GENERAL NOTES FOR 2018 ENERGY EFFICIENCY DESIGN – SB-12 PERFORMANCE

All work shall conform to OBC O.Reg.332/12, as amended.

Ensure the minimum thermal performance of building envelope and equipment shall conform to OBC SB-12, 3.1.1.2.

Furnace shall be equipped with brushless direct current motor - OBC DIV B 12.3.1.5.

Seal all ductwork within unconditioned space or outdoors, as per OBC DIV B 6.2.4.3(11). Seal all supply ducts located in conditioned space in compliance with OBC DIV B 6.2.4.3(12).

Separate any intakes from building envelope penetrations that are potential sources of contaminants (gas vents, oil fill pipes, etc.) by not less than 900mm (2ft 11in) – OBC Div B 9.32.3.12.

Installation of kitchen exhaust duct larger than 6” diameter will require a separate permit for revision of design as per OBC DIV B Part 6 requirements. Exhaust fan shall discharge directly to outside. Clothes dryer exhaust system shall comply with OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3. Balance the return airflow on the upper floor to match supply.

When a HRV is used as principal exhaust fan, the controller shall be wired to the HRV unit and interconnected to the furnace fan. The furnace blower must be in operation when the HRV is in operation.

Install additional supply air register as required to ensure a minimum temperature of 22 degree Celsius – OBC DIV B 9.33.3.1.(1).

Undercut door to any room without return air grille by not less than 1”. Return air intake shall be connected to the main return air duct at a horizontal distance of not less than 6ft from the casing of the unit (HRAI digest).

Provide adequate ventilation and combustion air for the optimum operation of the furnace, as per manufacturer’s recommendations.

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.

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

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

A. Project Information

Building number, street name		Unit number	Lot/Con
Model Type 45-01			
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 = 391.92 m^2 or _____ ft^2	W, S & G % = 12.68	☐ Log/Post&Beam ☐ ICF Above Grade ☐ ICF Basement ☐ Slab-on-ground ☐ Walkout Basement ☐ Air Conditioning ☐ Combo Unit ☐ Air Source Heat Pump (ASHP) ☐ Ground Source Heat Pump (GSHP)
Area of W, S & G = 49.71 m^2 or _____ ft^2		

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	R60		Windows/Sliding Glass Doors	U=1.6	
Ceiling without Attic Space	R31		Skylights/Glazed Roofs	N/A	
Exposed Floor	R31		**Mechanicals**		
Walls Above Grade	R22+R1.5ci		Heating Equip.(AFUE)	96% AFUE	
Basement Walls	R20ci		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))	53.3%	# 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•K) or Btu/(h•ft^2•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 175.10 GJ (1 GJ =1000MJ)

The annual energy consumption of this house as designed is 164.68 GJ

The software used to simulate the annual energy use of the building is: REMRATE 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.

REM/Rate - Residential Energy Analysis and Rating Software v16.0.2

Code Compliance Certificate

Project Title: Model 45-01

Report Date	June 13, 2021
Data Filename	Model 45-01.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)	4684
Conditioned Volume (cubic ft)	47133
Insulated Shell Area (sq ft)	9365

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

Construction Site	Owner	Builder	HERS Rater
Model 45-01	Royal Pine Homes	Royal Pine Homes	Clearsphere Consulting
Brampton,	Model 45-01	3550 Langstaff Road, Suite 200	John Godden
	Brampton,	Woodbridge, Ontario L4L 9G3	416-481-4218

Annual Energy Consumption	KWH	GJ
Reference Home Package A1	48638.29	175.10
Proposed House	45744.14	164.68
Better Than Code	6.0%	

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	1776	14.0	46.0
Roof 2: R-31 Flat	15	31.0	0.0
Above-Grade Walls			
AG Wall 1: R-22+1.5ci	3693	22.0	1.5
Joist 1: Cond -> ambient	371	22.0	1.5
Window 1: U= 0.282 SHGC 0.45	518		3.5
Door 1: Code	9		4.0
Door 2: Code	21		4.0
Floors Over Garage			
Floor 1: R-31 Std	359	31.0	0.0
Basement Walls			

This information does not constitute any warranty of energy costs or savings.
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Code Compliance Certificate

Building Summary Assembly	Gross Area or Perimeter	Cavity R-Value	Continuous R-Value
Wall 1: R-20 Blanket	1661	0.0	20.0
Window 2: U= 0.282 SHGC 0.45	17		3.5
Door 3	21		4.0

Mechanical Equipment	Name/Type	Size/Input	Efficiency
Heating: Fuel-fired air distribution	96 AFUE ECM	32.0 kBtuh	96.0 AFUE
Cooling: Air conditioner	13SEER A/C 1.5 ton	18.0 kBtuh,	13.0 SEER
Water Heating: Instant water heater, Gas	0.90 EF Condensing	0 gal	0.93 EF
HRV/ERV	-----	95.0 CFM	75.0% sen/ 0.0% tot

Drain Water Heat Recovery

1 of 2 Showers connected and 53.0% unit efficiency

Air Exchange

3.10 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

Property
Royal Pine Homes
Model 45-01 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 45-01 - A1
Model 45-01 - A1.blg

Organization
Clearsphere Consulting
416-481-4218
John Godden

Builder
Royal Pine Homes

HERS
Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

Property/Builder Information

Building Name	Model 45-01 - A1
Owner's Name	Royal Pine Homes
Property Address	Model 45-01 - A1
City, St, Zip	Brampton,
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 45-01 - A1
Community/Development	Forest Side
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	June 13, 2021
Rating Type	Projected Rating
Reason for Rating	New Home
Rating Number	N/A
Rating Permit Date	06/14/2022

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Building Summary

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Royal Pine Homes
Model 45-01 - A1
Brampton,

Weather:Toronto, ON_CAN
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Model 45-01 - A1.blg

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416-481-4218
John Godden

Builder
Royal Pine Homes

HERS
Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

General Building Information

Area of Conditioned. Space(sq ft)	4684
Volume of Conditioned. Space	47133
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	187.00	9.08	8.25	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

Property
Royal Pine Homes
Model 45-01 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 45-01 - A1
Model 45-01 - A1.blg

Organization
Clearsphere Consulting
416-481-4218
John Godden

Builder
Royal Pine Homes

HERS
Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

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	1454	8.25	187	187	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	359	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

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Royal Pine Homes
Model 45-01 - A1
Brampton,

Weather:Toronto, ON_CAN
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Model 45-01 - A1.blg

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John Godden

Builder
Royal Pine Homes

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Rater ID:0001

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	370.50	0.0	22.0	5.5	16.0	3	0.062

Above-Grade Wall

Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	R-22 Std	Cond -> ambient	Medium	3693.03	0.067

Above-Grade Wall Library List

Above-Grade Wall: R-22 Std

Information From Quick Fill Screen

Wall Construction Type	Std Frame w/Brick Veneer
Continuous Insulation (R-Value)	0.0
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	18.22	0.0	0.0	0.0	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	11.00	0.0	0.0	0.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	5.60	9.8	1.0	2.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	36.00	9.8	2.0	8.3	0.85	0.70	None	None

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Brampton,

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Model 45-01 - A1.blg

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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	44.00	1.3	1.8	8.4	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	44.00	0.3	3.0	10.3	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	51.33	0.3	3.0	10.3	0.85	0.70	None	None
Left	FndWall 1	West	0.282	0.450	3.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	13.00	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	16.00	0.0	0.0	0.0	0.85	0.70	None	None
back	FndWall 1	North	0.282	0.450	6.70	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	24.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	30.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	64.00	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	37.30	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	21.80	1.3	1.8	6.4	0.85	0.70	None	None
Right	FndWall 1	East	0.282	0.450	6.70	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	24.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	30.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	21.78	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	26.00	1.3	1.8	6.4	0.85	0.70	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	9.0	0.203	4.0	No
garage	Code	AGWall 1	20.5	0.203	4.0	No
Cold Cellar	Code	FndWall 1	20.5	0.203	4.0	No

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	1776.00	2220.00	Dark	No	Attic	0.017	No	No
Ceiling-with attic	R-31 Flat	15.00	15.00	Dark	No	Vaulted	0.052	No	No

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Rater ID:0001

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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Organization
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416-481-4218
John Godden

Builder
Royal Pine Homes

HERS
Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

Mechanical Equipment

Number of Mechanical Systems	3
Heating SetPoint(F)	72.0
Heating Setback Thermostat	Present
Cooling SetPoint(F)	75.0
Cooling Setup Thermostat	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

Cool: 13SEER A/C 1.5 ton

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: 0.80 EF 50g

Water Heater Type	Conventional

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Building Summary

Property
Royal Pine Homes
Model 45-01 - A1
Brampton,

Weather:Toronto, ON_CAN
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Rater ID:0001

Mechanical Equipment

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

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	79
TOTAL Pipelength for longest DHW run	109
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	
dhwGpd	68.17
peRatio	1.00
dishwasherGpd	5.88
clothesWasherHotWaterGPD	5.08
EDeff	1.00
ewaste	32.00
tmains	54.00
dwhrWhInletTempAdj	8.58
pumpConsKwh	0.00

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DHW Efficiencies

pumpConsMmbtu	0.00

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Rater ID:0001

Duct Systems

Name

Conditioned Floor Area(sq ft)	4684.0
# of Returns	6
Heating System	96 AFUE 371 Watts
Cooling System	13SEER A/C 1.5 ton
Supply Duct Surface Area(sq ft)	948.5
Return Duct Surface Area(sq ft)	878.3
No bldg cavities used as ducts	FALSE

Type	Location	Percent Location	R-Value
Supply	Conditioned space	100.0	0.0
Return	Conditioned space	100.0	0.0

Test Exemptions

IECC	TRUE
RESNET 2019	FALSE
ENERGY STAR LtO	TRUE

Duct Leakage

Input Type	Measured
Test Type	Total Duct Leakage
Duct Test Stage	Postconstruction Test

	LtO (based on Total DL)	Total Duct Leakage
Supply & Return	0.10 CFM @ 25 Pascals	0.10 CFM @ 25 Pascals
Supply Only	Not Applicable	
Return Only	Not Applicable	

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Rater ID:0001

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)	95
Adjusted Sensible Recovery Efficiency(%)	75.00
Adjusted Total Recovery Efficiency(%)	0.00
Hours per Day	24.0
Fan Power (watts)	71.00
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

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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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Royal Pine Homes
Model 45-01
Brampton,

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~~Model 45-01.blg~~

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Builder
Royal Pine Homes

HERS
Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

Property/Builder Information

Building Name	Model 45-01
Owner's Name	Royal Pine Homes
Property Address	Model 45-01
City, St, Zip	Brampton,
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 45-01
Community/Development	Forest Side
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	June 13, 2021
Rating Type	Projected Rating
Reason for Rating	New Home
Rating Number	N/A
Rating Permit Date	06/14/2022

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Brampton,

Weather:Toronto, ON_CAN
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Organization
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Royal Pine Homes

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Rating No:N/A
Rater ID:0001

General Building Information

Area of Conditioned. Space(sq ft)	4684
Volume of Conditioned. Space	47133
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	187.00	9.08	8.25	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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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	1454	8.25	187	187	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	359	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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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	370.50	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	3693.03	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	18.22	0.0	0.0	0.0	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	11.00	0.0	0.0	0.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	5.60	9.8	1.0	2.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	36.00	9.8	2.0	8.3	0.85	0.70	None	None

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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	44.00	1.3	1.8	8.4	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	44.00	0.3	3.0	10.3	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	51.33	0.3	3.0	10.3	0.85	0.70	None	None
Left	FndWall 1	West	0.282	0.450	3.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	13.00	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	16.00	0.0	0.0	0.0	0.85	0.70	None	None
back	FndWall 1	North	0.282	0.450	6.70	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	24.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	30.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	64.00	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	37.30	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	21.80	1.3	1.8	6.4	0.85	0.70	None	None
Right	FndWall 1	East	0.282	0.450	6.70	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	24.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	30.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	21.78	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	26.00	1.3	1.8	6.4	0.85	0.70	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	9.0	0.203	4.0	No
garage	Code	AGWall 1	20.5	0.203	4.0	No
Cold Cellar	Code	FndWall 1	20.5	0.203	4.0	No

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	1776.00	2220.00	Dark	No	Attic	0.017	No	No
Ceiling-with attic	R-31 Flat	15.00	15.00	Dark	No	Vaulted	0.052	No	No

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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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Mechanical Equipment

Number of Mechanical Systems	3
Heating SetPoint(F)	72.0
Heating Setback Thermostat	Present
Cooling SetPoint(F)	75.0
Cooling Setup Thermostat	Present
DHW SetPoint(F)	125.0

Heat: 96 AFUE ECM

SystemType	Fuel-fired air distribution
Fuel Type	Natural gas
Rated Output Capacity (kBtuh)	32.0
Seasonal Equipment Efficiency	96.0 AFUE
Auxiliary Electric	200 Watts
Note	
Number Of Units	1
Location	Conditioned area
Performance Adjustment	100
Percent Load Served	100

Cool: 13SEER A/C 1.5 ton

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: 0.90 EF Condensing

Water Heater Type	Instant water heater

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Mechanical Equipment

Fuel Type	Natural gas
Energy Factor	0.93
Recovery Efficiency	0.00
Water Tank Size (gallons)	0
Extra Tank Insulation (R-Value)	0.0
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	79
TOTAL Pipelength for longest DHW run	109
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	
dhwGpd	69.47
peRatio	1.00
dishwasherGpd	5.88
clothesWasherHotWaterGPD	5.08
EDeff	1.00
ewaste	32.00
tmains	54.00
dwhrWhInletTempAdj	5.41
pumpConsKwh	0.00

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DHW Efficiencies

pumpConsMmbtu	0.00

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Building Summary

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Duct Systems

Name

Conditioned Floor Area(sq ft)	4684.0
# of Returns	6
Heating System	96 AFUE ECM
Cooling System	13SEER A/C 1.5 ton
Supply Duct Surface Area(sq ft)	948.5
Return Duct Surface Area(sq ft)	878.3
No bldg cavities used as ducts	FALSE

Type	Location	Percent Location	R-Value
Supply	Conditioned space	100.0	0.0
Return	Conditioned space	100.0	0.0

Test Exemptions

IECC	TRUE
RESNET 2019	FALSE
ENERGY STAR LtO	TRUE

Duct Leakage

Input Type	Measured
Test Type	Total Duct Leakage
Duct Test Stage	Postconstruction Test

	LtO (based on Total DL)	Total Duct Leakage
Supply & Return	0.10 CFM @ 25 Pascals	0.10 CFM @ 25 Pascals
Supply Only	Not Applicable	
Return Only	Not Applicable	

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Rater ID:0001

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)	95
Adjusted Sensible Recovery Efficiency(%)	75.00
Adjusted Total Recovery Efficiency(%)	0.00
Hours per Day	24.0
Fan Power (watts)	71.00
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

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Rater ID:0001

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

This information does not constitute any warranty of energy costs or savings.
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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 4501 - Elev. A,B and C		Lot: 4501	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 #:** P22160
Heating and Cooling Load Calculations	Builder	Roval Pine Homes
Air System Design	Project	Forestside Estates
Residential mechanical ventilation Design Summary	Model	Unit 4501 - Elev. A,B and C
Residential System Design per CAN/CSA-F280-12		
Residential New Construction - Forced Air	SB-12	SB 12 Performance 28

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.

2022-06-28

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. P22160

Building Location

Address (Model):	Unit 4501 - Elev. A.B and C	Site:	Forestside Estates
Model:		Lot:	4501
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**	SB 1	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**	SB 1	R 20ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	SB 12 F	
Style B:			

Exposed floors

Style A:	**As per Selected OBC SB12**	SB 12	R 31
Style B:			

Windows

Style A:	**As per Selected OBC SB12**	SB 12 I	R 3.57
Style B:	**Existing Windows (When Applicable)**	R	
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12**	SB 12 P	R 60.0
Style B:	**As per Selected OBC SB12**	SB 12 P	R 31.0
Style C:			

Doors

Style A:	**As per Selected OBC SB12**	SB 12	R 3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12**	SB 12	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 # P22160

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: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C

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

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

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	2022-06-28

MCCALLUM HVAC DESIGN INC

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

Project # P22160

Project: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.339	42003.0	74.2	19039.74

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.1183429	42003	14.00	1252.63

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	19040	5462	1.74293
2	0.3		13255	0.43093
3	0.2		13158	0.28940
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	1252.63	0.07579
BUILDING CONDUCTIVE HEAT GAIN	16527.00	

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	5462	0.15
2	0.3		13255	0.04
3	0.2		13158	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	16527.00	

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):	1190

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1504.864
	3	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

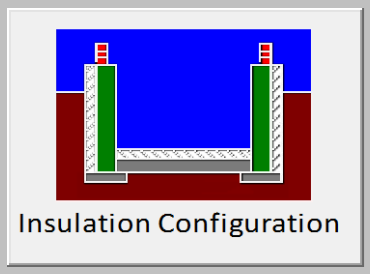
Heating Air Leakage Rate (ACH/H): 0.339

Cooling Air Leakage Rate (ACH/H): 0.118

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):	22.0
Floor Width (m):	5.52
Exposed Perimeter (m):	55.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.86
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):	**1479**



BCIN_1

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
Lot: 4501
Site: Forestside Estates

MCCALLUM HVAC DESIGN INC

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	15255 btu/h	EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.
LEVEL 2 NET LOAD	19631 btu/h	ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.
LEVEL 3 NET LOAD	18106 btu/h	AVAILABLE DESIGN PRESSURE	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft
SYSTEM HEATLOSS	52992 btu/h	R/A PLENUM PRESSURE	0.120"W.C.
SYSTEM HEATGAIN	33671 btu/h	S/A PLENUM PRESSURE	0.130"W.C.
BUILDING VOLUME Vb	42003.00 ft3	HEATING AIR FLOW PROPORTIONING FACTOR	0.0216 cfm/btuh
VENTILATION LOAD	1594.00 btu/h	COOLING AIR FLOW PROPORTIONING FACTOR	0.0340 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	1144.00 CFM
MODEL	EL296UH070XE36B			SELECTED CFM	1145.00 CFM
HIGH INPUT btu/h	66000	LOW INPUT btu/h	0	COOLING CHECK	1146.00 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	SB 12 Performance 28			COIL	3.0 TON
TEMP. RISE	51.75°F				

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

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
23	BASE	3814	82	38	0.13	35	140	175	0.07	6.0	4x10	B1
24	BASE	3814	82	38	0.13	47	140	187	0.06	6.0	4x10	B1
25	BASE	3814	82	38	0.13	26	150	176	0.07	6.0	4x10	D1
26	BASE	3814	82	38	0.13	17	130	147	0.08	6.0	4x10	E1
14	KIT/BRK	2136	46	72	0.13	42	150	192	0.06	6.0	4x10	A1
15	KIT/BRK	2136	46	72	0.13	34	140	174	0.07	6.0	4x10	A1
16	GREAT	2508	54	83	0.13	43	170	213	0.06	6.0	4x10	A1
17	DEN	1966	42	54	0.13	52	140	192	0.06	6	4x10	B1
20	LIV	2395	52	72	0.13	28	120	148	0.08	6.0	4x10	D1
21	POWDER	591	13	11	0.13	16	160	176	0.07	5	4x10	D1
22	DIN	2508	54	55	0.13	6	140	146	0.08	5.0	4x10	E1
2	P ENS	1507	33	41	0.13	47	170	217	0.06	5.0	4x10	C1
1	P W.CL	591	13	13	0.13	35	170	205	0.06	5	4x10	C1
4	PRIM	1530	33	49	0.13	41	170	211	0.06	6	4x10	A1
5	PRIM	1530	33	49	0.13	54	150	204	0.06	6	4x10	B1
6	ENS 2	772	17	10	0.13	46	140	186	0.06	5	4x10	C1
11	S BATH	804	17	16	0.13	16	120	136	0.09	5	4x10	E1
18	MUD	2588	56	17	0.13	41	130	171	0.07	5.0	4x10	C1
19	FOYER	2804	61	21	0.13	34	140	174	0.07	6	4x10	D1
3	P WIC	448	10	5	0.13	33	160	193	0.06	5	4x10	A1
13	LAUN	247	5	35	0.13	18	170	188	0.06	5.0	4x10	E1
12	BED 4	1523	33	41	0.13	21	150	171	0.07	6	4x10	C1
9	BED 3	1968	43	63	0.13	34	150	184	0.07	6	4x10	D1
10	BED 3	1968	43	63	0.13	36	130	166	0.07	6	4x10	D1
7	BED 2	2610	56	76	0.13	38	140	178	0.07	6.0	4x10	E1
8	BED 2	2610	56	76	0.13	31	130	161	0.07	6.0	4x10	E1

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	57	130	187	0.05	8	14x8	Y1

2R	70	0.12	28	160	188	0.05	6	14x8	X1
3R	110	0.12	31	170	201	0.05	7	14x8	W1
4R	140	0.12	25	120	145	0.07	7.5	14x8	Z1
5R	85	0.12	30	120	150	0.07	6	14x8	X1
6R	160	0.12	40	170	210	0.05	8.5	14x8	Y1
7R	160	0.12	40	170	210	0.05	8.5	14x8	Y1
8R	160	0.12	18	130	148	0.07	8	14x8	W1
9R	120	0.12	12	160	172	0.06	7	FLC	Z1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
Z1	720	0.05	14.5	24x8	18x10
Y1	460	0.05	12	16x8	22x6
X1	425	0.05	12	16x8	22x6
W1	270	0.05	10	12x8	16x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	189	0.06	8.5	10x8	
B1	428	0.06	11.5	14x8	20x6
C1	580	0.06	12.5	18x8	24x6
D1	294	0.07	9.5	12x8	
E1	564	0.06	12.5	18x8	24x6

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

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.: 15255 btuh	H.G.: 4498 btuh	AREA: 1311 ft2	Above Grade: 2	GROSS EXP. WALL	NEW 362 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 181 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		29.80		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	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.7	227 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: 8.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2		EXIST: 0.0 ft2		NEW: 4 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	166 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh	37.3	0 btuh	20.8	83 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	225 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh	14.9	0 btuh	11.7	47 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		5046 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	5462 btuh	LOSS	1.7429	9520 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	272.9 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	673 btuh	GAIN	0.0758	51 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	49 btuh	0	0 btuh	50%	2687 btuh	GAIN	0%	0 btuh

LEVEL 2

KIT/BRK	TOTALS H.L.: 4271 btuh	H.G.: 4252 btuh	AREA: 264 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1221 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	230 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: 64.0 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	1330 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	1803 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	2884 btuh	LOSS	0.4309	1243 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	144.1 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	2381 btuh	GAIN	0.0758	180 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	173 btuh	0	0 btuh	10%	537 btuh	GAIN	0%	0 btuh

GREAT	TOTALS H.L.: 2508 btuh	H.G.: 2436 btuh	AREA: 343 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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	1693 btuh	LOSS	0.4309	730 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	84.6 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1047 btuh	GAIN	0.0758	79 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	76 btuh	0	0 btuh	13%	672 btuh	GAIN	0%	0 btuh

DEN	TOTALS H.L.: 1966 btuh	H.G.: 1594 btuh	AREA: 113 ft2	C.Height: 11	GROSS EXP. WALL	NEW 231 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	829 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	156 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: 24.0 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	499 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	676 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	1328 btuh	LOSS	0.4309	572 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	66.4 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	833 btuh	GAIN	0.0758	63 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	61 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

LIV	TOTALS H.L.: 2395 btuh	H.G.: 2109 btuh	AREA: 101 ft2	C.Height: 11	GROSS EXP. WALL	NEW 253 ft	EXIST 0 ft

	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT	
	NEW: 23 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	29.80	22.05	2.04	2.03

INDIVIDUAL BCIN NUMBER 25896
FIRM BCIN NUMBER 102614

Doug McCallum

TOTAL HEATLOSS: 52992 BTUH
TOTAL HEATGAIN: 33671 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

LOSS	4.0	869 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	164 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: 36.0 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	748 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	1014 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	1617 btuh	LOSS	0.4309	697 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	80.8 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1178 btuh	GAIN	0.0758	89 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	86 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

POWDER	TOTALS H.L.: 591 btuh			H.G.: 324 btuh				AREA: 34 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		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03	
LOSS	4.0	232 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	44 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	399 btuh	LOSS	0.4309	172 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	19.9 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	217 btuh	GAIN	0.0758	16 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	16 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

DIN	TOTALS H.L.: 2508 btuh			H.G.: 1624 btuh				AREA: 219 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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: 30.0 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	624 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	651 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	1693 btuh	LOSS	0.4309	730 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	84.6 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	853 btuh	GAIN	0.0758	65 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	62 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2588 btuh			H.G.: 493 btuh				AREA: 108 ft2		C.Height: 11		GROSS EXP. WALL		NEW 220 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 20 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		29.80		22.05		2.04		2.03	
LOSS	4.0	713 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	134 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: 42.0 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	1035 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	195 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	1748 btuh	LOSS	0.4309	753 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	87.3 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	330 btuh	GAIN	0.0758	25 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	24 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

FOYER	TOTALS H.L.: 2804 btuh			H.G.: 603 btuh				AREA: 120 ft2		C.Height: 11		GROSS EXP. WALL		NEW 231 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	733 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	138 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: 42.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 6 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	1035 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	125 btuh	37.3	0 btuh
GAIN	4.7	195 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	70 btuh	14.9	0 btuh

TOTAL HEATLOSS: 52992 BTUH
TOTAL HEATGAIN: 33671 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

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	1893 btuh	LOSS	0.4309	816 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	94.6 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	404 btuh	GAIN	0.0758	31 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	29 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

P ENS	*TOTALS H.L.: 1507 btuh*					*H.G.: 1191 btuh*			AREA: 114 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: 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		29.80		22.05		2.04		2.03
LOSS	4.0	*525 btuh*	8.7	*0 btuh*	1.3	*143 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*99 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: 22.0 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	*457 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	*620 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	1125 btuh	LOSS	0.2894	326 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	56.2 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	798 btuh	GAIN	0.0758	60 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	58 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

P W.CL	*TOTALS H.L.: 591 btuh*					*H.G.: 384 btuh*			AREA: 30 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: 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		29.80		22.05		2.04		2.03
LOSS	4.0	*216 btuh*	8.7	*0 btuh*	1.3	*38 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*41 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: 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	441 btuh	LOSS	0.2894	128 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	22.0 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	257 btuh	GAIN	0.0758	19 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	19 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

PRIM	*TOTALS H.L.: 3059 btuh*					*H.G.: 2870 btuh*			AREA: 336 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: 336 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		29.80		22.05		2.04		2.03
LOSS	4.0	*1073 btuh*	8.7	*0 btuh*	1.3	*421 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*202 btuh*	1.6	*0 btuh*	0.7	*233 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	2284 btuh	LOSS	0.2894	661 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	114.1 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	1506 btuh	GAIN	0.0758	114 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	110 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh

ENS 2	*TOTALS H.L.: 772 btuh*					*H.G.: 293 btuh*			AREA: 57 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 90 ft*		*EXIST 0 ft*		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT		
	NEW: 10 ft		EXIST: 0 ft		NEW: 57 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 4 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		29.80		22.05		2.04		2.03
LOSS	4.0	*328 btuh*	8.7	*0 btuh*	1.3	*71 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*10 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*62 btuh*	1.6	*0 btuh*	0.7	*39 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*1 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	576 btuh	LOSS	0.2894	167 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	28.8 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	196 btuh	GAIN	0.0758	15 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	14 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

S BATH	*TOTALS H.L.: 804 btuh*					*H.G.: 458 btuh*			AREA: 113 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		

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

	NEW: 9 ft		EXIST: 0 ft		NEW: 113 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*292 btuh*	8.7	*0 btuh*	1.3	*142 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*55 btuh*	1.6	*0 btuh*	0.7	*78 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	600 btuh	LOSS	0.2894	174 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	30.0 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	307 btuh	GAIN	0.0758	23 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	22 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

P WIC	*TOTALS H.L.: 448 btuh*				*H.G.: 159 btuh*				AREA: 94 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: 94 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*216 btuh*	8.7	*0 btuh*	1.3	*118 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*41 btuh*	1.6	*0 btuh*	0.7	*65 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	334 btuh	LOSS	0.2894	97 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	16.7 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	106 btuh	GAIN	0.0758	8 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	8 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LAUN	*TOTALS H.L.: 247 btuh*				*H.G.: 1034 btuh*				AREA: 49 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: 49 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 43 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*0 btuh*	8.7	*0 btuh*	1.3	*61 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*107 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*0 btuh*	1.6	*0 btuh*	0.7	*34 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*12 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	168 btuh	LOSS	0.2894	49 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	8.4 btuh	239		5375		LOSS	10%	22 btuh
TOTAL CONDUCTIVE			GAIN	45 btuh	GAIN	0.0758	3 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	3 btuh	0	0 btuh	13%	672 btuh	GAIN	10%	72 btuh

BED 4	*TOTALS H.L.: 1523 btuh*				*H.G.: 1195 btuh*				AREA: 253 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: 204 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*549 btuh*	8.7	*0 btuh*	1.3	*256 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*104 btuh*	1.6	*0 btuh*	0.7	*141 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	1137 btuh	LOSS	0.2894	329 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	56.8 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	592 btuh	GAIN	0.0758	45 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	43 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 3	*TOTALS H.L.: 3935 btuh*				*H.G.: 3701 btuh*				AREA: 253 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 378 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 42 ft		EXIST: 0 ft		NEW: 253 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*1249 btuh*	8.7	*0 btuh*	1.3	*317 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*236 btuh*	1.6	*0 btuh*	0.7	*175 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: 66.0 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	

TOTAL HEATLOSS: 52992 BTUH
TOTAL HEATGAIN: 33671 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

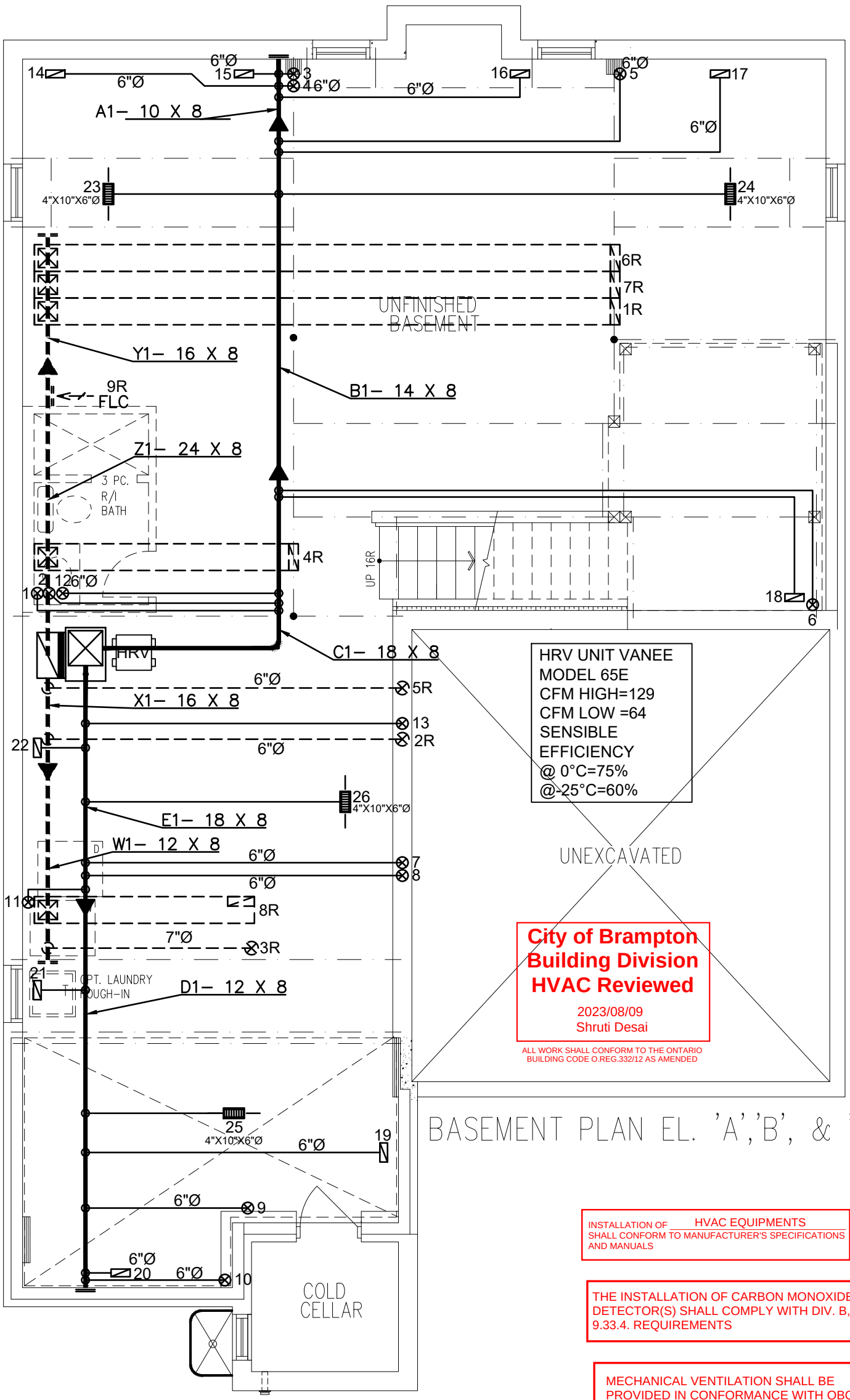
CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

LOSS	24.7	*0 btuh*	24.7	*0 btuh*	20.8	*1372 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	*1860 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	2938 btuh	LOSS	0.2894	850 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	146.8 btuh	239		5375		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2271 btuh	GAIN	0.0758	172 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	165 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2	*TOTALS H.L.: 5220 btuh*				*H.G.: 4453 btuh*				AREA: 320 ft2			C.Height: 9			GROSS EXP. WALL		*NEW 315 ft*		*EXIST 0 ft*
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT		
	NEW: 35 ft		EXIST: 0 ft		NEW: 320 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		29.80		22.05		2.04		2.03
LOSS	4.0	*969 btuh*	8.7	*0 btuh*	1.3	*401 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*667 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*183 btuh*	1.6	*0 btuh*	0.7	*222 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*72 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	3555 btuh	LOSS	0.2894	1029 btuh	LOSS	0.0000	0 btuh	LOSS	0.0	177.6 btuh	239		5375		LOSS	10%	458 btuh
TOTAL CONDUCTIVE			GAIN	2533 btuh	GAIN	0.0758	192 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	184 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	277 btuh

LEVEL 4



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

INSTALLATION OF HVAC EQUIPMENTS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN COMPLIANCE WITH OBC DIV.B, 6.2.1.6,9.32.3.6(3), 9.32.3.11 AND HRAI DIGEST REQUIREMENTS.

	# S/A	# R/A	# FANS
3RD	-	-	-
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	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: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: KB

SB-12 PERFORMANCE
CSA F280-12

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	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B, & C		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

M1

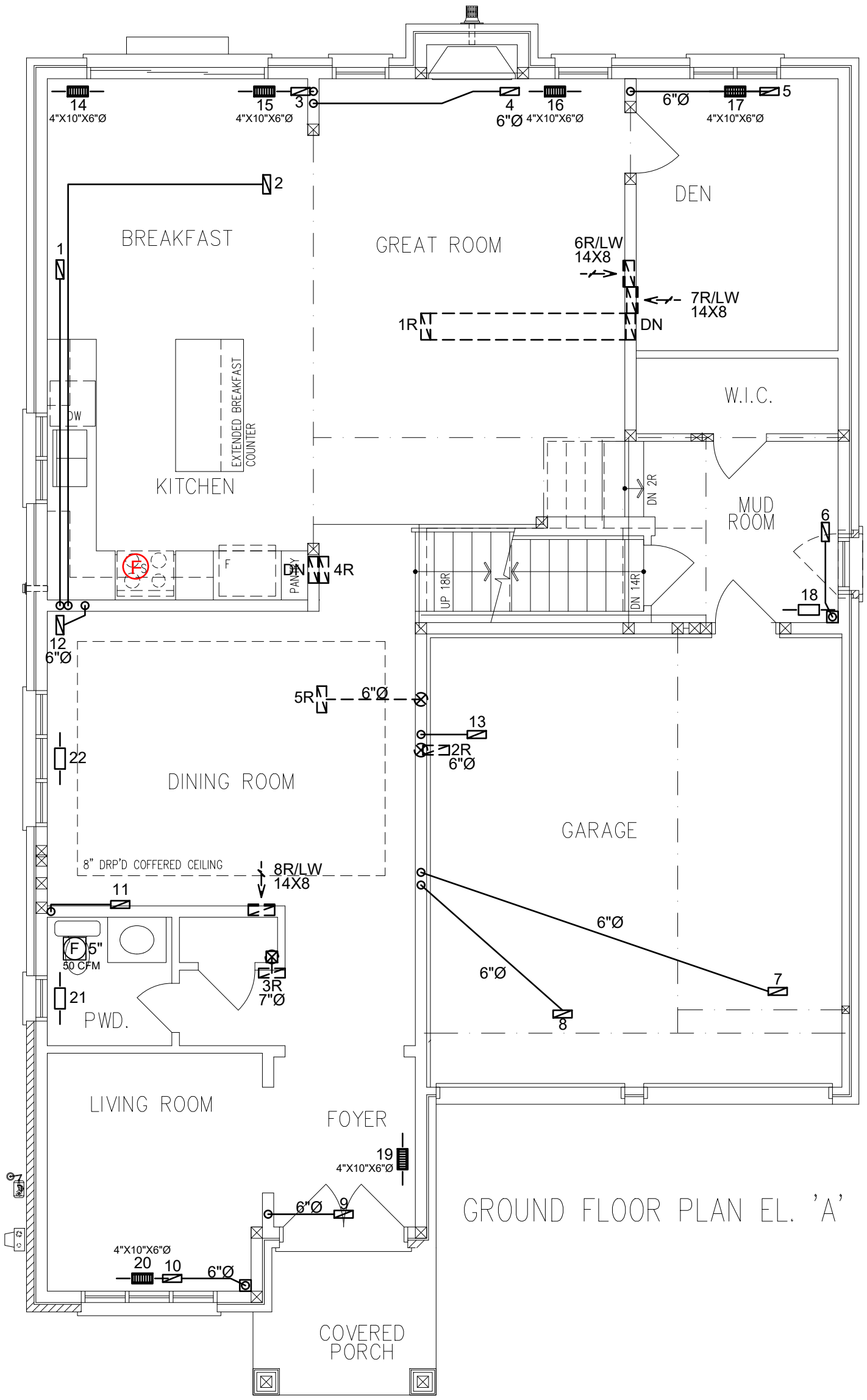
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

City of Brampton Building Division HVAC Reviewed

2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



GROUND FLOOR PLAN EL. 'A'

3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	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.
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PROPOSED 1ST FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: KB

SB-12 PERFORMANCE
CSA F280-12

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NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B, & C		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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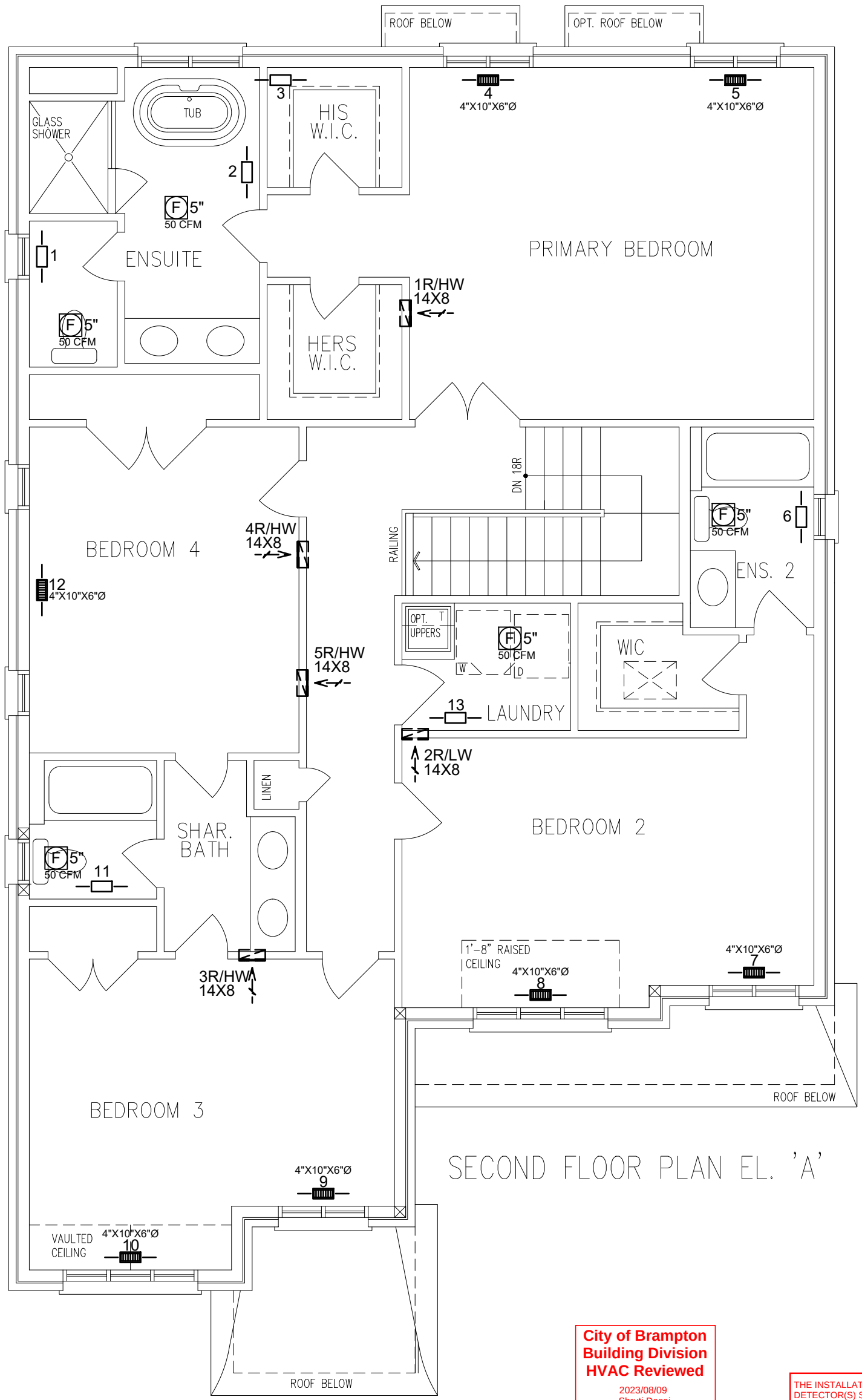
M2



SECOND FLOOR PLAN EL. 'A'

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

	# S/A	# R/A	# FANS
3RD	-	-	-
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	6

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PROPOSED 2ND FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: KB

SB-12 PERFORMANCE
CSA F280-12

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	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B, & C		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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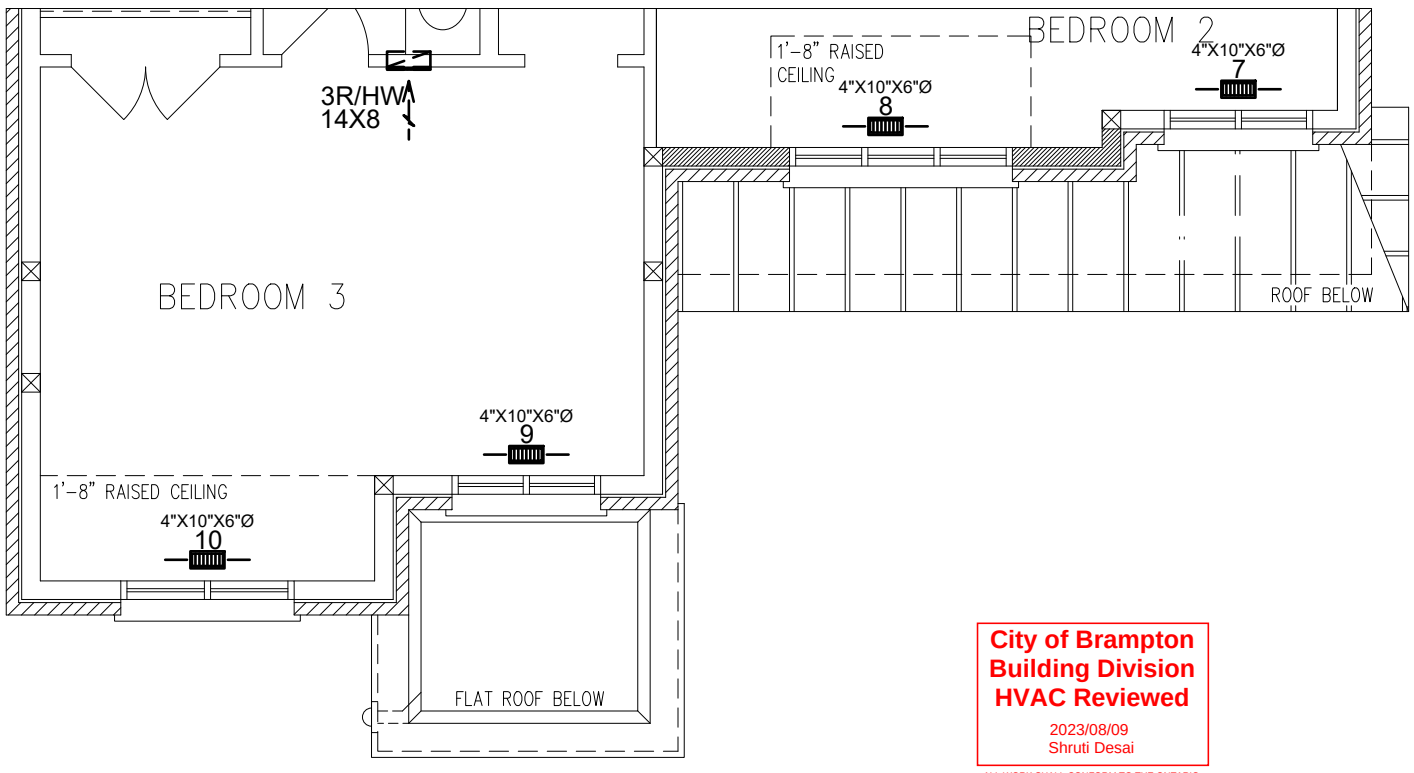
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M3

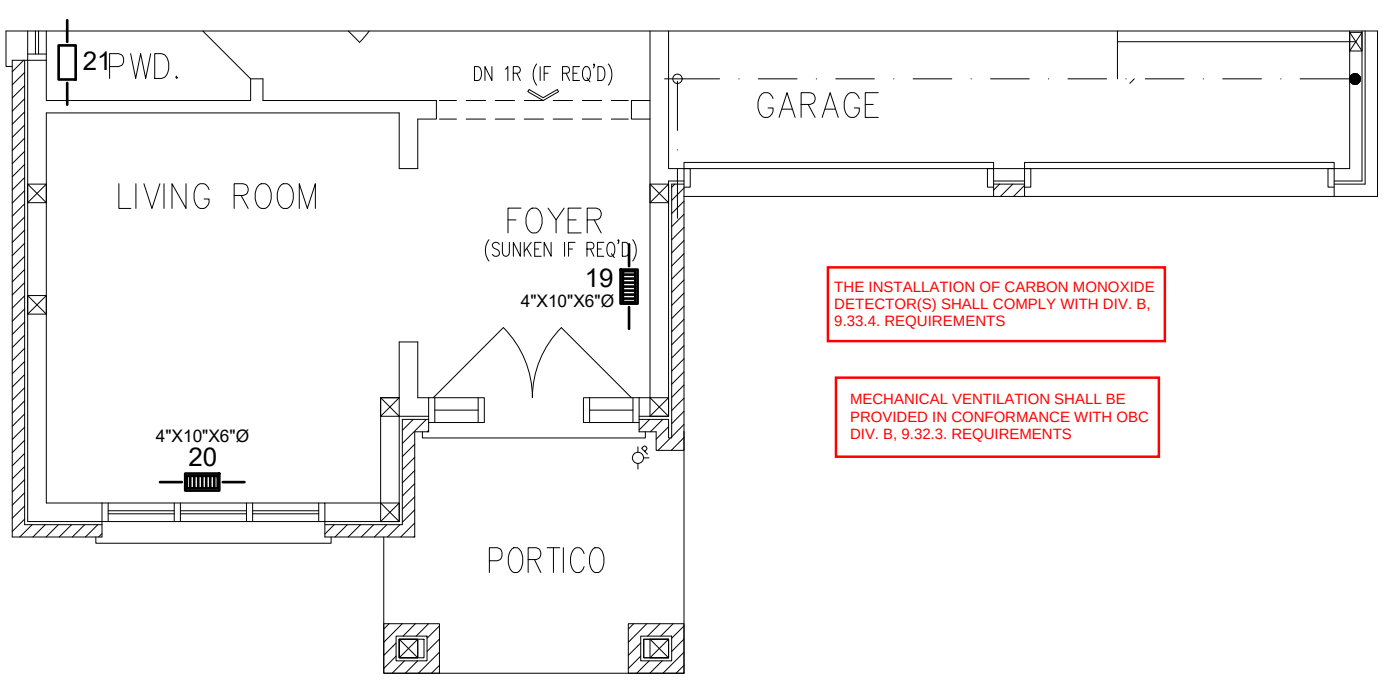


SECOND FLOOR PLAN EL. 'B'

City of Brampton Building Division HVAC Reviewed

2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

GROUND FLOOR PLAN EL. 'B'

3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	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.
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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.

PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: KB

SB-12 PERFORMANCE
CSA F280-12

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	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B, & C		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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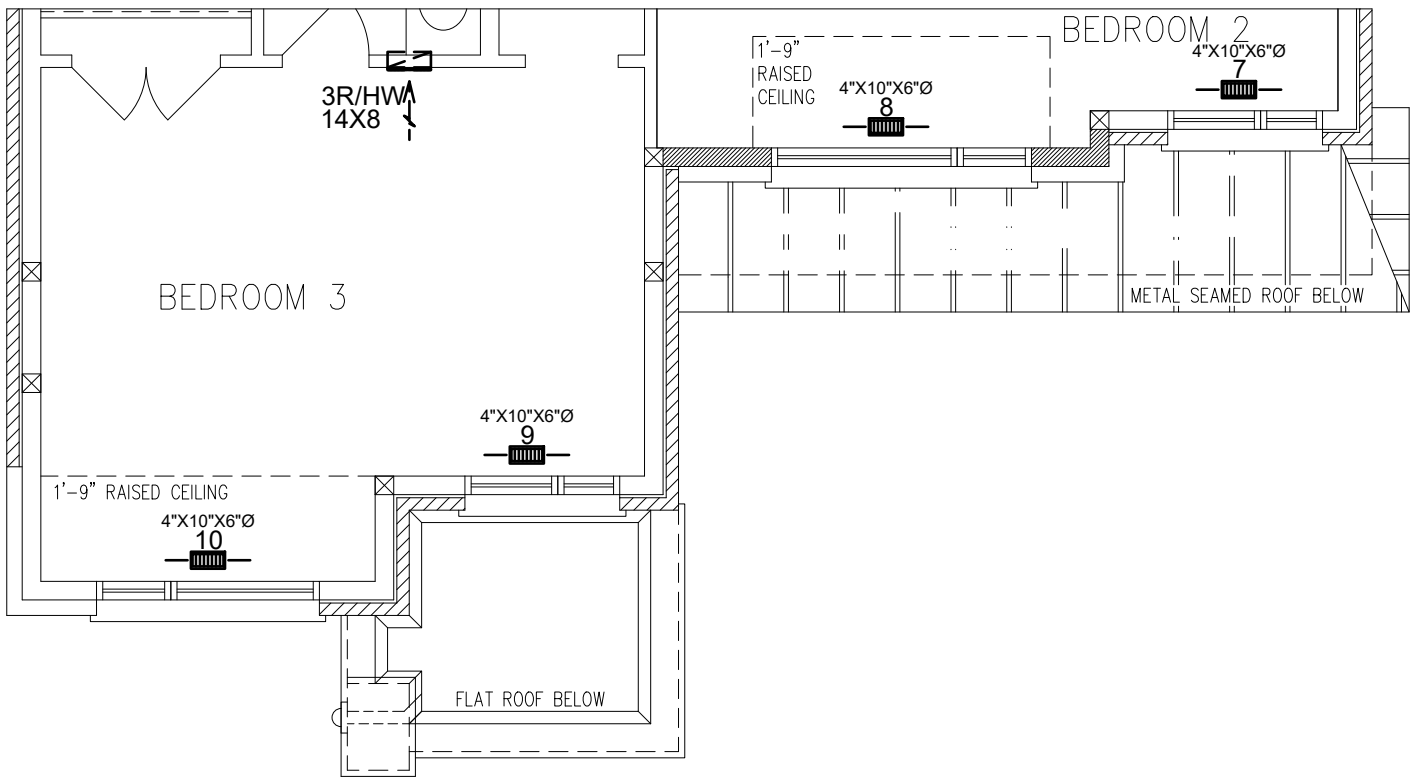
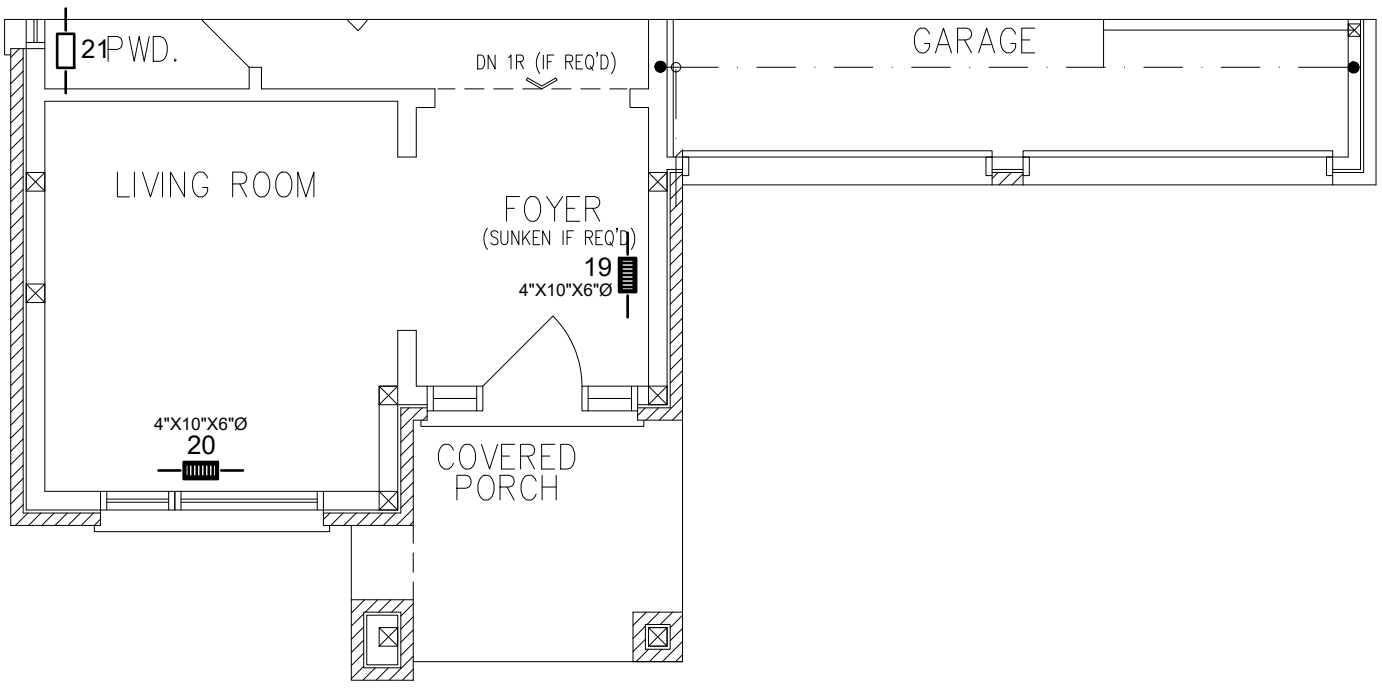
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M4



SECOND FLOOR PLAN EL. 'C'



GROUND FLOOR PLAN EL. 'C'

3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	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.
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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.

PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: KB

SB-12 PERFORMANCE
CSA F280-12

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

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NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B, & C		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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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 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedro			Lot: 4501	
			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 #:** P22160
Heating and Cooling Load Calculations		Builder	Roval Pine Homes
Air System Design		Project	Forestside Estates
Residential mechanical ventilation Design Summary		Model	Unit 4501 - Elev. A,B and C - Opt. 2nd
Residential System Design per CAN/CSA-F280-12			
Residential New Construction - Forced Air		SB-12	SB 12 Performance 28

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.

2022-06-30

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. P22160

Building Location

Address (Model):	Unit 4501 - Elev. A.B and C - Opt. 1	Site:	Forestside Estates
Model:		Lot:	4501
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**	SB 1	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**	SB 1	R 20ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	SB 12 F	
Style B:			

Exposed floors

Style A:	**As per Selected OBC SB12**	SB 12	R 31
Style B:			

Windows

Style A:	**As per Selected OBC SB12**	SB 12 I	R 3.57
Style B:	**Existing Windows (When Applicable)**	R	
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12**	SB 12 P	R 60.0
Style B:	**As per Selected OBC SB12**	SB 12 P	R 31.0
Style C:			

Doors

Style A:	**As per Selected OBC SB12**	SB 12	R 3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12**	SB 12	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 # P22160

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: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C - Opt.

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

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

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	6	@ 10.6	cfm	63.6	cfm
Other rooms	5	@ 10.6	cfm	53.0	cfm
		Total		201.4	

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	201.4
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	106.0 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 2022-06-30

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

Project # P22160

Project: Forestside Estates

Model: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.339	42039.0	74.2	19032.99

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.1180968	42039	14.00	1251.10

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	19033	5462	1.74231
2	0.3		13255	0.43077
3	0.2		13689	0.27808
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	1251.10	0.07267
BUILDING CONDUCTIVE HEAT GAIN	17215.00	

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	5462	0.17
2	0.3		13255	0.04
3	0.2		13689	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	17215.00	

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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):	1191

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1504.864
	3	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

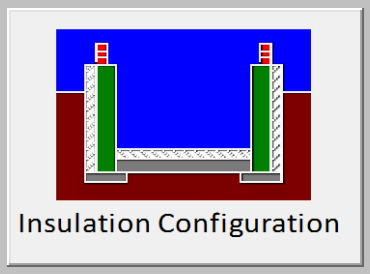
Heating Air Leakage Rate (ACH/H): 0.339

Cooling Air Leakage Rate (ACH/H): 0.118

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):	22.0
Floor Width (m):	5.52
Exposed Perimeter (m):	55.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.86
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):	**1479**



BCIN_1

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
Lot: 4501
Site: Forestside Estates

MCCALLUM HVAC DESIGN INC

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	15300 btu/h	EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.
LEVEL 2 NET LOAD	19746 btu/h	ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.
LEVEL 3 NET LOAD	18805 btu/h	AVAILABLE DESIGN PRESSURE	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft
SYSTEM HEATLOSS	53851 btu/h	R/A PLENUM PRESSURE	0.120"W.C.
SYSTEM HEATGAIN	35189 btu/h	S/A PLENUM PRESSURE	0.130"W.C.
BUILDING VOLUME Vb	42039.00 ft3	HEATING AIR FLOW PROPORTIONING FACTOR	0.0213 cfm/btuh
VENTILATION LOAD	1911.00 btu/h	COOLING AIR FLOW PROPORTIONING FACTOR	0.0325 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	1146.00 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	SB 12 Performance 28			COIL	3.0 TON
TEMP. RISE	51.75°F				

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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
23	BASE	3825	81	37	0.13	35	130	165	0.07	6.0	4x10	B1
24	BASE	3825	81	37	0.13	47	130	177	0.07	6.0	4x10	B1
25	BASE	3825	81	37	0.13	26	150	176	0.07	6.0	4x10	D1
26	BASE	3825	81	37	0.13	17	130	147	0.08	6.0	4x10	C1
14	KIT/BRK	2148	46	70	0.13	42	150	192	0.06	6.0	4x10	A1
15	KIT/BRK	2148	46	70	0.13	34	130	164	0.07	6.0	4x10	A1
16	GREAT	2522	54	63	0.13	43	180	223	0.05	6.0	4x10	A1
17	DEN	1978	42	52	0.13	52	120	172	0.07	6	4x10	B1
20	LIV	2409	51	80	0.13	28	120	148	0.08	6.0	4x10	D1
21	POWDER	595	13	11	0.13	16	160	176	0.07	5	4x10	D1
22	DIN	2522	54	64	0.13	6	140	146	0.08	5.0	4x10	C1
18	MUD	2604	55	16	0.13	41	160	201	0.06	5.0	4x10	B1
19	FOYER	2820	60	20	0.13	34	140	174	0.07	6	4x10	D1
2	M. BD	1375	29	45	0.13	41	150	191	0.06	6	4x10	A1
3	M. BD	1375	29	45	0.13	35	170	205	0.06	6	4x10	A1
4	M.WIC	389	8	4	0.13	40	180	220	0.05	5	4x10	A1
28	ENS-2	763	16	10	0.13	48	150	198	0.06	5	4x10	B1
6	BATH-2	1022	22	11	0.13	32	190	222	0.05	5	4x10	B1
12	SHD BATH-2	764	16	15	0.13	18	190	208	0.06	5	4x10	D1
1	P ENS	1120	24	33	0.13	24	190	214	0.06	6	4x10	B1
27	LAUND	294	6	28	0.13	18	170	188	0.06	5	4x10	C1
7	WIC-3	1538	33	40	0.13	36	150	186	0.06	5.0	4x10	C1
8	BED 3	1452	31	50	0.13	32	140	172	0.07	6	4x10	C1
9	BED 3	1452	31	50	0.13	29	130	159	0.08	6	4x10	C1
10	BED 4	1906	41	60	0.13	34	150	184	0.07	6	4x10	D1
11	BED 4	1906	41	60	0.13	36	130	166	0.07	6	4x10	D1
13	BD-5	1247	27	39	0.13	32	180	212	0.06	6	4x10	C1
5	BED 2	2203	47	63	0.13	51	210	261	0.05	6.0	4x10	A1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR	DUCT DESIGN	ACTUAL DUCT	EQUIVALENT	TOTAL EFFECTIV	ADJUSTED	DUCT SIZE	INLET SIZE	TRUNK

	VOLUME CFM	PRESSURE	LENGTH	LENGTH	E LENGTH	PRESSURE	ROUND		
1R	145	0.12	58	130	188	0.05	8	14x8	Y1
2R	70	0.12	27	160	187	0.05	6	14x8	X1
3R	110	0.12	33	170	203	0.05	7	14x8	W1
4R	160	0.12	25	120	145	0.07	8	14x8	Z1
5R	85	0.12	30	120	150	0.07	6	14x8	X1
6R	150	0.12	42	170	212	0.05	8	14x8	Y1
7R	150	0.12	41	170	211	0.05	8	14x8	Y1
8R	155	0.12	18	130	148	0.07	7.5	14x8	W1
9R	120	0.12	12	160	172	0.06	7	FLC	Z1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
Z1	725	0.05	14.5	24x8	18x10
Y1	445	0.05	12	16x8	22x6
X1	420	0.05	11.5	14x8	20x6
W1	265	0.05	10	12x8	16x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	259	0.05	10	12x8	16x6
B1	580	0.05	13	18x8	14x10
C1	566	0.06	12.5	18x8	24x6
D1	303	0.06	10	12x8	16x6

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B andC - Opt. 2nd floor - 5 bedroom - 4 bath cond
CLIENT: Royal Pine Homes
GTA: 3244
PROJECT #: P22160
LOT: 4501
COMPLIANCE PACKAGE: SB 12
SITE: Forestside Estates

City of Brampton Building Division HVAC Reviewed
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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.: 15300 btuh	H.G.: 4508 btuh	AREA: 1311 ft2	Above Grade: 2	GROSS EXP. WALL	NEW 362 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 181 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		29.80		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	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.7	227 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: 8.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2		EXIST: 0.0 ft2		NEW: 4 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	166 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh	37.3	0 btuh	20.8	83 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	225 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh	14.9	0 btuh	11.7	47 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		5046 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD			DUCT PIPE L.	
TOTAL CONDUCTIVE	LOSS	5462 btuh	LOSS	1.7423	9516 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	322.1 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	673 btuh	GAIN	0.0727	49 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	56 btuh	0	0 btuh	50%	2690 btuh	GAIN	0%	0 btuh

LEVEL 2

KIT/BRK	TOTALS H.L.: 4296 btuh	H.G.: 4280 btuh	AREA: 264 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1221 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	230 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: 64.0 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	1330 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	1803 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	2884 btuh	LOSS	0.4308	1242 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	170.1 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	2381 btuh	GAIN	0.0727	173 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	200 btuh	0	0 btuh	10%	538 btuh	GAIN	0%	0 btuh

GREAT	TOTALS H.L.: 2522 btuh	H.G.: 1924 btuh	AREA: 343 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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	1693 btuh	LOSS	0.4308	729 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	99.8 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1047 btuh	GAIN	0.0727	76 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	88 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

DEN	TOTALS H.L.: 1978 btuh	H.G.: 1603 btuh	AREA: 113 ft2	C.Height: 11	GROSS EXP. WALL	NEW 231 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	829 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	156 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: 24.0 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	499 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	676 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	1328 btuh	LOSS	0.4308	572 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	78.3 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	833 btuh	GAIN	0.0727	61 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	70 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

LIV	TOTALS H.L.: 2409 btuh	H.G.: 2471 btuh	AREA: 101 ft2	C.Height: 11	GROSS EXP. WALL	NEW 253 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 23 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		29.80		22.05		2.04		2.03	

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B andC - Opt. 2nd floor - 5 bedroom - 4 bath cond
CLIENT: Royal Pine Homes GTA: 3244
PROJECT #: P22160 LOT: 4501
COMPLIANCE PACKAGE: SB 12 SITE: Forestside Estates

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.BEG 332/12 AS AMENDED

MCCALLUM HVAC DESIGN INC

LOSS	4.0	869 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	164 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: 36.0 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	748 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	1014 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	1617 btuh	LOSS	0.4308	697 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	95.4 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1178 btuh	GAIN	0.0727	86 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	99 btuh	0	0 btuh	10%	538 btuh	GAIN	0%	0 btuh

POWDER	TOTALS H.L.: 595 btuh			H.G.: 326 btuh					AREA: 34 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		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03	
LOSS	4.0	232 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	44 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	399 btuh	LOSS	0.4308	172 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	23.5 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	217 btuh	GAIN	0.0727	16 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	18 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

DIN	TOTALS H.L.: 2522 btuh			H.G.: 1981 btuh					AREA: 219 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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: 30.0 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	624 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	651 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	1693 btuh	LOSS	0.4308	729 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	99.8 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	853 btuh	GAIN	0.0727	62 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	72 btuh	0	0 btuh	10%	538 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2604 btuh			H.G.: 497 btuh					AREA: 108 ft2		C.Height: 11		GROSS EXP. WALL		NEW 220 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 20 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		29.80		22.05		2.04		2.03	
LOSS	4.0	713 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	134 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: 42.0 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	1035 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	195 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	1748 btuh	LOSS	0.4308	753 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	103.1 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	330 btuh	GAIN	0.0727	24 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	28 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

FOYER	TOTALS H.L.: 2820 btuh			H.G.: 607 btuh					AREA: 120 ft2		C.Height: 11		GROSS EXP. WALL		NEW 231 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	733 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	138 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: 42.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 6 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	1035 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	125 btuh	37.3	0 btuh
GAIN	4.7	195 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	70 btuh	14.9	0 btuh

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B andC - Opt. 2nd floor - 5 bedroom - 4 bath cond
CLIENT: Royal Pine Homes GTA: 3244
PROJECT #: P22160 LOT: 4501
COMPLIANCE PACKAGE: SB 12 SITE: Forestside Estates

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE AND APPLICABLE LAWS

MCCALLUM HVAC DESIGN INC

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	1893 btuh	LOSS	0.4308	815 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	111.6 btuh	239		5380		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN	404 btuh	GAIN	0.0727	29 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	34 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

LEVEL 3

M. BD	TOTALS H.L.: 2749 btuh			H.G.: 2774 btuh				AREA: 269 ft2			C.Height: 9		GROSS EXP. WALL		NEW 270 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT	
	NEW: 30 ft		EXIST: 0 ft		NEW: 269 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		29.80		22.05		2.04	2.03
LOSS	4.0	929 btuh	8.7	0 btuh	1.3	337 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	175 btuh	1.6	0 btuh	0.7	186 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	2056 btuh	LOSS	0.2781	572 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	121.3 btuh	239		5380		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN	1432 btuh	GAIN	0.0727	104 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	120 btuh	2	478 btuh	0%	0 btuh	GAIN 0%	0 btuh

M.WIC	TOTALS H.L.: 389 btuh			H.G.: 124 btuh				AREA: 60 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: 60 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		29.80		22.05		2.04	2.03
LOSS	4.0	216 btuh	8.7	0 btuh	1.3	75 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	41 btuh	1.6	0 btuh	0.7	42 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	291 btuh	LOSS	0.2781	81 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	17.2 btuh	239		5380		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN	82 btuh	GAIN	0.0727	6 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	7 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

ENS-2	TOTALS H.L.: 763 btuh			H.G.: 296 btuh				AREA: 60 ft2			C.Height: 9		GROSS EXP. WALL		NEW 90 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT	
	NEW: 10 ft		EXIST: 0 ft		NEW: 60 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		29.80		22.05		2.04	2.03
LOSS	4.0	328 btuh	8.7	0 btuh	1.3	75 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	62 btuh	1.6	0 btuh	0.7	42 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	570 btuh	LOSS	0.2781	159 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	33.6 btuh	239		5380		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN	197 btuh	GAIN	0.0727	14 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	17 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

BATH-2	TOTALS H.L.: 1022 btuh			H.G.: 350 btuh				AREA: 70 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: 70 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 61 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		29.80		22.05		2.04	2.03
LOSS	4.0	292 btuh	8.7	0 btuh	1.3	88 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	152 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	55 btuh	1.6	0 btuh	0.7	48 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	16 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	698 btuh	LOSS	0.2781	194 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	41.2 btuh	239		5380		LOSS 10%	89 btuh
TOTAL CONDUCTIVE		GAIN	214 btuh	GAIN	0.0727	16 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	18 btuh	0	0 btuh	0%	0 btuh	GAIN 10%	21 btuh

SHD BATH-2	TOTALS H.L.: 764 btuh			H.G.: 475 btuh				AREA: 105 ft2			C.Height: 9		GROSS EXP. WALL		NEW 72 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT	

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B andC - Opt. 2nd floor - 5 bedroom - 4 bath cond
CLIENT: Royal Pine Homes
GTA: 3244
PROJECT #: P22160
LOT: 4501
COMPLIANCE PACKAGE: SB 12
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

	NEW: 8 ft		EXIST: 0 ft		NEW: 105 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*252 btuh*	8.7	*0 btuh*	1.3	*132 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*48 btuh*	1.6	*0 btuh*	0.7	*73 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	571 btuh	LOSS	0.2781	159 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	33.7 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	316 btuh	GAIN	0.0727	23 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	27 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

P ENS	*TOTALS H.L.: 1120 btuh*				*H.G.: 1018 btuh*				AREA: 127 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 90 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 10 ft		EXIST: 0 ft		NEW: 127 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*284 btuh*	8.7	*0 btuh*	1.3	*159 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*54 btuh*	1.6	*0 btuh*	0.7	*88 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	838 btuh	LOSS	0.2781	233 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	49.4 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	677 btuh	GAIN	0.0727	49 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	57 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LAUND	*TOTALS H.L.: 294 btuh*				*H.G.: 861 btuh*				AREA: 62 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: 62 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*0 btuh*	8.7	*0 btuh*	1.3	*78 btuh*	3.2	*0 btuh*	2.7	*110 btuh*	3.4	*0 btuh*	2.5	*122 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*0 btuh*	1.6	*0 btuh*	0.7	*43 btuh*	1.8	*0 btuh*	1.5	*61 btuh*	1.9	*0 btuh*	0.3	*13 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	200 btuh	LOSS	0.2781	56 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	11.8 btuh	239		5380		LOSS	10%	26 btuh
TOTAL CONDUCTIVE			GAIN	56 btuh	GAIN	0.0727	4 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	5 btuh	0	0 btuh	10%	538 btuh	GAIN	10%	59 btuh

WIC-3	*TOTALS H.L.: 1538 btuh*				*H.G.: 1214 btuh*				AREA: 47 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 126 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 14 ft		EXIST: 0 ft		NEW: 47 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 47 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*416 btuh*	8.7	*0 btuh*	1.3	*59 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*117 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*79 btuh*	1.6	*0 btuh*	0.7	*33 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*13 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: 22.0 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	*457 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	*620 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	1050 btuh	LOSS	0.2781	292 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	61.9 btuh	239		5380		LOSS	10%	134 btuh
TOTAL CONDUCTIVE			GAIN	744 btuh	GAIN	0.0727	54 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	62 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	74 btuh

BED 3	*TOTALS H.L.: 2904 btuh*				*H.G.: 3076 btuh*				AREA: 203 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 126 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 14 ft		EXIST: 0 ft		NEW: 203 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 148 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*300 btuh*	8.7	*0 btuh*	1.3	*254 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*369 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*57 btuh*	1.6	*0 btuh*	0.7	*141 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*40 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: 51.0 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	

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B andC - Opt. 2nd floor - 5 bedroom - 4 bath cond
CLIENT: Royal Pine Homes
GTA: 3244
PROJECT #: P22160
LOT: 4501
COMPLIANCE PACKAGE: SB 12
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

LOSS	24.7	0 btuh	24.7	0 btuh	20.8	1060 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	1437 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	1983 btuh	LOSS	0.2781	551 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	117.0 btuh	239		5380		LOSS	10%	253 btuh
TOTAL CONDUCTIVE			GAIN	1674 btuh	GAIN	0.0727	122 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	140 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	191 btuh

BED 4	TOTALS H.L.: 3812 btuh				H.G.: 3670 btuh				AREA: 212 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: 212 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		29.80		22.05		2.04		2.03
LOSS	4.0	1213 btuh	8.7	0 btuh	1.3	266 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	229 btuh	1.6	0 btuh	0.7	147 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: 66.0 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	1372 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	1860 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	2851 btuh	LOSS	0.2781	793 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	168.1 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2235 btuh	GAIN	0.0727	162 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	187 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BD-5	TOTALS H.L.: 1247 btuh				H.G.: 1184 btuh				AREA: 187 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: 187 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		29.80		22.05		2.04		2.03
LOSS	4.0	324 btuh	8.7	0 btuh	1.3	234 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	61 btuh	1.6	0 btuh	0.7	129 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	933 btuh	LOSS	0.2781	259 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	55.0 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	581 btuh	GAIN	0.0727	42 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	49 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2	TOTALS H.L.: 2203 btuh				H.G.: 1950 btuh				AREA: 221 ft2			C.Height: 9	GROSS EXP. WALL		NEW 225 ft		EXIST 0 ft		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT		
	NEW: 25 ft		EXIST: 0 ft		NEW: 221 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		29.80		22.05		2.04		2.03
LOSS	4.0	789 btuh	8.7	0 btuh	1.3	277 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	149 btuh	1.6	0 btuh	0.7	153 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	1648 btuh	LOSS	0.2781	458 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	97.2 btuh	239		5380		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1091 btuh	GAIN	0.0727	79 btuh	GAIN	0.0000	0 btuh	GAIN	0.08	91 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 4

INSTALLATION OF HVAC EQUIPMENTS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

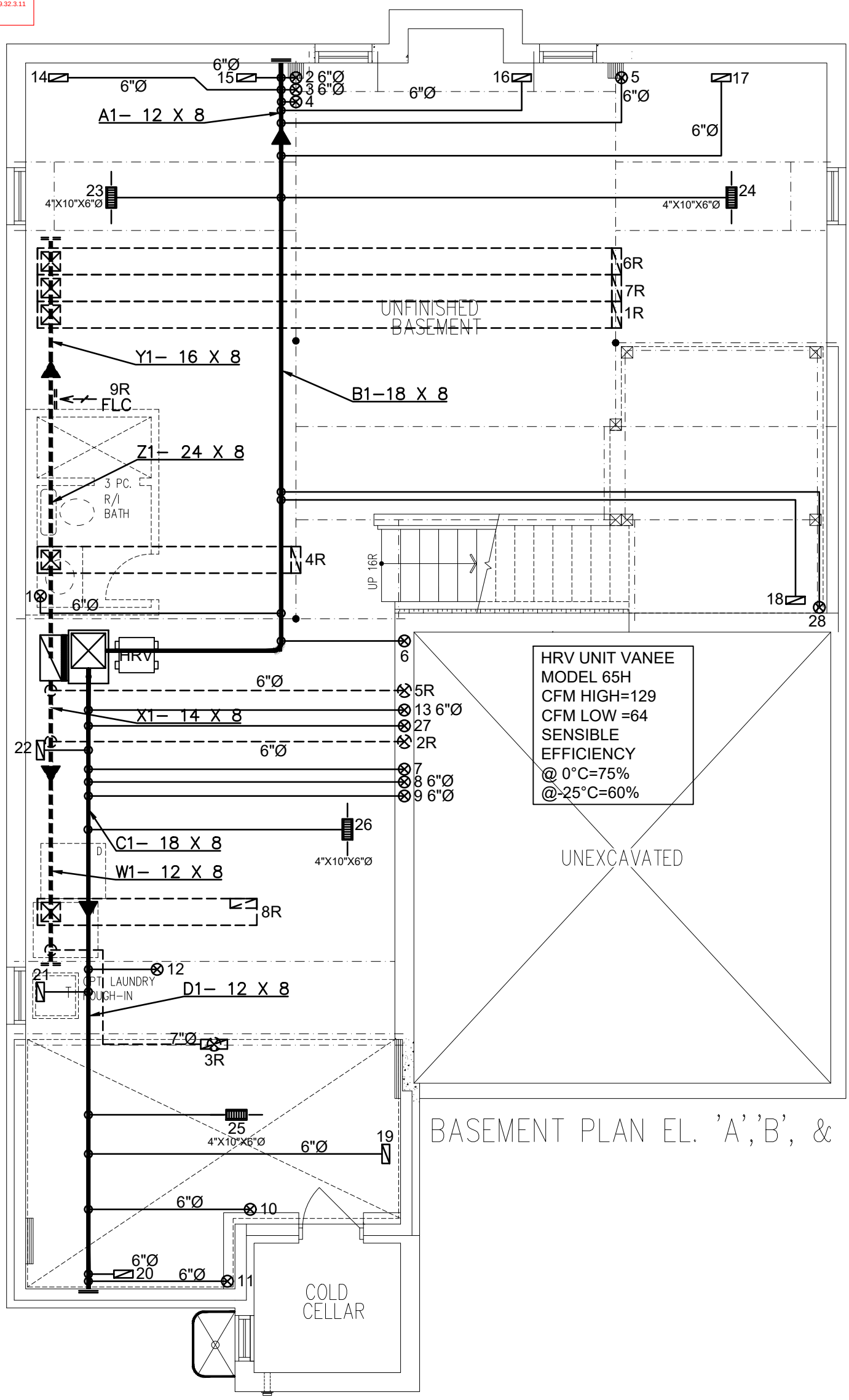
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN COMPLIANCE WITH OBC DIV.B, 6.2.1.6,9.32.3.6(3), 9.32.3.11 AND HRAI DIGEST REQUIREMENTS.

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG 332/12 AS AMENDED

PLEASE SEE ATTACHED NOTES AS THEY FORM PART OF THE REVIEWED DRAWINGS



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

3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	9	3	1
B	4	1	-
TOTAL	28	9	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: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	53,531 BTUH	
TOTAL GAIN	34,875 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

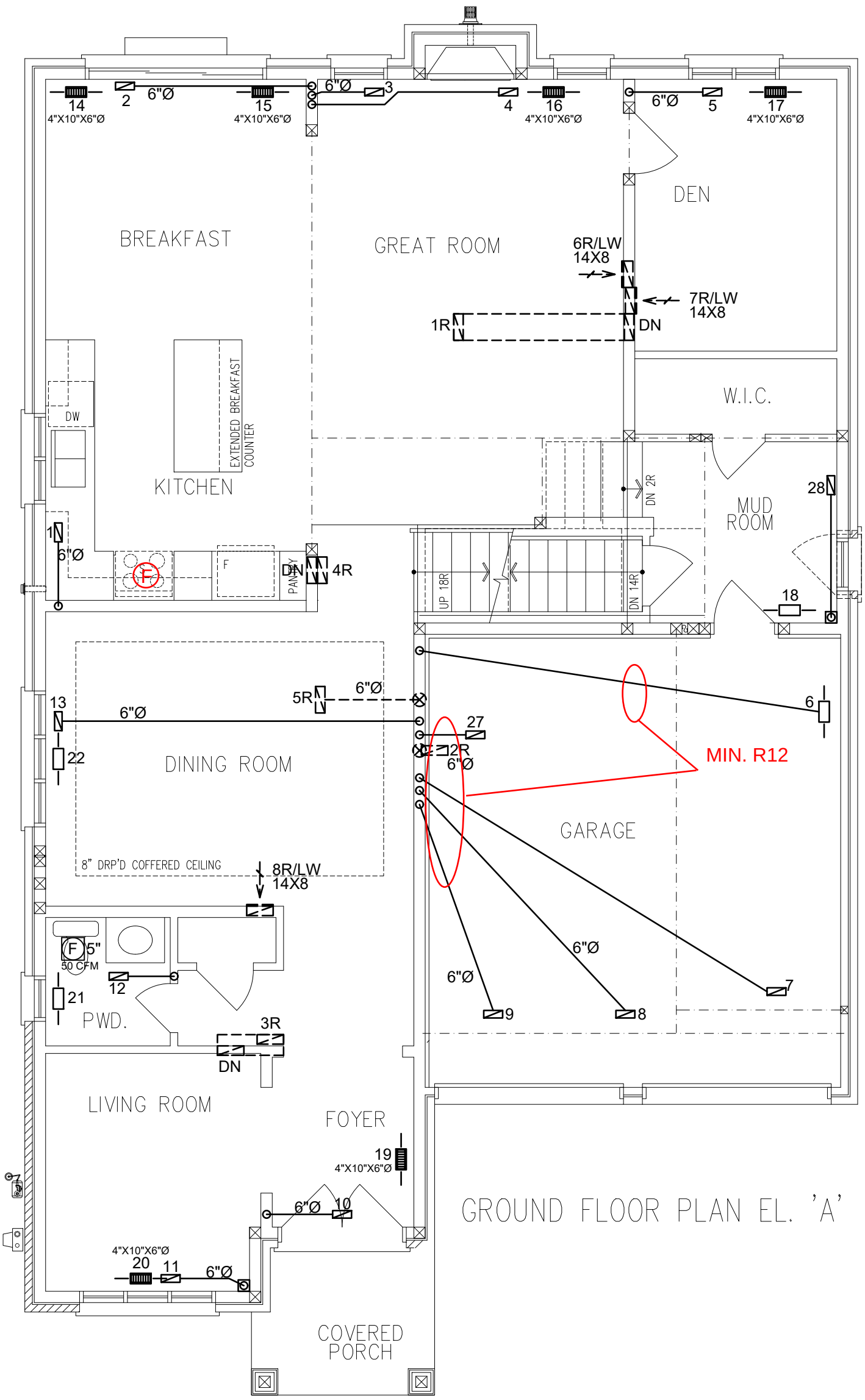
MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905–840–8166, info@mccallumhvac.com

M1

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	9	3	1
B	4	1	-
TOTAL	28	9	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.
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- ALL S/A RUNS TO BE 4"X10"X5" ROUND UNLESS OTHERWISE NOTED
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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 1ST FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	53,531 BTUH	
TOTAL GAIN	34,875 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

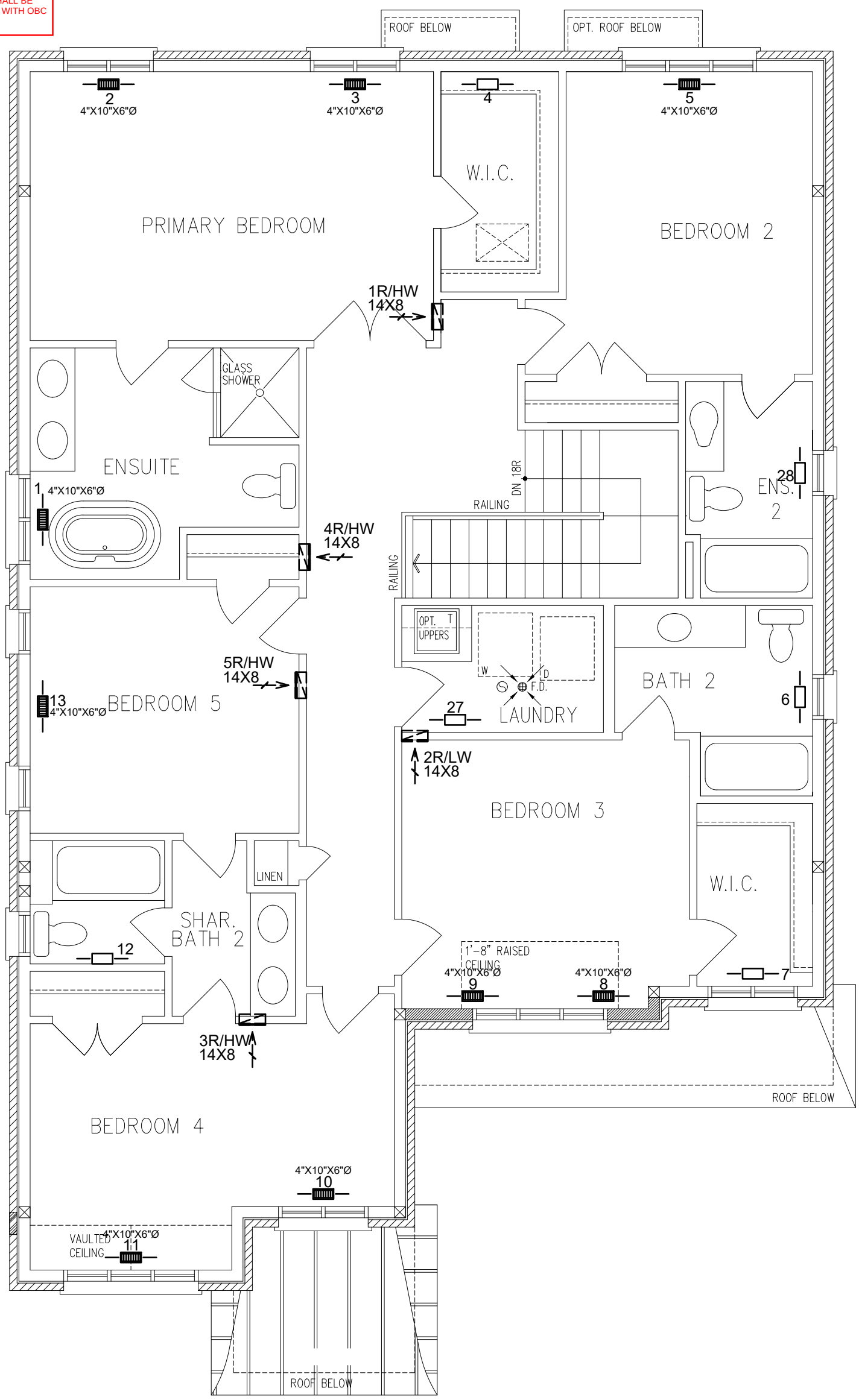
M2

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



OPT. SECOND FLOOR PLAN, ELEVATION 'A'
(W/ 5 BEDROOM, 4 BATHROOM CONDITION LAYOUT)

3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	9	3	1
B	4	1	-
TOTAL	28	9	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: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	53,531 BTUH	
TOTAL GAIN	34,875 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

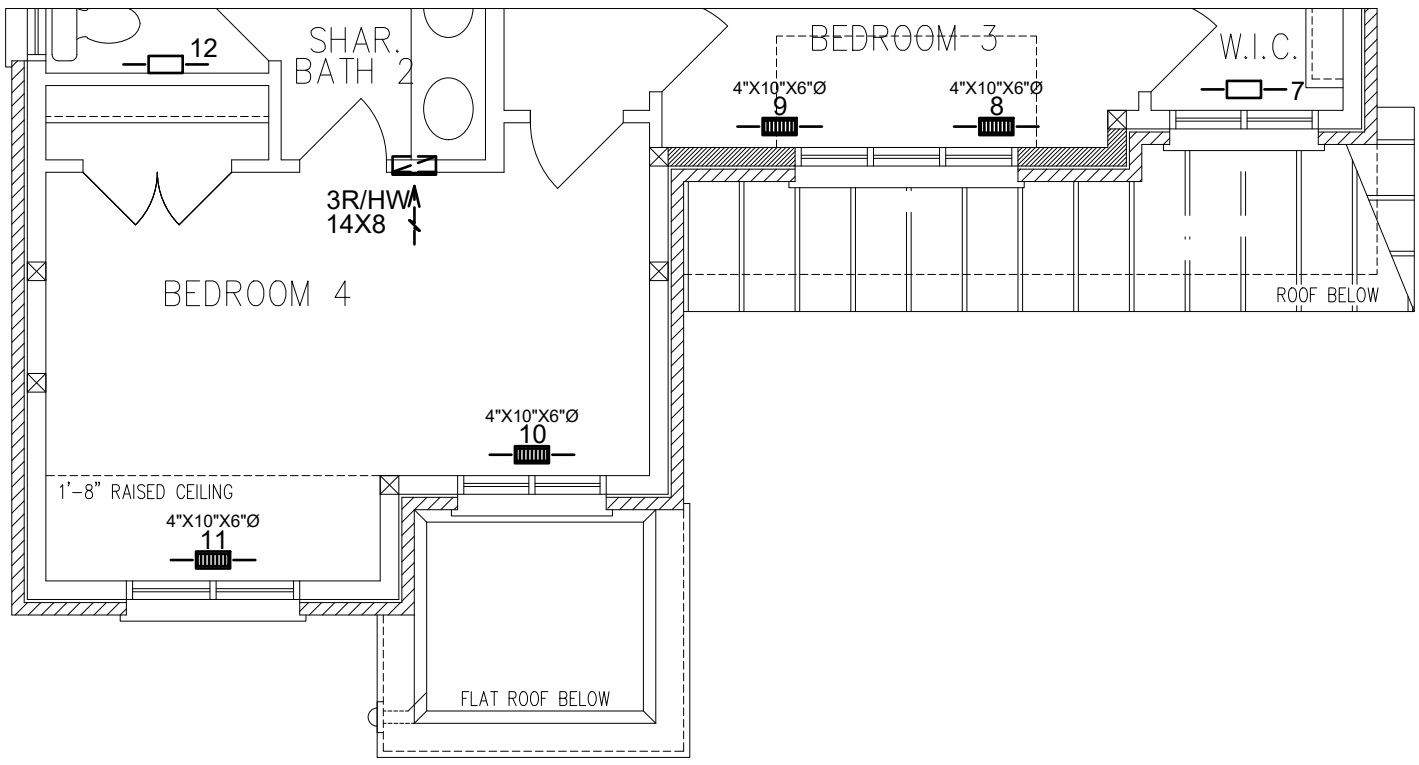
M3

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

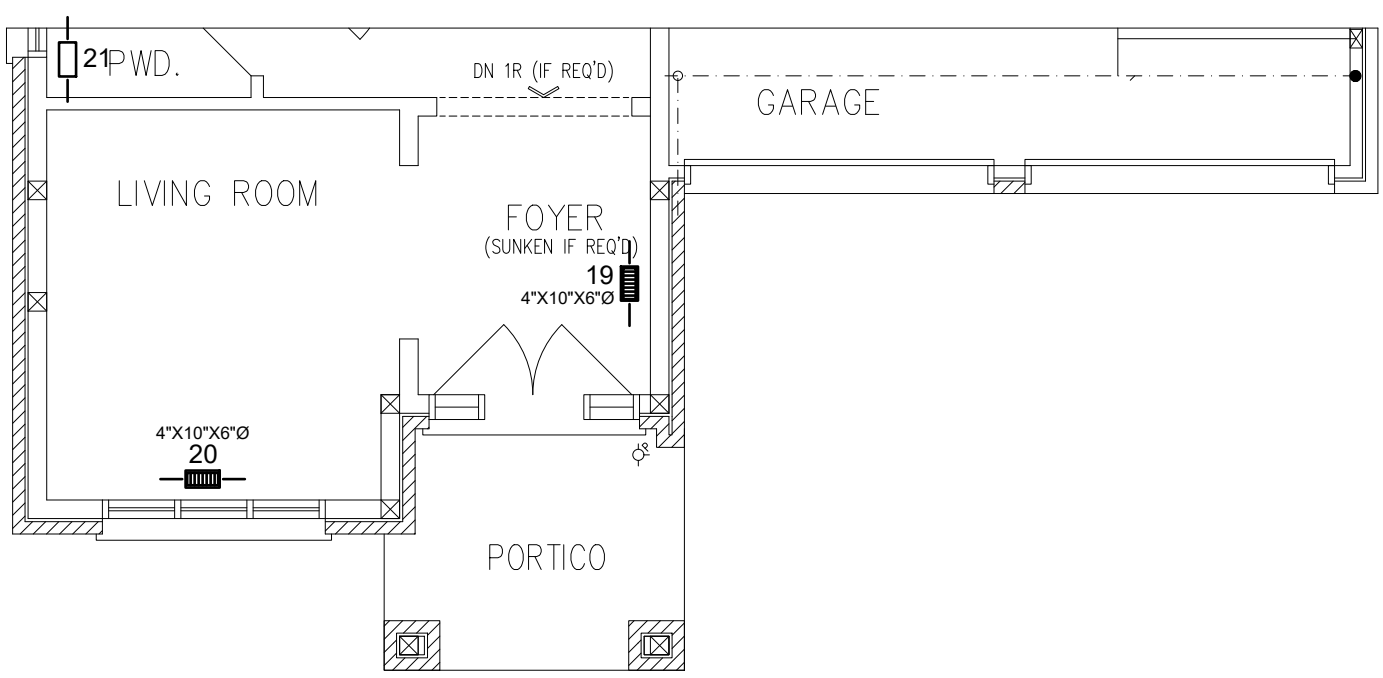
MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



OPT. SECOND FLOOR PLAN, ELEVATION 'B'
(W/ 5 BEDROOM, 4 BATHROOM CONDITION LAYOUT)



GROUND FLOOR PLAN EL. 'B'

3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	9	3	1
B	4	1	-
TOTAL	28	9	6

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PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY

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NAME	SIGNATURE	BCIN / BCDN
Doug McCallum		102614

TOTAL LOSS	53,531 BTUH	
TOTAL GAIN	34,875 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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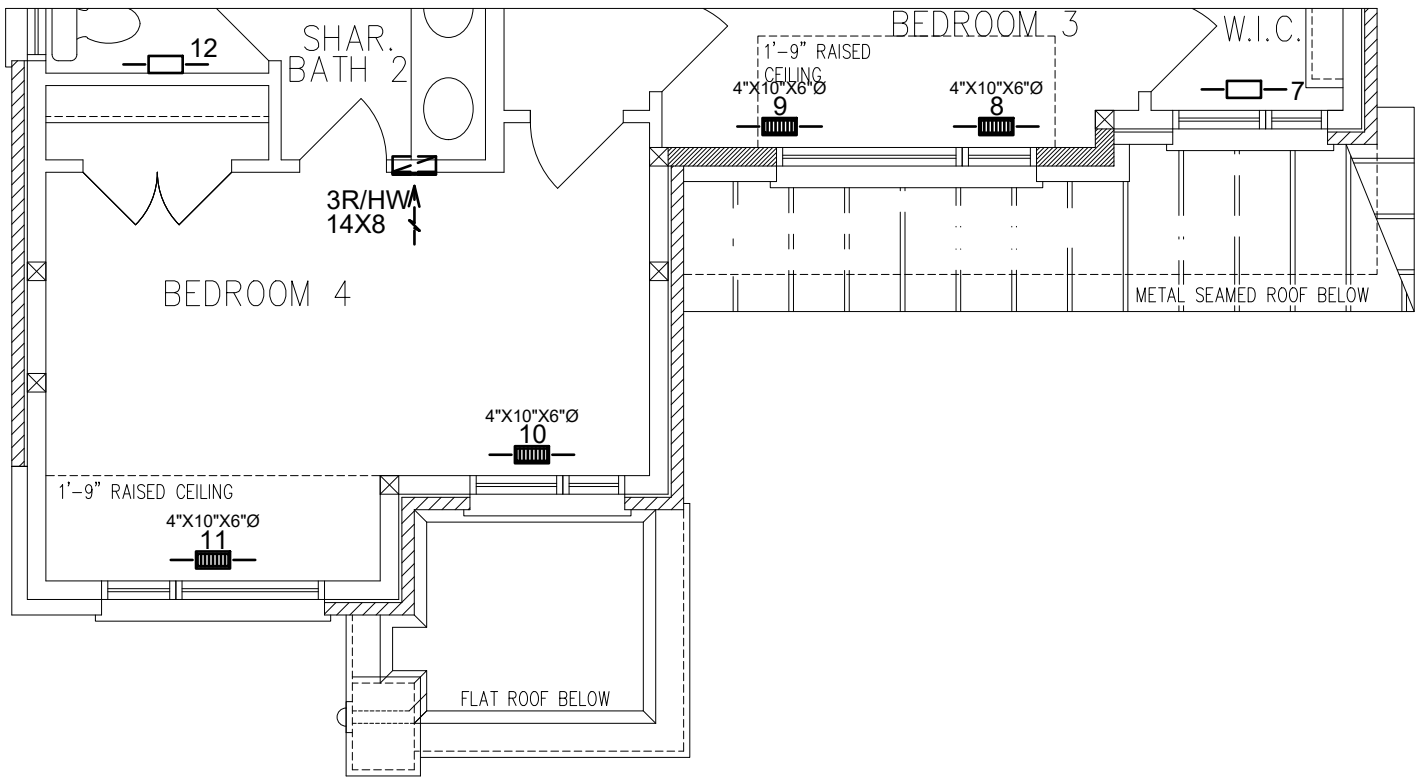
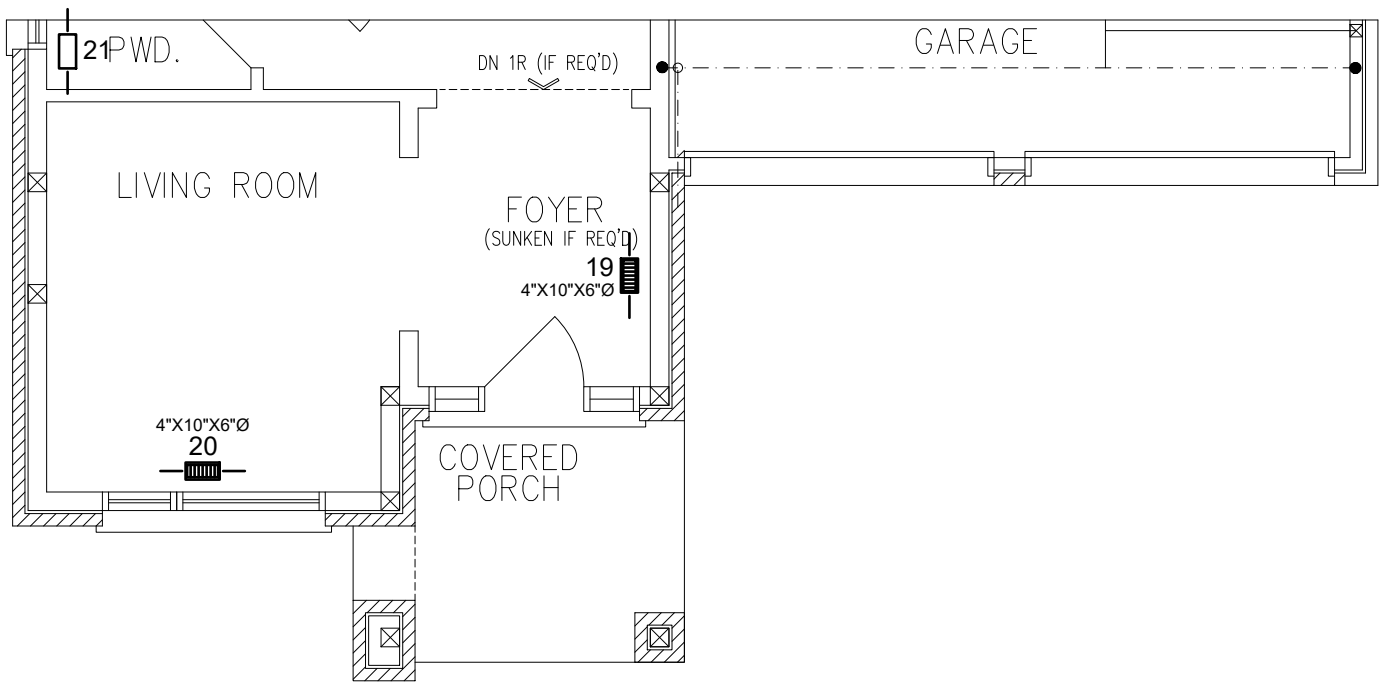
M4



OPT. SECOND FLOOR PLAN, ELEVATION 'C'
(W/ 5 BEDROOM, 4 BATHROOM CONDITION LAYOUT)



GROUND FLOOR PLAN EL. 'C'

3RD	# S/A -	# R/A -	# FANS -
2ND	15	5	5
1ST	9	3	1
B	4	1	-
TOTAL	28	9	6

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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.

PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	53,531 BTUH	
TOTAL GAIN	34,875 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom - 4 bath cond		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine 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 4501 - Elev. A,B and C - Opt. Grnd floor		Lot: 4501	
		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 #: P22160
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	Forestside Estates
		Model	Unit 4501 - Elev. A,B and C - Opt. Grn(
		SB-12	SB 12 Performance 28

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.

2022-06-29

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. P22160

Building Location

Address (Model):	Unit 4501 - Elev. A.B and C - Opt. (	Site:	Forestside Estates
Model:		Lot:	4501
City and Province:	Brampton	Postal code:	

City of Brampton Building Division HVAC Reviewed 2023/08/09 Clerk Comm. 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: 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 SB 1	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 SB 1	R	20ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	As per Selected OBC SB12 SB 12 F		
Style B:			

Exposed floors

Style A:	As per Selected OBC SB12 SB 12	R	31
Style B:			

Windows

Style A:	As per Selected OBC SB12 SB 12 I	R	3.57
Style B:	Existing Windows (When Applicable)	R	
Style C:			
Style D:			

Ceilings

Style A:	As per Selected OBC SB12 SB 12 P	R	60.0
Style B:	As per Selected OBC SB12 SB 12 P	R	31.0
Style C:			

Doors

Style A:	As per Selected OBC SB12 SB 12	R	3.01
Style B:			
Style C:			

Skylights

Style A:	As per Selected OBC SB12 SB 12	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 # P22160

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: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C - Opt.

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

City of Brampton
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Shruti Desai
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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	4	@ 10.6	cfm	42.4	cfm
		Total		169.6	

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	169.6
Less principal exhaust capacity	79.5
REQUIRED supplemental vent. Capacity	90.1 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	2022-06-29		

MCCALLUM HVAC DESIGN INC

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

Project # P22160

Project: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C - Opt. Grnd floor

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.339	42025.0	74.2	19035.62

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.1181924	42025	14.00	1251.69

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	19036	5462	1.74255
2	0.3		12559	0.45471
3	0.2		13158	0.28934
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	1251.69	0.07700
BUILDING CONDUCTIVE HEAT GAIN	16256.00	

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

Case 1

Ventilation Heat Loss (Exhaust only Systems)

Case 1 - Exhaust Only				
Level	LF	HLbvent	LVL Cond. HL	Multiplier
1	0.5	1593	5462	0.15
2	0.3		12559	0.04
3	0.2		13158	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	16256.00	

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	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):	1190

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1504.864
	3	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

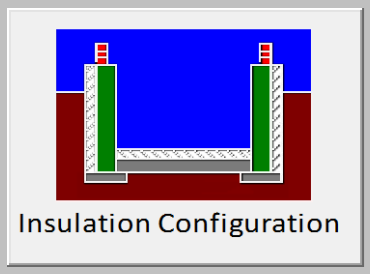
Heating Air Leakage Rate (ACH/H): 0.339

Cooling Air Leakage Rate (ACH/H): 0.118

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):	22.0
Floor Width (m):	5.52
Exposed Perimeter (m):	55.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.86
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):	**1479**



BCIN_1

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. Grnd floor
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
Lot: 4501
Site: Forestside Estates

MCCALLUM HVAC DESIGN INC

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	15259 btu/h	EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.
LEVEL 2 NET LOAD	18912 btu/h	ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.
LEVEL 3 NET LOAD	18121 btu/h	AVAILABLE DESIGN PRESSURE	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft
SYSTEM HEATLOSS	52292 btu/h	R/A PLENUM PRESSURE	0.120"W.C.
SYSTEM HEATGAIN	33322 btu/h	S/A PLENUM PRESSURE	0.130"W.C.
BUILDING VOLUME Vb	42025.00 ft3	HEATING AIR FLOW PROPORTIONING FACTOR	0.0219 cfm/btuh
VENTILATION LOAD	1594.00 btu/h	COOLING AIR FLOW PROPORTIONING FACTOR	0.0344 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	1146.00 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	SB 12 Performance 28			COIL	3.0 TON
TEMP. RISE	51.75°F				

City of Brampton
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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
23	BASE	3815	84	39	0.13	35	140	175	0.07	6.0	4x10	A1
24	BASE	3815	84	39	0.13	47	140	187	0.06	6.0	4x10	B1
25	BASE	3815	84	39	0.13	26	150	176	0.07	6.0	4x10	D1
26	BASE	3815	84	39	0.13	17	110	127	0.09	6.0	4x10	C1
14	KIT/BRK	2505	55	89	0.13	42	150	192	0.06	6.0	4x10	A1
15	KIT/BRK	2505	55	89	0.13	34	140	174	0.07	6.0	4x10	A1
16	GREAT	1517	33	47	0.13	46	170	216	0.06	6	4x10	B1
17	GREAT	1517	33	47	0.13	54	160	214	0.06	6	4x10	B1
20	DEN	2435	53	73	0.13	28	120	148	0.08	6.0	4x10	D1
21	POWDER	600	13	11	0.13	16	160	176	0.07	5	4x10	D1
22	DIN	2549	56	56	0.13	4	140	144	0.08	5.0	4x10	C1
2	P ENS	1508	33	41	0.13	31	140	171	0.07	5.0	4x10	A1
1	P W.CL	592	13	13	0.13	18	150	168	0.07	5	4x10	A1
4	M. BD	1531	34	49	0.13	43	200	243	0.05	6	4x10	B1
5	M. BD	1531	34	49	0.13	62	170	232	0.05	6	4x10	B1
6	ENS 2	772	17	10	0.13	59	140	199	0.06	5	4x10	B1
11	S BATH	805	18	16	0.13	15	120	135	0.09	5	4x10	C1
18	MUD	2434	53	16	0.13	41	130	171	0.07	5.0	4x10	B1
19	FOYER	2851	62	21	0.13	34	140	174	0.07	6	4x10	D1
3	P WIC	448	10	5	0.13	39	170	209	0.06	5	4x10	A1
13	LAUN	248	5	36	0.13	18	170	188	0.06	5.0	4x10	C1
12	BED 4	1524	33	41	0.13	5	140	145	0.08	6	4x10	A1
9	BED 3	1969	43	64	0.13	34	150	184	0.07	6.0	4x10	D1
10	BED 3	1969	43	64	0.13	36	130	166	0.07	6.0	4x10	D1
7	BED 2	2612	57	77	0.13	36	130	166	0.07	6.0	4x10	C1
8	BED 2	2612	57	77	0.13	31	120	151	0.08	6.0	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	75	0.12	40	140	180	0.06	6	14x8	W1

2R	80	0.12	26	120	146	0.07	6	14x8	Y1
3R	110	0.12	30	170	200	0.05	7	14x8	Z1
4R	130	0.12	22	120	142	0.07	7	14x8	X1
5R	140	0.12	30	190	220	0.05	8	14x8	Z1
6R	360	0.12	42	180	222	0.05	11.5	30x8	W1
7R	140	0.12	17	170	187	0.05	8	14x8	Z1
8R	110	0.12	22	170	192	0.05	7	FLC	X1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
Z1	390	0.05	11.5	14x8	20x6
Y1	470	0.05	12	16x8	22x6
X1	675	0.05	14	22x8	18x10
W1	435	0.05	12	16x8	22x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	571	0.05	13	18x8	14x10
B1	288	0.05	10	12x8	16x6
C1	575	0.06	12.5	18x8	24x6
D1	298	0.07	9.5	10x8	14x6

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. Grnd floor
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

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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.: 15259 btuh	H.G.: 4503 btuh	AREA: 1311 ft2	Above Grade: 2	GROSS EXP. WALL	NEW 362 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 181 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		29.80		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	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.7	227 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: 8.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 8.0 ft2		EXIST: 0.0 ft2		NEW: 4 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	166 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh	37.3	0 btuh	20.8	83 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	225 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh	14.9	0 btuh	11.7	47 btuh	14.9	0 btuh

FUND. CONDUCTIVE HEATLOSS		5046 btuh	AIR LEAKAGE NEW			AIR LEAKAGE EXIST			VENTILATION CASE 3			H.G. PEOPLE		APP. LOAD		DUCT PIPE L.		
TOTAL CONDUCTIVE	LOSS	5462 btuh	LOSS	1.7425	9518 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	279.0 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	673 btuh	GAIN	0.0770	52 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	50 btuh	0	0 btuh	50%	2689 btuh	GAIN	0%	0 btuh

LEVEL 2

KIT/BRK	TOTALS H.L.: 5010 btuh	H.G.: 5182 btuh	AREA: 503 ft2	C.Height: 11	GROSS EXP. WALL	NEW 462 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 42 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1498 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	283 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: 88.0 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	1829 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	2480 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	3327 btuh	LOSS	0.4547	1513 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	170.0 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	2762 btuh	GAIN	0.0770	213 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	204 btuh	0	0 btuh	15%	807 btuh	GAIN	0%	0 btuh

GREAT	TOTALS H.L.: 3033 btuh	H.G.: 2748 btuh	AREA: 252 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1265 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	239 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: 36.0 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	748 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	1014 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	2014 btuh	LOSS	0.4547	916 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	102.9 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1253 btuh	GAIN	0.0770	96 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	93 btuh	0	0 btuh	13%	672 btuh	GAIN	0%	0 btuh

DEN	TOTALS H.L.: 2435 btuh	H.G.: 2113 btuh	AREA: 101 ft2	C.Height: 11	GROSS EXP. WALL	NEW 253 ft	EXIST 0 ft

	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 23 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		29.80		22.05		2.04		2.03	
LOSS	4.0	869 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	164 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: 36.0 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	748 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	1014 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	1617 btuh	LOSS	0.4547	735 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	82.6 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE	GAIN	1178 btuh	GAIN	0.0770	91 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	87 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

POWDER	TOTALS H.L.: 600 btuh	H.G.: 325 btuh	AREA: 34 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		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03	

LOSS	4.0	232 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	44 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	399 btuh	LOSS	0.4547	181 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	20.4 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	217 btuh	GAIN	0.0770	17 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	16 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

DIN	TOTALS H.L.: 2549 btuh			H.G.: 1626 btuh					AREA: 219 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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: 30.0 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	624 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	651 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	1693 btuh	LOSS	0.4547	770 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	86.5 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	853 btuh	GAIN	0.0770	66 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	63 btuh	0	0 btuh	5%	269 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2434 btuh			H.G.: 456 btuh					AREA: 75 ft2		C.Height: 11		GROSS EXP. WALL		NEW 187 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 17 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		29.80		22.05		2.04		2.03	
LOSS	4.0	581 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	110 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: 42.0 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	1035 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	195 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	1616 btuh	LOSS	0.4547	735 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	82.5 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	305 btuh	GAIN	0.0770	23 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	23 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

FOYER	TOTALS H.L.: 2851 btuh			H.G.: 605 btuh					AREA: 120 ft2		C.Height: 11		GROSS EXP. WALL		NEW 231 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	733 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	138 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: 42.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 6 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	1035 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	125 btuh	37.3	0 btuh
GAIN	4.7	195 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	70 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	1893 btuh	LOSS	0.4547	861 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	96.7 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	404 btuh	GAIN	0.0770	31 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	30 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

P ENS	TOTALS H.L.: 1508 btuh			H.G.: 1193 btuh					AREA: 114 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	525 btuh	8.7	0 btuh	1.3	143 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	99 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: 22.0 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	457 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 4501 - Elev. A,B and C - Opt. Grnd floor
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

GAIN	4.7	0 btuh	4.7	0 btuh	28.2	620 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	1125 btuh	LOSS	0.2893	326 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	57.5 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	798 btuh	GAIN	0.0770	61 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	59 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

P W.CL	TOTALS H.L.: 592 btuh			H.G.: 385 btuh	AREA: 30 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: 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	29.80	22.05	2.04	2.03				
LOSS	4.0 216 btuh	8.7 0 btuh	1.3 38 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.5 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 41 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: 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 441 btuh	LOSS 0.2893	128 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	22.5 btuh	239		5377		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 257 btuh	GAIN 0.0770	20 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	19 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

M. BD	TOTALS H.L.: 3062 btuh			H.G.: 2874 btuh	AREA: 336 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: 336 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	29.80	22.05	2.04	2.03				
LOSS	4.0 1073 btuh	8.7 0 btuh	1.3 421 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.5 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 202 btuh	1.6 0 btuh	0.7 233 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 2284 btuh	LOSS 0.2893	661 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	116.7 btuh	239		5377		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 1506 btuh	GAIN 0.0770	116 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	111 btuh	2	478 btuh	0%	0 btuh	GAIN 0%	0 btuh

ENS 2	TOTALS H.L.: 772 btuh			H.G.: 293 btuh	AREA: 57 ft2		C.Height: 9		GROSS EXP. WALL		NEW 90 ft		EXIST 0 ft	
	EXPOSED WALLS		EXPOSED CEILING W/ATTIC		EXPOSED CEILING NO ATTIC		EXPOSED FLOORS		SKYLIGHT					
	NEW: 10 ft	EXIST: 0 ft	NEW: 57 ft2	EXIST: 0	NEW: 0	EXIST: 0	NEW: 4 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	29.80	22.05	2.04	2.03				
LOSS	4.0 328 btuh	8.7 0 btuh	1.3 71 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.5 10 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 62 btuh	1.6 0 btuh	0.7 39 btuh	1.8 0 btuh	1.5 0 btuh	1.9 0 btuh	0.3 1 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 576 btuh	LOSS 0.2893	167 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	29.4 btuh	239		5377		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 196 btuh	GAIN 0.0770	15 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	15 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

S BATH	TOTALS H.L.: 805 btuh			H.G.: 460 btuh	AREA: 113 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: 113 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	29.80	22.05	2.04	2.03				
LOSS	4.0 292 btuh	8.7 0 btuh	1.3 142 btuh	3.2 0 btuh	2.7 0 btuh	3.4 0 btuh	2.5 0 btuh	3.4 0 btuh	36.4 0 btuh	37 0 btuh				
GAIN	0.8 55 btuh	1.6 0 btuh	0.7 78 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 600 btuh	LOSS 0.2893	174 btuh	LOSS 0.0000	0 btuh	LOSS 0.1	30.6 btuh	239		5377		LOSS 0%	0 btuh
TOTAL CONDUCTIVE		GAIN 307 btuh	GAIN 0.0770	24 btuh	GAIN 0.0000	0 btuh	GAIN 0.07	23 btuh	0	0 btuh	0%	0 btuh	GAIN 0%	0 btuh

P WIC	TOTALS H.L.: 448 btuh			H.G.: 159 btuh	AREA: 94 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: 94 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 4501 - Elev. A,B and C - Opt. Grnd floor
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03	
LOSS	4.0	*216 btuh*	8.7	*0 btuh*	1.3	*118 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*41 btuh*	1.6	*0 btuh*	0.7	*65 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	334 btuh	LOSS	0.2893	97 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	17.1 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	106 btuh	GAIN	0.0770	8 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	8 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LAUN	*TOTALS H.L.: 248 btuh*				*H.G.: 1034 btuh*				AREA: 49 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: 49 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 43 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*0 btuh*	8.7	*0 btuh*	1.3	*61 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*107 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*0 btuh*	1.6	*0 btuh*	0.7	*34 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*12 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	168 btuh	LOSS	0.2893	49 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	8.6 btuh	239		5377		LOSS	10%	22 btuh
TOTAL CONDUCTIVE			GAIN	45 btuh	GAIN	0.0770	3 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	3 btuh	0	0 btuh	13%	672 btuh	GAIN	10%	72 btuh

BED 4	*TOTALS H.L.: 1524 btuh*				*H.G.: 1197 btuh*				AREA: 253 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: 204 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*549 btuh*	8.7	*0 btuh*	1.3	*256 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*104 btuh*	1.6	*0 btuh*	0.7	*141 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	1137 btuh	LOSS	0.2893	329 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	58.1 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	592 btuh	GAIN	0.0770	46 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	44 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 3	*TOTALS H.L.: 3938 btuh*				*H.G.: 3709 btuh*				AREA: 253 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 378 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 42 ft		EXIST: 0 ft		NEW: 253 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*1249 btuh*	8.7	*0 btuh*	1.3	*317 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*236 btuh*	1.6	*0 btuh*	0.7	*175 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: 66.0 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	*1372 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	*1860 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	2938 btuh	LOSS	0.2893	850 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	150.1 btuh	239		5377		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2271 btuh	GAIN	0.0770	175 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	168 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 2	*TOTALS H.L.: 5224 btuh*				*H.G.: 4460 btuh*				AREA: 320 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 315 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 35 ft		EXIST: 0 ft		NEW: 320 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*969 btuh*	8.7	*0 btuh*	1.3	*401 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*667 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*183 btuh*	1.6	*0 btuh*	0.7	*222 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*72 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*

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

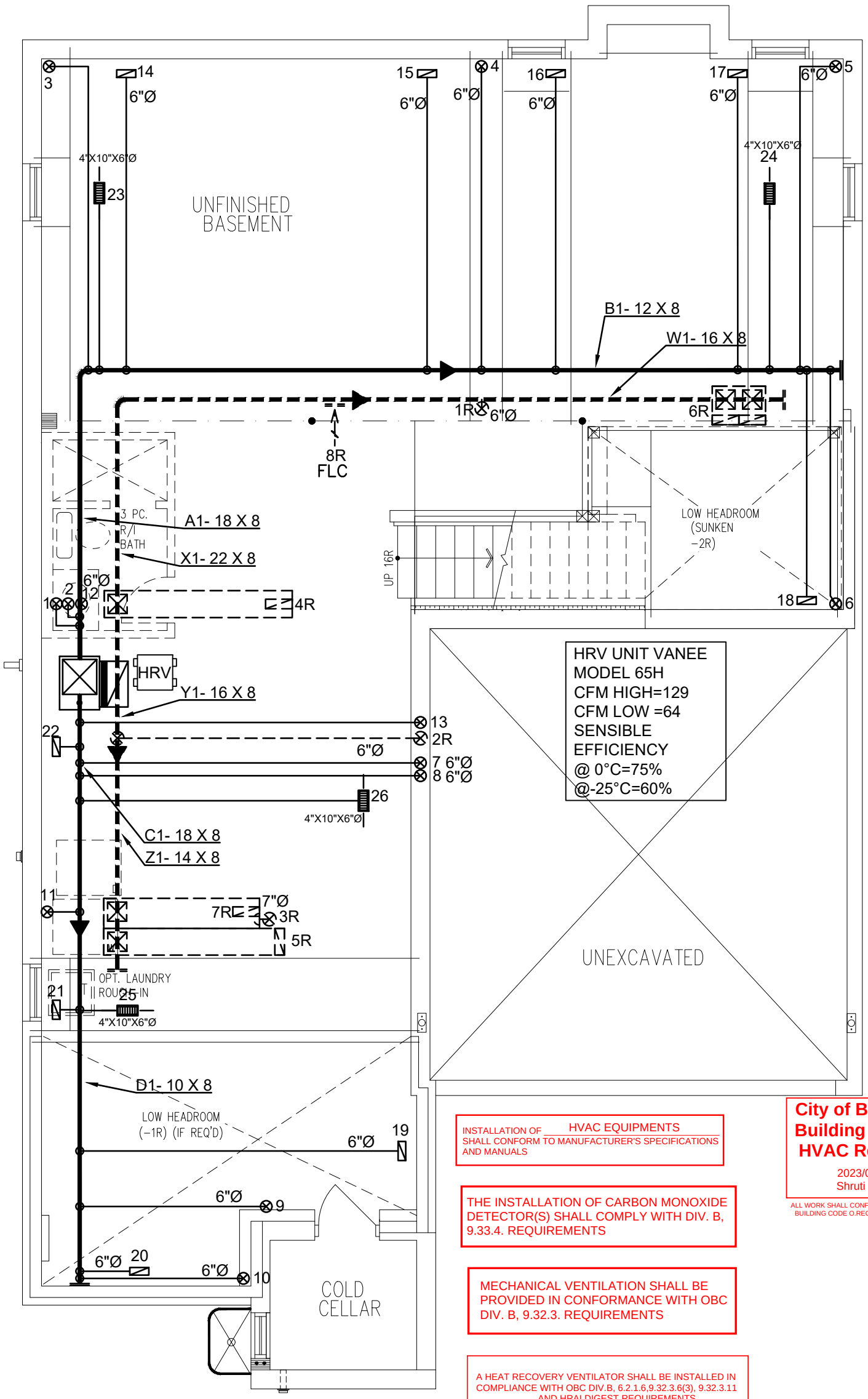
ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. Grnd floor
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

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	3555 btuh	LOSS	0.2893	1029 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	181.6 btuh	239		5377			LOSS	10%	458 btuh
TOTAL CONDUCTIVE			GAIN	2533 btuh	GAIN	0.0770	195 btuh	GAIN	0.0000	0 btuh	GAIN	0.07	187 btuh	1	239 btuh	0%	0 btuh		GAIN	10%	277 btuh

LEVEL 4



INSTALLATION OF HVAC EQUIPMENTS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN COMPLIANCE WITH OBC DIV.B, 6.2.1.6,9.32.3.6(3), 9.32.3.11 AND HRAI DIGEST REQUIREMENTS.

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

PART. BASEMENT PLAN FOR OPT. GROUND FLOOR PLAN EL. 'A','B', & 'C'

	# S/A	# R/A	# FANS
3RD	-	-	-
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	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.
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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: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	52,992 BTUH	
TOTAL GAIN	33,671 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. Grnd floor		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

M1

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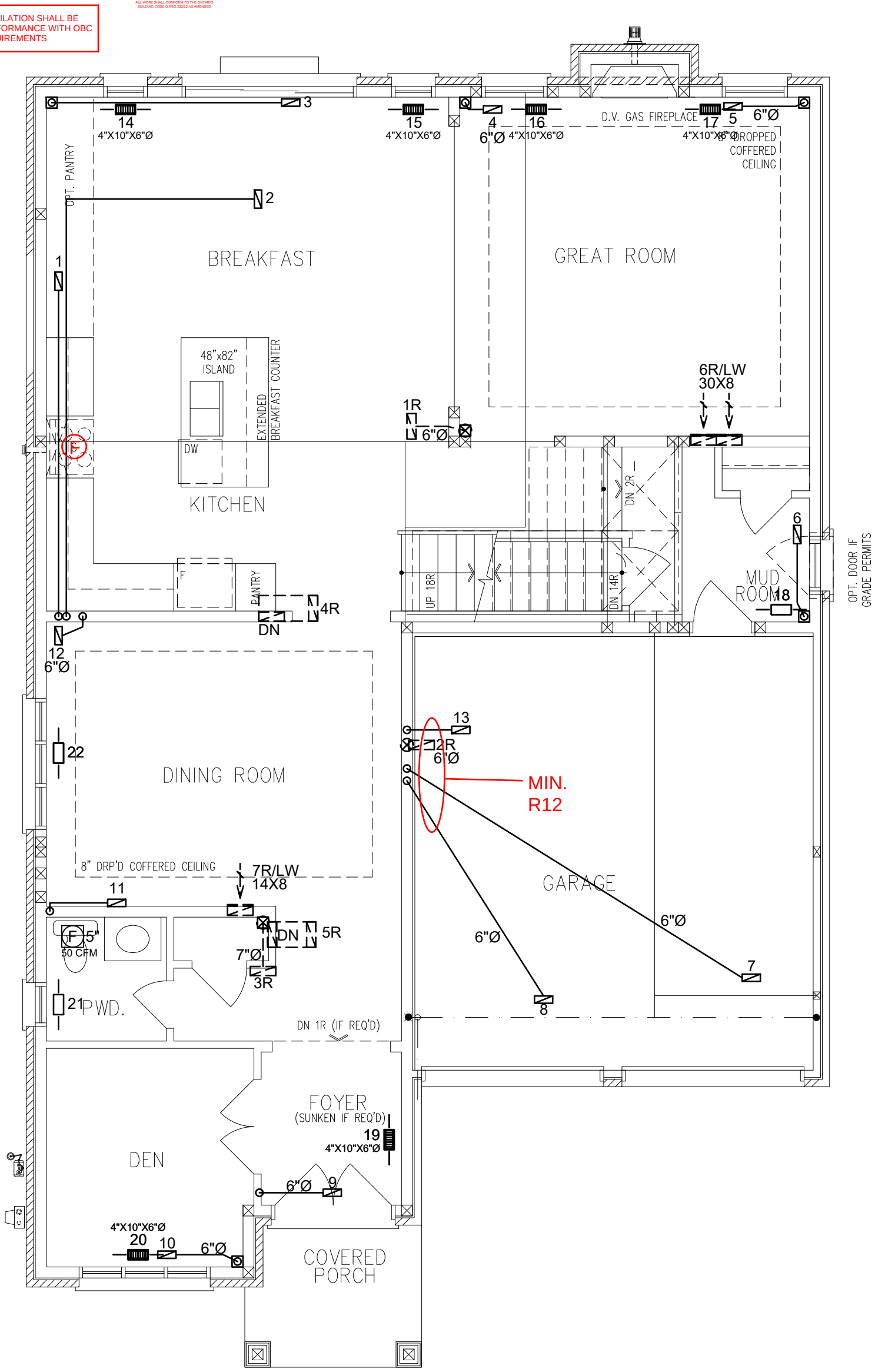
City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG. 332/12 AS AMENDED

THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A BY C.S.A. B149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-785-1314



OPT. GROUND FLOOR PLAN EL. 'A'

3RD	# S/A -	# R/A -	# FANS -
2ND	13	5	5
1ST	9	3	1
B	4	1	-
TOTAL	26	9	6

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PROPOSED 1ST FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

M2

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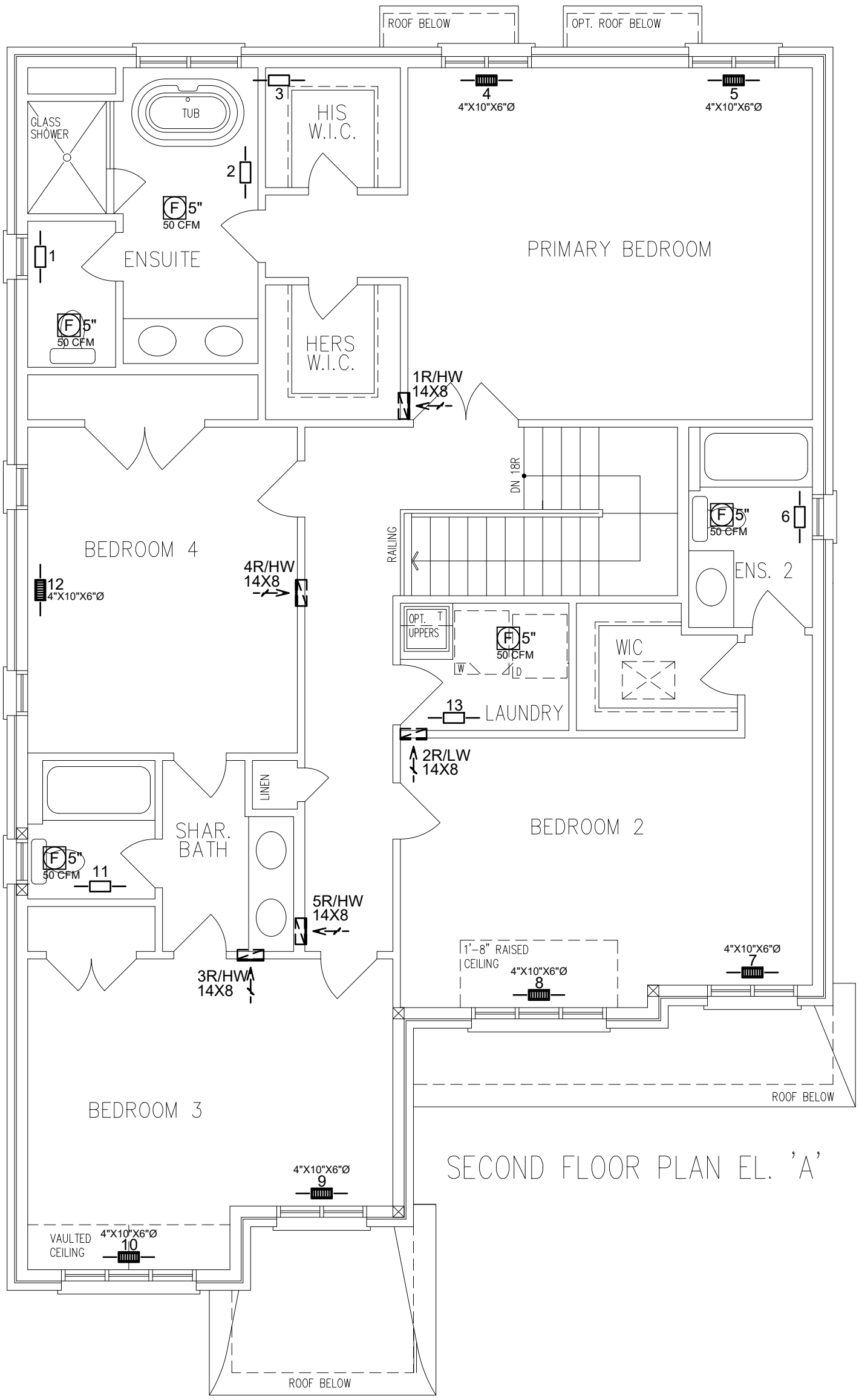
City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



SECOND FLOOR PLAN EL. 'A'

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

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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FOR:	Royal Pine Homes		
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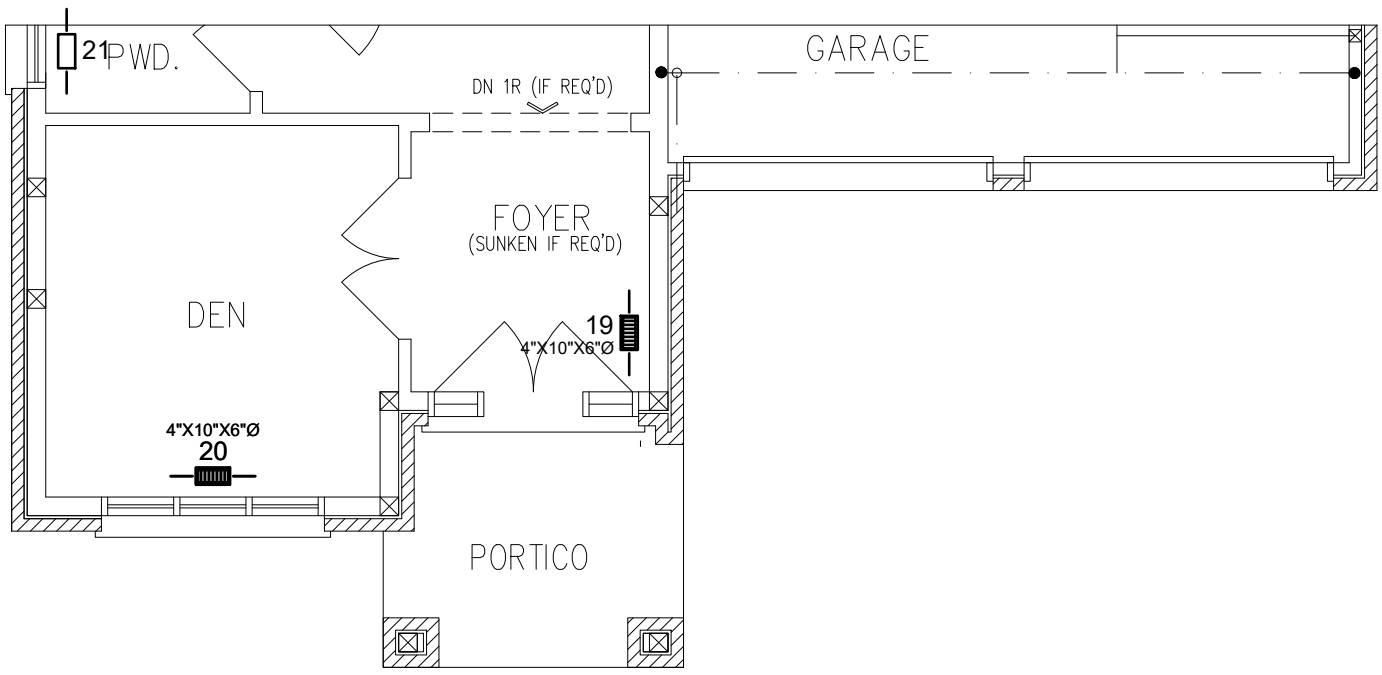
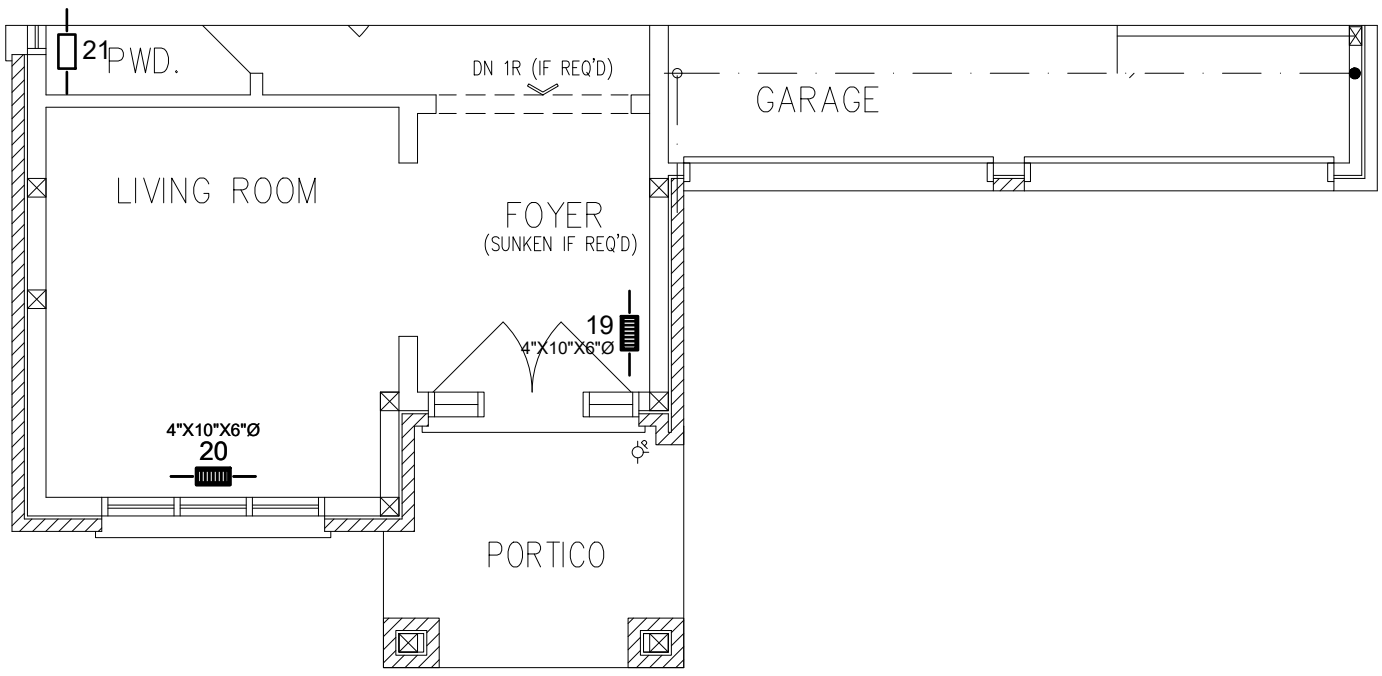
M3



GROUND FLOOR PLAN EL. 'B'



GROUND FLOOR PLAN EL. 'B'

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

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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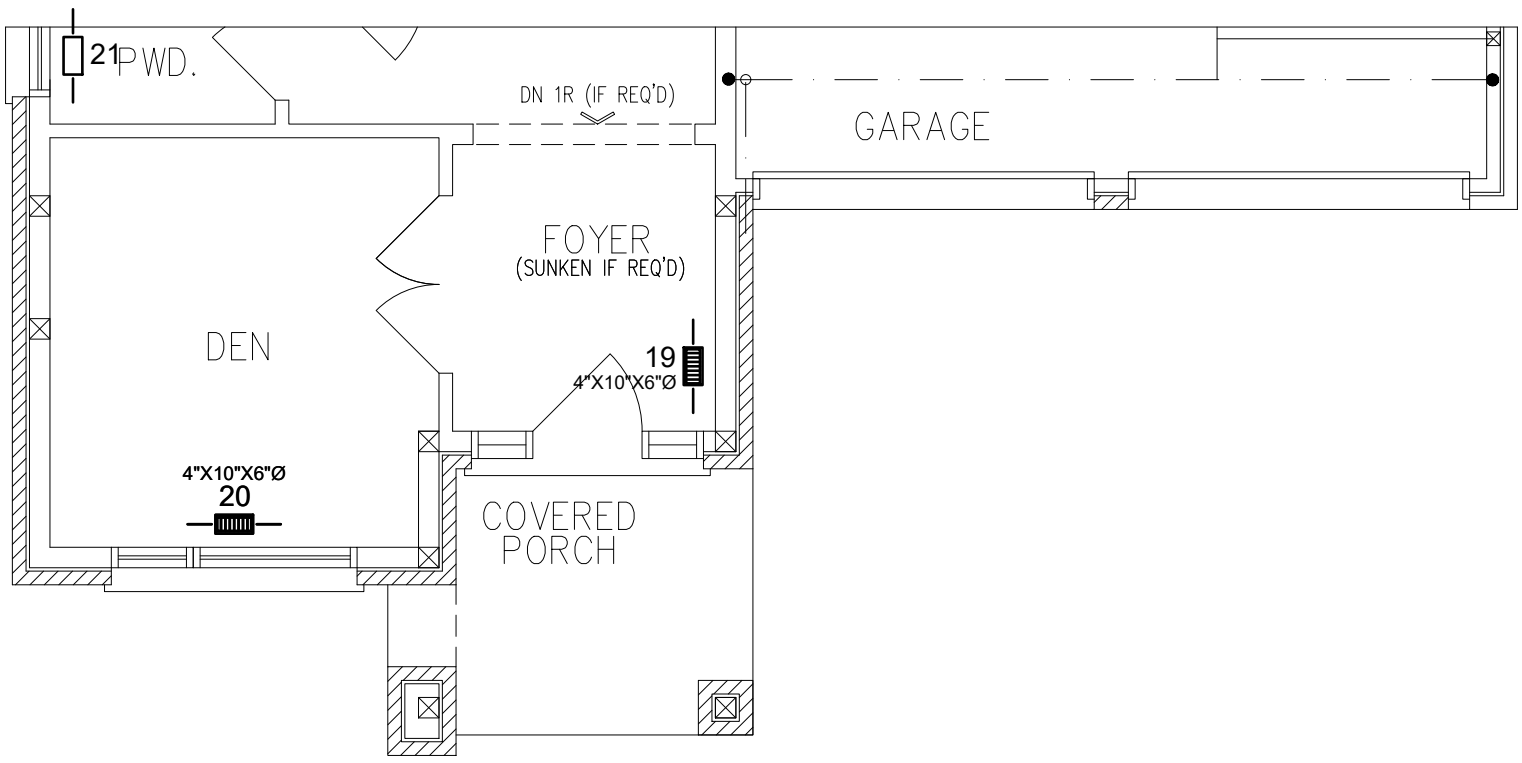
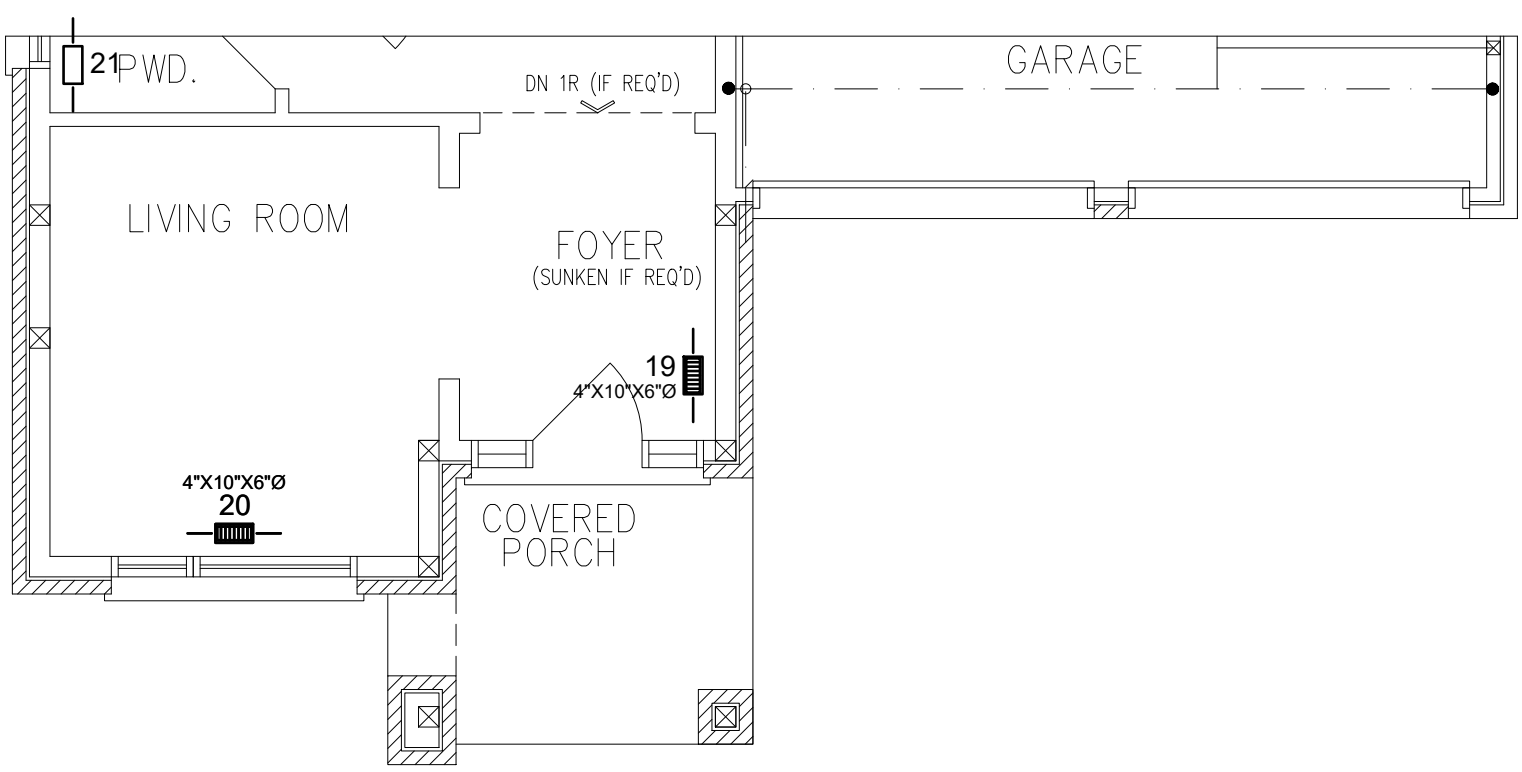
M4



OPT. GROUND FLOOR PLAN EL. 'C'



GROUND FLOOR PLAN EL. 'C'

3RD	# S/A -	# R/A -	# FANS -
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B	4	1	-
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PARTIAL PLANS

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SB-12 PERFORMANCE
CSA F280-12

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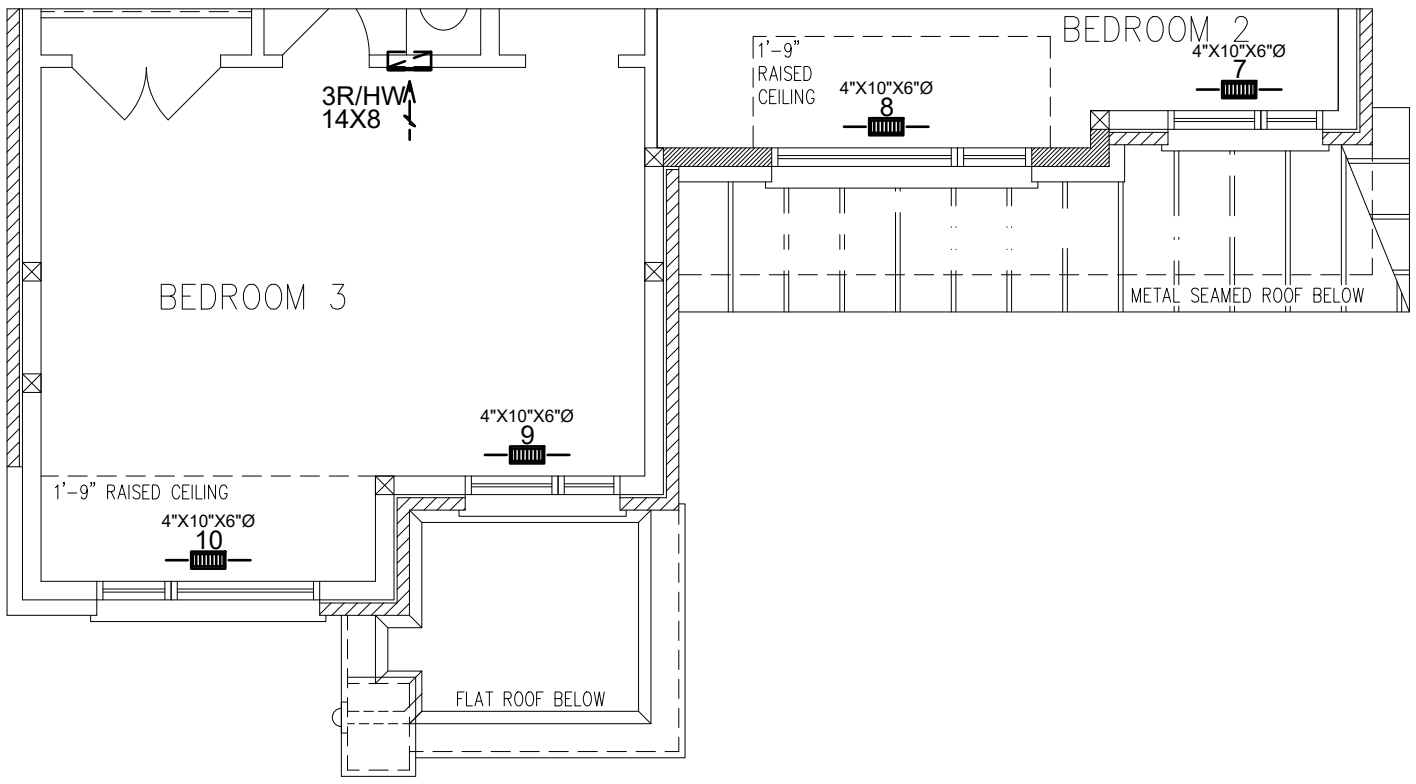
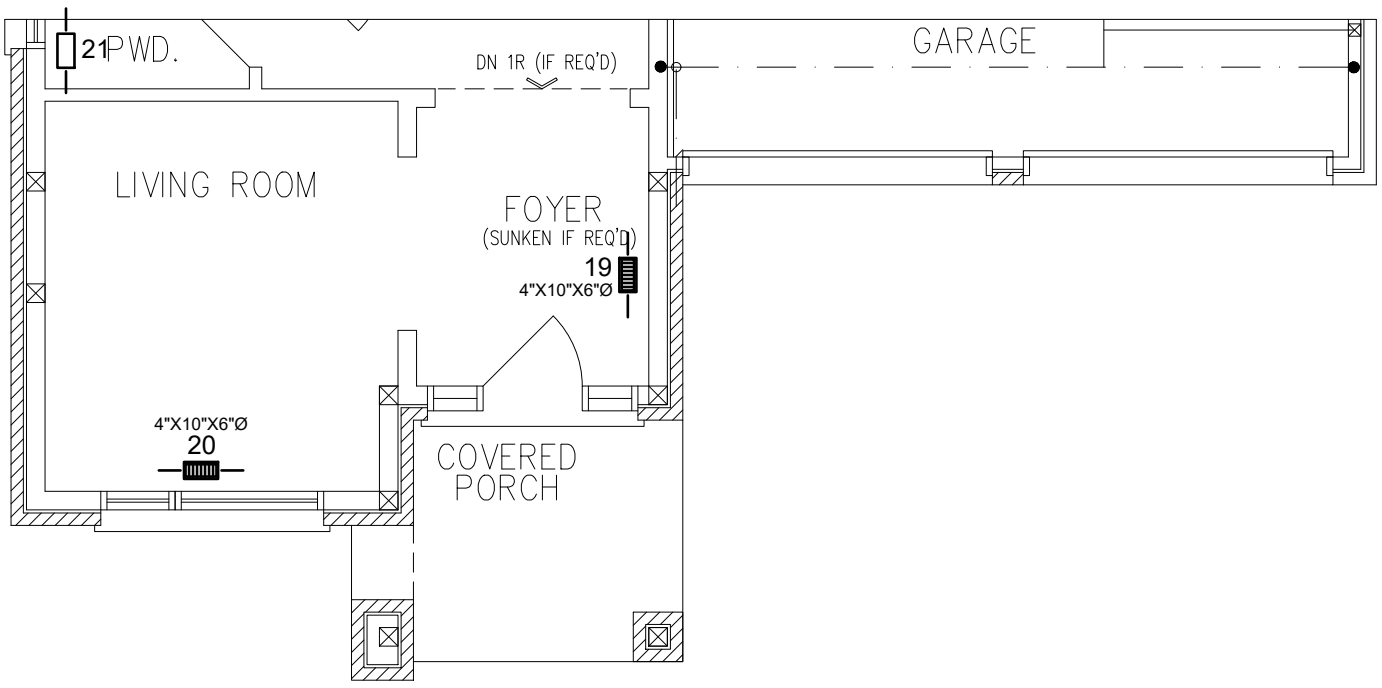
M5



SECOND FLOOR PLAN EL. 'C'



GROUND FLOOR PLAN EL. 'C'

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PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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M6

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 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedr			Lot: 4501	
			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 #:** P22160
Heating and Cooling Load Calculations	Builder	Roval Pine Homes	
Air System Design	Project	Forestside Estates	
Residential mechanical ventilation Design Summary	Model	Unit 4501 - Elev. A,B and C - Opt. 2nd	
Residential System Design per CAN/CSA-F280-12			
Residential New Construction - Forced Air	SB-12	SB 12 Performance 28	

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.

2022-06-30

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. P22160

Building Location

Address (Model):	Unit 4501 - Elev. A.B and C - Opt.	Site:	Forestside Estates
Model:		Lot:	4501
City and Province:	Brampton	Postal code:	

City of Brampton Building Division HVAC Reviewed 2023/08/09 Stamp Date 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

Style A:	**As per Selected OBC SB12**	SB 1	R 22+1.
Style B:	**Existing Walls (When Applicable)**	R 8.50	
Style C:			
Style D:			

Below grade walls

Style A:	**As per Selected OBC SB12**	SB 1	R 20ci
Style B:			
Style C:			
Style D:			

Floors on soil

Style A:	**As per Selected OBC SB12**	SB 12 F	
Style B:			

Exposed floors

Style A:	**As per Selected OBC SB12**	SB 12	R 31
Style B:			

Windows

Style A:	**As per Selected OBC SB12**	SB 12 I	R 3.57
Style B:	**Existing Windows (When Applicable)**	R	
Style C:			
Style D:			

Ceilings

Style A:	**As per Selected OBC SB12**	SB 12 P	R 60.0
Style B:	**As per Selected OBC SB12**	SB 12 P	R 22.8
Style C:			

Doors

Style A:	**As per Selected OBC SB12**	SB 12	R 3.01
Style B:			
Style C:			

Skylights

Style A:	**As per Selected OBC SB12**	SB 12	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 # P22160

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: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C - Opt.

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

City of Brampton
Building Division
HVAC Reviewed
~~2022/08/09~~
Shruti Desai
BUILDING CODE O.REG.332/12 AS AMENDED

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	5	@ 10.6	cfm	53.0	cfm
		Total		190.8	

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	190.8
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	95.4 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 2022-06-30

MCCALLUM HVAC DESIGN INC

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

Project # P22160

Project: Forestside Estates **Model:** Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss				
B	LRairh	Vb	HL^T	HLleak
0.018	0.339	42030.0	74.2	19034.68

Building Air Leakage Heat Gain				
B	LRairh	Vb	HG^T	HG Leak
0.018	0.1181583	42030	14.00	1251.48

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	19035	5462	1.74246
2	0.3		13255	0.43081
3	0.2		12527	0.30390
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	1251.48	0.08005
BUILDING CONDUCTIVE HEAT GAIN	15634.00	

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	5462	0.17
2	0.3		13255	0.04
3	0.2		12527	0.03
4	0		0	0

Ventilation Heat Gain (Exhaust Only Systems)

Case 1 - Exhaust Only		Multiplier
HGbvent	1442.448	0.09
Building Cond. HG	15634.00	

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	0.09
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):	1190

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values	
Custom BDT Data:	ELA @ 10 Pa.	1504.864
	3	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

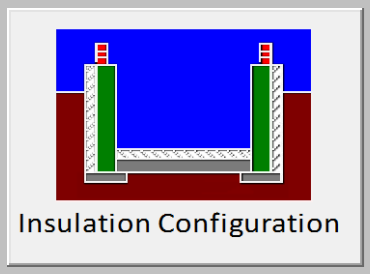
Heating Air Leakage Rate (ACH/H): 0.339

Cooling Air Leakage Rate (ACH/H): 0.118

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):	22.0
Floor Width (m):	5.52
Exposed Perimeter (m):	55.1
Wall Height (m):	3.05
Depth Below Grade (m):	2.44
Window Area (m^2):	1.86
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):	**1479**



BCIN_1

AIR SYSTEM DESIGN

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
Lot: 4501
Site: Forestside Estates

MCCALLUM HVAC DESIGN INC

SYSTEM A

DESIGN LOAD SPECIFICATIONS		AIR DISTRIBUTION AND PRESSURE	
LEVEL 1 NET LOAD	15313 btu/h	EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.
LEVEL 2 NET LOAD	19776 btu/h	ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.
LEVEL 3 NET LOAD	17488 btu/h	AVAILABLE DESIGN PRESSURE	0.250"W.C.
LEVEL 4 NET LOAD	0 btu/h	RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft
SYSTEM HEATLOSS	52577 btu/h	R/A PLENUM PRESSURE	0.120"W.C.
SYSTEM HEATGAIN	32939 btu/h	S/A PLENUM PRESSURE	0.130"W.C.
BUILDING VOLUME Vb	42030.00 ft3	HEATING AIR FLOW PROPORTIONING FACTOR	0.0218 cfm/btuh
VENTILATION LOAD	1911.00 btu/h	COOLING AIR FLOW PROPORTIONING FACTOR	0.0348 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	1146.00 CFM
MODEL	EL296UH070XE36B			SELECTED CFM	1145.00 CFM
HIGH INPUT btu/h	66000	LOW INPUT btu/h	0	COOLING CHECK	1141.00 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	SB 12 Performance 28			COIL	3.0 TON
TEMP. RISE	51.75°F				

City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG 332/12 AS AMENDED

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
23	BASE	3828	83	39	0.13	35	140	175	0.07	6.0	4x10	B1
24	BASE	3828	83	39	0.13	47	140	187	0.06	6.0	4x10	B1
25	BASE	3828	83	39	0.13	26	150	176	0.07	6.0	4x10	D1
26	BASE	3828	83	39	0.13	17	130	147	0.08	6.0	4x10	C1
14	KIT/BRK	2151	47	75	0.13	42	150	192	0.06	6.0	4x10	A1
15	KIT/BRK	2151	47	75	0.13	34	130	164	0.07	6.0	4x10	A1
16	GREAT	2526	55	68	0.13	43	180	223	0.05	6.0	4x10	A1
17	DEN	1981	43	56	0.13	52	130	182	0.07	6	4x10	B1
20	LIV	2413	53	87	0.13	28	120	148	0.08	6.0	4x10	D1
21	POWDER	595	13	11	0.13	16	160	176	0.07	5	4x10	D1
22	DIN	2526	55	69	0.13	6	140	146	0.08	6.0	4x10	C1
18	MUD	2608	57	17	0.13	41	130	171	0.07	5.0	4x10	B1
19	FOYER	2825	62	21	0.13	34	140	174	0.07	6	4x10	D1
2	M. BD	1403	31	49	0.13	41	150	191	0.06	6	4x10	A1
3	M. BD	1403	31	49	0.13	35	170	205	0.06	6	4x10	A1
4	M.WIC	421	9	5	0.13	40	180	220	0.05	5	4x10	A1
6	S BATH-1	754	16	6	0.13	27	190	217	0.06	5	4x10	B1
7	SHD B1 WC	1652	36	43	0.13	36	150	186	0.06	5.0	4x10	C1
12	SHD BATH-2	656	14	15	0.13	18	190	208	0.06	5	4x10	D1
1	P ENS	1122	24	35	0.13	24	190	214	0.06	6	4x10	B1
27	LAUND	251	5	30	0.13	18	170	188	0.06	5	4x10	C1
5	BED 2	2827	62	74	0.13	51	140	191	0.06	6.0	4x10	B1
8	BED 3	896	20	14	0.13	32	140	172	0.07	6	4x10	C1
9	BED 3	896	20	14	0.13	29	130	159	0.08	6	4x10	C1
10	BED 4	1957	43	65	0.13	34	150	184	0.07	6	4x10	D1
11	BED 4	1957	43	65	0.13	36	130	166	0.07	6	4x10	D1
13	BD-5	1294	28	42	0.13	32	180	212	0.06	6	4x10	C1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR	DUCT DESIGN	ACTUAL DUCT	EQUIVALENT	TOTAL EFFECTIV	ADJUSTED	DUCT SIZE	INLET SIZE	TRUNK

	VOLUME CFM	PRESSURE	LENGTH	LENGTH	E LENGTH	PRESSURE	ROUND		
1R	145	0.12	58	130	188	0.05	8	14x8	Y1
2R	70	0.12	27	160	187	0.05	6	14x8	X1
3R	110	0.12	33	170	203	0.05	7	14x8	W1
4R	160	0.12	25	120	145	0.07	8	14x8	Z1
5R	85	0.12	30	120	150	0.07	6	14x8	X1
6R	150	0.12	42	170	212	0.05	8	14x8	Y1
7R	150	0.12	41	170	211	0.05	8	14x8	Y1
8R	155	0.12	18	130	148	0.07	7.5	14x8	W1
9R	120	0.12	12	160	172	0.06	7	FLC	Z1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
Z1	725	0.05	14.5	24x8	18x10
Y1	445	0.05	12	16x8	22x6
X1	420	0.05	11.5	14x8	20x6
W1	265	0.05	10	12x8	16x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSURE	ROUND	RECT. SIZE	SIZE ALTERNATE
A1	220	0.05	9.5	10x8	14x6
B1	588	0.05	13.5	20x8	16x10
C1	558	0.06	12.5	18x8	24x6
D1	311	0.06	10	12x8	16x6

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

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.: 15313 btuh		H.G.: 4521 btuh		AREA: 1311 ft2		Above Grade: 2		GROSS EXP. WALL		NEW 362 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 181 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		29.80	
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	2.5	0 btuh
GAIN	0.7	227 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: 8.0 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	166 btuh	37.3	0 btuh	0	0	0	0	20.8	166 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	225 btuh	14.9	0 btuh	0	0	0	0	21.7	174 btuh
FUND. CONDUCTIVE HEATLOSS				5046 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	5462 btuh	LOSS	1.7425	9517 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	334.1 btuh	239
TOTAL CONDUCTIVE			GAIN	673 btuh	GAIN	0.0800	54 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	62 btuh	0

BASE																		
	EXPOSED FLOORS				SKYLIGHT													
	NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	22.05				2.04		2.03											
LOSS	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh								
GAIN	0.4	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh								
	SOUTH WINDOWS				NORTH WINDOWS													
	EXIST: 0.0 ft2				NEW: 4 ft2		EXIST: 0 ft2											
Eff. R-V	1.99				3.57		1.99											
LOSS	37.3	0 btuh	20.8	83 btuh	37.3	0 btuh												
GAIN	14.9	0 btuh	11.7	47 btuh	14.9	0 btuh												
	APP. LOAD				DUCT PIPE L.													
LOSS	5378				LOSS	0%	0 btuh											
LOSS	0.09	0 btuh	50%	2689 btuh	GAIN	0%	0 btuh											

LEVEL 2

KIT/BRK	TOTALS H.L.: 4302 btuh		H.G.: 4329 btuh		AREA: 264 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	
	NEW: 35 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		29.80	
LOSS	4.0	1221 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh
GAIN	0.8	230 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: 64.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 16.0 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	1330 btuh	37.3	0 btuh	0	0	0	0	20.8	333 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1803 btuh	14.9	0 btuh	0	0	0	0	21.7	347 btuh
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	2884 btuh	LOSS	0.4308	1242 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	176.4 btuh	239
TOTAL CONDUCTIVE			GAIN	2381 btuh	GAIN	0.0800	191 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	220 btuh	0

KIT/BRK																		
	EXPOSED FLOORS				SKYLIGHT													
	EXIST: 0 ft2				NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	22.05				2.04		2.03											
LOSS	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh								
GAIN	0.4	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh								
	SOUTH WINDOWS				NORTH WINDOWS													
	EXIST: 0.0 ft2				NEW: 0 ft2		EXIST: 0 ft2											
Eff. R-V	1.99				3.57		1.99											
LOSS	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh												
GAIN	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh												
	APP. LOAD				DUCT PIPE L.													
LOSS	5378				LOSS	0%	0 btuh											
LOSS	0.09	0 btuh	10%	538 btuh	GAIN	0%	0 btuh											

GREAT	TOTALS H.L.: 2526 btuh		H.G.: 1946 btuh		AREA: 343 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	
	NEW: 27 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		29.80	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh
GAIN	0.8	202 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: 30.0 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	624 btuh	37.3	0 btuh	0	0	0	0	20.8	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
FUND. CONDUCTIVE HEATLOSS				0 btuh	AIR LEAKAGE NEW		AIR LEAKAGE EXIST		VENTILATION CASE 3				H.G. PEOPLE	
TOTAL CONDUCTIVE			LOSS	1693 btuh	LOSS	0.4308	729 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	103.6 btuh	239
TOTAL CONDUCTIVE			GAIN	1047 btuh	GAIN	0.0800	84 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	97 btuh	0

GREAT																		
	EXPOSED FLOORS				SKYLIGHT													
	EXIST: 0 ft2				NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	22.05				2.04		2.03											
LOSS	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh								
GAIN	0.4	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh								
	SOUTH WINDOWS				NORTH WINDOWS													
	EXIST: 0.0 ft2				NEW: 0 ft2		EXIST: 0 ft2											
Eff. R-V	1.99				3.57		1.99											
LOSS	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh												
GAIN	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh												
	APP. LOAD				DUCT PIPE L.													
LOSS	5378				LOSS	0%	0 btuh											
LOSS	0.09	0 btuh	5%	269 btuh	GAIN	0%	0 btuh											

DEN	TOTALS H.L.: 1981 btuh		H.G.: 1620 btuh		AREA: 113 ft2		C.Height: 11		GROSS EXP. WALL		NEW 231 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 21 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		29.80	
LOSS	4.0	829 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh
GAIN	0.8	156 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: 24.0 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	499 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	676 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	1328 btuh	LOSS	0.4308	572 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	81.2 btuh	239
TOTAL CONDUCTIVE			GAIN	833 btuh	GAIN	0.0800	67 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	77 btuh	0

DEN																		
	EXPOSED FLOORS				SKYLIGHT													
	EXIST: 0 ft2				NEW: 0.0 ft2		EXIST: 0.0 ft2											
Eff. R-V	22.05				2.04		2.03											
LOSS	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh								
GAIN	0.4	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh								
	SOUTH WINDOWS				NORTH WINDOWS													
	EXIST: 0.0 ft2				NEW: 0 ft2		EXIST: 0 ft2											
Eff. R-V	1.99				3.57		1.99											
LOSS	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh												
GAIN	14.9	0 btuh	11.7	0 btuh	14.9	0 btuh												
	APP. LOAD				DUCT PIPE L.													
LOSS	5378				LOSS	0%	0 btuh											
LOSS	0.09	0 btuh	5%	269 btuh	GAIN	0%	0 btuh											

LIV	TOTALS H.L.: 2413 btuh		H.G.: 2495 btuh		AREA: 101 ft2		C.Height: 11		GROSS EXP. WALL		NEW 253 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS	
	NEW: 23 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		29.80	

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

INDIVIDUAL BCIN NUMBER 25896
FIRM BCIN NUMBER 102614

Doug McCallum

TOTAL HEATLOSS: 52577 BTUH
TOTAL HEATGAIN: 32939 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

LOSS	4.0	869 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	164 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: 36.0 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	748 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	1014 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	1617 btuh	LOSS	0.4308	697 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	98.9 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1178 btuh	GAIN	0.0800	94 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	109 btuh	0	0 btuh	10%	538 btuh	GAIN	0%	0 btuh

POWDER	TOTALS H.L.: 595 btuh			H.G.: 330 btuh					AREA: 34 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		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03	
LOSS	4.0	232 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	44 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	399 btuh	LOSS	0.4308	172 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	24.4 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	217 btuh	GAIN	0.0800	17 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	20 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

DIN	TOTALS H.L.: 2526 btuh			H.G.: 1999 btuh					AREA: 219 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: 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		29.80		22.05		2.04		2.03	
LOSS	4.0	1069 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	202 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: 30.0 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	624 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	651 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	1693 btuh	LOSS	0.4308	729 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	103.6 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	853 btuh	GAIN	0.0800	68 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	79 btuh	0	0 btuh	10%	538 btuh	GAIN	0%	0 btuh

MUD	TOTALS H.L.: 2608 btuh			H.G.: 502 btuh					AREA: 108 ft2		C.Height: 11		GROSS EXP. WALL		NEW 220 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 20 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		29.80		22.05		2.04		2.03	
LOSS	4.0	713 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	134 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: 42.0 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	1035 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	195 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	1748 btuh	LOSS	0.4308	753 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	106.9 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	330 btuh	GAIN	0.0800	26 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	30 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

FOYER	TOTALS H.L.: 2825 btuh			H.G.: 615 btuh					AREA: 120 ft2		C.Height: 11		GROSS EXP. WALL		NEW 231 ft		EXIST 0 ft			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 21 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		29.80		22.05		2.04		2.03	
LOSS	4.0	733 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	138 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: 42.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 6 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	1035 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	125 btuh	37.3	0 btuh
GAIN	4.7	195 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	70 btuh	14.9	0 btuh

TOTAL HEATLOSS: 52577 BTUH
TOTAL HEATGAIN: 32939 BTUH

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

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	1893 btuh	LOSS	0.4308	816 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	115.8 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	404 btuh	GAIN	0.0800	32 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	37 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 3

M. BD	*TOTALS H.L.: 2806 btuh*					*H.G.: 2804 btuh*			AREA: 268 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 270 ft*		*EXIST 0 ft*		
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT		
	NEW: 30 ft		EXIST: 0 ft		NEW: 268 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		29.80		22.05		2.04		2.03
LOSS	4.0	*929 btuh*	8.7	*0 btuh*	1.3	*336 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*175 btuh*	1.6	*0 btuh*	0.7	*186 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	2055 btuh	LOSS	0.3039	625 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	125.7 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	1432 btuh	GAIN	0.0800	115 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	132 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh

M.WIC	*TOTALS H.L.: 421 btuh*					*H.G.: 138 btuh*			AREA: 73 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: 73 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		29.80		22.05		2.04		2.03
LOSS	4.0	*216 btuh*	8.7	*0 btuh*	1.3	*91 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*41 btuh*	1.6	*0 btuh*	0.7	*51 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	308 btuh	LOSS	0.3039	94 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	18.8 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE		GAIN	91 btuh	GAIN	0.0800	7 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	8 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

S BATH-1	*TOTALS H.L.: 754 btuh*					*H.G.: 182 btuh*			AREA: 52 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: 52 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 46 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		29.80		22.05		2.04		2.03
LOSS	4.0	*324 btuh*	8.7	*0 btuh*	1.3	*65 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*115 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*61 btuh*	1.6	*0 btuh*	0.7	*36 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*12 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	504 btuh	LOSS	0.3039	153 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	30.8 btuh	239		5378		LOSS	10%	66 btuh
TOTAL CONDUCTIVE		GAIN	110 btuh	GAIN	0.0800	9 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	10 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	11 btuh

SHD B1 WC	*TOTALS H.L.: 1652 btuh*					*H.G.: 1249 btuh*			AREA: 52 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: 52 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 52 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		29.80		22.05		2.04		2.03
LOSS	4.0	*452 btuh*	8.7	*0 btuh*	1.3	*65 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*129 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*85 btuh*	1.6	*0 btuh*	0.7	*36 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: 22.0 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	*457 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	*620 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	1104 btuh	LOSS	0.3039	336 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	67.5 btuh	239		5378		LOSS	10%	144 btuh
TOTAL CONDUCTIVE		GAIN	755 btuh	GAIN	0.0800	60 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	70 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	76 btuh

SHD BATH-2	*TOTALS H.L.: 656 btuh*					*H.G.: 445 btuh*			AREA: 91 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		

HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom
PROJECT #: P22160
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3244
LOT: 4501
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

	NEW: 6 ft		EXIST: 0 ft		NEW: 91 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*180 btuh*	8.7	*0 btuh*	1.3	*114 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*34 btuh*	1.6	*0 btuh*	0.7	*63 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	481 btuh	LOSS	0.3039	146 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	29.4 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	292 btuh	GAIN	0.0800	23 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	27 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

P ENS	*TOTALS H.L.: 1122 btuh*				*H.G.: 1018 btuh*				AREA: 114 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 90 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 10 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*284 btuh*	8.7	*0 btuh*	1.3	*143 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*54 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: 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	822 btuh	LOSS	0.3039	250 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	50.3 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	668 btuh	GAIN	0.0800	53 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	62 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh

LAUND	*TOTALS H.L.: 251 btuh*				*H.G.: 849 btuh*				AREA: 53 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: 53 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 41 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*0 btuh*	8.7	*0 btuh*	1.3	*66 btuh*	3.2	*0 btuh*	2.7	*110 btuh*	3.4	*0 btuh*	2.5	*102 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*0 btuh*	1.6	*0 btuh*	0.7	*37 btuh*	1.8	*0 btuh*	1.5	*61 btuh*	1.9	*0 btuh*	0.3	*11 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	168 btuh	LOSS	0.3039	51 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	10.3 btuh	239		5378		LOSS	10%	22 btuh
TOTAL CONDUCTIVE			GAIN	48 btuh	GAIN	0.0800	4 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	4 btuh	0	0 btuh	10%	538 btuh	GAIN	10%	59 btuh

BED 2	*TOTALS H.L.: 2827 btuh*				*H.G.: 2128 btuh*				AREA: 271 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 315 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 35 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*1149 btuh*	8.7	*0 btuh*	1.3	*340 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*0 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*217 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: 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	2071 btuh	LOSS	0.3039	629 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	126.7 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1193 btuh	GAIN	0.0800	95 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	110 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BED 3	*TOTALS H.L.: 1792 btuh*				*H.G.: 829 btuh*				AREA: 224 ft2		C.Height: 9		GROSS EXP. WALL		*NEW 126 ft*		*EXIST 0 ft*			
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT			
	NEW: 14 ft		EXIST: 0 ft		NEW: 224 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 166 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		29.80		22.05		2.04		2.03	
LOSS	4.0	*505 btuh*	8.7	*0 btuh*	1.3	*281 btuh*	3.2	*0 btuh*	2.7	*0 btuh*	3.4	*0 btuh*	2.5	*413 btuh*	3.4	*0 btuh*	36.4	*0 btuh*	37	*0 btuh*
GAIN	0.8	*95 btuh*	1.6	*0 btuh*	0.7	*155 btuh*	1.8	*0 btuh*	1.5	*0 btuh*	1.9	*0 btuh*	0.3	*45 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	

TOTAL HEATLOSS: 52577 BTUH
TOTAL HEATGAIN: 32939 BTUH

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	1199 btuh	LOSS	0.3039	364 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	73.3 btuh	239		5378		LOSS	10%	156 btuh
TOTAL CONDUCTIVE			GAIN	295 btuh	GAIN	0.0800	24 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	27 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	53 btuh

BED 4	TOTALS H.L.: 3913 btuh			H.G.: 3731 btuh				AREA: 225 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: 225 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		29.80		22.05		2.04		2.03
LOSS	4.0	1213 btuh	8.7	0 btuh	1.3	282 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	229 btuh	1.6	0 btuh	0.7	156 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: 66.0 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	1372 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	1860 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	2867 btuh	LOSS	0.3039	871 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	175.4 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	2244 btuh	GAIN	0.0800	180 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	207 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

BD-5	TOTALS H.L.: 1294 btuh			H.G.: 1209 btuh				AREA: 199 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: 199 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		29.80		22.05		2.04		2.03
LOSS	4.0	324 btuh	8.7	0 btuh	1.3	249 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	61 btuh	1.6	0 btuh	0.7	138 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	948 btuh	LOSS	0.3039	288 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	58.0 btuh	239		5378		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	590 btuh	GAIN	0.0800	47 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	54 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh

LEVEL 4

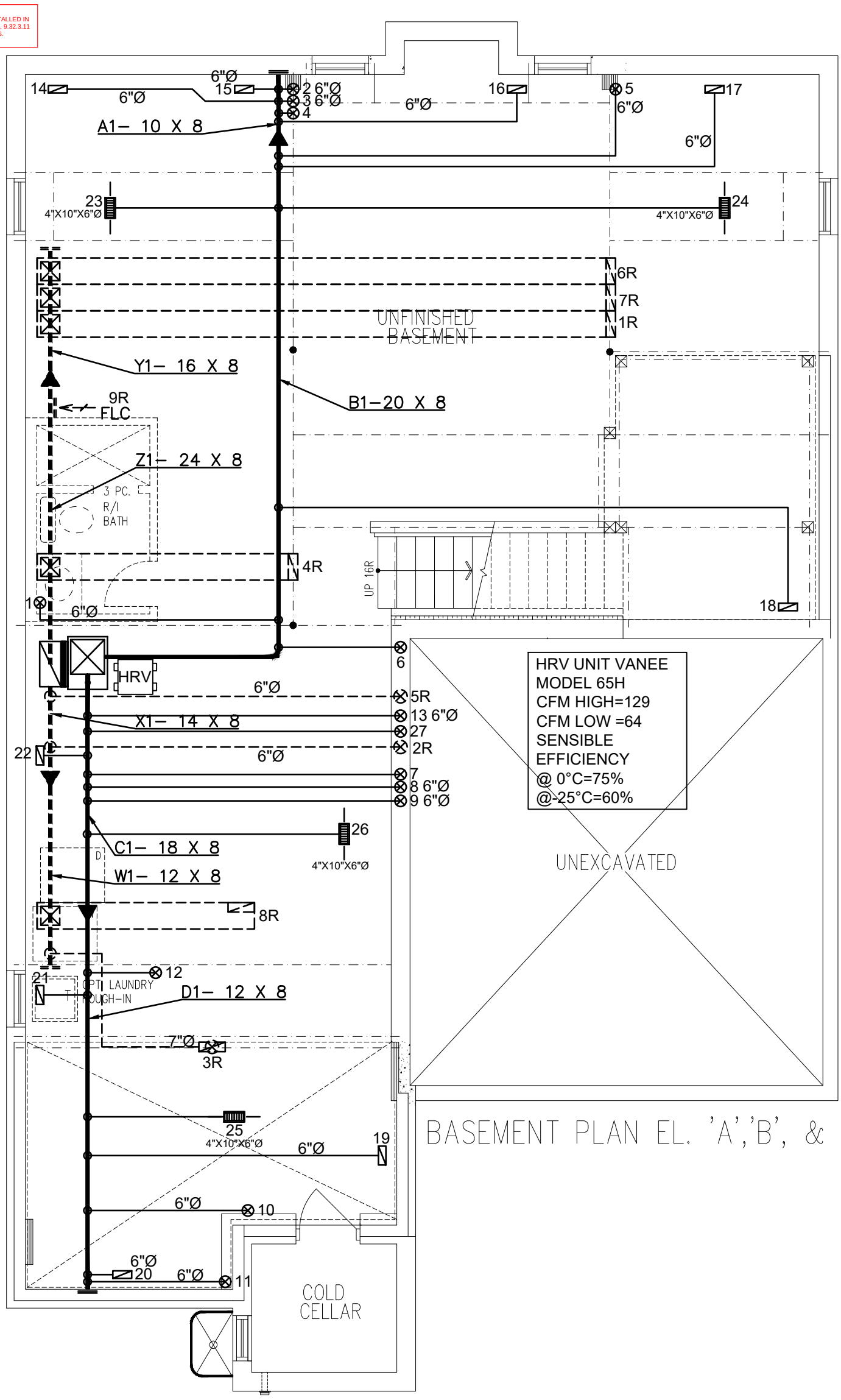
INSTALLATION OF HVAC EQUIPMENTS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

A HEAT RECOVERY VENTILATOR SHALL BE INSTALLED IN COMPLIANCE WITH OBC DIV.B, 6.2.1.6,9.32.3.6(3), 9.32.3.11 AND HRAI DIGEST REQUIREMENTS.

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



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

3RD	# S/A -	# R/A -	# FANS -
2ND	14	5	5
1ST	9	3	1
B	4	1	-
TOTAL	27	9	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.
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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: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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	52,577 BTUH	
TOTAL GAIN	32,939 BTUH	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTUH	1145 CFM

MODEL:	Unit 4501 - Elev. A,B and C - Opt. 2nd floor - 5 bedroom		
PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

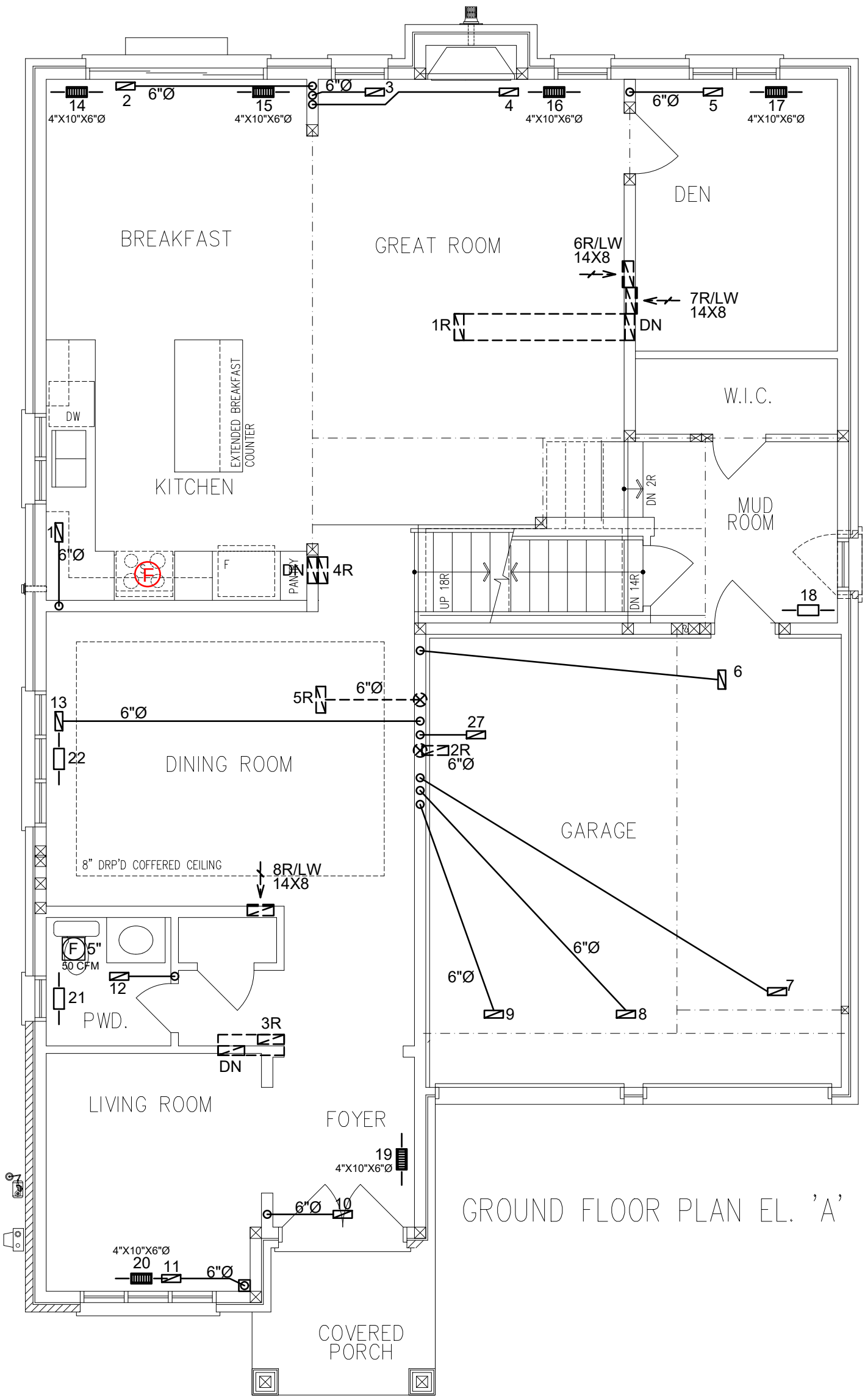
M1

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B, 9.32.3. REQUIREMENTS

THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A BY C.S.A. B149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-785-1314

City of Brampton Building Division HVAC Reviewed
2023/08/09
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED



3RD	# S/A -	# R/A -	# FANS -
2ND	14	5	5
1ST	9	3	1
B	4	1	-
TOTAL	27	9	6

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PROPOSED 1ST FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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PROJECT #:	P22160	SQFT: 3244	W%: 12.68
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

M2

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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City of Brampton
Building Division
HVAC Reviewed
2023/08/09
Shruti Desai
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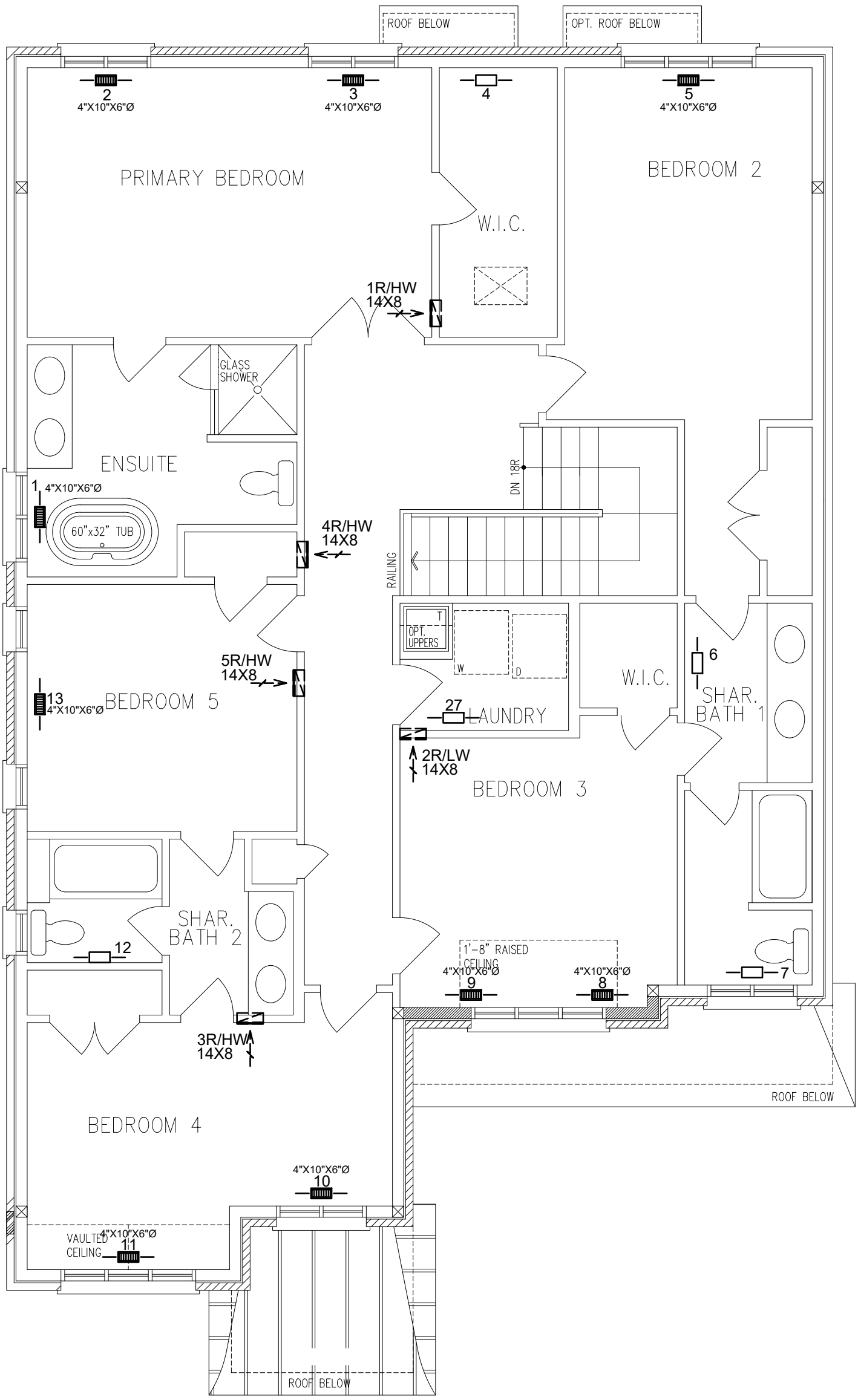

OPT. SECOND FLOOR PLAN EL. 'A' (5 BEDROOM CONDITION)

3RD	# S/A -	# R/A -	# FANS -
2ND	14	5	5
1ST	9	3	1
B	4	1	-
TOTAL	27	9	6

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PROPOSED 2ND FLOOR

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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SITE:	Forestside Estates, Brampton		
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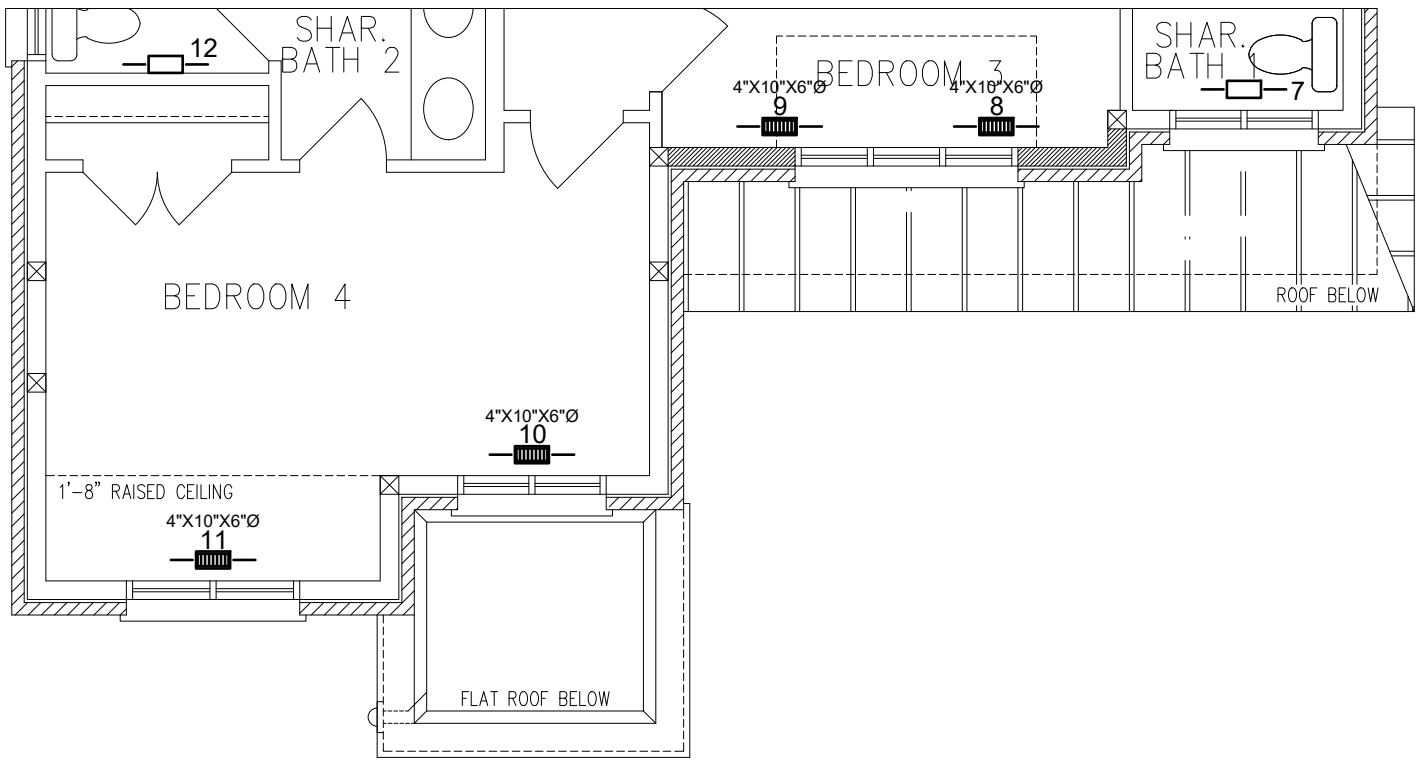
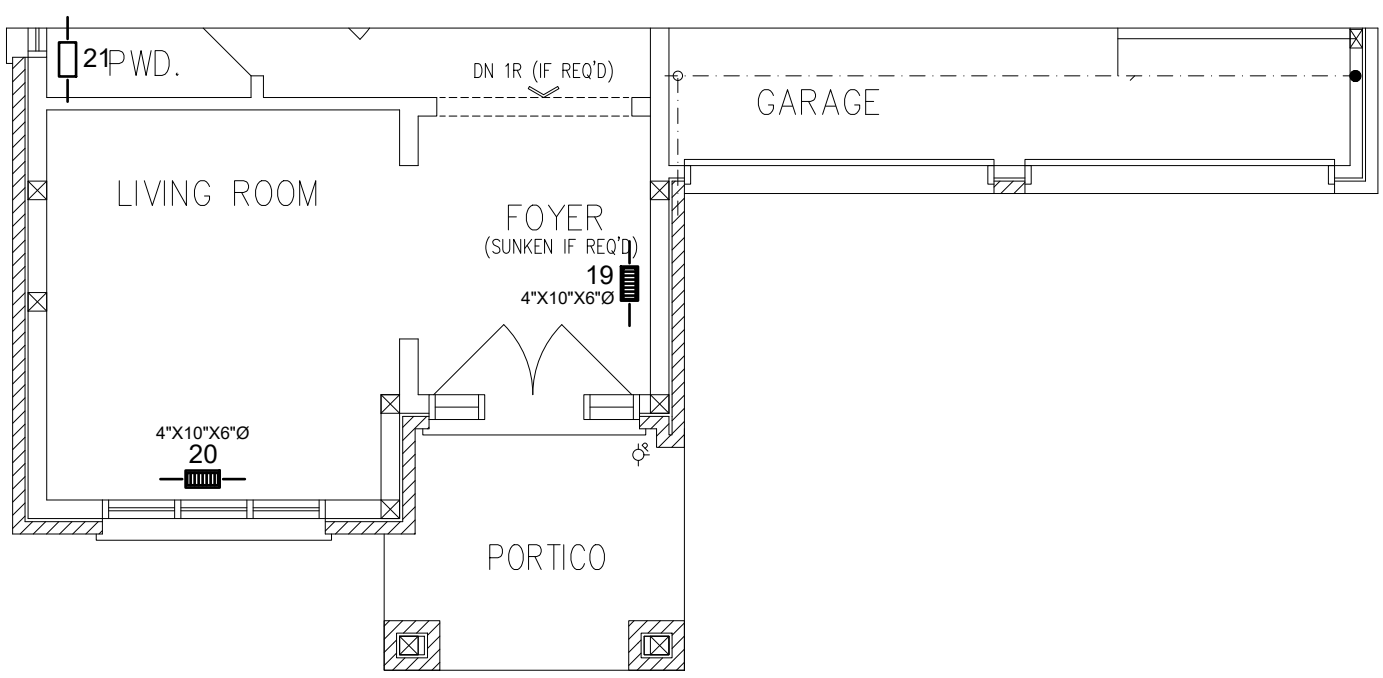
M3



OPT. SECOND FLOOR PLAN EL. 'B' (5 BEDROOM CONDITION)



GROUND FLOOR PLAN EL. 'B'

3RD	# S/A -	# R/A -	# FANS -
2ND	14	5	5
1ST	9	3	1
B	4	1	-
TOTAL	27	9	6

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PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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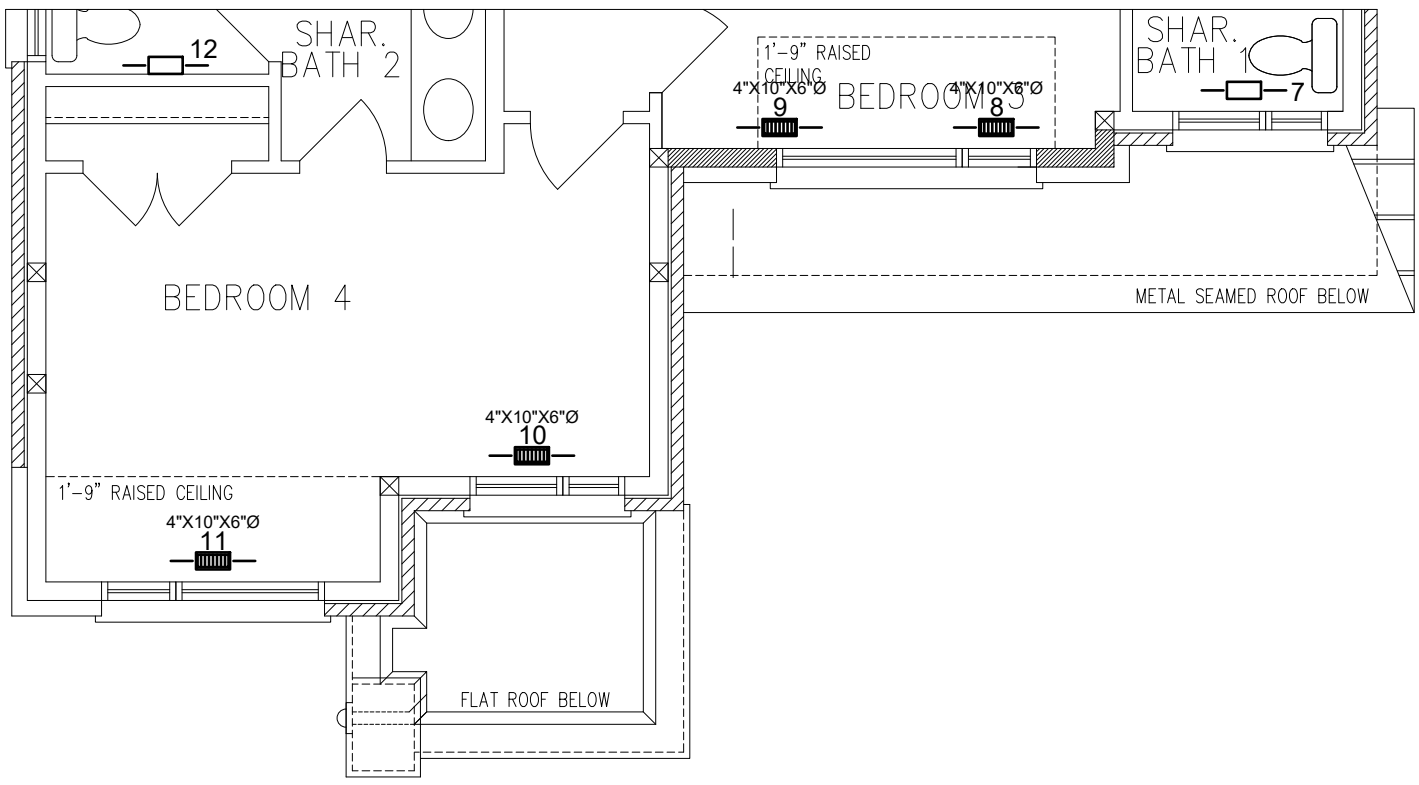
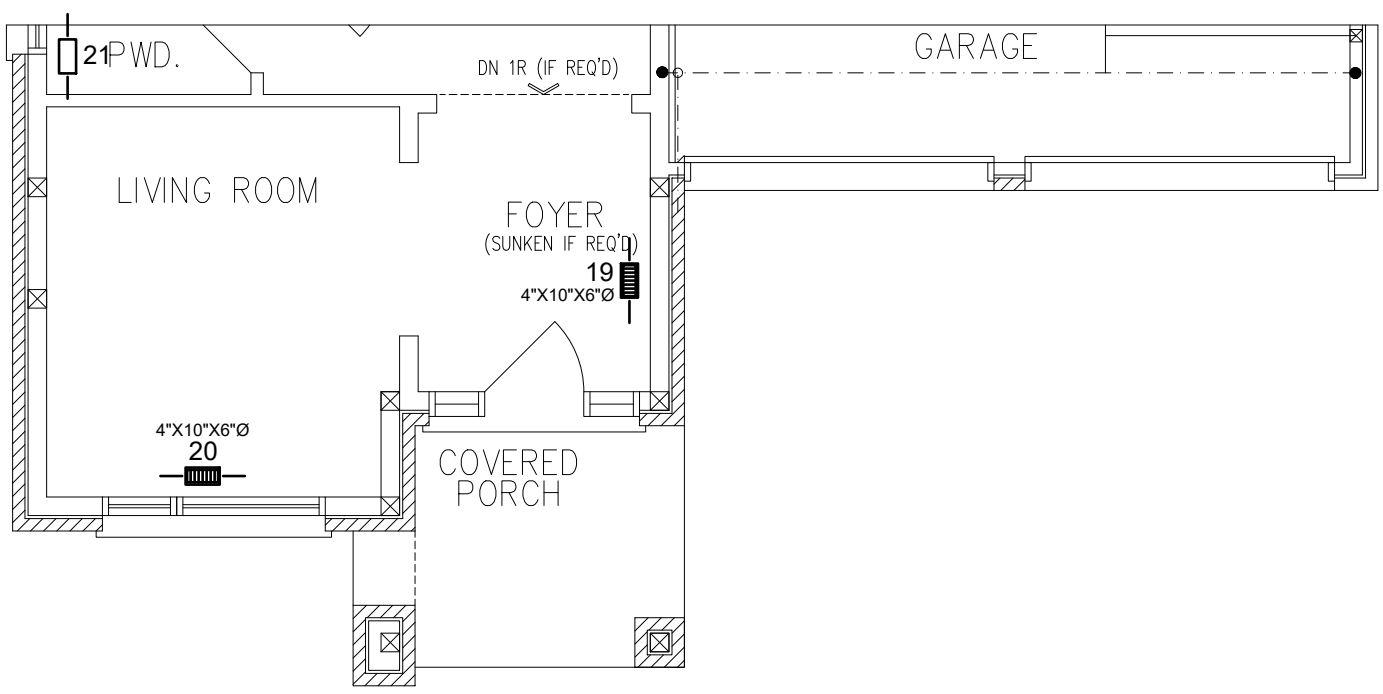
M4



OPT. SECOND FLOOR PLAN EL. 'C' (5 BEDROOM CONDITION)



GROUND FLOOR PLAN EL. 'C'

3RD	# S/A -	# R/A -	# FANS -
2ND	14	5	5
1ST	9	3	1
B	4	1	-
TOTAL	27	9	6

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PARTIAL PLANS

DATE: JUN/2022 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA

SB-12 PERFORMANCE
CSA F280-12

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M5

Desai, Shruti B (Planning & Development Services)

From: Cinzia Caruso <Cinzia@royalpinehomes.com>
Sent: 2023/08/04 9:31 AM
To: Desai, Shruti B (Planning & Development Services)
Subject: [EXTERNAL]status - Certified Models
Attachments: EEDS Performance Royal Pine Forest Side.pdf

Caution: This email originated from outside the organization. Do not click links or open attachments that you do not trust or are not expecting.

Good Morning Shruti,
Thank you for your comments.
Please find attached letter from Clearsphere, stating that we only used PROFORMANCE PACKAGE for our EEDS Forms also below is the link to the HVAC Drawings, HVAC Calculations that have comments and EEDS forms I applied with.

Re: 45-01 HVAC Design with the Optional ground floor for 2nd floor 5 Bedrooms options & 5 bedrooms & 4 Bathroom option, please remove this option. We have no sales for this option and will not have it in the future. This is to confirm you can ignore it from your comments.

https://www.dropbox.com/scl/fo/b7q2voz44dr7c66ddd6lb/h?rlkey=16osw3aakrqg6fqu2x30wgrzi&dl=0

Re: 45-05 point #1 do you see a discrepancy with EEDS form or the HVAC Calculations? Please clarify.

I have sent all your other comments to the HVAC Company, if you have any questions please call me, I would like to have this cleared up for you as soon as possible.

Thank You,
Cinzia Caruso

3550 Langstaff Road, Suite 200
Woodbridge, Ontario L4L 9G3
T 416.213.7181 X 356
T 905.856.2150 X 356
F 905.856.6543

From: Desai, Shruti B (Planning & Development Services) <ShrutiB.Desai@brampton.ca>
Sent: Thursday, August 3, 2023 1:37 PM
To: Cinzia Caruso <Cinzia@royalpinehomes.com>
Subject: RE: [EXTERNAL]status - Certified Models

Good morning Cinzia,

Thank you for the information provided, however, please clarify further following items :