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings			
☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection			
☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 4001 THE SUMMERDALE WOB Project: PINE VALLEY & TESTON	
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 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: _____			
☐ 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.			
October 5, 2018 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: PINE VALLEY & TESTON
BUILDER: GOLD PARK HOMESWOB
TYPE: 4001 THE SUMMERDALE GFA: 2840DATE: Oct-18
LOW 80230WINTER NATURAL AIR CHANGE RATE 0.390
SUMMER NATURAL AIR CHANGE RATE 0.134HEAT LOSS AT °F. 76
HEAT GAIN AT °F. 13C5A-F280-12
SB-12 PACKAGE A1

SOLICIT: GOLD PARK HOMES										TYPE: 4001 THE SUMMERDALE										GPA: 2050										LOF: 60239										SUMMER NATURAL AIR CHANGE RATE: 0.134										HEAT GAIN ΔT °F: 13				SB-12 PACKAGE A																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
ROOM USE		EXP. WALL		CLG. HT.		MBR		ENS		WIC		BED-2		BED-3		BED-4		BATH		CMLN		ENS-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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GRS.WALL AREA		21.3		16.0		0		0		0		0		0		0		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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NORTH		21.3		41.6		0		0		0		0		0		0		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
EAST		21.3		24.9		0		0		0		0		0		0		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SOUTH		21.3		41.6		36		766		1496		18		333		748		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
WEST		37.2		101.5		0		0		0		0		0		0		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SKYLT.		25.2		4.3		0		0		0		0		0		0		0		0		0		0		0		0		0		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
DOORS		4.6		0.6		284		1267		213		225		1004		169		63		281		47		81		260		1160		195		79		353		58		46		205		35		296		1321		222		46		205		35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
NET EXPOSED WALL		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		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		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		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		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		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		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		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		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	

ROOM USE			DIN		STDY		KT/FM				LN/MD		WVR		FOY						WOB		BAS	
EXP. WALL			18		9		87				20		14		45						42		126	
CLG. HT.			10		10		10				13		10		10						9		9	
FACTORS																								
GRS.WALL AREA	LOSS	GAIN																						
GLAZING			180		90		670				200		140		450						378		756	
	LOSS	GAIN			LOSS GAIN		LOSS GAIN				LOSS GAIN		LOSS GAIN		LOSS GAIN				LOSS GAIN		LOSS GAIN			
NORTH	21.3	16.0	0	0	0	20	426	319	0	0	0	0	192	144	0	0	0	0	0	0	0	0	0	
EAST	21.3	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SOUTH	21.3	24.9	24	511	590	0	0	0	0	0	0	0	0	0	7	149	174	0	0	0	0	0	0	
WEST	21.3	41.6	0	0	0	0	0	0	0	125	2600	5194	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	
DOORS	25.2	4.3	0	0	0	0	0	0	10	252	43	20	565	85	0	0	0	40	1010	170	0	0	0	
NET EXPOSED WALL	4.5	0.6	156	696	117	70	312	63	635	2388	402	231	1031	174	133	594	100	410	1830	308	278	1232	207	
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	
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	
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	
EXPOSED FLOOR	2.6	0.4	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																								
SLAB ON GRADE HEAT LOSS																								
SUBTOTAL HT LOSS			1207				738		5360		1727		743		2640						533		2360	
SUB TOTAL HT GAIN					715		372		5638		402		274		478						3975		4289	
LEVEL FACTOR / MULTIPLIER	0.30	0.50			0.30		0.50		0.30		0.50		0.30		0.50		0.30		0.50		4073		0.50	
AIR CHANGE HEAT LOSS			601				368		2539		860		370		1414								1.26	
AIR CHANGE HEAT GAIN			46		23		362		26		17		30										10420	
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		0		0		0		0		0				0		0	
HEAT GAIN APPLIANCES/LIGHTS			528		526		526		526		526		0		0						0		526	
TOTAL HT LOSS BTU/H			1808		1105		7938		2580		1112		4254								3975		14709	
TOTAL HT GAIN x 1.3 BTU/H			1671		1197		8471		1239		379		661								6295			

CITY OF MEMPHIS
BUILDING PERMITS DIVISION
ALL COMMERCIAL & ALL
CONCRETE WORK THE APPLICANT
FURNISH THE NECESSARY
REQUIREMENTS OF THE CITY
ENGINEER'S OFFICE
THE BUILDING CODES, PART 1
UNDER THE BUILDING CODES, PART 1

MEMPHIS

TOTAL HEAT GAIN BTU/H:

41869

TONS: 3.49

LOSS DUE TO VENTILATION LOAD BTU/H: 1631

STRUCTURAL HEAT LOSS: \$7133

TOTAL COMBINED HEAT LOSS BTU/H: 58764

Michael O'Rourke

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

 WOB
 TYPE: 4001 THE SUMMERDALE
 DATE: Oct-18

GFA: 2840 LO# 80230

 HEATING CFM 1255 COOLING CFM 1255
 TOTAL HEAT LOSS 57,133 TOTAL HEAT GAIN 41,595
 AIR FLOW RATE CFM 21.97 AIR FLOW RATE CFM 30.17

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

 EL296UH090XE48C
 FAN SPEED

^LENNOX 90

 AFUE = 96 %
 INPUT (BTU/H) = 88,000
 OUTPUT (BTU/H) = 85,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	9	5
R/A	0	0	4	2	1

 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

 MEDLOW 0
 MEDIUM 1105
 MEDIUM HIGH 1255
 HIGH 1525

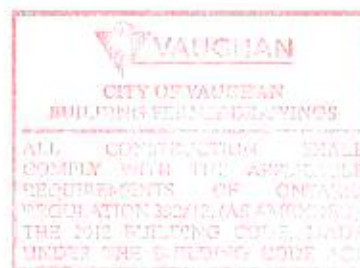
 DESIGN CFM = 1255
 CFM @ .5" E.S.P.

TEMPERATURE RISE 63 °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	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	WIC	BED-2	BED-3	BED-4	BATH	BED-3	BED-3	MBR	ENS-2	DIN	STDY	KT/FM	KT/FM	KT/FM	CM/LN	W/R	FOY	CM/LN	LN/RMD	KT/FM	BAS	BAS
RM LOSS MBH	1.52	2.08	0.54	1.25	1.84	1.29	0.64	1.84	1.84	1.52	0.82	1.81	1.11	1.98	1.98	1.98	2.23	1.11	4.25	2.23	2.59	1.98	3.74	3.74
CFM PER RUN HEAT	33	46	12	27	40	28	14	40	40	33	18	40	24	44	44	44	49	24	93	49	57	44	82	82
RM GAIN MBH	1.94	1.41	0.15	1.62	2.16	1.91	0.40	2.16	2.16	1.94	0.35	1.67	1.20	2.12	2.12	2.12	2.46	0.38	0.66	2.46	1.24	2.12	1.37	1.37
CFM PER RUN COOLING	58	43	5	49	65	58	12	65	65	58	11	50	36	64	64	64	74	11	20	74	37	64	41	41
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH	55	28	24	24	51	49	53	56	61	44	55	36	5	40	32	26	65	42	46	71	12	23	53	34
EQUIVALENT LENGTH	150	140	190	120	150	110	120	160	170	160	180	140	120	130	130	150	130	160	100	140	110	120	160	160
TOTAL EFFECTIVE LENGTH	205	168	214	144	201	159	173	216	231	204	235	176	125	170	162	176	195	202	146	211	122	143	213	194
ADJUSTED PRESSURE	0.08	0.1	0.08	0.12	0.09	0.11	0.1	0.08	0.07	0.08	0.07	0.1	0.14	0.1	0.11	0.1	0.09	0.09	0.11	0.08	0.14	0.12	0.06	0.08
ROUND DUCT SIZE	5	4	4	4	5	5	4	5	5	5	4	5	4	5	5	5	6	4	6	6	5	5	6	6
HEATING VELOCITY (ft/min)	242	528	138	310	294	208	161	294	294	242	207	294	275	323	323	323	250	275	474	250	419	323	418	418
COOLING VELOCITY (ft/min)	426	493	57	562	477	426	138	477	477	426	126	367	413	470	470	470	377	126	102	377	272	470	209	209
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10
TRUNK	B	D	C	D	A	B	B	A	A	C	A	B	D	B	C	D	A	B	A	A	D	D	B	D

RUN #	25	26	27
ROOM NAME	BAS	BAS	BAS
RM LOSS MBH	3.74	3.74	3.74
CFM PER RUN HEAT	62	62	62
RM GAIN MBH	1.37	1.37	1.37
CFM PER RUN COOLING	41	41	41
ADJUSTED PRESSURE	0.16	0.16	0.16
ACTUAL DUCT LGH	27	50	41
EQUIVALENT LENGTH	120	160	130
TOTAL EFFECTIVE LENGTH	147	210	171
ADJUSTED PRESSURE	0.11	0.08	0.09
ROUND DUCT SIZE	6	6	6
HEATING VELOCITY (ft/min)	418	418	418
COOLING VELOCITY (ft/min)	209	209	209
OUTLET GRILL SIZE	4X10	4X10	4X10
TRUNK	C	A	C



SUPPLY AIR TRUNK SIZE												RETURN AIR TRUNK SIZE											
TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	411	0.07	10.4	14	528	TRUNK G	0	0.00	0	0	0	TRUNK O	0	0.06	0	0	0	TRUNK P	0	0.06	0	0	0
TRUNK B	255	0.06	8.5	10	477	TRUNK H	0	0.00	0	0	0	TRUNK Q	0	0.06	0	0	0	TRUNK R	0	0.06	0	0	0
TRUNK C	929	0.07	14.1	24	697	TRUNK I	0	0.00	0	0	0	TRUNK S	0	0.06	0	0	0	TRUNK T	0	0.06	0	0	0
TRUNK D	324	0.08	9.2	10	583	TRUNK J	0	0.00	0	0	0	TRUNK U	0	0.06	0	0	0	TRUNK V	0	0.06	0	0	0
TRUNK E	0	0.00	0	0	0	TRUNK K	0	0.00	0	0	0	TRUNK W	0	0.06	0	0	0	TRUNK X	1255	0.06	16.4	32	565
TRUNK F	0	0.00	0	0	0	TRUNK L	0	0.00	0	0	0	TRUNK Y	405	0.06	10.7	14	8	TRUNK Z	0	0.06	0	0	0
RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
AIR VOLUME	155	155	155	95	365	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	58	57	40	59	21	22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	190	185	225	145	145	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LENGTH	248	242	265	204	166	207	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.06	0.07	0.09	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	7.5	7.5	7.5	6	9.3	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 4001 THE SUMMERDALE
SITE NAME: PINE VALLEY & TESTON

LO # 80230
WOB

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 5 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	3 @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	5 @ 10.6 cfm	53.5 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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
79.5 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 76 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm HVI Sones
ENS	FV-05-11VK1	50 ✓ 0.3
BATH	FV-05-11VK1	50 ✓ 0.3
ENS-2	FV-05-11VK1	50 ✓ 0.3
WR	FV-05-11VK1	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 #:		

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	

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:	October-18

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 80230

Model: 4001 THE SUMMERDALE

Builder: GOLD PARK HOMES

Date: 10/5/2018

Volume Calculation

Air Change & Delta T Data

House Volume			
Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1279	9	11511
First	1279	10	12790
Second	1581	9	14229
Third	0	9	0
Fourth	0	9	0
		Total:	38,530.0 ft ³
		Total:	1091.0 m ³

WINTER NATURAL AIR CHANGE RATE	0.398
SUMMER NATURAL AIR CHANGE RATE	0.134

	Design Temperature Difference			
	T _{in} °C	T _{out} °C	ΔT °C	ΔT °F
Winter DTD _h	22	-20	42	76
Summer DTD _c	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

$$\frac{0.398}{1} \times \frac{303.07}{1} \times \frac{42^\circ\text{C}}{1} \times \frac{1.2}{1} = \frac{6108\text{ W}}{1}$$

$$= \frac{20840\text{ Btu/h}}{1}$$

6.2.6 Sensible Gain due to Air Leakage

$$HG_{satb} = LR_{aire} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

$$= \frac{0.134}{\text{ft}^2} \times \frac{303.07}{\text{ft}} \times \frac{7^\circ\text{C}}{\text{ft}} \times \frac{1.2}{\text{ft}} = 345 \text{ W}$$

$$= 1178 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$\frac{80 \text{ CFM}}{1} \times \frac{76^\circ\text{F}}{1} \times \frac{1.08}{1} \times \frac{0.25}{1} = 1631 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{\text{vaibh}} = PVC \times DTD_{\text{R}} \times 1.08 \times (1 - E)$$

$$\frac{80 \text{ CFM}}{1} \times \frac{13^\circ\text{F}}{1} \times \frac{1.08}{1} \times \frac{0.25}{1} = 275 \text{ Btu/h}$$

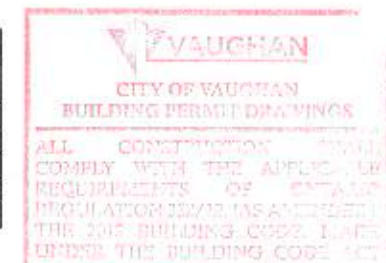
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{\text{airr}} = \text{Level Factor} \times HL_{\text{airbv}} \times \{(HL_{\text{agcr}} + HL_{\text{bgcr}}) \div (HL_{\text{agclevel}} + HL_{\text{bgclevel}})\}$$

Level	Level Factor (LF)	HLairstv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairstv / HL _{level})
1	0.5	20,840	8,264	1.261
2	0.3		12,555	0.498
3	0.2		14,493	0.288
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 $H_{\text{Airve}} = 0$



HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 4001 THE SUMMERDALE	WOB	BUILDER: GOLD PARK HOMES
SFQT: 2840	LO# 80230	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 (ft³):	38530.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 52.0 ft WIDTH: 32.0 ft		EXPOSED PERIMETER:	126.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	42.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component**

Ceiling with Attic Space Minimum RSI (R)-Value
 Ceiling Without Attic Space Minimum RSI (R)-Value
 Exposed Floor Minimum RSI (R)-Value
 Walls Above Grade Minimum RSI (R)-Value
 Basement Walls Minimum RSI (R)-Value
 Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value
 Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value
 Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value
 Windows and Sliding Glass Doors Maximum U-Value
 Skylights Maximum U-Value
 Space Heating Equipment Minimum AFUE
 HRV Minimum Efficiency
 Domestic Hot Water Heater Minimum EF

**Compliance Package****A1**

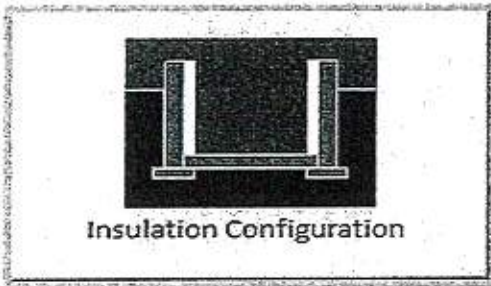
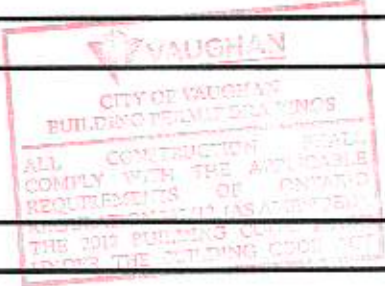
Nominal	Min. Eff.
60	59.22
31	27.65
31	29.80
22	17.03
20 ci	21.12
-	-
10	10
10	11.13
0.28	-
0.49	-
0.96	-
75%	-
0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

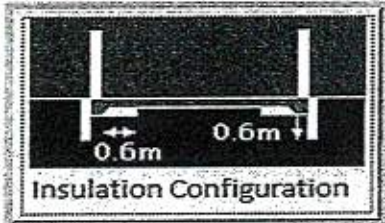
Weather Station Description		
Province:	Ontario	
Region:	Vaughan (Woodbridge)	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	38.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.53	
Window Area (m ²):	0.3	
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):	692	

TYPE: 4001 THE SUMMERDALE
LO# 80230

WOB

Residential Foundation Thermal Load Calculator

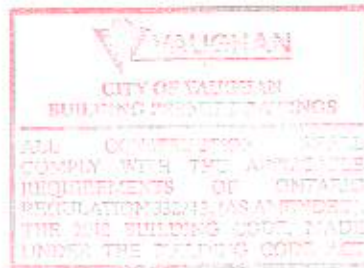
Supplemental tool for CAN/CSA-F280

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	 Insulation Configuration
Width (m):	9.8	
Exposed Perimeter (m):	12.8	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	156	

TYPE: 4001 THE SUMMERDALE
LO# 80230

WOB





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):	8.84			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1091.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1454.4 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.398			
Cooling Air Leakage Rate (ACH/H):	0.134			

TYPE: 4001 THE SUMMERDALE
LO# 80230

WOB