



Enser Consulting, LLC
(303) 725-8836

Load Short Form

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

Project Information

For: Ranch Sample, Joe Builder
Denver, CO

Design Information

	Htg	Clg	Infiltration	
Outside db (°F)	-3	90	Method	Simplified
Inside db (°F)	70	75	Construction quality	Semi-tight
Design TD (°F)	73	15	Fireplaces	1 (Semi-tight)
Daily range	-	H		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	62	-36		

HEATING EQUIPMENT

Make	Carrier
Trade	Carrier
Model	58MCB080-12
GAMA ID	144288
Efficiency	92.1 AFUE
Heating input	80000 Btuh
Heating output	66000 Btuh
Temperature rise	63 °F
Actual air flow	1155 cfm
Air flow factor	0.030 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	

COOLING EQUIPMENT

Make	Carrier
Trade	Base 13 Puron AC
Cond	24ABA330A32
Coil	CNPV*3017A**+TDR
ARI ref no.	1171030
Efficiency	13 SEER
Sensible cooling	19320 Btuh
Latent cooling	8280 Btuh
Total cooling	27600 Btuh
Actual air flow	1245 cfm
Air flow factor	0.077 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	1.00

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master Bedrm	224	3806	1819	113	140
Mstr Bath & Clst	110	1374	485	41	37
Bedrm #1	121	2407	987	72	76
Bsmt Stairs	48	0	0	0	0
Hall Bath	48	175	99	5	8
Lndry Rm	50	698	1177	21	90
Den/Bedrm #2	144	1969	1505	59	116
Foyer	96	1361	546	41	42
Hall	182	0	0	0	0
Unfinished Bsmt	1862	13914	1114	415	86
Family Rm	238	3044	3201	91	246
Kitchen	154	3353	2026	100	156
Dining Rm	156	1949	994	58	76
Living Rm	156	3634	1536	108	118
Nook	98	1050	711	31	55

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Entire House	d	3686	38734	16199	1155	1245
Other equip loads			5584	1163		
Equip. @ 0.95 RSM				16529		
Latent cooling				0		
TOTALS		3686	44318	16529	1155	1245

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Project Information

For: Ranch Sample, Joe Builder
Denver, CO

Design Conditions

Location:

Denver, CO, US
Elevation: 5331 ft
Latitude: 40°N

Outdoor:

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

Heating

-3
-
-
15.0

Cooling

90
27 (H)
59
7.5

Indoor:

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

Heating

70
73
50
62.2

Cooling

75
15
50
-35.9

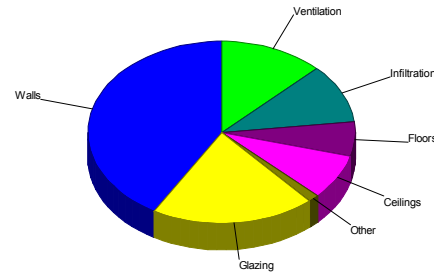
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Semi-tight
1 (Semi-tight)

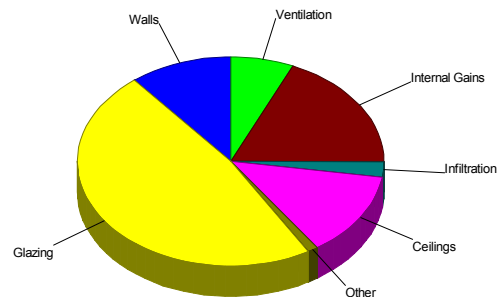
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	6.6	18429	41.6
Glazing	22.7	8785	19.8
Doors	28.5	598	1.3
Ceilings	1.9	3534	8.0
Floors	1.5	2719	6.1
Infiltration	3.0	4669	10.5
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		5584	12.6
Adjustments		-0	
Total		44318	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.7	1873	10.8
Glazing	21.4	8275	47.7
Doors	9.1	190	1.1
Ceilings	1.2	2263	13.0
Floors	0	0	0
Infiltration	0.3	418	2.4
Ducts		0	0
Ventilation		1163	6.7
Internal gains		3180	18.3
Blower		0	0
Adjustments		-0	
Total		17362	100.0



Overall U-value = 0.072 Btuh/ft²·°F

Data entries checked.



Enser Consulting, LLC
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Component Constructions Entire House

Joe Builder

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Project Information

For: Ranch Sample, Joe Builder
Denver, CO

Design Conditions

Location:			Indoor:	Heating	Cooling
Denver, CO, US			Indoor temperature (°F)	70	75
Elevation: 5331 ft			Design TD (°F)	73	15
Latitude: 40°N			Relative humidity (%)	50	50
Outdoor:	Heating	Cooling	Moisture difference (gr/lb)	62.2	-35.9
Dry bulb (°F)	-3	90	Infiltration:		
Daily range (°F)	-	27 (H)	Method	Simplified	
Wet bulb (°F)	-	59	Construction quality	Semi-tight	
Wind speed (mph)	15.0	7.5	Fireplaces	1 (Semi-tight)	

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								
12D-0sw: Frm wall, r-15 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm	n	306	0.086	15.0	6.28	1921	1.40	428
	e	222	0.086	15.0	6.28	1396	1.40	311
	s	322	0.086	15.0	6.28	2022	1.40	450
	w	402	0.086	15.0	6.28	2523	1.40	562
	all	1252	0.086	15.0	6.28	7861	1.40	1750
15B-0c-8: Bg wall, heavy dry or light damp soil, concrete wall, 8" thk	n	256	0.117	0	3.46	887	0	0
	e	408	0.117	0	8.54	3485	0	0
	s	272	0.117	0	5.35	1456	0	0
	w	408	0.117	0	8.54	3485	0	0
	all	1344	0.117	0	6.93	9312	0	0
Partitions								
12D-0sw: Frm wall, r-15 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm		200	0.086	15.0	6.28	1256	0.61	123
Windows								
61AD: Low-e window, U=0.31, SHGC=0.32; 50% outdoor insect screen; 1 ft overhang (4 ft window ht, 1.5 ft sep.)	n	74	0.310	0	22.6	1675	9.82	726
	s	42	0.310	0	22.6	950	14.3	600
	w	68	0.310	0	22.6	1539	31.4	2137
	all	184	0.310	0	22.6	4164	18.8	3464
61AD: Low-e window, U=0.31, SHGC=0.32	n	48	0.310	0	22.6	1086	10.9	523
	s	32	0.310	0	22.6	724	17.8	568
	all	80	0.310	0	22.6	1810	13.6	1092
61AD: Low-e window, U=0.31, SHGC=0.32; 5 ft overhang (6.7 ft window ht, 3 ft sep.)	e	7	0.310	0	22.6	152	31.2	209
61AD: Low-e window, U=0.31, SHGC=0.32; 50% outdoor insect screen; 1 ft overhang (5 ft window ht, 1.5 ft sep.)	e	60	0.310	0	22.6	1358	31.4	1886
61AD: Low-e window, U=0.31, SHGC=0.32; 1 ft overhang (4 ft window ht, 1.5 ft sep.)	s	16	0.310	0	22.6	362	15.9	254
61P: Sliding Glass Door - U=0.32, SHGC=0.35; 50% outdoor insect screen; 1 ft overhang (6.7 ft window ht, 1.5 ft sep.)	w	40	0.320	0	23.4	939	34.1	1371
Doors								
11D0: Door, wd sc type	e	21	0.390	0	28.5	598	9.07	190



Ceilings

16B-38ad: Attic ceiling, asphalt shingles roof mat, r-38 ceil ins, 1/2" gypsum board int fnsh

1862 0.026 38.0 1.90 3534 1.22 2263

Floors

21A-32t: Bg floor, heavy dry or light damp soil

1862 0.020 0 1.46 2719 0 0



Project Information

For: Ranch Sample, Joe Builder
Denver, CO

Notes:

Design Information

Weather: Denver, CO, US

Winter Design Conditions

Outside db	-3 °F
Inside db	70 °F
Design TD	73 °F

Summer Design Conditions

Outside db	90 °F
Inside db	75 °F
Design TD	15 °F
Daily range	H
Relative humidity	50 %
Moisture difference	-36 gr/lb

Heating Summary

Structure	38734 Btuh
Ducts	0 Btuh
Central vent (85 cfm)	5584 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	44318 Btuh

Sensible Cooling Equipment Load Sizing

Structure	16199 Btuh
Ducts	0 Btuh
Central vent (85 cfm)	1163 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.95
Equipment sensible load	16529 Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	1 (Semi-tight)

	Heating	Cooling
Area (ft ²)	3686	3686
Volume (ft ³)	18240	18240
Air changes/hour	0.23	0.10
Equiv. AVF (cfm)	71	30

Latent Cooling Equipment Load Sizing

Structure	590 Btuh
Ducts	0 Btuh
Central vent (85 cfm)	-1698 Btuh
Equipment latent load	0 Btuh
Equipment total load	16529 Btuh
Req. total capacity at 0.70 SHR	2.0 ton

Heating Equipment Summary

Make	Carrier
Trade	Carrier
Model	58MCB080-12
GAMA ID	144288
Efficiency	92.1 AFUE
Heating input	80000 Btuh
Heating output	66000 Btuh
Temperature rise	63 °F
Actual air flow	1155 cfm
Air flow factor	0.030 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	

Cooling Equipment Summary

Make	Carrier
Trade	Base 13 Puron AC
Cond	24ABA330A32
Coil	CNPV*3017A**+TDR
ARI ref no.	1171030
Efficiency	13 SEER
Sensible cooling	19320 Btuh
Latent cooling	8280 Btuh
Total cooling	27600 Btuh
Actual air flow	1245 cfm
Air flow factor	0.077 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	1.00

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Project Information

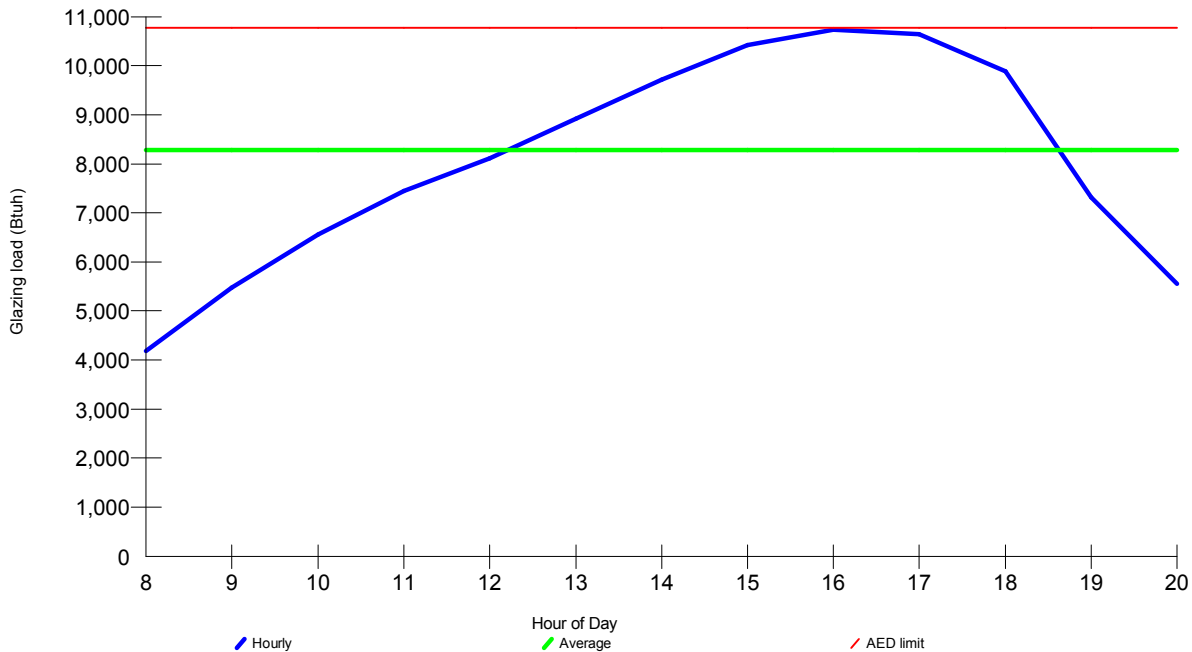
For: Ranch Sample, Joe Builder
Denver, CO

Design Conditions

Location:		Indoor:		Heating	Cooling
Denver, CO, US		Indoor temperature (°F)		70	75
Elevation: 5331 ft		Design TD (°F)		73	15
Latitude: 40°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		62.2	-35.9
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	-3	90			
Daily range (°F)	-	27 (H)			
Wet bulb (°F)	-	59			
Wind speed (mph)	15.0	7.5			

Test for Adequate Exposure Diversity

Hourly Glazing Load



Maximum hourly glazing load exceeds average by 29.5%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh



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Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
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1 Room name		Entire House							Master Bedrm					
2 Exposed wall		336.0 ft							30.0 ft					
3 Ceiling height		9.0 ft							10.0 ft					
4 Room dimensions		d							16.0 x 14.0 ft					
5 Room area		3686.0 ft²							224.0 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	12D-0sw	0.086	n	6.28	1.40	380	306	1921	428	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	74	0	1675	726	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	304	256	887	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	48	0	1086	523	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	310	222	1396	311	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	7	1	152	209	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	60	0	1358	1886	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	21	21	598	190	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	408	408	3485	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	380	322	2022	450	140	124	778	173
	G	61AD	0.310	s	22.63	15.88	16	4	362	254	16	4	362	254
	G	61AD	0.310	s	22.63	14.29	42	12	950	600	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	304	272	1456	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	32	0	724	568	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	510	402	2523	562	160	140	879	196
	G	61AD	0.310	w	22.63	31.43	68	0	1539	2137	20	0	453	629
	G	61P	0.320	w	23.36	34.11	40	0	939	1371	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	408	408	3485	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	200	200	1256	123	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	1862	1862	3534	2263	224	224	425	272
	F	21A-32t	0.020	-	1.46	0.00	1862	1862	2719	0	0	0	0	0
6	c) AED excursion									0				-26
	Envelope loss/gain								34064	12602			2897	1498
12	a) Infiltration								4669	418			887	79
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230		6				1380	1			230
			Appliances @	1200		2				1800	0			0
	Subtotal (lines 6 to 13)								38734	16199			3784	1807
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								-0	-0			22	12
14	Subtotal								38734	16199			3806	1819
15	Duct loads							0%	0%	0	0%	0%	0	0
	Total room load								38734	16199			3806	1819
	Air required (cfm)								1155	1245			113	140

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Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
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1	Room name				Mstr Bath & Clst				Bedrm #1					
	Exposed wall				10.0 ft				11.0 ft					
	Ceiling height				10.0 ft				10.0 ft					
2	Room dimensions				11.0 x 10.0 ft				10.0 ft x 11.0 ft					
3	Room area				110.0 ft²				121.0 ft²					
4	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	12D-0sw	0.086	n	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	100	86	540	120	110	82	515	115
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	14	4	317	200	28	8	634	400
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	0	0	0	0
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	110	110	691	68
	C	16B-38ad	0.026	-	1.90	1.22	110	110	209	134	121	121	230	147
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion													-9
	Envelope loss/gain								1066	451			2069	721
12	a) Infiltration								296	26			325	29
	b) Room ventilation								0	0			0	0
13	Internal gains:				Occupants @	230	0		0	0	1			230
					Appliances @	1200	0		0	0	0			0
	Subtotal (lines 6 to 13)								1361	478			2394	980
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								13	7			13	7
14	Subtotal								1374	485			2407	987
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								1374	485			2407	987
	Air required (cfm)								41	37			72	76

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Right-J® Worksheet

Entire House

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1 Room name				Bsmt Stairs				Hall Bath						
2 Exposed wall				0 ft				0 ft						
3 Ceiling height				10.0 ft				10.0 ft						
4 Room dimensions				12.0 x 4.0 ft				5.0 x 9.5 ft						
5 Room area				48.0 ft²				47.5 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	12D-0sw	0.086	n	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	0	0	0	0
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	48	48	91	58	48	48	90	58
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion									-7				-7
	Envelope loss/gain								91	51			90	51
12	a) Infiltration								0	0			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	0			0
			Appliances @	1200			0			0	0			0
	Subtotal (lines 6 to 13)								91	51			90	51
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								-91	-51			85	48
14	Subtotal								0	0			175	99
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								0	0			175	99
	Air required (cfm)								0	0			5	8

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Enser Consulting, LLC
(303) 725-8836

Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

1	Room name				Lndry Rm				Den/Bedrm #2					
	Exposed wall				0 ft				12.0 ft					
	Ceiling height				10.0 ft				10.0 ft					
2	Room dimensions				9.0 x 5.5 ft				12.0 x 12.0 ft					
3	Room area				49.5 ft²				144.0 ft²					
4	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	12D-0sw	0.086	n	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	0	0	0	0	120	90	565	126
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	30	0	679	943
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	0	0	0	0
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	90	90	565	55	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	50	50	94	60	144	144	273	175
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion													-54
	Envelope loss/gain								659	-46			1517	1189
12	a) Infiltration								0	0			355	32
	b) Room ventilation								0	0			0	0
13	Internal gains:				Occupants @	230	0			0	1			230
					Appliances @	1200	1			1200	0			0
	Subtotal (lines 6 to 13)								659	1154			1872	1451
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								39	22			97	54
14	Subtotal								698	1177			1969	1505
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								698	1177			1969	1505
	Air required (cfm)								21	90			59	116

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Enser Consulting, LLC
(303) 725-8836

Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

1	Room name				Foyer				Hall					
	Exposed wall				6.0 ft				0 ft					
	Ceiling height				10.0 ft				10.0 ft					
2	Room dimensions				6.0 x 16.0 ft				1.0 x 182.0 ft					
3	Room area				96.0 ft²				182.0 ft²					
4	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	12D-0sw	0.086	n	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	60	32	203	45	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	7	1	152	209	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	21	21	598	190	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	0	0	0	0
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	96	96	182	117	182	182	345	221
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion													-27
	Envelope loss/gain								1134	502			345	194
12	a) Infiltration								177	16			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:				Occupants @	230	0	0	0	0	0	0	0	0
					Appliances @	1200	0	0	0	0	0	0	0	0
	Subtotal (lines 6 to 13)								1312	518			345	194
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								49	28			-345	-194
14	Subtotal								1361	546			0	0
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								1361	546			0	0
	Air required (cfm)								41	42			0	0

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Enser Consulting, LLC
(303) 725-8836

Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

1 Room name				Unfinished Bsmt				Family Rm						
2 Exposed wall				178.0 ft				17.0 ft						
3 Ceiling height				8.0 ft				10.0 ft						
4 Room dimensions				1.0 x 1862.0 ft				17.0 x 14.0 ft						
5 Room area				1862.0 ft²				238.0 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	12D-0sw	0.086	n	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	304	256	887	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	48	0	1086	523	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	408	408	3485	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	304	272	1456	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	32	0	724	568	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	170	114	714	159
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	16	0	362	503
	G	61P	0.320	w	23.36	34.11	0	0	0	0	40	0	939	1371
	W	15B-0c-8	0.488	w	8.54	0.00	408	408	3485	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	38	38	72	46	238	238	452	289
	F	21A-32t	0.020	-	1.46	0.00	1862	1862	2719	0	0	0	0	0
6	c) AED excursion									-24				561
	Envelope loss/gain								13914	1114			2467	2884
12	a) Infiltration								0	0			502	45
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230					0	0	1			230
			Appliances @	1200					0	0	0			0
	Subtotal (lines 6 to 13)								13914	1114			2970	3159
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			74	42
14	Subtotal								13914	1114			3044	3201
15	Duct loads								0	0	0%	0%	0	0
	Total room load								13914	1114			3044	3201
	Air required (cfm)								415	86			91	246

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Enser Consulting, LLC
(303) 725-8836

Right-J® Worksheet

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

1	Room name				Kitchen				Dining Rm					
	Exposed wall				25.0 ft				12.0 ft					
	Ceiling height				10.0 ft				10.0 ft					
2	Room dimensions				11.0 x 14.0 ft				13.0 x 12.0 ft					
3	Room area				154.0 ft²				156.0 ft²					
4	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	12D-0sw	0.086	n	6.28	1.40	140	114	716	159	120	88	552	123
	G	61AD	0.310	n	22.63	9.82	26	0	588	255	32	0	724	314
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	0	0	0	0	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	110	90	565	126	0	0	0	0
	G	61AD	0.310	w	22.63	31.43	20	0	453	629	0	0	0	0
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	154	154	292	187	156	156	296	190
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion									4				-137
	Envelope loss/gain								2614	1360			1573	490
12	a) Infiltration								739	66			355	32
	b) Room ventilation								0	0			0	0
13	Internal gains:				Occupants @	230	0			0	2			460
					Appliances @	1200	1			600	0			0
	Subtotal (lines 6 to 13)								3353	2026			1927	981
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			22	12
14	Subtotal								3353	2026			1949	994
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								3353	2026			1949	994
	Air required (cfm)								100	156			58	76

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Enser Consulting, LLC
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Right-J® Worksheet

Entire House

Joe Builder

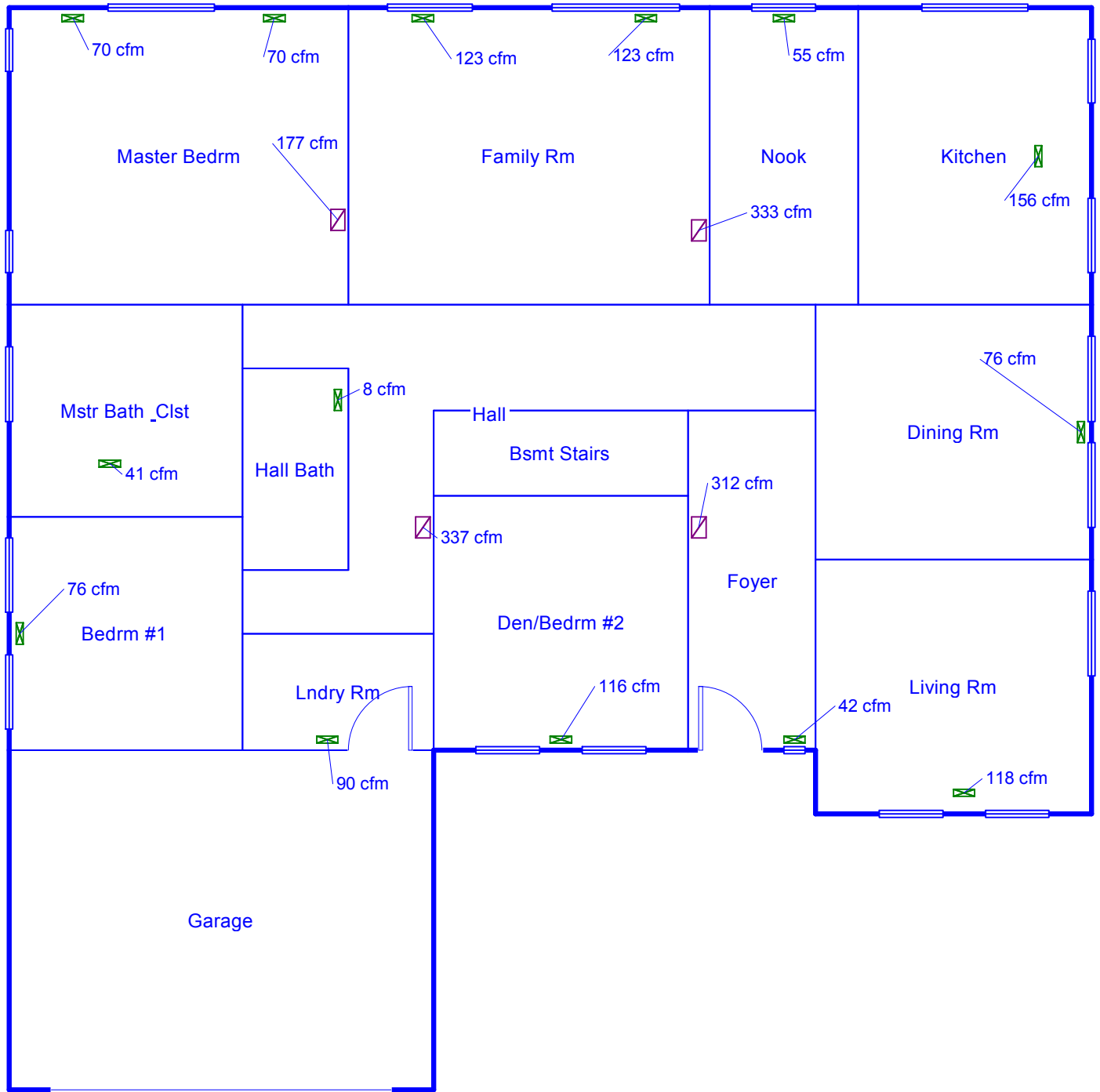
Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

1	Room name				Living Rm				Nook					
	Exposed wall				28.0 ft				7.0 ft					
	Ceiling height				10.0 ft				10.0 ft					
2	Room dimensions				13.0 x 12.0 ft				7.0 x 14.0 ft					
3	Room area				156.0 ft²				98.0 ft²					
4	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	12D-0sw	0.086	n	6.28	1.40	120	104	653	145	0	0	0	0
	G	61AD	0.310	n	22.63	9.82	16	0	362	157	0	0	0	0
	W	15B-0c-8	0.488	n	3.46	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	n	22.63	10.91	0	0	0	0	0	0	0	0
11	W	12D-0sw	0.086	e	6.28	1.40	130	100	628	140	0	0	0	0
	G	61AD	0.310	e	22.63	31.16	0	0	0	0	0	0	0	0
	G	61AD	0.310	e	22.63	31.43	30	0	679	943	0	0	0	0
	D	11D0	0.390	e	28.47	9.07	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	e	8.54	0.00	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	s	6.28	1.40	30	30	188	42	0	0	0	0
	G	61AD	0.310	s	22.63	15.88	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	14.29	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	s	5.35	0.00	0	0	0	0	0	0	0	0
	G	61AD	0.310	s	22.63	17.76	0	0	0	0	0	0	0	0
	W	12D-0sw	0.086	w	6.28	1.40	0	0	0	0	70	58	364	81
	G	61AD	0.310	w	22.63	31.43	0	0	0	0	12	0	272	377
	G	61P	0.320	w	23.36	34.11	0	0	0	0	0	0	0	0
	W	15B-0c-8	0.488	w	8.54	0.00	0	0	0	0	0	0	0	0
	P	12D-0sw	0.086	-	6.28	0.61	0	0	0	0	0	0	0	0
	C	16B-38ad	0.026	-	1.90	1.22	156	156	296	190	98	98	186	119
	F	21A-32t	0.020	-	1.46	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion													103
	Envelope loss/gain								2806	1462			822	680
12	a) Infiltration								828	74			207	19
	b) Room ventilation								0	0			0	0
13	Internal gains:				Occupants @	230	0		0	0	0		0	0
					Appliances @	1200	0		0	0		0	0	
	Subtotal (lines 6 to 13)								3634	1536			1029	699
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			22	12
14	Subtotal								3634	1536			1050	711
15	Duct loads						0%	0%	0	0	0%	0%	0	0
	Total room load								3634	1536			1050	711
	Air required (cfm)								108	118			31	55

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Main floor

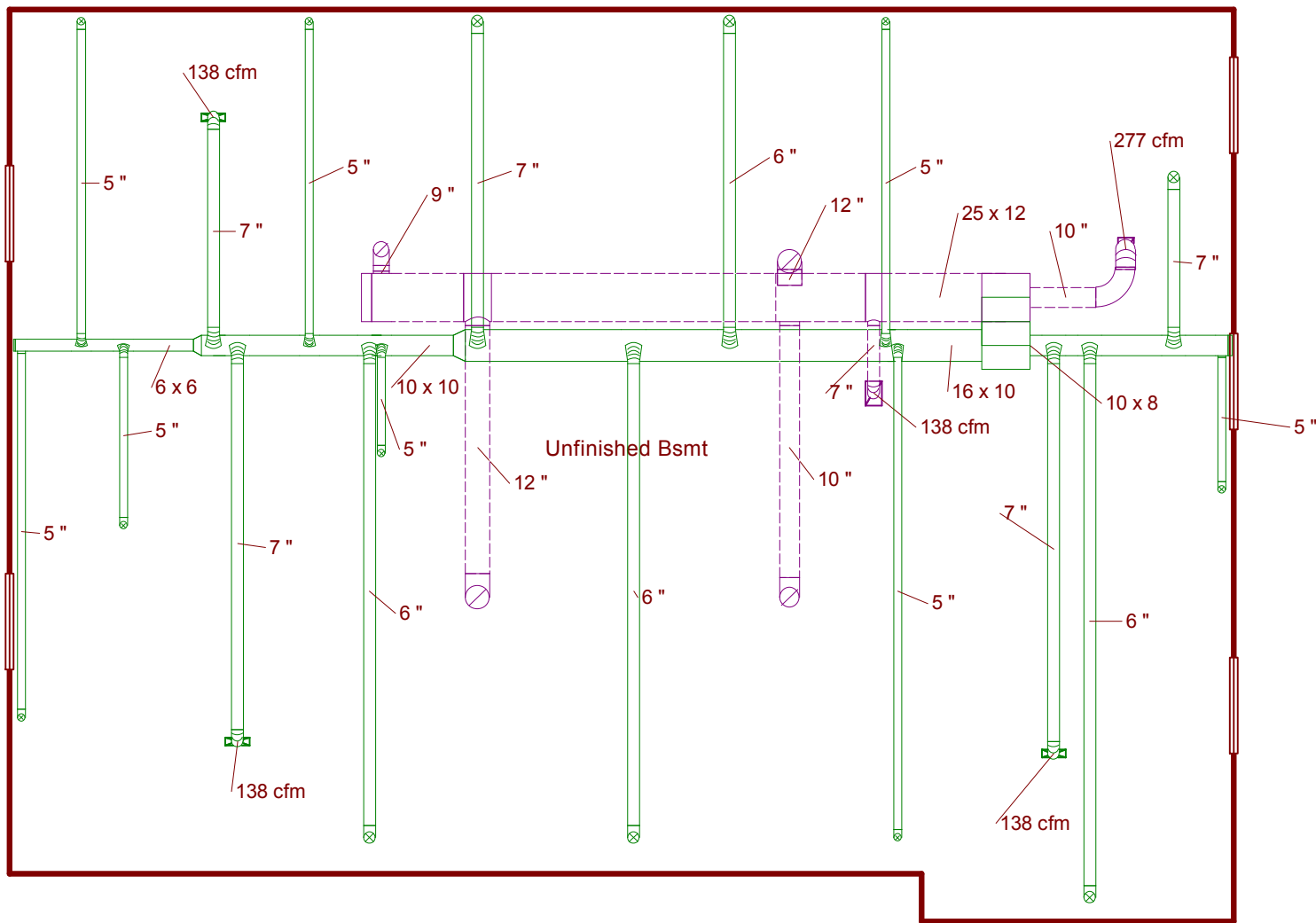


Job #: Ranch Sample
Performed by Enser Consulting, LLC for:
 Ranch Sample
 Denver, CO

Joe Builder

Scale: 1 : 85
 Page 1
 Right-Suite® Universal
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Basement



Job #: Ranch Sample
Performed by Enser Consulting, LLC for:
 Ranch Sample
 Denver, CO

Joe Builder

Scale: 1 : 85
 Page 2
 Right-Suite® Universal
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Enser Consulting, LLC
(303) 725-8836

Duct System Summary

Entire House

Joe Builder

Job: Ranch Sample
Date: May 17, 2007
By: Enser Consulting, LLC

Project Information

For: Ranch Sample, Joe Builder
Denver, CO

	Heating	Cooling
External static pressure	0.50 in H2O	0.50 in H2O
Pressure losses	0.16 in H2O	0.16 in H2O
Available static pressure	0.34 in H2O	0.34 in H2O
Supply / return available pressure	0.18 / 0.17 in H2O	0.18 / 0.17 in H2O
Lowest friction rate	0.079 in/100ft	0.079 in/100ft
Actual air flow	1155 cfm	1245 cfm
Total effective length (TEL)	437 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
Bedrm #1	c 987	72	76	0.109	5.0	0x0	ShMt	56.5	105.0	st4
Den/Bedrm #2	c 1505	59	116	0.083	6.0	0x0	ShMt	36.0	175.0	st2
Dining Rm	c 994	58	76	0.146	5.0	0x0	ShMt	15.0	105.0	st1
Family Rm	c 1600	45	123	0.083	7.0	0x0	ShMt	35.5	175.0	st2
Family Rm-A	c 1600	45	123	0.088	6.0	0x0	ShMt	25.0	175.0	st2
Foyer	c 546	41	42	0.088	5.0	0x0	ShMt	25.0	175.0	st2
Hall Bath	c 99	5	8	0.085	5.0	0x0	ShMt	30.5	175.0	st3
Kitchen	c 2026	100	156	0.104	7.0	0x0	ShMt	14.0	155.0	st1
Living Rm	c 1536	108	118	0.094	6.0	0x0	ShMt	26.5	160.0	st1
Lndry Rm	c 1177	21	90	0.079	6.0	0x0	ShMt	47.0	175.0	st3
Master Bedrm	c 910	57	70	0.085	5.0	0x0	ShMt	52.0	155.0	st4
Master Bedrm-A	c 910	57	70	0.081	5.0	0x0	ShMt	42.5	175.0	st3
Mstr Bath & Clst	h 1374	41	37	0.086	5.0	0x0	ShMt	44.3	160.0	st4
Nook-A	c 711	31	55	0.091	5.0	0x0	ShMt	18.5	175.0	st2
Unfinished Bsmt	h 4638	138	29	0.095	7.0	0x0	ShMt	19.0	165.0	st1
Unfinished Bsmt-A	h 4638	138	29	0.085	7.0	0x0	ShMt	42.5	165.0	st3
Unfinished Bsmt-C	h 4638	138	29	0.080	7.0	0x0	ShMt	48.5	170.0	st3

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	405	379	0.094	729	9.9	8 x 10	ShtMetl	
st2	Peak AVF	750	866	0.079	780	13.7	10 x 16	ShtMetl	
st3	Peak AVF	529	408	0.079	762	11.4	10 x 10	ShtMetl	st2
st4	Peak AVF	169	183	0.085	732	7.5	6 x 6	ShtMetl	st3

Return Branch Detail Table

Name	Grill 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
rb1	0x 0	177	333	130.5	0.130	424	12.0	0x 0		ShMt	rt2
rb2	0x 0	154	177	188.0	0.090	401	9.0	0x 0		ShMt	rt2
rb3	0x 0	279	312	141.5	0.120	572	10.0	0x 0		ShMt	rt2
rb4	0x 0	130	337	214.5	0.079	429	12.0	0x 0		ShMt	rt2
rb5	0x 0	277	57	77.0	0.220	507	10.0	0x 0		ShMt	
rb6	0x 0	138	29	129.5	0.131	517	7.0	0x 0		ShMt	rt2

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt2	Peak AVF	878	1188	0.079	570	15.4	12 x 25	ShtMetl	