

ILOPANGO/SAN SALVADOR ES

Latitude = 13.70 N

WMO No. 786630

Longitude = 89.12 W

Elevation = 2038 feet

Period of Record = 1973 to 1996

Average Pressure = 27.82 inches Hg

Design Criteria Data

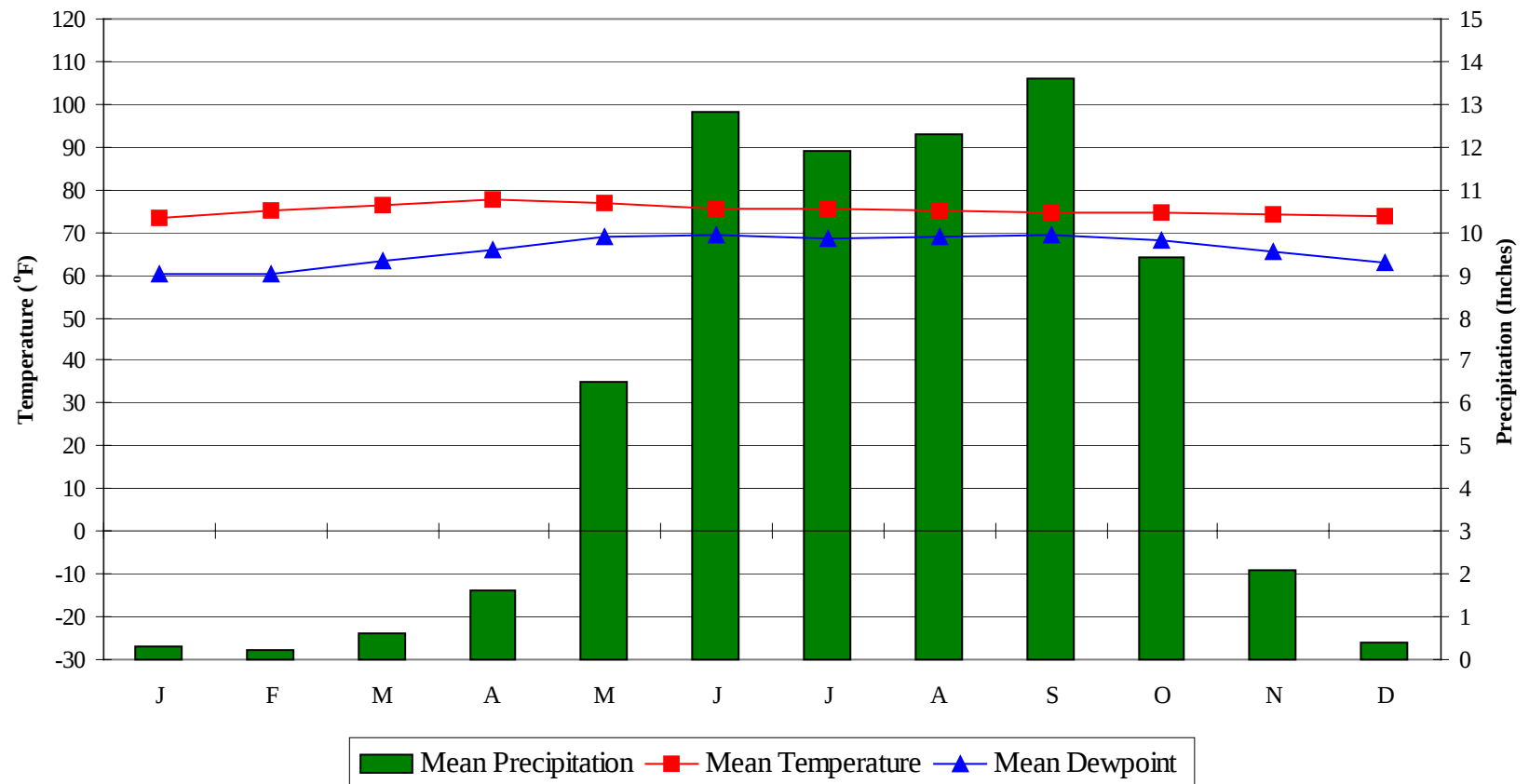
	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	93	70	81	9.8	N
0.4% Occurrence	90	71	90	8.3	N
1.0% Occurrence	89	71	95	8.0	S
2.0% Occurrence	88	71	97	8.0	S
Mean Daily Range	15	-	-	-	-
97.5% Occurrence	64	61	80	6.5	N
99.0% Occurrence	62	59	74	7.5	N
99.6% Occurrence	61	57	71	8.2	N
Median of Extreme Lows	59	56	66	7.9	N
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	81	86	161	7.8	S
0.4% Occurrence	78	84	141	7.0	S
1.0% Occurrence	76	83	131	7.0	S
2.0% Occurrence	76	83	131	7.0	S
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	162	83	0.99	8.3	S
0.4% Occurrence	143	82	0.88	6.9	S
1.0% Occurrence	134	80	0.83	6.4	S
2.0% Occurrence	134	80	0.83	6.4	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		6	2439	1671	6442

Other Site Data

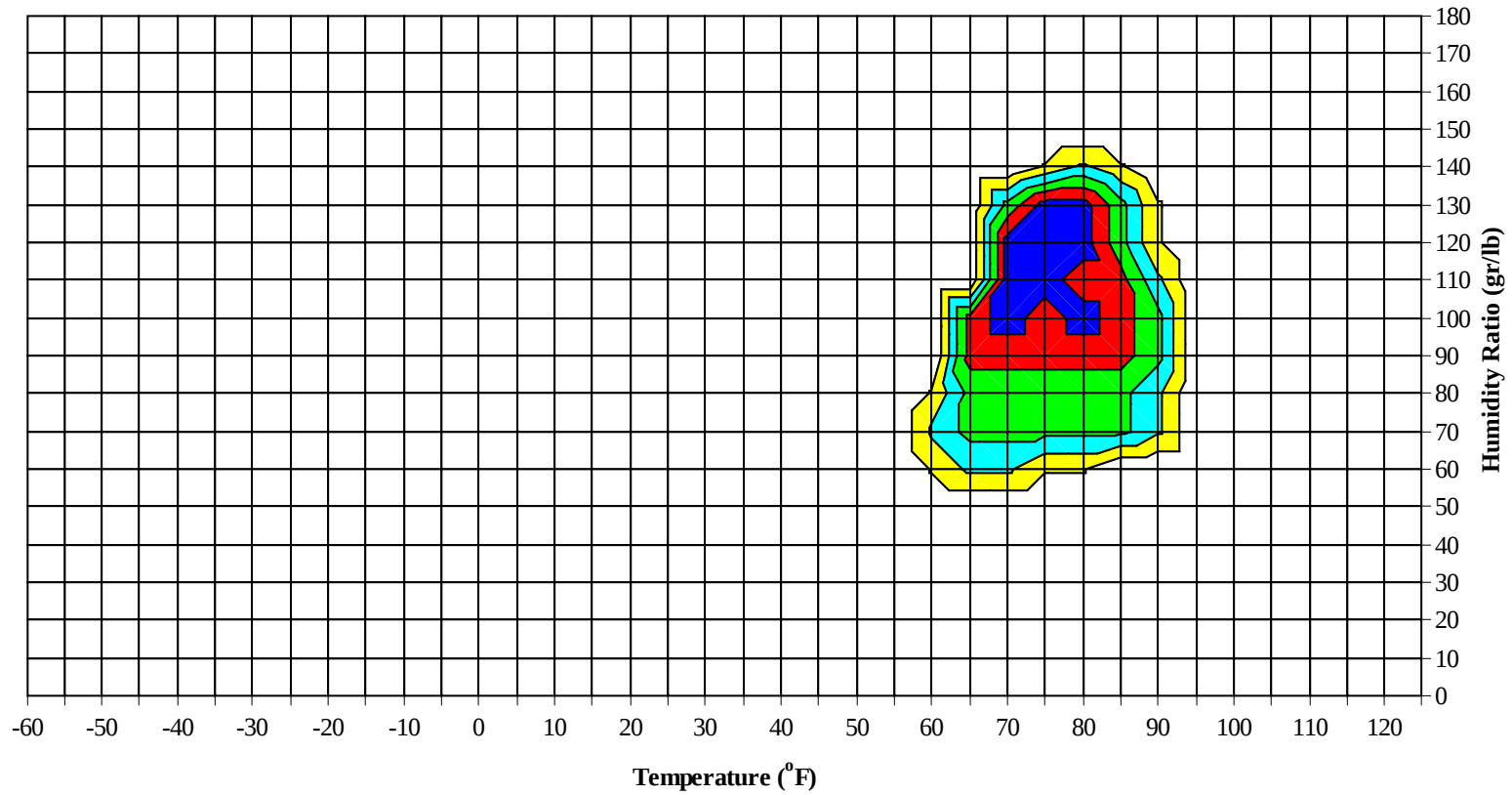
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	3.8 + 1.5
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
77.7	N/A	N/A	0

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

Average Annual Climate

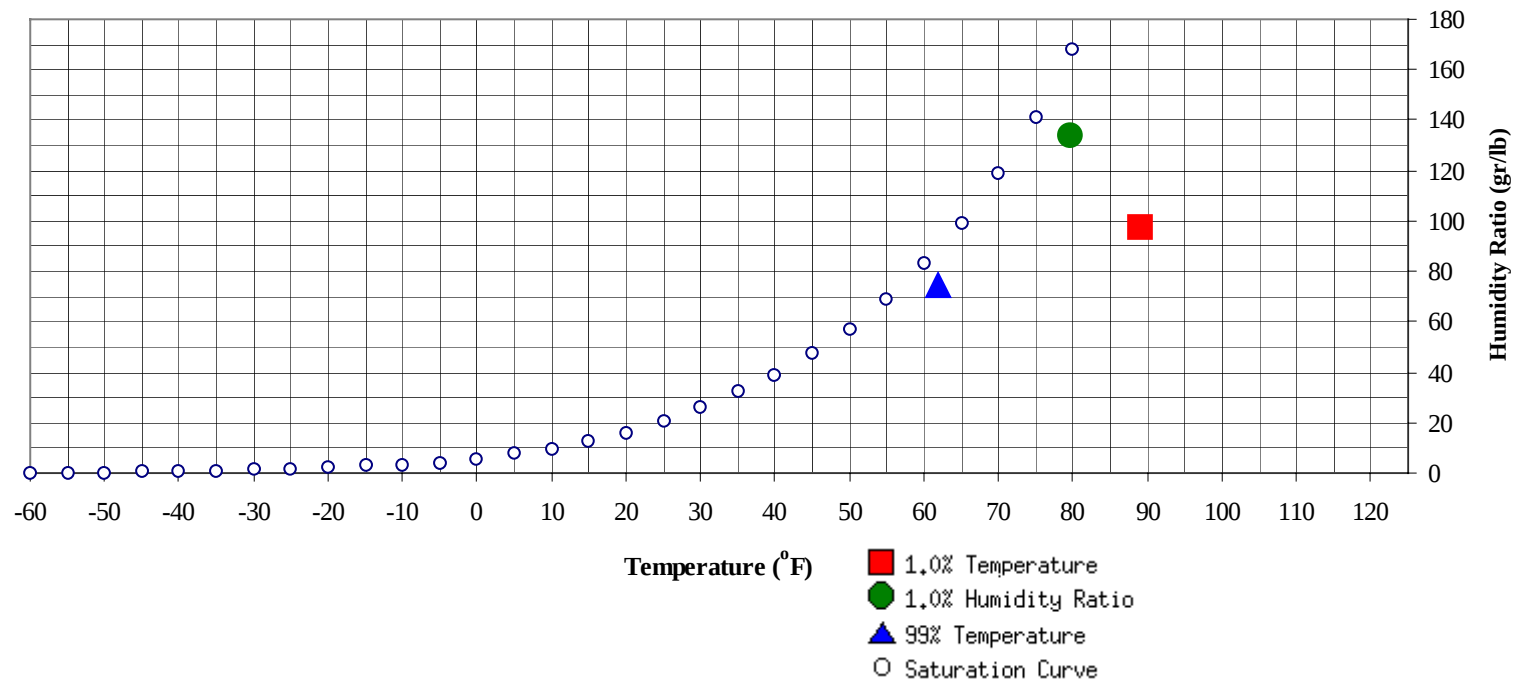


Long Term Psychrometric Summary



- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

Psychrometric Summary of Peak Design Values



99% Dry Bulb	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
	62	74.6	26.5		134.4	79.5	75	73.4	40.1

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	89	97.7	71.3	36.7

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99		0		0	79.0		0		0	69.0		0		0	72.0
90 / 94		2	0	2	68.7		9	0	9	68.9		18	1	19	70.4
85 / 89		34	2	36	68.3		50	2	52	68.5	0	73	2	75	70.2
80 / 84		108	21	129	67.7	1	89	24	114	67.9	1	104	28	133	69.6
75 / 79	0	60	58	117	66.7	1	49	66	116	66.9	10	43	90	143	68.5
70 / 74	23	37	102	162	65.2	33	24	93	149	65.3	85	10	104	198	66.9
65 / 69	86	7	41	133	62.8	82	3	30	115	62.6	102	1	20	122	63.7
60 / 64	123	1	23	146	59.6	95	1	10	106	59.4	49	0	4	53	59.9
55 / 59	17		2	19	55.1	11		0	11	55.3	1		0	1	53.1

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99		0		0	72.0										
90 / 94		25	1	26	70.7	0	7	0	7	71.9		1	0	1	76.8
85 / 89	0	74	4	78	71.6	0	46	1	47	73.7	0	27	1	28	74.1
80 / 84	1	96	33	131	71.4	0	118	22	140	73.4	0	113	17	130	73.8
75 / 79	25	40	120	184	70.3	26	63	118	206	72.2	11	76	81	169	72.5
70 / 74	129	5	75	209	68.0	163	15	100	278	69.8	143	22	123	288	69.9
65 / 69	73		8	81	64.7	58	0	8	65	66.6	84	1	18	103	67.1
60 / 64	11			11	60.5	1		0	1	63.5	1			1	63.8
55 / 59															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94		0		0	73.0		0		0	75.3		0		0	79.3
85 / 89	0	30	4	34	73.9		27	3	30	74.2	0	11	0	11	74.5
80 / 84	0	123	31	154	73.2	0	118	20	138	73.7	1	99	9	110	73.7
75 / 79	4	76	69	150	72.0	4	79	67	151	72.4	4	92	57	153	72.5
70 / 74	100	19	107	226	69.5	113	23	128	265	69.8	130	36	154	321	70.0
65 / 69	137	0	37	173	66.6	125	0	30	154	66.8	98	1	20	119	67.0
60 / 64	7		0	7	63.6	6		0	6	63.7	6		0	6	63.4
55 / 59															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94		0	0	0	76.3		1	0	1	73.1		2	0	2	70.1
85 / 89	0	9	0	9	73.2	0	20	1	21	72.4	0	28	1	29	70.2
80 / 84	1	115	10	127	72.6	0	118	11	129	71.1	0	116	16	132	69.4
75 / 79	3	95	61	159	71.6	3	75	60	138	69.8	0	66	59	125	68.2
70 / 74	113	29	153	295	69.4	64	25	124	213	67.9	43	32	118	193	66.7
65 / 69	117	0	23	140	66.2	120	1	38	159	64.7	108	3	38	149	63.9
60 / 64	13		1	14	61.7	53		6	59	60.4	89	0	15	104	60.0
55 / 59	0			0	59.0	0		0	0	56.7	9		1	10	55.5

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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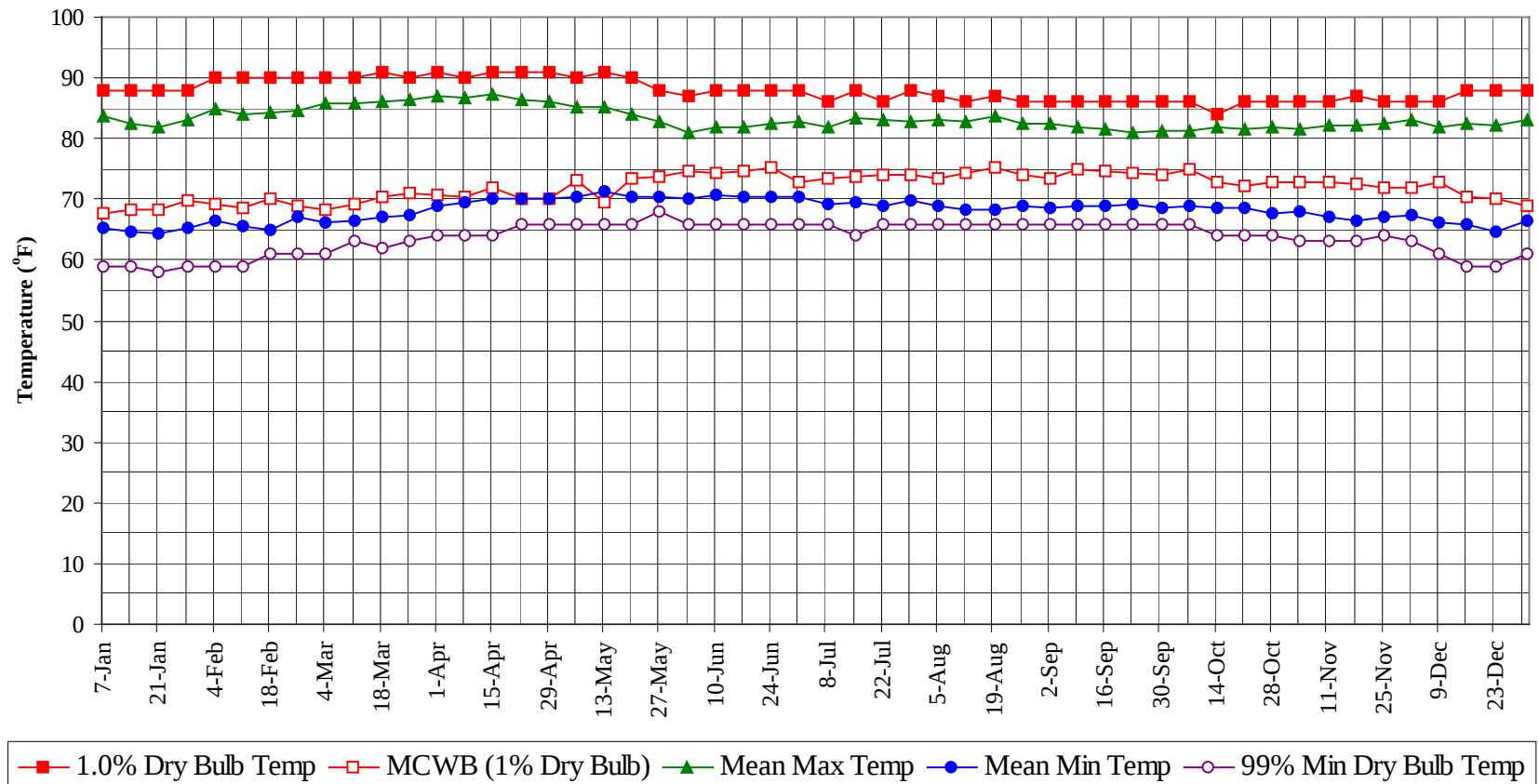
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

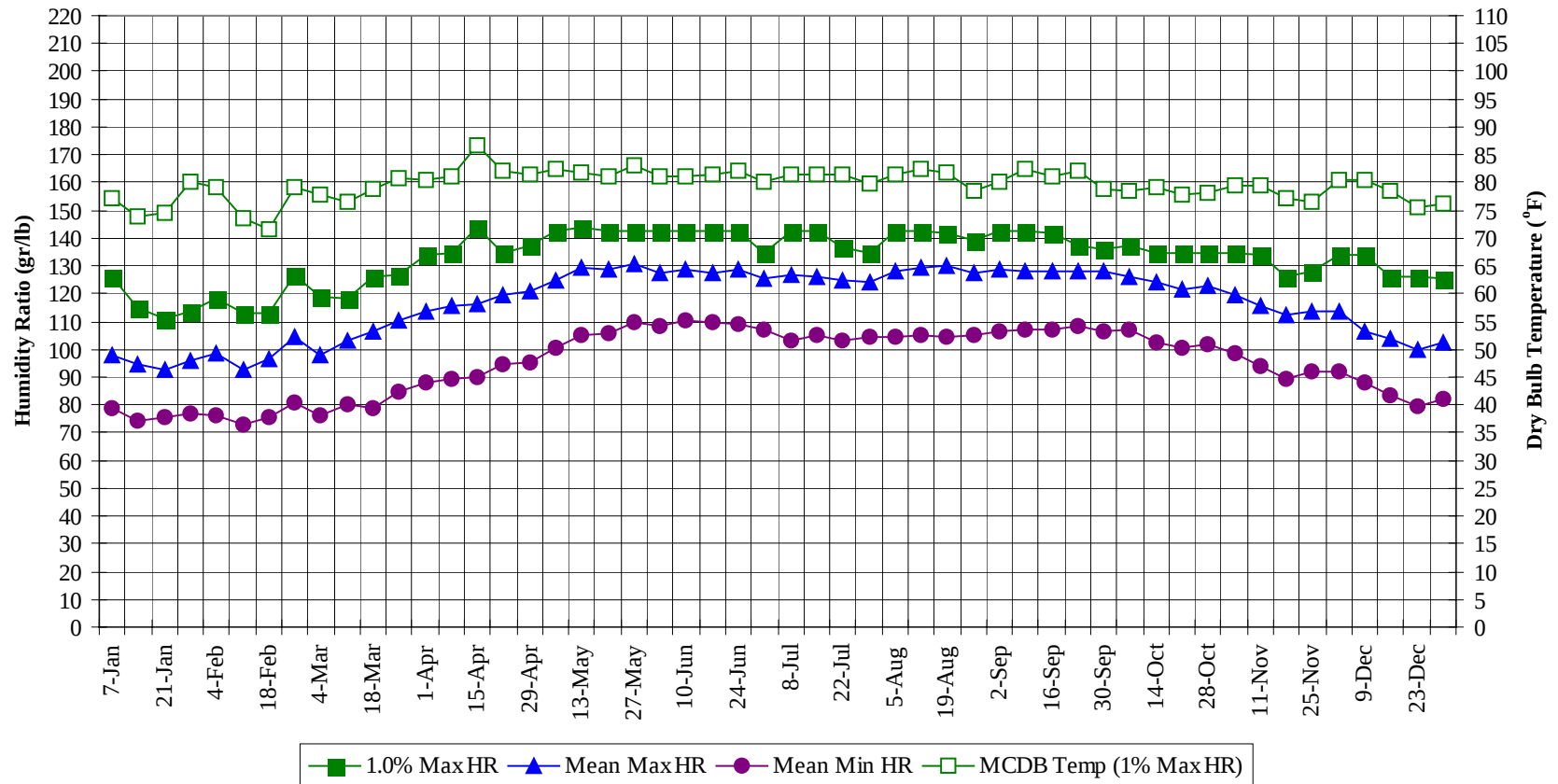
[illegible]

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

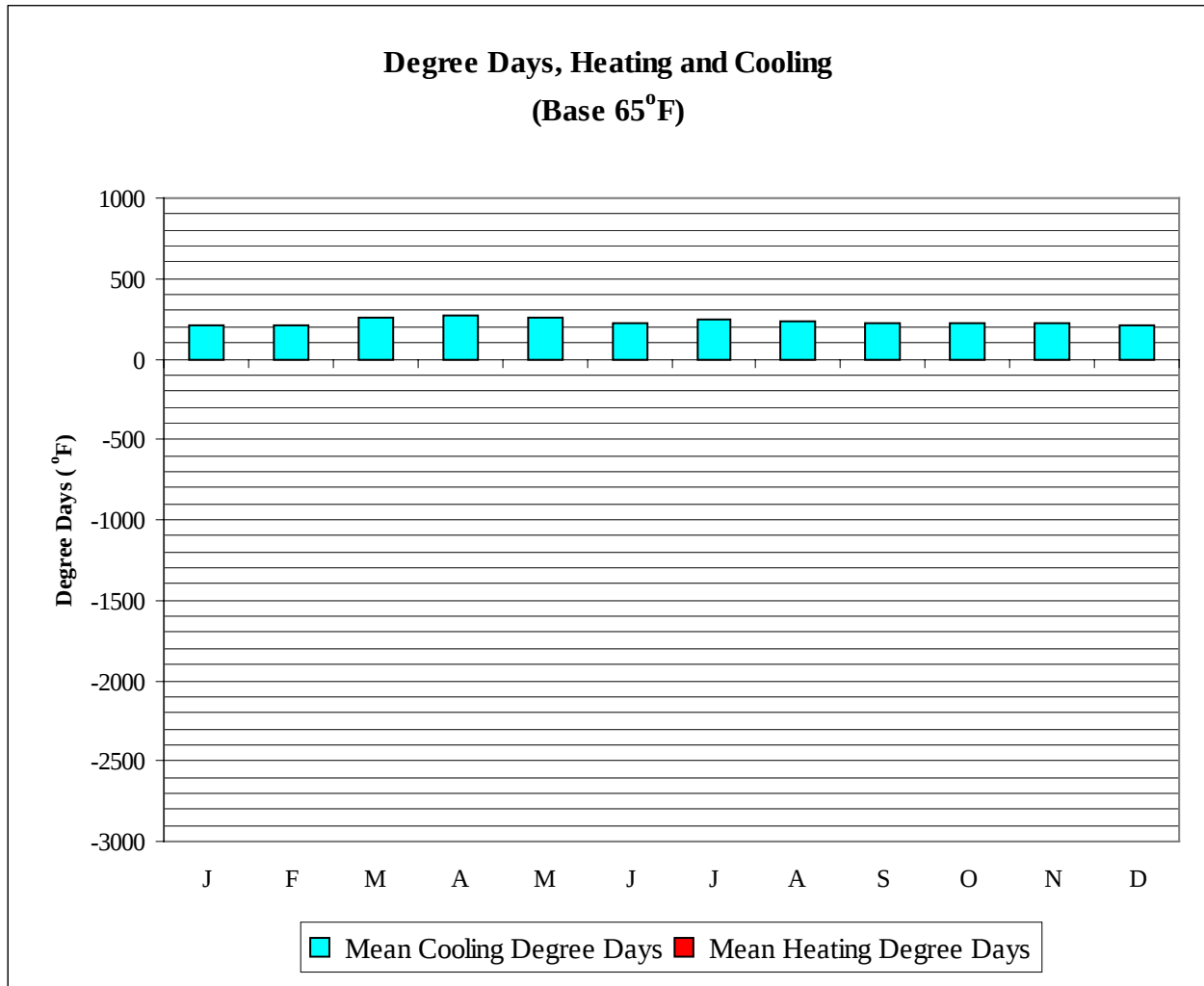


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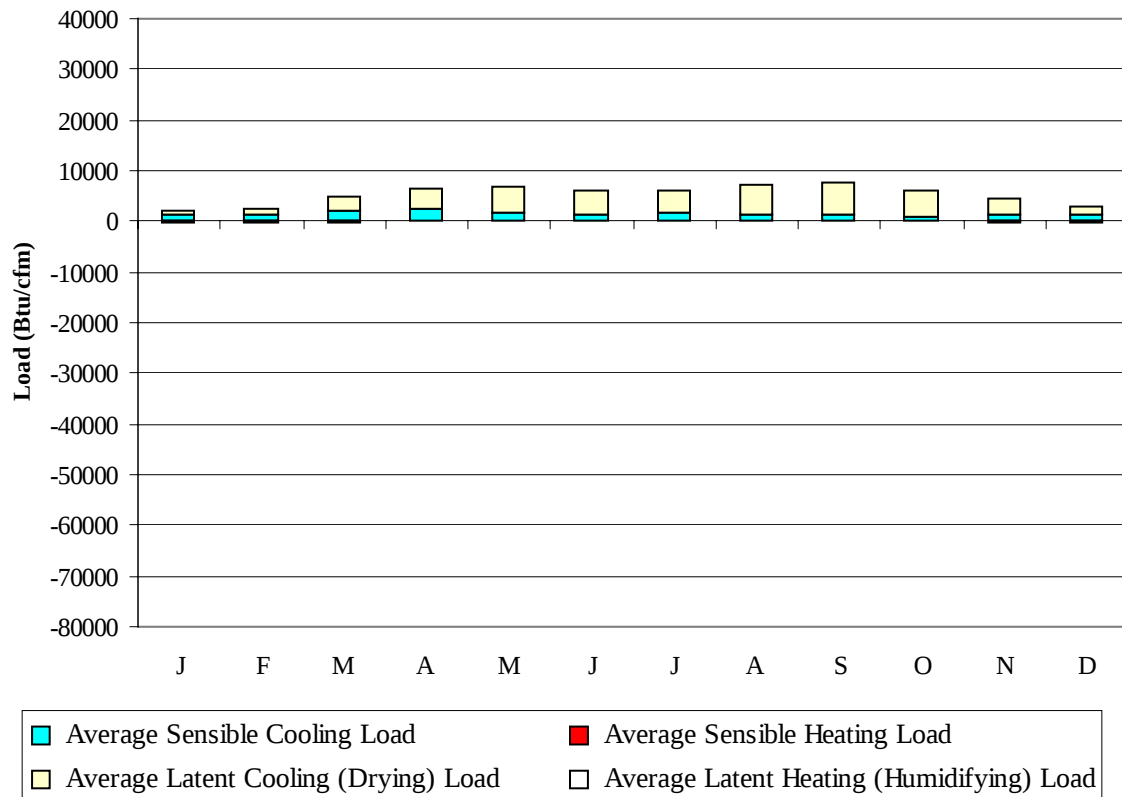
Long Term Dry Bulb Temperature and Humidity Summary

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	88.0	67.8	83.8	65.4	59.0	126.0	77.1	98.0	78.8
14-Jan	88.0	68.2	82.6	64.8	59.0	114.8	74.0	94.4	74.5
21-Jan	88.0	68.2	81.9	64.4	58.0	111.3	74.7	92.6	75.6
28-Jan	88.0	69.9	83.2	65.2	59.0	113.4	80.0	95.8	76.8
4-Feb	90.0	69.1	84.9	66.5	59.0	118.3	79.2	98.3	76.2
11-Feb	90.0	68.5	83.9	65.7	59.0	112.7	73.5	92.5	73.2
18-Feb	90.0	70.1	84.2	64.9	61.0	112.7	71.5	96.3	75.5
25-Feb	90.0	68.8	84.6	67.2	61.0	126.7	79.2	104.3	81.0
4-Mar	90.0	68.4	85.8	66.2	61.0	119.0	77.7	97.8	76.3
11-Mar	90.0	69.2	85.8	66.6	63.0	118.3	76.5	103.3	80.0
18-Mar	91.0	70.3	86.2	67.0	62.0	126.0	78.8	106.2	78.6
25-Mar	90.0	70.9	86.6	67.2	63.0	126.7	80.6	110.4	84.7
1-Apr	91.0	70.8	87.2	68.8	64.0	133.7	80.4	113.8	87.7
8-Apr	90.0	70.4	86.7	69.5	64.0	134.4	81.1	115.8	89.1
15-Apr	91.0	72.0	87.3	70.0	64.0	143.5	86.5	116.3	90.3
22-Apr	91.0	70.0	86.4	70.0	66.0	134.4	81.9	119.6	94.5
29-Apr	91.0	70.2	86.0	70.0	66.0	137.2	81.3	121.1	95.3
6-May	90.0	73.2	85.1	70.3	66.0	142.8	82.3	124.6	100.4
13-May	91.0	69.4	85.3	71.2	66.0	143.5	81.7	129.1	105.3
20-May	90.0	73.5	83.9	70.3	66.0	142.8	81.2	128.5	106.0
27-May	88.0	73.6	82.7	70.5	68.0	142.8	83.1	130.5	109.4
3-Jun	87.0	74.5	80.9	70.2	66.0	142.8	81.0	127.4	108.7
10-Jun	88.0	74.4	81.9	70.6	66.0	142.8	81.2	128.5	110.4
17-Jun	88.0	74.5	81.9	70.5	66.0	142.8	81.6	127.6	109.9
24-Jun	88.0	75.1	82.4	70.3	66.0	142.8	82.2	128.9	109.3
1-Jul	88.0	72.7	82.7	70.3	66.0	134.4	80.0	125.5	107.1
8-Jul	86.0	73.4	81.9	69.0	66.0	142.8	81.5	126.5	103.0
15-Jul	88.0	73.8	83.3	69.6	64.0	142.8	81.3	126.0	105.4
22-Jul	86.0	74.1	83.2	68.8	66.0	136.5	81.5	125.0	103.3
29-Jul	88.0	74.0	82.9	69.8	66.0	134.4	79.9	124.4	104.6
5-Aug	87.0	73.5	83.1	69.0	66.0	142.8	81.5	128.1	104.3
12-Aug	86.0	74.3	82.8	68.3	66.0	142.8	82.4	129.2	105.0
19-Aug	87.0	75.3	83.7	68.3	66.0	142.1	81.8	130.0	104.5
26-Aug	86.0	73.9	82.4	68.8	66.0	139.3	78.5	127.1	104.9
2-Sep	86.0	73.3	82.6	68.6	66.0	142.8	80.0	128.9	106.4
9-Sep	86.0	74.8	81.7	68.8	66.0	142.8	82.4	127.9	106.8
16-Sep	86.0	74.6	81.5	68.9	66.0	142.1	81.1	128.1	107.3
23-Sep	86.0	74.4	81.0	69.1	66.0	137.2	82.0	128.0	108.2
30-Sep	86.0	73.9	81.3	68.7	66.0	135.8	78.7	128.3	106.7
7-Oct	86.0	74.9	81.3	68.9	66.0	137.2	78.3	125.9	106.8
14-Oct	84.0	72.9	81.8	68.5	64.0	134.4	79.2	124.1	102.6
21-Oct	86.0	72.3	81.6	68.6	64.0	134.4	77.8	121.7	100.6
28-Oct	86.0	72.8	81.9	67.8	64.0	134.4	78.3	122.5	101.5
4-Nov	86.0	72.8	81.6	67.9	63.0	134.4	79.3	119.2	98.6
11-Nov	86.0	72.8	82.3	67.0	63.0	133.7	79.6	115.6	93.9
18-Nov	87.0	72.6	82.2	66.6	63.0	126.0	77.0	112.1	89.2
25-Nov	86.0	72.1	82.5	67.2	64.0	128.1	76.7	113.5	92.2
2-Dec	86.0	72.1	82.9	67.3	63.0	133.7	80.4	113.6	92.1
9-Dec	86.0	72.7	82.0	66.1	61.0	133.7	80.3	106.3	87.7
16-Dec	88.0	70.5	82.6	65.8	59.0	126.0	78.4	103.6	83.7
23-Dec	88.0	70.1	82.0	64.8	59.0	126.0	75.5	99.7	79.6
31-Dec	88.0	68.8	83.1	66.6	61.0	125.3	76.3	102.7	82.1



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	213	6
FEB	211	4
MAR	256	2
APR	272	0
MAY	262	0
JUN	224	0
JUL	246	0
AUG	234	0
SEP	219	0
OCT	218	0
NOV	227	1
DEC	212	4
ANN	2793	17

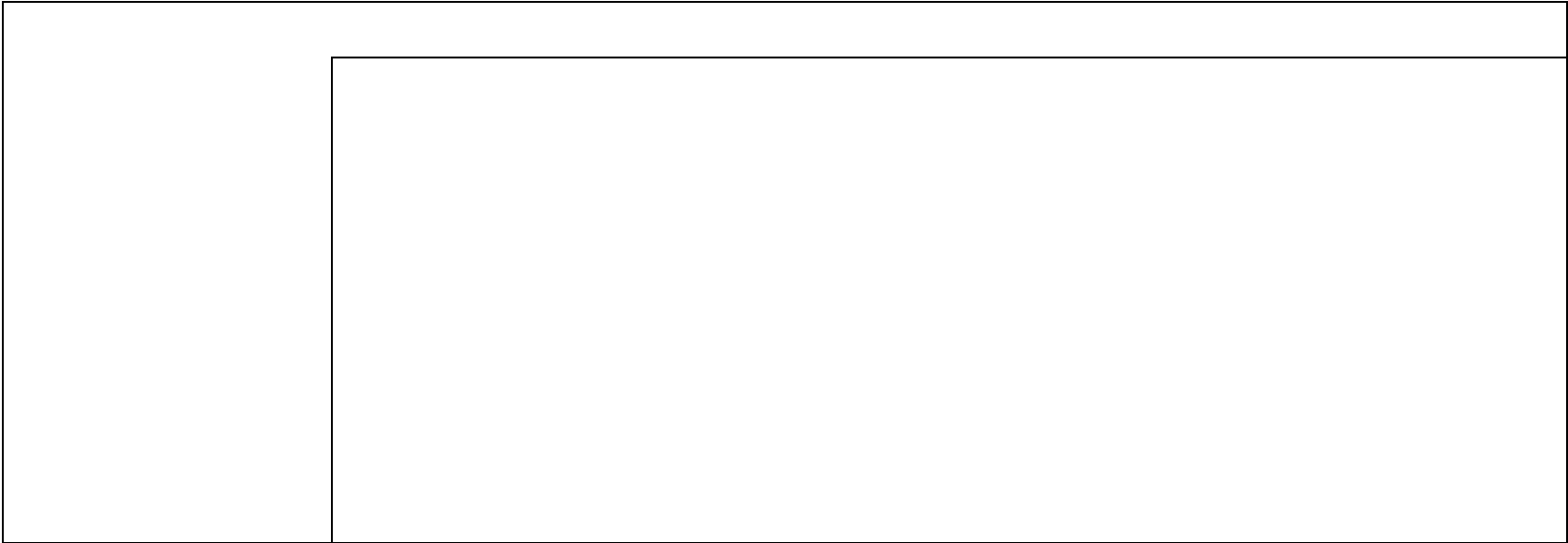
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	1267	-406	897	0
FEB	1461	-277	903	0
MAR	2231	-165	2507	0
APR	2480	-33	3784	0
MAY	1766	-10	5071	0
JUN	1378	-11	4845	0
JUL	1569	-45	4668	0
AUG	1367	-39	5995	0
SEP	1135	-34	6651	0
OCT	997	-48	4940	0
NOV	1204	-171	3274	0
DEC	1201	-302	1822	0
ANN	18056	-1541	45357	0

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

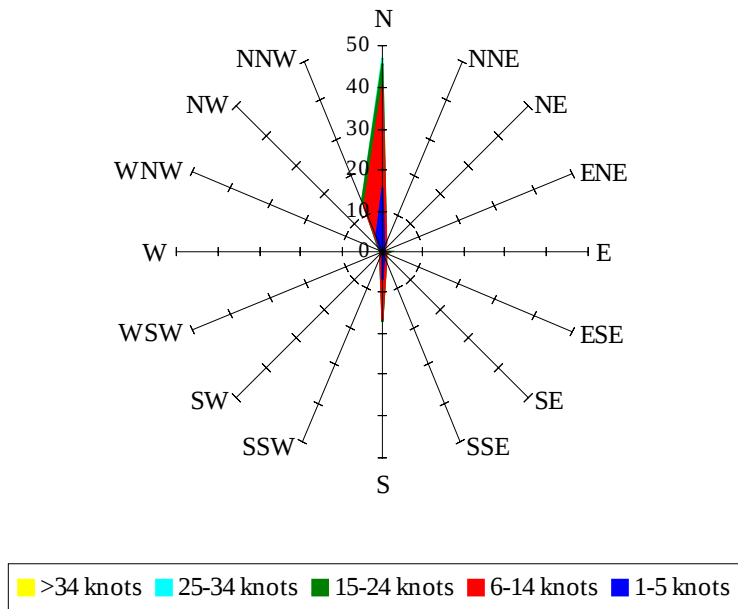


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

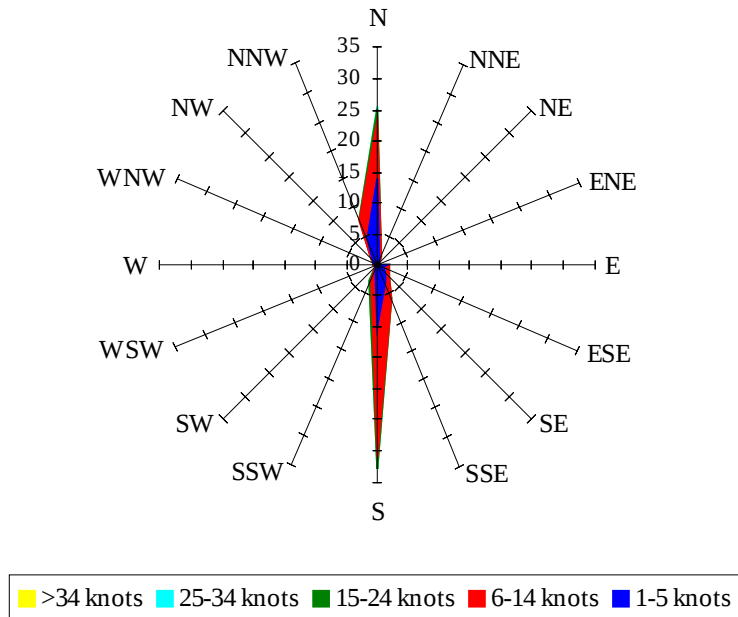
Labels of Percent Frequency on North Axis



Percent Calm = 8.05

Wind Summary - March, April, and May

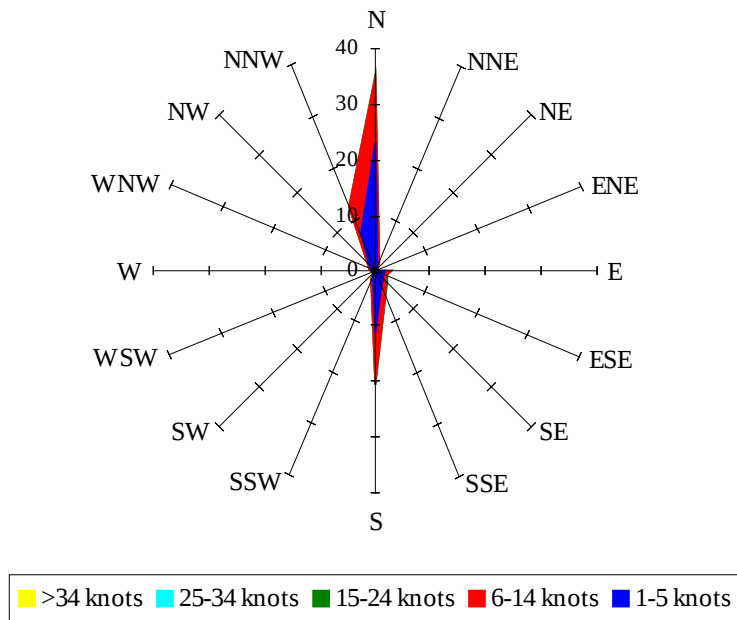
Labels of Percent Frequency on North Axis



Percent Calm = 12.63

Wind Summary - June, July, and August

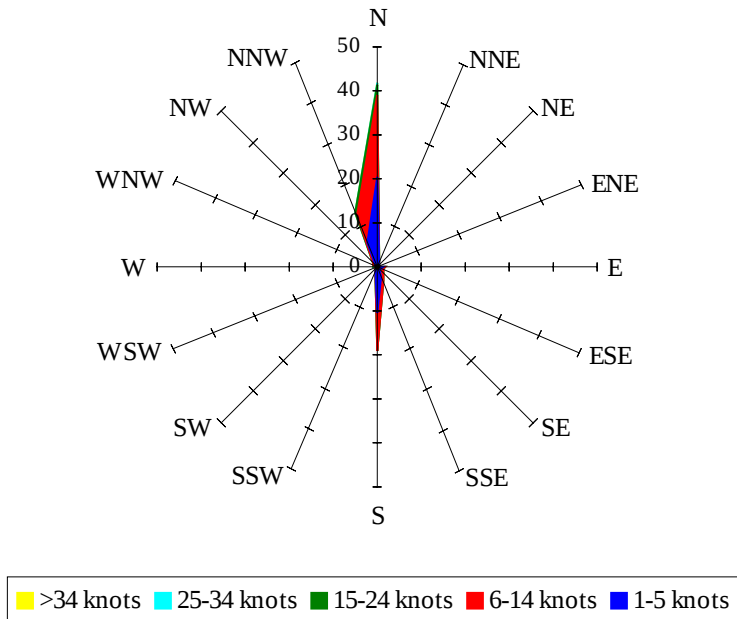
Labels of Percent Frequency on North Axis



Percent Calm = 10.98

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 9.96