



Load Report

Manual J8 Load Calculation

Project #:1121

March 25, 2017

Project Information

Project #: 1121
Name: 1121
Location: Gardnerville, NV

Notes:

Manual J Load Summary

Total Heating: 48,220 Btu/hr

Total Sensible: 19,980 Btu/hr

Total Latent: 400 Btu/hr

Outdoor Conditions

Location: Minden (micro), Nevada
Elevation: 4720 ft
Latitude: 39
Dry Bulb: **Heating** 4.0 °F
Daily Range: **Cooling** 92.0 °F
Wet Bulb: Medium 59.0 °F

Indoor Conditions

	Heating	Cooling
Room Temp:	65 - 70 °F	75 °F
Design Temp Diff:	66.0 °F	17.0 °F
Humidity:	35	50
Moisture Diff (Grains):		-41.0

Infiltration

Method: Simple
Stories: 1
Construction: Semi-Tight
Exposure Category: One or Two Exposures
Num Fireplaces: None
Net Air Changes (Heat/Cool): 0.30 / 0.18
Net Flow (Heat/Cool): 82 cfm / 41 cfm

Ventilation

	Heating	Cooling
Num Occupants:	2	
Type:	Heat Recovery	Type: Heat Recovery
ACH:	0.20	ACH: 0.24
Outside Air:	55 cfm	Outside Air: 55 cfm
Sensible Eff:	50 %	Sensible Eff: 50 %

Floorplan/Levels

Main Floor	1,924 ft²	Total Heated Area:	1,924 ft²
		Total Cooled Area:	1,622 ft²

Constructions

Walls

Code	Description	U-Value	Area	Heating	Cooling
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	427	0	0
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	93	0	0
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	77	491	117
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	1,402	8,910	2,638
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	107	0	0
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	65	414	0
12B-0sw	Frame Wall or Partition; Wood Framing; R-11 Insulation in 2 x 4 Stud Cavity; Stucco or Wood Siding; Plus Interior Finish	0.097	323	0	0

Doors

Code	Description	U-Value	Area	Heating	Cooling
11J	Metal Door with Fiberglass Core	0.600	176	0	846
11J	Metal Door with Fiberglass Core	0.600	38	1,496	635
11J	Metal Door with Fiberglass Core	0.600	40	0	0

Floors

Code	Description	U-Value	Area	Heating	Cooling
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	354	1,358	231
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	310	1,093	147
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	357	1,419	232
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	164	577	107
19x-8cvp (leaky Crawl)	Carpet or Hardwood Cover; R-8 board Insulation	0.097	89	196	0
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	275	957	179
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	245	982	159
Sub-Floor Plates-r (leaky Crawl)	Sub-Floor Plates -	0.159	128	467	0

Ceilings

Code	Description	U-Value	Area	Heating	Cooling
17B-10al	No radiant barrier over ceiling or same type of air space behind an attic knee wall; 1.5" wood plus R-10 insulation; Gravel Absorptivity exceeds 0.50 (t); 0.50 to 0.75 (a, m, x, z); Materials: Asphalt Shingles(a), Metal(m), Wood Shakes(w), Tar / Gravel(x), Membrane(z), Tile, Slate or Concrete; Colors: Dark(d), Light(l), White(w);	0.074	1,567	7,561	3,369
18B-15al	No radiant barrier over ceiling or same type of air space behind an attic knee wall; R-15 blanket or loose fill; Gravel Absorptivity exceeds 0.50 (t); 0.50 to 0.75 (a, m, x, z); Materials: Asphalt Shingles(a), Metal(m), Wood Shakes(w), Tar / Gravel(x), Membrane(z), Tile, Slate or Concrete; Colors: Dark(d), Light(l), White(w);	0.069	357	1,626	715

Glazing

Windows

Code	Description	Exposure	U-Value	SHGC	Area	Heating	Cooling
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	S	0.53	0.56	12	420	235
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	E	0.53	0.56	20	700	951
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	S	0.53	0.56	20	700	391
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Inside (20%), 2', 1' above.	S	0.53	0.56	20	700	288
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	W	0.53	0.56	46	1,609	2,187
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	N	0.53	0.56	22	770	0
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Inside (20%), 2', 1' above.	N	0.53	0.56	20	700	288
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	N	0.53	0.56	37	1,294	544
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), Inside (20%), 2', 1' above.	S	0.53	0.56	20	647	288
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	S	0.53	0.56	20	647	391
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	S	0.53	0.56	12	420	0
3Aw	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.40 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 1', 1' above.	W	0.53	0.56	20	700	0

Name:1121
Project #:1121

Load Report
March 25, 2017

4A-1w	Operable window or sliding glass door, with Emissivity of Low-e coating = 0.20 on surface 2 - Wood, Wood with Metal Clad or Vinyl Framing, BlindsMedium45 (50%), 7', 1' above., OldConcrete	S	0.47	0.49	44	1,379	581
-------	---	---	------	------	----	-------	-----

Internal Loads

Description	Sensible	Latent
Default (1,200 Btuh)	1,200	0
2 Occupants:	460	400
Total	1,660	400

Other Loads

Winter Humidification	3,084 Btu/hr
Flow Rate	8.4 USGPD
Blower Load	1,706 Btu/hr

Hot Water Pipes

Size/Type	Exposed Length	Insulated	Water Temp	Air Temp	Pipe Loss
1/2" Copper	10	YES	120	40.0	132

Load Breakdown

Name	Heating	Sensible	Latent
Windows*	10,682	6,146	
Skylights*	0	0	
Doors	1,496	1,481	
Walls	9,814	2,754	
Below Grade Walls	0		
Ceilings	9,188	4,083	
Floors	196	1,055	
Infiltration	5,066	655	0
Internal		1,660	400
Other	0		
Duct Loads	0	0	0
Ventilation	1,707	440	0
Humidification	3,084		
Piping Load	132		
Radiant Backloss	6,854		
Blower Heat		1,706	
AED*		0	
Total	48,220	19,980	400
Total Area	1,924 ft²	1,622 ft²	

*Average Load Procedure

JSHR: 0.98

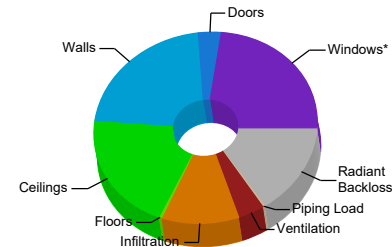
MJ8 Tons: 1.70

SqFt/Ton: 955

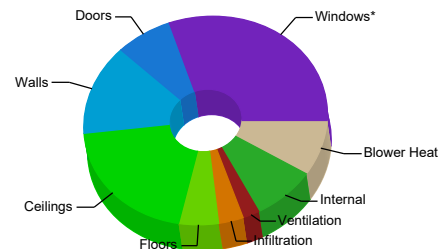
CFM/SqFt: 0.73

Est. Blower CFM: 1181

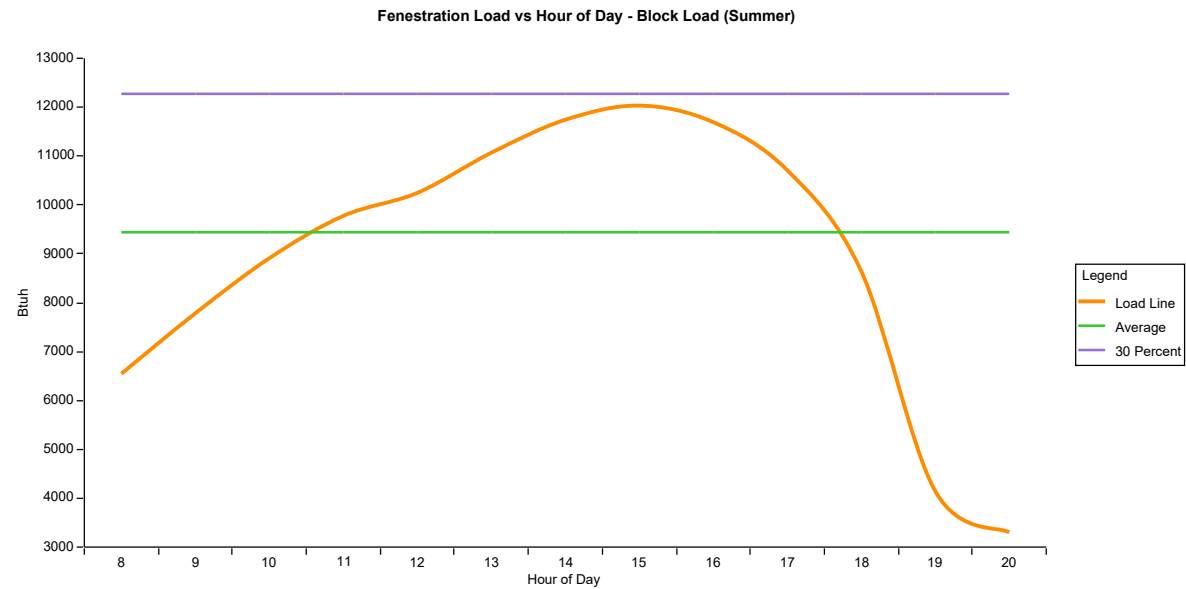
Heating Load Breakdown



Sensible Load Breakdown



AED



Average Load: 9,441 Btu/hr Peak Load: 12,033 Btu/hr
Excursion Limit: 12,274 Btu/hr AED Load: 0 Btu/hr

Heating Zones

Zone	Area	Room Temp	Total Load
Zone 101	14	70	131
Zone 102	467	70	9,265
Zone 103	477	65 - 70	11,440
Zone 104	157	70	2,523
Zone 105	164	70	4,339
Zone 106	89	70	2,105
Zone 107	354	70	9,731
Zone 108	116	70	3,026
Zone 109	84	70	2,444

Heating Rooms

Room	Area	Room Temp	Total Load
2nd Bath	89	70	2,105
Ben's Bedroom	164	70	4,339
Entrance Way	110	70	3,102
Great Room	357	70	6,164
Guest Bedroom	157	70	2,523
Kitchen-Dining	354	70	9,731
Laundry Room	84	70	2,444
Master Bath	128	70	3,947
Master BR	245	65	4,933
Master WIC	104	70	2,560
Office	116	70	3,026
Water Closet	14	70	131

Cooling Zones

Zone	Area	Room Temp	AED	Sensible Load*
C1	1,622	75	YES	23,626

(Peak Load Procedure)

Cooling Rooms

Room	Area	Room Temp	AED	Sensible Load*
Ben's Bedroom	164	75	NO	3,269
Entrance Way	110	75	YES	1,527
Great Room	357	75	NO	3,651

Name:1121
Project #:1121

Load Report
March 25, 2017

Guest Bedroom	157	75	NO	2,872
Kitchen-Dining	354	75	NO	6,545
Master BR	245	75	NO	4,218
Master WIC	104	75	YES	908
Office	116	75	YES	1,375
Water Closet	14	75	YES	127

(Peak Load Procedure)

Warnings

The sensible load for some rooms peak during late fall or early winter. This behavior is caused by glass that faces South East, South or South West. Room temperature may be difficult to control if zoning is not provided.

Disclaimers

With the permission of the Air Conditioning Contractors of America ("ACCA"), material is reproduced from Manual J Residential Load Calculation (8th Edition) which is copyrighted by ACCA. The program and data are provided "as is" without warranty of any kind either expressed or implied. The entire risk as the quality and performance of the program and data is with you. In no event will ACCA be liable to you for any damages, including without limitation any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use this program or the data. © 2015 Air Conditioning Contractors of America. All Rights Reserved. www.acca.org

ACCA, Manual J and Powered by ACCA Manual J are registered trademarks of the Air Conditioning Contractors of America. All rights reserved.

Cold weather humidification, or some lifestyles that produce excessive moisture, may cause condensation to occur if the absolute humidity of the indoor air is too high for the momentary circumstances. Condensation can occur on surfaces or concealed within the structure, and can lead to mold, mildew, frost damage, and moisture damage. The software does not perform calculations for the estimation or detection of possible condensation problems, and it is the designers (i.e. software users) responsibility to do so independently if required. For guidance and additional cautions refer to ACCA Manual J 8th Edition, including Section 1-11 and Section 27.

The calculated values shown in this report are based on the data input by the user of the software. Inaccurate or erroneous data input will result in inaccurate or erroneous results. You are strongly advised to review all input data carefully, and to have the calculated results reviewed by an experienced heating professional to ensure reasonableness and suitability for your application.

IN NO EVENT WILL AVENIR SOFTWARE INC. ("AVENIR") OR ITS AFFILIATES BE LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT OR SPECIAL OR PUNITIVE DAMAGES WHATSOEVER (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION OR DATA AND THE LIKE), EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. AVENIR'S CUMULATIVE LIABILITY FROM ANY CAUSE RELATED TO OR ARISING FROM THE USE THIS REPORT, AND REGARDLESS OF THE FORM OF THE ACTION, SHALL BE LIMITED TO NO GREATER THAN THE AMOUNT OF FEES PAID TO AVENIR UNDER THE SOFTWARE LICENSE AGREEMENT.