

社会開発調査部報告書

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

MINISTRY OF WATER RESOURCES

No. 11

THE STUDY
ON
ELEVEN CENTERS WATER SUPPLY AND SANITATION
IN
FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

DRAWINGS
NEFAS MEWCHA

(Volume IV-VII)

JICA LIBRARY



J1127892 (6)

FEBRUARY, 1996

SANYU CONSULTANTS INC.

KYOWA ENGINEERING CONSULTANTS CO., LTD.

JICA

L406

61.8

SSS

BRARY

SSS

J R

96-028

GOVERNMENT OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)
FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF WATER RESOURCES

THE STUDY
ON
ELEVEN CENTERS WATER SUPPLY AND SANITATION
IN
FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

DRAWINGS
NEFAS MEWCHA

(Volume IV-VII)

FEBRUARY, 1996

SANYU CONSULTANTS INC.
KYOWA ENGINEERING CONSULTANTS CO., LTD.



1127892 [6]

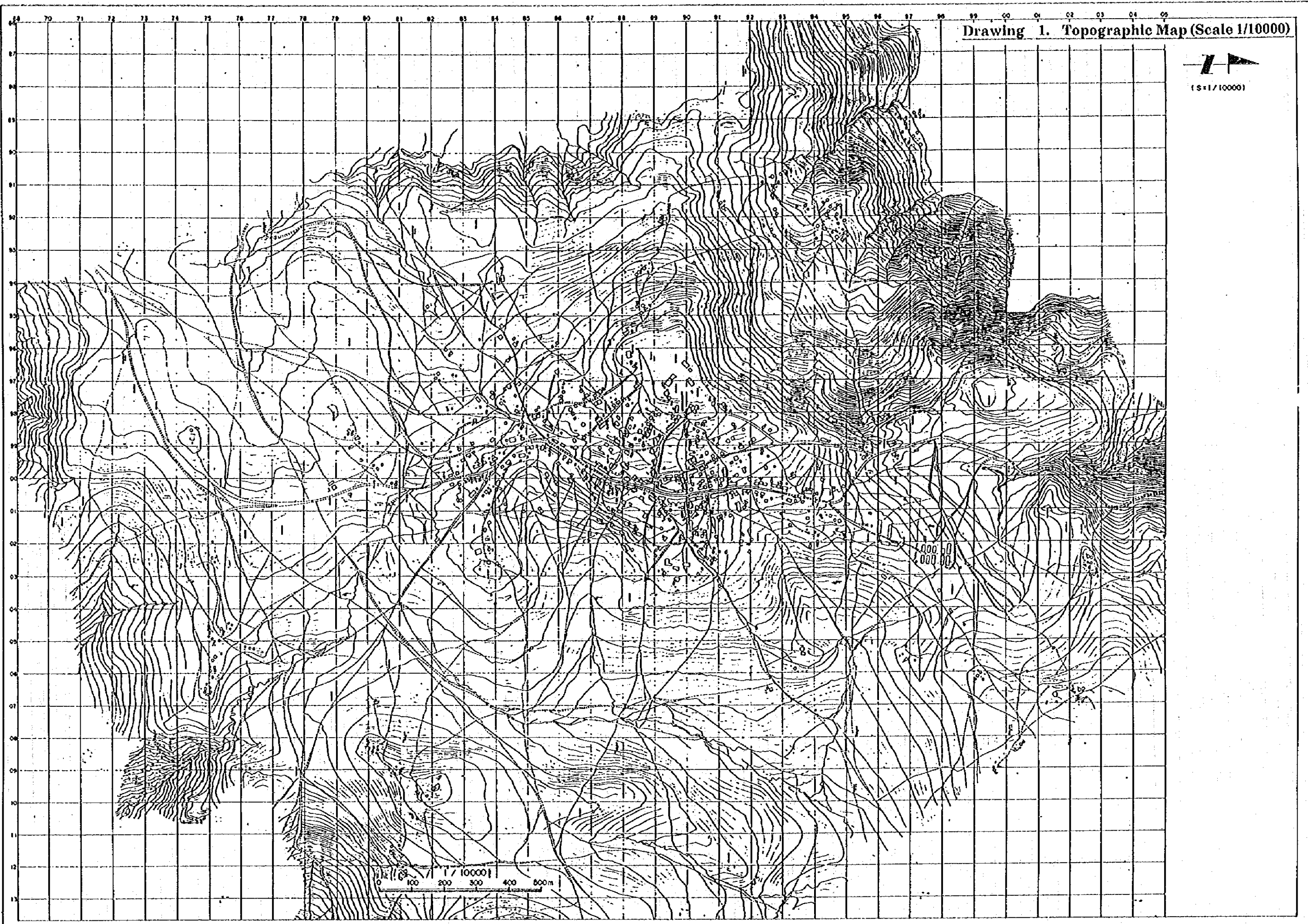
Table of Contents

Drawing 1.	Topographic Map (Scale 1/10000)
Drawing 2.	Topographic Map (Scale 1/5000)
Drawing 3.	Land Use and Bench Marks
Drawing 4.	Current Available Water Sources
Drawing 5.	Plan of Proposed Water Sources
Drawing 6.	Layout of Proposed Deep Well
Drawing 7.	Layout Between Water Sources and Reservoir
Drawing 8.	Layout of Water Distribution Pipelines
Drawing 9.	Location of Proposed Public Fountains
Drawing 10.	Layout of Proposed Public Fountain
Drawing 11.	Layout of Boosting Chamber
Drawing 12.	Layout of Household Waste Water Disposal Pit & Toilet
Drawing 13.	Layout of Community Type Toilet and VIP Public Type Toilet
Drawing 14.	Layout of Pour-flush Public Type Toilet and Sullage Disposal Pit
Drawing 15.	Location of Sanitary Facilities
Drawing 16.	Current Drainage Condition and Improvement Plan

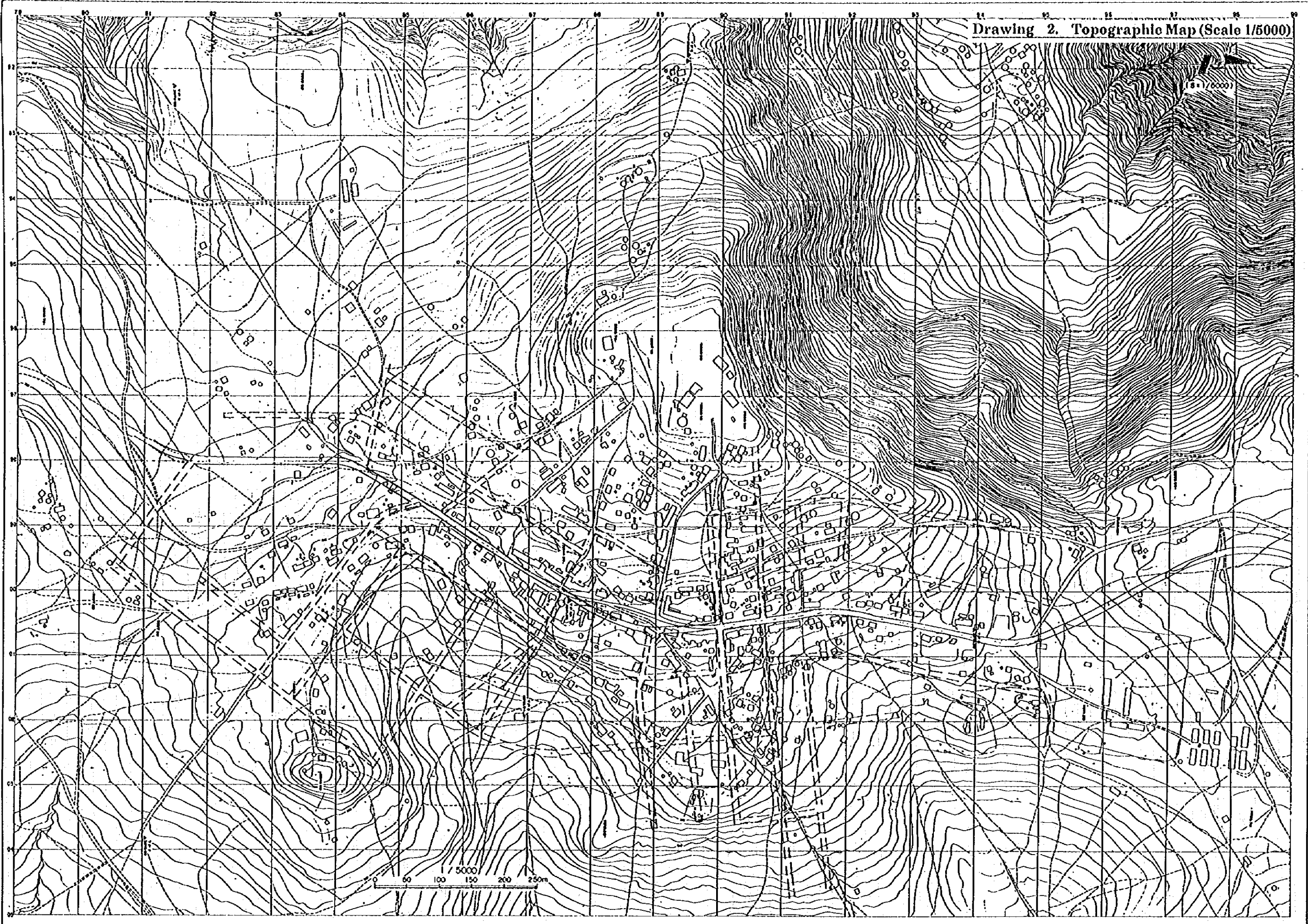
Drawing 1. Topographic Map (Scale 1/10000)



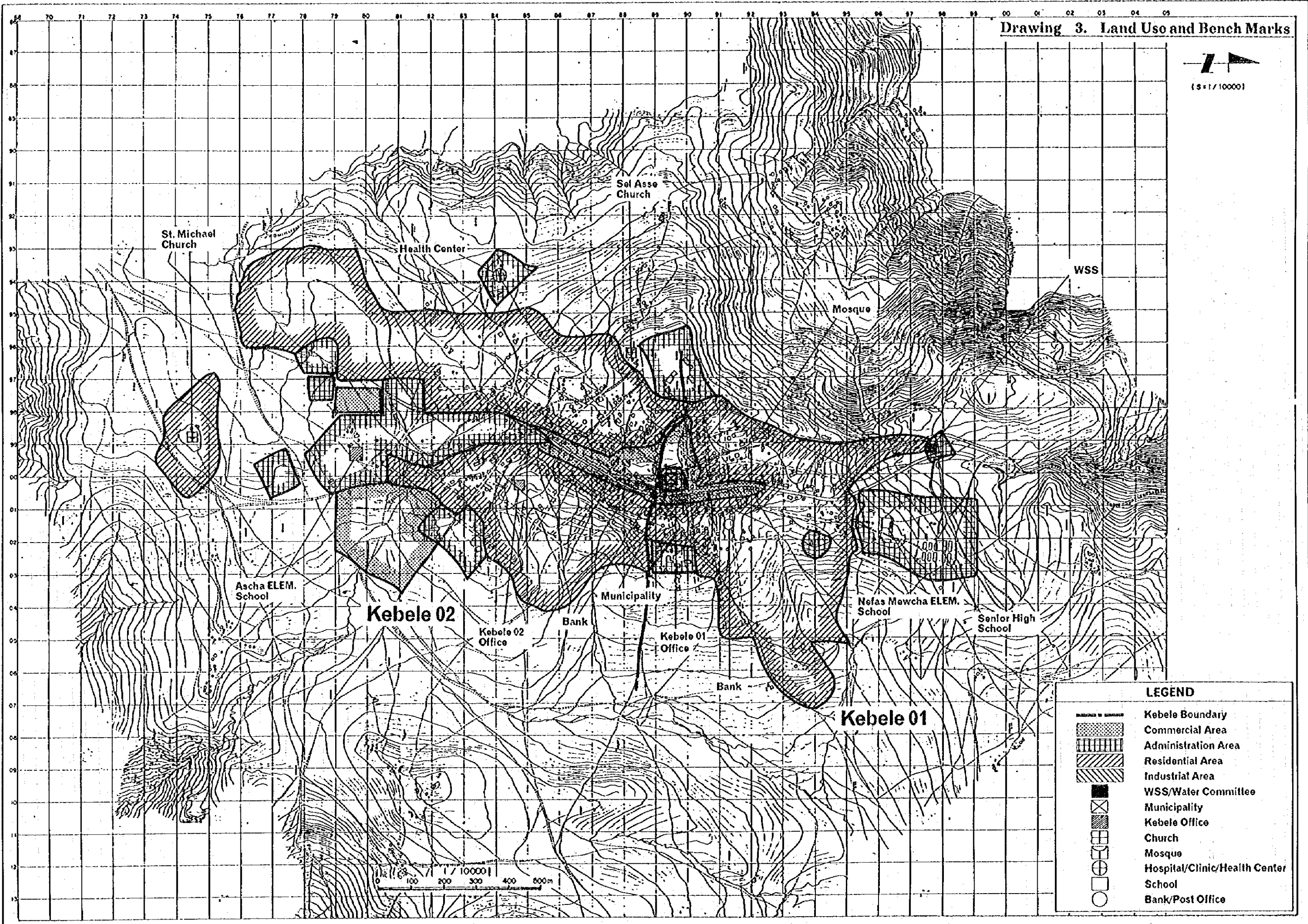
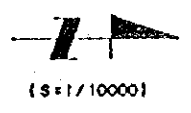
(S=1/10000)



Drawing 2. Topographic Map (Scale 1/5000)

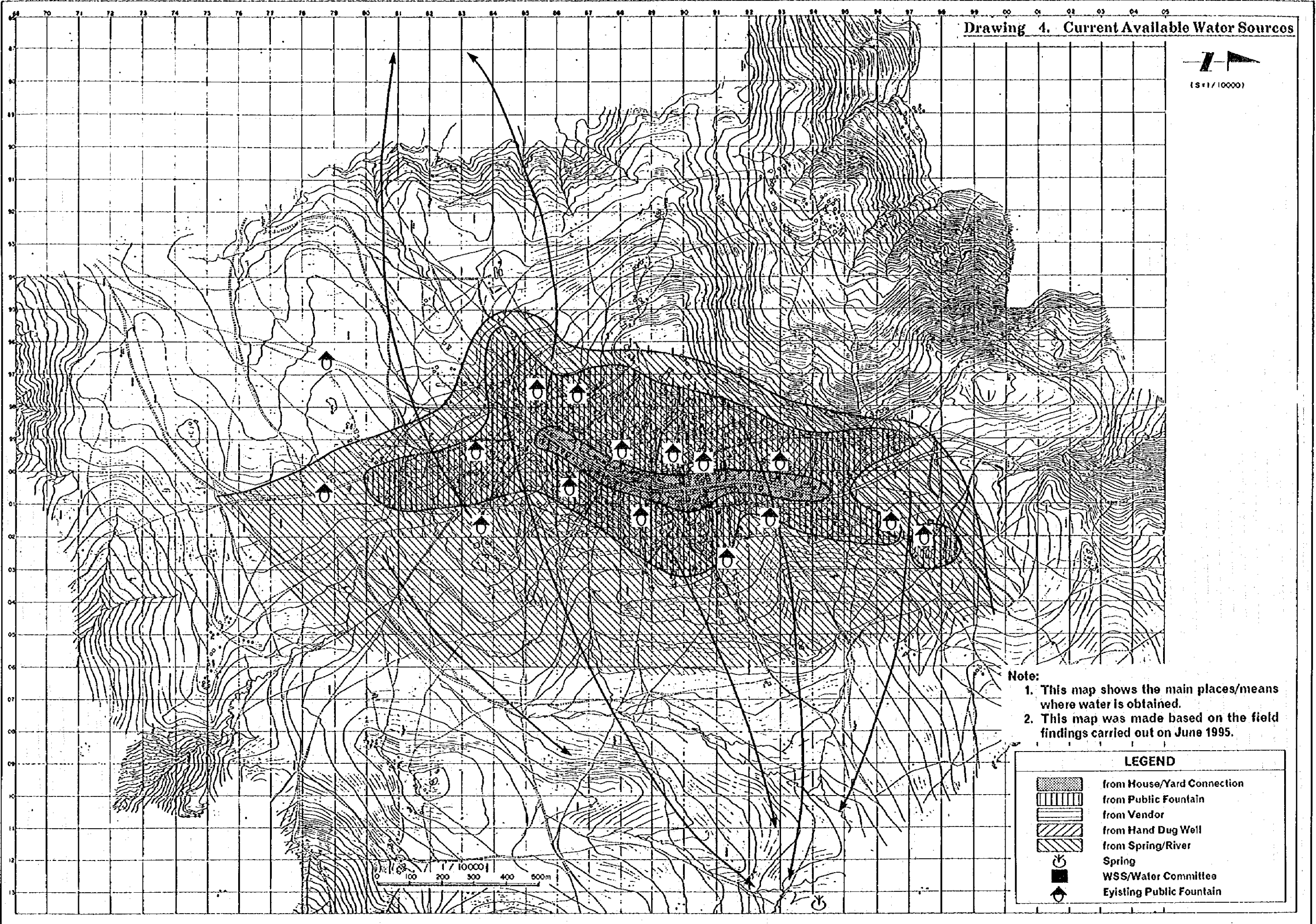
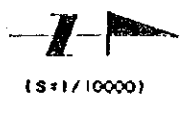


Drawing 3. Land Use and Bench Marks



LEGEND	
	Kebele Boundary
	Commercial Area
	Administration Area
	Residential Area
	Industrial Area
	WSS/Water Committee
	Municipality
	Kebele Office
	Church
	Mosque
	Hospital/Clinic/Health Center
	School
	Bank/Post Office

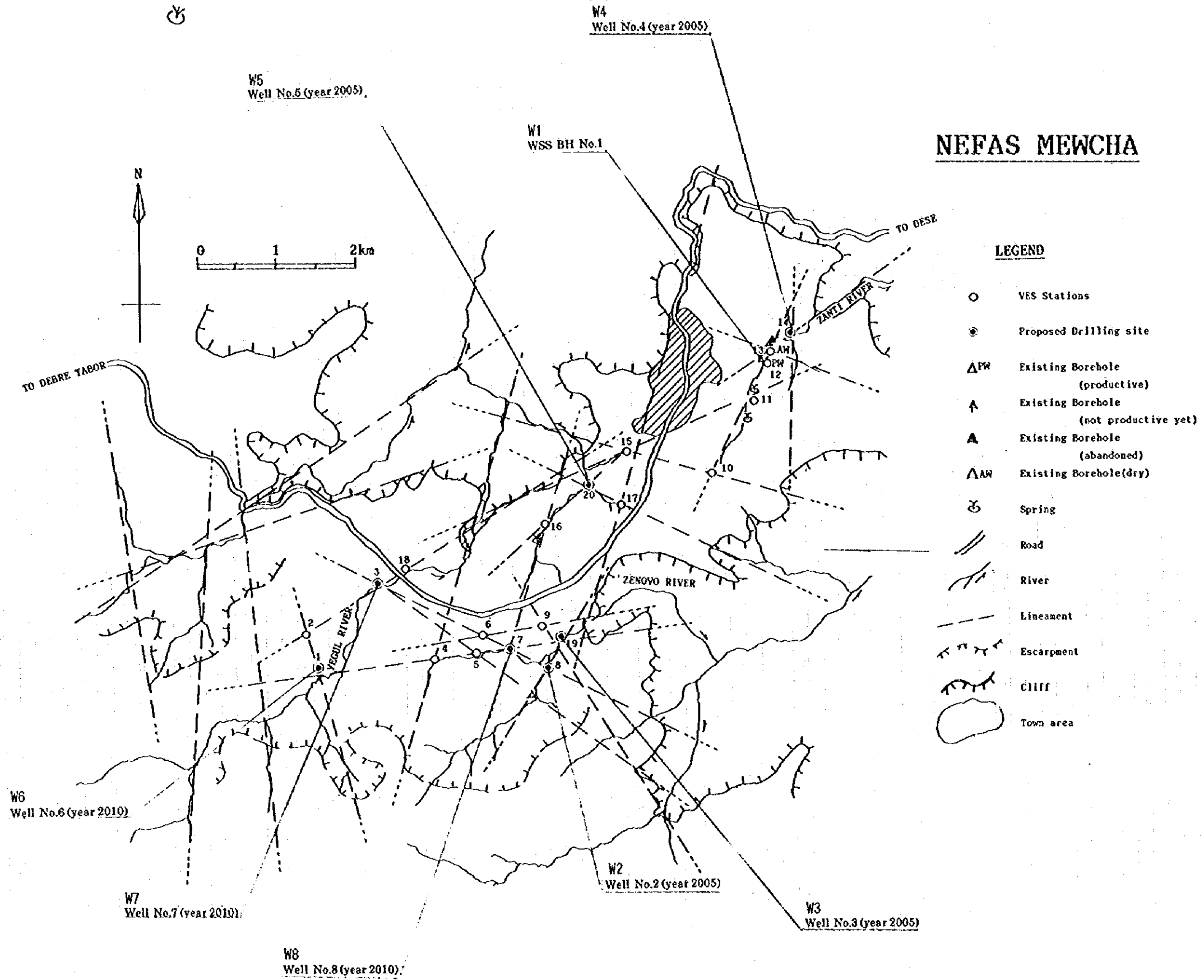
Drawing 4. Current Available Water Sources



- Note:
1. This map shows the main places/means where water is obtained.
 2. This map was made based on the field findings carried out on June 1995.

LEGEND	
	from House/Yard Connection
	from Public Fountain
	from Vendor
	from Hand Dug Well
	from Spring/River
	Spring
	WSS/Water Committee
	Existing Public Fountain

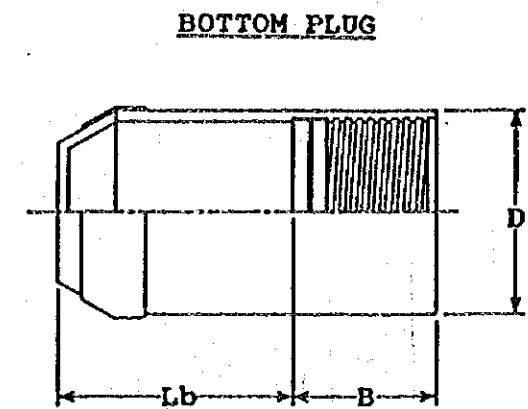
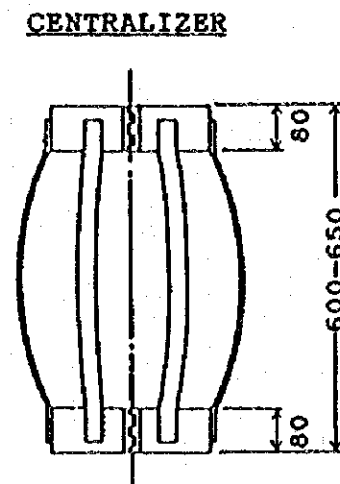
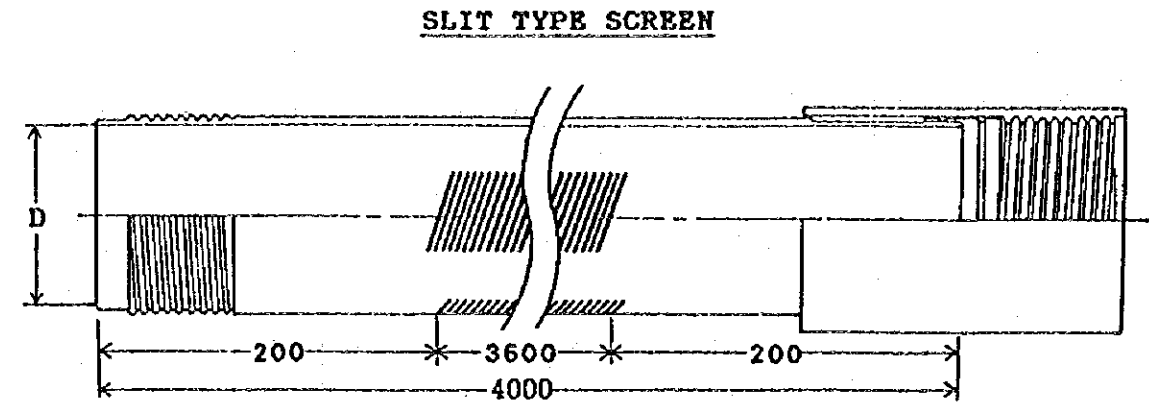
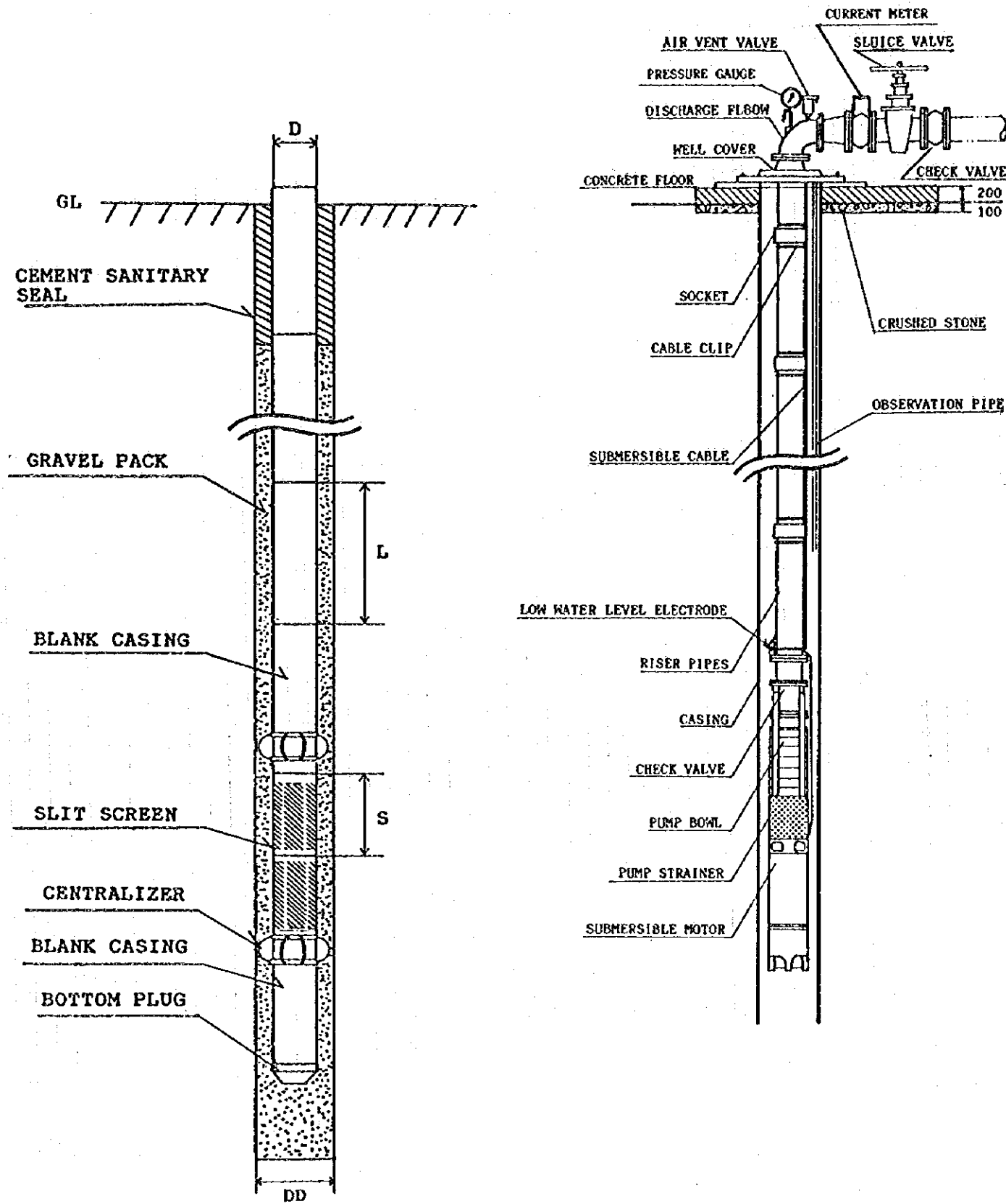
NEFAS MEWCHA



LEGEND

- VES Stations
- ⊙ Proposed Drilling site
- △PW Existing Borehole (productive)
- ↑ Existing Borehole (not productive yet)
- ▲ Existing Borehole (abandoned)
- △AW Existing Borehole(dry)
- ⊕ Spring
- == Road
- ~ River
- - - Lineament
- ⋈ Escarpment
- ⋈ Cliff
- ▭ Town area

Drawing 6. Layout of Proposed Deep Well



Dimension (Unit: mm)

Inner Diameter	Drilling Diameter	Blank Pipe	Diagonal Slit Screen	Bottom Plug	
D	DD	L	S	Lb	B
150	250	6,000	4,000	Approx 160	110
200	300				

Material
 BLANK PIPE : FRP
 SCREEN : FRP
 BOTTOM PLUG : FRP

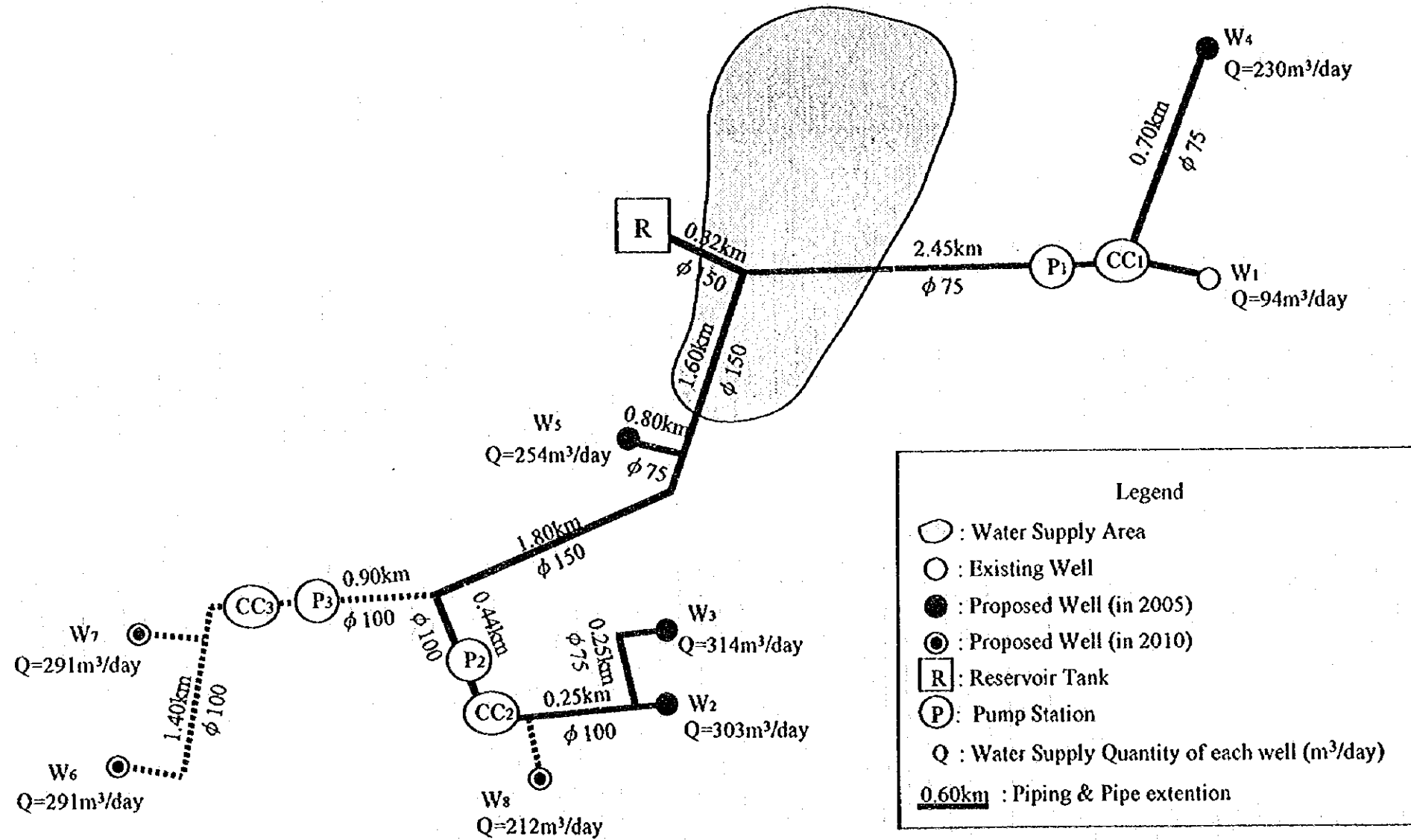
Drawing 7. Layout Between Water Sources and Reservoir

Total Water Demand in Target Years (m³/day)

	1995*	2000	2005	2010
Domestic	60	358	600	1,019
Non Domestic	6	167	256	385
Losses	27	58	117	248
Total	93	583	973	1652

*Actual consumption

General View of Wells & Water Conveyance Facility Plan
(Nefas-Mewcha)

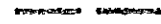
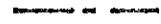




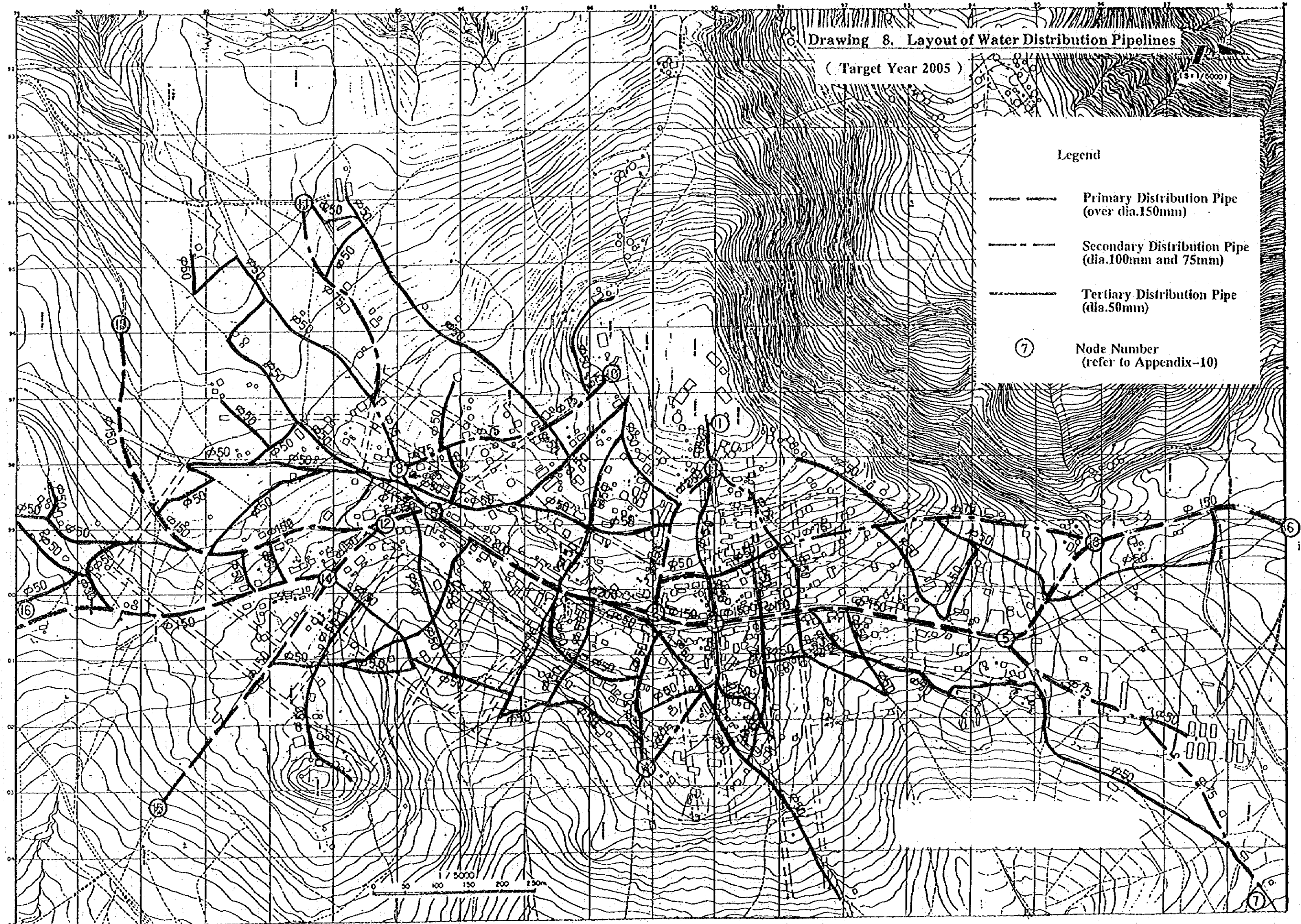
Drawing 8. Layout of Water Distribution Pipelines

(Target Year 2005)

(31/6000)

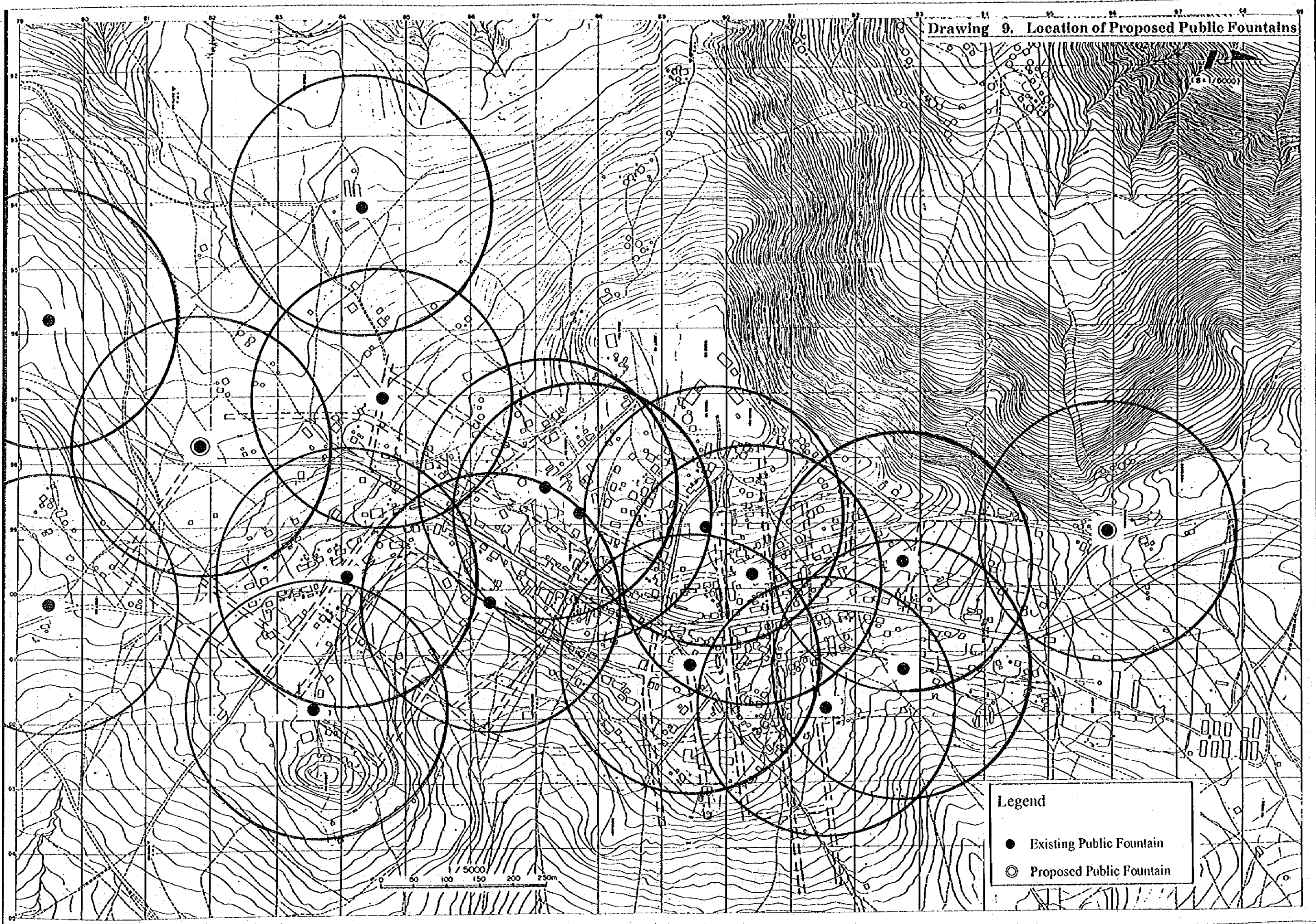
Legend

-  Primary Distribution Pipe (over dia.150mm)
-  Secondary Distribution Pipe (dia.100mm and 75mm)
-  Tertiary Distribution Pipe (dia.50mm)
-  Node Number (refer to Appendix-10)



(Nefas Mewcha)

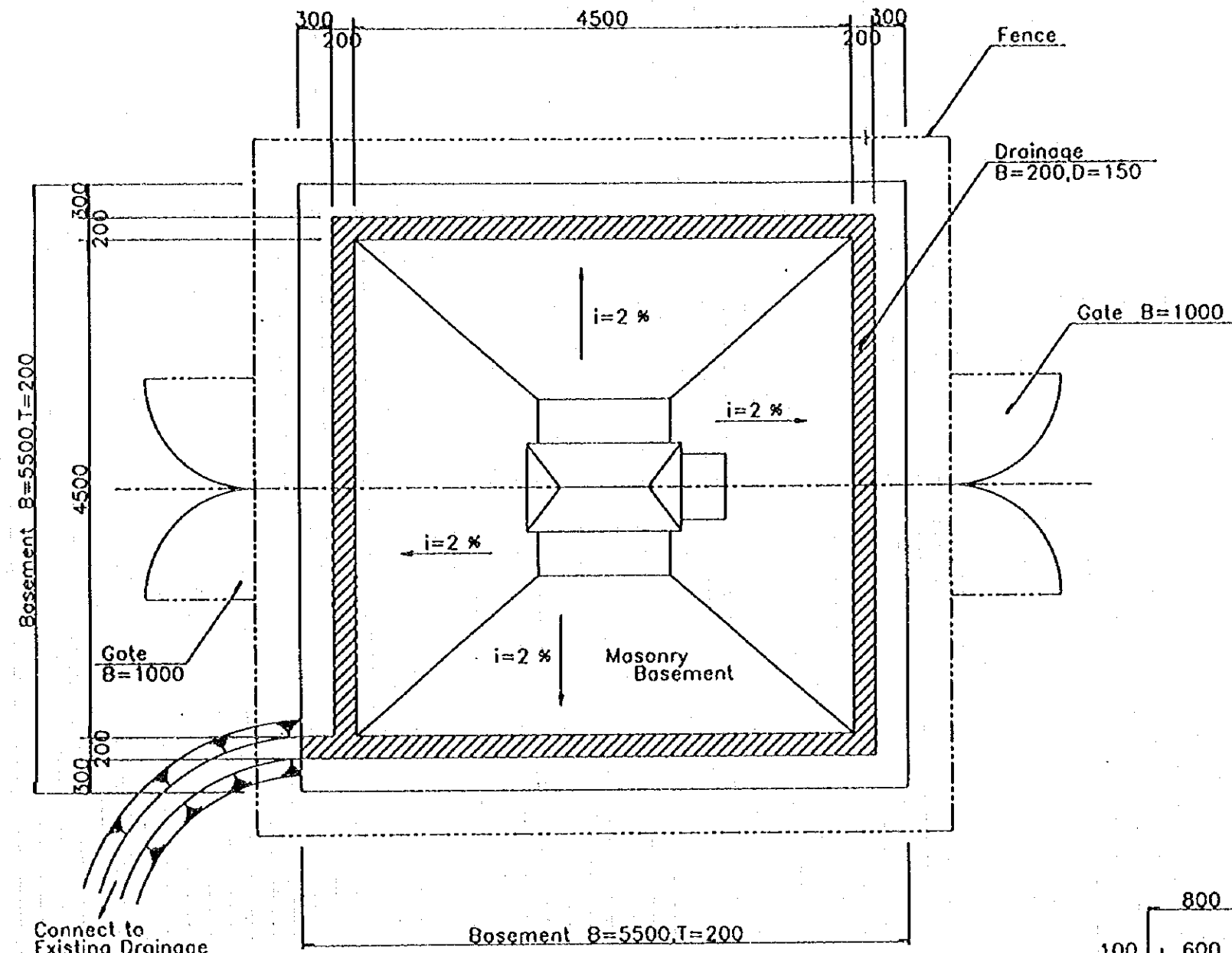
Drawing 9. Location of Proposed Public Fountains



Legend

- Existing Public Fountain
- ⊙ Proposed Public Fountain

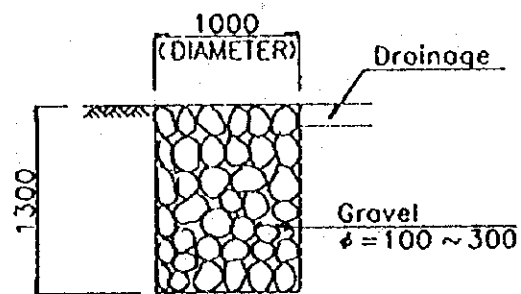
0 50 100 150 200 250m



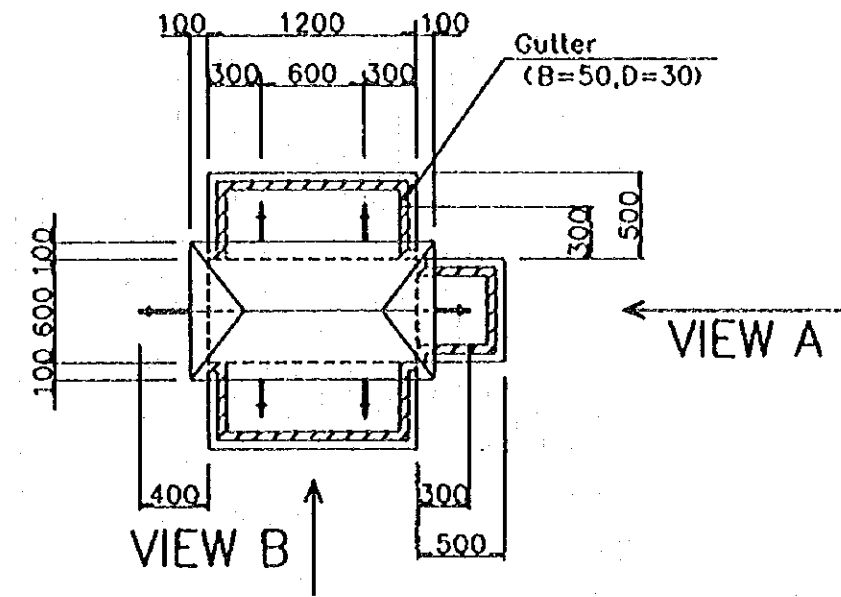
GENERAL PLAN

Quantity:

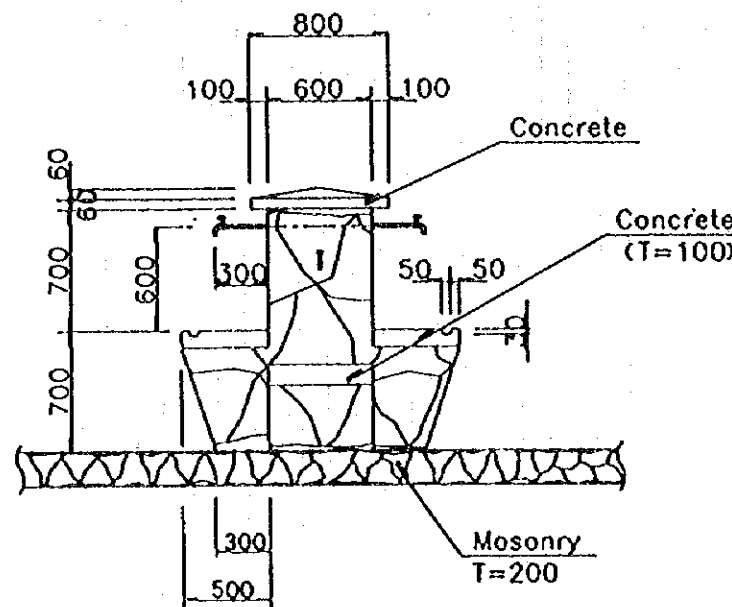
Concrete	: 0.25 m ³
Form-work	: 0.66 m ²
Masonry	: 7.08 m ³
Fence	: 2 m X 20.4 m
Pipe	: 6 m
Tap	: 6 NOS
Meter	: 1 NOS
Valve	: 1 NOS
Excavation	: 13 m ³
Gravel	: 1 m ³



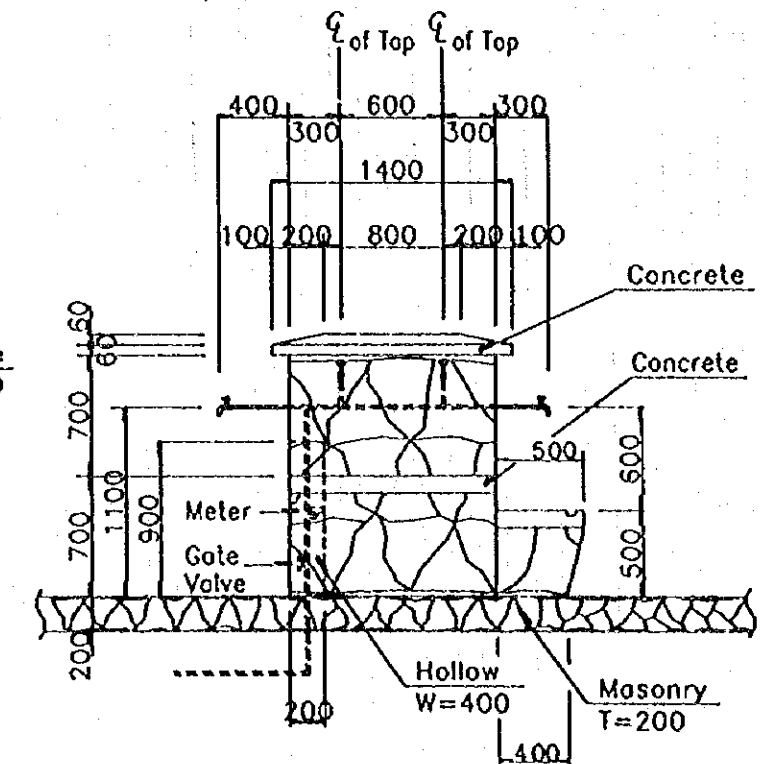
SOAKWAY



PLAN OF PUBLIC FOUNTAIN

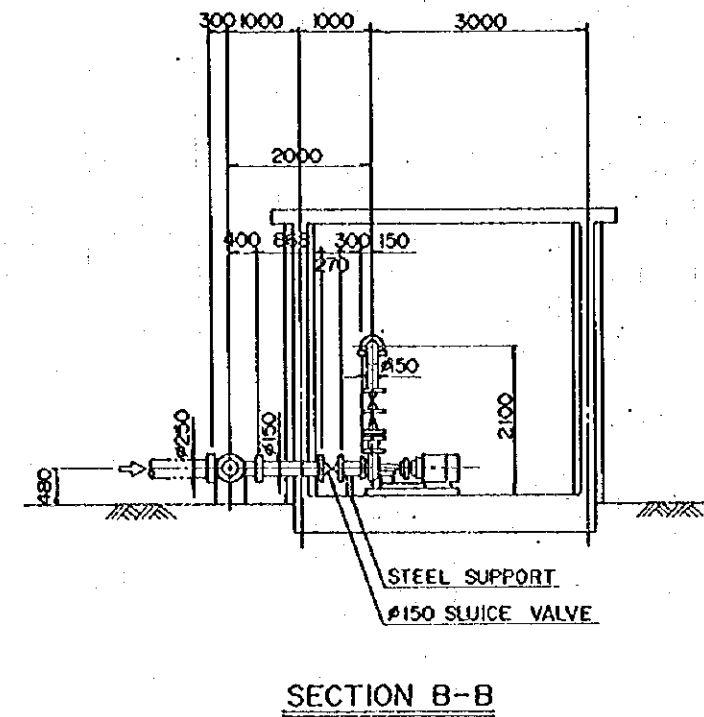
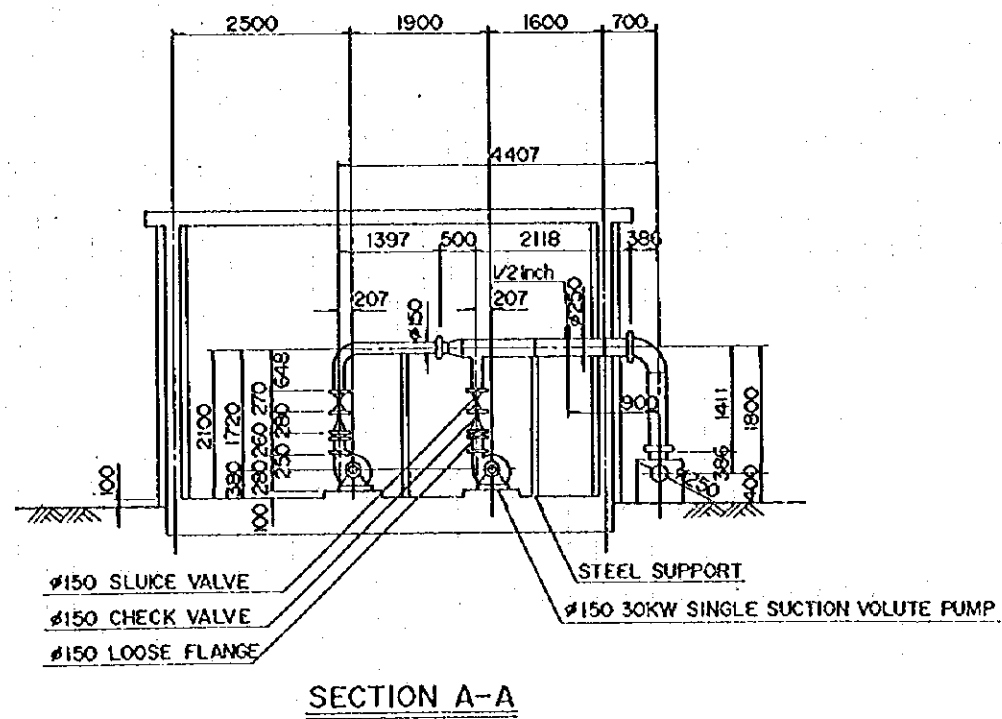
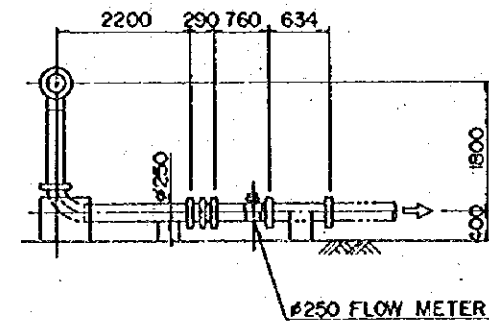
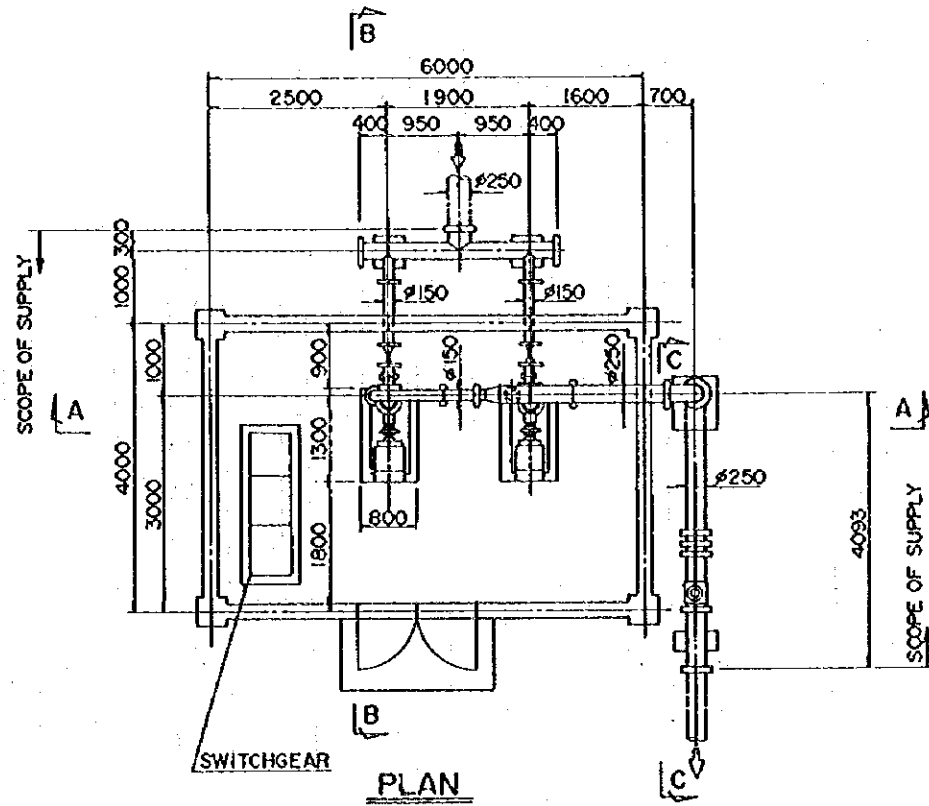


VIEW A

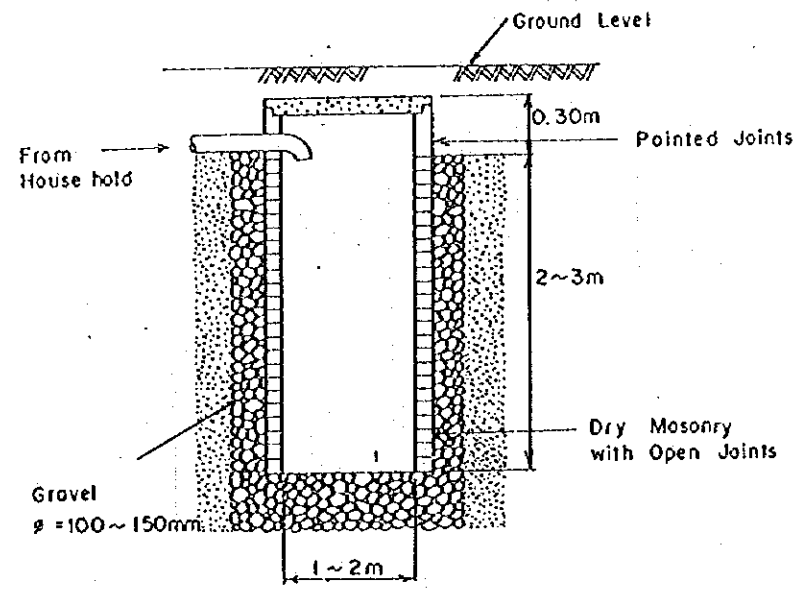


VIEW B

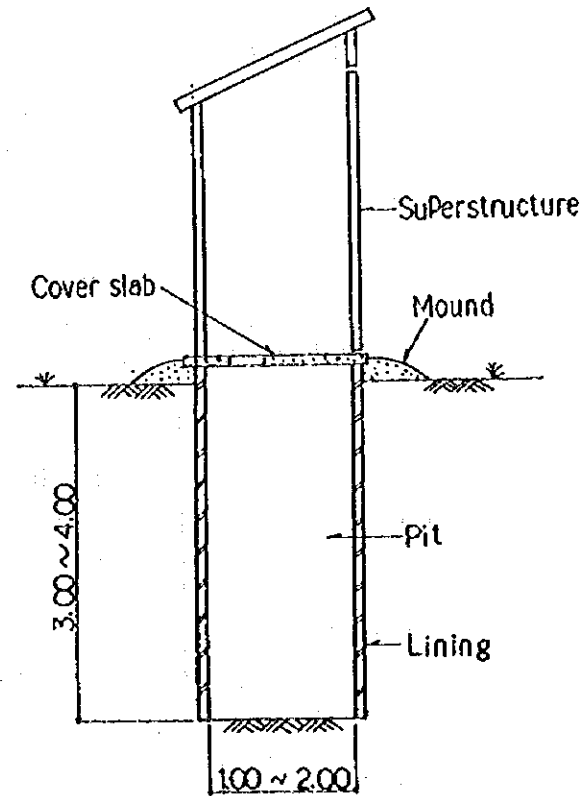
NOTE:
1. All dimensions are shown in millimeter.



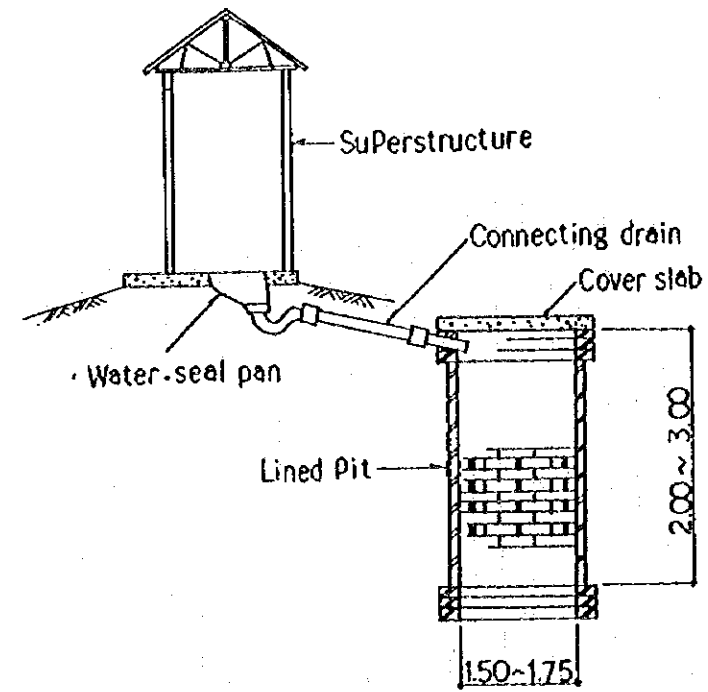
NOTE : unit is millimeter unless otherwise specified.



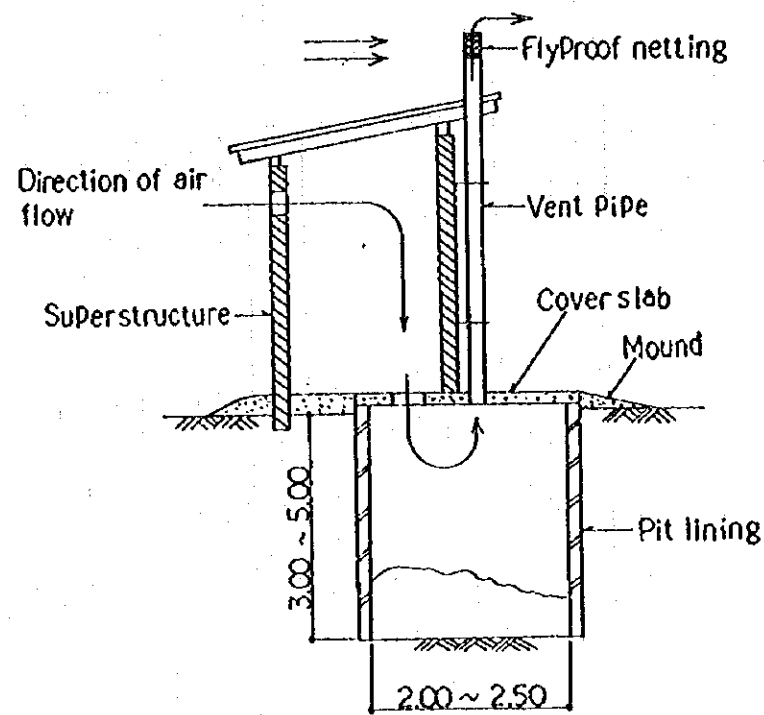
Waste Water Disposal Pit



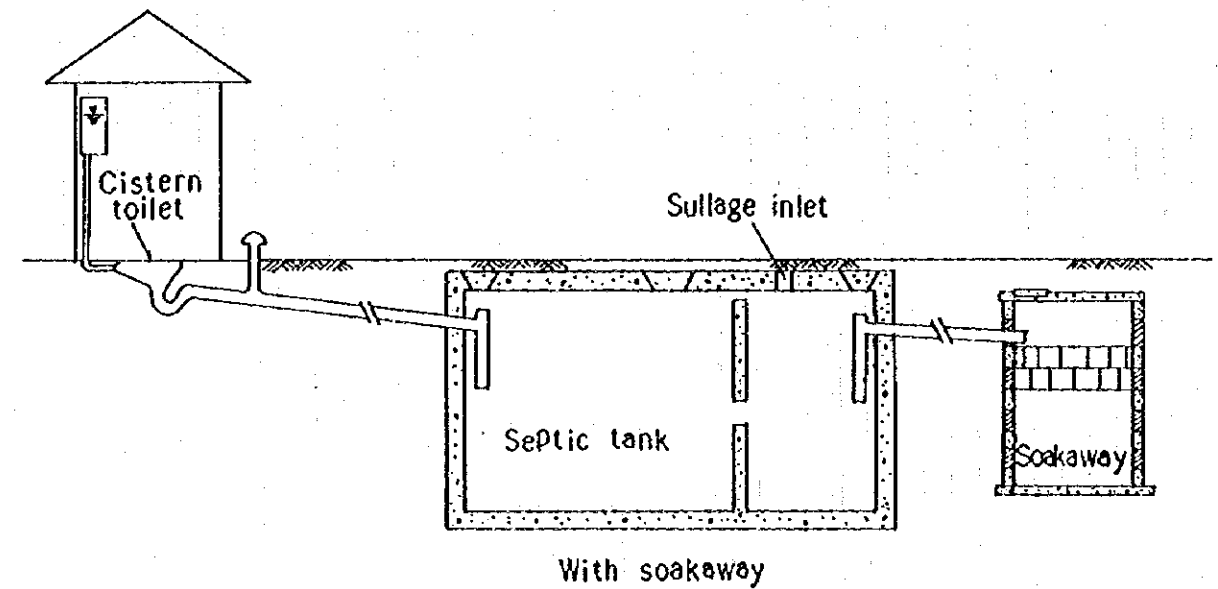
Improved Traditional Pit Latrine



Pour-flush latrine and Soakaway Pit

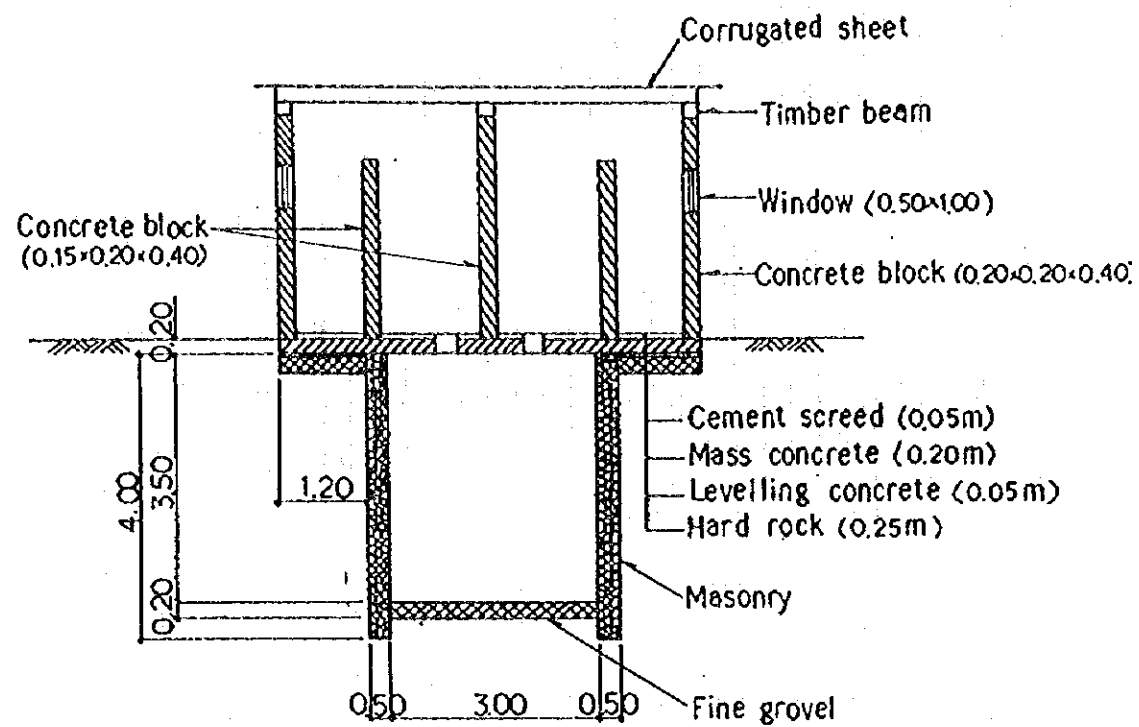


VIP Latrine

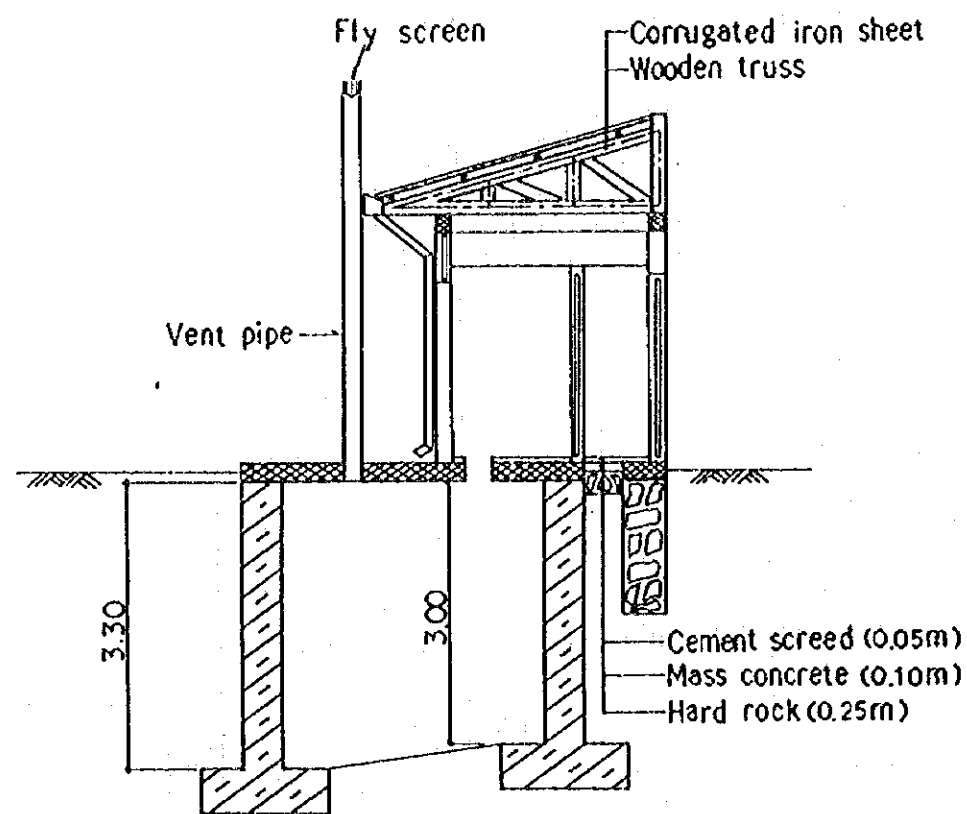


Cistern-flush Toilet and Septic Tank

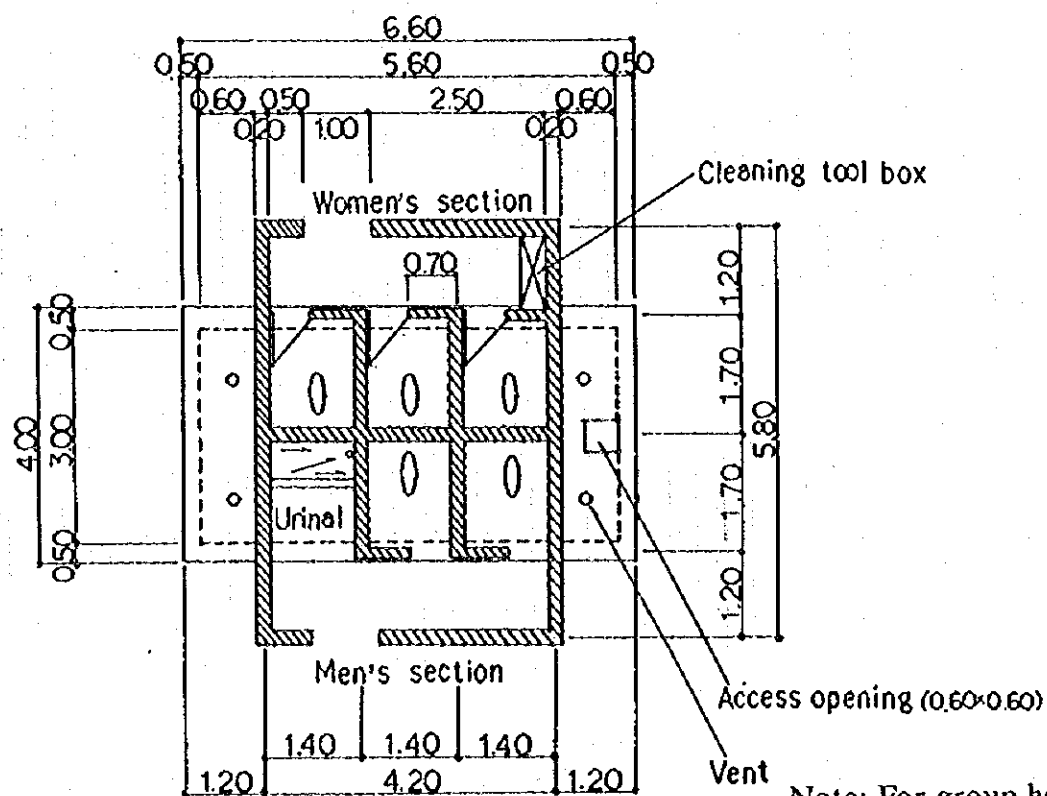
Drawing 13. Layout of Community Type Toilet and VIP Public Type Toilet



Typical Section

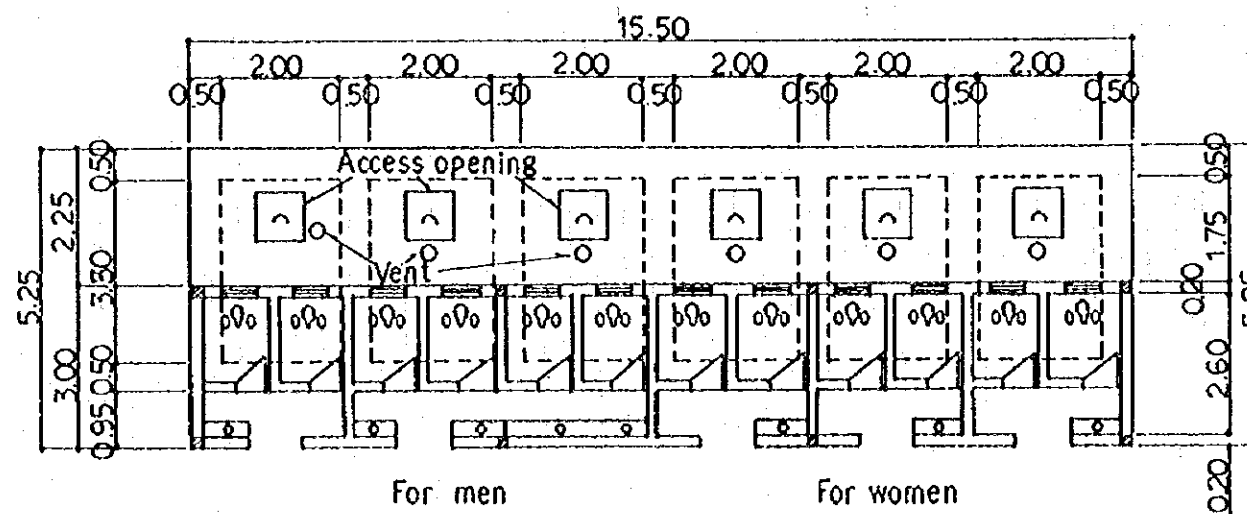


Typical Section



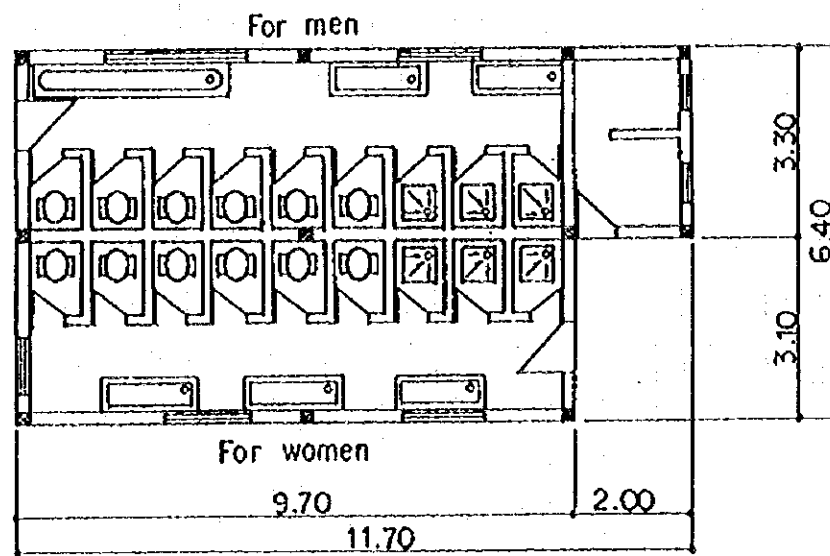
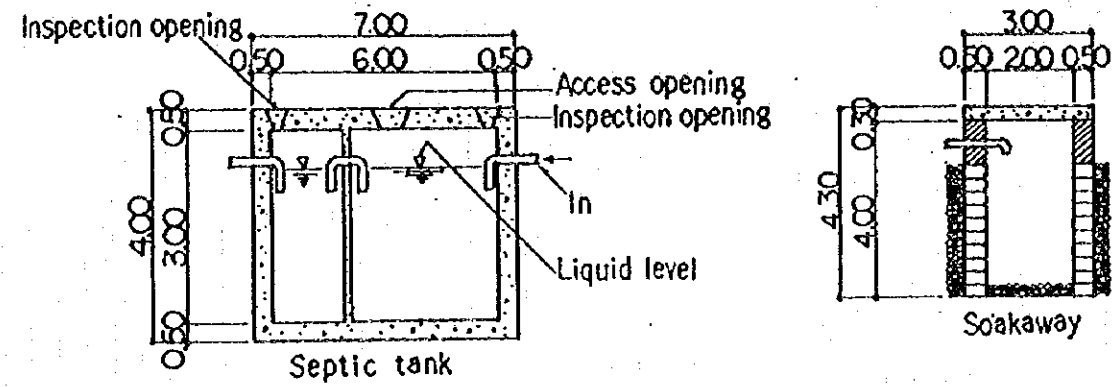
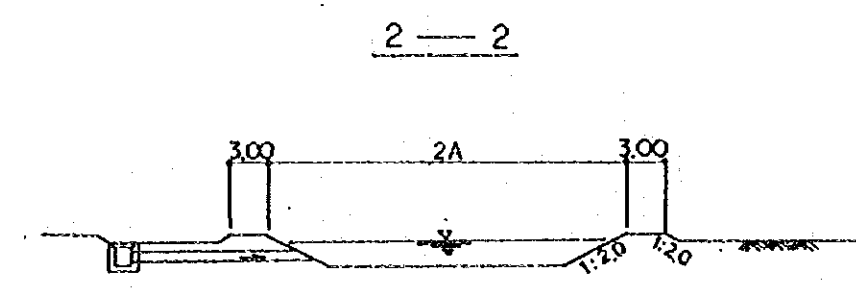
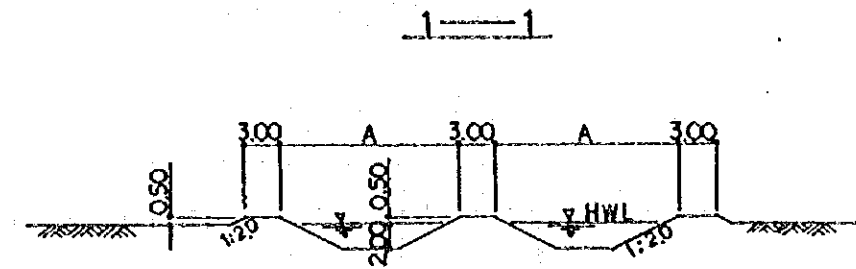
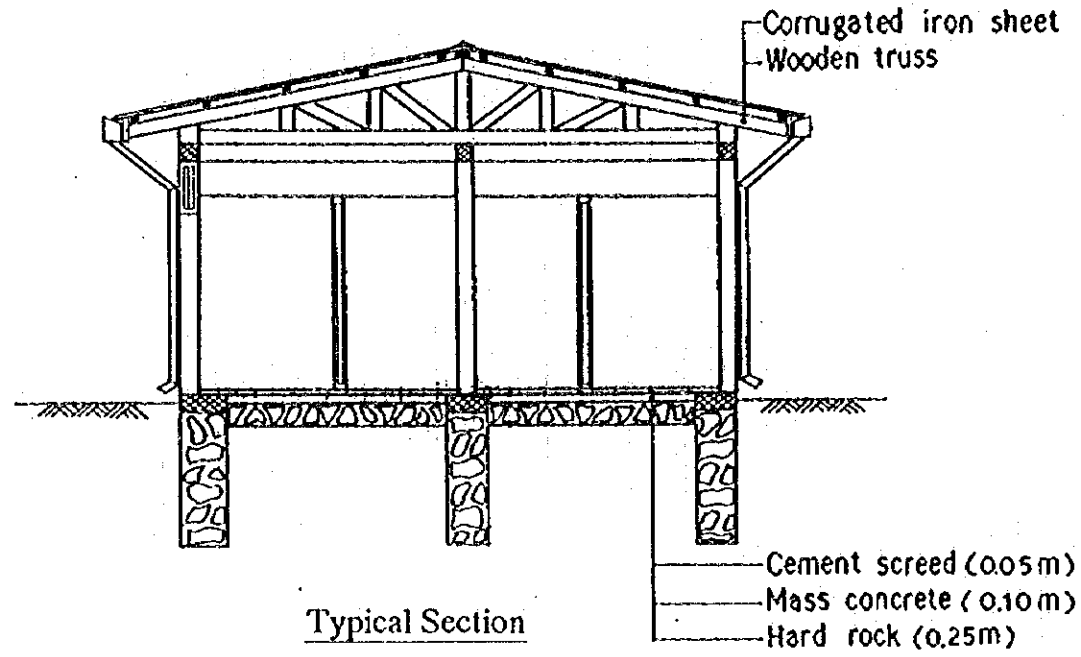
VIP Latrine (Community Type)

Note: For group household use, urinal is changed to 6th cubicle.

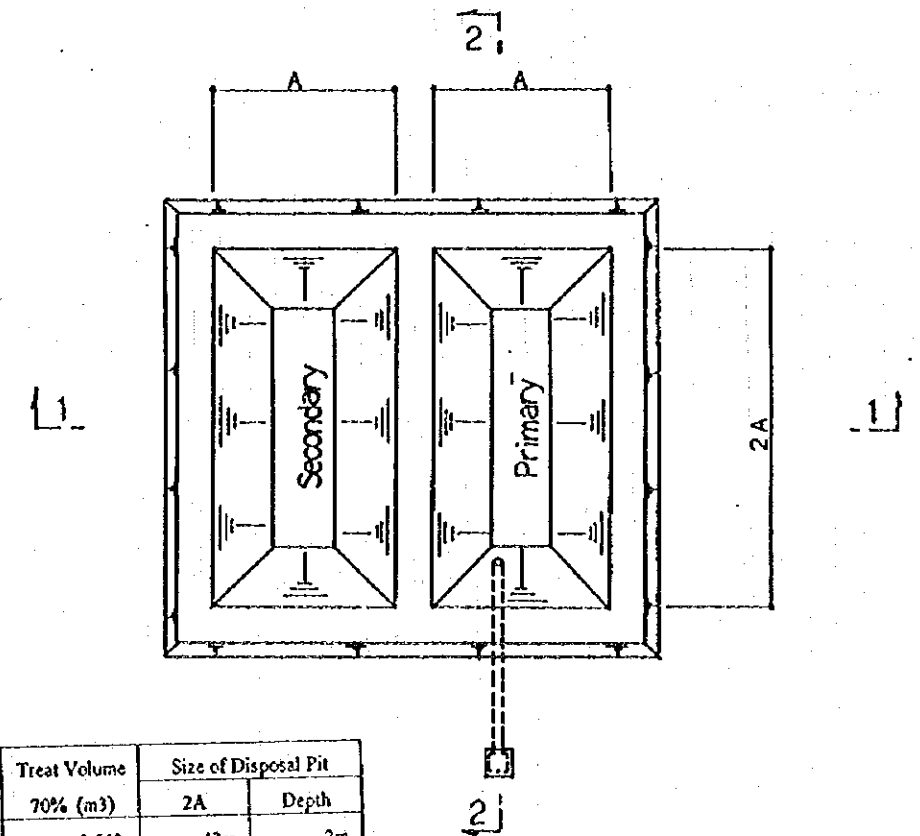


VIP Latrine (Public Type)

Drawing 14. Layout of Pour-flush Public Type Toilet and Sullage Disposal Pit



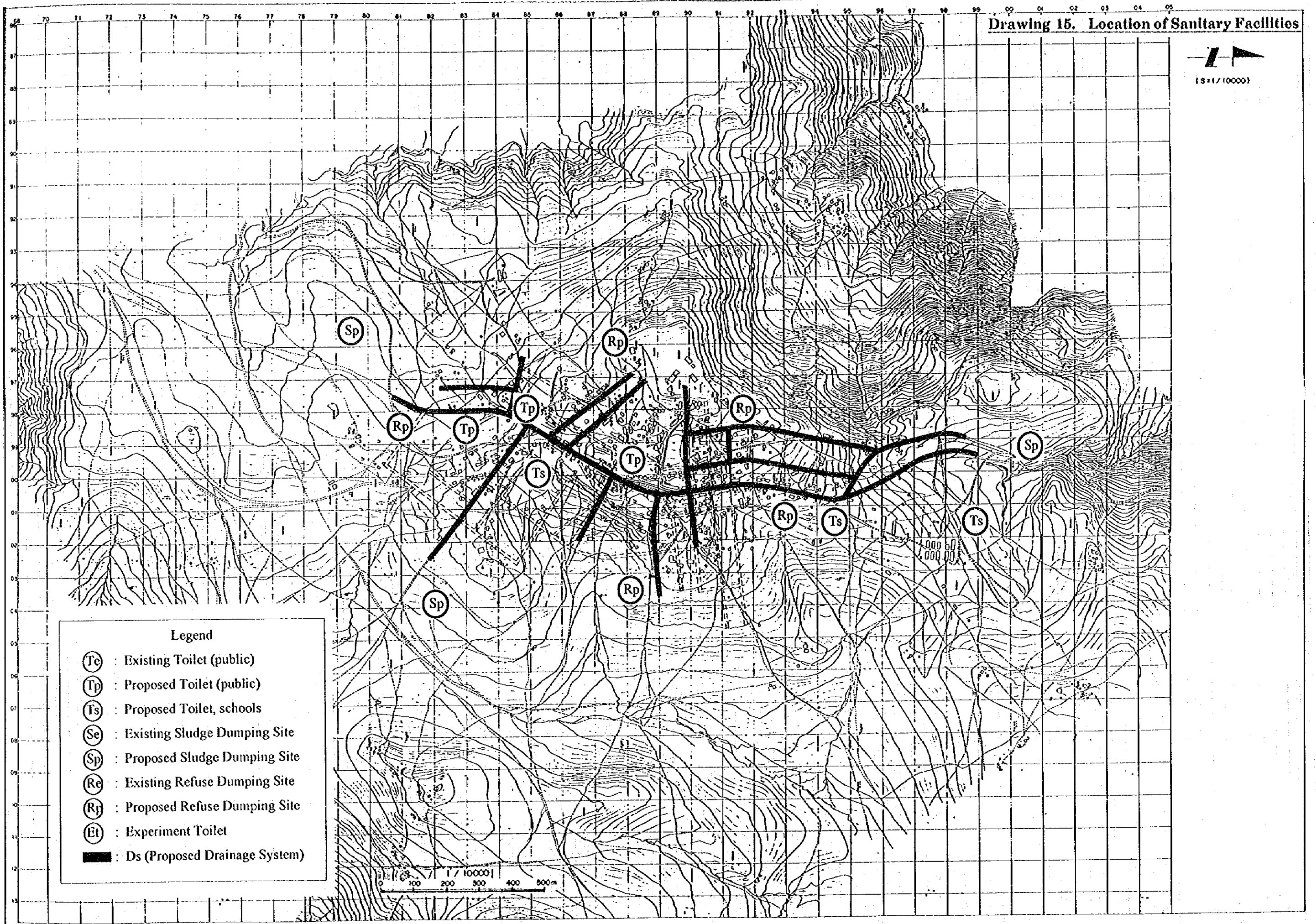
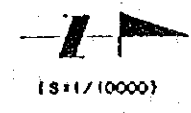
Pour-flush Latrine with Shower (Public Type)



Sullage Disposal Pit

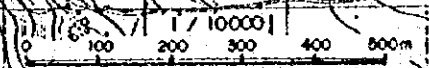
Urban Center	Population 2005	Sludge Volume 0.2m ³ /Man/Year	Treat Volume 70% (m ³)	Size of Disposal Pit	
				2A	Depth
Aykel	26,000	5,200	3,640	43m	2m

Drawing 15. Location of Sanitary Facilities

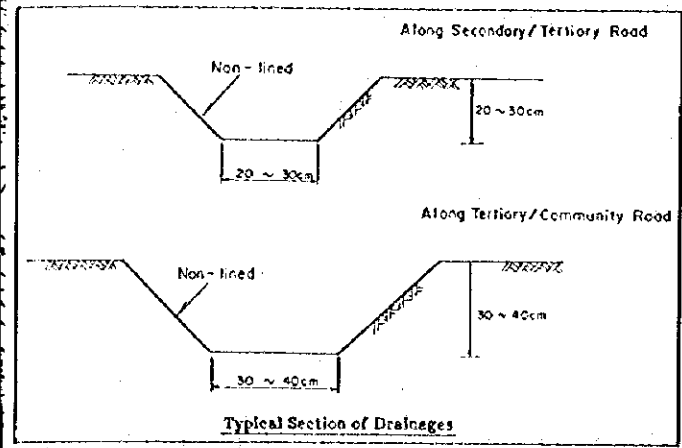


Legend

- (Tc) : Existing Toilet (public)
- (Tp) : Proposed Toilet (public)
- (Ts) : Proposed Toilet, schools
- (Se) : Existing Sludge Dumping Site
- (Sp) : Proposed Sludge Dumping Site
- (Re) : Existing Refuse Dumping Site
- (Rf) : Proposed Refuse Dumping Site
- (Et) : Experiment Toilet
- : Ds (Proposed Drainage System)



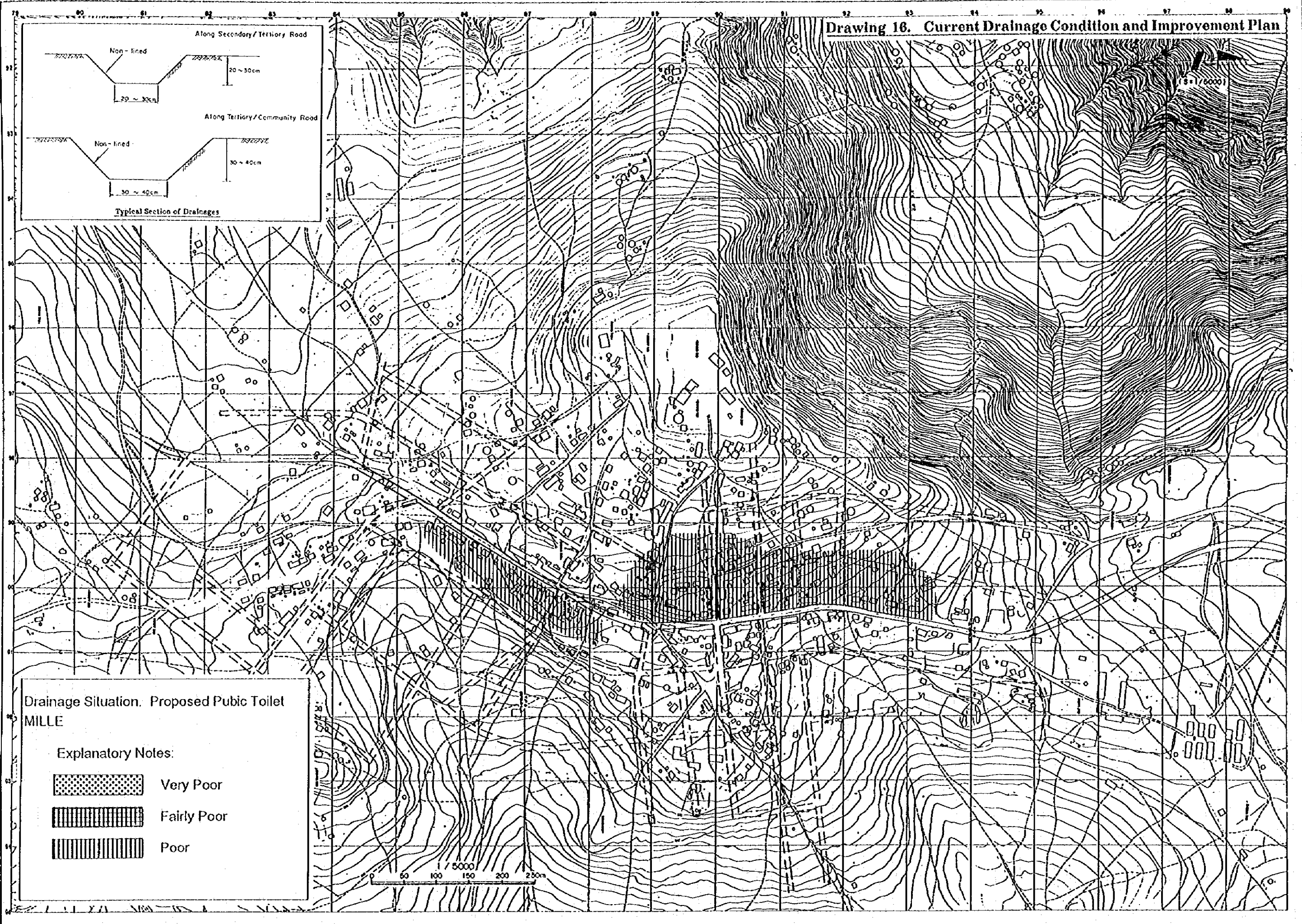
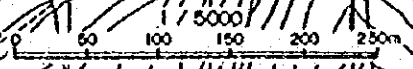
Drawing 16. Current Drainage Condition and Improvement Plan



Drainage Situation. Proposed Pubic Toilet MILLE

Explanatory Notes:

- Very Poor
- Fairly Poor
- Poor



JICA