2023 265572 000 00 CM

Energy Efficiency Design Summary:
Performance & Other Acceptable Compliance Methods

(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the Performance or Other Acceptable Compliance Methods described in Subsections 3.1.2. and 3.1.3. of SB-12,

This form must accurately reflect the information contained on the drawings and specifications being submitted. Refer to Supplementary Standard SB-12 for details about building code compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website or the municipal building department.

For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number	Lot/Con
Model Type 45-05			
Municipality	**Postal code**	**Reg. Plan number / other description**	
Brampton			

B. Compliance Option [indicate the building code compliance option being employed in this house design]

▣ *SB-12 Performance** [SB-12 - 3.1.2.]	* Attach energy performance results using an approved software (see guide)
☐ *ENERGY STAR®** [SB-12 - 3.1.3.]	* Attach Builder Option Package [BOP] form
☐ *R-2000® **[SB-12 - 3.1.3.]	* Attach R-2000 HOT2000 Report

C. Project Building Design Conditions

Climatic Zone (SB-1):	Heating Equipment Efficiency	Space Heating Fuel Source		
▣ Zone 1 (< 5000 degree days)	▣ ≥ 92% AFUE	▣ Gas	☐ Propane	☐ Solid Fuel
☐ Zone 2 (≥ 5000 degree days)	☐ ≥ 84% < 92% AFUE	☐ Oil	☐ Electric	☐ Earth Energy
Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area		**Other Building Characteristics**		
Area of walls = 387.87 m^2 **or** _____ ft^2	W, S & G % = 13.77	☐ Log/Post&Beam	☐ ICF Above Grade	☐ ICF Basement
Area of W, S & G = 53.42 m^2 **or** _____ ft^2		☐ Slab-on-ground	☐ Walkout Basement	
		☐ Air Conditioning	☐ Combo Unit	
		☐ Air Source Heat Pump (ASHP)		
		☐ Ground Source Heat Pump (GSHP)		

SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance

SB-12 Referenced Building Package (input design package): Package: A1 Table: 3.1.1.2.A

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach *ENERGY STAR* BOP form

Building Component	Minimum RSI / R values or Maximum U-Value(1)		Building Component	Efficiency Ratings	
Thermal Insulation	Nominal	Effective	**Windows & Doors** Provide U-Value(1) or ER rating		
Ceiling with Attic Space	R-60		Windows/Sliding Glass Doors	U = 1.6	
Ceiling without Attic Space	R-31		Skylights/Glazed Roofs	N/A	
Exposed Floor	R-31		**Mechanicals**		
Walls Above Grade	R-22+1.5ci		Heating Equip.(AFUE)	96% AFUE	
Basement Walls	R-20		HRV Efficiency (SRE% at 0°C)	75%	
Slab (all >600mm below grade)	N/A		DHW Heater (EF)	0.90 EF	
Slab (edge only ≤600mm below grade)	N/A		DWHR (CSA B55.1 (min. 42% efficiency))	53%	# Showers 1
Slab (all ≤600mm below grade, or heated)	N/A		Combined Space / Dom. Water Heating	N/A	

(1) U value to be provided in either $W/(m^2 \cdot K)$ or $Btu/(h \cdot ft^2 \cdot F)$ but not both.

E. Performance Design Verification [Subsection 3.1.2. Performance Compliance]

The annual energy consumption using Subsection 3.1.1. SB-12 Reference Building Package is 189.16 GJ (1 GJ =1000MJ)

The annual energy consumption of this house as designed is 180.06 GJ

The software used to simulate the annual energy use of the building is: REM/Rate 16.0.2 Canada

The building is being designed using an air tightness baseline of:

- ☒ OBC reference ACH, NLA or NLR default values (no depressurization test required)
- ☐ Targeted ACH, NLA or NLR. Depressurization test to meet _____ACH50 or NLR or NLA

- ☒ Reduction of overall thermal performance of the proposed building envelope is not more than 25% of the envelope of the compliance package it is compared against (3.1.2.1.(6)).
- ☒ Standard Operating Conditions Applied (A-3.1.2.1 - 4.6.2)
- ☐ Reduced Operating Conditions for Zero-rated homes Applied (A-3.1.2.1 - 4.6.2.5)

- ☐ On Site Renewable(s): Solar:_____

  Other Types: _____

F. ENERGY STAR or R-2000 Performance Design Verification [Subsection 3.1.3. Other Acceptable Compliance Methods]

- ☐ The NRCan "ENERGY STAR for New Homes Standard Version 12.6 " technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1).

- ☐ The NRCan,"2012 R-2000 Standard " technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1).

Performance Energy Modeling Professional

Energy Evaluator/Advisor/Rater/CEM Name and company:	Accreditation or Evaluator/Advisor/Rater License #
John B Godden/Clearsphere Consulting	08

***ENERGY STAR* or R-2000**

Energy Evaluator/Advisor/Rater/ Name and company:	Evaluator/Advisor/Rater License #

G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets the building code]

Qualified Designer: Declaration of designer to have reviewed and take responsibility for the design work.

Name	BCIN	Signature
Derek R. Santos (Hunt Design Associates Inc.)	37308 (19695)	

Form authorized by OHBA, OBOA, LMCBO. Revised December 1, 2016

Guide to the Energy Efficiency Design Summary Form for Performance & Other Acceptable Compliance Methods

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

- *SB-12 Performance* refers to the method of compliance in Subsection 3.1.2. of SB-12. Using this approach the designer must use recognized energy simulation software (such as HOT2000 V10.51 or newer), and submit documents which show that the annual energy use of the proposed building is equal to or less than a prescriptive (referenced) building package.
- *ENERGY STAR* houses must be designed to *ENERGY STAR* requirements and verified on completion by a licensed energy evaluator and/or service organization. The *ENERGY STAR* BOP form must be submitted with the permit documents.
- *R-2000* houses must be designed to the *R-2000 Standard* and verified on completion by a licensed energy evaluator and/or service organization. The HOT2000 report must be submitted with the permit documents.

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1
Windows, Skylights and Glass Doors: If the ratio of the total gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 3.1.1.1. of SB-12 for further details.
Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which *SB-12 Prescriptive* compliance package table applies.
Other Building Conditions: These construction conditions affect *SB-12 Prescriptive* compliance requirements.

D. Building Specifications

Thermal Insulation: Indicate the RSI or R-value being proposed where they apply to the house design. Refer to SB-12 for further details.

E. Performance Design Summary

A summary of the performance design applicable only to the *SB-12 Performance* option.

F. ENERGY STAR or R-2000 Performance Method

Design to ENERGY STAR or R-2000 Standards.

G. House Designer

The building code requires designers providing information about whether a building complies with the building code to have a BCIN. Exemptions apply to architects, engineers and owners designing their own house.

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES

All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered.
The air leakage rates in Table 3.1.2.1. are not requirements. The Table is not intended to require or suggest that the building meet those airtightness targets. They are provided only as default or reference values for the purpose of annual energy simulations, should the builder/owner decide to perform such simulations. They are given in three different metrics; ACH, NLA, NLR. Any one of them can be used. They can be used as a default values for both a reference and proposed building or, where an air leakage test is conducted and credit for airtightness is claimed, the airtightness values in Table 3.1.2.1. can be used for the reference building and the actual leakage rates obtained from the air leakage test can be used as inputs for the proposed building.

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)

Detached dwelling	3.0 ACH50	NLA 2.12 cm^2/m^2	NLR 1.32 $L/s/m^2$
Attached dwelling	3.5 ACH50	NLA 2.27 cm^2/m^2	NLR 1.44 $L/s/m^2$

The building code requires that a blower door test be conducted to verify the air tightness of the house during construction if the *SB-12 Performance* option is used and an air tightness of less than 3.0 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of detached houses, or 3.5 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of attached houses is necessary to meet the required energy efficiency standard.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

ENERGY STAR and R-2000 may issue labels for new homes constructed under their energy efficiency programs. The building code does not currently regulate or require new home labeling.

Code Compliance Certificate

Project Title: Model 45-05

Report Date	
Data Filename	Model 45-05.blg
Energy Code	OBC SB-12 Performance Compliance Ontario 2017
Location	Toronto, ON_CAN
Construction Type	Single-family detached
Heating Type	Natural Gas
Heating Degree Days	<5000 HDD-Zone 1
Conditioned Area (sq ft)	5598
Conditioned Volume (cubic ft)	56472
Insulated Shell Area (sq ft)	10470

Construction Site	Owner	Builder	HERS Rater
Model 45-05	Royal Pine Homes	Royal Pine Homes	Clearsphere Consulting
Brampton, ON_CAN	Model 45-05	3550 Langstaff Road, Suite 200	John Godden
	Brampton, ON_CAN	Woodbridge, Ontario L4L 9G3	416-481-4218

Annual Energy Consumption	KWH	GJ
Reference Home Package A1	52544.14	189.16
Proposed House	50017.89	180.06
Better Than Code	4.8%	

SB-12 Performance Compliance: PASS

The Design Home total annual consumption is less than or equal to the Reference Home.

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Ceilings			
Roof 1: R-60 Attic	2138	14.0	46.0
Roof 2: R-31 Flat *	15	31.0	0.0
Above-Grade Walls			
AG Wall 1: R-22+1.5ci**	3972	22.0	1.5
Joist 1: Cond -> ambient	330	22.0	1.5
Window 1: U= 0.282 SHGC 0.45	560		3.5
Door 1: Code*	17		4.0
Door 2: Code*	14		4.0
Door 3: Code*	21		4.0
Floors Over Garage			

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Code Compliance Certificate

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Floor 1: R-31 Std*	439	31.0	0.0
Basement Walls			
Wall 1: R-20 Blanket	1808	0.0	20.0
Window 2: U= 0.282 SHGC 0.45	17		3.5
Door 4	21		4.0

Mechanical Equipment	Name/Type	Size/Input	Efficiency
Heating: Fuel-fired air distribution	96 AFUE 371 Watts*	32.0 kBtuh	96.0 AFUE
Water Heating: Conventional, Gas	0.90 EF Condensing *	50 gal	0.90 EF
Cooling: Air conditioner	13SEER A/C 1.5 ton	18.0 kBtuh,	13.0 SEER
HRV/ERV	-----	75.0 CFM	75.0% sen/ 0.0% tot

Drain Water Heat Recovery

1 of 2 Showers connected and 53.0% unit efficiency

Air Exchange

2.89 ACH50 or: 0.26 CFM50/sf

Efficient Lighting

0.0% Interior, 0.0% Exterior, 0.0% Garage

Renewables

N/A

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Building Summary

Canada Package A1 Design

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Property/Builder Information

Building Name	Model 45-05
Owner's Name	Royal Pine Homes
Property Address	Model 45-05
City, St, Zip	Brampton, ON_CAN
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 45-05
Community/Development	Forestside
Identifier/Other	

Organization Information

Organization Name	Clearsphere Consulting
Address	1632 O'Connor Dr.
City, St, Zip	Toronto, ON_CAN M4B 3P4
Phone Number	416-481-4218
Website	www.clearsphere.ca

Rating/RESNET Information

Provider ID	2006-001
Sample Set ID	00000000
Registry ID	
Registry Date Registered	
Rater's Name	John Godden
Rater's ID	0001
Rater's Email	howard@clearsphere.ca
Last Field Insp	
Rating Type	Projected Rating
Reason for Rating	New Home
Rating Number	N/A
Rating Permit Date	06/19/2023

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Building Summary

Canada Package A1 Design

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001
Weather:Toronto, ON_CAN	**Builder**	
Model 45-05	Royal Pine Homes	
Model 45-05.blg		

General Building Information

Area of Conditioned. Space(sq ft)	5598
Volume of Conditioned. Space	56472
Year Built	2022
Housing Type	Single-family detached
Level Type(Apartments Only)	None
Floors on or Above-Grade	2
Number of Bedrooms	5
Foundation Type	Conditioned basement
Foundation is w/in Infiltration Volume:	N/A
Enclosed Crawl Space Type	N/A
Number of Stories Including Conditioned Basement	3
Thermal Boundary Location	N/A

Foundation Wall Information

Name	Library Entry	Location	Length(ft)	Total Height(ft)	Depth Below Grade(ft)	Height Above Grade(ft)	Uo Value Combo*	Uo Value (wall only)
Foundation Wall	R-20 Blanket	Cond->ambient/grn	199.50	9.25	8.42	0.83	0.035	0.048

* Uo Value Combo combines wall, airfilm, and soil path

Foundation Wall Library List

Foundation Wall: R-20 Blanket

Type	Solid concrete or stone
Thickness(in)	8.0
Studs	None
Interior Insulation	
Continuous R-Value	20.0
Frame Cavity R-Value	0.0
Cavity Insulation Grade	3
Ins top	0.00 ft from top of wall
Ins Bottom	0.00 ft from bottom of wall
Exterior Insulation	
R-Value	0.0
Ins top	0.00 ft from top of wall

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Building Summary

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Brampton, ON_CAN	John Godden	Rater ID:0001
Weather:Toronto, ON_CAN	**Builder**	
Model 45-05	Royal Pine Homes	
Model 45-05.blg		

Foundation Wall Library List

Ins bottom	0.00 ft below grade
Note	

Slab Floor Information

Name	Library Entry	Area(sq ft)	Depth Below Grade(ft)	Full Perimeter(ft)	Exposed Perimeter(ft)	On-Grade Perimeter(ft)
Slab	Uninsulated	1730	8.42	200	200	0

Slab Floor Library List

Slab Floor: Uninsulated

Slab Covering	Carpet
Perimeter Insulation (R-Value)	0.0
Perimeter Insulation Depth (ft)	0.0
Under-Slab Insulation (R-Value)	0.0
Under-Slab Insulation Width (ft)	0.0
Slab Insulation Grade	1
Radiant Slab	No
Note	

Frame Floor Information

Name	Library Entry	Location	Area(sq ft)	Uo Value
Exposed Floor	R-31 Std*	Btwn cond & garage	439	0.047

Frame Floor Library List

Floor: R-31 Std*

Information From Quick Fill Screen

Continous Insulation R-Value	0.0
Cavity Insulation R-Value	31.0
Cavity Insulation Thickness (in.)	9.5
Cavity Insulation Grade	3
Joist Size (w x h, in)	1.5 x 9.5
Joist Spacing (in oc)	16.0
Framing Factor - (defined)	0.1300
Floor Covering	CARPET

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Building Summary

Canada Package A1 Design

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Frame Floor Library List

Note

Rim and Band Joist Information

Name	Location	Area(sq ft)	Continuous Ins	Framed Cavity Ins	Cavity Ins Thk(in)	Joist Spacing	Insulation Grade	Uo Value
Rim Band Joist	Cond -> ambient	330.30	1.5	22.0	5.5	16.0	3	0.056

Above-Grade Wall

Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	R-22+1.5ci**	Cond -> ambient	Medium	3972.00	0.058

Above-Grade Wall Library List

Above-Grade Wall: R-22+1.5ci**

Information From Quick Fill Screen

Wall Construction Type	Std Frame w/Brick Veneer
Continuous Insulation (R-Value)	1.5
Frame Cavity Insulation (R-Value)	22.0
Frame Cavity Insulation Thickness (in)	5.5
Frame Cavity Insulation Grade	3
Stud Size (w x d, in)	1.5 x 5.5
Stud Spacing (in o.c.)	16.0
Framing Factor - (default)	0.2300
Gypsum Thickness (in)	0.5

Note

Window Information

						Overhang			Interior		Adjacent	
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	10.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	4.25	9.8	1.0	2.0	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	36.00	9.8	2.0	8.3	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	46.00	1.3	1.8	8.4	0.83	0.83	None	None

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Building Summary

Canada Package A1 Design

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Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Window Information

						Overhang			Interior		Adjacent	
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	33.20	1.3	1.8	8.4	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	20.44	1.3	1.8	8.4	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	38.33	1.3	1.8	8.4	0.83	0.83	None	None
front	AGWall 1	South	0.282	0.450	15.11	1.3	1.8	8.4	0.83	0.83	None	None
front Door	AGWall 1	South	0.282	0.450	4.50	1.3	1.8	8.4	0.83	0.83	None	None
Left	FndWall 1	West	0.282	0.450	6.70	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.282	0.450	14.40	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.282	0.450	45.33	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.282	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.282	0.450	34.70	1.3	1.8	6.1	0.83	0.83	None	None
Left	AGWall 1	West	0.282	0.450	8.00	1.3	1.8	6.1	0.83	0.83	None	None
back	FndWall 1	North	0.282	0.450	6.70	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.282	0.450	48.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.282	0.450	24.00	1.3	1.8	6.4	0.83	0.83	None	None
back	AGWall 1	North	0.282	0.450	72.00	1.3	1.8	6.4	0.83	0.83	None	None
back	AGWall 1	North	0.282	0.450	28.00	1.3	1.8	6.4	0.83	0.83	None	None
back	AGWall 1	North	0.282	0.450	18.70	1.3	1.8	6.4	0.83	0.83	None	None
Right	FndWall 1	East	0.282	0.450	3.30	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.282	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.282	0.450	16.00	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.282	0.450	18.70	0.0	0.0	0.0	0.83	0.83	None	None
Right door	AGWall 1	East	0.282	0.450	7.00	0.0	0.0	0.0	0.83	0.83	None	None

Door Information

Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	Code*	AGWall 1	16.5	0.203	4.0	No
Side	Code*	AGWall 1	14.0	0.203	4.0	No
garage	Code*	AGWall 1	21.0	0.203	4.0	No
Cold Cellar	Code*	FndWall 1	21.0	0.203	4.0	No

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Building Summary

Canada Package A1 Design

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Roof Information

Name	Library Entry	Ceiling Area(sq ft)	Roof Area(sq ft)	Exterior Color	Radiant Barrier	Type	Uo Value	Cement or Clay Tiles	Roof Tile Ventilation
Ceiling-with attic	R-60 Attic	2138.00	2672.50	Dark	No	Attic	0.017	No	No
Ceiling-with attic	R-31 Flat *	15.00	15.00	Dark	No	Vaulted	0.052	No	No

Roof Library List

Ceiling: R-60 Attic

Information From Quick Fill Screen

Continous Insulation (R-Value)	46.0
Cavity Insulation (R-Value)	14.0
Cavity Insulation Thickness (in)	3.5
Cavity Insulation Grade	3
Gypsum Thickness (in)	0.500
Insulated Framing Size(w x h, in)	1.5 x 3.5
Insulated Framing Spacing (in o.c.)	24.0
Framing Factor - (default)	0.1100
Ceiling Type	Attic
Note	

Ceiling: R-31 Flat *

Information From Quick Fill Screen

Continous Insulation (R-Value)	0.0
Cavity Insulation (R-Value)	31.0
Cavity Insulation Thickness (in)	9.5
Cavity Insulation Grade	3
Gypsum Thickness (in)	0.500
Insulated Framing Size(w x h, in)	1.5 x 9.5
Insulated Framing Spacing (in o.c.)	24.0
Framing Factor - (default)	0.1100
Ceiling Type	Vaulted
Note	

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Building Summary

Canada Package A1 Design

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Mechanical Equipment

Number of Mechanical Systems	3
Heating SetPoint(F)	72.0
Heating Setback Thermostat	Not Present
Cooling SetPoint(F)	75.0
Cooling Setup Thermostat	Not Present
DHW SetPoint(F)	125.0

Heat: 96 AFUE 371 Watts*

SystemType	Fuel-fired air distribution
Fuel Type	Natural gas
Rated Output Capacity (kBtuh)	32.0
Seasonal Equipment Efficiency	96.0 AFUE
Auxiliary Electric	371 Watts
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

DHW: 0.90 EF Condensing *

Water Heater Type	Conventional
Fuel Type	Natural gas
Energy Factor	0.90
Recovery Efficiency	0.90
Water Tank Size (gallons)	50
Extra Tank Insulation (R-Value)	0.0
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

Cool: 13SEER A/C 1.5 ton

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Building Summary

Canada Package A1 Design

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Mechanical Equipment

System Type	Air conditioner
Fuel Type	Electric
Rated Output Capacity (kBtuh)	18.0
Seasonal Equipment Efficiency	13.0 SEER
Sensible Heat Fraction (SHF)	0.70
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

DHW Efficiencies

All bath faucets & showers <= 2gpm	false
All DHW pipes fully insulated >= R-3	false
Recirculation type	None (standard system)
Farthest fixture to DHW heater	86
TOTAL Pipelength for longest DHW run	116
DWHR unit present?	true
DWHR unit efficiency per CSA 55.1	53.00
DWHR preheats cold supply for shower	false
DWHR preheats hot supply for shower	true
Number showerheads in home	2
Number showers connected to DWHR	1

DHW Diagnostics	Canada Package A1 Design
dhwGpd	69.47
peRatio	1.00
dishwasherGpd	5.88
clothesWasherHotWaterGPD	5.08
EDeff	1.00
ewaste	32.00
tmains	54.00
dwhrWhInletTempAdj	5.40
pumpConsKwh	0.00

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Building Summary

Canada Package A1 Design

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

DHW Efficiencies

pumpConsMmbtu	0.00

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Building Summary

Canada Package A1 Design

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration	
Input Type	Blower door
Heating Season Infiltration Value	0.26 CFM50/sf shell
Cooling Season Infiltration Value	0.26 CFM50/sf shell
Shelter Class	4
Code Verification	Tested
Mechanical Ventilation for IAQ	
Type	Balanced
Unable to Measure Mechanical Ventilation	FALSE
Rate(cfm)	75
Adjusted Sensible Recovery Efficiency(%)	75.00
Adjusted Total Recovery Efficiency(%)	0.00
Hours per Day	24.0
Fan Power (watts)	75.00
ECM Fan Motor	false
Ventilation Strategy for Cooling	
Cooling Season Ventilation	Natural Ventilation
Good Air Exchange for Multi-Family	NA

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Building Summary

Canada Package A1 Design

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Lights and Appliances

Rating/RESNET audit	
Ceiling Fan CFM / Watt	0.00
Refrigerator kWh/yr	691
Refrigerator Location	Conditioned
Range/Oven Fuel Type	Electric
Induction Range	No
Convection Oven	No
Dishwasher	
Energy Factor	0.46
Dishwasher kWh/yr	0
Place Setting Capacity	12
Clothes Dryer	
Fuel Type	Electric
Location	Conditioned
Moisture Sensing	No
CEF	2.62
Clothes Washer	
Location	Conditioned
LER (kWh/yr)	704
IMEF	0.331
Capacity (CU.Ft)	2.874
Electricity Rate	0.08
Gas Rate	0.58
Annual Gas Cost	23.00
Qualifying Light Fixtures	
Interior Lights %	0.0
Exterior Lights %	0.0
Garage Lights %	0.0
Interior LEDs %	0.0
Exterior LEDs %	0.0
Garage LEDs %	0.0

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Building Summary

Canada Package A1 Reference

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Property/Builder Information

Building Name	Model 45-05
Owner's Name	Royal Pine Homes
Property Address	Model 45-05
City, St, Zip	Brampton, ON_CAN
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 45-05
Community/Development	Forestside
Identifier/Other	

Organization Information

Organization Name	Clearsphere Consulting
Address	1632 O'Connor Dr.
City, St, Zip	Toronto, ON_CAN M4B 3P4
Phone Number	416-481-4218
Website	www.clearsphere.ca

Rating/RESNET Information

Provider ID	2006-001
Sample Set ID	00000000
Registry ID	
Registry Date Registered	
Rater's Name	John Godden
Rater's ID	0001
Rater's Email	howard@clearsphere.ca
Last Field Insp	
Rating Type	Projected Rating
Reason for Rating	New Home
Rating Number	N/A
Rating Permit Date	06/19/2023

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Building Summary

Canada Package A1 Reference

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

General Building Information

Area of Conditioned. Space(sq ft)	5598
Volume of Conditioned. Space	56472
Year Built	2022
Housing Type	Single-family detached
Level Type(Apartments Only)	None
Floors on or Above-Grade	2
Number of Bedrooms	5
Foundation Type	Conditioned basement
Foundation is w/in Infiltration Volume:	N/A
Enclosed Crawl Space Type	N/A
Number of Stories Including Conditioned Basement	3
Thermal Boundary Location	N/A

Foundation Wall Information

Name	Library Entry	Location	Length(ft)	Total Height(ft)	Depth Below Grade(ft)	Height Above Grade(ft)	Uo Value Combo*	Uo Value (wall only)
Foundation Wall	N/A	Cond->ambient/grn	199.50	9.25	8.42	0.83	0.047	N/A

* Uo Value Combo combines wall, airfilm, and soil path

Slab Floor Information

Name	Library Entry	Area(sq ft)	Depth Below Grade(ft)	Full Perimeter(ft)	Exposed Perimeter(ft)	On-Grade Perimeter(ft)
Slab	(Under R-0.0; Per R-0.0; Per depth-0.00)	1730	8.42	200	200	0

Frame Floor Information

Name	Library Entry	Location	Area(sq ft)	Uo Value
Exposed Floor	N/A	Btwn cond & garage	439	0.047

Rim and Band Joist Information

Name	Location	Area(sq ft)	Continuous Ins	Framed Cavity Ins	Cavity Ins Thk(in)	Joist Spacing	Insulation Grade	Uo Value
Rim Band Joist	Cond -> ambient	330.30	N/A	N/A	N/A	N/A	1	0.065

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Building Summary

Canada Package A1 Reference

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

PER PACKAGE A1 MAX. U VALUE = 0.059

Above-Grade Wall

Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	[frame wall]	Cond -> ambient	Medium	3972.00	0.065

Window Information

						Overhang			Interior		Adjacent	
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.280	0.450	10.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	4.25	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	36.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	46.00	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	33.20	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	20.44	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	38.33	0.0	0.0	0.0	0.83	0.83	None	None
front	AGWall 1	South	0.280	0.450	15.11	0.0	0.0	0.0	0.83	0.83	None	None
front Door	AGWall 1	South	0.280	0.450	4.50	0.0	0.0	0.0	0.83	0.83	None	None
Left	FndWall 1	West	0.280	0.450	6.70	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	14.40	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	45.33	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	34.70	0.0	0.0	0.0	0.83	0.83	None	None
Left	AGWall 1	West	0.280	0.450	8.00	0.0	0.0	0.0	0.83	0.83	None	None
back	FndWall 1	North	0.280	0.450	6.70	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	48.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	24.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	72.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	28.00	0.0	0.0	0.0	0.83	0.83	None	None
back	AGWall 1	North	0.280	0.450	18.70	0.0	0.0	0.0	0.83	0.83	None	None
Right	FndWall 1	East	0.280	0.450	3.30	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	8.70	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	16.00	0.0	0.0	0.0	0.83	0.83	None	None
Right	AGWall 1	East	0.280	0.450	18.70	0.0	0.0	0.0	0.83	0.83	None	None
Right door	AGWall 1	East	0.280	0.450	7.00	0.0	0.0	0.0	0.83	0.83	None	None

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Building Summary

Canada Package A1 Reference

Property
Royal Pine Homes
Model 45-05
Brampton, ON_CAN

Organization
Clearsphere Consulting
416-481-4218
John Godden

HERS
Projected Rating
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Door Information

Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	N/A	AGWall 1	16.5	0.250	N/A	N/A
Side	N/A	AGWall 1	14.0	0.250	N/A	N/A
garage	N/A	AGWall 1	21.0	0.250	N/A	N/A
Cold Cellar	N/A	FndWall 1	21.0	0.250	N/A	N/A

Roof Information

Name	Library Entry	Ceiling Area(sq ft)	Roof Area(sq ft)	Exterior Color	Radiant Barrier	Type	Uo Value	Cement or Clay Tiles	Roof Tile Ventilation
Ceiling-with attic	N/A	2138.00	2672.50	Medium	No	Attic	0.017	No	No
Ceiling-with attic	N/A	15.00	15.00	Medium	No	Attic	0.017	No	No

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Building Summary

Canada Package A1 Reference

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001
Weather:Toronto, ON_CAN	**Builder**	
Model 45-05	Royal Pine Homes	
Model 45-05.blg		

Mechanical Equipment

Number of Mechanical Systems	3
Heating SetPoint(F)	72.0
Heating Setback Thermostat	Not Present
Cooling SetPoint(F)	75.0
Cooling Setup Thermostat	Not Present
DHW SetPoint(F)	125.0

Heat: 96 AFUE 371 Watts*

SystemType	Fuel-fired air distribution
Fuel Type	Natural gas
Rated Output Capacity (kBtuh)	52.0
Seasonal Equipment Efficiency	96.0 AFUE
Auxiliary Electric	371 Watts
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

DHW: Reference DHW

Water Heater Type	Conventional
Fuel Type	Natural gas
Energy Factor	0.80
Recovery Efficiency	0.80
Water Tank Size (gallons)	50
Extra Tank Insulation (R-Value)	0.0
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

Cool: 13SEER A/C 1.5 ton

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Building Summary

Canada Package A1 Reference

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001
Weather:Toronto, ON_CAN	**Builder**	
Model 45-05	Royal Pine Homes	
Model 45-05.blg		

Mechanical Equipment

System Type	Air conditioner
Fuel Type	Electric
Rated Output Capacity (kBtuh)	27.7
Seasonal Equipment Efficiency	13.0 SEER
Sensible Heat Fraction (SHF)	0.70
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

DHW Efficiencies

All bath faucets & showers <= 2gpm	false
All DHW pipes fully insulated >= R-3	false
Recirculation type	None (standard system)
TOTAL Pipelength for longest DHW run	116
refPipeL	116
refLoopL	213
DWHR unit present?	true
DWHR unit efficiency per CSA 55.1	42.00
DWHR preheats cold supply for shower	false
DWHR preheats hot supply for shower	true
Number showerheads in home	2
Number showers connected to DWHR	2
DHW Diagnostics	Canada Package A1 Reference
dhwGpd	68.17
peRatio	1.00
EDeff	1.00
ewaste	32.00
tmains	54.00

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Building Summary

Canada Package A1 Reference

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration	
Input Type	Blower door
Heating Season Infiltration Value	0.26 CFM50/sf shell
Cooling Season Infiltration Value	0.26 CFM50/sf shell
Shelter Class	4
Code Verification	Tested
Mechanical Ventilation for IAQ	
Type	Balanced
Unable to Measure Mechanical Ventilation	FALSE
Rate(cfm)	75
Adjusted Sensible Recovery Efficiency(%)	75.00
Adjusted Total Recovery Efficiency(%)	0.00
Hours per Day	24.0
Fan Power (watts)	70.40
ECM Fan Motor	false
Ventilation Strategy for Cooling	
Cooling Season Ventilation	Natural Ventilation
Good Air Exchange for Multi-Family	NA

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Building Summary

Canada Package A1 Reference

Property	Organization	HERS
Royal Pine Homes	Clearsphere Consulting	Projected Rating
Model 45-05	416-481-4218	Rating No:N/A
Brampton, ON_CAN	John Godden	Rater ID:0001

Weather:Toronto, ON_CAN
Model 45-05
Model 45-05.blg

Builder
Royal Pine Homes

Lights and Appliances

Rating/RESNET audit	
Ceiling Fan CFM / Watt	0.00
Refrigerator kWh/yr	691
Refrigerator Location	Conditioned
Range/Oven Fuel Type	Electric
Induction Range	No
Convection Oven	No
Dishwasher	
Energy Factor	0.46
Dishwasher kWh/yr	0
Place Setting Capacity	12
Clothes Dryer	
Fuel Type	Electric
Location	Conditioned
Moisture Sensing	No
CEF	2.62
Clothes Washer	
Location	Conditioned
LER (kWh/yr)	704
IMEF	0.331
Capacity (CU.Ft)	2.874
Electricity Rate	0.08
Gas Rate	0.58
Annual Gas Cost	23.00
Qualifying Light Fixtures	
Interior Lights %	0.0
Exterior Lights %	0.0
Garage Lights %	0.0
Interior LEDs %	0.0
Exterior LEDs %	0.0
Garage LEDs %	0.0

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MCCALLUM HVAC DESIGN INC

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 4505 - STD		Lot:	
		Lot/con.	
Municipality: Brampton	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **Doug McCallum**		Firm: **McCallum HVAC Design Inc.**	
Street address: **2 Dewside Drive Unit 208**		Unit no.	Lot/con.
Municipality: **Brampton**	Postal code: **L6R 3Y5**	Province: **Ontario**	E-mail: info@mccallumhvac.com
Telephone number: **(905) 840-8166**	Fax number:		Cell number: **(647) 229-0380**

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 — **Model Certification** — **Project #:** RP23052

Heating and Cooling Load Calculations
Air System Design
Residential mechanical ventilation Design Summary
Residential System Design per CAN/CSA-F280-12
Residential New Construction - Forced Air

Builder	Roval Pine Homes
Project	
Model	Unit 4505 - STD
SB-12	A1

D. Declaration of Designer

I Doug McCallum 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 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: **25896**

Firm BCIN: **102614**

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:

Basis for exemption from registration:

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.

2023-06-07
Date

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 qualifications under Subsections 3.2.4 . and 3.2.5.of Division C.
2. Schedule 1 does not require to be completed a holder of a license, temporay license, or a certificate of authorization, issed by the Ontario Associstion of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

These documents issued for the use of Royal Pine Homes and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Project No. RP23052

Building Location

Address (Model): Unit 4505 - STD	Site:
Model:	Lot:
City and Province: Brampton	Postal code:

Calculations based on

Dimensional information based on:

Attachment: Detached	Front facing: East — Assumed? **Yes**
No. of Levels: 3 — Ventilated? **Included**	Air tightness: -1 — Assumed? **Yes**
Weather location: Brampton	Wind exposure: **Shelterd**
HRV? VanEE 65H	Internal shading: **Light-translucent** — Occupants: 6
Sensible Eff. at -25C 60.0 % — Apparent Effect. at -0C 75.0 %	Units: **Imperial**

Heating design conditions

Outdoor temp: -2.2°F Indoor temp: 72.0°F Mean soil temp: 48.2°F

Cooling design conditions

Outdoor temp: 86.0°F Indoor temp: 72.0°F Latitude: 43.68

Above grade walls

Style A:	**As per Selected OBC SB12**	A1	**R** 22
Style B:	**Existing Walls (When Applicable)**		**R** 12
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12**	A1	**R** 20 ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	A1
Style B:		

Exposed floors

Style A:	**As per Selected OBC SB12**	A1	**R** 31
Style B:			

Windows

Style A:	**As per Selected OBC SB12**	A1	**R** 3.57
Style B:	**Existing Windows (When Applicable)**		**R**
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12**	A1	**R** 60.0
Style B:	**As per Selected OBC SB12**	A1	**R** 31.0
Style C:			

Doors

Style A:	**As per Selected OBC SB12**	A1	**R** 3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12**	A1	**R** 2.04
Style B:			

Attached documents: **As per Shedule 1**

Notes: **Residential New Construction - Forced Air**

Calculations performed by

Name:	**Doug McCallum**	Postal code:	**L6R 3Y5**
Company:	**McCallum HVAC Design Inc.**	Telephone:	**(905) 840-8166**
Address:	**2 Dewside Drive Unit 208**	Mobile:	**(647) 229-0380**
City:	**Brampton**	E-mail	**info@mccallumhvac.com**

MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Project # RP2305

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code.
I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: 25896 Firm BCIN: 102614 Doug McCallum

Project: **Model:** Unit 4505 - STD

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

For systems serving one dwelling unit & conforming to the Ontario Building Code, O.geg 159/93

Location of Installation

Lot #	Plan #
Township	Brampton
Roll #	Permit #
Address	

Builder

Name	Roval Pine Homes
Address	
City	
Tel	Fax

Installing Contractor

Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)

a)	X	Direct vent (sealed combustion) only
b)		Positive venting induced draft (except fireplaces)
c)		Natural draft, B-vent or induced draft fireplaces
d)		Solid fuel (including fireplaces)
e)		No combustion Appliances

Heating System

X	Forced air
	Non forced air
	Electric space heat (if over 10% of heat load)

House Type 9.32.3.1(2)

I	X	Type a) or b) appliances only, no solid fuel
II		Type I except with solid fuel (including fireplace)
III		Any type c) appliance
IV		Type I or II either electric space heat
Other		Type I, II or IV no forced air

System Design Option

1		Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3	X	HRV simplified connection to forced air system
4		HRV full ducting/not coupled to forced air system
		Part 6 design

Total Ventilation Capacity 9.32.3.3(1)

Bsmt & Master Bdrm	2	@ 21.2	cfm	42.4	cfm
Other Bedrooms	4	@ 10.6	cfm	42.4	cfm
Bathrooms & Kitchen	5	@ 10.6	cfm	53.0	cfm
Other rooms	4	@ 10.6	cfm	42.4	cfm
		Total		180.2	

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1	@ 31.8	cfm	31.8	cfm
Other bedrooms	4	@ 15.9	cfm	63.6	cfm
		Total		95.4	

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	65H	BASE

129 cfm 64 Sones

Heat Recovery Ventilator

Make	VanEE		
Model	65H		
	129 cfm high	64	cfm low
Sensible efficiency @ -25 deg C		60	%
Sensible efficiency @ 0 deg C		75	%

Supplemental Ventilation Capacity

Total ventilation capacity	180.2
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	84.8 cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
ENSUITE	50	770	2.5
POWDER	50	770	2.5
		None	
		None	

all fans HVI listed Make Broan or Equiv.

Designer Certification

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name	Doug McCallum
Signature	
HRAI #	BCIN # 25896
Date	2023-06-07

MCCALLUM HVAC DESIGN INC
2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Project # RP23052

Project:

Model: Unit 4505 - STD

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.221	50528.0	74.2	14940.98

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.0646136	50528	14.00	822.73

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air Leakage	Level Conductive Heat Loss (HLclevel)	Air Leakage Heat Loss Multiplier
1	0.5	14941	6305	1.18485
2	0.3		13441	0.33348
3	0.2		14836	0.20142
4	0		0	0.00000

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

		Air Leakage Heat Gain Multiplier
HG LEAK	822.73	0.04490
BUILDING CONDUCTIVE HEAT GAIN	18323.00	

Levels this Dwelling
3

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	95.4	74.20	0.250	1911.24

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.08	95.4	14.00	1442.448

Case 1

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	1911	6305	0.15
2	0.3		13441	0.04
3	0.2		14836	0.03
4	0		0	0

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1442.448	0.08
Building Cond. HG	18323.00	

Case 2

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier
C	HL^T	(1-E) HRV	20.03
1.08	74.20	0.25	

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	15.12
1.08	14.00	

Case 3

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	1911	0.06

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	1442	0.08
1442.448	1		

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description

Province:	Brampton
Region:	ON
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10

Local Shielding

Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	6.71

Building Configuration

Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1431

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1267.713
	2.50	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:
	0	0

Flue Size

Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Envelope Air Leakage Rate

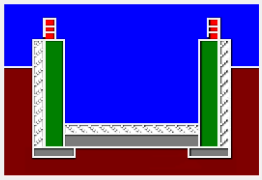
Heating Air Leakage Rate (ACH/H): 0.221

Cooling Air Leakage Rate (ACH/H): 0.065

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Brampton
Region:	ON
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Deep (>10 m, >33 Ft)
Foundation Dimensions	
Floor Length (m):	23.2
Floor Width (m):	6.34
Exposed Perimeter (m):	59.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.39
Door Area (m^2):	2
Radiant Slab	
Heated Fraction of the Slab:	**0**
Fluid Temperature (°C):	**23**
Design Months	
Heating Month	**1**
Foundation Loads	
Heating Load (Watts):	**1605**



Insulation Configuration

BCIN_1

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	14123 btu/h	**EQUIPMENT EXTERNAL STATIC PRESSURE**	0.500"W.C.
LEVEL 2 NET LOAD	18665 btu/h	**ADDITIONAL EQUIPMENT PRESSURE DROP**	0.250"W.C.
LEVEL 3 NET LOAD	19161 btu/h	**AVAILABLE DESIGN PRESSURE**	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	**RETURN BRANCH LONGEST EFFECTIVE LENGTH**	300ft
SYSTEM HEATLOSS	51949 btu/h	**R/A PLENUM PRESSURE**	0.120"W.C.
SYSTEM HEATGAIN	37430 btu/h	**S/A PLENUM PRESSURE**	0.130"W.C.
BUILDING VOLUME Vb	50528.00 ft3	**HEATING AIR FLOW PROPORTIONING FACTOR**	0.0220 cfm/btuh
VENTILATION LOAD	1909.00 btu/h	**COOLING AIR FLOW PROPORTIONING FACTOR**	0.0306 cfm/btuh
VENTILATION PVC	95.40 cfm	**R/A TEMP. 70°F**	S/A TEMP. 121.75°F DIFFUSER LOSS 0.01°"w.c.

FURNACE/AIR HANDLER DATA				BLOWER DATA	
MAKE	Lennox			HEATING CHECK	1144.00 CFM
MODEL	EL296UH070XE36B			SELECTED CFM	1145.00 CFM
HIGH INPUT btu/h	66000	LOW INPUT btu/h	0	COOLING CHECK	1147.00 CFM
HIGH OUTPUT btu/h	64000	LOW OUTPUT btu/h	0	COOLING AIR FLOW RATE	1145.00 CFM
E.S.P.	0.50			BLOWER TYPE ECM (BRUSHLESS DC OBC 12.3.1.5.(2))	
WATER TEMP.				A/C UNIT DATA	
AFUE	96.97%			MAKER	3.0 TON
AUX. HEAT	0			CONDENSER	3.0 TON
SB-12 PACKAGE	A1			COIL	3.0 TON
TEMP. RISE	51.75°F				

SUPPLY BRANCH AND GRILL SIZING

OUTLET #	ROOM USE	BTU/H OUTLET	HEATING AIR FLOW RATE CFM	COOLING AIR FLOW RATE CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	OUTLET SIZE	TRUNK
1	ENS	1799	40	36	0.13	52	140	192	0.06	5.0	4x10	D1
3	PRIM BED	1411	31	38	0.13	51	190	241	0.05	6.0	4x10	C1
29	PRIM BED	1411	31	38	0.13	52	150	202	0.06	6.0	4x10	D1
4	WIC	701	15	7	0.13	42	150	192	0.06	5	4x10	C1
5	ENS 2	937	21	10	0.13	35	170	205	0.06	5	4x10	B1
7	ENS 3	861	19	31	0.13	36	180	216	0.06	5	4x10	A1
11	BATH 2	620	14	12	0.13	26	150	176	0.07	5	4x10	B1
27	KIT/ BRK/GRT	2043	45	80	0.13	29	110	139	0.09	6.0	4x10	E1
14	KIT/ BRK/GRT	2043	45	80	0.13	41	140	181	0.07	6.0	4x10	D1
15	KIT/ BRK/GRT	2043	45	80	0.13	46	160	206	0.06	6.0	4x10	C1
16	KIT/ BRK/GRT	2043	45	80	0.13	55	140	195	0.06	6.0	4x10	C1
13	LNDRY	252	6	2	0.13	19	160	179	0.07	5	4x10	B1
17	DIN/ FOYR	2289	50	48	0.13	4	160	164	0.07	6.0	4x10	B1
18	DIN/ FOYR	2289	50	48	0.13	33	140	173	0.07	5.0	4x10	A1
19	DEN	2461	54	58	0.13	29	110	139	0.09	6.0	4x10	A1
20	PWD	637	14	11	0.13	19	110	129	0.09	5	4x10	B1
22	BASE	2825	62	32	0.13	26	160	186	0.06	6.0	4x10	D1
23	BASE	2825	62	32	0.13	34	120	154	0.08	6.0	4x10	D1
24	BASE	2825	62	32	0.13	47	150	197	0.06	6.0	4x10	C1
25	BASE	2825	62	32	0.13	23	130	153	0.08	6.0	4x10	E1
26	BASE	2825	62	32	0.13	26	150	176	0.07	6.0	4x10	A1
2	W/C	32	1	1	0.13	27	140	167	0.07	5	4x10	E1
21	MUD	2816	62	21	0.13	31	140	171	0.07	5.0	4x10	E1
10	BED 4	1511	33	39	0.13	21	140	161	0.07	5.0	4x10	B1
6	BED 2	2081	46	52	0.13	44	130	174	0.07	6.0	4x10	B1
28	BED 2	2081	46	52	0.13	44	190	234	0.05	6.0	4x10	A1
12	BED 5	1485	33	39	0.13	16	140	156	0.08	6.0	4x10	E1

8	BED 3	1990	44	62	0.13	35	140	175	0.07	6.0	4x10	A1
9	BED 3	1990	44	62	0.13	40	150	190	0.06	6.0	4x10	A1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR VOLUME CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	INLET SIZE	TRUNK
1R	140	0.12	43	140	183	0.05	8	14x8	Z1
2R	75	0.12	34	120	154	0.06	6	14x8	Y1
3R	140	0.12	31	160	191	0.05	8	14x8	X1
4R	140	0.12	39	170	209	0.05	8	14x8	W1
5R	75	0.12	42	130	172	0.06	6	14x8	W1
6R	85	0.12	32	120	152	0.07	6	14x8	X1
7R	360	0.12	42	180	222	0.05	11.5	14x8	Z1
8R	130	0.12	35	170	205	0.05	7.5	14x8	Y1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
DROP	1145	0.05		0	
Z1	500	0.05	12.5	18x8	24x6
Y1	705	0.05	14	22x8	18x10
X1	440	0.05	12	16x8	22x6
W1	215	0.05	9	8x8	12x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	319	0.05	10.5	12x8	16x6
B1	503	0.05	12.5	18x8	24x6
C1	198	0.05	9	10x8	12x6
D1	438	0.05	12	16x8	22x6
E1	641	0.05	13.5	22x8	16x10

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - STD
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

WEATHER DATA [Brampton] [43.68] [-2.20] [86.00] [51.80] [48.20] [74.20] [14.00]

LEVEL 1

BASE	TOTALS H.L.: 14123 btuh		H.G.: 5177 btuh		AREA: 1585 ft2		Above Grade: 2		GROSS EXP. WALL		NEW 388 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 194 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	21.12		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	3.5	0 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.7	233 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 6.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	125 btuh	37.3	0 btuh	0	0	0	0	20.8	125 btuh
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	169 btuh	14.9	0 btuh	0	0	0	0	21.7	130 btuh
FUND. CONDUCTIVE HEATLOSS				5476 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	6305 btuh	LOSS	1.1849	7470 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	348.5 btuh	239
TOTAL CONDUCTIVE			GAIN	666 btuh	GAIN	0.0449	30 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	52 btuh	0

	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	27.65		22.05		2.04		2.03											
LOSS	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh										
GAIN	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh										
	SOUTH WINDOWS				NORTH WINDOWS													
	NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW: 3 ft2		EXIST: 0 ft2											
Eff. R-V	3.57		1.99		3.57		1.99											
LOSS	20.8	125 btuh	37.3	0 btuh	20.8	62 btuh	37.3	0 btuh										
GAIN	21.7	130 btuh	14.9	0 btuh	11.7	35 btuh	14.9	0 btuh										
FUND. CONDUCTIVE HEATLOSS	H.G. PEOPLE		APP. LOAD		DUCT PIPE L.													
TOTAL CONDUCTIVE	239		6468		LOSS	0%	0 btuh											
TOTAL CONDUCTIVE	0	0 btuh	50%	3234 btuh	GAIN	0%	0 btuh											

LEVEL 2

KIT/BRK/GRT	TOTALS H.L.: 8173 btuh		H.G.: 10461 btuh		AREA: 669 ft2		C.Height: 11		GROSS EXP. WALL		NEW 803 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 73 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 7 ft2		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	2583 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	19 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	487 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	10 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 144.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 14.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	2993 btuh	37.3	0 btuh	0	0	0	0	20.8	291 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	4057 btuh	14.9	0 btuh	0	0	0	0	21.7	304 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	5885 btuh	LOSS	0.3335	1963 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	325.2 btuh	239
TOTAL CONDUCTIVE			GAIN	4859 btuh	GAIN	0.0449	218 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	383 btuh	0

	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	27.65		22.05		2.04		2.03											
LOSS	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh										
GAIN	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh										
	SOUTH WINDOWS				NORTH WINDOWS													
	NEW: 14.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2											
Eff. R-V	3.57		1.99		3.57		1.99											
LOSS	20.8	291 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh										
GAIN	21.7	304 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh										
FUND. CONDUCTIVE HEATLOSS	H.G. PEOPLE		APP. LOAD		DUCT PIPE L.													
TOTAL CONDUCTIVE	239		6468		LOSS	0%	0 btuh											
TOTAL CONDUCTIVE	0	0 btuh	40%	2587 btuh	GAIN	0%	0 btuh											

DIN/FOYR	TOTALS H.L.: 4578 btuh		H.G.: 3106 btuh		AREA: 476 ft2		C.Height: 11		GROSS EXP. WALL		NEW 572 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 52 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	2050 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	387 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 46.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	956 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	999 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	3297 btuh	LOSS	0.3335	1099 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	182.2 btuh	239
TOTAL CONDUCTIVE			GAIN	1550 btuh	GAIN	0.0449	70 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	122 btuh	0

	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	27.65		22.05		2.04		2.03											
LOSS	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh										
GAIN	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh										
	SOUTH WINDOWS				NORTH WINDOWS													
	NEW: 46.0 ft2		EXIST: 0.0 ft2		NEW: 14 ft2		EXIST: 0 ft2											
Eff. R-V	3.57		1.99		3.57		1.99											
LOSS	20.8	956 btuh	37.3	0 btuh	20.8	291 btuh	37.3	0 btuh										
GAIN	21.7	999 btuh	14.9	0 btuh	11.7	164 btuh	14.9	0 btuh										
FUND. CONDUCTIVE HEATLOSS	H.G. PEOPLE		APP. LOAD		DUCT PIPE L.													
TOTAL CONDUCTIVE	239		6468		LOSS	0%	0 btuh											
TOTAL CONDUCTIVE	0	0 btuh	10%	647 btuh	GAIN	0%	0 btuh											

DEN	TOTALS H.L.: 2461 btuh		H.G.: 1907 btuh		AREA: 126 ft2		C.Height: 11		GROSS EXP. WALL		NEW 275 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 25 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	941 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	178 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 40.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	831 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1127 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	1772 btuh	LOSS	0.3335	591 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	97.9 btuh	239
TOTAL CONDUCTIVE			GAIN	1305 btuh	GAIN	0.0449	59 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	103 btuh	0

	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	27.65		22.05		2.04		2.03											
LOSS	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh										
GAIN	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh										
	SOUTH WINDOWS				NORTH WINDOWS													
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2											
Eff. R-V	3.57		1.99		3.57		1.99											
LOSS	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh										
GAIN	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh										
FUND. CONDUCTIVE HEATLOSS	H.G. PEOPLE		APP. LOAD		DUCT PIPE L.													
TOTAL CONDUCTIVE	239		6468		LOSS	0%	0 btuh											
TOTAL CONDUCTIVE	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh											

PWD	TOTALS H.L.: 637 btuh		H.G.: 360 btuh		AREA: 38 ft2		C.Height: 11		GROSS EXP. WALL		NEW 77 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 7 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	

	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	27.65		22.05		2.04		2.03											

INDIVIDUAL BCIN NUMBER 25896
FIRM BCIN NUMBER 102614

Doug McCallum

TOTAL HEATLOSS: 51949 BTUH
TOTAL HEATGAIN: 37430 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - STD
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

LOSS	4.0	272 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	51 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 9.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	187 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	195 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	459 btuh	LOSS	0.3335	153 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	25.4 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	247 btuh	GAIN	0.0449	11 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	19 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2816 btuh		H.G.: 685 btuh		AREA: 244 ft2		C.Height: 11		GROSS EXP. WALL		NEW 352 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 32 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1281 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	242 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 11 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	229 btuh	37.3	0 btuh
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	129 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2028 btuh	LOSS	0.3335	676 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	112.1 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	469 btuh	GAIN	0.0449	21 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	37 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

ENS	TOTALS H.L.: 1799 btuh		H.G.: 1162 btuh		AREA: 141 ft2		C.Height: 9		GROSS EXP. WALL		NEW 234 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 26 ft		EXIST: 0 ft		NEW: 141 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	861 btuh	8.7	0 btuh	1.3	177 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	162 btuh	1.6	0 btuh	0.7	98 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 19.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	395 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	535 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1432 btuh	LOSS	0.2014	288 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	79.1 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	795 btuh	GAIN	0.0449	36 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	63 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

PRIM BED	TOTALS H.L.: 2821 btuh		H.G.: 2484 btuh		AREA: 381 ft2		C.Height: 9		GROSS EXP. WALL		NEW 324 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 36 ft		EXIST: 0 ft		NEW: 381 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1185 btuh	8.7	0 btuh	1.3	477 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	224 btuh	1.6	0 btuh	0.7	264 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 28.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	582 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	789 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2245 btuh	LOSS	0.2014	452 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	124.1 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1276 btuh	GAIN	0.0449	57 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	101 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh

WIC	TOTALS H.L.: 701 btuh		H.G.: 221 btuh		AREA: 100 ft2		C.Height: 9		GROSS EXP. WALL		NEW 108 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 12 ft		EXIST: 0 ft		NEW: 100 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	432 btuh	8.7	0 btuh	1.3	125 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	82 btuh	1.6	0 btuh	0.7	69 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - STD
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	558 btuh	LOSS	0.2014	112 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	30.8 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	151 btuh	GAIN	0.0449	7 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	12 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

ENS 2	TOTALS H.L.: 937 btuh			H.G.: 341 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 81 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 9 ft	EXIST: 0 ft	NEW: 58 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 49 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 288 btuh	8.7 0 btuh	1.3 73 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 131 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 54 btuh	1.6 0 btuh	0.7 40 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 14 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 9 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 187 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 106 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 680 btuh	LOSS 0.2014	137 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	37.6 btuh	239		6468		LOSS 10%	82 btuh
TOTAL CONDUCTIVE		GAIN 214 btuh	GAIN 0.0449	10 btuh	GAIN 0.0000	0 btuh	GAIN 0.08	17 btuh	0	0 btuh	0%	0 btuh	GAIN 10%	21 btuh

ENS 3	TOTALS H.L.: 861 btuh			H.G.: 1001 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 54 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 6 ft	EXIST: 0 ft	NEW: 58 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 136 btuh	8.7 0 btuh	1.3 73 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 26 btuh	1.6 0 btuh	0.7 40 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 0 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 20.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 416 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 564 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 625 btuh	LOSS 0.2014	126 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	34.5 btuh	239		6468		LOSS 10%	75 btuh
TOTAL CONDUCTIVE		GAIN 629 btuh	GAIN 0.0449	28 btuh	GAIN 0.0000	0 btuh	GAIN 0.08	50 btuh	0	0 btuh	0%	0 btuh	GAIN 10%	63 btuh

BATH 2	TOTALS H.L.: 620 btuh			H.G.: 402 btuh	AREA: 86 ft2		C.Height: 9		GROSS EXP. WALL		NEW 63 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 7 ft	EXIST: 0 ft	NEW: 86 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 220 btuh	8.7 0 btuh	1.3 108 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 42 btuh	1.6 0 btuh	0.7 60 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 0 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 8.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 166 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 174 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 494 btuh	LOSS 0.2014	99 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	27.3 btuh	239		6468		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 275 btuh	GAIN 0.0449	12 btuh	GAIN 0.0000	0 btuh	GAIN 0.08	22 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

LNDRY	TOTALS H.L.: 252 btuh			H.G.: 78 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 0 ft	EXIST: 0 ft	NEW: 58 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 48 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 0 btuh	8.7 0 btuh	1.3 73 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 129 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 0 btuh	1.6 0 btuh	0.7 40 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 14 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 201 btuh	LOSS 0.2014	40 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	11.1 btuh	239		6468		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 54 btuh	GAIN 0.0449	2 btuh	GAIN 0.0000	0 btuh	GAIN 0.08	4 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

W/C	TOTALS H.L.: 32 btuh			H.G.: 22 btuh	AREA: 21 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 0 ft	EXIST: 0 ft	NEW: 21 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - STD
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	0 btuh	8.7	0 btuh	1.3	26 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	0 btuh	1.6	0 btuh	0.7	15 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD			DUCT PIPE L.	
TOTAL CONDUCTIVE			LOSS	26 btuh	LOSS	0.2014	5 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	1.4 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	15 btuh	GAIN	0.0449	1 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	1 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 4	TOTALS H.L.: 1511 btuh			H.G.: 1262 btuh				AREA: 230 ft2			C.Height: 9			GROSS EXP. WALL		NEW 153 ft		EXIST 0 ft		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 17 ft		EXIST: 0 ft		NEW: 230 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	541 btuh	8.7	0 btuh	1.3	288 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	102 btuh	1.6	0 btuh	0.7	159 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 18.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	374 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	391 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD			DUCT PIPE L.	
TOTAL CONDUCTIVE			LOSS	1203 btuh	LOSS	0.2014	242 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	66.5 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	652 btuh	GAIN	0.0449	29 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	51 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2	TOTALS H.L.: 4162 btuh			H.G.: 3414 btuh				AREA: 272 ft2			C.Height: 11			GROSS EXP. WALL		NEW 297 ft		EXIST 0 ft		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 27 ft		EXIST: 0 ft		NEW: 272 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 225 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	977 btuh	8.7	0 btuh	1.3	341 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	604 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	184 btuh	1.6	0 btuh	0.7	188 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	65 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 53.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	1102 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1493 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD			DUCT PIPE L.	
TOTAL CONDUCTIVE			LOSS	3023 btuh	LOSS	0.2014	609 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	167.1 btuh	239		6468		LOSS	10%	363 btuh
TOTAL CONDUCTIVE			GAIN	1931 btuh	GAIN	0.0449	87 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	152 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	217 btuh

BED 5	TOTALS H.L.: 1485 btuh			H.G.: 1286 btuh				AREA: 271 ft2			C.Height: 9			GROSS EXP. WALL		NEW 135 ft		EXIST 0 ft		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 15 ft		EXIST: 0 ft		NEW: 271 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	469 btuh	8.7	0 btuh	1.3	340 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	88 btuh	1.6	0 btuh	0.7	188 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 18.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	374 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	391 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD			DUCT PIPE L.	
TOTAL CONDUCTIVE			LOSS	1182 btuh	LOSS	0.2014	238 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	65.3 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	667 btuh	GAIN	0.0449	30 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	53 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 3	TOTALS H.L.: 3980 btuh			H.G.: 4061 btuh				AREA: 279 ft2			C.Height: 11			GROSS EXP. WALL		NEW 385 ft		EXIST 0 ft		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 35 ft		EXIST: 0 ft		NEW: 279 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1237 btuh	8.7	0 btuh	1.3	350 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	233 btuh	1.6	0 btuh	0.7	193 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 76.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	1580 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

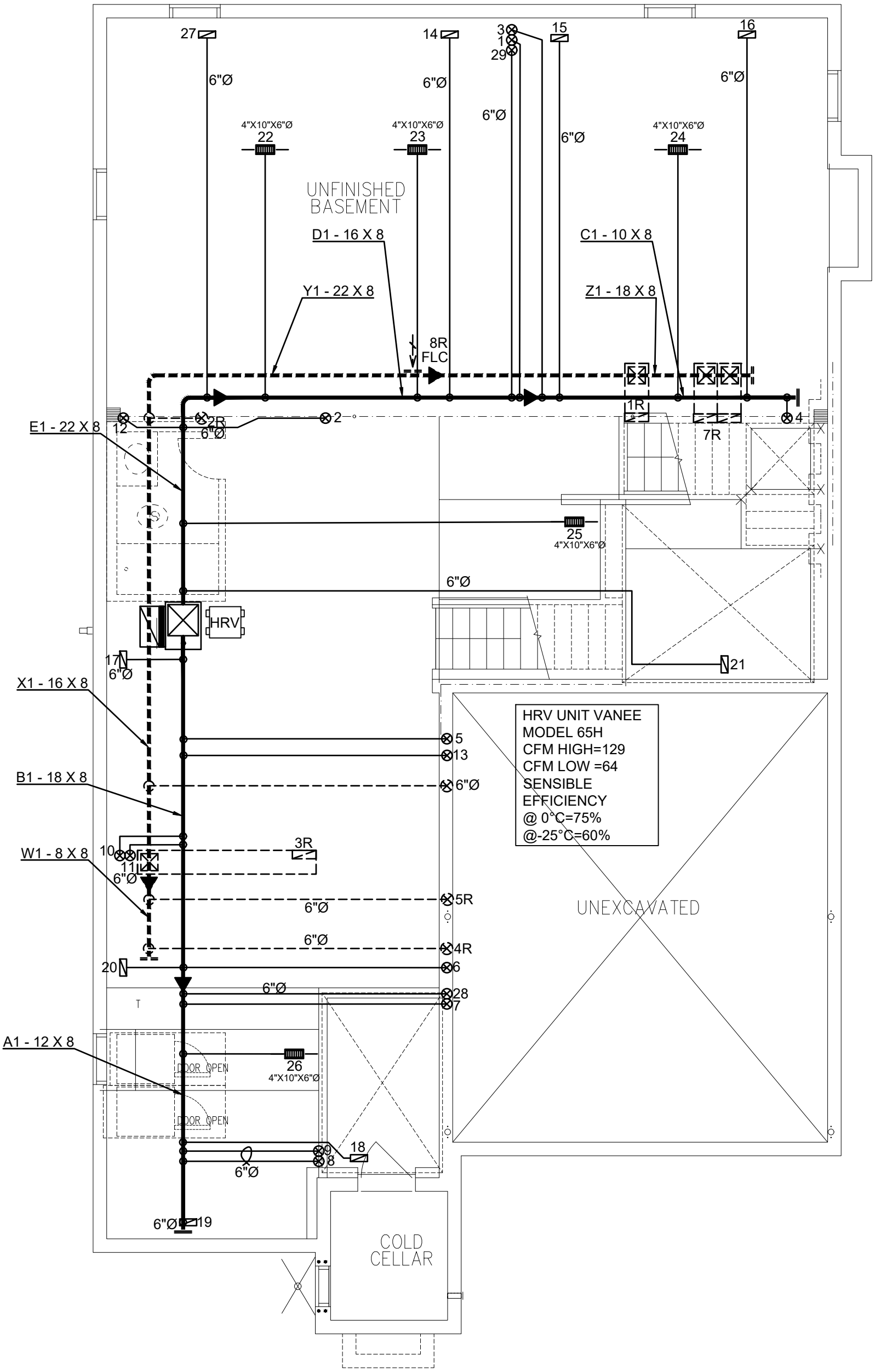
ADDRESS/MODEL: Unit 4505 - STD
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

GAIN	4.7	*0 btuh*	4.7	*0 btuh*	28.2	*2141 btuh*	14.9	*0 btuh*	0	0	0	0	21.7	*0 btuh*	14.9	*0 btuh*	11.7	*0 btuh*	14.9	*0 btuh*
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	3167 btuh	LOSS	0.2014	638 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	175.0 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2568 btuh	GAIN	0.0449	115 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	202 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 4



3RD	# S/A -	# R/A -	# FANS -
2ND	15	6	5
1ST	9	1	1
B	5	1	0
TOTAL	29	8	6

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED BASEMENT

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design, and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

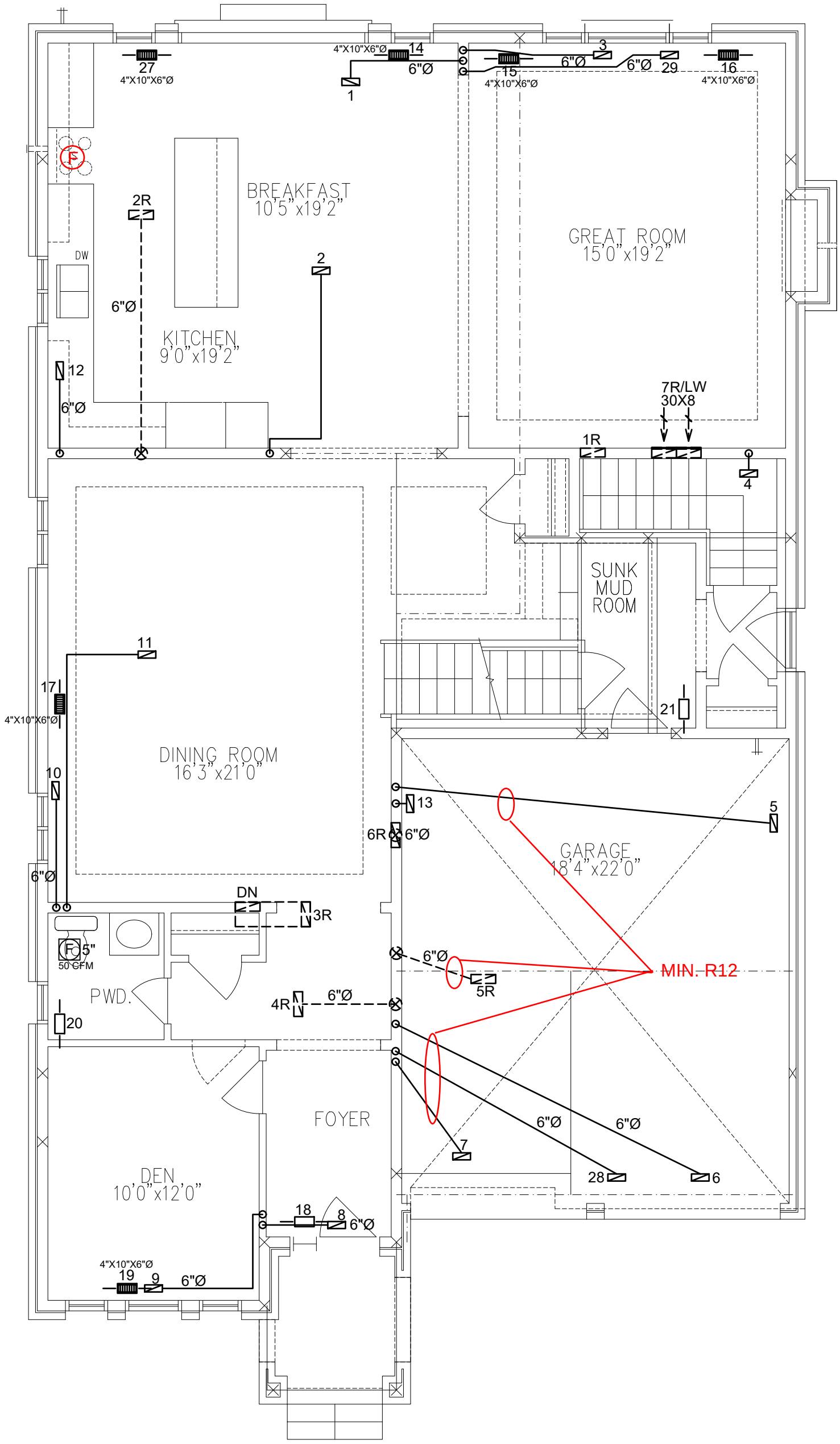
TOTAL LOSS	51,949 BTUH	
TOTAL GAIN	37,430 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - STD		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC

Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M1



3RD	# S/A -	# R/A -	# FANS -
2ND	15	6	5
1ST	9	1	1
B	5	1	0
TOTAL	29	8	6

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED 1ST FLOOR

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

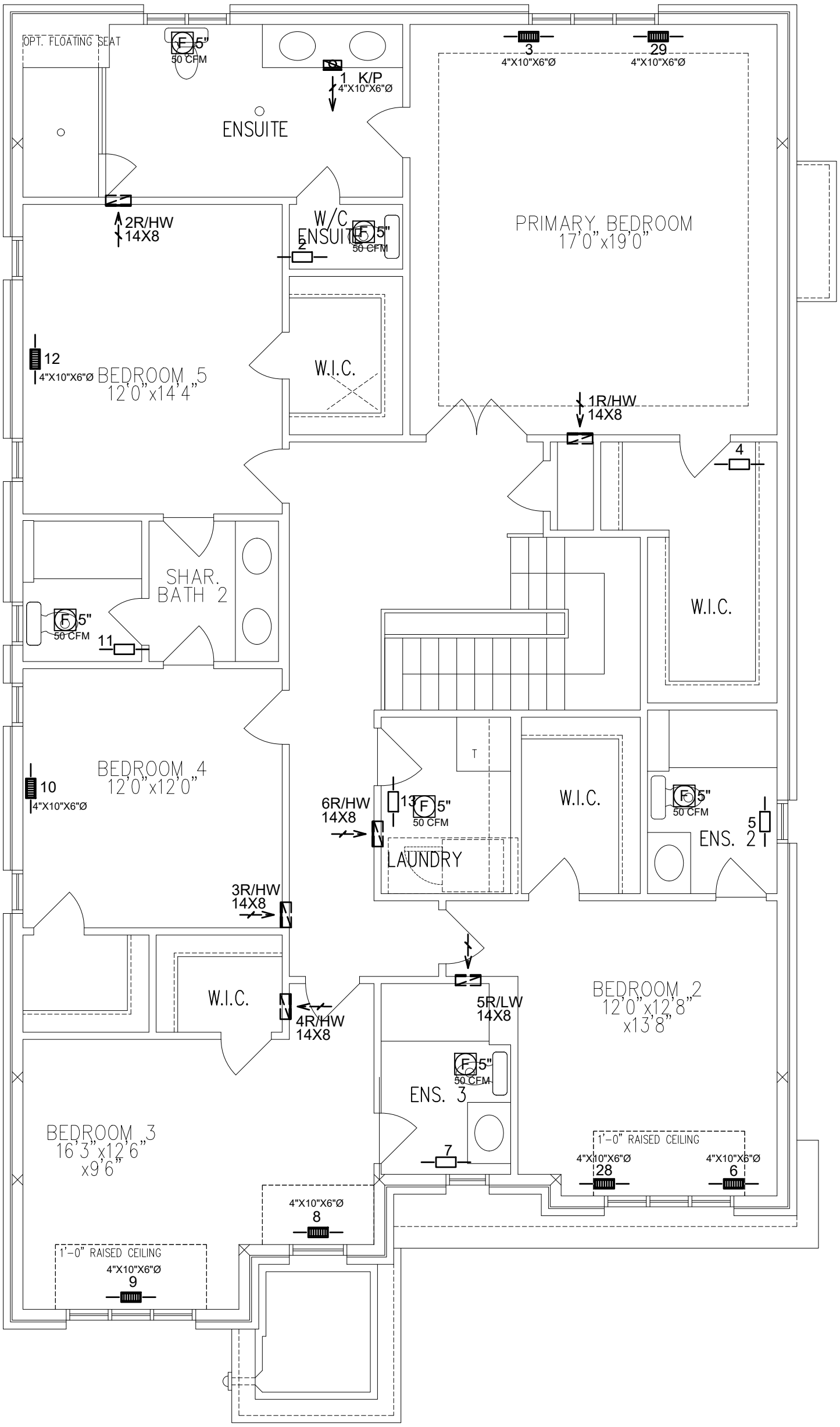
NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	51,949 BTUH	
TOTAL GAIN	37,430 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - STD		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M2



3RD	# S/A -	# R/A -	# FANS -
2ND	15	6	5
1ST	9	1	1
B	5	1	0
TOTAL	29	8	6

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED 2ND FLOOR

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

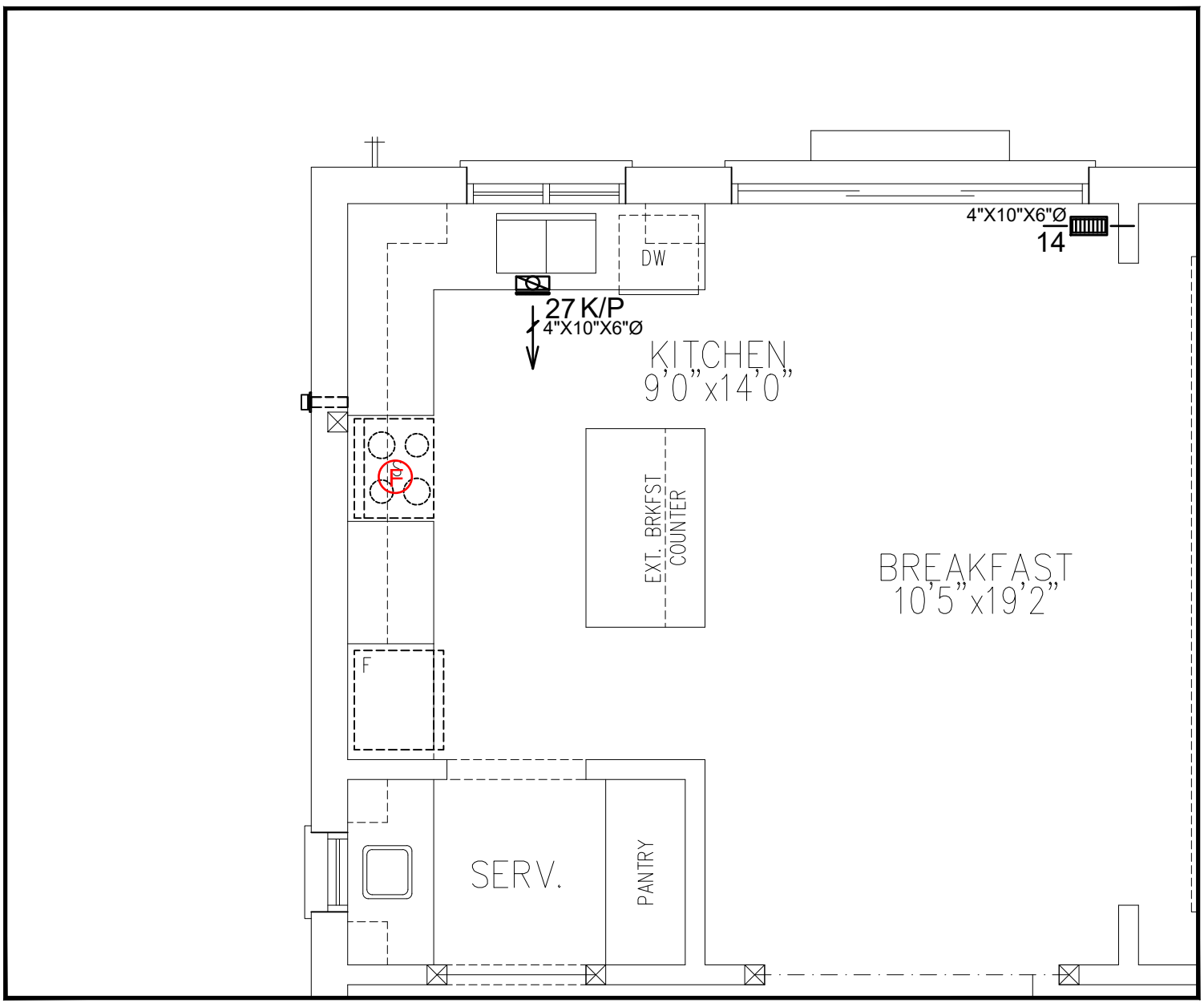
NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	51,949 BTUH	
TOTAL GAIN	37,430 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - STD		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M3



3RD	# S/A -	# R/A -	# FANS -
2ND	15	6	5
1ST	9	1	1
B	5	1	0
TOTAL	29	8	6

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- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
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OPT. KITCHEN PLAN

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

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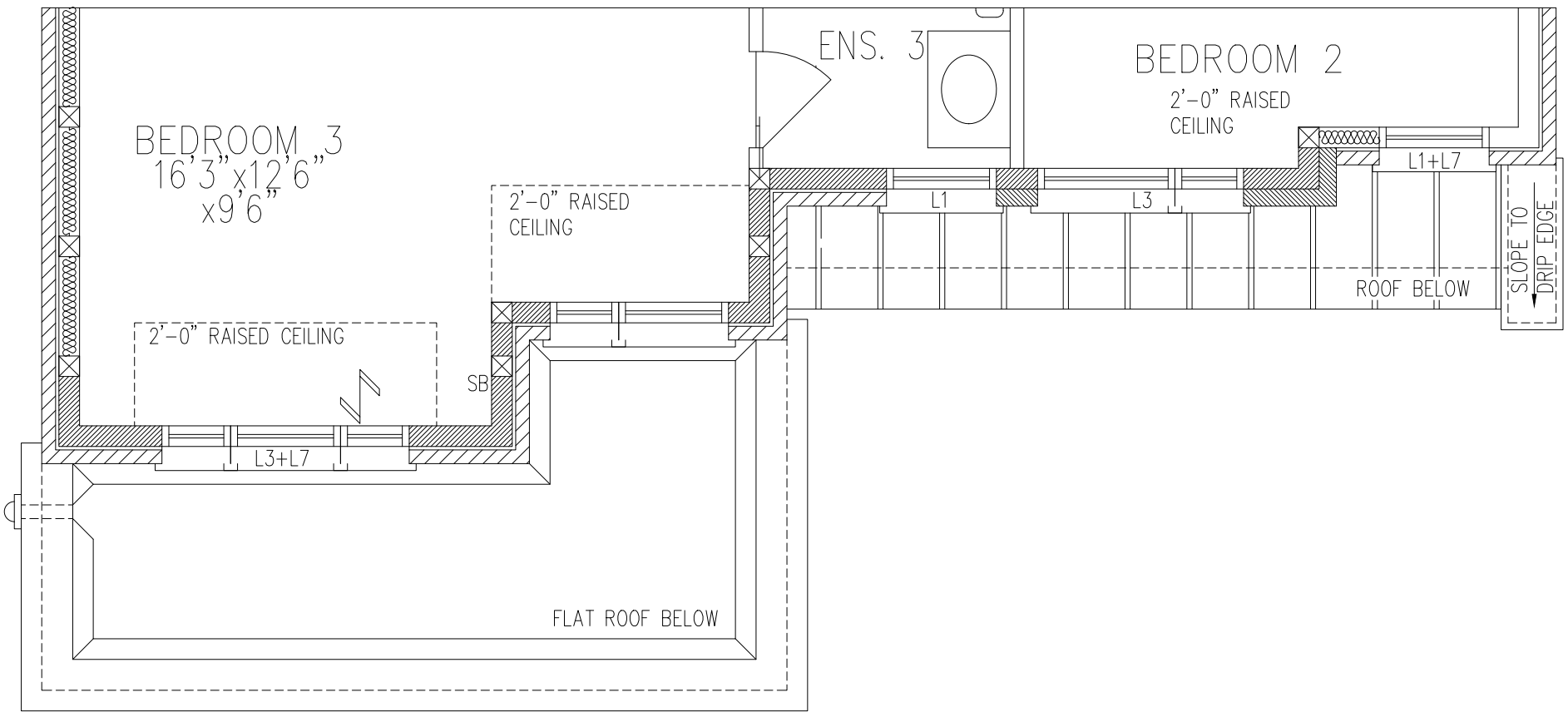
Doug McCallum		102614

TOTAL LOSS	51,949 BTUH	
TOTAL GAIN	37,430 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

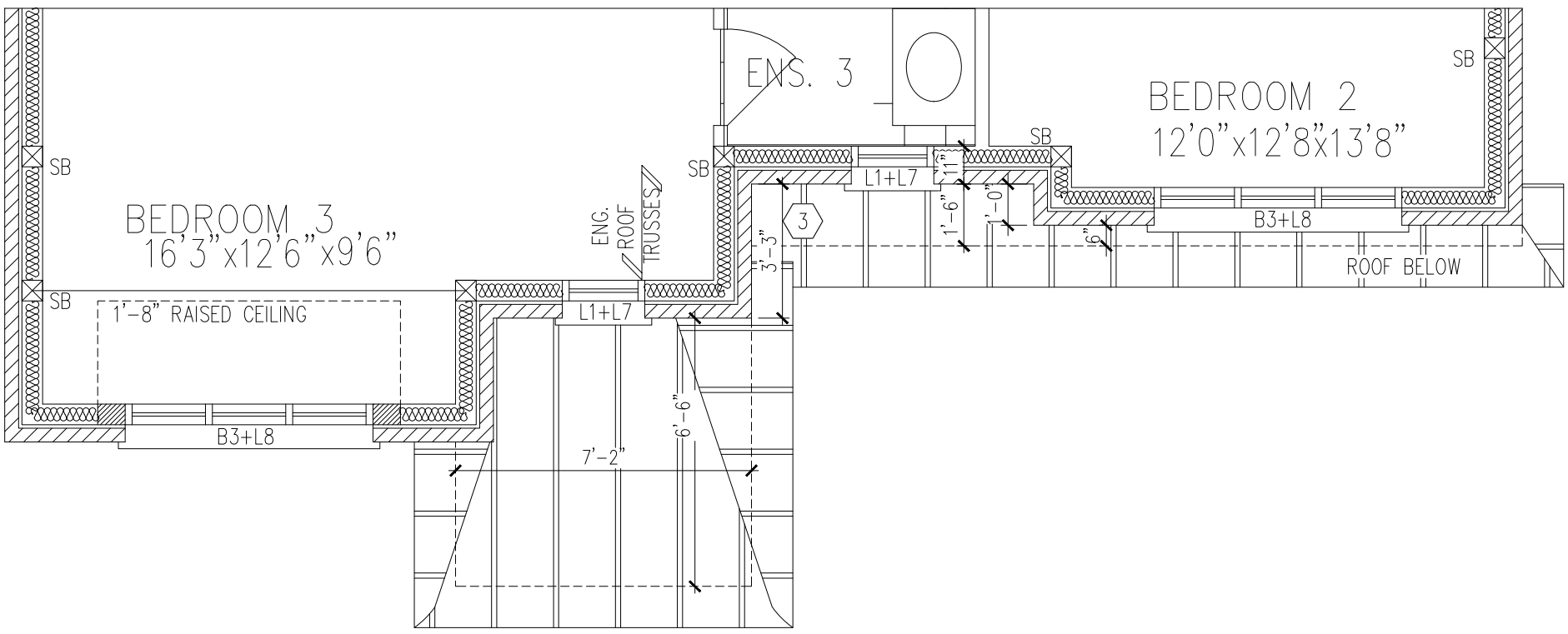
MODEL:	Unit 4505 - STD		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M4



PART. SECOND FLOOR PLAN, EL. 'C' – 5 BEDROOM COND.



PART. SECOND FLOOR PLAN, EL. 'B' – 5 BEDROOM COND.

3RD	# S/A -	# R/A -	# FANS -
2ND	15	6	5
1ST	9	1	1
B	5	1	0
TOTAL	29	8	6

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PARTIAL CUTOUT PLAN

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

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NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

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HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - STD		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M5

MCCALLUM HVAC DESIGN INC

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 4505 - 4 Bed		Lot:	
		Lot/con.	
Municipality: Brampton	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **Doug McCallum**		Firm: **McCallum HVAC Design Inc.**	
Street address: **2 Dewside Drive Unit 208**		Unit no.	Lot/con.
Municipality: **Brampton**	Postal code: **L6R 3Y5**	Province: **Ontario**	E-mail: info@mccallumhvac.com
Telephone number: **(905) 840-8166**	Fax number:		Cell number: **(647) 229-0380**

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 — **Model Certification** — **Project #:** RP23052

Heating and Cooling Load Calculations
Air System Design
Residential mechanical ventilation Design Summary
Residential System Design per CAN/CSA-F280-12
Residential New Construction - Forced Air

Builder	Royal Pines Homes
Project	
Model	Unit 4505 - 4 Bed
SB-12	A1

D. Declaration of Designer

I Doug McCallum 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 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: **25896**

Firm BCIN: **102614**

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:

Basis for exemption from registration:

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.

2023-06-07
Date

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 qualifications under Subsections 3.2.4 . and 3.2.5.of Division C.
2. Schedule 1 does not require to be completed a holder of a license, temporay license, or a certificate of authorization, issed by the Ontario Associstion of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

These documents issued for the use of Royal Pines Homes and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Project No. RP23052

Building Location

Address (Model): Unit 4505 - 4 Bed	Site:
Model:	Lot:
City and Province: Brampton	Postal code:

Calculations based on

Dimensional information based on:

Attachment: Detached	Front facing: East Assumed? **Yes**
No. of Levels: 3 Ventilated? **Included**	Air tightness: -1 Assumed? **Yes**
Weather location: Brampton	Wind exposure: **Shelterd**
HRV? VanEE 65H	Internal shading: **Light-translucent** Occupants: 5
Sensible Eff. at -25C 60.0 % Apparent Effect. at -0C 75.0 %	Units: **Imperial**

Heating design conditions

Outdoor temp: -2.2°F Indoor temp: 72.0°F Mean soil temp: 48.2°F

Cooling design conditions

Outdoor temp: 86.0°F Indoor temp: 72.0°F Latitude: 43.68

Above grade walls

Style A:	**As per Selected OBC SB12**	A1	R 22+1.
Style B:	**Existing Walls (When Applicable)**		R 12
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12**	A1	R 20 ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	A1
Style B:		

Exposed floors

Style A:	**As per Selected OBC SB12**	A1	R 31
Style B:			

Windows

Style A:	**As per Selected OBC SB12**	A1	R 3.57
Style B:	**Existing Windows (When Applicable)**		R
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12**	A1	R 60.0
Style B:	**As per Selected OBC SB12**	A1	R 31.0
Style C:			

Doors

Style A:	**As per Selected OBC SB12**	A1	R 3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12**	A1	R 2.04
Style B:			

Attached documents: **As per Shedule 1**

Notes: **Residential New Construction - Forced Air**

Calculations performed by

Name:	**Doug McCallum**	Postal code:	**L6R 3Y5**
Company:	**McCallum HVAC Design Inc.**	Telephone:	**(905) 840-8166**
Address:	**2 Dewside Drive Unit 208**	Mobile:	**(647) 229-0380**
City:	**Brampton**	E-mail	**info@mccallumhvac.com**

MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Project # RP2305

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code.
I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: 25896 Firm BCIN: 102614 Doug McCallum

Project: **Model:** Unit 4505 - 4 Bed

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

For systems serving one dwelling unit & conforming to the Ontario Building Code, O.geg 159/93

Location of Installation

Lot #	Plan #
Township	Brampton
Roll #	Permit #
Address	

Builder

Name	Roval Pines Homes
Address	
City	
Tel	Fax

Installing Contractor

Name	
Address	
City	
Tel	Fax

Combustion Appliances 9.32.3.1(1)

a)	X	Direct vent (sealed combustion) only
b)		Positive venting induced draft (except fireplaces)
c)		Natural draft, B-vent or induced draft fireplaces
d)		Solid fuel (including fireplaces)
e)		No combustion Appliances

Heating System

X	Forced air
	Non forced air
	Electric space heat (if over 10% of heat load)

House Type 9.32.3.1(2)

I	X	Type a) or b) appliances only, no solid fuel
II		Type I except with solid fuel (including fireplace)
III		Any type c) appliance
IV		Type I or II either electric space heat
Other		Type I, II or IV no forced air

System Design Option

1		Exhaust only / forced air system
2		HRV WITH DUCTING / forced air system
3	X	HRV simplified connection to forced air system
4		HRV full ducting/not coupled to forced air system
		Part 6 design

Total Ventilation Capacity 9.32.3.3(1)

Bsmt & Master Bdrm	2	@ 21.2	cfm	42.4	cfm
Other Bedrooms	3	@ 10.6	cfm	31.8	cfm
Bathrooms & Kitchen	5	@ 10.6	cfm	53.0	cfm
Other rooms	5	@ 10.6	cfm	53.0	cfm
		Total		180.2	

Principal Ventilation Capacity 9.32.3.4(1)

Master bedroom	1	@ 31.8	cfm	31.8	cfm
Other bedrooms	3	@ 15.9	cfm	47.7	cfm
		Total		79.5	

Principal Exhaust Fan Capacity

Make	Model	Location
VanEE	65H	BASE

129 cfm 64 Sones

Heat Recovery Ventilator

Make	VanEE		
Model	65H		
	129 cfm high	64	cfm low
Sensible efficiency @ -25 deg C		60	%
Sensible efficiency @ 0 deg C		75	%

Supplemental Ventilation Capacity

Total ventilation capacity	180.2
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	100.7 cfm

Supplemental Fans 9.32.3.5.

Location	cfm	Model	Sones
ENSUITE	50	770	2.5
POWDER	50	770	2.5
		None	
		None	

all fans HVI listed Make Broan or Equiv.

Designer Certification

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name	Doug McCallum
Signature	
HRAI #	BCIN # 25896
Date	2023-06-07

MCCALLUM HVAC DESIGN INC
2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Project # RP23052

Project:

Model: Unit 4505 - 4 Bed

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.221	51059.0	74.2	15098.00

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.0646136	51059	14.00	831.37

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air Leakage	Level Conductive Heat Loss (HLclevel)	Air Leakage Heat Loss Multiplier
1	0.5	15098	5891	1.28145
2	0.3		13423	0.33744
3	0.2		15019	0.20105
4	0		0	0.00000

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

		Air Leakage Heat Gain Multiplier
HG LEAK	831.37	0.04537
BUILDING CONDUCTIVE HEAT GAIN	18323.00	

Levels this Dwelling
3

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	79.5	74.20	0.250	1592.70

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.08	79.5	14.00	1202.040

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	1593	5891	0.14
2	0.3		13423	0.04
3	0.2		15019	0.02
4	0		0	0

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1202.040	0.07
Building Cond. HG	18323.00	

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier
C	HL^T	(1-E) HRV	20.03
1.08	74.20	0.25	

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	15.12
1.08	14.00	

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	1593	0.05

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	1202	0.07
1202.040	1		

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description

Province:	Brampton
Region:	ON
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10

Local Shielding

Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	6.71

Building Configuration

Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1446

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1281.035
	2.50	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:
	0	0

Flue Size

Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Envelope Air Leakage Rate

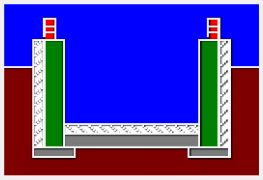
Heating Air Leakage Rate (ACH/H): 0.221

Cooling Air Leakage Rate (ACH/H): 0.065

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Brampton
Region:	ON
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Deep (>10 m, >33 Ft)
Foundation Dimensions	
Floor Length (m):	23.2
Floor Width (m):	6.34
Exposed Perimeter (m):	59.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.39
Door Area (m^2):	0
Radiant Slab	
Heated Fraction of the Slab:	**0**
Fluid Temperature (°C):	**23**
Design Months	
Heating Month	**1**
Foundation Loads	
Heating Load (Watts):	**1635**



Insulation Configuration

BCIN_1

ADDRESS/MODEL: Unit 4505 - 4 Bed
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pines Homes
GTA: 3848
Lot:
Site:

MCCALLUM HVAC DESIGN INC

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	13713 btu/h	EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.
LEVEL 2 NET LOAD	18575 btu/h	ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.
LEVEL 3 NET LOAD	19247 btu/h	AVAILABLE DESIGN PRESSURE	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft
SYSTEM HEATLOSS	51535 btu/h	R/A PLENUM PRESSURE	0.120"W.C.
SYSTEM HEATGAIN	36904 btu/h	S/A PLENUM PRESSURE	0.130"W.C.
BUILDING VOLUME Vb	51059.00 ft3	HEATING AIR FLOW PROPORTIONING FACTOR	0.0222 cfm/btuh
VENTILATION LOAD	1591.00 btu/h	COOLING AIR FLOW PROPORTIONING FACTOR	0.0310 cfm/btuh
VENTILATION PVC	79.50 cfm	R/A TEMP. 70°F	S/A TEMP. 121.75°F DIFFUSER LOSS 0.01°"w.c.

FURNACE/AIR HANDLER DATA				BLOWER DATA	
MAKE	LENNOX			HEATING CHECK	1145.00 CFM
MODEL	EL296UH070XE36B			SELECTED CFM	1145.00 CFM
HIGH INPUT btu/h	66000	LOW INPUT btu/h	0	COOLING CHECK	1147.00 CFM
HIGH OUTPUT btu/h	64000	LOW OUTPUT btu/h	0	COOLING AIR FLOW RATE	1145.00 CFM
E.S.P.	0.50			BLOWER TYPE ECM (BRUSHLESS DC OBC 12.3.1.5.(2))	
WATER TEMP.				A/C UNIT DATA	
AFUE	96.97%			MAKER	3.0 TON
AUX. HEAT	0			CONDENSER	3.0 TON
SB-12 PACKAGE	A1			COIL	3.0 TON
TEMP. RISE	51.75°F				

SUPPLY BRANCH AND GRILL SIZING

OUTLET #	ROOM USE	BTU/H OUTLET	HEATING AIR FLOW RATE CFM	COOLING AIR FLOW RATE CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	OUTLET SIZE	TRUNK
1	PRIM BED	1818	40	48	0.13	31	130	161	0.07	6.0	4x10	E1
2	PRIM BED	1818	40	48	0.13	48	160	208	0.06	6.0	4x10	D1
3	ENS	1903	42	37	0.13	55	150	205	0.06	6.0	4x10	D1
5	ENS 2	758	17	9	0.13	44	190	234	0.05	5	4x10	C1
14	MEDIA	544	12	5	0.13	34	160	194	0.06	5	4x10	B1
4	W/C 1	395	9	6	0.13	38	170	208	0.06	5	4x10	C1
10	W/C 2	541	12	11	0.13	12	150	162	0.07	5	4x10	B1
13	LNDRY	117	3	2	0.13	31	140	171	0.07	5	4x10	D1
11	M BATH	125	3	2	0.13	28	150	178	0.07	5	4x10	B1
15	KIT/ BRK/GRT	2030	45	81	0.13	29	110	139	0.09	6.0	4x10	E1
16	KIT/ BRK/GRT	2030	45	81	0.13	42	150	192	0.06	6.0	4x10	D1
17	KIT/ BRK/GRT	2030	45	81	0.13	46	170	216	0.06	6.0	4x10	C1
18	KIT/ BRK/GRT	2030	45	81	0.13	56	140	196	0.06	6.0	4x10	C1
20	DIN/ FOYER	2282	51	48	0.13	33	140	173	0.07	5.0	4x10	A1
21	DIN/ FOYER	2282	51	48	0.13	4	150	154	0.08	6.0	4x10	B1
23	PWD	635	14	11	0.13	18	110	128	0.09	5	4x10	B1
22	DEN	2452	54	58	0.13	29	110	139	0.09	6.0	4x10	A1
19	MUD	2806	62	21	0.13	31	160	191	0.06	6.0	4x10	E1
24	BASE	2743	61	32	0.13	26	170	196	0.06	6.0	4x10	D1
25	BASE	2743	61	32	0.13	34	160	194	0.06	6.0	4x10	D1
26	BASE	2743	61	32	0.13	47	160	207	0.06	6.0	4x10	C1
27	BASE	2743	61	32	0.13	23	130	153	0.08	6.0	4x10	E1
28	BASE	2743	61	32	0.13	26	150	176	0.07	6.0	4x10	A1
12	BED 4	1639	36	39	0.13	16	140	156	0.08	6.0	4x10	E1
6	BED 2	2640	59	69	0.13	48	120	168	0.07	6.0	4x10	B1
7	BED 2	2640	59	69	0.13	43	180	223	0.05	6.0	4x10	A1
8	BED 3	2156	48	66	0.13	35	150	185	0.06	6.0	4x10	A1

9	BED 3	2156	48	66	0.13	40	160	200	0.06	6.0	4x10	A1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR VOLUME CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	INLET SIZE	TRUNK
1R	120	0.12	35	170	205	0.05	7.5	14x8	W1
2R	75	0.12	43	120	163	0.06	6	14x8	W1
3R	70	0.12	54	130	184	0.05	6	14x8	Z1
4R	70	0.12	40	170	210	0.05	6	14x8	Z1
5R	360	0.12	33	120	153	0.07	10.5	14x8	Y1
6R	360	0.12	36	180	216	0.05	11.5	14x8	X1
7R	100	0.12	27	140	167	0.06	6.5	14x8	X1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
DROP	1145	0.05		0	
Z1	140	0.05	8	8x8	10x6
Y1	500	0.05	12.5	18x8	24x6
X1	460	0.05	12	16x8	22x6
W1	655	0.05	14	22x8	18x10

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	321	0.05	10.5	12x8	16x6
B1	472	0.05	12	16x8	22x6
C1	177	0.05	8.5	10x8	10x6
D1	429	0.05	12	16x8	22x6
E1	673	0.05	14	22x8	18x10

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - 4 Bed
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pines Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

WEATHER DATA [Brampton] [43.68] [-2.20] [86.00] [51.80] [48.20] [74.20] [14.00]

LEVEL 1

BASE	TOTALS H.L.: 13713 btuh	H.G.: 5093 btuh	AREA: 1585 ft2	Above Grade: 2	GROSS EXP. WALL	NEW 388 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 194 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	21.12		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	3.5	0 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.7	247 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW: 3 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	125 btuh	37.3	0 btuh	0	0	0	0	20.8	125 btuh	37.3	0 btuh	20.8	62 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	169 btuh	14.9	0 btuh	0	0	0	0	21.7	130 btuh	14.9	0 btuh	11.7	35 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		5579 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	5891 btuh	LOSS	1.2814	7549 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	273.3 btuh	239	6543	LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	582 btuh	GAIN	0.0454	26 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	38 btuh	0	0 btuh	50%	3272 btuh	GAIN	0%	0 btuh

LEVEL 2

KIT/BRK/GRT	TOTALS H.L.: 8119 btuh	H.G.: 10405 btuh	AREA: 669 ft2	C.Height: 11	GROSS EXP. WALL	NEW 803 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 73 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	2583 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	487 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 144.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 14.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	2993 btuh	37.3	0 btuh	0	0	0	0	20.8	291 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	4057 btuh	14.9	0 btuh	0	0	0	0	21.7	304 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	5867 btuh	LOSS	0.3374	1980 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	272.2 btuh	239	6543	LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	4849 btuh	GAIN	0.0454	220 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	318 btuh	0	0 btuh	40%	2617 btuh	GAIN	0%	0 btuh

DIN/FOYER	TOTALS H.L.: 4563 btuh	H.G.: 3089 btuh	AREA: 476 ft2	C.Height: 11	GROSS EXP. WALL	NEW 572 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 52 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	2050 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	387 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 46.0 ft2		EXIST: 0.0 ft2		NEW: 14 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	956 btuh	37.3	0 btuh	20.8	291 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	999 btuh	14.9	0 btuh	11.7	164 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	3297 btuh	LOSS	0.3374	1113 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	152.9 btuh	239	6543	LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1550 btuh	GAIN	0.0454	70 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	102 btuh	0	0 btuh	10%	654 btuh	GAIN	0%	0 btuh

PWD	TOTALS H.L.: 635 btuh	H.G.: 356 btuh	AREA: 38 ft2	C.Height: 11	GROSS EXP. WALL	NEW 77 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 7 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	272 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	51 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 9.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	187 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	195 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	459 btuh	LOSS	0.3374	155 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	21.3 btuh	239	6543	LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	247 btuh	GAIN	0.0454	11 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	16 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

DEN	TOTALS H.L.: 2452 btuh	H.G.: 1885 btuh	AREA: 126 ft2	C.Height: 11	GROSS EXP. WALL	NEW 275 ft	EXIST 0 ft

	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT	
	NEW: 25 ft	EXIST: 0 ft	NEW: 0	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03

TOTAL HEATLOSS: 51535 BTUH
TOTAL HEATGAIN: 36904 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - 4 Bed
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pines Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

LOSS	4.0	941 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	178 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 40.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	831 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1127 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1772 btuh	LOSS	0.3374	598 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	82.2 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1305 btuh	GAIN	0.0454	59 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	86 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2806 btuh			H.G.: 677 btuh					AREA: 244 ft2		C.Height: 11		GROSS EXP. WALL		NEW 352 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 32 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1281 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	242 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 11 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	229 btuh	37.3	0 btuh
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	129 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2028 btuh	LOSS	0.3374	684 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	94.1 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	469 btuh	GAIN	0.0454	21 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	31 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

PRIM BED	TOTALS H.L.: 3635 btuh			H.G.: 3110 btuh					AREA: 551 ft2		C.Height: 9		GROSS EXP. WALL		NEW 396 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 44 ft		EXIST: 0 ft		NEW: 551 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1434 btuh	8.7	0 btuh	1.3	690 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	270 btuh	1.6	0 btuh	0.7	381 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 38.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	790 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1071 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2914 btuh	LOSS	0.2011	586 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	135.2 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1723 btuh	GAIN	0.0454	78 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	113 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh

ENS	TOTALS H.L.: 1903 btuh			H.G.: 1196 btuh					AREA: 114 ft2		C.Height: 9		GROSS EXP. WALL		NEW 207 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 23 ft		EXIST: 0 ft		NEW: 114 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	697 btuh	8.7	0 btuh	1.3	143 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	131 btuh	1.6	0 btuh	0.7	79 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 14.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 19 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	291 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	395 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	394 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	223 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1525 btuh	LOSS	0.2011	307 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	70.7 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	828 btuh	GAIN	0.0454	38 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	54 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

ENS 2	TOTALS H.L.: 758 btuh			H.G.: 298 btuh					AREA: 62 ft2		C.Height: 9		GROSS EXP. WALL		NEW 99 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 11 ft		EXIST: 0 ft		NEW: 62 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	364 btuh	8.7	0 btuh	1.3	78 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	69 btuh	1.6	0 btuh	0.7	43 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 8 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	166 btuh	37.3	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - 4 Bed
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pines Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	94 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	608 btuh	LOSS	0.2011	122 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	28.2 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	206 btuh	GAIN	0.0454	9 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	14 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

MEDIA	TOTALS H.L.: 544 btuh			H.G.: 164 btuh	AREA: 110 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft	EXIST 0 ft		
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 0 ft	EXIST: 0 ft	NEW: 110 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 97 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 0 btuh	8.7 0 btuh	1.3 138 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 260 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 0 btuh	1.6 0 btuh	0.7 76 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 28 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 398 btuh	LOSS 0.2011	80 btuh	LOSS 0.0000	0 btuh	LOSS 0.0	18.5 btuh	239		6543		LOSS 10%	48 btuh
TOTAL CONDUCTIVE		GAIN 104 btuh	GAIN 0.0454	5 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	7 btuh	0	0 btuh	0%	0 btuh	GAIN 10%	10 btuh

W/C 1	TOTALS H.L.: 395 btuh			H.G.: 196 btuh	AREA: 30 ft2		C.Height: 9		GROSS EXP. WALL		NEW 36 ft	EXIST 0 ft		
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 4 ft	EXIST: 0 ft	NEW: 30 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 112 btuh	8.7 0 btuh	1.3 38 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 21 btuh	1.6 0 btuh	0.7 21 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 0 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 8 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 166 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 94 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 316 btuh	LOSS 0.2011	64 btuh	LOSS 0.0000	0 btuh	LOSS 0.0	14.7 btuh	239		6543		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 136 btuh	GAIN 0.0454	6 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	9 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

W/C 2	TOTALS H.L.: 541 btuh			H.G.: 350 btuh	AREA: 38 ft2		C.Height: 9		GROSS EXP. WALL		NEW 63 ft	EXIST 0 ft		
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 7 ft	EXIST: 0 ft	NEW: 38 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 220 btuh	8.7 0 btuh	1.3 48 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 42 btuh	1.6 0 btuh	0.7 26 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 0 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 8.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 166 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 174 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 434 btuh	LOSS 0.2011	87 btuh	LOSS 0.0000	0 btuh	LOSS 0.0	20.1 btuh	239		6543		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 242 btuh	GAIN 0.0454	11 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	16 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

LNDRY	TOTALS H.L.: 117 btuh			H.G.: 74 btuh	AREA: 75 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft	EXIST 0 ft		
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 0 ft	EXIST: 0 ft	NEW: 75 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				
Eff. R-V	18.53	8.50	59.22	22.86	27.65	22.05	27.65	22.05	2.04	2.03				
LOSS	4.0 0 btuh	8.7 0 btuh	1.3 94 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.7 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 0 btuh	1.6 0 btuh	0.7 52 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 0 btuh	0.4 0 btuh	89.7 0 btuh	14.7 0 btuh				
	DOORS		EAST/WEST WINDOWS		SE/SW WINDOWS		SOUTH WINDOWS		NORTH WINDOWS					
	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW:	EXIST:	NEW: 0.0 ft2	EXIST: 0.0 ft2	NEW: 0 ft2	EXIST: 0 ft2				
Eff. R-V	3.01	3.01	3.57	1.99	0	0	3.57	1.99	3.57	1.99				
LOSS	24.7 0 btuh	24.7 0 btuh	20.8 0 btuh	37.3 0 btuh	0 0	0 0	20.8 0 btuh	37.3 0 btuh	20.8 0 btuh	37.3 0 btuh				
GAIN	4.7 0 btuh	4.7 0 btuh	28.2 0 btuh	14.9 0 btuh	0 0	0 0	21.7 0 btuh	14.9 0 btuh	11.7 0 btuh	14.9 0 btuh				
FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE		LOSS 94 btuh	LOSS 0.2011	19 btuh	LOSS 0.0000	0 btuh	LOSS 0.0	4.4 btuh	239		6543		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 52 btuh	GAIN 0.0454	2 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	3 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

M BATH	TOTALS H.L.: 125 btuh			H.G.: 79 btuh	AREA: 80 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft	EXIST 0 ft		
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 0 ft	EXIST: 0 ft	NEW: 80 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 0 ft2	EXIST: 0 ft2	NEW: 0.0 ft2	EXIST: 0.0 ft2				

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - 4 Bed
PROJECT #: RP23052
COMPLIANCE PACKAGE: A1

CLIENT: Royal Pines Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

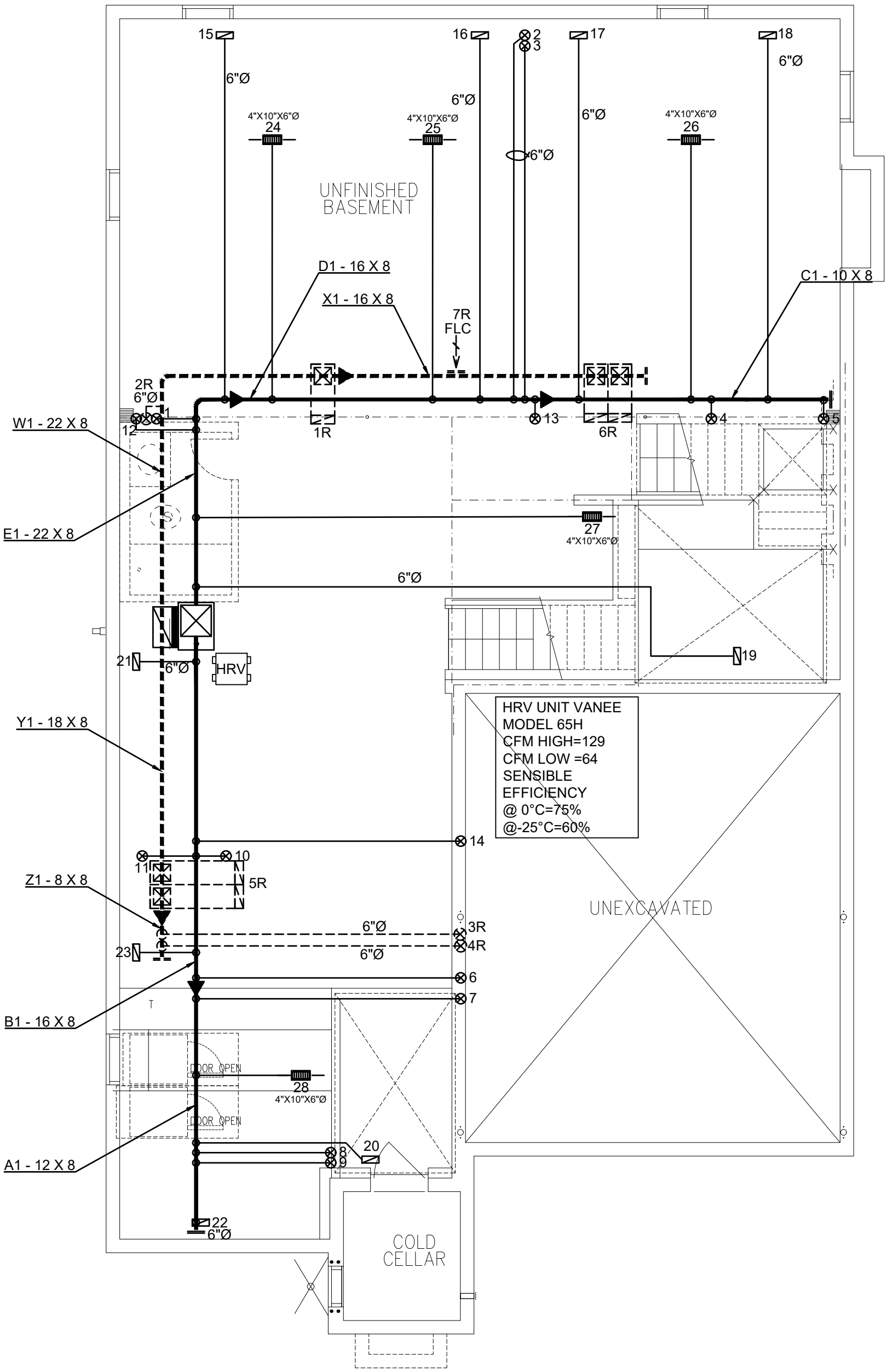
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	*0 btuh*	8.7	*0 btuh*	1.3	*100 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*0 btuh*	1.6	*0 btuh*	0.7	*55 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*0 btuh*	0.4	*0 btuh*	89.7	*0 btuh*	14.7	*0 btuh*
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	*0 btuh*	24.7	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*	0	0	0	0	20.8	*0 btuh*	37.3	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*
GAIN	4.7	*0 btuh*	4.7	*0 btuh*	28.2	*0 btuh*	14.9	*0 btuh*	0	0	0	0	21.7	*0 btuh*	14.9	*0 btuh*	11.7	*0 btuh*	14.9	*0 btuh*
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	100 btuh	LOSS	0.2011	20 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	4.6 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	55 btuh	GAIN	0.0454	2 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	4 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 4	***TOTALS H.L.: 1639 btuh***						***H.G.: 1270 btuh***		AREA: 288 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 171 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 19 ft		EXIST: 0 ft		NEW: 288 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	*621 btuh*	8.7	*0 btuh*	1.3	*361 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*117 btuh*	1.6	*0 btuh*	0.7	*199 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*0 btuh*	0.4	*0 btuh*	89.7	*0 btuh*	14.7	*0 btuh*
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 16.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	*0 btuh*	24.7	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*	0	0	0	0	20.8	*333 btuh*	37.3	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*
GAIN	4.7	*0 btuh*	4.7	*0 btuh*	28.2	*0 btuh*	14.9	*0 btuh*	0	0	0	0	21.7	*347 btuh*	14.9	*0 btuh*	11.7	*0 btuh*	14.9	*0 btuh*
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1314 btuh	LOSS	0.2011	264 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	61.0 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	664 btuh	GAIN	0.0454	30 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	44 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2	***TOTALS H.L.: 5279 btuh***						***H.G.: 4436 btuh***		AREA: 350 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 369 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 41 ft		EXIST: 0 ft		NEW: 350 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 268 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	*1185 btuh*	8.7	*0 btuh*	1.3	*439 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.7	*719 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*224 btuh*	1.6	*0 btuh*	0.7	*242 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*78 btuh*	0.4	*0 btuh*	89.7	*0 btuh*	14.7	*0 btuh*
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 73.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	*0 btuh*	24.7	*0 btuh*	20.8	*1517 btuh*	37.3	*0 btuh*	0	0	0	0	20.8	*0 btuh*	37.3	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*
GAIN	4.7	*0 btuh*	4.7	*0 btuh*	28.2	*2057 btuh*	14.9	*0 btuh*	0	0	0	0	21.7	*0 btuh*	14.9	*0 btuh*	11.7	*0 btuh*	14.9	*0 btuh*
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	3860 btuh	LOSS	0.2011	776 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	179.1 btuh	239		6543		LOSS	10%	464 btuh
TOTAL CONDUCTIVE			GAIN	2600 btuh	GAIN	0.0454	118 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	171 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	284 btuh

BED 3	***TOTALS H.L.: 4311 btuh***						***H.G.: 4226 btuh***		AREA: 316 ft2		C.Height: 11		GROSS EXP. WALL		*NEW 429 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 39 ft		EXIST: 0 ft		NEW: 316 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 6 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	*1402 btuh*	8.7	*0 btuh*	1.3	*396 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.7	*16 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*264 btuh*	1.6	*0 btuh*	0.7	*219 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*2 btuh*	0.4	*0 btuh*	89.7	*0 btuh*	14.7	*0 btuh*
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 79.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	*0 btuh*	24.7	*0 btuh*	20.8	*1642 btuh*	37.3	*0 btuh*	0	0	0	0	20.8	*0 btuh*	37.3	*0 btuh*	20.8	*0 btuh*	37.3	*0 btuh*
GAIN	4.7	*0 btuh*	4.7	*0 btuh*	28.2	*2226 btuh*	14.9	*0 btuh*	0	0	0	0	21.7	*0 btuh*	14.9	*0 btuh*	11.7	*0 btuh*	14.9	*0 btuh*
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	3456 btuh	LOSS	0.2011	695 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	160.3 btuh	239		6543		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2711 btuh	GAIN	0.0454	123 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	178 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 4



3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	4
1ST	9	1	1
B	5	1	0
TOTAL	27	8	5

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
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- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED BASEMENT

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

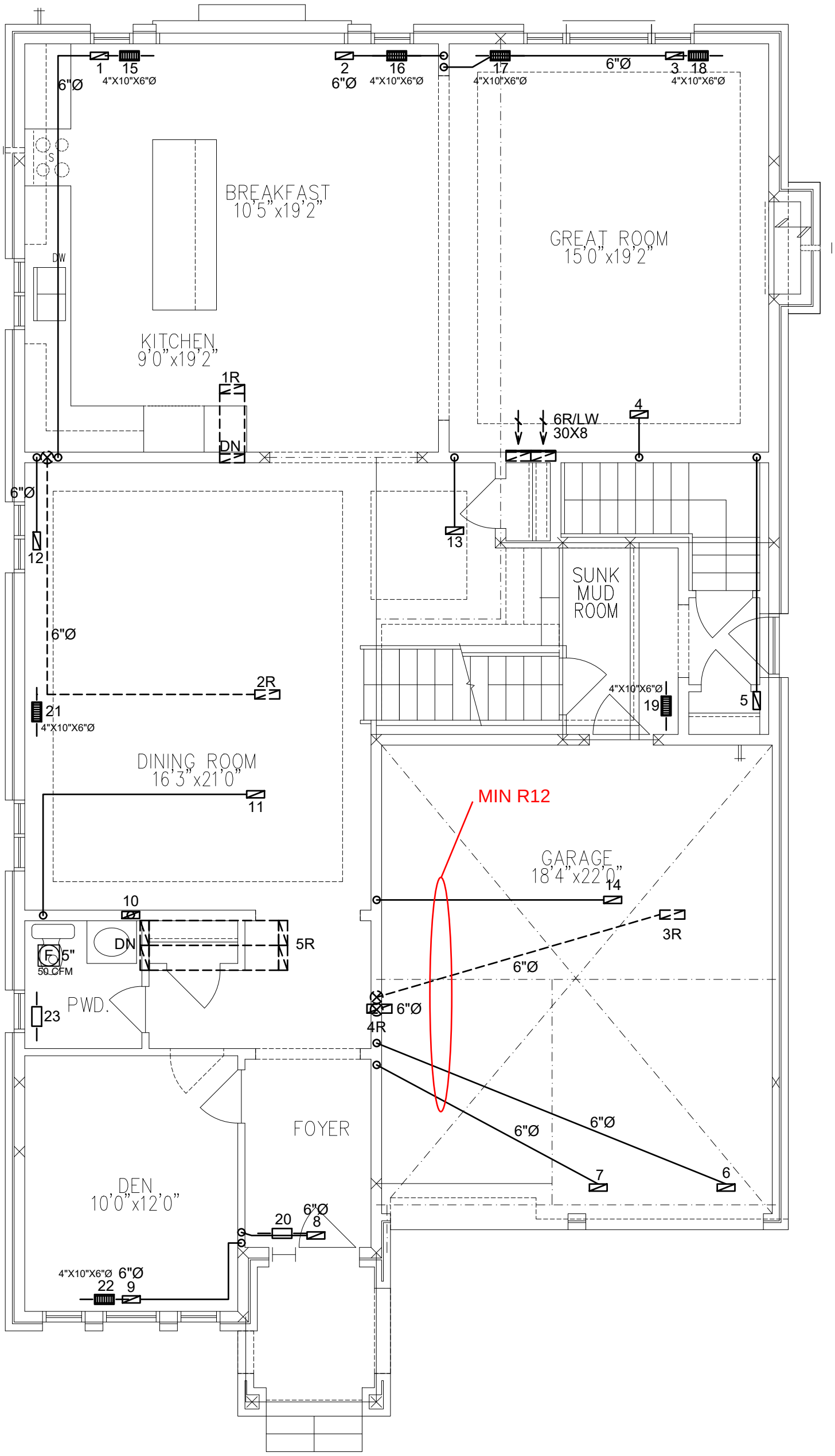
NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	51,535 BTUH	
TOTAL GAIN	36,904 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - 4 Bed Plan		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M1



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B	5	1	0
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PROPOSED 1ST FLOOR

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
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A1

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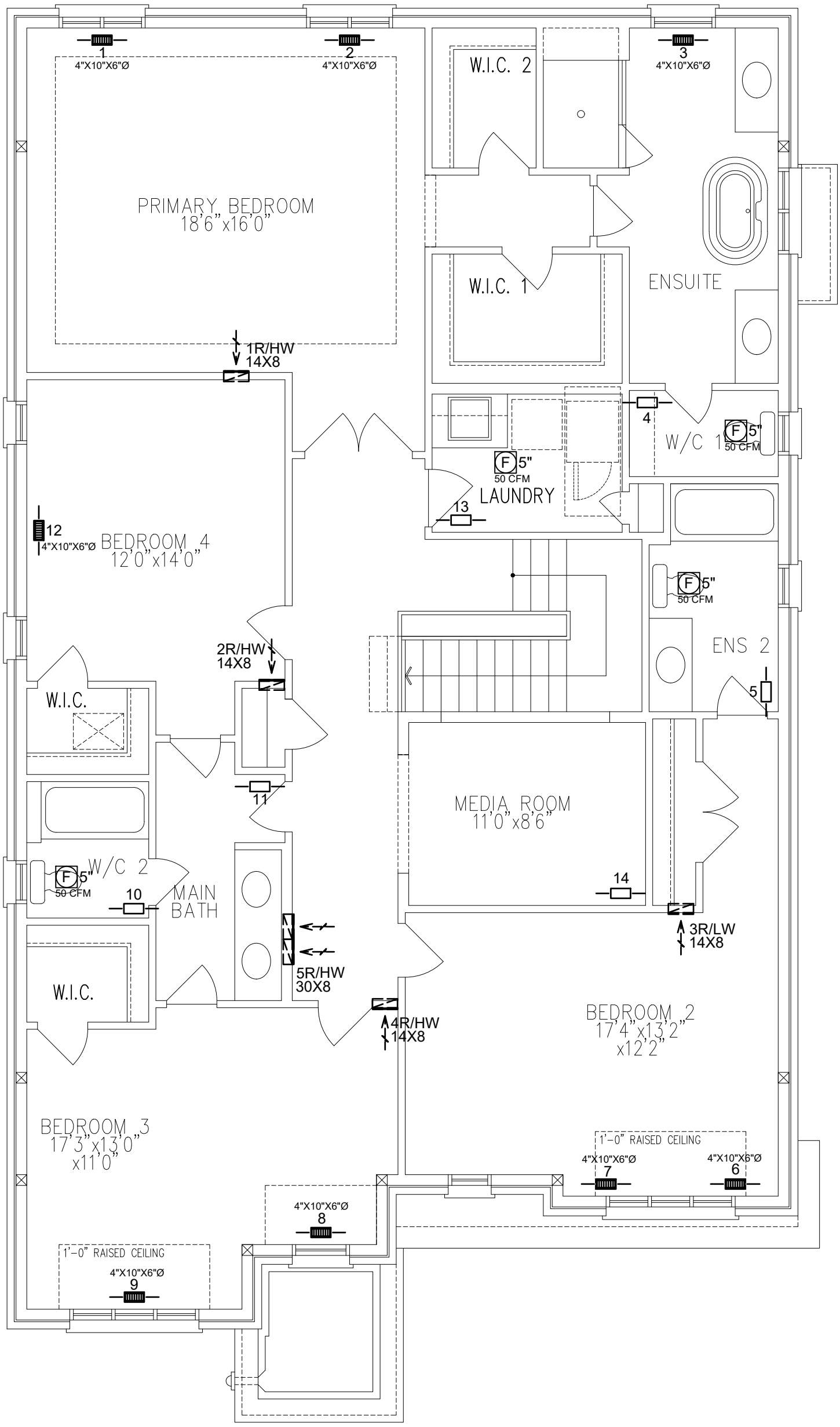
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - 4 Bed Plan		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M2



3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	4
1ST	9	1	1
B	5	1	0
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PROPOSED 2ND FLOOR

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

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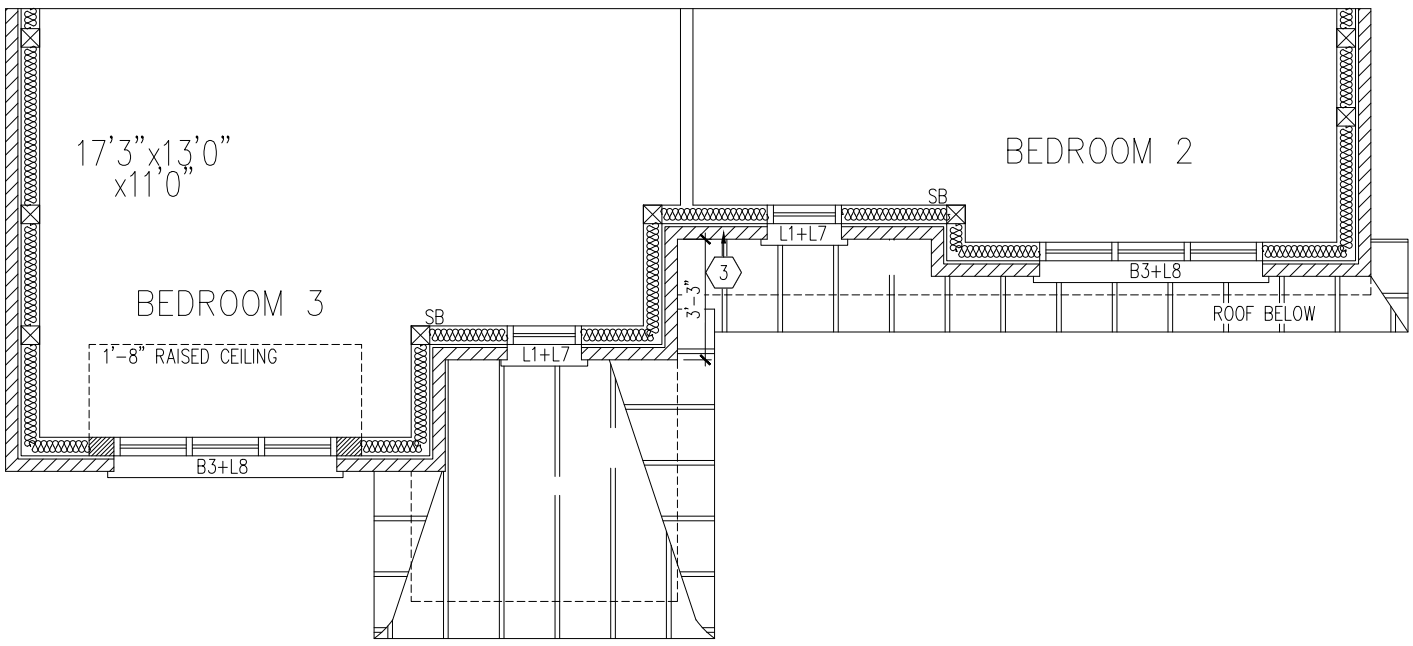
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

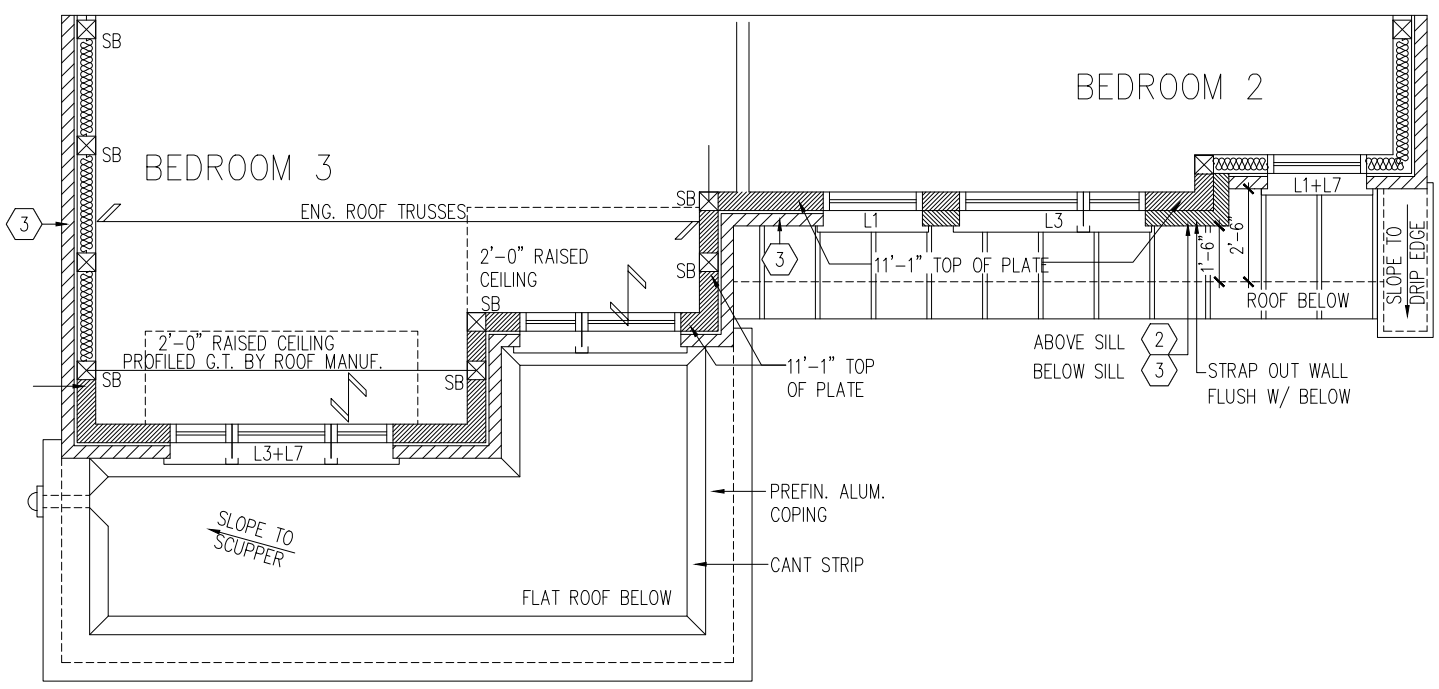
MODEL:	Unit 4505 - 4 Bed Plan		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M3



PART. SECOND FLOOR PLAN, EL. 'B' – OPT. 4 BEDROOM COND.



PART. SECOND FLOOR PLAN, EL. 'C' – OPT. 4 BEDROOM COND.

3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	4
1ST	9	1	1
B	5	1	0
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PARTIAL CUTOUT PLAN

DATE: NOV/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

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MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4505 - 4 Bed Plan		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M4

MCCALLUM HVAC DESIGN INC

DATE RECEIVED: AUG. 4,2023

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 4505 - Inlaw Suite		Lot:	
		Lot/con.	
Municipality: Brampton	Postal code:	Plan number/ other description:	

B. Individual who reviews and takes responsibility for design activities

Name: **Doug McCallum**		Firm: **McCallum HVAC Design Inc.**	
Street address: **2 Dewside Drive Unit 208**		Unit no.	Lot/con.
Municipality: **Brampton**	Postal code: **L6R 3Y5**	Province: **Ontario**	E-mail: info@mccallumhvac.com
Telephone number: **(905) 840-8166**	Fax number:		Cell number: **(647) 229-0380**

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	Model Certification		Project #: RP23052
Heating and Cooling Load Calculations Air System Design Residential mechanical ventilation Design Summary Residential System Design per CAN/CSA-F280-12 Residential New Construction - Forced Air		Builder	Royal Pine Homes
		Project	
		Model	Unit 4505 - Inlaw Suite
		SB-12	Performance

D. Declaration of Designer

I Doug McCallum 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 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: **25896**

Firm BCIN: **102614**

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:

Basis for exemption from registration:

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.

2022-11-24

Date

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 qualifications under Subsections 3.2.4 . and 3.2.5.of Division C.
2. Schedule 1 does not require to be completed a holder of a license, temporay license, or a certificate of authorization, issed by the Ontario Associstion of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard
Form No. 1

These documents issued for the use of Royal Pine Homes and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

Project No. RP23052

Building Location

Address (Model):	Unit 4505 - Inlaw Suite	Site:	
Model:		Lot:	
City and Province:	Brampton	Postal code:	

City of Brampton
Building Division
HVAC Reviewed
2023/08/14
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

Calculations based on

Dimensional information based on:

Attachment:	Detached	Front facing:	East — Assumed? **Yes**
No. of Levels:	3 — Ventilated? **Included**	Air tightness:	-1 — Assumed? **Yes**
Weather location:	Brampton	Wind exposure:	**Shelterd**
HRV?	VanEE 65H	Internal shading:	**Light-translucent** — Occupants: 6
Sensible Eff. at -25C	60.0 % — Apparent Effect. at -0C 75.0 %	Units:	**Imperial**

Heating design conditions

Outdoor temp: -2.2°F Indoor temp: 72.0°F Mean soil temp: 48.2°F

Cooling design conditions

Outdoor temp: 86.0°F Indoor temp: 72.0°F Latitude: 43.68

Above grade walls

1.5 Ci

Style A:	**As per Selected OBC SB12** Perfc	R	22+5c
Style B:	**Existing Walls (When Applicable)**	R	12
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12** Perfc	R	20ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12** Perform		
Style B:			

Exposed floors

Style A:	**As per Selected OBC SB12** Perforr	R	31
Style B:			

Windows

Style A:	**As per Selected OBC SB12** Perforn	R	1.6
Style B:	**Existing Windows (When Applicable)**	R	
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12** Performa	R	60.0
Style B:	**As per Selected OBC SB12** Performa	R	31.0
Style C:			

Doors

Style A:	**As per Selected OBC SB12** Perforr	R	3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12** Perforr	R	2.08
Style B:			

Attached documents: **As per Shedule 1**

Notes: **Residential New Construction - Forced Air**

Calculations performed by

Name:	**Doug McCallum**	Postal code:	**L6R 3Y5**
Company:	**McCallum HVAC Design Inc.**	Telephone:	**(905) 840-8166**
Address:	**2 Dewside Drive Unit 208**	Mobile:	**(647) 229-0380**
City:	**Brampton**	E-mail	**info@mccallumhvac.com**

RESIDENTIAL MECHANICAL VENTILATION RECORD

For Certification of Design and Performance of Residential Ventilation Systems

W2

A — HEATING SYSTEM/ COMBUSTION APPLIANCES

- [x] Forced Air
- [ ] Non Forced air
- [ ] Electric
- [ ] Gas
- [ ] Oil
- [ ] Other
- [ ] No Combustion Appliances — *No Depressurization limit*
- [ ] Solid Fuel (including Fireplaces) — *5 pa Depress limit*
- [x] Direct Vent (sealed combustion) — *No Dep Limit*
- [ ] Positive Venting Induced Draft — *Pascals limit*
- [ ] Natural Draft or B-Vent Atmospheric — *5 pa depress limit*

Lowest Depressurization Limit _____ Pa.

B — EXHAUST EQUIPMENT

- [ ] Clothes Dryer(s) (150 cfm default)
- [ ] Downdraft Cook Top (220 cfm default)
- [x] Other (exhaust) (over 150 cfm)

Depressurization test/Calc. Required? [ ] Yes [ ] No

C — TOTAL VENTILATION CAPACITY (TVC)

Bsmt & Master Bedroom	2	@	20	cfm	40	cfm
Other Bedrooms	5	@	10	cfm	50	cfm
Bathrooms & Kitchens	5	@	10	cfm	50	cfm
Other Hab. Rooms	4	@	10	cfm	40	cfm
Total Ventilation Capacity (TVC)					180	cfm

D — EXHAUST CAPACITY

Continuous

Minimum Continuous Exhaust

Kitchen(s)	1	@	60	cfm	=	60	cfm
Bathroom(s)	3	@	20	cfm	=	60	cfm
				Total		120	cfm

Intermittent

Minimum Intermittent Exhaust

Kitchen(s)	1	@	100	cfm	=	100	cfm
Bathroom(s)	3	@	50	cfm	=	150	cfm
				Total		250	cfm

E — F — TVC SYSTEM

Location: BASEMENT

Manufacturer/Model: VANEE 65H [x] HVI rated

Design Airflow 129 cfm high 64 cfm low

HRV/ERV 75 % Sensible Efficiency @ 0°C _____ watts

HRV/ERV 60 % Sensible Efficiency @ -25°C _____ watts

G — ADDITIONAL (exhaust)EQUIPMENT

1	Location: POWDER	50	cfm	Sones	
	Manufacturer/Model: BROAN 770		[x] TVC	[x] HVI	
2	Location: ENSUITE	50	cfm	Sones	
	Manufacturer/Model: BROAN 770		[x] TVC	[x] HVI	
3	Location:		cfm	Sones	
	Manufacturer/Model:		[ ] TVC	[ ] HVI	
4	Location:		cfm	Sones	
	Manufacturer/Model:		[ ] TVC	[ ] HVI	

H — LOCATION

Roll #: Permit #:

Lot & Plan:

Civic address:

I — BUILDER

Name: House ID#:

Address:

City: BRAMPTON P.C.

Phone: Fax:

Email Address:

J — DESIGNER

Name: DOUG McCALLUM HRAI #: 3310

Address: 2 Dewside Drive

City: BRAMPTON P.C. L6R 3Y5

Phone: 905-840-8166 Fax:

Email Address: info@mccallumhvac.com Other #

I certify this ventilation system design to be in accordance with:

- [x] CSA F326 M-91
- [ ] R-2000

Signature: Date: 04/08/2023

K — INSTALLATION CHECKLIST

- [ ] Controls Functioning
- [ ] Fans operating and clean
- [ ] Filters Clean
- [ ] Flow measuring stations
- [ ] Dampers Accessible
- [ ] Insulated ducts sealed
- [ ] Drain loop and connection
- [ ] Label supply/exhaust hood
- [ ] Distribution to all habitable rooms (non forced air)
- [ ] Forced air system [ ] Continuous mode [ ] Interlocked
- [ ] Kitchen intake grease filter
- [ ] Kitchen exh. 40" to range
- [ ] Exhaust 4" above grade
- [ ] Supply 18" above grade
- [ ] Supply intake 6' from exhaust (*recommended*)
- [ ] Supply intake 3' from other exhaust

L — MEASURED TVC SYSTEMS

TVC system SUPPLY airflow measured

_____ cfm High _____ cfm Low

TVC system EXHAUST airflow measured

_____ cfm High _____ cfm Low

M — INSTALLER

Name: HRAI #:

Address:

City: P.C.

Phone: Fax:

Email Address:

I certify this ventilation system install to be in accordance with:

- [ ] CSA F326 M-91
- [ ] R-2000

Signature: _____ Date: _____

Prepared By:	HRAI #:	Job Name:	
DOUG MCCALLUM	03310	ROYAL PIN HOME(BRAMPTON)	
Signature:	Date: 25/07/2023	Job #:	Official Use:

© Copyright HRAI

IMBALANCE @ TVCC (Total Ventilation Capacity Condition) for systems with more exhaust than supply @ TVCC

RESET

W-3A line #

1. FLOOR AREA

(total heated floor area including basement; count crawl space at 1/2 actual area)

Total Floor Area 3848 ft2 — 301

2. ASSUMED AIR CHANGES PER HOUR AT 50 PASCAL'S

Tight R-2000	0.5 ACH	Typical R-2000	1.0 ACH	Prairies/North (new)	1.0 ACH
Atlantic (new)	1.5 ACH	Other provinces (new)	1.4 ACH	Older homes	2.5 ACH
or actual test	_____				

House ACH50 1.4 — 302

3. COMBUSTION APPLIANCE DEPRESSURIZATION LIMIT

If spillage susceptible, = -5pa. flow factor = 0.022

If non-spillage susceptible, = -10pa flow factor = 0.037

Depressurization Limit @ TVCC -10 **pa** — 303

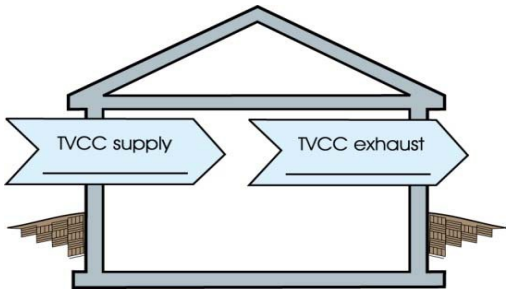
Flow Factor 0.037 — 304

4. ALLOWABLE NET EXHAUST

Floor Area (301) 3848 ft^2 **x** ACH50 (302) 1.4 **x** Flow Factor (304) 0.037 = — 305

Allowable Net Exhaust @ TVCC 200 cfm

5. ACTUAL NET EXHAUST



TVCC Exhaust 370 cfm — 306

- minus

TVCC Supply 1,310 cfm — 307

= equals

Actual Net Exhaust @ TVCC -940 **cfm** — 308

Note: If supply is greater than exhaust, use worksheet #W-3B

6. REQUIRED MAKE-UP AIR FLOW

Note:
If **Actual** Net Exhaust is **less** than **Allowable** Net Exhaust **no action** is required.

Actual Net Exhaust @ TVCC (line 308) -940 cfm

- minus

Allowable Net Exhaust @ TVCC (line 305) 200 cfm

= equals

Required Make-Up Airflow @ TVCC -1140 **cfm** — 309

At Depressurization Limit (line 303) -10 **pa**

7. DESCRIPTION OF MAKE-UP AIR SYSTEM

8. ON-SITE TEST DEPRESSURIZATION TEST

☐ **Required** ☑ **Not Required** — 310

Prepared By: DOUG MCCALLUM	HRAI #: 03310	Job Name: ROYAL PINE HOMES/BRAMPTON	
Signature:	Date: 04/04/2023	Job #:	Official Use:

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MCCALLUM HVAC DESIGN INC

2 Dewside Drive Unit 208, Brampton, Ontario L6R 3Y5 Tel: 905-840-8166
e-mail - info@mccallumhvac.com

Project # RP23052

Project:

Model: Unit 4505 - Inlaw Suite

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.192	50528.0	74.2	12978.23

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.0385947	50528	14.00	491.43

Air Leakage Heat Loss/Gain Multiplier Table (Section 11)				
Level	Level Factor (LF)	Building Air Leakage	Level Conductive Heat Loss (HLclevel)	Air Leakage Heat Loss Multiplier
1	0.5	12978	6305	1.02920
2	0.3		13349	0.29167
3	0.2		14303	0.18148
4	0		0	0.00000

Levels			
1	2	3	4
(LF)	(LF)	(LF)	(LF)
1.0	0.6	0.5	0.4
	0.4	0.3	0.3
		0.2	0.2
			0.1

		Air Leakage Heat Gain Multiplier
HG LEAK	491.43	0.02717
BUILDING CONDUCTIVE HEAT GAIN	18085.00	

Levels this Dwelling
3

Ventilation Calculations

Vent

Ventilation Heat Loss

Ventilation Heat Loss				
C	PVC	HL^T	(1-E) HRV	HLbvent
1.08	111.3	74.20	0.250	2229.78

Ventilation Heat Gain

Ventilation Heat Gain			
C	PVC	HG^T	HGbvent
1.08	111.3	14.00	1682.856

Case 1

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	2230	6305	0.18
2	0.3		13349	0.05
3	0.2		14303	0.03
4	0		0	0

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1682.856	0.09
Building Cond. HG	18085.00	

Case 2

Case 2

Ventilation Heat Loss (Direct Ducted Systems)

			Multiplier
C	HL^T	(1-E) HRV	20.03
1.08	74.20	0.25	

Ventilation Heat Gain (Direct Ducted Systems)

		Multiplier
C	HG^T	15.12
1.08	14.00	

Case 3

Case 3

Ventilation Heat Loss (Forced Air Systems)

	HLbvent	Multiplier
Total Ventilation Load	2230	0.07

Ventilation Heat Gain (Forced Air Systems)

		Vent Heat Gain	Multiplier
HGbvent	HG*1.3	1683	0.09
1682.856	1		

Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description

Province:	Brampton
Region:	ON
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10

Local Shielding

Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	6.71

Building Configuration

Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1431

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1267.713
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply:	Total Exhaust:
	0	0

Flue Size

Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

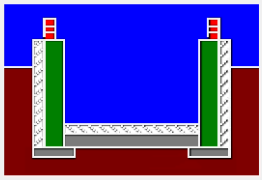
Envelope Air Leakage Rate

Heating Air Leakage Rate (ACH/H):	**0.192**
Cooling Air Leakage Rate (ACH/H):	**0.039**

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Brampton
Region:	ON
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Deep (>10 m, >33 Ft)
Foundation Dimensions	
Floor Length (m):	23.2
Floor Width (m):	6.34
Exposed Perimeter (m):	59.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.39
Door Area (m^2):	2
Radiant Slab	
Heated Fraction of the Slab:	**0**
Fluid Temperature (°C):	**23**
Design Months	
Heating Month	**1**
Foundation Loads	
Heating Load (Watts):	**1605**



Insulation Configuration

BCIN_1

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	13208 btu/h	**EQUIPMENT EXTERNAL STATIC PRESSURE**	0.500"W.C.
LEVEL 2 NET LOAD	18118 btu/h	**ADDITIONAL EQUIPMENT PRESSURE DROP**	0.250"W.C.
LEVEL 3 NET LOAD	18322 btu/h	**AVAILABLE DESIGN PRESSURE**	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	**RETURN BRANCH LONGEST EFFECTIVE LENGTH**	300ft
SYSTEM HEATLOSS	49648 btu/h	**R/A PLENUM PRESSURE**	0.120"W.C.
SYSTEM HEATGAIN	36996 btu/h	**S/A PLENUM PRESSURE**	0.130"W.C.
BUILDING VOLUME Vb	50528.00 ft3	**HEATING AIR FLOW PROPORTIONING FACTOR**	0.0264 cfm/btuh
VENTILATION LOAD	2229.00 btu/h	**COOLING AIR FLOW PROPORTIONING FACTOR**	0.0354 cfm/btuh
VENTILATION PVC	111.30 cfm	**R/A TEMP. 70°F**	S/A TEMP. 129.37°F DIFFUSER LOSS 0.01°"w.c.

FURNACE/AIR HANDLER DATA				BLOWER DATA	
MAKE	Lennox			HEATING CHECK	1308.00 CFM
MODEL	EL296UH090XE48C			SELECTED CFM	1310.00 CFM
HIGH INPUT btu/h	88000	LOW INPUT btu/h	0	COOLING CHECK	1306.00 CFM
HIGH OUTPUT btu/h	84000	LOW OUTPUT btu/h	0	COOLING AIR FLOW RATE	1310.00 CFM
E.S.P.	0.50			BLOWER TYPE ECM (BRUSHLESS DC OBC 12.3.1.5.(2))	
WATER TEMP.				A/C UNIT DATA	
AFUE	96.00%			MAKER	3.5 TON
AUX. HEAT	0			CONDENSER	3.5 TON
SB-12 PACKAGE	Performance			COIL	3.5 TON
TEMP. RISE	59.37°F				

SUPPLY BRANCH AND GRILL SIZING

OUTLET #	ROOM USE	BTU/H OUTLET	HEATING AIR FLOW RATE CFM	COOLING AIR FLOW RATE CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	OUTLET SIZE	TRUNK
1	ENS	1825	46	41	0.13	52	150	202	0.06	6.0	4x10	E1
3	PRIM BED	1431	36	44	0.13	51	160	211	0.06	6.0	4x10	E1
29	PRIM BED	1431	36	44	0.13	52	140	192	0.06	6.0	4x10	E1
4	WIC	712	18	8	0.13	42	150	192	0.06	5	4x10	D1
5	ENS 2	949	24	12	0.13	35	160	195	0.06	5	4x10	C1
7	ENS 3	873	22	35	0.13	36	140	176	0.07	5	4x10	B1
11	BATH 2	629	16	14	0.13	26	130	156	0.08	5	4x10	C1
27	KIT/ BRK/GRT	2062	52	92	0.13	29	110	139	0.09	6.0	4x10	F1
14	KIT/ BRK/GRT	2062	52	92	0.13	41	140	181	0.07	6.0	4x10	E1
15	KIT/ BRK/GRT	2062	52	92	0.13	46	160	206	0.06	6.0	4x10	D1
16	KIT/ BRK/GRT	2062	52	92	0.13	55	140	195	0.06	6.0	4x10	D1
13	LNDRY	256	6	3	0.13	19	150	169	0.07	5	4x10	C1
17	DIN/ FOYR	2125	54	54	0.13	4	150	154	0.08	5.0	4x10	C1
18	DIN/ FOYR	2125	54	54	0.13	33	150	183	0.07	5.0	4x10	A1
20	PWD	621	16	12	0.13	19	140	159	0.08	5	4x10	B1
19	INLAW	2188	56	53	0.13	29	120	149	0.08	6.0	4x10	A1
22	BASE	2838	72	36	0.13	26	160	186	0.06	6.0	4x10	E1
23	BASE	2838	72	36	0.13	34	150	184	0.07	6.0	4x10	E1
24	BASE	2838	72	36	0.13	47	150	197	0.06	6.0	4x10	D1
25	BASE	2838	72	36	0.13	23	130	153	0.08	6.0	4x10	F1
26	BASE	2838	72	36	0.13	26	120	146	0.08	6.0	4x10	B1
2	W/C	33	1	1	0.13	27	140	167	0.07	5	4x10	F1
21	MUD	2842	72	24	0.13	31	160	191	0.06	6.0	4x10	F1
12	BED 5	1507	38	45	0.13	16	140	156	0.08	6.0	4x10	F1
8	BED 3	1816	46	70	0.13	35	150	185	0.06	6.0	4x10	A1
9	BED 3	1816	46	70	0.13	40	160	200	0.06	6.0	4x10	A1
10	BED 4	1533	39	45	0.13	21	120	141	0.09	6.0	4x10	C1

6	BED 2	1958	50	59	0.13	44	170	214	0.06	6.0	4x10	B1
28	BED 2	1958	50	59	0.13	44	150	194	0.06	6.0	4x10	B1
30	ENS	559	14	11	0.13	12	120	132	0.09	5	4x10	C1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR VOLUME CFM	DUCT DESIGN PRESSURE	ACTUAL DUCT LENGTH	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	DUCT SIZE ROUND	INLET SIZE	TRUNK
1R	130	0.12	43	130	173	0.06	7.5	14x8	Y1
2R	60	0.12	34	120	154	0.06	5.5	14x8	Z1
3R	214	0.12	31	120	151	0.07	8.5	30x8	X1
4R	70	0.12	39	170	209	0.05	6	14x8	W1
5R	70	0.12	42	130	172	0.06	6	14x8	W1
6R	295	0.12	32	120	152	0.07	9.5	30x8	Y1
7R	371	0.12	42	180	222	0.05	11.5	30x8	Y1
8R	100	0.12	35	170	205	0.05	7	FLC	Z1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
DROP	1310	0.05		0	
Z1	956	0.05	16	30x8	22x10
Y1	796	0.05	15	26x8	20x10
X1	354	0.05	11	14x8	18x6
W1	140	0.05	8	8x8	10x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	202	0.06	8.5	8x8	10x6
B1	412	0.06	11	14x8	18x6
C1	565	0.06	12.5	18x8	24x6
D1	194	0.06	8.5	8x8	10x6
E1	508	0.06	12	16x8	22x6
F1	743	0.06	14	22x8	18x10

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - Inlaw Suite
PROJECT #: RP23052
COMPLIANCE PACKAGE: Performance

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

WEATHER DATA [Brampton] [43.68] [-2.20] [86.00] [51.80] [48.20] [74.20] [14.00]

LEVEL 1

BASE	TOTALS H.L.: 13208 btuh	H.G.: 5174 btuh	AREA: 1585 ft2	Above Grade: 2	GROSS EXP. WALL	NEW 388 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 194 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	21.12		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	3.5	0 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.7	233 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 6.0 ft2		EXIST: 0.0 ft2		NEW: 3 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	125 btuh	37.3	0 btuh	0	0	0	0	20.8	125 btuh	37.3	0 btuh	20.8	62 btuh	37.3	0 btuh
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	169 btuh	14.9	0 btuh	0	0	0	0	21.7	130 btuh	14.9	0 btuh	11.7	35 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		5476 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	6305 btuh	LOSS	1.0292	6489 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	414.0 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	666 btuh	GAIN	0.0272	18 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	62 btuh	0	0 btuh	50%	3234 btuh	GAIN	0%	0 btuh

LEVEL 2

KIT/BRK/GRT	TOTALS H.L.: 7987 btuh	H.G.: 10439 btuh	AREA: 669 ft2	C.Height: 11	GROSS EXP. WALL	NEW 803 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 73 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 7 ft2		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	2583 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	19 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	487 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	10 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 144.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 14.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	2993 btuh	37.3	0 btuh	0	0	0	0	20.8	291 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	4057 btuh	14.9	0 btuh	0	0	0	0	21.7	304 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	5885 btuh	LOSS	0.2917	1716 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	386.4 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	4859 btuh	GAIN	0.0272	132 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	452 btuh	0	0 btuh	40%	2587 btuh	GAIN	0%	0 btuh

DIN/FOYR	TOTALS H.L.: 4117 btuh	H.G.: 3026 btuh	AREA: 424 ft2	C.Height: 11	GROSS EXP. WALL	NEW 506 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 46 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1786 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	337 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 46.0 ft2		EXIST: 0.0 ft2		NEW: 14 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	956 btuh	37.3	0 btuh	20.8	291 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	999 btuh	14.9	0 btuh	11.7	164 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	3033 btuh	LOSS	0.2917	885 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	199.2 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1500 btuh	GAIN	0.0272	41 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	140 btuh	0	0 btuh	10%	647 btuh	GAIN	0%	0 btuh

PWD	TOTALS H.L.: 601 btuh	H.G.: 329 btuh	AREA: 38 ft2	C.Height: 11	GROSS EXP. WALL	NEW 77 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 7 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	276 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	52 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	443 btuh	LOSS	0.2917	129 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	29.1 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	226 btuh	GAIN	0.0272	6 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	21 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

INLAW	TOTALS H.L.: 2119 btuh	H.G.: 1489 btuh	AREA: 116 ft2	C.Height: 11	GROSS EXP. WALL	NEW 264 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 24 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - Inlaw Suite
PROJECT #: RP23052
COMPLIANCE PACKAGE: Performance

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

LOSS	4.0	937 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	177 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 30.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	624 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	845 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1561 btuh	LOSS	0.2917	455 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	102.5 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1022 btuh	GAIN	0.0272	28 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	95 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2753 btuh			H.G.: 684 btuh					AREA: 244 ft2		C.Height: 11		GROSS EXP. WALL		NEW 352 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 32 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1281 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	242 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 11 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	229 btuh	37.3	0 btuh
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	129 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2028 btuh	LOSS	0.2917	592 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	133.2 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	469 btuh	GAIN	0.0272	13 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	44 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

ENS	TOTALS H.L.: 541 btuh			H.G.: 316 btuh					AREA: 62 ft2		C.Height: 11		GROSS EXP. WALL		NEW 66 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 6 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		12.00		59.22		31.00		27.65		31.00		27.65		31.00		2.04		2.03	
LOSS	4.0	232 btuh	6.2	0 btuh	1.3	0 btuh	2.4	0 btuh	2.7	0 btuh	2.4	0 btuh	2.7	0 btuh	2.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	44 btuh	1.2	0 btuh	0.7	0 btuh	1.3	0 btuh	1.5	0 btuh	1.3	0 btuh	0.3	0 btuh	0.3	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	399 btuh	LOSS	0.2917	116 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	26.2 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	217 btuh	GAIN	0.0272	6 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	20 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

ENS	TOTALS H.L.: 1786 btuh			H.G.: 1158 btuh					AREA: 141 ft2		C.Height: 9		GROSS EXP. WALL		NEW 234 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 26 ft		EXIST: 0 ft		NEW: 141 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	861 btuh	8.7	0 btuh	1.3	177 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	162 btuh	1.6	0 btuh	0.7	98 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 19.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	395 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	535 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1432 btuh	LOSS	0.1815	260 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	94.0 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	795 btuh	GAIN	0.0272	22 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	74 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

PRIM BED	TOTALS H.L.: 2799 btuh			H.G.: 2480 btuh					AREA: 381 ft2		C.Height: 9		GROSS EXP. WALL		NEW 324 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 36 ft		EXIST: 0 ft		NEW: 381 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	1185 btuh	8.7	0 btuh	1.3	477 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	224 btuh	1.6	0 btuh	0.7	264 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 28.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	582 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - Inlaw Suite
PROJECT #: RP23052
COMPLIANCE PACKAGE: Performance

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

GAIN	4.7	0 btuh	4.7	0 btuh	28.2	789 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3		H.G. PEOPLE			APP. LOAD		DUCT PIPE L.	
TOTAL CONDUCTIVE			LOSS	2245 btuh	LOSS	0.1815	407 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	147.4 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1276 btuh	GAIN	0.0272	35 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	119 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh

WIC	TOTALS H.L.: 696 btuh			H.G.: 220 btuh	AREA: 100 ft2		C.Height: 9		GROSS EXP. WALL		NEW 108 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 12 ft		EXIST: 0 ft		NEW: 100 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	432 btuh	8.7	0 btuh	1.3	125 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	82 btuh	1.6	0 btuh	0.7	69 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3		H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	558 btuh	LOSS	0.1815	101 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	36.6 btuh	239
TOTAL CONDUCTIVE			GAIN	151 btuh	GAIN	0.0272	4 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	14 btuh	0

ENS 2	TOTALS H.L.: 928 btuh			H.G.: 339 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 81 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 9 ft		EXIST: 0 ft		NEW: 58 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 49 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	288 btuh	8.7	0 btuh	1.3	73 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	131 btuh
GAIN	0.8	54 btuh	1.6	0 btuh	0.7	40 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	14 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3		H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	680 btuh	LOSS	0.1815	123 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	44.7 btuh	239
TOTAL CONDUCTIVE			GAIN	214 btuh	GAIN	0.0272	6 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	20 btuh	0

ENS 3	TOTALS H.L.: 853 btuh			H.G.: 998 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 54 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 6 ft		EXIST: 0 ft		NEW: 58 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	136 btuh	8.7	0 btuh	1.3	73 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	26 btuh	1.6	0 btuh	0.7	40 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 20.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	416 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	564 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3		H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	625 btuh	LOSS	0.1815	113 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	41.0 btuh	239
TOTAL CONDUCTIVE			GAIN	629 btuh	GAIN	0.0272	17 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	59 btuh	0

BATH 2	TOTALS H.L.: 616 btuh			H.G.: 400 btuh	AREA: 86 ft2		C.Height: 9		GROSS EXP. WALL		NEW 63 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 7 ft		EXIST: 0 ft		NEW: 86 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65	
LOSS	4.0	220 btuh	8.7	0 btuh	1.3	108 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh
GAIN	0.8	42 btuh	1.6	0 btuh	0.7	60 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS	
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3		H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	494 btuh	LOSS	0.1815	90 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	32.4 btuh	239
TOTAL CONDUCTIVE			GAIN	275 btuh	GAIN	0.0272	7 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	26 btuh	0

LNDRY	TOTALS H.L.: 250 btuh			H.G.: 78 btuh	AREA: 58 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 0 ft		EXIST: 0 ft		NEW: 58 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 48 ft2	

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - Inlaw Suite
PROJECT #: RP23052
COMPLIANCE PACKAGE: Performance

CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	0 btuh	8.7	0 btuh	1.3	73 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	129 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	0 btuh	1.6	0 btuh	0.7	40 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	14 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST				VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.			
TOTAL CONDUCTIVE			LOSS	201 btuh	LOSS	0.1815	36 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	13.2 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	54 btuh	GAIN	0.0272	1 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	5 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

W/C	TOTALS H.L.: 33 btuh		H.G.: 21 btuh		AREA: 21 ft2		C.Height: 9		GROSS EXP. WALL		NEW 0 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 0 ft		EXIST: 0 ft		NEW: 21 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	0 btuh	8.7	0 btuh	1.3	26 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	0 btuh	1.6	0 btuh	0.7	15 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST				VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.			
TOTAL CONDUCTIVE			LOSS	26 btuh	LOSS	0.1815	5 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	1.7 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	15 btuh	GAIN	0.0272	0 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	1 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 5	TOTALS H.L.: 1475 btuh		H.G.: 1282 btuh		AREA: 271 ft2		C.Height: 9		GROSS EXP. WALL		NEW 135 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 15 ft		EXIST: 0 ft		NEW: 271 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	469 btuh	8.7	0 btuh	1.3	340 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	88 btuh	1.6	0 btuh	0.7	188 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 18.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	374 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	391 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST				VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.			
TOTAL CONDUCTIVE			LOSS	1182 btuh	LOSS	0.1815	215 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	77.6 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	667 btuh	GAIN	0.0272	18 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	62 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 3	TOTALS H.L.: 3554 btuh		H.G.: 3962 btuh		AREA: 279 ft2		C.Height: 9		GROSS EXP. WALL		NEW 306 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 34 ft		EXIST: 0 ft		NEW: 279 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	921 btuh	8.7	0 btuh	1.3	350 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	174 btuh	1.6	0 btuh	0.7	193 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 76.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	1580 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	2141 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST				VENTILATION CASE 3		H.G. PEOPLE		APP. LOAD		DUCT PIPE L.			
TOTAL CONDUCTIVE			LOSS	2850 btuh	LOSS	0.1815	517 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	187.1 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2508 btuh	GAIN	0.0272	68 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	233 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 4	TOTALS H.L.: 1500 btuh		H.G.: 1261 btuh		AREA: 230 ft2		C.Height: 9		GROSS EXP. WALL		NEW 153 ft		EXIST 0 ft							
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 17 ft		EXIST: 0 ft		NEW: 230 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	541 btuh	8.7	0 btuh	1.3	288 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	102 btuh	1.6	0 btuh	0.7	159 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 18.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	374 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4505 - Inlaw Suite
PROJECT #: RP23052
COMPLIANCE PACKAGE: Performance

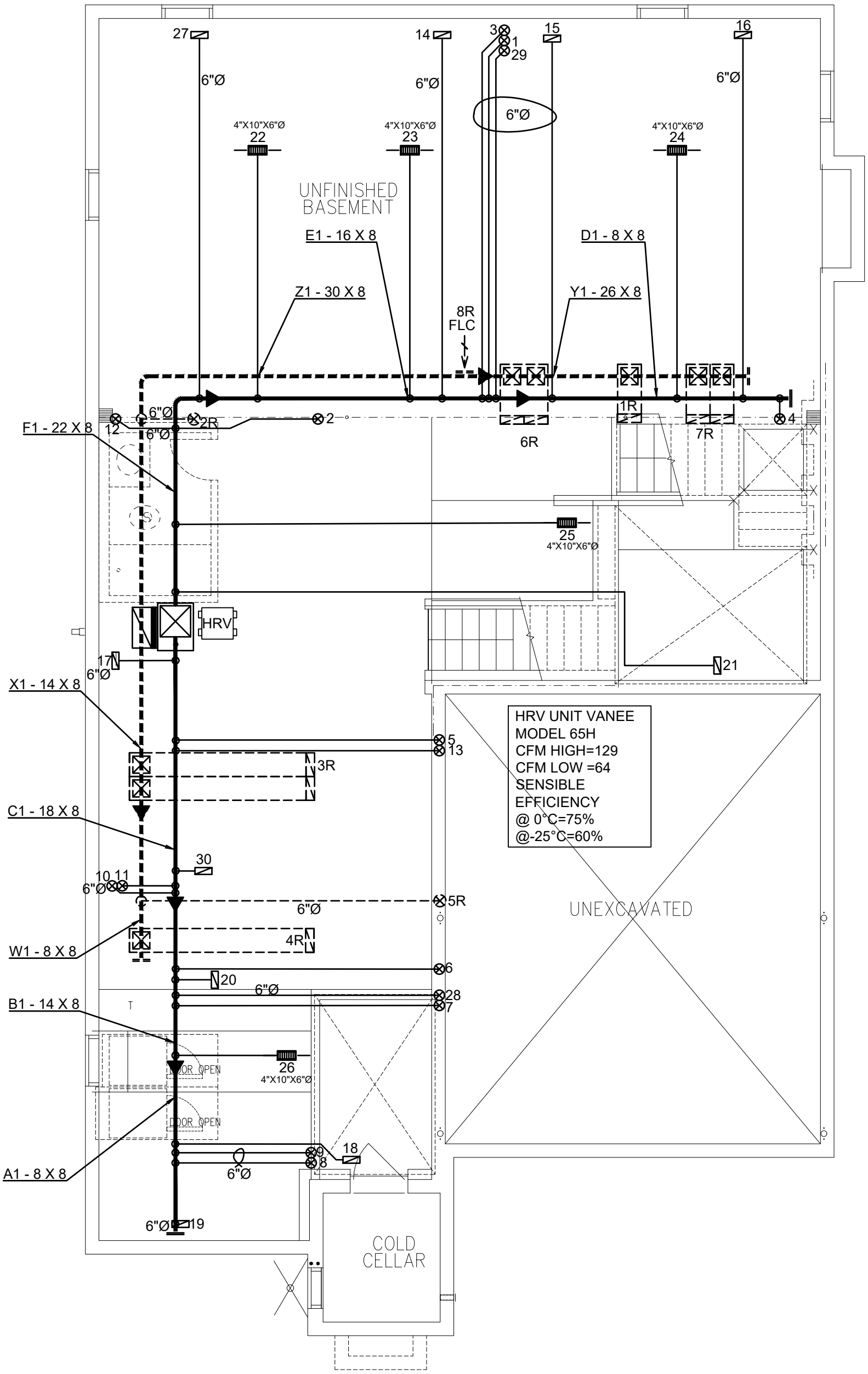
CLIENT: Royal Pine Homes
GTA: 3848
LOT:
SITE:

MCCALLUM HVAC DESIGN INC

GAIN	4.7	0 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	391 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	1203 btuh	LOSS	0.1815	218 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	79.0 btuh	239		6468		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	652 btuh	GAIN	0.0272	18 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	61 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2																				
	TOTALS H.L.: 3832 btuh				H.G.: 3340 btuh						AREA: 272 ft2		C.Height: 9		GROSS EXP. WALL		NEW 243 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 27 ft		EXIST: 0 ft		NEW: 272 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 225 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2	
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		27.65		22.05		2.04		2.03	
LOSS	4.0	761 btuh	8.7	0 btuh	1.3	341 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.7	604 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	144 btuh	1.6	0 btuh	0.7	188 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	65 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 53.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0 ft2		EXIST: 0 ft2	
Eff. R-V	3.01		3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	0 btuh	24.7	0 btuh	20.8	1102 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1493 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE			LOSS	2807 btuh	LOSS	0.1815	509 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	184.3 btuh	239		6468		LOSS	10%	332 btuh
TOTAL CONDUCTIVE			GAIN	1890 btuh	GAIN	0.0272	51 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	176 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	213 btuh

LEVEL 4



3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	10	2	2
B	5	1	0
TOTAL	30	8	7

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED BASEMENT

DATE: NOV/2023 | SCALE: 1/4"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

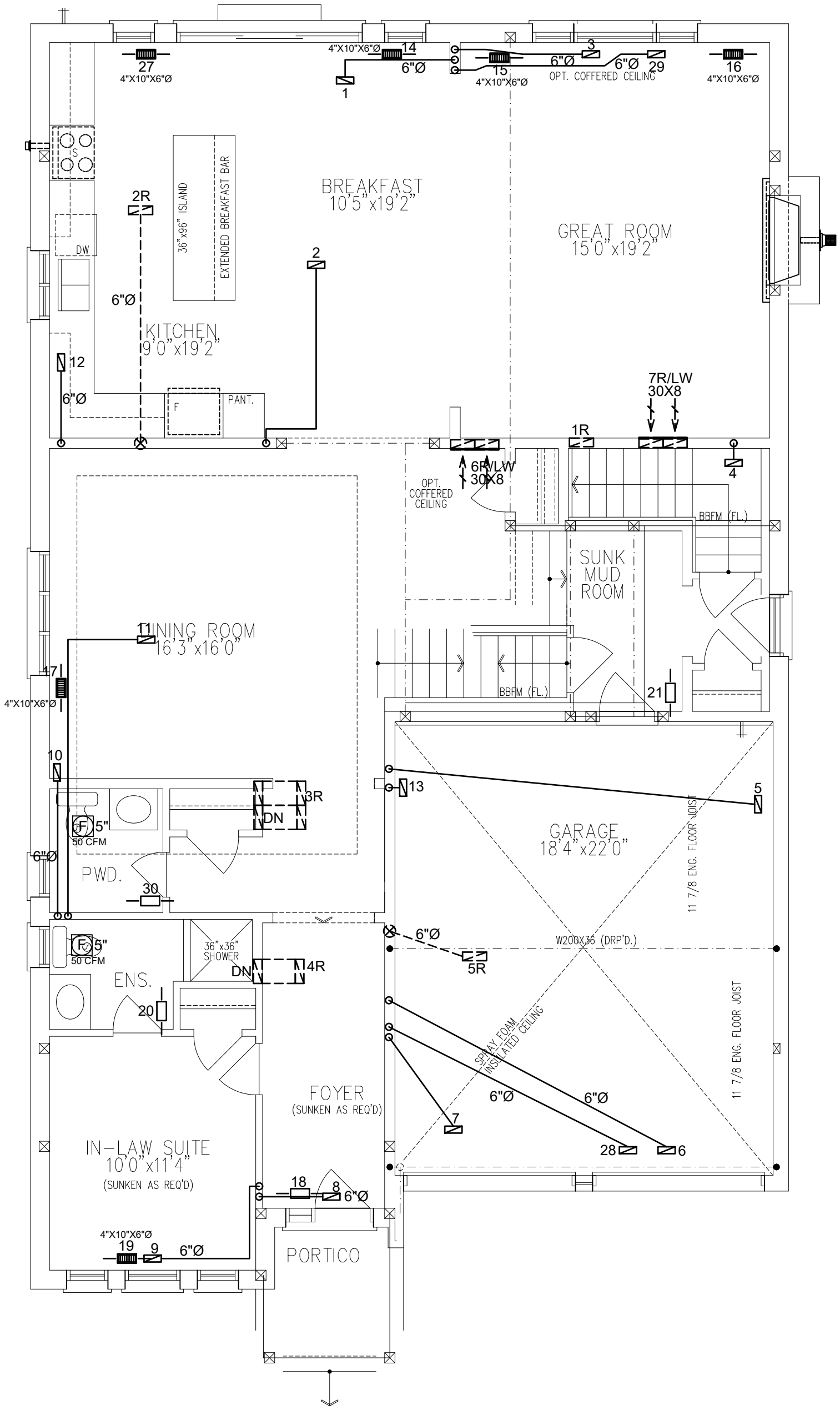
NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	49,648 BTUH	
TOTAL GAIN	36,996 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH090XE48C	3.5 TONS
OUTPUT	84,000 BTUH	1310 CFM

MODEL:	Unit 4505 - Inlaw Suite		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M1



3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	10	2	2
B	5	1	0
TOTAL	30	8	7

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED 1ST FLOOR

DATE: NOV/2023 | SCALE: 1/4"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

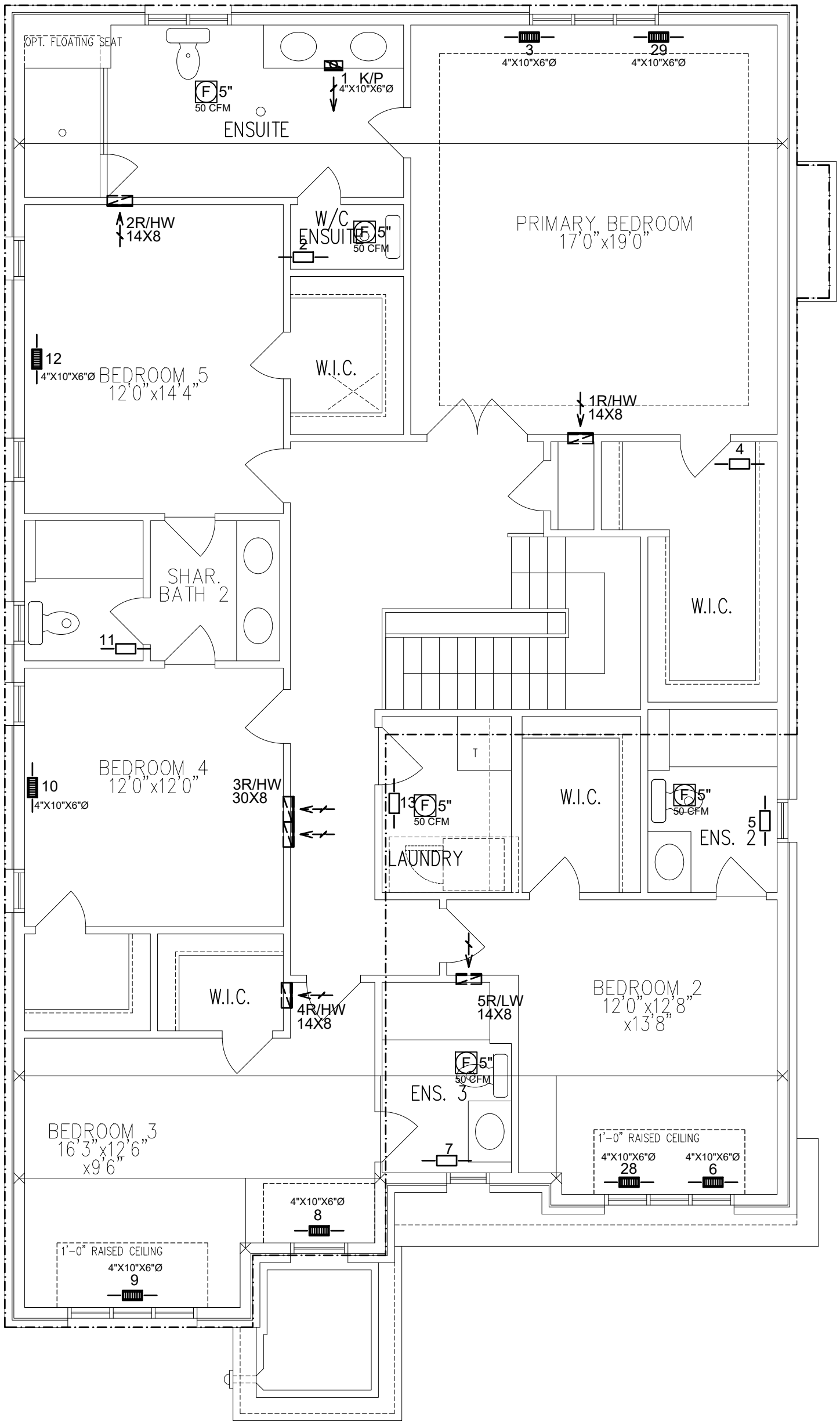
NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	49,648 BTUH	
TOTAL GAIN	36,996 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH090XE48C	3.5 TONS
OUTPUT	84,000 BTUH	1310 CFM

MODEL:	Unit 4505 - Inlaw Suite		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M2



3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	10	2	2
B	5	1	0
TOTAL	30	8	7

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PROPOSED 2ND FLOOR

DATE: NOV/2023 | SCALE: 1/4"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

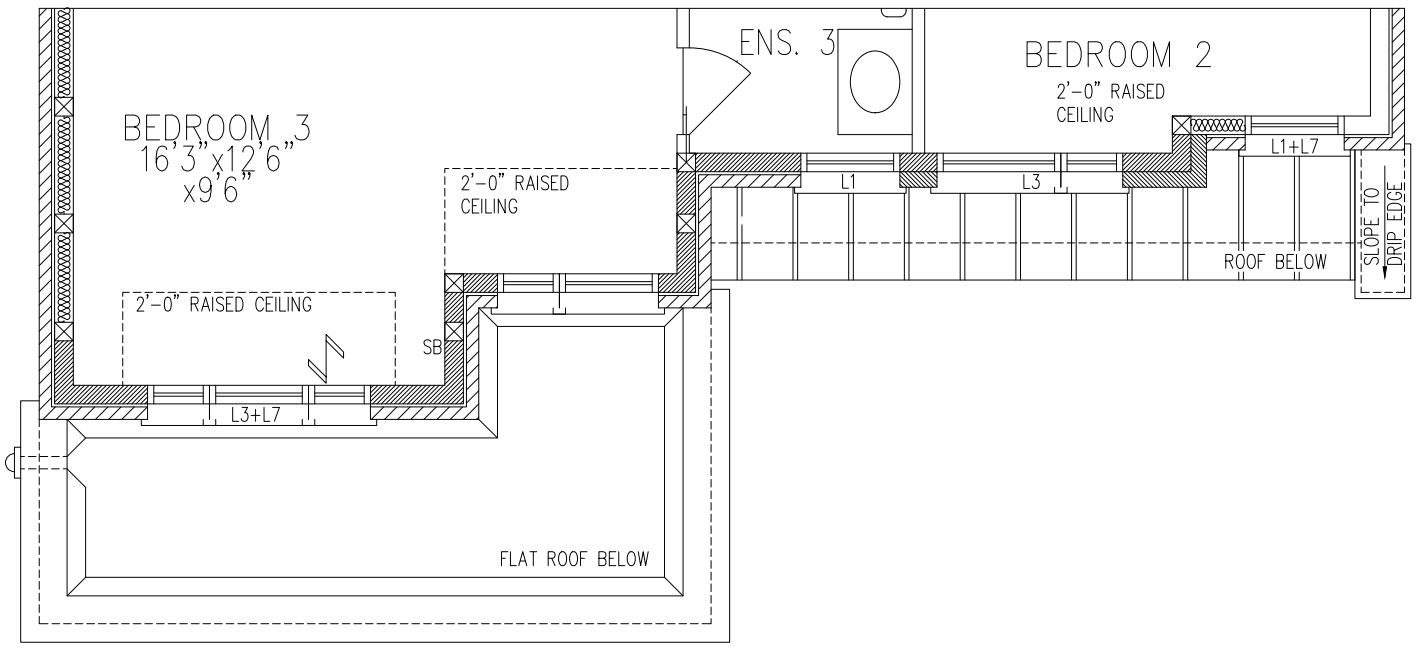
The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

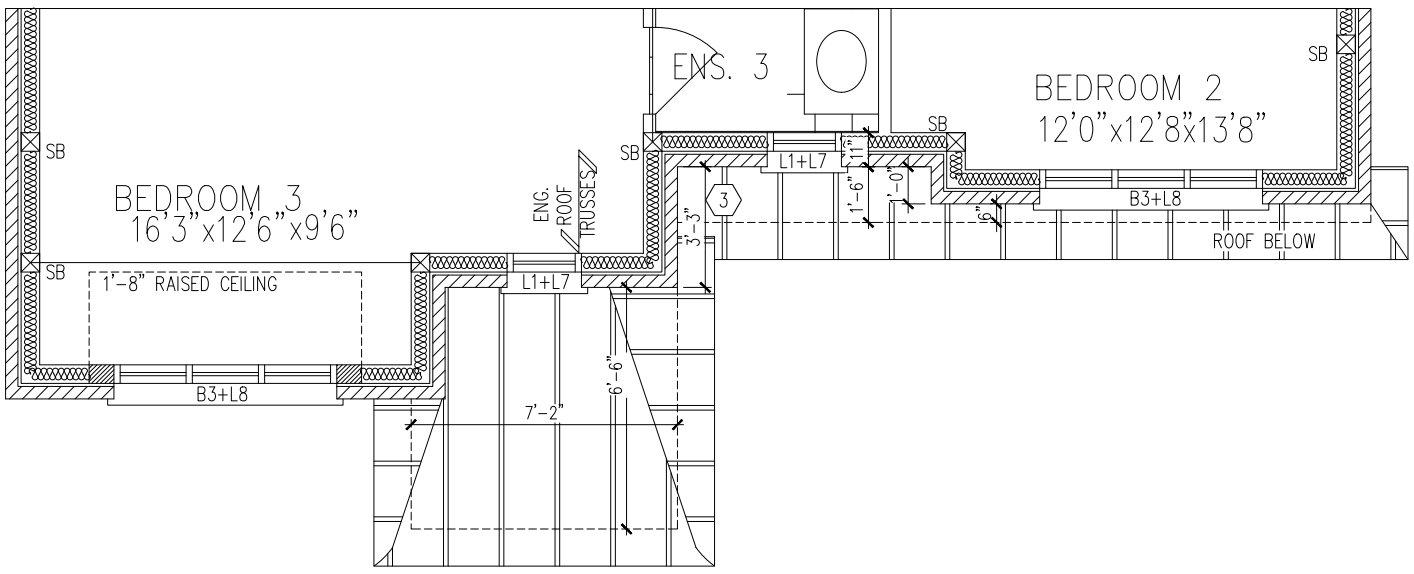
TOTAL LOSS	49,648 BTUH		MODEL:	Unit 4505 - Inlaw Suite	
TOTAL GAIN	36,996 BTUH		PROJECT #:	RP23052	SQFT: 3848 / W%: 12.42
HEATING UNIT	LENNOX		SITE:	Brampton	
MODEL #	EL296UH090XE48C	3.5 TONS	FOR:	Royal Pines Homes	
OUTPUT	84,000 BTUH	1310 CFM	BUILDER:	Royal Pines Homes	

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M3



PART. SECOND FLOOR PLAN, EL. 'C' – 5 BEDROOM COND.



PART. SECOND FLOOR PLAN, EL. 'B' – 5 BEDROOM COND.

3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	10	2	2
B	5	1	0
TOTAL	30	8	7

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.
- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
- INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS
- ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.

PARTIAL CUTOUT PLAN

DATE: NOV/2023 | SCALE: 1/4"=1'-0" | DRAWN BY: SS/MP

COMPLIANCE PACKAGE
CSA F280-12

A1

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NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	49,648 BTUH	
TOTAL GAIN	36,996 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH090XE48C	3.5 TONS
OUTPUT	84,000 BTUH	1310 CFM

MODEL:	Unit 4505 - Inlaw Suite		
PROJECT #:	RP23052	SQFT: 3848	W%: 12.42
SITE:	Brampton		
FOR:	Royal Pines Homes		
BUILDER:	Royal Pines Homes		

MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M4