

Project Information

For: Risley4BR1S, HABITAT FOR HUMANITY
 COLORADO SPRINGS, CO

Design Information

	Htg	Clg	Method	Infiltration
Outside db (°F)	0	90		Simplified
Inside db (°F)	72	75	Construction quality	Semi-tight
Design TD (°F)	72	15	Fireplaces	
Daily range	-	H		
Inside humidity (%)	35	35		
Moisture difference (gr/lb)	46	-14		

HEATING EQUIPMENT

Make	Bryant
Trade	BRYANT
Model	912SC36040S17
AHRI ref	7126229
Efficiency	92.1 AFUE
Heating input	40000 Btuh
Heating output	37000 Btuh
Temperature rise	49 °F
Actual air flow	855 cfm
Air flow factor	0.040 cfm/Btuh
Static pressure	0.80 in H2O
Space thermostat	

COOLING EQUIPMENT

Make	Bryant
Trade	LEGACY LINE PURONAC
Cond	123ANA018****C*
Coil	CNPV*2417AL*+912*A36040E17***
AHRI ref	6351006
Efficiency	12.0 EER, 14.5 SEER
Sensible cooling	14790 Btuh
Latent cooling	2610 Btuh
Total cooling	17400 Btuh
Actual air flow	845 cfm
Air flow factor	0.090 cfm/Btuh
Static pressure	0.80 in H2O
Load sensible heat ratio	0.94

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
LAUNDRY	63	864	691	35	62
BED RM#1	176	2236	1318	90	119
BED RM#2	141	2061	1233	83	111
BED RM#4	120	1094	691	44	62
BATH	45	389	376	16	34
KITCHEN	81	0	0	0	0
DINING	140	2718	1367	109	123
BATH#2	45	377	87	15	8
BED RM#3	114	1086	478	44	43
CRAWLER	1240	6976	445	280	40
LIVING/HALL	315	3500	2705	140	243

Bold/italic values have been manually overridden

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

Entire House	2480	21303	9392	855	845
Other equip loads		1211	257		
Equip. @ 0.95 RSM			9196		
Latent cooling			615		
TOTALS	2480	22513	9811	855	845

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Project Information

For: Risley4BR1S, HABITAT FOR HUMANITY
 COLORADO SPRINGS, CO

Design Conditions

Location:

Colorado Springs Muni AP, CO, US
 Elevation: 6171 ft
 Latitude: 39°N

Outdoor:

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

Heating	Cooling
0	90
-	26 (H)
-	59
15.0	7.5

Indoor:

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

Heating	Cooling
72	75
72	15
35	35
45.9	-13.7

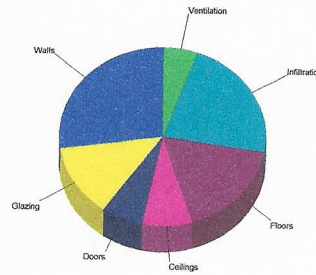
Infiltration:

Method
 Construction quality
 Fireplaces

Simplified
 Semi-tight
 0

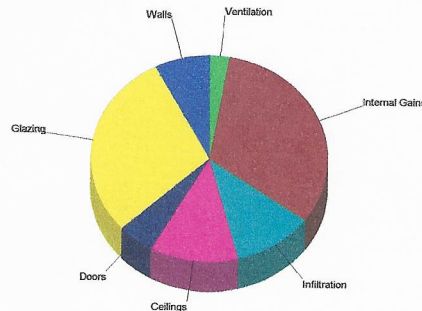
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.1	6139	27.3
Glazing	23.0	2972	13.2
Doors	23.0	1452	6.4
Ceilings	1.4	1786	7.9
Floors	3.2	3936	17.5
Infiltration	3.3	5018	22.3
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		1211	5.4
Adjustments		0	0
Total		22513	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.5	737	7.6
Glazing	21.9	2828	29.3
Doors	7.6	479	5.0
Ceilings	0.9	1172	12.1
Floors	0	0	0
Infiltration	0.7	1066	11.0
Ducts		0	0
Ventilation		257	2.7
Internal gains		3110	32.2
Blower		0	0
Adjustments		0	0
Total		9649	100.0



Latent Cooling Load = 615 Btuh
 Overall U-value = 0.054 Btuh/ft²-°F

Data entries checked.

Bold/italic values have been manually overridden

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

Project Information

For: Risley4BR1S, HABITAT FOR HUMANITY
 COLORADO SPRINGS, CO

Design Conditions

Location:			Indoor:	Heating	Cooling
Colorado Springs Muni AP, CO, US			Indoor temperature (°F)	72	75
Elevation: 6171 ft			Design TD (°F)	72	15
Latitude: 39°N			Relative humidity (%)	35	35
Outdoor:	Heating	Cooling	Moisture difference (gr/lb)	45.9	-13.7
Dry bulb (°F)	0	90	Infiltration:		
Daily range (°F)	-	26 (H)	Method	Simplified	
Wet bulb (°F)	-	59	Construction quality	Semi-tight	
Wind speed (mph)	15.0	7.5	Fireplaces	0	

Construction descriptions

	Or	Area ft²	U-value Btu/hft²·F	Insul R ft²·F/Btu	Htg HTM Btu/hft²	Loss Btu/h	Cig HTM Btu/hft²	Gain Btu/h
Walls								
12D-5sw: Fm wall, wd ext, 5/8" wood shth, r-15 cav ins, 1/2" gypsum board int fnsh, r-5 ext bd ins, 2"x6" wood frm, 16" o.c. stud								
	n	195	0.062	20.0	4.46	870	0.62	120
	e	138	0.062	20.0	4.46	616	0.62	85
	s	368	0.062	20.0	4.46	1643	0.62	227
	w	168	0.062	20.0	4.46	750	0.62	104
	all	869	0.062	20.0	4.46	3879	0.62	536
Bg wall, light dry soil, icf wall, 10" thk, 1/2" gypsum board int fnsh: Bg wall, light dry soil, icf wall, 10" thk, 1/2" gypsum board int fnsh								
	n	156	0.045	19.0	3.24	505	0.35	55
	e	75	0.045	19.0	3.24	243	0.35	26
	s	156	0.045	19.0	3.24	505	0.35	55
	w	75	0.045	19.0	3.24	243	0.35	26
	all	462	0.045	19.0	3.24	1497	0.35	163
Partitions								
12D-5sw: Fm wall, wd ext, 5/8" wood shth, r-15 cav ins, 1/2" gypsum board int fnsh, r-5 ext bd ins, 2"x6" wood frm, 16" o.c. stud								
		171	0.062	20.0	4.46	763	0.22	38
Windows								
4A5-2ov: 2 glazing, clr low-e outr, argon gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; NFRC rated (SHGC=0.32); 50% drapes, medium; 50% indoor insect screen; 6.67 ft head ht								
	n	8	0.320	0	23.0	184	8.89	71
	e	41	0.320	0	23.0	945	28.2	1157
	s	48	0.320	0	23.0	1106	14.0	673
	w	16	0.320	0	23.0	369	28.2	452
	all	113	0.320	0	23.0	2604	20.8	2353
	w	16	0.320	0	23.0	369	29.7	475
4A5-2ov: 2 glazing, clr low-e outr, argon gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; NFRC rated (SHGC=0.32); 50% drapes, medium; 6.67 ft head ht								
Doors								
Door, mtl eps core type: Door, mtl eps core type								
	n	21	0.320	8.7	23.0	484	7.60	160
	e	21	0.320	8.7	23.0	484	7.60	160
	n	21	0.320	8.7	23.0	484	7.60	160
	all	63	0.320	8.7	23.0	1452	7.60	479

Ceilings

Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh: Attic ceiling, asphalt shingles roof mat, r-50 ceil ins, 1/2" gypsum board int fnsh

1240 0.020 49.0 1.44 1786 0.95 1172

Floors

22B-10vpm: Bg floor, heavy dry or light damp soil, on grade depth, r-10 edge ins, vinyl flr fnsh

154 0.355 10.0 25.6 3936 0 0



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For: Risley4BR1S, HABITAT FOR HUMANITY
 COLORADO SPRINGS, CO

Notes:

Design Information

Weather: Colorado Springs Muni AP, CO, US

Winter Design Conditions

Outside db	0 °F
Inside db	72 °F
Design TD	72 °F

Summer Design Conditions

Outside db	90 °F
Inside db	75 °F
Design TD	15 °F
Daily range	H
Relative humidity	35 %
Moisture difference	-14 gr/lb

Heating Summary

Structure	21303 Btuh
Ducts	0 Btuh
Central vent (75 cfm)	1513 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	22816 Btuh

Sensible Cooling Equipment Load Sizing

Structure	9392 Btuh
Ducts	0 Btuh
Central vent (75 cfm)	322 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.95
Equipment sensible load	9257 Btuh

Infiltration

Method	Simplified	
Construction quality	Semi-tight	
Fireplaces	0	
Heating		
Area (ft ²)	2480	2480
Volume (ft ³)	13640	13640
Air changes/hour	0.35	0.35
Equiv. AVF (cfm)	80	80
Cooling		
Area (ft ²)	2480	2480
Volume (ft ³)	13640	13640
Air changes/hour	0.35	0.35
Equiv. AVF (cfm)	80	80

Latent Cooling Equipment Load Sizing

Structure	810 Btuh
Ducts	0 Btuh
Central vent (75 cfm)	-244 Btuh
Equipment latent load	566 Btuh
Equipment total load	9823 Btuh
Req. total capacity at 0.85 SHR	0.9 ton

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Trade	BRYANT
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Heating output	37000 Btuh
Temperature rise	49 °F
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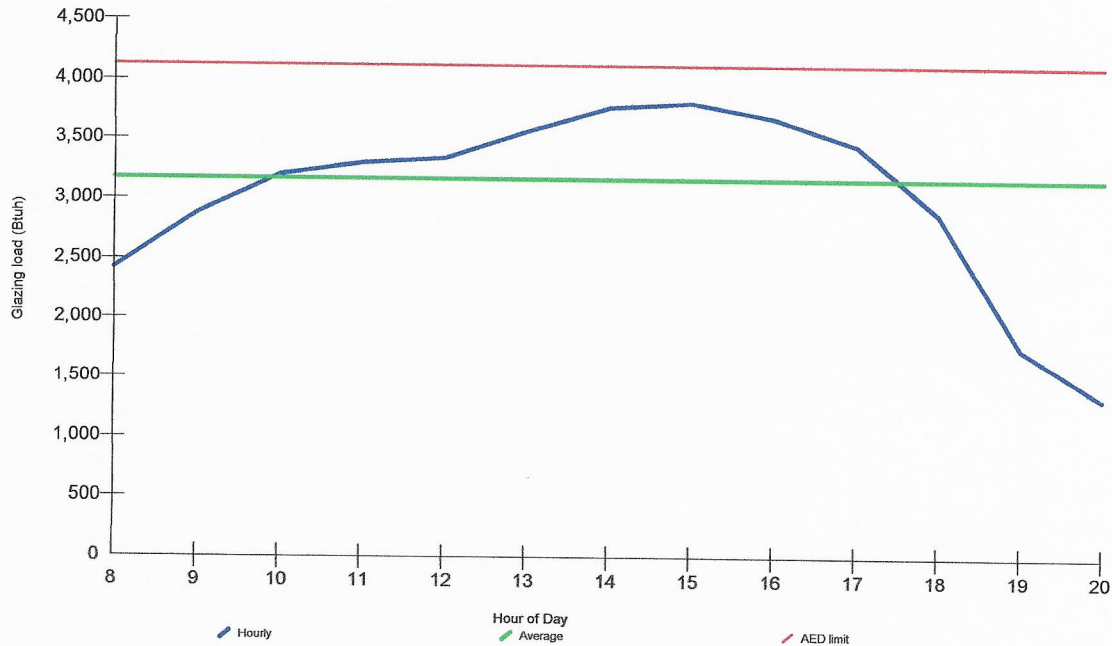
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Design Conditions

Location:		Indoor:		Heating	Cooling
Colorado Springs Muni AP, CO, US		Indoor temperature (°F)		72	75
Elevation: 6171 ft		Design TD (°F)		72	15
Latitude: 39°N		Relative humidity (%)		35	35
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	0	90	Moisture difference (gr/lb)		
Daily range (°F)	-	26 (H)	45.9		
Wet bulb (°F)	-	59	-13.7		
Wind speed (mph)	15.0	7.5			

Test for Adequate Exposure Diversity

Hourly Glazing Load



Maximum hourly glazing load exceeds average by 20.2%.

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

AED excursion: 0 Btuh

Bold/italic values have been manually overridden

Right-J® Worksheet

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22,2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

1		Room name		Entire House				LAUNDRY						
2		Exposed wall		284.0 ft				5.0 ft						
3		Room height		5.5 ft				8.0 ft						
4		Room dimensions		2480.0 ft²				7.0 x 9.0 ft						
5		Room area		2480.0 ft²				63.0 ft²						
	Ty	Construction number	U-value (Btu/h-ft²-F)	Or	HTM (Btu/h-ft²)		Area (ft²) or perimeter (ft)		Load (Btu/h)		Area (ft²) or perimeter (ft)		Load (Btu/h)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12D-5sw	0.062	n	4.46	0.62	224	195	870	120	40	19	85	12
	G	4A5-2ov	0.320	n	23.04	8.89	8	0	184	71	0	0	0	0
	D	Door, mfl eps core t	0.320	n	23.04	7.60	21	21	484	160	21	21	484	160
	W	Bg wall, light dry s	0.045	n	3.24	0.35	156	156	505	55	0	0	0	0
11	W	12D-5sw	0.062	e	4.46	0.62	200	138	616	85	0	0	0	0
	G	4A5-2ov	0.320	e	23.04	28.23	41	0	945	1157	0	0	0	0
	D	Door, mfl eps core t	0.320	e	23.04	7.60	21	21	484	160	0	0	0	0
	W	Bg wall, light dry s	0.045	e	3.24	0.35	75	75	243	26	0	0	0	0
	W	12D-5sw	0.062	s	4.46	0.62	416	368	1643	227	0	0	0	0
	G	4A5-2ov	0.320	s	23.04	14.02	48	0	1106	673	0	0	0	0
	W	Bg wall, light dry s	0.045	s	3.24	0.35	156	156	505	55	0	0	0	0
	W	12D-5sw	0.062	w	4.46	0.62	200	168	750	104	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	29.71	16	0	369	475	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	28.23	16	0	369	452	0	0	0	0
	W	Bg wall, light dry s	0.045	w	3.24	0.35	75	75	243	26	0	0	0	0
	P	12D-5sw	0.062	-	4.46	0.22	192	171	763	38	16	16	71	4
	D	Door, mfl eps core t	0.320	n	23.04	7.60	21	21	484	160	0	0	0	0
	C	Attic ceiling, aspha	0.020	-	1.44	0.95	1240	1240	1786	1172	63	63	91	60
	F	22B-10vpm	0.355	-	25.56	0.00	1240	154	3936	0	0	0	0	0
6	c) AED excursion									0				-72
	Envelope loss/gain								16285	5216			731	163
12	a) Infiltration								5018	1066			134	28
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230		7			1610	0			0	0
			Appliances/other						1500				500	
	Subtotal (lines 6 to 13)								21303	9392			864	691
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								21303	9392			864	691
15	Duct loads								0	0	-0%	0%	0	0
	Total room load								21303	9392			864	691
	Air required (cfm)								855	845			35	62

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

Right-J® Worksheet

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22,2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

1 Room name		BED RM#1						BED RM#2						
2 Exposed wall		8.0 ft 27.0 ft heat/cool						8.0 ft 25.0 ft heat/cool						
3 Room height		1.0 x 176.0 ft						1.0 x 141.0 ft						
4 Room dimensions		176.0 ft²						141.0 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	12D-5sw	0.062	n	4.46	0.62	96	96	429	59	0	0	0	0
	G	4A5-2ov	0.320	n	23.04	8.89	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	n	3.24	0.35	0	0	0	0	0	0	0	0
11	W	12D-5sw	0.062	e	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	e	23.04	28.23	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	e	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	e	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	s	4.46	0.62	0	0	0	0	120	120	536	74
	G	4A5-2ov	0.320	s	23.04	14.02	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	s	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	w	4.46	0.62	120	104	464	64	80	64	286	39
	G	4A5-2ov	0.320	w	23.04	29.71	16	0	369	475	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	28.23	0	0	0	0	16	0	369	452
	W	Bg wall, light dry s	0.045	w	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	-	4.46	0.22	0	0	0	0	0	0	0	0
	P	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	D	Attic ceiling, aspha	0.020	-	1.44	0.95	176	176	253	166	141	141	203	133
	C	22B-10vpm	0.355	-	25.56	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion								169				163	
	Envelope loss/gain							1515	934			1393	861	
12	a) Infiltration							722	153			668	142	
	b) Room ventilation							0	0			0	0	
13	Internal gains:		Occupants @	230	1			230	1			230	0	
			Appliances/other					0				0	0	
	Subtotal (lines 6 to 13)							2236	1318			2061	1233	
	Less external load							0	0			0	0	
	Less transfer							0	0			0	0	
	Redistribution							0	0			0	0	
14	Subtotal							2236	1318			2061	1233	
15	Duct loads							0	0			0	0	
	Total room load							2236	1318			2061	1233	
	Air required (cfm)							90	119			83	111	

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Right-J® Worksheet
Entire House
Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22,2020
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1 2 3 4 5	Room name		BED RM#4				BATH							
	Exposed wall		8.0 ft		10.0 ft		8.0 ft		0 ft					
	Room height		heat/cool		heat/cool		heat/cool		heat/cool					
Room dimensions		120.0 ft ²		10.0 x 12.0 ft		45.0 ft ²		5.0 x 9.0 ft						
Room area														
6	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	12D-5sw	0.062	n	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	n	23.04	8.89	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	n	3.24	0.35	0	0	0	0	0	0	0	0
11	W	12D-5sw	0.062	e	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	e	23.04	28.23	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	e	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	e	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	s	4.46	0.62	80	64	286	39	0	0	0	0
	G	4A5-2ov	0.320	s	23.04	14.02	16	0	369	224	0	0	0	0
	W	Bg wall, light dry s	0.045	s	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	w	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	29.71	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	28.23	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	w	3.24	0.35	0	0	0	0	0	0	0	0
	P	12D-5sw	0.062	-	4.46	0.22	0	0	0	0	40	40	179	9
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	C	Attic ceiling, aspha	0.020	-	1.44	0.95	120	120	173	113	45	45	65	43
	F	22B-10vprn	0.355	-	25.56	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion								28					-5
	Envelope loss/gain								827	405			243	47
12	a) Infiltration								267	57			0	0
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			1		230	0			0	0
			Appliances/other						0				0	0
	Subtotal (lines 6 to 13)								1094	691			243	47
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			146	330
14	Subtotal								1094	691			389	376
15	Duct loads								0	0			0	0
	Total room load								1094	691			389	376
	Air required (cfm)								44	62			16	34

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



Right-J® Worksheet

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22, 2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

		KITCHEN		DINING										
1	Room name	0 ft		20.0 ft										
2	Exposed wall	8.0 ft		8.0 ft										
3	Room height	9.0 ft		10.0 ft										
4	Room dimensions	81.0 ft ²		140.0 ft ²										
5	Room area	heat/cool		heat/cool										
6	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	12D-5sw	0.062	n	4.46	0.62	0	0	0	0	48	40	179	25
	G	4A5-2ov	0.320	n	23.04	8.89	0	0	0	0	8	0	184	71
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bq wall, light dry s	0.045	n	3.24	0.35	0	0	0	0	0	0	0	0
11	W	12D-5sw	0.062	e	4.46	0.62	0	0	0	0	80	64	286	39
	G	4A5-2ov	0.320	e	23.04	28.23	0	0	0	0	16	0	369	452
	D	Door, mtl eps core t	0.320	e	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bq wall, light dry s	0.045	e	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	s	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	s	23.04	14.02	0	0	0	0	32	32	143	20
	W	Bq wall, light dry s	0.045	s	3.24	0.35	0	0	0	0	0	0	0	0
	W	12D-5sw	0.062	w	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	29.71	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	28.23	0	0	0	0	0	0	0	0
	W	Bq wall, light dry s	0.045	w	3.24	0.35	0	0	0	0	0	0	0	0
	P	12D-5sw	0.062	-	4.46	0.22	72	72	321	16	64	43	192	9
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	21	21	484	160
	C	Attic ceiling, aspha	0.020	-	1.44	0.95	81	81	117	77	140	140	202	132
	F	22B-10vpm	0.355	-	25.56	0.00	0	0	0	0	0	0	0	0
6	c) AED excursion									-103				15
	Envelope loss/gain								438	-10			2037	923
12	a) Infiltration								0	0			534	114
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230		0				0	0			0
			Appliances/other							1000				0
	Subtotal (lines 6 to 13)								438	990			2572	1037
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								-438	-990			0	0
14	Subtotal								0	0			146	330
15	Duct loads								0	0			2718	1367
	Total room load								0	0			0	0
	Air required (cfm)								0	0			2718	1367
									0	0			109	123

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

Right-J® Worksheet

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22,2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

1 Room name		BATH#2						BED RM#3								
2 Exposed wall		5.0 ft						10.0 ft								
3 Room height		8.0 ft						8.0 ft								
4 Room dimensions		5.0 x 9.0 ft						1.0 x 114.0 ft								
5 Room area		45.0 ft²						114.0 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-5sw	0.062	n	4.46	0.62	40	40	179	25	0	0	0	0		
	G	4A5-2ov	0.320	n	23.04	8.89	0	0	0	0	0	0	0	0		
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0		
	W	Bg wall, light dry s	0.045	n	3.24	0.35	0	0	0	0	0	0	0	0		
11	W	12D-5sw	0.062	e	4.46	0.62	0	0	0	0	0	0	0	0		
	G	4A5-2ov	0.320	e	23.04	28.23	0	0	0	0	0	0	0	0		
	D	Door, mtl eps core t	0.320	e	23.04	7.60	0	0	0	0	0	0	0	0		
	W	Bg wall, light dry s	0.045	e	3.24	0.35	0	0	0	0	0	0	0	0		
	W	12D-5sw	0.062	s	4.46	0.62	0	0	0	0	80	64	286	39		
	G	4A5-2ov	0.320	s	23.04	14.02	0	0	0	0	16	0	369	224		
	W	Bg wall, light dry s	0.045	s	3.24	0.35	0	0	0	0	0	0	0	0		
	W	12D-5sw	0.062	w	4.46	0.62	0	0	0	0	0	0	0	0		
	G	4A5-2ov	0.320	w	23.04	29.71	0	0	0	0	0	0	0	0		
	G	4A5-2ov	0.320	w	23.04	28.23	0	0	0	0	0	0	0	0		
	W	Bg wall, light dry s	0.045	w	3.24	0.35	0	0	0	0	0	0	0	0		
	W	12D-5sw	0.062	-	4.46	0.22	0	0	0	0	0	0	0	0		
	P	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0		
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0		
	C	Attic ceiling, aspha	0.020	-	1.44	0.95	45	45	65	43	114	114	164	108		
	F	22B-10vpm	0.355	-	25.56	0.00	0	0	0	0	0	0	0	0		
6	c) AED excursion												-9	50		
	Envelope loss/gain												243	58	818	421
12	a) Infiltration												134	28	267	57
	b) Room ventilation												0	0	0	0
13	Internal gains:		Occupants @	230	0		0		0		0		0			
			Appliances/other													
	Subtotal (lines 6 to 13)												377	87	1086	478
	Less external load												0	0	0	0
	Less transfer												0	0	0	0
	Redistribution												0	0	0	0
14	Subtotal												377	87	1086	478
15	Duct loads												-0%	0%	0	0
	Total room load												377	87	1086	478
	Air required (cfm)												15	8	44	43

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

Right-J® Worksheet

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22, 2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

				CRAWLER				LIVING/HALL						
				154.0 ft				28.0 ft						
				3.0 ft 1.0 x 1240.0 ft				8.0 ft 1.0 x 315.0 ft						
				1240.0 ft²				315.0 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
1		Room name												
2		Exposed wall												
3		Room height												
4		Room dimensions												
5		Room area												
6	W	12D-5sw	0.062	n	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	n	23.04	8.89	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	n	3.24	0.35	156	156	505	55	0	0	0	0
11	W	12D-5sw	0.062	e	4.46	0.62	0	0	0	0	120	74	330	46
	G	4A5-2ov	0.320	e	23.04	28.23	0	0	0	0	25	0	576	706
	D	Door, mtl eps core t	0.320	e	23.04	7.60	0	0	0	0	21	21	484	160
	W	Bg wall, light dry s	0.045	e	3.24	0.35	75	75	243	26	0	0	0	0
	W	12D-5sw	0.062	s	4.46	0.62	0	0	0	0	104	88	393	54
	G	4A5-2ov	0.320	s	23.04	14.02	0	0	0	0	16	0	369	224
	W	Bg wall, light dry s	0.045	s	3.24	0.35	156	156	505	55	0	0	0	0
	W	12D-5sw	0.062	w	4.46	0.62	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	29.71	0	0	0	0	0	0	0	0
	G	4A5-2ov	0.320	w	23.04	28.23	0	0	0	0	0	0	0	0
	W	Bg wall, light dry s	0.045	w	3.24	0.35	75	75	243	26	0	0	0	0
	P	12D-5sw	0.062	-	4.46	0.22	0	0	0	0	0	0	0	0
	D	Door, mtl eps core t	0.320	n	23.04	7.60	0	0	0	0	0	0	0	0
	C	Attic ceiling, aspha	0.020	-	1.44	0.95	0	0	0	0	315	315	454	298
	F	22B-10vpm	0.355	-	25.56	0.00	1240	154	3936	0	0	0	0	0
6	c) AED excursion									-46				-191
	Envelope loss/gain								5433	117			2605	1296
12	a) Infiltration								1543	328			748	159
	b) Room ventilation								0	0			0	0
13	Internal gains:		Occupants @	230			0			0	4			920
			Appliances/other							0				0
	Subtotal (lines 6 to 13)								6976	445			3354	2376
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								6976	445			146	330
15	Duct loads								0	0	-0%	0%	0	0
	Total room load								6976	445			3500	2705
	Air required (cfm)								280	40			140	243

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



Duct System Summary

Entire House

Colorado TruEnergy Solutions

Job: Risley4BR1S
 Date: FEB 22,2020
 By: EDWARD COYNE

15150 Chelmsford St., Colorado Springs, CO 80921 Phone: 719-304-1887 Email: ed@cotruenergy.com Web: www.cotruenergy.com

Project Information

For: Risley4BR1S, HABITAT FOR HUMANITY
 COLORADO SPRINGS, CO

	Heating	Cooling
External static pressure	0.80 in H2O	0.80 in H2O
Pressure losses	0.30 in H2O	0.30 in H2O
Available static pressure	0.50 in H2O	0.50 in H2O
Supply / return available pressure	0.355 / 0.145 in H2O	0.355 / 0.145 in H2O
Lowest friction rate	0.167 in/100ft	0.167 in/100ft
Actual air flow	855 cfm	845 cfm
Total effective length (TEL)		300 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	c 376	16	34	0.219	4.0	0x0	VIFx	7.0	155.0	st1
BATH#2	h 377	15	8	0.223	4.0	0x0	VIFx	14.0	145.0	st2
BED RM#1	c 1318	90	119	0.201	6.0	0x0	VIFx	22.0	155.0	st2A
BED RM#2	c 1233	83	111	0.173	6.0	0x0	VIFx	30.4	175.0	st2A
BED RM#3	h 1086	44	43	0.202	6.0	0x0	VIFx	16.0	160.0	st2
BED RM#4	c 691	44	62	0.213	6.0	0x0	VIFx	22.0	145.0	st1
CRAWLER	h 3488	140	20	0.182	6.0	0x0	VIFx	20.0	175.0	st1A
CRAWLER-A	h 3488	140	20	0.191	6.0	0x0	VIFx	16.0	170.0	st2A
DINING	c 683	55	61	0.190	6.0	0x0	VIFx	32.0	155.0	st1A
DINING-A	c 683	55	61	0.179	6.0	0x0	VIFx	28.0	170.0	st1A
LAUNDRY	c 691	35	62	0.215	4.0	0x0	VIFx	10.0	155.0	st2
LIVING/HALL	c 1353	70	122	0.167	6.0	0x0	VIFx	33.0	180.0	st1A
LIVING/HALL-A	c 1353	70	122	0.182	6.0	0x0	VIFx	30.0	165.0	st1A

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st2	Peak AVF	406	363	0.173	522	8.0	8 x 14	ShtMetl	
st2A	Peak AVF	312	250	0.173	469	8.0	8 x 12	ShtMetl	st2
st1	Peak AVF	449	482	0.167	620	8.5	8 x 14	ShtMetl	
st1A	Peak AVF	390	386	0.167	584	8.5	8 x 12	ShtMetl	st1

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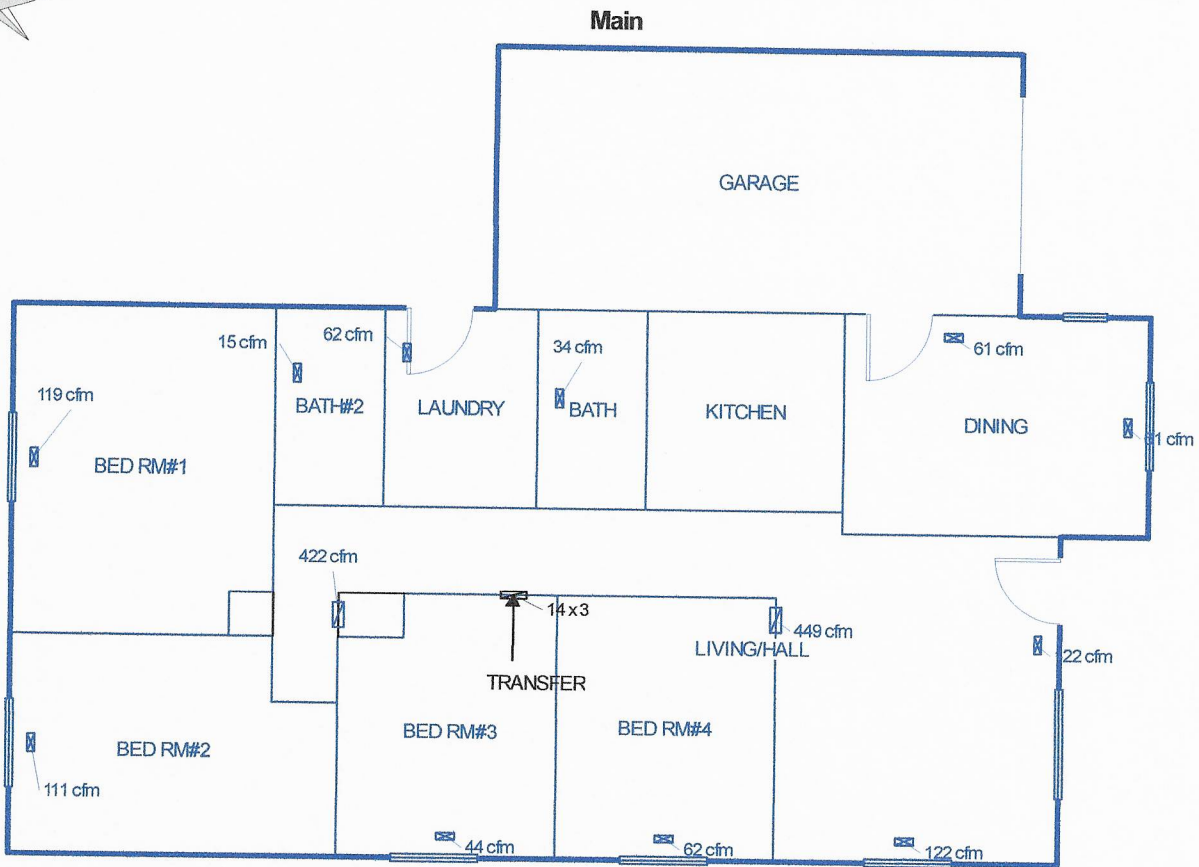


Return Branch Detail Table

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
rb3	0x0	433	449	87.0	0.167	823	10.0	<i>0x 0</i>		VIFx	
rb6	0x0	422	396	81.0	0.179	773	10.0	<i>0x 0</i>		VIFx	

Bold/italic values have been manually overridden





Job #: Risley4BR1S
Performed by EDWARD COYNE for:
Risley4BR1S
COLORADO SPRINGS, CO

Colorado TruEnergy Solutions

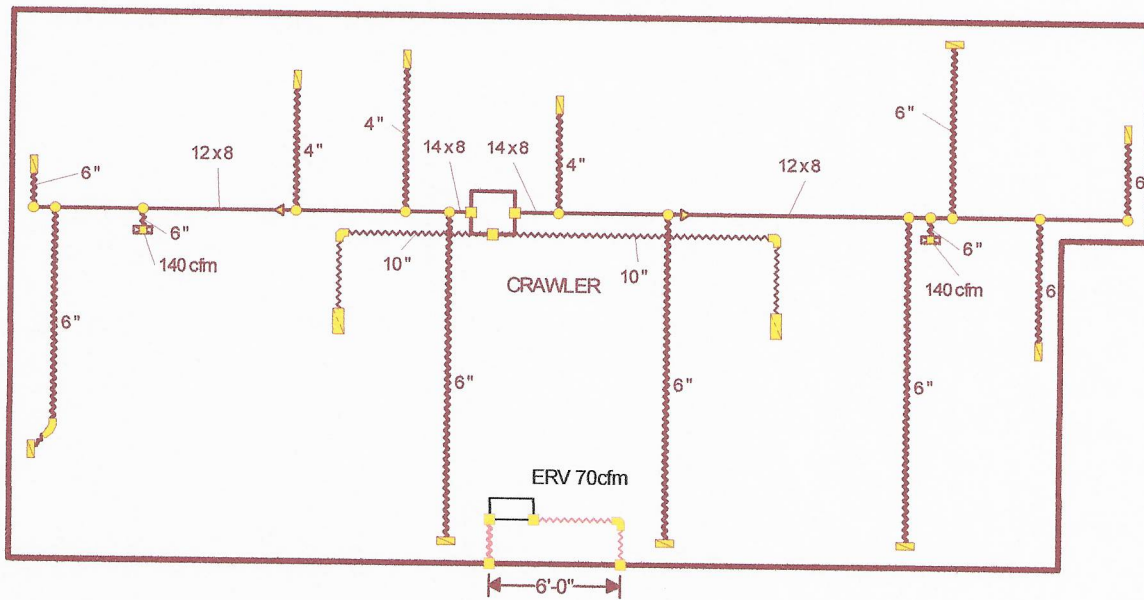
15150 Chelmsford St.
Colorado Springs, CO 80921
Phone: 719-304-1887
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Scale: 1 : 105

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Crawler



Job #: Risley4BR1S
Performed by EDWARD COYNE for:
Risley4BR1S
COLORADO SPRINGS, CO

Colorado TruEnergy Solutions
15150 Chelmsford St.
Colorado Springs, CO 80921
Phone: 719-304-1887
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SAP ORDERING NO.	CASING DIMENSIONS (IN.)			RATED HEATING OUTPUT†		HEATING AIRFLOW		COOLING CFM @ 0.5 ESP (in. W.C.)	MOTOR HP - SPEED TAPS
	H	D	W	(BTUH)	AFUE	CFM‡	Heating ESP (in. W.C.)		
912SC30040S14	35	29.5	14.2	37,000	92.1%	910	0.10	595-970	1/3 - 4
912SC36040S17	35	29.5	17.5	37,000	92.1%	980	0.10	655-1140	1/2 - 5
912SC36060S14	35	29.5	14.2	56,000	92.1%	910	0.12	645-1155	1/3 - 4
912SC48060S17	35	29.5	17.5	56,000	92.1%	980	0.12	985-1505	1/2 - 4
912SB48080S17	35	29.5	17.5	75,000	92.1%	1030	0.15	760-1555	1/2 - 5
912SC48080S17	35	29.5	17.5	75,000	92.1%	1030	0.15	760-1555	1/2 - 5
912SC60080S21	35	29.5	21.0	75,000	92.1%	1115	0.15	865-1885	3/4 - 5
912SC48100S21	35	29.5	21.0	93,000	92.1%	1490	0.20	890-1490	1/2 - 4
912SC60100S21	35	29.5	21.0	93,000	92.1%	1550	0.20	1475-1970	3/4 - 4
912SC60120S24	35	29.5	24.5	112,000	92.1%	2070	0.20	1450-2050	3/4 - 4

† Capacity in accordance with DOE test procedures. Ratings are position dependent. See rating plate.

‡ Heating CFM at factory default blower motor heating tap settings.

ESP - External Static Pressure

912SC

FEATURES AND BENEFITS

HYBRID HEAT® Dual Fuel system — This system can provide more control over your monthly energy bills by automatically selecting the most economical method of heating. With HYBRID HEAT, our system automatically switches between the gas furnace and the single-stage electric heat pump as outside temperatures change to maintain greater efficiency and comfort than with any traditional single-source heating system. The heat pump also delivers high-efficiency cooling in the summer.

Power Heat™ Igniter — Bryant's unique SiN igniter is not only physically robust but it is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators as do other brands. This unique feature further enhances the gas furnace reliability and continues Bryant's tradition of technology leadership and innovation in providing a reliable and durable product.

Reliable Heat Exchanger Design — The aluminized steel, clam shell primary heat exchanger was re-engineered to achieve greater efficiency out of a smaller size. The first two passes of the heat exchanger are based on the current 80% product, a design with more than ten years of field-proven performance and success. These innovations, paired with the continuation of a crimped, no-weld seam create an efficient, robust design for this essential component.

The condensing heat exchanger, a stainless steel fin and tube design, is positioned in the furnace to extract additional heat. Stainless steel coupling box componentry between heat exchangers has exceptional corrosion resistance in both natural gas and propane applications.

4-Way Multipoise Design — One model for all applications — there is no need to stock special downflow or horizontal models when one unit will do it all. The new heat exchanger design allows these units to achieve the certified AFUE in all positions.

Direct or Single-pipe Venting, or Optional Ventilated Combustion Air — This furnace can be installed as a 2-pipe (Direct Vent) furnace, in an optional ventilated combustion air application, or in single-pipe, non-direct vent applications. This provides added flexibility to meet diverse installation needs.

Sealed Combustion System — This furnace brings in combustion air from outside the furnace, which results in especially quiet operation. By sealing the entire combustion vestibule, the entire furnace can be made quieter, not just the burners.

Monoport Burners — The burners are specially designed and finely tuned for smooth, quiet combustion and economical operation.

Bottom Closure — Factory-installed for side return; easily removable for bottom return. The multi-use bottom closure can also serve for roll-out protection in horizontal applications, and act as the bottom closure for the optional return air base accessory.

Blower Access Panel Switch — Automatically shuts off 115-v power to furnace whenever blower access panel is opened.

Quality Registration — Our furnaces are engineered and manufactured under an ISO 9001 registered quality system.

Certifications — This furnace is CSA (AGA and CGA) design certified for use with natural and propane gases. The furnace is factory-shipped for use with natural gas. A CSA listed gas conversion kit is required to convert furnace for use with propane gas. The efficiency is AHRI efficiency rating certified. This furnace meets California Air Quality Management District emission requirements.

SPECIFICATIONS

The furnace should be sized to provide 100 percent of the design heating load requirement plus any margin that occurs because of furnace model size capacity increments. None of the furnace model sizes can be used if the heating load is 20,000 BTU or lower. Use Air Conditioning Contractors of America (Manual J and S); American Society of Heating, Refrigerating, and Air-Conditioning Engineers; or other approved engineering

method to calculate heating load estimates and select the furnace. Excessive oversizing of the furnace may cause the furnace and/or vent to fail prematurely, customer discomfort and/or vent freezing. Failure to follow these guidelines is considered faulty installation and/or misapplication of the furnace; and resulting failure, damage, or repairs may impact warranty coverage.

912SC

Heating Capacity and Efficiency			30040	36040	36060	48060	48080	60080	48100	60100	60120
Input	High Heat	(BTUH)	40,000	40,000	60,000	60,000	80,000	80,000	100,000	100,000	120,000
Output	High Heat	(BTUH)	37,000	37,000	56,000	56,000	75,000	75,000	93,000	93,000	112,000
Certified Temperature Rise Range °F (°C)		High Heat	40 - 70 (22 - 39)	35 - 65 (19 - 36)	40 - 70 (22 - 39)	35 - 65 (19 - 36)	35 - 65 (19 - 36)	35 - 65 (19 - 36)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	45 - 75 (25 - 42)
Airflow Capacity and Blower Data			30040	36040	36060	48060	48080	60080	48100	60100	60120
Rated External Static Pressure (in. W.C.)	Heating		0.10	0.10	0.12	0.12	0.15	0.15	0.20	0.20	0.20
	Cooling		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Airflow Delivery @ Rated ESP (CFM)	High Heat		910	980	910	980	1030	1115	1480	1550	2070
	Cooling		970	1140	1155	1505	1555	1885	1490	1970	2050
Cooling Capacity (tons)	400 CFM/ton		2.5	2.5	2.5	3.5	4	4.5	3.5	5	5
	350 CFM/ton		2.5	3	3	4	4.5	5.0	4.0	5.5	5.5
Direct-Drive Motor Type			Permanent Split Capacitor (PSC)								
Direct-Drive Motor HP			0.3	0.5	0.3	0.5	0.5	0.75	0.5	0.75	0.75
Motor Full Load Amps			4.6	6.8	4.6	7.9	7.4	7.9	6.5	11.1	11.1
RPM Range			500 - 1150								
Speed Selections			4	5	4	4	5	5	4	4	4
Blower Wheel Dia x Width		in.	11 x 7	11 x 8	11 x 7	11 x 8	11 x 8	11 x 10	11 x 10	11 x 10	11 x 11
Air Filtration System			Field Supplied								
Filter Used for Certified Watt Data*			KGAWF**06UFR								
Electrical Data			30040	36040	36060	48060	48080	60080	48100	60100	60120
Input Voltage		Volts-Hertz-Phase	115-60-1								
Operating Voltage Range		Min-Max	104-127								
Maximum Input Amps		Amps	5.2	7.4	5.3	8.6	8.1	8.6	7.3	11.9	11.9
Unit Ampacity		Amps	7.5	10.3	7.6	11.7	11.1	11.7	10.1	15.8	15.8
Minimum Wire Size		AWG	14	14	14	14	14	14	14	12	12
Maximum Wire Length @ Minimum Wire Size	Feet		49	36	48	31	33	31	36	36	36
	(M)		(14.9)	(11.0)	(14.6)	(9.4)	(10.1)	(9.4)	(11.0)	(11.0)	(11.0)
Maximum Fuse/Ckt Bkr (Time-Delay Type Recommended)		Amps	15	15	15	15	15	15	15	20	20
Transformer Capacity (24vac output)			40 VA								
External Control Power Available	Heating		27.9 VA								
	Cooling		34.6 VA								
Controls			30040	36040	36060	48060	48080	60080	48100	60100	60120
Gas Connection Size			1/2" - NPT								
Burners (Monoport)			2	2	3	3	4	4	5	5	6
Gas Valve (Redundant)		Manufacturer	White Rodgers								
Minimum Inlet Gas pressure (in. W.C.)			4.5								
Maximum Inlet Gas pressure (in. W.C.)			13.6								
Ignition Device			Silicon Nitride								
Limit Control			195	180	220	190	185	195	220	220	165
Heating Blower Control (Heating Off-Delay)			Adjustable: 90, 120, 150, 180 seconds								
Cooling Blower Control (Time Delay Relay)			90 seconds								
Communication System			none								
Thermostat Connections			Com 24V, R, W, G, Y								
Accessory Connections			EAC (115vac); HUM (24vac)								

* See Accessory List for part numbers available.

AIR DELIVERY - CFM (BOTTOM RETURN WITH FILTER)

Furnace	Return Air Connection	Wire Lead Color	Cooling Tons	CFM / Ton	Test Airflow Delivery @ Various External Static Pressures									
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
030040	SIDE/BOTTOM	Black	2.5	388	1145	1100	1060	1015	970	920	860	785	680	615
		Blue	2.0	413	970	940	905	870	825	775	730	675	570	505
		Yellow	2.0	385	910	880	845	810	770	725	675	600	535	475
		Red	1.5	397	725	695	665	635	595	555	510	460	390	340
036060	SIDE/BOTTOM	Black	3.0	385	1215	1205	1205	1195	1155	1100	1045	975	910	805
		Blue	2.5	370	980	985	980	955	925	880	835	780	695	585
		Yellow	2.0	425	910	920	905	880	850	815	765	695	630	545
		Red ³	1.5	430	750	730	705	680	645	605	555	490	435	370
036040	SIDE/BOTTOM	Black	3.0	380	1365	1310	1255	1200	1140	1080	1015	950	860	795
		Yellow	2.5	418	1245	1200	1150	1100	1045	990	930	855	790	730
		Orange	2.5	366	1050	1025	985	950	915	870	820	760	705	655
		Blue	2.0	435	980	955	935	905	870	830	780	725	675	625
		Red	1.5	437	720	705	690	675	655	625	590	555	525	485
048060	SIDE/BOTTOM	Black	4.0	376	1600	1545	1505	1475	1505	1445	1400	1330	1235	1140
		Yellow	3.5	377	1380	1340	1335	1330	1320	1285	1225	1155	1085	1000
		Blue ³	3.0	387	1190	1185	1195	1195	1160	1125	1075	1015	950	885
		Red ³	2.5	394	1030	1025	1030	1010	985	940	905	855	805	735
48080 (Series B Only)	SIDE/BOTTOM	Black	4.0	408	1800	1770	1735	1685	1630	1570	1495	1415	1330	1230
		Yellow	3.5	386	1445	1430	1410	1385	1350	1305	1255	1195	1120	1045
		Orange	3.0	390	1250	1240	1225	1200	1170	1130	1090	1040	975	910
		Blue	2.5	404	1090	1080	1060	1035	1010	970	930	885	835	765
048080 (Series C Only)	SIDE/BOTTOM	Black	4.0	389	1650	1620	1640	1605	1555	1495	1425	1345	1255	1165
		Yellow	3.5	381	1420	1425	1400	1370	1335	1290	1230	1170	1095	1015
		Orange	3.0	383	1205	1205	1185	1165	1150	1100	1055	1000	935	870
		Blue	2.5	384	1035	1020	1005	985	960	930	895	845	795	735
060080	BOTTOM or TWO-SIDES ^{4,5}	Black	5.0	377	2225	2160	2070	1980	1885	1790	1690	1575	1460	1345
		Yellow	4.0	386	1690	1665	1640	1595	1545	1485	1410	1330	1235	1135
		Orange	3.5	397	1485	1470	1455	1430	1390	1340	1280	1205	1120	1035
		Blue ³	2.5	426	1120	1110	1100	1090	1065	1035	990	935	870	805
048100	SIDE/BOTTOM	Black	4.0	373	1715	1660	1610	1555	1490	1420	1340	1245	1150	1065
		Yellow ³	3.5	379	1535	1480	1435	1380	1325	1260	1180	1095	1010	910
		Blue ³	3.0	367	1300	1255	1205	1160	1100	1035	970	905	810	730
		Red ³	2.0	445	1110	1055	1005	955	890	835	770	690	610	535
060100	BOTTOM or TWO-SIDES ^{4,5}	Black	5.0	394	2270	2205	2130	2055	1970	1880	1780	1670	1555	1425
		Yellow	5.0	367	2090	2040	1980	1910	1835	1755	1670	1570	1460	1340
		Blue	4.0	416	1850	1815	1775	1725	1665	1600	1525	1435	1335	1225
		Red	3.5	421	1580	1550	1540	1515	1475	1420	1355	1280	1190	1100
060120	BOTTOM or TWO-SIDES ^{4,5}	Black	5.0	410	2385	2310	2230	2150	2050	1920	1780	1650	1540	1415
		Yellow	5.0	369	2130	2070	2010	1940	1845	1740	1630	1525	1420	1305
		Blue	4.0	416	1875	1840	1795	1735	1665	1580	1495	1410	1310	1205
		Red ³	3.5	414	1610	1585	1555	1515	1450	1395	1325	1250	1160	1080

912SC

NOTE:

1. A filter is required for each return-air inlet. Airflow performance includes a 3/4-in. (19 mm) washable filter media such as contained in a factory-authorized accessory filter rack. See accessory list. To determine airflow performance without this filter, assume an additional 0.1 in. W.C.. available external static pressure.
2. **ADJUST THE BLOWER SPEED TAPS AS NECESSARY FOR THE PROPER AIR TEMPERATURE RISE FOR EACH INSTALLATION.**
3. Shaded areas indicate that this airflow range is BELOW THE RANGE ALLOWED FOR HEATING OPERATION.
4. Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return. A minimum filter size of 20" x 25" (508 x 635 mm) is required.
5. For upflow applications, air entering from one side into both the side of the furnace and a return air base counts as a side and bottom return.
6. All airflows that are shown in **BOLD** exceed 0.58 watts per CFM at the given external static pressure.

PERFORMANCE DATA (cont.)
COIL STATIC PRESSURE DROP (in. w.c.) PURON® and R-22 REFRIGERANTS

CNPV / CNRV

UNIT SIZE	Standard CFM																		
	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
1814	Dry																		
	0.078	0.114	0.156	0.198	0.253														
1917	Wet																		
	0.096	0.138	0.183	0.213	0.277														
2414	Dry																		
	0.042	0.060	0.080	0.102	0.128														
2417	Wet																		
	0.055	0.076	0.104	0.127	0.158														
3014	Dry																		
	0.070	0.103	0.143	0.182	0.233	0.290	0.354												
3017	Wet																		
	0.089	0.128	0.171	0.214	0.269	0.336	0.413												
3117	Dry																		
	0.048	0.068	0.090	0.112	0.140	0.170	0.203												
3177	Wet																		
	0.064	0.091	0.122	0.150	0.188	0.224	0.263												
3617	Dry																		
	0.065	0.097	0.135	0.173	0.223	0.278	0.339	0.405	0.478										
3621	Wet																		
	0.078	0.114	0.160	0.206	0.260	0.321	0.388	0.461	0.540										
3621	Dry																		
	0.042	0.060	0.080	0.102	0.128	0.157	0.188	0.222	0.259										
3621	Wet																		
	0.055	0.076	0.104	0.127	0.158	0.190	0.225	0.266	0.309										
3617	Dry																		
	0.031	0.046	0.063	0.083	0.105	0.130	0.156	0.193	0.230										
3617	Wet																		
	0.039	0.056	0.075	0.097	0.121	0.149	0.179	0.212	0.249										
3617	Dry																		
	0.043	0.061	0.082	0.103	0.128	0.157	0.189	0.221	0.259	0.299	0.341								
3621	Wet																		
	0.056	0.079	0.107	0.133	0.166	0.200	0.236	0.276	0.315	0.361	0.413								
3621	Dry																		
	0.035	0.048	0.062	0.076	0.093	0.111	0.132	0.153	0.177	0.201	0.228								
3717	Wet																		
	0.049	0.066	0.085	0.100	0.122	0.144	0.171	0.192	0.217	0.245	0.276								
4217	Dry																		
	0.025	0.038	0.054	0.072	0.093	0.117	0.143	0.171	0.205	0.233	0.273								
4221	Wet																		
	0.030	0.044	0.061	0.079	0.103	0.125	0.154	0.182	0.216	0.251	0.288								
4221	Dry																		
			0.072	0.093	0.118	0.145	0.175	0.206	0.243	0.281	0.322	0.366	0.413						
4221	Wet																		
			0.079	0.102	0.130	0.159	0.192	0.228	0.26	0.303	0.348	0.396	0.446						
4324	Dry																		
	0.030	0.041	0.054	0.066	0.082	0.099	0.118	0.137	0.158	0.180	0.205	0.231	0.259						
4324	Wet																		
	0.043	0.059	0.078	0.101	0.126	0.153	0.181	0.207	0.234	0.260	0.288	0.319	0.354						
4821	Dry																		
				0.053	0.062	0.073	0.084	0.097	0.111	0.126	0.138	0.154	0.172	0.190	0.210				
4821	Wet																		
				0.067	0.082	0.096	0.112	0.129	0.145	0.163	0.171	0.191	0.212	0.235	0.258				
4821	Dry																		
			0.047	0.060	0.075	0.092	0.110	0.130	0.152	0.176	0.204	0.230	0.256	0.284	0.318				
4821	Wet																		
			0.053	0.067	0.085	0.104	0.125	0.147	0.172	0.200	0.228	0.259	0.292	0.327	0.365				
4824	Dry																		
			0.015	0.046	0.057	0.069	0.094	0.019	0.119	0.124	0.140	0.158	0.175	0.195	0.214				
4824	Wet																		
			0.032	0.050	0.066	0.081	0.097	0.114	0.131	0.150	0.169	0.190	0.211	0.233	0.257				
6024	Dry																		
					0.062	0.073	0.084	0.097	0.111	0.126	0.138	0.154	0.172	0.190	0.210	0.228	0.251	0.273	0.293
6024	Wet																		
					0.082	0.096	0.112	0.129	0.145	0.163	0.171	0.191	0.212	0.235	0.258	0.283	0.310	0.336	0.366
6124	Dry																		
												0.130	0.140	0.160	0.180	0.200	0.220	0.240	0.270
6124	Wet																		
												0.150	0.170	0.190	0.210	0.230	0.260	0.290	0.310
																			0.340

Specification Sheet

Item #: 428476
Rev Date: 2018-10-03

VER 100

Energy Recovery Ventilator
Product #: 463235



Fantech's, VER 100 is an Energy Recovery Ventilator designed for higher static pressure applications. The unit brings a continuous supply of fresh air into a home while exhausting an equal amount of contaminated air. The energy recovery core at the center of the unit transfers heat and moisture from incoming air to the outgoing air that was cooled and dried by the building's air conditioner.

Features

- 5" (125mm) oval duct connections with integrated airflow measurement
- Compact design, only 21.5" (546 mm) wide
- Includes EZ-Mount wall bracket
- Fans with backward curved blade
- ERV transfers both heat and humidity
- Anti-microbial material
- Withstands freezing
- AHRI certified
- Electrostatic filters (washable)
- Removable screw terminal for easy connection
- Easy Core Guide Channels For Removing Core
- Only weighs 32 lbs (14.5Kg)

Optional Controls

- ECO-Touch™ (#44929) – Programmable Touch Screen Wall Control
- EDF7 (#44883) – Electronic multi-function dehumidistat
- EDF1 (#40375) – Multi-function control
- RTS5 (#44794) – 20/40/60 minute over-ride
- RTS2 (#40164) – 20 minute over-ride
- MDEH1 (#40172) – Dehumidistat

Specifications

- Duct size – 5" (125 mm) oval
- Voltage/Phase – 120/1
- Power rated – 168 W
- Amp – 1.4 A
- Average airflow – 124 cfm (59 L/s)
@ 0.4" P_s (100Pa)

Fans

Two (2) factory-balanced fans with backward curved blades. Motors come with permanently lubricated, sealed ball-bearings to guarantee long life and maintenance-free operation.

Energy Recovery Core

AHRI certified core made from water vapor transport durable polymer membrane that is highly permeable to humidity. The ERV core is freeze tolerant and water washable. Core dimensions are 8.4 x 8.4" (213 x 213 mm) with a 15" (381 mm) depth.

Defrost

A preset frost prevention sequence is activated at an outdoor air temperature of 14°F (-10°C) and lower. During the frost prevention sequence, the supply blower shuts down and the exhaust blower switches into high speed to maximize the effectiveness of the frost prevention strategy. The unit then returns to normal operation and continues cycle.

Serviceability

Core, filters, fans, drain pan and electrical panel can be accessed easily from the access panel. Core conveniently slides out with only 14" (432 mm) clearance.

Case

24 gauge galvanized pre-painted steel corrosion resistant

Insulation

Cabinet is fully insulated with 1" (25 mm) foil-face high density expanded polystyrene.

Filters

Two (2) washable electrostatic panel type air filters 8.5" (216mm) x 12.5" (318 mm) x 0.125" (3mm).

Controls

External three (3) position (Low/Stand By/Medium) rocker switch that will offer continuous ventilation. Fantech offers a variety of external controls. (see controls)

Installation

Unit is typically installed using supplied wall bracket.

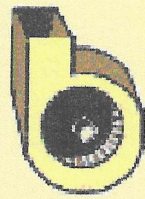
Warranty

5 years on energy recovery core, 7 year on motors, and 5 year on parts.



fantech®
a systemair company

Static Pressure for Entire House



External static pressure
Pressure losses

- Coil
- Heat exchanger
- Supply diffusers
- Return grilles
- Filter
- Humidifier
- Balancing damper
- Other device

Heating
(in H2O) [0.80]

0.19
0
0.03
0.03
0.05
0
0
0

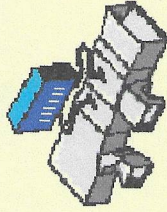
Cooling
(in H2O) [0.80]

0.19
0
0.03
0.03
0.05
0
0
0

Available static pressure

0.50

0.50



- Measured length of run-out
- Measured length of trunk
- Equivalent length of fittings

Supply
(ft)

15
18
180

...

Return
(ft)

17
0
70

...

Total length

213

Total effective length

87

300

Friction Rate

Heating
(in/100ft)

[0.167]
[0.167]

OK

Supply

OK

Return

OK

Cooling
(in/100ft)

[0.167]
[0.167]

OK

OK

Pikes Peak REGIONAL Building Department

INTERNATIONAL ENERGY CONSERVATION CODE (IECC) RESIDENTIAL INSULATION CERTIFICATE - EL PASO COUNTY ONLY

This certificate is based on the 2015 International Energy Conservation Code (IECC), as amended by the 2017 Pikes Peak Regional Building Code. This certificate is applicable to One- and Two- family Dwellings as well as Townhouses, R2, R-3 and R-4 buildings three stories or less in height. *This certificate is required to be submitted as part of the plan review package.*

ADDRESS OR MASTER #: Risley4BR1S Habitat for Humanity

METHOD OF ENERGY CODE COMPLIANCE:

The IECC provide various option for compliance with minimum standards. Check the box to indicate the method of compliance.

- | | |
|---|---|
| <input checked="" type="checkbox"/> 1. Prescriptive Method (IECC Section R402.1.2) | <input type="checkbox"/> 5. Simulated Performance Alternative ² (IECC Section R405). Available only to design professionals licensed in the State of Colorado or by qualified persons as approved by the Building Official. |
| <input type="checkbox"/> 2. U-factor Alternative ¹ (IECC Section R402.1.4) | <input type="checkbox"/> 6. Energy Rating Index Compliance Alternative ² (IECC Section R406). Available only to design professionals licensed in the State of Colorado or by qualified persons as approved by the Building Official. |
| <input type="checkbox"/> 3. Total UA Alternative ¹ (IECC Section R402.1.5) | |
| <input type="checkbox"/> 4. ResCheck ¹ (IECC Section R402.1.5) | |

¹ Please attach documentation and calculations to substantiate compliance.

² If the Simulated Performance or ERI Alternative is selected please attach necessary documentation to show compliance. Complete third party documentation of compliance must be submitted at time of final inspection.

MINIMUM INSULATION VALUES FOR PRESCRIPTIVE METHOD

Door and Window U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement Wall R-Value	Slab R-Value/Depth	Crawlspace Wall R-Value
0.32	0.55	49	20 or 13+5	13/17	30	10/13	10/2 ft	15/19

INSULATION DATA:

Enter the appropriate values for the scope of work that coincide with the compliance method selected above. This data is required for all methods of compliance

<u>20</u> Wall R-Value (wood frame or mass)	<u>19</u> Crawlspace Wall R-Value
<u>49</u> Ceiling R-Value	<u>10</u> Slab perimeter R-Value (24" minimum)
<u> </u> Floor R-Value	<u>.32</u> Glazing U-Factor
<u> </u> Basement Wall R-Value	<u>.32</u> Door(s) U-Factor

INSPECTION REQUIREMENTS:

Section R402.4 of the IECC requires the thermal envelope to be sealed to limit infiltration. The IECC requires the thermal envelope to be visually inspected and tested to demonstrate compliance with building envelope tightness requirements. Selection of the method of compliance shall occur when the Building Frame Inspection is scheduled. Below is a summary of the methods.

1. Third party visual inspection and testing with documentation required at time of final inspection.
2. RBD visual inspection and third party testing with documentation required at time of final inspection.

NOTE: The Simulated Performance and Energy Rating Index Alternatives requires third party inspections.

Pikes Peak REGIONAL Building Department

RESIDENTIAL HVAC EQUIPMENT CERTIFICATE - EL PASO COUNTY ONLY

Provide this certificate with heat loss, or optional heat gain, calculations for all new residential construction and additions. This form is part of the permanent record.

ADDRESS OR MASTER PLAN #: Risley4BR1S Habitat for Humanity

CALCULATIONS:

Duct Design New Structure Existing Structure Performance Test
 New Addition Only Existing Structure + New Addition (requires separate calculation for each)

1. Envelope heat loss _____ 17495 BTU/hr
2. Infiltration heat loss (.35 ach max) _____ 5018 BTU/hr
3. Envelope heat gain (optional) _____ BTU/hr
4. Infiltration heat gain (optional) _____ BTU/hr
5. Total heat loss (add lines 1 and 2)** _____ 22513 BTU/hr
6. Total heat gain (add lines 3 and 4 - optional) _____ BTU/hr
7. Type of heating appliance Bryant 912SC36040S17 New Existing
 BTU/hr input 37000 / 92.1 Location CRAWLER Area served ENTIRE HOUSE
8. Type of heating appliance _____ New Existing
 BTU/hr input _____ / _____ Location _____ Area served _____
9. Type of cooling appliance _____ New Existing
 BTU/hr input _____ / _____ Location _____ Area served _____
10. Type of cooling appliance _____ New Existing
 BTU/hr input _____ / _____ Location _____ Area served _____

SUMMARY:

- A. Input of heating appliance(s)* _____ 37000 BTU/hr
- B. Altitude derate (x .80) _____ 29600 BTU/hr
- C. Efficiency derate (output) _____ 27232 BTU/hr
- D. Electrical heating (1 watt = 3.413 BTU/hr) _____ BTU/hr
- E. Total Heating Output** _____ 27232 BTU/hr
- F. Total Cooling _____ BTU/hr

*If using high/low fired equipment, assign sum of the low fires on this line.

Applicant Signature EDWARD COYNE Date 2-22-2020
 Print name & company Colorado TruEnergy Solutions Phone 719-304-1887

IECC/IRC VENTILATION VERIFICATION (New Homes Only)

- Indicate method of compliance with **Whole-house Mechanical Ventilation System** (M1507.3) (check all that apply)

Outside Air/Supply Exhaust

- List **Fan Type/Description, CFM, and Location** of ALL exhaust fans, including kitchen hoods. Check box if fan is part of Whole-house Mechanical Ventilation System. (Example: Exhaust fan, 120 CFM, Master Bathroom)

Fantech VER100 ERV	75 cfm	(Capacity 124cfm)	<input checked="" type="checkbox"/>
Exhaust fan Bath room #1	50cfm		<input type="checkbox"/>
Exhaust fan Bath room #2	50cfm		<input type="checkbox"/>
Kitchen Hood	400cfm		<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

- Indicate **Ventilation Control** (check one)

Constant Intermittent: _____ % per Table M1507.3.3(2)

- Specify location of **Whole House Ventilation Manual Override Control Switch**, if known, otherwise note as **To Be Determined**.

Crawl Space (1,501-3000 sq ft with 4 bed rooms)= 75cfm