Table 23 LIST OF LABOUR WAGES

(as Nokorn Ratchasima)

No.	I t e m	Pedium (฿/day)
1.	Commom labour	70
2.	Foreman, earth work	180
3.	Foreman, concrete work	215
4.	Foreman, other civil work	215
5.	Foreman, mechanical work	215
6.	Foreman, Electrical work	215
7.	Foreman, steel work	180
8.	Technician, capenter	180
9.	Technician, Electrician	180
10.	Technician, steel worker	180
11.	Techinician, form worker	180
12.	Technician, concrete worker	180
13.	Technician, mechanical	180
14.	Technician, mason	180
15.	Operator, bulldozer	180
16.	Operator, backhoe	180
17.	Operator, loader	180
18.	Operator, tamping roller	180
19.	Operator, other light equipment	145
20.	Driver, dump truck	145
21.	Driver, truck	145
22.	Driver, light vehicles	120

Table 24 LIST OF MATERIAL COST

No.	I t e m	Unit	Unit Cost (฿)
1.	Portland cement	t	90
2.	Concrete admixture, AE & others	kg	45
3.	Reinforcing steel bar, deformed, SD 30	t	9,800
4.	Reinforcing steel bar, round, SR 24	t	9,800
5.	Wire for binding reinforcing steel bar, ϕ180mm	t	14,000
6.	Aggregate for concrete, coarse (gravel)	m^3	220
7.	Aggregate for concrete, fine (sand)	m^3	150
8.	Laterite	m^3	140
9.	Wooden material for wooden form, soft wood	m^3	7,000
10.	Wooden material for house, hard wood	m^3	13,500
11.	Metal form	m^2	460
12.	Reinforced concrete pipe ϕ150 mm (L=1.0m)	m	80
13.	Reinforced concrete pipe ϕ200 mm (")	m	95
14.	Reinforced concrete pipe ϕ300 mm (")	m	160
15.	Reinforced concrete pipe ϕ400 mm (")	m	245
16.	Reinforced concrete pipe ϕ500 mm (")	m	300
17.	Reinforced concrete pipe ϕ600 mm (")	m	350
18.	Reinforced concrete pipe ϕ800 mm (")	m	600
19.	Reinforced concrete pipe ϕ1,000 mm (")	m	840
20.	Reinforced concrete pipe ϕ1,200 mm (")	m	1,200
21.	Reinforced concrete pipe ϕ1,500 mm (")	m	2,200
22.	Structure steel	t	10,500
23.	Nail	t	12,500
24.	Water-stop, PVC, 230 x 6 mm	m	160
25.	Water-stop, PVC, 300 x 7 mm	m	225
26.	PVC pipe, ϕ20 mm x 4.0 m class 8.5 not for high pressior	pec.	36
27.	PVC pipe, ϕ25 mm	"	48
28.	PVC pipe, ϕ30 mm	"	60
29.	PVC pipe, ϕ40 mm	"	78
30.	PVC pipe, ϕ50 mm	"	125
31.	PVC pipe, ϕ75 mm	"	262
32.	PVC pipe, ϕ100 mm	"	430

LIST OF MATERIAL COST

No.	I t e m	Unit	Unit Cost (ß)
33.	PVC pipe, ϕ150 mm	pec.	920
34.	PVC pipe, ϕ200 mm	"	1,720
35.	PVC pipe, ϕ300 mm	"	3,360
36.	Sod	m^2	20
37.	Fence mech wire	m^2	58
38.	Fuel, diesel oil	lit	6.9
39.	Fuel, gasoline, regular	"	11.0
40.	Stone for masonry work	m^3	210
41.	Elastic filler 0.02 x 1.20 x 2.40 m	pc	1,730
42.	Elastic filler 0.01 x 1.20 x 2.40 m	"	920
43.	Steel pipe L=6.0m ϕ1/2" (BS-S)	"	45
44.	Steel pipe L=6.0m ϕ3/4" (")	"	70
45.	Steel pipe L=6.0m ϕ1" (")	"	100
46.	Steel pipe L=6.0m ϕ1 1/4(")	"	135
47.	Steel pipe L=6.0m ϕ1 1/2(")	"	160
48.	Steel pipe L=6.0m ϕ2" (")	"	194
49.	Steel pipe L=6.0m ϕ2 1/2 (")	"	262
50.	Steel pipe L=6.0m ϕ3" (")	"	386
51.	Steel pipe L=6.0m ϕ4" (")	"	540
52.	Steel pipe L=6.0m ϕ5" (")	"	1,025
53.	Steel pipe L=6.0m ϕ6" (")	"	1,160
54.	Welding bar ϕ2.6 mm	kg	23
55.	Welding bar ϕ3.2 mm	kg	23
56.	Welding bar ϕ4.0 mm	kg	23
57.	Electric power	kwH	2.8

Table 25 LIST OF UNIT COST BY MANPOWER

No.	I t e m	Unit	Unit Cost (Baht)
MP-1	Excavation by manpower		
	Sand	m^3	16.8
	Common soil	m^3	28.0
	Gravel	m^3	38.5
MP-2	Hauling by manpower		
	L = 20 m	m^3	15.4
	L = 40 m	m^3	20.3
	L = 60 m	m^3	23.8
	L = 80 m	m^3	28.0
	L = 100 m	m^3	29.4
	L = 120 m	m^3	30.1
MP-3	Compacting		
MP-3-1	Compacting by manpower	m^3	19.6
MP-3-2	Compacting by compactor	m^3	14.8
MP-4	Smoothing of face Excavated or filled up	m^2	1.4
MP-5	Concrete		
MP-5-1	Plain concrete	m^3	997.8
MP-5-2	Reinforced concrete	m^3	1,080.8
MP-5-3	Lean concrete	m^3	834.9
MP-5-4	Lining concrete	m^3	1,119.6
MP-6	Mortar (C:S = 1:3)	m^3	961.9
MP-7	Wooden form of concrete	m^2	326.0
MP-8	Processing and assembling of reinforcing steel bar	ton	12,041.0
MP-9	Sod facing	m^2	44.8
MP-10	Wooden scaffolding	m^3	140.1
MP-11	Drainage by pump	day	332.3

Table 26 LIST OF UNIT COST BY USING CONSTRUCTION EQUIPMENTS

No.	I t e m	Unit	Unit Cost (Baht)
EQ-1	Excavation by Bulldozer (11 ton)		
	Sand	m^3	14.6
	Common soil	m^3	17.1
	Gravel and weathered rock	m^3	20.5
EQ-2	Excavation by Bulldozer (21 ton)		
	Sand	m^3	13.3
	Common soil	m^3	15.5
	Gravel and weathered rock	m^3	17.0
EQ-3	Excavation by Backhoe Shovel(0.35 m^3)		
	Sand	m^3	16.6
	Common soil	m^3	17.7
	Gravel and weathered rock	m^3	22.1
EQ-4	Excavation by Backho Shovel (0.7 m^3)		
	Sand	m^3	14.2
	Common soil	m^3	15.2
	Gravel and weathered rock	m^3	19.0
EQ-5	Excavation by Backhoe shovel (1.2 m^3)		
	Sand	m^3	15.2
	Common soil	m^3	16.2
	Gravel and weathered rock	m^3	20.2
EQ-6	Loading by Tractor Shovel		
	Sand	m^3	13.9
	Common soil	m^3	15.2
	Gravel and weathered rock	m^3	16.7
EQ-7	Hauling by Dump Truck (8 ton)		
	Sand	m^3	0.0074L+15.5
	Common soil	m^3	0.0070L+14.6
	Gravel and weathered rock	m^3	0.0083L+17.3
EQ-8	Hauling by Dump Truck (11 ton)		
	Sand	m^3	0.0070L+14.8
	Common soil	m^3	0.0066L+13.9
	Gravel and weathered rock	m^3	0.0079L+16.5

LIST OF UNIT COST BY USING CONSTRUCTION EQUIPMENTS

No.	I t e m	Unit	Unit Cost (Baht)
EQ-9	Spreading by Bulldozer (11 ton)		
	Sand	m^3	9.1
	Common soil	m^3	9.1
	Gravel and weathered rock	m^3	9.1
EQ-10	Compaction by Tire Roller (11 - 20 t)	m^3	3.9
EQ-11	Compaction by Vibration Roller (3 - 5 t)	m^3	13.6
EQ-12	Compaction by Bulldozer (11 ton)	m^3	6.8

Table 27 LIST OF THE VISITORS

Cooperatives Promotion Department	
1. Mr. Chern Bamrungwong	Director General
2. Mrs.Wannee Ratanawaraha	Chief, Project Management Office
3. Mr. Wallop Nisadol	Senior Agronomist
4. Miss Rachneewan Prathomthong	Senior Policy and Analyst
5. Mr. Witaya Chinchantarawong	Policy and Plan Analyst
6. Mr. Chuchad Losakul	Survey Engineer
7. Mr. Suthep Tanom	Civil Engineer
8. Mr. Somchai Suthigul	Civil Engineer
Nakorn Ratchasima Provincial Cooperative Office	
9. Mr. Sangchai Pavaboonsiriwongse	Chief, Provincial C.P.D. Office
10. Mrs. Sumol Pakakan	Senior Coop. Technician
3rd Engineering Center (C.P.D.)	
11. Mr. Panya Promdee	Chief, 3rd E.C.
12. Mr. Somchai Sarananusorn	Technical Engineer
13. Mr. Anan Sangchai	Technical Engineer
Kong District Cooperative Office	
14. Mrs. Chittra Bureerug	Kong District Coop. Officer
15. Mr. Weerasak Comko	
16. Mr. Nopporn Modcharoen	
Chakarat District Cooperative Office	
17. Miss Vilaiporn Pothichai	Manager and Farm Guidance Staff

F I G U R E S

FIGURES LIST

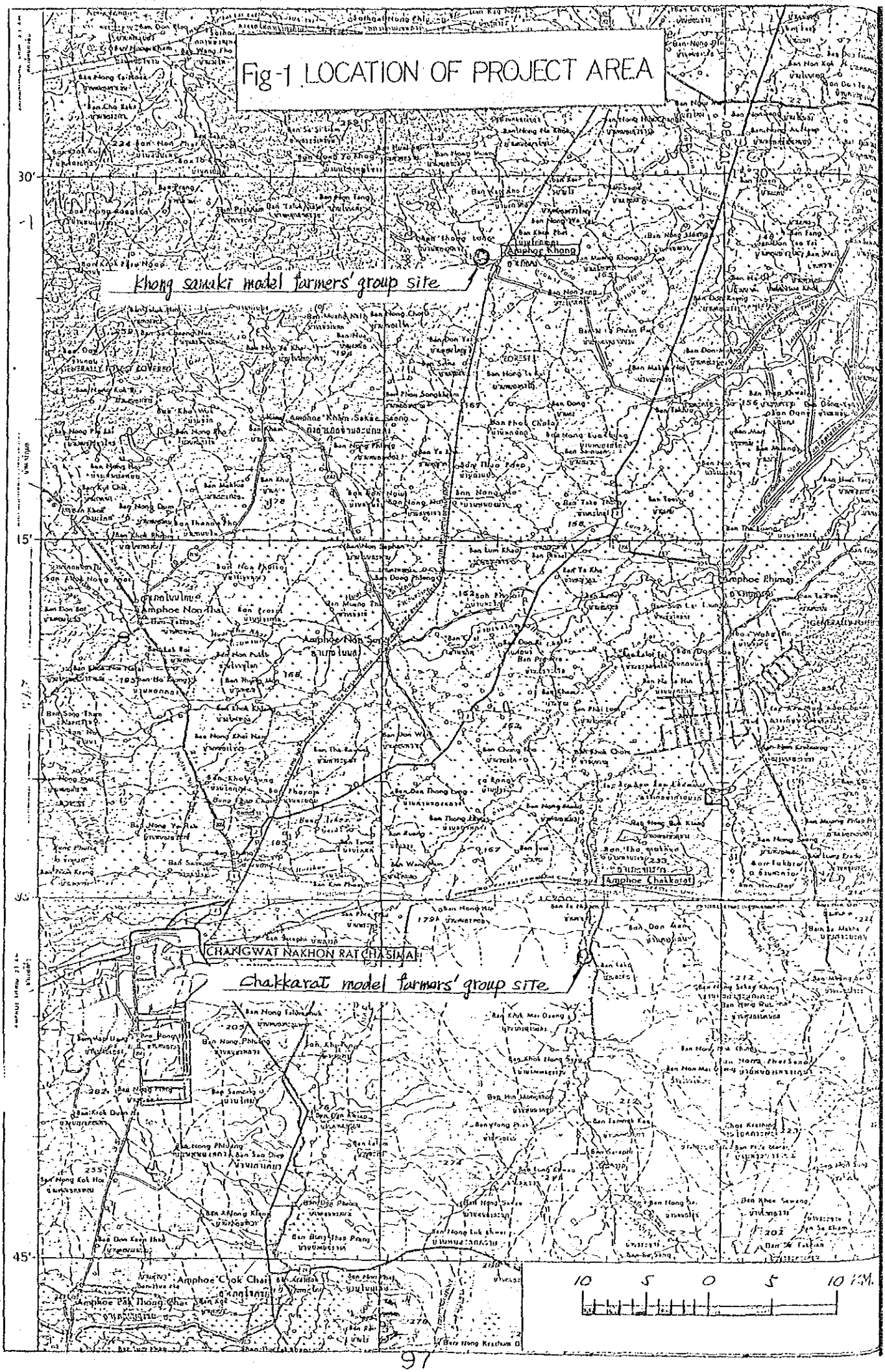
Fig-1 LOCATION OF PROJECT AREA
Khong samaki model farmers' group site
Chakkarat model farmers' group site
CHANGWAT NAKHON RATCHASIMA
Amphoe Khong
Amphoe Chakkarat
Amphoe Rhimaj
Amphoe Non Thai
Amphoe Chok Chai
10 5 0 5 10 K.M.

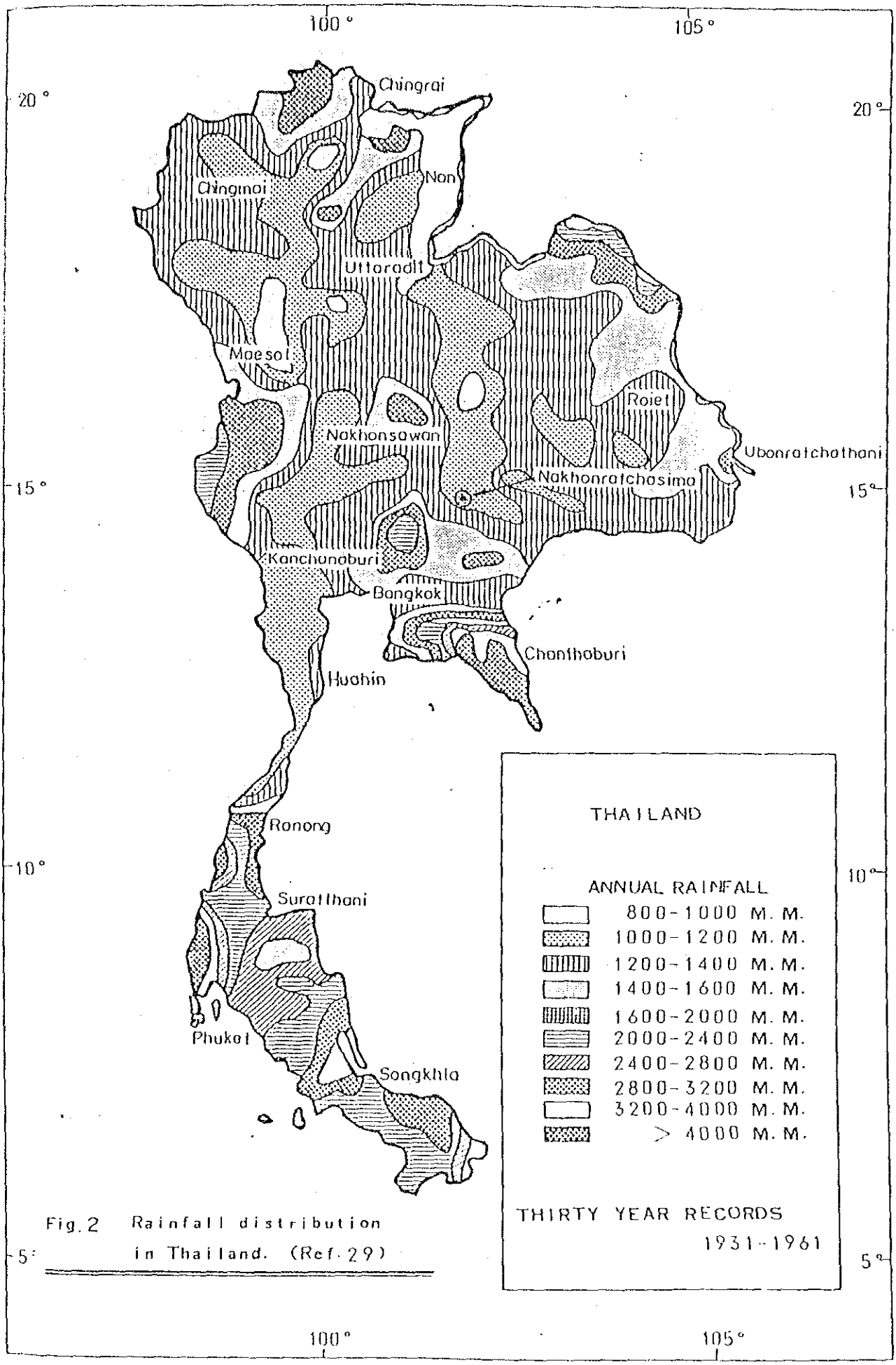

Fig. 2 Rainfall distribution in Thailand. (Ref. 29)

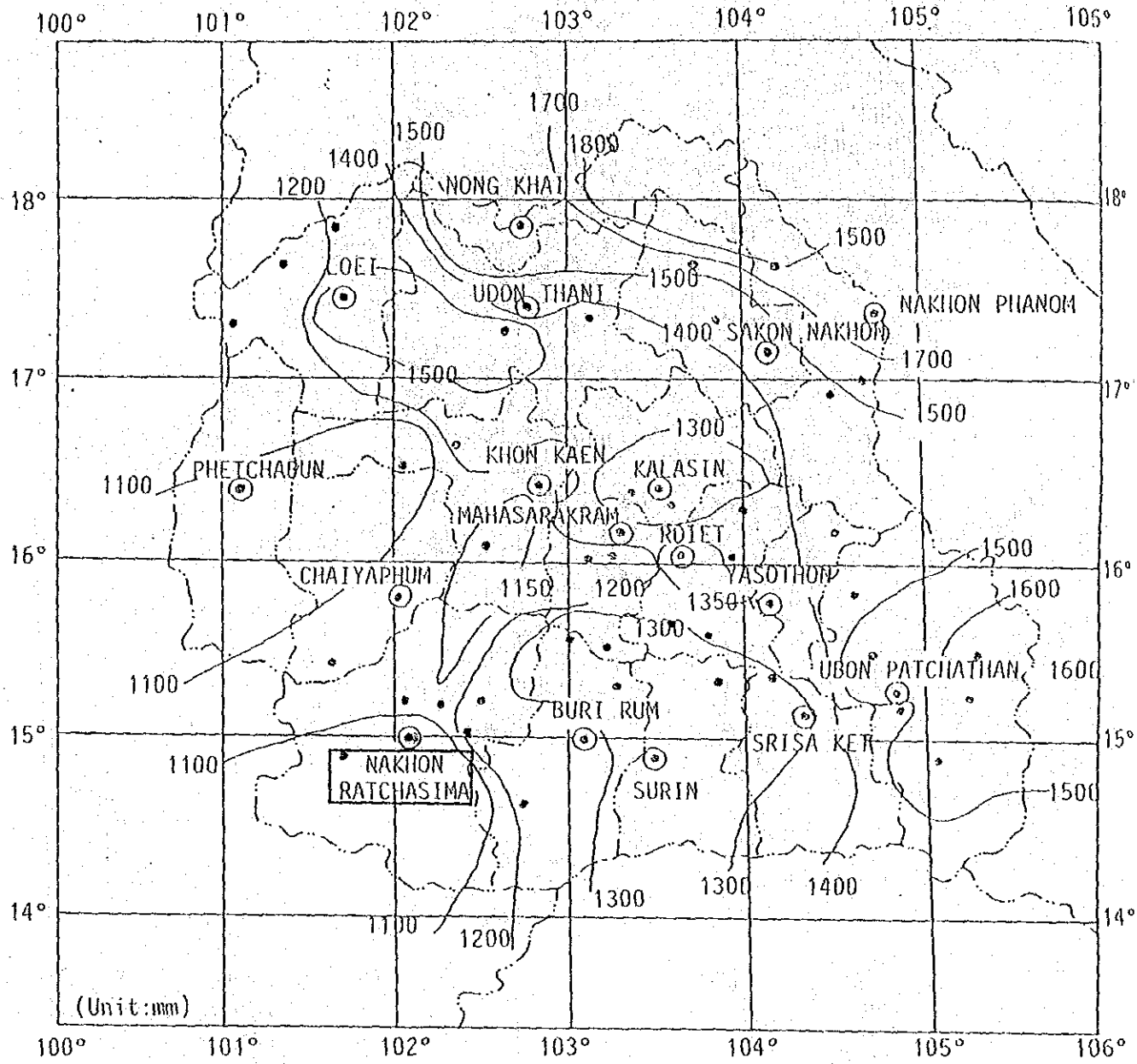

Fig. 3 Isohyets for Mean Annual Rainfall (Ref. 1)

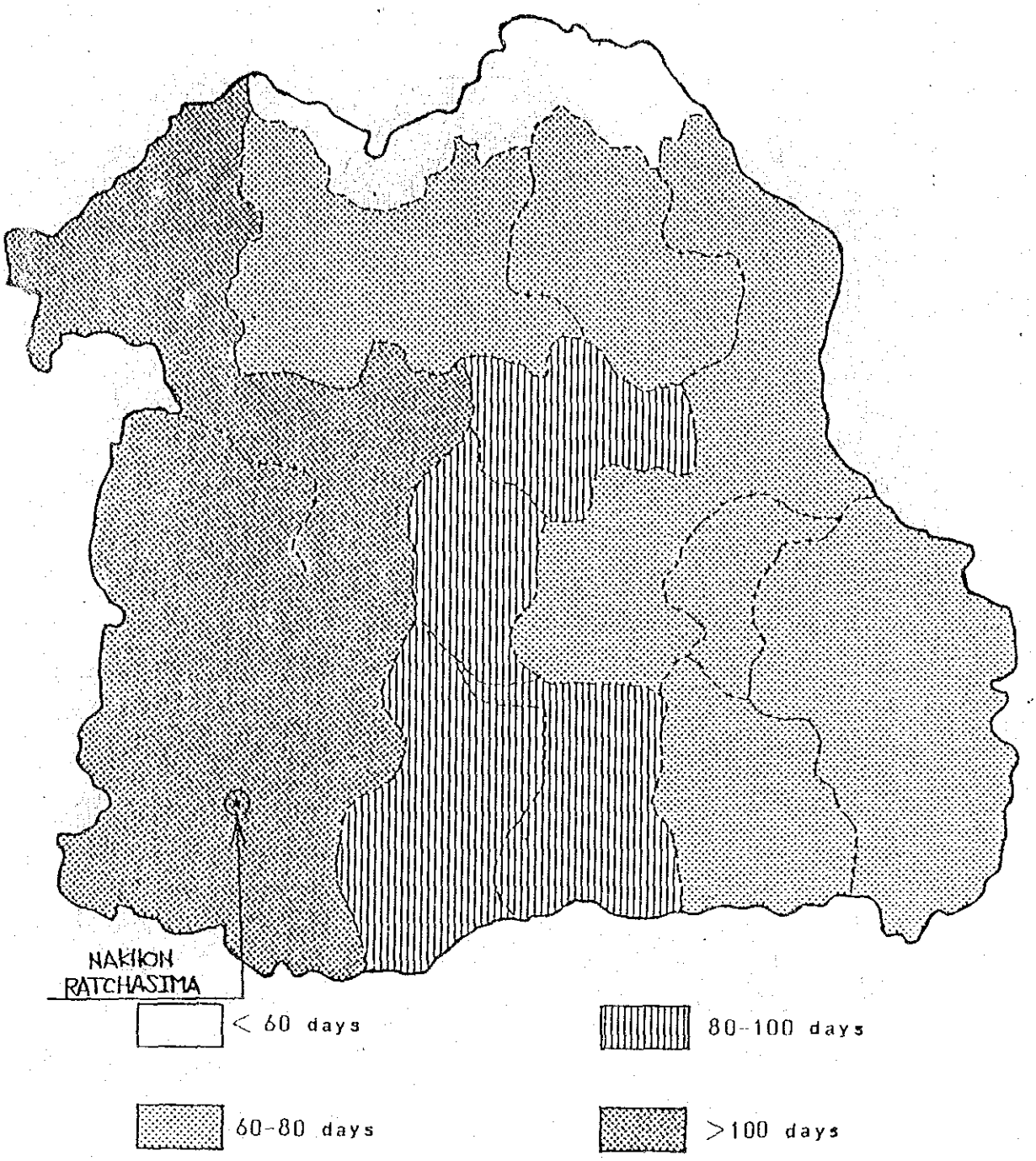

Fig. 4 Number of total drought days (calculated for paddy) for the period of May to October (Ref. 13, Original source: ESCAP 1974).

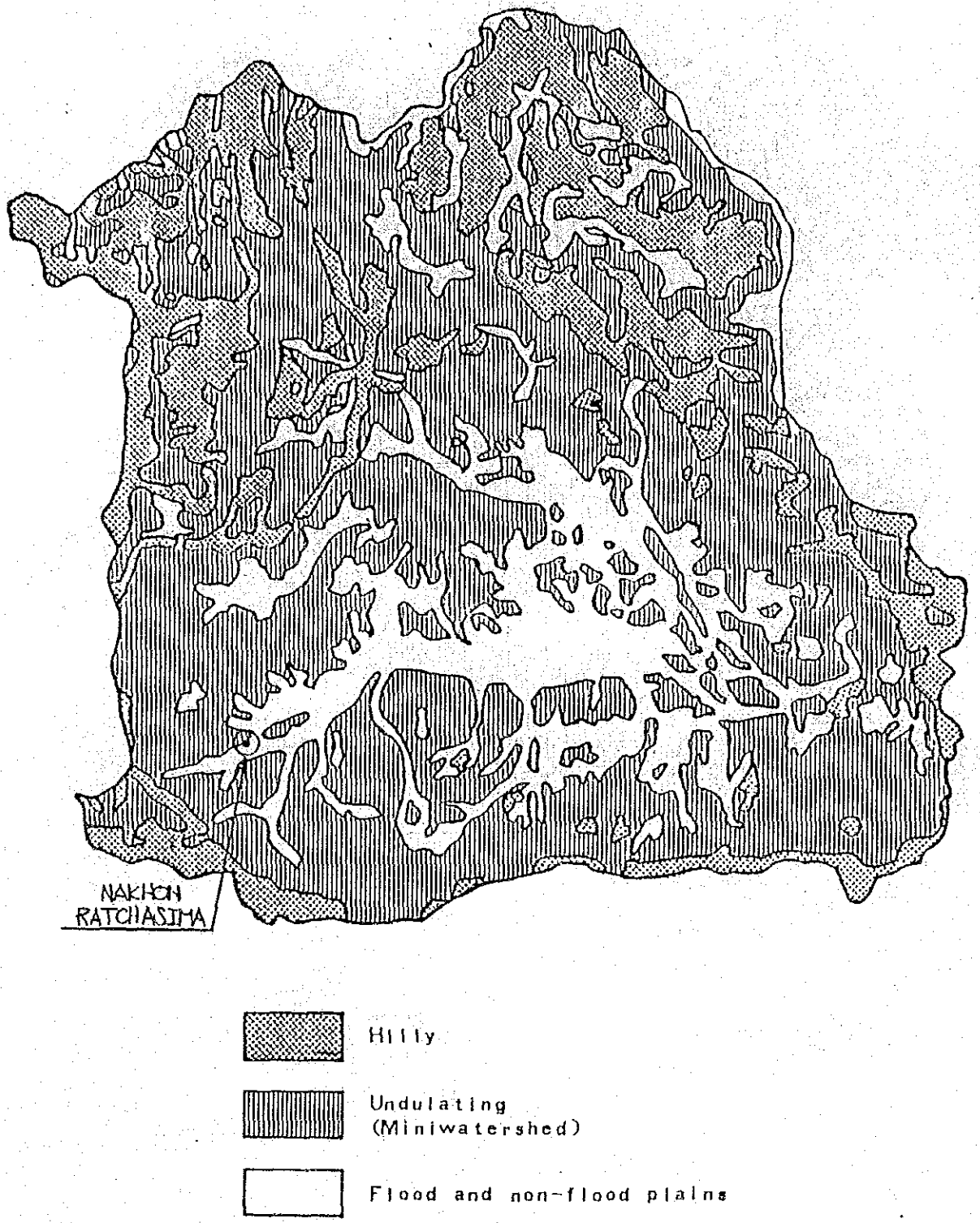

Fig - 5 Land form map of the Northeast (Ref. 13 Original source: Department of Land Development, 1972).

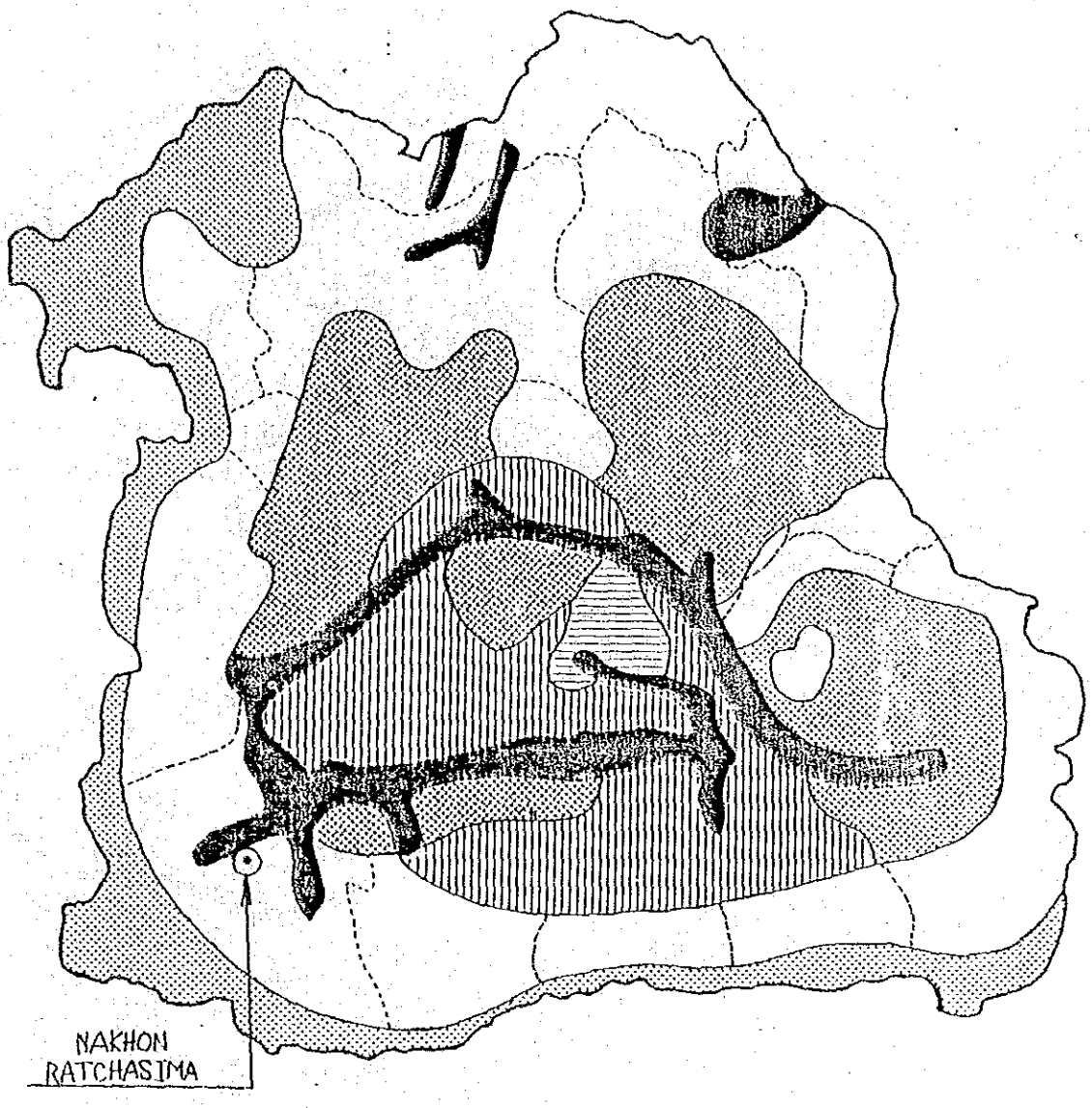

Fig-6 Simplified soil map of Northeast Thailand (Ref. 13)
Original source: Dept. of Land Development. 1979).

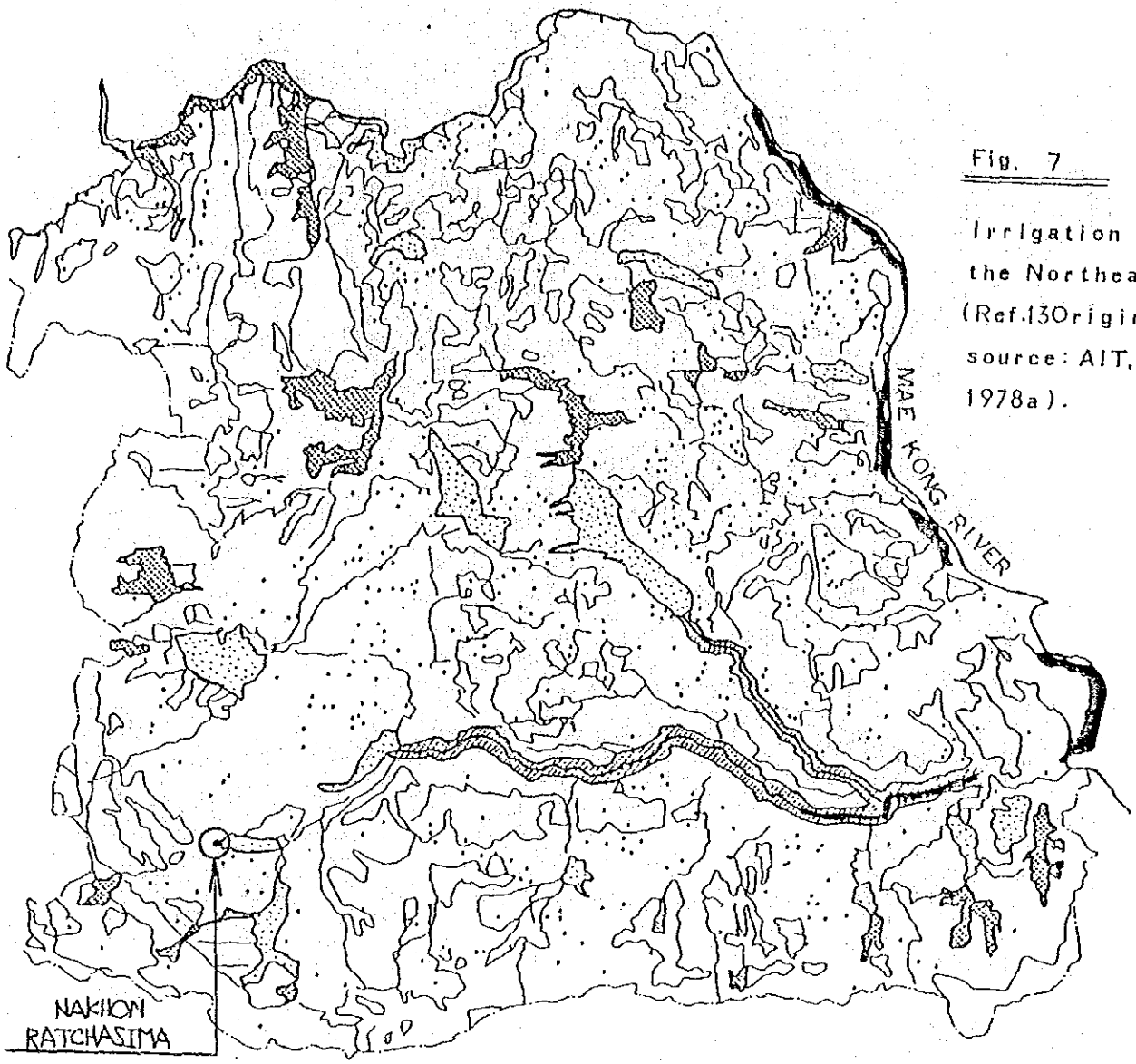

Fig. 7

Irrigation in the Northeast (Ref.13Original source: AIT, 1978a).

- Small tanks (completed and planned)
- Dry season
- Wet season

} Pump irrigation (existing and potential)

- Reservoir
- Irrigated area

} Irrigation from large reservoir (existing and potential)

Fig - 8

Soil Salinity Distribution in the Northeast

(Provided by : Land Development Department)

LEGEND

Mapping No.	Description	Area Rai	Area %
1	Heavily salt-affected area.	1,476,762	1.40
2	Moderately salt-affected area	3,690,349	3.50
3	Slightly salt-affected area.	12,845,735	11.98
4	Potential salt source area	19,423,774	18.41
5	Non-salt-affected area.	67,400,262	63.86
6	Reservoir.	897,040	0.85
	Total	105,533,962	100.00

INDEX MAP

CONVENTIONAL SYMBOLS

- Changwat
- Amphoe
- Road
- Railroads
- International Boundary
- Changwat Boundary
- River , Canal
- Water , Dam

SCALE = 5,000,000

SOIL SURVEY DIVISION BANGKOK ,1978

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Fig - 9 Observation period of rainfall (daily)

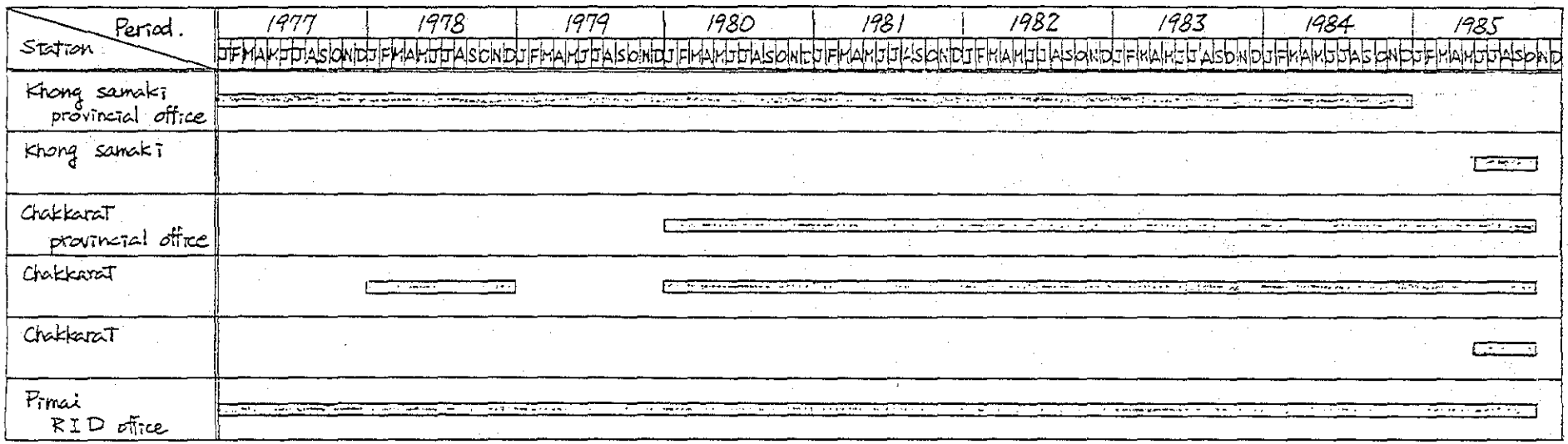
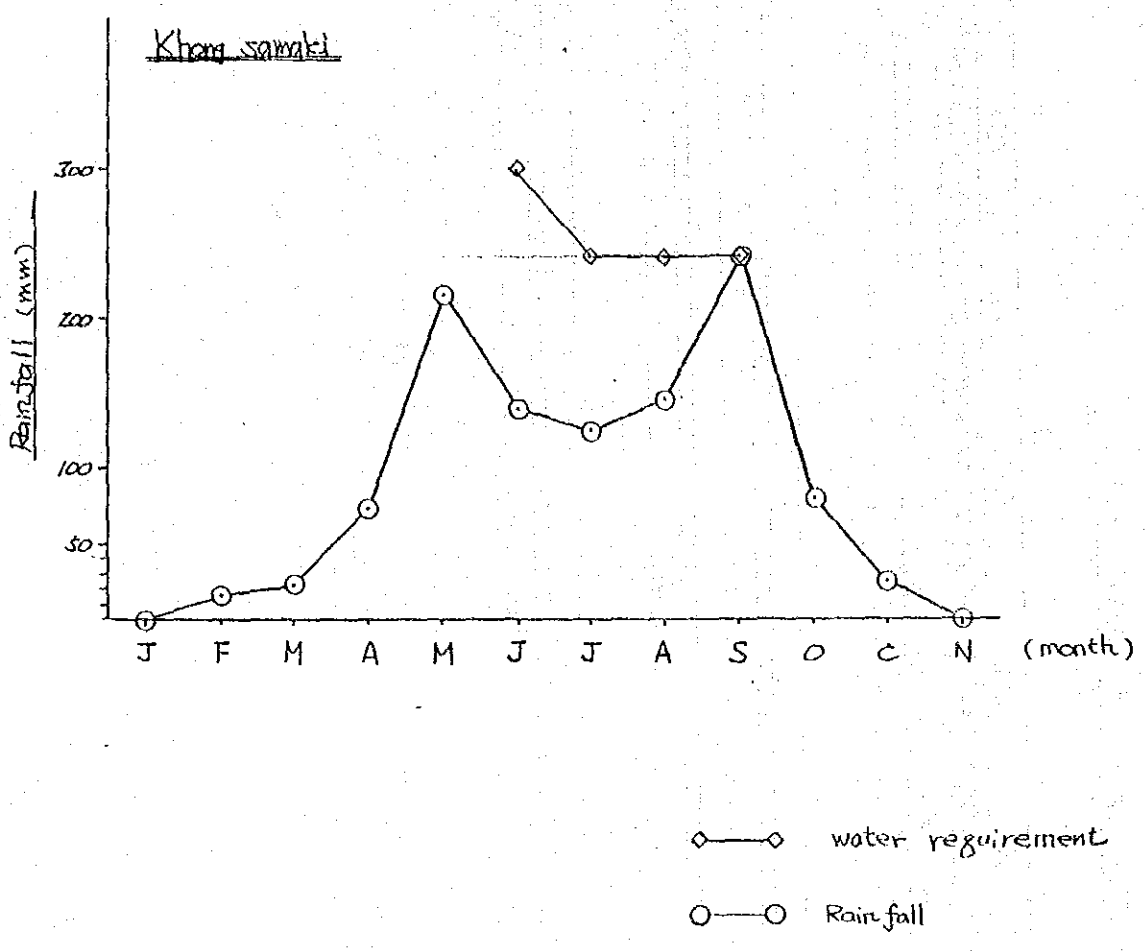
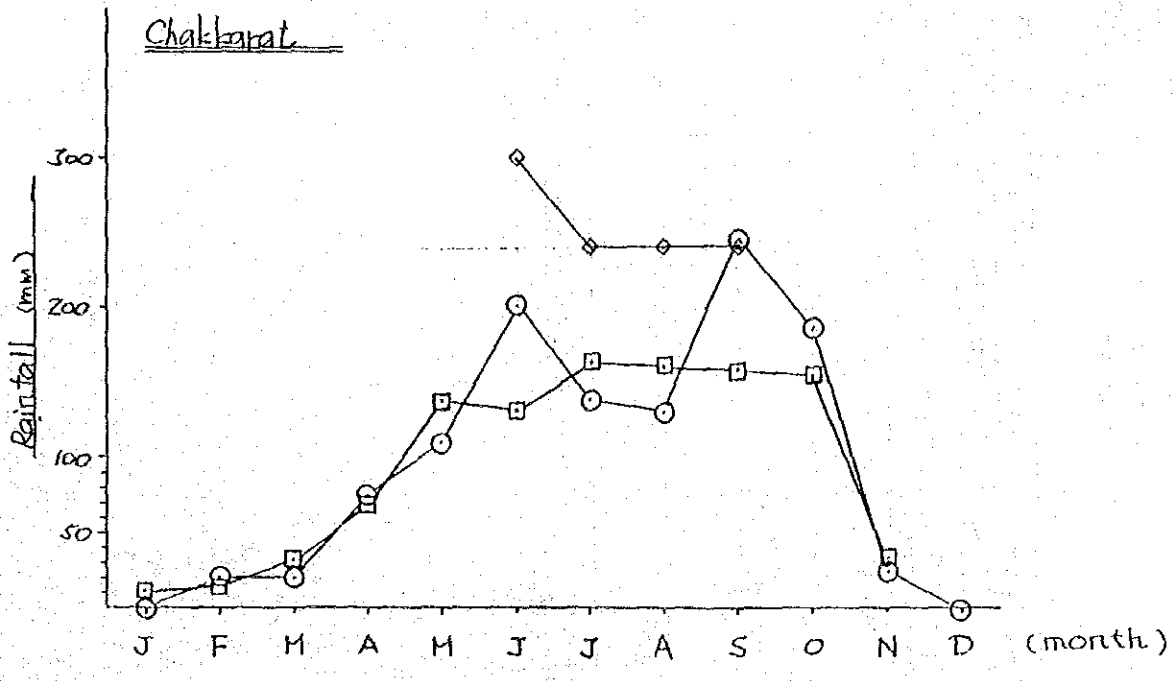


Fig-10 Monthly rainfall





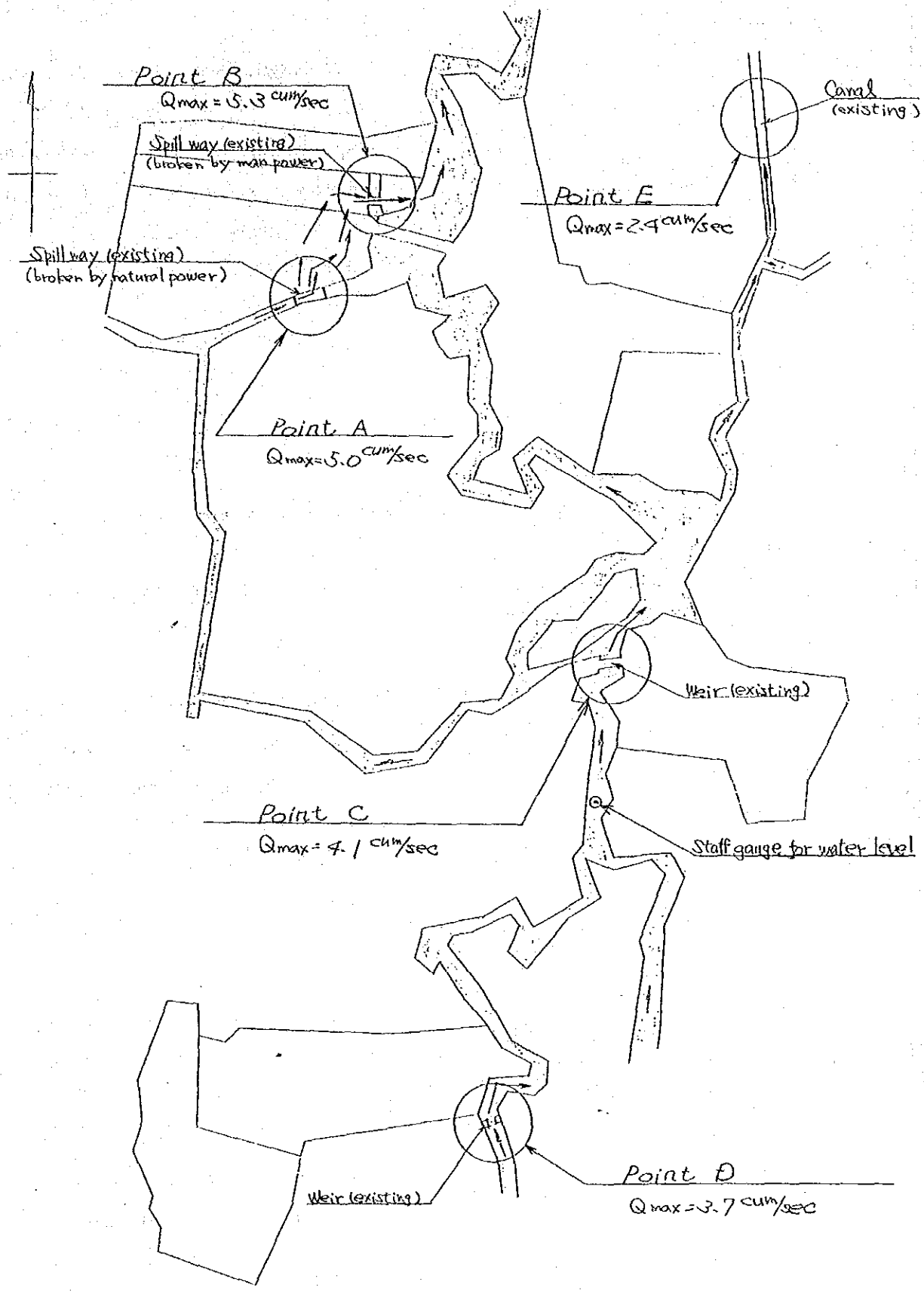
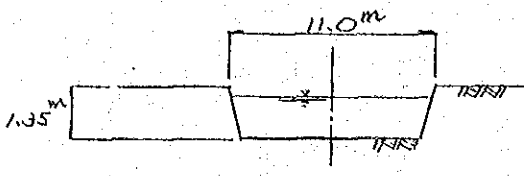


Fig-11 Location of check discharge scale 1 : 5,000

- continue -

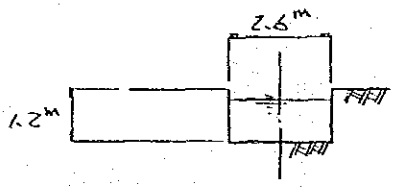


- Cross sectional area ; $A_{max} = 11.0^{m} \times 1.35^{m}$
  $\fallingdotseq 15.58^{sqm}$
- Velocity of flow $V = 0.33^{m/sec}$
  (Velocity is calculated in existing flow depth = 0.85m)

Discharge (max) is as follows.

- Discharge $Q = A \times V$
  $= 15.58^{sqm} \times 0.33^{m/sec}$
  $\fallingdotseq 5.0^{cum/sec}$ (Q_{max})

Point A (see fig 11)



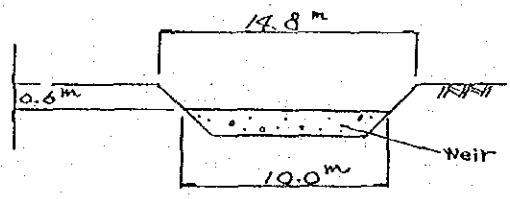
Discharge (Q_{max}) is as follows.

- $Q = CBH^{3/2}$

here C ; over flow coefficient
B ; canal bed length (m)
H ; over flow depth (m)

$Q = 1.7 \times 2.6^{m} \times 1.2^{m}$
$\fallingdotseq 5.3^{cum/sec}$

Point B (see fig 11)



Discharge (Qmax) is as follows.

$Q = AV$

here A ; cross sectional area
V ; velocity of flow
(use existing flow depth = 0.32m)

$A = \frac{1}{2}(14.8^{m} + 10.0^{m}) \times 0.6^{m}$
$= 7.44^{sqm}$

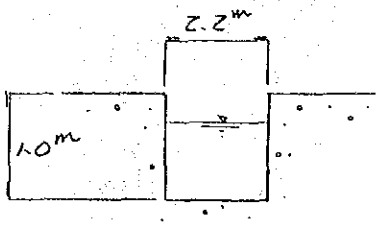
- continue -

V ≒ 0.55 m/sec

Q = 7.44 sqm × 0.55 m/sec

≒ 4.1 cum/sec

Point C (see fig 11)



Discharge (Q max) is as follows.

$Q = CBH^{3/2}$

here C ; overflow coefficient

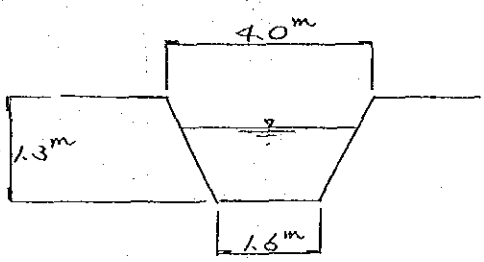
B ; canal bed length (m)

H ; overflow depth (m)

Q = 1.7 × 2.2 m × 1.0 m

= 3.7 sqm/sec

Point D (see fig 11)



Discharge (Qmax) is as follows.

Q = A V

here A ; cross sectional area

V ; velocity of flow

(use existing flow depth = 1.2 m)

A = 1/2 (4.0 m + 1.6 m) × 1.3 m

= 3.64 sqm

V = 0.65 m/sec

Q = 3.64 sqm × 0.65 m/sec

≒ 2.4 cum/sec

Point E (see fig 11)

Calculation of Flow capacity in existing canal

Fig-12 Rainfall and water level (Chakarat, river 1485)

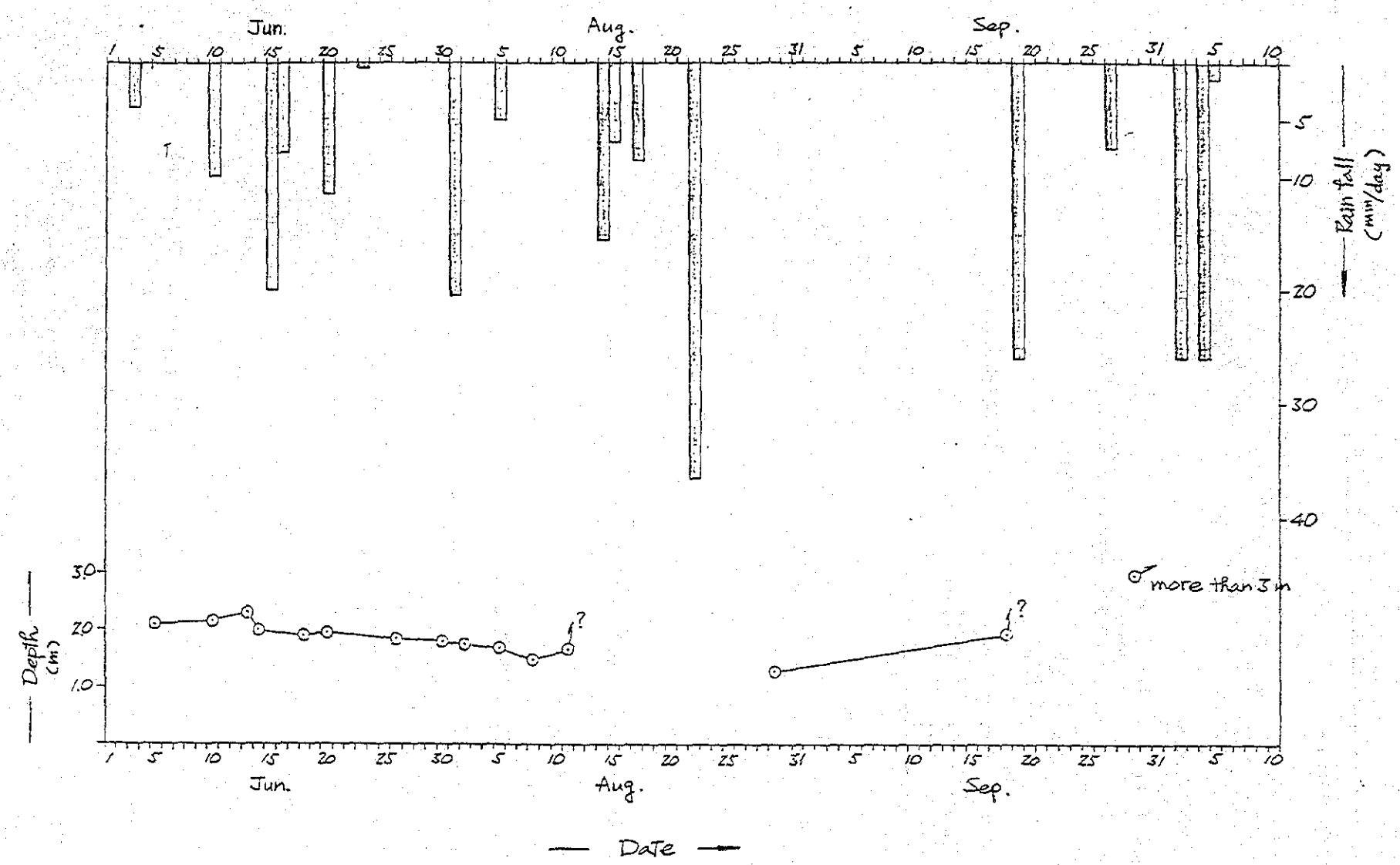


Fig 13-1

RUNOFF RECORD AT CHAKKARAT

Period : May ~ Dec , 1982

Remark : May. Jun. Jul. ------ NOT WATER FLOW

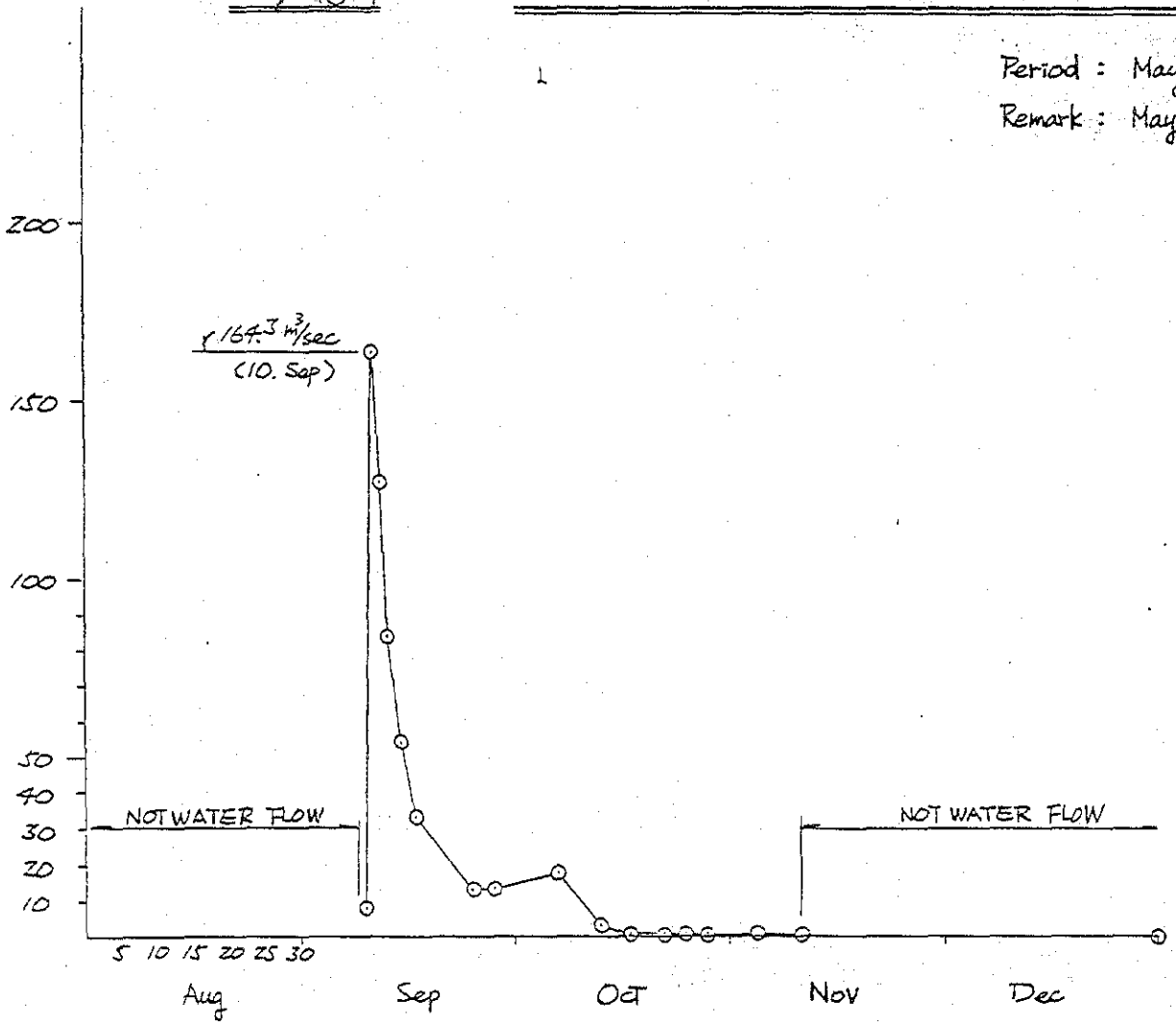


Fig-13-2

RUNOFF RECORD AT CHAKKARAT

Period : Jan ~ Dec , 1983

Remark : Jan ~ Jul ----- no water

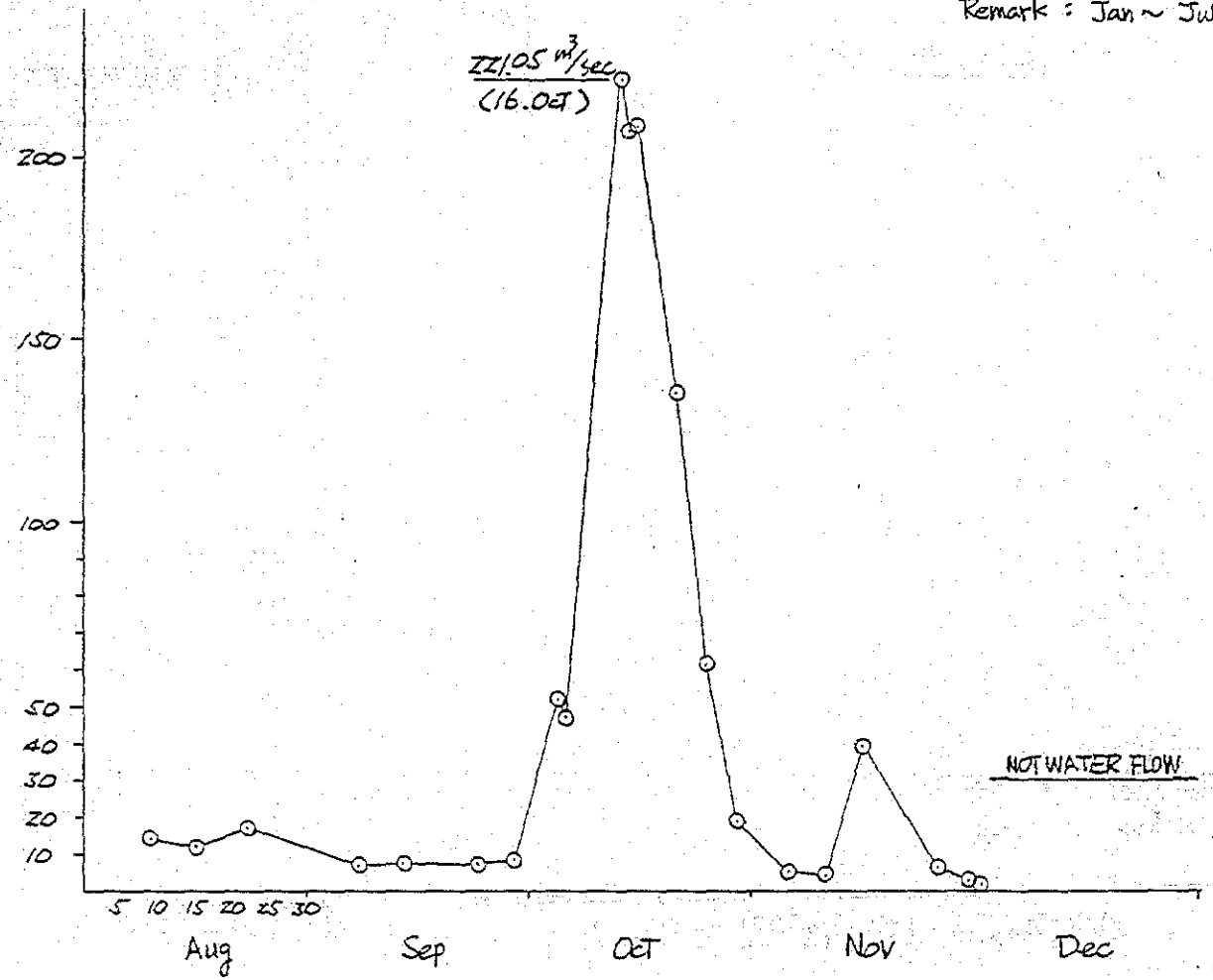


Fig-13-3 RUNOFF RECORD AT CHAKKARAT

Period : Jan ~ Dec, 1984

Remark : Jan ~ Jul ---- no water

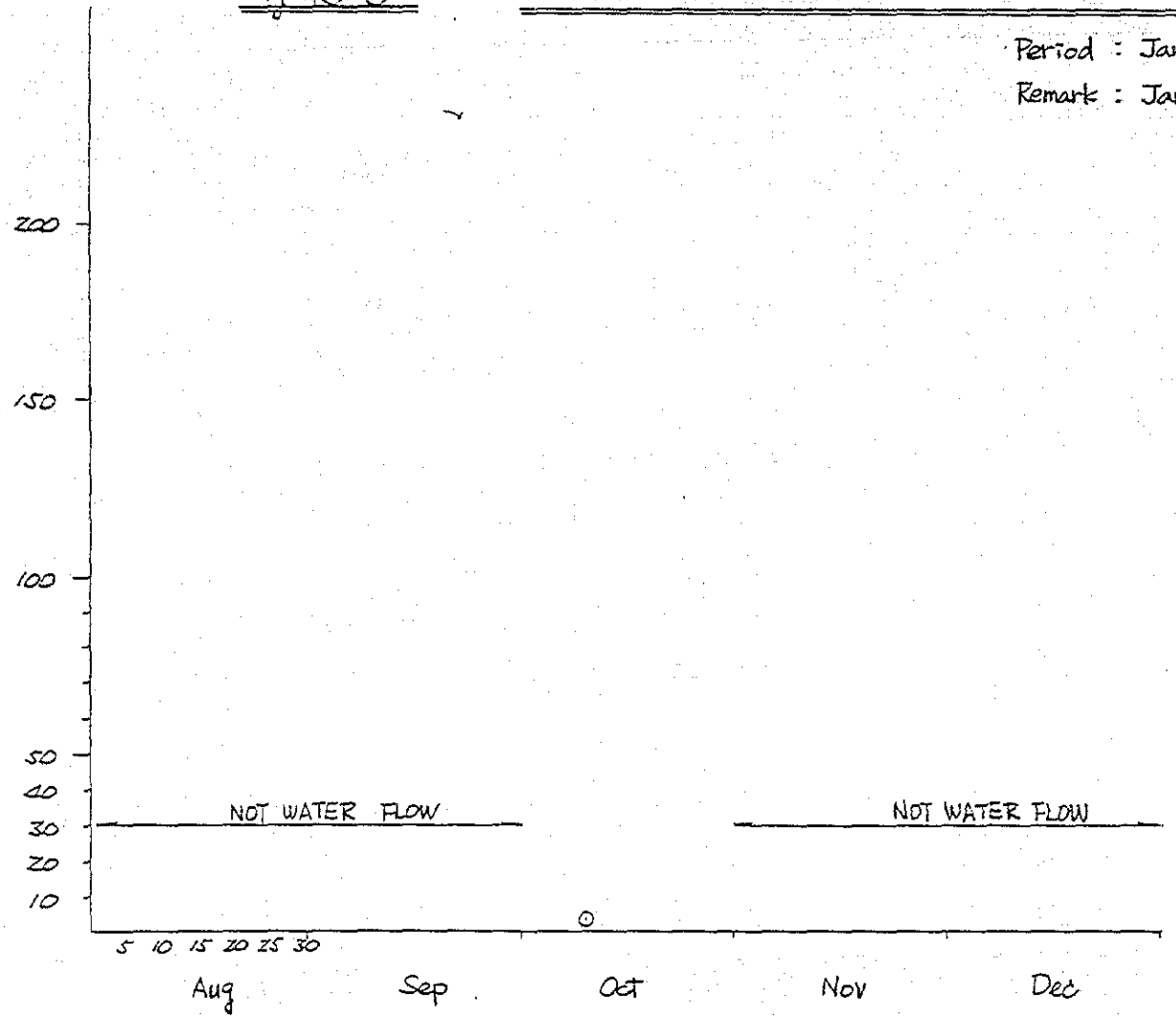


Fig -13-4

RUNOFF RECORD AT CHAKKARAT

Period : Jan ~ Sep , 1985
Remark : Jan ~ Jul ····· no water

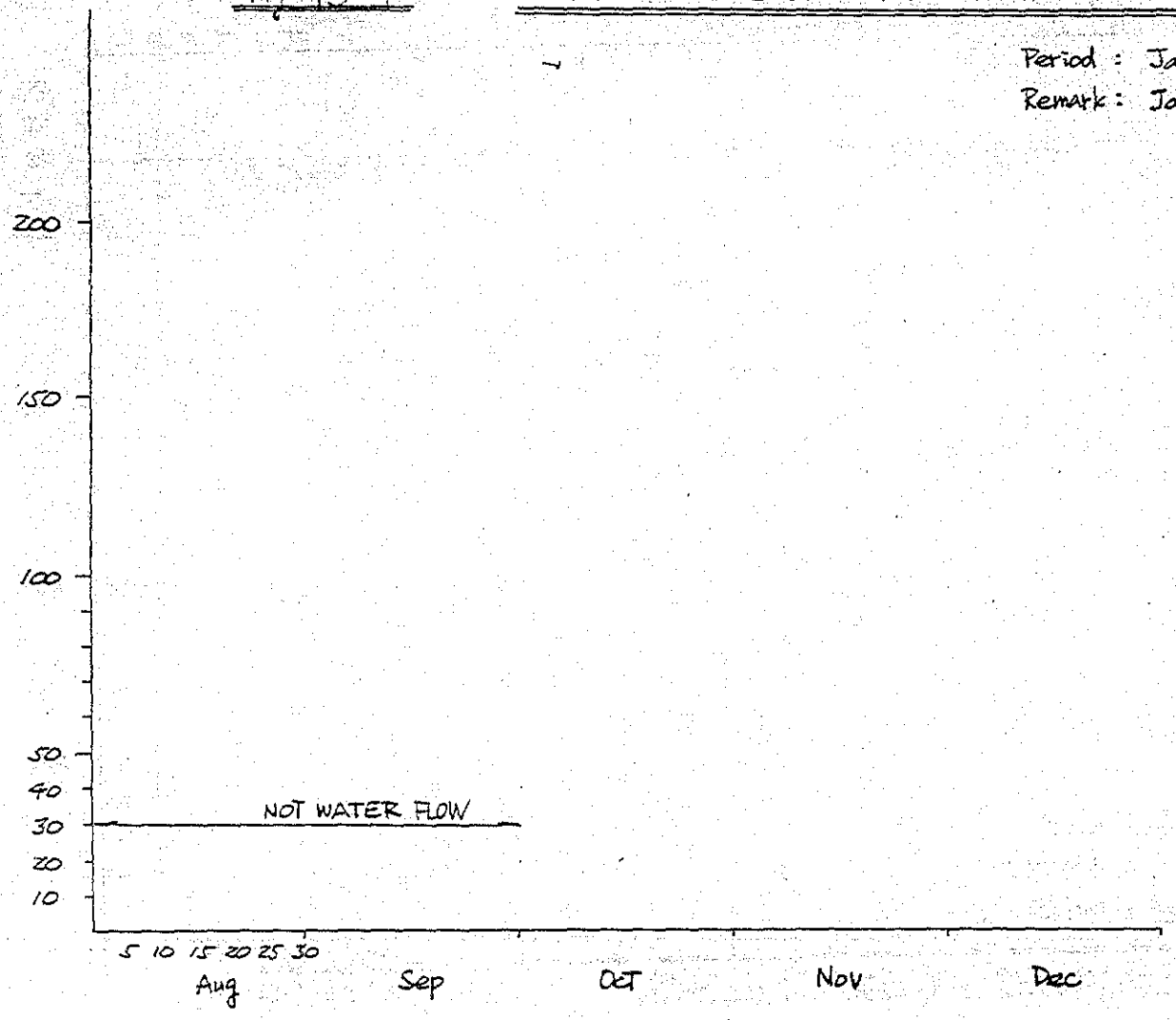
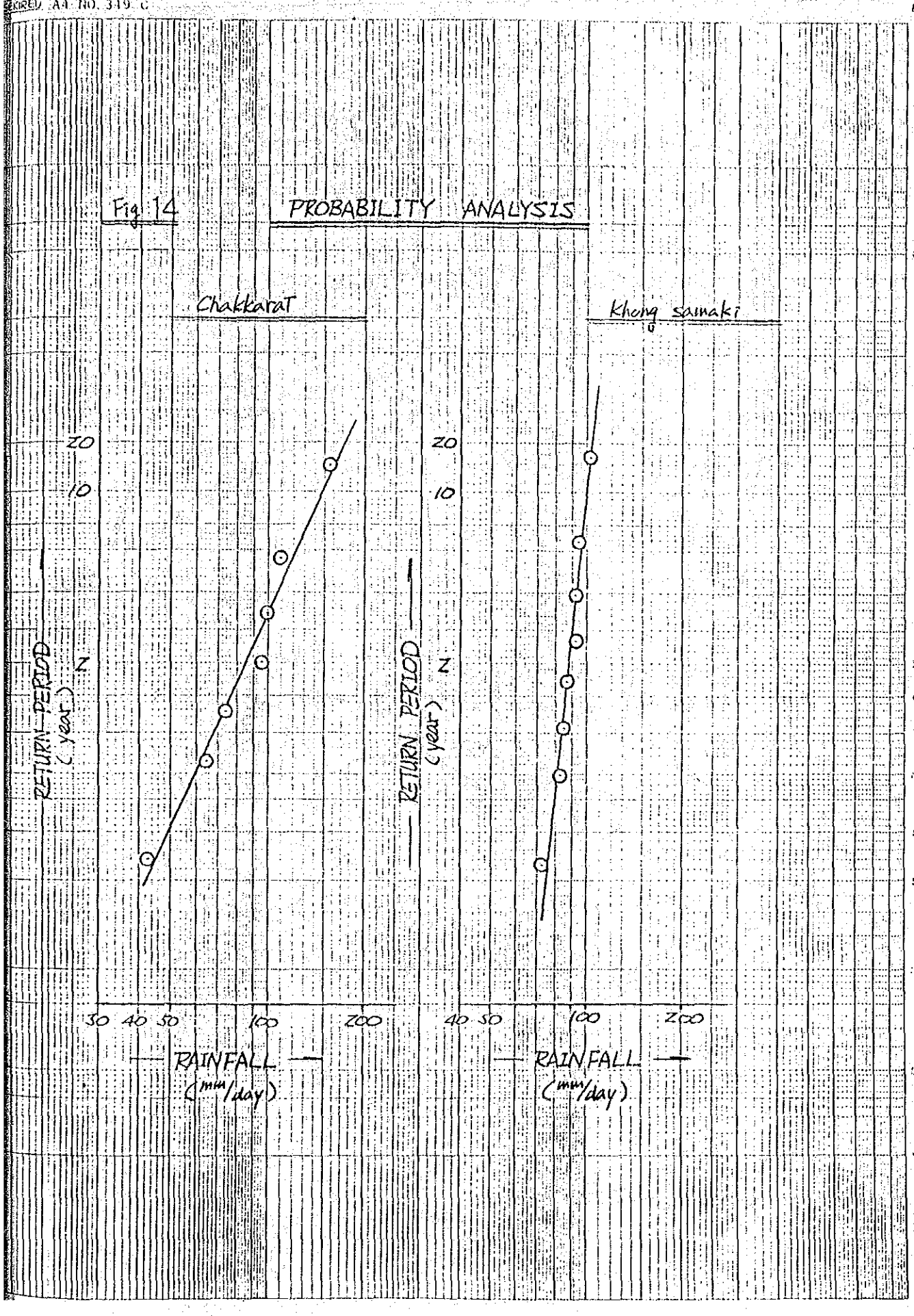


Fig 14 PROBABILITY ANALYSIS



$$100F = 100 \times \int_{-\infty}^{\log x} u\,dx \qquad 100F = 100 \times \int_{\log}^{+\infty} u\,dx \qquad u = \frac{1}{\sqrt{2\pi}} e^{-\frac{(\log x)^2}{2}}, \quad x > 0$$

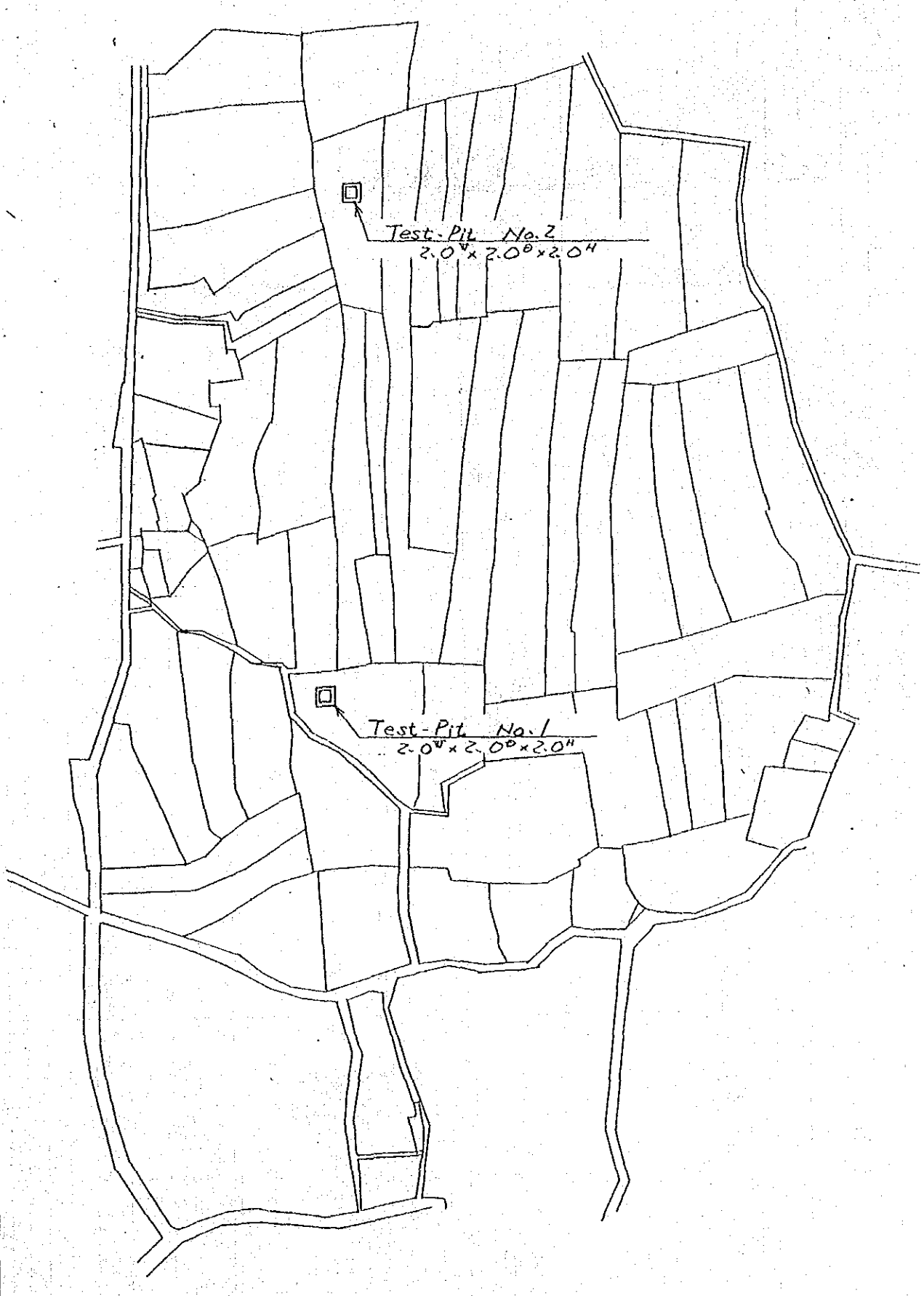


Fig-15 Location of Test pits

Scale 1:1000

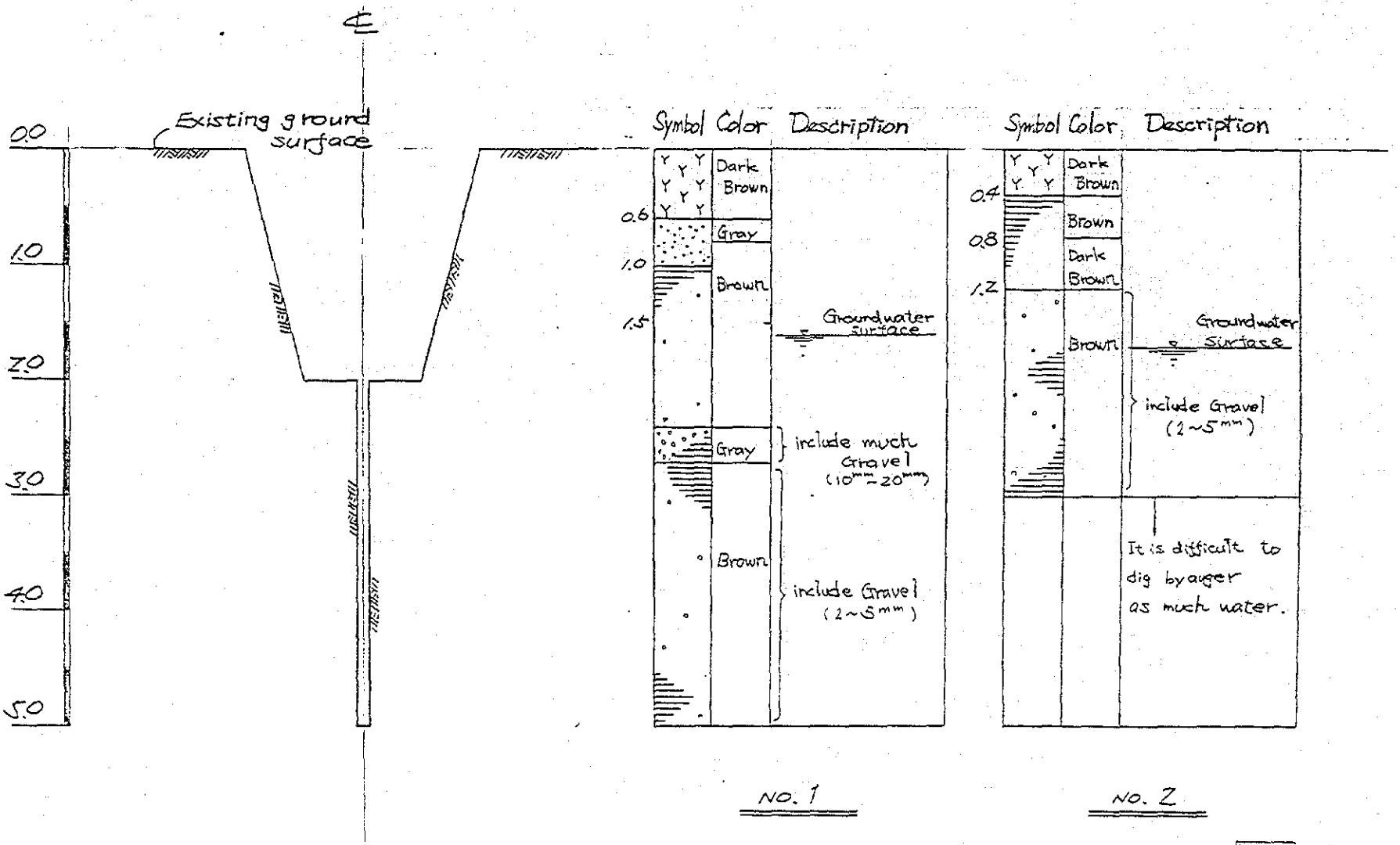
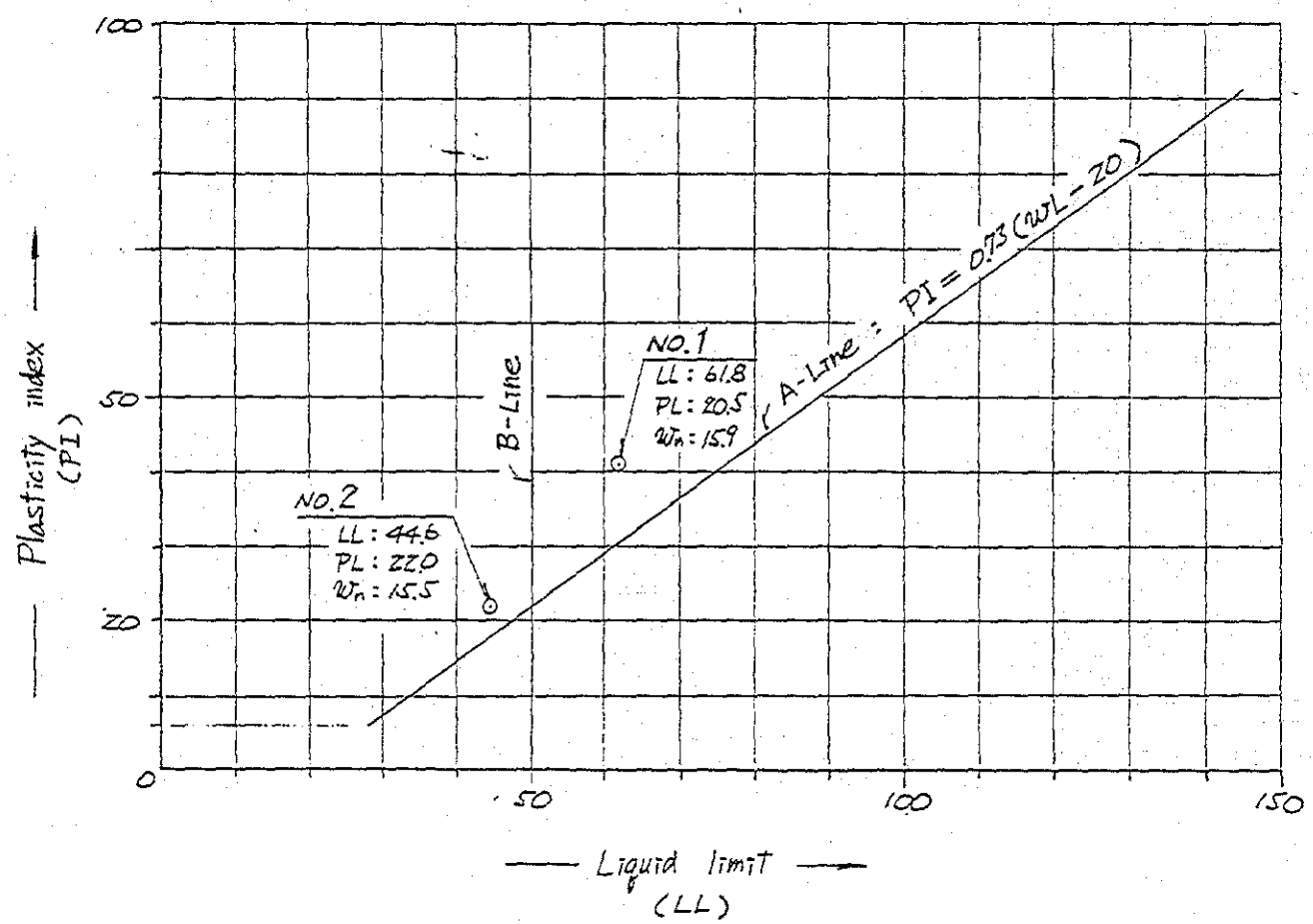


Fig-16 Standard section at Test pits

Fig-17 Columnar section at Test pits

Fig - 18 CONSISTENCY LIMITS



Consistency index

NO.1 CI = 1.3

NO.2 CI = 1.3

Liquidity index

NO.1 LI = −0.3

NO.2 LI = −0.1

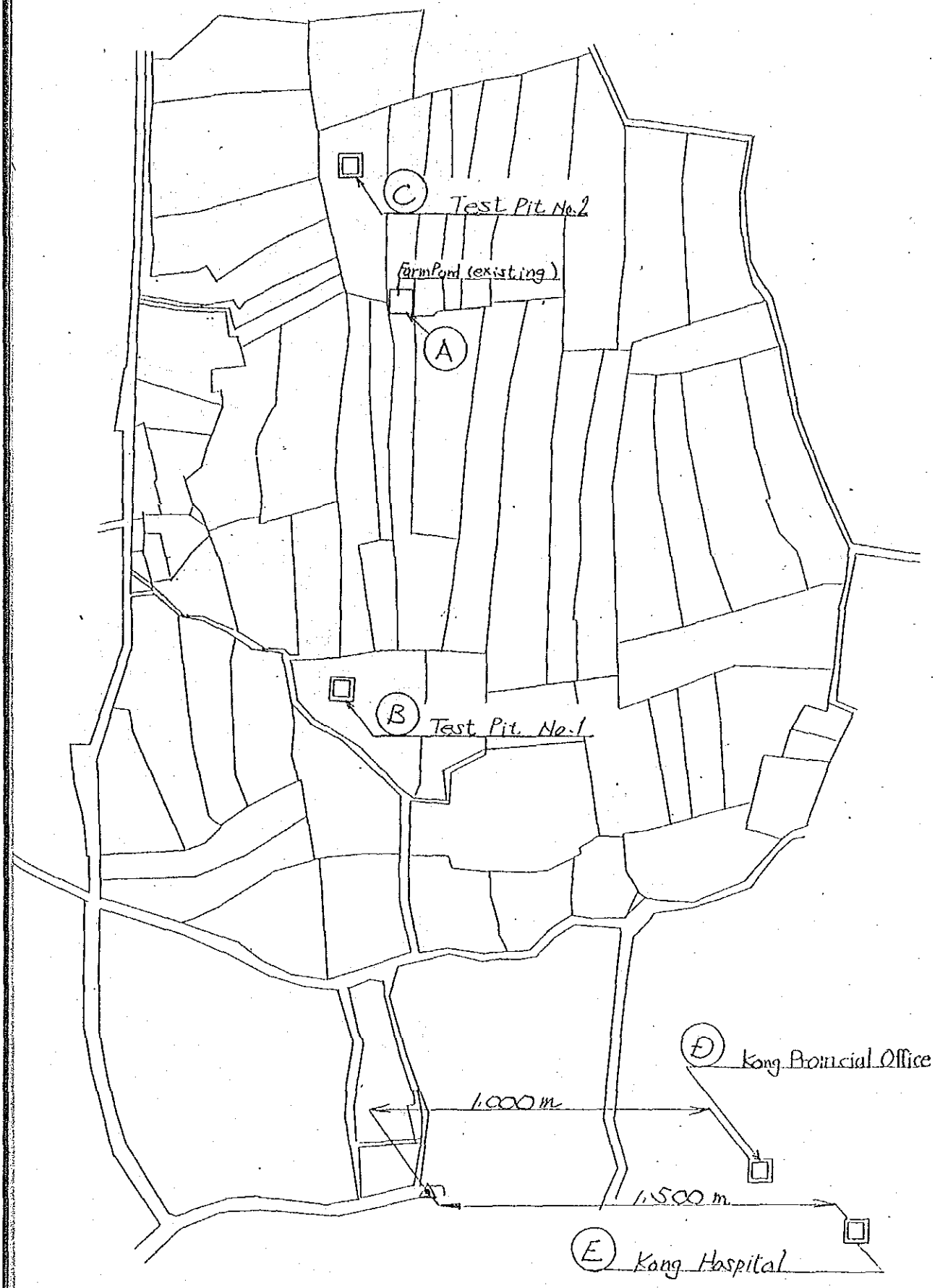


Fig-19-1 Location of Water sample scale 1:1000

(Kong Samaki)

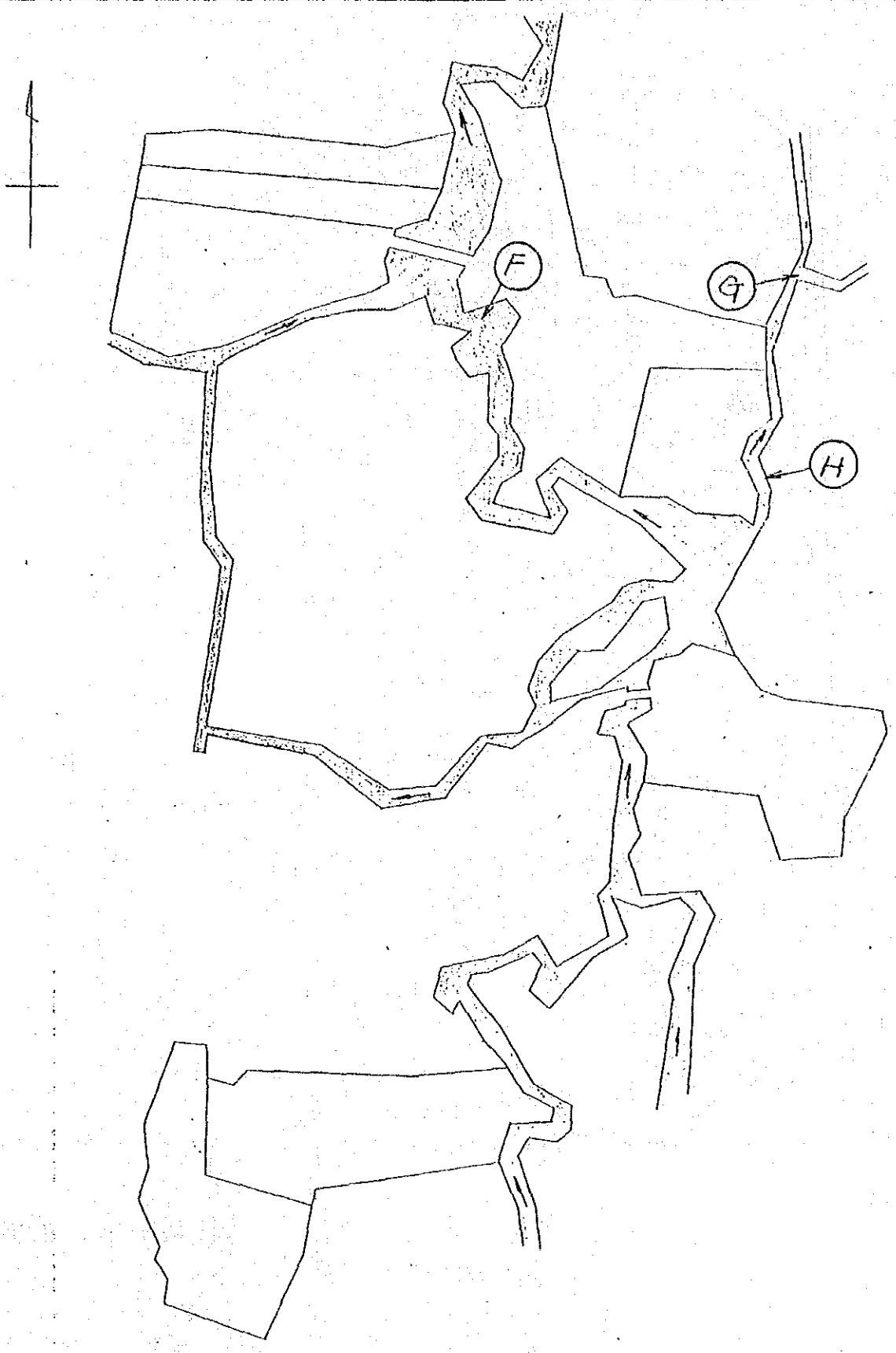
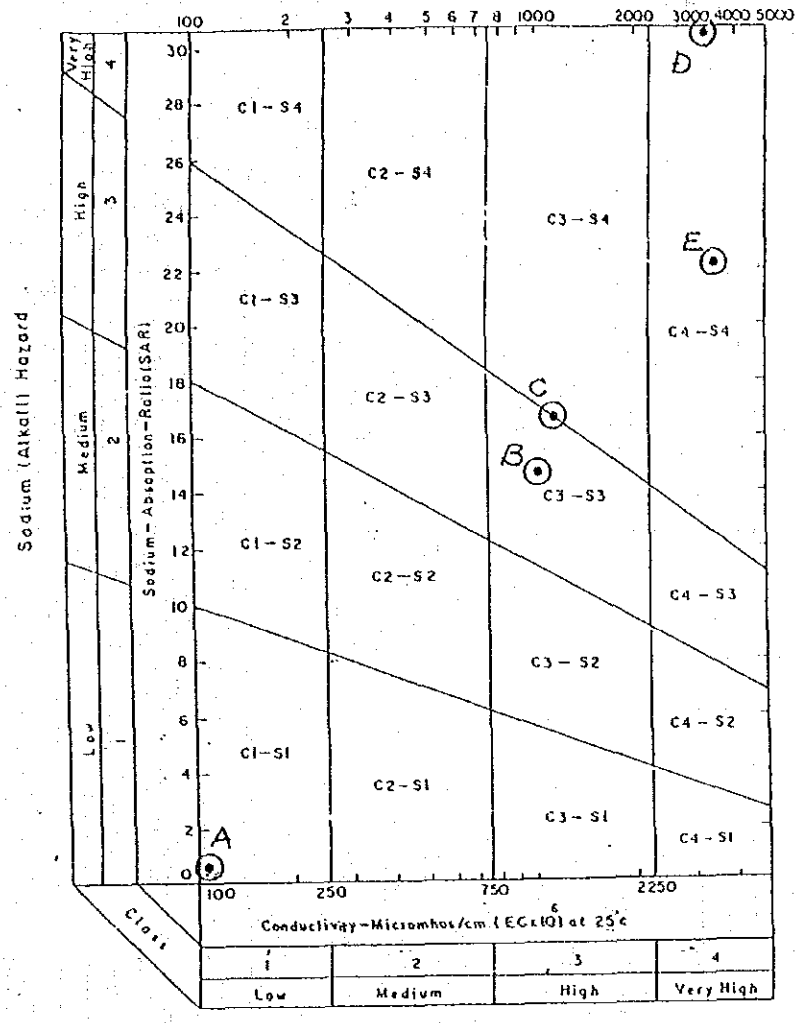


Fig-19-2 Location of Water sample (Chakarat) scale 1 : 5,000

Fig 20 WATER QUALITY CLASSIFICATION



S_1	Low sodium water can be used for irrigation in almost all soils with little danger of the development of harmful levels of exchangeable sodium. However, sodium sensitive crops such as stonefruit trees and avocados may accumulate injurious concentrations of sodium.	C_1	Low salinity water can be used for irrigation with most crops on most soils with little likelihood, that soil salinity will develop. Some leaching is required but this occurs under normal irrigation practices, except in soils of extremely low permeability.
S_2	Medium water will present an appreciable sodium hazard in fine textured soils having high cation exchange capacity, especially under low leaching conditions unless gypsum is present in the soil. This water may be used on coarse textured or organic soils with good permeability.	C_2	Medium salinity water can be used if a moderate amount of leaching occurs. Plants with moderate salt tolerance can be grown in most cases without special practices for salinity control.
S_3	High sodium water may produce harmful levels of exchangeable sodium in most soils, and will require special soils management; good drainage, high leaching, and organic matter conditions. Gypsiferous soils may not develop harmful levels of exchangeable sodium from such waters. Chemical amendments may be required for replacement of exchangeable sodium, except that amendments may not be feasible in the case of waters of very high salinity.	C_3	High salinity water cannot be used on soils with restricted drainage, even with adequate drainage, special treatment for salinity control may be required, and plants with good salt tolerance should be selected.
S_4	Very high sodium water is generally unsatisfactory for irrigation pruposes, except at low and perhaps medium salinity where the solution of calcium from the soil or used of gypsum or other amendments may make the use of these waters feasible.	C_4	Very high salinity water is not suitable for irrigation under ordinary conditions, but may be used occasionally under very special cercumstances. The soils must be permeable, drainage condition must be adequate, irrigation water must be applied in excess to provide consierable leaching and very salt-tolerance crops should be selected.

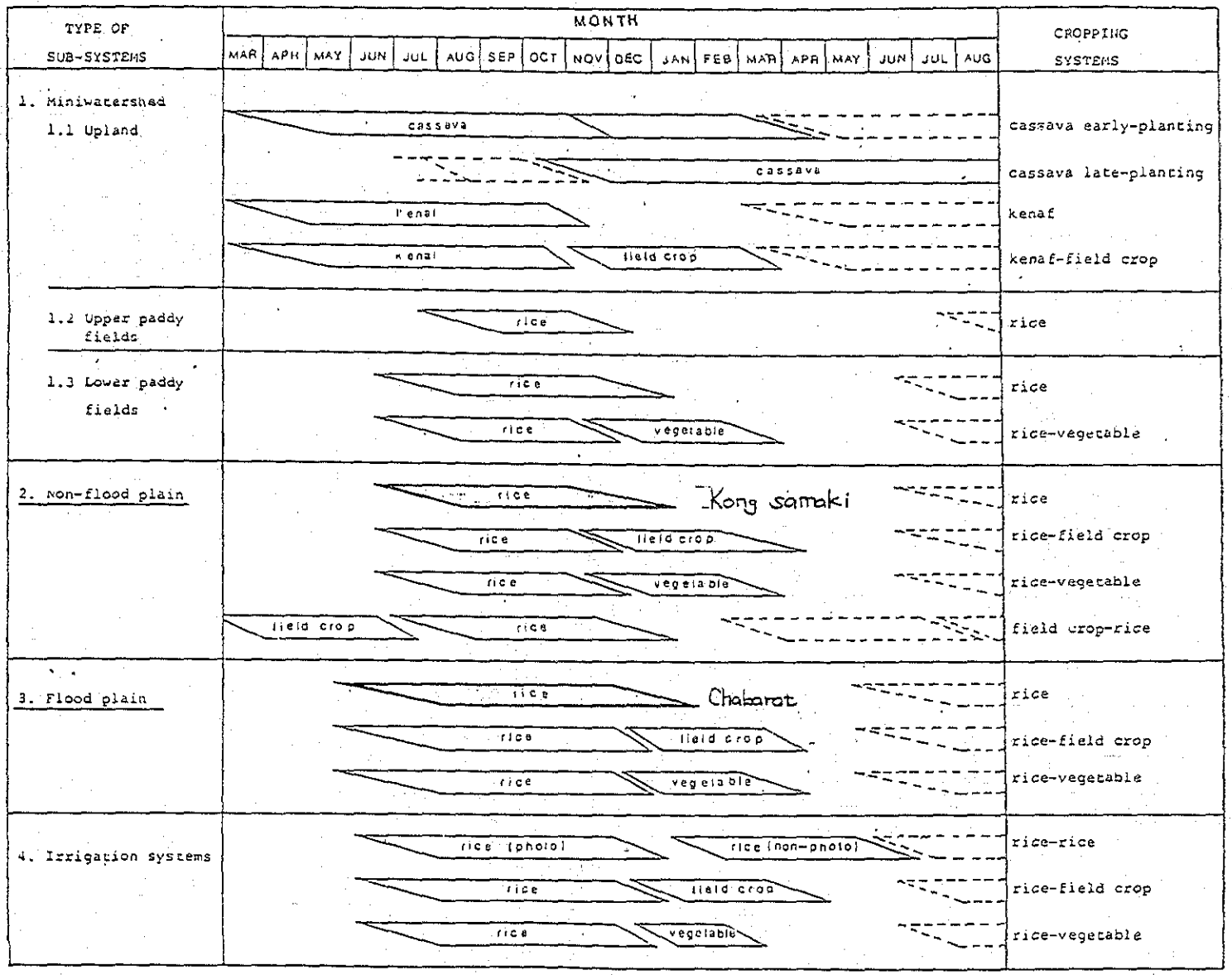


Figure 5.4. Calendar of the existing cropping systems in the Korat Triangle.

Remarks : 1. Field crop = short duration (< 120 days).

2. Vegetables grown after rice need watering from shallow wells or farm ponds.

Fig -21 Cropping pattern of rice

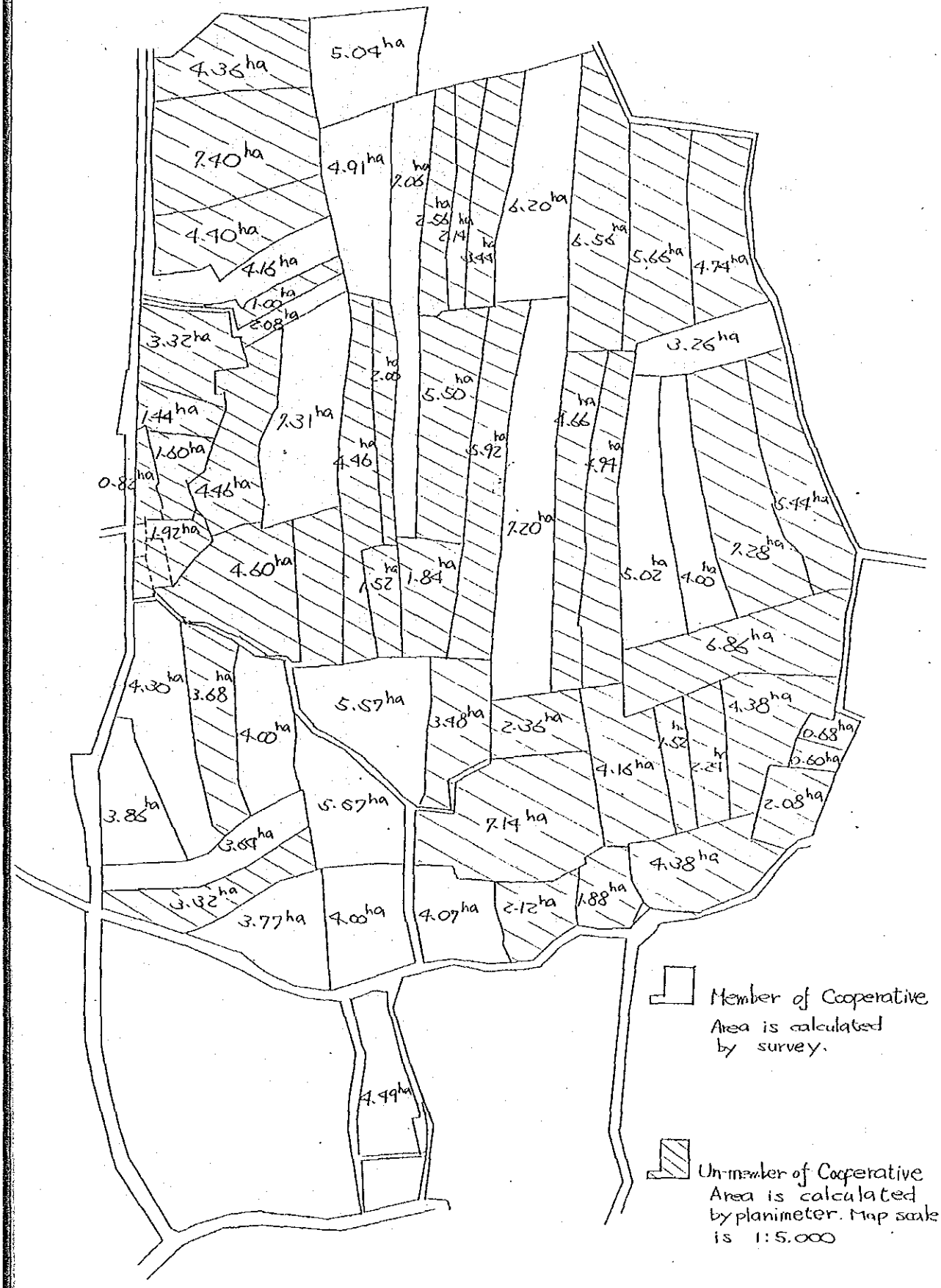


Fig-22 Area of Paddy Field (Kong samaki)

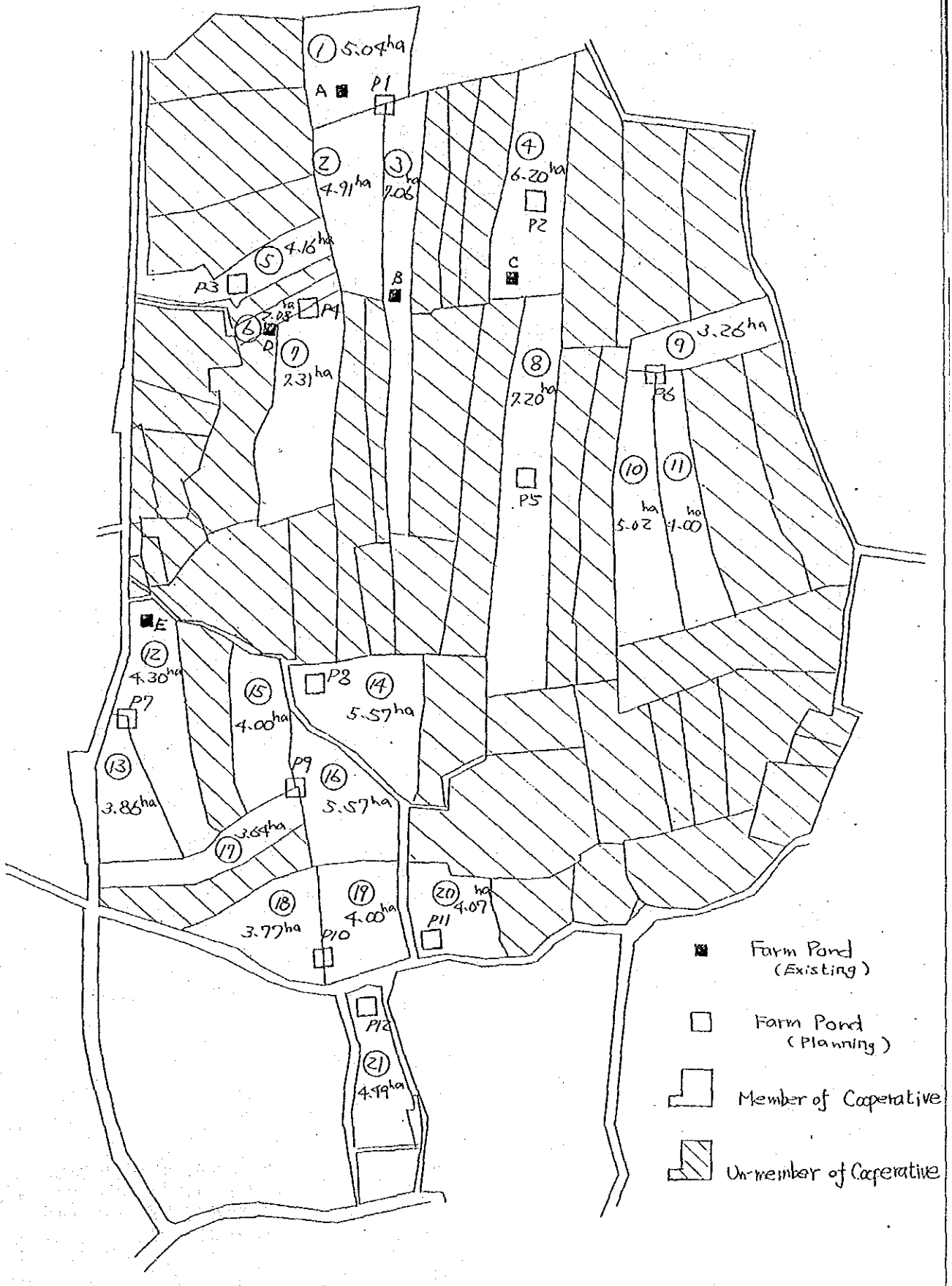


Fig-23 Location of Farm pond (Kong samaki)

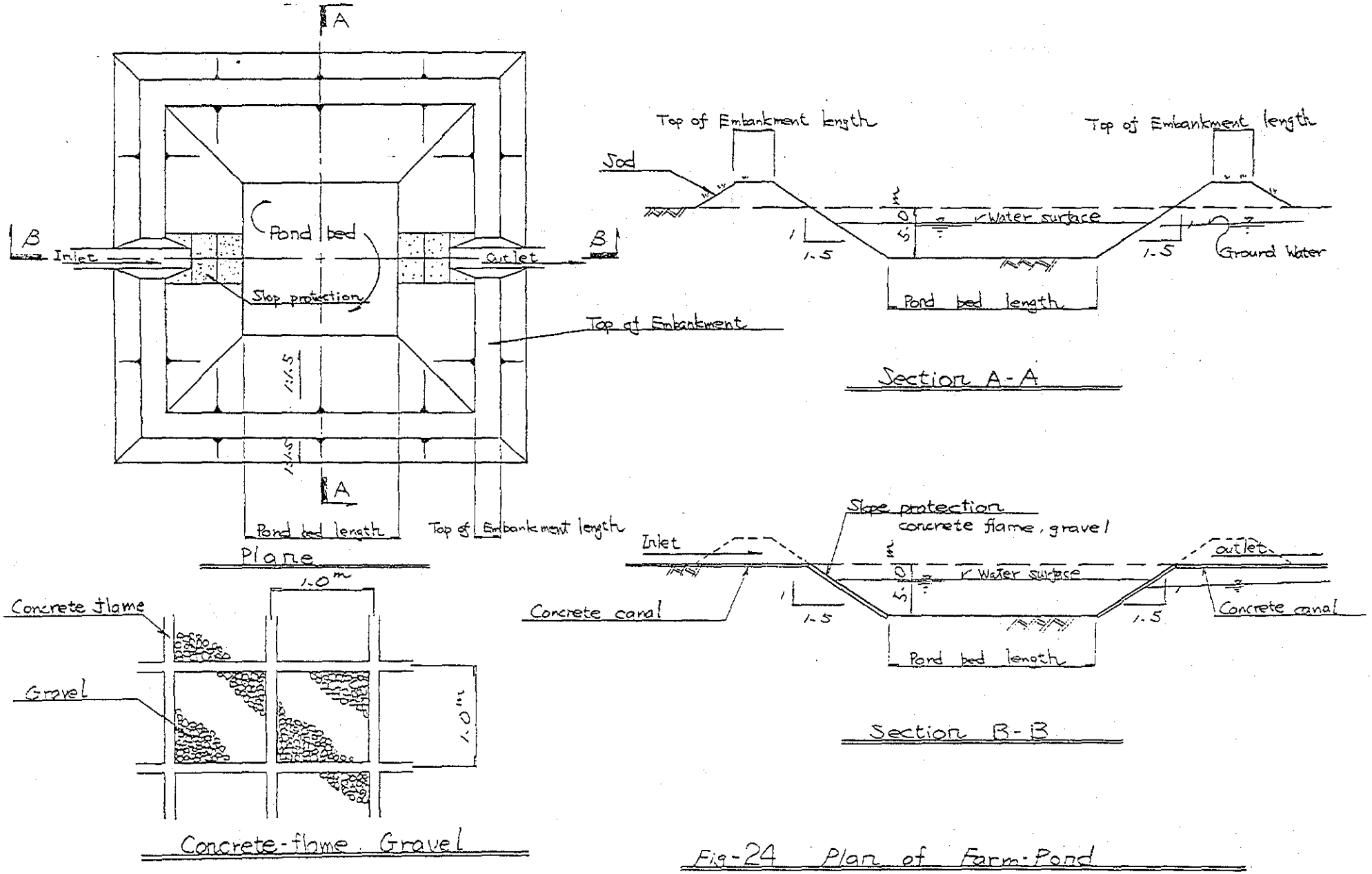
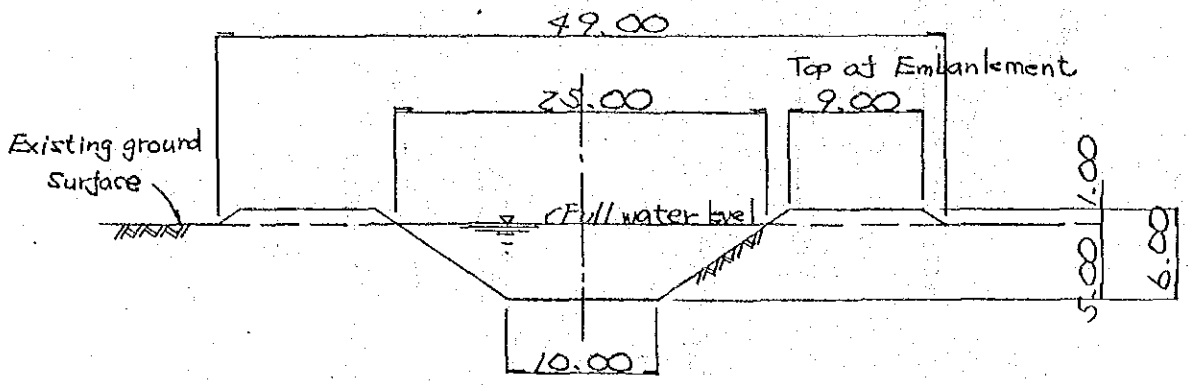
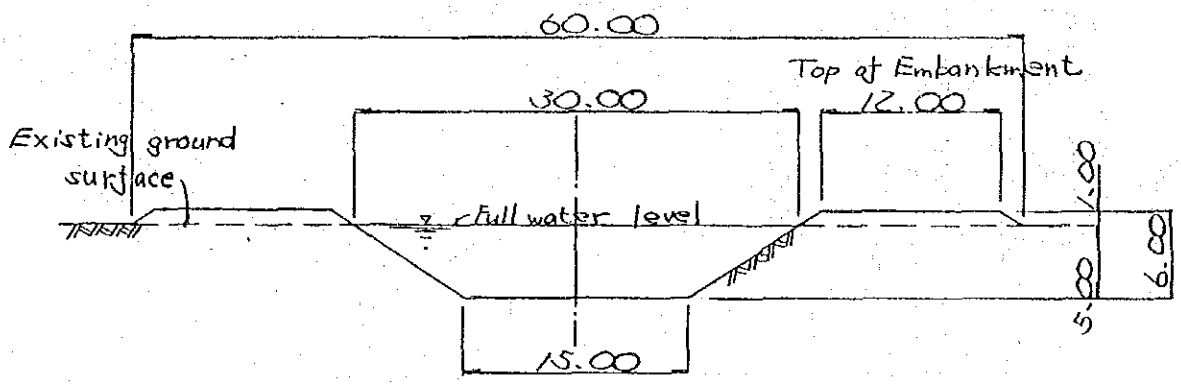


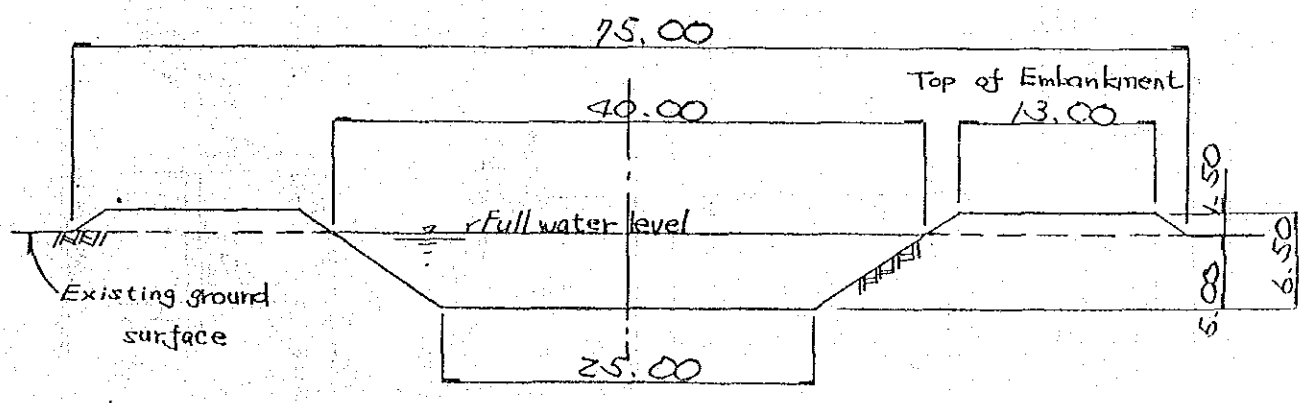
Fig-24 Plan of Farm-Pond



TYPE A



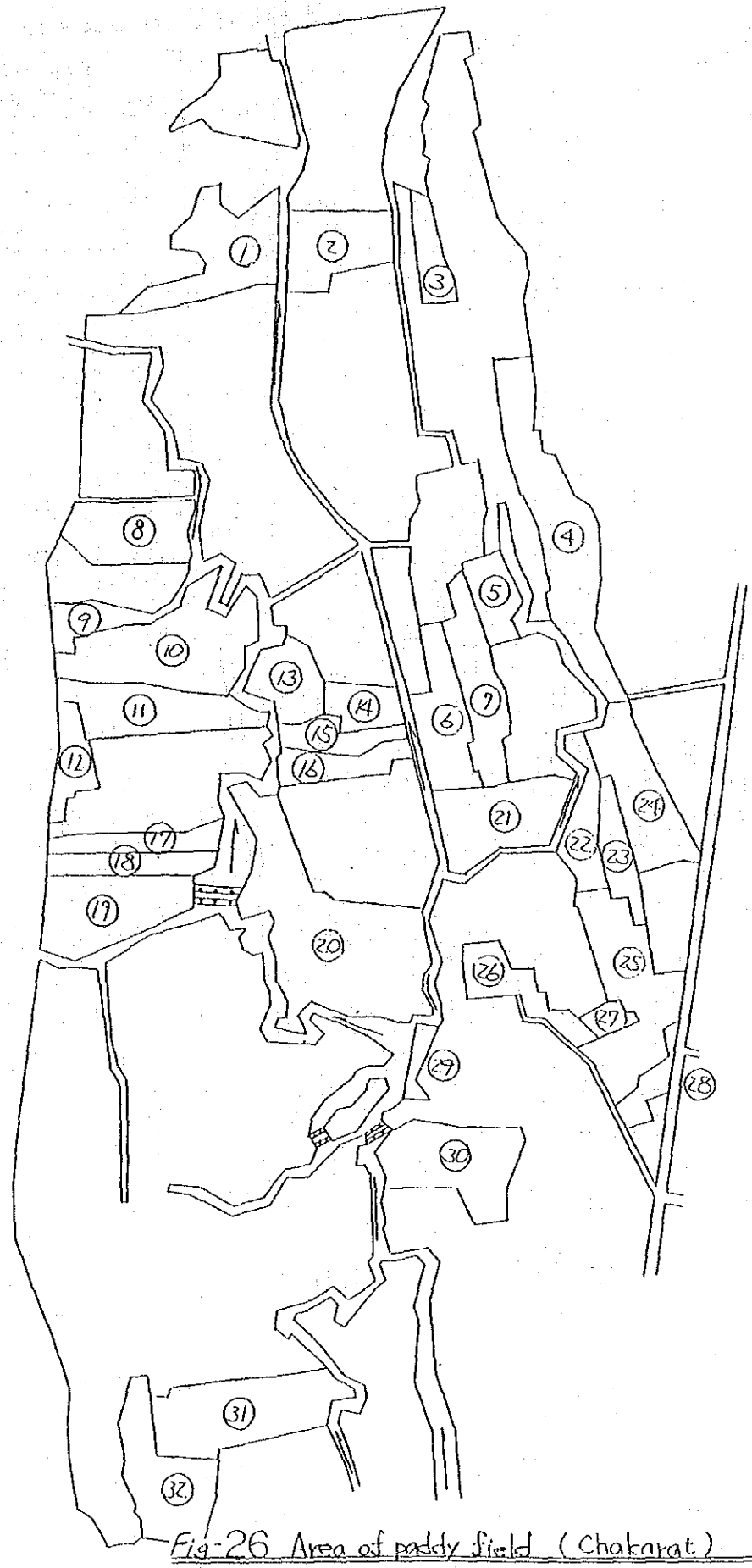
TYPE B



TYPE C

Fig - 25 Standard sections of Farm pond

scale 1:500



NO.	Area of paddy field
①	1.88 ha
②	1.38
③	0.50
④	3.28
⑤	0.70
⑥	1.63
⑦	1.45
⑧	1.55
⑨	0.75
⑩	2.88
⑪	1.63
⑫	0.50
⑬	0.88
⑭	0.55
⑮	0.68
⑯	0.63
⑰	0.83
⑱	0.63
⑲	2.20
⑳	3.50
㉑	1.70
㉒	0.88
㉓	0.53
㉔	1.88
㉕	2.50
㉖	0.95
㉗	0.25
㉘	0.43
㉙	0.20
㉚	1.75
㉛	2.33
㉜	1.25
TOTAL	43.18 ha

Fig-26 Area of paddy field (Chakarat)

Area of paddy field down stream from A site

NO.	Area of paddy field
⑧	1.55 ha
⑨	0.75
⑩	2.88
⑪	1.63
⑫	0.50
⑬	0.88
⑮	0.68
⑯	0.63
⑰	0.83
⑱	0.63
⑲	2.20
Total	13.16 ha

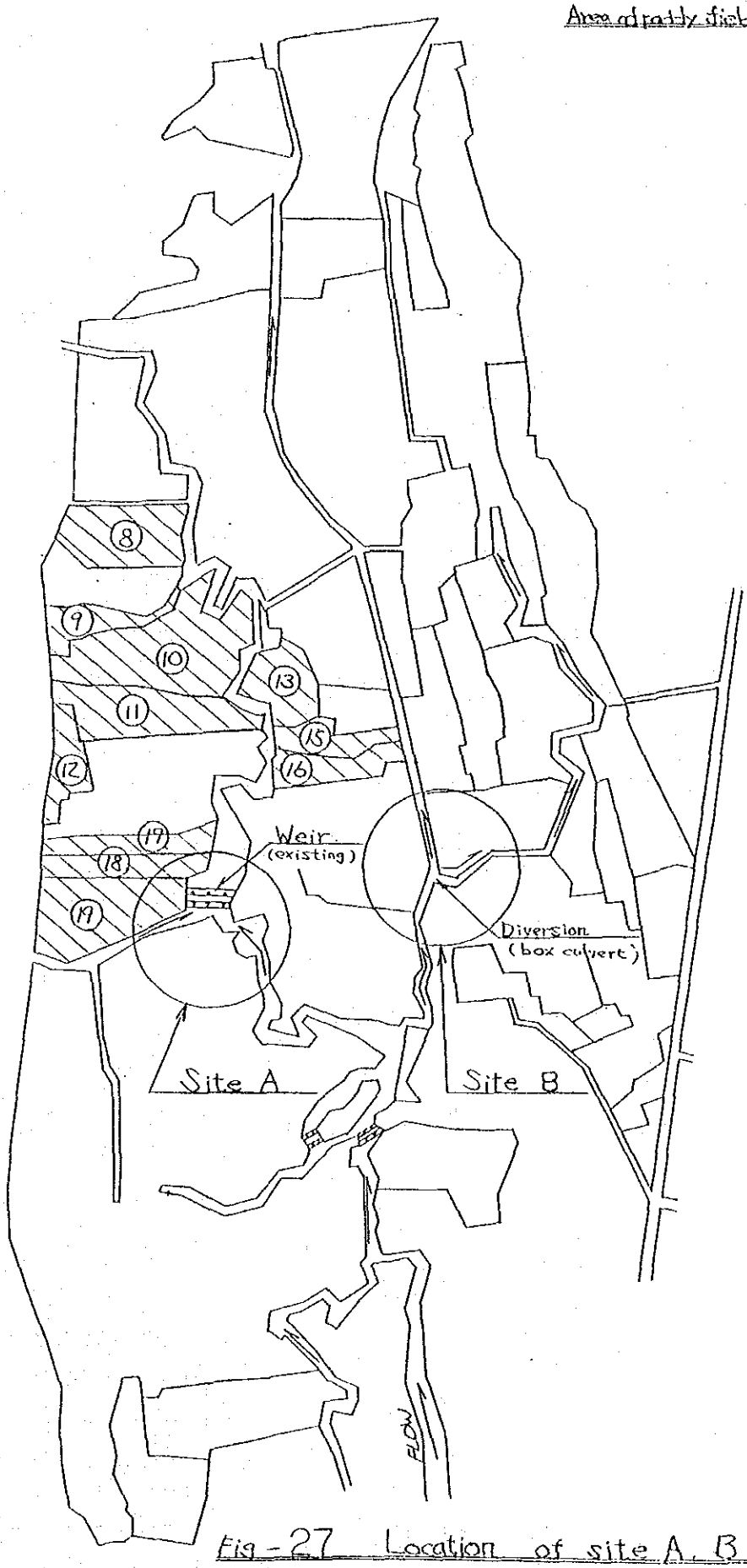
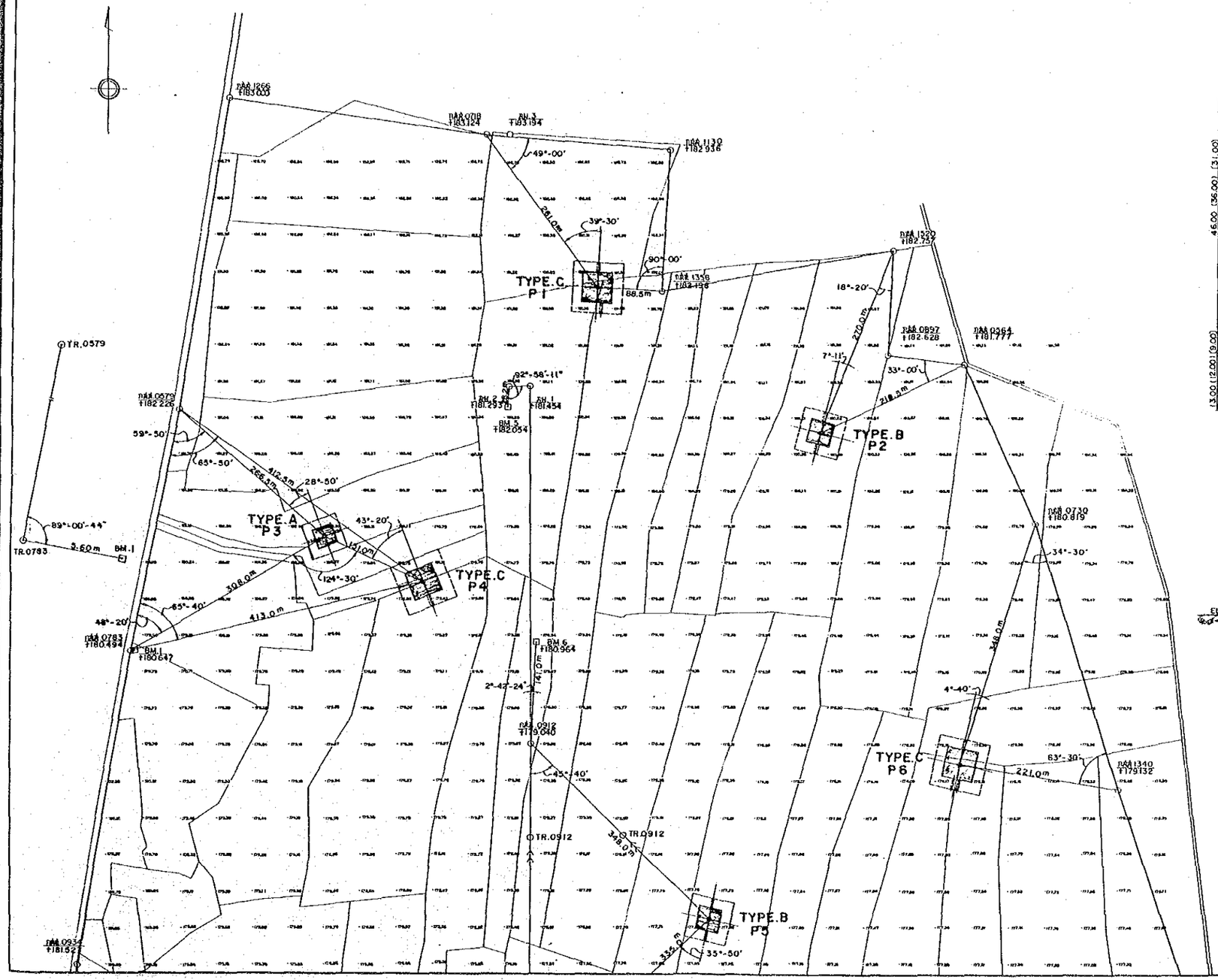


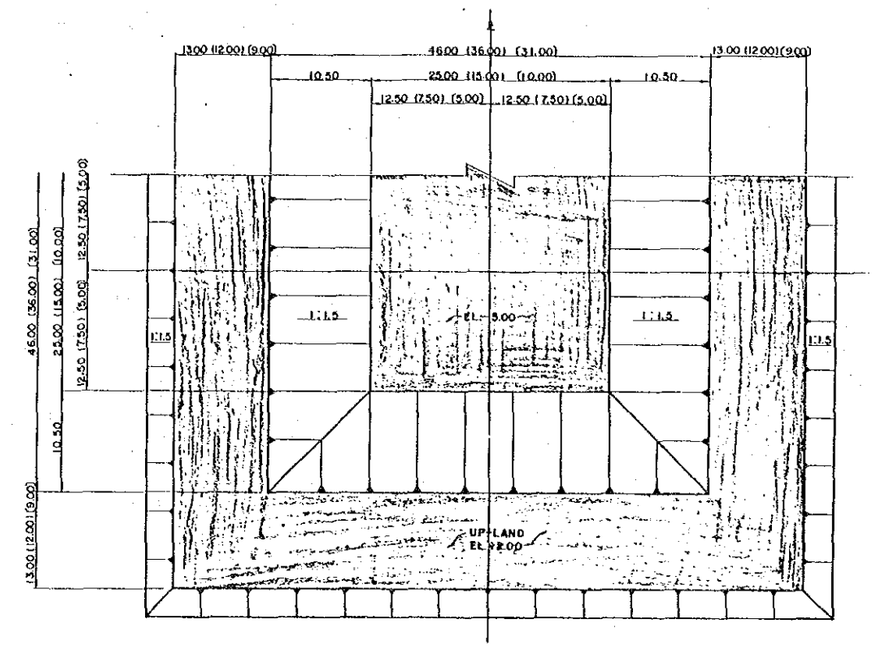
Fig-27 Location of site A, B

D R A W I N G S

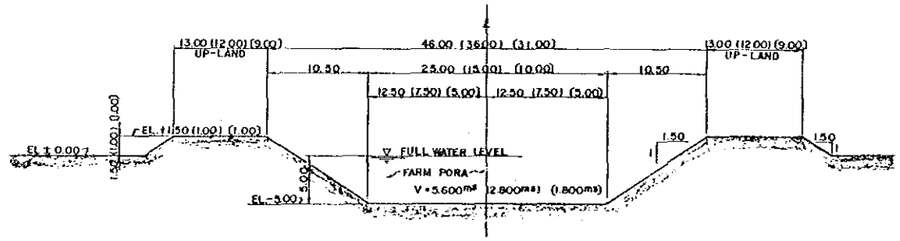
***** DRAWINGS LIST *****

DRAWING NO.	T I T L E	
1	LOCATION OF FARM POND	(1)
2	LOCATION OF FARM POND	(2)
3	PLAN OF FARM POND	(1)
4	PLAN OF FARM POND	(2)
5	PLAN OF INLET	
6	GENERAL PLAN OF OUTLET WORKS	
7	PLAN OF OUTLET WORKS	(1)
8	PLAN OF OUTLET WORKS	(2)
9	EARTHWORK CROSS SECTION	(1)
10	EARTHWORK CROSS SECTION	(2)
11	EARTHWORK CROSS SECTION	(3)
12	GENERAL PLAN OF DIVERSION WORKS	
13	PLAN OF DIVERSION WORKS	(1)
14	PLAN OF DIVERSION WORKS	(2)
15	ARRANGEMENT OF REINFORCEMENT	
16	EARTHWORK CROSS SECTION	(1)
17	EARTHWORK CROSS SECTION	(2)
18	DETAIL OF SLUICE GATE	(1)
19	DETAIL OF SLUICE GATE	(2)





PLANE OF FARM POND



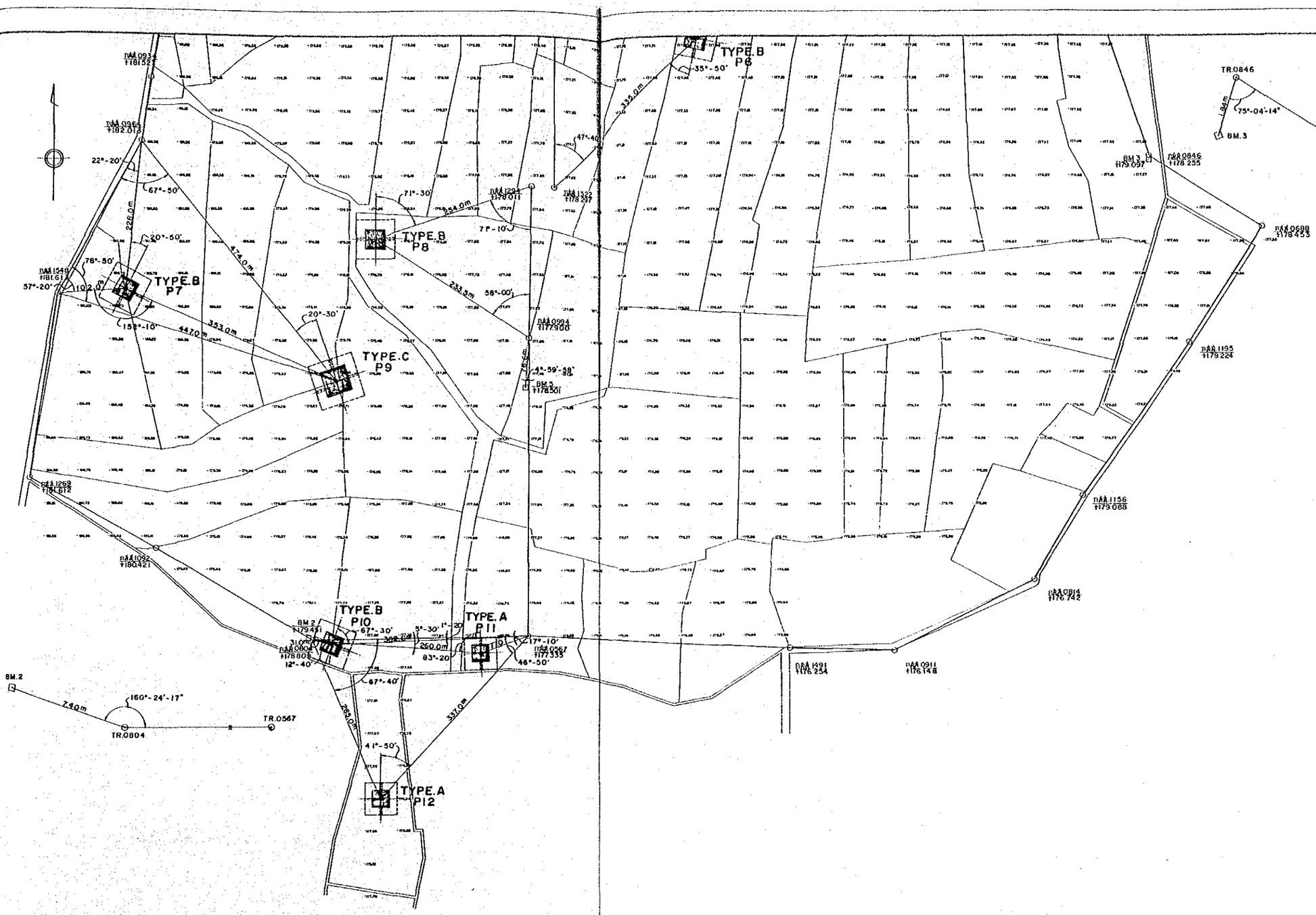
STANDARD SECTION (TYPE.C)

SCALE 1: 250

THE VALUE OF ( ) IS SHOWN TYPE-B

THE VALUE OF [ ] IS SHOWN TYPE-A

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
LOCATION OF FARM POND (1)	
PREPARED BY	DRAWING NO. 1
CHECKED NO.	



TYPE.A

NO.	EXISTING GROUND LEVEL	FULL WATER LEVEL	POND BOTTOM LEVEL	TOP-LARD LEVEL	THE NUMBER OF INLETS
P3	EL. 180.30	FWL. 180.20	EL. 175.20	EL. 181.20	2
P11	EL. 177.40	FWL. 177.00	EL. 172.00	EL. 178.00	2
P12	EL. 177.00	FWL. 177.00	EL. 172.00	EL. 178.00	2

TYPE.B

NO.	EXISTING GROUND LEVEL	FULL WATER LEVEL	POND BOTTOM LEVEL	TOP-LARD LEVEL	THE NUMBER OF INLETS
P2	EL. 180.40	FWL. 180.30	EL. 175.30	EL. 181.30	2
P5	EL. 177.60	FWL. 177.50	EL. 172.50	EL. 178.50	2
P7	EL. 180.80	FWL. 180.60	EL. 175.60	EL. 181.60	2
P8	EL. 179.60	FWL. 178.80	EL. 173.80	EL. 179.80	2
P10	EL. 179.50	FWL. 178.10	EL. 173.10	EL. 179.10	2

TYPE.C

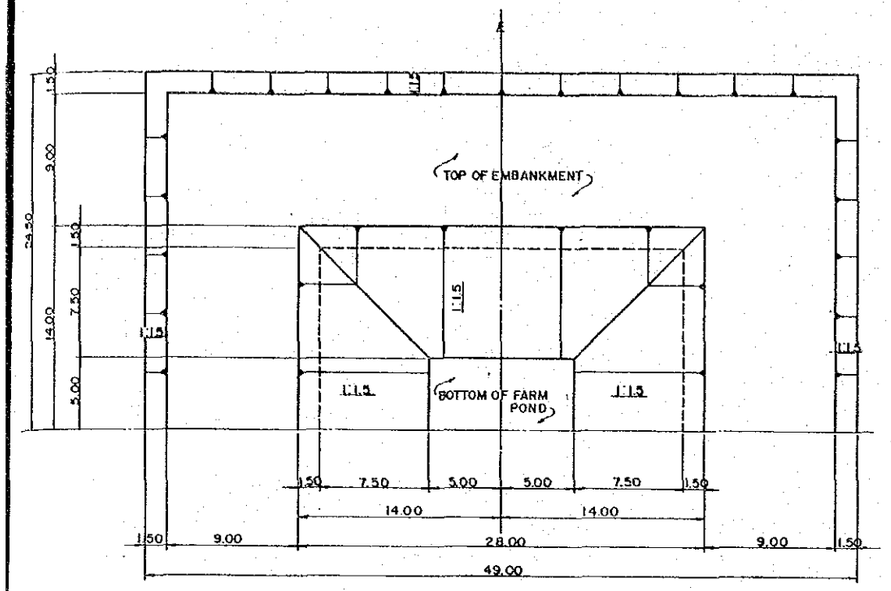
NO.	EXISTING GROUND LEVEL	FULL WATER LEVEL	POND BOTTOM LEVEL	TOP-LARD LEVEL	THE NUMBER OF INLETS
P1	EL. 181.90	FWL. 181.40	EL. 176.40	EL. 182.90	3
P4	EL. 179. 80	FWL. 179.60	EL. 174.60	EL. 181. 10	2
P6	EL. 178. 20	FWL. 178.00	EL. 173.00	EL. 179. 50	3
P9	EL. 179. 20	FWL. 178.70	EL. 173.70	EL. 180. 20	3

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR
AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

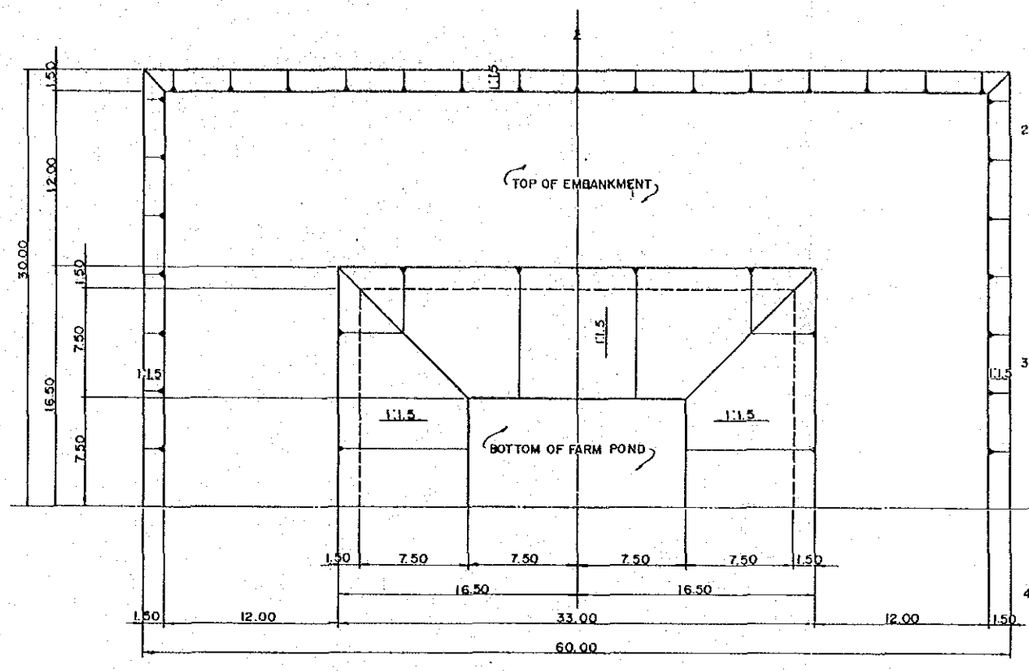
LOCATION OF FARM POND (2)

PREPARED BY	DRAWING NO.
CHECKED NO.	2



PLANE OF FARM POND TYPE. A

SCALE 1:200



PLANE OF FARM POND TYPE. B

SCALE 1:200

NOTE.

1. BEFOR THE COURSE OF COMPACTION THE CONTRACTOR SHALL TEST THE STANDARD COMPACTION TEST ACCORDING TO ASTM D-698-66T METHOD A OR JIS A 1210-1970.

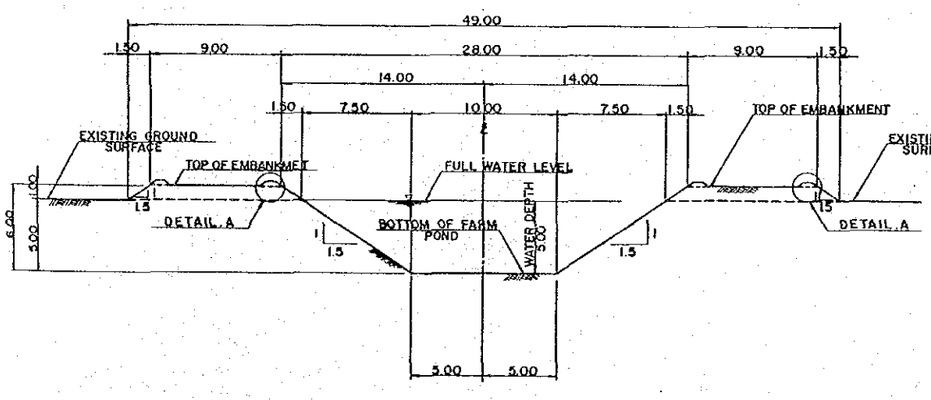
2. THE SAMPLING PLACES FOR THE STANDARD COMPACTION TEST ARE INDICATED BY THE INSPECTION COMMITTEE. AND THE CONTRACTOR SHALL TAKE MORE THAN 3 (THREE) SAMPLES FOR STANDARD COMPACTION TEST AT ANY PLACE INDICATED BY THE INSPECTION COMMITTEE.

3. THE CONTRACTOR SHALL SUBMIT THE RESULTS OF THE STANDARD COMPACTION TEST TO THE INSPECTION COMMITTEE. ACCORDING TO WHICH. THE INSPECTION COMMITTEE WILL DECIDE THE WORKABLE RANGE OF MOISTURE CONTENT FOR THE COMPACTION.

4. THE CONTRACTOR SHALL COMPACT EARTH IN CASE ACTUAL MOISTURE CONTENT IS OUT OF THE WORKABLE PANGE. SHOULD THE CONTRACTOR TO COMPACT EARTH IN THE ABOVE MENTIONED STATE. THE CONTRACTOR OBTAIN THE PRIOR PERMISSION OF THE INSPECTION COMMITTEE.

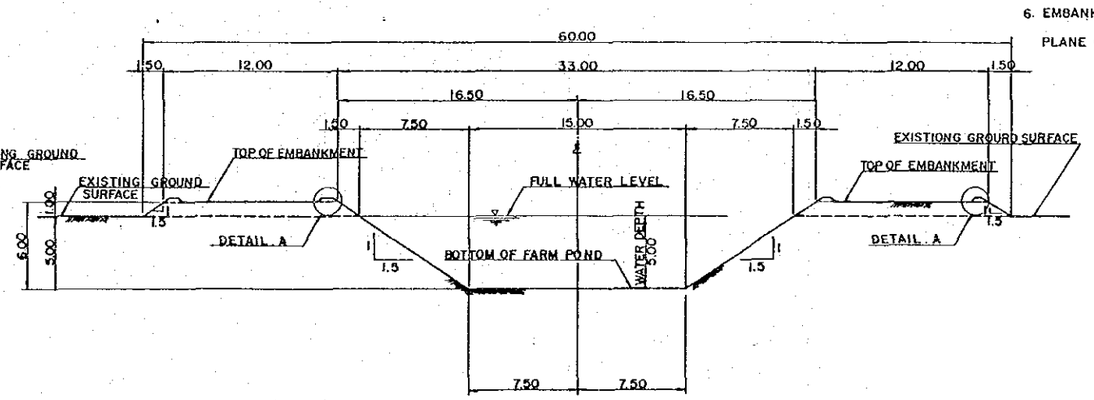
5. DATAIL. A IS SHOWN IN DRAWING NO.4

6. EMBANKMENT (DETAIL.A) IS OMITTED IN PLANE OF FARM POND.



STANDARD SECTION OF FARM POND TYPE. A

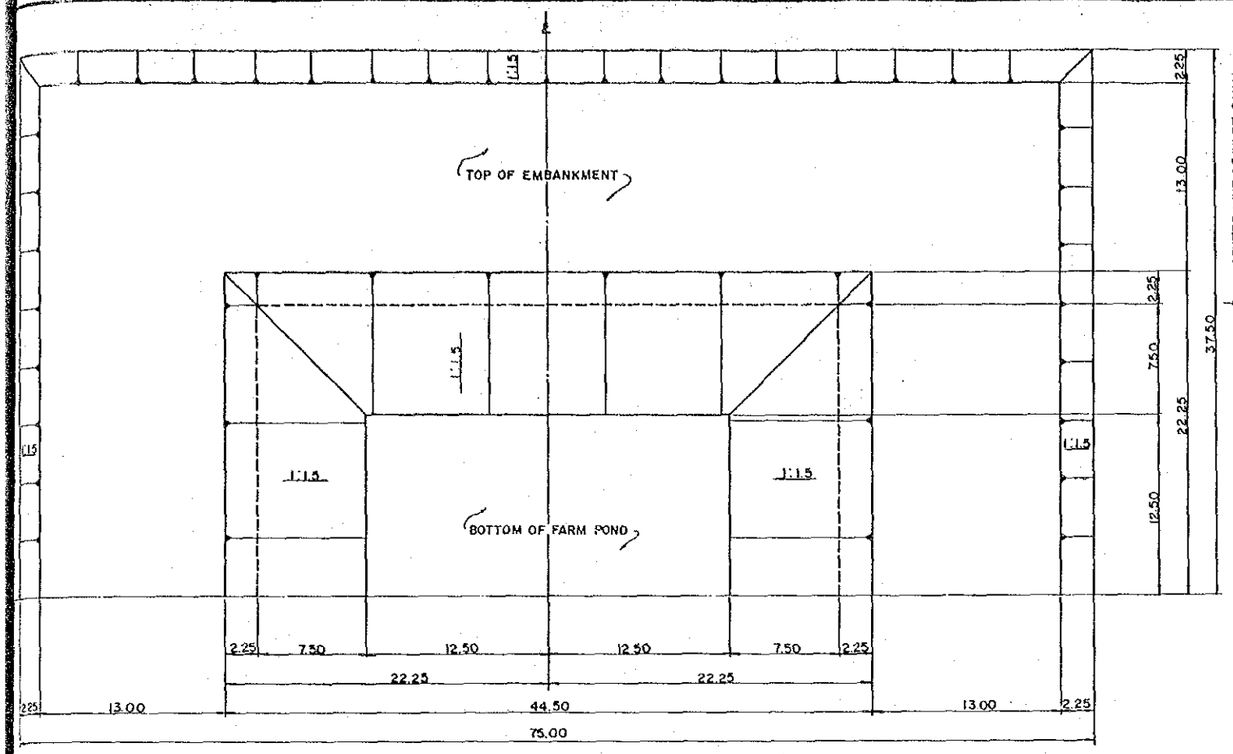
SCALE 1:200



STANDARD SECTION OF FARM POND TYPE. B

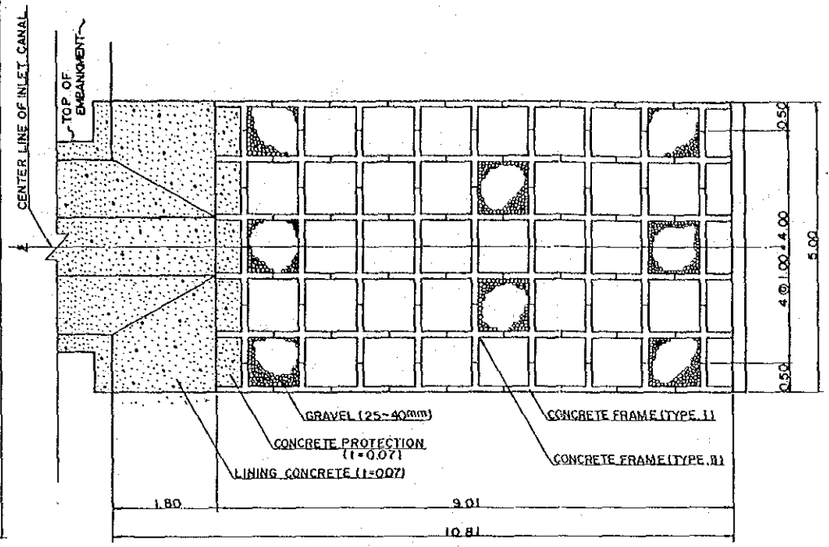
SCALE 1:200

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
PLAN OF FARM POND (1)	
PREPARED BY	DRAWING NO. 3
CHECKED NO.	



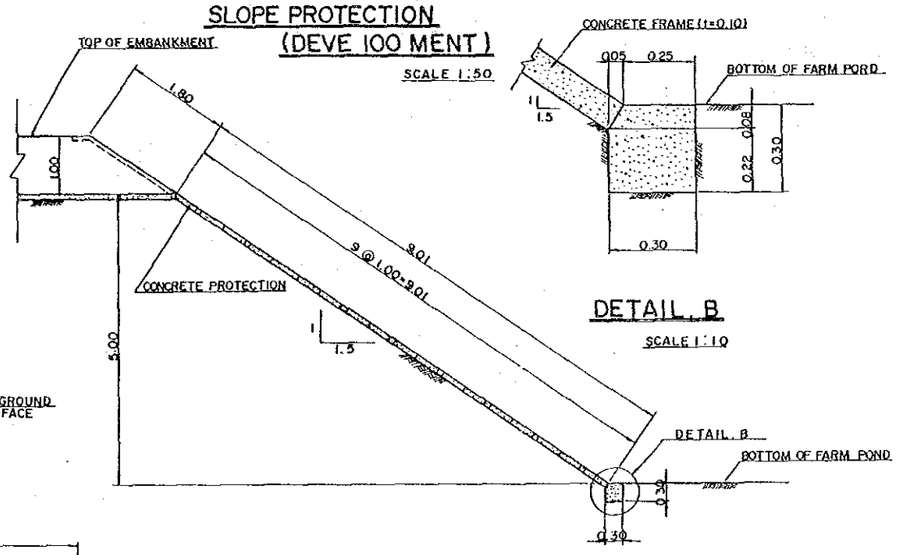
PLANE OF FARM POND TYPE. C

SCALE 1: 200



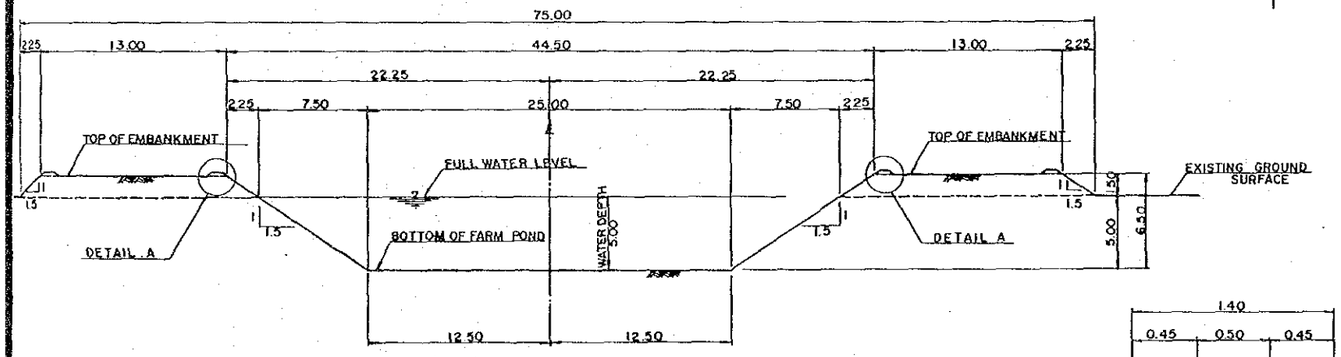
SLOPE PROTECTION (DEVE 100 MENT)

SCALE 1:50



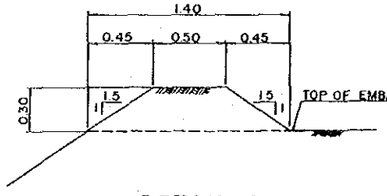
DETAIL. B

SCALE 1:10



STANDARD SECTION OF FARM POND TYPE. C

SCALE 1: 200

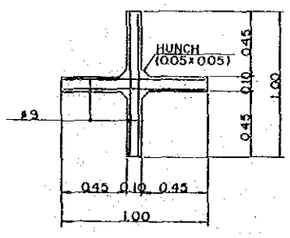


DETAIL. A

SCALE 1:20

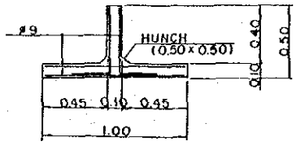
LONGITUDINAL SECTION OF SLOPE PROTECTION

SCALE 1: 50



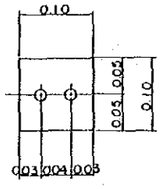
CONCRETE FRAME (TYPE. I)

SCALE 1: 20



CONCRETE FRAME (TYPE. II)

SCALE 1: 20



CONCRETE FRAME STANDARD SECTION

SCALE 1:4

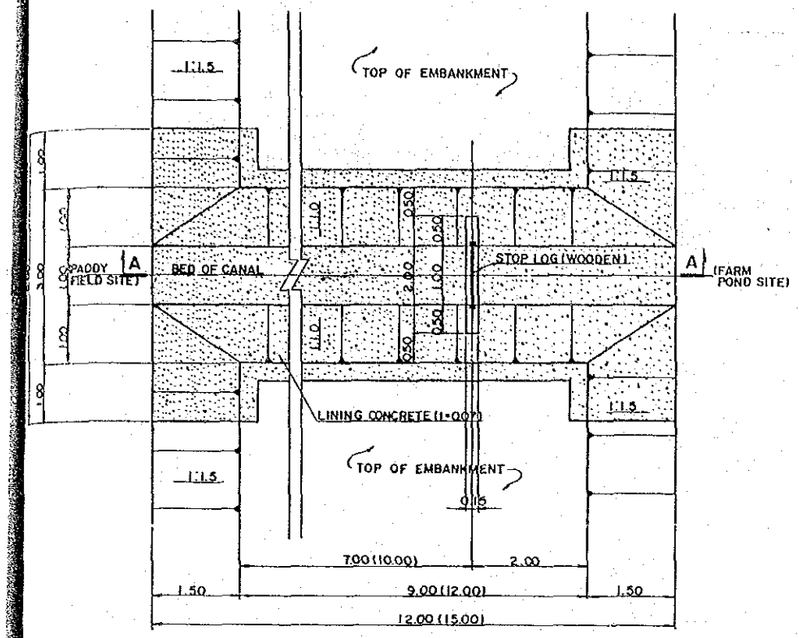
NOTE.

1. ABBREVIATION AND SYMBOL
   - ℄ : CENTER LINE
2. ALL REINFORCING STEEL TO BE PLAIN BAR WITH HOOKS FACH (AS FOLLOWS)
   - R = 2.5 #
   - L : LONGER THAN 6cm AND 4 #
   - # : DIAMETER OF STEEL BAR
   - R : BEND RADIUS OF STEEL BAR

LENGH OF LAP AND ANCHORAGE(USE SR30)

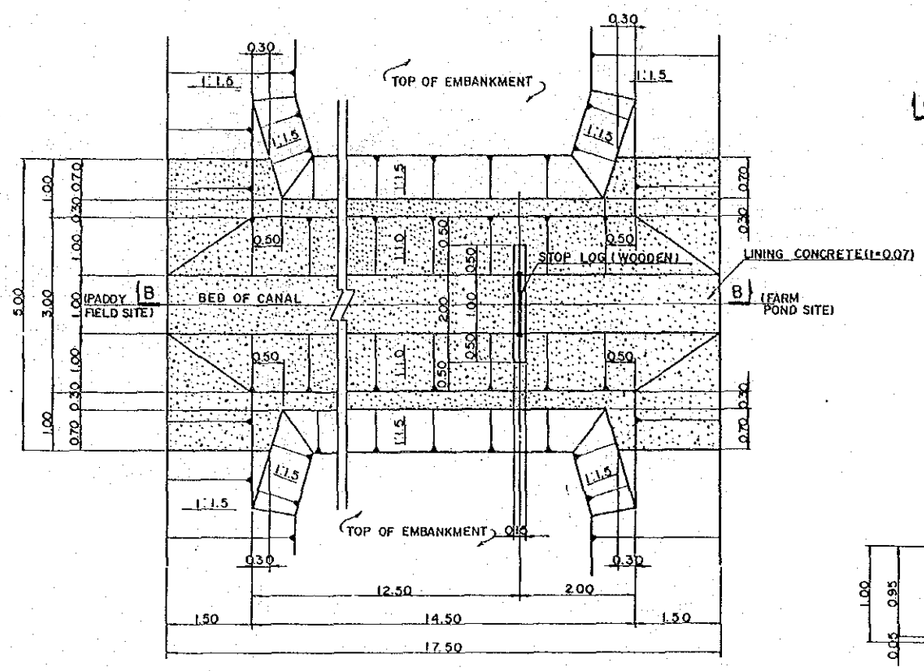
36 BAR DIAMETER (WITH HOOKS)

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
PLAN OF FARM POND (2)	
PREPARED BY	DRAWING NO. 4
CHECKED NO.	



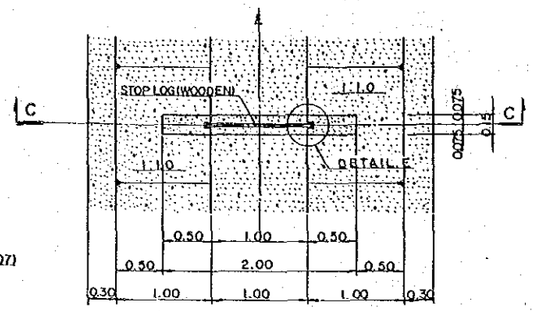
PLANE OF INLET (EMBANKMENT HEIGHT = 1.0m)

SCALE 1 : 50



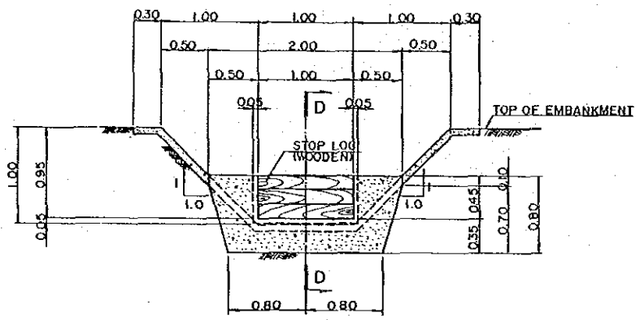
PLANE OF INLET (EMBANKMENT HEIGHT=1.5m)

SCALE 1:50



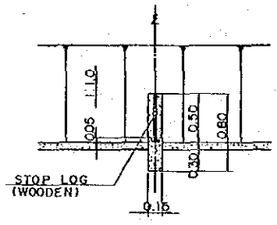
PLANE OF FLASH BOARD WEIR

SCALE 1:30



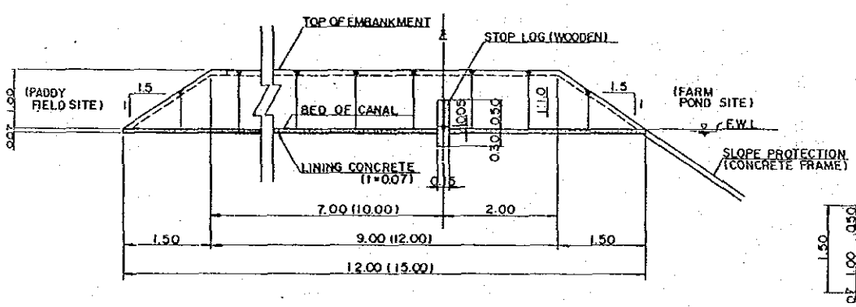
SECTION C – C

SCALE 1:30



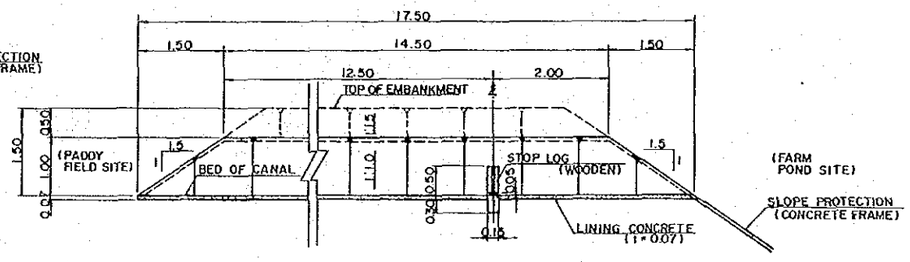
SECTION D – D

SCALE 1:30



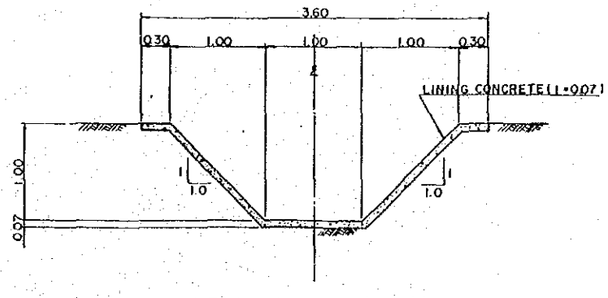
LONGITUDINAL (SECTION A – A)

SCALE 1 : 50



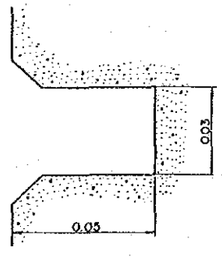
LONGITUDINAL (SECTION B – B)

SCALE 1 : 50



STANDARD SECTION

SCALE 1:30



DETAIL E

SCALE 1 : 1

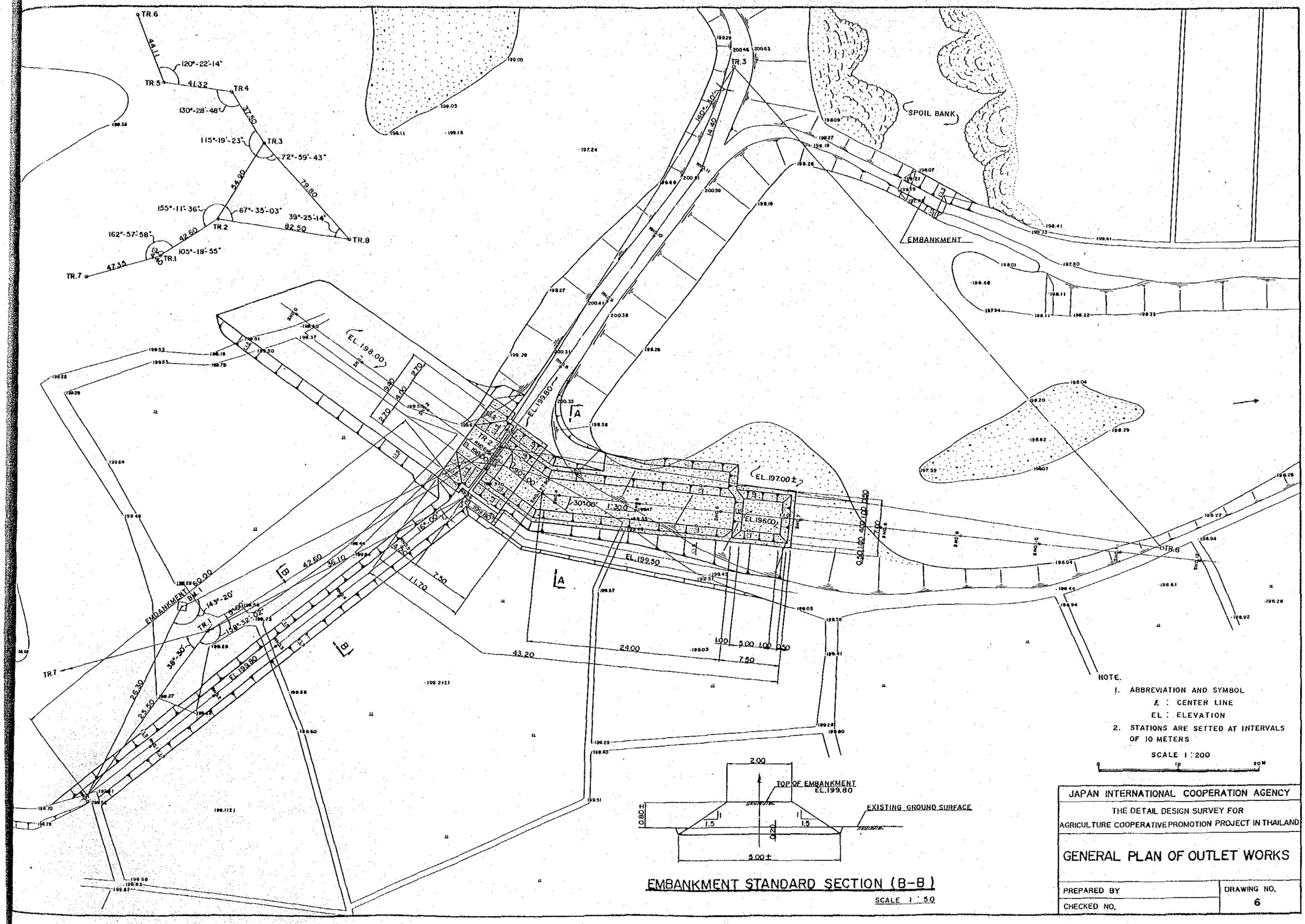
NOTE.

1. ABBREVIATION AND SYMBOL

℄ : CENTER LINE

2. WOODEN PARTS SHALL BE TREATED WITH WATERPROOF CHEMICAL FOR AGENT.

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
PLAN OF INLET	
PREPARED BY	DRAWING NO.
CHECKED NO.	5



EMBANKMENT STANDARD SECTION (B-B)

SCALE 1 : 50

NOTE.

1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATIONS ARE SETTED AT INTERVALS OF 10 METERS

SCALE 1 : 200

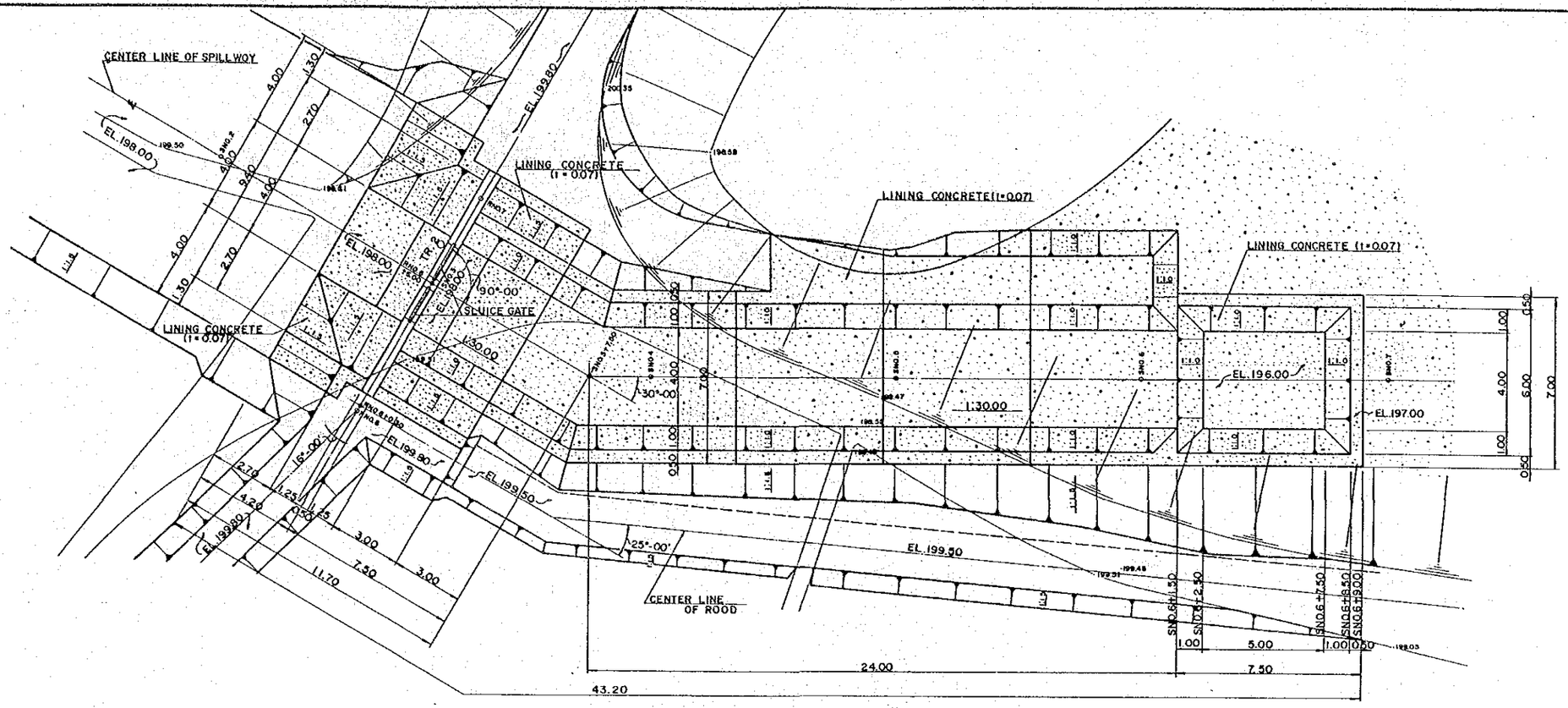
0 10 20M

JAPAN INTERNATIONAL COOPERATION AGENCY

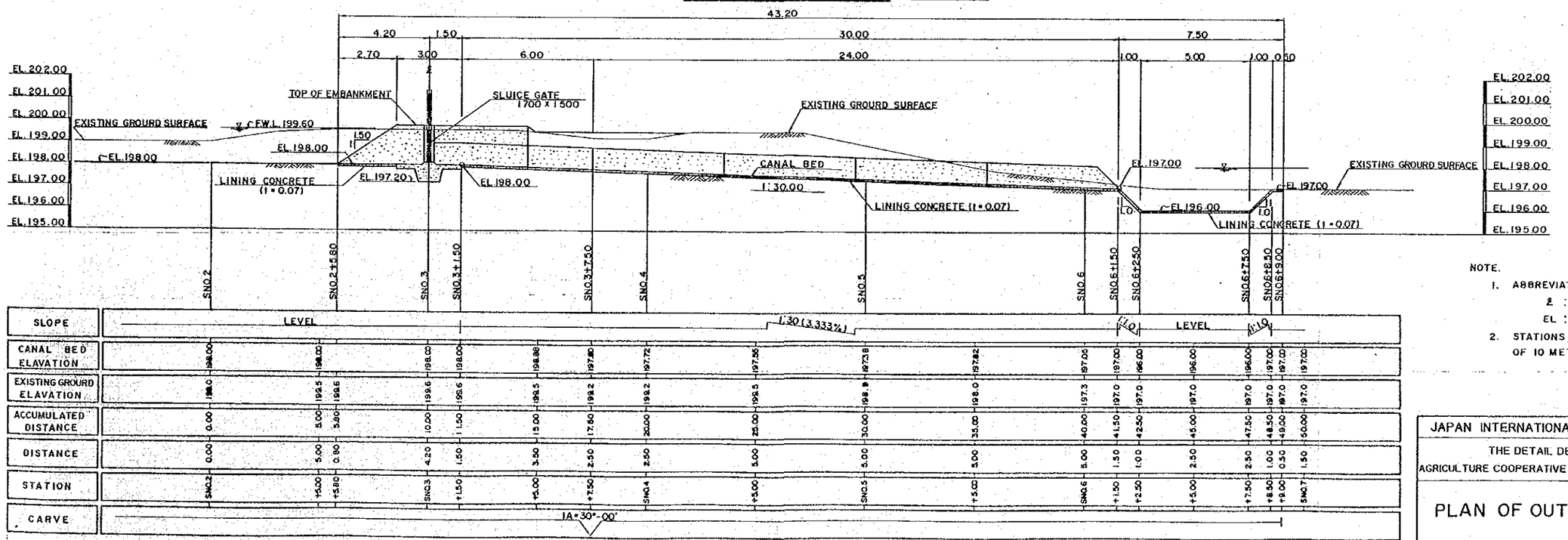
THE DETAIL DESIGN SURVEY FOR
AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

GENERAL PLAN OF OUTLET WORKS

PREPARED BY	DRAWING NO.
CHECKED NO.	6



PLANE OF SPILLWAY SCALE 1:100



LONGITUDINAL SECTION SPILLWAY SCALE 1:100

NOTE.

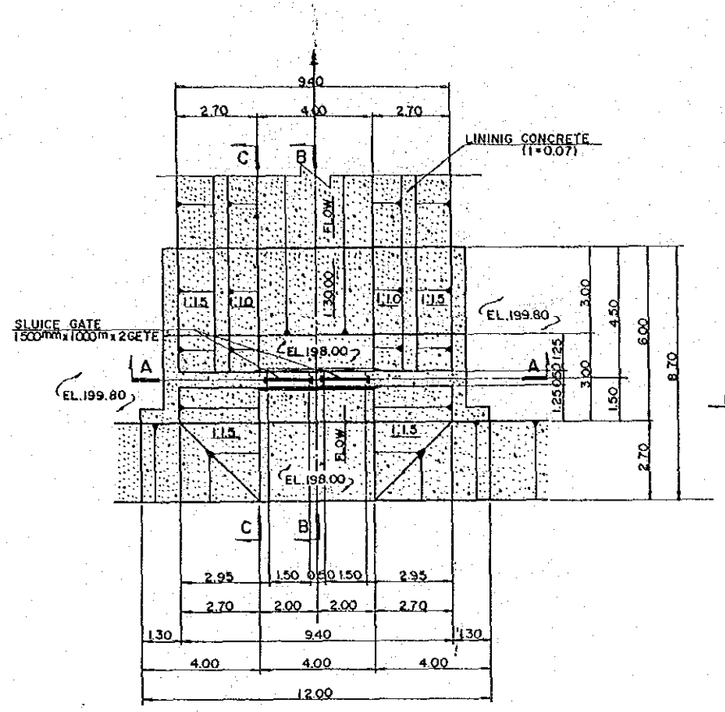
1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATIONS ARE SETTED AT INTERVALS OF 10 METERS

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

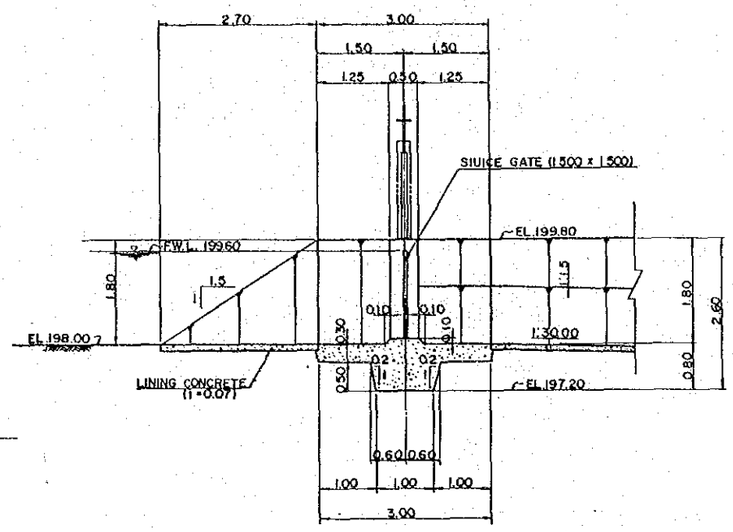
PLAN OF OUTLET WORKS (1)

PREPARED BY	DRAWING NO.
CHECKED NO.	7



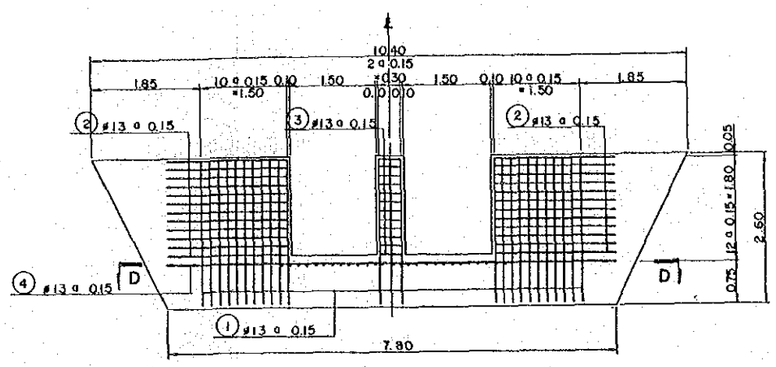
PLANE OF SPILLWAY

SCALE 1:100



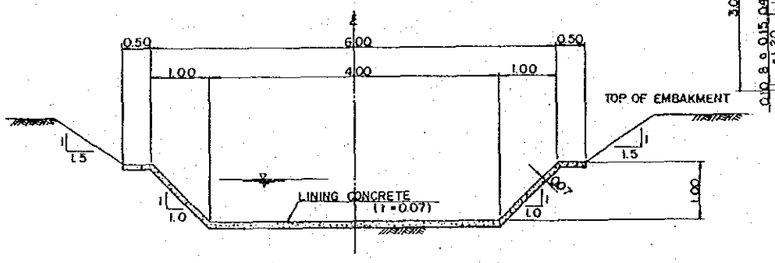
SECTION B—B

SCALE 1:50



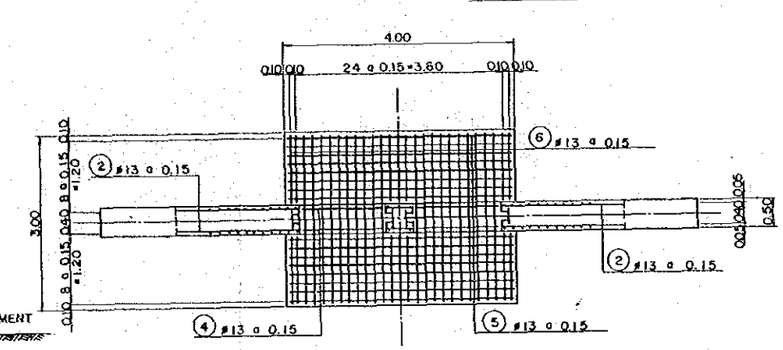
REINF. OF SECTION A—A

SCALE 1:50



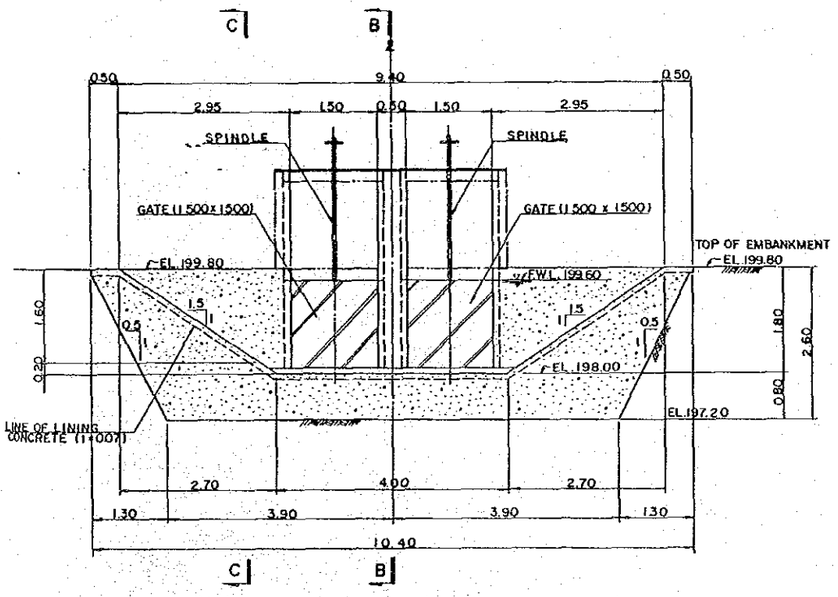
SPILL WAY STANDARD SECTION

SCALE 1:50



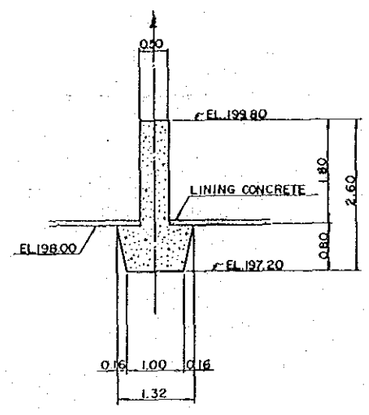
REINF. OF SECTION D—D

SCALE 1:50



SECTION A—A

SCALE 1:50

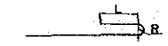


SECTION C—C

SCALE 1:50

NOTE.

1. ABBREVIATION AND SYMBOL
   - ℄ : CENTER LINE
   - EL: ELEVATION
2. ALL REINFORCING STEEL TO BE PLAIN BAR WITH HOOKS FACH (AS FOLLOWS)
   - R = 2.5 ϕ
   - L : LONGER THAN 6cm AND 4 ϕ
   - ϕ : DIAMETER OF STEEL BAR
   - R : BEND RADIUS OF STEEL BAR



LENGH OF LAP AND ANCHORAGE (USE SR30)

35 BAR DIAMETER (WITH HOOKS)

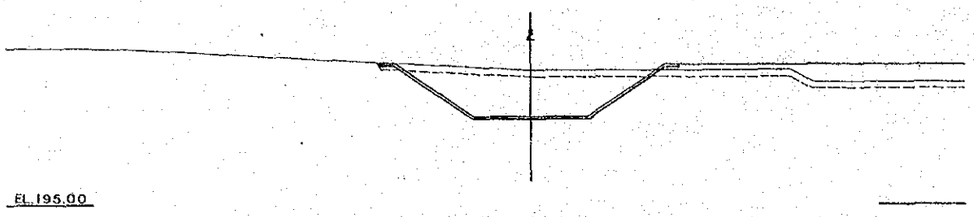
COVER FOR REINFORCING TO BE 5cm MINIMUM

JAPAN INTERNATIONAL COOPERATION AGENCY

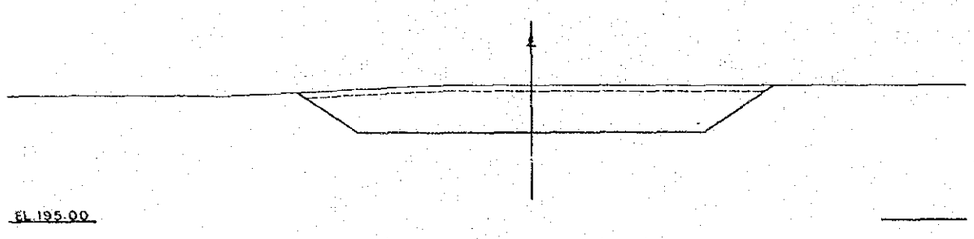
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

PLAN OF OUTLET WORKS

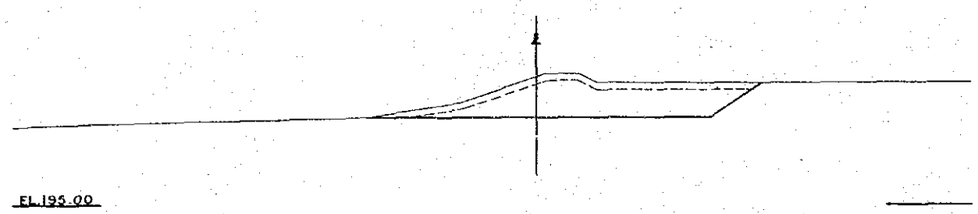
PREPARED BY	DRAWING NO.
CHECKED NO.	8



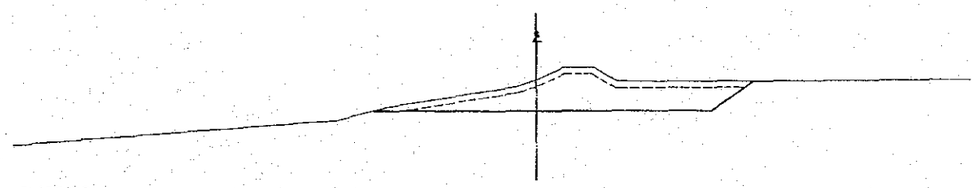
SNO.2+8.50



SNO.2+5.30



SNO. 2



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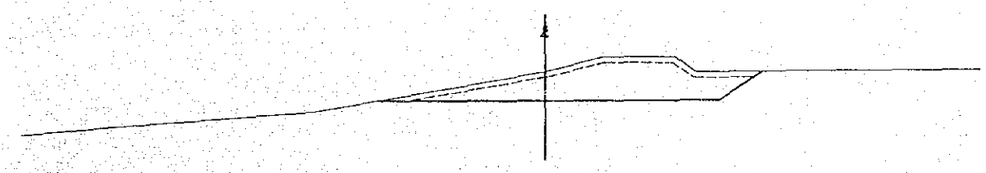

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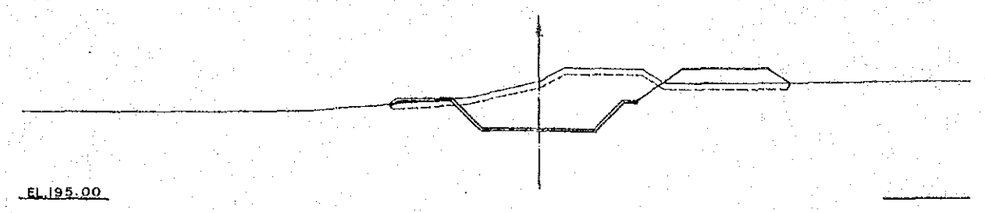

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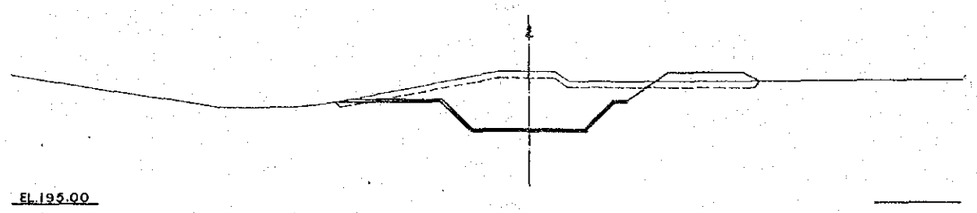
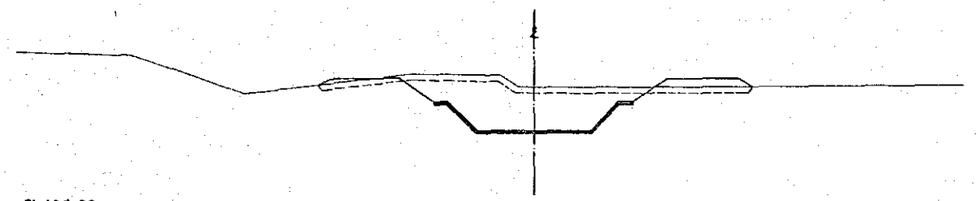


SNO4+5.00



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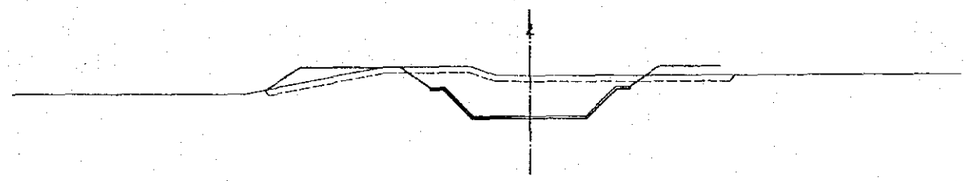

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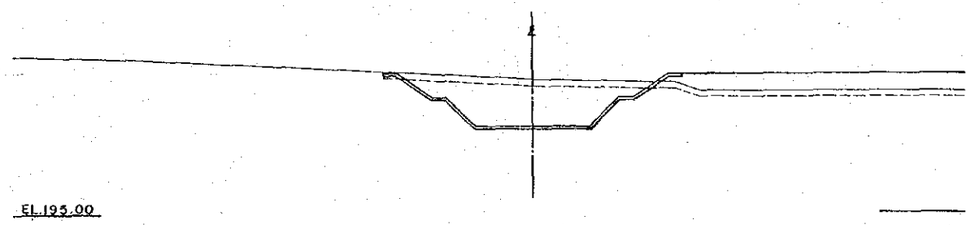


SNO. 3

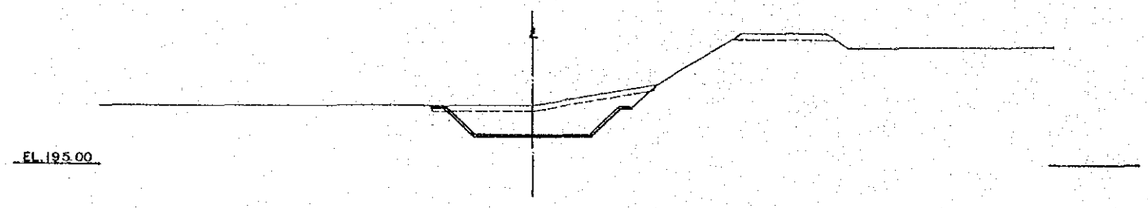
EARTHWORK CROSS SECTION

SCALE 1:100

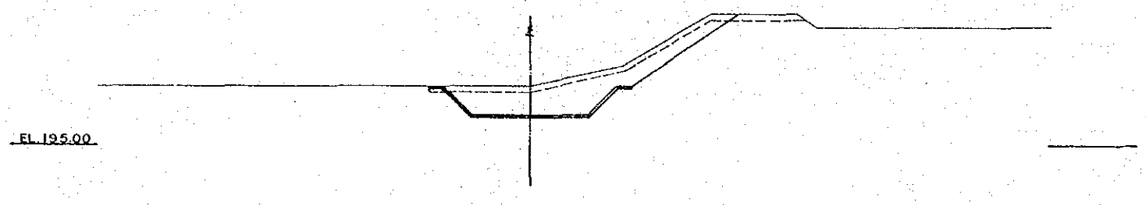
NOTE.

1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATION NO. ARE SHOWN IN DRAWING NO. 6

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
EARTHWORK CROSS SECTION (1)	
PREPARED BY	DRAWING NO. 9
CHECKED NO.	



SNO.6+7.50



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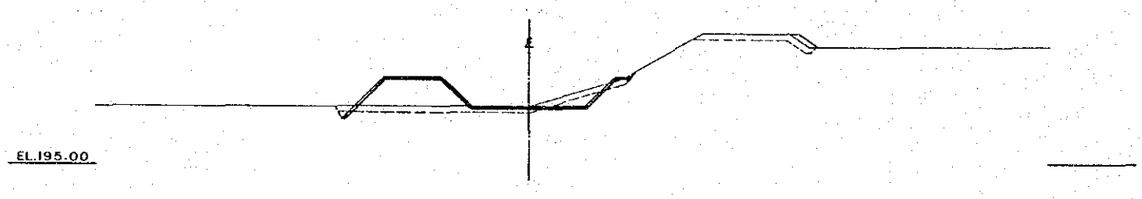
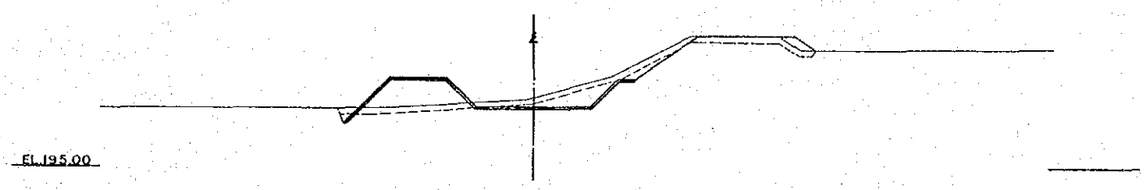
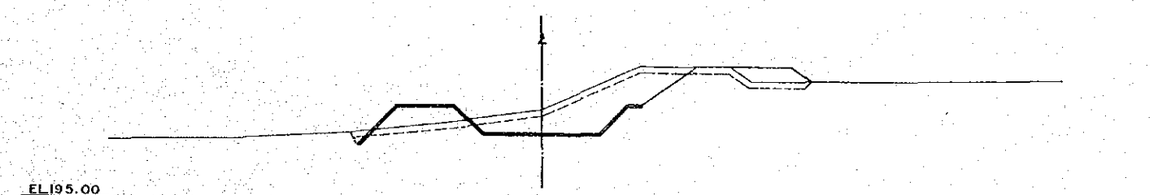


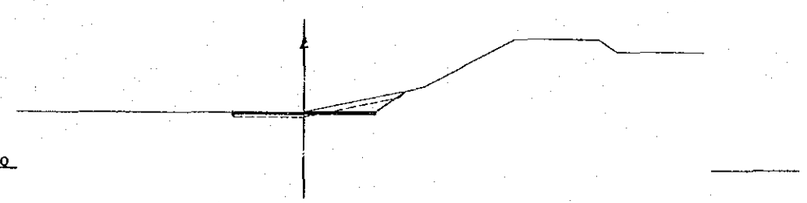
SNO.6+1.50



SNO.6



SNO.5+5.00



SNO.6+8.50

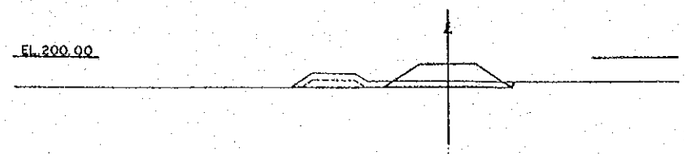
EARTHWORK CROSS SECTION

SCALE 1:100

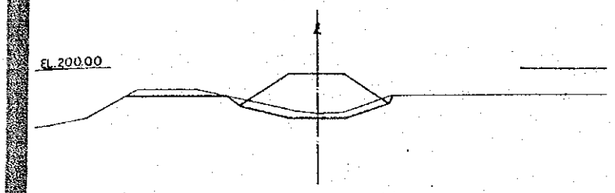
NOTE.

1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL: ELEVATION
2. STATION NO. ARE SHOWN IN DRAWING NO. 6

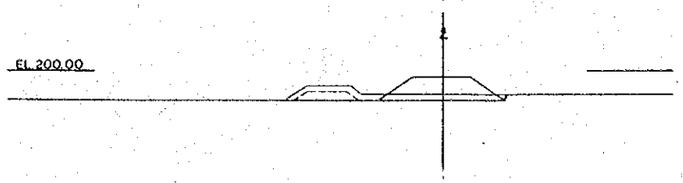
JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
EARTHWORK CROSS SECTION (2)	
PREPARED BY	DRAWING NO. 10
CHECKED NO.	



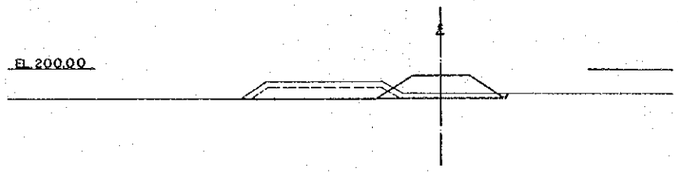
RNO. 4



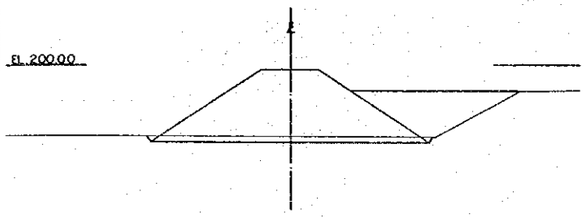
RNO. 1+5.00



RNO. 3+5.0



RNO. 5+8.0



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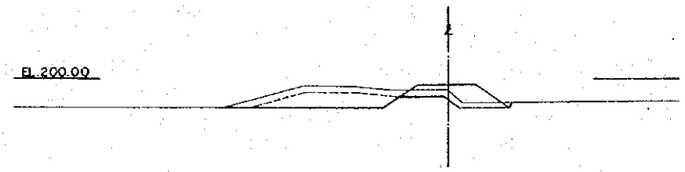
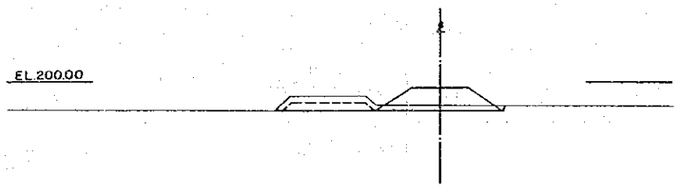


RNO. 3



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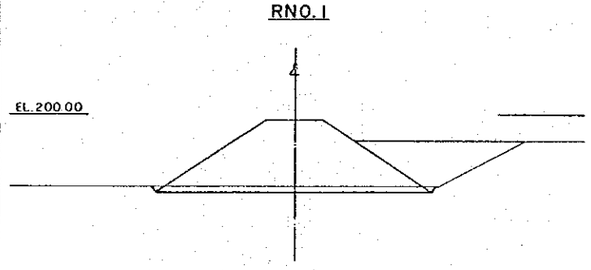

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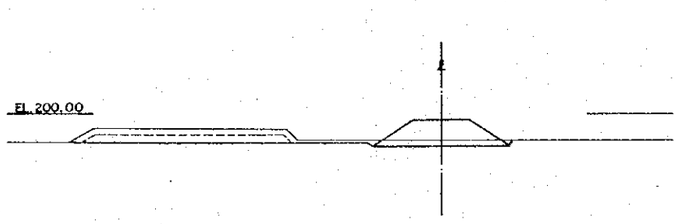

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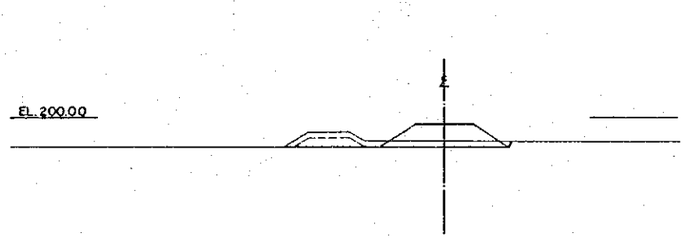

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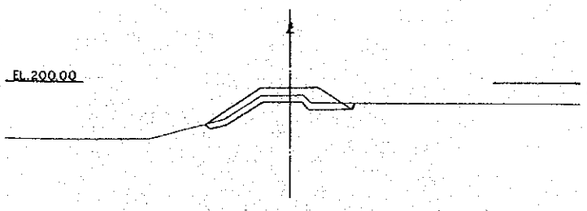

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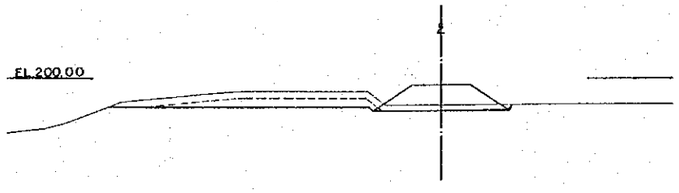

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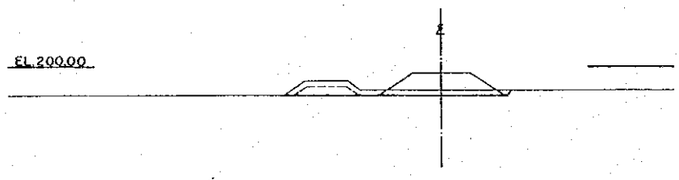


RNO. 4 +5.00

NOTE.

1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATION NO. ARE SHOWN IN DRAWING NO. 6

EARTHWORK CROSS SECTION

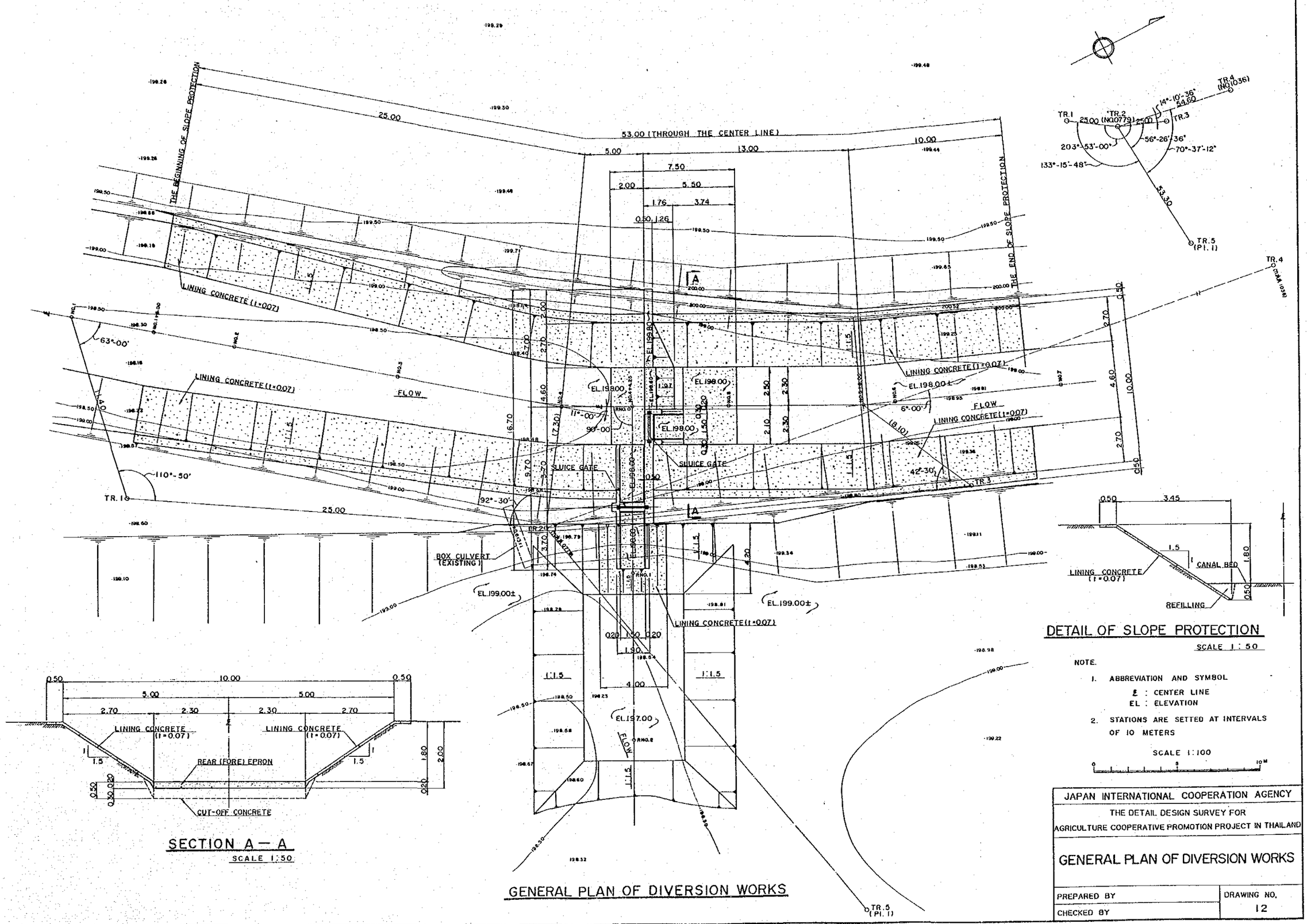
SCALE 1:100

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR
AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

EARTHWORK CROSS SECTION (3)

PREPARED BY	DRAWING NO.
CHECKED NO.	11



SECTION A — A

SCALE 1:50

GENERAL PLAN OF DIVERSION WORKS

DETAIL OF SLOPE PROTECTION

SCALE 1:50

NOTE.

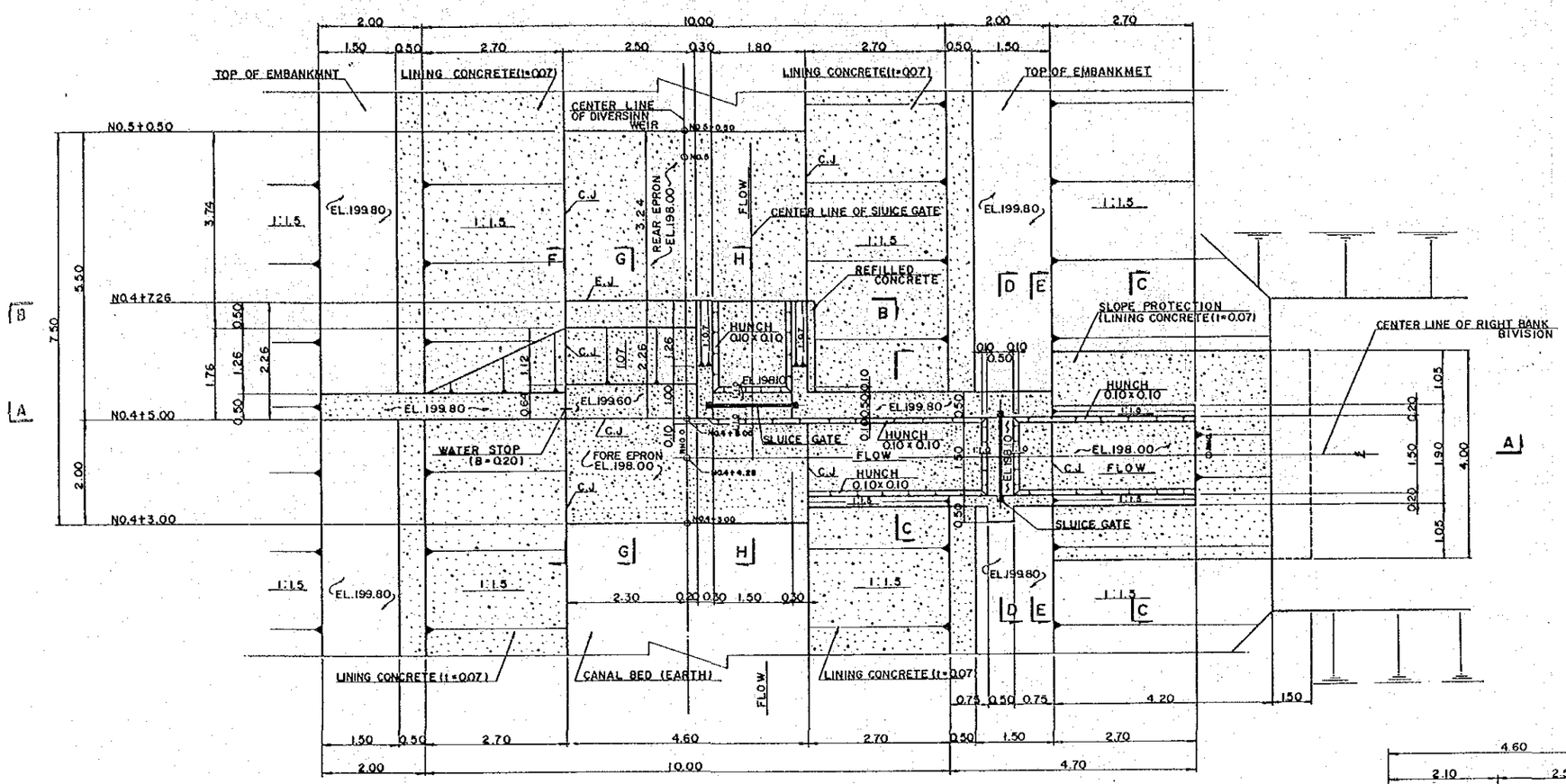
1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATIONS ARE SETTED AT INTERVALS OF 10 METERS

SCALE 1:100

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
GENERAL PLAN OF DIVERSION WORKS	
PREPARED BY	DRAWING NO. 12
CHECKED BY	

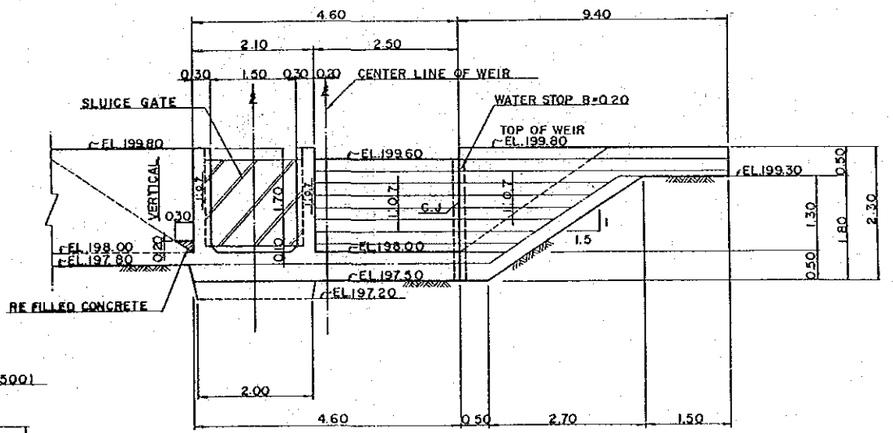
NOTE.

1. ABBREVIATION AND SYMBOL
   - ℄ : CENTER LINE
   - EL : ELEVATION
   - C.J : CONTRACTION JOINT
   - E.J : EXPANSION JOINT
2. THE EDGES OF CONCRETE ARE TREATED WITH CORNER CUT - OFF (0.03×0.03)
3. JOINT TREATMENT
   - C.J ····· OIL - PAINT
   - E.J ····· ELASTIC FILLER



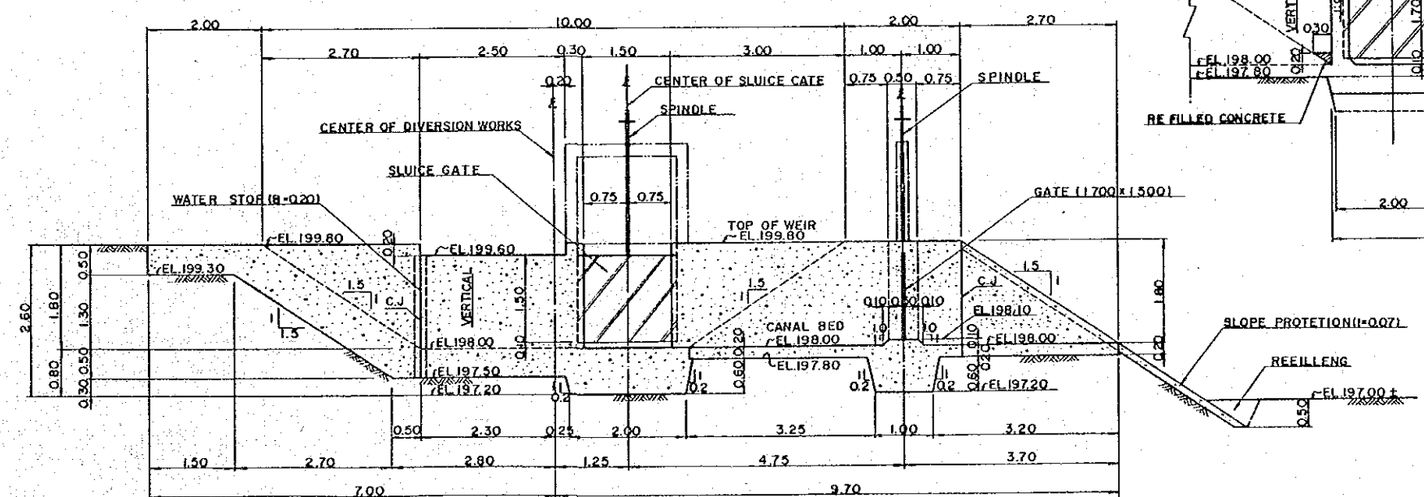
PLANE OF DIVERSION WORKS

SCALE 1 : 50



SECTION B – B

SCALE 1 : 50



LONGITUDINAL SECTION (A – A)

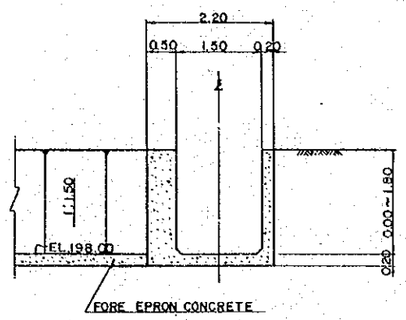
SCALE 1 : 50

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

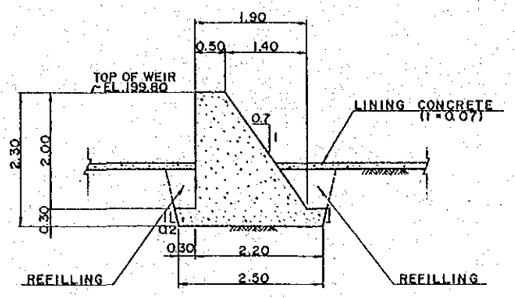
PLAN OF DIVERSION WORKS (I)

PREPARED BY	DRAWING NO.
CHECKED NO,	13



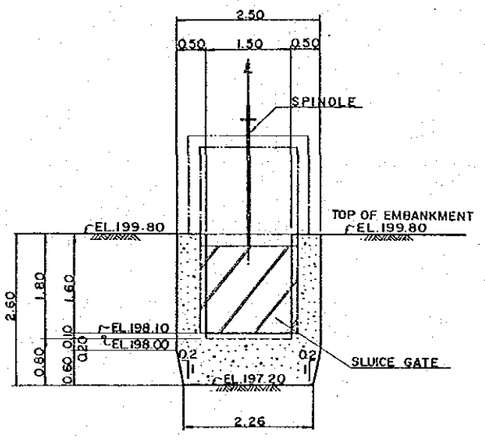
SECTION C-C

SCALE 1:50



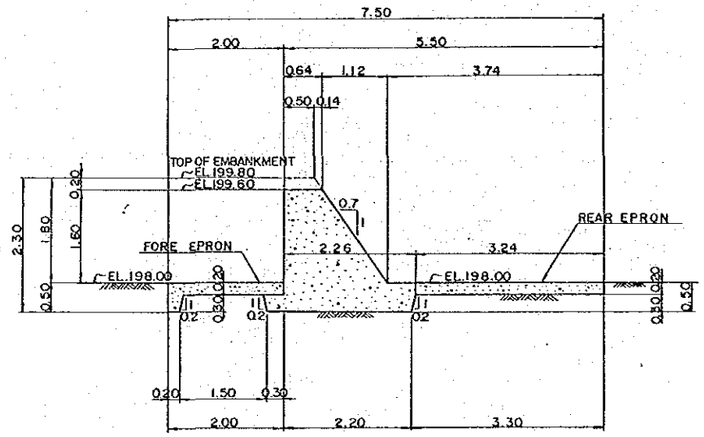
SECTION F-F

SCALE 1:50



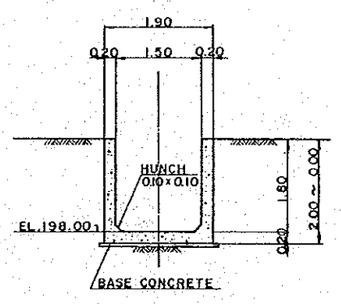
SECTION D-D

SCALE 1:50



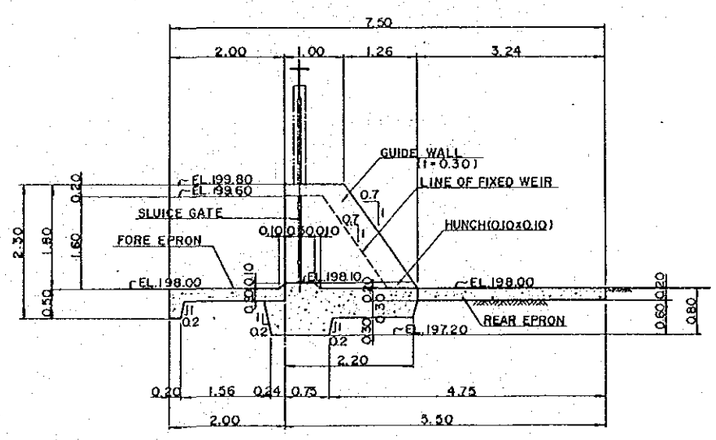
FIXED WEIR STANDARD SECTION (SECTION G-G)

SCALE 1:50



SECTION E-E

SCALE 1:50



SECTION N-N

SCALE 1:50

NOTE.

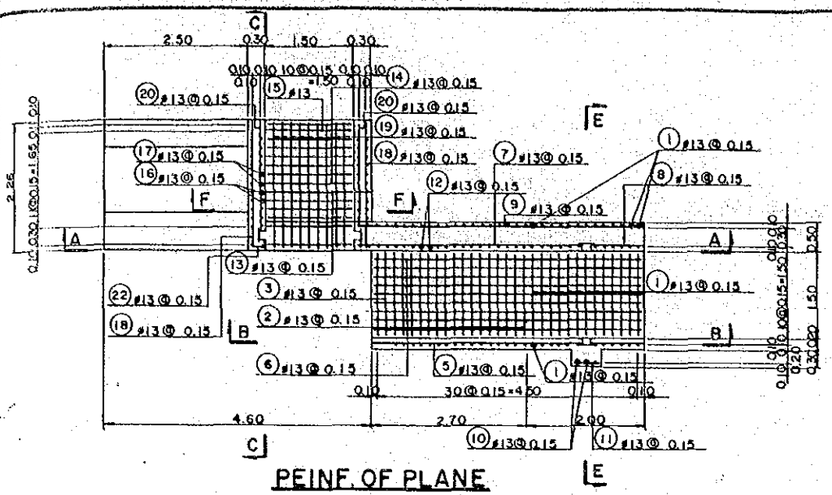
1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. THE EDGES OF CONCRETE ARE TREATED WITH CORNER CUT-OFF (0.03×0.03)
3. DETAIL OF SLUICE GATE IS SHOWN IN DRAWING NO. 18

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR
AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

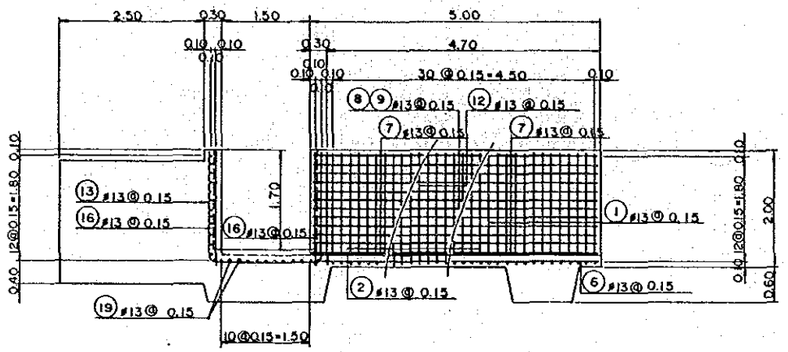
PLAN OF DIVERSION WORKS (2)

PREPARED BY	DRAWING NO.
CHECKED NO.	14



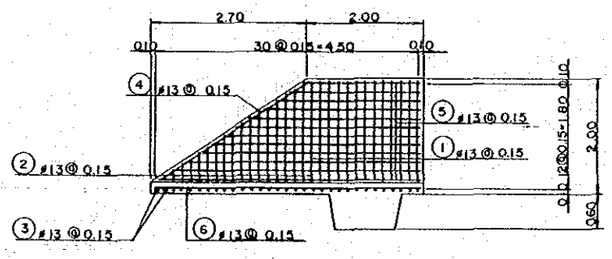
PEINF. OF PLANE

SCALE 1:50



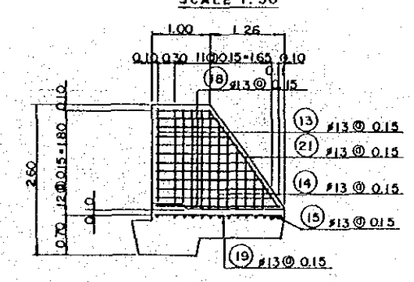
SECTION A—A

SCALE 1:50



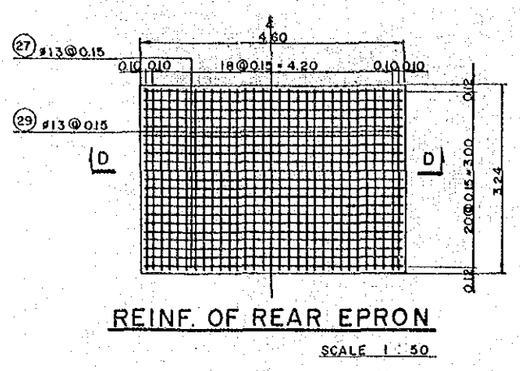
SECTION B—B

SCALE 1:50



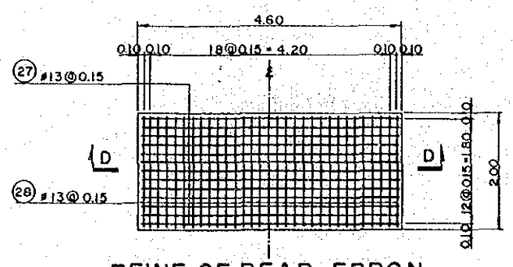
SECTION C—C

SCALE 1:50



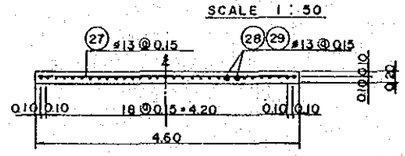
REINF. OF REAR EPRON

SCALE 1:50



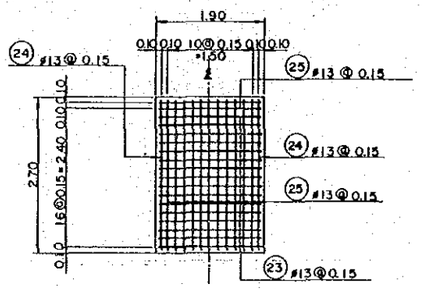
REINF. OF REAR EPRON

SCALE 1:50



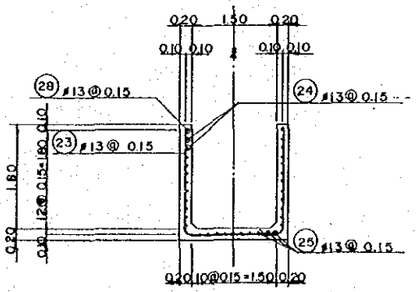
REINF. OF EPRON (SECTION D-D)

SCALE 1:50



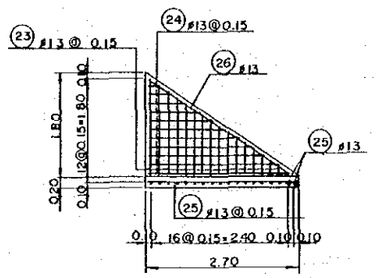
REINF. OF INVERT

SCALE 1:50



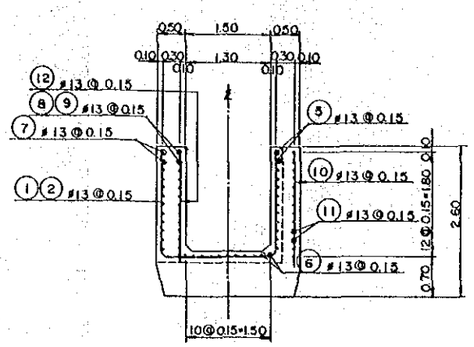
REINF. OF STANDARD SECTION

SCALE 1:50



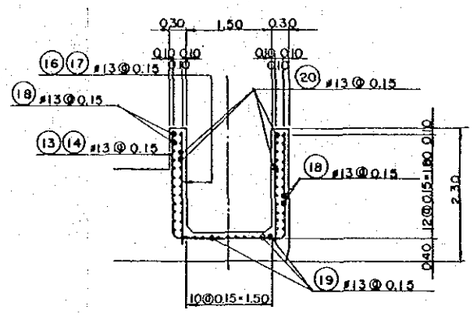
REINF. OF SIDEWALL

SCALE 1:50



SECTION E—E

SCALE 1:50

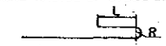


SECTION F—F

SCALE 1:50

NOTE.

1. ABBREVIATION AND SYMBOL
   - ℄ : CENTER LINE
   - EL: ELEVATION
2. ALL REINFORCING STEEL TO BE PLAIN BAR WITH HOOKS EACH (AS FOLLOWS)
   - R = 2.5 ϕ
   - L : LONGER THAN 6cm AND 4 ϕ
   - ϕ : DIAMETER OF STEEL BAR
   - R : BEND RADIUS OF STEEL BAR



LENGH OF LAP AND ANCHORAGE (USE SR30)

35 BAR DIAMETER (WITH HOOKS)

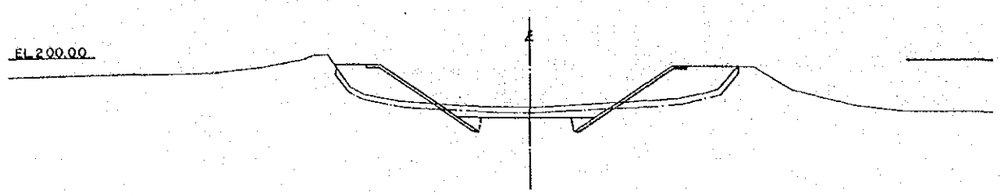
COVER FOR REINFORCING TO BE 5cm MINIMUM

JAPAN INTERNATIONAL COOPERATION AGENCY

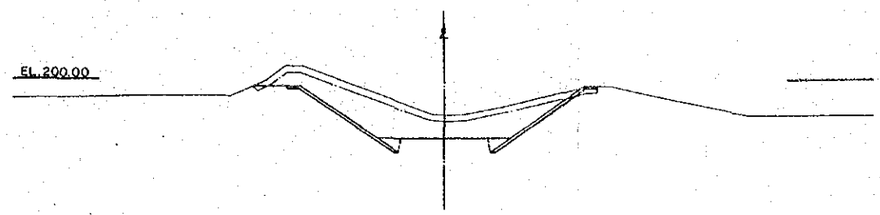
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

ARRENGEMENT OF REINFORCEMENT

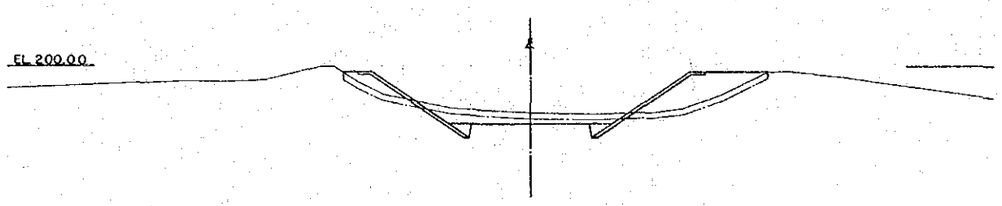
PREPARED BY	DRAWING NO.
CHECKED NO.	15



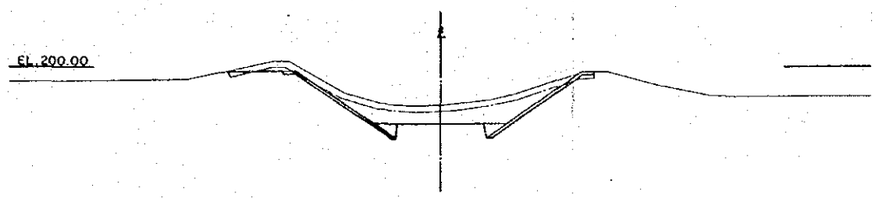
NO. 4



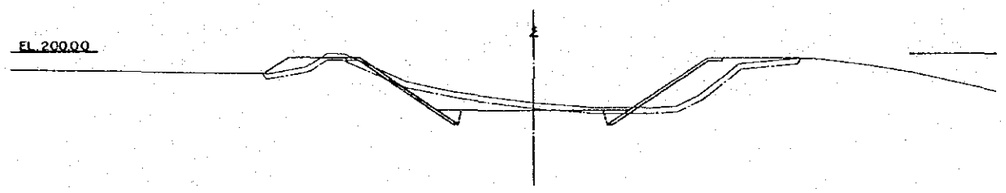
NO.6+8.00



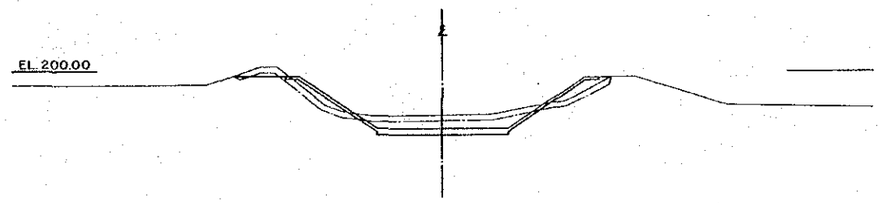
NO. 3



NO.5+8.00



NO. 2



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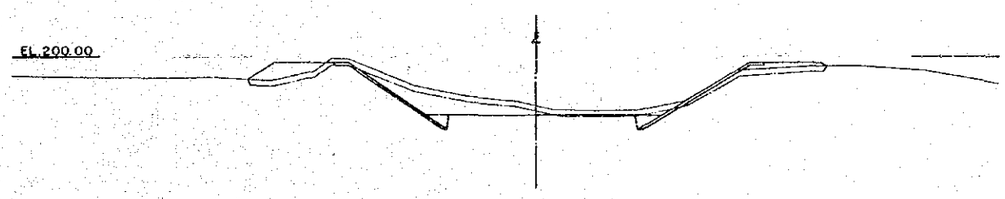
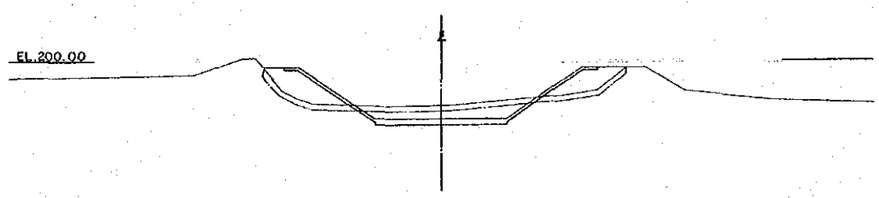


NO. 1



NO.4+3.00

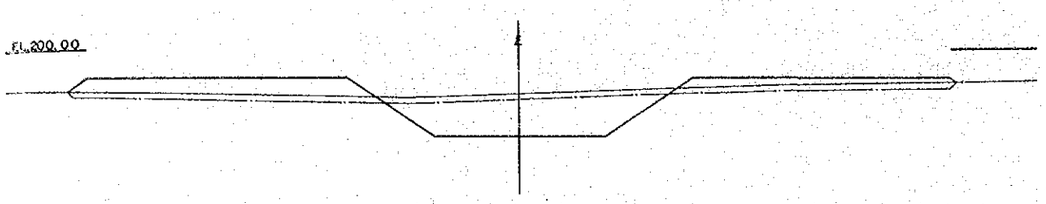
EARTHWORK CROSS SECTION

SCALE 1:100

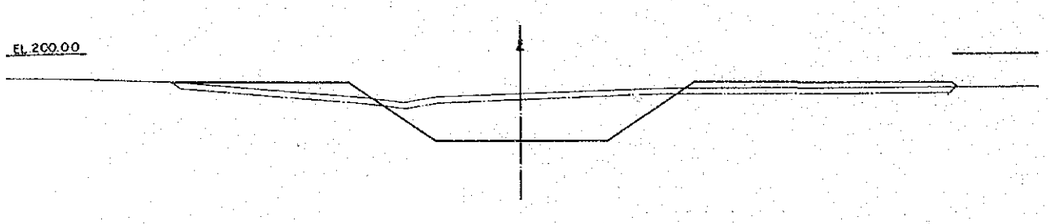
NOTE.

1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATION NO. ARE SHOWN IN DRAWING NO. 12

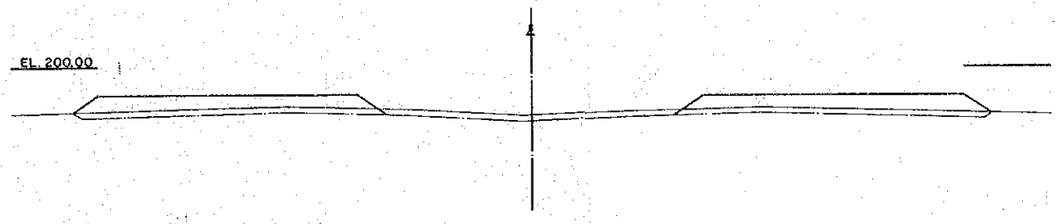
JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
EARTHWORK CROSS SECTION (I)	
PREPARED BY	DRAWING NO. 16
CHECKED NO.	



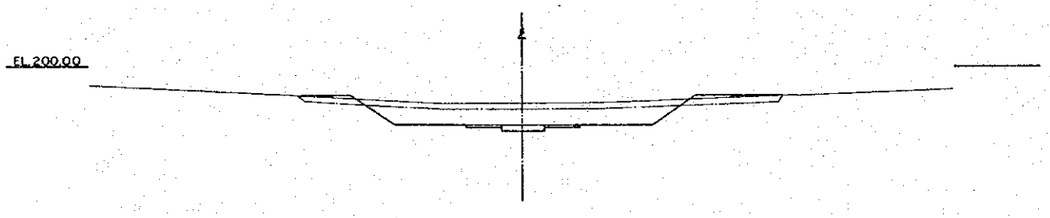
RNO. 1 + 6.20



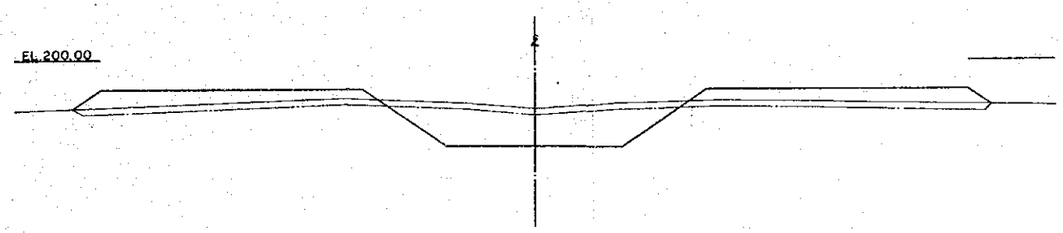
RNO. 1 + 1.20



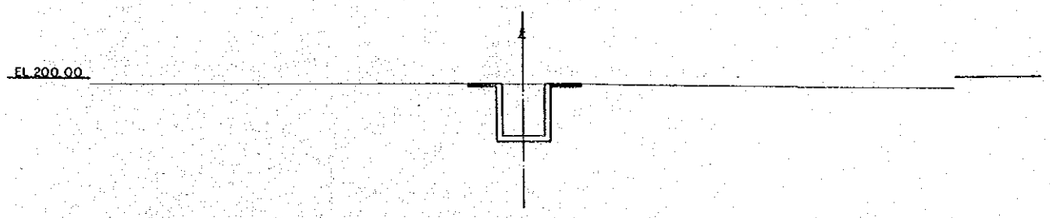
RNO. 2 + 4.20



RNO. 0 + 9.70



RNO. 2 + 1.20



RNO. 0 + 7.00

EARTHWORK CROSS SECTION

SCALE 1:100

NOTE.

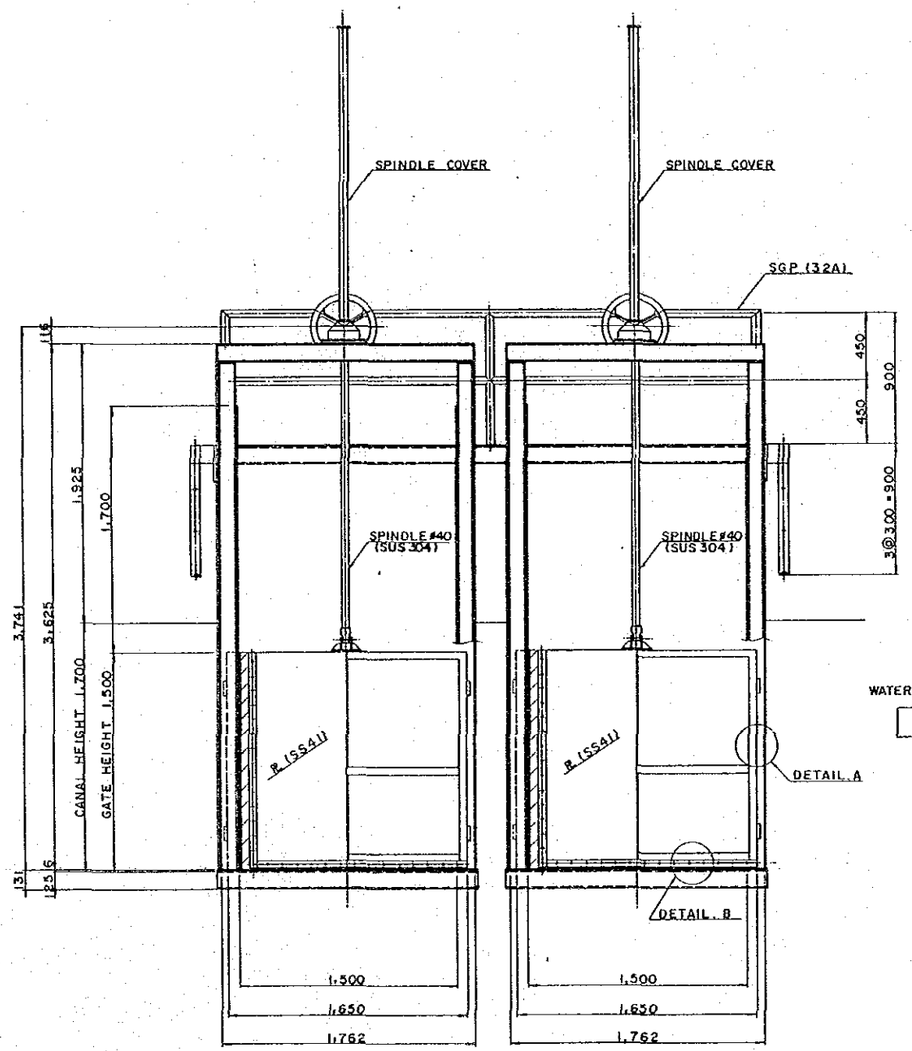
1. ABBREVIATION AND SYMBOL
   ℄ : CENTER LINE
   EL : ELEVATION
2. STATION NO. ARE SHOWN IN DRAWING NO. 12

JAPAN INTERNATIONAL COOPERATION AGENCY

THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND

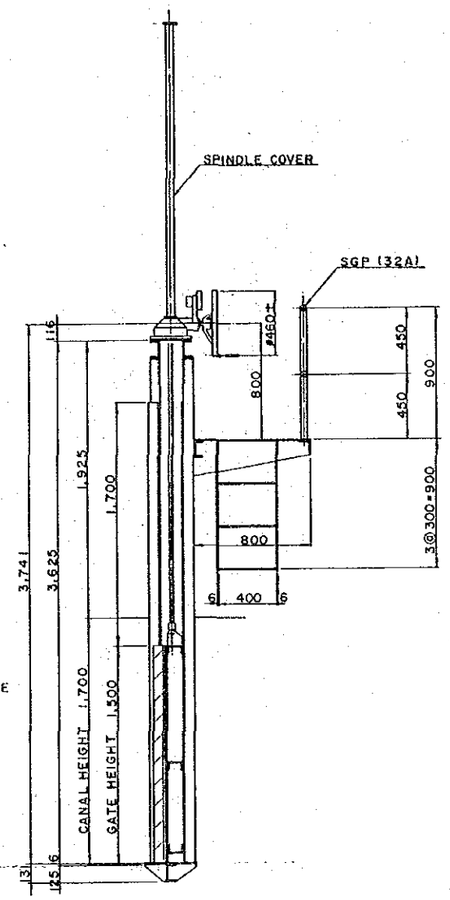
EARTHWORK CROSS SECTION (2)

PREPARED BY	DRAWING NO.
CHECKED NO.	17



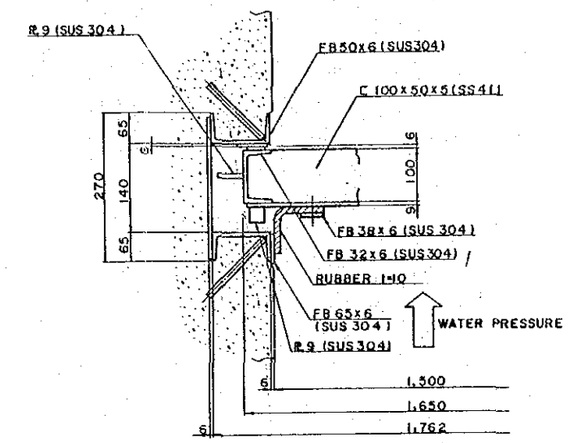
FRONT VIEW

SCALE 1:20



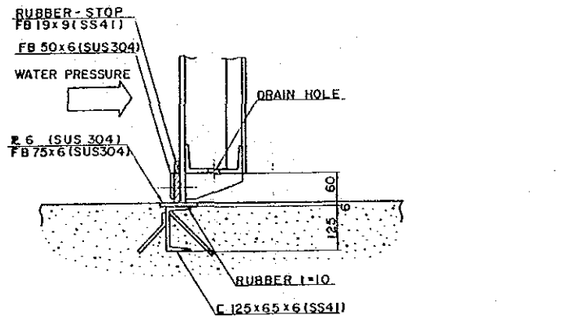
SECTIONAL VIEW

SCALE 1:20



DETAIL. A

SCALE 1:5



DETAIL. B

SCALE 1:5

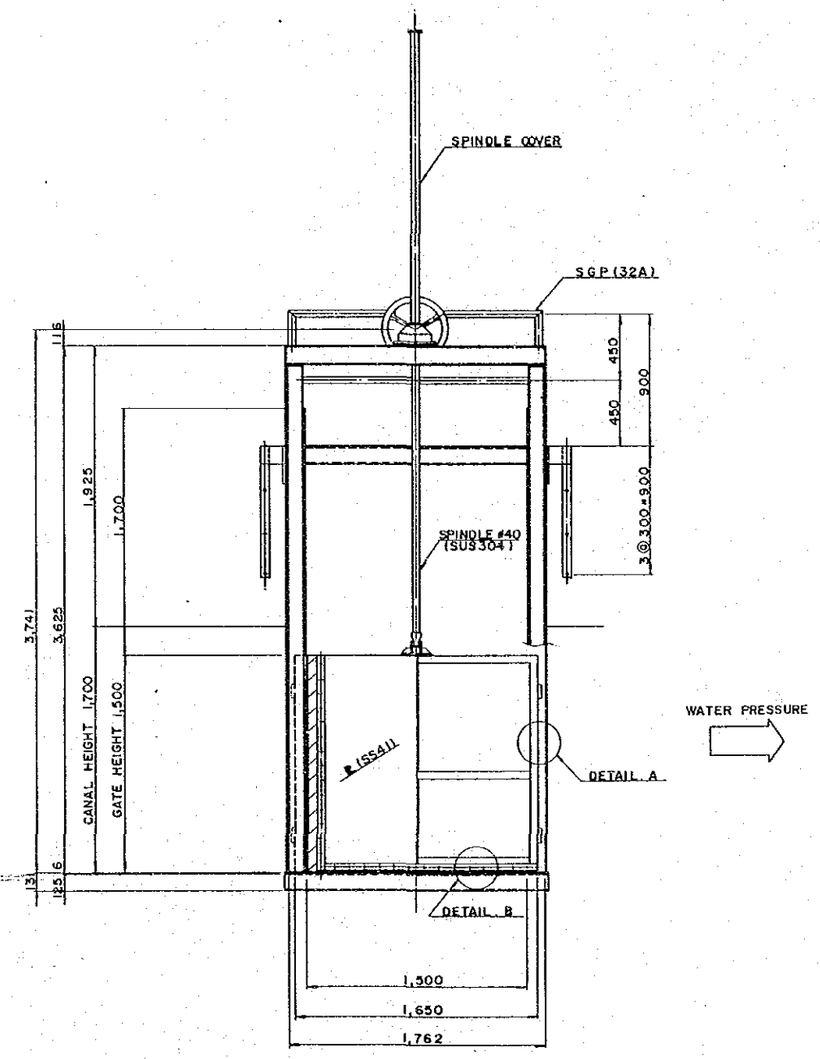
NOTE.

1 PAINTING
EPOXY RESIN

2. GATE TYPE
SLUICE GATE (3 SECTION WATERTIGHT. HAND-OPERATED. BEVEL GEAR)

3. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE INDICATED.

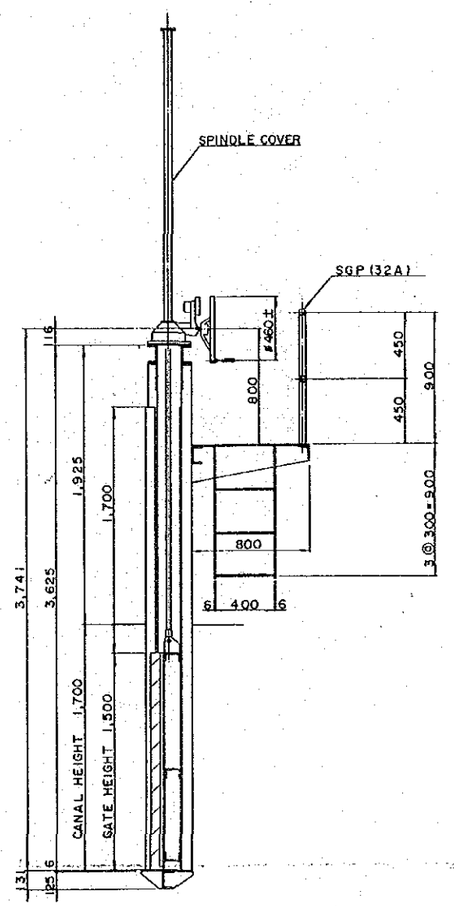
JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
DETAIL OF SLUICE GATE (1)	
PREPARED BY	DRAWING NO. 18
CHECKED NO.	



FRONT VIEW

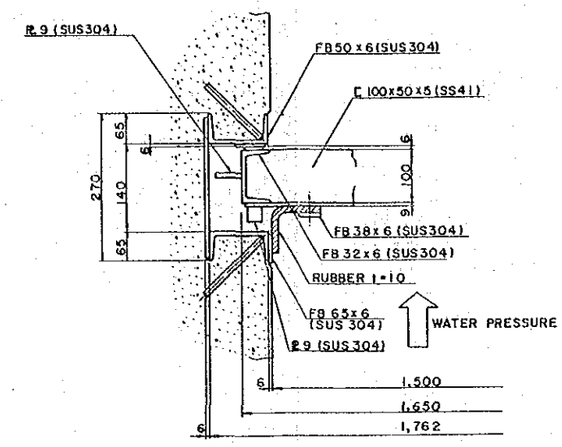
SCALE 1:20

WATER PRESSURE



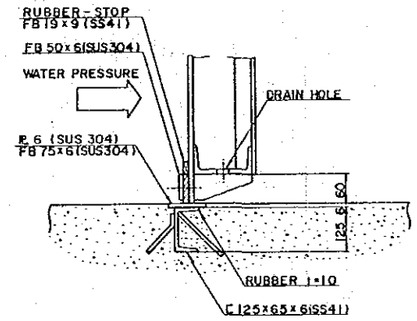
SECTIONAL VIEW

SCALE 1:20



DETAIL A

SCALE 1:5



DETAIL B

SCALE 1:5

NOTE.

1. PAINTING
   EPOXY RESIN
2. GATE TYPE
   SLUICE GATE (3 SECTION WATERTIGHT. HAND-OPERATED BEVEL GEAR)
3. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE INDICATED.

JAPAN INTERNATIONAL COOPERATION AGENCY	
THE DETAIL DESIGN SURVEY FOR AGRICULTURE COOPERATIVE PROMOTION PROJECT IN THAILAND	
DETAIL OF SLUICE GATE (2)	
PREPARED BY	DRAWING NO. 19
CHECKED NO,