
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.

DATE
RECEIVED: June 19, 2023

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
2023/07/26
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
Municipality	Postal code	Reg. Plan number / other description	

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 = _____m ² or _____ft ²	W, S & G % = _____	☐ Log/Post&Beam ☐ ICF Above Grade ☐ ICF Basement
Area of W, S & G = _____m ² or _____ft ²		☐ Slab-on-ground ☐ Walkout Basement
☐ Air Conditioning ☐ Combo Unit		
☐ Air Source Heat Pump (ASHP)		
☐ Ground Source Heat Pump (GSHP)		
SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance		
SB-12 Referenced Building Package (input design package): Package: _____ Table: _____		

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			Windows/Sliding Glass Doors	
Ceiling without Attic Space			Skylights/Glazed Roofs	
Exposed Floor			Mechanicals	
Walls Above Grade			Heating Equip.(AFUE)	
Basement Walls			HRV Efficiency (SRE% at 0°C)	
Slab (all >600mm below grade)			DHW Heater (EF)	
Slab (edge only ≤600mm below grade)			DWHR (CSA B55.1 (min. 42% efficiency))	# Showers_____
Slab (all ≤600mm below grade, or heated)			Combined Space / Dom. Water Heating	

(1) U value to be provided in either W/(m²•K) or Btu/(h•ft²•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 _____ GJ (1 GJ =1000MJ)

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

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

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 #

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
		

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

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

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

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1 *Windows, Skylights and Glass Doors:* If the ratio of the total gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 3.1.1.1. of SB-12 for further details.

Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which SB-12 Prescriptive compliance package table applies.

Other Building Conditions: These construction conditions affect SB-12 Prescriptive compliance requirements.

D. Building Specifications

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

E. Performance Design Summary

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

F. ENERGY STAR or R-2000 Performance Method

Design to ENERGY STAR or R-2000 Standards.

G. House Designer

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

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES

All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered.

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

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)

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

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

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

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

Code Compliance Certificate

Project Title: Model 40-02

Report Date June 13, 2021
Data Filename Model 40-02.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) 5056
Conditioned Volume (cubic ft) 49291
Insulated Shell Area (sq ft) 9678

**City of Brampton
Building Division
HVAC Reviewed**

2023/07/26
Shruti Desai

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BUILDING CODE O.REG.332/12 AS AMENDED

Construction Site	Owner	Builder	HERS Rater
Model 40-02	Royal Pine Homes	Royal Pine Homes	Clearsphere Consulting
Brampton,	Model 40-02	3550 Langstaff Road, Suite 200	John Godden
	Brampton,	Woodbridge, Ontario L4L 9G3	416-481-4218

Annual Energy Consumption	KWH	GJ
Reference Home Package A1	49501.50	178.21
Proposed House	46683.89	168.06
Better Than Code	5.7%	

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	1930	14.0	46.0
Roof 2: R-31 Flat	15	31.0	0.0
Above-Grade Walls			
AG Wall 1: R-22+1.5ci	3814	22.0	1.5
Joist 1: Cond -> ambient	387	22.0	1.5
Window 1: U= 0.282 SHGC 0.45	452		3.5
Door 1: Code	9		4.0
Door 2: Code	21		4.0
Floors Over Garage			
Floor 1: R-31 Std	405	31.0	0.0
Basement Walls			

Code Compliance Certificate

Building Summary

Assembly

Wall 1: R-20 Blanket
 Window 2: U= 0.282 SHGC 0.45
 Door 3

Gross Area or Perimeter

1526
 17
 21

Cavity R-Value

0.0

Continuous R-Value

20.0
 3.5
 4.0

Mechanical Equipment

Heating: Fuel-fired air distribution
 Cooling: Air conditioner
 Water Heating: Instant water heater, Gas
 HRV/ERV

Name/Type

96 AFUE ECM
 13SEER A/C 1.5 ton
 0.90 EF Condensing

Size/Input

32.0 kBtuh
 18.0 kBtuh,
 0 gal
 95.0 CFM

Efficiency

96.0 AFUE
 13.0 SEER
 0.93 EF
 75.0% sen/ 0.0% tot

Drain Water Heat Recovery

1 of 2 Showers connected and 53.0% unit efficiency

Air Exchange

3.06 ACH50 or: 0.26 CFM50/sf

Efficient Lighting

0.0% Interior, 0.0% Exterior, 0.0% Garage

Renewables

N/A

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 40-02 - A1
Model 40-02 - 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 40-02 - A1
Owner's Name	Royal Pine Homes
Property Address	Model 40-02 - A1
City, St, Zip	Brampton,
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 40-02 - A1
Community/Development Identifier/Other	Forest Side

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

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

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

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Building Summary

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Model 40-02 - A1.blg

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General Building Information

Area of Conditioned. Space(sq ft)	5056
Volume of Conditioned. Space	49291
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	193.50	8.08	7.25	0.83	0.036	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

Building Summary

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Model 40-02 - A1.blg

Builder

Royal Pine Homes

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	1563	7.25	194	194	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	405	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	387.00	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	3814.26	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

Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Overhang			Interior		Adjacent	
						Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	15.94	0.0	0.0	0.0	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	11.70	0.0	0.0	0.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	5.33	9.8	1.0	2.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	44.00	9.8	2.0	8.3	0.85	0.70	None	None

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Window Information

Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Overhang			Interior		Adjacent	
						Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	12.00	1.3	1.8	8.4	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	56.25	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	6.70	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	17.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	8.00	1.3	1.8	6.1	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	18.70	1.3	1.8	5.8	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	62.70	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	17.30	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	37.33	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	21.78	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	8.00	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	48.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	37.33	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	1930.00	2412.50	Dark	No	Attic	0.017	No	No
Ceiling-with attic	R-31 Flat	15.00	15.00	Dark	No	Vaulted	0.052	No	No

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Brampton,

Organization

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Rater ID:0001

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

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Roof Library List

Ceiling: R-60 Attic

Information From Quick Fill Screen

Continuous 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

Continuous 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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Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

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
-------------------	--------------

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

Organization

Clearsphere Consulting
416-481-4218
John Godden

HERS

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

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

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	82
TOTAL Pipelength for longest DHW run	112
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
EDef	1.00
ewaste	32.00
tmains	54.00
dwHrWhInletTempAdj	8.57
pumpConsKwh	0.00

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

Organization

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

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

DHW Efficiencies

pumpConsMmbtu

0.00

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

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

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

Duct Systems

Name

Conditioned Floor Area(sq ft)	5056.0
# of Returns	6
Heating System	96 AFUE 371 Watts
Cooling System	13SEER A/C 1.5 ton
Supply Duct Surface Area(sq ft)	1023.8
Return Duct Surface Area(sq ft)	948.0
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	

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

Organization

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

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type	Blower door
Heating Season Infiltration Value	0.26 CFM50/sf shell
Cooling Season Infiltration Value	0.26 CFM50/sf shell
Shelter Class	4
Code Verification	Tested

Mechanical Ventilation for IAQ

Type	Balanced
Unable to Measure Mechanical Ventilation	FALSE
Rate(cfm)	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
------------------------------------	----

Building Summary

Property

Royal Pine Homes
Model 40-02 - A1
Brampton,

Organization

Clearsphere Consulting
416-481-4218
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HERS

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

Weather:Toronto, ON_CAN

Model 40-02 - A1
Model 40-02 - A1.blg

Builder

Royal Pine Homes

Lights and Appliances

Rating/RESNET audit

Ceiling Fan CFM / Watt	0.00
Refrigerator kWh/yr	691
Refrigerator Location	Conditioned
Range/Oven Fuel Type	Electric
Induction Range	No
Convection Oven	No

Dishwasher

Energy Factor	0.46
Dishwasher kWh/yr	0
Place Setting Capacity	12

Clothes Dryer

Fuel Type	Electric
Location	Conditioned
Moisture Sensing	No
CEF	2.62

Clothes Washer

Location	Conditioned
LER (kWh/yr)	704
IMEF	0.331
Capacity (CU.Ft)	2.874
Electricity Rate	0.08
Gas Rate	0.58
Annual Gas Cost	23.00

Qualifying Light Fixtures

Interior Lights %	0.0
Exterior Lights %	0.0
Garage Lights %	0.0
Interior LEDs %	0.0
Exterior LEDs %	0.0
Garage LEDs %	0.0

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

Clearsphere Consulting
416-481-4218
John Godden

HERS

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Property/Builder Information

Building Name	Model 40-02
Owner's Name	Royal Pine Homes
Property Address	Model 40-02
City, St, Zip	Brampton,
Phone Number	
Builder's Name	Royal Pine Homes
Phone Number	
Email Address	
Plan/Model Name	Model 40-02
Community/Development Identifier/Other	Forest Side

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

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

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Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

Clearsphere Consulting
416-481-4218
John Godden

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

General Building Information

Area of Conditioned. Space(sq ft)	5056
Volume of Conditioned. Space	49291
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	193.50	8.08	7.25	0.83	0.036	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

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

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416-481-4218
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Projected Rating
June 13, 2021
Rating No:N/A
Rater ID:0001

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

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	1563	7.25	194	194	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	405	0.047

Frame Floor Library List

Floor: R-31 Std

Information From Quick Fill Screen

Continuous 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

Property

Royal Pine Homes
Model 40-02
Brampton,

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Projected Rating
June 13, 2021
Rating No:N/A
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Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Frame Floor Library List

Note

Rim and Band Joist Information

Name	Location	Area(sq ft)	Continuous Ins	Framed Cavity Ins	Cavity Ins Thk(in)	Joist Spacing	Insulation Grade	Uo Value
Rim Band Joist	Cond -> ambient	387.00	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	3814.26	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

Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Overhang			Interior		Adjacent	
						Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	15.94	0.0	0.0	0.0	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	11.70	0.0	0.0	0.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	5.33	9.8	1.0	2.0	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	44.00	9.8	2.0	8.3	0.85	0.70	None	None

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Building Summary

Property
Royal Pine Homes
Model 40-02
Brampton,

Organization
Clearsphere Consulting
416-481-4218
John Godden

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder
Royal Pine Homes

Window Information

Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Overhang			Interior		Adjacent	
						Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summer Shading
front	AGWall 1	South	0.282	0.450	12.00	1.3	1.8	8.4	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	56.25	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	6.70	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	17.30	0.0	0.0	0.0	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	8.00	1.3	1.8	6.1	0.85	0.70	None	None
Left	AGWall 1	West	0.282	0.450	18.70	1.3	1.8	5.8	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	62.70	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	17.30	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	37.33	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	21.78	1.3	1.8	6.4	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	8.00	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	48.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	37.33	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	1930.00	2412.50	Dark	No	Attic	0.017	No	No
Ceiling-with attic	R-31 Flat	15.00	15.00	Dark	No	Vaulted	0.052	No	No

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Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

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

Weather:Toronto, ON_CAN

Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Roof Library List

Ceiling: R-60 Attic

Information From Quick Fill Screen

Continuous 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

Continuous 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	

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

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

Weather:Toronto, ON_CAN

Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

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
-------------------	----------------------

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

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	82
TOTAL Pipelength for longest DHW run	112
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
EDef	1.00
ewaste	32.00
tmains	54.00
dwHrWhInletTempAdj	5.41
pumpConsKwh	0.00

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

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416-481-4218
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HERS

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

Weather:Toronto, ON_CAN

Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

DHW Efficiencies

pumpConsMmbtu

0.00

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

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HERS

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

Weather:Toronto, ON_CAN

Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Duct Systems

Name

Conditioned Floor Area(sq ft)	5056.0
# of Returns	6
Heating System	96 AFUE ECM
Cooling System	13SEER A/C 1.5 ton
Supply Duct Surface Area(sq ft)	1023.8
Return Duct Surface Area(sq ft)	948.0
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	

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

Clearsphere Consulting
416-481-4218
John Godden

HERS

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type	Blower door
Heating Season Infiltration Value	0.26 CFM50/sf shell
Cooling Season Infiltration Value	0.26 CFM50/sf shell
Shelter Class	4
Code Verification	Tested

Mechanical Ventilation for IAQ

Type	Balanced
Unable to Measure Mechanical Ventilation	FALSE
Rate(cfm)	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
------------------------------------	----

Building Summary

Property

Royal Pine Homes
Model 40-02
Brampton,

Organization

Clearsphere Consulting
416-481-4218
John Godden

HERS

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

Weather:Toronto, ON_CAN
Model 40-02
Model 40-02.blg

Builder

Royal Pine Homes

Lights and Appliances

Rating/RESNET audit

Ceiling Fan CFM / Watt	0.00
Refrigerator kWh/yr	691
Refrigerator Location	Conditioned
Range/Oven Fuel Type	Electric
Induction Range	No
Convection Oven	No

Dishwasher

Energy Factor	0.46
Dishwasher kWh/yr	0
Place Setting Capacity	12

Clothes Dryer

Fuel Type	Electric
Location	Conditioned
Moisture Sensing	No
CEF	2.62

Clothes Washer

Location	Conditioned
LER (kWh/yr)	704
IMEF	0.331
Capacity (CU.Ft)	2.874
Electricity Rate	0.08
Gas Rate	0.58
Annual Gas Cost	23.00

Qualifying Light Fixtures

Interior Lights %	0.0
Exterior Lights %	0.0
Garage Lights %	0.0
Interior LEDs %	0.0
Exterior LEDs %	0.0
Garage LEDs %	0.0

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 4002 - Elev. A,B & C		Lot: 4002	
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	
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		Project #: RP23051	
		Builder	Royal Pine Homes
		Project	Forestside Estates
		Model	Unit 4002 - Elev. A,B & C
		SB-12	SB 12 Performance 28
D. Declaration of Designer			
I, <u>Doug McCallum</u> 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: <u>25896</u>			
Firm BCIN: <u>102614</u>			
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.			
<u>2023-06-07</u> Date		 Signature of Designer	

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4 . and 3.2.5. of Division C.
- Schedule 1 does not require to be completed a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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 <u>Royal Pine Homes</u>		Project No. RP23051
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.		
Building Location		
Address (Model): Unit 4002 - Elev. A,B & C	Site: Forestside Estates	
Model:	Lot: 4002	
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		Cooling design conditions
Outdoor temp: -2.2°F Indoor temp: 72.0°F Mean soil temp: 48.2°F		Outdoor temp: 86.0°F Indoor temp: 72.0°F Latitude: 43.68
Above grade walls		Below grade walls
Style A: As per Selected OBC SB12 SB 1 R 22+1.	Style A: As per Selected OBC SB12 SB 1 R 20ci	
Style B: Existing Walls (When Applicable) R 12	Style B:	
Style C:	Style C:	
Style D:	Style D:	
Floors on soil		Ceilings
Style A: As per Selected OBC SB12 SB 12 F	Style A: As per Selected OBC SB12 SB 12 P R 60.0	
Style B:	Style B: As per Selected OBC SB12 SB 12 P R 31.0	
Exposed floors		Style C:
Style A: As per Selected OBC SB12 SB 12 R 31	Doors	
Style B:	Style A: As per Selected OBC SB12 SB 12 R 3.01	
Windows		Style B:
Style A: As per Selected OBC SB12 SB 12 I R 3.57	Style C:	
Style B: Existing Windows (When Applicable) R	Skylights	
Style C:	Style A: As per Selected OBC SB12 SB 12 R 2.04	
Style D:	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	

Project: Forestside Estates

Model: Unit 4002 - Elev. A.B & C

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

Location of Installation	
Lot #	Plan #
Township Brampton	
Roll #	Permit #
Address	

Total Ventilation Capacity 9.32.3.3(1)					
Bsmt & Master Bdrm	2	@ 21.2	cfm	42.4	cfm
Other Bedrooms	4	@ 10.6	cfm	42.4	cfm
Bathrooms & Kitchen	5	@ 10.6	cfm	53.0	cfm
Other rooms	4	@ 10.6	cfm	42.4	cfm
Total				180.2	cfm

Builder	
Name	Royal Pine Homes
Address	
City	
Tel	Fax

**City of Brampton
Building Division
HVAC Reviewed**
2023/07/26
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO
BUILDING CODE O.B.C. 3301.2 AS AMENDED

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	cfm

Principal Exhaust Fan Capacity			
Make	Model	Location	
VanEE	65H	BASE	
129	cfm	64	Sones

Installing Contractor	
Name	
Address	
City	
Tel	Fax

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	%

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

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

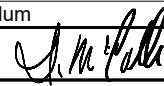
Heating System	
☒	Forced air
☐	Non forced air
☐	Electric space heat (if over 10% of heat load)

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.	

House Type 9.32.3.1(2)	
I	☒ 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

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

System Design Option	
1	☐ Exhaust only / forced air system
2	☐ HRV WITH DUCTING / forced air system
3	☒ HRV simplified connection to forced air system
4	☐ HRV full ducting/not coupled to forced air system
	☐ Part 6 design

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

Project: Forestside Estates

Model: Unit 4002 - Elev. A,B & C

Air Leakage Calculations

Air Leakage Calculations

Building Air Leakage Heat Loss

B	LRairh	Vb	HL^T	HLleak
0.018	0.339	45253.0	74.2	20512.95

Building Air Leakage Heat Gain

B	LRairh	Vb	HG^T	HG Leak
0.018	0.1183429	45253	14.00	1349.55

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	20513	7085	1.44763
2	0.3		12815	0.48021
3	0.2		12978	0.31612
4	0		0	0.00000

HG LEAK		0.09088
1349.55		
BUILDING CONDUCTIVE HEAT GAIN		14850.00

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

Levels this Dwelling

3

Air Leakage Calculations

Ventilation Calculations

Vent	Ventilation Heat Loss					Ventilation Heat Gain				Vent		
	Ventilation Heat Loss					Ventilation Heat Gain						
	C	PVC	HL^T	(1-E) HRV	HLbvent	C	PVC	HG^T	HGbvent			
	1.08	95.4	74.20	0.250	1911.24	1.08	95.4	14.00	1442.448			
Case 1												
Case 1	Ventilation Heat Loss (Exhaust only Systems)					Ventilation Heat Gain (Exhaust Only Systems)				Case 1		
	Case 1 - Exhaust Only					Case 1 - Exhaust Only		Multiplier				
	Level	LF	HLbvent	LVL Cond. HL	Multiplier	HGbvent	1442.448	0.10				
	1	0.5	1911	7085	0.13	Building Cond. HG	14850.00					
	2	0.3		12815	0.04							
	3	0.2		12978	0.03							
	4	0		0	0							
	Case 2											
	Case 2	Ventilation Heat Loss (Direct Ducted Systems)					Ventilation Heat Gain (Direct Ducted Systems)				Case 2	
					Multiplier							Multiplier
C		HL^T	(1-E) HRV	20.03		C	HG^T	15.12				
1.08		74.20	0.25			1.08	14.00					
Case 3												
Case 3	Ventilation Heat Loss (Forced Air Systems)					Ventilation Heat Gain (Forced Air Systems)				Case 3		
			HLbvent	Multiplier				Vent Heat Gain	Multiplier			
	Total Ventilation Load		1911	0.06		HGbvent	HG*1.3	1442	0.10			
						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:	Heavv
Flue:	Heavv
Highest Ceiling Height (m):	6.71

Building Configuration

Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m ³):	1282

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values		
Custom BDT Data:	ELA @ 10 Pa.	1621.304	
	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

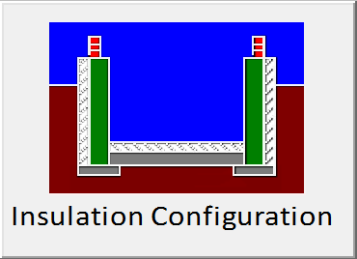
Envelope Air Leakage Rate

Heating Air Leakage Rate (ACH/H):

Cooling Air Leakage Rate (ACH/H):

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):	22.7	 Insulation Configuration BCIN_1
Floor Width (m):	5.73	
Exposed Perimeter (m):	57.0	
Wall Height (m):	3.05	
Depth Below Grade (m):	2.44	
Window Area (m ²):	1.49	
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):	1979	

SYSTEM A

DESIGN LOAD SPECIFICATIONS				AIR DISTRIBUTION AND PRESSURE			
LEVEL 1 NET LOAD	17753 btu/h			EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.		
LEVEL 2 NET LOAD	19715 btu/h			ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.		
LEVEL 3 NET LOAD	18337 btu/h			AVAILABLE DESIGN PRESSURE	0.250"W.C.		
LEVEL 4 NET LOAD	0 btu/h			RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft		
SYSTEM HEATLOSS	55805 btu/h			R/A PLENUM PRESSURE	0.120"W.C.		
SYSTEM HEATGAIN	32650 btu/h			S/A PLENUM PRESSURE	0.130"W.C.		
BUILDING VOLUME Vb	45253.00 ft3			HEATING AIR FLOW PROPORTIONING FACTOR	0.0205 cfm/btuh		
VENTILATION LOAD	1911.00 btu/h			COOLING AIR FLOW PROPORTIONING FACTOR	0.0351 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	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 Reviewed2023/08/03
Shruti DesaiALL WORK SHALL CONFORM TO THE ONTARIO
BUILDING CODE 0.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
25	BASE	3549	72	33	0.13	38	125	163	0.07	6.0	4x10	D1
26	BASE	3549	72	33	0.13	34	115	149	0.08	6.0	4x10	D1
27	BASE	3549	72	33	0.13	30	175	205	0.06	6.0	4x10	B1
28	BASE	3549	72	33	0.13	45	165	210	0.06	6.0	4x10	A1
29	BASE	3549	72	33	0.13	7	110	117	0.10	6	4x10	E1
15	KIT/BREAK	1845	37	61	0.13	38	165	203	0.06	6.0	4x10	C1
16	KIT/BREAK	1845	37	61	0.13	31	135	166	0.07	5.0	4x10	C1
17	KIT/BREAK	1845	37	61	0.13	36	175	211	0.06	6	4x10	C1
18	KIT/BREAK	1845	37	61	0.13	37	135	172	0.07	6	4x10	D1
19	DEN	1049	21	40	0.13	12	150	162	0.07	5.0	4x10	E1
20	LAUD/MUD	3071	62	50	0.13	15	160	175	0.07	5.0	4x10	E1
21	FOYER	4052	82	36	0.13	50	155	205	0.06	6.0	4x10	A1
22	PWD	271	5	2	0.13	34	145	179	0.07	5	4x10	B1
23	LIV/DIN	1939	39	46	0.13	34	185	219	0.05	5.0	4x10	B1
24	LIV/DIN	1939	39	46	0.13	26	150	176	0.07	5.0	4x10	D1
1	ENS WC	768	16	17	0.13	48	175	223	0.05	5	4x10	C1
2	ENSUITE	1462	30	43	0.13	42	165	207	0.06	5.0	4x10	C1
3	PRI BED	1620	33	53	0.13	33	155	188	0.06	6	4x10	C1
4	PRI BED	1620	33	53	0.13	27	185	212	0.06	6	4x10	D1
6	SHD BATH-1	1089	22	13	0.13	46	185	231	0.05	5	4x10	B1
12	SHD BATH-2	637	13	15	0.13	31	175	206	0.06	5	4x10	B1
14	PRI. WIC	609	12	6	0.13	34	175	209	0.06	5	4x10	D1
9	BED4 WIC	752	15	23	0.13	47	185	232	0.05	5	4x10	A1
13	BED-5	1629	33	48	0.13	29	120	149	0.08	6	4x10	E1
5	BED-2	2002	41	42	0.13	19	140	159	0.08	6	4x10	E1
10	BED-4	1416	29	48	0.13	64	165	229	0.05	6	4x10	A1
11	BED-4	1416	29	48	0.13	60	155	215	0.06	6	4x10	A1

7	BED-3	2057	42	54	0.13	56	155	211	0.06	6	4x10	B1
8	BED-3	2057	42	54	0.13	52	145	197	0.06	6	4x10	B1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR VOLUME CFM	DUCT DESIGN PRESSU RE	ACTUAL DUCT LENGTH	EQUIVAL ENT LENGTH	TOTAL EFFECTIV E LENGTH	ADJUSTE D PRESSU RE	DUCT SIZE ROUND	INLET SIZE	TRUNK
1R	140	0.12	24	160	184	0.05	8	14x8	Y1
2R	140	0.12	20	120	140	0.07	7.5	14x8	W1
3R	140	0.12	40	180	220	0.05	8	14x8	W1
4R	60	0.12	56	140	196	0.05	6	14x8	V1
5R	60	0.12	49	170	219	0.05	6	14x8	V1
6R	355	0.12	12	160	172	0.06	10.5	30X8	Y1
7R	140	0.12	27	130	157	0.06	7.5	14x8	X1
8R	110	0.12	22	170	192	0.05	7	FLC	X1

RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSU RE	ROUND	RECT. SIZE	SIZE ALTERNA TE
DROP	1145	0.05		0	
Z1	1145	0.05	17	26x10	26x10
Y1	495	0.05	12.5	18x8	24x6
X1	650	0.05	14	22x8	18x10
W1	400	0.05	11.5	14x8	20x6
V1	120	0.05	7.5	8x8	8x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSU RE	ROUND	RECT. SIZE	SIZE ALTERNA TE
A1	227	0.05	9.5	10x8	14x6
B1	462	0.05	12	16x8	22x6
C1	190	0.05	9	10X8	
D1	455	0.05	12	16x8	22x6
E1	1146	0.05	17	26x10	26x10

MCCALLUM
HVAC DESIGN INC.

2023/08/03
Shruti Desai

TOTAL HEATLOSS: 55805 BTUH
TOTAL HEATGAIN: 32650 BTUH

**HEATLOSS/GAIN
CALCULATIONS
CSA-F280-12**

ADDRESS/MODEL: Unit 4002 - Elev. A,B & C CLIENT: Royal Pine Homes
PROJECT #: RP23051
COMPLIANCE PACKAGE: SB 12
Performance 28
GTA: 3485
LOT: 4002
SITE: Forestside Estates



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	1682 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	317 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh	
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS				
	NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 21 ft2		EXIST: 0 ft2		
Eff. R-V	3.01	3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99			
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	436 btuh	37.3	0 btuh	
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	246 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	2636 btuh	LOSS	0.4802	1266 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	153.2 btuh	239	5792		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	661 btuh	GAIN	0.0909	60 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	64 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		
PWD																					
		TOTALS H.L.: 271 btuh				H.G.: 51 btuh				AREA: 33 ft2		C.Height: 11		GROSS EXP. WALL				NEW 44 ft		EXIST 0 ft	
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT				
	NEW: 4 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	176 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	33 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: 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	176 btuh	LOSS	0.4802	85 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	10.2 btuh	239	5792		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	33 btuh	GAIN	0.0909	3 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	3 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		
LIV/DIN																					
		TOTALS H.L.: 3882 btuh				H.G.: 2618 btuh				AREA: 407 ft2		C.Height: 11		GROSS EXP. WALL				NEW 429 ft		EXIST 0 ft	
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT				
	NEW: 39 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	1526 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	288 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: 48.0 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	998 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	1042 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	2523 btuh	LOSS	0.4802	1212 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	146.7 btuh	239	5792		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	1330 btuh	GAIN	0.0909	121 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	129 btuh	0	0 btuh	8%	434 btuh	GAIN	0%	0 btuh		
LEVEL 3																					
ENS WC		TOTALS H.L.: 718 btuh				H.G.: 473 btuh				AREA: 29 ft2		C.Height: 8		GROSS EXP. WALL				NEW 88 ft		EXIST 0 ft	
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT				
	NEW: 11 ft		EXIST: 0 ft		NEW: 29 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	320 btuh	8.7	0 btuh	1.3	36 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	60 btuh	1.6	0 btuh	0.7	20 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: 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	166 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	225 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	523 btuh	LOSS	0.3161	165 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	30.4 btuh	239	5792		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	306 btuh	GAIN	0.0909	28 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	30 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		
ENSUITE																					
		TOTALS H.L.: 1400 btuh				H.G.: 1216 btuh				AREA: 135 ft2		C.Height: 8		GROSS EXP. WALL				NEW 120 ft		EXIST 0 ft	
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT				
	NEW: 15 ft		EXIST: 0 ft		NEW: 135 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	392 btuh	8.7	0 btuh	1.3	169 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	74 btuh	1.6	0 btuh	0.7	93 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			

**HEATLOSS/GAIN
CALCULATIONS
CSA-F280-12**

ADDRESS/MODEL: Unit 4002 - Elev. A,B & C CLIENT: Royal Pine Homes
PROJECT #: RP23051
COMPLIANCE PACKAGE: SB 12
Performance 28
GTA: 3485
LOT: 4002
SITE: Forestside Estates



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	1019 btuh	LOSS	0.3161	322 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	59.2 btuh	239		5792		LOSS	0%	0 btuh	
TOTAL CONDUCTIVE		GAIN	787 btuh	GAIN	0.0909	72 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	76 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh	
PRI BED				TOTALS H.L.: 3092 btuh			H.G.: 2998 btuh			AREA: 349 ft2		C.Height: 8		GROSS EXP. WALL		NEW 280 ft		EXIST 0 ft		
	EXPOSED WALLS			EXPOSED CEILING W/ATTIC			EXPOSED CEILING NO ATTIC			EXPOSED FLOORS			SKYLIGHT							
	NEW: 35 ft		EXIST: 0 ft		NEW: 349 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 8 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	961 btuh	8.7	0 btuh	1.3	437 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	181 btuh	1.6	0 btuh	0.7	242 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS			EAST/WEST WINDOWS			SE/SW WINDOWS			SOUTH WINDOWS			NORTH WINDOWS							
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 38.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 2.0 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	42 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	43 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	2250 btuh	LOSS	0.3161	711 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	130.8 btuh	239		5792		LOSS	0%	0 btuh	
TOTAL CONDUCTIVE		GAIN	1539 btuh	GAIN	0.0909	140 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	150 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh	
SHD BATH-1				TOTALS H.L.: 1062 btuh			H.G.: 369 btuh			AREA: 96 ft2		C.Height: 8		GROSS EXP. WALL		NEW 56 ft		EXIST 0 ft		
	EXPOSED WALLS			EXPOSED CEILING W/ATTIC			EXPOSED CEILING NO ATTIC			EXPOSED FLOORS			SKYLIGHT							
	NEW: 7 ft		EXIST: 0 ft		NEW: 96 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 91 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	192 btuh	8.7	0 btuh	1.3	120 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	227 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	36 btuh	1.6	0 btuh	0.7	66 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	24 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	705 btuh	LOSS	0.3161	223 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	41.0 btuh	239		5792		LOSS	10%	93 btuh	
TOTAL CONDUCTIVE		GAIN	221 btuh	GAIN	0.0909	20 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	22 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	22 btuh	
SHD BATH-2				TOTALS H.L.: 613 btuh			H.G.: 432 btuh			AREA: 80 ft2		C.Height: 8		GROSS EXP. WALL		NEW 48 ft		EXIST 0 ft		
	EXPOSED WALLS			EXPOSED CEILING W/ATTIC			EXPOSED CEILING NO ATTIC			EXPOSED FLOORS			SKYLIGHT							
	NEW: 6 ft		EXIST: 0 ft		NEW: 80 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 1 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	156 btuh	8.7	0 btuh	1.3	100 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	2 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	29 btuh	1.6	0 btuh	0.7	55 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS			EAST/WEST WINDOWS			SE/SW WINDOWS			SOUTH WINDOWS			NORTH WINDOWS							
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 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	446 btuh	LOSS	0.3161	141 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	25.9 btuh	239		5792		LOSS	0%	0 btuh	
TOTAL CONDUCTIVE		GAIN	280 btuh	GAIN	0.0909	25 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	27 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh	
PRI. WIC				TOTALS H.L.: 562 btuh			H.G.: 170 btuh			AREA: 71 ft2		C.Height: 8		GROSS EXP. WALL		NEW 80 ft		EXIST 0 ft		
	EXPOSED WALLS			EXPOSED CEILING W/ATTIC			EXPOSED CEILING NO ATTIC			EXPOSED FLOORS			SKYLIGHT							
	NEW: 10 ft		EXIST: 0 ft		NEW: 71 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	320 btuh	8.7	0 btuh	1.3	89 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	60 btuh	1.6	0 btuh	0.7	49 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	409 btuh	LOSS	0.3161	129 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	23.8 btuh	239		5792		LOSS	0%	0 btuh	
TOTAL CONDUCTIVE		GAIN	110 btuh	GAIN	0.0909	10 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	11 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh	
BED4 WIC				TOTALS H.L.: 725 btuh			H.G.: 651 btuh			AREA: 25 ft2		C.Height: 8		GROSS EXP. WALL		NEW 48 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 4002 - Elev. A,B & C CLIENT: Royal Pine Homes
PROJECT #: RP23051 GTA: 3485
COMPLIANCE PACKAGE: SB 12 LOT: 4002
Performance 28 SITE: Forestside Estates



	NEW: 6 ft			EXIST: 0 ft		NEW: 25 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 23 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	144 btuh	8.7	0 btuh	1.3	31 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	57 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh	
GAIN	0.8	27 btuh	1.6	0 btuh	0.7	17 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	6 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: 12.0 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	249 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	338 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	482 btuh	LOSS	0.3161	152 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	28.0 btuh	239		5792		LOSS	10%	63 btuh	
TOTAL CONDUCTIVE			GAIN	389 btuh	GAIN	0.0909	35 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	38 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	39 btuh	

BED-5	TOTALS H.L.: 1569 btuh					H.G.: 1362 btuh					AREA: 244 ft2		C.Height: 8		GROSS EXP. WALL				NEW 120 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT					
	NEW: 15 ft			EXIST: 0 ft		NEW: 244 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 8 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	400 btuh	8.7	0 btuh	1.3	306 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh		
GAIN	0.8	76 btuh	1.6	0 btuh	0.7	169 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh		
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS					
	NEW: 0.0 ft2			EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 20.0 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	416 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	434 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	1142 btuh	LOSS	0.3161	361 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	66.4 btuh	239		5792		LOSS	0%	0 btuh		
TOTAL CONDUCTIVE			GAIN	681 btuh	GAIN	0.0909	62 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	66 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh		

BED-2	TOTALS H.L.: 1914 btuh					H.G.: 1191 btuh					AREA: 291 ft2		C.Height: 8		GROSS EXP. WALL				NEW 168 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT					
	NEW: 21 ft			EXIST: 0 ft		NEW: 291 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 8 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	593 btuh	8.7	0 btuh	1.3	365 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh		
GAIN	0.8	112 btuh	1.6	0 btuh	0.7	201 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh		
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS					
	NEW: 0.0 ft2			EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 2.0 ft2		EXIST: 0.0 ft2		NEW: 18 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	42 btuh	37.3	0 btuh	20.8	374 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	43 btuh	14.9	0 btuh	11.7	211 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	1393 btuh	LOSS	0.3161	440 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	81.0 btuh	239		5792		LOSS	0%	0 btuh		
TOTAL CONDUCTIVE			GAIN	570 btuh	GAIN	0.0909	52 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	55 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh		

BED-4	TOTALS H.L.: 2704 btuh					H.G.: 2707 btuh					AREA: 172 ft2		C.Height: 8		GROSS EXP. WALL				NEW 240 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT					
	NEW: 30 ft			EXIST: 0 ft		NEW: 172 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 8 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	777 btuh	8.7	0 btuh	1.3	216 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh		
GAIN	0.8	147 btuh	1.6	0 btuh	0.7	119 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh		
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS					
	NEW: 0.0 ft2			EXIST: 0.0 ft2		NEW: 44.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 2.0 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	915 btuh	37.3	0 btuh	0	0	0	0	20.8	42 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh		
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1240 btuh	14.9	0 btuh	0	0	0	0	21.7	43 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	1968 btuh	LOSS	0.3161	622 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	114.4 btuh	239		5792		LOSS	0%	0 btuh		
TOTAL CONDUCTIVE			GAIN	1551 btuh	GAIN	0.0909	141 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	151 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh		

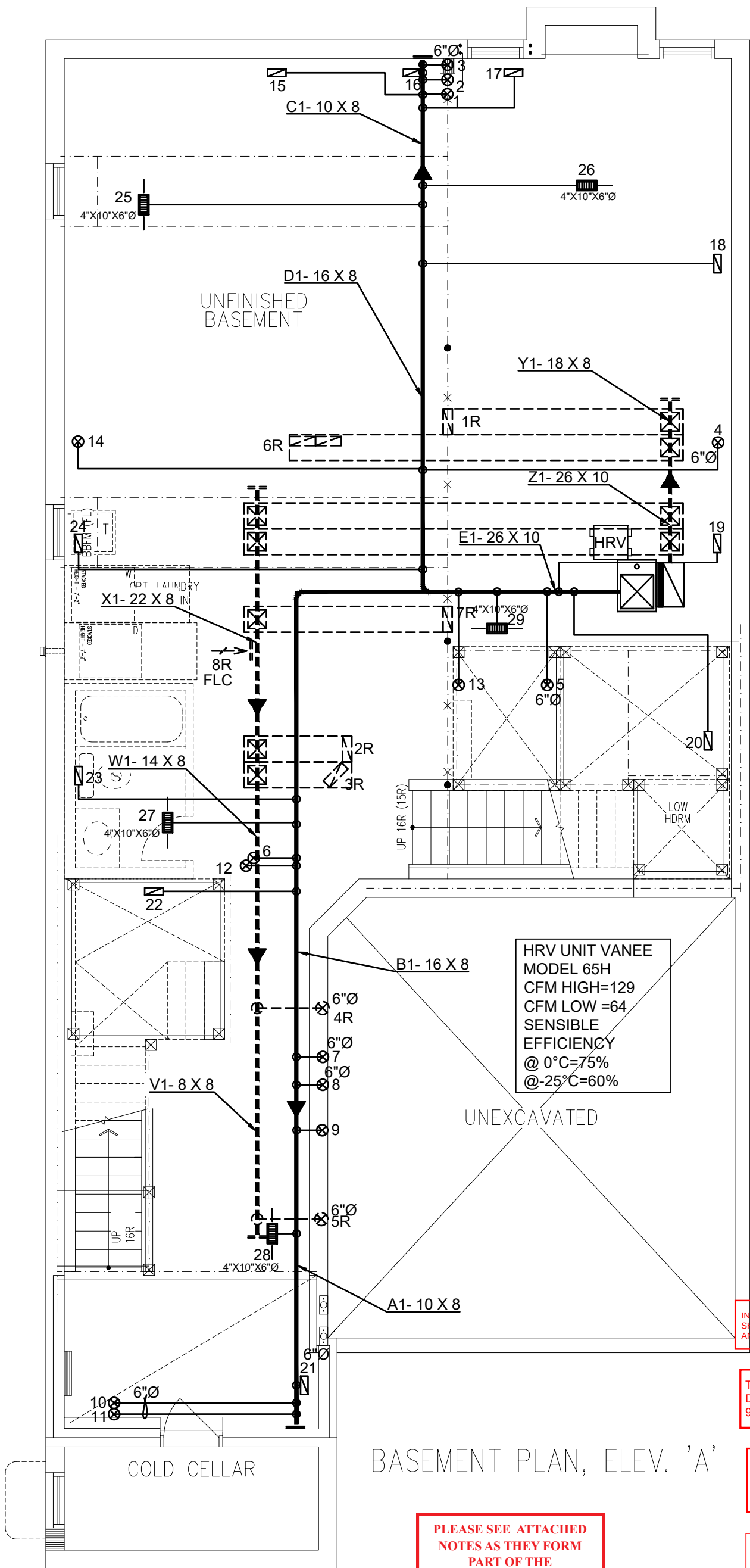
BED-3	TOTALS H.L.: 3978 btuh					H.G.: 3069 btuh					AREA: 265 ft2		C.Height: 8		GROSS EXP. WALL				NEW 256 ft		EXIST 0 ft	
	EXPOSED WALLS				EXPOSED CEILING W/ATTIC				EXPOSED CEILING NO ATTIC				EXPOSED FLOORS				SKYLIGHT					
	NEW: 32 ft			EXIST: 0 ft		NEW: 265 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 219 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	849 btuh	8.7	0 btuh	1.3	332 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	545 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh		
GAIN	0.8	160 btuh	1.6	0 btuh	0.7	183 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	59 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: 42.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 2.0 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 4002 - Elev. A,B & C CLIENT: Royal Pine Homes
PROJECT #: RP23051
COMPLIANCE PACKAGE: SB 12
Performance 28
GTA: 3485
LOT: 4002
SITE: Forestside Estates



LOSS	24.7	0 btuh	24.7	0 btuh	20.8	873 btuh	37.3	0 btuh	0	0	0	0	20.8	42 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1183 btuh	14.9	0 btuh	0	0	0	0	21.7	43 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	2641 btuh	LOSS	0.3161	835 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	153.5 btuh	239		5792		LOSS	10%	348 btuh	
TOTAL CONDUCTIVE		GAIN	1629 btuh	GAIN	0.0909	148 btuh	GAIN	0.0000	0 btuh	GAIN	0.10	158 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	187 btuh	
LEVEL 4																				



City of Brampton
Building Division
HVAC Reviewed
2023/08/03
Shruti Desai

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

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.

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

3RD	# S/A	# R/A	# FANS	• 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.
2ND	14	5	4	
1ST	10	2	2	
B	5	1	-	
TOTAL	29	8	6	
CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY				TOTAL LOSS 55,805 BTU/H
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.				TOTAL GAIN 32,650 BTU/H
Doug McCallum				HEATING UNIT LENNOX
NAME SIGNATURE BCIN / BCDN				MODEL # EL296UH070XE36B 3.0 TONS
				OUTPUT 64,000 BTU/H 1145 CFM

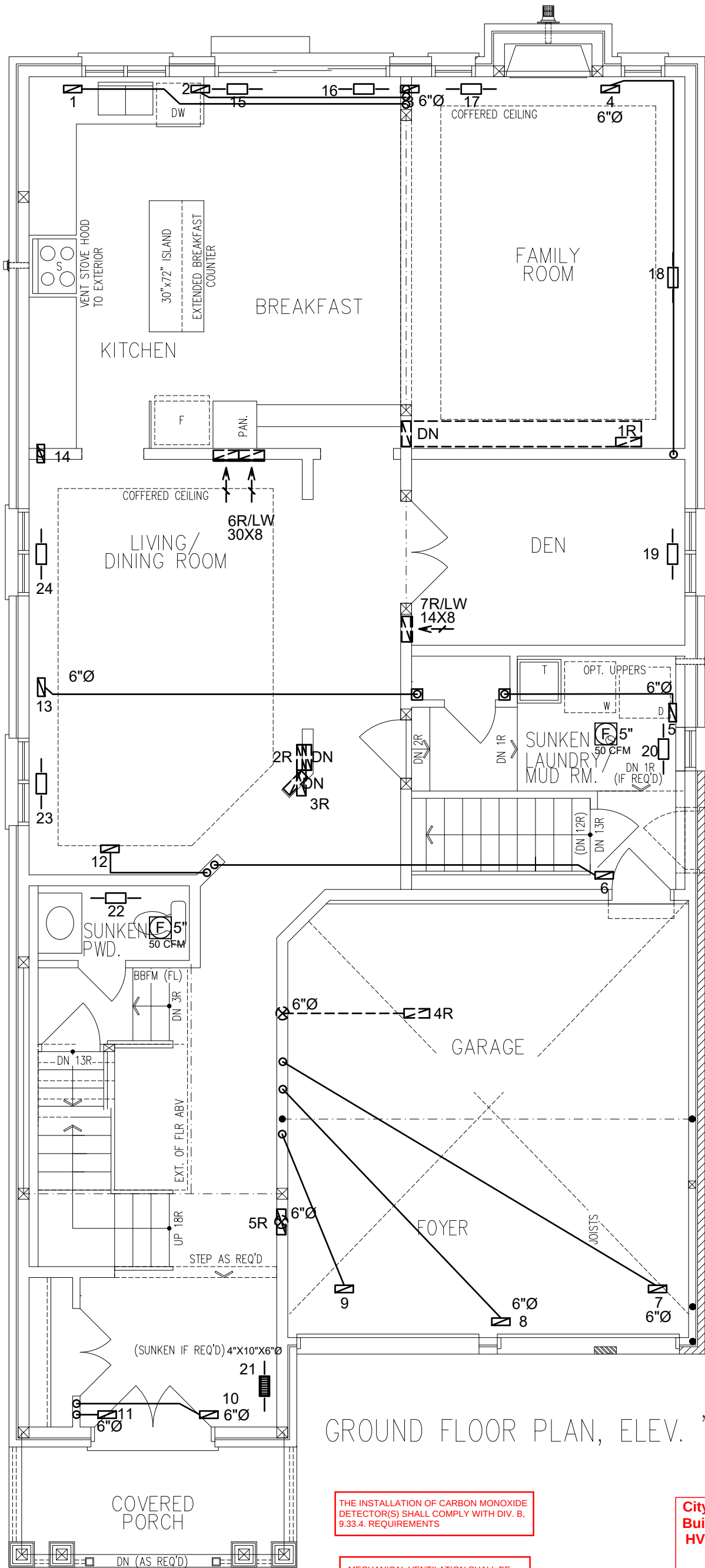
PROPOSED BASEMENT

DATE: JUN/2023 SCALE: 3/16"=1'-0" DRAWN BY: SY/MP

SB-12 PERFORMANCE
CSA F280-12

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

M1

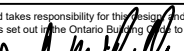


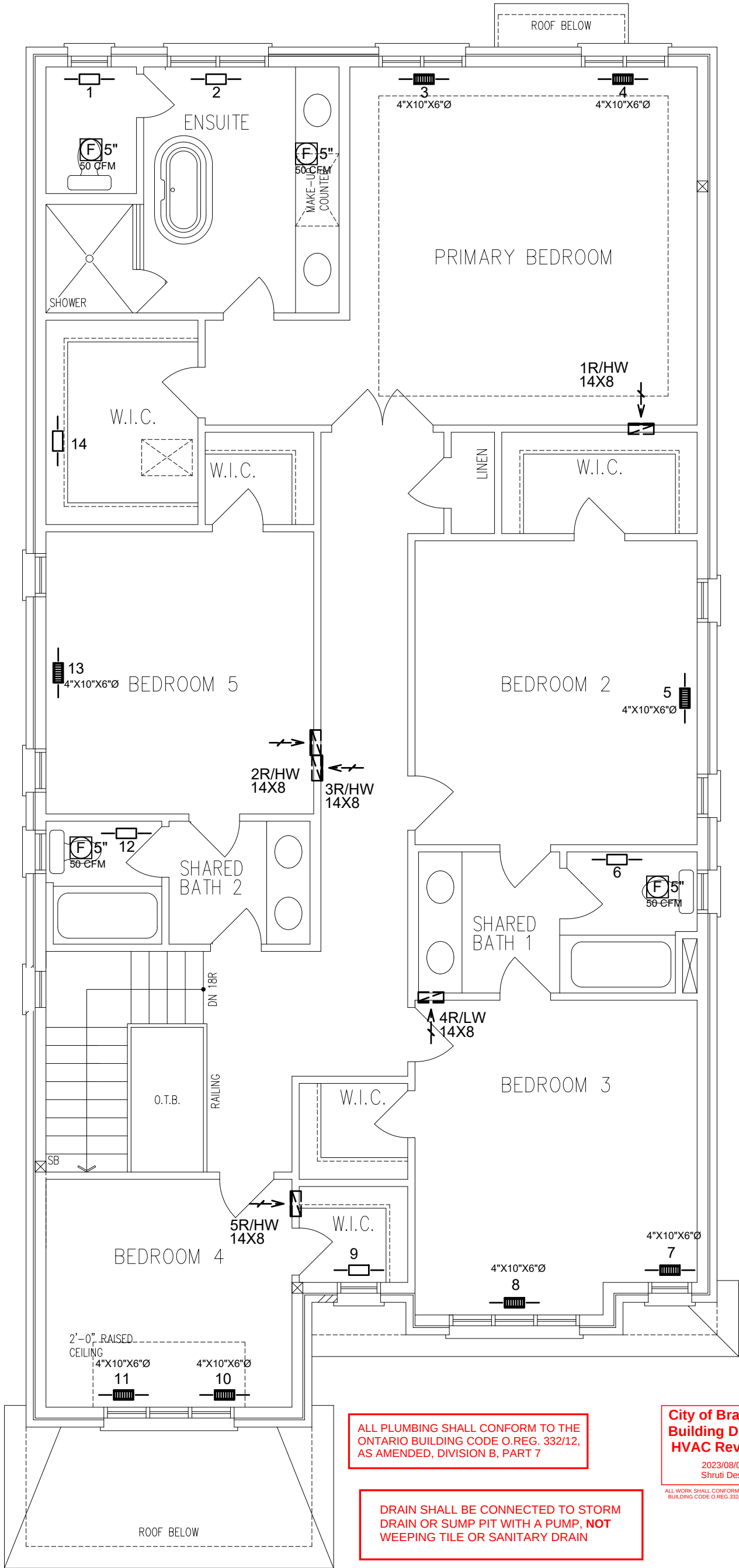
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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

City of Brampton
Building Division
HVAC Reviewed
2023/08/03
Shruti Desai

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

<table><tr><th>3RD</th><th># S/A</th><th>- # R/A</th><th>- # FANS</th><th>-</th></tr><tr><td>2ND</td><td>14</td><td>5</td><td>4</td><td></td></tr><tr><td>1ST</td><td>10</td><td>2</td><td>2</td><td></td></tr><tr><td>B</td><td>5</td><td>1</td><td>-</td><td></td></tr><tr><td>TOTAL</td><td>29</td><td>8</td><td>6</td><td></td></tr></table>				3RD	# S/A	- # R/A	- # FANS	-	2ND	14	5	4		1ST	10	2	2		B	5	1	-		TOTAL	29	8	6		- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. - INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. - COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION. - PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS. - ALL S/A RUNS TO BE 4"x10"x5" ROUND UNLESS OTHERWISE NOTED - INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS - ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.				PROPOSED 1ST FLOOR <table><tr><td>DATE:</td><td>JUN/2023</td><td>SCALE:</td><td>3/16"=1'-0"</td><td>DRAWN BY:</td><td>SY/MP</td></tr><tr><td colspan="6">SB-12 PERFORMANCE</td></tr><tr><td colspan="6">CSA F280-12</td></tr></table>				DATE:	JUN/2023	SCALE:	3/16"=1'-0"	DRAWN BY:	SY/MP	SB-12 PERFORMANCE						CSA F280-12					
3RD	# S/A	- # R/A	- # FANS	-																																																		
2ND	14	5	4																																																			
1ST	10	2	2																																																			
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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. Doug McCallum  102614 NAMESIGNATUREBCIN / BCDN				TOTAL LOSS55,805 BTU/H TOTAL GAIN32,650 BTU/H HEATING UNITLENNOX <table><tr><td>MODEL #</td><td>EL296UH070XE36B</td><td>3.0 TONS</td></tr><tr><td>OUTPUT</td><td>64,000 BTU/H</td><td>1145 CFM</td></tr></table>		MODEL #	EL296UH070XE36B	3.0 TONS	OUTPUT	64,000 BTU/H	1145 CFM	MODEL:Unit 4002 - Elev. A,B & C PROJECT #:RP23051 SQFT: 3485 W%: 10.75 SITE:Forestside Estates, Brampton FOR:Royal Pine Homes BUILDER:Royal Pine Homes		M MCCALLUM HVAC DESIGN INC Brampton, Ontario, 905-840-8166, info@mccallumhvac.com M2																																								
MODEL #	EL296UH070XE36B	3.0 TONS																																																				
OUTPUT	64,000 BTU/H	1145 CFM																																																				



ALL PLUMBING SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG. 332/12, AS AMENDED, DIVISION B, PART 7

DRAIN SHALL BE CONNECTED TO STORM DRAIN OR SUMP PIT WITH A PUMP, NOT WEEPING TILE OR SANITARY DRAIN

City of Brampton
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HVAC Reviewed
2023/08/03
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ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG. 332/12 AS AMENDED

3RD	# S/A	- # R/A	- # FANS
2ND	14	5	4
1ST	10	2	2
B	5	1	-
TOTAL	29	8	6

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

PROPOSED 2ND FLOOR		
DATE: JUN/2023	SCALE: 3/16"=1'-0"	DRAWN BY: SY/MP
SB-12 PERFORMANCE CSA F280-12		

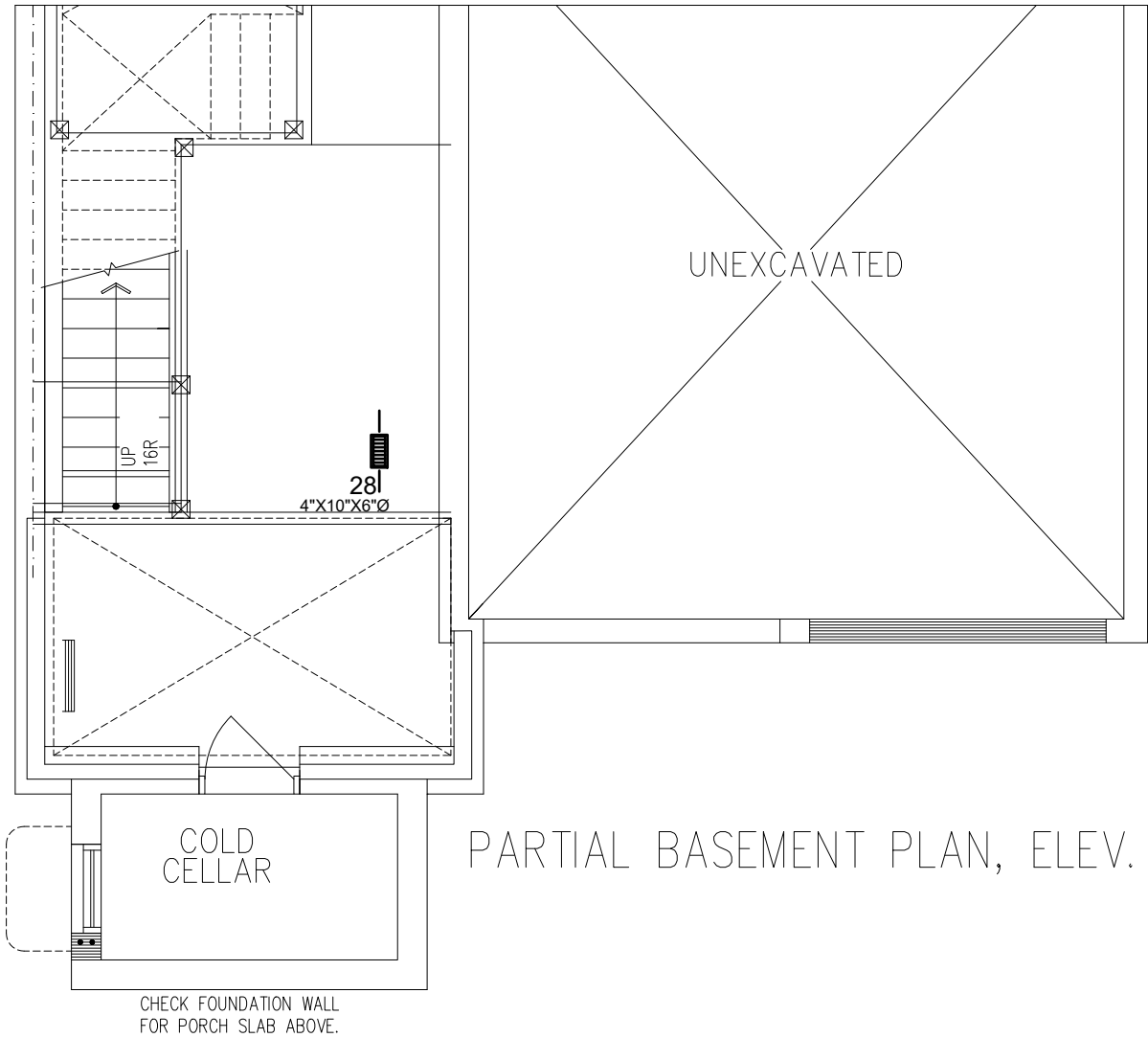
CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY		
The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.		
Doug McCallum		102614
NAME	SIGNATURE	BCIN / BCDN

TOTAL LOSS	55,805 BTU/H	
TOTAL GAIN	32,650 BTU/H	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTU/H	1145 CFM

MODEL:	Unit 4002 - Elev. A,B & C		
PROJECT #:	RP23051	SQFT: 3485	W%: 10.75
SITE:	Forestside Estates, Brampton		
FOR:	Royal Pine Homes		
BUILDER:	Royal Pine Homes		

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

M3

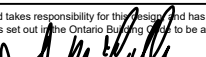


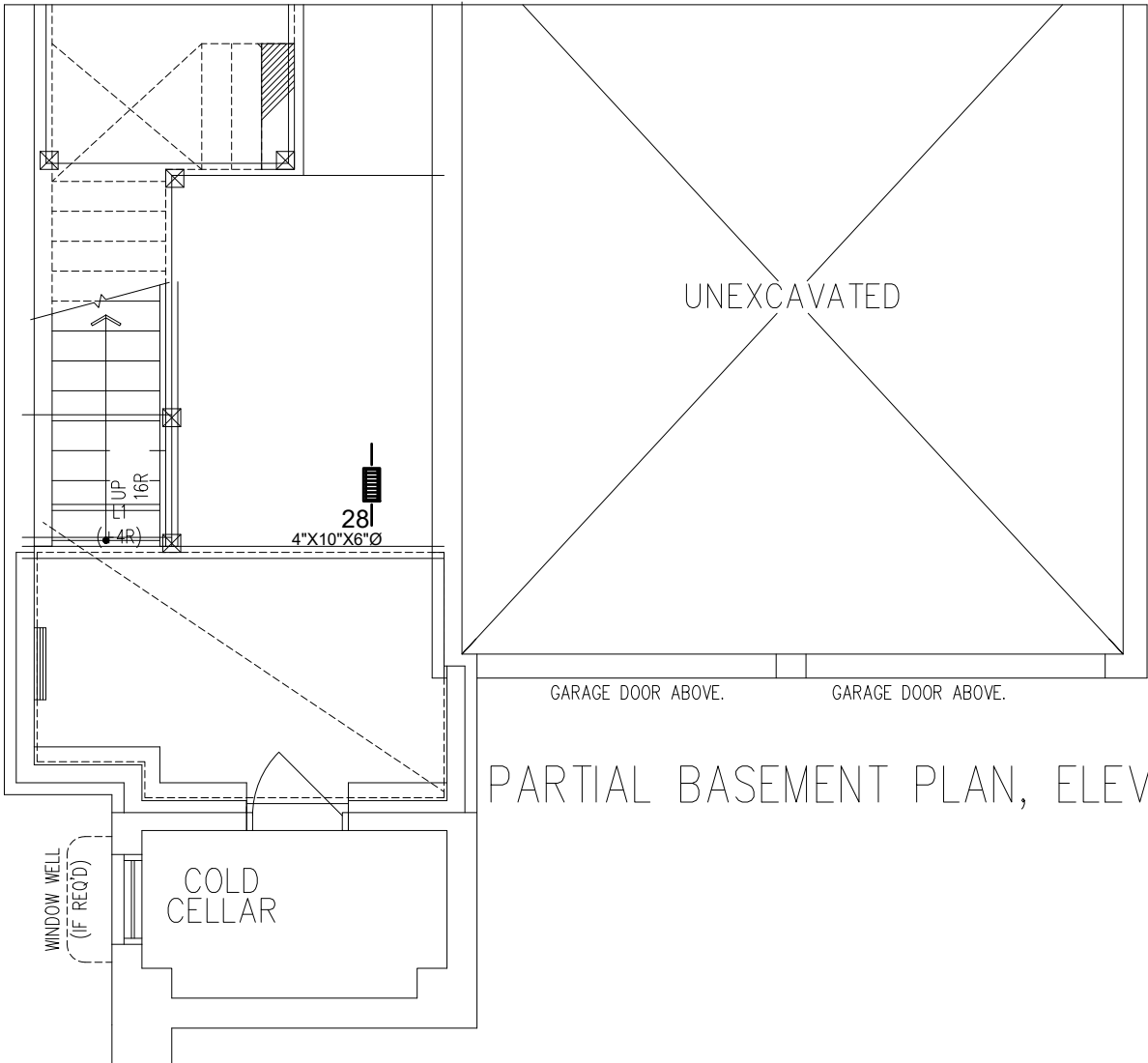
PARTIAL BASEMENT PLAN, ELEV. 'B'

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
2023/08/03
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

<table><tr><td>3RD</td><td># S/A</td><td>-</td><td># R/A</td><td>-</td><td># FANS</td><td>-</td></tr><tr><td>2ND</td><td>14</td><td></td><td>5</td><td></td><td>4</td><td></td></tr><tr><td>1ST</td><td>10</td><td></td><td>2</td><td></td><td>2</td><td></td></tr><tr><td>B</td><td>5</td><td></td><td>1</td><td></td><td>-</td><td></td></tr><tr><td>TOTAL</td><td>29</td><td></td><td>8</td><td></td><td>6</td><td></td></tr></table>						3RD	# S/A	-	# R/A	-	# FANS	-	2ND	14		5		4		1ST	10		2		2		B	5		1		-		TOTAL	29		8		6		• DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. • INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. • COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION. • PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS. • ALL S/A RUNS TO BE 4"x10"x5" ROUND UNLESS OTHERWISE NOTED • INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE. ALL DUCTS • ALL DUCTWORK LOCATED IN UNHEATED SPACES SHALL BE MIN R-12. UNDERCUT ALL DOORS IN ROOMS WITHOUT RETURN AIR, KEEP JOINTS TIGHT AND AIR LEAKAGE TO A MINIMUM.						PARTIAL PLANS DATE: JUN/2023 SCALE: 3/16"=1'-0" DRAWN BY: SY/MP SB-12 PERFORMANCE CSA F280-12					
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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. Doug McCallum  102614 NAME SIGNATURE BCIN / BCDN						TOTAL GAIN			32,650 BTUH			PROJECT #:		RP23051 SQFT: 3485 W%: 10.75																																						
						HEATING UNIT			LENNOX			SITE:		Forestside Estates, Brampton																																						
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						MCCALLUM HVAC DESIGN INC Brampton, Ontario, 905-840-8166, info@mccallumhvac.com						M4																																								



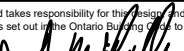
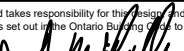
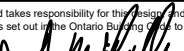
PARTIAL BASEMENT PLAN, ELEV. 'C'

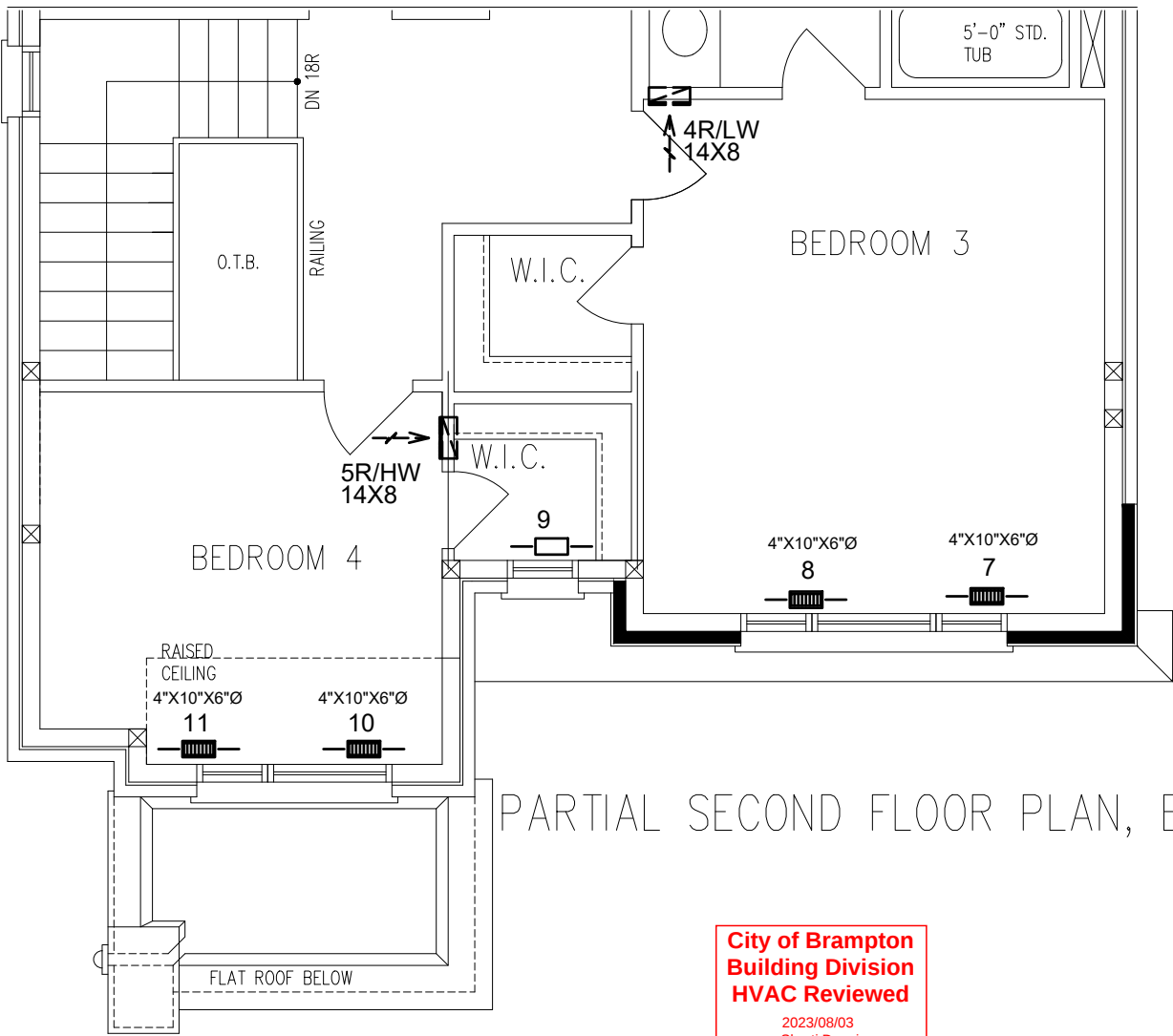
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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

City of Brampton
Building Division
HVAC Reviewed
2023/08/03
Shruti Desai

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

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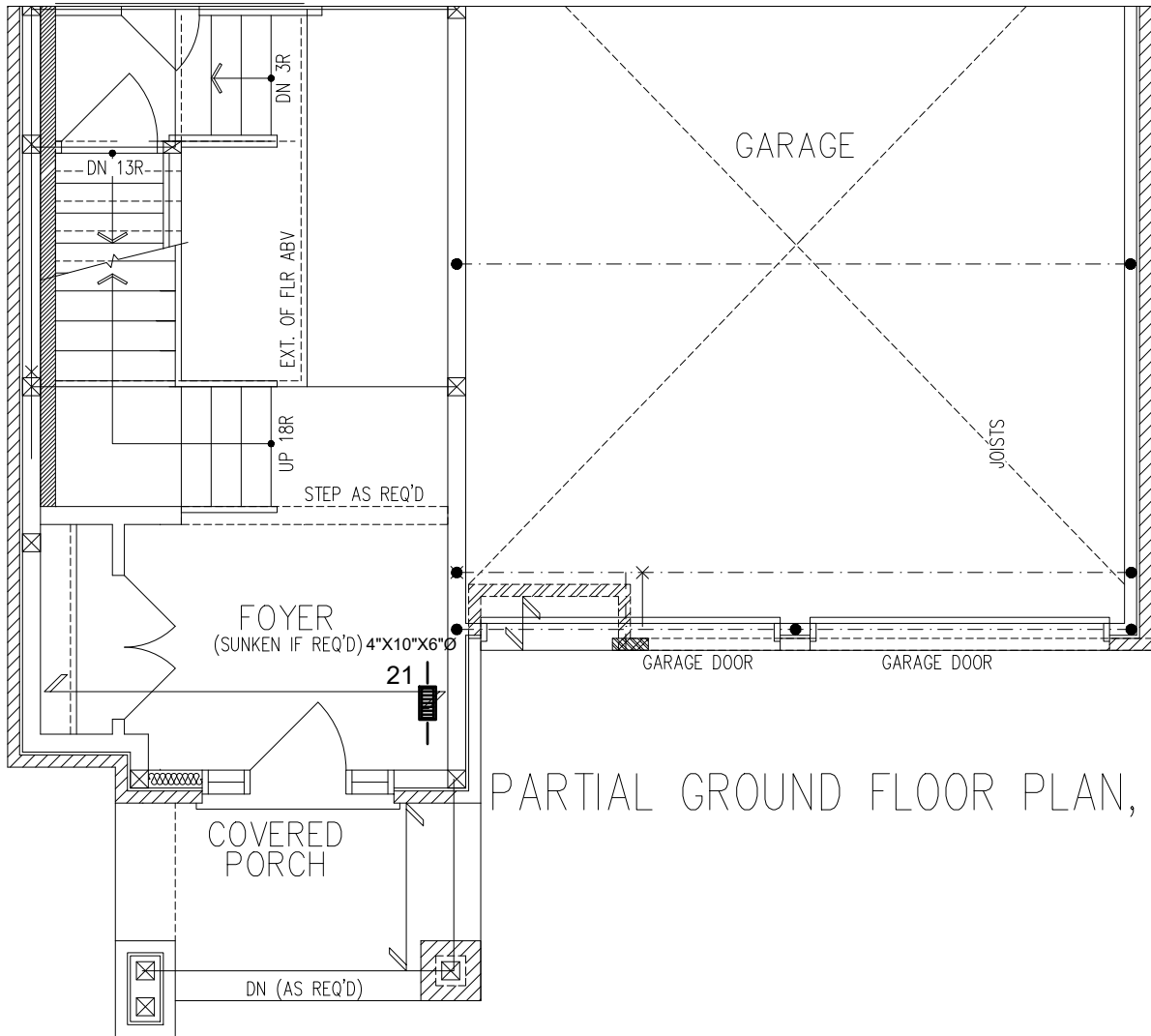
PARTIAL SECOND FLOOR PLAN, ELEV. 'C'

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.32.4. REQUIREMENTS

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

City of Brampton
Building Division
HVAC Reviewed
2023/08/03
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO
BUILDING CODE O.B.C. 33312 AS AMENDED



PARTIAL GROUND FLOOR PLAN, ELEV. 'C'

3RD	# S/A	# R/A	# FANS
2ND	14	5	4
1ST	10	2	2
B	5	1	-
TOTAL	29	8	6

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS.
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PARTIAL PLANS

DATE: JUN/2023 SCALE: 3/16"=1'-0" DRAWN BY: SY/MP

SB-12 PERFORMANCE
CSA F280-12

CONTRACTOR TO WORK FROM MUNICIPAL
APPROVED DRAWINGS ONLY

TOTAL LOSS	55,805 BTUH
TOTAL GAIN	32,650 BTUH
HEATING UNIT	LENNOX
MODEL #	EL296UH070XE36B
OUTPUT	64,000 BTUH

MODEL:	Unit 4002 - Elev. A,B & C
PROJECT #:	RP23051
SQFT:	3485
W%:	10.75
SITE:	Forestside Estates, Brampton
FOR:	Royal Pine Homes
BUILDER:	Royal Pine Homes

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

M7

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.

Doug McCallum
NAME
SIGNATURE
102614
BCIN / BCDN

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 4002 - Elev. A,B and C - Opt. 2nd floor - Laundry				Lot: 4002	
				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 #: RP23051	
Heating and Cooling Load Calculations		Builder	Roval Pine Homes		
Air System Design		Project	Forestside Estates		
Residential mechanical ventilation Design Summary		Model	Unit 4002 - Elev. A,B and C - Opt. 2nd		
Residential System Design per CAN/CSA-F280-12		SB-12	Performance		
Residential New Construction - Forced Air					
D. Declaration of Designer					
I, <u>Doug McCallum</u> 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: <u>25896</u>					
Firm BCIN: <u>102614</u>					
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.					
<u>2023-06-07</u>					
Date		Signature of Designer			

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d), of Division C, Article 3.2.5.1. of Division C and all other persons who are exempt from qualifications under Subsections 3.2.4 . and 3.2.5. of Division C.
- Schedule 1 does not require to be completed a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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 <u>Royal Pine Homes</u>		Project No. RP23051
and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.		
Building Location		
Address (Model): <u>Unit 4002 - Elev. A,B and C - Opt. 1</u>	Site: <u>Forestside Estates</u>	
Model:	Lot: <u>4002</u>	
City and Province: <u>Brampton</u>	Postal code:	
Calculations based on		
Dimensional information based on:		
Attachment: <u>Detached</u>	Front facing: <u>East</u>	Assumed? Yes
No. of Levels: <u>3</u> Ventilated? Included	Air tightness: <u>-1</u>	Assumed? Yes
Weather location: <u>Brampton</u>	Wind exposure: <u>Shelterd</u>	
HRV? <u>VanEE</u> <u>65H</u>	Internal shading: <u>Light-translucent</u>	Occupants: <u>6</u>
Sensible Eff. at -25C <u>60.0 %</u> Apparent Effect. at -0C <u>75.0 %</u>	Units: <u>Imperial</u>	
Heating design conditions		Cooling design conditions
Outdoor temp: -2.2°F Indoor temp: 72.0°F Mean soil temp: 48.2°F		Outdoor temp: 86.0°F Indoor temp: 72.0°F Latitude: 43.68
Above grade walls		Below grade walls
Style A: As per Selected OBC SB12 Perfc R 22+50	Style A: As per Selected OBC SB12 Perfc R 20ci	
Style B: Existing Walls (When Applicable) R 8.50	Style B:	
Style C:	Style C:	
Style D:	Style D:	
Floors on soil		Ceilings
Style A: As per Selected OBC SB12 Perform	Style A: As per Selected OBC SB12 Perform: R 60.0	
Style B:	Style B: As per Selected OBC SB12 Perform: R 22.8	
Exposed floors		Style C:
Style A: As per Selected OBC SB12 Perforr R 31	Doors	
Style B:	Style A: As per Selected OBC SB12 Perforr R 3.01	
Windows		Style B:
Style A: As per Selected OBC SB12 Perform R 1.6	Style C:	
Style B: Existing Windows (When Applicable) R	Skylights	
Style C:	Style A: As per Selected OBC SB12 Perforr R 2.08	
Style D:	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	

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

J. McCallum

Project # RP2305

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code.

I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 25896

Firm BCIN: 102614

Doug McCallum

Project: Forestside Estates

Model: Unit 4002 - Elev. A.B and C - Ont.

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	

Total Ventilation Capacity 9.32.3.3(1)					
Bsmt & Master Bdrm	2	@ 21.2	cfm	42.4	cfm
Other Bedrooms	4	@ 10.6	cfm	42.4	cfm
Bathrooms & Kitchen	5	@ 10.6	cfm	53.0	cfm
Other rooms	4	@ 10.6	cfm	42.4	cfm
Total				<u>180.2</u>	

Builder	
Name	Royal Pine Homes
Address	
City	
Tel	Fax

**City of Brampton
Building Division
HVAC Reviewed**
2023/08/03
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ALL WORK SHALL CONFORM TO THE ONTARIO
BUILDING CODE O.BEG-32012 AS AMENDED.

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				<u>95.4</u>	

Installing Contractor	
Name	
Address	
City	
Tel	Fax

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	%

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

Supplemental Ventilation Capacity	
Total ventilation capacity	180.2
Less principal exhaust capacity	95.4
REQUIRED supplemental vent. Capacity	<u>84.8</u> cfm

Heating System	
☒	Forced air
☐	Non forced air
☐	Electric space heat (if over 10% of heat load)

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.

House Type 9.32.3.1(2)	
I	☒ 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

Designer Certification	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name	Doug McCallum
Signature	<i>J. McCallum</i>
HRAI #	BCIN # 25896
Date	2023-06-07

System Design Option	
1	☐ Exhaust only / forced air system
2	☐ HRV WITH DUCTING / forced air system
3	☒ HRV simplified connection to forced air system
4	☐ HRV full ducting/not coupled to forced air system
	☐ Part 6 design



Project: Forestside Estates

Model: Unit 4002 - Elev. A,B and C - Opt. 2nd floor -

Air Leakage Calculations

Air Leakage Calculations	Building Air Leakage Heat Loss					Building Air Leakage Heat Gain					
	B	LRairh	Vb	HL^T	HLleak	B	LRairh	Vb	HG^T	HG Leak	
	0.018	0.339	45280.0	74.2	20507.89	0.018	0.1181715	45280	14.00	1348.40	
	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	Levels					
	1	0.5	20508	7085	1.44727	1	2	3	4		
	2	0.3		12815	0.48009	(LF)	(LF)	(LF)	(LF)		
	3	0.2		14139	0.29009	1.0	0.6	0.5	0.4		
	4	0		0	0.00000		0.4	0.3	0.3		
	Air Leakage Heat Gain Multiplier							0.2	0.2		
									0.1		
	HG LEAK					Levels this Dwelling					
	1348.40					3					
	BUILDING CONDUCTIVE HEAT GAIN										
	15194.00										

Ventilation Calculations

Vent	Ventilation Heat Loss					Ventilation Heat Gain				Vent
	Ventilation Heat Loss					Ventilation Heat Gain				
	C	PVC	HL^T	(1-E) HRV	HLbvent	C	PVC	HG^T	HGbvent	
	1.08	95.4	74.20	0.250	1911.24	1.08	95.4	14.00	1442.448	
Case 1					Case 1					
Case 1	Ventilation Heat Loss (Exhaust only Systems)					Ventilation Heat Gain (Exhaust Only Systems)				Case 1
	Case 1 - Exhaust Only					Case 1 - Exhaust Only		Multiplier		
	Level	LF	HLbvent	LVL Cond. HL	Multiplier	HGbvent	1442.448	0.09		
	1	0.5	1911	7085	0.13	Building Cond. HG	15194.00			
	2	0.3		12815	0.04					
	3	0.2		14139	0.03					
	4	0		0	0					
Case 2					Case 2					
Case 2	Ventilation Heat Loss (Direct Ducted Systems)					Ventilation Heat Gain (Direct Ducted Systems)				Case 2
				Multiplier						
	C	HL^T	(1-E) HRV	20.03		C	HG^T	Multiplier		
	1.08	74.20	0.25			1.08	14.00	15.12		
Case 3					Case 3					
Case 3	Ventilation Heat Loss (Forced Air Systems)					Ventilation Heat Gain (Forced Air Systems)				Case 3
			HLbvent	Multiplier				Vent Heat Gain	Multiplier	
	Total Ventilation Load		1911	0.06		HGbvent		HG*1.3	1442	
						1442.448		1		

DATE
RECEIVED: JULY 26, 2023

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	City of Brampton Building Division HVAC Reviewed 2023/08/03 Shruti Desai ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O. REG. 332/12 AS AMENDED
Walls:	Heav	
Flue:	Heav	
Highest Ceiling Height (m):	6.71	

Building Configuration

Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m ³):	1282

Air Leakage/Ventilation

Air Tightness Type:	Custom - DBT values		
Custom BDT Data:	ELA @ 10 Pa.	1621.304	
	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

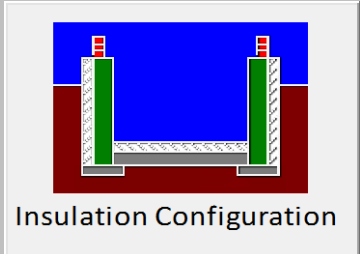
Envelope Air Leakage Rate

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):	22.7	 Insulation Configuration BCIN_1
Floor Width (m):	5.73	
Exposed Perimeter (m):	57.0	
Wall Height (m):	3.05	
Depth Below Grade (m):	2.44	
Window Area (m ²):	1.49	
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):	1979	

DATE
2023/08/03
SYSTEM A

DESIGN LOAD SPECIFICATIONS				AIR DISTRIBUTION AND PRESSURE			
LEVEL 1 NET LOAD	17737 btu/h			EQUIPMENT EXTERNAL STATIC PRESSURE	0.500"W.C.		
LEVEL 2 NET LOAD	19686 btu/h			ADDITIONAL EQUIPMENT PRESSURE DROP	0.250"W.C.		
LEVEL 3 NET LOAD	19547 btu/h			AVAILABLE DESIGN PRESSURE	0.250"W.C.		
LEVEL 4 NET LOAD	0 btu/h			RETURN BRANCH LONGEST EFFECTIVE LENGTH	300ft		
SYSTEM HEATLOSS	56970 btu/h			R/A PLENUM PRESSURE	0.120"W.C.		
SYSTEM HEATGAIN	33106 btu/h			S/A PLENUM PRESSURE	0.130"W.C.		
BUILDING VOLUME Vb	45280.00 ft3			HEATING AIR FLOW PROPORTIONING FACTOR	0.0201 cfm/btuh		
VENTILATION LOAD	1911.00 btu/h			COOLING AIR FLOW PROPORTIONING FACTOR	0.0346 cfm/btuh		
VENTILATION PVC	95.40 cfm			R/A TEMP. 70°F	S/A TEMP. 121.75°F	DIFFUSER LOSS 0.01"W.C.	
FURNACE/AIR HANDLER DATA				BLOWER DATA			
MAKE	LENNOX			HEATING CHECK	1144.00 CFM		
MODEL	EL296UH070XE36B			SELECTED CFM	1145.00 CFM		
HIGH INPUT btu/h	66000	LOW INPUT btu/h	0	COOLING CHECK	1145.00 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	Performance			COIL	3.0 TON		
TEMP. RISE	51.75°F						

**City of Brampton
Building Division
HVAC Reviewed**

2023/08/03
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
25	BASE	3547	71	33	0.13	38	125	163	0.07	6.0	4x10	D1
26	BASE	3547	71	33	0.13	34	115	149	0.08	6.0	4x10	D1
27	BASE	3547	71	33	0.13	30	175	205	0.06	6.0	4x10	B1
28	BASE	3547	71	33	0.13	45	165	210	0.06	6.0	4x10	A1
29	BASE	3547	71	33	0.13	7	110	117	0.10	6	4x10	E1
15	KIT/BREAK	1844	37	60	0.13	38	165	203	0.06	6.0	4x10	C1
16	KIT/BREAK	1844	37	60	0.13	31	135	166	0.07	5.0	4x10	C1
17	KIT/BREAK	1844	37	60	0.13	36	175	211	0.06	6	4x10	C1
18	KIT/BREAK	1844	37	60	0.13	37	135	172	0.07	6	4x10	D1
19	DEN	1047	21	40	0.13	12	150	162	0.07	5.0	4x10	E1
20	LAUD/MUD	3069	62	49	0.13	15	160	175	0.07	5.0	4x10	E1
21	FOYER	4050	81	35	0.13	50	155	205	0.06	6.0	4x10	A1
22	PWD	270	5	2	0.13	34	145	179	0.07	5	4x10	B1
23	LIV/DIN	1938	39	45	0.13	34	185	219	0.05	5.0	4x10	B1
24	LIV/DIN	1938	39	45	0.13	26	150	176	0.07	5.0	4x10	D1
1	ENS WC	763	15	17	0.13	48	175	223	0.05	5	4x10	C1
2	ENSUITE	1453	29	43	0.13	42	165	207	0.06	5.0	4x10	C1
3	PRI BED	1590	32	52	0.13	33	155	188	0.06	6	4x10	C1
4	PRI BED	1590	32	52	0.13	27	185	212	0.06	6	4x10	D1
6	SHD BATH-1	1082	22	13	0.13	46	185	231	0.05	5	4x10	B1
12	SHD BATH-2	632	13	15	0.13	31	175	206	0.06	5	4x10	B1
14	PRI. WIC	604	12	6	0.13	34	175	209	0.06	5	4x10	D1
9	BED3 WIC	746	15	23	0.13	47	185	232	0.05	5	4x10	A1
13	BED-4	1618	33	48	0.13	29	120	149	0.08	6	4x10	E1
10	MEDIA RM	1738	35	54	0.13	64	165	229	0.05	6.0	4x10	A1
11	MEDIA RM	1738	35	54	0.13	60	155	215	0.06	6	4x10	A1

INDIVIDUAL BCIN NUMBER 25896
FIRM BCIN NUMBER 102614

Doug McCallum
Page 1



5	BED-2	1950	39	41	0.13	19	140	159	0.08	6	4x10	E1
7	BED-3	2022	41	53	0.13	50	155	211	0.06	6	4x10	B1
8	BED-3	2022	41	53	0.13	52	145	197	0.06	6	4x10	B1

RETURN BRANCH AND GRILL SIZING

R/A INLET #	INLET AIR VOLUME CFM	DUCT DESIGN PRESSU RE	ACTUAL DUCT LENGTH	EQUIVAL ENT LENGTH	TOTAL EFFECTIV E LENGTH	ADJUSTE D PRESSU RE	DUCT SIZE ROUND	INLET SIZE	TRUNK
1R	140	0.12	24	160	184	0.05	8	14x8	Y1
2R	140	0.12	20	120	140	0.07	7.5	14x8	W1
3R	140	0.12	40	180	220	0.05	8	14x8	W1
4R	60	0.12	56	140	196	0.05	6	14x8	V1
5R	60	0.12	49	170	219	0.05	6	14x8	V1
6R	355	0.12	12	160	172	0.06	10.5	30X8	Y1
7R	140	0.12	27	130	157	0.06	7.5	14x8	X1
8R	110	0.12	22	170	192	0.05	7	FLC	X1

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HVAC Reviewed**

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RETURN TRUNK DUCT SIZING

TRUNK	CFM	PRESSU RE	ROUND	RECT. SIZE	SIZE ALTERNA TE
DROP	1145	0.05		0	
Z1	1145	0.05	17	26x10	26x10
Y1	495	0.05	12.5	18x8	24x6
X1	650	0.05	14	22x8	18x10
W1	400	0.05	11.5	14x8	20x6
V1	120	0.05	7.5	8x8	8x6

SUPPLY TRUNK DUCT SIZING

TRUNK	CFM	PRESSU RE	ROUND	RECT. SIZE	SIZE ALTERNA TE
A1	237	0.05	9.5	10x8	14x6
B1	469	0.05	12	16x8	22x6
C1	187	0.05	8.5	10X8	
D1	449	0.05	12	16x8	22x6
E1	1144	0.05	17	26x10	26x10

HEATLOSS/GAIN
CALCULATIONS
CSA-F280-12

ADDRESS/MODEL: Unit 4002 - Elev. A,B and CLIENT: Royal Pine Homes
C - Opt. 2nd floor - Laundry & Media room GTA: 3485
PROJECT #: RP23051 LOT: 4002
COMPLIANCE PACKAGE: Performance SITE: Forestside Estates

City of Brampton
Building Division
HVAC Reviewed

MCCALLUM
HVAC DESIGN INC

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

LEVEL 1																			2023/08/03 Shruti Desai									
BASE		TOTALS H.L.: 17737 btuh						H.G.: 4745 btuh						AREA: 1404 ft2			Above Grade			GROSS EXP. WALL			NEW 374 ft			EXIST 0 ft		
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT											
	NEW: 187 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	237 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: 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	166 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	225 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				6752 btuh				AIR LEAKAGE NEW				AIR LEAKAGE EXIST				VENTILATION CASE 3				H.G. PEOPLE		APP. LOAD		DUCT PIPE L.				
TOTAL CONDUCTIVE		LOSS	7085 btuh		LOSS	1.4473	10254 btuh		LOSS	0.0000	0 btuh		LOSS	0.1	397.8 btuh		239		5796		LOSS	0%	0 btuh					
TOTAL CONDUCTIVE		GAIN	636 btuh		GAIN	0.0887	56 btuh		GAIN	0.0000	0 btuh		GAIN	0.09	60 btuh		0 0 btuh		50% 2898 btuh		GAIN	0%	0 btuh					
LEVEL 2																												
KIT/BREAK		TOTALS H.L.: 7374 btuh						H.G.: 6980 btuh						AREA: 530 ft2			C.Height: 11			GROSS EXP. WALL			NEW 759 ft			EXIST 0 ft		
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT											
	NEW: 69 ft		EXIST: 0 ft		NEW: 0		EXIST: 0		NEW: 6 ft2		EXIST: 0		NEW: 0 ft2		EXIST: 0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2									
Eff. R-V	18.53		8.50		59.22		22.86		27.65		22.05		29.80		22.05		2.04		2.03									
LOSS	4.0	2623 btuh	8.7	0 btuh	1.3	0 btuh	3.2	0 btuh	2.7	16 btuh	3.4	0 btuh	2.5	0 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh								
GAIN	0.8	495 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	9 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: 104.0 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	2162 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	2930 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	4800 btuh		LOSS	0.4801	2304 btuh		LOSS	0.0000	0 btuh		LOSS	0.1	269.5 btuh		239		5796		LOSS	0%	0 btuh					
TOTAL CONDUCTIVE		GAIN	3434 btuh		GAIN	0.0887	305 btuh		GAIN	0.0000	0 btuh		GAIN	0.09	326 btuh		0 0 btuh		23% 1304 btuh		GAIN	0%	0 btuh					
DEN		TOTALS H.L.: 1047 btuh						H.G.: 1156 btuh						AREA: 110 ft2			C.Height: 11			GROSS EXP. WALL			NEW 99 ft			EXIST 0 ft		
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED FLOORS				SKYLIGHT											
	NEW: 9 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	328 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	62 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: 0.0 ft2		EXIST: 0.0 ft2		NEW: 17 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	353 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	200 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	682 btuh		LOSS	0.4801	327 btuh		LOSS	0.0000	0 btuh		LOSS	0.1	38.3 btuh		239		5796		LOSS	0%	0 btuh					
TOTAL CONDUCTIVE		GAIN	261 btuh		GAIN	0.0887	23 btuh		GAIN	0.0000	0 btuh		GAIN	0.09	25 btuh		0 0 btuh		10% 580 btuh		GAIN	0%	0 btuh					
LAUD/MUD		TOTALS H.L.: 3069 btuh						H.G.: 1418 btuh						AREA: 145 ft2			C.Height: 11			GROSS EXP. WALL			NEW 253 ft			EXIST 0 ft		
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED 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	817 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	154 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: 7 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	145 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	82 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	1998 btuh		LOSS	0.4801	959 btuh		LOSS	0.0000	0 btuh		LOSS	0.1	112.2 btuh		239		5796		LOSS	0%	0 btuh					
TOTAL CONDUCTIVE		GAIN	432 btuh		GAIN	0.0887	38 btuh		GAIN	0.0000	0 btuh		GAIN	0.09	41 btuh		0 0 btuh		10% 580 btuh		GAIN	0%	0 btuh					
FOYER		TOTALS H.L.: 4050 btuh						H.G.: 1018 btuh						AREA: 175 ft2			C.Height: 11			GROSS EXP. WALL			NEW 462 ft			EXIST 0 ft		
	EXPPOSED WALLS				EXPPOSED CEILING W/ATTIC				EXPPOSED CEILING NO ATTIC				EXPPOSED 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									

**HEATLOSS/GAIN
CALCULATIONS
CSA-F280-12**

ADDRESS/MODEL: Unit 4002 - Elev. A,B and CLIENT: Royal Pine Homes
C - Opt. 2nd floor - Laundry & Media room GTA: 3485
PROJECT #: RP23051 LOT: 4002
COMPLIANCE PACKAGE: Performance SITE: Forestside Estates



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	1682 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	317 btuh	1.6	0 btuh	0.7	0 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh	
		DOORS			EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS				
		NEW: 21.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 21 ft2		EXIST: 0 ft2	
Eff. R-V	3.01			3.01		3.57		1.99		0		0		3.57		1.99		3.57		1.99	
LOSS	24.7	518 btuh	24.7	0 btuh	20.8	0 btuh	37.3	0 btuh	0	0	0	0	20.8	0 btuh	37.3	0 btuh	20.8	436 btuh	37.3	0 btuh	
GAIN	4.7	98 btuh	4.7	0 btuh	28.2	0 btuh	14.9	0 btuh	0	0	0	0	21.7	0 btuh	14.9	0 btuh	11.7	246 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	2636 btuh	LOSS	0.4801	1266 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	148.0 btuh	239	5796		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	661 btuh	GAIN	0.0887	59 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	63 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		

PWD	TOTALS H.L.: 270 btuh				H.G.: 51 btuh				AREA: 33 ft2		C.Height: 11		GROSS EXP. WALL				NEW 44 ft		EXIST 0 ft		
		EXP. WALLS			EXP. CEILING W/ATTIC			EXP. CEILING NO ATTIC			EXP. FLOORS			SKYLIGHT							
		NEW: 4 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	176 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	33 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: 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	176 btuh	LOSS	0.4801	84 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	9.9 btuh	239	5796		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	33 btuh	GAIN	0.0887	3 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	3 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		

LIV/DIN	TOTALS H.L.: 3876 btuh				H.G.: 2612 btuh				AREA: 407 ft2		C.Height: 11		GROSS EXP. WALL				NEW 429 ft		EXIST 0 ft		
		EXP. WALLS			EXP. CEILING W/ATTIC			EXP. CEILING NO ATTIC			EXP. FLOORS			SKYLIGHT							
		NEW: 39 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	1526 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	288 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: 48.0 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	998 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	1042 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	2523 btuh	LOSS	0.4801	1211 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	141.7 btuh	239	5796		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	1330 btuh	GAIN	0.0887	118 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	126 btuh	0	0 btuh	8%	435 btuh	GAIN	0%	0 btuh		

LEVEL 3																					
ENS WC	TOTALS H.L.: 763 btuh				H.G.: 484 btuh				AREA: 29 ft2		C.Height: 9		GROSS EXP. WALL				NEW 99 ft		EXIST 0 ft		
		EXP. WALLS			EXP. CEILING W/ATTIC			EXP. CEILING NO ATTIC			EXP. FLOORS			SKYLIGHT							
		NEW: 11 ft		EXIST: 0 ft		NEW: 29 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	364 btuh	8.7	0 btuh	1.3	36 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	69 btuh	1.6	0 btuh	0.7	20 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: 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	166 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	225 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	567 btuh	LOSS	0.2901	164 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	31.8 btuh	239	5796		LOSS	0%	0 btuh			
TOTAL CONDUCTIVE		GAIN	314 btuh	GAIN	0.0887	28 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	30 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh		

ENSUITE	TOTALS H.L.: 1453 btuh				H.G.: 1230 btuh				AREA: 135 ft2		C.Height: 9		GROSS EXP. WALL				NEW 135 ft		EXIST 0 ft		
		EXP. WALLS			EXP. CEILING W/ATTIC			EXP. CEILING NO ATTIC			EXP. FLOORS			SKYLIGHT							
		NEW: 15 ft		EXIST: 0 ft		NEW: 135 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	452 btuh	8.7	0 btuh	1.3	169 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	85 btuh	1.6	0 btuh	0.7	93 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			

INDIVIDUAL BCIN NUMBER 25896
FIRM BCIN NUMBER 102614

Doug McCallum
Page 2

TOTAL HEATLOSS: 56970 BTUH
TOTAL HEATGAIN: 33106 BTUH

**HEATLOSS/GAIN
CALCULATIONS
CSA-F280-12**

ADDRESS/MODEL: Unit 4002 - Elev. A,B and CLIENT: Royal Pine Homes
C - Opt. 2nd floor - Laundry & Media room GTA: 3485
PROJECT #: RP23051 LOT: 4002
COMPLIANCE PACKAGE: Performance SITE: Forestside Estates



LOSS	24.7	0 btuh	24.7	0 btuh	20.8	457 btuh	37.3	0 btuh	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	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	1079 btuh	LOSS	0.2901	313 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	60.6 btuh	239		5796		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	799 btuh	GAIN	0.0887	71 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	76 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh
PRI BED		TOTALS H.L.: 3180 btuh				H.G.: 3007 btuh				AREA: 327 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: 327 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 8 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	1101 btuh	8.7	0 btuh	1.3	410 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	208 btuh	1.6	0 btuh	0.7	226 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 38.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 2.0 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	42 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	43 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	2362 btuh	LOSS	0.2901	685 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	132.6 btuh	239		5796		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	1550 btuh	GAIN	0.0887	138 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	147 btuh	2	478 btuh	0%	0 btuh	GAIN	0%	0 btuh
SHD BATH-1		TOTALS H.L.: 1082 btuh				H.G.: 377 btuh				AREA: 96 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: 96 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 91 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	220 btuh	8.7	0 btuh	1.3	120 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	227 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	42 btuh	1.6	0 btuh	0.7	66 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	24 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	733 btuh	LOSS	0.2901	213 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	41.2 btuh	239		5796		LOSS	10%	95 btuh
TOTAL CONDUCTIVE			GAIN	226 btuh	GAIN	0.0887	20 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	22 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	23 btuh
SHD BATH-2		TOTALS H.L.: 632 btuh				H.G.: 438 btuh				AREA: 80 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: 80 ft2		EXIST: 0		NEW: 0		EXIST: 0		NEW: 1 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	100 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	2 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh
GAIN	0.8	34 btuh	1.6	0 btuh	0.7	55 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	0 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh
	DOORS				EAST/WEST WINDOWS				SE/SW WINDOWS				SOUTH WINDOWS				NORTH WINDOWS			
	NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW: 0.0 ft2		EXIST: 0.0 ft2		NEW:		EXIST:		NEW: 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	470 btuh	LOSS	0.2901	136 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	26.4 btuh	239		5796		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	285 btuh	GAIN	0.0887	25 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	27 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh
PRI. WIC		TOTALS H.L.: 604 btuh				H.G.: 179 btuh				AREA: 71 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: 71 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	360 btuh	8.7	0 btuh	1.3	89 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	68 btuh	1.6	0 btuh	0.7	49 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	449 btuh	LOSS	0.2901	130 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	25.2 btuh	239		5796		LOSS	0%	0 btuh
TOTAL CONDUCTIVE			GAIN	117 btuh	GAIN	0.0887	10 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	11 btuh	0	0 btuh	0%	0 btuh	GAIN	0%	0 btuh
BED3 WIC		TOTALS H.L.: 746 btuh				H.G.: 655 btuh				AREA: 25 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 4002 - Elev. A,B and CLIENT: Royal Pine Homes
C - Opt. 2nd floor - Laundry & Media room GTA: 3485
PROJECT #: RP23051 LOT: 4002
COMPLIANCE PACKAGE: Performance SITE: Forestside Estates



	NEW: 6 ft			EXIST: 0 ft		NEW: 25 ft2			EXIST: 0			NEW: 0			EXIST: 0			NEW: 23 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	168 btuh	8.7	0 btuh	1.3	31 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	57 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh									
GAIN	0.8	32 btuh	1.6	0 btuh	0.7	17 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	6 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: 12.0 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	249 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	338 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	506 btuh	LOSS	0.2901	147 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	28.4 btuh	239		5796		LOSS	10%	65 btuh									
TOTAL CONDUCTIVE			GAIN	393 btuh	GAIN	0.0887	35 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	37 btuh	0	0 btuh	0%	0 btuh	GAIN	10%	39 btuh									
BED-4		TOTALS H.L.: 1618 btuh								H.G.: 1375 btuh				AREA: 244 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: 244 ft2			EXIST: 0			NEW: 0			EXIST: 0			NEW: 8 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	460 btuh	8.7	0 btuh	1.3	306 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh									
GAIN	0.8	87 btuh	1.6	0 btuh	0.7	169 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh									
DOORS			EAST/WEST WINDOWS						SE/SW WINDOWS						SOUTH WINDOWS						NORTH WINDOWS								
NEW: 0.0 ft2			EXIST: 0.0 ft2			NEW: 0.0 ft2			EXIST: 0.0 ft2			NEW:			EXIST:			NEW: 20.0 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	416 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	434 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	1202 btuh	LOSS	0.2901	349 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	67.5 btuh	239		5796		LOSS	0%	0 btuh									
TOTAL CONDUCTIVE			GAIN	692 btuh	GAIN	0.0887	61 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	66 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh									
MEDIA RM		TOTALS H.L.: 3475 btuh								H.G.: 3115 btuh				AREA: 241 ft2		C.Height: 9		GROSS EXP. WALL				NEW 342 ft		EXIST 0 ft					
EXPOSED WALLS			EXPOSED CEILING W/ATTIC						EXPOSED CEILING NO ATTIC						EXPOSED FLOORS						SKYLIGHT								
NEW: 38 ft			EXIST: 0 ft			NEW: 241 ft2			EXIST: 0			NEW: 0			EXIST: 0			NEW: 8 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	1157 btuh	8.7	0 btuh	1.3	302 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh									
GAIN	0.8	218 btuh	1.6	0 btuh	0.7	167 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh									
DOORS			EAST/WEST WINDOWS						SE/SW WINDOWS						SOUTH WINDOWS						NORTH WINDOWS								
NEW: 0.0 ft2			EXIST: 0.0 ft2			NEW: 44.0 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	915 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	1240 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	2581 btuh	LOSS	0.2901	749 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	144.9 btuh	239		5796		LOSS	0%	0 btuh									
TOTAL CONDUCTIVE			GAIN	1822 btuh	GAIN	0.0887	162 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	173 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh									
BED-2		TOTALS H.L.: 1950 btuh								H.G.: 1190 btuh				AREA: 269 ft2		C.Height: 9		GROSS EXP. WALL				NEW 189 ft		EXIST 0 ft					
EXPOSED WALLS			EXPOSED CEILING W/ATTIC						EXPOSED CEILING NO ATTIC						EXPOSED FLOORS						SKYLIGHT								
NEW: 21 ft			EXIST: 0 ft			NEW: 269 ft2			EXIST: 0			NEW: 0			EXIST: 0			NEW: 8 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	677 btuh	8.7	0 btuh	1.3	337 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	20 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh									
GAIN	0.8	128 btuh	1.6	0 btuh	0.7	186 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	2 btuh	0.4	0 btuh	89.7	0 btuh	14.7	0 btuh									
DOORS			EAST/WEST WINDOWS						SE/SW WINDOWS						SOUTH WINDOWS						NORTH WINDOWS								
NEW: 0.0 ft2			EXIST: 0.0 ft2			NEW: 0.0 ft2			EXIST: 0.0 ft2			NEW:			EXIST:			NEW: 2.0 ft2			EXIST: 0.0 ft2			NEW: 18 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	42 btuh	37.3	0 btuh	20.8	374 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	43 btuh	14.9	0 btuh	11.7	211 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	1449 btuh	LOSS	0.2901	420 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	81.4 btuh	239		5796		LOSS	0%	0 btuh									
TOTAL CONDUCTIVE			GAIN	571 btuh	GAIN	0.0887	51 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	54 btuh	1	239 btuh	0%	0 btuh	GAIN	0%	0 btuh									
BED-3		TOTALS H.L.: 4044 btuh								H.G.: 3076 btuh				AREA: 243 ft2		C.Height: 9		GROSS EXP. WALL				NEW 288 ft		EXIST 0 ft					
EXPOSED WALLS			EXPOSED CEILING W/ATTIC						EXPOSED CEILING NO ATTIC						EXPOSED FLOORS						SKYLIGHT								
NEW: 32 ft			EXIST: 0 ft			NEW: 243 ft2			EXIST: 0			NEW: 0			EXIST: 0			NEW: 219 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	977 btuh	8.7	0 btuh	1.3	304 btuh	3.2	0 btuh	2.7	0 btuh	3.4	0 btuh	2.5	545 btuh	3.4	0 btuh	36.4	0 btuh	37	0 btuh									
GAIN	0.8	184 btuh	1.6	0 btuh	0.7	168 btuh	1.8	0 btuh	1.5	0 btuh	1.9	0 btuh	0.3	59 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: 42.0 ft2			EXIST: 0.0 ft2			NEW:			EXIST:			NEW: 2.0 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 4002 - Elev. A,B and CLIENT: Royal Pine Homes
C - Opt. 2nd floor - Laundry & Media room GTA: 3485
PROJECT #: RP23051 LOT: 4002
COMPLIANCE PACKAGE: Performance SITE: Forestside Estates



LOSS	24.7	0 btuh	24.7	0 btuh	20.8	873 btuh	37.3	0 btuh	0	0	0	20.8	42 btuh	37.3	0 btuh	20.8	0 btuh	37.3	0 btuh
GAIN	4.7	0 btuh	4.7	0 btuh	28.2	1183 btuh	14.9	0 btuh	0	0	0	21.7	43 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	2741 btuh	LOSS	0.2901	795 btuh	LOSS	0.0000	0 btuh	LOSS	0.1	153.9 btuh	239	5796	LOSS	10%	354 btuh			
TOTAL CONDUCTIVE	GAIN	1638 btuh	GAIN	0.0887	145 btuh	GAIN	0.0000	0 btuh	GAIN	0.09	156 btuh	1	239 btuh	0%	0 btuh	GAIN	10%	188 btuh	
LEVEL 4																			

City of Brampton
Building Division
HVAC Reviewed

2023/08/03
Shruti Desai

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

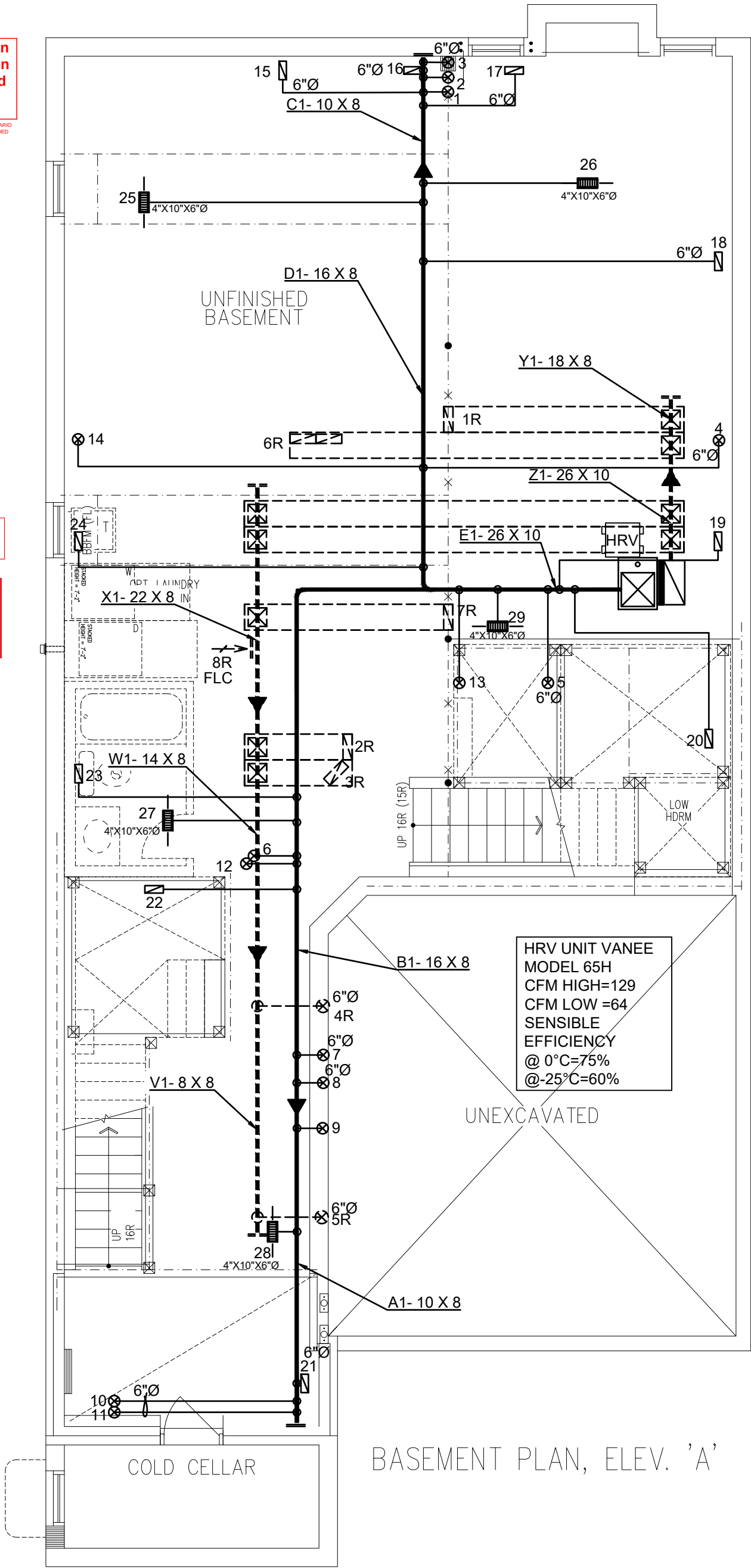
INSTALLATION OF HVAC EQUIPMENTS
SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS
AND MANUALS

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(1), 9.32.3.11
AND HRAI DIGEST REQUIREMENTS

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



3RD	# S/A	# R/A	# FANS
2ND	14	5	5
1ST	10	2	2
B	5	1	-
TOTAL	29	8	7

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

PROPOSED BASEMENT

DATE: JUL/2023 SCALE: 3/16"=1'-0" DRAWN BY: MMA/MP

PERFORMANCE PACKAGE
CSA F280-12

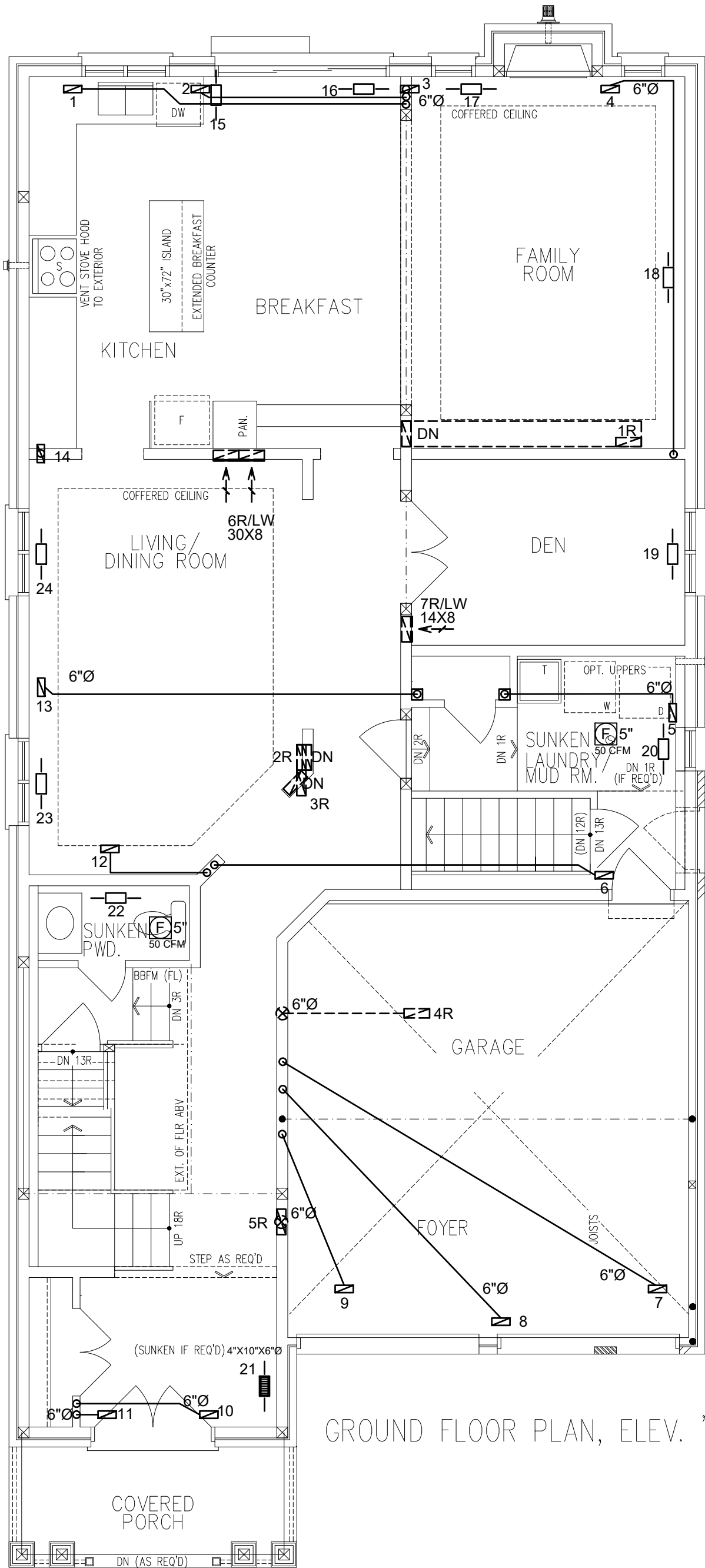
CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY		
The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.	102614	
Doug McCallum		
NAME	SIGNATURE	BCIN / BCDN

TOTAL LOSS	56,970 BTUH
TOTAL GAIN	33,106 BTUH
HEATING UNIT	LENNOX
MODEL #	EL296UH070XE36B
OUTPUT	64,000 BTUH
	3.0 TONS
	1145 CFM

MODEL:	Unit 4002 - Elev. A,B and C - Opt. 2nd floor - Laundry & Media room
PROJECT #:	RP23051 SQFT: 3485 W%: 10.75
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

2023/08/03
Shruti Desai

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O REG 33012 AS AMENDED

GROUND FLOOR PLAN, ELEV. 'A'

3RD	# S/A	# R/A	# FANS
2ND	14	5	5
1ST	10	2	2
B	5	1	-
TOTAL	29	8	7

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

PROPOSED 1ST FLOOR

DATE: JUL/2023 SCALE: 3/16"=1'-0" DRAWN BY: MMA/MP

PERFORMANCE PACKAGE
CSA F280-12

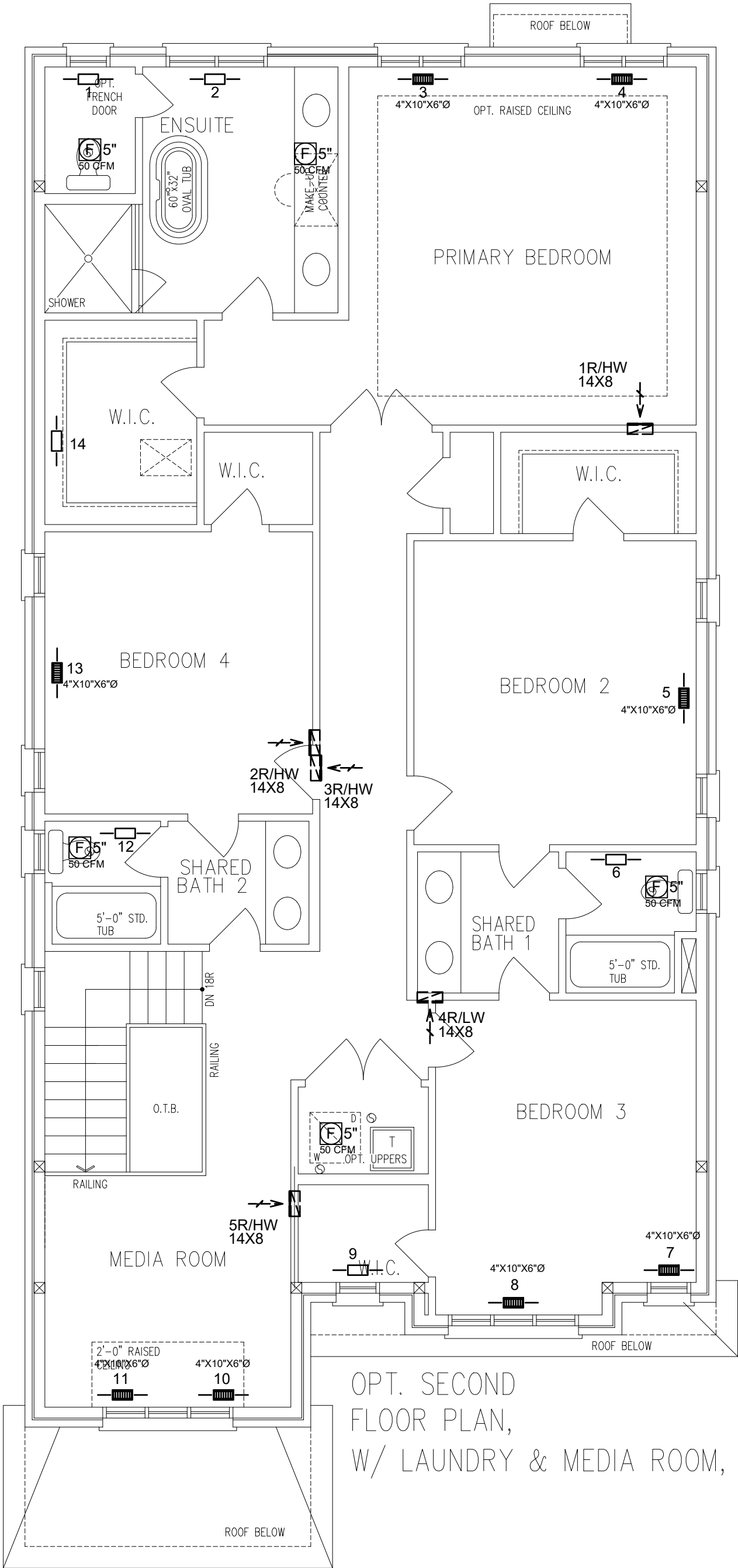
CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY		
The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.		
Doug McCallum	102614	
NAME	SIGNATURE	BCIN / BCDN

TOTAL LOSS	56,970 BTUH
TOTAL GAIN	33,106 BTUH
HEATING UNIT	LENNOX
MODEL #	EL296UH070XE36B
OUTPUT	64,000 BTUH
	3.0 TONS
	1145 CFM

MODEL:	Unit 4002 - Elev. A,B and C - Opt. 2nd floor - Laundry & Media room
PROJECT #:	RP23051
SQFT:	3485
W%:	10.75
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



OPT. SECOND FLOOR PLAN,
W/ LAUNDRY & MEDIA ROOM, EL. 'A'

3RD	# S/A	- # R/A	- # FANS
2ND	14	5	5
1ST	10	2	2
B	5	1	-
TOTAL	29	8	7

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

PROPOSED 2ND FLOOR		
DATE: JUL/2023	SCALE: 3/16"=1'-0"	DRAWN BY: MMA/MP
PERFORMANCE PACKAGE		
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.		
Doug McCallum		102614
NAME	SIGNATURE	BCIN / BCDN

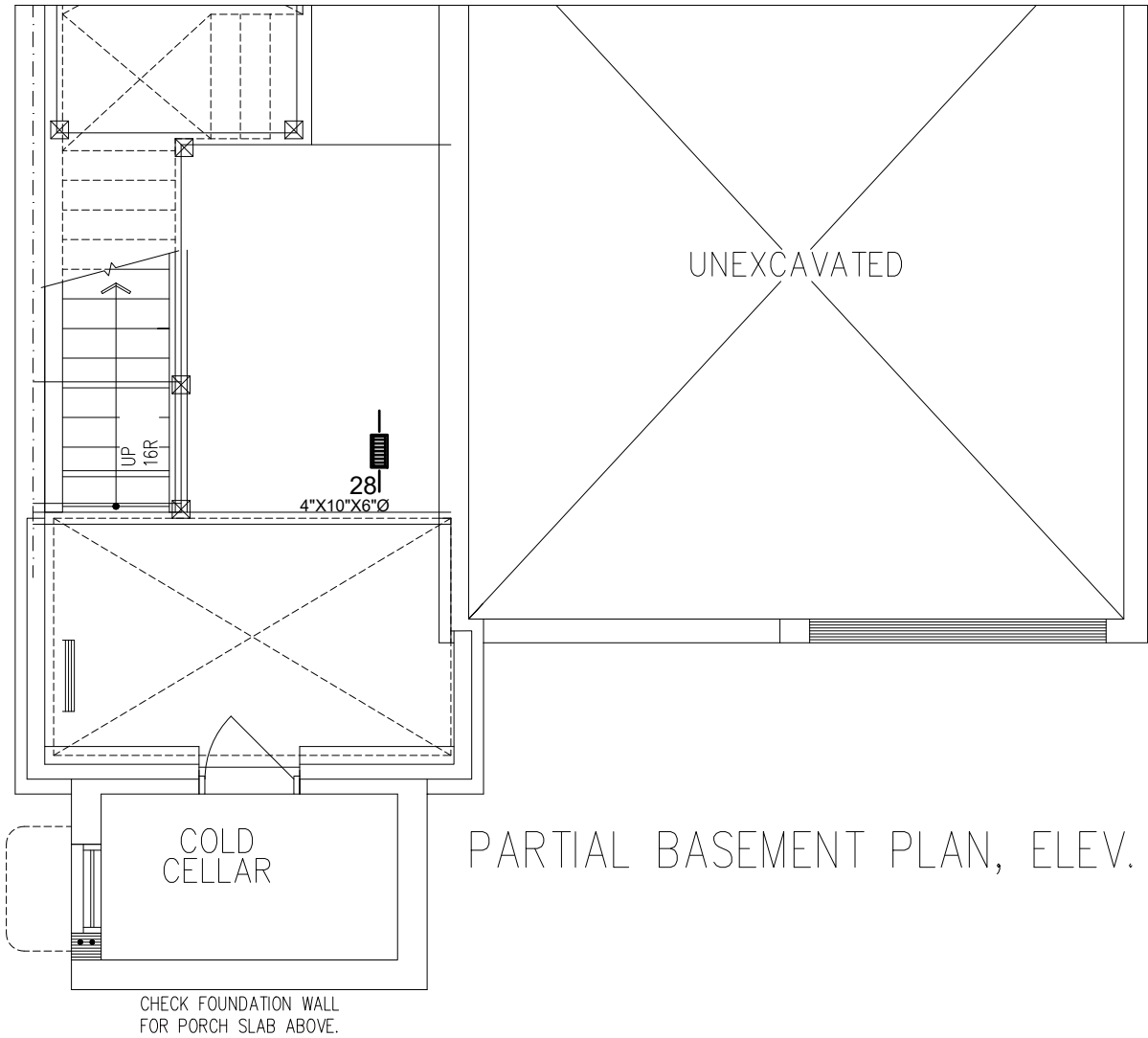
TOTAL LOSS	56,970 BTU/H	
TOTAL GAIN	33,106 BTU/H	
HEATING UNIT	LENNOX	
MODEL #	EL296UH070XE36B	3.0 TONS
OUTPUT	64,000 BTU/H	1145 CFM

MODEL:	Unit 4002 - Elev. A,B and C - Opt. 2nd floor - Laundry & Media room	
PROJECT #:	RP23051	SQFT: 3485 W%: 10.75
SITE:	Forestside Estates, Brampton	
FOR:	Royal Pine Homes	
BUILDER:	Royal Pine Homes	



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

M3



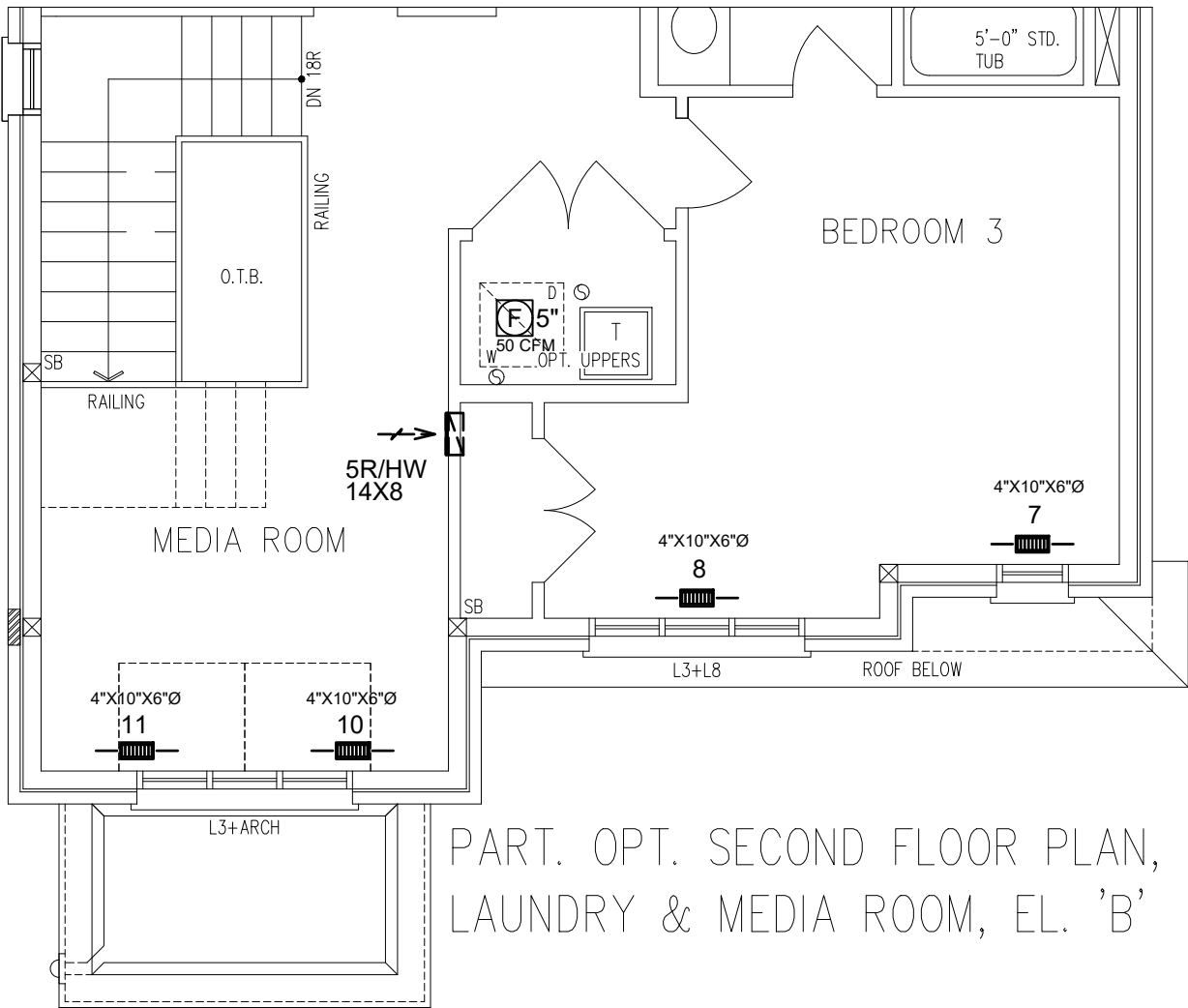
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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

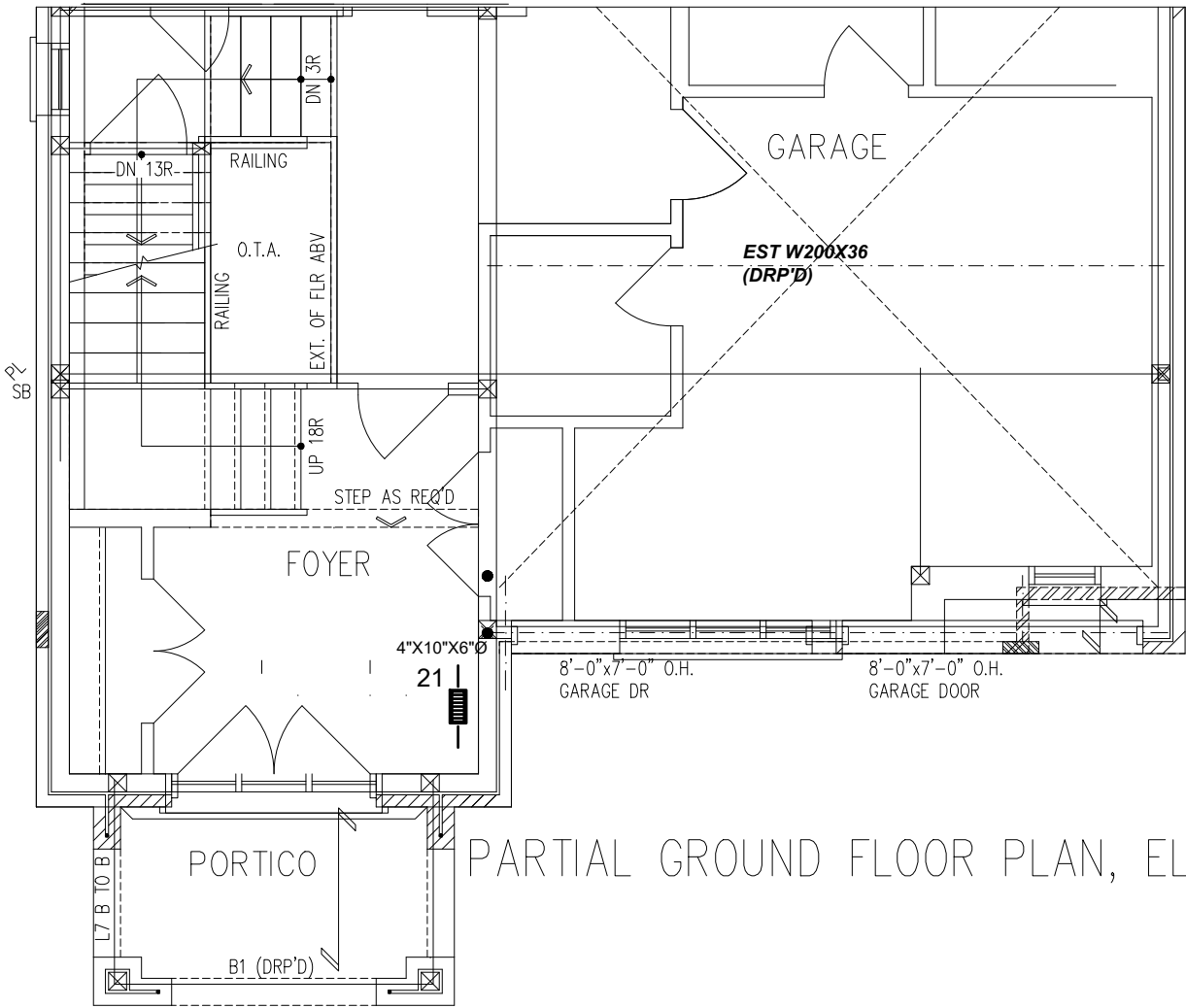
City of Brampton
Building Division
HVAC Reviewed

2023/08/03
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.B.C. 3301.2 AS AMENDED

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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. Doug McCallum102614 NAMESIGNATUREBCIN / BCDN					TOTAL GAIN		33,106 BTUH		PROJECT #:		RP23051 SQFT: 3485 W%: 10.75																																										
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PART. OPT. SECOND FLOOR PLAN, W/ LAUNDRY & MEDIA ROOM, EL. 'B'



PARTIAL GROUND FLOOR PLAN, ELEV. 'B'

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

2023/08/03
Shruti Desai

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

3RD	# S/A	-	# R/A	-	# FANS	-	DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS.					
2ND	14		5		5		INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.					
1ST	10		2		2		COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.					
B	5		1		-		PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO S/A BRANCH OUTLETS, MAIN TAKE OFF'S & "Y" FITTINGS.					
TOTAL	29		8		7		- 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.					
CONTRACTOR TO WORK FROM MUNICIPAL APPROVED DRAWINGS ONLY							TOTAL LOSS	56,970 BTUH		MODEL:	Unit 4002 - Elev. A,B and C - Opt. 2nd floor - Laundry & Media room	
							TOTAL GAIN	33,106 BTUH		PROJECT #:	RP23051	SQFT: 3485
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.							HEATING UNIT	LENNOX		SITE:	Forestside Estates, Brampton	
							MODEL #	EL296UH070XE36B	3.0 TONS	FOR:	Royal Pine Homes	
Doug McCallum							OUTPUT	64,000 BTUH	1145 CFM	BUILDER:	Royal Pine Homes	
NAME SIGNATURE BCIN / BCDN												

PARTIAL PLANS

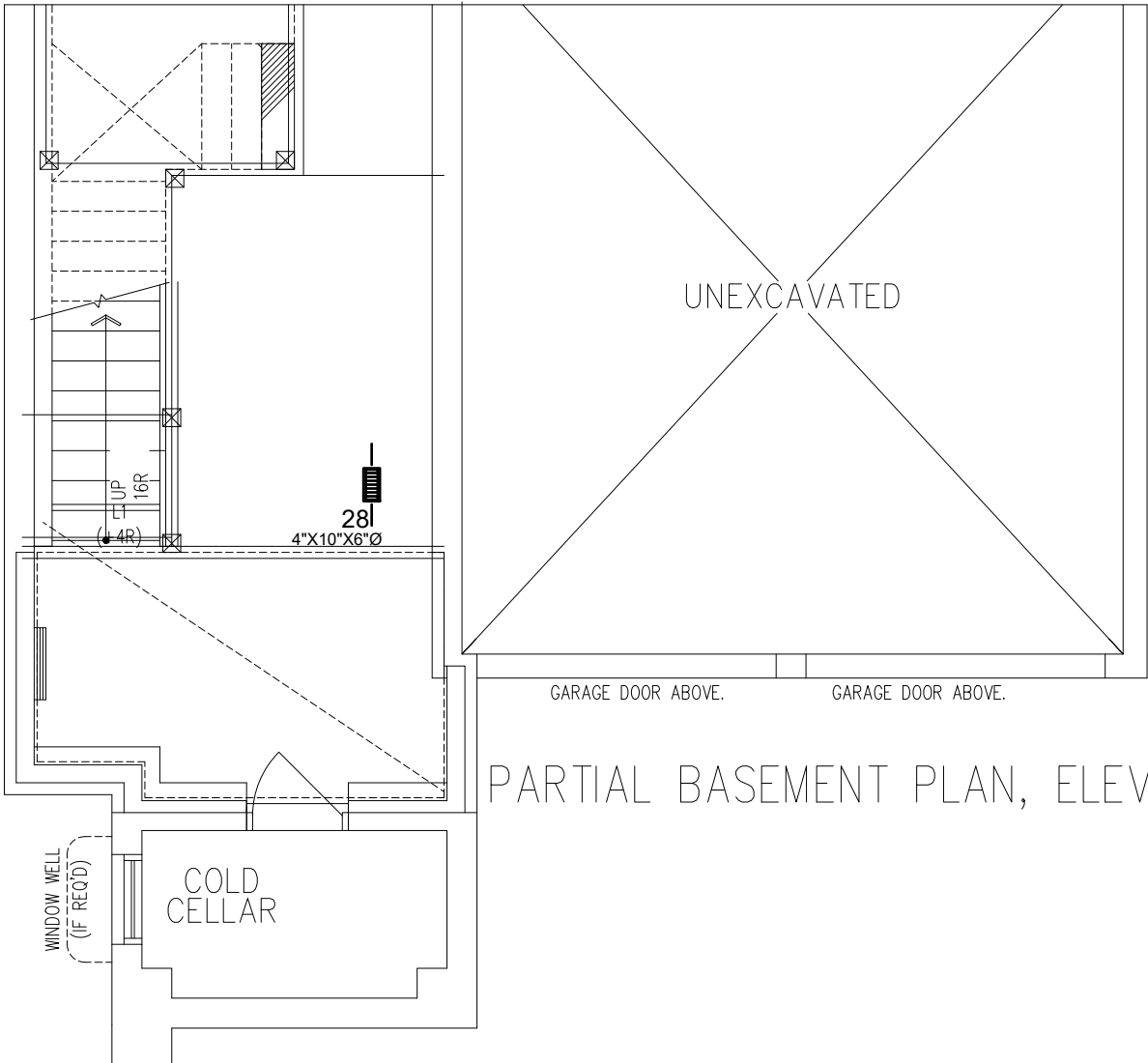
DATE: JUL/2023 SCALE: 3/16"=1'-0" DRAWN BY: MMA/MP

PERFORMANCE PACKAGE
CSA F280-12

MCCALLUM
HVAC DESIGN INC

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

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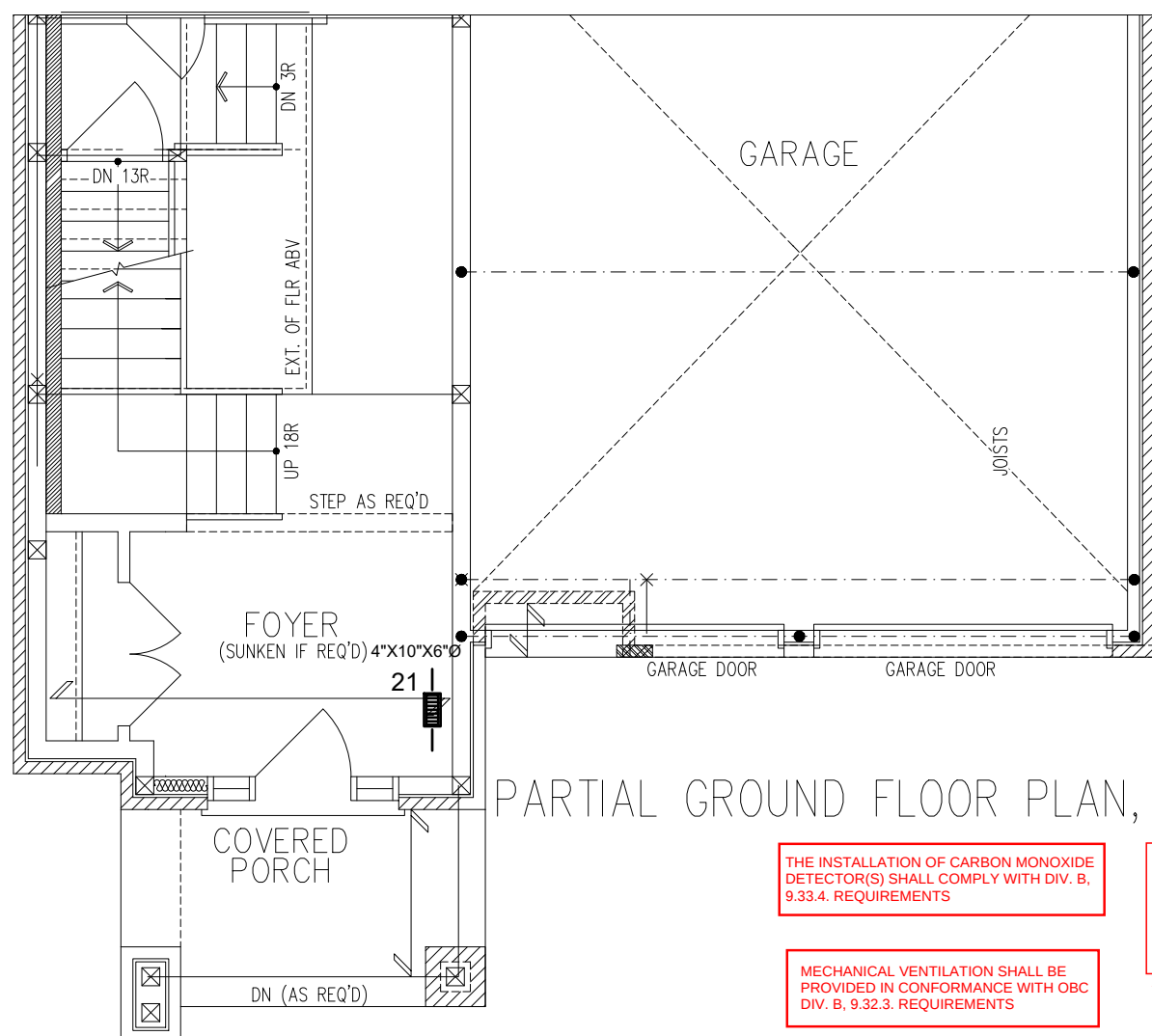
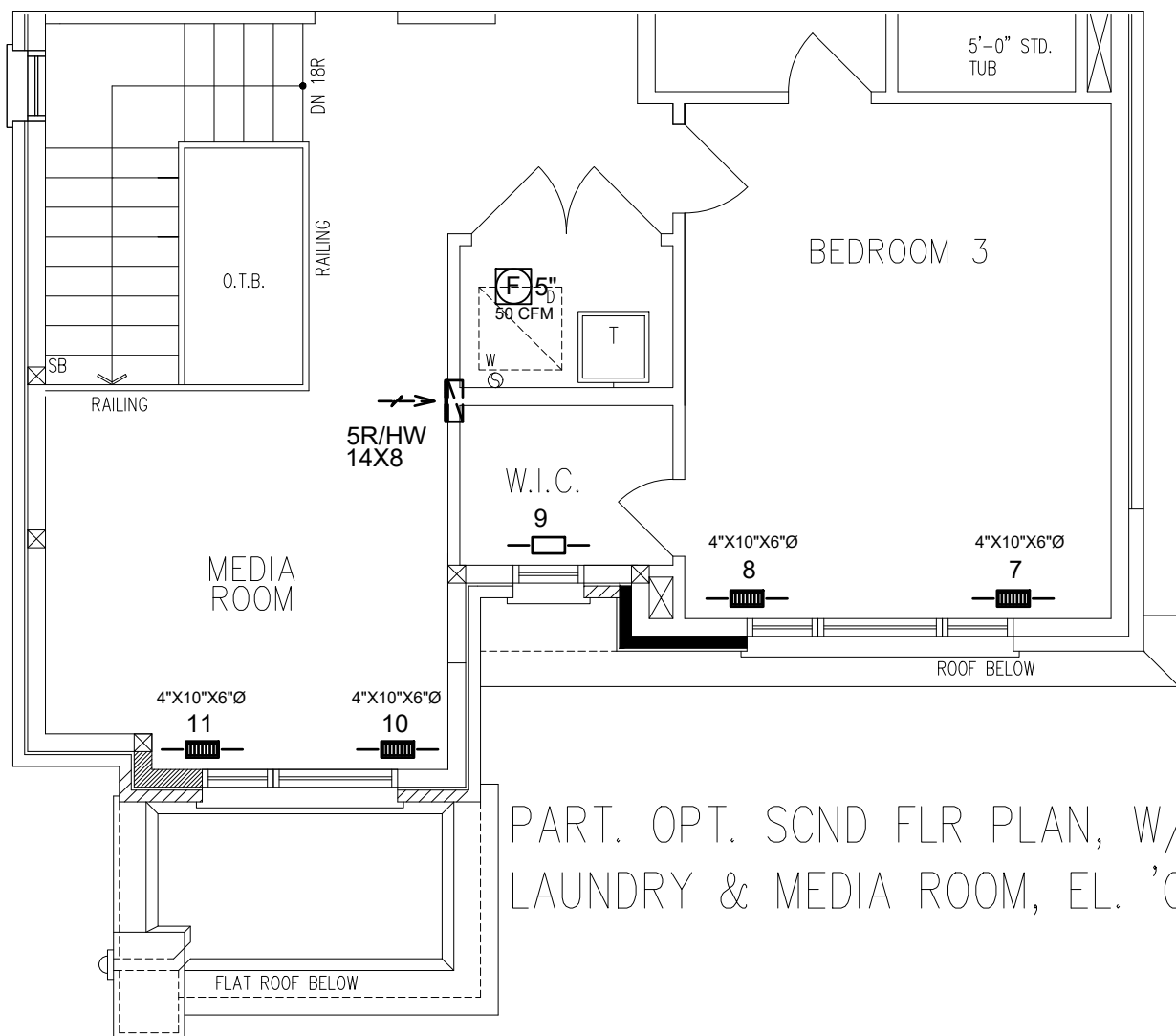


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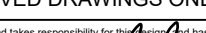
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