related to the establishment of appropriate institutional and organizational set up for the new airport administration. Details of the specific functions of the Progress Monitoring Committee may be determined in consultation with the Minister of MWPC.

9.2 New International Airport Administration

9.2.1 Type of Administration

Judging from the results of financial analysis, it is considered next to unpracticable to expect the New Airport Administration to be a financially self-supporting public corporation. The present recommendation, therefore, envisages the new airport to be administered directly by the competent authorities of the Kingdom's government

9.2.2 Managerial and Operational Organization

Fig. 9.3 shows schematic diagram of a recommended administrative organization that would be necessary to ensure an efficient operation and management of the new airport. Airport Manager will be assisted by two deputy managers, one in charge of technical matters, and the other administrative. The technical deputy shall control the Operation Division and the Maintenance Division, the former consisting of Air Traffic Control, Flight Operations/ Aeronautical Telecommunications, Meteorological Service, Fire-fighting and Rescue Service units. The Maintenance Division will comprise 4 units of Terminal, Airfiled, Electric/ Mechanical, and Radio/Communications maintenance. The administrative deputy shall control the 4 of his division

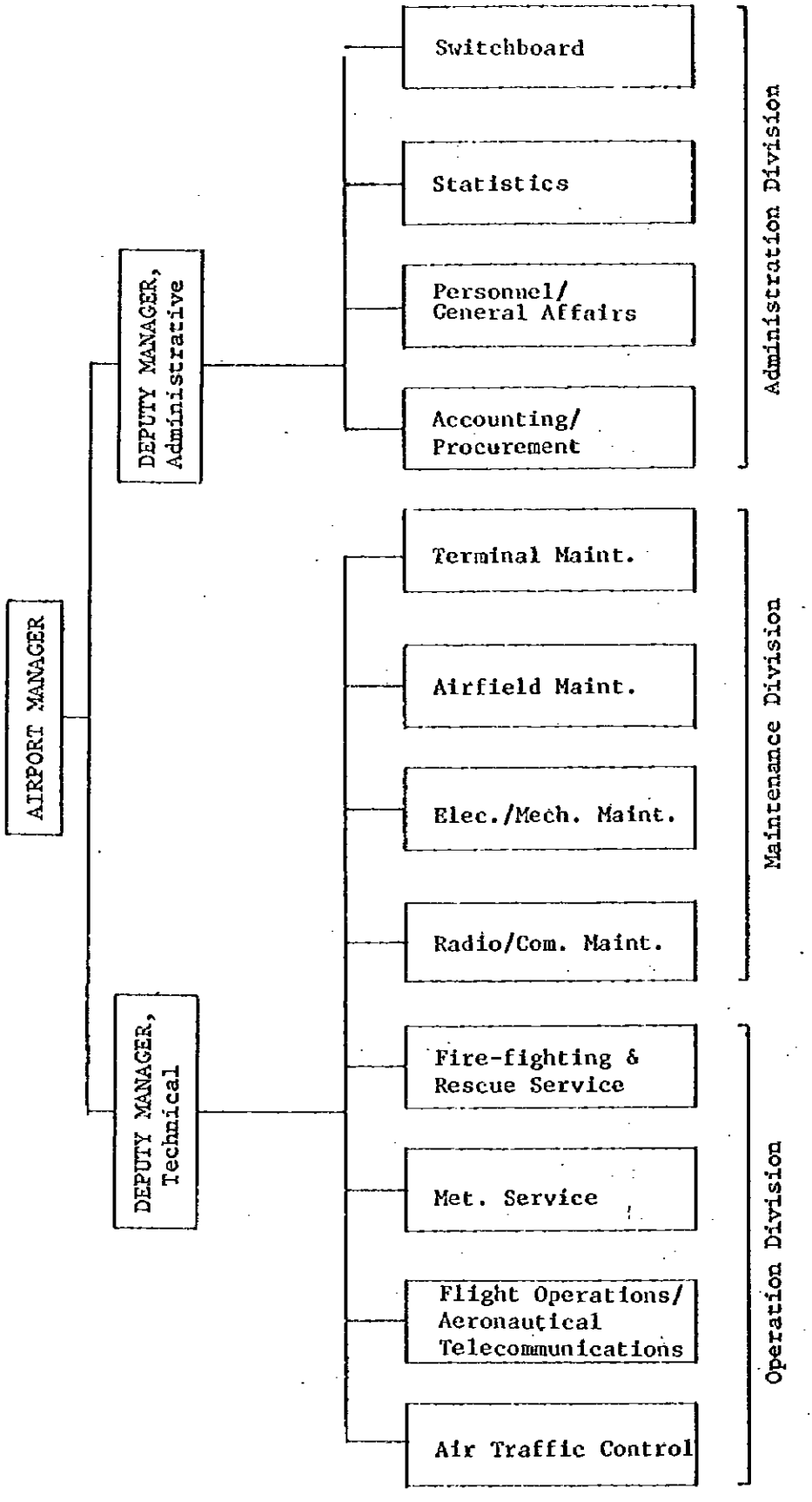


Fig. 9.3 PROPOSED ORGANIZATION CHART FOR NEW INTERNATIONAL AIRPORT

Table 9.1 Recommended Manning of New International Airport Administration

Classification	1985	1996
Airport Manager	1	1
Deputy Airport Manager	2	2
Air Traffic Control	11	15
Flight Operation	6	7
Meteorological Service	6	7
Fire-fighting and Rescue Serice	28	33
Radio/Communications Maintenance	11	15
Electric/Mechanical Maintenance	4	4
Airfield Maintenance	2	2
Terminal Maintenance	2	2
Accounting/Procurement	3	3
Personnel/General Affairs	2	2
Statistics	1	1
Switchboard	3	4
Secretary/Typist	2	2
Miscellaneous	12	15
Total	96	115

units, namely Accounting/Procurement, Personnel, Statistics, and Switchboard.

Functions of each service unit are described hereunder together with the respective manning schedule as summarized in Table 9.1, which is based on the assumption that the new airport will be operated 15 hours a day in Stage I up to and including 1995, and 18 hours a day thereafter, or during Stage II.

1) Air Traffic Control

Since the new airport administration will provide both approach control and aerodrome control, the airport's ATC unit shall comprise one each console of the respective control, plus an additional console for flight data processing. Stage I manning will require 3-shift operations by 3-member teams, or a total staff of 11 men including one each Chief Controller and Training Officer, and Stage II, 4 shifts and 15 men including 1 Chief Controller and 2 Training Officers.

2) Flight Operations/Aeronautical Telecommunications

This unit shall be in charge of receiving and processing flight plans, aeronautical information service, aeronautical fixed service, and control of aircraft movement area. With 2 men on duty at all times, a total of 6 and 7 men is planned for Stage I and Stage II respectively.

3) Meteorological Service

Weather observation and meteorological information service shall be the responsibility of this service unit, to which are assigned 6 and 7 men in Stage I and Stage II respectively.

4) Fire-fighting and Rescue Service

Besides providing the fire-fighting and rescue services in emergency, this unit shall also be responsible for the airport's security at normal times. The total staff will comprise 28 men in Stage I and 33 in Stage II.

5) Radio/Communications Maintenance

This unit shall be responsible for the maintenance of the radio navigational aid facilities of VOR/DME, NDB, etc. as well as the aeronautical fixed and mobile service facilities. A total of 11 men will be assigned in Stage I, and 15 in Stage II.

6) Electric/Mechanical Maintenance

Daily up-keep and light repair of airfield lighting, power distribution, air-conditioning and other utilities of the airport shall be the primary responsibility of this unit, which will comprise a staff of 4 men throughout the two stages of the Project. Major repair work shall be made on separate contract basis.

7) Airfield Maintenance

A staff of only 2 engineers assigned to this unit shall see to it that the airfield facilities of runway, taxiway, apron, runway strip, etc. as well as the sewerage and water supply facilities of the airport are kept in good condition at all times. Actual work of maintenance and repair shall be done all on separate contract basis regardless of the nature and quantity of the work involved.

8) Terminal Maintenance

Terminal Maintenance unit shall also comprise a permanent staff of only 2 men throughout the entire Project period, and shall be responsible for maintaining the terminal and other buildings of the airport by procuring and supervising the necessary services to be provided under separate contract basis.

9) Accounting/Procurement

A staff of 3 men both in Stages I and II shall be responsible for book-keeping and procurement of all goods and materials necessary for the administration, operation and maintenance of the airport.

10) Statistics

One statistician in both stages shall be assigned to cope with all statistical requirements of the airport administration.

11) Personnel/General Affairs

A 2 men staff shall be in charge of the personnel and general affairs of the entire airport employees in both Stage I and Stage II. In addition, there shall be a provision for 2 secretary/typists for both stages, and 12 and 15' miscellaneous workers for Stage I and II assigned for such odd jobs as cleaning and messenger services, etc.

12) Switchboard shall require 3 operators in Stage I and 4 in Stage II.

9.2.3 Training of New International Airport Administration Personnel

The present Matsapa Airport has 25 technical staff members and 28 more are scheduled to be trained by 1981 under the UNDP training program. As the present Matsapa Airport is planned to be a general aviation airport after completion of the new airport, approximately 43 trained technical personnel are expected to be transferred to the new airport. This, however, would still leave a shortage of 27, since the new airport will require at least 70 technical personnel to satisfy the Stage I operational requirements. It is, therefore, strongly recommended that an appropriate training program be implemented for the 27 additional technical personnel, which should be completed at least 6 months prior to the inauguration of the new airport scheduled for January 1985, so that the newly trained will be ready to participate in the familiarization program together with the rest of the airport personnel.

APPENDIX

SCOPE OF WORK
ON
THE FEASIBILITY STUDY
FOR
THE NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
IN
THE KINGDOM OF SWAZILAND

AGREED

BETWEEN

THE GOVERNMENT OF THE KINGDOM OF SWAZILAND

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

( )

The Government of the
Kingdom of Swaziland.

(TAKAO HIROTA)
Director of
Social Development Cooperation
Department, Japan International
Cooperation Agency. (JICA)

I. INTRODUCTION

In response to a request of the Government of the Kingdom of Swaziland, the Government of Japan has decided to conduct a feasibility study for the New International Airport construction project in accordance with laws and regulations in force in Japan, and the Japan International Cooperation Agency (hereinafter referred to as JICA), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will carry out the study.

The present document sets forth the scope of work in regard to the above-mentioned study which is to be carried out in close cooperation with the Government of the Kingdom of Swaziland and the authorities concerned.

II. OBJECTIVE OF THE STUDY

The objective of this study is to examine the technical and economic feasibility of the New International Airport construction project so as to contribute to optimum planning of the project.

III. OUTLINE OF THE STUDY

This feasibility study will consist of the followings:

1) Air transport demand forecasts
2) Facility requirement analysis
3) Site selection
4) Airport layout plan
5) Facility planning
6) Air navigation planning
7) Construction schedule and cost estimate
8) Economic analysis
9) Financial analysis

IV. REPORTS

JICA will prepare and submit the following reports in the course of the study. All documents are written in English and with metric system.

1)	Inception Report	20 copies
2)	Progress Report (1)	20 copies
3)	Progress Report (2)	20 copies
4)	Draft Final Report	20 copies
5)	Final Report	50 copies

V. UNDERTAKING OF THE GOVERNMENT OF THE KINGDOM OF SWAZILAND

1) To provide the study team with all available data and information necessary for the study, including soil boring information, access to topographical maps and aerial photographs; and to give the study team free access to such sources of information as may be necessary for the proper execution of the study.
2) To ensure that such research documents can be taken out of the country.
3) To exempt the taxes and duties on the materials required for the study and personal effects which the study team will bring into the Kingdom of Swaziland.
4) To assign the counterpart officials for the study team.
5) To provide suitable office space for the team.
6) To provide the study team with the necessary means and equipment for their activities in the country.

VI. TIME SCHEDULE

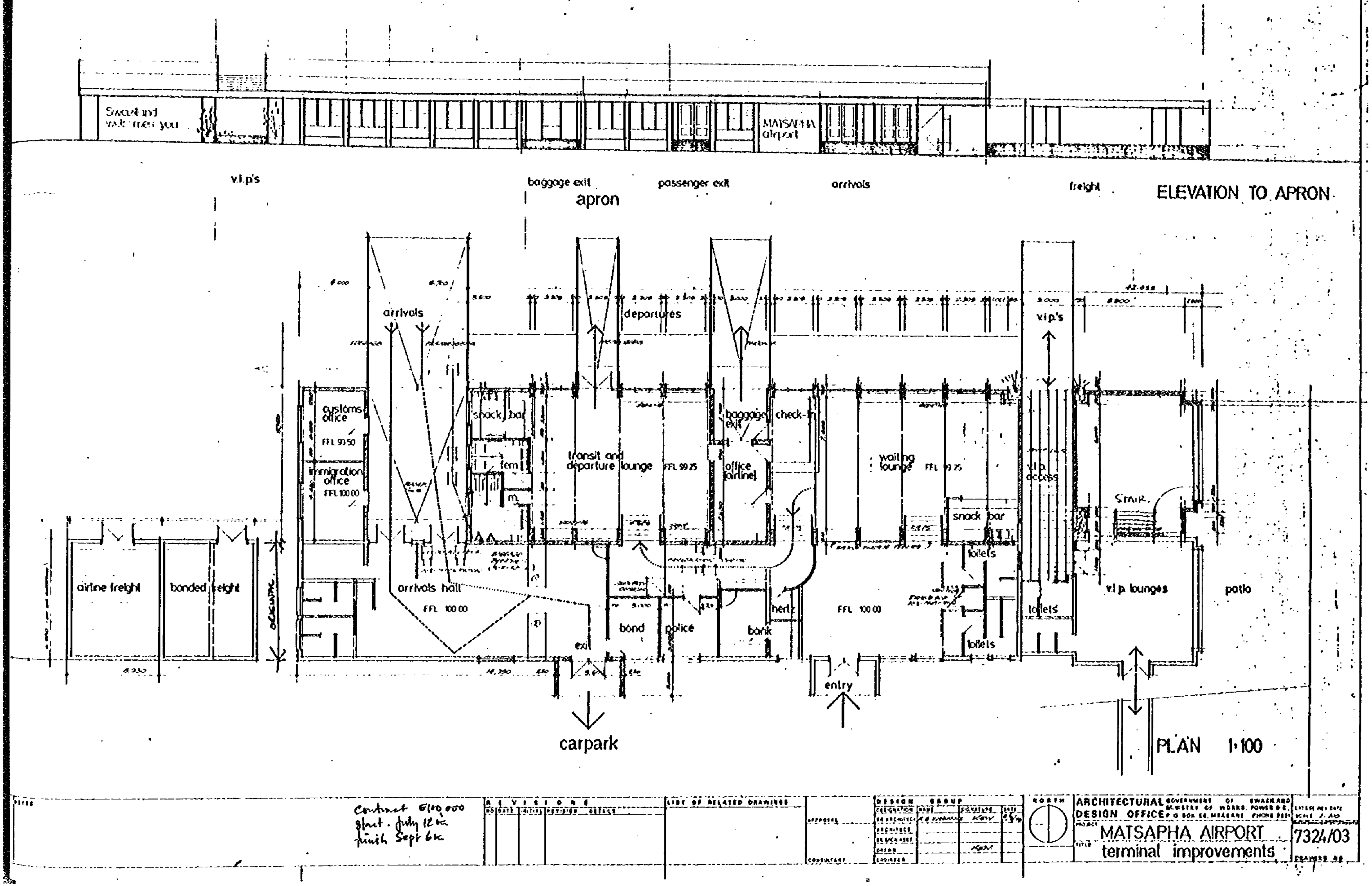
JICA will conduct the study on the following schedule.

This time schedule, however, is subject to change according to circumstances.

Appendix 1A-4

Month	1	2	3	4	5	6	7
Field Survey	═══	═══					
Analysis		═══	═══	═══	═══		
Inception Report	o						
Progress Report (1)		o					
Progress Report (2)			o				
Draft Final Report					o		
Final Report						o	

Appendix 2A

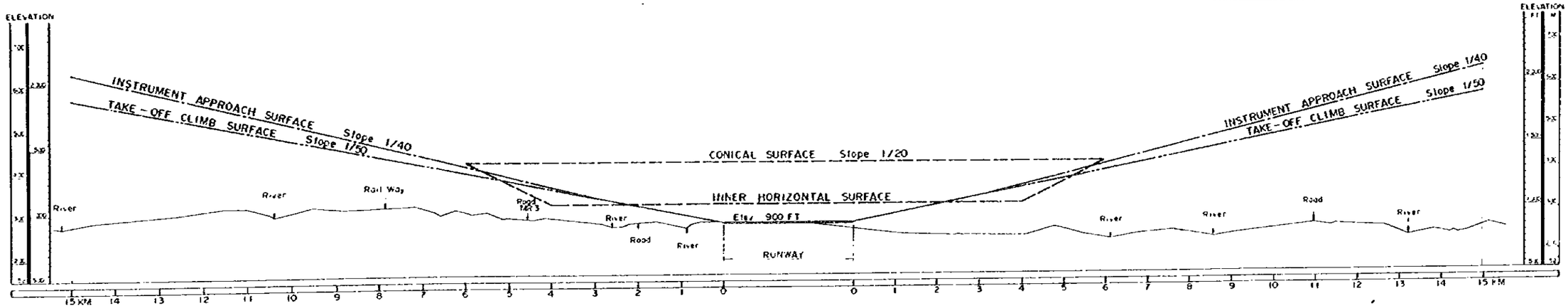

Swaziland welcomes you
MATSAPHA airport
v.i.p's
baggage exit
apron
passenger exit
arrivals
freight
ELEVATION TO APRON
arrivals
departures
v.i.p's
customs office
immigration office
snack bar
transit and departure lounge
baggage exit
check-in
office (airline)
waiting lounge
v.i.p. access
snack bar
toilets
airline freight
bonded freight
arrivals hall
bond
police
bank
hertz
toilets
toilets
v.i.p. lounges
patio
exit
entry
carpark
PLAN 1:100
Contract E160 000
start. July 12th
finish Sept 6th
ARCHITECTURAL DESIGN OFFICE
MATSAPHA AIRPORT
terminal improvements
7324/03

Appendix 3A – 1

PLAN

SCALE

0 1000 2000 3000 4000 5000m



PROFILE OF OBSTRUCTION LIMITATION AREA

NOTES

1) INSTRUMENT RUNWAY
2) ICAO OBSTRUCTION RESTRICTION
3) RUNWAY LENGTH 3,000m
4) RUNWAY ORIENTATION 180°-360°
5) AIRPORT ELEVATION 300FT

○ - TOPOGRAPHICALLY OBSTRUCTED AREA

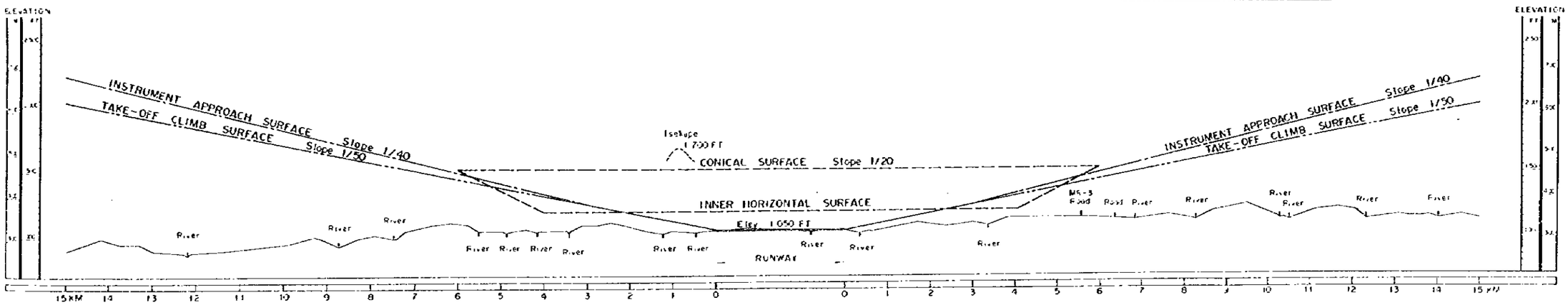
OBSTRUCTION CHART

MPAKA SITE

PLAN

SCALE

0 1000 2000 3000 4000 5000m



PROFILE OF OBSTRUCTION LIMITATION AREA

NOTES

1) INSTRUMENT RUNWAY
2) ICAO OBSTRUCTION RESTRICTION
3) RUNWAY LENGTH 3,600m
4) RUNWAY ORIENTATION 4° - 184°
5) AIRPORT ELEVATION 1,050FT

▨ - TOPOGRAPHICALLY OBSTRUCTED AREA

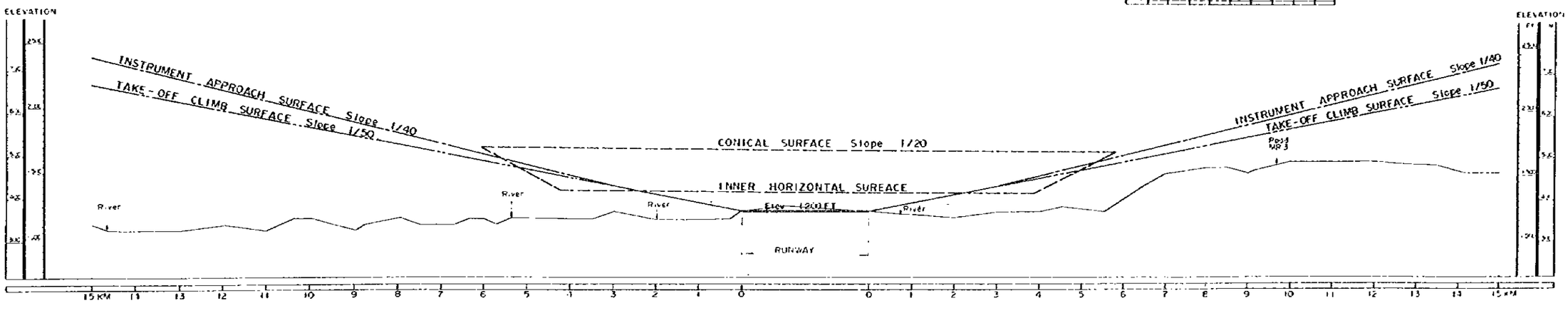
OBSTRUCTION CHART

SIKUPE SITE

PLAN

SCALE

0 1000 2000 3000 4000 5000m



PROFILE OF OBSTRUCTION LIMITATION AREA

NOTES

1) INSTRUMENT RUNWAY
2) ICAO OBSTRUCTION RESTRICTION
3) RUNWAY LENGTH 3,000m
4) RUNWAY ORIENTATION 30°-210°
5) AIRPORT ELEVATION 1,200FT

⊘ - TOPOGRAPHICALLY OBSTRUCTED AREA

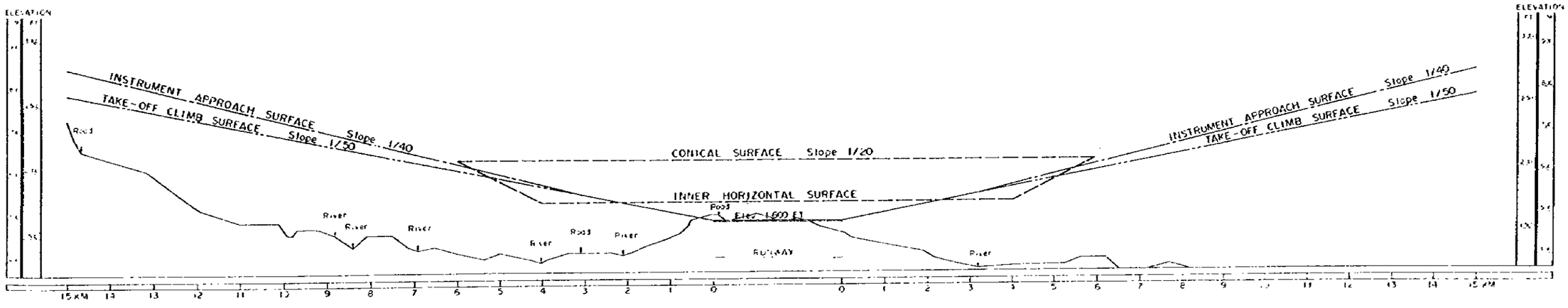
OBSTRUCTION CHART

MPISI SITE

PLAN

SCALE

0 1000 2000 3000 4000 5000m



PROFILE OF OBSTRUCTION LIMITATION AREA

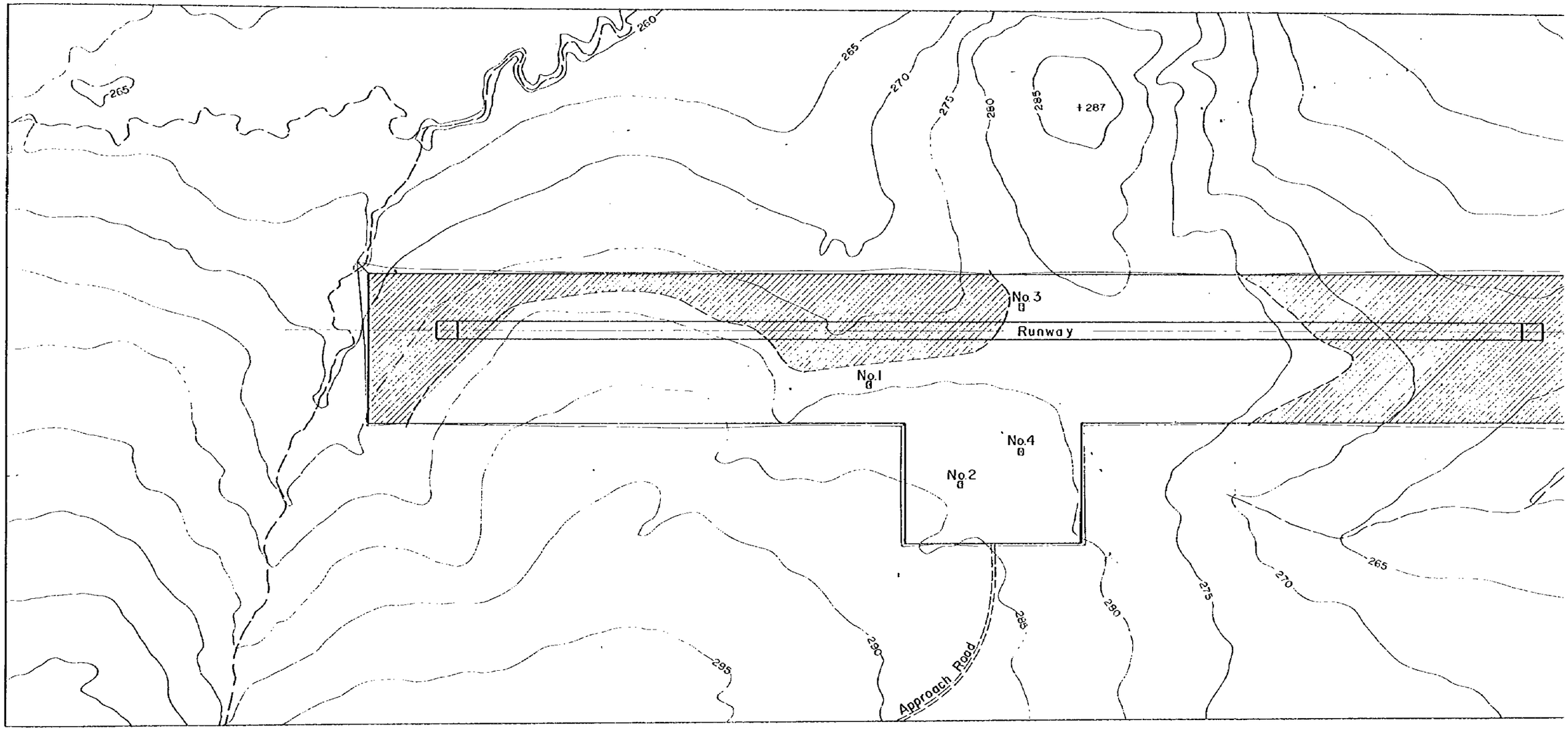
NOTES

1) INSTRUMENT RUNWAY
2) ICAO OBSTRUCTION RESTRICTION
3) RUNWAY LENGTH 3,000m
4) RUNWAY ORIENTATION 194°-[illegible]
5) AIRPORT ELEVATION [illegible] FT

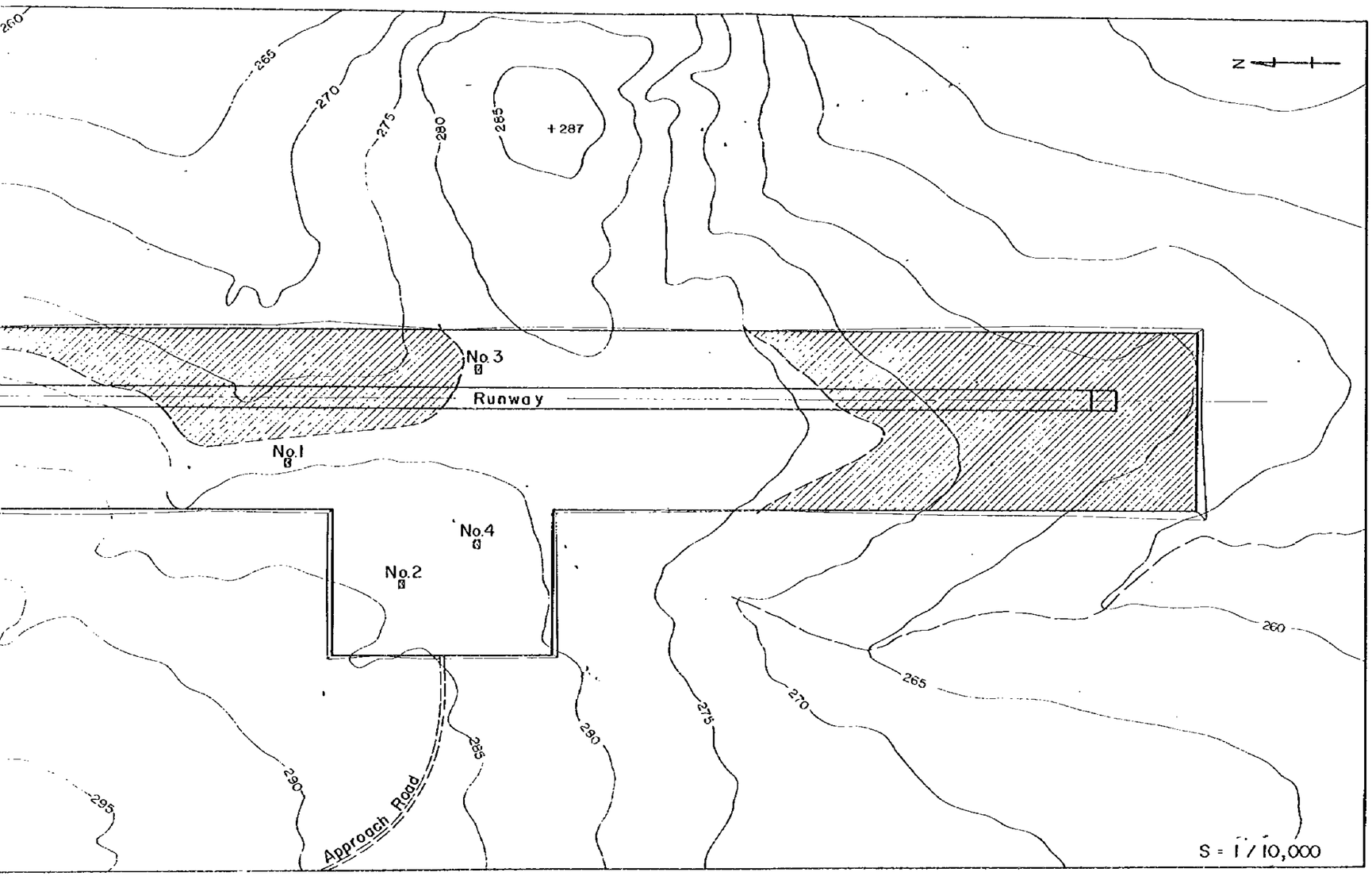
⊘ - TOPOGRAPHICALLY OBSTRUCTED AREA

OBSTRUCTION CHART

MOGOBI SITE


260
265
270
275
280
285
+287
No.3
Runway
No.1
No.4
No.2
290
295
Approach Road
LEGEND
Cut Area
Embankment Area
Trial Pit

GRAD
MPAK

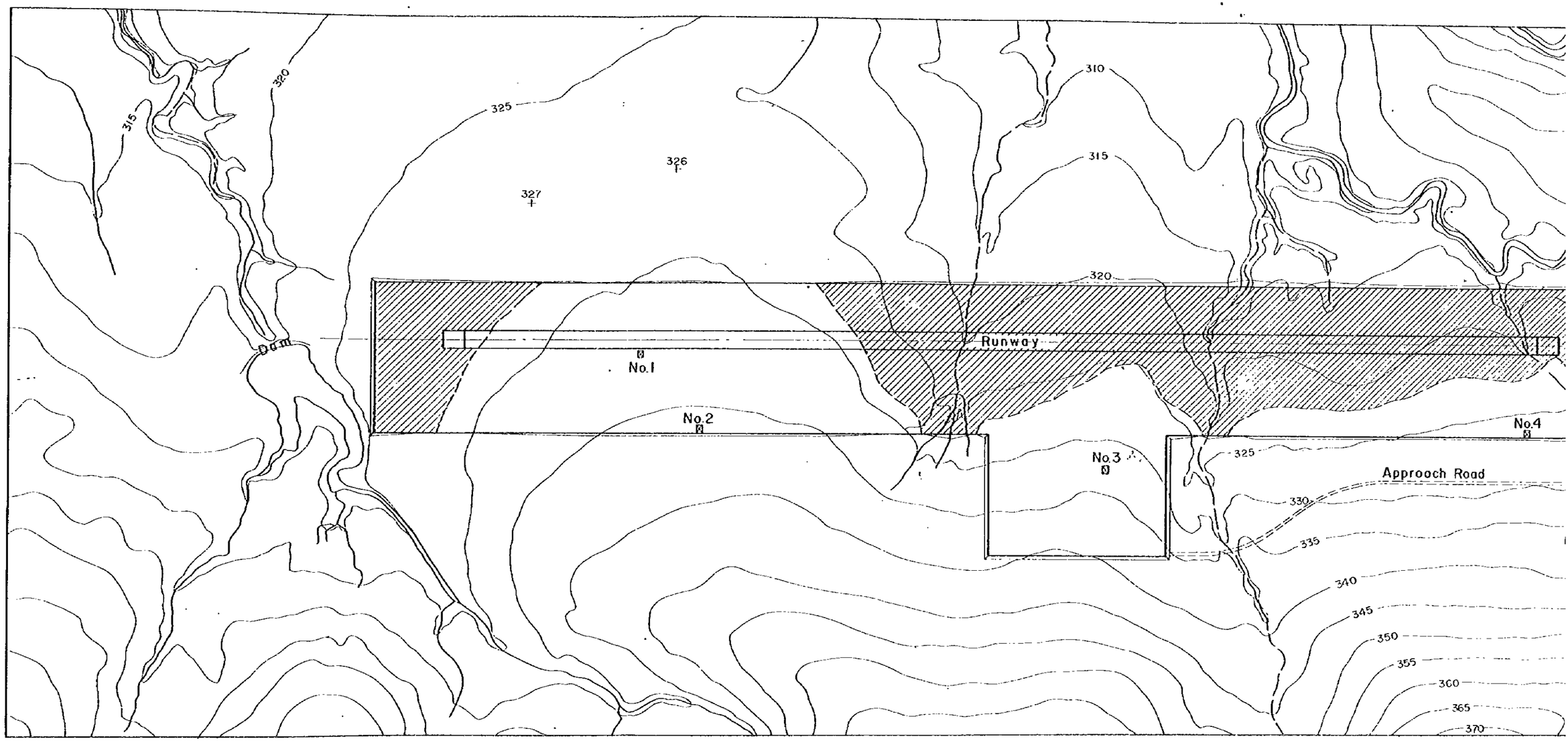


Embankment Area

Trial Pit

GRADING PLAN

MPAKA SITE



LEGEND

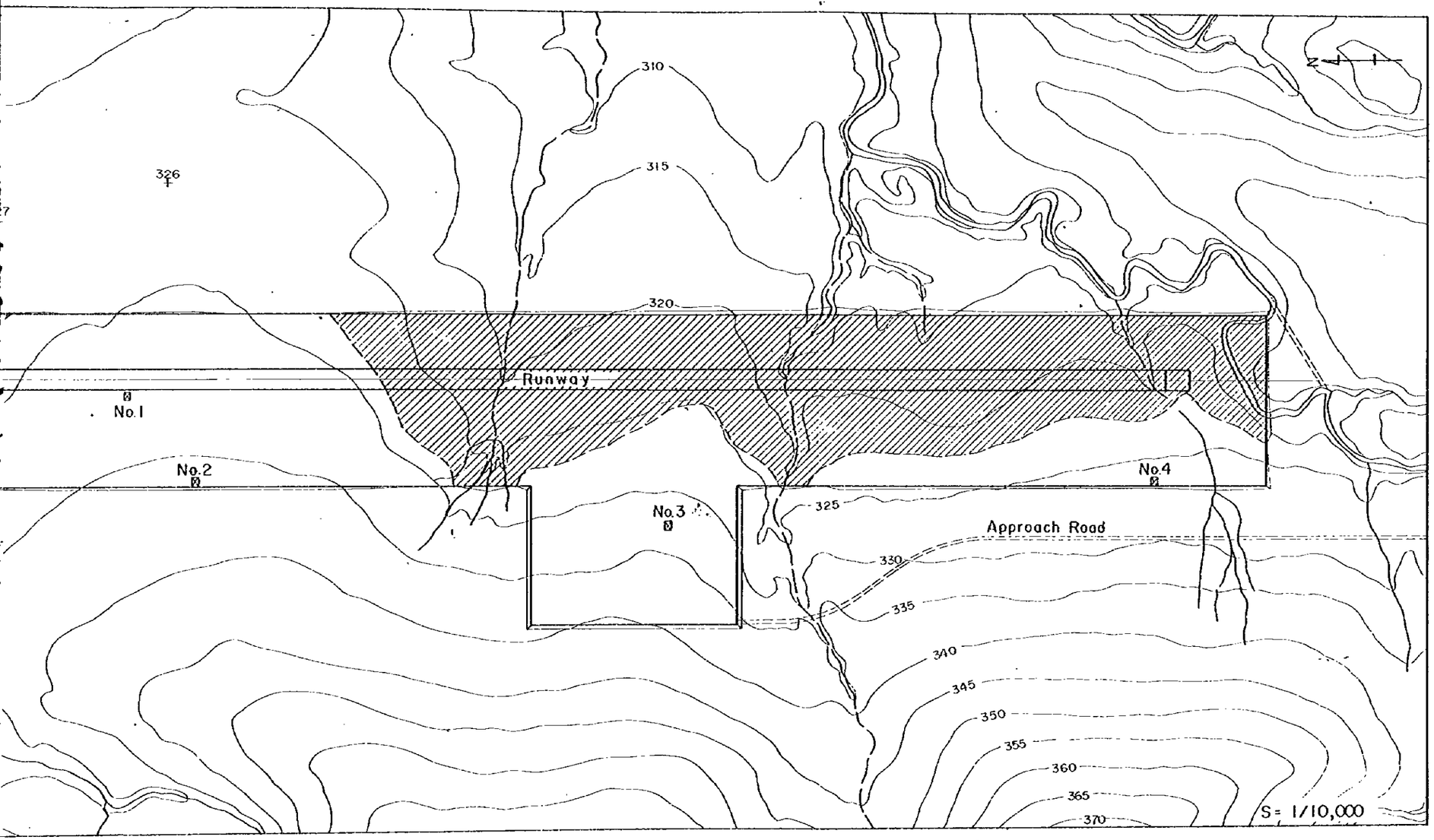
Cut Area

Embankment Area

Trial Pit

GRAD

SIKU



Embankment Area

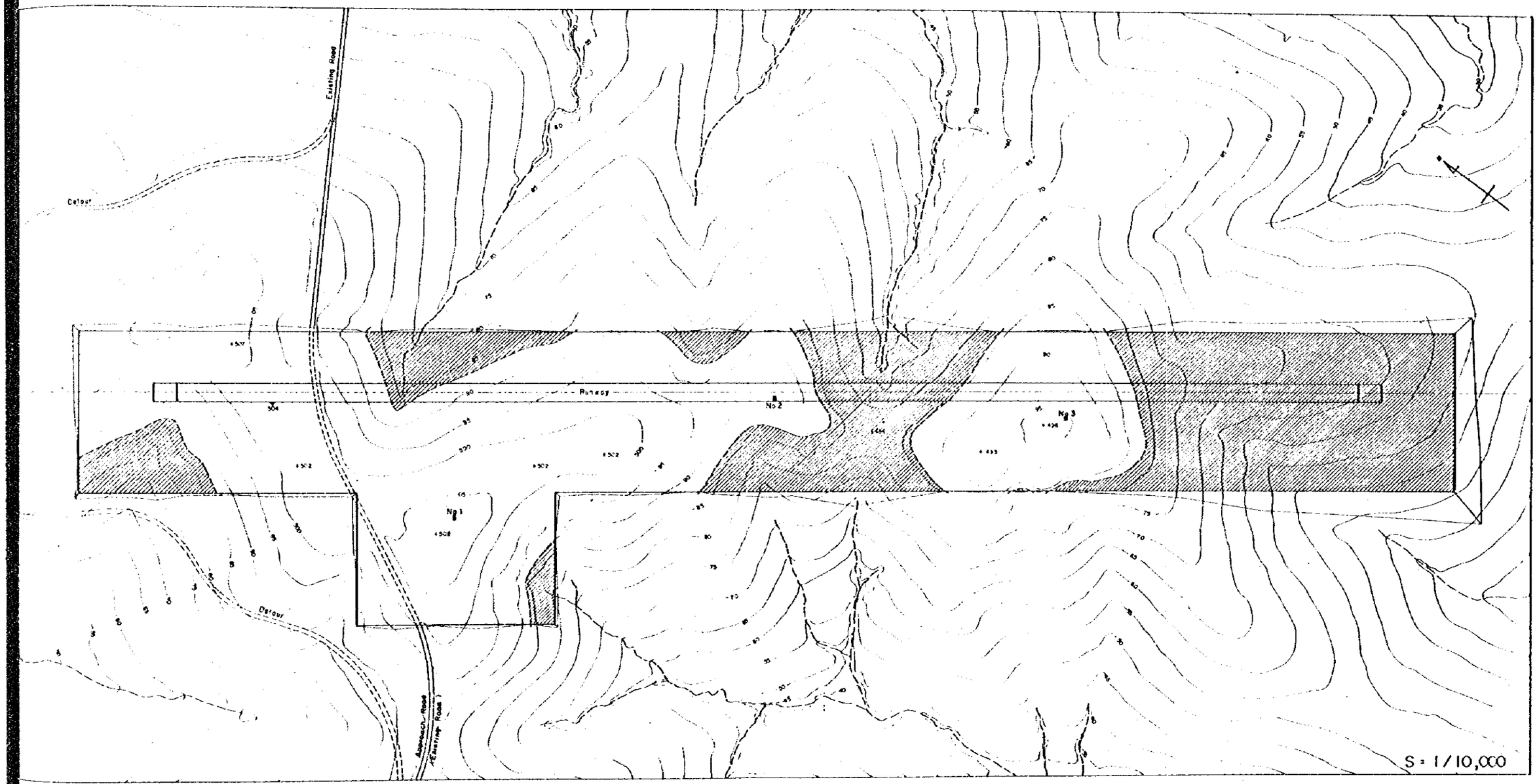
Trial Pit

GRADING PLAN
SIKUPE SITE

MOGOBI SITE

PLAN S = 1/10,000

Appendix 3B – 3



LEGEND

Cut Area

Embankment Area

Trial Pit

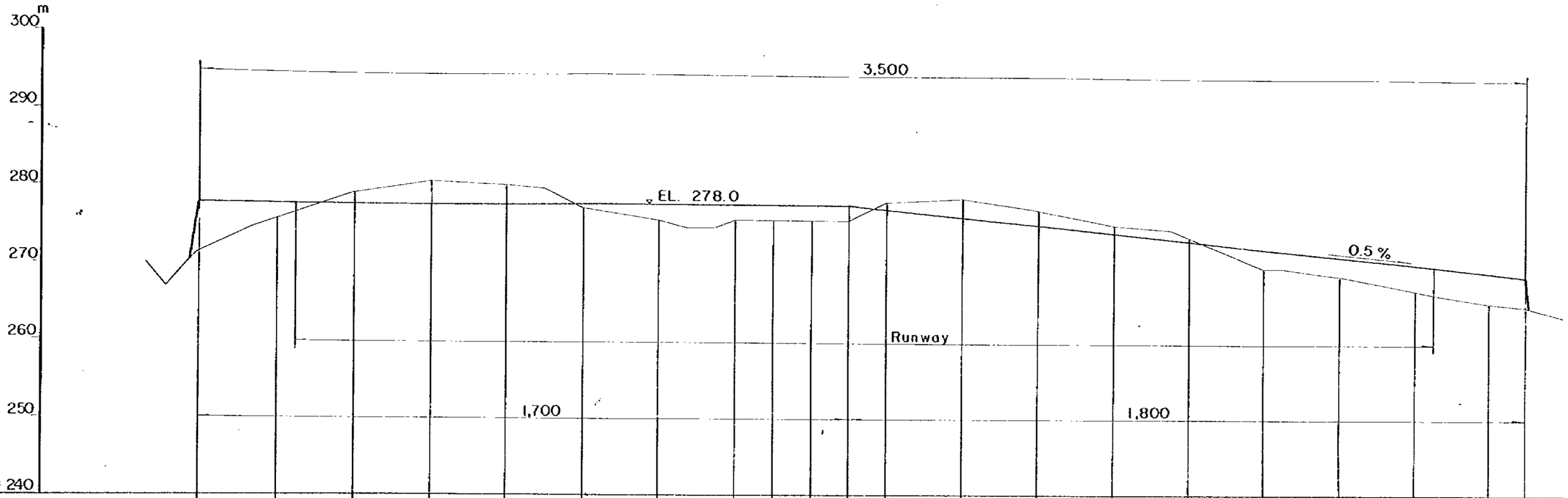
GRADING PLAN

MOGOBI SITE

MPAKA SITE

LONGITUDINAL SECTION

S: H = 1 / 10,000
V = 1 / 500



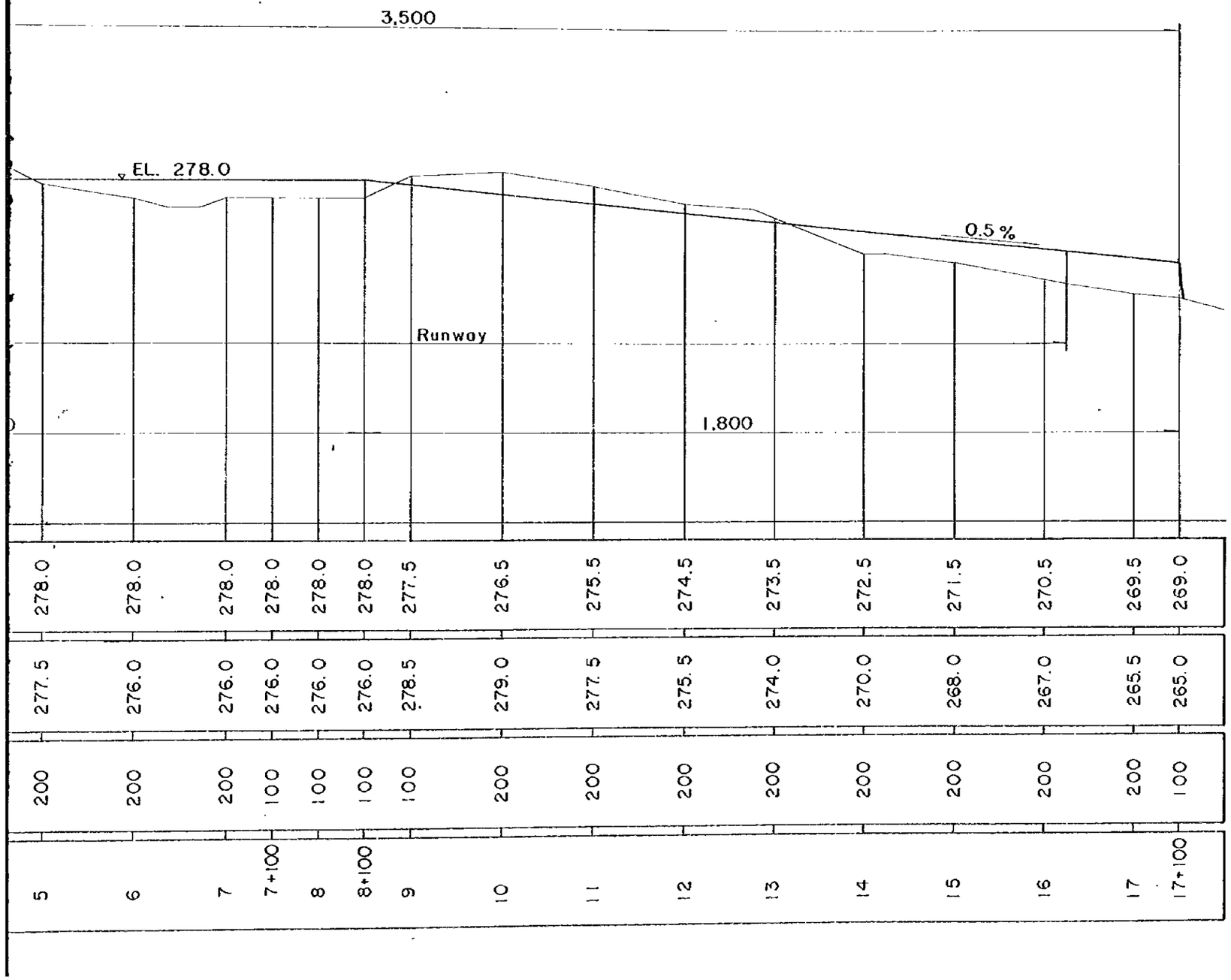
NO.	Interval	G·H	F·H
0	0	271.5	278.0
1	200	276.0	278.0
2	200	279.5	278.0
3	200	281.0	278.0
4	200	280.5	278.0
5	200	277.5	278.0
6	200	276.0	278.0
7	200	276.0	278.0
7+100	100	276.0	278.0
8	100	276.0	278.0
8+100	100	276.0	278.0
9	100	278.5	277.5
10	200	279.0	276.5
11	200	277.5	275.5
12	200	275.5	274.5
13	200	274.0	273.5
14	200	270.0	272.5
15	200	268.0	271.5
16	200	267.0	270.5
17	200	265.5	269.5
17+100	100	265.0	269.0

MPAKA SITE

LONGITUDINAL SECTION

S: H = 1 / 10,000
V = 1 / 500

Appendix 3C – 1

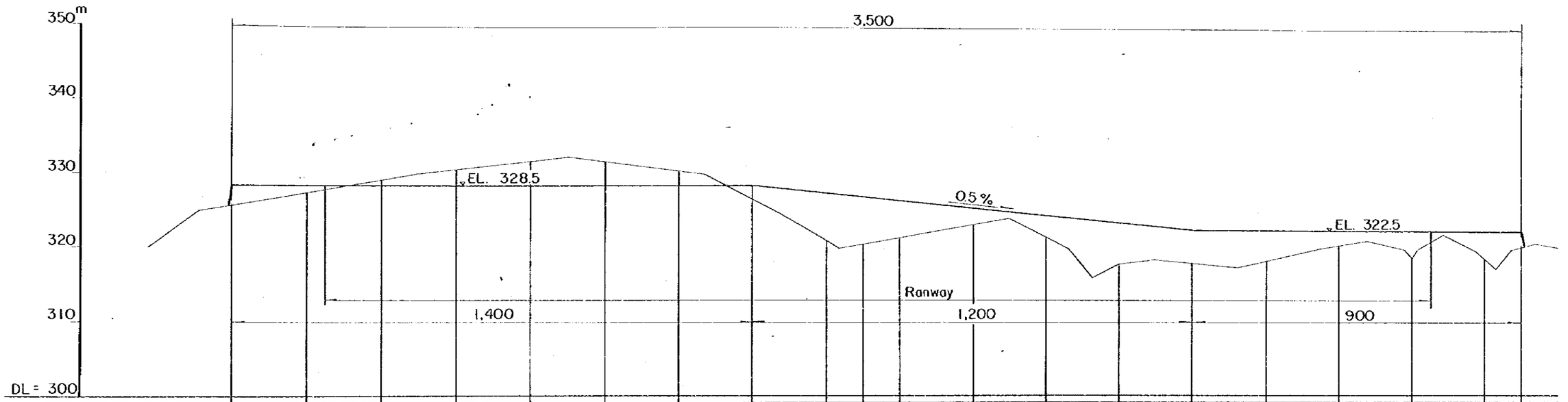


5	6	7	7+100	8	8+100	9	10	11	12	13	14	15	16	17	17+100		
200	200	200	100	100	100	100	200	200	200	200	200	200	200	200	100		
277.5	276.0	276.0	276.0	276.0	276.0	278.5	279.0	277.5	275.5	274.0	270.0	268.0	267.0	265.5	265.0		
278.0	278.0	278.0	278.0	278.0	278.0	277.5	276.5	275.5	274.5	273.5	272.5	271.5	270.5	269.5	269.0		

SIKUPE SITE

LONGITUDINAL SECTION

S: H = 1/10,000
V = 1/500

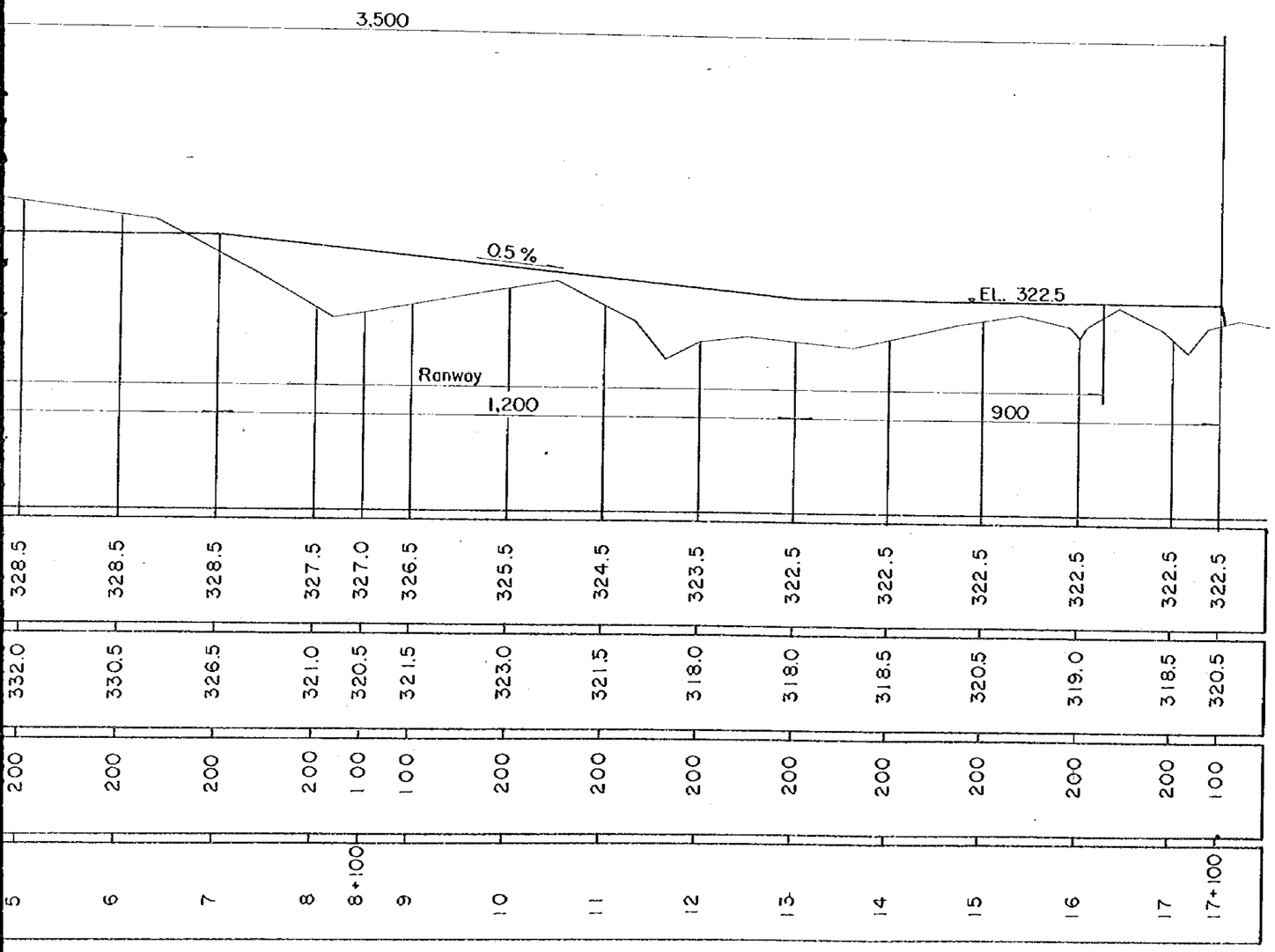


NO.	Interval	G.H	F.H
0	0	325.7	328.5
1	200	327.5	328.5
2	200	329.2	328.5
3	200	331.7	328.5
4	200	332.0	328.5
5	200	332.0	328.5
6	200	330.5	328.5
7	200	326.5	328.5
8	200	321.0	327.5
8+100	100	320.5	327.0
9	100	321.5	326.5
10	200	323.0	325.5
11	200	321.5	324.5
12	200	318.0	323.5
13	200	318.0	322.5
14	200	318.5	322.5
15	200	320.5	322.5
16	200	319.0	322.5
17	200	318.5	322.5
17+100	100	320.5	322.5

SIKUPE SITE

LONGITUDINAL SECTION

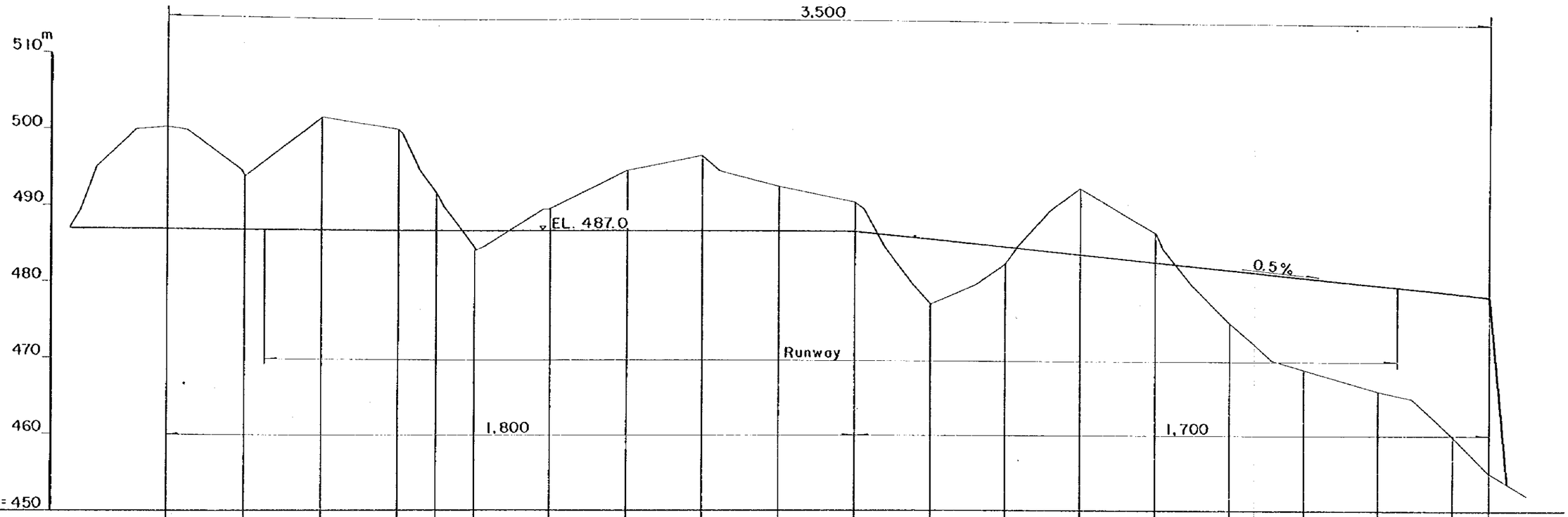
S: H = 1/10,000
V = 1/500



MOGOBI SITE

LONGITUDINAL SECTION

S: H = 1/ 10,000
V = 1/ 500

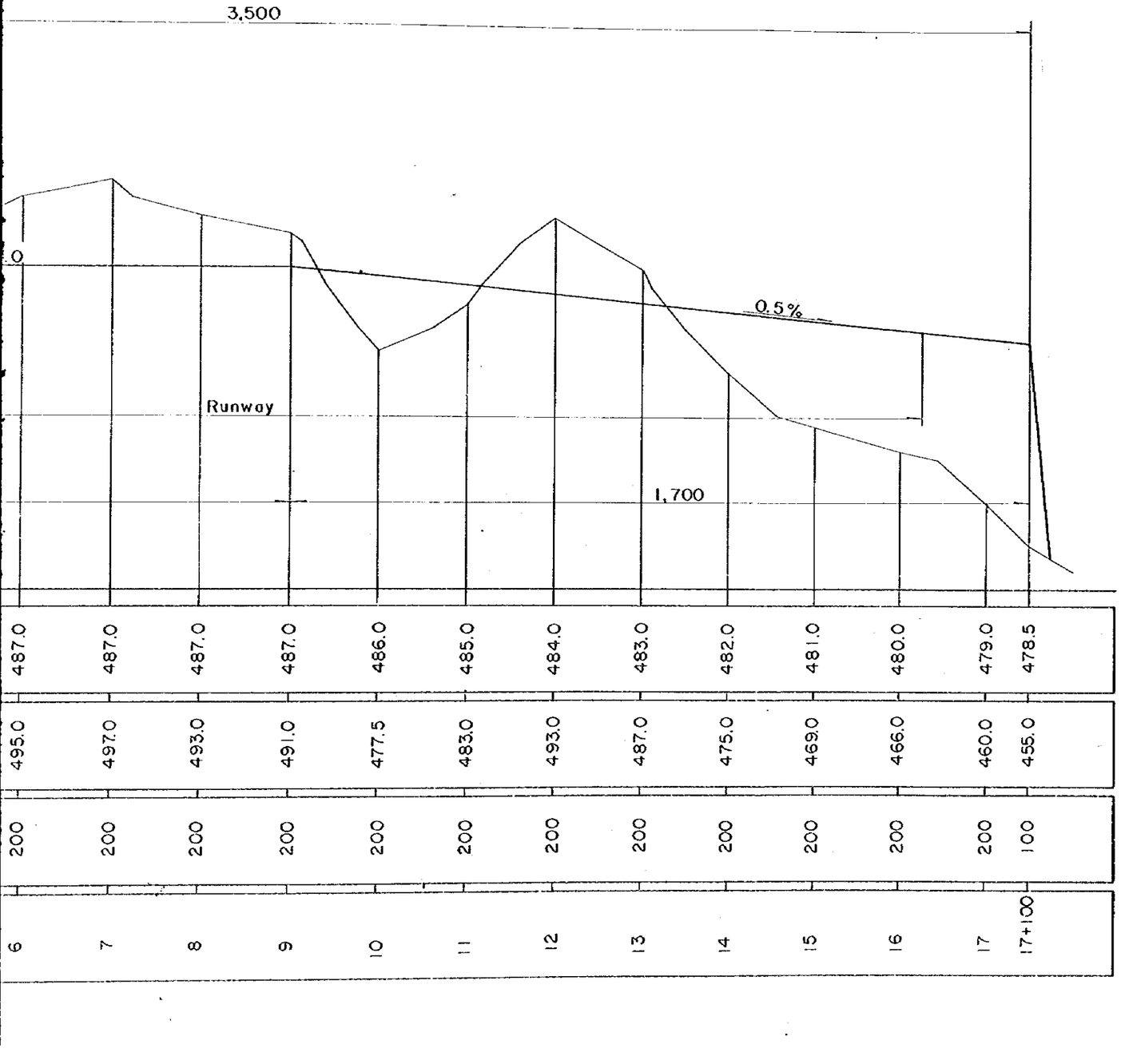


NO.	Interval	G·H	F·H
0	0	500.5	487.0
1	200	494.0	487.0
2	200	502.0	487.0
3	200	500.5	487.0
3+100	100	492.0	487.0
4	100	484.5	487.0
5	200	490.0	487.0
6	200	495.0	487.0
7	200	497.0	487.0
8	200	493.0	487.0
9	200	491.0	487.0
10	200	477.5	486.0
11	200	483.0	485.0
12	200	493.0	484.0
13	200	487.0	483.0
14	200	475.0	482.0
15	200	469.0	481.0
16	200	466.0	480.0
17	200	460.0	479.0
17+100	100	455.0	478.5

MOGOBI SITE

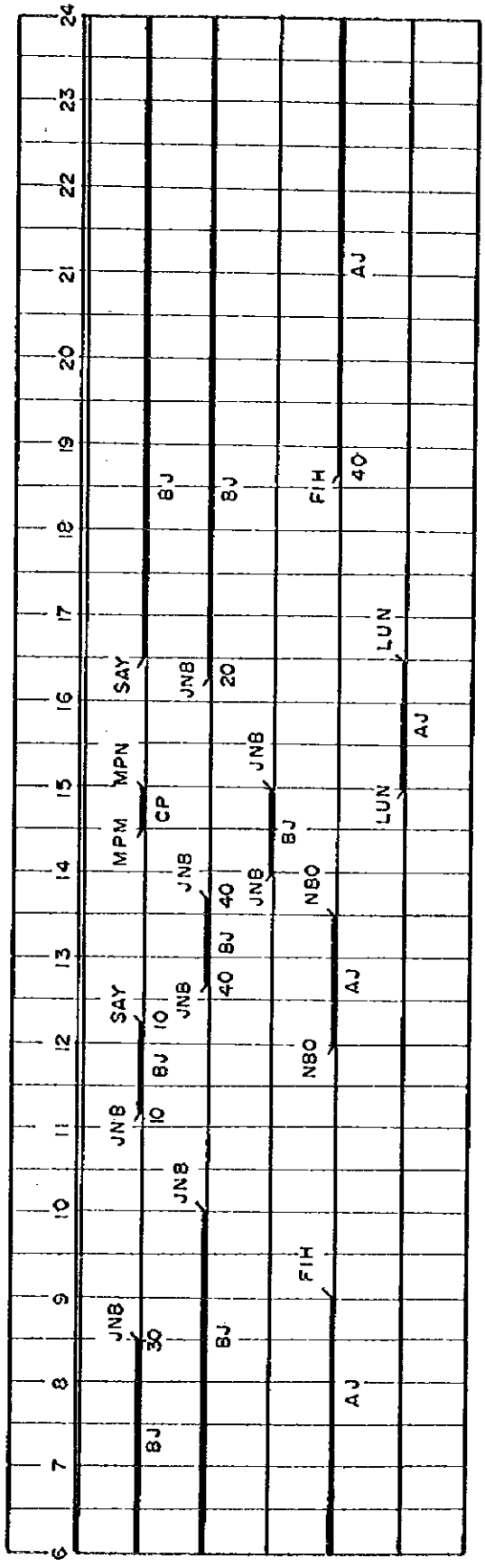
LONGITUDINAL SECTION

S: H = 1/ 10,000
V = 1/ 500



	6	7	8	9	10	11	12	13	14	15	16	17	17+100
	200	200	200	200	200	200	200	200	200	200	200	200	100
	495.0	497.0	493.0	491.0	477.5	483.0	493.0	487.0	475.0	469.0	466.0	460.0	455.0
	487.0	487.0	487.0	487.0	486.0	485.0	484.0	483.0	482.0	481.0	480.0	479.0	478.5

PROJECTED FLIGHT SCHEDULE IN YEAR 1995

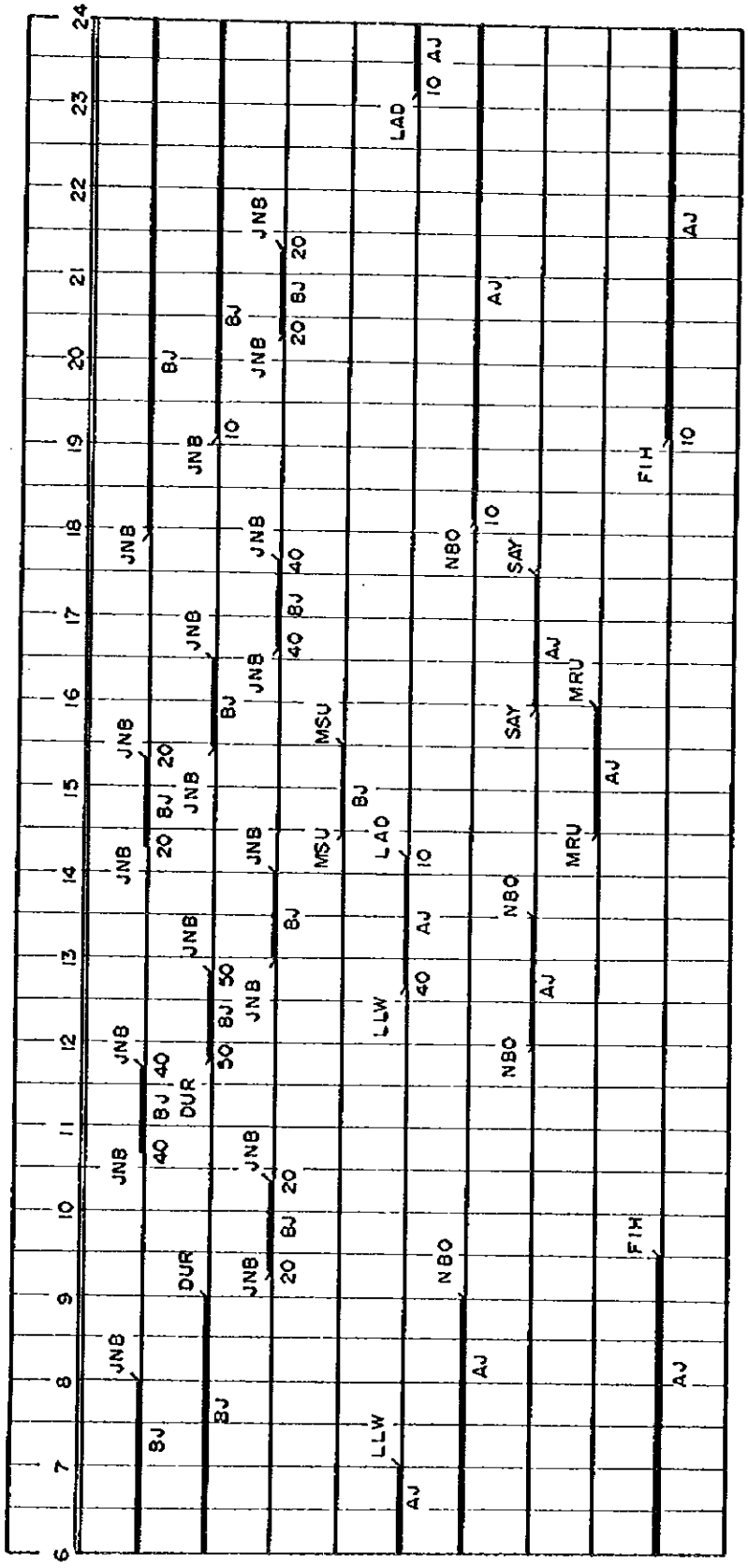


Note : AJ ------ B707 Type Aircraft

BJ ------ B737 Type Aircraft

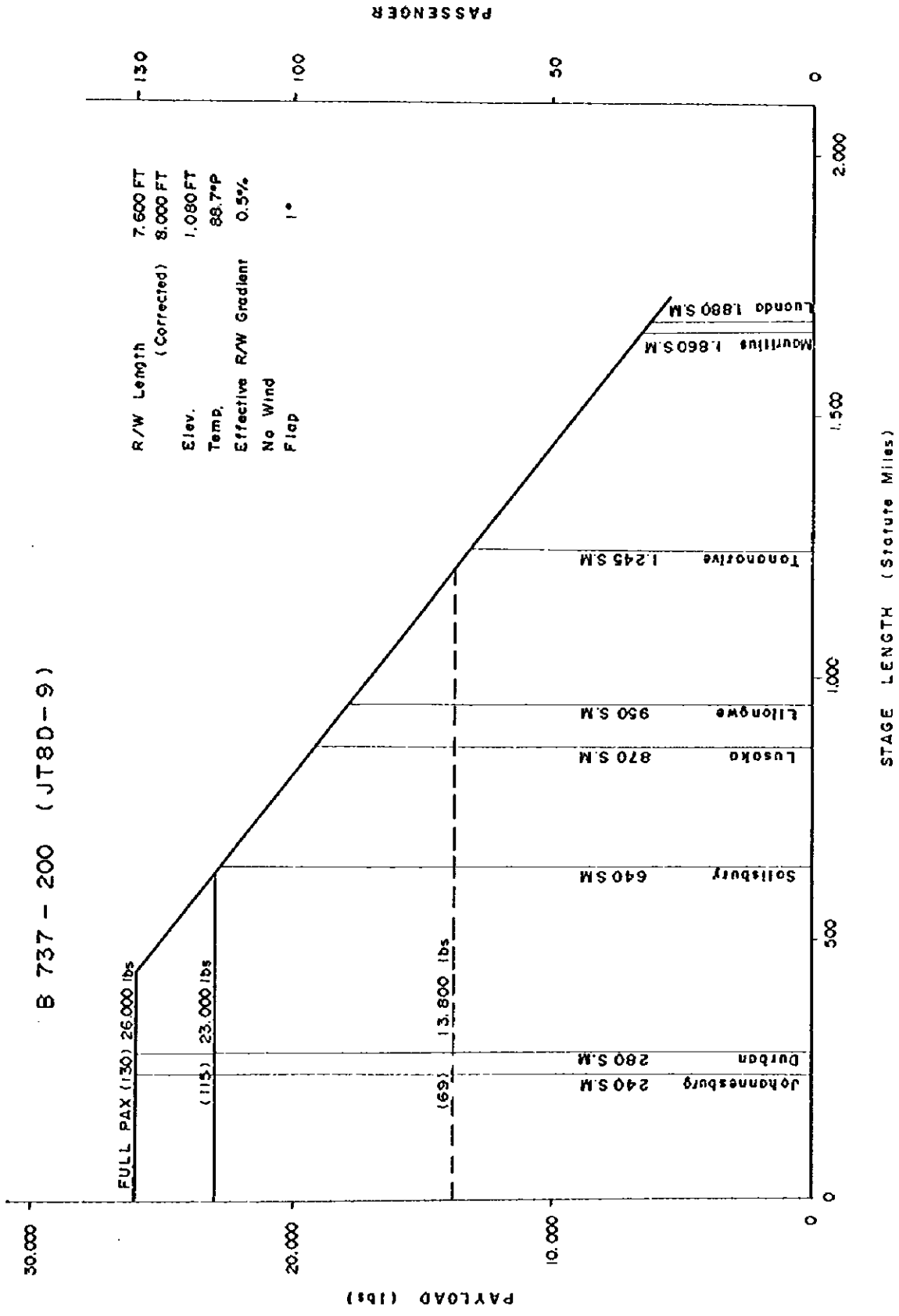
CP ------ F-27 Type Aircraft

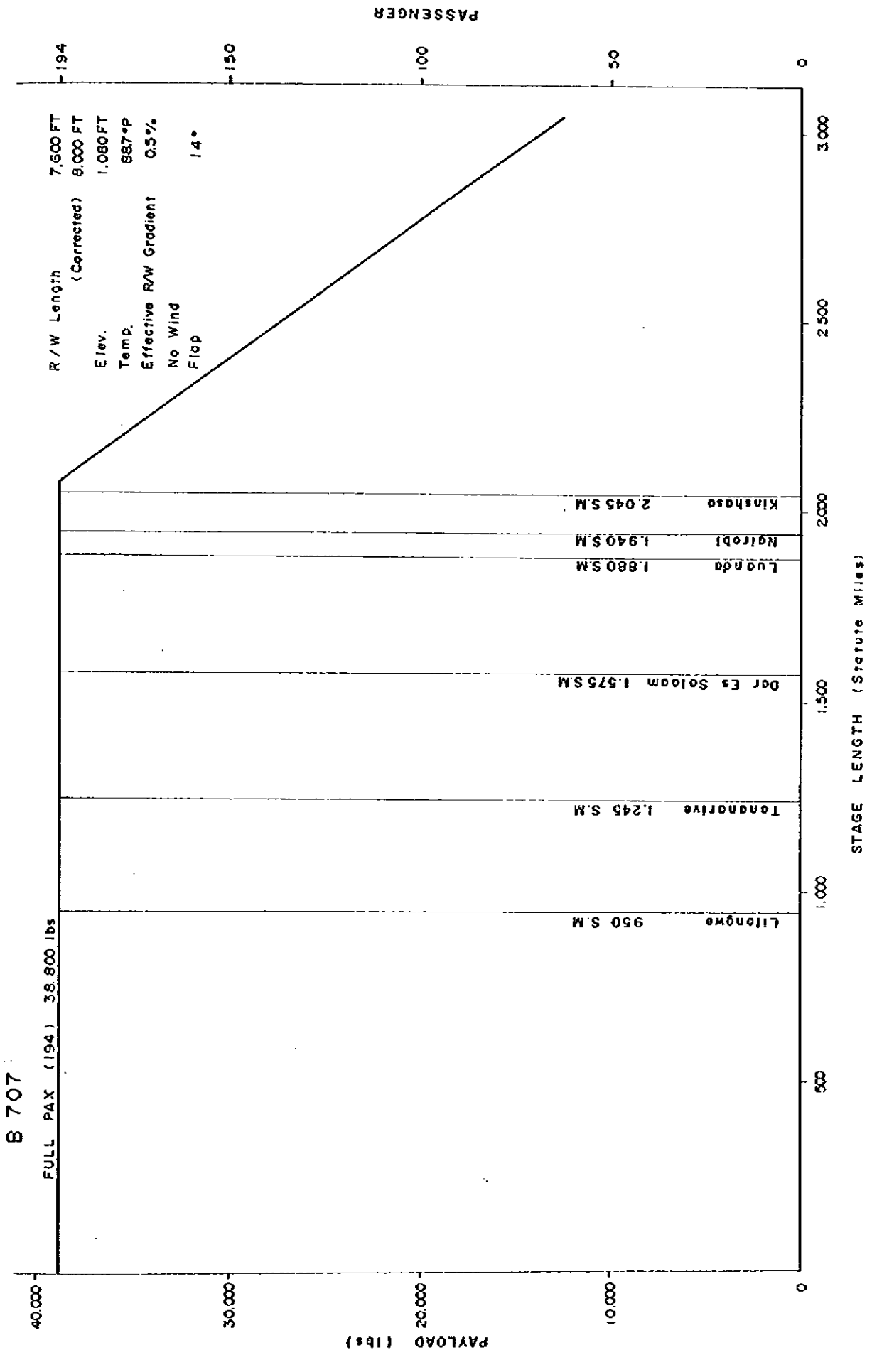
PROJECTED FLIGHT SCHEDULE IN YEAR 2005

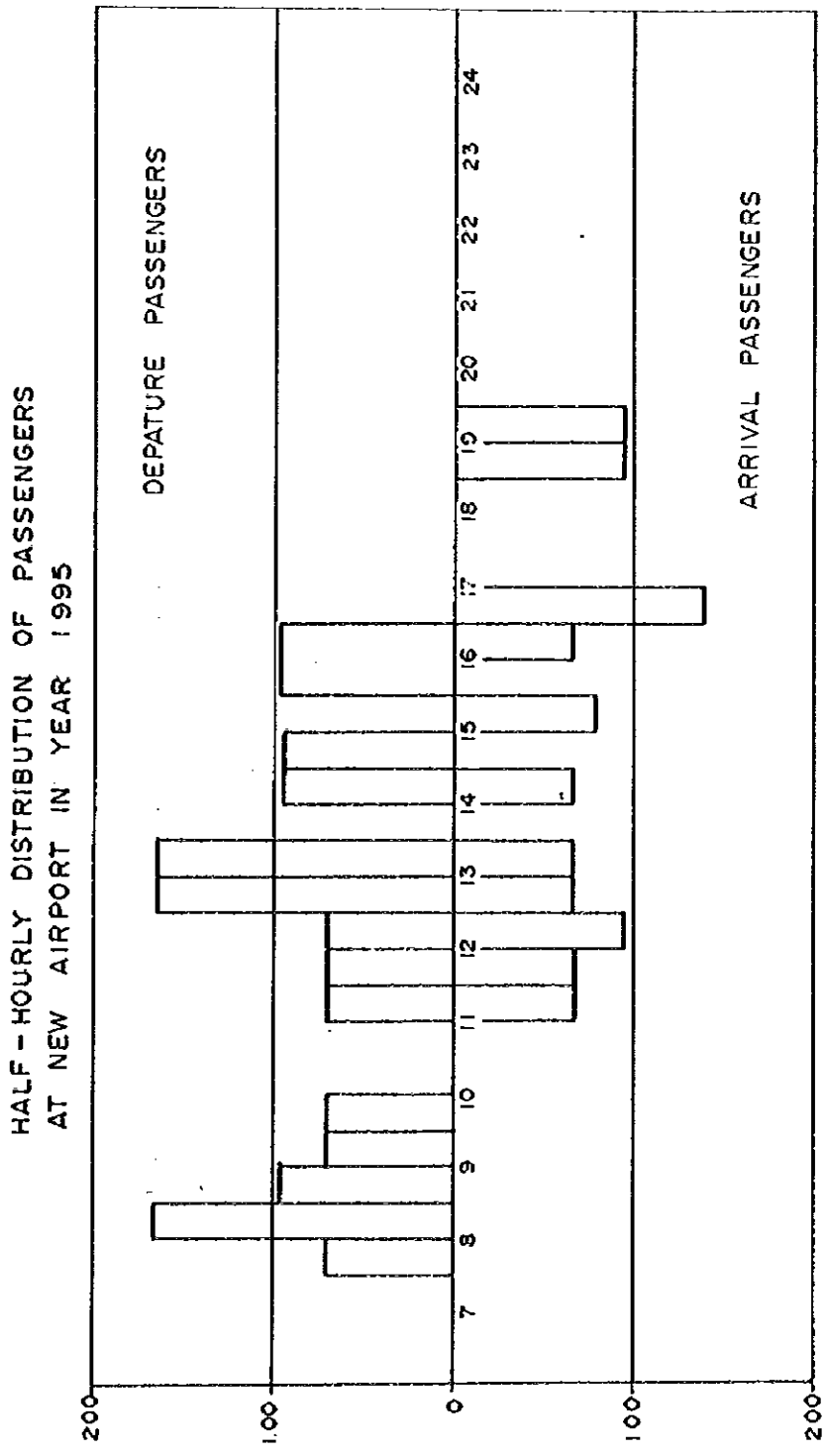


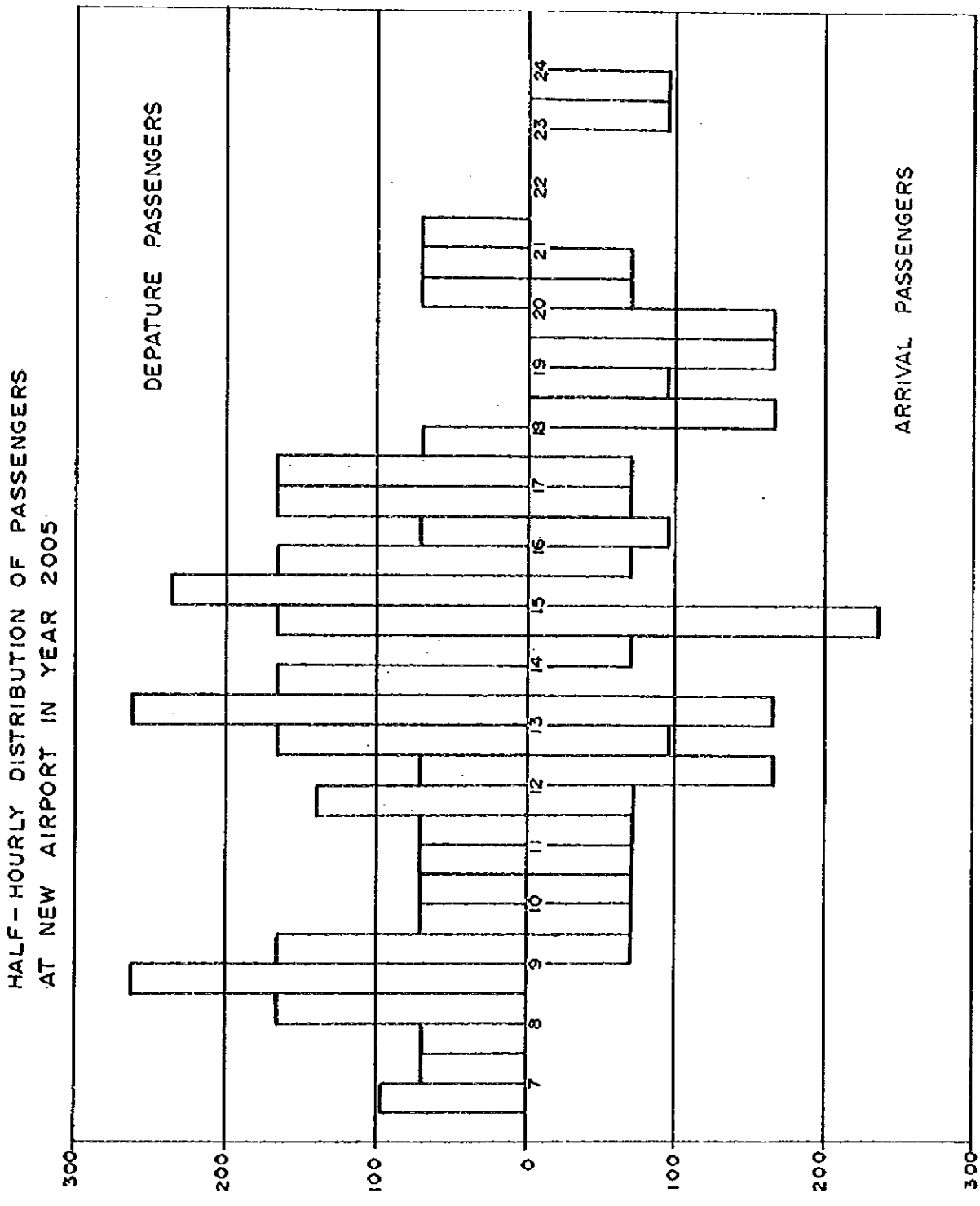
Note : AJ ------ B707 Type Aircraft

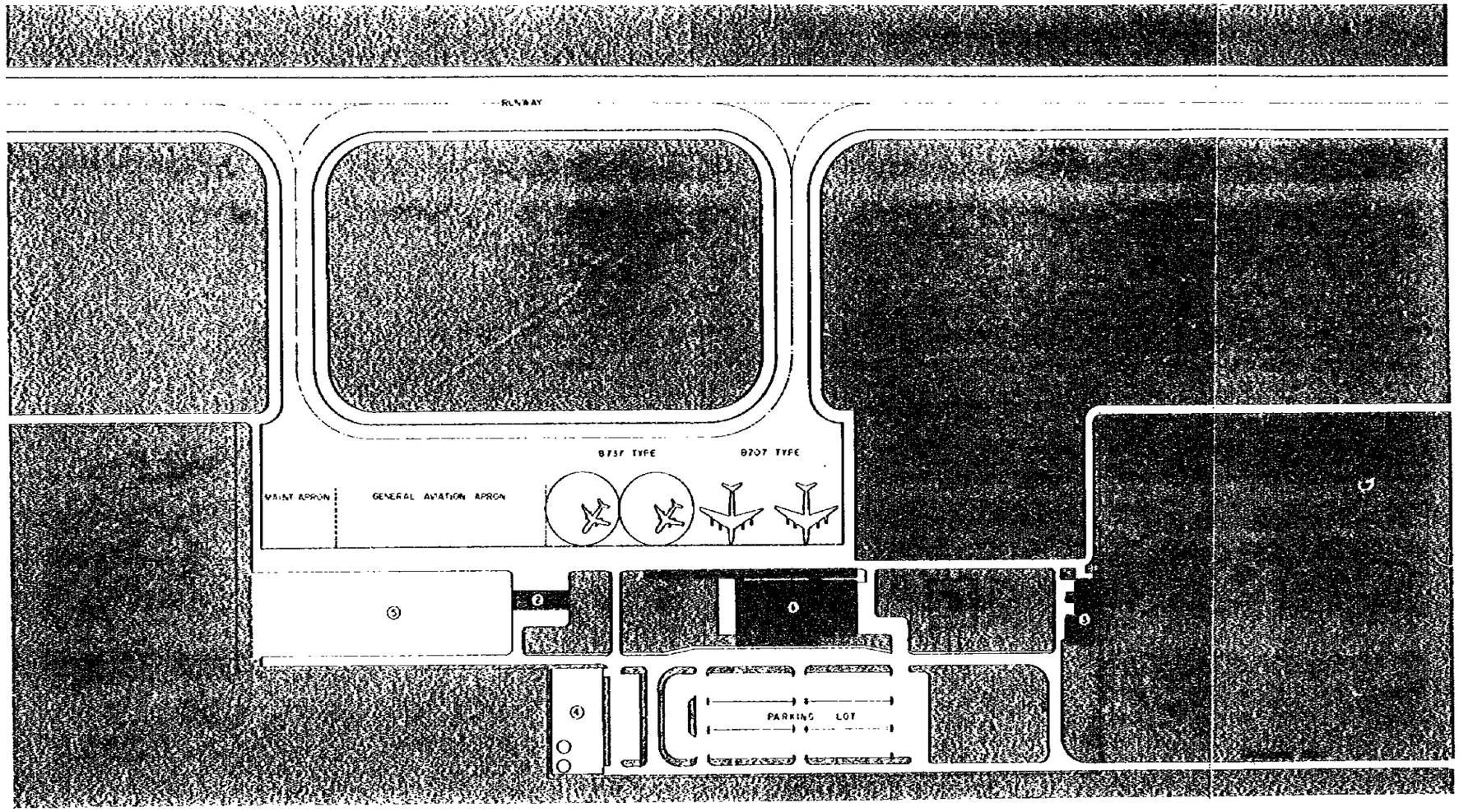
BJ ------ B737 Type Aircraft


B 737 - 200 (JT8D-9)
PASSENGER
130
100
50
0
PAYLOAD (lbs)
30,000
20,000
10,000
0
STAGE LENGTH (Statute Miles)
2,000
1,500
1,000
500
0
R/W Length 7,600 FT
(Corrected) 8,000 FT
Elev. 1,080 FT
Temp. 88.7°F
Effective R/W Gradient 0.5%
No Wind
Flap 1°
FULL PAX (130) 26,000 lbs
(115) 23,000 lbs
(69) 13,800 lbs
Johannesburg 240 S.M
Butban 280 S.M
Salisbury 640 S.M
Lusaka 870 S.M
Lilongwe 950 S.M
Tononoziwe 1,245 S.M
Mauritius 1,860 S.M
Luanda 1,880 S.M


B 707
FULL PAX (194) 38,800 lbs
R/W Length 7,600 FT
(Corrected) 8,000 FT
Elev. 1,080 FT
Temp. 88.7°F
Effective R/W Gradient 0.5%
No Wind
Flap 14°
PASSENGER
194
150
100
50
0
PAYLOAD (lbs)
40,000
30,000
20,000
10,000
0
STAGE LENGTH (Statute Miles)
500
1,000
1,500
2,000
2,500
3,000
Lilongwe 950 S.M
Tonanorliye 1,245 S.M
Dar Es Salaam 1,575 S.M
Luanda 1,880 S.M
Nairobi 1,940 S.M
Kinshasa 2,045 S.M


HALF - HOURLY DISTRIBUTION OF PASSENGERS
AT NEW AIRPORT IN YEAR 1995
DEPATURE PASSENGERS
ARRIVAL PASSENGERS
200
100
0
100
200
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24


HALF-HOURLY DISTRIBUTION OF PASSENGERS
AT NEW AIRPORT IN YEAR 2005
DEPATURE PASSENGERS
ARRIVAL PASSENGERS
300
200
100
0
100
200
300
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24



① PASSENGER TERMINAL AND ADMINISTRATION BUILDING
② FIRE FIGHTING AND RESCUE STATION
③ MAIN POWER SUBSTATION
④ AIRCRAFT FUEL STORAGE AREA
⑤ AIRCRAFT MAINTENANCE AND GENERAL AVIATION AREA
⑥ HEAD OF STATES BUILDING AREA

SCALE
0 50 100 200M

N

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

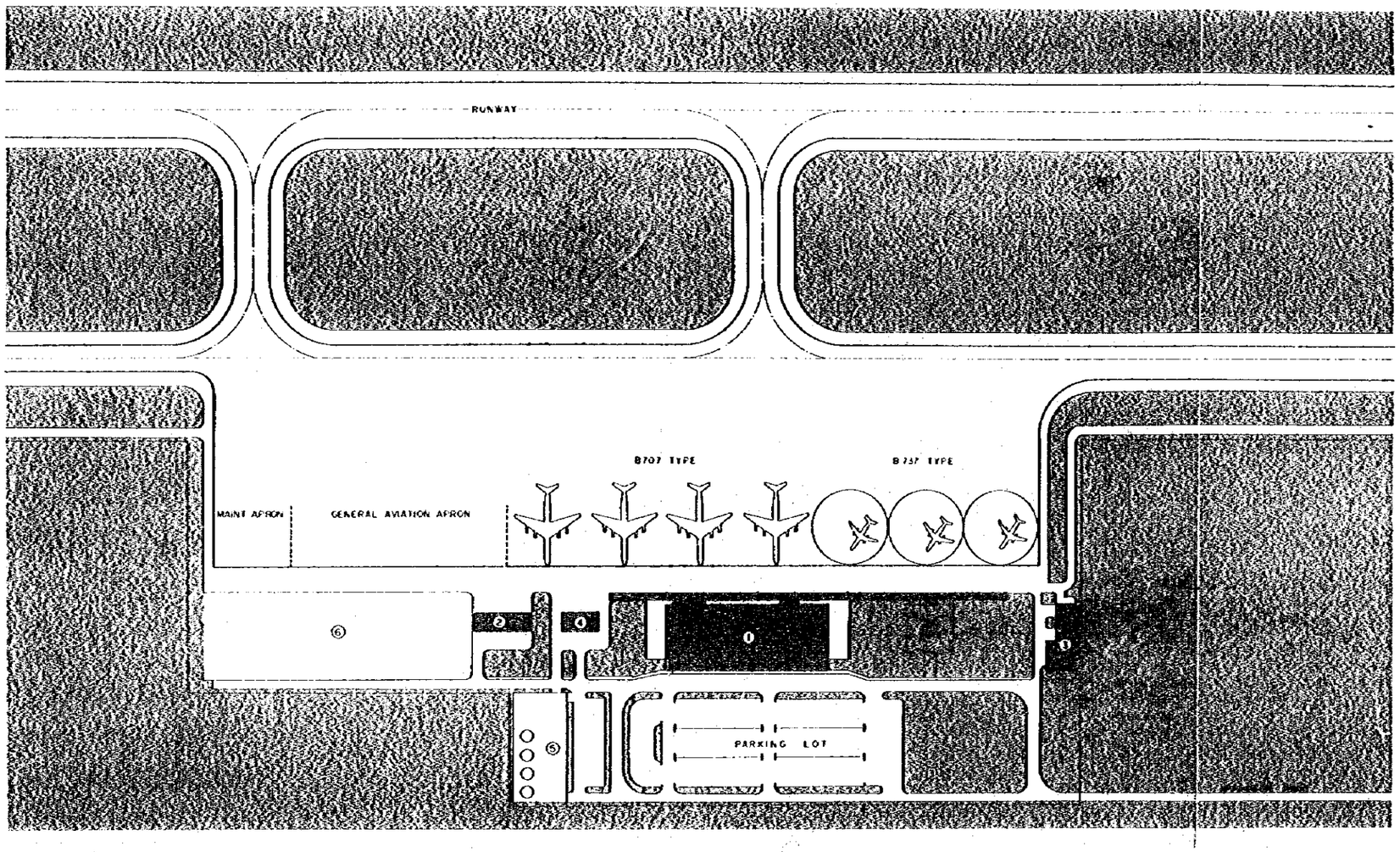
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

TERMINAL AREA LAYOUT PLAN
STAGE I

MAR. 1980

No. 13

JAPAN INTERNATIONAL COOPERATION AGENCY



① PASSENGER TERMINAL AND ADMINISTRATION BUILDING
② FIRE FIGHTING AND RESCUE STATION
③ MAIN POWER SUBSTATION
④ CARGO TERMINAL BUILDING
⑤ AIRCRAFT FUEL STORAGE AREA
⑥ AIRCRAFT MAINTENANCE AND GENERAL AVIATION AREA
⑦ HEAD OF STATES BUILDING AREA

SCALE 0 50 100 200 M

N

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

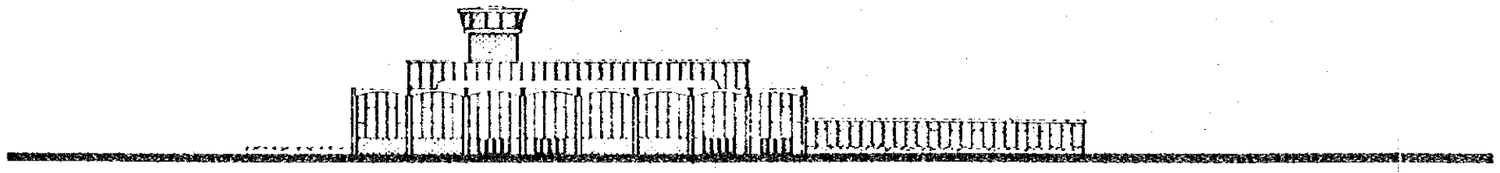
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

TERMINAL AREA LAYOUT PLAN
STAGE Ⅱ

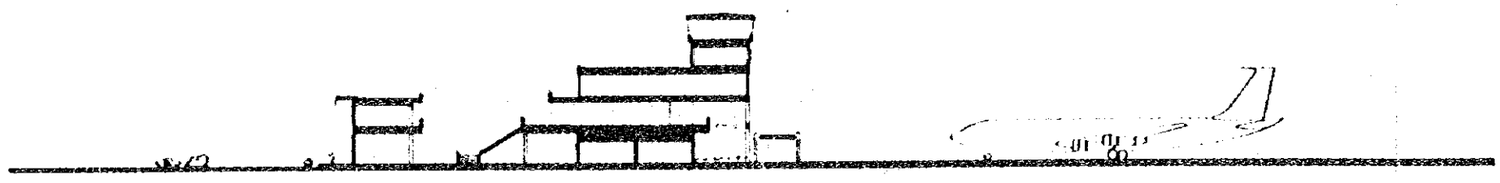
MAR. 1980

No. 14

JAPAN INTERNATIONAL COOPERATION AGENCY



ELEVATION



SECTION

SCALE

0 10 20 30

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

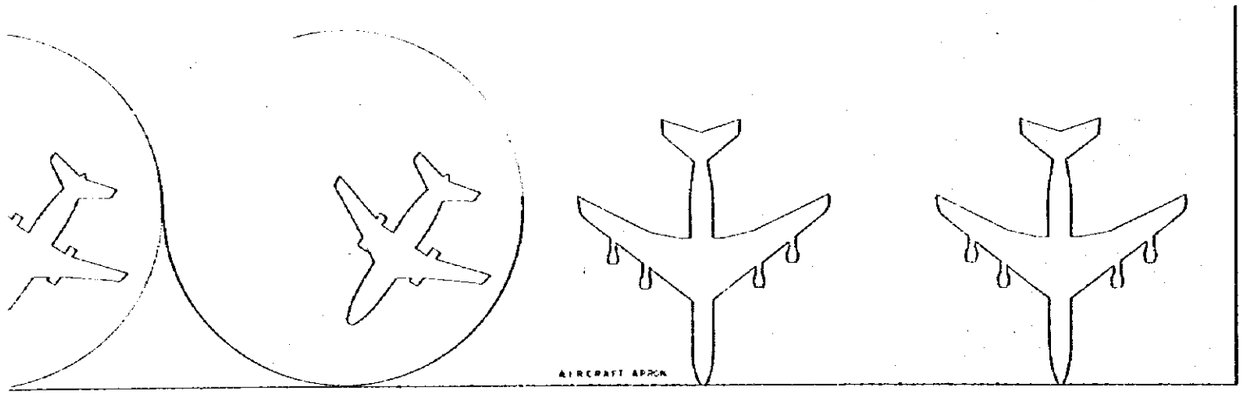
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

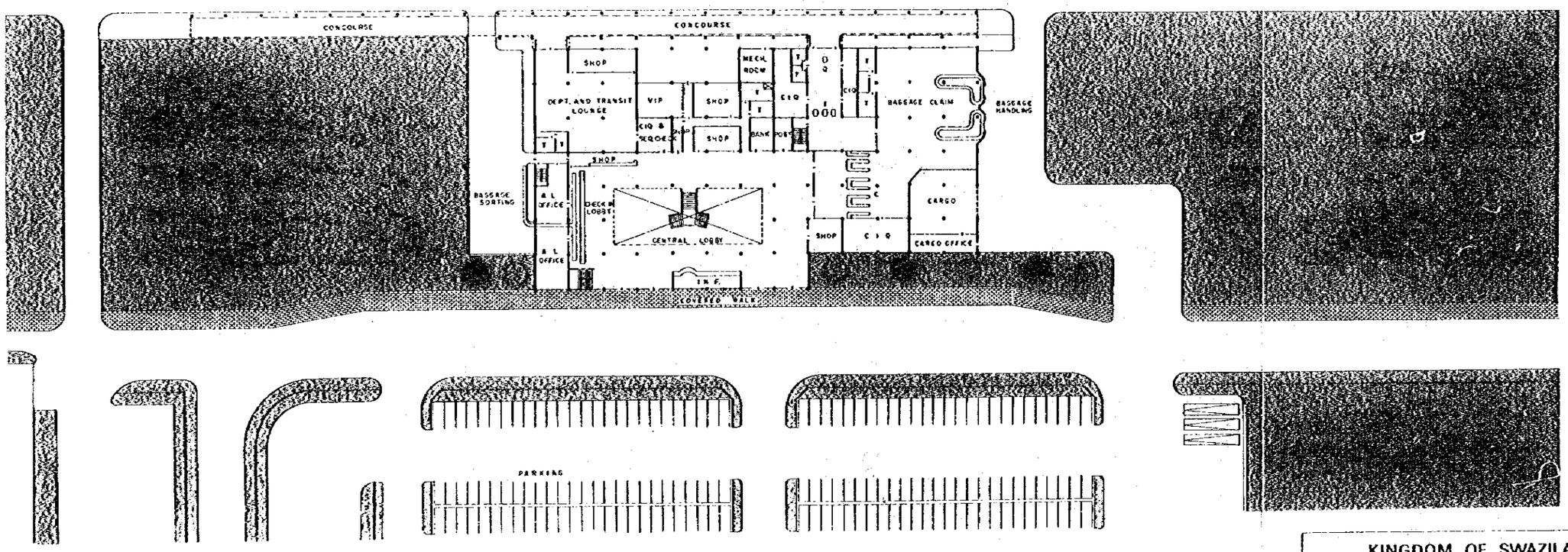
PASSENGER TERMINAL AND ADMINISTRATION BUILDING
ELEVATION / SECTION STAGE I

MAR. 1980

No. 15

JAPAN INTERNATIONAL COOPERATION AGENCY



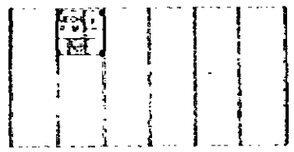


SCALE

0 10 20 30 40M

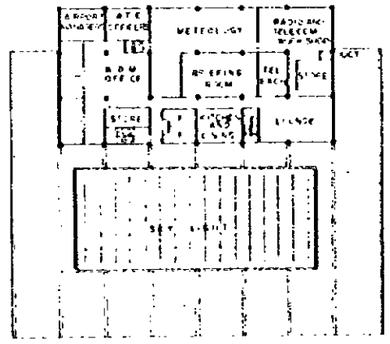
N

KINGDOM OF SWAZILAND	
MINISTRY OF WORKS, POWER AND COMMUNICATIONS	
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT FEASIBILITY STUDY	
PASSENGER TERMINAL AND ADMINISTRATION BUILDING GROUND FLOOR PLAN STAGE I	MAR. 1980 No. 16
JAPAN INTERNATIONAL COOPERATION AGENCY	

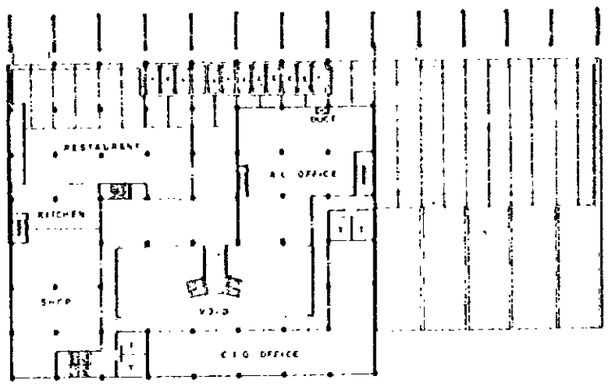


3RD FLOOR PLAN

4TH FLOOR PLAN



2ND FLOOR PLAN



1ST FLOOR PLAN

SCALE

0 10 20 30 40M

N

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT

FEASIBILITY STUDY

PASSENGER TERMINAL AND ADMINISTRATION BUILDING 1ST AND 2ND FLOOR PLAN STAGE I	MAR. 1980 No. 17

JAPAN INTERNATIONAL COOPERATION AGENCY

ELEVATION

SECTION

SCALE

0 10 20 30

KINGDOM OF SWAZILAND

MINISTRY OF WORKS POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT

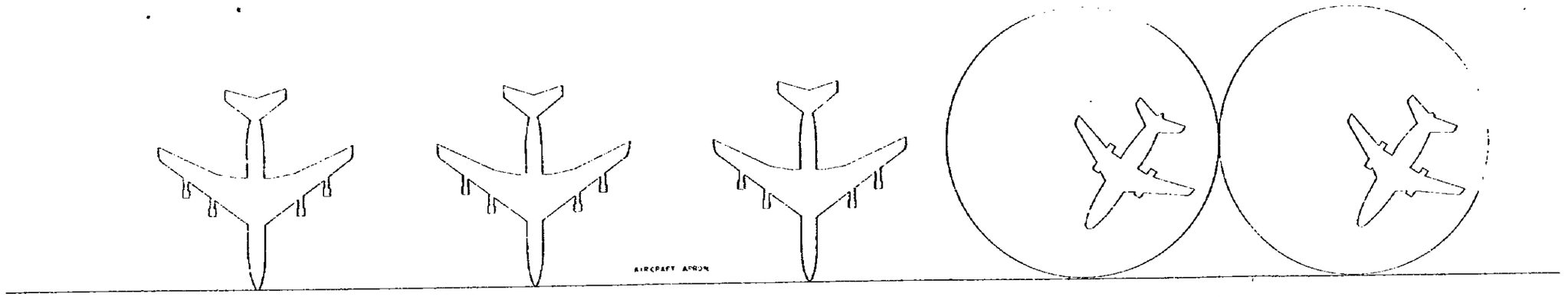
FEASIBILITY STUDY

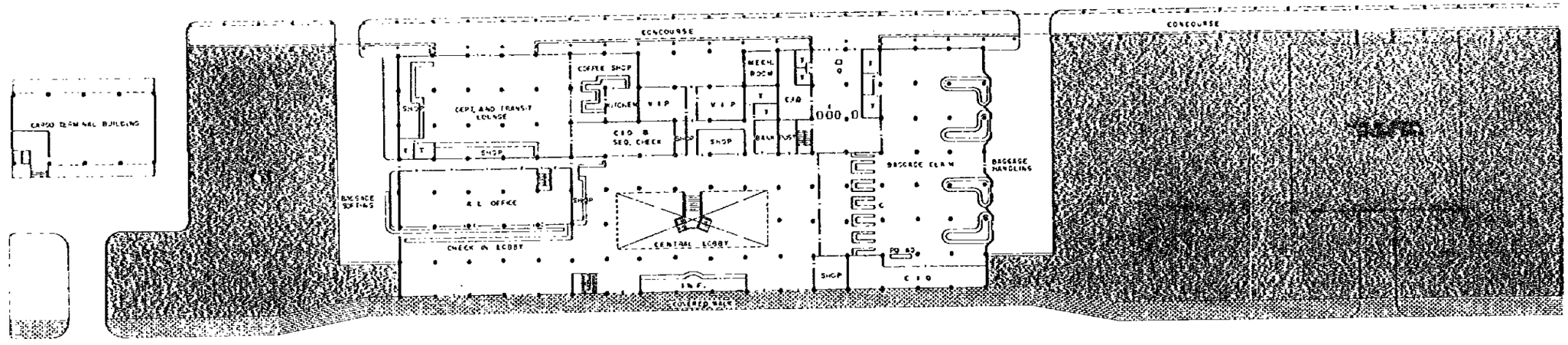
PASSENGER TERMINAL AND ADMINISTRATION BUILDING ELEVATION / SECTION STAGE I

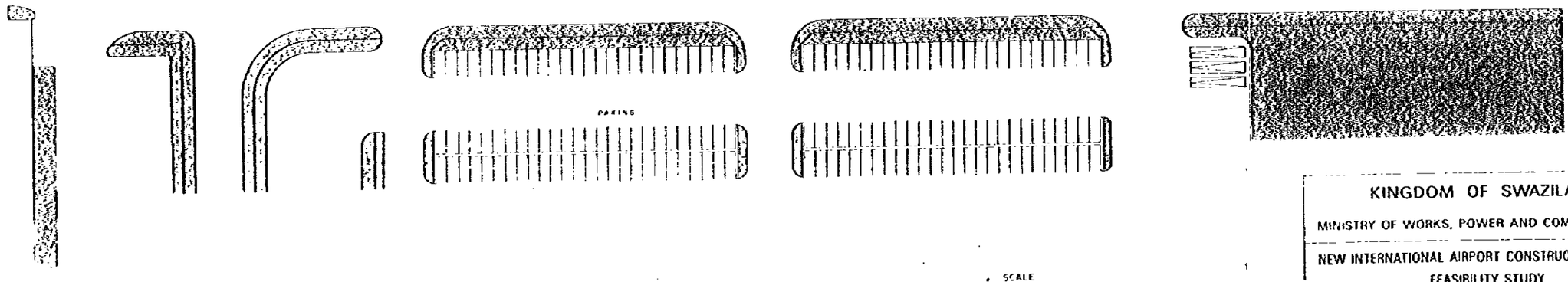
MAR 1980

No. 18

JAPAN INTERNATIONAL COOPERATION AGENCY







SCALE
0 10 20 30 40M

N

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

PASSENGER TERMINAL AND ADMINISTRATION BUILDING
GROUND FLOOR PLAN STAGE 1

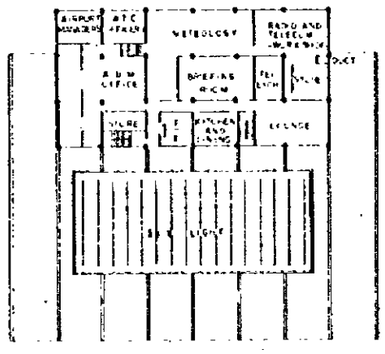
MAR. 1980

No. 19

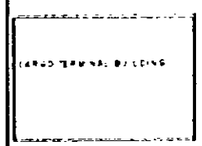
JAPAN INTERNATIONAL COOPERATION AGENCY

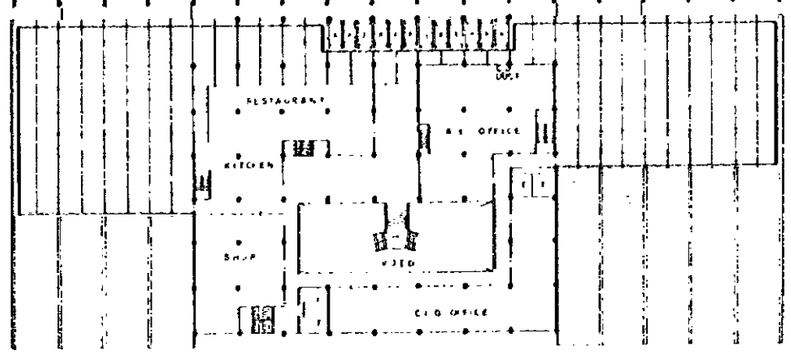
3RD FLOOR PLAN

4TH FLOOR PLAN

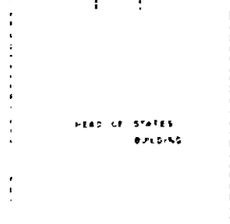


2ND FLOOR PLAN





1ST FLOOR PLAN



SCALE

0 10 20 30 40M

N

KINGDOM OF SWAZILAND

MINISTRY OF WORKS POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT

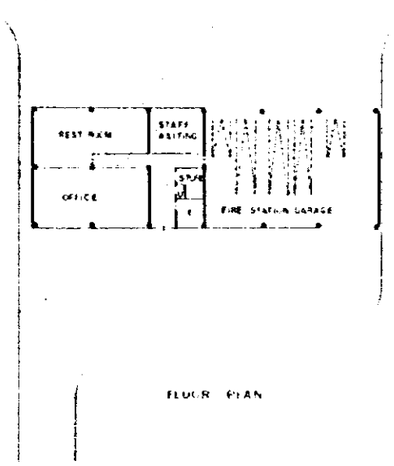
FEASIBILITY STUDY

PASSENGER TERMINAL AND ADMINISTRATION BUILDING 1ST AND 2ND FLOOR PLAN STAGE II

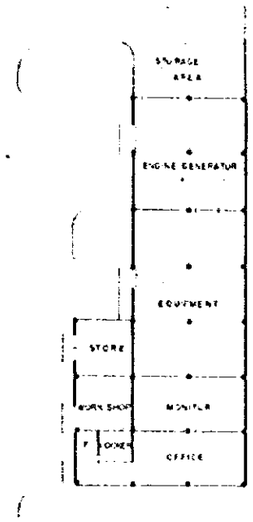
MAR 1980

No 20

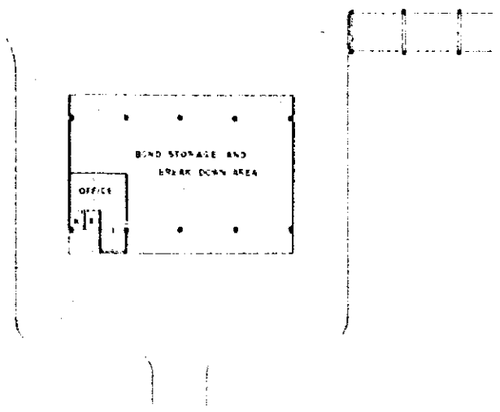
JAPAN INTERNATIONAL COOPERATION AGENCY



FLOOR PLAN



FLOOR PLAN



FLOOR PLAN

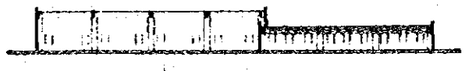
ELEVATION

ELEVATION

ELEVATION

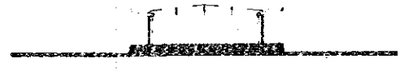
SECTION

FIRE/RESCUE STATION



SECTION

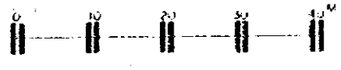
MAIN SUBSTATION



SECTION

CARGO TERMINAL BUILDING

SCALE



KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT

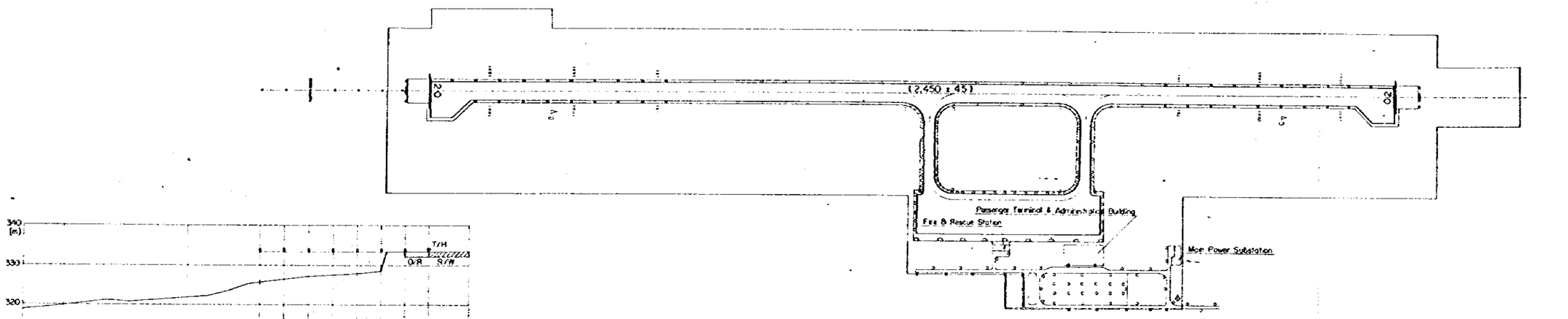
FEASIBILITY STUDY

FIRE/RESCUE STATION, MAIN POWER SUBSTATION, CARGO TERMINAL BUILDING

MAR. 1980

No. 21

JAPAN INTERNATIONAL COOPERATION AGENCY

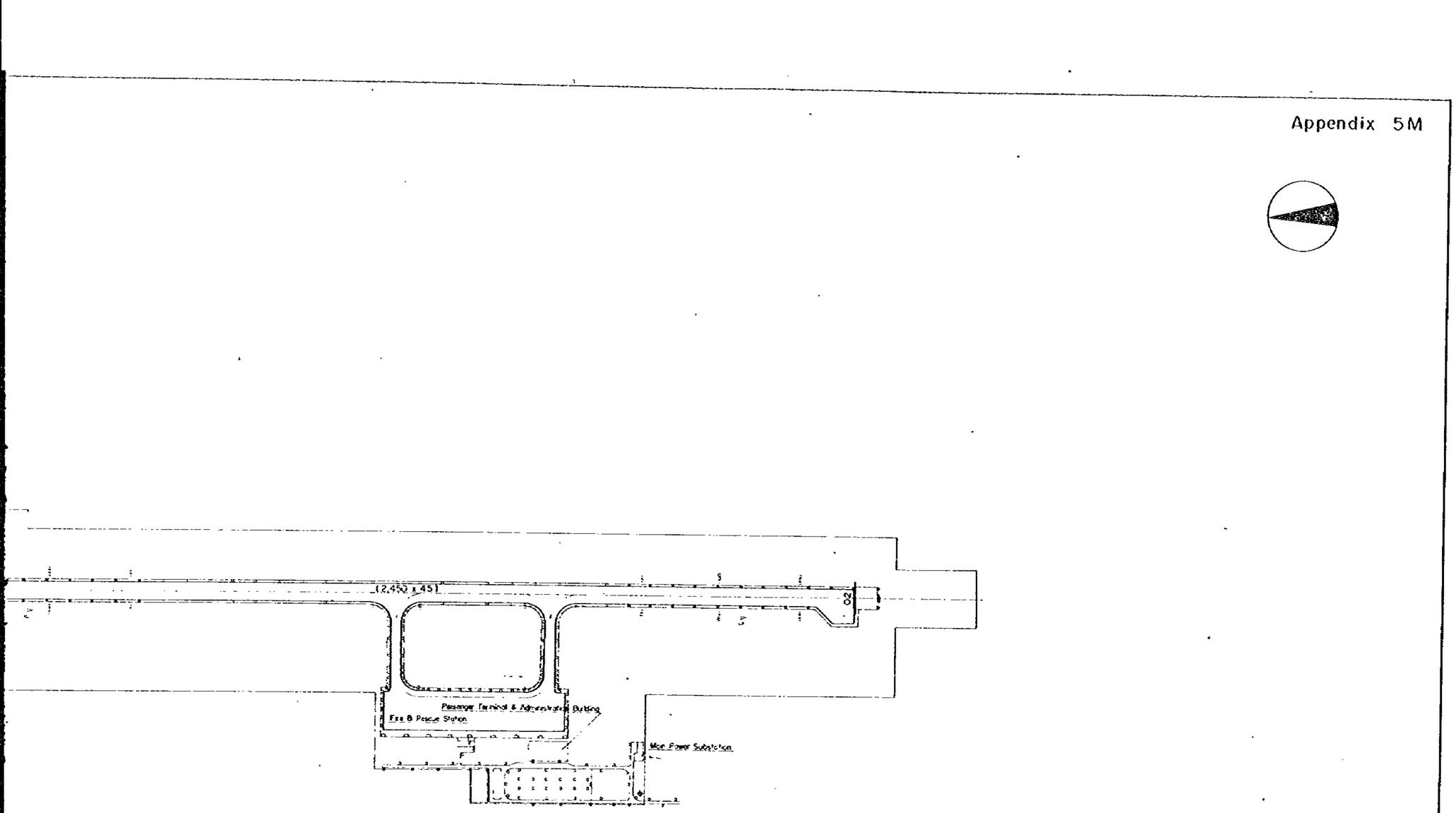


LEGEND			
SYMBOL	LIGHTS		Lamp Wattage
•	SALS	Simple Approach Lighting System Center Bar	200 (W)
		Simple Approach Lighting System Cross Bar	200
	VASIS	Visual Approach Slope Indicator System	200 x 3
○ ●	RWYL	Runway Edge Lights	200
	RWYTL	Runway Threshold Lights	
	RWYEL	Runway End Lights	
	RWYTAL	Runway Threshold Auxiliary Lights	300
⊕	OVRL	Overrun Lights	200
	TWYL	Taxiway Edge Lights	30 (45)
	TWYEL	Taxiway Exit-Entrance Lights	20
	WDIL	Wind Direction Indicator Lights	200 x 4
	ABN	Aerodrome Beacon	2,500
	FLO	Apron Flood Lights	

SCALE

0 100 200 300 400 500 M

Appendix 5M



LEGEND			
SYMBOL	LIGHTS		Lamp Wattage
	SALS	Simple Approach Lighting System Center Bar	200 (A)
		Simple Approach Lighting System Cross Bar	200
	VASIS	Visual Approach Slope Indicator System	200 x 3
	RWYEL	Runway Edge Lights	200
	RWYTL	Runway Threshold Lights	
	RWYEL	Runway End Lights	
	RWYTAL	Runway Threshold Auxiliary Lights	300
	OVRL	Overrun Lights	200
	TWYL	Taxiway Edge Lights	30 (45)
	EWYEL	Taxiway Exit-Entrance Lights	20
	WDIL	Wind Direction Indicator Lights	200 x 4
	ABN	Aerodrome Beacon	2,500
	FLO	Apron Flood Lights	—

SCALE

0 100 200 300 400 500 M

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

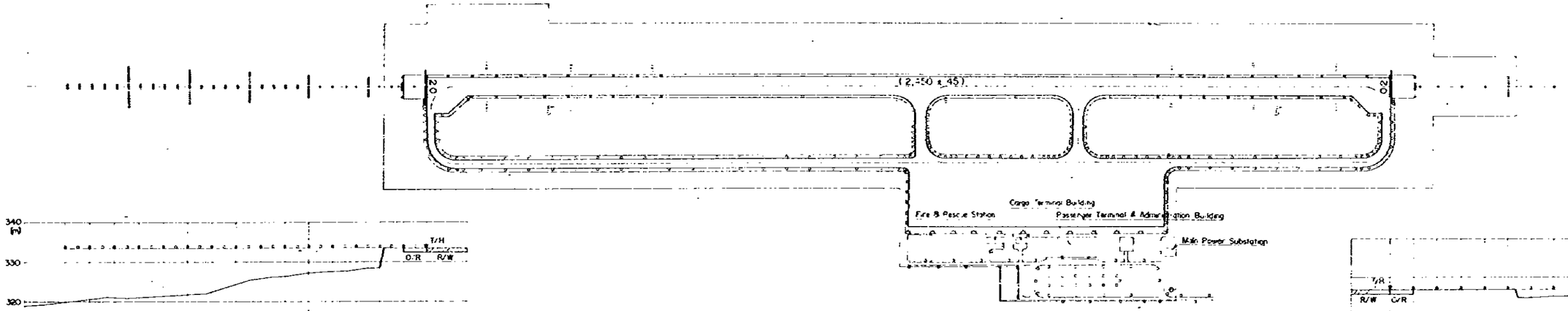
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

AIRFIELD LIGHTING SYSTEM
STAGE I

MAR 1980

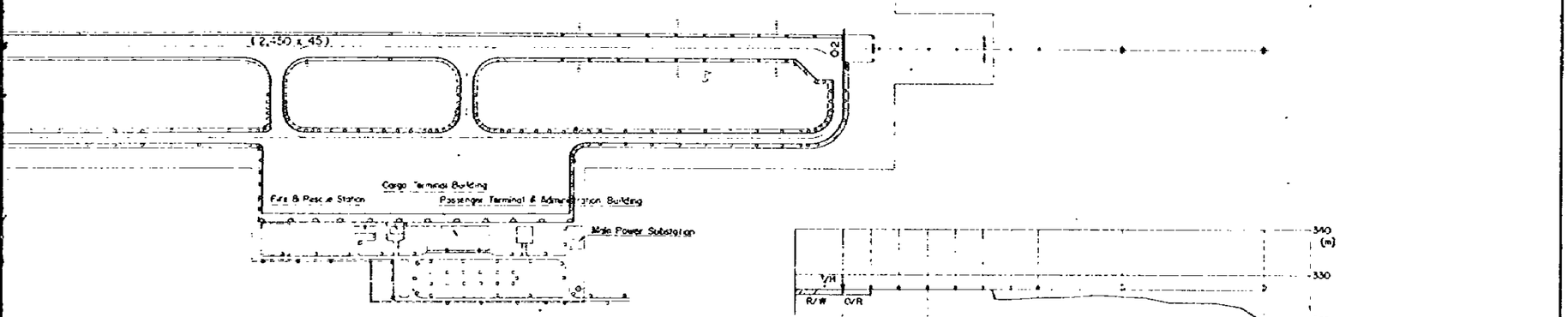
No. 22

JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND			
SYMBOL	LIGHTS		Lamp Wattage
	ALS	Approach Lighting System Center Bar	200 (4)
	SALS	Simple Approach Lighting System Center Bar	200
	ALS.SALS	Approach Lighting System Cross Bar	200
	ALB	Approach Light Beacons	500 x 5
	VASIS	Visual Approach Slope Indicator System	200 x 3
	RWYL	Runway Edge Lights	200
	RWYTL	Runway Threshold Lights	300
	RWYEL	Runway End Lights	300
	RWYTAL	Runway Threshold Auxiliary Lights	500
	CVRL	Overrun Lights	200
	TWYL	Taxiway Edge Lights	30
	TWYEL	Taxiway Exit - Entrance Lights	20
	WDIL	Wind Direction Indicator Lights	200 x 4
	ABN	Aerodrome Beacon	2,500
	FLO	Apron Flood Lights	

Appendix 5N



	Lamp Wattage
stem Center Bar	200 (4)
ng System Center Bar	200
System Cross Bar	200
ocons	500 x 5
ndicator System	200 x 3
s	200
Lights	300
	300
ssitory Lights	300
	200
s	30
rce Lights	20
cator Lights	200 x 4
	2,500

SCALE

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

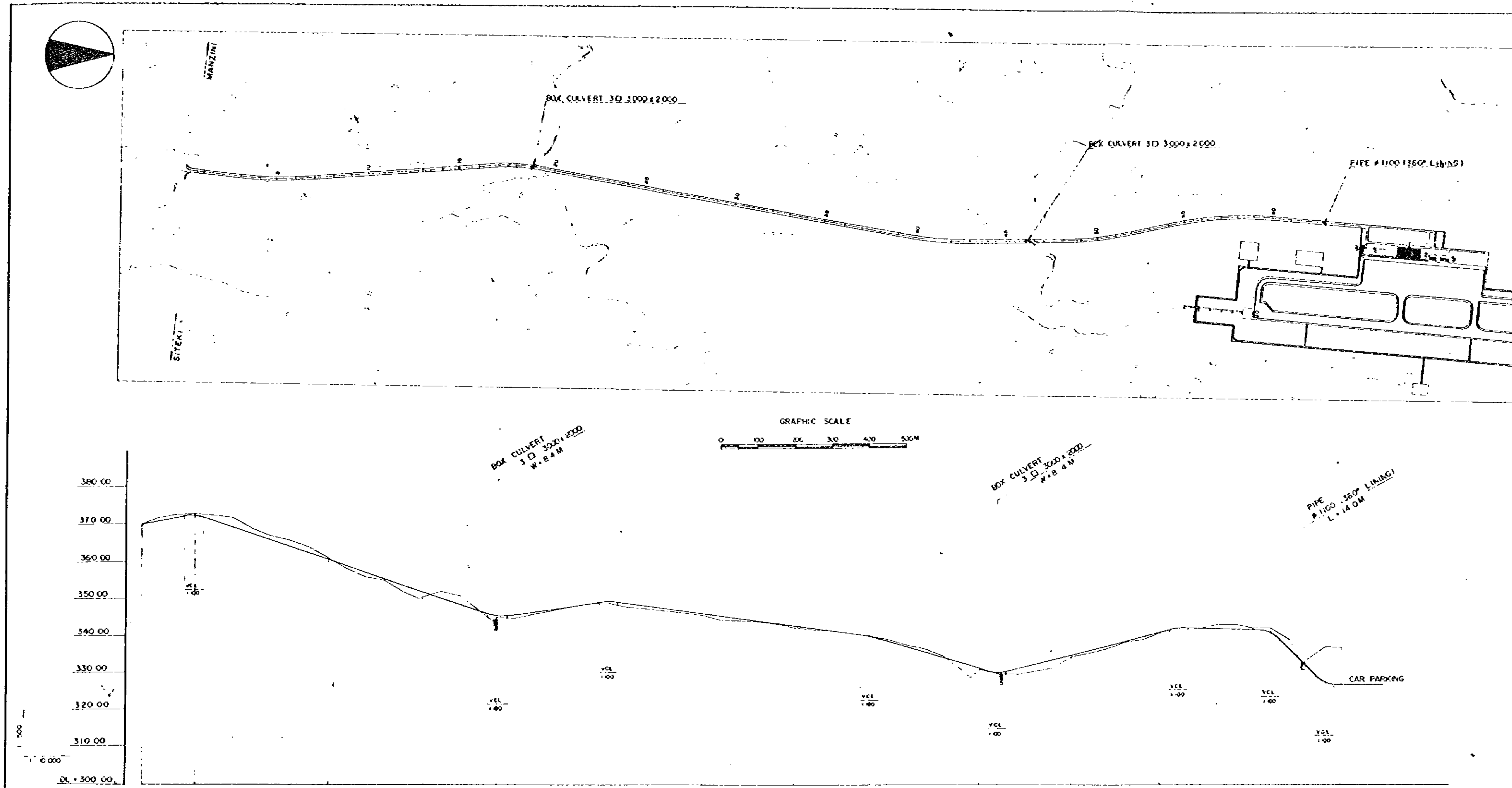
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

AIRFIELD LIGHTING SYSTEM
STAGE II

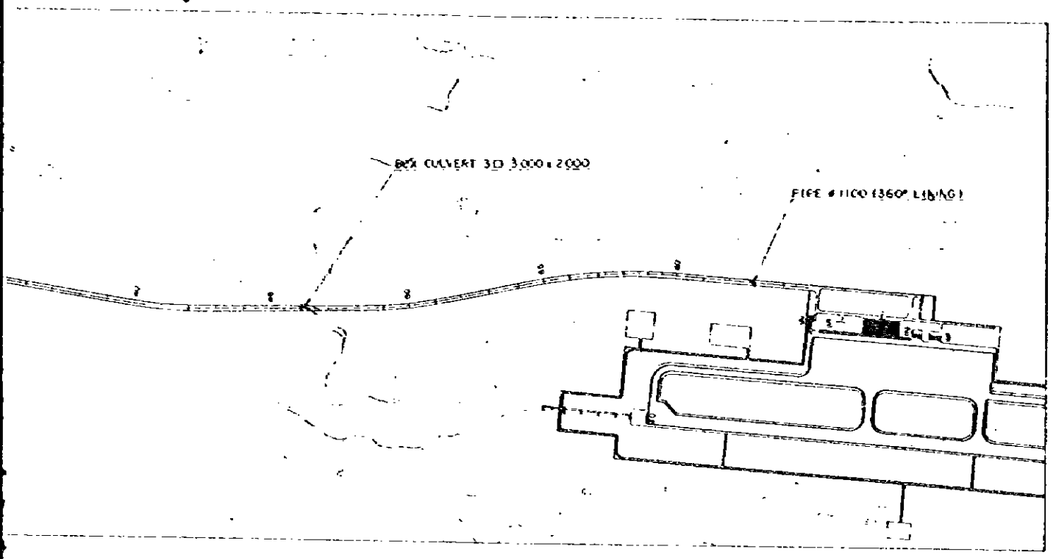
MAR 1980

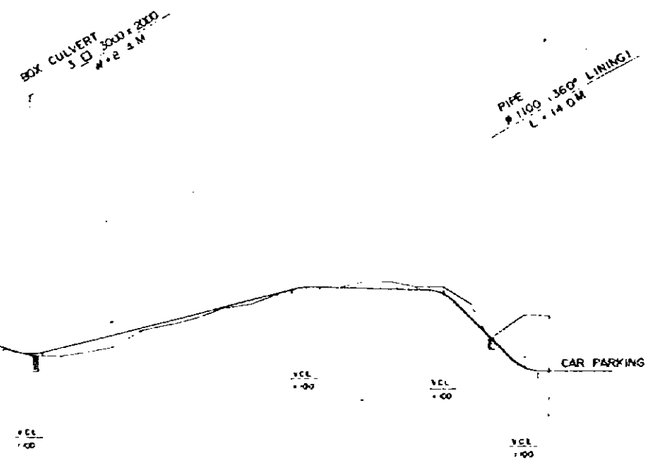
No. 23

JAPAN INTERNATIONAL COOPERATION AGENCY

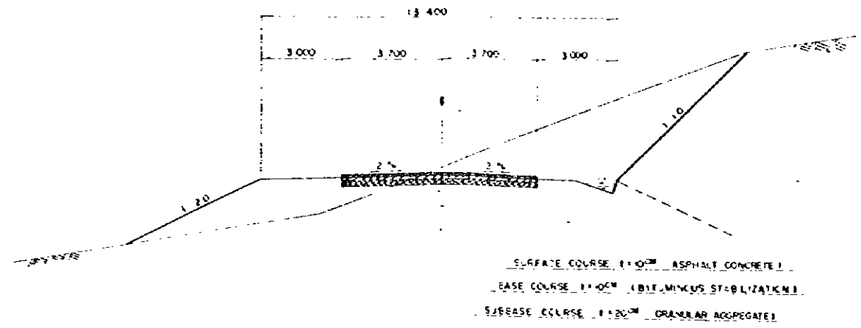


GRADIENT	370.00	373.00				345.00		350.00			340.90		330.90			343.00		342.70		327.70 LEVEL	327.70
CUT. FILL	0.00	0.09	2.50	0.25	-1.50	-0.12	-0.18	-0.98	-0.60	-0.70	0.09	0.43	0.42	-0.04	-0.50	0.25	0.15	0.24	0.92	9.68	10.30
FORMATION HEIGHT	370.00	372.91	369.50	360.75	352.00	345.12	345.83	349.98	346.60	343.20	340.41	339.07	331.92	330.42	335.50	341.75	342.85	342.76	342.58	328.32	327.70
GROUND HEIGHT	370.00	373.00	372.00	361.00	350.50	345.00	345.00	349.00	346.00	342.50	340.50	339.50	331.50	330.50	335.00	342.00	343.00	343.00	343.50	338.00	338.00
ACCUMULATED DISTANCE	0.000	300.000	500.000	1000.000	1500.000	1900.000	2000.000	2500.000	3000.000	3500.000	3900.000	4000.000	4500.000	4600.000	5000.000	5500.000	5600.000	6000.000	6100.000	6400.000	6490.000
STATION	BP (No 0)	No 3	No 5	No 10	No 15	No 19	No 20	No 25	No 30	No 35	No 39	No 40	No 45	No 46	No 50	No 55	No 56	No 60	No 61	No 64	EP (64+90.00)

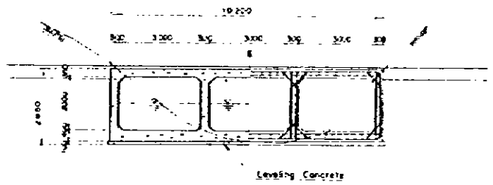




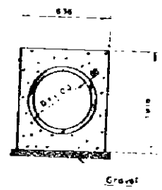
TYPICAL CROSS SECTION



BOX CULVERT 3-□ 3000x2000



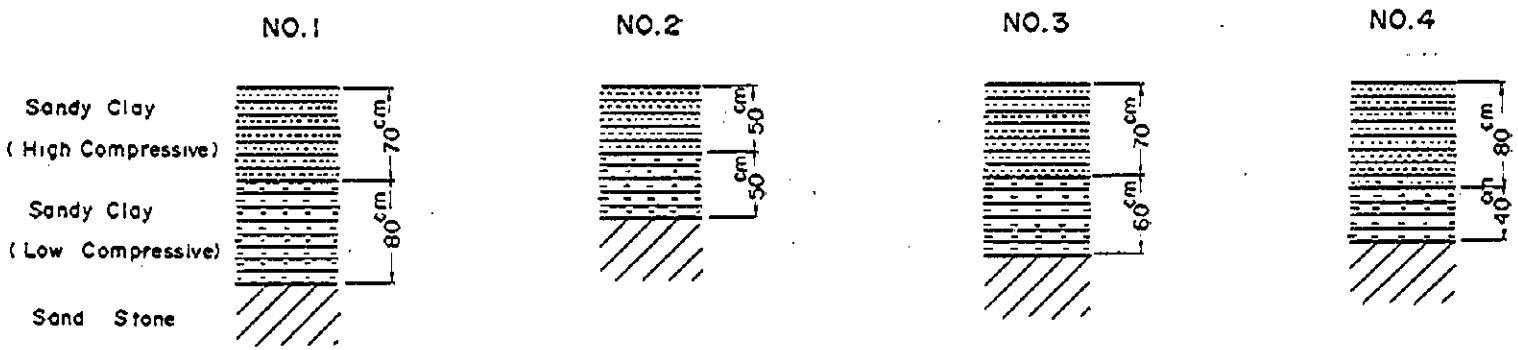
PIPE φ1100 (360° LINING)

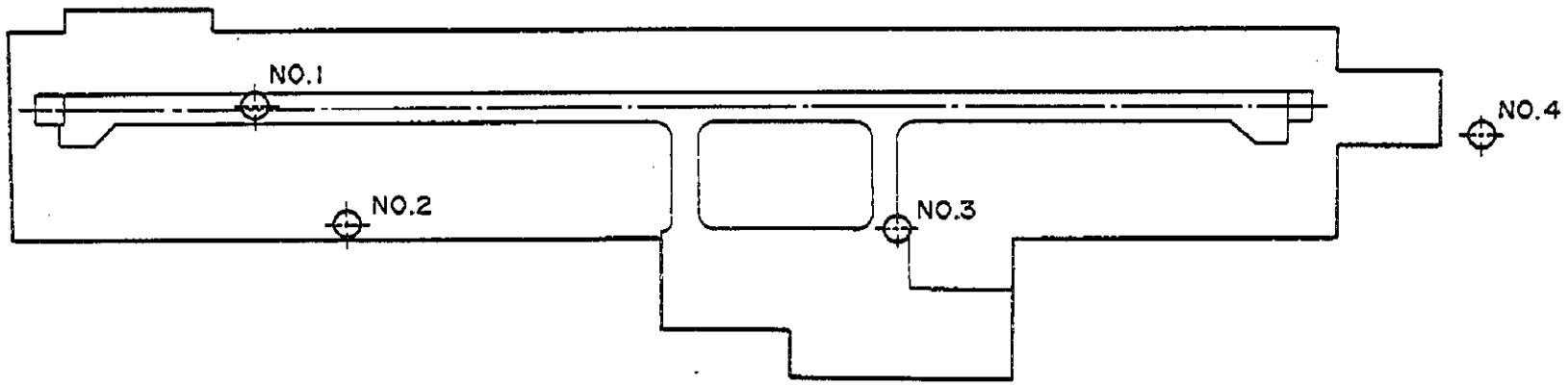


BUILDINGS

1. PASSENGER TERMINAL AND ADMINISTRATION BUILDING
2. CARGO TERMINAL BUILDING
3. FIRE / RESCUE STATION
4. M.S. POWER SUBSTATION
5. HEAD OF STATE BUILDING (AREA)

KINGDOM OF SWAZILAND	
MINISTRY OF WORKS, POWER AND COMMUNICATIONS	
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT FEASIBILITY STUDY	
APPROACH ROAD	MAR 1980
	No. 12
JAPAN INTERNATIONAL COOPERATION AGENCY	

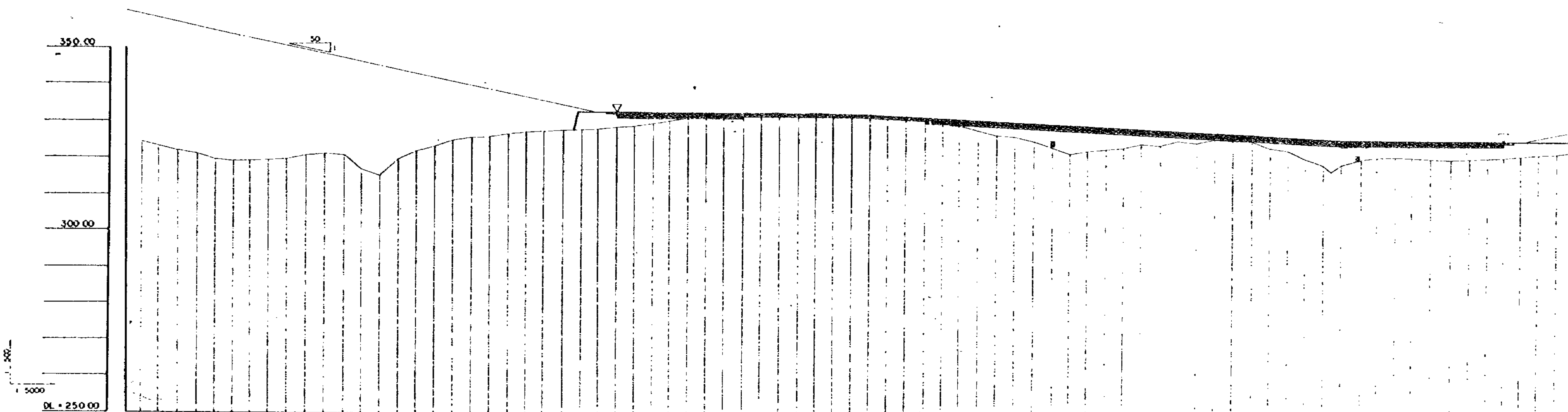




GEOLOGICAL PROFILE

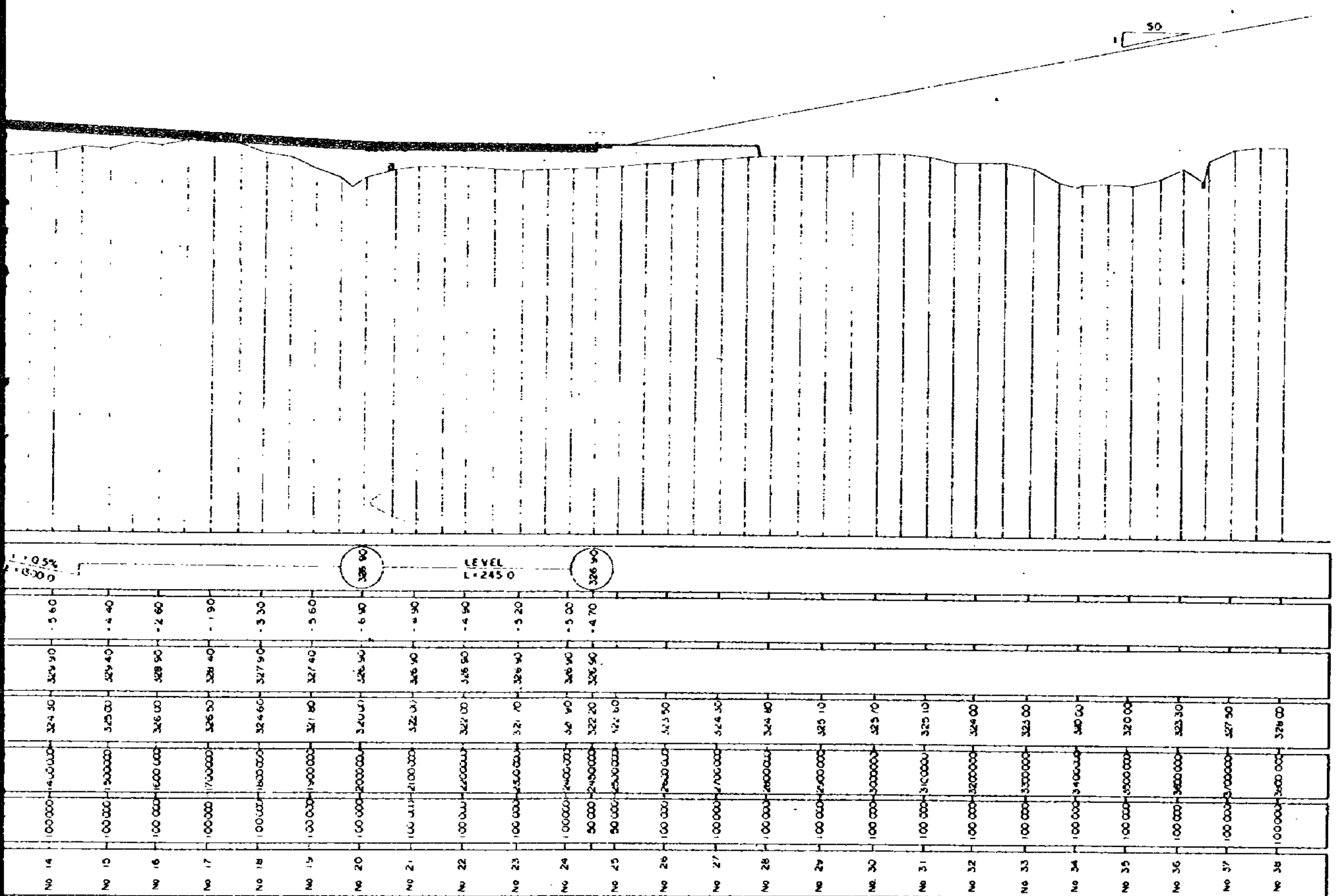
Results of Soil Tests (SIKUPE SITE)

Test	Test Pit / Depth (cm)	Test 1		Test 2			Test 3	
		d = 30 - 85	100 - 110	0 - 50	50 - 110	110 - 120	40 - 80	90 - 110
Field Moisture Content (%)		—	13.4	—	—	13.4	—	13.3
Sieve Analysis	Passing 2.0mm (%)	98.7	98.6	97.9	96.7	93.6	97.9	92.7
	" 0.42mm (%)	65.5	74.1	62.1	72.5	73.7	74.4	70.6
	" 0.074mm (%)	53.0	56.7	25.2	55.0	52.8	54.7	50.1
Atterberg's Limits	LL (%)	51.6	43.8	15.9	44.4	41.0	42.2	37.6
	PL (%)	21.0	21.1	13.1	20.1	20.6	16.8	20.2
	PI (%)	30.6	22.7	2.8	24.3	20.4	25.4	17.4
Compaction Test	CBR (56) (%)	5	6	—	3	6	7	13
	" (25) (%)	5	4	—	3	5	5	11
	Max. D.D (kg/cm^3)	1.835	1.825	—	1.786	1.820	1.875	1.750
	Field Density (")	——	1.527 (84%)	—	——	1.519 (83%)	—	1.369 (78%)
	Expansion (56) (%)	——	2.4	——	3.4	3.1	1.9	1.3
	" (25) (%)	2.5	2.3	——	2.9	2.4	2.4	1.1
Soil Classification	AASHO Type	A-7-6 Clayey Soil	A-7-6 Clayey Soil	A-2-4 Silty Gravel & Sand	A-7-6 Clayey Soil	A-7-6 Clayey Soil	A-7-6 Clayey Soil	A-7-6 Clayey Soil
	US Type	CH Plastic Clay.	CL Low Plastic Clay. Sandy Clay.	SM Silty Sand Silt & Sand	CL Low Plastic Clay. Sandy Clay.	CL "	CL "	CL "
	FAA	E-8	E-7	E-4	E-7	E-7	E-7	E-7



GRANDIENT: (333.40) LEVEL L = 700.0 (333.40) — i = 0.5% L = 1300.0 — (326.90) LEVEL L = 245.0 (326.90)

STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND HIGHT	FORMATION HIGHT	CUT FILL
No -13	100.000	1300.000	324.80		
No -12	100.000	1200.000	321.80		
No -11	100.000	1100.000	319.70		
No -10	100.000	1000.000	319.80		
No -9	100.000	900.000	319.80		
No -8	100.000	800.000	321.20		
No -7	100.000	700.000	317.00		
No -6	100.000	600.000	320.80		
No -5	100.000	500.000	323.30		
No -4	100.000	400.000	326.00		
No -3	100.000	300.000	327.10		
No -2	100.000	200.000	327.70		
No -1	100.000	100.000	328.40		
No 0	0.000	0.000	329.00	333.40	-4.40
No 1	100.000	100.000	330.30	333.40	-3.10
No 2	100.000	200.000	332.00	333.40	-1.40
No 3	100.000	300.000	332.80	333.40	-0.60
No 4	100.000	400.000	333.40	333.40	0.00
No 5	100.000	500.000	333.30	333.40	-0.10
No 6	100.000	600.000	333.40	333.40	0.00
No 7	100.000	700.000	333.00	333.40	+0.40
No 8	100.000	800.000	332.30	332.90	-0.60
No 9	100.000	900.000	331.30	332.40	-1.10
No 10	100.000	1000.000	329.00	331.90	+2.90
No 11	100.000	1100.000	327.20	331.40	+4.20
No 12	100.000	1200.000	324.50	330.90	+6.40
No 13	100.000	1300.000	323.50	330.40	+6.90
No 14	100.000	1400.000	324.30	329.90	+5.60
No 15	100.000	1500.000	325.00	329.40	+4.40
No 16	100.000	1600.000	326.00	328.90	+2.90
No 17	100.000	1700.000	326.50	328.40	+1.90
No 18	100.000	1800.000	324.60	327.90	+3.30
No 19	100.000	1900.000	321.80	327.40	+5.60
No 20	100.000	2000.000	320.00	326.90	+6.90
No 21	100.000	2100.000	[illegible]	326.90	[illegible]
No 22	100.000	2200.000	[illegible]	326.90	[illegible]
No 23	100.000	2300.000	321.70	326.90	+5.20
No 24	100.000	2400.000	[illegible]	326.90	[illegible]
	50.000	2450.000	322.20	326.90	+4.70
No 25	50.000	2500.000	[illegible]		
No 26	100.000	2600.000	[illegible]		



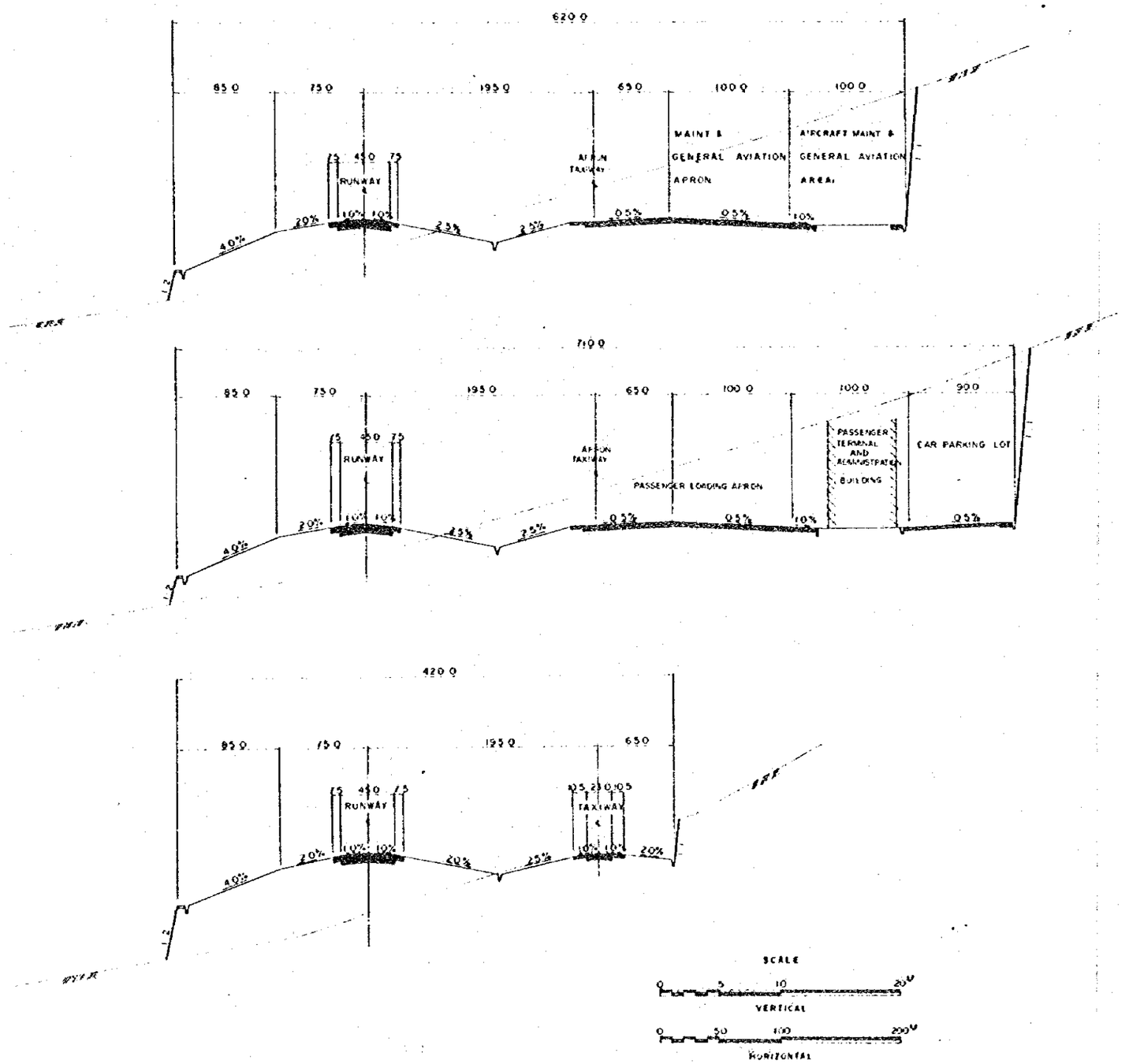
KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

LONGITUDINAL PROFILE OF RUNWAY | No. 6

JAPAN INTERNATIONAL COOPERATION AGENCY



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MINISTRY OF WORKS, POWER AND COMMUNICATIONS

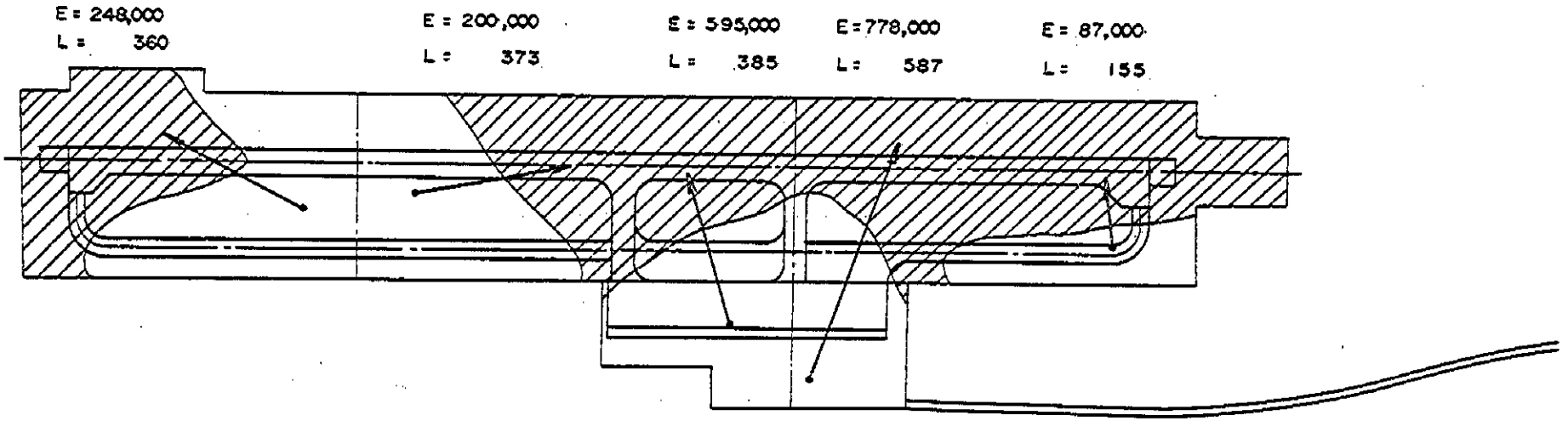
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

RUNWAY STRIP
TYPICAL CROSS SECTION

MAR. 1980

No. 7

JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND

EMBANKMENT AREA

EXCAVATION AREA

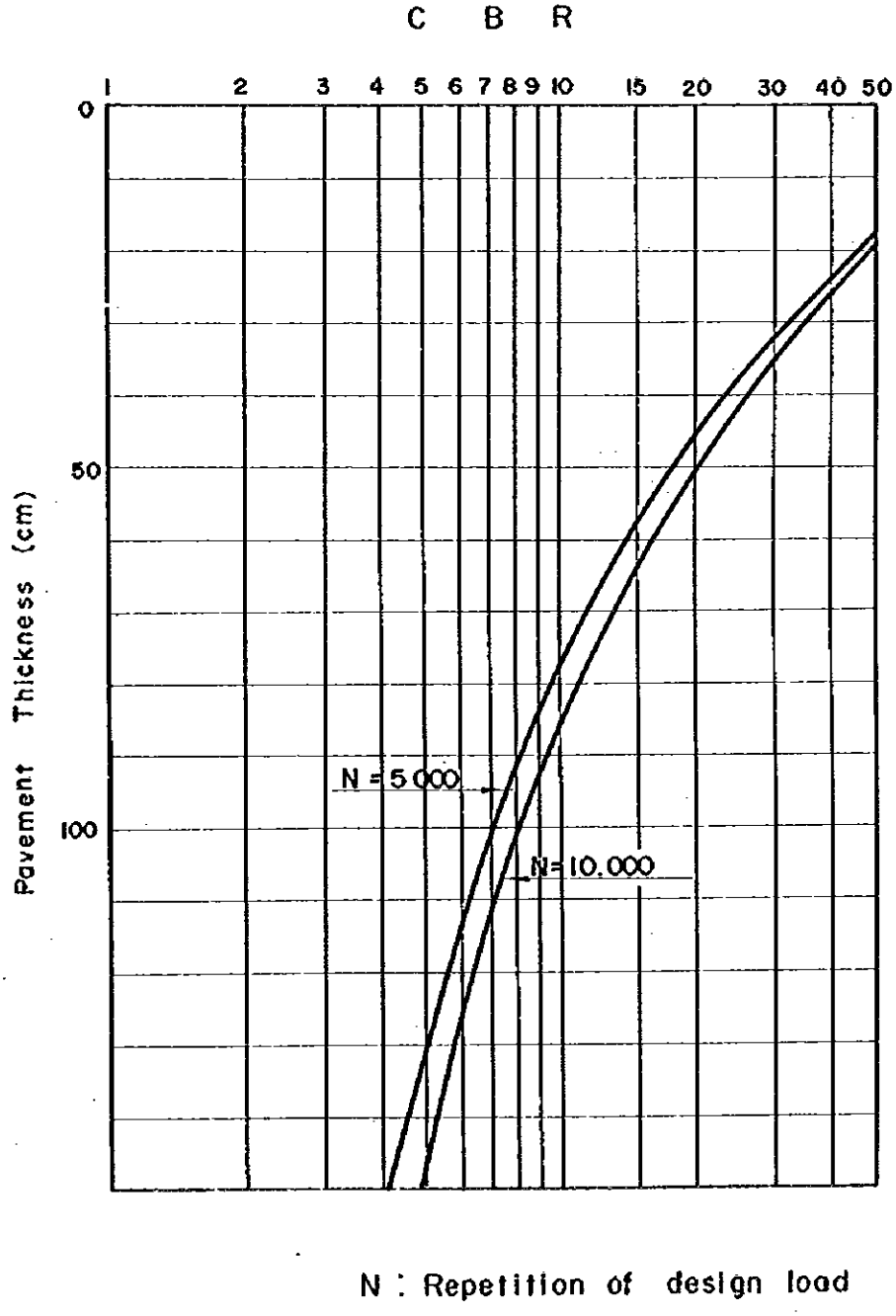
DIRECTION OF EARTH MOVING

E QUANITY OF EARTH MOVING (M^3)

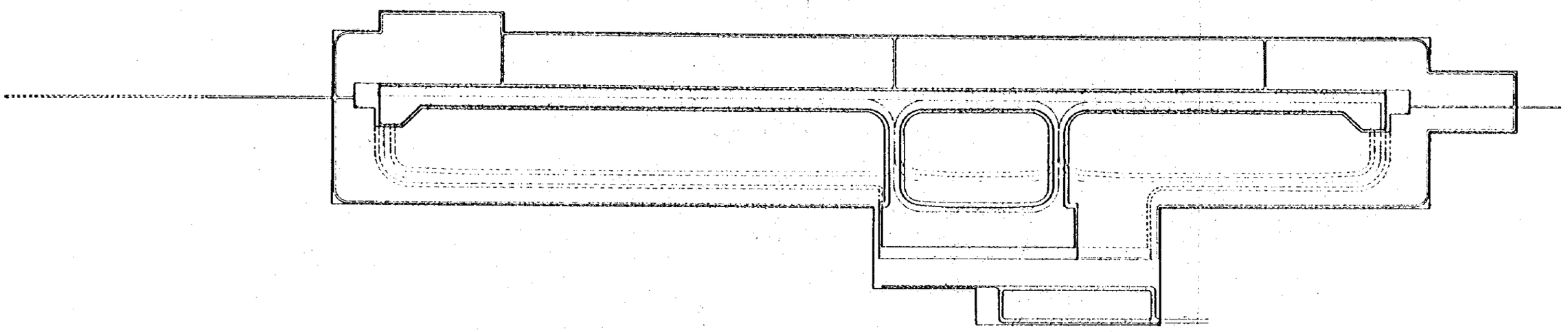
L AVERAGE DISTANCE OF EARTH MOVING (M)

DISTRIBUTION DIAGRAM OF EARTHWORK

Appendix 6D



FLEXIBLE PAVEMENT DESIGN CURVE (B707)



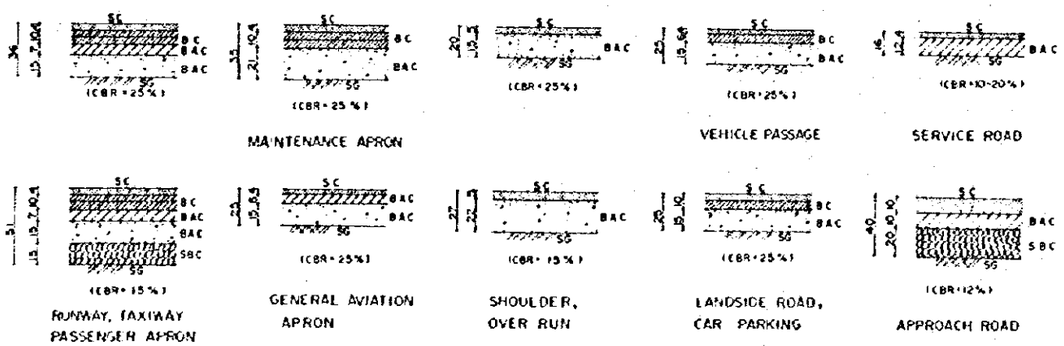
SCALE

0 100 200 300 400 500M

LEGEND

- AIRFIELD PAVEMENT
- PARKING LOT
- LANDSIDE ROAD
- SERVICE ROAD

PAVEMENT STRUCTURE SECTION



MAINTENANCE APRON

VEHICLE PASSAGE

SERVICE ROAD

RUNWAY, TAXIWAY
PASSENGER APRON

GENERAL AVIATION
APRON

SHOULDER,
OVER RUN

LANDSIDE ROAD,
CAR PARKING

APPROACH ROAD

LEGEND

- SC SURFACE COURSE (ASPHALT CONCRETE)
- BC BINDER COURSE (ASPHALT CONCRETE)
- BAC BASE COURSE (BITUMINOUS STABILIZATION)
- BAC BASE COURSE (CRUSHED AGGREGATE FOR MECHANICAL STABILIZATION)
- SBC SUBBASE COURSE (GRANULAR AGGREGATE WITH SAND STONE)
- SG SUBGRADE

KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

PAVEMENT PLAN

MAR 1980

No 10

JAPAN INTERNATIONAL COOPERATION AGENCY