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WASHINGTON/NATIONAL, DC, USA

WMO#: **724050**

Lat: **38.87N** Long: **77.03W** Elev: **20** StdP: **101.08** Time Zone: **-5.00 (NAE)** Period: **86-10** WBAN: **13743**

Annual Heating and Humidification Design Conditions

	Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB		
				99.6%			99%			0.4%		1%				
		99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	
(1)	1	-8.2	-6.3	-18.9	0.7	-6.4	-16.5	0.9	-4.3	11.9	2.8	11.0	1.3	5.4	330	(1)

Annual Cooling, Dehumidification, and Enthalpy Design Conditions

	Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB		
			0.4%		1%		2%		0.4%		1%		2%				
			DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(2)	7	9.0	34.7	24.3	33.2	23.8	31.9	23.1	25.8	31.6	25.2	30.7	24.6	29.5	4.6	170	(2)

	Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Hours 8 to 4 & 12.8/20.6	
	0.4%			1%			2%			0.4%		1%		2%			
	DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(3)	24.4	19.4	28.4	23.7	18.6	27.8	23.0	17.8	27.2	79.8	31.8	76.9	30.8	74.3	29.6	712	(3)

Extreme Annual Design Conditions

	Extreme Annual WS			Extreme Max WB	Extreme Annual DB				n-Year Return Period Values of Extreme DB								
					Mean		Standard deviation		n=5 years		n=10 years		n=20 years		n=50 years		
	1%	2.5%	5%		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	
(4)	10.4	9.0	8.1	29.4	-11.1	36.8	3.0	1.7	-13.3	38.0	-15.0	39.0	-16.7	39.9	-18.8	41.1	(4)

Monthly Climatic Design Conditions

				Annual (d)	Jan (e)	Feb (f)	Mar (g)	Apr (h)	May (i)	Jun (j)	Jul (k)	Aug (l)	Sep (m)	Oct (n)	Nov (o)	Dec (p)	
(5)	Temperatures, Degree-Days and Degree-Hours		Tavg	14.6	2.7	3.8	8.4	13.8	18.8	24.0	26.5	25.7	21.7	15.2	9.7	4.3	(5)
(6)			Sd		5.31	4.77	5.14	4.50	4.09	3.37	2.64	2.75	3.57	4.26	4.50	4.68	(6)
(7)			HDD10.0	770	232	181	93	14	0	0	0	0	0	5	60	185	(7)
(8)			HDD18.3	2220	483	407	311	148	44	3	0	1	11	117	260	435	(8)
(9)			CDD10.0	2455	7	7	43	128	274	420	513	486	351	166	51	9	(9)
(10)			CDD18.3	864	0	0	2	12	60	173	254	228	113	19	1	0	(10)
(11)			CDH23.3	7687	0	0	23	119	494	1526	2576	2097	741	109	3	0	(11)
(12)			CDH26.7	2924	0	0	4	29	156	575	1107	820	212	21	0	0	(12)
(13)	Precipitation		PrecAvg	981	69	69	81	69	93	86	97	99	84	77	79	79	(13)
(14)			PrecMax	1315	181	143	140	136	173	293	240	233	314	197	170	166	(14)
(15)			PrecMin	725	31	11	37	20	30	28	17	9	5	29	11	11	(15)
(16)			PrecSD	159.3	39.7	42.3	30.4	30.8	37.0	67.7	60.4	61.2	74.3	48.0	47.4	44.3	(16)
(17)	Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures	0.4%	DB		18.8	20.3	26.7	30.0	32.8	35.5	37.0	36.0	33.6	29.1	23.5	19.7	(17)
(18)			MCWB		14.1	13.9	17.4	19.0	22.9	24.5	24.7	24.7	22.6	21.4	16.8	14.9	(18)
(19)		2%	DB		15.8	16.5	22.0	26.9	30.4	33.2	35.2	34.0	30.9	26.2	20.5	16.1	(19)
(20)			MCWB		12.7	11.9	14.6	17.4	21.3	23.5	24.5	24.3	22.3	20.0	16.0	13.0	(20)
(21)		5%	DB		12.7	13.4	19.1	23.9	28.2	31.7	33.6	32.5	29.0	23.9	18.6	13.4	(21)
(22)			MCWB		9.6	8.6	13.0	16.2	20.7	22.9	24.0	23.7	21.6	18.5	15.1	10.7	(22)
(23)		10%	DB		9.9	10.8	16.4	21.5	26.2	30.0	32.0	31.0	27.4	22.1	16.7	10.9	(23)
(24)			MCWB		6.6	7.3	11.0	15.0	19.3	22.4	23.5	23.0	20.8	17.5	13.2	7.6	(24)
(25)	Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures	0.4%	WB		15.7	15.6	18.1	20.8	24.5	26.1	26.9	26.7	25.3	22.9	19.1	16.6	(25)
(26)			MCDB		17.6	18.5	24.5	26.7	30.5	32.0	32.9	32.5	29.3	26.2	21.0	18.3	(26)
(27)		2%	WB		13.2	12.3	15.8	19.1	22.8	25.1	26.1	25.7	24.1	21.5	17.4	13.8	(27)
(28)			MCDB		15.5	15.3	20.7	24.2	28.2	30.6	32.0	31.4	27.6	24.6	19.4	15.5	(28)
(29)		5%	WB		10.2	9.7	13.8	17.6	21.5	24.4	25.3	25.1	23.3	20.0	15.5	11.1	(29)
(30)			MCDB		12.4	12.6	17.7	22.4	26.7	29.5	30.9	30.3	26.6	22.9	18.0	12.9	(30)
(31)		10%	WB		7.1	7.7	11.9	16.0	20.3	23.7	24.7	24.4	22.5	18.3	13.8	8.1	(31)
(32)			MCDB		9.3	10.5	15.6	20.6	25.0	28.2	29.8	28.7	25.8	21.2	16.1	10.1	(32)
(33)	Mean Daily Temperature Range		MDBR		7.6	8.3	9.6	10.1	9.8	9.4	9.0	8.7	8.7	9.2	8.5	7.4	(33)
(34)		5% DB	MCDBR		11.3	12.5	13.7	13.9	12.5	11.1	10.8	10.4	10.3	11.2	11.1	11.0	(34)
(35)			MCWBR		8.6	8.6	7.9	6.9	5.8	4.4	3.9	4.0	4.4	6.1	7.6	8.8	(35)
(36)		5% WB	MCDBR		10.6	10.9	12.5	12.1	11.1	9.8	9.5	9.4	8.5	9.4	9.6	10.0	(36)
(37)			MCWBR		9.1	8.6	8.5	6.8	5.7	4.5	4.1	4.0	4.5	6.1	8.0	9.2	(37)
(38)	Clear Sky Solar Irradiance	taub			0.324	0.337	0.368	0.392	0.411	0.463	0.456	0.442	0.406	0.354	0.333	0.310	(38)
(39)		taud			2.511	2.454	2.382	2.289	2.203	2.071	2.130	2.192	2.322	2.474	2.554	2.626	(39)
(40)		Ebn,noon			852	887	889	884	870	822	824	826	837	854	835	849	(40)
(41)		Edh,noon			77	93	111	129	143	164	153	140	116	90	74	65	(41)

Nomenclature: See separate page