

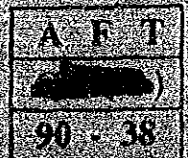
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM

FEASIBILITY STUDY
ON
INTEGRATED JALA-JALA RURAL
DEVELOPMENT PROJECT

DRAWINGS

SEPTEMBER, 1990

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)



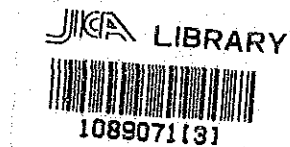
国際協力事業団

22119

THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM

FEASIBILITY STUDY
ON
INTEGRATED JALA-JALA RURAL
DEVELOPMENT PROJECT

DRAWINGS



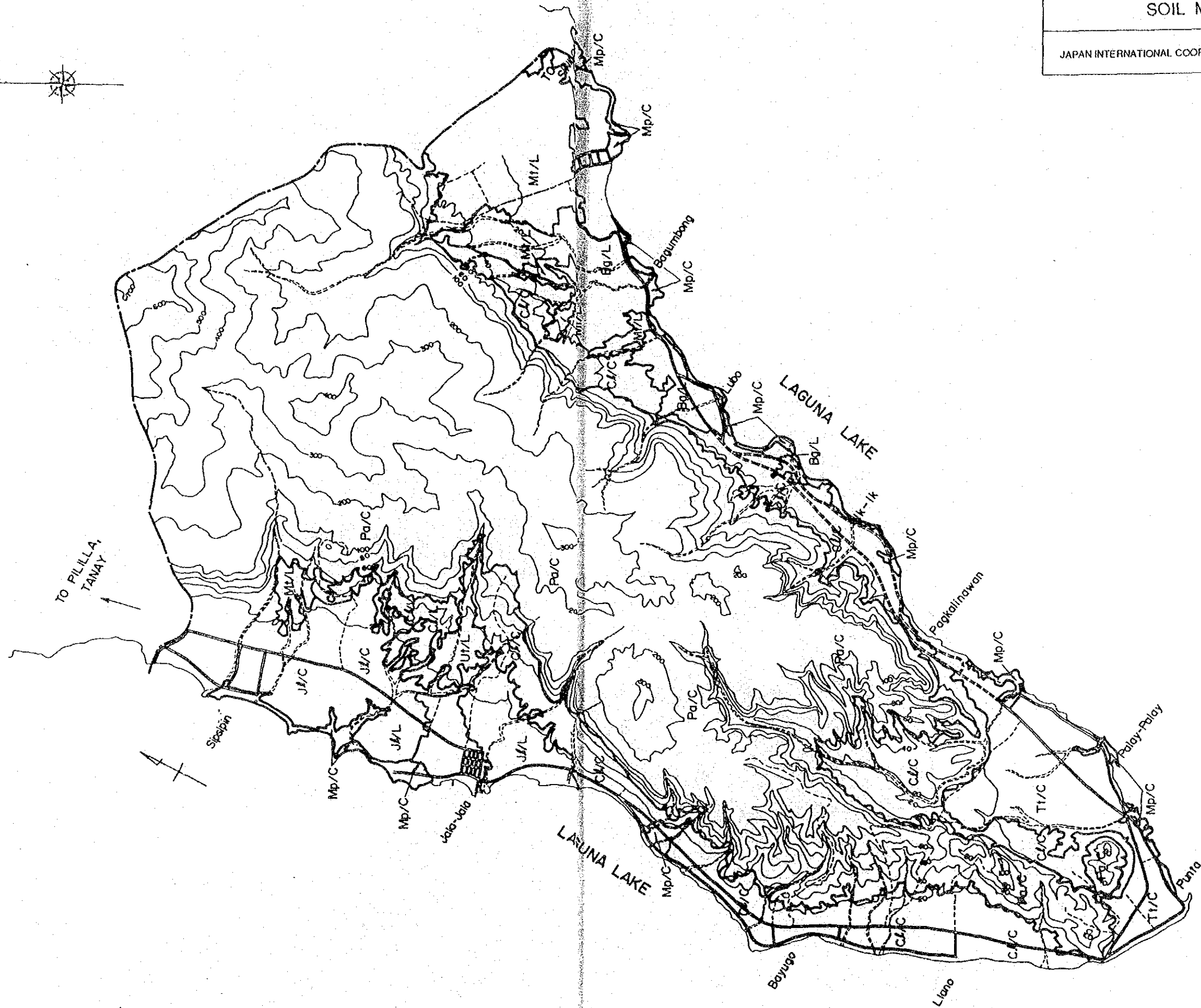
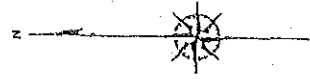
22119

SEPTEMBER, 1990

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

LIST OF DRAWINGS

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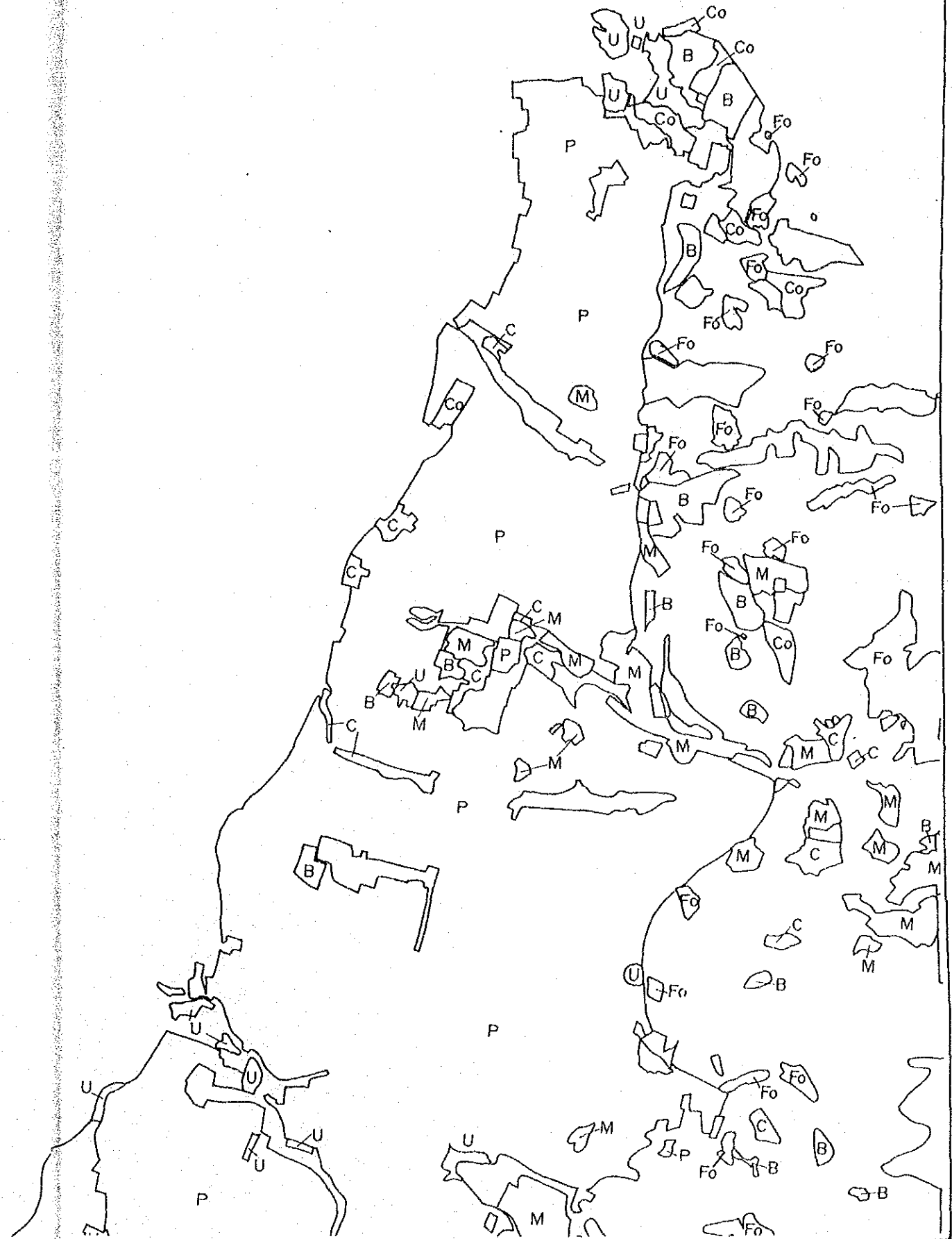
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

TITLE OF DRAWING
Present Land Use Map
(1/5)

JAPAN INTERNATIONAL COOPERATION AGENCY

PLATE NO.2

DWG NO.
2-1

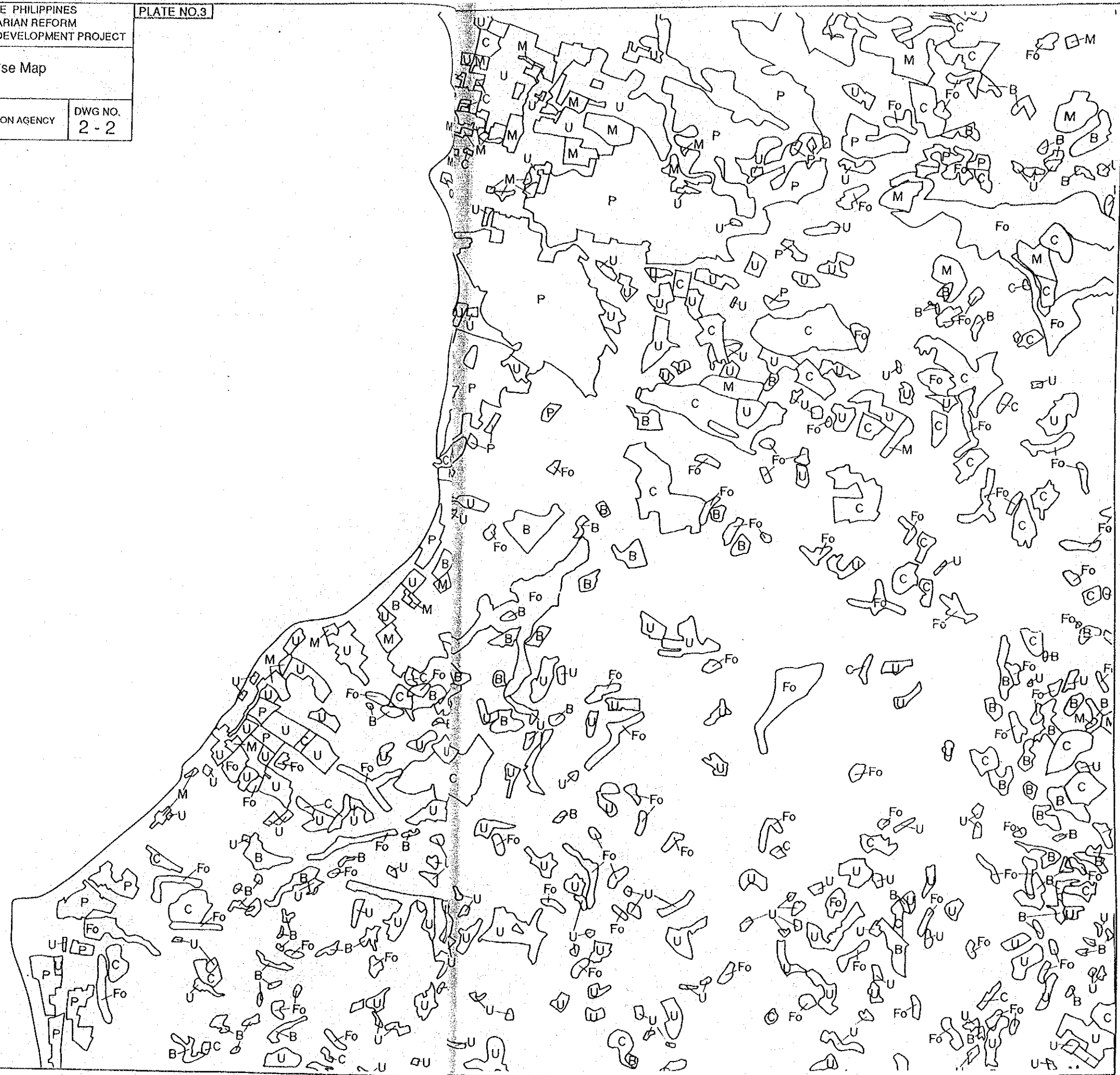


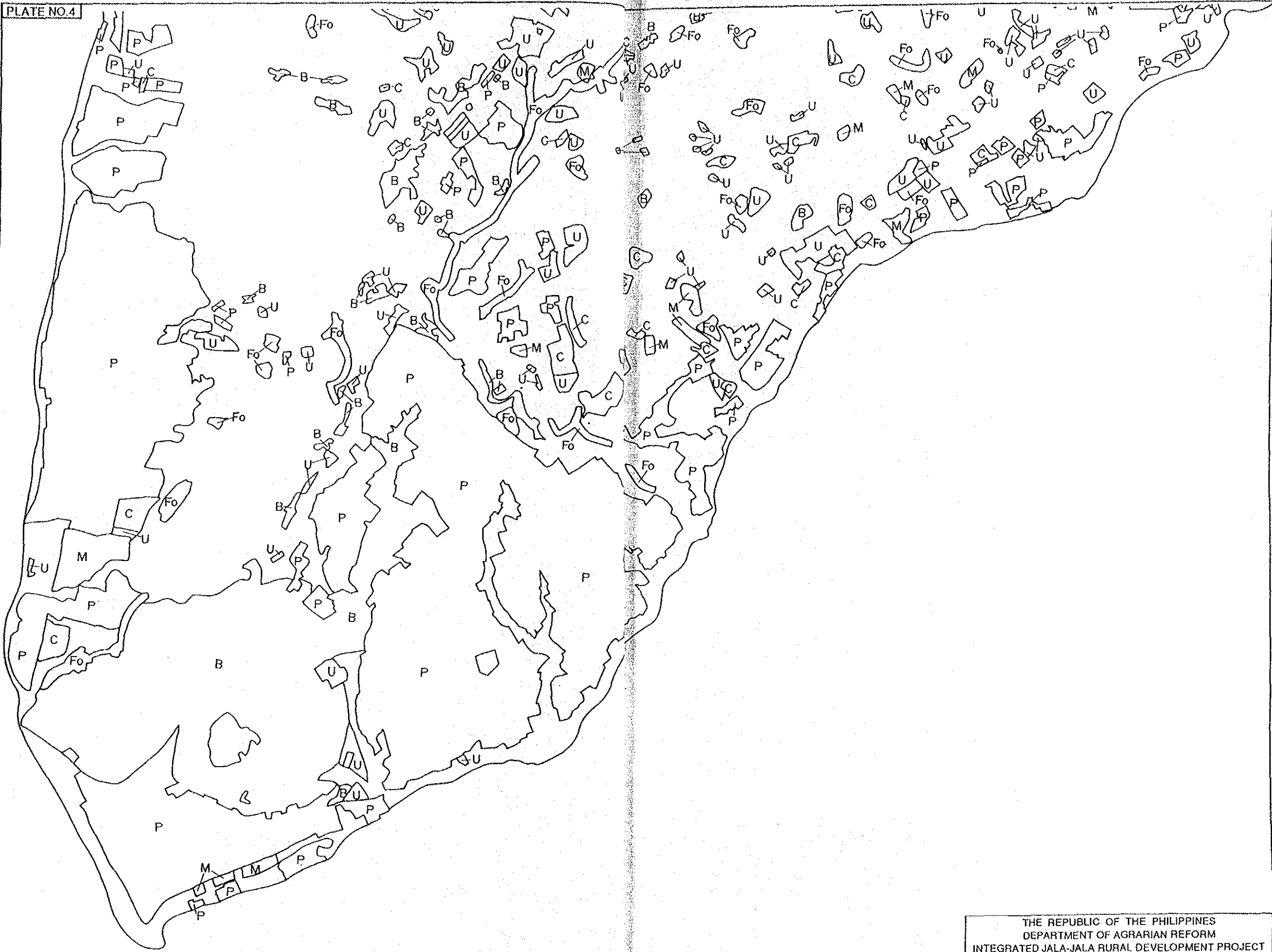
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

PLATE NO.3

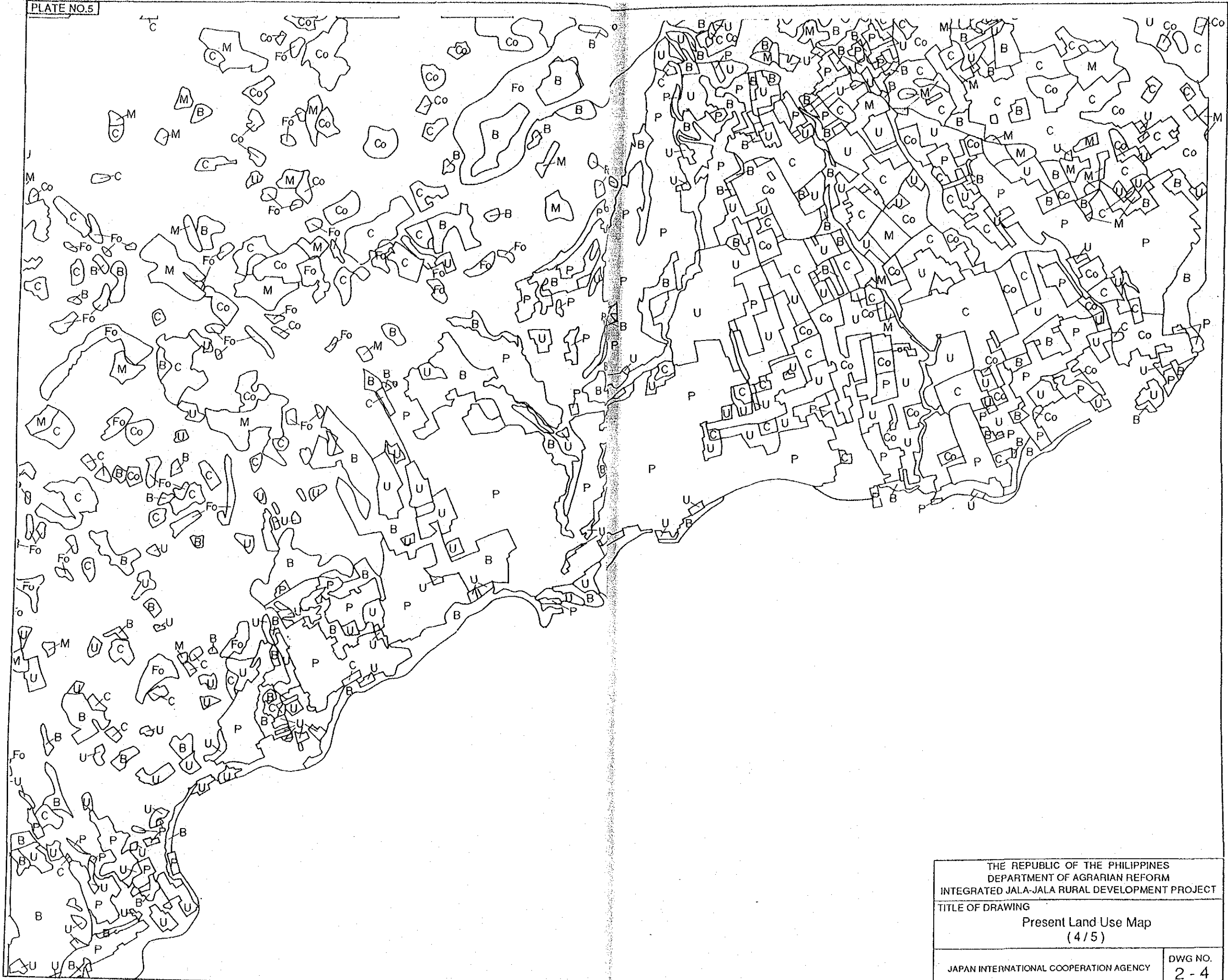
TITLE OF DRAWING
Present Land Use Map
(2/5)

JAPAN INTERNATIONAL COOPERATION AGENCY
DWG NO.
2-2

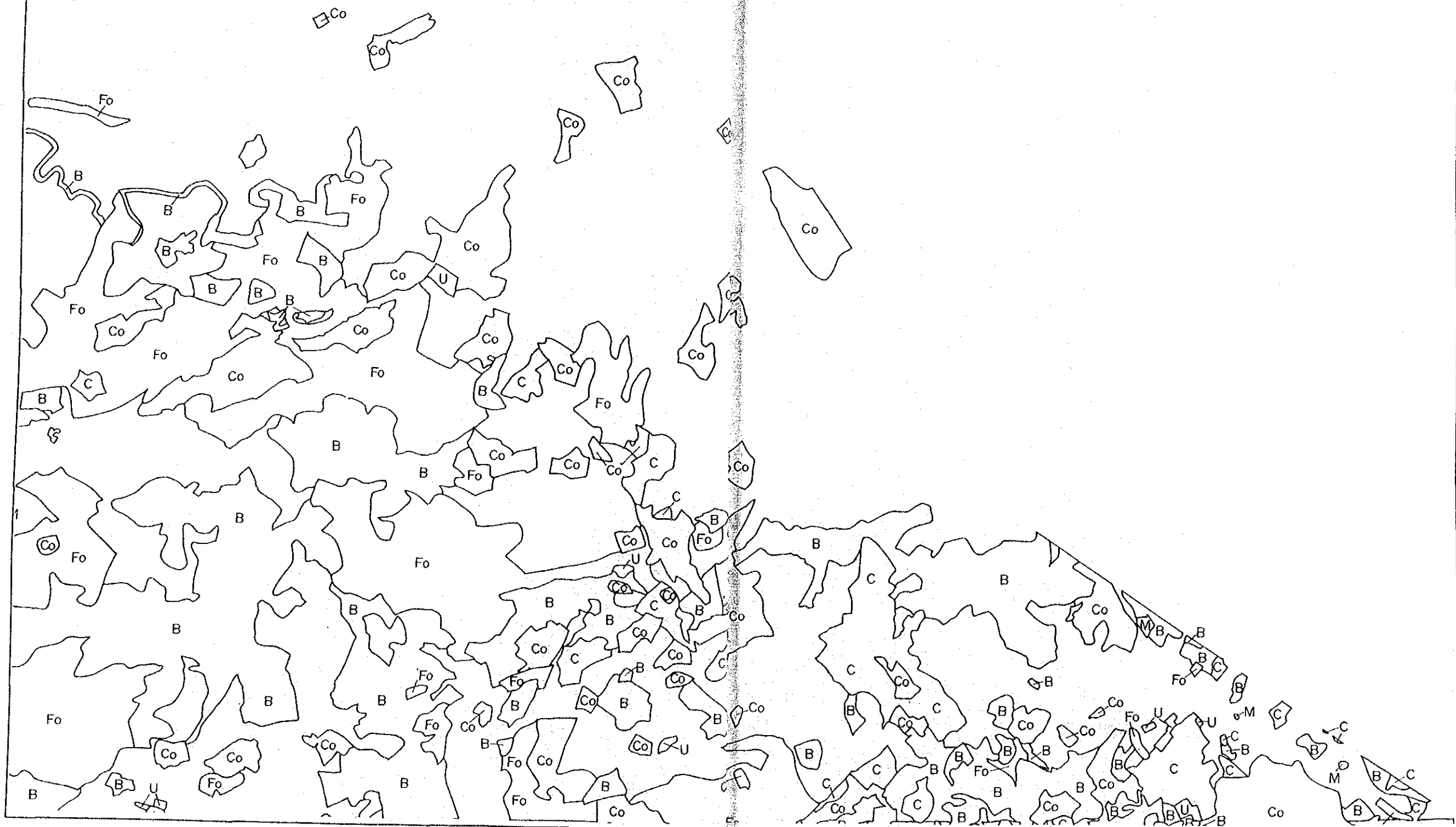




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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING Present Land Use Map (3/5) | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 2-3 |



| | |
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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING Present Land Use Map (4/5) | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 2-4 |



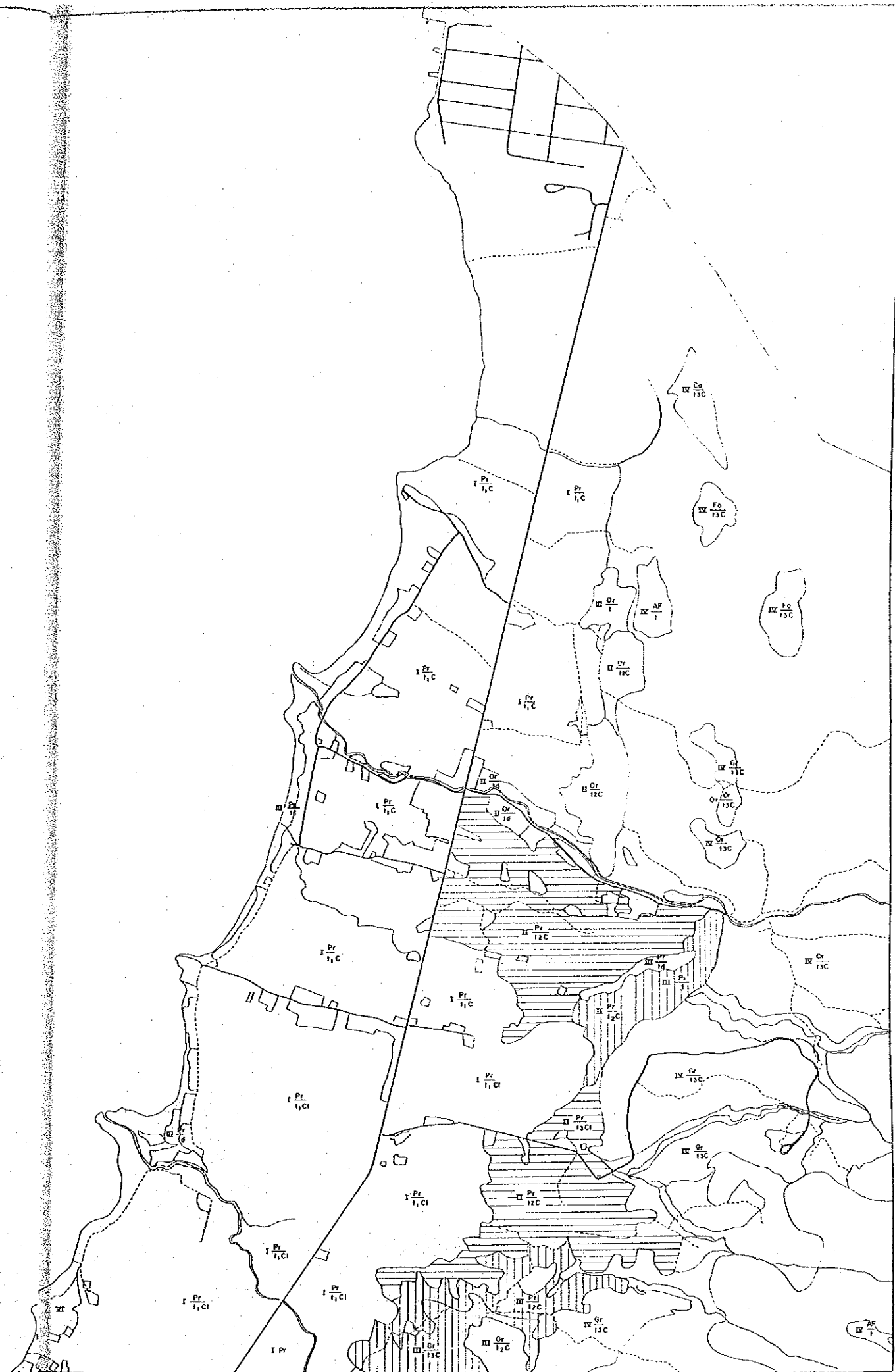
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

PLATE NO. 7

TITLE OF DRAWING
LAND CLASSIFICATION MAP
(1/5)

JAPAN INTERNATIONAL COOPERATION AGENCY
DWG NO.
3 - 1

0 200 400 600 800 1,000m
SCALE

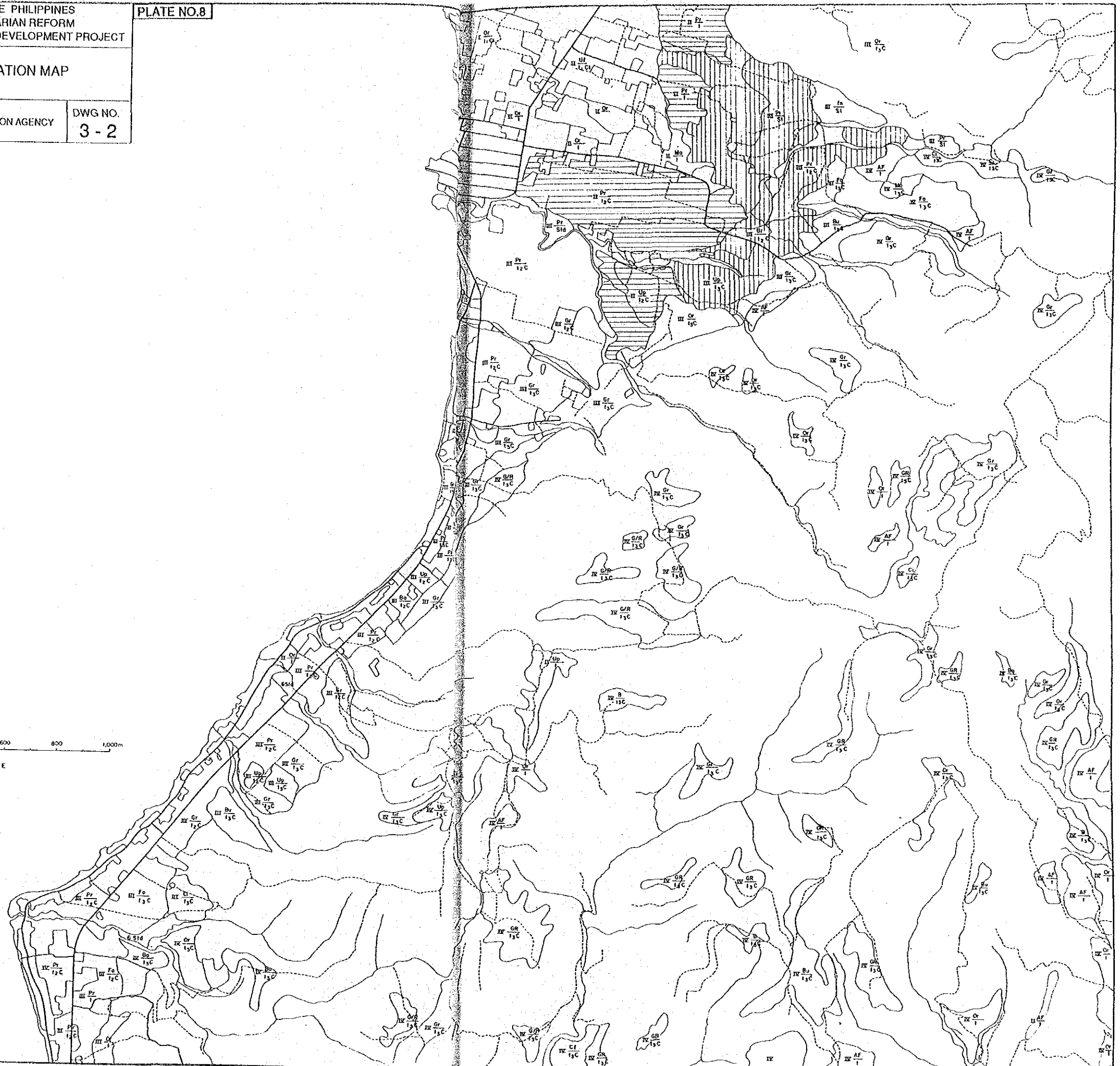
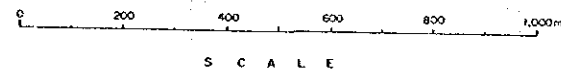


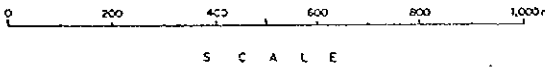
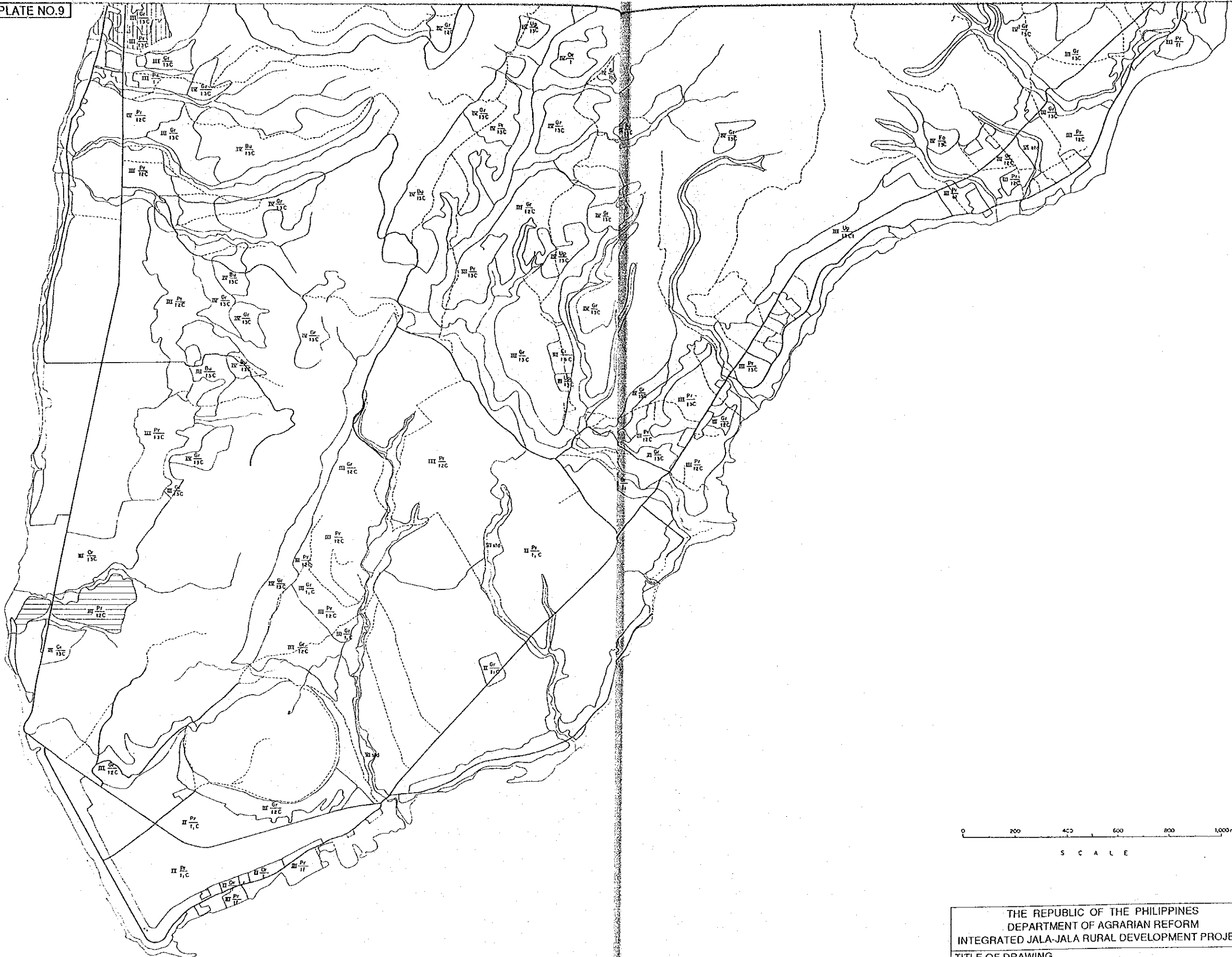
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

PLATE NO.8

TITLE OF DRAWING
LAND CLASSIFICATION MAP
(2/5)

JAPAN INTERNATIONAL COOPERATION AGENCY
DWG NO.
3-2



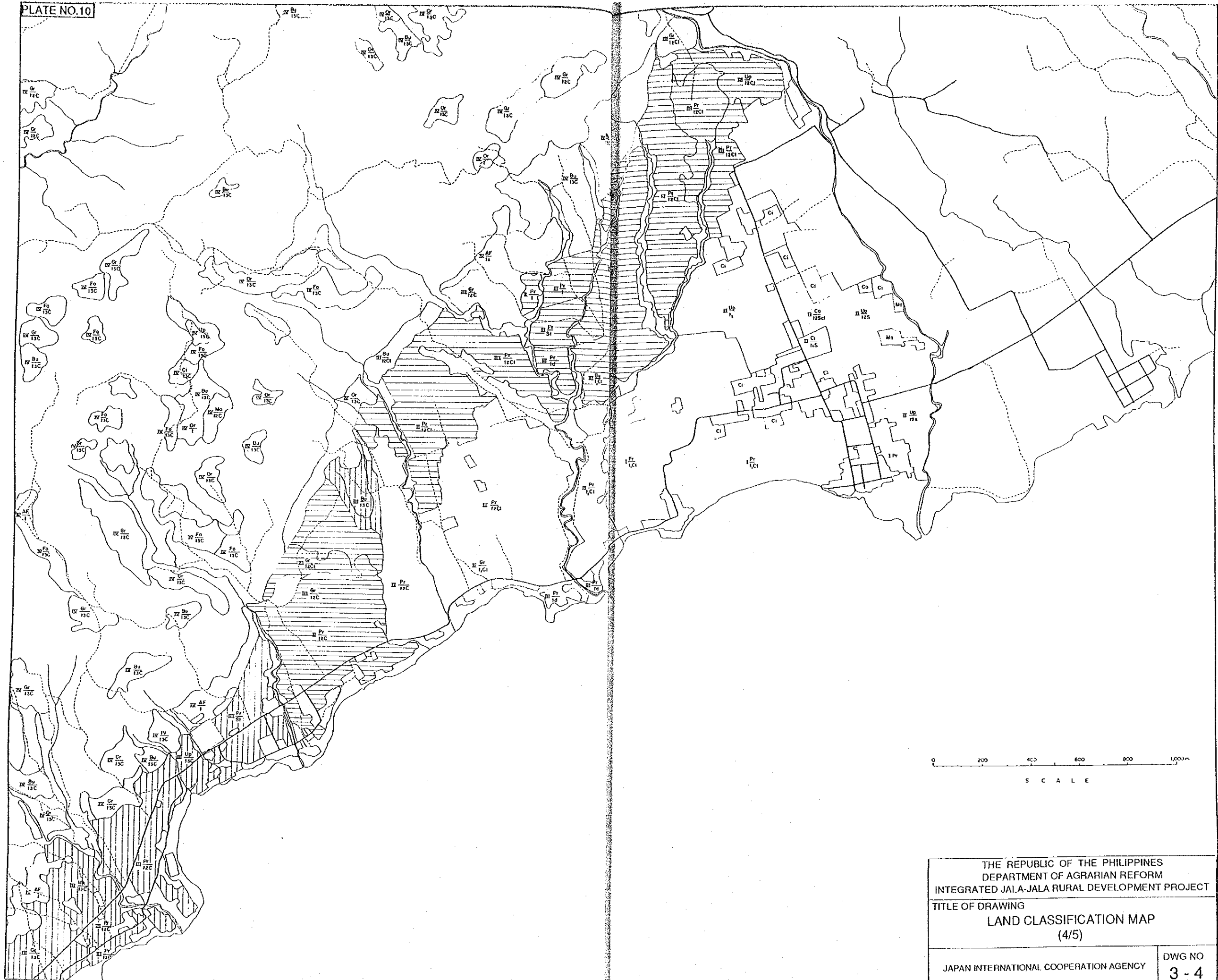


THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

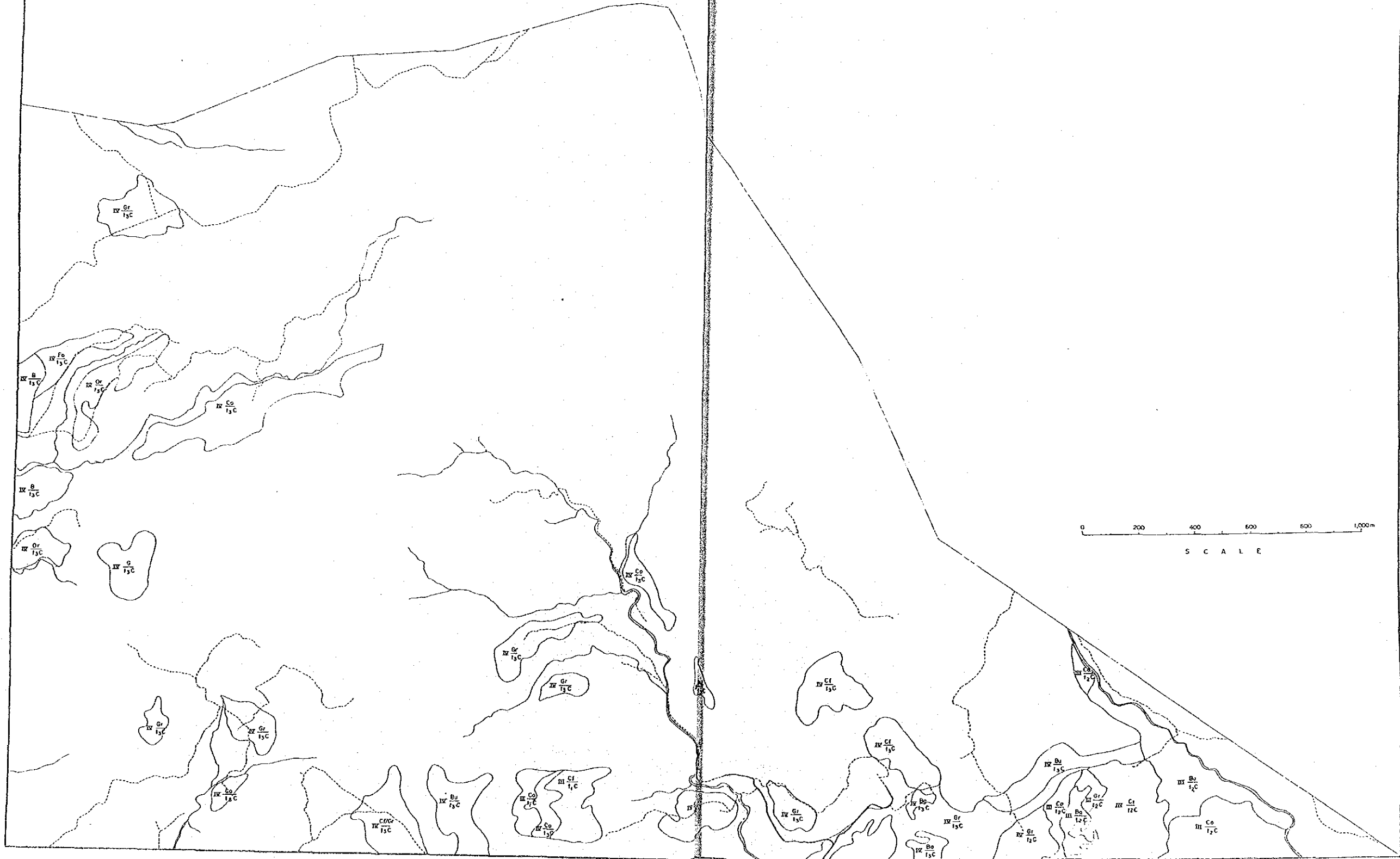
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LAND CLASSIFICATION MAP
(3/5)

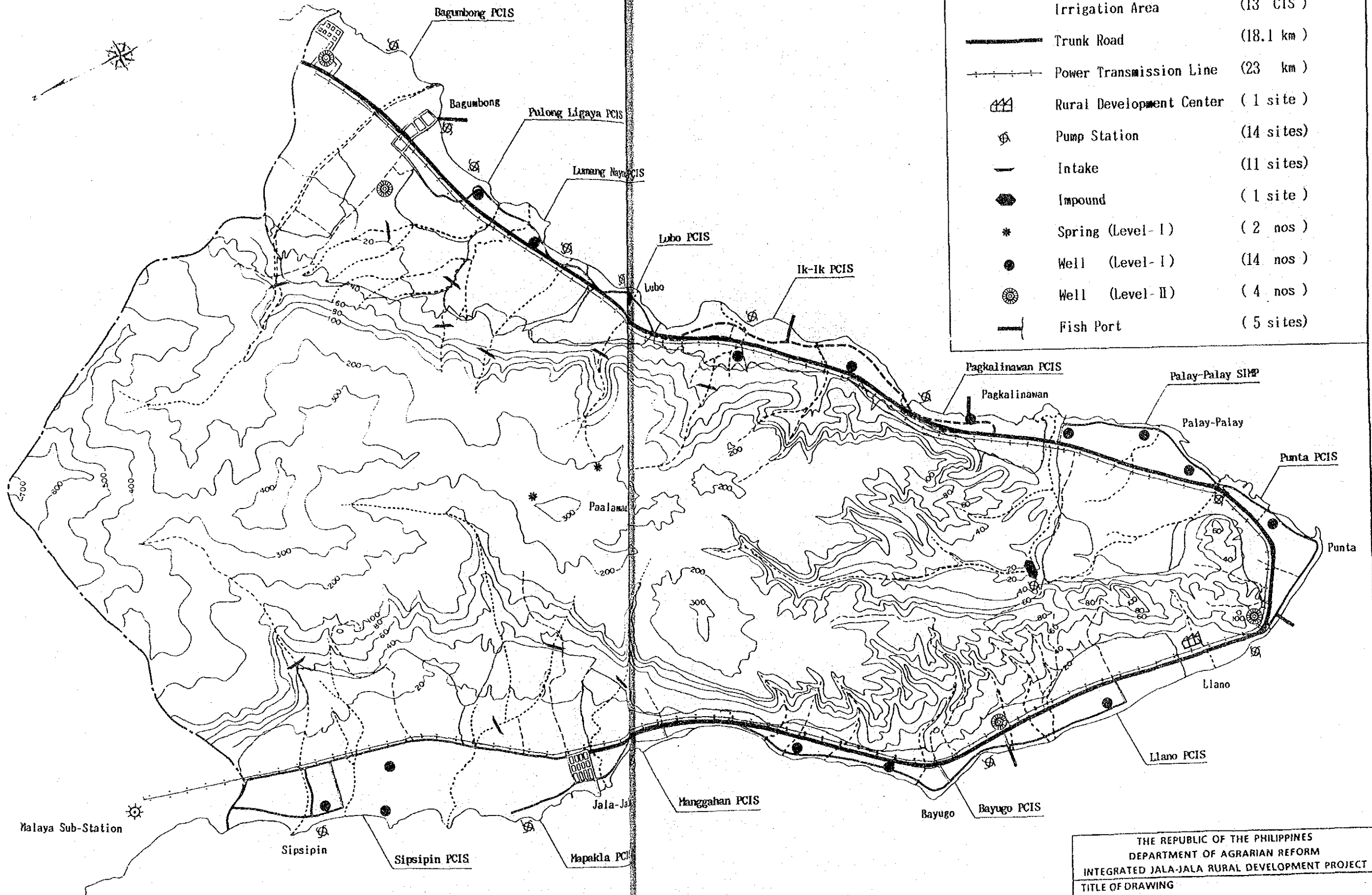
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG NO.
3 - 3



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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING LAND CLASSIFICATION MAP (4/5) | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 3 - 4 |





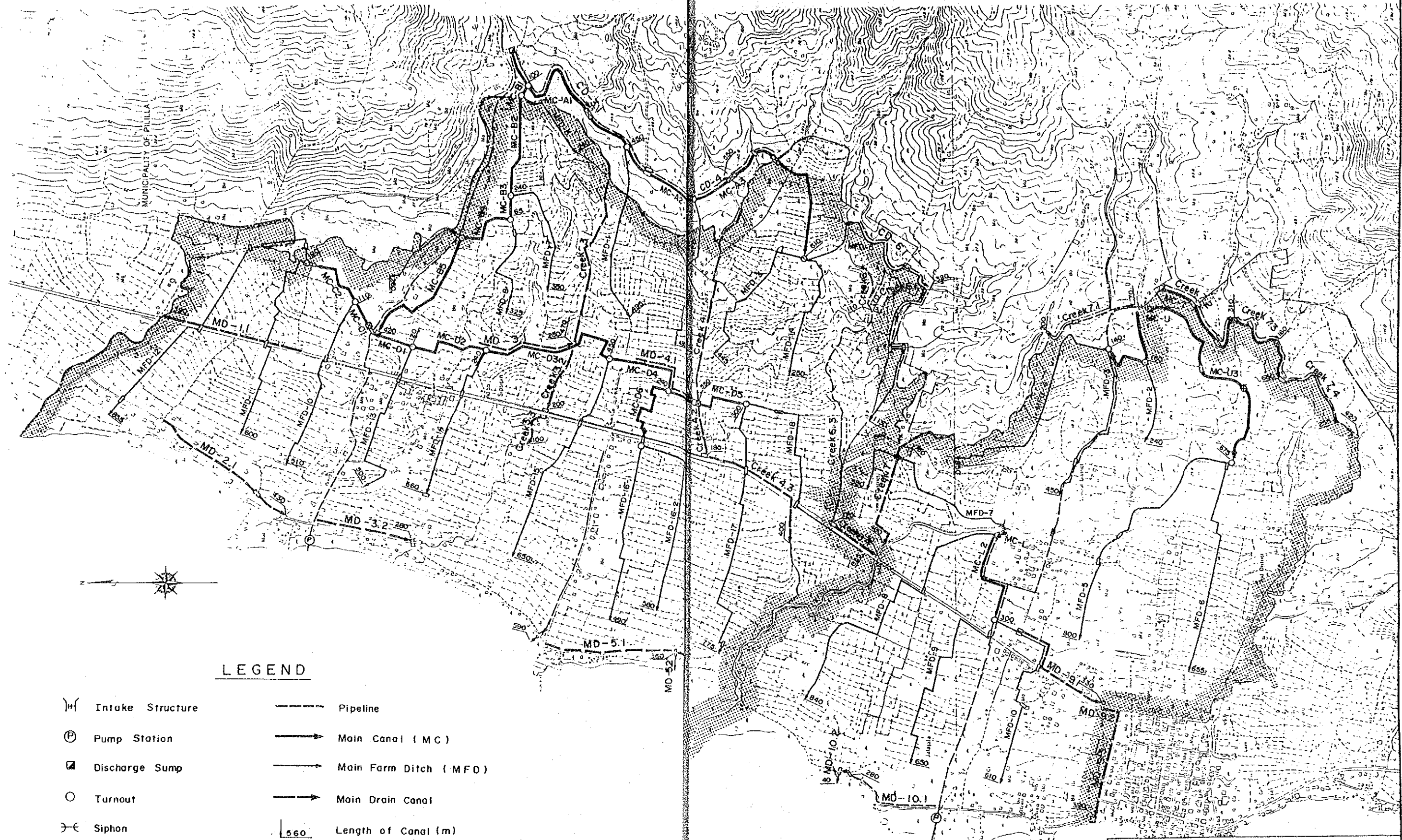
LEGEND

| | | |
|--|--------------------------|------------|
| | Irrigation Area | (13 CIS) |
| | Trunk Road | (18.1 km) |
| | Power Transmission Line | (23 km) |
| | Rural Development Center | (1 site) |
| | Pump Station | (14 sites) |
| | Intake | (11 sites) |
| | Impound | (1 site) |
| | Spring (Level-1) | (2 nos) |
| | Well (Level-1) | (14 nos) |
| | Well (Level-II) | (4 nos) |
| | Fish Port | (5 sites) |

Malaya Sub-Station

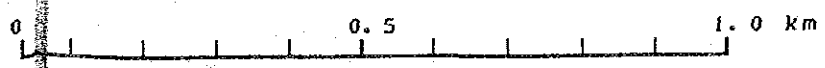
SCALE 0 1.0 1.5 km

| | |
|--|--------------|
| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING GENERAL MAP | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 4 |



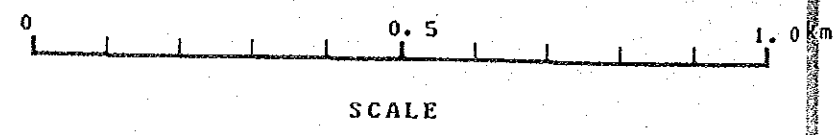
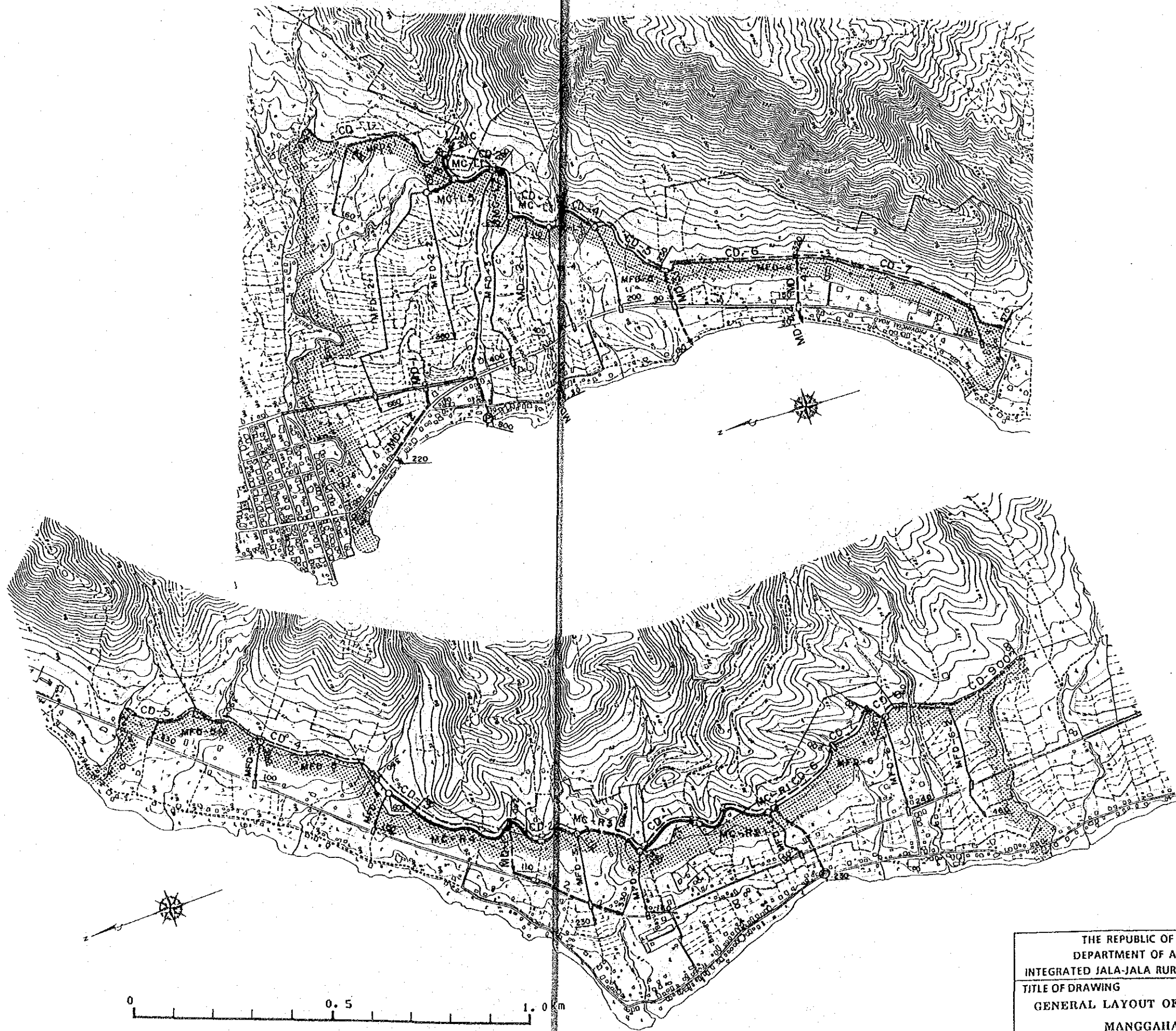
LEGEND

- | | | | |
|--|------------------------------------|--|-------------------------------|
| | Intake Structure | | Pipeline |
| | Pump Station | | Main Canal (MC) |
| | Discharge Sump | | Main Farm Ditch (MFD) |
| | Turnout | | Main Drain Canal |
| | Siphon | | Length of Canal (m) |
| | Road Crossing for Irrigation Canal | | Boundary of Distributed Area |
| | Road Crossing for Drainage Canal | | Boundary of Irrigation System |
| | Aqueduct Bridge | | |
| | Cross Drain | | |

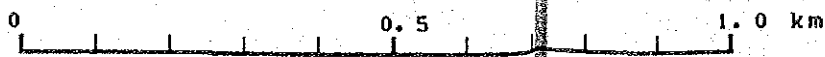
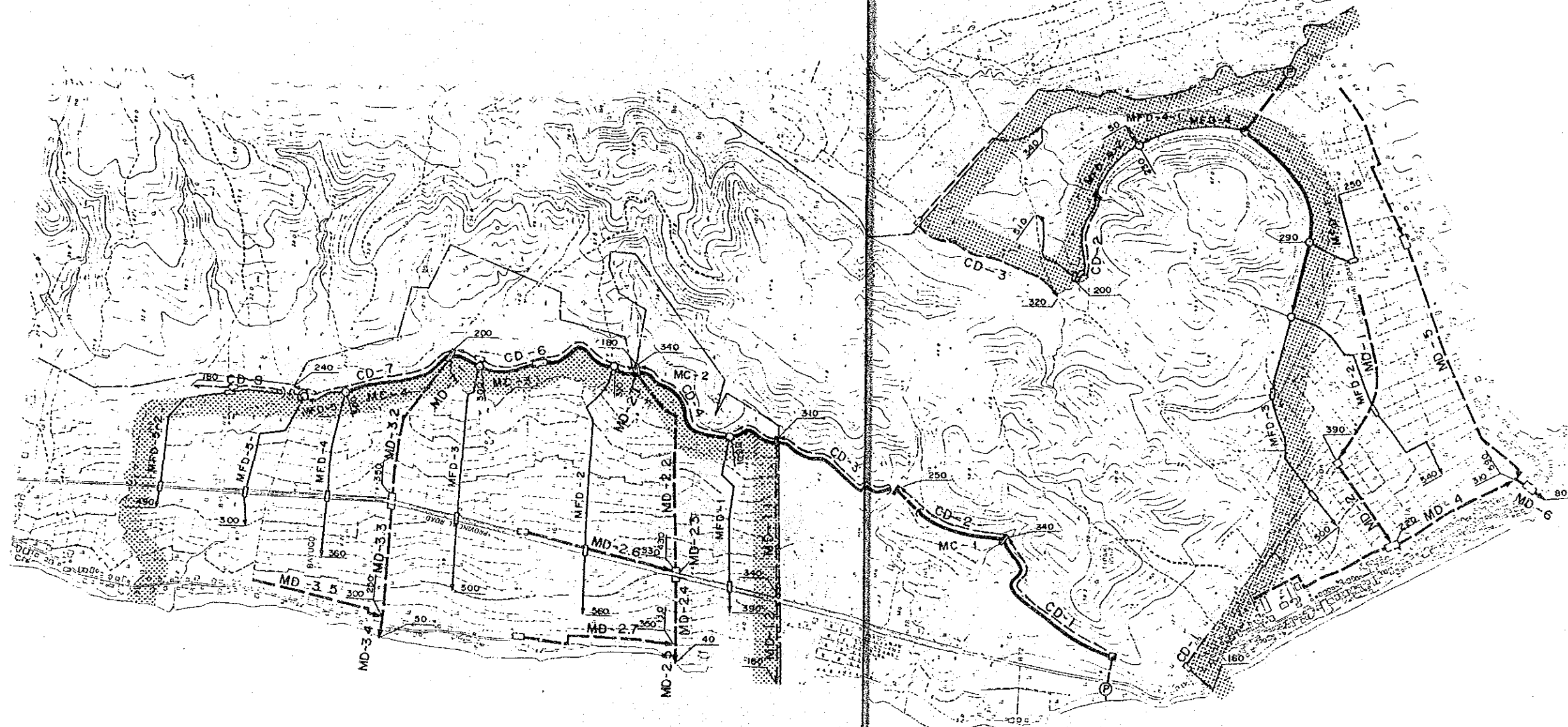


SCALE

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|--|---------|
| THE REPUBLIC OF THE PHILIPPINES | |
| DEPARTMENT OF AGRARIAN REFORM | |
| INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING | |
| GENERAL LAYOUT OF IRRIGATION SYSTEM | |
| SIPSIPIN, MAPAKLA | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. |
| | 5-1 |

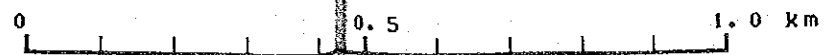
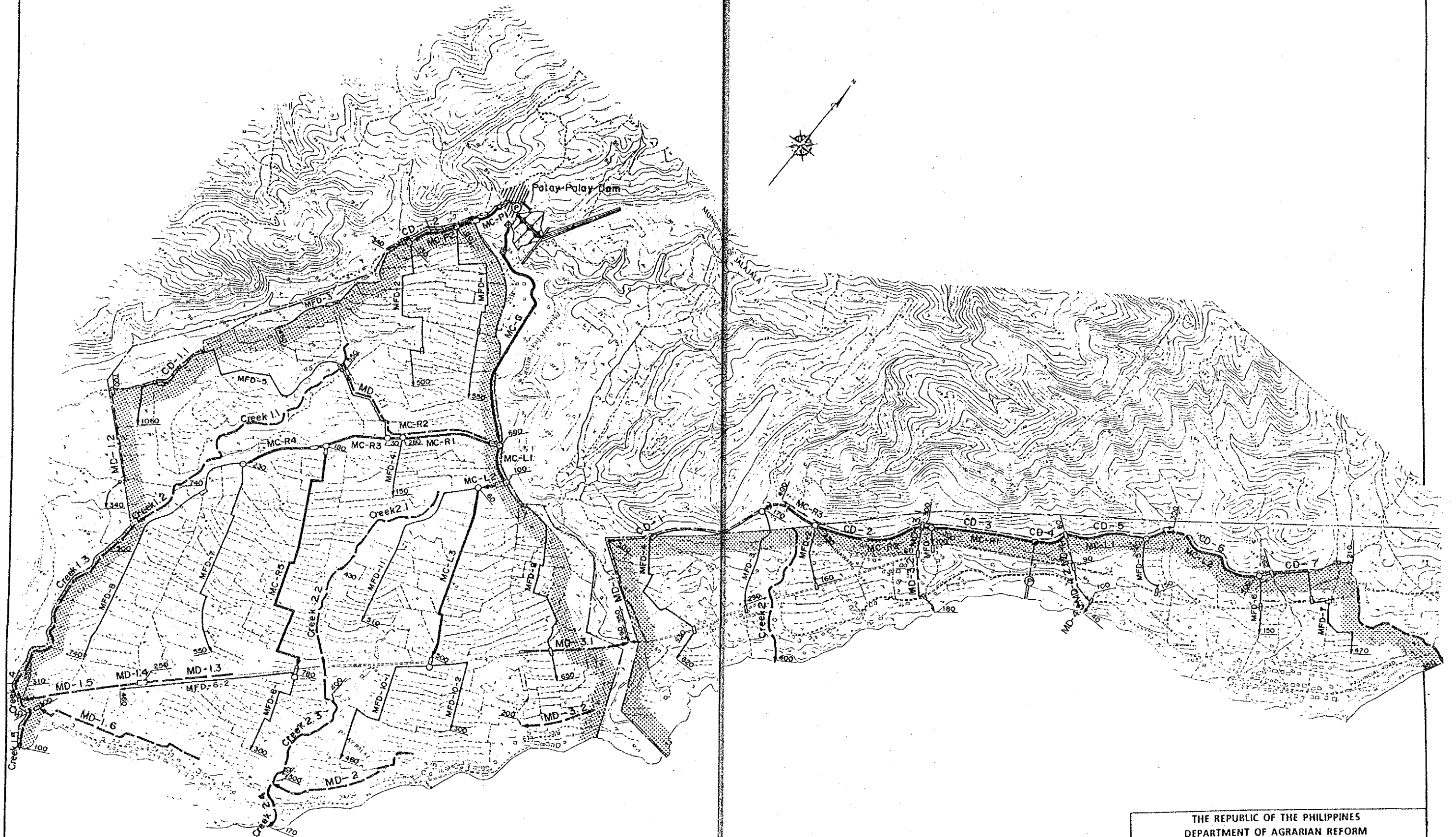


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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM | |
| INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING GENERAL LAYOUT OF IRRIGATION SYSTEM MANGGAHAN, BAYUGO | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 5-2 |



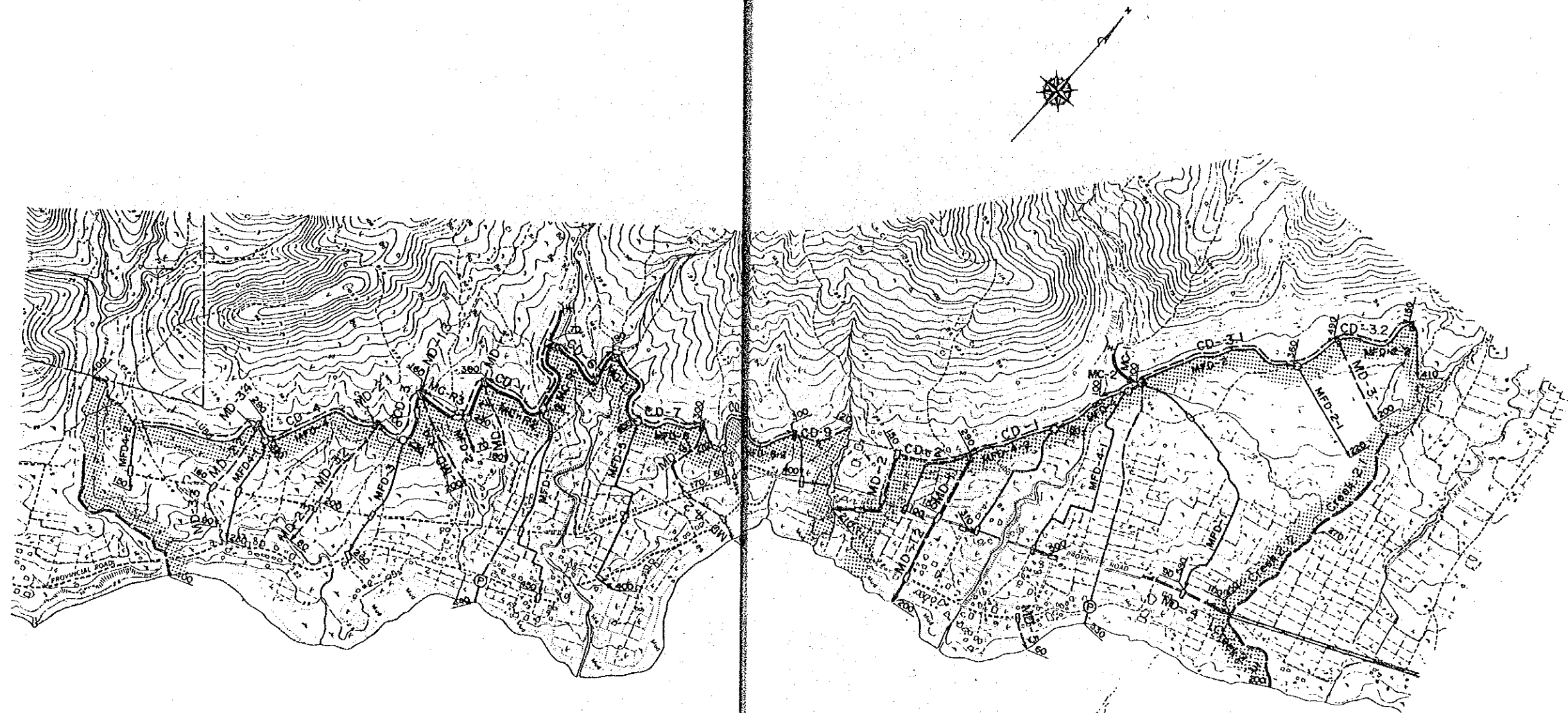
SCALE

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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING GENERAL LAYOUT OF IRRIGATION SYSTEM LIANO, PUNTA | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 5-3 |



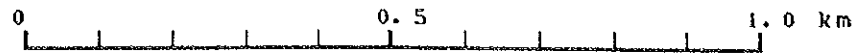
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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING GENERAL LAYOUT OF IRRIGATION SYSTEM PALAY-PALAY, PAGKALINAWAN | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 5 - 4 |

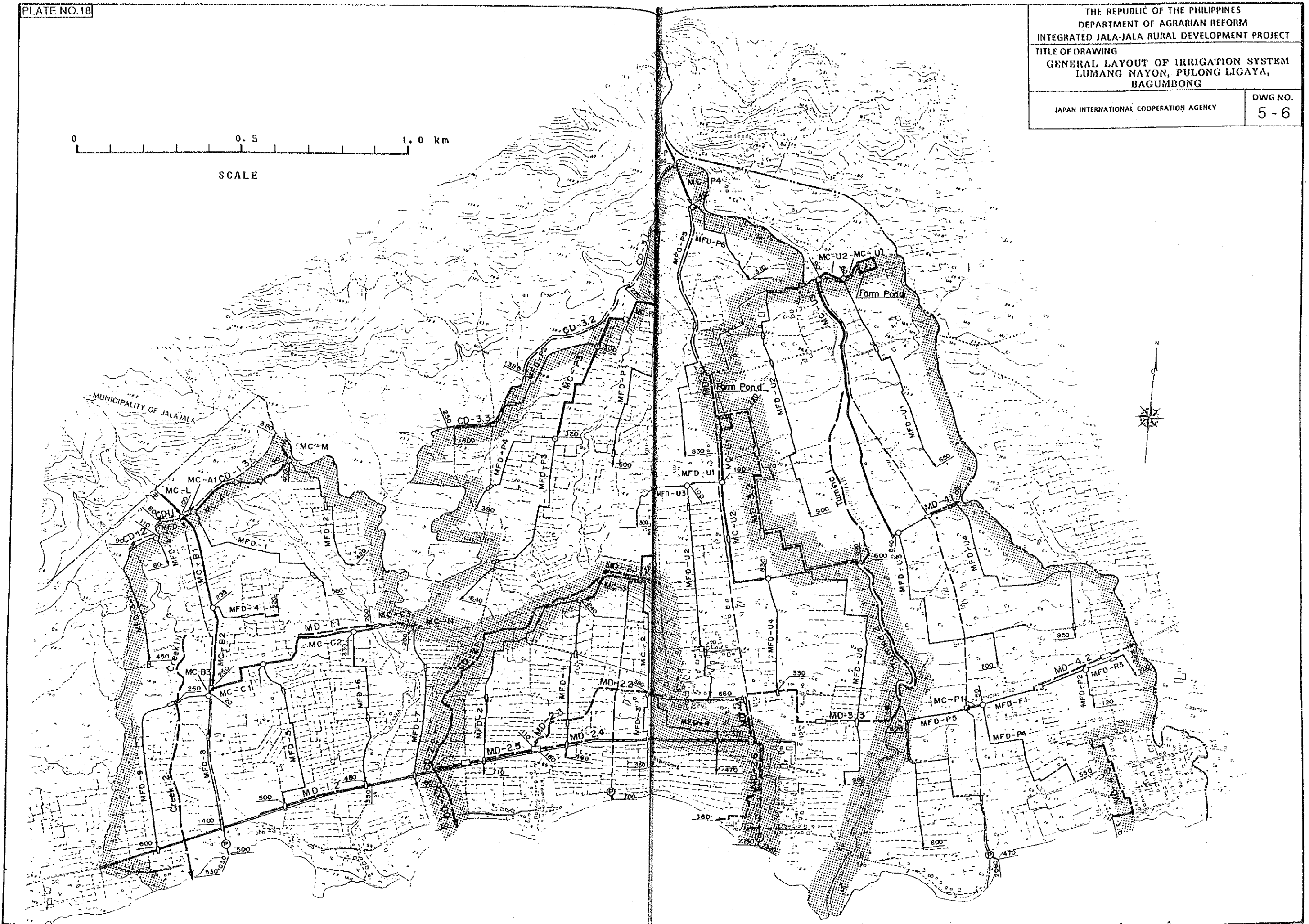


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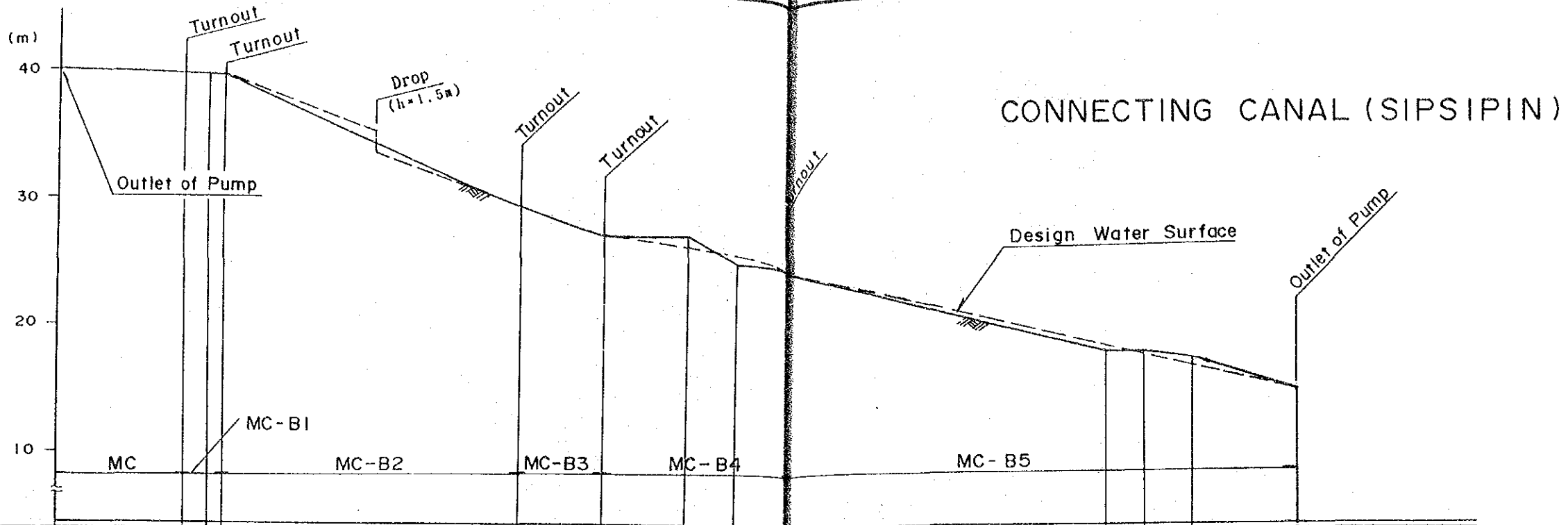
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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING GENERAL LAYOUT OF IRRIGATION SYSTEM IK-1K, LUBO | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 5-5 |



SCALE



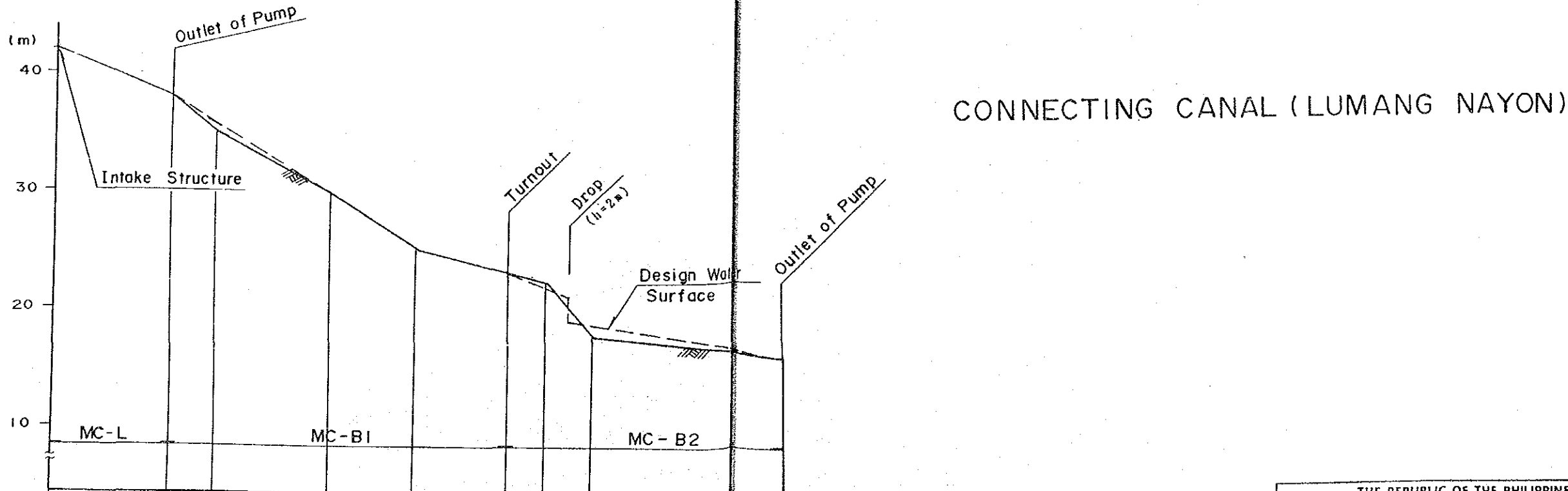
H=1:4000
V=1:400



| | | | | | | | | | | | | | | |
|-------------------------|------|------|------|------|------|------|------|------|--|--|------|------|------|------|
| DESIGN WATER LEVEL (m) | 40.0 | 39.5 | | | | | | | | | | 15.0 | | |
| EXISTING ELEVATION (m) | 40.0 | 40.0 | 40.0 | 39.5 | 29.5 | 27.0 | 27.0 | 25.0 | | | 18.0 | 18.0 | 17.5 | 15.0 |
| ADDITIONAL DISTANCE (m) | 0 | 100 | 120 | 135 | 375 | 440 | 505 | 545 | | | 870 | 900 | 940 | 1020 |

CONNECTING CANAL (SIPSIPIN)

H=1:4000
V=1:400



| | | | | | | | | | | | | |
|-------------------------|------|------|------|------|------|------|------|------|--|--|--|------|
| DESIGN WATER LEVEL (m) | 42.0 | 38.0 | | 30.0 | 25.0 | 23.5 | 23.5 | 18.5 | | | | 16.0 |
| EXISTING ELEVATION (m) | 42.0 | 38.0 | 35.0 | 30.0 | 25.0 | 23.5 | 22.5 | 17.5 | | | | 16.0 |
| ADDITIONAL DISTANCE (m) | 0 | 100 | 140 | 240 | 315 | 395 | 425 | 465 | | | | 645 |

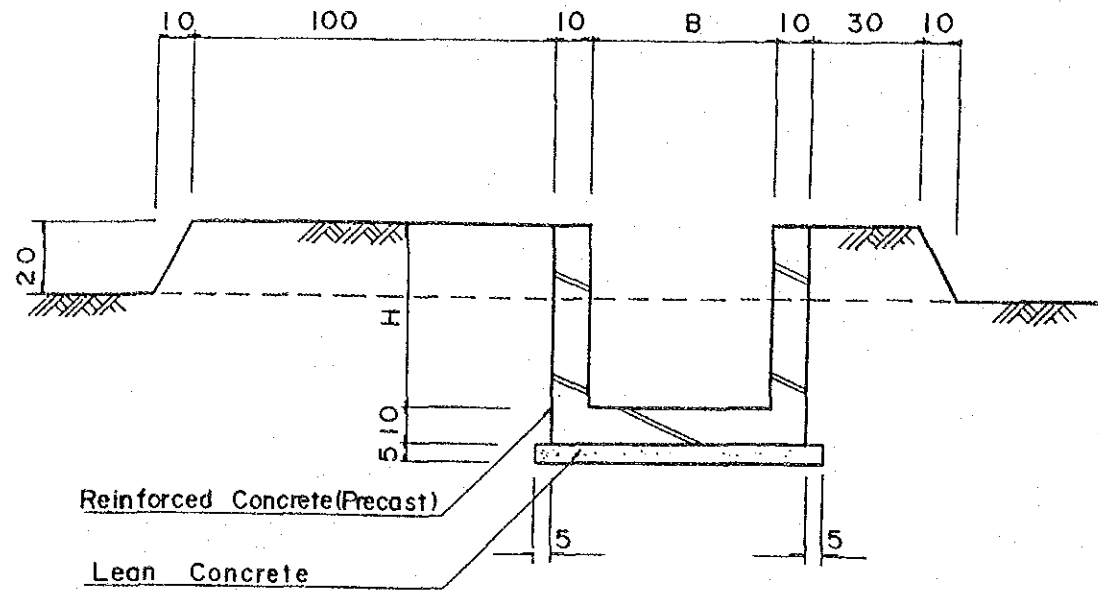
CONNECTING CANAL (LUMANG NAYON)

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INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT

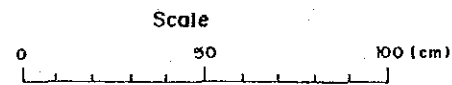
TITLE OF DRAWING
PROFILE OF MAIN CANAL

JAPAN INTERNATIONAL COOPERATION AGENCY

DWG NO.
6

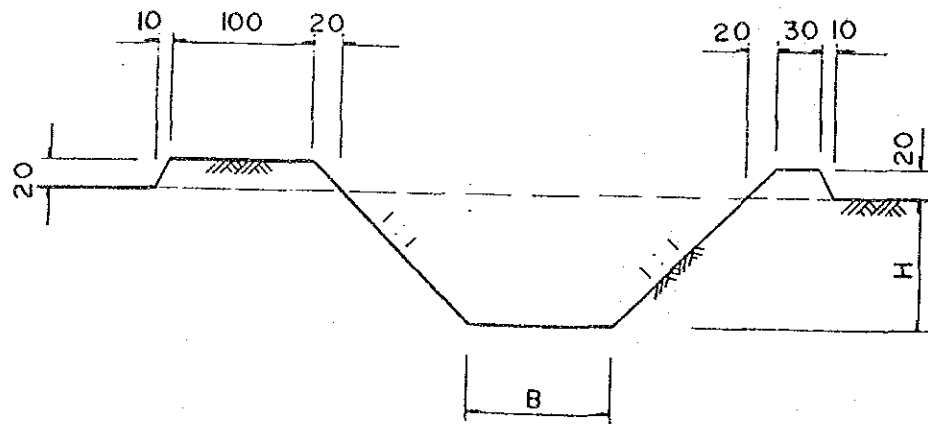


CROSS SECTION OF MAIN CANAL

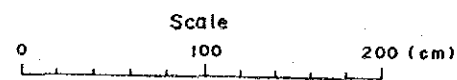


Dimension of Main Canal (cm)

| Type | B | H |
|------|----|----|
| A | 65 | 65 |
| B | 60 | 60 |
| C | 50 | 50 |
| D | 45 | 45 |
| E | 40 | 40 |
| F | 35 | 35 |
| G | 30 | 30 |

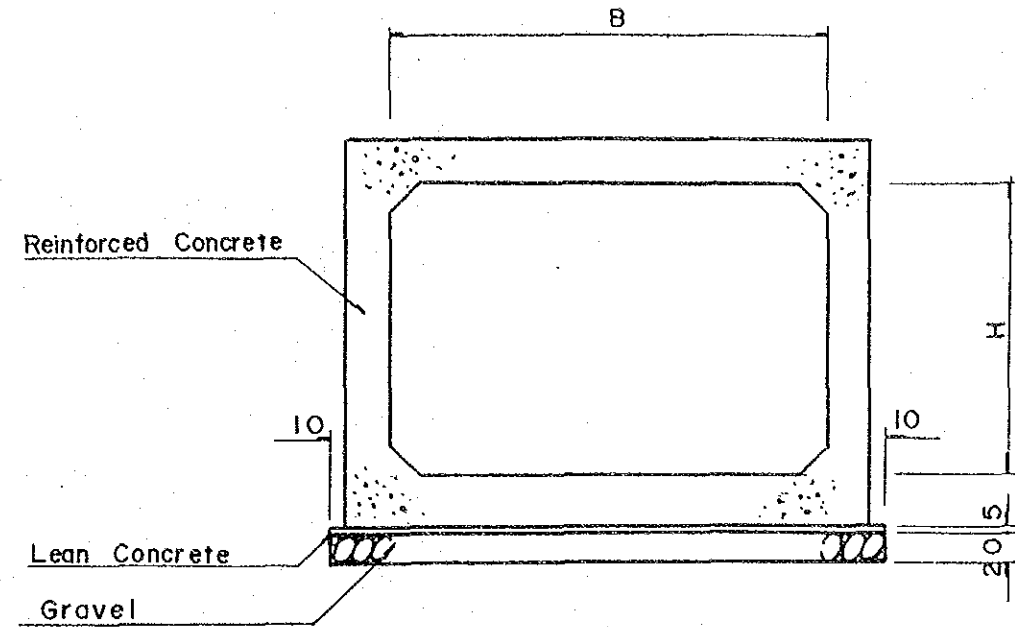


CROSS SECTION OF MAIN DRAIN

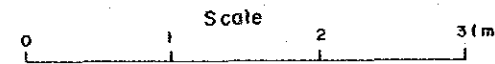


Dimension of Main Drain

| Type | B | H |
|---------|-----|-----|
| u - 0.3 | 0.3 | 0.6 |
| u - 0.6 | 0.6 | 0.6 |
| u - 0.8 | 0.8 | 0.6 |
| u - 1.0 | 1.0 | 0.7 |
| u - 1.2 | 1.2 | 0.8 |
| u - 1.4 | 1.4 | 0.9 |
| u - 1.6 | 1.6 | 1.0 |
| u - 1.8 | 1.8 | 1.1 |
| u - 2.0 | 2.0 | 1.2 |

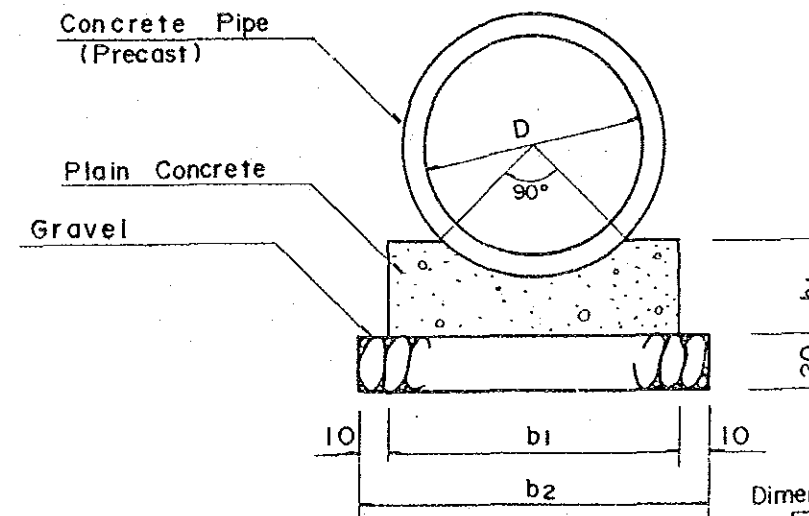


CROSS-SECTION OF BOX CULVERT

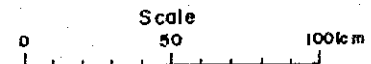


Dimension of Culvert (cm)

| Type | B | H |
|------|-----|-----|
| A | 150 | 100 |
| B | 200 | 125 |
| C | 300 | 200 |
| D | 400 | 250 |



CROSS-SECTION OF PIPE CULVERT



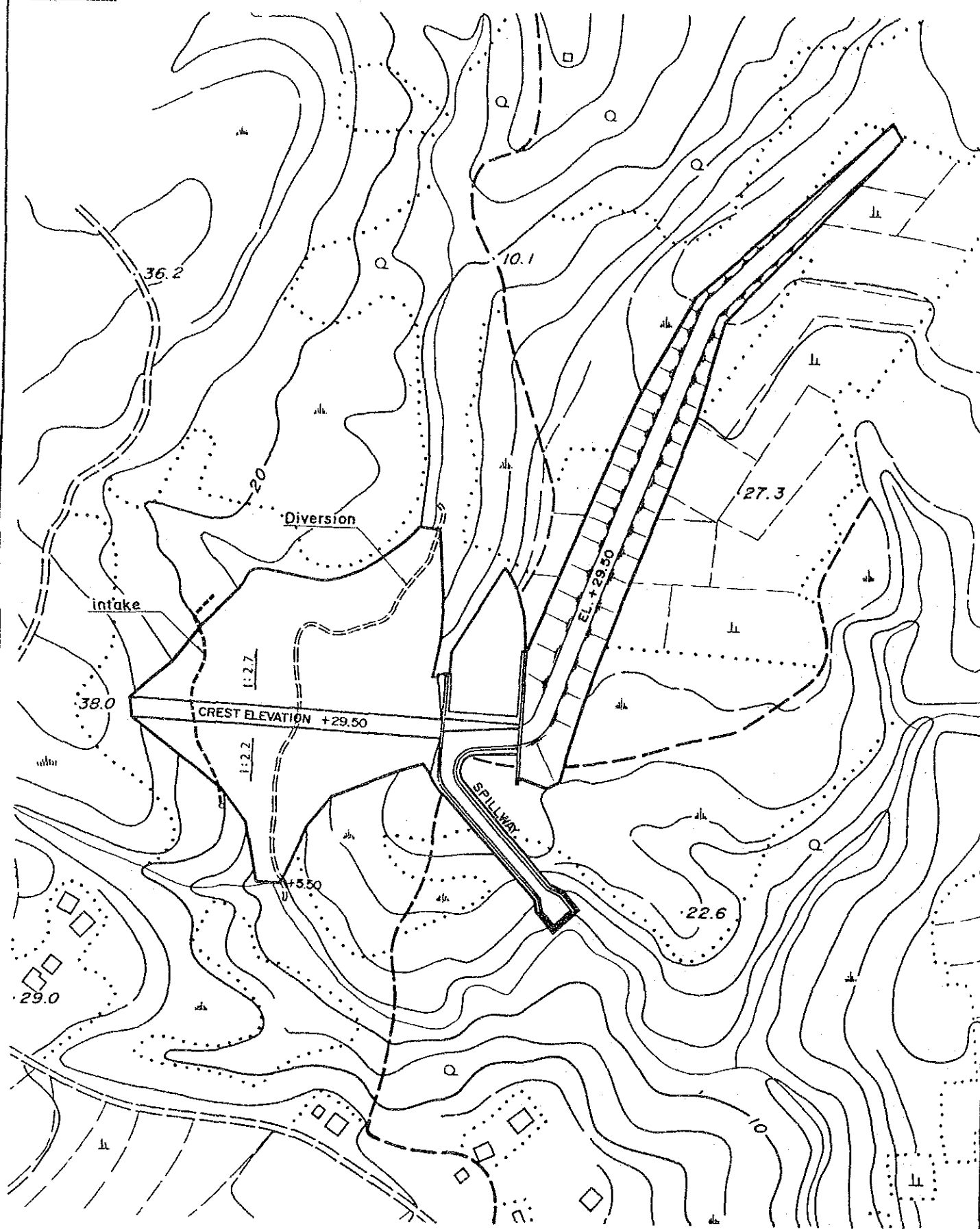
Dimension of Pipe Culvert (cm)

| Type | h ₁ | b ₁ | b ₂ |
|---------------------|----------------|----------------|----------------|
| φ 600 ^{mm} | 26 | 75 | 95 |
| φ 900 ^{mm} | 36 | 105 | 125 |

THE REPUBLIC OF THE PHILIPPINES
 DEPARTMENT OF AGRARIAN REFORM
 INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT
 TITLE OF DRAWING
**TYPICAL CROSS-SECTION OF IRRIGATION
 AND DRAINAGE CANAL**

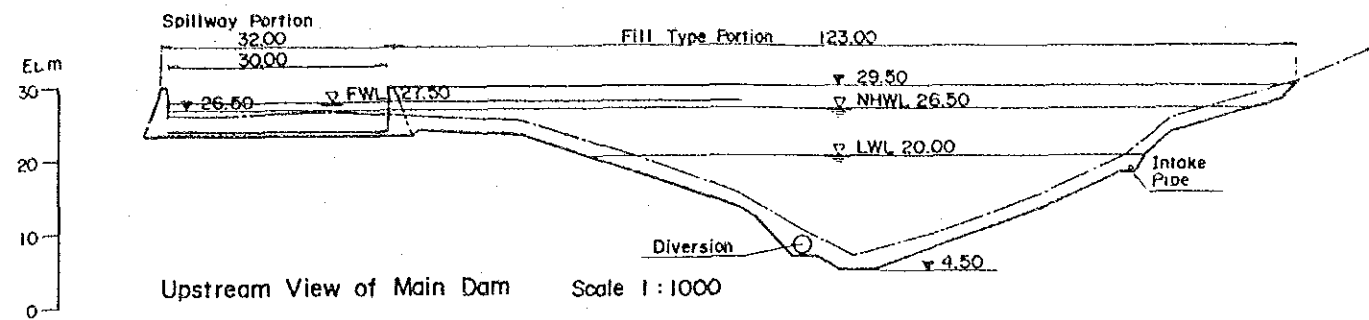
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG NO.
7

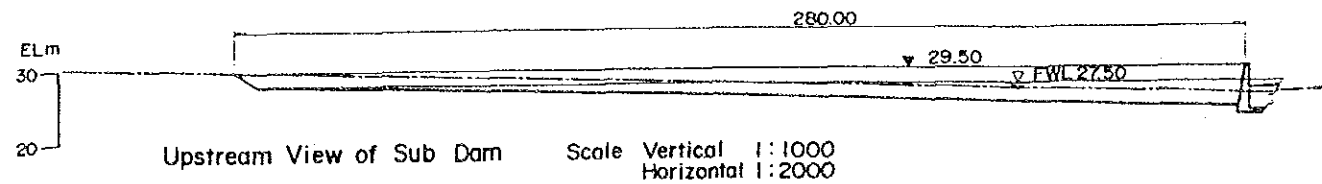


PLAN

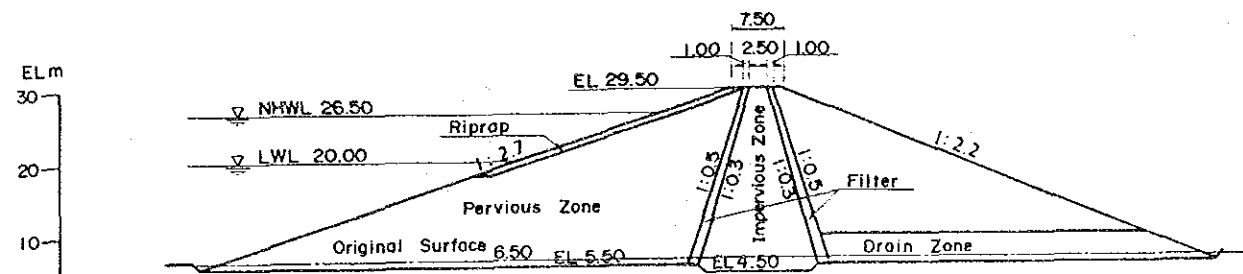
SCALE 1:2000



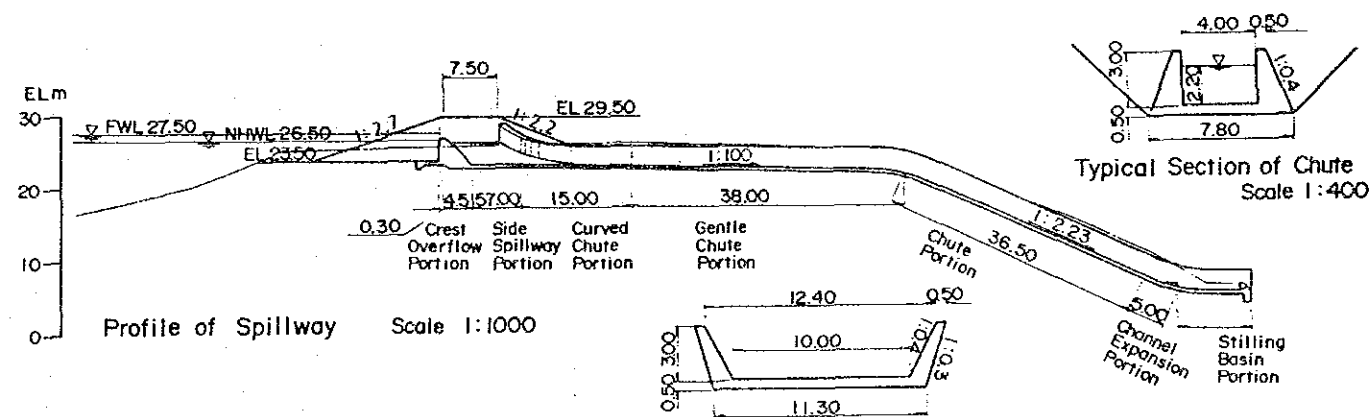
Upstream View of Main Dam Scale 1:1000



Upstream View of Sub Dam Scale Vertical 1:1000 Horizontal 1:2000

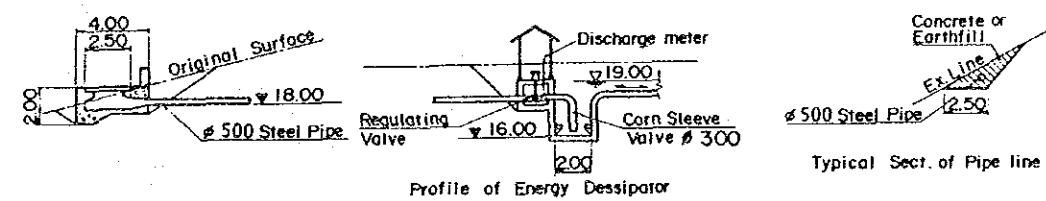


Typical Dam Section Scale 1:1000

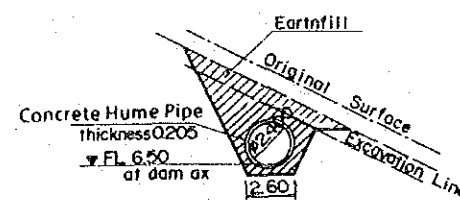


Profile of Spillway Scale 1:1000

Typical Section of Stilling Basin Scale 1:400

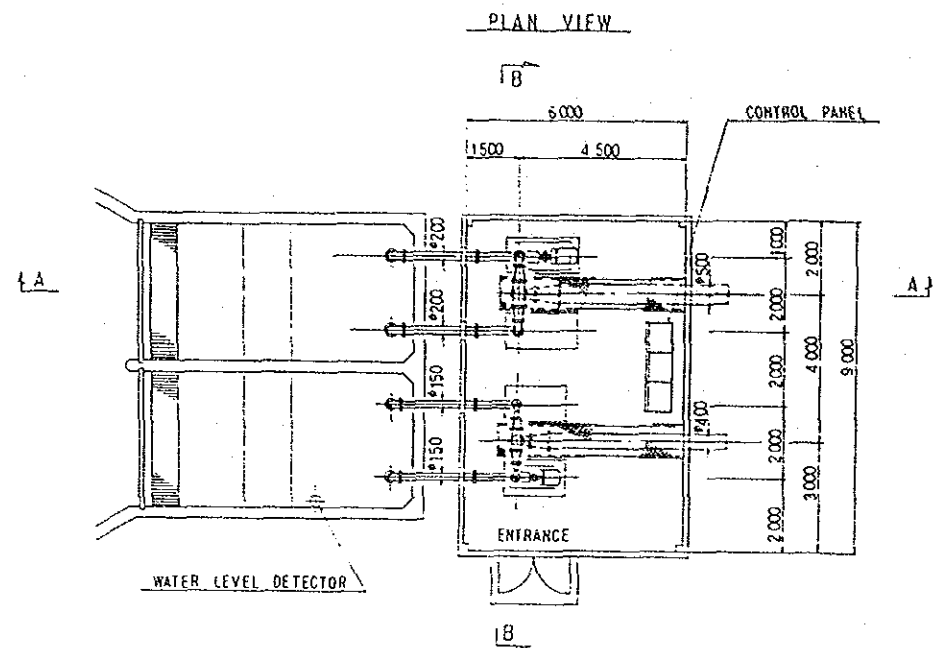


Profile of Energy Dissipator Intake Conduit Scale 1:400



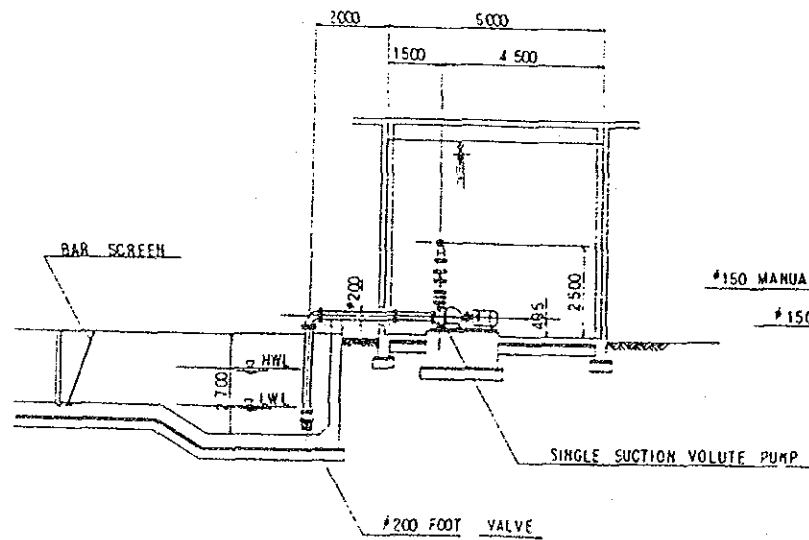
Typical Section of Diversion Scale 1:400

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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT TITLE OF DRAWING PALAY-PALAY DAM | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 8 |



WATER LEVEL DETECTOR

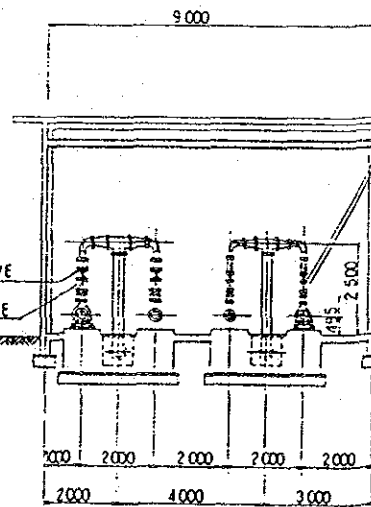
A-A SECTION



SINGLE SUCTION VOLUTE PUMP

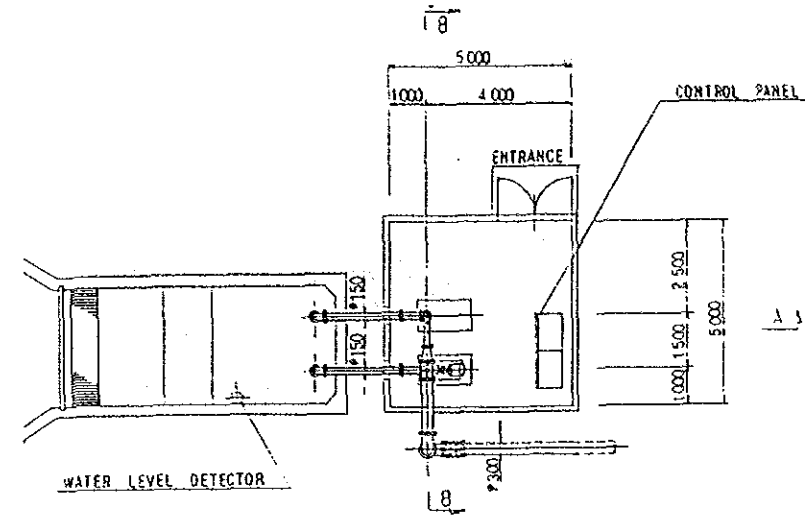
#200 FOOT VALVE

B-B SECTION



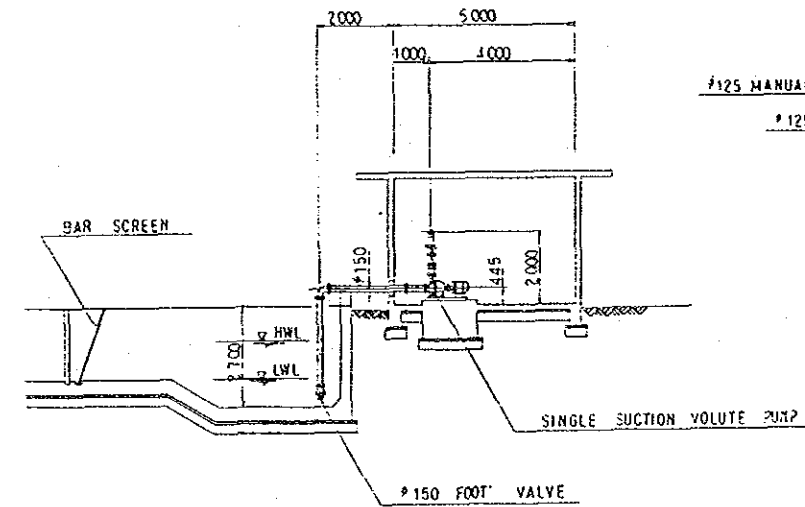
#150 MANUAL SLUICE VALVE
#150 CHECK VALVE

PLAN VIEW



WATER LEVEL DETECTOR

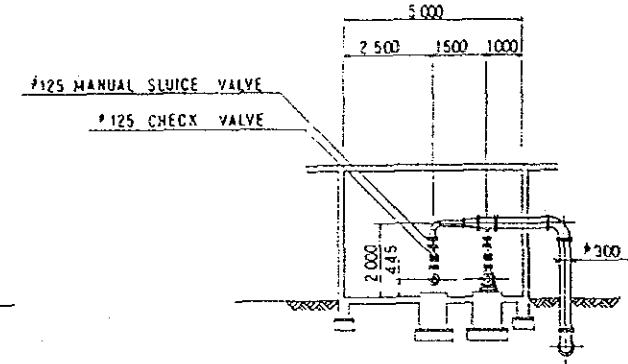
A-A SECTION



SINGLE SUCTION VOLUTE PUMP

#150 FOOT VALVE

B-B SECTION



#125 MANUAL SLUICE VALVE
#125 CHECK VALVE

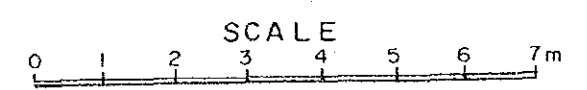
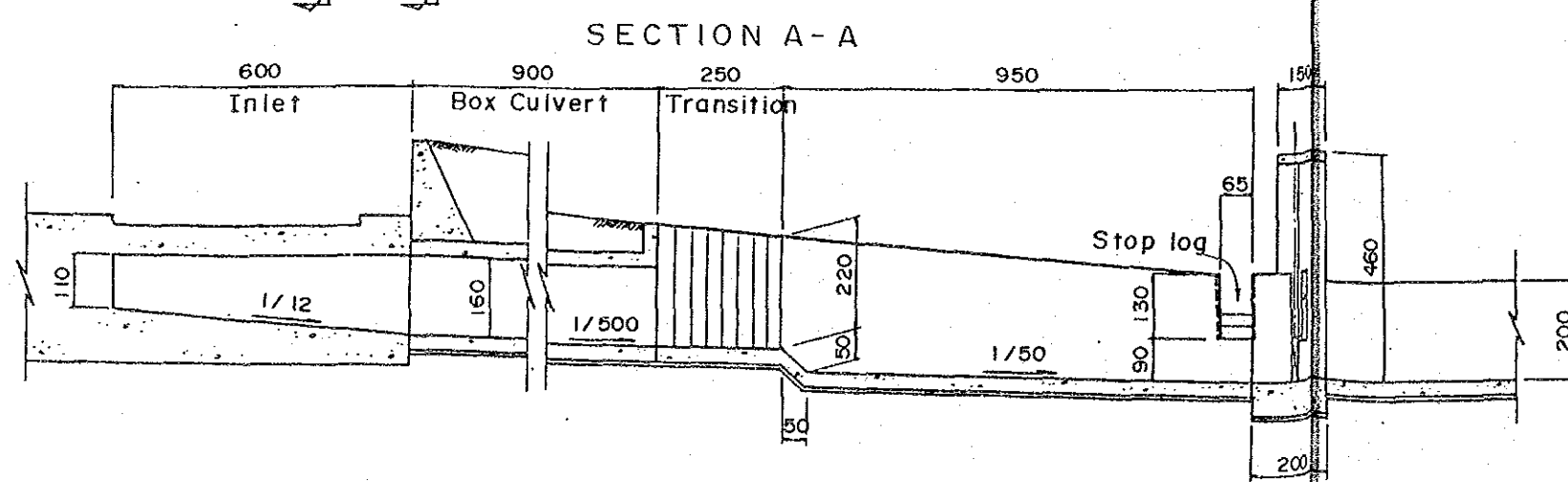
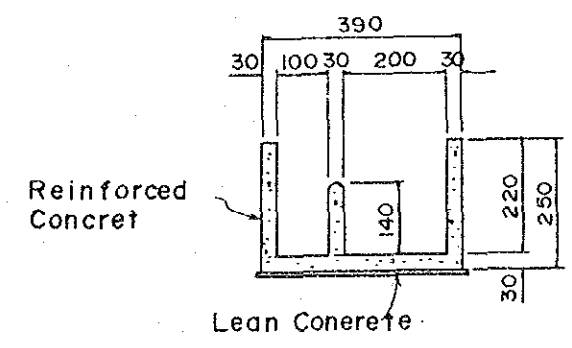
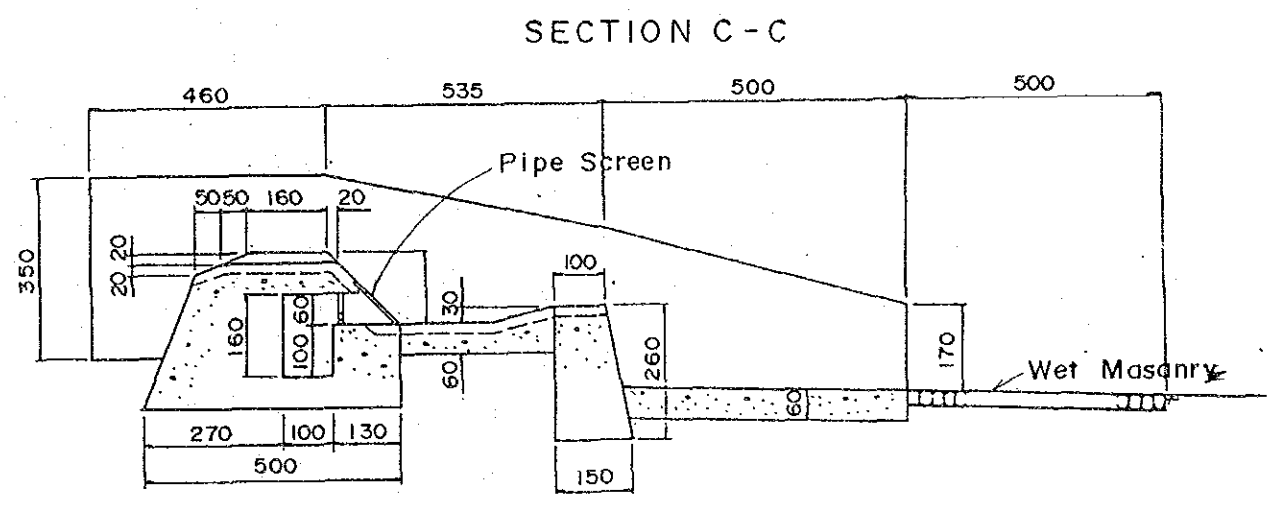
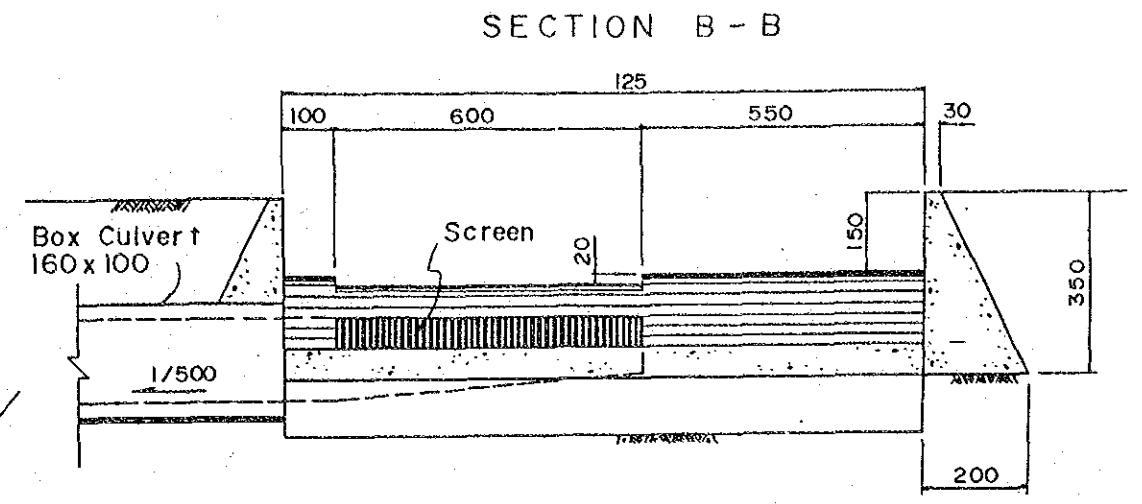
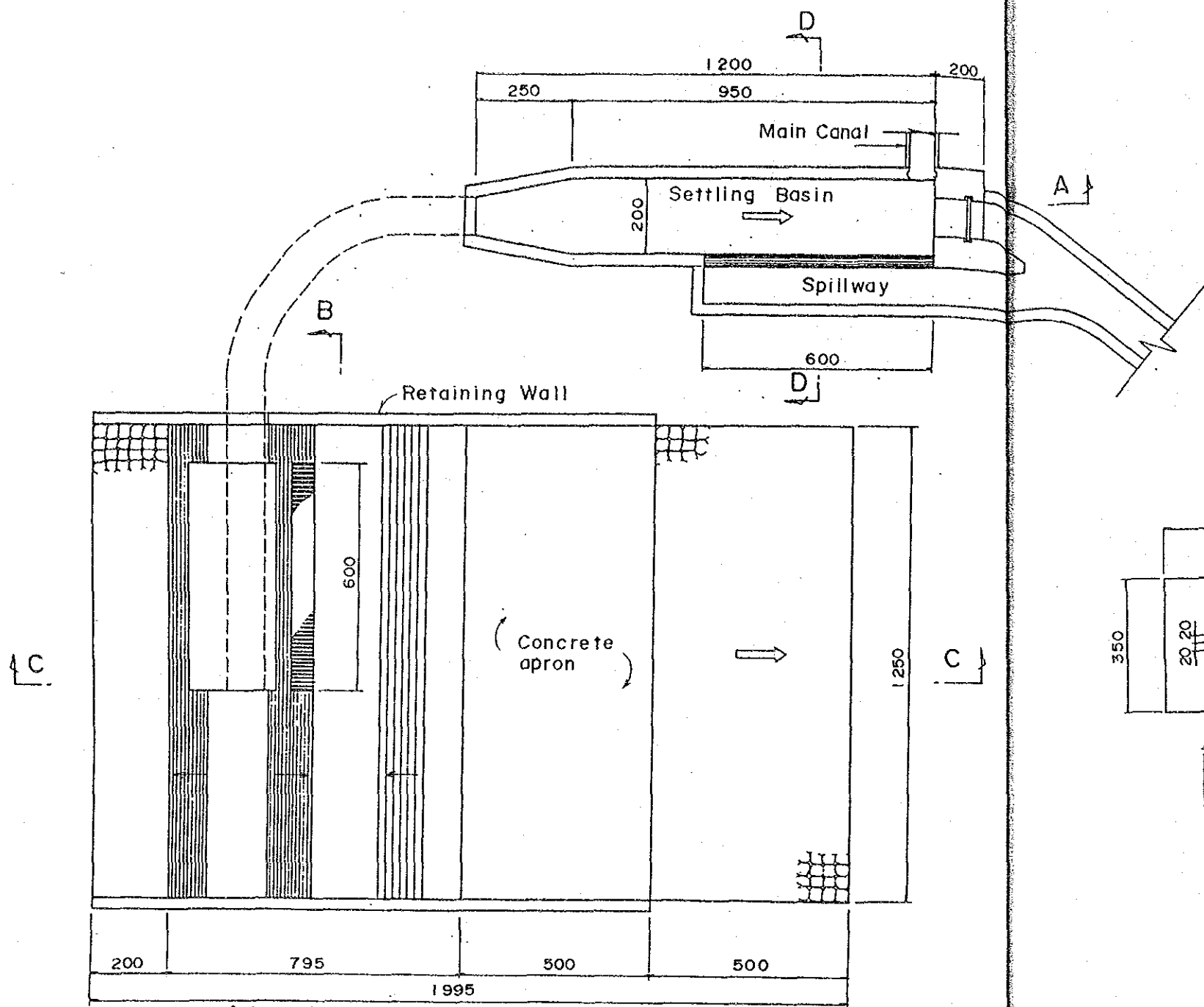
THE REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRARIAN REFORM
INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT
TITLE OF DRAWING

PUMP STATION

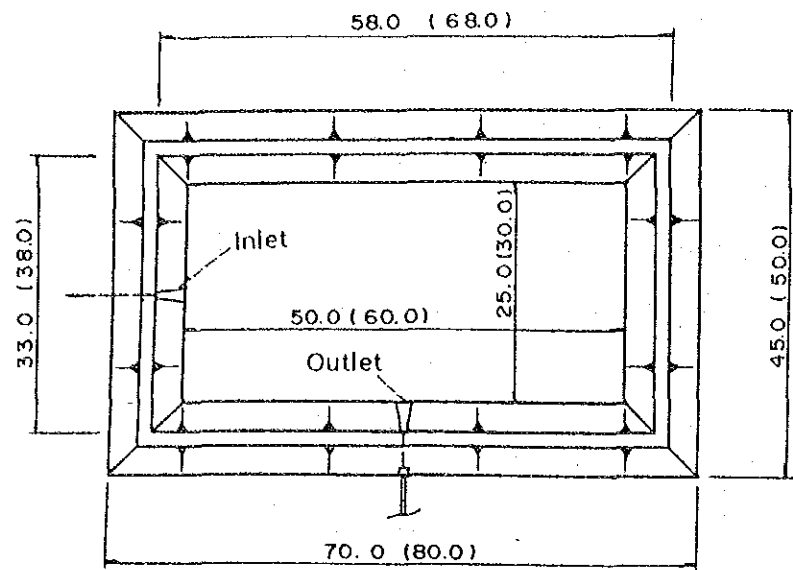
JAPAN INTERNATIONAL COOPERATION AGENCY

DWG NO.

9

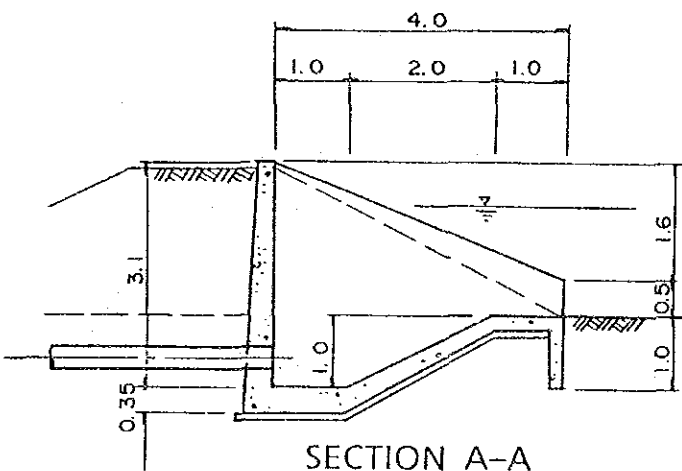


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| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING INTAKE | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 10 |

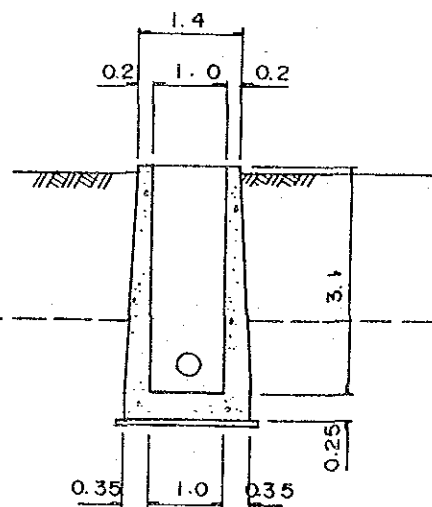


PLAN OF FARM POND

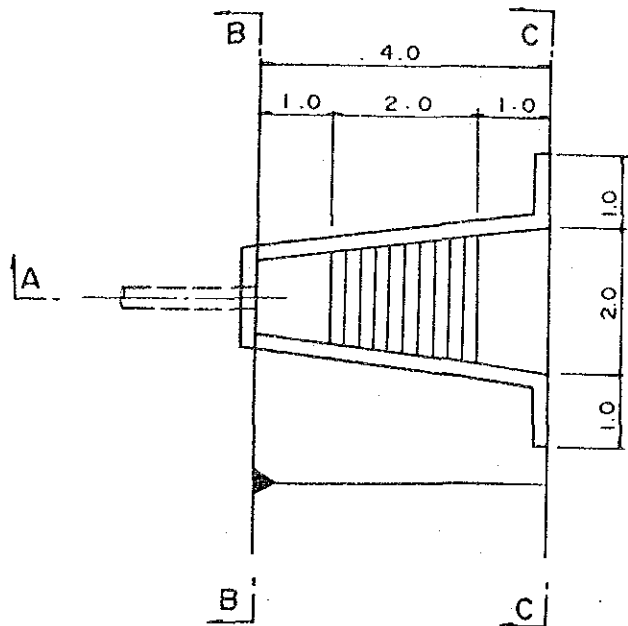
SCALE 0 10 20m



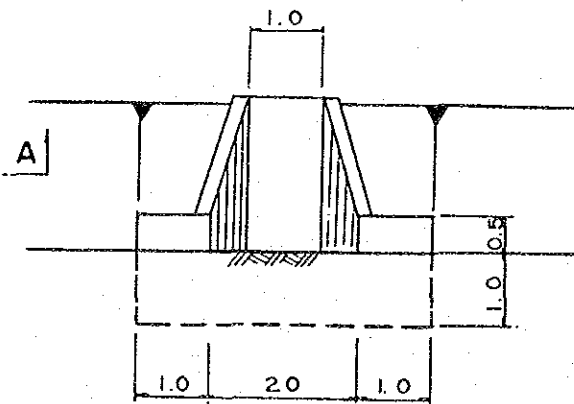
SECTION A-A



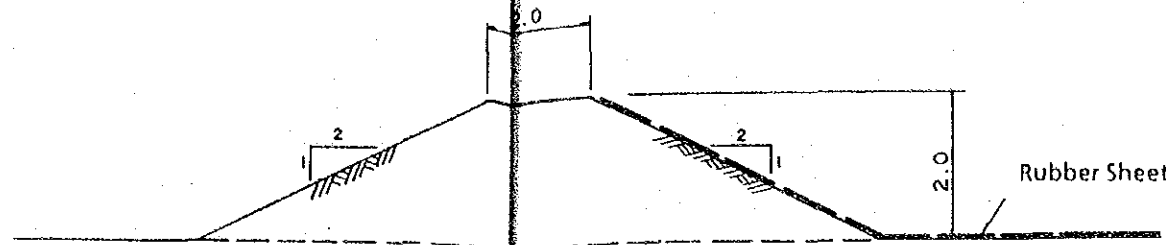
SECTION B-B



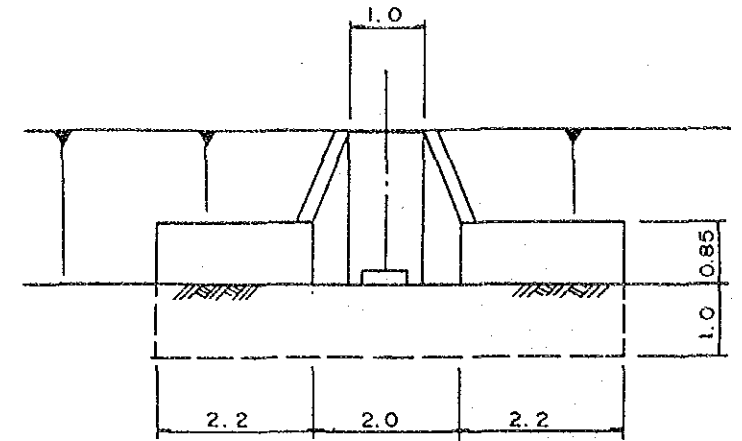
PLAN OF INLET



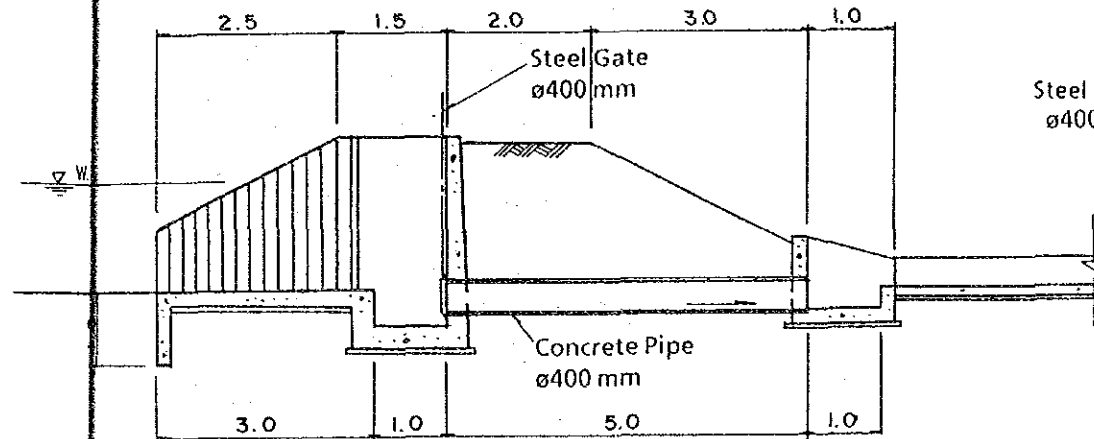
SECTION C-C



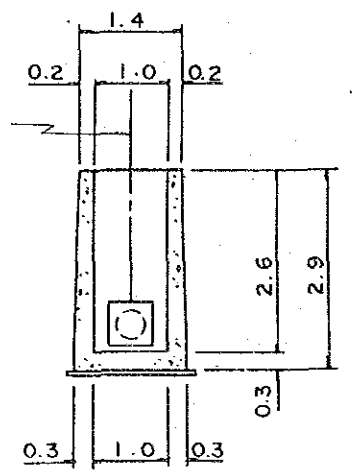
TYPICAL CROSS-SECTION OF EMBANKMENT



SECTION E-E

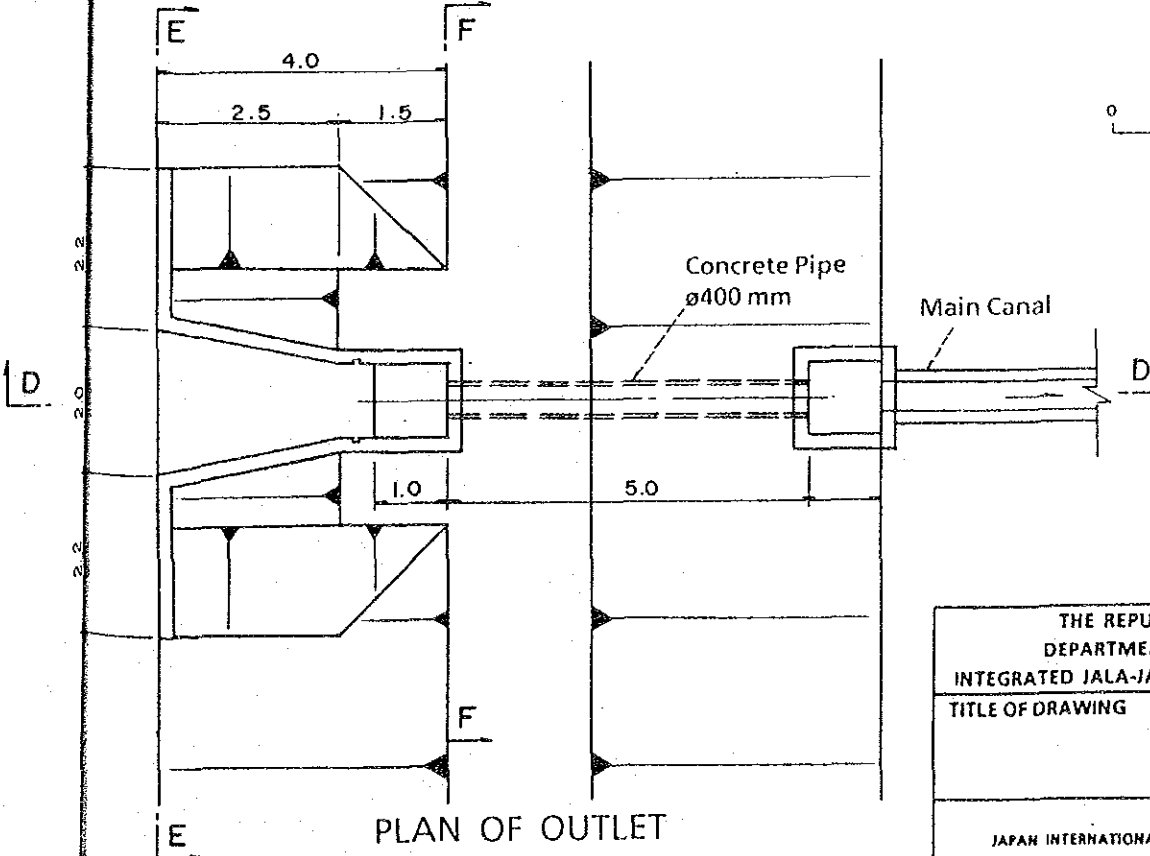


SECTION D-D



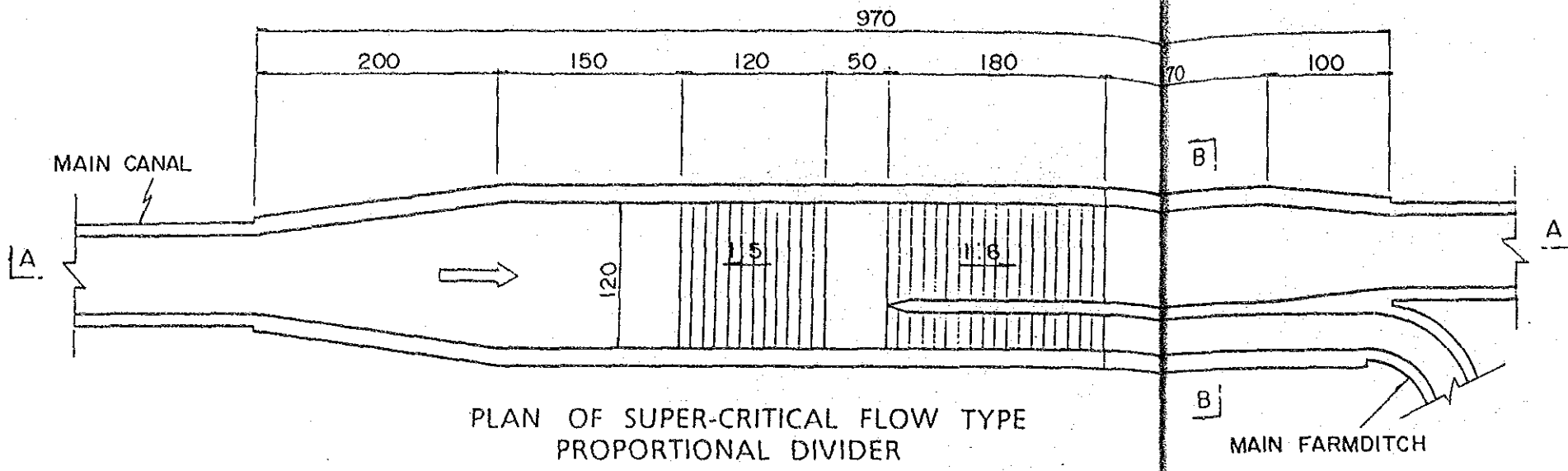
SECTION F-F

SCALE
0 1 2 3 4 5m
EXCEPT AS NOTED

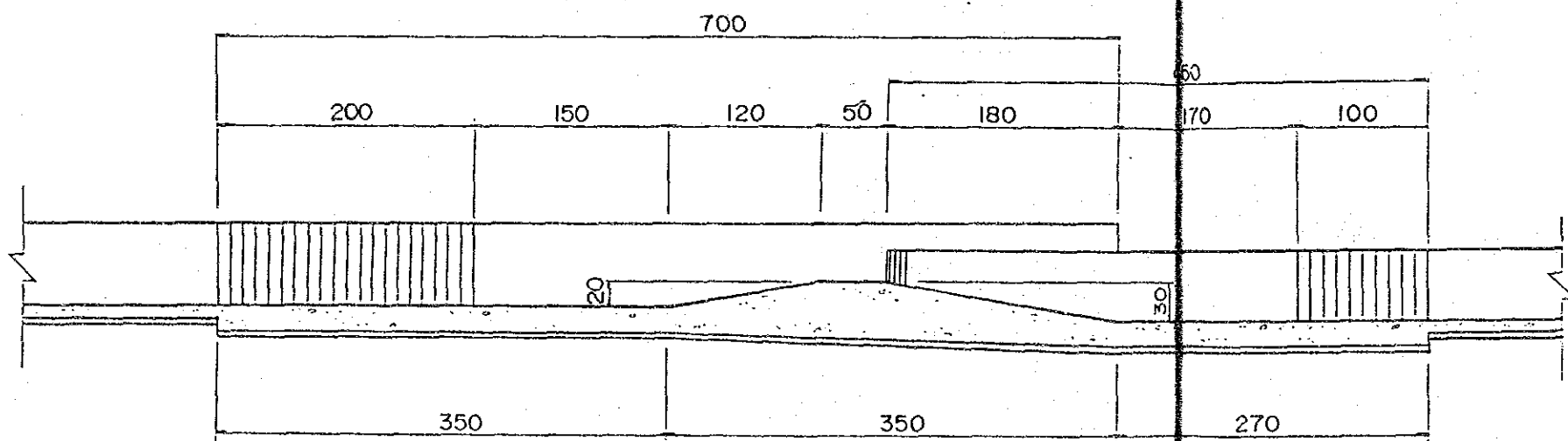


PLAN OF OUTLET

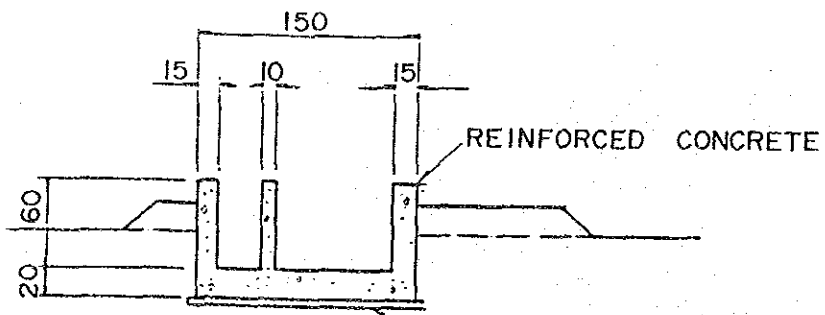
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|--|----------------------|
| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING FARM POND | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 11 |



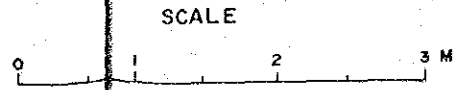
PLAN OF SUPER-CRITICAL FLOW TYPE PROPORTIONAL DIVIDER



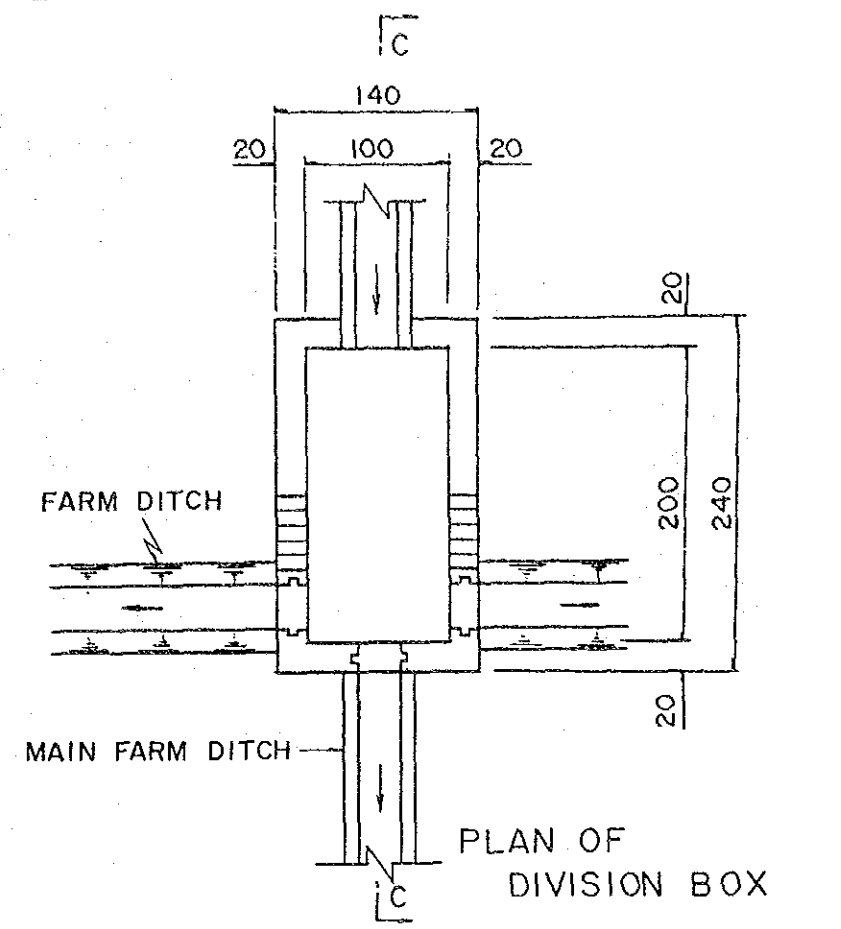
SECTION A - A



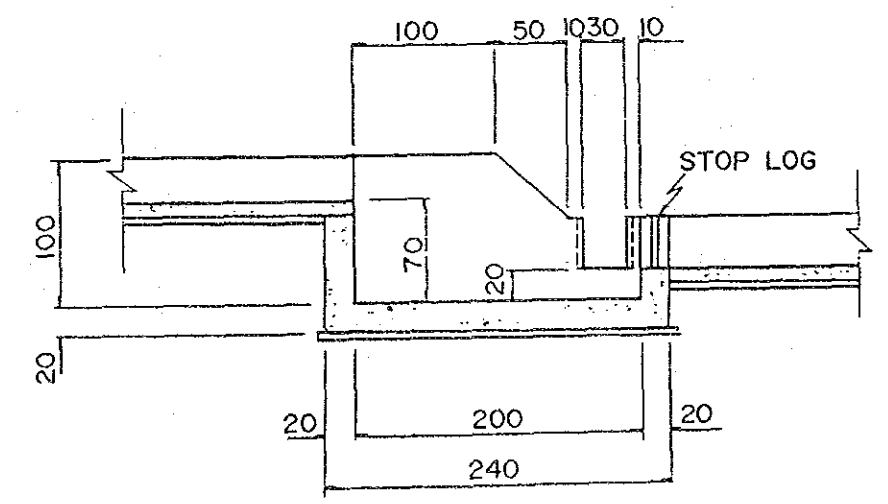
SECTION B - B



SCALE



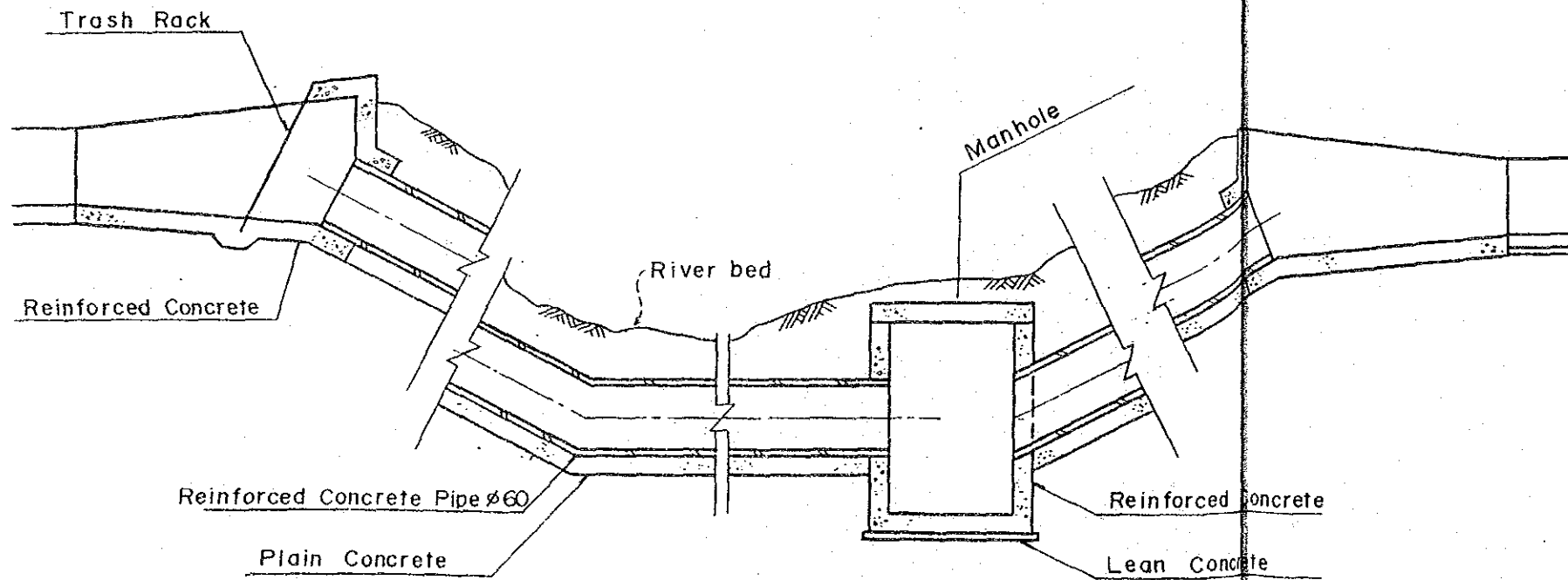
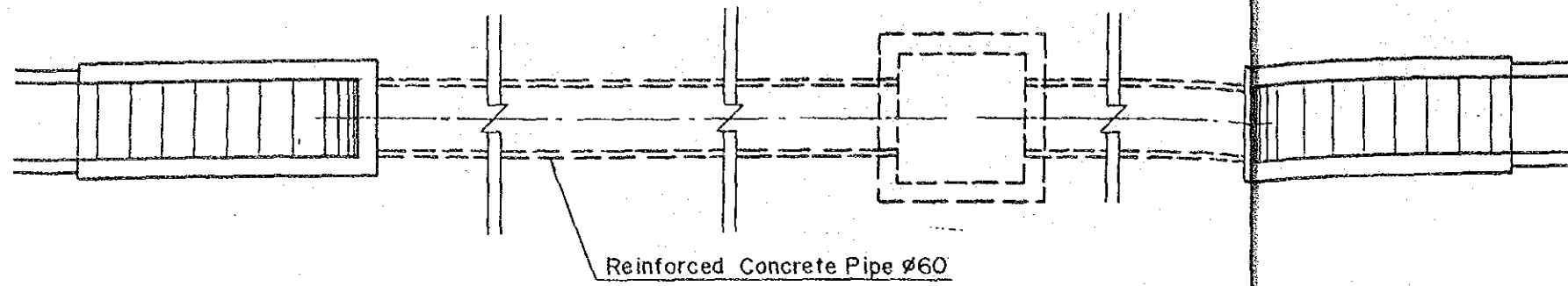
PLAN OF DIVISION BOX



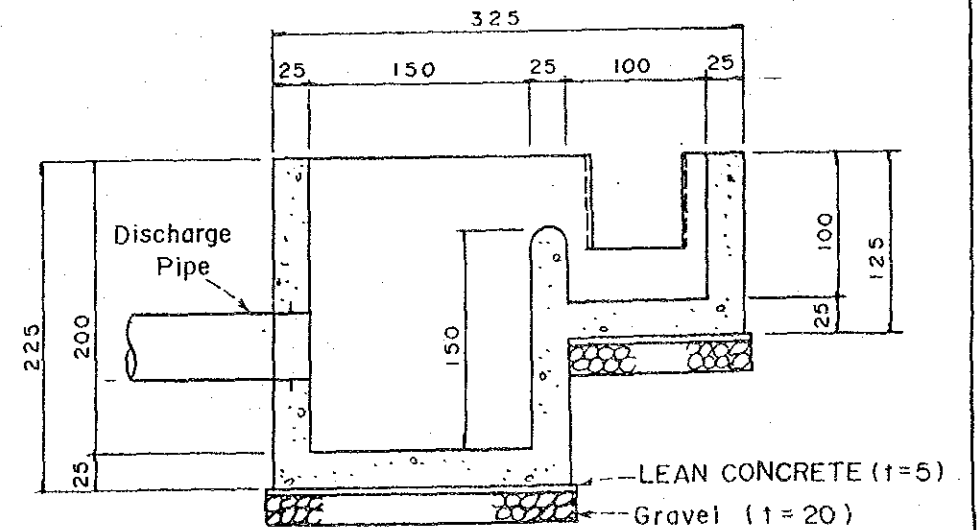
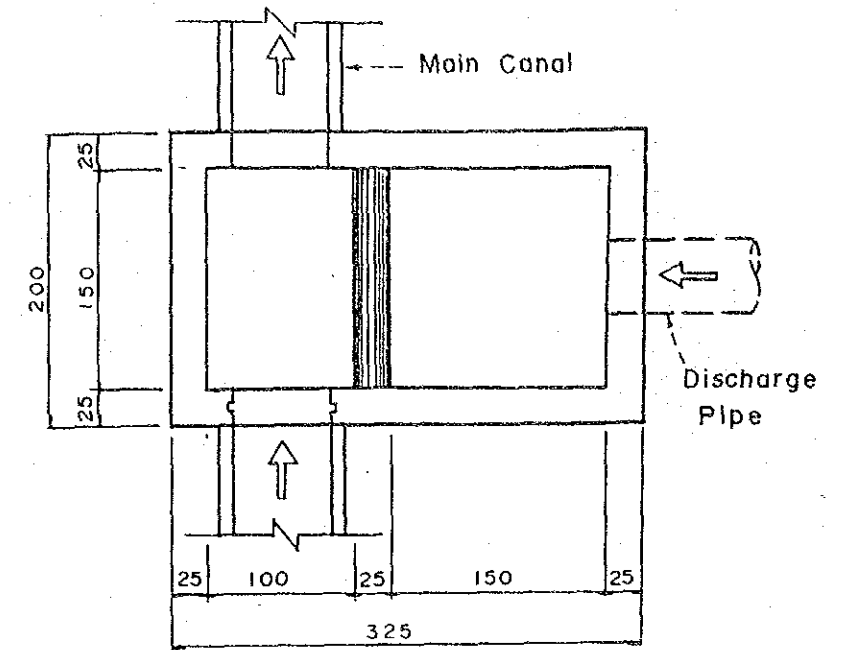
SECTION C - C

| | |
|--|---------------------|
| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT TITLE OF DRAWING TURNOUT | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO 12 |

SIPHON

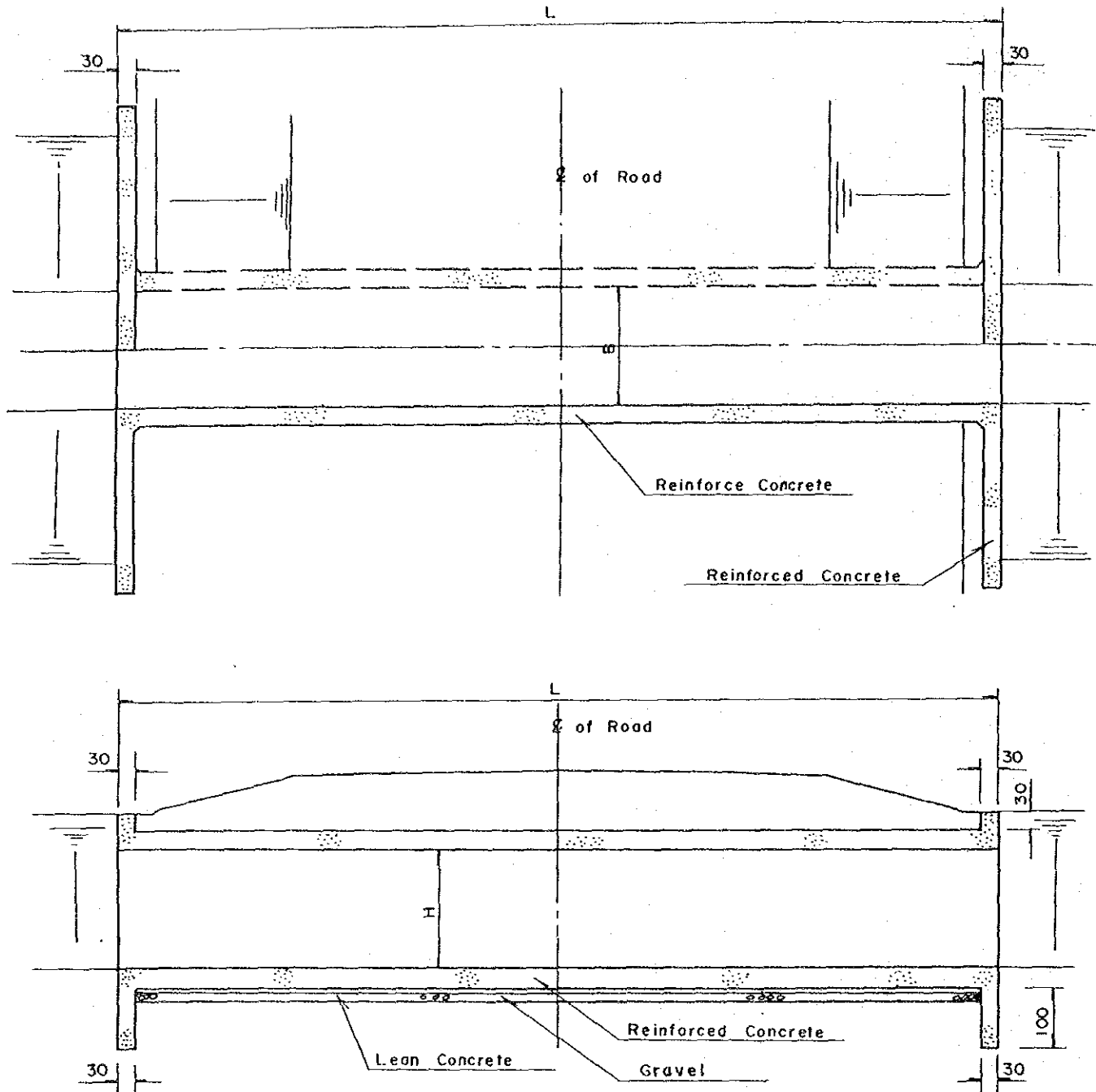


DISCHARGE SUMP.

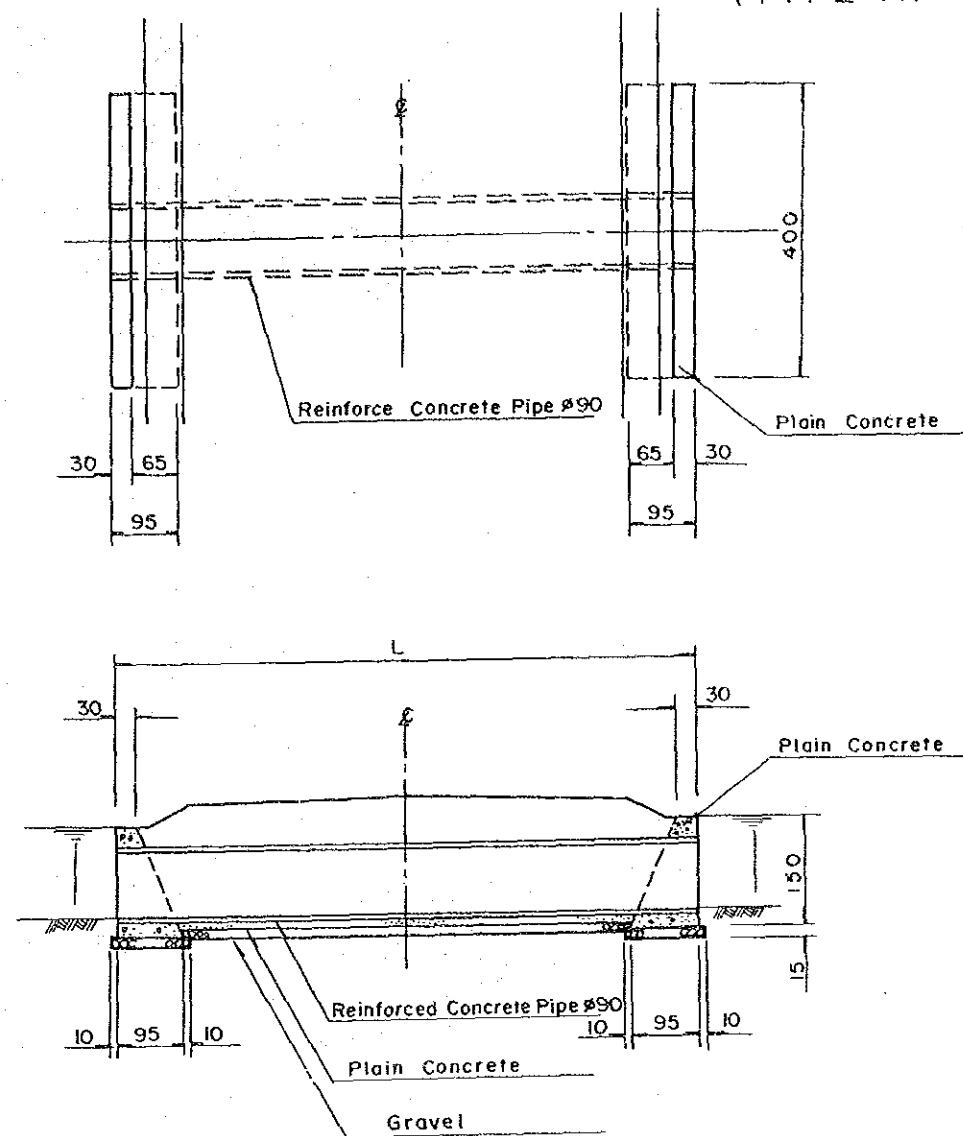


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|--|----------------------|
| THE REPUBLIC OF THE PHILIPPINES DEPARTMENT OF AGRARIAN REFORM INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT | |
| TITLE OF DRAWING SIPHON, DISCHARGE SUMP. | |
| JAPAN INTERNATIONAL COOPERATION AGENCY | DWG NO. 13 |

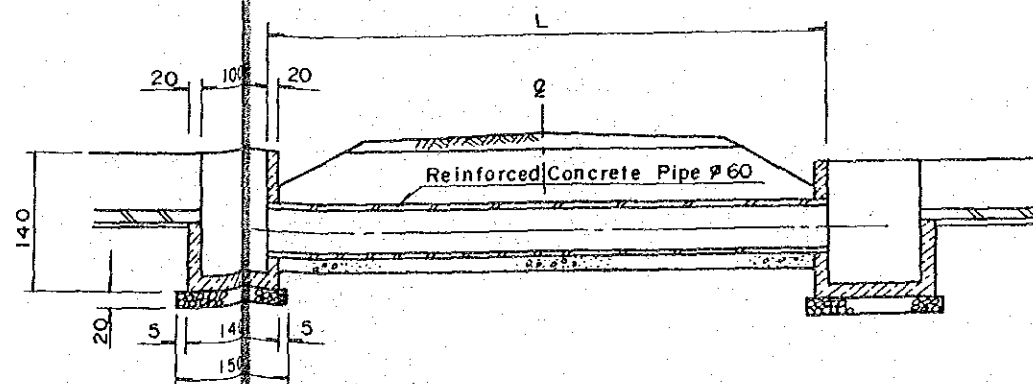
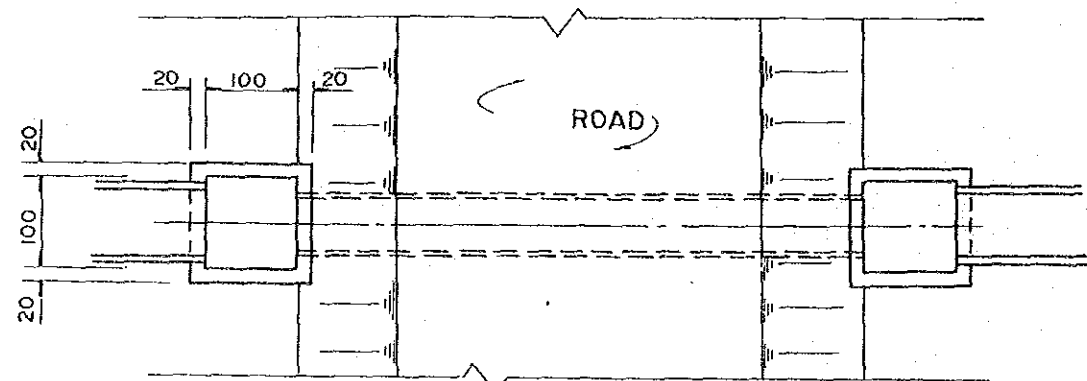
BOX CULVERT



PIPE CULVERT FOR DRAIN (TYPE A)



PIPE CULVERT FOR IRRIGATION (TYPE F)



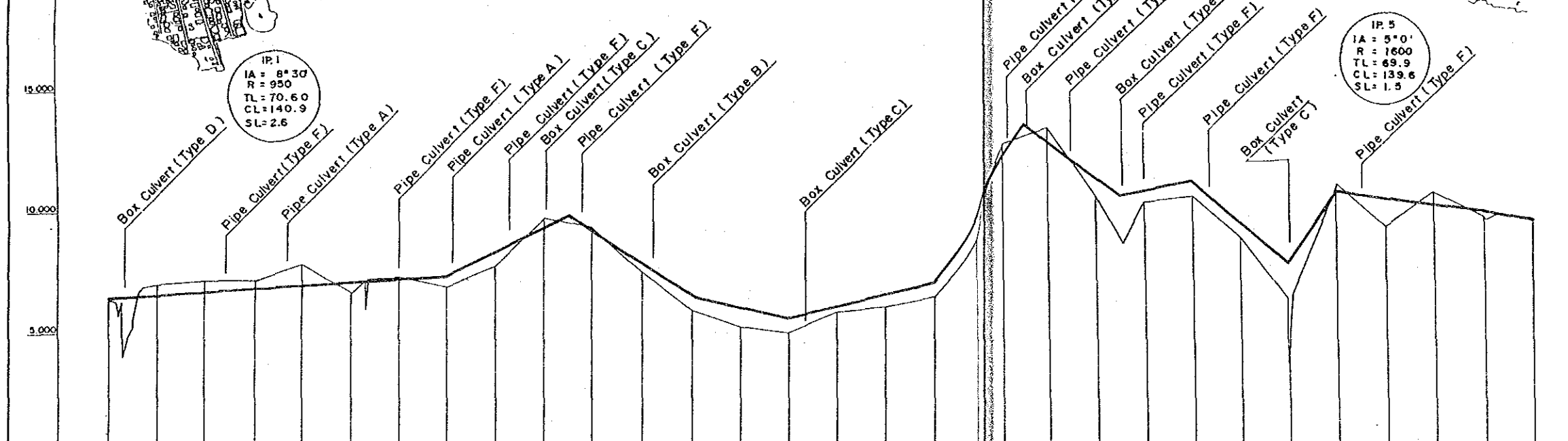
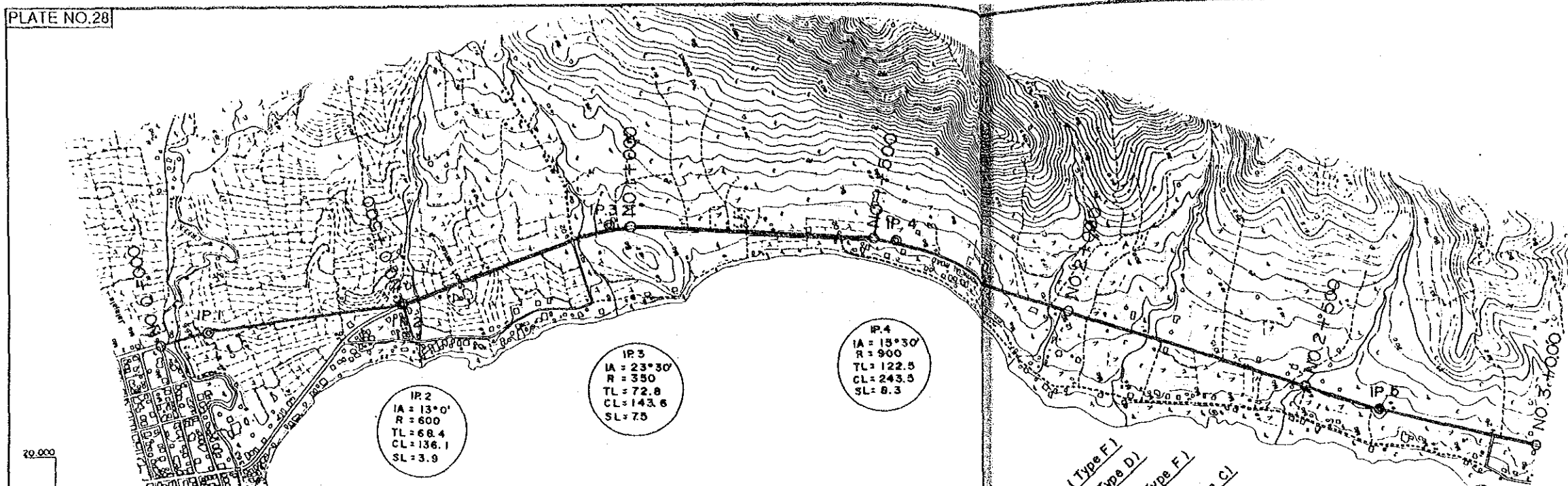
Dimension of Culvert

| Type | B (m) | H (m) | |
|------|-------|-------|---------|
| A | — | — | φ 900mm |
| B | 1.5 | 1.0 | |
| C | 2.0 | 1.25 | |
| D | 3.0 | 2.0 | |
| E | 4.0 | 2.5 | |
| F | — | — | φ 600mm |

THE REPUBLIC OF THE PHILIPPINES
 DEPARTMENT OF AGRARIAN REFORM
 INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT
 TITLE OF DRAWING
ROAD CROSSING

JAPAN INTERNATIONAL COOPERATION AGENCY

DWG NO.
14



| STATION | 0+000 | 100.0 | 200.0 | 300.0 | 400.0 | 500.0 | 600.0 | 700.0 | 800.0 | 900.0 | 1000.0 | 1100.0 | 1200.0 | 1300.0 | 1400.0 | 1500.0 | 1600.0 | 1700.0 | 1800.0 | 1900.0 | 2000.0 | 2100.0 | 2200.0 | 2300.0 | 2400.0 | 2500.0 | 2600.0 | 2700.0 | 2800.0 | 2900.0 | 3000.0 | | | |
|------------------|------------------------|-------|------------------------|-------|------------------------|-------|------------------------|-------|------------------------|-------|------------------------|--------|------------------------|--------|------------------------|--------|------------------------|--------|------------------------|--------|------------------------|--------|-----------------------|--------|-----------------------|--------|-----------------------|--------|-----------------------|--------|--------|-------|------|------|
| GRADE | 6.50 | 6.70 | 6.90 | 6.90 | 7.10 | 7.20 | 7.30 | 7.40 | 8.40 | 9.40 | 9.90 | 9.90 | 7.90 | 6.30 | 6.00 | 5.55 | 6.05 | 6.50 | 7.00 | 8.40 | 12.10 | 13.35 | 12.90 | 11.40 | 10.90 | 10.70 | 11.00 | 9.25 | 7.50 | 10.50 | 10.10 | 9.85 | 9.60 | 9.20 |
| EXISTING GRADE | 6.32 | 6.98 | 7.12 | 7.15 | 7.81 | 6.64 | 7.33 | 6.88 | 7.75 | 9.70 | 9.55 | 9.36 | 7.52 | 5.93 | 5.25 | 5.01 | 5.88 | 6.02 | 6.48 | 8.90 | 12.82 | 13.10 | 13.41 | 10.53 | 8.54 | 10.52 | 10.42 | 8.72 | 6.08 | 10.82 | 9.04 | 10.38 | 9.33 | 9.27 |
| GRADE DIFFERENCE | 0.18 | 0.28 | 0.32 | 0.35 | 0.71 | 0.63 | 0.30 | 0.16 | 0.38 | 0.37 | 0.75 | 0.54 | 0.17 | 0.48 | 0.52 | 0.45 | 0.67 | 1.96 | 0.18 | 0.98 | 0.33 | 1.42 | 0.32 | 1.06 | 0.27 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | | |
| GRADE SLOPE | 1 = 0.129% L = 700m | | 1 = 1.000% L = 250m | | 1 = 1.360% L = 250m | | 1 = 0.475% L = 200m | | 1 = 0.483% L = 300m | | 1 = 1.525% L = 200m | | 1 = 0.352% L = 150m | | 1 = 1.750% L = 200m | | 1 = 3.000% L = 100m | | 1 = 0.300% L = 300m | | 1 = 0.414% L = 600m | | | | | | | | | | | | | |
| GRADE TYPE | Pipe Culvert (Type F) | | Pipe Culvert (Type A) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | Pipe Culvert (Type F) | | | | | |
| GRADE CURVE | IP.1 R = 950 | | IP.2 R = 600 | | IP.3 R = 350 | | IP.4 R = 900 | | IP.5 R = 1600 | | | | | | | | | | | | | | | | | | | | | | | | | |

THE REPUBLIC OF THE PHILIPPINES
 DEPARTMENT OF AGRARIAN REFORM
 INTEGRATED JALA-JALA RURAL DEVELOPMENT PROJECT
 TITLE OF DRAWING
 GENERAL LAYOUT OF TRUNK ROAD
 NO.0 TO NO.3
 JAPAN INTERNATIONAL COOPERATION AGENCY
 DWG NO.
 15 - 1