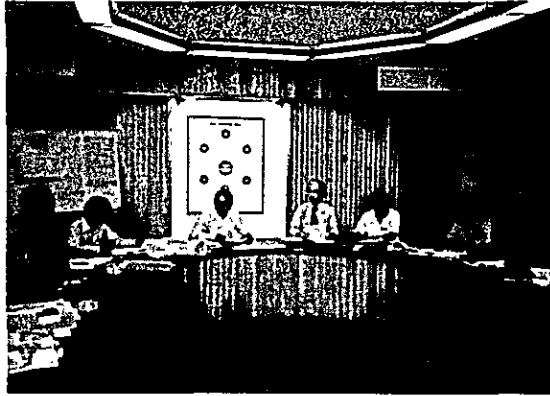


## Ⅵ マレーシア水管理訓練計画参考資料

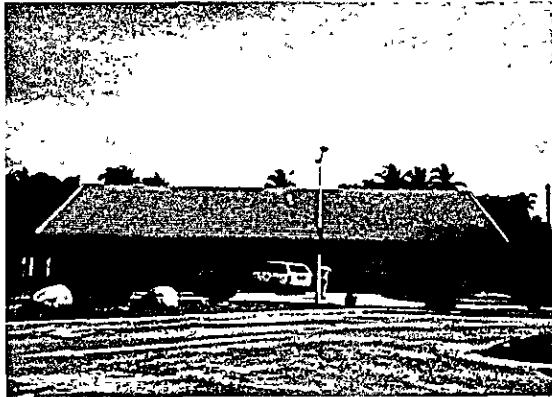


## VI マレーシア水管理訓練計画参考資料

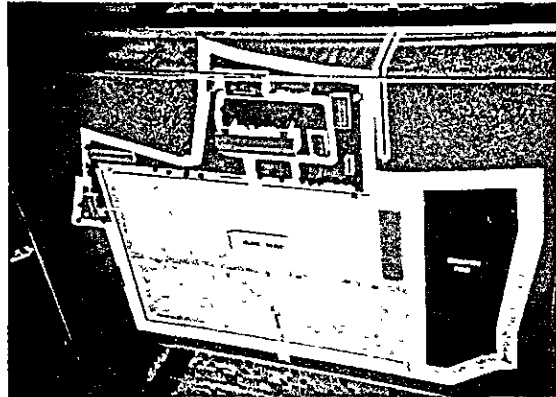
### 1 プロジェクト写真



合同会議  
(マ側プロジェクトスタッフ↔調査団員  
全専門家、State DID会議室にて、10/27)



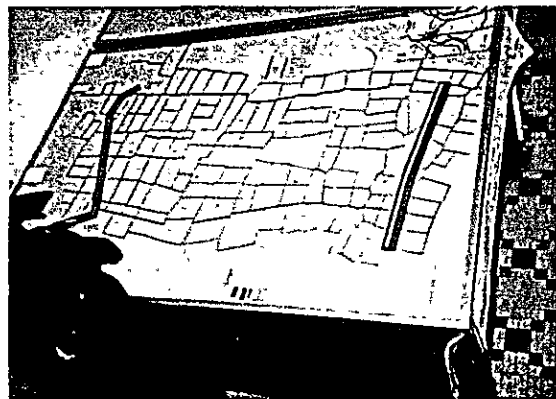
プロジェクト事務所  
(StateDID敷地内)



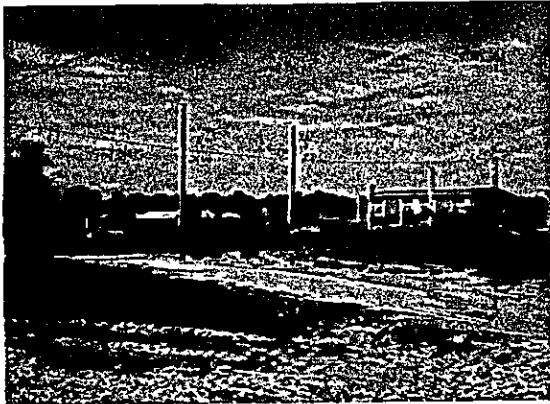
トレーニングセンター・デモンスト  
レーションファーム模型  
(State DID内)



プロジェクト事務所前にて  
(右から、和田団員、西村団員、佐藤団長、  
大橋団員、松田団員)



パイロットファーム№1地区模型  
(State DID内)



トレーニングセンター建設工事状況  
(左より、 Hostelブロック、 研修本館、  
ワークショップ)



デモンストレーションファーム



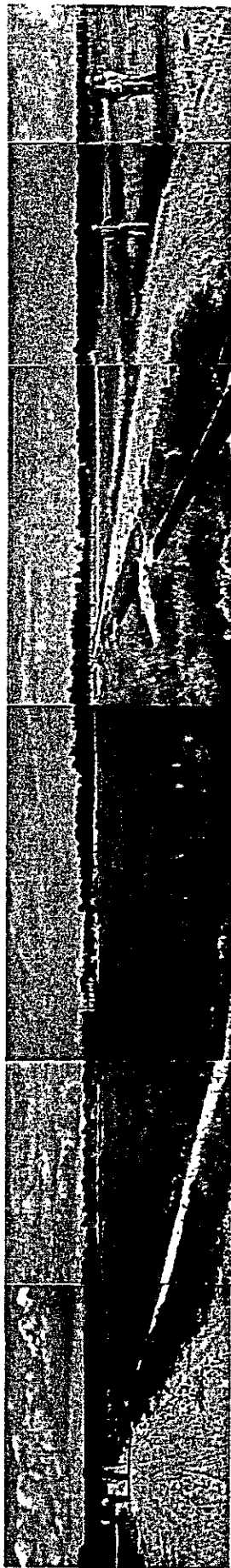
農機具庫  
(T/C内)



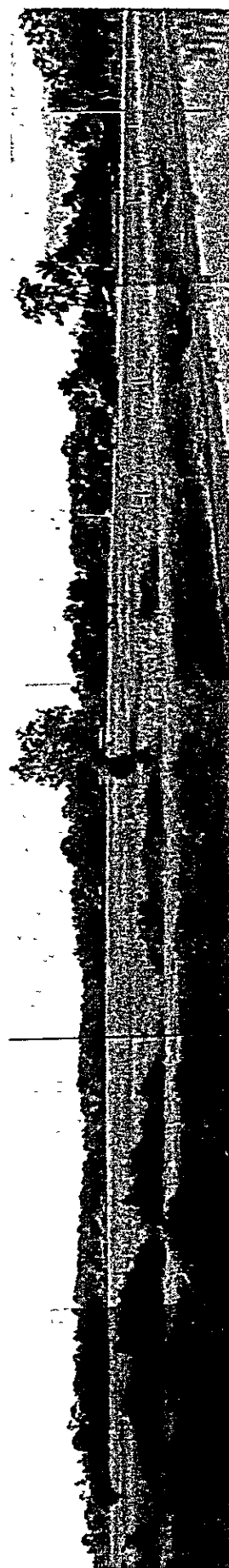
ファームポンド



肥料類倉庫  
(T/C内)

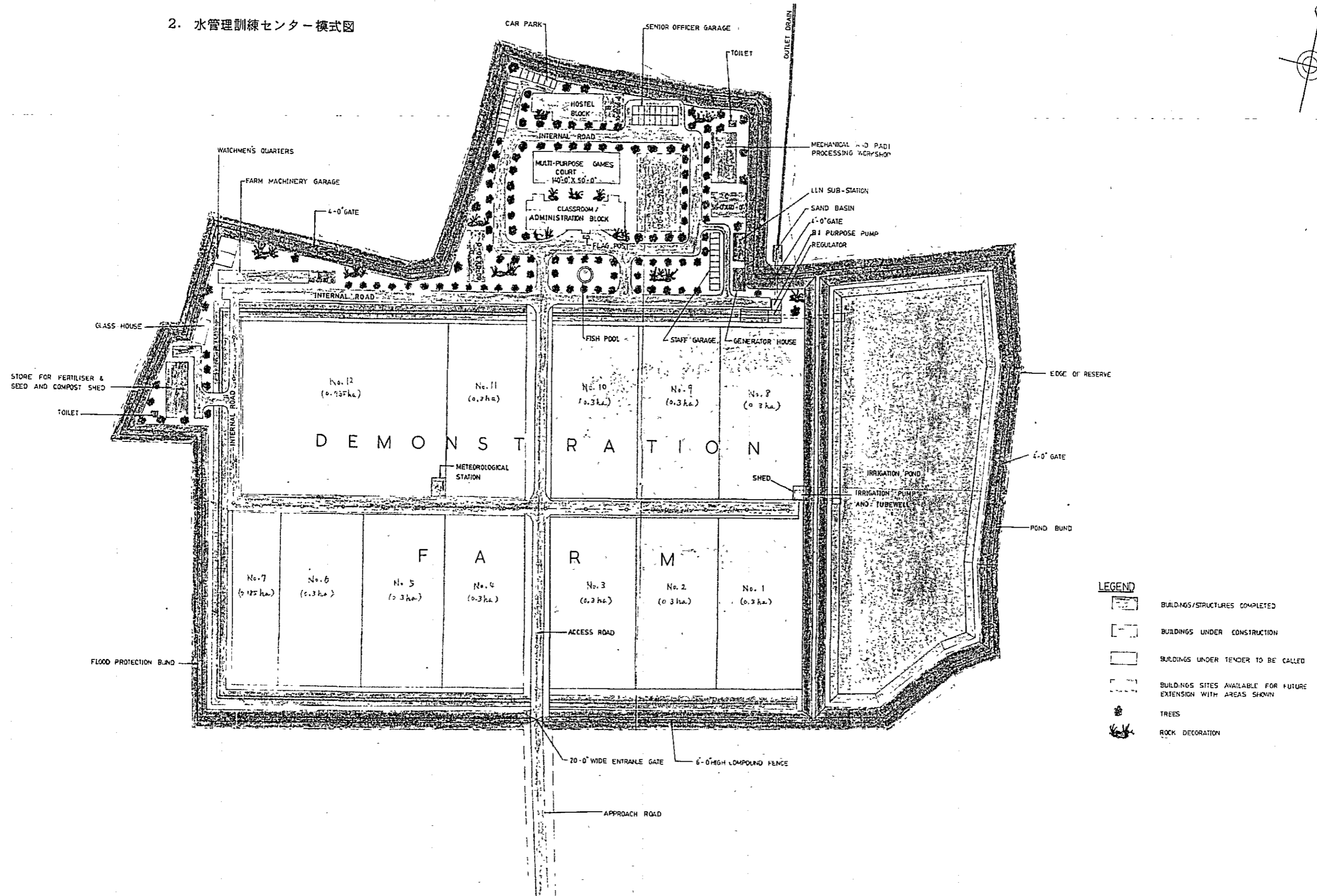


デモンストレーションファーム全景



パイロットファーム Ⅱ 地区全景

2. 水管理訓練センター模式図



- LEGEND**
- BUILDINGS/STRUCTURES COMPLETED
  - BUILDINGS UNDER CONSTRUCTION
  - BUILDINGS UNDER TENDER TO BE CALLED
  - BUILDINGS SITES AVAILABLE FOR FUTURE EXTENSION WITH AREAS SHOWN
  - TREES
  - ROCK DECORATION



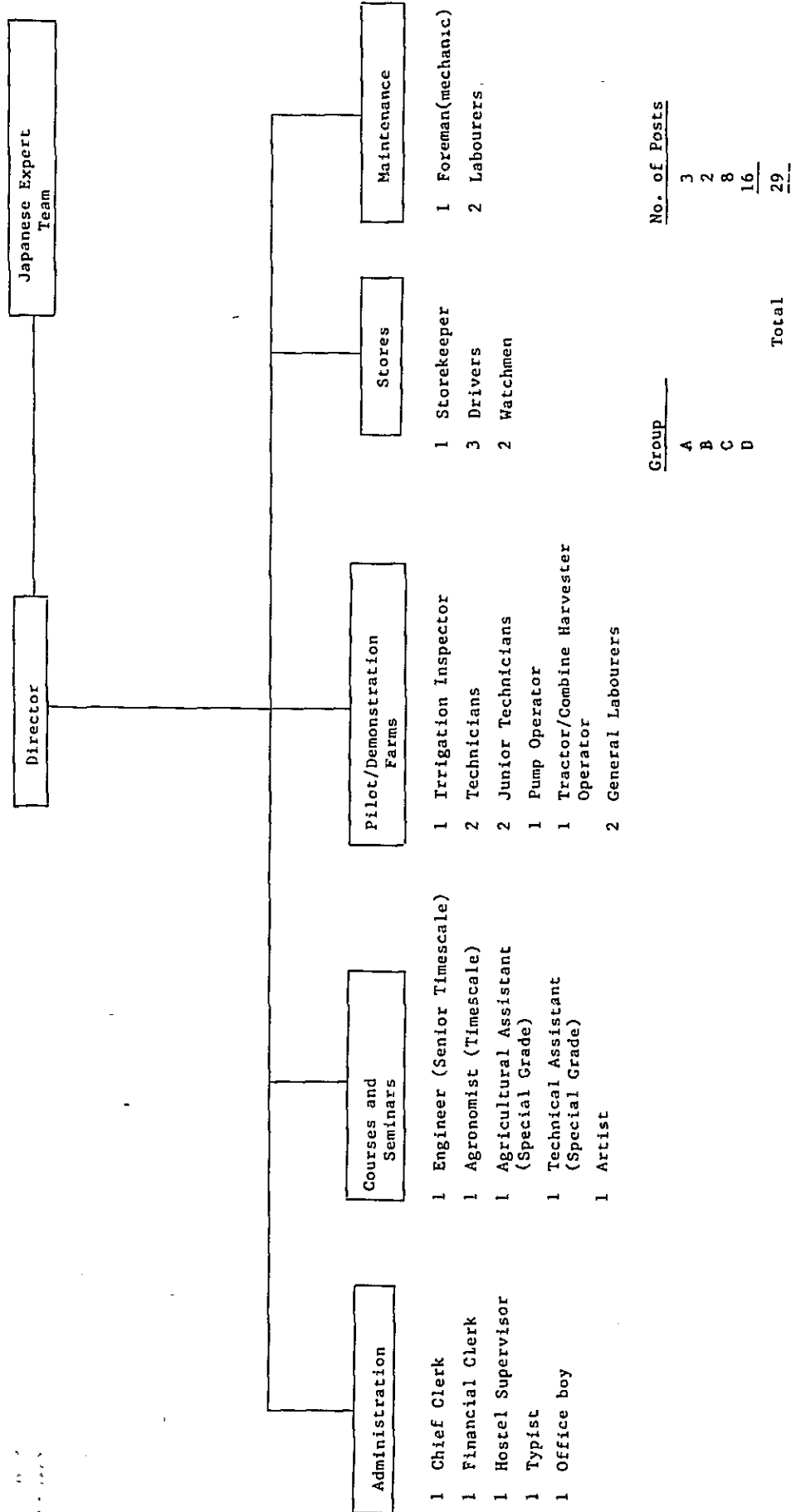




4. センター職員配属計画(1981年度)

National Water Management Training Centre

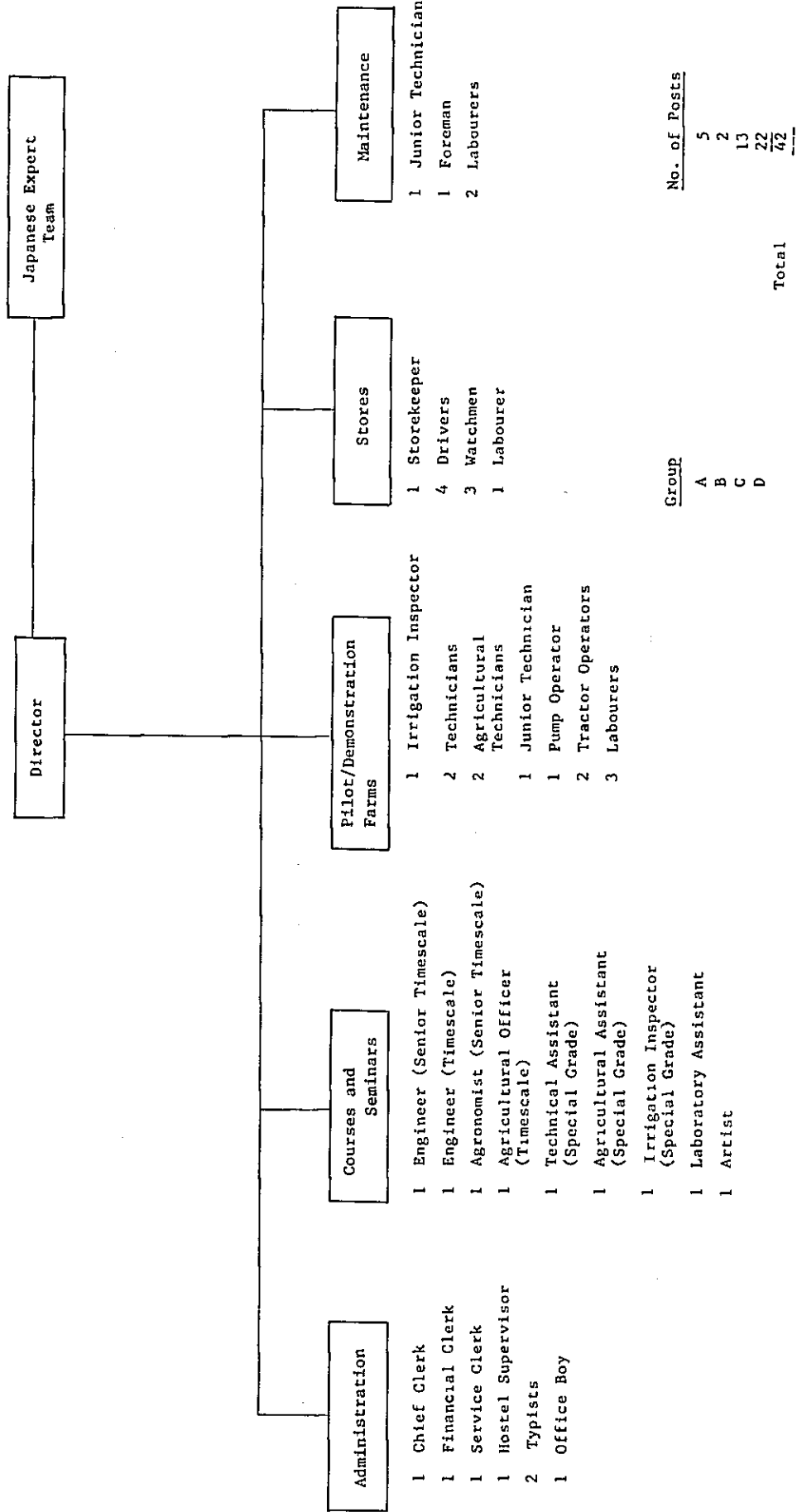
Proposed Organisation Chart 1981



5. センター職員配属計画(1983年度)

National Water Management Training Centre

Proposed Organisation Chart 1983





7. 事業実施計画 (1980~1981)

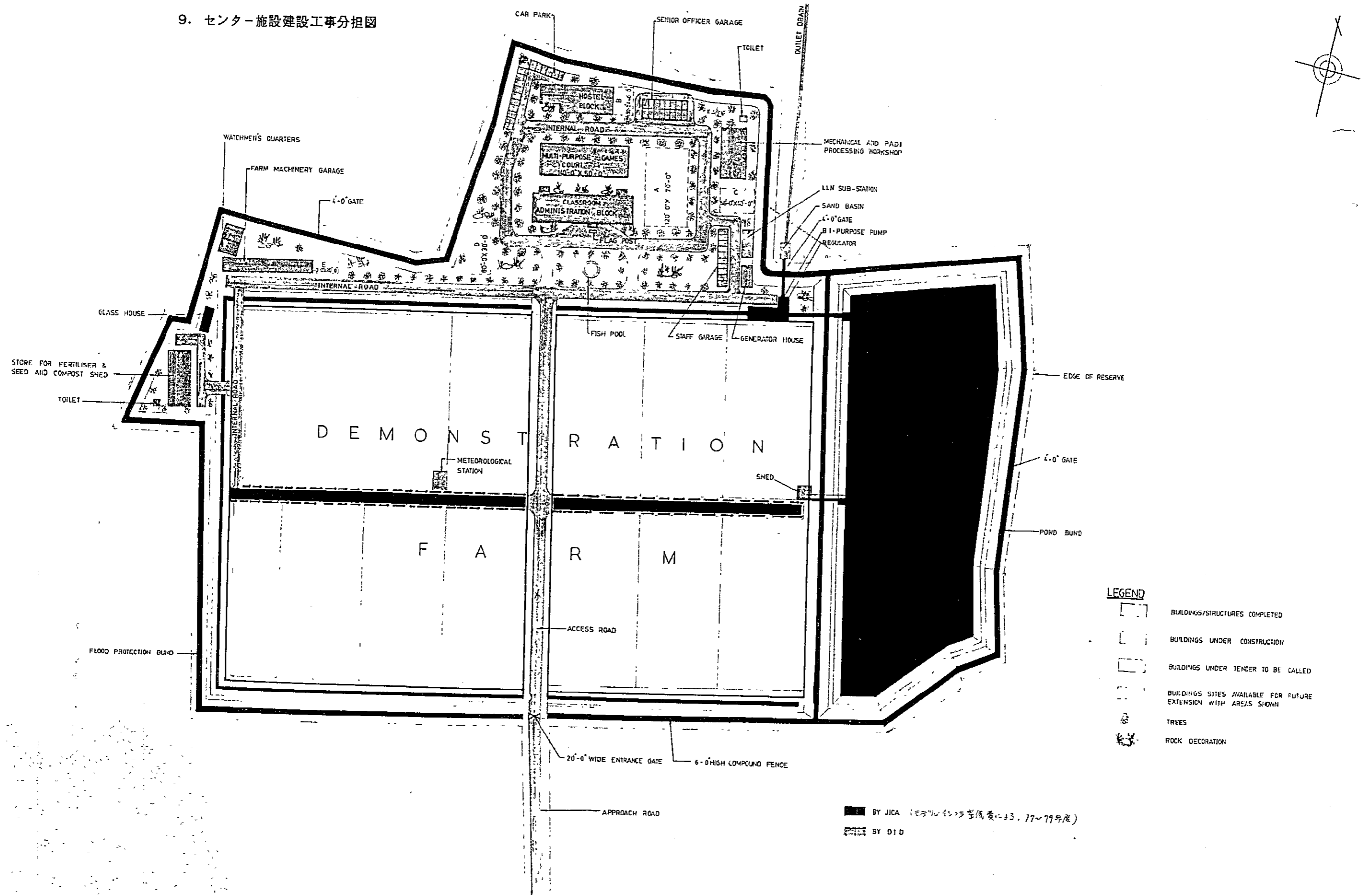
Working Schedule, National Water Management Training Center, Malaysia

Activities	Months															
	80	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
1. Japanese experts																
1) New Team leader																
2) Underground drainage																
3) Irrigation pump repair																
2. Temporary ware house																
3. Formulation of Training Curriculum																
1st step																
2nd step 3), 4)																
5)																
3rd step 6), 1)																
4th step 7)																
8)																
Final step 10)																
4. Implementation of training course																
Normal course																
Crash course																
Special course																
5. D/F/F																
1) Rice cultivation																
Main season																
Off season																
2) Levelling work																
3) Underground drainage planning																
drainage construction work																
6. P/F/F																
No. 1 Construction work																
No. 2 Designing																

8 センター施設建設工事進捗状況表

施設項目		工事費	進 度	備 考
本 館	Administration / Classroom	M\$ 757,594	10%	地質調査中
寄 宿 舎	Hostel Block	574,308	30	建 築 中
農器具用倉庫	Farm Machinery Garage	48,795	100	(完)
温 室	Mechanical / Padi Processing Work Shop	84,336	100	(完)
肥料用倉庫	Fertiliser Store			(完)
地区外排水路	Outlet Drain	263,999	95	(完)
沈 砂 池	Sand Basin			(完)
横断暗渠	4. Road Culverts			(完)
堤防筋芝工	Turfing			(完)
階 段 工	Steps			(完)
道路舗装	Roads Surfacing			(完)
配 電 室	Power Sub-Station	202,168	50	現在建設中
発 電 機 室	Generator House			"
洗 面 所	Toilet			(完)
センター外周フェンス	Compound Fencing			(完)
上屋部道路の盛土	Earth filling	178,535	100	
水田水位観測標	Stick-gauges	71,130	30	メジャーは日本から送付済
用水コントロールバルブ	Control Valves			(完)
ゲ - ト	Slide-gates			(完)
鳥鼠害防止工	Bird-Net posts			Net は日本から送付済
均 平 客 工	Land-levelling			
排 水 管 橋	Outlet pipes bridges			
※ 機材保管庫		(75万円)	100	日本政府側で建設済

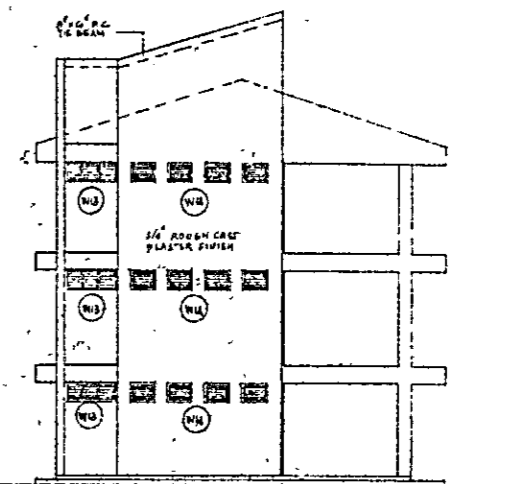
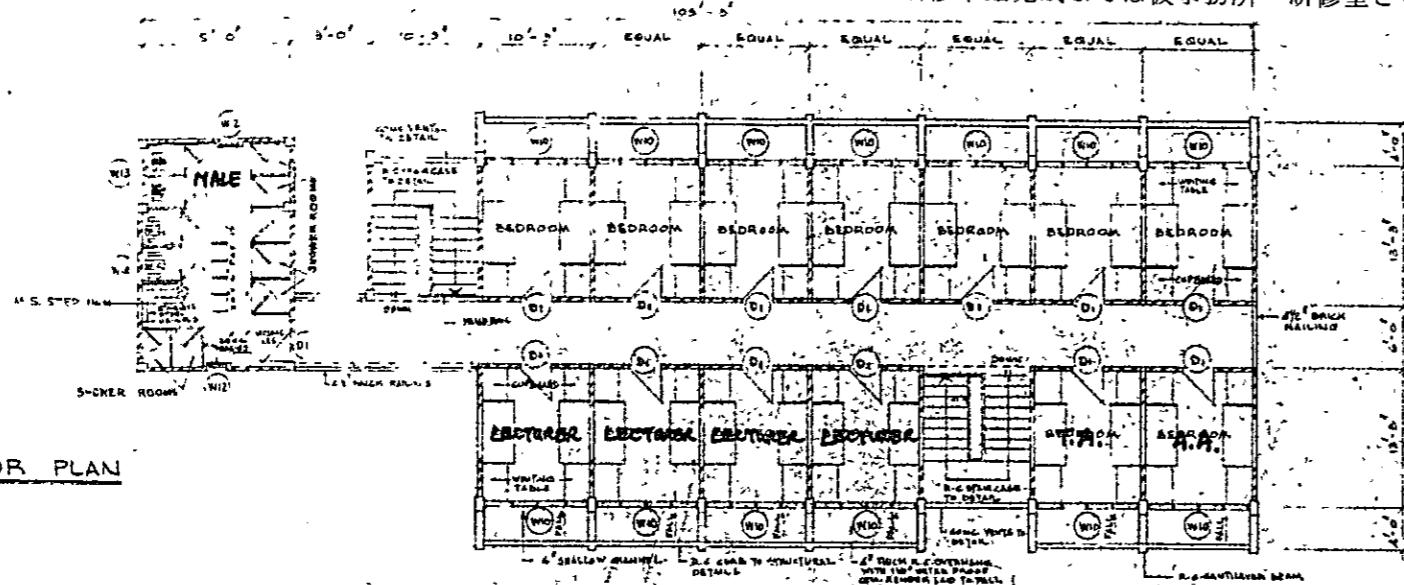
9. センター施設建設工事分担図



10. ホステルブロック建築工事計画図

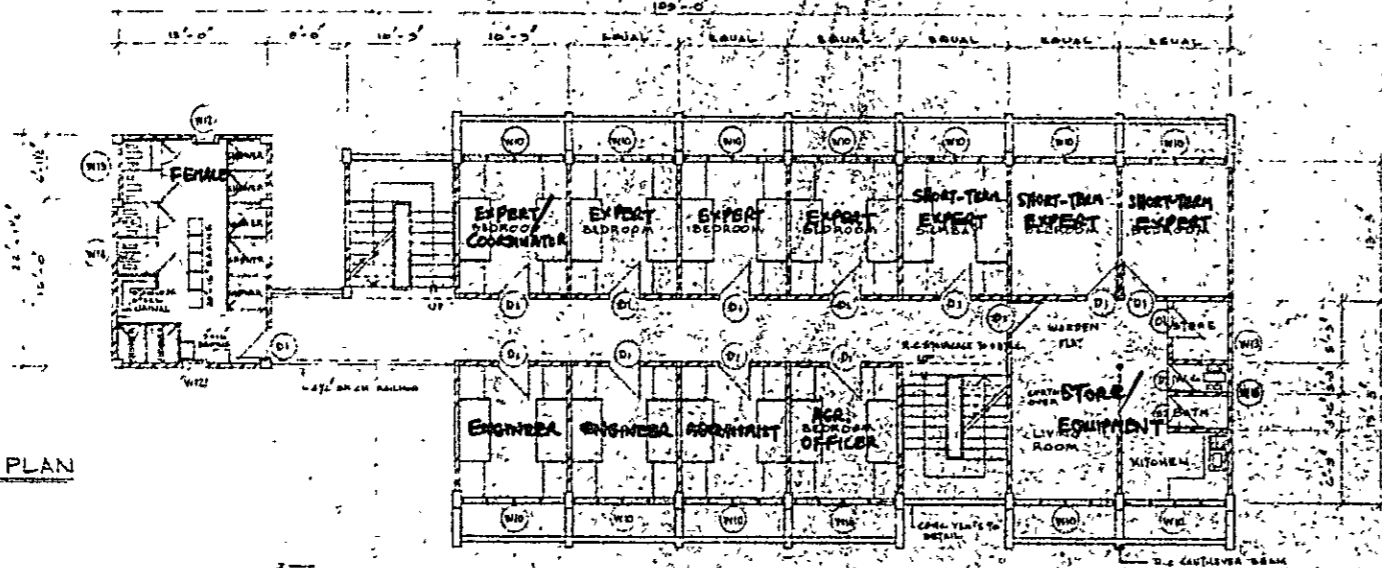
( 研修本館完成までは仮事務所・研修室として利用予定 )

2<sup>ND</sup> FLOOR PLAN

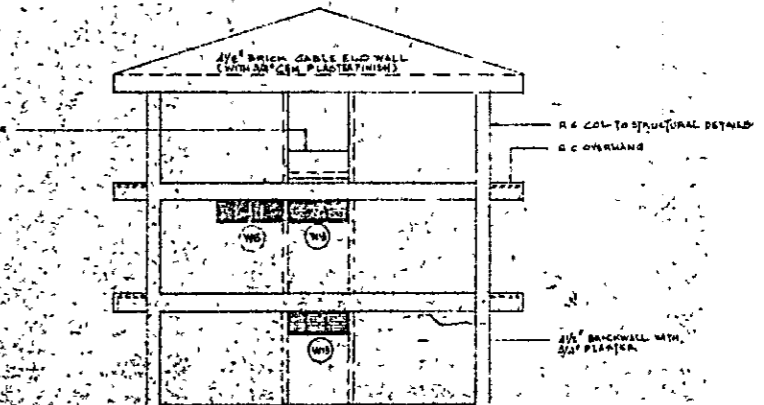


LEFT ELEVATION

1<sup>ST</sup> FLOOR PLAN

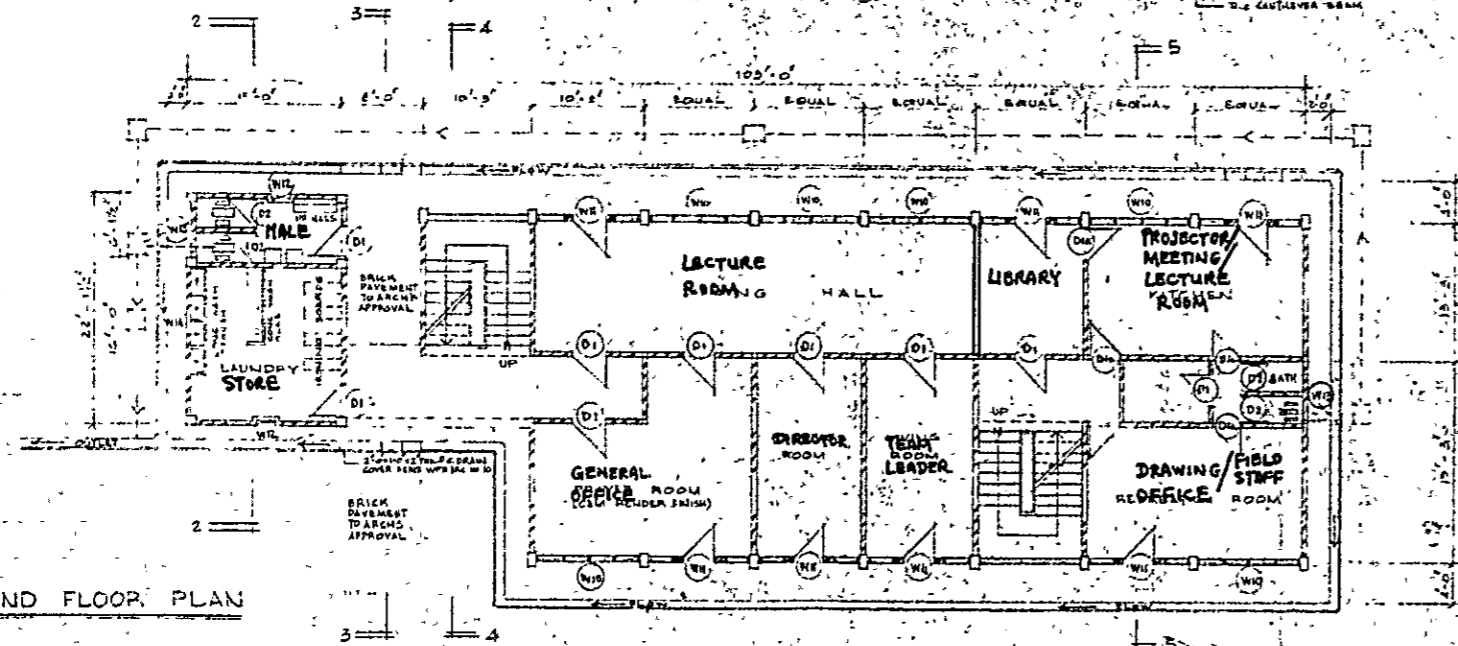


4" BRICK ANCHORS ON 2" x 4" x 8" BEAM & FORWARD WITH ANCHOR PLASTER



RIGHT ELEVATION

GROUND FLOOR PLAN







11. 研修実施計画(1981年度)

Training Programe 1981

30 Dec. 1980

Course	Trainee	Days	1	2	3	4	5	6	7	8	9	10	11	12
1. Induction C	Eng.	5	—											
2. Induction C	TA	5	—											
3. Basic C	Junior Tec.	5			—	—								
4. Basic C	Draftman	21					—							
5. Basic C	Tec. II	49		—	—							—		
6. Medium C	Draftman	21						—						
7. Medium C	Tec.	21									—			
8. Departmental Practical C and Contract	Eng.	3										—		
9. Departmental Practical C and Contract	TA.	3											—	
10. Operation and Maintenance C	Eng.	3											—	
11. Hydrological C	Tec.	14						—						
12. Management C	Top Managerial Level	3											—	
13. Management C	District Managerial Level	3											—	
14. Seminar on W.M	Resource Personnel	4			10	12								
15. Seminar WHO UNDP on Mathematical Model on Flood Forecasting		14			—									
16. Seminar On Ground Water	Eng.	7												
17. Water Management Course I	II.AT. (20人)	14					4	17				10	23	
18. Water Management Course II	TA, AA (20人)	14						8	21				14	27
19. Water Management Course III	Eng. AO.(20人)	14											10	23
20. Farmers Training	Farmers (30人x6 =18人)	1			18	31	11		28	5	12			

Puasa Month (Moslim People)

TA. T. JT. II. 10. Draftman 部局の試験

17 DIDのEng. 3~5年  
ADのOfficer

- 1 Ir. System 2 Fundamental Paddy Farming 3 Theory of Dr & Ir
- 4 Reportary Lesson 5 Farm Machineries Applied to Paddy Farming
- 6 Demonstration of Farm Machineries 7 Ir. System of KADA Proj.
- 8 Maintenance & Operation System

18 DIDのTec. Ast. 5年  
ADのAgr. Ast.

- 1 Conception of WM, Ir & Dr System at Farm Level 2 Demonstration of Paddy Farm
- 3 Water Dev. 4 Fundamental Rice Cultivation
- 5 Operation & Maintenance System 6 Demonstration of Farm Machineries
- 7 Demonstration of Ir. & Dr.

19 DIDのII 及 Tec.  
ADのAgr Tec. 2~3年

- 1 Conception of WM 2 On Farm Facilities 3 Mode of Rice Cultivation
- 4 Farm Machineries 5 Demonstration of Ir. System

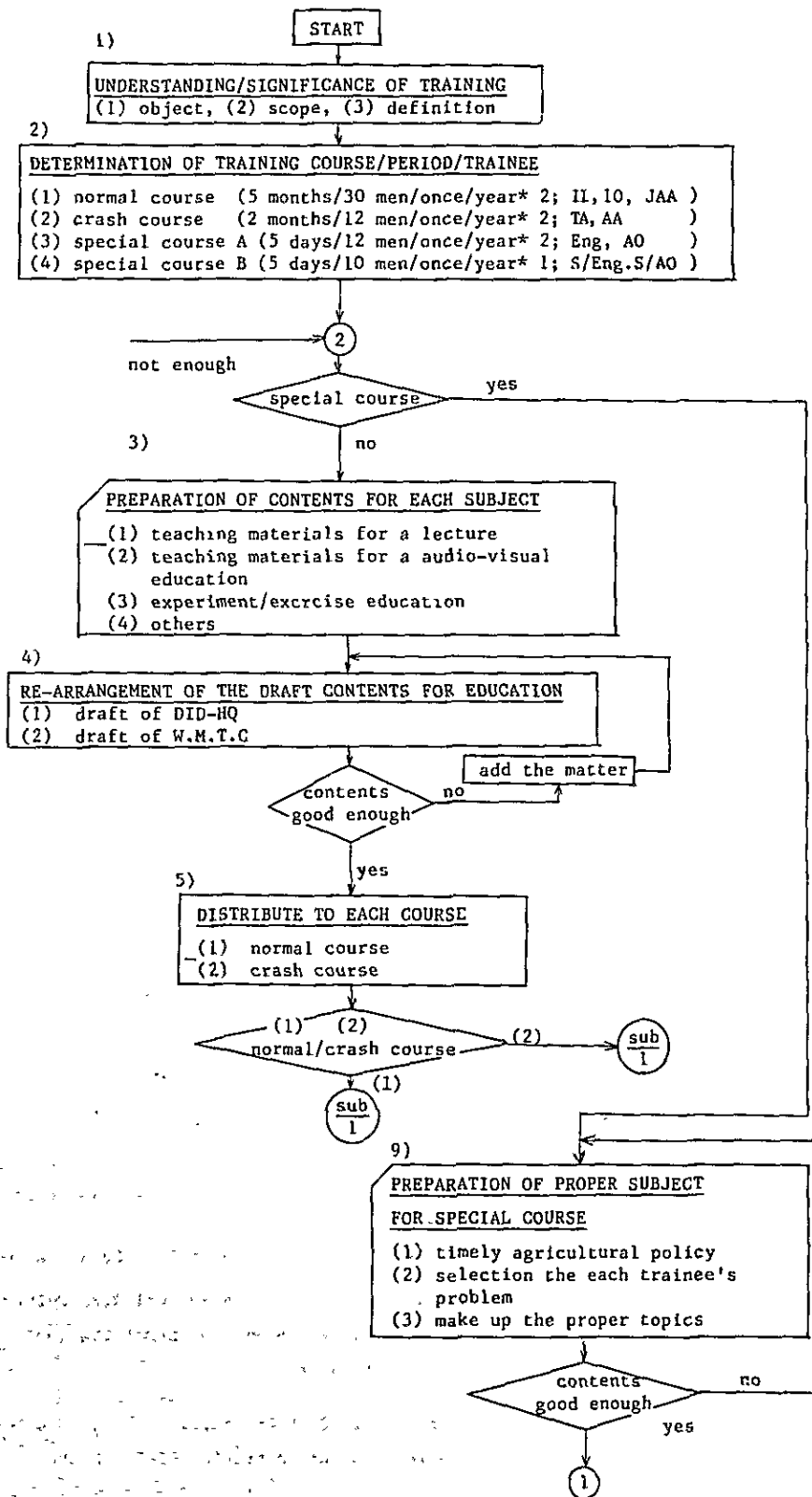
## 12. 研修カリキュラム作成計画フローチャート

### HOW TO CARRY OUT THE W.M.T. CURRICULUM

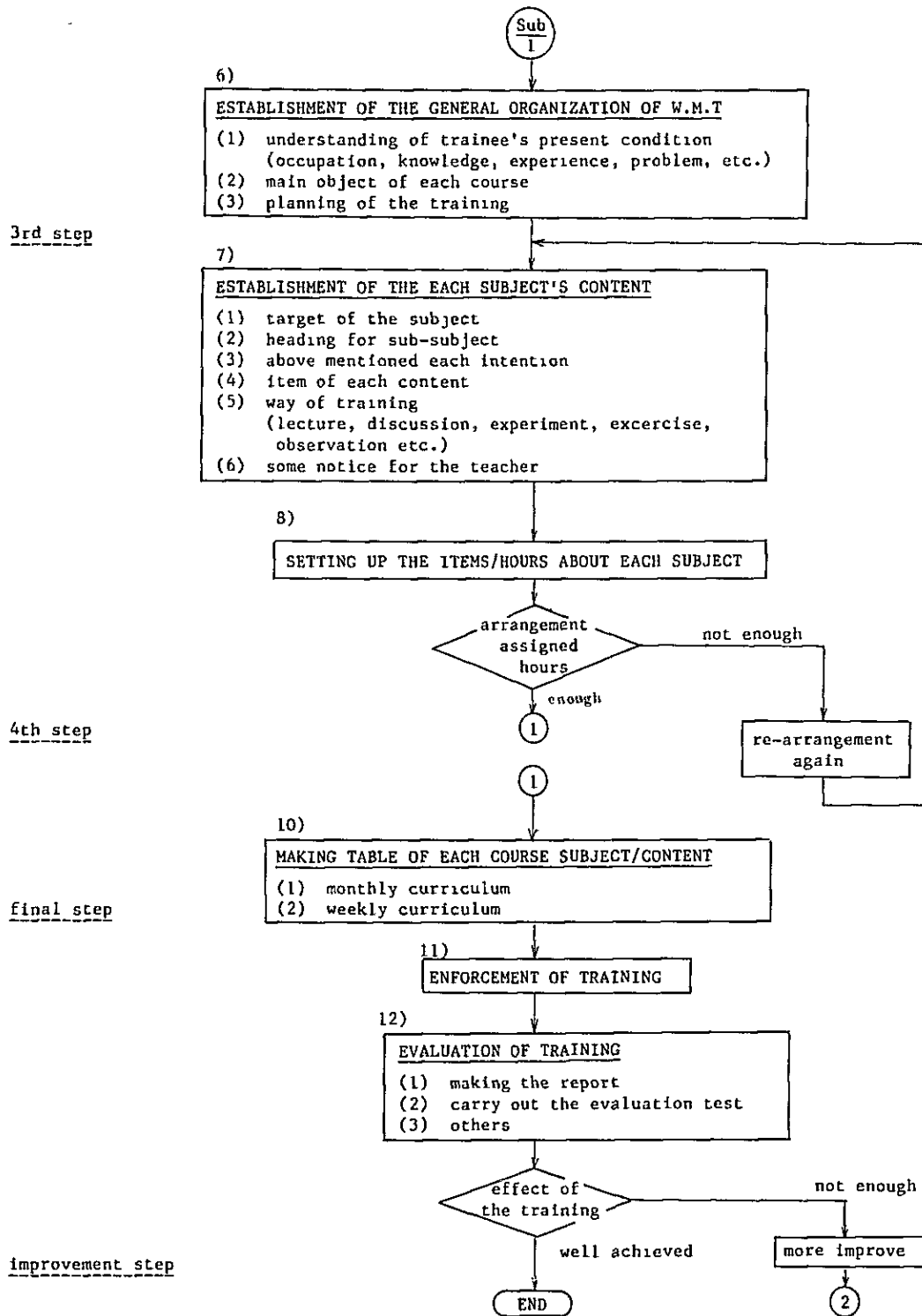
Remark

#### GENERAL FLOW CHART

1st step



2nd step





13. 研修カリキュラム ( D I D HQ案 )

DERAF KURIKULUM KHUSUS LATIHAN

UNTUK

PENGURUSAN AIR

Disusun oleh  
Cawangan Latihan  
Ibu Pejabat  
Jabatan Parit dan Taliair  
Malaysia.

## Course Contents

1. Irrigation
2. Irrigation practice
  - Soil
  - Water
  - Plant-water relationship
3. Water management
4. Rice Cultivation
5. Water management for rice
  - Cultivation in an irrigation Area
6. Demonstration plot
7. Upland irrigation
8. Land Consolidation
9. Irrigation extension

## IRRIGATION

1. What is Irrigation
2. History of IRRIGATION AND DRAINAGE
  - (a) WORLD
  - (b) Asean Countries
  - (c) Malaysia
3. IRRIGATION in Agriculture
4. IRRIGATION DEVELOPMENT IN THE WORLD
5. IRRIGATION DEVELOPMENT in Malaysia
  - (a) Existing facilities
  - (b) Improvement to existing facilities
  - (c) NEW AREAS
  - (d) Introduction of Double Cropping
  - (e) Introduction to on-farm (Terminal facilities)
  - (f) Land Classification - Water rate
6. Types of IRRIGATION SCHEMES in Malaysia
  - (a) Gravity schemes
  - (b) Inundation schemes
  - (c) Controlled drainage schemes
  - (d) Pumping schemes
  - (e) Impounding schemes
7. Types of Water Distribution system in Malaysia (Layout)
  - (a) Conveyance networks - Concrete lined canals
  - (b) Distribution networks - Pipeline conveyance
  - (c) On-farm (networks)
8. Types of structures (Hydraulic) in use for Irrigation in Malaysia
  - (a) Headworks (weirs)
  - (b) Bifurcation controls (Regulators)
  - (c) Intermediate controls (Regulators)
  - (d) Drop structures
  - (e) Intake controls

- (f) Offtakes
  - (g) Flumes or conduits.
  - (h) Chutes
  - (i) Irrigation end controls
  - (j) Road culverts
  - (k) Bridges
9. Measuring type of structures in use
- (a) Parshall flumes
  - (b) V notch weirs
  - (c) Rectangular weir
  - (d) Cipolletti weir
  - (e) Constant Head orifices
10. On-farm (structures)
- (a) Turn out gates or Farm head gates
  - (b) Junction boxes
  - (c) Division boxes
  - (d) Checks - Permanent and portable
  - (e) Check cum crossings
  - (f) Gated distribution pipes
11. Water application Methods in Malaysia
- (a) Continuous
  - (b) Rotational
  - (c) Intermittent
  - (d) Re-cycling of water
12. Other Methods of water application
- (a) Furrow
  - (b) Border
  - (c) Surface
  - (d) Sub-irrigation
  - (e) Corrugation
  - (f) Sprinkler
  - (g) Drip or trickle
13. Drainage in relation to irrigation
- (a) Surface drainage
  - (b) Intermittant drainage



- (c) Water logging improvements
  - (d) Drainage (intervals) during the growth stage of padi
14. Drainage system in irrigation schemes
- (a) Farm drains
  - (b) Sub laterals
  - (c) Laterals
  - (d) Main drains
  - (e) Catch drains
15. Drainage structures in use, in Irrigation schemes
- (a) Drainage controls
  - (b) Control drops
  - (c) Under-drainage culverts
  - (d) Chutes
  - (e) Drainage end controls
  - (f) Drainage gates
  - (g) Tidal control gates
16. Communication Network in Irrigation schemes
- (a) Bridle path
  - (b) Farm roads
  - (c) Secondary roads
  - (d) Positioning of electric cables
  - (e) Positioning of Telephone cables
  - (f) Positioning Water mains
17. IRRIGATION PUMPS
- (a) Indigeneous water lifts
  - (b) Positive displacement pumps
  - (c) Centrifugal pumps
  - (d) Vertical turbine pumps
  - (e) Submersible pumps
  - (f) Propellor and mixed flow pumps
  - (g) Jet pumps
  - (h) Air lift pumps
  - (i) Selection of pumps

- (j) Power requirements
  - (k) Efficiency and economics of Irrigation pumps
18. Irrigation losses
- (a) Storage loss
  - (b) Conveyance loss
  - (c) Distribution loss
  - (d) Field loss
19. Irrigation Efficiency
- (a) Water storage efficiency
  - (b) Water conveyance efficiency
  - (c) Water Distribution efficiency
  - (d) Water application efficiency
  - (e) Water use efficiency
    - (a) Crop water efficiency
    - (b) Field water use efficiency
  - (f) Project efficiency
  - (g) Economic (Irrigation) efficiency
20. Effective Rainfall
21. Net irrigation requirements
22. Gross irrigation requirements
23. Field Water-balance

## Irrigation Practice

### Soil

#### 1.1 Soil texture - classification

- (a) Soil
- (b) Sandy loam
- (c) Loam
- (d) Silt loam
- (e) Clay loam
- (f) Clay

#### 1.2 Soil structure

- (i) Single grain structure or massive structure
- (ii) Compound structure
  - (a) Cube like structure
  - (b) Column structure
  - (c) Platy structure
  - (d) Angular structure
  - (e) Sub-angular structure
  - (f) Prismatic structure

#### 1.3 Volume and mass relationship soil constituents

- (a) Soil density
- (b) Dry bulk density - apparent specific gravity
- (c) Porosity
- (d) Void ratio

#### 1.4 Storage of soil moisture

- (a) Saturation capacity
- (b) Field capacity - soil moisture tension
- (c) Moisture equivalent
- (d) Permanent wilting percentage
- (e) Available water

- 1.5 Measurement of soil moisture
  - (a) Graviometric method
  - (b) Tensimeter
  - (c) Electric resistance block
  - (d) Neutron method
  - (e) Piezometer to measure pressure heads
  - (f) Constant head permeameter
  - (g) Variable head permeameter ) soil permeameter
- 1.6 Field capacity determination
- 1.7 Permanent wilting percentage determination
- 1.8 Judging soil moisture in the field
  - (a) Judgement
  - (b) Feel
  - (c) Experience
  - (d) Soil profile
  - (e) Hand soil sampling tubes and probes
  - (f) Measuring intake rate
  - (g) Movement of soil water during irrigation
- 1.9 Kinds of soil water
  - (i) Hygroscopic water
  - (ii) Capillary water
  - (iii) Gravitational
- 1.1 Soil moisture tension
- 1.2 Soil moisture stress
- 1.13 Influence of soil profile on the wilting of the soil

### Water

- 1. Importance of water
- 2. Hydrological cycle
- 3. Present Water resources, types and limitations of exploitation
- 4. Environmental problems due to Water-resources development and use



11. Estimating Evapo-transpiration from climatological data
  - (i) Blaney - criddle method
  - (ii) Thornth waite method
  - (iv) Penman method
  - (v) Christiansen method
  
12. Crop response to water at defferent stages of growth
  - (i) Germination
  - (ii) Tillering
  - (iii) Jointing
  - (iv) Shooting
  - (v) Booting
  - (vi) Heading (earing)
  - (vii) Flowering
  - (viii) Grain formation -
    - (a) Milky stage
    - (b) Dough stage
    - (c) Waxy stage
    - (d) Full ripe
    - (e) Dead ripe

## Water Management

1. The elements of water management
2. Definitions of water management
3. Need for a new approach to water-management
  - (a) Water development for agriculture
  - (b) Changes in Engineering approach
  - (c) Changes in agricultural approach
4. Measures to implement better water-management
  - (a) The need for applied research
  - (b) Education
  - (c) Training
  - (d) Operation and management of Irrigation projects
  - (e) Regional co-operation
5. Water management and requirements for rice cultivation

## RICE CULTIVATION

### SECTION A - GENERAL INFORMATION

- I. World Rice Production and Consumption
  - 1) Volume of production
  - 2) Acreage under cultivation
  - 3) Yield of paddy
- II. Agriculture in Malaysia
  - 1) Major crops
  - 2) Agricultural Statistics
    - (a) Agricultural population
    - (b) Farm size

- (c) Agricultural income
- (d) Import data on rice
- 3) Research and extension

## SECTION B - GROWTH OF RICE PLANT

### I. Varieties and Their Characteristics

- 1) Japonica and Indica varieties
- 2) Photosensitivity
  - (a) Non-photosensitive variety
  - (b) Weak-photosensitive variety
  - (c) Photosensitive variety
- 3) Varietal response to fertilizer
- 4) Resistance to insects and diseases

### II. Growth Phases and Yield Components

- 1) Vegetative growth phases
  - a) Time of last bearing tiller
  - b) Maximum tiller number
  - c) Non-productive tiller
- 2) Reproductive growth phases
  - a) Panicle differentiation ( Panicle initiation)
  - b) Spikelet differentiation (Spikelet formation)
  - c) Reduction-division
  - d) Heading
  - e) Ripening
- 3) Yield components
  - a) Number of panicles per unit area
  - b) Number of spikelets per hill and per unit area
  - c) Percentage of ripened grains
  - d) Weight of 1,000 grains



## SECTION C - RICE CULTURAL PRACTICES

### I. Rice Culture In Malaysia

- 1) Wet paddy
  - a) Rain-fed paddy
  - b) Double cropping
- 2) Upland paddy

### II. Land Preparation

- 1) Pre-Saturation
- 2) Plowing and harrowing using:
  - a) Tractor
  - b) Power tiller
  - c) Water buffalo
- 3) Puddling
- 4) Repair of levees

### III. Production of Seedling

- 1) Breaking seed dormancy
  - a) Long and medium term local variety
  - b) Improved variety
- 2) Testing the viability of seed
  - a) Ragdoll method
  - b) Seedbox method
- 3) Seed selection by specific gravity
- 4) Chemical seed disinfection
- 5) Soaking and incubating seeds
- 6) Raising seedlings
  - a) Wetbed nursery
  - b) Seeding rate
  - c) Period of nursery
  - d) Fertilizer for nursery seedlings

#### IV. Preparation For Transplanting

- 1) Planting density and pattern
- 2) Number of seedlings per hill
- 3) Planting depth

#### V. Harvesting Of Grains

- 1) Harvesting
  - a) Optimum cutting time
  - b) Harvesting for seeds
  - c) Seed purification
  - d) Storage of seeds
- 2) Drying of rice grains
  - a) Methods of drying
  - b) Grain moisture content

#### VI. Planting Schedule

### SECTION D - PRACTICE OF FERTILIZER APPLICATION

#### I. Some Properties of Rice Field Soils

- 1) Soil for rice fields
  - a) Class and types of soils
  - b) Amelioration of rice field soils
- 2) Natural supply of nutrients in flooded rice fields
  - a) Fixation of atmospheric NITROGEN
  - b) Ammonia retention
  - c) Organic matter
  - d) Irrigation water

#### II. Characteristics of Major Fertilizers

- 1) Nitrogenous fertilizer
- 2) Phosphatic fertilizer

- 3) Potassic fertilizer
- 4) Compound fertilizer
- 5) Organic manure

### III. Fertilizer Application

- 1) Fertilizer application
- 2) Mixing fertilizer
- 3) Methods of application
  - a) Recommended rate
  - b) Time of application
    - i) Bassal dressing
    - ii) Top dressing

## SECTION E - RICE CROP PLANT PROTECTION

### I. Insect, Disease and Pest Control

- 1) Major insect pests of rice plant
  - a) Identification of insects
  - b) Types of insecticides
    - i) Granule
    - ii) Emulsifiable concentrate
    - iii) Wettable powder
  - c) Insecticide calculation
- 2) Major diseases of rice plant
  - a) Identification of diseases
  - b) Types of fungicides
    - i) Dust
    - ii) Emulsifiable concentrate
    - iii) Wettable powder
- 3) Other pests
  - a) Rodents
  - b) Birds
  - c) Rice storage insect pests

4) Pest control equipments

- a) Duster
- b) Granular applicator
- c) Knapsack sprayer
- d) Mist blower

II. Weed and Its Control

- 1) Types of weeds
- 2) Manual weed control
- 3) Chemical weed control
  - a) Types of herbicides
    - i) Contact
    - ii) Systemic
  - b) Herbicide calculation

SECTION F - MECHANIZATION AND FARM TRANSPORTATION

I. Machineries for Rice Cultivation

- 1) Tractor and implements
- 2) Transplanter
- 3) Combine harvester
- 4) Paddy dryer

II. Farm Transportation

- 1) Transportation for field operation
- 2) Infrastructures for field transportation

III. Labour efficiency

- 1) Labour requirement
- 2) Manual labour in comparison to machines
  - a) Cost-benefit ratio
  - b) Efficiency

Water - management for rice  
cultivation in an irrigation area

- (a) Soil - soil moisture studies
- (b) Rainfall
- (c) Consumptive use observations
- (d) Available water
  - (i) Wet season
  - (ii) Dry season
- (e) Cropping pattern
- (f) Ground water survey
- (g) Layout of fields (on-farm) for irrigation and drainage
  - (i) Compartments - parcelling units
  - (ii) Farm lots - (based on ownership)
  - (iii) Location of farm irrigation ditches (density)
  - (iv) Location of Drainage ditches (density)
  - (v) Measuring device structures for irrigation and drainage
  - (vi) Farm roads (density)
- (h) Land grading criteria
  - (i) Characteristics of soil profile
  - (ii) Prevailing land slope
  - (iii) Rainfall characteristics
  - (iv) Cropping pattern
  - (v) Method of irrigation
  - (vi) Preference of farmers
- (i) Design criteria for tertiary canals and drains capacities
  - (i) Water requirements for pre-saturation
  - (ii) Evaporation from the saturated soil
  - (iii) Evaporation from standing water
  - (iv) Infiltration and deep-percolation
  - (v) Evapo-transpiration requirements
  - (vi) Water requirements for ploughing puddling and transplanting

- (vi) Water requirements within 30 days counted from transplanting
- (vii) Water requirements after 30 days of planting - during various stages of growth of padi.
  
- (j) Irrigation scheduling among rotation units
- (k) Water management practices
  - (a) Optimum water depths
  - (b) Drought and water saving
  - (c) Re-cycling of water
  - (d) Salinity problem
  - (e) Mid season drainage
  - (f) Drainage during ripening stage
  
- (l) Irrigation Losses
  - (1) Conveyance loss
  - (2) Distribution loss
  - (3) Field loss
  
- (m) Irrigation 'duty'
- (n) Irrigation efficiency
- (o) Project efficiency

#### Demonstration Plot

- (1) Demonstration of - land layout
  - Land grading
  - Irrigation ditches
  - Drainage
  - Measuring devices cum structures
  
- (2) Experiments (Field)
  - 2.1. (1) Measurement of soil structure
    - (a) Porosity - void ratio
    - (b) Aggregation

- (c) Cohesiveness
  - (d) Permeability
  - (e) Bulk Density - specific gravity
- (2) Soil profile and horizons
- 2.2 Measurement of soil moisture
- (a) Infiltration - cylinder infiltrometer
  - (b) Gravimetric method
  - (c) Tensiometers
  - (d) Electrical resistance block
  - (e) Neutron moisture meter
- 2.3 Field capacity determination
- 2.4 Permanent wilting percentage determination
- 2.5 Evaporation
- 2.6 Transpiration
- 2.7 Evapotranspiration - Measurements
- (a) Lysimeter experiments
  - (b) Soil moisture depletion studies
  - (c) Water balance method

### Upland Irrigation

1. Philosophy
2. General considerations for upland Irrigation
  - (a) Environmental suitability
  - (b) Operational suitability
  - (c) Farmers acceptance
  - (d) Importance of early results
  - (e) Relative costs

3. Scheme considerations

- (a) Availability of land
- (b) Climatic parameters
- (c) Soil suitability
- (d) Water resources (S.S.W.R.)
- (e) Crop options
- (f) Soil-water-plant-relationship
- (g) Consumptive use studies
- (h) Design and layout
- (i) Water application methods

4. Design and Layout

- (a) Topography
- (b) Water Source location
- (c) Design of main irrigation and drainage system
- (d) Land grading
- (e) Parcelling - service areas - service units
- (f) Farm irrigation and drainage channels
- (g) Structures with measuring devices
- (h) Farm roads

5. Method of water application

- (a) Surface irrigation
- (b) Sub-irrigation
- (c) Furrow irrigation
- (d) Coorugation irrigation
- (e) Sprinkler irrigation
- (f) Drip or trickle irrigation

6. Water Management practices

- (a) Effective rainfall
- (b) Irrigation efficiency
- (c) Control and supply water at various stages of growth
- (d) Intermittent drainage
- (e) Scheduling of rotational system (intermittent)



7. Operation and maintenance of scheme
  - (a) Maintenance of all system
  - (b) Maintenance of all gates
  - (c) Periodical repairs
  - (d) Water-depth records
  - (e) Water level records
  - (f) Rainfall records
  - (g) Evaporation records
  - (h) Planting schedules - returns
  
8. Future facilities for upland irrigation in Peninsular Malaysia
  - (i) Integrating into existing padi system
  - (ii) Separate development for upland crop production

#### Land Consolidation

- 1) Definition
- 2) Process -
  - (a) Re-adjustment
  - (b) Land grading
  - (c) Improvement to existing irrigation and drainage facilities
  - (d) On-farm designs and layouts
  - (e) Water management practices
  - (f) Improvement to farm roads
  - (g) Soil improvements
  - (h) Mechanization
- 3) Governmental approach - and co-operation

#### Irrigation Extension

- 1) Definition
- 2) Development of Irrigation extension
  - (a) Training of personnel

- (b) Establishing irrigation pilot projects
- (c) Water management studies and implementation
- (d) Farmers associations/Irrigation advisory committees
- (e) Disseminating informations on the functions of the Department and procedures

3) Communication

- (a) Organising
- (b) Participating with agricultural counterpart
- (c) Field demonstration on water management
- (d) On importance of saving water

4) Involvement

- (a) To work hand in hand with farmers
- (b) To solve problems in the field
- (c) To practice water scheduling
- (d) To work out programmes
- (e) Feed back on programme implementation
- (f) To work jointly with the agriculture counterpart

5. Evaluation - On case studies

- Pilot projects and farmers involvement
- Acceptance

6. Improvement on Irrigation extension works

14. 1980年 Off Season 稲作栽培結果 (D/F)

Plot №	品 種	田 植 時 期	収 穫 時 期	圃 場 面 積 (ha)	収 穫 面 積 (ha)	収 穫 量 Kg	ha 当 収 量 ton / ha
№ 1	MR 7	7-5-80	24-8-80	0.3	(0.3)	586.7	2.0
№ 2	SM 2	7-5-80	2-9-80	0.3	0.2	578.6	2.89
№ 3	MR 7	7-5-80	27-8-80	0.3	0.2	382.7	1.9
№ 8-2	SM 2	10-5-80	1-9-80	0.135	0.105	420.8	3.12
№ 2	MR 7	10-5-80	26-8-80	0.3	(0.3)	639.8	2.13
№ 10	SM 2	7-5-80	1-9-80	0.3	(0.3)	859.4	2.86

(参考) 1979/80年 Main Season との比較

作 期	作付耕区 (№)	田 植 期	収 穫 期	作付面積 (ha)	収穫面積 (ha)	収 穫 量 (Kg)	ha 当 収 量 (Kg / ha)	
							(当付面積)	(当収面積)
Main Season 1979/80	4, 5, 6,	9-11-79	5-3-80	1.385	1.08	3,779	2,728	3,499
	7, 11,	13-11-79	5-4-80					
Off Season 1980	1, 2, 3, 8-2, 9, 10	7-5-80 10-5-80	24-8-80 1-9-80	1.635	1.435	3,467	2,120	2,416

品 種 M.S. 1979-80 MR7, MR10, SMII, Mahsuri Bahagia

O.S. 1980 MR7, SMII

15. 1980/81年 Main Season 稲作栽培計画 (D/F)

耕区№	面 積 (ha)	品 種	作 期		田植方式	備 考
			田 植	収 穫		
1	0.3	MR 7 (Sekembang)	29-10-'80	8-2-'81	機 械 植	} 用水量測定
2	0.3	"	23-11-'80	7-3-'81	"	
3	0.3	Mahsuri	23-11-'80	19-3-'81	"	
4	0.3	"	10-12-'80	5-4-'81	"	
5	0.3	SMII (SriMalaysia II)	20-12-'80	18-4-'81	手 植	} 水稻栽培経済調査
8-2	0.15	MR 7 (Sekembang)	23-10-'80	14-2-'81	機 械 植	
9	0.3	MR 10 (Sekembang)	30-11-'80	31-3-'81	"	
10	0.3	PMI (PulutMalaysia I)	10-12-'80	11-4-'81	"	
11	0.	MR 7 (Sekembang)	21-12-'80	7-4-'81	手 植	
計	2.55	5品種				

16. 4パイロットファーム候補地区 Crop Cutting Survey

結果(1979/80年雨期)

Yield, growth and yield components  
of paddy in proposed Pilot Farms (Main Season 1979/80)

(P/F No.1) P 3 T 1 S 6 K

Lot No.	No. of hills /m <sup>2</sup>	Culm ht. cm	No. of panicles /m <sup>2</sup>	No. of spikelets/ panicle	No. of spikelets/ m <sup>2</sup> x 1,000	% of ripened grains	Wt. of 1,000 grains g	Wt. of empty grains t/ha	Yield of paddy t/ha	gt/ac
1051	12.7	114	160	111	18	94	19.1	0.051	3.174	505
1854	13.0	112	182	131	24	83	19.4	0.182	3.877	616
1850	12.8	71	206	107	22	87	19.4	0.171	3.70	588
1836	13.6	70	196	102	20	87	19.0	0.127	3.310	526
1841	11.7	117	178	108	19	83	20.4	0.194	3.250	517
1852	12.1	118	188	102	19	83	20.9	0.129	3.531	561
1818	13.1	70	188	120	23	85	18.6	0.158	3.588	570
1910	14.4	69	230	105	24	84	18.8	0.182	2.835	610
1820	13.2	119	226	123	28	88	20.9	0.241	5.086	809
1911	15.5	99	204	109	22	86	19.0	0.134	3.625	576
Average	13.2	96	196	112	22	87	19.6	0.156	3.698	588

(P/F No.2) P 4 S 3 L

1409	13.0	99	254	126	32	68	18.6	0.380	4.071	647
755	12.7	92	172	120	20	72	17.7	0.254	2.621	417
756	16.5	99	240	110	26	78	19.4	0.233	3.989	634
748	14.3	110	219	108	24	84	18.6	0.219	3.708	590
664	16.0	86	245	74	18	71	18.4	0.213	2.363	376
753	11.5	100	186	93	17	74	20.0	0.199	2.548	405
736	11.1	85	117	251	29	67	18.9	0.399	3.681	585
745	10.7	100	185	99	18	80	20.2	0.178	2.968	472
Average	13.2	97	202	123	23	74	19.0	0.259	3.244	516

## (P/F No.3) P 2 M

Lot No.	No. of hills /m <sup>2</sup>	Culm ht. cm	No. of panicles /m <sup>2</sup>	No. of spikelets/ panicle	No. of spikelets/ m <sup>2</sup> x 1,000	% of ripened grains	Wt. of grains		Yield of paddy	
							1,000 grains g	empty grains t/ha	t/ha	gt/ac
164	15.3	93	234	128	30	77	19.2	0.378	4.443	706
52C	15.5	100	190	223	42	79	16.8	0.549	5.623	894
155	15.4	103	158	213	34	84	17.7	0.307	4.987	793
52I	16.5	102	233	144	34	82	18.8	0.353	5.180	824
73	15.4	103	167	145	24	83	18.7	0.223	3.752	597
173	15.8	103	172	190	33	85	18.1	0.255	5.041	802
174	16.4	98	200	200	40	83	18.4	0.377	6.138	976
58	16.1	95	274	140	38	85	19.1	0.302	6.264	996
Average	15.8	100	204	173	34	82	18.4	0.343	5.179	824

## (P/F No.4) Padang Lindong

1036	11.0	82	189	167	32	88	18.0	0.227	4.996	794
1057	10.1	93	134	156	21	83	18.5	0.201	3.253	517
1061	11.7	83	206	160	33	81	17.7	0.307	4.709	749
1650	14.3	81	208	94	20	75	16.3	0.295	2.386	379
772	9.8	91	162	161	26	81	17.2	0.248	3.654	581
830	12.5	76	224	121	27	85	15.6	0.225	3.597	572
1634	11.9	94	192	146	28	87	15.6	0.166	3.811	606
1017	10.0	79	162	122	20	88	18.6	0.149	3.228	513
980	9.7	84	133	159	21	85	16.6	0.143	2.966	472
Average	11.2	85	179	143	25	84	17.1	0.218	3.622	576

3.936/4PF

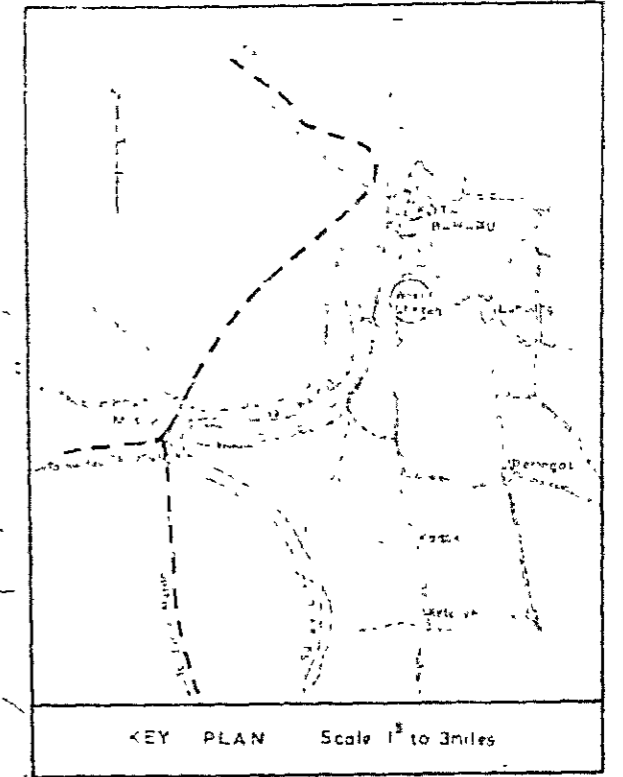
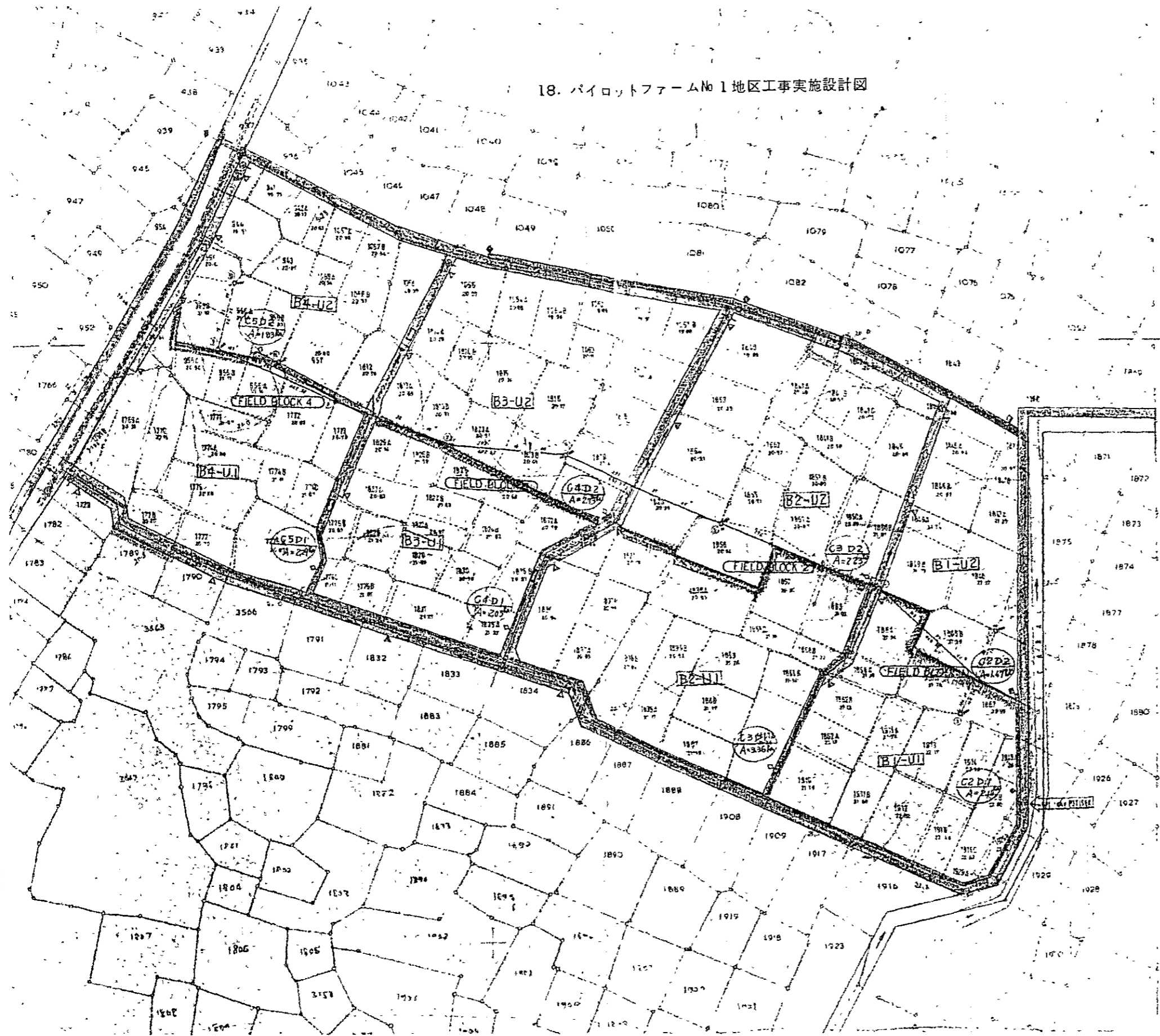
17. 稻作栽培・水管理技術試験調査展示計画案

Operation schedule of Study, trail & demonstration

	Plot No.	M.S	O.S	M.S	O.S	M.S
		1980-81	1981	1981-82	1982	1982-83
1. Variety introduce trail Ist stage	Pot		→			
IInd stage	7			→		
IIId stage	P.F.				→	
2. Soil fertility development trail	6				→	
3. Nitrogen fertilizer application dem.	5				→	
4. Cultivation method demonstration	12		→			
5. Economic study for paddy cultivation	10+11	→				
6. Field water requirement study total	1.2.3	→				
E.T.P.	1.2.3		→			
7. Field water depth study	8-2			→		
8. Drought damage study on different growth stage	Pot		→			
	10			→		
9. Water requirement study on different water management	11			→		
10. Rotational irrigation study	3				→	
11. Pre-saturation study	12		→			
12. Bearing Capacity study	3.9.10. 11.12.	→				
13. Under ground drainage study	1.2.3		→			
14. Year-round paddy cultivation study	Pot	→				



18. パイロットファームNo 1地区工事実施設計図



LEGEND

- EXISTING TERTIARY CANAL
- EXISTING MAIN DRAIN
- FIELD CHANNEL
- FIELD DRAIN
- FARM ROAD
- DIVISION BOX
- DRAINAGE OUTLET
- CHANNEL CROSSING
- DRAIN CROSSING
- DRAINAGE CONTROL
- BLOCK I - UNIT I
- BOUNDARY

NOTE  
 1. ROUND  
 2. TRAVENBY STATION  
 3. ALL LEVELS ARE BASED ON THE CREST LEVEL  
 OF THE OFF-TAKE STRUCTURE R.C. 23.80  
 4. AREA IS AT-REV  
 5. BOUNDARY LINE IS





19. 研修員受入実績

List of Participants  
Who Had Completed Training Courses in Japan

No.	Name	Department	Training Course	Duration
1.	A. Kulasingam	Kelantan State D.I.D., Kota Bharu	Observation Tour	2 weeks, March, 1978
2.	Tg. Mohamad Raja Daud	Kelantan State D.I.D., Kota Bharu	Agricultural Land and Water Resources Development	2 months, June, 1978
3.	A. Lyander	Western Johore Project	Observation Tour	2 weeks, September, 1978
4.	Khoo Soo Hock	D.I.D. Headquarters, Kuala Lumpur	Observation Tour	2 weeks, September, 1978
5.	Wan Alias Wan Daud	KADA, Kota Bharu	Agricultural Land and Water Resources Development	2 months, June, 1979
6.	Lim Thye Lian	KADA, Kota Bharu	Observation Tour	2 weeks, November, 1979
7.	Nik Yusoff	KADA, Kota Bharu	Observation Tour	2 weeks, November, 1979
8.	Chan Choong Cheong	Water Management Training Centre, Kota Bharu	Observation Tour	2 weeks, September, 1980
9.	Nik Ariff Sulaiman	Water Management Training Centre, Kota Bharu	Observation Tour	3 weeks, December, 1980

## 20. 合同会議議事録

### Meeting With Japanese Guidance

Team on 27.10.80

A) The following points were discussed:-

#### 1. Main Building:

Guidance Team wanted to know the time schedule when:

- a) Investigation works on foundation will be completed.
- b) Consultant's report will be ready.
- c) The new contract will be awarded.

Answer: Approximate time schedule given as follows:-

Investigation works under a Senior Engineer will be completed soon and a report will be submitted to the Dept. in November.

Consultants will take 2-3 months to submit their comments to the Dept. Acting on the Consultant's report, a new contract may be awarded in March or April 1981 to continue on the construction.

#### 2. Demonstration Farm (D/F):

The major works on the D/F have been completed by JICA funds. Some minor works like the fitting of control valves to field-off takes, slide-gates to outlet boxes, pest control works etc. to be carried by D.I.D. funds at an estimated cost of \$60,000/=. Guidance Team wanted to know when all these works can be completed.

Answer: About 40% of these minor works already completed.

Remaining works will be completed by March/April, 1981.

#### 3. Underdrainage works to 3 lots of Demonstration Farm:

Lots 1, 2, 3, for D/F will be constructed with underdrainage works in March 1981 to improve soil condition and to facilitate drainage at end of season before harvest. Guidance Team wanted to know whether such underdrainage works will be installed in the Kemubu

Project as well as other projects in Malaysia.

Answer: Underdrainage for padi cultivation will be tested in the D/F for some years to obtain the results whether such works will bring about increased yields and better soil conditions. Such underdrainage works will not be installed in the Kemubu Project or other Malaysian projects as present before their importance has been assessed in the D/F.

4. Pilot Farms No. 1:

Guidance Team pointed out that there is considerable delay in the implementation of Pilot Farm No. 1 at Wakaf Che Yeh. Team also pointed out that the construction works may disturb the off-season planting of the farmers. Team wanted to know how these problems can be overcome.

Answer: The centre was awaiting the appointment of the new Expert Team Leader to finalise certain technical details for the design and implementation of Pilot Farm No. 1. The construction plans have been approved by D.I.D. Headquarters and construction works are expected to start early next year.

The construction details will be discussed with D.I.D. State Office so that the works will be carried out with minimum disturbance to the off-season planting. Temporary pipes may be installed to allow the flow of water to the lower lots. Some small compensation may be considered for the farmers affected.

5. Pilot Farms No. 2, 3, 4:

The Guidance Team pointed out that the locations for these 3 pilot farms are suitable. Centre was requested to complete the planning and design of the farms early so that construction can proceed.

Answer: The layout of the Pilot Farm No. 2 put up in the Technical Report 1977 will be reviewed by the Centre, and if it is suitable,

survey and investigation works will proceed, followed by design and construction.

The experience that will be gained in the implementation of Pilot Farm No. 1 will greatly assist in the implementation of the remaining 3 pilot farms.

6. Malaysian Counterparts and Vacant Posts:

Guidance Team wanted to know when the vacant posts of Senior Timescale Engineer, Store-keeper, Pump Operator and Tractor Operator will be filled.

Answer: The Malaysian counterparts to the Japanese Experts have been appointed. D.I.D. Hqrs. already have a proposal to fill the post of Senior Timescale Engineer soon. Two candidates had been appointed to fill the post of Store-keeper during the last few months, but they did not turn up. A third candidate has been appointed and she is given up to 28.10.80 to report for duty. Applications for the posts of Pump Operator & Tractor Operator already closed in August and D.I.D. Hqrs presently processing the applications. Interviews for these two posts will be held soon.

7. Casual Labourers working on Demonstration Farm:

Guidance Team pointed out that the labourers working on the D/F are casual workers. The centre needs to employ permanent labourers so that they can be trained to do the works.

Answer: This year there is no post for permanent labourers. However, in 1981, four posts for labourers have been approved, 2 for the demonstration farm and 2 for maintenance works. It is hoped that these posts will be filled early next year so that the people can be trained to do the works. An Irrigation Inspector will be appointed to take care of the operation and maintenance to the D/F.

8. Programme of Curriculum:

Guidance Team pointed out that two drafts of curriculum, one put up by the centre in 1979 and the other by the D.I.D. Hqrs. (an amended version), should be unified as a standard curriculum for the centre. Joint meetings should be held between the D.I.D. Staff and Japanese Experts to finalise the curriculum. Regarding the Training Workshop on Water Management to be held in Kota Bharu on 11th. - 13th. November, the Team hoped that some useful teaching materials will be developed.

Answer: Several joint meetings have been held between centre staff and Japanese Experts to discuss on the programme of development of training curriculum. The centre is presently working on the detailed curriculum in which staff members and Japanese Experts are both involved. More meetings will be held on the detailed curriculum.

Many Senior Engineers will present papers in the Training Workshop. The discussions and ideas obtained during the workshop will help to develop the teaching materials for water management training.

B) The following points were commented by the Guidance Team:-

1. According to the Record of Discussions 1977, the agreement on the Water Management Training Centre Project will only have 2 more years in force. The Team welcomed the idea to have the Hostel Block to be converted into the temporary administration office and classroom so that the training courses can be started within that period of time.
2. The Team hoped that the experience gained during the construction of Pilot Farm No. 1 will be useful for the implementation of the remaining pilot farms.
3. The Team suggested some operating budget for the demonstration farm.

4. Since training courses will begin sometimes in the middle of next year with the completion of the Hostel Block, the Team hoped that the centre will develop the training curriculum early.

C) The following requests were made by the centre to the Guidance Team:-

1. JICA is requested to get early approval for the training courses in Japan for 1981 & 1982 so that there is sufficient time for D.I.D. to select the candidates and to obtain the early approval from the Malaysian Authorities concerned.
2. A list of equipment/instrument will be submitted to JICA in early 1981. These equipment/instrument will be required for the operation of centre and demonstration farm. It is hoped that this request will meet favourable approval and equipment/instrument sent early.
3. A number of short-term experts will be required by the centre for
  - i) Preparation of curriculum and teaching materials
  - ii) Survey and investigation of pilot farms

The centre will put up details for the experts required and requests made to JICA.

The Guidance Team welcomed the requests and pointed out that these requests should be submitted to JICA early.

Meeting ended at 12.00 noon.





JICA