

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Cooling Equipment

Design Conditions

Outdoor design DB:	93.0°F	Sensible gain:	28331 Btuh	Entering coil DB:	79.1°F
Outdoor design WB:	65.0°F	Latent gain:	0 Btuh	Entering coil WB:	63.1°F
Indoor design DB:	75.0°F	Total gain:	28331 Btuh		
Indoor RH:	50%	Estimated airflow:	1200 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split AC				
Manufacturer:	Lennox	Model:	ML13KC1-036-230A**+CK40DT-30/36B-**		
Actual airflow:	1200 cfm				
Sensible capacity:	29070 Btuh		103% of load		
Latent capacity:	5130 Btuh		0% of load		
Total capacity:	34200 Btuh		121% of load	SHR:	85%

Heating Equipment

Design Conditions

Outdoor design DB:	16.0°F	Heat loss:	32255 Btuh	Entering coil DB:	63.0°F
Indoor design DB:	70.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Gas furnace				
Manufacturer:	Lennox	Model:	ML196DF045XE36B-*		
Actual airflow:	1200 cfm				
Output capacity:	43000 Btuh		133% of load	Temp. rise:	50 °F

Meets all requirements of ACCA Manual S.



Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 2.0

Canyon County Header Information

Contractor _____

Mechanical license# _____

Building plan # _____

Home address (Street or Lot#, Block, Subdivision) 1234 Basic St., Entire House

Applicable Attachments
 Manual J1 Form and Worksheet A: Yes No
 OEM performance data (heating, cooling, blower): Yes No
 Duct distribution sketch: Yes No
 IRC Table R301.2 (climate & geographic design criteria) Yes No

HVAC LOAD CALCULATION (IRC M1401.3)

Manual J Design Criteria and Loads

Location

Elevation 2428 ft
 Altitude Correction Factor 0.92
 Latitude 44 °N

Summer Design Conditions

Outdoor Cooling Temp 93 °F
 Indoor Cooling Temp 75 °F
 Cooling Temp Diff 18 °F
 Indoor Summer Design RH 50 %
 Coincident Wet Bulb Temp 65 °F

Manual J Loads

Total Heat Loss 32255 Btuh
 Sensible Heat Gain 28331 Btuh
 Latent Heat Gain 0 Btuh
 Total Heat Gain 28331 Btuh

Winter Design Conditions

Outdoor Winter Temp 16 °F
 Indoor Winter Temp 70 °F
 Heating Temp Diff 54 °F

The heat loss/gain was calculated in accordance with ACCA Manual J? Y N

HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment

Furnace Boiler Electric Heat
 Single Speed Multi Stage Modulating

Cooling Equipment

Air Conditioner Heat Pump
 Air-to-Air Geothermal Open Loop Geothermal Closed Loop
 Single Speed Multi Stage Variable Speed

Model ML196DF045XE36B-*

Output 43000 Btuh Sizing Value 32255 Btuh
 Supplemental Heat 0 Btuh Sizing Limit 200.0 %
 Load: Capacity 133.3 %

Model ML13KC1-036-230A**

Sensible 29070 Btuh Sizing Value 28331 Btuh
 Latent 5130 Btuh Sizing Limit 115.0 %
 Total 34200 Btuh Load: Capacity 120.7 %

Size Factor is within Manual S Size Limit? Y N

Size Factor is within Manual S Size Limit? Y N

HVAC DUCT DISTRIBUTION DESIGN (IRC M1601.1)

Design airflow 1200 cfm Longest Supply Duct 391 ft Duct Materials Used
 External Static Pressure (ESP) 0.80 in H2O Longest Return Duct 54.4 ft Trunk Duct: Duct Board Sheet Metal
 Component Pressure Loss (CPL) 0.49 in H2O Total Effective Length (TEL) 446 ft Flex Lined Sheet Metal Other
 Available static pressure (ASP) 0.31 in H2O Friction Rate 0.07 in/100ft Branch Duct: Duct Board Sheet Metal
 ESP - CPL = ASP (ASP x 100) / TEL = Friction Rate Flex Lined Sheet Metal Other

Ducts are sized per Manual D? Y N

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above and understand the claims made on these forms may be subject to review and verification.

Contractor's printed name: _____

Contractor's signature: _____ Date: _____

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Design Information

	Htg	Clg	Method	Infiltration
Outside db (°F)	16	93	Method	Simplified
Inside db (°F)	70	75	Construction quality	Semi-tight
Design TD (°F)	54	18	Fireplaces	0
Daily range	-	H		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	49	-14		

HEATING EQUIPMENT

Make	Lennox
Trade	LENNOX
Model	ML196DF045XE36B-*
AHRI ref	204454171
Efficiency	95 AFUE
Heating input	44000 Btuh
Heating output	43000 Btuh
Temperature rise	36 °F
Actual air flow	1200 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.80 in H2O
Space thermostat	

COOLING EQUIPMENT

Make	Lennox
Trade	LENNOX
Cond	ML13KC1-036-230A**
Coil	CK40DT-30/36B-**
AHRI ref	
Efficiency	12.0 EER2, 13.8 SEER2
Sensible cooling	29070 Btuh
Latent cooling	5130 Btuh
Total cooling	34200 Btuh
Actual air flow	1200 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.80 in H2O
Load sensible heat ratio	1.00

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
BED #3	158	3239	3119	149	142
BATH #1	66	659	362	30	16
BED #2	159	1865	1700	86	78
PANTRY	88	0	0	0	0
MUD	55	869	304	40	14
LAUNDRY	85	231	667	11	30
DEN	190	1021	537	47	24
BED #1	162	2113	1032	97	47
LIV/NOOK/KIT	666	8121	9561	373	436
HALL	55	0	0	0	0
SAUNA/DRESSING	168	885	4625	41	211
MASTER BED	217	2209	2434	101	111
MASTER WIC	72	0	0	0	0
MASTER BATH	176	2829	1254	130	57

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

ENTRY	172	2115	703	97	32
Entire House	2489	26156	26298	1200	1200
Other equip loads		6099	2033		
Equip. @ 0.98 RSM			27764		
Latent cooling			0		
TOTALS	2489	32255	27764	1200	1200

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



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Design Conditions

Location:

Caldwell AWOS, ID, US
Elevation: 2428 ft
Latitude: 44°N

Outdoor:

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

Heating

16
-
-
15.0

Cooling

93
30 (H)
65
7.5

Indoor:

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

Heating

70
54
50
49.1

Cooling

75
18
50
-14.5

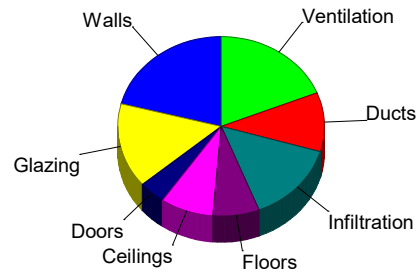
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Semi-tight
0

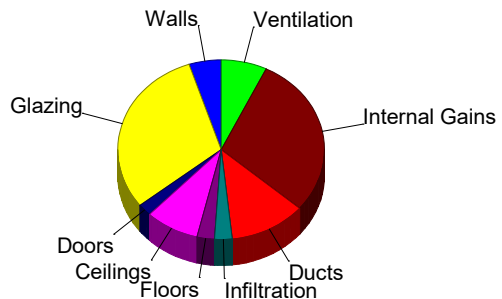
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.5	6751	20.9
Glazing	17.3	4929	15.3
Doors	21.1	1348	4.2
Ceilings	1.1	2689	8.3
Floors	0.9	2337	7.2
Infiltration	2.7	4677	14.5
Ducts		3425	10.6
Piping		0	0
Humidification		0	0
Ventilation		6099	18.9
Adjustments		0	0
Total		32255	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.7	1423	5.0
Glazing	30.4	8671	30.6
Doors	9.6	612	2.2
Ceilings	1.0	2390	8.4
Floors	0.3	779	2.8
Infiltration	0.4	779	2.8
Ducts		3394	12.0
Ventilation		2033	7.2
Internal gains		8250	29.1
Blower		0	0
Adjustments		0	0
Total		28331	100.0



Latent Cooling Load = 0 Btuh
Overall U-value = 0.166 Btuh/ft²·°F, Window / Floor Area = 11.5 %

Data entries checked.

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Location:		Indoor:		Heating	Cooling
Caldwell AWOS, ID, US		Indoor temperature (°F)		70	75
Elevation: 2428 ft		Design TD (°F)		54	18
Latitude: 44°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		49.1	-14.5
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	16	93	Method	Simplified	
Daily range (°F)	-	30 (H)	Construction quality	Semi-tight	
Wet bulb (°F)	-	65	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls								
12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud								
	n	344	0.065	21.0	3.51	1209	0.86	298
	e	411	0.065	21.0	3.51	1443	0.86	356
	s	536	0.065	21.0	3.51	1882	0.86	464
	w	132	0.065	21.0	3.51	465	0.86	115
	all	1424	0.065	21.0	3.51	5000	0.86	1231
Partitions								
12F-0sw: Frm wall, 5/8" gyp.bd ext, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud								
		499	0.065	21.0	3.51	1751	0.38	191
Windows								
2 glazing, clr out, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, clr out, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht								
	n	56	0.320	0	17.3	968	12.4	694
	e	143	0.320	0	17.3	2471	38.5	5502
	s	50	0.320	0	17.3	868	21.7	1090
	w	36	0.320	0	17.3	622	38.5	1385
	all	285	0.320	0	17.3	4929	30.4	8671
Doors								
11D0: Door, wd sc type								
	e	20	0.390	0	21.1	421	9.55	191
	w	24	0.390	0	21.1	505	9.55	229
	n	20	0.390	0	21.1	421	9.55	191
	all	64	0.390	0	21.1	1348	9.55	612
Ceilings								
16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh								
		2489	0.020	50.0	1.08	2689	0.96	2390
Floors								
19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul								
		2489	0.368	19.0	0.94	2337	0.31	779

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Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² ·°F	Insul R ft ² ·°F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	94	0.065	21.0	3.51	332	0.86	82
	s	94	0.065	21.0	3.51	332	0.86	82
	w	99	0.065	21.0	3.51	347	0.86	86
	all	288	0.065	21.0	3.51	1011	0.86	249
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, w clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht		36	0.320	0	17.3	622	38.5	1385
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		158	0.020	50.0	1.08	170	0.96	151
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		158	0.368	19.0	0.94	148	0.31	49

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Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	s	50	0.065	21.0	3.51	174	0.86	43
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, s clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	s	7	0.320	0	17.3	117	21.7	146
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		66	0.020	50.0	1.08	71	0.96	63
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		66	0.368	19.0	0.94	62	0.31	21

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Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	s	67	0.065	21.0	3.51	234	0.86	58
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, s clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	s	30	0.320	0	17.3	518	21.7	651
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		159	0.020	50.0	1.08	171	0.96	152
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		159	0.368	19.0	0.94	149	0.31	50

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Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	s	40	0.065	21.0	3.51	142	0.86	35
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, s clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	s	14	0.320	0	17.3	233	21.7	293
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		88	0.020	50.0	1.08	96	0.96	85
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		88	0.368	19.0	0.94	83	0.31	28

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Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls (none)								
Partitions 12F-0sw: Frm wall, 5/8" gyp.bd ext, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud		63	0.065	21.0	3.51	222	0.38	24
Windows (none)								
Doors 11D0: Door, wd sc type	n	20	0.390	0	21.1	421	9.55	191
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		55	0.020	50.0	1.08	60	0.96	53
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		55	0.368	19.0	0.94	52	0.31	17

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Design Conditions

Location:		Indoor:		Heating	Cooling
Caldwell AWOS, ID, US		Indoor temperature (°F)		70	75
Elevation: 2428 ft		Design TD (°F)		54	18
Latitude: 44°N		Relative humidity (%)		50	50
Outdoor:		Moisture difference (gr/lb)		49.1	-14.5
	Heating	Cooling	Infiltration:		
Dry bulb (°F)	16	93	Method	Simplified	
Daily range (°F)	-	30 (H)	Construction quality	Semi-tight	
Wet bulb (°F)	-	65	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls								
(none)								
Partitions								
(none)								
Windows								
(none)								
Doors								
(none)								
Ceilings								
16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		85	0.020	50.0	1.08	92	0.96	82
Floors								
19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight cowl ovr, r-19 wall insul		85	0.368	19.0	0.94	80	0.31	27

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Design Conditions

Location:		Indoor:		Heating	Cooling
Caldwell AWOS, ID, US		Indoor temperature (°F)		70	75
Elevation: 2428 ft		Design TD (°F)		54	18
Latitude: 44°N		Relative humidity (%)		50	50
Outdoor:		Moisture difference (gr/lb)		49.1	-14.5
	Heating	Cooling	Infiltration:		
Dry bulb (°F)	16	93	Method	Simplified	
Daily range (°F)	-	30 (H)	Construction quality	Semi-tight	
Wet bulb (°F)	-	65	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² ·°F	Insul R ft ² ·°F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls								
(none)								
Partitions								
12F-0sw: Frm wall, 5/8" gyp.bd ext, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud		140	0.065	21.0	3.51	490	0.38	53
Windows								
(none)								
Doors								
(none)								
Ceilings								
16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		190	0.020	50.0	1.08	205	0.96	183
Floors								
19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		190	0.368	19.0	0.94	179	0.31	60

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Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² ·°F	Insul R ft ² ·°F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	76	0.065	21.0	3.51	266	0.86	65
Partitions 12F-0sw: Frm wall, 5/8" gyp.bd ext, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud		126	0.065	21.0	3.51	442	0.38	48
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, n clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	n	30	0.320	0	17.3	518	12.4	372
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		162	0.020	50.0	1.08	175	0.96	156
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		162	0.368	19.0	0.94	152	0.31	51

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft²	U-value Btuh/ft²·°F	Insul R ft²·°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	e	170	0.065	21.0	3.51	597	0.86	147
	s	285	0.065	21.0	3.51	1000	0.86	246
	all	455	0.065	21.0	3.51	1597	0.86	393
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	e	105	0.320	0	17.3	1814	38.5	4040
Doors 11D0: Door, wd sc type	e	20	0.390	0	21.1	421	9.55	191
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		666	0.020	50.0	1.08	720	0.96	640
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		666	0.368	19.0	0.94	626	0.31	209

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location:		Indoor:		Heating	Cooling
Caldwell AWOS, ID, US		Indoor temperature (°F)		70	75
Elevation: 2428 ft		Design TD (°F)		54	18
Latitude: 44°N		Relative humidity (%)		50	50
Outdoor:		Moisture difference (gr/lb)		49.1	-14.5
	Heating	Cooling	Infiltration:		
Dry bulb (°F)	16	93	Method	Simplified	
Daily range (°F)	-	30 (H)	Construction quality	Semi-tight	
Wet bulb (°F)	-	65	Fireplaces	0	
Wind speed (mph)	15.0	7.5			

Construction descriptions

	Or	Area	U-value	Insul R	Htg HTM	Loss	Clg HTM	Gain
		ft ²	Btuh/ft ² ·°F	ft ² ·°F/Btuh	Btuh/ft ²	Btuh	Btuh/ft ²	Btuh
Walls (none)								
Partitions (none)								
Windows (none)								
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		55	0.020	50.0	1.08	60	0.96	53
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight cowl ovr, r-19 wall insul		55	0.368	19.0	0.94	52	0.31	17

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft²	U-value Btuh/ft²·°F	Insul R ft²·°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	54	0.065	21.0	3.51	191	0.86	47
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, n clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	n	4	0.320	0	17.3	69	12.4	50
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		168	0.020	50.0	1.08	181	0.96	161
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		168	0.368	19.0	0.94	158	0.31	53

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² ·F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	e	108	0.065	21.0	3.51	377	0.86	93
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	e	30	0.320	0	17.3	518	38.5	1154
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		217	0.020	50.0	1.08	234	0.96	208
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		217	0.368	19.0	0.94	203	0.31	68

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	e	81	0.065	21.0	3.51	284	0.86	70
Partitions (none)								
Windows (none)								
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		72	0.020	50.0	1.08	78	0.96	69
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		72	0.368	19.0	0.94	68	0.31	23

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

Construction descriptions	Or	Area ft²	U-value Btuh/ft²·°F	Insul R ft²·°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	120	0.065	21.0	3.51	420	0.86	104
	e	53	0.065	21.0	3.51	185	0.86	46
	all	172	0.065	21.0	3.51	605	0.86	149
Partitions (none)								
Windows 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; 2 glazing, clr outr, air gas, wd frm mat, clr innr, 1/4" gap, 1/8" thk; NFRC rated (SHGC=0.35); 6.67 ft head ht	n	22	0.320	0	17.3	380	12.4	273
	e	8	0.320	0	17.3	138	38.5	308
	all	30	0.320	0	17.3	518	19.3	580
Doors (none)								
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		176	0.020	50.0	1.08	190	0.96	169
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		176	0.368	19.0	0.94	165	0.31	55

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Design Conditions

Location: Caldwell AWOS, ID, US Elevation: 2428 ft Latitude: 44°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 54 50 49.1	Cooling 75 18 50 -14.5
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 93 30 (H) 65 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Semi-tight 0	

Construction descriptions

	Or	Area ft ²	U-value Btuh/ft ² °F	Insul R ft ² °F/Btuh	Htg HTM Btuh/ft ²	Loss Btuh	Clg HTM Btuh/ft ²	Gain Btuh
Walls 12F-0sw: Frm wall, wd ext, 1/2" wood shth, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	w	34	0.065	21.0	3.51	118	0.86	29
Partitions 12F-0sw: Frm wall, 5/8" gyp.bd ext, r-21 cav ins, 5/8" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud		170	0.065	21.0	3.51	597	0.38	65
Windows (none)								
Doors 11D0: Door, wd sc type	w	24	0.390	0	21.1	505	9.55	229
Ceilings 16B-50ad: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh		172	0.020	50.0	1.08	186	0.96	165
Floors 19D-0cswp: Flr floor, frm flr, 10" thkns, hrd wd flr fnsh, tight crwl ovr, r-19 wall insul		172	0.368	19.0	0.94	161	0.31	54

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

Notes:

Design Information

Weather: Caldwell AWOS, ID, US

Winter Design Conditions

Outside db 16 °F
Inside db 70 °F
Design TD 54 °F

Ventilation Method ASHRAE 62.2-2013

Heating Summary

Structure 22731 Btuh
Ducts (R-8.0) 3425 Btuh
Central vent (112 cfm) 6099 Btuh
Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 32255 Btuh

Infiltration

Method Simplified
Construction quality Semi-tight
Fireplaces 0

	Heating	Cooling
Area (ft ²)	2489	2489
Volume (ft ³)	23459	23459
Air changes/hour	0.22	0.11
Equiv. AVF (cfm)	86	43

Heating Equipment Summary

Make Lennox
Trade LENNOX
Model ML196DF045XE36B-*
AHRI ref 204454171

Efficiency 95 AFUE
Heating input 44000 Btuh
Heating output 43000 Btuh
Temperature rise 36 °F
Actual air flow 1200 cfm
Air flow factor 0.046 cfm/Btuh
Static pressure 0.80 in H2O
Space thermostat

Summer Design Conditions

Outside db 93 °F
Inside db 75 °F
Design TD 18 °F
Daily range H
Relative humidity 50 %
Moisture difference -14 gr/lb

Sensible Cooling Equipment Load Sizing

Structure 22904 Btuh
Ducts (R-8.0) 3394 Btuh
Central vent (112 cfm) 2033 Btuh
Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.98
Equipment sensible load 27764 Btuh

Latent Cooling Equipment Load Sizing

Structure 612 Btuh
Ducts 45 Btuh
Central vent (112 cfm) -1012 Btuh
Outside air
Equipment latent load 0 Btuh

Equipment Total Load (Sen+Lat) 27764 Btuh
Req. total capacity at 0.85 SHR 2.7 ton

Cooling Equipment Summary

Make Lennox
Trade LENNOX
Cond ML13KC1-036-230A**
Coil CK40DT-30/36B-**
AHRI ref
Efficiency 12.0 EER2, 13.8 SEER2
Sensible cooling 29070 Btuh
Latent cooling 5130 Btuh
Total cooling 34200 Btuh
Actual air flow 1200 cfm
Air flow factor 0.046 cfm/Btuh
Static pressure 0.80 in H2O
Load sensible heat ratio 1.00

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

		Entire House						BED #3						
		242.0 ft						36.0 ft						
		9.4 ft						9.0 ft heat/cool						
		2489.4 ft²						157.5 ft² 15.0 x 10.5 ft						
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	400	344	1209	298	94	94	332	82
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	56	0	968	694	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	574	411	1443	356	0	0	0	0
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	143	0	2471	5502	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	20	20	421	191	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	586	536	1882	464	94	94	332	82
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	50	0	868	1090	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	192	132	465	115	135	99	347	86
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	36	0	622	1385	36	0	622	1385
	D	11D0	0.390	w	21.06	9.55	24	24	505	229	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	519	499	1751	191	0	0	0	0
	D	11D0	0.390	n	21.06	9.55	20	20	421	191	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	2489	2489	2689	2390	158	158	170	151
	F	19D-0cswp	0.368	-	0.94	0.31	2489	2489	2337	779	158	158	148	49
6	c) AED excursion									0			508	
	Envelope loss/gain								18054	13874			1951	2342
12	a) Infiltration								4677	779			864	144
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			5			1150	1		230	
			Appliances/other						7100				0	
	Subtotal (lines 6 to 13)								22731	22904			2815	2716
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								22731	22904			2815	2716
15	Duct loads						15%	15%	3425	3394	15%	15%	424	402
	Total room load								26156	26298			3239	3119
	Air required (cfm)								1200	1200			149	142

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



1 Room name				BATH #1				BED #2						
2 Exposed wall				9.0 ft 6.2 ft heat/cool				9.0 ft 10.8 ft heat/cool						
3 Room height				10.5 x 6.2 ft				14.8 x 10.8 ft						
4 Room dimensions				65.6 ft²				158.6 ft²						
5 Room area														
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	0	0	0	0	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	56	50	174	43	97	67	234	58
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	7	0	117	146	30	0	518	651
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	0	0	0	0
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	66	66	71	63	159	159	171	152
	F	19D-0cswp	0.368	-	0.94	0.31	66	66	62	21	159	159	149	50
6	c) AED excursion									17				86
	Envelope loss/gain								423	290			1073	997
12	a) Infiltration								150	25			258	43
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230		0				0	1			230
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								573	315			1331	1270
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			290	211
14	Subtotal								573	315			1621	1481
15	Duct loads						15%	15%	86	47	15%	15%	244	219
	Total room load								659	362			1865	1700
	Air required (cfm)								30	16			86	78

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

1 Room name				Pantry				MJD						
2 Exposed wall				6.0 ft				9.2 ft						
3 Room height				9.0 ft heat/cool				9.0 ft heat/cool						
4 Room dimensions				14.8 x 6.0 ft				1.0 x 55.2 ft						
5 Room area				88.5 ft²				55.2 ft²						
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	0	0	0	0	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	54	40	142	35	0	0	0	0
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	14	0	233	293	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	83	63	222	24
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	20	20	421	191
	C	16B-50ad	0.020	-	1.08	0.96	88	88	96	85	55	55	60	53
	F	19D-0cswp	0.368	-	0.94	0.31	88	88	83	28	55	55	52	17
6	c) AED excursion									44				-21
	Envelope loss/gain								554	484			755	265
12	a) Infiltration								144	24			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								698	508			755	265
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								-698	-508			0	0
14	Subtotal								0	0			755	265
15	Duct loads						15%	15%	0	0	15%	15%	114	39
	Total room load								0	0			869	304
	Air required (cfm)								0	0			40	14

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

1 Room name				LAUNDRY				DEN						
2 Exposed wall				0 ft				15.5 ft						
3 Room height				9.0 ft				9.0 ft						
4 Room dimensions				8.8 x 9.8 ft				1.0 x 190.2 ft						
5 Room area				85.3 ft²				190.2 ft²						
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	0	0	0	0	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	140	140	490	53
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	85	85	92	82	190	190	205	183
	F	19D-0cswp	0.368	-	0.94	0.31	85	85	80	27	190	190	179	60
6	c) AED excursion									-44				-36
	Envelope loss/gain								172	64			874	259
12	a) Infiltration								0	0			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230		0				0	0			0
			Appliances/other							500				200
	Subtotal (lines 6 to 13)								172	564			874	459
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								28	17			14	8
14	Subtotal								201	581			887	468
15	Duct loads						15%	15%	30	86	15%	15%	134	69
	Total room load								231	667			1021	537
	Air required (cfm)								11	30			47	24

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

1 Room name				BED #1 25.8 ft				LIV/NOOK/KIT 58.0 ft						
2 Exposed wall				9.0 ft heat/cool				10.0 ft heat/cool						
3 Room height				1.0 x 162.2 ft				1.0 x 666.5 ft						
4 Room dimensions				162.2 ft²				666.5 ft²						
5 Room area														
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	106	76	266	65	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	30	0	518	372	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	0	0	0	0	295	170	597	147
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	0	0	0	0	105	0	1814	4040
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	20	20	421	191
	W	12F-0sw	0.065	s	3.51	0.86	0	0	0	0	285	285	1000	246
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	126	126	442	48	0	0	0	0
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	162	162	175	156	666	666	720	640
	F	19D-0cswp	0.368	-	0.94	0.31	162	162	152	51	666	666	626	209
6	c) AED excursion									-71				-39
	Envelope loss/gain								1554	621			5178	5434
12	a) Infiltration								282	47			1547	258
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			1			230	0			0
			Appliances/other							0				2400
	Subtotal (lines 6 to 13)								1836	898			6725	8092
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			332	236
14	Subtotal								1836	898			7057	8327
15	Duct loads						15%	15%	277	133	15%	15%	1064	1234
	Total room load								2113	1032			8121	9561
	Air required (cfm)								97	47			373	436

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



1 Room name		2 Exposed wall		3 Room height		4 Room dimensions		5 Room area		HALL 0 ft heat/cool 9.0 ft 13.0 x 4.2 ft 55.2 ft²				SAUNA/DRESSING 6.5 ft heat/cool 9.0 ft 1.0 x 167.9 ft 167.9 ft²			
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)				
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool			
6	W	12F-0sw	0.065	n	3.51	0.86	0	0	0	0	58	54	191	47			
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	0	0	0	0	4	0	69	50			
	W	12F-0sw	0.065	e	3.51	0.86	0	0	0	0	0	0	0	0			
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	0	0	0	0	0	0	0	0			
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0			
	W	12F-0sw	0.065	s	3.51	0.86	0	0	0	0	0	0	0	0			
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	0	0	0	0	0	0	0	0			
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0			
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0			
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0			
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	0	0	0	0			
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0			
	C	16B-50ad	0.020	-	1.08	0.96	55	55	60	53	168	168	181	161			
	F	19D-0cswp	0.368	-	0.94	0.31	55	55	52	17	168	168	158	53			
6	c) AED excursion													-316			
	Envelope loss/gain								112	65			599	-6			
12	a) Infiltration								0	0			156	26			
	b) Room ventilation								0	0			0	0			
13	Internal gains:		Occupants @	230			0		0	0	0			0			
			Appliances/other						0	0				4000			
	Subtotal (lines 6 to 13)								112	65			755	4020			
	Less external load								0	0			0	0			
	Less transfer								0	0			0	0			
	Redistribution								-112	-65			14	8			
14	Subtotal								0	0			769	4028			
15	Duct loads						15%	15%	0	0	15%	15%	116	597			
	Total room load								0	0			885	4625			
	Air required (cfm)								0	0			41	211			

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



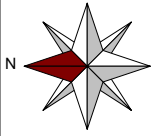
1 Room name				MASTER BED 13.8 ft 10.0 ft heat/cool				MASTER WIC 9.0 ft 9.0 ft x 8.0 ft heat/cool						
2 Exposed wall				216.6 ft²				72.0 ft²						
3 Room height														
4 Room dimensions														
5 Room area														
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	138	108	377	93	81	81	284	70
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	30	0	518	1154	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	0	0	0	0
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	0	0	0	0
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	217	217	234	208	72	72	78	69
	F	19D-0cswp	0.368	-	0.94	0.31	217	217	203	68	72	72	68	23
6	c) AED excursion									9				-14
	Envelope loss/gain								1333	1532			430	147
12	a) Infiltration								367	61			216	36
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			2			460	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								1700	2053			646	183
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								220	67			-646	-183
14	Subtotal								1920	2120			0	0
15	Duct loads							15%	289	314	15%	15%	0	0
	Total room load								2209	2434			0	0
	Air required (cfm)								101	111			0	0

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

1 Room name		MASTER BATH 22.5 ft							ENTRY 22.8 ft					
2 Exposed wall		9.0 ft heat/cool							10.0 ft heat/cool					
3 Room height		176.1 ft ²							172.0 ft ²					
4 Room dimensions		1.0 x 176.1 ft							1.0 x 172.0 ft					
5 Room area		176.1 ft ²							172.0 ft ²					
	Ty	Construction number	U-value (Btuh/ft ² ·°F)	Or	HTM (Btuh/ft ²)		Area (ft ²) or perimeter (ft)		Load (Btuh)		Area (ft ²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12F-0sw	0.065	n	3.51	0.86	142	120	420	104	0	0	0	0
	G	2 glazing, dr outr,	0.320	n	17.28	12.39	22	0	380	273	0	0	0	0
	W	12F-0sw	0.065	e	3.51	0.86	61	53	185	46	0	0	0	0
	G	2 glazing, dr outr,	0.320	e	17.28	38.47	8	0	138	308	0	0	0	0
11	D	11D0	0.390	e	21.06	9.55	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	s	3.51	0.86	0	0	0	0	0	0	0	0
	G	2 glazing, dr outr,	0.320	s	17.28	21.69	0	0	0	0	0	0	0	0
	W	12F-0sw	0.065	w	3.51	0.86	0	0	0	0	58	34	118	29
	G	2 glazing, dr outr,	0.320	w	17.28	38.47	0	0	0	0	0	0	0	0
	D	11D0	0.390	w	21.06	9.55	0	0	0	0	24	24	505	229
	R	12F-0sw	0.065	-	3.51	0.38	0	0	0	0	170	170	597	65
	D	11D0	0.390	n	21.06	9.55	0	0	0	0	0	0	0	0
	C	16B-50ad	0.020	-	1.08	0.96	176	176	190	169	172	172	186	165
	F	19D-0cswp	0.368	-	0.94	0.31	176	176	165	55	172	172	161	54
6	c) AED excursion									-76				-41
	Envelope loss/gain								1479	878			1567	501
12	a) Infiltration								540	90			153	26
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								2019	968			1720	527
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								439	125			118	86
14	Subtotal								2458	1092			1838	612
15	Duct loads						15%	15%	370	162	15%	15%	277	91
	Total room load								2829	1254			2115	703
	Air required (cfm)								130	57			97	32

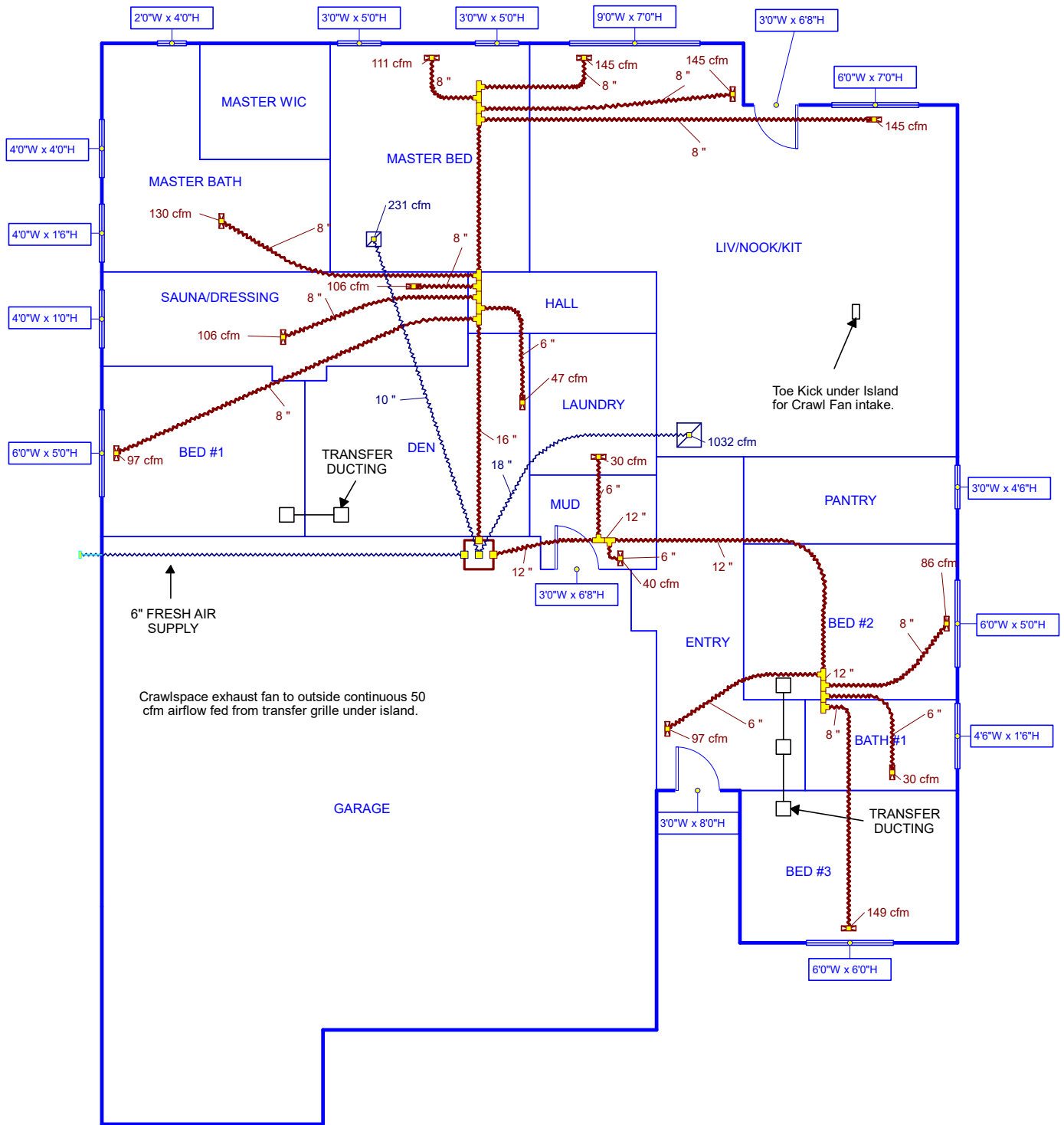
Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.





Main Floor

Window U-Value: 0.32, SHGC: 0.35



Job #:
Performed by Kyle Nelson for:
 John Smith
 1234 Basic St.
 Nampa, ID

Scale: 1 : 122
 Page 1
 Right-Suite@ Universal 2025
 25.0.03 RSU64855
 2026-Jun-04 14:41:08
 ... 83687 Manual JSD PO# 889427.rup

Project Information

For: John Smith, HVAC Company
1234 Basic St., Nampa, ID

	Heating	Cooling
External static pressure	0.80 in H2O	0.80 in H2O
Pressure losses	0.49 in H2O	0.49 in H2O
Available static pressure	0.31 in H2O	0.31 in H2O
Supply / return available pressure	0.272 / 0.038 in H2O	0.272 / 0.038 in H2O
Lowest friction rate	0.070 in/100ft	0.070 in/100ft
Actual air flow	1200 cfm	1200 cfm
Total effective length (TEL)	446 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
BATH #1	h 659	30	16	0.091	6.0	0x0	VIFx	43.7	255.0	st5
BED #1	h 2113	97	47	0.145	8.0	0x0	VIFx	42.2	145.0	st1
BED #2	h 1865	86	78	0.093	8.0	0x0	VIFx	43.5	250.0	st5
BED #3	h 3239	149	142	0.070	8.0	0x0	VIFx	51.4	340.0	st5
DEN	h 1021	47	24	0.155	6.0	0x0	VIFx	25.4	150.0	st1
ENTRY	h 2115	97	32	0.094	6.0	0x0	VIFx	44.1	245.0	st4
LAUNDRY	c 667	11	30	0.172	6.0	0x0	VIFx	13.1	145.0	st2
LIV/NOOK/KIT	c 3187	124	145	0.123	8.0	0x0	VIFx	56.2	165.0	st1
LIV/NOOK/KIT-A	c 3187	124	145	0.122	8.0	0x0	VIFx	47.3	175.0	st1
LIV/NOOK/KIT-B	c 3187	124	145	0.121	8.0	0x0	VIFx	40.5	185.0	st1
MASTER BATH	h 2829	130	57	0.135	8.0	0x0	VIFx	37.0	165.0	st1
MASTER BED	c 2434	101	111	0.126	8.0	0x0	VIFx	36.5	180.0	st1
MUD	h 869	40	14	0.111	6.0	0x0	VIFx	10.1	235.0	st3
SAUNA/DRESSING	c 2313	20	106	0.147	8.0	0x0	VIFx	30.8	155.0	st1
SAUNA/DRESSING-A	c 2312	20	106	0.154	8.0	0x0	VIFx	22.0	155.0	st1

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	788	887	0.121	635	16.0	0 x 0	VinIFlx	
st5	Peak AVF	264	236	0.070	337	12.0	0 x 0	VinIFlx	st4
st4	Peak AVF	361	268	0.070	460	12.0	0 x 0	VinIFlx	st3
st3	Peak AVF	401	282	0.070	511	12.0	0 x 0	VinIFlx	st2
st2	Peak AVF	412	313	0.070	524	12.0	0 x 0	VinIFlx	

Bold/italic values have been manually overridden

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb2	0x0	969	1032	54.4	0.070	584	18.0	0x 0		VIFx	
rb1	0x0	231	168	52.9	0.071	424	10.0	0x 0		VIFx	