

ANITA AND JERRY WEST HVAC LOAD ANALYSIS

for

DON REED CONSTRUCTION LLC.

2230 SE BAYA DR.
LAKE CITY FL 32025

Prepared By.

DAVID HALL
DAVID HALL'S INC
PO BOX 244
LAKE CITY FL 32056
386-755-9792
12/13/13

Project File Name: REED, WEST

---System 1---	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum.	Indoor Dry Bulb	Grains Difference
Winter:	31	N/A	N/A	72	N/A
Summer:	96	78	50%	75	52

No.	Projection	Offset	No.	Projection	Offset
1	3	1	6	0	0
2	5	0	7	0	0
3	4	0.5	8	0	0
4	0	0	9	0	0
5	0	0	10	0	0

	<u>Runouts</u>	<u>Main Trunk</u>
Duct Material:	Flexible Duct	Galvanized Steel
Roughness Factor:	0.010000	0.000300
Pressure Drop:	0.1000 In.wg/100 Ft.	0.1000 In.wg/100 Ft.
Minimum Velocity:	450.0 Ft./Minute	650.0 Ft./Minute
Maximum Velocity:	750.0 Ft./Minute	900.0 Ft./Minute
Minimum Height:	0 Inches	0 Inches
Maximum Height:	0 Inches	0 Inches

	<u>Winter</u>	<u>Summer</u>
Infiltration:	0.900 AC/Hr	0.400 AC/Hr
Volume of Conditioned Space:	X 27413 Cu.Ft.	X 27413 Cu.Ft.
	24,672 Cu.Ft./Hr	10,965 Cu.Ft./Hr
	X 0.0167	X 0.0167
Total Building Infiltration:	411.195 CFM	182.7533 CFM
Total Building Ventilation	0 CFM	0 CFM
---System 1---		
Infiltration & Ventilation Sensible Gain Multiplier:	23.10 = (1.10 X 21.00 Summer Temp. Difference)	
Infiltration & Ventilation Latent Gain Multiplier:	35.12 = (0.68 X 51.65 Grains Difference)	
Infiltration & Ventilation Sensible Loss Multiplier:	45.10 = (1.10 X 41.00 Winter Temp. Difference)	

Component Description	Area Quan	Sen. Loss	Lat. Gain	Sen. Gain	Total Gain
3B Window Double Pane Clear Glass TIM Frame	327	8,162	0	13,663	13,663
8O Glass Door Double Clear Glass Metal Frame	144	4,280	0	3,370	3,370
9G French Door Double Clear Glass Wood Frame	126	2,697	0	7,695	7,695
12H Wall R-19 + 1/2" Gypsum Board(R-0.5)	2,061	5,070	0	3,044	3,044
16J Ceiling R-57 Insulation	2,394	1,669	0	1,831	1,831
22A Slab on Grade No Edge Insulation	234	7,773	0	0	0
Subtotals for structure.	5,286	29,651	0	29,603	29,603
Active People:	4	0	920	1,200	2,120
Inactive People:	0	0	0	0	0
Appliances:	0	0	1,200	1,200	2,400
Lighting:	0	0		4,433	
Ductwork:	0	2,409	0	4,065	4,065
Infiltration: Winter CFM: 411.2, Summer CFM: 182.8	597	18,544	6,419	4,223	10,642
Ventilation: Winter CFM: 0.0, Summer CFM: 0.0	0	0	0	0	0
Sensible Gain Total:				44,724	
Temperature Swing Multiplier:				X1.00	
Building Load Totals:		50,604	8,539	44,724	53,263

Total Building Supply CFM:	2033	CFM per square foot:	0.858
Square feet of room area:	2,370	Square feet per ton:	489.643

Total heating required with outside air:	50,604 Btuh	50.604 MBH
Total sensible gain:	44,724 Btuh	84 %
Total latent gain:	8,539 Btuh	16 %
Total cooling required with outside air:	53,263 Btuh	4.439 Tons (based on sensible + latent)
		4.840 Tons (based on 77% sensible capacity)

Calculations are based on 7th edition of ACCA Manual J.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads.

Component Description	Area Quan	Sen. Loss	Lat Gain	Sen. Gain	Total Gain
3B Window Double Pane Clear Glass TIM Frame	327	8,162	0	13,663	13,663
8O Glass Door Double Clear Glass Metal Frame	144	4,280	0	3,370	3,370
9G French Door Double Clear Glass Wood Frame	126	2,697	0	7,695	7,695
12H Wall R-19 + 1/2" Gypsum Board(R-0.5)	2,061	5,070	0	3,044	3,044
16J Ceiling R-57 Insulation	2,394	1,669	0	1,831	1,831
22A Slab on Grade No Edge Insulation	234	7,773	0	0	0
Subtotals for structure:	5,286	29,651	0	29,603	29,603
Active People:	4	0	920	1,200	2,120
Inactive People:	0	0	0	0	0
Appliances:	0	0	1,200	1,200	2,400
Lighting:	0	0		4,433	
Ductwork:	0	2,409	0	4,065	4,065
Infiltration: Winter CFM. 411.2, Summer CFM. 182.8	597	18,544	6,419	4,223	10,642
Ventilation: Winter CFM. 0.0, Summer CFM. 0.0	0	0	0	0	0
Sensible Gain Total.				44,724	
Temperature Swing Multiplier:				X1.00	
System Load Totals:		50,604	8,539	44,724	53,263

Supply CFM	2,033	CFM per square foot:	0.858
Square feet of room area	2,370	Square feet per ton:	489.643

Total heating required with outside air:	50,604 Btuh	50.604 MBH
Total sensible gain.	44,724 Btuh	84 %
Total latent gain.	8,539 Btuh	16 %
Total cooling required with outside air:	53,263 Btuh	4.439 Tons (based on sensible + latent)
		4.840 Tons (based on 77% sensible capacity)

Calculations are based on 7th edition of ACCA Manual J.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads.

No	Room Name	Area SF	Htg Sens Btuh	Htg Nom CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Clg Nom CFM	Zone Adj Fact	Clg Adj CFM	Air Sys CFM
---Zone 1---												
1	Bedroom #2	200	5,291	69	1-9	580	4,334	811	197	1.30	256	197
2	Hall	63	81	1	1-3	396	428	0	19	1.00	19	19
3	Bath #2	70	534	7	1-3	521	563	0	26	1.00	26	26
4	Bedroom #3	164	2,873	37	1-7	563	2,450	387	111	1.35	150	111
5	Great Room	533	10,097	131	2-8	516	7,919	1,391	360	1.00	360	360
6	Kitchen	255	238	3	1-6	523	2,259	1,430	103	1.00	103	103
7	Dining	212	12,598	164	1-12	670	11,576	1,935	526	1.00	526	526
8	Foyer	93	2,801	36	1-8	464	2,642	452	120	1.35	162	120
9	Laundry/ Pantry	219	2,905	38	2-5	561	2,493	387	113	1.35	153	113
10	Master Closet	133	3,889	51	1-7	541	2,706	387	123	1.17	145	123
11	Master Bath	190	1,658	22	2-4	653	2,005	161	91	1.25	114	91
12	Master Bedroom	238	7,639	99	2-7	455	5,349	1,198	243	1.00	243	243
System 1 Totals		2370	50,604	657			44,724	8,539	2,033		2,257	2,033

*Main Trunk Size. 20x16 in.

*Main Trunk velocity constraints were not met due to duct schedule limitations.
Main Trunk Air Velocity = 978 Feet/Minute

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required.	4.439	84%/16%	44,724	8,539	53,263
Recommended:	4.840	77%/23%	44,724	13,359	58,083