

マレーシア国
アロースター下水道および排水計画
マスタープランおよびフィージビリティスタディー報告書

第 VIII 卷
図 面 集

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国際協力事業団

調 一

81-38(8/8)

VOLUME VIII

PRELIMINARY ENGINEERING DRAWINGS AND MAPS

LIST OF FIGURES

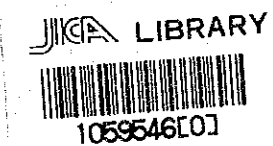
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国際協力事業団	
受入 月日	84. 4. 25 113
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	SDF



- | NO | NAME |
|------|-------------------------------------|
| 1 | Taman Kuala Kedah |
| 2 | Rancangan Rumah Murah Ji Sultanah |
| 3 | Makal Flats |
| 4 | Kawasan Perumahan Ji Shariff |
| 5 | Lorong Tinggi |
| 6 | Lorong Mepati |
| 7, 8 | Ji. Ghous |
| 9 | Market |
| 10 | " |
| 11 | " |
| 12 | Rancangan Rumah Murah Yonglang Ford |
| 13 | Ji. Bunga Raya |
| 15 | Commercial Area |
| 16 | Polls Quarters |
| 17 | " |
| 18 | Market |
| 19 | " |
| 20 | " |
| 21 | General Hospital |

SCALE
1:20000

0 10 20 KILOMETRE
0 0.5 1.0 MILE

LEGEND

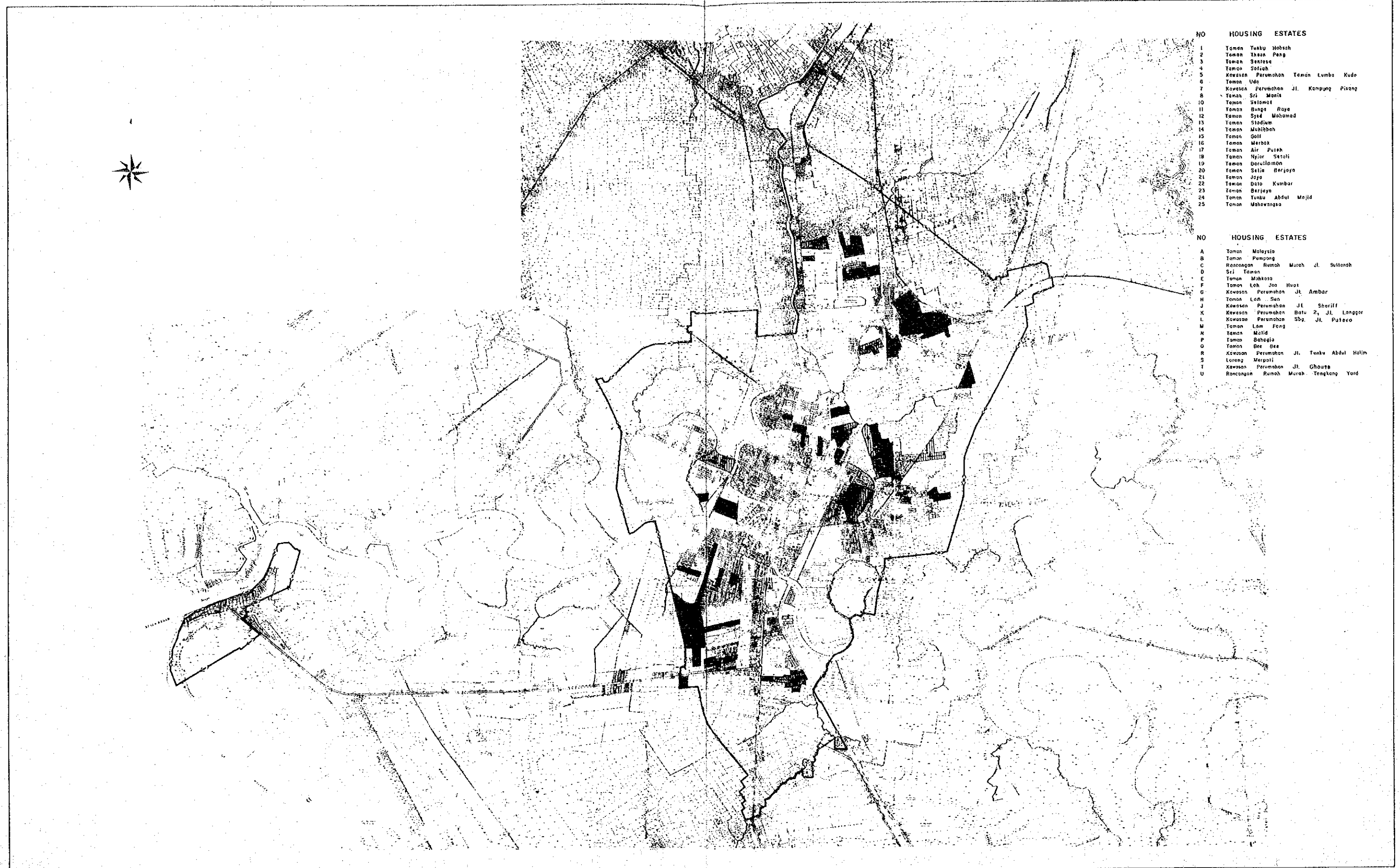
- Boundary of Study Area
- Location of Communal Septic Tank
- Served Area of Communal Septic Tank

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL COOPERATION AGENCY
NIHON SUDO CONSULTANTS CO., LTD.
TOKYO, JAPAN

LOCATIONS AND SERVED AREAS
BY EXISTING COMMUNAL
SEPTIC TANKS

FIGURE
SM-1



NO	HOUSING ESTATES
1	Taman Tunku Hobah
2	Taman Tasek Peng
3	Taman Sentosa
4	Taman Solih
5	Kawasan Perumahan Taman Lumba Kuda
6	Taman Uda
7	Kawasan Perumahan JI. Kampung Pisang
8	Taman Sri Manis
10	Taman Selamat
11	Taman Bunga Raya
12	Taman Syed Mohamad
13	Taman Stadium
14	Taman Mahabbah
15	Taman Golf
16	Taman Merbok
17	Taman Air Putih
18	Taman Njir Setali
19	Taman Darulaman
20	Taman Selia Berjaya
21	Taman Jaya
22	Taman Dato Kumbang
23	Taman Berjaya
24	Taman Tunku Abdul Majid
25	Taman Mahawangsa

NO	HOUSING ESTATES
A	Taman Malaysia
B	Taman Pempang
C	Rancangan Rumah Murah JI. Sultanah
D	Sri Taman
E	Taman Mahkota
F	Taman Loh Joo Huat
G	Kawasan Perumahan JI. Ambar
H	Taman Loh Sun
J	Kawasan Perumahan JI. Sheriff
K	Kawasan Perumahan Batu 2, JI. Langgar
L	Kawasan Perumahan Sbg. JI. Putera
M	Taman Lam Fong
N	Taman Bahagia
O	Taman Dita Sea
R	Kawasan Perumahan JI. Tunku Abdul Halim
S	Lorong Mergali
T	Kawasan Perumahan JI. Ghauts
U	Rancangan Rumah Murah Tenglong Yard

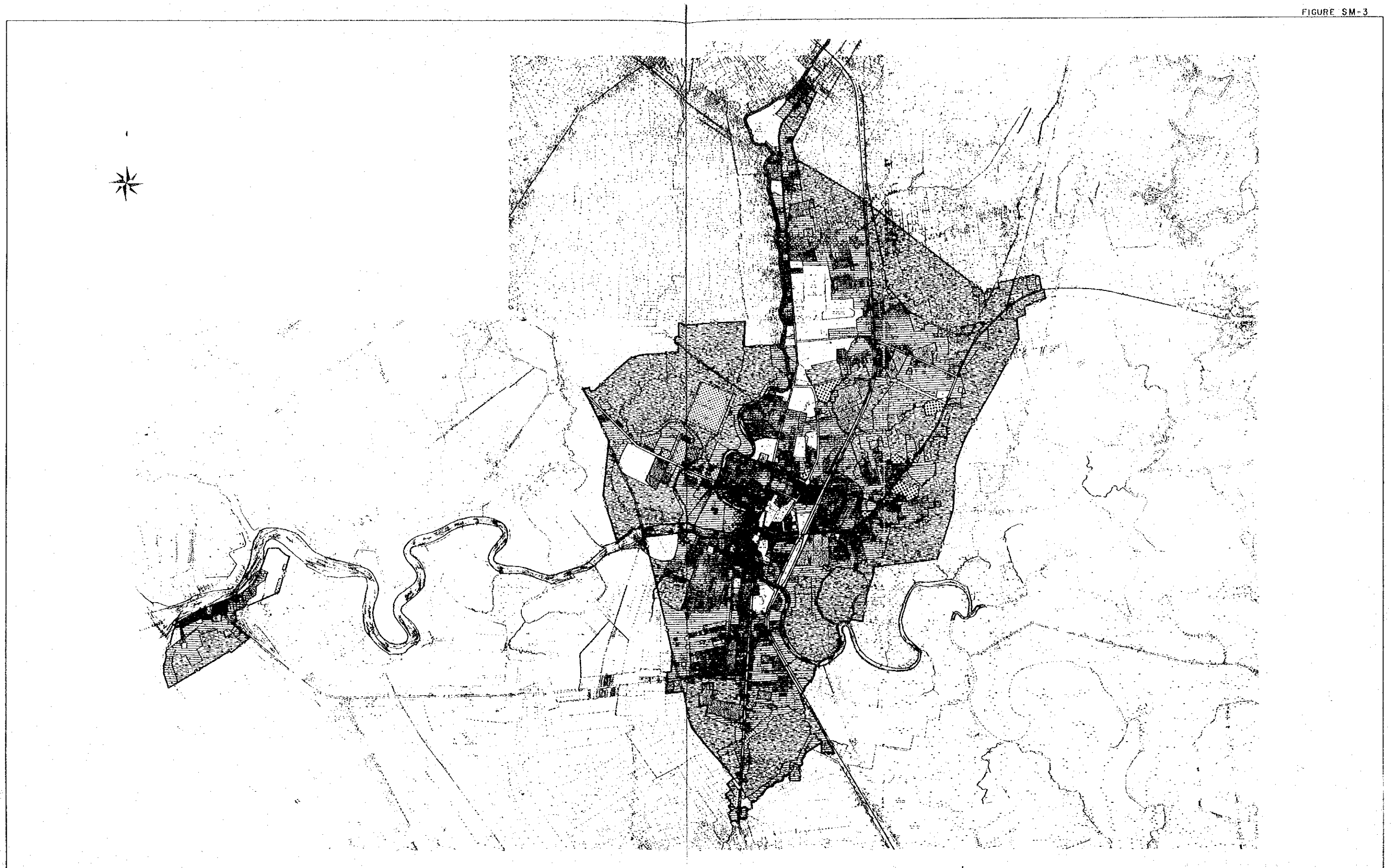
SCALE
1:20,000

0 10 20 KILOMETRE
0 0.5 10 MILE

LEGEND

Boundary of Study Area
Location of Development Area
Wier 1970
Location of Development Area
Between 1962 to 1969

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS
JAPAN INTERNATIONAL COOPERATION AGENCY
NIHON SUIDO CONSULTANTS CO.LTD
TOKYO, JAPAN
LOCATIONS OF EXISTING HOUSING
DEVELOPMENT AREAS
FIGURE
SM-2



SCALE
1:20 000

0 10 20 KILOMETRE
0 0.5 1.0 MILE

LEGEND

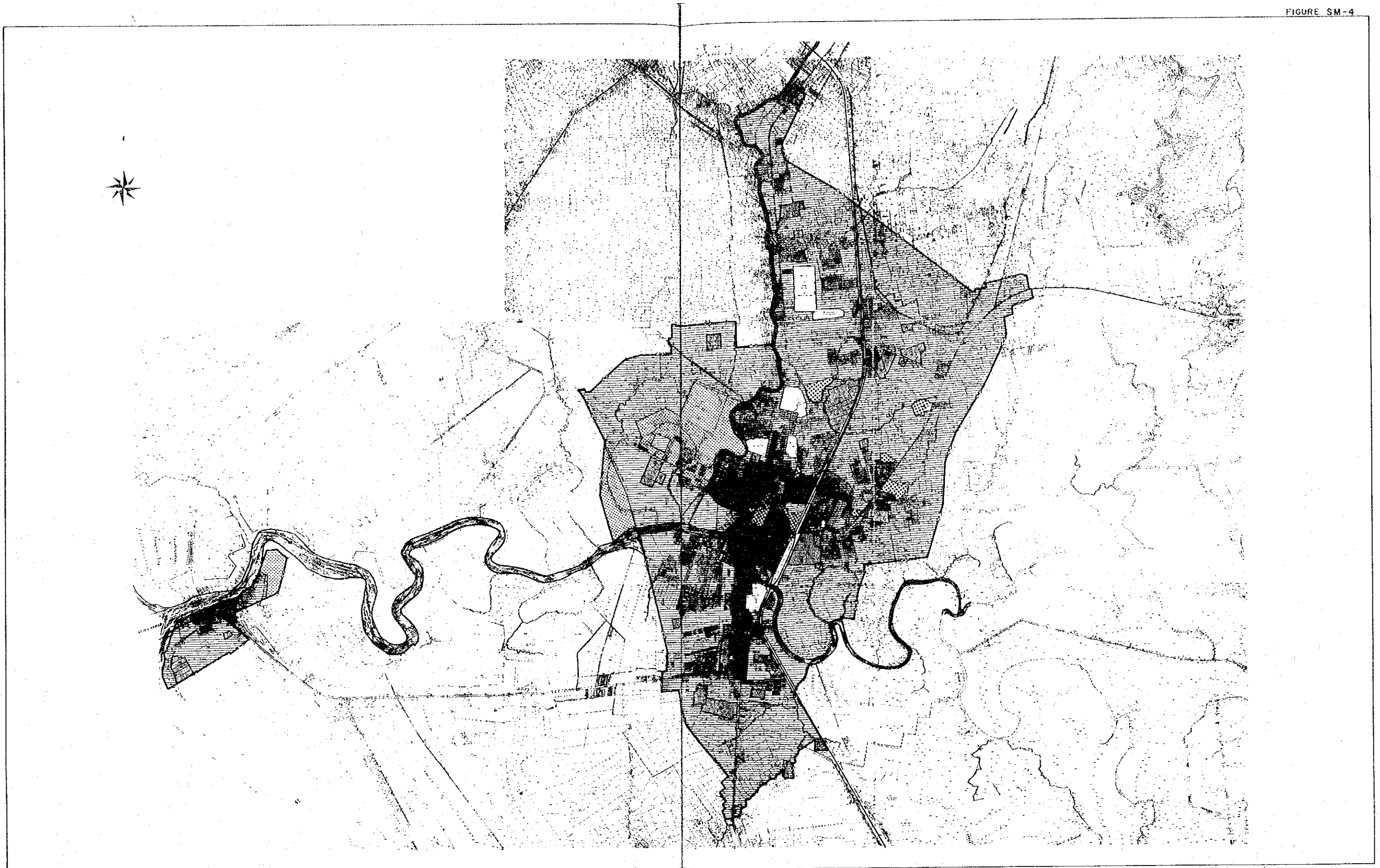
- Boundary of Study Area
- Commercial Area
- Residential Area
- Industrial Area
- School Area
- Open Space & Park Etc. Area
- Mosque Area
- Paddy Field Area
- Railway

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL COOPERATION AGENCY
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LAND USES IN 1979

FIGURE
SM-3













SCALE
1:20,000

0 10 20 KILOMETRE

0 05 10 MILE

LEGEND

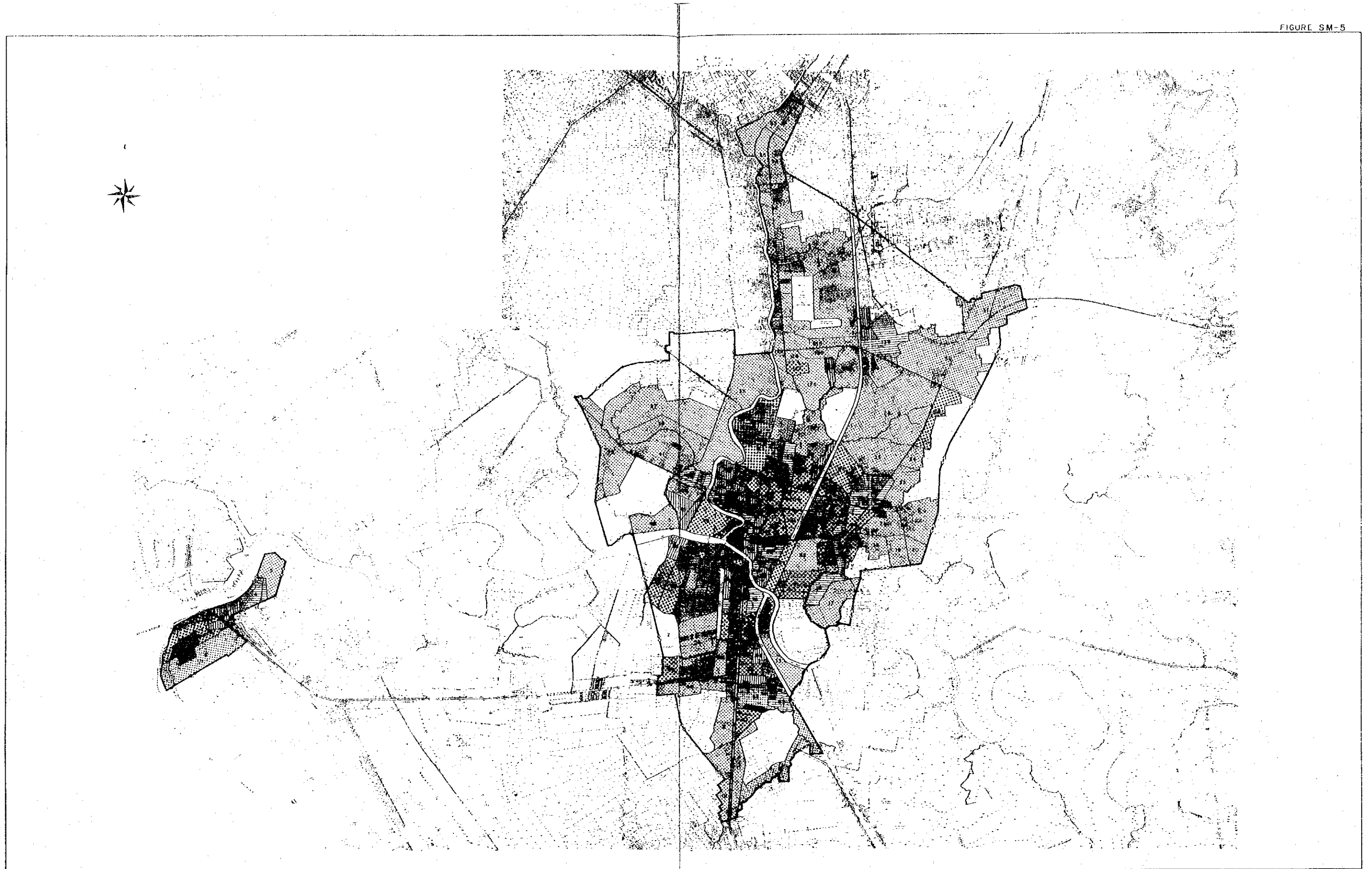
-  Boundary of Study Area
-  Institutional Area
-  Commercial Area
-  Residential Area
-  Industrial Area
-  School Area
-  Mosque Area
-  Open Space (Vacant) Area
-  Railway
-  River

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL COOPERATION AGENCY NIPPON KAIKYO CONSULTANTS CO., LTD.
TOKYO, JAPAN

LAND USES IN 2000

FIGURE
SM-4



SCALE
1:20,000

0 10 20 KILOMETRE
0 0.5 1.0 MILE

LEGEND

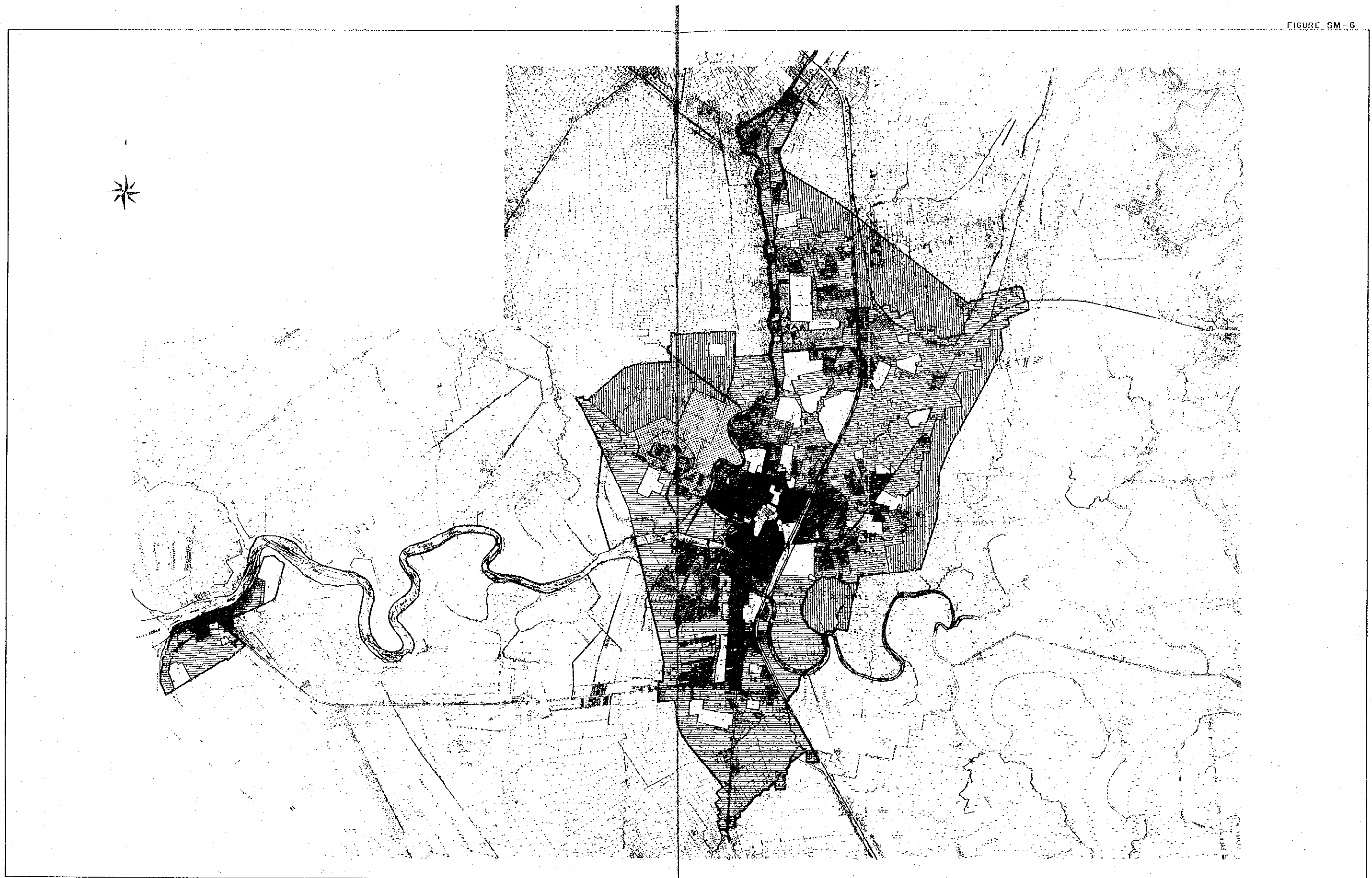
	Boundary of Study Area
	0 Person / ha
	1 - 49 Persons / ha
	50 - 99 Persons / ha
	100 - 149 Persons / ha
	150 - 199 Persons / ha
	200 - 249 Persons / ha
	250 - Persons / ha

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL COOPERATION AGENCY
NIHON SUDO CONSULTANTS CO., LTD.
TOKYO, JAPAN

POPULATION DISTRIBUTION
IN 1979

FIGURE
SM-5



SCALE
1:20,000

0 10 20 KILOMETRE
0 0.5 1.0 MILE

LEGEND

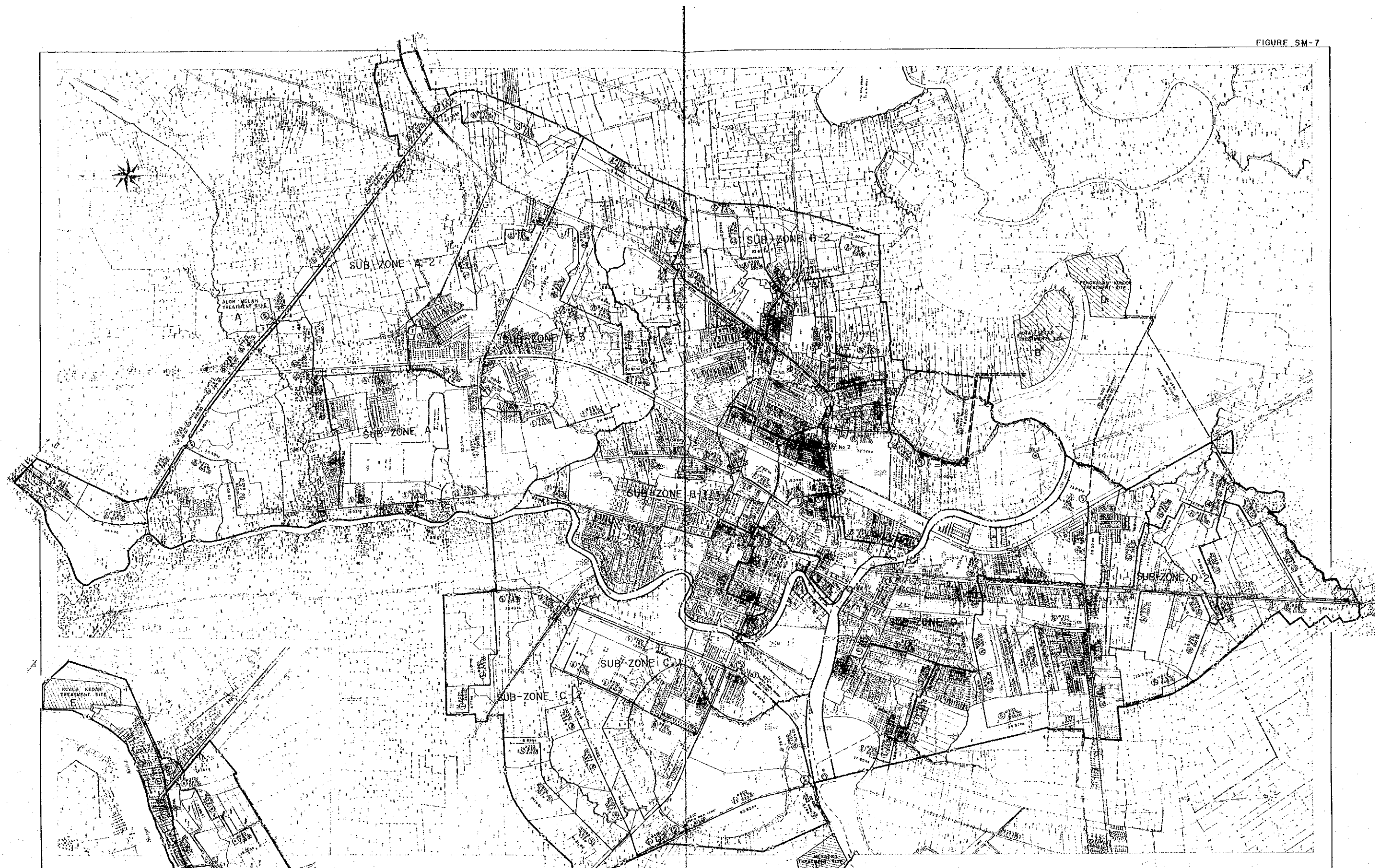
- Boundary of Study Area
- Commercial Area, 200 persons/ha
- Residential Area, 120 persons/ha
- Industrial Area, 61.7 persons/ha
- Industrial Area, North Mangrove 100 persons/ha
- Others Open area/ha
- Railway
- River

- ①: Sultan's Palace, 150 persons
- ②: Kadah Club, 1100 persons
- ③: Police Quarter, 780 persons
- ④: Alor Malai Flats, 960 persons
- ⑤: Mangrove Housing Estate, 2000 persons
- ⑥: Tong Kong Yard Housing Estate, 650 persons

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL COOPERATION AGENCY
NIHON SUIDO CONSULTANTS CO., LTD.
TOKYO, JAPAN

PROJECTED POPULATION DISTRIBUTION IN 2000
FIGURE SM-6



SCALE
1:10,000

0 10 KILOMETRE
0 0.5 MILE

LEGEND

- Boundary of Master Plan Study Area
- Boundary of sewerage zone
- Boundary of sewerage sub-zone
- ① Sewer number
- φ225 Sewer diameter (mm)
- 2.8% Slope
- 420.00 Sewer length (m)
- 19.81ha Served area for each sewer
- Differential area for determination of sewer capacity
- Proposed treatment site
- Trunk sewer
- Branch and lateral sewer
- Force main sewer
- ② Sewage pumping station
- ③ Location of boring point
- ④ Wastewater point

MASTER PLAN AND FEASIBILITY STUDY FOR SEWERAGE AND DRAINAGE SYSTEM PROJECT IN ALOR SETAR AND ITS URBAN ENVIRONS	
JAPAN INTERNATIONAL COOPERATION AGENCY	NIHON SUDO CONSULTANTS CO., LTD. TOKYO, JAPAN
PLAN OF PROPOSED SEWERAGE SYSTEM	FIGURE SM-7

FIGURE SM-B-1

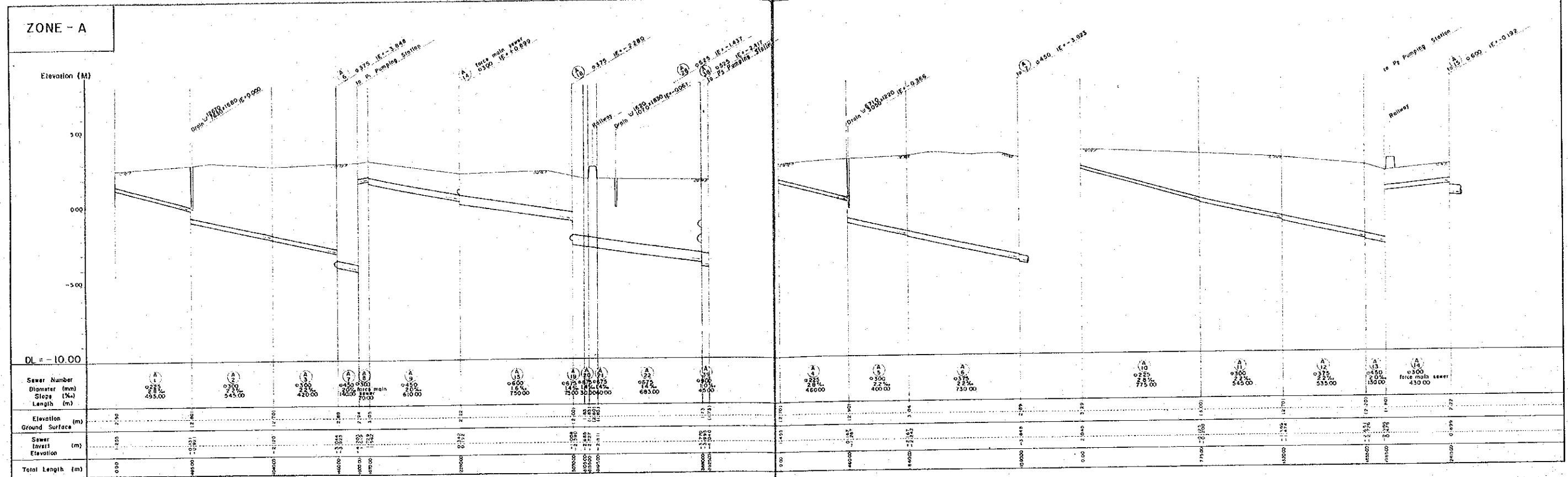
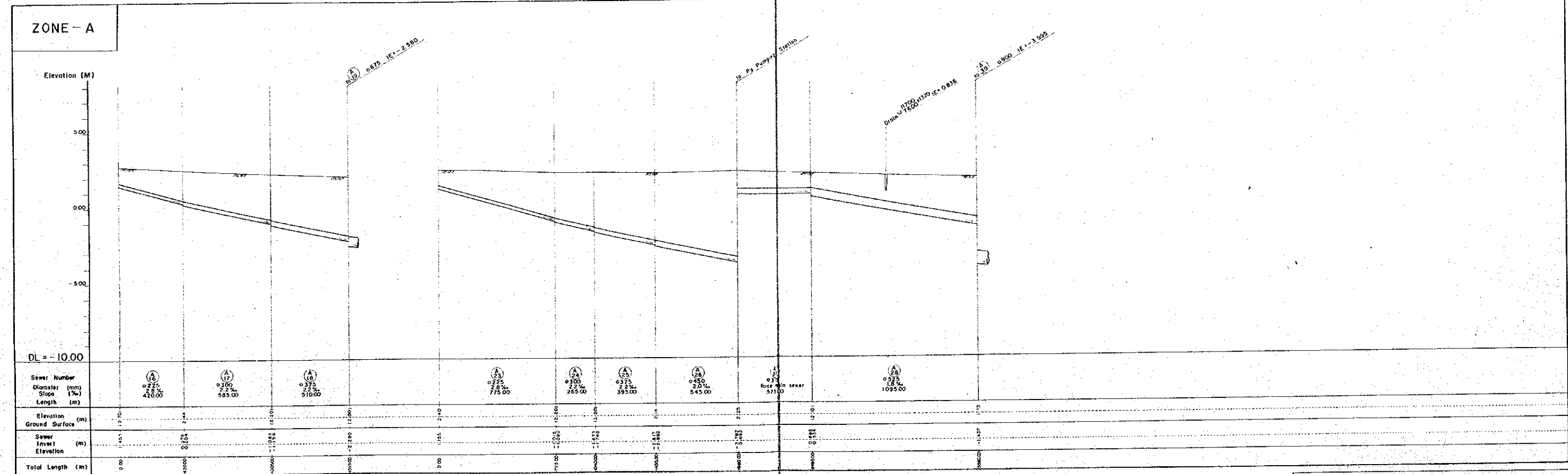


FIGURE SM-B-2



SCALE

Horizontal 1 : 10,000
Vertical 1 : 100

FIGURE SM-9-1

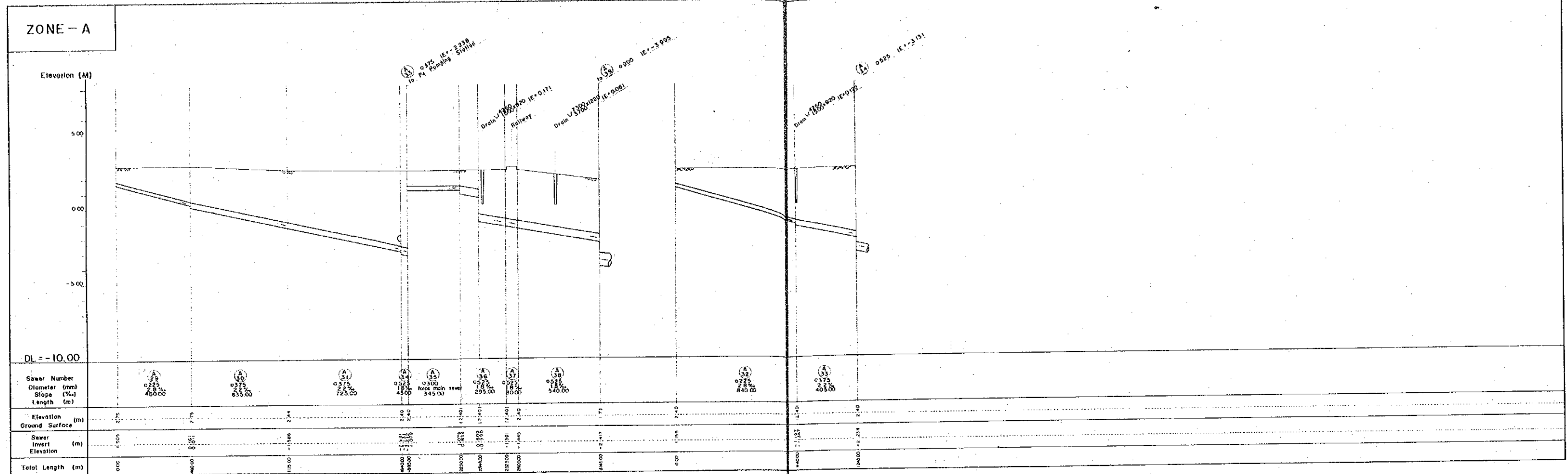
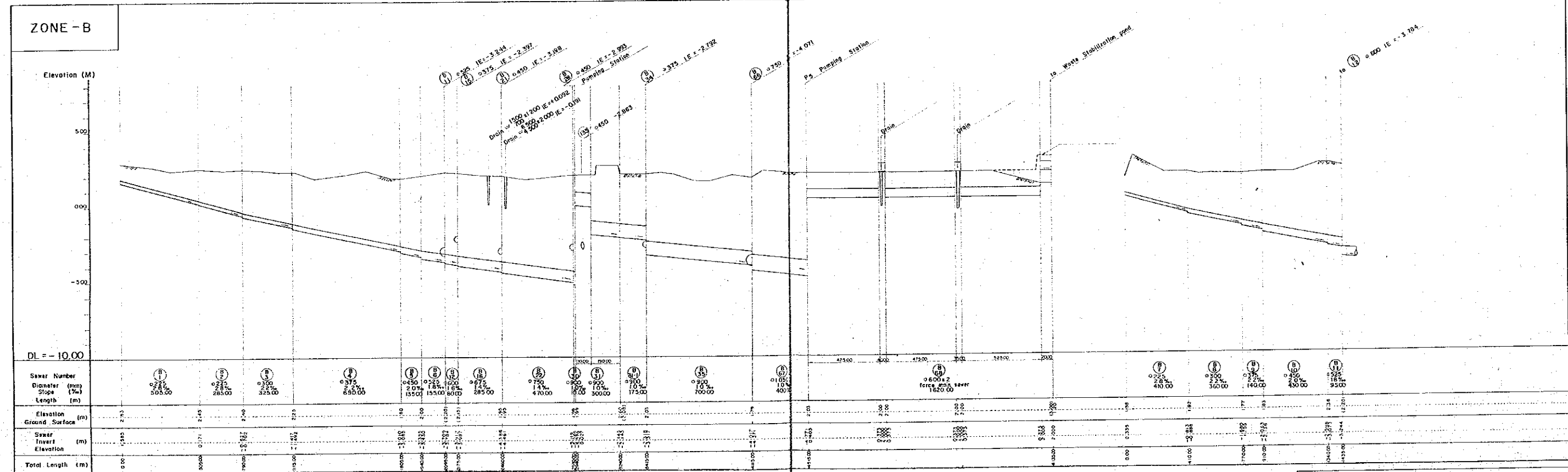


FIGURE SM-9-2



SCALE

Horizontal 1 : 10,000
Vertical 1 : 100

ZONE - B

Elevation (M)

DL = -10.00

Sewer Number	Diameter (mm)	Slope (%)	Length (m)
18	300	2.8	510.00
19	300	2.8	150.00
20	300	2.8	605.00
21	300	2.8	750.00
22	300	2.8	190.00
23	300	2.8	370.00
24	300	2.8	80.00
25	300	2.8	340.00
26	300	2.8	300.00
27	300	2.8	405.00
28	300	2.8	210.00
29	300	2.8	600.00
30	300	2.8	465.00
31	300	2.8	320.00
32	300	2.8	360.00

Elevation Ground Surface (m)

Sewer Invert Elevation (m)

Total Length (m)

ZONE - B

Elevation (M)

DL = -10.00

Sewer Number	Diameter (mm)	Slope (%)	Length (m)	Elevation Ground Surface (m)	Sewer Invert Elevation (m)	Total Length (m)
16	0.225	2.8%	625.00	2.15	2.15	0.00
17	0.300	3.0%	305.00	1.50	1.50	4.25
18	0.375	3.2%	16.00	1.14	1.14	4.41
19	0.450	2.0%	385.00	1.00	1.00	4.80
20	0.450	2.0%	540.00	1.00	1.00	5.34
21	0.450	2.0%	245.00	1.00	1.00	5.59
22	0.300	1.8%	115.00	1.00	1.00	5.70
23	0.450	2.0%	520.00	1.00	1.00	6.22
24	0.525	1.8%	460.00	1.00	1.00	6.68
25	0.600	1.8%	300.00	1.00	1.00	6.98
26	0.450	1.8%	315.00	1.00	1.00	7.30
27	0.450	1.8%	540.00	1.00	1.00	7.84
28	0.450	1.8%	300.00	1.00	1.00	8.14
29	0.450	1.8%	410.00	1.00	1.00	8.55
30	0.450	1.8%	390.00	1.00	1.00	8.94
31	0.750	1.5%	435.00	1.00	1.00	9.38
32	0.750	1.5%	760.00	1.00	1.00	10.14
33	0.750	1.5%	490.00	1.00	1.00	10.63
34	0.750	1.5%	425.00	1.00	1.00	11.05
35	0.750	1.5%	750.00	1.00	1.00	11.80

Notes:

- To P4 Pumping Station
- From P5 Pumping Station
- Force main sewer

MASTER PLAN AND FEASIBILITY STUDY FOR SEWERAGE AND DRAINAGE SYSTEM PROJECT IN ALOR SETAR AND ITS URBAN ENVIRONS	
JAPAN INTERNATIONAL COOPERATION AGENCY	NIHON SUIDO CONSULTANTS CO., LTD. TOKYO, JAPAN
PROFILE OF PROPOSED SEWERS	FIGURE SM-10

FIGURE SM-11-1

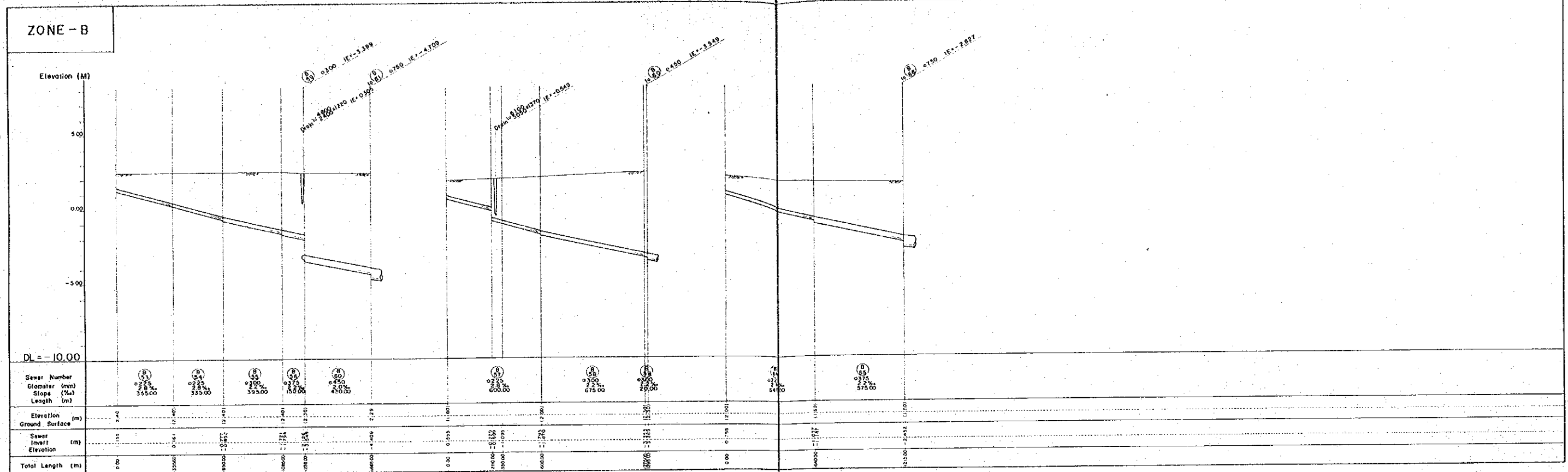
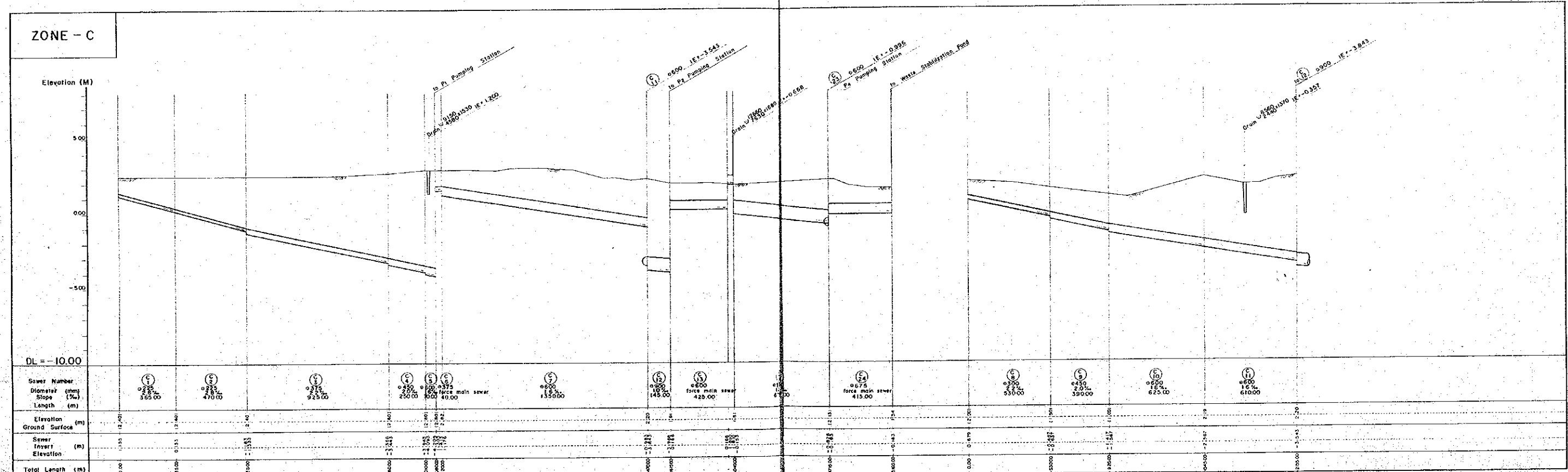


FIGURE SM-11-2



SCALE
Horizontal 1 : 10,000
Vertical 1 : 100

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

JAPAN INTERNATIONAL
COOPERATION AGENCY

NIHON SUDO CONSULTANTS CO., LTD.
TOKYO, JAPAN

PROFILE OF PROPOSED SEWERS

FIGURE
SM-11

FIGURE SM-13-1

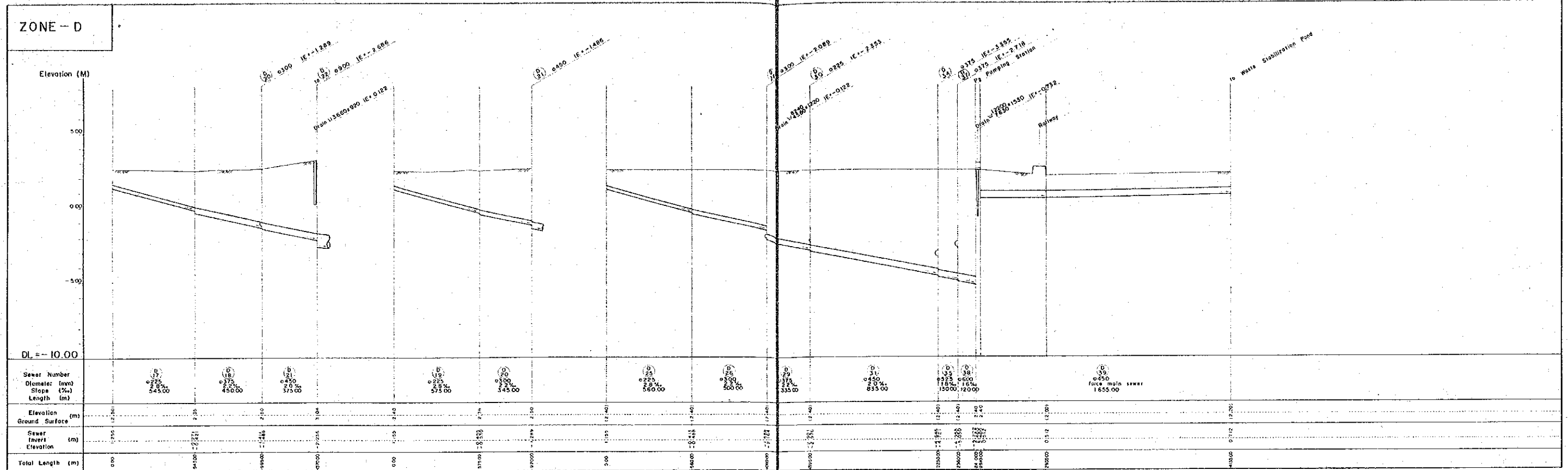
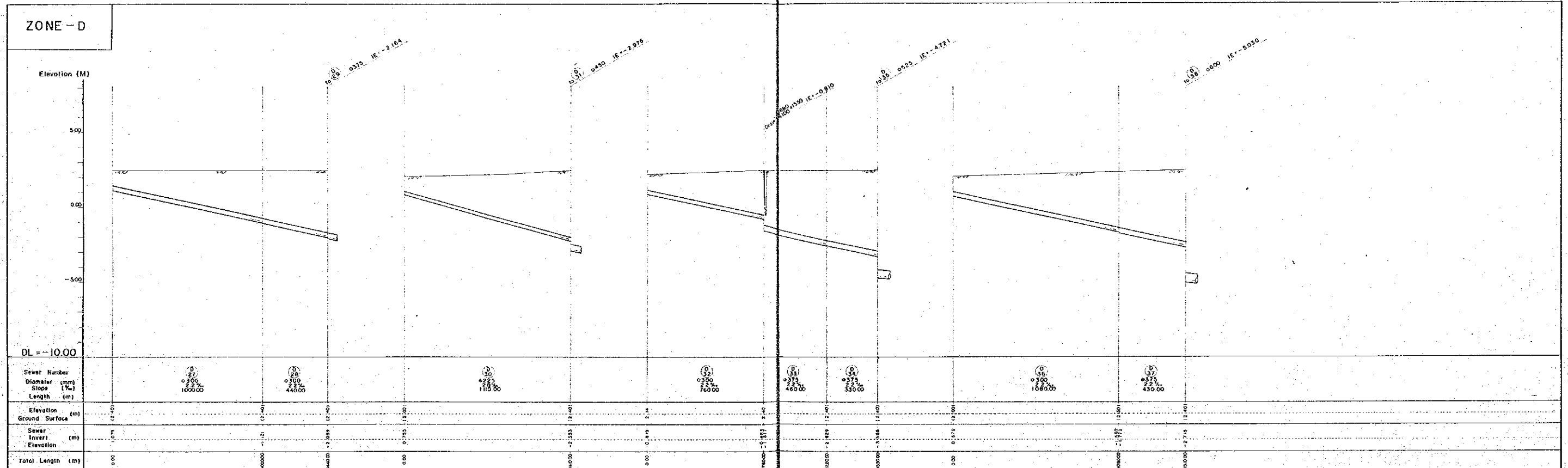


FIGURE SM-13-2



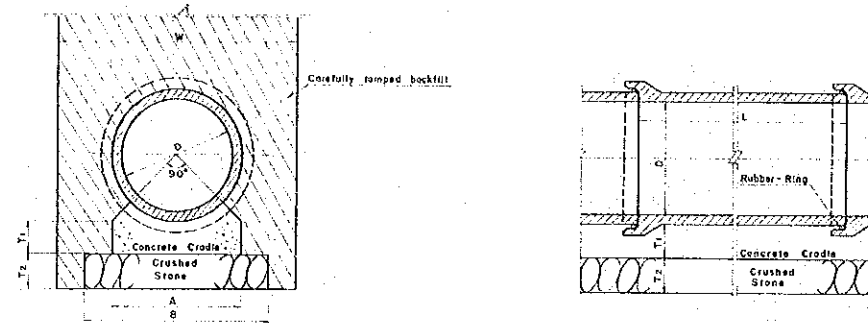
SCALE

Horizontal 1 : 10,000
Vertical 1 : 100

MASTER PLAN AND FEASIBILITY STUDY FOR SEWERAGE AND DRAINAGE SYSTEM PROJECT IN ALOR SETAR AND ITS URBAN ENVIRONS	
JAPAN INTERNATIONAL COOPERATION AGENCY	NIHON SUDO CONSULTANTS CO., LTD. TOKYO, JAPAN
PROFILE OF PROPOSED SEWERS	FIGURE SM-13

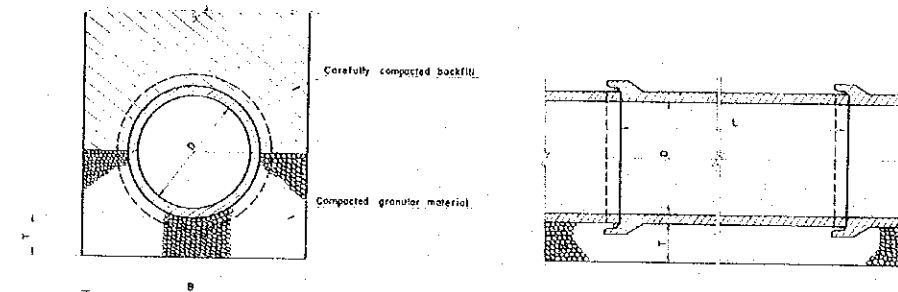
PIPE BEDDING DETAILS

CONCRETE CRADLE BEDDING



Dimensions in mm						
D	L	A	T1	B	T2	W
225	910	300	120	470	120	1100
300	910	350	120	560	120	1100
375	1830	400	120	650	120	1100
450	3050	550	150	750	150	1150
525	3050	630	150	830	150	1200
600	3050	700	150	900	150	1350
675	3050	800	180	1000	180	1500
750	3050	900	180	1100	180	1550
900	3050	1050	180	1250	180	1750

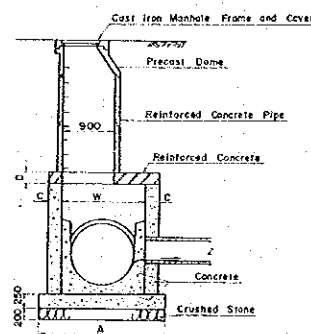
COMPACTED GRANULAR BEDDING



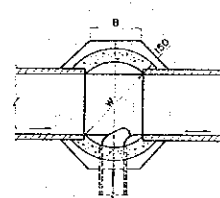
Dimension in mm			
D	L	T	B
225	910	90	1100
300	910	120	1100
375	1830	150	1100
450	3050	180	1150
525	3050	180	1200

MANHOLE STRUCTURE

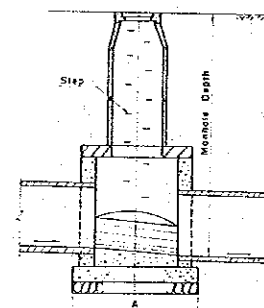
CROSS SECTION



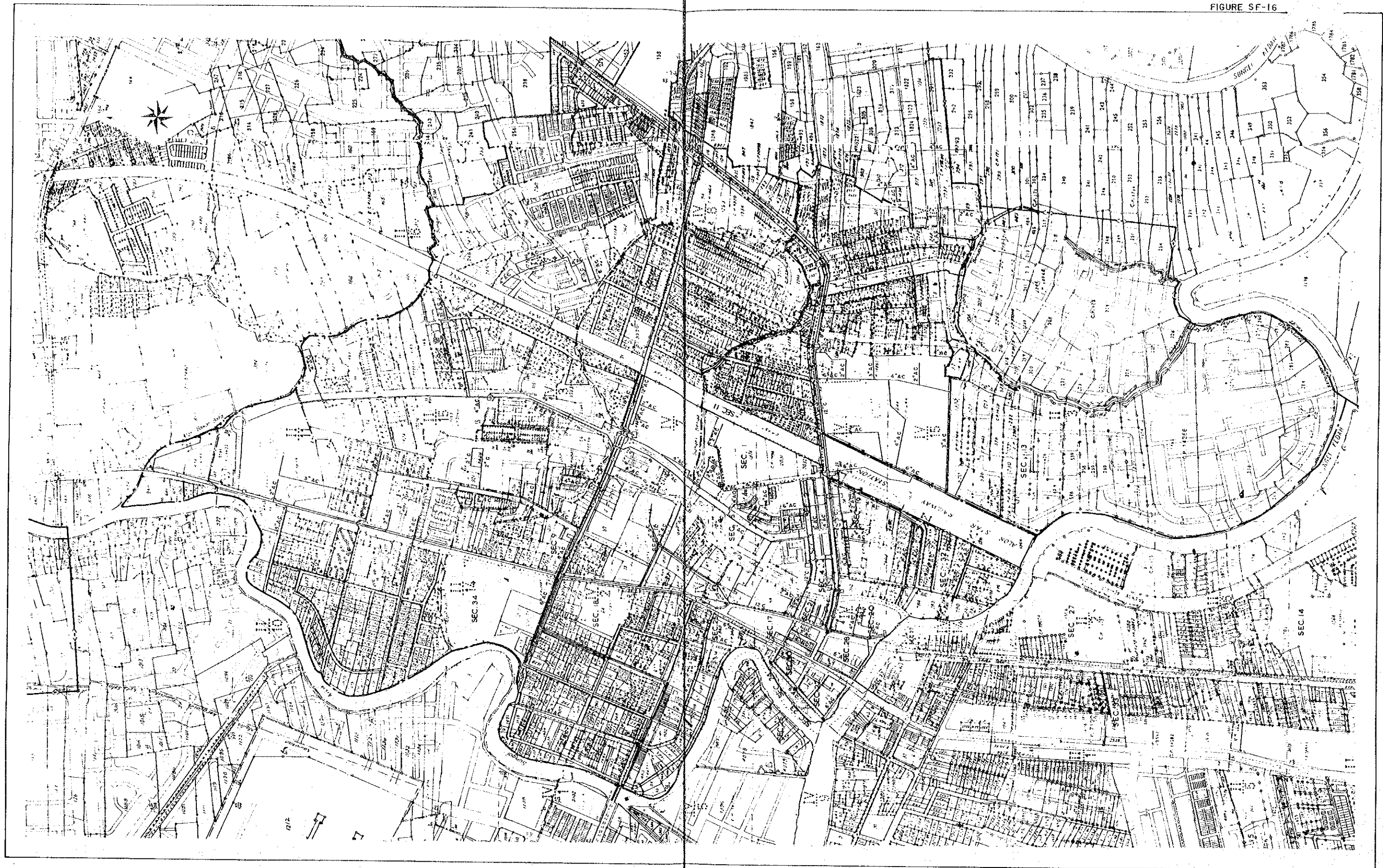
SECTIONAL PLAN



VERTICAL SECTION



Dimensions in mm					
Type of Manhole	W	A	B	C	D
I	1,200	2,000	830	250	200
II	1,500	2,300	950	250	200
III	1,600	2,700	1,120	300	250



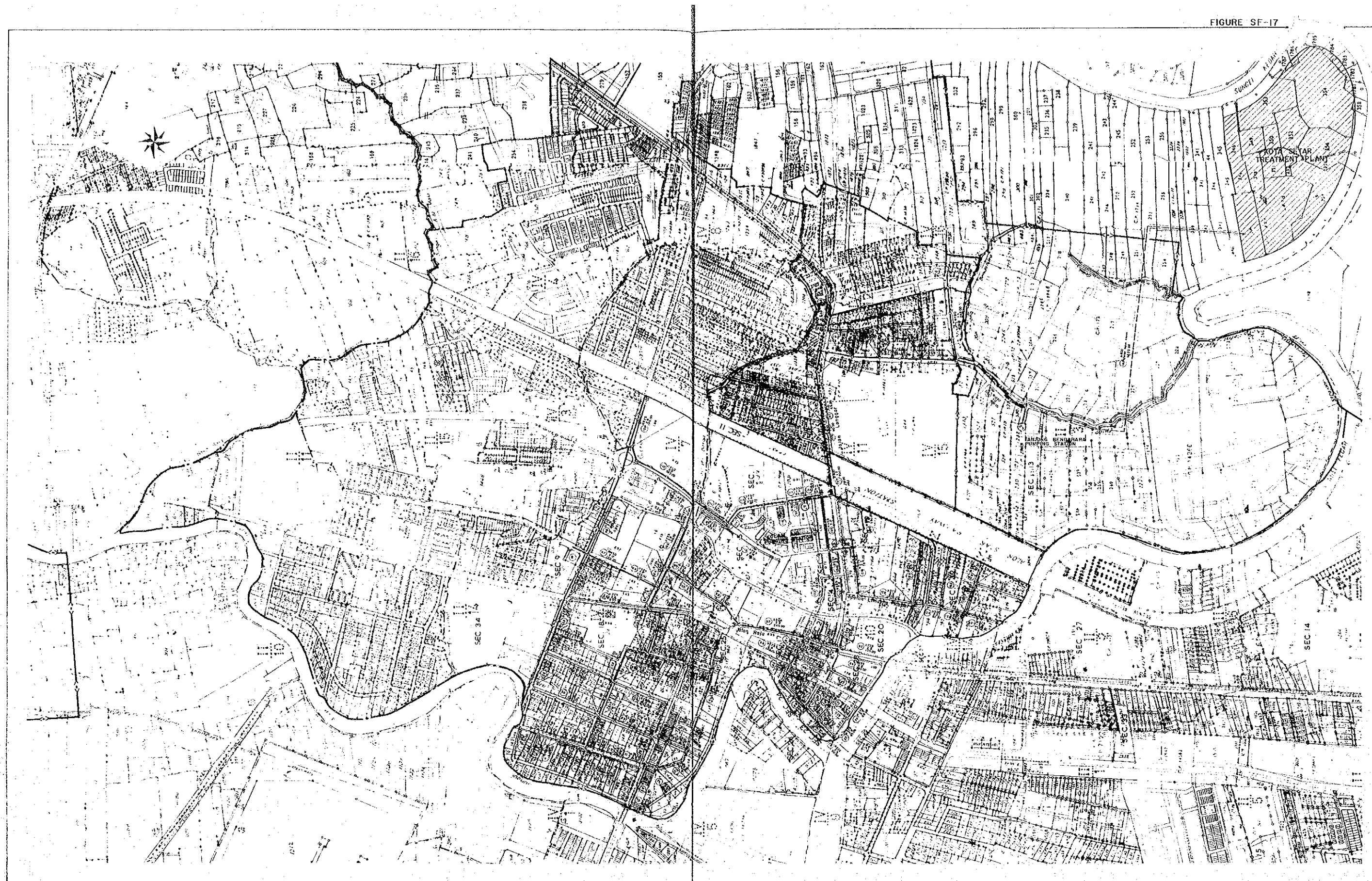
SCALE
1:5,000

0 0.5 KILOMETRE
0 0.3 MILE

LEGEND

- Boundary of Master Plan Study Area
- Boundary of sewerage sub-zone
- Boundary of First Phase Area
- Water supply pipe
- Electric power cable

MASTER PLAN AND FEASIBILITY STUDY FOR SEWERAGE AND DRAINAGE SYSTEM PROJECT IN ALOR SETAR AND ITS URBAN ENVIRONS	
JAPAN INTERNATIONAL COOPERATION AGENCY	NIHON SUDO CONSULTANTS CO., LTD. TOKYO, JAPAN
UNDERGROUND STRUCTURES	FIGURE SF-16



SCALE
1:50,000

LEGEND

- | | | | |
|--|---------------------------------------|--|---|
| | Boundary of Master Plan Study Area | | Differential area for determination of sewer capacity |
| | Boundary of sewerage sub-zone | | Location for proposed waste stabilization pond |
| | Boundary of first phase area | | Trunk sewer |
| | Sewer with flow direction and manhole | | Branch and lateral sewer |
| | Sewer number | | Force main |
| | Sewer diameter (mm) | | Sewage pumping station |
| | Slope (%) | | |
| | Sewer length (m) | | |

MASTER PLAN AND FEASIBILITY STUDY FOR SEWERAGE AND DRAINAGE SYSTEM PROJECT IN ALOR SETAR AND ITS URBAN ENVIRONS	
JAPAN INTERNATIONAL COOPERATION AGENCY	NIHON SUDO CONSULTANTS CO., LTD. TOKYO, JAPAN
PLAN OF PROPOSED SEWERAGE SYSTEM	FIGURE SF-17

FIGURE SF-18-1

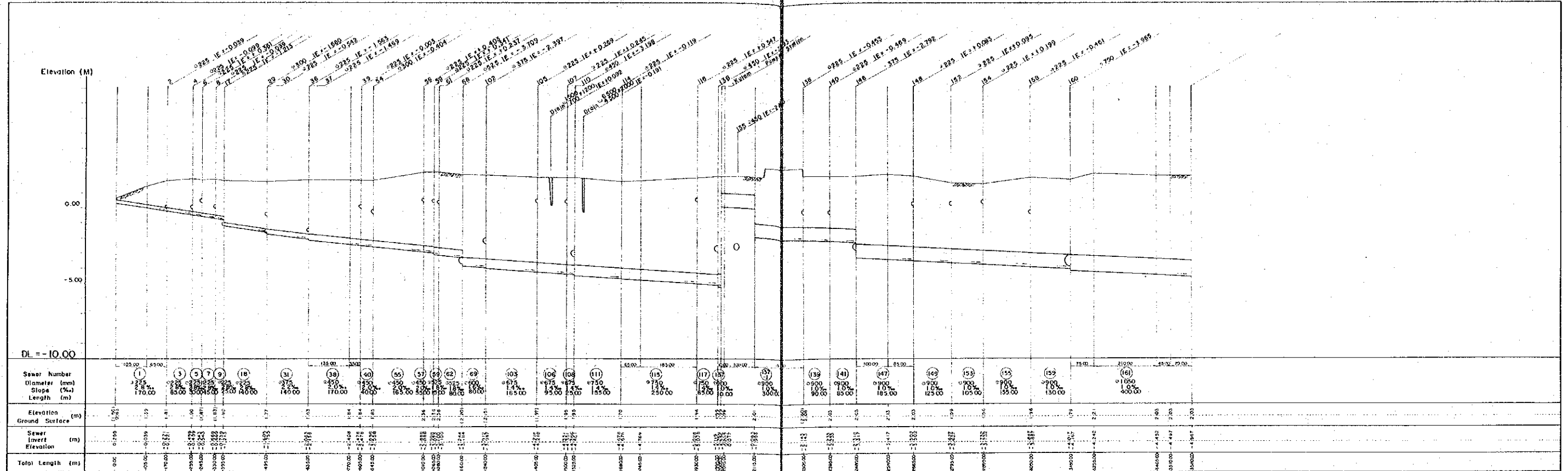


FIGURE SF-19-1

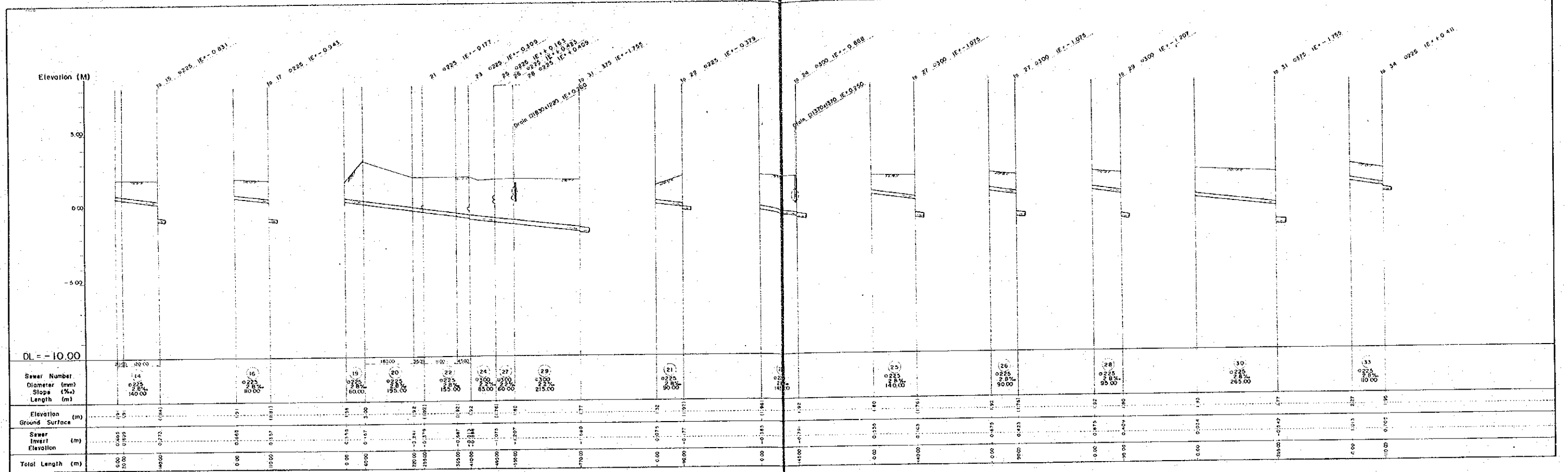
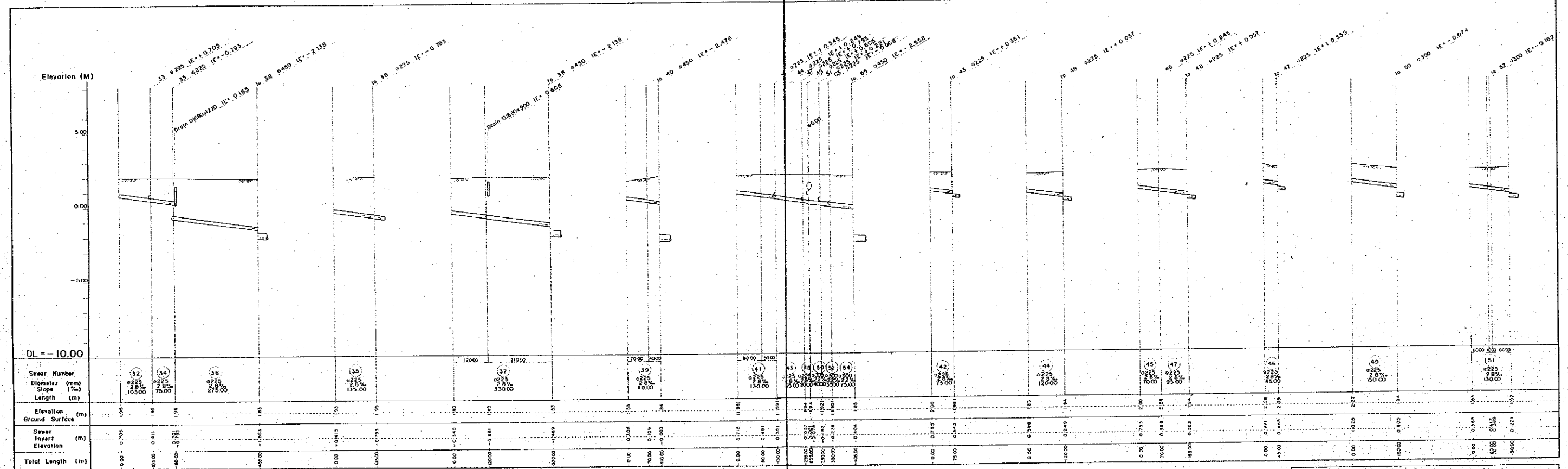


FIGURE SF-19-2



SCALE

Horizontal 1:5,000
Vertical 1:100

FIGURE SF-20-1

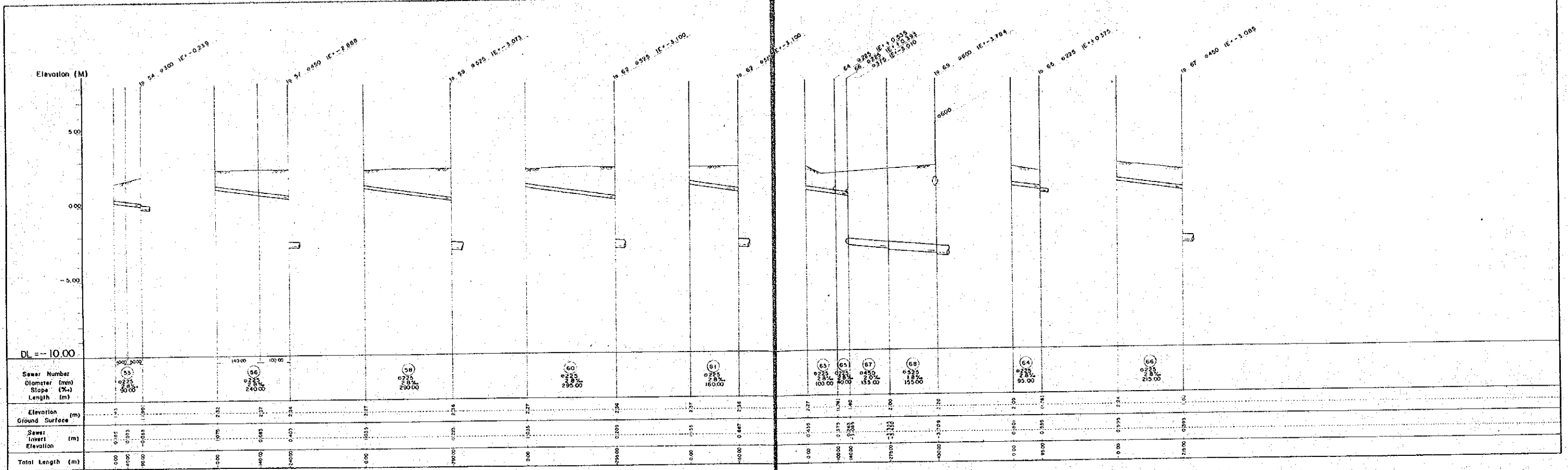
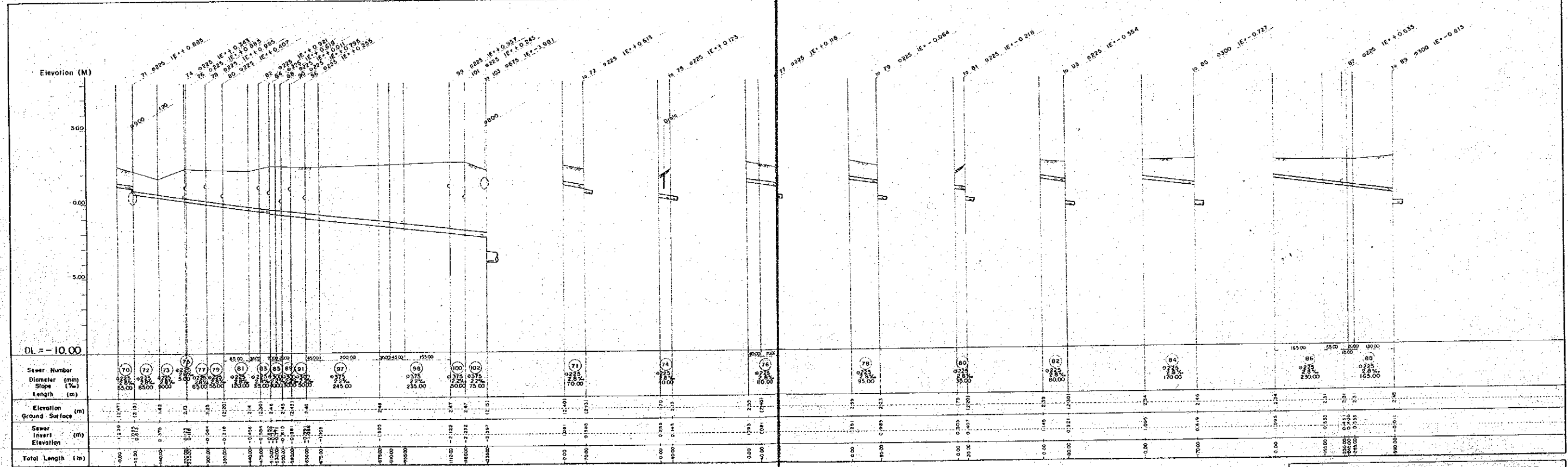


FIGURE SF-20-2



SCALE
Horizontal 1: 5,000
Vertical 1: 100

FIGURE SF-21-1

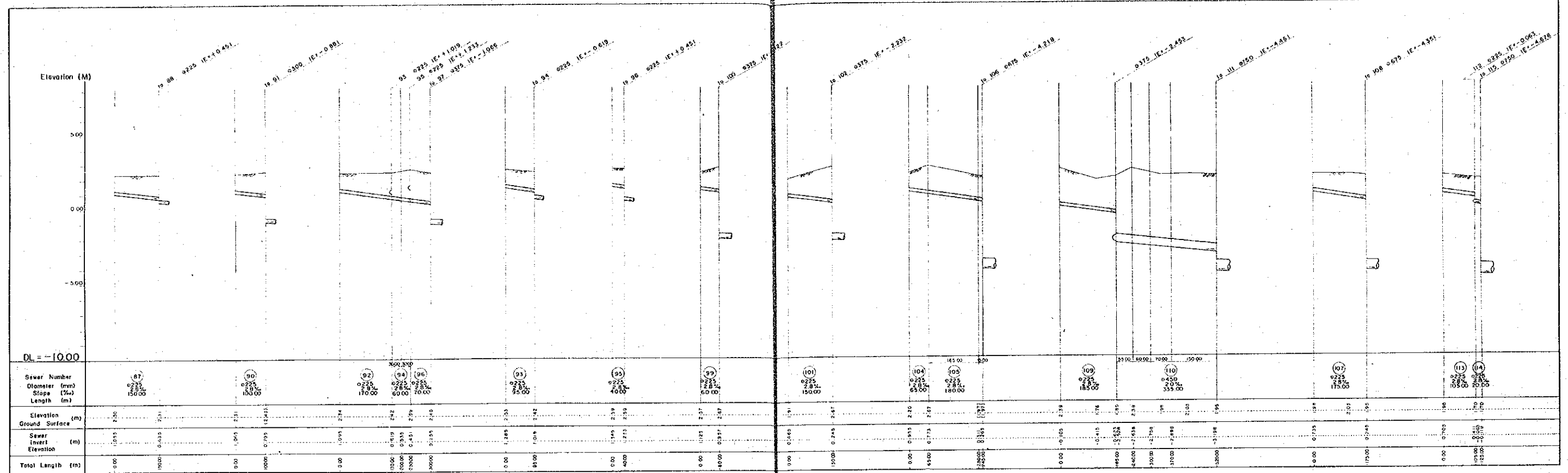
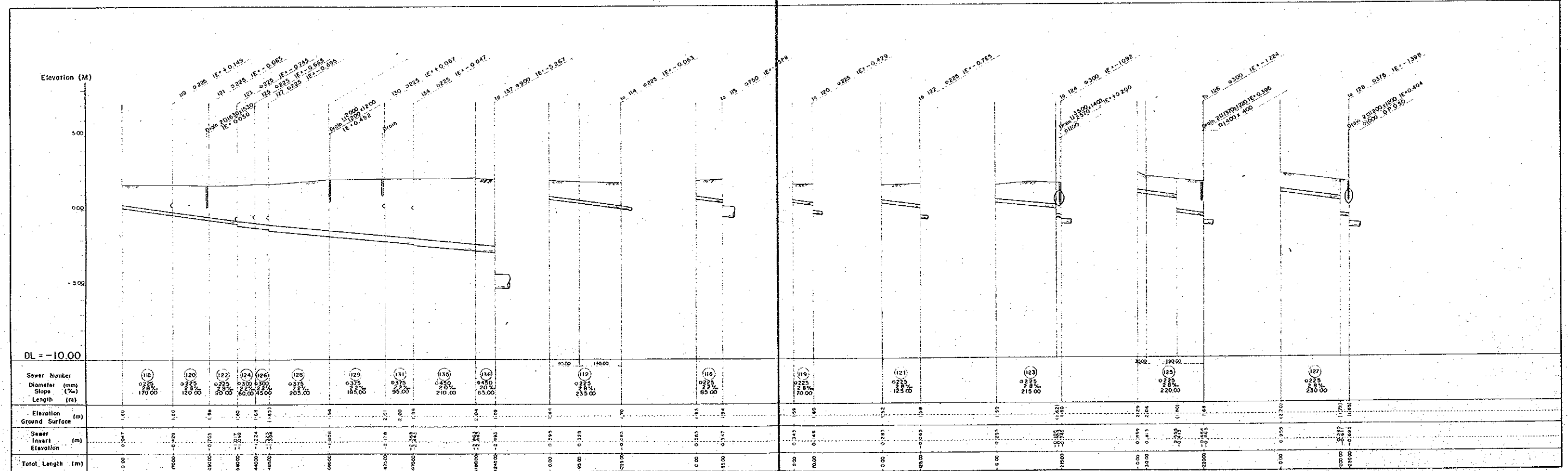


FIGURE SF-21-2



SCALE

Horizontal 1: 5,000
Vertical 1: 100

FIGURE SF-22-1

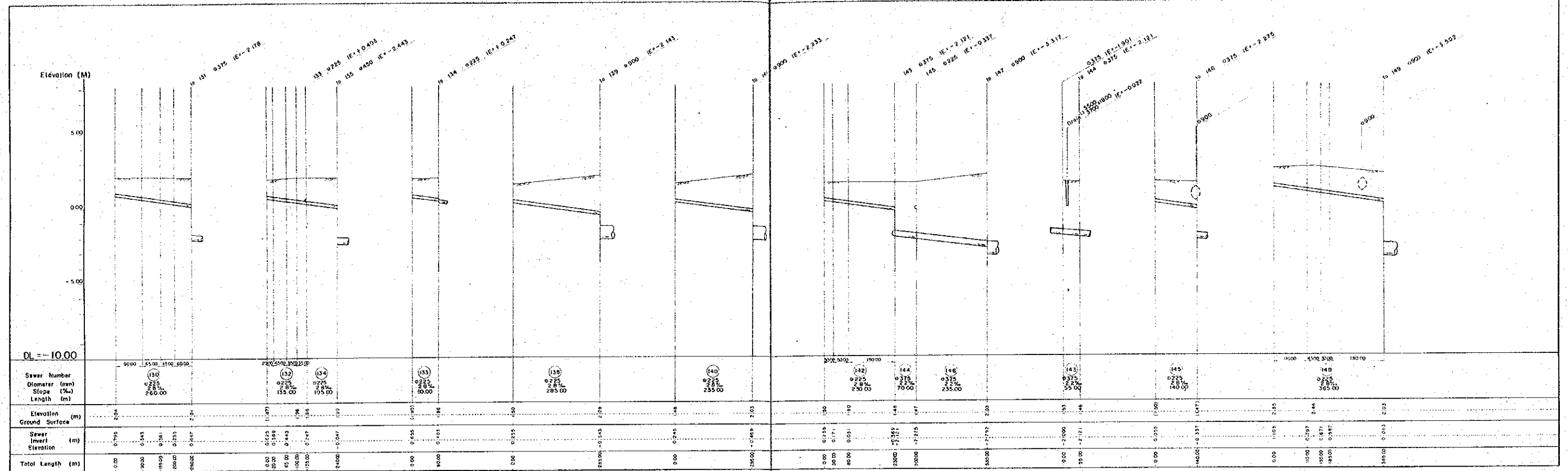
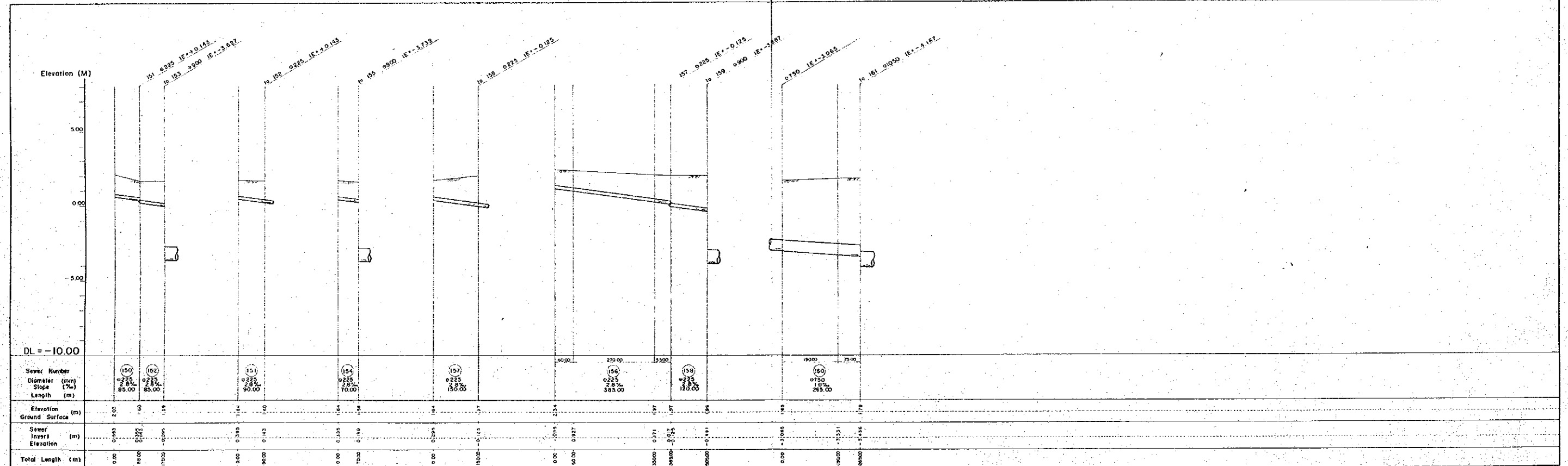


FIGURE SF-22-2

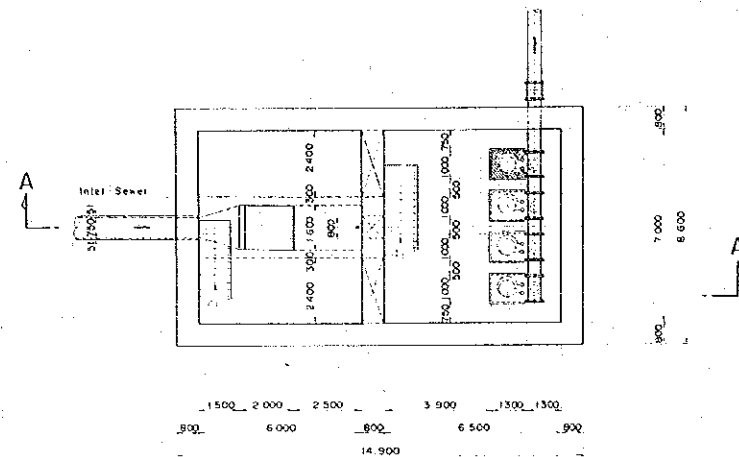


SCALE

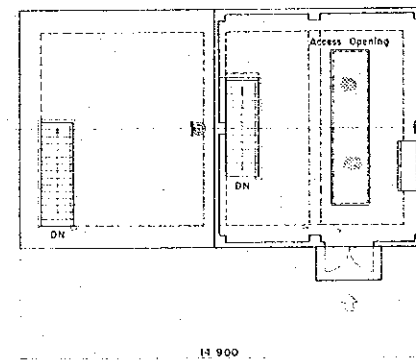
Horizontal 1 : 5,000
Vertical 1 : 100

KOLAM AIR PUMPNG STATION
SCALE 1:100

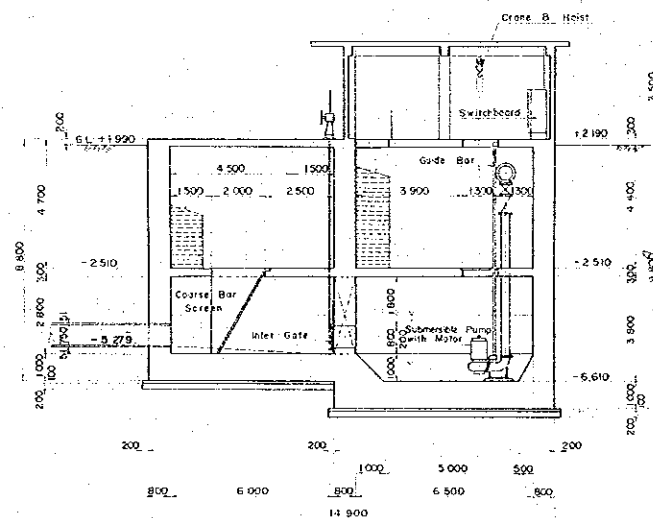
PLAN VIEW



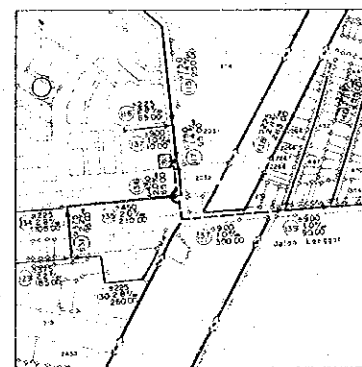
GROUND FLOOR LEVEL



SECTION A-A



LOCATION SCALE 1:5000

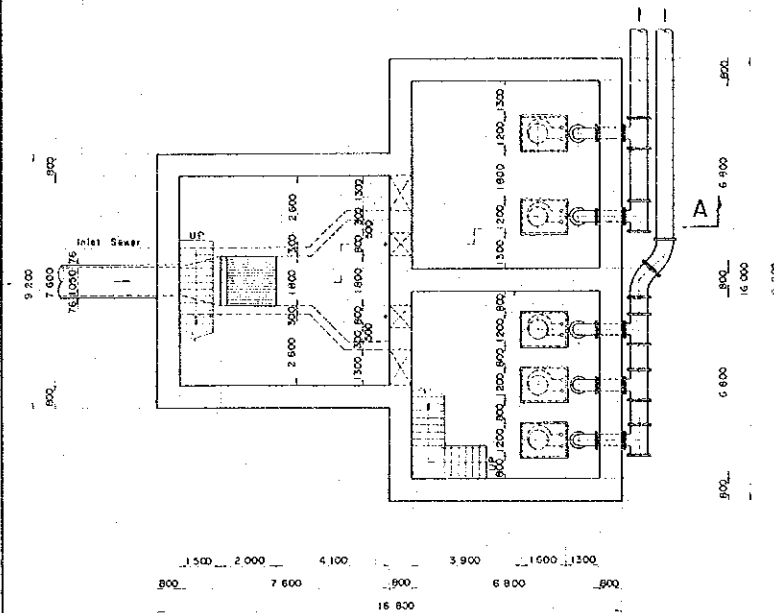


Note

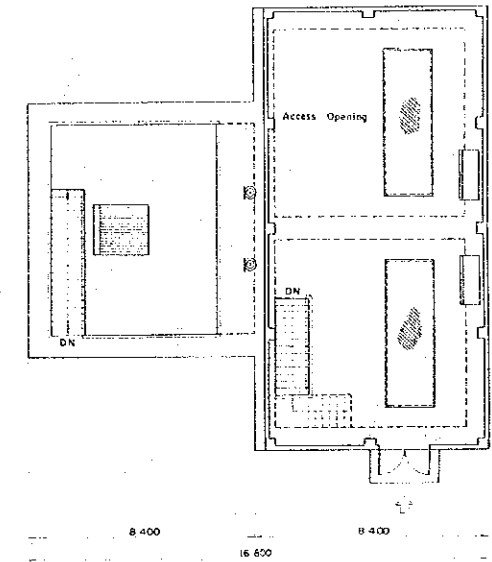
First Phase	To install 5 pump sets
Later Phase	To install additional One pump set

TANJONG BENDAHARA PUMPING STATION
SCALE 1:100

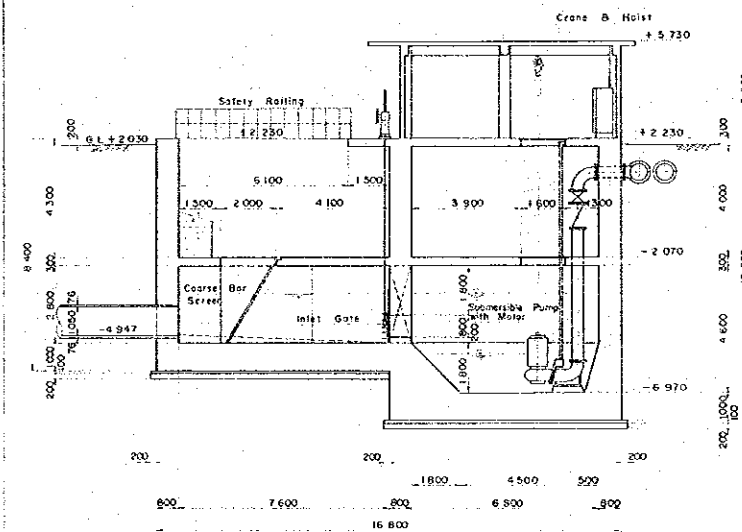
PLAN VIEW



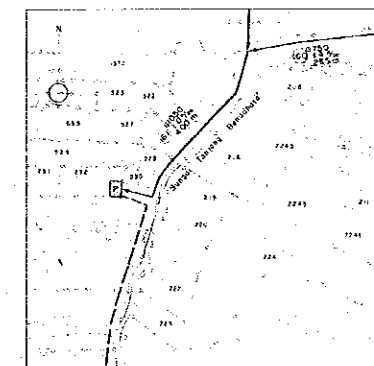
GROUND FLOOR LEVEL



SECTION A - A



LOCATION SCALE 1:5 000



Note

First Phase	To install 3 pump units
Later Phase	To install additional 2 pump units

Dimension in millimeter

MASTER PLAN AND FEASIBILITY STUDY FOR
SEWERAGE AND DRAINAGE SYSTEM PROJECT IN
ALOR SETAR AND ITS URBAN ENVIRONS

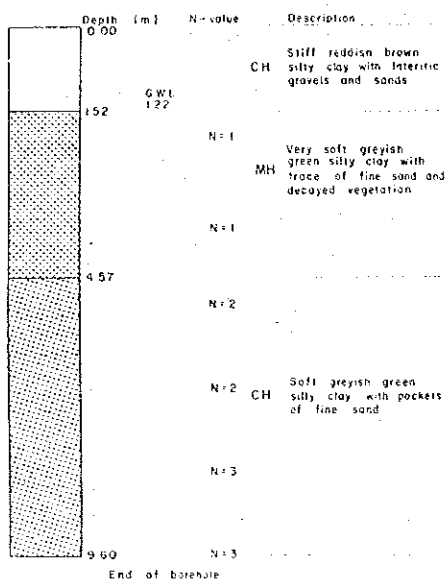
JAPAN INTERNATIONAL
COOPERATION AGENCY

NIHON SUDO CONSULTANTS CO., LTD.
TOKYO, JAPAN

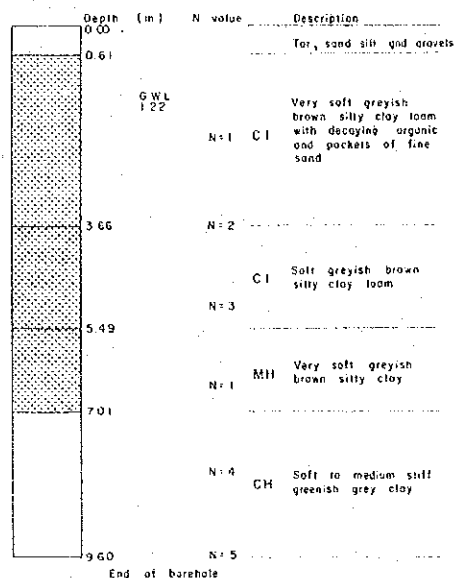
DESIGN FOR PUMPING STATIONS

FIGURE
SF-23

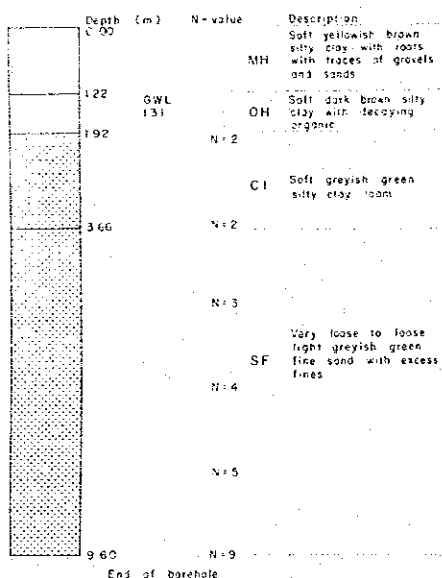
Borehole No. 1



Borehole No. 2



Borehole No. 3



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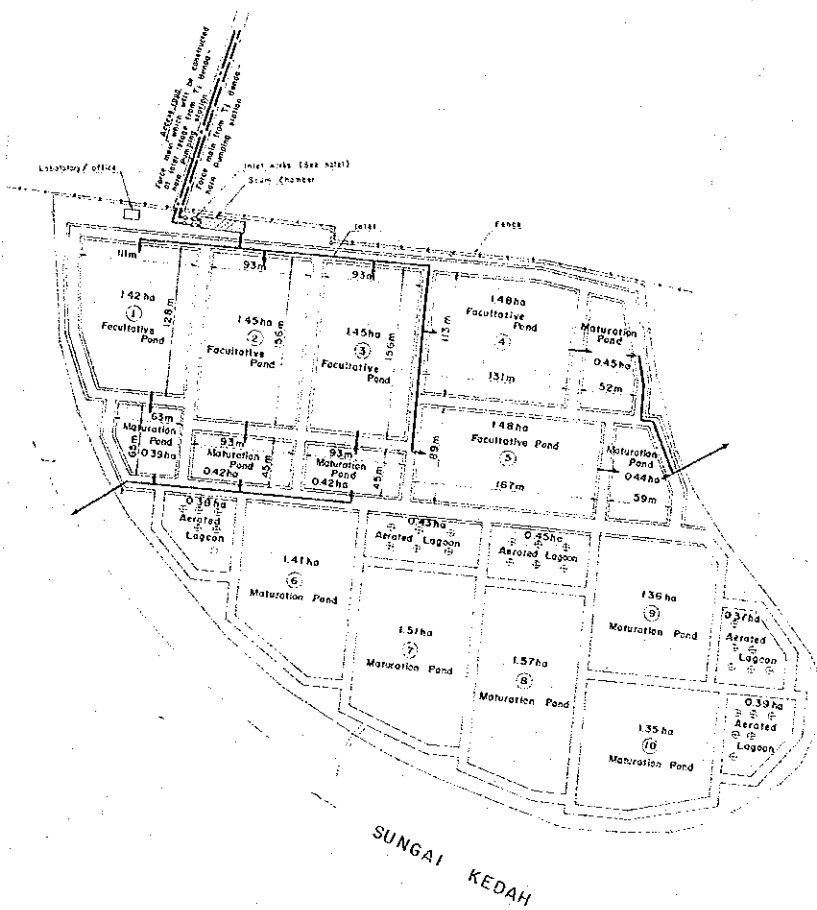
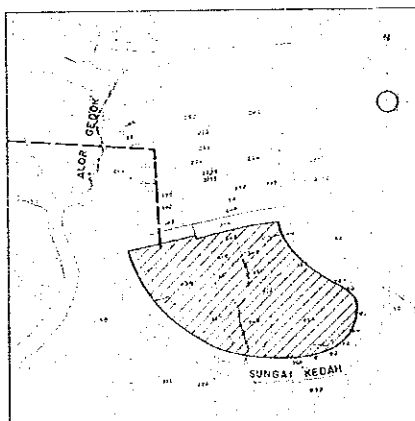
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BORING LOGS SURVEYED

FIGURE
SF-24

KOTA SETAR TREATMENT PLANT

SCALE 1:2,500

LOCATION
SCALE 1:10,000

Notes

(1) Inlet works

(2) Slam chamber & record house

(3) Construction programme

first show construct facilities of No. 1, 2, 3, 4, 5 with

later phase construct facilities of No. 6, 7, 8, 9, 10 with and

No. 1, 2, 3, 4, 5 are converted into aerated lagoon process

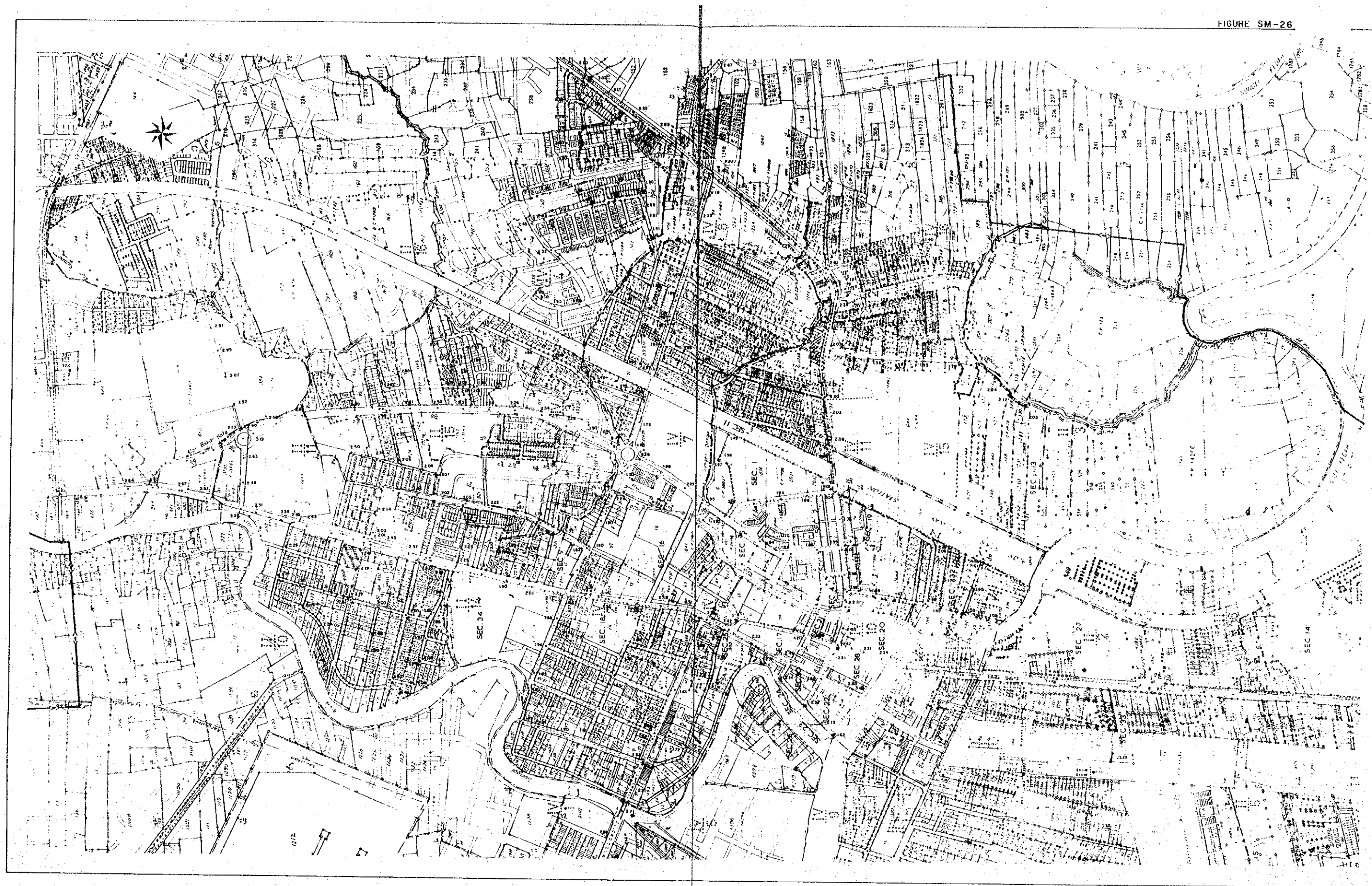
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PLAN FOR WASTE
STABILIZATION POND

FIGURE
SF-25



SCALE
1:5,000

LEGEND

• 2.00 Leveling point with ground elevation in meter

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RESULTS OF LEVELING ON
MAIN SEWER ROUTES

FIGURE
SM-26