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# LOG 208: Substantiating Documents







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# LOG 209: Substantiating Documents



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Reston, VA 20191  
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F 703 620 5071

February 4, 2019

Teresa Payne  
Acting Administrator, Office of Manufactured Housing Programs  
Department of Housing and Urban Development  
451 Seventh Street SW, Room 9164  
Washington, DC 20410

**Re:** Manufactured Home Procedural and Enforcement Regulations; Clarifying the Exemption for Manufacture of Recreational Vehicles

Dear Acting Administrator Payne:

The RV Industry Association applauds the Department of Housing and Human Development's final rule clarifying the exemption for manufacture of recreational vehicles. I write today to ask that the Department update the final rule's reference to the National Fire Protection Association's (NFPA) 1192 Standard on Recreational Vehicles to the 2018 edition.

The RV Industry Association is the national trade association representing the diverse manufacturing businesses which build more than 98 percent of all RVs produced in the U.S.—including motorhomes, travel trailers, fifth wheel travel trailers, folding camping trailers, park model RVs, and truck campers. We are the unifying force for safety and professionalism within the RV industry and work with federal and state policymakers to promote and protect the RV industry and its members.

The final rule provides much needed regulatory clarity to the RV industry. Section 3282.16 of the final rule, however, incorporates by reference the NFPA 1192 Standard on Recreational Vehicles, 2015 Edition. The 2015 edition, however, is now outdated as the 2018 edition has been released. We, therefore, ask that HUD update the final rule to incorporate the updated 2018 NFPA 1192 edition, to ensure that the rule reflects the most current industry standard.

Thank you for your attention to this matter. Please do not hesitate to contact me should you have any questions.

Respectfully submitted,

A handwritten signature in black ink that reads "Michael Ochs".

Michael Ochs  
Director of Government Affairs  
RV Industry Association

# STANDARDS NEWS



August 16, 2017

Standards News Bulletin

SNB-17/17

TO: Recreational Vehicle Manufacturers, Suppliers and Other Interested Parties

FROM: Kent Perkins, Senior Director, Standards

SUBJECT: Availability of the 2018 Edition of the RVIA RV Handbook – A Guide to the NFPA 1192

This bulletin serves to notify you that the 2018 edition of the RVIA RV Handbook – a Guide to the NFPA 1192 is now available for ordering. This Handbook outlines the uniform enforcement positions based on the 2018 editions of the NFPA 1192, and the ANSI LV, and 2017 edition of the NEC 70. This RV Handbook is used by the RVIA Inspection Staff during RV-OEM member inspections. The three RV code State Agencies (NE, OR, and WA) also agreed to these handbook enforcement positions.

The Standards Steering Committee has taken the position that as a requirement of membership, each RV manufacturer must have at least one copy of every standard adopted by the Board of Directors and the “Guide to NFPA 1192: A Handbook,” latest editions, present at every production campus\* operated by that manufacturer. RVIA inspection staff verifies that the manufacturer has, at every production campus, the latest edition of the adopted standards and the “Guide to NFPA 1192; A Handbook.”

\* The term “campus” was used specifically to indicate the intent that one set of documents be available for each single location with one or more production lines. Having only one set of documents for two or more remote locations was not the intent and will not be permitted.

Please also note that RVIA’s Board of Directors has established an “Effective” date of June 1, 2017 for in-field use of the 2017/2018 editions of the standards along with this Handbook and a mandatory “Enforcement” date of September 1, 2017. RVIA will use and promote these standards during the transition period between May to September and will provide in-field training regarding the new or revised requirements.

**NOTICE:** RVIA has recently been informed by NFPA that the 2018 edition of the NFPA 1192 standard will not be available for distribution until at least September 23, 2017. Therefore, it will be necessary for RVIA to delay the originally planned Enforcement Date of the 2018 NFPA 1192 requirements until this standard is published. RVIA will issue a Standard News Bulletin as soon as the 2018 edition of NFPA 1192 becomes available.

Please see attached form for ordering this RV Handbook and respective 2017/2018 Standards.



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_____	09HBK1192_W1	Handbook for 2018 – NFPA 1192 Standard for Recreational Vehicles	\$235.00/Member \$285.00/Non-member	_____
_____	09ANSILV_W1	ANSI/RVIA Standard for Low Voltage Systems – 2018 Edition	\$47.00/Member \$55.00/Non-member	_____
_____	A1195_W1	Standard for Recreational Park Model RVs 2015 Edition (ANSI A119.5)	\$37.00/Member \$41.00/Non-member	_____
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# STANDARDS NEWS



August 16, 2017

Standards News Bulletin SNB-18/17

TO: RV Manufacturers, Suppliers, and Other Interested Parties

FROM: Kent Perkins, Director, RV Standards

SUBJECT: Effective & Enforcement Dates and Availability of the 2018 editions of the NFPA 1192 and ANSI LV and the 2017 edition of the NEC & RVIA 2018 RV Handbook

At its meeting on June 8, 2017, RVIA's Board of Directors established an "Effective Date" of **June 1, 2017** for in-field use of the above standards, along with a mandatory "Enforcement Date" of **September 1, 2017**. RVIA will use and promote these standards during the transition period between the effective and enforcement dates and will provide in-field training regarding the new or revised requirements.

However, RVIA has recently been informed by NFPA that the 2018 edition of the NFPA 1192 standard will not be available for distribution until at least September 23, 2017. Therefore, it will be necessary for RVIA to delay the originally planned Enforcement Date of the 2018 NFPA 1192 requirements until this standard is published.

Note that the revised 2018 RVIA Handbook addressing the 2018 NFPA 1192 enforcement positions is currently available from RVIA (See SNB 17/17).

Here is an updated status report for each of the standards that were noted by the RVIA Board of Directors at its June 8<sup>th</sup> meeting:

## 2018 NFPA 1192 RV Standard

NOTICE: NFPA has indicated to RVIA that publication of the 2018 edition of the NFPA 1192 standard is delayed until at least September 23, 2017. RVIA will issue a Standard News Bulletin as soon as the 2018 edition of NFPA 1192 becomes available.

## 2018 ANSI/RVIA LV Standard for Low Voltage Systems

The 2018 edition of the ANSI/RVIA *Standard for Low Voltage Systems in Conversion and Recreational Vehicles* is now available from RVIA for \$47.00/member and \$55.00/non-member per copy.

## 2017 National Electrical Code (NEC)

The 2017 edition of the NEC is available now from NFPA by calling 1-800-344-3555 or on-line at



<http://www.nfpa.org/catalog/>. Please note that RVIA does not stock this item.

## 2018 RVIA RV Handbook

The 2018 edition of the RVIA RV Handbook - A Guide to the NFPA 1192, is now available from RVIA for \$235.00/members and \$285.00/non-member per copy.

**To expedite your order** for any of these documents, **please place** the order **on line** at [www.rvia.org](http://www.rvia.org) – go to “Industry Publications” - or use the attached order form and mail to RVIA.

Should you have any questions regarding any of the above, please contact John-Vincent Nichols at [jnichols@rvia.org](mailto:jnichols@rvia.org) or 571-665-5859.

## Attachments

For a copy of this bulletin or any other bulletins, please visit RVIA's web site at <http://www.rvia.org/rvia.cfm?ESID=SNBidx2017>



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# STANDARDS NEWS



December 11, 2017  
Standards News Bulletin SNB-22/17

TO: RV Manufacturers, Suppliers, and Other Interested Parties  
FROM: Kent Perkins, Director, RV Standards  
SUBJECT: Availability of the 2018 Edition of the NFPA 1192 Standard on Recreational Vehicles

## NFPA 1192 RV Standard – 2018 Edition

The 2018 edition of the NFPA 1192 RV standard is now available from RVIA for \$41.85/member and \$46.50/non-member per copy. **To expedite receiving your new standard(s), please place your order online at our NEW store <https://my.rvia.org/store>** or use the attached order form and mail to RVIA.

Should you have any questions regarding any of the above, please contact John-Vincent Nichols at [jnichols@rvia.org](mailto:jnichols@rvia.org) or 571-665-5859.

Attachments

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Park Model RV Reports (Monthly- typically 2-3 months after month end))				
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## MANUFACTURED HOUSING CONSENSUS COMMITTEE

1.888.602.4663 | [hud.gov/program\\_offices/housing/rmra/mhs/cc1](https://hud.gov/program_offices/housing/rmra/mhs/cc1)

# LOG 216: Substantiating Documents

# MANUFACTURED HOUSING CONSENSUS COMMITTEE

[Proposed Changes Form](#)
[Member Application Form](#)

## MHCC PROPOSED CHANGE FORM

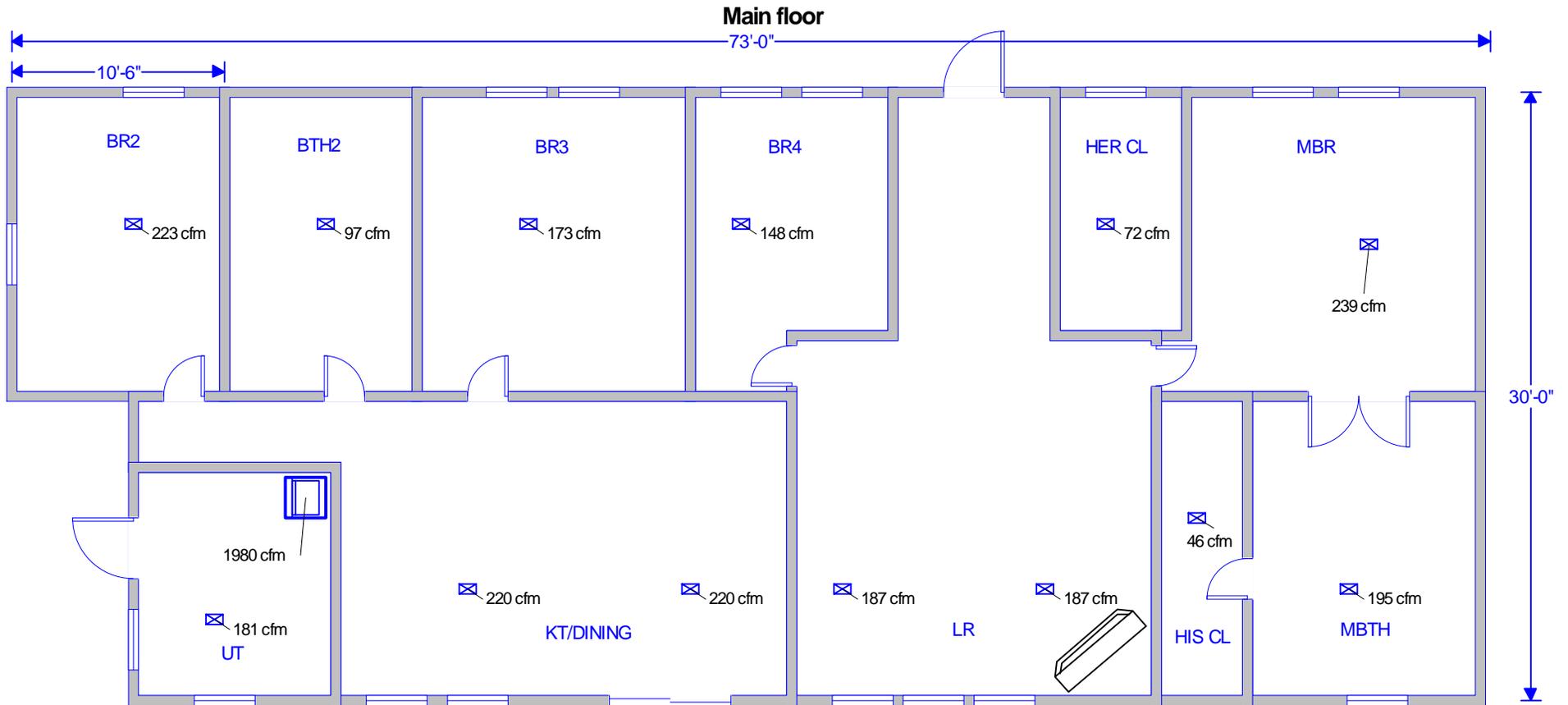
OMB Control Number 2535-0116

Thank you for submitting your proposed change to HUD's Manufactured Home Construction and Safety Standards. Your proposed change will be reviewed and acted on by the Manufactured Housing Consensus Committee (MHCC). In a moment you should receive a confirmation email from [MHCC@homeinnovation.com](mailto:MHCC@homeinnovation.com), if you do not receive a confirmation email please check your spam or blocked folder. Please print/save this page for your records. Refer any questions to [mhcc@homeinnovation.com](mailto:mhcc@homeinnovation.com).

Company:	Healthy Homes of Louisiana, LLC
First Name:	Robert
Last Name:	Parks
Phone:	318-355-1918
Address L1:	104 Cherokee Drive
Address L2:	
City:	West Monroe
State:	Louisiana
Zip Code:	71291
Organization Represented:	self
MHCC Document Title:	24 CFR Part 3280 Manufactured Home Construction and Safety Standards
Section/Paragraph:	3280.715 (a)(7)
Requested Action:	Revised Text
Proposal:	3280.715 (a)(7) Unless installed in a basement, supply and return ducts, fittings, and crossover duct plenums exposed directly to outside air, such as those ducts located in an unvented or vented attic, under-chassis crossover ducts or ducts connecting external heating, cooling, or combination heating/cooling appliances, must be insulated with material having a minimum thermal resistance of R-8 in all Thermal Zones. All such insulating materials must have a continuous vapor barrier retarder having a perm rating of not more than 1 perm. Where ducts are exposed underneath the manufactured home, they must comply with paragraph (a)(5)(ii) of this section, and shall be listed for exterior use.
Reason:	The manufactured housing industry is basically the only industry that still allows the cheapest insulated duct (R-4) to be placed in the hottest cavity of the building. When doing the Manual J heating and cooling calculations, a duct system that is located in the attic is most often the single largest heat gain/loss component of the home. Even greater than the windows. The second law of thermodynamics basically states that heat moves from more-to-less, and the greater the difference between the two temperatures, the greater the movement. During the summer, we circulate the coldest air in the building through the hottest cavity of the building and even more detrimental, during the winter we are circulating the hottest air in the building through the coldest cavity so better insulation of the duct system becomes critical to building performance.
Original Idea:	Yes
Source for Idea:	
Additional Cost:	No
Cost Explanation:	Many manufactures have already learned, the hard way, that placing R-4.2 ducts in the attic can increase the heating and cooling capacities to a level great enough that one unit can no longer heat/cool the home. Thus many manufactures have already made R-8 a required upgrade when placing the duct system in the attic, versus the floor system (which is considered inside the thermal barrier of the home and also the most efficient location to place the duct system). The average cost for a single section home to upgrade from R-4.2 to R-8 is approximately \$100, however if the proper Manual J load calculation is done, this cost is offset by the cost savings of being able to use a small heating and/or cooling system. There is also the additional benefits of guaranteed utility savings for the end user of the home.
Email:	bobby@parksair.com
Substantiating Documents:	True

For further information on the MHCC, please contact the Administering Organization, Home Innovation Research Labs at [mhcc@homeinnovation.com](mailto:mhcc@homeinnovation.com) or toll free at 1-888-602-4663.

# Home with R-4.2 in Shreveport La



**Job #: Home with R-4.2**  
**Performed by Bobby for:**  
Home with R-4.2  
Shreveport, La

**Healthy Homes of La. LLC**  
PO Drawer 3127  
West Monroe, La 71294  
Phone: 318-355-1918 Fax: 318-397-2123  
www.parksair.com bobby@parksair.com

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July 2020

### Project Information

For: Home with R-4.2, Ducts in ventilated attic  
Shreveport, La

### Design Conditions

**Location:**

Shreveport Regional AP, LA, US  
Elevation: 259 ft  
Latitude: 32°N

**Outdoor:**

Dry bulb (°F)  
Daily range (°F)  
Wet bulb (°F)  
Wind speed (mph)

**Heating**

28  
-  
-  
15.0

**Cooling**

95  
19 ( M )  
76  
7.5

**Indoor:**

Indoor temperature (°F)  
Design TD (°F)  
Relative humidity (%)  
Moisture difference (gr/lb)

**Heating**

70  
42  
50  
37.8

**Cooling**

75  
20  
50  
42.8

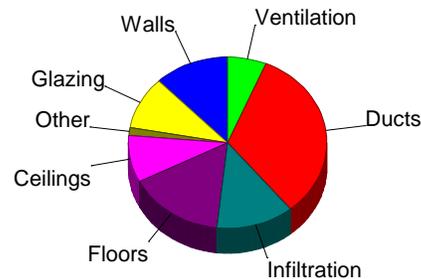
**Infiltration:**

Method  
Construction quality  
Fireplaces

Simplified  
Average  
1 (Average)

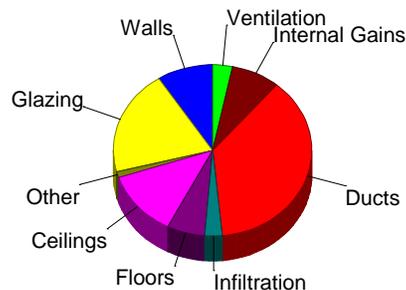
### Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.1	5348	12.2
Glazing	14.7	4337	9.9
Doors	15.7	657	1.5
Ceilings	1.9	3881	8.9
Floors	3.3	6879	15.7
Infiltration	3.4	5535	12.7
Ducts		14342	32.8
Piping		0	0
Humidification		0	0
Ventilation		2764	6.3
Adjustments		0	0
<b>Total</b>		<b>43743</b>	<b>100.0</b>



### Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.9	3780	9.1
Glazing	28.0	8238	19.9
Doors	11.0	461	1.1
Ceilings	2.5	5119	12.4
Floors	1.2	2570	6.2
Infiltration	0.7	1174	2.8
Ducts		15449	37.3
Ventilation		1333	3.2
Internal gains		3280	7.9
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>41405</b>	<b>100.0</b>



Latent Cooling Load = 7169 Btuh  
Overall U-value = 0.086 Btuh/ft²·°F

Data entries checked.

## Project Information

For: Home with R-4.2, Ducts in ventilated attic  
 Shreveport, La

Notes:

## Design Information

Weather: Shreveport Regional AP, LA, US

### Winter Design Conditions

Outside db	28 °F
Inside db	70 °F
Design TD	42 °F

### Summer Design Conditions

Outside db	95 °F
Inside db	75 °F
Design TD	20 °F
Daily range	M
Relative humidity	50 %
Moisture difference	43 gr/lb

### Heating Summary

Structure	26638 Btuh
Ducts	14342 Btuh
Central vent (60 cfm)	2764 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	43743 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	24623 Btuh
Ducts	15449 Btuh
Central vent (60 cfm)	1333 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	1.00
Equipment sensible load	41571 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Average)

### Latent Cooling Equipment Load Sizing

Structure	2722 Btuh
Ducts	2719 Btuh
Central vent (60 cfm)	1728 Btuh
Outside air	
Equipment latent load	7169 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	2085	2085
Volume (ft <sup>3</sup> )	16680	16680
Air changes/hour	0.43	0.19
Equiv. AVF (cfm)	120	53

<b>Equipment Total Load (Sen+Lat)</b>	48739 Btuh
Req. total capacity at 0.70 SHR	4.9 ton

### Heating Equipment Summary

Make	Generic
Trade	
Model	AFUE 100
AHRI ref	
Efficiency	100 EFF
Heating input	12.8 kW
Heating output	43743 Btuh
Temperature rise	20 °F
Actual air flow	1980 cfm
Air flow factor	0.048 cfm/Btuh
Static pressure	0.30 in H2O
Space thermostat	

### Cooling Equipment Summary

Make	Generic
Trade	
Cond	SEER 14.0
Coil	
AHRI ref	
Efficiency	12.2 EER, 14 SEER
Sensible cooling	41571 Btuh
Latent cooling	17816 Btuh
Total cooling	59387 Btuh
Actual air flow	1980 cfm
Air flow factor	0.049 cfm/Btuh
Static pressure	0.30 in H2O
Load sensible heat ratio	0.85

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

## Project Information

For: Home with R-4.2, Ducts in ventilated attic  
Shreveport, La

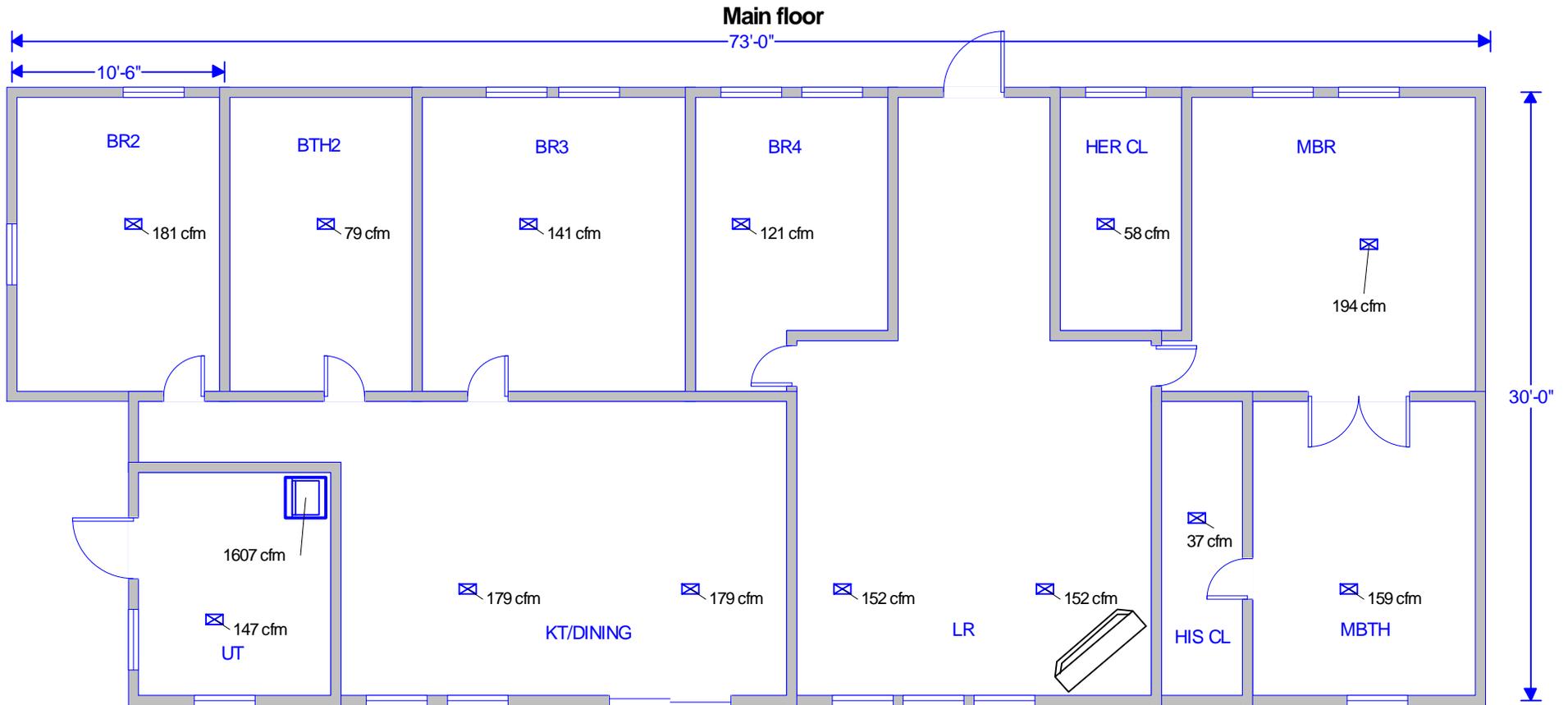
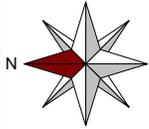
## Design Conditions

<b>Location:</b> Shreveport Regional AP, LA, US Elevation: 259 ft Latitude: 32°N		<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 42 50 37.8	<b>Cooling</b> 75 20 50 42.8
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 28 - - 15.0	<b>Cooling</b> 95 19 ( M ) 76 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	Simplified Average 1 (Average)

## Construction descriptions

	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	189	0.097	11.0	4.10	775	2.90	548
	e	439	0.097	11.0	4.10	1801	2.90	1273
	s	240	0.097	11.0	4.10	985	2.90	696
	w	435	0.097	11.0	4.10	1786	2.90	1263
	all	1303	0.097	11.0	4.10	5348	2.90	3780
<b>Partitions</b> (none)								
<b>Windows</b>								
common low e windows 34 28: Most Common Low E Uo.34 and SHGC .28; 50% blinds 45°, light; 6.67 ft head ht	n	30	0.340	0	14.4	431	11.0	331
	e	120	0.340	0	14.4	1726	28.9	3463
	w	105	0.340	0	14.4	1510	28.9	3030
	all	255	0.340	0	14.4	3667	26.8	6825
1D-c2obd: 2 glazing, dr outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 50% blinds 45°, light; 6.67 ft head ht	w	40	0.400	0	16.9	670	31.7	1253
<b>Doors</b>								
SE FRENCH DR: SE FR DOOR Uo.37 SHGC .34	n	21	0.370	0	15.7	329	11.0	231
	e	21	0.370	0	15.7	329	11.0	231
	all	42	0.370	0	15.7	657	11.0	461
<b>Ceilings</b>								
16B-21ad: Attic ceiling, asphalt shingles roof mat, r-21 ceil ins, 1/2" gypsum board int fnsh		2085	0.044	21.0	1.86	3881	2.46	5119
<b>Floors</b>								
20P-11t: Flr floor, frm flr, 8" thkns, tile flr fnsh, r-11 cav ins, amb ovr		2085	0.078	11.0	3.30	6879	1.23	2570

# Home with R-8 in Shreveport La



**Job #: Home with R-8**  
**Performed by Bobby for:**  
Home with R-8  
Shreveport, La

**Healthy Homes of La. LLC**  
PO Drawer 3127  
West Monroe, La 71294  
Phone: 318-355-1918 Fax: 318-397-2123  
www.parksair.com bobby@parksair.com

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July 2020

### Project Information

For: Home with R-8, Ducts in ventilated attic  
Shreveport, La

### Design Conditions

**Location:**

Shreveport Regional AP, LA, US  
Elevation: 259 ft  
Latitude: 32°N

**Outdoor:**

Dry bulb (°F)  
Daily range (°F)  
Wet bulb (°F)  
Wind speed (mph)

**Heating**

28  
-  
-  
15.0

**Cooling**

95  
19 ( M )  
76  
7.5

**Indoor:**

Indoor temperature (°F)  
Design TD (°F)  
Relative humidity (%)  
Moisture difference (gr/lb)

**Heating**

70  
42  
50  
37.8

**Cooling**

75  
20  
50  
42.8

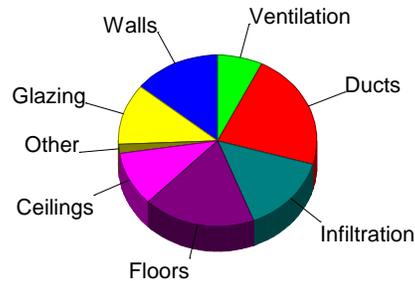
**Infiltration:**

Method  
Construction quality  
Fireplaces

Simplified  
Average  
1 (Average)

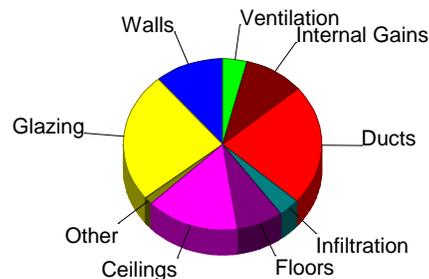
### Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.1	5348	14.2
Glazing	14.7	4337	11.5
Doors	15.7	657	1.7
Ceilings	1.9	3881	10.3
Floors	3.3	6879	18.2
Infiltration	3.4	5535	14.7
Ducts		8360	22.1
Piping		0	0
Humidification		0	0
Ventilation		2764	7.3
Adjustments		0	0
<b>Total</b>		<b>37762</b>	<b>100.0</b>



### Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.9	3780	11.2
Glazing	28.0	8238	24.5
Doors	11.0	461	1.4
Ceilings	2.5	5119	15.2
Floors	1.2	2570	7.6
Infiltration	0.7	1174	3.5
Ducts		7666	22.8
Ventilation		1333	4.0
Internal gains		3280	9.8
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>33622</b>	<b>100.0</b>



Latent Cooling Load = 6504 Btuh  
Overall U-value = 0.086 Btuh/ft²·°F

Data entries checked.

## Project Information

For: Home with R-8, Ducts in ventilated attic  
 Shreveport, La

Notes:

## Design Information

Weather: Shreveport Regional AP, LA, US

### Winter Design Conditions

Outside db	28 °F
Inside db	70 °F
Design TD	42 °F

### Summer Design Conditions

Outside db	95 °F
Inside db	75 °F
Design TD	20 °F
Daily range	M
Relative humidity	50 %
Moisture difference	43 gr/lb

### Heating Summary

Structure	26638 Btuh
Ducts	8360 Btuh
Central vent (60 cfm)	2764 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	37762 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	24623 Btuh
Ducts	7666 Btuh
Central vent (60 cfm)	1333 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	1.00
Equipment sensible load	33756 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Average)

### Latent Cooling Equipment Load Sizing

Structure	2722 Btuh
Ducts	2054 Btuh
Central vent (60 cfm)	1728 Btuh
Outside air	
Equipment latent load	6504 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	2085	2085
Volume (ft <sup>3</sup> )	16680	16680
Air changes/hour	0.43	0.19
Equiv. AVF (cfm)	120	53

<b>Equipment Total Load (Sen+Lat)</b>	40260 Btuh
Req. total capacity at 0.70 SHR	4.0 ton

### Heating Equipment Summary

Make	Generic
Trade	
Model	AFUE 100
AHRI ref	
Efficiency	100 EFF
Heating input	11.1 kW
Heating output	37762 Btuh
Temperature rise	22 °F
Actual air flow	1607 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.30 in H2O
Space thermostat	

### Cooling Equipment Summary

Make	Generic
Trade	
Cond	SEER 14.0
Coil	
AHRI ref	
Efficiency	12.2 EER, 14 SEER
Sensible cooling	33756 Btuh
Latent cooling	14467 Btuh
Total cooling	48223 Btuh
Actual air flow	1607 cfm
Air flow factor	0.050 cfm/Btuh
Static pressure	0.30 in H2O
Load sensible heat ratio	0.84

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

## Project Information

For: Home with R-8, Ducts in ventilated attic  
Shreveport, La

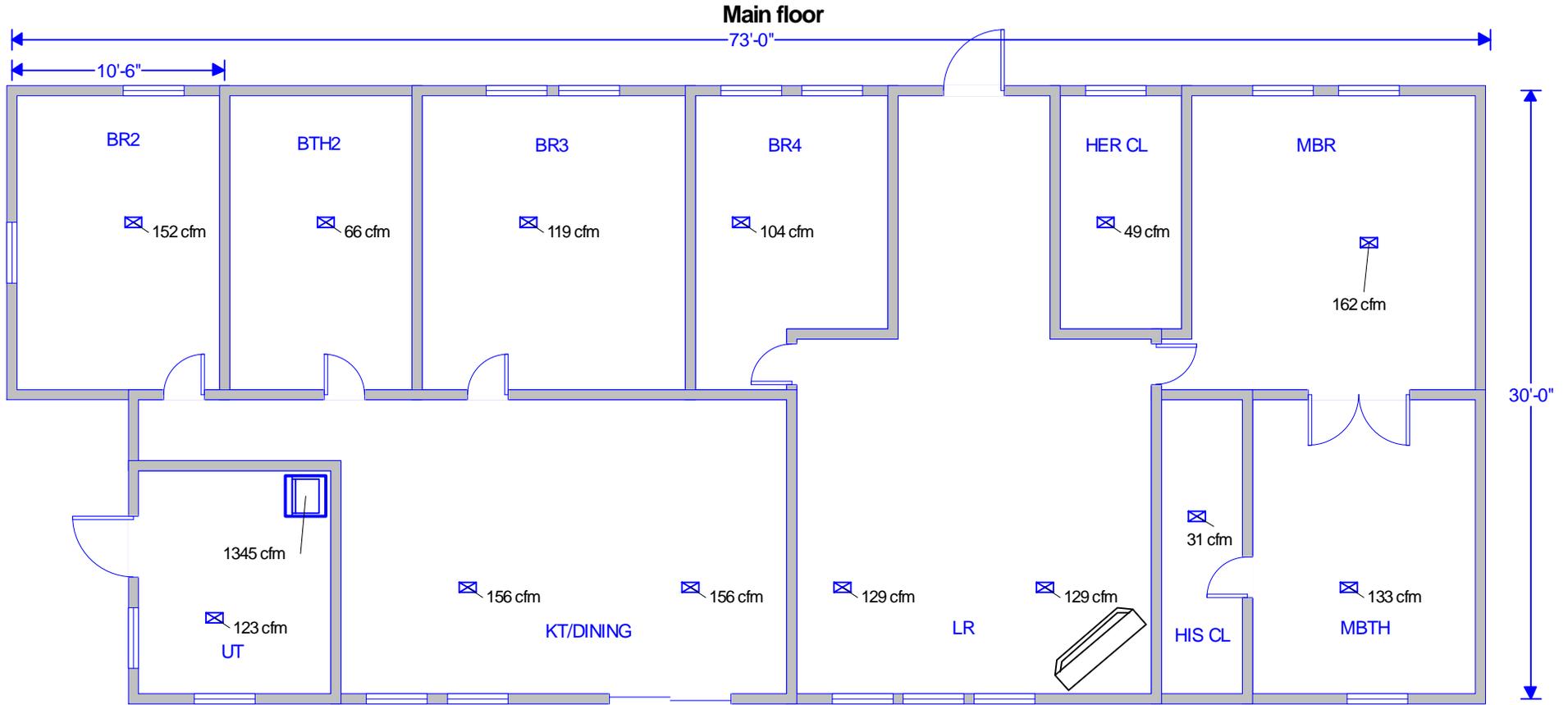
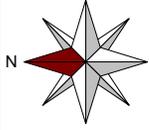
## Design Conditions

<b>Location:</b> Shreveport Regional AP, LA, US Elevation: 259 ft Latitude: 32°N		<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 42 50 37.8	<b>Cooling</b> 75 20 50 42.8
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 28 - - 15.0	<b>Cooling</b> 95 19 ( M ) 76 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	
		Simplified Average 1 (Average)		

### Construction descriptions

Construction descriptions	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	189	0.097	11.0	4.10	775	2.90	548
	e	439	0.097	11.0	4.10	1801	2.90	1273
	s	240	0.097	11.0	4.10	985	2.90	696
	w	435	0.097	11.0	4.10	1786	2.90	1263
	all	1303	0.097	11.0	4.10	5348	2.90	3780
<b>Partitions</b> (none)								
<b>Windows</b>								
common low e windows 34 28: Most Common Low E Uo.34 and SHGC .28; 50% blinds 45°, light; 6.67 ft head ht	n	30	0.340	0	14.4	431	11.0	331
	e	120	0.340	0	14.4	1726	28.9	3463
	w	105	0.340	0	14.4	1510	28.9	3030
	all	255	0.340	0	14.4	3667	26.8	6825
1D-c2obd: 2 glazing, dr outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 50% blinds 45°, light; 6.67 ft head ht	w	40	0.400	0	16.9	670	31.7	1253
<b>Doors</b>								
SE FRENCH DR: SE FR DOOR Uo.37 SHGC .34	n	21	0.370	0	15.7	329	11.0	231
	e	21	0.370	0	15.7	329	11.0	231
	all	42	0.370	0	15.7	657	11.0	461
<b>Ceilings</b>								
16B-21ad: Attic ceiling, asphalt shingles roof mat, r-21 ceil ins, 1/2" gypsum board int fnsh		2085	0.044	21.0	1.86	3881	2.46	5119
<b>Floors</b>								
20P-11t: Flr floor, frm flr, 8" thkns, tile flr fnsh, r-11 cav ins, amb ovr		2085	0.078	11.0	3.30	6879	1.23	2570

# Home with R-4.2 in Nappanee, In.



**Job #: Home with R-4.2**  
**Performed by Bobby for:**  
Home with R-4.2  
Nappanee, In

**Healthy Homes of La. LLC**  
PO Drawer 3127  
West Monroe, La 71294  
Phone: 318-355-1918 Fax: 318-397-2123  
www.parksair.com bobby@parksair.com

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### Project Information

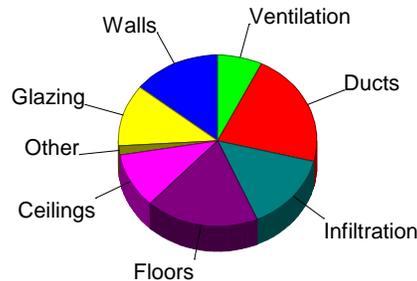
For: Home with R-4.2, Ducts in ventilated attic  
Nappanee, In

### Design Conditions

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
South Bend/St.josep, IN, US		Indoor temperature (°F)		70	75
Elevation: 774 ft		Design TD (°F)		64	13
Latitude: 42°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		50.2	32.2
<b>Outdoor:</b>	<b>Heating</b>	<b>Cooling</b>	<b>Infiltration:</b>		
Dry bulb (°F)	6	88	Method	Simplified	
Daily range (°F)	-	19 ( M )	Construction quality	Average	
Wet bulb (°F)	-	73	Fireplaces	1 (Average)	
Wind speed (mph)	15.0	7.5			

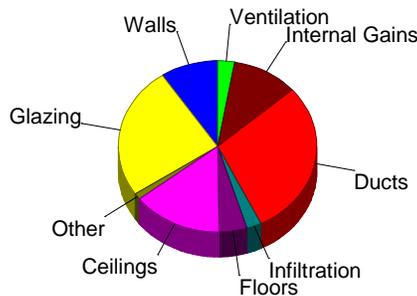
### Heating

Component	Btuh/ft²	Btuh	% of load
Walls	6.2	8117	14.3
Glazing	22.3	6583	11.6
Doors	23.8	998	1.8
Ceilings	2.8	5890	10.4
Floors	5.0	10441	18.4
Infiltration	5.0	8246	14.6
Ducts		12259	21.6
Piping		0	0
Humidification		0	0
Ventilation		4117	7.3
Adjustments		0	0
<b>Total</b>		<b>56650</b>	<b>100.0</b>



### Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.2	2864	9.4
Glazing	25.7	7577	24.9
Doors	8.5	358	1.2
Ceilings	2.1	4454	14.7
Floors	0.7	1390	4.6
Infiltration	0.4	734	2.4
Ducts		8889	29.3
Ventilation		834	2.7
Internal gains		3280	10.8
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>30380</b>	<b>100.0</b>



Latent Cooling Load = 4967 Btuh  
Overall U-value = 0.086 Btuh/ft²·°F

Data entries checked.

## Project Information

For: Home with R-4.2, Ducts in ventilated attic  
 Nappanee, In

Notes:

## Design Information

Weather: South Bend/St.joseph, IN, US

### Winter Design Conditions

Outside db	6 °F
Inside db	70 °F
Design TD	64 °F

### Summer Design Conditions

Outside db	88 °F
Inside db	75 °F
Design TD	13 °F
Daily range	M
Relative humidity	50 %
Moisture difference	32 gr/lb

### Heating Summary

Structure	40274 Btuh
Ducts	12259 Btuh
Central vent (60 cfm)	4117 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	56650 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	20657 Btuh
Ducts	8889 Btuh
Central vent (60 cfm)	834 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.93
Equipment sensible load	28253 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Average)

### Latent Cooling Equipment Load Sizing

Structure	2325 Btuh
Ducts	1365 Btuh
Central vent (60 cfm)	1277 Btuh
Outside air	
Equipment latent load	4967 Btuh

	Heating	Cooling
Area (ft²)	2085	2085
Volume (ft³)	16680	16680
Air changes/hour	0.43	0.19
Equiv. AVF (cfm)	120	53

<b>Equipment Total Load (Sen+Lat)</b>	33220 Btuh
Req. total capacity at 0.70 SHR	3.4 ton

### Heating Equipment Summary

Make	Generic
Trade	
Model	AFUE 100
AHRI ref	
Efficiency	100 EFF
Heating input	16.6 kW
Heating output	56650 Btuh
Temperature rise	39 °F
Actual air flow	1345 cfm
Air flow factor	0.026 cfm/Btuh
Static pressure	0.30 in H2O
Space thermostat	

### Cooling Equipment Summary

Make	Generic
Trade	
Cond	SEER 14.0
Coil	
AHRI ref	
Efficiency	12.2 EER, 14 SEER
Sensible cooling	28253 Btuh
Latent cooling	12108 Btuh
Total cooling	40361 Btuh
Actual air flow	1345 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.30 in H2O
Load sensible heat ratio	0.86

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

## Project Information

For: Home with R-4.2, Ducts in ventilated attic  
Nappanee, In

## Design Conditions

<b>Location:</b> South Bend/St.josep, IN, US Elevation: 774 ft Latitude: 42°N	<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 64 50 50.2	<b>Cooling</b> 75 13 50 32.2
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 6 - - 15.0	<b>Cooling</b> 88 19 ( M ) 73 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces
		Simplified Average 1 (Average)	

### Construction descriptions

	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	189	0.097	11.0	6.23	1177	2.20	415
	e	439	0.097	11.0	6.23	2734	2.20	965
	s	240	0.097	11.0	6.23	1495	2.20	527
	w	435	0.097	11.0	6.23	2711	2.20	957
	all	1303	0.097	11.0	6.23	8117	2.20	2864

### Partitions (none)

### Windows

common low e windows 34 28: Most Common Low E Uo.34 and SHGC .28; 50% blinds 45°, light; 6.67 ft head ht	n	30	0.340	0	21.8	655	8.24	247
	e	120	0.340	0	21.8	2619	25.9	3112
	w	105	0.340	0	21.8	2292	25.9	2723
	all	255	0.340	0	21.8	5566	23.9	6082
1D-c2obd: 2 glazing, dr outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 50% blinds 45°, light; 6.67 ft head ht	w	40	0.400	0	25.7	1017	28.3	1119

### Doors

SE FRENCH DR: SE FR DOOR Uo.37 SHGC .34	n	21	0.370	0	23.8	499	8.52	179
	e	21	0.370	0	23.8	499	8.52	179
	all	42	0.370	0	23.8	998	8.52	358

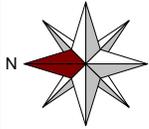
### Ceilings

16B-21ad: Attic ceiling, asphalt shingles roof mat, r-21 ceil ins, 1/2" gypsum board int fnsh	2085	0.044	21.0	2.82	5890	2.14	4454
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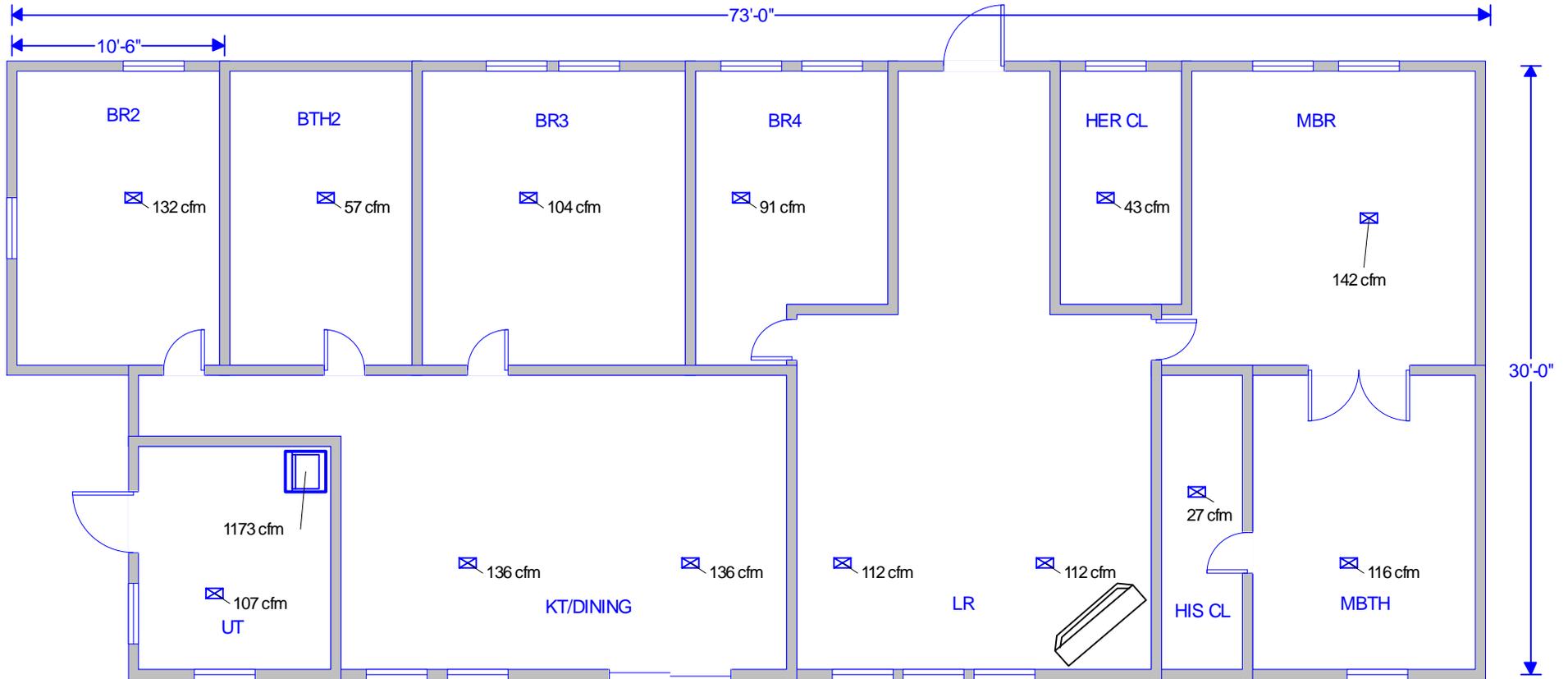
### Floors

20P-11t: Flr floor, frm flr, 8" thkns, tile flr fnsh, r-11 cav ins, amb ovr	2085	0.078	11.0	5.01	10441	0.67	1390
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# Home with R-8 in Nappanee, In.



**Main floor**



**Job #: Home with R-8**  
**Performed by Bobby for:**  
Home with R-8  
Nappanee, In

**Healthy Homes of La. LLC**  
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July 2020

### Project Information

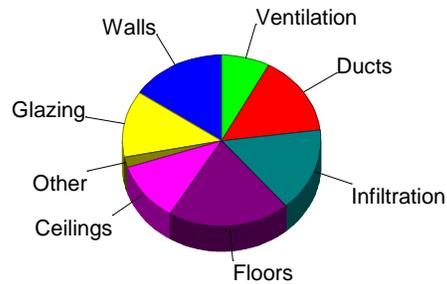
For: Home with R-8, Ducts in ventilated attic  
Nappanee, In

### Design Conditions

<b>Location:</b> South Bend/St.josep, IN, US Elevation: 774 ft Latitude: 42°N		<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)		<b>Heating</b> 70 64 50 50.2	<b>Cooling</b> 75 13 50 32.2
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 6 - - 15.0	<b>Cooling</b> 88 19 ( M ) 73 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	Simplified Average 1 (Average)	

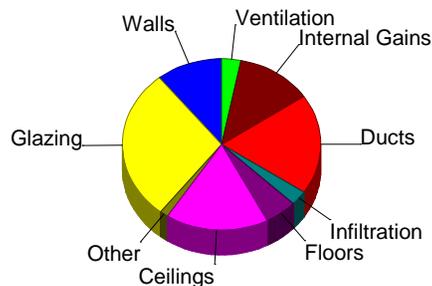
### Heating

Component	Btuh/ft²	Btuh	% of load
Walls	6.2	8117	15.5
Glazing	22.3	6583	12.6
Doors	23.8	998	1.9
Ceilings	2.8	5890	11.3
Floors	5.0	10441	20.0
Infiltration	5.0	8246	15.8
Ducts		7897	15.1
Piping		0	0
Humidification		0	0
Ventilation		4117	7.9
Adjustments		0	0
<b>Total</b>		<b>52288</b>	<b>100.0</b>



### Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.2	2864	10.8
Glazing	25.7	7577	28.6
Doors	8.5	358	1.4
Ceilings	2.1	4454	16.8
Floors	0.7	1390	5.2
Infiltration	0.4	734	2.8
Ducts		4996	18.9
Ventilation		834	3.1
Internal gains		3280	12.4
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>26487</b>	<b>100.0</b>



Latent Cooling Load = 4805 Btuh  
Overall U-value = 0.086 Btuh/ft²·°F

Data entries checked.

## Project Information

For: Home with R-8, Ducts in ventilated attic  
 Nappanee, In

Notes:

## Design Information

Weather: South Bend/St.joseph, IN, US

### Winter Design Conditions

Outside db	6 °F
Inside db	70 °F
Design TD	64 °F

### Summer Design Conditions

Outside db	88 °F
Inside db	75 °F
Design TD	13 °F
Daily range	M
Relative humidity	50 %
Moisture difference	32 gr/lb

### Heating Summary

Structure	40274 Btuh
Ducts	7897 Btuh
Central vent (60 cfm)	4117 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	52288 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	20657 Btuh
Ducts	4996 Btuh
Central vent (60 cfm)	834 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.93
Equipment sensible load	24633 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Average)

### Latent Cooling Equipment Load Sizing

Structure	2325 Btuh
Ducts	1203 Btuh
Central vent (60 cfm)	1277 Btuh
Outside air	
Equipment latent load	4805 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	2085	2085
Volume (ft <sup>3</sup> )	16680	16680
Air changes/hour	0.43	0.19
Equiv. AVF (cfm)	120	53

<b>Equipment Total Load (Sen+Lat)</b>	29437 Btuh
Req. total capacity at 0.70 SHR	2.9 ton

### Heating Equipment Summary

Make	Generic
Trade	
Model	AFUE 100
AHRI ref	
Efficiency	100 EFF
Heating input	15.3 kW
Heating output	52288 Btuh
Temperature rise	42 °F
Actual air flow	1173 cfm
Air flow factor	0.024 cfm/Btuh
Static pressure	0.30 in H2O
Space thermostat	

### Cooling Equipment Summary

Make	Generic
Trade	
Cond	SEER 14.0
Coil	
AHRI ref	
Efficiency	12.2 EER, 14 SEER
Sensible cooling	24633 Btuh
Latent cooling	10557 Btuh
Total cooling	35190 Btuh
Actual air flow	1173 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.30 in H2O
Load sensible heat ratio	0.85

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

## Project Information

For: Home with R-8, Ducts in ventilated attic  
Nappanee, In

## Design Conditions

<b>Location:</b> South Bend/St.josep, IN, US Elevation: 774 ft Latitude: 42°N		<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 64 50 50.2	<b>Cooling</b> 75 13 50 32.2
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 6 - - 15.0	<b>Cooling</b> 88 19 ( M ) 73 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	
		Simplified Average 1 (Average)		

### Construction descriptions

	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
12B-0sw: Frm wall, vnl ext, 3/8" wood shth, r-11 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	189	0.097	11.0	6.23	1177	2.20	415
	e	439	0.097	11.0	6.23	2734	2.20	965
	s	240	0.097	11.0	6.23	1495	2.20	527
	w	435	0.097	11.0	6.23	2711	2.20	957
	all	1303	0.097	11.0	6.23	8117	2.20	2864

### Partitions (none)

### Windows

common low e windows 34 28: Most Common Low E Uo.34 and SHGC .28; 50% blinds 45°, light; 6.67 ft head ht	n	30	0.340	0	21.8	655	8.24	247
	e	120	0.340	0	21.8	2619	25.9	3112
	w	105	0.340	0	21.8	2292	25.9	2723
	all	255	0.340	0	21.8	5566	23.9	6082
1D-c2obd: 2 glazing, dr outr, argon gas, mtl /w brk frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.30); 50% blinds 45°, light; 6.67 ft head ht	w	40	0.400	0	25.7	1017	28.3	1119

### Doors

SE FRENCH DR: SE FR DOOR Uo.37 SHGC .34	n	21	0.370	0	23.8	499	8.52	179
	e	21	0.370	0	23.8	499	8.52	179
	all	42	0.370	0	23.8	998	8.52	358

### Ceilings

16B-21ad: Attic ceiling, asphalt shingles roof mat, r-21 ceil ins, 1/2" gypsum board int fnsh		2085	0.044	21.0	2.82	5890	2.14	4454
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### Floors

20P-11t: Flr floor, frm flr, 8" thkns, tile flr fnsh, r-11 cav ins, amb ovr		2085	0.078	11.0	5.01	10441	0.67	1390
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