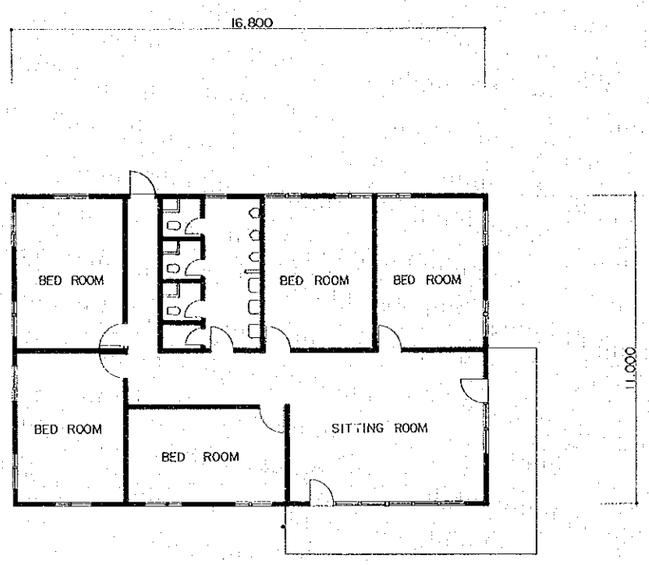
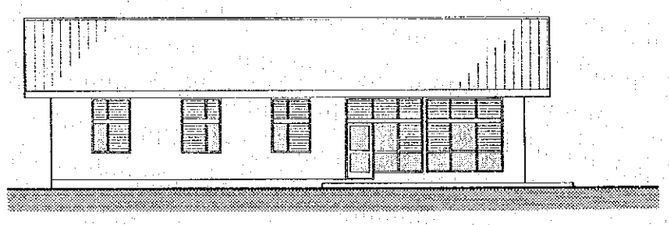
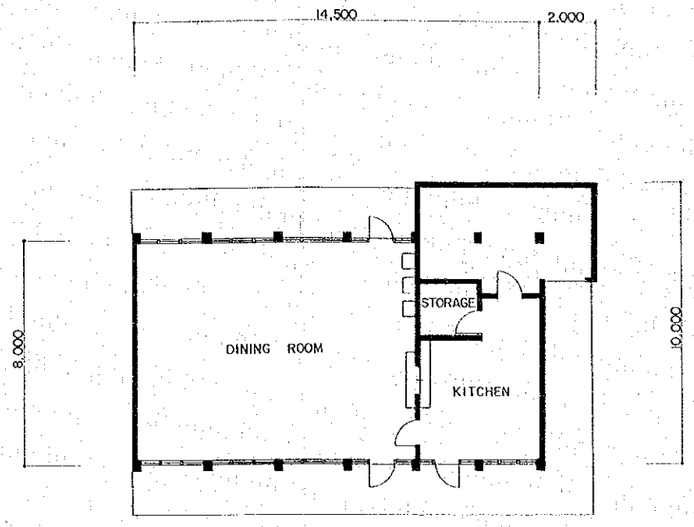


PLAN

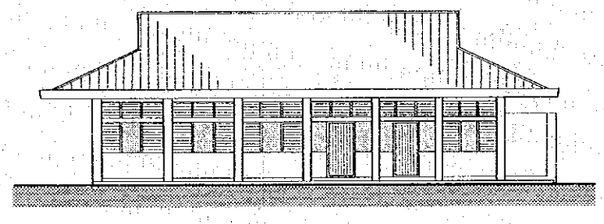


ELEVATION

VISITING INSTRUCTOR'S DORMITORY

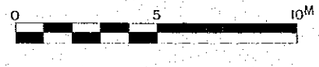


PLAN



ELEVATION

DINING ROOM AND KITCHEN



LEGEND

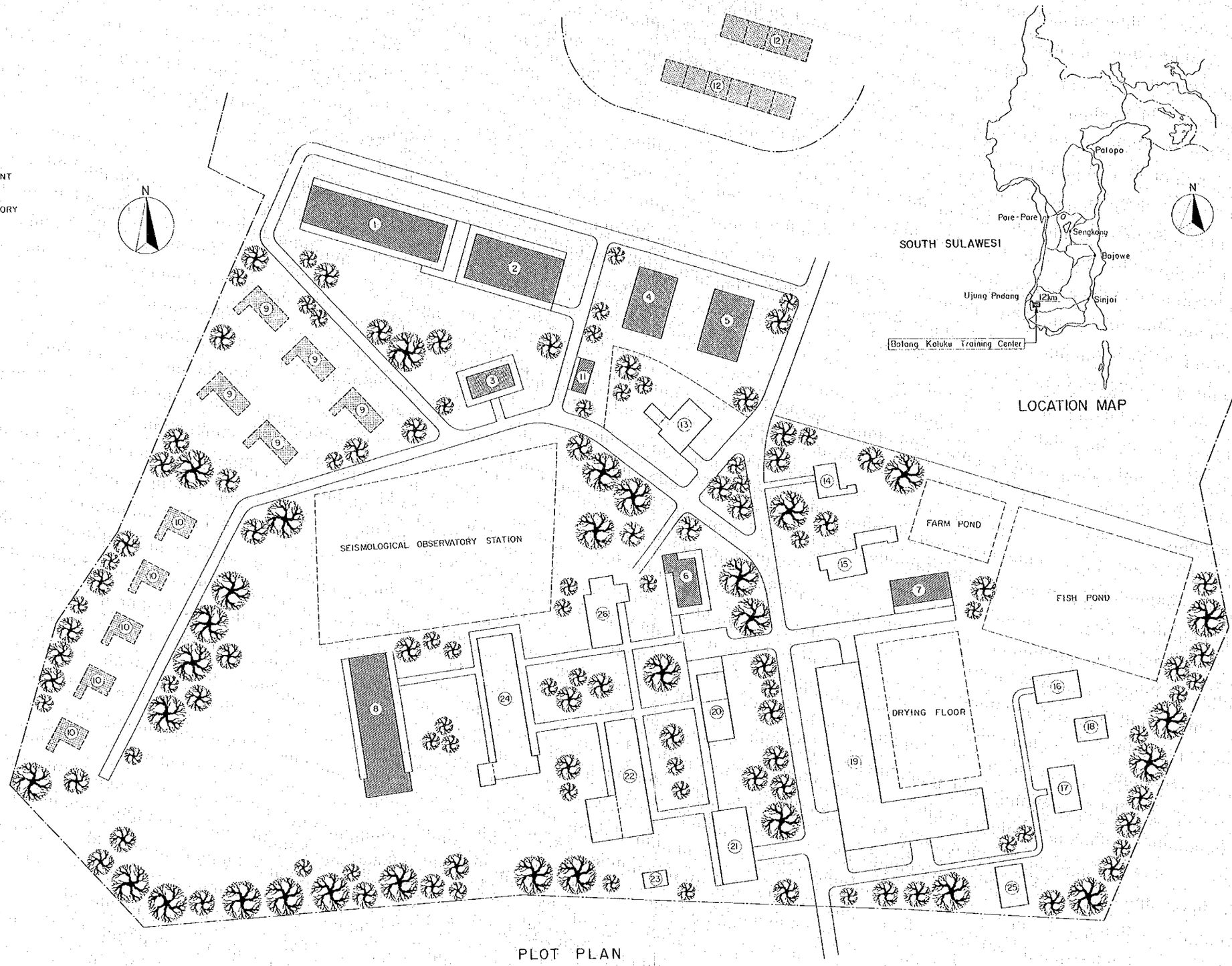
NEW BUILDINGS

1. CENTRAL BUILDING
2. MULTI-PURPOSE HALL
3. LABORATORY-HOME IMPROVEMENT
4. WOMEN'S DORMITORY
5. VISITING INSTRUCTOR'S DORMITORY
6. DINING ROOM AND KITCHEN
7. STORAGE FOR EQUIPMENT
8. MEN'S DORMITORY
9. INSTRUCTOR'S HOUSE
10. ASST. INSTRUCTOR'S HOUSE
11. ABLUTION BLOCK
12. EMPLOYEE'S HOUSE

EXISTING BUILDINGS

13. HOUSE (TYPE B)
14. HOUSE (TYPE D)
15. HOUSE
16. LARGE ANIMAL SHED
17. CHICKEN HOUSE
18. SMALL ANIMAL SHED
19. MACHINERY SHED
20. ADMINISTRATION BUILDING
21. WORK SHOP
22. CLASS ROOM
23. ABLUTION BLOCK
24. DORMITORY
25. STORAGE
26. DINING ROOM AND KITCHEN

EXISTING BUILDING
NEW BUILDING
NEW BUILDING (FUTURE)



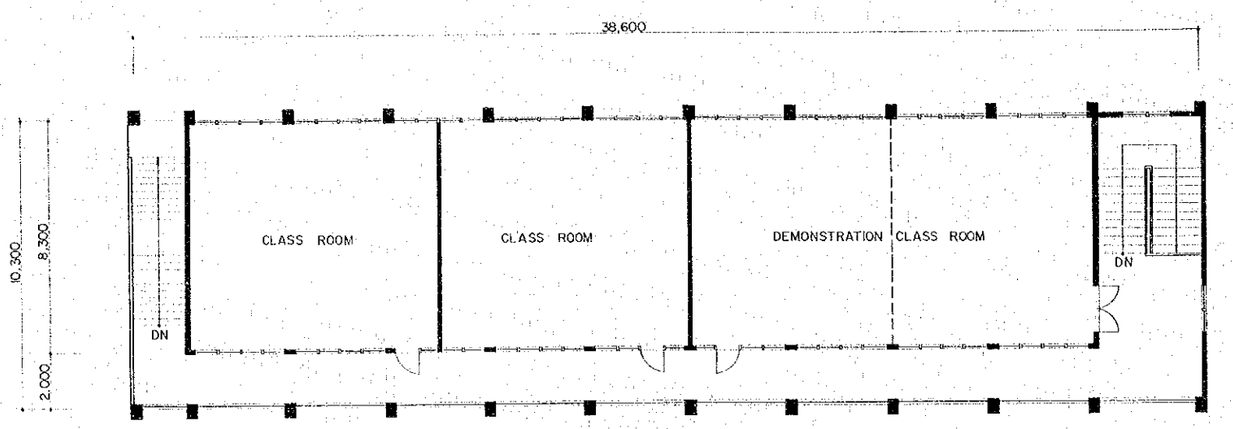
PLOT PLAN

0 10 50M

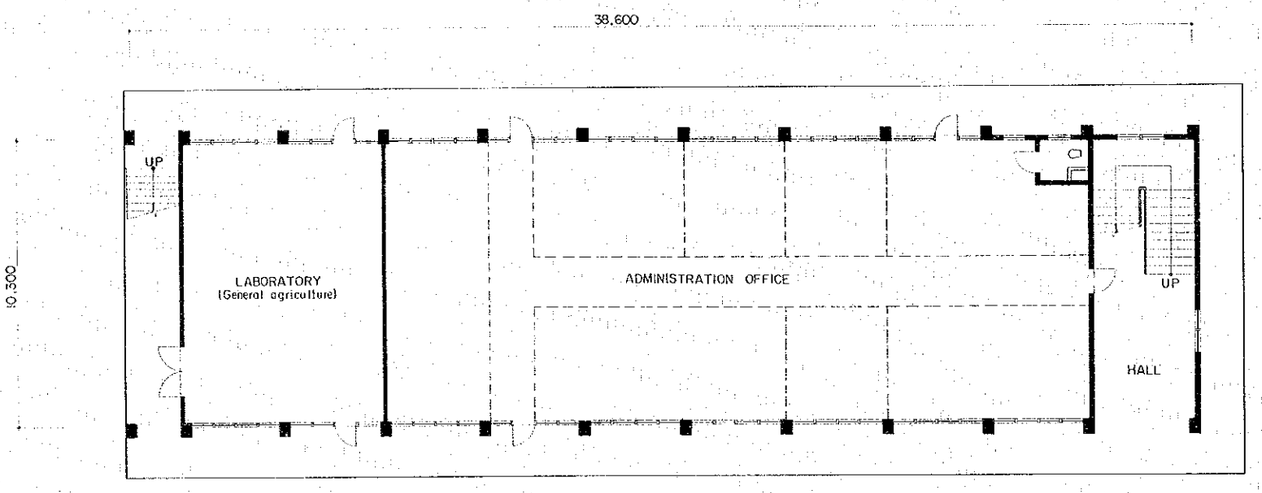
LOCATION MAP

BATANG KALUKU TRAINING CENTER

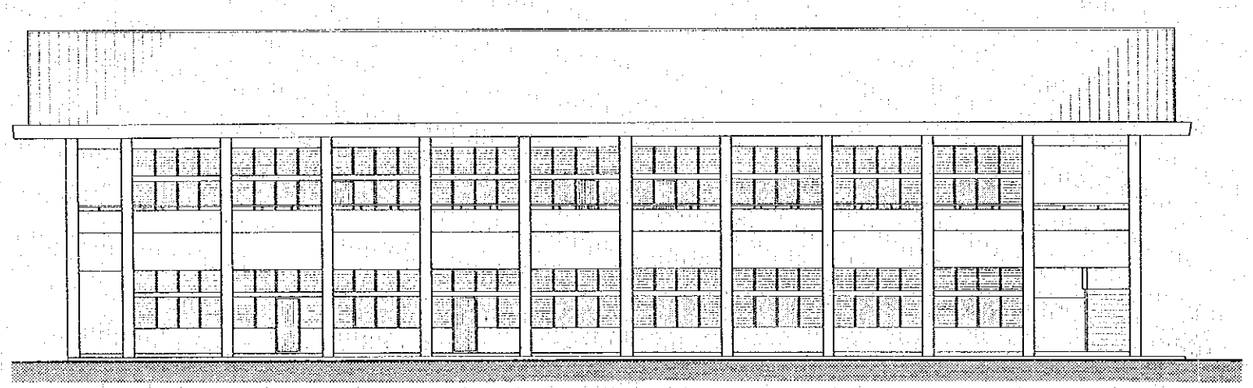
PLOT PLAN 07



SECOND FLOOR PLAN

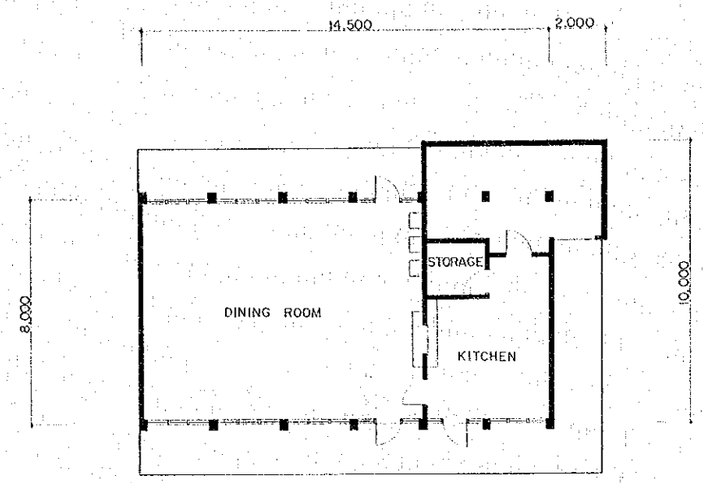


FIRST FLOOR PLAN

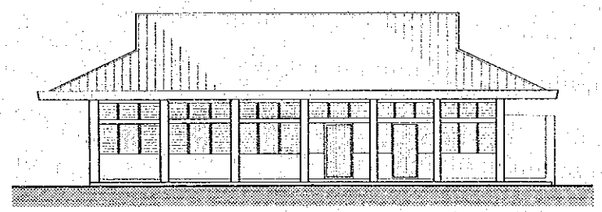


ELEVATION

CENTRAL BUILDING

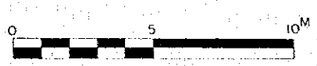


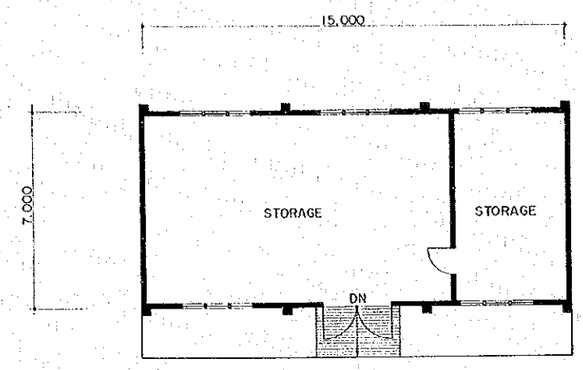
PLAN



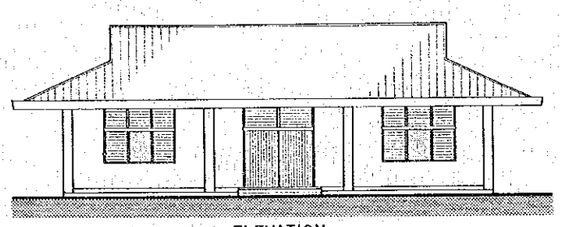
ELEVATION

DINING ROOM AND KITCHEN



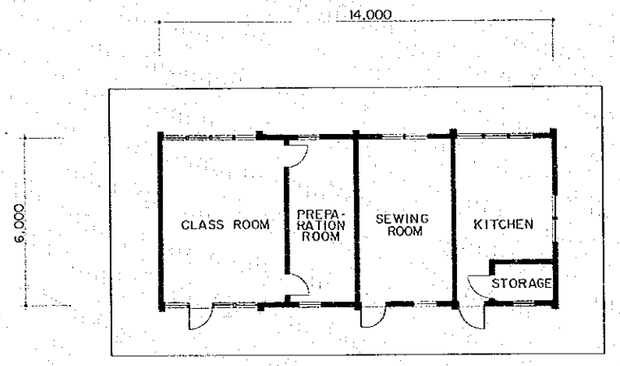


PLAN

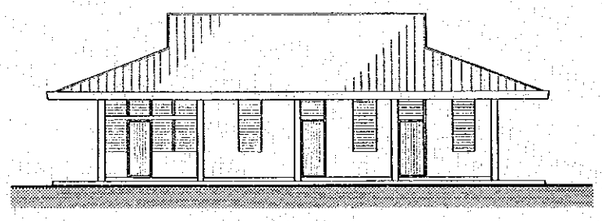


ELEVATION

STORAGE FOR EQUIPMENT

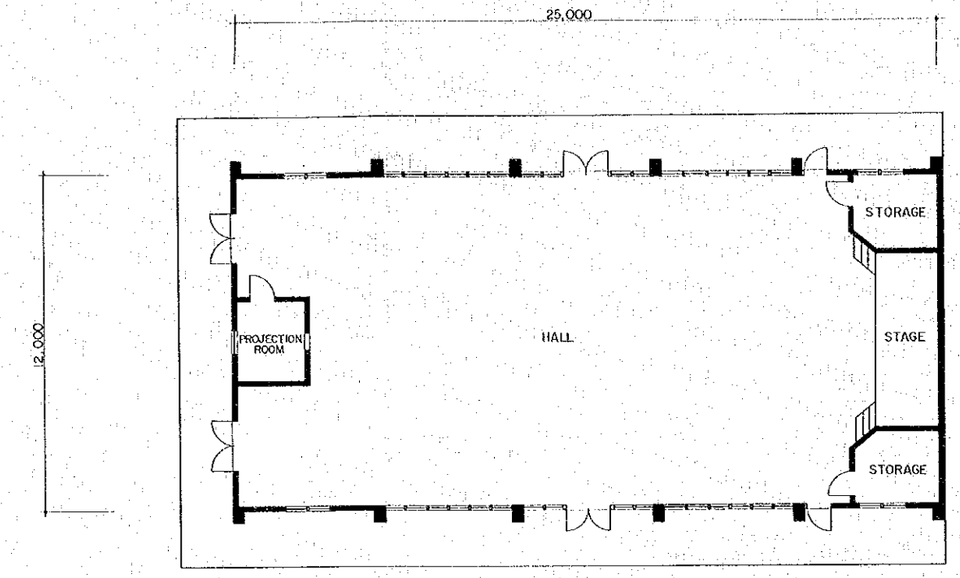


PLAN

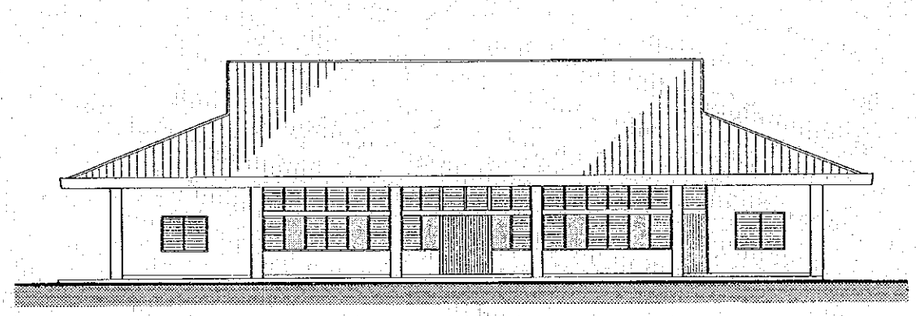


ELEVATION

LABORATORY – HOME IMPROVEMENT



PLAN



ELEVATION

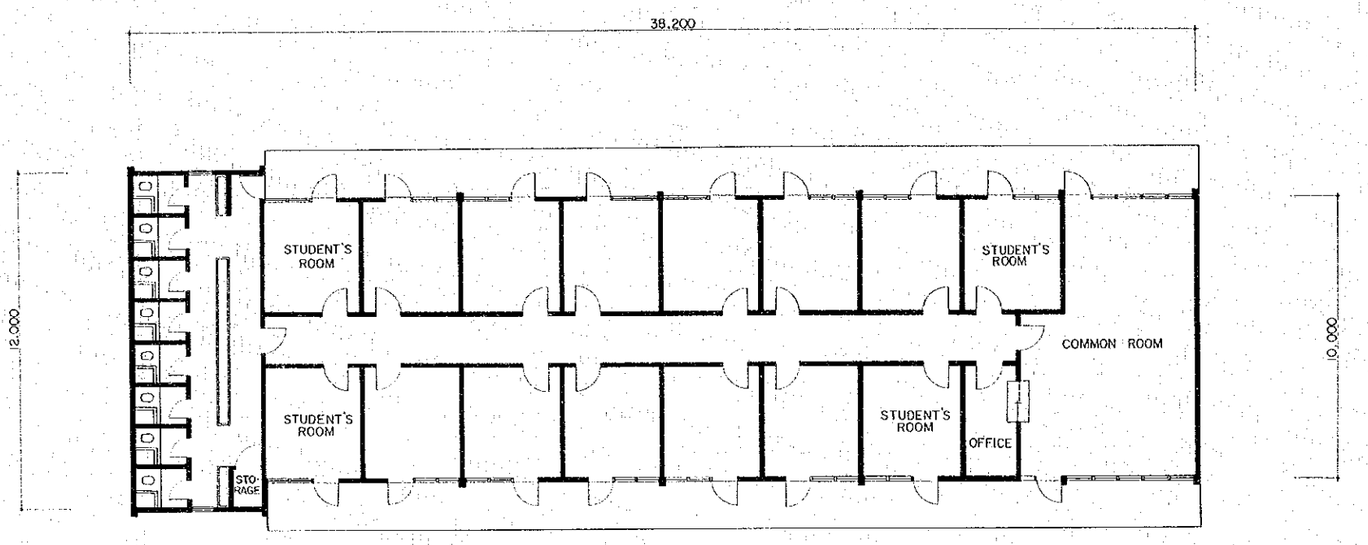
MULTI - PURPOSE HALL

0 5 10M

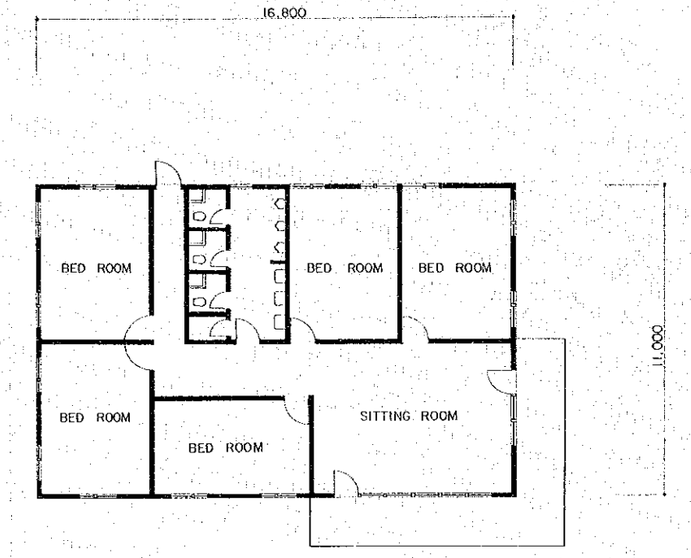
BATANG KALUKU TRAINING CENTER

STORAGE FOR EQUIPMENT / MULTI – PURPOSE HALL
LABORATORY – HOME IMPROVEMENT

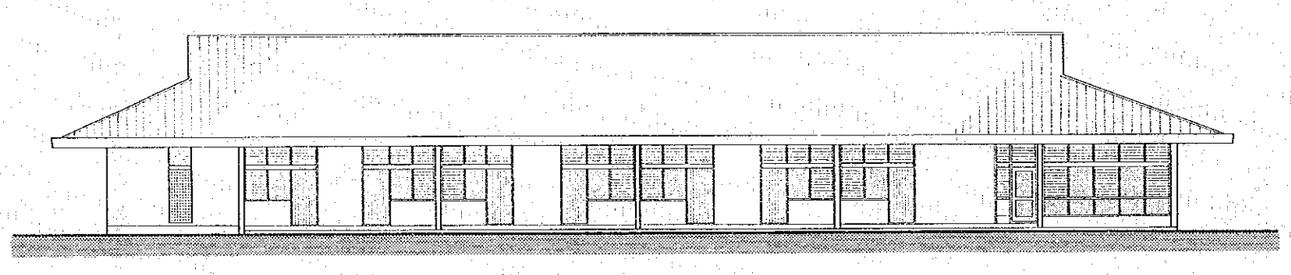
09



PLAN

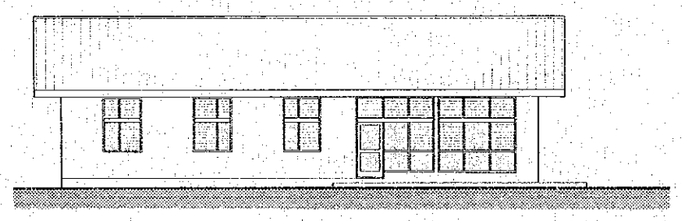


PLAN



ELEVATION

MEN'S DORMITORY

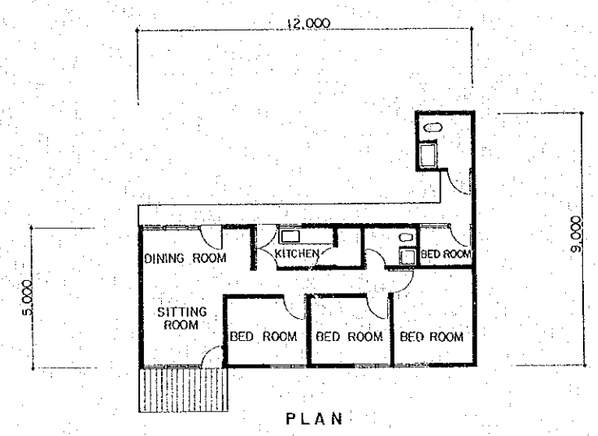


ELEVATION

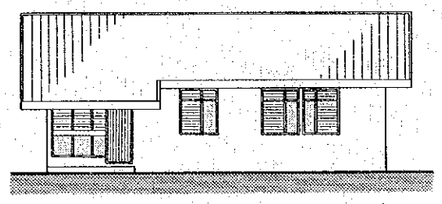
VISITING INSTRUCTOR'S DORMITORY

BATANG KALUKU TRAINING CENTER

MEN'S DORMITORY / VISITING INSTRUCTOR'S DORMITORY

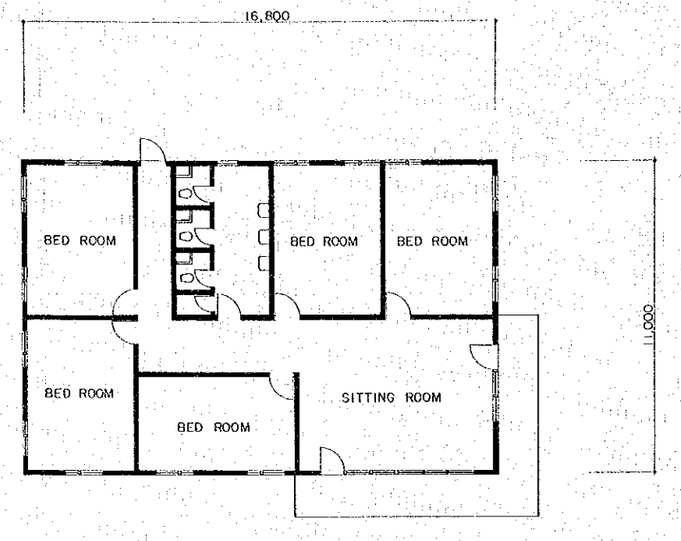


PLAN

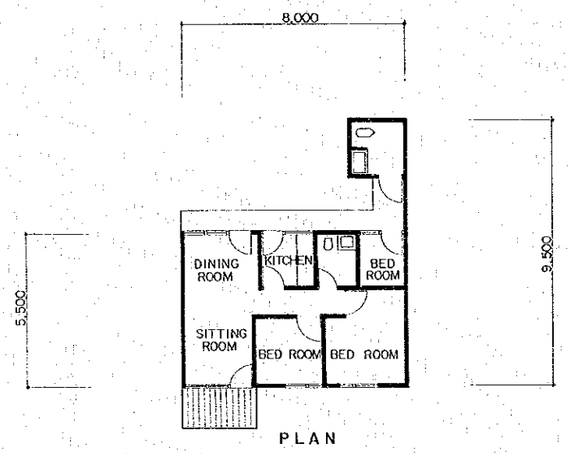


ELEVATION

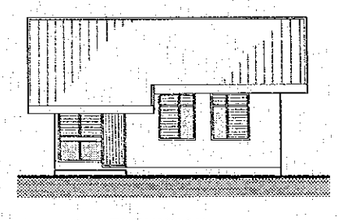
INSTRUCTOR'S HOUSE



PLAN

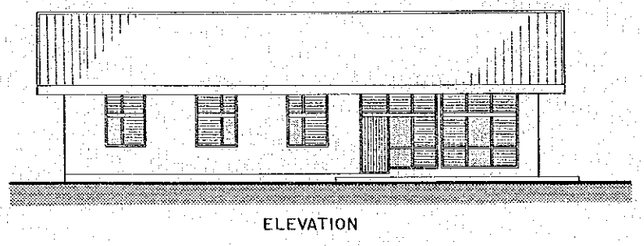


PLAN



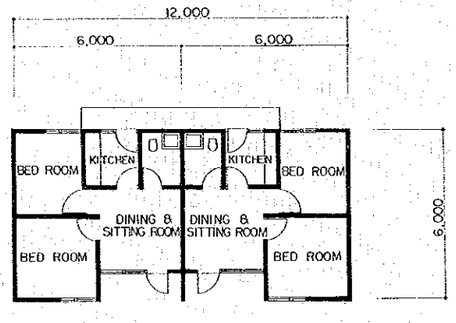
ELEVATION

ASST. INSTRUCTOR'S HOUSE

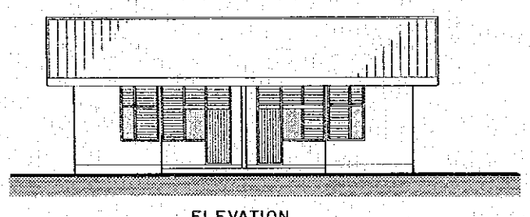


ELEVATION

WOMEN'S DORMITORY

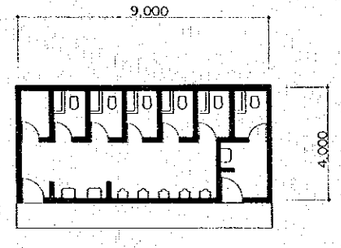


PLAN

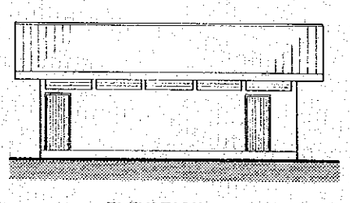


ELEVATION

EMPLOYEE'S HOUSE

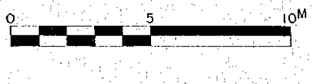


PLAN



ELEVATION

ABLUTION BLOCK



BATANG KALUKU TRAINING CENTER

INSTRUCTOR'S HOUSE / ASST. INSTRUCTOR'S HOUSE / EMPROYEE'S HOUSE
WOMEN'S DORMITORY / ABLUTION BLOCK

LEGEND

NEW BUILDINGS

1. CENTRAL BUILDING
2. DRYING FLOOR
3. MULTI - PURPOSE HALL
4. CLASS ROOM
5. STORAGE, WORKSHOP, TRACTOR AND VEHICLE SHED
6. WOMEN'S DORMITORY
7. VISITING INSTRUCTOR'S DORMITORY
8. MEN'S DORMITORY (EXIST. BUILDING TO BE REMODELED)
9. ABLUTION BLOK
10. DINING ROOM AND KITCHEN
11. MILK ROOM
12. INSTRUCTOR'S HOUSE
13. ASST. INSTRUCTOR'S HOUSE
14. EMPLOYEE'S HOUSE
15. STORAGE FOR ANIMAL FEED

EXISTING BUILDINGS

16. WORKSHOP
17. ADMINISTRATION BUILDING
18. DORMITORY
19. DINING ROOM AND KITCHEN
20. ABLUTION BLOK
21. MACHINERY SHED
22. HOUSE (TYPE B.C.D)
23. CHICKEN HOUSE SHED
24. LARGE ANIMAL SHED
25. SMALL ANIMAL SHED
26. GENERATOR ROOM

— EXISTING BUILDING

— NEW BUILDING

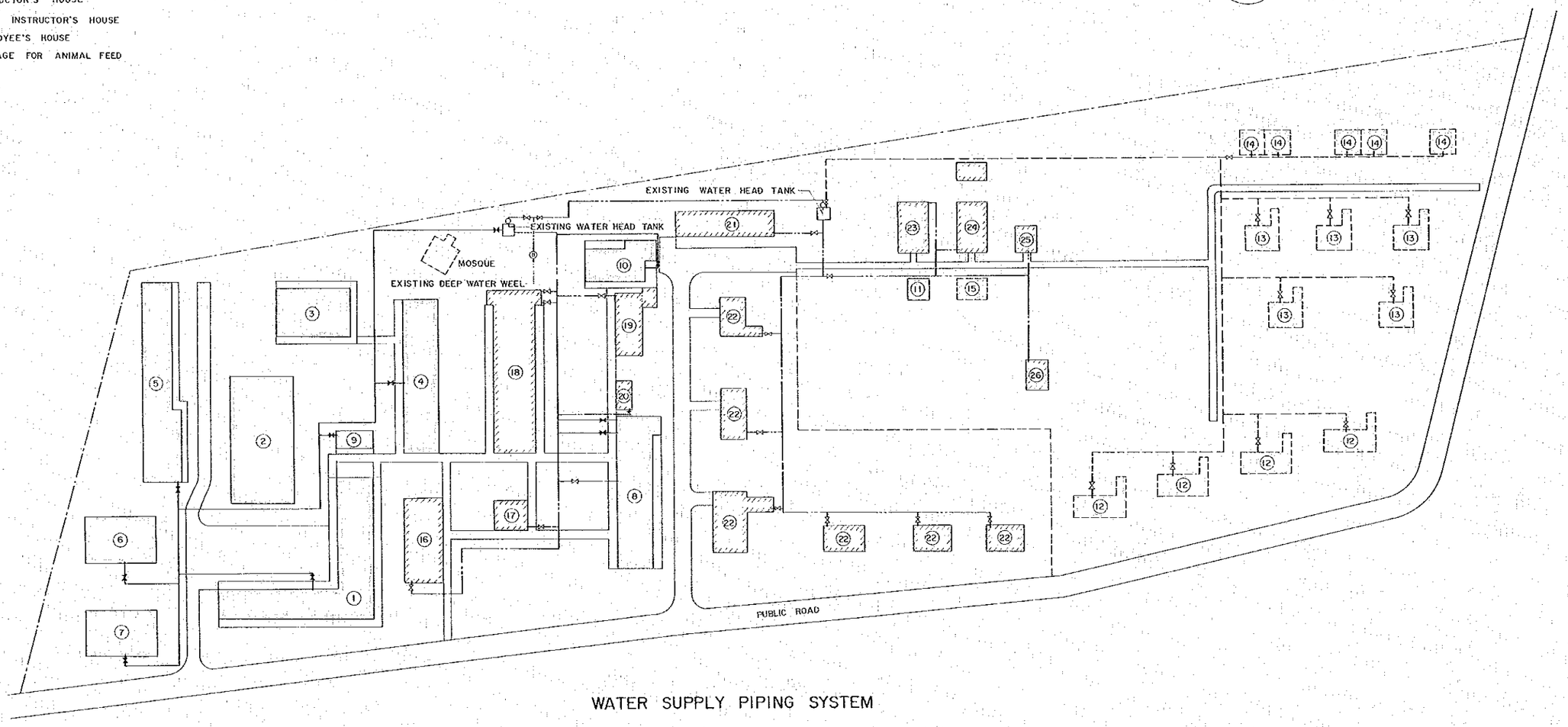
— NEW BUILDING (FUTURE)

EXISTING WATER DISTRIBUTION PIPE LINE

NEW WATER DISTRIBUTION PIPE LINE

NEW WATER DISTRIBUTION PIPE LINE (FUTURE)

N



WATER SUPPLY PIPING SYSTEM

0 10 50M

CIHEA TRAINING CENTER

WATER SUPPLY PIPING SYSTEM

LEGEND

NEW BUILDINGS

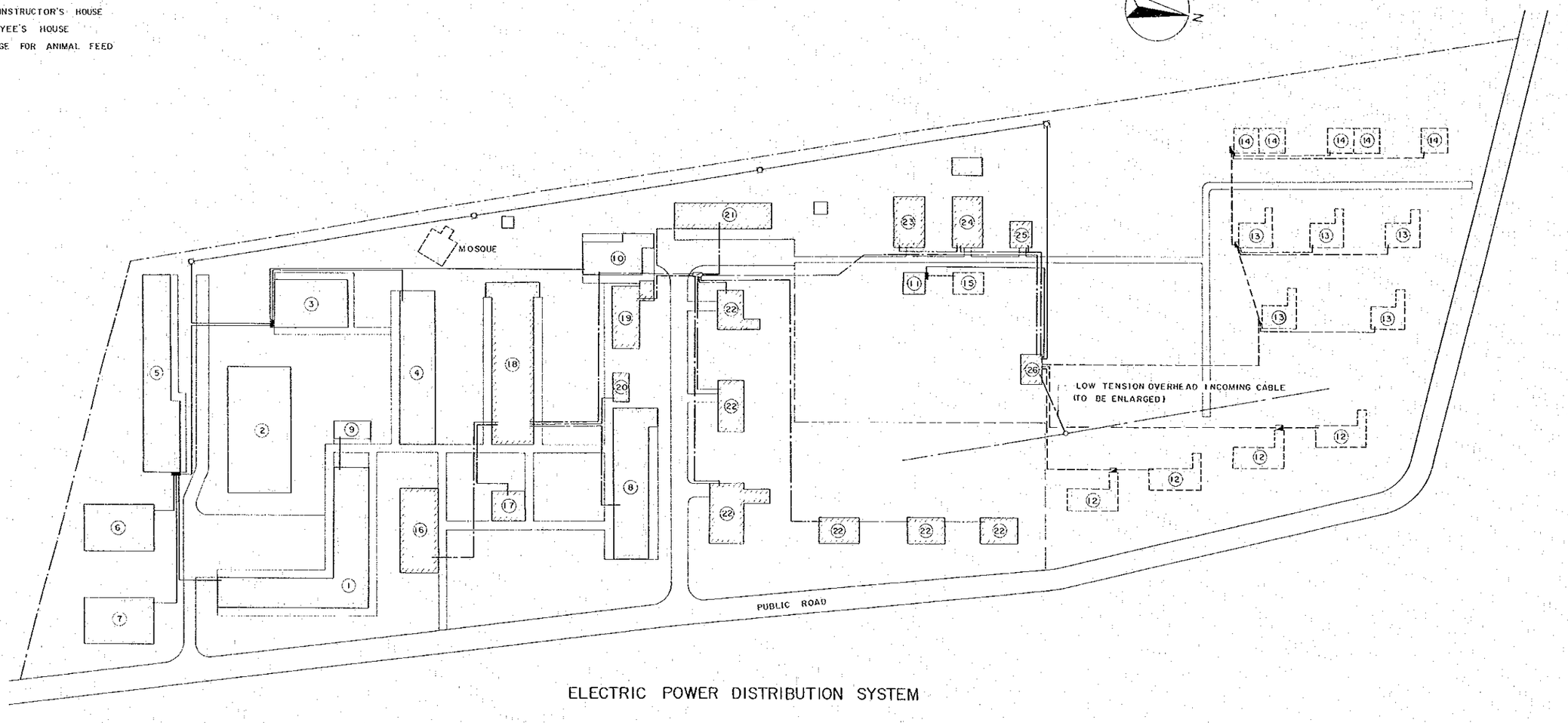
(1) CENTRAL BUILDING
(2) DRYING FLOOR
(3) MULI-PURPOSE HALL
(4) CLASS ROOM
(5) STORAGE, WORKSHOP, TRACTOR AND VEHICLE SHED
(6) WOMEN'S DORMITORY
(7) VISITING INSTRUCTOR'S DORMITORY
(8) MEN'S DORMITORY (EXIST. BUILDING TO BE REMODELED)
(9) ABLUTION BLOK
(10) DINING ROOM AND KITCHEN
(11) MILK ROOM
(12) INSTRUCTOR'S HOUSE
(13) ASSI. INSTRUCTOR'S HOUSE
(14) EMPLOYEE'S HOUSE
(15) STORAGE FOR ANIMAL FEED

EXISTING BUILDINGS

(16) WORKSHOP
(17) ADMINISTRATION BUILDING
(18) DORMITORY
(19) DINING ROOM AND KITCHEN
(20) ABLUTION BLOCK
(21) MACHINERY SHED
(22) HOUSE (TYPE B.C.D)
(23) CHICKEN HOUSE
(24) LARGE ANIMAL SHED
(25) SMALL ANIMAL SHED
(26) GENERATOR ROOM

— EXISTING BUILDING
— NEW BUILDING
— NEW BUILDING (FUTURE)
EXISTING UNDERGROUND CABLE LINE
NEW UNDERGROUND CABLE LINE
NEW UNDERGROUND CABLE LINE (FUTURE)
NEW HAND HOLE
EXISTING POOL BOX
NEW POOL BOX
NEW POOL BOX (FUTURE)

N



ELECTRIC POWER DISTRIBUTION SYSTEM

0 10 50M

CIHEA TRAINING CENTER

ELECTRIC POWER DISTRIBUTION SYSTEM 13

LEGEND

NEW BUILDINGS

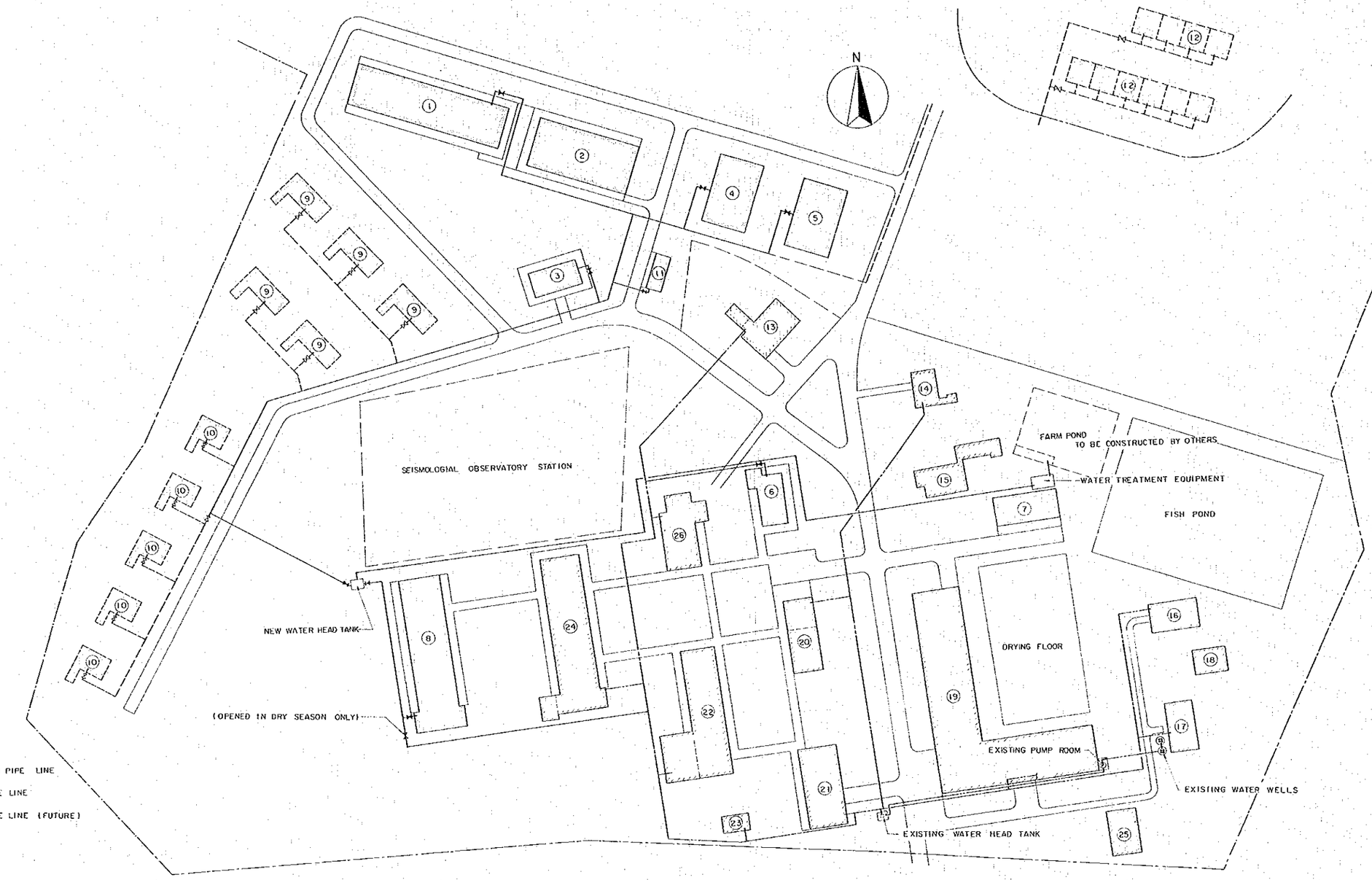
(1) CENTRAL BUILDING
(2) MULTI-PURPOSE HALL
(3) LABORATORY - HOME IMPROVEMENT
(4) WOMEN'S DORMITORY
(5) VISITING INSTRUCTOR'S DORMITORY
(6) DINING ROOM AND KITCHEN
(7) STORAGE FOR EQUIPMENT
(8) MEN'S DORMITORY
(9) INSTRUCTOR'S HOUSE
(10) ASST. INSTRUCTOR'S HOUSE
(11) ABLUTION BLOCK
(12) EMPLOYEE'S HOUSE

EXISTING BUILDINGS

(13) HOUSE (TYPE B)
(14) HOUSE (TYPE D)
(15) HOUSE
(16) LARGE ANIMAL SHED
(17) CHICKEN HOUSE
(18) SMALL ANIMAL SHED
(19) MACHINERY SHED
(20) ADMINISTRATION BUILDING
(21) WORK SHOP
(22) CLASS ROOM
(23) ABLUTION BLOCK
(24) DORMITORY
(25) STORAGE
(26) DINING ROOM AND KITCHEN

— EXISTING BUILDING
— NEW BUILDING
— NEW BUILDING (FUTURE)

EXISTING WATER DISTRIBUTION PIPE LINE
NEW WATER DISTRIBUTION PIPE LINE
NEW WATER DISTRIBUTION PIPE LINE (FUTURE)



WATER SUPPLY PIPING SYSTEM

NOTES: THIS WATER SUPPLY SYSTEM HAS BEEN MADE ASSUMING THAT DEEP WATER WELL IS NOT FEASIBLE, FOR WHICH TEST BORING IS NOW UNDER WAY.
WATER IN FARM POND WILL BE TAKEN FROM BERANG RIVER FLOWING ABOUT 200M TO THE WEST.
SHOULD TEST BORING SUCCEED IN FINDING GROUND WATER, IT WILL BE CONVERTED TO A DEEP WELL INSTALLING A WATER PUMP.

0 10 50M

BATANG KALUKU TRAINING CENTER

WATER SUPPLY PIPING SYSTEM

LEGEND

NEW BUILDINGS

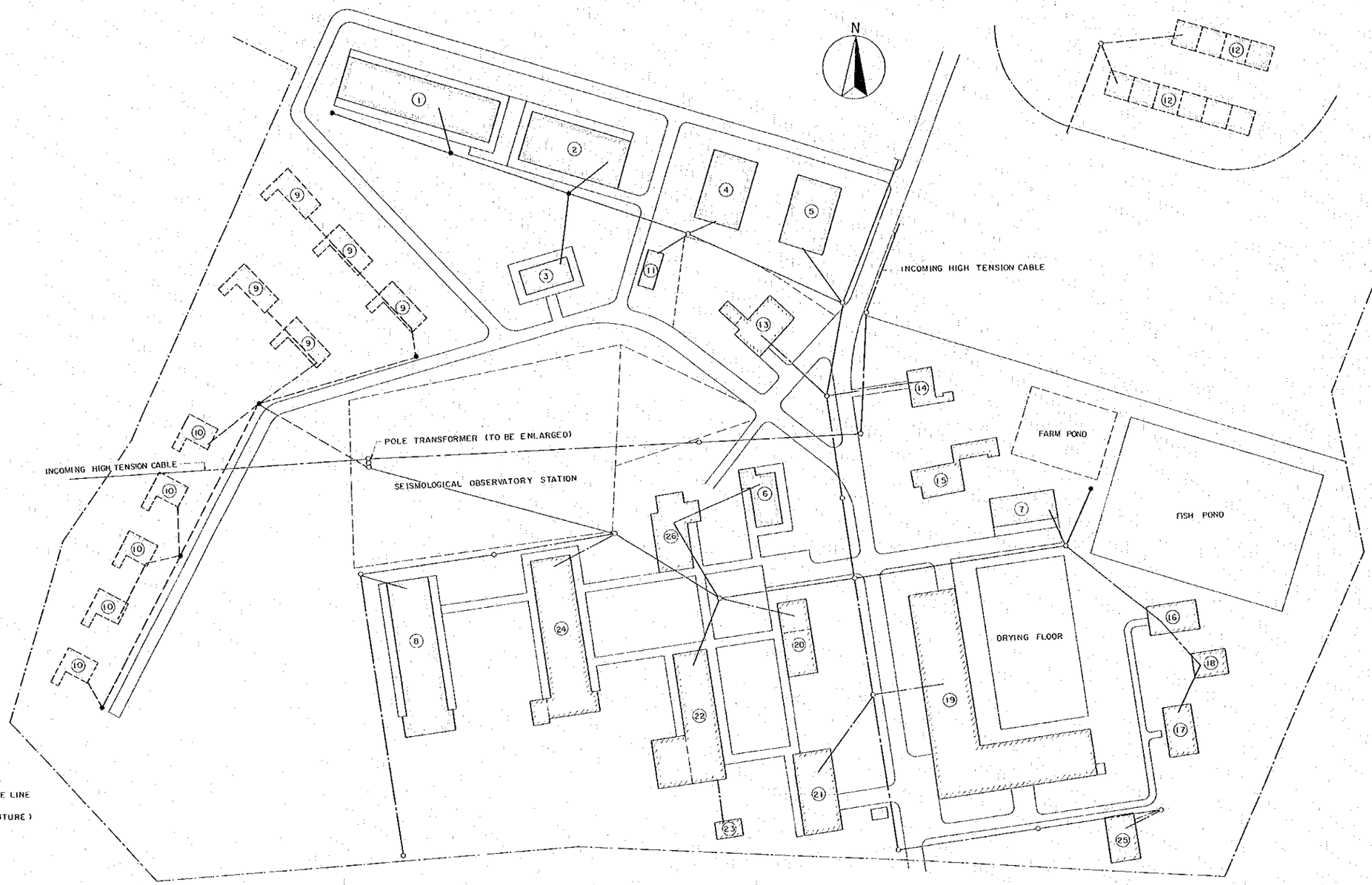
(1) CENTRAL BUILDING
(2) MUILTI - PURPOSE HALL
(3) LABORATORY - HOME IMPROVEMENT
(4) WOMEN'S DORMITORY
(5) VISITING INSTRUCTOR'S DORMITORY
(6) DINING ROOM AND KITCHEN
(7) STORAGE FOR EQUIPMENT
(8) MEN'S DORMITORY
(9) INSTRUCTOR'S HOUSE
(10) ASST. INSTRUCTOR'S HOUSE
(11) ABLUTION BLOCK
(12) EMPLOYEE'S HOUSE

EXISTING BUILDINGS

(13) HOUSE (TYPE B)
(14) HOUSE (TYPE D)
(15) HOUSE
(16) LARGE ANIMAL SHED
(17) CHICKEN HOUSE
(18) SMALL ANIMAL SHED
(19) MACHINERY SHED
(20) ADMINISTRATION BUILDING
(21) WORK SHOP
(22) CLASS ROOM
(23) ABLUTION BLOCK
(24) DORMITORY
(25) STORAGE
(26) DINING ROOM AND KITCHEN

— EXISTING BUILDING
— NEW BUILDING
— NEW BUILDING (FUTURE)

EXISTING OVERHEAD CABLE LINE
NEW OR REPLACED OVERHEAD CABLE LINE
NEW OVERHEAD CABLE LINE (FUTURE)
EXISTING POLE
NEW POLE



ELECTRIC POWER DISTRIBUTION SYSTEM

APPENDIX – 1

GROUND WATER SURVEY AT BATANGKALUKU TRAINING CENTER

1.1 Purpose of Survey

Purporse of the survey is to find out a possibility to construct a deep well to supply domestic water for Batangkaluku Training Center based on a hydrogeological survey and a test boring.

The survey comprises the following:

a) Geological and hydrogeological survey around the Center,

b) Electric prospective survey by Wenner Method at 11 points with a prospecting depth of 130 m,

c) A test boring in a depth of 100 m.

1.2 Hydrogeological Situation

a) Outline of Geographic and Geological Conditions

The area surrounding Batangkaluku Training Center is a vast flat Alluvial plain in a ground level of 10 ∿ 15 m above sea, dotted with small and low hills of Tertiary stratum. Receding from sea side to the east, there rise Tertiary volcanic rocks to a height of 200 ∿ 500 m forming ranges of highlands.

The Alluvial plain, gently sloping from this high-lands to the west sea side, is cultivated mainly for paddy fields and up-land crop fields.

The low hills scattered all over the plain like detached islands stand 5 ∿ 10 m above the surrounding plain and mostly oval in shape with longer axis in

east-west or northeast-southwest directions.

The highlands at the east side is part of a mountain range having steep peaks of 200 ∿ 500 m high which constitutes a water parting from the east coast line of South Sulawesi Province.

Geological profile of this area is consisted of Tertiary sedimentary rocks and volcanic rocks as base overlain by Quaternary Alluvial soils.

Geological Age		Symbol	Name of stratum	Geological Constitution
Quaternary	Alluvial	A	Alluvial soils	Clay, sandy-clay
Tertiary	Miocene	Tv	Tertiary volcanic rocks	Volcanic breccia, tuff breccia, lava, tuff etc.
		Ts	Tertiary sedimentary rocks	Alternation of sandstone, mudstone and conglomerate

Following are the geological and hydrogeological characteristics of each stratum.

b) Tertiary Sedimentary Rocks (Ts)

The hill standing at the west part of Batangkaluku Center and those in the vicinity are formed of marine deposits of Tertiary Miocene period which are mainly consisted of sandstone, mudstone, conglomerate or alternation of these. Sandstone is prevalent around the center sometimes covered with slightly weathered conglomerates over the surface.

The conglomerate is mainly greyish-black andesite pebble ($\phi 5$ ∿ 20 cm) and presents solid impermeable rock facies except around the Center.

The sandstone, consisted generally of grey and massive medium-to-coarse sandstone is found well developed

but containing few bedding or cracks.

The mudstone which is rarely found on the ground surface here, appears alternating with sandstone and conglomerate.

Geological structure here is assumed to be of gently sloping monocline striking south or south-west direction, though not so predictable because the Tertiary sedimentary rocks rarely have developed bedding and existing conditions do not afford much information.

Sandstone, mudstone and conglomerate generally are impermeable solid base rock from the hydrogeological point of view and rarely hold ground water in it. However, there seems a slight possibility of ground-water existence in the Tertiary sedimentary rocks around here from the fact that sedimentary rock of Miocene period in South Sulawesi often intercalates volcanic rocks, there is tuff breccia of this kind found on river bed in a stream running east side of the Center and the volcanic rocks in the highlands in the east appears to be contemporaneous but heterotopic with the sedimentary rocks here.

On the other hand volcanic rock often constitutes an aquifer as it has comparatively well developed joints and cracks with sedimentary rocks.

Consequently it must be advisable to try to tap fissured water like ground water should the sedimentary rocks in this area intercalate volcamic rocks with well developed joints and cracks.

c) Tertiary Volcanic Rocks (Tv)

This is the volcanic rocks forming the mountaneous highlands on the east side which is assumed to be contemporaneous with or bit younger than the hereto

mentioned sedimentary rocks though there seems no relations in between.

This stratum is mainly composed of black basaltic volcanic rocks and tuff breccia partially containing lava, lapilli tuff or tuff of the same qualities and thought to be formed by submarine volcanoes.

It generally presents impermeable solid rock facies but said to be superior to sedimentary rocks as far as the possibility of ground water stocking is concerned.

d) Alluvial Stratum (A)

This is the stratum which forms the Alluvial plain and is mainly consisted of soft clay or sandy-clay.

Fluviatile sand and gravel beds are scarcely found and fine marine deposits of impermeable clay is therefore the main component.

Besides, the Alluvial stratum around the Center is very thin, merely 10 m or less, due partly to predominant distribution of the Tertiary stratum.

The Alluvial soil must be very poor as an aquifer judging from the existing structural materials and their thickness.

1.3 Existing Form of Ground Water

There seems to arise lots of difficulties to exploit ground water in this area considering the fact that solid and impermeable Tertiary stratum is widely distributed thus making hydrogeological situation poor.

If there should exist any ground water it must be in either of the following 2 forms under the circumstances.

a) Shallow Ground Water in Alluvial Soils

Batangkaluku Center has been obtaining living water from shallow wells constructed in the Alluvial soils to utilize shallow ground water. The wells get depleted of water in dry seasons.

To further try to develop this shallow ground water does not seem reasonable considering the impermeability of Alluvial soils and their thickness and water delivery of the existing well.

Incidentally it does not seem possible to utilize underflow water from Berang river, rather wide and large, which is running at about 200 m south of the Center because there do not exist permeable sand or sand-gravel layer.

b) Deep Ground Water

Sandstone, mudstone and conglomerate constituting the Tertiary stratum are classified as impermeable material, therefore, can not be counted on as holding any water.

On the other hand, volcanic rock which is expected to be intercalated in the sedimentary rocks can be counted on as giving fissured water like ground water if there existed joints and cracks which allow water to permeate through.

Consequently posibility of exploiting ground water in Tertiary stratum solely deponds on the distribution, location, thickness and hydrogeological properties of the volcanic rocks intercalated in the Tertiary stratum.

1.4 Electric Prospective Survey

a) Method

An electric prospective survey in the surrounding ground of the Center was carried out to fathom the geological structure in advance of the test boring comprising the following:

Measurement Apparatus:	Electric prospective survey kit "Noshi S"
Survey Points:	11 nos.
Location of Survey Points:	In an interval of 100 ∿ 200 m in a range of 1 km around the Center
Survey Depth:	130 m with interval of measurement 0 ∿ 10 m : @1 m 10 ∿ 32 : @2 32 ∿ 100 : @4 100∿ 130 : @10
Electrode Configuration:	Wenner Method

b) Analysis of ρ-a Curve

Relative resistivity curve (ρ-a curve) and analysis values by direct looking method at each survey point are shown in the attached Picture-3.

The ρ-a curves presenting multi-layer structure curve with many different resistivity layers suggest that there are a lot of change in Tertiary layer facies.

This complicated ρ-a curves can be classified into the following 5 layers based on the relative resistivity and curve appearance.

Layer	Average Relative Resistivity	Assumed Geology	Geological Stratum	Hydrogeology
1 st	5∿30 Ωm	Clay, sandy clay	Alluvial stratum	Water-bearing capacity poor
2 nd	3∿15 Ωm	Alternation of sandstone mudstone and conglomerate	Tertiary stratum	Aquiclude
3 rd	10 Ωm	Sandstone, breccia or tuff breccia	"	Water-bearing capacity poor
4 th	10∿60 Ωm	Volcanic breccia, tuff breccia	"	Can be aquifer depending on geological conditions
5 th	<10 Ωm	Sandstone, mudstone or fine-graded volcanic rocks	"	Impervious

c) Analysis of Survey Results

Assumed geological structure based on the electric prospective survey is shown on the attached Picture-3 in north-south direction traversing the Center.

Hydrogeological characteristics of each layer are summerized below.

i) First layer (Alluvial soils) is a thin bed of 2 ∿ 10 m thickness distributed except for at point E9.

It is a clay-rich layer, assumed from the low relative resistivity, having no possibility of ground water.

ii) Second layer is the low relative resistivity layer (3 ∿ 15 Ωm) distributed down to a depth of 52 ∿ 72 m under the Alluvial soils.

It is a layer alternated by solid sandstone, conglomerate and mudstone and can not be expected to contain water.

iii) Third layer have been found only at points E5, E6 and E10 of which materials are not clear. It must, however, be a little superior hydrogeologically to the second layer due to its higher relative resistivity.

iv) Fourth layer has a considerably high relative resistivity compared with second and fifth layers and ρ-a curve shows rising tendency.

It can be a coarse materials probably volcanic rocks intercalated in sedimentary rocks from its relative resistivity, thus leaving a possibility of a ground water-stocking layer under a certain geological conditions. It can also be assumed that this layer is existing in the depth between 60 to 100 m below in a rather thick and continuous condition.

v) Fifth layer existing in a depth between 92 to 120 m is of a very low resistivity layer with a relative resistivity of less than 10 Ωm and is apparently an impermeable layer.

vi) Reviewing the structural profile of Picture-3, it appears to be generally simple containing a change only at around points E4 and E5 in the fourth layer leaving a possibility of ground water exploitation at this point only.

d) Location of Test Boring

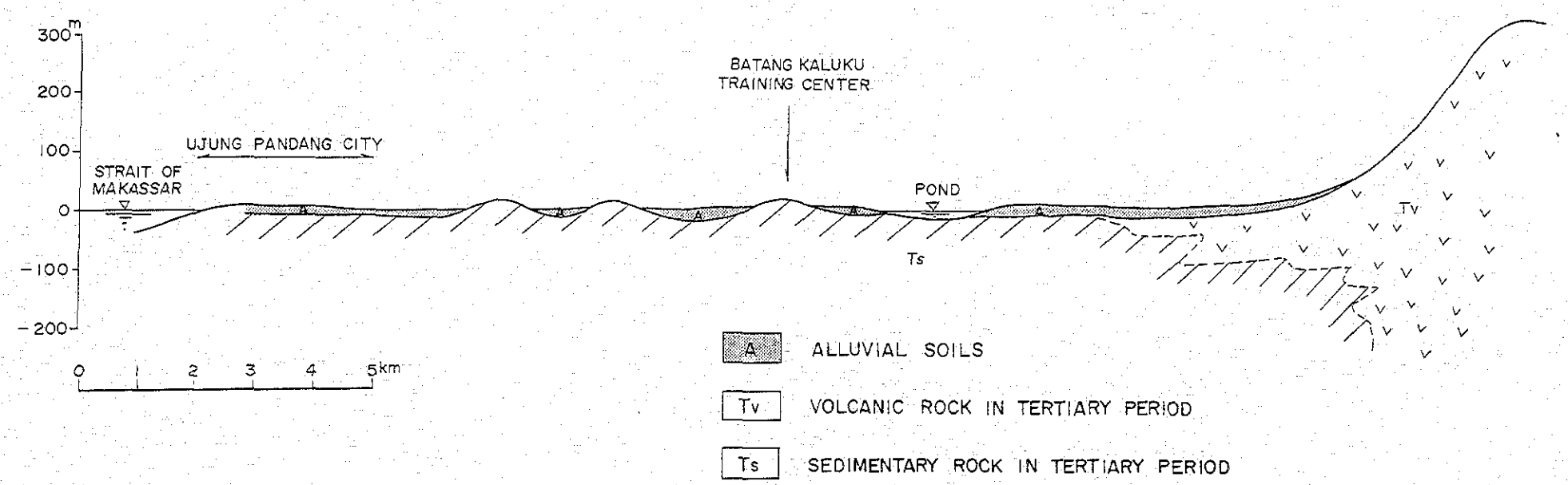
Point of the test boring for a deep well has been decided at the point shown on the attached Picture-2 zeroing in on the intercalated volcanic rocks in

the sedimentary rock possibly existing at survey points E4 and E5 as explained hereto and incidentally taking into consideration the working conditions and in relation with water supply system.

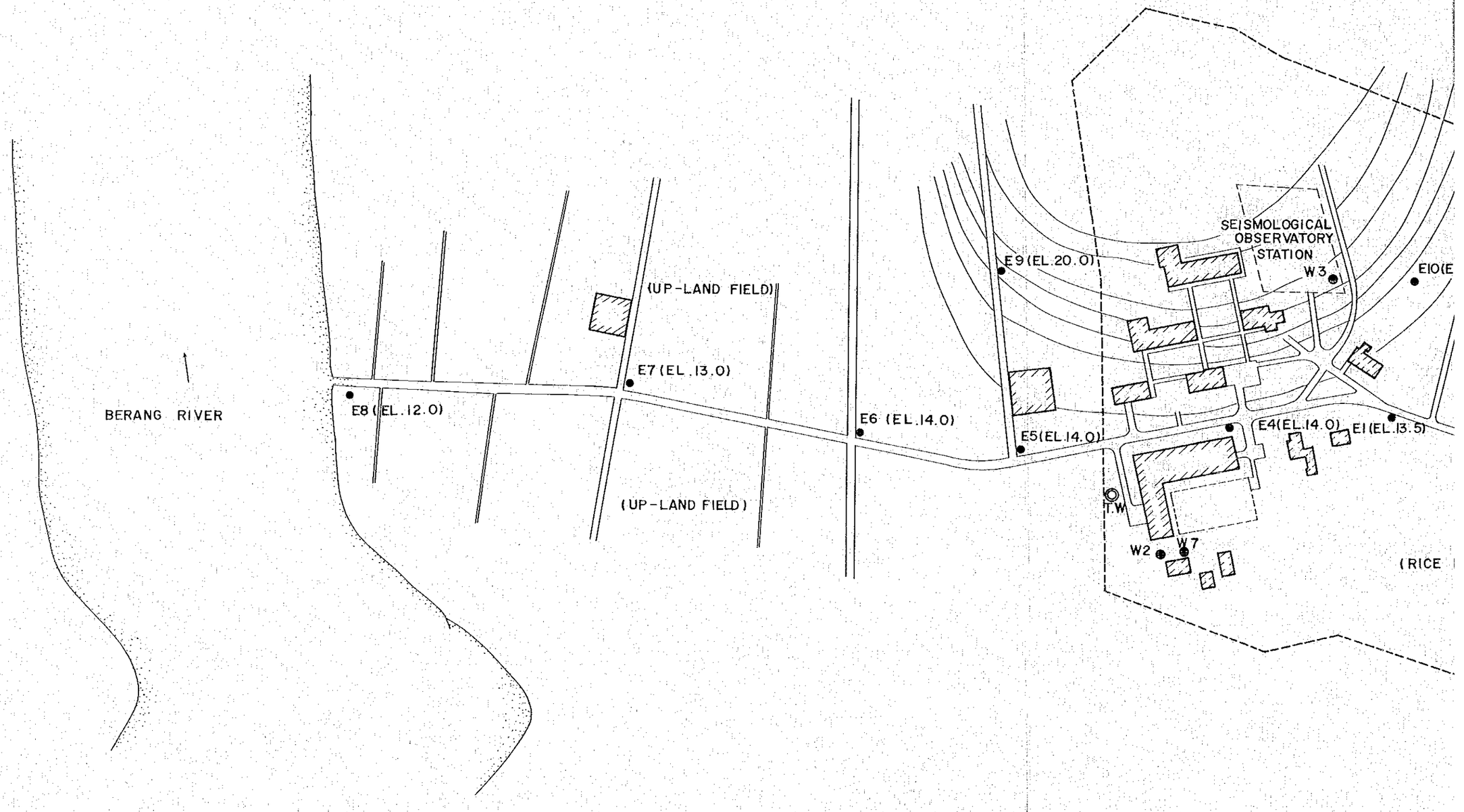
Profile of the test boring is shown in attached Picture-4.

PICTURE–1 GEOLOGICAL SECTION

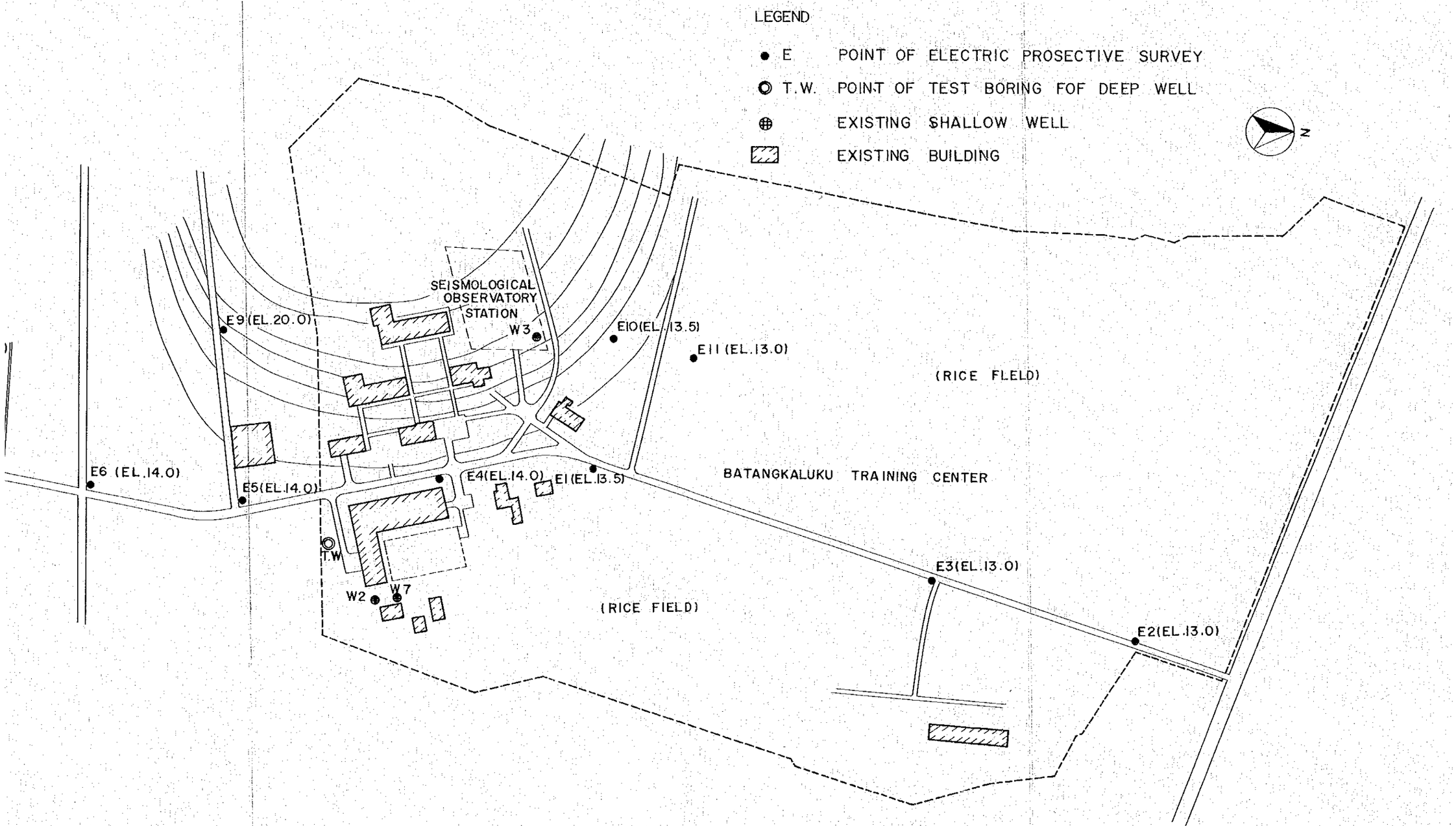
(EAST–WEST DIRECTION)



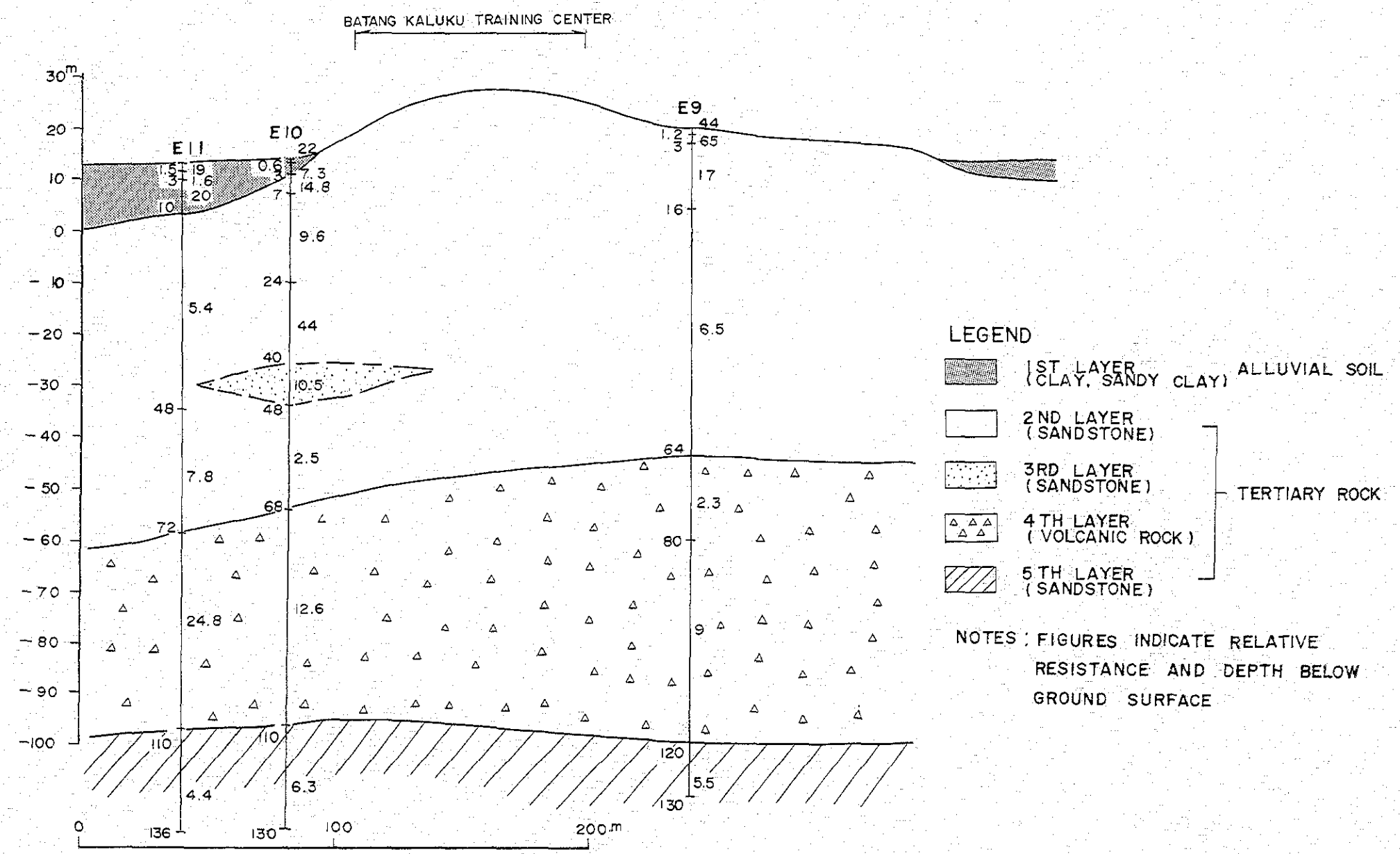
PICTURE— 2 PLAN OF ELECTRIC PROSPECTIVE SURVEY—BATANGKALUKUI TRAINING CENTER



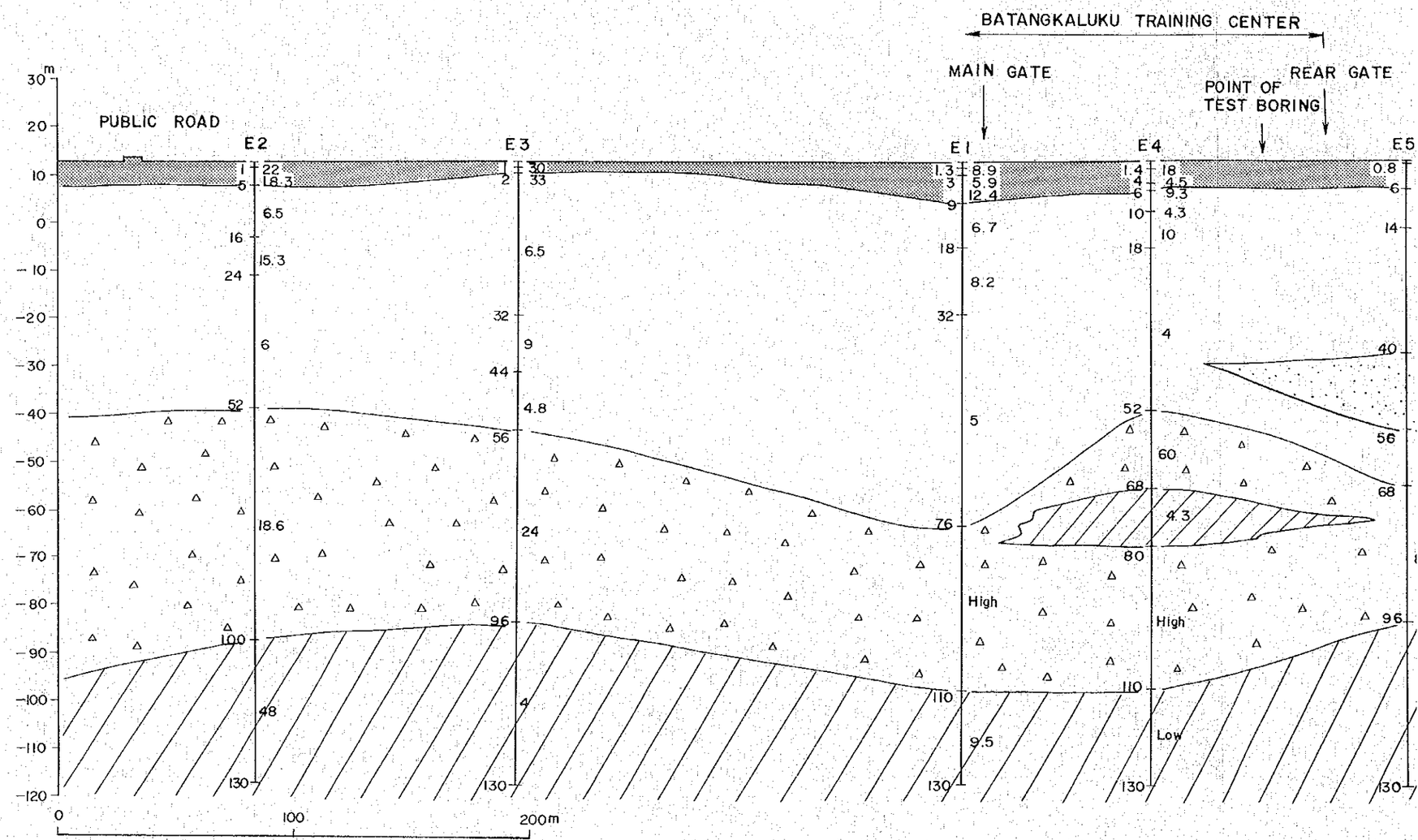
SURVEY—BATANGKALUKUI TRAINING CENTER



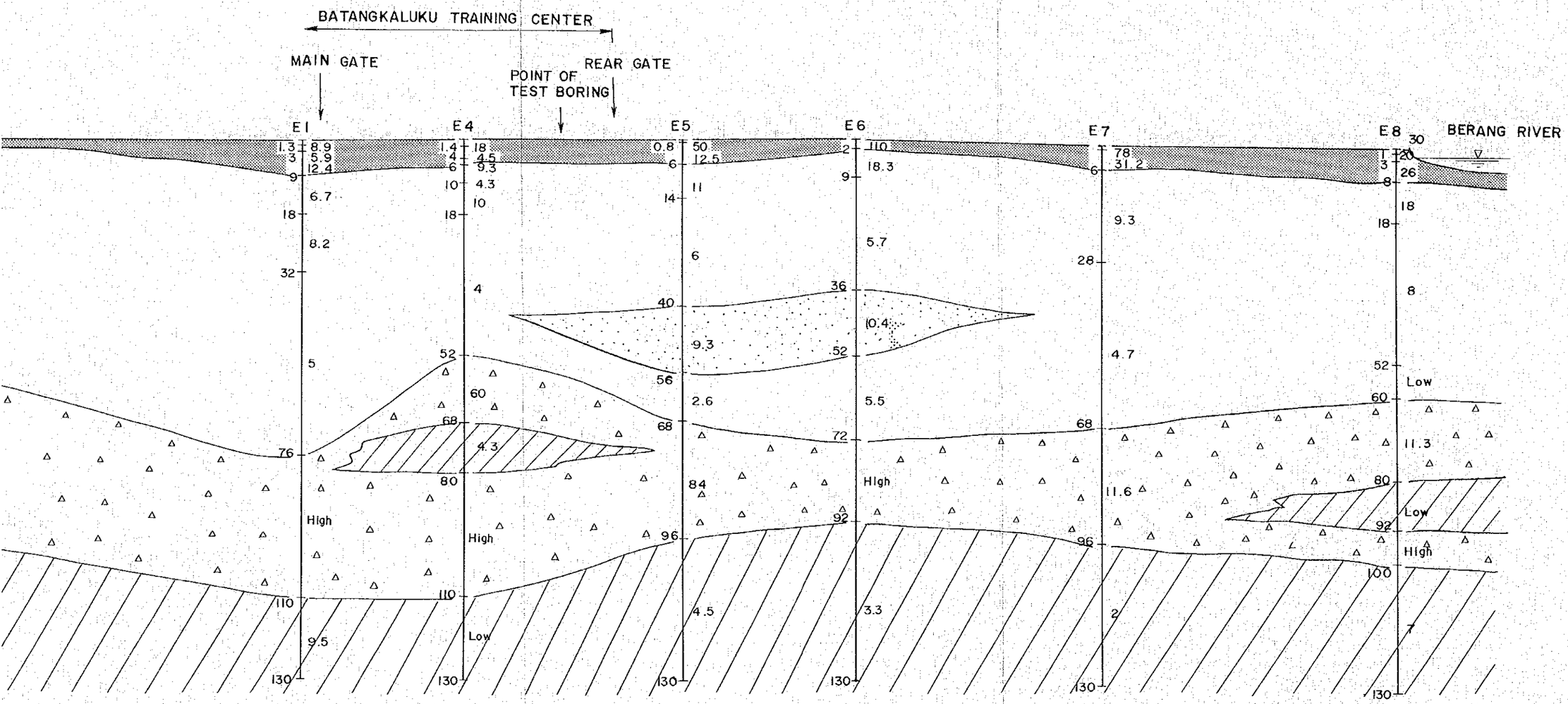
PICTURE-3 ASSUMED GEOLOGICAL SECTION BY ELECTRIC PROSPECTIVE SURVEY (1)



PICTURE—3 ASSUMED GEOLOGICAL SECTION BY ELECTRIC PROSPECTIVE SURVEY (2)



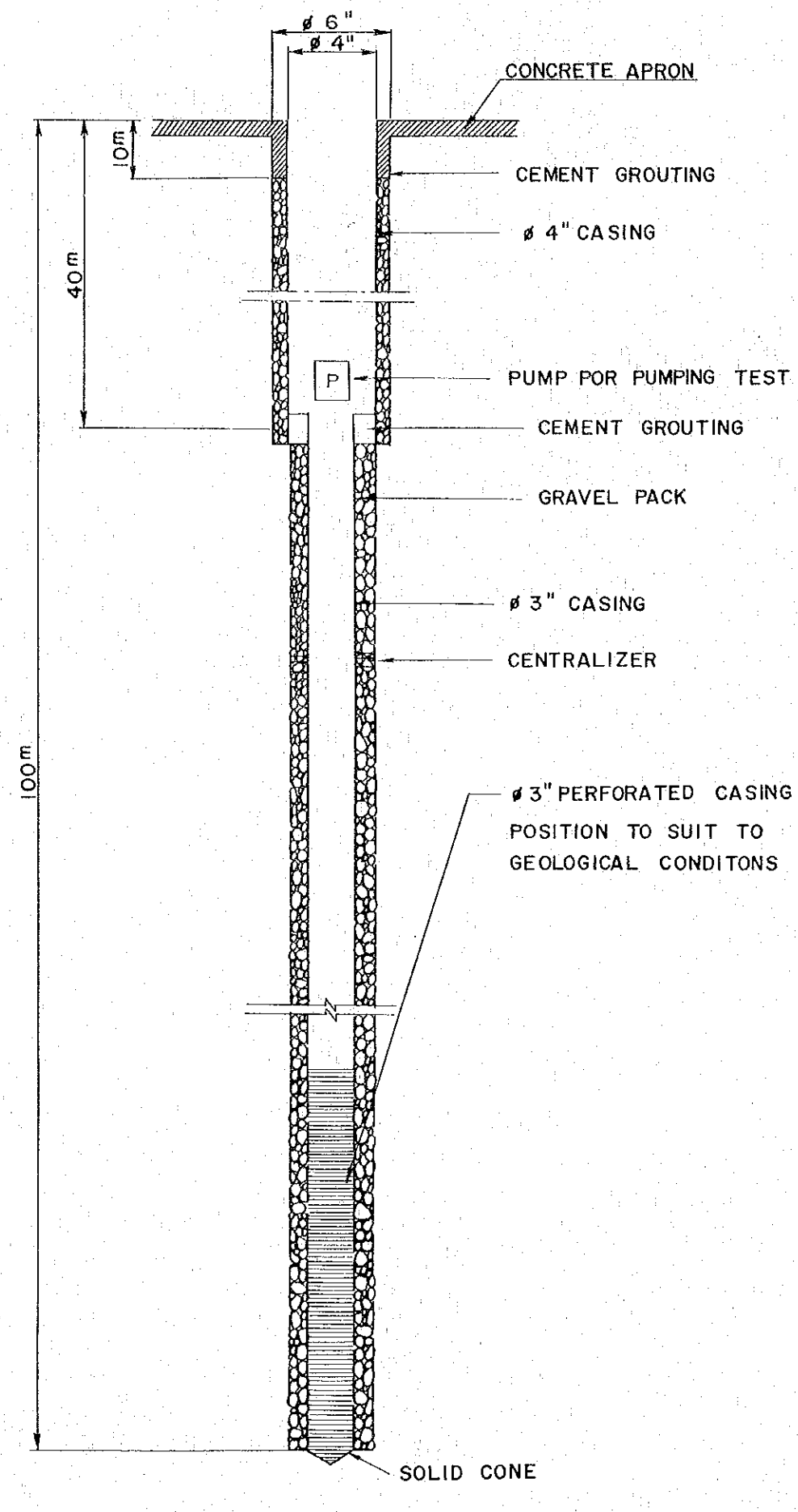
CTION BY ELECTRIC PROSPECTIVE SURVEY (2)



NOTES: 1. FOR LEGEND SEE SECTION (1)

2. FIGURES INDICATE RELATIVE RESISTANCE AND DEPTH BELOW GROUND SURFACE

PICTURE--4 PROFILE OF TEST BORING



APPENDIX-2

CONSTRUCTION COST ESTIMATE FOR SECOND PRIORITY GROUP

2.1 General

Should there be surplus in the amount of Grant Aid fund after covering the first priority group of facilities, part of the second priority group in the Interim Report can happily be recovered. Following is the cost estimate for the second priority group of facilities.

2.2 Cost Estimate for Second Priority Group

i) Civil and Building Works

Construction Cost ($\times 10^3$ yen)

Work Item	Cihea Center	Batangkaluku Center	Central Office
Annex Office	—	—	19,133
Instructor's House	15,160	18,950	—
Assistant's House	13,536	13,536	—
Employee's House	7,811	15,621	—
Storage for Animal Feed	1,357	—	
Outdoor Water & Power Supply and Drainage Systems	3,840	3,840	—
	41,704	51,947	19,133
		Total	112,784,000

ii) Design and Supervision Fee 6,000,000

iii) Contingency 1,216,000

Grand Total ¥120,000,000