COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD No. 1966/160

GRAVITY METER MEASUREMENTS IN CONNECTION WITH THE WESTERN PACIFIC CALIBRATION LINE (AUSTRALIAN SEGMENT), 1965

by

J.E. SHIRLEY

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CONTENTS

ILLUSTRATIONS

SUMMARY

The Bureau of Mineral Resources cooperated with the United States Air Force in reading five La Coste and Romberg geodetic gravity meters at stations within the Australian segment of the Western Pacific Calibration Line - part of the world gravity network.

Only the preliminary results are presented; the final results incorporating the Western Pacific Calibration Line into the world gravity network will be published by the International Union of Geodesy and Geophysics.

The data will undergo further revision when they are incorporated into the Australian Isogal network.

1. INTRODUCTION

The first series of measurements designed to establish the Western Pacific Calibration Line (WPCL) was made in early 1965 by two United States Air Force (USAF) observers using four La Coste and Romberg geodetic gravity meters.

During the course of the work within Australia, stations were occupied at Darwin, Mount Isa, Cairns, Townsville, Mackay, Rockhampton, Maryborough, Brisbane, Grafton, Kempsey, Sydney, Canberra, Albury, and Melbourne.

The Bureau of Mineral Resources (BMR) cooperated in the establishment of the Australian segment of the WPCL as part of its commitment to the International Union of Geodesy and Geophysics (IUGG). The data obtained will also be used to obtain north-south control for the Australian Isogal network (Barlow, in preparation), thus integrating the Australian and the world gravity networks.

2. SURVEY OPERATIONS

On the way to join the USAF observers in Darwin the BMR La Coste and Romberg gravity meter was used to obtain readings at Adelaide, Alice Springs, and Tennant Creek (see lower part of Table 2). The Australian stations were observed in company with the USAF observers, and the BMR portion of the survey terminated in Melbourne. After working in New Zealand the USAF team returned to Australia and re-occupied the Australian stations. Plate 1 shows the manner in which the survey proceeded, and is followed by plates showing the station location diagrams and the short station descriptions as given by Barlow (in preparation).

At Townsville, Sydney, and Melbourne the gravity meters were read over the BMR calibration ranges.

At each place, at least two stations were observed, and at least three stations were observed if there was a pendulum station in the locality. Amendments to the proposed survey programme were made to include pendulum stations and stations of the Isogal network along the east coast of Australia, thus making maximum use of the five-meter ties. This also ensured easy access to WPCL stations by air or road for other visiting observers.

An appendix lists the survey statistics.

3. REDUCTION OF RESULTS

The results obtained by the USAF observers were made available to the BMR. All meter readings were converted to gravity intervals using the maker's meter calibration tables, and a tidal gravity correction (Goguel, 1964) was applied. Gravity intervals were calculated between adjacent airport stations and the intervals are listed in Table 2. The gravity intervals obtained during ground ties at each town are shown in Table 1. All intervals are measured in 'La Coste milligals'. The intervals between airport stations were converted to 'Australian milligals' by multiplying by a factor of 0.999675.

This factor was obtained by comparison of the Melbourne-Darwin and Melbourne-Cairns intervals in 'Australian milligals' with the same intervals in 'La Coste milligals' using the following data :

	Australian mgal	La Coste mgal	Correction factor
Melbourne-Darwin	1663.8	1664.2	0.99976
Melbourne-Cairns	1478.3	1478.9	0.99959

For comparison, the accepted intervals between airport stations (Barlow, in preparation) are shown in the last column of Table 2.

Some measurements were discarded as it appeared that there had been a misreading or a jump in the gravity meter concerned.

The final adjusted results incorporating the WPCL into the world gravity network will be published by the IUGG.

The USAF data have been computed by the BMR and incorporated with the BMR data through the co-operation of the USAF. The gravity intervals given in this report may not agree with those finally computed by the USAF for the world network.

The WPCL data in this report will undergo a further revision when they are incorporated into the Australian Isogal network (Barlow, in preparation).

4. REFERENCES

BARLOW, B. C. — Australian Isogal gravity survey, 1964. Bur. Min. Resour. Aust. Rec. (in preparation).

GOGUEL, J. — 1964 — Tidal gravity corrections for 1965. Geophys. Prosp. 12 (Supp. No. 1).

APPENDIX

Survey statistics

BMR observer : J. E. Shirley
USAF observers : Lt. D. Hamlin
Lt. R. Friez

Survey period : 30th January to 20th February 1965 (BMR)
1st to 23rd February 1965) (USAF)
4th to 8th March 1965)

Gravity meters : La Coste and Romberg G20 (BMR)
La Coste and Romberg G43)
La Coste and Romberg G44) (USAF)
La Coste and Romberg G47)
La Coste and Romberg G48)

Number of stations : 57

Transport : Commercial aircraft except between Brisbane and Sydney where a car was used.

TABLE 1

Gravity intervals from ground ties

Station No.	Station locality	Gravity intervals in La Coste milligals G20	G43	G44	G47	G48	Mean
6491.0232	Darwin A/S						
5099.9932	Darwin PS	+1.02	+1.01	+0.99	+1.01	+1.00	+1.01
6491.0532	Darwin BMR	-1.36	-1.34	-1.37	-1.38	-1.38	-1.36
6491.0332	Darwin Wharf	+1.68	+1.69	+1.62	+1.67	+1.68	+1.67
6491.0147	Brisbane A/S						
6499.0147	Brisbane PS	+10.32	+10.32	+10.29	+10.29	+10.27	+10.30
6091.0147	Brisbane CSI	+9.71	+9.70	+9.67	+9.68	+9.69	+9.69
6091.0247	Brisbane CS2	-48.51	-48.59	-48.59	-48.58	-48.58	-48.57
6491.0247	Brisbane A/S (Archerfield)	+8.42	+8.10	+8.42	+8.38	+8.43	+8.35
5099.9948	Maryborough PS						
6591.0148	Maryborough RS	+1.76	+1.76	+1.75	+1.76	+1.77	+1.76
6499.0149	Rockhampton A/S						
6591.0147	Rockhampton A/S (Woollard)	-0.70	-0.70	-0.71	-0.68	-0.69	-0.70
5099.9949	Rockhampton PS	-4.01	-4.01	-4.02	-4.00	-3.98	-4.00
6491.0161	Mackay A/S						
6499.9961	Mackay PS	+0.87	+0.88	+0.88	+0.89	+0.89	+0.88
6591.0151	Townsville A/S						
6499.0151	Townsville PS	+0.02	+0.03	+0.03	+0.03	+0.03	+0.03
5099.9951	Townsville PS	+0.08	+0.05	+0.02	+0.06	+0.08	+0.06
6491.0251	Townsville PS Gulf	+0.76	+0.75	+0.73	+0.75	+0.80	+0.76
6091.0251	Townsville CS2	-57.54?	-57.30	-57.35	-57.42	-57.36	-57.36
6091.0151	Townsville CS1	+3.03	+3.20	+3.15	+3.18	+3.17	+3.15
5099.9952	Cairns PS						
6491.0252	Cairns RS	-1.53	-1.50	-1.50	-1.54	-1.54	-1.52
6491.0152	Cairns Wharf	-4.22	-4.17	-4.20	-4.27	-4.24	-4.22
6491.9110	Grafton A/S						
6491.1110	Grafton RS	-9.00	-8.97	-9.00	-9.03	-9.01	-9.00
6491.9111	Kempsey A/S						
6491.1111	Kempsey RS	+9.75	+9.78	+9.78	+9.74	+9.77	+9.76
6491.0105	Sydney A/S						
5099.9905	Sydney PS	-12.95	-12.83	-12.94	-12.97	-12.95	-12.93
6091.0105	Sydney CS1	-31.73	-31.74	-31.77	-31.78	-31.75	-31.75
6091.0205	Sydney CS2	-90.77	-90.72	-90.73	-90.78	-91.06?	-90.75
6491.0104	Canberra A/S						
6491.0204	Canberra CS2	-59.08	-59.17	-59.16	-59.14	-59.10	-59.13
6591.9136	Albury A/S						
6591.1136	Albury RS	+5.93	+5.92	+5.96	+5.96	+5.97	+5.95

Station No.	Station locality	Gravity intervals in La Coste milligals G20	G43	G44	G47	G48	Mean
6491.0101	Melbourne A/S						
6491.0501	Melbourne Gate 5	+17.79	+17.86	+17.86	+17.84	+17.86	+17.84
5099.9901	Melbourne NGBS	+17.77	+17.84	+17.86	+16.77?	+17.82	+17.82
6491.0201	Melbourne Inst.Room	+17.76	+17.82	+17.86	+17.83	+17.78	+17.81
6591.0201	Melbourne Rose	+17.79	+17.84	+17.89	+17.83	+17.83	+17.84
6591.0101	Melbourne Veh.park	+17.93	+17.99	+18.04	+18.00	+17.97	+17.99
6491.0301	Melb. Proj. 'Magnet'	-0.02	-0.02	-0.01	-0.02	-0.04	-0.02
6591.0201	Melbourne Old TAA	+0.86	+0.86	+0.87	+0.87	+0.83	+0.86
6591.0301	Melbourne Old TAA	+0.86	+0.89	+0.90	+0.87	+0.84	+0.87
6491.0401	Melb. Observatory	+24.97	+25.07	+25.09	+25.07	+25.02	+25.04
6091.0000	Melbourne CS1	-13.49	-13.49	-13.52	-13.53	-13.56	-13.52
6091.0201	Melbourne CS2	-66.53	-66.51	-66.53	-66.58	-66.56	-66.54

Notes. Values marked ? are doubtful and have been excluded from the determination of the mean.

The intervals in this table are all stated with respect to the airport station in the immediate locality.

A/S - Airstrip
CS - Calibration station
RS - Railway station
PS - Pendulum station

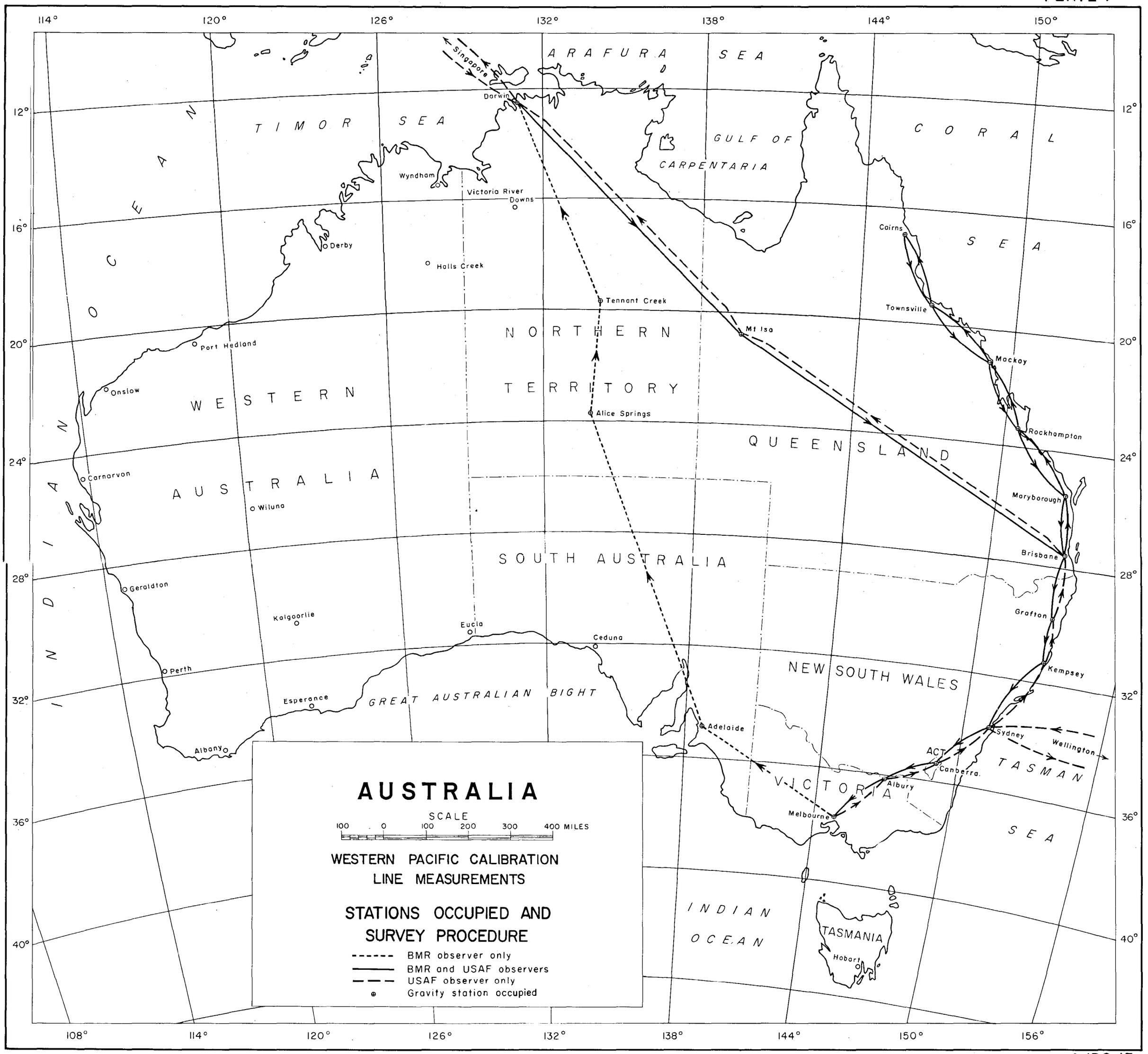
TABLE 2

Gravity intervals between airports

Station No.	Station locality	Gravity meter intervals in La Coste milligels										Mean	Mean (Aust.mgal)	Accepted interval (Aust.mgal)
		G20(S)	G20(N)	G43(S)	G43(N)	G44(S)	G44(N)	G47(S)	G47(N)	G48(S)	G48(N)			
6491.0101	Melbourne													
6591.9136	Albury	-195.58	-	-195.61	-195.48	-195.61	-195.60	-195.68	-195.72	-195.71	-195.66	-195.63	-195.56	-195.56
6491.0104	Canberra	-145.24	-	-145.28	-145.26	-145.32	-145.32	-145.33	-145.32	-145.35	-145.33	-145.31	-145.28	-145.33
6491.0105	Sydney	+78.35	-	+78.22	+78.29	+77.40?	+78.34	+78.32	+78.45	+78.31	+78.41	+78.34	+78.31	+78.36
6491.9111	Kempsey	-272.24	-	-272.32	-272.35	-272.57	-272.43	-272.44	-272.53	-272.44	-272.45	-272.42	-272.33	-272.31
6491.9110	Grafton	-97.04	-	-96.97	-96.99	-97.07	-97.00	-97.04	-97.11	-97.06	-97.07	-97.04	-97.01	-97.01
6491.0147	Brisbane	-169.78	-	-169.77	-169.78	-169.80	-169.79	-169.79	-169.87	-169.80	-169.83	-169.80	-169.74	-169.74
5099.9948	Maryborough	-138.19	-138.18	-138.15	-138.22	-138.16	-138.25	-138.24	-138.25	-138.25	-138.27	-138.22	-138.17	-138.17
6499.0149	Rockhampton	-147.19	-147.21	-147.33	-147.24	-147.26	-147.28	-147.31	-147.30	-147.30	-147.29	-147.27	-147.22	-147.22
6491.0161	Mackay	-140.06	-140.07	-140.18	-140.12	-140.19	-140.17	-140.21	-140.23	-140.20	-140.16	-140.16	-140.11	-140.12
6591.0151	Townsville	-110.14	-110.14	-110.16	-110.21	-110.21	-110.22	-109.98	-110.24	-110.00	-110.18	-110.15	-110.11	-110.12
5099.9952	Cairns	-123.45	-123.39	-123.37	-123.40	-123.39	-123.37	-123.33	-123.45	-123.38	-123.44	-123.40	-123.36	-123.36
6491.0147	Brisbane													
6491.9962	Mount Isa	-540.86?	-	-541.03	-541.02	-541.16	-541.10	-541.10	-541.19	-541.24	-541.21	-541.13	-540.96	-540.87
6491.0232	Darwin	-303.33	-	-303.50	-303.42	-303.49	-303.38	-303.50	-303.47	-303.49	-303.43	-303.44	-303.35	-303.40
6491.0101	Melbourne	-												
6491.0108	Adelaide	-242.04										-242.04	-241.95	-242.16
6491.0335	Alice Springs	-1064.35?												-1065.32
6491.0134	Tennant Creek	-124.83										-124.83	-124.79	-124.85
6491.0232	Darwin	-213.39										-213.39	-213.32	-213.53

Notes. The accepted intervals shown in last column are taken from Barlow (in preparation).
Values marked ? are doubtful and have been excluded from the determination of the mean.
The intervals in this table are between adjacent stations.
N and S refer to the vessel run north or south, respectively.

PLATE I



AUSTRALIA

SCALE

100 0 100 200 300 400 MILES

WESTERN PACIFIC CALIBRATION LINE MEASUREMENTS

STATIONS OCCUPIED AND SURVEY PROCEDURE

- ------ BMR observer only
- ——— BMR and USAF observers
- — — — USAF observer only
- ⊕ Gravity station occupied

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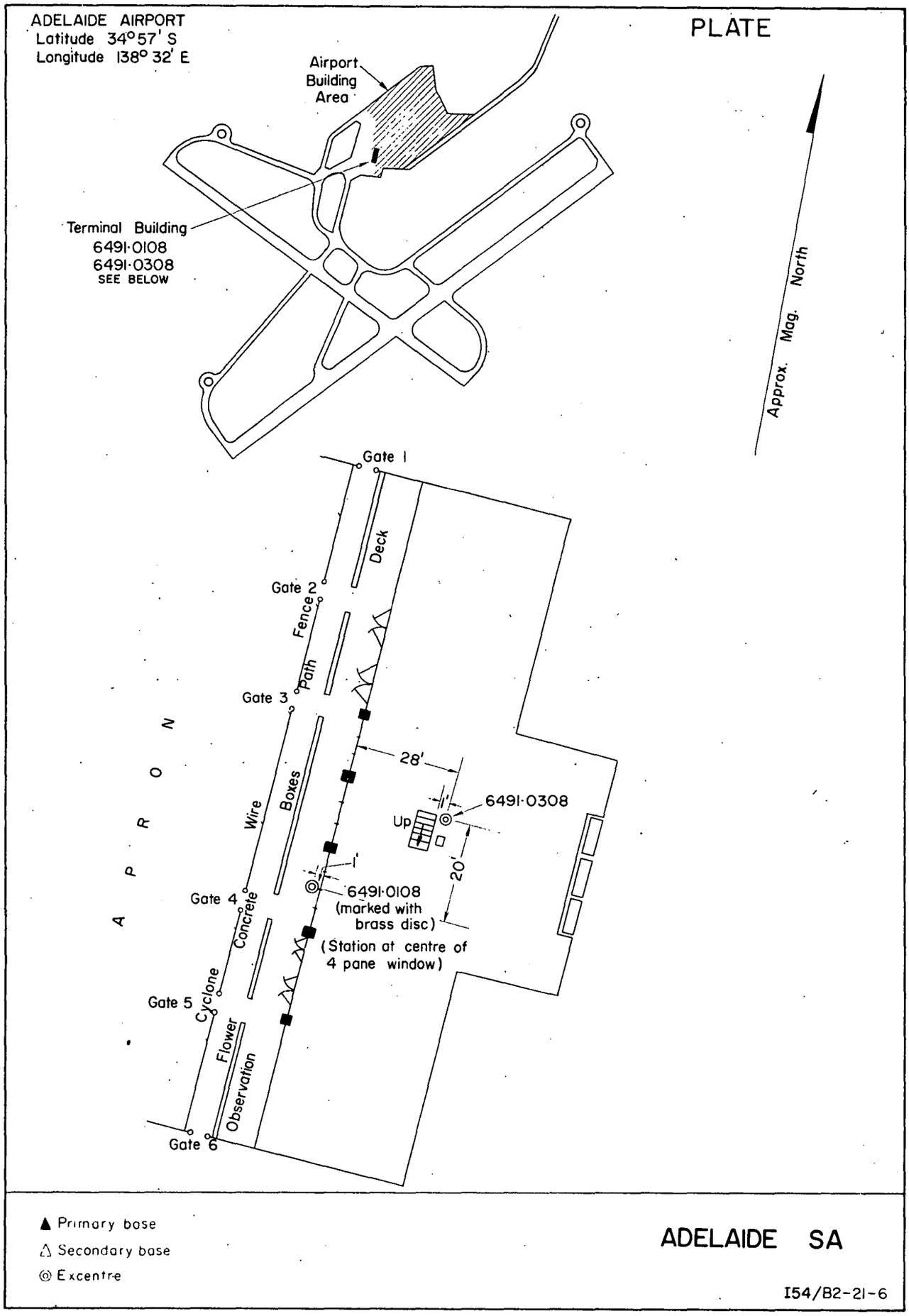

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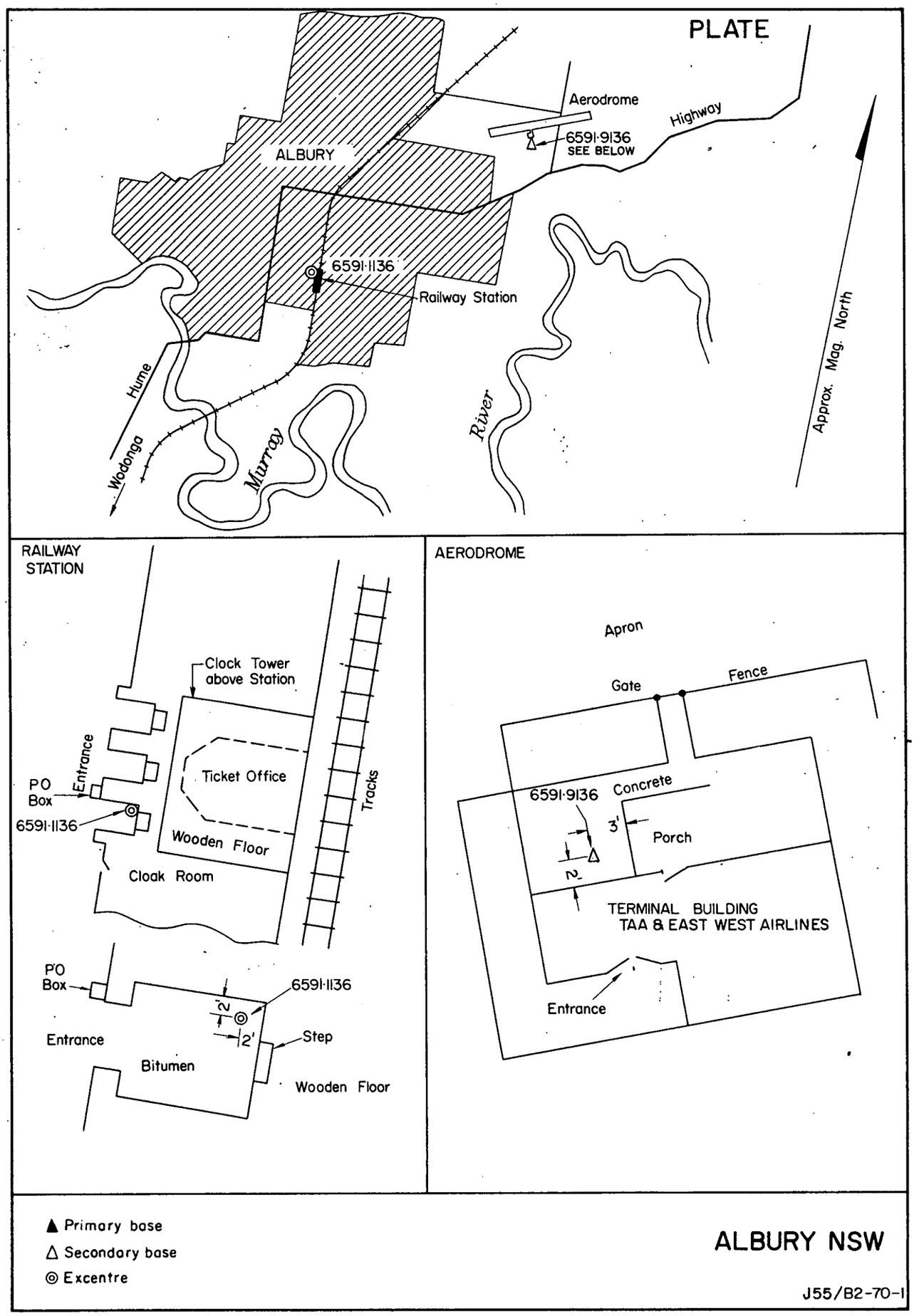

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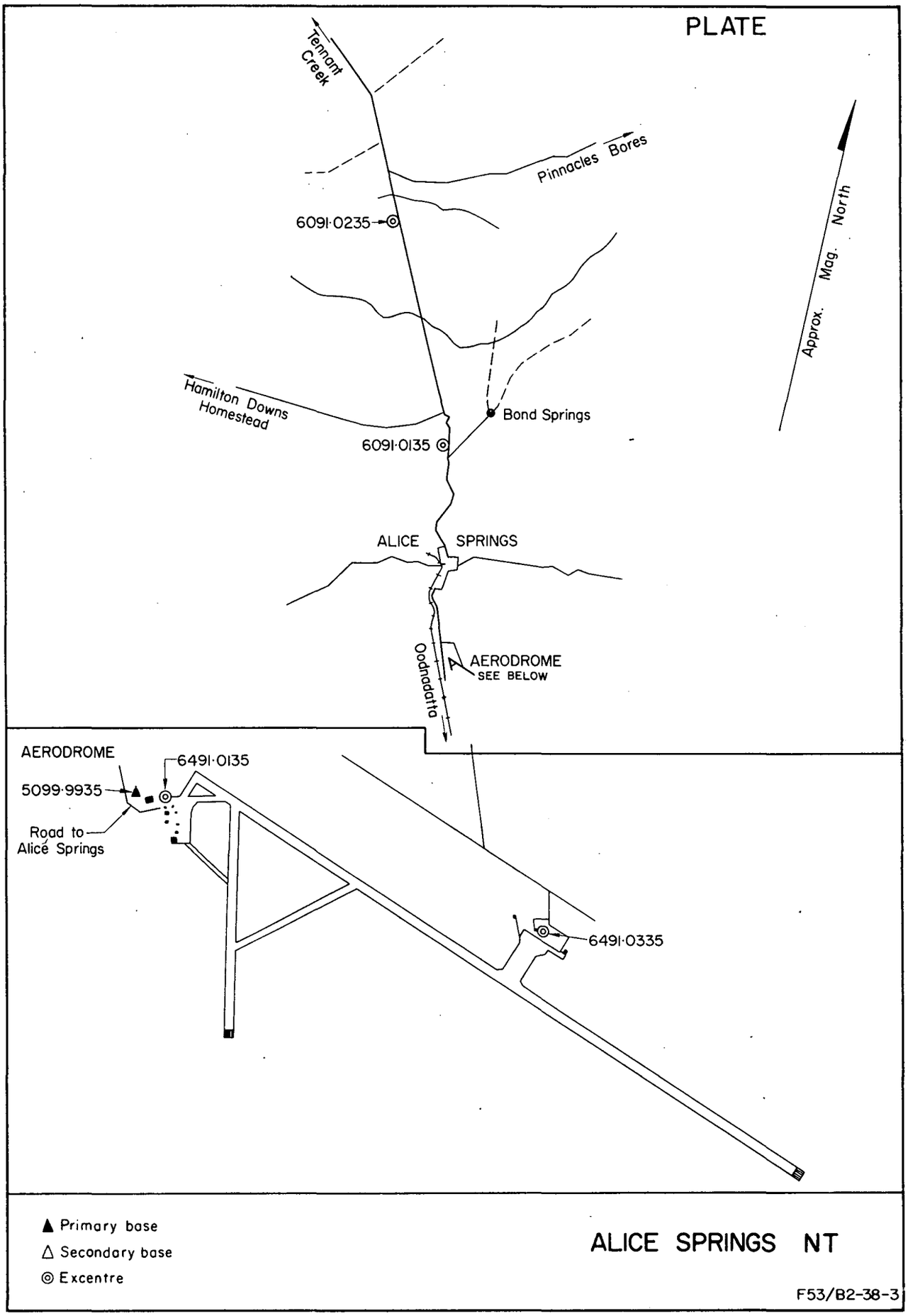

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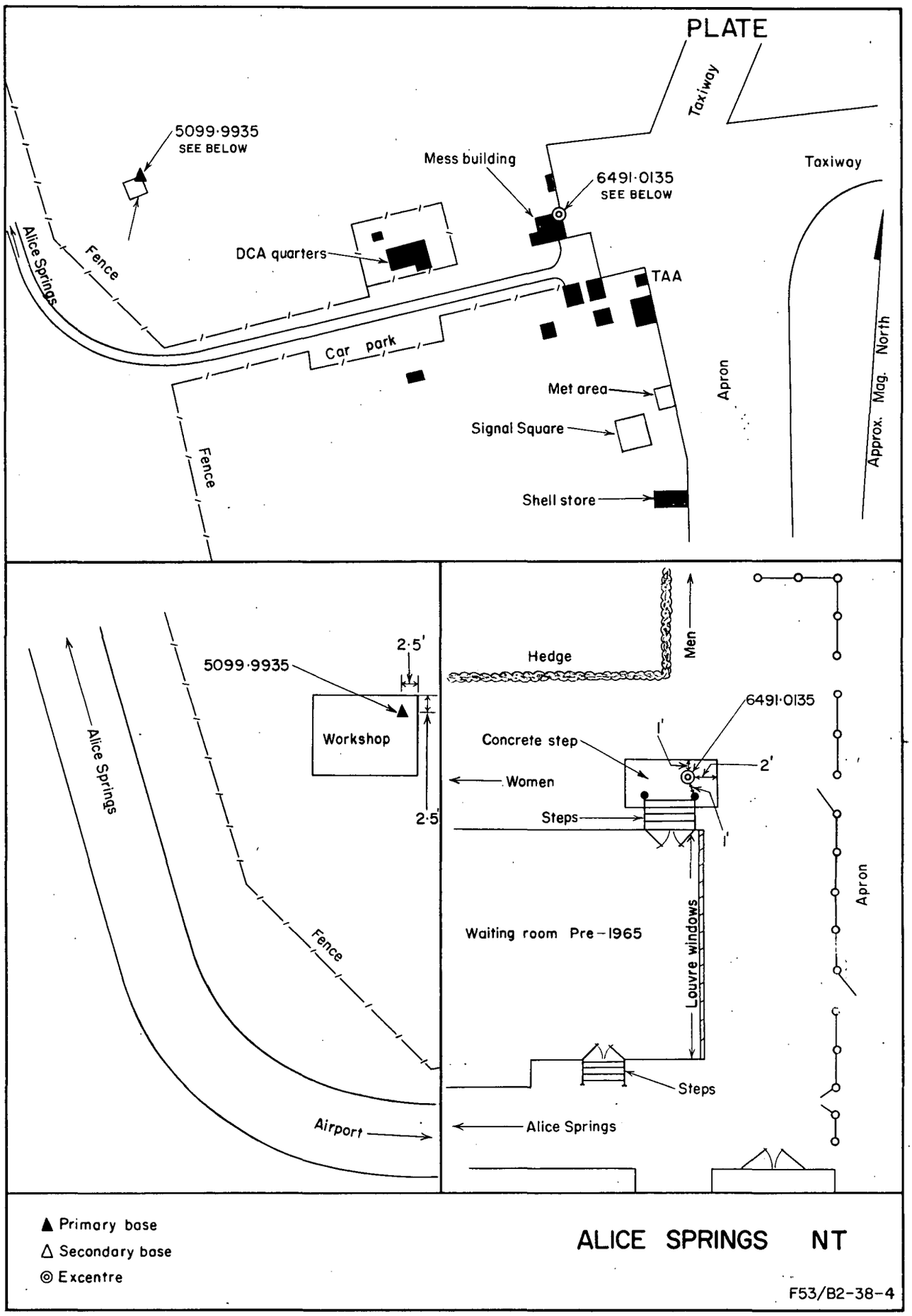

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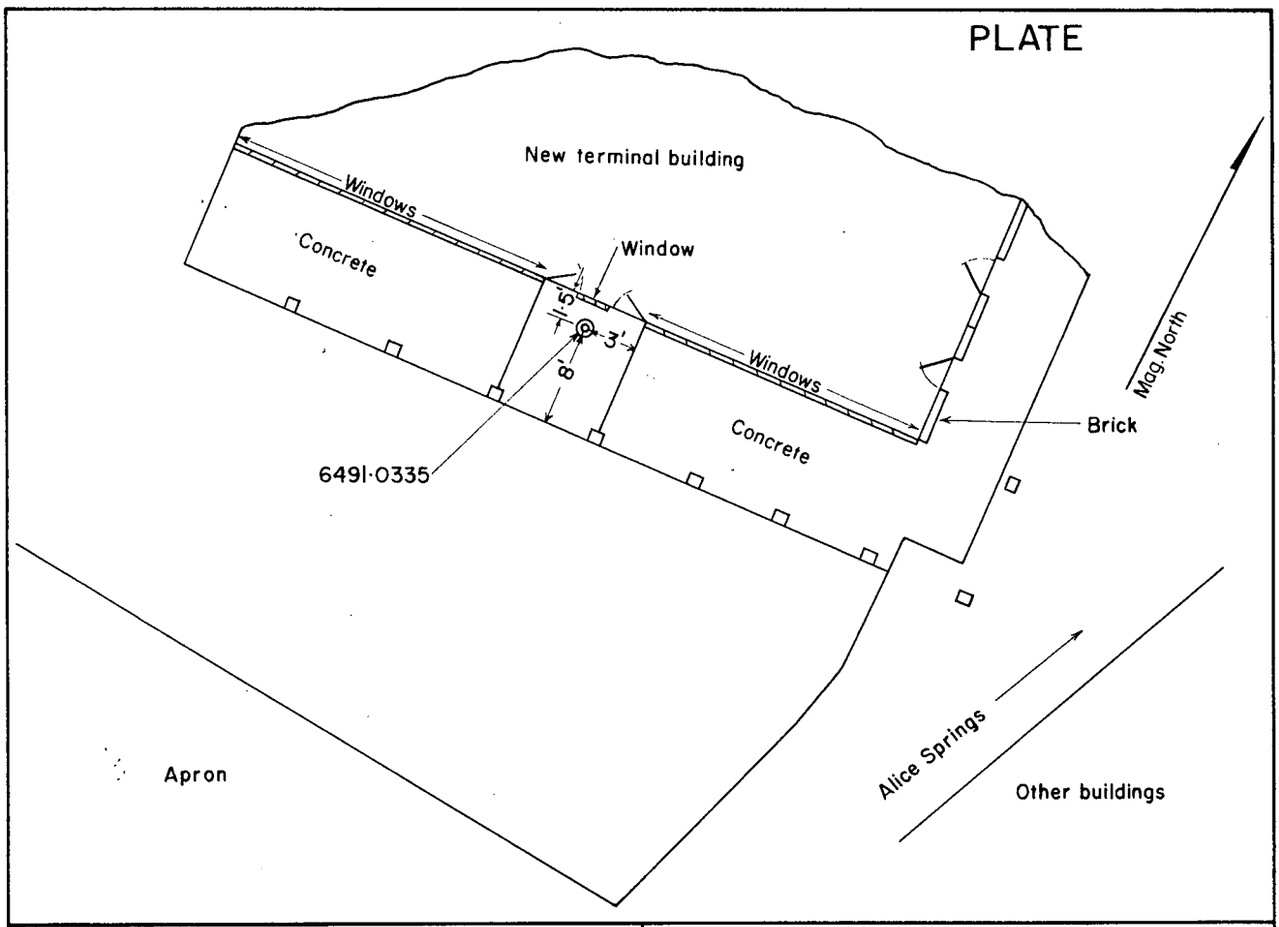

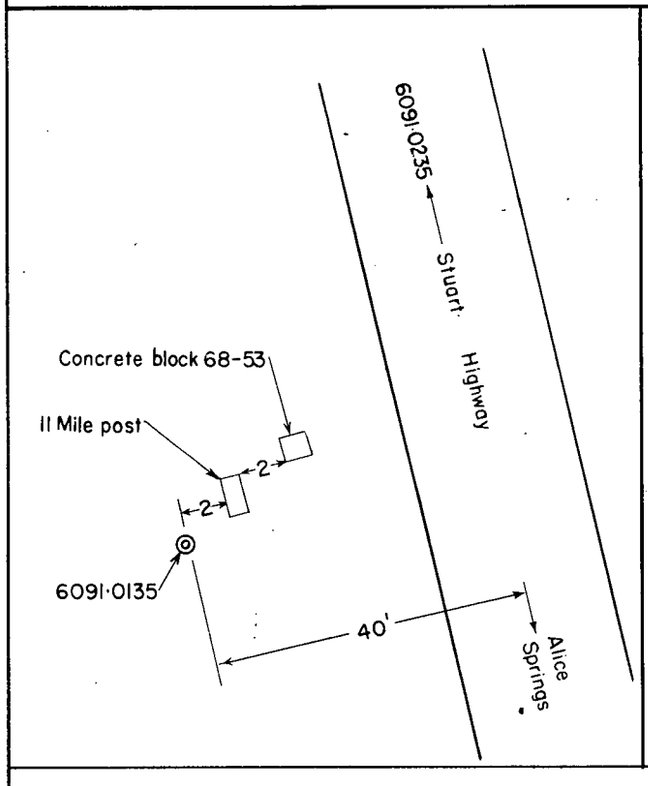

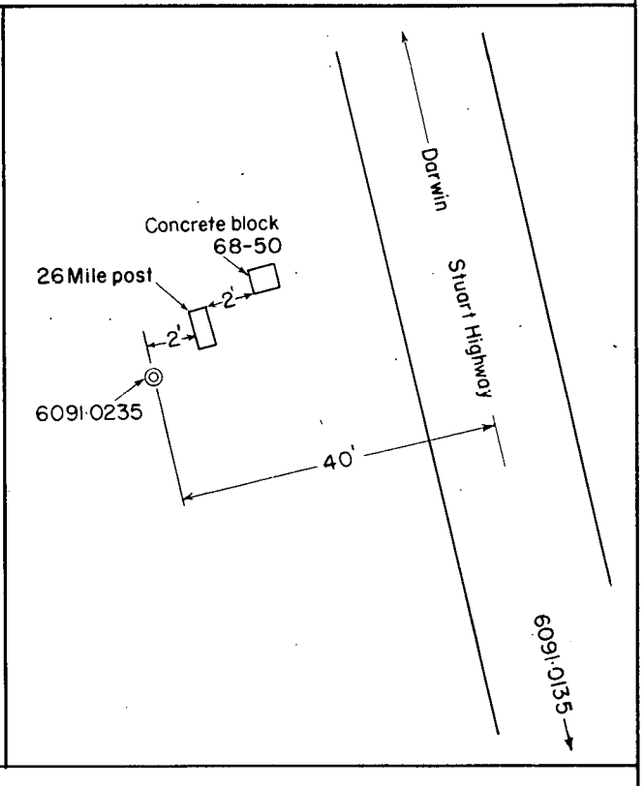

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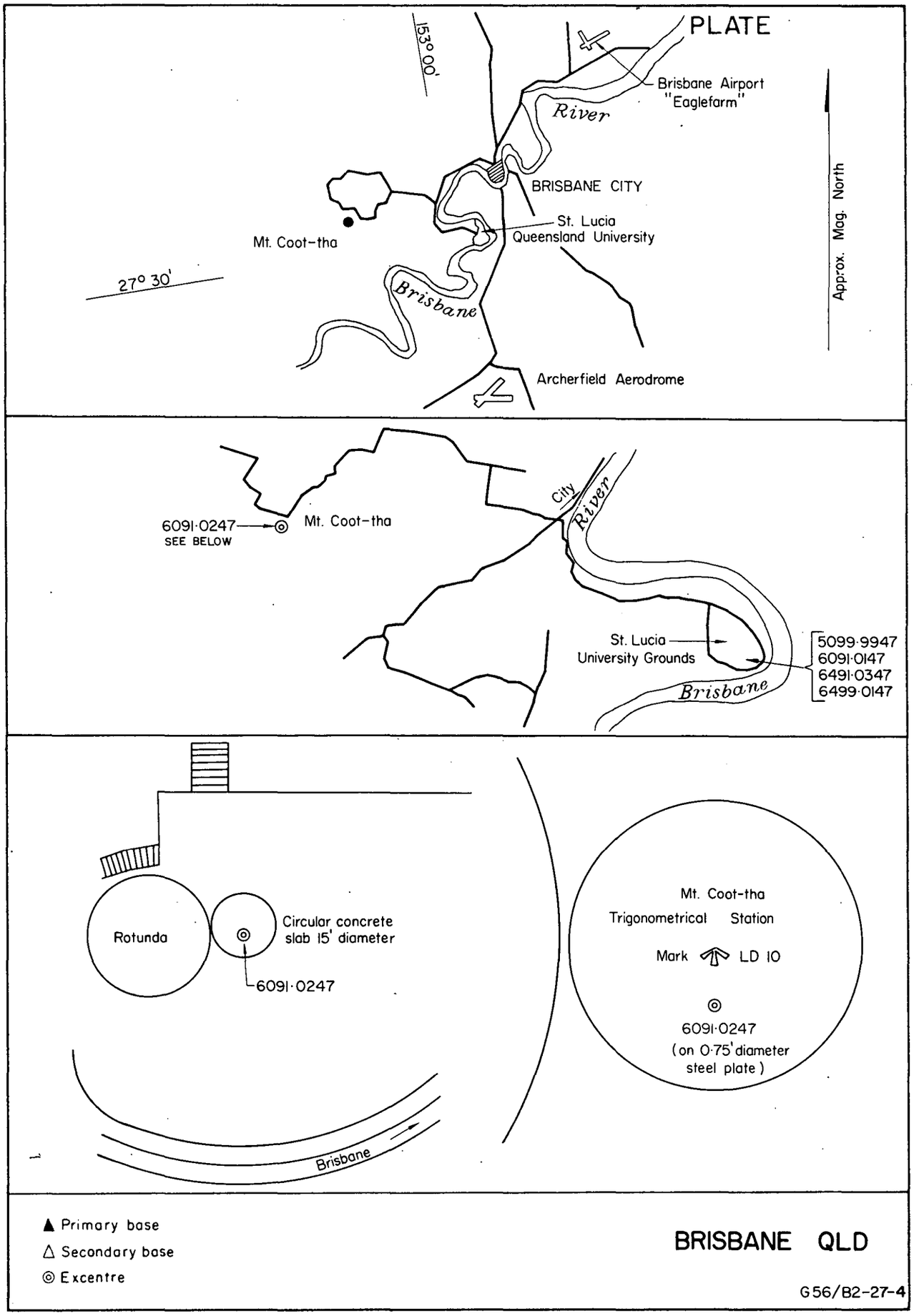

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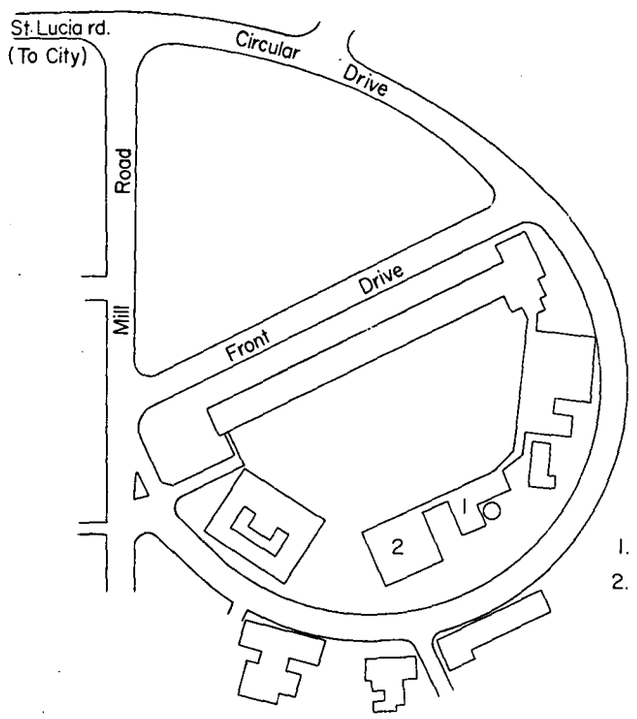
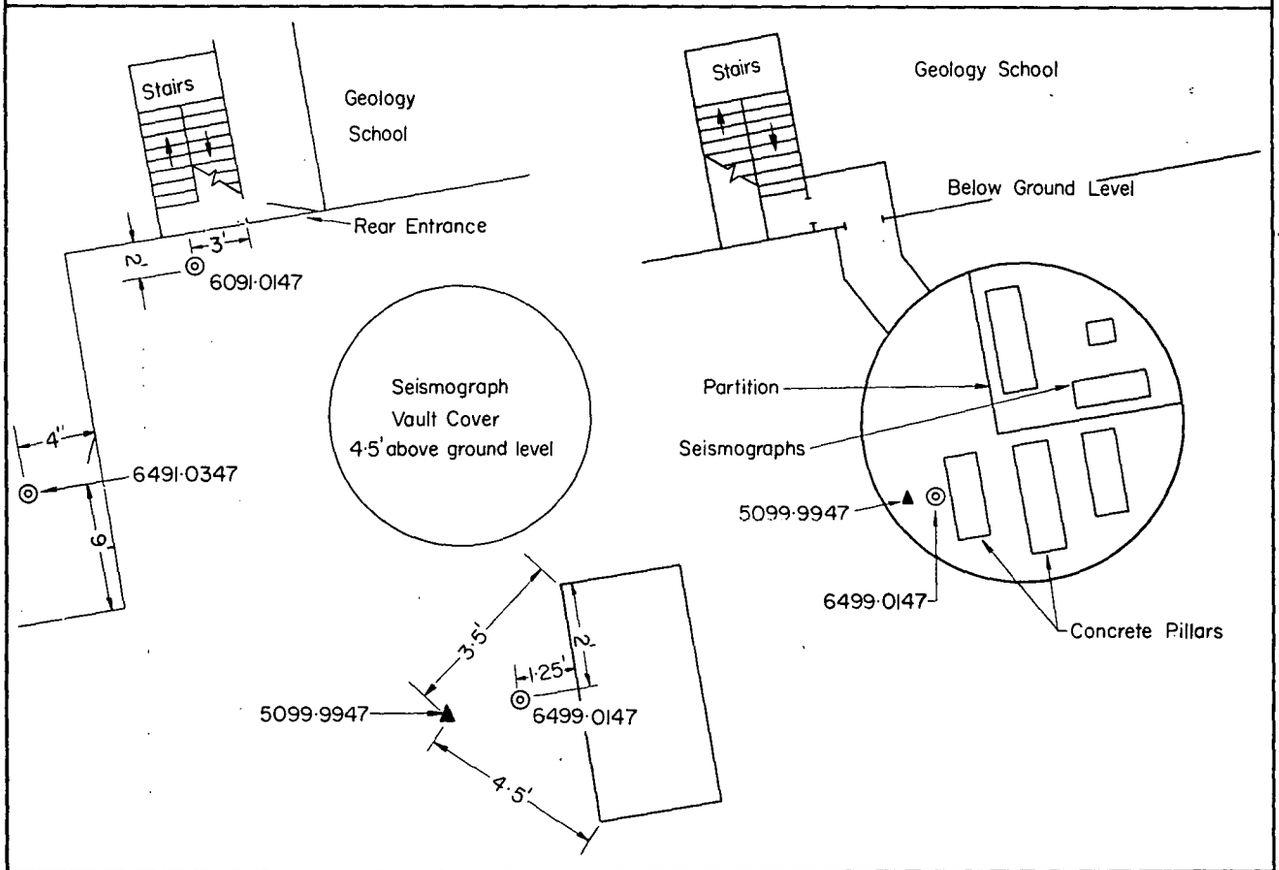
ST LUCIA BRISBANE

PLATE





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BRISBANE QLD

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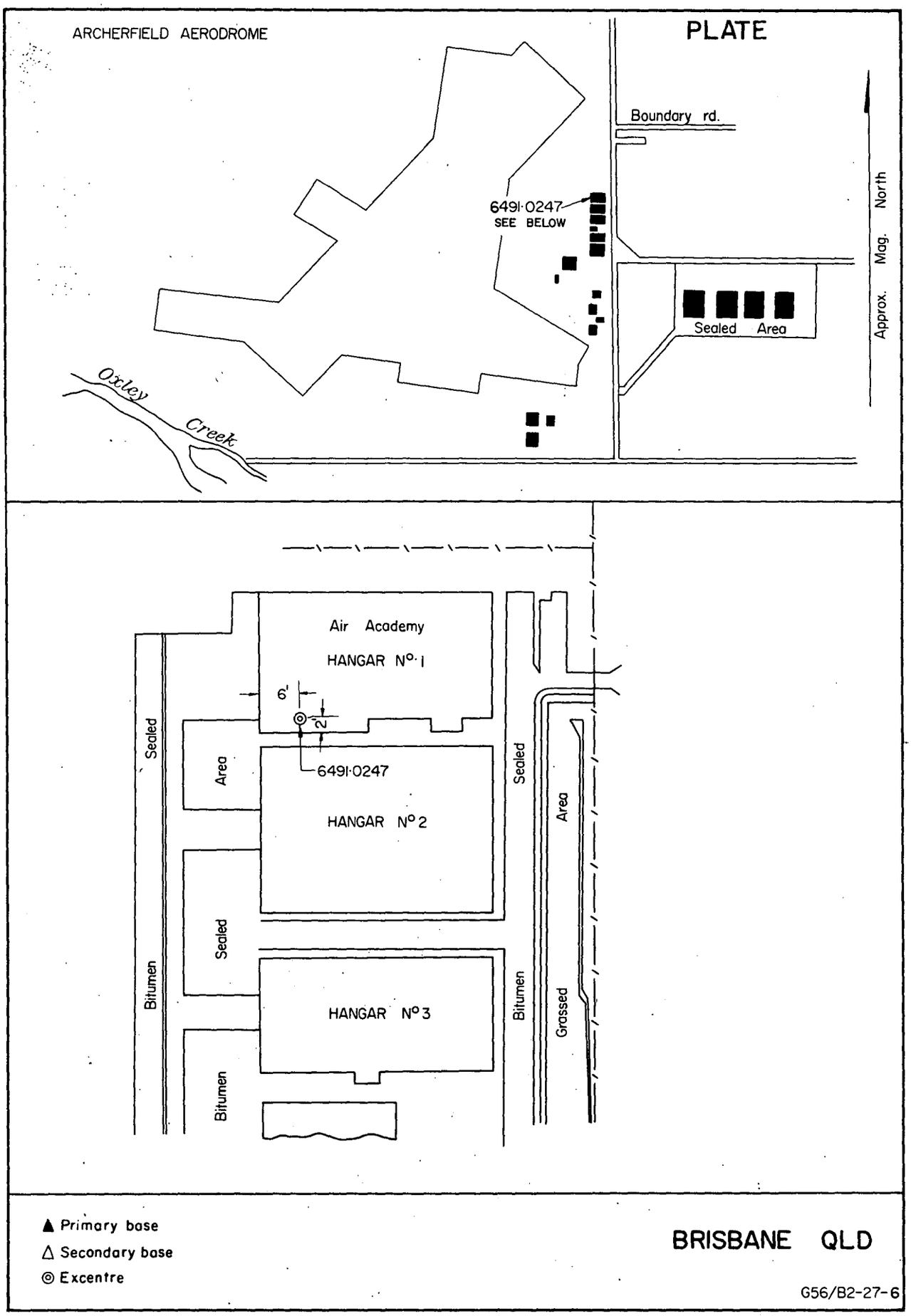

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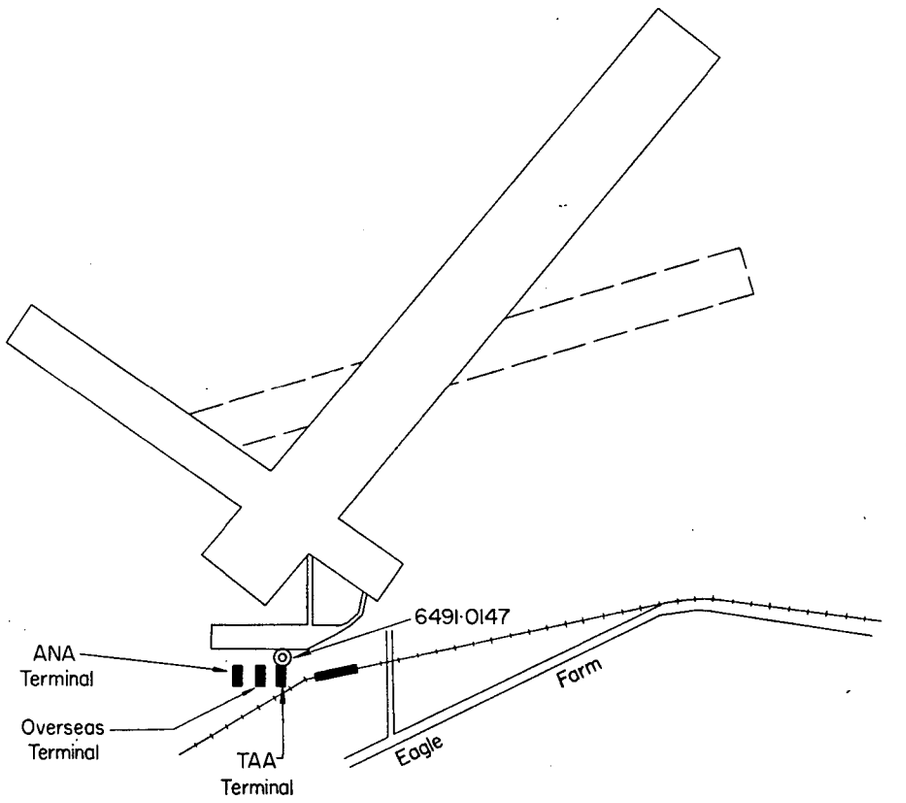
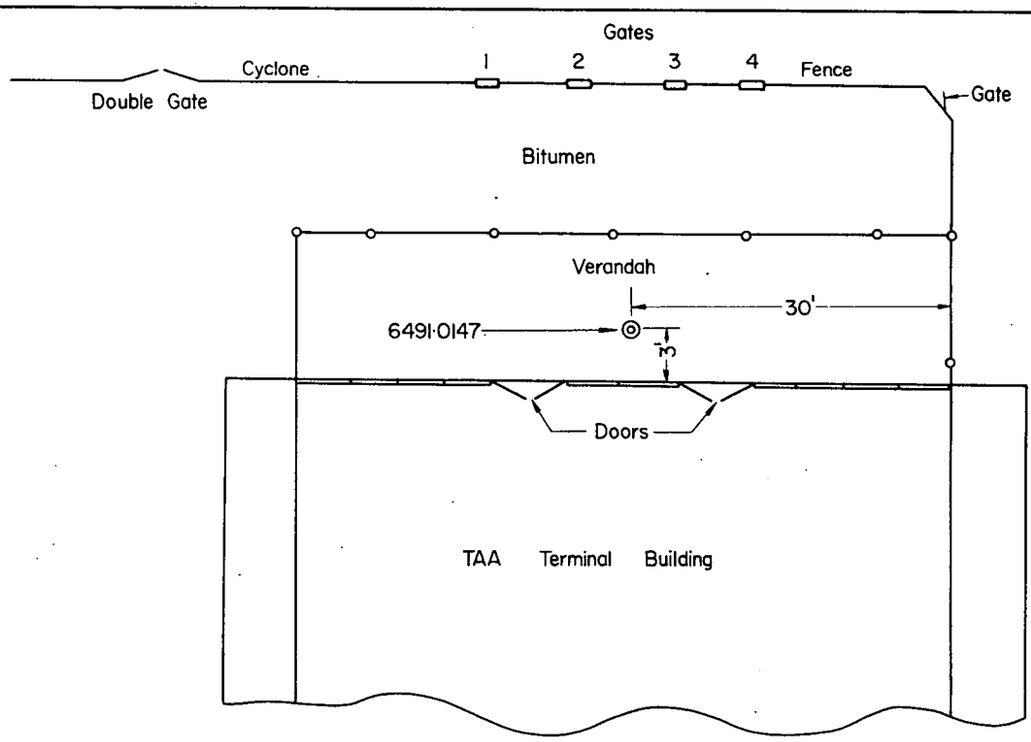
BRISBANE AIRPORT
"EAGLE FARM"





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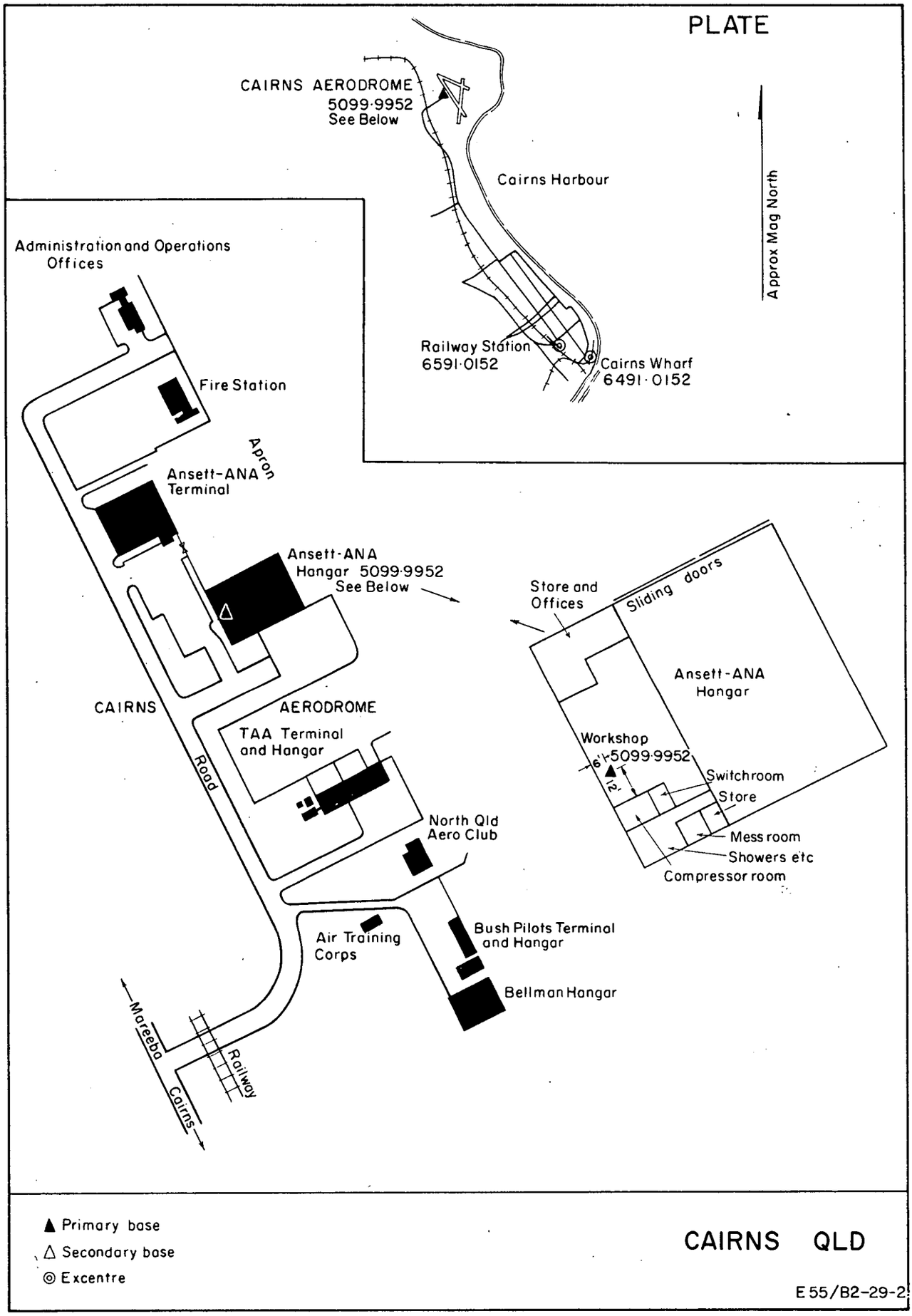

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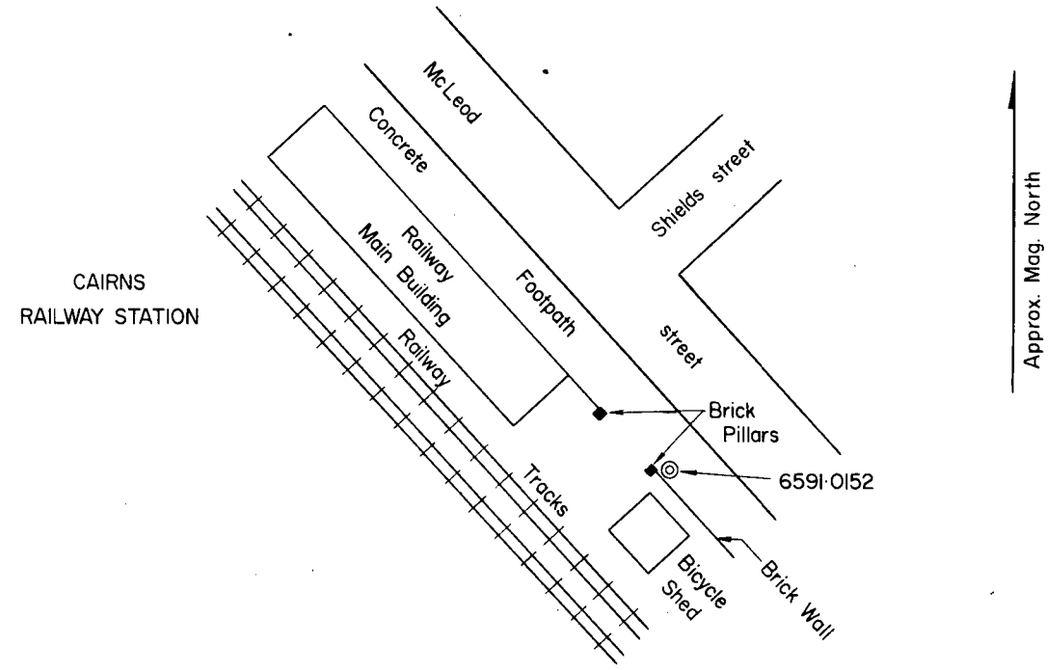

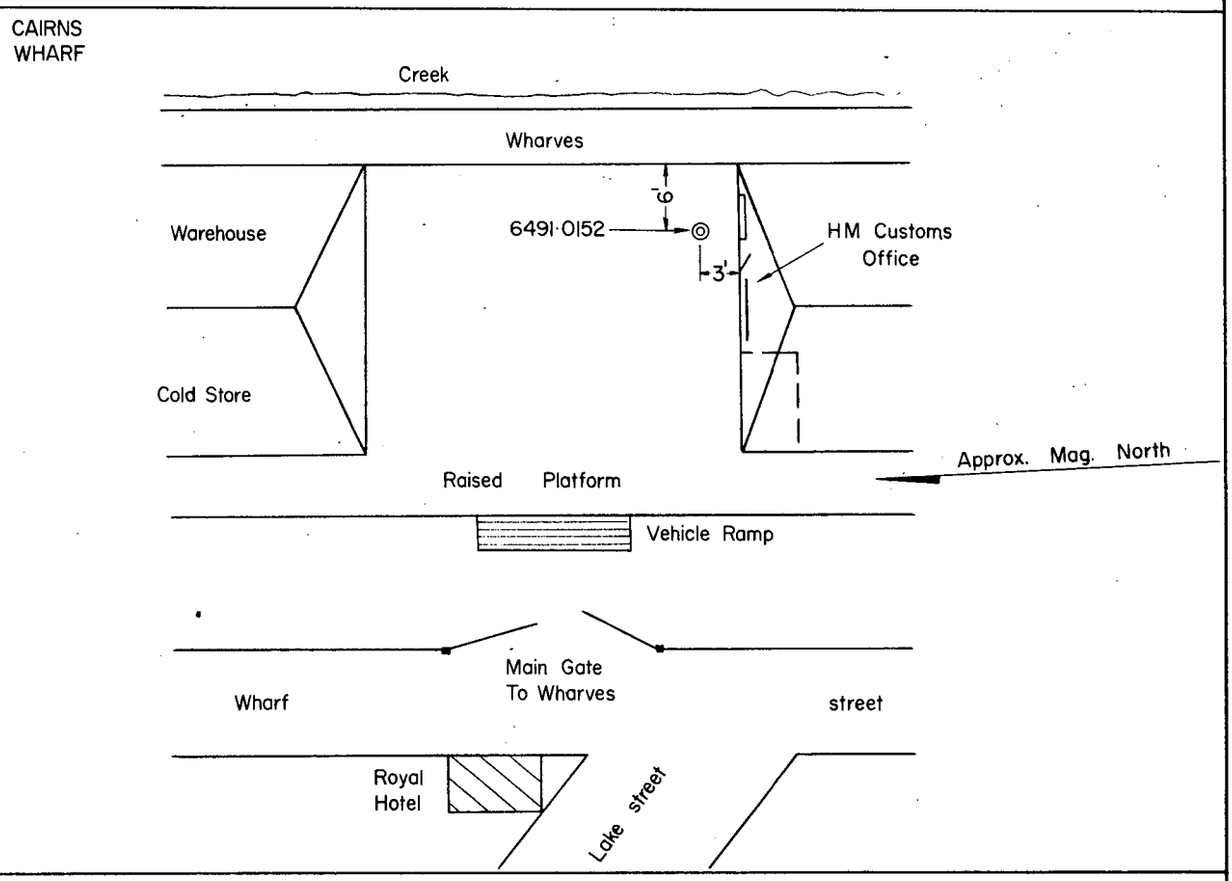

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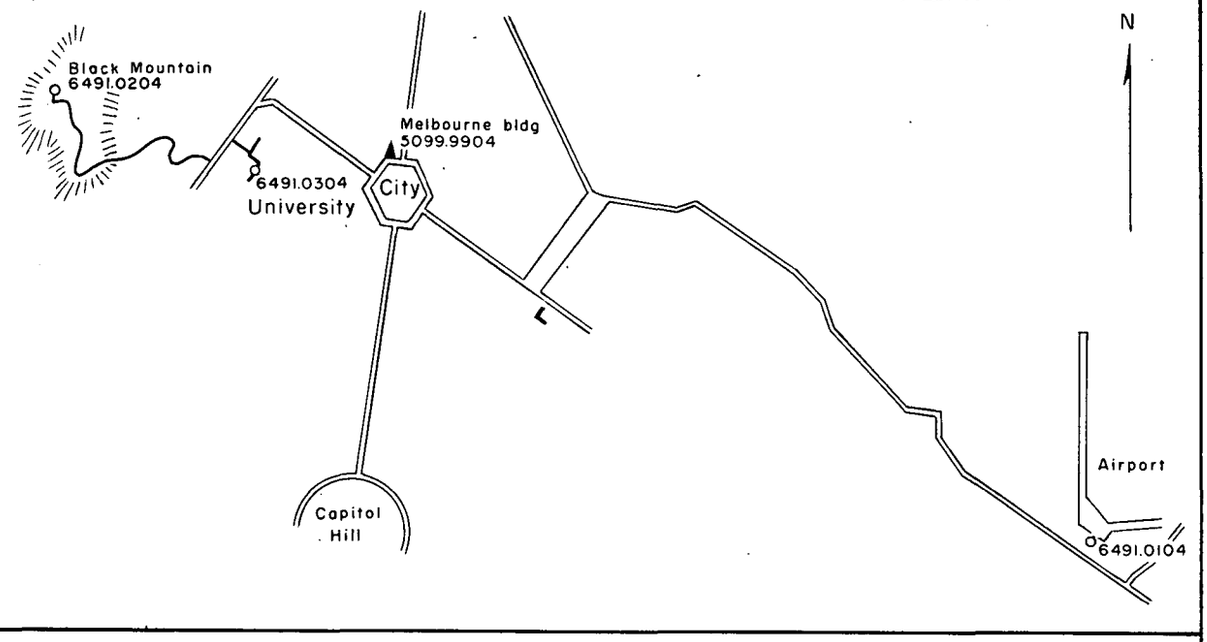
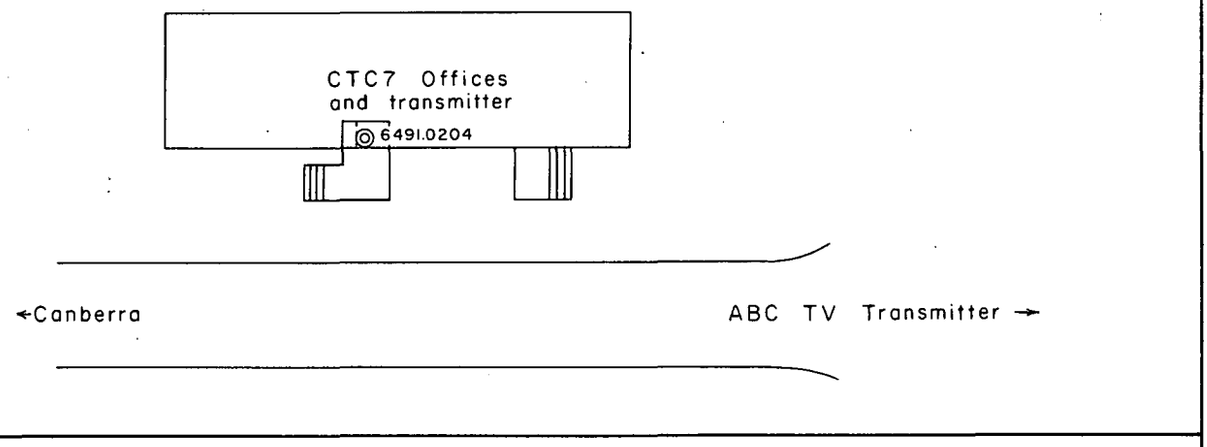
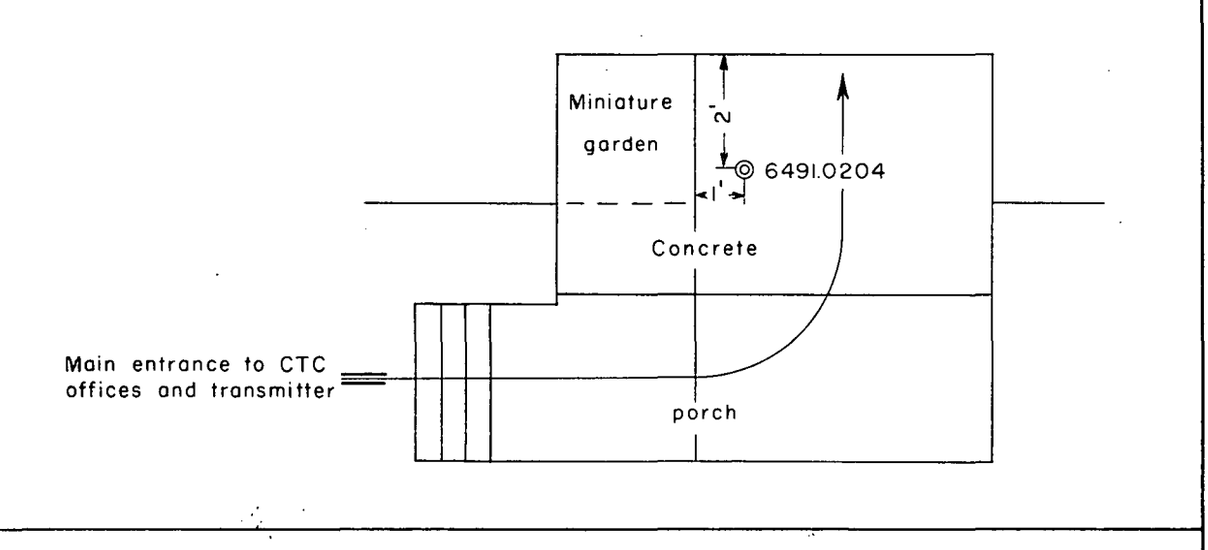
PLATE







▲ Primary base
△ Secondary base
◎ Excentre

CANBERRA, A.C.T.

155/B2-19-4

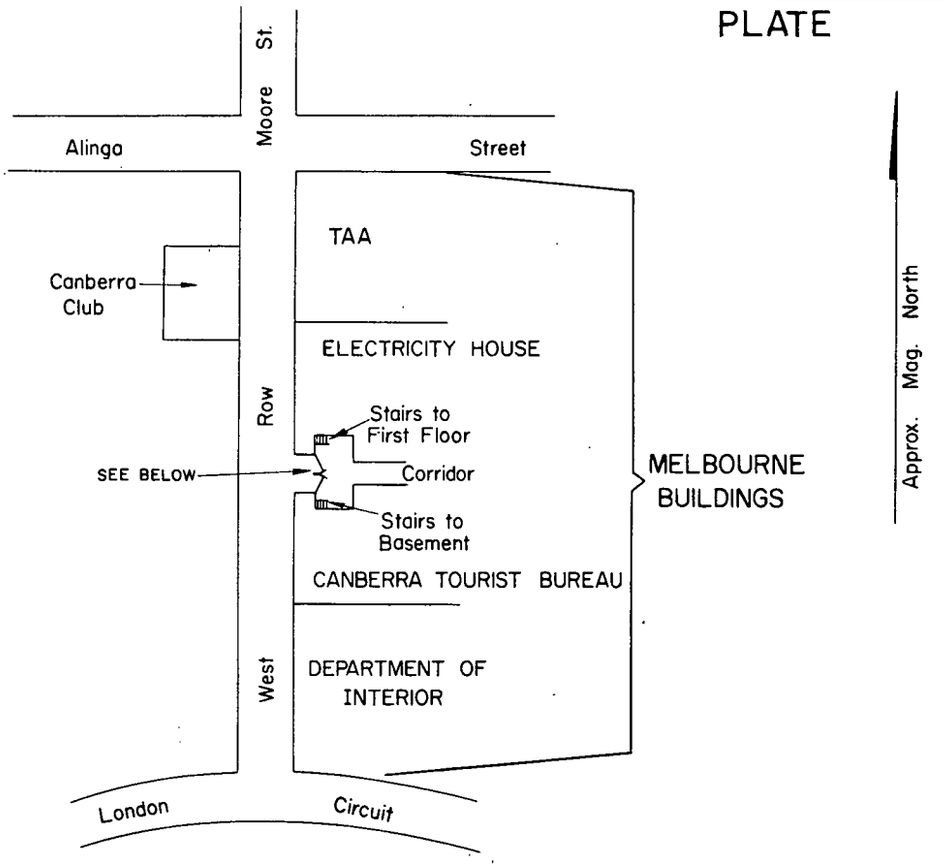
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

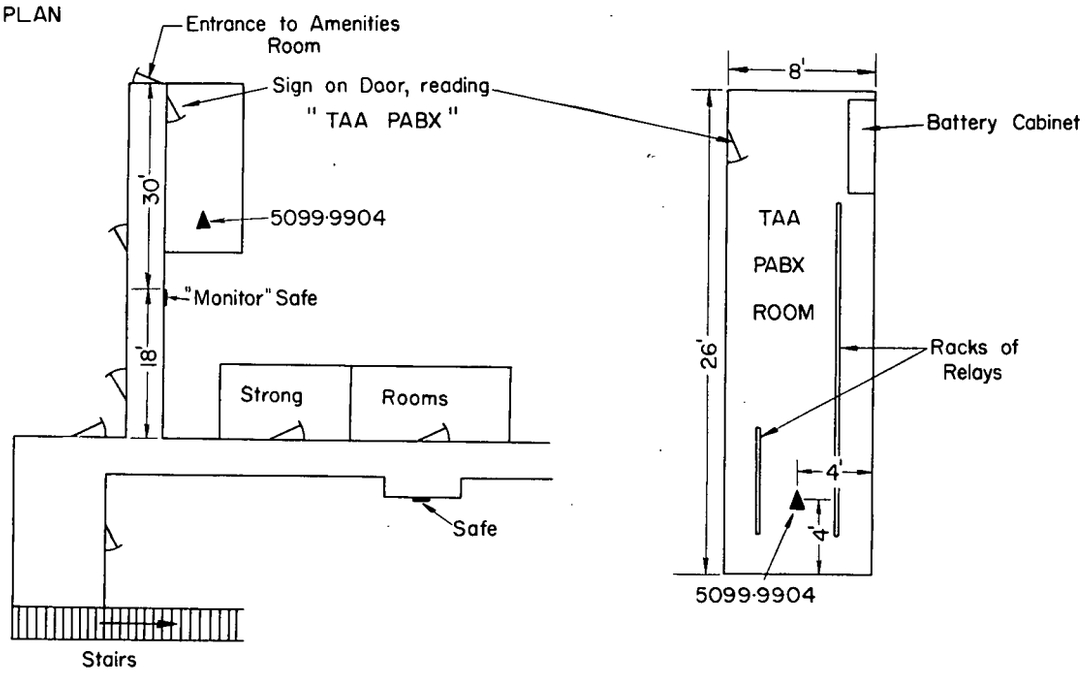
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

I55/62-19

PLATE



BASEMENT PLAN



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△ Secondary base
◎ Excentre

CANBERRA A.C.T.

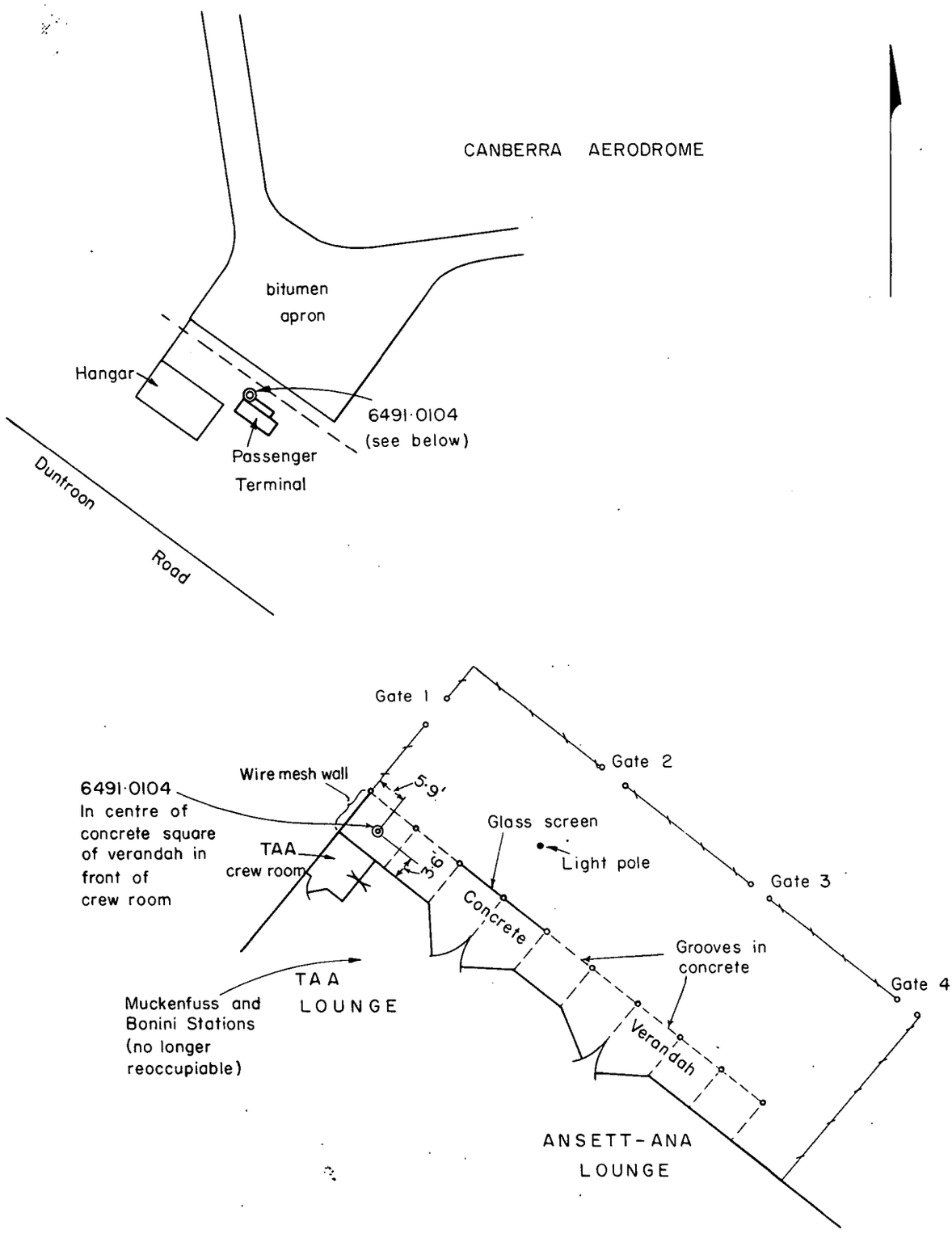
I55/B2-19-5

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE



▲ Primary base
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◎ Excentre

CANBERRA A.C.T.

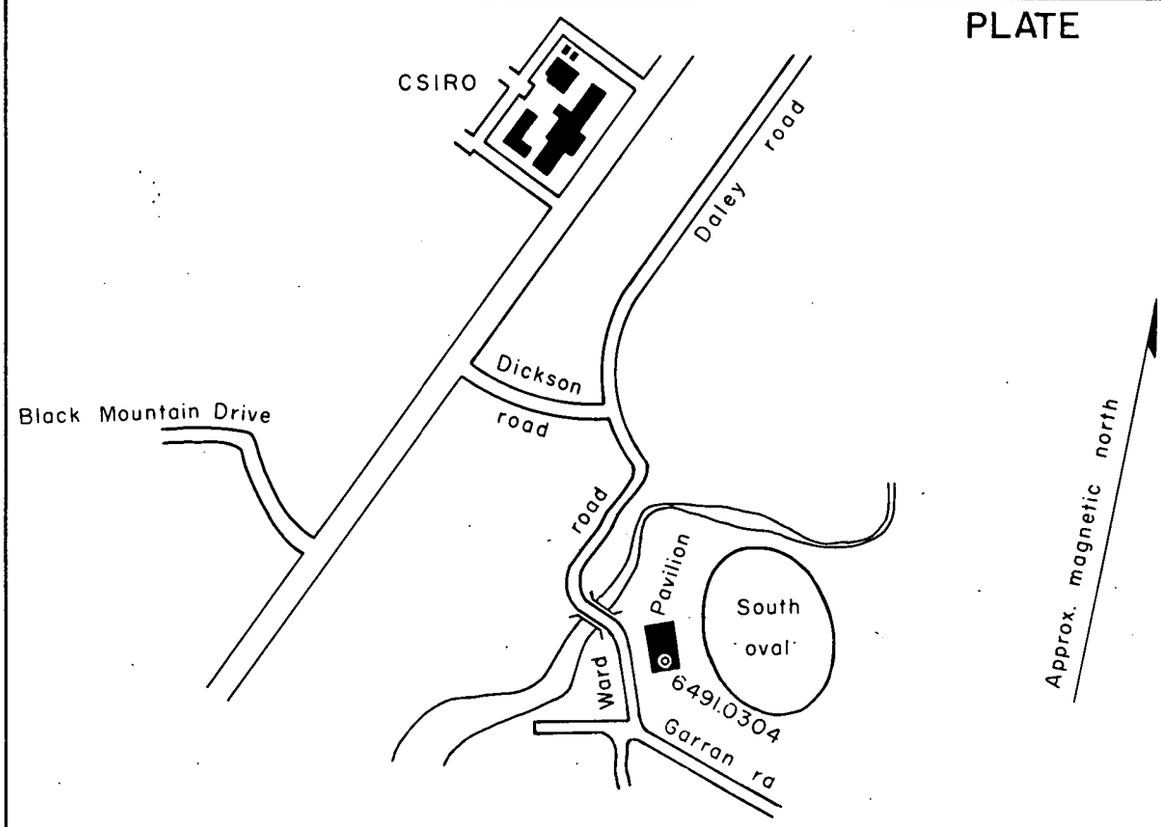
I55/B2-19-6

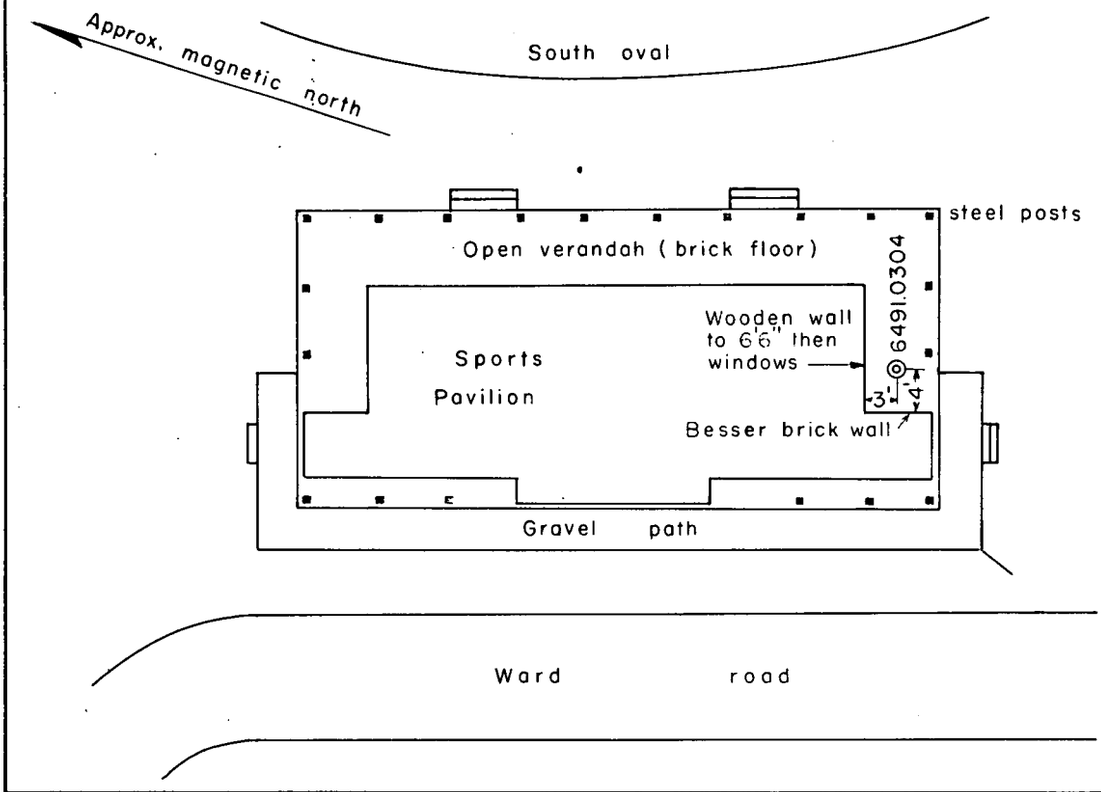
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





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◎ Excentre

CANBERRA, A.C.T.

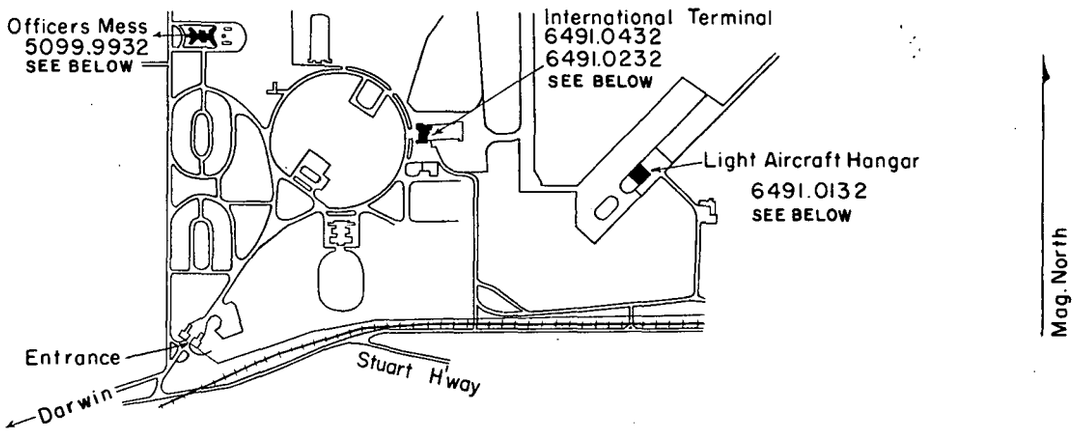
155/B2-19-7

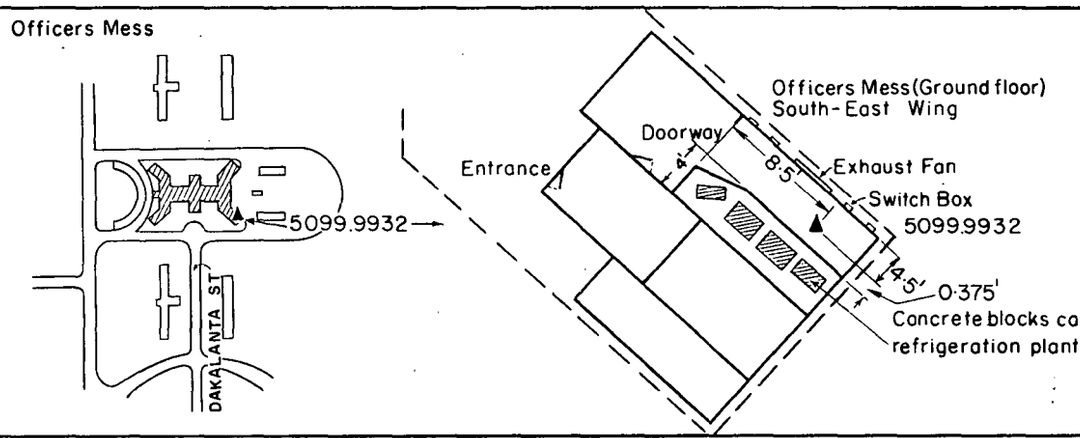
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

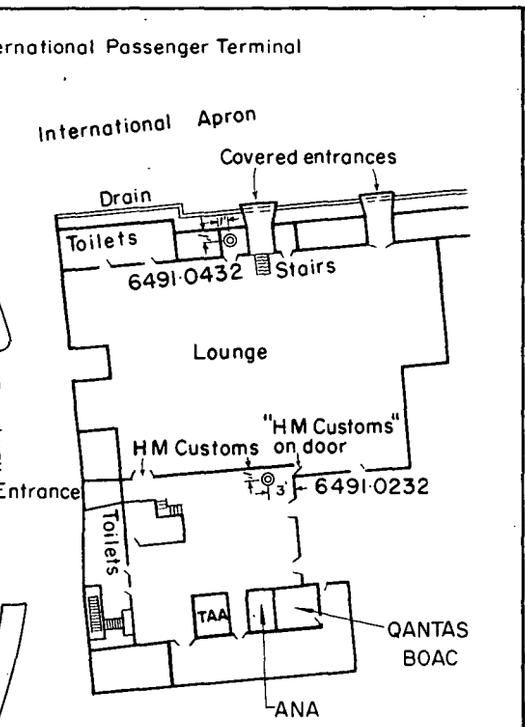
TO ACCOMPANY RECORD No. 1966/160

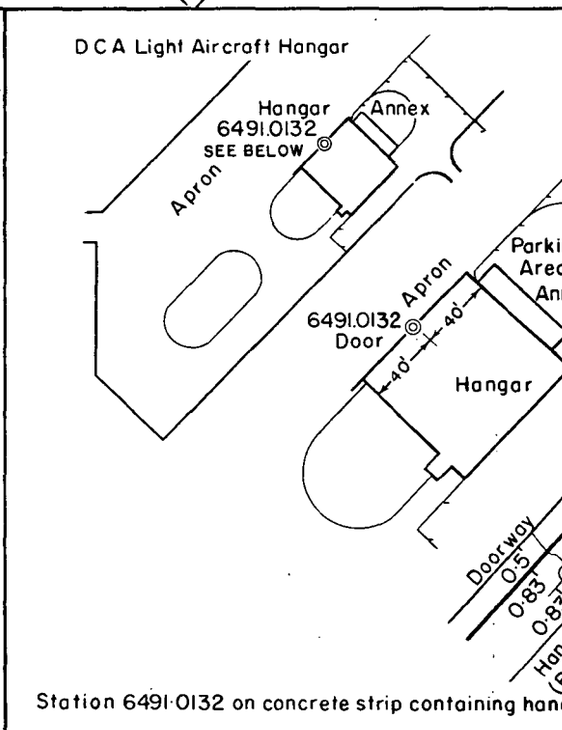
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE









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△ Secondary base
◎ Excentre

DARWIN, NT

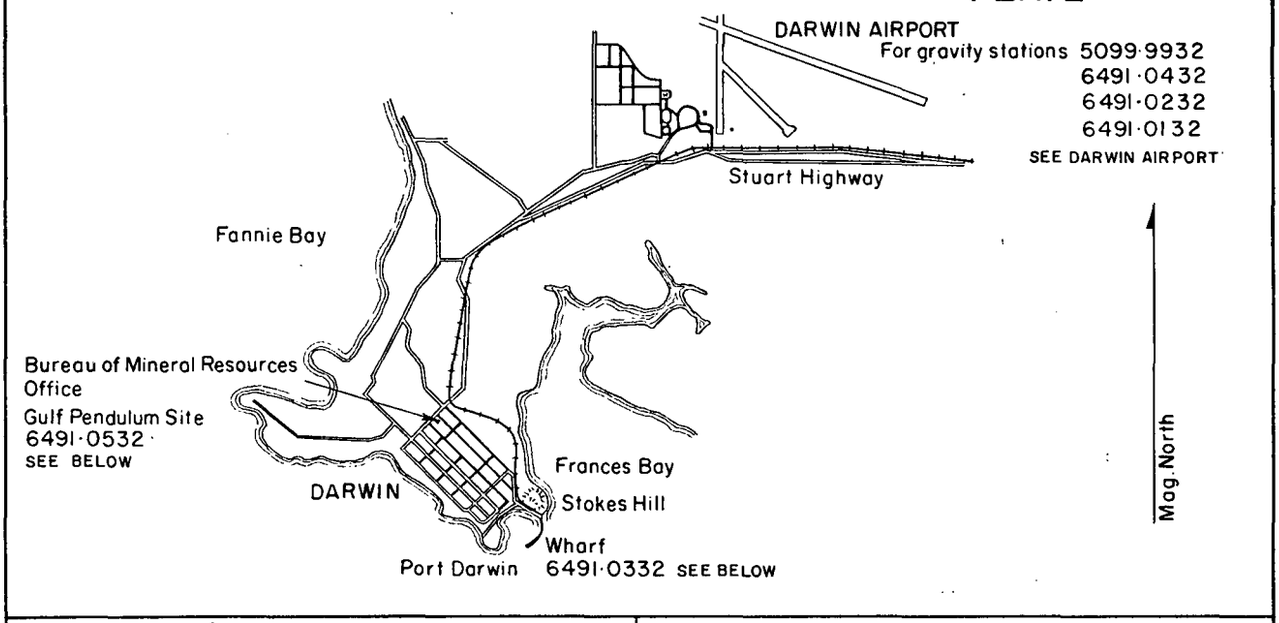
D52/B2-20-1

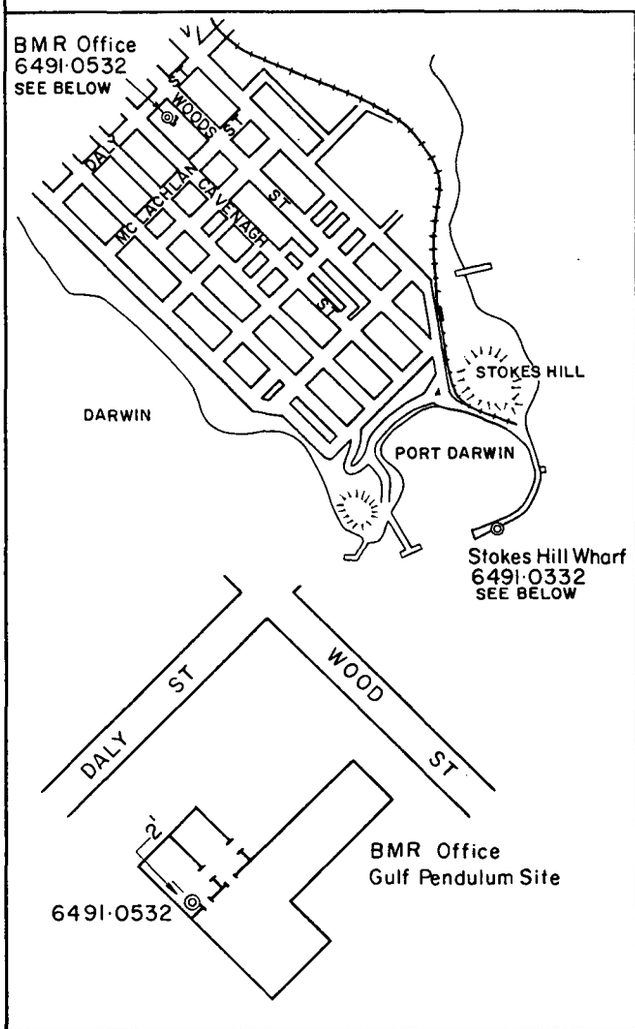
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

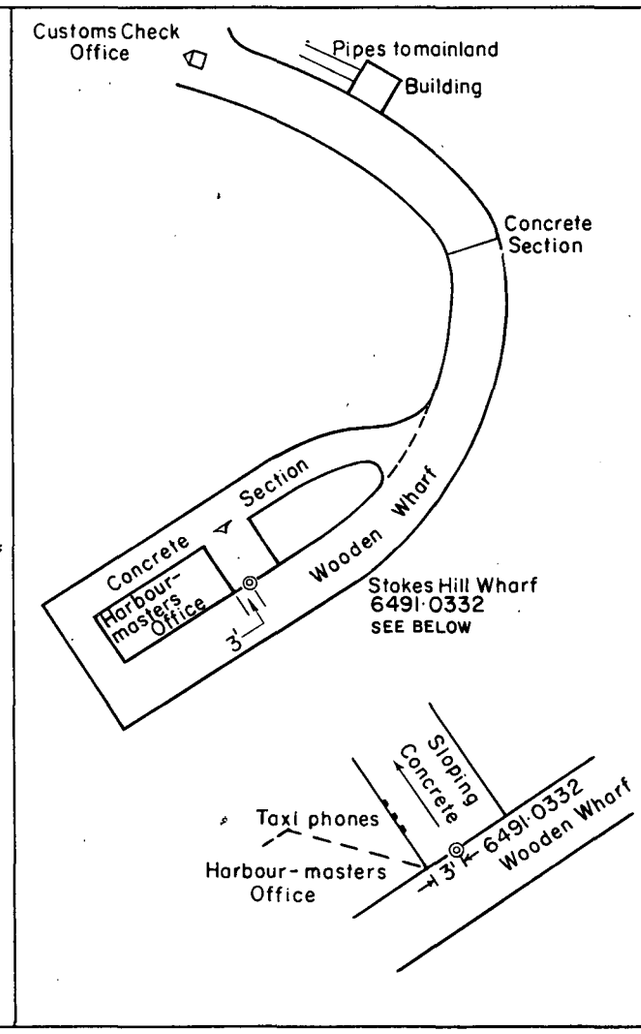
TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE







▲ Primary base
△ Secondary base
◎ Excentre

DARWIN, N.T.

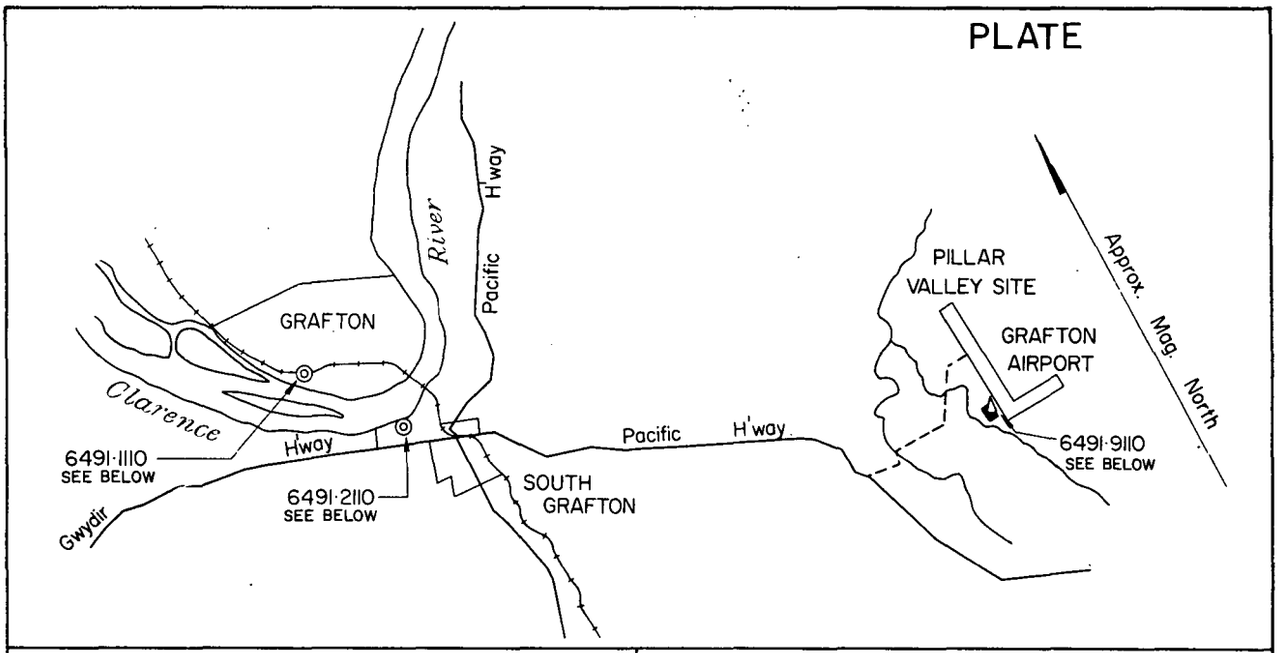
D52/B2-19-1

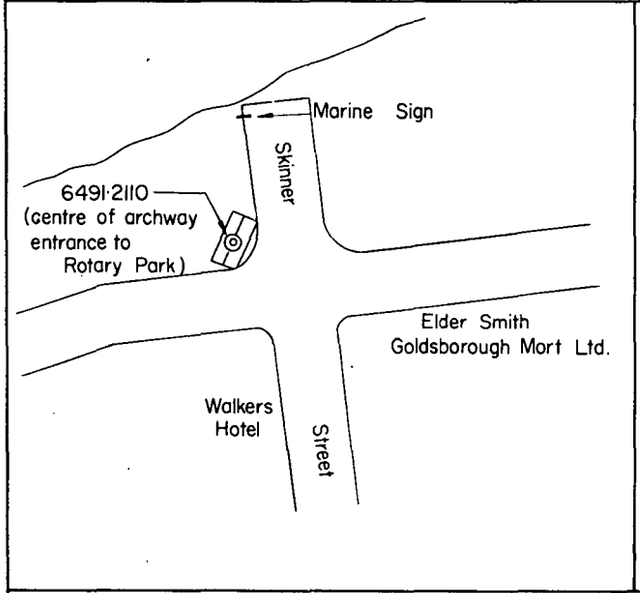
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

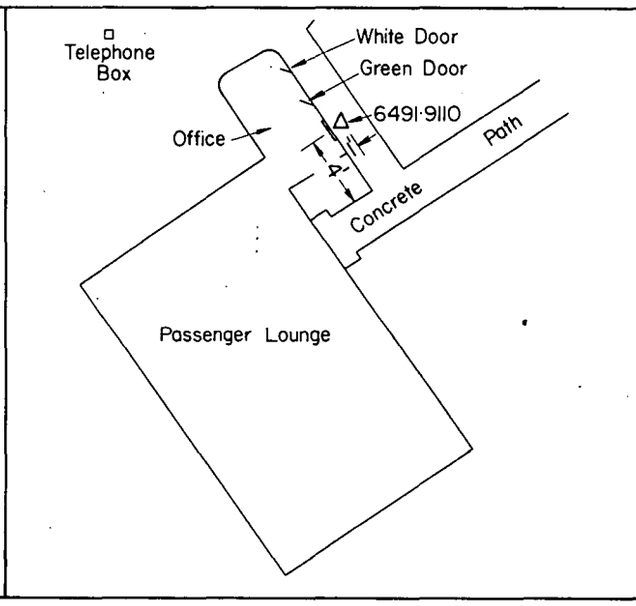
TO ACCOMPANY RECORD No. 1966/160

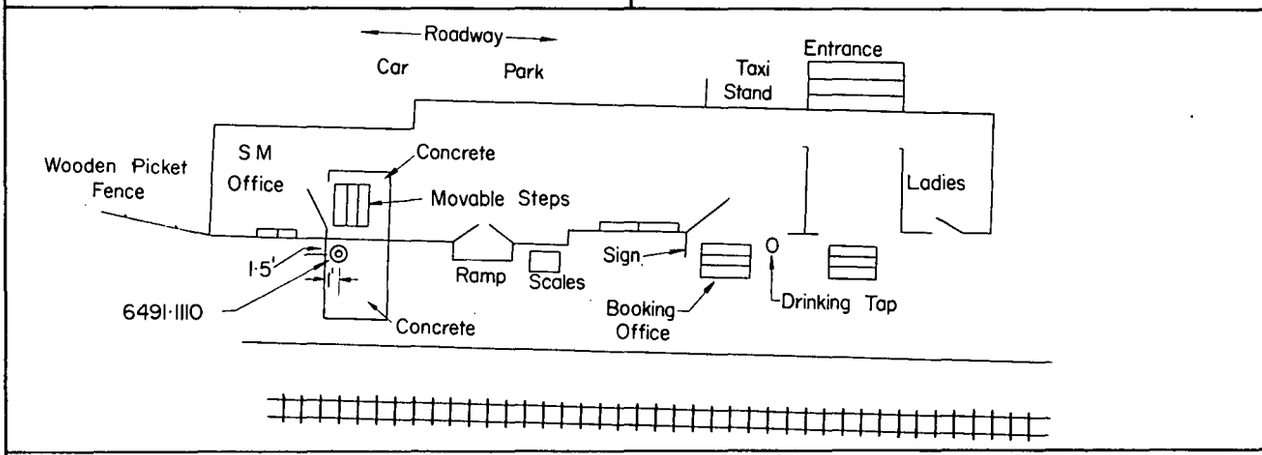
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE









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◎ Excentre

GRAFTON NSW

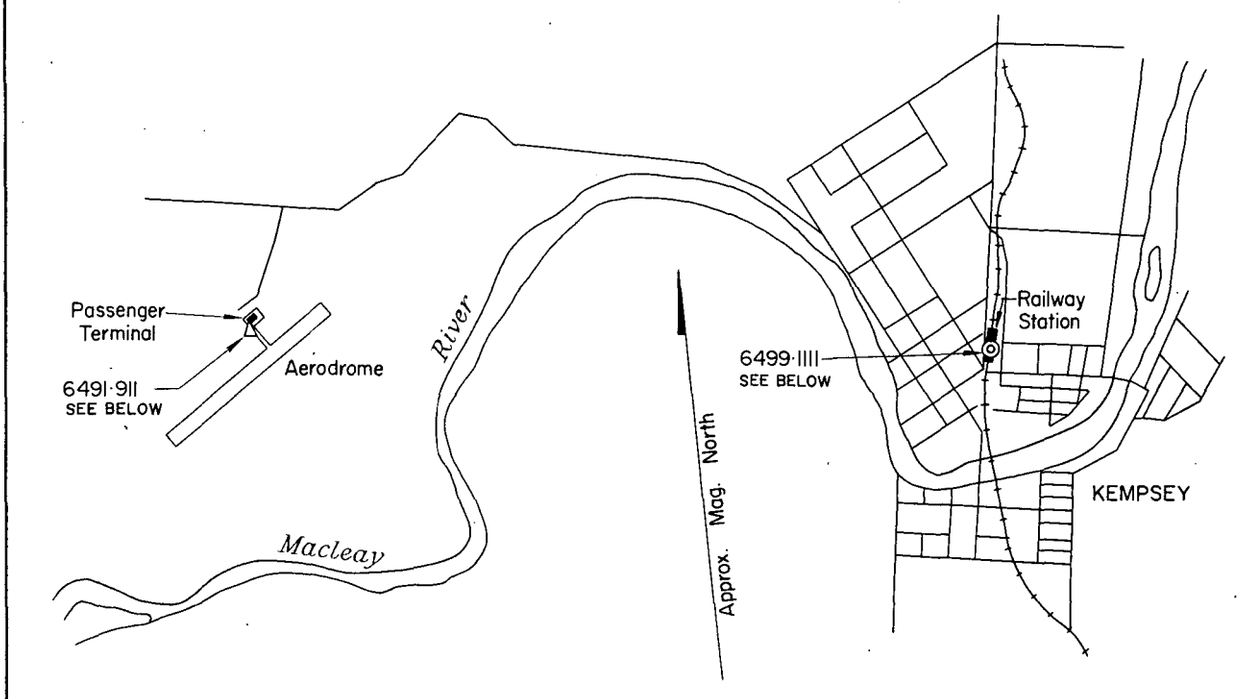
H56/B2-18-1

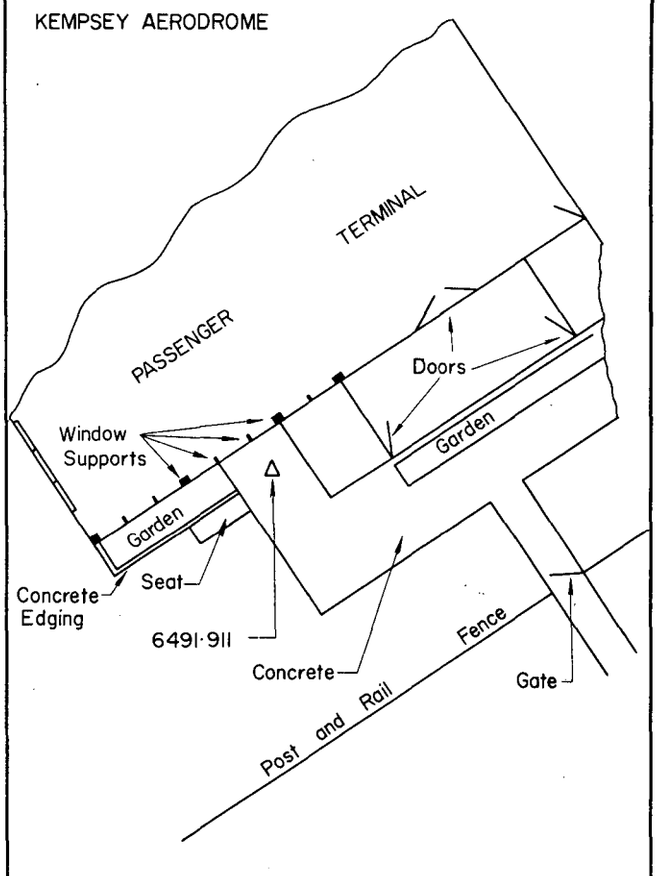
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

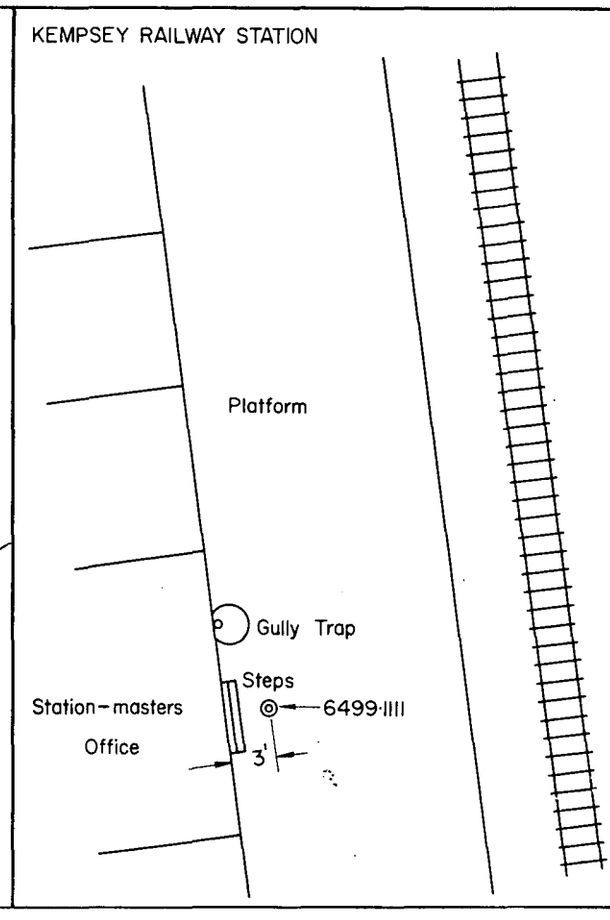
TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE







▲ Primary base
△ Secondary base
◎ Excentre

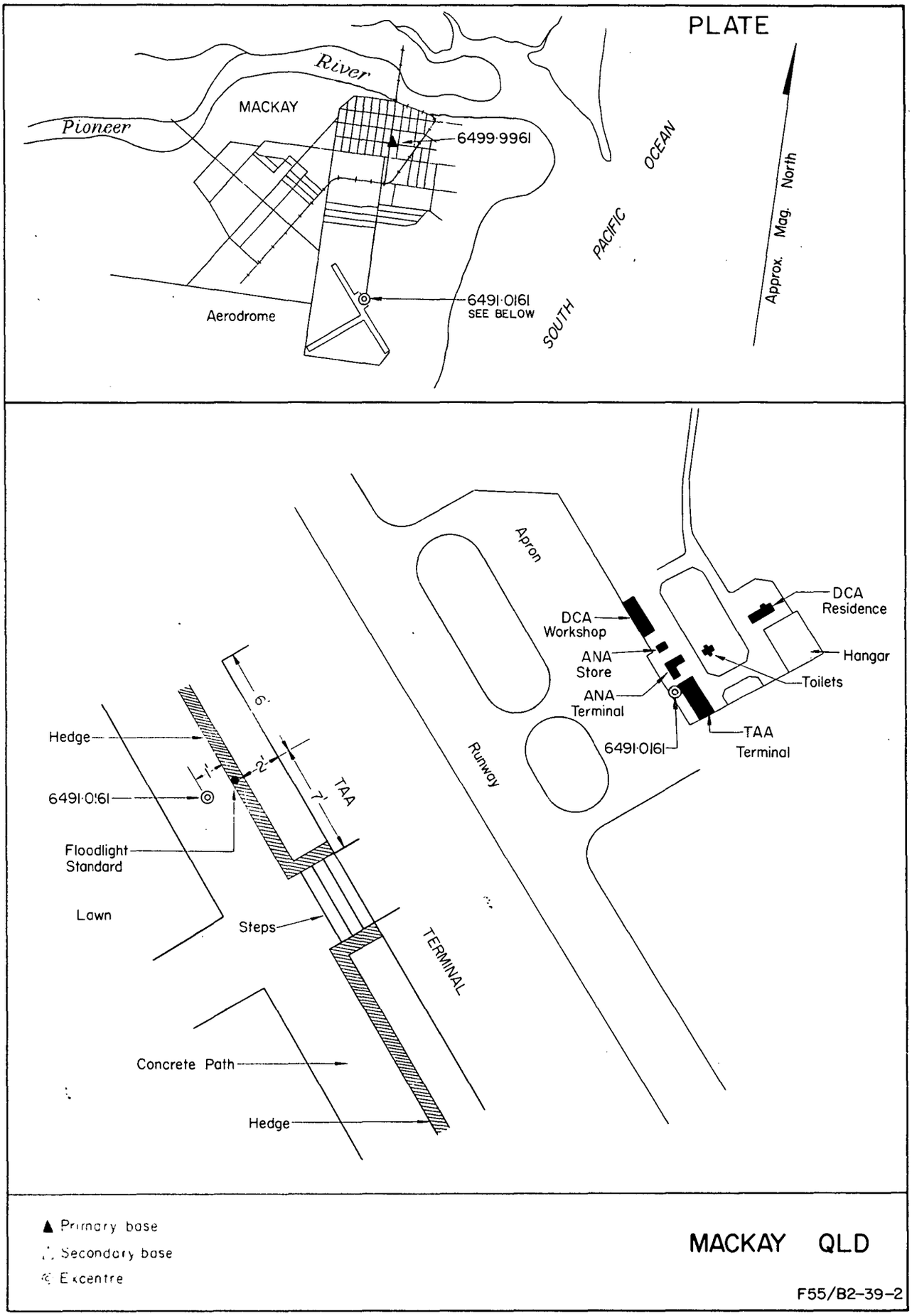
KEMPSEY NSW

H56/B2-17-1

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics



GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

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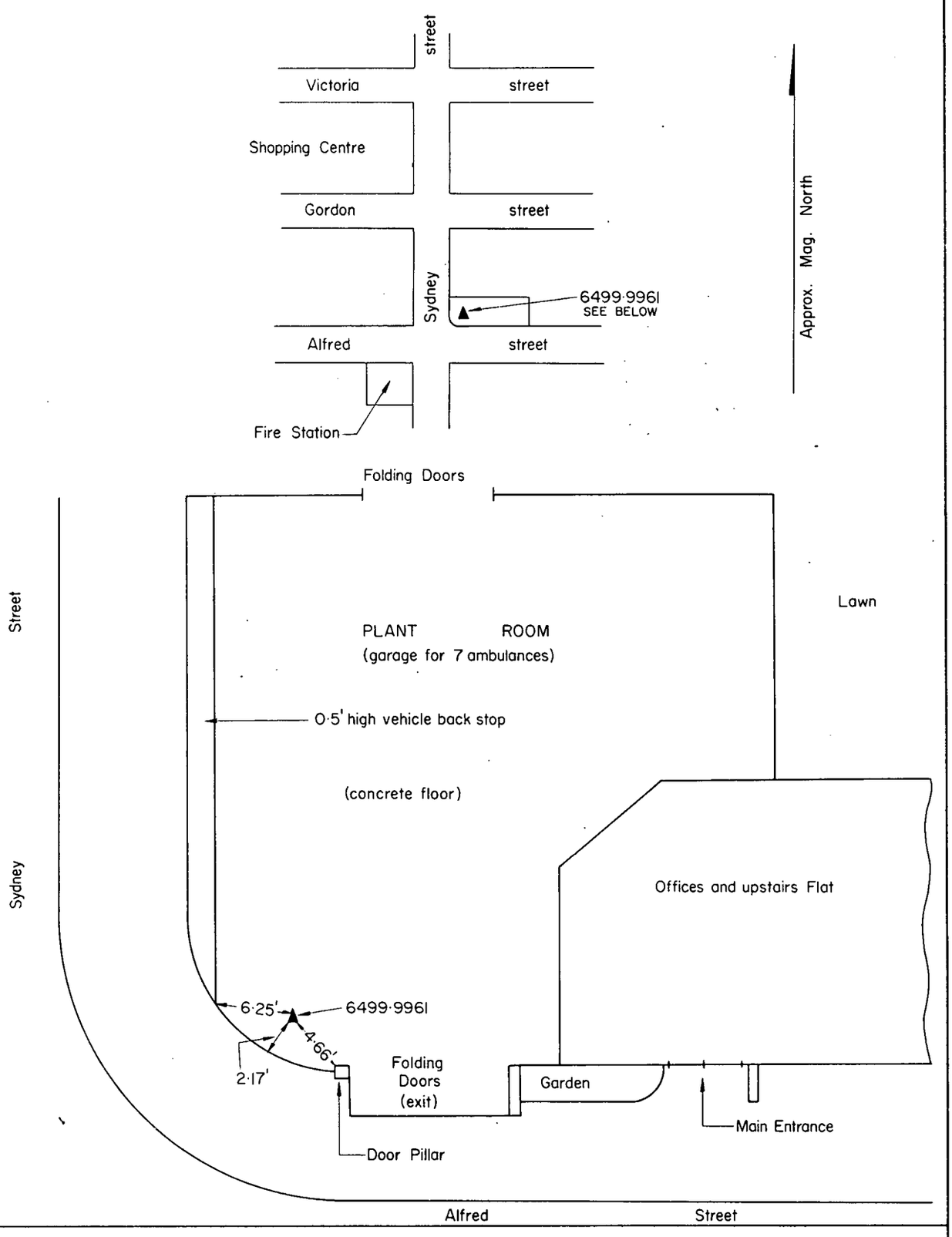
PLATE



▲ Primary base
△ Secondary base
◎ Excentre

MACKAY QLD

F55/B2-39-3

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

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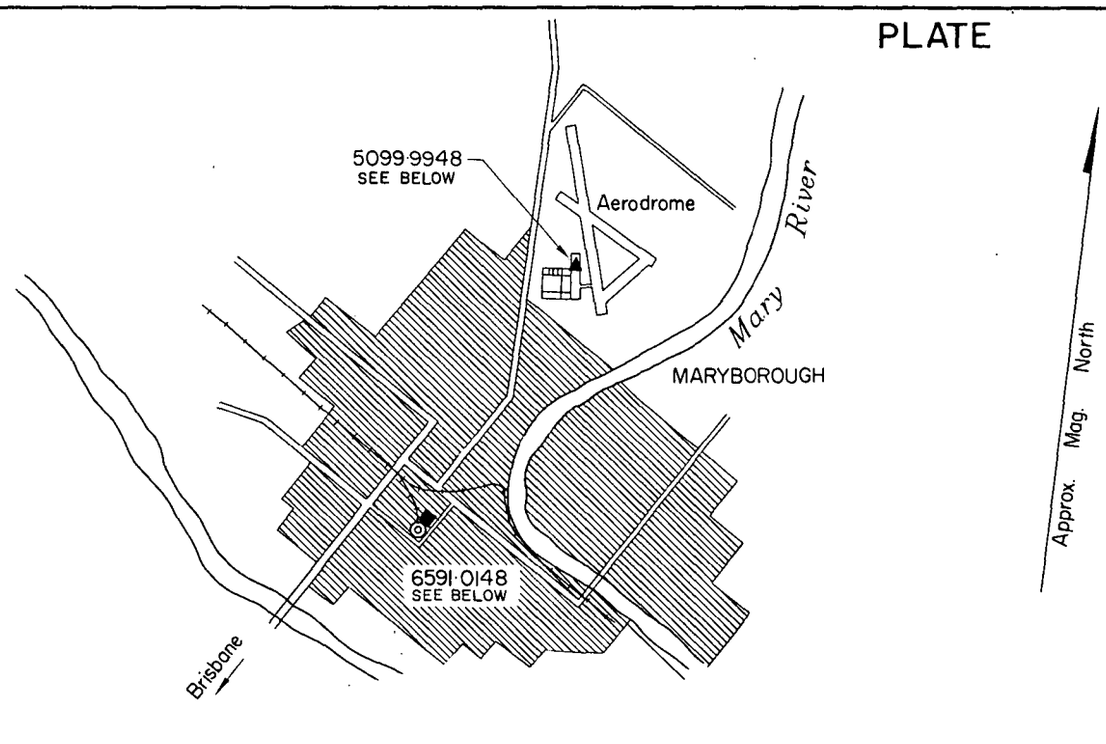
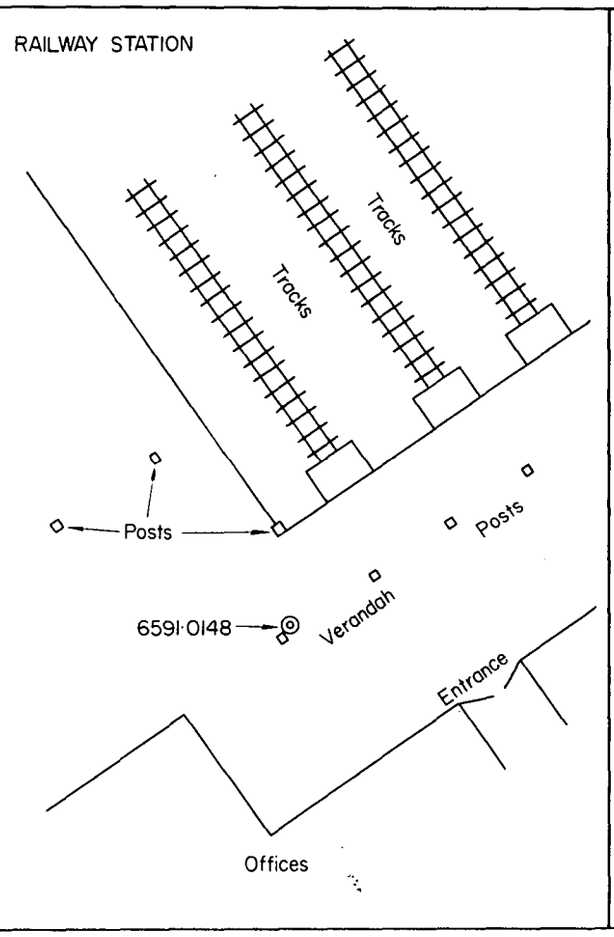
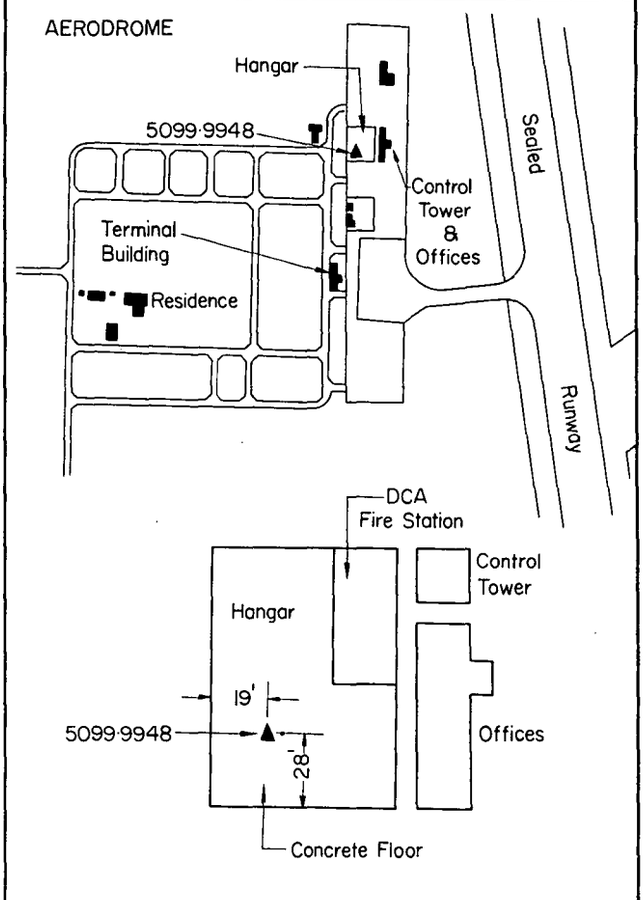
PLATE







▲ Primary base
△ Secondary base
◎ Excentre

MARYBOROUGH QLD

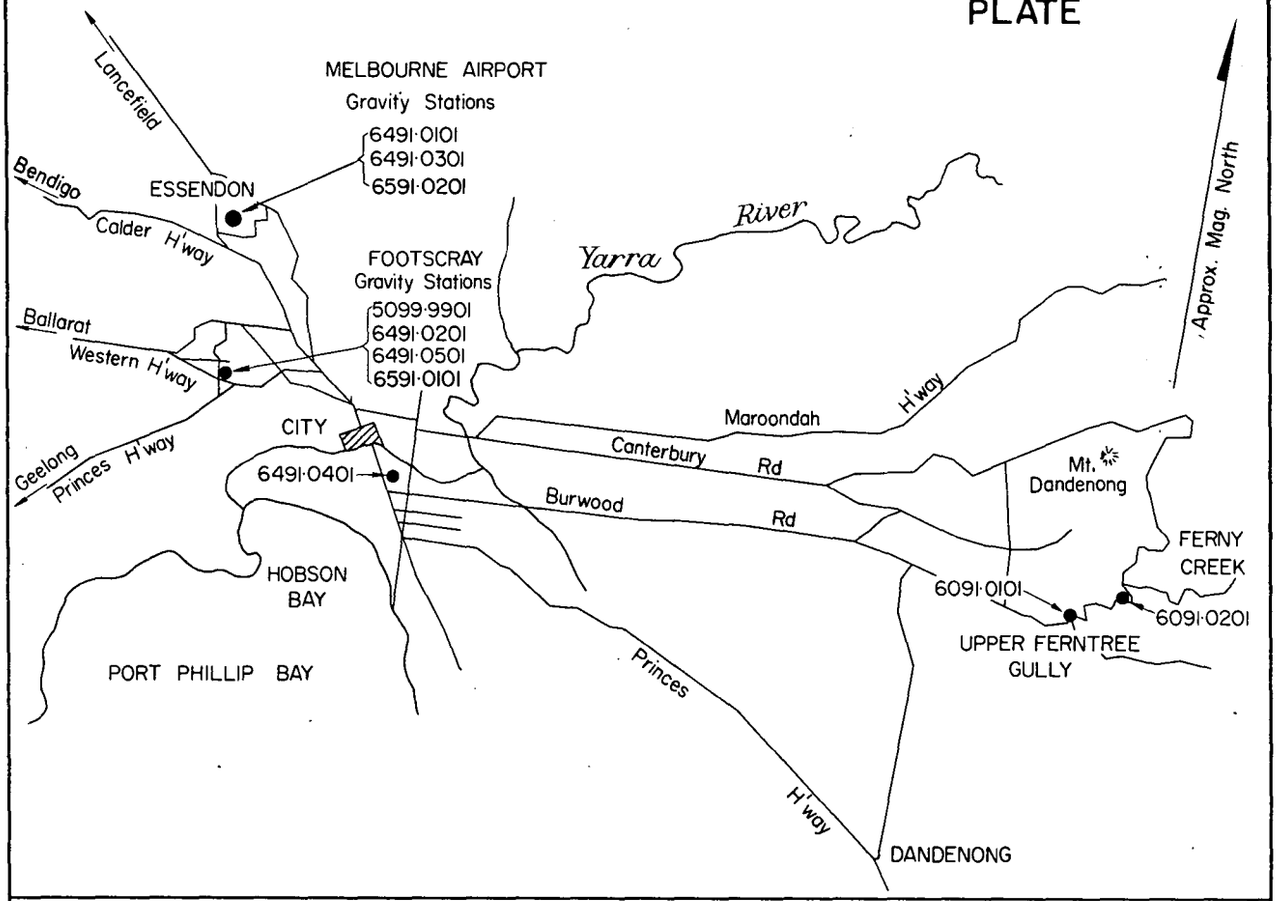
G56/B2-26-1

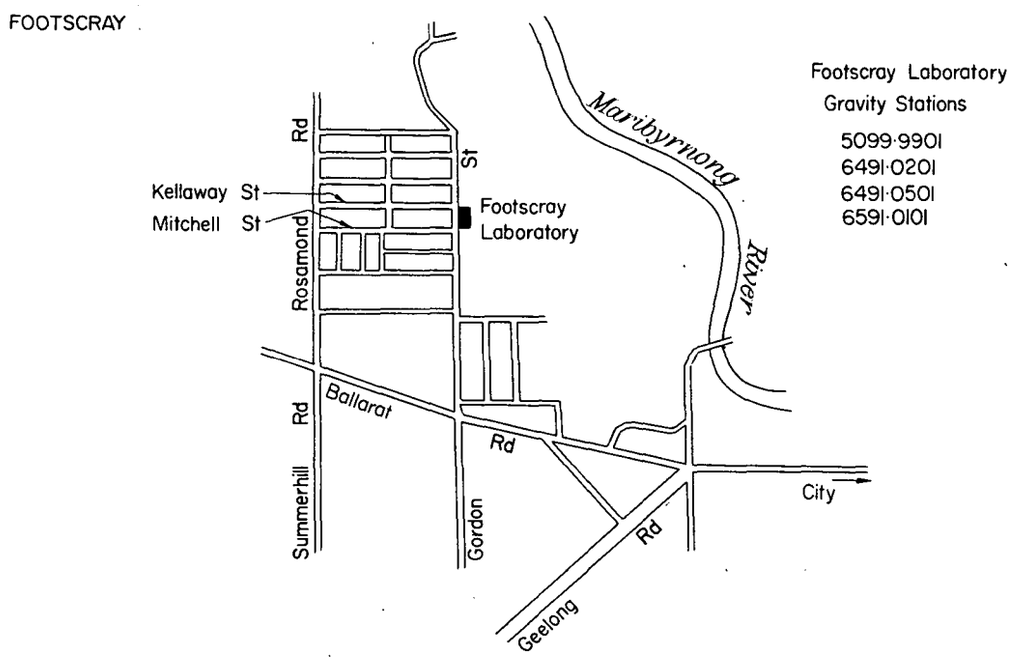
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

MELBOURNE VIC

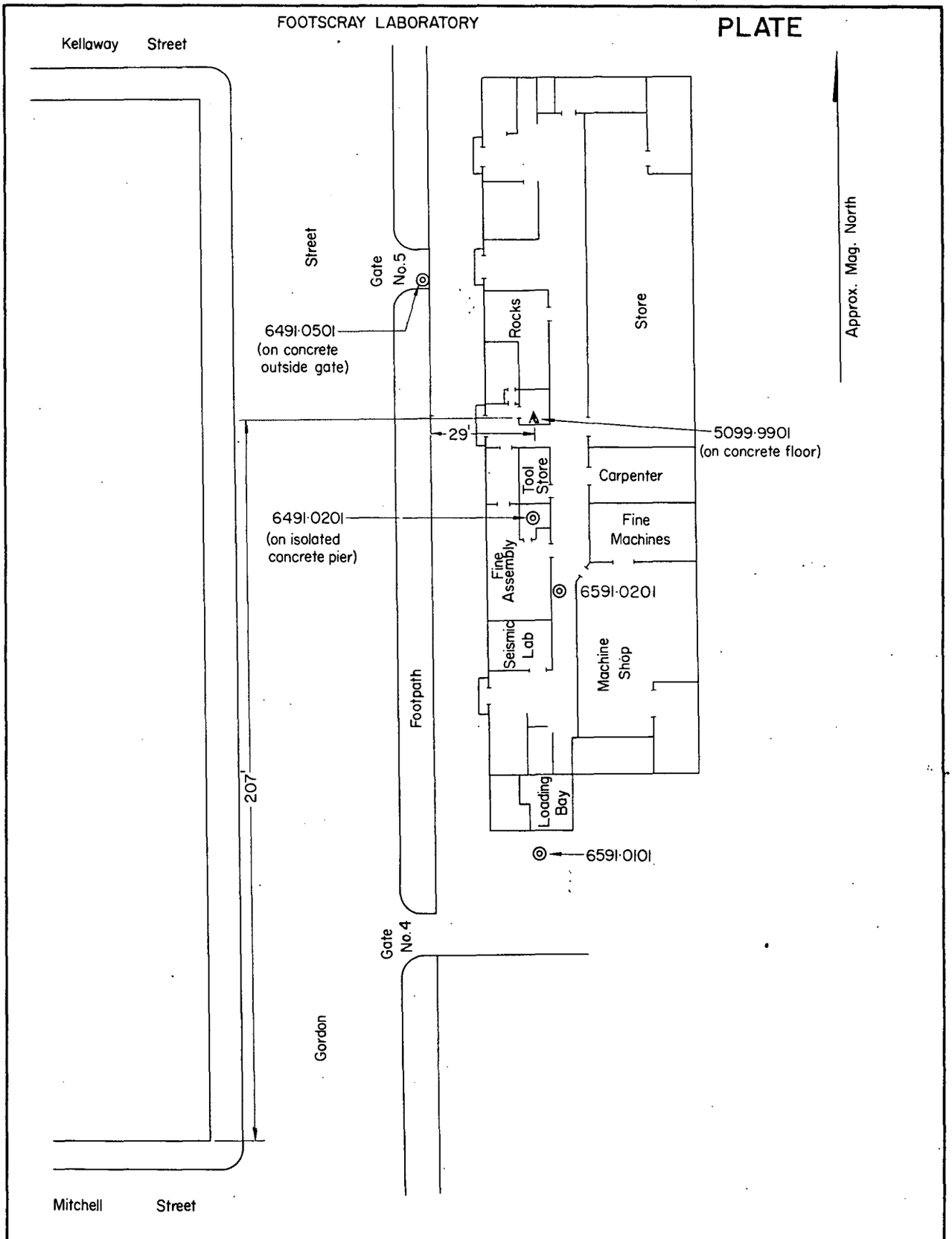
J55/B2-62-6

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE



▲ Primary base
△ Secondary base
◎ Excentre

NATIONAL GRAVITY BASE STATION
MELBOURNE, VIC.

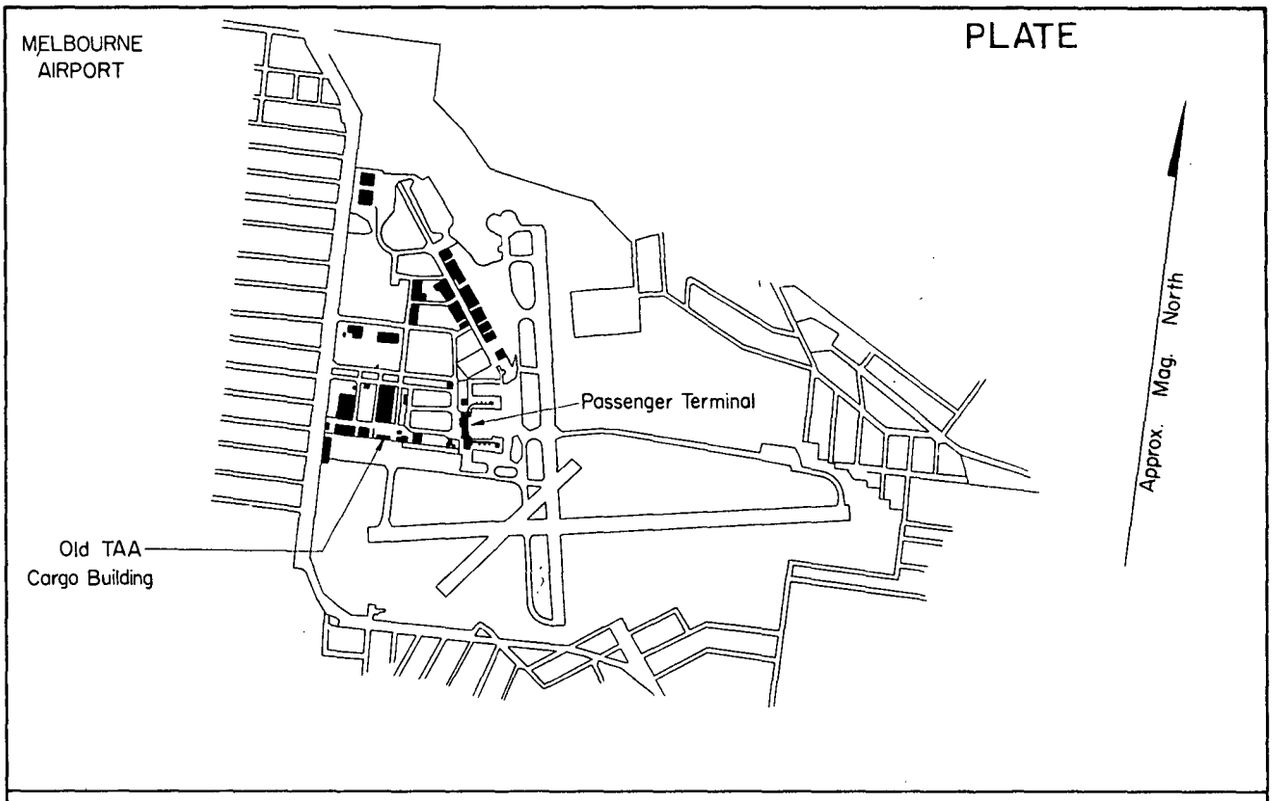
J55/B2-62-7

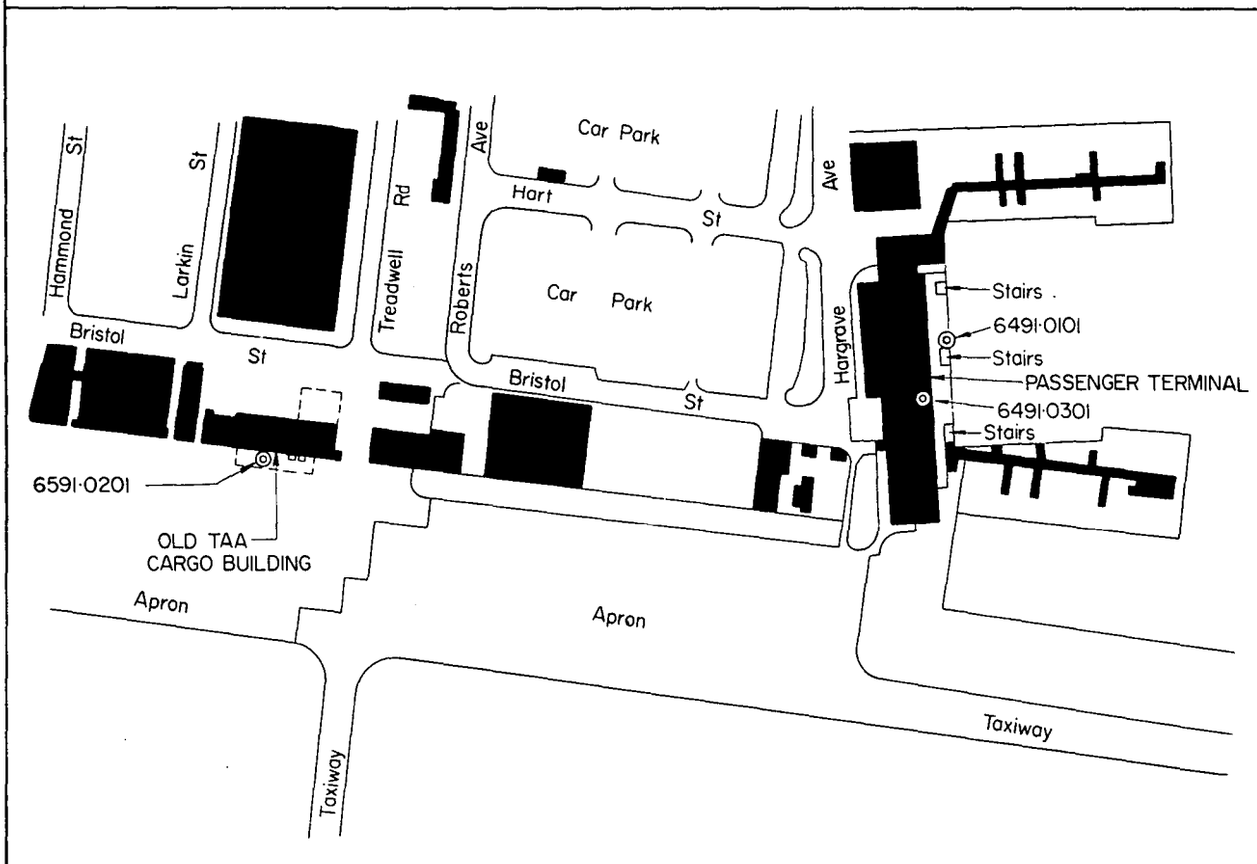
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

MELBOURNE VIC

J55/B2-62-8

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

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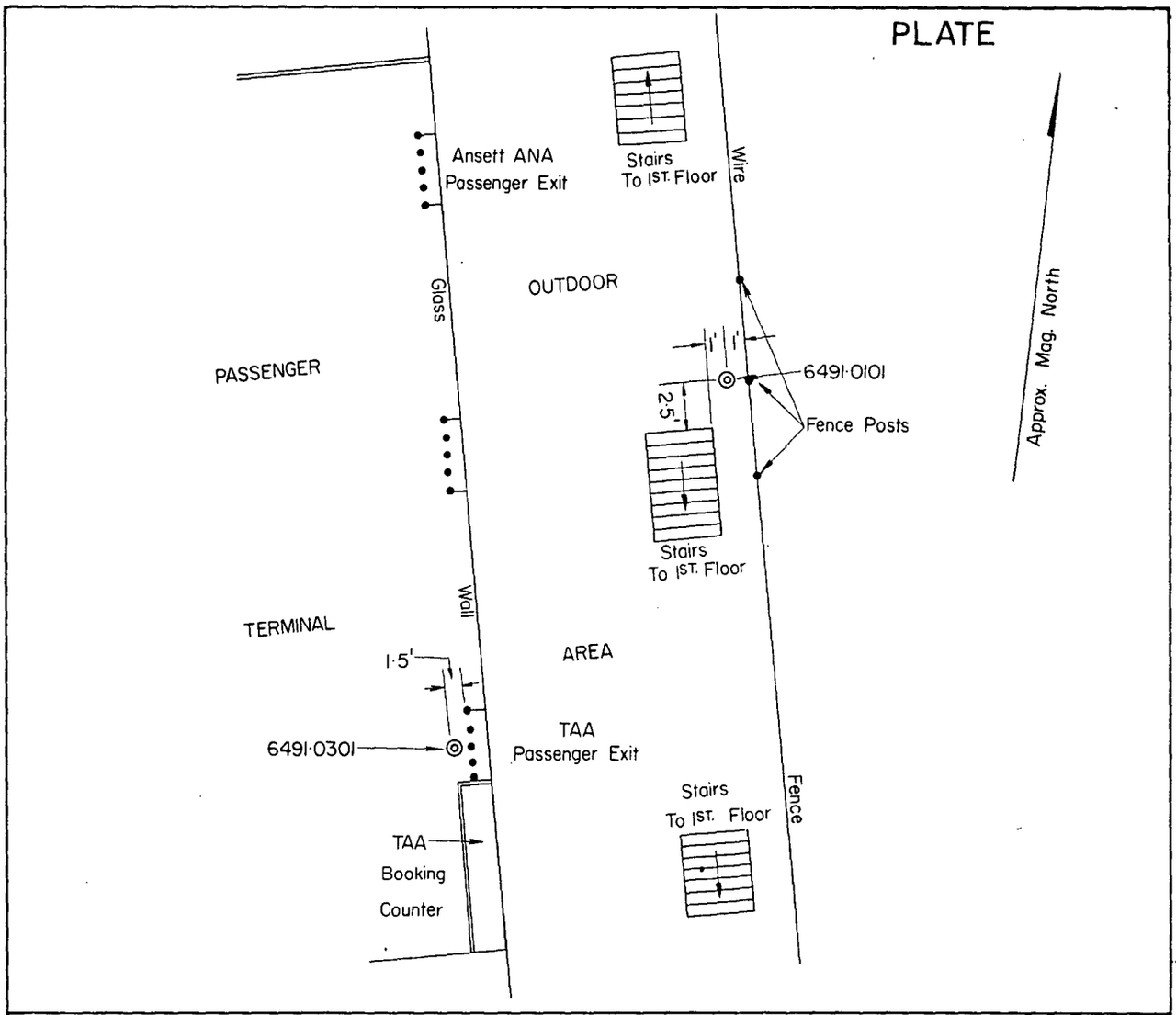
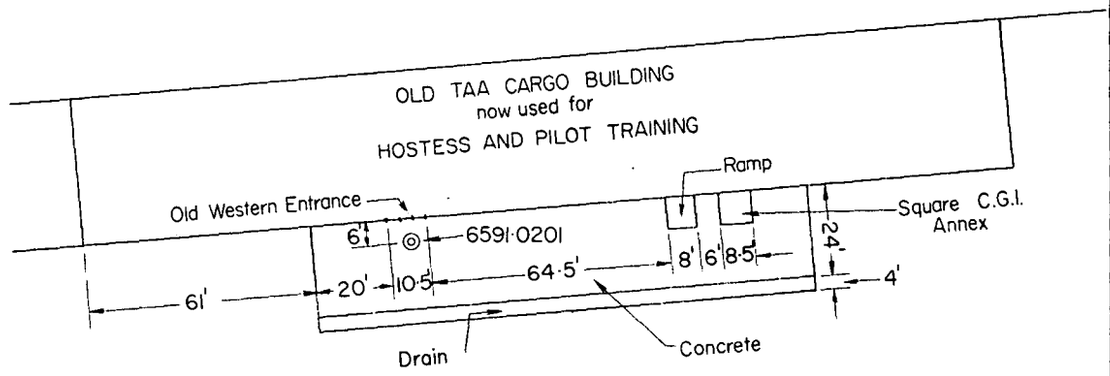
PLATE





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△ Secondary base
◎ Excentre

MELBOURNE VIC

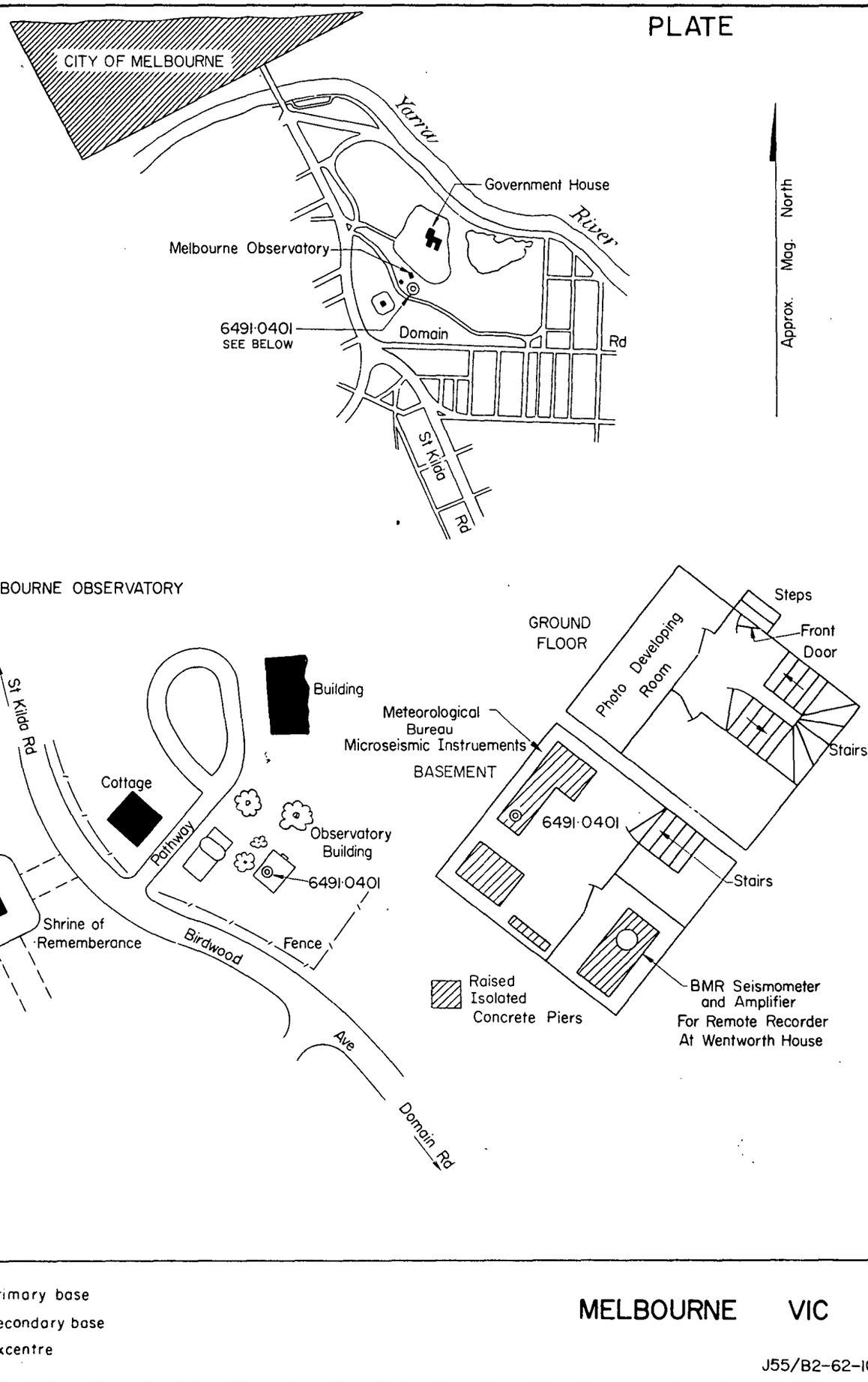
J55/B2-62-9

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE



▲ Primary base
△ Secondary base
◎ Excentre

MELBOURNE VIC

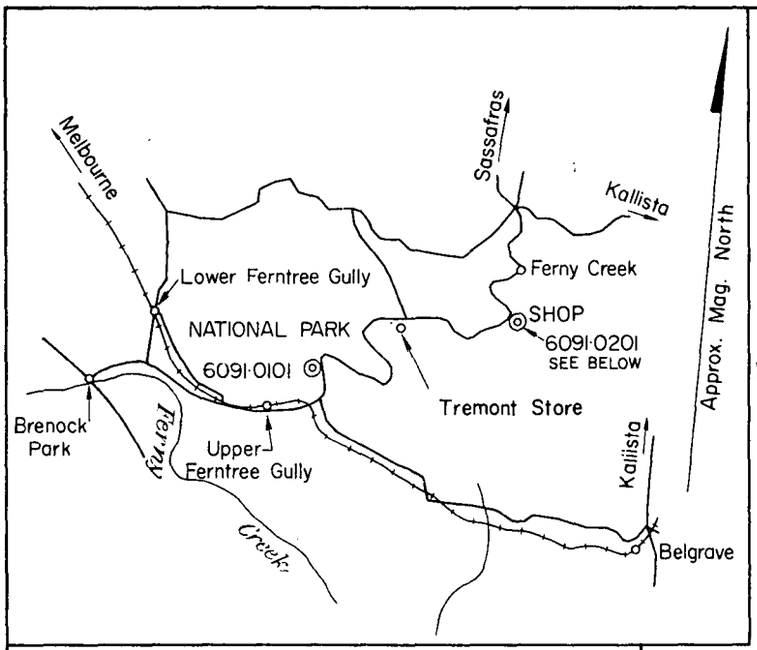
J55/B2-62-10

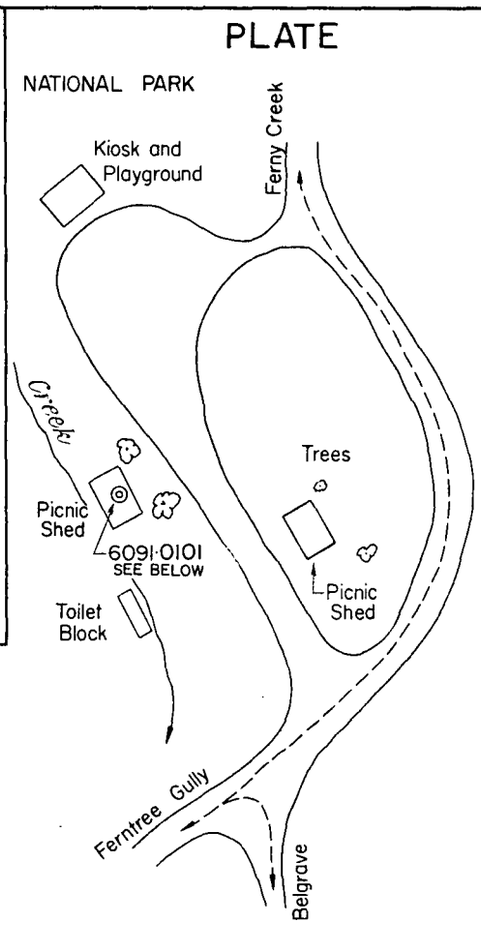
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

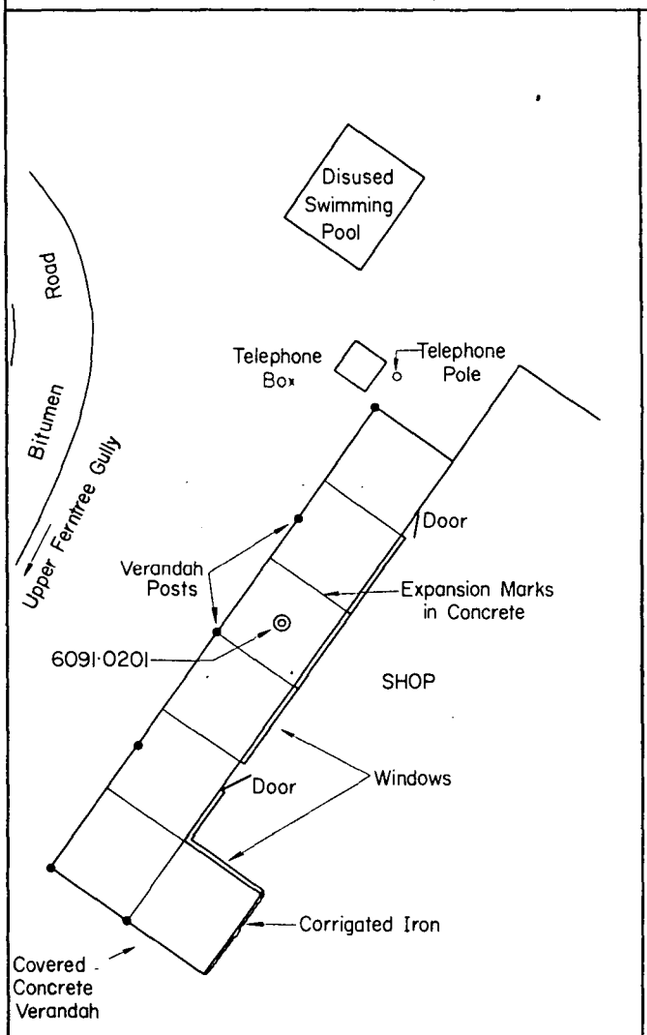
TO ACCOMPANY RECORD No. 1966/160

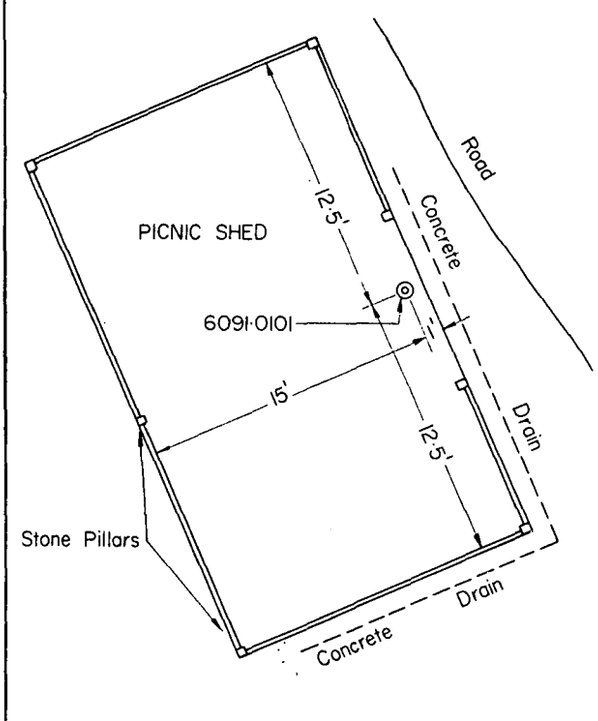
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE









▲ Primary base
△ Secondary base
◎ Excentre

MELBOURNE VIC

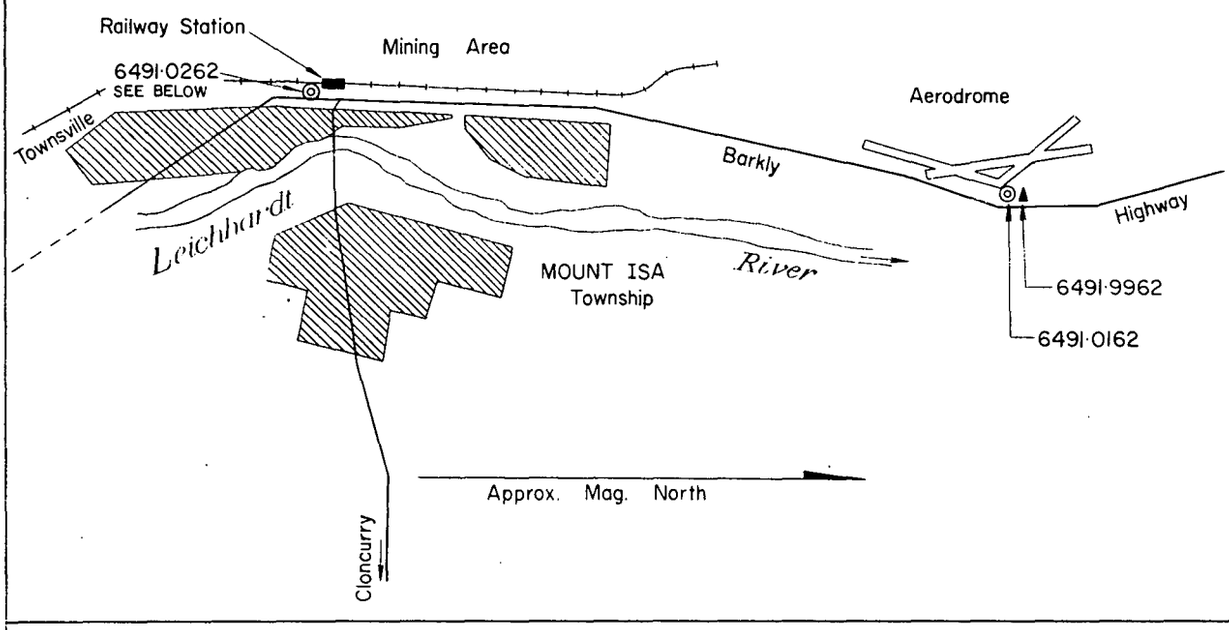
J55/B2-62-11

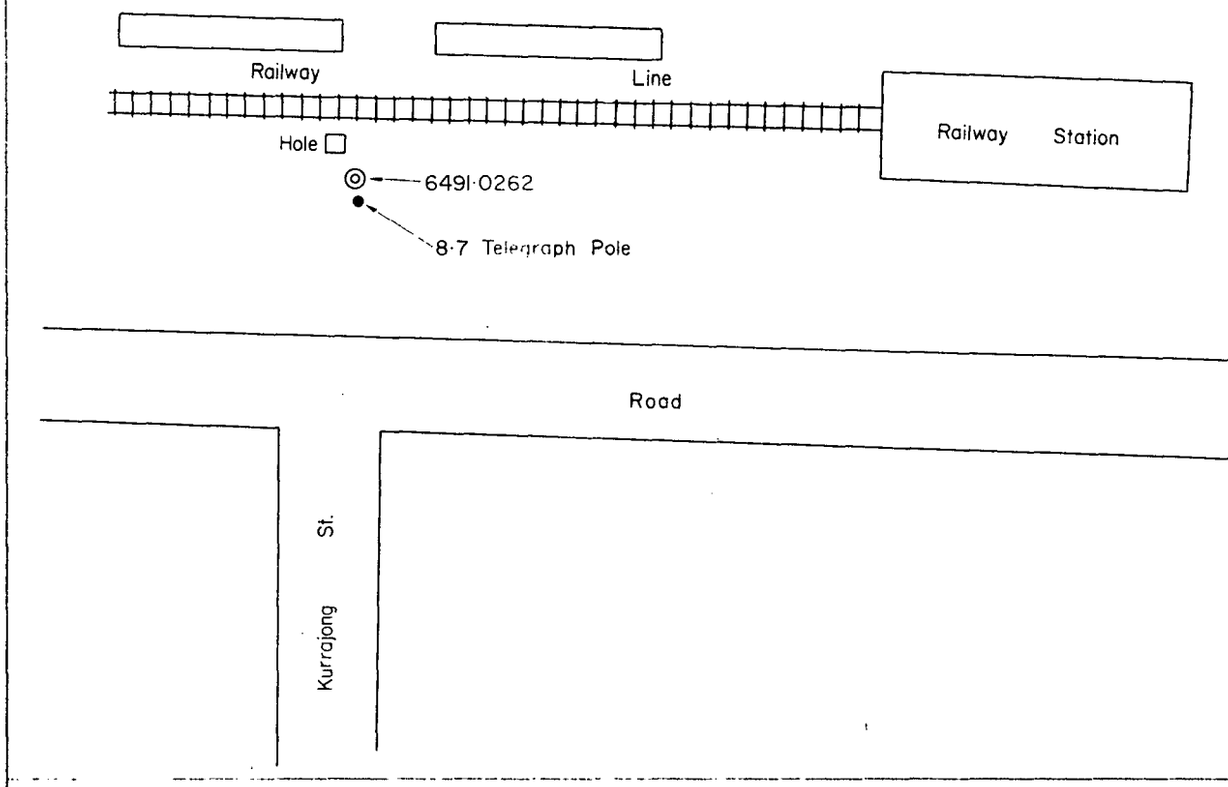
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No.1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
· Excentre

MOUNT ISA QLD

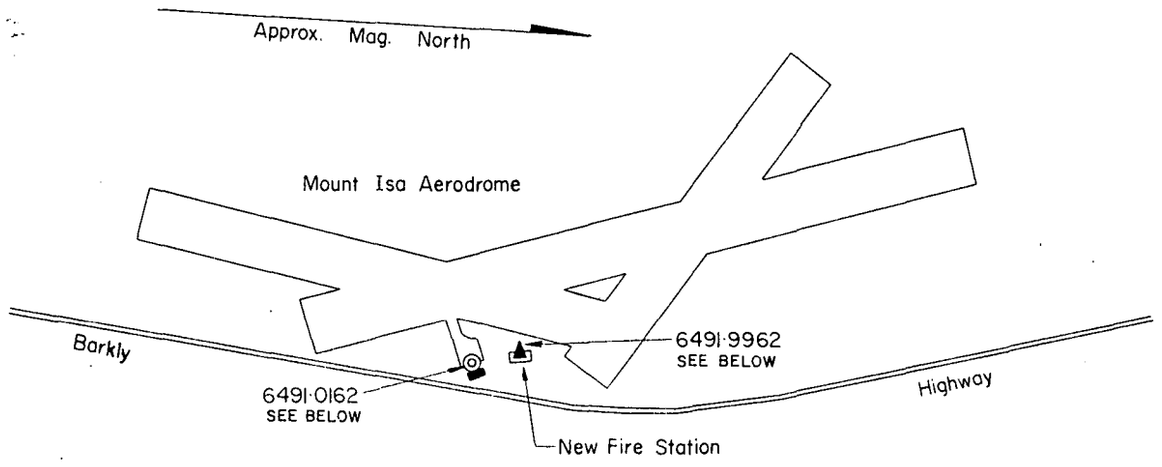
F 54/B2-51-2

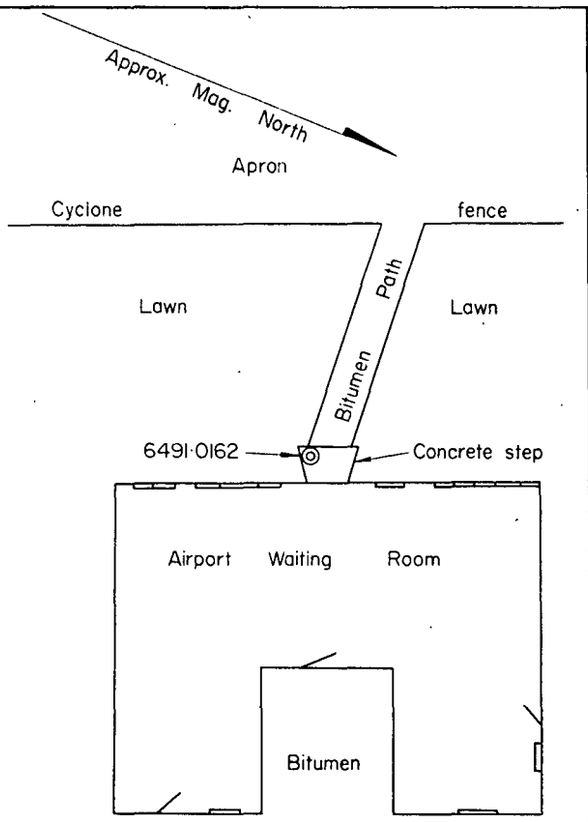
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

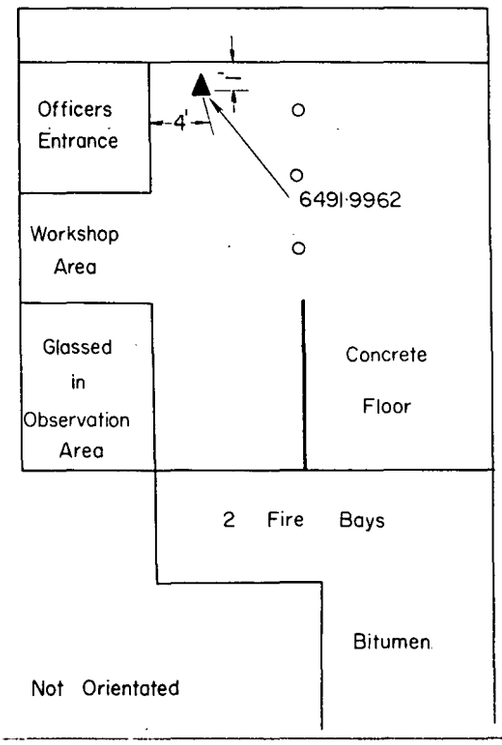
TO ACCOMPANY RECORD No. 1966/160

Geophysics Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE







▲ Primary base
△ Secondary base
· Excentre

MOUNT ISA QLD

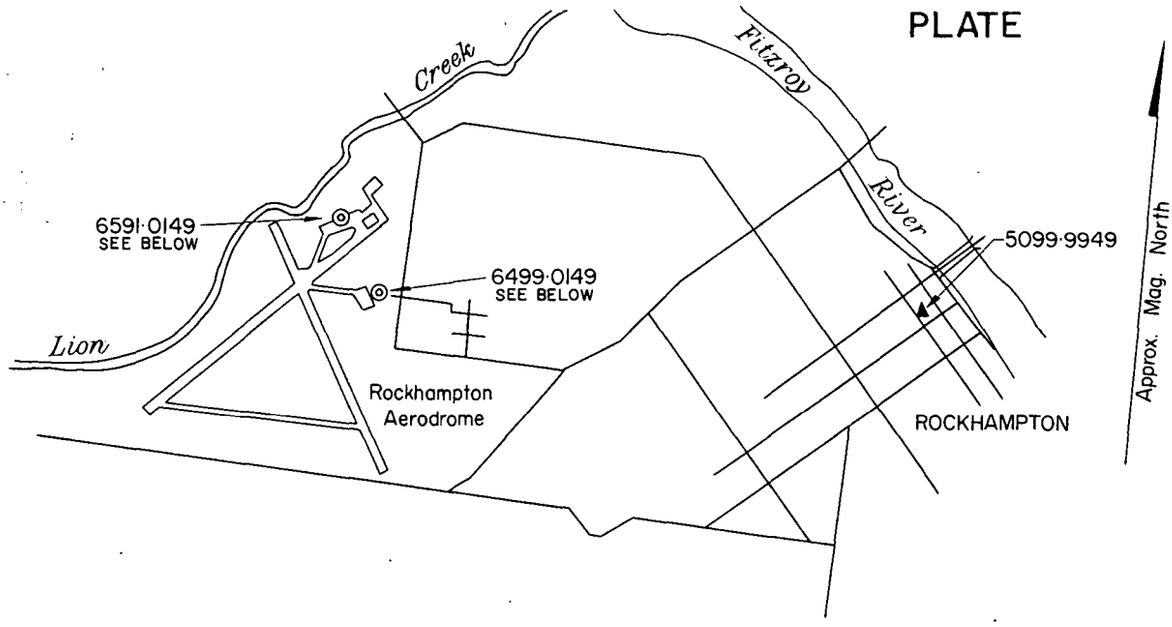
F54/B2-51-3

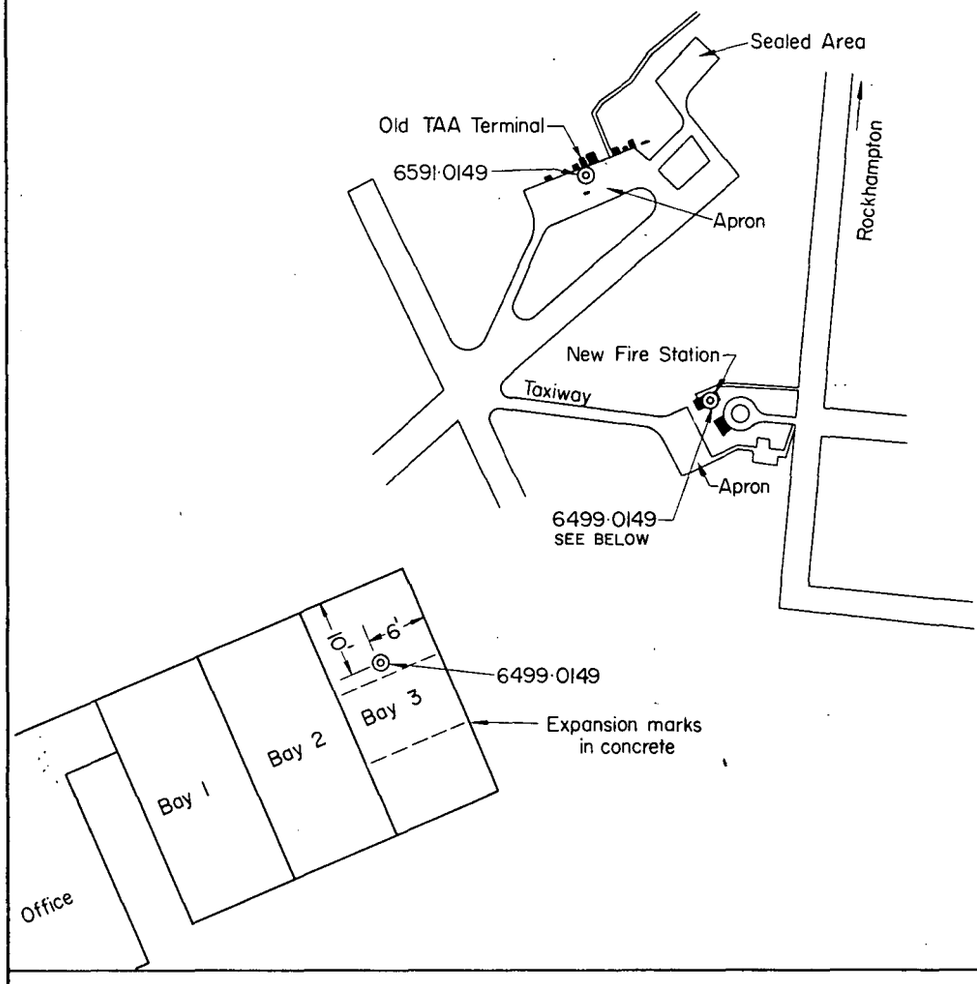
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
⊙ Excentre

ROCKHAMPTON QLD

F56/B2-17-2

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

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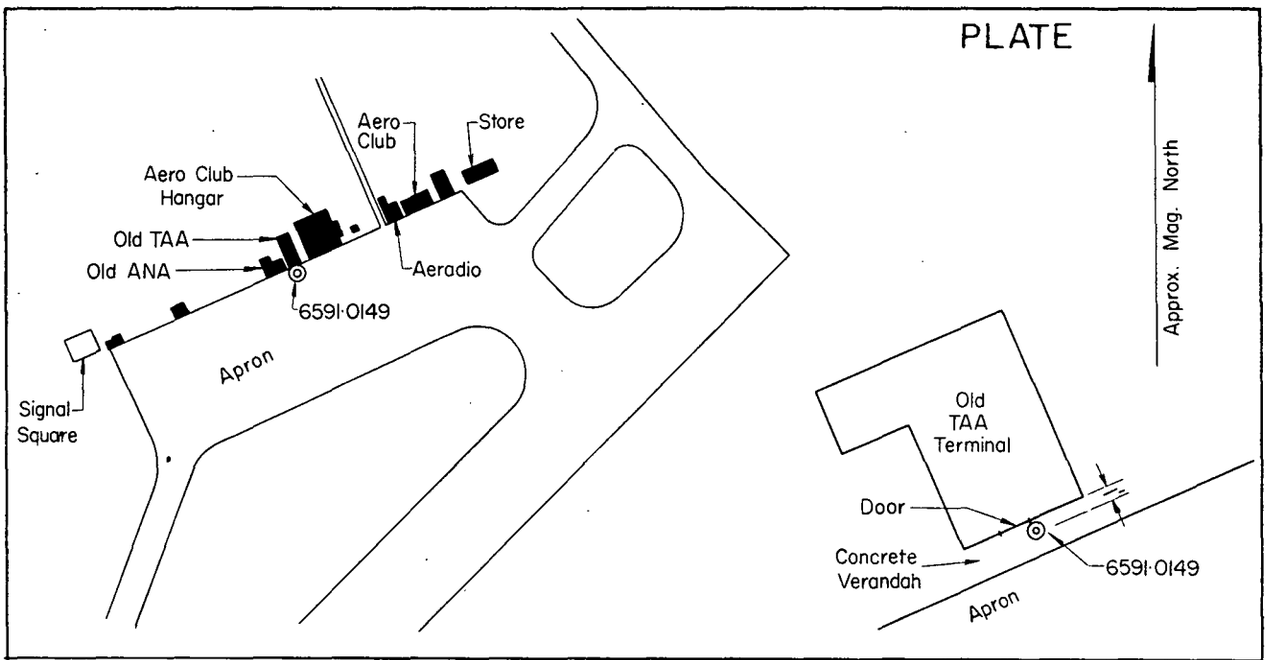
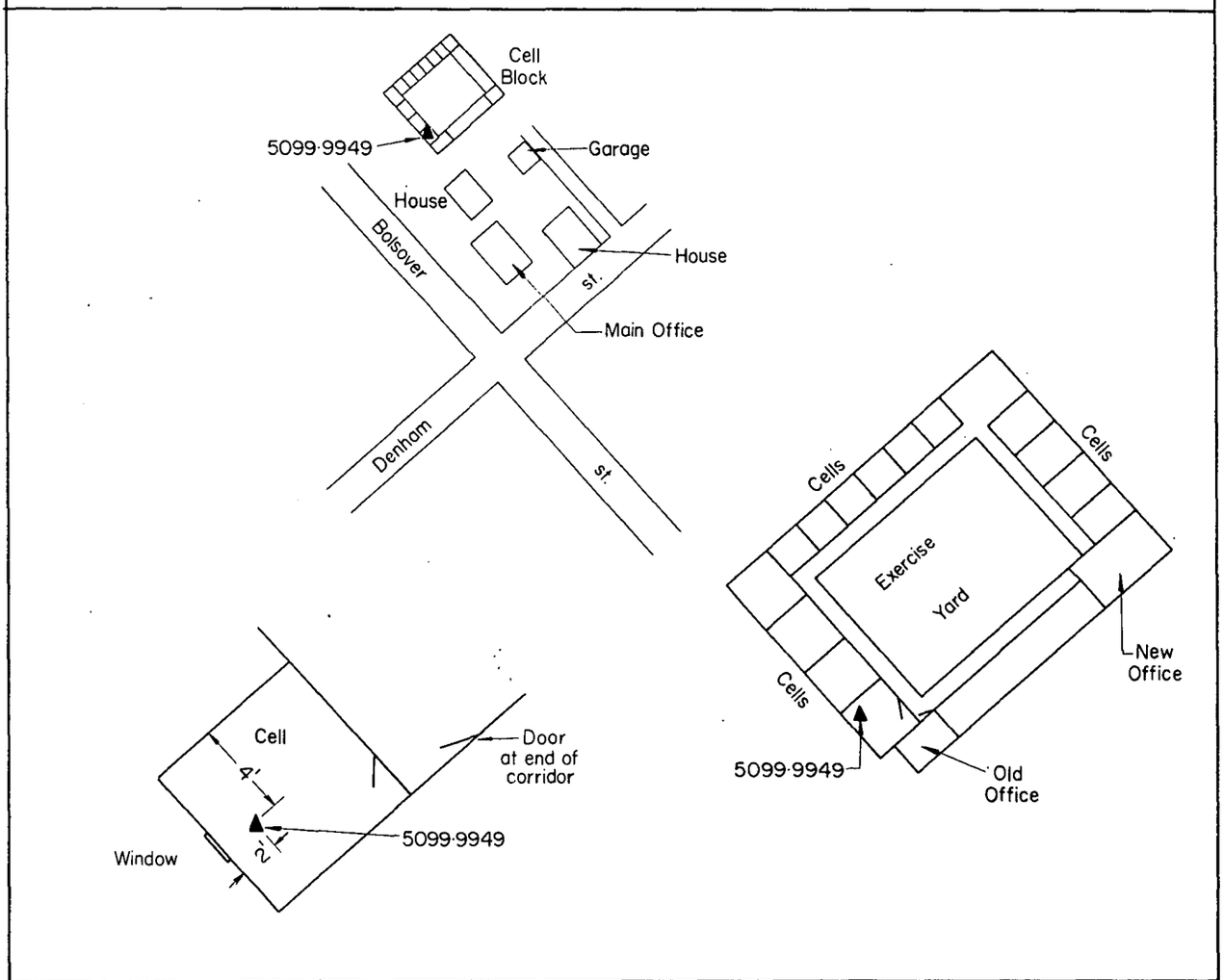
PLATE





▲ Primary base
△ Secondary base
◎ Excentre

ROCKHAMPTON QLD

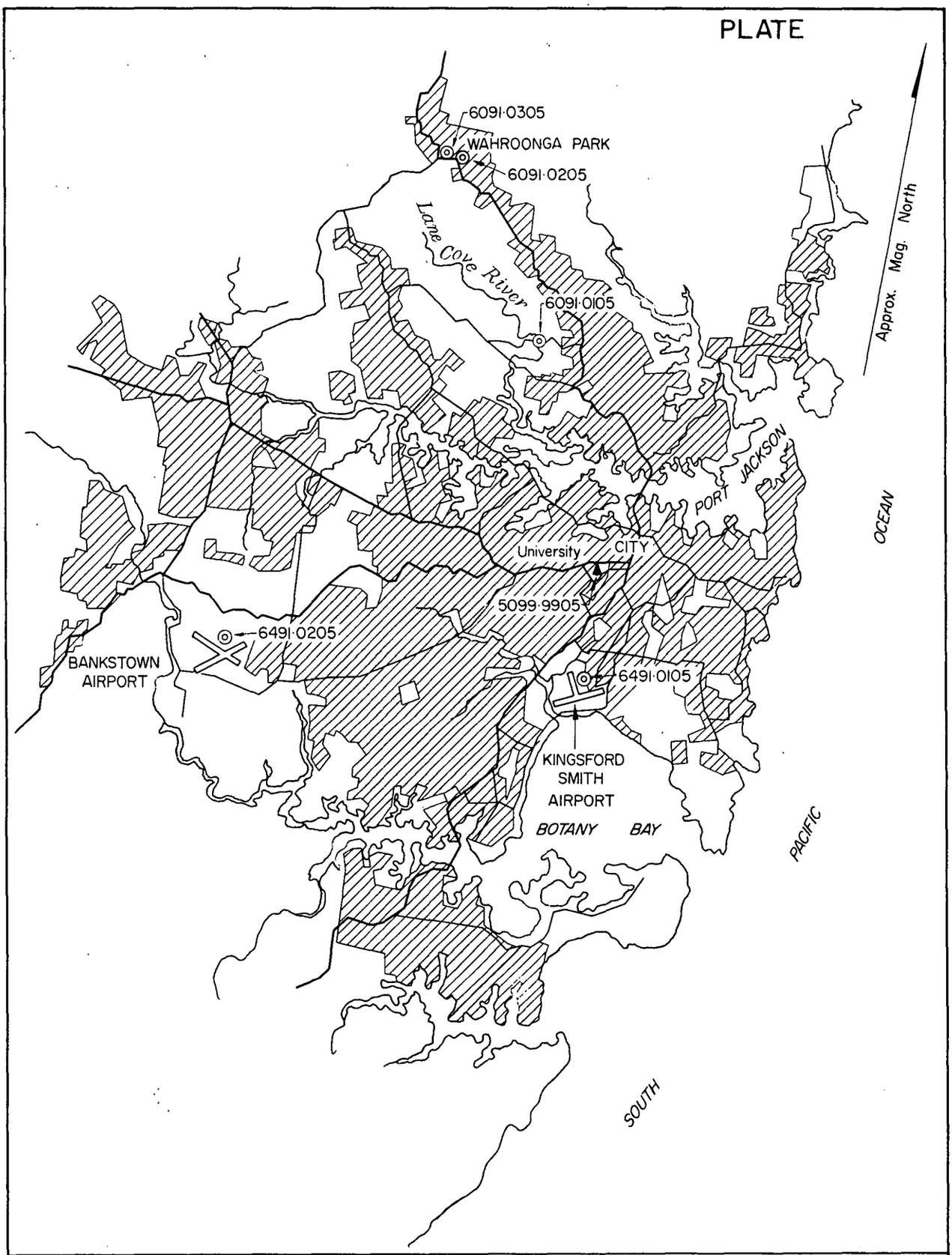
F56/B2-17-3

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE



▲ Primary base
△ Secondary base
◎ Excentre

SYDNEY NSW

156/B2-19-5

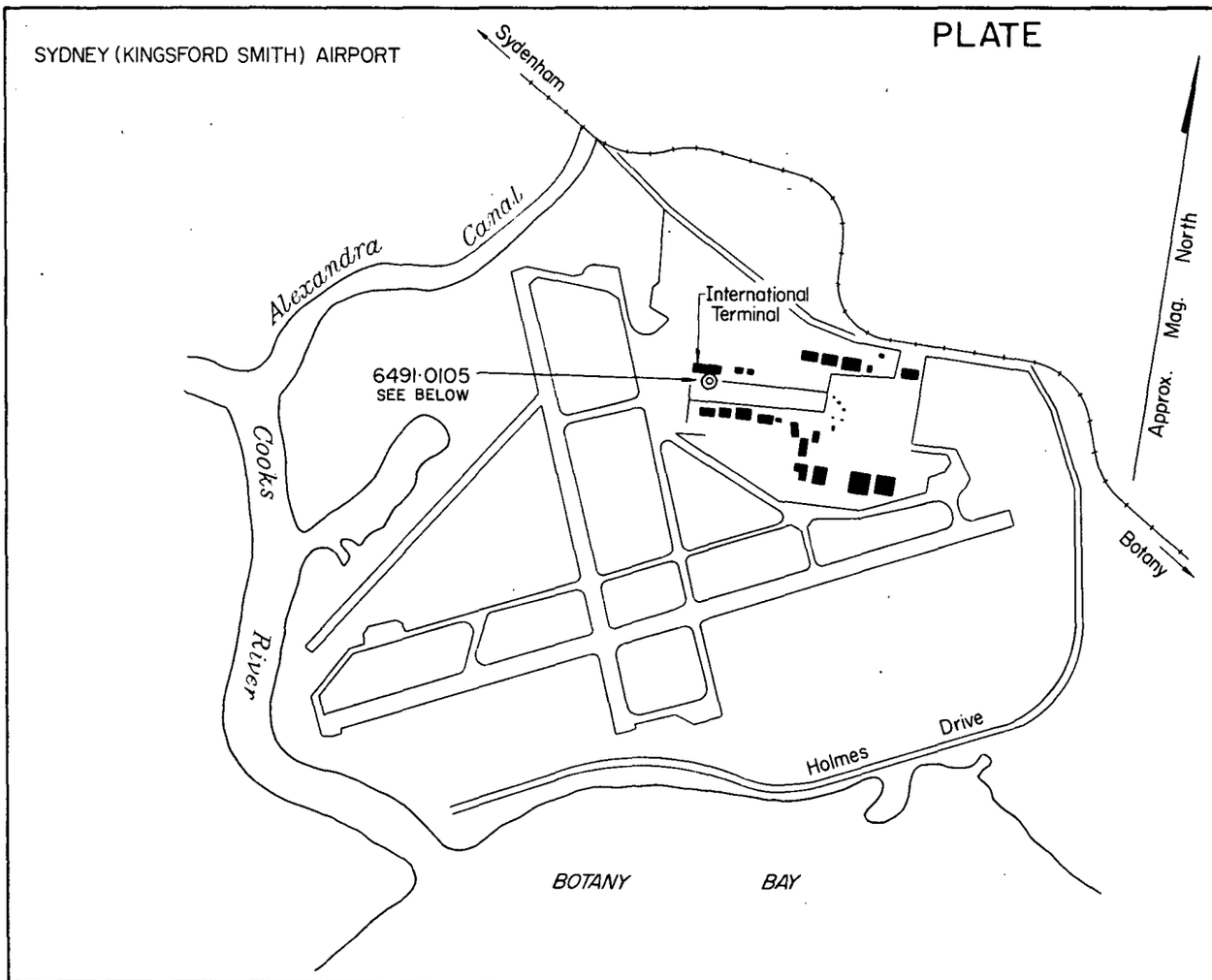
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

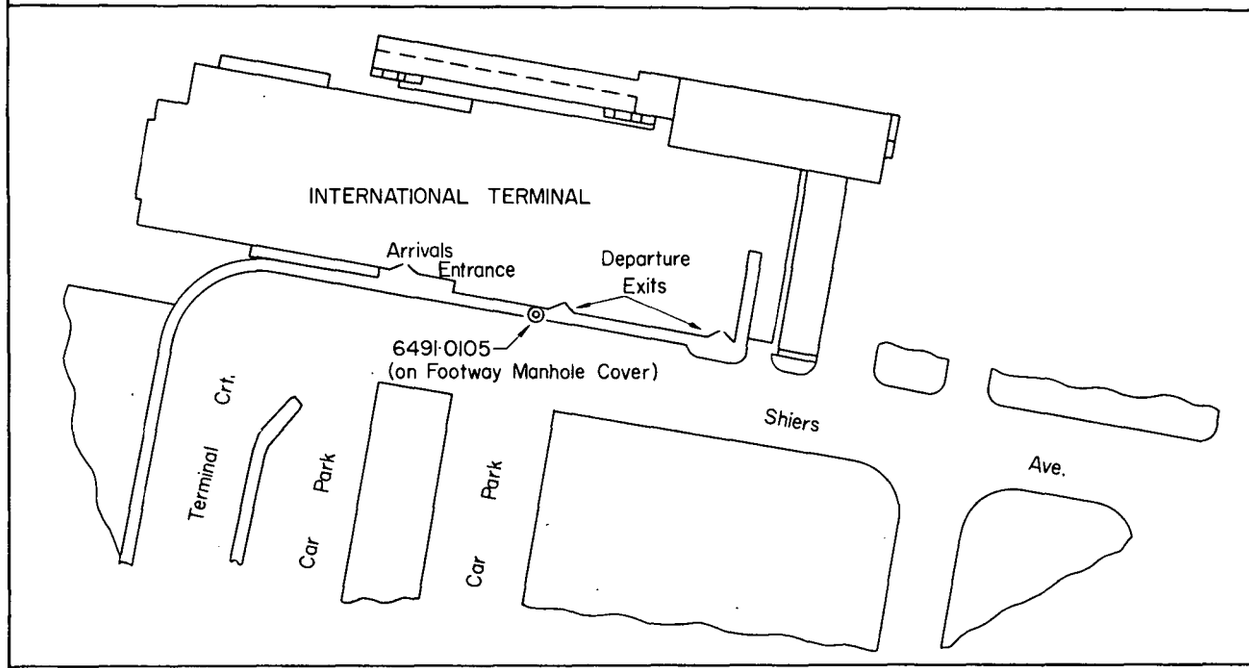
TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE

SYDNEY (KINGSFORD SMITH) AIRPORT





▲ Primary base
△ Secondary base
◎ Excentre

SYDNEY NSW

I56/B2-19-6

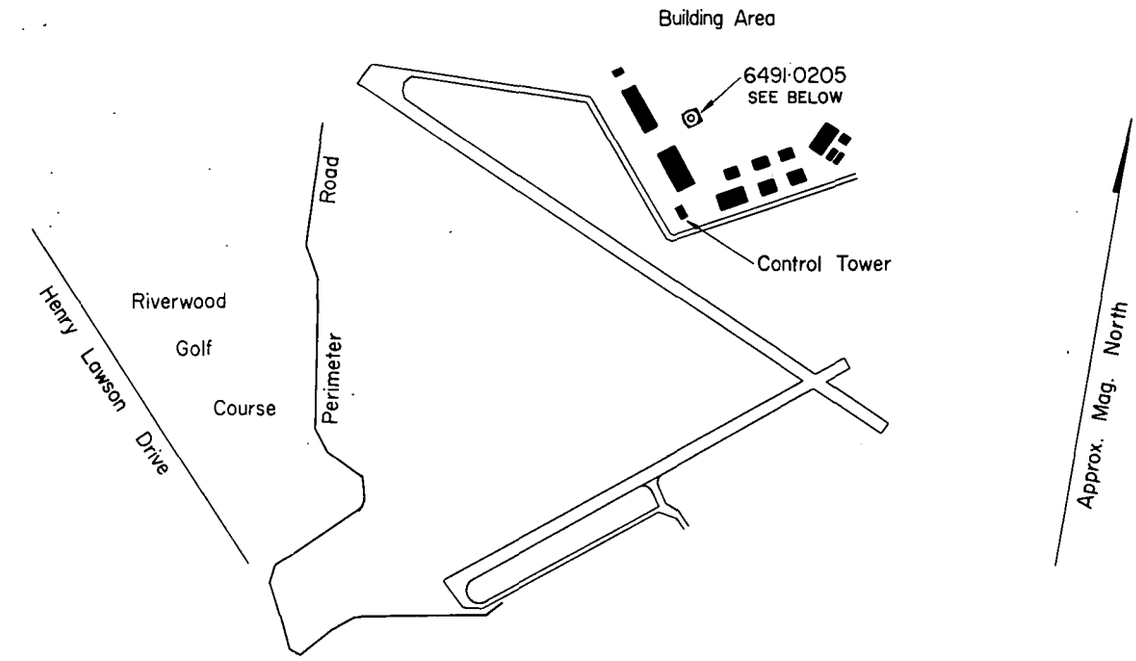
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

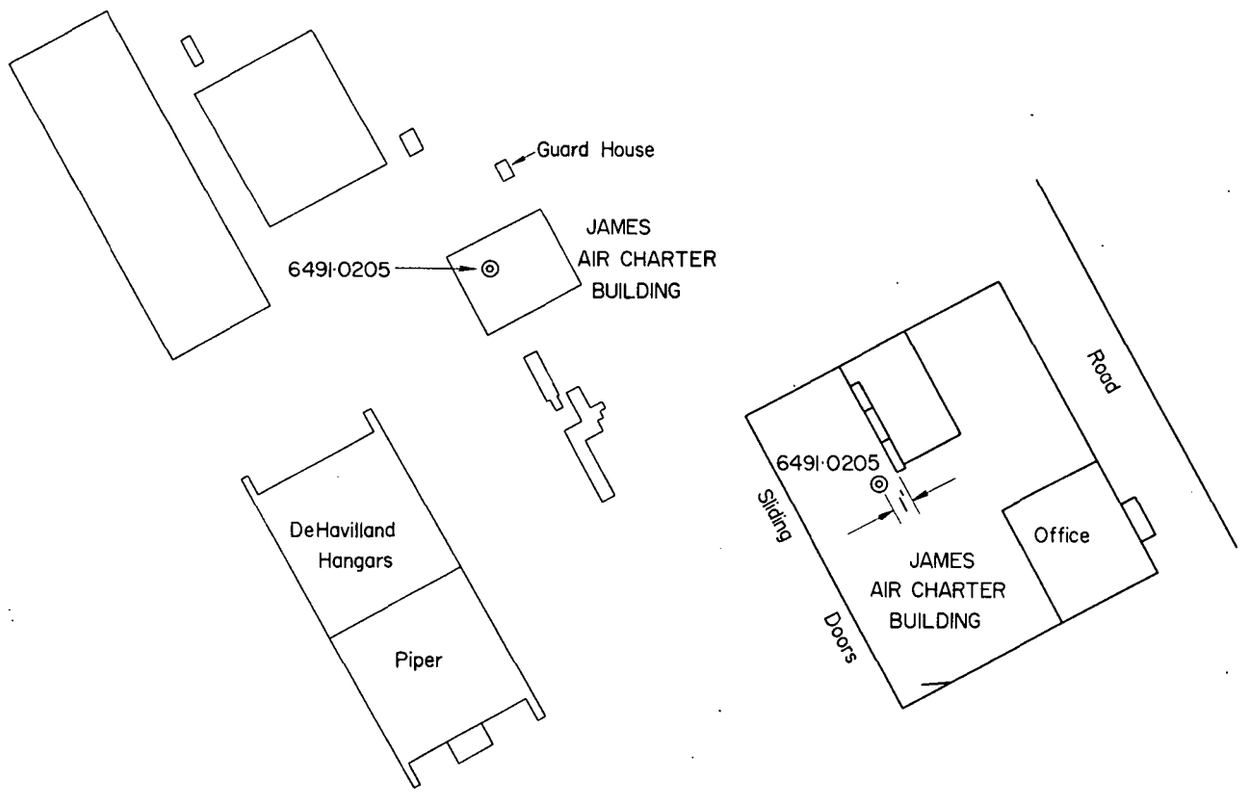
TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE

BANKSTOWN AIRPORT





▲ Primary base
△ Secondary base
◎ Excentre

SYDNEY NSW

I56/B2-19-7

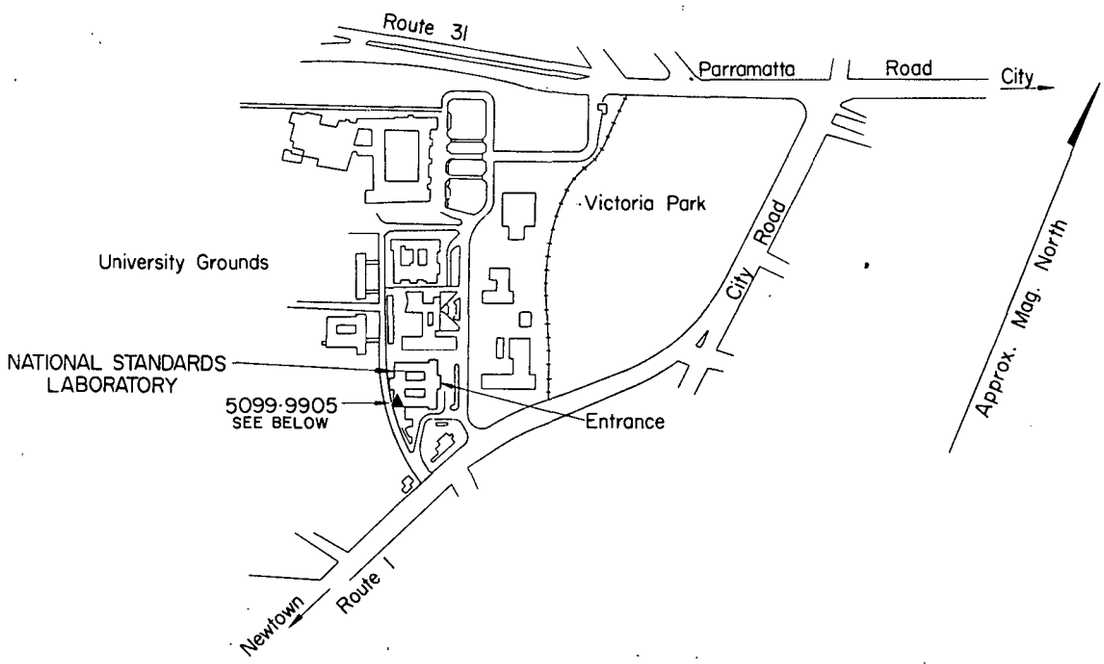
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

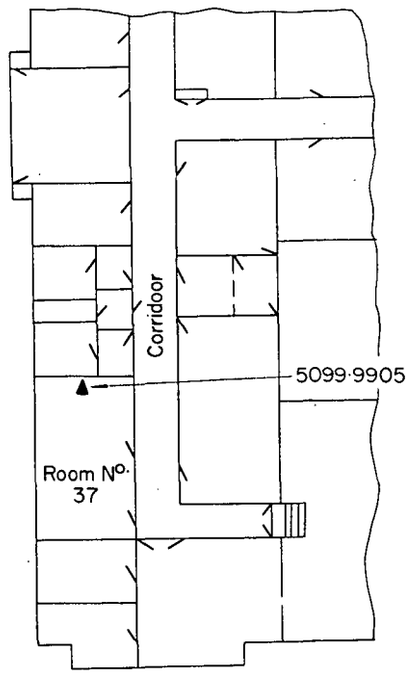
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

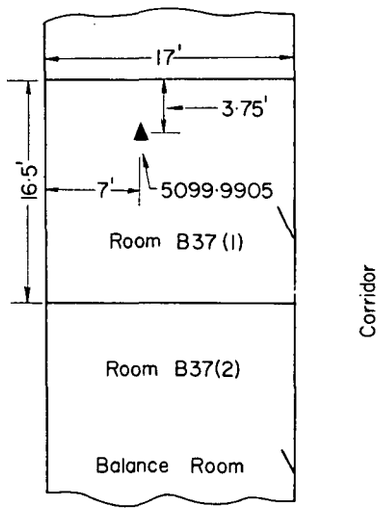
PLATE

SYDNEY UNIVERSITY



PART OF THE BASEMENT
OF
NATIONAL STANDARDS LABORATORY





▲ Primary base
△ Secondary base
◎ Excentre

SYDNEY NSW

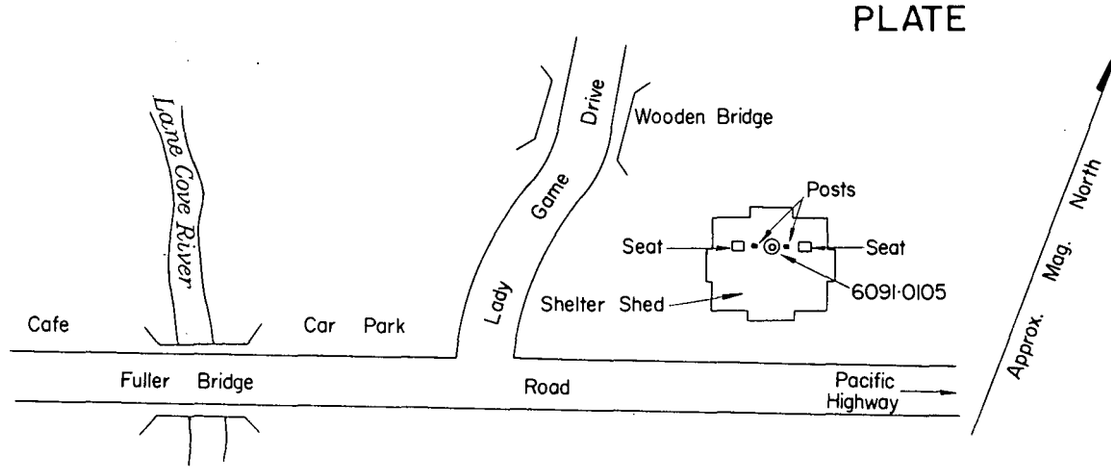
I56/B2-19-8

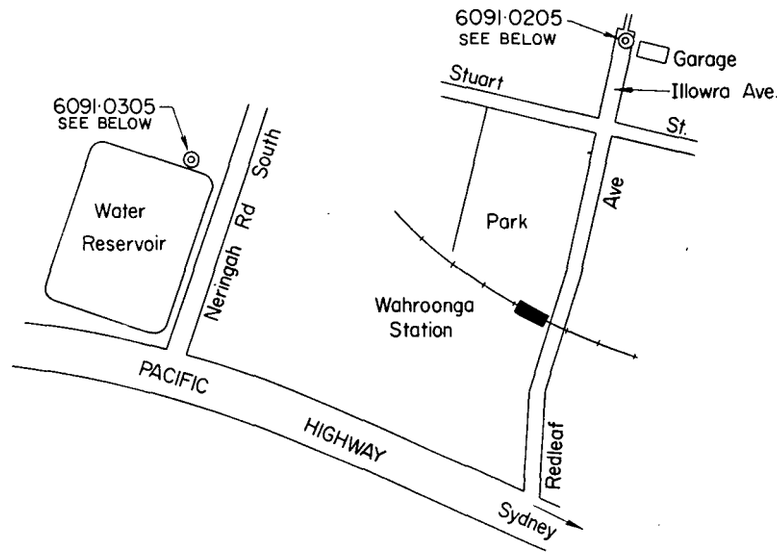
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

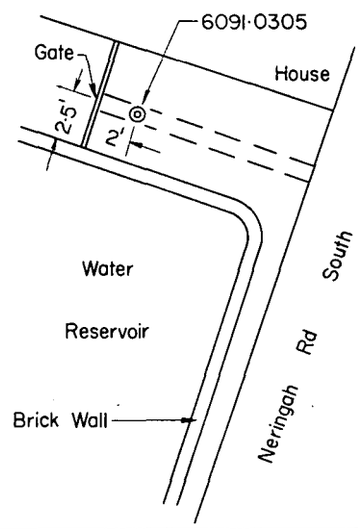
TO ACCOMPANY RECORD No. 1966/160

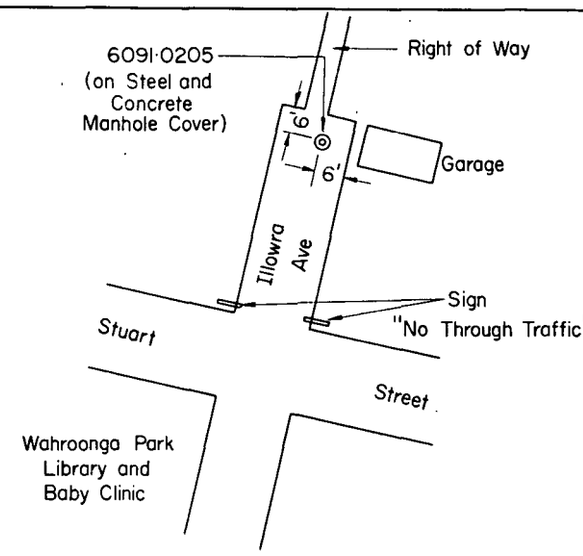
Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE









▲ Primary base
△ Secondary base
◎ Excentre

SYDNEY NSW

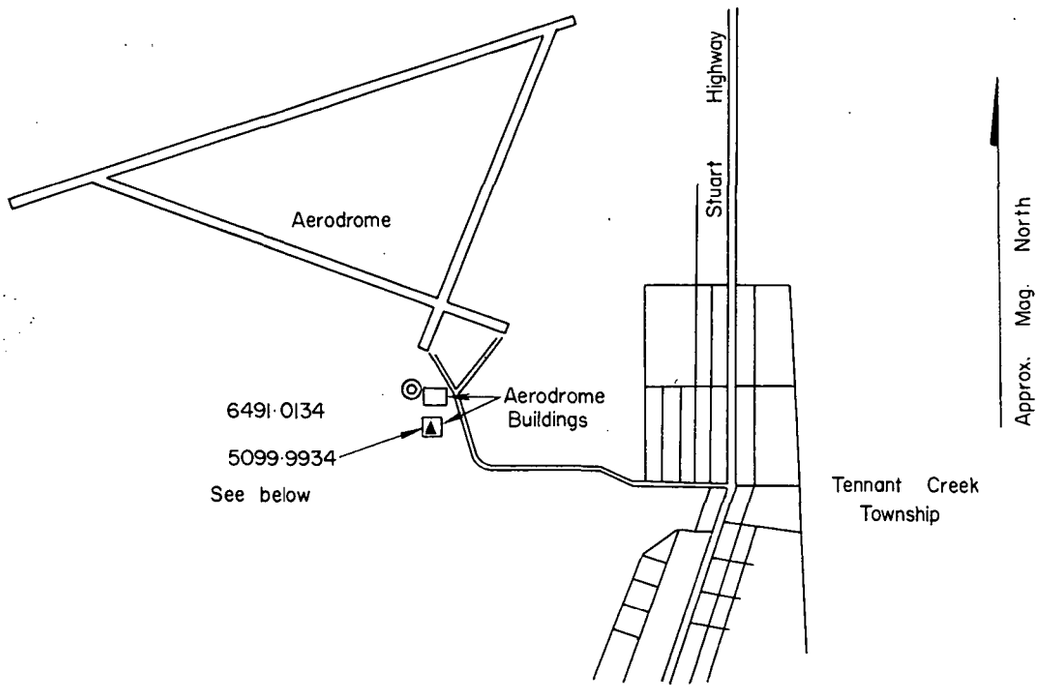
I56/B2-19-9

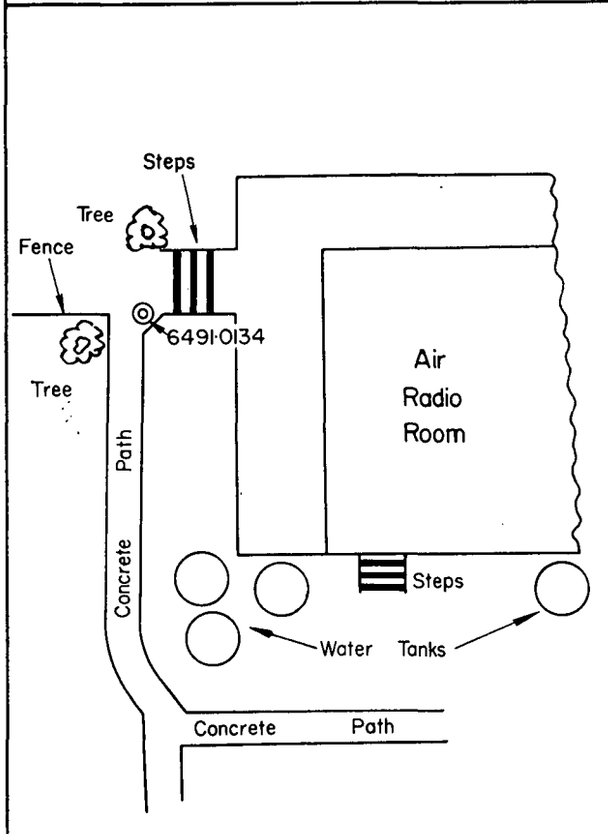
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

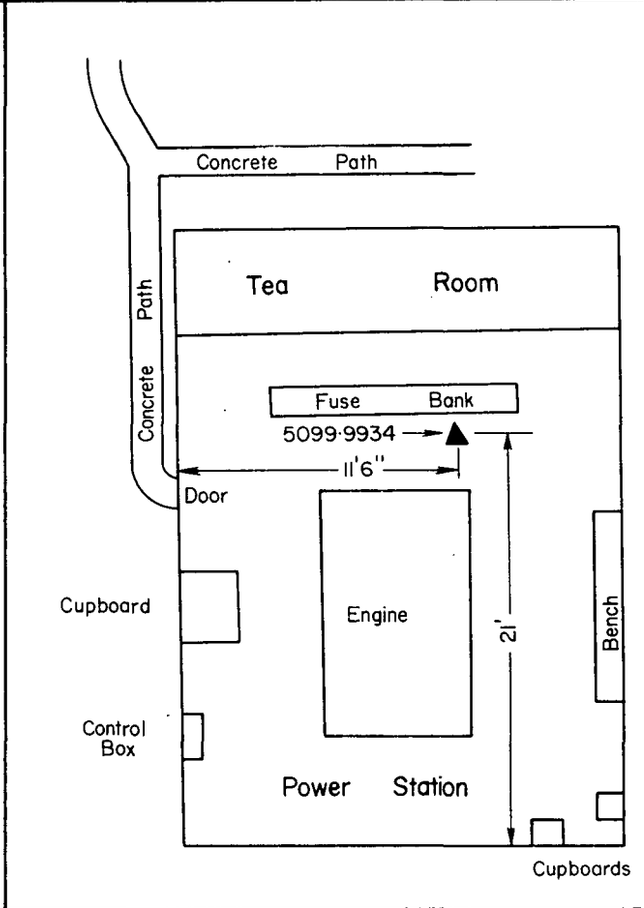
TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE







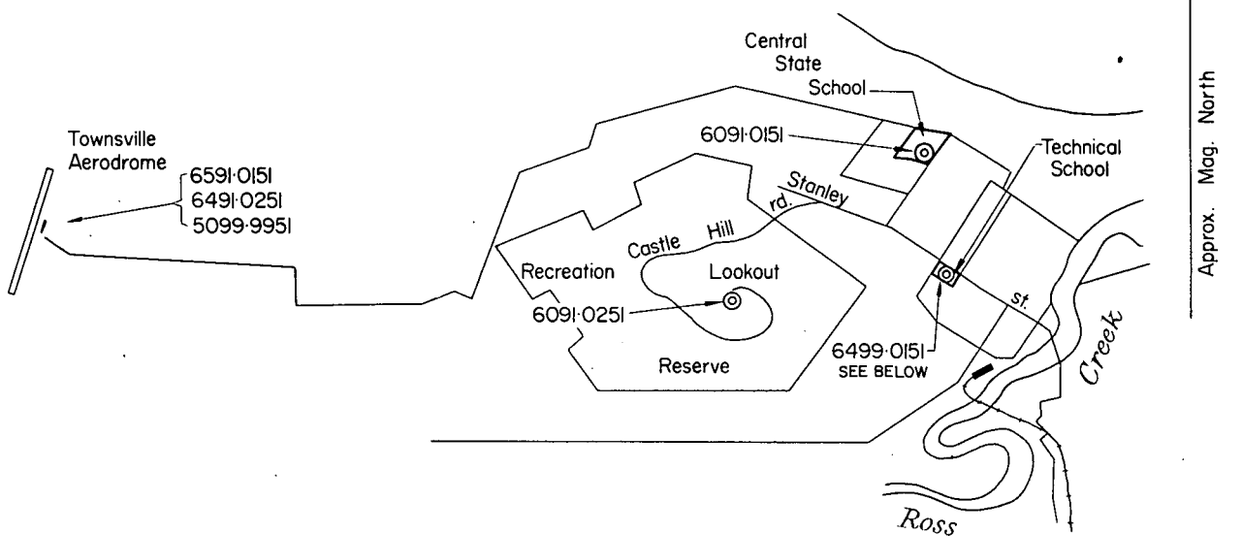
▲ Primary base
△ Secondary base
◎ Excentre

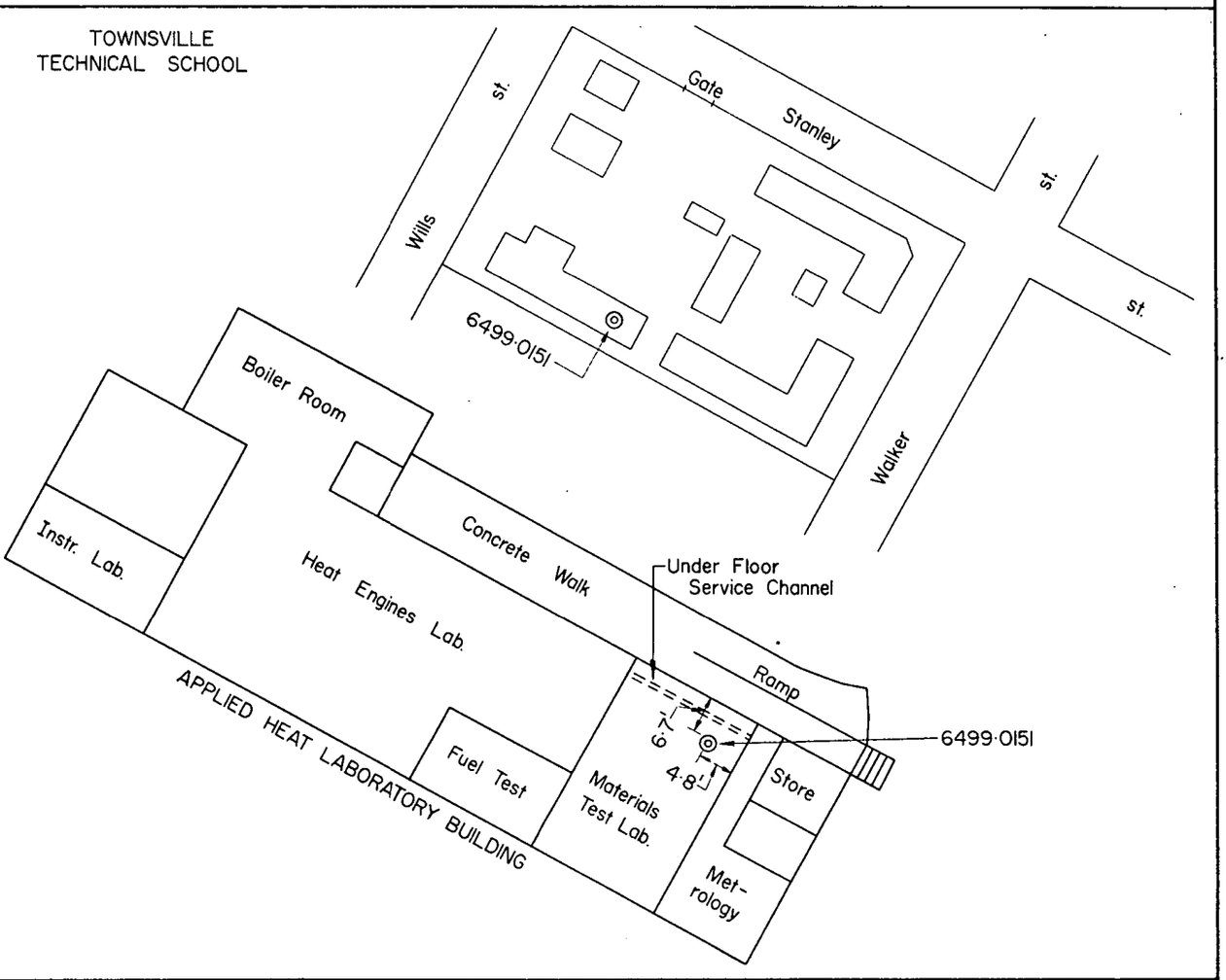
TENNANT CREEK NT

E53/B2-35-1

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

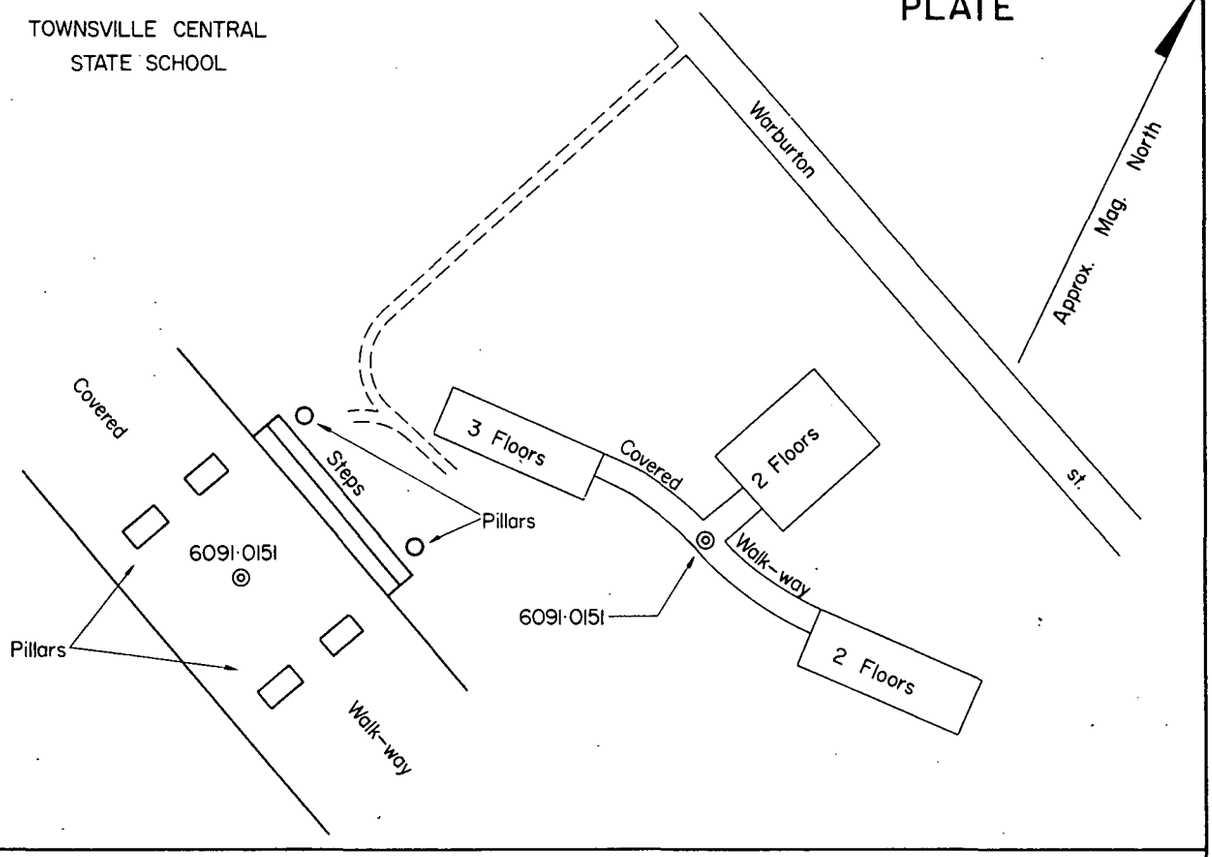
TOWNSVILLE QLD

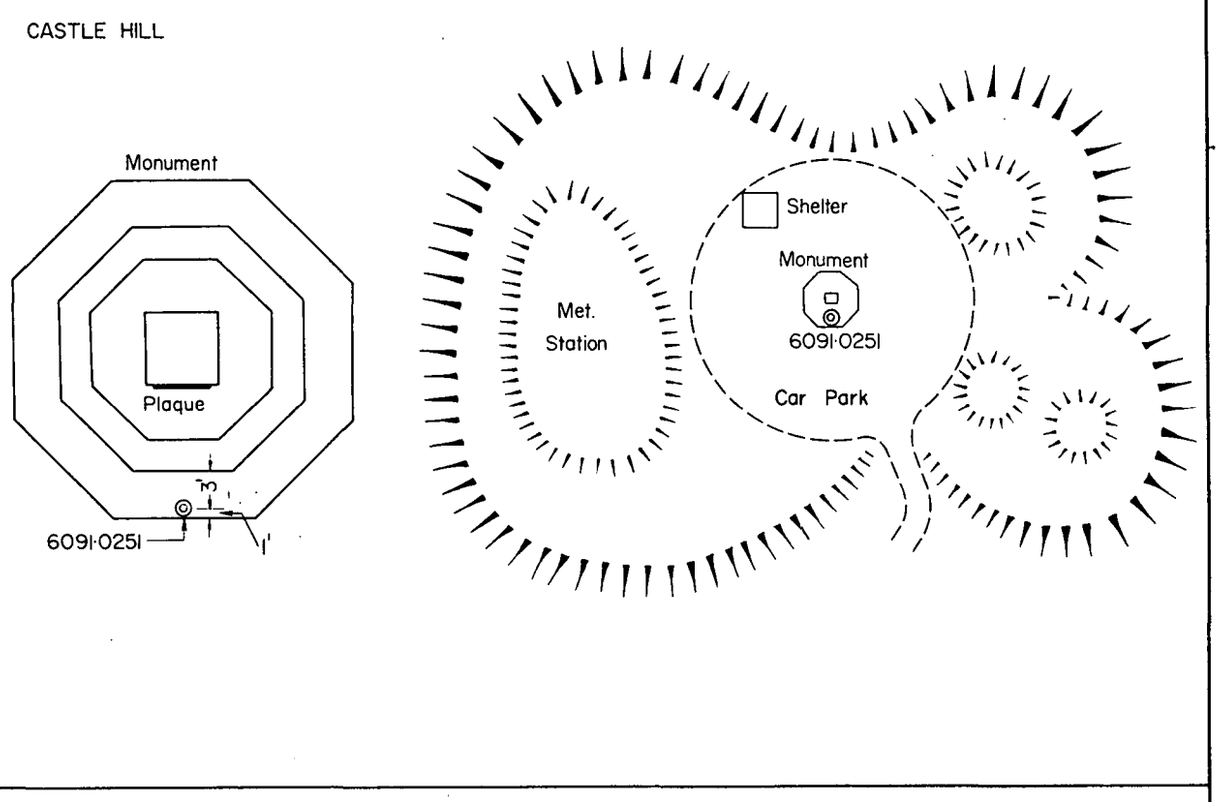
E55/B2-30-4

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

TOWNSVILLE QLD

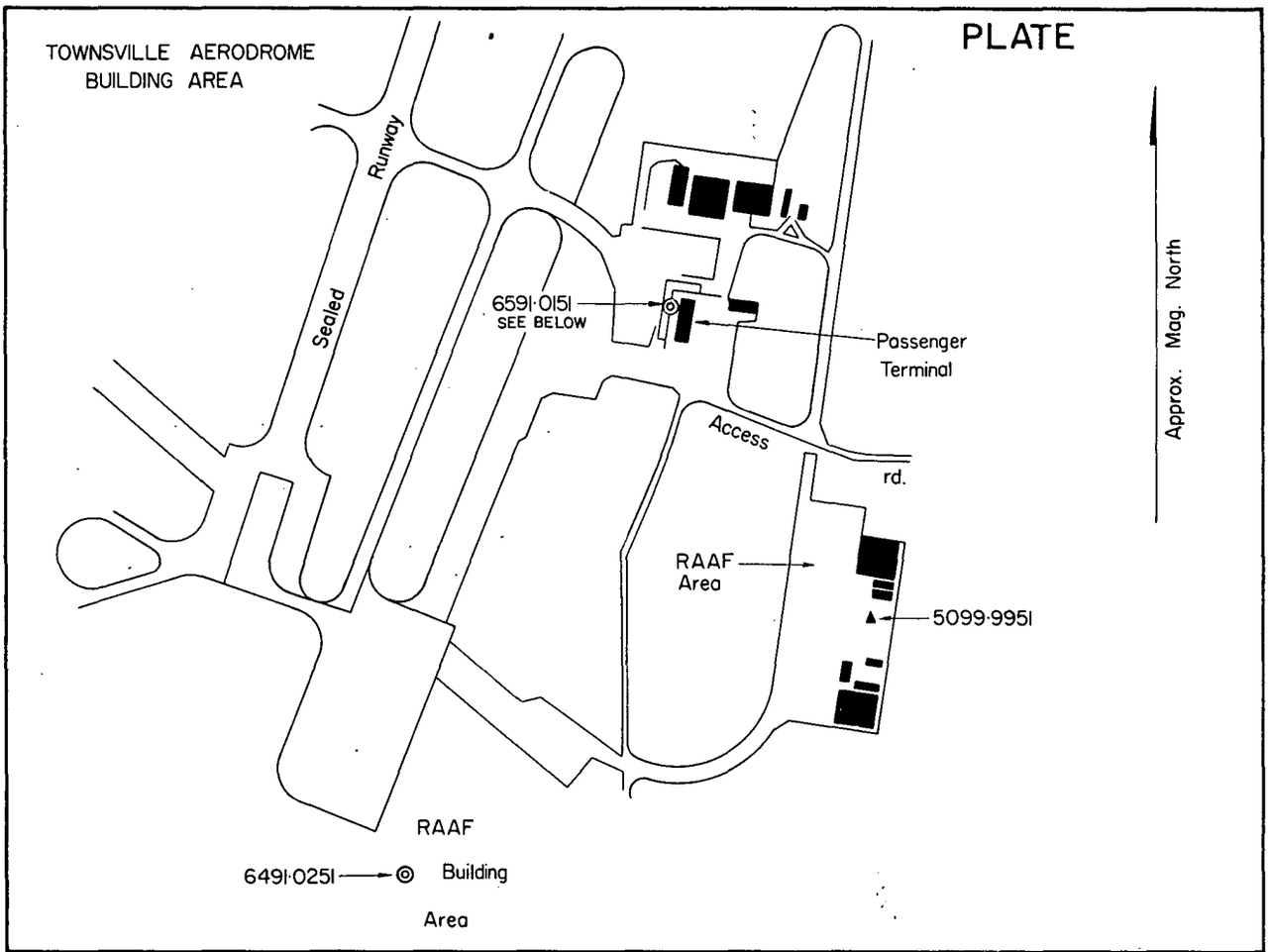
E55/B2-30-5

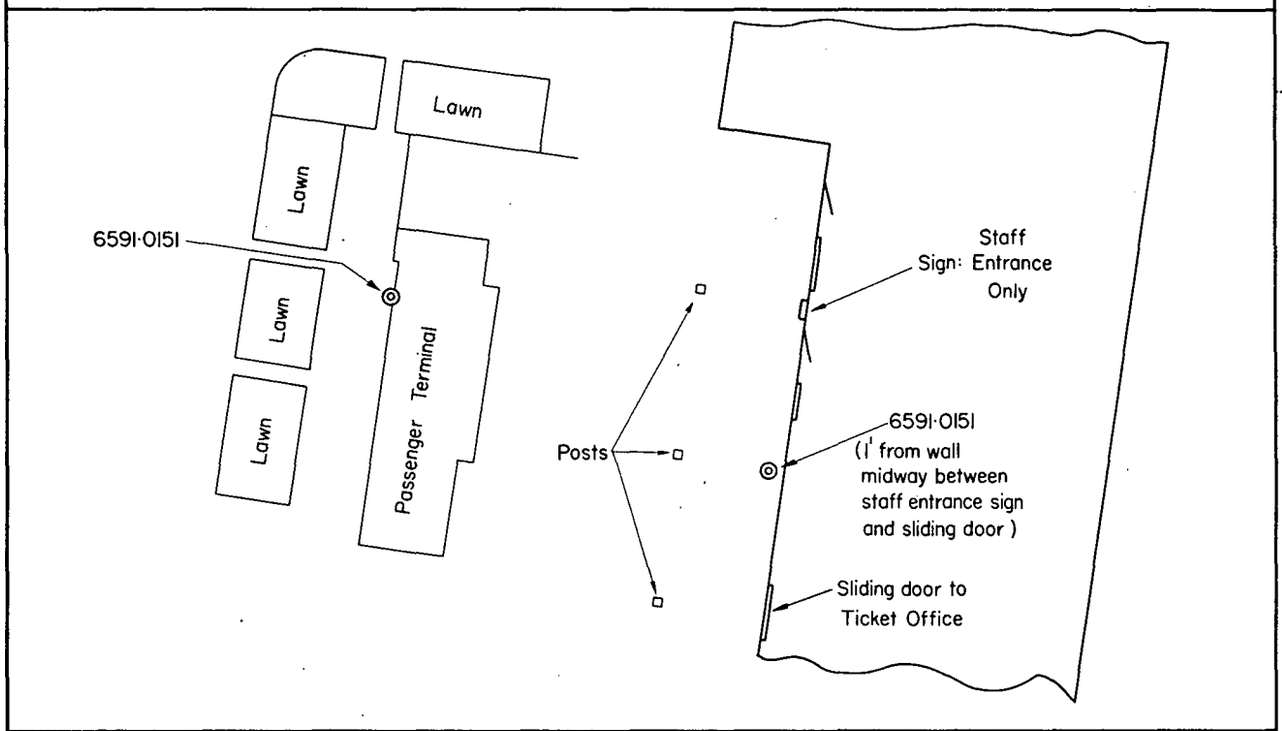
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

TOWNSVILLE QLD

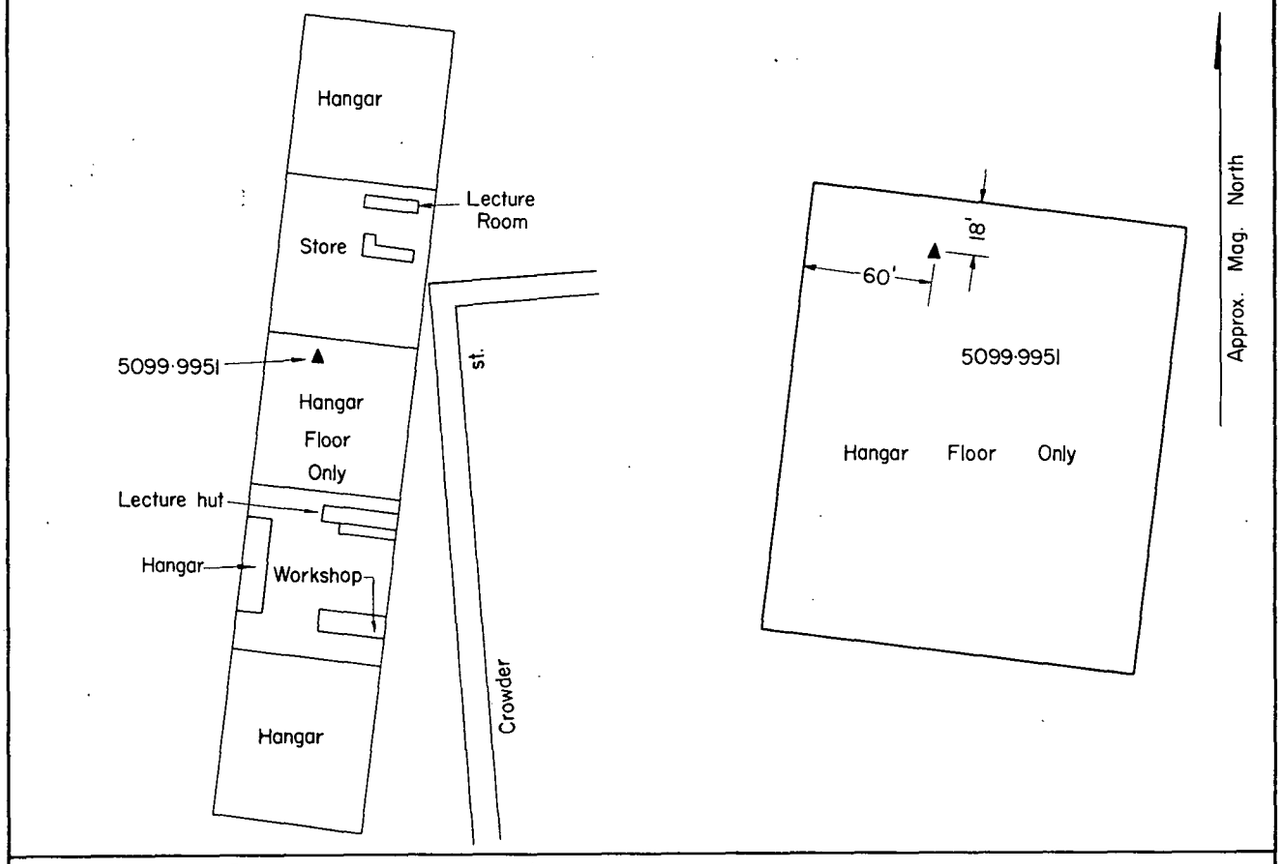
E55/B2-30-6

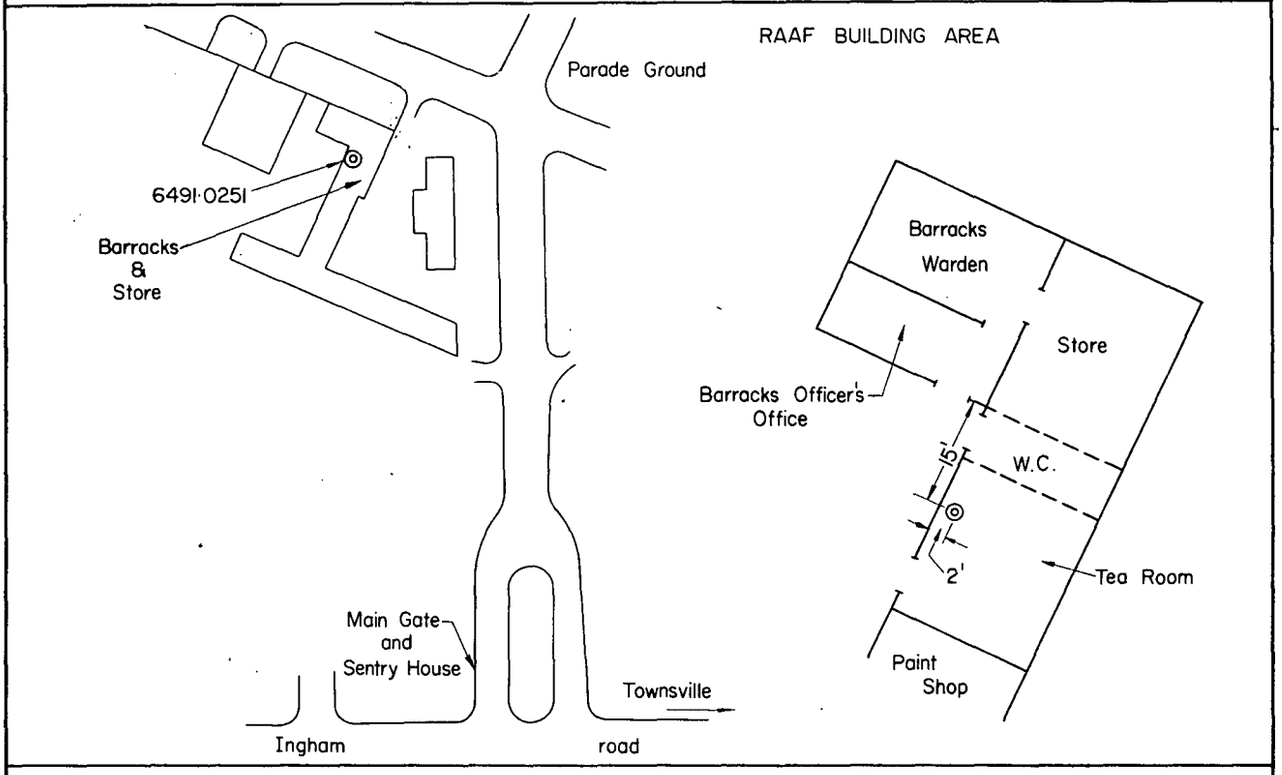
GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

PLATE





▲ Primary base
△ Secondary base
◎ Excentre

TOWNSVILLE QLD

E55/B2-30-7

GRAVITY STATIONS
AUSTRALIAN NATIONAL GRAVITY NETWORK

TO ACCOMPANY RECORD No. 1966/160

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics