Richmond Hill Building Division

Energy Efficiency Design Summary: ther Acceptable Compliance Methods

HVAC REVIEWED rormance & Other Acceptable Compliance Methods
(Building Code Part 9, Residential)

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

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

	For use by Principal Authority					
Application No:		Model/Certification Number				
A. Project Information	•					
Building number, street name			Unit number	Lot/Con		
Model Type 38-11 Belvedere	l Postal code					
Municipality	Reg. Plan number / other descript	ion				
Richmond Hill						
B. Compliance Option [indicate the building code compliance option being employed in this house design]						
■ SB-12 Performance* [SB-12 - 3.1.:	rmance results using	an approved softwa	are (see guide)			
☐ <i>ENERGY STAR</i> ®* [SB-12 - 3.1.3.]	* Attach Builder Option	n Package [BOP] for	m			
☐ <i>R-2000</i> ® *[SB-12 - 3.1.3.]	* Attach R-2000 HOT	2000 Report	00 Report			
	••••					
C. Project Building Design Co		ou Coasa Hasting Fu	al Causas			
	Heating Equipment Efficier ■ ≥ 92% AFUE			Solid Fuel		
= = = : (■ 2 92% AFUE □ ≥ 84% < 92% AFUE			Earth Energy		
Ratio of Windows, Skylights & Glass (V				Latti Liicigy		
Ratio of Willdows, Skylights & Glass (V	v, 3 & G) to vvali Alea		Other Building Characteristics □ Log/Post&Beam □ ICF Above Grade □ ICF Basement			
Area of walls = $336.75 \text{ m}^2 \text{ or}$ ft ²		"	□ Walkout Basemer			
A second	W, S & G % = 11.08	☐ Air Conditioning				
	W, S & G % =	□ Air Source Heat				
Area of W, S & G = $\frac{37.32}{m^2}$ orft ²			rce Heat Pump (GSHP)			
SB-12 Performance Reference Building	Design Package indicating	the prescriptive pack	age to be compared	for compliance		
SP 13 Referenced Building Reckage (input design package): Reckage: A1 Table: 3.1.1.2.A						
SB-12 Referenced Building Package	(input design package): P	ackage: ^ '	Table: 3.	1.1.2.7		

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

Building Component		SI / R values n 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% AFL	IE
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))	42	# Showers 2
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/(m²•K) or Btu/(h•ft²•F) but not both.

	E. Performance Design Verification [Subsection 3.1.2. Pe	erformance Compliance]	
	The annual energy consumption using Subsection 3.1.1. Si	3-12 Reference Building	Package is 153.09 GJ (1 GJ =1000MJ)
	The annual energy consumption of this house as designed	is <u>120.40</u> GJ	
	The software used to simulate the annual energy use of the	building is: REMRAT	E 16.0.2 Canada
	The building is being designed using an air tightness baseli	ne of:	
	☐ OBC reference ACH, NLA or NLR default values (no	depressurization test re	equired)
	■ Targeted ACH, NLA or NLR. Depressurization test to	o meet <u>2.5</u> _AC	CH50 or NLR or NLA
	Reduction of overall thermal performance of the pro- envelope of the compliance package it is compared		pe is not more than 25% of the
	☐ Standard Operating Conditions Applied (A-3.1.2.1 - 4	4.6.2)	
	☐ Reduced Operating Conditions for Zero-rated homes	s Applied (A-3.1.2.1 - 4.	6.2.5)
	☐ On Site Renewable(s): Solar:		
	Other Types:		
	E ENERGY STAP or P.2000 Performance Design V	Varification (Cubacation	2.4.2. Other Assentable Contributes Methods
	 F. ENERGY STAR or R-2000 Performance Design No. 1 The NRCan "ENERGY STAR for New Homes Standard design result in the building performance meeting or esupplementary Standard SB12 (A-3.1.3.1). 	rd Version 12.6 " technic	cal requirements, applied to this building
	☐ The NRCan, "2012 R-2000 Standard " technical require performance meeting or exceeding the prescriptive per (A-3.1.3.1).		
I	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 I	licerise #
L			
ſ	G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) pro		
l	Qualified Designer: Declaration of designer to have reviewed and take Name	BCIN BCIN	work. Signature
			1 Dette .
۱	MARTHA SANDOVAL	103017	(h hullows

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.

- <u>SB-12 Performance</u> 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.
- <u>ENERGY STAR</u> houses must be designed to <u>ENERGY STAR</u> requirements and verified on completion by a licensed energy evaluator and/or service organization. The <u>ENERGY STAR</u> 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 <u>SB-12 Prescriptive</u> 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 <u>SB-12 Performance</u> option is used and an air tightness of less than 3.0 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of detached houses, or 3.5 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of attached houses is necessary to meet the required energy efficiency standard.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

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

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

Code Compliance Certificate

Project Title: Model 38-11 - Proposed

Report Date June 22, 2021

Data Filename Model 38-11 - Proposed.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) 3850 Conditioned Volume (cubic ft) 37620 Insulated Shell Area (sq ft) 8308

Construction Site Owner Builder HERS Rater

Model 38-11 - Proposed Royal Pine Homes Royal Pine Homes Clearsphere Consulting

Richmond Hill, Model 38-11 - Proposed 3550 Langstaff Road, Suite 200 John Godden Richmond Hill, Woodbridge, Ontario L4L 9G3 416-481-4218

Annual Energy Consumption KWH GJ

Reference Home Package A1

Proposed House Better Than Code

127711	
42524.11	153.09
33445.26	120.40
21.3%	

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: Std-R60, Attic G2*******	1516	20.0	40.0
Above-Grade Walls			
AG Wall 1: Std R22 G2 + 1.5 @16*********	3201	22.0	1.5
Joist 1: Cond -> ambient	339	22.0	1.5
Window 1: U=0.282, SHGC 0.45**********	385		3.5
Door 1: R6*******	9		6.0
Door 2: Code	18		4.0
Floors Over Garage			
Floor 1: Std-R31 G2*******	371	31.0	0.0
Basement Walls			

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

Code Compliance Certificate

Building Summary	Gross Area or	Continuous	
Assembly	Perimeter	Cavity R-Value	R-Value
Wall 1: Std-R-20 Blanket G2*******	1680	0.0	20.0
Window 2: U=0.282, SHGC 0.45********	17		3.5
Door 3	17		4.0
Mechanical Equipment	Name/Type	Size/Input	Efficiency
Heating: Fuel-fired air distribution	96 AFUE Gas ECM 64k********	64.0 kBtuh	96.0 AFUE
Water Heating: Conventional, Gas	50 gal. 0.90 EF Gas*******	50 gal	0.90 EF
HRV/ERV		66.0 CFM	75.0% sen/ 0.0% tot

Drain Water Heat Recovery

2 of 2 Showers connected and 42.0% unit efficiency

Air Exchange

2.50 ACH50 or: 0.19 CFM50/sf

Efficient Lighting

90.0% Interior, 90.0% Exterior, 0.0% Garage

Renewables

N/A

Property

Royal Pine Homes Model 38-11 - Proposed

Richmond Hill,

Weather: Toronto, ON_CAN Model 38-11 - Proposed Model 38-11 - Proposed.blg Organization

Clearsphere Consulting

416-481-4218 John Godden

Builder

Royal Pine Homes

HERS

Projected Rating June 22, 2021 Rating No:N/A Rater ID:0001

Property/Builder Information

Building Name Owner's Name **Property Address**

City, St, Zip

Phone Number

Model 38-11 - Proposed

Royal Pine Homes

Model 38-11 - Proposed

Richmond Hill.

Builder's Name

Phone Number

Fmail Address

Plan/Model Name Community/Development

Identifier/Other

Royal Pine Homes

Model

Centerfiled

Organization Information

Organization Name

Address

Website

City, St, Zip

Phone Number

Clearsphere Consulting

1632 O'Connor Dr.

Toronto, ON_CAN M4B 3P4

416-481-4218

www.clearsphere.ca

Rating/RESNET Information

Provider ID Sample Set ID

Registry ID

Registry Date Registered

Rater's Name

Rater's ID

Rater's Email

John Godden

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2006-001

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howard@clearsphere.ca

Last Field Insp

Rating Type Reason for Rating Rating Number

Rating Permit Date

June 22, 2021

Projected Rating

New Home

11/22/2019

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Property

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Organization

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Projected Rating June 22, 2021 Rating No:N/A Rater ID:0001

General Building Information

Area of Conditioned. Space(sq ft) 3850

Volume of Conditioned. Space 37620

Year Built 2021

Housing Type Single-family detached

Level Type(Apartments Only)

Floors on or Above-Grade

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

Thermal Boundary Location

N/A

Foundation Wall Information

. canaarion ma								
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	Std-R-20 Blanket G2******	Cond->ambient/gri	r 170.00	10.08	9.08	1.00	0.034	0.048

^{*} Uo Value Combo combines wall, airfilm, and soil path

Foundation Wall Library List

Foundation Wall: Std-R-20 Blanket G2*********

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 2

Ins top 0.00 ft from top of wall
Ins Bottom 0.00 ft from bottom of wall

Exterior Insulation

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Foundation Wall Library List

R-Value 0.0

Ins top 0.00 ft from top of wall on the 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*******	1167	9.08	170	170	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	3
Radiant Slab	No

Note

Frame Floor Information

Name	Library Entry	Location	Area(sq ft)	Uo Value
Exposed Floor	Std-R31 G2*******	Btwn cond & garage	371	0.039

Frame Floor Library List

Floor: Std-R31 G2*******

Information From Quick Fill Screen

Continous Insulation R-Value0.0Cavity Insulation R-Value31.0Cavity Insulation Thickness (in.)9.5Cavity Insulation Grade2

Joist Size (w x h, in) 1.5 x 9.5 Joist Spacing (in oc) 16.0

Property

Royal Pine Homes Model 38-11 - Proposed Richmond Hill,

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Frame Floor Library List

Framing Factor - (default) 0.1300
Floor Covering CARPET

Note

Rim and Band Joist Information

		· • · ·						
Name	Location	Area(sq ft)	Continuous	Framed	Cavity Ins	Joist	Insulation	Uo Value
			Ins	Cavity Ins	Thk(in)	Spacing	Grade	
Rim Band Joist	Cond -> ambient	338.80	1.5	22.0	5.5	16.0	2	0.049

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Aha	/e-Grad	ווב/// בוּ

ABOVO CIAGO Wai	•				
Name	Library Entry	Location	Exterior Color	Area(sq ft)	Uo Value
AGW	Std R22 G2 + 1.5 @16*******	Cond -> ambient	Medium	3201.10	0.053

Above-Grade Wall Library List

Above-Grade Wall: Std R22 G2 + 1.5

@16********

Information From Quick Fill Screen

Wall Construction Type Std Frame w/Brick Veneer

Continuous Insulation (R-Value)1.5Frame Cavity Insulation (R-Value)22.0Frame Cavity Insulation Thickness (in)5.5Frame Cavity Insulation Grade2Stud Size (w x d, in)1.5 x 5.5

Stud Spacing (in o.c.)

Framing Factor - (default)

Gypsum Thickness (in)

16.0

0.2300

0.5

Note

Window	Information											
							Overhang		Inte	rior	Adja	cent
Name	Wall	Orient	U-Value	SHGC	Area	Depth	То Тор	To Btm	Winter	Summer	Winter	Summer
	Assignment				(sqft)	(ft)	(ft)	(ft)	Shading	Shading	Shading	Shading

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G2*****

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Rater ID:0001

						(Overhang		Inte	rior	Adja	cent
Name	Wall Assignment	Orient	U-Value	SHGC	Area (sqft)	Depth (ft)	To Top (ft)	To Btm (ft)	Winter Shading	Summer Shading	Winter Shading	Summe Shading
front	AGWall 1	South	0.282	0.450	5.70	5.0	0.8	1.8	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	18.70	5.0	1.8	8.8	0.85	0.70	None	None
front door	AGWall 1	South	0.282	0.450	12.00	5.0	1.8	8.6	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	22.70	1.3	1.5	7.2	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	34.00	1.3	1.5	7.2	0.85	0.70	None	None
front	AGWall 1	South	0.282	0.450	53.30	1.3	1.7	8.3	0.85	0.70	None	None
back	FndWall 1	North	0.282	0.450	10.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	17.30	0.0	0.0	0.0	0.85	0.70	None	None
back Sliding	AGWall 1	North	0.282	0.450	48.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	24.00	0.0	0.0	0.0	0.85	0.70	None	None
back	AGWall 1	North	0.282	0.450	70.00	1.3	1.8	6.4	0.85	0.70	None	None
Right	FndWall 1	East	0.282	0.450	6.70	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	8.70	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	45.30	0.0	0.0	0.0	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	8.00	1.3	1.8	5.8	0.85	0.70	None	None
Right	AGWall 1	East	0.282	0.450	17.30	1.3	1.8	6.1	0.85	0.70	None	None

Door Informatio	n					
Name	Library Entry	Wall Assignment	Opaque Area(sq ft)	Uo Value	R-Value of Opaque Area	Storm Door
Front	R6******	AGWall 1	8.5	0.144	6.0	No
garage	Code*	AGWall 1	18.2	0.203	4.0	No
Cold Cellar	Code*	FndWall 1	17.1	0.203	4.0	No

Roof Info	rmation								
Name	Library	Ceiling	Roof	Exterior	Radiant	Туре	Uo Value	Cement or	Roof Tile
	Entry	Area(sq ft)	Area(sq ft)	Color	Barrier			Clay Tiles	Ventilation
Ceiling-with	Std-R60,	1516.00	1895.00	Medium	No	Attic	0.017	No	No

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Roof Library List

Ceiling: Std-R60, Attic G2********

Information From Quick Fill Screen

40.0 Continous Insulation (R-Value) Cavity Insulation (R-Value) 20.0 Cavity Insulation Thickness (in) 9.5 Cavity Insulation Grade 2 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

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Mechanical Equipment

Number of Mechanical Systems2Heating SetPoint(F)72.0Heating Setback ThermostatPresentCooling SetPoint(F)75.0Cooling Setup ThermostatPresentDHW SetPoint(F)125.0

Heat: 96 AFUE Gas ECM 64k**********

SystemType Fuel-fired air distribution

Fuel Type Natural gas
Rated Output Capacity (kBtuh) 64.0
Seasonal Equipment Efficiency 96.0 AFUE
Auxiliary Electric 200 Watts

Note

Number Of Units

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

DHW: 50 gal. 0.90 EF Gas********

Water Heater Type Conventional
Fuel Type Natural gas
Energy Factor 0.90
Recovery Efficiency 0.90
Water Tank Size (gallons) 50
Extra Tank Insulation (R-Value) 0.0

Note

Number Of Units 1

Location Conditioned area

Performance Adjustment 100
Percent Load Served 100

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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 72 TOTAL Pipelength for longest DHW run 102 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 2 Number showerheads in home Number showers connected to DWHR 2

DHW Diagnostics

dhwGpd 58.83 1.00 peRatio dishwasherGpd 5.10 clothesWasherHotWaterGPD 4.48 **EDeff** 1.00 ewaste 32.00 54.00 tmains dwhrWhInletTempAdj 8.44 pumpConsKwh 0.00 pumpConsMmbtu 0.00

Property

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Duct Systems

Name

Conditioned Floor Area(sq ft) 3850.0

of Returns 6

Cooling System N/A
Supply Duct Surface Area(sq ft) 779.6
Return Duct Surface Area(sq ft) 721.9
No bldg cavities used as ducts FALSE

TypeLocationPercent LocationR-ValueSupplyConditioned space100.00.0ReturnConditioned space100.00.0

Test Exemptions

IECCTRUERESNET 2019TRUEENERGY STAR LtOTRUE

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

Not Applicable

0.00 CFM @ 25 Pascals

Supply Only 0.00 CFM @ 25 Pascals
Return Only 0.00 CFM @ 25 Pascals

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Projected Rating June 22, 2021 Rating No:N/A Rater ID:0001

Infiltration and Mechanical Ventilation

Whole Dwelling Infiltration

Input Type Blower door

Heating Season Infiltration Value 2.50 ACH @ 50 Pascals Cooling Season Infiltration Value 2.50 ACH @ 50 Pascals

Shelter Class 4
Code Verification Tested

Mechanical Ventilation for IAQ

Type Balanced
Unable to Measure Mechanical Ventilation FALSE
Rate(cfm) 66
Adjusted Sensible Recovery Efficiency(%) 75.00
Adjusted Total Recovery Efficiency(%) 0.00
Hours per Day 24.0
Fan Power (watts) 64.00
ECM Fan Motor false

Ventilation Strategy for Cooling

Cooling Season Ventilation Natural Ventilation

Good Air Exchange for Multi-Family NA

Property

Royal Pine Homes Model 38-11 - Proposed Richmond Hill,

Weather:Toronto, ON_CAN Model 38-11 - Proposed Model 38-11 - Proposed.blg Organization

Clearsphere Consulting 416-481-4218 John Godden

Builder

Royal Pine Homes

HERS

Projected Rating June 22, 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 % 90.0
Exterior LEDs % 90.0
Garage LEDs % 0.0

Schedule 1: Designer Information

CITY OF RICHMOND HILL BUILDING DIVISION

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

A. Project Information				09/	15/2021	
Building number, street name				Unit no.	Lot/con.	┰
Municipality	Postal code	Plan number/ other of	description			+
RICHMOND HILL	l'Ostal Code	riair number/ other t	description		CEIVED	
B. Individual who reviews a	nd takes responsibility	v for decign activities		Per:jo	celyn.aguilar	-
Name	and takes responsibility	Firm				
MICHAEL O'ROURKE		HVAC DESIGNS LT	D.			
Street address		•	Unit no.		Lot/con.	
375 FINLEY AVE			202		N/A	
Municipality	Postal code	Province ONTARIO	E-mail			
AJAX	L1S 2E2	ONTARIO		vacdesigns.ca		
Telephone number (905) 619-2300	Fax number (905) 619-237	75	Cell nur			
` '	,		ì ,			
C. Design activities undert	aken by individual iden	itified in Section B. [B	sullaing Co	ode Table 3.5.2.1	OF Division Cj	
☐ House	<u> </u>	AC – House		☐ Building	Structural	
☐ Small Buildings		ding Services		☐ Plumbing		
Large Buildings		ection, Lighting and F	Power	☐ Plumbing	g – All Buildings	
☐ Complex Buildings	山 Fire	Protection			Sewage Systems	
Description of designer's work	TIONE	Mode	el: 38-11	Replemend Hill	City of Richmond Hi	
	IIONS		FIN RSI	AT WUB	•	
HEAT LOSS / GAIN CALCULA						
DUCT SIZING RESIDENTIAL MECHANICAL \	'ENTILATION DESIGN SUI	MMARY Brain			Building Division	1
DUCT SIZING		MMARY Proje				ו
DUCT SIZING RESIDENTIAL MECHANICAL \	N per CSA-F280-12	MMARY Proje			**************************************	1
DUCT SIZING RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG	N per CSA-F280-12	MMARY Proje	ect: CENTR	HVACR		1
DUCT SIZING RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer	N per CSA-F280-12	MMARY Proje	ect: CENTR		<u>ÉVIEWED</u>	
DUCT SIZING RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer MICHAEL O'R	N per CSA-F280-12	ork on behalf of a firm reg	ct: CENTR	clare that (cho	PXV	
DUCT SIZING RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer MICHAEL O'R I review and take res Division C, of the Bu	COURKE (print name) sponsibility for the design wo dilding Code. I am qualified, a	ork on behalf of a firm reg	ct: CENTR	clare that (cho	PXV	
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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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 1: Designer Information

CITY OF RICHMOND HILL

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

						00/46	100		
A. Project Information						09/13	3/2()21	
Building number, street name						Unit no.		Lot/con.	
Municipality	Postal code	Plan number	r/ other des	cription		REC	FIVE	<u>-D</u>	
RICHMOND HILL					Pe		lvn.ag		
B. Individual who reviews and takes	responsibility	for design ac	tivities			تتامالالا	ومتنوا	шаі	
Name		Firm							
MICHAEL O'ROURKE		HVAC DESI	GNS LTD.						
Street address				Unit no.				₋ot/con.	
375 FINLEY AVE				202			١	N/A	
Municipality	Postal code	Province		E-mail		_			
AJAX	L1S 2E2	ONTARIO				signs.ca			
Telephone number	Fax number			Cell nur					
(905) 619-2300	(905) 619-2375	5		())				
C. Design activities undertaken by i	ndividual identi	ified in Sectio	n B. [Buile	ding Co	de Ta	ble 3.5.2.1 OI	F Divisi	ion C]	
☐ House	⊠ HVA	C – House				Building Stru	uctural		
☐ Small Buildings		ing Services				Plumbing –			
☐ Large Buildings		ction, Lighting Protection	g and Pov	ver		Ptombing/ On-site Sev	All Bui	ldings ity of Richmo	nd Hil
☐ Complex Buildings	☐ Fire F	Protection				On-site Sew	age Sy	ystems Building D	
Description of designer's work			Model:	38-11				9	
HEAT LOSS / GAIN CALCULATIONS DUCT SIZING				BELVE	DEKE	HVAC	RE	VIEWE	D
RESIDENTIAL MECHANICAL VENTILATI	ON DESIGN SUM	IMADV							
RESIDENTIAL SYSTEM DESIGN per CSA		IWIAKI	Project:	CENTRE	FIELD	WEST GORML		PXV	
D. Declaration of Designer						Initials:_			
MICHAEL O'ROURKE	orint name)			de	clare tr	iat (choose one	as appi	ropnate).	
☐ I review and take responsibility Division C, of the Building Code classes/categories.	for the design wor				er subse	ection 3.2.4.of appropri	ate		
Individual BCIN: Firm BCIN:					-				
I review and take responsibility designer" under subsection 3		I am qualified in sion C, of the Bu			egory as	s an "other			
Individual BCIN:	19669								
Basis for exemption		and qualification	:	O.B.C	SEN	TENCE 3.2.	4.1 (4))_	
☐ The design work is exempt Basis for exemption from registi	from the registr		ication requi	irements	of the I	Building Code.			
I certify that:									
The information contained I have submitted this applic		edule is true to tl wledge and con			edge.		0		
April 19, 2021				m	heha	1 Okon	Le.		
Date	_					Signature of	of Desig	ner	

^{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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

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	CENTR	EFIELD	(WES	T GOR	MLEY)													DATE:	Apr-21			v	VINTER	NATURAL	AIR CH	ANGE RATE 0.227		HEAT L	LOSS .	ΔT °F. 78	CS	A-F280-12
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ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH	1				<u> </u>	ENS-4				
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WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	51	1111	2119	55	1198	2285	0	0	0			D	0	0	_ 0			
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DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0			
NET EXPOSED WALL	4.2	0.7	325	1367	225	176	740	122	54	227	37	144	606	100	264	1110	183	224	942	155	56	236	39				72	303	50			
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0			
EXPOSED CLG	1.3	0.6	355	467	209	125	164	73	70	92	41	232	305	136	162	213	95	198	260	116	85	112	50				75	99	44			
NO ATTIC EXPOSED CLG		1.3	0	0	0	0	0	0	0	0	0	0	0	0	40	112	50	40	112	50	0	0	0				0	0	0			
EXPOSED FLOOR		0.4	0	0	0	0	0	0	0	0	0	0	0	0	40	104	17	238	621	102	0	0	o				75	196	32			
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BASEMENT/CRAWL HEAT LOSS	l			0			0		1	U			0		1	0		1	U			0					1	0				
SLAB ON GRADE HEAT LOSS				0			0		l	0			0			0			0			0						0				
SUBTOTAL HT LOSS				2792			1384			319			1303			2651			3134			500						597				
SUB TOTAL HT GAIN					2262			1109	l		79			684			2464			2709			263						126			
LEVEL FACTOR / MULTIPLIER			0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18					0.20					
AIR CHANGE HEAT LOSS				507			251			58			237			481			569			91						108				
AIR CHANGE HEAT GAIN					114			56			4			34			124			136			13						6			
DUCT LOSS				0			0			0			154			313			370			59						71				
DUCT GAIN					0			0			0			175			362			387			28						13			
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0				0		0			
HEAT GAIN APPLIANCES/LIGHTS					790			0			0			790			790			790			0						0			
TOTAL HT LOSS BTU/H				3299			1635			377			1693			3446			4074			650						776				
TOTAL HT GAIN x 1.3 BTU/H					4738			1515			107			2500			5173			5541			395						189			
																														1		
ROOM USE							FAM			KT/BR			LV/DN			LAUN			PWD			FOY		MUI	D .						В	AS
EXP. WALL							32			35			39			0			6			29		15								68
CLG. HT.							10						10			9						11		11								0
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GRS.WALL AREA GLAZING	LOSS	GAIN					323 LOSS	GAIN		354 LOSS	GAIN	0	394 LOSS	GAIN		0 LOSS	GAIN		61 LOSS	GAIN		322 LOSS	GAIN	167 LOS	, S GAIN						LC	SS GAIN
GRS.WALL AREA GLAZING NORTH	LOSS 21.8	GAIN 16.0				0	323 LOSS 0	0	0	354 LOSS 0	0	0	394 LOSS 0	0	0	0 LOSS 0	0	0	61 LOSS 0	0	0	322 LOSS 0	0	167 LOS 0 0	S GAIN						0 0	SS GAIN
GRS.WALL AREA GLAZING NORTH EAST	21.8 21.8	16.0 41.6				0 22	323 LOSS 0 479	0 914	0 63	354 LOSS 0 1372	0 2618	0	394 LOSS 0 0	0 0	0	0 LOSS 0	0 0	0	61 LOSS 0 0	0	0	322 LOSS 0 0	0 0	167 LOS 0 0	S GAIN 0 0						0 9 1	OSS GAIN 0 0 96 374
GRS.WALL AREA GLAZING NORTH EAST SOUTH	21.8 21.8 21.8 21.8	16.0 41.6 24.9				0 22 0	323 LOSS 0 479 0	0 914 0	0 63 0	354 LOSS 0 1372 0	0 2618 0	0 38	394 LOSS 0 0 828	0 0 946	0	0 LOSS 0 0	0 0 0	0 0 9	61 LOSS 0 0 196	0 0 224	0 0 0	322 LOSS 0 0	0 0 0	167 LOS 0 0 0 0	S GAIN 0 0 0						0 9 1 6 1	OSS GAIN 0 0 96 374 31 149
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST	21.8 21.8 21.8 21.8 21.8	16.0 41.6 24.9 41.6				0 22 0 0	323 LOSS 0 479 0	0 914 0 0	0 63 0 0	354 LOSS 0 1372 0	0 2618 0 0	0 38 0	394 LOSS 0 0 828	0 0 946 0	0 0	0 LOSS 0 0 0	0 0 0	0 0 9 0	61 LOSS 0 0 196	0 0 224 0	0 0 0 18	322 LOSS 0 0 0 392	0 0 0 748	167 LOS 0 0 0 0 0 0	S GAIN 0 0 0 0						0 9 1 6 1	0SS GAIN 0 0 96 374 31 149 0 0
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GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS	21.8 21.8 21.8 21.8 21.8 35.8 25.8	16.0 41.6 24.9 41.6 101.2 4.3				0 22 0 0 0	323 LOSS 0 479 0 0 0	0 914 0 0 0	0 63 0 0 0	354 LOSS 0 1372 0 0	0 2618 0 0 0	0 38 0 0	394 LOSS 0 0 828 0 0	0 0 946 0 0	0 0 0 0	0 LOSS 0 0 0 0	0 0 0 0 0	0 0 9 0 0	61 LOSS 0 0 196 0	0 0 224 0 0	0 0 0 18 0 40	322 LOSS 0 0 0 392 0	0 0 0 748 0 170	167 LOS 0 0 0 0 0 0 0 0 0 0 20 517	S GAIN 0 0 0 0 0 0						0 9 1 6 1 0 0	OSS GAIN 0 0 96 374 31 149 0 0 0 0 17 85
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GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL	21.8 21.8 21.8 21.8 25.8 4.2 3.7	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				0 22 0 0 0 0 0 301	323 LOSS 0 479 0 0 0 0 1267	0 914 0 0 0 0 208	0 63 0 0 0 0 291	354 LOSS 0 1372 0 0 0 0 1222	0 2618 0 0 0 0 0 201	0 38 0 0 0 356	394 LOSS 0 0 828 0 0 0 1497	0 0 946 0 0 0 246	0 0 0 0 0 0 0	0 LOSS 0 0 0 0 0	0 0 0 0 0 0	0 9 0 0 0 52	61 LOSS 0 0 196 0 0 0 217	0 0 224 0 0 0 36 0	0 0 18 0 40 264	322 LOSS 0 0 0 392 0 1034 1110	0 0 748 0 170 183 0	167 LOS 0 0 0 0 0 0 0 0 0 0 20 517 147 616	S GAIN 0 0 0 0 0 7 85 6 101						0 9 1 6 1 0 0 20 5 0	OSS GAIN 0 0 96 374 31 149 0 0 0 0 17 85 0 0 857 305
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7				0 22 0 0 0 0 0 301 0	323 LOSS 0 479 0 0 0 0	0 914 0 0 0 0 208	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0	0 2618 0 0 0 0 201	0 38 0 0 0 356	394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0	0 0 0 0 0 0 0	0 LOSS 0 0 0 0	0 0 0 0 0 0 0 0	0 0 9 0 0 0 0 52 0	61 LOSS 0 0 196 0 0 0	0 0 224 0 0 0 36	0 0 18 0 40 264 0	322 LOSS 0 0 0 392 0 1034 1110 0	0 0 748 0 170 183	167 LOS 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0	0 0 0 0 0 0 0 0 0 0						0 9 1 6 1 0 0 20 5 0	OSS GAIN 0 0 996 374 331 149 0 0 0 0 17 85 0 0 557 305 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				0 22 0 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 0 1267	0 914 0 0 0 0 208	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 0 1222	0 2618 0 0 0 0 0 201	0 38 0 0 0 356	394 LOSS 0 0 828 0 0 0 1497	0 0 946 0 0 0 246	0 0 0 0 0 0 0	0 LOSS 0 0 0 0 0	0 0 0 0 0 0	0 0 9 0 0 0 52 0	61 LOSS 0 0 196 0 0 0 217	0 0 224 0 0 0 36 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0	167 LOS 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0	S GAIN 0 0 0 0 0 7 85 6 101						0 9 1 6 1 0 0 20 5 0 504 18	OSS GAIN 0 0 996 374 331 149 0 0 0 0 17 85 0 0 0557 305 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				0 22 0 0 0 0 0 301 0	323 LOSS 0 479 0 0 0 1267 0	0 914 0 0 0 0 208 0	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0	0 2618 0 0 0 0 201 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0	0 0 0 0 0 0 0	0 LOSS 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 9 0 0 0 0 52 0	61 LOSS 0 0 196 0 0 217 0	0 0 224 0 0 0 0 36 0	0 0 18 0 40 264 0	322 LOSS 0 0 0 392 0 1034 1110 0	0 0 0 748 0 170 183 0	167 LOS 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0	S GAIN 0 0 0 0 0 0 7 85 5 101 0						0 9 1 6 1 0 0 20 5 0 504 18	OSS GAIN 0 0 996 374 331 149 0 0 0 0 17 85 0 0 557 305 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0	0 2618 0 0 0 0 201 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 0 95	0 LOSS 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0	61 LOSS 0 0 196 0 0 217 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0	S GAIN 0 0 0 0 0 7 85 6 101 0						0 9 1 6 1 0 0 20 5 504 18 0 0 0 0	OSS GAIN 0 0 996 374 331 149 0 0 0 0 17 85 0 0 0557 305 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BABAT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 0 1222 0 0	0 2618 0 0 0 0 201 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 0 95	0 LOSS 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0	61 LOSS 0 0 196 0 0 217 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0	S GAIN 0 0 0 0 0 7 85 6 101 0						0 9 1 6 1 0 0 20 5 504 18 0 0 0 0	OSS GAIN 0 0 96 374 31 149 0 0 0 0 117 85 0 0 157 305 0 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED CLG EXPOSED LLOR EXPOSED LLOR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0 0	0 2618 0 0 0 0 201 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 0 95	0 LOSS 0 0 0 0 0 0 0 0 125 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0	61 LOSS 0 0 196 0 0 217 0 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0	S GAIN 0 0 0 0 0 7 85 5 101 0 0						0 9 1 6 1 0 0 0 504 18 0 0 0 5 6	OSS GAIN 0 0 96 374 31 149 0 0 0 0 117 85 0 0 157 305 0 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BANT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLOR BASEMENT/CRWU. HEAT LOSS SLAB ON GRADE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0	0 2618 0 0 0 0 201 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 0 95	0 LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0	61 LOSS 0 0 196 0 0 217 0 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0	S GAIN 0 0 0 0 0 7 85 5 101 0 0						0 9 1 6 1 0 0 0 504 18 0 0 0 5 6	OSS GAIN 0 0 96 374 31 149 0 0 0 0 117 85 0 0 157 305 0 0 0 0 0 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BMAIT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT CAIN	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 0	0 2618 0 0 0 0 201 0 0	0 38 0 0 0 356 0 0	394 LOSS 0 0 828 0 0 1497 0 0 0 0 0 2324	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95 0	0 LOSS 0 0 0 0 0 0 0 125 0 0 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 0	S GAIN 0 0 0 0 0 85 5 101 0 0 0						0 9 1 6 1 0 0 20 5 0 0 504 18 0 0 0	OSS GAIN 0 0 96 374 31 149 0 0 0 0 117 85 0 0 157 305 0 0 0 0 0 0 0 0 0 0
GRS.WALL AREA A GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED FOOR BASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0	0 38 0 0 0 356 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 0 95	0 LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 7 85 5 101 0 0 0						0 9 1 6 1 0 0 20 5 0 0 5 0 0 0 5 6 8 3 0 0 0 0 5 6 6 1 1 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OSS GAIN 0 0 96 374 31 149 0 0 0 0 0 0 0 0 17 85 0 0 157 305 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLO EXPOSED CLO SABASEMENT/CRWL HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0 0 0 0	0 914 0 0 0 0 208 0 0 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 0	0 2618 0 0 0 201 0 0 0	0 38 0 0 0 356 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0 0	0 0 0 0 0 0 0 95 0	0 LOSS 0 0 0 0 0 0 0 125 0 0 0 125 0	0 0 0 0 0 0 0 56 0	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 0	S GAIN 0 0 0 0 0 85 5 101 0 0 0 0						0 9 1 6 1 0 0 20 5 0 0 5 0 0 0 5 6 8 3 0 0 0 0 5 6 6 1 1 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SS GAIN 0 0 0 96 374 31 149 0 0 0 0 0 0 17 85 0 0 0 17 85 0 0 0 184 884 914 669
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 0 0 1222 0 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0	0 38 0 0 0 356 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95 0	0 LOSS 0 0 0 0 0 0 125 0 0 0 125 0 125 0 125 0 125 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 56	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0 2536	0 0 748 0 170 183 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 7 85 5 101 0 0 0						0 9 1 6 1 0 0 0 20 5 0 1 18 0 0 0 0 0 0 0 0 0 0 0 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 0	SS GAIN 0 0 0 374 331 149 0 0 0 0 0 0 0 0 0 177 85 0 0 0 0557 305 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 0 0 2594	0 2618 0 0 0 201 0 0 0 0 2819	0 38 0 0 0 356 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0	0 0 0 0 0 0 0 95 0	0 LOSS 0 0 0 0 0 0 0 125 0 0 0 125 0	0 0 0 0 0 0 0 0 0 56 0 0	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 0 85 101 0 0 0 0						0 9 1 6 1 0 0 0 20 5 0 1 18 0 0 0 0 0 0 0 0 0 0 0 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 0	OSS GAIN 0 0 374 311 149 0 0 0 0 0 0 0 0 117 85 0 0 0 0557 305 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0 0	323 LOSS 0 479 0 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 208 0 0 0 0 1123	0 63 0 0 0 0 291 0 0 0	354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 0 2594	0 2618 0 0 0 2011 0 0 0 2819	0 38 0 0 0 356 0 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 LOSS 0 0 0 0 0 0 125 0 0 0 125 0 125 0 125 0 125 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 56 0 0	0 9 0 0 0 52 0 0 0	61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0 2536	0 0 748 0 170 183 0 0 0 1101	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 0 85 5 101 0 0 0 0 186 2 3						0 9 1 6 1 0 0 0 5 6 8 3 0 .50 0 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	SS GAIN 0 0 0 374 331 149 0 0 0 0 0 0 177 85 0 0 0 187 305 0 0 0 1884 914 69 114 46 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMIT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED FLOS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT GAIN DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0	323 LOSS 0 479 0 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 0 2594	0 2618 0 0 0 201 0 0 0 0 2819	0 38 0 0 0 356 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0 0	0 0 0 0 0 0 0 95 0	0 LOSS 0 0 0 0 0 0 125 0 0 0 125 0 125 0 125 0 125 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 56 0 0	0 0 9 0 0 0 52 0 0	61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0 0	0 0 18 0 40 264 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0 2536	0 0 748 0 170 183 0 0 0 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0 9 1 6 1 0 0 0 20 5 0 1 18 0 0 0 0 0 0 0 0 0 0 0 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 5 6 0 0 0 0	SS GAIN 0 0 0 374 331 149 0 0 0 0 0 0 0 0 177 85 0 0 0 0 0 0 157 305 0 0 0 0 0 0 1884 914 69 114 46 0 0
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN APPLIANCES/LIGHTS	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0 0 0	323 LOSS 0 479 0 0 0 0 1267 0 0 0 0 1746 0 0.32 567 0	0 914 0 0 0 208 0 0 0 0 1123	0 63 0 0 0 0 291 0 0 0	354 LOSS 0 11372 0 0 0 1222 0 0 0 0 0 2594 0 0.32 842	0 2618 0 0 0 2011 0 0 0 2819	0 38 0 0 0 356 0 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324 0 0.32 755	0 0 946 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 LOSS 0 0 0 0 0 0 0 125 0 0 0 125 0 0 125 0 0 125 0 0 125 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	0 0 0 0 0 0 0 0 0 0 56 0 0	0 9 0 0 0 52 0 0 0	61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413 0.32 134	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536 0 0.32 823	0 0 748 0 170 183 0 0 0 1101	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 0 113:	S GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0 9 1 1 6 1 0 0 0 5 6 0 5 6 0 5 6 0 5 6 0 0 5 6 0 0 0 0	SS GAIN 0 0 0 96 374 331 149 0 0 0 0 0 0 177 85 0 0 0 157 305 0 0 0 0 0 0 184 914 46 0 0 790
GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED CLG EXPOSED FLOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUBTOTAL HT COSS SUBTOTAL HT COSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT LOSS AUR CHANGE HEAT GAIN DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				0 22 0 0 0 0 301 0 0 0 0	323 LOSS 0 479 0 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0 0 0	0 63 0 0 0 0 291 0 0 0	354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 0 2594	0 2618 0 0 0 201 0 0 0 0 2819	0 38 0 0 0 356 0 0 0	394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 LOSS 0 0 0 0 0 0 125 0 0 0 125 0 125 0 125 0 125 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 56 0 0	0 9 0 0 0 52 0 0 0	61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0 0	0 0 18 0 40 264 0 0 0	322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 2536 0 332 0	0 0 748 0 170 183 0 0 0 0 0	167 LOS 0 0 0 0 0 0 0 0 0 0 0 0 20 517 147 616 0 0 0 0 0 0 0 0 1133	S GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0 9 1 1 6 1 0 0 0 5 6 0 5 6 0 5 6 0 5 6 0 0 5 6 0 0 0 0	SS GAIN 0 0 0 374 331 149 0 0 0 0 0 0 0 0 177 85 0 0 0 0 0 0 157 305 0 0 0 0 0 0 1884 914 69 114 46 0 0

TOTAL HEAT GAIN BTU/H:

34984

TONS: 2.92

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 44531

TOTAL COMBINED HEAT LOSS BTU/H: 46201

Michael Offmule.



HEATING CFM					WEST GO	ORMLEY)		TYPE:	38_11			DATE:	Anr-21			GEA=	2674	10#	87614				
HEATING CPM 1145 COOLING CPM 1145 TOTAL HEAT LOSS 44,531 TOTAL HEAT LOSS 44,531 TOTAL HEAT LOSS 44,531 TOTAL HEAT LOSS 44,541 STATE LARGE MEDIUM 1745 MIR FLOW RATE CPM 32.99 AIR FLOW RATE CPM 32.99	B01	ILDLIN	NOTAL	INLIIC	NVILO						0.6		DAIL.	Αρι-2 ι			GI A.	CIT	TV OF		MON	Д ШП		
TOTAL HEAT LOSS 44,531	HEATING CFM	1145		COC	LING CFM	1145												CI,	CARRIE		IIVIOIN	AFUE =	97 %	
AND COLUMN 4th 3rd 2nd 1st 8as SIAN 0 0 0 12 7 4 4																	59TN64	-060-14V	BIGHL	DING	DIMAG	(BTINH) =	60 000	
RUN COUNT			Δ			- ,					0.2								_ 00_					
RIN COUNT 4th 3rd 2nd 1st Bas		20.7				02.00					0.35						. 1		820		/0.0	(= 1 - 1 - 1)	00,000	
S/A 0 0 12 7 4	RUN COUNT	4th	3rd	2nd	1st	Bas	1			0,000,00	0.00						N			1113	DESI	GN CFM =	1145	
R/A							1	la	enum pre	ssure s/a	0.18		r/a pressure	0.17							20	CFM @ .	6 " E.S.P.	_
All S/A runs 5'0 unless noted otherwise on layout. All S/A runs 5'0 unless noted otherwise on layout. All S/A runs 5'0 unless noted note					2		1					r/a										- 0		
All S/A runs 5''0 unless noted otherwise on layout. RUN# 1 2 3 4 5 6 7 8 9 10 11 13 14 15 16 17		ess note	ed otherwi	se on lav	out.		1													Т	EMPERAT	URE RISE	47	°F
ROMANAME NBR ENS WIC BED-2 BED-3 BED-4 BATH BED-3 BATH BED-4 BATH BED-3 BED-4 BATH BED-4 BATH BATH BED-4 BATH BED-4 BATH BED-4 BATH BED-4 BATH BED-4 BATH BED-4												,												-
ROOM NAME RINGS MBH. 165 183 0.38 169 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 0.65 1.72 2.04 1.65 1.85 0.78 2.31 1.72 1.72 3.08 0.15 0.55 3.55 1.50 3.55 1.50 3.55 1.50 3.55 1.50 0.25 0.55 3.66 1.50 3.55 1.50 0.25 0.5		1			4	5	6	7	8	9	10	11	13	14	15	16	17	18					23	24
RM LOSS MBH. 1	ROOM NAME	MBR	FNS	WIC	BFD-2			BATH	BFD-3						KT/BR	I V/DN		PWD -	FOY			BAS	BAS	BAS
CFM PER RUN HEAT RM GAIN MBH. 23 42 42 10 44 44 52 17 0.40 2.59 2.77 0.40 2.59 2.																						3.55	3.55	3.55
RM GAIN MBH. CCM PER RUN COOLING 78 50 4 82 85 91 13 85 91 78 6 84 80 80 88 3 12 50 8 19 ADJUSTED PRESSURE ACTUAL DUCT LIGH. EQUIVALENT LENGTH 130 140 120 150 140 150 140 120 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 140 150 150 140 140 140 140 140 140 140 140 140 14																						91	91	91
CFM PER RUN COOLING 78 50 4 82 85 91 13 85 91 78 6 84 80 80 88 3 12 50 8 19																						0.57	0.57	0.57
ADJUSTED PRESSURE ACTUAL DUCT LIGH. ACTUAL DUCT LIGH. EQUIVALENT LENGTH 130 140 120 150 140 120 150 140 120 150 130 150 100 160 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 150 100 120 180 130 130 140 130 150 100 120 180 130 130 140 130 130 140 130 140 120 120 120 120 120 120 120 120 120 12																						19	19	19
ACTUAL DUCT LGH. 69 37 30 32 34 40 32 42 46 56 36 53 42 35 14 32 14 30 45 48 EQUIVALENT LENGTH 130 140 120 150 140 120 150 140 120 150 130 190 160 130 150 100 120 180 130 130 140 130 150 101 101 101 101 101 101 101 101 10																						0.16	0.16	0.16
EQUIVALENT LENGTH 130 140 120 150 140 120 120 150 130 190 160 130 150 100 120 180 130 130 130 140 130 130 140 130 130 140 130 130 130 140 130 130 130 140 130 130 130 140 130 130 130 140 130 130 130 140 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140 130 130 140																						29	8	20
TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE BROWN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LENGTH ADJUSTED PRESSURE ACUAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE BROWN MARK A B B B D C D D D C D A D D A D A B D B C C A A A 178 188 199 177 150 182 174 160 152 192 176 192 176 192 176 192 176 192 176 193 176 196 183 192 135 134 212 144 160 185 178 0.09 0.0																						110	130	120
ADJUSTED PRESSURE ROUND DUCT SIZE 6 5 4 6 6 6 4 6 6 6 4 6 6 6 4 4 6 6 6 6																						139	138	140
ROUND DUCT SIZE HEATING VELOCITY (ft/min) 214 308 115 224 224 265 195 224 265 214 229 301 224 224 403 46 161 438 447 464 COOLING VELOCITY (ft/min) 398 367 46 418 433 464 149 433 464 398 69 428 408 449 34 138 255 92 97 OUTLET GRILL SIZE AX10 3X10 3X10 4X10 4X10 4X10 4X10 4X10 4X10 4X10 3X10 4X10 4X10 4X10 4X10 4X10 3X10 5X10 5X10 5X10 5X10 5X10 5X10 5X10 5																						0.12	0.12	0.12
HEATING VELOCITY (ft/min) 214 308 115 224 224 265 195 224 265 214 229 301 224 224 403 46 161 438 447 464 COOLING VELOCITY (ft/min) 398 367 46 418 433 464 149 433 464 398 69 428 408 408 449 34 138 255 92 97 OUTLET GRILL SIZE TRUNK A B B D C D D D C D A D A A B D B C C A A A B D B C C A A A B D B C C A A A B D B C C C A A A B D B C C C A A A B D D B C C D D D C D D C D D D C D D D D																						6	6	6
COOLING VELOCITY (ft/min) OUTLET GRILL SIZE AX10 3X10 3X10 4X10 4X10 4X10 4X10 4X10 4X10 4X10 4																						464	464	464
OUTLET GRILL SIZE																						97	97	97
RUN# ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																						4X10	4X10	4X10
RUN # ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																						В	В	C
ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE											,,			- ' '							,,			
RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE																								
ADJUSTED PRESSURE ROUND DUCT SIZE																								
ROUND DUCT SIZE																								
HEATING VELOCITY (T/min)																								
00011101171 00171/111 1																								
COOLING VELOCITY (thmin)																								
OUTLET GRILL SIZE																								
TRUNK	IRUNK																							

SUPPLY AIR TRUNK SIZE																	RETURN A	IR TRUN	K SIZE					
	TRUNK	STATIC	ROUND	RECT			VELOCITY			TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCI
	CFM	PRESS.	DUCT	DUCT			(ft/min)			CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min
TRUNK A	317	0.07	9.4	10	Х	8	571		TRUNK G	0	0.00	0	0	х	8	0	TRUNK O	0	0.05	0	0	х	8	0
TRUNK B	599	0.07	12	16	Х	8	674		TRUNK H	0	0.00	0	0	Х	8	0	TRUNK P	0	0.05	0	0	Х	8	0
TRUNK C	279	0.08	8.7	10	Х	8	502		TRUNK I	0	0.00	0	0	х	8	0	TRUNK Q	0	0.05	0	0	х	8	0
TRUNK D	543	0.08	11.2	16	Х	8	611		TRUNK J	0	0.00	0	0	Х	8	0	TRUNK R	0	0.05	0	0	Х	8	0
TRUNK E	0	0.00	0	0	Х	8	0		TRUNK K	0	0.00	0	0	х	8	0	TRUNK S	0	0.05	0	0	х	8	0
TRUNK F	0	0.00	0	0	Х	8	0		TRUNK L	0	0.00	0	0	Х	8	0	TRUNK T	0	0.05	0	0	Х	8	0
																	TRUNK U	0	0.05	0	0	Х	8	0
																	TRUNK V	0	0.05	0	0	Х	8	0
ETURN AIR #	1	2	3	4	5	6	7									BR	TRUNK W	0	0.05	0	0	Х	8	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		TRUNK X	1145	0.05	16.6	32	Х	8	644
AIR VOLUME	130	130	75	75	85	340	130	0	0	0	0	0	0	0	0	180	TRUNK Y	340	0.05	10.5	14	Х	8	43
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	TRUNK Z	0	0.05	0	0	Х	8	0
CTUAL DUCT LGH.	49	41	39	46	45	24	39	1	1	1	1	1	1	1	1	14	DROP	1145	0.05	16.6	24	Х	10	687
QUIVALENT LENGTH	195	175	275	235	195	120	215	0	0	0	0	0	0	0	0	135								
OTAL EFFECTIVE LH	244	216	314	281	240	144	254	1	1	1	1	1	1	1	1	149								
DJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.06	0.10	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10								
OUND DUCT SIZE	7	6.8	6	6	6	8.9	7	0	0	0	0	0	0	0	0	7								
ILET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	8								
	X	Х	Х	X	Х	X	X	Χ	X	X	X	Х	Χ	X	X	X								
NLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	14	1							

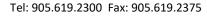


TYPE: SITE NAME: 38-11 CENTREFIELD (WEST GORMLEY) LO# 87614

RESIDENTIAL MECH	ANICAL V	/ENTILATION DESIGN	SUMMARY OF R	ICHMOND	HILL	7
	9.32.3.1(1)		TILATION CAPACITY	NO DIVIDIO	N.I.	9.32.3.5.
a)		Total Ventilation Capa	ity 00/1	2/216962	1	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Ventil. C	apacity	79.5	_	c <mark>f</mark> m
c) Natural draft, B-vent or induced draft gas fireplace		Required Supplementa	Capacity RF	CFIV901D	_	cfm
d) Solid Fuel (including fireplaces)			Per: joc	elyn.aguila	-	
a) Solid i dei (including ineplaces)		PRINCIPAL EXHAUST				
e) No Combustion Appliances		Model:	VANEE 65H	Location:	BSN	МТ
HEATING SYSTEM		79.5	efm		✓ HV	/I Approved
Forced Air Non Forced Air			HEAT LOSS CALCULA			
		79.5 CFM	ΔT °F X 78 F	FACTOR X 1.08	Х	% LOSS 0.25
Electric Space Heat		SUPPLEMENTAL FAM	IS BY	INSTALLING CON	TRACTOR	
HOUSE TYPE	9.32.1(2)	Location ENS	Model BY INSTALLING CONTRACT	cfm FOR 50	HVI	Sones 3.5
	3.32.1(2)	BATH	BY INSTALLING CONTRACT		· ·	3.5
Type a) or b) appliance only, no solid fuel		ENS-4 PWD	BY INSTALLING CONTRACT BY INSTALLING CONTRACT		√ √	3.5 3.5
II Type I except with solid fuel (including fireplaces)		FWD	BT INSTALLING CONTINACT	50 S		3.0
III Any Type e) englishes		HEAT RECOVERY VE				9.32.3.11.
III Any Type c) appliance		Model: 155	VANEE 65H cfm high	64		cfm low
IV Type I, or II with electric space heat		75	% Sensible Efficiency	v	_ 	/I Approved
Other: Type I, II or IV no forced air			@ 32 deg F (0 deg C			
		LOCATION OF INSTA	LLATION			
SYSTEM DESIGN OPTIONS O	N.H.W.P.	Lot		Concession		
1 Exhaust only/Forced Air System		Lot:		Concession		
2 HRV with Ducting/Forced Air System		Township		Plan:		
✓ 3 HRV Simplified/connected to forced air system		Address				
4 HRV with Ducting/non forced air system		Roll #		Building Perr	nit #	
4 HRV with Ducting/non forced all system		BUILDER:	ROYAL PINE HOME	S		
Part 6 Design		Name:				
TOTAL VENTILATION CAPACITY 9	9.32.3.3(1)	Address:				
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:				
Other Bedrooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Telephone #:		Fax #:		
Kitchen & Bathrooms	cfm	INSTALLING CONTRA	ACTOR			
Other Rooms <u>4</u> @ 10.6 cfm <u>42.4</u>	cfm	Name:				
Table 9.32.3.A. TOTAL <u>169.6</u>	cfm	Address:				
		City:				
PRINCIPAL VENTILATION CAPACITY REQUIRED 9.	.32.3.4.(1)	T		- "		
1 Bedroom 31.8	cfm	Telephone #:	ATION	Fax#:		
2 Bedroom 47.7	cfm	, ,	s ventilation system has b	een designed		
3 Bedroom 63.6	cfm	in accordance with the Name:	Ontario Building Code. HVAC Designs Ltd.			
4 Bedroom 79.5	cfm	Signature:	M	Mehad Ofounde	٠.	
5 Bedroom 95.4	cfm	HRAI#		001820		
TOTAL 79.5 cfm		Date:		April-21		



							CITY OF R	RICHMO NG DIVI	
		CSA F28	30-12 Residential Hea	t Loss and Heat Gain	Calculations		00/4	0/0/	
		Form	ula Sheet (For Air Lea	kage / Ventiliation C	Calculation)		09/1	3/2(J21 I
LO#: 87614	Model: 38-11		Builde	r: ROYAL PINE HOMES				Date	e: 4/19/2021
	Volume Calculatio	n				Air Change & Del	lta T Data		
							RE	CEIVE	- D
House Volume					WINTER NA	TURAL AIR CHAN	GERATE IOC	e 0/227g	uilar
Level Floor Area (ft²)	Floor Height (ft)	Volume (ft³)			SUMMER NA	TURAL AIR CHAN	IGE RATE	0.071	
Bsmt 1154	10	11540					_		
First 1154	10	11655.4					. 5:00		
Second 1520 Third 0	9	13680					emperature Diff		AT °F
Third 0 Fourth 0	9	0			Winter DTDh	Tin °C 22	Tout °C -21	ΔT °C 43	ΔT °F 78
Fourtii	Total:	36,875.4 ft ³			Summer DTDc	24	31	7	13
	Total:	1044.2 m ³			Summer DTDC	24	31	,	15
	Total.	1044.2 111							
5.2.3	.1 Heat Loss due to Ai	r Leakage		1	6.2.6 9	ensible Gain due	e to Air Leakage		
	$LR_{airh} \times \frac{V_b}{3.6} \times L_b$		= 3408 W		$HG_{salb} = LR_{airc} \times $ \times 290.05			=	175 W
	<u> </u>	··· <u></u>				- · · · <u> · · · · · · · · · · · · · ·</u>		-	
			= 11629 Btu/h					=	597 Btu/h
5.2.3.2 Hea	at Loss due to Mechan	ical Ventilation			6.2.7 Ser	sible heat Gain	due to Ventilatio	n	
$\mathit{HL}_{vairb} =$	$PVC \times DTD_h \times 1$	$.08 \times (1-E)$		HL	$_{vairb} = PVC \times D'$	$TD_h \times 1.08 \times$	(1-E)		
80 CFM x 78 °F	x 1.08	x <u>0.25</u>	= 1670 Btu/h	80 CFM	x <u>13 °F</u>	x <u>1.08</u>	x <u>0.25</u>	=	275 Btu/h
		5.2.3.3 Calcula	tion of Air Change Heat L	oss for Each Room (Flo	or Multiplier Section)				
	HL_{ai}	_{rr} = Level Facto	or \times HL_{airbv} \times {(H	$L_{agcr} + HL_{bgcr}$) ÷	$(HL_{agclevel} + HL_{l}$	$p_{gclevel}$	-		
			HLairve Air Leakage +	Level Conductive Heat	Air Leakage Heat Los	s Multiplier (LF)	d		
	Level	Level Factor (LF)	Ventilation Heat Loss	Loss: (HL _{clevel})	HLairby / H	• •			
		0.5	(Btu/h)			<u> </u>	4		
	1	0.5		8,384	0.69		4		
	2	0.3	11 (30	10,746	0.32		+		
	3	0.2	11,629	12,804	0.18		+		
	5	0		0	0.00		+		
				U	1 0.00	<u> </u>	_		
		•	- ventilation heat loss entilation system HLairve	= 0					





Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

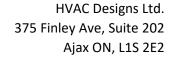
HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SFQT:	38-11 2674	LO# 87614	BUILDER: TROYALRINE HOMES) H SITE: CENTREFIELD (WEST GO	
DESIGN A	SSUMPTIONS		09/13/2021	
	R DESIGN TEMP. DESIGN TEMP. G DATA	°F -6 72	COOLING OUTDOOR DESIGN TEMP. jocelyn.aguilar INDOOR DESIGN TEMP. (MAX 75°F)	°F 88 75
ATTACHN	1ENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FA	ACES:	EAST	ASSUMED (Y/N):	Υ
AIR CHAN	IGES PER HOUR:	2.50	ASSUMED (Y/N):	Υ
AIR TIGH	TNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Υ
WIND EXI	POSURE:	SHELTERED	ASSUMED (Y/N):	Υ
HOUSE V	OLUME (ft³):	36875.4	ASSUMED (Y/N):	Υ
INTERNAI	L SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR	LIGHTING LOAD (Btu/I	n/ft²): 1.65	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDAT	TION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH:	52.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	168.0 ft

2012 OBC - COMPLIANCE PACKAGE		
	Compliance	Package
Component	SB-12 PERI	ORMANCE
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE







905-619-2300
CITY OF RICHMOND HILL
BUILDING DIVISION

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

RECEIVED

W	eather Stati	on Description Per: jocelyn.aguilar
Province:	Ontario	
Region:	Richmond	Hill
	Site De	scription
Soil Conductivity:	Normal co	nductivity: dry sand, loam, clay
Water Table:	Normal (7	-10 m, 23-33 ft)
	Foundation	Dimensions
Floor Length (m):	15.8	
Floor Width (m):	9.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	Insulation Configuration
Window Area (m²):	1.4	
Door Area (m²):	1.9	
	Radia	nt Slab
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
	Design	Months
Heating Month	1	
	Foundat	ion Loads
Heating Load (Watts):		1665

TYPE: 38-11 **LO#** 87614





CITY OF RICHMOND HILL⁹⁰⁵-619-2300 BUILDING DIVISION

09/13/2021

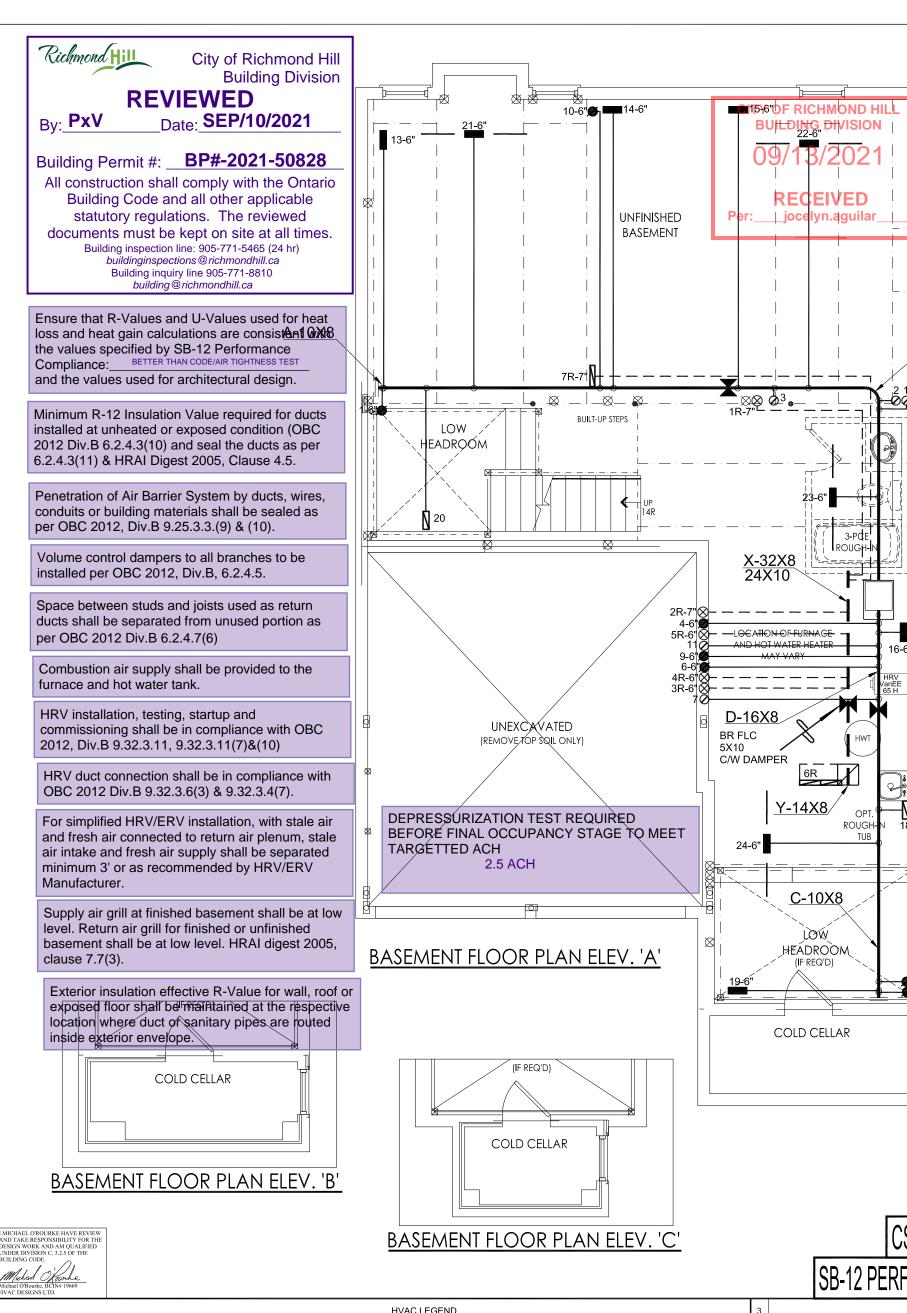
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Per:___jocelyn.aguilar_

Weather Statio	on Des	cript	ion		
Province:	Ontari	io			
Region:	Richm	ond H	ill		
Weather Station Location:	Open				
Anemometer height (m):	10				
Local Sh	nielding	3			
Building Site:	Subur	ban, fo	orest		
Walls:	Heavy	,			
Flue:	Heavy	,			
Highest Ceiling Height (m):	6.74				
Building Co	nfigura	tion			
Туре:	Detacl	hed			
Number of Stories:	Two				
Foundation:	Full				
House Volume (m³):	1044.2	2			
Air Leakage,	/Ventil	atior	1		
Air Tightness Type:	Energy	y Star	Detach	ned (2.	5 ACH)
Custom BDT Data:	ELA @	10 Pa	Э.		974.8 cm ²
	2.50				ACH @ 50 Pa
Mechanical Ventilation (L/s):	To	tal Sup	ply		Total Exhaust
		37.5			37.5
Flue	Size				
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural Infilt	ration	Rate	S		
Heating Air Leakage Rate (ACH/H)	•	C	.22	7	
Cooling Air Leakage Rate (ACH/H):	;	C	.07	1	

TYPE: 38-11 **LO#** 87614



HVAC LEGEND SYMBOL DESCRIPTION SYMBOL DESCRIPTION SYMBOL DESCRIPTION SYMBOL DESCRIPTION 2. REVISED AS PER ARCHITECTURALS SUPPLY AIR GRILLE 14"x8" RETURN AIR GRILLE 6" SUPPLY AIR BOOT ABOVE RETURN AIR STACK ABOVE REVISED TO PERFORMANCE SEPT/2020 30"x8" RETURN AIR GRILLE SUPPLY AIR GRILLE 6" BOOT 0 SUPPLY AIR STACK FROM 2nd FLOOR Description RETURN AIR STACK 2nd FLOOR FRA- FLOOR RETURN AIR GRILLE **REVISIONS** . 6" SUPPLY AIR STACK 2nd FLOOR

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

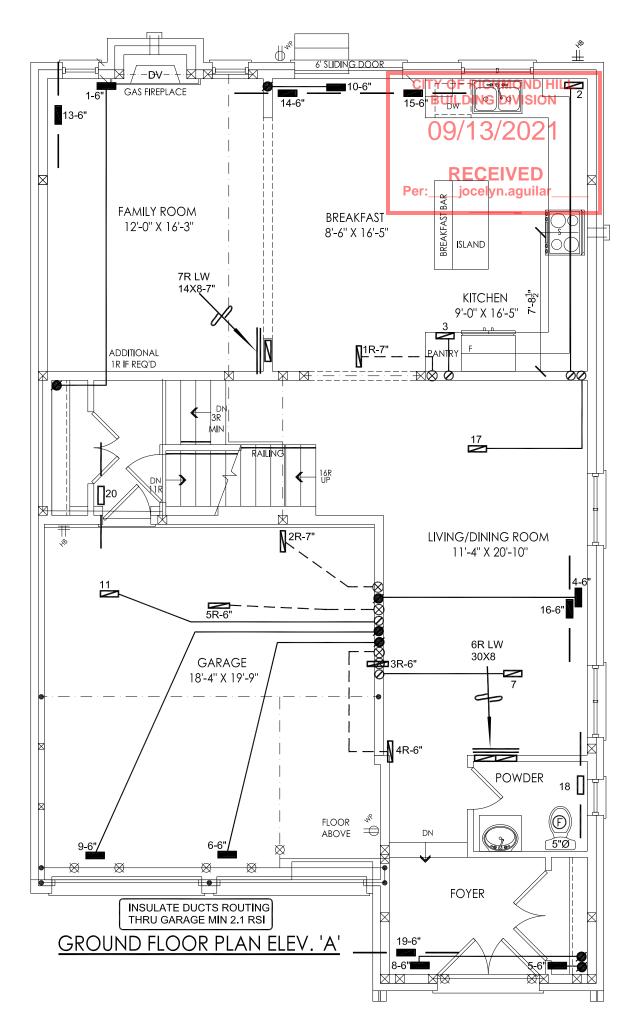
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

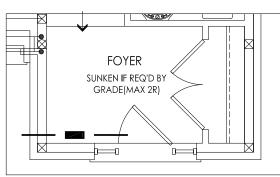
Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

HEAT LO	OSS 46201	BTU/H	# OF RUNS	S/A	R/A	FANS	Sheet Title	
1	UN I T DATA		3RD FLOOR				BA	SEMENT
MAKE								
(CARRIER		2ND FLOOR	12	5	4	П	EATING
MODEL			40T EL 00D	_	_	_	1	.AYOUT
59T	N6A-060-14\	/	1ST FLOOR	7	2	2		./ (1001
INPUT	60	MBTU/H	BASEMENT	4	1	0	Date (SEPT/2020
OUTPUT		A ADTILIU	ALL S/A DIFFU	CEDC	4 1140		Scale 3	3/16" = 1'-0"
	58	MBTU/H	UNLESS NOTE					
COOLING		TONS	ON LAYOUT. A				В	CIN# 19669
	3.0	TONS	UNLESS NOTE					
FAN SPEED		cfm @	ON LAYOUT. U	NDER	CUT		I ()#	87614
	1145	0.6" w.c.	DOORS 1" min.	FOR	R/A)	0

B-16X8

38-11





GROUND FLOOR PLAN ELEV. 'B'

Sec. FOYER

GROUND FLOOR PLAN ELEV. 'C

CSA-F280-12

SB-12 PERFORMANCE

				HVAC LE	EGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

Proiect Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

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

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply Ductwork which passes through the garage or unheated spaces shall be FIRST FLOOR **HEATING LAYOUT** SEPT/2020 3/16" = 1'-0"

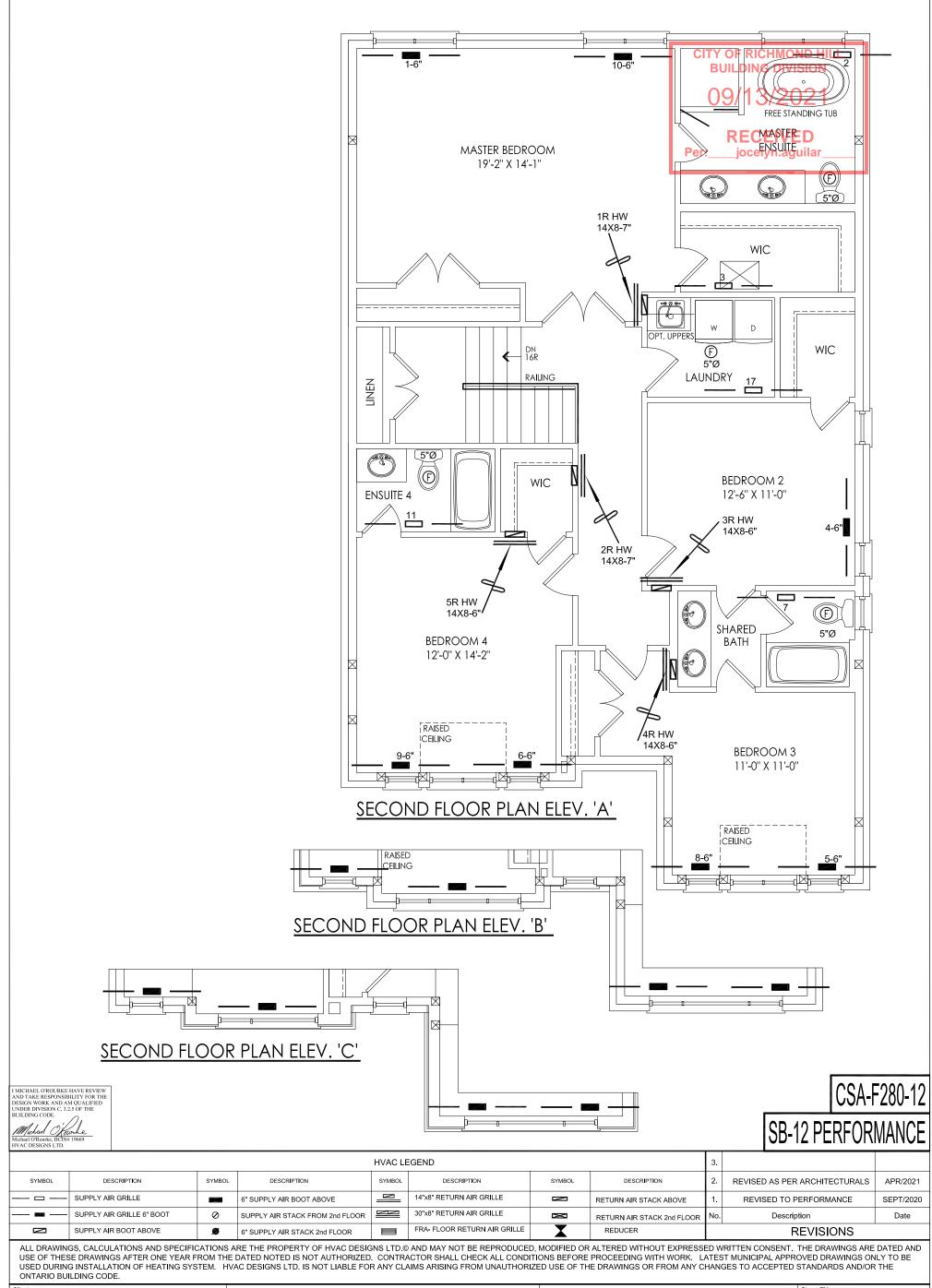
BCIN# 19669

LO#

87614

branch outlets shall be equipped with a manual balancing damper. adequately insulated and be gas-proofed.

38-11



Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

HVA DESIGNS LTD.

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

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

SECOND FLOOR HEATING LAYOUT

Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669

LO# 87614

38-11 2674 sc

Schedule 1: Designer Information

CITY OF RICHMOND HILL

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

A. Project Information				09/13	/2021
Building number, street name				Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other desc	ription	RECE	IVED
RICHMOND HILL					n.aguilar
B. Individual who review	s and takes responsibility	for design activities		joi.ety	пауша
Name	-	Firm			
MICHAEL O'ROURKE		HVAC DESIGNS LTD.	l lait aa		II at/aan
Street address 375 FINLEY AVE			Unit no. 202	•	Lot/con. N/A
Municipality	Postal code	Province	E-mail		
AJAX	L1S 2E2	ONTARIO	info@h	vacdesigns.ca	
Telephone number	Fax number	_	Cell nur		
(905) 619-2300	(905) 619-237	5 	())	
C. Design activities unde	ertaken by individual ident	ified in Section B. [Build	ding Co	ode Table 3.5.2.1 OF	Division C]
		0 11			
☐ House ☐ Small Buildings		C – House ling Services		☐ Building Strud ☐ Plumbing – H	
☐ Large Buildings	☐ Dete	ction, Lighting and Pov	/er	☐ Plumbing – A	ll Buildings
☐ Complex Buildings		Protection		☐ On-site Sewa	ge Systems
Description of designer's work		Model:	38-11	DEDE	
HEAT LOSS / GAIN CALCUL DUCT SIZING	ATIONS		BELVE FIN BSN	MT WUB	
	_ VENTILATION DESIGN SU	MMARY Brainet			١
RESIDENTIAL SYSTEM DES	IGN per CSA-F280-12	Project.	CENTRE	EFIELD (WEST GORMLEY)
D. Declaration of Design	er				
I MICHAEL C	PROURKE		de	clare that (choose one a	as appropriate):
	(print name)				
	esponsibility for the design wo Building Code. I am qualified, a s.			er subsection 3.2.4.of appropriat	е
Individo Firm Bo	ual BCIN:			<u>-</u>	
	responsibility for the design and subsection 3.2.5.of Di	d am qualified in the approprision C, of the Building Code		egory as an "other	
	ual BCIN: <u>19669</u> or exemption from registration	and qualification:	O.B.C	SENTENCE 3.2.4.	1 (4)
☐ The design work is Basis for exemption	s exempt from the regist on from registration and qualific	ration and qualification requi cation:	rements	of the Building Code.	
I certify that:					
The information I have submit	on contained in this sch ted this application with the kno	edule is true to the best of movinedge and consent of the		edge.	
			m	11/00	/
April 19, 2021			1111	hehad O'Kounk	e.
Date				Signature of	Designer

^{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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 1: Designer Information

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

A. Proj	ect Information						
Building n	umber, street name					Unit no.	Lot/con.
Municipal	ty	Postal code	Plan numbe	r/ other des	cription		
RICHMONI) HILL						
B. Indiv	idual who reviews and ta	kes responsibility	for design ac	tivities			
Name			Firm				
MICHAEL Street add	. O'ROURKE		HVAC DES	GNS LTD.	Unit no.		Lot/con.
375 FINL					202		N/A
Municipal		Postal code	Province		E-mail		<u> </u>
AJAX	,	L1S 2E2	ONTARIO		info@hvaco	designs.ca	
Telephone		Fax number	•		Cell number		
(905) 619)-2300	(905) 619-2375	5		()		
C. Desig	gn activities undertaken l	oy individual identi	fied in Section	n B. [Build	ding Code	Table 3.5.2.1 OF	Division C]
☐ Hou	se.	⊠ HVA	C – House			☐ Building Stru	ıctural
	all Buildings	🖵 Buildi	ing Services		C	Plumbing – I	House
	ge Buildings oplex Buildings		ction, Lighting Protection	g and Pov		☐ Plumbing – I ☐ On-site Sew	
	. •	☐ Fire F	Protection	Madal		■ On-site Sew	age Systems
•	n of designer's work SS / GAIN CALCULATIONS			Model:	38-11 Belvedere		
DUCT SIZ					Deivedele		
RESIDEN	TIAL MECHANICAL VENTIL	ATION DESIGN SUM	IMARY	Project:	CENTREFIEL	D (WEST GORMLE	·Y)
	TIAL SYSTEM DESIGN per	CSA-F280-12		1 10,000			,
D. Decla	aration of Designer						
I	MICHAEL O'ROURK				declare	e that (choose one	as appropriate):
		(print name)					
	I review and take responsib Division C, of the Building C classes/categories.					bsection 3.2.4.of appropri	ate
	Individual BCIN: Firm BCIN:						
X	I review and take responsib designer" under subsection		am qualified in sion C, of the B			as an "other	
	Individual BCIN:						
	Basis for exemp	tion from registration a	and qualification	n:	O.B.C SI	ENTENCE 3.2.4	4.1 (4)
	The design work is exempt Basis for exemption from re			ication requi	irements of th	ne Building Code.	
I certify th	nat:						
	 The information contain I have submitted this approximation 		edule is true to t wledge and cor				
	April 19, 2021				Mak	and Officer	Le.
	Date					Signature o	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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

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SOUTH 21.8 24.9 0 0 0 0 0 0 0 0 0	SITE NAME:	CENTR	EFIELD) (WES	T GOR	MLEY)													DATE:	Apr-21			v	VINTER	R NATURAL AIR C	HANGE RATE 0.227		HEAT	LOSS A	∆T °F. 78		CSA-F2	280-12
SEP-NALL ORIGINAL LARGE ORIGINAL SECTION ORIG	BUILDER:	ROYAL	PINE I	HOMES	3				TYPE:	38-11					GFA:	2674			LO#	87614			SI	JMMEF	R NATURAL AIR C	HANGE RATE 0.071		HEAT	GAIN A	∆T °F. 13	SB-12	PERFORM	IANCE
C.C.S. FT MCTUTES S S S S S S S S S	ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH					ENS-4					
GRAVALLAMOR (OSS GAM) OSS GAM) OSS GAM) OSS GAM OSS G	EXP. WALL				41			22			6			18			35			31			7					8					
CHI	CLG. HT.				9			9			9			9			9			9			9					9					
Column C		FACTO	RS																														
NOTITY 12.1 4.6 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GRS.WALL AREA	LOSS	GAIN		369			198			54			162			315			279			63					72					
EMET 121 24 54 56 4 596 182 27 779 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN				
SOUTH 128 248 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0				
MET 21 54 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EAST	21.8	41.6	44	958	1828	22	479	914	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0				
SENTLY 18, 1912 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SOUTH	21.8	24.9	0	0	0	0	0	0	0	0	0	18	392	448	0	0	0	0	0	0	7	152	174			0	0	0				
SENTLY 138 1912 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WEST	21.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	51	1111	2119	55	1198	2285	0	0	0			0	0	0				
METERORISMULI MALE METERO	SKYLT.	35.8	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0			0	0	0				
METERORISMALI 42 2 7 32 107 70 70 70 70 70 70 70 70 70 70 70 70 7	DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0				
THE PROPERTY MALE ASSOCIATION 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NET EXPOSED WALL				1367	225	176	740	122	54	227	37	144	606		264	1110	183		942	155	56	236	39			72	303	50				
EMPORED CLG 2 3 1 0 5 0 50 47 209 02 14 77 90 22 46 122 200 130 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6		0	0		0									0			0	0			0				0					
MAZIMINE PROPRIE CLAI 2 28 13 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					467	209		164	73		92	41	232	305	136	162	213	95		260	116		112	50			75	99	44				
BLAG OR PICOPS 2.8 2.4 0 0 0 0 0 0 0 0 0																																	
BASEMENTCRAWN. FEAT. LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0	0		0	0	0	0	0		0						102		0	0			75	196	32				
SAR ON GRADE HEAT LOSS SUBTOTIAL HT CARL SUBTOTIA															-												1						
SUSTOTIAL HT CLOS 1272 1184 1190 1190 1190 1290 1280 1280 1290 1280 1290 128					•		1	•		1	•			•		l	•		1	•			•			1		0	ļ				
SUBTOTAL HT GAIN LT FLORM LT F					-		1	-		1	-			-		l	-		1	-			-			1		•	ļ				
LEVEL FACTOR MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOS						2262	1		1109	1		79			684	l		2464	1		2709			263		1			126				
ARCHANGE HEAT LOSS ON USE OF 114 0 56 0 1 0 0 0 0 0 0 1 175 0 163 0 1 14 0 154 0 1 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 124 0 1				0.20	0.18		0.20	0.18		0.20	0.18	. •	0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18			1	0.20	0.18					
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HEAT GRAM PEOPLE HEAT GRAM PEOPLE TOTAL HIT LOSS BILLIN TOTAL HIT					٠	0		٠	0		٠	0		104	175		0.0	362		0.0	387		00	28				• • •	13				
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ROOM USE FAM					0200	4738		1000	1515		0	107		1000	2500		0440	5173		40.4	55/1		000	305					180				
EXP. WALL CLG. HT. CACTORS GRIWALL AREA, LOSS GAIN GLAZING MORTH 21.8 22 35 354 394 0 105 0 107 1176 1176 1176 1176 1176 1176 117	TOTAL III GAIRX 1.0 BTO/II					4730			1313			107			2300			3173	l		3341			333		1			103				
CLG. HT. FACTORS GRS.WALL AREA LOSS GAIN GLAZING GRS.WALL AREA LOSS GAIN GLAZING GRS.WALL AREA LOSS GAIN LOSS GAIN LOSS GAIN	ROOM USE							FAM			KT/BR			LV/DN			LAUN			PWD			FOY		MUD							BAS	
GRS.WALLAREA LOSS GAIN GLAZING GRS.WALLAREA LOSS GAIN GLAZING GRS.WALLAREA LOSS GAIN GLAZING GRS.WALLAREA LOSS GAIN	EXP. WALL							32			35			39			0			6			29		15							168	
GR.WALL AREA (LOSS GAIN GLAZING GLAZIN	CLG. HT.							10			10			10			9			10			11		11							10	
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NORTH 21.8 16.0		LOSS	GAIN														-																
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SKYLT. 1. 5.8 10.1.2 DOORS 25.8 4.3 DOORS 25.8 4.3 SET EXPOSED MALL 4.2 0.7 SET EXPOSED MALL 4.2 0.7 SET EXPOSED MALL 4.2 0.7 SET EXPOSED MALL ABOVE CR 3.7 0.6 SEXPOSED FLOOR 2.8 1.3 SUBTOTAL H LOSS SUBSTOTAL H	SOUTH	21.8	24.9				0	0	0	0	0	0	38	828	946	0	0	0	9	196	224	0	0	0	0 0 0						•	6 131	149
DOORS 25.8 4.3							-	0	-	_	0	0		-	0		0	-		-	-					1			ļ		١,		
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NET EXPOSED BSMT WALL ABOVE GR		25.8	4.3				0	0	0	0	0	0	0	0	0	0	0	0		0	0	40	1034	170	20 517 85						2	0 517	85
EXPOSED CLG 2.8 1.3 0.6								1267				201			246	0				217	36					1			ļ			•	
NO ATTIC EXPOSED CLG	NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	l				0	0		0	0	-		-	-				0	0	-	-	0		1					50	04 1857	305
EXPOSED FLOOR 2.6 0.4		-					1 0	0	0	0	0	0	0	0	0	95	125	56		0	0	-		0	0 0 0	1	1				(0 0	
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SUBTOTAL HT LOSS SUB TOTAL HT GAIN 1123 2594 2594 1192 56 260 1101 186 914 914 914 914 914 914 914 914 914 914	NO ATTIC EXPOSED CLG EXPOSED FLOOR	1.3 2.8	1.3				0		-		0	0	-	0	0	0	0	0	U	U	U	۰	U	0	0 0 0				ļ		(0 0	0
SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER 0.30 0.32 0.30 0.30	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	1.3 2.8	1.3				0		-		0 0 0	0	-		0	0	0	0		0	U		0	0	0 0 0						(0
LEVEL FACTOR / MULTIPLIER	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	1.3 2.8	1.3				0	0	-		0 0	0	-	0	0	0	0	0		0	U		•	0	0						(0
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AIR CHANGE HEAT GAIN DUCT LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN	1.3 2.8	1.3				0	0 0 0 1746	0	0	0 0 0 2594	0	0	0 0 2324			0 0 125			413			2536		0 0 1133 186							5684 8384	914
DUCT LOSS 0	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN	1.3 2.8	1.3				0	0 0 0 1746	0	0	0 0 0 2594	0	0	0 0 2324			0 0 125			413			2536		0 0 1133 186							5684 8384	-
DUCT GAIN HEAT GAIN PEOPLE 10 TOTAL HT LOSS BTU/H 0 <th< td=""><td>NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS</td><td>1.3 2.8</td><td>1.3</td><td></td><td></td><td></td><td>0</td><td>0 0 0 1746</td><td>0</td><td>0</td><td>0 0 0 2594</td><td>0</td><td>0</td><td>0 0 2324 0.32</td><td></td><td></td><td>0 0 125 0.18</td><td></td><td></td><td>413</td><td></td><td></td><td>2536 0.32</td><td></td><td>0 0 1133 186 0.30 0.32</td><td></td><td></td><td></td><td></td><td></td><td></td><td>5684 8384 50 0.69</td><td>-</td></th<>	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	1.3 2.8	1.3				0	0 0 0 1746	0	0	0 0 0 2594	0	0	0 0 2324 0.32			0 0 125 0.18			413			2536 0.32		0 0 1133 186 0.30 0.32							5684 8384 50 0.69	-
HEAT GAIN PEOPLE 240 790 790 790 790 0 0 0 0 0 0 790 790 790 790 0	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS	1.3 2.8	1.3				0	0 0 0 1746	1123	0	0 0 0 2594	2819	0	0 0 2324 0.32	1192		0 0 125 0.18	56		413	260		2536 0.32	1101	0 0 1133 186 0.30 0.32 368							5684 8384 50 0.69	914
HEAT GAIN APPLIANCES/LIGHTS 790 790 790 0 0 0 0 790 790 790 790 790 148 547 3359 1501 14199 14199	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN	1.3 2.8	1.3				0	0 0 1746 0.32 567	1123	0	0 0 0 2594 0.32 842	2819	0	0 0 2324 0.32 755	1192		0 0 125 0.18 23	56		413 0.32 134	260		2536 0.32 823	1101	0 0 1133 186 0.30 0.32 368							5684 8384 50 0.69	914
TOTAL HT LOSS BTU/H 2313 3436 3079 148 547 3359 1501 14199	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR, MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	1.3 2.8	1.3				0	0 0 1746 0.32 567	1123	0	0 0 0 2594 0.32 842	0 2819 142	0	0 0 2324 0.32 755	1192		0 0 125 0.18 23	56		413 0.32 134	260		2536 0.32 823	1101	0 0 1133 186 0.30 0.32 368 9							5684 8384 50 0.69	914
	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN	1.3 2.8 2.6	1.3				0.30	0 0 1746 0.32 567	0 1123 56 0	0.30	0 0 0 2594 0.32 842	0 2819 142 0	0.30	0 0 2324 0.32 755	1192 60 0	0.20	0 0 125 0.18 23	56 3 0	0.30	413 0.32 134	260 13	0.30	2536 0.32 823	1101 55 0	0 0 1133 186 0.30 0.32 368 9 0						0.	5684 8384 50 0.69 5814	914 46 0
TOTAL HT GAIN Y 13 RTIVIH 2550 4975 2654 76 255 4502 255	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE	1.3 2.8 2.6	1.3				0.30	0 0 1746 0.32 567	1123 56 0	0.30	0 0 0 2594 0.32 842	0 2819 142 0 0	0.30	0 0 2324 0.32 755	1192 60 0	0.20	0 0 125 0.18 23	56 3 0	0.30	413 0.32 134	260 13 0	0.30	2536 0.32 823	1101 55 0	0 0 1133 186 0.30 0.32 368 9 0 0 0 0						0.	5684 8384 50 0.69 5814	914 46 0
10 DE 11 CARA 1.0 DE 011 2004 70 300 1003 200 201	NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN APPLIANCES/LIGHTS	1.3 2.8 2.6	1.3				0.30	0 0 1746 0.32 567	1123 56 0	0.30	0 0 0 2594 0.32 842	0 2819 142 0 0	0.30	0 0 2324 0.32 755	1192 60 0	0.20	0 0 125 0.18 23	56 3 0	0.30	413 0.32 134 0	260 13 0	0.30	2536 0.32 823 0	1101 55 0	0 0 1133 186 0.30 0.32 368 9 0 0 0 0 0 0						0.	5684 8384 50 0.69 5814 0	914 46 0

TOTAL HEAT GAIN BTU/H:

34984

TONS: 2.92

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 44531

TOTAL COMBINED HEAT LOSS BTU/H: 46201

Michael Offmule.



HEATING CIPM 145				EFIELD (\ PINE HO		ORMLEY))		TYPE:	38-11			I	DATE:	Apr-21			GFA:	2674	LO#	87614				
SIN COUNT 417 302 702 124 884 584 10	TOTAL HEAT LOSS	44,531	Α	TOTAL H	EAT GAIN	34,710		ä	furr a/c coil available	nace filter pressure pressure	0.2								060-14V SPEED	60	R		(BTU/H) =	60,000	
Fig. 1					1st														DLOW	0		DESI			_
AIS SA ms 50 United pressure via 0.16 AIS SA Ms 50 Unite					7							r/a											CFM @ .	6 " E.S.P.	
RUNF 1																		WILDIO			Т	EMPERAT	URE RISE	47	°F
ROOM MARE MSR ENS WIC BED-2 BED-3 BED-4 BATH BED-3 BED-4 MSR ENS-4 FAM KTER KTER KUNN LAUN PWD FOY MUD BAS		ted other						7			10	- 11		40	4.4	45	40	47	40	40	20	04	20	22	0.4
RIALOSSIMBH 1.65 1.63 0.38 1.69 1.72 2.04 0.65 1.72 2.04 1.65 0.76 0.75 2.31 1.72 1.72 3.09 0.15 0.55 3.55		I MBR		•				•																	24 BAS
RINGAD ALTO SIZE STATE PRINCE STATE PRINCE STATE PRINCE STATE STATE PRINCE STATE	RM LOSS MBH.			0.38			2.04			2.04	1.65			2.31			3.08				1.50				3.55
CEMBER RUNCOCINIS 78 50 4 82 85 91 13 85 91 78 6 84 80 80 80 88 3 12 50 8 19 19 19 ADJUSTED PRESSURE 0.77 0.17 0.17 0.16 0.16 0.16 0.17 0.17 0.17 0.17 0.16 0.16 0.16 0.16 ACTUAL DUCT LIGH 69 37 30 32 34 40 35 42 48 56 30 53 42 35 14 30 45 48 20 8 ACTUAL DUCT LIGH 69 37 30 32 34 40 35 42 48 56 30 53 42 35 14 30 45 48 20 8 ACTUAL DUCT LIGH 69 37 30 32 34 40 35 42 48 56 30 53 42 35 14 30 45 48 20 8 ACTUAL DUCT LIGH 69 37 30 32 34 40 35 42 48 56 30 53 42 35 14 30 45 48 20 8 ACTUAL DUCT LIGH 69 37 30 32 34 40 35 42 48 48 48 48 48 ACTUAL DUCT LIGH 69 37 40 48 48 48 48 48 48 48																									91
ACTUAL DISTEP PRESSURE 0.17 0.17 0.16 0.16 0.16 0.16 0.17 0.16 0.16 0.17 0.16 0.17 0.16 0.17 0.17 0.16																									0.57 19
ACTUAL BUST LEAST 69 37 30 32 34 40 32 42 46 56 36 53 42 35 14 32 14 30 45 48 29 8 EQUIVALENT LEAST 199 177 150 162 174 160 152 192 176 246 166 183 192 193 134 212 144 160 185 178 193 193 193 TOTAL EFFCTIVE LEAST 199 177 150 182 174 160 152 192 176 246 166 183 192 193 134 212 144 160 185 178 193 193 193 EAST LEAST LEAST 199 177 150 182 174 160 152 192 176 246 166 183 192 193				•								•													0.16
TOTAL EFFECTIVE LENGTH 199 177 150 182 174 180 152 192 176 246 196 183 192 135 134 212 144 160 185 178 139 138 138 178 139 138																									20
ADJUSTED PRESSURE 0.09 0.1 0.11 0.09 0.09 0.1 0.11 0.08 0.09 0.07 0.012 0.09 0.07 0.012 0.09 0.09 0.012 0.12 0.09 0.09 0.09 0.																									120
ROUND DUCT SIZE RATING VECTOR (Minim) 198 367 46 46 66 4 66 66 4 4																									140 0.12
HEATING VELOCITY (thrim) 214 308 115 224 224 225 238 367 46 418 433 434 448 438 438 436 448 43																									6
OUTLET GRILL SIZE 4X10 3X10 4X10 4X1																									464
TRUMK A B B D C D D C D A D A B D B C C A A B B B ROM MANE RML IOSA MBH ROM NAME RML IOSA MBH ROM PER RIVI NEGH ROM NAME RML IOSA MBH CFH PER RIVI NEGH ROM PER RIVI NEGH ROM DUCT SIGN ADJUSTED PRESSURE ACTUAL DUCT LGH EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROWN DUCT SIGN COCINE VELOCITY (TIME) COCINE VELOCITY (TIME) COCINE VELOCITY (TIME) TRUMK SIGN T																									97
RUN B ROOM NAME RIN ILOSS MBH. CFM PER RUN HEAT COMMERCEN IN COMMERCE																									4X10 C
ROOM NAME RIN LOSS MBH- CFM PER RUN HEAT RIN GAIN MBH- CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LICH EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VELOCITY (trimin) O'OTHER FRILS SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK TRUNK SUPPLY AIR TRUNK SUPPLY A																									
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RM GAIN MBIL CFM PER SURE ACTUAL DUCT LGIL EQUIVALENT LEINGTH TOTAL EFFECTIVE LEINGTH ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VELOCITY (trimin) OUTLET GRILL SIZE TRUNK SUPPLY AIR TRUNK SIZE TRUNK SIZE TRUNK TRUNK TRUNK SIZE TRUNK TRUNK SIZE TRUNK TRUNK TRUNK SIZE TRUNK TRU																									
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ACTUAL DUCT LGH- EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VEIGOLTY (firmin) COOLING VELOCITY (firmin) COOLING VELOCITY (firmin) COOLING VELOCITY (firmin) COTING VELOCITY (firmin) TRUNK SIZE TRUNK 3 177 0.07 9.4 10 x 8 571 TRUNK 9 8 674 TRUNK H 0 0.00 0 0 0 x 8 0 TRUNK 0 0 0.05 0 0 x 8 TRUNK 959 0.07 12 16 x 8 674 TRUNK H 0 0.00 0 0 0 x 8 0 TRUNK P 0 0.05 0 0 x 8 TRUNK C 279 0.08 8.7 10 x 8 502 TRUNK I 0 0.00 0 0 x 8 0 TRUNK P 0 0.05 0 0 x 8 TRUNK D 43 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 543 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 643 0.08 11.2 16 x 8 611 TRUNK J 0 0.00 0 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 644 0.05 0 0 0 x 8 0 TRUNK R 0 0.05 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 x 8 TRUNK D 645 0.05 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																									
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CFM	SUPPLY AIR TRUNK SIZE																	RETURN A							
TRUNK A 317 0.07 9.4 10 X 8 571 TRUNK G 0 0.00 0 0 X 8 0 TRUNK O 0.05 0 0 X 8 TRUNK B 599 0.07 12 16 X 8 674 TRUNK H 0 0.00 0 0 X 8 0 TRUNK C 279 0.08 8.7 10 X 8 502 TRUNK I 0 0.00 0 0 X 8 0 TRUNK C 279 0.08 8.7 10 X 8 502 TRUNK I 0 0.00 0 0 X 8 0 TRUNK C 279 0.08 11.2 16 X 8 611 TRUNK J 0 0.00 0 0 X 8 0 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.00 0 0 X 8 0 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.00 0 0 X 8 0 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.00 0 0 X 8 0 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.00 0 0 X 8 0 TRUNK C 0 0.05 0 0 X 8 TRUNK C 0 0.05 0 X 8 T																									VELOCITY (ft/min)
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TRUNK D 543 0.08 11.2 16 X 8 611 TRUNK J 0 0.00 0 0 X 8 0 TRUNK R 0 0.05 0 0 X 8 TRUNK R 0 0.00 0 0 X 8 0 TRUNK R 0 0.00 0 0 X 8 0 TRUNK R 0 0.05 0 0 X 8 TRUNK R 0 0.05 0 0 X 8 TRUNK R 0 0.00 0 0 X 8 0 TRUNK R 0 0.05 0 0 X 8 TRUNK R 0 0.05 0 TRUNK R 0 0.0	TRUNK B	599	0.07	12	16		8			TRUNK H	Ō	0.00	Ō	Ō		8	Ō		Ō		Ō	Ö		8	Ö
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RETURN AIR # 1 2 3 4 5 6 7																	•		-		-	•			0
O 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																				0.05				8	0 0
AIR VOLUME 130 130 75 75 85 340 130 0 0 0 0 0 0 0 0 180 TRUNKY 340 0.05 10.5 14 x 8 4 PLENUM PRESSURE 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	RETURN AIR #	1						7	0	0	0	0	0	0	0	0	BR								0 644
PLENUM PRESSURE 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	AIR VOLUME	-		-	-		-	-				-			-		180								437
EQUIVALENT LENGTH 195 175 275 235 195 120 215 0 0 0 0 0 0 0 135		0.15	0.15	0.15	0.15	0.15	0.15	0.15			0.15	0.15	0.15	0.15		0.15	0.15		0	0.05	0	0	х	8	0
																		DROP	1145	0.05	16.6	24	х	10	687
										1		U 1													
ADJUSTED PRESSURE 0.06 0.07 0.05 0.05 0.06 0.10 0.06 14.80 14.80 14.80 14.80 14.80 0.10										14.80		14.80				-									
ROUND DUCT SIZE 7 6.8 6 6 6 8.9 7 0 0 0 0 0 0 7	ROUND DUCT SIZE	7	6.8	6	6	6	8.9	7	0	0	0	0	0	0	0	0	7								
INLET GRILL SIZE 8 8 8 8 8 8 8 0 0 0 0 0 0 0 8	INLET GRILL SIZE	•	-	-	•		-		-	-	-	•		-	-	-	-	1							
X X X X X X X X X X X X X X X X X X X		~										~	~	~	~	~	~								



TYPE: SITE NAME:

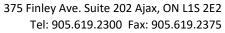
CENTREFIELD (WEST GORMLEY) RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

LO# 87614

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL	VENTILATION CAPACITY			9.32.3.5
a) Direct vent (sealed combustion) only		Total Ventilation Ca	pacity	169.6	_	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Vent	il. Capacity	79.5	_	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Suppleme	ental Capacity	90.1	_	cfm
d) Solid Fuel (including fireplaces)						
e) No Combustion Appliances		Model:	JST FAN CAPACITY VANEE 65H	Location:	R	SMT
HEATING SYSTEM		79.5	cfm	Location		HVI Approved
Forced Air Non Forced Air		PRINCIPAL EXHAL	JST HEAT LOSS CALCULATION	N		
		CFM	ΔT °F	FACTOR		% LOSS
Electric Space Heat		79.5 CFM	X 78 F X	1.08	Х	0.25
		SUPPLEMENTAL I Location	FANS BY INS' Model	TALLING CON cfm	ITRACTO HVI	R Sones
HOUSE TYPE	9.32.1(2)	ENS	BY INSTALLING CONTRACTOR	50		3.5
		BATH	BY INSTALLING CONTRACTOR	50	√	3.5
✓ I Type a) or b) appliance only, no solid fuel		ENS-4 PWD	BY INSTALLING CONTRACTOR BY INSTALLING CONTRACTOR	50 50	√	3.5
II Type I except with solid fuel (including fireplaces)		FWD	BT INSTALLING CONTRACTOR	50		3.5
		HEAT RECOVERY				9.32.3.11
III Any Type c) appliance		Model: 155	VANEE 65H cfm high	64		cfm low
IV Type I, or II with electric space heat		155		- 04	_	CITTIOW
Other: Type I, II or IV no forced air		75	% Sensible Efficiency @ 32 deg F (0 deg C)		✓ H	HVI Approved
		LOCATION OF INS	TALLATION			
SYSTEM DESIGN OPTIONS C	D.N.H.W.P.	LOCATION OF INC	TALLATION			
		Lot:		Concession		
1 Exhaust only/Forced Air System		Township		Plan:		
2 HRV with Ducting/Forced Air System		Address				
HRV Simplified/connected to forced air system		Roll #		Building Peri	mit #	
4 HRV with Ducting/non forced air system		BUILDER:	ROYAL PINE HOMES	•		
Part 6 Design		Name:	NOTAL FINE HOMES			
OTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:				
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City				
<u> </u>		City:				
Other Bedrooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Telephone #:		Fax#:		
Kitchen & Bathrooms 5 @ 10.6 cfm 53	cfm	INSTALLING CON	TRACTOR			
Other Rooms <u>4</u> @ 10.6 cfm <u>42.4</u>	cfm	Name:				
Table 9.32.3.A. TOTAL <u>169.6</u>	cfm	Address:				
PRINCIPAL VENTILATION CAPACITY REQUIRED	0.32.3.4.(1)	City:				
		Telephone #:		Fax#:		
1 Bedroom 31.8	cfm	DESIGNER CERTII	FICATION			
2 Bedroom 47.7	cfm	I hereby certify that	this ventilation system has been the Ontario Building Code.	designed		
3 Bedroom 63.6	cfm	Name:	HVAC Designs Ltd.			
4 Bedroom 79.5	cfm	Signature:	Much	and Ofound	e.	
5 Bedroom 95.4	cfm	HRAI#		001820		
TOTAL 79.5 cfm		Date:		April-21		
I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIF	FIED IN THE AP	PROPRIATE CATEGORY AS AN	"OTHER DESIGNER" UNDER DIVISION (C, 3.2.5 OF THE BU	JILDING CO	DE.



			Form	iula Sheet (For Air Lea	kage / Ventiliation C	alculation)				
			r: ROYAL PINE HOMES				Date:	4/19/2021		
		Volume Calculati	on				Air Change & Delt	a T Data		
				1					1	1
ise Volume	-1 (6:3)	T =1	(6.2)				TURAL AIR CHANG		0.227	
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	-		SUMMER NA	TURAL AIR CHANG	SE RATE	0.071	
Bsmt	1154 1154	10	11540							
First Second	1520	9	11655.4 13680	-			Design To	mperature Diffe	aranca	
Third	0	9	0	-			Tin °C	Tout °C	ΔT °C	ΔT °F
Fourth	0	9	0	1		Winter DTDh	22	-21	43	78
		Total:	36,875.4 ft ³	1		Summer DTDc	24	31	7	13
		Total:	1044.2 m³				1		· ·	
		•	•	_						
	5.2.3	3.1 Heat Loss due to A	ir Leakage			6.2.6 9	ensible Gain due	to Air Leakage		
		V.					V.			
	$HL_{airb} =$	$LR_{airh} \times \frac{V_b}{3.6} \times$	$DTD_h \times 1.2$		Н	$IG_{salb} = LR_{airc} \times$	$\frac{\sqrt{b}}{2c} \times DTD_c$	× 1.2		
0.227				= 3408 W	= 0.071		5.0		_	175 W
0.227	x <u>290.05</u>	x 43 °C	_ X <u>1.2</u>	= 3406 VV	= 0.071	x <u>290.05</u>	x / C	X 1.2	=	1/3 W
				= 11629 Btu/h	1				=	597 Btu/h
				- 11029 Btu/II	¹				-	397 Btu/1
	5.2.3.2 He	at Loss due to Mecha	nical Ventilation			6.2.7 Ser	sible heat Gain d	ue to Ventilatio	n	
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$				HL_1	$_{vairb} = PVC \times D'$	$TD_h \times 1.08 \times$	(1 - E)			
80 CFM	x 78 °F	x 1.08	x 0.25	= 1670 Btu/h	80 CFM	x 13 °F	x 1.08	x 0.25	=	275 Btu/h
		_							<u>-</u> '	
			5.2.3.3 Calcula	tion of Air Change Heat	Loss for Each Room (Floo	or Multiplier Section)				
						(>-			
		HL_{c}	_{uirr} = Level Fact	$or \times HL_{airbv} \times \{(H_{airbv}) \times \{$	$(L_{agcr} + HL_{bgcr}) \div$	$(HL_{agclevel} + HL_{i})$	bgclevel)}			
				HLairve Air Leakage +	Laural Carrativativa Harat					
		Level	Level Factor (LF)	Ventilation Heat Loss	Level Conductive Heat	•				
				(Btu/h)	Loss: (HL _{clevel})	HLairbv / H	ILIEVEI)			
		1	0.5		8,384	0.69	3			
		2	0.3		10,746	0.32	5			
		3	0.2	11,629	12,804	0.18	2			
		4	0		0	0.00	0			
		5	0		0	0.00	0			
		·	·	+ ventilation heat loss	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				







HEAT LOSS AND GAIN SUMMARY SHEET

		IILAI L	JOS KILD GK	III JOIVIIVIANT STILLT		
MODEL:	38-11			BUILDER: ROYAL PINE HOMES		
SFQT:	2674	LO# 8	7614	SITE: CENTREFIELD (WES	T GORMLEY)	
DESIGN ASS	SUMPTIONS					
DESIGN AS	SOIVIF HONS					
HEATING			°F	COOLING	°F	
OUTDOOR I	DESIGN TEMP.		-6	OUTDOOR DESIGN TEMP.	88	
INDOOR DE	SIGN TEMP.		72	INDOOR DESIGN TEMP. (MAX 75°F)	75	
BUILDING D	DATA					
ATTACHMENT:		DETACHED		# OF STORIES (+BASEMENT):	3	
FRONT FAC	ES:	EAST		ASSUMED (Y/N):	Υ	
AIR CHANGES PER HOUR:		2.50		ASSUMED (Y/N):	Υ	
AIR TIGHTNESS CATEGORY:		TIGHT		ASSUMED (Y/N):	Υ	
WIND EXPOSURE:		SHELTERED		ASSUMED (Y/N):	Υ	
HOUSE VOLUME (ft³):		36875.4		ASSUMED (Y/N):	Υ	
INTERNAL SHADING:		BLINDS/C	URTAINS	ASSUMED OCCUPANTS:	5	
INTERIOR LIGHTING LOAD (Btu/h/ft²):		n/ft²):	1.65	DC BRUSHLESS MOTOR (Y/N):	Υ	
FOUNDATIO	ON CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	7.0 ft	
LENGTH:	52.0 ft	WIDTH:	32.0 ft	EXPOSED PERIMETER:	168.0 ft	

2012 OBC - COMPLIANCE PACKAGE			
	Compliance	Package	
Component	SB-12 PERFORMANCE		
	Nominal	Min. Eff.	
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20	
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70	
Exposed Floor Minimum RSI (R)-Value	31	29.80	
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50	
Basement Walls Minimum RSI (R)-Value	20	21.12	
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-	
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10	
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13	
Windows and Sliding Glass Doors Maximum U-Value	1.6	-	
Skylights Maximum U-Value	2.6	-	
Space Heating Equipment Minimum AFUE	0.96	-	
HRV Minimum Efficiency	75%	-	
Domestic Hot Water Heater Minimum EF	TE=94%	-	

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE





Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

We	eather Sta	tion Description					
Province:	Ontario	·					
Region:	Richmon	Richmond Hill					
	Site D	escription					
Soil Conductivity:	Normal c	Normal conductivity: dry sand, loam, clay					
Water Table:	7-10 m, 23-33 ft)						
Foundation Dimensions							
Floor Length (m):	15.8						
Floor Width (m):	9.8						
Exposed Perimeter (m):	0.0						
Wall Height (m):	3.0						
Depth Below Grade (m):	2.13	Insulation Configuration					
Window Area (m²):	1.4						
Door Area (m²):	1.9						
	Radi	ant Slab					
Heated Fraction of the Slab:	0						
Fluid Temperature (°C):	33						
Design Months							
Heating Month	1						
	Founda	tion Loads					
Heating Load (Watts): 1665							

TYPE: 38-11 **LO#** 87614

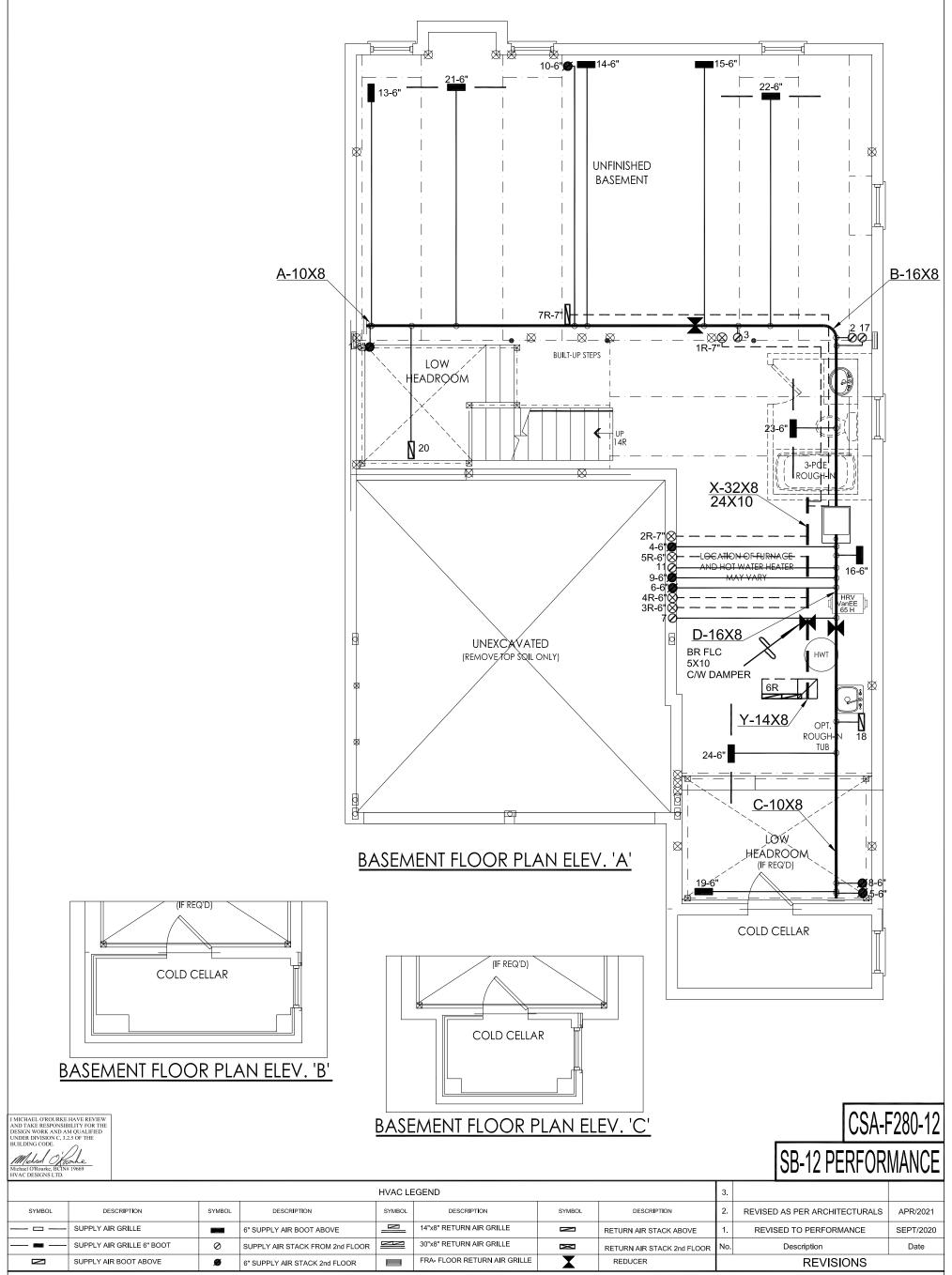


Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Sta	ition Description	
Province:	Ontario	
Region:	Richmond Hill	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
	Shielding	
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	6.74	
Building (Configuration	
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m³):	1044.2	
Air Leakag	ge/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)	
Custom BDT Data:	ELA @ 10 Pa. 974.8 cm	2
	2.50 ACH @ 50 P	a
Mechanical Ventilation (L/s):	Total Supply Total Exhaust	
, , ,	37.5 37.5	
Flu	ue Size	
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Inf	filtration Rates	
Heating Air Leakage Rate (ACH/H	H): 0.227	
Cooling Air Leakage Rate (ACH/H	H): 0.071	

TYPE: 38-11 **LO#** 87614



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ROYAL PINE HOMES

ONTARIO BUILDING CODE.

Project Name

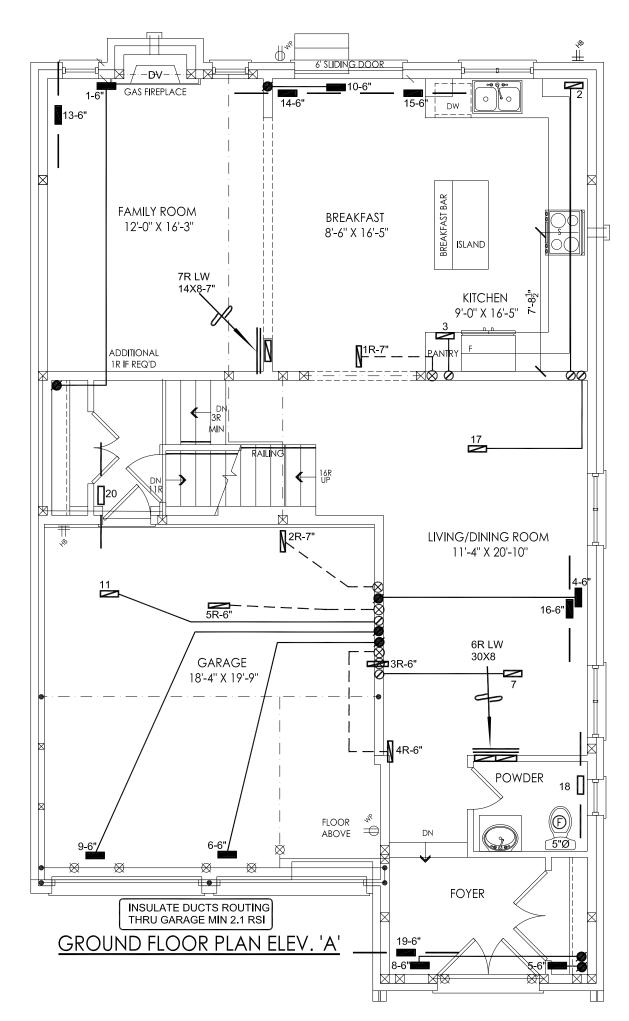
CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

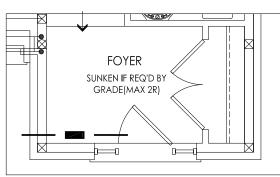
375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

		SS 46201	BTU/H	# OF RUNS	S/A	R/A	FANS	Sheet Title	0=14=1 =
	_	IN I T DATA		3RD FLOOR				BA	SEMENT
		ARRIER		2ND FLOOR	12	5	4		EATING
	MODEL 59TN	6A-060-14\	/	1ST FLOOR	7	2	2	L	.AYOUT
	INPUT	60	MBTU/H	BASEMENT	4	1	0	Date (SEPT/2020
_	OUTPUT	F0	MBTU/H	ALL S/A DIFFU:	SERS	4 "x10		Scale 3	3/16" = 1'-0"
	COOLING	58	TONS	UNLESS NOTE ON LAYOUT. A				В	CIN# 19669
Э		3.0	10113	UNLESS NOTE			ISE		07044
	FAN SPEED	1145	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.				LO#	87614

38-11





GROUND FLOOR PLAN ELEV. 'B'

FOYER

GROUND FLOOR PLAN ELEV. 'C'

CSA-F280-12

SB-12 PERFORMANCE

HVAC DESIGNS ETD.										
			3.							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	×	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	Ø	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

HVA DESIGNS LTD.

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

Specializing in Residential Mechanical Design Services

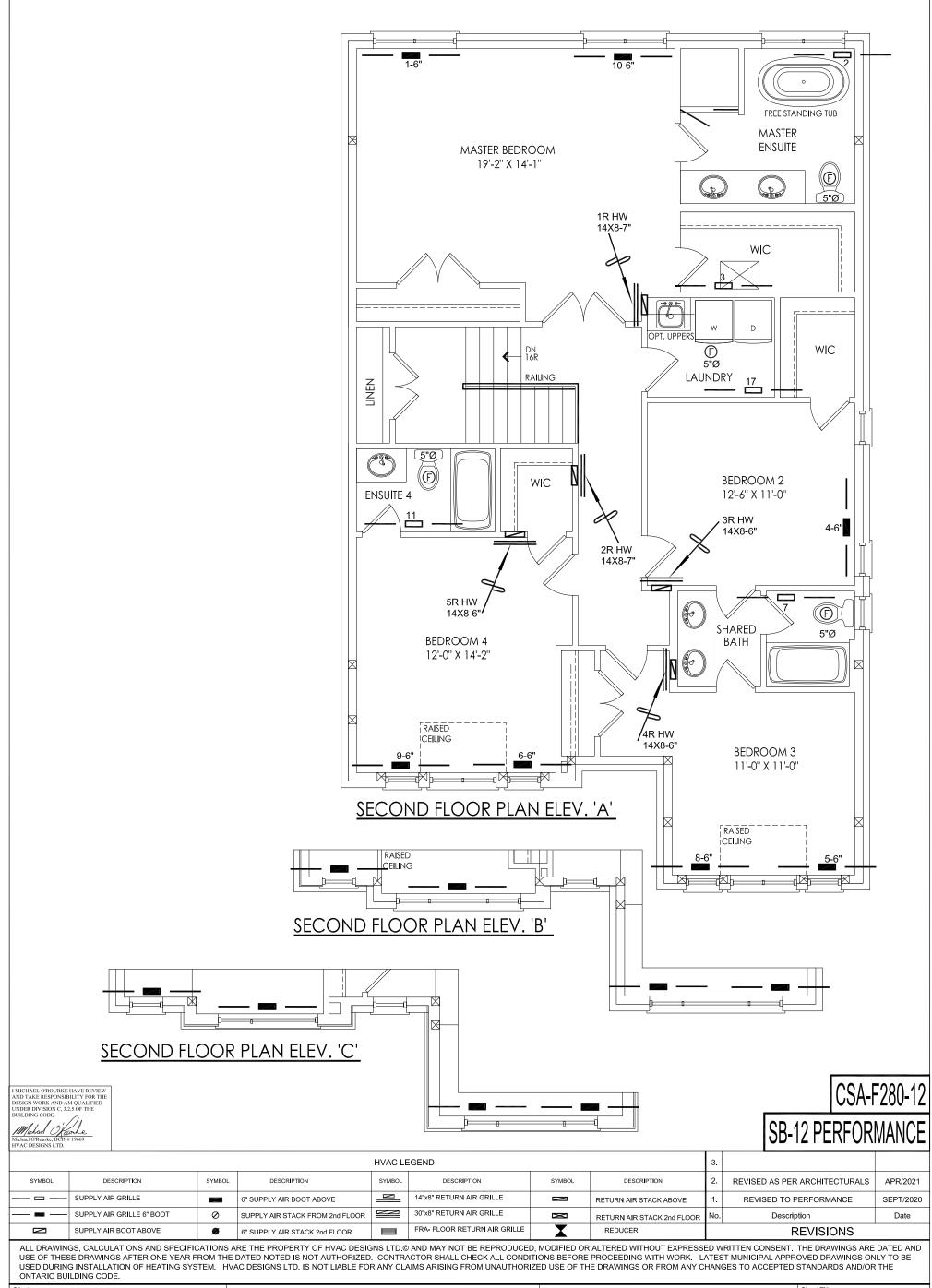
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

BCIN# 19669

LO#

87614

38-11 2674 sq



Cllent

ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY)
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SECOND FLOOR
HEATING
LAYOUT

Date SEPT/2020 Scale 3/16" = 1'-0" BCIN# 19669

LO# 87614

38-11 2674 sq

Schedule 1: Designer Information

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

A. Projec	t Information						
	nber, street name					Unit no.	Lot/con.
	·	T=	T=				
Municipality		Postal code	Plan number/ othe	r desc	cription		
RICHMOND H							
B. Individ	ual who reviews and takes	responsibility f	or design activitie	s			
Name			Firm				
MICHAEL C			HVAC DESIGNS I	_TD.	Trans.		Tr
Street addre					Unit no. 202		Lot/con. N/A
	AVE	Postal code	Province		E-mail		IN/A
Municipality AJAX		L1S 2E2	ONTARIO		info@hvacdes	sians ca	
Telephone n	uumher	Fax number	ONTAINO		Cell number	Jigiio.cu	
(905) 619-2		(905) 619-2375			()		
` ,		` ′			` ,		
C. Design	activities undertaken by in	ndividual identif	ied in Section B.	Build	ding Code Ta	ble 3.5.2.1 OF Di	vision Cj
☐ House	9	⊠ HVAC	C – House			Building Structu	ıral
	Buildings		ng Services			Plumbing – Hou	
_	Buildings	⊔ Detect □ Fire P	tion, Lighting and	Pow		Plumbing – All I On-site Sewage	
	lex Buildings	u File P	T			On-site Sewage	e Systems
	of designer's work 6 / GAIN CALCULATIONS		Mod	iei:	38-11 BELVEDERE		
DUCT SIZIN					FIN BSMT WUI		
	AL MECHANICAL VENTILATI	ON DESIGN SUMI	MARY Dro	ioot:	CENTRELLE D	(MEST CODMIEV)	
RESIDENTI	AL SYSTEM DESIGN per CSA	\-F280-12	F10	ject.	CENTREFIELD ((WEST GORMLEY)	
D. Declara	ation of Designer		_				
ı	MICHAEL O'ROURKE				declare th	nat (choose one as	appropriate):
		orint name)				•	, ,
[review and take responsibility bility of the Building Code classes/categories.					ection 3.2.4.of appropriate	
	Individual BCIN: Firm BCIN:						
	review and take responsibility the designer" under subsection 3		am qualified in the apion C, of the Building			s an "other	
	Individual BCIN:	19669					
	Basis for exemption		nd qualification:		O.B.C SEN	TENCE 3.2.4.1	(4)
	The design work is exempt Basis for exemption from registr		tion and qualification	requi	irements of the	Building Code.	
I certify that	:						
	The information contained I have submitted this applic		dule is true to the bes ledge and consent o				
	April 19, 2021				Muchan	1 Ofounde	
	Date	=				Signature of D	esigner
	Duic					Digitature of D	00161101

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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.



	CENTR				MLEY)				FIN BSI	MT WU	В							DATE:								ANGE RATE 0.227				ΔT °F.				CSA-F28
BUILDER:	ROYAL	PINE I	IOMES					TYPE:	38-11					GFA:	2674			LO#					UMMEF	RNATU	RAL AIR CH	ANGE RATE 0.071			GAIN	ΔT °F.			3-12 PE	RFORMAN
ROOM USE				MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH						ENS-4		1	B-BAT	Ή		
EXP. WALL				41			22			6			18			35			31			7						8			9			
CLG. HT.				9			9			9			9			9			9			9						9			10			
	FACTO	RS																																
GRS.WALL AREA	LOSS	GAIN		369			198			54			162			315			279			63						72			63			
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			GAIN		LOSS	GAIN					LOSS	GAIN			GAIN		
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0		
EAST	21.8	41.6	44	958	1828	22	479	914	ō	0	0	0	0	0	o	0	0	0	0	0	ō	0	ō				0	0	0	o	ō	0		
SOUTH		24.9	0	0	0	0	0	0	ő	0	0	18	392	448	0	0	0	0	0	0	7	152	174				0	0	0	3	65	75		
WEST	21.8	41.6	0	0	۰	0	0	0	0	0	0	0	0	0	51	1111	2119	55	1198	2285	ó	0	0				0	0	0	0	0	0		
SKYLT.					0			-		-											_	-						-		_	-			
	35.8	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0		
DOORS	25.8	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0		
NET EXPOSED WALL	4.2	0.7	325	1367	225	176	740	122	54	227	37	144	606	100	264	1110	183	224	942	155	56	236	39				72	303	50	0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	27	99	16		
EXPOSED CLG	1.3	0.6	355	467	209	125	164	73	70	92	41	232	305	136	162	213	95	198	260	116	85	112	50				75	99	44	0	0	0		
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0	0	0	0	40	112	50	40	112	50	0	0	0				0	0	0	0	0	0		
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0	0	0	0	0	0	0	40	104	17	238	621	102	0	0	0				75	196	32	0	0	0		
BASEMENT/CRAWL HEAT LOSS				0		1	0		1	0			0		1	0			0		1	0					1	0		1	269		1	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0						0			0			
SUBTOTAL HT LOSS				2792		1	1384		1	319			1303		1	2651			3134		1	500					1	597		1	433		1	
SUB TOTAL HT GAIN					2262	1		1109	1		79			684	1		2464			2709	1		263				1		126	1		91	1	
LEVEL FACTOR / MULTIPLIER			0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18		0.20	0.18					0.20	0.18		0.50	0.66			
AIR CHANGE HEAT LOSS				507			251			58			237			481			569			91						108			285			
AIR CHANGE HEAT GAIN					112			55			4			34			122			134			13						6			5		
DUCT LOSS				0			0	•••		0	•		154	•		313			370			59						71	•		0	•		
DUCT GAIN				•	0		•	0		•	0			170		0.0	357		0.0	383		•••	28					• •	13		•	0		
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	4		240	1		240	0		0				0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS	240		-		742	"		n	ľ		0	•		742	١.		742	•		742	ľ		0						0			0		
TOTAL HT LOSS BTU/H				3299			1635	٠		377	٠		1693			3446	172		4074	,		650	ŭ					776	٠		719	-		
TOTAL HT GAIN x 1.3 BTU/H				0200	4674		.000	1514		0	107		1000	2431		0440	5103		40.4	5470		000	395						189		, 10	124		
TOTAL III GAIN X 1:3 BTO/II					40/4			1314			107			2431			3103			3470			395						103			124		
ROOM USE																																		
							FΔM			KT/BR			I V/DN			I AUN			PWD		1	FOY			MUD						WUR			BAS
							FAM 32			KT/BR			LV/DN			LAUN			PWD 6			FOY 29			MUD 15						WUB	1		BAS 142
EXP. WALL							32			35			39			0			6			29			15						17	1		142
	FACTO	ıPS																														1		
EXP. WALL CLG. HT.	FACTO						32 10			35 10			39 10			0 9			6 10			29 11			15 11						17 10			142 10
EXP. WALL CLG. HT. GRS.WALL AREA							32 10 323	CAIN		35 10 354	CAIN		39 10 394	CAIN		0 9 0	CAIN		6 10 61	CAIN		29 11 322	CAIN		15 11 167						17 10 170			142 10 994
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING	LOSS	GAIN					32 10 323 LOSS	GAIN		35 10 354 LOSS	GAIN		39 10 394 LOSS			0 9 0 LOSS	GAIN		6 10 61 LOSS	GAIN		29 11 322 LOSS	GAIN	ı	15 11 167 LOSS GAIN						17 10 170 LOSS	3 GAIN		142 10 994 LOSS G
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH	LOSS 21.8	GAIN 16.0				0	32 10 323 LOSS 0	0	0	35 10 354 LOSS 0	0	0	39 10 394 LOSS 0	0	0	0 9 0 LOSS 0	0	0	6 10 61 LOSS 0	0	0	29 11 322 LOSS 0	0		15 11 167 LOSS GAIN 0 0					0	17 10 170 LOSS 0	GAIN 0	0	142 10 994 LOSS G
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST	21.8 21.8	16.0 41.6				22	32 10 323 LOSS 0 479	0 914	0 63	35 10 354 LOSS 0 1372	0 2618	0	39 10 394 LOSS 0	0 0	0	0 9 0 LOSS 0	0	0	6 10 61 LOSS 0 0	0	0	29 11 322 LOSS 0 0	0 0	0 0	15 11 167 LOSS GAIN 0 0 0 0					3	17 10 170 LOSS 0 65	6 GAIN 0 125	6	142 10 994 LOSS G 0 131 2
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH	21.8 21.8 21.8 21.8	16.0 41.6 24.9				22 0	32 10 323 LOSS 0 479 0	0 914 0	0 63 0	35 10 354 LOSS 0 1372 0	0 2618 0	0 0 38	39 10 394 LOSS 0 0 828	0 0 946	0	0 9 0 LOSS 0 0	0 0 0	0 0 9	6 10 61 LOSS 0 0	0 0 224	0	29 11 322 LOSS 0 0	0 0 0	0 0 0	15 11 167 LOSS GAIN 0 0 0 0					3	17 10 170 LOSS 0 65 0	6 GAIN 0 125 0	6	142 10 994 LOSS G 0 131 2 131 1
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST	21.8 21.8 21.8 21.8 21.8	16.0 41.6 24.9 41.6				22 0 0	32 10 323 LOSS 0 479 0	0 914 0 0	0 63 0	35 10 354 LOSS 0 1372 0	0 2618 0 0	0 0 38 0	39 10 394 LOSS 0 0 828	0 0 946 0	0 0	0 9 0 LOSS 0 0	0 0 0	0 0 9 0	6 10 61 LOSS 0 0 196	0 0 224 0	0 0 18	29 11 322 LOSS 0 0 0 392	0 0 0 748	0 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0					3 0	17 10 170 LOSS 0 65 0	6 GAIN 0 125 0	6 6	142 10 994 LOSS G 0 131 2 131 1
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT.	21.8 21.8 21.8 21.8 21.8 35.8	16.0 41.6 24.9 41.6 101.2				22 0 0 0	32 10 323 LOSS 0 479 0 0	0 914 0 0	0 63 0 0	35 10 354 LOSS 0 1372 0 0	0 2618 0 0	0 0 38 0	39 10 394 LOSS 0 0 828 0	0 0 946 0	0 0 0	0 9 0 LOSS 0 0 0	0 0 0 0	0 9 0	6 10 61 LOSS 0 0 196 0	0 0 224 0	0 0 18 0	29 11 322 LOSS 0 0 0 392 0	0 0 0 748 0	0 0 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0					3 0 0	17 10 170 LOSS 0 65 0 0	6 GAIN 0 125 0 0	6 6 0	142 10 994 LOSS G. 0 131 2 131 1 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS	21.8 21.8 21.8 21.8 21.8 35.8 25.8	16.0 41.6 24.9 41.6 101.2				22 0 0 0 0	32 10 323 LOSS 0 479 0 0	0 914 0 0 0	0 63 0 0	35 10 354 LOSS 0 1372 0 0	0 2618 0 0 0	0 0 38 0 0	39 10 394 LOSS 0 0 828 0 0	0 0 946 0 0	0 0 0 0	0 9 0 LOSS 0 0 0 0	0 0 0 0	0 9 0 0	6 10 61 LOSS 0 0 196 0	0 0 224 0 0	0 0 18 0 40	29 11 322 LOSS 0 0 0 392 0 1034	0 0 0 748 0 170	0 0 0 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 517 85					3 0 0 0 20	17 10 170 LOSS 0 65 0 0 0	6 GAIN 0 125 0 0 0	6 6 0 0 20	142 10 994 LOSS G. 0 131 2 131 1 0 0 517 8
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL	21.8 21.8 21.8 21.8 21.8 25.8 4.2	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7				22 0 0 0 0 0 301	32 10 323 LOSS 0 479 0 0 0	0 914 0 0 0 0 208	0 63 0 0 0 0	35 10 354 LOSS 0 1372 0 0 0	0 2618 0 0 0 0 201	0 0 38 0 0 0 356	39 10 394 LOSS 0 0 828 0 0 0	0 0 946 0 0 0 246	0 0 0 0 0 0	0 9 0 LOSS 0 0 0 0	0 0 0 0 0	0 9 0 0 0 52	6 10 61 LOSS 0 0 196 0 0	0 0 224 0 0 0 36	0 0 18 0 40 264	29 11 322 LOSS 0 0 0 392 0 1034 1110	0 0 748 0 170 183	0 0 0 0 0 0 20 147	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 517 85 616 101					3 0 0 0 20 147	17 10 170 LOSS 0 65 0 0 517 618	G GAIN 0 125 0 0 0 85 102	6 6 0 0 20	142 10 994 LOSS G 0 131 2 131 1 0 0 517 3
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BASH WALL ABOVE GR	21.8 21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6				22 0 0 0 0 0 301	32 10 323 LOSS 0 479 0 0 0 0 1267	0 914 0 0 0 0 208	0 63 0 0 0 0 291	35 10 354 LOSS 0 1372 0 0 0 1222 0	0 2618 0 0 0 0 0 201	0 0 38 0 0 0 356	39 10 394 LOSS 0 0 828 0 0 0 1497	0 0 946 0 0 0 246	0 0 0 0 0 0 0	0 9 0 LOSS 0 0 0 0 0	0 0 0 0 0	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217	0 0 224 0 0 0 36 0	0 0 18 0 40 264 0	29 11 322 LOSS 0 0 0 392 0 1034 1110	0 0 748 0 170 183 0	0 0 0 0 0 0 20 147 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 517 85 616 101 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 0 517 618	6 GAIN 0 125 0 0 0 85 102	6 6 0 0 20 0 426	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				22 0 0 0 0 301 0	32 10 323 LOSS 0 479 0 0 0 0 1267 0	0 914 0 0 0 0 208 0	0 63 0 0 0 0 291 0	35 10 354 LOSS 0 1372 0 0 0 1222 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0	0 0 0 0 0 0 0	0 9 0 LOSS 0 0 0 0 0 0	0 0 0 0 0 0 0	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0	0 0 224 0 0 0 0 36 0	0 0 18 0 40 264 0	29 11 322 LOSS 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0	0 0 0 0 0 20 147 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 517 85 616 101 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0	6 GAIN 0 125 0 0 0 85 102 0	6 6 0 0 20 0 426	142 10 994 LOSS G 0 131 2 131 1 0 0 517 6 0 1569 2
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 0 1267	0 914 0 0 0 0 208	0 63 0 0 0 0 291 0	35 10 354 LOSS 0 1372 0 0 0 1222 0	0 2618 0 0 0 0 0 201	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0	0 0 224 0 0 0 36 0	0 0 18 0 40 264 0 0	29 11 322 LOSS 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0	0 0 0 0 0 20 147 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 517 85 616 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 0 517 618	6 GAIN 0 125 0 0 0 85 102 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 6 0 1569 2 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6				22 0 0 0 0 301 0	32 10 323 LOSS 0 479 0 0 0 0 1267 0	0 914 0 0 0 0 208 0	0 63 0 0 0 0 291 0	35 10 354 LOSS 0 1372 0 0 0 1222 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0	0 0 0 0 0 0 0	0 9 0 LOSS 0 0 0 0 0 0	0 0 0 0 0 0 0	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0	0 0 224 0 0 0 0 36 0	0 0 18 0 40 264 0	29 11 322 LOSS 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0	0 0 0 0 0 20 147 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 517 85 616 101 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0	6 GAIN 0 125 0 0 0 85 102 0	6 6 0 0 20 0 426	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0 1569 2 0 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	29 11 322 LOSS 0 0 392 0 1034 1110 0	0 0 748 0 170 183 0	0 0 0 0 0 20 147 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 517 85 616 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0	6 GAIN 0 125 0 0 0 85 102 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 6 0 1569 2 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BSMT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0 125 0	0 0 0 0 0 0 0 0 56	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0	0 0 748 0 170 183 0	0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 517 85 616 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0	6 GAIN 0 125 0 0 0 85 102 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0 1569 2 0 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0 125 0	0 0 0 0 0 0 0 0 56	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0	0 0 748 0 170 183 0	0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0 1569 2 0 0
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0	0 2618 0 0 0 0 201 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 0 246 0 0	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 56	0 9 0 0 0 52 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0	0 0 2224 0 0 0 36 0	0 0 18 0 40 264 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0	0 0 748 0 170 183 0	0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 517 85 616 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1517 8 0 0 1569 2 0 0 0 4744
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED BABIT WALL ABOVE GR EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0	0 2618 0 0 0 0 201 0 0	0 0 38 0 0 0 356 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0	0 0 946 0 0 246 0 0	0 0 0 0 0 0 0 95	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 0	0 0 0 0 0 0 0 56	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0	0 0 748 0 170 183 0 0	0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0 0 1569 2 0 0 4744
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG EXPOSED CLG EXPOSED LGD	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0	0 0 38 0 0 0 356 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0	0 0 0 0 0 0 95 0	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 0	0 0 0 0 0 0 0 56	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 0 217 0 0 0 0 0 413	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0	0 0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1517 4 0 0 1569 2 0 0 4744 7091
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0	0 63 0 0 0 0 291 0 0	35 10 354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0	0 0 38 0 0 0 356 0 0	39 10 394 LOSS 0 0 828 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0	0 0 0 0 0 0 95 0	0 9 0 LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 56	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 224 0 0 0 36 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0	0 0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 4 0 1569 2 0 0 4744 7091 7
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSI AIR CHANGE HEAT LOSI	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0	0 63 0 0 0 0 291 0 0	35 10 354 LOSS 0 1372 0 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0 0	0 0 38 0 0 0 356 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0 0	0 0 0 0 0 0 95 0	0 9 0 LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 56 0	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536	0 0 748 0 170 183 0 0 0	0 0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 173 85 616 101 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 517 6 0 1569 2 0 0 4744 7091 7 0.66 5529
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED USG EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUBTOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0	0 63 0 0 0 0 291 0 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 0 201 0 0 0	0 0 38 0 0 0 356 0 0	39 10 394 LOSS 0 0 828 0 0 1497 0 0 0 0 2324	0 0 946 0 0 246 0 0 0	0 0 0 0 0 0 95 0	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 125 0 125 0 18 23	0 0 0 0 0 0 56 0	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0	0 0 748 0 170 183 0 0 0	0 0 0 0 0 20 147 0 0	15 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	6 GAIN 0 125 0 0 85 102 0 0	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1569 2 0 0 4744 7091 7 0.666 5529
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS OUCT GAIN	21.8 21.8 21.8 21.8 35.8 35.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 301 0 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 0 208 0 0 0 0	0 63 0 0 0 0 291 0 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 2011 0 0 0 2819	0 0 38 0 0 0 356 0 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0	0 0 0 0 0 0 95 0	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 9 0 0 52 0 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0	0 0 748 0 170 183 0 0 0 0	0 0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3 0 0 0 20 147 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	S GAIN 0 125 0 0 0 85 102 0 0 0 0 0 311	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1569 2 0 0 4744 7091 7 0.66 5529
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE	21.8 21.8 21.8 21.8 35.8 25.8 4.2 3.7 1.3 2.8	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 0 301 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 208 0 0 0 0 0 1123	0 63 0 0 0 0 291 0 0 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 2011 0 0 0 0 2819	0 0 38 0 0 0 356 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 9 0 0 0 52 0 0 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0	0 0 748 0 170 183 0 0 0 0 0	0 0 0 0 0 20 147 0 0	15 11 167 LOSS GAIN 0					3 0 0 0 220 147 0 0 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	S GAIN 0 125 0 0 0 85 102 0 0 0 0 3111	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1569 2 0 0 4744 7091 7 0.66 5529
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG EXPOSED CLG ON ATTIC EXPOSED CLG EXPOSED FLOOR BASEMENT/CRAWL HEAT LOSS SUB TOTAL HT LOSS SUB TOTAL HT GAIN LEVEL FACTOR/MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT GAIN DUCT LOSS DUCT GAIN HEAT GAIN PEOPLE HEAT GAIN APPLIANCES/LIGHTS	21.8 21.8 21.8 21.8 35.8 35.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 301 0 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746 0.32 567	0 914 0 0 0 208 0 0 0 0	0 63 0 0 0 0 291 0 0 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 0 2594 0.32	0 2618 0 0 0 2011 0 0 0 2819	0 0 38 0 0 0 356 0 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324 0.32 755	0 0 946 0 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 9 0 LOSS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 9 0 0 0 52 0 0 0	6 10 61 LOSS 0 0 196 0 0 0 217 0 0 0 0 413 0.32 134	0 0 2224 0 0 0 36 0 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 2536 0.32 823	0 0 748 0 170 183 0 0 0 0	0 0 0 0 0 0 20 147 0 0 0	15 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					3 0 0 0 220 147 0 0 0	17 10 170 LOSS 0 65 0 0 517 618 0 0 0 106 1306	G GAIN 0 125 0 0 0 0 855 102 0 0 0 0 0 3111	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1569 2 0 0 4744 7091 7 0.66 5529 9
EXP. WALL CLG. HT. GRS.WALL AREA GLAZING NORTH EAST SOUTH WEST SKYLT. DOORS NET EXPOSED WALL NET EXPOSED WALL NET EXPOSED CLG NO ATTIC EXPOSED CLG EXPOSED FLOOR SASEMENT/CRAWL HEAT LOSS SLAB ON GRADE HEAT LOSS SUB TOTAL HT GAIN LEVEL FACTOR / MULTIPLIER AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS AIR CHANGE HEAT LOSS DUCT GAIN HEAT GAIN HEAT GAIN	21.8 21.8 21.8 21.8 35.8 35.8 4.2 3.7 1.3 2.8 2.6	GAIN 16.0 41.6 24.9 41.6 101.2 4.3 0.7 0.6 0.6 1.3				22 0 0 0 301 0 0 0	32 10 323 LOSS 0 479 0 0 0 1267 0 0 0 0 1746	0 914 0 0 0 208 0 0 0 0 0 1123	0 63 0 0 0 0 291 0 0 0	35 10 354 LOSS 0 1372 0 0 0 1222 0 0 0 0 0 2594	0 2618 0 0 0 2011 0 0 0 0 2819	0 0 38 0 0 0 356 0 0 0	39 10 394 LOSS 0 0 828 0 0 0 1497 0 0 0 0 2324	0 0 946 0 0 0 246 0 0 0 0	0 0 0 0 0 0 0 0 95 0 0	0 9 0 LOSS 0 0 0 0 0 0 0 125 0 0 125 0 125 0 18 23	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 9 0 0 0 52 0 0 0	6 10 61 LOSS 0 0 196 0 0 217 0 0 0 0 413	0 0 2224 0 0 0 36 0 0 0 0	0 0 18 0 40 264 0 0 0	29 11 322 LOSS 0 0 0 392 0 1034 1110 0 0 0 0 0 0 0	0 0 748 0 170 183 0 0 0 0 0	0 0 0 0 0 0 20 147 0 0 0	15 11 167 LOSS GAIN 0					3 0 0 0 220 147 0 0 0	17 10 170 LOSS 0 65 0 0 517 618 0 0	G GAIN 0 125 0 0 0 0 855 102 0 0 0 0 0 3111	6 6 0 0 20 0 426 0	142 10 994 LOSS G 0 131 2 131 1 0 0 1569 2 0 0 4744 7091 7 0.66 5529

TOTAL HEAT GAIN BTU/H:

34767

TONS: 2.90

LOSS DUE TO VENTILATION LOAD BTU/H: 1670

STRUCTURAL HEAT LOSS: 44977

TOTAL COMBINED HEAT LOSS BTU/H: 46647

Michael Offmule.



	1145 44,977 25.46 4th 0	A Srd 0 0	COC TOTAL HAIR FLOW I 2nd 12 5	DLING CFM HEAT GAIN RATE CFM 1st 7	1145 34,492		ple max	furr a/c coil vailable for enum pre s/a dif pr	FIN BSM 38-11 pressure nace filter pressure pressure s/a & r/a ssure s/a ress. loss ssure s/a	0.6 0.05 0.2 0.35 0.18 0.02		r/a _l a grille pre usted pre		0.17 0.02			ME N	**	*CARRIE 60 820 0		OUTPUT	_	60,000 58,000 1145 .6 " E.S.P.	°F
All S/A runs 5"Ø unless nov RUN # ROOM NAME RM LOSS MBH. CFM PER RUN HEAT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VELOCITY (ff/min) COOLING VELOCITY (ff/min) OUTLET GRILL SIZE TRUNK				4 BED-2 1.69 43 2.43 81 0.16 32 150 182 0.09 6 219 413 4X10 D	5 BED-3 1.72 44 2.55 85 0.16 34 140 174 0.09 6 224 433 4X10 C	6 BED-4 2.04 52 2.74 91 0.16 40 120 160 0.1 6 265 464 4X10 D	7 BATH 0.65 17 0.39 13 0.17 32 120 152 0.11 4 195 149 3X10 D	8 BED-3 1.72 44 2.55 85 0.16 42 150 192 0.08 6 224 433 4X10 C	9 BED-4 2.04 52 2.74 91 0.16 46 130 176 0.09 6 265 464 4X10 D	10 MBR 1.65 42 2.34 78 0.17 56 190 246 0.07 6 214 398 4X10 A	11 ENS-4 0.78 20 0.19 6 0.17 36 160 196 0.09 4 229 69 3X10 D	acted pre-	13 FAM 2.31 59 2.50 83 0.16 53 130 183 0.09 6 301 423 4X10 A	14 KT/BR 1.72 44 2.41 80 0.17 42 150 192 0.09 5 323 587 3X10 A	15 KT/BR 1.72 44 2.41 80 0.17 35 100 135 0.13 5 323 587 3X10 B	16 LV/DN 3.08 78 2.59 86 0.16 14 120 134 0.12 6 398 438 4X10 D	17 LAUN 0.15 4 0.08 3 0.17 32 180 212 0.08 4 46 34 3X10 B	18 PWD 0.55 14 0.35 12 0.17 14 130 144 0.12 4 161 138 3X10 C	19 FOY 3.36 86 1.50 50 0.16 30 130 160 0.1 6 438 255 4X10 C	20 MUD 1.50 38 0.25 8 0.17 45 140 185 0.09 4 436 92 3X10 A	21 BAS 3.48 89 0.60 20 0.16 61 160 221 0.07 6 454 102 4X10 A	22 BAS 3.48 89 0.60 20 0.16 37 140 177 0.09 6 454 102 4X10 B	23 B-BATH 0.72 18 0.17 4 0.17 8 130 0.12 4 4 207 46 3X10 B	24 BAS 3.48 89 0.60 20 0.16 20 120 140 0.12 6 454 102 4X10 C
RUN # ROOM NAME RM LOSS MBH. CFM PER RUN HEATT RM GAIN MBH. CFM PER RUN COOLING ADJUSTED PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LENGTH ADJUSTED PRESSURE ROUND DUCT SIZE HEATING VELOCITY (ft/min) COOLING VELOCITY Gr/min) OUTLET GRILL SIZE TRUNK	25 BAS 3.48 89 0.60 20 0.16 20 160 180 0.09 6 454 102 4X10 B																							
TRUNK A TRUNK B TRUNK C TRUNK C TRUNK D TRUNK E TRUNK F	610 277 539 0	STATIC PRESS. 0.07 0.07 0.08 0.08 0.00 0.00	ROUND DUCT 9.4 12 8.7 11.1 0	RECT DUCT 10 16 10 16 0	x x x x x x	8 8 8 8 8 8	VELOCITY (ft/min) 565 686 499 606 0		TRUNK G TRUNK H TRUNK I TRUNK J TRUNK K TRUNK L	TRUNK CFM 0 0 0 0 0 0 0	STATIC PRESS. 0.00 0.00 0.00 0.00 0.00 0.00 0.00	ROUND DUCT 0 0 0 0 0 0	RECT DUCT 0 0 0 0 0 0	x x x x x	8 8 8 8 8	VELOCITY (ff/min) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TRUNK O TRUNK P TRUNK Q TRUNK R TRUNK S TRUNK T TRUNK U TRUNK U TRUNK V	TRUNK CFM 0 0 0 0 0 0 0 0 0 0 0	SIZE STATIC PRESS. 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0	ROUND DUCT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RECT DUCT 0 0 0 0 0 0 0	x x x x x x x	8 8 8 8 8 8 8	VELOCITY (ft/min) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
AIR VOLUME PLENUM PRESSURE ACTUAL DUCT LGH. EQUIVALENT LENGTH TOTAL EFFECTIVE LH ADJUSTED PRESSURE ROUND DUCT SIZE INLET GRILL SIZE	130 0.15 49 195 244 0.06 7 8 X	0 130 0.15 41 175 216 0.07 6.8 8 X	0 75 0.15 39 275 314 0.05 6 8 X	75 0.15 46 235 281 0.05 6 8 X	85 0.15 45 195 240 0.06 6 8 X	340 0.15 24 120 144 0.10 8.9 8 X 30	0 130 0.15 39 215 254 0.06 7 8 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	0 0 0.15 1 0 1 14.80 0 0 X	180 0.15 14 135 149 0.10 7 8 X	TRUNK X TRUNK Y TRUNK Z DROP	1145 340 0 1145	0.05 0.05 0.05 0.05 0.05	16.6 10.5 0 16.6	32 14 0 24	x x x	8 8 8 10	644 437 0 687



TYPE: 38-11 SITE NAME:

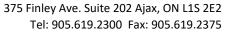
87615 FIN BSMT WUB LO#

CENTREFIELD (WEST GORMLEY) FIN BSMT RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES	9.32.3.1(1)	SUPPLEMENTAL V	/ENTILATION CAPACI	ГҮ	9.32.3.5.
a)		Total Ventilation Ca	pacity	180.2	cfm
b) Positive venting induced draft (except fireplaces)		Less Principal Venti	il. Capacity	79.5	cfm
c) Natural draft, B-vent or induced draft gas fireplace		Required Suppleme	ental Capacity	100.7	cfm
d) Solid Fuel (including fireplaces)					
e) No Combustion Appliances		PRINCIPAL EXHAL	JST FAN CAPACITY		
		Model:	VANEE 65H	Location:	BSMT
HEATING SYSTEM		79.5	cfm		✓ HVI Approved
Forced Air Non Forced Air			JST HEAT LOSS CALC		
		79.5 CFM	ΔT °F X 78 F	FACTOR X 1.08	% LOSS X 0.25
Electric Space Heat		SUPPLEMENTAL F	ANS	BY INSTALLING CON	TRACTOR
		Location	Model	cfm	HVI Sones
HOUSE TYPE	9.32.1(2)	ENS	BY INSTALLING CONT	RACTOR 50	✓ 3.5
		BATH	BY INSTALLING CONT		√ 3.5
Type a) or b) appliance only, no solid fuel		ENS-4 PWD	BY INSTALLING CONT BY INSTALLING CONT		✓ 3.5 ✓ 3.5
II Type I except with solid fuel (including fireplace	s)			30	1 777
III Any Type c) appliance		HEAT RECOVERY Model:	VENTILATOR VANEE 65H	1	9.32.3.11.
IV Type I, or II with electric space heat		155	cfm high	64	cfm low
Other: Type I, II or IV no forced air		75	% Sensible Effic @ 32 deg F (0 d		✓ HVI Approved
Other. Type I, II of IV no forced all			@ 32 deg 1 (0 d	leg C)	
OVOTEN DEGICAL OPTIONS		LOCATION OF INS	TALLATION		
SYSTEM DESIGN OPTIONS	O.N.H.W.P.	Lot:		Concession	
1 Exhaust only/Forced Air System					
2 HRV with Ducting/Forced Air System		Township		Plan:	
✓ 3 HRV Simplified/connected to forced air system		Address			
4 HRV with Ducting/non forced air system		Roll #		Building Perr	mit #
		BUILDER:	ROYAL PINE H	OMES	
Part 6 Design		Name:			
TOTAL VENTILATION CAPACITY	9.32.3.3(1)	Address:			
Basement + Master Bedroom 2 @ 21.2 cfm 42.4	cfm	City:			
Other Bedrooms <u>3</u> @ 10.6 cfm <u>31.8</u>	cfm	Telephone #:		Fax#:	
Kitchen & Bathrooms 6 @ 10.6 cfm 63.6	cfm	INSTALLING CONT	TRACTOR		
Other Rooms 4 @ 10.6 cfm 42.4	cfm	Name:			
Table 9.32.3.A. TOTAL 180.2	cfm	Address:			
		City:			
PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)				
1 Bedroom 31.8	cfm	Telephone #:		Fax #:	
2 Bedroom 47.7	cfm	DESIGNER CERTIF I hereby certify that	FICATION this ventilation system h	nas been designed	
3 Bedroom 63.6	cfm		the Ontario Building Coo HVAC Designs	de.	
4 Bedroom 79.5	cfm	Signature:	5	Mehad Ofourh	,
5 Bedroom 95.4	cfm	HRAI#		001820	
TOTAL 79.5 cfm		Date:		April-21	
I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUA	ALIFIED IN THE AP		"OTHER DESIGNER" UNDER		JILDING CODE.



			Form	nula Sheet (For Air Lea	kage / Ventiliation C	alculation)				
LO#: 876	15	Model: 38-11		Builde	r: ROYAL PINE HOMES				Date:	4/19/2021
		Volume Calculat	on				Air Change & Delt	a T Data		
				1					ı	1
se Volume	El	I = 11 : 1 : (6)	(6.3)				TURAL AIR CHANG		0.227	
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)			SUMMER NA	TURAL AIR CHANG	GE RATE	0.071]
Bsmt	1154 1154	10	11540							
First Second	1520	10 9	11655.4 13680				Design Te	mperature Diff	aranca	
Third	0	9	0	1			Tin °C	Tout °C	ΔT °C	ΔT °F
Fourth	0	9	0			Winter DTDh	22	-21	43	78
Tourth		Total:	36,875.4 ft ³			Summer DTDc	24	31	7	13
		Total:	1044.2 m ³	1		Summer Dibe			,	13
				<u> </u>						
	5.2.3	3.1 Heat Loss due to	Air Leakage			6.2.6	Sensible Gain due	to Air Leakage		
		V_{r}					V.			
	$HL_{airb} =$	$LR_{airh} \times \frac{V_b}{3.6} \times$	$DTD_h \times 1.2$		H	$IG_{salb} = LR_{airc} >$	$\langle \frac{v_b}{2c} \times DTD_c \rangle$	× 1.2		
0 227				- 3409 W/			5.0		_	175 \\
0.227	x <u>290.05</u>	x <u>43 °C</u>	X1.2	= 3408 W	= 0.071	x <u>290.05</u>	_ x <u> </u>	X 1.2	=	175 W
				= 11629 Btu/h	7				=	597 Btu/h
				- 11025 Btu/II					-	337 Btu/1
	5.2.3.2 He	at Loss due to Mecha	nical Ventilation			6.2.7 Sei	nsible heat Gain d	ue to Ventilatio	n	
	$HL_{vairb} =$	$PVC \times DTD_h \times$	$1.08 \times (1 - E)$		HL	$_{vairb} = PVC \times D$	$TD_h \times 1.08 \times$	(1 - E)		
					_					
80 CFM	x 78 °F	x 1.08	x 0.25	= 1670 Btu/h	80 CFM	x <u>13 °F</u>	x 1.08	x 0.25	=	275 Btu/h
.		-	 -	-		_		_	="	
			5.2.3.3 Calcula	tion of Air Change Heat	Loss for Each Room (Flo	or Multiplier Section)				
		***				(, , , , , , , , , , , , , , , , , , ,)2			
		HL	_{airr} = Level Fact	$or \times HL_{airbv} \times \{(H_{airbv}) \times \{$	$L_{agcr} + HL_{bgcr}) \div$	$(HL_{agclevel} + HL)$	bgclevel)}			
				HLairve Air Leakage +	Level Conductive Heat	Air Leakage Heat Lo	ss Multiplier (LE v			
		Level	Level Factor (LF)	Ventilation Heat Loss	Loss: (HL _{clevel})	HLairby / I				
				(Btu/h)	LOSS. (TIL _{clevel})	nLali DV / I	illevelj			
		1	0.5		8,831	0.65				
		2	0.3		10,746	0.32	5			
		3	0.2	11,629	12,804	0.18				
		4	0		0	0.00	0			
		5	0		0	0.00	0			
				+ ventilation heat loss						







HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	38-11	/(1	FIN BSMT WUB	BUILDER: ROYAL PINE HOMES	<u> </u>
	2674	LO#	87615	SITE: CENTREFIELD (WES	
DESIGN AS	SUMPTIONS				
	DESIGN TEMP. ESIGN TEMP.		°F -6 72	COOLING OUTDOOR DESIGN TEMP. INDOOR DESIGN TEMP. (MAX 75°F)	°F 88 75
BUILDING I	DATA				
ATTACHME	ENT:		DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FAC	CES:		EAST	ASSUMED (Y/N):	Υ
AIR CHANG	SES PER HOUR:		2.50	ASSUMED (Y/N):	Υ
AIR TIGHTN	NESS CATEGORY:		TIGHT	ASSUMED (Y/N):	Υ
WIND EXPO	OSURE:		SHELTERED	ASSUMED (Y/N):	Υ
HOUSE VOI	LUME (ft³):		36875.4	ASSUMED (Y/N):	Υ
INTERNALS	SHADING:	BLIND	S/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR L	IGHTING LOAD (Btu/h	n/ft²):	1.55	DC BRUSHLESS MOTOR (Y/N):	Υ
FOUNDATIO	ON CONFIGURATION		BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH:	52.0 ft	WIDTH:	32.0 ft	EXPOSED PERIMETER:	151.0 ft

2012 OBC - COMPLIANCE PACKAGE		
	Compliance	Package
Component	SB-12 PERI	ORMANCE
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE





Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

We	eather Sta	tion Description									
Province:	Ontario	•									
Region:	Richmon	d Hill									
	Site D	escription									
Soil Conductivity:	Normal o	conductivity: dry sand, loam, clay									
Water Table:	Normal (7-10 m, 23-33 ft)									
Foundation Dimensions											
Floor Length (m):	15.8										
Floor Width (m):	9.8										
Exposed Perimeter (m):	46.0										
Wall Height (m):	3.0										
Depth Below Grade (m):	2.13	Insulation Configuration									
Window Area (m²):	1.7										
Door Area (m²):	3.7										
	Radi	ant Slab									
Heated Fraction of the Slab:	0										
Fluid Temperature (°C):	33										
	Desig	n Months									
Heating Month	1										
	Founda	ntion Loads									
Heating Load (Watts):		1469									

TYPE: 38-11 **LO#** 87615

FIN BSMT WUB



Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Wea	ther Sta	tion Description								
Province:	Ontario									
Region:	Richmond	Hill								
	Site Do	escription								
Soil Conductivity:	Normal co	onductivity: dry sand, loam, clay								
Water Table: Normal (7-10 m, 23-33 ft)										
Fo	undatio	n Dimensions								
Length (m):	4.6									
Width (m):	0.6	0.6m ↓								
Exposed Perimeter (m):	5.2	Insulation Configuration								
	Radia	ant Slab								
Heated Fraction of the Slab:	0									
Fluid Temperature (°C):	33									
	Design	n Months								
Heating Month	1									
	Re	esults								
Heating Load (Watts):		31								

TYPE: 38-11 **LO#** 87615

FIN BSMT WUB



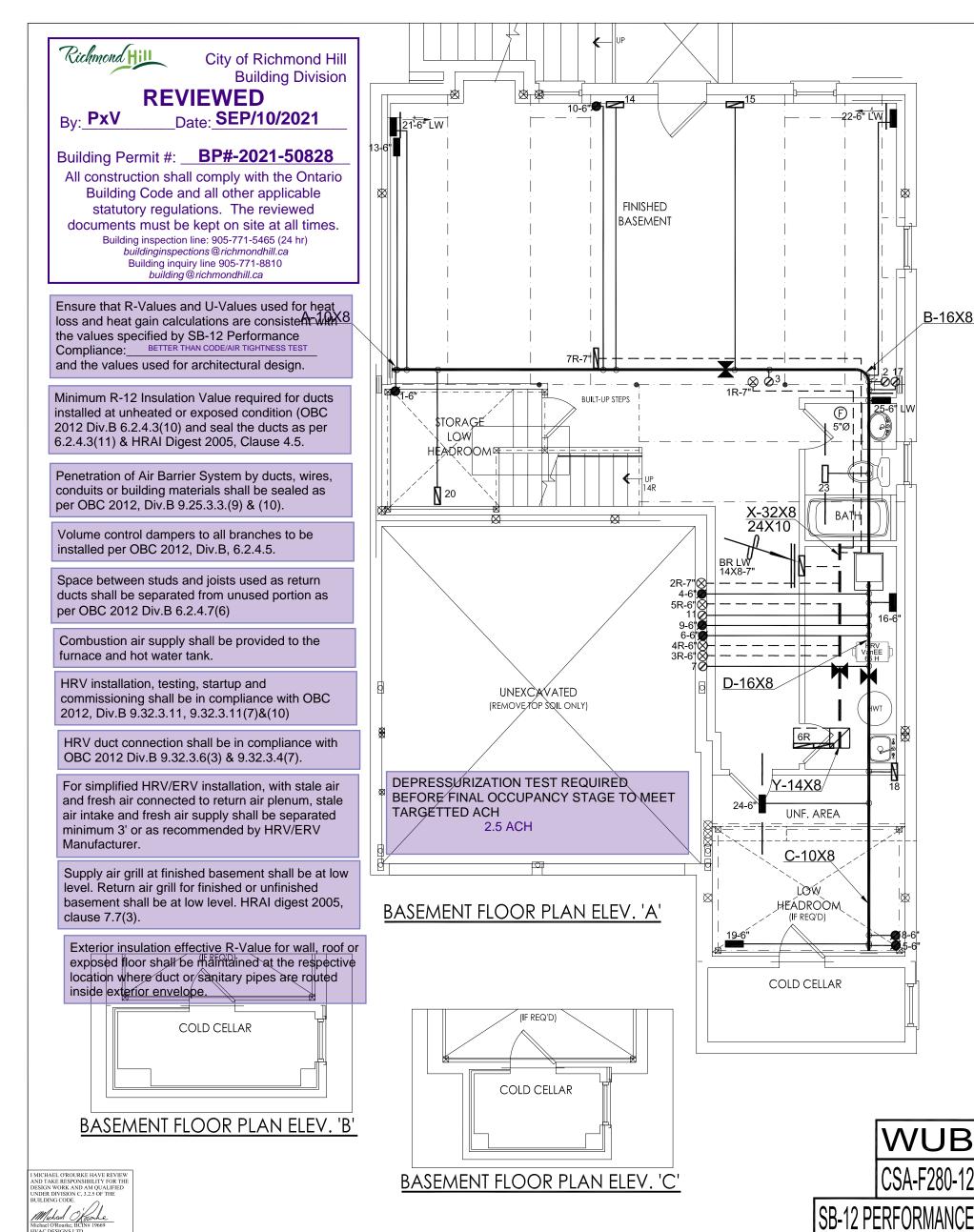
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Statio	n Des	cript	ion		
Province:	Ontar	io			
Region:	Richm	nond H	lill		
Weather Station Location:	Open	flat te	rrain, g	grass	
Anemometer height (m):	10				
Local Sh	ieldin	g			
Building Site:	Subur	ban, f	orest		
Walls:	Heavy	/			
Flue:	Heavy	/			
Highest Ceiling Height (m):	6.74				
Building Cor	nfigura	ation			
Type:	Detac	hed			
Number of Stories:	Two				
Foundation:	Full				
House Volume (m³):	1044.	2			
Air Leakage/	Ventil	atior	1		
Air Tightness Type:	Energ	y Star	Detach	ned (2.!	5 ACH)
Custom BDT Data:	ELA @	9 10 Pa	Э.		974.8 cm ²
	2.50				ACH @ 50 Pa
Mechanical Ventilation (L/s):	To	tal Sup	ply		Total Exhaust
		37.5			37.5
Flue S	Size				
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural Infilt	ration	Rate	es.		
Heating Air Leakage Rate (ACH/H):		C).22	7	
Cooling Air Leakage Rate (ACH/H):		C	0.07	1	

TYPE: 38-11 **LO#** 87615

FIN BSMT WUB



HVAC LEGEND SYMBOL DESCRIPTION SYMBOL DESCRIPTION SYMBOL DESCRIPTION SYMBOL DESCRIPTION 2. REVISED AS PER ARCHITECTURALS SUPPLY AIR GRILLE 14"x8" RETURN AIR GRILLE SEPT/2020 6" SUPPLY AIR BOOT ABOVE RETURN AIR STACK ABOVE REVISED TO PERFORMANCE 30"x8" RETURN AIR GRILLE SUPPLY AIR GRILLE 6" BOOT 0 SUPPLY AIR STACK FROM 2nd FLOOR > <Description No RETURN AIR STACK 2nd FLOOR SUPPLY AIR BOOT ABOVE FRA- FLOOR RETURN AIR GRILLE **REVISIONS** . 6" SUPPLY AIR STACK 2nd FLOOR

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

2674 sqft

FIN BSMT WUB

38-11

375 Finley Ave. Suite 202 - Ajax, Ontario

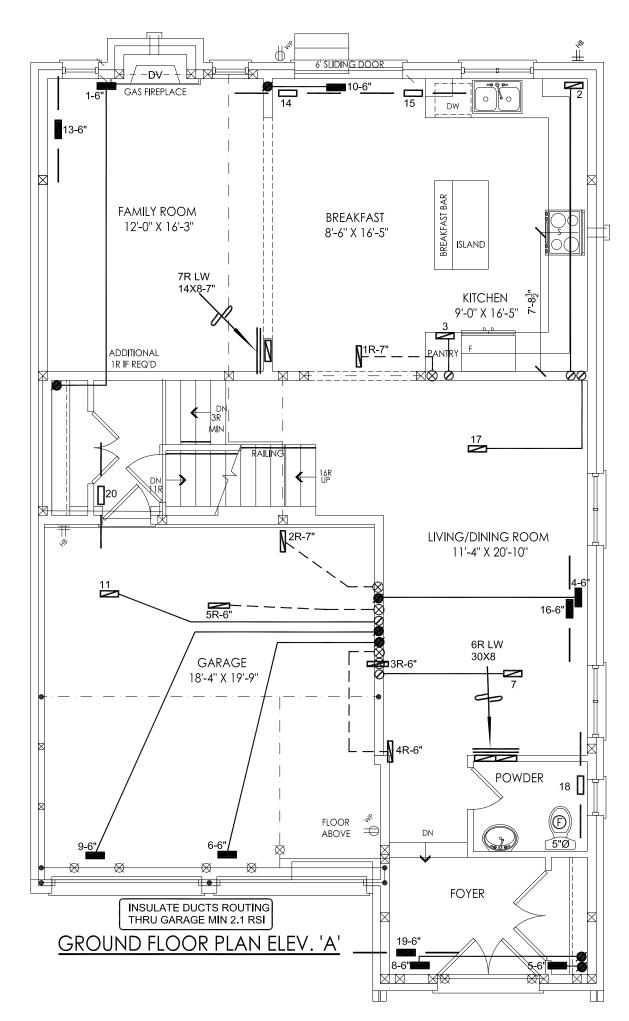
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca

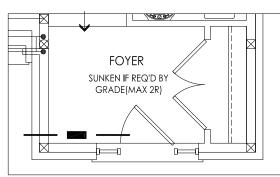
adequately insulated and be gas-proofed.

Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper Ductwork which passes through the garage or unheated spaces shall be

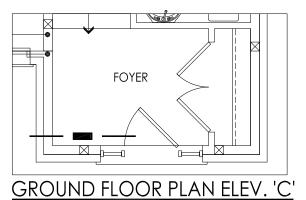
	FAN SPEED	1145	cfm @ 0.6" w.c.	ON LAYOUT. U DOORS 1" min.				LO#	87615
е	COOLING	3.0	TONS	ON LAYOUT. A UNLESS NOTE				. . .	
		58	MBTU/H	ALL S/A DIFFUS UNLESS NOTE					CIN# 19669
	OUTPUT							Scale 3	3/16" = 1'-0"
	INPUT	60	мвти/н	BASEMENT	5	1	1	Date 5	SEPT/2020
	MODEL 59TN	N6A-060-14	·V	1ST FLOOR	7	2	2	L	.AYOUT
	C	ARRIER		2ND FLOOR	12	5	4		EATING
	MAKE	JN I T DATA		3RD FLOOR					SEMENT
		SS 46647		# OF RUNS	S/A	R/A	FANS	Sheet Title	OFNAFAIT

B-16X8





GROUND FLOOR PLAN ELEV. 'B'



WUB

SB-12 PERFORMANCE

								_		
HVAC LEGEND							3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED AS PER ARCHITECTURALS	APR/2021
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE	SEPT/2020
	SUPPLY AIR GRILLE 6" BOOT	0	SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	\bowtie	RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE	8	6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	X	REDUCER		REVISIONS	

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ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

FIN BSMT WUB 38-11

2674 sqft

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

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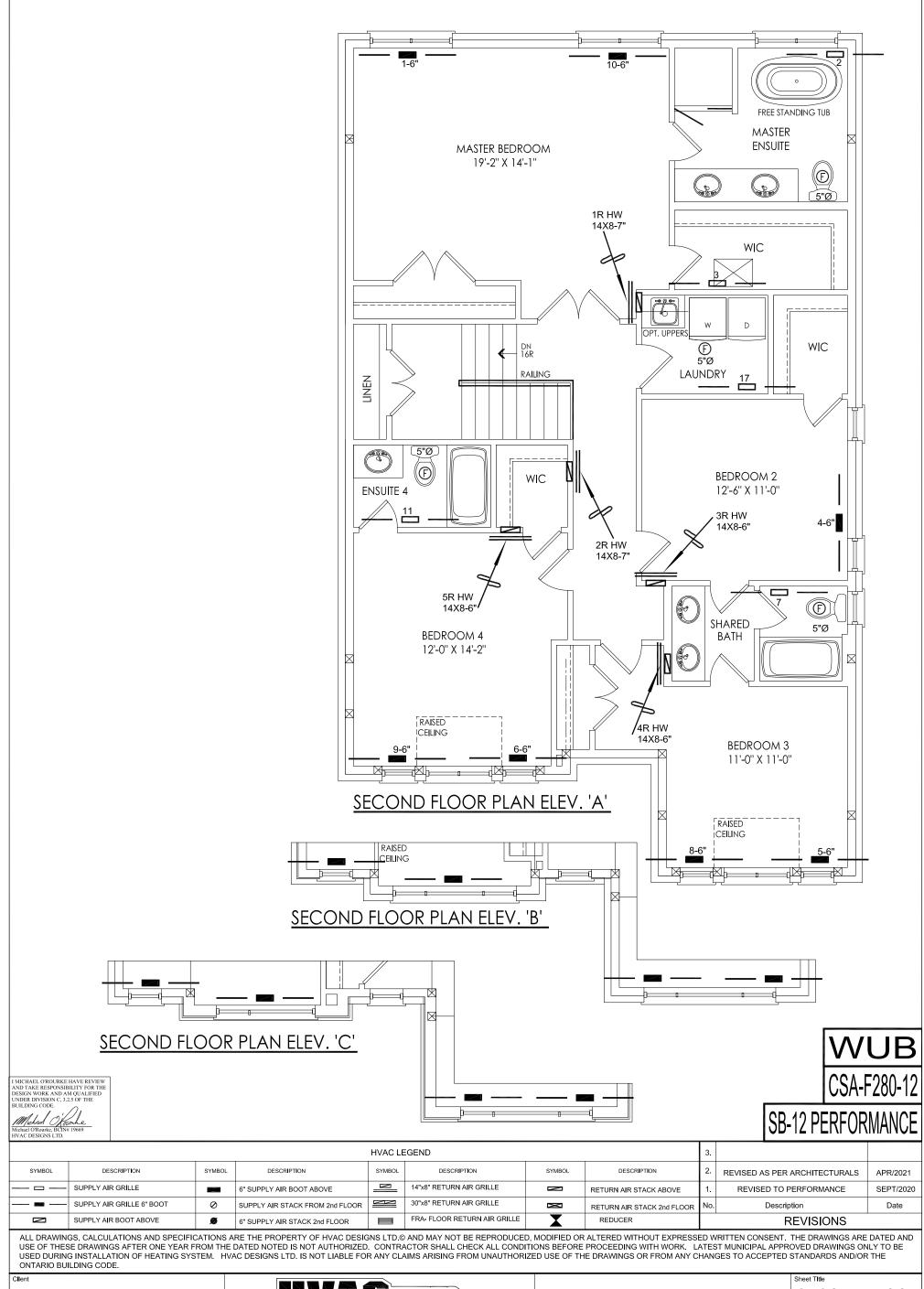
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet TIt	le
FI	RST FLOOR
	HEATING
	LAYOUT
Date	SEPT/2020
Scale	3/16" = 1'-0"

BCIN# 19669

LO#

87615



ROYAL PINE HOMES

Project Name

CENTREFIELD (WEST GORMLEY) RICHMOND HILL, ONTARIO

2674 sqft

FIN BSMT WUB

38-11

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

Specializing in Residential Mechanical Design Services

Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

SECOND FLOOR **HEATING LAYOUT**

Date SEPT/2020 3/16" = 1'-0" BCIN# 19669

87615 LO#

Schedule 1: Designer Information

CITY OF RICHMOND HILL BUILDING DIVISION

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

A. Project Information				(19/	15/2021
Building number, street name				Unit no.	Lot/con.
Municipality	Postal code	Plan number/ other d	lescription		
RICHMOND HILL	r ostal code	rian number/ other o	escription		CEIVED
B. Individual who reviews	and takes recognishility	y for decign activities		Per:jo	celyn aguilar
Name	and takes responsibility	Firm			
MICHAEL O'ROURKE		HVAC DESIGNS LT	D.		
Street address		•	Unit no.		Lot/con.
375 FINLEY AVE			202		N/A
Municipality	Postal code	Province ONTARIO	E-mail		
AJAX	L1S 2E2	ONTARIO		vacdesigns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-237	75	Cell nur		
` '	, ,) '	•	
C. Design activities undert	aken by individual iden	tified in Section B. [B	uilding Co	ode Table 3.5.2.	1 OF Division C]
Dillavas		NC Havea		D. D. Salina	Characterial
☐ House ☐ Small Buildings		AC – House ding Services		☐ Building☐ Plumbing	
☐ Large Buildings	☐ Dete	ection, Lighting and F	ower	☐ Plumbing	g – All Buildings
Complex Buildings	☐ Fire	Protection		☐ On-site S	Sewage Systems
Description of designer's work		Mode	l: 38-11	BERRMOND HILL	City of Richmond Hill
HEAT LOSS / GAIN CALCULA	TIONS		BELVE FIN RSI	MT WUB	•
DUCT CIZING			1111 051	VII VV O D	Puilding Divicion
DUCT SIZING	/ENTIL ATION DESIGN SUI	MMARY			Building Division
RESIDENTIAL MECHANICAL \		MMARY Project	ct: CENTR	HVAC R	
	SN per CSA-F280-12	MMARY Project	ct: CENTR	HVAC R	EVIEWED
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer	GN per CSA-F280-12	MMARY Projec			
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG	GN per CSA-F280-12	MMARY Projec		HVAC R	ÉVIEWED
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer MICHAEL O'R	GN per CSA-F280-12	ork on behalf of a firm regi	de	oclare-that (cho Initials: er subsection 3.2.4	PXV
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer MICHAEL O'R I review and take resident of the Building of	ROURKE (print name) sponsibility for the design wo ilding Code. I am qualified, a	ork on behalf of a firm regi	de	oclare-that (cho Initials: er subsection 3.2.4	PXV
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer I MICHAEL O'R I review and take residence of the Buclasses/categories. Individual Firm BCII	ROURKE (print name) sponsibility for the design wo ilding Code. I am qualified, at I BCIN: N: sponsibility for the design an	ork on behalf of a firm regiand the firm is registered,	de	clare that (cho Initials: er subsection 3.2.4 appi	PXV
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer I MICHAEL O'R I review and take resplication C, of the Buclasses/categories. Individual Firm BCII I review and take resplication of the Buclasses	ROURKE (print name) sponsibility for the design wo ilding Code. I am qualified, at IBCIN: N: sponsibility for the design an ubsection 3.2.5.of Di	ork on behalf of a firm reginand the firm is registered, and am qualified in the approxision C, of the Building Co	de stered unde in the opriate cate	er subsection 3.2.4 appropries	PXV
RESIDENTIAL MECHANICAL \ RESIDENTIAL SYSTEM DESIG D. Declaration of Designer I MICHAEL O'R I review and take resplication C, of the Buclasses/categories. Individual Firm BCII I review and take resplication of the Buclasses	ROURKE (print name) sponsibility for the design wo ilding Code. I am qualified, a I BCIN: N: sponsibility for the design an ubsection 3.2.5.of Di	ork on behalf of a firm reginand the firm is registered, and am qualified in the approxision C, of the Building Co	de stered unde in the opriate cate	er subsection 3.2.4 appropries	PXV
RESIDENTIAL MECHANICAL \(\) RESIDENTIAL SYSTEM DESIGED. Declaration of Designer of Design	ROURKE (print name) sponsibility for the design we ilding Code. I am qualified, at I BCIN: N: sponsibility for the design an ubsection 3.2.5.of Divolution of the design and ubsection from registration	ork on behalf of a firm registered, and the firm is registered, and am qualified in the approvision C, of the Building Contact and qualification:	de stered unde in the copriate cate ode.	er subsection 3.2.4 appropries aggregates an "other	PXV a.of ropriate
RESIDENTIAL MECHANICAL \(\) RESIDENTIAL SYSTEM DESIGED. Declaration of Designer of Design	ROURKE (print name) sponsibility for the design we ilding Code. I am qualified, at IBCIN: N: sponsibility for the design an absection 3.2.5.of Diversibility for the design and acceptance of the property	ork on behalf of a firm registered, and the firm is registered, and am qualified in the approvision C, of the Building Contact and qualification:	de stered unde in the copriate cate ode.	er subsection 3.2.4 appropries aggregates an "other	PXV a.of ropriate
RESIDENTIAL MECHANICAL NESIDENTIAL SYSTEM DESIGED. D. Declaration of Designer I MICHAEL O'R I review and take responsion C, of the Buclasses/categories. Individual Firm BCII I review and take responsion under substantial designer under substantial designer under substantial design work is espassion for exemption. I certify that:	ROURKE (print name) sponsibility for the design we ilding Code. I am qualified, at I BCIN: N: sponsibility for the design an absection 3.2.5.of Divul BCIN: BCIN: BCIN: BCIN: BCIN: 19669 exemption from registration exempt from the regist from registration and qualification.	ork on behalf of a firm registered, and the firm is registered, and am qualified in the approxision C, of the Building Contact and qualification: tration and qualification recation:	stered under in the copriate cate code. O.B.C. quirements	er subsection 3.2.4 apple egory as an "other c SENTENCE of the Building Co	PXV a.of ropriate
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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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.

^{2.} Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.