Globe & Mail, Sept 10, 1980

Radiation at CN Tower higher than U.S. allows

By ROSS LAVER
Globe and Mail Reporter

SALT LAKE CITY — Toronto's CN Tower would be ordered to stop television and radio transmission under current U.S. regulations because of potentially dangerous levels of electromagnetic radiation, a senior U.S. radiation protection official said yesterday.

Robert Curtis, director of health response for the U.S. Occupational Safety and Health Administration, told a symposium on microwave safety here that a 1977 Ontario Government study of microwave levels on and near the tower indicates that maintenance workers at the site may be exposed to potentially harmful radiation levels.

"I'm surprised that the radio frequency levels (inside parts of the CN Tower) are so high," Mr. Curtis said in an interview after studying the report. "We would have cited the owners for not providing a safe work place for their maintenance people."

The report, based on four separate sets of readings taken in 1976 and 1977, concluded that levels of electromagnetic radiation in the 555-metre (1,800 foot) communications tower fell within Ontario Labor Ministry guidelines for occupational exposure. The guidelines state that whole-body doses of radio frequencies should be kept below one milliwatt per square centimetre when averaged over a one-hour period.

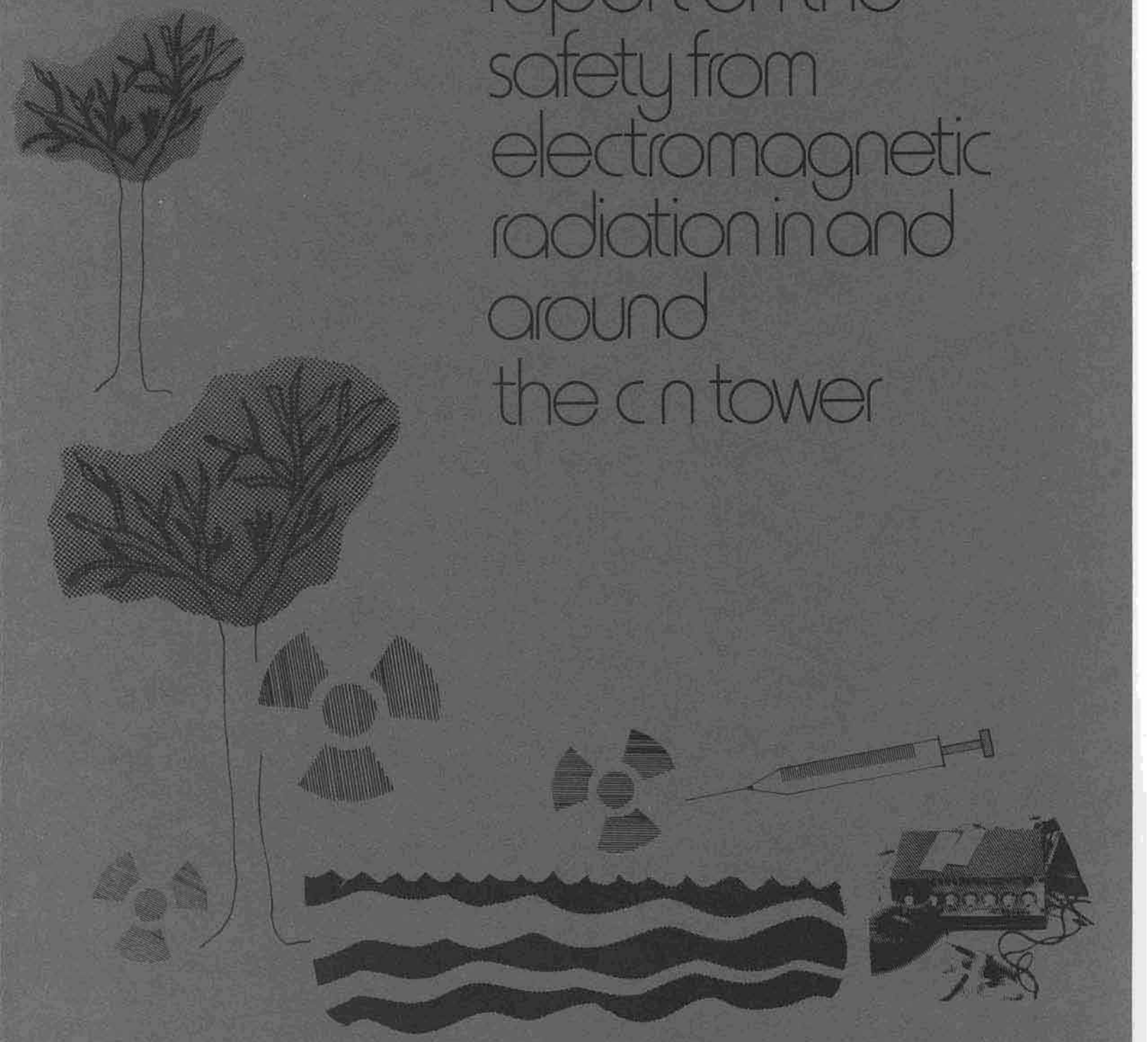
Electromagetic radiation, a form of non-ionizing radiation similar to high frequency radio waves, is emitted by virtually every type of communications equipment. According to some studies, excessive exposure to electromagnetic fields can cause cataracts, cardio-vascular problems, weariness and changes in the immunity system.

77-EHD-7

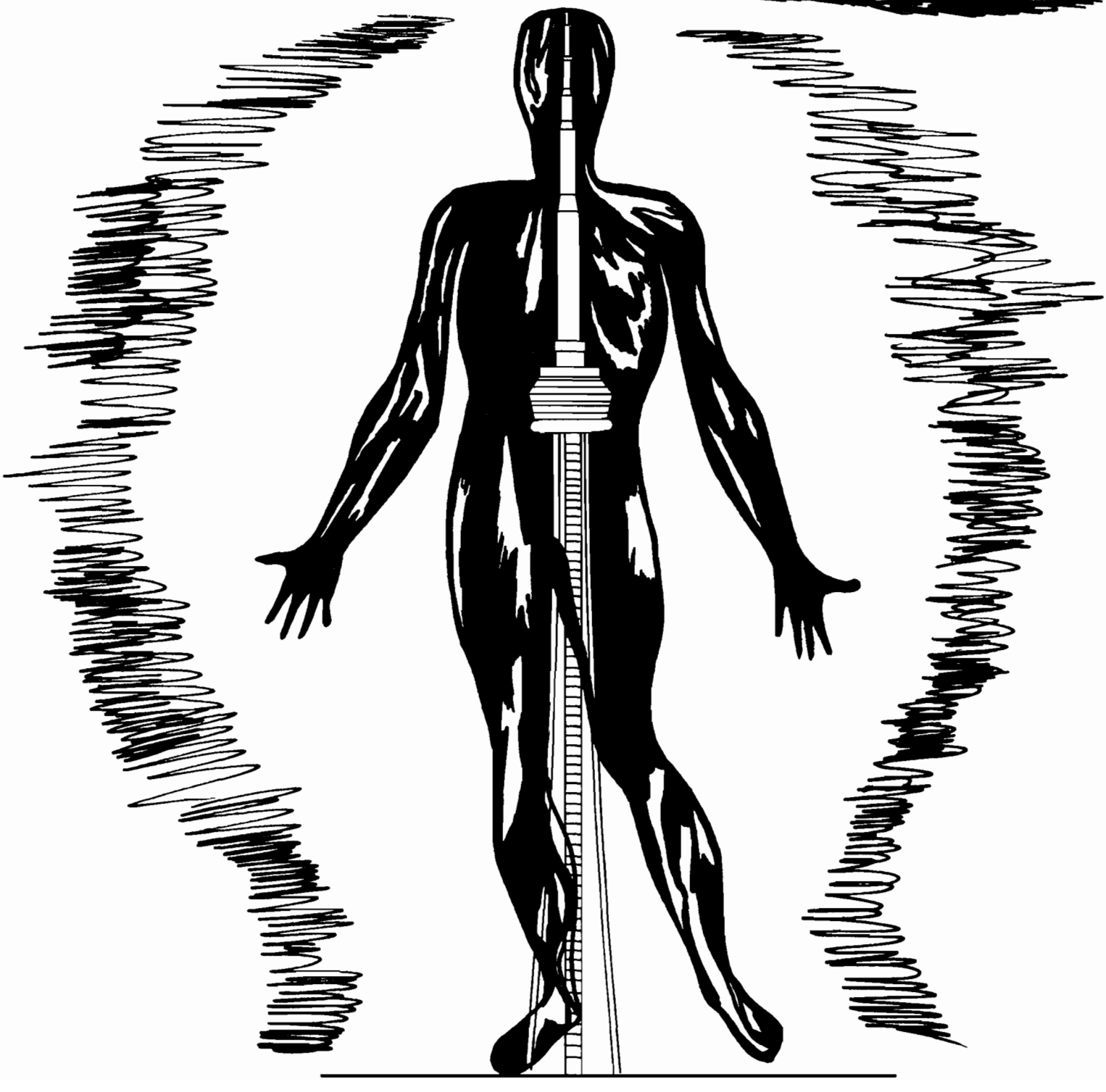
Health and Welfare Canada
Health Protection Branch

Santé et Bien-être social Canada
Direction générale de la protection de la santé

report on the safety from electromagnetic radiation in and around the c n tower



REPORT ON THE SAFETY FROM ELECTROMAGNETIC RADIATION IN AND AROUND THE CN TOWER



REPORT ON THE SAFETY FROM ELECTROMAGNETIC RADIATIONS IN AND AROUND THE CN TOWER, TORONTO

ENVIRONMENTAL HEALTH DIRECTORATE
HEALTH PROTECTION BRANCH

In collaboration with

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ABSTRACT

During July 1976 a survey of the electromagnetic radiation emissions from the CN Tower was made, to assess any possible health hazards to the general public and employees working within the tower. Field intensity measurements were taken at all levels of occupancy within the CN Tower, on the roofs of 5 downtown Toronto buildings, on 3 floors of the Bank of Montreal Building, and at ground level of the Toronto Dominion Plaza. Measurements were also taken along east, west and north radials from the CN Tower for distances up to 20 miles.

Unfortunately, at the time of the survey, not all the broadcast equipment had been installed into the CN Tower and some of the stations were not operating at their fully licenced power levels. However, the survey results indicate that microwave radiation exposure levels are within currently accepted limits for both microwave radiation workers in the tower and for the general public. There does not appear to be a health hazard from the electromagnetic radiations emitted from the CN Tower.

PREFACE

The Radiation Protection Bureau of the Environmental Health Directorate, Health Protection Branch, conducts surveys to determine the radiation hazards to personnel in establishments under Federal jurisdiction, by the authority of the Canada Labour Code. The Ontario Ministry of Health is responsible for the health and safety of the general public in areas coming under Provincial jurisdiction. The Federal Department of Communications is responsible under the Radio Act for all technical matters relating to broadcasting and microwave installations.

Since there were overlapping responsibilities with regard to the electromagnetic transmissions from the CN Tower, it was decided that a joint survey be completed and that the report be issued by the Department of National Health and Welfare in cooperation with the Ontario Ministry of Health and Federal Department of Communications.

The following persons were involved in the CN Tower survey and the preparation of this Report:

Health and Welfare Canada, Radiation Protection Bureau, M.H. Repacholi, Dr. S.K. Ghosh, R. Mann and D. Lecuyer

Ontario Ministry of Health
Dr. A.M. Muc (presently with the Ontario Ministry of Labour)

Department of Communications, Ontario Region
J.G. Rolston, M.C. Yee and G.T. Marks

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INTRODUCTION

The CN Tower, located in the downtown area of Toronto, rises 553 meters above ground level.

Main features of the tower as shown in Appendix A, consist of

(i) a concrete support column with services and reception area at ground level
(ii) a pod at a height of 350 meters and containing 7 levels
(iii) the central support column which continues through the roof of the pod and houses the main elevator motors at a height of about 5 meters above the roof;
(iv) a 91 meters high column supporting another public observation area; and
(v) a 96 meters high spire containing the FM and TV antennae.

A map of the vicinity of the tower and details of its various levels are described in Appendix C.

A number of tall buildings stand in its vicinity and several broadcasting transmitters are located in this tower. Licensed effective radiated power (ERP) for various channels and their present operating ERP levels are shown in Table 1.

The location of the tower, in a densely populated area combined with the high power levels of its radio and television stations, have generated concern amongst the public. Enquiries have been received by the Department of National Health and Welfare and the Ontario Ministry of Health about possible adverse health effects resulting from exposure to the electromagnetic emissions from the tower.

In order to ascertain whether the broadcasting station employees and the public were being excessively exposed to the tower emissions, it was decided that the electromagnetic fields should be measured at various locations within (i) the tower; (ii) highrise buildings in the vicinity of the tower; and (iii) up to twenty miles away from the tower.

In July 1976 the Department of National Health and Welfare and the Ontario Ministry of Health measured field intensities at all levels of occupancy in the CN Tower, on the roofs of five buildings in downtown Toronto, on three floors of the Bank of Montreal Building, and at the ground level of the Toronto Dominion Plaza. The Department of Communications measured field intensities within twenty miles of the CN Tower. At the time of the survey, all stations excepting channels 19 and 25 were operating on full power.

In 1977 channels 19 and 25 are expected to operate at full power of 1.08 and 2.14 megawatts respectively.

Measurements

Measurements were recorded with the following instruments:

1. Rhode and Schwartz VHF-Field Strength Meter
   Type HFV 203.6018.03 (25 MHz - 300 MHz)
2. Narda-Isotropic Radiation Monitor
   Model 8315-A, Probe Model 8321 (0.3 - 18 GHz)
3. Raham Model 2 Radiation Hazard Monitor (10 MHz - 3GHz)
4. Instruments for Industry Model EFS-1 Field Intensity Meter
   (10 kHz - 200 MHz).

The Narda Monitor, although used as an indicator in some cases, was not appropriate for all measurements since it does not respond below 300 MHz and so was only able to pick up TV channels 19, 25 and 79.

The order of the recorded data in Appendix B for the measurements on the CN Tower is, starting from the top of the tower:

(1) Spire
(2) Space Deck
(3) Sky Pod Roof (above level 7 mechanical)
(4) T.V. and F.M. Transmitters Levels 5 and 6
(5) Restaurant Level 4
(6) Upper Observation Deck Level 3
(7) Lower Observation Deck Level 2
(8) Microwave Radome Level 1
(9) Ground Level
(10) Buildings downtown
(11) Ground level downtown (Toronto Dominion Plaza)

For areas (2) through (7) the notation "North" is Grid North for the city, and all measurements thereafter are in a clockwise rotation.

Measurements were also carried out in the areas of the transmitting equipment with special emphasis placed on the power combiners and dividers which feed the antennae.

Further measurements should be carried out when all the transmitters are operating at full power, and the microwave installations on Level 1 of the tower are in operation.

SPIRE

This spire is a metal shell enclosed in a radome of non-conducting material which also acts as a weather barrier. Portholes to the outer area allow observation of the antenna elements.

Measurements were taken with all four instruments but due to the difficulty of zeroing the first three instruments, only the INSTRUMENTS FOR INDUSTRY EFS-1 readings are listed.

These measurements were taken at the base of the spire and every second spider (structural members inside the spire, as shown on page 3 of Appendix D) up to a maximum of 36.6 m above the space deck. In the antenna spire the measurements are listed from no. 1 to no. 7 at 36.6 m above the base in increments of approximately 6m.

SPACE DECK

Here the field strengths from the F.M. Stations were measured with the R & S Field Intensity Meter. Other measurements were made with the Narda and Raham radiation monitors, but the levels were less than the detection limit of the instruments (approximately 50 $\mu W/cm^2$). For each of the stations measured, six readings were taken starting at grid north. These are shown in Appendix B.

SKY POD ROOF

To be consistent with the measurements made in the space deck, measurements were performed in six locations maintaining a constant distance from the edge of the building to the measurement site.

The measurements made for Ch 5 (77.25 MHz) are incomplete due to instrument malfunction. However, due to the levels recorded for the three measurements taken, and the patterns observed in the other measurements, it was felt that no further measurements were necessary.

F.M. and T.V. TRANSMITTER ROOMS

Here measurements of power density were carried out around the transmitters and transmission lines to the divider/combiners which feed the antennas. The values recorded are shown in Appendix B.

The divider/combiners were the locations of maximum power, and the only points where leakage values were observed to be within the range of sensitivity of the power density meters. Field strength measurements were not taken in the F.M. and T.V. transmitter rooms since levels would in all likelihood exceed the maximum capabilities of the field strength meter.

RESTAURANT

The ten waiters' work stations were selected here as measurement sites because of the access to mains power. This, combined with the complete coverage of the periphery of the restaurant, made the work stations ideal locations. As before, the measurements began at grid north and continued in a clockwise direction.

UPPER AND LOWER OBSERVATION DECKS

Four measurement stations were selected for each of these two areas. The antenna of the measuring instrument was positioned so it would not be affected by the metal window frames of the upper observation deck or the metal hand rail and safety screen around the perimeter of the lower observation deck.

MICROWAVE RADOME LEVEL 1

Measurements were made here with the broadband Raham model 2 monitor, even though the antennae were not yet in use. This is one of the areas which should be resurveyed when all equipment is operating at full rated power.

OUTDOOR TERRACE

The measurement sites for the outdoor terrace are shown in Appendix G. Number 1,2 and 3 indicate measurements taken alongside a walkway between the pool at the base of the tower and the lunch bar. Measurement site no. 4 was on the upper level of the terrace between the statue and the corner of the building. Number 5 was located in the main lobby in front of a display of video monitors showing programming being transmitted from the tower. The results in Appendix B are listed by position number.

SURROUNDING BUILDINGS

Power density levels were determined at five buildings in downtown Toronto. This was to determine electromagnetic radiation exposure levels to the general public. The measurements were made only on the roofs of the buildings with the exception of the tallest of the five, the Bank of Montreal building. Here the southwest corner, which is closest to the tower, was selected as the site for a series of measurements at fifteen floor intervals, starting at the roof and continuing down to the 30th floor.

Other Survey Data

1. Department of Communications

A separate survey was completed by the Department of Communications, Ontario Region and is described in their report "Field-Strength Measurements for Some Broadcast Stations at the CN Tower". This survey was carried out under the Radio Act to determine the field strengths of five (5) TV channels and three (3) FM broadcast stations. Measurements were taken along east, west and north radials from the CN Tower. Field strength maxima were observed at different locations for different stations depending on the position of the antennae on the CN Tower and the shape of the field they radiate.

Field strengths are relatively low for each of the stations immediately underneath the tower. Initially, they tend to rise away from the tower, attaining a peak and then rapidly drop off. In each case, the measured value of the peak field strength was less than 600 millivolts per meter, which corresponds approximately to 0.01 microwatts per centimeters squared.

2. EMI Sound and Vision Equipment Limited

This company installed the broadcast equipment into the CN Tower, and carried out a preliminary survey of radiation levels inside the antenna mast area. A summary of the EMI survey is given in Appendix E.

EMI stated that the maximum recommended level for continuous working conditions, by English standards was 200 volts per meter. All antennas were under power when the tests were carried out. A person standing and working on the damper between channels 5 and 9 would have his head in from of the channel 9 panels. It was considered that this area would produce 200 volts per meter and so it was not recommended that anyone spend any extended length of time in this area.

Recommended Permissible Limits of Exposure

The current recommendations for any person exposed to continuous or pulsed electromagnetic radiation in the frequency range 10 MHz - 300 GHz, are given in the table below. The following values should not be exceeded in any one-hour period:

Average energy flux	1 mW h cm^{-2}
Average power density	1 mW cm^{-2}
Average electric field strength	60 V m^{-1}
Average magnetic field strength	0.16 A m^{-1}
Maximum average power density (averaged over one minute)	25 mW cm^{-2}

Thus for a given average power density P (mW cm^{-2}), the maximum exposure time t (minutes) for any one-hour period is given by the expression t = 60/P.

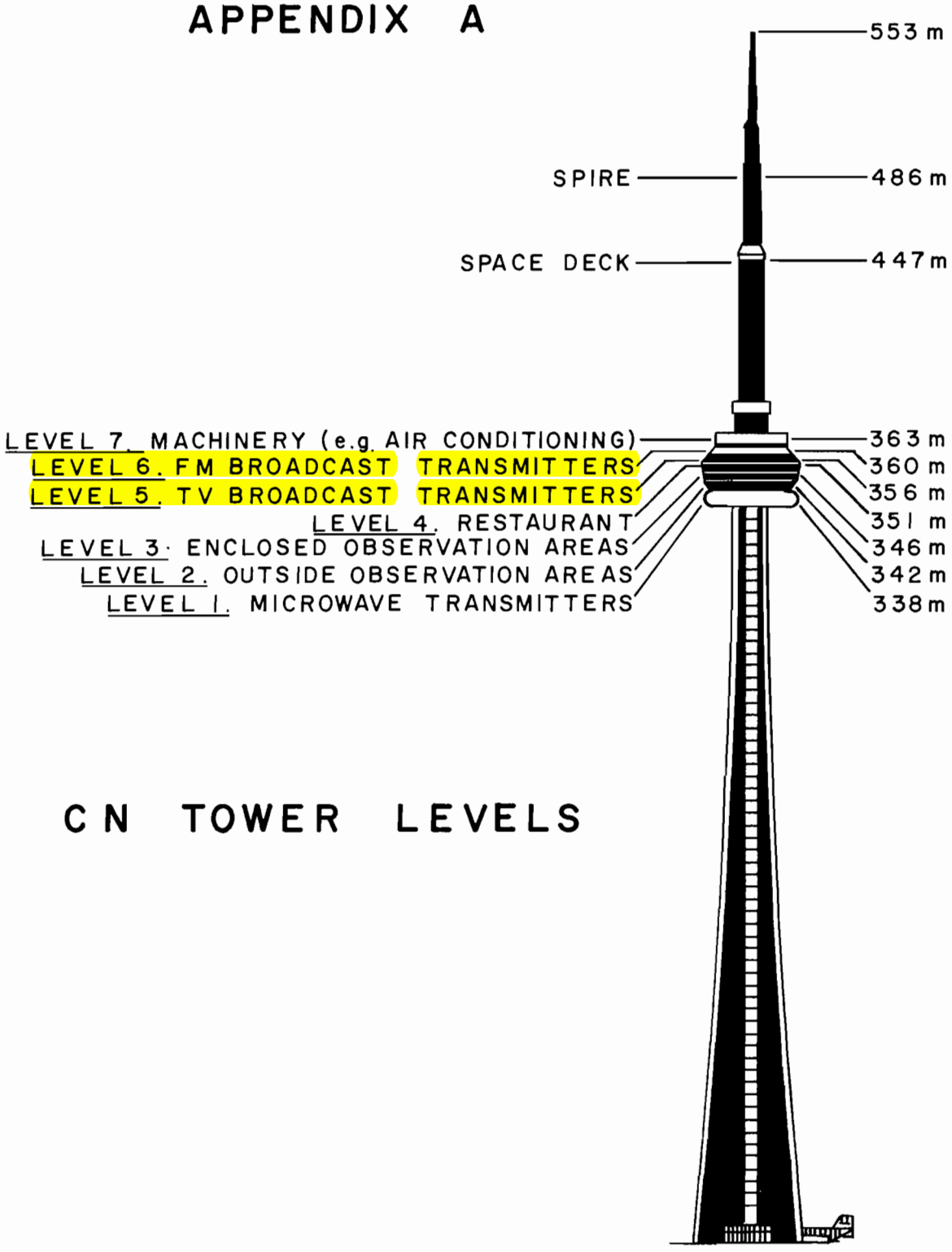
Conclusions

From the results of this survey and the data gathered during "other surveys", it appears that within and around the CN Tower and in buildings in downtown Toronto normally occupied by the public, microwave radiation levels were well within permissible limits. Within the CN Tower, at locations generally occupied by workers and not normally frequented by the public, microwave radiation levels were also found to be well within the permissible limits.

Measurements taken at generally inaccessible locations around the antenna feed dividers and near the vibration dampers, were significantly higher. However, when one accounts for the occupancy of the areas, the microwave radiation levels were within the recommended exposure limits for microwave radiation workers.

At the time of the survey all equipment had not been installed at the CN Tower, and some broadcasting stations had not been operating at their fully licenced power levels. However, based on the data gathered during the survey, it is expected that the power density levels in all accessible areas will still be within the recommended limits. There does not appear to be a health hazard to either the microwave radiation workers or the general public from the electromagnetic transmissions of the CN Tower.

APPENDIX A



CN TOWER LEVELS

Geographical Co-ordinates	:	Lat. 43° 38' 33" N.
	:	Long. 79° 23' 15" W.
Overall Elevation of Structure	:	625 meters
Overall Elevation of Structure	:	553 meters
Ground Level Elevation	:	72 meters

APPENDIX B

Measurements (M) of field intensity were recorded in db(μV) and converted to watts per square centimetre by taking into account the antenna factor K using the formula

$x = (M+K)/20$ where

10^x = microvolts per meter (μV/m)

and $\frac{(10^x)^2}{377} \times 10^{-16}$ = watts per square centimetre (W/cm^2)

The instruments used are indicated by their number shown on the first paragraph of the section entitled "Measurements".

1. Spire Base; 453m level
   Instrument no. 4
   Measurements taken at successive 6 m intervals

Level (m)	Field Strength (V/m)	Power Density (W/cm^2)
453	6.00	9.55×10^{-6}
459	3.50	3.24×10^{-6}
465	3.25	2.80×10^{-6}
471	6.00	9.55×10^{-6}
477	7.00	13.00×10^{-6}
483	4.00	4.24×10^{-6}
489	2.50	1.66×10^{-6}

C.N. TOWER

SPACE DECK

Instrument no. 1 Frequency: 94.1

Position	Reading db(μV)	Antenna Factor db	Conversion To μV/M	Conversion To W/cm^2
N	102.5	7.6	3.20×10^{5}	2.71×10^{-8}
NE	95.0	7.6	1.35×10^{5}	4.83×10^{-9}
SE	113.0	7.6	1.07×10^{6}	3.05×10^{-7}
S	118.0	7.6	1.91×10^{6}	9.63×10^{-7}
SW	110.0	7.6	7.59×10^{5}	1.52×10^{-7}
NW	109.0	7.6	6.76×10^{5}	1.21×10^{-7}
	Frequency: 98.1			
N	113.0	8.2	1.15×10^{6}	3.50×10^{-7}
NE	100.0	8.2	2.57×10^{5}	1.75×10^{-8}
SE	126.0	8.2	5.13×10^{6}	6.98×10^{-6}
S	109.0	8.2	7.24×10^{5}	1.39×10^{-7}
SW	119.0	8.2	2.29×10^{6}	1.39×10^{-6}
NW	115.0	8.2	1.45×10^{6}	5.54×10^{-7}
	Frequency: 99.9			
N	111.0	8.6	9.55×10^{5}	2.42×10^{-7}
NE	110.0	8.6	8.51×10^{5}	1.92×10^{-7}
SE	124.0	8.6	4.27×10^{6}	4.83×10^{-6}
S	113.0	8.6	1.20×10^{6}	3.83×10^{-7}
SW	115.0	8.6	1.51×10^{6}	6.08×10^{-7}
NW	108.0	8.6	6.76×10^{5}	1.21×10^{-7}
	Frequency: 100.7			
N	99.5	8.7	2.57×10^{5}	1.75×10^{-8}
NE	88.0	8.7	6.84×10^{4}	1.24×10^{-9}
SE	111.0	8.7	9.66×10^{5}	2.48×10^{-7}
S	101.0	8.7	3.05×10^{5}	2.48×10^{-8}
SW	106.0	8.7	5.43×10^{5}	7.83×10^{-8}
NW	103.0	8.7	3.85×10^{5}	3.93×10^{-8}

C.N. TOWER

SPACE DECK Cont'd

Instrument no. 1 Frequency: 104.5

Position	Reading db(μV)	Antenna Factor db	Conversion To μV/M	Conversion To W/cm²
N	109.0	9.5	8.41×10^5	1.88×10^{-7}
NE	101.0	9.5	3.35×10^5	2.98×10^{-8}
SE	121.0	9.5	3.35×10^6	2.98×10^{-6}
S	113.0	9.5	1.33×10^6	4.72×10^{-7}
SW	111.0	9.5	1.06×10^6	2.98×10^{-7}
NW	119.0	9.5	2.66×10^6	1.88×10^{-6}
SKY POD ROOF	Frequency: 77.25			
N				
NE	108.0	6	5.01×10^5	6.66×10^{-8}
SE	105.0	6	3.55×10^5	3.34×10^{-8}
S	107.0	6	4.47×10^5	5.29×10^{-8}
SW				
NW				
	Frequency: 94.1			
N	102.5	7.6	3.20×10^5	2.71×10^{-8}
NE	113.0	7.6	1.07×10^6	3.05×10^{-7}
SE	112.5	7.6	1.01×10^6	2.71×10^{-7}
S	115.0	7.6	1.35×10^6	4.83×10^{-7}
SW	115.0	7.6	1.35×10^6	4.83×10^{-7}
NW	114.0	7.6	1.20×10^6	3.83×10^{-7}
	Frequency: 98.1			
N	106.0	8.2	5.13×10^5	6.98×10^{-8}
NE	110.0	8.2	8.13×10^5	1.75×10^{-7}
SE	112.5	8.2	1.08×10^6	3.12×10^{-7}
S	108.5	8.2	6.84×10^5	1.24×10^{-7}
SW	110.0	8.2	8.13×10^5	1.75×10^{-7}
NW	109.0	8.2	7.24×10^5	1.39×10^{-7}

C.N. TOWER

SKY POD ROOF Cont'd

Instrument no. 1 Frequency: 99.9

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/m	Conversion to W/cm²
N	105.0	8.6	4.79×10^{5}	6.08×10^{-8}
NE	62.5	8.6	3.59×10^{3}	3.42×10^{-12}
SE	111.0	8.6	9.55×10^{5}	2.42×10^{-7}
S	109.5	8.6	8.04×10^{5}	1.71×10^{-7}
SW	108.0	8.6	6.76×10^{5}	1.21×10^{-7}
NW	106.0	8.6	5.37×10^{5}	7.65×10^{-8}
	Frequency: 100.7			
N	91.5	8.7	1.02×10^{5}	2.78×10^{-9}
NE	97.5	8.7	2.04×10^{5}	1.10×10^{-8}
SE	101.0	8.7	3.05×10^{5}	2.48×10^{-8}
S	100.5	8.7	2.88×10^{5}	2.21×10^{-8}
SW	100.0	8.7	2.72×10^{5}	1.97×10^{-8}
NW	92.5	8.7	1.15×10^{5}	3.50×10^{-9}
	Frequency: 104.5			
N	106.0	9.5	5.96×10^{5}	9.41×10^{-8}
NE	102.0	9.5	3.76×10^{5}	3.75×10^{-8}
SE	100.5	9.5	3.16×10^{5}	2.65×10^{-8}
S	110.0	9.5	9.44×10^{5}	2.37×10^{-7}
SW	107.0	9.5	6.68×10^{5}	1.19×10^{-7}
NW	101.0	9.5	3.35×10^{5}	2.98×10^{-8}

C.N. TOWER

RESTAURANT

Instrument no. 1 Frequency 94.1

Station Number	Reading db (μV)	Antenna Factor db	Conversion to μV/m	Conversion to W/cm²
1	96.0	7.6	1.51×10^{5}	6.08×10^{-9}
2	83.0	7.6	3.39×10^{4}	3.05×10^{-10}
3	91.0	7.6	8.51×10^{4}	1.92×10^{-9}
4	93.0	7.6	1.07×10^{5}	3.05×10^{-9}
5	89.0	7.6	6.76×10^{4}	1.21×10^{-9}
6	92.0	7.6	9.55×10^{4}	2.42×10^{-9}
7	76.0	7.6	1.51×10^{4}	6.08×10^{-11}
8	89.0	7.6	6.76×10^{4}	1.21×10^{-9}
9	94.0	7.6	1.20×10^{5}	3.83×10^{-9}
10	96.0	7.6	1.51×10^{5}	6.08×10^{-9}
	Frequency: 98.1			
1	92.0	8.2	1.02×10^{5}	2.78×10^{-9}
2	84.0	8.2	4.07×10^{4}	4.40×10^{-10}
3	94.0	8.2	1.29×10^{5}	4.40×10^{-9}
4	95.0	8.2	1.45×10^{5}	5.54×10^{-9}
5	93.0	8.2	1.15×10^{5}	3.50×10^{-9}
6	95.0	8.2	1.45×10^{5}	5.54×10^{-9}
7	94.0	8.2	1.29×10^{5}	4.40×10^{-9}
8	101.0	8.2	2.88×10^{5}	2.21×10^{-8}
9	99.0	8.2	2.29×10^{5}	1.39×10^{-8}
10	96.0	8.2	1.62×10^{5}	6.98×10^{-9}
	Frequency: 99.9			
1	90.0	8.6	8.51×10^{4}	1.92×10^{-9}
2	99.0	8.6	2.40×10^{5}	1.53×10^{-8}
3	96.0	8.6	1.70×10^{5}	7.65×10^{-9}
4	93.0	8.6	1.20×10^{5}	3.83×10^{-9}
5	91.0	8.6	9.55×10^{4}	2.42×10^{-9}
6	100.5	8.6	2.85×10^{5}	2.16×10^{-8}
7	93.0	8.6	1.20×10^{5}	3.83×10^{-9}
8	100.0	8.6	2.69×10^{5}	1.92×10^{-8}
9	95.0	8.6	1.51×10^{5}	6.08×10^{-9}
10	96.0	8.6	1.70×10^{5}	7.65×10^{-9}

C.N. TOWER

RESTAURANT Cont'd

Frequency: 100.7

Station Number	Reading db (μV)	Antenna Factor db	Conversion to μV/m	Conversion to W/cm²
1	96.0	8.7	1.72×10^{5}	7.83×10^{-9}
2	89.0	8.7	7.67×10^{4}	1.56×10^{-9}
3	85.0	8.7	4.84×10^{4}	6.22×10^{-10}
4	86.0	8.7	5.43×10^{4}	7.83×10^{-10}
5	88.0	8.7	6.84×10^{4}	1.24×10^{-9}
6	81.0	8.7	3.05×10^{4}	2.48×10^{-10}
7	84.0	8.7	4.32×10^{4}	4.94×10^{-10}
8	82.0	8.7	3.43×10^{4}	3.12×10^{-10}
9	87.0	8.7	6.10×10^{4}	9.86×10^{-10}
10	88.0	8.7	6.84×10^{4}	1.24×10^{-9}

Frequency: 104.5

1	98.5	9.5	2.51×10^{5}	1.67×10^{-8}
2	90.0	9.5	9.44×10^{4}	2.36×10^{-9}
3	93.0	9.5	1.33×10^{5}	4.72×10^{-9}
4	97.0	9.5	2.11×10^{5}	1.18×10^{-8}
5	94.0	9.5	1.50×10^{5}	5.94×10^{-9}
6	96.0	9.5	1.88×10^{5}	9.41×10^{-9}
7	96.0	9.5	1.88×10^{5}	9.41×10^{-9}
8	91.0	9.5	1.06×10^{5}	2.98×10^{-9}
9	93.0	9.5	1.33×10^{5}	4.72×10^{-8}
10	100.5	9.5	3.16×10^{5}	2.65×10^{-8}

F.M. TRANSMITTER ROOM LEVEL 6

INSTRUMENTS NO. 2 & NO. 3

F.M. TRANSMITTER COMBINER	MAXIMUM LEVEL
CHFI	Just detectable
CHUM	Not measurable
CHIN	" "
CKFM	0.6 mW/cm^2
CBL	Not measurable

T.V. TRANSMITTER ROOMS LEVEL 5

Only 5, 19, 25 channels

INSTRUMENTS No. 2 & No. 3

Channel 5

POSITION	LEVEL
Lower Antenna Feed	Max 0.3 mW/cm^2
Upper Antenna Feed	Max 0.2 mW/cm^2

Channel No. 9

Antenna Feed Divider	INPUT	0.6 mW/cm^2
	Output Lower	*2.0 mW/cm^2
	Output Upper	0.2 mW/cm^2

Channel No. 25

Combiner Video & Audio	0.25 mW/cm^2
Input Side of Power Divider	0.1 mW/cm^2

Page number 2 of Appendix "D" shows a typical power divider/combiner used for all of the T.V. and F.M. Transmitters.

*Although this level is greater than the 1.0 mW/cm^2 recommended maximum for continuous occupancy, it is in an area which is neither easily accessible nor frequently accessed. This measurement was taken between the metal casings of the couplers shown in the photos of Appendix "D".

C.N. TOWER

UPPER OBSERVATION DECK

Instrument no. 1 Frequency: 94.1

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm^2
	101.0	7.6	2.69×10^{5}	1.92×10^{-8}
	94.0	7.6	1.20×10^{5}	3.83×10^{-9}
	92.0	7.6	9.55×10^{4}	2.42×10^{-9}
	96.0	7.6	1.51×10^{5}	6.08×10^{-9}
	Frequency: 98.1			
	95.0	8.2	1.45×10^{5}	5.54×10^{-9}
	94.0	8.2	1.29×10^{5}	4.40×10^{-9}
	102.0	8.2	3.24×10^{5}	2.78×10^{-8}
	96.0	8.2	1.62×10^{5}	6.98×10^{-9}
	Frequency: 99.9			
	102.5	8.6	3.59×10^{5}	3.42×10^{-8}
	96.0	8.6	1.70×10^{5}	7.65×10^{-9}
	94.0	8.6	1.35×10^{5}	4.83×10^{-9}
	101.0	8.6	3.02×10^{5}	2.42×10^{-8}
	Frequency: 100.7			
	93.0	8.7	1.22×10^{5}	3.93×10^{-9}
	82.0	8.7	3.43×10^{4}	3.12×10^{-10}
	88.0	8.7	6.84×10^{4}	1.24×10^{-9}
	87.0	8.7	6.10×10^{4}	9.86×10^{-10}
	Frequency: 104.5			
	97.0	9.5	2.11×10^{5}	1.19×10^{-8}
	91.0	9.5	1.06×10^{5}	2.98×10^{-9}
	92.0	9.5	1.19×10^{5}	3.75×10^{-9}
	90.0	9.5	9.44×10^{4}	2.37×10^{-9}

C.N. TOWER

LOWER OBSERVATION DECK

Instrument no. 1 Frequency: 94.1

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm^2
	94.0	7.6	1.20×10^{5}	3.83×10^{-9}
	87.0	7.6	5.37×10^{4}	7.65×10^{-10}
	85.0	7.6	4.27×10^{4}	4.83×10^{-10}
	92.0	7.6	9.55×10^{4}	2.42×10^{-9}
	Frequency: 98.1			
	97.0	8.2	1.82×10^{5}	8.78×10^{-9}
	100.0	8.2	2.57×10^{5}	1.75×10^{-8}
	94.0	8.2	1.29×10^{5}	4.40×10^{-9}
	91.0	8.2	9.12×10^{4}	2.21×10^{-9}
	Frequency: 99.9			
	100.0	8.6	2.69×10^{5}	1.92×10^{-8}
	96.0	8.6	1.70×10^{5}	7.65×10^{-9}
	91.0	8.6	9.55×10^{4}	2.42×10^{-9}
	93.0	8.6	1.20×10^{5}	3.83×10^{-9}
	Frequency: 100.7			
	85.0	8.7	4.84×10^{4}	6.22×10^{-10}
	75.0	8.7	1.53×10^{4}	6.22×10^{-11}
	79.0	8.7	2.43×10^{4}	1.56×10^{-10}
	80.0	8.7	2.72×10^{4}	1.97×10^{-10}
	Frequency: 104.5			
	86.0	9.5	5.96×10^{4}	9.41×10^{-10}
	94.0	9.5	1.50×10^{5}	5.94×10^{-9}
	93.0	9.5	1.33×10^{5}	4.72×10^{-9}
	87.0	9.5	6.68×10^{4}	1.18×10^{-9}

C.N. TOWER

OUTDOOR TERRACE

Instrument no. 1 Frequency: 77.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm^2
1	93.5	6	9.44×10^{4}	2.37×10^{-9}
2	100.0	6	2.00×10^{5}	1.06×10^{-8}
3	101.0	6	2.24×10^{5}	1.33×10^{-8}
4	94.0	6	1.00×10^{5}	2.65×10^{-9}
5	90.0	6	6.31×10^{4}	1.06×10^{-9}
	Frequency: 94.1			
1	90.0	7.6	7.59×10^{4}	1.53×10^{-9}
2	85.5	7.6	4.52×10^{4}	5.42×10^{-10}
3	91.0	7.6	8.51×10^{4}	1.92×10^{-9}
4	88.0	7.6	6.03×10^{4}	9.63×10^{-10}
5	87.0	7.6	5.37×10^{4}	7.65×10^{-10}
	Frequency: 98.1			
1	86.5	8.2	5.43×10^{4}	7.83×10^{-10}
2	86.5	8.2	5.43×10^{4}	7.83×10^{-10}
3	91.0	8.2	9.12×10^{4}	2.21×10^{-9}
4	84.0	8.2	4.07×10^{4}	4.40×10^{-10}
5	91.0	8.2	9.12×10^{4}	2.21×10^{-9}
	Frequency: 99.9			
1	90.0	8.6	8.51×10^{4}	1.92×10^{-9}
2	86.0	8.6	5.37×10^{4}	7.65×10^{-10}
3	82.0	8.6	3.39×10^{4}	3.05×10^{-10}
4	85.0	8.6	4.79×10^{4}	6.08×10^{-10}
5	89.0	8.6	7.59×10^{4}	1.53×10^{-9}

C.N. TOWER

OUTDOOR TERRACE Cont'd

Instrument no. 1 Frequency: 100.7

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
1	75.0	8.7	1.53×10^{4}	6.22×10^{-11}
2	78.0	8.7	2.16×10^{4}	1.24×10^{-10}
3	74.0	8.7	1.36×10^{4}	4.94×10^{-10}
4	71.0	8.7	9.66×10^{3}	2.48×10^{11}
5	77.0	8.7	1.93×10^{4}	9.86×10^{-11}
	Frequency: 104.5			
1	81.0	9.5	3.35×10^{4}	2.98×10^{-10}
2	84.0	9.5	4.73×10^{4}	5.94×10^{-10}
3	82.0	9.5	3.76×10^{4}	3.75×10^{-10}
4	70.0	9.5	9.44×10^{3}	2.36×10^{-11}
5	78.0	9.5	2.37×10^{4}	1.49×10^{-10}
	Frequency: 187.25			
1	72.0	14	2.00×10^{4}	1.06×10^{-10}
2	78.0	14	3.98×10^{4}	4.20×10^{-10}
3	66.0	14	1.00×10^{4}	2.65×10^{-11}
4	71.0	14	1.78×10^{4}	8.39×10^{-11}
5	77.0	14	3.55×10^{4}	3.34×10^{-10}
	Frequency: 191.25			
1	72.0	14	2.00×10^{4}	1.06×10^{-10}
2	72.0	14	2.00×10^{4}	1.06×10^{-10}
3	73.0	14	2.24×10^{4}	1.33×10^{-10}
4	78.0	14	3.98×10^{4}	4.20×10^{-10}
5	73.0	14	2.44×10^{4}	1.33×10^{-10}

C.N. TOWER

CANADIAN IMPERIAL BANK OF COMMERCE

Instrument no. 1 Frequency: 77.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
Corner Facing Tower	108.5	6	5.31×10^{5}	7.48×10^{-8}
Corner Facing B of M	103.0	6	2.82×10^{5}	2.11×10^{-8}
	Frequency: 94.1			
Corner Facing Tower	107.0	7.6	5.37×10^{5}	7.65×10^{-8}
Corner Facing B of M	100.5	7.6	2.54×10^{5}	1.71×10^{-8}
	Frequency: 98.1			
Corner Facing Tower	71.0	8.2	9.12×10^{3}	2.21×10^{-11}
Corner Facing B of M	106.0	8.2	5.13×10^{5}	6.98×10^{-8}
	Frequency: 99.9			
Corner Facing Tower	104.5	8.6	4.52×10^{5}	5.42×10^{-8}
Corner Facing B of M	100.5	8.6	2.85×10^{5}	2.16×10^{-8}
	Frequency: 100.7			
Corner Facing Tower	90.0	8.7	8.61×10^{4}	1.97×10^{-9}
Corner Facing B of M	97.0	8.7	1.93×10^{5}	9.86×10^{-9}
	Frequency: 104.5			
Corner Facing Tower	114.0	9.5	1.50×10^{6}	5.94×10^{-7}
Corner Facing B of M	104.0	9.5	4.73×10^{5}	5.94×10^{-8}

C.N. TOWER

CANADIAN IMPERIAL BANK OF COMMERCE Cont'd

Frequency: 187.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
Corner Facing Tower	113.0	14	2.24×16^{6}	1.33×10^{-6}
Corner Facing B of M	83.5	14	7.50×10^{4}	1.50×10^{-9}

TORONTO DOMINION CENTRE

Instrument no. 1 Frequency: 77.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
Roof	105.0	6	3.55×10^{5}	3.34×10^{-8}
	Frequency: 94.1			
Roof	107.0	7.6	5.37×10^{5}	7.65×10^{-8}
	Frequency: 98.1			
Roof	106.5	8.2	5.43×10^{5}	7.83×10^{-8}
	Frequency: 99.9			
Roof	104.0	8.6	4.27×10^{5}	4.83×10^{-8}
	Frequency: 100.7			
Roof	94.0	8.7	1.36×10^{5}	4.94×10^{-9}
	Frequency: 104.5			
Roof	90.0	9.5	9.44×10^{4}	2.36×10^{-9}
	Frequency: 187.25			
Roof	90.5	14	1.68×10^{5}	7.48×10^{-9}

COMMERCIAL UNION

Instrument no. 1 Frequency: 77.25

Roof	101.0	6	2.24×10^{5}	1.33×10^{-8}

C.N. TOWER

COMMERCIAL UNION Cont'd

Position	Reading db (μV)	Antenna Factor db	Conversion to μV/m	Conversion to W/cm²
	Frequency: 94.1			
Roof	104.0	7.6	3.80×10^{5}	3.83×10^{-8}
	Frequency: 98.1			
Roof	102.5	8.2	3.43×10^{5}	3.12×10^{-8}
	Frequency: 99.9			
Roof	104.0	8.6	4.27×10^{5}	4.83×10^{-8}
	Frequency: 100.7			
Roof	94.5	8.7	1.45×10^{5}	5.54×10^{-9}
	Frequency: 104.5			
Roof	101.0	9.5	3.35×10^{5}	2.98×10^{-8}
	Frequency: 187.25			
Roof	100.5	14	5.31×10^{5}	7.48×10^{-8}
ROYAL TRUST				
Instrument no. 1	Frequency: 77.25			
Roof	105.5	6	3.76×10^{5}	3.75×10^{-8}
	Frequency: 94.1			
Roof	101.0	7.6	2.69×10^{5}	1.92×10^{-8}
	Frequency: 98.1			
Roof	101.0	8.2	2.88×10^{5}	2.21×10^{-8}
	Frequency: 99.9			
Roof	100.0	8.6	2.69×10^{5}	1.92×10^{-8}
	Frequency: 100.7			
Roof	87.5	8.7	6.46×10^{4}	1.11×10^{-9}
	Frequency: 104.5			
Roof	99.5	9.5	2.82×10^{5}	2.11×10^{-8}

C.N. TOWER

ROYAL TRUST Cont'd

Instrument no. 1 Frequency: 187.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm^2
Roof	104.0	14	7.94×10^5	1.67×10^{-7}

TORONTO DOMINION PLAZA

Instrument no. 1 Frequency: 77.25

Ground level	101.0	6	2.24×10^5	1.33×10^{-8}
	Frequency: 94.1			
Ground level	105.0	7.6	4.27×10^5	4.83×10^{-8}
	Frequency: 98.1			
Ground level	102.0	8.2	3.24×10^5	2.78×10^{-8}
	Frequency: 99.9			
	105.5	8.6	5.07×10^5	6.82×10^{-8}
	Frequency: 100.7			
	96.0	8.7	1.72×10^5	7.83×10^{-9}
	Frequency: 104.5			
	102.5	9.5	3.98×10^5	4.20×10^{-8}
	Frequency: 187.25			
Ground level	93.0	14	2.24×10^5	1.33×10^{-8}
	Frequency: 191.25			
Ground level	89.0	14	1.41×10^5	5.29×10^{-9}

C.N. TOWER

BANK OF MONTREAL

Instrument no. 1 Frequency: 77.25

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
SE Corner	105.0	6	3.55×10^{5}	3.34×10^{-8}
SW Corner	103.0	6	2.82×10^{5}	2.11×10^{-8}
Floor 60	99.5	6	1.88×10^{5}	9.41×10^{-9}
Floor 45	100.5	6	2.11×10^{5}	1.18×10^{-8}
Floor 30	85.0	6	3.55×10^{4}	3.34×10^{-10}
	Frequency: 94.1			
SE Corner	104.5	7.6	4.03×10^{5}	4.30×10^{-8}
SW Corner	108.0	7.6	6.03×10^{5}	9.63×10^{-8}
Floor 60	104.0	7.6	3.80×10^{5}	3.83×10^{-8}
Floor 45	100.5	7.6	2.54×10^{5}	1.71×10^{-8}
Floor 30	91.0	7.6	8.51×10^{4}	1.92×10^{-9}
	Frequency: 98.1			
SE Corner	105.0	8.2	4.57×10^{5}	5.54×10^{-8}
SW Corner	107.0	8.2	5.75×10^{5}	8.79×10^{-8}
Floor 60	100.0	8.2	2.57×10^{5}	1.75×10^{-8}
Floor 45	104.0	8.2	4.07×10^{5}	4.40×10^{-8}
Floor 30	92.0	8.2	1.02×10^{5}	2.78×10^{-9}
	Frequency: 99.9			
SE Corner	106.0	8.6	5.37×10^{5}	7.65×10^{-8}
SW Corner	109.5	8.6	8.04×10^{5}	1.71×10^{-7}
Floor 60	105.5	8.6	5.07×10^{5}	6.82×10^{-8}
Floor 45	95.0	8.6	1.51×10^{5}	6.08×10^{-9}
Floor 30	89.0	8.6	7.59×10^{4}	1.53×10^{-9}

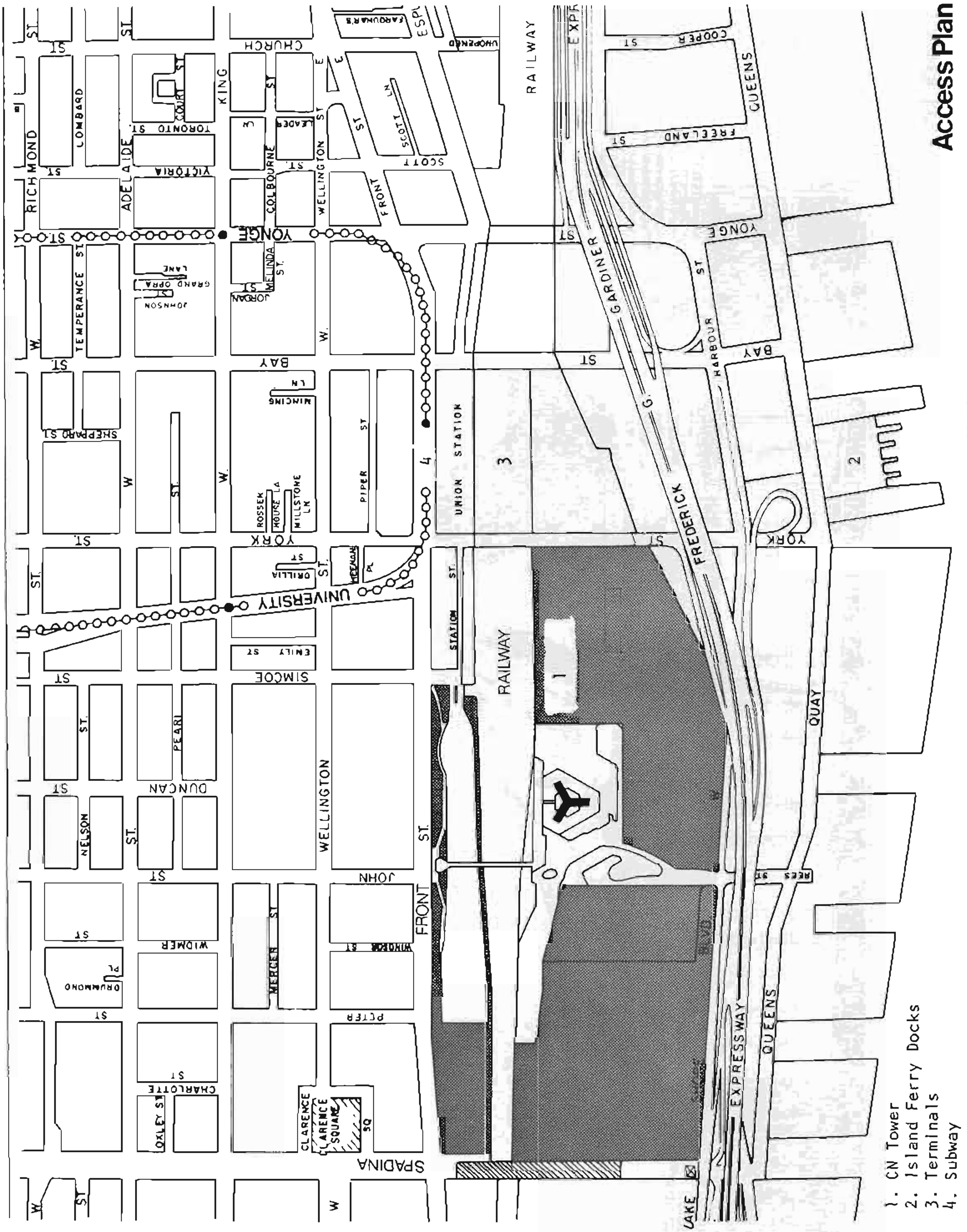
C.N. TOWER

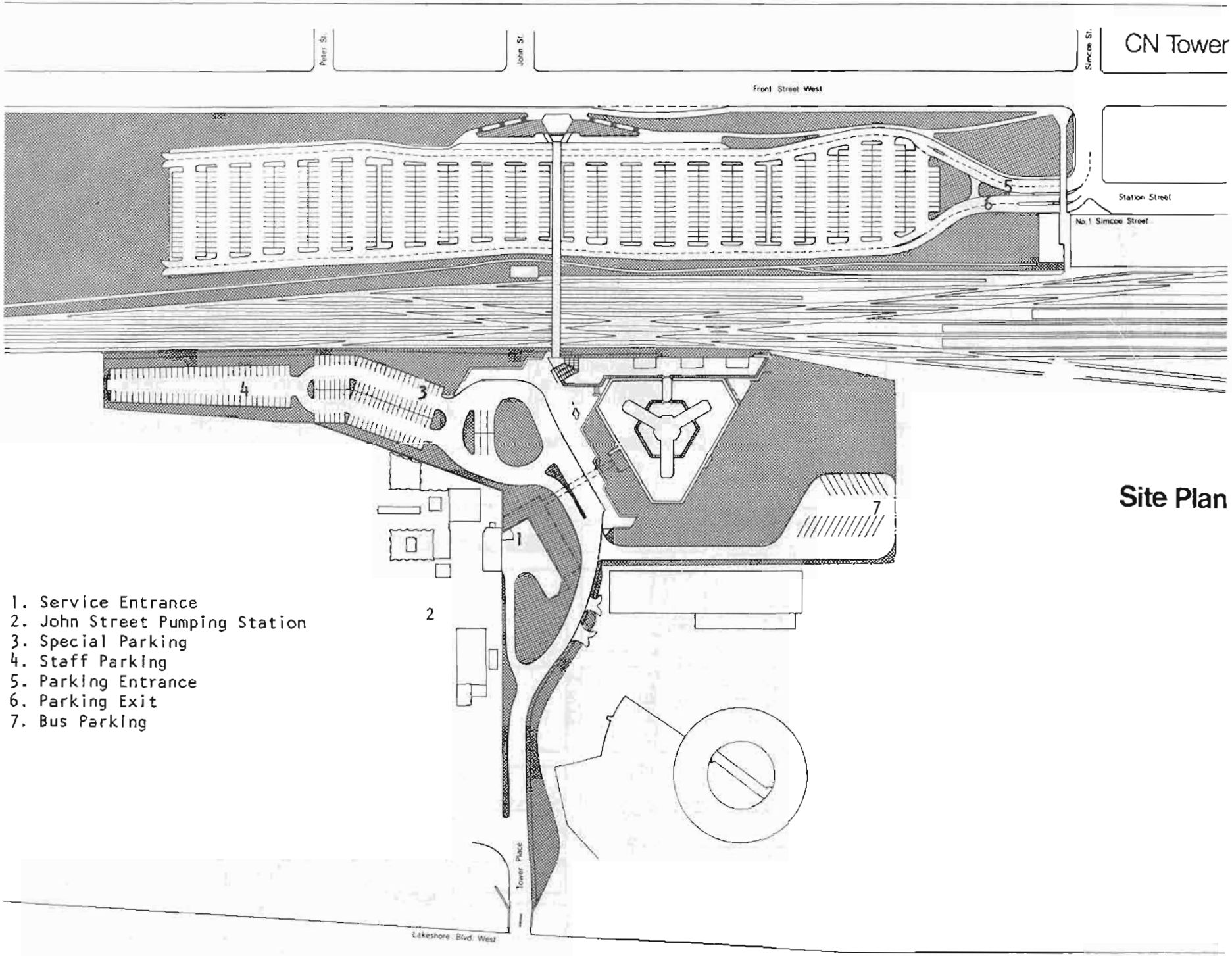
BANK OF MONTREAL Cont'd

Instrument no. 1 Frequency: 100.7

Position	Reading db(μV)	Antenna Factor db	Conversion to μV/M	Conversion to W/cm²
SE Corner	97.0	8.7	1.93×10^{5}	9.86×10^{-9}
SW Corner	98.0	8.7	2.16×10^{5}	1.24×10^{-8}
Floor 60	99.0	8.7	2.43×10^{5}	1.56×10^{-8}
Floor 45	88.0	8.7	6.84×10^{4}	1.24×10^{-9}
Floor 30	81.0	8.7	3.05×10^{4}	2.47×10^{-10}
	Frequency: 104.5			
SE Corner	102.0	9.5	3.76×10^{5}	3.75×10^{-8}
SW Corner	100.5	9.5	3.16×10^{5}	2.65×10^{-8}
Floor 60	105.0	9.5	5.31×10^{5}	7.48×10^{-8}
Floor 45	93.0	9.5	1.33×10^{5}	4.72×10^{-9}
Floor 30	90.0	9.5	9.44×10^{4}	2.36×10^{-9}
	Frequency: 187.25			
SE Corner	94.0	14	2.51×10^{5}	1.67×10^{-8}
SW Corner	93.0	14	2.24×10^{5}	1.33×10^{-8}
Floor 60	87.0	14	1.12×10^{5}	3.34×10^{-9}
Floor 45	87.0	14	1.12×10^{5}	3.34×10^{-9}
Floor 30	81.0	14	5.62×10^{4}	8.39×10^{-10}
	Frequency: 191.75			
SE Corner	98.0	14	3.98×10^{5}	4.20×10^{-8}
SW Corner	91.0	14	1.78×10^{5}	8.39×10^{-9}
Floor 60	85.0	14	8.91×10^{4}	2.11×10^{-9}
Floor 45	80.0	14	5.01×10^{4}	6.66×10^{-10}
Floor 30	75.0	14	2.82×10^{4}	2.11×10^{-10}

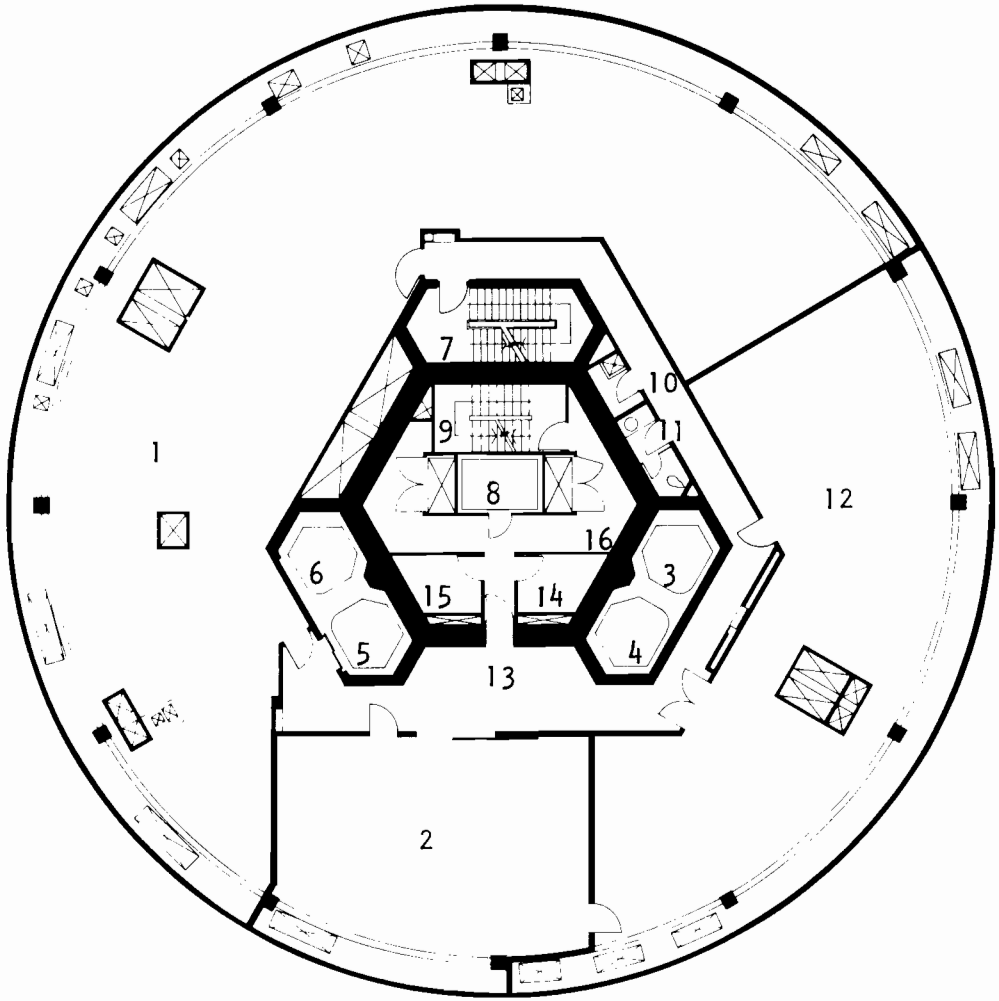
APPENDIX C


Access Plan
1. CN Tower
2. Island Ferry Docks
3. Terminals
4. Subway



Site Plan

1. Service Entrance
2. John Street Pumping Station
3. Special Parking
4. Staff Parking
5. Parking Entrance
6. Parking Exit
7. Bus Parking



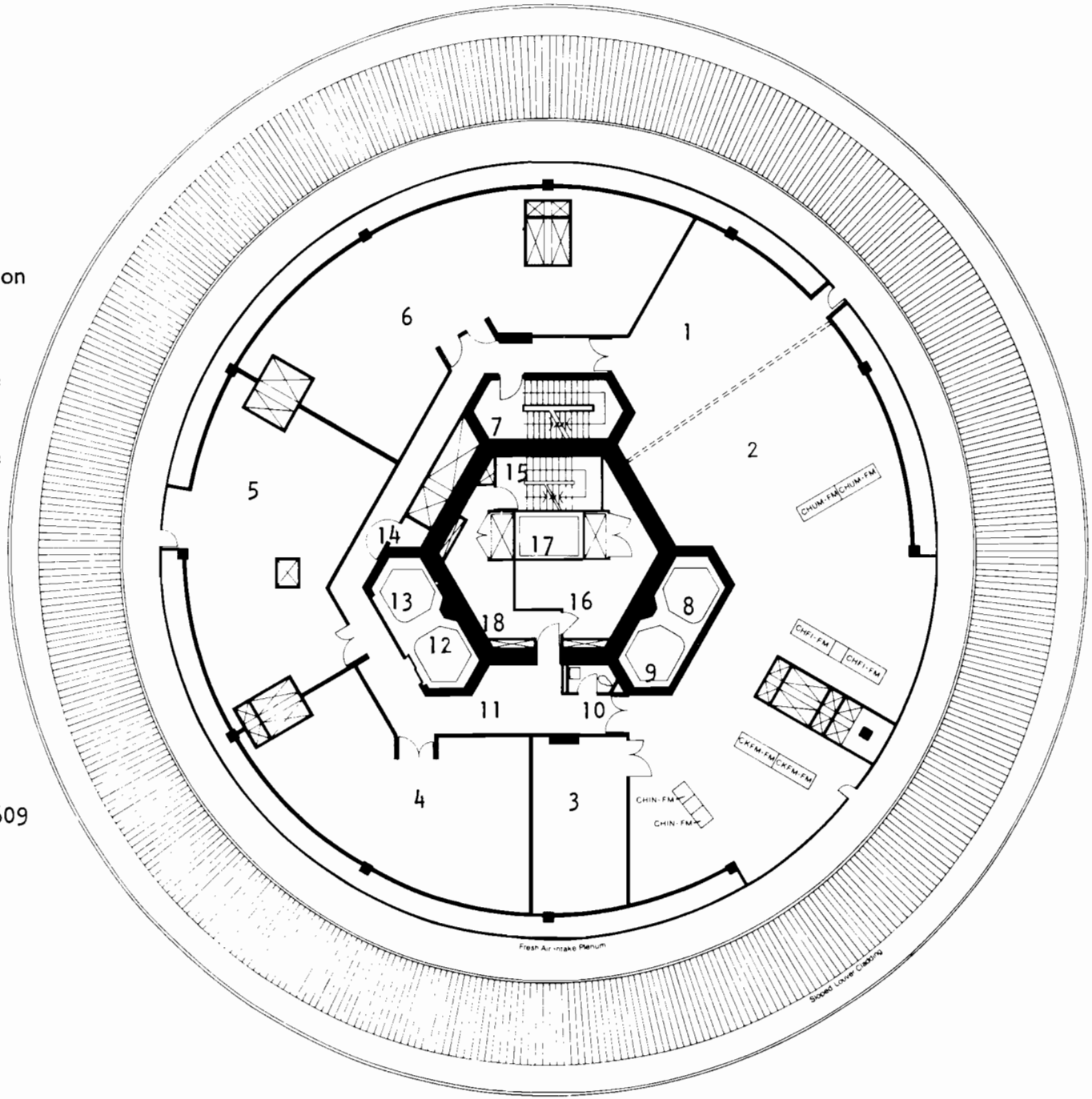
1. Mechanical Room 701
2. Transformer Vault 702
3. Elev. No. 3
4. Elev. No. 4
5. Elev. No. 1 (Service)
6. Elev. No. 2
7. Stair No. 3
8. Elev. No. 5
9. Stair No. 2
10. Janitor 704
11. W.R.
12. Electrical Room 703
13. Corridor 705
14. Cable Pulling 706
15. Cable Pulling 707
16. Corridor 708

Elevation
ASL 1427.2 Feet
AGL 363 Meters

Measurements made around perrif of the roof.

CN Tower
Level 6

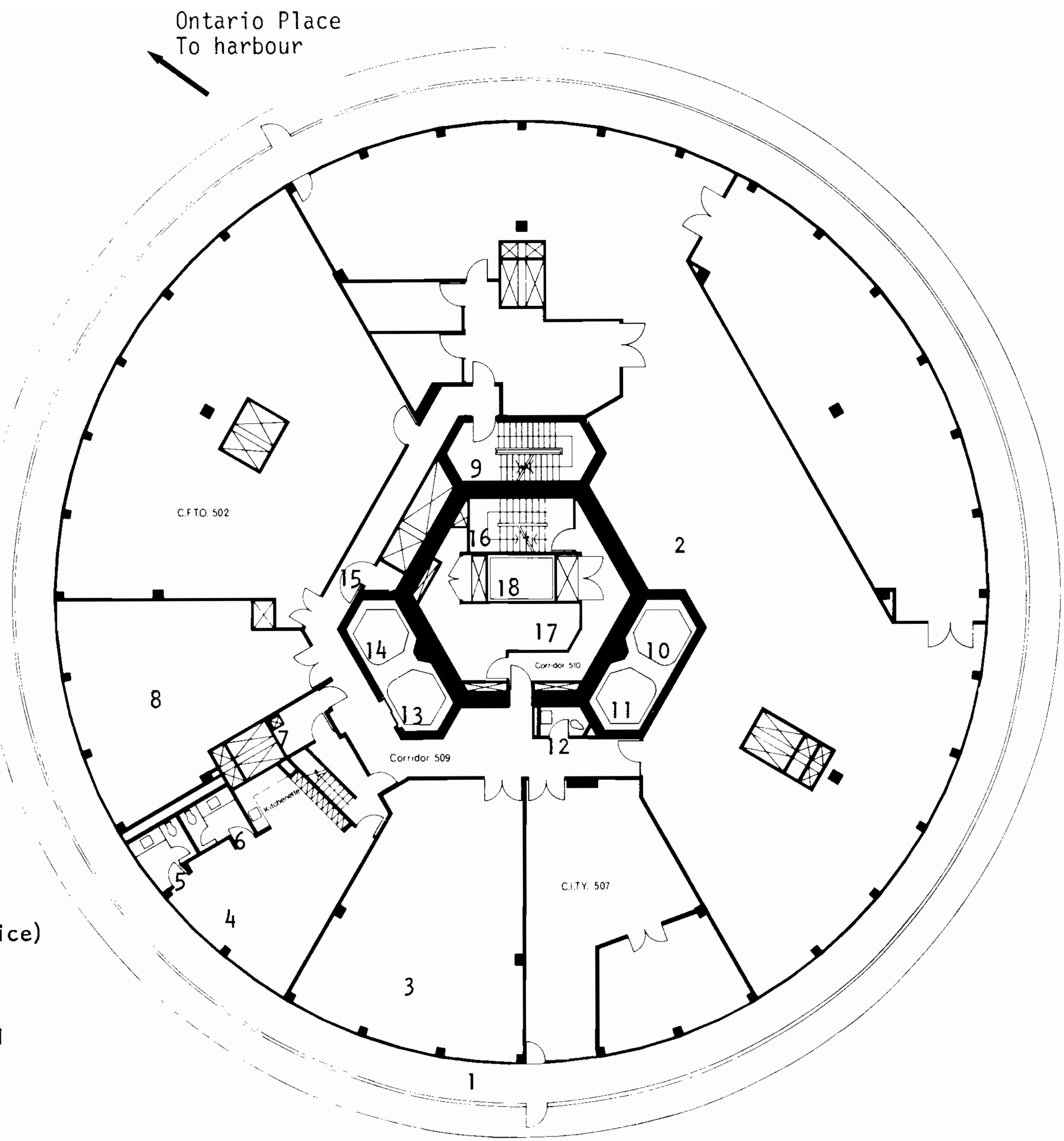
1. Future F.M. 605
2. F.M. Transmission Area 604
3. Master F.M. 603
4. Future F.M. Broadcast Space 602
5. Future U.H.E. Broadcast Space 601
6. Future F.M. 600
7. Stair No. 3
8. Elev. No. 3
9. Elev. No. 4
10. WR
11. Corridor 607
12. Elev. No. 1 (Service)
13. Elev. No. 2
14. Elect. Rm. 606
15. Stair No. 2
16. Telephone Rm. 609
17. Elev. No. 5
18. Passage 608



Elevation
ASL 1414.6 Feet
AGL 360 Meters

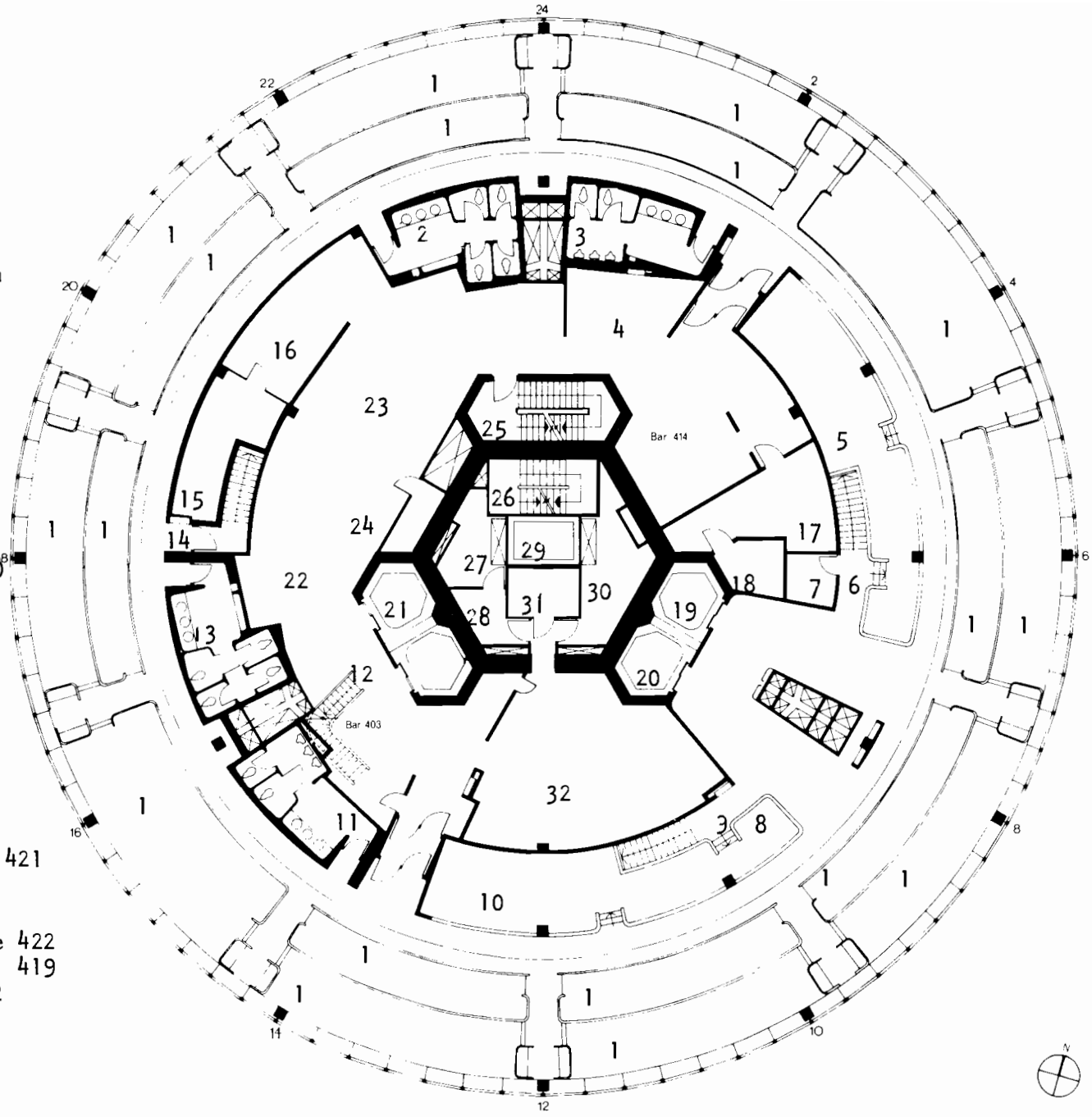
CN Tower
Level 5

Elevation
ASL 1399.6 Feet
AGL 356 Meters



1. Fresh Air Intake Planum
2. C.B.C. 501
3. Future U.H.F. 506
4. Kitchen Staff Area 505
5. Men's WR
6. Women's WR
7. Janitor Rm. 504
8. Future U.H.F. 503
9. Stair No. 3
10. Elev. No. 3
11. Elev. No. 4
12. WR
13. Elev. No. 1 (Service)
14. Elev. No. 2
15. Elect. Rm. 508
16. Stair No. 2
17. Telephone Room 511
18. Elev. No. 5

CN Tower
Level 4

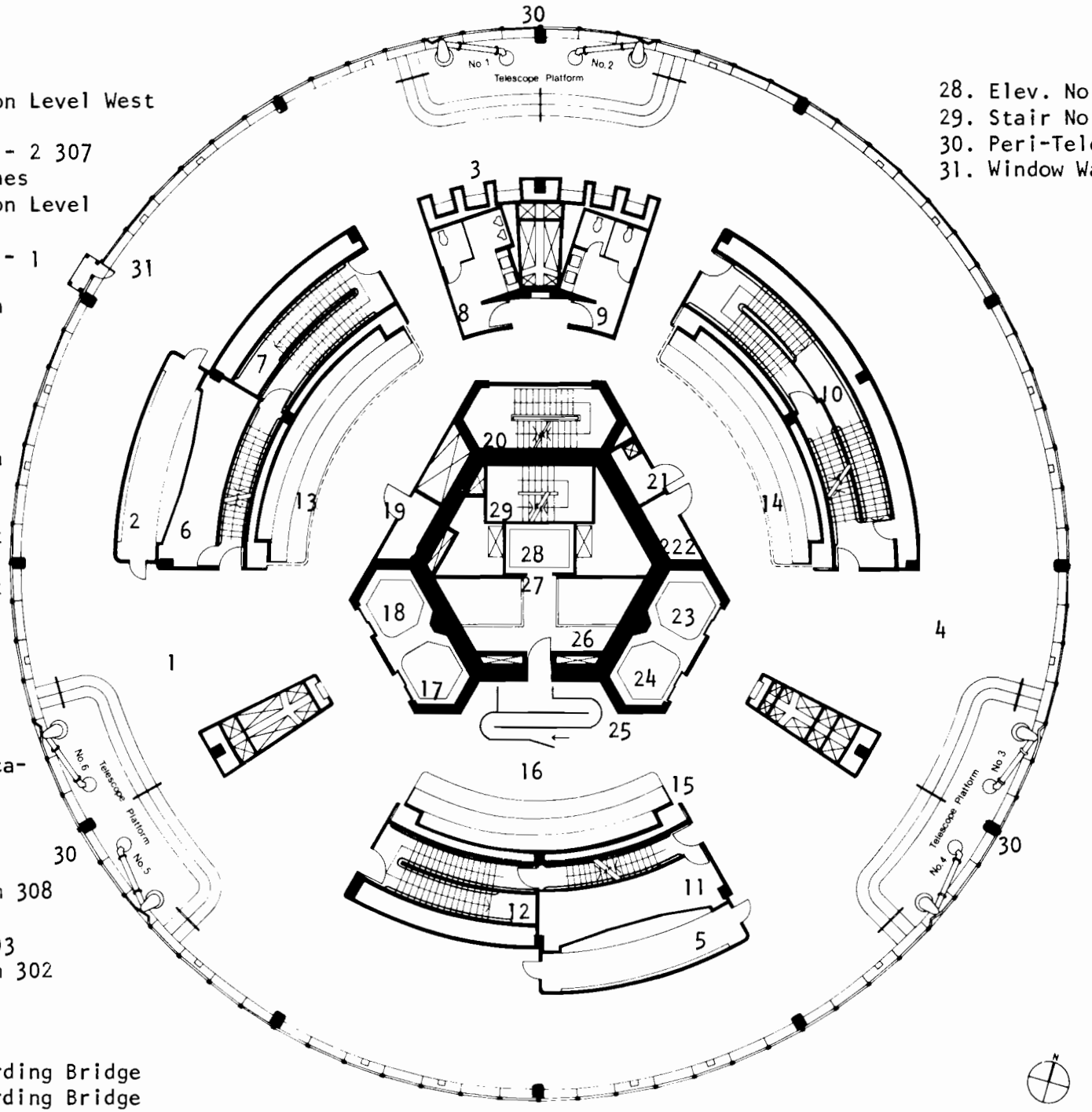


1. Dining Section
2. Women's WR 411
3. Men's WR 412
4. Scrapping 413
5. Lounge 415
6. Stair No. 10
7. Office 418
8. Musicians' Area
9. Stair No. 8
10. Lounge 401
11. Men's WR 404
12. Stair to Staff Dining Area
13. Women's WR 405
14. Stair No. 9
15. General Refrigeration 409
16. Preparation 410
17. Storage 416
18. Elect 417
19. Elev. No. 3
20. Elev. No. 4
21. Elev. No. 2
22. Kitchen 406
23. Hot Pickup 408
24. Elect. 407
25. Stair No. 3
26. Stair No. 2
27. Bell Telephone 421
28. Storage 420
29. Elev. No. 5
30. Kitchen Storage 422
31. Garbage Refrig. 419
32. Dishwashing 402

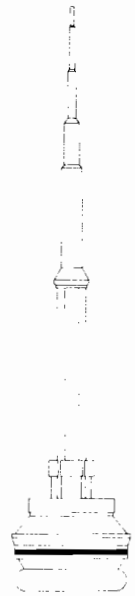
Elevation
ASL 1386 Feet
AGL 351 Meters

CN Tower
Level 3

1. Main Observation Level West Lobby 309
2. Skypod Theatre - 2 307
3. Public Telephones
4. Main Observation Level East Lobby 301
5. Skypod Theatre - 1 312
6. Back Projection Room
7. Stair No. 9
8. Men's WR
9. Women's WR
10. Stair No. 10
11. Back Projection Room 311
12. Stair No. 8
13. Souvenir - Gift Area 305
14. Souvenir - Gift Area 304
15. Kodak Info.
    Post Office
    Cash
    Ticketing Cash
    310
16. Skypod Communications Centre
17. Elev. No. 1 (service)
18. Elev. No. 2
19. Electrical Room 308
20. Stair No. 3
21. Janitor Room 303
22. Electrical Room 302
23. Elev. No. 3
24. Elev. No. 4
25. To Space Deck
26. Space Deck Boarding Bridge
27. Space Deck Boarding Bridge
28. Elev. No. 5
29. Stair No. 2
30. Peri-Telescope
31. Window Washing Platform

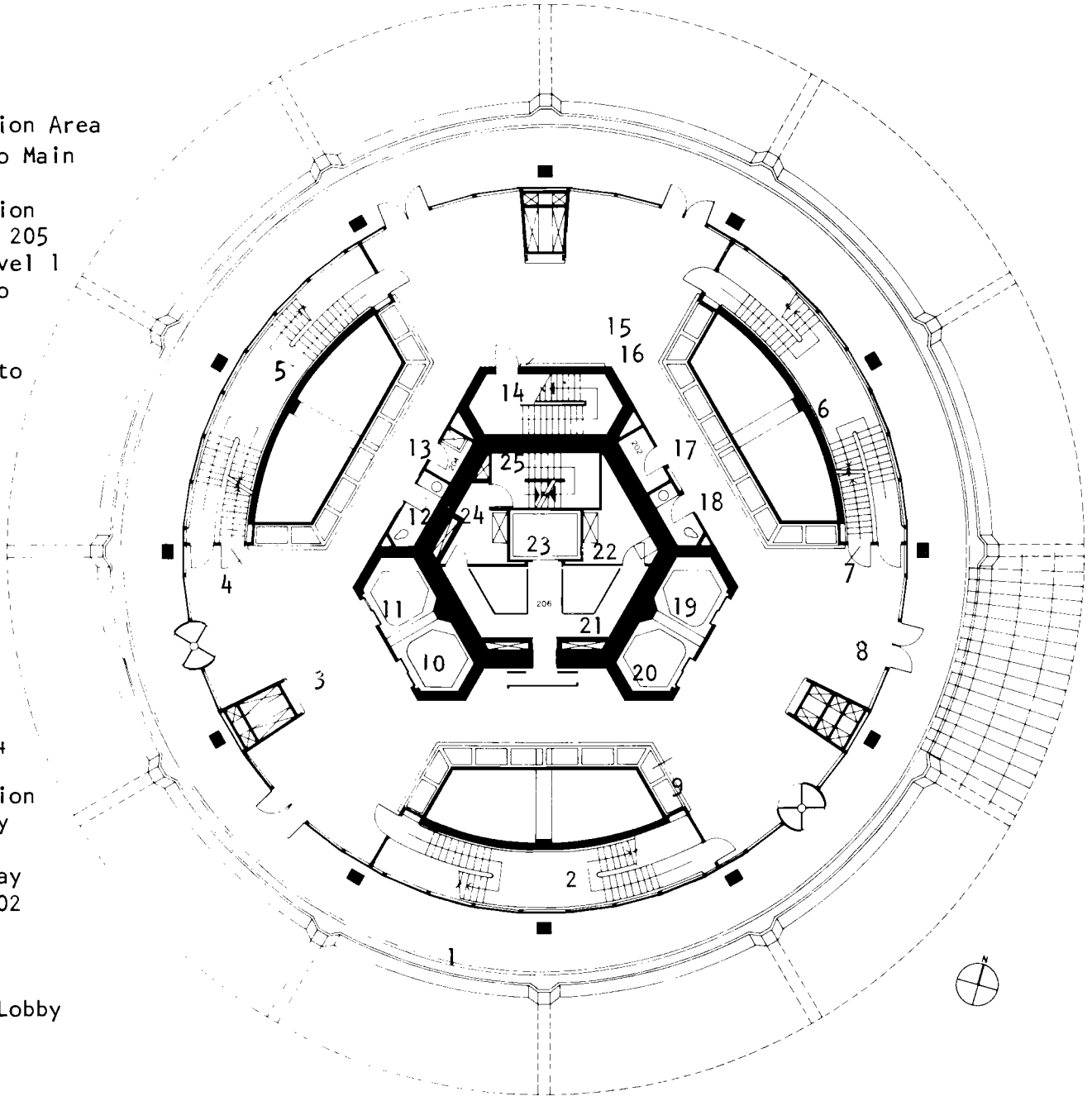


Elevation
ASL 1371 Feet
AGL 346 Meters



CN Tower
Level 2

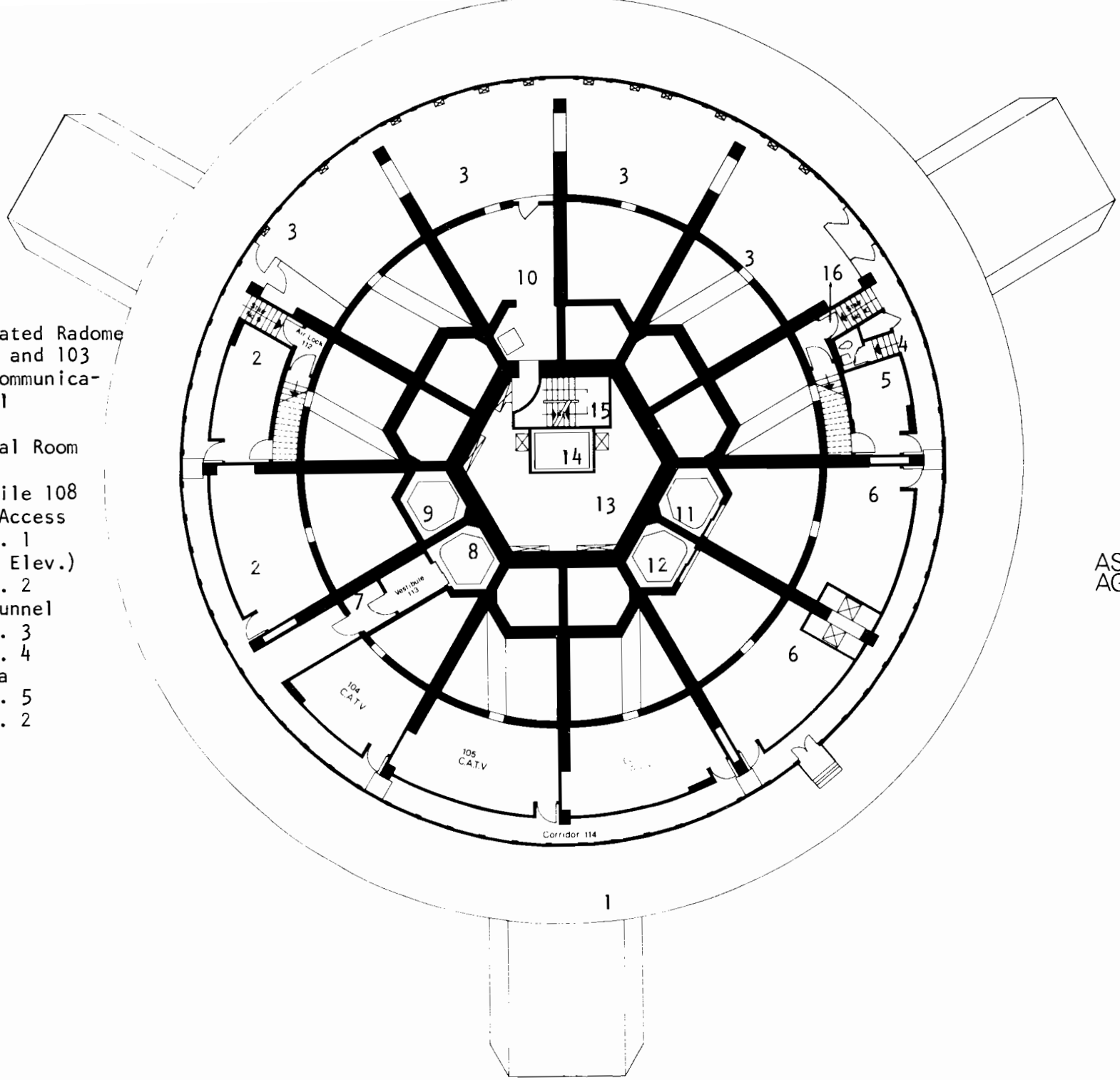
1. Outdoor Observation Area
2. Stair No. 8 up to Main Observation Area
3. Outdoor Observation Level West Lobby 205
4. Stair down to Level 1
5. Stair No. 9 up to Main Observation Level
6. Stair No. 10 up to Main Observation Level
7. Stair down to Level 1
8. Outdoor Observation Level East Lobby 201
9. Typical Shaft Viewing Windows
10. Elev. No. 1 (Service Elev.)
11. Elev. No. 2
12. Women's W.R.
13. Janitor's Rm. 204
14. Stair No. 3
15. Outdoor Observation Level North Lobby 203
16. Electronic Display
17. Electrical Rm. 202
18. Men's W.R.
19. Elev. No. 3
20. Elev. No. 4
21. Space Deck Exit Lobby
22. First Aid 207
23. Elev. No. 5
24. Lobby 208
25. Stair No. 2



Elevation
ASL 1357.3 Feet
AGL 342 Meters

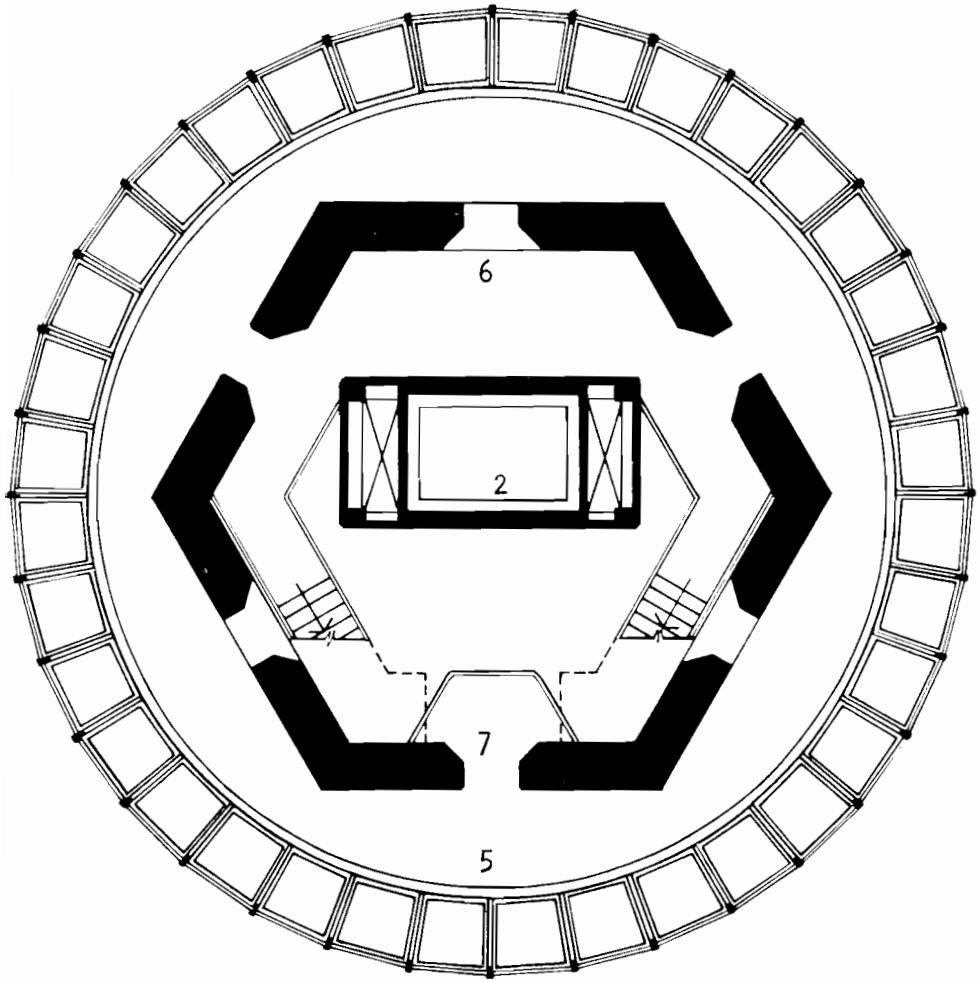
CN Tower
Level 1

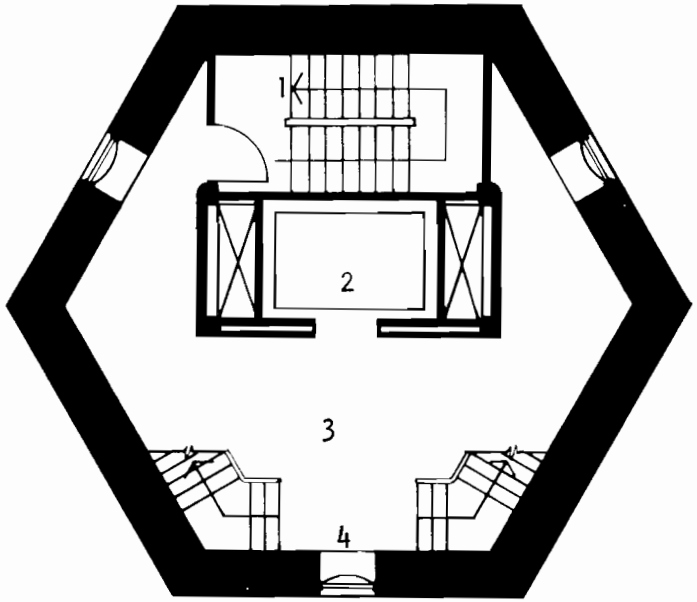
1. Air Inflated Radome
2. Room 102 and 103
3. CN Telecommunications 101
4. W.R. 110
5. Electrical Room 109
6. Land Mobile 108
7. Service Access
8. Elev. No. 1 (Service Elev.)
9. Elev. No. 2
10. Access Tunnel
11. Elev. No. 3
12. Elev. No. 4
13. Void Area
14. Elev. No. 5
15. Stair No. 2
16. Air Lock



Elevation
ASL 1343.8 Feet
AGL 338 Meters

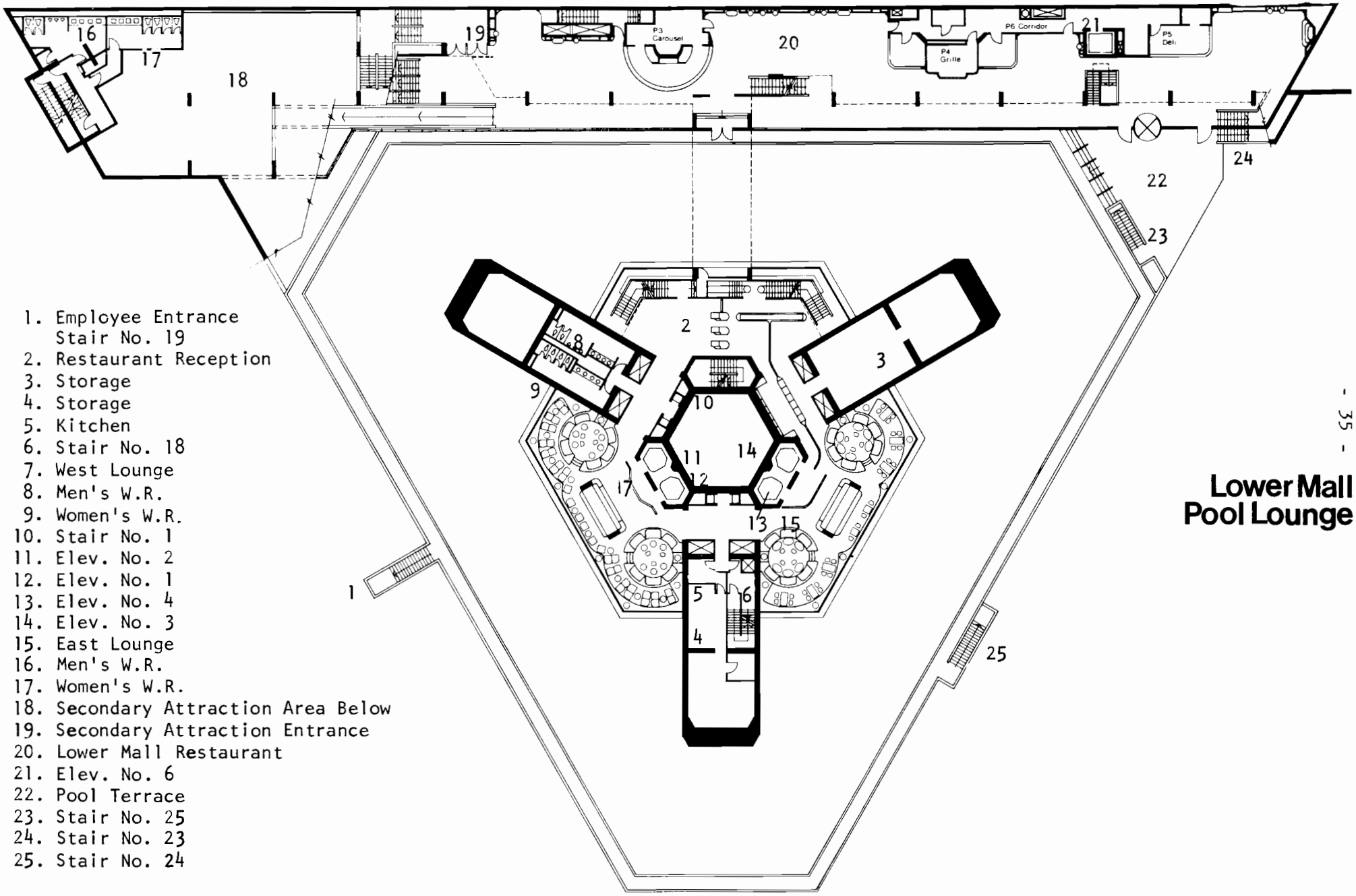
CN Tower
Upper Observation Deck





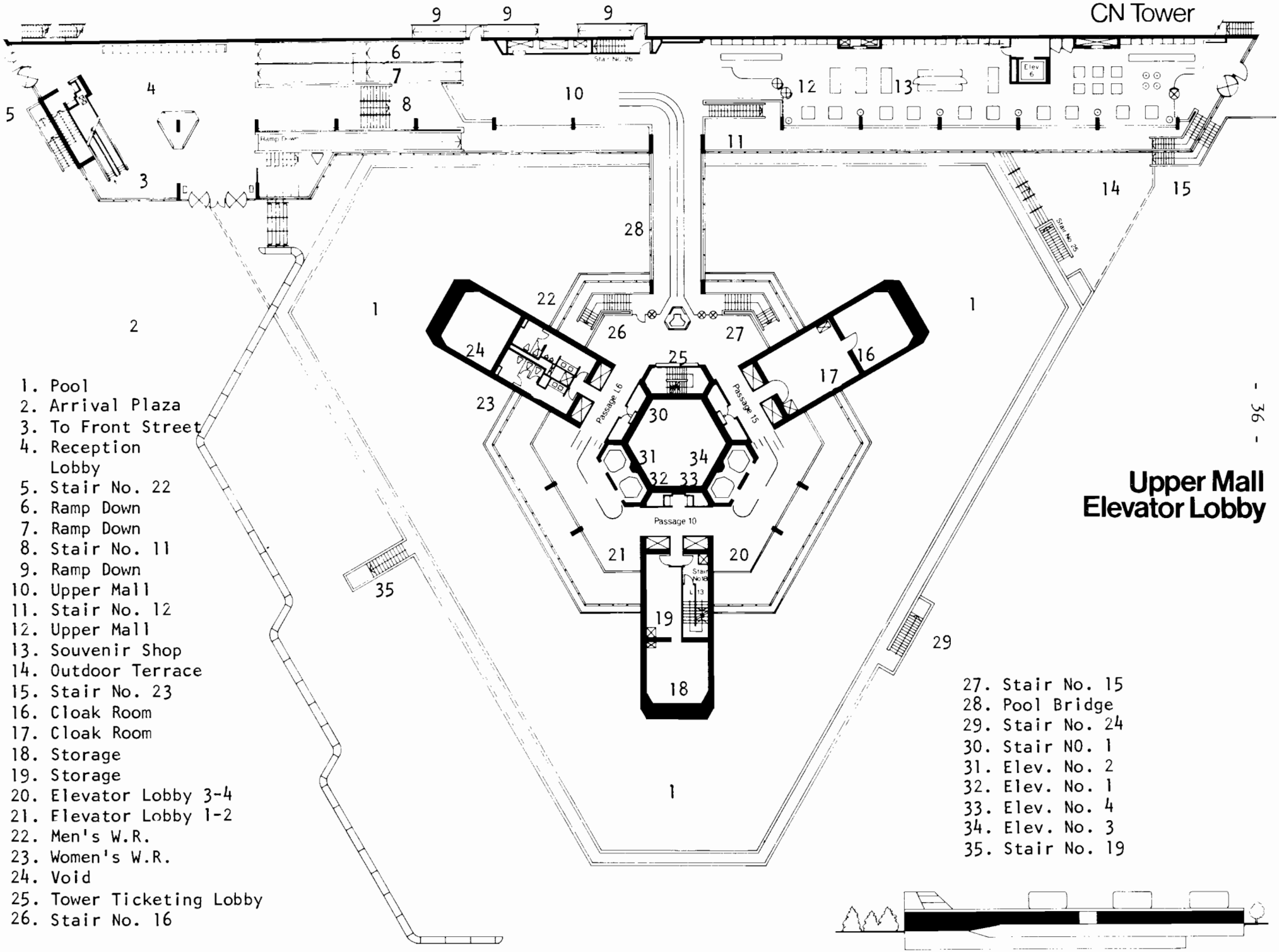
Elevation
ASL 1699.6 Feet
AGL 447 Meters

1. Stair No. 4
2. Elev. No. 5
3. Arrival and Departure Lobby
4. Stairs to Space Deck
5. Space Deck
6. Space Deck Vestibule
7. Balcony



1. Employee Entrance Stair No. 19
2. Restaurant Reception
3. Storage
4. Storage
5. Kitchen
6. Stair No. 18
7. West Lounge
8. Men's W.R.
9. Women's W.R.
10. Stair No. 1
11. Elev. No. 2
12. Elev. No. 1
13. Elev. No. 4
14. Elev. No. 3
15. East Lounge
16. Men's W.R.
17. Women's W.R.
18. Secondary Attraction Area Below
19. Secondary Attraction Entrance
20. Lower Mall Restaurant
21. Elev. No. 6
22. Pool Terrace
23. Stair No. 25
24. Stair No. 23
25. Stair No. 24

Lower Mall Pool Lounge

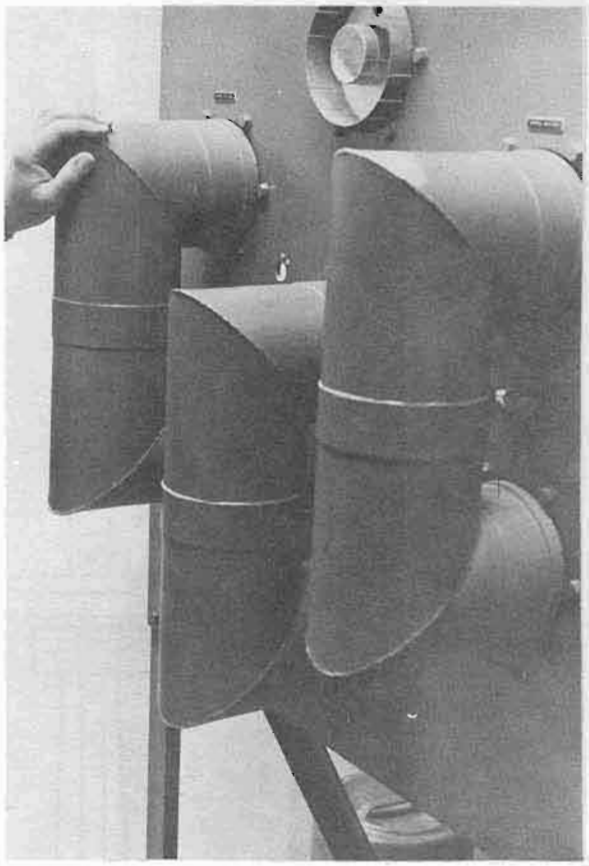


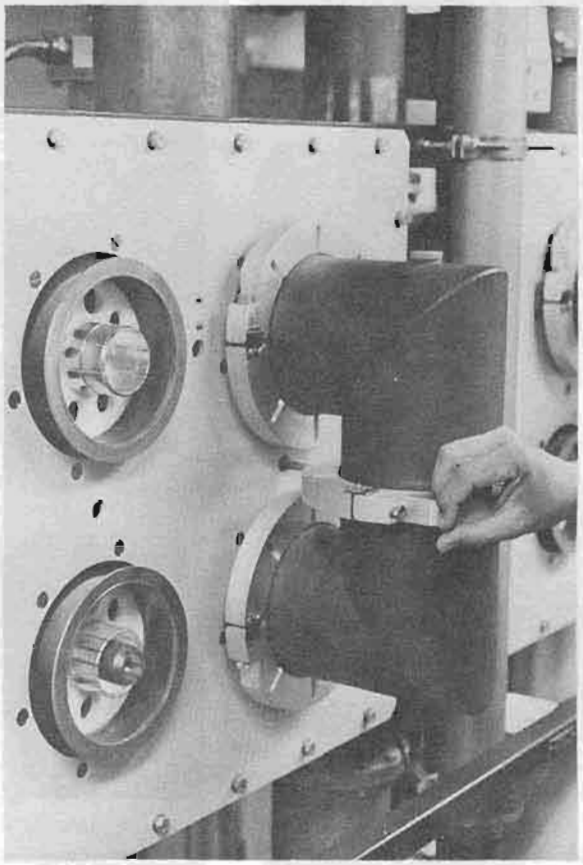
1. Pool
2. Arrival Plaza
3. To Front Street
4. Reception Lobby
5. Stair No. 22
6. Ramp Down
7. Ramp Down
8. Stair No. 11
9. Ramp Down
10. Upper Mall
11. Stair No. 12
12. Upper Mall
13. Souvenir Shop
14. Outdoor Terrace
15. Stair No. 23
16. Cloak Room
17. Cloak Room
18. Storage
19. Storage
20. Elevator Lobby 3-4
21. Elevator Lobby 1-2
22. Men's W.R.
23. Women's W.R.
24. Void
25. Tower Ticketing Lobby
26. Stair No. 16
27. Stair No. 15
28. Pool Bridge
29. Stair No. 24
30. Stair NO. 1
31. Elev. No. 2
32. Elev. No. 1
33. Elev. No. 4
34. Elev. No. 3
35. Stair No. 19

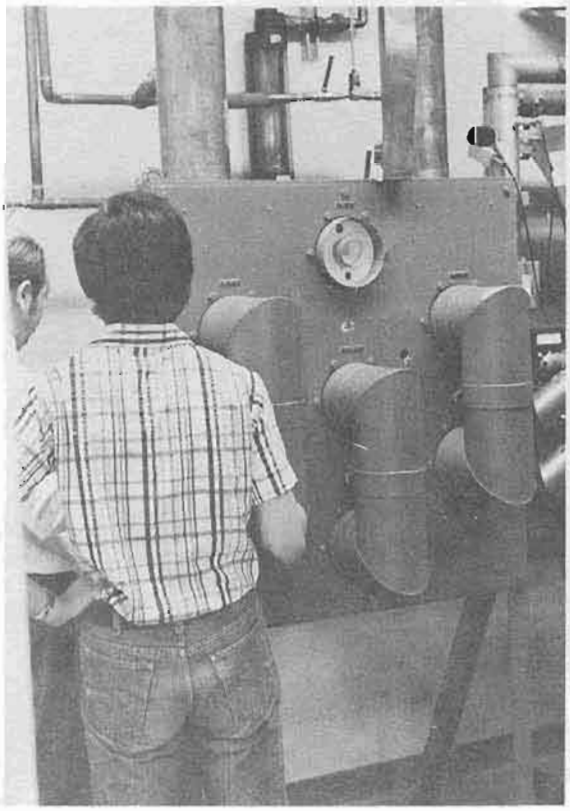
Upper Mall Elevator Lobby

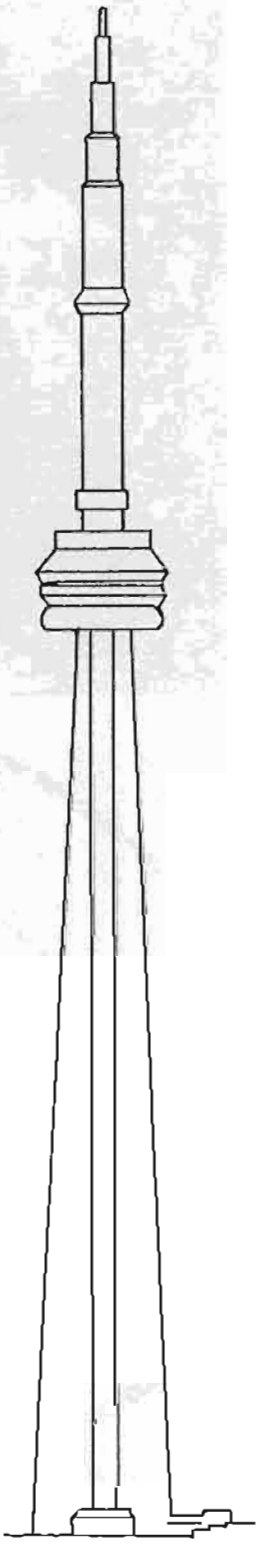
APPENDIX D

POWER DIVIDER/COMBINER

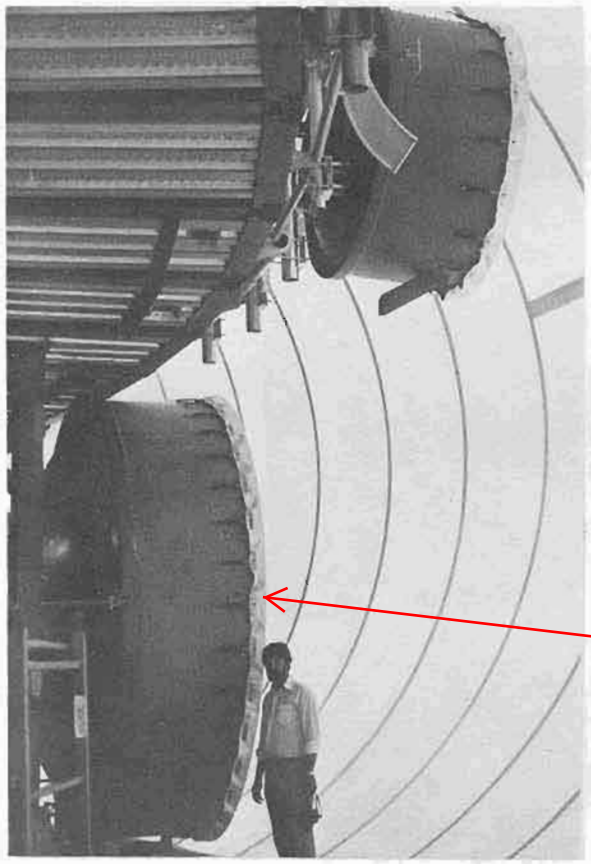


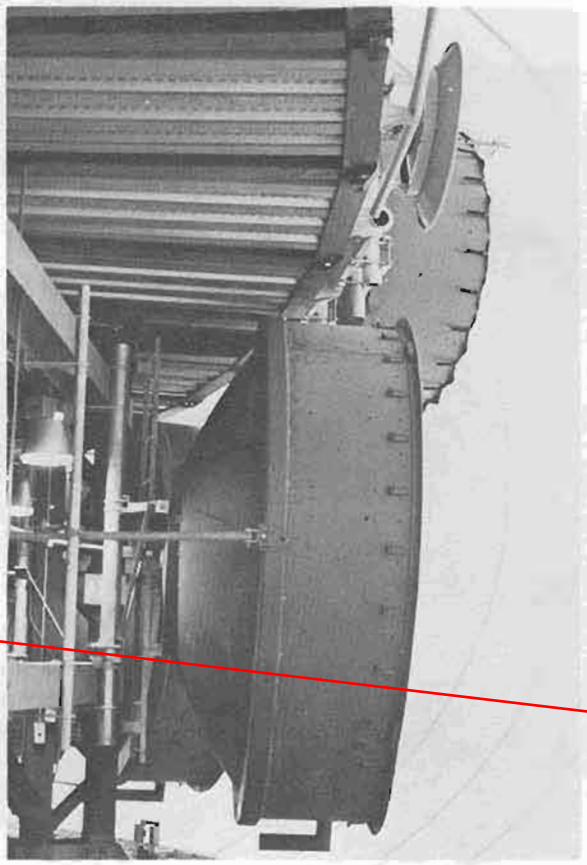


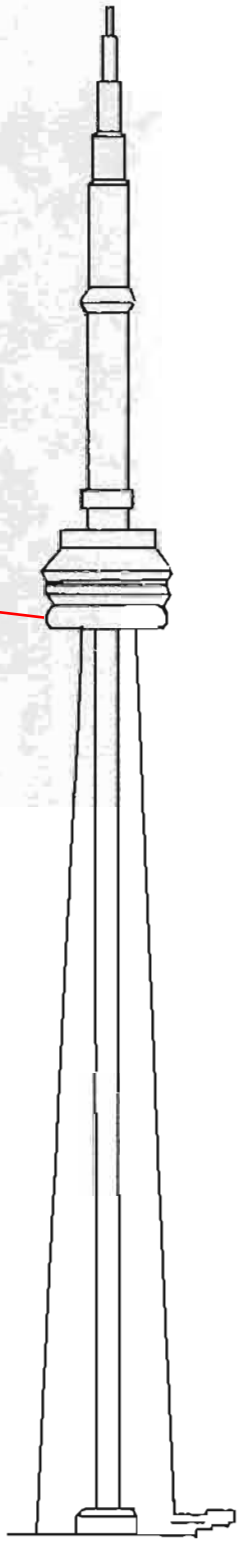


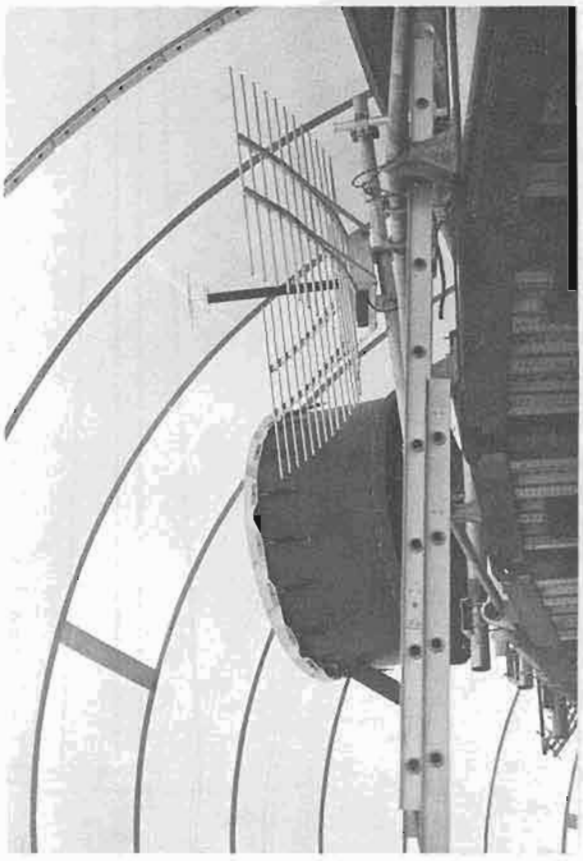


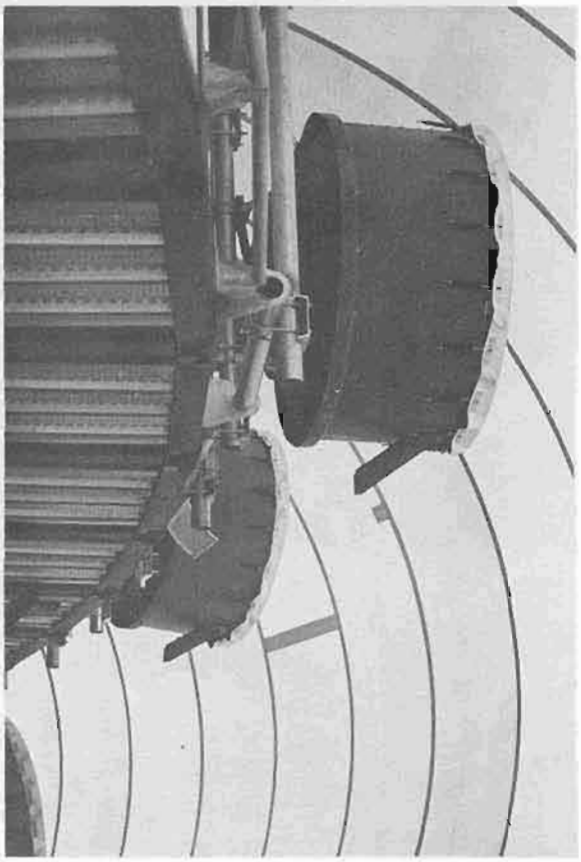
MICROWAVE RADOME ANTENNAS





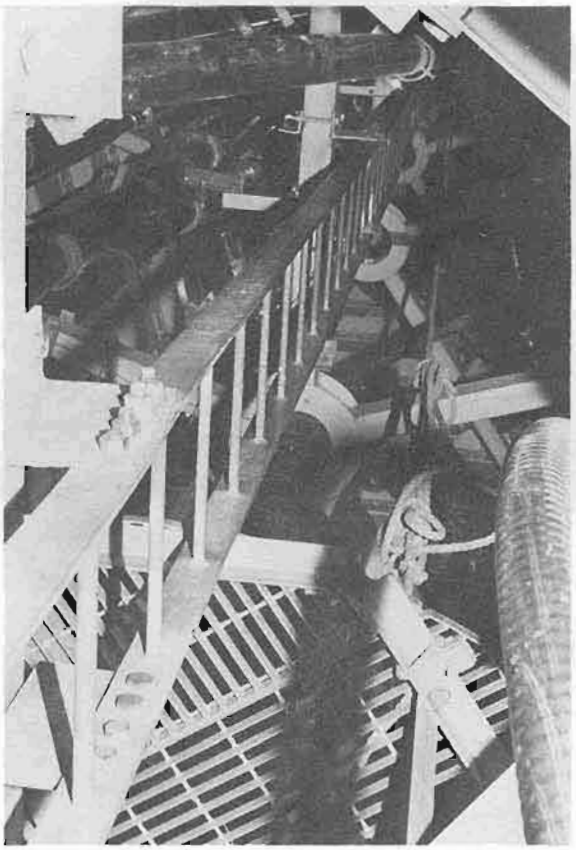


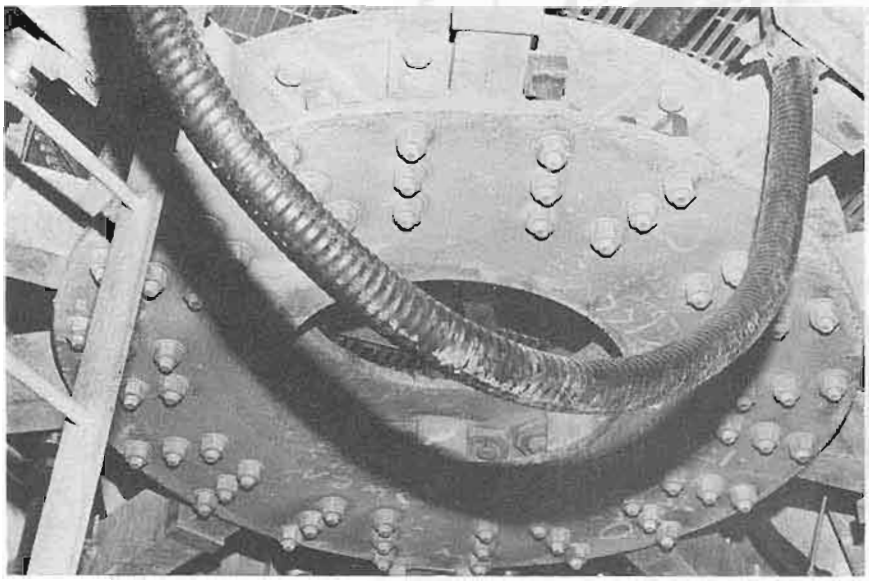


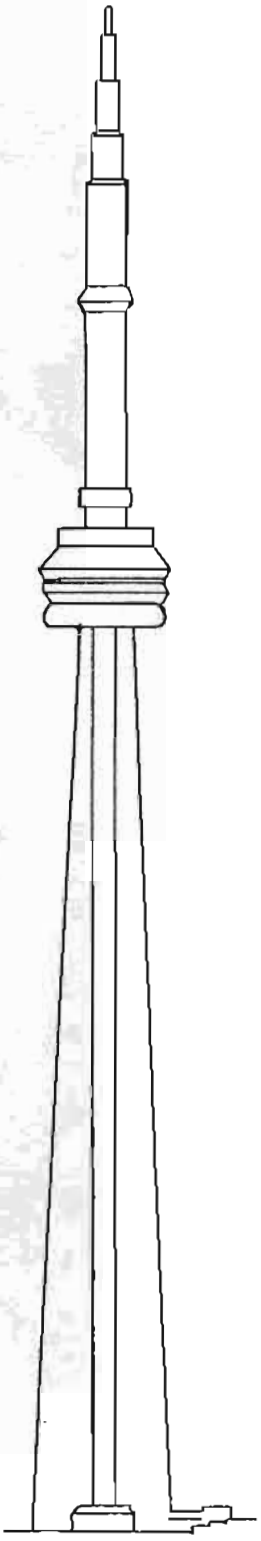


SPIRE OF TOWER

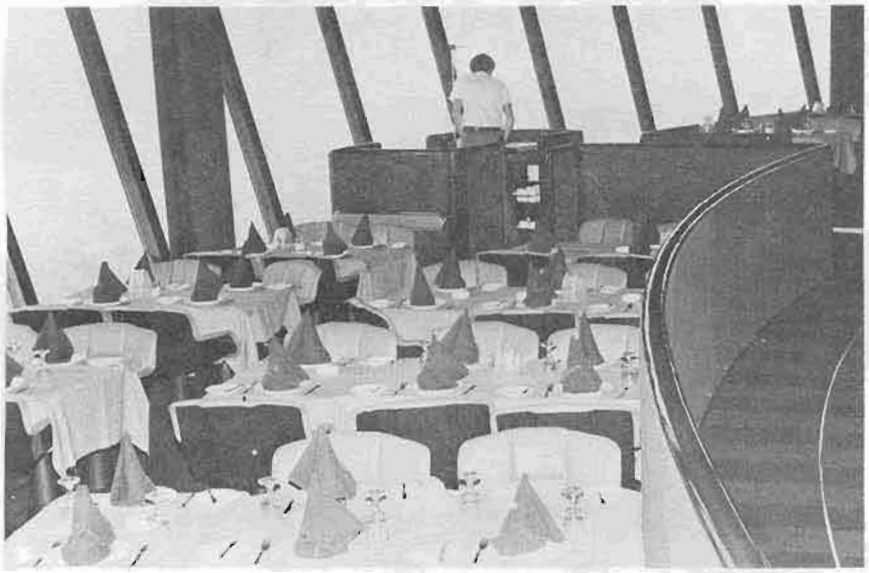
"SPIDERS"

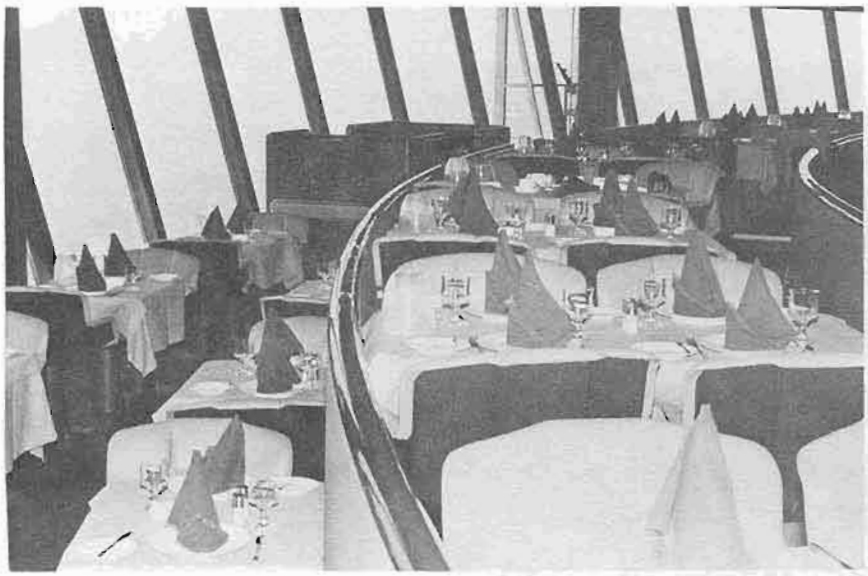


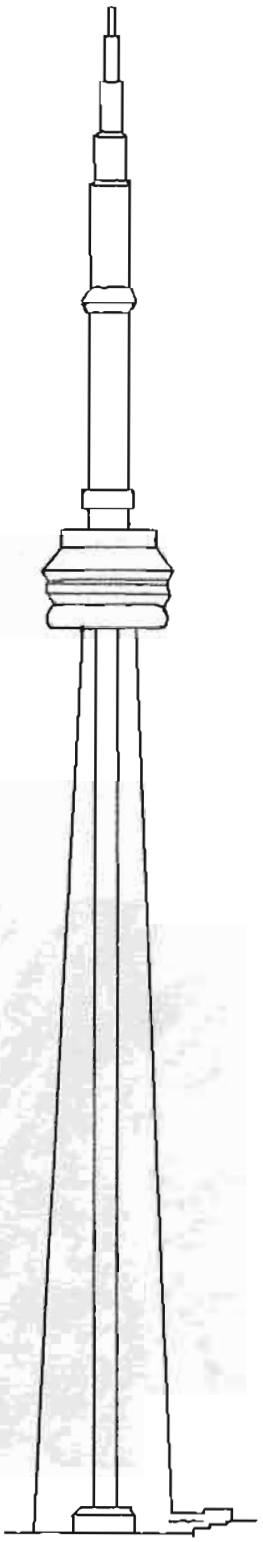




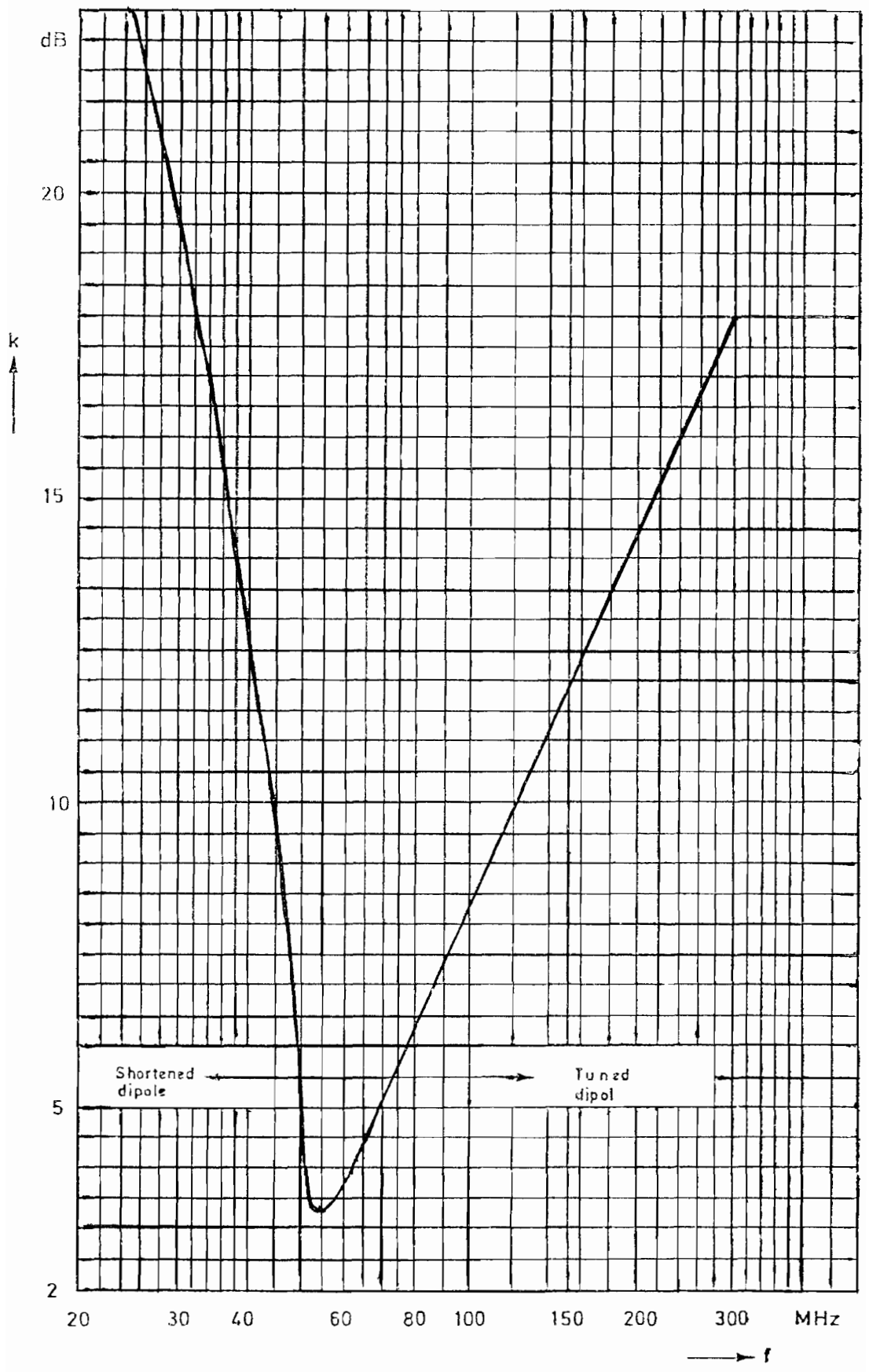
RESTAURANT







APPENDIX E



Antenna factor k of halfwave dipole

APPENDIX F

A summary of the results of a preliminary survey carried out by EMI Sound and Vision Limited is given below. It is not known what instrument was used in the survey or the precise locations of their measurements.

a) From top of concrete to underside of FM Antenna
Less than 50 volts per meter.

b) Below FM Aperture above top of concrete outside Antenna Mast
Less than 50 volts per meter, but it should be noted that in certain locations within 18 cm of electrical conduit or feedlines, the reading was 200 volts per meter.

c) Channel 5 Aperture
50 volts per meter and within 15 cm of the feedline 150 - 200 volts per meter.

d) FM Antenna
0 - less than 50 volts per meter.

e) Platform between 5 and FM Area
Less than 50 volts per meter.

f) Platform between Channel 5 and 9
Less than 50 volts per meter.

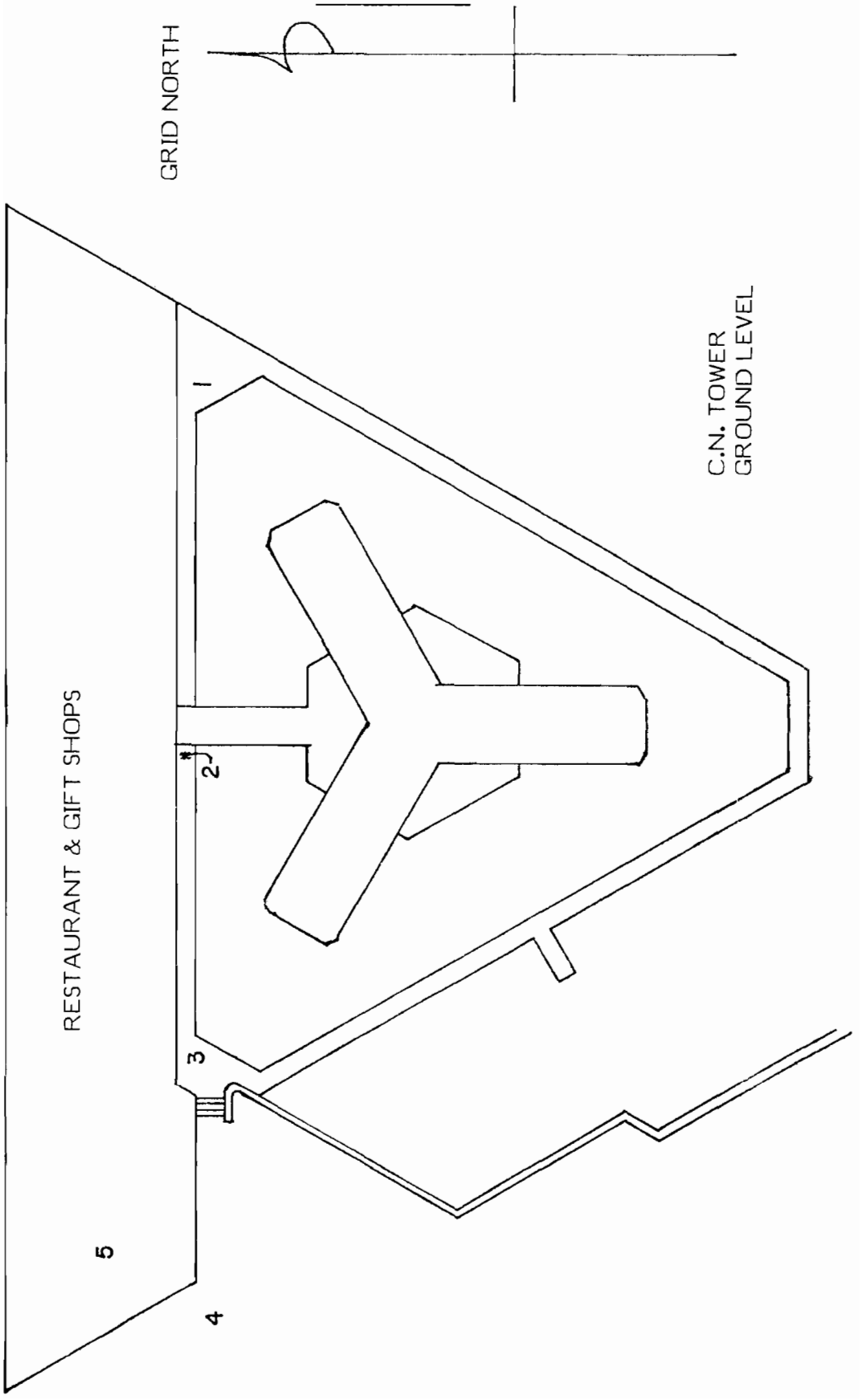
g) Damper area between Channel 5 and 9
Less than 50 volts per meter, did not obtain any reading more than 100 volts per meter.

h) Channel 9
Generally the reading taken in this area in the location where a person is passing through this level, the readings were less than 100 volts per meter. There are isolated pockets close to certain feedlines and conduits which rendered a reading of 200 - 300 volts per meter. This was within 18 cm of a conductor.

i) Channels 19/25 and 79
Readings generally were less than 50 volts per meter and in the Channel 79 area, less than 10 volts per meter.

j) Top Deck above Antenna Mast
No appreciable readings at this level.

APPENDIX G


GRID NORTH
C.N. TOWER
GROUND LEVEL
RESTAURANT & GIFT SHOPS
1
2
3
4
5