

TABLE 1. WINTER CLIMATIC CONDITIONS^a—(CONTINUED)

COL. 1 STATE	COL. 2 STATION ^b	COL. 3 ELEVATION ^c FT	COL. 4 PERIOD OF RECORD ^d	COL. 5 LOWEST TEMP. ON RECORD ^e °F	COL. 6 AVERAGE ANNUAL MIN. TEMP. °F	COL. 7 DESIGN DRY-BULB TEMP. ON TAC 97% BASIS ^f °F	COL. 8 WIND VEL. AT DESIGN TEMP. ^g MPH	COL. 9 DESIGN DRY-BULB TEMP. IN COMMON USE ^h °F	COL. 10 AVG. WIND VEL. DEC. JAN.-FEB. MPH
Pa.	Philadelphia	CO 200	1871-1947	-11	6			0	11.0
	Philadelphia	AP 18	1940-1947	-1				0	11.6
	Pittsburgh	CO 329	1875-1947	-20	-2			0	11.6
	Pittsburgh	AP 1284	1935-1947	-16		9k	12.1	0	9.0
	Reading	CO 311	1913-1947	-14				-5	7.6
R. I.	Scranton	CO 877	1901-1947	-19					
	Sunbury	AP 448	1935-1939 ^d			7	7.1		
	Block Island	CO 46	1881-1947	-10				0	20.6
S. C.	Providence	CO 77	1904-1947	-17	1			0	12.1
	Charleston	CO 59	1871-1947	7	22			15	10.5
	Charleston	AP 51	1940-1947	14		26	6.9	10	8.0
S. D.	Columbia	CO 401	1887-1947	-2	19				
	Columbia	AP 227	1939-1947	9				10	8.4
	Greenville	CO 1006 ^e	Up to 1946	-5				-20	10.7
Tenn.	Huron	CO 1342	1881-1938	-43	-26				
	Huron	AP 1287	1938-1947	-30				-20	8.0
	Rapid City	CO 3309	1898-1947	-34	-21				
Texas	Rapid City	AP 3220	1938-1947	-34				10	7.7
	Chattanooga	CO 952	1879-1947	-10	9				
	Chattanooga	AP 675	1940-1947	6		19	6.2	0	7.2
Tenn.	Knoxville	CO 1024	1871-1942	-16	2				
	Knoxville	AP 1007	1942-1947	1				0	9.3
	Memphis	CO 348	1872-1941	-9	9				
Texas	Memphis	AP 267	1941-1947	1		19	8.9	0	9.8
	Nashville	CO 714	1871-1947	-13	5				
	Nashville	AP 610	1939-1947	-15		14	7.3	0	10.1
Texas	Abilene	CO 1748	1885-1944	-6				15	10.1
	Abilene	AP 1756	1940-1947	-9		20	10.4	-5	12.1
	Amarillo	CO 3686	1892-1941	-16	0			-10	8.3
Texas	Amarillo	AP 3595	1941-1947	-7		11	12.9		
	Austin	CO 625	1897-1942	-1				20	30
	Austin	AP 625	1942-1947	13					10.4
Texas	Brownsville	CO 140	1922-1943	12	29				
	Brownsville	AP 25	1943-1947	-30				20	11.0
	Corpus Christi	CO 21	1887-1942 ^d	11					
Texas	Corpus Christi	AP 45	1943-1946 ^d	-23				0	10.6
	Dallas	CO 732	1913-1940	-3	13				
	Dallas	AP 520	1940-1947	5		23	8.8	15	8.0
Texas	Dallas	CO 1020	1925-1947	-12				10	9.0
	El Paso	CO 3792	1880-1942	-5	16				
	El Paso	AP 3956	1939-1947	11		26	8.6	10	10.5
Texas	Fort Worth	CO 708	1898-1939 ^d	-8	12				
	Fort Worth	AP 728	1940-1947	4				20	11.2
	Galveston	CO 128	1871-1947	8					
Texas	Galveston	AP 9	1939-1947	14				20	10.5
	Houston	CO 198	1888-1947	5	22				
	Houston	AP 73	1932-1947	5		33	9.2	20	8.0
Texas	Palestine	CO 555	1881-1947	-6				15	10.7
	Port Arthur	CO 64	1917-1947	11				20	8.3
	Port Arthur	AP 21	1944-1947	24					
Texas	San Antonio	CO 770 ^e	1885-1941	4	21			20	
	San Antonio	AP 800	1942-1947	17		32	7.6		
	Waco	CO 513	1931-1947	7		26	11.6		
Utah	Wink	AP 2811	1935-1939 ^d	7		23	8.5		
	Nilford	AP 5095	1935-1939 ^d	-17		-2	7.7		
	Modena	CO 5472	1901-1947	-32	-15			-15	9.0
Utah	Salt Lake City	CO 4346	1874-1947	-20	-2			-10	7.8
	Salt Lake City	AP 4254	1928-1947	-30		7	7.4		
	Burlington	CO 409	1884-1943	-29	-17			-10	11.6
Vt.	Burlington	AP 335	1943-1944	-23					
	Cape Henry	CO 24	1874-1947	5				10	14.0
	Lynchburg	CO 644	1874-1944	-7	8			5	8.1
Va.	Lynchburg	AP 951	1944-1947	7				15	8.1
	Norfolk	CO 91	1871-1947	2	15				
	Richmond	CO 180	1897-1947	-3	10			15	
Wash.	Richmond	AP 172	1929-1947	-12		15	7.1		
	Reynolds	AP 1194	1935-1939 ^d			21	8.2		
	Ellensburg	AP 1751	1935-1939 ^d			1	3.8		
Wash.	North Bend	CO 199	1884-1947	11	24			20	16.1
	Seattle	CO 104	1890-1947	3	20			15	9.8
	Seattle	AP 47	1928-1947	3		24	6.3		6.2
Wash.	Spokane	CO 2030	1881-1941	-30	-5			-15	
	Spokane	AP 1974	1941-1947	-7		4	5.1		-8.0
	Tacoma	CO 279	1897-1947	7				15	18.9
W. Va.	Tatoosh Is.	CO 110	1883-1947	-24				-5	4.1
	Yakima	CO 1160	1938-1946	-24					
	Yakima	AP 1066	1944-1947	-4				-10	6.2
W. Va.	Elkins	CO 1969 ^e	1898-1944	-28	-8			-10	7.2
	Parkersburg	CO 685	1888-1947	-27	-1				

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Wisc.	Green Bay	CO 598	1886-1947	-36	-18			-20	10.5
	La Crosse	CO 725	1872-1947	-43	-21			-25	9.3
	La Crosse	AP 677	1943-1947	-28		-17	6.9	-15	10.1
	Madison	CO 1008	1858-1947	-29		-8	9.1	-15	12.1
	Madison	AP 884	1935-1939 ^d					-15	13.3
Wyo.	Milwaukee	CO 744	1870-1947	-25	-12			-15	
	Milwaukee	AP 707	1927-1947	-29		-6	11.9	-15	3.9
	Cheyenne	CO 6144	1873-1935	-38	-18			-18	
	Cheyenne	AP 6181	1935-1947	-34		-3	11.1	-18	
	Lander	CO 5448	1891-1946	-40	-12			-18	
Alta.	Lander	AP 5568	1946-1947	-14				-18	
	Rock Springs	AP 6746	1932-1942	-33		-7	9.1	-18	
	Edmonton	2219 ^e	Up to 1943	-57	-41			-40	7.5
	Vancouver	222 ^e	Up to 1943	2	13			-10	4.5
	Victoria	228 ^e	Up to 1943	-2	19			-5	12.6
Man.	Winnipeg	786 ^e	Up to 1943	-54	-38			-35	10.1
	Fredericton	184 ^e	Up to 1943	-35	-25			-20	9.1
	Yarmouth	136 ^e	Up to 1943	-12	0			-5	12.3
	Ottawa	912 ^e	Up to 1943	-27	-14			-5	10.3
	Port Arthur	254 ^e	Up to 1943	-35	-24			-20	8.4
P. E. I.	Port Arthur	644 ^e	Up to 1943	-40	-29			-30	8.0
	Toronto	379 ^e	Up to 1943	-26	-11			-10	13.6
	Charlottetown	186 ^e	Up to 1943	-27	-13			-10	9.8
	Montreal	137 ^e	Up to 1943	-29	-18			-15	11.3
	Quebec	256 ^e	Up to 1943	-34	-23			-20	13.3
Sask.	Prince Albert	1414 ^e	Up to 1943	-70	-47			-45	5.1
	Dawson	1062 ^e	Up to 1943	-68	-54			-45	3.7
	St. Johns	428 ^e	Up to 1943	-21	-5			-10	12
	Newf.								

^a United States Data compiled from U. S. Weather Bureau Records for years indicated, and Canadian data from Meteorological Service of Canada corrected to 1946.

^b Col. 2. The stations followed by letters AP are airport stations, all others are city office stations and are followed by letters CO.

^c Col. 3. The elevations marked c are ground elevations of the station. All other elevations given are the actual elevations of the thermometer bulb above mean sea level.

^d Col. 4. The periods of record indicated apply only to the lowest temperature ever recorded shown in Col. 5, and generally extend from a summer month of the first year indicated through the spring months of the last year indicated. The periods marked by d terminated in December of the year indicated.

^e Average of readings of one lowest temperature obtained for each year.

^f It should be noted that Col. 7 applies only to airports, as these data for city stations are not available at this time. The temperature shown is the minimum hourly out-door temperature which has been equalled or exceeded 97 1/2 per cent of the total hours in December, January and February for the period of record. It is pointed out that in most cases the airport stations are outside of the city and these data would apply primarily to rural areas.

^g Col. 8 indicates the average wind velocity which occurred at temperatures the same as, and lower than, the temperatures shown in Col. 7.

^h Col. 9 records design temperatures in use by A.S.H.V.E. Members as reported by Chapter Secretaries for the various stations. Where these were not available the design temperatures from an ASHRA publication and various other sources have been inserted.

ⁱ The wind velocities indicated in Col. 10 were furnished by the U. S. Weather Bureau and corrected through Feb. 1948.

^j The bulletin published by A.S.H.V.E. for annual weather data of Detroit indicates 6 as design temperature.

^k Computed for Reading by Karl Shelley and O. F. Smith.

words, a person may feel warm or cool at the same dry-bulb temperature, depending on the relative humidity and air motion. The optimum winter effective temperature for sedentary persons, as determined at the A.S.H.V.E. Research Laboratory, is 67-68 ET.

As explained in Chapter 6 for so-called still air conditions, a relative humidity of approximately 50 per cent is required to produce an effective temperature of 68 ET when the dry-bulb temperature is 72.5 F. However, even where provision is made for artificial humidification, the relative humidity is seldom maintained higher than 40 per cent during the ex-