CLIMATIC INFORMATION
for
BUILDING DESIGN IN CANADA

1961

SUPPLEMENT No. 1 TO THE NATIONAL BUILDING CODE OF CANADA

Reprinted Edition

Issued by the

ASSOCIATE COMMITTEE ON THE NATIONAL BUILDING CODE
NATIONAL RESEARCH COUNCIL
OTTAWA, CANADA

Printed in Canada

NRC No. 6483
Price 25 cents

ASSOCIATE COMMITTEE ON THE NATIONAL BUILDING CODE (1960 - 1961)

R. F. Legget (Chairman)
E. A. Allcut
L. R. Andrews
D. C. Beam
C. N. Blankstein
A. E. Bridges
A. J. Cameron
J. P. Carrière
S. D. C. Chutter
J. Connolly
R. Duschenes
R. S. Ferguson
J. H. Jenkins
M. Joubert
S. D. Lash
F. Lasserre*
W. M. McCance
G. S. Mooney
J. H. Palmason
R. B. Rolland
P. S. Secord
A. Tubby
A. E. Berry (ex officio)
R. E. Bolton (ex officio)
C. D. Carruthers (ex officio)
C. A. Thomson (ex officio)
J. M. Robertson (Secretary)

*Died April 1961.

CLIMATIC INFORMATION FOR BUILDING DESIGN IN CANADA

SUPPLEMENT No. 1
NATIONAL BUILDING CODE OF CANADA

TABLE OF CONTENTS

CLIMATIC INFORMATION
for
BUILDING DESIGN IN CANADA

by

DONALD W. BOYD
(D.O.T. Meteorologist with DBR/NRC)

A joint contribution from the Meteorological Branch, Department of Transport, and the Division of Building Research, National Research Council.

The great diversity of climate in Canada has a considerable effect on the performance of buildings, and consequently the design of buildings should reflect this diversity. The purposes of this handbook are: firstly, by means of maps, to indicate the variability and general distribution of earthquake intensity, permafrost, and those climatic elements that are most frequently considered in building design; secondly, to explain briefly how the design weather values are computed; and, thirdly, to present recommended design data for a number of cities and towns. It is not practical to list values for all municipalities but recommended design weather data for any location in Canada can be obtained by writing to the Secretary, Associate Committee on the National Building Code, National Research Council, Ottawa.

The choice of climatic elements that are included in this handbook and the form in which they are expressed has been dictated largely by the requirement for specific values in several sections of the National Building Code of Canada 1960. A few additional charts are included. The following notes explain briefly the significance of these particular elements in building design and indicate what observations were used and how they were analysed to yield the required design values. To select design values for other locations in Canada, the observed or computed values of each element for specific observation stations were plotted on maps to the scale of one inch to 100 miles. Isolines were drawn on these working charts to show the distributions of the design values. The charts in this handbook have been reduced from the working charts, but these small copies are not intended as a source of design values.

In the Table, design weather data are listed for 186 urban municipalities which have been chosen on the basis of population and geographical location. The tabulated values are those recommended by the Associate Committee on the National Building Code and are not necessarily the same as those used in local bylaws. In some cases the values obtained from the large-scale charts have not been rounded off, for reasons explained later. Some municipalities may wish to round off these values in their bylaws.

Neither the charts nor the list of design values should be expected to give a complete picture of the variations of these climatic elements. The list of observed or computed values and the large-scale manuscript charts will be used for estimating values for locations not included in the Table, if application is made to the Secretary as already mentioned. In the absence of weather observations at any particular location, a knowledge of the local topography may be important. For example, cold air has a tendency to collect in depressions, precipitation frequently increases with elevation, and winds are generally stronger near large bodies of water. These and other relationships affect the corresponding design values, and will be taken into consideration where possible in answering inquiries.

All the weather records that were used in preparing the charts were, of necessity, observed at inhabited locations, and hence the charts apply only to populated areas. This is particularly significant in mountainous areas where the lines on the charts apply only to the populated valleys and not to the mountain slopes and high passes, where, in some cases, very different conditions are known to exist.

WINTER DESIGN TEMPERATURES (CHARTS 1 AND 2)

A building and its heating system should be designed to maintain the inside temperature at some pre-determined level. To do this it is necessary to know the most severe weather conditions under which the system will be expected to function satisfactorily. Failure to maintain the inside temperature at the pre-determined level will usually not be serious if the temperature drop is not great and if the duration is not long. The outside conditions used for design should, therefore, not be the most severe in many years, but should be the somewhat less severe conditions that are occasionally but not greatly exceeded.

Winter design temperature is based on an analysis of winter air temperatures only. Wind and solar radiation also affect the inside temperature of most buildings but there is no convenient way of combinating their effects with that of outside air temperature. The use of average wind and radiation conditions is usually satisfactory for design purposes.

The choice of a method to determine the winter design temperature depends to some extent on the form of the available temperature records. In Canada, hourly temperatures in degrees Fahrenheit for ten successive years were available on punched cards for over 100 stations, and from these cards it was possible to obtain frequency distributions. The winter design temperature is defined, therefore, as the lowest temperature at or below which only a certain small percentage of the hourly outside air temperatures in January occur. The Climatology Division, Meteorological Branch, Department of Transport, prepared tabulations showing the number of hours in January in the ten years from 1951 to 1960 inclusive in which the temperature fell in each of over 50 two-degree intervals. From this it was possible to select the two-degree interval below which only a small number of temperatures fell. To find the required temperature to the nearest degree an interpolation rule was devised based on the normal distribution. Using this rule it was possible to select the temperature below which 1 per cent or 2½ per cent of the January temperatures fell.

Tabulations and design temperatures for 118 stations were obtained. The temperatures were plotted on maps and used to estimate design temperatures for the other stations in the Table. Since the pattern of winter design temperature charts is similar to that of mean annual minimum temperature charts, the latter chart in the Atlas of Canada (1) influenced the pattern of these winter design temperature charts in the Far North where hourly temperature observations are scarce.

Most of the design temperatures on the 2½ per cent chart in the Prairie Provinces and British Columbia are 5 to 10 degrees higher than they are on the corresponding chart by Thomas in the 1953 edition of the National Building Code of Canada (2). Each chart is based on temperatures for only a 10-year period: the 1953 chart on the period from 1941 to 1950 and the current chart on the period from 1951 to 1960. The differences emphasize the statistical inadequacy of a 10-year period, but unfortunately temperature reports have been punched on cards for longer periods for only a very few stations. The earlier period includes the unusually cold January of 1950 when the average temperature in the four western provinces ranged from 12 to 32 degrees below normal. By omitting this exceptional month it is thought that the present values will more nearly describe a typical winter.

In most cases the temperatures observed at airports have had to be used and no adjustments have been made to allow for the city effect. The winter design temperatures are not reliable to within one degree, but the differences between the 1 and 2½ per cent values (which average about four degrees) are more reliable. The design temperatures, therefore, are listed to the nearest degree as an indication of these differences.

The 2½ per cent winter design temperature is the value ordinarily used in the design of heating systems. In special cases when the control of inside temperature is more critical, the 1 per cent value may be used.

HEATING DEGREE-DAYS (CHART 3)

It has long been known that the amount of fuel or energy required to keep the interior of a building at about 70°F. when the outside air temperature is below 65°F. is roughly proportional to the difference between 65°F. and the outside temperature. Wind speed and solar radiation, and the extent to which a building is exposed to these elements, also affect the heat required, but there is no convenient way of combining these effects. For average wind and radiation conditions, however, the proportionality with the temperature difference still holds and hence the heating degree-days are based on temperature alone.

Since the fuel required is also proportional to the duration of cold weather, a convenient method of combining these elements of temperature and time is to add the differences between 65°F. and the mean temperatures for every day in the year when the mean temperature is below 65°F. It is assumed that no heat is required when the mean outside air temperature for the day is 65°F. or higher.

Daily degree-days have been computed and added for many years at Winnipeg, Toronto and Halifax. The values given in the Table for these three cities are the average annual totals for the 30-year period from 1921 to 1950. Values for these three cities computed from monthly mean temperatures, as explained below, were all within 30 degree-days of the exact values.

Daily degree-days are not available for the full 30-year period for other stations. An approximate but reasonably accurate method of obtaining degree-days from monthly mean temperatures was devised by Thom in 1954 (3). This method was used by Thomas and Boyd in 1956 to compute normal monthly and annual degree-day totals based on normal mean temperatures for the period 1921 to 1950 for about 100 stations (4). Since that time they have computed values for an additional 70 stations, some of them especially for the present chart. These degree-day values were plotted on a map (Chart 3) and used to estimate values for other municipalities listed in the Table. Computed values are shown in the Table to the nearest 10 degree-days. Values read from the manuscript chart are to the nearest 100 degree-days.

RAINFALL INTENSITY (CHART 4)

Roof drainage systems are designed to carry off the rainwater from the most intense rainfall that is likely to occur. A certain amount of time is required for the rainwater to flow across or down the roof before it enters the gutter or drainage system. This results in the smoothing out of the most rapid changes in rainfall intensity. The drainage system, therefore, need cope only with the flow of rainwater produced by the average rainfall intensity over a period of a few minutes which can be called the concentration time.

In Canada, it has been customary to use the 15-minute rainfall that will probably be exceeded on the average once in ten years. The concentration time for small roofs is much less than 15 minutes and hence the design intensity will be exceeded more frequently than once in ten years. The safety factors included in the tables in Part 7 of the National Building Code, will probably reduce the frequency to a reasonable value and, in addition, the occasional failure of a roof drainage system will not be particularly serious in most cases.

Chart 4 is a revision of the corresponding charts by Thomas (2) and by Bruce (5) which show the 15-minute rainfall, in inches, that will probably be exceeded on the average once in ten years. As Bruce explained, there were available to him only nine locations in Canada with recording rain gauge observations covering a reasonable length of time. From these he computed the 15-minute, ten-year, rainfall. Bruce also computed the maximum 6-hour rainfall expected once in ten years for 85 locations and used the ratios of 15-minute to 6-hour rainfalls at six stations where both were available to estimate the 15-minute value for the other locations. Rainfall intensities for some locations in northern Canada estimated by the United States Weather Bureau and the latest rainfall intensity figures for cities in the United States near the Canadian border were also used. Since the publication of his paper Bruce has analysed the rainfall records from several additional stations and these have been used in redrawing the chart.

It would be very difficult to estimate the pattern of rainfall intensity in British Columbia where precipitation is extremely variable. Along the coast an attempt has been made, based on reports from Victoria and Vancouver and a few stations in the State of Washington. In the interior of British Columbia, the value of 0.6 inch based on a seven-year record from Penticton is the only available indication of the intensity for all the valleys in the southeastern part of the Province. In the Fraser Valley and further north, the value may be slightly smaller.

ONE-DAY RAINFALL (CHART 5)

If, for any reason, a roof-drainage system becomes ineffective, the accumulation of rainwater may be great enough in some cases to cause a significant increase in the load on the roof. Although the period during which rainwater may accumulate is unknown, it is common practice to use the maximum one-day rainfall for estimating the additional load.

For most weather stations in Canada the total rainfall for each day is published. The maximum "one-day" rainfall (as it is usually called) for several hundred stations has been determined and published by the Climatology Division (6). Since these values are all for predetermined 24-hour periods, beginning and ending at the same time each morning, it is probable that most of them have been exceeded in periods of 24 hours including parts of two consecutive days. The maximum "24-hour" rainfall (i.e. any 24-hour period) according to Hershfield and Wilson is, on the average, about 113 per cent of the maximum "one-day" rainfall. (7)

Most of the rainfall amounts that were used in preparing Chart 5 were based on reports covering between 20 and 30 years. These maximum values differ greatly within relatively small areas where little difference would be expected. The variable length of records may account for part of this variability which might be reduced by an analysis of annual maxima instead of merely selecting the maximum in the period of record. Whatever the reason, the variability has necessitated a considerable amount of smoothing in drawing the chart and hence the isolines do not in all cases agree with the observed maximum one-day rainfalls. The tabulated values are intended to be representative of the immediate area, and therefore include some local variations which cannot be shown on the small-scale chart.

ANNUAL TOTAL PRECIPITATION (CHART 6)

The total amount of precipitation that normally falls in one year is frequently used as a general indication of the wetness of a climate. As such it is thought to have a place in this handbook. Total precipitation is the sum in inches of the measured depth of rainwater and one tenth of the measured depth of snow (since the average density of fresh snow is about one tenth that of water).

The average annual total precipitations for the 30-year period from 1921 to 1950 were used in preparing Chart 6. The values were selected from a list of precipitation normals prepared by the Climatology Division (8). All stations with records for the full 30 years were plotted on the map or compared with nearby stations that had already been plotted to ensure consistency. Many adjusted values were used in areas where unadjusted 30-year values were not available. The corresponding chart in the Atlas of Canada (1) was used for reference.

SNOW LOADS (CHART 7)

The roof of a building should be able to support the greatest weight of snow that is likely to accumulate on it. Some observations of snow loads on roofs have been made in recent years, but they are not sufficiently numerous to form the basis for a snow load chart. Similarly, observations of the weight or water equivalent of the snow on the ground are not sufficient for such a chart. Although the roof load and water equivalent observations are necessary (as mentioned below) the chart must be based on the more numerous observations of the depth of snow on the ground.

In estimating the design snow load from snow depth observations, these steps were followed:

1. The depth of snow on the ground which will be equalled or exceeded once in 30 years, on the average, was computed.
2. A density was assumed and used to convert snow depths to loads.
3. An adjustment was added to allow for the increase in the load caused by rainwater absorbed by the snow.
4. A reduction was allowed because the accumulation of snow on roofs is generally less than that on the ground.

These steps are explained in more detail in the following paragraphs.

The annual maximum depths of snow on the ground for periods ranging from 10 to 18 years were available for over 200 stations. These data were assembled and analysed using Gumbel's extreme value method as explained by Boyd (9). The resulting chart showed the distribution in Canada of the snow depth which will probably be equalled or exceeded on the average once in 30 years.

The specific gravity of old snow generally ranges from 0.2 to 0.4 times that of water. It is usually assumed in Canada that 0.1 is the average specific gravity of new snow. The

30-year maximum snow depth will almost certainly occur immediately after an unusually heavy snowfall and hence a large proportion of the snow cover will have a low density. It therefore seemed reasonable to assume a mean specific gravity under these unusual circumstances of about 0.2 for the whole snow cover. In practice it is convenient to assume that one inch of snow cover corresponds to a load of exactly one pound per square foot. This corresponds to a specific gravity of 0.192.

Because roof failures in Canada frequently occur when early spring rain adds to an already heavy snow load, it was considered advisable to increase the snow load by the load of rain-water that it might retain. It is convenient to use the maximum one-day rainfall in the period of the year when snow depths are greatest. Boyd has explained how a 2- or 3-month period was selected (9).

The results from the first five winters of a survey of snow loads on roofs indicated that roof loads were generally less than loads on the ground. On the basis of these observations, the Associate Committee on the National Building Code decided that for exposed flat or exposed low-slope roofs the design snow load would be 80 per cent of the maximum snow load on the ground.

A further decrease in the design snow load is allowed for steeply sloping roofs, and substantial increases are required for roofs where snow accumulation may be more rapid. The detailed requirements are given in Section 4.1. of the National Building Code 1960.

Chart 7 shows the general distribution of snow loads on the ground, that is, the load due to snow which will be exceeded on the average once in 30 years, plus the load due to the maximum one-day rainfall in the late winter or early spring. Values of the snow loads on the ground were read from the large-scale original of Chart 7 and are tabulated under the heading "Ground". The design snow loads, or snow loads on roofs, which are 80 per cent of the ground loads, are tabulated under the heading "Roof". The snow loads are tabulated in whole pounds per square foot because it is not practical to round off both ground and roof loads to multiples of five.

Charts on such a small scale as those in this handbook cannot show local differences in the weather elements, even where these are known to exist. All the weather observations used in preparing this chart were, of necessity, taken at inhabited locations, and hence the charts apply only to permanently populated areas. This is particularly significant in mountainous areas where the lines on the chart apply only to the populated valleys and not to the mountain slopes, where, in some cases, much greater snow depths are known to accumulate.

WIND LOADS (CHART 8)

All structures should be built to withstand the pressures and suctions caused by the strongest wind that is likely to blow at the site in many years. The following steps were followed in estimating these pressures and suctions from the records of hourly wind speeds:

1. The annual maximum hourly wind speeds were analysed to obtain the hourly wind speed that will be equalled or exceeded, on the average, once in 30 years.
2. The result of a comparison of hourly wind speeds with the corresponding maximum gust speeds was used to convert maximum hourly speeds to maximum gust speeds.
3. An average air density was assumed in order to compute the "velocity pressure".
4. For heights over 40 feet the velocity pressure was increased.
5. The design pressures are finally obtained by multiplying the velocity pressure by a factor which depends on the shape of the building.

These shape factors are described in Supplement No. 3 of the National Building Code. The other four steps are discussed in the following paragraphs.

The number of miles of wind that pass an anemometer head in each hour, or the hourly average wind speed, is the only wind speed record that is kept at many wind-measuring stations in Canada. These hourly mileages must therefore be used for any statistical analysis that is to cover the country. The annual maximum hourly mileages for over 100 stations for periods from 10 to 22 years were analysed using Gumbel's extreme value method, to estimate the hourly mileages that would be equalled or exceeded, on the average, once in 30 years.

The pressure on the wall of a building does not respond instantaneously to rapid changes in the wind speed and hence the most rapid wind fluctuations may have little effect on the larger buildings. Chimneys and towers, being smaller, are affected more quickly. The duration of the wind gust used in design should therefore depend on the size and shape of the structure. This is not feasible at present, and in practice the average response time of a Dines pressure tube anemometer (which is about 2 or 3 seconds) is used as a reasonable period for the design gust speed. Dines pressure tube anemometers (from which gust speeds could be obtained) and cup anemometers (from which hourly mileages are read) were both operated at 11 stations for 3 or more years in the period from 1950 to 1957. A comparison of over 1500 hourly mileages of 30 miles or over with the corresponding maximum gust speeds yielded the equation:

$$G = 5.8 + 1.29\,V$$

where G is the gust speed in miles per hour and V is the hourly mileage. This equation was used to convert all the "30-year hourly mileages" to "30-year gusts". These are the values that were used to prepare Chart 8: wind gust speeds that will be equalled or exceeded, on the average, once in 30 years. Values read from the original chart are shown in the Table under the heading "Gust".

Pressures and suctions caused by the wind depend not only on the speed of the wind but also on the air temperature and the atmospheric pressure. If G is the design wind or the wind gust speed in miles per hour, then the velocity pressure, P, in pounds per square foot is given by the equation:

$$P = CG^2$$

where C depends on air temperatures and atmospheric pressure. The value 0.0027 is within 10 per cent of the monthly average value of C for most of Canada in the windy part of the year. This value (0.0027) has been used to compute all the velocity pressures in the Table from the corresponding gust speeds.

For buildings over 40 feet high, the velocity pressure must be increased according to a table in Section 4.1 of the National Building Code 1960 which is based on the assumption that the gust speed increases in proportion to the one-seventh power of the height. For buildings 20 feet high or less the velocity pressure may be reduced.

PERMAFROST (CHART 9)

The line on Chart 9 indicates the *approximate* southern limit of permafrost in Canada. The distribution of permafrost varies from continuous in the north to discontinous in the south. In the continuous zone, permafrost occurs everywhere under the ground surface and is generally hundreds of feet thick. Southward, the continuous zone gives way gradually to the discontinuous zone where permafrost exists in combination with some areas of unfrozen material. The discontinuous zone is one of broad transition between continuous permafrost and ground having no permafrost. In this zone, permafrost may vary from a widespread distribution with isolated patches of unfrozen ground to predominantly thawed material containing islands of ground that remain frozen. In the southern area of this discontinuous zone, permafrost occurs as scattered patches and is only a few feet thick.

It is emphasized that the line on this map must be considered as the approximate location of a broad transition zone many miles wide in which permafrost thins out in scattered islands. The location of individual islands cannot be shown on the map. Prior to construction it is particularly important to conduct careful site investigations at any proposed building location in the vicinity of the line. Permafrost also exists at high altitudes in southern Labrador-Ungava, and in the mountains of Western Canada a great distance south of the line shown on the map.

EARTHQUAKE INTENSITY (CHART 10)

Earthquake intensity is the estimated intensity of earthquake forces that may occur. An indication of the possible damage to which buildings might be subjected is given by zones. The location and extent of these zones were determined on the basis of data received from the Dominion Observatories Branch, Department of Mines and Technical Surveys. These data are based on a system of earthquake zoning established by the United States Coast and Geodetic Survey.

The zones shown in Chart 10 and the zone numbers listed in the Table indicate intensities as follows:

Zone 0 No damage

Zone 1 Minor damage

Zone 2 Moderate damage

Zone 3 Major damage

Where severe earthquakes have occurred in the recent past, the location is indicated with the magnitude according to the Gutenburg-Richter scale.

The earthquake factor to be used in the National Building Code 1960 is the same as the zone number except in Zone 3 where the factor is 4. Both the zone numbers and the earthquake factors are listed in the Table.

REFERENCES

(1) "Atlas of Canada". Dept. of Mines and Technical Surveys, Geographical Branch. Ottawa 1957.

(2) Thomas, M. K. "Climatological Atlas of Canada". National Research Council, Division of Building Research, and Dept. of Transport, Meteorological Branch. Ottawa 1953. NRC No. 3151.

Also in "National Building Code of Canada 1953, Part 2: Climate". National Research Council, Assoc. Committee on the National Building Code. Ottawa 1953. NRC No. 3188.

(3) Thom, H. C. S. "The Rational Relationship between Heating Degree-Days and Temperature". Monthly Weather Review, Vol. 82, No. 1, p. 1-6, Jan. 1954.

(4) Thomas, M. K. and D. W. Boyd. "Standard Period Heating Degree-Day Normals". Dept. of Transport, Meteorological Branch, CIR-2849, CLI-16, Dec. 1956.

(5) Bruce, J. P. "Rainfall Intensity—Duration—Frequency Maps for Canada". Dept. of Transport, Meteorological Branch, CIR-3243, TEC-308, Aug. 1959.

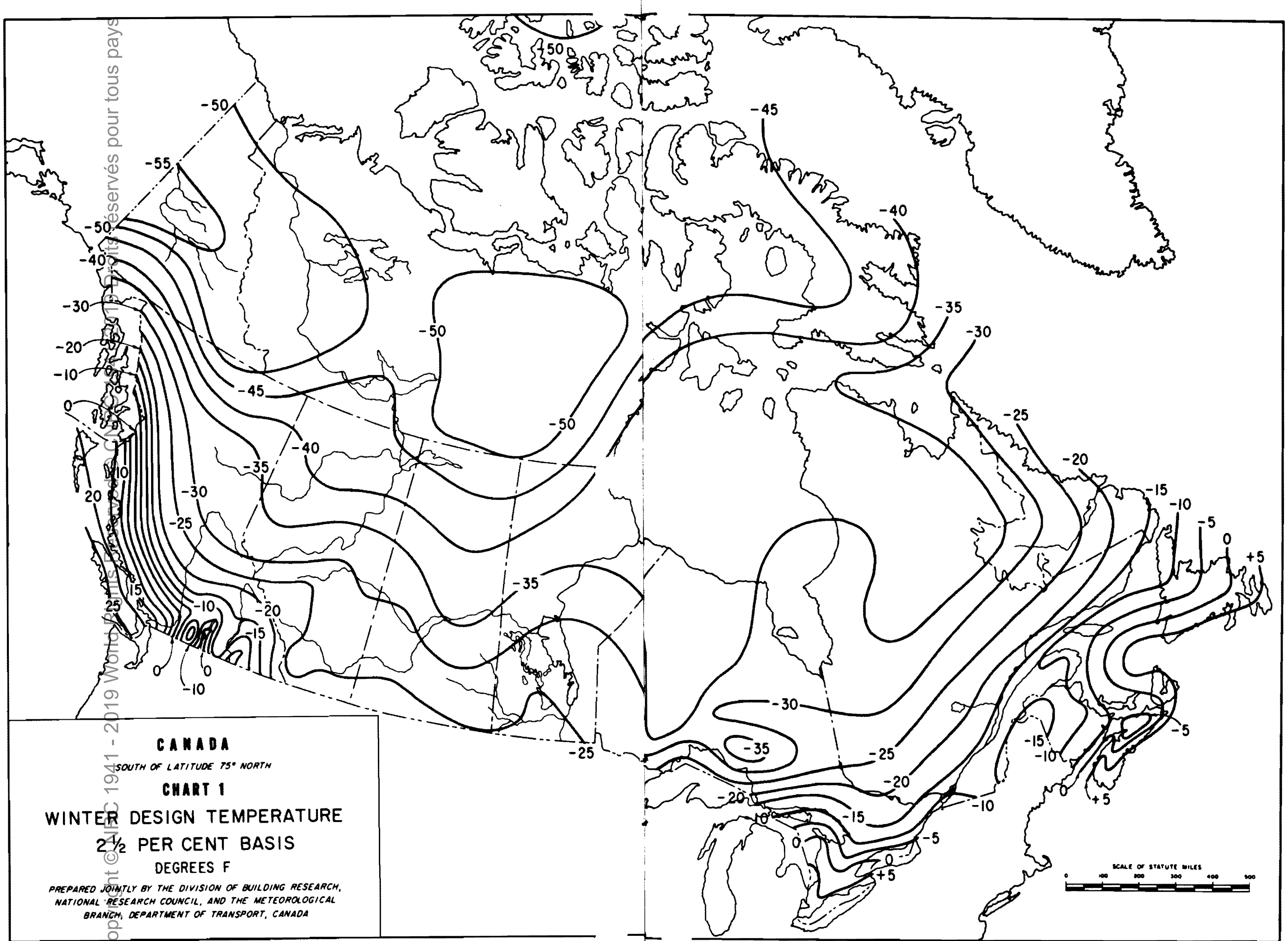
(6) "Maximum Precipitation Reported on any One Observation Day 1931–1958". Dept. of Transport, Meteorological Branch, Climatic Data Sheets No. 9–59, Oct. 1959.

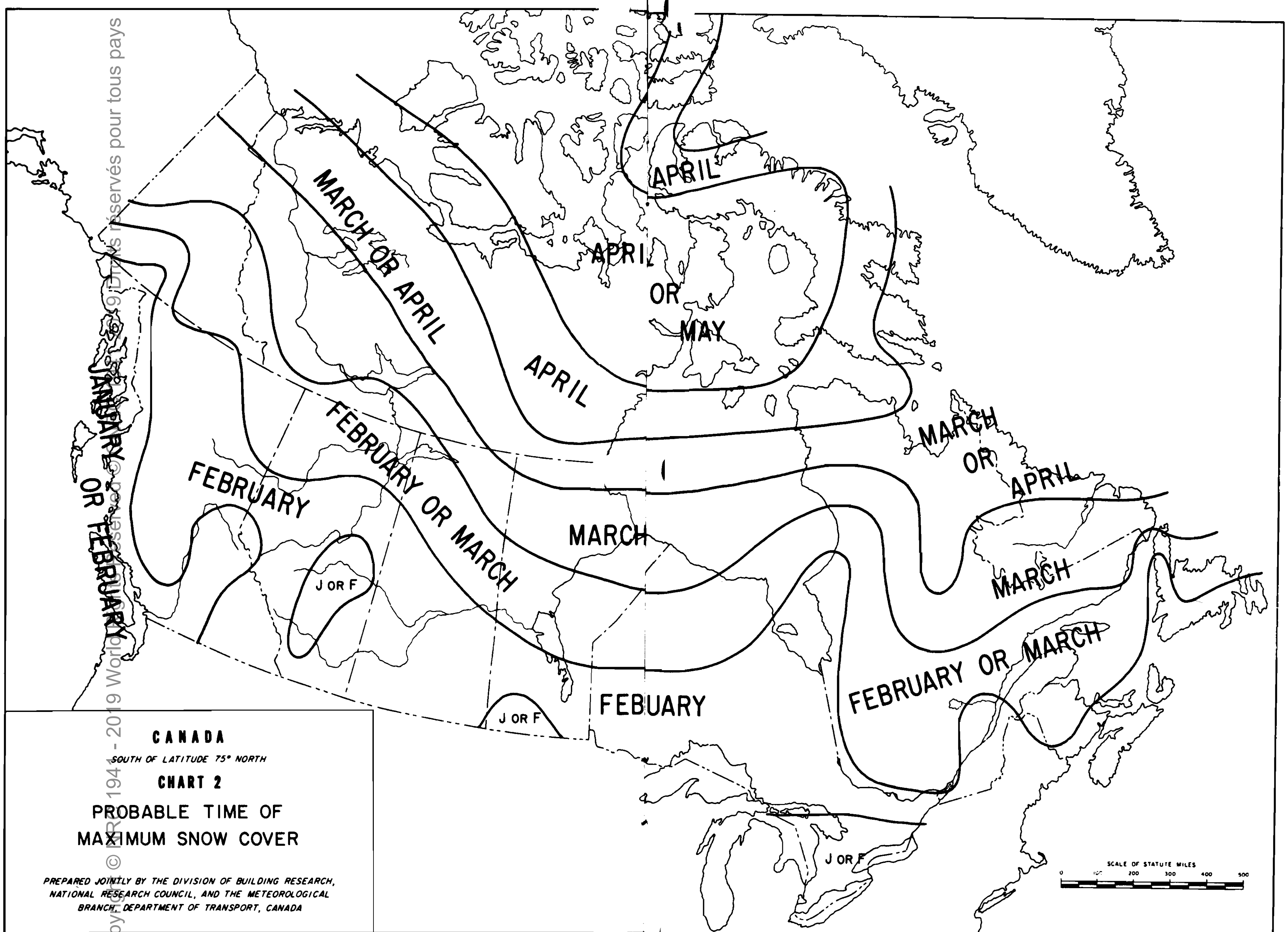
(7) Hershfield, D. M. and W. T. Wilson. "Generalizing of Rainfall—Intensity—Frequency Data". International Association of Scientific Hydrology, General Assembly, Toronto, 1957, Vol. 1, p. 499–506.

(8) "Temperature and Precipitation Normals for Canadian Weather Stations Based on the Period 1921–1950". Dept. of Transport, Meteorological Branch, CIR-3208, CLI-19, June 1959.

(9) Boyd, D. W. "Maximum Snow Depths and Snow Loads on Roofs in Canada". Proceedings, 29th Annual Meeting, Western Snow Conference, Spokane, Wash., April 1961.

CHARTS 1 to 10


CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 1
WINTER DESIGN TEMPERATURE
2½ PER CENT BASIS
DEGREES F
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES



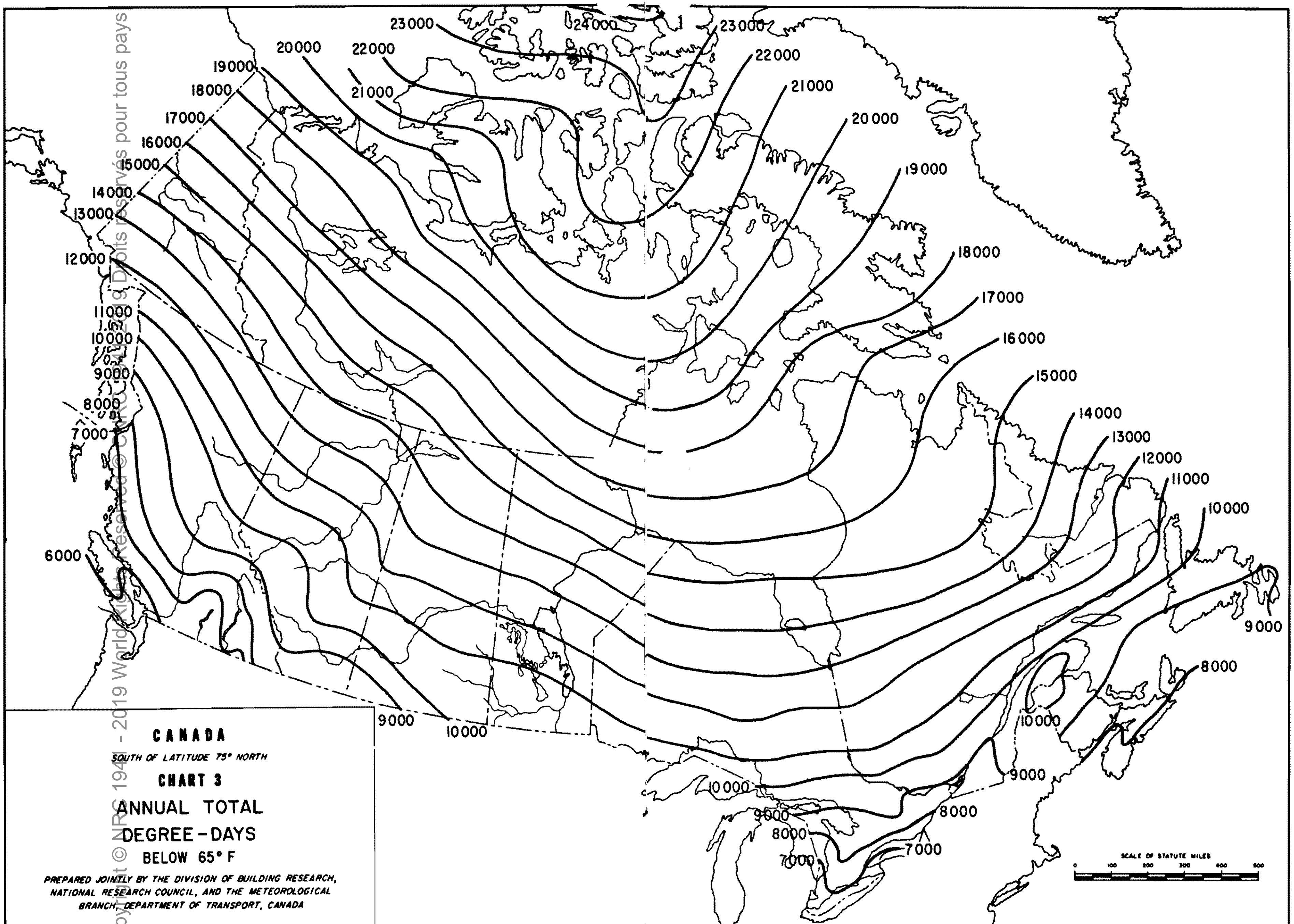
CANADA

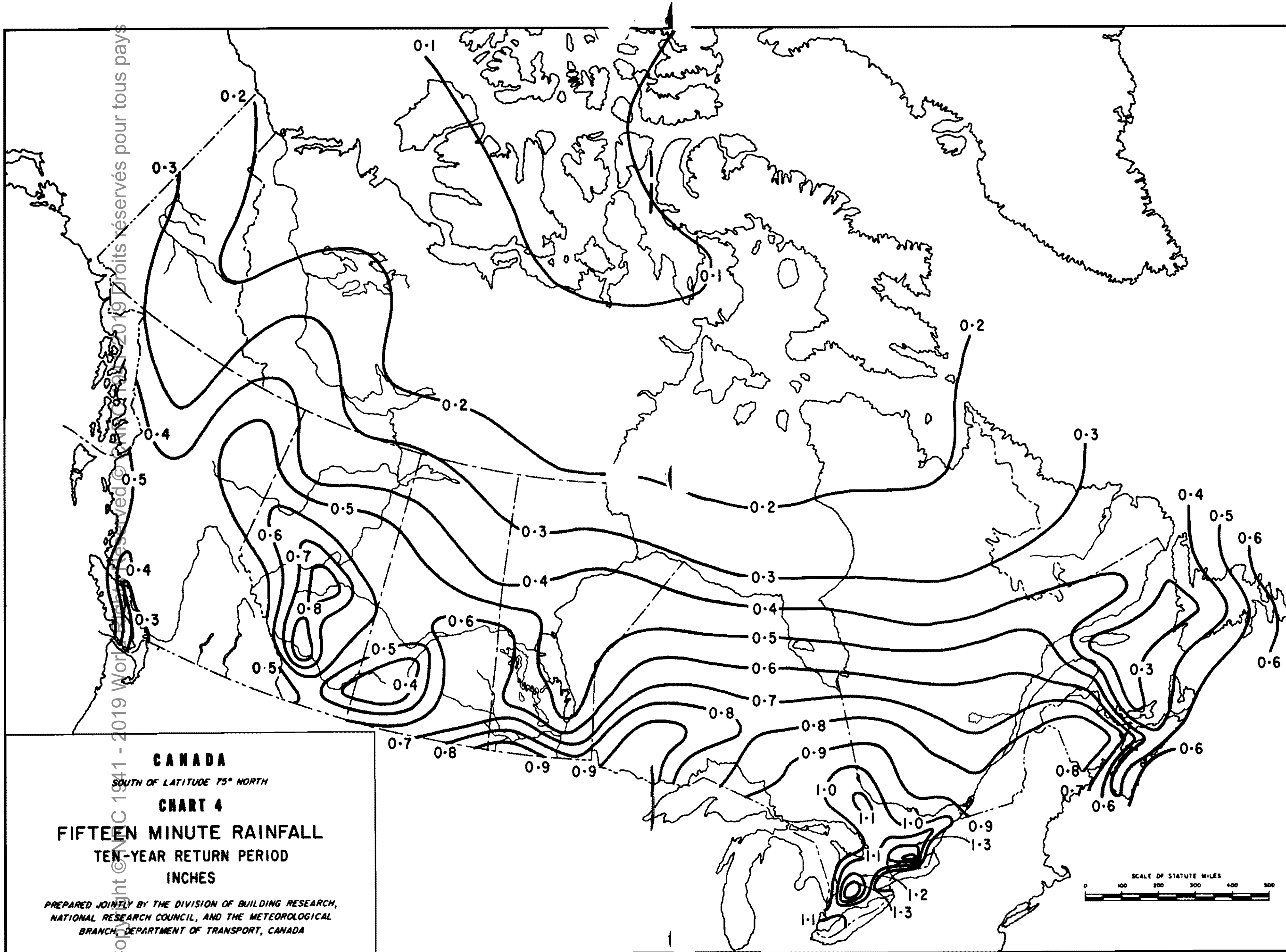
SOUTH OF LATITUDE 75° NORTH

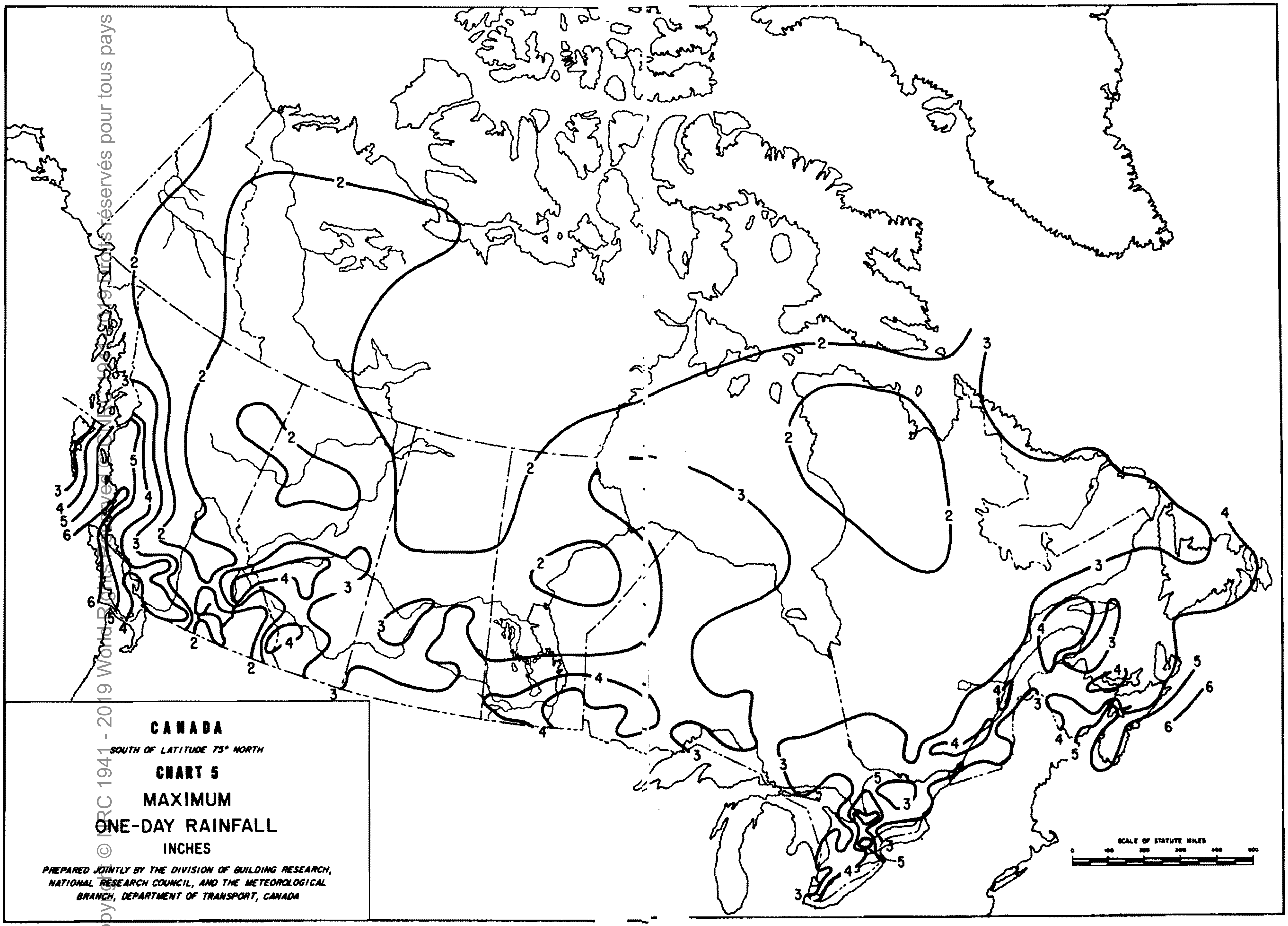
CHART 2

PROBABLE TIME OF MAXIMUM SNOW COVER

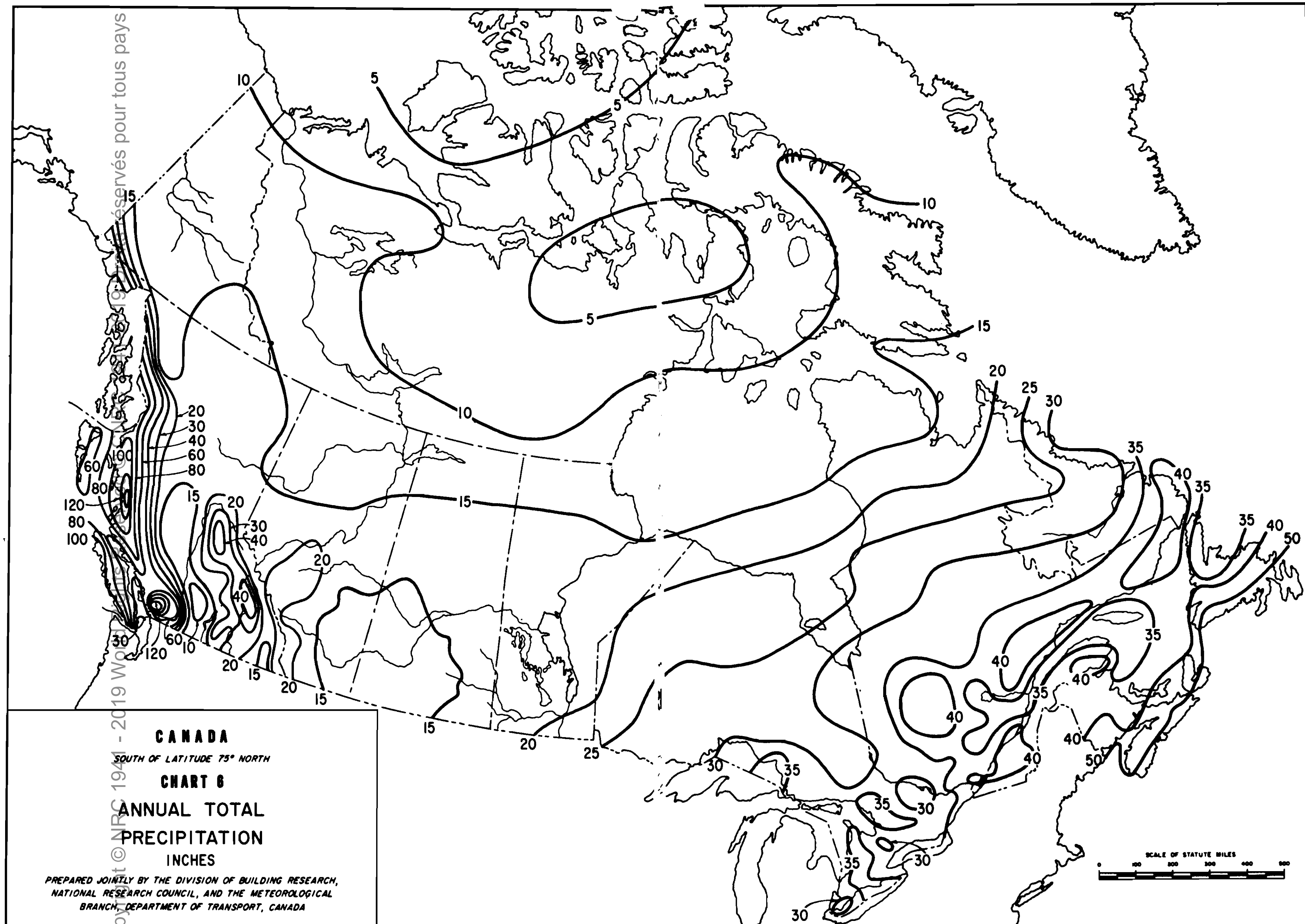
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA

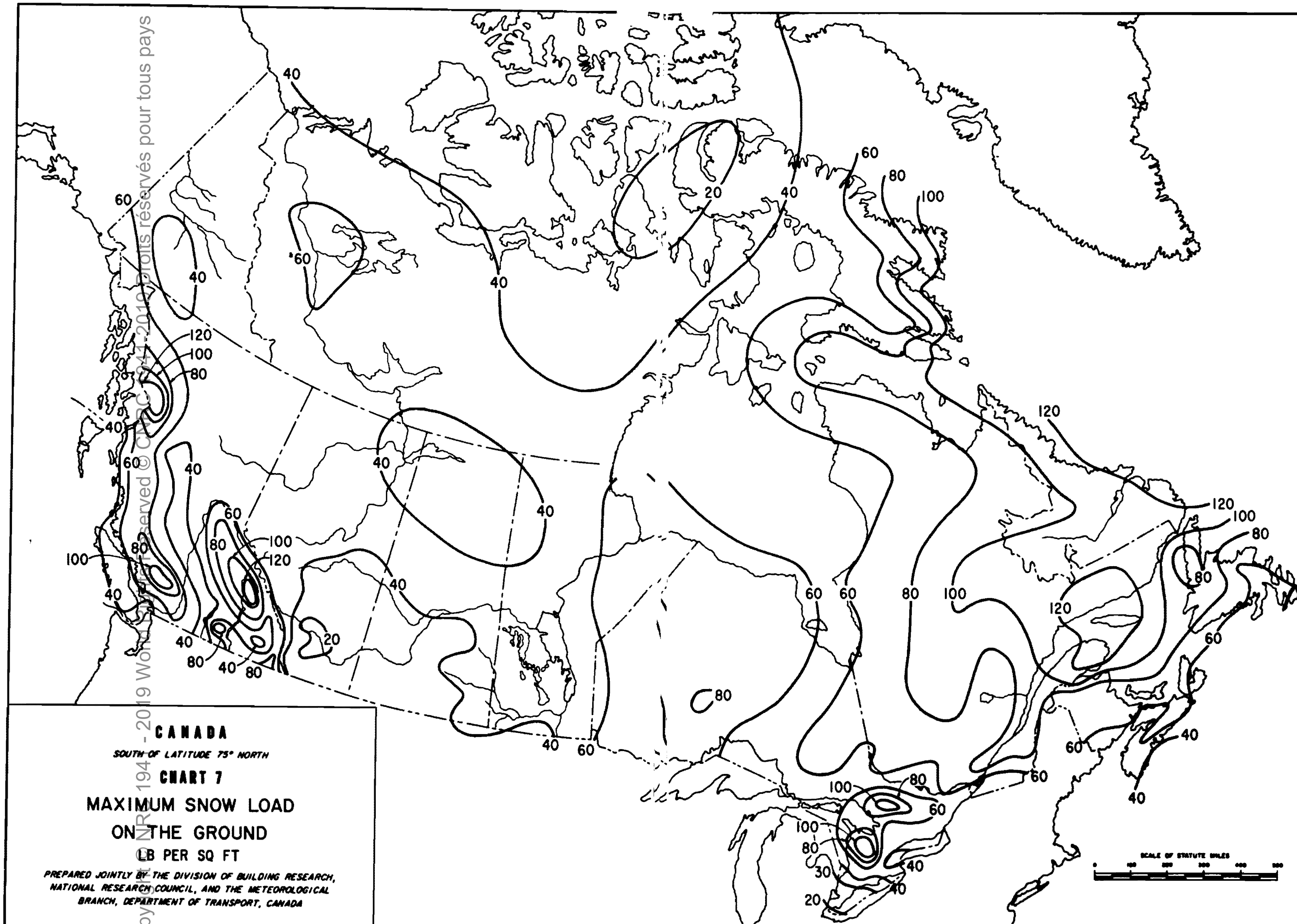

CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 3
ANNUAL TOTAL
DEGREE-DAYS
BELOW 65° F
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES
0
100
200
300
400
500
24000
23000
22000
21000
20000
19000
18000
17000
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000

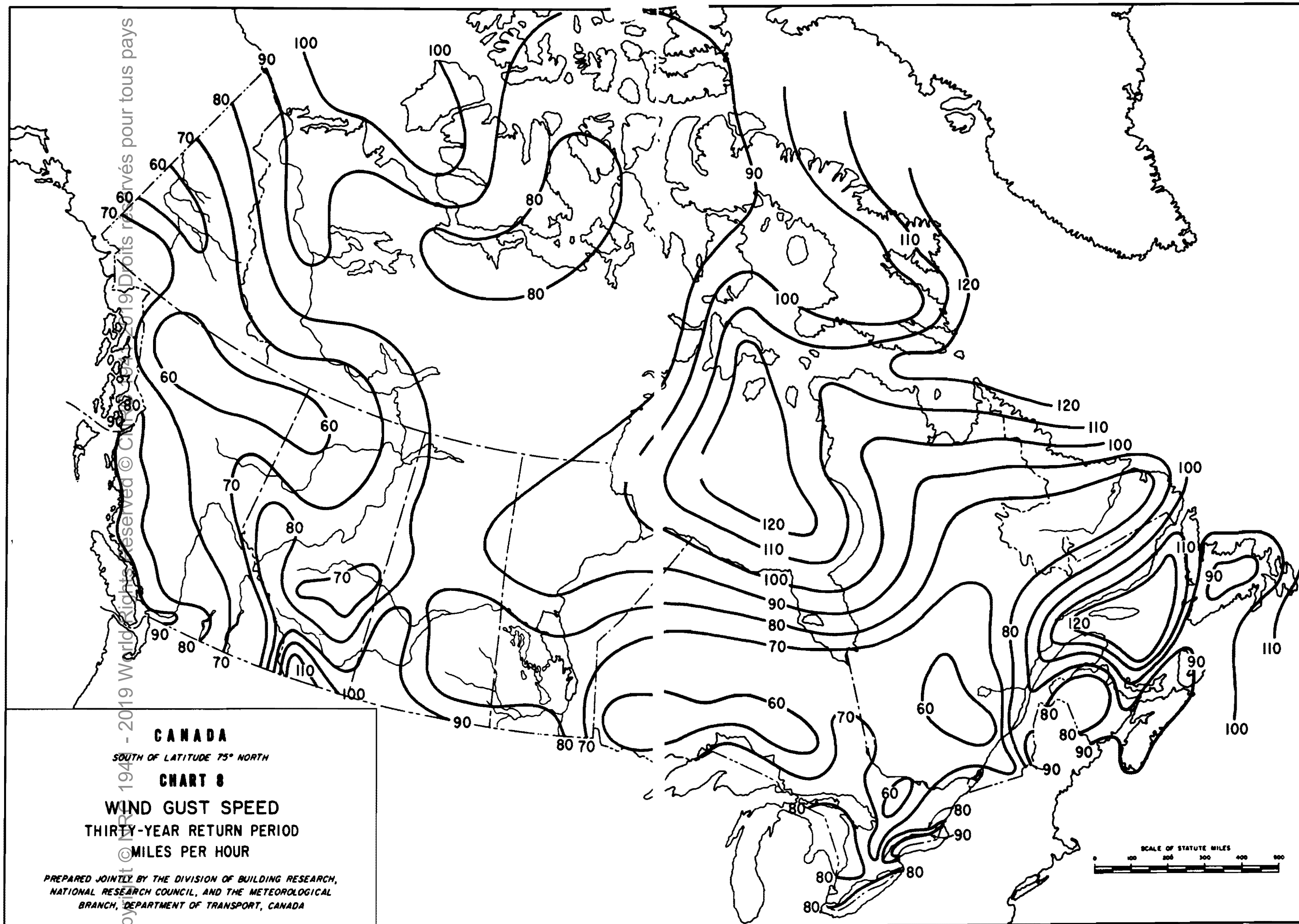

CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 4
FIFTEEN MINUTE RAINFALL
TEN-YEAR RETURN PERIOD
INCHES
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES
0 100 200 300 400 500



CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 5
MAXIMUM
ONE-DAY RAINFALL
INCHES
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES


CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 6
ANNUAL TOTAL PRECIPITATION
INCHES
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES


CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 7
MAXIMUM SNOW LOAD
ON THE GROUND
LB PER SQ FT
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA
SCALE OF STATUTE MILES
0 100 200 300 400 500



CANADA

SOUTH OF LATITUDE 75° NORTH

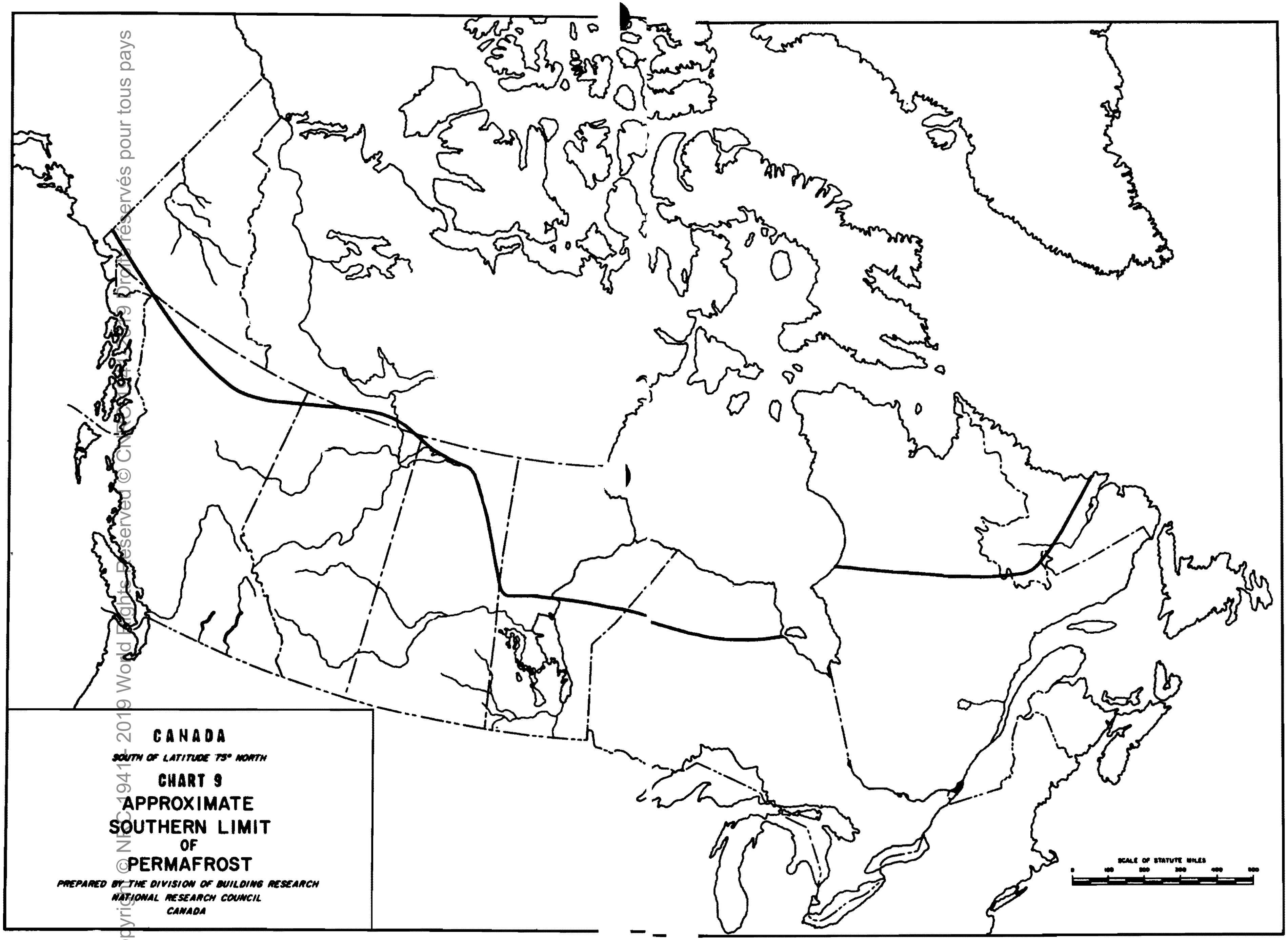
CHART 8

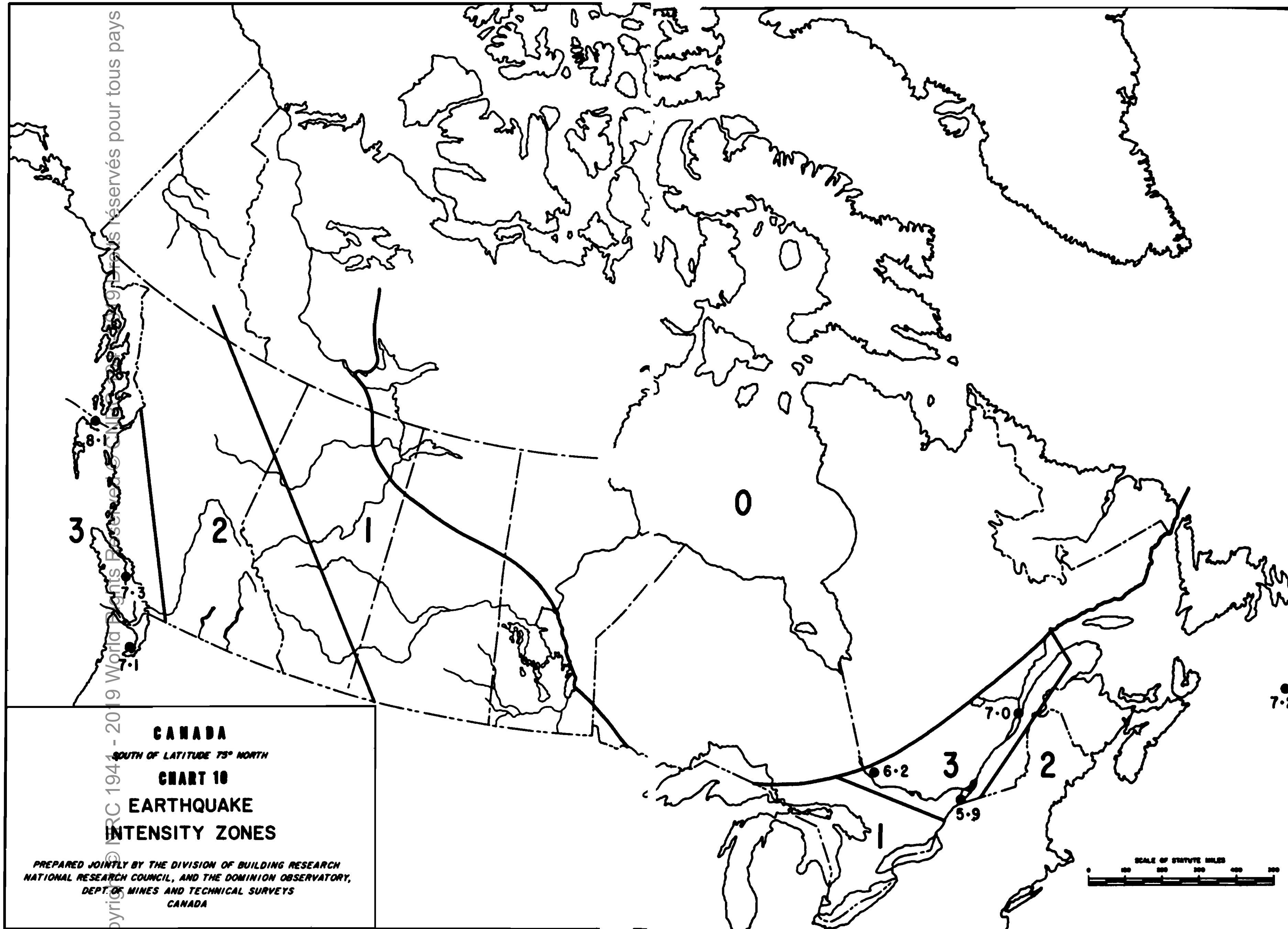
WIND GUST SPEED

THIRTY-YEAR RETURN PERIOD

MILES PER HOUR

PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH, NATIONAL RESEARCH COUNCIL, AND THE METEOROLOGICAL BRANCH, DEPARTMENT OF TRANSPORT, CANADA


CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 9
APPROXIMATE
SOUTHERN LIMIT
OF
PERMAFROST
PREPARED BY THE DIVISION OF BUILDING RESEARCH
NATIONAL RESEARCH COUNCIL
CANADA
SCALE OF STATUTE MILES



CANADA
SOUTH OF LATITUDE 75° NORTH
CHART 10
EARTHQUAKE
INTENSITY ZONES
PREPARED JOINTLY BY THE DIVISION OF BUILDING RESEARCH
NATIONAL RESEARCH COUNCIL, AND THE DOMINION OBSERVATORY,
DEPT. OF MINES AND TECHNICAL SURVEYS
CANADA

DESIGN DATA FOR SELECTED MUNICIPALITIES

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
British Columbia												
Campbell River	18	15	5900	0.3	4.5	55	58	46	92	23	3	4
Chilliwack	10	7	6100	0.4	4.5	59	55	44	96	25	3	4
Dawson Creek	−35	−40	11000	0.6	2.5	15	49	39	75	15	2	2
Kamloops	−10	−16	6730	0.5	2.0	10	35	28	75	15	2	2
Kelowna	0	−5	6400	0.6	2.0	12	41	33	80	17	2	2
Kimberley	−16	−21	8500	0.5	2.0	15	38	30	67	12	2	2
Kitimat	2	−1	7600	0.5	5.5	88	70	56	82	18	3	4
Nanaimo	20	17	5470	0.3	3.0	37	46	37	92	23	3	4
Nelson	−5	−11	7180	0.6	2.5	29	65	52	67	12	2	2
New Westminster	19	15	5600	0.3	4.5	55	40	32	90	22	3	4
Penticton	3	−1	6410	0.6	2.0	12	27	22	88	21	2	2
Port Alberni	22	20	6000	0.4	4.5	67	52	42	92	23	3	4
Powell River	15	12	5800	0.3	4.0	35	65	52	90	22	3	4
Prince George	−31	−37	9600	0.4	2.0	22	59	47	63	11	2	2
Prince Rupert	15	11	6910	0.5	5.5	94	33	26	86	20	3	4
Quesnel	−29	−34	9200	0.4	2.5	19	58	46	67	12	2	2
Revelstoke	−16	−21	7700	0.6	4.0	39	88	70	67	12	2	2
Smithers	−22	−26	8800	0.4	2.5	18	39	31	75	15	2	2
Trail	−5	−11	6730	0.6	2.5	24	62	50	70	13	2	2
Vancouver	19	15	5400	0.3	4.5	57	34	27	90	22	3	4
Vernon	−5	−10	6500	0.6	2.0	16	41	33	77	16	2	2
Victoria	23	20	5410	0.2	3.5	26	25	20	92	23	3	4
Alberta												
Banff	−22	−26	9300	0.7	2.5	18	56	45	82	18	2	2
Brooks	−26	−31	9200	0.6	3.5	13	20	16	84	19	2	2
Calgary	−25	−29	9520	0.9	3.5	17	19	15	83	19	2	2
Camrose	−28	−33	10500	0.7	3.5	15	27	22	67	12	1	1
Cardston	−24	−29	8400	0.5	4.0	18	30	24	115	36	2	2
Claresholm	−26	−31	9000	0.6	3.5	17	15	12	107	31	2	2
Drumheller	−25	−29	10000	0.7	2.5	14	21	17	77	16	2	2
Edmonton	−26	−29	10320	0.9	4.0	18	27	22	78	16	1	1
Edson	−30	−35	9800	0.6	3.0	20	46	37	80	17	2	2
Grande Prairie	−37	−43	11010	0.6	3.0	18	46	37	81	18	2	2
Jasper	−28	−32	9200	0.4	3.0	14	52	42	80	17	2	2
Lac la Biche	−32	−38	11400	0.6	3.0	17	40	32	75	15	1	1
Lethbridge	−24	−31	8650	0.5	3.5	17	22	18	105	30	2	2
McMurray	−39	−42	12570	0.6	3.5	16	42	34	75	15	1	1
Medicine Hat	−26	−30	8650	0.4	3.0	14	27	22	85	20	2	2
Peace River	−37	−43	11700	0.6	2.0	13	47	38	67	12	1	1
Red Deer	−28	−33	10100	0.7	4.5	16	30	24	75	15	2	2
Stettler	−27	−32	10400	0.7	3.0	16	25	20	70	13	2	2
Taber	−25	−31	8600	0.5	3.0	15	22	18	100	27	2	2
Vegreville	−29	−33	11000	0.7	3.5	17	31	25	70	13	1	1
Wainwright	−28	−32	11000	0.6	2.5	15	26	21	70	13	1	1
Saskatchewan												
Assiniboia	−25	−29	9800	0.6	3.0	14	24	19	88	21	1	1
Biggar	−29	−33	10800	0.5	4.0	14	36	29	94	24	1	1
Estevan	−25	−30	10300	0.8	3.0	17	43	34	87	20	1	1
Humboldt	−32	−37	11100	0.6	2.5	15	35	28	74	15	1	1
Kamsack	−29	−33	11000	0.7	3.0	16	50	40	75	15	1	1
Kindersley	−27	−32	10200	0.4	3.0	13	35	28	92	23	1	1
Lloydminster	−30	−35	11500	0.6	2.5	15	31	25	75	15	1	1
Maple Creek	−25	−29	8800	0.4	3.0	14	32	26	92	23	2	2
Meadow Lake	−33	−38	12000	0.6	2.5	15	42	34	82	18	1	1
Melfort	−34	−40	11400	0.6	3.0	16	38	30	70	13	1	1
Melville	−28	−33	10800	0.7	3.5	16	47	38	75	15	1	1
Moose Jaw	−27	−32	10500	0.5	2.5	15	28	22	80	17	1	1

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Nipawin......	−36	−41	11800	0.6	3.0	16	43	34	72	14	1	1
North Battleford....	−29	−33	11000	0.6	3.0	13	39	31	95	24	1	1
Prince Albert	−35	−41	11430	0.6	3.0	16	44	35	72	14	1	1
Regina.......	−29	−34	10770	0.6	3.0	15	35	28	77	16	1	1
Saskatoon	−30	−34	10960	0.4	3.0	14	35	28	81	18	1	1
Swift Current	−25	−29	9660	0.3	2.5	15	24	19	91	22	1	1
Uranium City	−47	−50	14600	0.3	2.0	13	37	30	82	18	0	0
Weyburn......	−27	−32	10500	0.7	3.0	16	35	28	82	18	1	1
Yorkton......	−28	−33	10900	0.7	3.5	17	50	40	75	15	1	1
Manitoba												
Brandon......	−26	−29	10930	0.8	4.0	19	46	37	82	18	1	1
Churchill.....	−38	−40	16910	0.3	3.5	14	66	53	93	23	0	0
Dauphin	−26	−29	10560	0.6	3.5	18	52	42	75	15	1	1
Flin Flon.....	−36	−40	12900	0.5	3.0	17	45	36	88	21	1	1
Gimli.........	−28	−30	10900	0.5	4.5	19	45	36	75	15	1	1
Morden	−22	−25	10300	0.9	4.0	21	38	30	84	19	1	1
Neepawa.....	−25	−29	10800	0.7	4.0	20	53	42	78	16	1	1
Portage la Prairie....	−22	−25	10800	0.7	5.0	20	40	32	80	17	1	1
Steinbach	−25	−28	10500	0.7	3.5	21	45	36	75	15	1	1
Swan River...	−30	−33	11300	0.6	3.0	17	52	42	73	14	1	1
The Pas......	−32	−35	12400	0.6	3.0	17	59	47	80	17	1	1
Virden	−27	−30	10800	0.8	4.0	18	46	37	80	17	1	1
Winnipeg.....	−25	−28	10658	0.6	3.5	20	45	36	79	17	1	1
Ontario												
Bancroft	−15	−19	9500	1.1	2.5	30	73	58	67	12	1	1
Barrie........	− 9	−13	8000	1.1	5.0	32	60	48	67	12	1	1
Belleville.....	− 7	−11	7700	1.3	3.0	32	50	40	77	16	1	1
Brantford	3	− 1	7200	1.1	4.0	31	48	38	75	15	1	1
Brockville	− 9	−13	7900	1.0	3.5	38	54	43	77	16	3	4
Chatham.....	6	3	6600	1.1	4.0	30	27	22	77	16	1	1
Cornwall	− 9	−14	8300	1.0	2.5	38	55	44	75	15	3	4
Fort Frances .	−27	−31	10500	1.0	3.5	28	62	50	60	10	1	1
Fort William .	−23	−27	10640	0.7	3.0	28	73	58	67	12	0	0
Geraldton	−31	−36	11900	0.8	3.0	27	63	50	60	10	0	0
Goderich	4	1	7300	1.1	3.5	31	50	40	86	20	1	1
Guelph.......	0	− 4	7800	1.2	4.5	33	77	62	68	12	1	1
Hamilton.....	3	0	7150	1.0	4.0	31	40	32	80	17	1	1
Hanover	0	− 4	8100	1.1	3.0	36	106	85	80	17	1	1
Kapuskasing	−28	−31	11750	0.8	2.5	28	56	45	66	12	0	0
Kenora.......	−28	−31	10740	0.9	3.5	25	62	50	60	10	0	0
Kingston.....	− 7	−10	7810	0.9	4.5	34	50	40	80	17	1	1
Kitchener	1	− 3	7620	1.3	4.0	33	60	48	72	14	1	1
London.......	3	− 1	7380	1.3	3.5	38	42	34	84	19	1	1
Moosonee	−32	−36	13000	0.7	2.5	31	56	45	60	10	0	0
New Liskeard	−25	−30	10700	1.0	3.5	29	56	45	77	16	0	0
Niagara Falls	5	2	6800	1.0	3.5	32	48	38	77	16	1	1
North Bay ...	−17	−21	9600	1.1	4.0	33	54	43	69	13	1	1
Oshawa	− 2	− 5	7200	1.1	3.0	32	42	34	88	21	1	1
Ottawa.......	−13	−17	8740	0.9	3.5	35	60	48	75	15	3	4
Owen Sound..	− 1	− 5	8000	1.0	3.0	33	87	70	80	17	1	1
Parry Sound..	−10	−13	8600	1.0	3.5	38	85	68	72	14	1	1
Pembroke	−18	−22	9100	0.9	3.5	29	55	44	64	11	3	4
Peterborough	− 9	−13	8040	1.2	3.5	31	50	40	75	15	1	1
St. Catharines	5	2	6700	1.0	3.5	31	38	30	80	17	1	1
St. Thomas...	5	1	7100	1.0	3.5	36	35	28	80	17	1	1
Sarnia........	6	2	6790	0.9	3.5	32	30	24	80	17	1	1
Sault Ste. Marie ..	−15	−20	9590	1.0	2.5	32	50	40	75	15	1	1
Smiths Falls .	−12	−16	8500	1.1	3.0	34	57	46	75	15	3	4
Stratford.....	2	− 2	7700	1.3	4.5	38	61	49	80	17	1	1
Sudbury......	−15	−20	9870	1.0	3.0	29	55	44	78	16	1	1
Timmins	−28	−33	11480	0.9	3.0	28	68	54	70	13	0	0
Toronto......	1	− 3	7008	1.0	5.0	31	40	32	84	19	1	1
Trout Lake...	−36	−40	14130	0.5	3.5	25	78	62	77	16	0	0
Windsor......	7	4	6640	1.1	3.0	33	22	18	74	15	1	1

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Quebec												
Alma	−21	−25	10680	0.7	3.0	38	72	58	67	12	3	4
Chicoutimi	−20	−24	10300	0.7	3.0	35	75	60	70	13	3	4
Drummond-ville	−13	−18	8700	0.8	4.0	43	72	58	67	12	3	4
Fort Chimo	−36	−39	15600	0.2	2.0	16	75	60	98	26	0	0
Granby	−12	−17	8500	0.9	3.0	39	56	45	70	13	2	2
Great Whale River	−34	−37	15500	0.3	2.5	26	60	48	105	30	0	0
Hull	−13	−17	8800	0.9	3.5	35	62	50	75	15	3	4
Joliette	−13	−18	9000	0.8	4.0	33	81	65	68	12	3	4
Knob Lake	−37	−40	14890	0.3	2.5	28	90	72	77	16	0	0
La Tuque	−19	−24	10000	0.7	3.0	34	75	60	60	10	3	4
Matane	−11	−15	9900	0.6	3.5	35	106	85	100	27	3	4
Megantic	−16	−20	9670	0.9	3.0	39	78	62	92	23	2	2
Mont Laurier	−20	−24	9600	0.9	3.5	33	65	52	66	12	3	4
Montreal	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
Nitchequon	−37	−40	14510	0.3	2.0	31	103	82	72	14	0	0
Port Harrison	−36	−39	16880	0.2	2.0	15	43	34	108	31	0	0
Quebec	−13	−19	9300	0.8	4.5	45	84	67	84	19	3	4
Rimouski	−12	−16	9700	0.7	3.5	35	92	74	94	24	3	4
Rivière du Loup	−13	−18	9600	0.7	4.0	35	85	68	88	21	3	4
Roberval	−22	−26	10800	0.7	2.5	29	72	58	64	11	3	4
Rouyn	−27	−32	11400	0.9	3.5	32	63	50	70	13	0	0
St. Hyacinthe	−12	−17	8500	0.8	3.0	40	60	48	70	13	3	4
St. Jérôme	−13	−18	9000	0.9	3.0	42	70	56	72	14	3	4
St. Johns	−10	−15	8300	0.9	3.0	38	55	44	75	15	3	4
Seven Islands	−22	−27	11370	0.5	3.5	42	116	93	110	33	0	0
Shawinigan Falls	−15	−20	9400	0.8	3.5	36	81	65	60	10	3	4
Sherbrooke	−13	−18	8610	0.9	4.0	39	55	44	64	11	2	2
Thetford Mines	−14	−19	9300	0.8	4.0	41	81	65	82	18	2	2
Three Rivers	−13	−18	9060	0.8	4.5	40	84	67	64	11	3	4
Val d'Or	−27	−31	11200	0.9	3.0	35	64	51	67	12	0	0
Valleyfield	− 9	−14	8300	0.9	3.0	38	54	43	75	15	3	4
New Brunswick												
Bathurst	−10	−15	9670	0.7	3.0	35	80	64	80	17	2	2
Campbellton	−14	−18	10100	0.7	4.5	40	112	90	84	19	2	2
Chatham	−10	−15	9290	0.7	3.0	37	62	50	75	15	2	2
Edmundston	−16	−20	10100	0.8	3.0	36	69	55	77	16	2	2
Fredericton	−10	−16	8830	0.9	4.5	41	60	48	75	15	2	2
Moncton	− 7	−12	8830	0.7	3.5	39	75	60	92	23	2	2
Saint John	− 7	−12	8380	0.7	5.0	48	53	42	84	19	2	2
St. Stephen	− 8	−13	8500	0.8	5.0	45	50	40	90	22	2	2
Woodstock	−14	−19	9200	0.9	3.5	37	63	50	72	14	2	2
Nova Scotia												
Amherst	− 5	−10	8400	0.6	4.0	40	60	48	88	21	2	2
Bridgewater	5	1	7700	0.6	5.0	52	45	36	88	21	2	2
Digby	5	1	7560	0.5	5.0	44	48	38	86	20	2	2
Halifax	4	0	7585	0.6	5.5	54	45	36	88	21	2	2
Kentville	0	− 4	8000	0.5	5.0	41	56	45	84	19	2	2
New Glasgow	− 5	−10	8500	0.4	4.0	45	58	46	86	20	2	2
Sydney	5	0	8220	0.4	3.5	51	49	39	90	22	2	2
Truro	− 7	−12	8500	0.5	4.0	41	53	42	84	19	2	2
Yarmouth	9	5	7520	0.5	4.5	49	55	44	87	20	2	2
Prince Edward Island												
Charlottetown	− 3	− 6	8710	0.3	4.0	43	66	53	86	20	2	2
Summerside	− 3	− 8	8800	0.4	4.5	39	62	50	90	22	2	2

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Newfoundland												
Bonavista....	2	− 2	9200	0.6	4.0	48	72	58	96	25	2	2
Corner Brook.	− 5	−10	9180	0.3	3.5	45	90	72	100	27	2	2
Gander.......	− 1	− 5	9440	0.5	4.0	40	62	50	90	22	2	2
Goose Bay...	−25	−27	12140	0.3	2.5	29	103	82	72	14	0	0
Grand Bank .	7	3	8600	0.5	4.0	54	55	44	100	27	2	2
Port aux Basques.....	7	2	8800	0.4	4.0	56	75	60	96	25	2	2
St. Anthony .	−11	−17	10500	0.4	3.0	32	111	89	105	30	2	2
St. John's....	6	2	8780	0.6	4.0	57	72	58	103	29	2	2
Stephenville..	− 1	− 6	9000	0.3	3.5	40	86	69	102	28	2	2
Wabana......	5	1	8900	0.6	4.0	55	60	48	100	27	2	2
Yukon												
Dawson......	−56	−59	15040	0.3	2.0	13	58	46	60	10	2	2
Whitehorse ..	−42	−45	12300	0.2	1.5	11	27	22	72	14	2	2
Northwest Territories												
Frobisher.....	−42	−45	17920	0.2	2.0	14	50	40	100	27	0	0
Hay River....	−41	−45	14600	0.3	2.0	12	50	40	70	13	0	0
Inuvik.......	−48	−50	18000	0.2	2.0	10	46	37	90	22	1	1
Norman Wells	−52	−55	16400	0.2	2.5	13	63	50	92	23	1	1
Resolute.....	−47	−49	22600	0.1	1.5	5	27	22	86	20	0	0
Yellowknife...	−47	−49	15640	0.2	2.0	8	42	34	80	17	0	0

The National Building Code is published by the National Research Council as an advisory document for use throughout Canada. It is advisory only and has no legal standing until and unless adopted for specific use by a provincial government or municipal administration. The Code is essentially a set of minimum regulations respecting the safety of buildings with reference to public health, fire protection and structural sufficiency. It is not and is not intended to be a text-book of building design, advice upon which should be sought from professional sources. The Code relates to buildings and simple structures but it is not intended for use with specialized civil engineering structures. Its essential purpose is the promotion of public safety through the use of desirable building standards throughout Canada.

The National Building Code and its various parts or sections as well as other supplements may be obtained by writing to:

The Secretary,

Associate Committee on the National Building Code,

National Research Council,

Ottawa, Canada.

ADDENDUM

TO

CLIMATIC INFORMATION

for

BUILDING DESIGN IN CANADA

1961

SUPPLEMENT No. 1 TO THE NATIONAL BUILDING CODE OF CANADA

Issued by the

ASSOCIATE COMMITTEE ON THE NATIONAL BUILDING CODE
NATIONAL RESEARCH COUNCIL
OTTAWA, CANADA

Printed in Canada

ADDENDUM

TO

CLIMATIC INFORMATION

for

BUILDING DESIGN IN CANADA

by

DONALD W. BOYD
(D.O.T. Meteorologist with DBR/NRC)

A joint contribution from the Meteorological Branch, Department of Transport, and the Division of Building Research, National Research Council.

Supplement No. 1 to the National Building Code of Canada contains a table of design weather data for 186 municipalities selected on the basis of population and geographical location. It also states that recommended design weather data for any other location of Canada can be obtained by writing to the Secretary, Associate Committee on the National Building Code, National Research Council, Ottawa. Many companies and many municipalities have requested design weather data for one or several locations and the list had grown by the end of 1962 to over 500 locations.

The table in this addendum lists all the locations for which complete weather design data are available except for the municipalities already listed in Supplement No. 1. About half the requests for data came from Ontario and this is reflected in the large number of locations in Ontario in this addendum. A request from a department of the Federal Government concerned with building in the far north resulted in a relatively large number of locations in the Northwest Territories being added to the list. The weather records used in the preparation of the charts mentioned in Supplement No. 1 were in some cases obtained at weather stations far removed from large population centres. Since much of the weather data were available for these stations, they have been included in the list.

The words "selected municipalities" have been omitted from the title because the locations were not selected and many of them are not municipalities

DESIGN DATA FOR LOCATIONS IN CANADA

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
British Columbia												
Abbotsford	13	11	5900	0.4	4.0	60	50	40	90	22	3	4
Agassiz	7	4	6300	0.4	4.5	60	60	48	104	29	2	2
Alberni	22	20	6000	0.4	4.5	67	52	42	92	23	3	4
Ashcroft	−14	−19	7500	0.5	2.0	9	27	22	73	14	2	2
Beaton River	−36	−40	11900	0.5	2.0	17	60	48	65	11	2	2
Carmi	−11	−16	6500	0.6	2.0	21	80	64	71	14	2	2
Comox	18	15	5800	0.3	4.0	53	57	46	92	23	3	4
Courtenay	18	15	5800	0.3	4.0	53	57	46	92	23	3	4
Cranbrook	−17	−22	8760	0.5	2.5	15	44	35	67	12	2	2
Crescent Valley	−5	−11	8040	0.6	2.0	29	67	54	67	12	2	2
Crofton	21	19	5500	0.3	4.0	38	35	28	92	23	3	4
Duncan	21	19	5800	0.3	4.0	32	35	28	92	23	3	4
Fort Nelson	−41	−44	12690	0.5	2.5	16	44	35	60	10	1	1
Fort St. John	−34	−39	11200	0.6	2.5	15	53	42	74	15	2	2
Glacier	−17	−22	8200	0.6	3.5	52	161	129	67	12	2	2
Golden	−19	−23	8600	0.5	2.5	18	75	60	70	13	2	2
Haney	15	12	5800	0.3	4.5	65	45	36	94	24	3	4
Langley	17	14	5700	0.3	4.5	60	44	35	92	23	3	4
Lytton	−3	−8	7100	0.5	2.5	17	60	48	77	16	2	2
Mission City	14	11	5900	0.4	5.0	70	50	40	94	24	3	4
Port McNeill	21	19	6400	0.5	5.0	50	52	42	92	23	3	4
Princeton	−16	−23	6800	0.5	4.5	13	49	39	82	18	2	2
Richmond	19	15	5400	0.3	4.5	57	34	27	90	22	3	4
Salmon Arm	−10	−15	6800	0.6	2.0	20	50	40	73	14	2	2
Smith River	−51	−54	12600	0.3	2.0	18	48	38	62	10	1	1
Tofino	27	26	5540	0.5	6.0	95	40	32	96	25	3	4
Williams Lake	−23	−28	8800	0.4	2.0	18	44	35	73	14	2	2
Youbou	22	20	5800	0.4	4.5	65	50	40	90	22	3	4
Alberta												
Beaverlodge	−35	−41	10530	0.6	3.0	17	47	38	71	14	2	2
Cold Lake	−33	−38	12000	0.6	3.0	17	41	33	75	15	1	1
Coleman	−25	−30	8900	0.5	4.0	20	45	36	100	27	2	2
Coronation	−24	−28	10400	0.6	2.5	14	49	39	70	13	1	1
Cowley	−26	−31	8800	0.5	3.5	19	37	30	114	35	2	2
Embarras	−43	−47	13400	0.4	2.5	15	32	26	75	15	0	0
Fairview	−38	−43	11500	0.6	2.0	18	44	35	70	13	2	2
Keg River	−40	−44	12700	0.4	2.5	15	52	42	60	10	1	1
Penhold	−28	−33	10100	0.7	4.0	16	30	24	75	15	2	2
Pincher Creek	−26	−31	8700	0.5	3.5	21	37	30	112	34	2	2
Rocky Mountain House	−25	−28	9800	0.8	4.0	23	41	33	70	13	2	2
Valleyview	−36	−42	10800	0.7	2.0	18	44	35	80	17	2	2
Vermilion	−31	−36	11490	0.6	3.0	17	28	22	66	12	1	1
Wagner	−34	−40	11100	0.7	2.5	17	43	34	72	14	1	1
Whitecourt	−32	−38	10200	0.7	2.5	21	48	38	77	16	2	2
Saskatchewan												
Broadview	−29	−33	10700	0.6	3.5	17	41	33	70	13	1	1
Dafoe	−32	−38	11100	0.6	3.0	16	33	26	72	14	1	1
Dundurn	−30	−34	10900	0.4	3.0	14	35	28	84	19	1	1
Hudson Bay	−33	−37	11700	0.7	2.5	16	50	40	72	14	1	1
Island Falls	−38	−41	13200	0.4	2.5	19	36	29	91	22	1	1
Qu'appelle	−29	−34	10800	0.6	2.5	17	41	33	77	16	1	1
Strasbourg	−29	−34	10800	0.6	3.5	15	41	33	77	16	1	1
Manitoba												
Beausejour	−26	−29	10700	0.6	3.5	20	46	37	75	15	1	1
Lac du Bonnet	−28	−30	10800	0.6	3.0	20	48	38	72	14	1	1
Lynn Lake	−40	−43	14300	0.3	2.0	16	38	30	92	23	0	0
Pine Falls	−28	−30	11000	0.5	4.0	19	46	37	73	14	1	1
Rivers	−27	−30	10700	0.8	4.0	19	47	38	80	17	1	1
St. Boniface	−25	−28	10658	0.6	3.5	20	45	36	79	17	1	1
St. Vital	−25	−28	10658	0.6	3.5	20	45	36	79	17	1	1
Thompson	−35	−38	13900	0.4	2.0	17	50	40	92	23	0	0
Whiteshell	−28	−30	10800	0.6	3.0	20	48	38	72	14	1	1
Ontario												
Ailsa Craig	4	1	7400	1.2	3.5	38	40	32	86	20	1	1
Ajax	−2	−5	7300	1.1	3.0	32	43	34	88	21	1	1

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Alexandria	−11	−16	8500	0.9	3.0	37	58	46	75	15	3	4
Alliston	− 7	−11	8100	1.1	4.5	30	65	52	67	12	1	1
Almonte	−14	−18	8800	1.0	3.0	33	60	48	75	15	3	4
Ansonville	−27	−32	11600	0.9	2.5	30	69	55	75	15	0	0
Armstrong	−38	−44	12000	0.9	4.0	27	82	66	61	10	0	0
Arnprior	−16	−20	8800	0.9	3.0	31	60	48	72	14	3	4
Atikokan	−29	−34	10700	1.0	3.5	25	65	52	60	10	0	0
Aurora	− 4	− 8	8060	1.1	4.0	29	48	38	77	16	1	1
Beaverton	−10	−14	8400	1.1	5.5	34	50	40	70	13	1	1
Belmont	4	0	7300	1.2	3.5	37	38	30	82	18	1	1
Bowmanville	− 3	− 6	7400	1.1	3.0	32	44	35	90	22	1	1
Bracebridge	−13	−17	8800	1.0	4.5	40	69	55	60	10	1	1
Bradford	− 7	−11	8100	1.1	4.5	30	52	42	70	13	1	1
Brampton	0	− 4	7600	1.1	6.0	31	50	40	77	16	1	1
Brighton	− 5	− 8	7500	1.3	3.0	32	48	38	86	20	1	1
Brooklin	− 3	− 7	7600	1.1	3.0	31	44	35	84	19	1	1
Burks Falls	−14	−18	9300	1.1	4.0	36	106	85	64	11	1	1
Burlington	3	0	7200	1.0	4.0	31	40	32	80	17	1	1
Caledonia	4	1	7000	1.1	4.0	31	46	37	75	15	1	1
Campbellford	− 9	−13	8000	1.3	3.5	31	50	40	75	15	1	1
Camp Borden	− 8	−12	8000	1.1	4.5	28	65	52	67	12	1	1
Cannington	− 9	−13	8300	1.1	5.0	32	48	38	70	13	1	1
Carleton Place	−13	−17	8750	1.0	3.0	33	58	46	75	15	3	4
Cavan	− 7	−11	7900	1.2	3.0	31	48	38	77	16	1	1
Centralia	4	1	7500	1.2	3.5	38	41	33	84	19	1	1
Chapleau	−31	−36	11000	0.9	3.5	30	64	51	60	10	0	0
Chelmsford	−15	−20	9800	1.0	3.0	30	55	44	77	16	1	1
Chesley	0	− 4	8100	1.1	3.0	35	100	80	80	17	1	1
Clinton	4	0	7400	1.1	3.5	35	50	40	84	19	1	1
Coboconk	−12	−16	8600	1.1	5.0	38	55	44	67	12	1	1
Cobourg	− 4	− 7	7500	1.2	3.0	32	45	36	90	22	1	1
Cochrane	−28	−32	11590	0.9	2.5	31	68	54	70	13	0	0
Colborne	− 5	− 8	7500	1.2	3.0	32	45	36	88	21	1	1
Collingwood	− 6	−10	7800	1.1	4.0	32	85	68	72	14	1	1
Cooksville	2	− 2	7100	1.0	5.5	31	40	32	82	18	1	1
Corunna	6	2	6800	0.9	3.5	32	30	24	80	17	1	1
Deep River	−20	−24	9500	0.9	3.5	29	56	45	60	10	3	4
Deseronto	− 7	−11	7750	1.1	3.5	33	50	40	77	16	1	1
Dorchester	3	− 1	7400	1.3	3.5	36	42	34	80	17	1	1
Dresden	5	2	6800	1.1	3.0	31	29	23	77	16	1	1
Dryden	−29	−32	11200	0.9	4.0	25	62	50	60	10	0	0
Dunnville	7	4	6600	1.0	4.0	35	48	38	77	16	1	1
Durham	− 2	− 6	8400	1.1	3.0	35	110	88	77	16	1	1
Dutton	5	2	7100	1.1	3.5	35	32	26	80	17	1	1
Earlton	−26	−32	10900	1.0	3.5	29	53	42	78	16	0	0
Eastview	−13	−17	8740	0.9	3.5	35	60	48	75	15	3	4
Elmvale	− 9	−13	8200	1.1	5.0	33	75	60	70	13	1	1
Embro	3	− 1	7500	1.3	3.5	35	52	42	80	17	1	1
Englehart	−26	−32	11000	1.0	4.0	29	56	45	75	15	0	0
Exeter	4	1	7500	1.2	3.5	38	45	36	84	19	1	1
Fergus	− 2	− 6	8000	1.2	3.5	33	106	85	70	13	1	1
Fonthill	6	3	6700	1.0	4.0	33	50	40	77	16	1	1
Forest	6	2	7000	1.0	3.5	34	35	28	84	19	1	1
Fort Erie	7	5	6600	1.0	4.0	34	55	44	80	17	1	1
Galt	1	− 3	7500	1.2	4.0	33	60	48	70	13	1	1
Gananoque	− 7	−11	7800	0.9	3.5	36	52	42	80	17	1	1
Glencoe	5	2	7100	1.1	3.5	35	34	27	77	16	1	1
Gore Bay	− 9	−13	9200	1.0	2.5	32	45	36	74	15	1	1
Graham	−35	−40	11200	0.9	4.0	27	70	56	60	10	0	0
Gravenhurst	−13	−17	8800	1.1	4.5	40	62	50	60	10	1	1
Grimsby	5	2	6800	1.0	4.5	31	38	30	80	17	1	1
Hagersville	5	2	7000	1.1	4.0	33	44	35	77	16	1	1
Haileybury	−25	−30	10700	1.0	3.5	29	56	45	77	16	0	0
Haliburton	−15	−19	8960	1.1	3.5	34	75	60	60	10	1	1
Hanover	0	− 4	8100	1.1	3.0	36	106	85	80	17	1	1
Hastings	− 9	−13	8000	1.3	3.5	31	50	40	75	15	1	1
Hawkesbury	−13	−18	9000	0.9	3.5	39	62	50	75	15	3	4
Hearst	−28	−32	12100	0.8	2.5	28	56	45	63	11	0	0
Honey Harbour	−10	−13	8500	1.0	5.0	35	80	64	72	14	1	1
Hornepayne	−35	−40	11900	0.8	3.0	25	54	43	60	10	0	0
Huntsville	−14	−18	9200	1.0	4.0	36	104	83	60	10	1	1
Ingersoll	3	− 1	7400	1.3	3.5	35	46	37	80	17	1	1
Jarvis	5	2	7000	1.1	4.0	34	41	33	77	16	1	1
Kemptville	−12	−16	8500	1.1	3.0	34	57	46	75	15	3	4
Killaloe	−18	−22	9300	1.0	3.0	28	55	44	67	12	3	4
Kincardine	3	0	7500	1.0	3.0	35	75	60	86	20	1	1
Kinmount	−13	−17	8800	1.1	4.0	38	58	46	64	11	1	1

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Kirkland Lake	−27	−32	11200	1.0	3.5	29	62	50	75	15	0	0
Lakefield	−10	−14	8200	1.2	3.5	30	53	42	72	14	1	1
Lansdowne House	−38	−44	13300	0.7	2.5	24	69	55	67	12	0	0
Leamington	7	4	6500	1.1	3.5	30	22	18	80	17	1	1
Lindsay	− 9	−13	8340	1.2	4.0	32	48	38	72	14	1	1
Lions Head	− 1	− 5	8200	1.0	3.0	35	75	60	80	17	1	1
Listowel	0	− 4	8200	1.3	3.0	38	94	75	80	17	1	1
Lucan	4	0	7500	1.3	3.5	38	42	34	86	20	1	1
Maitland	− 9	−13	7900	1.0	3.0	38	54	43	77	16	3	4
Markdale	− 3	− 7	8200	1.1	3.0	33	100	80	75	15	1	1
Matheson	−27	−32	11500	0.9	3.0	29	68	54	75	15	0	0
Mattawa	−19	−23	9800	1.0	3.5	31	55	44	67	12	3	4
Midland	− 9	−13	8300	1.0	5.0	34	80	64	72	14	1	1
Milton	1	− 3	7400	1.1	5.0	31	50	40	77	16	1	1
Milverton	0	− 4	7800	1.3	3.0	38	80	64	77	16	1	1
Minden	−14	−18	8900	1.1	4.0	38	62	50	60	10	1	1
Mitchell	2	− 2	7700	1.3	3.0	38	60	48	82	18	1	1
Morrisburg	− 9	−14	8200	1.0	3.0	38	55	44	75	15	3	4
Mount Forest	− 2	− 6	8500	1.2	3.0	33	110	88	75	15	1	1
Muskoka Arpt	−13	−17	8800	1.1	4.5	40	62	50	60	10	1	1
Nakina	−30	−34	12200	0.8	3.0	28	65	52	60	10	0	0
Napanee	− 7	−11	7750	1.1	3.5	33	50	40	77	16	1	1
Newcastle	− 3	− 6	7400	1.1	3.0	32	44	35	90	22	1	1
Norwood	−10	−14	8200	1.2	3.5	32	53	42	75	15	1	1
Oakville	2	− 1	7100	1.0	4.5	31	40	32	82	18	1	1
Orangeville	− 4	− 8	8300	1.2	3.0	33	80	64	70	13	1	1
Orillia	−11	−15	8500	1.1	5.0	34	52	42	64	11	1	1
Pagwa	−29	−33	12200	0.8	3.0	30	63	50	60	10	0	0
Paris	3	− 1	7300	1.2	3.5	37	50	40	75	15	1	1
Parkhill	5	2	7300	1.2	3.5	37	40	32	86	20	1	1
Penetanguishene	− 9	−13	8300	1.0	5.0	34	80	64	72	14	1	1
Perth	−12	−16	8500	1.1	3.0	34	58	46	75	15	3	4
Petawawa	−19	−23	9300	0.9	3.5	29	56	45	60	10	3	4
Petrolia	5	2	6900	1.0	3.0	32	31	25	80	17	1	1
Picton	− 5	− 9	7500	1.1	3.0	33	48	38	82	18	1	1
Plattsville	2	− 2	7500	1.3	3.5	33	58	46	75	15	1	1
Point Alexander	−20	−24	9500	0.9	3.5	29	56	45	60	10	3	4
Porcupine	−28	−33	11500	0.9	3.0	28	68	54	72	14	0	0
Port Arthur	−23	−27	10640	0.7	3.0	28	73	58	67	12	0	0
Port Burwell	6	3	7000	1.0	4.0	36	32	26	80	17	1	1
Port Colborne	7	4	6600	1.0	4.0	34	55	44	80	17	1	1
Port Credit	2	− 2	7100	1.0	5.5	31	40	32	82	18	1	1
Port Dover	6	3	7000	1.0	4.0	34	38	30	80	17	1	1
Port Elgin	2	− 1	8000	1.0	3.0	36	87	70	86	20	1	1
Port Hope	− 4	− 7	7500	1.2	3.0	32	45	36	90	22	1	1
Port Perry	− 6	−10	8000	1.2	3.5	31	45	36	77	16	1	1
Port Stanley	6	3	7100	1.0	4.0	36	32	26	80	17	1	1
Prescott	− 9	−13	8000	1.0	3.0	38	54	43	77	16	3	4
Princeton	3	− 1	7400	1.2	3.5	33	50	40	75	15	1	1
Red Lake	−29	−32	11700	0.7	4.0	21	62	50	64	11	0	0
Renfrew	−17	−21	8800	0.9	3.0	30	62	50	70	13	3	4
Ridgeway	7	5	6600	1.0	4.0	34	55	44	80	17	1	1
Rockland	−14	−18	8800	0.9	3.5	36	62	50	75	15	3	4
St. Marys	3	− 1	7600	1.3	3.5	38	50	40	82	18	1	1
Schreiber	−30	−34	11400	0.8	3.0	31	48	38	67	12	0	0
Seaforth	3	− 1	7500	1.2	3.5	36	53	42	84	19	1	1
Simcoe	5	2	7100	1.1	4.0	35	38	30	77	16	1	1
Sioux Lookout	−29	−32	11530	0.9	4.5	27	63	50	60	10	0	0
Smithville	5	2	6800	1.0	4.5	32	41	33	77	16	1	1
Smooth Rock Falls	−28	−32	11700	0.8	2.5	30	62	50	67	12	0	0
Southampton	2	− 2	8020	1.0	3.0	37	87	70	84	19	1	1
South Porcupine	−28	−33	11500	0.9	3.0	28	68	54	72	14	0	0
Stirling	− 9	−13	7800	1.3	3.0	31	51	41	74	15	1	1
Strathroy	4	1	7200	1.2	3.0	37	38	30	82	18	1	1
Sturgeon Falls	−16	−20	9500	1.1	3.5	33	55	44	70	13	1	1
Tavistock	2	− 2	7600	1.3	3.5	35	60	48	80	17	1	1
Thamesford	3	− 1	7400	1.3	3.5	36	46	37	80	17	1	1
Thedford	5	2	7100	1.1	3.5	34	37	30	86	20	1	1
Tillsonburg	5	1	7200	1.1	4.0	35	38	30	77	16	1	1
Trenton	− 5	− 9	7630	1.3	3.0	32	50	40	80	17	1	1
Uxbridge	− 7	−11	8100	1.2	4.0	31	44	35	75	15	1	1
Walkerton	1	− 3	7780	1.1	3.5	36	100	80	82	18	1	1

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
Wallaceburg..	6	3	6700	1.1	3.0	31	27	22	77	16	1	1
Waterloo.....	1	− 3	7620	1.3	4.0	33	60	48	72	14	1	1
Watford......	5	2	7100	1.1	3.0	34	35	28	80	17	1	1
Wawa........	−32	−37	11000	0.9	3.0	36	50	40	66	12	0	0
Welland......	6	3	6700	1.0	4.0	34	52	42	77	16	1	1
West Lorne...	5	2	7100	1.1	4.0	35	30	24	80	17	1	1
Whitby	− 2	− 5	7300	1.1	3.0	32	43	34	88	21	1	1
White River..	−39	−44	11850	0.8	3.5	30	46	37	60	10	0	0
Wiarton......	1	− 3	8100	1.0	3.0	37	80	64	80	17	1	1
Wingham.....	2	− 2	7700	1.1	3.5	36	81	65	82	18	1	1
Woodstock...	3	− 1	7400	1.3	3.5	34	50	40	77	16	1	1
Wyoming.....	5	2	7000	1.0	3.0	32	33	26	80	17	1	1
Quebec												
Amos........	−28	−32	11800	0.9	3.0	33	69	55	67	12	0	0
Ancienne Lorette......	−13	−19	9500	0.8	4.0	41	81	65	84	19	3	4
Arvida.......	−20	−24	10500	0.7	3.0	39	75	60	70	13	3	4
Aylmer.......	−13	−17	8800	0.9	3.5	35	60	48	75	15	3	4
Baie Comeau .	−16	−20	10400	0.6	3.0	35	102	82	100	27	3	4
Beaconsfield..	−10	−16	8300	0.8	3.0	38	54	43	75	15	3	4
Buckingham..	−14	−18	8900	0.9	4.0	36	62	50	75	15	3	4
Campbells Bay.........	−18	−22	9100	0.9	3.5	30	58	46	67	12	3	4
Camp Valcartier...	−13	−19	9500	0.8	4.0	41	81	65	84	19	3	4
Dorval.......	−10	−16	8300	0.8	3.0	38	54	43	75	15	3	4
Fabreville....	−11	−17	8500	0.8	3.5	42	60	48	75	15	3	4
Fort Coulonge	−18	−22	9200	0.9	4.0	30	58	46	67	12	3	4
Gagnon......	−28	−32	13000	0.4	2.5	33	112	90	80	17	0	0
Gatineau.....	−13	−17	8800	0.9	3.5	35	62	50	75	15	3	4
Gatineau-Pointe.......	−13	−17	8800	0.9	3.5	35	62	50	75	15	3	4
Gracefield....	−19	−23	9200	0.9	3.5	32	60	48	67	12	3	4
Harrington Harbour.....	−13	−18	11640	0.4	3.0	50	108	86	116	36	0	0
Jonquiere.....	−20	−24	10700	0.7	3.0	35	75	60	70	13	3	4
Kenogami....	−20	−24	10700	0.7	3.0	35	75	60	70	13	3	4
Lachine......	−10	−16	8300	0.8	2.0	38	54	43	75	15	3	4
Lachute......	−13	−18	9000	0.9	3.5	40	65	52	75	15	3	4
La Salle......	−10	−16	8300	0.8	3.0	38	54	43	75	15	3	4
Les Saules....	−13	−19	9500	0.8	4.0	41	81	65	84	19	3	4
Levis........	−13	−19	9300	0.8	4.5	45	84	67	84	19	3	4
Loretteville...	−13	−19	9500	0.8	4.0	41	81	65	84	19	3	4
Louiseville....	−13	−18	9100	0.8	4.5	39	82	66	64	11	3	4
Maniwaki....	−20	−24	9250	0.9	3.0	31	59	47	66	12	3	4
Masson.......	−14	−18	8900	0.9	4.0	36	62	50	75	15	3	4
Mont Joli....	−12	−16	9750	0.7	3.5	35	103	82	101	28	3	4
Montmagny..	−13	−19	9200	0.8	3.5	38	85	68	86	20	3	4
Montreal Nord	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
Mount Royal.	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
Noranda.....	−27	−32	11400	0.9	3.5	32	65	52	70	13	0	0
Outremont ...	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
Pierrefonds...	−10	−16	8300	0.8	3.0	38	54	43	75	15	3	4
Pointe Claire.	−10	−16	8300	0.8	3.0	38	54	43	75	15	3	4
Port Alfred...	−19	−23	10500	0.7	3.0	37	75	60	70	13	3	4
Ste. Agathe des Monts...	−16	−20	9600	0.9	3.5	38	79	63	70	13	3	4
Ste. Anne de Bellevue.....	−10	−15	8300	0.9	3.0	38	55	44	75	15	3	4
St. Felicien...	−23	−28	11000	0.7	2.5	30	75	60	64	11	3	4
Ste. Foy......	−13	−19	9300	0.8	4.5	45	84	67	84	19	3	4
St. Hubert....	−11	−16	8300	0.8	3.0	37	58	46	75	15	3	4
St. Laurent...	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
St. Nicolas....	−13	−19	9100	0.8	4.0	44	84	67	82	18	3	4
Schefferville ..	−37	−40	14890	0.3	2.5	28	90	72	77	16	0	0
Shawville.....	−17	−21	9000	0.9	3.5	30	58	46	70	13	3	4
Sillery........	−13	−19	9300	0.8	4.5	45	84	67	84	19	3	4
Sorel.........	−12	−17	9000	0.8	4.0	36	80	64	67	12	3	4
Temiscaming .	−21	−25	10000	1.1	3.5	32	60	48	67	12	3	4
Thurso.......	−14	−18	8900	0.9	4.0	36	62	50	75	15	3	4
Verdun.......	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4
Victoriaville ..	−14	−19	8900	0.8	3.5	43	80	64	70	13	3	4
Ville Marie...	−24	−28	10500	1.0	3.5	28	62	50	75	15	0	0
Westmount...	−10	−16	8200	0.8	3.5	42	54	43	75	15	3	4

	Design Temp.		Degree Days	15-Min Rain	1-Day Rain	Annual Pcpn.	Snow		Wind		Earthquake	
	2½%	1%					Gnd.	Roof	Gust	Press	Zone	Factor
	°F.	°F.		in.	in.	in.	psf	psf	mph	psf		
New Brunswick												
Alma	−5	−10	8400	0.7	4.5	39	60	48	86	20	2	2
Camp Gagetown	−9	−15	8500	0.8	4.0	41	60	48	84	19	2	2
Grand Falls	−16	−21	9950	0.8	3.0	38	66	53	75	15	2	2
Oromocto	−9	−15	8700	0.9	4.5	41	60	48	82	18	2	2
Sackville	−5	−10	8500	0.7	4.0	38	63	50	88	21	2	2
Shippigan	−7	−12	9400	0.5	2.5	35	92	74	96	25	2	2
Nova Scotia												
Dartmouth	4	0	7600	0.6	5.5	54	45	36	88	21	2	2
Debert	−7	−12	8490	0.5	4.0	42	53	42	86	20	2	2
Greenwood	1	−2	7600	0.5	5.0	41	58	46	84	19	2	2
Liverpool	7	3	7500	0.6	5.5	57	37	30	90	22	2	2
Lockeport	7	3	7500	0.6	5.0	57	40	32	90	22	2	2
Louisburg	6	1	8000	0.5	4.0	53	45	36	94	24	2	2
Lunenburg	6	2	7600	0.6	5.0	55	45	36	90	22	2	2
North Sydney	5	0	8220	0.4	3.5	50	50	40	90	22	2	2
Tatamagouche	−5	−10	8600	0.4	3.5	44	58	46	86	20	2	2
Wolfville	−1	−5	8000	0.5	5.0	41	56	45	84	19	2	2
Prince Edward Island												
Souris	−1	−5	8600	0.3	3.5	43	68	54	86	20	2	2
Tignish	−3	−8	8900	0.4	4.0	37	75	60	102	28	2	2
Newfoundland												
Argentia	5	1	8800	0.6	4.0	57	47	38	100	27	2	2
Buchans	−5	−12	9300	0.3	3.5	36	91	73	90	22	2	2
Cape Harrison	−20	−24	12700	0.3	3.0	29	128	102	90	22	0	0
Cape Race	6	2	9290	0.6	4.5	54	48	38	117	37	2	2
Grand Falls	−5	−10	9500	0.4	3.0	37	72	58	90	22	2	2
Labrador City	−32	−36	14000	0.4	2.5	31	110	88	75	15	0	0
Wabush Lake	−32	−36	14000	0.4	2.5	31	110	88	75	15	0	0
Yukon												
Aishihik	−46	−49	13000	0.3	2.0	10	26	21	73	14	2	2
Snag	−60	−63	13800	0.3	2.0	14	50	40	60	10	2	2
Teslin	−41	−45	12000	0.2	1.5	13	34	27	63	11	2	2
Watson Lake	−51	−54	12300	0.3	2.0	17	54	43	61	10	2	2
Northwest Territories												
Aklavik	−48	−50	17910	0.2	1.5	10	46	37	88	21	1	1
Alert	−48	−50	23730	0.1	1.5	6	43	34	100	27	0	0
Baker Lake	−50	−52	19990	0.1	1.5	7	32	26	86	20	0	0
Cambridge Bay	−48	−50	21490	0.1	1.0	6	32	26	72	14	0	0
Chesterfield	−40	−43	19710	0.2	1.5	11	50	40	88	21	0	0
Clyde	−43	−46	19830	0.2	2.0	10	54	43	107	31	0	0
Coppermine	−47	−49	19410	0.2	2.5	11	45	36	79	17	0	0
Coral Harbour	−38	−40	19670	0.2	2.0	9	61	49	130	46	0	0
Eskimo Point	−40	−43	18200	0.2	2.5	12	56	45	93	23	0	0
Eureka	−49	−51	24820	0.1	1.5	3	25	20	94	24	0	0
Fort Good Hope	−51	−53	17200	0.2	2.5	12	60	48	99	26	1	1
Fort Providence	−46	−49	14800	0.3	3.0	10	48	38	70	13	1	1
Fort Simpson	−50	−53	14610	0.3	2.5	12	56	45	75	15	1	1
Fort Smith	−46	−49	14360	0.3	1.5	13	37	30	75	15	0	0
Holman Island	−46	−48	19610	0.1	1.0	5	25	20	106	30	0	0
Isachsen	−51	−53	24460	0.1	1.5	4	30	24	92	23	0	0
Mould Bay	−49	−51	23730	0.1	2.0	3	22	18	94	24	0	0
Nottingham Island	−37	−39	17870	0.2	2.0	12	85	68	92	23	0	0
Rae	−48	−50	15800	0.2	2.0	9	48	38	80	17	0	0
Rankin Inlet	−40	−43	19300	0.2	2.0	11	52	42	90	22	0	0
Resolution Island	−32	−35	16110	0.2	1.5	16	117	94	125	42	0	0