

## その他添付資料

- 添付資料
- 1 フィールドレポート（団長レター含む）
  - 2 プロジェクト運営組織図
  - 3 灌漑施設用供与機材リスト
  - 4 降雨データ
  - 5 今回不採用になった施設の設計図



1 フィールドレポート (団長レター含む)

**THE DETAILED DESIGN SURVEY  
FOR THE DAIRY FARMING DEVELOPMENT PROJECT  
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND**

**FIELD REPORT**

**DECEMBER 1994**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

## 1. General

### 1.1 Objectives

The objective of this survey is the detailed design of the demonstration farm facilities to be constructed by the Government of Japan as the Model Infrastructure Works for the Dairy Farming Development Project in The Central Region of The Kingdom of Thailand.

The purposes of constructing the demonstration farm facilities are as follows;

- (1) To demonstrate the improved dairy farming technology in the Central Region of the Kingdom of Thailand.
- (2) To use the facilities for training the government officers, technical staff of dairy cooperatives and key farmers in the Central Region of Thailand.

### 1.2 Survey Team Members

<u>Name</u>	<u>Assignment</u>	<u>Dispatched Period</u>	<u>Organization/ Position</u>
Kazuhiko OIKAWA	Team Leader	FM 06.11.94 TO 13.11.94	Deputy Director, Planning Div., Agricultural Development Co- operation Dept., JICA
Tsuneo AMANO	Irrigation/ Facilities	FM 06.11.94 TO 15.12.94	General Manager, Overseas Dept., Japan Engineering Consultants Co., Ltd. (JEC)
Toshiaki SHIMAUCHI	Farm Road	FM 06.11.94 TO 15.12.94	Asst. Manager, Overseas Dept., JEC

### 1.3 Survey Site

**Pathum Thani AI Centre:** 80 Tiwanon Road, Bang Ka Dee Sub-district, Muang District, Pathum Thani 12000

**Dairy Demonstration Centre:**  
at Chai Badan Land Settlement  
Cooperative Unit Tha-Luang District  
Lopburi Province 15230

### 1.4 Schedule for the Field Survey

The Detailed Design Survey consists of a field survey in Thailand and an office work in Japan. The field survey has been carried out for 40 days from November 6, 1994 to December 15, 1994.

Date/Day	Place	Schedule
Nov. 06/Sun	-	Arrived at Bangkok(BKK) from Japan
07/Mon	BKK	Courtesy call on DTEC, CPD, JICA & Embassy of Japan, Move to Chai Badan(C.B.)
08/Tue	C.B.	Field reconnaissance at C.B. Demonstration Centre, Meeting with JICA experts and CPD, Move to BKK
09/Wed	BKK	Field reconnaissance and discussion at Pathum Thani AI Centre
10/Thu	BKK	Collecting information from similar projects, Preparation of survey
11/Fri	BKK	Joint meeting among DLD, CPD, JICA experts and the survey team, Issuance of Team Leader's letter

Nov. 12/Sat	BKK	Internal Meeting
13/Sun	BKK	Team leader left for Japan, Preparation of the field survey
14/Mon	BKK	Reconnaissance survey, Alignment of farm road, Site clearance, Water quality test and Data collection at AI Centre
15/Tue	BKK	Survey at AI Centre
16/Wed	BKK	- ditto -
17/Thu	BKK	- ditto -
18/Fri	BKK	Survey at AI Centre, Collection of data and information at CPD
19/Sat	BKK	Computation of the survey
20/Sun	BKK	Computation, plotting and drafting
21/Mon	BKK	Preparation of soil test and survey for C.B. Demonstration Centre, Discussion with JICA expert, Move to C.B.
22/Tue	C.B.	Survey at C.B. Demonstration Centre
23/Wed	C.B.	- ditto -
24/Thu	C.B.	- ditto -
25/Fri	C.B.	- ditto - , Soil sampling, Collecting deep well data
26/Sat	C.B.	Survey at C.B. Demonstration Centre, Making irrigation plan
27/Sun	C.B.	Computation of the survey, Making irrigation plan
28/Mon	C.B.	Survey at C.B. Demonstration Centre
29/Tue	C.B. BKK	Data collection, Move to BKK, Discussion with JICA experts at AI Centre
30/Wed	BKK	Computation, plotting and drafting at CPD
Dec. 01/Thu	BKK	Preliminary design of roads and irrigation facilities at CPD,

Discussion with JICA experts at AI Centre

Dec. 02/Fri	BKK	Preliminary design of roads and making detailed layout plan for paddock and manure deposit shed
03/Sat	BKK	Preliminary design
04/Sun	BKK	Preliminary design
05/Mon	BKK	Preliminary design, Data collection
06/Tue	BKK	- ditto -
07/Wed	BKK	Complemental survey at AI Centre, Discussion with JICA experts, Data collection
08/Thu	BKK	Preliminary design
09/Fri	BKK	- ditto - , Data collection
10/Sat	BKK	- ditto -
11/Sun	BKK	Preparation of Field Report
12/Mon	BKK	Preparation of Field Report
13/Tue	BKK	Meeting with JICA experts, Report to CPD
14/Wed	BKK	Report to DLD and JICA
15/Thu	-	Leave for Japan

#### 1.5 Visited Agency and Concerned Persons

- (1) Department of Technical and Economic Cooperation (DTEC)
 

Mr. Wichai Choowisetsuk	Japan Sub-Division
Mr. Michimasa Numata	Aid Coordinator (JICA Expert)
  
- (2) Department of Livestock Development (DLD)
 

Mr. Yant Sukwongs	Director of Pathum Thani AI Research Centre
Dr. Parishat Sakhato	Acting Director of A-I Div.
Ms. Kalaya Kengrikkum	Veterinarian 7
Ms. Tureerat Sanpote	Animal Scientist 6
Mr. Viboon Yiengvisavakuc	Veterinarian 7

- Ms. Mukda Ratanapaskon Veterinarian 7  
 Ms. Papiphan Uavechanichkul Veterinarian 7  
 Mr. Vichai Chanatinart Chief of Frozen Semen Production  
 Sec, Phatum Thani A-I Center
- (3) Cooperatives Promotion Department (CPD)
- Mr. Vichien Tongsimas Director of Agricultural Co-op  
 Division
- Ms. Boonna Tiragool Senior Officer  
 Dairy Co-op Promotion Sec.  
 Agricultural Co-op Division
- Ms. Kanitta Promsamak Co-op Technician  
 Ms. Piyarat Faiuppara Co-op Technician  
 Mr. Kriangkrai Krutthai Co-op Technician
- Ms. Rachaneewan Chief of Special Project Sec.  
 Prathomthong Planning Div.
- Mr. Wichan Tanthamaroaj Senior Policy and Plan Analysis
- Mr. Charas Watticha Senior Officer
- Mr. Kanokpol Phothong Civil Engineer, Engineering Div.  
 Mr. Komol Sur-sa-ngiem Mechanical Engineer, Region I  
 Mr. Somnuek Phongphuth Civil Engineer, Region I
- (4) Embassy of Japan
- Mr. Ryuji Shimojo First Secretary
- (5) JICA Thailand Office
- Mr. Shinichi Omote Resident Representative  
 Mr. Naoto Hattori Asst. Resident Representative
- (6) JICA Expert/LWCC Project
- Mr. Yasuhiko Misima Team Leader



Mr. Yoshinori Takahashi      Coordinator

(7) JICA Expert/IEC Project

Mr. Kiyoshi Horii              Team Leader

Mr. Masafumi Taguchi         Coordinator/Irrigation Engineer

(8) Colombo Plan Expert

Mr. Kosho Daigo                Planning Div, LDD

Mr. Mitsuo Sayama             Geotechnical Div, RID

(9) JICA Expert/DFD Project

Mr. Kazuo Kanaya               Team Leader

Mr. Yoshihiro Shimizu         Coordinator

Mr. Seijun Kikuchi             Forage Crop and Grass Management

Mr. Teruo Sato                 Animal Reproduction and Health

Mr. Atsushi Suzuki             Animal Feeding & Management

Mr. Haruaki Uetsuki            Breeding Livestock

## 2. Major Works Performed in the Field Survey Period

### 2.1 Discussion

In the joint meeting held on November 12, 1994 at AI Centre, the outline of the detailed design and priority of the facilities to be constructed in the Model Infrastructure Works were discussed among DLD, CPD, JICA Experts and the design survey team. As the results of discussion, Team Leader's letter was issued.

### 2.2 Data Collection

Data and information regarding the facilities to be constructed, for instance, meteorological data, present problems at the project site, project activities to be

taken, construction condition of deep well, construction materials, data for cost estimate, etc., have been collected as given in Annex attached here with.

### 2.3 Topographic Survey

Topographic survey at Pathum Thani AI Centre and Chai Badan Dairy Demonstration Centre was carried out as follows;

#### - Pathumu Thani AI Centre -

- 1) Route Survey ( center line survey, longitudinal leveling & cross leveling)

Trunk road: 313 m

Approaches to major buildings: 357 m (4 Nos.)

Farm road: 274 m

- 2) Topographic survey

Paddock land: 8,000 sq.m

Manure deposit shed land: 2,000 sq.m

- 3) Layout plan survey

AI Centre facility area: 6 ha

#### - Chai Badan Dairy Demonstration Centre -

- 1) Setting up 10 Nos. of temporary Bench Marks

- 2) Route Survey

Trunk road: 586 m

Lateral roads: 2,050 m (7 Nos.)

Approaches to major buildings: 189 m (6 Nos.)

### 2.4 CBR Test

In order to design the thickness of asphalt pavement for the farm road in Chai Badan Dairy Demonstration Centre, California bearing ratio(CBR) test was done. Since the farm road to be paved has been scheduled to be filled up 50 cm thick by laterite by the end of February 1995, laboratory CBR

test of the laterite soil was carried out instead of in-situ CBR test. Together with the CBR test, Standard proctor compaction test, Sieve analysis and Atterberg Limits were also done.

### 2.5 Water Quality Survey

Electric conductivity of groundwater from deep wells and surface water from ponds in the project sites and neighborhood was measured.

### 2.6 Construction Cost Survey

Data and information regarding costs of the construction materials, equipment and labour, etc. were collected. And quotations of deep wells were received from local contractors.

### 2.7 Preliminary Design

On the basis of results of the survey and series discussions with the persons concerned, preliminary design of the facilities to be constructed that is; water supply facilities, a paddock and a manure deposit shed for the milking cows, and roads for Pathum Thani AI Centre and irrigation facilities and roads for Chai Badan Dairy Demonstration Centre, was carried out.

## 3. Outline of the Facilities to be constructed

As a result of the preliminary design, the outline of the facilities to be constructed have been decided as shown in Table 3-1.

**Table 3-1 Outline of The Facilities to be constructed**

Item	Quantity	Specification
<b>&lt; Pathumu Thani AI Centre &gt;</b>		
<b>1. Water Supply Facilities</b>		
1) Deep Well	1 No.	Drilling dia: 200 mm Well dia: 100 mm Depth: 300 m Design yield: 31 l/min
2) Pump for well	1 unit	Submergible pump 32 mm x 2.2 kw
3) Elevated Water Tank	1 set	V 5 cu.m x H 18 m
4) Water Supply Pipe	60 m	PVC 20 mm
<b>2. Paddock</b>	1 No.	700 sq.m (pavement: 400 sq.m, roof: 144 sq.m)
<b>3. Manure Deposit Shed</b>	1 No.	5 m x 10 m
<b>4. Road</b>		
1) Approach to Milking Cow Shed	70 m	Asphalt pavement of 4.0 m wide
2) Approach to Semen Collecting Building	40 m	Asphalt pavement of 2.5 m wide
3) Approach to Manure Deposit Shed	150 m	Laterite, 5.0 m wide
4) Approach to Hay Storage	80 m	Laterite, 5.0 m wide
5) Farm Road	270 m	Laterite, 5.0 m wide
<b>&lt; Chai Badan Dairy Demonstration Centre &gt;</b>		
<b>1. Irrigation Facilities</b>		
1) Deep Well	1 No.	Drilling dia: 300 mm Well dia: 150 mm

Item	Quantity	Specification
2) Pump for well	1 unit	Depth: 80 m Design Yield: 250 l/min Submergible pump 50 mm x 2.2 kw
3) Farm Pond	1 No.	V=4,500 cu.m (are of full water level = 50 m sq. = 2,500 sq.m), lined by flexible PVC membrane liner (t=1.5 mm)
4) Pump for Irrigation	1 unit	Volute pump, 80/65 mm x 22 kw
5) Pipe line (sprinkler irrigation system)	645 m	dia 100 mm & 80 mm solid-set underground
<b>2. Road</b>		
1) Trunk road section-1 & beginning sections of lateral roads R1, R2 & L1	315 m	Asphalt pavement of 5.0 m wide
2) Approaches to major buildings	180 m	Asphalt pavement of 4.0 m wide
3) Lateral road L1	210 m	Laterite, 4.0 m wide
4) Lateral roads L2 & R3	450 m	Laterite, 5.0 m wide
5) Trunk road section-2 & beginning section of lateral roads L2 & R3	160 m	Asphalt pavement of 5.0 m wide
6) Lateral roads SB & WB	830 m	Laterite, 5.0 m wide
7) Lateral roads R1 & R2	540 m	Asphalt pavement of 4.0 m wide

#### 4. Priority of the facilities to be constructed

The priority of the demonstration farm facilities to be constructed by the Government of Japan has tentatively been decided as follows;

##### - Pathum Thani AI Centre -

1st: \* Water supply facilities

\* Paddock and it's approach (paved)

2nd: \* Approach (paved) to the semen collecting building

3rd: \* Manure deposit shed and it's approach (laterite)

4th: \* Approach (laterite) to the hay storage

5th: \* Farm road (laterite)

##### - Chai Badan Dairy Demonstration Centre -

1st: \* Irrigation facilities

2nd: \* Pavement of trunk road between B.P. and lateral road R2 with beginning sections of lateral roads of R1, R2 and L1

\* Pavement of approaches to major buildings

3rd: \* Lateral road L1 (laterite)

4th: \* Lateral roads L2 and R3 (laterite)

5th: \* Pavement of trunk road between lateral roads R2 and R3 with beginning sections of lateral roads L2 and R3

6th: \* Lateral roads SB and WB (laterite)

7th: \* Pavement of lateral roads R1 and R2

#### 5. Implementation Schedule

After the survey team go back to Japan, the detailed design will be finished out and the construction cost will be estimated. Finally, the detailed design report on the Model Infrastructure Works and the draft tender document will be

prepared in February 1995. The tentative schedule for the detailed design survey and the construction works are given in Table-1 of the Team Leader's Letter attached here with as ANNEX-1.

Bangkok, November 11, 1994

Dr. Tweesackdi Sesaweeth  
 Director General  
 Department of Livestock Development,  
 Ministry Agriculture and Cooperatives,  
 The Kingdom of Thailand

Dear Sir,

The Detailed Design Survey Team has been organized by Japan International Cooperation Agency (JICA) for the purpose of formulating detailed plan on the Model Infrastructure Works for the Dairy Farming Development Project in the Central Region of the Kingdom of Thailand.


The Team has so far made a series of site reconnaissance and discussions with your staff concerned in order to determine the location and scale of the demonstration farm and its facilities. As a result, we would like to submit to you the tentative idea for design of the demonstration farm as per the attached.

Two members of the Team, Mr. T.AMANO and Mr. T.SHIMAUCHI, will proceed with your staff to conduct further field surveys. After the completion of the detailed design, and assessment of its cost estimated by JICA, you will be informed of its result through the JICA Thailand office.

Further, for the timely commencement of the construction, we would like to ask you to take the necessary formalities in due consultation with the JICA Thailand office.

Lastly, we would like to express our appreciation for the kind cooperation of your staff during our stay.

Sincerely Yours,



Kazuhiko OIKAWA  
 Team Leader  
 Detailed Design Survey Team  
 Japan International Cooperation Agency

cc : Director General of Cooperatives Promotion Department (CPD)  
 Director of Artificial Insemination Division, DLD  
 Director of Pathum Thani Artificial Insemination Center, DLD  
 Director of Agricultural Cooperatives Division, CPD  
 Chief of Chai Badan Dairy Demonstration Center, CPD  
 Director of Foreign Agricultural Relations Division, OPS  
 Representative of Department of Technical and Economic Cooperation, (DTEC)  
 Representative of Budget Bureau  
 Embassy of Japan  
 Team leader of Project  
 Director of JICA Thailand Officer



**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**  
**DETAILED DESIGN SURVEY TEAM**  
**FOR**  
**THE DAIRY DEVELOPMENT PROJECT**  
**IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND**

**1. Objective**

This survey is to carry out the detailed design on the demonstration farm facilities to be constructed by the Japanese government.

The purposes of constructing the demonstration farm facilities are the following :

- (1) To demonstrate the improved dairy farming technology.
- (2) To use the facilities for training the government officers, technical staff of dairy cooperatives and key farmers in the central region of Thailand.

In light of the above, the team had preliminary discussion on the framework of the construction work such as scale of work, road, facilities of irrigation system, and etc.

**2. Location and Scale of the work**

- (1) The model farms are located at Pathum Thani and Chai Badan (Fig-1).
- (2) The layout maps of them are shown in the Fig-2 and 3.
- (3) As the budget from the Japanese government for this work is limited, it is necessary to discuss the work contents, their priority, etc. after the accurate construction cost is estimated.

**3. Component of construction works**

The following construction works will be designed by the mission team.

**(1) Pathum Thani Artificial Insemination Center**

**1) Water tower and water supply facilities**

To construct a water tower and water supply facilities to the milking cow shed (well, water tower, pipe arrangement work, incidental road, etc.).

**2) Paddock**

To construct a paddock for milking cows.

**3) Manure deposit shed**

To construct a manure deposit shell and its incidental road.

**4) Road**

To construct the access road to the semen collecting building, the hay storage and the pasture.

**(2) Chai Badan Dairy Demonstration Center**

**1) Farm pond**

To construct a farm pond for the effective water use.

**2) Irrigation facilities**

To construct irrigation facilities (well, pump, pipeline, etc.).

**3) Farm road**

To construct farm road which is including "Trunk road" and "Lateral road"

**4. Outline of the tentative schedule**

The tentative schedule for the detailed design survey and the construction works are shown in Table-1.

**Table-1**

**OUTLINE OF THE TENTATIVE SCHEDULE  
ON THE MODEL INFRASTRUCTURE WORKS**

<b>Month</b>	<b>Japanese Side</b>	<b>Thailand Side</b>
<b>1994</b>		
<b>November</b>	<b>Detail design survey (To make the basic plan of construction work) 6th/Nov. - 15th/Dec.</b>	
<b>December</b>	<b>Report of the survey team (Outline of construction work)</b>	<b>Preparation of A1-Form for short-term expert on construction supervision</b>  <b>Preparation of A4-Form for the equipment.</b>
<b>1995</b>		
<b>January</b>	<b>Detailed Design in Japan</b>	
<b>February</b>	<b>Submission of Final Report Consultation with Ministry of Foreign Affairs</b>	<b>Receipt of Final Report Request for construction works (through JICA Thailand officer)</b>
	←←←←←←←← Exchange of supplementary note to the R/D →→→→→→→→	
	←←←←←←←← Exchange of Note Verbal →→→→→→→→	
<b>March</b>	<b>Dispatch of supervising expert</b>  <b>Tender Contract of construction Start of construction works</b>	

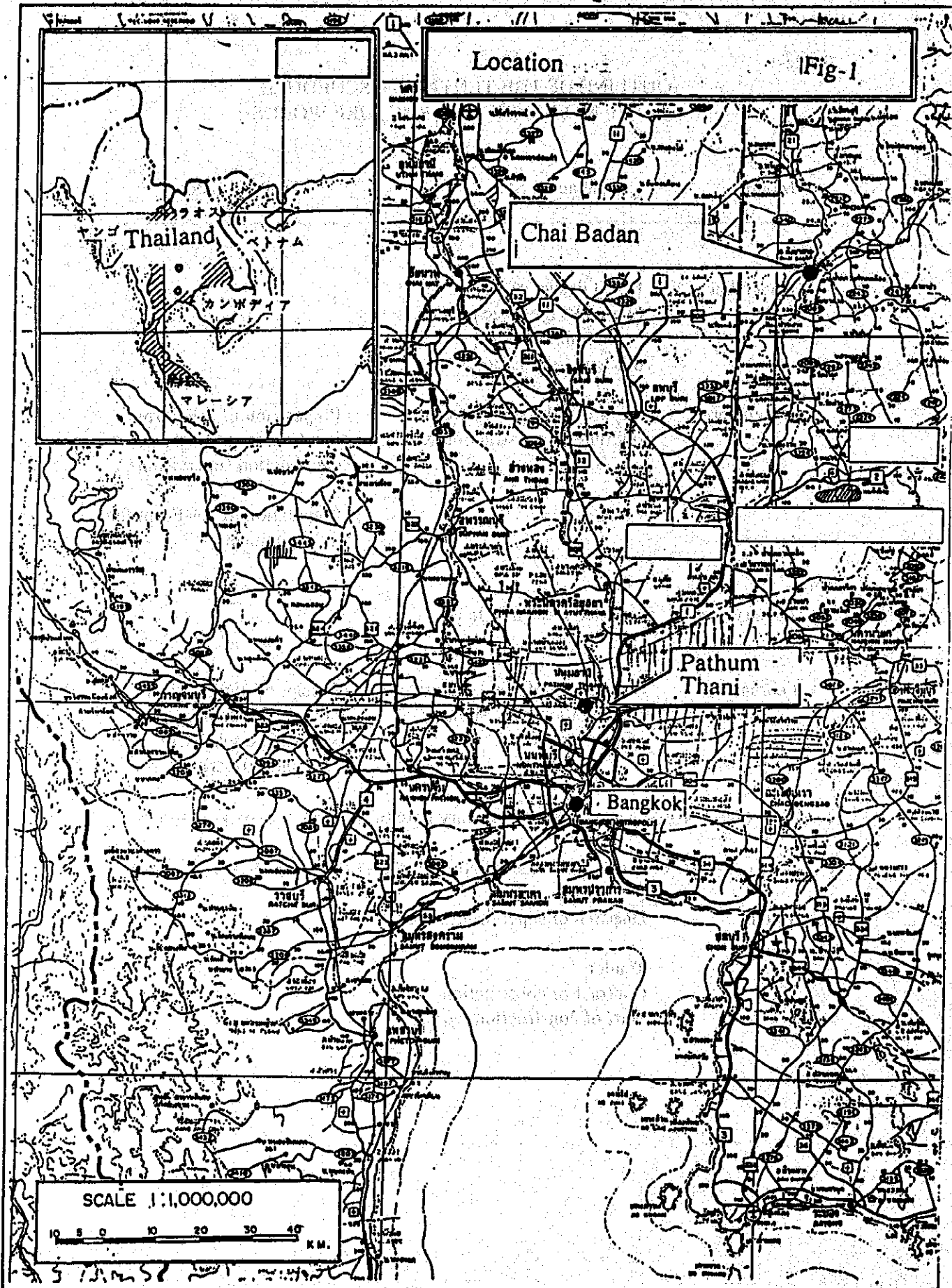


Fig-2 Pathum Tani AI Center Outline Map.  
 パツンタニー人工受精(AI)センター

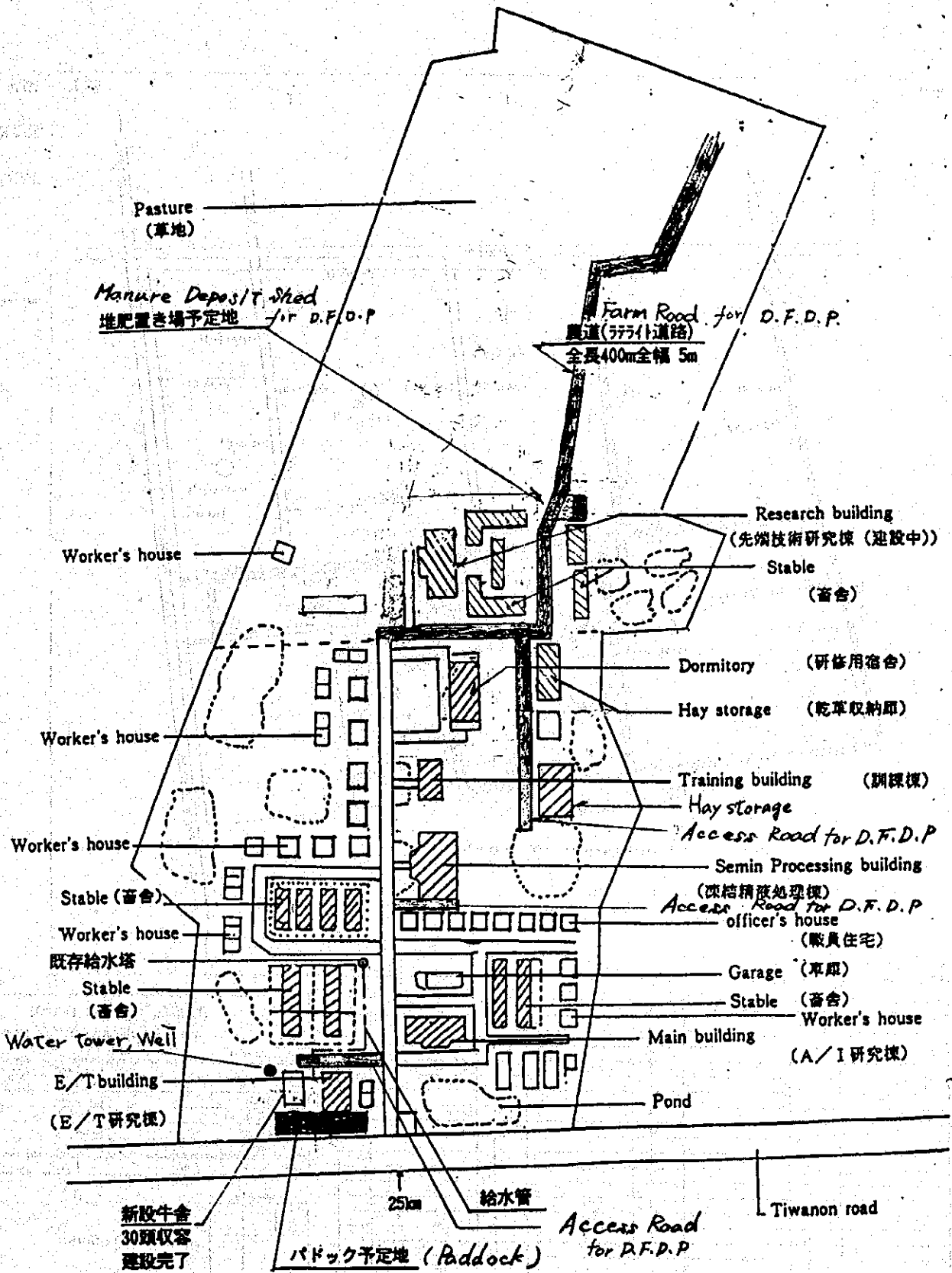


図 既存施設及び計画施設概略配置図



LIST OF COLLECTED DATA

## 1. Meteorological Data

- Monthly rainfall, mean temperature from 1983 to 1994 at Pathum Thani Rice Research Centre
- Monthly rainfall and mean temperature from 1985 to 1994 at Buachum, Chai Badan district, Lopburi

## 2. Map

- Map of Chai Badan Land Settlement Cooperative Area 395,431 Rais
- Survey map of Land for Chai Badan Dairy Demonstration Centre (S=1:2,000)
- Topographical map of Chai Badan (S=1:50,000)

## 3. Data on Deep Well

- Reports of underground drilling at Pathum Thani
- Wells drilled in Thmbon Tha-luang, Amphoe Tha-luang, Changwat Lopburi ( Groundwater Data Centre, Groundwater Division, Department of Mineral Resources)

## 4. Data on Farm Road

- Typical cross sections of road in Thailand
- Material Location Map (Chai Badan)
- Tender document for construction of Chai Badan Dairy Demonstration Centre

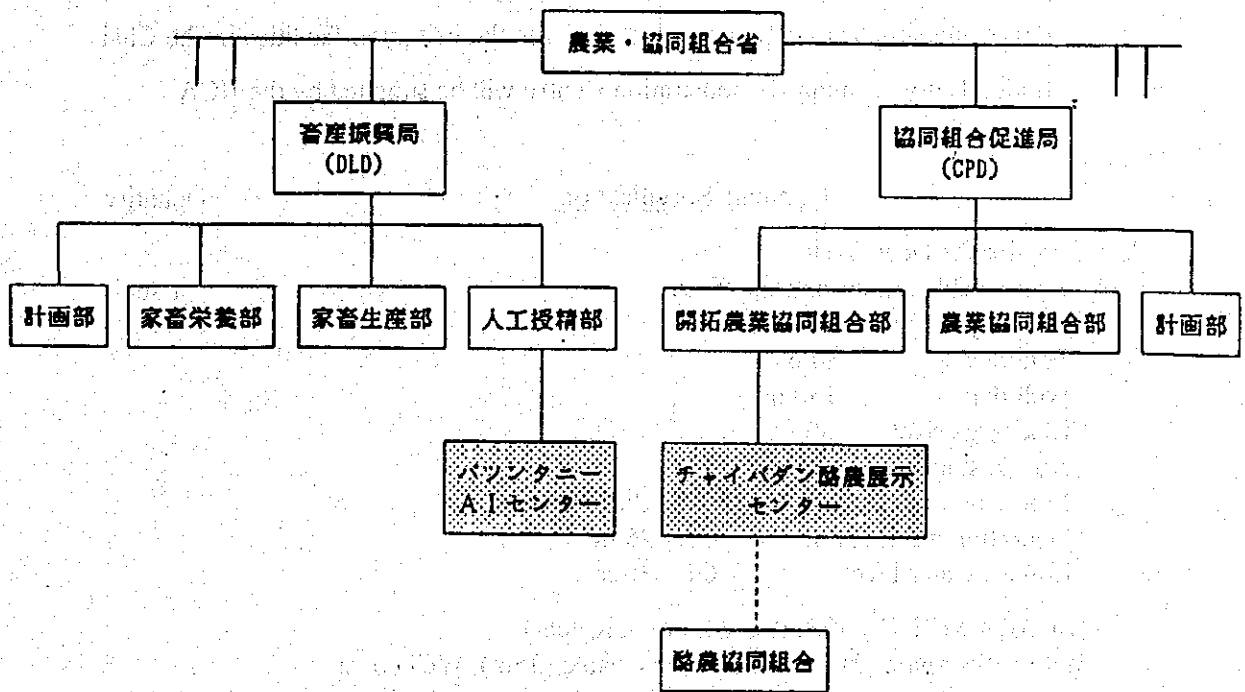
## 5. Cost Estimation Data


- Material Price List Around Bangkok Area for Estimation of Official Budget provided by Material Price Division, Business Economic Department, Ministry of Commerce (Effective July 1994)
- Cost estimate for the Land and Conservation Center Project

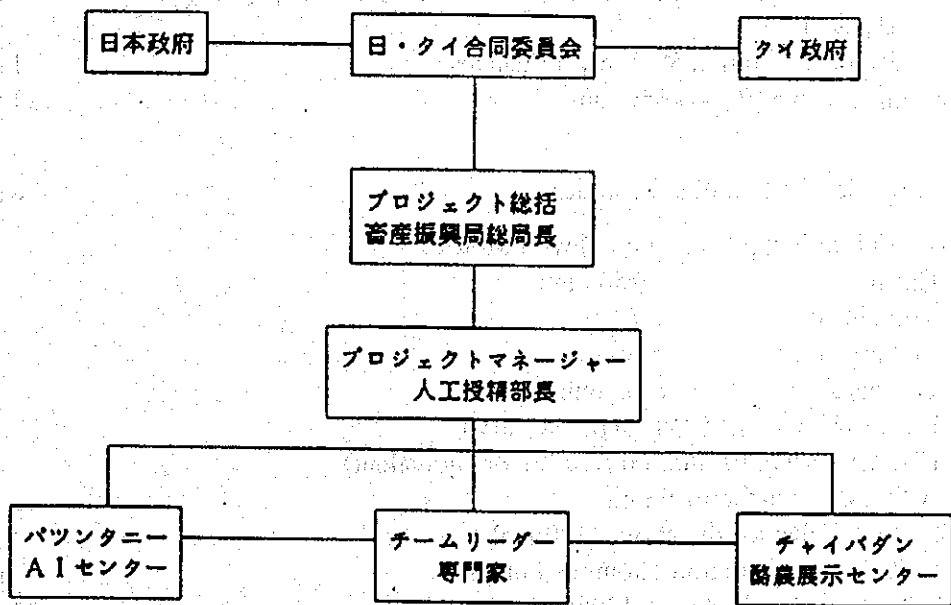
**in the East of Thailand**



2 プロジェクト運営組織図



\*  プロジェクトサイト



### 3 灌溉施設用供与機材リスト

#### SUPPLIES

Following supplies viz pumps, pipes etc. for the irrigation facilities in the Chai Baden Dairy Farming Demonstration Centre will be supplied by the JICA.

<u>Contents/Specification</u>	<u>Quantity</u>
<b>A. Supplies for Deep Well</b>	
<b>A1. Submersible pump for Deep Well</b>	1 set
Capacity: 250 l/min	
Total head: 30 m	
Well dia: 150 mm	
Discharge size: 50 mm	
No. Of stages: 5 stages	
Motor output: 2.2 KW (50HZ, 3x380V)	
Operation water level: GL - 25 m	
Lowest water level: GL - 30 m	
(EBARA MODEL 50BHS 5.2.2 or equivalent)	
With : Riser pipes (31m), Submersible cable (35m), Well cover, Discharge elbow, Low water level electrode, Automatic air vent valve, Compound gauge and Control panel	
<b>A2. Check Valve <math>\phi</math>50 mm for the above pump with companion flange</b>	1 set
<b>A3. Sluice Valve <math>\phi</math>50 mm for the above pump with companion flange</b>	1 set
<b>A4. Galvanized steel pipe 50<math>\phi</math> mm with a short elbow 90° &amp; a short elbow 30°</b>	10 m
<b>A5. Tee pipe 50 mm x 50 mm with flanges</b>	1 no.
<b>A6. Gate Valve (Brass) <math>\phi</math>50 mm</b>	1 no.
<b>B. Supplies for Pumping Facilities</b>	1 unit
<b>B1. Volute Pump (Single type) with Motor</b>	
Capacity: 750 l/min	
Total head: 70 m	
Suction size : $\phi$ 80 mm	
Discharge size : $\phi$ 65 mm	
Motor output : 22 KW(50HZ, 3x380V)	
(EBARA MODEL 80x65FS 2J522 or equivalent)	
with: Base and Control unit	
<b>B2. Foot Valve for the above (100mm)</b>	1 no.
<b>B3. Reducer for suction 100mm x 80mm</b>	1 no.
<b>B4. Reducer for discharge 100mm x 65mm</b>	1 no.
<b>B5. Galvanized steel pipe 80mm with flanges and a short elbo 90°</b>	6 no.
<b>B6. Gate Valve (steel) <math>\phi</math>100mm with companion flange</b>	1 set

**C. Supplies for Pipeline**

C1. Galvanized steel pipe $\phi$ 100mm with couplings	210 m
C2. Galvanized steel pipe $\phi$ 80mm with couplings	480 m
C3. Short elbow 90° $\phi$ 100mm	5 nos.
C4. Short elbow 90° $\phi$ 80mm	6 nos.
C5. Cross pipe 100mm x 80mm	1 no.
C6. Tee pipe 80mm x 100 mm x 100mm	2 nos.
C7. Tee pipe 100mm x 80mm x 80mm	1 no.
C8. Tee pipe (for the raiser pipe) 80mm x 50mm	6 nos.
C9. End pipe with tee (for raiser pipe) 80mm x 50mm	6 nos.
C10. Sluice Valve 80mm	6 nos.
C11. Sprinkler	3 nos.
Water quantity: 340 l/min	
Radius : 35 - 40 m	
Full rotating (Rain Bird Model 102 EHM or equivalent)	
C12. Expansible raiser pipe $\phi$ 50mm	12 sets
Length : 1.5 m with a quick raiser coupler and a tripot	
C13. Quick socket $\phi$ 50mm	12 nos.
C14. Protector (plate type, to be attached to raiser pipe)	1 no.
C15. Raiser plug 50mm	12 nos.

#### 4 降雨データ

##### 平均降雨量

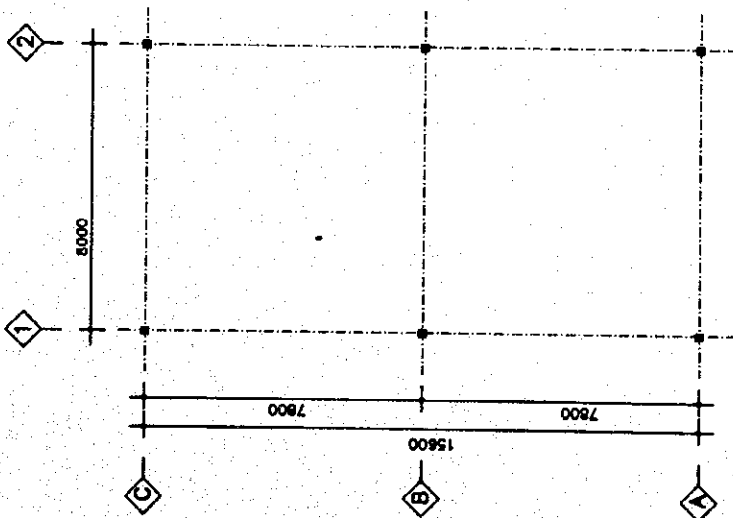
Month	Pathum Thani		Chai Badan	
	Ave. Rainfall (mm)	Ave. Rainy Days	Ave. Rainfall (mm)	Ave. Rainy Days
Jan.	4.9	1	8.5	1
Feb.	6.4	1	2.1	1
Mar.	24.7	2	53.4	4
Apr.	69.8	3	74.8	6
May	134.6	10	140.8	15
Jun.	149.7	10	116.1	14
Jul.	169.5	12	117.9	12
Aug.	186.8	15	181.3	17
Sep.	311.8	17	242.4	17
Oct.	191.1	13	107.3	11
Nov.	22.3	2	19.6	2
Dec.	3.5	1	3.5	1
Total	1,275.1	87	1,067.7	101

Station : Pathum Thani - Rice Resarch Center (1984 - 1993)  
: Chai Badan (1985 - 1994)

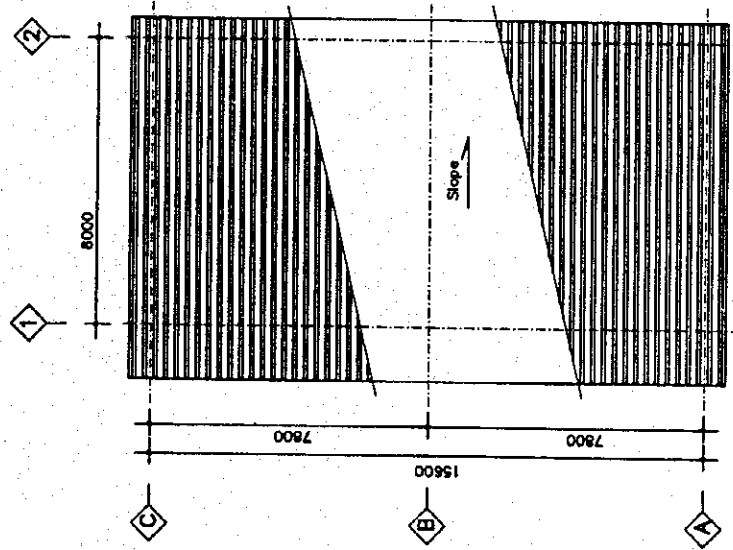
5. 今回不採用になった施設の設計図

- 1) ROOFING FOR PADDOCK (1/2)  
PATHUM THANI AI CENTRE
- 2) ROOFING FOR PADDOCK (2/2)  
PATHUM THANI AI CENTRE
- 3) R9 ROAD (2/2) & R10 ROAD  
PATHUM THANI AI CENTRE
- 4) MAIN ROAD (2/2)  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 5) R1 ROAD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 6) L1 ROAD & DOWNSLOPE TO FIELD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 7) R2 ROAD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 8) L2 ROAD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 9) R3 ROAD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 10) SB ROAD (1/2)  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 11) SB ROAD (2/2) & WB ROAD (1/2)  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 12) WB ROAD (2/2)  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

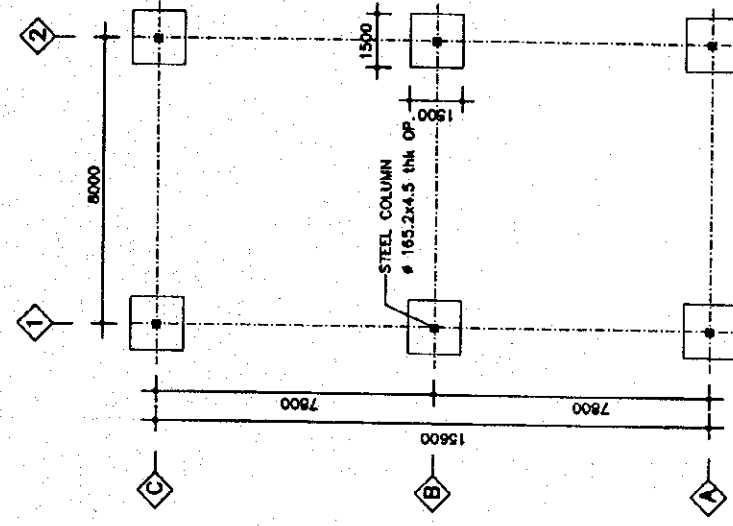




PLAN  
SCALE 1:100



ROOF PLAN  
SCALE 1:100



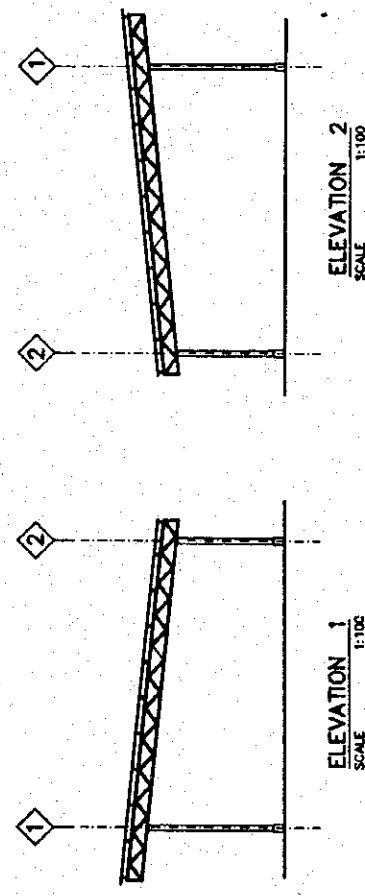
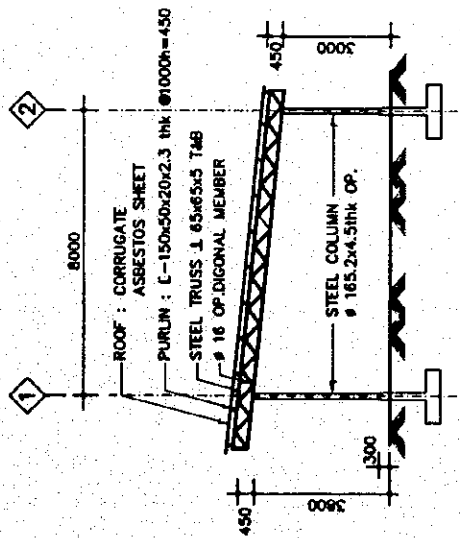
FOUNDATION PLAN  
SCALE 1:100



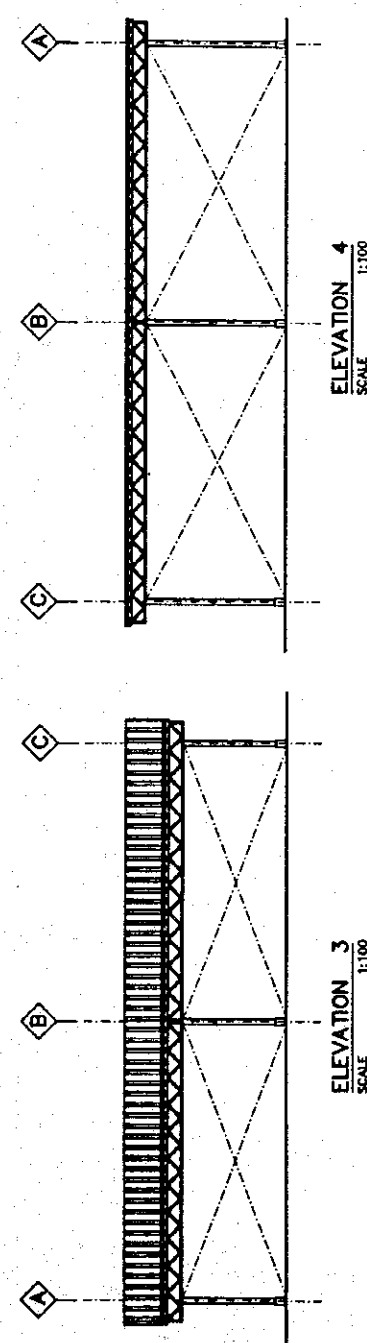
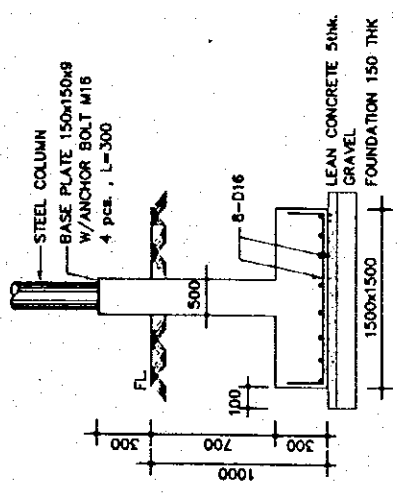
1) ROOFING FOR PADDOCK (1/2)  
PATRUK THANI AI CENTRE







12019  
# 9 • 150  
500x500



2) ROOFING FOR PADDOCK (2/2)  
PATHUM TRANI AI CENTRE



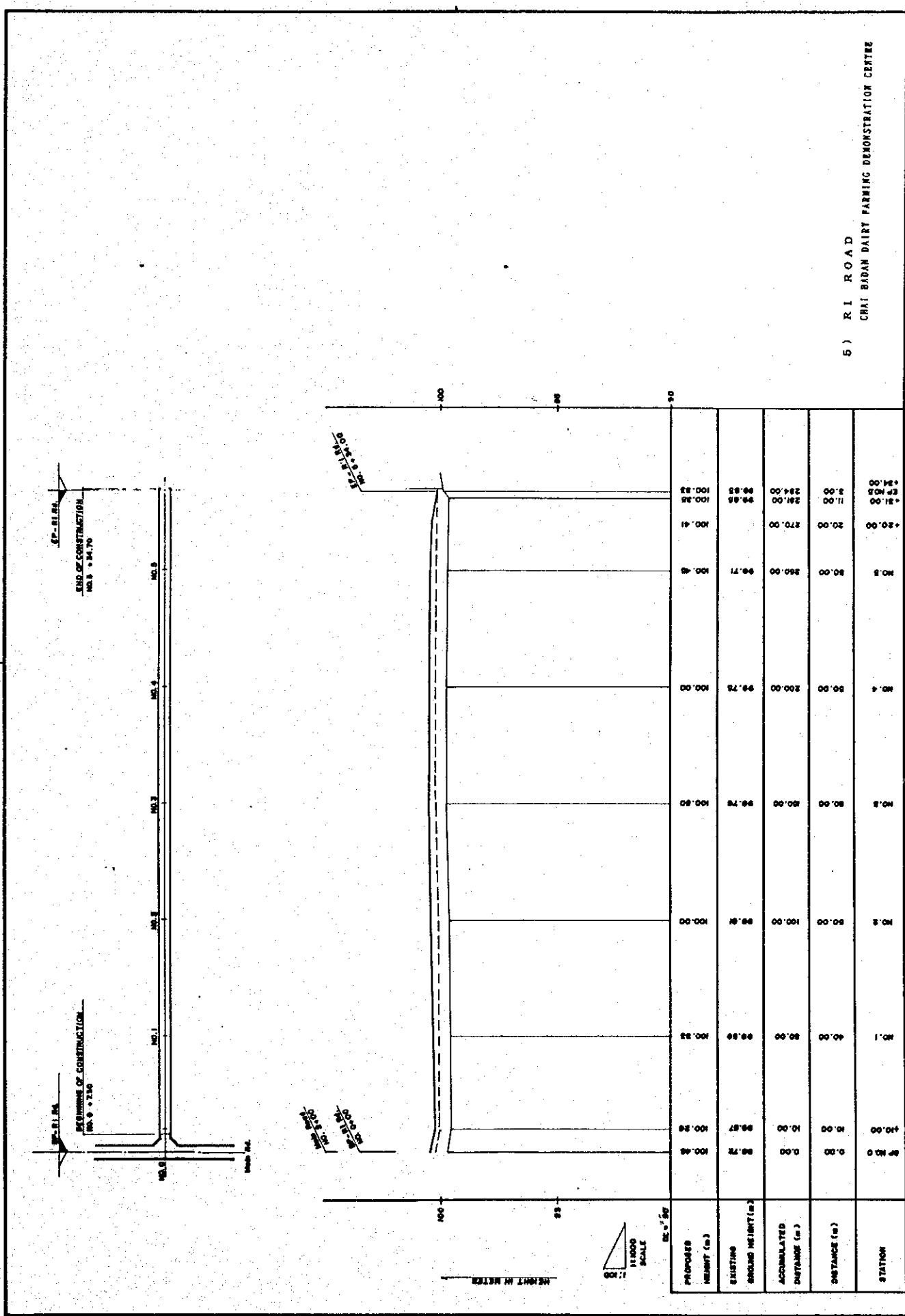








5) RI ROAD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

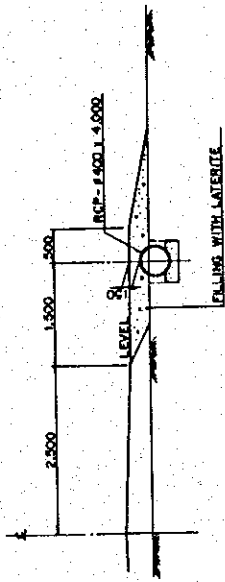


STATION	PROPOSED HEIGHT (m)	EXISTING HEIGHT (m)	GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)
0+00	100.48	98.72	98.72	0.00	0.00
0+10	100.48	98.87	98.87	10.00	10.00
0+20	100.00	98.89	98.89	20.00	10.00
0+30	100.00	98.89	98.89	30.00	10.00
0+40	100.00	98.78	98.78	40.00	10.00
0+50	100.00	98.81	98.81	50.00	10.00
0+60	100.00	98.78	98.78	60.00	10.00
0+70	100.00	98.81	98.81	70.00	10.00
0+80	100.00	98.78	98.78	80.00	10.00
0+90	100.00	98.78	98.78	90.00	10.00
0+100	100.41	98.71	98.71	100.00	10.00
0+110	100.25	98.85	98.85	110.00	10.00
0+120	100.25	98.85	98.85	120.00	10.00
0+130	100.41	98.85	98.85	130.00	10.00
0+140	100.41	98.85	98.85	140.00	10.00
0+150	100.41	98.85	98.85	150.00	10.00
0+160	100.41	98.85	98.85	160.00	10.00
0+170	100.41	98.85	98.85	170.00	10.00
0+180	100.41	98.85	98.85	180.00	10.00
0+190	100.41	98.85	98.85	190.00	10.00
0+200	100.41	98.85	98.85	200.00	10.00

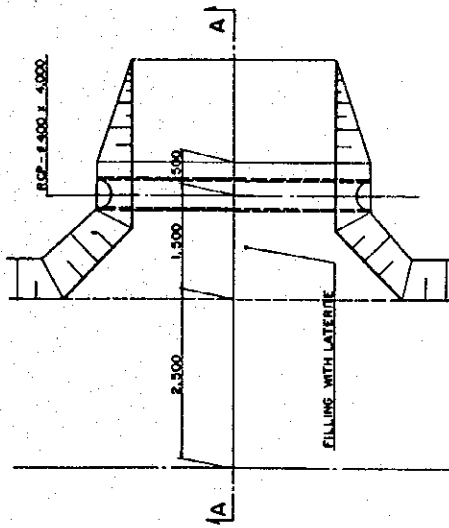




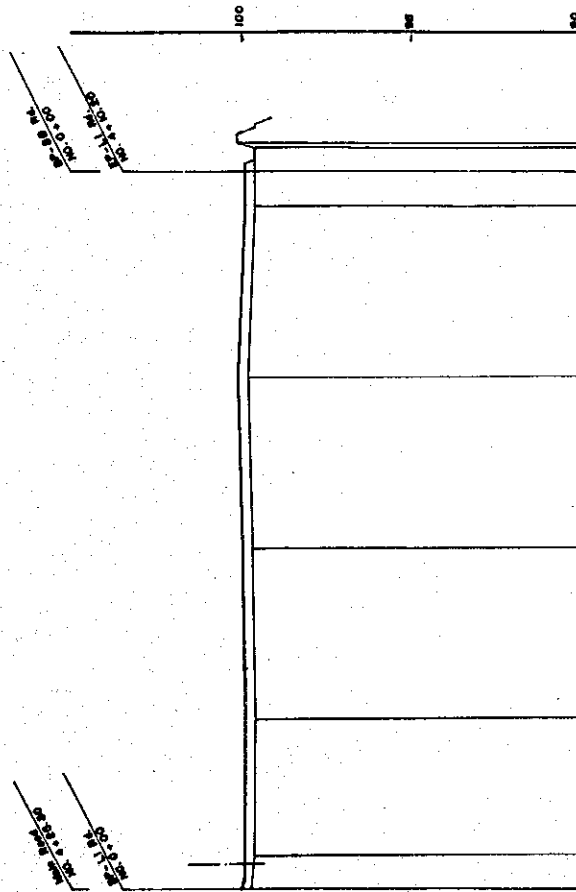
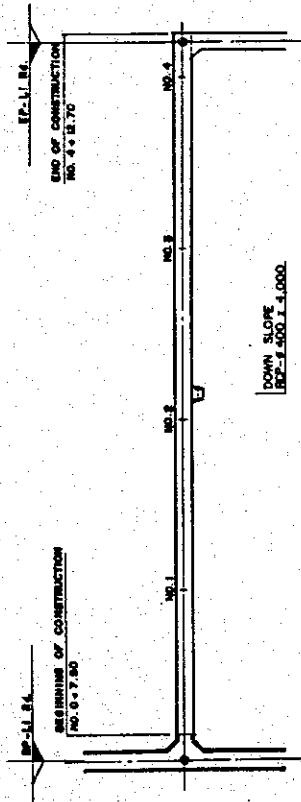
DETAILS OF DOWN SLOPE TO THE FIELD SCALE 1:50  
(FOR R1, L1, R2, L2, R3 ROADS)



SECTION A-A



PLAN

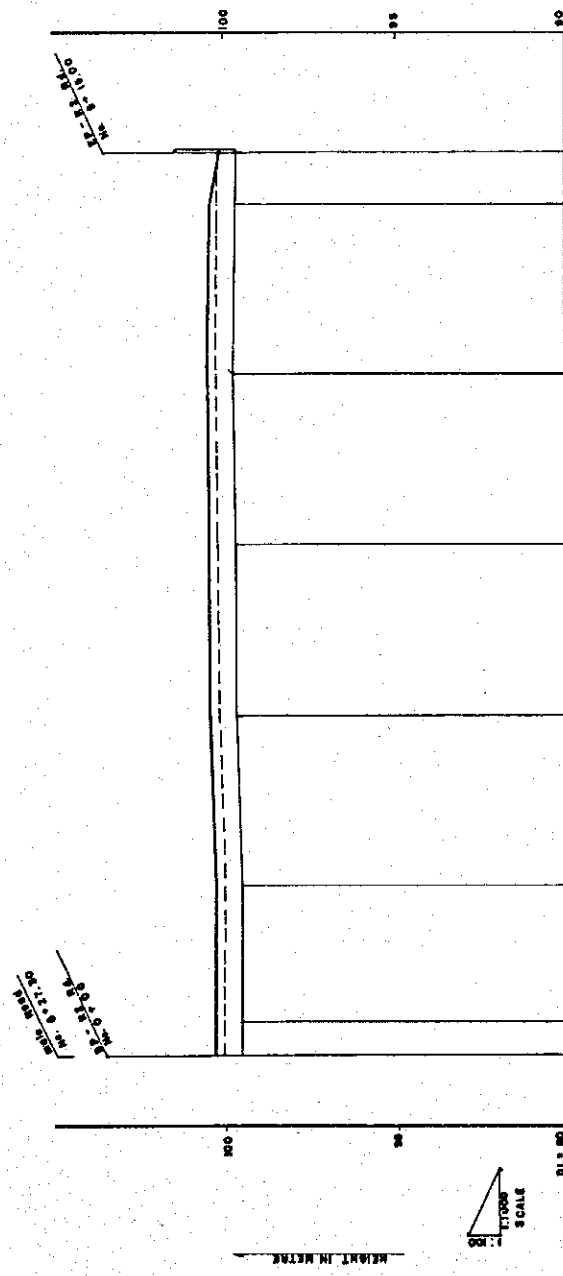
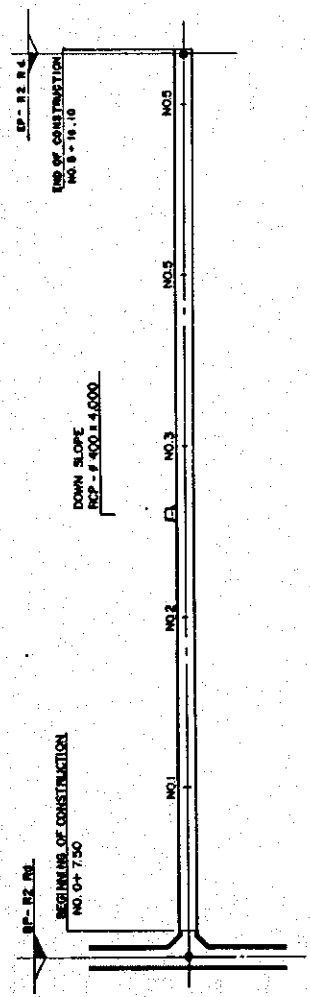


PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)	STATION
98.80	98.80	0.00	0.00	10.00
98.82	98.82	0.00	0.00	10.00
98.84	98.84	0.00	0.00	10.00
98.86	98.86	0.00	0.00	10.00
98.88	98.88	0.00	0.00	10.00
98.90	98.90	0.00	0.00	10.00
98.92	98.92	0.00	0.00	10.00
98.94	98.94	0.00	0.00	10.00
98.96	98.96	0.00	0.00	10.00
98.98	98.98	0.00	0.00	10.00
99.00	99.00	0.00	0.00	10.00
99.02	99.02	0.00	0.00	10.00
99.04	99.04	0.00	0.00	10.00
99.06	99.06	0.00	0.00	10.00
99.08	99.08	0.00	0.00	10.00
99.10	99.10	0.00	0.00	10.00
99.12	99.12	0.00	0.00	10.00
99.14	99.14	0.00	0.00	10.00
99.16	99.16	0.00	0.00	10.00
99.18	99.18	0.00	0.00	10.00
99.20	99.20	0.00	0.00	10.00
99.22	99.22	0.00	0.00	10.00
99.24	99.24	0.00	0.00	10.00
99.26	99.26	0.00	0.00	10.00
99.28	99.28	0.00	0.00	10.00
99.30	99.30	0.00	0.00	10.00
99.32	99.32	0.00	0.00	10.00
99.34	99.34	0.00	0.00	10.00
99.36	99.36	0.00	0.00	10.00
99.38	99.38	0.00	0.00	10.00
99.40	99.40	0.00	0.00	10.00
99.42	99.42	0.00	0.00	10.00
99.44	99.44	0.00	0.00	10.00
99.46	99.46	0.00	0.00	10.00
99.48	99.48	0.00	0.00	10.00
99.50	99.50	0.00	0.00	10.00

8) L1 ROAD & DOWNSLOPE TO FIELD  
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

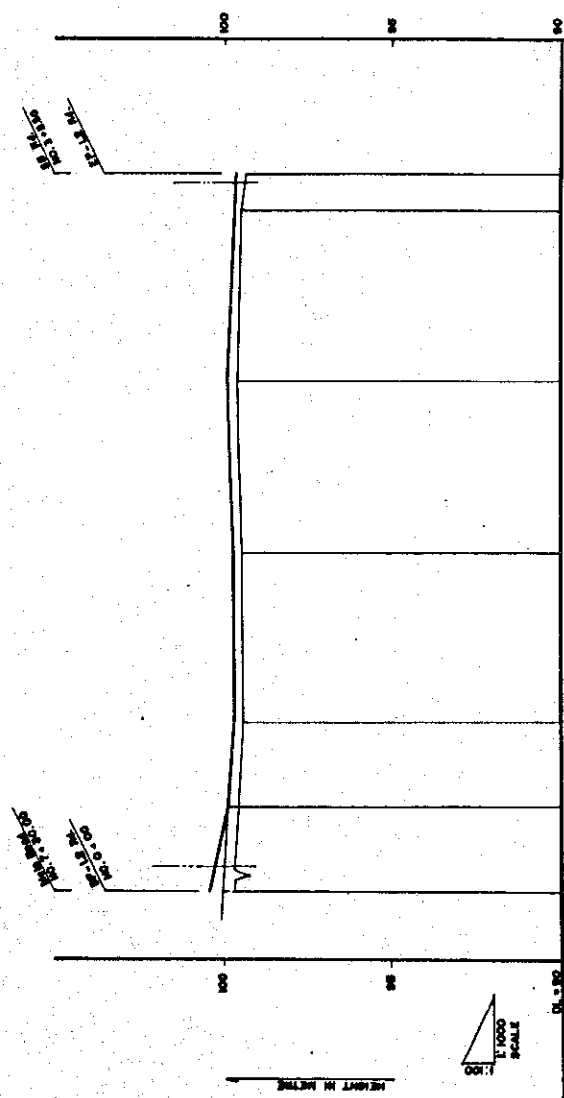
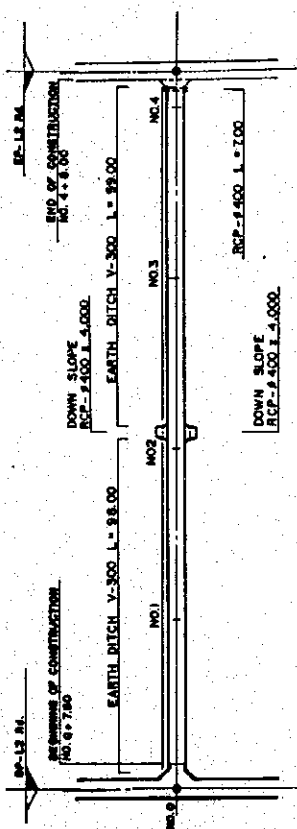


7) R 2 ROAD  
 CRAI BADAR DAIRY PAVING DEMONSTRATION CENTRE



STATION	DISTANCE (m)	ACCUMULATED DISTANCE (m)	EXISTING GROUND HEIGHT (m)	PROPOSED HEIGHT (m)
0+0.00	0.00	0.00	98.84	100.24
+ 10.00	10.00	10.00	98.84	100.38
NO. 1	40.00	50.00	98.80	100.24
NO. 2	50.00	100.00	98.84	100.38
NO. 3	80.00	180.00	98.88	101.40
NO. 4	80.00	300.00	98.71	100.45
NO. 5	80.00	380.00	98.64	100.38
END OF CONSTRUCTION	16.10	396.10	98.64	100.12



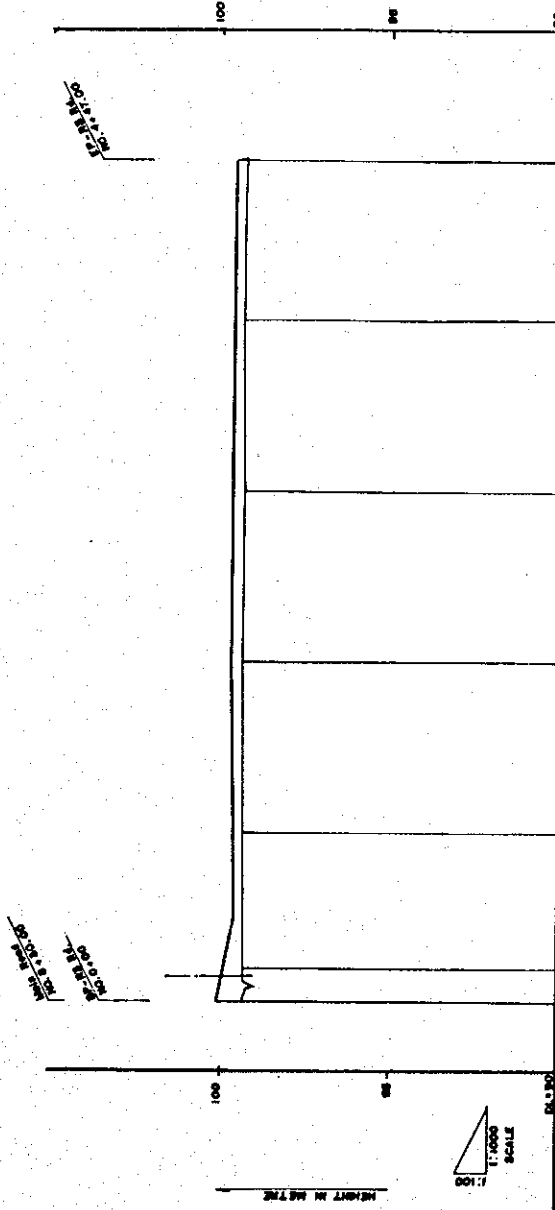
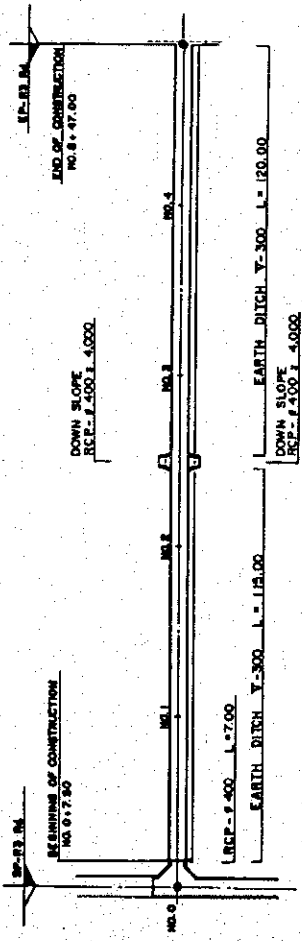


PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	CUT/FILL (m)	STATION
98.47	98.30	0.00	0.00	100.41
98.75	98.48	30.00	0.00	100.41
98.75	98.75	60.00	0.00	100.41
98.66	98.66	90.00	0.00	100.41
98.66	98.66	120.00	0.00	100.41
98.66	98.66	150.00	0.00	100.41
98.66	98.66	180.00	0.00	100.41
98.66	98.66	210.00	0.00	100.41
98.66	98.66	240.00	0.00	100.41
98.66	98.66	270.00	0.00	100.41
98.66	98.66	300.00	0.00	100.41
98.66	98.66	330.00	0.00	100.41
98.66	98.66	360.00	0.00	100.41
98.66	98.66	390.00	0.00	100.41
98.66	98.66	420.00	0.00	100.41
98.66	98.66	450.00	0.00	100.41
98.66	98.66	480.00	0.00	100.41
98.66	98.66	510.00	0.00	100.41
98.66	98.66	540.00	0.00	100.41
98.66	98.66	570.00	0.00	100.41
98.66	98.66	600.00	0.00	100.41
98.66	98.66	630.00	0.00	100.41
98.66	98.66	660.00	0.00	100.41
98.66	98.66	690.00	0.00	100.41
98.66	98.66	720.00	0.00	100.41
98.66	98.66	750.00	0.00	100.41
98.66	98.66	780.00	0.00	100.41
98.66	98.66	810.00	0.00	100.41
98.66	98.66	840.00	0.00	100.41
98.66	98.66	870.00	0.00	100.41
98.66	98.66	900.00	0.00	100.41
98.66	98.66	930.00	0.00	100.41
98.66	98.66	960.00	0.00	100.41
98.66	98.66	990.00	0.00	100.41
98.66	98.66	1020.00	0.00	100.41
98.66	98.66	1050.00	0.00	100.41
98.66	98.66	1080.00	0.00	100.41
98.66	98.66	1110.00	0.00	100.41
98.66	98.66	1140.00	0.00	100.41
98.66	98.66	1170.00	0.00	100.41
98.66	98.66	1200.00	0.00	100.41
98.66	98.66	1230.00	0.00	100.41
98.66	98.66	1260.00	0.00	100.41
98.66	98.66	1290.00	0.00	100.41
98.66	98.66	1320.00	0.00	100.41
98.66	98.66	1350.00	0.00	100.41
98.66	98.66	1380.00	0.00	100.41
98.66	98.66	1410.00	0.00	100.41
98.66	98.66	1440.00	0.00	100.41
98.66	98.66	1470.00	0.00	100.41
98.66	98.66	1500.00	0.00	100.41



8) L 2 ROAD  
 CRAI BADAN DAIRY PARKING DEMONSTRATION CENTRE



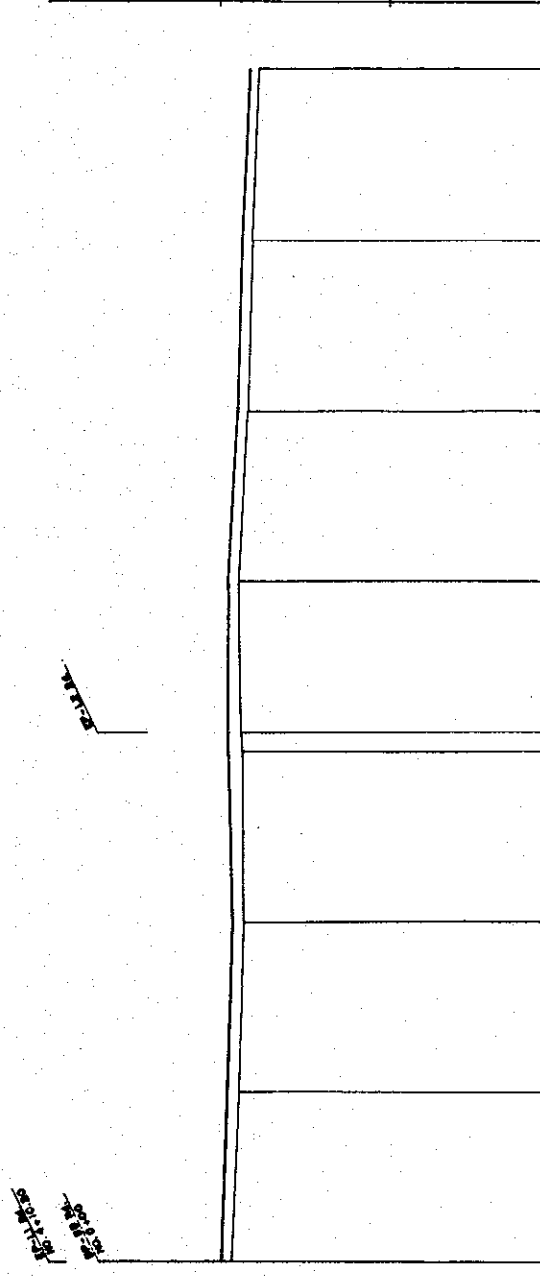
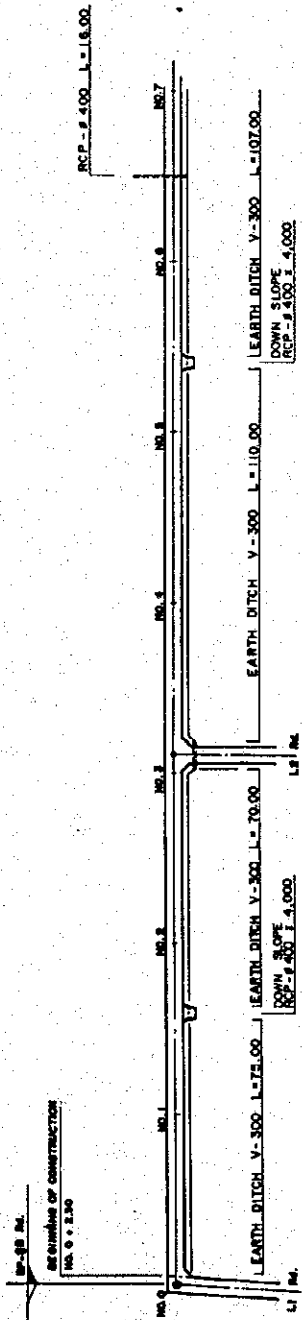


STATION	PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)
0+00.0	0.00	0.00	0.00	0.00
0+10.00	10.00	10.00	10.00	10.00
0+20.00	15.00	15.00	25.00	15.00
0+30.00	25.00	25.00	50.00	25.00
0+40.00	30.00	30.00	75.00	35.00
0+47.00	47.00	47.00	122.00	47.00

9) R 3 ROAD  
 CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

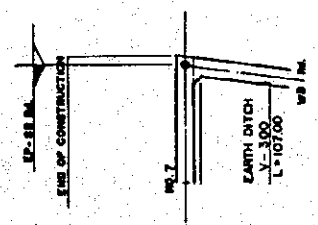
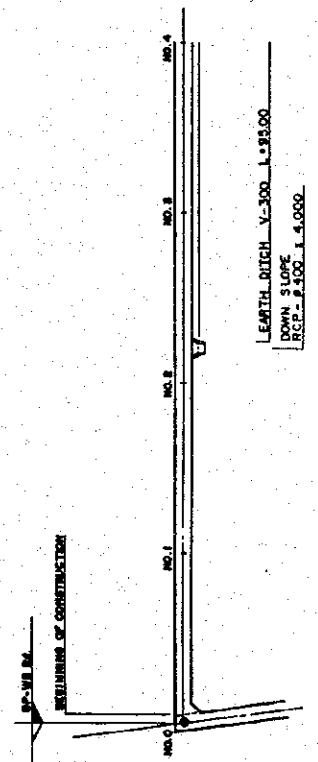






STATION	0+00	0+10	0+20	0+30	0+40	0+50	0+60	0+70
PROPOSED HEIGHT (m)	98.80	99.74	99.80	99.82	99.88	99.90	99.90	99.11
EXISTING GROUND HEIGHT (m)	99.80	99.48	99.38	99.38	99.38	99.38	99.38	99.81
ACCUMULATED DISTANCE (m)	0.00	90.00	100.00	180.00	200.00	200.00	200.00	200.00
CURVATURE (m)	0.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00





98.17  
98.17  
98.17  
98.17

98.17  
98.17  
98.17  
98.17

STATION	DISTANCE (m)	ACCUMULATED DISTANCE (m)	EXISTING GROUND HEIGHTS	PROPOSED HEIGHT (m)
98.00	0.00	0.00	98.17	98.47
98.01	80.00	80.00	98.98	98.29
98.02	160.00	160.00	98.03	98.33
98.03	240.00	240.00	98.98	98.27
98.04	320.00	320.00	98.98	98.21

STATION	DISTANCE (m)	ACCUMULATED DISTANCE (m)	EXISTING GROUND HEIGHTS	PROPOSED HEIGHT (m)
98.07	0.00	0.00	98.17	98.47
98.08	80.00	80.00	98.98	98.41

11) SB ROAD (2/2) &  
WB ROAD (1/2)  
CRAI BADAR DAIRY FARMING  
DEMONSTRATION CENTRE





JICA