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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
CHAGNI

(Volume IV-VIII)

FEBRUARY, 1996

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

GOVERNMENT OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)

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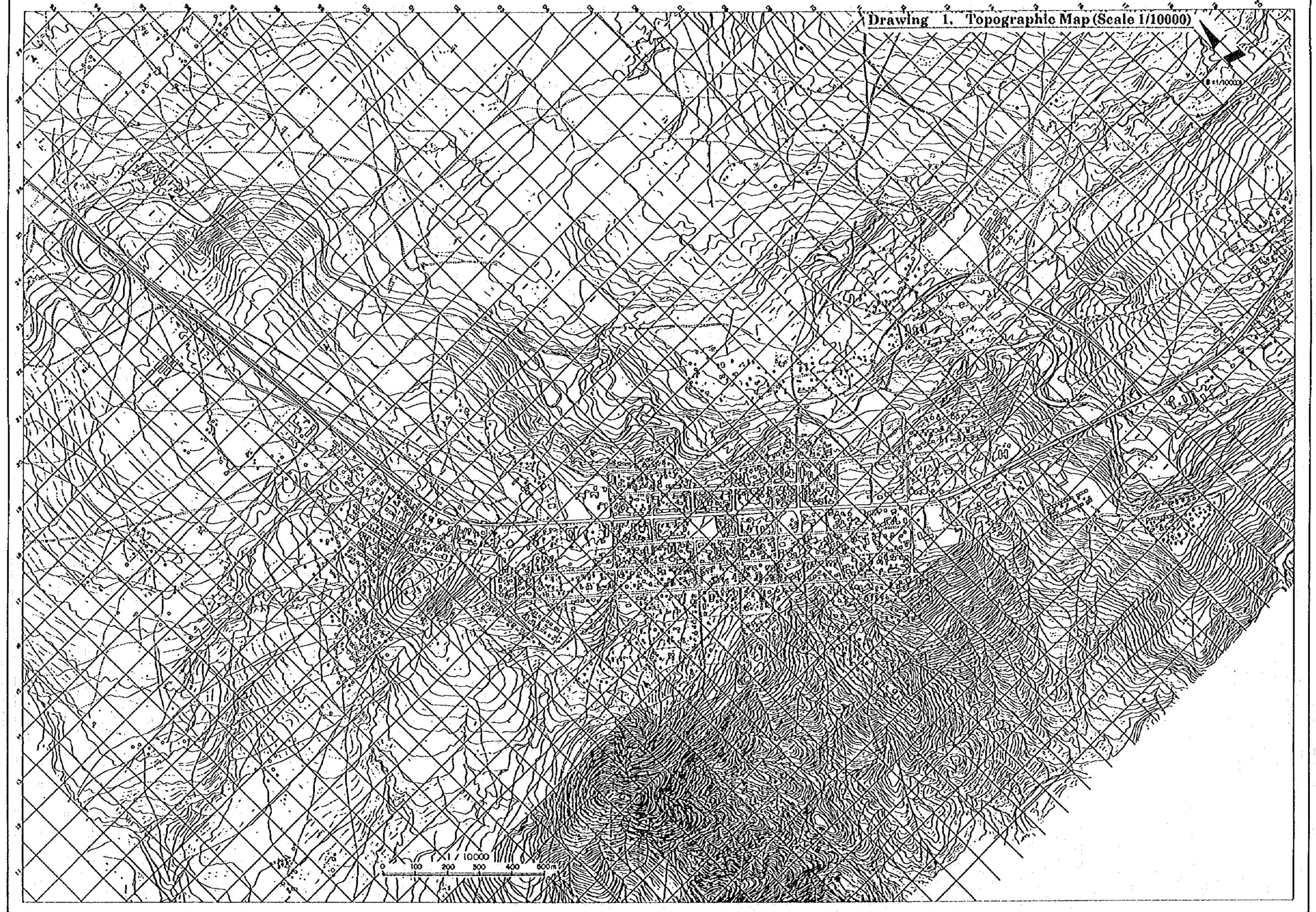
Drawing 1. Topographic Map (Scale 1/10000)



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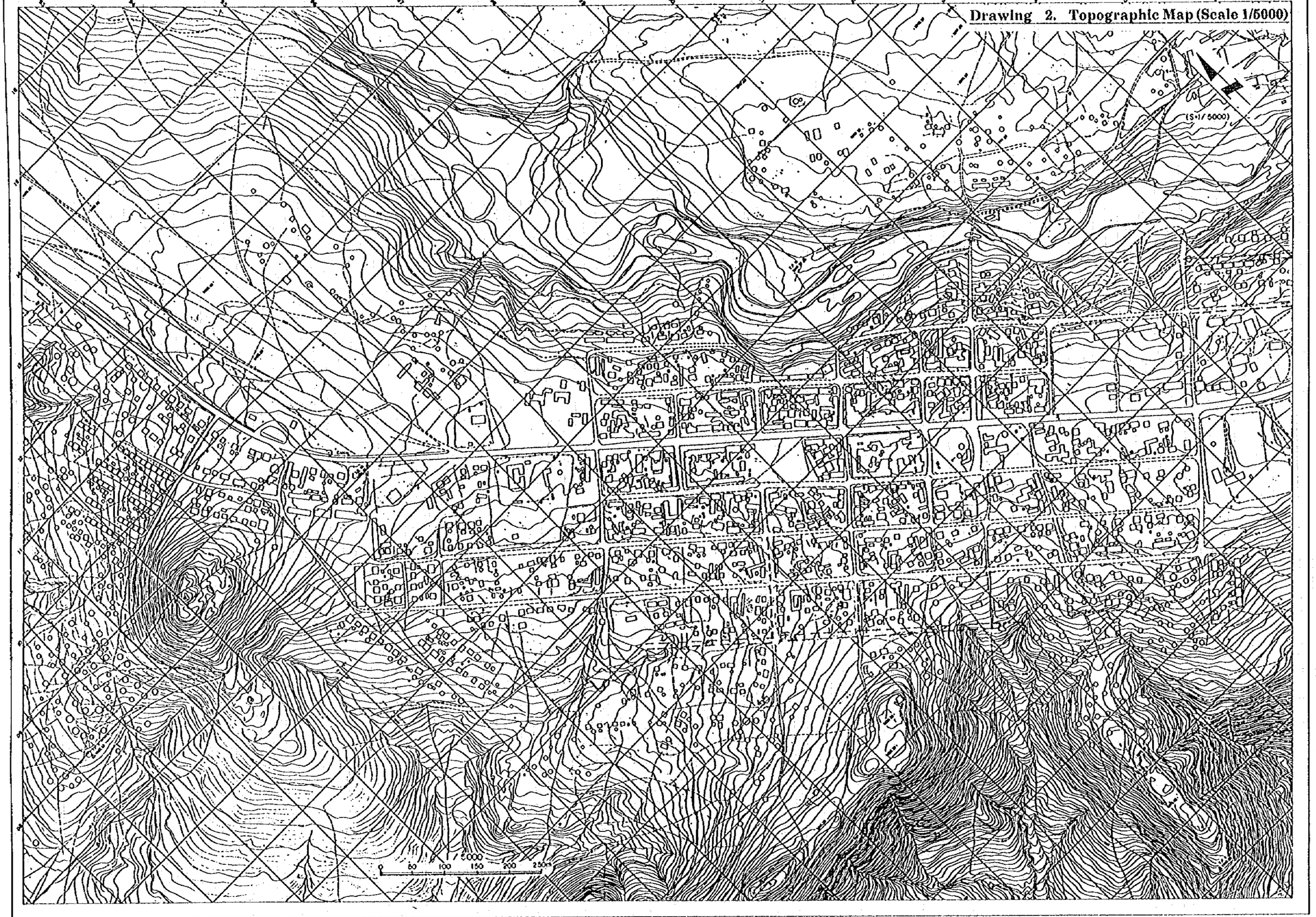
Drawing 2. Topographic Map (Scale 1/5000)



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Drawing 3. Land Use and Bench Marks

Kebele 01

Kebele 02

Senior Secondary School

Mosque

Chagni Elementary School

WSS

Health Center

Municipality

Kebele 02 Office

Junior Secondary School

Chagni Elementary School

Post Office

Police Station

Kebele 01 Office

Bank

Mosque

Debre Medhanialm Church

1 / 10000

0 100 200 300 400 500m

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

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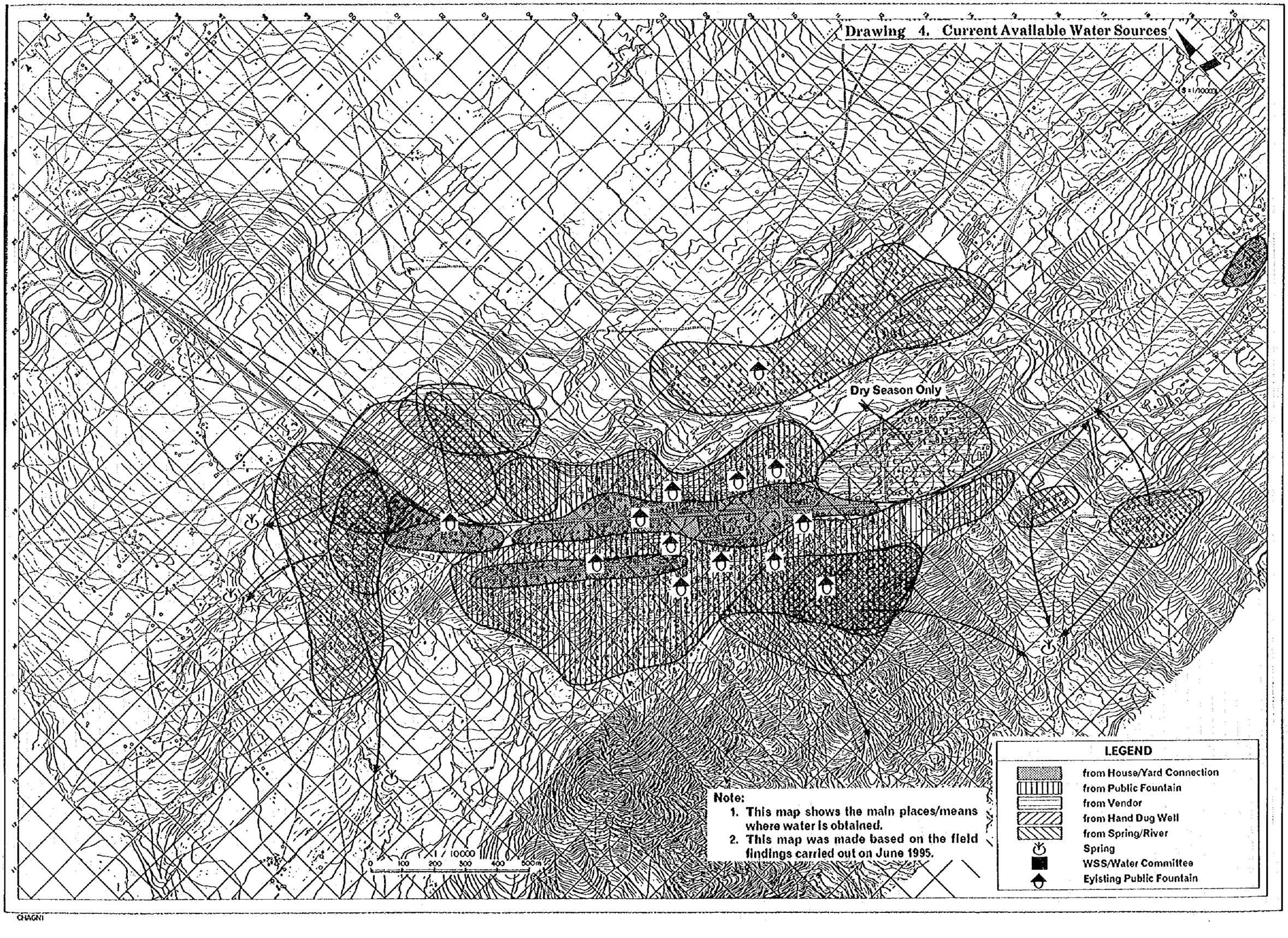
Drawing 4. Current Available Water Sources



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.

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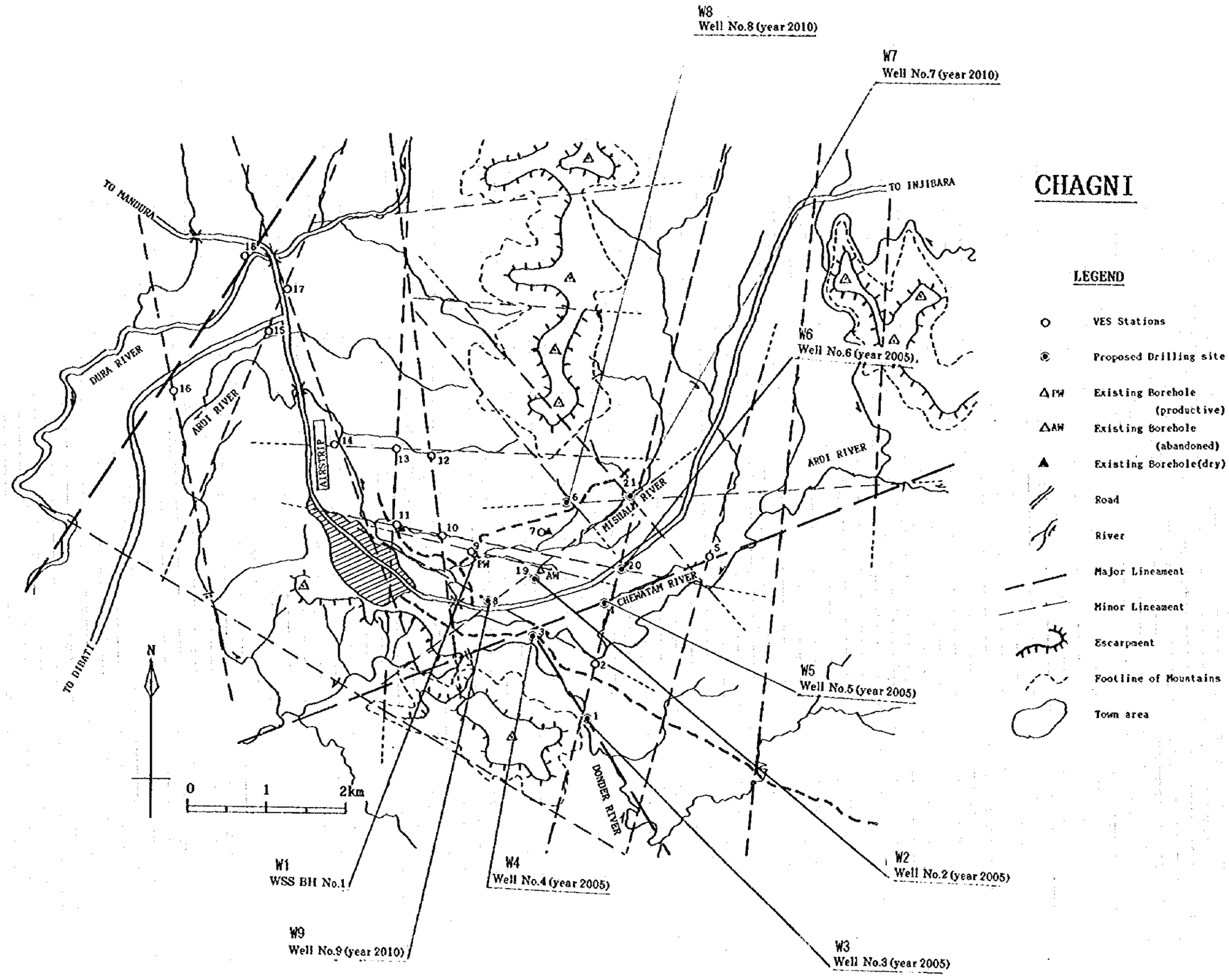
Drawing 5. Plan of Proposed Water Sources



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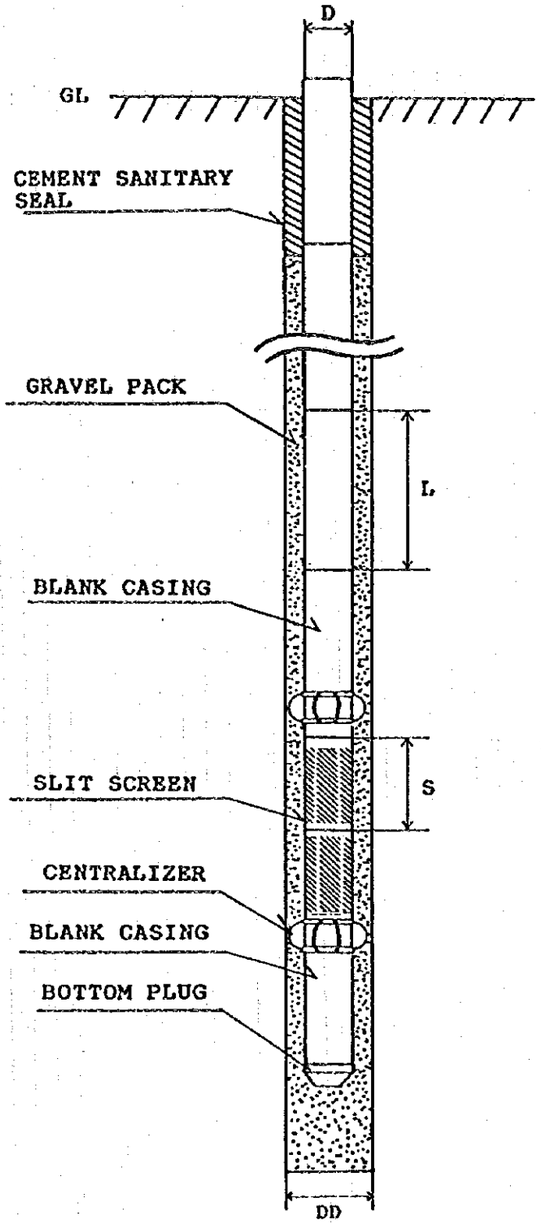
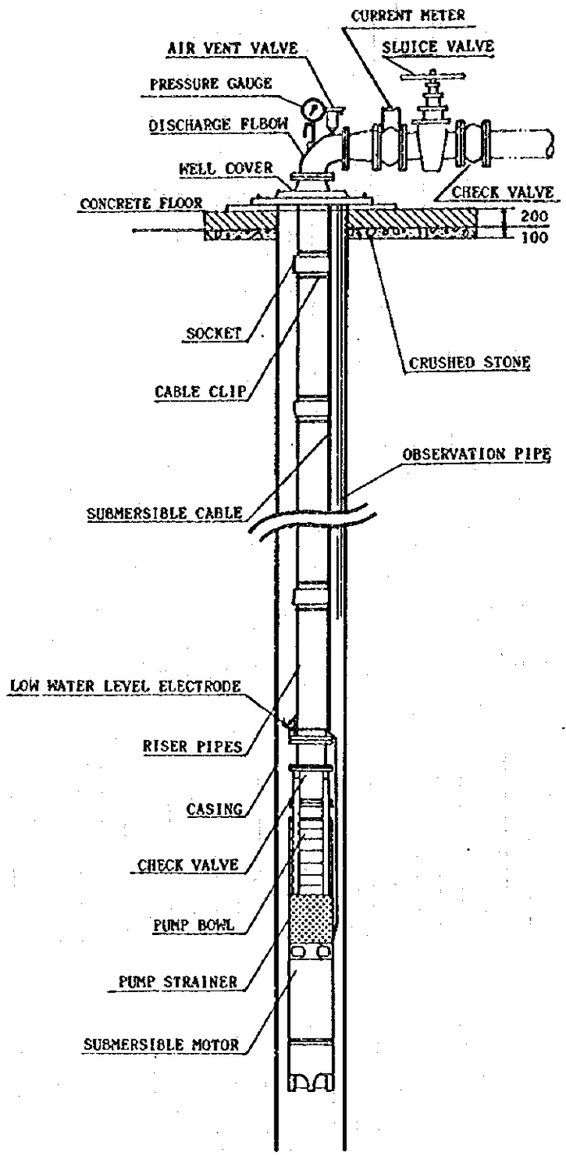
LEGEND

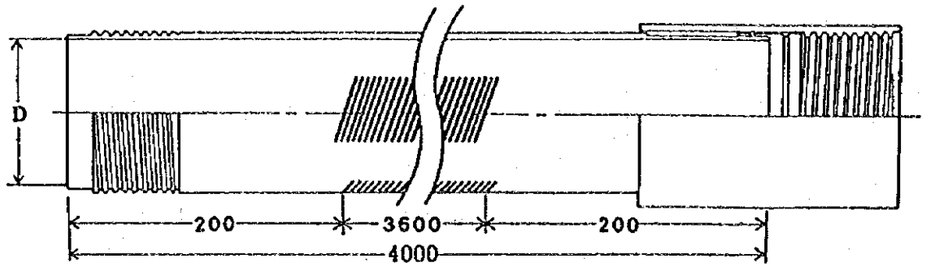
- ○ VES Stations
- ◉ Proposed Drilling site
- △PW Existing Borehole (productive)
- △AW Existing Borehole (abandoned)
- ▲ Existing Borehole(dry)
- Road
- River
- Major Lineament
- Minor Lineament
- Escarpment
- Footline of Mountains
- Town area

Drawing 6. Layout of Proposed Deep Well

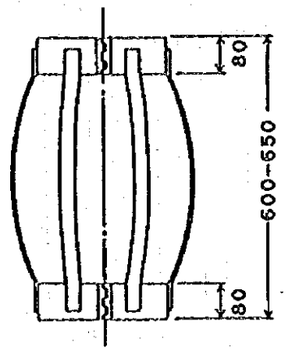




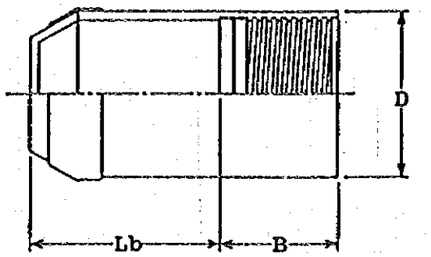
SLIT TYPE SCREEN



CENTRALIZER



BOTTOM PLUG



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 12%	160	110
200	300					

Material

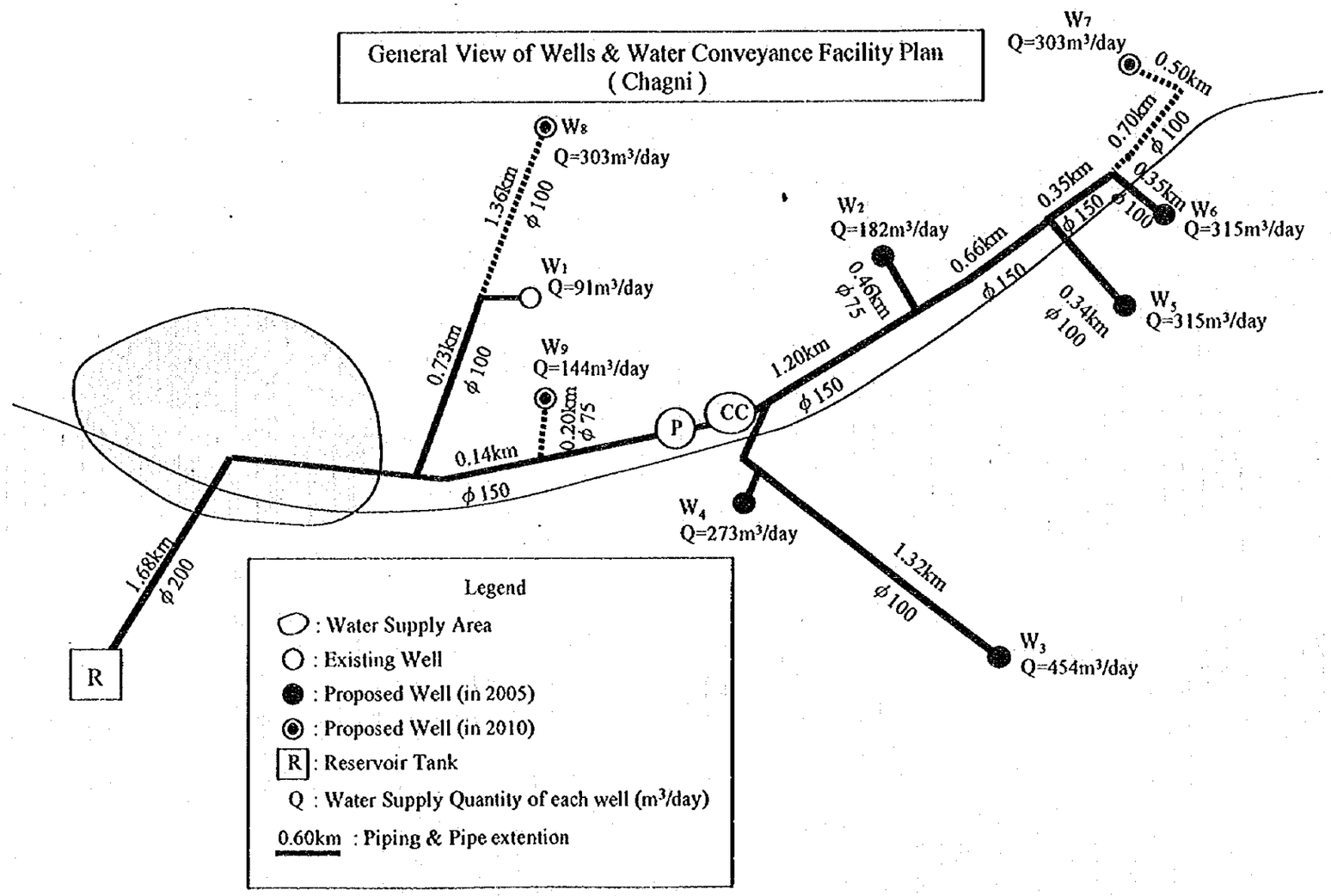
BLANK PIPE : FRP
SCREEN : FRP
BOTTOM PLUG : FRP

Drawing 7. Layout Between Water Sources and Reservoir

Total Water Demand in Target Years (m3/day)

	1995*	2000	2005	2010
Domestic	153	533	900	1,466
Non Domestic	36	112	154	205
Losses	102	72	144	295
Total	291	716	1,198	1,966

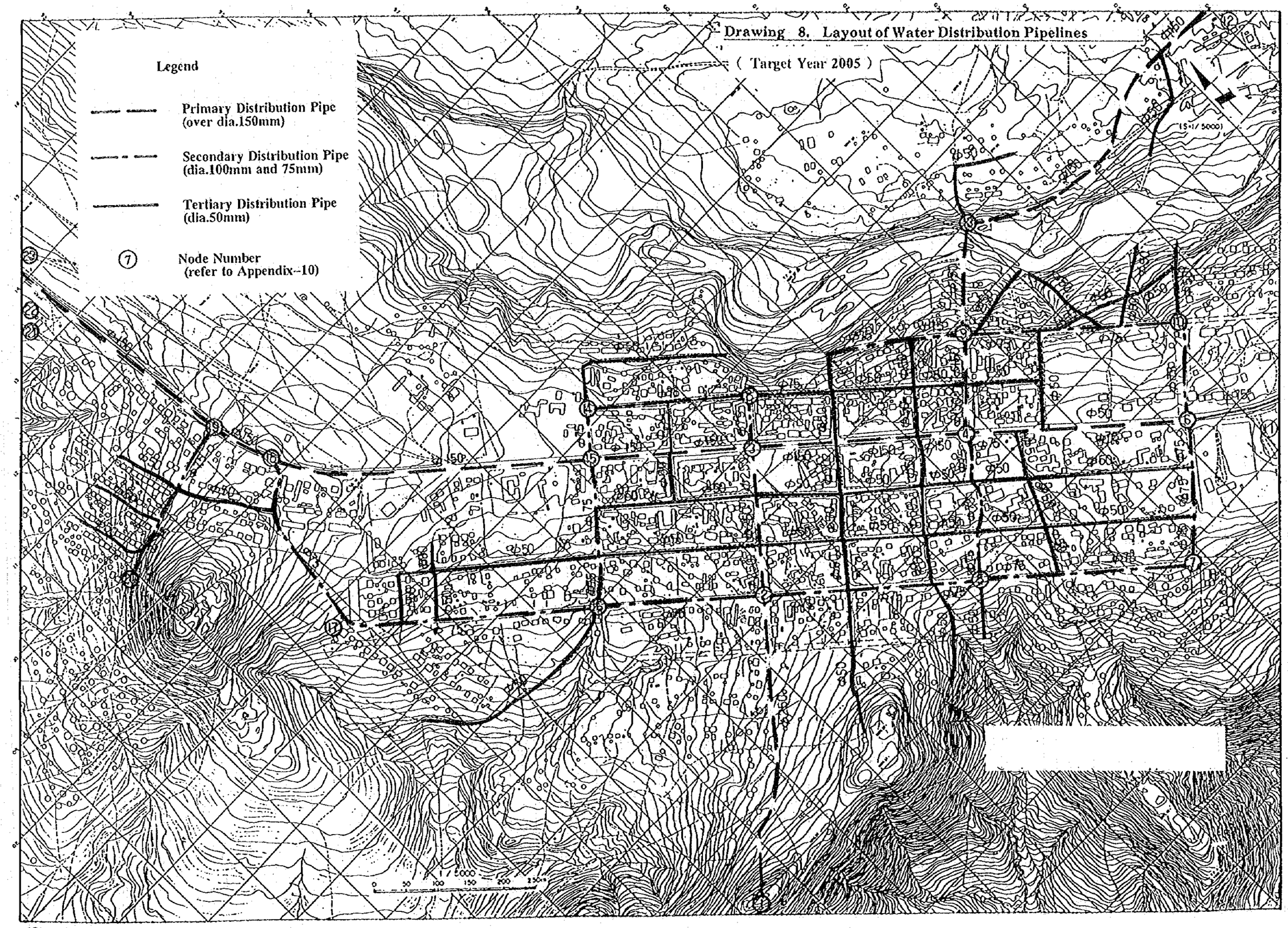
*Actual consumption



(Chagni)

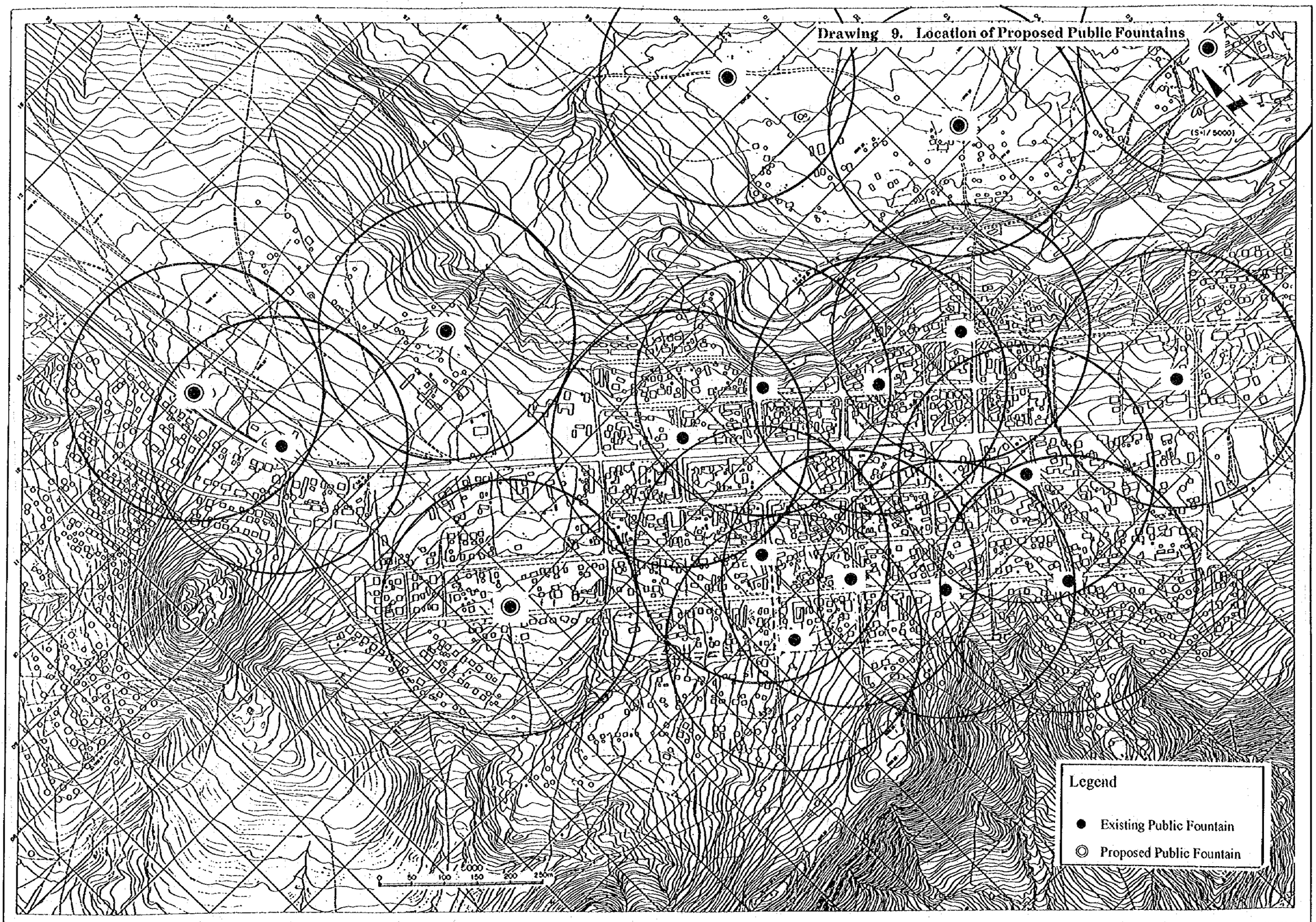
Drawing 8. Layout of Water Distribution Pipelines

(Target Year 2005)

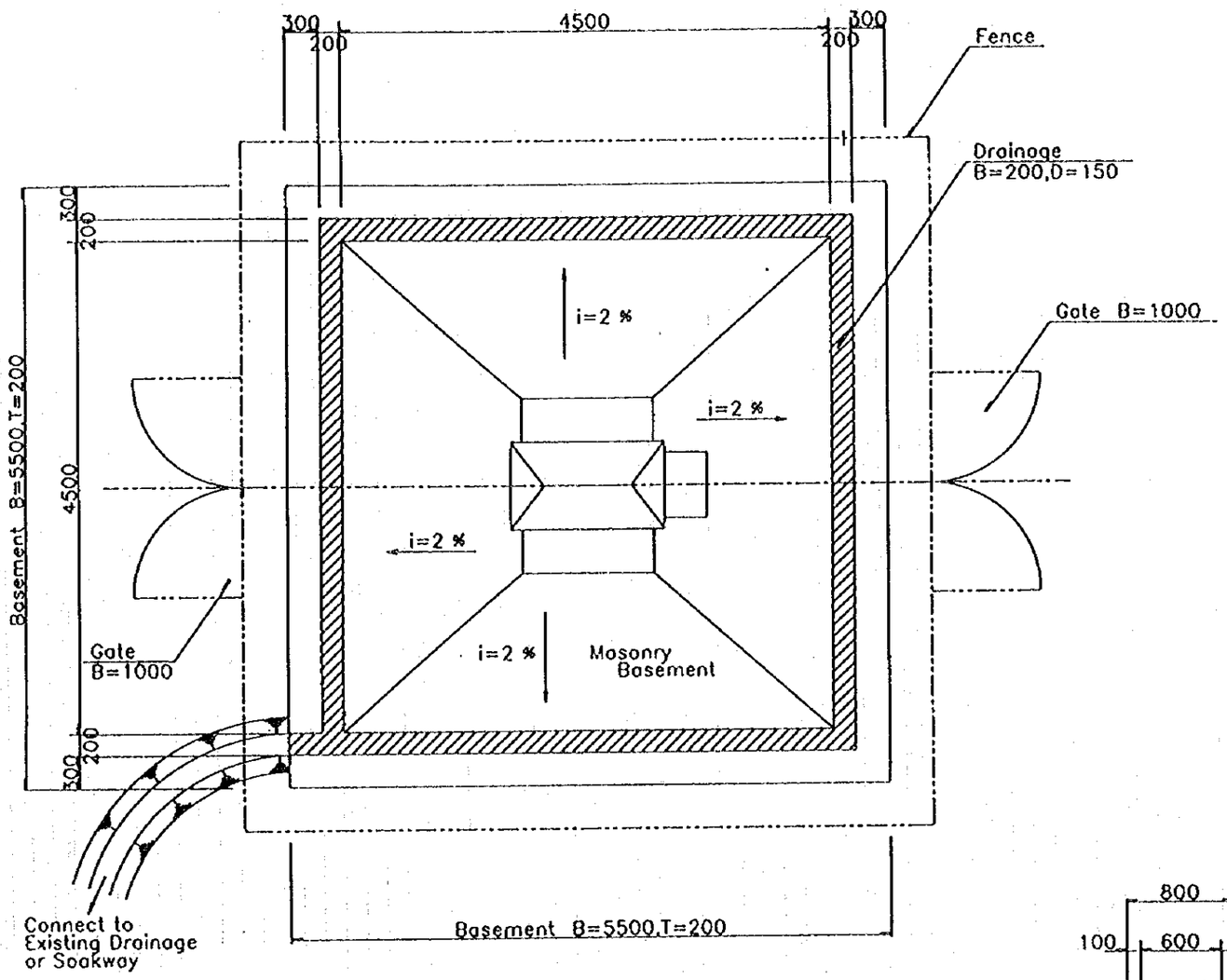


(Chagni)

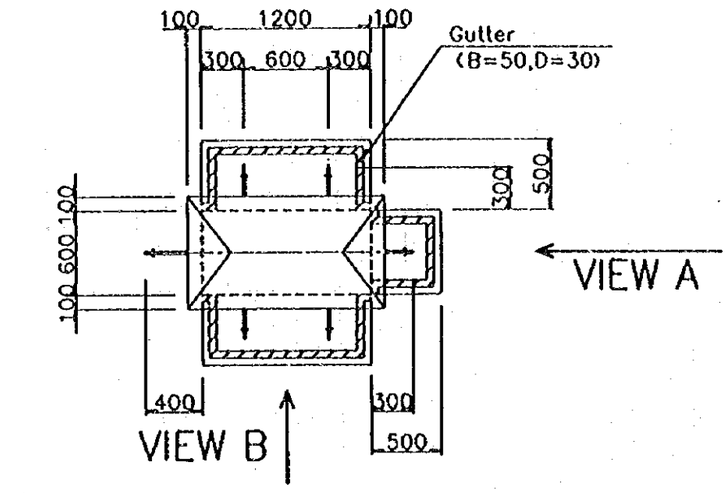
Drawing 9. Location of Proposed Public Fountains



Drawing 10. Layout of Proposed Public Fountain



GENERAL PLAN

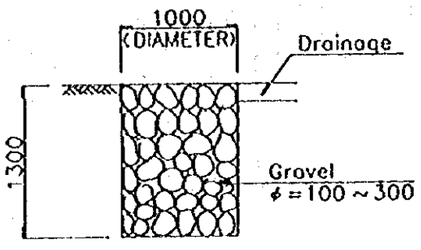


PLAN OF PUBLIC FOUNTAIN

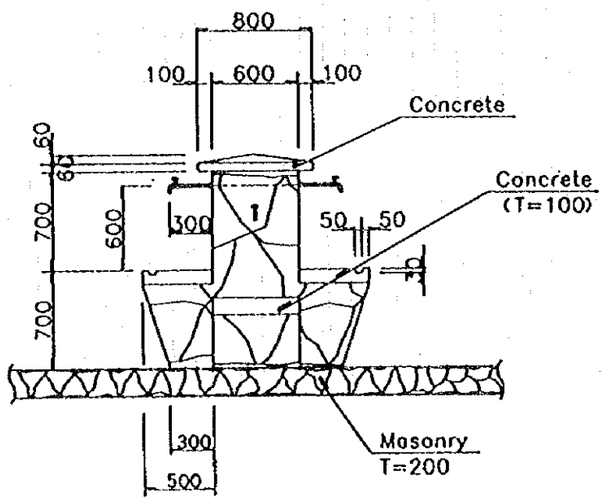
Quantity:

Concrete	:	0.25 m³
Form-work	:	0.66 m²
Masonry	:	7.08 m³
Fence	:	2 m × 20.4 m
Pipe	:	6 m
Tap	:	6 NOS
Meter	:	1 NOS
Valve	:	1 NOS
Excavation	:	13 m³
Gravel	:	1 m³

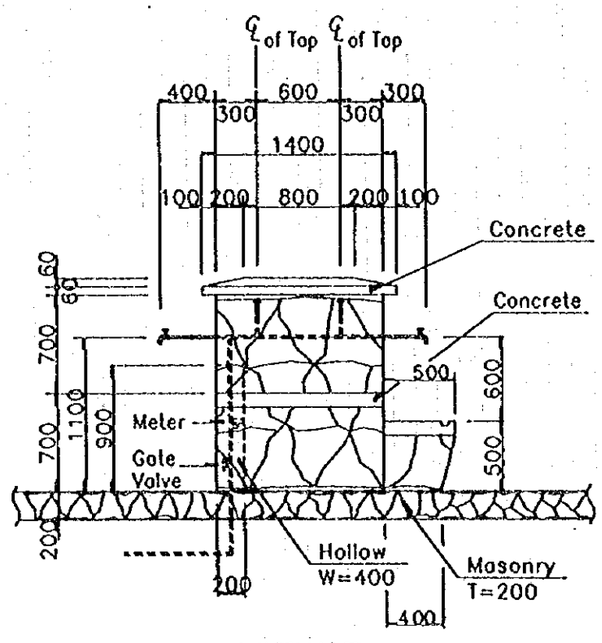
NOTE:
1. All dimensions are shown in millimeter.



SOAKWAY

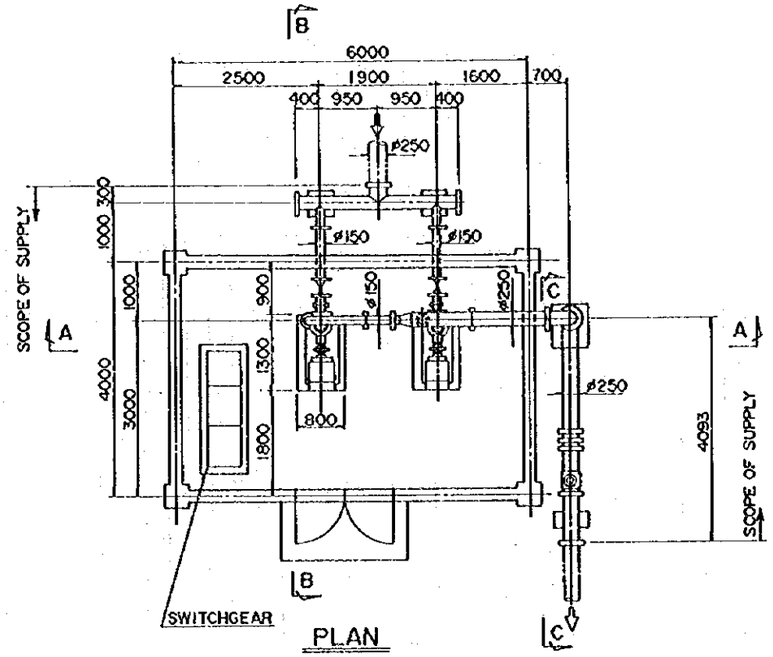


VIEW A

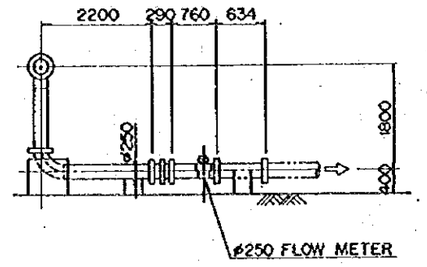


VIEW B

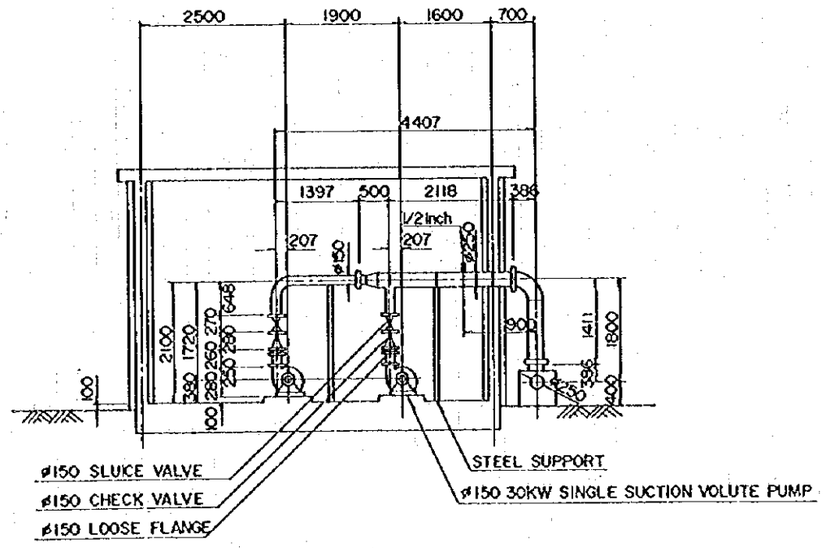
Drawing 11. Layout of Boosting Chamber



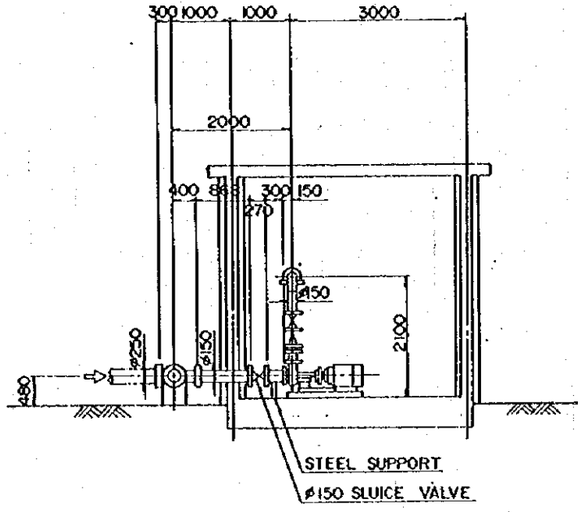
PLAN



SECTION C-C



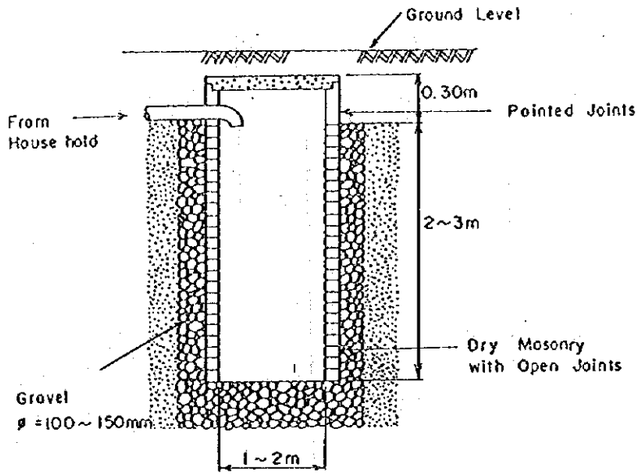
SECTION A-A



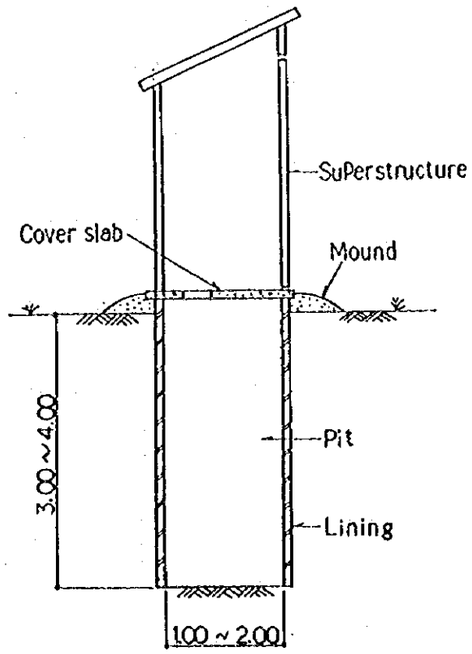
SECTION B-B

NOTE : unit is millimeter unless otherwise specified.

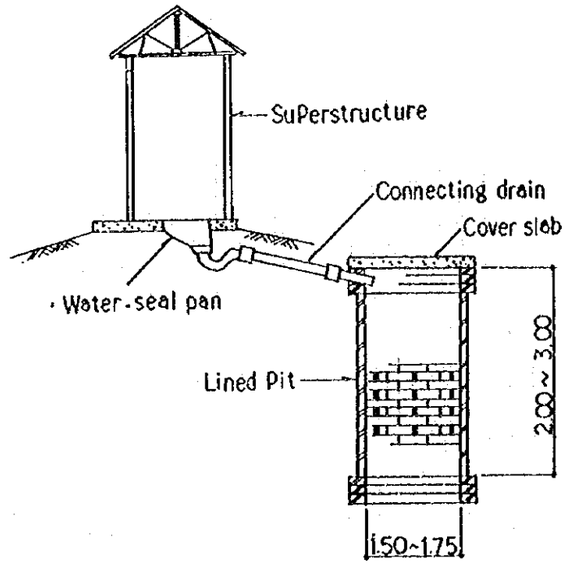
Drawing 12. Layout of Household Waste Water Disposal Pit & Toilet



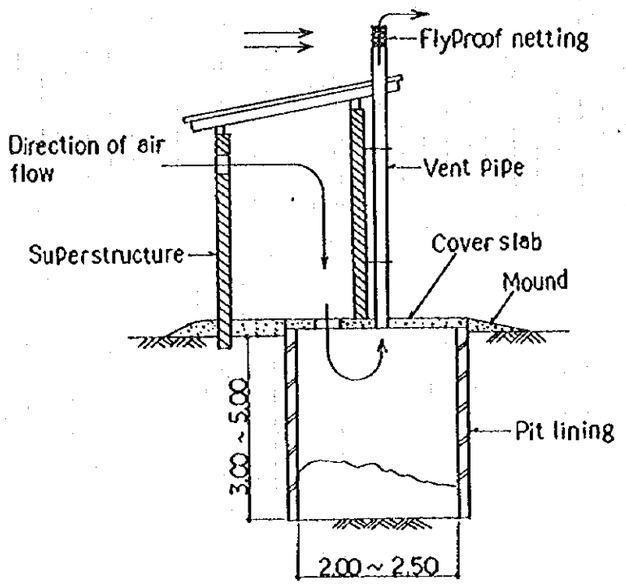
Waste Water Disposal Pit



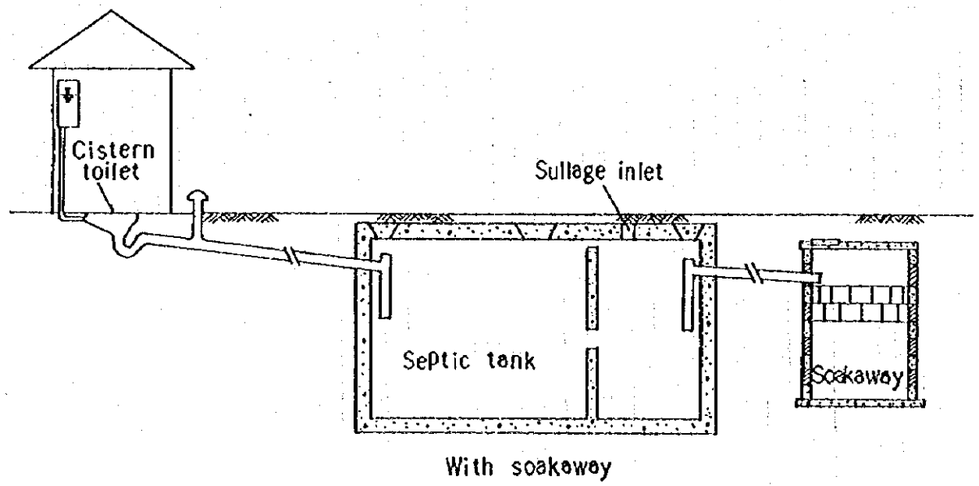
Improved Traditional Pit Latrine



Pour-flush latrine and Soakaway Pit

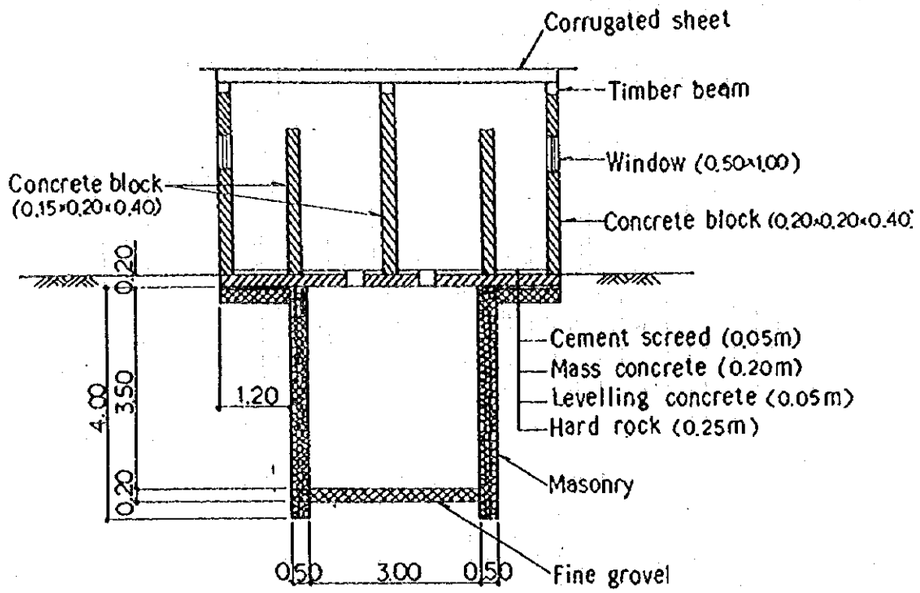


VIP Latrine

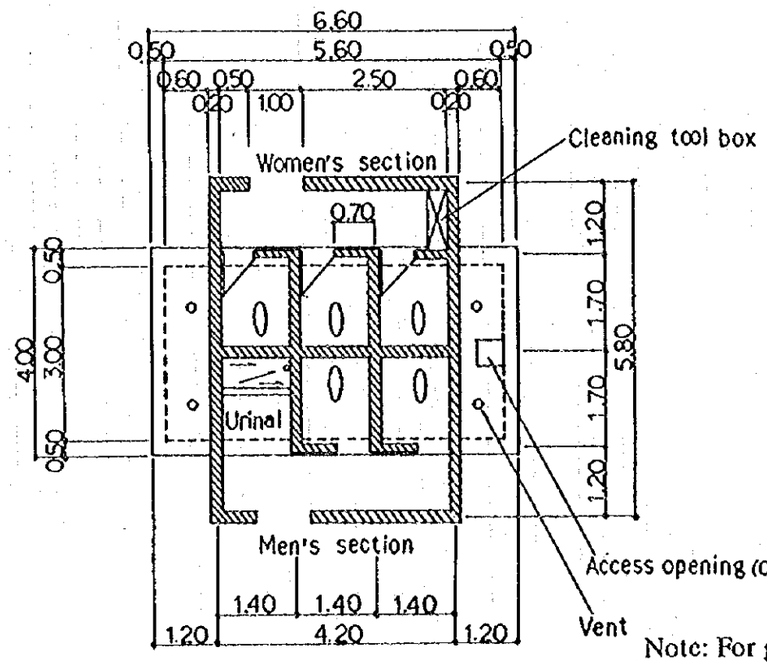


Cistern-flush Toilet and Septic Tank

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

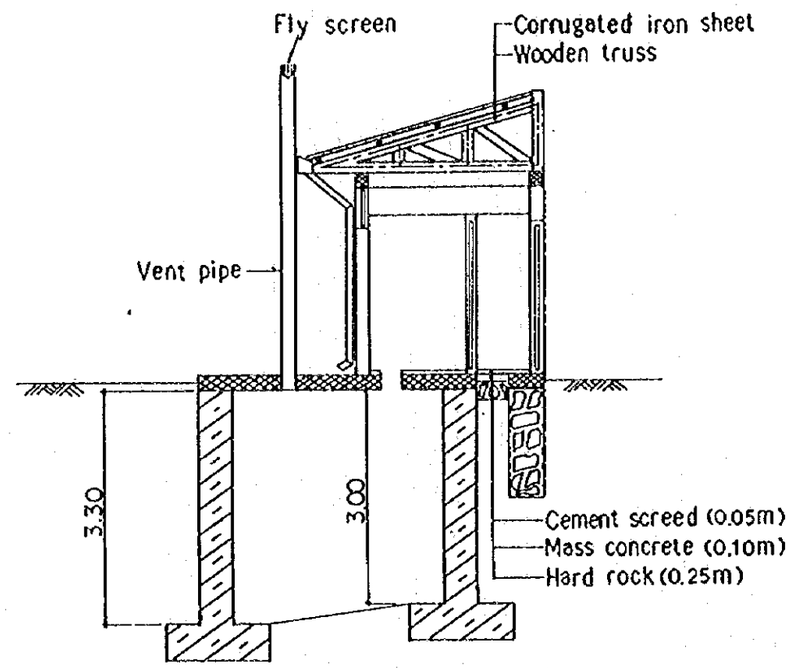


Typical Section

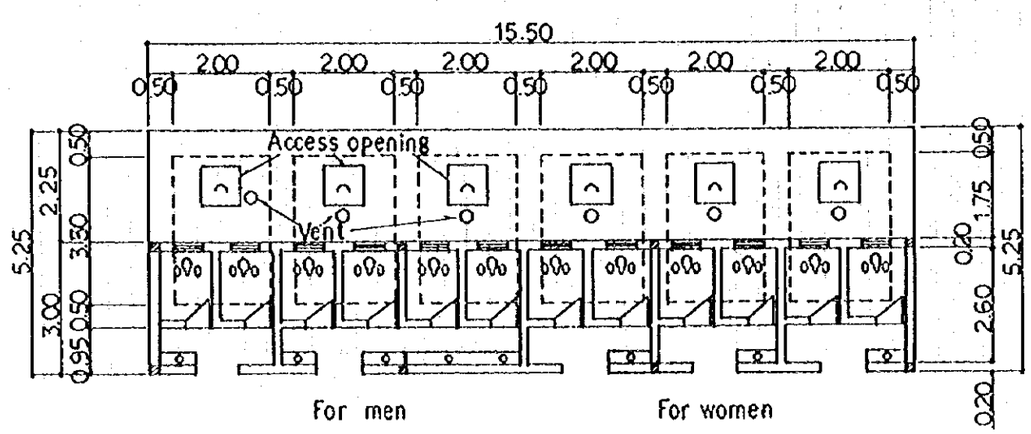


Note: For group household use, urinal is changed to 6th cubicle.

VIP Latrine (Community Type)

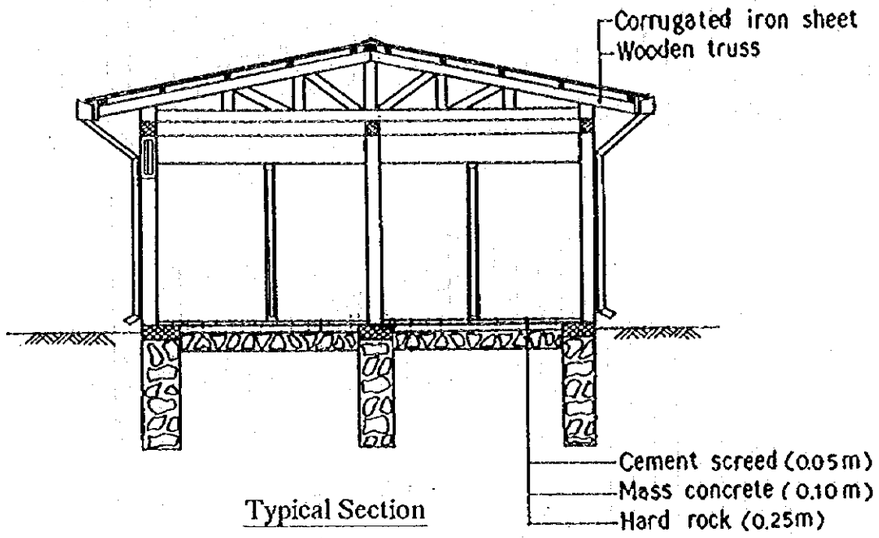


Typical Section

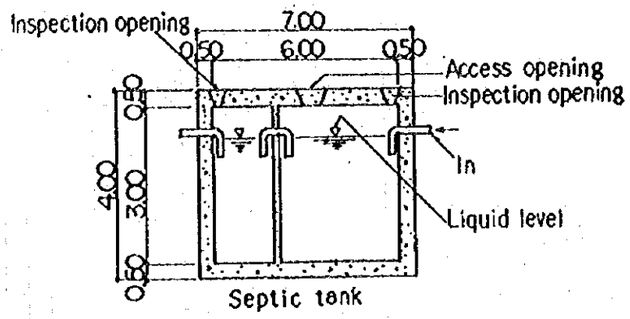


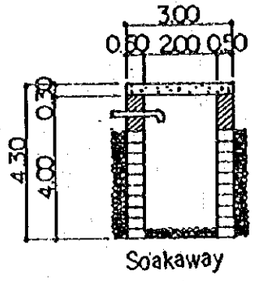
VIP Latrine (Public Type)

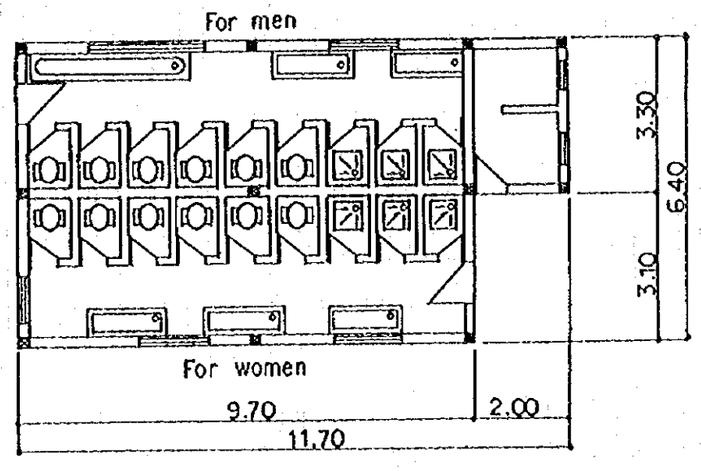
Drawing 14. Layout of Pour-flush Public Type Toilet and Sullage Disposal Pit



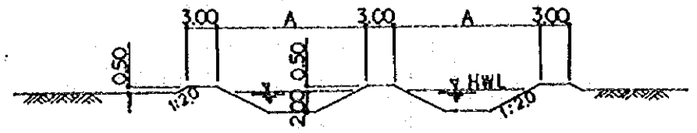
Typical Section

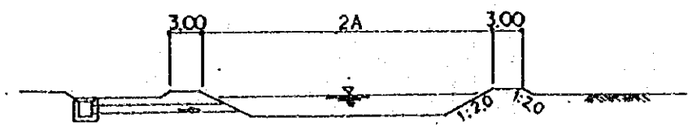


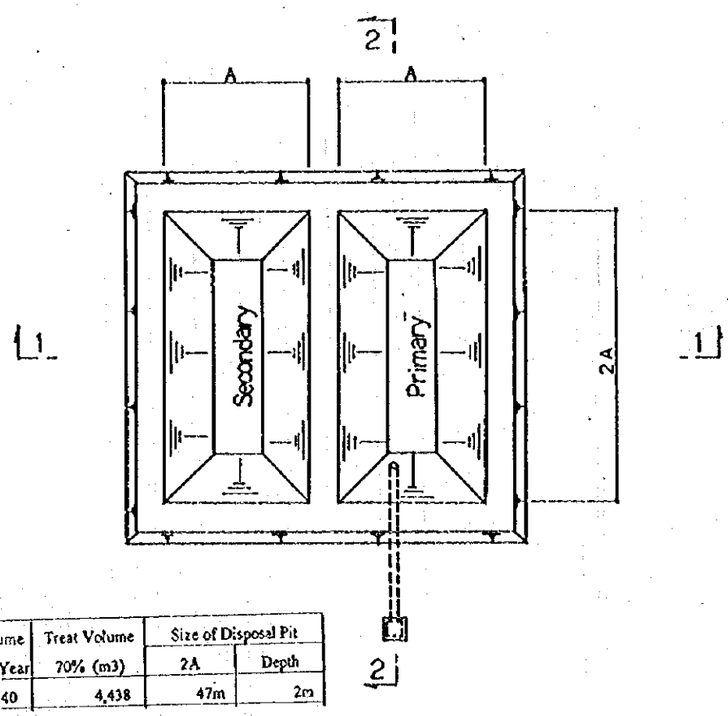




Pour-flush Latrine with Shower (Public Type)







Urban Center	Population	Sludge Volume	Treat Volume	Size of Disposal Pit	
	2005	0.2m3/Man/Year	70% (m3)	2A	Depth
Bure	31,700	6,340	4,438	47m	2m

Sullage Disposal Pit

Drawing 15. Location of Sanitary Facilities

Legend

- (Tc) : Existing Toilet (public)
- (Tp) : Proposed Toilet (public)
- (Ts) : Proposed Toilet, schools
- (Sc) : Existing Sludge Dumping Site
- (Sp) : Proposed Sludge Dumping Site
- (Rc) : Existing Refuse Dumping Site
- (Rp) : Proposed Refuse Dumping Site
- (Et) : Experiment Toilet
- : Ds (Proposed Drainage System)

1 / 10000

0 100 200 300 400 600m

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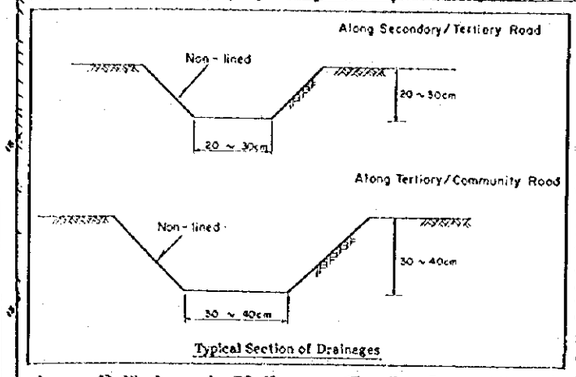
Drawing 16. Current Drainage Condition and Improvement Plan



Typical Section of Drainages

(S=1/5000)

Drainage Situation. Proposed Pubic Toilet
MILLE

Explanatory Notes:

- Very Poor
- Fairly Poor
- Poor

1/5000
50 100 150 200 250m

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