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

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

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

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

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

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

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

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

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

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

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

# Energy Efficiency Design Summary:
# Performance & Other Acceptable Compliance Methods

(Building Code Part 9, Residential)

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

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

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

City of Brampton
Building Division
HVAC Reviewed
2023/07/18
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

## A. Project Information

| Building number, street name | | Unit number | Lot/Con |
|---|---|---|---|
| Model Type 38-02 | | | |
| **Municipality** | **Postal code** | **Reg. Plan number / other description** | |
| Brampton | | | |

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

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

## C. Project Building Design Conditions

| Climatic Zone (SB-1): | Heating Equipment Efficiency | Space Heating Fuel Source | | |
|---|---|---|---|---|
| ☒ Zone 1 (< 5000 degree days) | ☒ ≥ 92% AFUE | ☒ Gas | ☐ Propane | ☐ Solid Fuel |
| ☐ Zone 2 (≥ 5000 degree days) | ☐ ≥ 84% < 92% AFUE | ☐ Oil | ☐ Electric | ☐ Earth Energy |

| Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area | | Other Building Characteristics |
|---|---|---|
| Area of walls = 360.75 $m^2$ **or** _____ $ft^2$ | W, S & G % = 12.49 | ☐ Log/Post&Beam ☐ ICF Above Grade ☐ ICF Basement<br>☐ Slab-on-ground ☐ Walkout Basement<br>☐ Air Conditioning ☐ Combo Unit<br>☐ Air Source Heat Pump (ASHP)<br>☐ Ground Source Heat Pump (GSHP) |
| Area of W, S & G = 45.06 $m^2$ **or** _____ $ft^2$ | | |

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

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

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

| Building Component | Minimum RSI / R values or Maximum U-Value(1) | | Building Component | Efficiency Ratings | |
|---|---|---|---|---|---|
| **Thermal Insulation** | Nominal | Effective | **Windows & Doors** Provide U-Value(1) or ER rating | | |
| Ceiling with Attic Space | R60 | | Windows/Sliding Glass Doors | U=1.6 | |
| Ceiling without Attic Space | R31 | | Skylights/Glazed Roofs | N/A | |
| Exposed Floor | R31 | | **Mechanicals** | | |
| Walls Above Grade | R22+R1.5ci | | Heating Equip.(AFUE) | 96% AFUE | |
| Basement Walls | R20ci | | HRV Efficiency (SRE% at 0°C) | 75% | |
| Slab (all >600mm below grade) | N/A | | DHW Heater (EF) | 0.90 EF | |
| Slab (edge only ≤600mm below grade) | N/A | | DWHR (CSA B55.1 (min. 42% efficiency)) | 53.3% | # Showers 1 |
| Slab (all ≤600mm below grade, or heated) | N/A | | Combined Space / Dom. Water Heating | N/A | |

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

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

The annual energy consumption using Subsection 3.1.1. SB-12 Reference Building Package is 164.41 GJ (1 GJ =1000MJ)

The annual energy consumption of this house as designed is 153.99 GJ

The software used to simulate the annual energy use of the building is: REMRATE 16.0.2 Canada

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

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

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

- ☐ On Site Renewable(s): Solar:_____
  Other Types: _____

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

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

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

***Performance Energy Modeling Professional***

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

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

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

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

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

| Name | BCIN | Signature |
|---|---|---|
| Derek R. Santos<br>(Hunt Design Associates Inc.) | 37308<br>(19695) | |

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

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

COMPLETING THE FORM

**B. Compliance Options**

Indicate the compliance option being used.

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

**C. Project Design Conditions**

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

**D. Building Specifications**

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

**E. Performance Design Summary**

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

**F. ENERGY STAR or R-2000 Performance Method**

Design to ENERGY STAR or R-2000 Standards.

**G. House Designer**

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

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN NEW HOUSES

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

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)

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

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

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

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

# Code Compliance Certificate

## Project Title: Model 38-02

| | |
|---|---|
| Report Date | June 13, 2021 |
| Data Filename | Model 38-02.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) | 4470 |
| Conditioned Volume (cubic ft) | 43597 |
| Insulated Shell Area (sq ft) | 8930 |

| Construction Site | Owner | Builder | HERS Rater |
|---|---|---|---|
| Model 38-02 | Royal Pine Homes | Royal Pine Homes | Clearsphere Consulting |
| Brampton, | Model 38-02 | 3550 Langstaff Road, Suite 200 | John Godden |
| | Brampton, | Woodbridge, Ontario L4L 9G3 | 416-481-4218 |

| Annual Energy Consumption | KWH | GJ |
|---|---|---|
| Reference Home Package A1 | 45670.18 | 164.41 |
| Proposed House | 42775.70 | 153.99 |
| Better Than Code | 6.3% | |

**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 | 1694 | 14.0 | 46.0 |
| Roof 2: R-31 Flat | 40 | 31.0 | 0.0 |
| Above-Grade Walls | | | |
| AG Wall 1: R-22+1.5ci | 3398 | 22.0 | 1.5 |
| Joist 1: Cond -> ambient | 364 | 22.0 | 1.5 |
| Window 1: U= 0.282 SHGC 0.45 | 472 | | 3.5 |
| Door 1: Code | 9 | | 4.0 |
| Door 2: Code | 21 | | 4.0 |
| Floors Over Garage | | | |
| Floor 1: R-31 Std | 368 | 31.0 | 0.0 |
| Basement Walls | | | |


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

| Building Summary<br>Assembly | Gross Area or<br>Perimeter | Cavity R-Value | Continuous<br>R-Value |
|---|---|---|---|
| Wall 1: R-20 Blanket | 1644 | 0.0 | 20.0 |
| Window 2: U= 0.282 SHGC 0.45 | 13 | | 3.5 |
| Door 3 | 21 | | 4.0 |

| Mechanical Equipment | Name/Type | Size/Input | Efficiency |
|---|---|---|---|
| Heating: Fuel-fired air distribution | 96 AFUE ECM | 32.0 kBtuh | 96.0 AFUE |
| Cooling: Air conditioner | 13SEER A/C 1.5 ton | 18.0 kBtuh, | 13.0 SEER |
| Water Heating: Instant water heater, Gas | 0.90 EF Condensing | 0 gal | 0.93 EF |
| HRV/ERV | ----- | 80.0 CFM | 75.0% sen/ 0.0% tot |

## Drain Water Heat Recovery

1 of 2 Showers connected and 53.0% unit efficiency

## Air Exchange

3.20 ACH50 or: 0.26 CFM50/sf

## Efficient Lighting

0.0% Interior, 0.0% Exterior, 0.0% Garage

## Renewables

N/A


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 38-02 - A1
Model 38-02 - 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 38-02 - A1 |
| Owner's Name | Royal Pine Homes |
| Property Address | Model 38-02 - A1 |
| City, St, Zip | Brampton, |
| Phone Number | |
| | |
| Builder's Name | Royal Pine Homes |
| Phone Number | |
| Email Address | |
| Plan/Model Name | Model 38-02 - A1 |
| Community/Development | Forest Side |
| Identifier/Other | |

## Organization Information

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

## Rating/RESNET Information

| | |
|---|---|
| Provider ID | 2006-001 |
| Sample Set ID | 00000000 |
| Registry ID | |
| Registry Date Registered | |
| Rater's Name | John Godden |
| Rater's ID | 0001 |
| Rater's Email | howard@clearsphere.ca |
| | |
| Last Field Insp | June 13, 2021 |
| Rating Type | Projected Rating |
| Reason for Rating | New Home |
| Rating Number | N/A |
| Rating Permit Date | 06/14/2022 |


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 38-02 - A1
Model 38-02 - 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

## General Building Information

| | |
|---|---|
| Area of Conditioned. Space(sq ft) | 4470 |
| Volume of Conditioned. Space | 43597 |
| Year Built | 2022 |
| Housing Type | Single-family detached |
| Level Type(Apartments Only) | None |
| Floors on or Above-Grade | 2 |
| Number of Bedrooms | 4 |
| 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 | 184.83 | 9.08 | 8.42 | 0.66 | 0.035 | 0.048 |

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

## Foundation Wall Library List

### Foundation Wall: R-20 Blanket

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


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 38-02 - A1
Model 38-02 - 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

## 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 | 1388 | 8.42 | 185 | 185 | 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 | 368 | 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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Brampton,

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Model 38-02 - 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

## 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 | 363.60 | 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 | 3397.72 | 0.067 |

## Above-Grade Wall Library List

### Above-Grade Wall: R-22 Std

Information From Quick Fill Screen

| | |
|---|---|
| Wall Construction Type | Std Frame w/Brick Veneer |
| Continuous Insulation (R-Value) | 0.0 |
| Frame Cavity Insulation (R-Value) | 22.0 |
| Frame Cavity Insulation Thickness (in) | 5.5 |
| Frame Cavity Insulation Grade | 3 |
| Stud Size (w x d, in) | 1.5 x 5.5 |
| Stud Spacing (in o.c.) | 16.0 |
| Framing Factor - (default) | 0.2300 |
| Gypsum Thickness (in) | 0.5 |

Note

## Window Information

| | | | | | | Overhang | | | Interior | | Adjacent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Wall Assignment | Orient | U-Value | SHGC | Area (sqft) | Depth (ft) | To Top (ft) | To Btm (ft) | Winter Shading | Summer Shading | Winter Shading | Summer Shading |
| front | AGWall 1 | South | 0.282 | 0.450 | 15.90 | 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 | 8.00 | 9.8 | 2.0 | 8.3 | 0.85 | 0.70 | None | None |


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# Building Summary

**Property**
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Model 38-02 - A1
Brampton,

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Model 38-02 - 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

## Window Information

| | | | | | | Overhang | | | Interior | | Adjacent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Wall Assignment | Orient | U-Value | SHGC | Area (sqft) | Depth (ft) | To Top (ft) | To Btm (ft) | Winter Shading | Summer Shading | Winter Shading | Summer Shading |
| front | AGWall 1 | South | 0.282 | 0.450 | 10.70 | 1.3 | 1.8 | 8.4 | 0.85 | 0.70 | None | None |
| front | AGWall 1 | South | 0.282 | 0.450 | 58.70 | 0.3 | 3.0 | 10.3 | 0.85 | 0.70 | None | None |
| front | AGWall 1 | South | 0.282 | 0.450 | 40.33 | 0.3 | 3.0 | 10.3 | 0.85 | 0.70 | None | None |
| Left | FndWall 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 | 21.33 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 32.00 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 8.70 | 1.3 | 1.8 | 6.1 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 17.33 | 1.3 | 1.8 | 5.8 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 22.70 | 1.3 | 1.8 | 5.8 | 0.85 | 0.70 | None | None |
| back | FndWall 1 | North | 0.282 | 0.450 | 3.33 | 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 | 42.70 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| back | AGWall 1 | North | 0.282 | 0.450 | 21.80 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| back | AGWall 1 | North | 0.282 | 0.450 | 37.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | FndWall 1 | East | 0.282 | 0.450 | 3.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 12.00 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 8.00 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 17.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 17.33 | 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 | 8.8 | 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 | 1694.00 | 2117.50 | Dark | No | Attic | 0.017 | No | No |


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02 - A1
Brampton,

Weather:Toronto, ON_CAN
Model 38-02 - A1
Model 38-02 - 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

## 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-31 Flat | 40.00 | 40.00 | Dark | No | Vaulted | 0.052 | No | No |

## Roof Library List

### Ceiling: R-60 Attic

Information From Quick Fill Screen

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

### Ceiling: R-31 Flat

Information From Quick Fill Screen

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


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# Building Summary

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Model 38-02 - A1
Brampton,

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**Organization**
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416-481-4218
John Godden

**Builder**
Royal Pine Homes

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

## Mechanical Equipment

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

## Heat: 96 AFUE 371 Watts

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

## Cool: 13SEER A/C 1.5 ton

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

## DHW: 0.80 EF 50g

| | |
|---|---|
| Water Heater Type | Conventional |


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

## Mechanical Equipment

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

## DHW Efficiencies

| | |
|---|---|
| All bath faucets & showers <= 2gpm | false |
| All DHW pipes fully insulated >= R-3 | false |
| Recirculation type | None (standard system) |
| Farthest fixture to DHW heater | 77 |
| TOTAL Pipelength for longest DHW run | 107 |
| 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 | 58.83 |
| peRatio | 1.00 |
| dishwasherGpd | 5.10 |
| clothesWasherHotWaterGPD | 4.48 |
| EDeff | 1.00 |
| ewaste | 32.00 |
| tmains | 54.00 |
| dwhrWhInletTempAdj | 8.43 |
| pumpConsKwh | 0.00 |


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**Organization**
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416-481-4218
John Godden

**Builder**
Royal Pine Homes

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June 13, 2021
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Rater ID:0001

## DHW Efficiencies

| | |
|---|---|
| pumpConsMmbtu | 0.00 |


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

## Duct Systems

**Name**

| | |
|---|---|
| Conditioned Floor Area(sq ft) | 4470.0 |
| # of Returns | 6 |
| Heating System | 96 AFUE 371 Watts |
| Cooling System | 13SEER A/C 1.5 ton |
| Supply Duct Surface Area(sq ft) | 905.2 |
| Return Duct Surface Area(sq ft) | 838.1 |
| No bldg cavities used as ducts | FALSE |

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

**Test Exemptions**

| | |
|---|---|
| IECC | TRUE |
| RESNET 2019 | FALSE |
| ENERGY STAR LtO | TRUE |

**Duct Leakage**

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

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


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Projected Rating
June 13, 2021
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Rater ID:0001

## Infiltration and Mechanical Ventilation

| | |
|---|---|
| Whole Dwelling Infiltration | |
| Input Type | Blower door |
| Heating Season Infiltration Value | 0.26 CFM50/sf shell |
| Cooling Season Infiltration Value | 0.26 CFM50/sf shell |
| Shelter Class | 4 |
| Code Verification | Tested |
| | |
| Mechanical Ventilation for IAQ | |
| Type | Balanced |
| Unable to Measure Mechanical Ventilation | FALSE |
| Rate(cfm) | 80 |
| Adjusted Sensible Recovery Efficiency(%) | 75.00 |
| Adjusted Total Recovery Efficiency(%) | 0.00 |
| Hours per Day | 24.0 |
| Fan Power (watts) | 71.00 |
| ECM Fan Motor | false |
| | |
| Ventilation Strategy for Cooling | |
| Cooling Season Ventilation | Natural Ventilation |
| | |
| Good Air Exchange for Multi-Family | NA |


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John Godden

**Builder**
Royal Pine Homes

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

## Lights and Appliances

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


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# Building Summary

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Brampton,

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Model 38-02
Model 38-02.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 38-02 |
| Owner's Name | Royal Pine Homes |
| Property Address | Model 38-02 |
| City, St, Zip | Brampton, |
| Phone Number | |
| | |
| Builder's Name | Royal Pine Homes |
| Phone Number | |
| Email Address | |
| Plan/Model Name | Model 38-02 |
| Community/Development | Forest Side |
| Identifier/Other | |

## Organization Information

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

## Rating/RESNET Information

| | |
|---|---|
| Provider ID | 2006-001 |
| Sample Set ID | 00000000 |
| Registry ID | |
| Registry Date Registered | |
| Rater's Name | John Godden |
| Rater's ID | 0001 |
| Rater's Email | howard@clearsphere.ca |
| | |
| Last Field Insp | June 13, 2021 |
| Rating Type | Projected Rating |
| Reason for Rating | New Home |
| Rating Number | N/A |
| Rating Permit Date | 06/14/2022 |


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# Building Summary

**Property**
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Model 38-02
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Model 38-02
Model 38-02.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

## General Building Information

| | |
|---|---|
| Area of Conditioned. Space(sq ft) | 4470 |
| Volume of Conditioned. Space | 43597 |
| Year Built | 2022 |
| Housing Type | Single-family detached |
| Level Type(Apartments Only) | None |
| Floors on or Above-Grade | 2 |
| Number of Bedrooms | 4 |
| 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 | 184.83 | 9.08 | 8.42 | 0.66 | 0.035 | 0.048 |

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

## Foundation Wall Library List

### Foundation Wall: R-20 Blanket

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


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02
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Model 38-02
Model 38-02.blg

**Organization**
Clearsphere Consulting
416-481-4218
John Godden

**Builder**
Royal Pine Homes

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

## Foundation Wall Library List

| | |
|---|---|
| Ins bottom | 0.00 ft below grade |
| Note | |

## Slab Floor Information

| Name | Library Entry | Area(sq ft) | Depth Below Grade(ft) | Full Perimeter(ft) | Exposed Perimeter(ft) | On-Grade Perimeter(ft) |
|---|---|---|---|---|---|---|
| Slab | Uninsulated | 1388 | 8.42 | 185 | 185 | 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 | 368 | 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 | 363.60 | 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 | 3397.72 | 0.058 |

## Above-Grade Wall Library List

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

Information From Quick Fill Screen

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

Note

## Window Information

| | | | | | | Overhang | | | Interior | | Adjacent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Wall Assignment | Orient | U-Value | SHGC | Area (sqft) | Depth (ft) | To Top (ft) | To Btm (ft) | Winter Shading | Summer Shading | Winter Shading | Summer Shading |
| front | AGWall 1 | South | 0.282 | 0.450 | 15.90 | 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 | 8.00 | 9.8 | 2.0 | 8.3 | 0.85 | 0.70 | None | None |


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416-481-4218
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June 13, 2021
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Rater ID:0001

## Window Information

| | | | | | | Overhang | | | Interior | | Adjacent | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Wall Assignment | Orient | U-Value | SHGC | Area (sqft) | Depth (ft) | To Top (ft) | To Btm (ft) | Winter Shading | Summer Shading | Winter Shading | Summer Shading |
| front | AGWall 1 | South | 0.282 | 0.450 | 10.70 | 1.3 | 1.8 | 8.4 | 0.85 | 0.70 | None | None |
| front | AGWall 1 | South | 0.282 | 0.450 | 58.70 | 0.3 | 3.0 | 10.3 | 0.85 | 0.70 | None | None |
| front | AGWall 1 | South | 0.282 | 0.450 | 40.33 | 0.3 | 3.0 | 10.3 | 0.85 | 0.70 | None | None |
| Left | FndWall 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 | 21.33 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 32.00 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 8.70 | 1.3 | 1.8 | 6.1 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 17.33 | 1.3 | 1.8 | 5.8 | 0.85 | 0.70 | None | None |
| Left | AGWall 1 | West | 0.282 | 0.450 | 22.70 | 1.3 | 1.8 | 5.8 | 0.85 | 0.70 | None | None |
| back | FndWall 1 | North | 0.282 | 0.450 | 3.33 | 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 | 42.70 | 0.0 | 0.0 | 0.0 | 0.85 | 0.70 | None | None |
| back | AGWall 1 | North | 0.282 | 0.450 | 21.80 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| back | AGWall 1 | North | 0.282 | 0.450 | 37.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | FndWall 1 | East | 0.282 | 0.450 | 3.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 12.00 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 8.00 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 17.33 | 1.3 | 1.8 | 6.4 | 0.85 | 0.70 | None | None |
| Right | AGWall 1 | East | 0.282 | 0.450 | 17.33 | 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 | 8.8 | 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 | 1694.00 | 2117.50 | Dark | No | Attic | 0.017 | No | No |


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# Building Summary

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Royal Pine Homes
Model 38-02
Brampton,

Weather:Toronto, ON_CAN
Model 38-02
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**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

## 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-31 Flat | 40.00 | 40.00 | Dark | No | Vaulted | 0.052 | No | No |

## Roof Library List

### Ceiling: R-60 Attic

Information From Quick Fill Screen

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

### Ceiling: R-31 Flat

Information From Quick Fill Screen

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


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02
Brampton,

Weather:Toronto, ON_CAN
Model 38-02
Model 38-02.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

## Mechanical Equipment

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

## Heat: 96 AFUE ECM

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

## Cool: 13SEER A/C 1.5 ton

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

## DHW: 0.90 EF Condensing

| | |
|---|---|
| Water Heater Type | Instant water heater |


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# Building Summary

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Royal Pine Homes
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Brampton,

Weather:Toronto, ON_CAN
Model 38-02
Model 38-02.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

## 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 | 77 |
| TOTAL Pipelength for longest DHW run | 107 |
| 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 | 59.93 |
| peRatio | 1.00 |
| dishwasherGpd | 5.10 |
| clothesWasherHotWaterGPD | 4.48 |
| EDeff | 1.00 |
| ewaste | 32.00 |
| tmains | 54.00 |
| dwhrWhInletTempAdj | 5.32 |
| pumpConsKwh | 0.00 |


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# Building Summary

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Brampton,

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Model 38-02
Model 38-02.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

## DHW Efficiencies

| | |
|---|---|
| pumpConsMmbtu | 0.00 |


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# Building Summary

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Brampton,

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Model 38-02
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416-481-4218
John Godden

**Builder**
Royal Pine Homes

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

## Duct Systems

**Name**

| | |
|---|---|
| Conditioned Floor Area(sq ft) | 4470.0 |
| # of Returns | 6 |
| Heating System | 96 AFUE ECM |
| Cooling System | 13SEER A/C 1.5 ton |
| Supply Duct Surface Area(sq ft) | 905.2 |
| Return Duct Surface Area(sq ft) | 838.1 |
| No bldg cavities used as ducts | FALSE |

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

**Test Exemptions**

| | |
|---|---|
| IECC | TRUE |
| RESNET 2019 | FALSE |
| ENERGY STAR LtO | TRUE |

**Duct Leakage**

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

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


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# Building Summary

**Property**
Royal Pine Homes
Model 38-02
Brampton,

Weather:Toronto, ON_CAN
Model 38-02
Model 38-02.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

## 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) | 80 |
| Adjusted Sensible Recovery Efficiency(%) | 75.00 |
| Adjusted Total Recovery Efficiency(%) | 0.00 |
| Hours per Day | 24.0 |
| Fan Power (watts) | 71.00 |
| ECM Fan Motor | false |
| | |
| Ventilation Strategy for Cooling | |
| Cooling Season Ventilation | Natural Ventilation |
| | |
| Good Air Exchange for Multi-Family | NA |


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# Building Summary

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Model 38-02
Model 38-02.blg

**Organization**
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416-481-4218
John Godden

**Builder**
Royal Pine Homes

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

## Lights and Appliances

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


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MCCALLUM HVAC DESIGN INC

# Schedule 1: Designer Information

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

| **A. Project Information** | | | |
|---|---|---|---|
| Building number, street name: Unit 3802- Elve A,B and C | | Lot: 3802 | 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 #:** RP23047 |
|---|---|---|---|
| Heating and Cooling Load Calculations<br>Air System Design<br>Residential mechanical ventilation Design Summary<br>Residential System Design per CAN/CSA-F280-12<br>Residential New Construction - Forced Air | | Builder | Roval Pine Homes |
| | | Project | Forestside Estates |
| | | Model | Unit 3802- Elve A,B and C |
| | | SB-12 | SB 12 Performance 28 |

**D. Declaration of Designer**

I Doug McCallum declare that (choose one as appropriate):

(print name)

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

Individual BCIN: **25896**

Firm BCIN: **102614**

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

Individual BCIN:

Basis for exemption from registration:

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification:

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

2022-06-21

Date

Signature of Designer

NOTE:

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

MCCALLUM HVAC DESIGN INC

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

# Heat loss and gain calculation summary sheet

CSA-F280-M12 Standard Form No. 1

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

Project No. RP23047

## Building Location

| | | | |
|---|---|---|---|
| Address (Model): | Unit 3802- Elve A.B and C | Site: | Forestside Estates |
| Model: | | Lot: | 3802 |
| City and Province: | Brampton | Postal code: | |

## Calculations based on

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

## Heating design conditions

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

## Cooling design conditions

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

## Above grade walls

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

## Below grade walls

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

## Floors on soil

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

## Exposed floors

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

## Windows

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

## Ceilings

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

## Doors

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

## Skylights

| | | | |
|---|---|---|---|
| Style A: | **As per Selected OBC SB12** SB 12 | **R** | 2.04 |
| Style B: | | | |

Attached documents: **As per Shedule 1**

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

## Calculations performed by

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

MCCALLUM HVAC DESIGN INC

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

**Project #** RP2304

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 3802- Elve A,B and C

# RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

## Location of Installation

| | |
|---|---|
| Lot # | Plan # |
| Township | Brampton |
| Roll # | Permit # |
| Address | |

## Builder

| | |
|---|---|
| Name | Roval Pine Homes |
| Address | |
| City | |
| Tel | Fax |

City of Brampton
Building Division
HVAC Reviewed
2023/07/18
Shruti Desai
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

## Installing Contractor

| | |
|---|---|
| Name | |
| Address | |
| City | |
| Tel | Fax |

## Combustion Appliances 9.32.3.1(1)

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

## Heating System

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

## House Type 9.32.3.1(2)

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

## System Design Option

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

## Total Ventilation Capacity 9.32.3.3(1)

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

## Principal Ventilation Capacity 9.32.3.4(1)

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

## Principal Exhaust Fan Capacity

| Make | Model | Location |
|---|---|---|
| VanEE | 65H | Base |

129 cfm 64 Sones

## Heat Recovery Ventilator

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

## Supplemental Ventilation Capacity

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

## Supplemental Fans 9.32.3.5.

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

*all fans HVI listed* Make Broan or Equiv.

## Designer Certification

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

| | | | |
|---|---|---|---|
| Name | Doug McCallum | | |
| Signature | | | |
| HRAI # | | BCIN # | 25896 |
| Date | 2022-06-21 | | |

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

**Project #** RP23047

**Project:** Forestside Estates **Model:** Unit 3802- Elve A,B and C

# Air Leakage Calculations

Air Leakage Calculations

| Building Air Leakage Heat Loss | | | | |
|---|---|---|---|---|
| B | LRairh | Vb | HL^T | HLleak |
| 0.018 | 0.330 | 38292.0 | 74.2 | 16871.91 |

| Building Air Leakage Heat Gain | | | | |
|---|---|---|---|---|
| B | LRairh | Vb | HG^T | HG Leak |
| 0.018 | 0.1149682 | 38292 | 14.00 | 1109.40 |

| 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 |
| 1 | 0.5 | 16872 | 5696 | 1.48103 |
| 2 | 0.3 | | 11491 | 0.44048 |
| 3 | 0.2 | | 12743 | 0.26480 |
| 4 | 0 | | 0 | 0.00000 |

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

| | | Air Leakage Heat Gain Multiplier |
|---|---|---|
| HG LEAK | 1109.40 | 0.07339 |
| BUILDING CONDUCTIVE HEAT GAIN | 15117.00 | |

| Levels this Dwelling |
|---|
| 3 |

# Ventilation Calculations

Vent

**Ventilation Heat Loss**

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

**Ventilation Heat Gain**

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

## Case 1

**Ventilation Heat Loss (Exhaust only Systems)**

| Case 1 - Exhaust Only | | | | |
|---|---|---|---|---|
| Level | LF | HLbvent | LVL Cond. HL | Multiplier |
| 1 | 0.5 | 1593 | 5696 | 0.14 |
| 2 | 0.3 | | 11491 | 0.04 |
| 3 | 0.2 | | 12743 | 0.02 |
| 4 | 0 | | 0 | 0 |

**Ventilation Heat Gain (Exhaust Only Systems)**

| Case 1 - Exhaust Only | | Multiplier |
|---|---|---|
| HGbvent | 1202.040 | 0.08 |
| Building Cond. HG | 15117.00 | |

## Case 2

**Ventilation Heat Loss (Direct Ducted Systems)**

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

**Ventilation Heat Gain (Direct Ducted Systems)**

| | | Multiplier |
|---|---|---|
| C | HG^T | 15.12 |
| 1.08 | 14.00 | |

## Case 3

**Ventilation Heat Loss (Forced Air Systems)**

| | HLbvent | Multiplier |
|---|---|---|
| Total Ventilation Load | 1593 | 0.05 |

**Ventilation Heat Gain (Forced Air Systems)**

| | | Vent Heat Gain | Multiplier |
|---|---|---|---|
| HGbvent | HG*1.3 | 1202 | 0.08 |
| 1202.040 | 1 | | |

# Envelope Air Leakage Calculator

Supplemental tool for CAN/CSA-F280

## Weather Station Description

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

## Local Shielding

| | |
|---|---|
| Building Site: | Suburban, forest |
| Walls: | Heavy |
| Flue: | Heavy |
| Highest Ceiling Height (m): | 6.40 |

## Building Configuration

| | |
|---|---|
| Type: | Detached |
| Number of Stories: | Two |
| Foundation: | Full |
| House Volume ($m^3$): | 1084 |

## Air Leakage/Ventilation

| | | |
|---|---|---|
| Air Tightness Type: | Custom - DBT values | |
| Custom BDT Data: | ELA @ 10 Pa. | 1371.908 |
| | 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

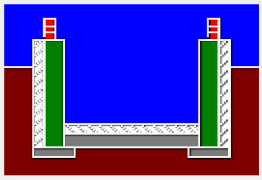
**Heating Air Leakage Rate (ACH/H):** 0.330

**Cooling Air Leakage Rate (ACH/H):** 0.115

# 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): | 21.9 |
| Floor Width (m): | 5.21 |
| Exposed Perimeter (m): | 54.2 |
| Wall Height (m): | 3.05 |
| Depth Below Grade (m): | 2.44 |
| Window Area ($m^2$): | 1.58 |
| Door Area ($m^2$): | 2 |
| **Radiant Slab** | |
| Heated Fraction of the Slab: | **0** |
| Fluid Temperature (°C): | **23** |
| **Design Months** | |
| **Heating Month** | **1** |
| **Foundation Loads** | |
| **Heating Load (Watts):** | **1414** |



Insulation Configuration

BCIN_1

**AIR SYSTEM DESIGN**

ADDRESS/MODEL: Unit 3802- Elve A,B and C
PROJECT #: RP23047
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3072
Lot: 3802
Site: Forestside Estates

MCCALLUM HVAC DESIGN INC

## SYSTEM A

| DESIGN LOAD SPECIFICATIONS | | AIR DISTRIBUTION AND PRESSURE | |
|---|---|---|---|
| LEVEL 1 NET LOAD | 14435 btu/h | EQUIPMENT EXTERNAL STATIC PRESSURE | 0.500"W.C. |
| LEVEL 2 NET LOAD | 17165 btu/h | ADDITIONAL EQUIPMENT PRESSURE DROP | 0.250"W.C. |
| LEVEL 3 NET LOAD | 17261 btu/h | AVAILABLE DESIGN PRESSURE | 0.250"W.C. |
| LEVEL 4 NET LOAD | 0 btu/h | RETURN BRANCH LONGEST EFFECTIVE LENGTH | 300ft |
| SYSTEM HEATLOSS | 48861 btu/h | R/A PLENUM PRESSURE | 0.120"W.C. |
| SYSTEM HEATGAIN | 31153 btu/h | S/A PLENUM PRESSURE | 0.130"W.C. |
| BUILDING VOLUME Vb | 38292.00 ft3 | HEATING AIR FLOW PROPORTIONING FACTOR | 0.0234 cfm/btuh |
| VENTILATION LOAD | 1594.00 btu/h | COOLING AIR FLOW PROPORTIONING FACTOR | 0.0368 cfm/btuh |
| VENTILATION PVC | 79.50 cfm | R/A TEMP. 70°F | S/A TEMP. 121.75°F DIFFUSER LOSS 0.01°"w.c. |

| FURNACE/AIR HANDLER DATA | | | | BLOWER DATA | |
|---|---|---|---|---|---|
| MAKE | LENNOX | | | HEATING CHECK | 1145.00 CFM |
| MODEL | EL296UH070XE36B | | | SELECTED CFM | 1145.00 CFM |
| HIGH INPUT btu/h | 66000 | LOW INPUT btu/h | 0 | COOLING CHECK | 1147.00 CFM |
| HIGH OUTPUT btu/h | 64000 | LOW OUTPUT btu/h | 0 | COOLING AIR FLOW RATE | 1145.00 CFM |
| E.S.P. | 0.50 | | | BLOWER TYPE ECM (BRUSHLESS DC OBC 12.3.1.5.(2)) | |
| WATER TEMP. | | | | A/C UNIT DATA | |
| AFUE | 96.97% | | | MAKER | 3.0 TON |
| AUX. HEAT | 0 | | | CONDENSER | 3.0 TON |
| SB-12 PACKAGE | SB 12 Performance 28 | | | COIL | 3.0 TON |
| TEMP. RISE | 51.75°F | | | | |

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## SUPPLY BRANCH AND GRILL SIZING

| OUTLET # | ROOM USE | BTU/H OUTLET | HEATING AIR FLOW RATE CFM | COOLING AIR FLOW RATE CFM | DUCT DESIGN PRESSURE | ACTUAL DUCT LENGTH | EQUIVALENT LENGTH | TOTAL EFFECTIVE LENGTH | ADJUSTED PRESSURE | DUCT SIZE ROUND | OUTLET SIZE | TRUNK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PRI. BED | 1406 | 33 | 52 | 0.13 | 48 | 155 | 203 | 0.06 | 6.0 | 4x10 | B1 |
| 2 | PRI. BED | 1406 | 33 | 52 | 0.13 | 36 | 145 | 181 | 0.07 | 6.0 | 4x10 | A1 |
| 3 | MB. ENS | 1657 | 39 | 49 | 0.13 | 53 | 155 | 208 | 0.06 | 5.0 | 4x10 | B1 |
| 4 | MB.ENS .WC | 494 | 12 | 8 | 0.13 | 28 | 150 | 178 | 0.07 | 5 | 4x10 | E1 |
| 5 | BED 2 WIC | 352 | 8 | 4 | 0.13 | 23 | 140 | 163 | 0.07 | 5 | 4x10 | E1 |
| 7 | SHRD. BATH | 924 | 22 | 12 | 0.13 | 52 | 165 | 217 | 0.06 | 5 | 4x10 | D1 |
| 10 | COMP NOOK | 1722 | 40 | 55 | 0.13 | 54 | 165 | 219 | 0.05 | 6.0 | 4x10 | C1 |
| 11 | COMP NOOK | 1722 | 40 | 55 | 0.13 | 58 | 165 | 223 | 0.05 | 6.0 | 4x10 | C1 |
| 13 | ENS 2 | 588 | 14 | 14 | 0.13 | 22 | 120 | 142 | 0.08 | 5 | 4x10 | E1 |
| 14 | FAM ROOM | 1921 | 45 | 65 | 0.13 | 32 | 155 | 187 | 0.06 | 6.0 | 4x10 | B1 |
| 15 | FAM ROOM | 1921 | 45 | 65 | 0.13 | 38 | 155 | 193 | 0.06 | 6.0 | 4x10 | A1 |
| 19 | MUD/ WIC | 1844 | 43 | 13 | 0.13 | 16 | 140 | 156 | 0.08 | 5.0 | 4x10 | E1 |
| 16 | KIT/ BREAK | 2004 | 47 | 76 | 0.13 | 37 | 135 | 172 | 0.07 | 6.0 | 4x10 | A1 |
| 17 | KIT/ BREAK | 2004 | 47 | 76 | 0.13 | 48 | 165 | 213 | 0.06 | 6.0 | 4x10 | A1 |
| 18 | LAUD/ PWD | 478 | 11 | 40 | 0.13 | 12 | 130 | 142 | 0.08 | 5.0 | 4x10 | E1 |
| 20 | FOYER | 2318 | 54 | 23 | 0.13 | 48 | 165 | 213 | 0.06 | 5.0 | 4x10 | C1 |
| 21 | FOYER | 2318 | 54 | 23 | 0.13 | 58 | 155 | 213 | 0.06 | 5.0 | 4x10 | C1 |
| 22 | DINING | 2357 | 55 | 72 | 0.13 | 33 | 175 | 208 | 0.06 | 6.0 | 4x10 | D1 |
| 23 | UNF BSMT | 3609 | 85 | 40 | 0.13 | 37 | 135 | 172 | 0.07 | 6.0 | 4x10 | B1 |
| 24 | UNF BSMT | 3609 | 85 | 40 | 0.13 | 38 | 145 | 183 | 0.07 | 6.0 | 4x10 | B1 |
| 25 | UNF BSMT | 3609 | 85 | 40 | 0.13 | 33 | 155 | 188 | 0.06 | 6.0 | 4x10 | D1 |
| 26 | UNF BSMT | 3609 | 85 | 40 | 0.13 | 45 | 175 | 220 | 0.05 | 6.0 | 4x10 | C1 |
| 12 | BED 4 | 1440 | 34 | 47 | 0.13 | 40 | 185 | 225 | 0.05 | 6.0 | 4x10 | D1 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | BED 3 | 2193 | 51 | 77 | 0.13 | 56 | 155 | 211 | 0.06 | 6.0 | 4x10 | D1 |
| 9 | BED 3 | 2193 | 51 | 77 | 0.13 | 50 | 145 | 195 | 0.06 | 6.0 | 4x10 | D1 |
| 6 | BED 2 | 1166 | 27 | 32 | 0.13 | 10 | 120 | 130 | 0.09 | 6.0 | 4x10 | PL |

## RETURN BRANCH AND GRILL SIZING

| R/A INLET # | INLET AIR VOLUME CFM | DUCT DESIGN PRESSURE | ACTUAL DUCT LENGTH | EQUIVALENT LENGTH | TOTAL EFFECTIVE LENGTH | ADJUSTED PRESSURE | DUCT SIZE ROUND | INLET SIZE | TRUNK |
|---|---|---|---|---|---|---|---|---|---|
| 1R | 120 | 0.12 | 41 | 130 | 171 | 0.06 | 7 | 14x8 | Z1 |
| 2R | 140 | 0.12 | 24 | 160 | 184 | 0.05 | 8 | 14x8 | Z1 |
| 3R | 110 | 0.12 | 50 | 170 | 220 | 0.05 | 7 | 14x8 | X1 |
| 4R | 150 | 0.12 | 33 | 180 | 213 | 0.05 | 8 | 14x8 | Y1 |
| 5R | 360 | 0.12 | 18 | 130 | 148 | 0.07 | 10.5 | 30x8 | Y1 |
| 6R | 120 | 0.12 | 23 | 140 | 163 | 0.06 | 7 | FLC | X1 |
| 7R | 145 | 0.12 | 31 | 170 | 201 | 0.05 | 8 | 14x8 | Y1 |

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## RETURN TRUNK DUCT SIZING

| TRUNK | CFM | PRESSURE | ROUND | RECT. SIZE | SIZE ALTERNATE |
|---|---|---|---|---|---|
| DROP | 1145 | 0.05 | | 0 | |
| Z1 | 1145 | 0.05 | 17 | 26x10 | 26x10 |
| Y1 | 885 | 0.05 | 15.5 | 28x8 | 22x10 |
| X1 | 230 | 0.05 | 9.5 | 10x8 | 14x6 |

## SUPPLY TRUNK DUCT SIZING

| TRUNK | CFM | PRESSURE | ROUND | RECT. SIZE | SIZE ALTERNATE |
|---|---|---|---|---|---|
| A1 | 172 | 0.06 | 8 | 8x8 | 10x6 |
| B1 | 459 | 0.06 | 11.5 | 14x8 | 20x6 |
| C1 | 273 | 0.05 | 10 | 12x8 | 16x6 |
| D1 | 571 | 0.05 | 13 | 18x8 | 14x10 |
| E1 | 1118 | 0.05 | 17 | 26x10 | 26x10 |
| PL | 27 | 0.09 | 4 | | |

# HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 3802- Elve A,B and C
PROJECT #: RP23047
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3072
LOT: 3802
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

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

## LEVEL 1

| UNF BSMT | TOTALS H.L.: 14435 btuh | | H.G.: 4326 btuh | | AREA: 1229 ft2 | | Above Grade: 2 | | GROSS EXP. WALL | | NEW 356 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | |
| | NEW: 178 ft | | EXIST: 0 ft | | NEW: 0 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 0 ft2 | |
| Eff. R-V | 21.12 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | |
| LOSS | 3.5 | 0 btuh | 8.7 | 0 btuh | 1.3 | 0 btuh | 3.2 | 0 btuh | 2.7 | 0 btuh | 3.4 | 0 btuh | 2.5 | 0 btuh |
| GAIN | 0.7 | 211 btuh | 1.6 | 0 btuh | 0.7 | 0 btuh | 1.8 | 0 btuh | 1.5 | 0 btuh | 1.9 | 0 btuh | 0.3 | 0 btuh |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | |
| | NEW: 21.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 7.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 7.0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | |
| LOSS | 24.7 | 518 btuh | 24.7 | 0 btuh | 20.8 | 145 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 145 btuh |
| GAIN | 4.7 | 98 btuh | 4.7 | 0 btuh | 28.2 | 197 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 152 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 4825 btuh | AIR LEAKAGE NEW | | AIR LEAKAGE EXIST | | VENTILATION CASE 3 | | | | H.G. PEOPLE | |
| TOTAL CONDUCTIVE | | | LOSS | 5696 btuh | LOSS | 1.4810 | 8436 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 303.1 btuh | 239 |
| TOTAL CONDUCTIVE | | | GAIN | 693 btuh | GAIN | 0.0734 | 51 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 55 btuh | 0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 0 ft2 | | EXIST: 0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | |
| Eff. R-V | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |
| LOSS | 3.4 | 0 btuh | 2.5 | 0 btuh | 3.4 | 0 btuh | 36.4 | 0 btuh | 37 | 0 btuh |
| GAIN | 1.9 | 0 btuh | 0.3 | 0 btuh | 0.4 | 0 btuh | 89.7 | 0 btuh | 14.7 | 0 btuh |
| | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 3 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 1.99 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 37.3 | 0 btuh | 20.8 | 62 btuh | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh |
| GAIN | 14.9 | 0 btuh | 11.7 | 35 btuh | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh |
| APP. LOAD | | | DUCT PIPE L. | | | | | | | |
| 5057 | | | LOSS | 0% | 0 btuh | | | | | |
| 0 | 0 btuh | 50% | 2529 btuh | GAIN | 0% | 0 btuh | | | | |

## LEVEL 2

| FAM ROOM | TOTALS H.L.: 3842 btuh | | H.G.: 3536 btuh | | AREA: 287 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 370 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | |
| | NEW: 37 ft | | EXIST: 0 ft | | NEW: 0 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 0 ft2 | |
| Eff. R-V | 18.53 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | |
| LOSS | 4.0 | 1221 btuh | 8.7 | 0 btuh | 1.3 | 0 btuh | 3.2 | 0 btuh | 2.7 | 0 btuh | 3.4 | 0 btuh | 2.5 | 0 btuh |
| GAIN | 0.8 | 230 btuh | 1.6 | 0 btuh | 0.7 | 0 btuh | 1.8 | 0 btuh | 1.5 | 0 btuh | 1.9 | 0 btuh | 0.3 | 0 btuh |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 43.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 22.0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | |
| LOSS | 24.7 | 0 btuh | 24.7 | 0 btuh | 20.8 | 894 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 457 btuh |
| GAIN | 4.7 | 0 btuh | 4.7 | 0 btuh | 28.2 | 1212 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 478 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | AIR LEAKAGE EXIST | | VENTILATION CASE 3 | | | | H.G. PEOPLE | |
| TOTAL CONDUCTIVE | | | LOSS | 2572 btuh | LOSS | 0.4405 | 1133 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 136.9 btuh | 239 |
| TOTAL CONDUCTIVE | | | GAIN | 1920 btuh | GAIN | 0.0734 | 141 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 153 btuh | 0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 0 ft2 | | EXIST: 0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | |
| Eff. R-V | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |
| LOSS | 3.4 | 0 btuh | 2.5 | 0 btuh | 3.4 | 0 btuh | 36.4 | 0 btuh | 37 | 0 btuh |
| GAIN | 1.9 | 0 btuh | 0.3 | 0 btuh | 0.4 | 0 btuh | 89.7 | 0 btuh | 14.7 | 0 btuh |
| | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 1.99 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh |
| GAIN | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh |
| APP. LOAD | | | DUCT PIPE L. | | | | | | | |
| 5057 | | | LOSS | 0% | 0 btuh | | | | | |
| 0 | 0 btuh | 10% | 506 btuh | GAIN | 0% | 0 btuh | | | | |

| MUD/WIC | TOTALS H.L.: 1844 btuh | | H.G.: 350 btuh | | AREA: 73 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 200 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | |
| | NEW: 20 ft | | EXIST: 0 ft | | NEW: 0 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 0 ft2 | |
| Eff. R-V | 18.53 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | |
| LOSS | 4.0 | 717 btuh | 8.7 | 0 btuh | 1.3 | 0 btuh | 3.2 | 0 btuh | 2.7 | 0 btuh | 3.4 | 0 btuh | 2.5 | 0 btuh |
| GAIN | 0.8 | 135 btuh | 1.6 | 0 btuh | 0.7 | 0 btuh | 1.8 | 0 btuh | 1.5 | 0 btuh | 1.9 | 0 btuh | 0.3 | 0 btuh |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | |
| | NEW: 21.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 0.0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | |
| LOSS | 24.7 | 518 btuh | 24.7 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 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 |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | AIR LEAKAGE EXIST | | VENTILATION CASE 3 | | | | H.G. PEOPLE | |
| TOTAL CONDUCTIVE | | | LOSS | 1234 btuh | LOSS | 0.4405 | 544 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 65.7 btuh | 239 |
| TOTAL CONDUCTIVE | | | GAIN | 233 btuh | GAIN | 0.0734 | 17 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 19 btuh | 0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 0 ft2 | | EXIST: 0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | |
| Eff. R-V | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |
| LOSS | 3.4 | 0 btuh | 2.5 | 0 btuh | 3.4 | 0 btuh | 36.4 | 0 btuh | 37 | 0 btuh |
| GAIN | 1.9 | 0 btuh | 0.3 | 0 btuh | 0.4 | 0 btuh | 89.7 | 0 btuh | 14.7 | 0 btuh |
| | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 1.99 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh |
| GAIN | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh |
| APP. LOAD | | | DUCT PIPE L. | | | | | | | |
| 5057 | | | LOSS | 0% | 0 btuh | | | | | |
| 0 | 0 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh | | | | |

| KIT/BREAK | TOTALS H.L.: 4008 btuh | | H.G.: 4139 btuh | | AREA: 308 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 360 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | |
| | NEW: 36 ft | | EXIST: 0 ft | | NEW: 0 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 0 ft2 | |
| Eff. R-V | 18.53 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | |
| LOSS | 4.0 | 1145 btuh | 8.7 | 0 btuh | 1.3 | 0 btuh | 3.2 | 0 btuh | 2.7 | 0 btuh | 3.4 | 0 btuh | 2.5 | 0 btuh |
| GAIN | 0.8 | 216 btuh | 1.6 | 0 btuh | 0.7 | 0 btuh | 1.8 | 0 btuh | 1.5 | 0 btuh | 1.9 | 0 btuh | 0.3 | 0 btuh |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 62.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 0.0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | |
| LOSS | 24.7 | 0 btuh | 24.7 | 0 btuh | 20.8 | 1289 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 0 btuh |
| GAIN | 4.7 | 0 btuh | 4.7 | 0 btuh | 28.2 | 1747 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 0 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | AIR LEAKAGE EXIST | | VENTILATION CASE 3 | | | | H.G. PEOPLE | |
| TOTAL CONDUCTIVE | | | LOSS | 2683 btuh | LOSS | 0.4405 | 1182 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 142.8 btuh | 239 |
| TOTAL CONDUCTIVE | | | GAIN | 2104 btuh | GAIN | 0.0734 | 154 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 167 btuh | 0 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 0 ft2 | | EXIST: 0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | |
| Eff. R-V | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |
| LOSS | 3.4 | 0 btuh | 2.5 | 0 btuh | 3.4 | 0 btuh | 36.4 | 0 btuh | 37 | 0 btuh |
| GAIN | 1.9 | 0 btuh | 0.3 | 0 btuh | 0.4 | 0 btuh | 89.7 | 0 btuh | 14.7 | 0 btuh |
| | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 12 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 1.99 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 37.3 | 0 btuh | 20.8 | 249 btuh | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh |
| GAIN | 14.9 | 0 btuh | 11.7 | 141 btuh | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh |
| APP. LOAD | | | DUCT PIPE L. | | | | | | | |
| 5057 | | | LOSS | 0% | 0 btuh | | | | | |
| 0 | 0 btuh | 15% | 759 btuh | GAIN | 0% | 0 btuh | | | | |

| LAUD/PWD | TOTALS H.L.: 478 btuh | | H.G.: 1076 btuh | | AREA: 102 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 80 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | |
| | NEW: 8 ft | | EXIST: 0 ft | | NEW: 0 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 0 ft2 | |
| Eff. R-V | 18.53 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 0 ft2 | | EXIST: 0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | |
| Eff. R-V | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOSS | 4.0 | 320 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 | 60 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 | 320 btuh | LOSS | 0.4405 | 141 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 17.0 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 60 btuh | GAIN | 0.0734 | 4 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 5 btuh | 0 | 0 btuh | 15% | 759 btuh | GAIN | 0% | 0 btuh |

| FOYER | TOTALS H.L.: 4636 btuh | | | H.G.: 1240 btuh | | | | | AREA: 207 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 500 ft | | EXIST 0 ft | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 50 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 | 1778 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 | 335 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: 8.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 6 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 24.7 | 1035 btuh | 24.7 | 0 btuh | 20.8 | 166 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 0 btuh | 37.3 | 0 btuh | 20.8 | 125 btuh | 37.3 | 0 btuh |
| GAIN | 4.7 | 195 btuh | 4.7 | 0 btuh | 28.2 | 225 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 0 btuh | 14.9 | 0 btuh | 11.7 | 70 btuh | 14.9 | 0 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | | AIR LEAKAGE EXIST | | | VENTILATION CASE 3 | | | H.G. PEOPLE | | APP. LOAD | | DUCT PIPE L. | | |
| TOTAL CONDUCTIVE | | | LOSS | 3104 btuh | LOSS | 0.4405 | 1367 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 165.2 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 827 btuh | GAIN | 0.0734 | 61 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 66 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |

| DINING | TOTALS H.L.: 2357 btuh | | | H.G.: 1958 btuh | | | | | AREA: 248 ft2 | | C.Height: 10 | | GROSS EXP. WALL | | NEW 260 ft | | EXIST 0 ft | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 26 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 | 913 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 | 172 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: 32.0 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 | 665 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 | 695 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 | 1578 btuh | LOSS | 0.4405 | 695 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 84.0 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 867 btuh | GAIN | 0.0734 | 64 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 69 btuh | 0 | 0 btuh | 10% | 506 btuh | GAIN | 0% | 0 btuh |

## LEVEL 3

| PRI. BED | TOTALS H.L.: 2812 btuh | | | H.G.: 2846 btuh | | | | | AREA: 350 ft2 | | C.Height: 8 | | GROSS EXP. WALL | | NEW 264 ft | | EXIST 0 ft | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 33 ft | | EXIST: 0 ft | | NEW: 350 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 | 905 btuh | 8.7 | 0 btuh | 1.3 | 439 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 | 171 btuh | 1.6 | 0 btuh | 0.7 | 242 btuh | 1.8 | 0 btuh | 1.5 | 0 btuh | 1.9 | 0 btuh | 0.3 | 0 btuh | 0.4 | 0 btuh | 89.7 | 0 btuh | 14.7 | 0 btuh |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 38.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 24.7 | 0 btuh | 24.7 | 0 btuh | 20.8 | 790 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 0 btuh | 37.3 | 0 btuh | 20.8 | 0 btuh | 37.3 | 0 btuh |
| GAIN | 4.7 | 0 btuh | 4.7 | 0 btuh | 28.2 | 1071 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 0 btuh | 14.9 | 0 btuh | 11.7 | 0 btuh | 14.9 | 0 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | | AIR LEAKAGE EXIST | | | VENTILATION CASE 3 | | | H.G. PEOPLE | | APP. LOAD | | DUCT PIPE L. | | |
| TOTAL CONDUCTIVE | | | LOSS | 2133 btuh | LOSS | 0.2648 | 565 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 113.5 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 1484 btuh | GAIN | 0.0734 | 109 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 118 btuh | 2 | 478 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |

| MB. ENS | TOTALS H.L.: 1657 btuh | | | H.G.: 1331 btuh | | | | | AREA: 102 ft2 | | C.Height: 8 | | GROSS EXP. WALL | | NEW 152 ft | | EXIST 0 ft | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 19 ft | | EXIST: 0 ft | | NEW: 102 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 | 485 btuh | 8.7 | 0 btuh | 1.3 | 128 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 | 91 btuh | 1.6 | 0 btuh | 0.7 | 71 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: 9 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 24.7 | 0 btuh | 24.7 | 0 btuh | 20.8 | 457 btuh | 37.3 | 0 btuh | 0 | 0 | 0 | 0 | 20.8 | 0 btuh | 37.3 | 0 btuh | 20.8 | 187 btuh | 37.3 | 0 btuh |

# HEATLOSS/GAIN CALCULATIONS CSA-F280-12

ADDRESS/MODEL: Unit 3802- Elve A,B and C
PROJECT #: RP23047
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3072
LOT: 3802
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GAIN | 4.7 | 0 btuh | 4.7 | 0 btuh | 28.2 | 620 btuh | 14.9 | 0 btuh | 0 | 0 | 0 | 0 | 21.7 | 0 btuh | 14.9 | 0 btuh | 11.7 | 106 btuh | 14.9 | 0 btuh |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | | AIR LEAKAGE EXIST | | | VENTILATION CASE 3 | | H.G. PEOPLE | | | APP. LOAD | | DUCT PIPE L. | | |
| TOTAL CONDUCTIVE | | | LOSS | 1257 btuh | LOSS | 0.2648 | 333 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 66.9 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 888 btuh | GAIN | 0.0734 | 65 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 71 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |

| MB.ENS.WC | TOTALS H.L.: 494 btuh | | | H.G.: 228 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 | | | | | |
| | NEW: 6 ft | EXIST: 0 ft | NEW: 25 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 | 4.0 156 btuh | 8.7 0 btuh | 1.3 31 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 29 btuh | 1.6 0 btuh | 0.7 17 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: 9 ft2 | EXIST: 0 ft2 | | | | |
| Eff. R-V | 3.01 | 3.01 | 3.57 | 1.99 | 0 | 0 | 3.57 | 1.99 | 3.57 | 1.99 | | | | |
| LOSS | 24.7 0 btuh | 24.7 0 btuh | 20.8 0 btuh | 37.3 0 btuh | 0 0 | 0 0 | 20.8 0 btuh | 37.3 0 btuh | 20.8 187 btuh | 37.3 0 btuh | | | | |
| GAIN | 4.7 0 btuh | 4.7 0 btuh | 28.2 0 btuh | 14.9 0 btuh | 0 0 | 0 0 | 21.7 0 btuh | 14.9 0 btuh | 11.7 106 btuh | 14.9 0 btuh | | | | |
| FUND. CONDUCTIVE HEATLOSS | | 0 btuh | AIR LEAKAGE NEW | | AIR LEAKAGE EXIST | | VENTILATION CASE 3 | | H.G. PEOPLE | | APP. LOAD | | DUCT PIPE L. | |
| TOTAL CONDUCTIVE | | LOSS 375 btuh | LOSS 0.2648 | 99 btuh | LOSS 0.0000 | 0 btuh | LOSS 0.1 | 20.0 btuh | 239 | | 5057 | | LOSS 0% | 0 btuh |
| TOTAL CONDUCTIVE | | GAIN 152 btuh | GAIN 0.0734 | 11 btuh | GAIN 0.0000 | 0 btuh | GAIN 0.08 | 12 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN 0% | 0 btuh |

| BED 2 WIC | TOTALS H.L.: 352 btuh | | | H.G.: 99 btuh | AREA: 34 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: 34 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 | 4.0 224 btuh | 8.7 0 btuh | 1.3 43 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 42 btuh | 1.6 0 btuh | 0.7 24 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 267 btuh | LOSS 0.2648 | 71 btuh | LOSS 0.0000 | 0 btuh | LOSS 0.1 | 14.2 btuh | 239 | | 5057 | | LOSS 0% | 0 btuh |
| TOTAL CONDUCTIVE | | GAIN 66 btuh | GAIN 0.0734 | 5 btuh | GAIN 0.0000 | 0 btuh | GAIN 0.08 | 5 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN 0% | 0 btuh |

| SHRD. BATH | TOTALS H.L.: 924 btuh | | | H.G.: 335 btuh | AREA: 82 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: 82 ft2 | EXIST: 0 | NEW: 0 | EXIST: 0 | NEW: 72 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 | 1.3 103 btuh | 3.2 0 btuh | 2.7 0 btuh | 3.4 0 btuh | 2.5 179 btuh | 3.4 0 btuh | 36.4 0 btuh | 37 0 btuh | | | | |
| GAIN | 0.8 36 btuh | 1.6 0 btuh | 0.7 57 btuh | 1.8 0 btuh | 1.5 0 btuh | 1.9 0 btuh | 0.3 19 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 640 btuh | LOSS 0.2648 | 169 btuh | LOSS 0.0000 | 0 btuh | LOSS 0.1 | 34.1 btuh | 239 | | 5057 | | LOSS 10% | 81 btuh |
| TOTAL CONDUCTIVE | | GAIN 206 btuh | GAIN 0.0734 | 15 btuh | GAIN 0.0000 | 0 btuh | GAIN 0.08 | 16 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN 10% | 21 btuh |

| COMP NOOK | TOTALS H.L.: 3443 btuh | | | H.G.: 2999 btuh | AREA: 249 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: 249 ft2 | EXIST: 0 | NEW: 0 | EXIST: 0 | NEW: 42 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 | 4.0 865 btuh | 8.7 0 btuh | 1.3 312 btuh | 3.2 0 btuh | 2.7 0 btuh | 3.4 0 btuh | 2.5 105 btuh | 3.4 0 btuh | 36.4 0 btuh | 37 0 btuh | | | | |
| GAIN | 0.8 163 btuh | 1.6 0 btuh | 0.7 172 btuh | 1.8 0 btuh | 1.5 0 btuh | 1.9 0 btuh | 0.3 11 btuh | 0.4 0 btuh | 89.7 0 btuh | 14.7 0 btuh | | | | |
| | DOORS | | EAST/WEST WINDOWS | | SE/SW WINDOWS | | SOUTH WINDOWS | | NORTH WINDOWS | | | | | |
| | NEW: 0.0 ft2 | EXIST: 0.0 ft2 | NEW: 41.0 ft2 | EXIST: 0.0 ft2 | NEW: | EXIST: | NEW: 23.0 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 | 20.8 852 btuh | 37.3 0 btuh | 0 0 | 0 0 | 20.8 478 btuh | 37.3 0 btuh | 20.8 0 btuh | 37.3 0 btuh | | | | |
| GAIN | 4.7 0 btuh | 4.7 0 btuh | 28.2 1155 btuh | 14.9 0 btuh | 0 0 | 0 0 | 21.7 499 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 2612 btuh | LOSS 0.2648 | 692 btuh | LOSS 0.0000 | 0 btuh | LOSS 0.1 | 139.0 btuh | 239 | | 5057 | | LOSS 0% | 0 btuh |
| TOTAL CONDUCTIVE | | GAIN 2001 btuh | GAIN 0.0734 | 147 btuh | GAIN 0.0000 | 0 btuh | GAIN 0.08 | 159 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN 0% | 0 btuh |

| ENS 2 | TOTALS H.L.: 588 btuh | | | H.G.: 369 btuh | AREA: 44 ft2 | | C.Height: 8 | | GROSS EXP. WALL | | NEW 64 ft | | EXIST 0 ft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EXPOSED WALLS | | EXPOSED CEILING W/ATTIC | | EXPOSED CEILING NO ATTIC | | EXPOSED FLOORS | | SKYLIGHT | | | | | |
| | NEW: 8 ft | EXIST: 0 ft | NEW: 44 ft2 | EXIST: 0 | NEW: 0 | EXIST: 0 | NEW: 0 ft2 | EXIST: 0 ft2 | NEW: 0.0 ft2 | EXIST: 0.0 ft2 | | | | |

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

ADDRESS/MODEL: Unit 3802- Elve A,B and C
PROJECT #: RP23047
COMPLIANCE PACKAGE: SB 12

CLIENT: Royal Pine Homes
GTA: 3072
LOT: 3802
SITE: Forestside Estates

MCCALLUM HVAC DESIGN INC

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eff. R-V | 18.53 | | 8.50 | | 59.22 | | 22.86 | | 27.65 | | 22.05 | | 29.80 | | 22.05 | | 2.04 | | 2.03 | |
| LOSS | 4.0 | *224 btuh* | 8.7 | *0 btuh* | 1.3 | *55 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 | *42 btuh* | 1.6 | *0 btuh* | 0.7 | *30 btuh* | 1.8 | *0 btuh* | 1.5 | *0 btuh* | 1.9 | *0 btuh* | 0.3 | *0 btuh* | 0.4 | *0 btuh* | 89.7 | *0 btuh* | 14.7 | *0 btuh* |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 8.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 24.7 | *0 btuh* | 24.7 | *0 btuh* | 20.8 | *0 btuh* | 37.3 | *0 btuh* | 0 | 0 | 0 | 0 | 20.8 | *166 btuh* | 37.3 | *0 btuh* | 20.8 | *0 btuh* | 37.3 | *0 btuh* |
| GAIN | 4.7 | *0 btuh* | 4.7 | *0 btuh* | 28.2 | *0 btuh* | 14.9 | *0 btuh* | 0 | 0 | 0 | 0 | 21.7 | *174 btuh* | 14.9 | *0 btuh* | 11.7 | *0 btuh* | 14.9 | *0 btuh* |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | | AIR LEAKAGE EXIST | | | VENTILATION CASE 3 | | H.G. PEOPLE | | APP. LOAD | | DUCT PIPE L. | | | |
| TOTAL CONDUCTIVE | | | LOSS | 446 btuh | LOSS | 0.2648 | 118 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 23.7 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 246 btuh | GAIN | 0.0734 | 18 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 20 btuh | 0 | 0 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |
| **BED 4** | | | ***TOTALS H.L.: 1440 btuh*** | | | | ***H.G.: 1270 btuh*** | | AREA: 248 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: 248 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 | *408 btuh* | 8.7 | *0 btuh* | 1.3 | *311 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 | *77 btuh* | 1.6 | *0 btuh* | 0.7 | *172 btuh* | 1.8 | *0 btuh* | 1.5 | *0 btuh* | 1.9 | *0 btuh* | 0.3 | *0 btuh* | 0.4 | *0 btuh* | 89.7 | *0 btuh* | 14.7 | *0 btuh* |
| | DOORS | | | | EAST/WEST WINDOWS | | | | SE/SW WINDOWS | | | | SOUTH WINDOWS | | | | NORTH WINDOWS | | | |
| | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0.0 ft2 | | EXIST: 0.0 ft2 | | NEW: | | EXIST: | | NEW: 18.0 ft2 | | EXIST: 0.0 ft2 | | NEW: 0 ft2 | | EXIST: 0 ft2 | |
| Eff. R-V | 3.01 | | 3.01 | | 3.57 | | 1.99 | | 0 | | 0 | | 3.57 | | 1.99 | | 3.57 | | 1.99 | |
| LOSS | 24.7 | *0 btuh* | 24.7 | *0 btuh* | 20.8 | *0 btuh* | 37.3 | *0 btuh* | 0 | 0 | 0 | 0 | 20.8 | *374 btuh* | 37.3 | *0 btuh* | 20.8 | *0 btuh* | 37.3 | *0 btuh* |
| GAIN | 4.7 | *0 btuh* | 4.7 | *0 btuh* | 28.2 | *0 btuh* | 14.9 | *0 btuh* | 0 | 0 | 0 | 0 | 21.7 | *391 btuh* | 14.9 | *0 btuh* | 11.7 | *0 btuh* | 14.9 | *0 btuh* |
| FUND. CONDUCTIVE HEATLOSS | | | | 0 btuh | AIR LEAKAGE NEW | | | AIR LEAKAGE EXIST | | | VENTILATION CASE 3 | | H.G. PEOPLE | | APP. LOAD | | DUCT PIPE L. | | | |
| TOTAL CONDUCTIVE | | | LOSS | 1093 btuh | LOSS | 0.2648 | 289 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 58.2 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 640 btuh | GAIN | 0.0734 | 47 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 51 btuh | 1 | 239 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |
| **BED 3** | | | ***TOTALS H.L.: 4385 btuh*** | | | | ***H.G.: 4173 btuh*** | | AREA: 222 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: 222 ft2 | | EXIST: 0 | | NEW: 0 | | EXIST: 0 | | NEW: 217 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 | *741 btuh* | 8.7 | *0 btuh* | 1.3 | *278 btuh* | 3.2 | *0 btuh* | 2.7 | *0 btuh* | 3.4 | *0 btuh* | 2.5 | *540 btuh* | 3.4 | *0 btuh* | 36.4 | *0 btuh* | 37 | *0 btuh* |
| GAIN | 0.8 | *140 btuh* | 1.6 | *0 btuh* | 0.7 | *154 btuh* | 1.8 | *0 btuh* | 1.5 | *0 btuh* | 1.9 | *0 btuh* | 0.3 | *58 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: 71.0 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 | *1476 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 | *2001 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 | 3035 btuh | LOSS | 0.2648 | 804 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 161.5 btuh | 239 | | 5057 | | LOSS | 10% | 384 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 2352 btuh | GAIN | 0.0734 | 173 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 187 btuh | 1 | 239 btuh | 0% | 0 btuh | GAIN | 10% | 259 btuh |
| **BED 2** | | | ***TOTALS H.L.: 1166 btuh*** | | | | ***H.G.: 878 btuh*** | | AREA: 172 ft2 | | C.Height: 8 | | GROSS EXP. WALL | | *NEW 96 ft* | | *EXIST 0 ft* | | | |
| | EXPOSED WALLS | | | | EXPOSED CEILING W/ATTIC | | | | EXPOSED CEILING NO ATTIC | | | | EXPOSED FLOORS | | | | SKYLIGHT | | | |
| | NEW: 12 ft | | EXIST: 0 ft | | NEW: 172 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 | *316 btuh* | 8.7 | *0 btuh* | 1.3 | *216 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 | *119 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 | 885 btuh | LOSS | 0.2648 | 234 btuh | LOSS | 0.0000 | 0 btuh | LOSS | 0.1 | 47.1 btuh | 239 | | 5057 | | LOSS | 0% | 0 btuh |
| TOTAL CONDUCTIVE | | | GAIN | 378 btuh | GAIN | 0.0734 | 28 btuh | GAIN | 0.0000 | 0 btuh | GAIN | 0.08 | 30 btuh | 1 | 239 btuh | 0% | 0 btuh | GAIN | 0% | 0 btuh |

**LEVEL 4**

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

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

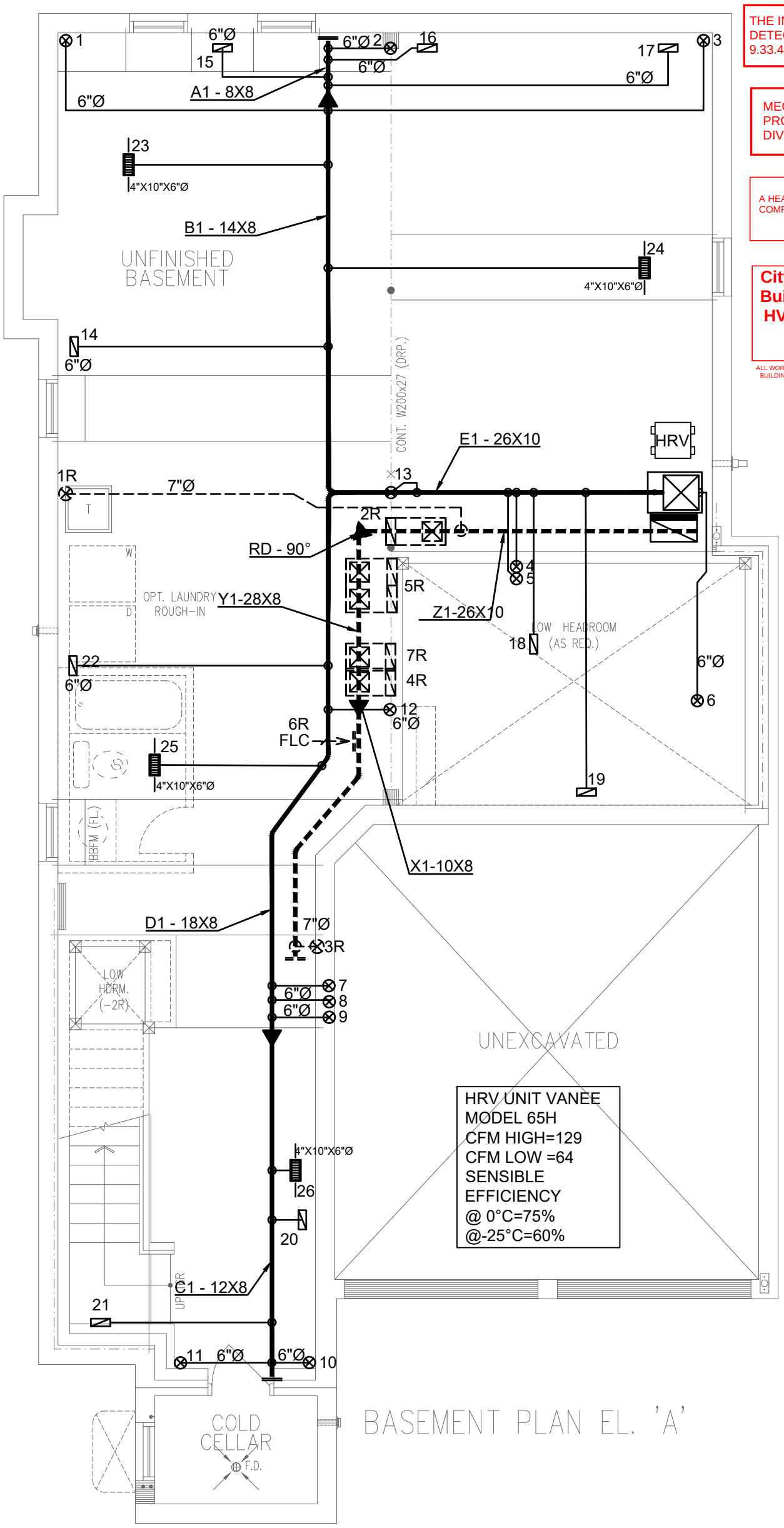
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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

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

**City of Brampton Building Division HVAC Reviewed**
2023/07/18
Shruti Desai

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




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

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

# PROPOSED BASEMENT

DATE: JUN/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA/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.

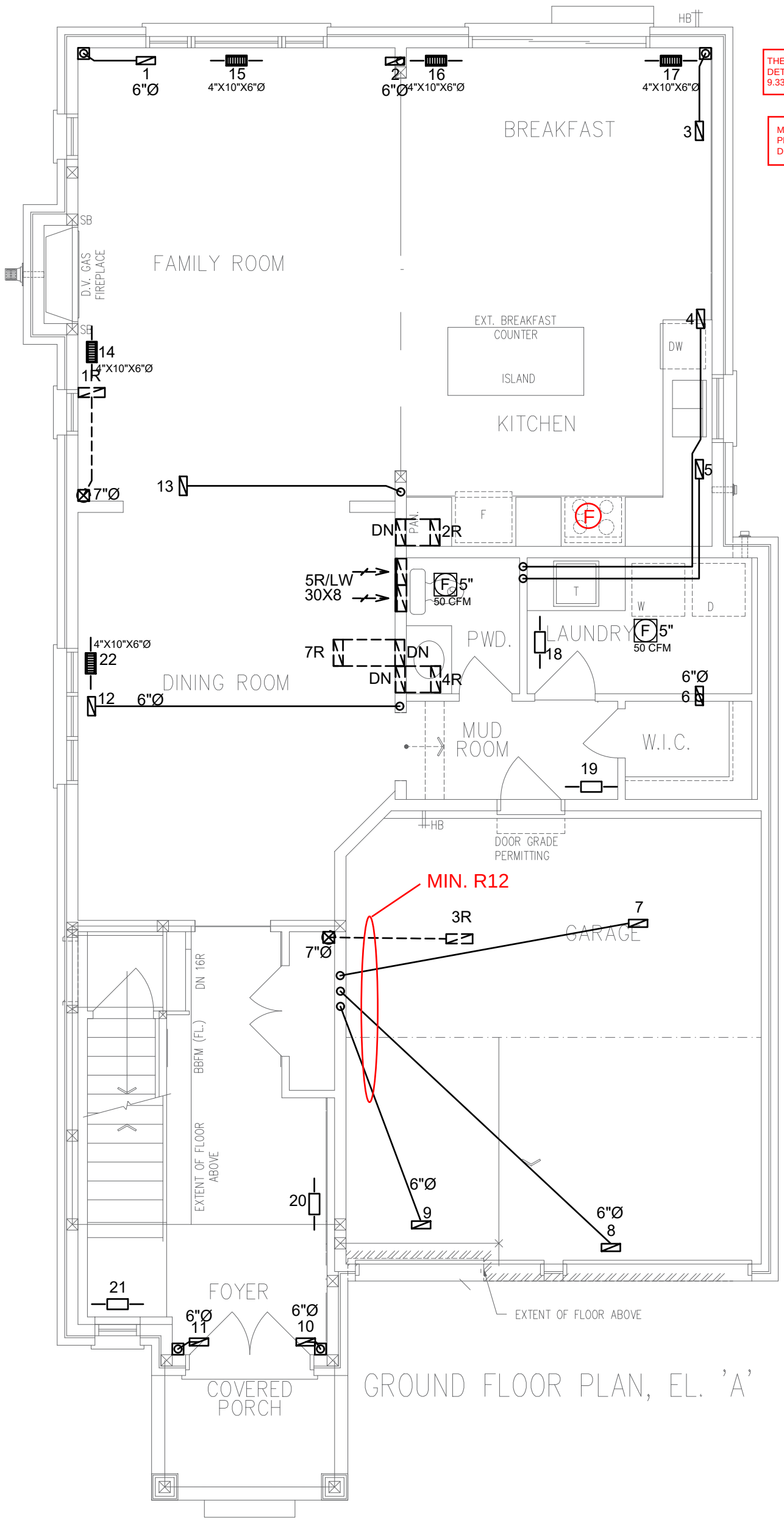
| NAME | SIGNATURE | BCIN / BCDN |
|---|---|---|
| Doug McCallum | | 102614 |

| | | |
|---|---|---|
| TOTAL LOSS | 48,861 BTUH | |
| TOTAL GAIN | 31,153 BTUH | |
| HEATING UNIT | LENNOX | |
| MODEL # | EL296UH070XE36B | 3.0 TONS |
| OUTPUT | 64,000 BTUH | 1145 CFM |

| | | | |
|---|---|---|---|
| MODEL: | Unit 3802 - Elev A,B and C | | |
| PROJECT #: | RP23047 | SQFT: 3072 | W%: 12.49 |
| 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**
2023/07/18
Shruti Desai

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

GROUND FLOOR PLAN, EL. 'A'

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

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
- COORDINATE EXACT LOCATION OF GRILLES AND REGISTERS WITH OTHER TRADES, SITE CONDITIONS, OWNER BUILDER, AND/OR ARCHITECT BEFORE INSTALLATION.
- 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: JUN/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA/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.

| NAME | SIGNATURE | BCIN / BCDN |
|---|---|---|
| Doug McCallum | | 102614 |

| | | |
|---|---|---|
| TOTAL LOSS | 48,861 BTUH | |
| TOTAL GAIN | 31,153 BTUH | |
| HEATING UNIT | LENNOX | |
| MODEL # | EL296UH070XE36B | 3.0 TONS |
| OUTPUT | 64,000 BTUH | 1145 CFM |

| | | | |
|---|---|---|---|
| MODEL: | Unit 3802 - Elev A,B and C | | |
| PROJECT #: | RP23047 | SQFT: 3072 | W%: 12.49 |
| SITE: | Forestside Estates, Brampton | | |
| FOR: | Royal Pine Homes | | |
| BUILDER: | Royal Pine Homes | | |

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

M2

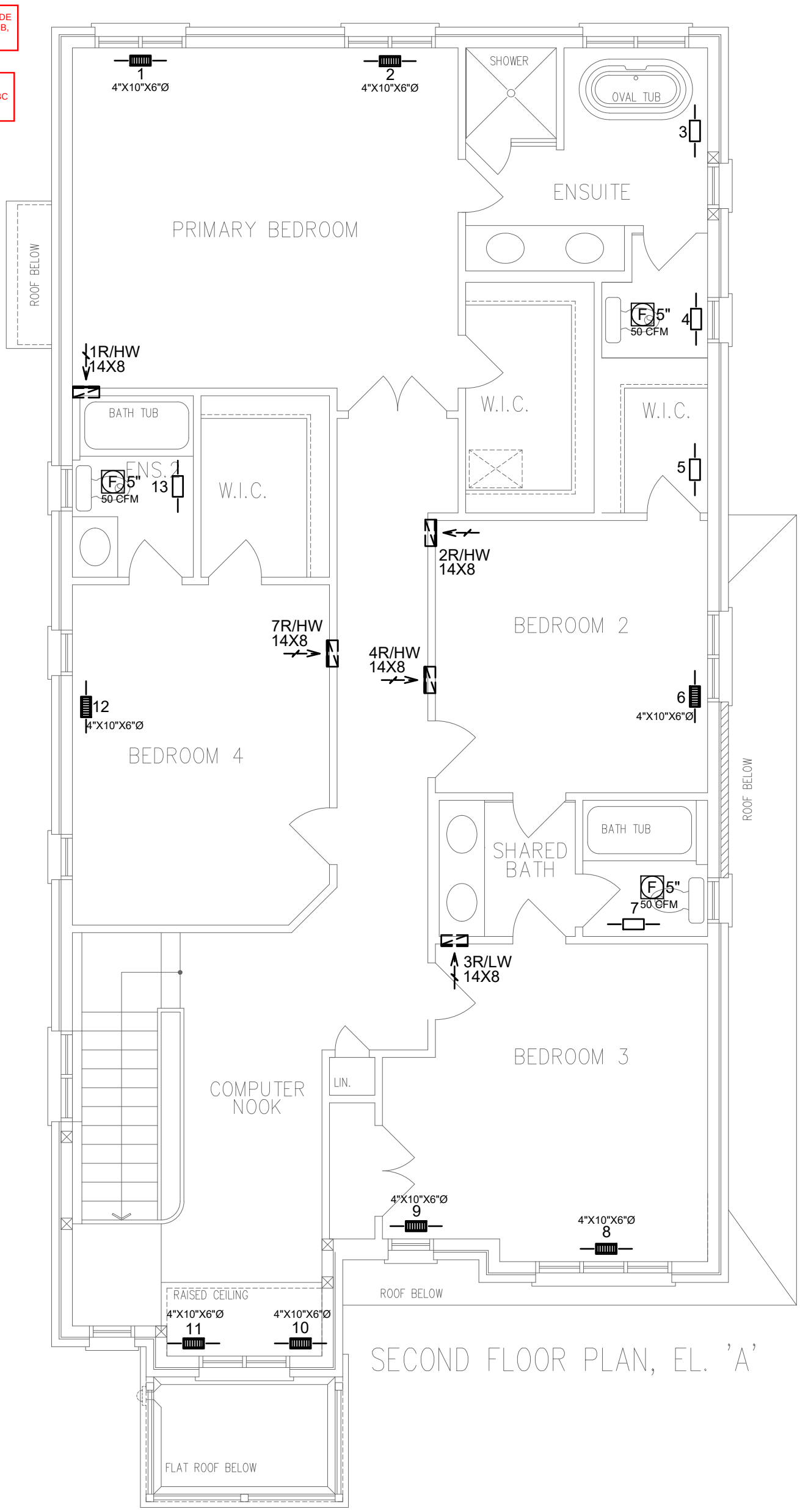
THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

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

**City of Brampton Building Division HVAC Reviewed**

2023/07/18
Shruti Desai

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




SECOND FLOOR PLAN, EL. 'A'

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

- DESIGNER TO BE NOTIFIED OF ALL & ANY CHANGES TO THE STRUCTURE AND/OR SYSTEM DESIGN BEFORE INSTALLATION BEGINS. INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
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# PROPOSED 2ND FLOOR

DATE: JUN/2023 | SCALE: 3/16"=1'-0" | DRAWN BY: MMA/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.

| NAME | SIGNATURE | BCIN / BCDN |
|---|---|---|
| Doug McCallum | | 102614 |

| | | |
|---|---|---|
| TOTAL LOSS | 48,861 BTUH | |
| TOTAL GAIN | 31,153 BTUH | |
| HEATING UNIT | LENNOX | |
| MODEL # | EL296UH070XE36B | 3.0 TONS |
| OUTPUT | 64,000 BTUH | 1145 CFM |

| | | | |
|---|---|---|---|
| MODEL: | Unit 3802 - Elev A,B and C | | |
| PROJECT #: | RP23047 | SQFT: 3072 | W%: 12.49 |
| SITE: | Forestside Estates, Brampton | | |
| FOR: | Royal Pine Homes | | |
| BUILDER: | Royal Pine Homes | | |

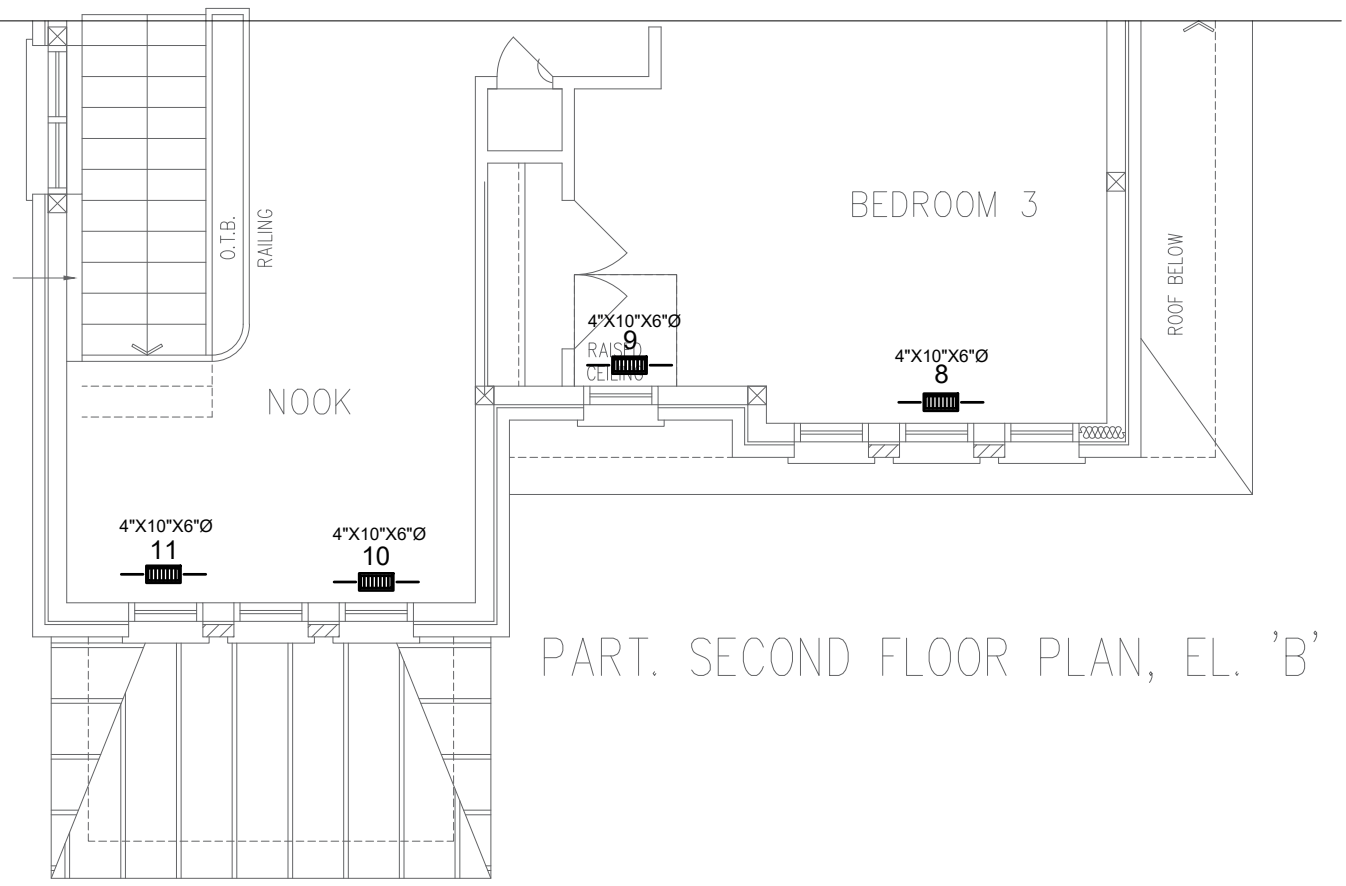
MCCALLUM HVAC DESIGN INC
Brampton, Ontario, 905-840-8166, info@mccallumhvac.com

M3

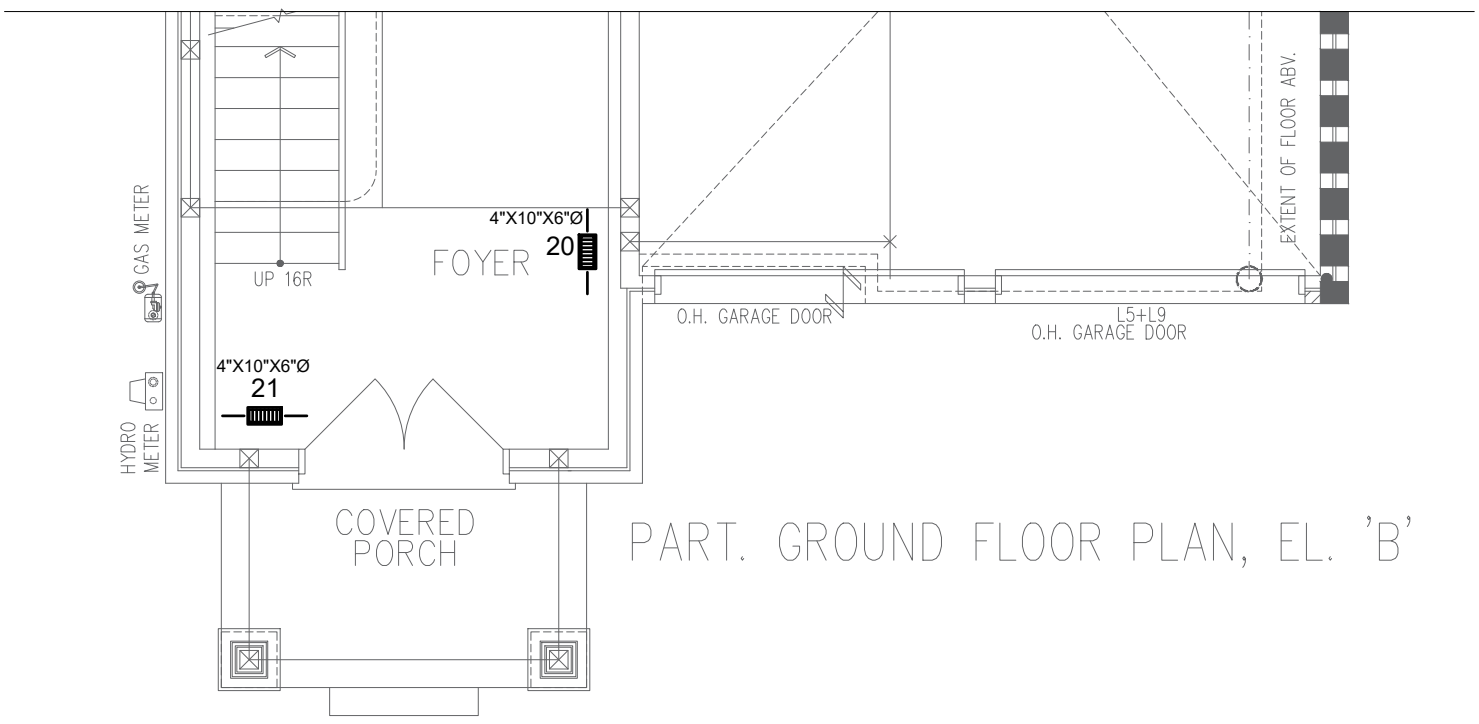
**City of Brampton**
**Building Division**
**HVAC Reviewed**

2023/07/18
Shruti Desai

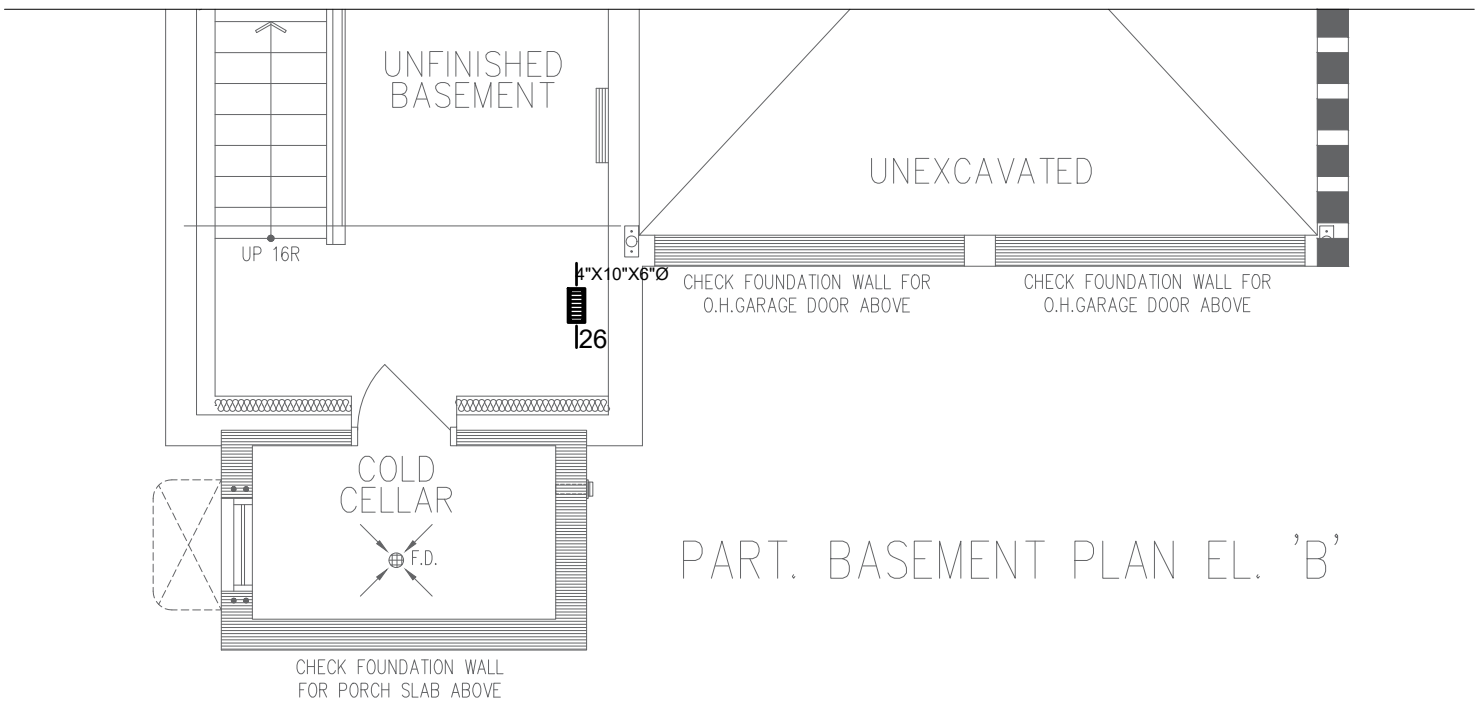
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED




PART. SECOND FLOOR PLAN, EL. 'B'




PART. GROUND FLOOR PLAN, EL. 'B'




PART. BASEMENT PLAN EL. 'B'

| | | | |
|---|---|---|---|
| 3RD | # S/A - | # R/A - | # FANS - |
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# PARTIAL PLANS

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

SB-12 PERFORMANCE
CSA F280-12

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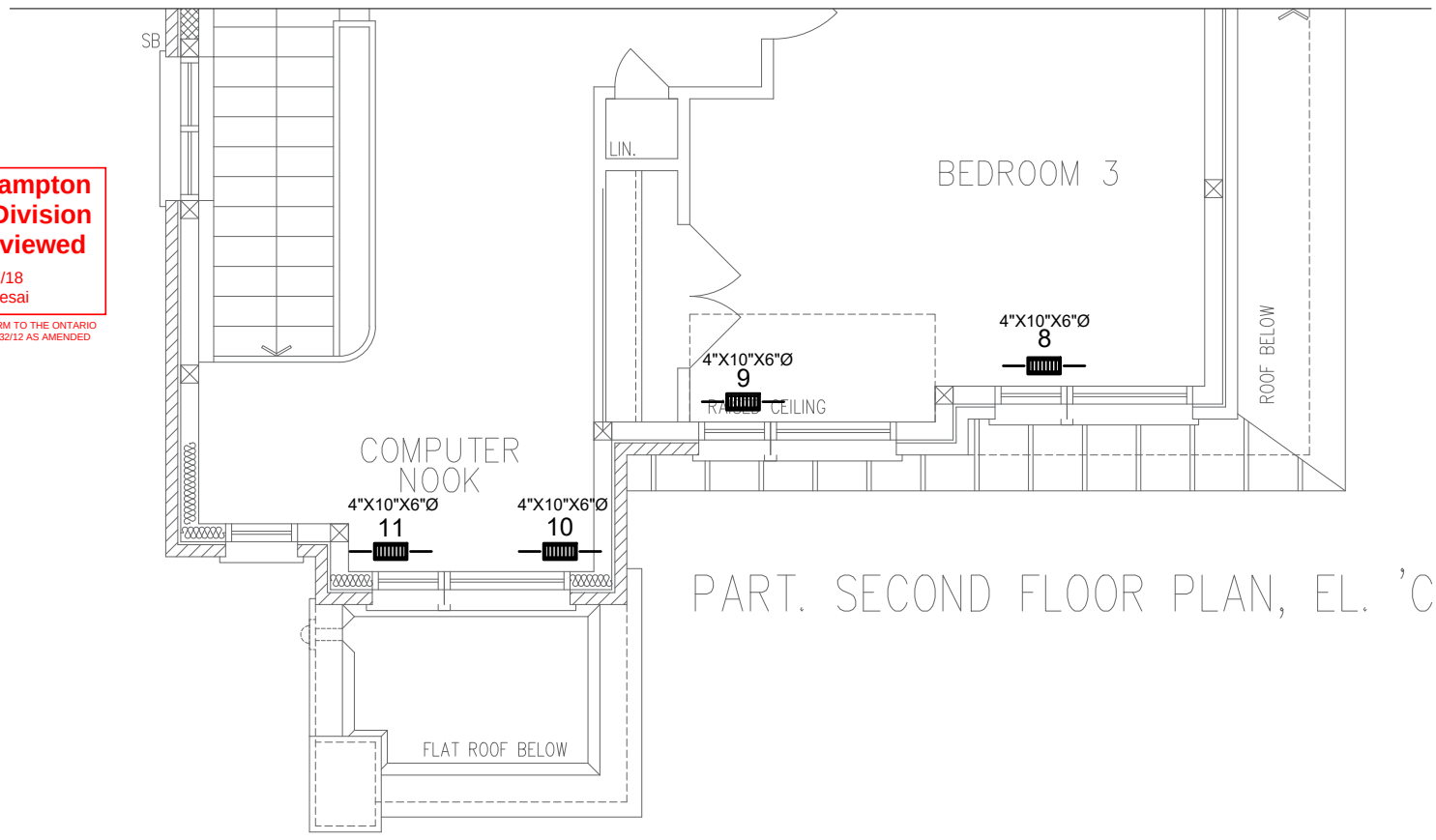
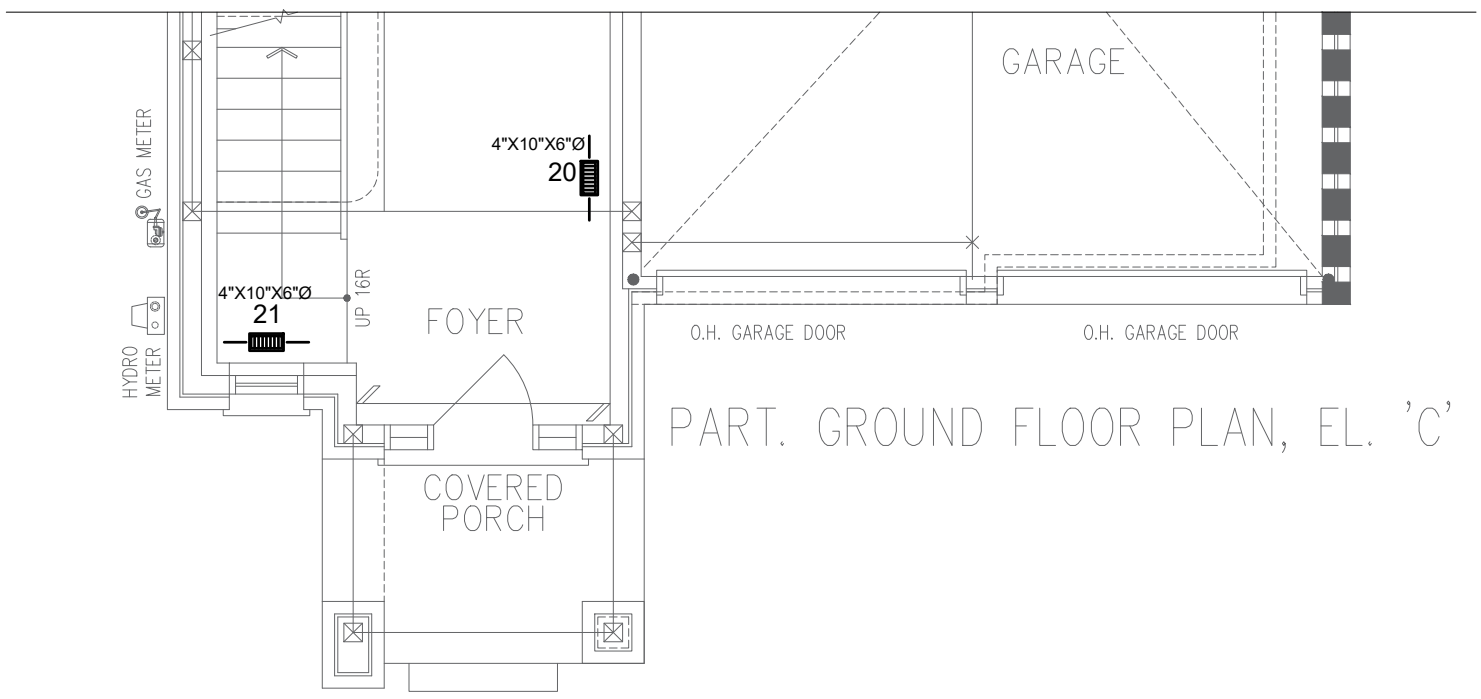
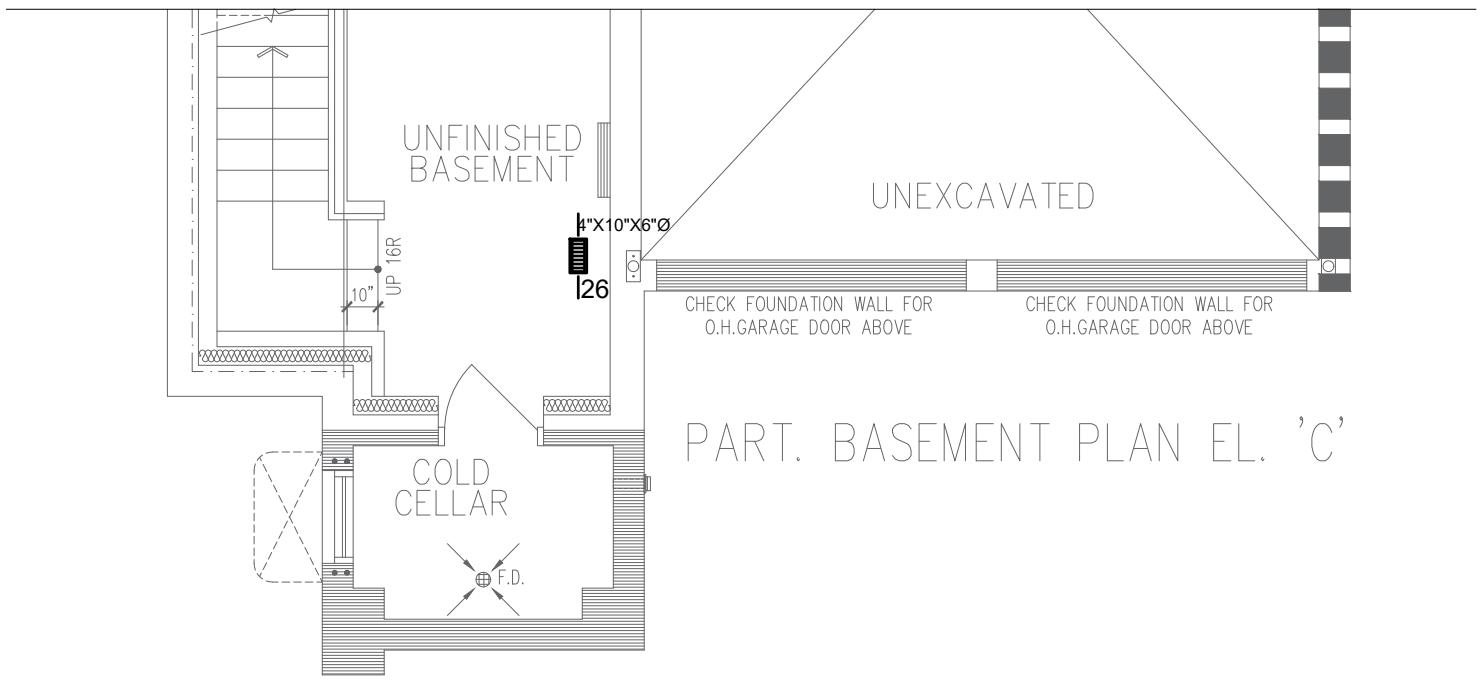



PART. SECOND FLOOR PLAN, EL. 'C'




PART. GROUND FLOOR PLAN, EL. 'C'




PART. BASEMENT PLAN EL. 'C'

| | | | |
|---|---|---|---|
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# *PARTIAL PLANS*

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M5