Table 1 .... Winter Climatic Conditions—United States[a] (Continued)

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9
State	Station[b]	Elevation[c] Ft.	Design Winter Temperatures—F Frequency of Recurrence, Years					Avg Wind Speed, Dec, Jan, Feb[d] Mph
			Once in 40	Once in 20	Once in 13	Once in 10	Once in 5	
N. J.	Plainfield C	120	−1	2	4	5	8	11.2
	Somerville C	75	−3	0	2	3	7	10.5
	Trenton C	144	−4	0	2	3	7	10.9
N. M.	Albuquerque A	5310	3	6	8	10	14	7.3
	Roswell A	3612	−4	1	4	6	11	7.1
	Santa Fe C	7045	−2	1	3	4	7	7.0
N. Y.	Albany C	114	−16	−12	−9	−8	−4	10.5
	Binghamton C	915	−12	−9	−7	−5	−2	6.8
	Buffalo A	693	−11	−7	−5	−4	0	17.1
	Canton C	458	−28	−25	−22	−21	−17	10.5
	Ithaca C	888	−9	−6	−4	−3	0	11.3
	New York C	425	1	3	5	6	9	16.8
	Oswego C	363	−12	−9	−7	−5	−1	12.1
	Rochester A	543	−9	−6	−4	−3	1	9.6
	Syracuse A	424	−16	−12	−10	−8	−4	11.2
N. C.	Asheville C	2280	−2	2	5	6	11	9.5
	Charlotte C	809	9	12	14	16	19	7.3
	Hatteras C	4	16	19	21	22	25	14.3
	Raleigh C	405	9	12	14	15	18	7.9
	Wilmington C	78	16	19	20	22	25	9.4
N. D.	Bismarck A	1650	−38	−34	−31	−29	−24	9.1
	Devils Lake C	1481	−37	−34	−32	−30	−27	10.1
	Grand Forks C	832	−37	−34	−31	−30	−26	13.2
	Williston C	1919	−44	−38	−35	−33	−27	8.6
Ohio	Cincinnati C	772	−9	−5	−3	−1	3	8.5
	Cleveland C	669	−11	−7	−5	−3	1	14.7
	Columbus C	812	−9	−5	−3	−2	2	11.6
	Dayton A	1002	−10	−6	−4	−2	2	11.1
	Sandusky C	608	−10	−6	−4	−2	2	11.0
	Toledo A	622	−11	−7	−5	−4	0	12.1
Okla.	Oklahoma City C	1264	−9	−4	−1	1	6	11.5
Ore.	Baker C	3501	−24	−17	−14	−11	−5	5.6
	Portland C	98	1	7	10	12	18	7.3
	Roseburg C	523	14	17	19	20	24	3.9
Pa.	Erie C	771	−9	−5	−3	−2	2	13.6
	Harrisburg A	335	0	2	4	5	8	7.6
	Philadelphia C	18	1	4	6	7	11	11.0
	Pittsburgh C	929	−9	−6	−3	−2	2	11.6
	Reading C	311	−2	1	3	4	8	9.0
	Scranton C	877	−8	−4	−2	−1	3	7.6
R. I.	Block Island C	46	3	5	7	8	10	20.6
	Kingston C	100	−5	−2	0	1	4	11.7
	Providence C	77	−4	−1	1	2	5	12.1
S. C.	Charleston C	59	17	20	22	23	27	10.5
	Columbia C	401	14	17	19	20	24	8.0
S. D.	Huron C	1342	−27	−23	−21	−20	−17	10.7
	Pierre A	1718	−28	−25	−22	−21	−17	11.7
	Rapid City A	3165	−28	−24	−22	−20	−16	8.0
Tenn.	Chattanooga C	952	0	5	8	10	14	7.7
	Knoxville A	950	−3	2	5	7	12	7.2
	Memphis C	348	0	4	6	8	13	9.3
	Nashville C	714	−4	0	3	5	10	9.8
Tex.	Abilene A	1751	0	5	7	9	14	10.1
	Amarillo A	3590	−10	−5	−2	0	5	12.1
	Corpus Christi A	40	16	20	23	24	29	11.0
	Dallas A	487	1	6	8	10	15	10.6

Table 1 .... Winter Climatic Conditions—United States[a] (Concluded)

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9
State	Station[b]	Elevation[c] Ft.	Design Winter Temperatures[e]—F Frequency of Recurrence, Years					Avg Wind Speed, Dec, Jan, Feb[d] Mph
			Once in 40	Once in 20	Once in 13	Once in 10	Once in 5	
Tex.	El Paso A	3920	15	18	20	21	25	9.0
	Fort Worth C	708	0	5	8	10	15	10.5
	Galveston C	128	16	20	23	24	29	11.2
	Houston C	198	13	17	19	21	25	10.5
	Palestine C	555	4	8	11	13	18	8.0
	San Antonio A	782	12	16	19	20	25	8.2
	Taylor C	570	5	9	12	14	19	9.8
Utah	Salt Lake City C	4346	−8	−3	−1	1	6	7.8
Vt.	Burlington A	331	−23	−19	−17	−15	−11	11.6
	Northfield C	840	−24	−21	−19	−17	−13	8.8
Va.	Cape Henry C	24	13	16	17	18	21	14.0
	Lynchburg A	947	7	10	11	12	15	8.1
	Norfolk C	91	11	14	15	17	20	12.1
	Richmond C	180	6	9	11	12	16	8.1
	Wytheville C	2400	−3	1	3	4	8	7.3
Wash.	Seattle C	104	9	13	15	17	21	9.8
	Spokane A	2357	−28	−20	−16	−13	−5	6.2
	Tacoma C	279	9	13	15	16	20	8.0
	Tatoosh Island C	110	12	16	18	20	25	18.9
	Walla Walla C	949	−23	−16	−12	−8	−1	5.3
W. Va.	Elkins A	1970	−10	−7	−4	−3	1	6.2
	Parkersburg C	685	−7	−3	−1	1	5	7.2
Wis.	Green Bay C	598	−27	−23	−20	−18	−14	10.5
	La Crosse C	725	−27	−23	−20	−19	−14	9.3
	Madison C	1008	−25	−21	−19	−17	−13	10.1
	Milwaukee C	744	−24	−20	−17	−15	−10	12.1
Wyo.	Cheyenne A	6139	−26	−22	−19	−17	−12	13.3
	Lander A	5569	−39	−33	−30	−27	−21	3.9
	Yellowstone Park C	6239	−45	−38	−34	−30	−23	8.8

Notes for Table 1

[a] Data compiled from U. S. Weather Bureau records by H. C. S. Thom.
[b] Col. 2. The stations followed by letter A are airport stations; all others are city office stations and are followed by the letter C.
[c] Col. 3. Elevations marked c are ground elevations at stations. All other elevations given are the actual elevations of the thermometer bulb above mean sea level.
[d] Wind speeds are from U. S. Weather Bureau records for the period ending February 1948.
[e] The winter design temperatures shown in Columns 4–8 inclusive for U. S. cities are minimum average daily temperatures that will recur with a probable frequency of once in the number of years shown at the head of the column based on the U. S. Weather Bureau records for the 30-year period between 1921 and 1950. For example, the temperatures in Column 6 will recur once every 13 years as minimum average daily values, the temperatures in Column 7, once every 10 years, etc.

Tables 1 or 2, a heating engineer should consider each of the following factors:

1. Is heat capacity of structure high or low?
2. Is structure insulated?
3. Is structure exposed to high wind?
4. Is the ventilation or infiltration load high?
5. Is there more glass area than normal in the structure?
6. During what part of the day will it be used?
7. What is the nature of occupancy?
8. Will there be long periods of operation at reduced indoor temperature?
9. What is the amplitude between maximum and minimum daily temperature in the locality?
10. Are there local conditions which cause significant variation from temperatures reported by Weather Bureau?
11. What auxiliary heating devices will there be in the building?
12. What is the expected cost of fuel or energy?

For the usual structure under typical conditions the ASHAE Technical Advisory Committee on Heating and Air Conditioning Loads recommends that the design temperatures in Column 6 be used for U. S. cities. The U. S. Weather Bureau data show that an average daily temperature lower than that shown in Column 6 will occur with a probability of once in 13 years.

If a careful study of preceding factors 1 to 12 shows that the indoor temperature of the structure in question will respond more quickly than normal to extreme outdoor temperatures that persist for less than twelve hours, then design temperatures from Columns 7 or 8 may be used. On the other hand, if the structure is less responsive than normal to changes in outdoor temperature, outdoor design temperatures from Columns 5 or 4 may be selected.

The designer must keep in mind, before reaching a final