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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  
BATI

(Volume IV-III)

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GOVERNMENT OF JAPAN  
JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)  
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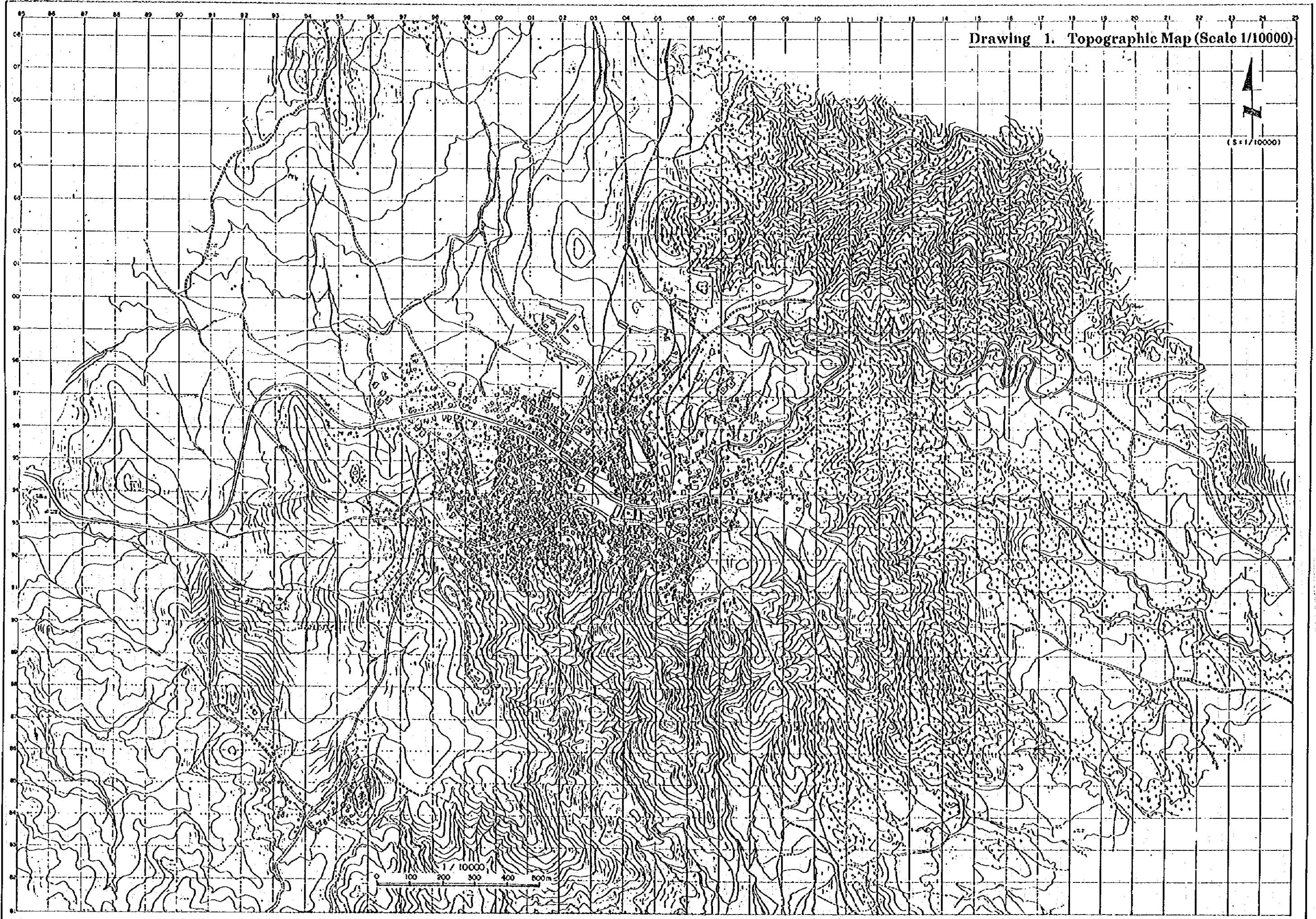


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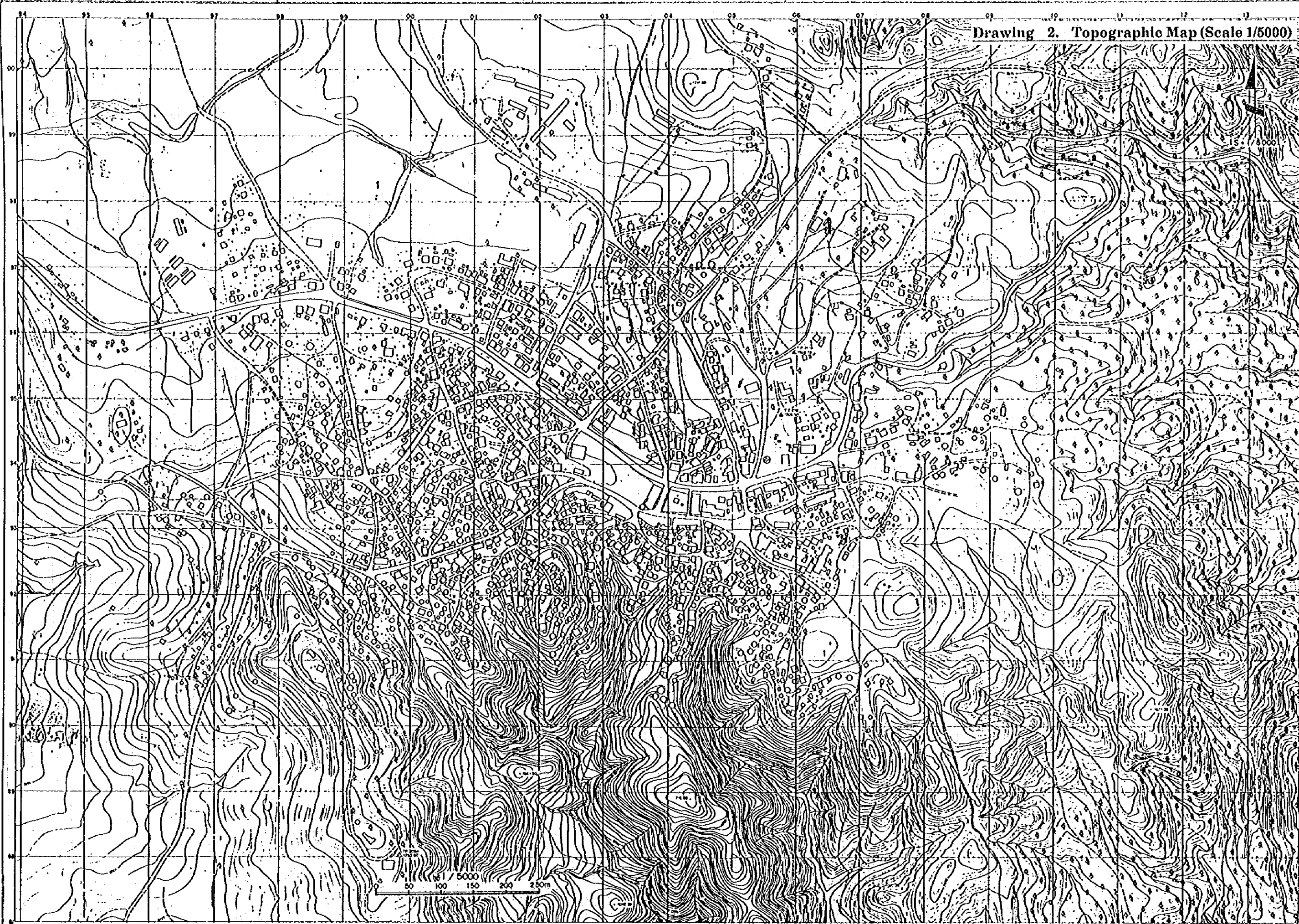
|                    |   |
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Drawing 1. Topographic Map (Scale 1/10000)

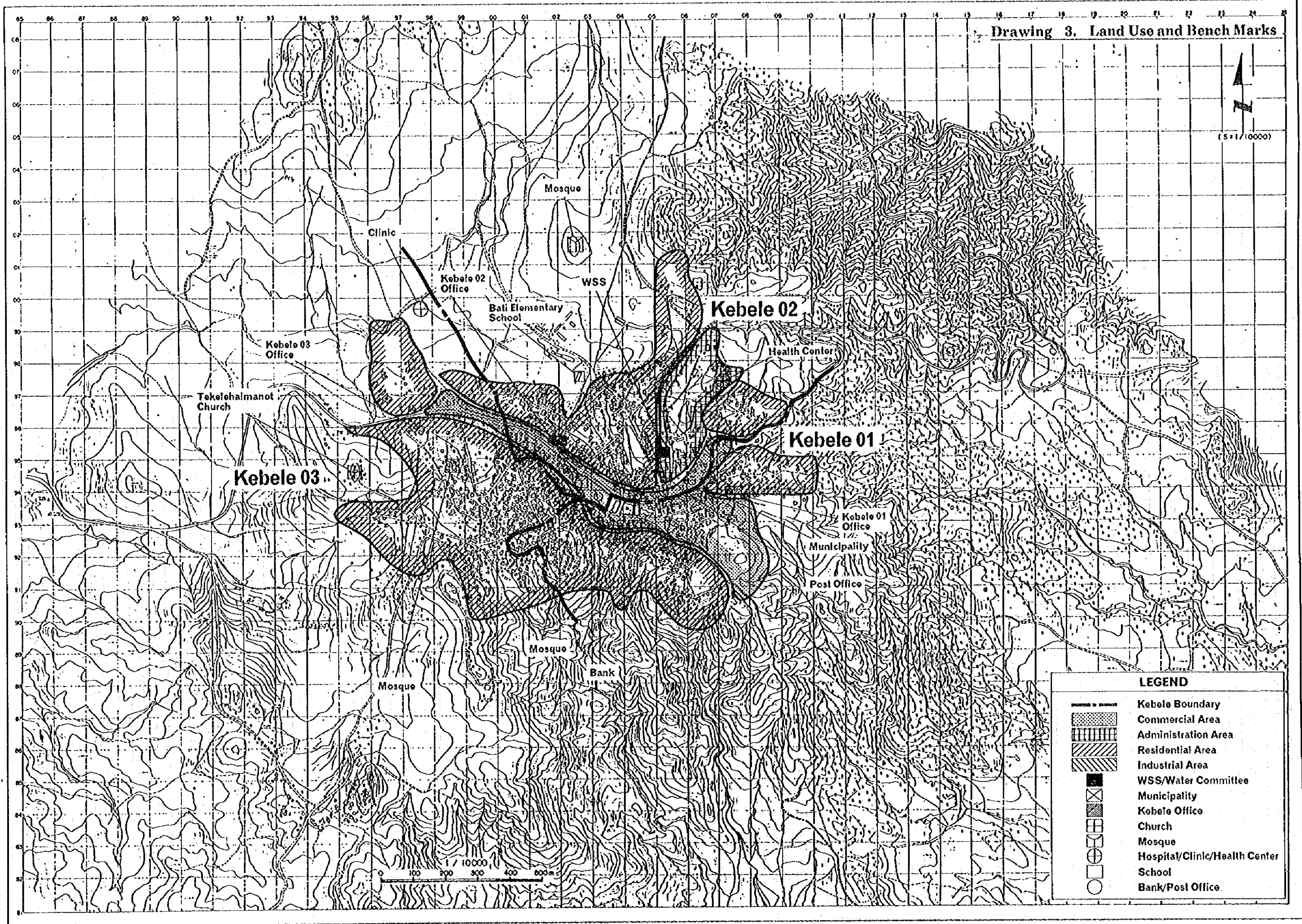




Drawing 2. Topographic Map (Scale 1/5000)



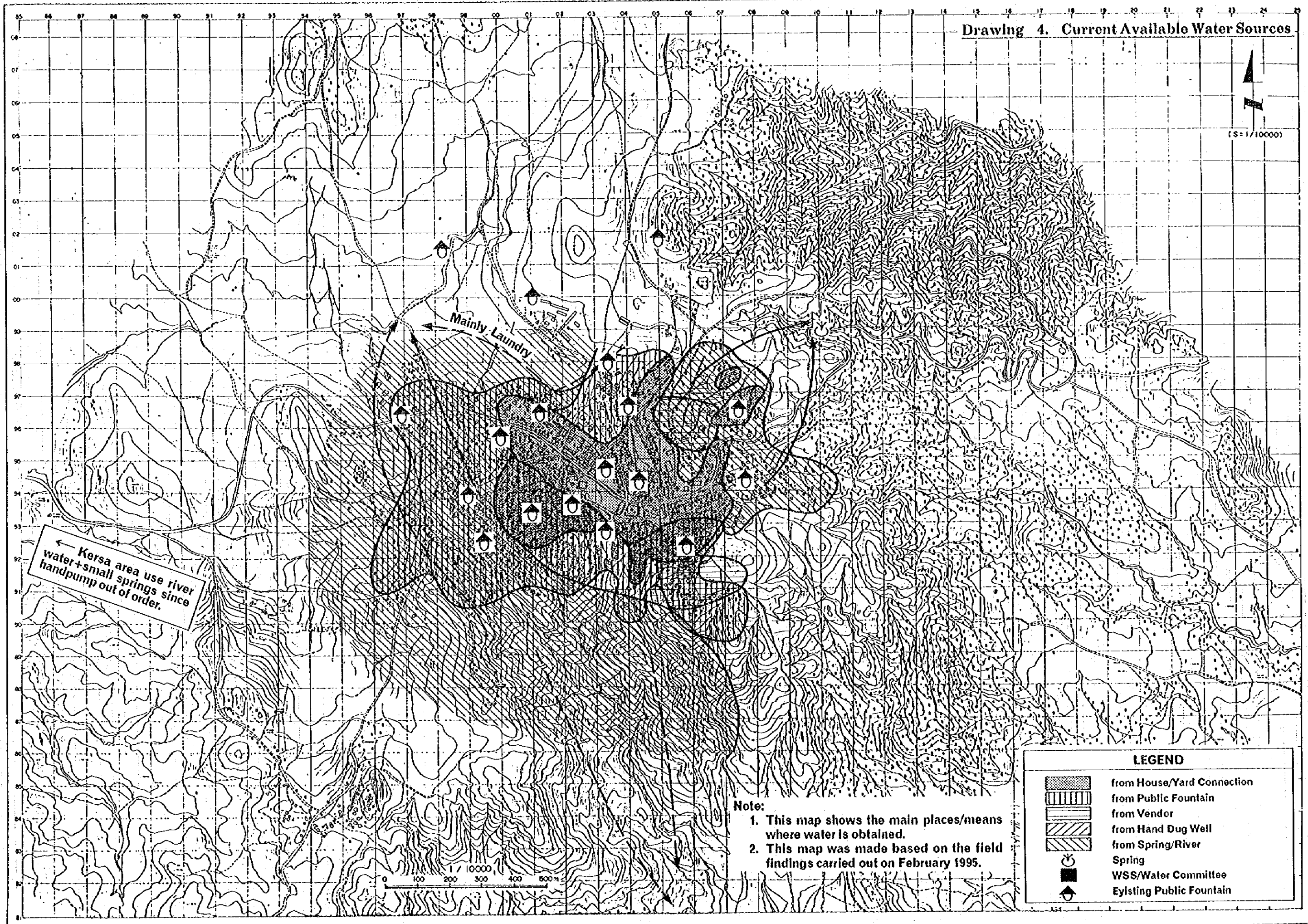
Drawing 3. Land Use and Bench Marks



(S=1/10000)

| 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



← Kersa area use river water + small springs since handpump out of order.

Mainly Laundry

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 February 1995.

**LEGEND**

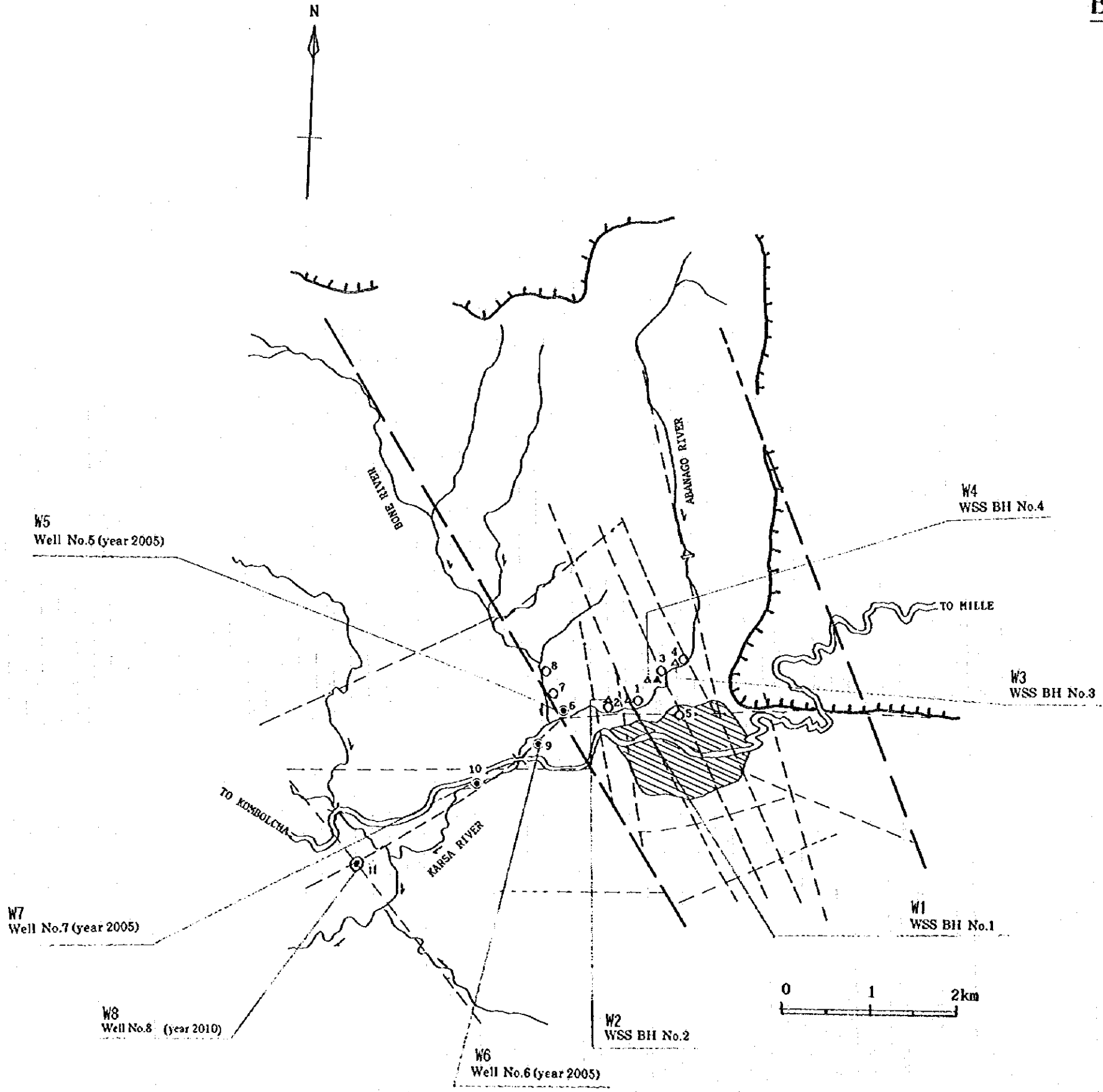
|  |                            |
|--|----------------------------|
|  | from House/Yard Connection |
|  | from Public Fountain       |
|  | from Vendor                |
|  | from Hand Dug Well         |
|  | from Spring/River          |
|  | Spring                     |
|  | WSS/Water Committee        |
|  | Eyisting Public Fountain   |

Drawing 5. Plan of Proposed Water Sources

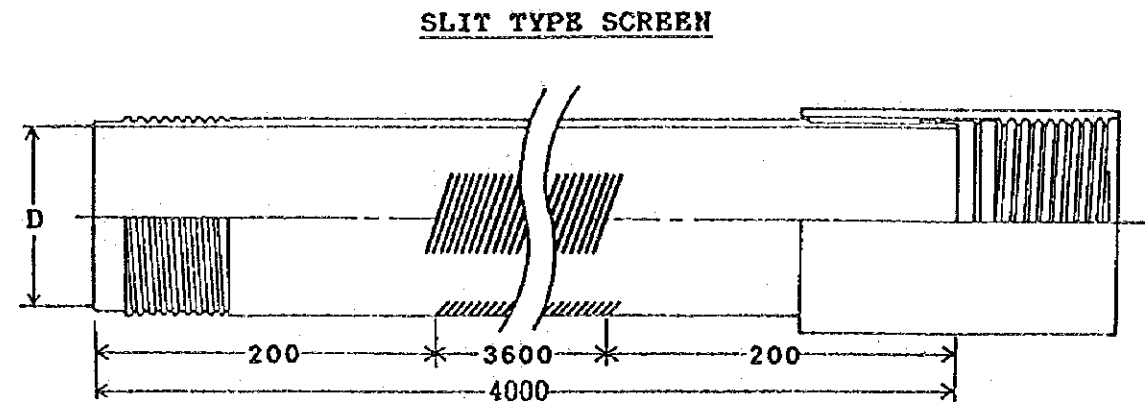
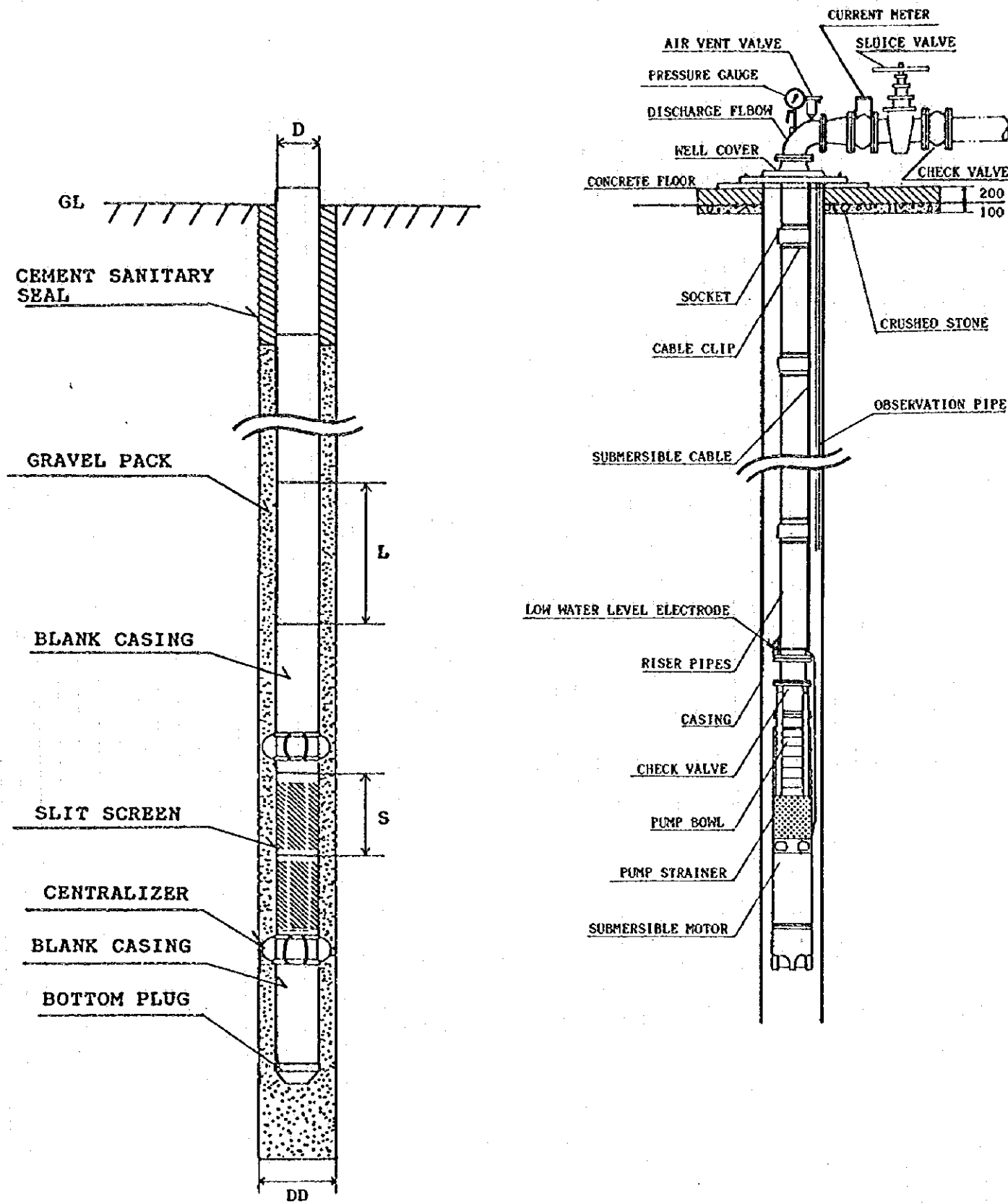
**BATI**

**LEGEND**

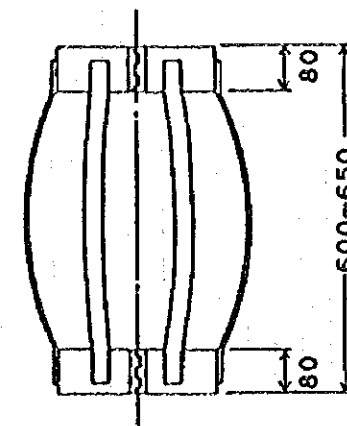
- O VES Stations
- ⊙ Proposed Drilling site
- △ Existing Borehole
- △ Abandoned Borehole
- Road
- River
- - - Major Lineament
- - - Minor Lineament
- Dam site
- Escarpment
- ▨ Town area



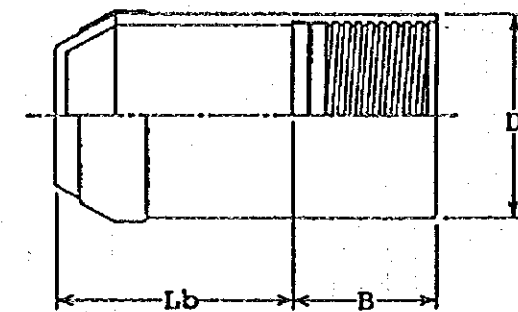
**Drawing 6. Layout of Proposed Deep Well**



**CENTRALIZER**



**BOTTOM PLUG**



**Dimension**

(Unit: mm)

| Inner Diameter | Drilling Diameter | Blank Pipe | Diagonal Slit Screen |            | Bottom Plug |     |
|----------------|-------------------|------------|----------------------|------------|-------------|-----|
|                |                   |            | S                    |            | Lb          | B   |
| D              | DD                | L          | S                    |            | Lb          | B   |
| 150            | 250               | 6,000      | 4,000                | Approx 12% | 160         | 110 |
| 200            | 300               |            |                      |            |             |     |

**Material**

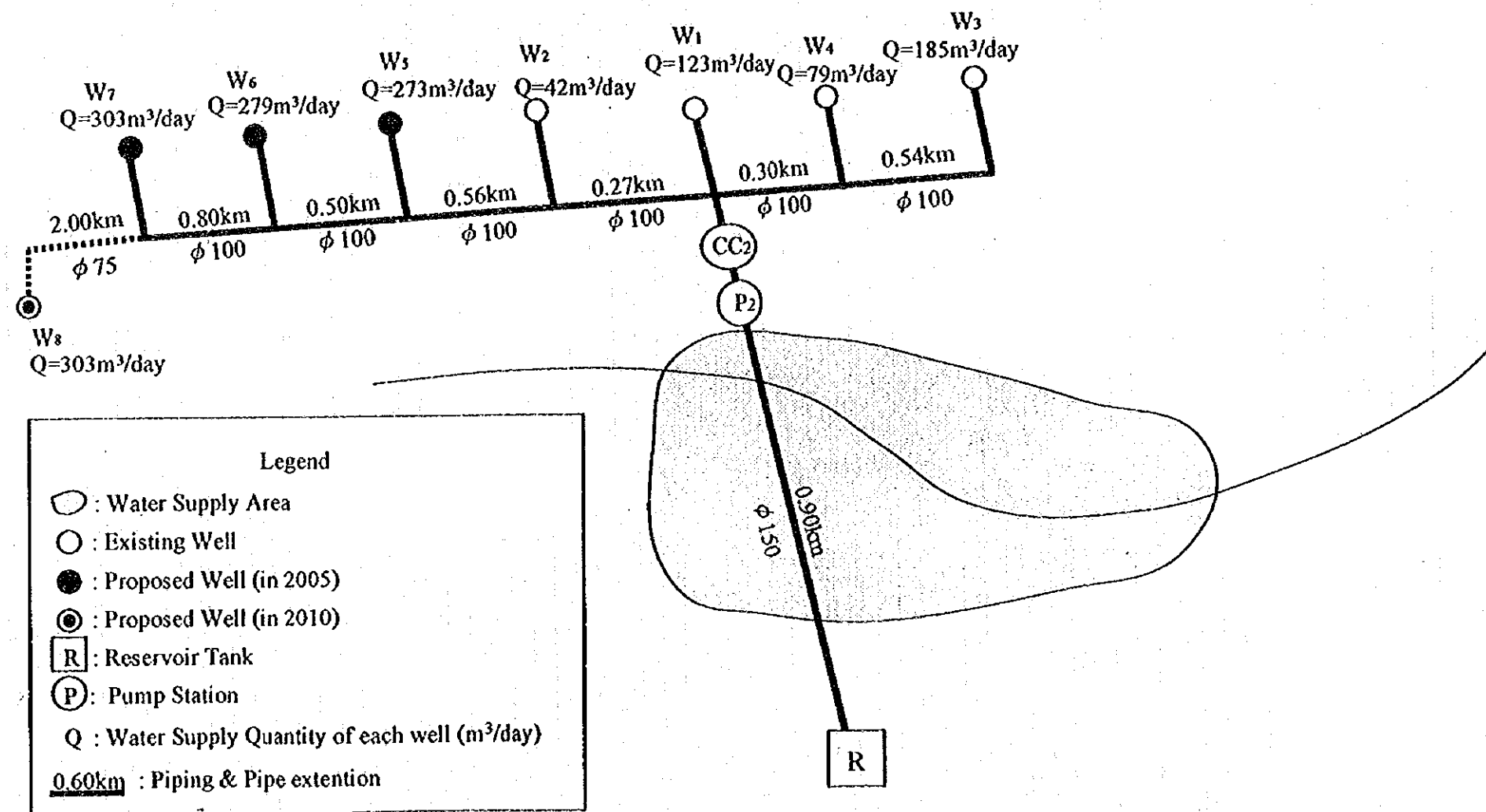
- BLANK PIPE : FRP
- SCREEN : FRP
- BOTTOM PLUG : FRP

**Total Water Demand in Target Years (m<sup>3</sup>/day)**

|              | 1995*      | 2000       | 2005       | 2010         |
|--------------|------------|------------|------------|--------------|
| Domestic     | 200        | 419        | 659        | 932          |
| Non Domestic | 32         | 81         | 102        | 128          |
| Losses       | 168        | 56         | 104        | 187          |
| <b>Total</b> | <b>400</b> | <b>556</b> | <b>864</b> | <b>1,247</b> |

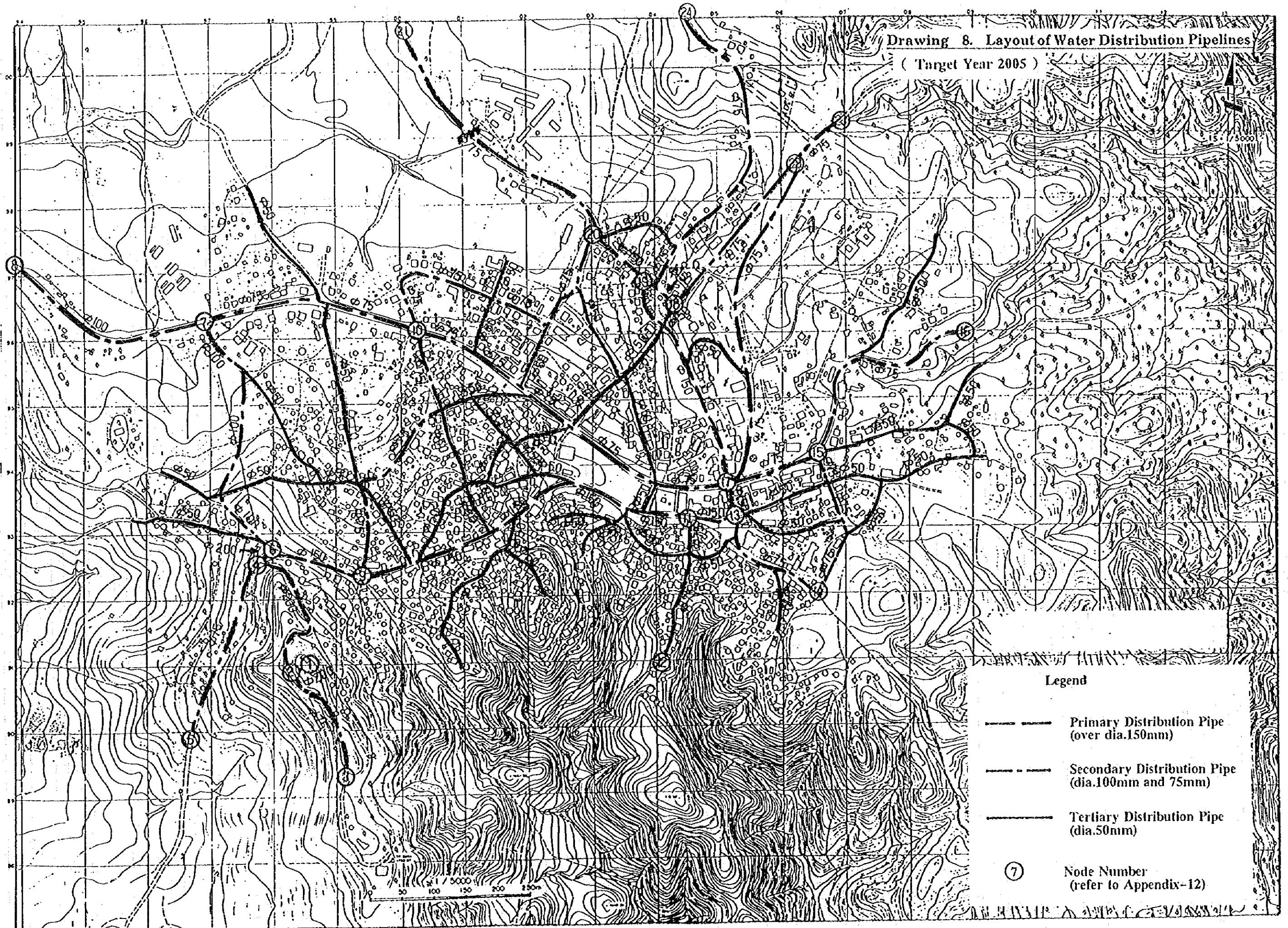
\*Actual consumption

General View of Wells & Water Conveyance Facility Plan  
( Bati )







Drawing 8. Layout of Water Distribution Pipelines

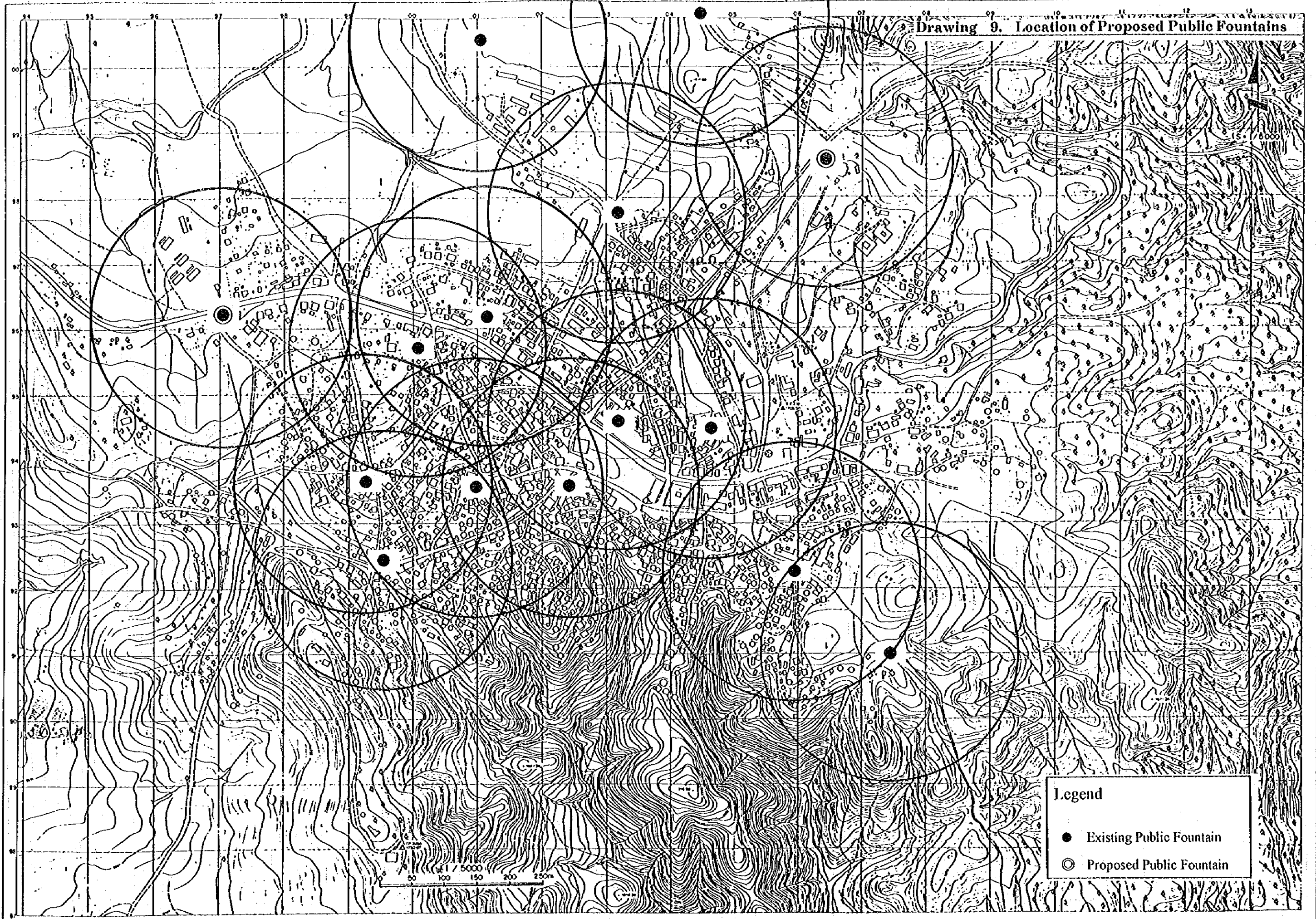
( Target Year 2005 )



Legend

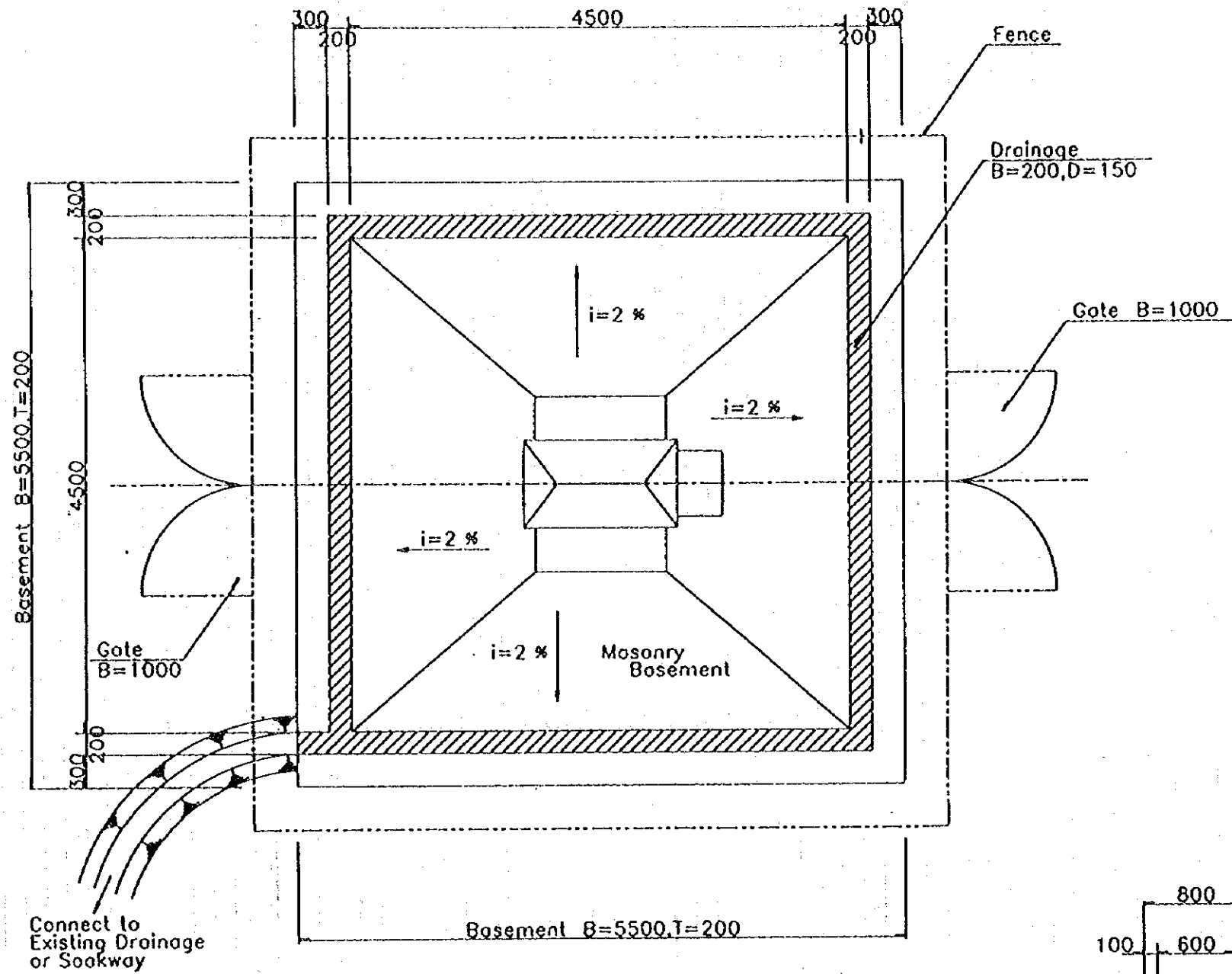
-  Primary Distribution Pipe (over dia.150mm)
-  Secondary Distribution Pipe (dia.100mm and 75mm)
-  Tertiary Distribution Pipe (dia.50mm)
-  Node Number (refer to Appendix-12)

Drawing 9. Location of Proposed Public Fountains

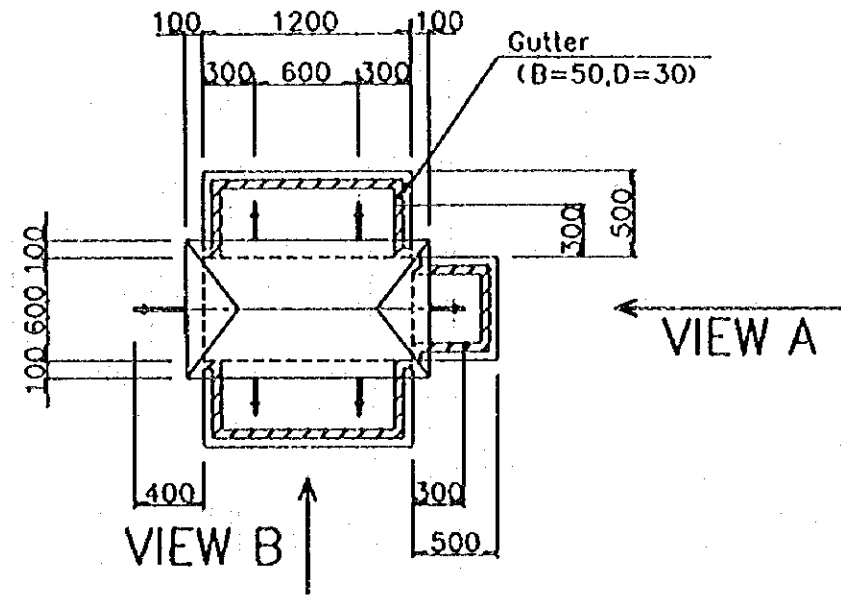


- Legend
- Existing Public Fountain
  - ⊙ Proposed Public Fountain



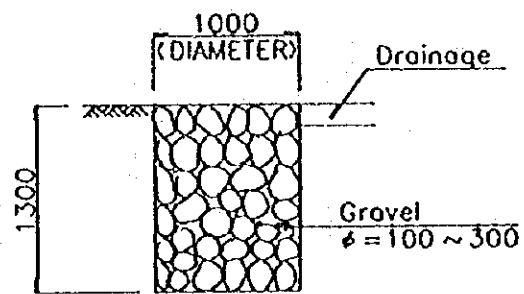


GENERAL PLAN

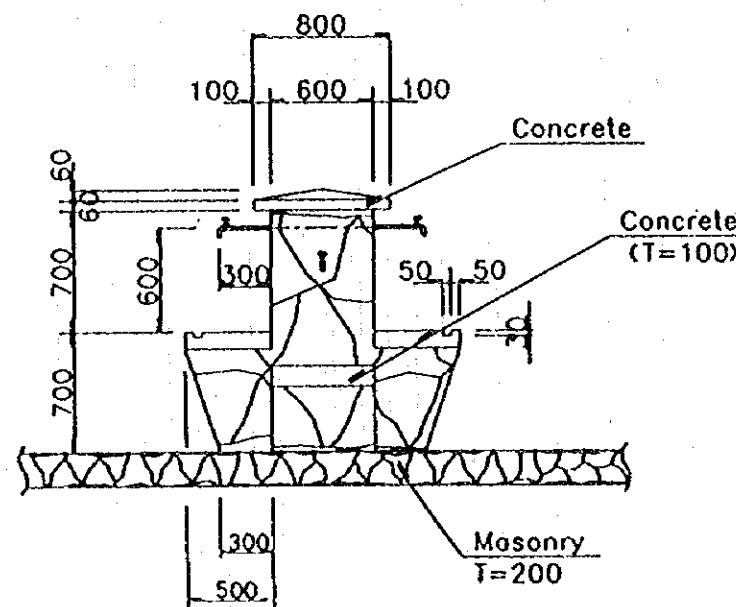


PLAN OF PUBLIC FOUNTAIN

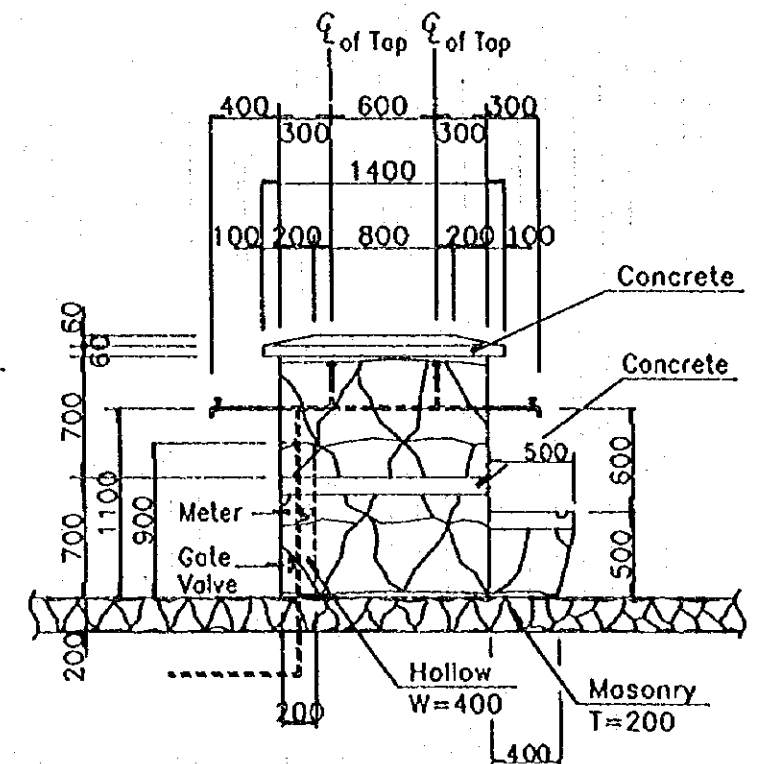
- Quantity:
- Concrete : 0.25 m<sup>3</sup>
  - Form-work : 0.66 m<sup>2</sup>
  - Masonry : 7.08 m<sup>3</sup>
  - Fence : 2 m X 20.4 m
  - Pipe : 6 m
  - Tap : 6 NOS
  - Meter : 1 NOS
  - Valve : 1 NOS
  - Excavation : 13 m<sup>3</sup>
  - Gravel : 1 m<sup>3</sup>



SOAKWAY

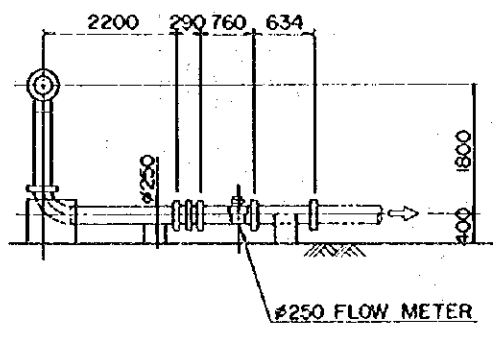
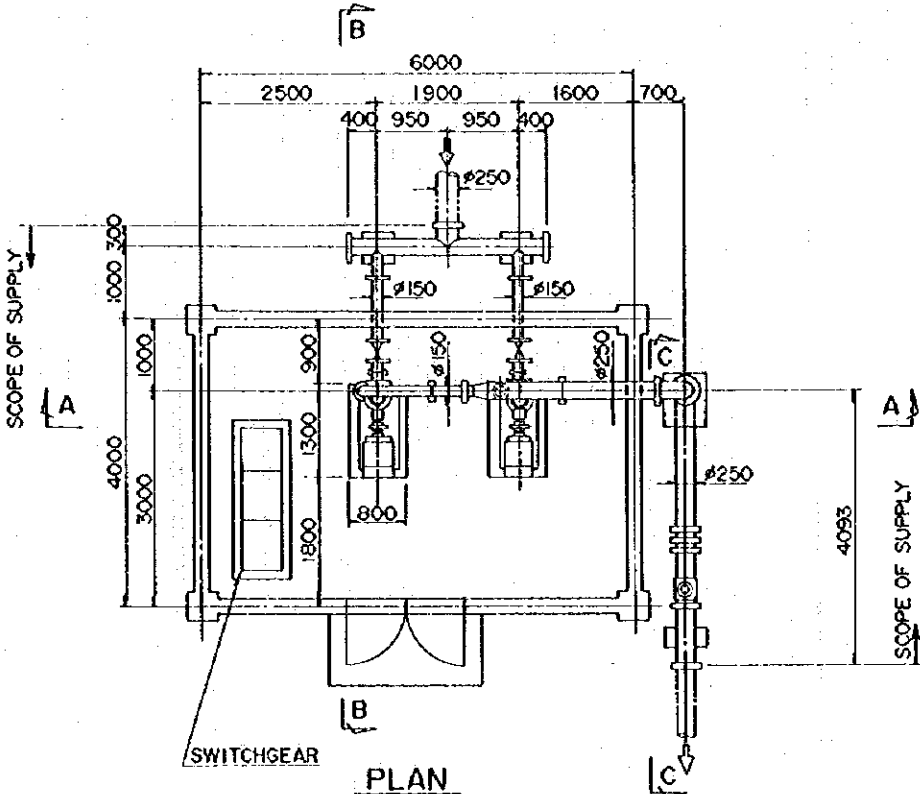


VIEW A

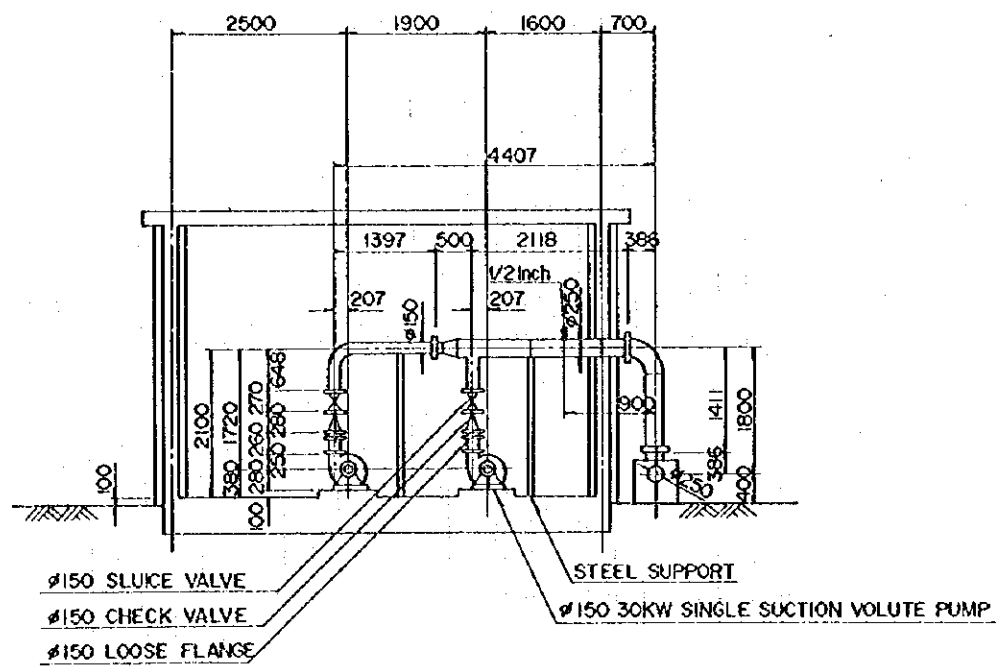


VIEW B

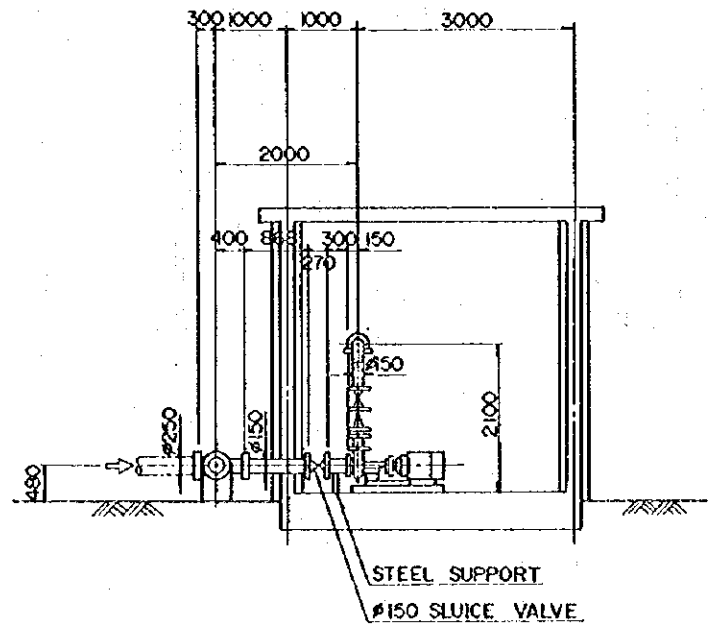
NOTE:  
1. All dimensions are shown in millimeter.



SECTION C-C



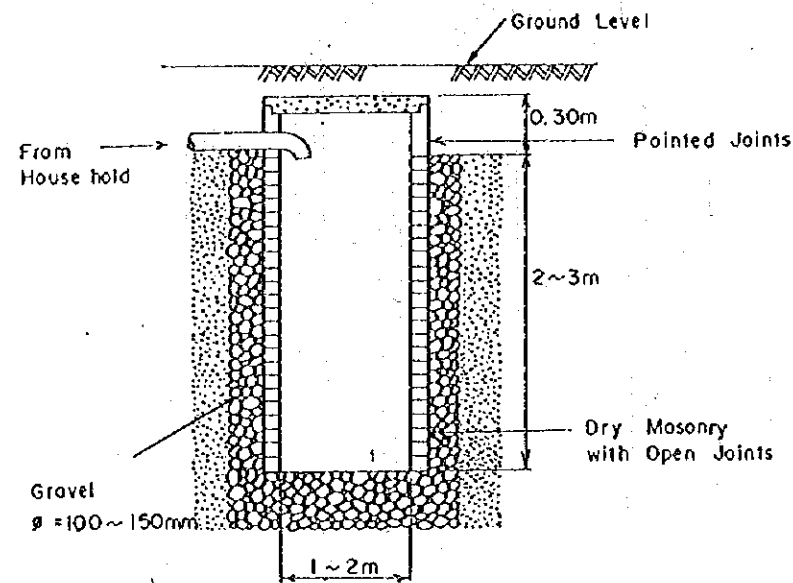
SECTION A-A



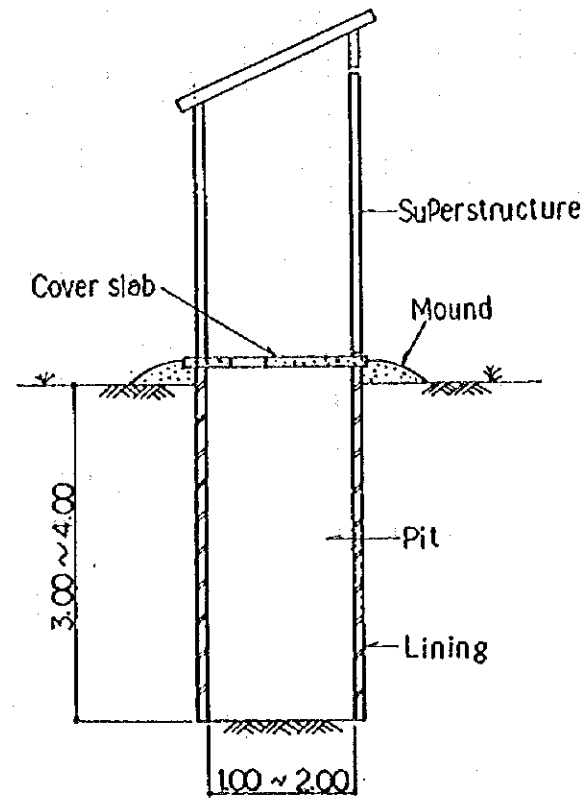
SECTION B-B

NOTE : unit is millimeter unless otherwise specified.

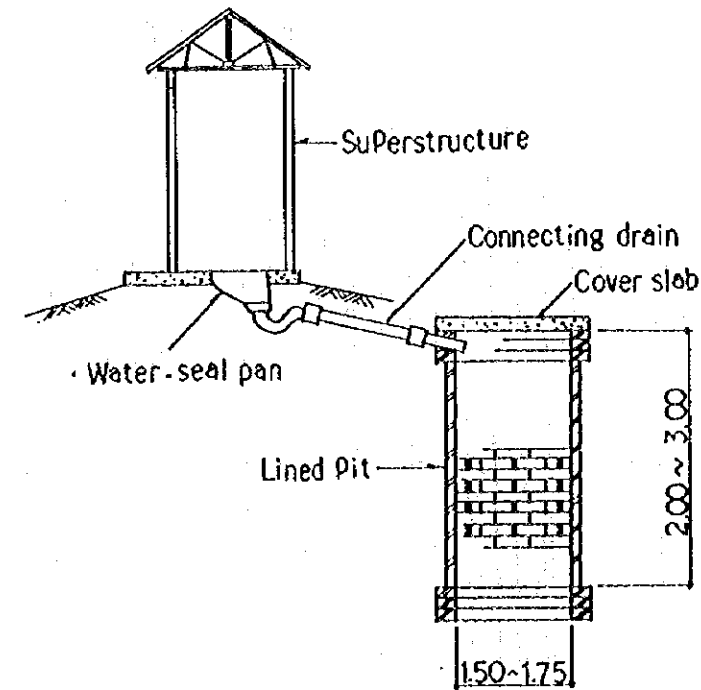
**Drawing 12. Layout of Household Waste Water Disposal Pit & Toilet**



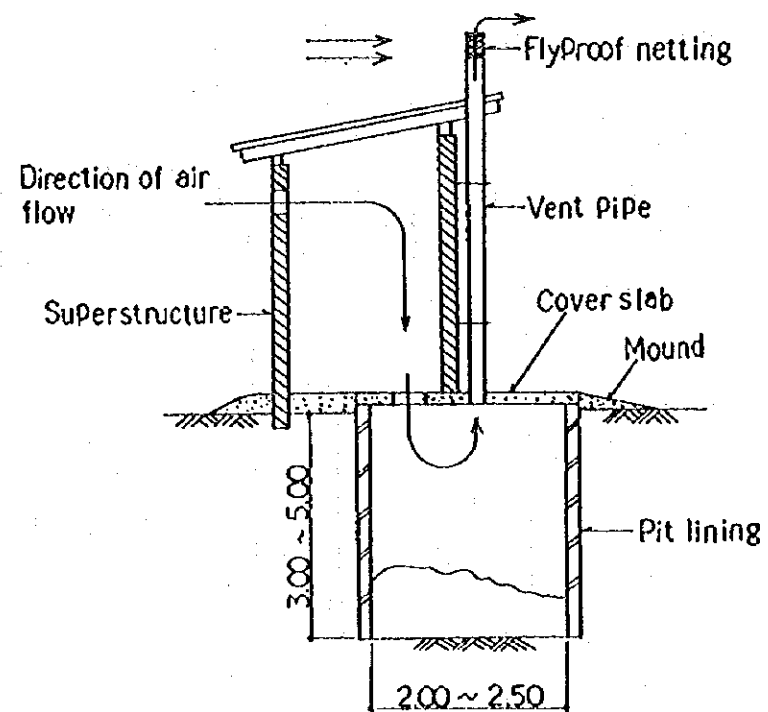
Waste Water Disposal Pit



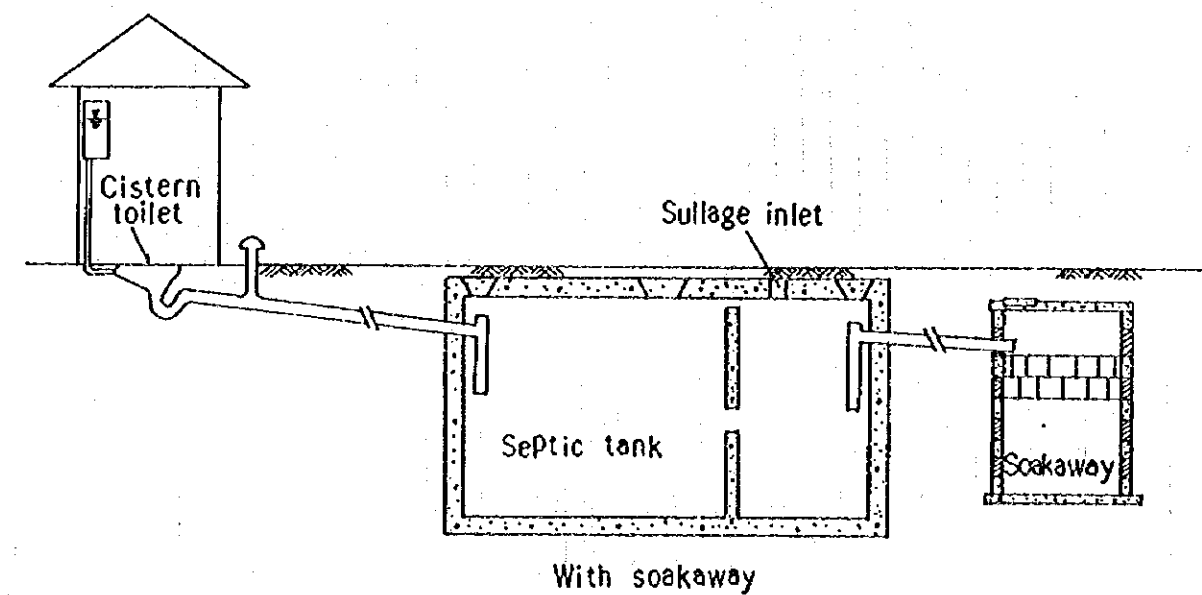
Improved Traditional Pit Latrine



Pour-flush latrine and Soakaway Pit

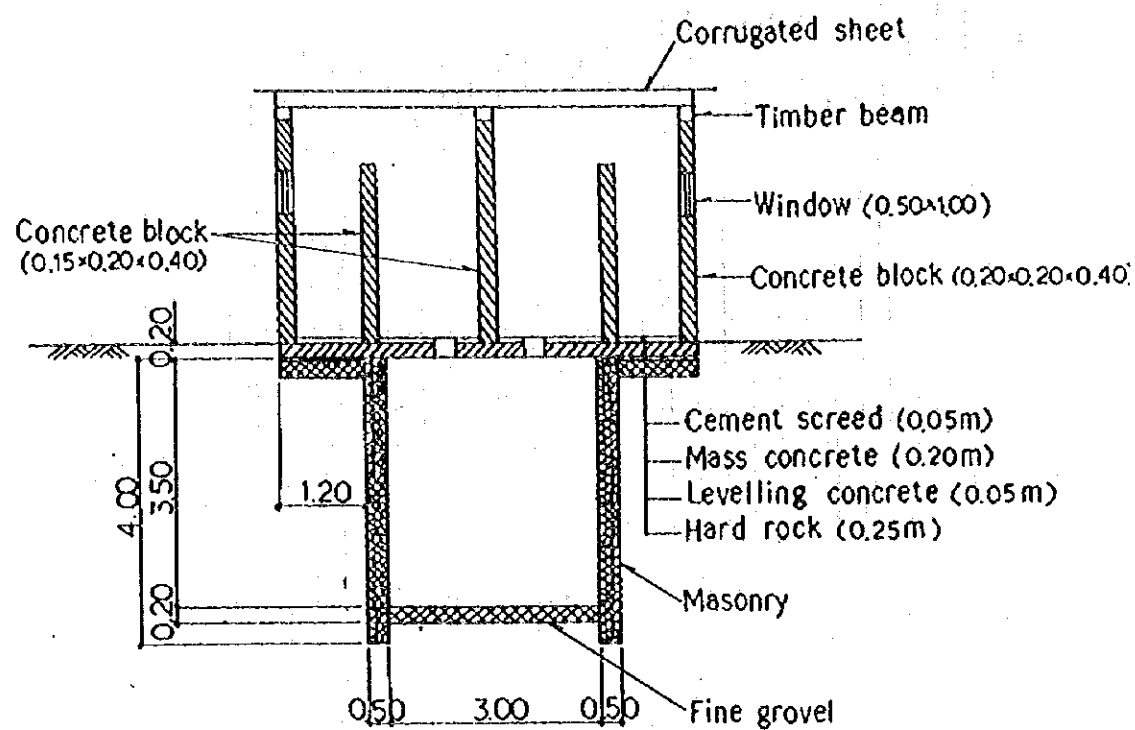


VIP Latrine

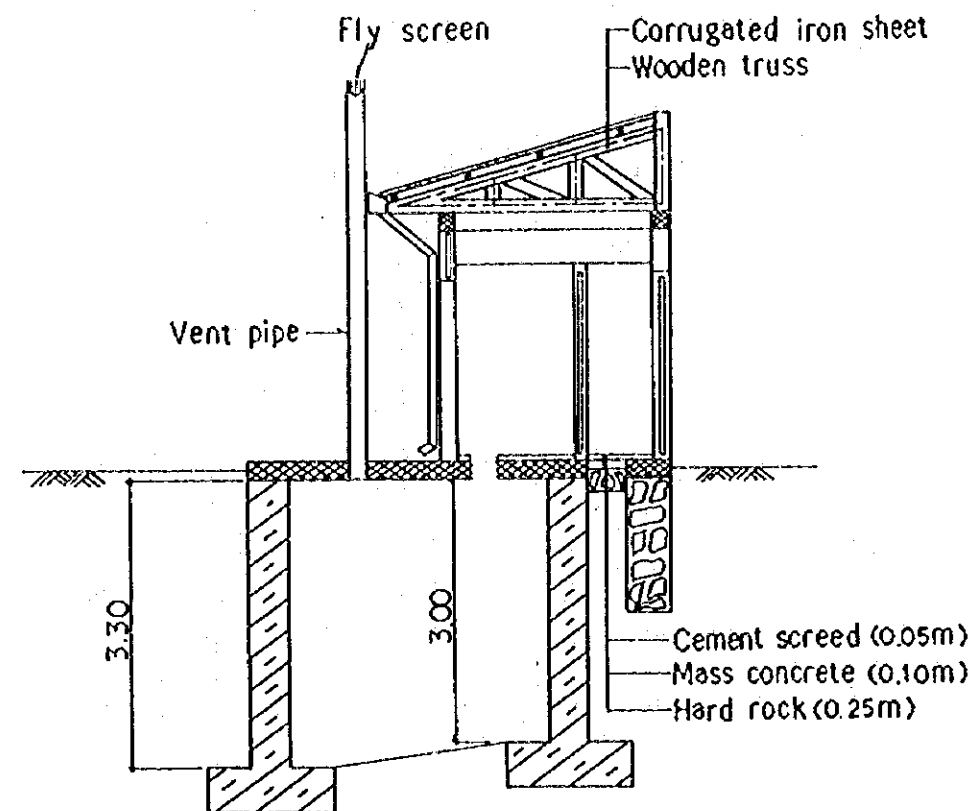


Cistern-flush Toilet and Septic Tank

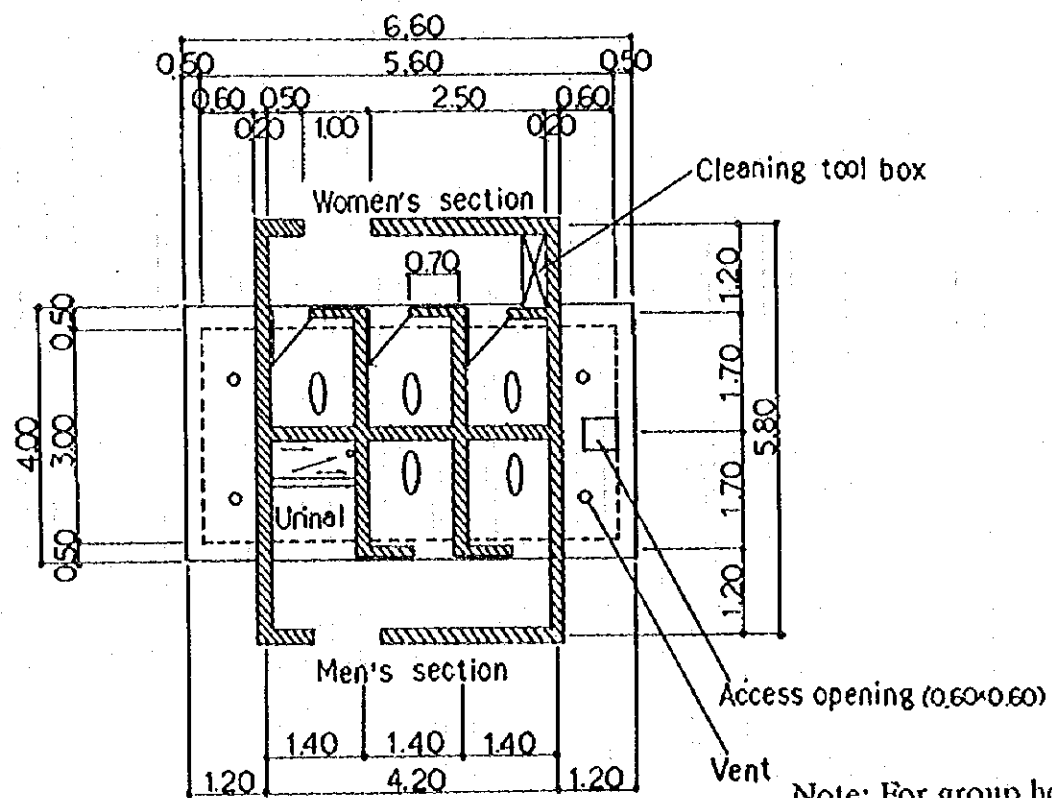
**Drawing 13. Layout of Community Type Toilet and VIP Public Type Toilet**



**Typical Section**

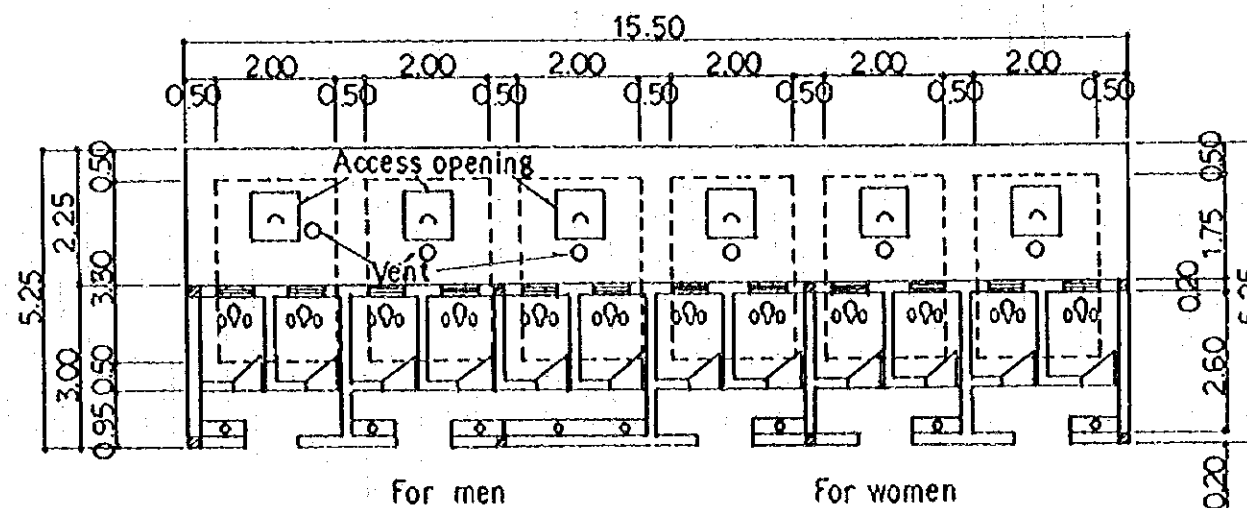


**Typical Section**



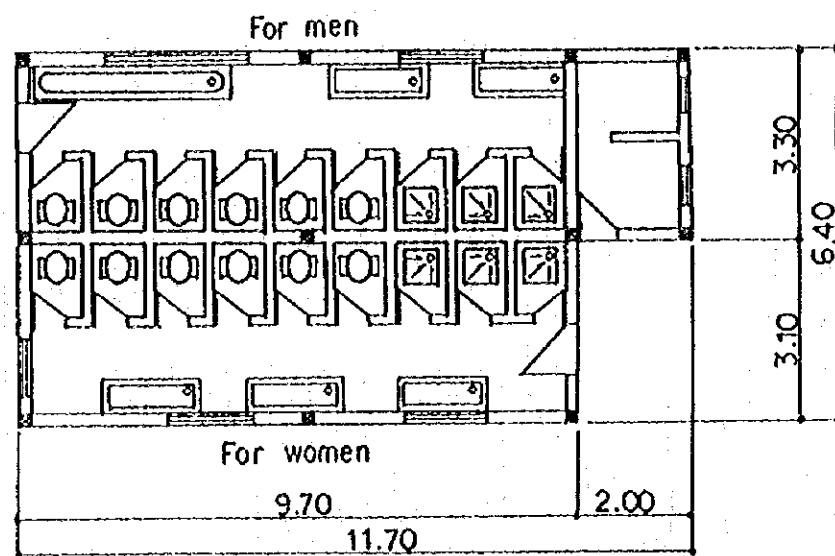
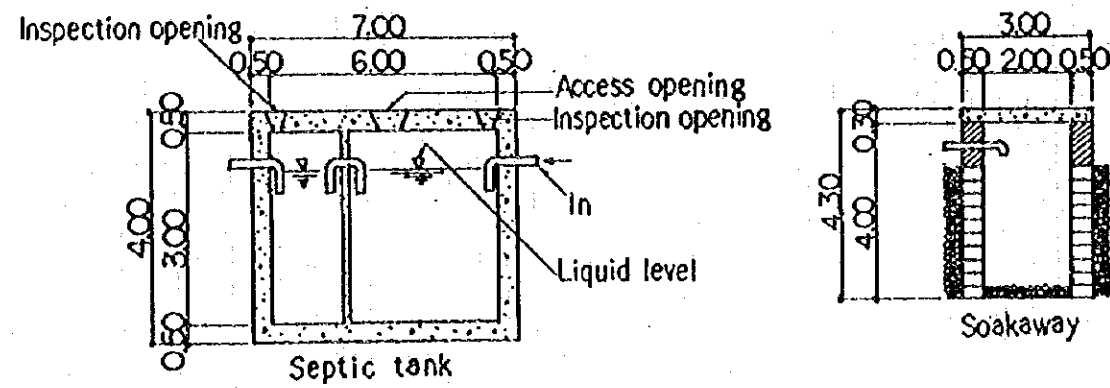
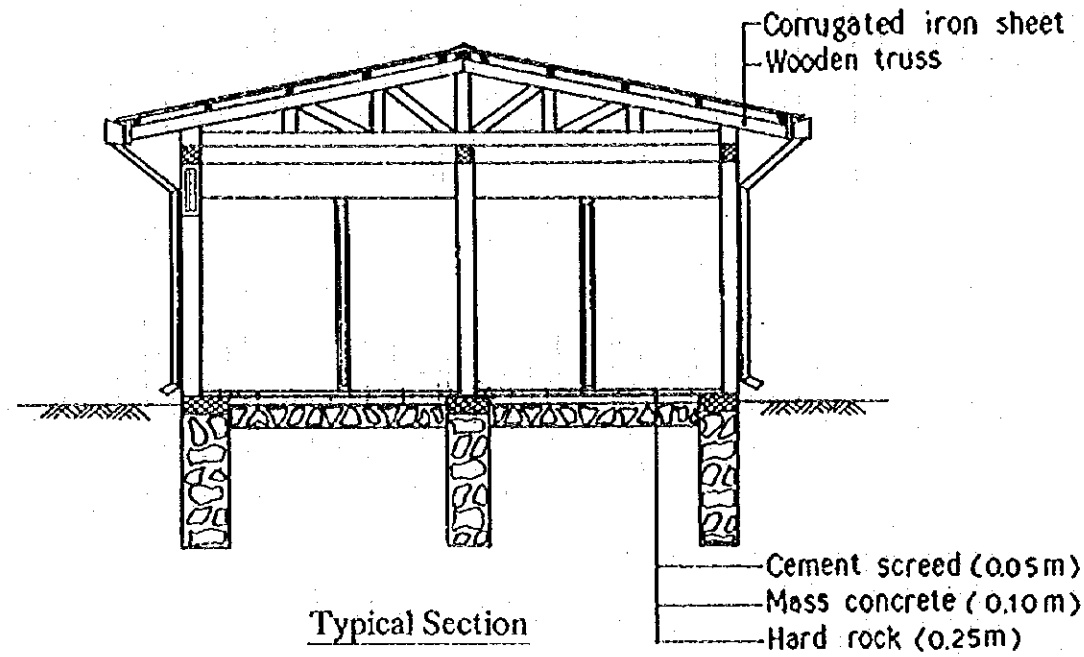
**VIP Latrine (Community Type)**

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

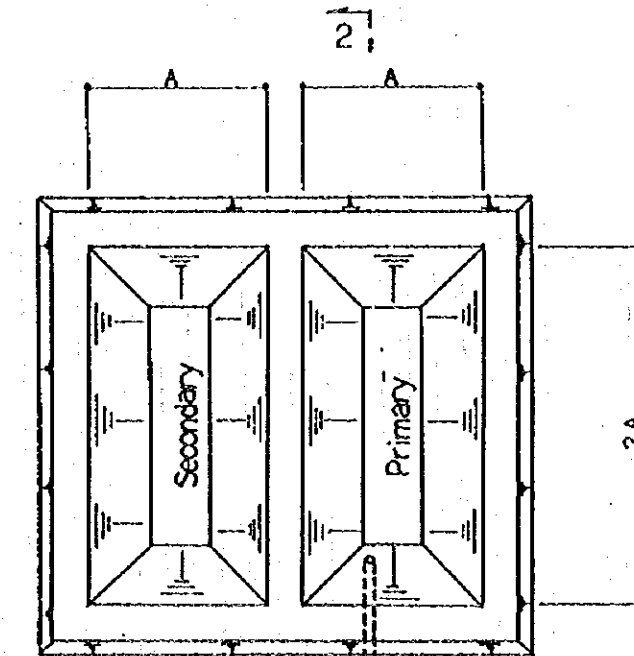
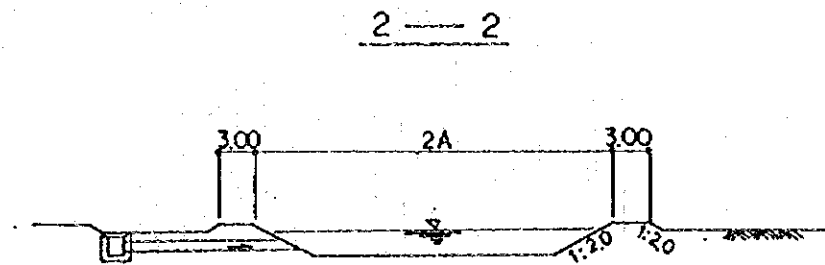
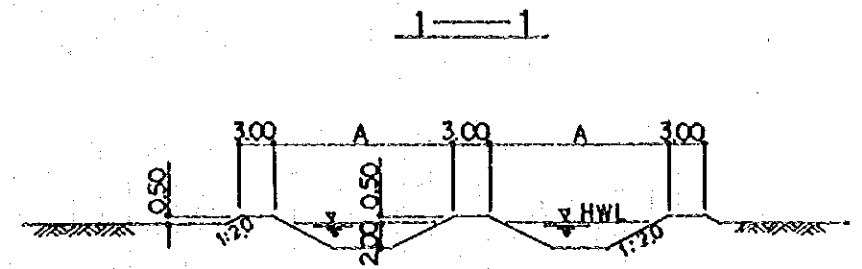


**VIP Latrine (Public Type)**

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



Pour-flush Latrine with Shower (Public Type)



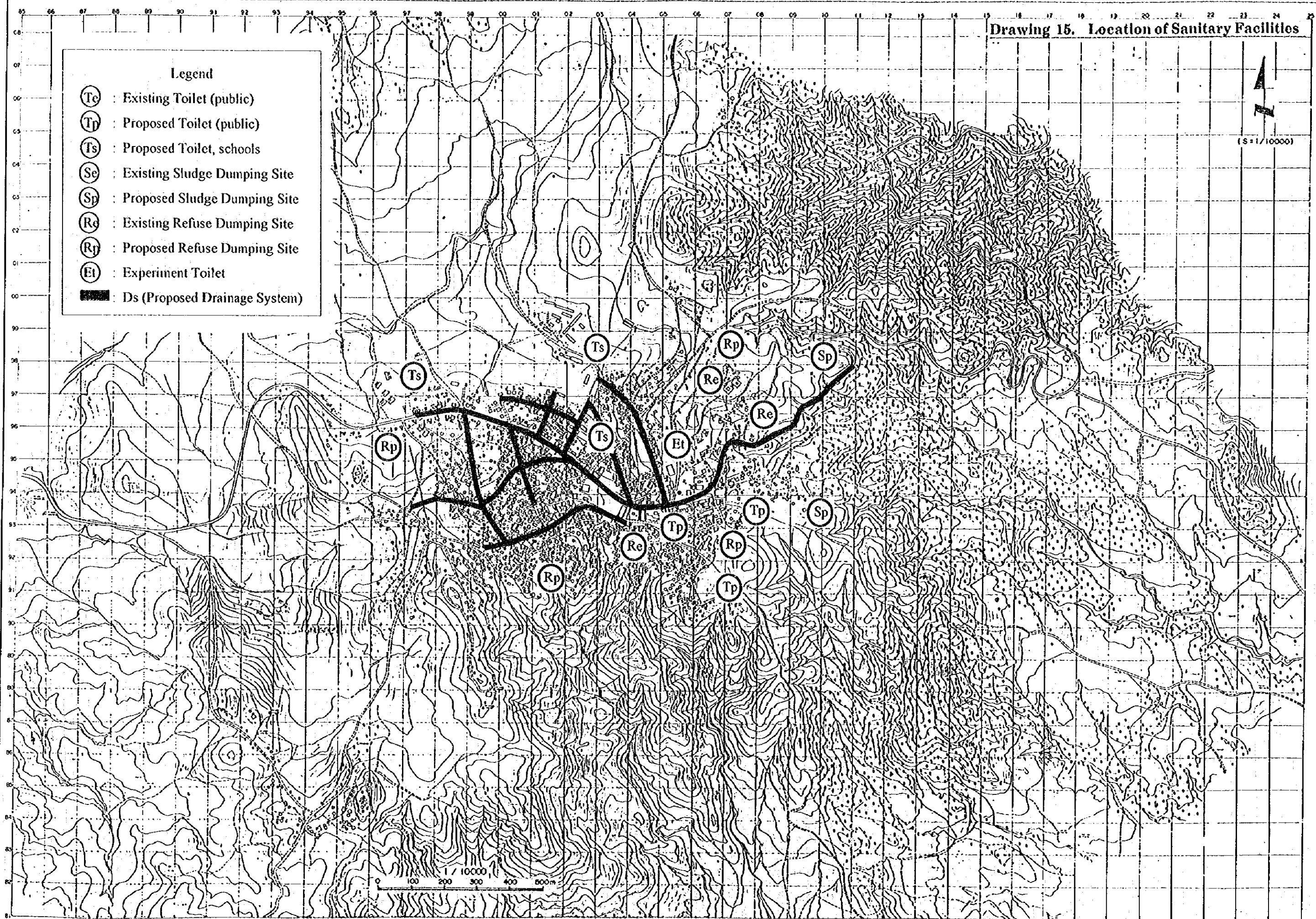
| Urban Center | Population | Sludge Volume               | Treat Volume          | Size of Disposal Pit |       |
|--------------|------------|-----------------------------|-----------------------|----------------------|-------|
|              |            |                             |                       | 2A                   | Depth |
| Batti        | 18,400     | 0.2m <sup>3</sup> /Man/Year | 70% (m <sup>3</sup> ) | 36m                  | 2m    |

Sullage Disposal Pit

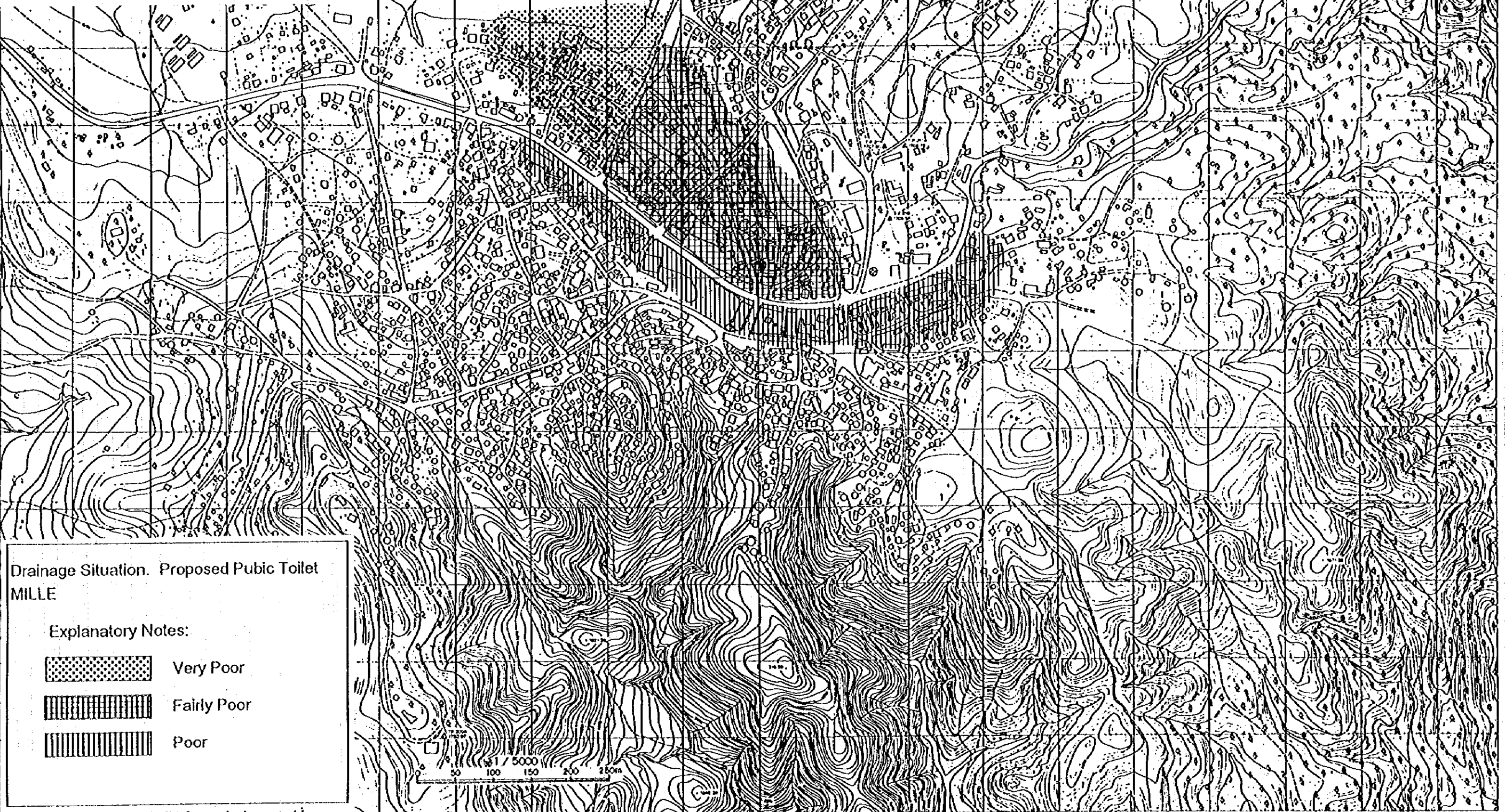
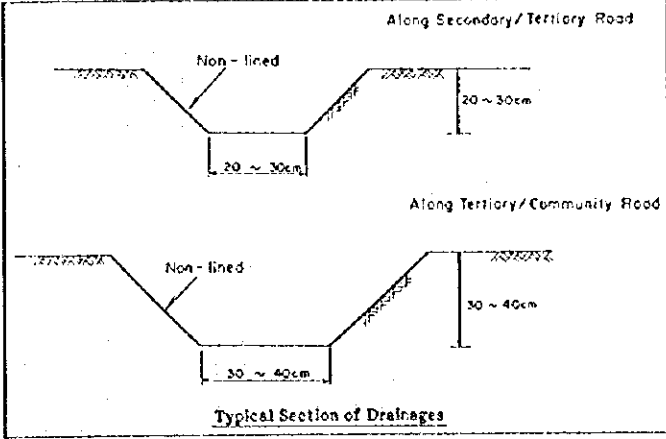
Drawing 15. Location of Sanitary Facilities

(S=1/10000)

- 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
  - (Rp) : Proposed Refuse Dumping Site
  - (Et) : Experiment Toilet
  - : Ds (Proposed Drainage System)






Drawing 16. Current Drainage Condition and Improvement Plan



Drainage Situation. Proposed Public Toilet MILLE

Explanatory Notes:

-  Very Poor
-  Fairly Poor
-  Poor









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