

#### 4.3.4 Basic Design Drawings

##### (1) Outline of Buildings

- 1) Name of the Project : Project for Improvement of the Institute of Human Settlements in the Republic of Indonesia
- 2) Location : Kampung Panyawungan, Blok Jeruk Mipis, Desa Cileunyi Wetan, Kecamatan Ujung Berung, Kabupaten Bandung, Propinsi Jawa Barat
- 3) Site Area : About 9.36 ha
- 4) Building Area : 9,979 sq.m

##### 5) Total Floor Area

Main Building	: 6,245 sq.m
Structure/Earthquake Laboratory	: 1,776 sq.m
Building Material Laboratory	: 1,052 sq.m
Fire Testing Laboratory	: 740 sq.m
Sanitary Engineering Laboratory	: 819 sq.m
Workshop	: 573 sq.m
Utility Building	: 293 sq.m
Guardhouse	: 23 sq.m

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Total	11,521 sq.m
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##### 6) Structure

Main Building	: Two stories, reinforced concrete structure
Structure/Earthquake Laboratory	: One story (in part two stories), steel structure
Building Material Laboratory	: One story, steel structure
Fire Testing Laboratory	: One story (in part two stories), steel structure
Sanitary Engineering Laboratory	: One story (in part two stories), steel structure

Workshop	:	One story, steel structure
Utility Building	:	One story, steel structure
Guardhouse	:	One story, reinforced concrete structure

7) Height

Main Building	Eaves height	:	8,650 mm
Structure/Earthquake Laboratory	Eaves height	:	16,100 mm
Building Material Laboratory	Eaves height	:	5,300 mm
Fire Testing Laboratory	Eaves height	:	8,900 mm
Sanitary Engineering Laboratory	Eaves height	:	8,900 mm
Workshop	Eaves height	:	5,300 mm
Utility Building	Eaves height	:	4,300 mm
Guardhouse	Eaves height	:	3,100 mm

8) Principal Exterior Finish

Main Building & Guardhouse	Roof	:	Clay tile roofing, in part urethane resin waterproofing
	Wall	:	Sprayed resin on exposed concrete
	Doors & Windows	:	Wood and aluminum sashes in part steel
Laboratories and Workshop	Roof	:	Slate roofing
	Wall	:	Corrugated slate
	Doors & Windows	:	Aluminum and steel sashes, in part wirenet

Utility Building	Roof	: Urethane resin waterproofing
	Wall	: Sprayed resin on exposed concrete
	Doors & Windows	: Aluminum and steel sashes

(2) Basic Design Drawings

Site Plan (Fig. 4.18)

Main Building  
1st Floor Plan (Fig. 4.19)

Main Building  
2nd Floor Plan (Fig. 4.20)

Main Building  
Roof Plan (Fig. 4.21)

Main Building  
Elevations (Fig. 4.22)

Main Building  
Sections (Fig. 4.23)

Structure/Earthquake Laboratory  
Plans, Elevations and Sections (Fig. 4.24)

Building Material Laboratory  
Plans, Elevations and Sections (Fig. 4.25)

Fire Testing Laboratory  
Plans, Elevations and Sections (Fig. 4.26)

Sanitary Engineering Laboratory  
Plans, Elevations and Sections (Fig. 4.27)

Workshop, Utility Building, and Guardhouse  
Plans, Elevations and Sections (Fig. 4.28)

Utility Building, Guardhouse, Elevated Water Tank, and Connecting Corridor  
Plans, Elevations and Sections (Fig. 4.29)

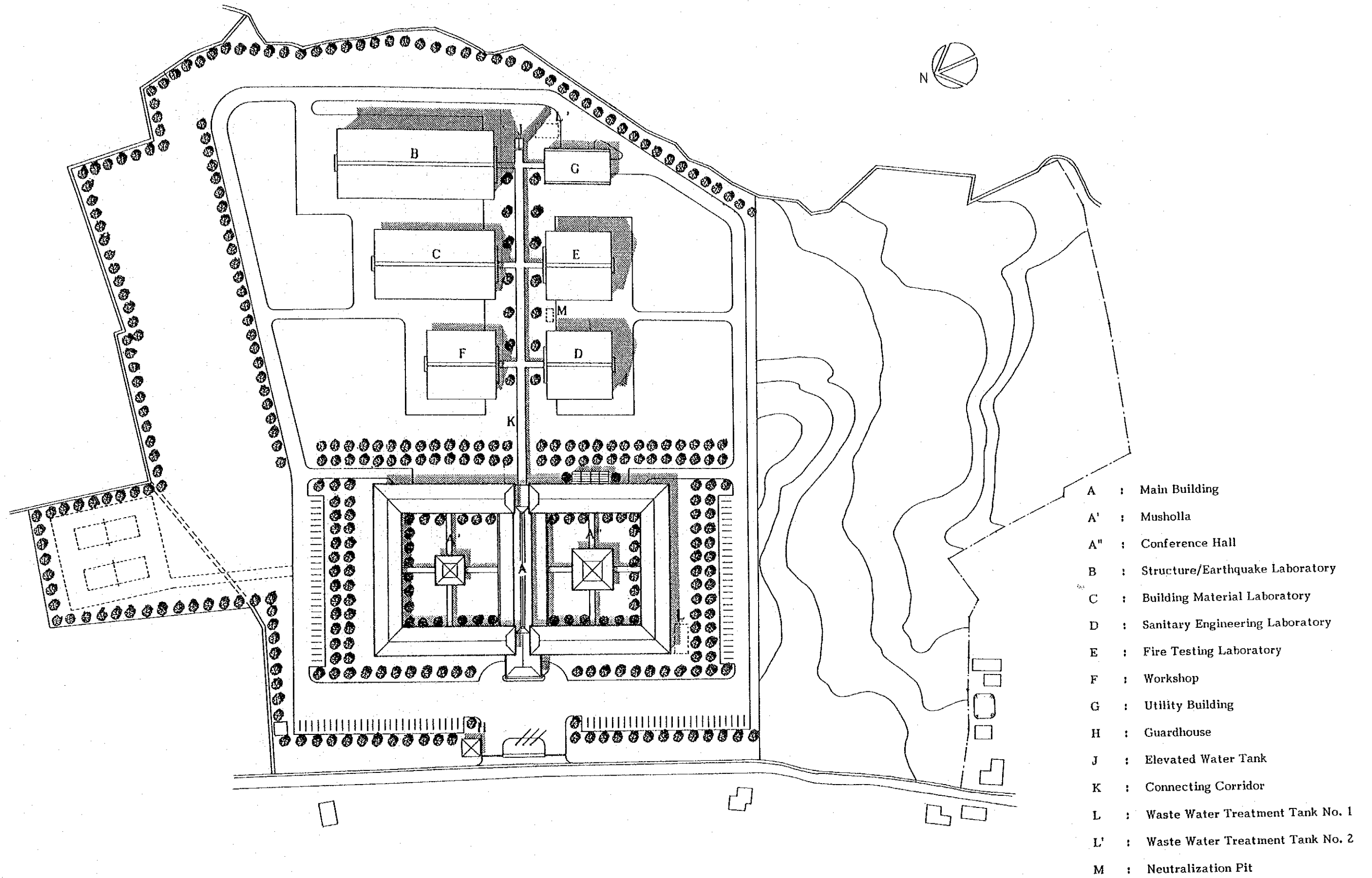
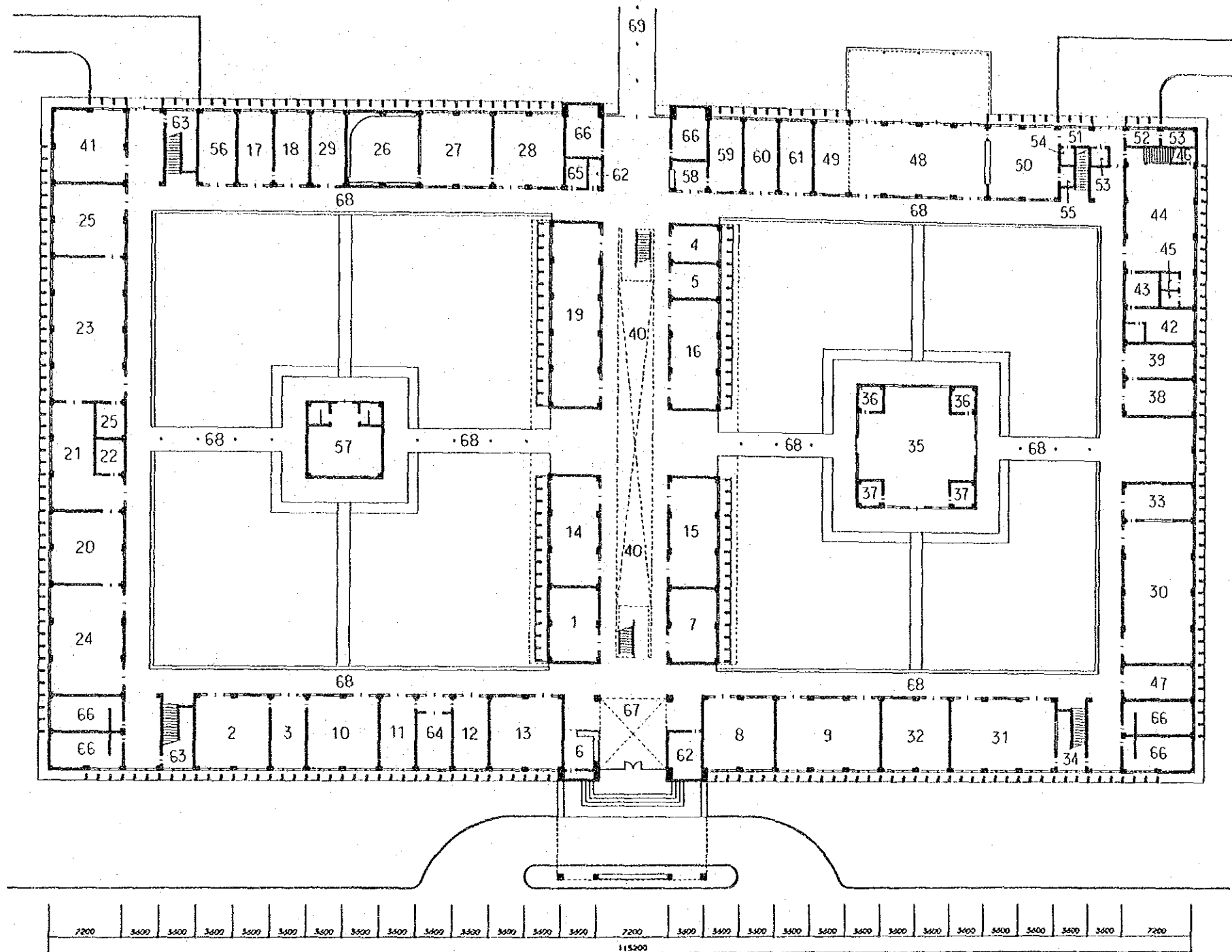
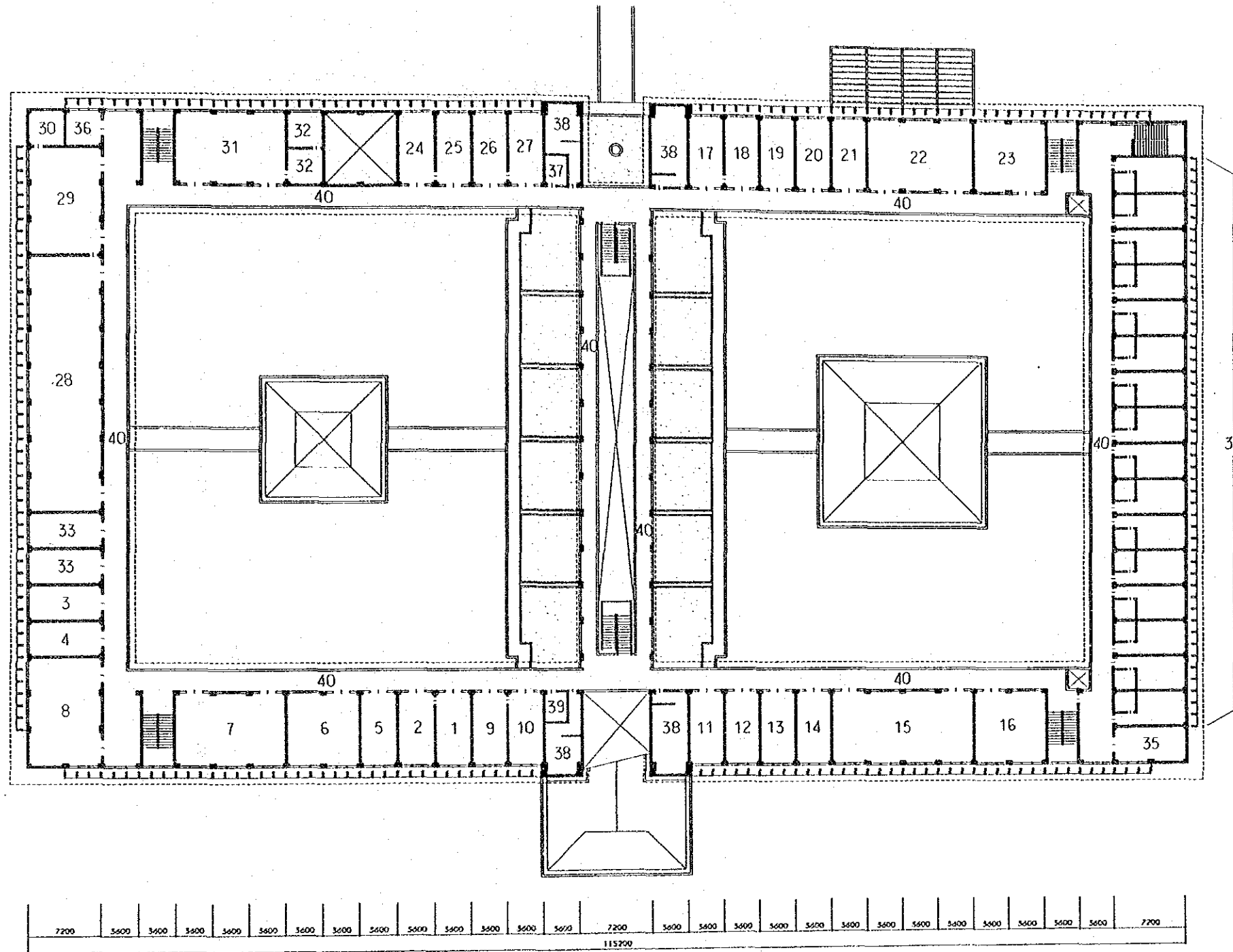


Fig. 4.18 Site Plan



- 1 - Director General's Room
- 2 - Director's Room
- 3 - Secretary's Room
- 4 - Foundation
- 5 - Ladies Organization
- 6 - Information
- 7 - Meeting Room No. 1
- 8 - Meeting Room No. 2
- 9 - Meeting Room No. 3
- 10 - Reception Room
- 11 - Head's Room
- 12 - Clerk's Room
- 13 - Planning Sec. Room
- 14 - Finance Sec. Room
- 15 - Inventory Sec. Room
- 16 - Personnel Sec. Room
- 17 - Head's Room
- 18 - Clerk's Room
- 19 - Staff Room
- 20 - Printing Preparation Room
- 21 - Film Preparation Room
- 22 - Darkroom
- 23 - Printing Room
- 24 - Staff Room (Printing)
- 25 - Storage for Printing Materials
- 26 - Studio
- 27 - Preparation Room
- 28 - Staff Room (Studio)
- 29 - Mechanical Room
- 30 - Seminar Room No. 1
- 31 - Seminar Room No. 2
- 32 - Seminar Room No. 3
- 33 - Preparation Room No. 1
- 34 - Preparation Room No. 2
- 35 - Conference Hall
- 36 - Control Room
- 37 - Storage for Chalks
- 38 - Seminar Office
- 39 - Lecturer's Room
- 40 - Exhibition Corner
- 41 - Exhibition Preparation Room
- 42 - Overnight Duty Room
- 43 - Office
- 44 - Guest Lounge
- 45 - Toilet
- 46 - Storage
- 47 - Boiler Room
- 48 - Dining Room
- 49 - Stand
- 50 - Kitchen
- 51 - Anteroom for Kitchen
- 52 - Office (Kitchen)
- 53 - Locker Room
- 54 - Toilet
- 55 - Storage
- 56 - Archives
- 57 - Musholla
- 58 - Alarm Panel Room
- 59 - Overnight Duty Room
- 60 - Driver's Room
- 61 - Janitor's Room
- 62 - Storage
- 63 - Storage for Chalks
- 64 - Copy Room
- 65 - Kitchenette
- 66 - Toilet
- 67 - Entrance Hall
- 68 - Corridor
- 69 - Connecting Corridor

Fig. 4.19 First Floor Plan of Main Building



- Div. of Housing Environment and Sanitary Engineering
  - 1 - Head's Room
  - 2 - Clerk's Room
  - 3 - Researcher's Room No. 1
  - 4 - Researcher's Room No. 2
  - 5 - Researcher's Room No. 3
  - 6 - Researcher's Room No. 4
  - 7 - Junior Researcher's Room
  - 8 - Technician's Room
- Experimental St. for Housing and Building
  - 24 - Head's Room
  - 25 - Clerk's Room
- Experimental St. for Sanitary Engineering
  - 26 - Head's Room
  - 27 - Clerk's Room
  - 28 - Library
  - 29 - Librarian's Room
  - 30 - Archives
  - 31 - Computer Room
  - 32 - Mechanical Room
  - 33 - Foreign Expert Room Nos. 1 and 2
- Div. of Building Construction and Structure
  - 9 - Head's Room
  - 10 - Clerk's Room
  - 11 - Researcher's Room No. 1
  - 12 - Researcher's Room No. 2
  - 13 - Researcher's Room No. 3
  - 14 - Researcher's Room No. 4
  - 15 - Junior Researcher's Room
  - 16 - Technician's Room
- Dormitory
  - 34 - Guest Room Nos. 1 to 16
  - 35 - Laundry/Linen Room
- Div. of Building Material
  - 17 - Head's Room
  - 18 - Clerk's Room
  - 19 - Researcher's Room No. 1
  - 20 - Researcher's Room No. 2
  - 21 - Researcher's Room No. 3
  - 22 - Junior Researcher's Room
  - 23 - Technician's Room
- Copy Room
  - 36 - Copy Room
  - 37 - Kitchenette
  - 38 - Toilet
  - 39 - Storage
  - 40 - Corridor

Fig. 4.20 Second Floor Plan of Main Building

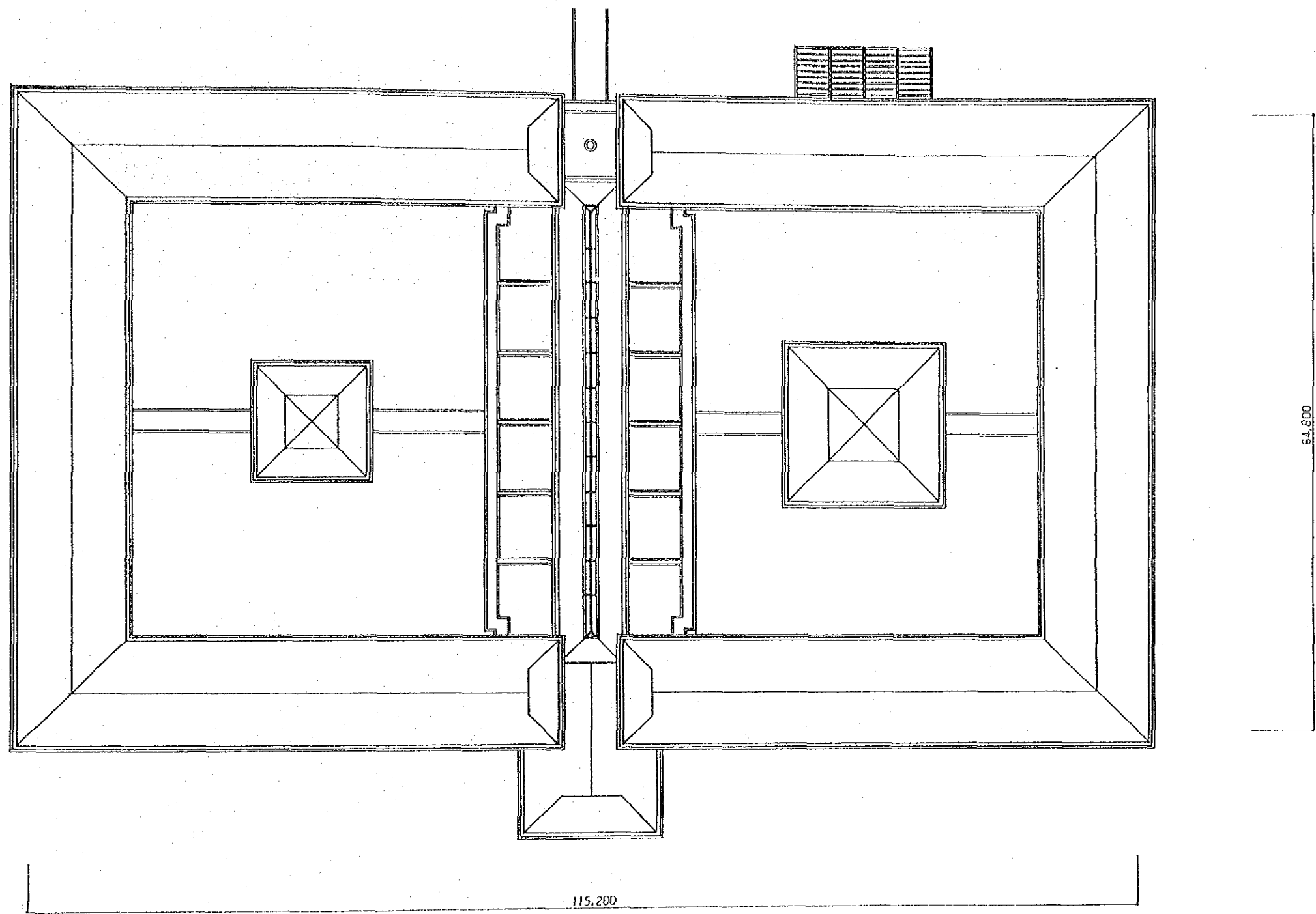
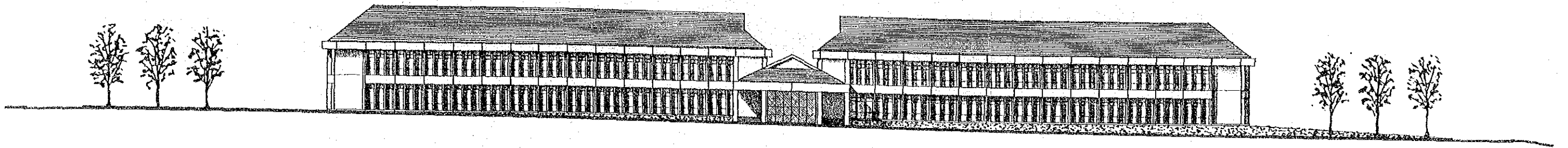
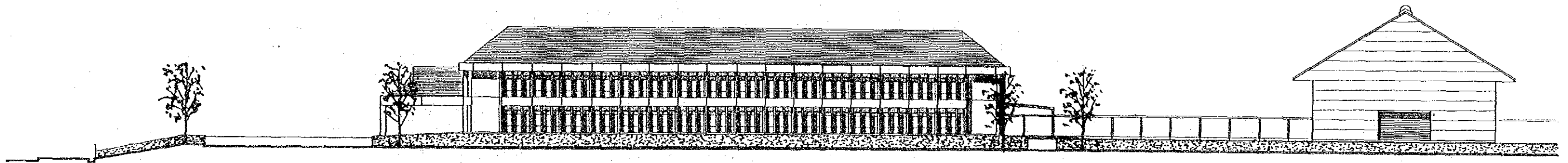


Fig. 4.21 Roof Plan of Main Building

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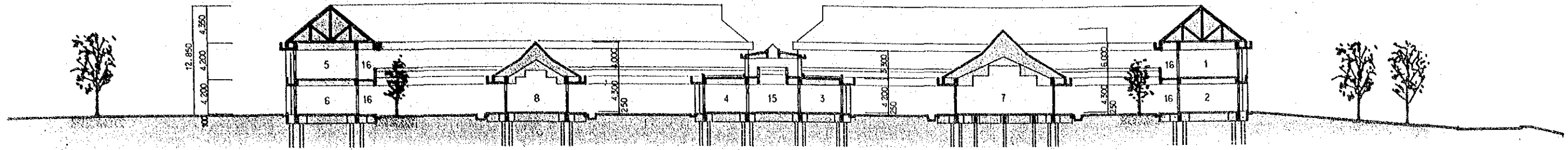


West Elevation

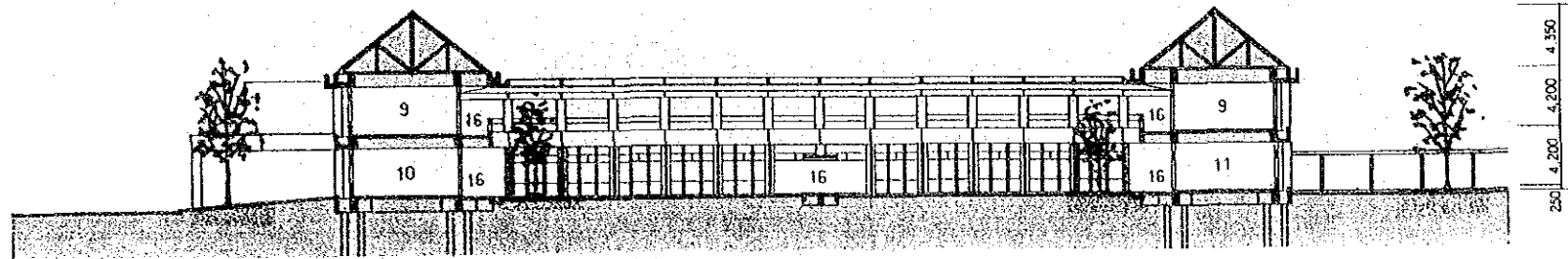


South Elevation

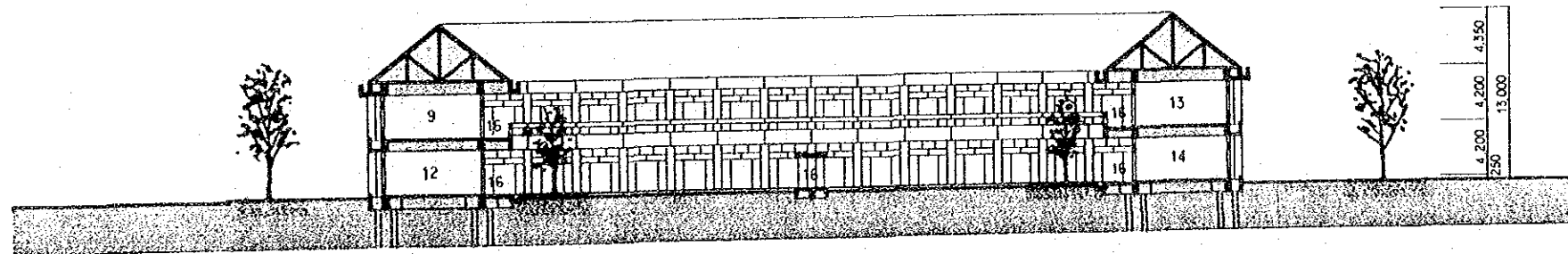




A-A Section



B-B Section



C-C Section

- 1 - Guest Room
- 2 - Seminar Room
- 3 - Inventory Sec. Room
- 4 - Finance Sec. Room
- 5 - Library
- 6 - Film Preparation Room
- 7 - Conference Hall
- 8 - Musholla
- 9 - Researcher's Room
- 10 - Meeting Room
- 11 - Driver's Room
- 12 - Director's Room
- 13 - Computer Room
- 14 - Archives
- 15 - Exhibition Corner
- 16 - Corridor
- 17 - Connecting Corridor

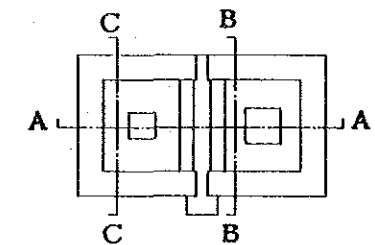
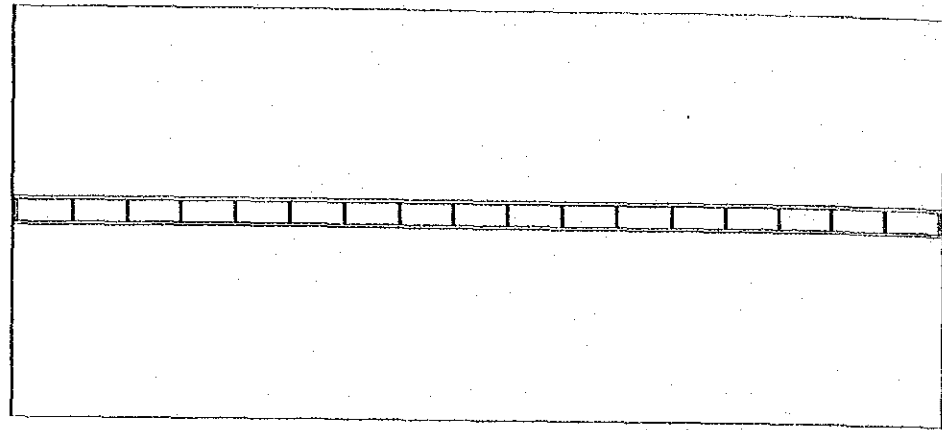
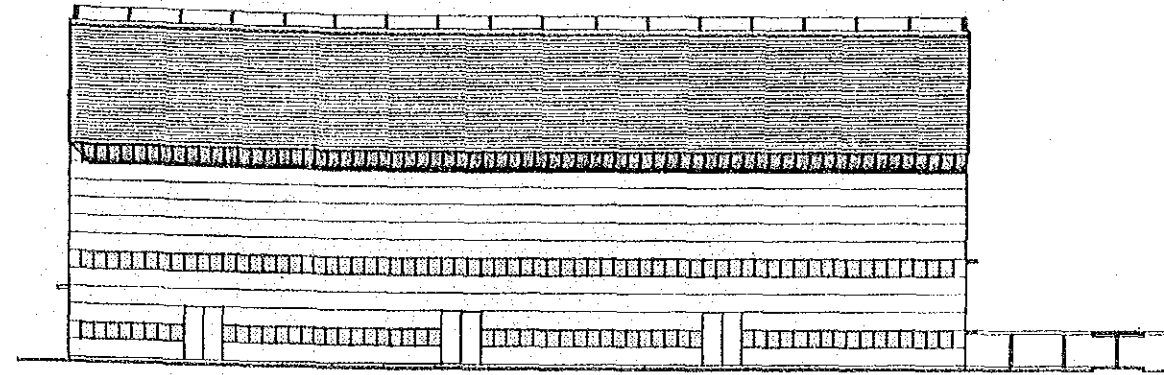


Fig. 4.23 Sections of Main Building

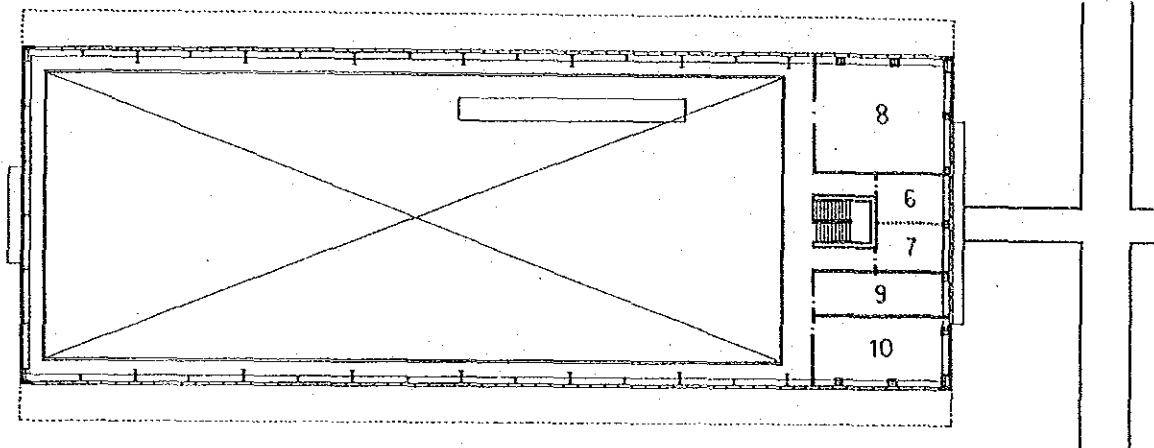
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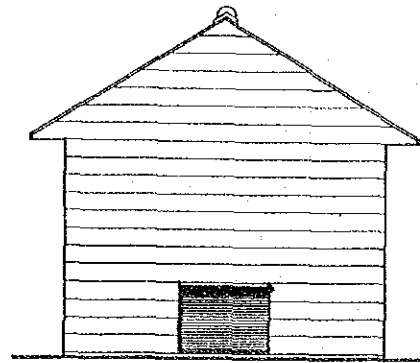
Roof Plan



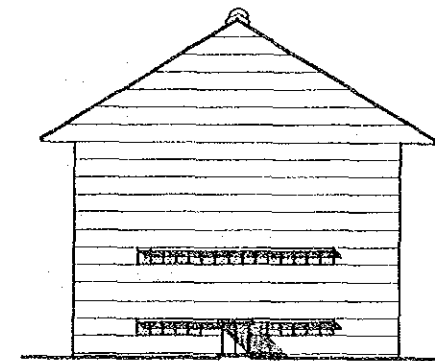
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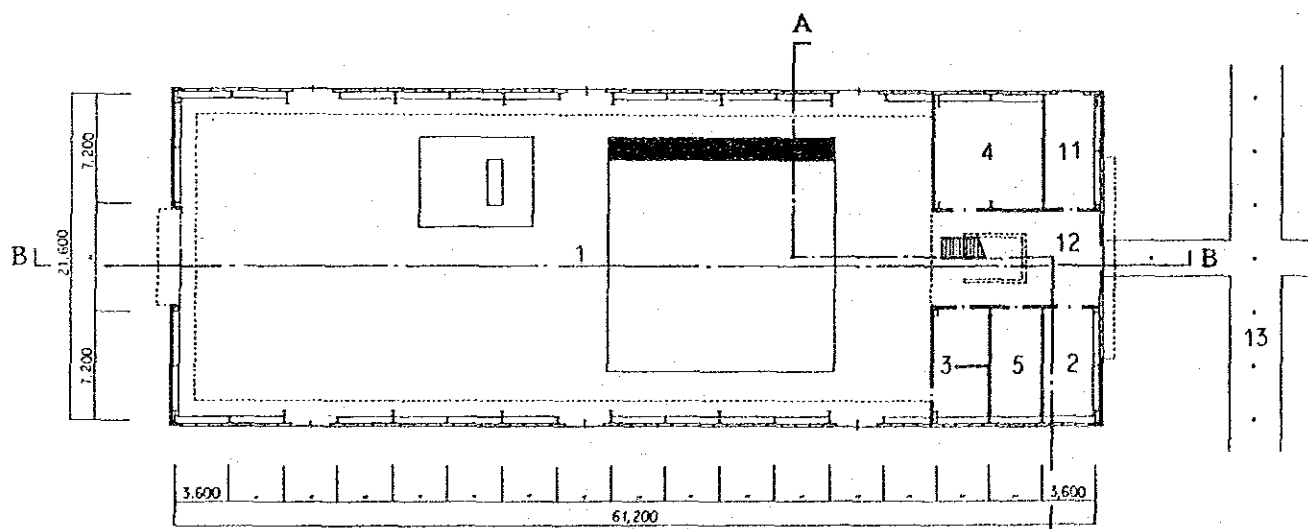
2nd Floor Plan



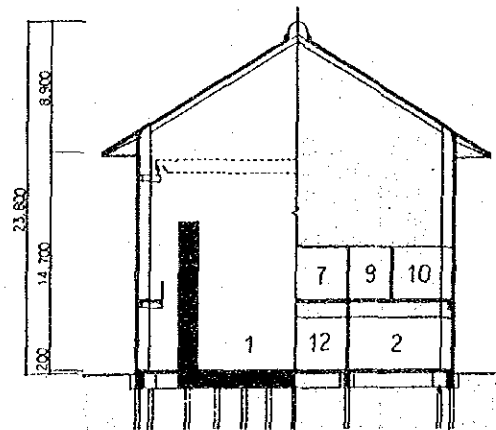
North Elevation



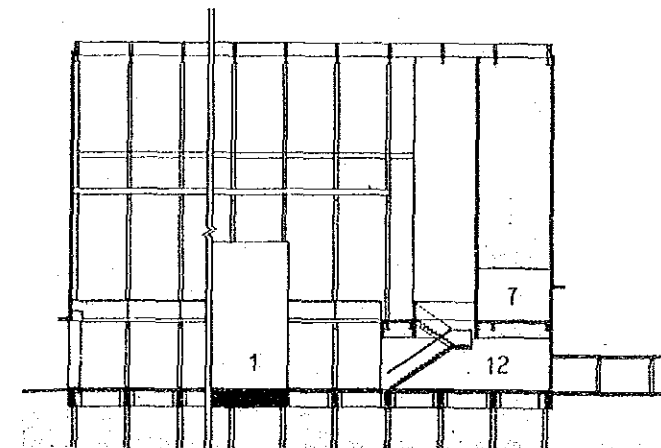
South Elevation



1st Floor Plan

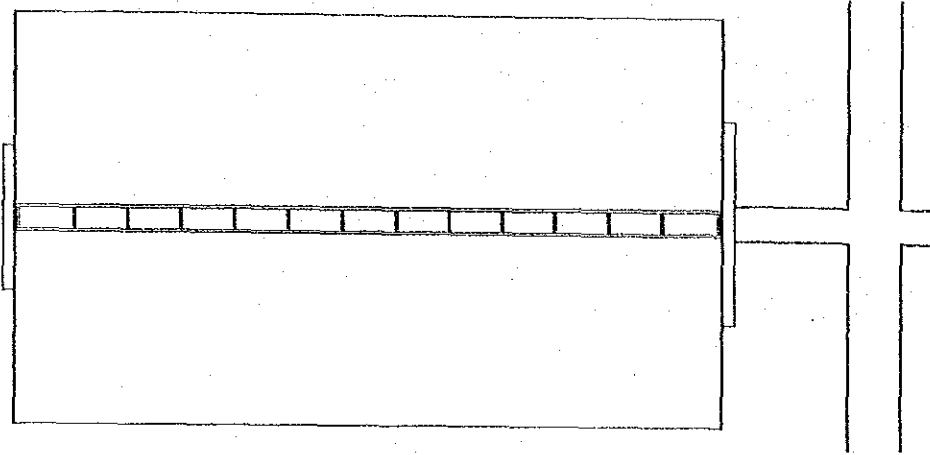


A-A Section

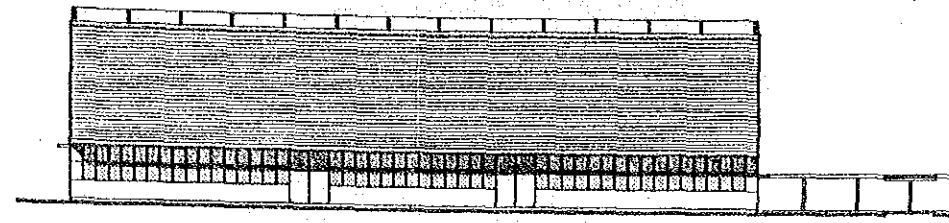


B-B Section

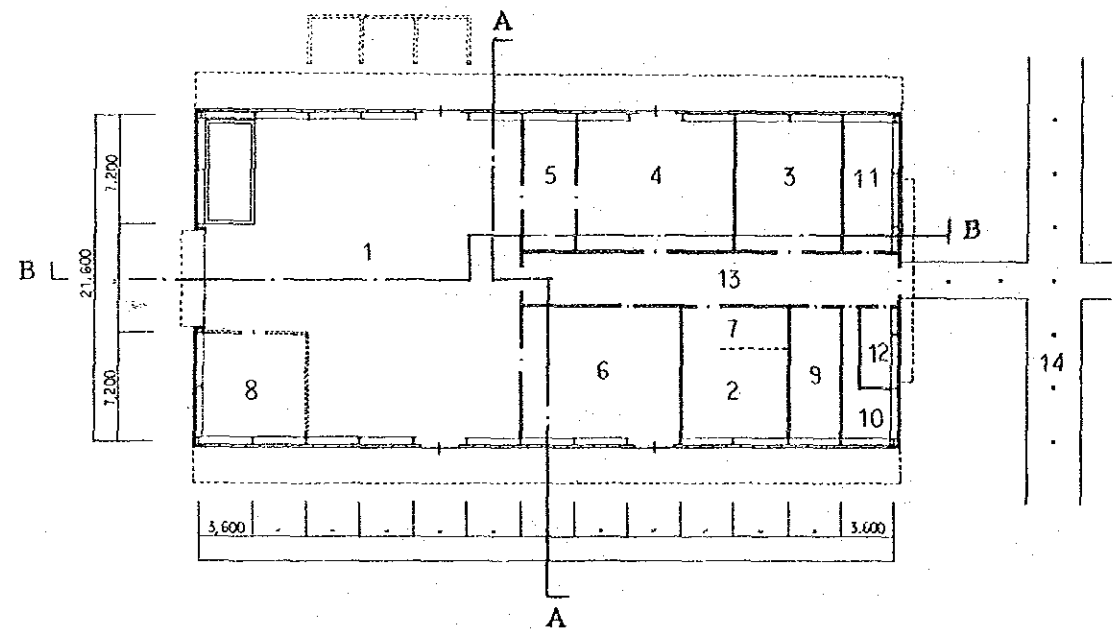
- 1 - Test Hall
- 2 - Tool Storage
- 3 - Measuring Equipment/  
Data Room
- 4 - Soil Testing Room
- 5 - Illumination/  
Acoustics Testing Room
- 6 - Chief's Room No. 1
- 7 - Chief's Room No. 2
- 8 - Engineer's Room
- 9 - Drafting Room
- 10 - Meeting Room
- 11 - Storage for Outdoor  
Soil Testing Apparatus
- 12 - Corridor
- 13 - Connecting Corridor



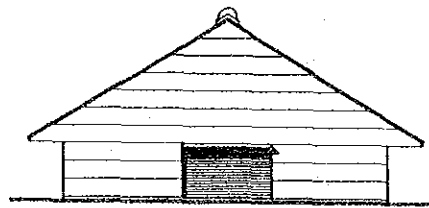
Roof Plan



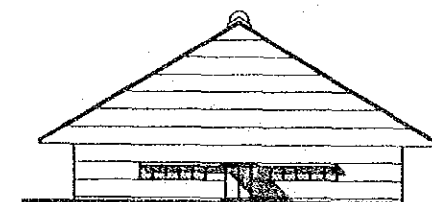
West Elevation



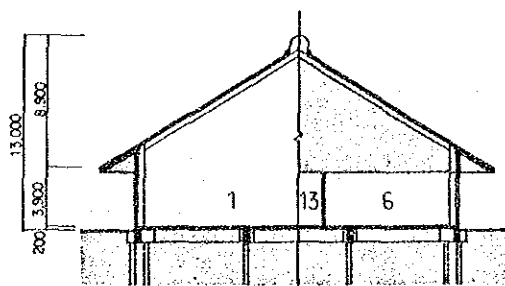
1st Floor Plan



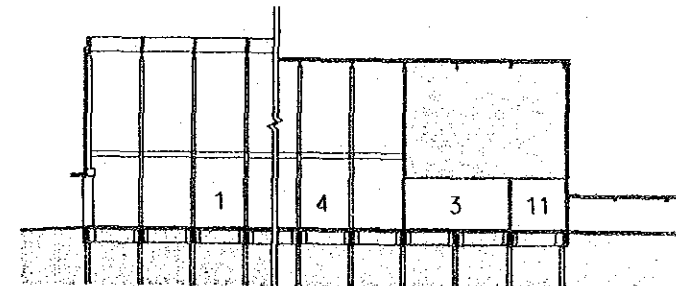
North Elevation



South Elevation



A-A Section

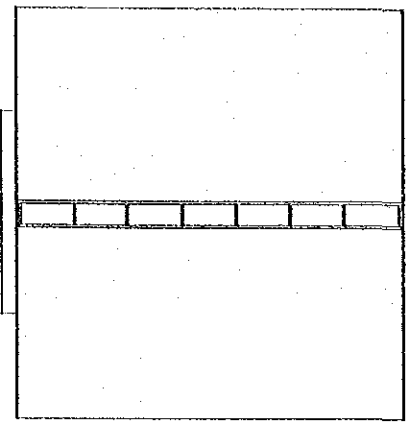


B-B Section

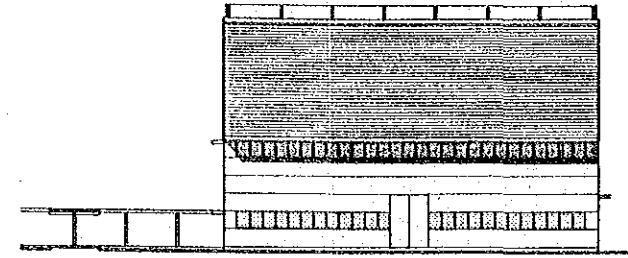
- 1 - Concrete Mixer Room
- 2 - Wood Testing Room
- 3 - Chemical Testing Room
- 4 - Cement/Concrete Testing Room
- 5 - Curing Room
- 6 - Aggregate Testing Room
- 7 - Plastics/Coating Material Testing Room
- 8 - Loading Testing Room
- 9 - Engineer's Room
- 10 - Drafting Room
- 11 - Meeting Room
- 12 - Storage
- 13 - Corridor
- 14 - Connecting Corridor

Fig. 4.25 Plans, Elevations and Sections of Building Material Laboratory

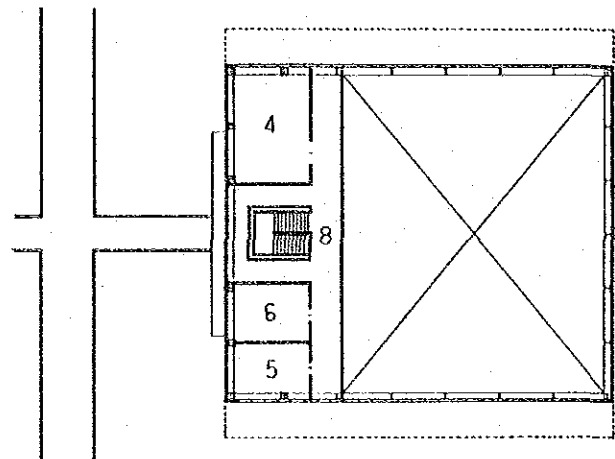
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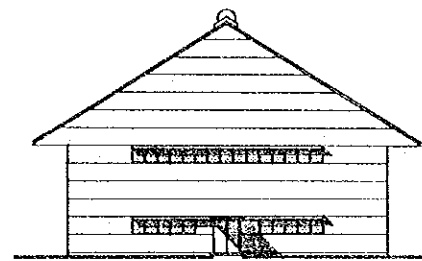
Roof Plan



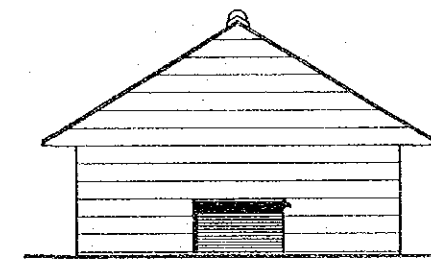
West Elevation



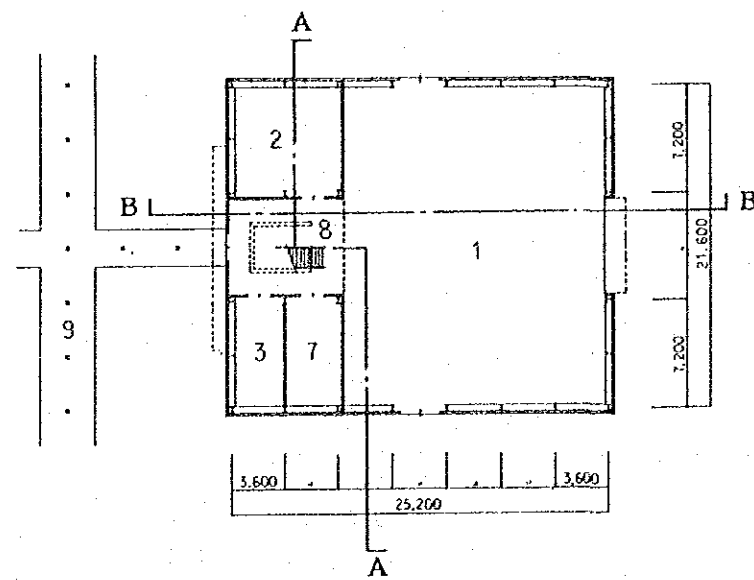
2nd Floor Plan



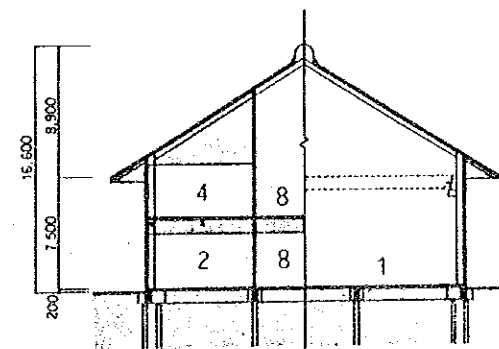
North Elevation



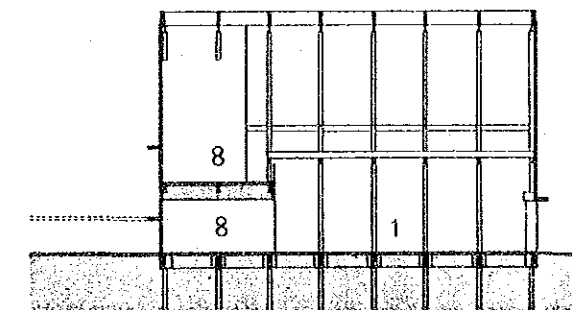
South Elevation



1st Floor Plan



A-A Section

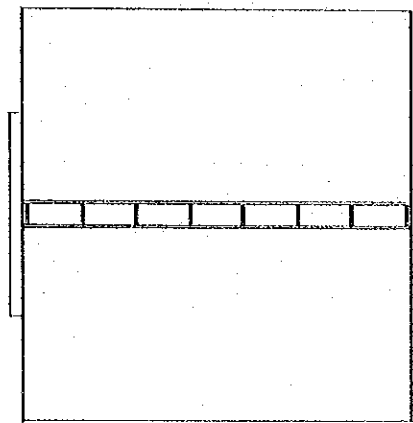


B-B Section

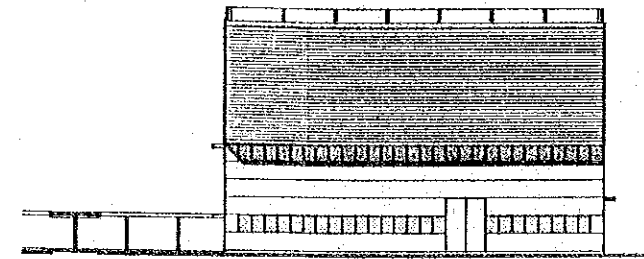
- 1 - Test Hall
- 2 - Material Combustibility Room
- 3 - Tool Storage
- 4 - Engineer's Room
- 5 - Drafting Room
- 6 - Meeting Room
- 7 - Storage
- 8 - Corridor
- 9 - Connecting Corridor

Fig. 4.26 Plans, Elevations and Sections of Fire Testing Laboratory

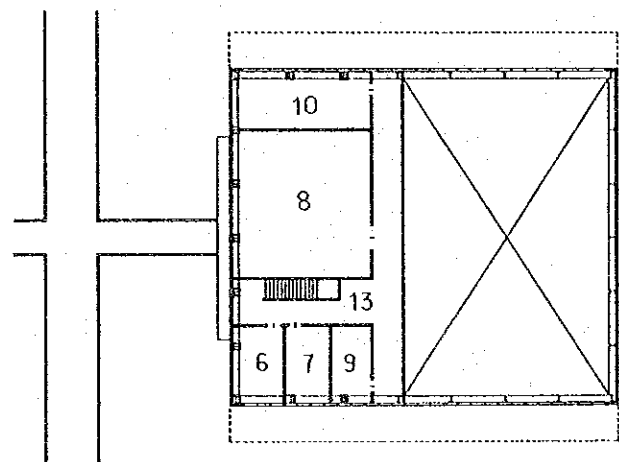
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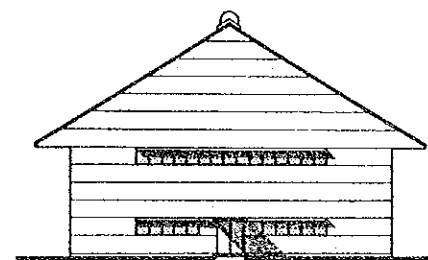
Roof Plan



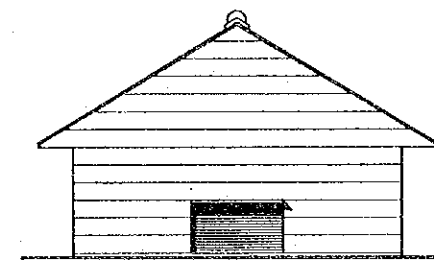
West Elevation



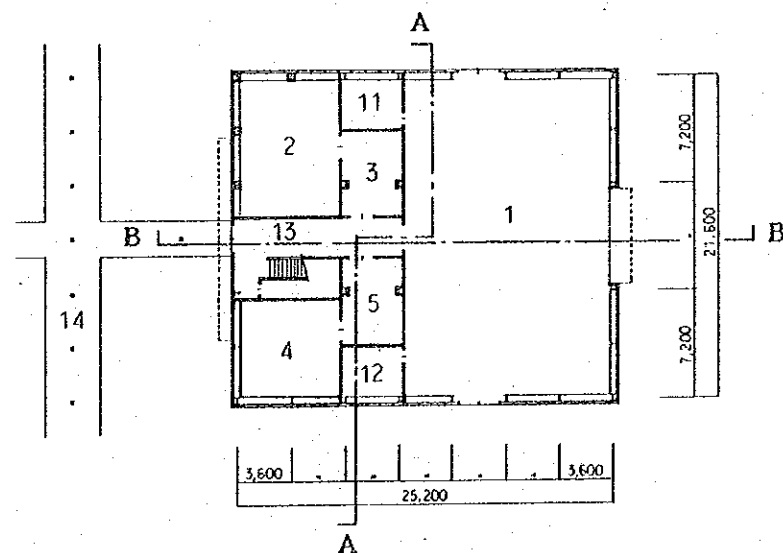
2nd Floor Plan



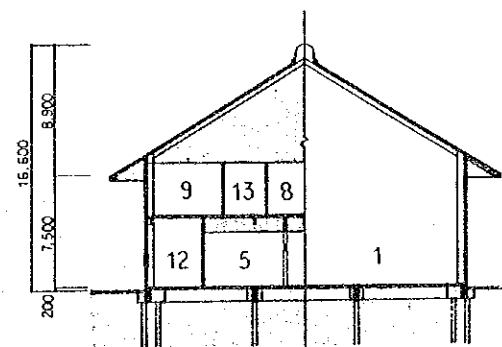
North Elevation



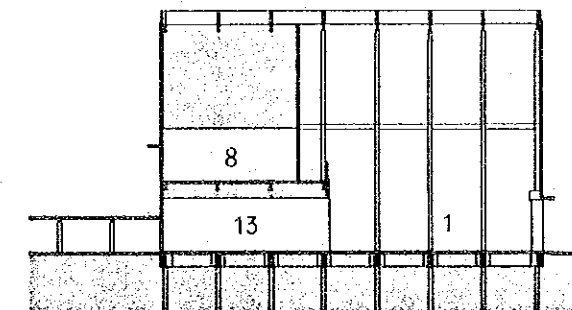
South Elevation



1st Floor Plan



A-A Section



B-B Section

- 1 - Test Hall (incl. Physical Laboratory)
- 2 - Chemical Laboratory
- 3 - Preparation Room No. 1
- 4 - Microbiological Laboratory
- 5 - Preparation Room No. 2
- 6 - Chief's Room No. 1
- 7 - Chief's Room No. 2
- 8 - Engineer's Room
- 9 - Drafting Room
- 10 - Meeting Room
- 11 - Storage
- 12 - Air Conditioning Unit Room
- 13 - Corridor
- 14 - Connecting Corridor

Fig. 4.27 Plans, Elevations and Sections of Sanitary Engineering Laboratory

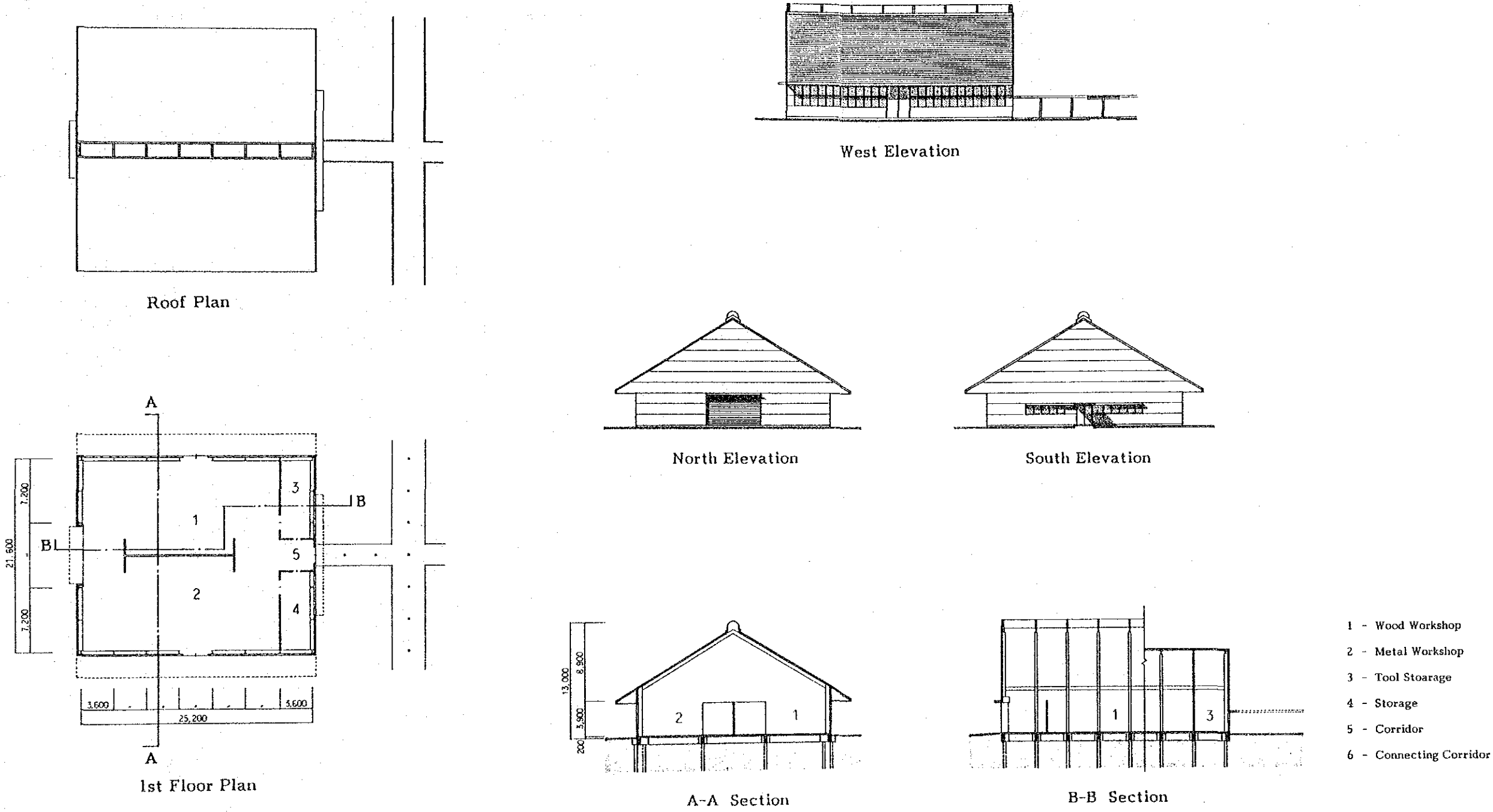
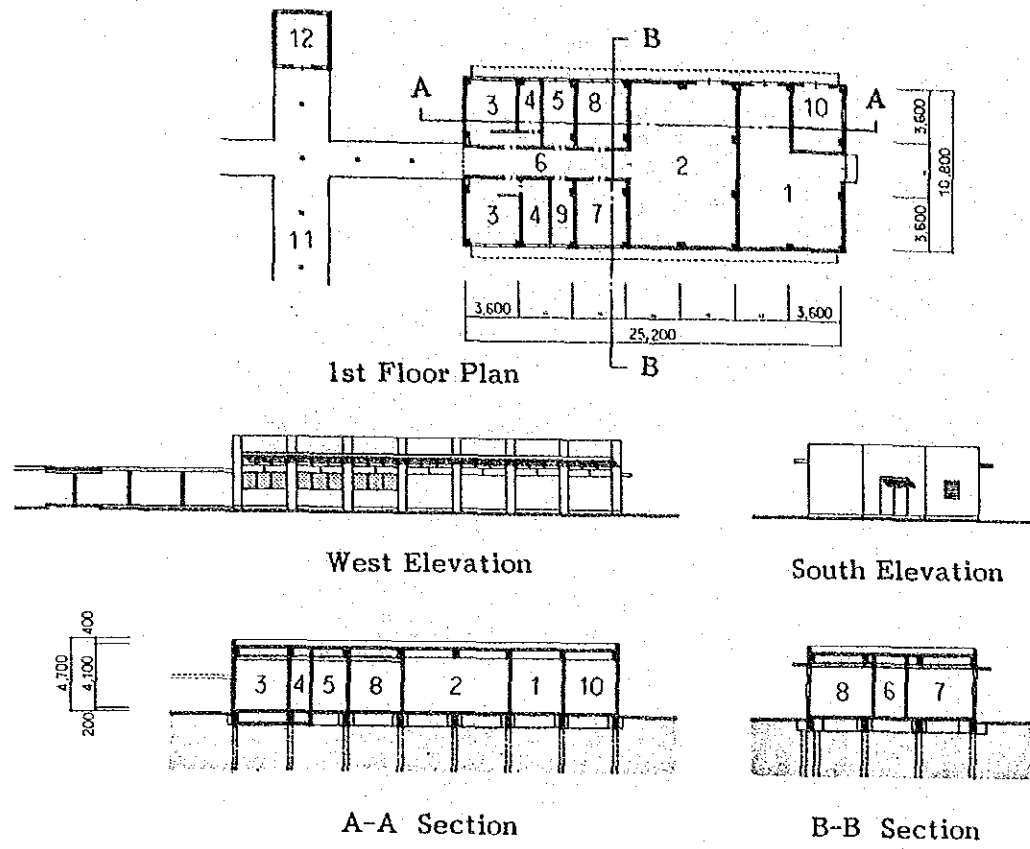
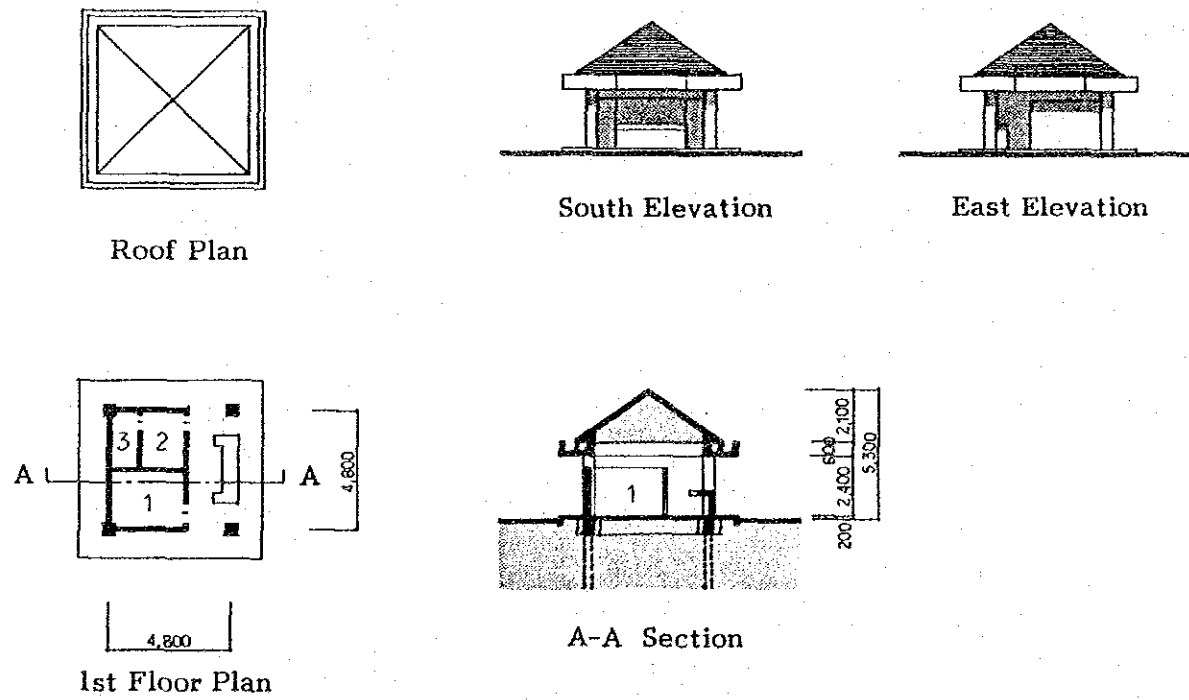
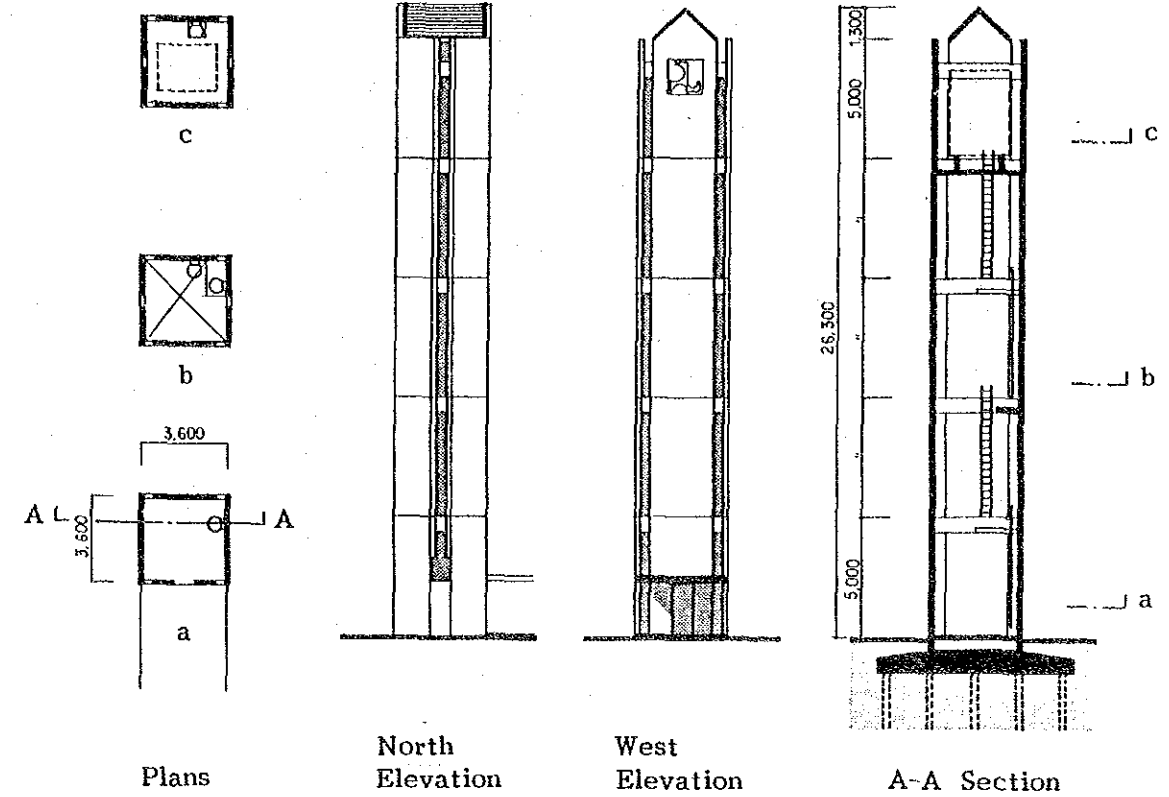


Fig. 4.28 Plans, Elevations and Sections of Workshop



- 1 - Electrical Room
- 2 - Water Treatment Room
- 3 - Toilet
- 4 - Shower Room
- 5 - Kitchenette
- 6 - Corridor
- 7 - Staff Room
- 8 - Maintenance Engineer's Room
- 9 - Storage
- 10 - Space for Generator
- 11 - Connecting Corridor
- 12 - Elevated Water Tank



- 1 - Overnight Duties
- 2 - Kitchenette
- 3 - Toilet

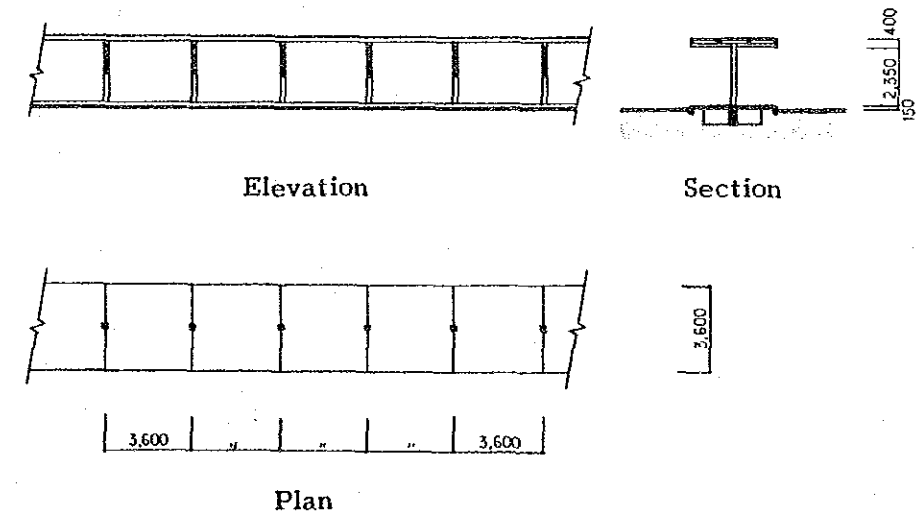


Fig. 4.29 Plans, Elevations and Sections of Utility Building, Guardhouse, Elevated Water Tank and Connecting Corridor





#### 4.4 Construction Plan

##### 4.4.1 Construction Situation and Guidelines

In observing a number of construction sites in Bandung, it is evident that some companies have introduced modern building techniques like steel scaffolding and cranes, but for the most part work is done using bamboo or wood scaffolding, and man-power is much more common than machine-power. In the suburbs of Bandung, there is a mixture of these modern and traditional building techniques.

Labor efficiency is relatively low in Indonesia, and a local study revealed that the number of laborers required for a job is about 1.6 ~ 2.5 times the Japanese standard. Construction labor is plentiful in Indonesia, and many workers are unfamiliar with mechanized construction sites. On the other hand, as many modern buildings have been constructed in and around Jakarta by Japanese and other foreign aid, and by foreign enterprises and capital, skilled labor familiar with modern technology has increased. In order to create a high quality building, this skilled labor must be mobilized. Further, since this large construction work including piling work and equipment installation work should be completed within twelve months for each phase, proper construction schedule control and efficient site management are most essential. Moreover good engineers and supervisors from Japan must supervise and give guidance on construction as necessary.

In Indonesia there is no uniform national code equivalent to the Japanese building code. However, a draft (unreleased) of such a national building code is being prepared. The following are the main codes and regulations regarding building.

- a. National Building Code
- b. Load regulations
- c. Regulations concerning the relationship between client and consulting engineer bridge
- d. Building regulations of the Bandung Municipality
- e. Code of practice for red brick (bata merah)
- f. Code of practice for the prevention and protection of village houses against fire
- g. Regulations on shell construction for building in Indonesia

- h. Design code for earthquake resistant buildings
- i. The seismic loading code for Indonesia

In addition to the above codes and regulations, there is the "Indonesian Building Construction Standard (SKBI)" which IHS played a central role in developing.

The following application procedures are needed for permits prior to commencement of the construction work.

- a. Location Permit - Authorization of Ministry of Public Works (DPU)
- b. Planning Permit - Authorization of Regional Development Planning Office (BAPPEDA)
- c. Building Permit - Regency office (KANTOR KABUPATEN)

A local study showed that there are no particular regulations and procedures which will directly affect construction periods and schedules. However, some detailed laws are currently being consolidated, and thorough previous discussions must be conducted in advance with pertinent government officials and agencies to ensure that legal procedures go as smoothly as possible.

In order to smoothly advance this project in such a construction situation as described above, the executing agency (IHS) and the consultant must, after the Exchange of Notes regarding grant aid, wield a thorough knowledge of the basic design and conduct detailed discussions and schedule adjustment regarding detailed design, contract for design and construction supervision services, bidding, construction contracting, construction, etc..

In discussions between IHS, consultant and contractors upon the construction contract, an appropriate starting period for the construction shall be set, and an overall process shall be established by reviewing the scope and procedures for construction by each country, building material procurement plans, site delivery plans, construction and installation periods, and periods for trial operation of machinery and equipment.

Based on this overall plan, detailed plans shall be prepared and followed for building work, building services work, equipment installation and works to be handled by the Indonesian side, and these individual plans shall be adjusted to ensure compatibility.

To ensure smooth progress of the whole construction work, it is essential to take into consideration the timing of the installation of equipment to be procured from Japan, and the period during which specialists will be dispatched. In particular, countermeasures for piling work, earthwork, foundation work, concreting and water-proofing work to be done in the rainy season (November-April) should be sufficiently planned and complete construction schedule should be elaborated in order to complete the construction work within the scheduled period.

#### 4.4.2 Works Division

##### (1) Work to be shouldered by Japan

###### Building (including Building Services)

- Main building
- Structure/Earthquake laboratory
- Building material laboratory
- Fire testing laboratory
- Sanitary engineering laboratory
- Workshop
- Utility building
- Guardhouse
- Elevated water tank

###### Special Facilities

- Water treatment facility
- Chemical waste neutralization facility
- Sewage draining and treating equipment

###### External Works

- Connecting corridor
- Front gate, flag pole
- On-site roads, parking lot
- On-site drainage system

### Equipment

- Experimental equipment
- Information dissemination equipment

### (2) Works to be shouldered by the Indonesian side

#### Works for 1988/89:

- Development and preparation of the part of the site where buildings will be built (No. 1)
- Diversion of the drainage ditches within the site run along the perimeter
- Deep well construction (including pump)
- Temporary power supply
- Telephone wiring (2 lines)
- Building permit application (incl. cost for application)

#### Works for 1989/90:

- Land development and preparation needed for the project but not done in the year of 1989/90 (No. 2)
- Widening and paving of access road
- Improvement of existing drainage ditches around the site perimeter
- Construction of fence for site perimeter
- Permanent power supply
- Telephone wiring (additional 3 lines)
- Landscaping
- Outdoor lighting
- Garage
- Furniture
- Relocation of existing equipment

The works for 1988/89 must be done prior to construction, and the work for 1989/90 must be done parallel to the construction, without hindering overall construction progress.

4.4.3 Construction Supervision Plan

After the Exchange of Notes for the grant aid for the Project is completed, the consultant will conclude a design supervision agreement with the executing agency, and the consultant will work out the detailed design of the facilities and equipment according to the basic design. When the detailed design is completed, the consultant will assist in bidding and contracting, and after the start of construction will perform supervisory services.

From the start of construction till its completion, the consultant will guide and supervise the work to ensure the Project is implemented properly by dispatching a resident engineer who will be posted full-time at the site. The consultant will also dispatch specialists from various fields when necessary as the work progresses, and will lead detailed discussions, inspections and checking of trial operation and adjustment and will guide the work.

Fig. 4.30 shows the proposed construction supervisory system for this Project.

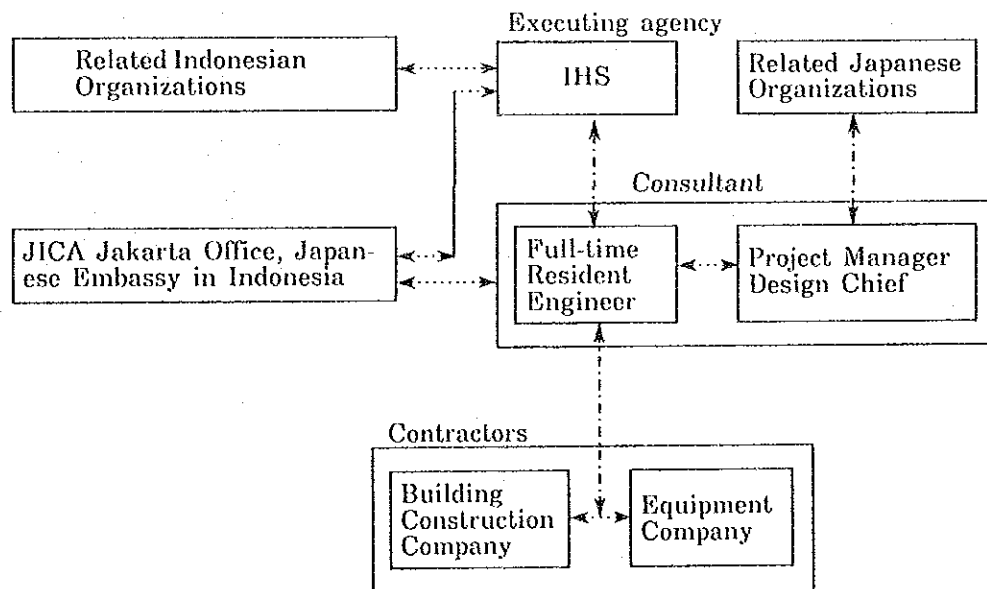


Fig. 4.30 Construction Supervision Net Work

#### 4.4.4 Material and Equipment Procurement Plan

In procuring materials and equipment which will be used in the Project, local materials shall be investigated wherever possible, as long as there are no significant problems in terms of quality and price. Although many imported building materials and machines are in Indonesian markets, they must be thoroughly investigated in terms of prices, delivery dates and maintenance and upkeep when used.

Thus the proposed procurement of materials and equipment as shown in Table 4.3 was developed by considering the above situation and the structure and function and required performance (strength, durability, etc.) of the facilities for this Project.

Table 4.3 Major Material and Equipment Procurement Plan

Work Item	Locally Procured Materials and Equipment	Materials and Equipment Procured from Japan
Building Work	Fabricated structural steel (in part) Doors and Windows (in part) Cement Bricks, concrete blocks Glass Tile Asphalt paving material Wood Reinforcing bars Paint (in part) Lightweight steel ceiling materials Boards Corrugated asbesto cement board etc.	Fabricated structural steel (in part) Doors and Windows (in part) Paint (in part) Metal fittings (in part) Skylight Waterproofing material
Electrical Work	Electric cables, lighting fixtures, electric appliances, conduit, etc.	Switchboards, power control panels, telephone switchboards, etc.
Cooling and Ventilation Work	Fans, piping, ducts, etc.	
Plumbing Work	Sanitary fixtures, piping materials, pumps, water tanks, etc.	
Equipment Work	Van, bus, computer system, etc.	Housing Environment Analyzing Equipment, Building Material Laboratory Equipment, Structure/ Earthquake Laboratory Equipment, Sanitary Engineering Laboratory Equipment, Fire Testing-Laboratory Equipment, Information Dissemination Division Equipment, etc.

4.5 Schedule

After this Project has been formalized by the Exchange of Notes between the two governments on this grant from the Japanese Government, design, construction bidding and construction will proceed according to the implementation schedule shown in Fig. 4.31.

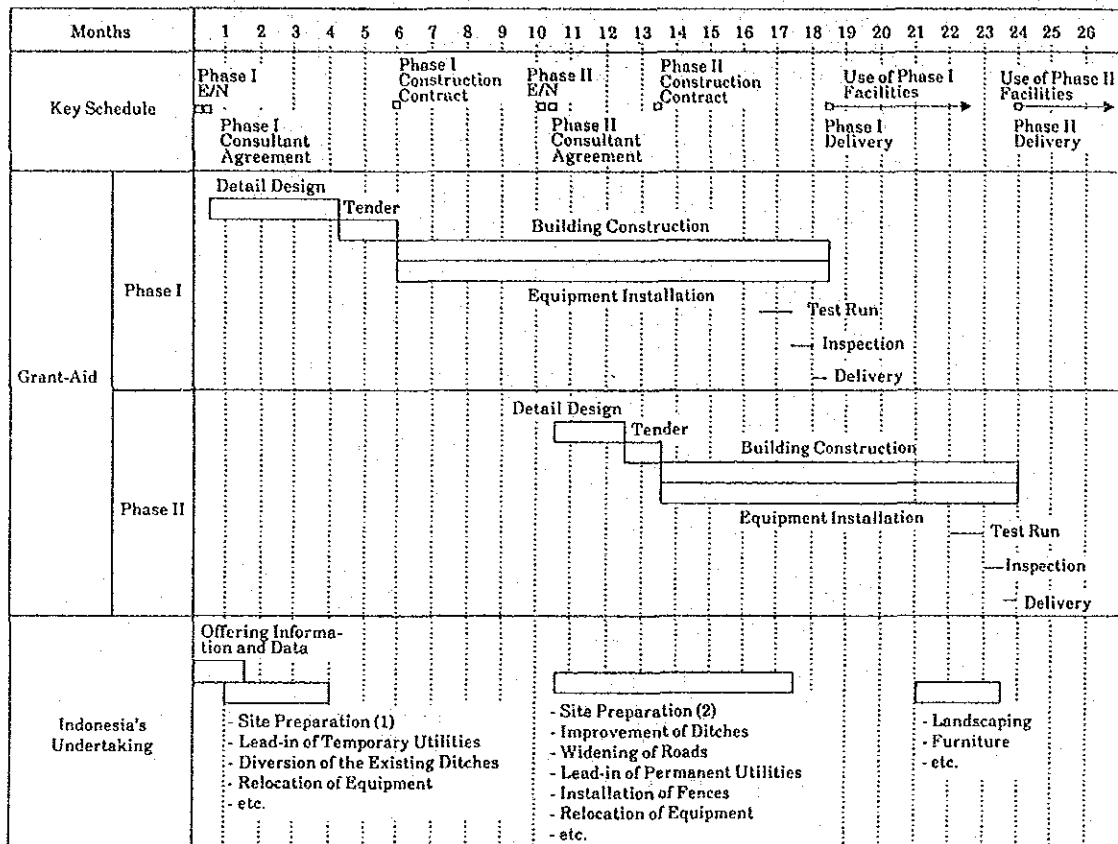


Fig. 4.31 Schedule of the Project Implementation



#### 4.6 Running Costs

The running costs three years after the IHS facilities are completed, i.e., 1993 or 1994, are estimated as shown in Table 4.4 below.

Table 4.4 Estimated Running Costs

		(Unit: Million Rp.)
Personnel expenses		975.0
Energy expenses	Electricity	87.0
	Oil	1.4
Administration cost (incl. telephone charges)		225.0
Experimentation expenses (incl. consumables)		875.0
Information dissemination expenses		300.0
Equipment maintenance expenses		100.0
<hr/>		
	Total	2,563.4

(Source: IHS)

The running costs above are 1.4 times the 1988/89 estimate of approximately Rp.1,700,000,000 and within the future budget estimated by the IHS.

#### 4.7 Project Cost Estimate

The following is an estimate of the project cost required for implementation of this Project.

##### (1) Project Cost to be Borne by The Republic of Indonesia

The total estimated cost to be borne by Indonesia is about Rp.1,113,600,000 (equivalent to ¥86 million).

This cost is broken down as follows.

##### Approx. cost of work for 1988/89

Site preparation (No. 1)	Rp. 294,000,000
Diversion of drainage ditch	Rp. 20,000,000
Deep well work (including pumps)	Rp. 25,000,000
Temporary power supply	-
Telephone wiring (2 lines)	Rp. 4,280,000
Building permit application fee	Rp. 23,000,000
Total	Rp. 366,280,000

##### Approx. cost of work for 1989/90

Site preparation (No. 2)	Rp. 20,700,000
Widening of the access road	Rp. 57,700,000
Drainage ditch improvement	Rp. 28,000,000
Fence construction	Rp. 32,500,000
Permanent power supply	Rp. 48,300,000
Telephone wiring (additional 3 lines)	Rp. 6,420,000
Landscaping	Rp. 200,000,000
Outdoor lighting	Rp. 33,000,000
Garage	Rp. 22,000,000
Relocation of equipment	Rp. 48,700,000
Furniture	Rp. 250,000,000
Total	Rp. 747,320,000

## CHAPTER 5 PROJECT EVALUATION



## CHAPTER 5 PROJECT EVALUATION

The purpose of this Project is to establish a system for realistically promoting improvement in housing and housing conditions. This is to be done by strengthening functions of IHS so that it can conduct general research and development relating to building technology and materials, and moreover raise the consciousness of the people and improve construction technology throughout the country through active information dissemination. Some of the expected effects of this project are as follows.

### (1) Promotion of Human Settlement Environment Improvement

IHS is the sole national research and development organization in Indonesia working in the field of human settlements. It is responsible for the basic human need for shelter, and aims to improve the supply and quality of housing for all classes of society, but in particular for the low-income class.

Therefore the expansion and strengthening of IHS should contribute greatly to creating a solid foundation for development of the Indonesian society.

### (2) Promotion of Building Fire Prevention

Indonesia loses a great deal of life and property due to disasters like earthquakes and fires. Research and development relating to disaster prevention performed at IHS via earthquake and fire prevention testing will contribute to the stabilization of Indonesian society as a whole.

### (3) Rationalization and Education of the Construction Industry

IHS conducts research and development on new building materials using domestically available materials and waste products of agriculture and industry, and strengthening of these activities will promote rationalization of the construction industry.

(4) Dissemination of Results of Research and Development

The participation of local people is indispensable in improving human settlement environments, and these improvements can be realistically and soundly advanced by strengthening the information dissemination system of IHS, providing appropriate training of local leaders, and information to local people, and reviewing in turn feedback from people.

(5) Promotion of International Research and Development Activities

IHS plays the role of UN Regional Center for Research on Human Settlements (UNRCRHS) for the United Nations. This work extends beyond Indonesia and contributes to organizations performing research in the field of human settlements in other developing countries.

(6) Response to the International Year of Shelter for the Homeless

The United Nations General Assembly has designated 1987 as the International Year of Shelter for the Homeless, and this year activities are planned for countries throughout the world based on a plan of action extending up to the year 2000. Working in this way to raise interest in improving and providing shelter in each country is more than just a matter between Japan and Indonesia. It can also have a great positive effect on relations between other developed and developing countries.

(7) Enhancement of Japan's International Role

Japan has given technical cooperation regarding human settlements to Indonesia for over ten years, mainly by dispatching experts. The current Project is another step in this continuing relationship on technical cooperation, based on many previous fruitful results.

## **CHAPTER 6 CONCLUSION AND RECOMMENDATIONS**





## CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

The Republic of Indonesia has in recent years risen in national strength and general level of development, and the improvement of the housing insufficiencies and accompanying poor housing conditions which arise due to population increases and concentration of population in the cities is one of the most important tasks to be performed by the government.

To deal effectively with this housing situation problem, persons in all classes, areas and fields must have a firm grasp of pertinent knowledge and technology. To improve housing environments under such circumstances, it is of great significance to expand the functions of IHS as noted in 3.2.1 "Review of Facility Scale." Strengthening IHS can not only help stabilize Indonesian society through the improvement of human settlement environments (as noted in 5. "Project Evaluation"), it can also contribute indirectly to the improvement of housing environments in other developing countries via UNRCRHS.

The Government of Indonesia has great expectations for this Project and is preparing for the Project's implementation. It has secured a site, prepared a budget for the construction to be shouldered by Indonesia and drafted programs for new activities.

The Project is also attractive from the Japanese perspective. Japan has been providing technical cooperation in this field for over ten years, and the strong human relations (the Third Country Training Programs of recent years in particular) built up during that period will be useful in this Project which aims to extend results which have been so successful as to garner attention from other countries. Implementation of this Project will not only improve Japanese-Indonesian relations, but will also undoubtedly leave a very favorable impression of Japan's international cooperation on other Southeast Asian specialists in this field.

In the above consideration, it is judged appropriate to implement this Project on a grant aid basis.

IHS activities cover a wide field, and there is a tendency for research to get too diffuse, this means that key research themes must be isolated by appropriately weighing subjects. This Project also aims to expand and reinforce the information dissemination division, and although the current staff is eager to meet the project goals, they are somewhat inexperienced. In addition, it will take time for workers to

master the operation of some of the experimentation and testing equipment. Hence, it has been deemed necessary to enhance technical cooperation in dispatching experts from Japan.

Finally, in implementing this Project, the following are recommended.

- (1) To improve the quality of researchers, a budgetary system should be created to allow individual researchers to propose their own research subjects. This will promote self-motivated research.
- (2) Administration and IHS activities must be closely meshed. IHS should more actively propose policy, and fulfill technology advising and dissemination roles, and generally raise their level of involvement in housing and human settlements policy guidance.
- (3) Observing SKBI and guidelines is itself significant, and IHS needs a more active drive for legislation for the standards and guidelines.
- (4) IHS is to actively perform research and development with the private construction industry, and support fostering of the construction industry to stimulate the domestic demand.
- (5) IHS should establish the organic mechanism extending from research and development to guidance and training.

## APPENDICES



## APPENDIX 1 INFORMATION ON THE FIELD SURVEY

### (BASIC DESIGN STUDY AND BASIC DESIGN (DF) STUDY)

#### 1.1 Members of the Study Teams

##### (1) Basic Design Study

Hiroshi ASANO (Leader)	Director Housing & Land Planning Division, Housing Planning Department, Housing and Urban Development Corporation
Shinsuke NAKATA	Head Building Engineering Division, International Institute of Seismology & Earthquake Engineering, Building Research Institute, Ministry of Construction
Masatoshi SATO	Researcher Organic Material Division, Material Department, Building Research Institute, Ministry of Construction
Itaru HAMAKAWA	Project Coordinator Second Basic Design Study Division, Grant Aid Planning & Survey Department, Japan International Cooperation Agency
Nobuya UEDA	Nikken Sekkei Ltd
Nobuatsu KUWATA	Nikken Sekkei Ltd
Toshiaki MIYOSHI	Nikken Sekkei Ltd
Ryuji INOUE	General Building Research Corporation
Masatomo YOSHIDA	General Building Research Corporation

(2) Basic Design (DF) Study

Yujiro KANEKO      Representative, International Affairs  
The Building Center of Japan

Taiichi TAKAHASHI      Head  
Organic Material Division,  
Material Department,  
Building Research Institute,  
Ministry of Construction

Nobuya UEDA      As mentioned above

Ryuji INOUE      As mentioned above

Masatomo YOSHIDA      As mentioned above

## 1.2 Diary of the Study Teams

### (1) Basic Design Study

<u>Date</u>	<u>Day</u>	<u>Description</u>
April 21, 1988	Thu.	<ul style="list-style-type: none"><li>- Flight from Tokyo to Jakarta by JL721</li><li>- Team meeting</li></ul>
April 22	Fri.	<ul style="list-style-type: none"><li>- Meeting with the Ministry of Public Works of the Indonesian Government</li><li>- Visited the studio of the Ministry of Public Works</li><li>- Visited the NURSE EDUCATION FACILITIES in Jakarta</li><li>- Meeting at JICA Jakarta Office</li><li>- Meeting at the Embassy of Japan</li><li>- Moved to Bandung</li></ul>
April 23	Sat.	<ul style="list-style-type: none"><li>- Meeting with IHS</li><li>- Meeting on the study schedule</li><li>- Visited IHS in Tamansari</li><li>- Visited IHS in Turangga</li><li>- Visited the site</li><li>- Visited Padjadjaran University</li></ul>
April 24	Sun.	<ul style="list-style-type: none"><li>- Team meeting</li></ul>
April 25	Mon.	<ul style="list-style-type: none"><li>- Meeting with IHS<ul style="list-style-type: none"><li>• Request for submission of data</li><li>• Research topics, budget, problems relating to human settlements, etc.</li><li>• Newly provided equipment</li></ul></li><li>- Team meeting</li></ul>

- |          |      |   |
|----------|------|---|
| April 26 | Tue. | <ul style="list-style-type: none"> <li>- Meeting with IHS</li> <li>• Formation of employees, manpower plan, budget, present running costs, etc.</li> <li>• Works to be done by Indonesian side</li> <li>• Research activities</li> </ul>  |
| April 27 | Wed. | <ul style="list-style-type: none"> <li>- Team meeting</li> <li>- Discussed the Minutes and explained the Grant Aid Program</li> </ul>   |
| April 28 | Thu. | <ul style="list-style-type: none"> <li>- Signed the MINUTES OF DISCUSSIONS</li> <li>- Presentation by the Indonesian side</li> <li>- Investigated the site</li> </ul>   |
| April 29 | Fri. | <ul style="list-style-type: none"> <li>- Meeting with the Minister of Public Works</li> <li>- Meeting with BAPPENAS</li> <li>- Meeting with SEKKAB</li> <li>- Investigated the equipment owned by IHS in Tamansari (Information dissemination &amp; Sanitary Engineering)</li> <li>- Investigated the equipment owned by IHS in Turangga (Building Material)</li> </ul> |
| April 30 | Sat. | <ul style="list-style-type: none"> <li>- Meeting at the Embassy of Japan and JICA Jakarta office</li> <li>- Mr. ASANO left Jakarta</li> <li>- Investigated the equipment owned by IHS in Turangga (Structure, Fire Testing, and Workshop)</li> </ul>  |
| May 1    | Sun. | <ul style="list-style-type: none"> <li>- Team meeting</li> </ul>  |



- |       |      |   |
|-------|------|---|
| May 2 | Mon. | <ul style="list-style-type: none"> <li>- Meeting with IHS             <ul style="list-style-type: none"> <li>• Schedule</li> <li>• Requested data</li> <li>• Manpower plan</li> </ul> </li> <li>- Meeting with PERUMTEL</li> <li>- Team meeting</li> </ul>  |
| May 3 | Tue. | <ul style="list-style-type: none"> <li>- Meeting with IHS             <ul style="list-style-type: none"> <li>• Confirmation on required rooms of each building</li> <li>• Confirmation on no. of occupants of each room</li> </ul> </li> <li>- Visited KIP</li> <li>- Visited PERUMNAS Housing</li> </ul>   |
| May 4 | Wed. | <ul style="list-style-type: none"> <li>- Meeting at KABUPATEN Bandung office</li> <li>- Meeting at PLN Majalaya office</li> <li>- Visited the KANWIL Testing Division</li> <li>- Visited the BIC</li> <li>- Investigated the construction site of "SUTI HOTEL"</li> <li>- Visited "GUDUNG SATE" West Java State government office</li> <li>- Prepared the block plan</li> </ul>   |
| May 5 | Thu. | <ul style="list-style-type: none"> <li>- Meeting with IHS             <ul style="list-style-type: none"> <li>• Explained the block plan</li> </ul> </li> <li>- Visited the Institute of Hydraulic Engineering</li> <li>- Investigated the IHS' experimental station for sanitary engineering</li> <li>- Investigated the experimental sanitary engineering equipment and experimental housing</li> <li>- Calculation of soil volume</li> <li>- Prepared rough estimation of the work to be done by Indonesian side</li> </ul> |

- |       |      |   |
|-------|------|---|
| May 6 | Fri. | <ul style="list-style-type: none"> <li>- Meeting with IHS           <ul style="list-style-type: none"> <li>• Work to be done by Indonesian side</li> <li>• Block plan</li> <li>• Equipment to be relocated to new facilities</li> </ul> </li> <li>- Visited the headquarters of ITB</li> <li>- Investigated the equipment material market</li> <li>- Prepared new block plan</li> <li>- Calculation of soil volume on the new block plan</li> </ul> |
| May 7 | Sat. | <ul style="list-style-type: none"> <li>- Meeting with IHS           <ul style="list-style-type: none"> <li>• Discussed the Record of Technical Meeting</li> <li>• Signed Record of Technical Meeting</li> </ul> </li> <li>- Investigated the site and drainage facility of the site</li> <li>- Investigated the building material suppliers</li> <li>- Moved to Jakarta</li> </ul>  |
| May 8 | Sun. | <ul style="list-style-type: none"> <li>- Visited CGSC in Bekasi</li> <li>- Visited CEVEST in Bekasi</li> <li>- Team meeting</li> <li>- Processed the data</li> </ul>  |
| May 9 | Mon. | <ul style="list-style-type: none"> <li>- Meeting with Mr. Karman, Somawidjaja Director General, Agency for Research and Development, Ministry of Public Works</li> <li>- Visited PUSDIKLAT Head Office</li> <li>- Visited Jakarta Training Center of PUSDIKLAT/PUSBINLAT</li> <li>- Visited BPB</li> <li>- Processed the data</li> </ul>  |

- |        |      |   |
|--------|------|---|
| May 10 | Tue. | <ul style="list-style-type: none"> <li>- Courtesy call at JICA Jakarta office</li> <li>- Courtesy call at the Embassy of Japan</li> <li>- Investigated the local consultant</li> <li>- Investigated the building materials</li> </ul> |
| May 11 | Wed. | <ul style="list-style-type: none"> <li>- Flight from Jakarta to Tokyo by CX710/CX500</li> </ul>   |

(2) Basic Design (DF) Study

<u>Date</u>	<u>Day</u>	<u>Description</u>
August 12, 1988	Fri.	<ul style="list-style-type: none"> <li>- Flight from Tokyo to Jakarta by JL719/SQ210</li> <li>- Team meeting</li> </ul>
August 13	Sat.	<ul style="list-style-type: none"> <li>- Meeting with SEKKAB</li> <li>- Meeting with BAPPENAS</li> </ul>
August 14	Sun.	<ul style="list-style-type: none"> <li>- Team meeting</li> </ul>
August 15	Mon.	<ul style="list-style-type: none"> <li>- Meeting at JICA Jakarta Office</li> <li>- Meeting at the Embassy of Japan</li> <li>- Meeting with the Minister of the Ministry of Public Works of the Indonesian Government</li> <li>- Moved to Bandung</li> </ul>
August 16	Tue.	<ul style="list-style-type: none"> <li>- Meeting with IHS               <ul style="list-style-type: none"> <li>• Survey schedule</li> <li>• Explanation and confirmation of the draft report</li> <li>• Request for preparation of the data for confirmation</li> </ul> </li> </ul>
August 17	Wed.	<ul style="list-style-type: none"> <li>- Team meeting</li> </ul>

- |           |      |   |
|-----------|------|---|
| August 18 | Thu. | <ul style="list-style-type: none"> <li>- Meeting with IHS           <ul style="list-style-type: none"> <li>• Building design</li> <li>• Equipment plan</li> </ul> </li> <li>- Site survey</li> <li>- Investigated such existing equipment of IHS in Turangga and Tamansari as will be relocated to new IHS</li> <li>- Discussed the MINUTES OF DISCUSSIONS</li> </ul> |
| August 19 | Fri. | <ul style="list-style-type: none"> <li>- Investigated the generator (of IHS in Turangga) to be relocated to new IHS</li> <li>- Signed the MINUTES OF DISCUSSIONS</li> <li>- Received the data</li> <li>- Moved to Jakarta</li> </ul>  |
| August 20 | Sat. | <ul style="list-style-type: none"> <li>- Meeting at the Embassy of Japan</li> <li>- Meeting at JICA Jakarta office</li> <li>- Meeting with SEKKAB</li> <li>- Team meeting</li> </ul>  |
| August 21 | Sun. | <ul style="list-style-type: none"> <li>- Flight from Jakarta to Tokyo by CX710/CX500</li> </ul>   |

MINUTES OF DISCUSSIONS  
ON  
THE PROJECT  
FOR  
IMPROVEMENT OF THE INSTITUTE OF HUMAN SETTLEMENTS  
IN  
THE REPUBLIC OF INDONESIA

In response to the request of the Government of the Republic of Indonesia, the Government of Japan decided to conduct a basic design study on the Project for Improvement of the Institute of Human Settlements and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Republic of Indonesia the study team headed by Mr. Hiroshi ASANO, Director, Housing & Land Planning Division, Housing Planning Department, Housing & Urban Development Corporation from April 21 to May 11, 1988.

The team had a series of discussions on the Project with the officials concerned of the Government of the Republic of Indonesia headed by Mr. Karman SOMAWIDJAJA, Director General, Agency for Research and Development, Ministry of Public Works and conducted a field survey.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Bandung, April 28, 1988

浅野 宏

Mr. Hiroshi ASANO  
Leader, Basic Design  
Study Team,  
Japan International Cooperation  
Agency



Mr. Karman SOMAWIDJAJA  
Director General,  
Agency for Research and  
Development,  
Ministry of Public Works

## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to construct new facilities with necessary equipment for the Institute of Human Settlements (IHS) in order to improve the human settlements by strengthening the IHS' activities ("Research & Development", "Testing" and "Communication & Information Network").

### 2. Organization

Responsible and Executing Agency for the Project is the Agency for Research & Development, Ministry of Public Works.

### 3. Project Site

The project site is 9.36 hectares owned by the Ministry of Public Works and located at Cileunyi, Regency of Bandung as shown in Annex I.

### 4. Request of the Government of Indonesia

The Team will convey the request of the Government of Indonesia to the Government of Japan that the latter will take the necessary measures to cooperate by providing the facilities and equipment as listed in Annex II within the scope of the Japan's Grant Aid Programme.

### 5. Japan's Grant Aid System

The Government of Indonesia has understood the system of Japan's Grant Aid explained by the Team, which includes a principle of the use of a Japanese consultant and Japanese firms for the execution of the Project.

### 6. Measures to be taken by the Government of Indonesia

The Government of Indonesia will take the necessary measures as listed in Annex III on condition that the Grant Aid by the Government of Japan is extended to the Project.

### 7. Budget and Personnel

The Government of Indonesia will assure the necessary budget and personnel for the operation and maintenance of the facilities and equipment provided, on condition that the Grant Aid by the Government of Japan is extended to the Project.

H. A.

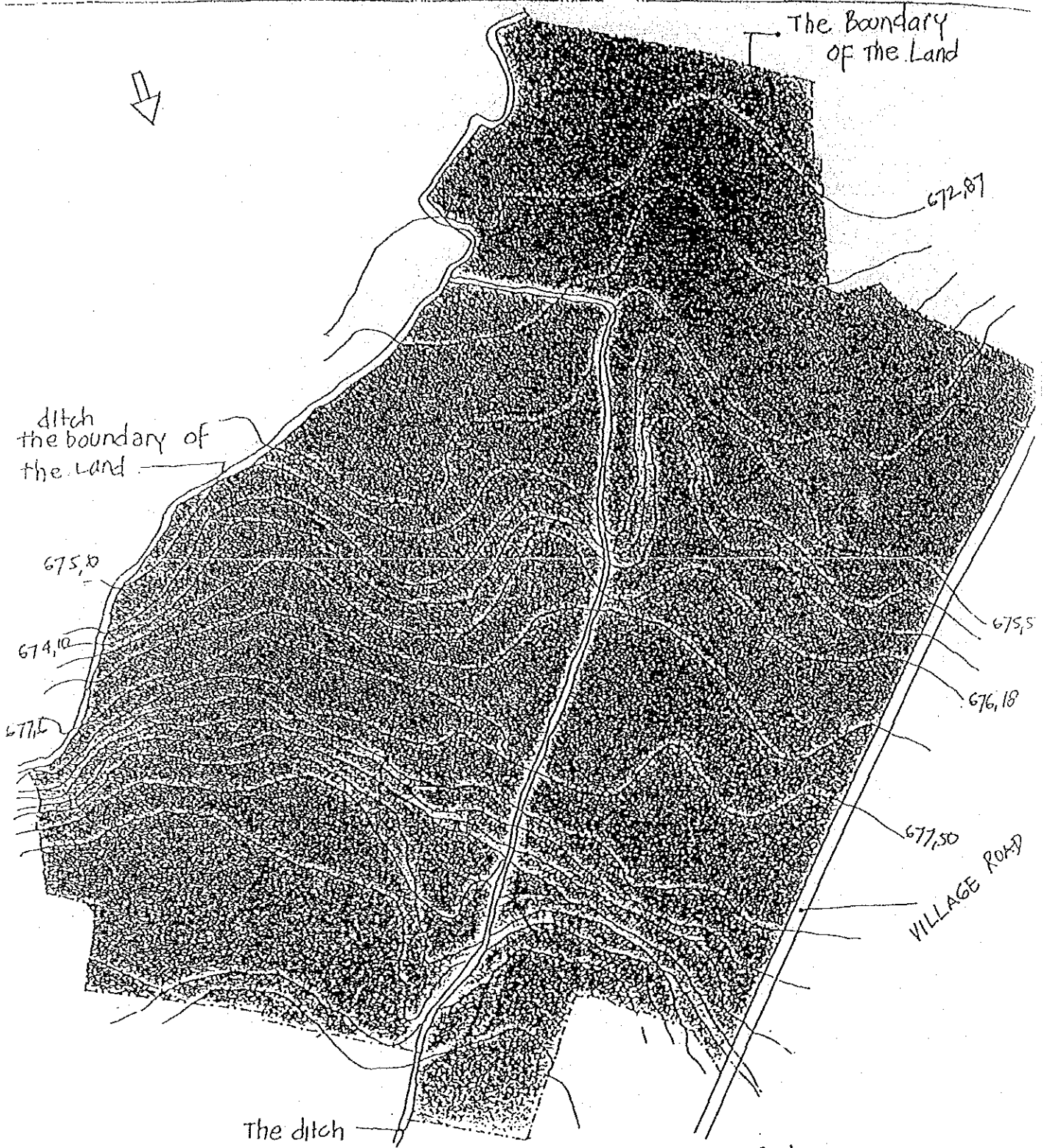
## 8. Technical Cooperation


The Team will convey to the Government of Japan the request of the Government of Indonesia for dispatch of Japanese Experts as shown below:

- One short term expert in the field of "General Management on the Research & Development";
- One long term expert in the field of "Communication & Information Network";
- One long term expert in the field of "Testing".

H.A.

ANNEX I  
PROJECT SITE



 LAND AREA = 93 610 m<sup>2</sup>

Scale  
0 19,5 39 58,5 78

M.A.



ANNEX II

Request of the Government of Indonesia

1. Buildings (including electrical and mechanical installations) Total approx. 11.500m<sup>2</sup>

- (1) Main Building
- (2) Laboratories
  - Building Material Laboratory
  - Structural Testing Laboratory
  - Water & Sanitary Engineering Laboratory
  - Fire Testing Laboratory
  - Workshop
- (3) Seminar and Exhibition Building
- (4) Dormitory and Dining Building
- (5) Energy Plant, connecting Corridors, etc.

2. Equipment

2-1. Housing Environment Laboratory (Main Building)

- (1) Equipment for Statistical Analysis
- (2) Equipment for Survey Data Collection
- (3) Equipment for Analyzing Aerial Photography
- (4) Equipment for Map Analysis

2-2. Building Material Laboratory

- (1) General Physical Testing Apparatus
- (2) General Chemical Testing Apparatus
- (3) Cement Testing Apparatus
- (4) Fresh Concrete Testing Apparatus
- (5) Hardened Concrete Testing Apparatus
- (6) Testing Apparatus for Cement & Cement Based Materials
- (7) Testing Apparatus for Wood & Wood Based Materials
- (8) Testing Apparatus for Plastics and Coating Materials
- (9) Durability Testing Apparatus

H.A.



(10) Aggregate Testing Apparatus

(11) Metal Testing Apparatus

2-3. Structural Testing Laboratory

(1) Seismic Loading System

(2) Permanent Loading System

(3) Data Acquisition System for Structural Test

(4) Static Soil Penetration Testing System

(5) Sensors and Data Acquisition System for Soil Testing

(6) Equipment for Testing on Building Physics (illumination, ventilation and acoustics)

2-4. Water and Sanitary Engineering Laboratory

(1) General Testing Apparatus for Water Quality

(2) General Testing Apparatus for Liquid & Solid Waste

(3) Gas Analysis Apparatus

(4) General Microbiological Test Apparatus

(5) Chemical Test Equipment

(6) Physical Test Equipment

(7) Portable Test Kits

(8) Data Acquisition System for Water and Sanitary Test.

2-5. Fire Testing Laboratory

(1) Fire Prevention Testing Apparatus

(2) Fire Resistance Testing Apparatus

2-6. Workshop

(1) General Metal Workshop Equipment

(2) General Wood Workshop Equipment

H.A.



2-7. Communication and Information Network (Main Building)

- (1) Audio-visual Equipment (including production)
- (2) Seminar and Exhibition Equipment
- (3) Printing and Binding Equipment

H.A.

ANNEX III

Necessary Measures to be taken by the Government of Indonesia

- 1.\* To secure land
- 2.\* To clear, level and reclaim the site
- 3.\* To construct retaining walls and fences around the site
- 4.\* To construct access road to the site
- 5.\* To divert the existing in-site ditch and to improve the existing drainage system around the site
- 6.\* To provide facilities for the distribution of electricity, water supply and other incidental facilities
  - a) Power distribution line to the site
  - b) Water supply (deep wells)
  - c) Telephone trunk line
- 7.\* To secure building permit and to bear its fees
8. To provide the followings upon completion of the facilities
  - a) Landscaping
  - b) Exterior lighting
  - c) General furniture (carpets, curtains, tables, chairs and others)
9. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A
  - a) Advising commission of A/P
  - b) Payment commission
10. To ensure tax exemption and custom clearance of the products at the port of disembarkation
11. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Indonesia and stay therein for the performance of their work
12. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Indonesia with respect to the supply of the products and services under the verified contracts
13. To maintain and use properly and effectively the facilities constructed and equipment under the verified contracts

H.A.

14. To bear all the expenses, including V.A.T. (Value Added Tax), other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment
15. To bear all the expenses necessary for relocation of the existing equipment to be used in the new facilities.

Note: Marked with (\*) should be completed before start of construction of the facilities.

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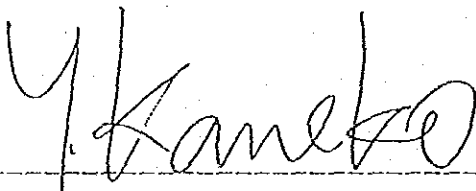
MINUTES OF DISCUSSION  
ON  
THE PROJECT FOR THE IMPROVEMENT  
OF  
THE INSTITUTE OF HUMAN SETTLEMENTS  
IN  
THE REPUBLIC OF INDONESIA

In response to the request of the Government of the Republic of Indonesia for Grant Aid for the Project for the Improvement of the Institute of Human Settlements in the Republic of Indonesia (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Indonesia the team headed by Mr. Hiroshi Asano, Director, Housing and Land Planning Division, Housing and Urban Development Corporation, from April 21st to May 11th, 1988.

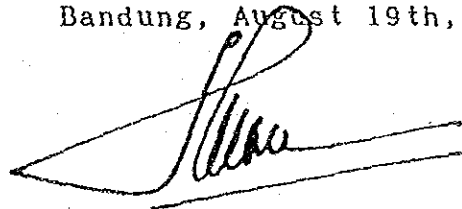
As the result of the study, JICA prepared a draft report and dispatched a team headed by Mr. Yujiro Kaneko, Representative, International Activities, the Building Center of Japan, to explain and discuss it from August 12th to August 21st, 1988.

Both parties had a series of discussions on the report and agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

Bandung, August 19th, 1988



Mr. Yujiro KANEKO  
Team Leader  
Basic Design (DF) Study Team  
Japan International Cooperation  
Agency



Mr. Karman SOMAWIDJAJA  
Director General  
Agency for Research and  
Development  
Ministry of Public Works

ATTACHMENT

1. The Indonesian side has agreed in principle to the basic design proposed in the Draft Final Report with minor but appropriate alteration as shown in Annex-I mutually agreed upon to be incorporated in the Final Report (ANNEX-I).
2. The Indonesian side has understood Japan's grant aid system and confirmed that the necessary measures will be taken by the Indonesian side as shown in the Annex-II which are manifested in the Annex III of the MINUTES OF DISCUSSIONS on the Project signed on April 28th, 1988 on condition that the grant aid by the Government of Japan would be extended to the Project (ANNEX-II)
3. The Government of Indonesia will assure the necessary budget and personnel for the operation and maintenance of the facilities and equipment provided, on condition that the Grant Aid by the Government of Japan is extended to the Project.
4. The Indonesian side has agreed to bear the Value Added Tax (V.A.T.) necessary for construction of the facilities as well as for the transportation and installation of the equipment.
5. The Final Report (10 copies in English) will be submitted to the Indonesian side by the end of October, 1988.
6. The Team will convey to the Government of Japan the request of the Government of Indonesia for future technical cooperation including dispatch of Japanese Experts.

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(ANNEX-1)

1. The Indonesian side expressed their preference of adding a little more local taste to the design of the main building including the central part of west and east elevations and the interior finish of the auditorium.
2. The Team was advised by the Indonesian side to study the necessity to provide additional stairs around the centers of west and east wings of the main building in order to comply with the Indonesian regulation.
3. The Indonesian side requested to provide a room for drivers who work for the Institute's vehicles.
4. It was proposed to the Team that the Indonesian side would relocate 105 KVA generator for emergency use for chemical testing room in Building Material Laboratory Building and chemical and biochemical laboratories in Sanitary Engineering Laboratory Building. In order to accord with this proposal, the Team agreed to modify the design of power distribution system of the Project.
5. In order to reinforce research activity and to ensure practical operation in the Housing Environment and Sanitary Engineering Division, the Indonesian side proposed an Optical Pantograph instead of an Easy Mapping Machine which was previously requested.

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ANNEX III

Necessary Measures to be taken by the Government of Indonesia

- 1.\* To secure land
- 2.\* To clear, level and reclaim the site
- 3.\* To construct retaining walls and fences around the site
- 4.\* To construct access road to the site
- 5.\* To divert the existing in-site ditch and to improve the existing drainage system around the site
- 6.\* To provide facilities for the distribution of electricity, water supply and other incidental facilities
  - a) Power distribution line to the site
  - b) Water supply (deep wells)
  - c) Telephone trunk line
- 7.\* To secure building permit and to bear its fees
8. To provide the followings upon completion of the facilities
  - a) Landscaping
  - b) Exterior lighting
  - c) General furniture (carpets, curtains, tables, chairs and others)
9. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the D/A
  - a) Advising commission of A/P
  - b) Payment commission
10. To ensure tax exemption and custom clearance of the products at the port of disembarkation
11. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Indonesia and stay therein for the performance of their work
12. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Indonesia with respect to the supply of the products and services under the verified contracts
13. To maintain and use properly and effectively the facilities constructed and equipment under the verified contracts

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14. To bear all the expenses, including V.A.T. (Value Added Tax), other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment
15. To bear all the expenses necessary for relocation of the existing equipment to be used in the new facilities.

Note: Marked with (\*) should be completed before start of construction of the facilities.

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1.4 Persons Concerned In Indonesia

1. Ministry of Public Works

Mr. RADINAL MOOCHTAR  
- Minister of Public Works

Mr. KARMAN SOMAWIDJAJA  
- Director General of Agency for Research and Development

Mr. SOEROTO M.  
- Directorate of Housing  
- Directorate General of Human Settlements

Mr. HARYONO SUKARNEU  
- Inspectorate General

Mr. H. MOELJONO SOEBIJONO  
- Secretariat General

Mr. ROBI SULARTO SASTROWARDOYO  
- Architect

2. BAPPENAS

Mr. M. SOEBEKTI INDROHADIKOESOEMO  
- Secretary (in charge of Public Works)

3. SEKKAB

Mr. ADIK BANTARSO BANDORO  
- Acting Head of Intergovernmental Division, Bureau for Technical Cooperation, Cabinet Secretariate

4. Institute of Human Settlements (IHS)

Mr. SAHAT MULIA RITONGA  
- Director

Mr. ZULKARNAEN AKSA  
- Head, Division of Administration & Operation

Mr. DEDI SUWANDI PARTADINATA  
- Head, Experimental Station for Housing and Building  
- Head, Division of Construction and Structure

Mr. A. ABUDURACHIM IDRIS  
- Head, Division of Building Materials

Mr. M. NASROEN RIVAI  
- Head, Experimental Station for Sanitary Engineering

Mr. BAMBANG UTOJO  
- Head, Division of Documentation & Dissemination

Mr. R. SALEH  
- Head, Housing Environment and Sanitary Engineering Division

Mr. ALEXANDER TH. LUMANAUW  
- Chief, Publication, Production & Library Sub-division

Mr. VICTOR L. LEANDER  
- Chief, Training & Dissemination

Mrs. IDA Y. SUMIDJAN  
- Chief, Experimental Station for Sanitary Engineering

Mr. TR. SUPRAPTA  
- Fire Researcher

Mr. RUSWANDI  
- Architect, Regional and City Planner

Mr. PURWITO  
- Civil Engineer

Mr. MOCH ADNAN  
- Engineer, Experimental Station for Sanitary Engineering

5. PUSDIKLAT (Head Office)

Mr. S. TJAKRADIPURA  
- Director

Mr. H. ALIZAR ANWAR  
- Head, Training Division

6. Jakarta Training Center

Mr. SURATMAN  
- Head, Curriculum and Media Division

7. PUSBINLAT

Mr. MUDJITABA  
- Director

8. KANWIL, PU (Bandung)

Mr. SADELI WIRAMIHARDJA  
- Head, KANWIL

9. Puslitbang Pengairan

Mr. BADRUDDIN MACHBUB  
- Director

10. KABUPATEN BANDUNG Office

Mr. R. ARIFIN SOEHARA

11. PLN

Mr. ASNAWI SABRAWI  
- Chief of Technical Division, PLN Branch Office, Majalaya

Mr. ARDANA  
- Chief of Technical Division, PLN Distribution III, Bandung

12. PERUMTEL

Mr. KUSWAN PRIBADI  
- Head of Operational

Mr. DJOKO HANDAYANTO  
- Head of Monitoring Section

13. P.T. Encona Engineering Inc.

Mr. MOHAMMAD DANISWORO  
- Vice President, Business Development

14. The Japanese Embassy in Indonesia

Mr. KORO BESSHO  
- First Secretary

Mr. SATOSHI UEDA  
- Second Secretary

15. JICA Jakarta Office

Mr. YASUO KITANO

- Residential Representative

Mr. KAZUHISA MATSUOKA

- Vice-Residential Representative

Mr. JUNJI ISHIZUKA

- Assistant to Residential Representative

16. Experts Dispatched by JICA

Mr. TATSUO NARAFU

- IHS, Agency for Research and Development

Mr. SHIGERU KATO

- Directorate of Housing, Directorate General of Human Settlements

Mr. KEISUKE HAMA

- Directorate of Housing, Directorate General of Human Settlements

Mr. TOMOHIRO HASEGAWA

- Directorate of Housing, Directorate General of Human Settlements

## APPENDIX 2 HOUSING CONDITIONS IN INDONESIA

### (1) Distribution of Households by Household Size and Residential Area

#### Urban Housing: Distribution of Households by Household Size and Floor

	Floor Space Occupied (M <sup>2</sup> ) - Percent of Households										Average Floor Space for		Percent	
	less 20	20-29	30-39	40-49	50-69	70-79	100-149	150-199	200-299	over 300	Total	household person	of Total household	
1	34.8	18.3	11.9	10.5	10.2	8.5	4.0	1.7	1.1	1.0	100.0	45.7	45.7	5.0
2	25.7	17.1	14.1	12.7	12.7	9.8	4.4	1.6	1.1	1.1	100.0	48.9	24.5	10.5
3	20.0	17.3	14.9	14.3	14.1	10.7	5.0	1.7	1.2	0.8	100.0	51.6	17.2	14.5
4	15.8	15.4	15.2	15.4	15.9	12.5	5.9	2.0	1.4	0.8	100.0	55.2	13.8	15.1
5	11.6	14.1	15.3	15.6	17.4	14.0	6.9	2.4	1.6	1.1	100.0	60.6	12.1	14.2
6	8.8	12.5	14.3	15.8	18.8	15.9	7.8	2.6	1.9	1.2	100.0	64.6	10.8	12.4
7	6.6	10.7	13.4	16.1	19.3	17.8	9.5	3.1	2.3	1.3	100.0	69.9	10.0	9.9
8	4.9	9.4	8.2	15.6	20.6	19.0	10.0	3.8	2.7	1.8	100.0	73.8	9.2	7.2
9	3.9	7.8	11.3	15.2	21.1	20.0	11.2	4.2	3.0	2.2	100.0	79.5	8.8	5.2
10+	2.4	5.8	8.3	13.3	20.1	22.1	13.8	5.4	4.7	3.4	100.0	91.3	n.a.	6.4
Percent of Total Households	13.6	13.4	13.7	14.6	16.8	14.4	7.3	2.6	1.9	1.3	100.0	62.0	11.4	100.0

# Average size of Household = 5.44

Source : Calculated from 1980 CENSUS

(2) Building Materials Used in House Construction in Kotamadya and Other Areas

Housing Materials Used in House Construction in Kotamadya and  
other Urban and Rural areas, 1978

	(Percentage Distribution)		
	Urban		Rural
	Kotamadya	Non-Kotamadya	
Wall Construction			
Masonry	41.7	30.1	15.3
Lumber	32.3	34.3	26.9
Bamboo	25.1	33.7	55.1
Earth	0.1	0.2	0.4
Other	0.9	1.6	2.3
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Floor			
Tile	28.9	12.7	1.9
Concrete	32.3	33.2	14.2
Lumber	14.0	21.3	19.9
Bamboo	1.2	5.8	11.4
Earth	23.1	21.1	51.4
Other	0.5	0.8	1.2
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Source ; 1978 SUSENAS



(3) The Fourth Five-year Development Program  
 (by Directorate General of Human Settlements)

Cipta Karya - Target of Development Programme

in Repelita IV (1984 - 1988)

No.	Programme	Target
1.	Housing	
1.1.	Perumnas	140,000 units
1.2.	Non Perumnas	160,000 units
1.3.	Kampung Improvement	400 cities, 15,000 Ha
1.4.	Rural Housing	10,000 villages
1.5.	Others	25,000 units
1.6.	New Town	6,000 Ha
1.7.	Urban Renewal	50 Ha
2.	Water Supply	
2.1.	Urban Coverage	70 % (BNA)
2.2.	Rural Coverage	55 %
2.3.	IKK (District Capital)	2,000 small towns
3.	Environmental Sanitation	
3.1.	Solid waste disposal	200 cities } through labour
3.2.	Drainage	200 cities } intensive
3.3.	Sewerage	10 cities
4.	Urban and Regional Planning	
4.1.	Spacial Planning	1 nat./27 prov./ 269 regencies
4.2.	Regional Planning	394 WPP/198 regencies
4.3.	Urban Planning	292 cities
4.4.	Areal Planning	195 areas and 204 districts

Source: Directorate General of Human Settlements

APPENDIX 3 DATA OF BORING AT THE SITE

Project : INSTITUTE OF HUMAN SETTLEMENTS

Location : BANDUNG, WEST JAVA

DB 1

Elevation (m)		SOIL DESCRIPTION	Consistency			Core	%	SPT
From	To		S	M	H			
0.00	1.00	Inorganic silty clay, elastic greyish brown	*	-	-	1.00	100	-
1.00	2.00	Inorganic silty clay, elastic gray	*	-	-	1.00	100	-
2.00	3.00	Inorganic silty clay, dark gray	*	-	-	1.00	100	-
3.00	3.45	SPT	-	-	-	0.45	-	5
3.45	4.00	Inorganic silty clay with some sands, dark gray	*	-	-	0.55	100	-
4.00	4.50	Undisturbed sampling	-	-	-	0.50	-	-
4.50	5.50	Inorganic sandy silty clay, blackish gray	*	-	-	1.00	100	-
5.50	6.00	Undisturbed sampling	-	-	-	0.50	-	-
6.00	6.45	SPT	-	-	-	0.45	-	3
6.45	7.50	Inorganic sandy silty clay, blackish gray	*	-	-	1.05	100	-
7.50	9.00	Non Plastic sands blackish gray	-	-	*	1.50	100	-
9.00	9.45	SPT	-	-	-	0.45	-	57
9.45	10.50	Non plastic sands with some fines, blackish gray	-	*	-	0.95	90	-
10.50	12.00	Non plastic sands with some fines, blackish gray	-	*	-	0.75	90	-

\*  
S : Soft  
M : Medium  
H : Hard

Project : INSTITUTE OF HUMAN SETTLEMENTS

Location : BANDUNG, WEST JAVA

DB I

Elevation (m)		SOIL DESCRIPTION	Consistency			Core	%	SPT
From	To		S	M	H			
12.00	12.45	S P T	-	-	-	0.45	-	11
12.45	13.50	Non plastic gravelly sands with some fines, blackish gray	-	*	-	1.05	100	-
13.50	15.00	Non plastic gravelly sands with some fines, blackish gray	-	*	-	1.50	100	-
15.00	15.45	S P T	-	-	-	0.45	-	10
15.45	17.00	Inorganic stiff clay, dark gray	-	-	*	1.55	100	-
17.00	18.00	Inorganic stiff clay with some claystone, dark gray	-	-	*	1.00	100	-
18.00	18.45	S P T	-	-	-	0.45	-	81
18.45	19.50	Non plastic gravelly sands, black	-	-	*	1.05	100	-
19.50	21.00	Non plastic gravelly sands, black	-	-	*	1.50	100	-
21.00	21.33	S P T	-	-	-	0.33	-	>80
21.33	22.50	Gravelly claystone with some boulder, yellow	-	-	*	1.05	90	-
22.50	23.00	Gravelly claystone with some boulder, yellow	-	-	*	0.50	100	-
23.00	24.00	Gravelly claystone with some boulder, gray	-	-	*	0.90	90	-

\*  
S : Soft  
M : Medium  
H : Hard

Project : INSTITUTE OF HUMAN SETTLEMENTS

Location : BANDUNG, WEST JAVA

DB I

Elevation (m)		SOIL DESCRIPTION	Consistency			Core	%	SPT
From	To		S	M	H			
24.00	24.30	S P T	-	-	-	0.30	-	>80
24.30	25.00	Sandy gravelly claystone with some boulder, gray	-	-	*	0.70	100	-
25.00	26.00	Sandy gravelly claystone with some boulder, gray	-	-	*	0.90	90	-
26.00	27.00	Sandy gravelly claystone with some boulder, gray	-	-	*	1.00	100	-
27.00	27.30	S P T	-	-	-	0.30	-	>80
27.30	28.00	Sandy gravelly claystone with some boulder, gray	-	-	*	0.70	100	-
28.00	29.00	Sandy gravelly claystone with some boulder, gray	-	-	*	0.75	75	-
29.00	30.00	Sandy gravelly claystone with some boulder, gray	-	-	*	0.90	90	-
30.00	30.15	S P T	-	-	-	0.15	-	>80

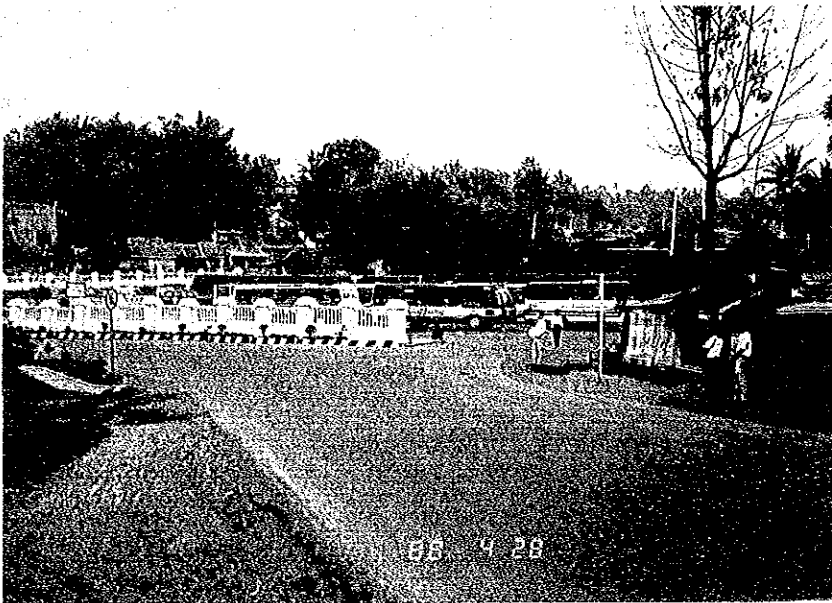
S : Soft  
M : Medium  
H : Hard

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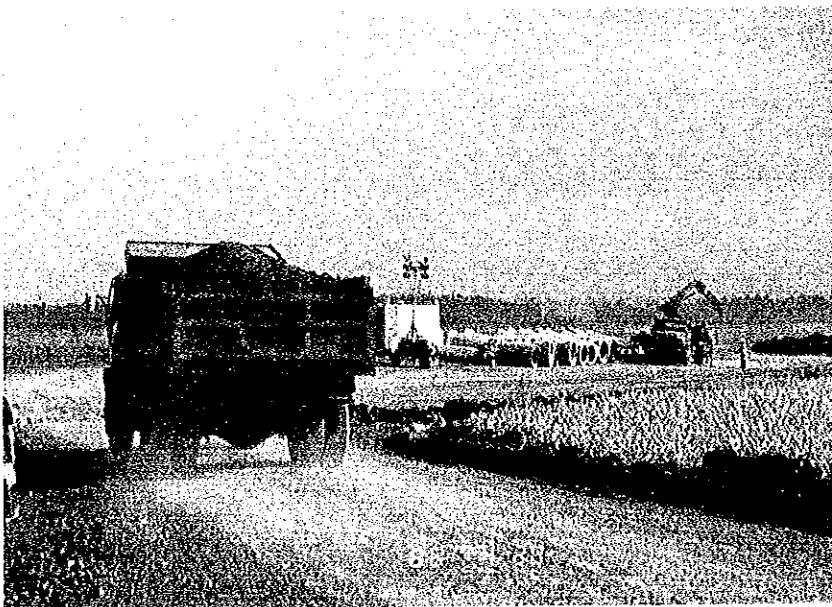
APPENDIX 4 PHOTOGRAPHS OF SURROUNDING AREAS OF THE SITE



Bandung Loop

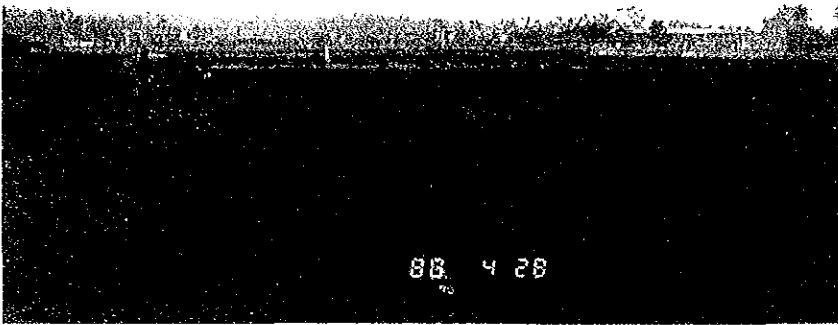


Bus Terminal  
at Cileunyi



Toll Road under  
Construction





Access Road



Project Site



Existing Ditch in the East Side of the Site







JICA