

9.2 新空港の管理運営体制

9.2.1 管理運営形態

新空港の管理運営形態は、第7章における財務分析の結果から判断して独立採算制の公団形式とすることは困難であると想定されるので、開港後は政府直轄空港として運営されることが妥当であろうと考えられる。

9.2.2 新空港の管理運営体制

新空港の管理運営にとって必要となる業務を円滑かつ効果的に実施するため、Fig 9.3に示すような管理運営組織の確立が必要となる。各部門の業務および要員数は以下のとおりである。

なお、要員数は1995年までは1日15時間運用、以後は18時間運用となるものとして推定した。(Table 9.1)

1) 航空管制部門

新空港では進入管制業務および飛行場管制業務が実施されるので、この2席にフライト・データ席を加え、3名1組として交替勤務を行う。1995年までは3チーム制とし、先任管制官および訓練・管理担当管制官各1名を加えた12名態勢とする。また、1996年以降は4チーム制とし、先任管制官1名、訓練・管理担当管制官2名を置いて計15名態勢とする。

2) 航務・通信部門

航務・通信部門は、飛行計画書の受理および関係機関への通報、航空情報の管理、航空固定通信、航空機移動区域の管理等の業務を担当する。2人1組とし、1995年までは6名、以後は7名の要員を配することとする。

3) 気象部門

気象部門は、航空気象観測ならびにターミナル気象予報を担当する。1995年では6名、以後7名を配置する。

4) 空港消防部門

空港消防部門は、航空事故に対する消火救難業務と、平時における警務業務を担当する。1995年までは28名、以後33名の要員を配置する。

5) 無線・通信保守部門

無線・通信保守部門は、VOR/DME, NDB等の航行援助施設、航空移動通信設備および航空固定通信設備の維持管理を担当する。1955年までは11名、以後15名の要員を配置する。

6) 電気・機械保守部門

電気・機械保守部門は、空港照明施設その他の電気施設、および空調機その他の機械設備の維持管理を担当する。但し、業務は主として外注するものとし、応急措置および管理要員として4名を配置する。

7) 空港基本施設保守部門

空港基本施設保守部門は、滑走路、誘導路、エプロン、着陸帯等の土木施設および都市設備等の維持管理を担当する。

但し、維持業務は全て外注で行うものとし、管理要員2名を配置する。

8) 建物施設保守部門

建物施設保守部門は、旅客ターミナル・ビルその他の空港当局の管理下にある建物施設の維持管理を担当する。但し、維持業務は全て外注で行うものとし、管理要員2名を配置する。

9) 経理・補給部門

経理・補給部門は、物品の補給ならびに金銭出納業務を担当することとし、要員3名を配置する。

10) 統計担当部門

新空港に係る全ての統計事務を担当する。要員1名を配置する。

11) 庶務部門

庶務部門は、空港事務所職員の人事、庶務事項を担当する。要員2名を配置する。他に秘書兼タイピスト2名を配置する。また、このほか、空港当局が直接管理する建物施設の清掃およびメッセンジャー業務のための雑務担当者として、1995年までは12名、以後15名を配置する。

12) 電話交換手

空港事務所の電話交換手を、1995年までは3名、以後4名を配置する。

9.2.3 新空港要員の養成

現 Matsapa 空港は、航空管制要員 3 名、ラジオ・メンテナンス要員 2 名、気象観測要員 1 名、テレタイプ通信要員 2 名、空港消防要員 17 名、会計担当者 1 名、電話交換手 1 名、タイピスト 1 名の 28 名のスタッフと空港長 1 名の計 29 名で、午前 7 時から午後 5 時 30 分までの 10 時間半の運用を行っているが、運営体制強化のため、52 名の要員増（警察官を除く）の要求が出されている。

将来、新空港が開港した場合、現 Matsapa 空港は国内ゼネラル・エビエーション用となる計画なので、極めて限られた管理要員で運営は可能となるものと考えられるから、現空港の要員の大半は新空港へ転出することが可能となるであろう。

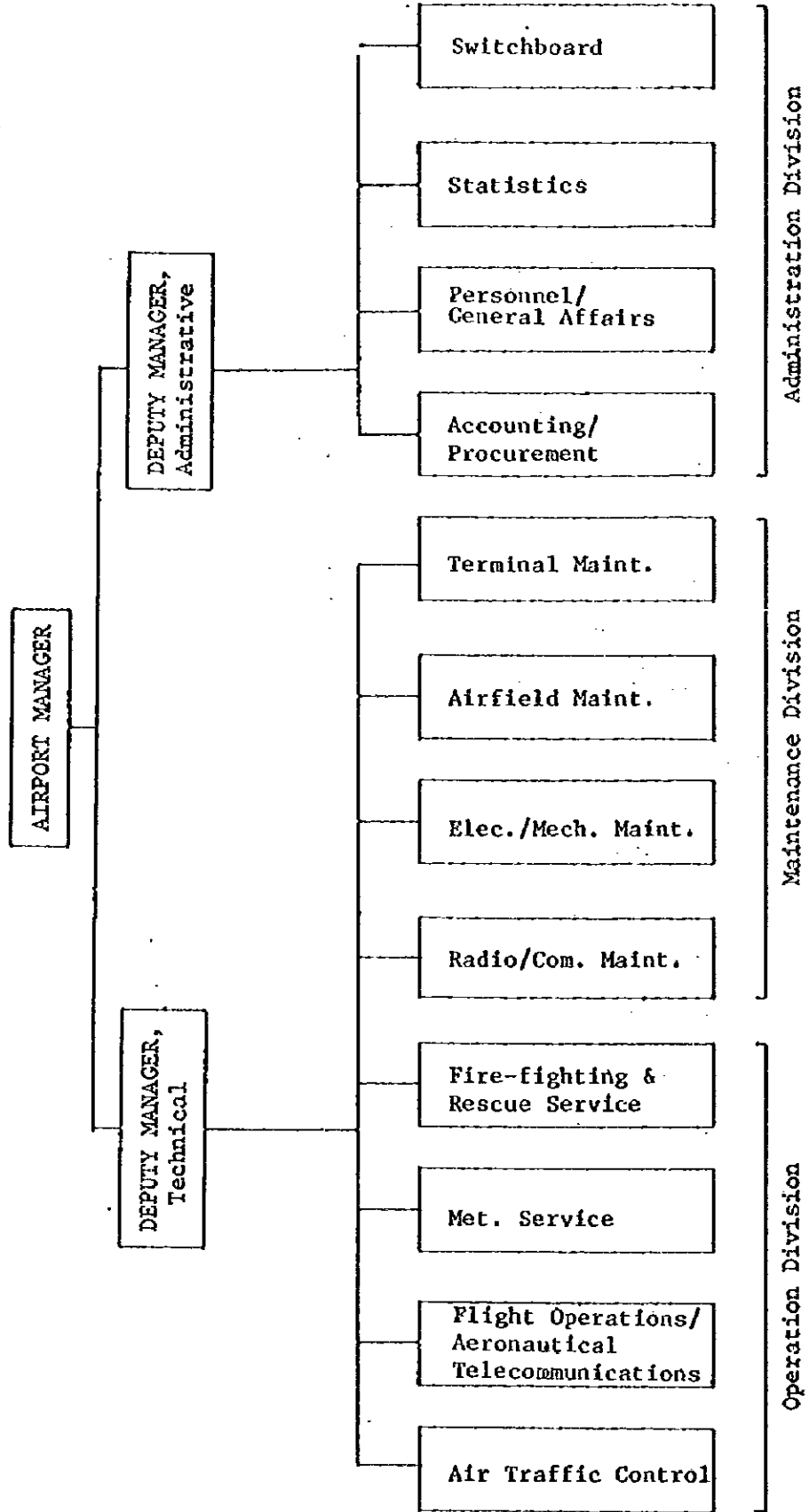
現在、UNDP の空港管理要員訓練計画によって、1981 年までに 28 名の空港管理要員（監理関係を除く）の養成が完了する予定であるが、現 Matsapa 空港の技術要員を仮りに 10 名、新空港への転出要員を 43 名としても、新空港で 1985 年に必要となる技術要員数 70 名には、なお 27 名不足することになる。

従って、今後、既存の訓練計画の完全実施の外に、遅くとも新空港の開港半年前までに残る 27 名の技術要員の養成を完了しておくことが必要である。

**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 Service	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

Fig. 9.3 PROPOSED ORGANIZATION CHART FOR NEW INTERNATIONAL AIRPORT



APPENDIX

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

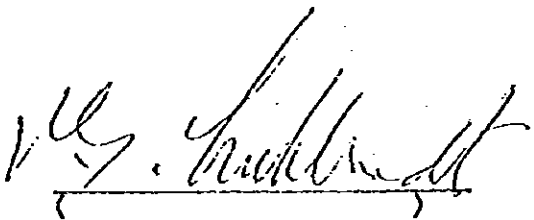
AGREED

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.

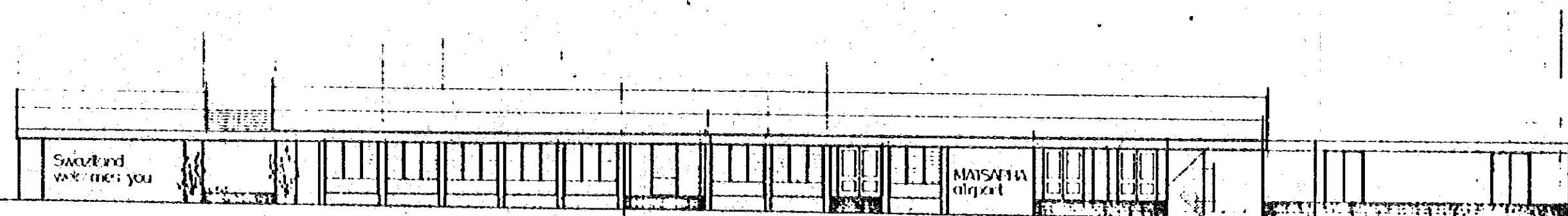
VI. TIME SCHEDULE

JICA will conduct the study on the following schedule.

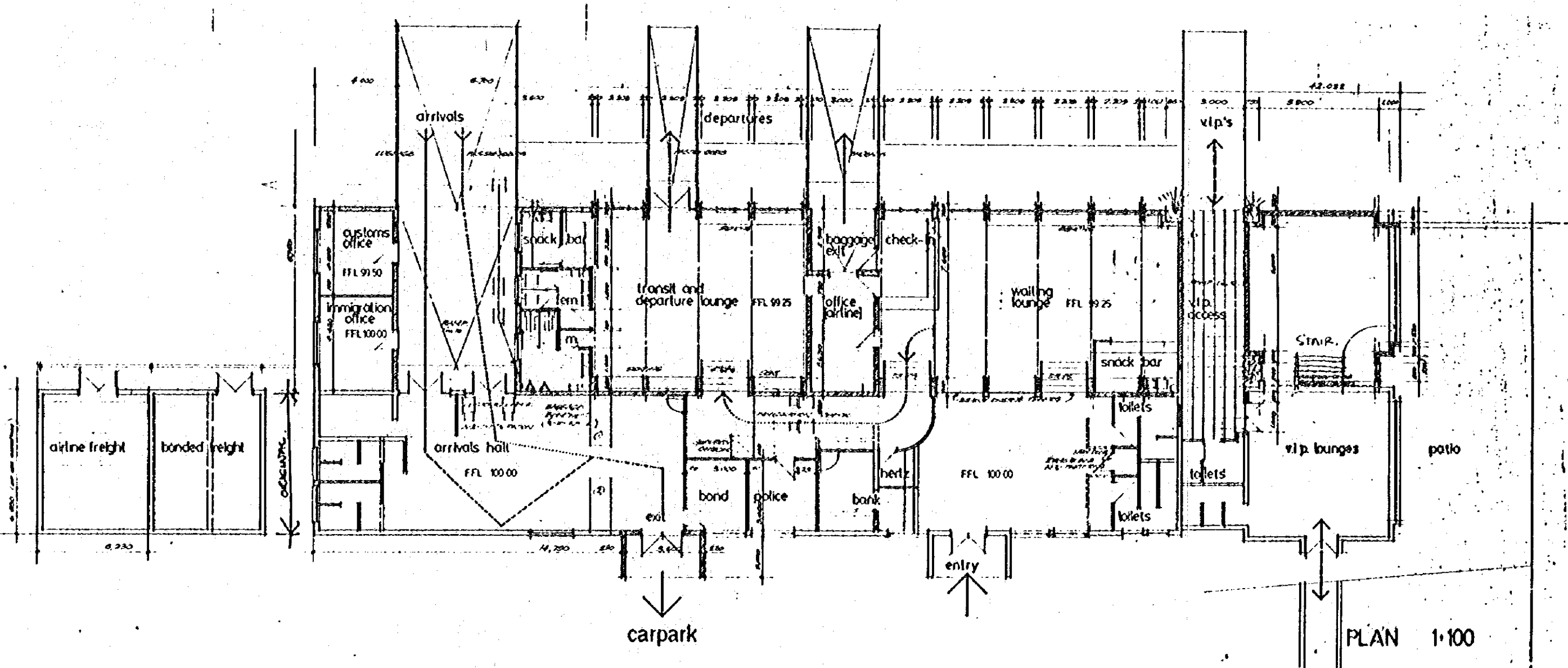
This time schedule, however, is subject to change according to circumstances.

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		



v.i.p's baggage exit apron passenger exit arrivals freight **ELEVATION TO APRON**



PLAN 1:100

Contract E100,000
Start - July 12th
Finish - Sept 6th

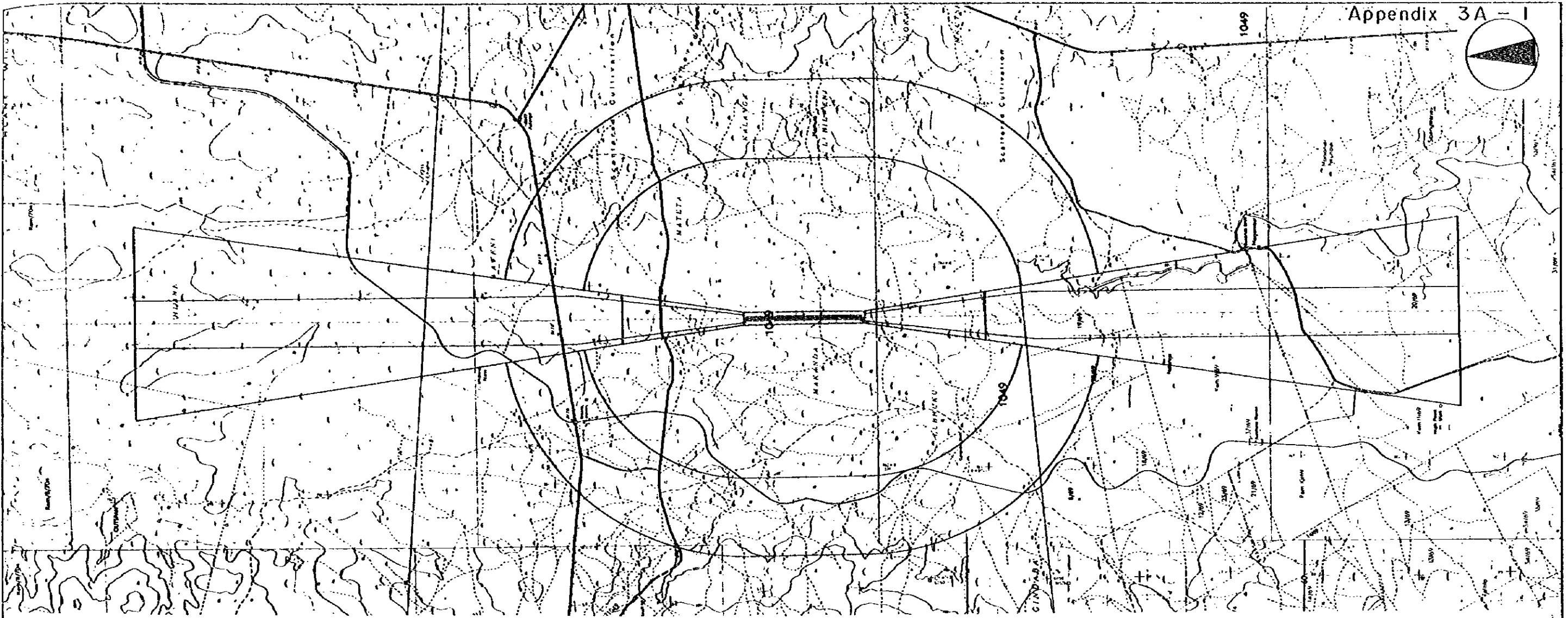
REVISIONS		LIST OF RELATED DRAWINGS
NO.	DESCRIPTION	

DESIGN GROUP			
DESIGNER	DATE	REVISED	BY

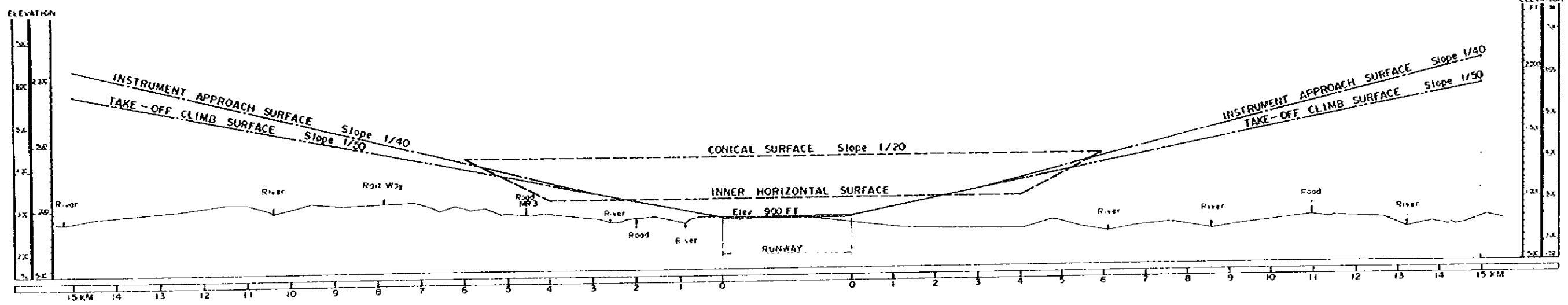
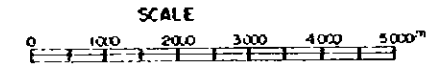
ARCHITECTURAL DESIGN OFFICE
GOVERNMENT OF SWAZILAND
MINISTRY OF WORKS, POWER & WATER
P.O. BOX 18, MABABANE, SWAZILAND

MATSAPHA AIRPORT
terminal improvements

7321/03



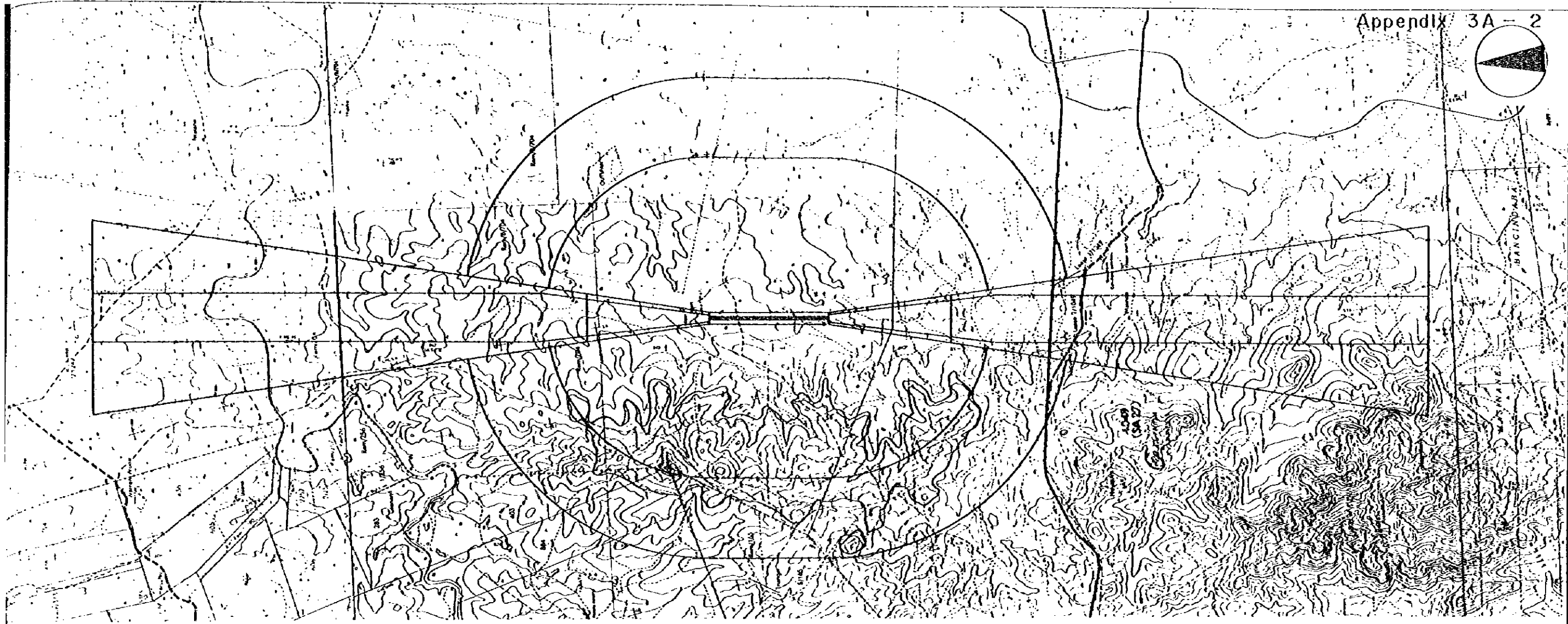
PLAN



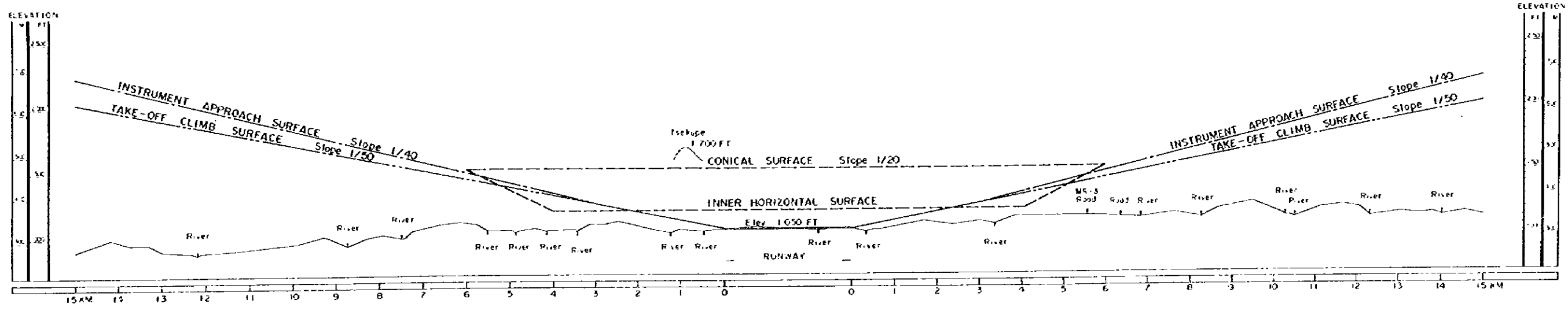
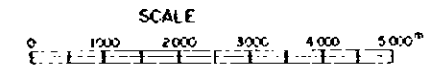
PROFILE OF OBSTRUCTION LIMITATION AREA

- NOTES
- 1) INSTRUMENT RUNWAY
 - 2) ICAO OBSTRUCTION RESTRICTION
 - 3) RUNWAY LENGTH 3,000'
 - 4) RUNWAY ORIENTATION 160°-300°
 - 5) AIRPORT ELEVATION 1,000 FT
- - TOPOGRAPHICALLY OBSTRUCTED AREA

OBSTRUCTION CHART
MPAKA SITE



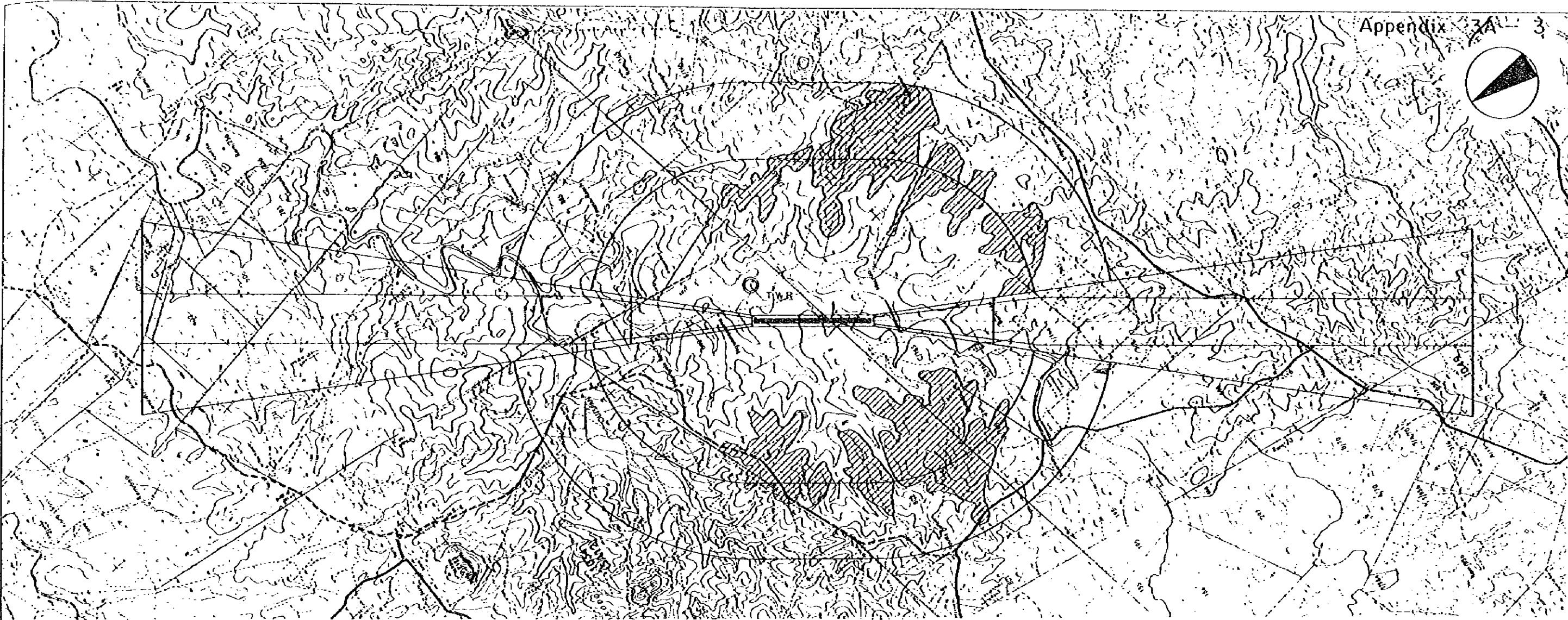
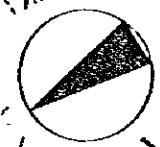
PLAN



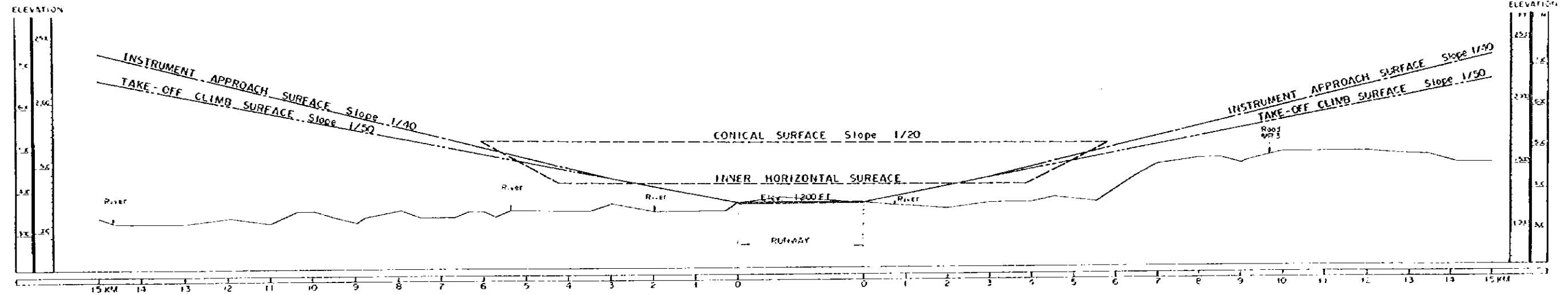
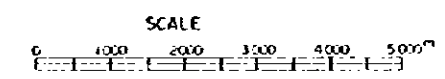
PROFILE OF OBSTRUCTION LIMITATION AREA

- NOTES
- 1) INSTRUMENT RUNWAY
 - 2) ICAO OBSTRUCTION RESTRICTION
 - 3) RUNWAY LENGTH 3,000m
 - 4) RUNWAY ORIENTATION 4° - 184°
 - 5) AIRPORT ELEVATION 1,050 FT
- ⊗ - TOPOGRAPHICALLY OBSTRUCTED AREA

OBSTRUCTION CHART
SIKUPE SITE



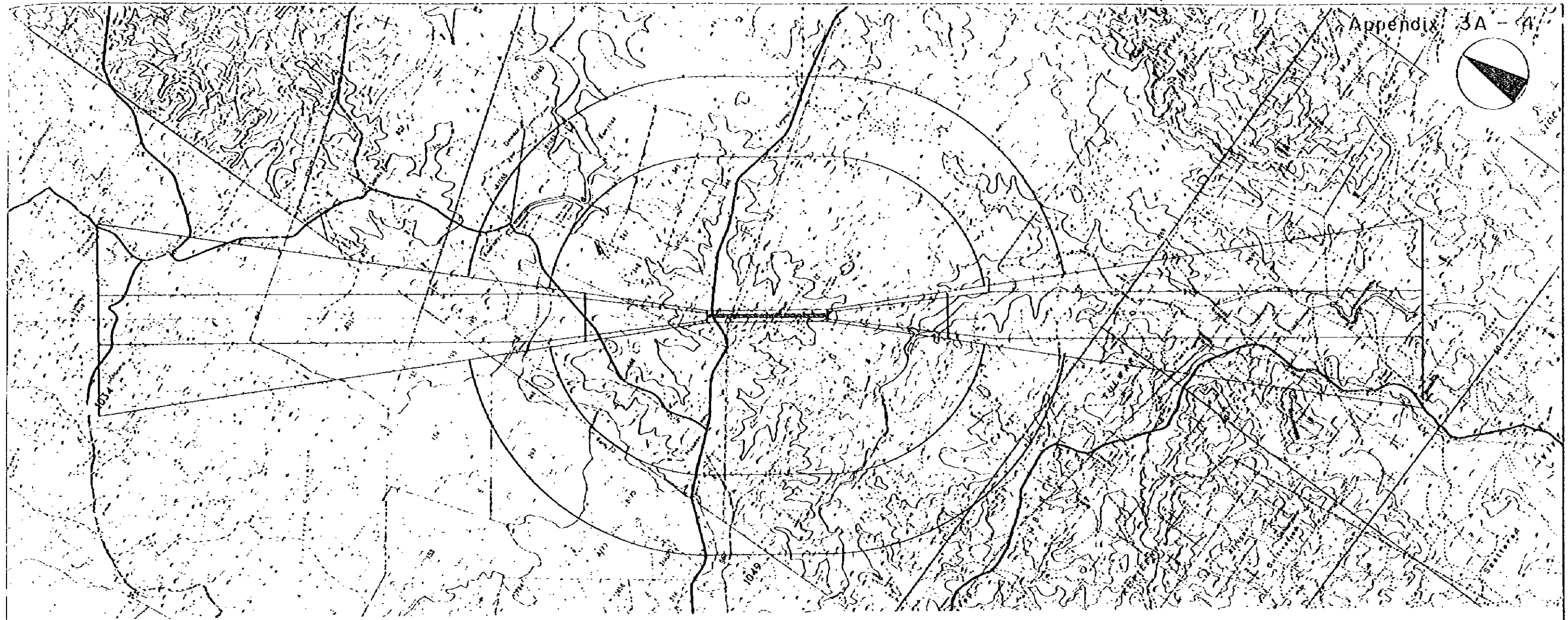
PLAN



PROFILE OF OBSTRUCTION LIMITATION AREA

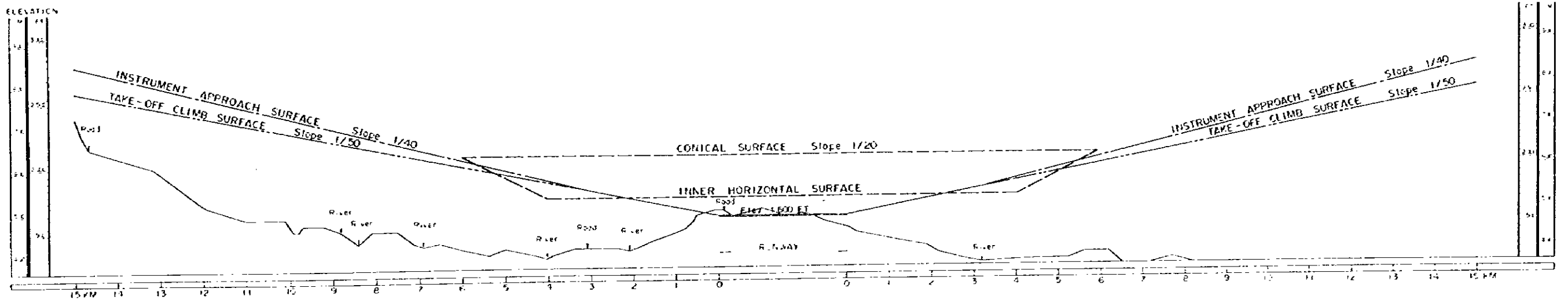
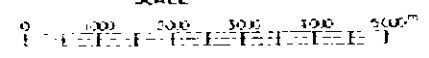
- NOTES
- 1) INSTRUMENT RUNWAY
 - 2) ICAO OBSTRUCTION RESTRICTION
 - 3) RUNWAY LENGTH 3,000m
 - 4) RUNWAY ORIENTATION 30°-210°
 - 5) AIRPORT ELEVATION 1,200FT
- ⊙ - TOPOGRAPHICALLY OBSTRUCTED AREA

OBSTRUCTION CHART
MPISI SITE



PLAN

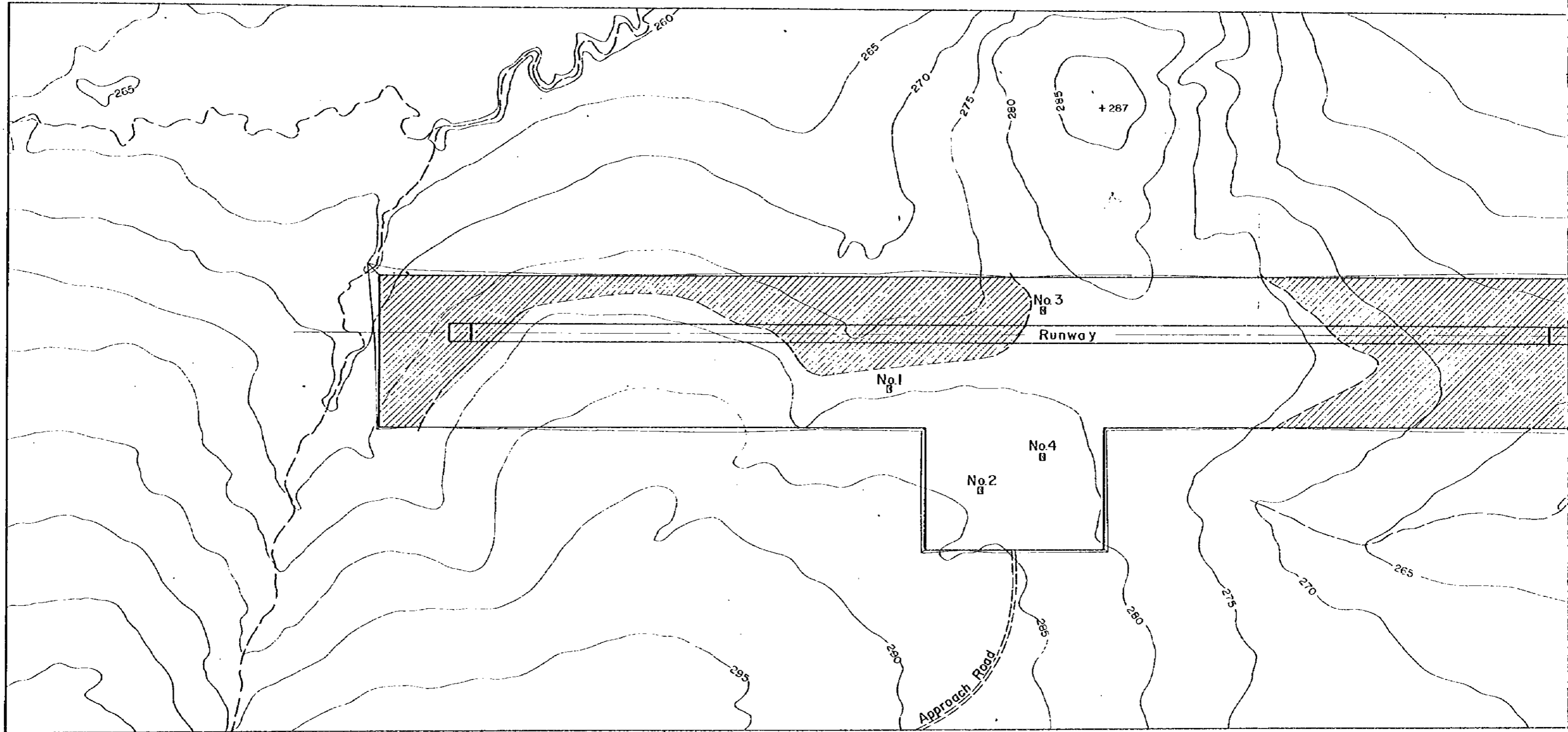
SCALE



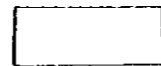
PROFILE OF OBSTRUCTION LIMITATION AREA

- NOTES
- 1) INSTRUMENT RUNWAY
 - 2) ICAO OBSTRUCTION RESTRICTION
 - 3) RUNWAY LENGTH 3,000m
 - 4) RUNWAY ORIENTATION 144° - T.L.
 - 5) AIRPORT ELEVATION 1,600 FT
- ⊙ - TOPOGRAPHICALLY OBSTRUCTED AREA

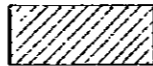
OBSTRUCTION CHART
MOGOBI SITE



LEGEND



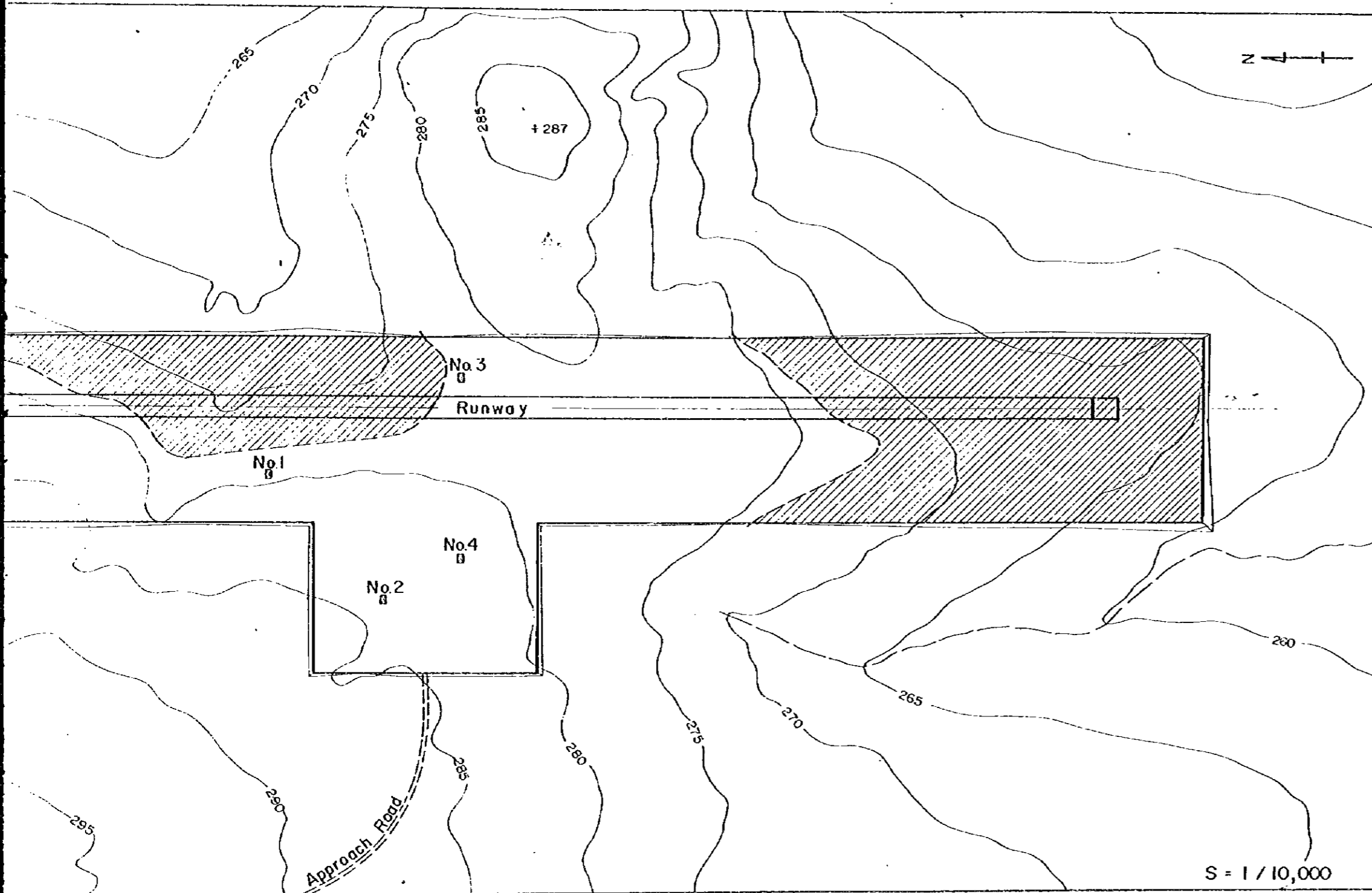
Cut Area



Embankment Area

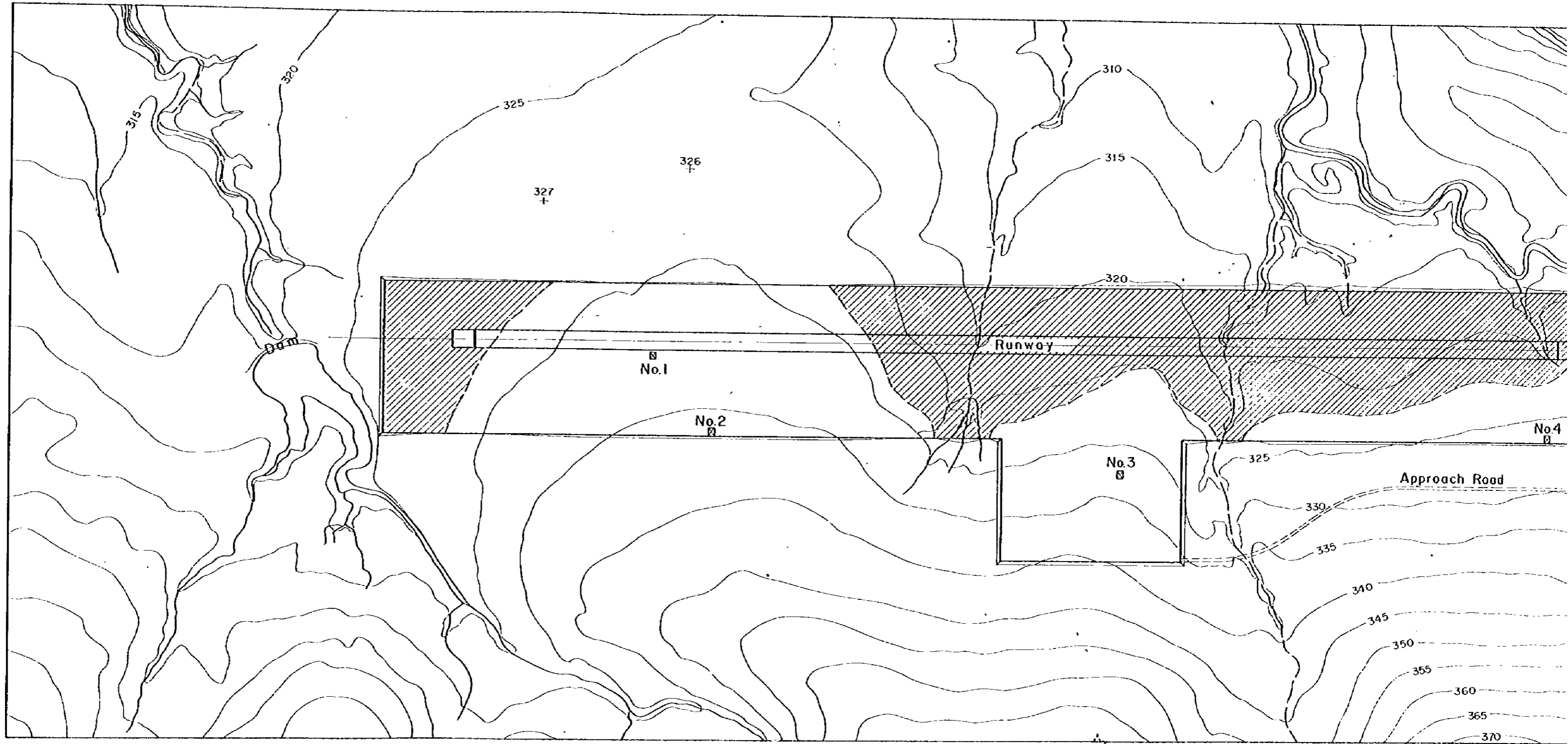


Trial Pit



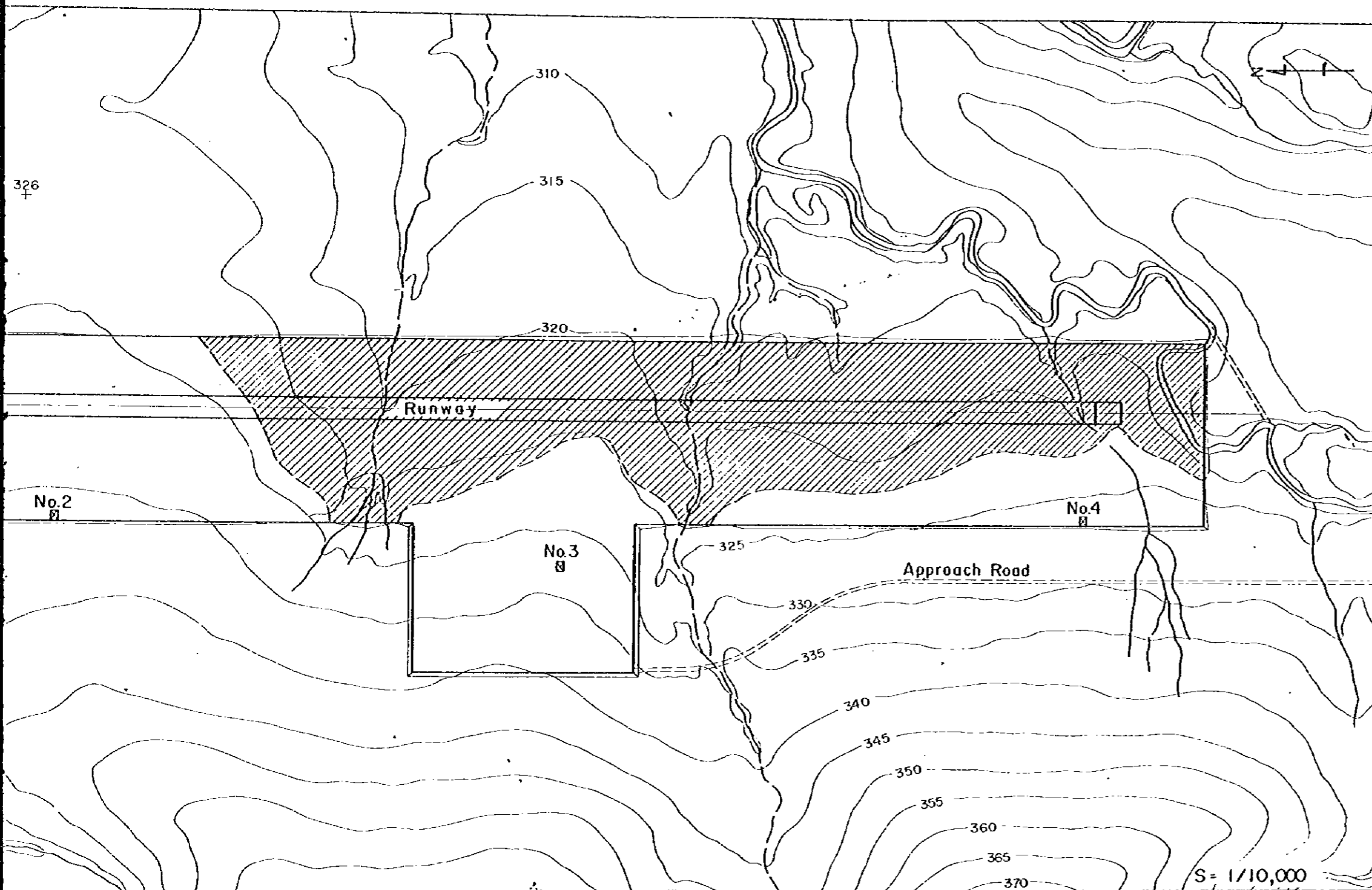
Embankment Area
Trial Pit

GRADING PLAN
MPAKA SITE



LEGEND

- Cut Area
- Embankment Area
- Trial Pit



Embankment Area

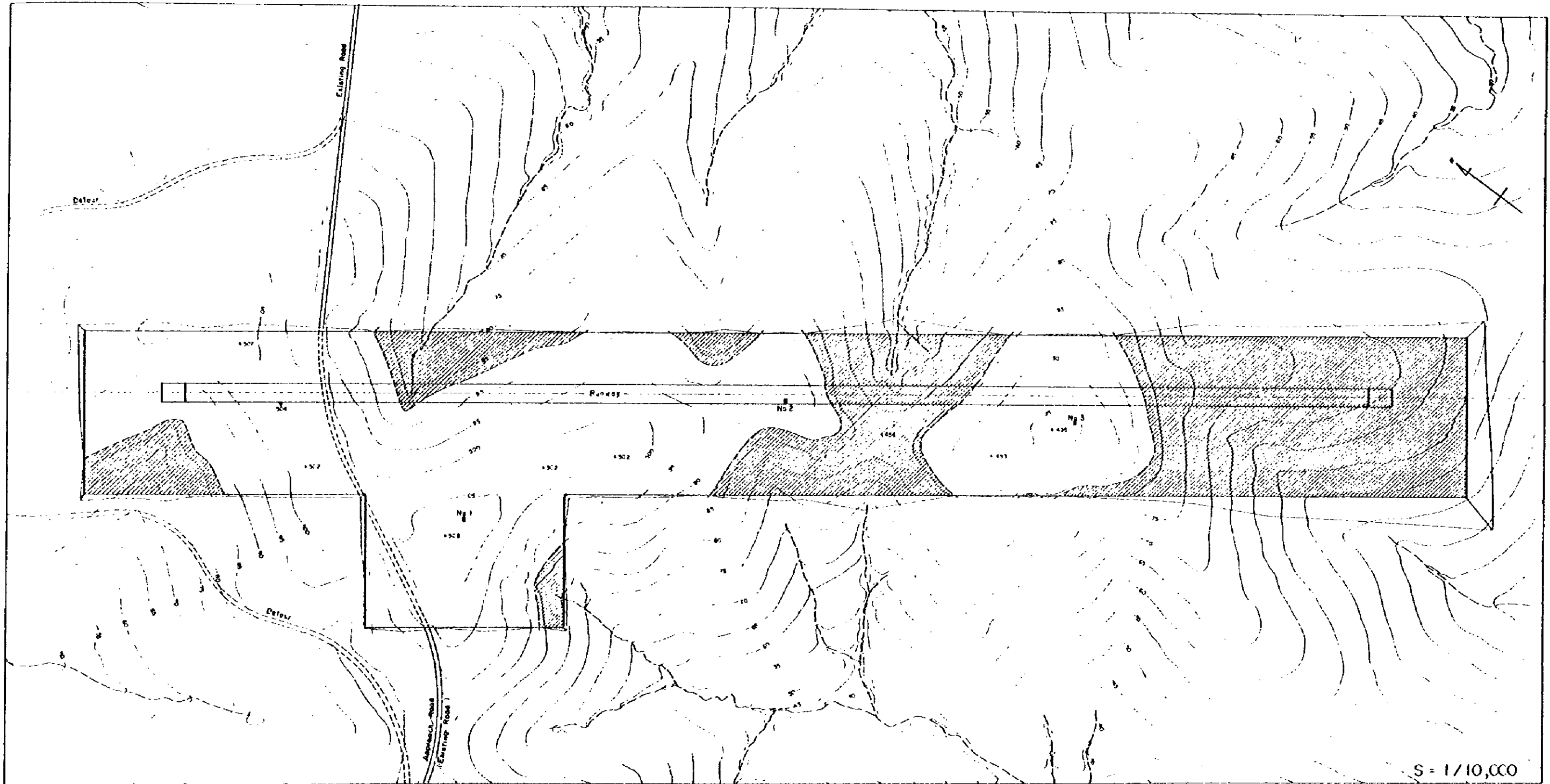
Trial Pit

GRADING PLAN
SIKUPE SITE

MOGOBI SITE

PLAN S = 1/10,000

Appendix 3B - 3



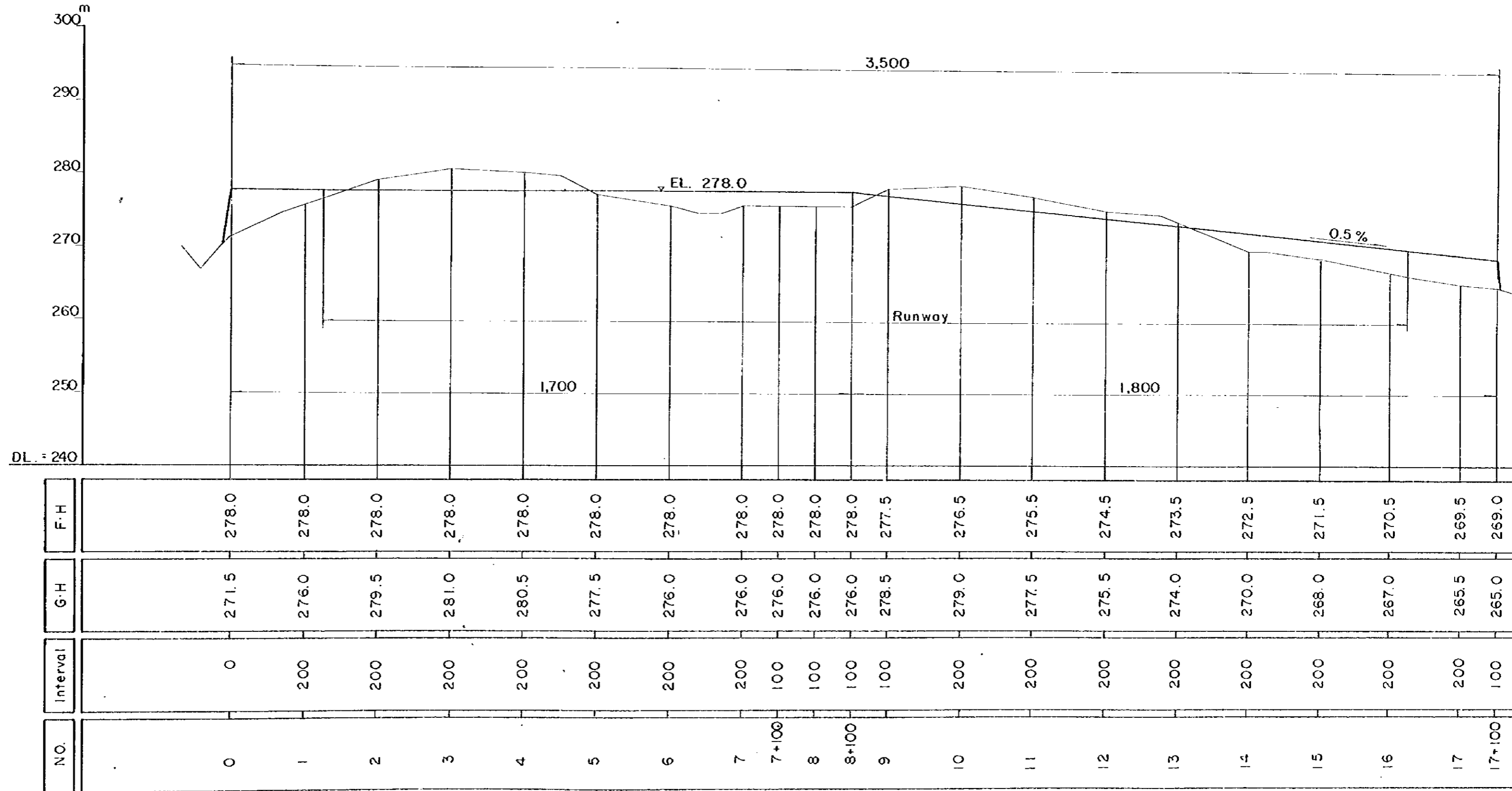
LEGEND
[Shaded Box] Cut Area
[Dashed Box] Embankment Area
[Symbol] Trial Pit

GRADING PLAN
MOGOBI SITE

MPAKA SITE

LONGITUDINAL SECTION

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

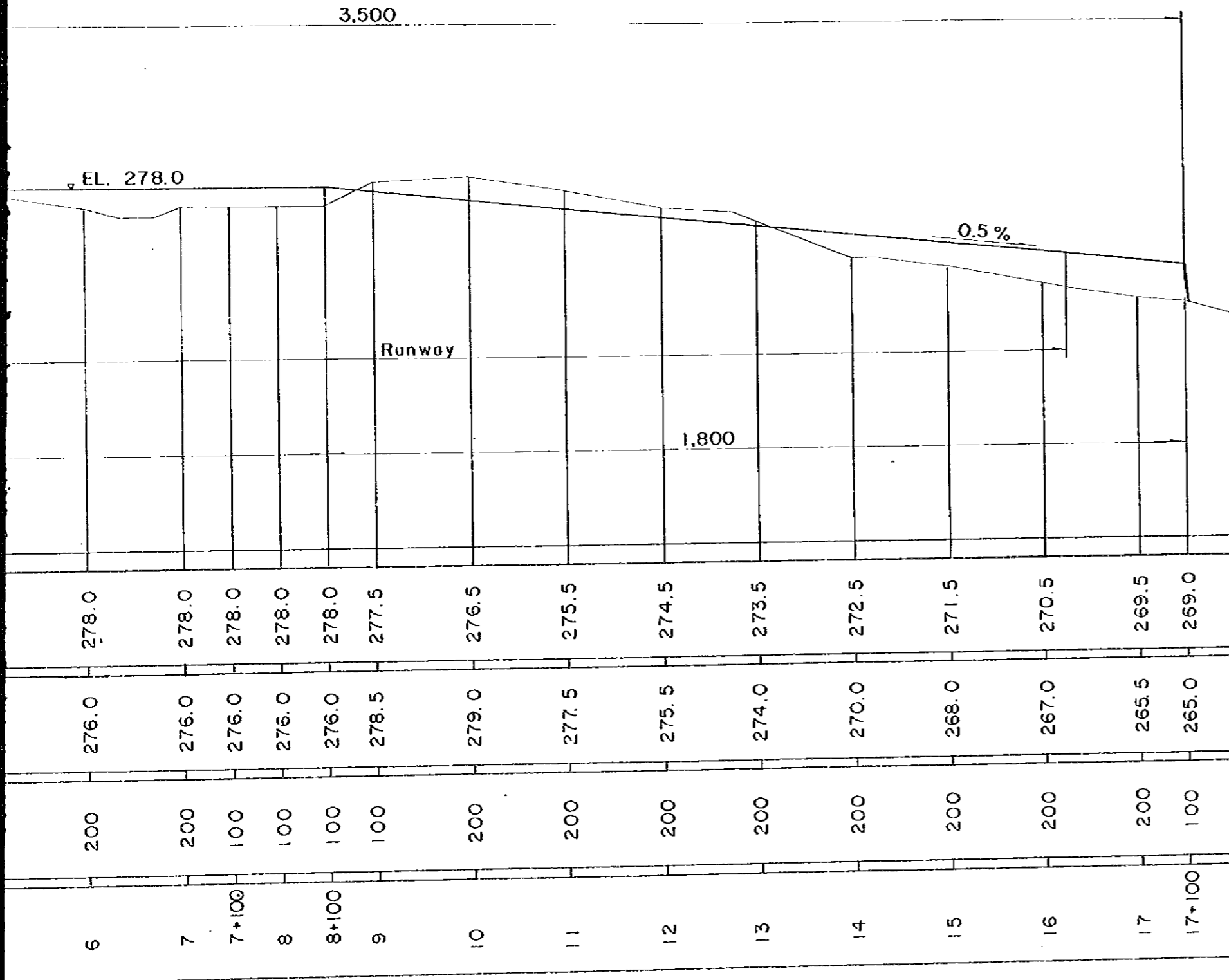


MPAKA SITE

LONGITUDINAL SECTION

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

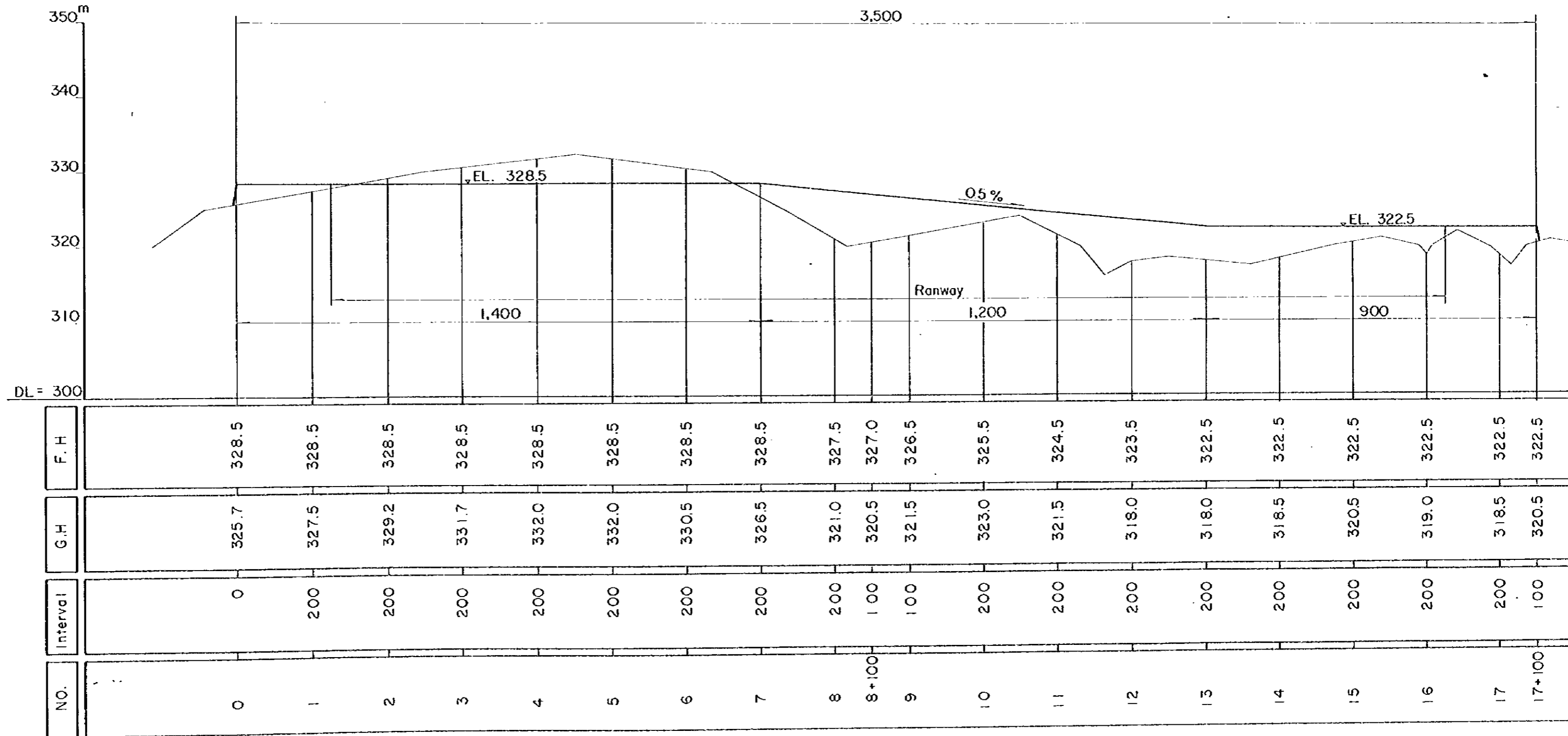
Appendix 3C - 1



SIKUPE SITE

LONGITUDINAL SECTION

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

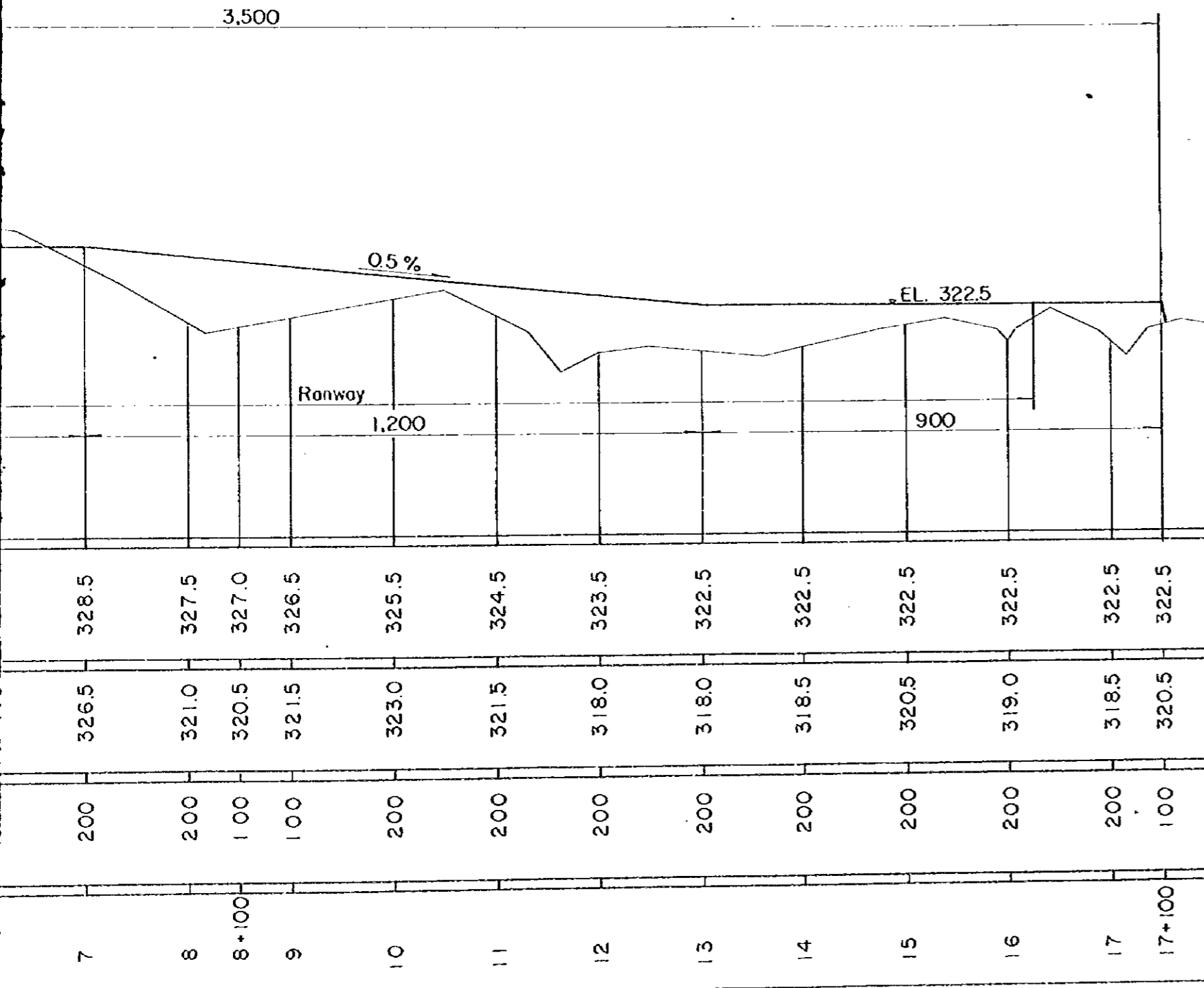


SIKUPE SITE

LONGITUDINAL SECTION

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

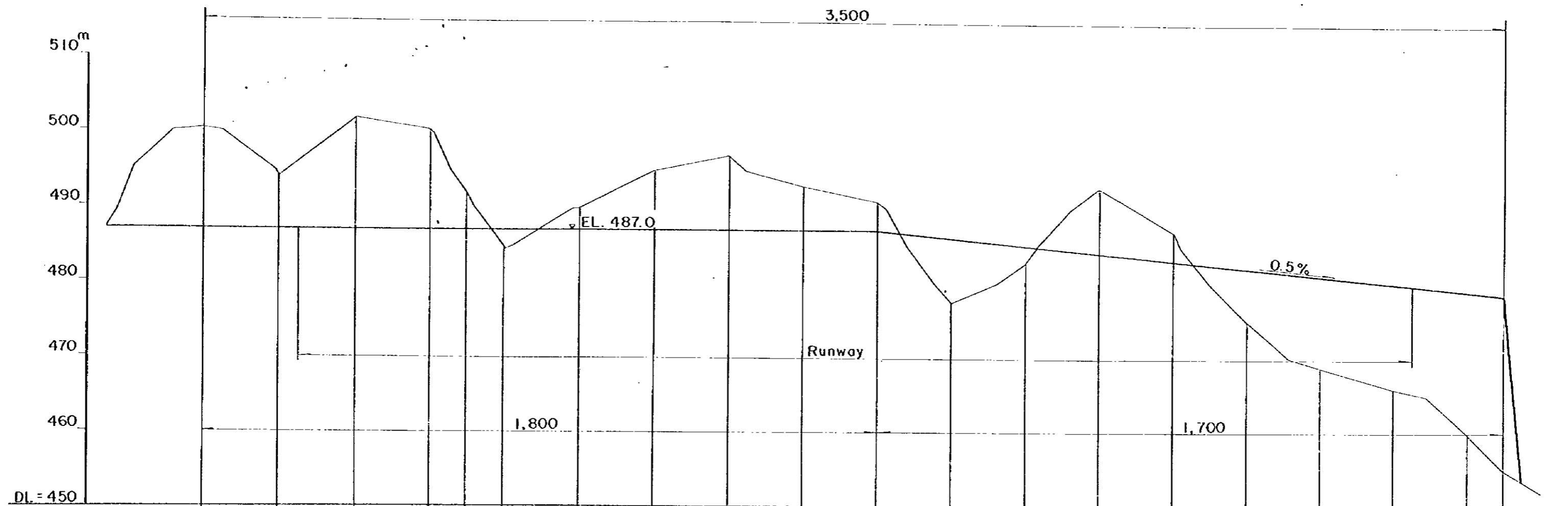
Appendix 3C - 2



MOGOBI SITE

LONGITUDINAL SECTION

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



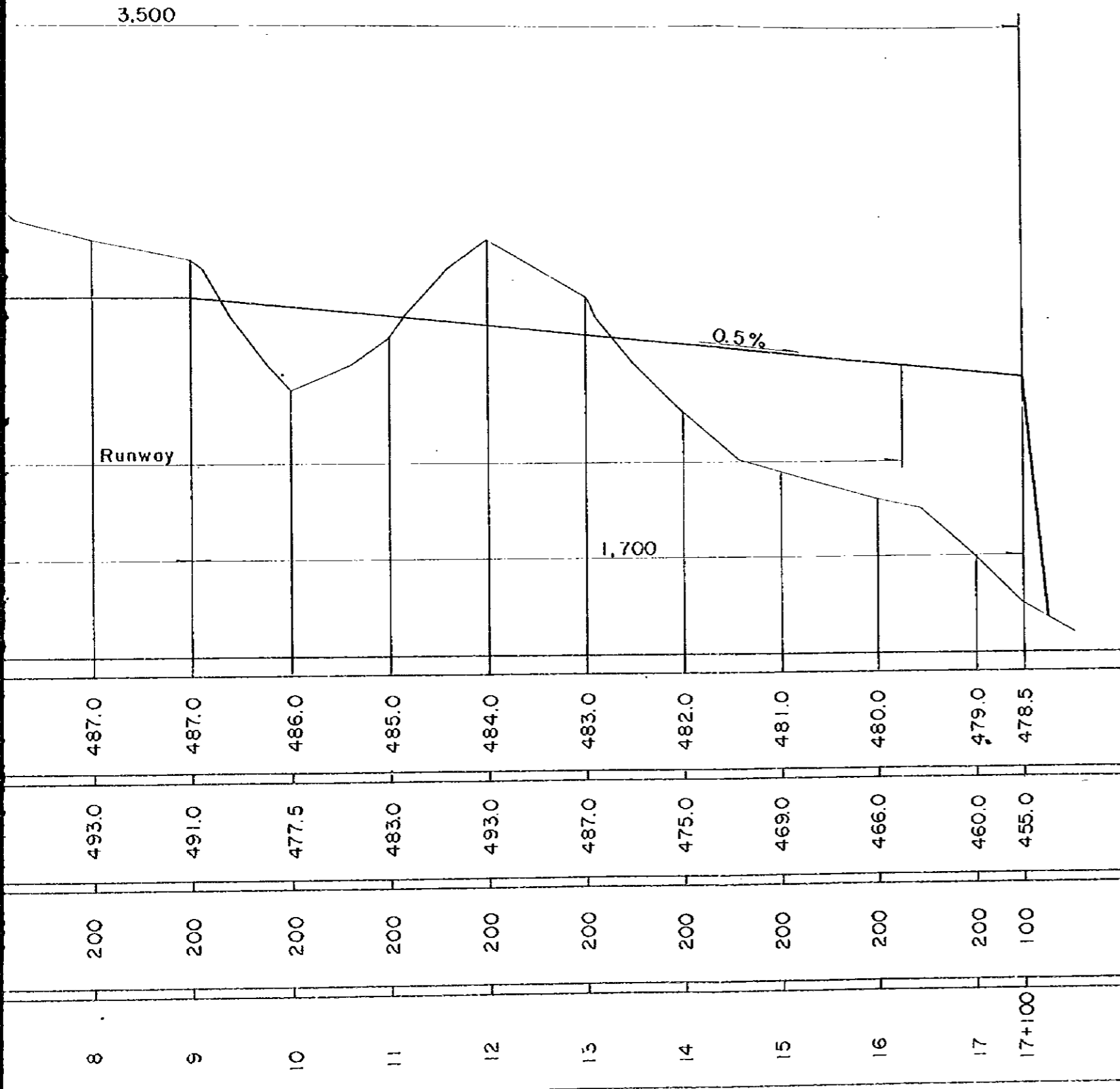
F. H	G. H	Interval	NO.
487.0	500.5	0	0
487.0	494.0	200	1
487.0	502.0	200	2
487.0	500.5	200	3
487.0	492.0	100	3+100
487.0	484.5	100	4
487.0	490.0	200	5
487.0	495.0	200	6
487.0	497.0	200	7
487.0	493.0	200	8
487.0	491.0	200	9
486.0	477.5	200	10
485.0	483.0	200	11
484.0	493.0	200	12
483.0	487.0	200	13
482.0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

MOGOBI SITE

LONGITUDINAL SECTION

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

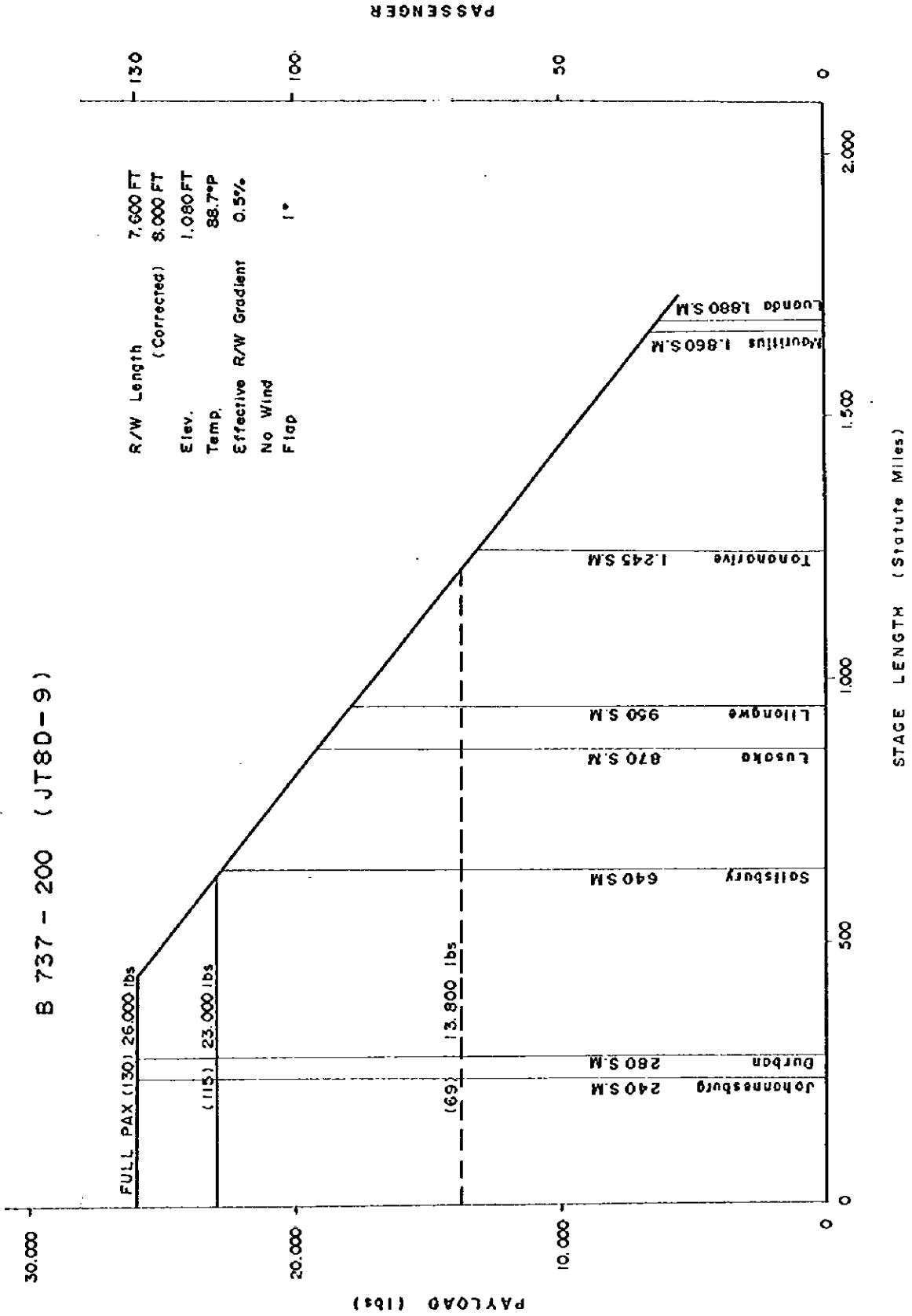
Appendix 3C - 3

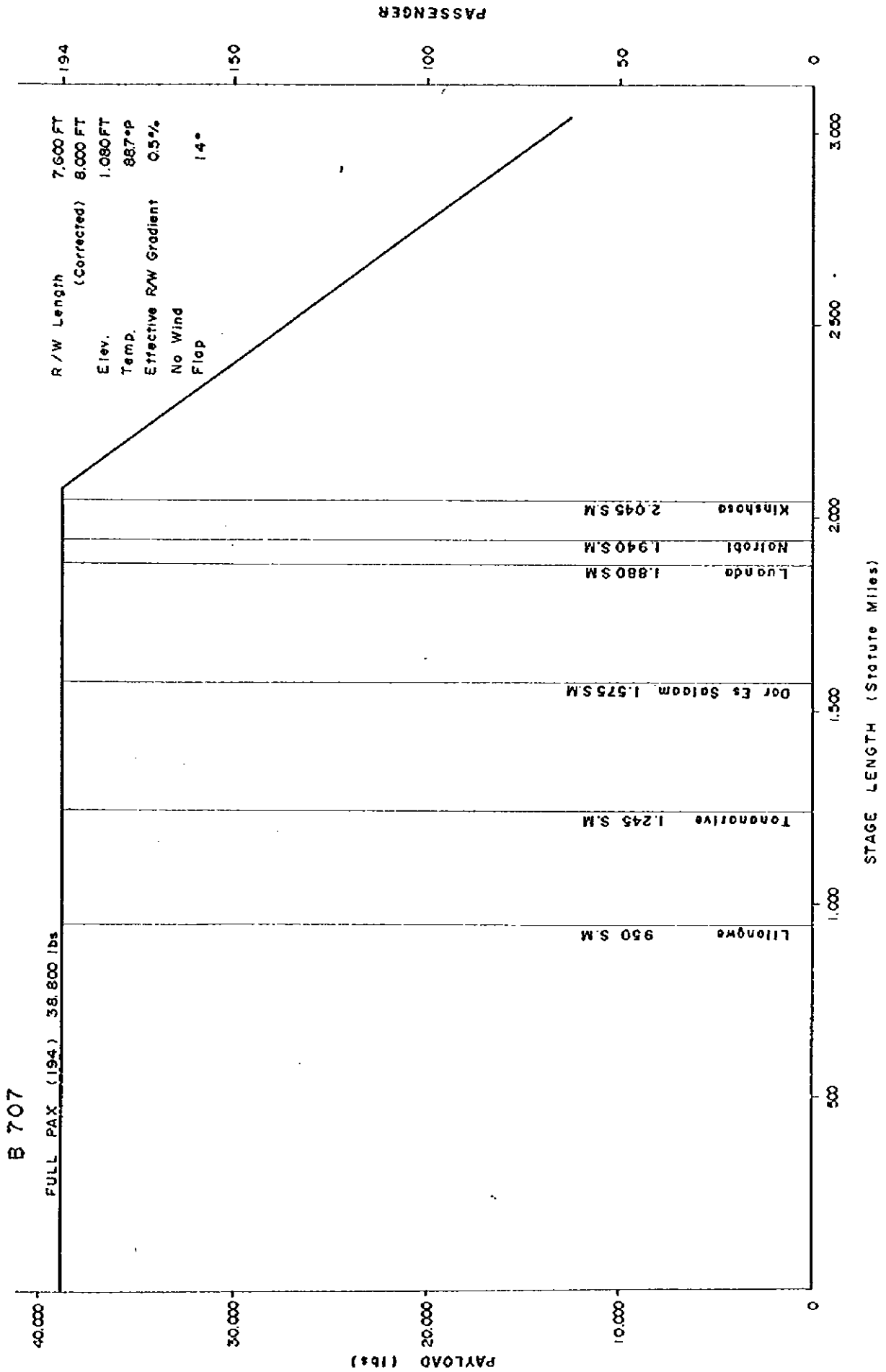


PROJECTED FLIGHT SCHEDULE IN YEAR 1995

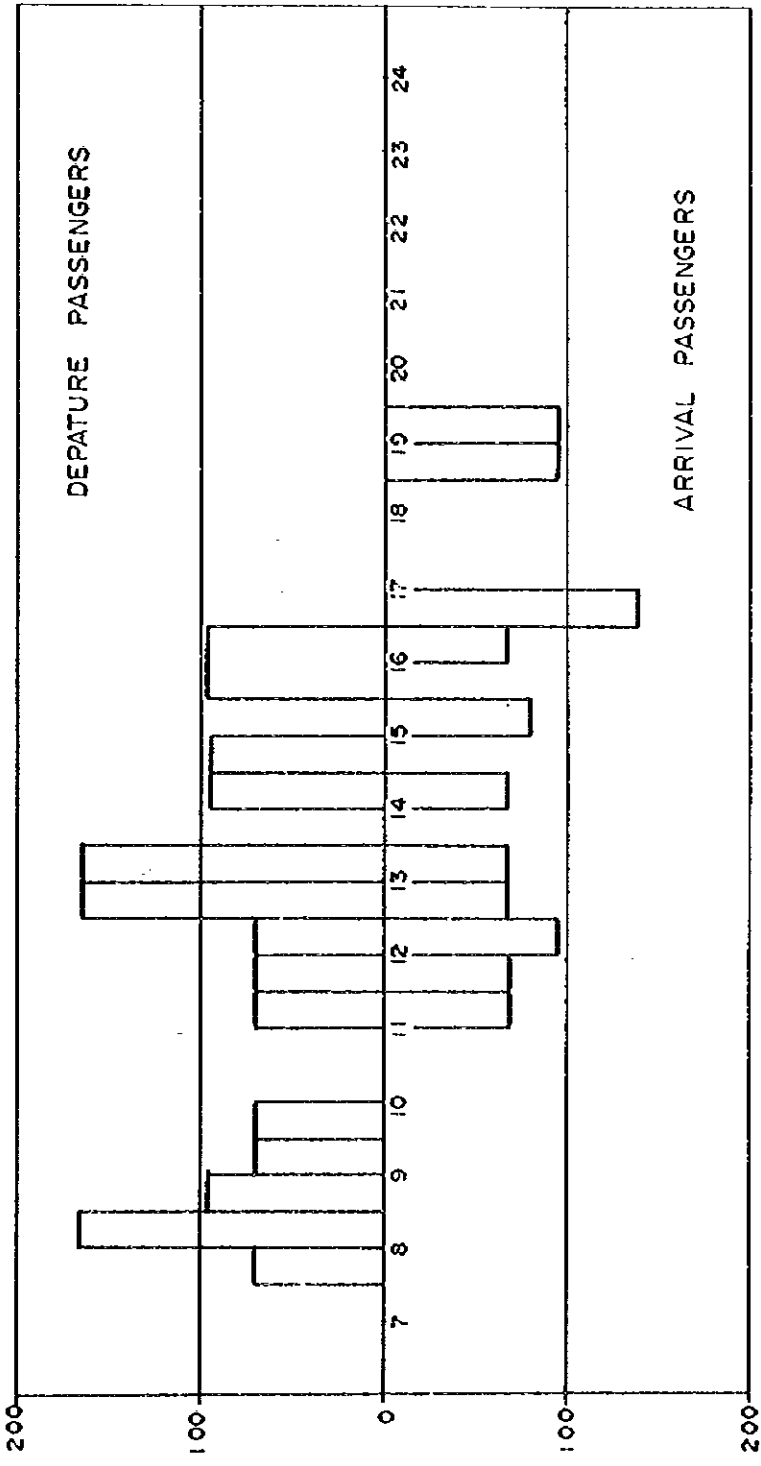
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
				JNB		JNB	SAY		MPM	MPN	SAY									
		BJ		30	JNB	10	BJ 10	JNB	JNB	CP	JNB			BJ						
			BJ		JNB		40	BJ 40	JNB	JNB	20		BJ							
									JNB	BJ										
				FIH			NBO		NBO				FIH							
			AJ					AJ								AJ				
									LUN	LUN		LUN								
										AJ										

Note : AJ B707 Type Aircraft
 BJ B737 Type Aircraft
 CP F-27 Type Aircraft

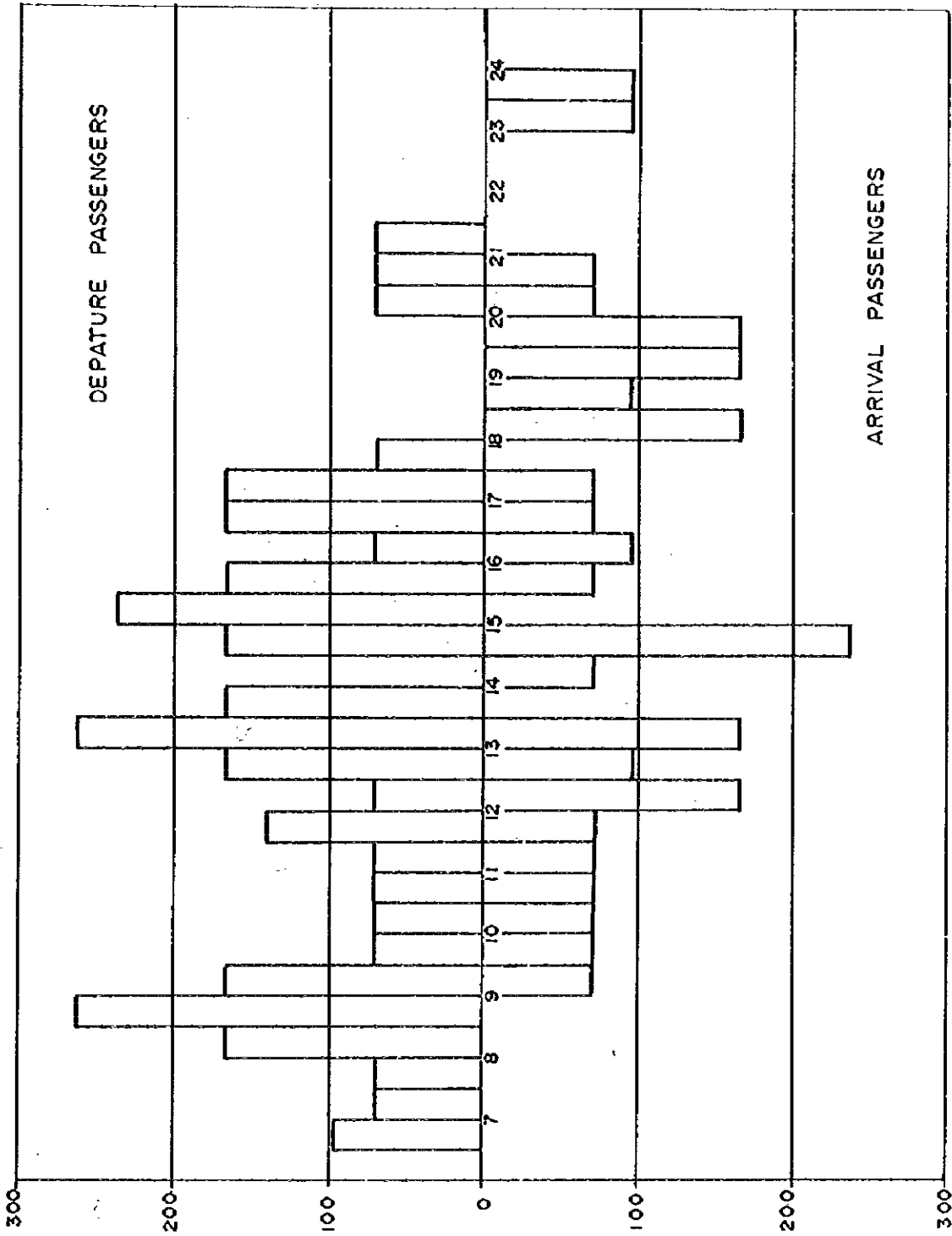


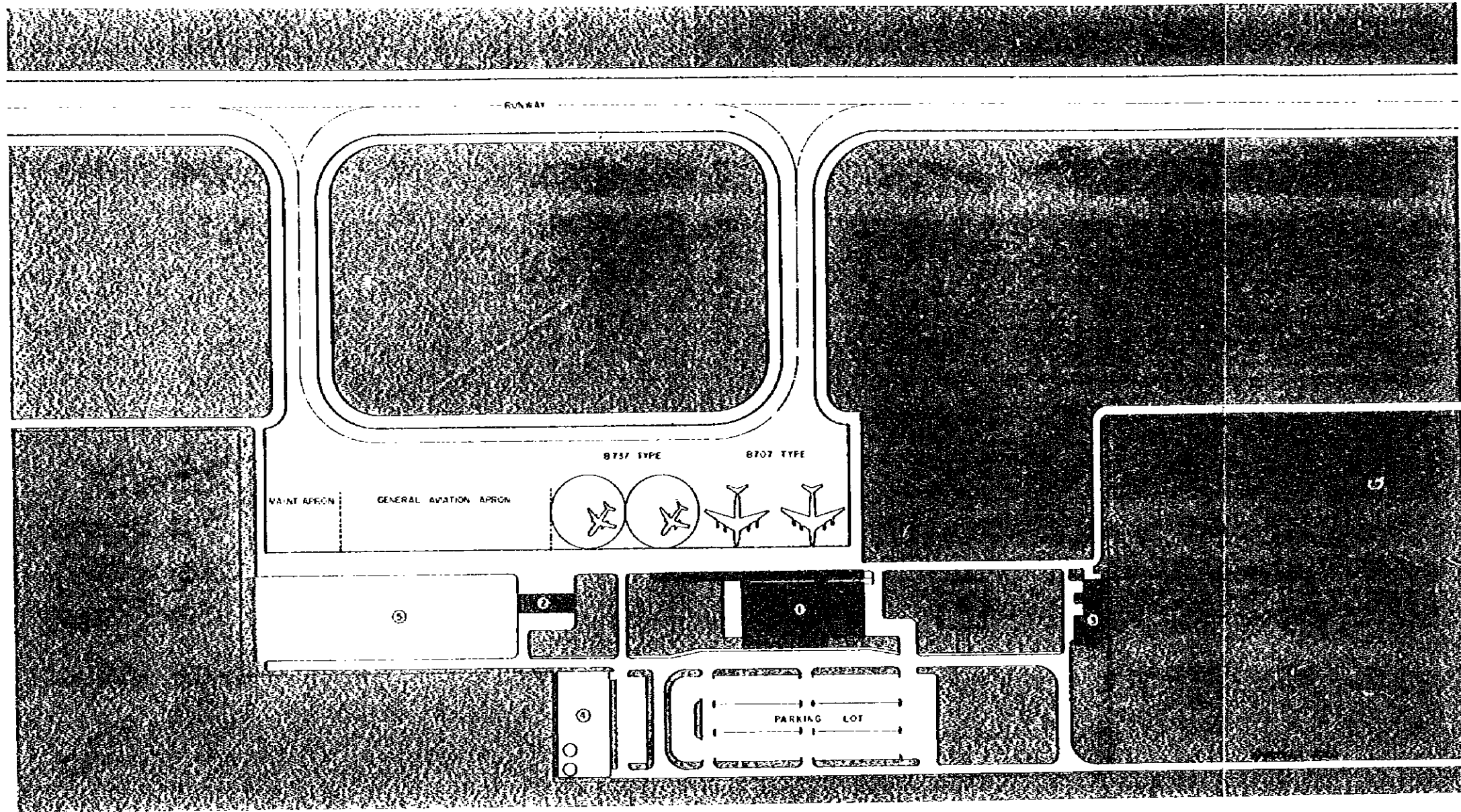


HALF-HOURLY DISTRIBUTION OF PASSENGERS
AT NEW AIRPORT IN YEAR 1995

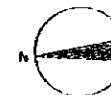


HALF-HOURLY DISTRIBUTION OF PASSENGERS
AT NEW AIRPORT IN YEAR 2005

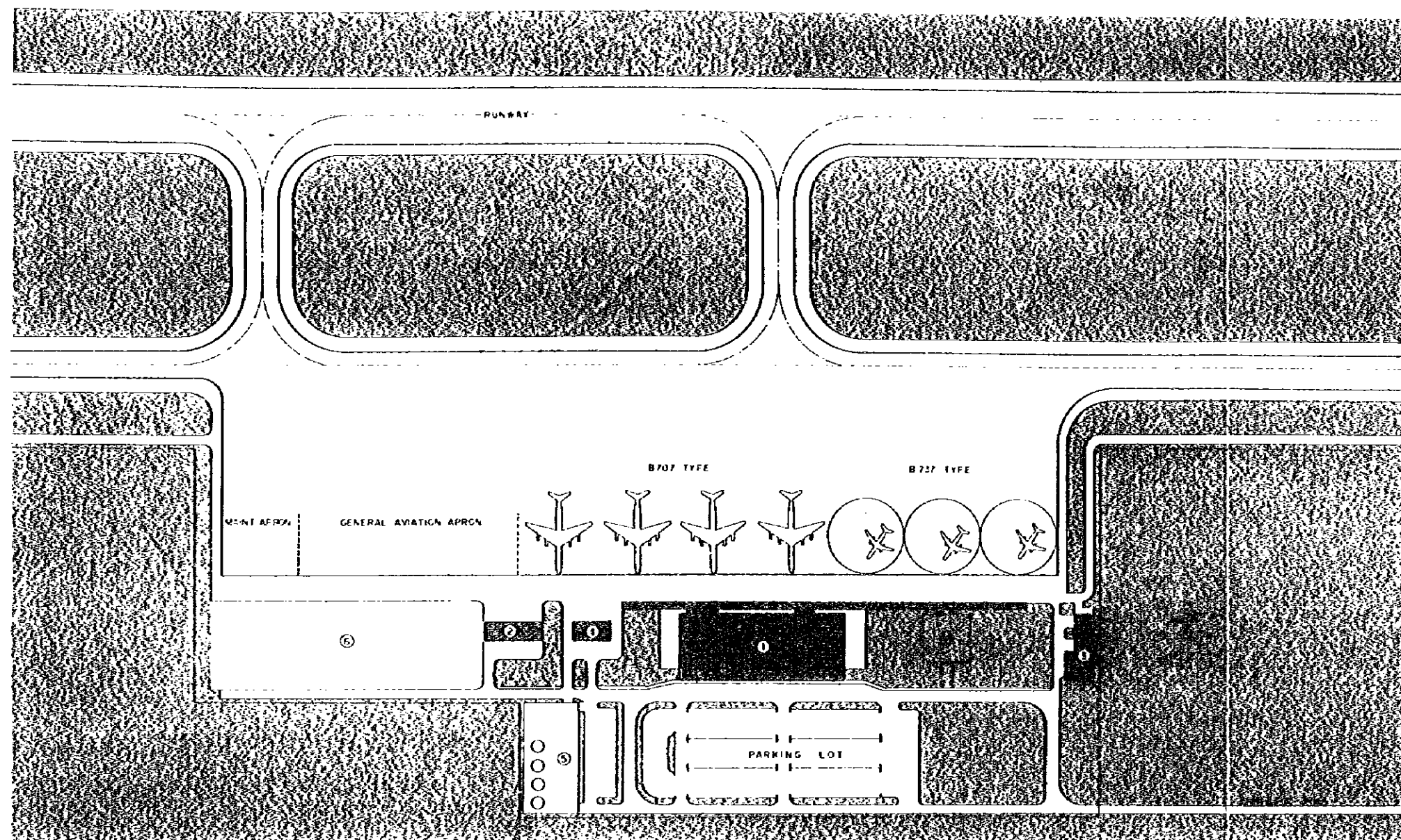




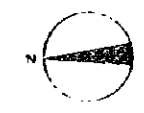
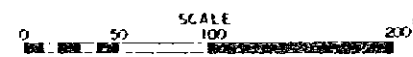
- ① PASSENGER TERMINAL AND ADMINISTRATION BUILDING
- ② FIRE FIGHTING AND RESCUE STATION
- ③ MAIN POWER SUBSTATION
- ④ AIRCRAFT FUEL STORAGE AREA
- ⑤ AIRCRAFT MAINTENANCE AND GENERAL AVIATION AREA
- ⑥ HEAD OF STATES BUILDING AREA



KINGDOM OF SWAZILAND	
MINISTRY OF WORKS, POWER AND COMMUNICATIONS	
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT FEASIBILITY STUDY	
TERMINAL AREA LAYOUT PLAN STAGE 1	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



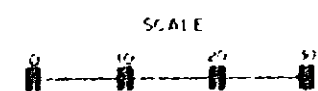
KINGDOM OF SWAZILAND	
MINISTRY OF WORKS, POWER AND COMMUNICATIONS	
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT	
FEASIBILITY STUDY	
TERMINAL AREA LAYOUT PLAN	MAR. 1980
STAGE II	No. 14
JAPAN INTERNATIONAL COOPERATION AGENCY	



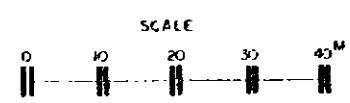
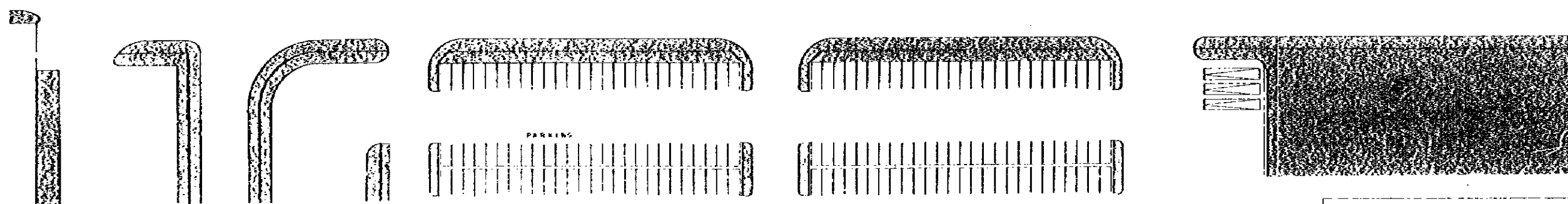
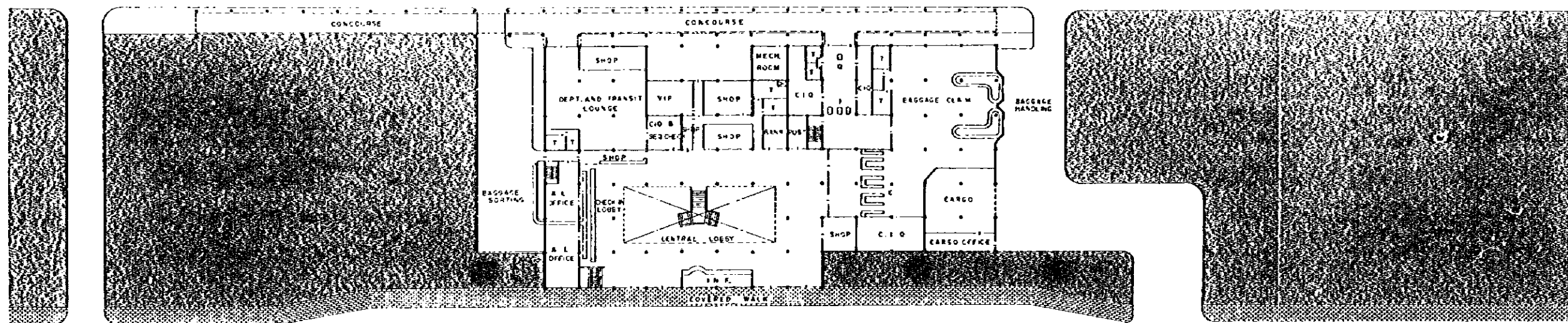
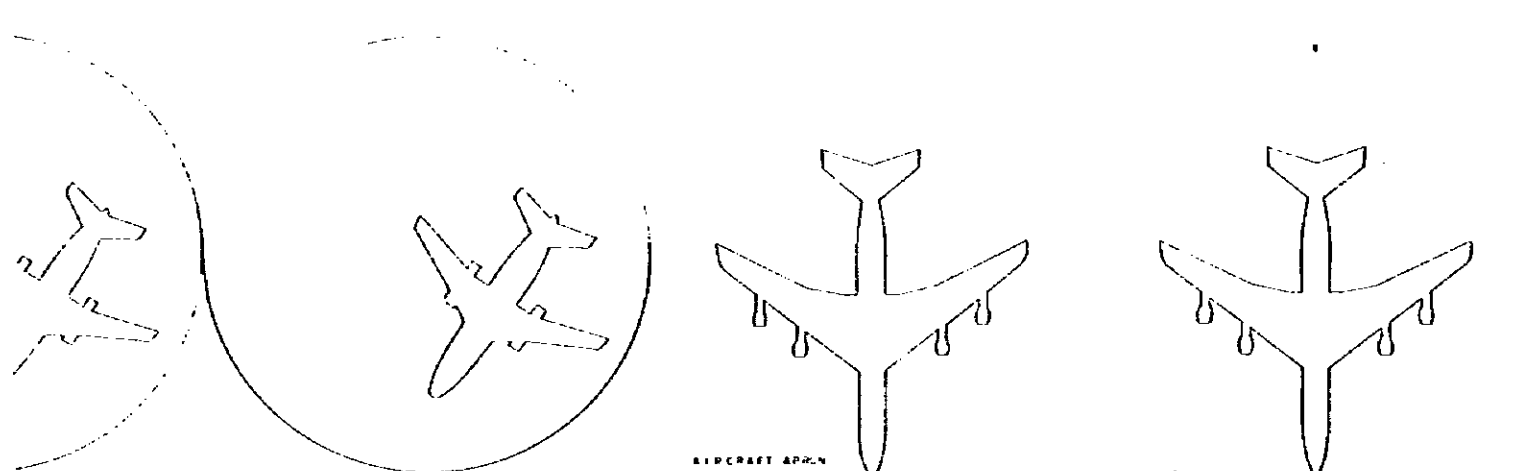
ELEVATION



SECTION

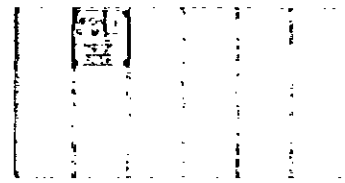


KINGDOM OF SWAZILAND
MINISTRY OF WORKS POWER AND COMMUNICATIONS
NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY
PASSENGER TERMINAL AND ADMINISTRATION BUILDING
ELEVATION / SECTION STAGE 1 | MAR 1980 | No. 15
JAPAN INTERNATIONAL COOPERATION AGENCY



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
 JAPAN INTERNATIONAL COOPERATION AGENCY

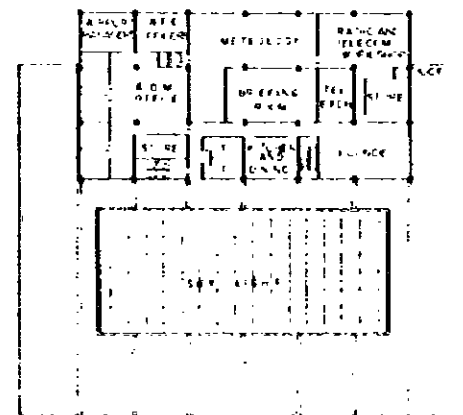
MAR. 1980
 No. 16



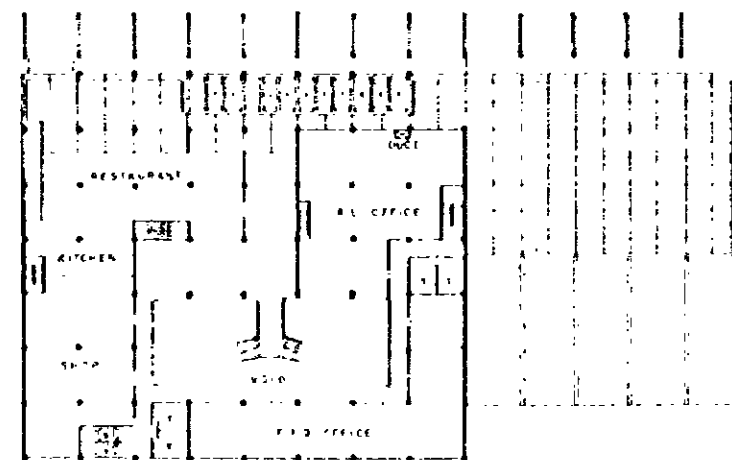
3RD FLOOR PLAN



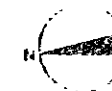
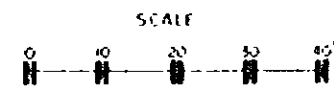
4TH FLOOR PLAN



2ND FLOOR PLAN



1ST FLOOR PLAN

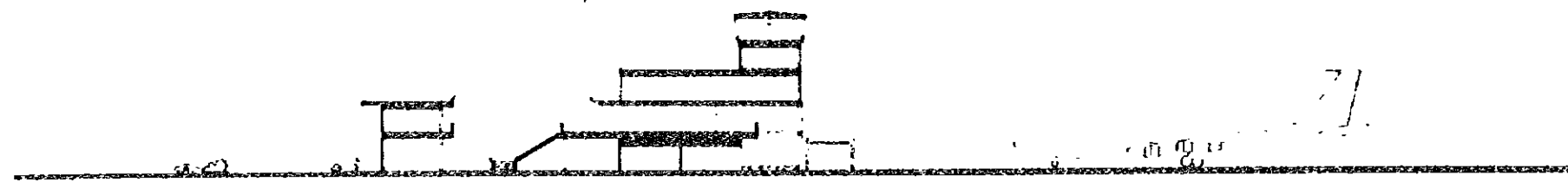


KINGDOM OF SWAZILAND
 MINISTRY OF WORKS, POWER AND COMMUNICATIONS
 NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY
 PASSENGER TERMINAL AND ADMINISTRATION BUILDING 1ST AND 2ND FLOOR PLAN STAGE 1
 MAR. 1980 No 17
 JAPAN INTERNATIONAL COOPERATION AGENCY



(HEAD OF STATES BUILDING)

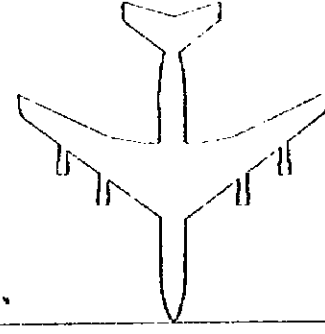
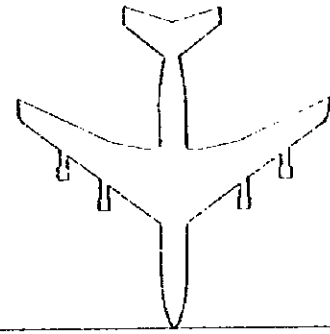
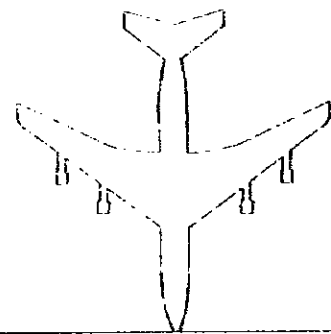
ELEVATION



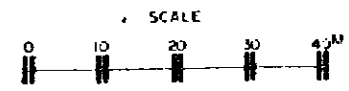
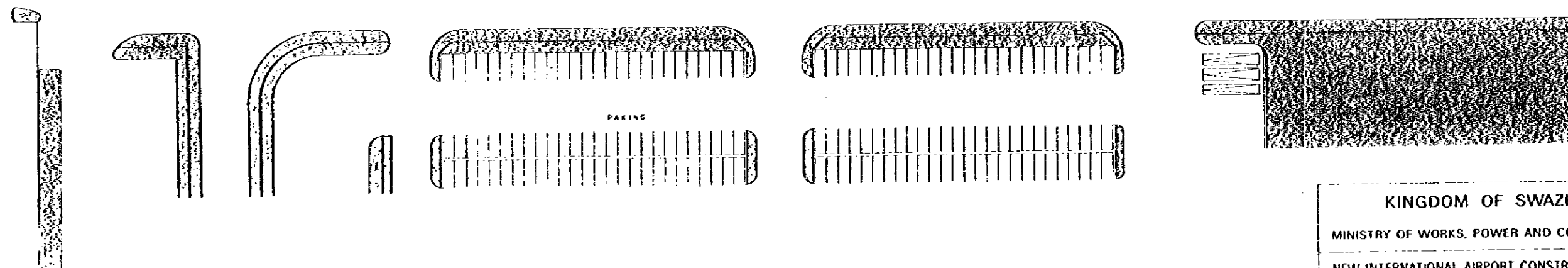
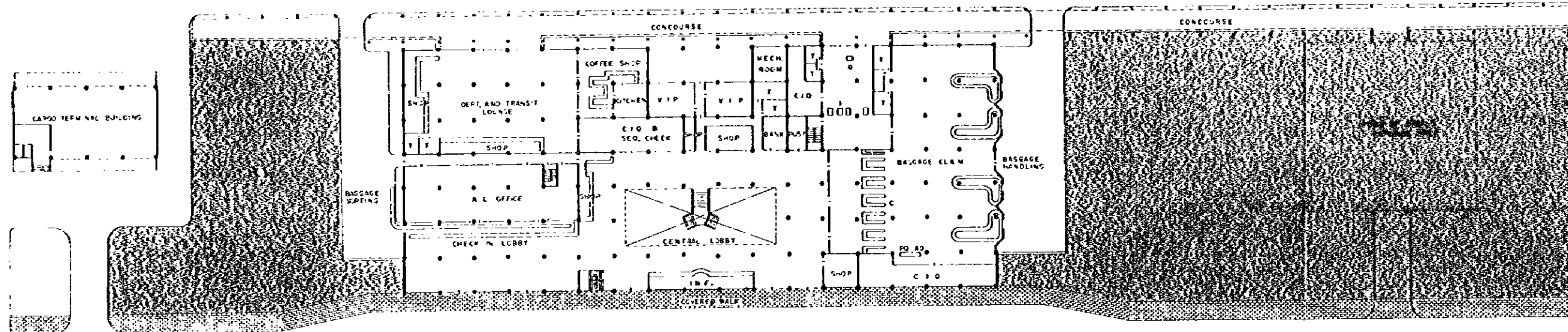
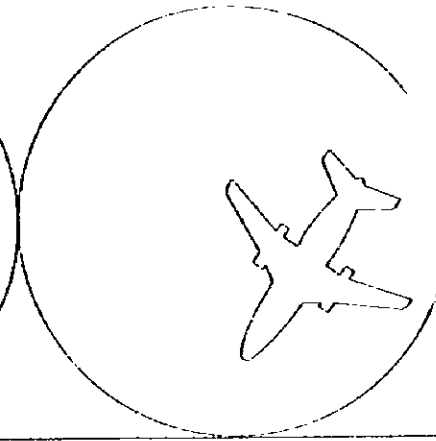
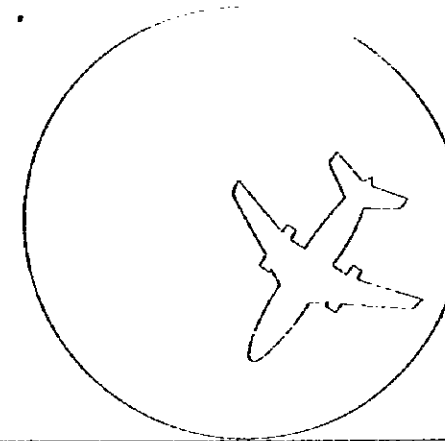
SECTION



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

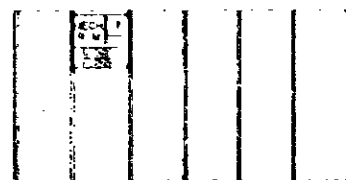


AIRCRAFT BRON



KINGDOM OF SWAZILAND
 MINISTRY OF WORKS, POWER AND COMMUNICATIONS
 NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY

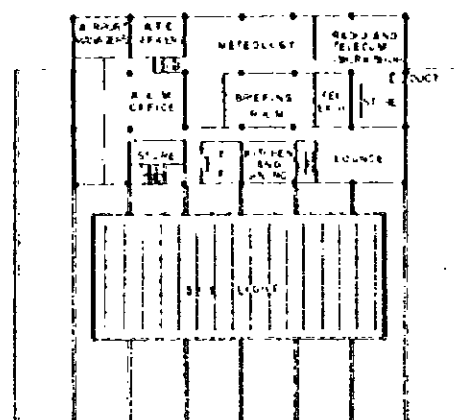
PASSENGER TERMINAL AND ADMINISTRATION BUILDING	MAR. 1980
GROUND FLOOR PLAN STAGE 1	No. 19
JAPAN INTERNATIONAL COOPERATION AGENCY	



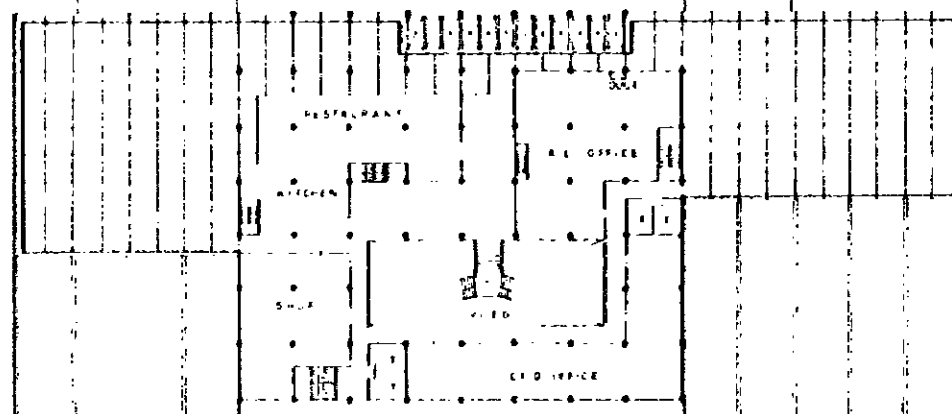
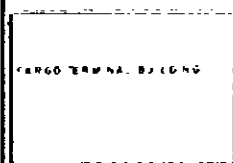
3RD FLOOR PLAN



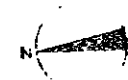
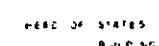
4TH FLOOR PLAN



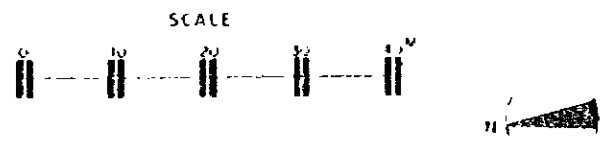
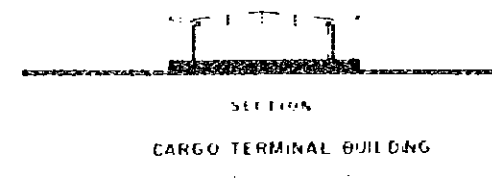
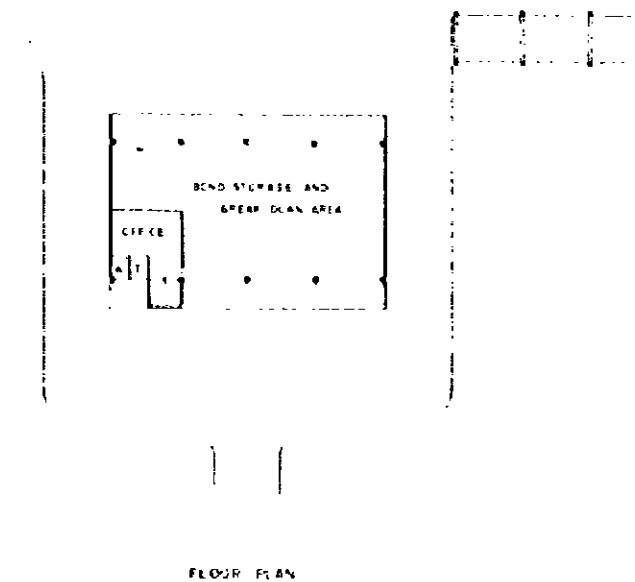
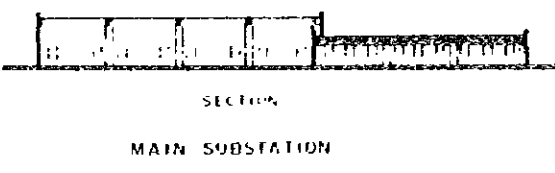
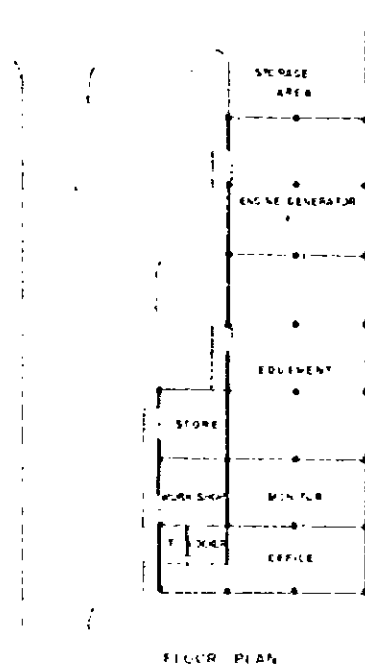
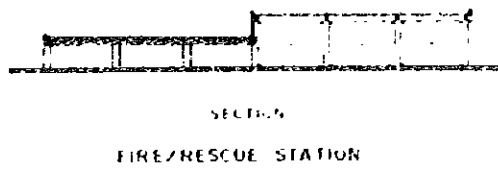
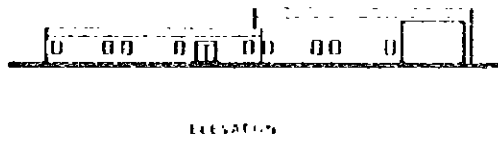
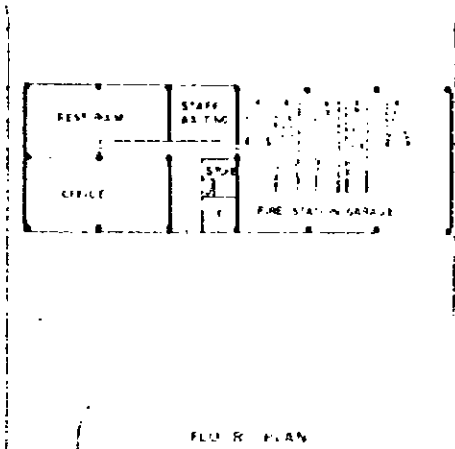
2ND FLOOR PLAN



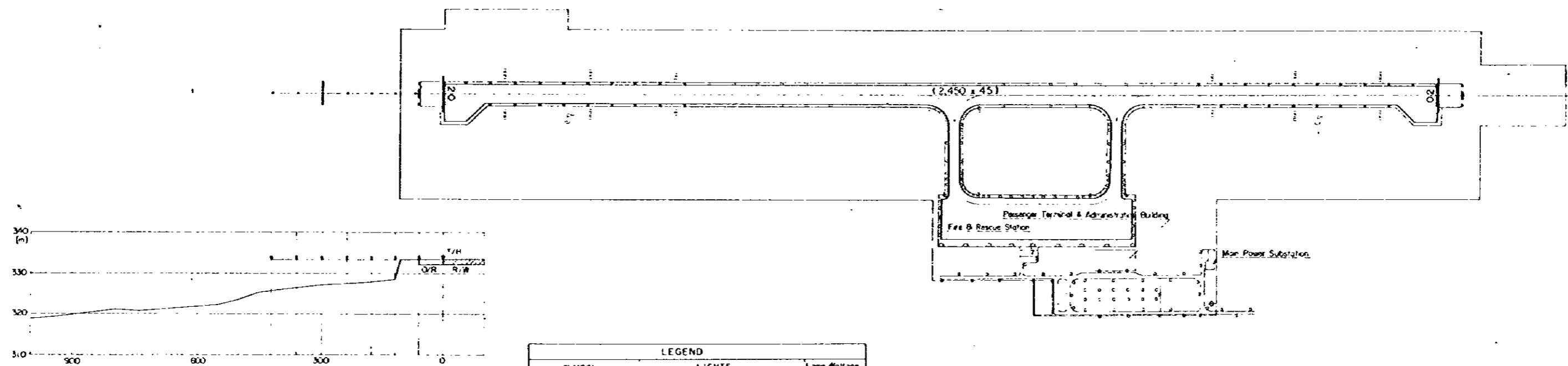
1ST FLOOR PLAN



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

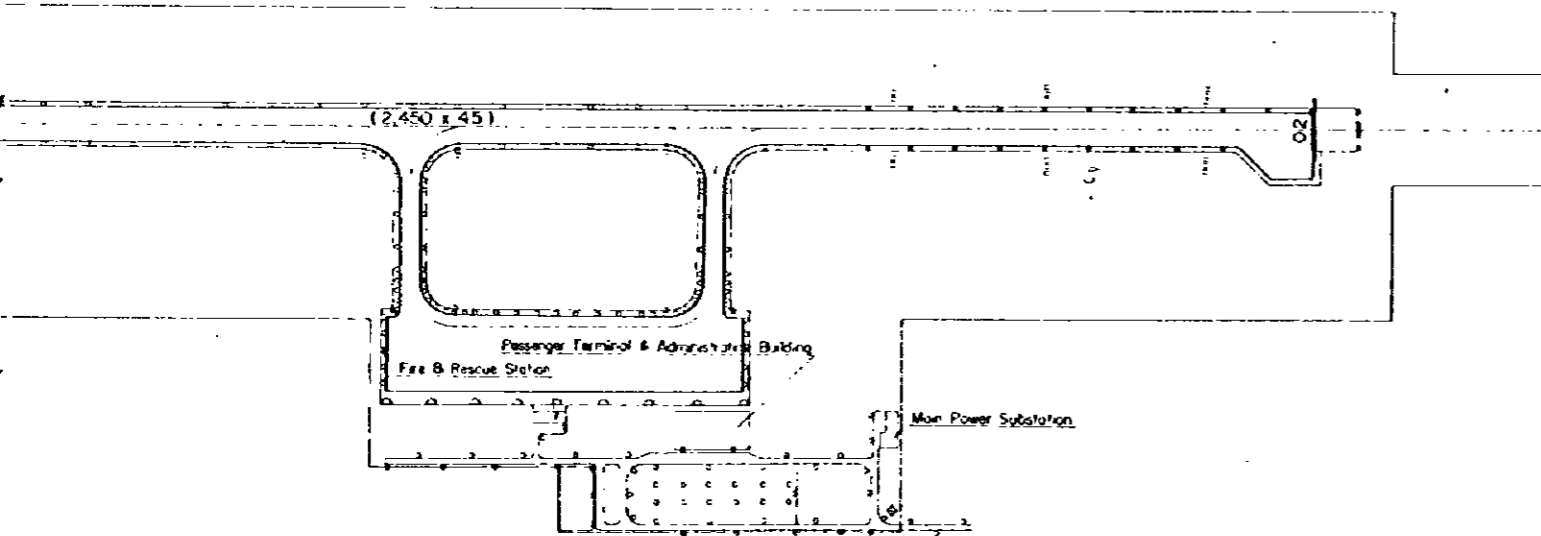
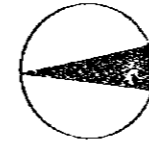


KINGDOM OF SWAZILAND
 MINISTRY OF WORKS, POWER AND COMMUNICATIONS
 NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY
 FIRE/RESCUE STATION, MAIN POWER SUBSTATION, CARGO TERMINAL BUILDING
 MAR. 1980
 No. 21
 JAPAN INTERNATIONAL COOPERATION AGENCY



LEGEND		
SYMBOL	LIGHTS	Lamp #/M
•	SALS Single Approach Lighting System Center Bar	200 (4)
—	Single Approach Lighting System Cross Bar	200
—	VASIS Visual Approach Slope Indicator System	200 x 3
•	RAYL Runway Edge Lights	200
—	RAYTL Runway Threshold Lights	—
—	RAYEL Runway End Lights	—
—	RWXTAL Runway Threshold Auxiliary Lights	300
•	ORL Obstruction Lights	200
•	TWYL Taxiway Edge Lights	30 (45)
•	TWVEL Taxiway Exit-Entrance Lights	20
•	WDIL Wind Direction Indicator Lights	200 x 4
•	ABN Aerodrome Beacon	2 500
•	FLO Apron Flood Lights	—





Lamp Voltage	
System Center Bar	200 (R)
System Cross Bar	200
Indicator System	200 x 3
	200
Lights	
Auxiliary Lights	300
	200
	30 (45)
Light	20
Indicator Lights	200 x 4
	2,500

SCALE



KINGDOM OF SWAZILAND

MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
FEASIBILITY STUDY

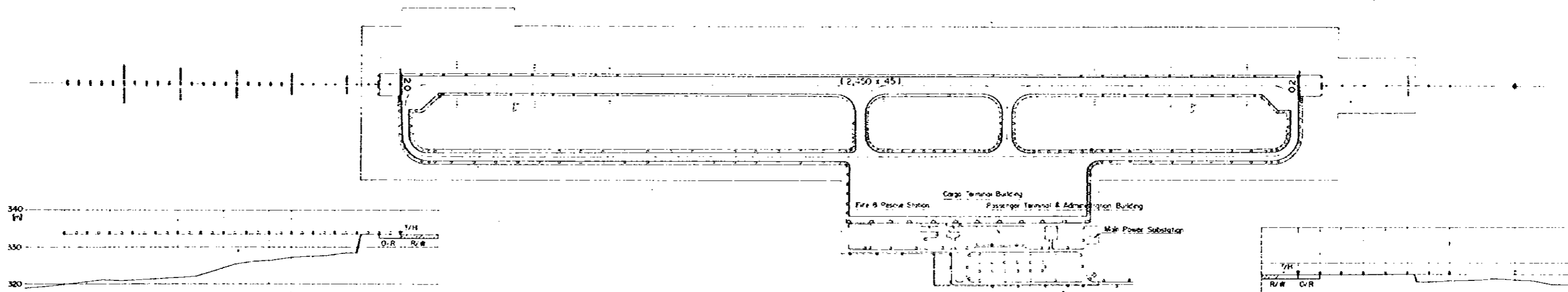
AIRFIELD LIGHTING SYSTEM

MAR 1980

STAGE I

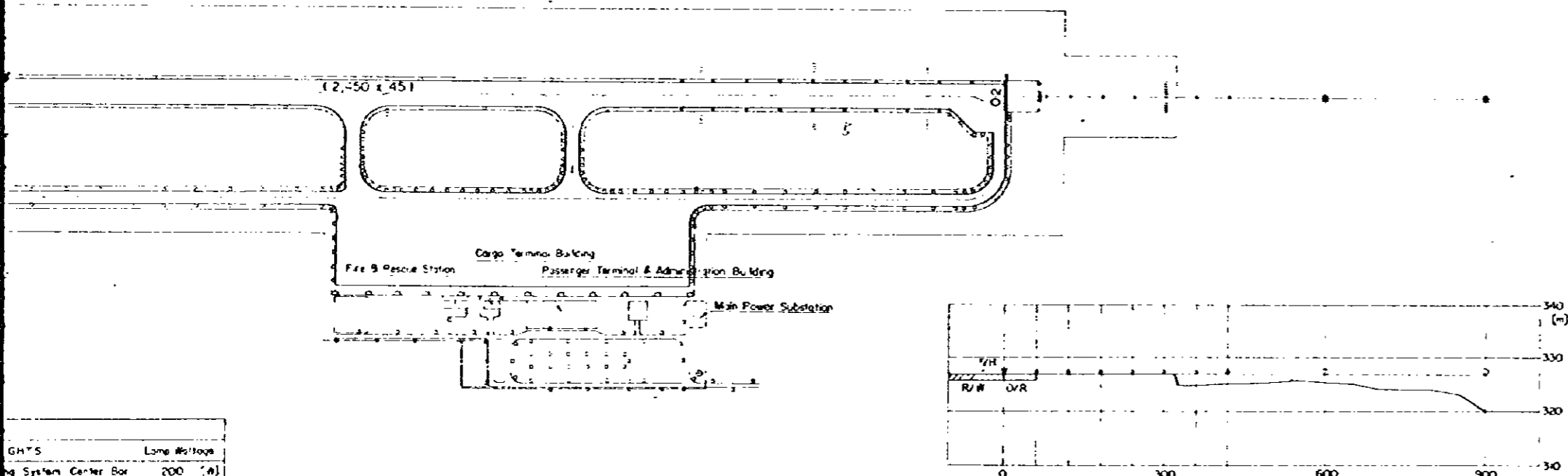
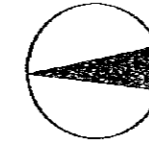
No. 22

JAPAN INTERNATIONAL COOPERATION AGENCY

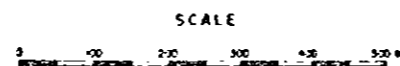


LEGEND		
SYMBOL	LIGHTS	Lamp Voltage
—	ALS Approach Lighting System Center Bar	200 (4)
+	SALS Single Approach Lighting System Center Bar	200
—+—	ALS SALS Approach Lighting System Cross Bar	200
⊕	ALB Approach Light Beacons	500 ± 5
—+—+—	VASIS Visual Approach Slope Indicator System	200 ± 3
—	RWEL Runway Edge Lights	200
—+—	RWYTL Runway Threshold Lights	300
—+—+—	RWYEL Runway End Lights	300
—+—+—	RWYRAL Runway Threshold Auxiliary Lights	300
○	OVRL Overrun Lights	200
—	TWEL Taxiway Edge Lights	30
—	TWYEL Taxiway End - Entrance Lights	20
⊕	WDL Wind Direction Indicator Lights	200 ± 4
⊕	ABN Aerodrome Beacon	2,500
⊕	FLO Apron Flood Lights	—

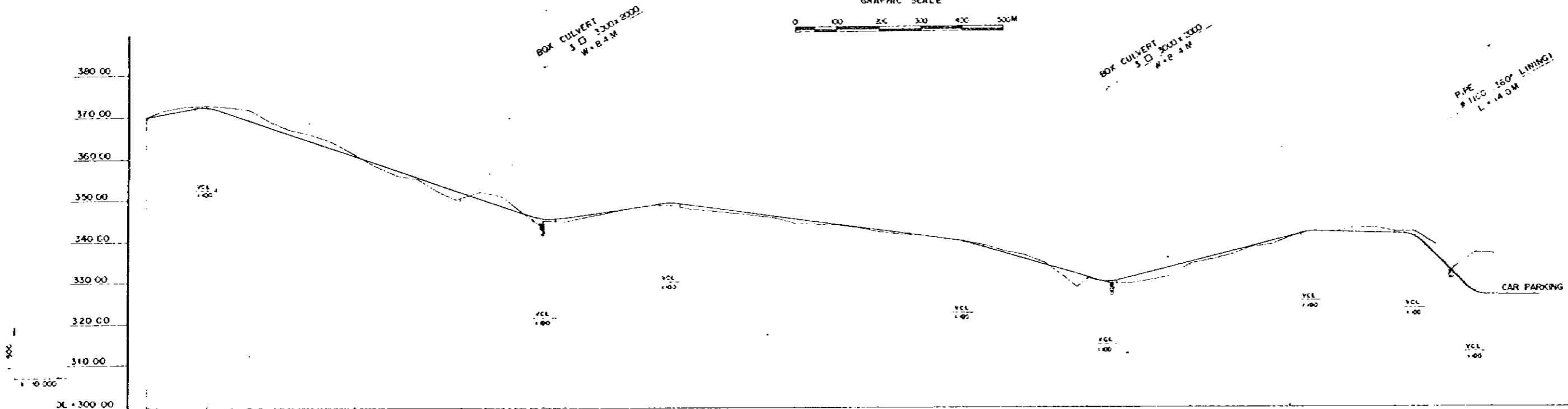
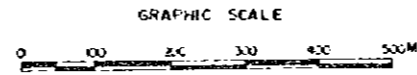
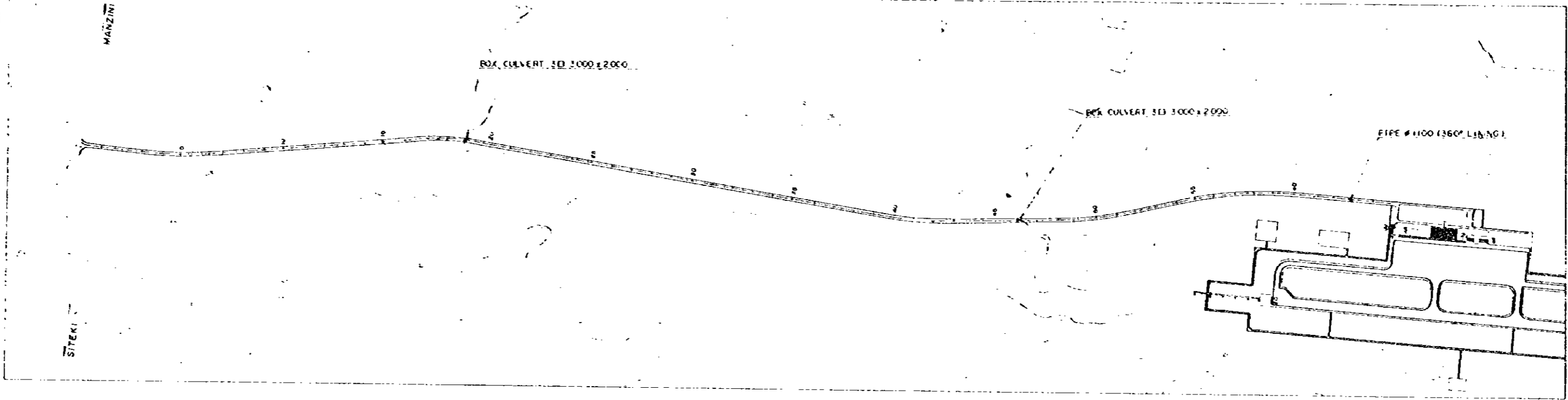
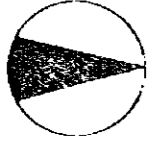
SCALE
 0 100 200 300 400 500



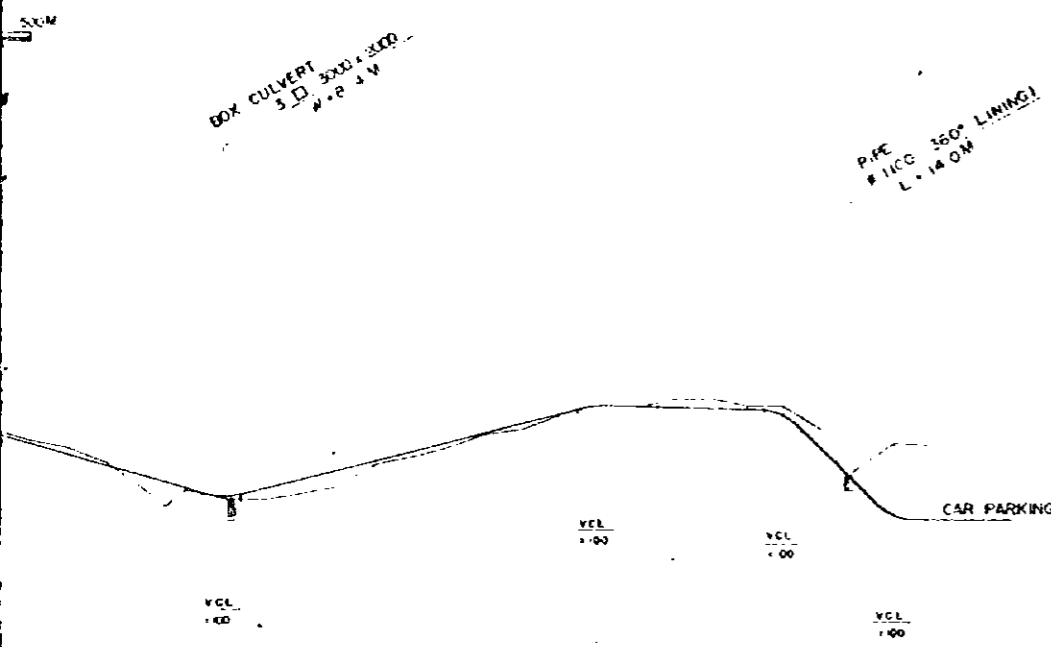
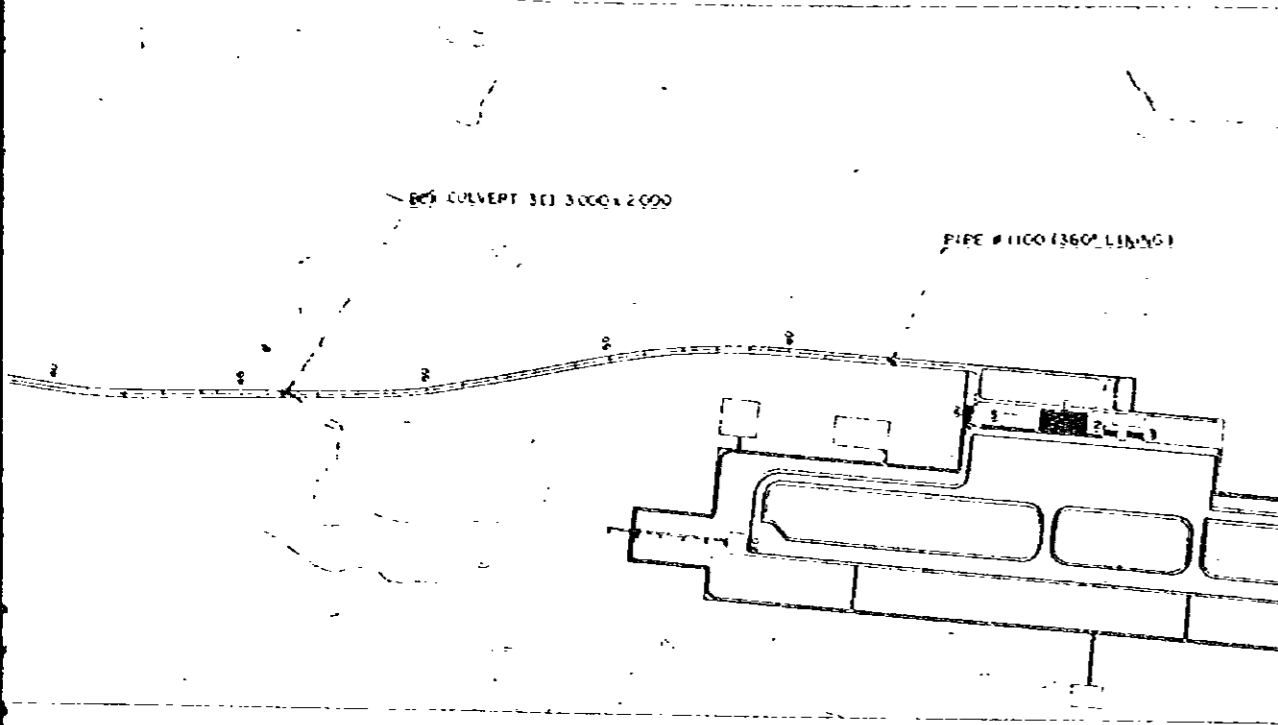
GHYS	Long Meters
Lighting System Center Bar	200
Lighting System Center Bar	200
Lighting System Cross Bar	200
Beacons	500 x 5
Slope Indicator System	200 x 3
Lights	200
Side Lights	300
Lights	500
Side Auxiliary Lights	500
Lights	200
Lights	50
Entrance Lights	20
Indicator Lights	200 x 4
Light	2,500
Lights	



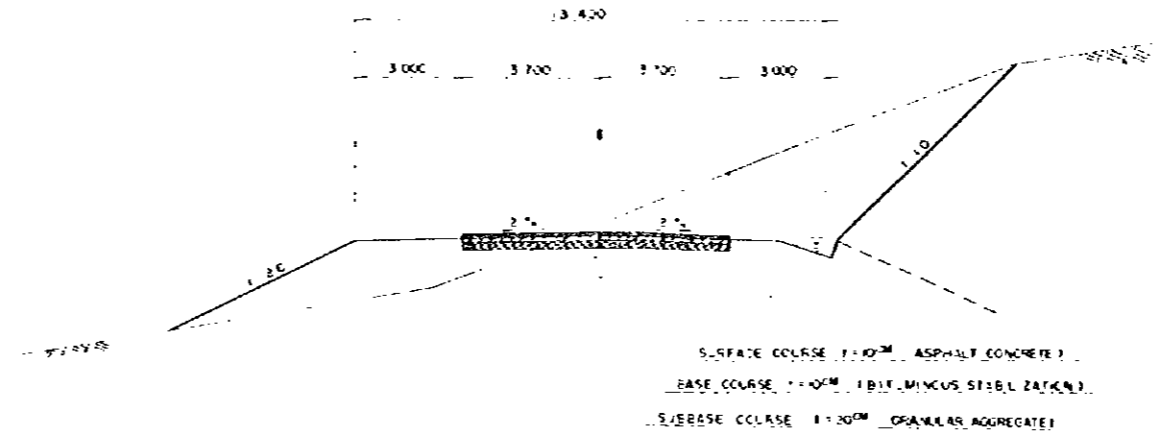
KINGDOM OF SWAZILAND
 MINISTRY OF WORKS POWER AND COMMUNICATIONS
 NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY
AIRFIELD LIGHTING SYSTEM MAR 1980
STAGE I No. 23
 JAPAN INTERNATIONAL COOPERATION AGENCY



STATION	ACCUMULATED DISTANCE	GROUND HEIGHT	FORMATION HEIGHT	CUT FILL	GRADIENT
Sta 0+00	0.000	370.00	370.00	0.00	1.70%
Sta 3+00	300.000	373.00	372.91	0.09	1.75%
Sta 5+00	500.000	372.00	368.76	2.50	1.65%
Sta 10+00	1000.000	361.00	360.75	0.25	3.45%
Sta 15+00	1500.000	350.00	352.00	-1.50	1.75%
Sta 19+00	1900.000	345.00	345.12	-0.12	1.65%
Sta 20+00	2000.000	345.00	345.83	-0.83	3.90%
Sta 25+00	2500.000	346.00	349.98	-0.98	1.48%
Sta 30+00	3000.000	346.00	346.00	-0.60	1.48%
Sta 35+00	3500.000	342.50	343.20	-0.70	3.40%
Sta 39+00	3900.000	340.00	340.41	0.41	1.48%
Sta 40+00	4000.000	339.50	339.07	0.43	3.30%
Sta 45+00	4500.000	331.50	331.92	0.42	1.25%
Sta 46+00	4600.000	330.50	330.92	0.42	1.60%
Sta 50+00	5000.000	335.00	335.70	-0.70	3.45%
Sta 55+00	5500.000	342.00	341.75	0.25	1.75%
Sta 56+00	5600.000	342.00	342.00	0.00	1.75%
Sta 60+00	6000.000	343.00	342.76	0.24	1.75%
Sta 61+00	6100.000	343.00	342.48	0.52	1.75%
Sta 64+00	6400.000	338.00	328.32	9.68	1.75%
Sta 65+00	6500.000	338.00	327.70	10.30	1.75%

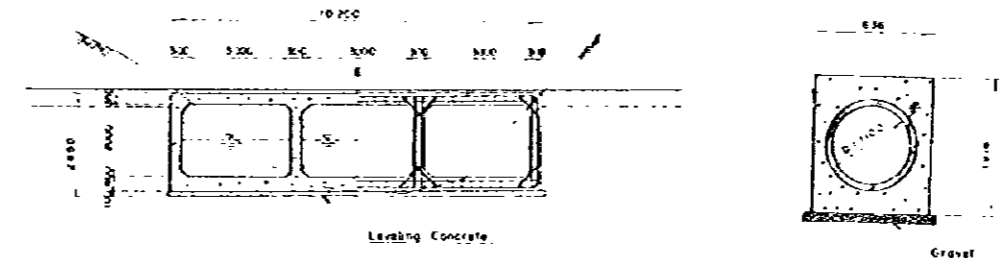


TYPICAL CROSS SECTION



BOX CULVERT 3-[] 3000x2000

PIPE #1100 (360° LINING)



131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92
131.92	130.92	130.92	131.75	132.45	132.76	132.45	131.92	130.92	130.92

- BUILDINGS**
- ① PASSENGER TERMINAL AND ADMINISTRATION BUILDING
 - ② CARGO TERMINAL BUILDING
 - ③ FIRE / RESCUE STATION
 - ④ MAIN POWER SUBSTATION
 - ⑤ HEAD OF STATE BUILDING (AREA)

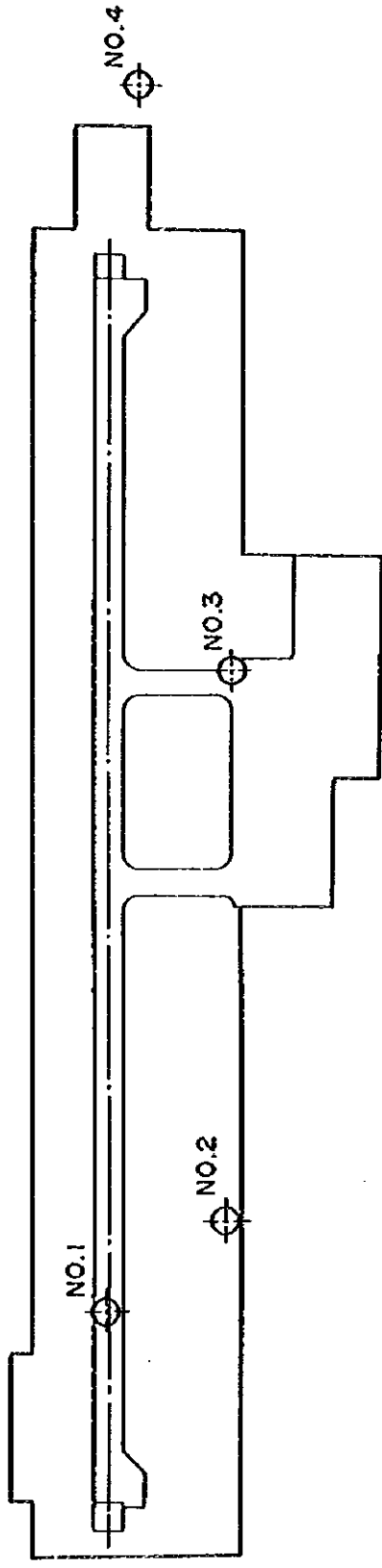
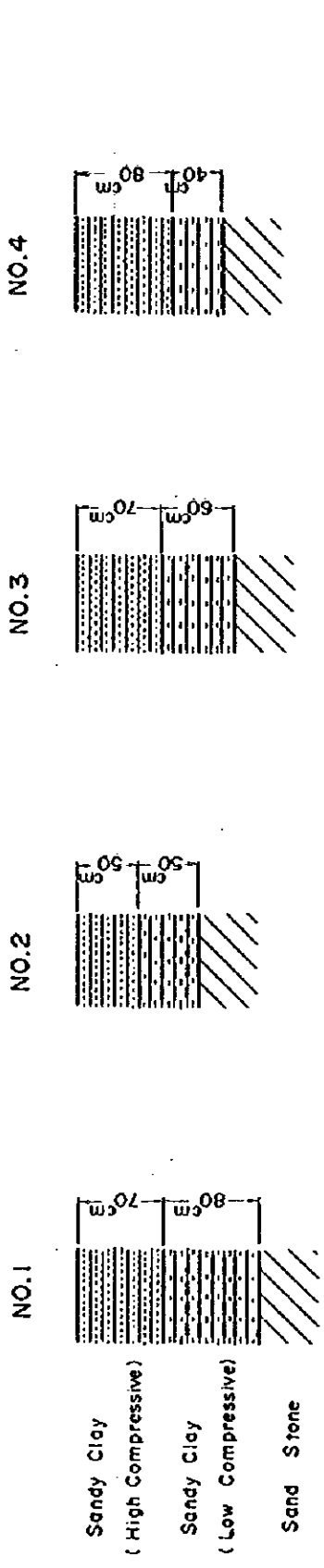
KINGDOM OF SWAZILAND
 MINISTRY OF WORKS, POWER AND COMMUNICATIONS

NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY

APPROACH ROAD

MAR 1980
No 12

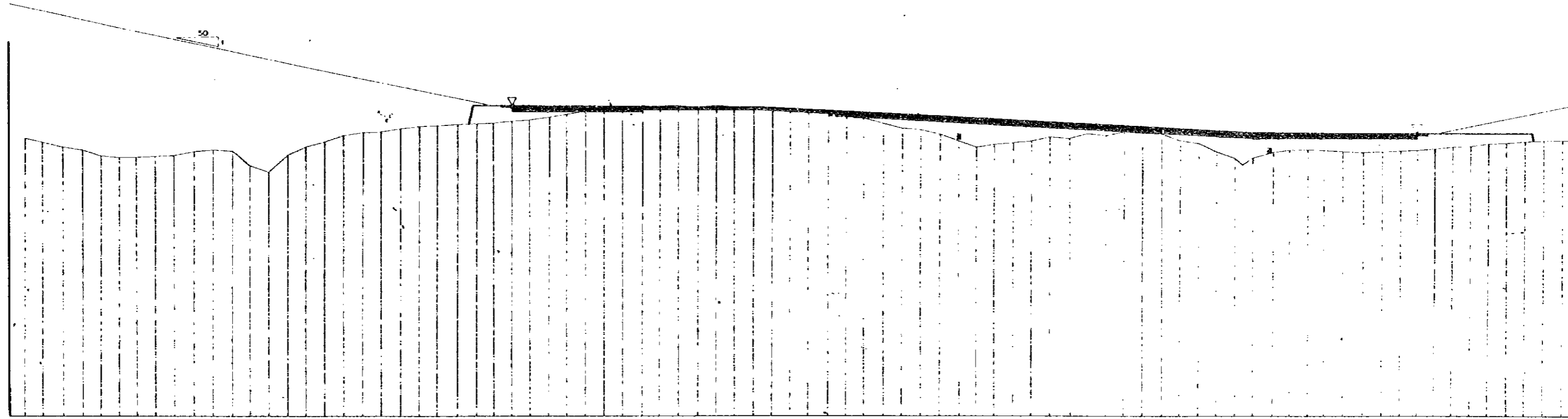
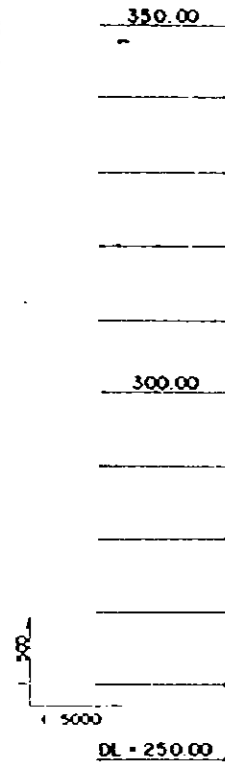
JAPAN INTERNATIONAL COOPERATION AGENCY



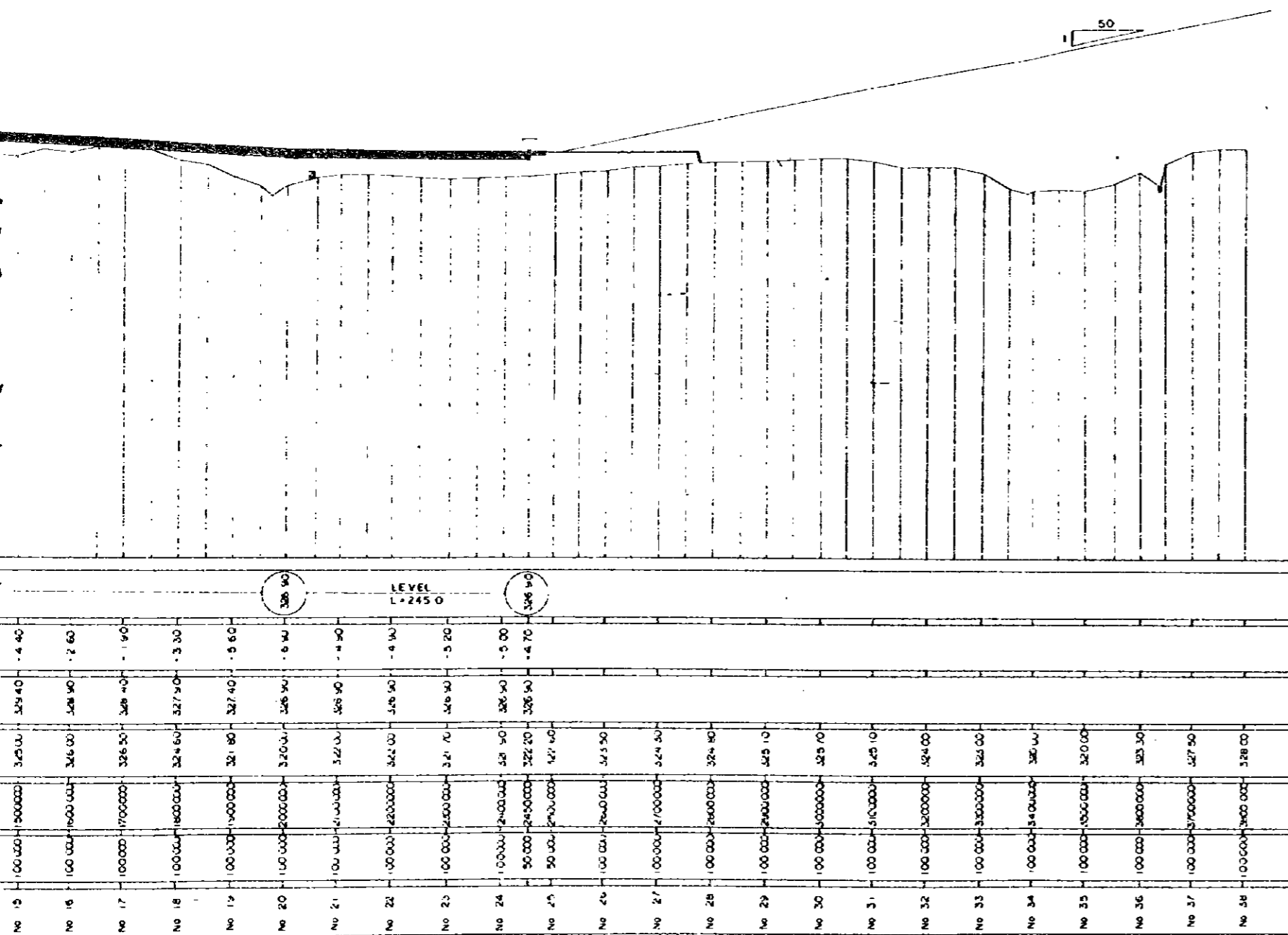
GEOLOGICAL PROFILE

Results of Soil Tests (SIKUPE SITE)

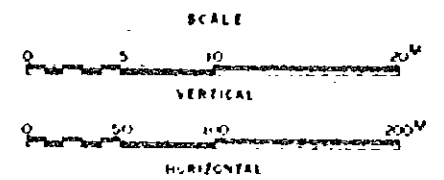
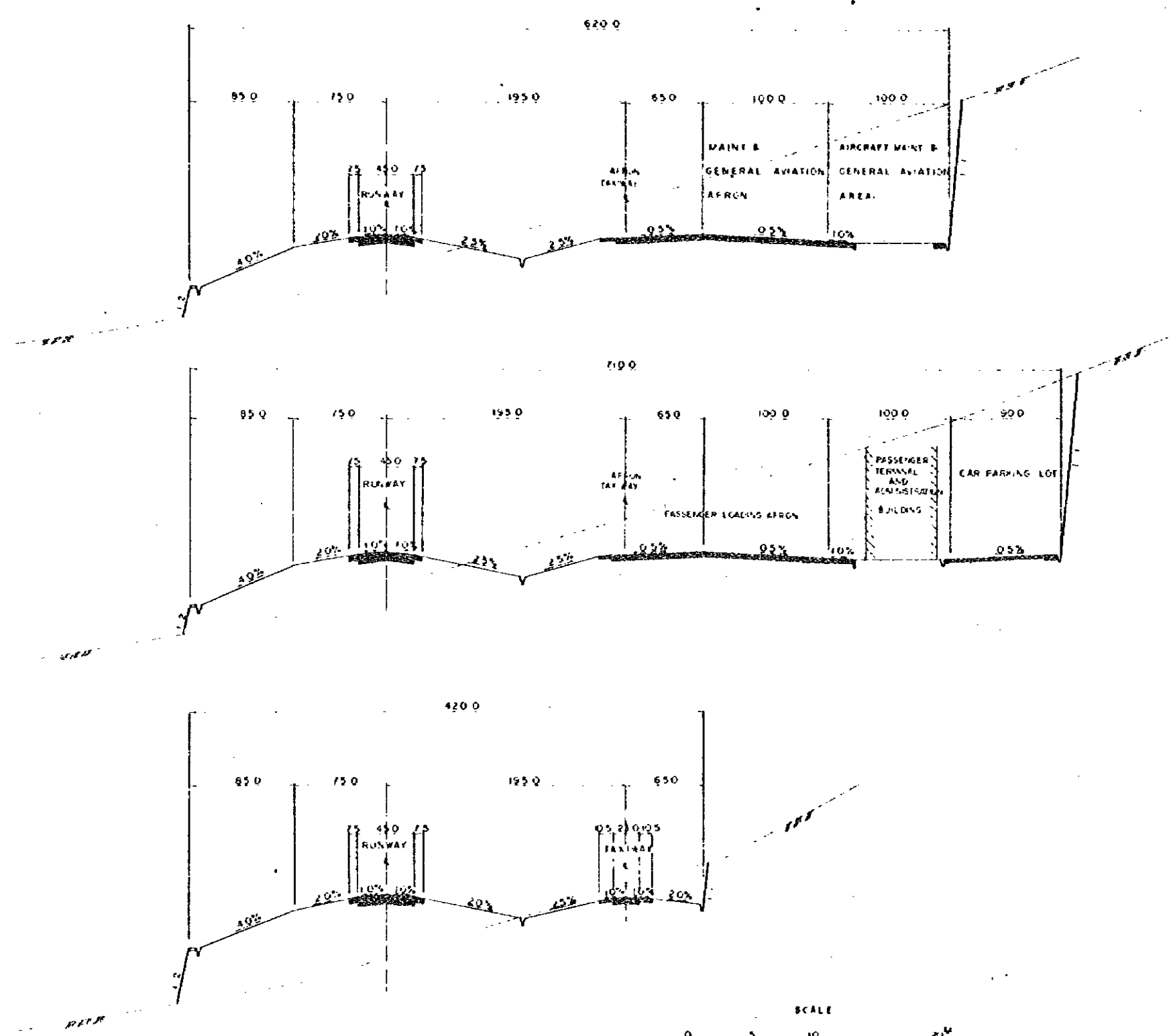
Test	Test 1		Test 2			Test 3	
	d = 30 - 85	100 - 110	0 - 50	50 - 110	110 - 120	40 - 80	90 - 110
Field Moisture Content (%)	—	13.4	—	—	13.4	—	13.3
Passing 2.0mm (%)	98.7	98.6	97.9	96.7	93.6	97.9	92.7
" 0.42mm (%)	65.5	74.1	62.1	72.5	73.7	74.4	70.6
" 0.074mm (%)	53.0	56.7	25.2	55.0	52.8	54.7	50.1
Atterberg's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



STATION	DISTANCE	ACCUMULATED DISTANCE	GROUND HEIGHT	FORMATION HEIGHT	CUT FILL	GRADIENT
No 13	100.000	100.000	324.00			
No 12	100.000	200.000	321.90			
No 11	100.000	300.000	319.70			
No 10	100.000	400.000	319.00			
No 9	100.000	500.000	319.90			
No 8	100.000	600.000	321.20			
No 7	100.000	700.000	317.00			
No 6	100.000	800.000	320.00			
No 5	100.000	900.000	323.50			
No 4	100.000	1000.000	326.00			
No 3	100.000	1100.000	327.10			
No 2	100.000	1200.000	327.70			
No 1	100.000	1300.000	329.40			
No 0	0.000	0.000	329.00	333.40	-4.40	333.40
No 1	100.000	100.000	330.50	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	333.50	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	332.50	333.40	-0.90	
No 9	100.000	900.000	331.50	333.40	-1.10	
No 10	100.000	1000.000	329.00	333.40	-2.90	
No 11	100.000	1100.000	327.20	333.40	-4.20	
No 12	100.000	1200.000	324.50	333.40	-6.40	
No 13	100.000	1300.000	323.50	333.40	-6.90	
No 14	100.000	1400.000	324.50	333.40	-5.60	
No 15	100.000	1500.000	325.00	333.40	-4.40	
No 16	100.000	1600.000	326.00	333.40	-3.60	
No 17	100.000	1700.000	326.50	333.40	-3.10	
No 18	100.000	1800.000	324.60	333.40	-3.30	
No 19	100.000	1900.000	321.90	333.40	-5.60	
No 20	100.000	2000.000	320.00	333.40	-6.90	
No 21	100.000	2100.000	320.00	333.40	-6.90	
No 22	100.000	2200.000	320.00	333.40	-6.90	
No 23	100.000	2300.000	321.70	333.40	-5.20	
No 24	100.000	2400.000	323.90	333.40	-3.00	
No 25	100.000	2500.000	322.00	333.40	-4.70	
No 26	100.000	2600.000	323.50	333.40	-4.70	
No 27	100.000	2700.000	324.50	333.40	-4.70	
No 28	100.000	2800.000	324.60	333.40	-4.70	

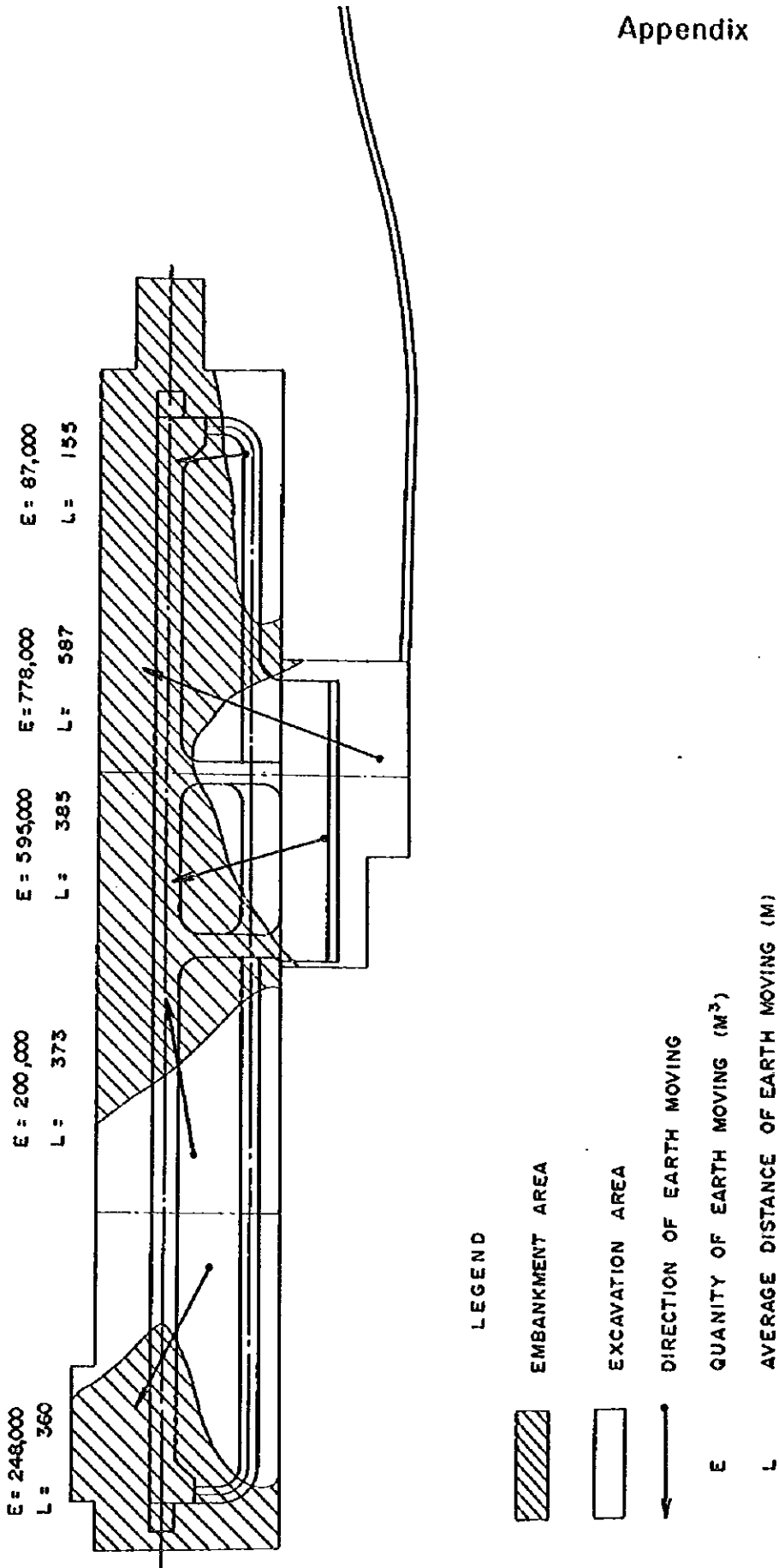


KINGDOM OF SWAZILAND MINISTRY OF WORKS, POWER AND COMMUNICATIONS NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT FEASIBILITY STUDY	
LONGITUDINAL PROFILE OF RUNWAY No 6	No 6
JAPAN INTERNATIONAL COOPERATION AGENCY	

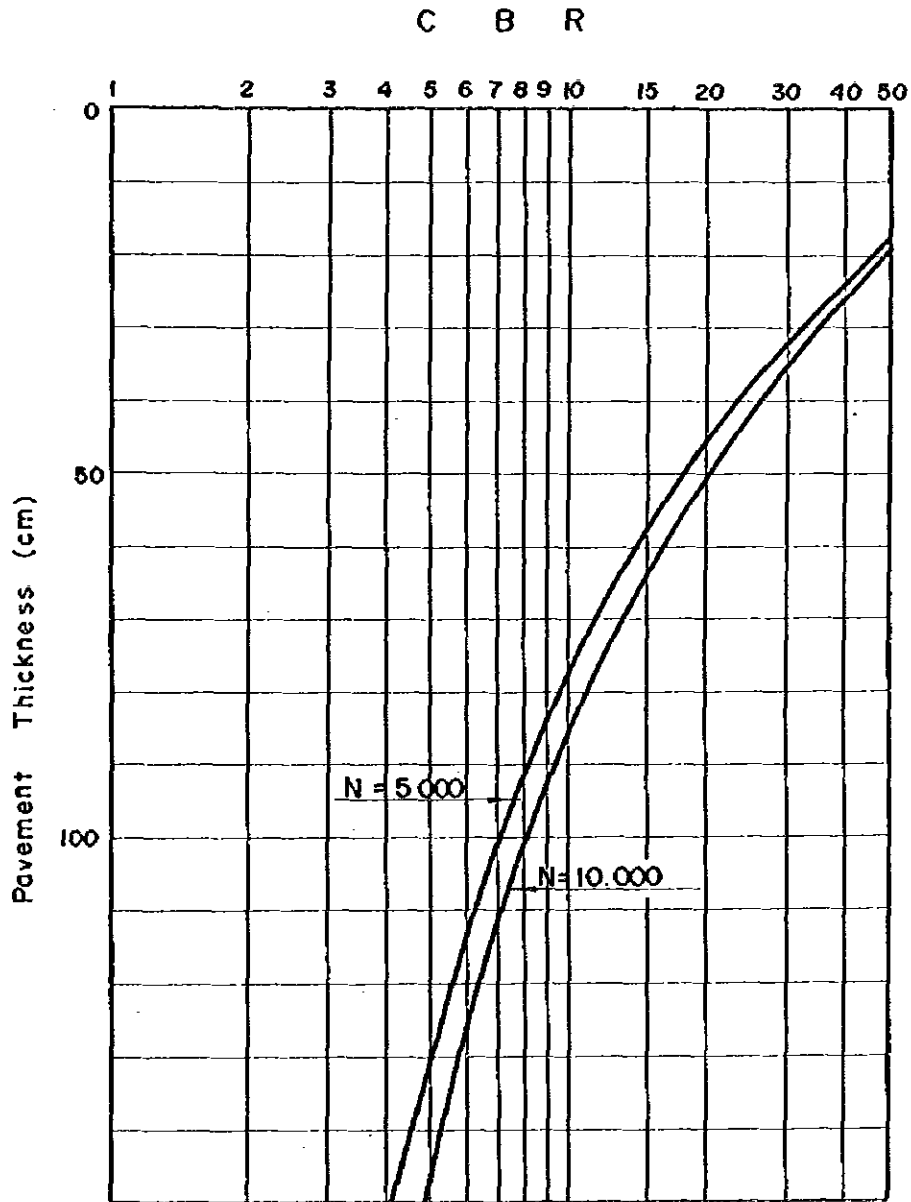


KINGDOM OF SWAZILAND
 MINISTRY OF WORKS, POWER AND COMMUNICATIONS
 NEW INTERNATIONAL AIRPORT CONSTRUCTION PROJECT
 FEASIBILITY STUDY

RUNWAY STRIP	MAR 1980
TYPICAL CROSS SECTION	No 7
JAPAN INTERNATIONAL COOPERATION AGENCY	

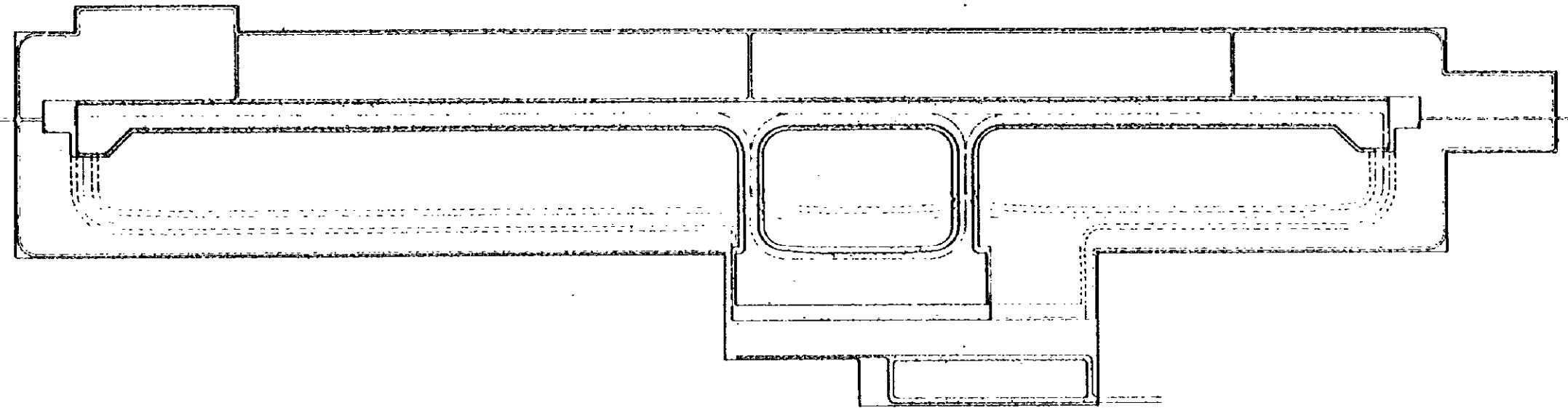
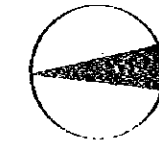


DISTRIBUTION DIAGRAM OF EARTHWORK



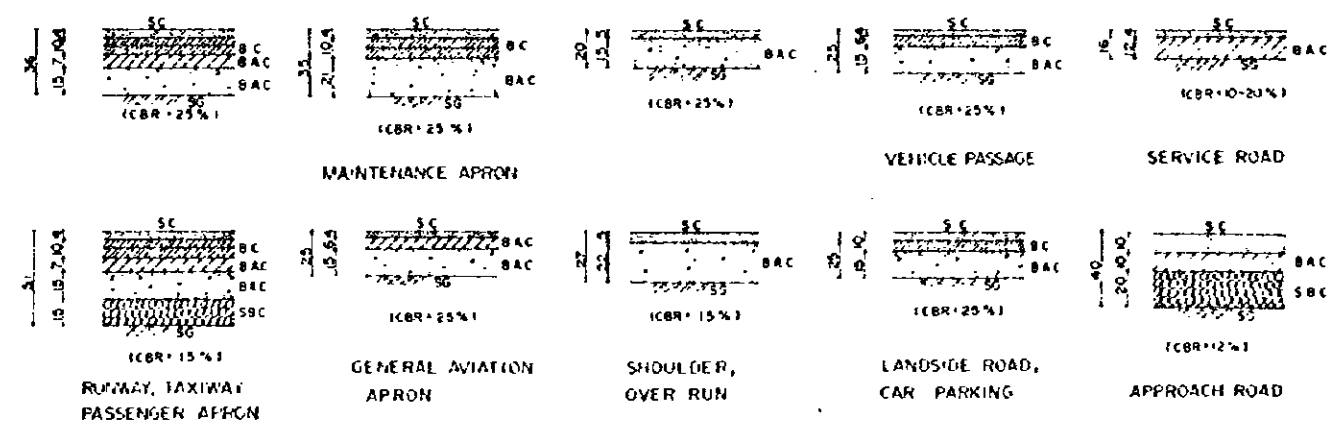
N : Repetition of design load

FLEXIBLE PAVEMENT DESIGN CURVE (B707)



PAVEMENT STRUCTURE SECTION

SCALE



LEGEND

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

LEGEND

- S C SURFACE COURSE (ASPHALT CONCRETE)
- B C BINDER COURSE (ASPHALT CONCRETE)
- B A C BASE COURSE (BITUMINOUS STABILIZATION)
- B A C BASE COURSE (CRUSHED AGGREGATE FOR MECHANICAL STABILIZATION)
- S B C SUBBASE COURSE (GRANULAR AGGREGATE WITH SAND/STONE)
- S G 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

