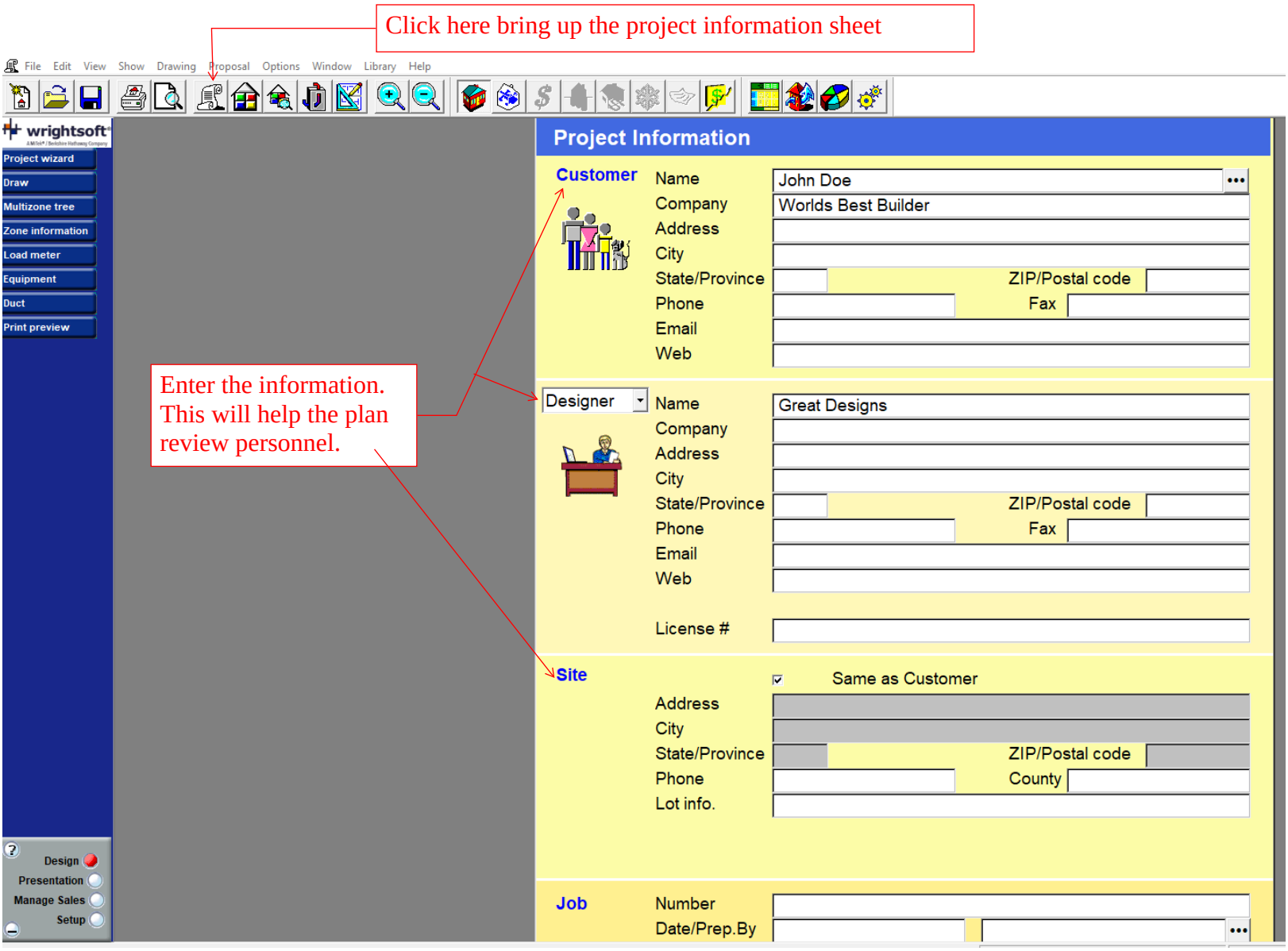
Wrightsoft Setup Basics
Building Code Support Program



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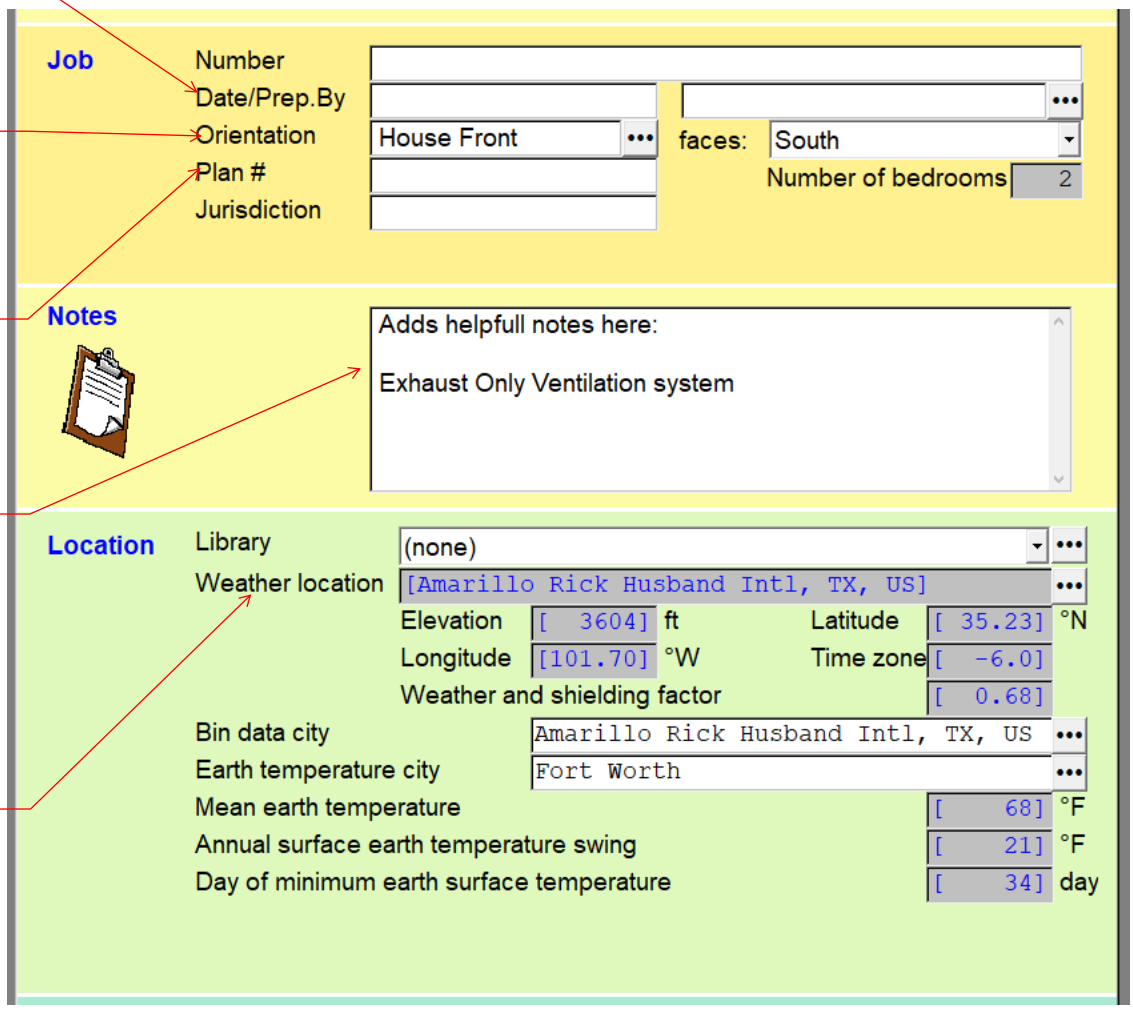
Design date would be nice but not required.

This would be for a custom home. We will show you later for worst case direction for a production home.

Model home plan number or custom home.

Add any special notes here for the plan review personnel. Indicating the whole house ventilation system is very helpful.

Not all locations are in the data base. Choose the location that is reasonably close to the actual location. The example is Amarillo, TX.



Bin data shows the number of days at a temperature range foe an average weather year.

Location

Library	(none)				
Weather location	[Amarillo Rick Husband Intl, TX, US]				
Elevation	[3604] ft	Latitude	[35.23]	°N	
Longitude	[101.70] °W	Time zone	[-6.0]		
Weather and shielding factor			[0.68]		
Bin data city	Amarillo Rick Husband Intl, TX, US				
Earth temperature city	Fort Worth				
Mean earth temperature			[68]	°F	
Annual surface earth temperature swing			[21]	°F	
Day of minimum earth surface temperature			[34]	day	

Bin Temperature Data

Location: Amarillo Rick Husband Intl, TX, US

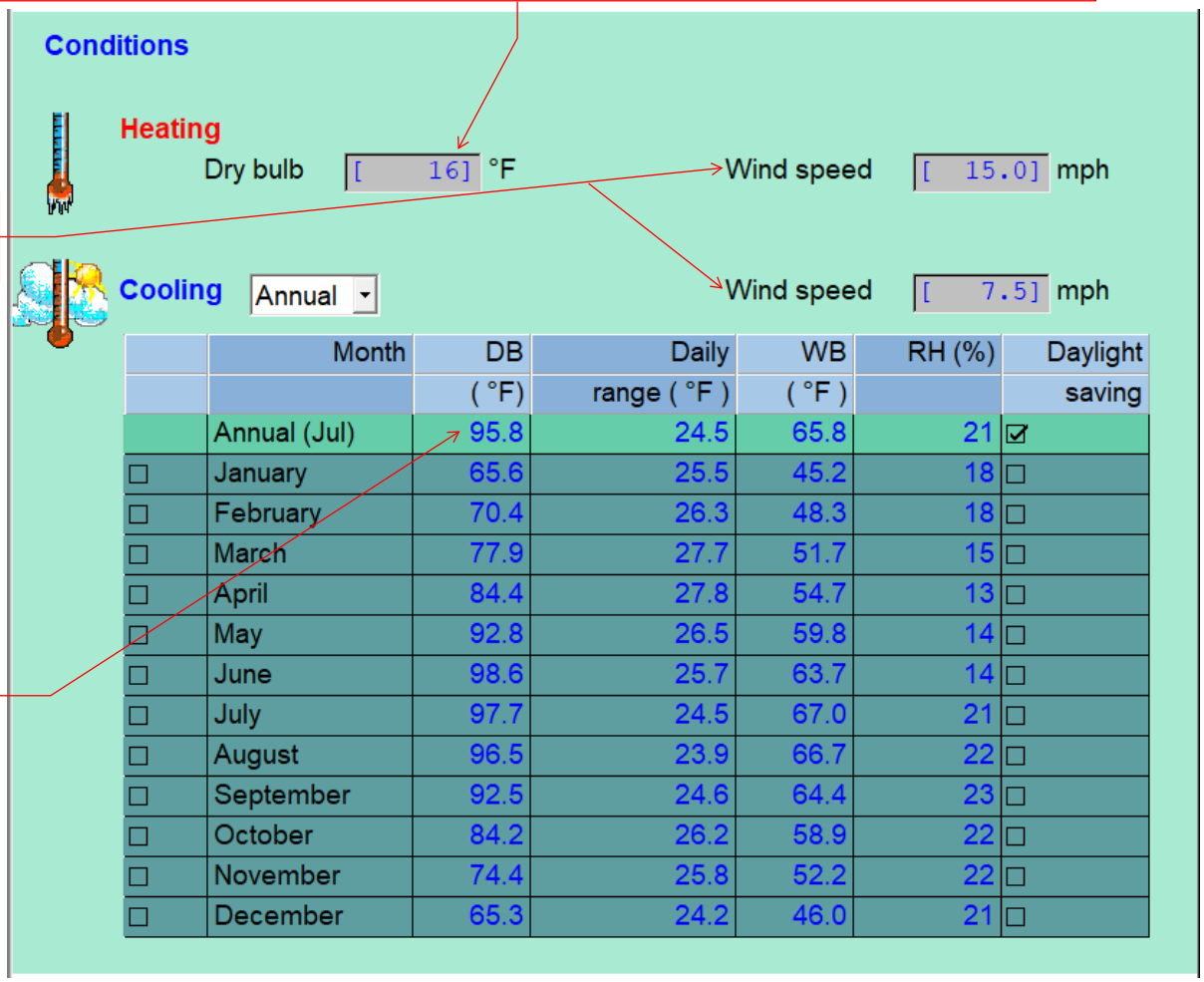
Temp Range	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
110 to 114	0	0	0	0	0	0	0	0	0	0	0	0	0
105 to 109	2	0	0	0	0	0	2	0	0	0	0	0	0
100 to 104	23	0	0	0	0	1	10	7	4	1	0	0	0
95 to 99	100	0	0	0	0	8	24	37	24	7	0	0	0
90 to 94	252	0	0	0	2	23	53	79	71	22	2	0	0
85 to 89	372	0	0	3	12	37	71	103	89	45	12	0	0
80 to 84	469	0	1	8	24	55	88	102	93	67	28	3	0
75 to 79	602	1	3	19	43	71	104	120	111	81	37	11	1
70 to 74	768	5	12	32	53	86	117	133	142	105	58	21	4
65 to 69	875	13	19	44	68	104	117	119	141	131	75	32	12
60 to 64	796	21	31	55	88	118	90	39	58	120	108	46	22
55 to 59	685	35	41	75	94	105	34	5	10	73	113	64	36
50 to 54	687	54	56	93	103	75	9	0	1	43	117	87	49
45 to 49	633	69	71	93	91	37	1	0	0	18	86	98	69
40 to 44	612	83	84	95	69	18	0	0	0	5	56	109	93
35 to 39	574	102	98	95	40	5	0	0	0	2	31	95	106
30 to 34	557	128	108	72	23	1	0	0	0	0	14	76	135
25 to 29	377	108	72	33	9	0	0	0	0	0	4	46	105
20 to 24	210	69	40	16	1	0	0	0	0	0	2	22	60
15 to 19	98	36	18	7	0	0	0	0	0	0	1	8	28
10 to 14	38	13	8	2	0	0	0	0	0	0	0	2	13
5 to 9	20	6	6	2	0	0	0	0	0	0	0	0	6
0 to 4	8	1	3	0	0	0	0	0	0	0	0	0	4
-5 to -1	2	0	1	0	0	0	0	0	0	0	0	0	1
-10 to -6	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	8760	744	672	744	720	744	720	744	744	720	744	720	744

Close

Based on the bin data the 99% (meaning that only 1% of the hours in a year is it colder) winter design temperature. If the jurisdiction has an adopted design temperature. then place the cursor over the cell and left click. Then press the F8 key and enter the adopted temperature.

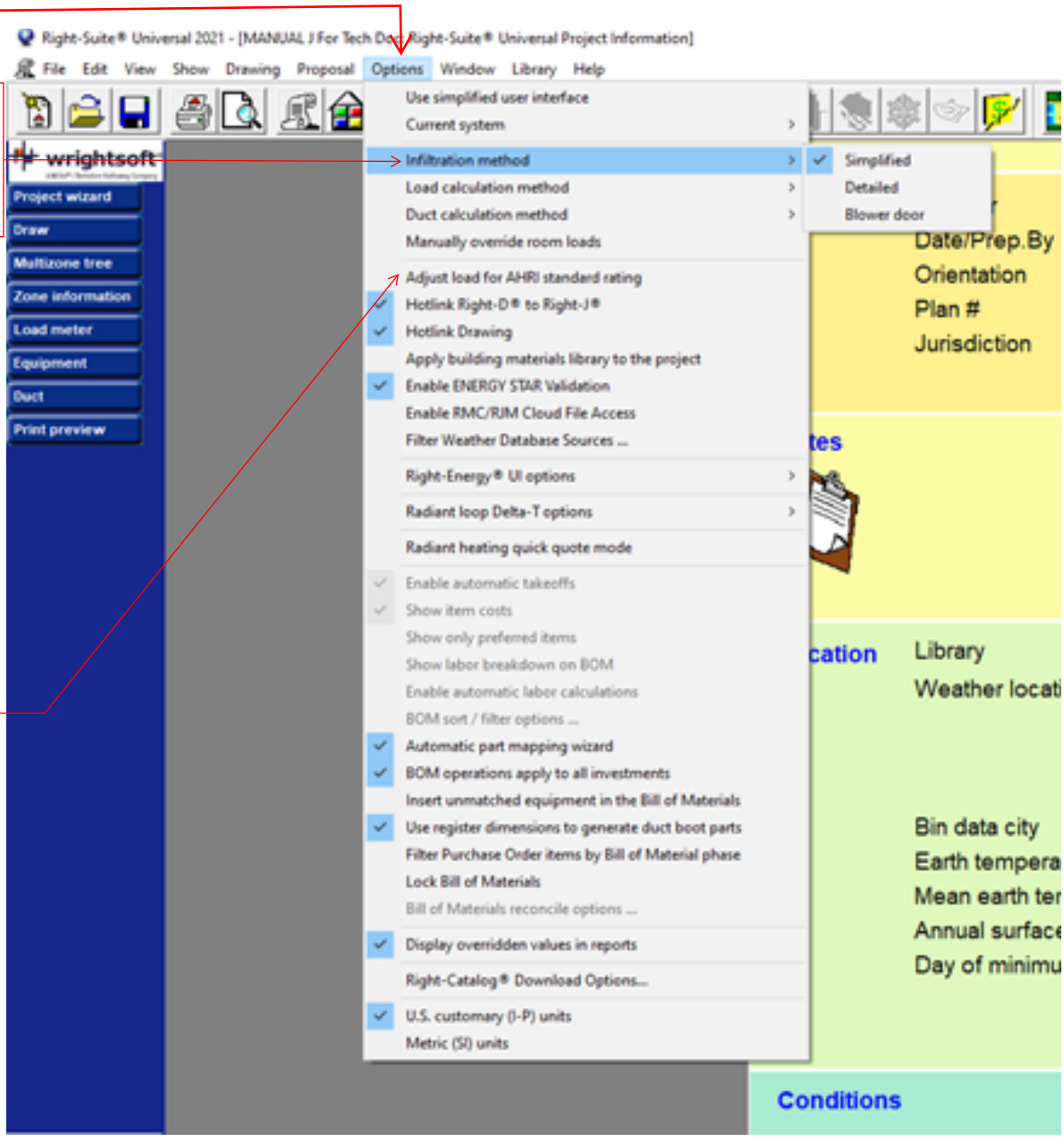
No Need to change the default for wind speed.

Based on the bin data the 1% (meaning that 99% of the hours in a year it is colder) summer design temperature. If the jurisdiction has an adopted design temperature. Then place the cursor over the cell and left click. Then press the F8 key and enter the adopted temperature.



	Month	DB (°F)	Daily range (°F)	WB (°F)	RH (%)	Daylight saving
	Annual (Jul)	95.8	24.5	65.8	21	☑
☐	January	65.6	25.5	45.2	18	☐
☐	February	70.4	26.3	48.3	18	☐
☐	March	77.9	27.7	51.7	15	☐
☐	April	84.4	27.8	54.7	13	☐
☐	May	92.8	26.5	59.8	14	☐
☐	June	98.6	25.7	63.7	14	☐
☐	July	97.7	24.5	67.0	21	☐
☐	August	96.5	23.9	66.7	22	☐
☐	September	92.5	24.6	64.4	23	☐
☐	October	84.2	26.2	58.9	22	☐
☐	November	74.4	25.8	52.2	22	☐
☐	December	65.3	24.2	46.0	21	☐

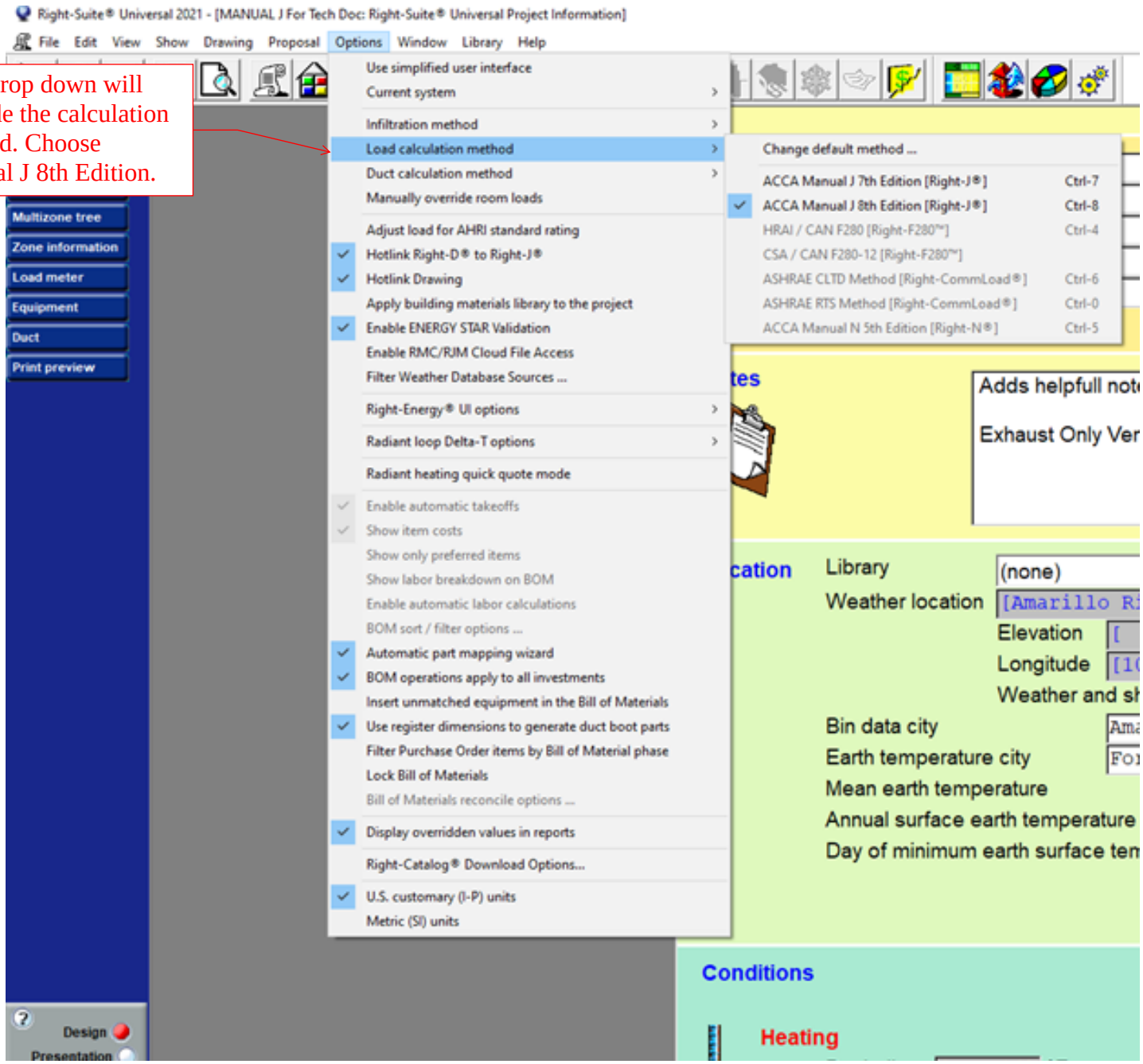
Most designers will use the simplified infiltration method. Will show later the settings.



Recommend not selecting the AHRI adjustment. This is an attempt to provide air conditioning appliance size.
There are NO softwares that have a Manual S capability. The heating and cooling appliance selection must be done by the designer.

I know sorry for the blurry picture

This drop down will provide the calculation method. Choose Manual J 8th Edition.



I know sorry for the blurry picture

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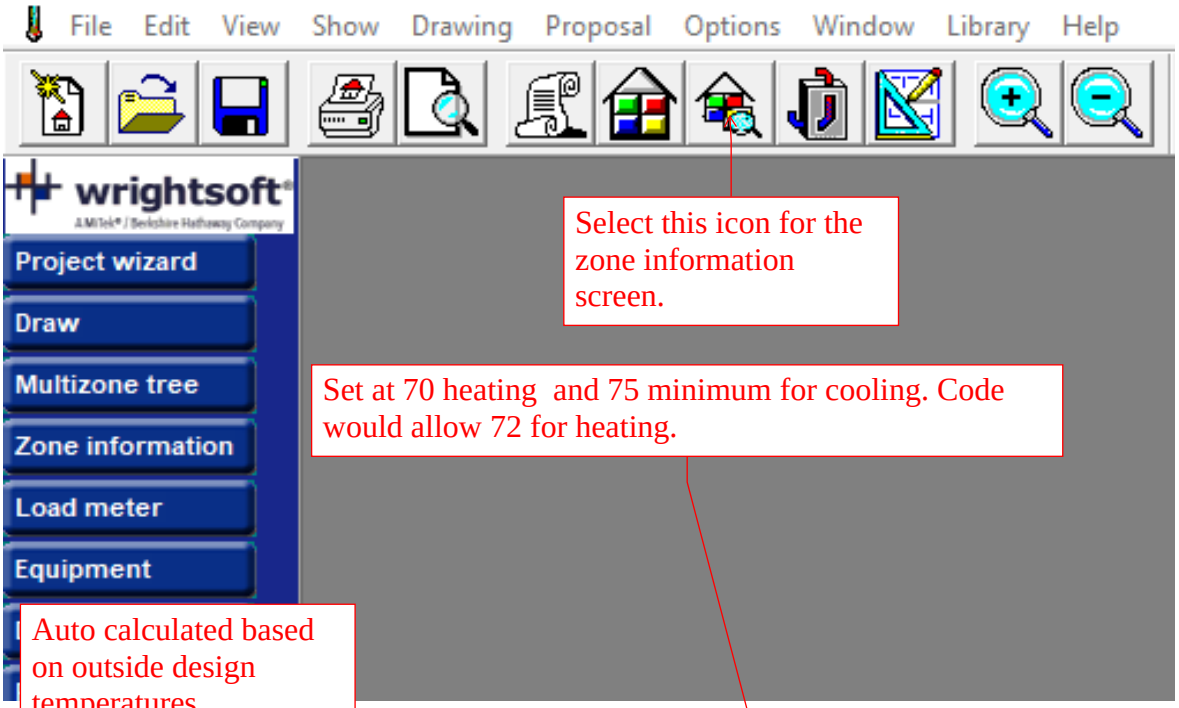


Select this icon for the zone information screen.

Set at 70 heating and 75 minimum for cooling. Code would allow 72 for heating.

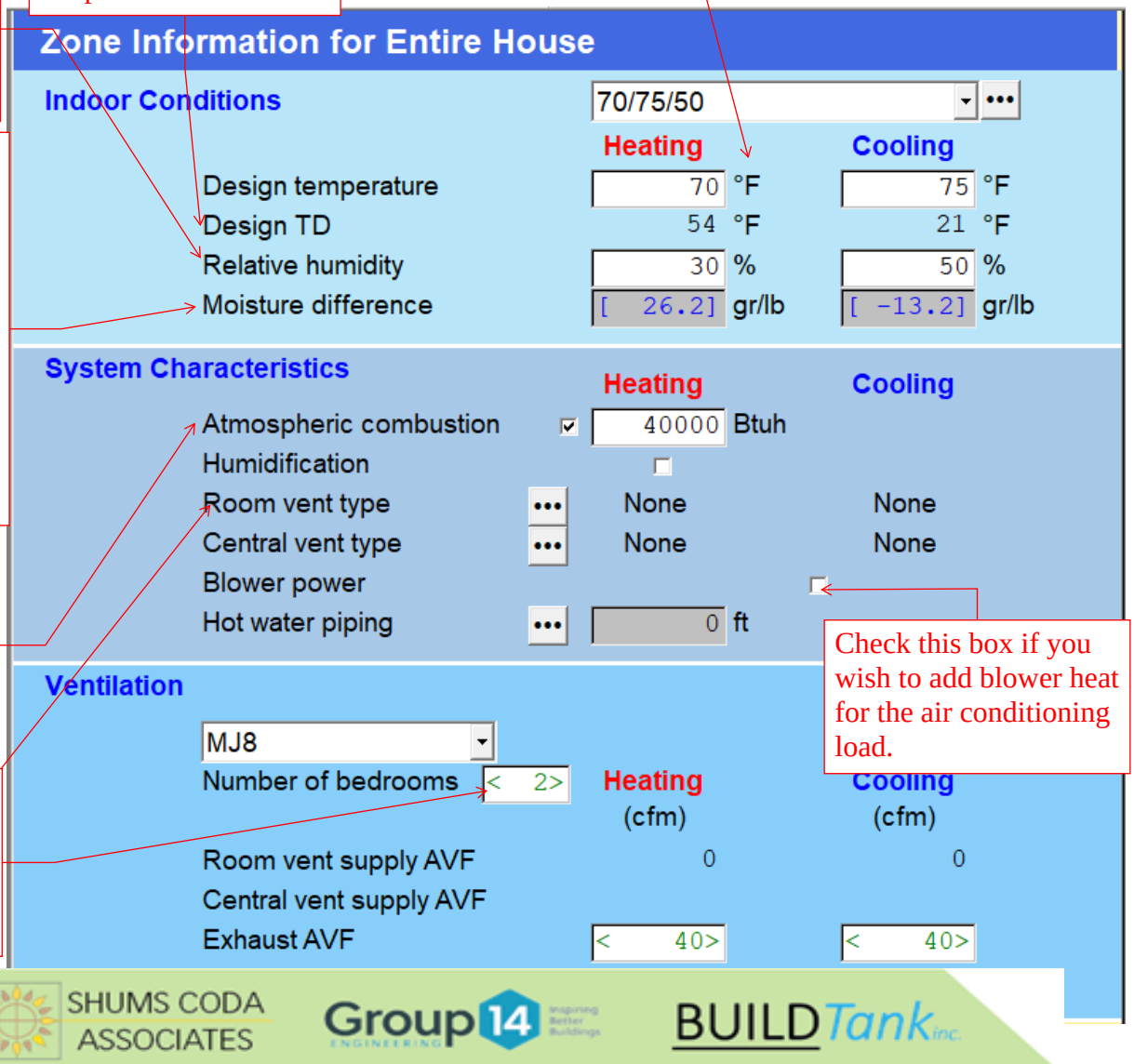
Auto calculated based on outside design temperatures.

50% RH at 75° is considered "comfort" for a residential occupancy. Keep heating design at 30% maximum.

This will be based on your location. Amarillo, Texas is reasonably dry as is Colorado. So the grains difference for cooling will be a negative number. Places Florida would be a positive number. This will determine the latent load for cooling.

If you have any combustion air. Enter the Btuh for the appliances requiring combustion air.

If you are providing individual ventilation for each bedroom, then enter the number of bedrooms here.



Check this box if you wish to add blower heat for the air conditioning load.

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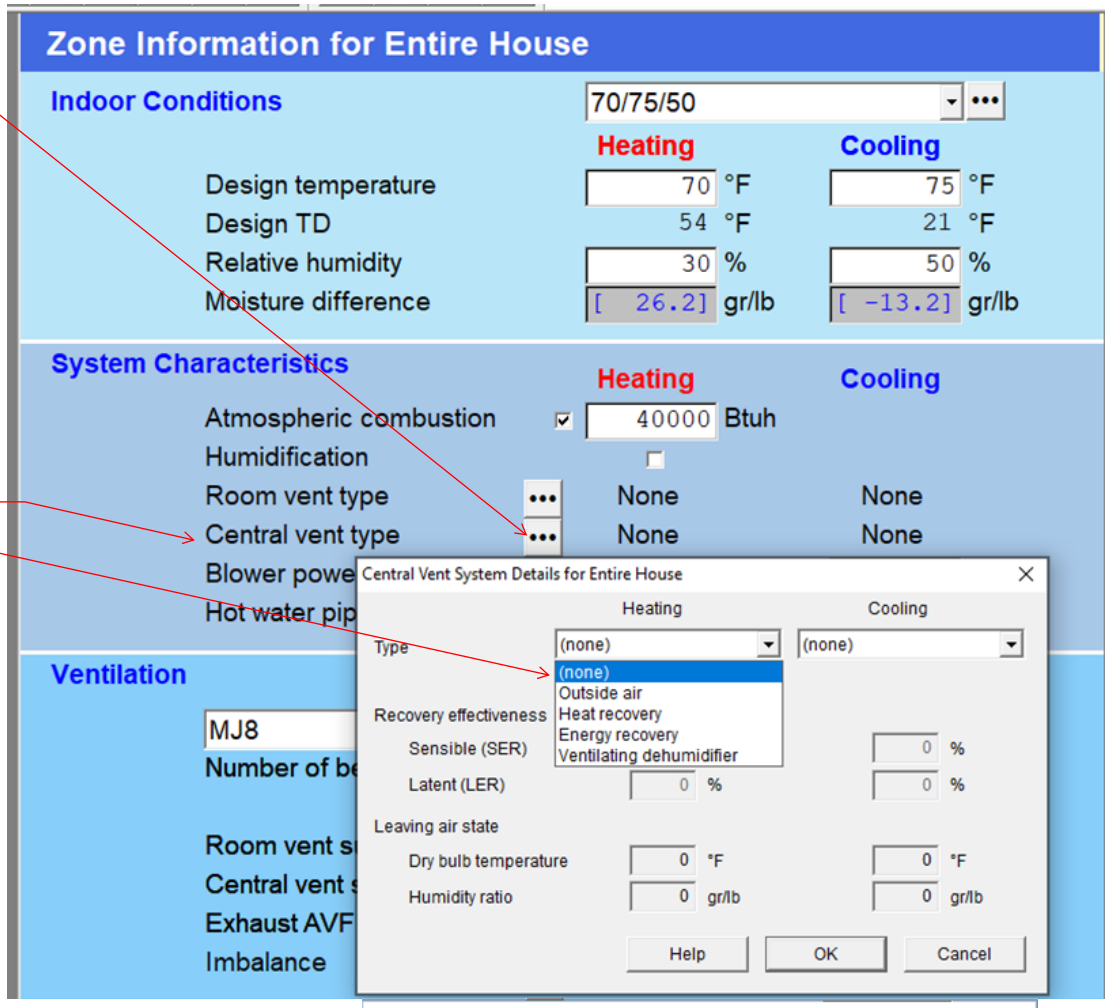
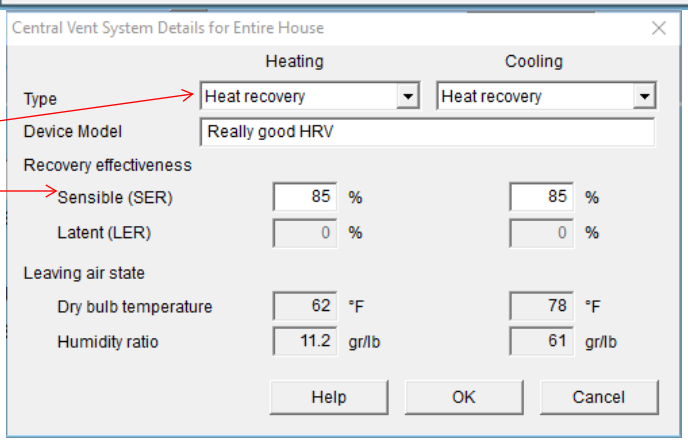
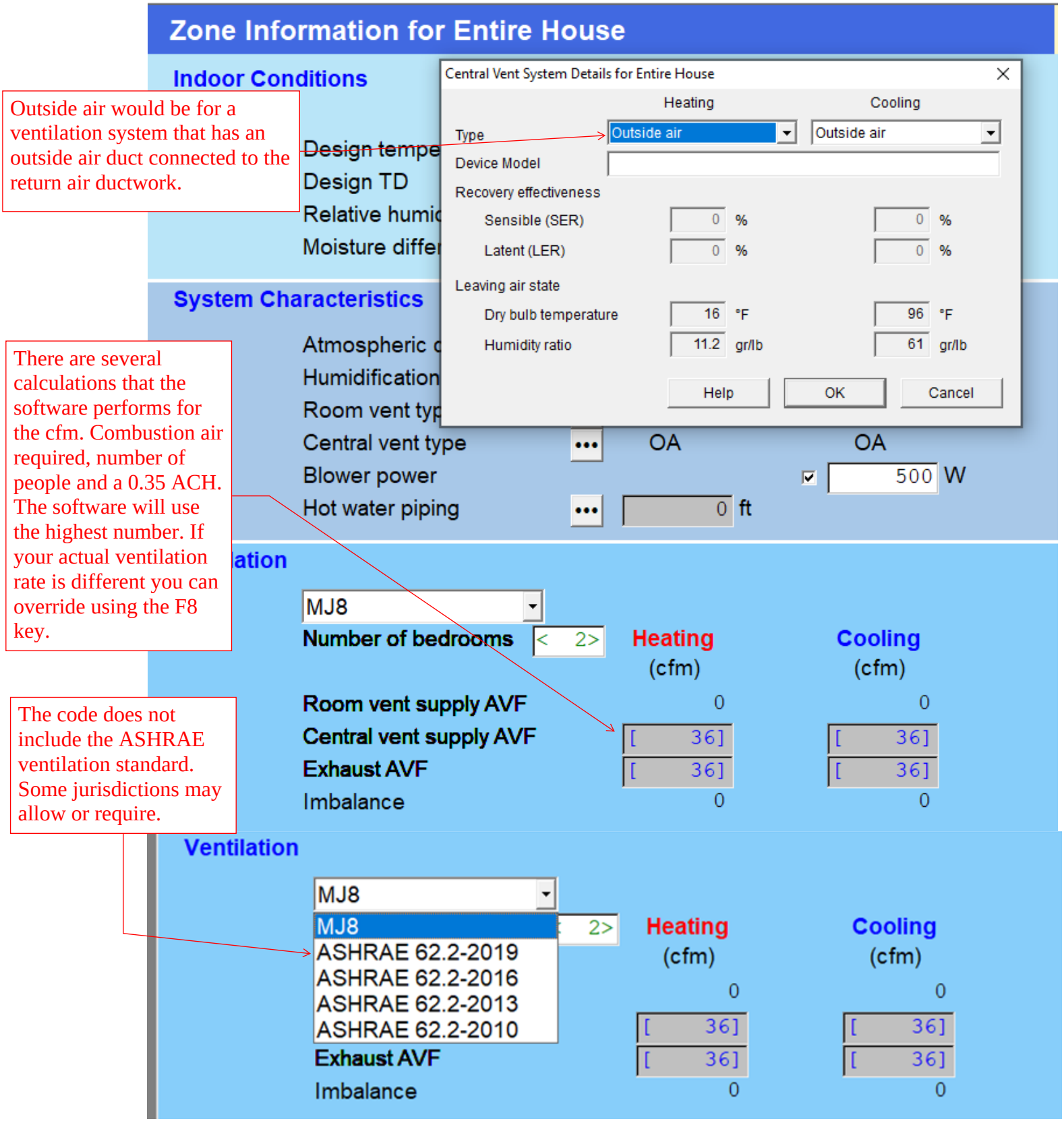
Use this icon for the pop up screens.

Several choices for ventilation. None would be if a exhaust only ventilation system is proposed.

If an Heat Recovery Ventilator or Energy Recovery Ventilator is used. Enter the efficiency found in the manufacturers data.



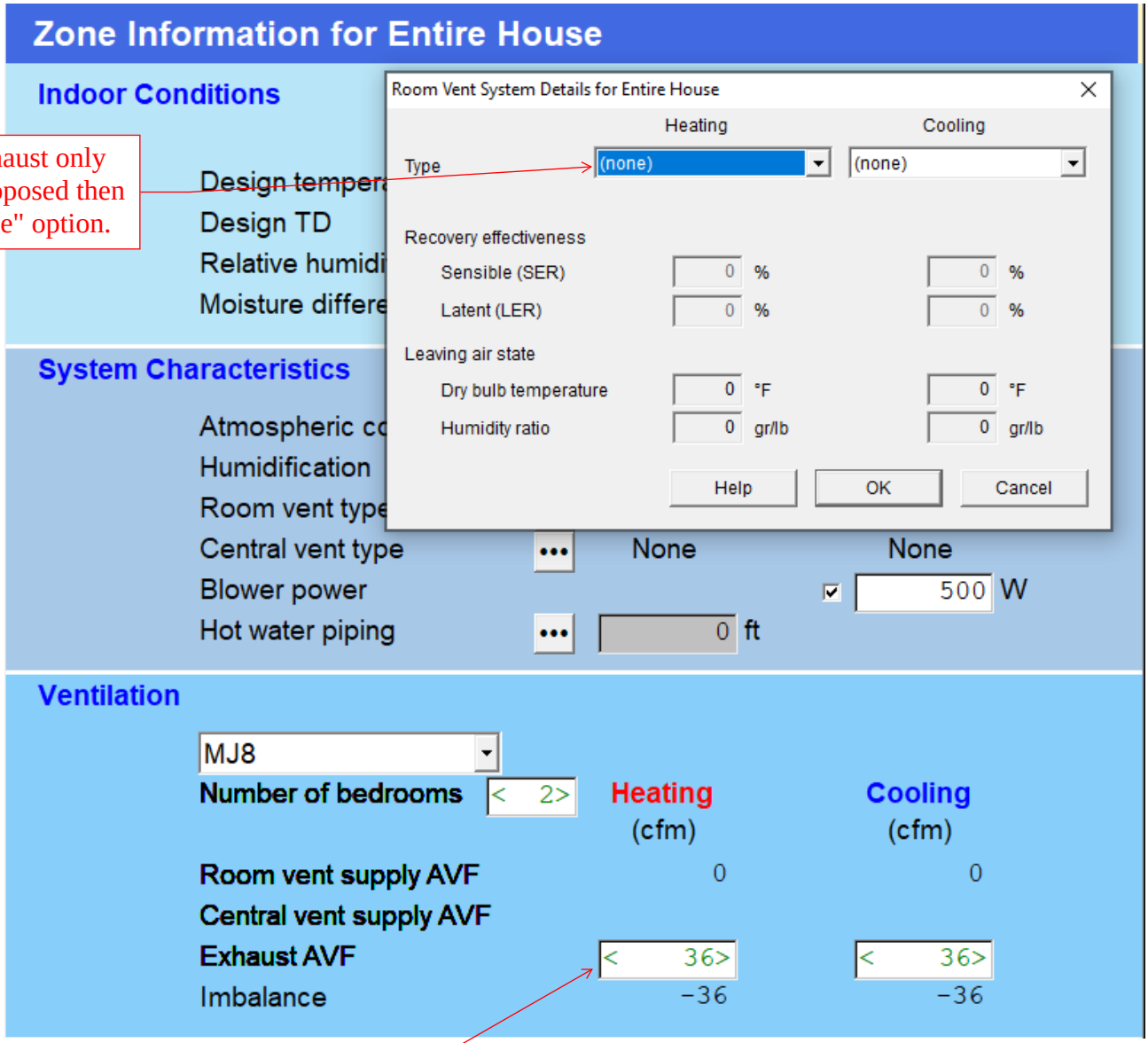




Outside air would be for a ventilation system that has an outside air duct connected to the return air ductwork.

There are several calculations that the software performs for the cfm. Combustion air required, number of people and a 0.35 ACH. The software will use the highest number. If your actual ventilation rate is different you can override using the F8 key.

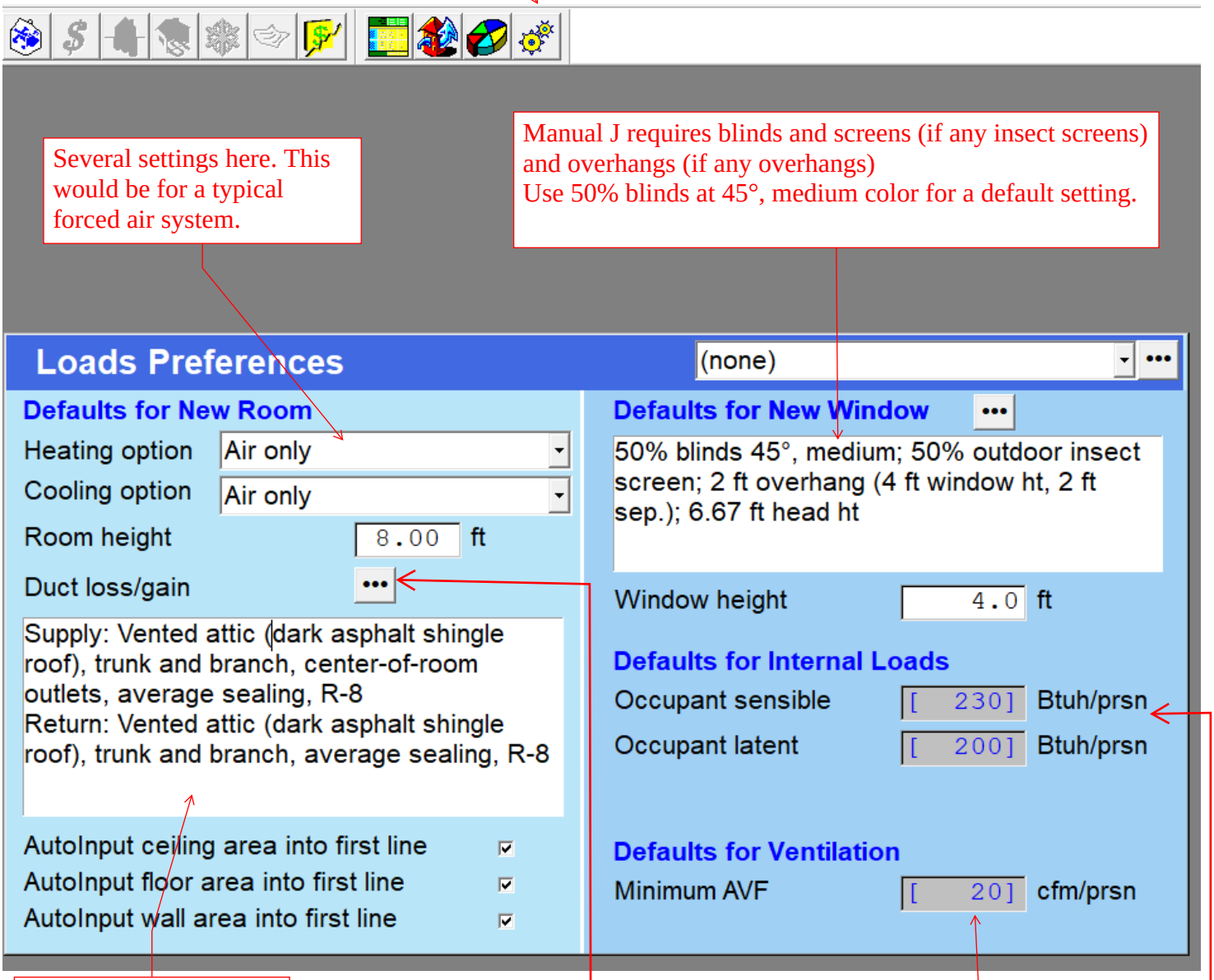
The code does not include the ASHRAE ventilation standard. Some jurisdictions may allow or require.



When an exhaust only system is proposed then use the "None" option.

Use the F8 key to enter the proposed exhaust ventilation CFM. The software will calculate as infiltration.

This icon will take you to the load preferences.



Several settings here. This would be for a typical forced air system.

Manual J requires blinds and screens (if any insect screens) and overhangs (if any overhangs)
Use 50% blinds at 45°, medium color for a default setting.

Use this icon to set the default duct loss and gain. This project is set for a vented attic with R-8 insulated ducts.

Default loads and ventilation cfm for each person. We have found no reason to change.

This icon will take you to the infiltration screen.

You have choices. Tight, Semi-Tight, Average, Semi-Loose and Loose. For new homes never use Semi-Loose or Loose. Using average as a starting place for new homes is acceptable. As your designer gets comfortable with consistent blower door test results, many will use Semi-Tight and Tight.

Simplified Method Infiltration for Entire House

Conditions

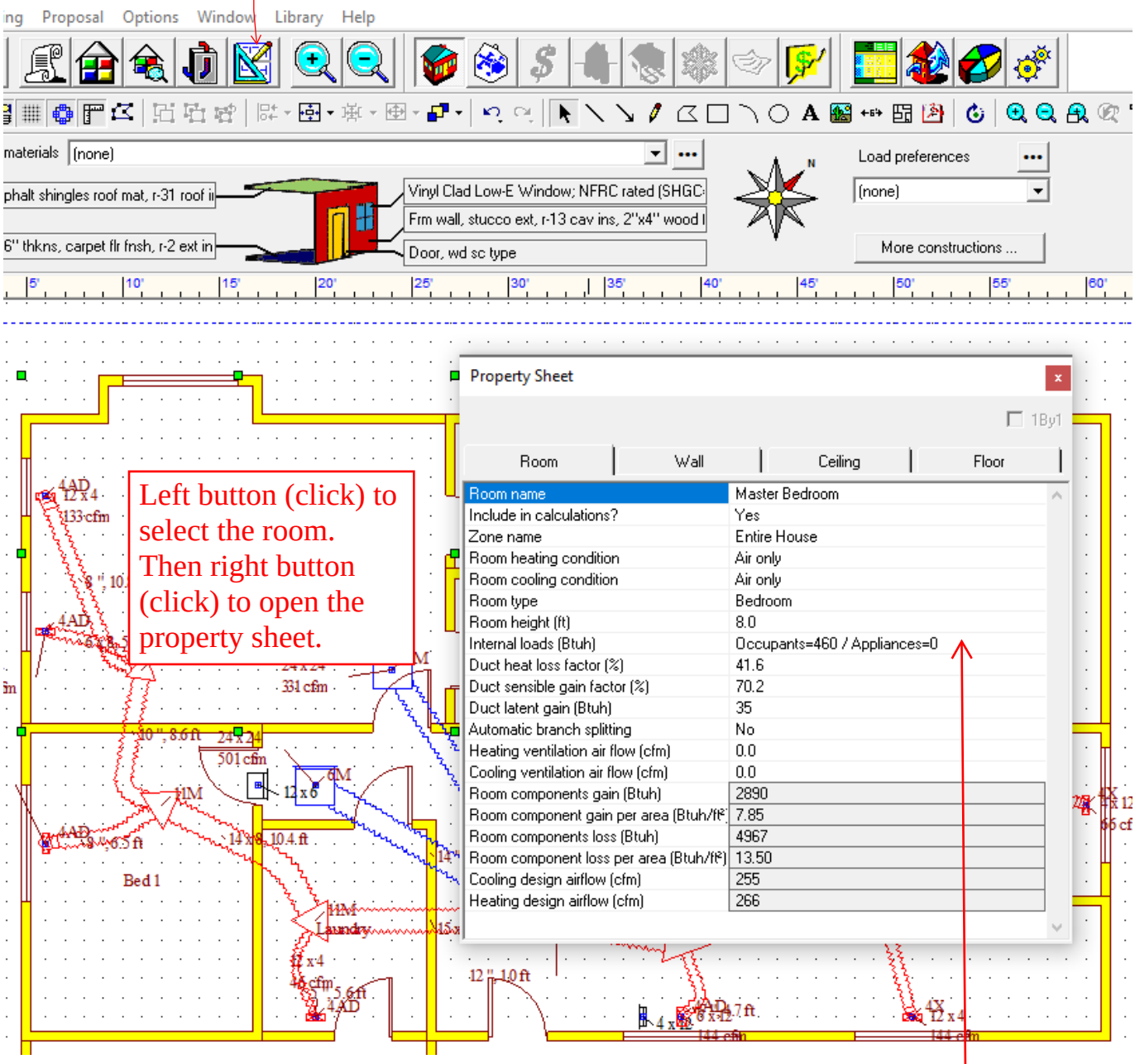
☐ Isolated zone

Construction quality	Average
Number of above grade stories	1
Exposures	○ 1 or 2 ◉ 3 or 4
Number of fireplaces	0
Fireplace quality	Average

Summary

	Heating		Cooling	
Conditioned floor area	[1808]	ft²	[1808]	ft²
Above grade volume	[14464]	ft³	[14464]	ft³
Air change rate	[0.380]	ach	[0.200]	ach
Unadjusted AVF	[92]	cfm	[48]	cfm
Vent adjustment	0	cfm	0	cfm
Net AVF	92	cfm	48	cfm

This icon will open the draw screen.



Left button (click) to select the room. Then right button (click) to open the property sheet.

Click on each area that needs to be updated. Most will fill in automatically. The number of occupants is entered here.

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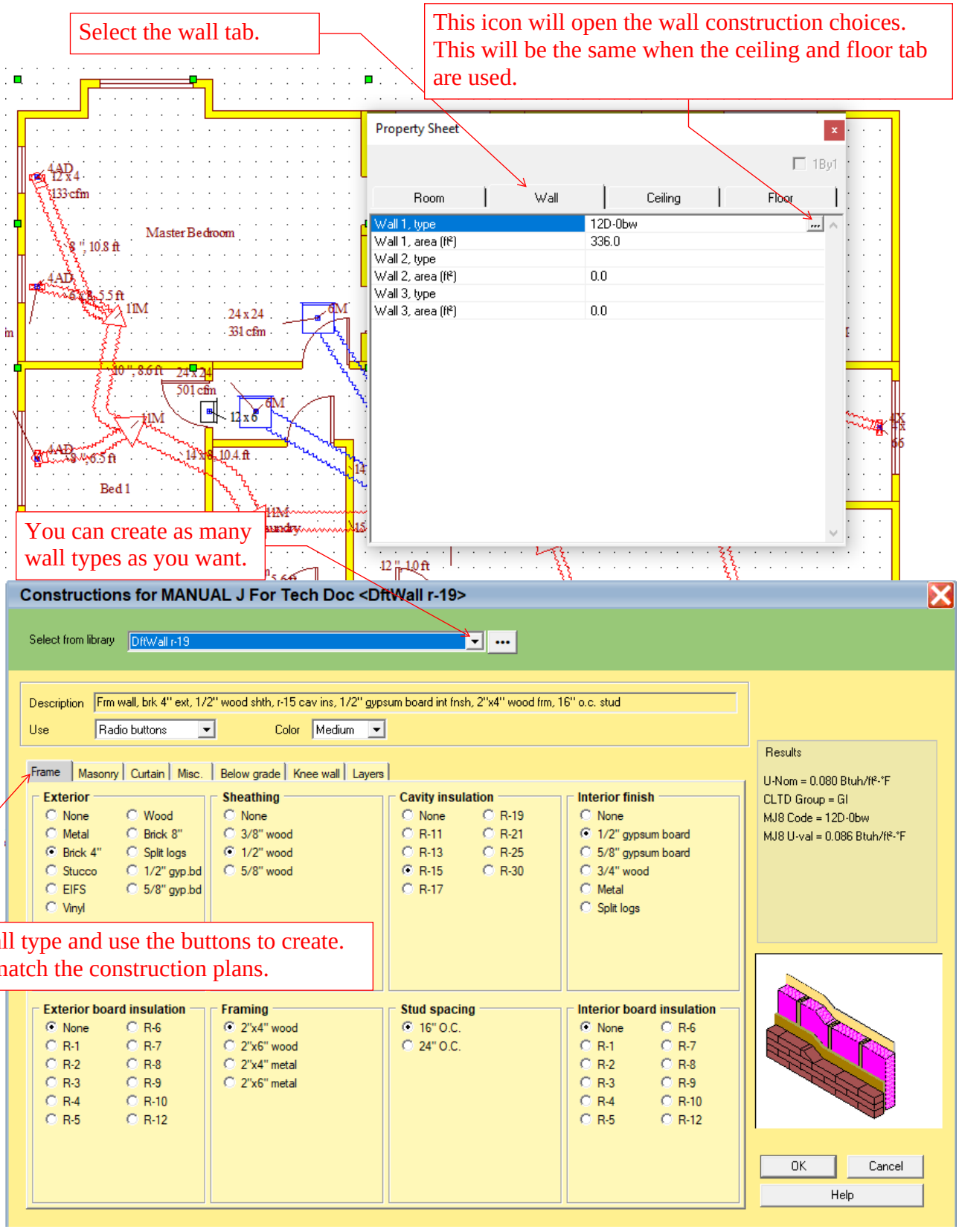

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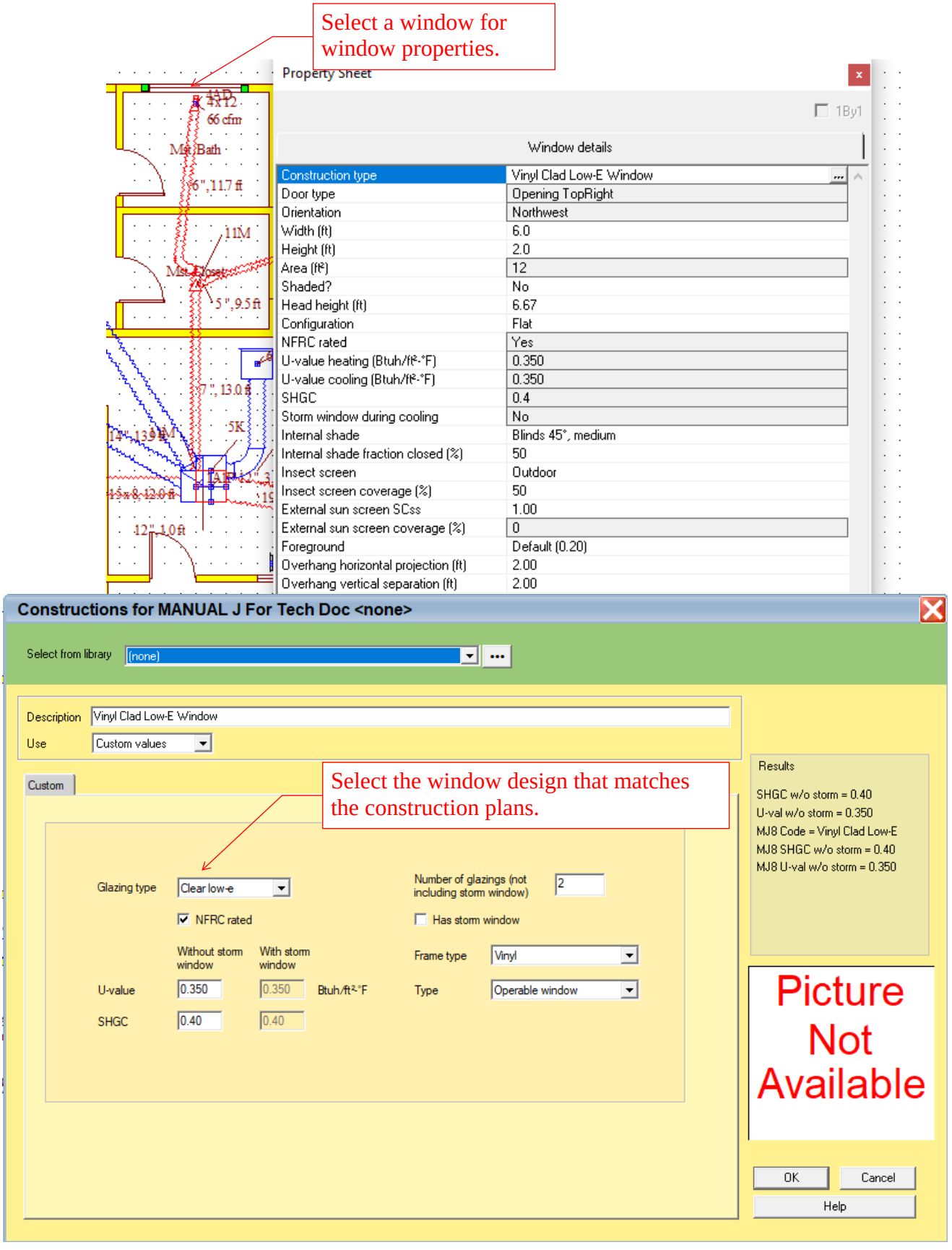
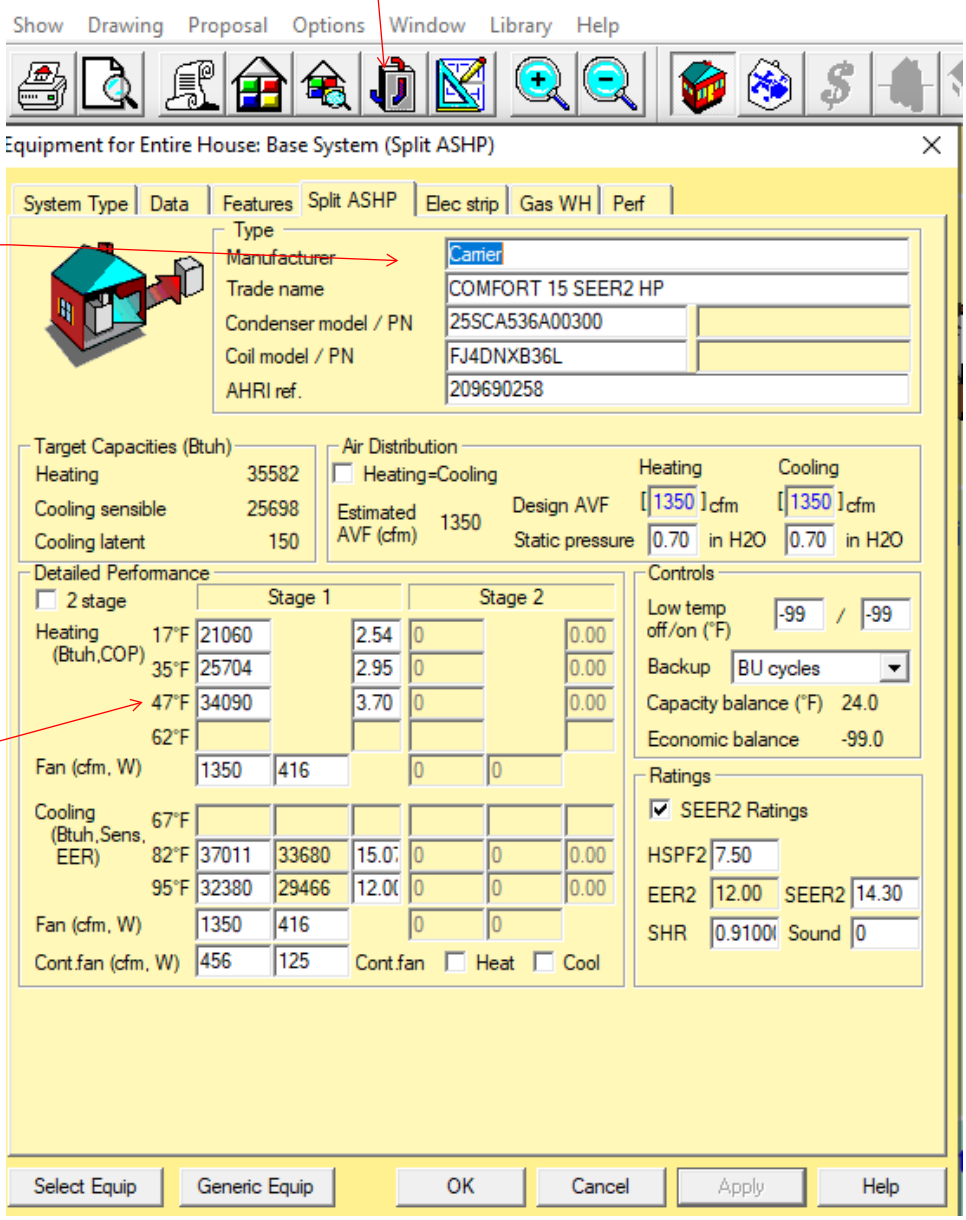


This icon will open the equipment screen.

The software will have 1,000's of choices. We used a Carrier heat pump for this example.

The software only has AHRI data. The designer must enter the the capacities at the design temperatures.



Used these values from the manufacturers expanded performance data.

DETAILED COOLING CAPACITIES# (Continued)

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)											
		75.0 (23.9)			85.0 (29.4)			95.0 (35.0)			105.0 (40.6)		
CFM	EWB	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys
		Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**
25SCA536A003 Outdoor Section With FJ4DNXB36L* Indoor Section													
1060	72.0 (22.2)	41.65	21.37	2.29	39.73	20.65	2.56	37.70	19.88	2.81	35.53	19.08	3.10
	67.0 (19.4)	37.84	26.35	2.33	36.07	25.61	2.59	34.20	24.83	2.85	32.20	24.01	3.14
	63.0 (17.2)††	35.05	25.33	2.34	33.41	24.59	2.61	31.65	23.80	2.87	29.77	22.97	3.15
	62.0 (16.7)	34.43	31.15	2.34	32.85	30.37	2.61	31.16	29.52	2.87	29.40	28.59	3.15
	57.0 (13.9)	33.21	33.21	2.34	31.95	31.95	2.61	30.59	30.59	2.87	29.12	29.12	3.15
1200	72.0 (22.2)	42.35	22.32	2.33	40.36	21.58	2.59	38.26	20.80	2.84	36.01	19.99	3.13
	67.0 (19.4)	38.52	27.88	2.36	36.73	27.17	2.63	34.73	26.33	2.89	32.65	25.53	3.17
	63.0 (17.2)††	35.69	26.76	2.38	33.97	25.98	2.65	32.15	25.22	2.91	30.21	24.37	3.19
	62.0 (16.7)	35.17	33.16	2.38	33.55	32.30	2.65	31.96	31.04	2.91	30.19	30.19	3.19
	57.0 (13.9)	34.46	34.46	2.38	33.13	33.13	2.65	31.69	31.69	2.91	30.14	30.14	3.19
1350	72.0 (22.2)	42.92	23.27	2.36	40.87	22.52	2.62	38.70	21.74	2.88	36.39	20.92	3.17
	67.0 (19.4)	39.04	29.46	2.41	37.15	28.70	2.67	35.15	27.89	2.93	33.03	27.01	3.22
	63.0 (17.2)††	36.22	28.22	2.42	34.43	27.45	2.69	32.38	26.55	2.95	30.58	25.76	3.23
	62.0 (16.7)	35.86	35.05	2.42	34.24	34.24	2.69	32.73	32.73	2.95	31.07	31.07	3.23
	57.0 (13.9)	35.60	35.60	2.43	34.18	34.18	2.69	32.67	32.67	2.95	31.03	31.03	3.23
25SCA512A003 Outdoor Section With FJ4DNXC42L* Indoor Section													

HEAT PUMP HEATING PERFORMANCE

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																	
		-3.0 (-19.4)			7.0 (-13.9)			17.0 (-8.3)			27.0 (-2.8)			37.0 (2.8)			47.0 (8.3)		
EDB	CFM	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. KW†
		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*	
25SCA536A003 Outdoor Section With FJ4DNXB36L* Indoor Section																			
65.0 (18.3)	1060	13.57	12.48	2.18	17.01	15.63	2.19	21.01	19.16	2.26	25.84	22.95	2.39	30.04	27.34	2.49	34.58	34.58	2.60
	1200	13.82	12.71	2.20	17.30	15.90	2.20	21.35	19.47	2.27	26.14	23.22	2.38	30.41	27.67	2.48	35.06	35.06	2.58
	1350	14.06	12.93	2.23	17.57	16.14	2.22	21.65	19.74	2.28	26.43	23.48	2.39	30.76	27.99	2.48	35.49	35.49	2.57
70.0 (21.1)	1060	12.97	11.93	2.28	16.42	15.09	2.29	20.40	18.60	2.35	25.37	22.54	2.48	29.53	26.87	2.59	34.00	34.00	2.69
	1200	13.24	12.18	2.31	16.72	15.36	2.31	20.74	18.91	2.37	25.71	22.84	2.48	29.91	27.22	2.58	34.47	34.47	2.68
	1350	13.47	12.39	2.34	16.99	15.61	2.33	21.06	19.20	2.39	26.01	23.10	2.49	30.27	27.55	2.58	34.90	34.90	2.67
75.0 (23.9)	1060	12.31	11.32	2.36	15.76	14.48	2.37	19.74	18.00	2.44	24.24	21.53	2.55	29.02	26.41	2.68	33.42	33.42	2.79
	1200	12.56	11.55	2.39	16.05	14.75	2.39	20.08	18.31	2.45	24.77	22.00	2.56	29.40	26.75	2.67	33.88	33.88	2.78
	1350	12.81	11.78	2.43	16.34	15.01	2.42	20.40	18.60	2.47	25.51	22.66	2.59	29.74	27.06	2.68	34.30	34.30	2.77

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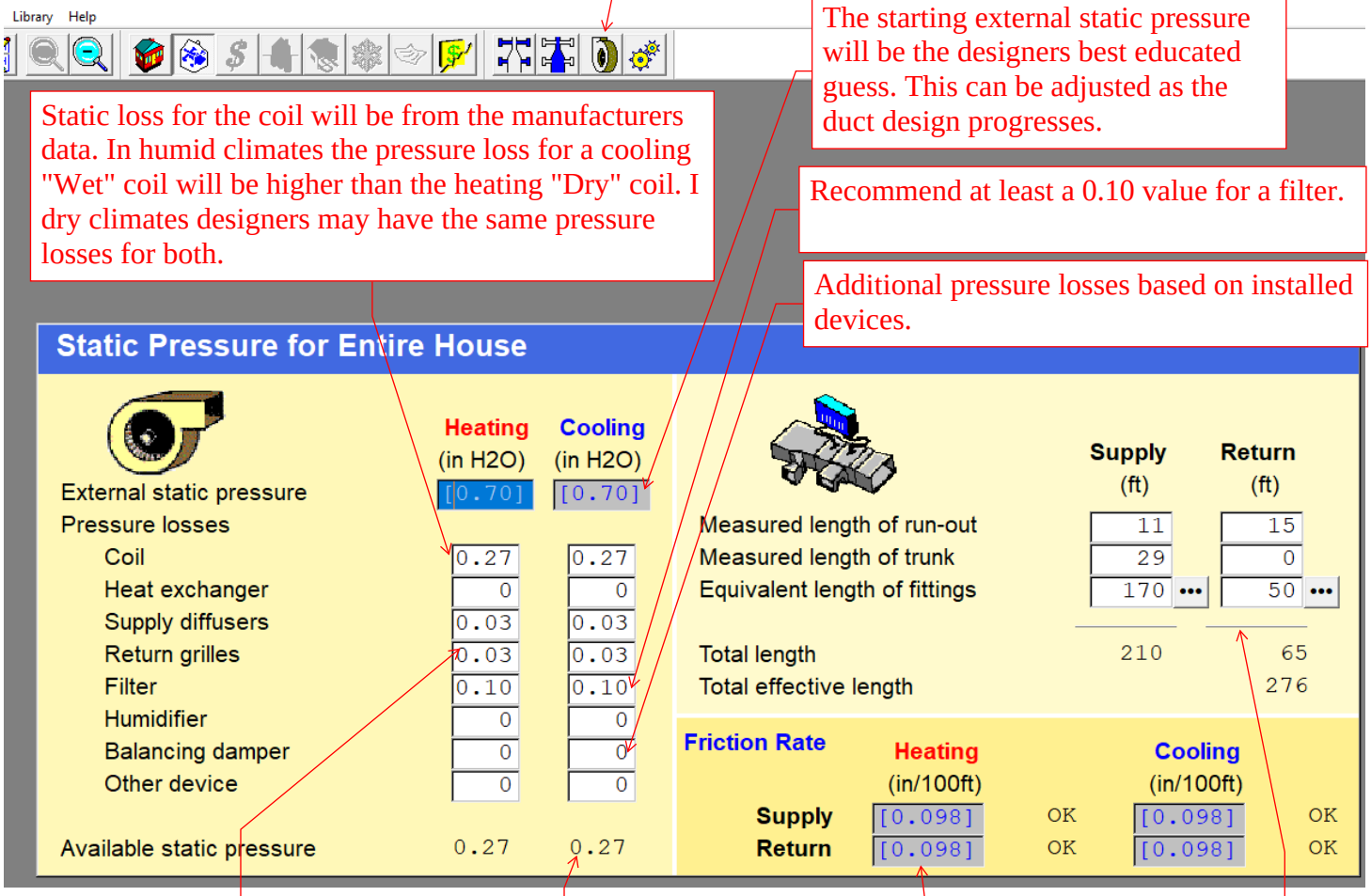
This icon will open the blower information screen.

The starting external static pressure will be the designers best educated guess. This can be adjusted as the duct design progresses.

Static loss for the coil will be from the manufacturers data. In humid climates the pressure loss for a cooling "Wet" coil will be higher than the heating "Dry" coil. I dry climates designers may have the same pressure losses for both.

Recommend at least a 0.10 value for a filter.

Additional pressure losses based on installed devices.



Manual T can be used for the pressure loss for registers and grilles. A reasonable value of 0.03 can be used.

This is the available static pressure for the duct design.

The lengths will be calculated from the duct design.

The friction rate is the relationship between the blower and the ductwork. The design friction rate must be between a 0.06 and 0.18.
Available static pressure * 100 / Total equivalent length = Friction Rate

0.27*100/276 = 0.098

This icon will open the duct preferences information screen.

Duct Preferences for Entire House

Flex/Flex Junc Boxes

Duct / Register Preferences ☐ Separate per floor

	Supply Branch	Supply Trunk		Return Branch	Return Trunk	
Duct material	VinlFlx	VinlFlx		VinlFlx	VinlFlx	
Duct height	0 Rect	0 Rect	in	0 Rect	0 Rect	in
Maximum velocity	600	600	fpm	600	600	fpm
Minimum velocity	200	200	fpm	200	200	fpm
Minimum diameter	4	4	in	4	4	in
Round ducts sizes	Std roun	Std roun		Std roun	Std roun	
Rect/oval duct sizes	(none)	(none)		(none)	(none)	
Insulation	Low or Non	Low or Non		Low or Non	Low or Non	
Register shape/size	Round 12.0		in	Rect 24.0 x 12.0		in
Register type/material	Ceiling diffuser three	Metal		Ceiling diffuser four	Metal	
Autosize registers	☑ Supply register sizes ...			☑ Return register sizes ...		
Face Vel / Free area (%)	400	80		400	80	

Duct layout	User defined	Duct size	Round to nearest inch
Auto regs placement	None	Automatic trunk reduction	☑
Max SB heating	8000 Btuh	Use variable friction rate	☑
Max SB cooling	4000 Btuh	Bi-level zoning	☐
Auto flex end	None 3.0 ft		

The designer has many choices for duct design. This has been st up for a flex duct system that will be located in the attic.

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This icon will open the draw screen.