Project Summary
Entire House
Yates Heating

Job:
Date: Mar 05, 2020
By:

OH 45385

Project Information

For: Mcintire [redacted] Xenia, OH 45385

Notes: Frame Walls 2x6 R-23 Vinyl Siding, Ceiling R-60, Half Basement R-12, Crawlspace condition

Design Information

Weather: Dayton/James M Cox, OH, US

Winter Design Conditions

Outside db	1	°F
Inside db	74	°F
Design TD	73	°F

Summer Design Conditions

Outside db	89	°F
Inside db	70	°F
Design TD	19	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	43	gr/lb

Heating Summary

Structure	28756	Btuh
Ducts	0	Btuh
Central vent (SER=50% 133 cfm) Energy recovery	5147	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	33904	Btuh

Sensible Cooling Equipment Load Sizing

Structure	13042	Btuh
Ducts	0	Btuh
Central vent (SER=50% 133 cfm) Energy recovery	1340	Btuh
Blower	0	Btuh
Use manufacturer's data	n	
Rate/swing multiplier	0.94	
Equipment sensible load	13519	Btuh

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

	Heating	Cooling
Area (ft²)	3182	3182
Volume (ft³)	18263	18263
Air changes/hour	0.19	0.10
Equiv. AVF (cfm)	58	30

Latent Cooling Equipment Load Sizing

Structure	1868	Btuh
Ducts	0	Btuh
Central vent (LER=50% 133 cfm) Energy recovery	1896	Btuh
Equipment latent load	3764	Btuh
Equipment total load	17283	Btuh
Req. total capacity at 0.70 SHR	1.6	ton

Heating Equipment Summary

Make		
Trade		
Model		
AHRI ref		
Efficiency	95	AFUE
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	820	cfm
Air flow factor	0.029	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

Cooling Equipment Summary

Make		
Trade		
Cond		
Coil		
AHRI ref		
Efficiency	0	SEER
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	820	cfm
Air flow factor	0.063	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.79	

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

Load Short Form
Entire House
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Design Information

	Htg	Clg
Outside db (°F)	1	89
Inside db (°F)	74	70
Design TD (°F)	73	19
Daily range	-	M
Inside humidity (%)	50	50
Moisture difference (gr/lb)	60	43

Infiltration

Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

HEATING EQUIPMENT

Make		
Trade		
Model		
AHRI ref		
Efficiency	95 AFUE	
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	820	cfm
Air flow factor	0.029	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

COOLING EQUIPMENT

Make		
Trade		
Cond		
Coil		
AHRI ref		
Efficiency	0 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	820	cfm
Air flow factor	0.063	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.79	

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
KITCHEN	185	2222	2266	63	142
BEDROOM 2	175	2626	1603	75	101
BEDROOM 1	162	1359	1012	39	64
MASTER BDRM	212	4029	2065	115	130
MASTER BATH	103	1075	331	31	21
BATH	41	83	59	2	4
LAUNDRY	52	83	59	2	4
HALL	91	0	0	0	0
LIVING ROOM	406	4622	1938	132	122
STEPS	34	0	0	0	0
PANTRY	22	268	77	8	5
DINING	140	4018	2606	115	164
OFFICE	100	829	364	24	23
UTILTY	96	185	0	5	0

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FIN BASEMENT	518	3267	310	93	20
UP	36	0	0	0	0
CRAWL 2	405	2045	183	58	11
CRAWL 1	405	2045	169	58	11
Entire House	3182	28756	13042	820	820
Other equip loads		5147	1340		
Equip. @ 0.94 RSM			13519		
Latent cooling			3764		
TOTALS	3182	33904	17283	820	820

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Building Analysis
Entire House
Yates Heating

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OH 45385

Project Information

For: Mcintire [redacted] Xenia, OH 45385

Design Conditions

Location:
Dayton/James M Cox, OH, US
Elevation: 1004 ft
Latitude: 40 °N

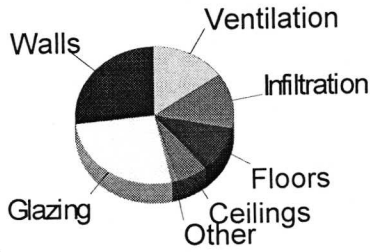
Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	1	89
Daily range (°F)	-	18 (M)
Wet bulb (°F)	-	73
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	74	70
Design TD (°F)	73	19
Relative humidity (%)	50	50
Moisture difference (gr/lb)	60.4	43.5

Infiltration:	
Method	Simplified
Construction quality	Semi-tight
Fireplaces	0

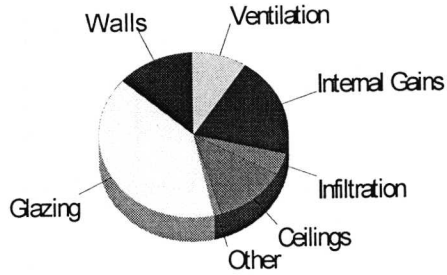
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.6	9038	26.7
Glazing	34.8	9023	26.6
Doors	21.2	445	1.3
Ceilings	1.3	2146	6.3
Floors	2.2	3627	10.7
Infiltration	2.5	4478	13.2
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		5147	15.2
Adjustments		0	
Total		**33904**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.0	1912	13.3
Glazing	22.2	5753	40.0
Doors	9.1	191	1.3
Ceilings	1.1	1743	12.1
Floors	0	0	0
Infiltration	0.3	613	4.3
Ducts		0	0
Ventilation		1340	9.3
Internal gains		2830	19.7
Blower		0	0
Adjustments		0	
Total		**14382**	**100.0**



Latent Cooling Load = 3764 Btuh
Overall U-value = 0.059 Btuh/ft²-°F

Data entries checked.

Component Constructions
Entire House
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Infiltration:

Method	Simplified
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Fireplaces	0

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
12F-0sw: Frm wall, vnl ext, 5/8" wood shth, r-21 cav ins, 1/2" gypsum board int fnsh, 2"x6" wood frm, 16" o.c. stud	n	274	0.065	21.0	4.74	1299	1.31	359
	ne	21	0.065	21.0	4.74	98	1.31	27
	e	228	0.065	21.0	4.74	1082	1.31	299
	s	351	0.065	21.0	4.74	1665	1.31	460
	w	219	0.065	21.0	4.74	1038	1.31	286
	nw	21	0.065	21.0	4.74	98	1.31	27
	all	1113	0.065	21.0	4.74	5279	1.31	1457
15B-15sfc-2: Bg wall, light dry soil, concrete wall, r-15 ins, 8" thk	n	108	0.045	15.0	3.92	424	0.57	62
	e	120	0.045	15.0	3.92	471	0.69	83
	s	108	0.045	15.0	3.92	424	0.57	62
	w	120	0.045	15.0	3.92	471	0.57	68
	all	456	0.045	15.0	3.92	1789	0.60	274
15B15-0wc-6: Bg wall, light dry soil, 2"x4" wood int frm, concrete wall, r-15 cav ins, 8" thk, 1/2" gypsum board int fnsh	n	183	0.061	15.0	5.08	931	0.43	79
	s	200	0.061	15.0	5.19	1038	0.51	102
	all	383	0.061	15.0	5.14	1970	0.47	181
Partitions								
(none)								
Windows								
10D-v: 2 glazing, clr low-e outr, argon gas, insulated vinyl frm mat, clr innr, 1/4" gap, 1/4" thk; 6.67 ft head ht	n	80	0.490	0	35.8	2862	10.8	868
	n	18	0.470	0	34.3	626	14.9	272
	n	17	0.470	0	34.3	572	14.9	249
	ne	12	0.470	0	34.3	400	28.2	329
	e	28	0.470	0	34.3	961	38.2	1069
	s	56	0.470	0	34.3	1921	21.6	1212
	w	37	0.470	0	34.3	1281	38.2	1425
	nw	12	0.470	0	34.3	400	28.2	329
	all	260	0.470	0	34.8	9023	22.2	5753
Doors								
11P0: Door, mtl pur core type	s	21	0.290	10.5	21.2	445	9.09	191

Ceilings								
16A-56al: Attic ceiling, asphalt shingles roof mat, r-56 ceil ins, 1/2" gypsum board int fnsh		363	0.018	56.0	1.31	477	1.35	489
		1270	0.018	56.0	1.31	1669	0.99	1254
	all	1633	0.018	56.0	1.31	2146	1.07	1743
Floors								
21A-20t: Bg floor, heavy dry or light damp soil, 2' depth		810	0.027	0	1.97	1597	0	0
21A-24t: Bg floor, heavy dry or light damp soil, 5' depth		750	0.025	0	1.83	1369	0	0
22A-tpm: Bg floor, heavy dry or light damp soil, on grade depth		8	1.180	0	86.1	662	0	0

AED Assessment
Entire House
Yates Heating

Job:
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By:

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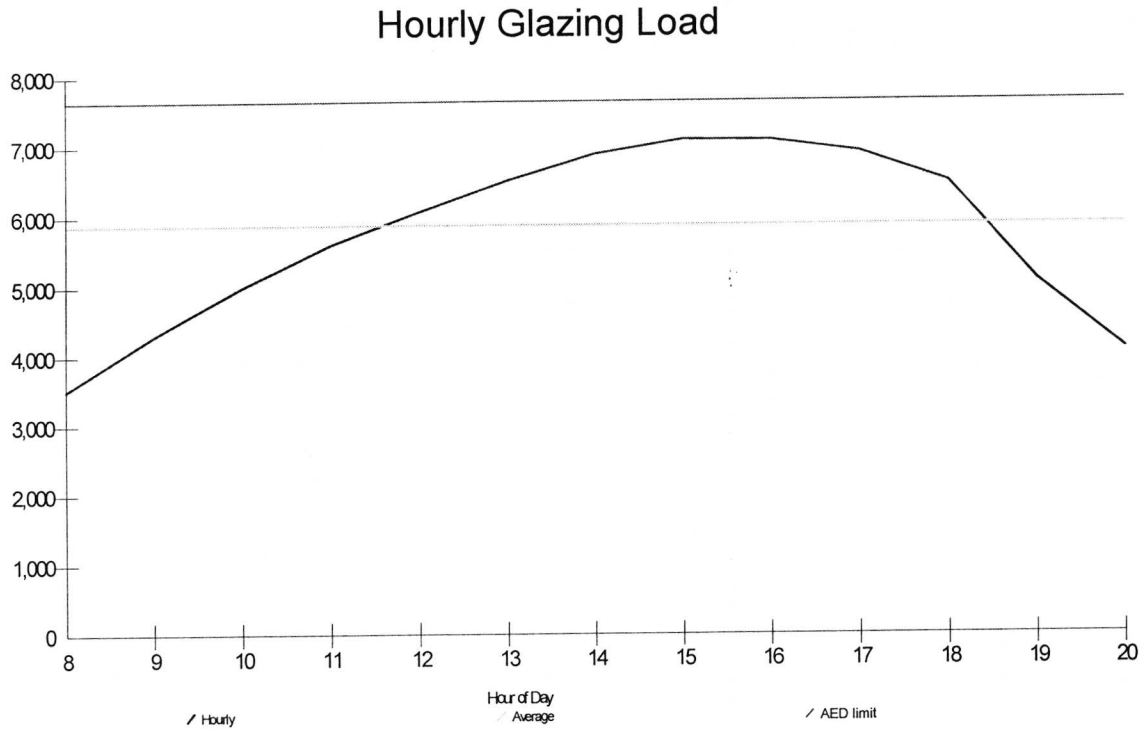
Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 20.6%.

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

AED excursion: 0 Btuh