

TABLE 2. SUMMER CLIMATIC CONDITIONS* (CONTINUED)
Suggested Design Wet-Bulb and Dry-Bulb Temperatures

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8	COL. 9
STATE	STATION ^b	ELEVATION ^c Ft	PERIOD OF RECORD ^d	HIGHEST TEMP. EVER RECORDED ^d °F	DESIGN DRY-BULB TEMP. ON BASIS ^e °F	DESIGN DRY-BULB TEMP. IN COMMON USE ^f °F	DESIGN WET-BULB TEMP. IN COMMON USE ^f °F	AVERAGE SUMMER WIND VELOCITY ^g MPH
S. C.	Columbia.....CO	401	1887-1947	106	...	95	75	...
S. D.	Columbia.....AP	227	1939-1947 ^d	104	...	...	...	...
	Huron.....CO	1342	1881-1938 ^d	111	...	95	75	10.3
	Huron.....AP	1287	1938-1947	110	...	...	...	...
	Rapid City.....CO	3309	1888-1947	106	...	95	70	7.9
	Rapid City.....AP	3220	1939-1947	108	...	...	...	...
Tenn.	Chattanooga.....CO	952	1879-1947	103	...	95	76	5.6
	Chattanooga.....AP	675	1940-1947	105	94	...	...	...
	Knoxville.....CO	1024	1871-1942 ^d	104	...	95	75	5.7
	Knoxville.....AP	1007	1942-1947	102	94	...	...	...
	Memphis.....CO	348	1872-1941 ^d	106	...	95	78	7.4
	Memphis.....AP	267	1941-1947	105	96	...	...	...
	Nashville.....CO	714	1871-1947	106	...	95	78	...
	Nashville.....AP	610	1939-1947	104	...	...	...	...
Texas	Abilene.....CO	1748	1885-1944 ^d	111	...	100	74	...
	Abilene.....AP	1756	1940-1947	109	97	...	...	...
	Amarillo.....CO	3688	1892-1941	107	...	100	72	11.8
	Amarillo.....AP	3585	1941-1947	106	96	...	...	...
	Austin.....CO	625	1897-1942	109	...	100	78	...
	Austin.....AP	625	1942-1947	104	...	...	...	...
	Brownsville.....CO	140	1922-1943 ^d	102	...	100	80	7.0
	Brownsville.....AP	125	1943-1947	100	...	...	...	...
	Corpus Christi.....CO	21	1887-1942	105	...	95	80	...
	Corpus Christi.....AP	45	1943-1946	101	...	...	...	...
	Dallas.....CO	732	1913-1940	110	...	100	78	9.3
	Dallas.....AP	520	1940-1947	109	99	...	...	...
	Del Rio.....CO	1020	1905-1947	111	...	100	78	8.4
	El Paso.....CO	3792	1887-1942	106	...	100	69	...
	El Paso.....AP	3956	1939-1947	104	97	...	...	...
	Fort Worth.....CO	708	1898-1939	112	...	100	78	9.5
	Fort Worth.....AP	728	1940-1947	110	...	...	...	...
	Galveston.....CO	128	1871-1947	101	...	95	80	9.7
	Galveston.....AP	9	1939-1947	101	...	...	...	...
	Houston.....CO	198	1888-1947	108	...	95	80	8.8
	Houston.....AP	73	1932-1947	105	93	...	...	...
	Palestine.....CO	555	1881-1947	108	...	100	78	...
	Port Arthur.....CO	64	1917-1947	102	...	95	79	...
	Port Arthur.....AP	21	1944-1947	98	...	...	...	...
	San Antonio.....CO	770	1885-1941 ^d	107	...	100	78	7.8
	San Antonio.....AP	800	1942-1947	104	98	...	...	...
	Waco.....CO	513	1931-1947	111	98	...	...	...
	Wink.....AP	2811	1935-1939	110	99	...	...	...
Utah	Milford.....AP	5095	1935-1939	103	94	...	...	...
	Modena.....CO	5472	1901-1947	101	...	95	65	...
	Salt Lake City.....CO	4346	1874-1947	105	...	95	65	9.8
	Salt Lake City.....AP	4254	1928-1947	106	95	...	...	...
Vt.	Burlington.....CO	409	1884-1943 ^d	100	...	90	73	8.5
	Burlington.....AP	335	1943-1947	101	...	...	...	...
Va.	Cape Henry.....CO	24	1874-1947	104	...	95	78	...
	Lynchburg.....CO	644	1874-1944	106	...	95	75	...
	Lynchburg.....AP	951	1944-1947	100	...	...	...	...
	Norfolk.....CO	91	1871-1947	105	...	95	78	10.1
	Richmond.....CO	180	1897-1947	107	...	95	78	6.4
	Richmond.....AP	172	1929-1947	104	92	...	...	...
	Roanoke.....AP	1194	1935-1939	103	90	...	76	...
Wash.	Ellensburg.....AP	1731	1935-1939	105	90	...	...	...
	North Head.....CO	199	1884-1947	97	...	85	65	...
	Seattle.....CO	104	1890-1947	100	...	85	65	...
	Seattle.....AP	47	1928-1947	99	81	...	...	...
	Spokane.....CO	2030	1881-1941 ^d	108	...	93	65	6.5
	Spokane.....AP	1974	1941-1947	104	92	...	...	...
	Tacoma.....CO	279	1897-1947	98	...	85	64	...
	Tatoosh Island.....CO	110	1883-1947	88	...	...	...	...
	Yakima.....CO	1160	1928-1946	110	...	95	65	...
	Yakima.....AP	1068	1944-1947	103	...	...	...	...
W. Va.	Parkersburg.....CO	685	1888-1947	106	...	95	75	5.3
Wisc.	Green Bay.....CO	598	1886-1947	104	...	95	75	9.3
	La Crosse.....CO	725	1872-1947	108	...	95	75	6.4
	La Crosse.....AP	677	1943-1947	96	91	...	...	...
	Madison.....CO	1008	1888-1947	107	...	95	75	7.9
	Madison.....AP	884	1935-1939	106	89	...	...	...
	Milwaukee.....CO	744	1870-1947	105	...	95	75	9.8
	Milwaukee.....AP	707	1927-1947	106	87	...	...	...
Wyo.	Cheyenne.....CO	6144	1873-1935	100	...	95	65	9.2
	Cheyenne.....AP	6161	1935-1947	100	89	...	...	...
	Lander.....CO	5448	1891-1946	102	...	95	65	...
	Lander.....AP	5568	1936-1947	97	...	...	...	...
	Rock Springs.....AP	6746	1932-1942	98	87	...	...	...

TABLE 2. SUMMER CLIMATIC CONDITIONS* (CONCLUDED)
Suggested Design Wet-Bulb and Dry-Bulb Temperatures

COL. 1	COL. 2	COL. 3	COL. 4	COL. 5	COL. 6	COL. 7	COL. 8	COL. 9	COL. 10	COL. 11	COL. 12
PROV. OF CAN. ADA ^j	STATION ^b	ELEVATION ^c	PERIOD OF RECORD ^d	HIGHEST TEMP. ON RECORD ^d	Summer Design Temp.				DESIGN DB TEMP. IN COMMON USE ^f	DESIGN WB TEMP. IN COMMON USE ^f	AVG. SUMMER WIND VELOCITY ^g
					1% F	2% F	5% F	10% F			MPH
Alta.	Calgary.....AP	3540°	1921-1950	97	86	83	80	77	90	66	9.7
	Edmonton.....AP	2219°	1921-1950	99	87	83	80	77	90	68	8.9
	Medicine Hat.....AP	2365°	1921-1950	108	92	89	86	82	90	65	9.1
B.C.	Vancouver.....AP	22°	1938-1950	87	80	77	75	72	80	67	7.8
Man.	Winnipeg.....AP	786°	1921-1950	108	89	86	84	81	90	71	11.5
N.B.	Fredericton.....CO	164°	1921-1950	102	89	87	84	81	90	75	...
	Saint John.....CO	119°	1921-1950	93	80	77	75	72	90	75	7.9
N.S.	Halifax.....CO	83°	1921-1950	94	80	78	76	73	90	75	6.6
	Sydney.....AP	197°	1921-1950	95	85	83	80	75	90	75	9.9
Ont.	Fort William.....AP	644°	1921-1950	104	85	82	79	76	90	75	8.4
	North Bay.....AP	1210°	1925-1950	99	83	80	77	74	90	75	9.6
	Ottawa.....AP	339°	1921-1950	102	89	86	84	81	90	75	8.9
	Sault Ste. Marie.....CO	635°	1921-1950	99	83	80	77	74	90	75	...
	Toronto.....CO	379°	1921-1950	105	88	86	83	81	93	75	8.1
	Toronto.....AP	578°	1938-1950	101	90	87	84	81	90	75	8.7
P.E.I.	Charlottetown.....CO	74°	1921-1950	98	82	79	77	74	90	75	8.7
Que.	Montreal.....CO	187°	1921-1950	97	87	84	82	79	90	75	9.9
	Montreal.....AP	98°	1942-1950	96	88	85	83	80	90	75	9.5
	Quebec.....CO	289°	1921-1950	96	85	82	80	77	90	75	9.0
Sask.	Regina.....AP	1894°	1921-1950	111	91	88	85	81	90	71	12.4
	Saskatoon.....AP	1645°	1921-1950	104	92	89	85	81	90	70	10.7

Notes for Table 2

- * Data compiled from U. S. Weather Bureau Data and various other sources.
- ^b Column 2. The station designation AP or CO indicates airport or city office station, respectively.
- ^c Column 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, corrected to 1948.
- ^d The periods of record indicated apply only to the highest temperature ever recorded shown in Column 5, and do not necessarily include all of the summer months of the first year indicated. The last year indicated includes July or August, except those marked d which terminate prior to July of that year.
- ^e It should be noted that Column 6 in the United States section of the table applies only to airports, as these data for city stations are not available at this time. The temperature shown is the maximum hourly outdoor temperature which has been equalled or exceeded 24 percent of the total hours of June, July, August and September for the 5-year period 1935-1939 inclusive. It is pointed out that in most cases the airport stations are outside of the city, and that these data would apply primarily to rural areas.
- ^f Columns 7 and 8 in the United States section and Columns 9 and 10 in the Canadian section of the table record wet and dry-bulb temperatures in use by A.S.H.A.E. members as reported by Chapter secretaries for various stations. Where such values were not available, the design temperatures published by API or obtained from various other sources have been inserted.
- ^g The average wind velocities in Column 9 in the United States section were furnished by the U. S. Weather Bureau, corrected to 1948. In general these velocities are averages for the months of June through September.
- ^h The bulletin published by the A.S.H.A.E. for the annual weather data of Detroit indicates 73 F as the design wet-bulb temperature which has been equalled or exceeded 5 percent of the hours for period 1935-39.
- ⁱ Blank spaces indicate data not available.
- ^j The data for Canada were compiled by D. W. Boyd and Morley Thomas from the records of the Meteorological Division, National Research Council of Canada.
- ^k The highest temperature ever recorded in the Canadian section of the table is for the 30 year period, 1921-1950, where available. In some cases the stations have been relocated and in a few instances some years are missing.
- ^l In the Canadian section of the table, the summer design dry-bulb temperatures for the basis of 1, 2, 5 and 10 percent are the Fahrenheit temperature values at or above which these percentages of all the July hourly outdoor temperatures occur, for the years 1941-1950 inclusive.
- ^m Most of the wind speeds are based on the periods ending in 1947 which are somewhat shorter than the periods for the highest temperatures. The three months June, July and August were used.

INSTANTANEOUS HEAT LOAD

The total cooling load is frequently divided for convenience into two components, *sensible heat* and *latent heat*. While this subdivision is not imperative, past practice has found it convenient.

A gain of *sensible heat* is considered to occur when there is a direct addi-