

5.5 Drawings

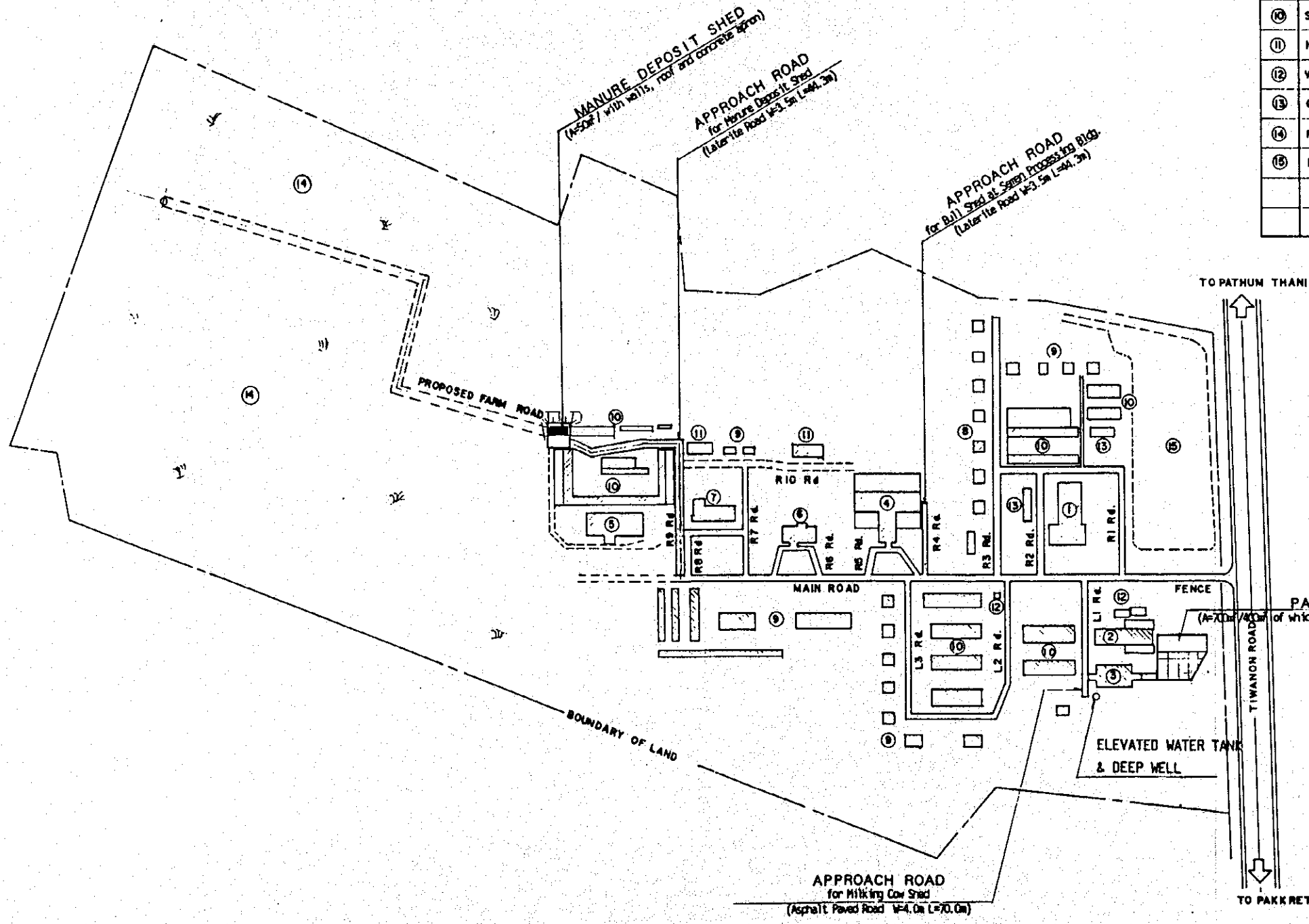
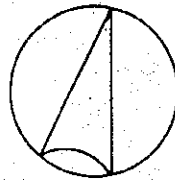
CONTENT OF DRAWINGS

NO. OF DRAWING	NAME OF DRAWING	
01	GENERAL PLAN OF PATHUM THANI AI CENTER	
02	WATER SUPPLY FACILITIES	- PATHUM THANI AI CENTER
03	GENERAL VIEW AND DETAILES OF PADDOCK	- PATHNM THANI AI CENTER
04	DETAILS OF FACILITIES FOR PADDOCK	- PATHUM THANI AI CENTER
05	DETAILS OF FACILITIES FOR PADDOCK (1/2)	- PATHUM THANI AI CENTER
06	GENERAL VIEW OF MANURE DEPOSIT SHED	- PATHUM THANI AI CENTER
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09	DETAILS OF MANURE DEPOSIT SHED (3/3)	- PATHUM THANI AI CENTER
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11	PLAN AND PROFILE OF R9 ROAD	- PATHUM THANI AI CENTER
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16	PUMPING STATION AND DEEP WELL	- CHAI BADAN DAILY FARMING DEMONSTRATION CENTER
17	PLAN, SECTION AND DETAILS OF FARM POND	- CHAI BADAN DAILY FARMING DEMONSTRATION CENTER
18	PLAN AND DETAILS OF PIPE LINE AND SPRINKLER	- CHAI BADAN DAILY FARMING DEMONSTRATION CENTER
19	PLAN AND PROFILE OF MAIN ROAD	- CHAI BADAN DAILY FARMING DEMONSTRATION CENTER
20	TYPICAL CROSS SECTIONS OF MAIN AND APPROACH ROADS	- CHAI BADAN DAILY FARMING DEMON STRATION CENTER

GENERAL PLAN OF INSTITUTION OF PATHUM THANI A-1 CENTRE

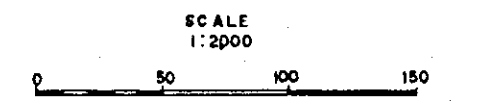
SCALE 1:2,000

INSTITUTION OF PATHUM THANI A1 CENTRE



NO	NAME OF INSTITUTION	REMARKS
①	MAN (A/I) RESEARCH BLDG.	
②	E/T RESEARCH BLDG.	
③	MILKING COW SHED	
④	SEMEN PROCESSING BLDG.	
⑤	HIGH-TECH. RESEARCH BLDG.	
⑥	TRAINING BLDG.	
⑦	DORMITORY FOR TRAINEES	
⑧	OFFICER'S HOUSES	
⑨	LABOURER'S HOUSES	
⑩	STABLES	
⑪	HAY STORAGE	
⑫	WATER TANK	
⑬	GARAGE	
⑭	PASTURE LAND	
⑮	POND	

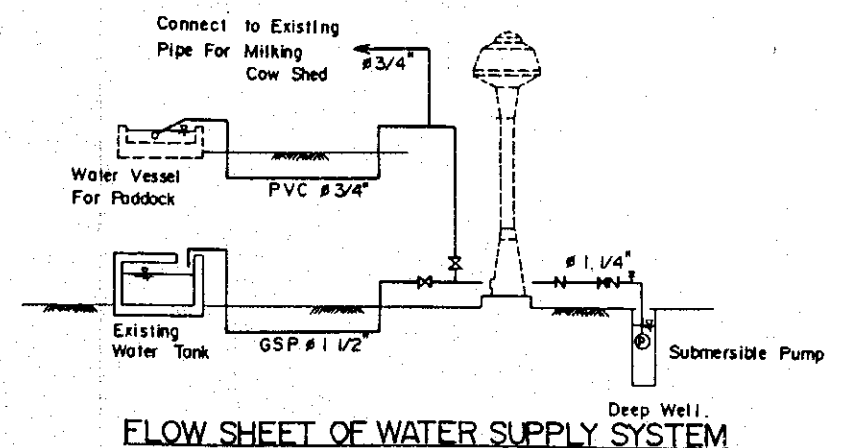
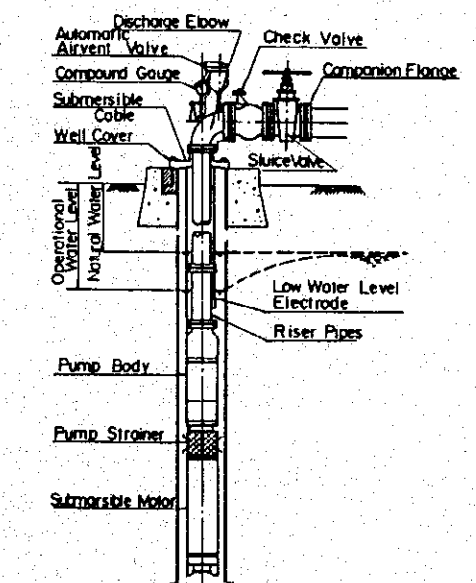
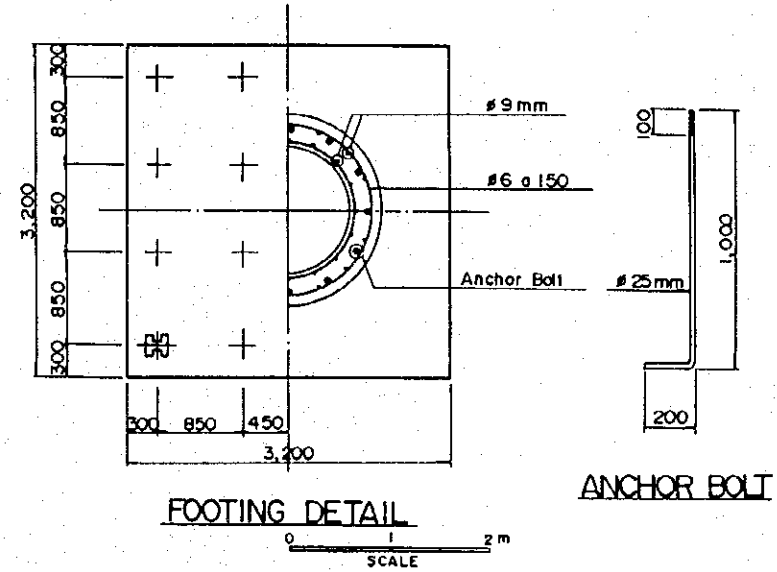
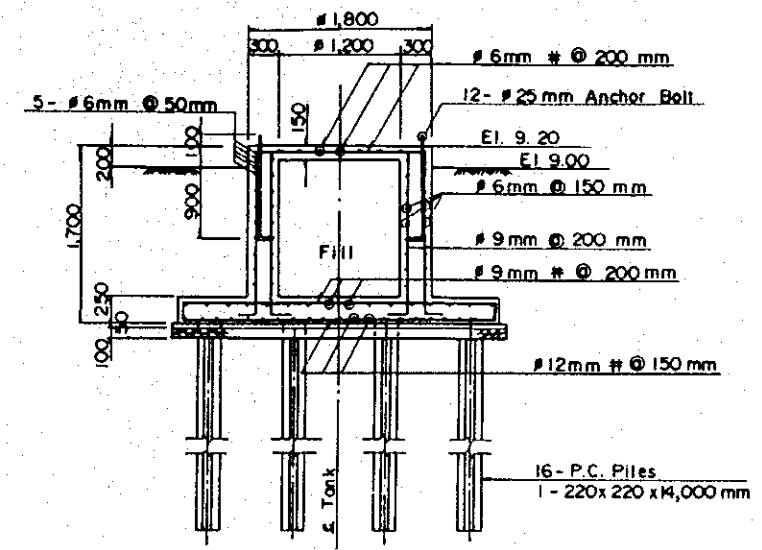
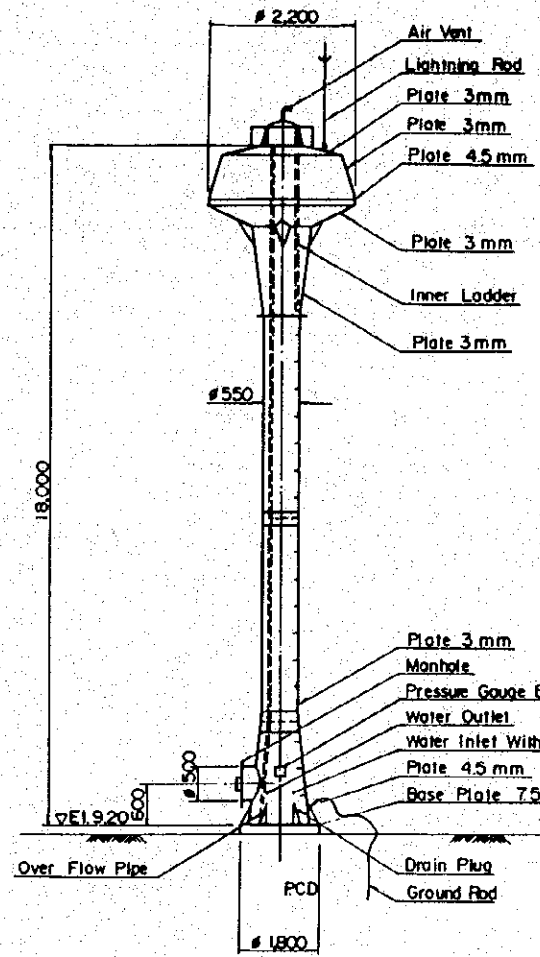
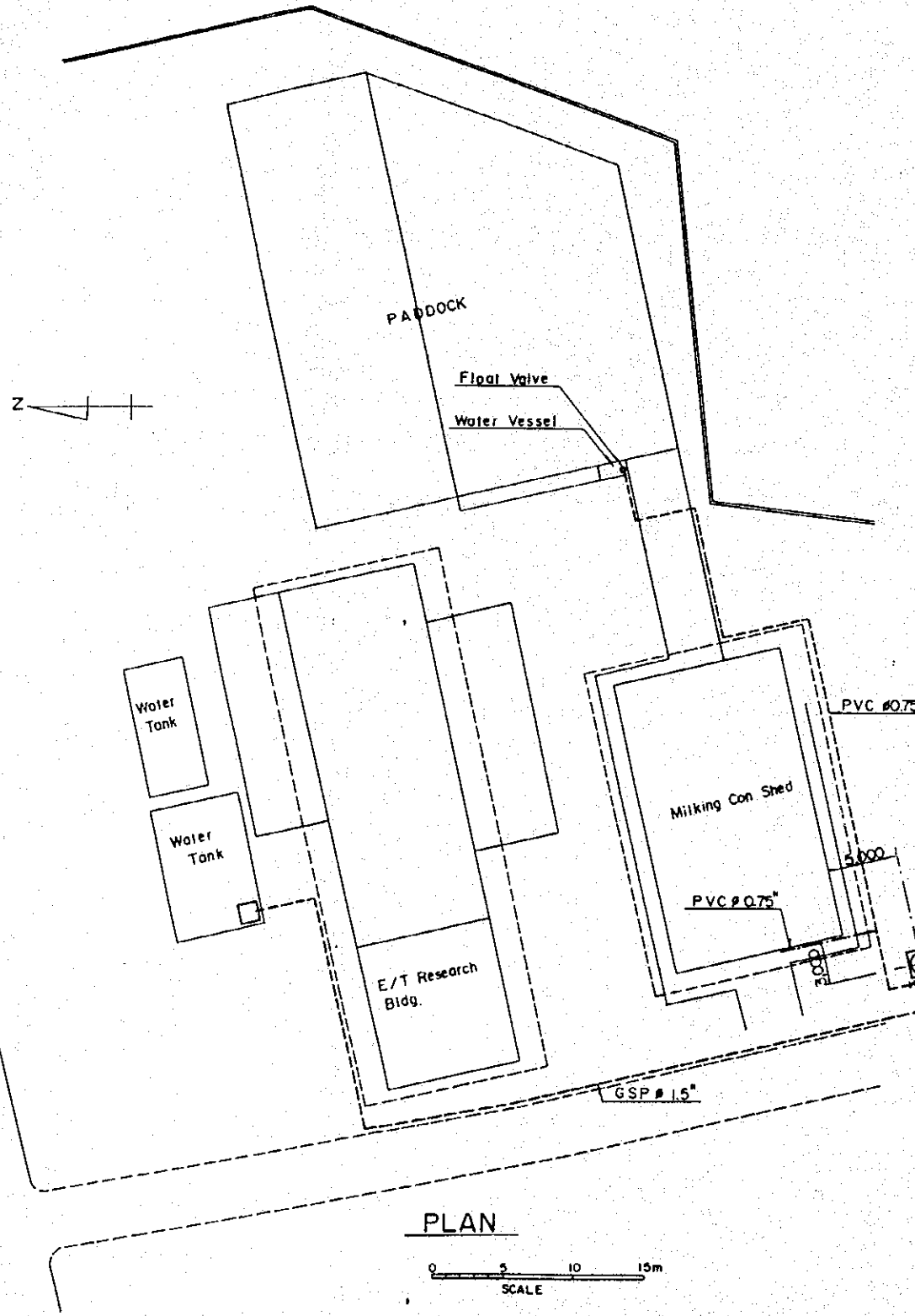
NOTE: BOUNDARY LINE IS DRAWN IN NON SCALE



THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
GENERAL PLAN
OF
PATHUM THANI A1 CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 1



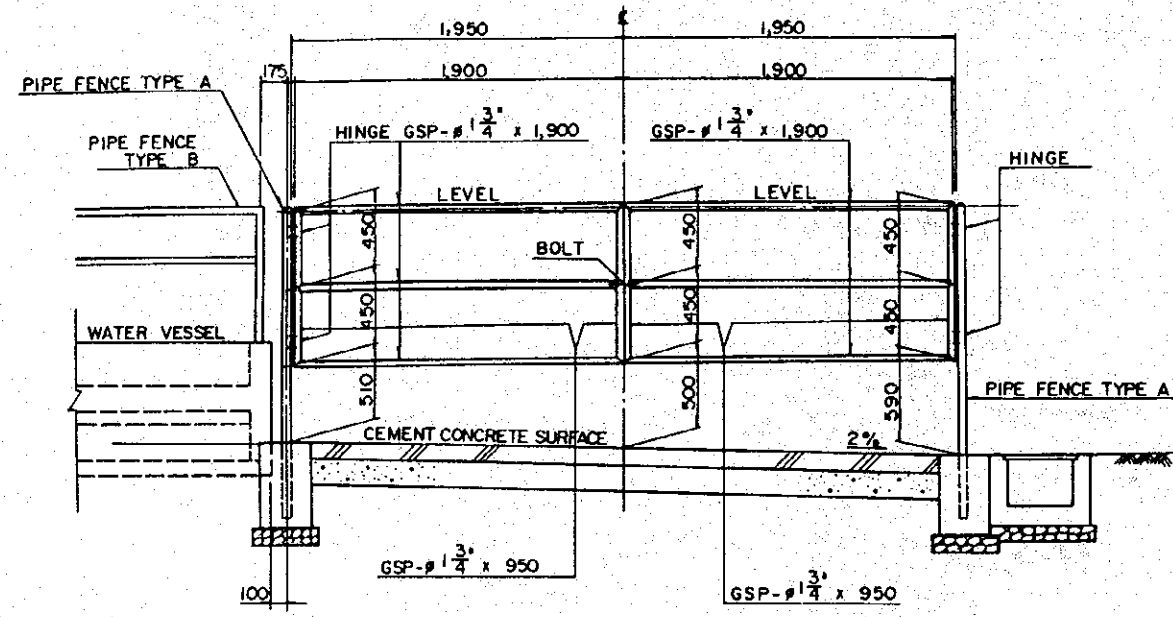
THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
WATER SUPPLY FACILITIES

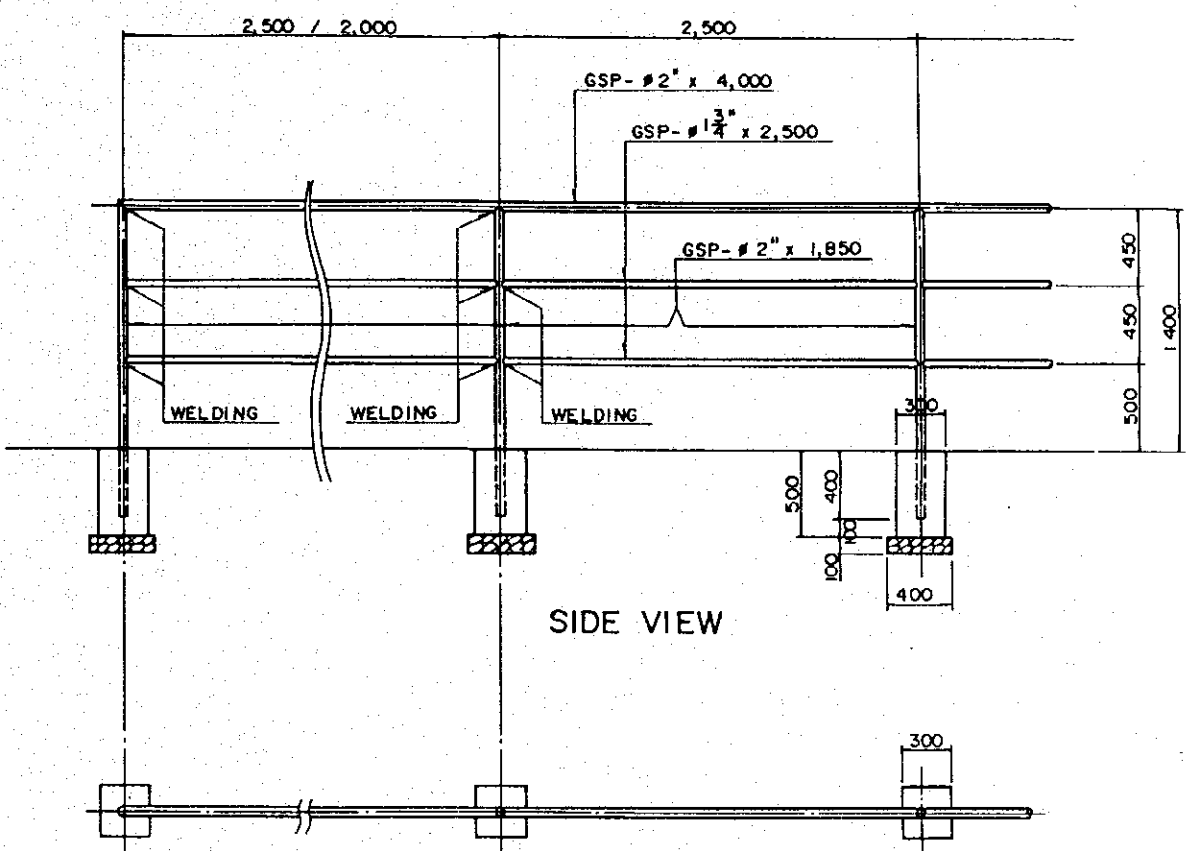
PATHUM THANI AI CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 2

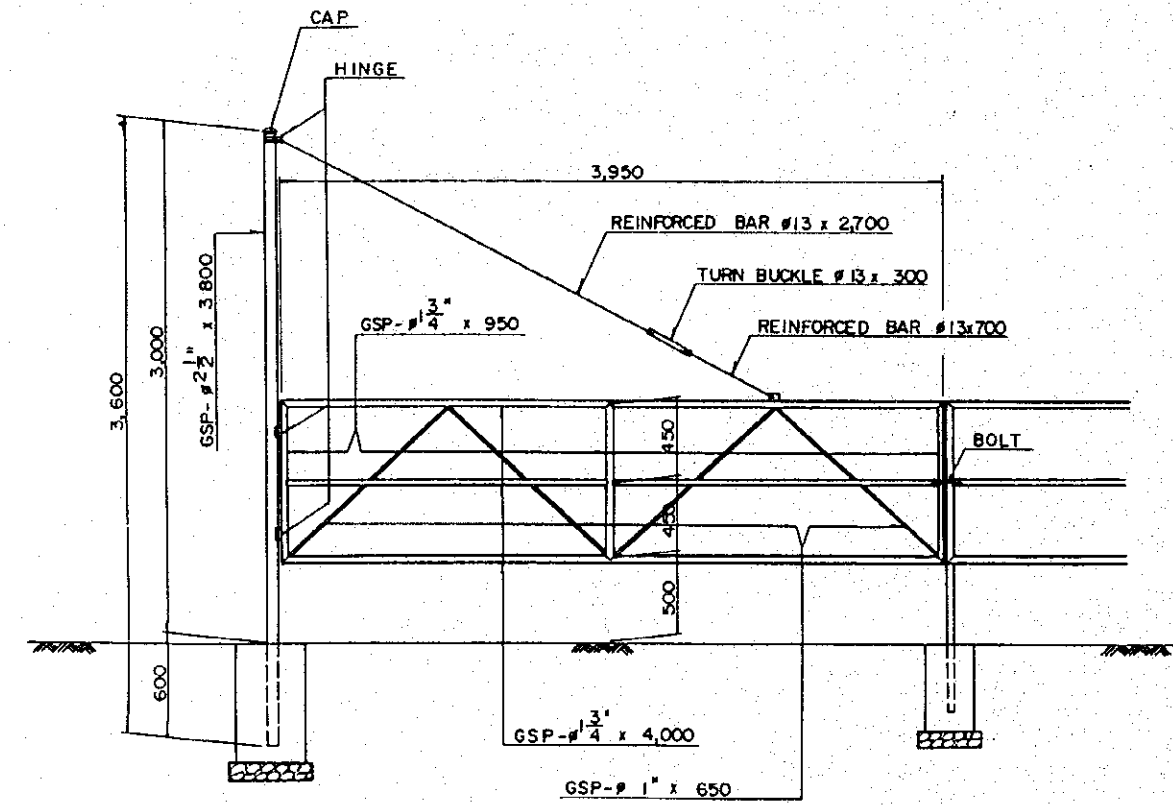
DETAILS OF GATES AND PIPE FENCE TYPE A SCALE 1:30



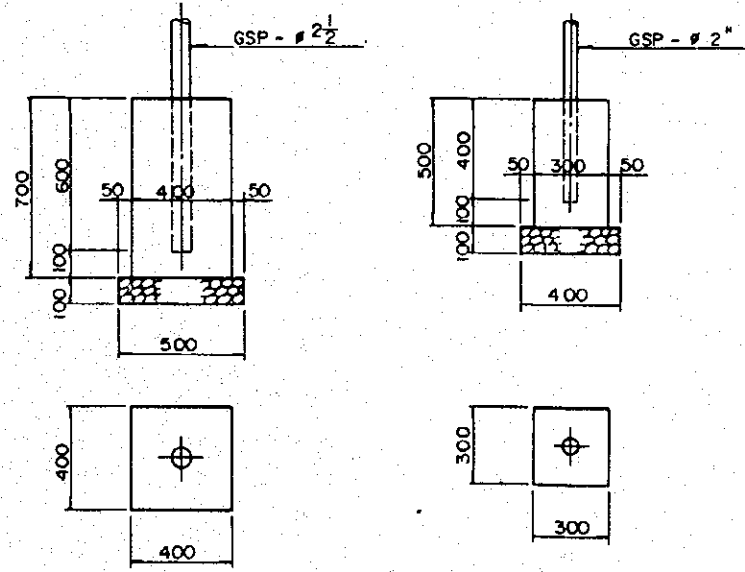
GATE TYPE A



PLAN
PIPE FENCE TYPE A



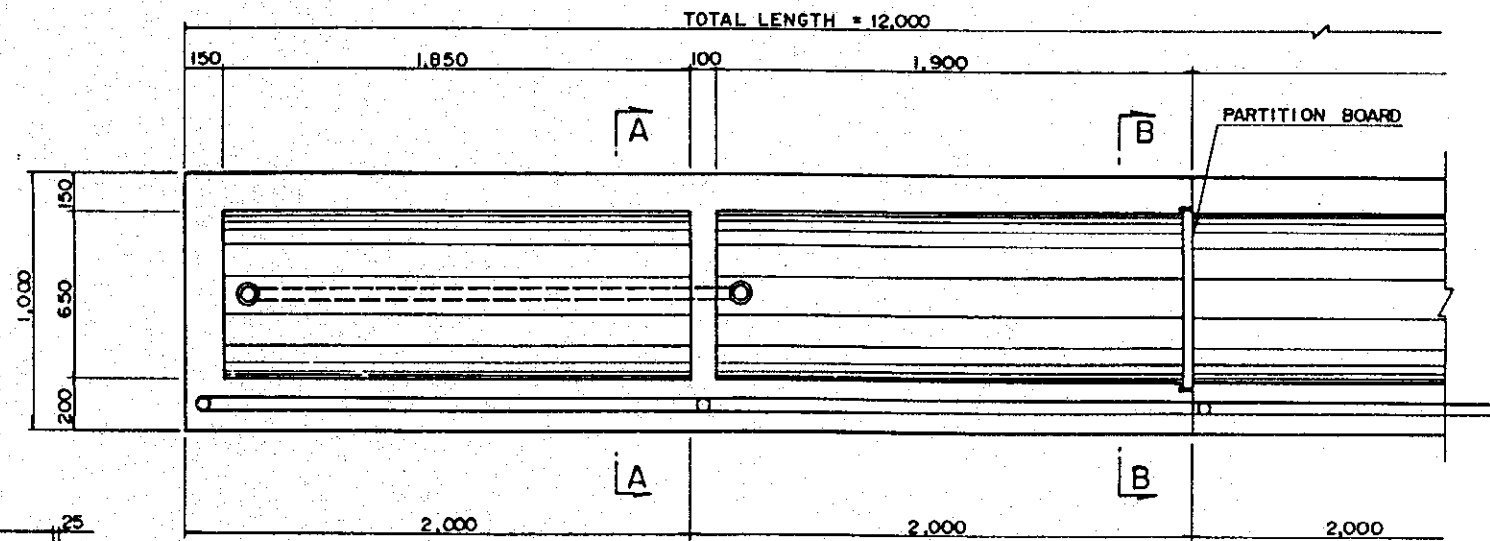
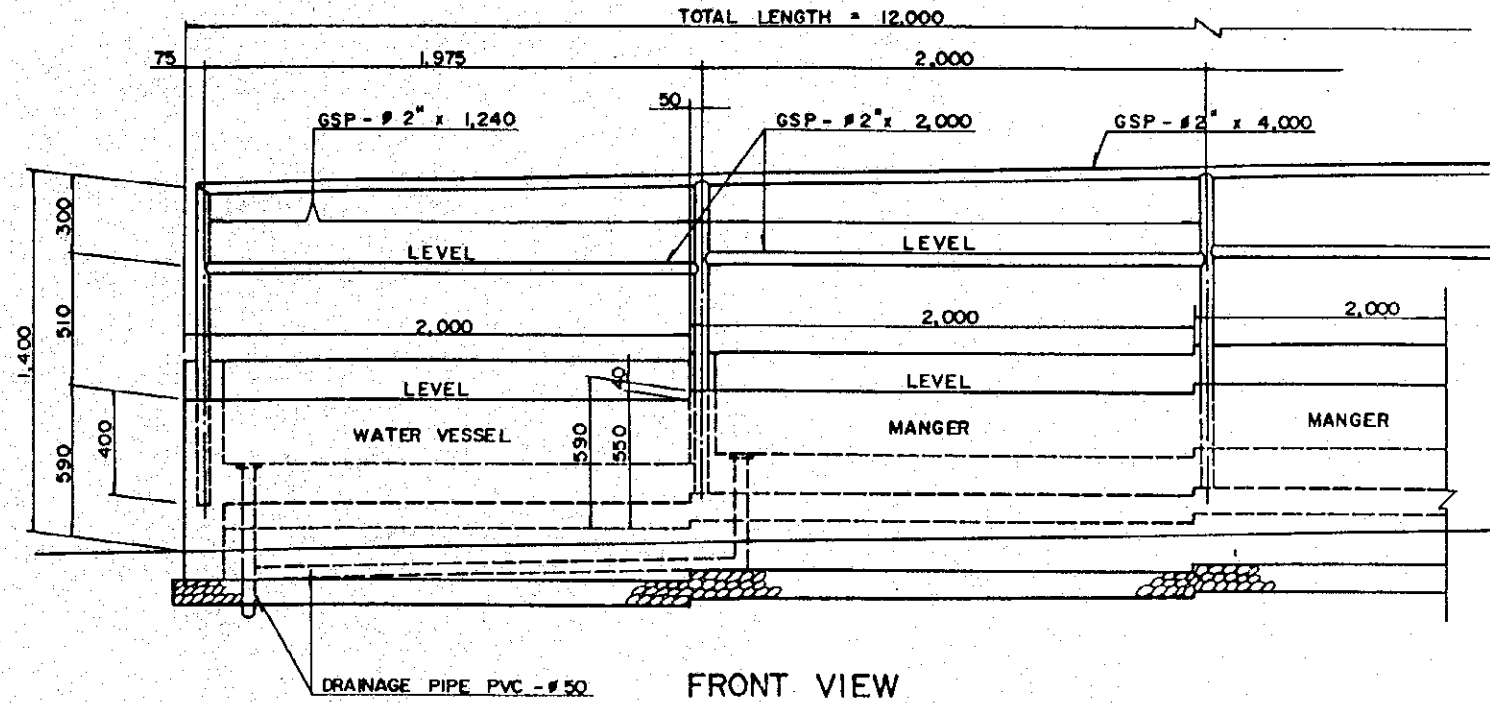
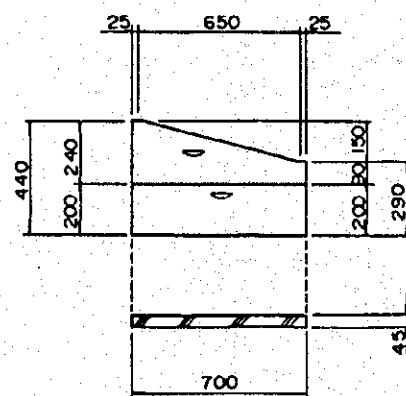
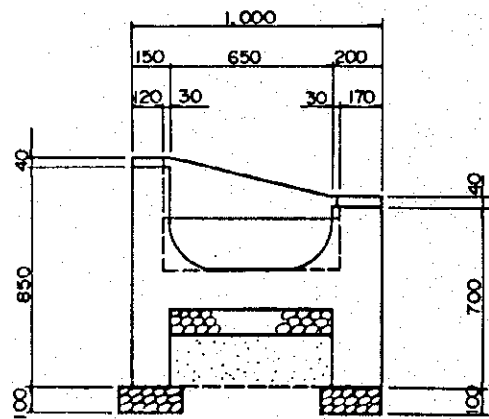
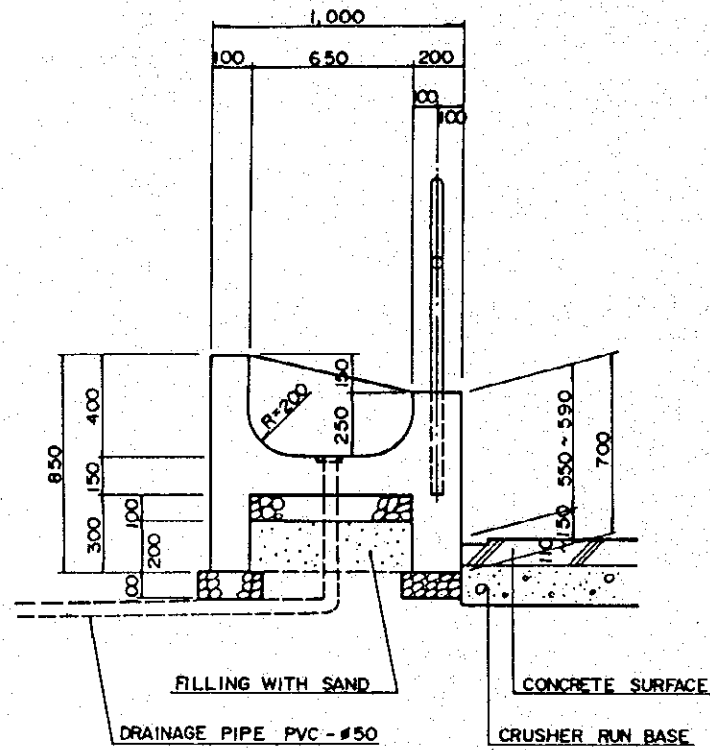
GATE TYPE B



FOOTINGS OF GATE AND FENCE SCALE 1:20

THE MODEL INFRASTRUCTURE WORKS FOR THE DAIRY FARMING DEVELOPMENT PROJECT IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND	
TITLE OF DRAWING : DETAILS OF FACILITIES FOR Paddock PATHUM THANI AI CENTRE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DRAWING NO. : 4

DETAILS OF MANGER AND WATER VESSEL WITH PIPE FENCE TYPE B SCALE 1:20

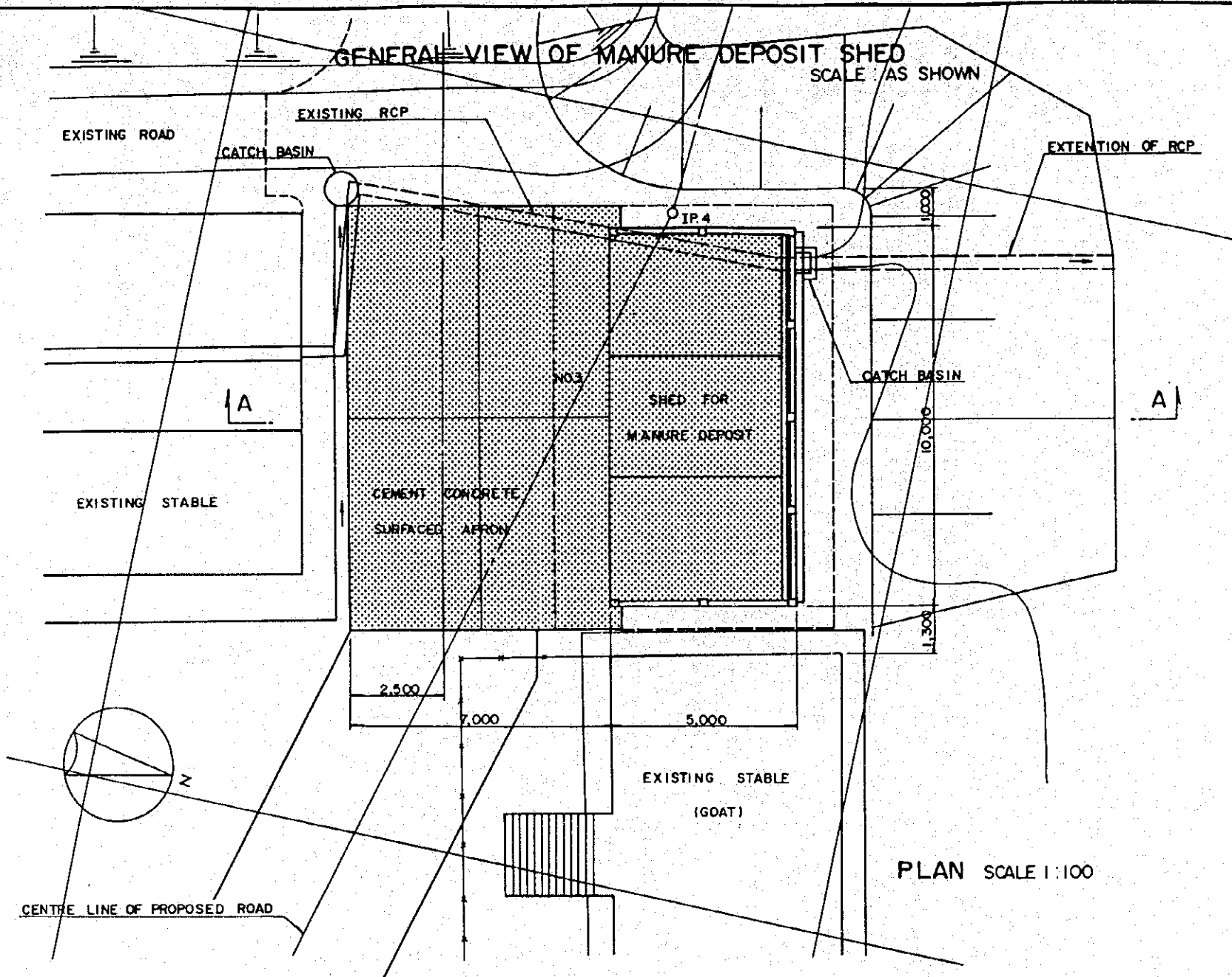


THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
DETAILS OF FACILITIES
FOR PADDOCK
PATHUM THANAI CENTRE

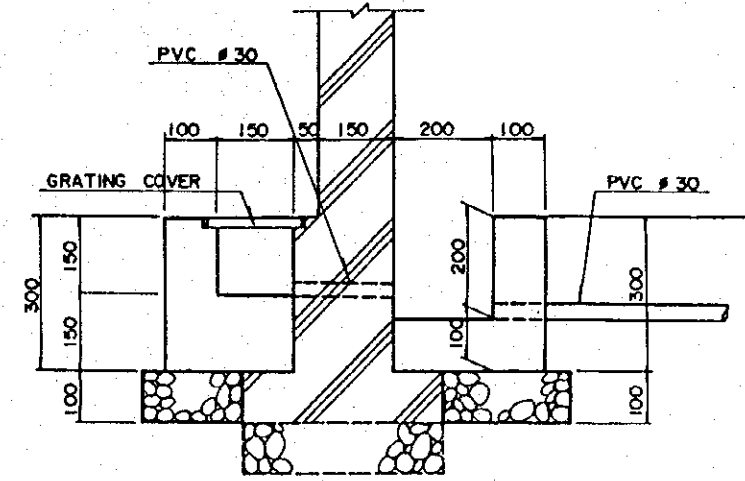
JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 5

GENERAL VIEW OF MANURE DEPOSIT SHED
SCALE AS SHOWN

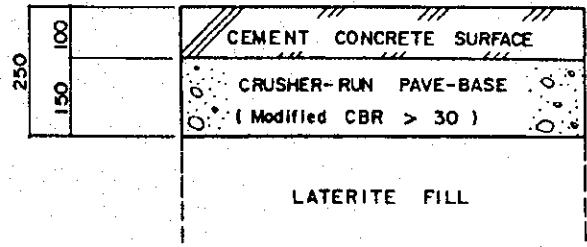


PLAN SCALE 1:100

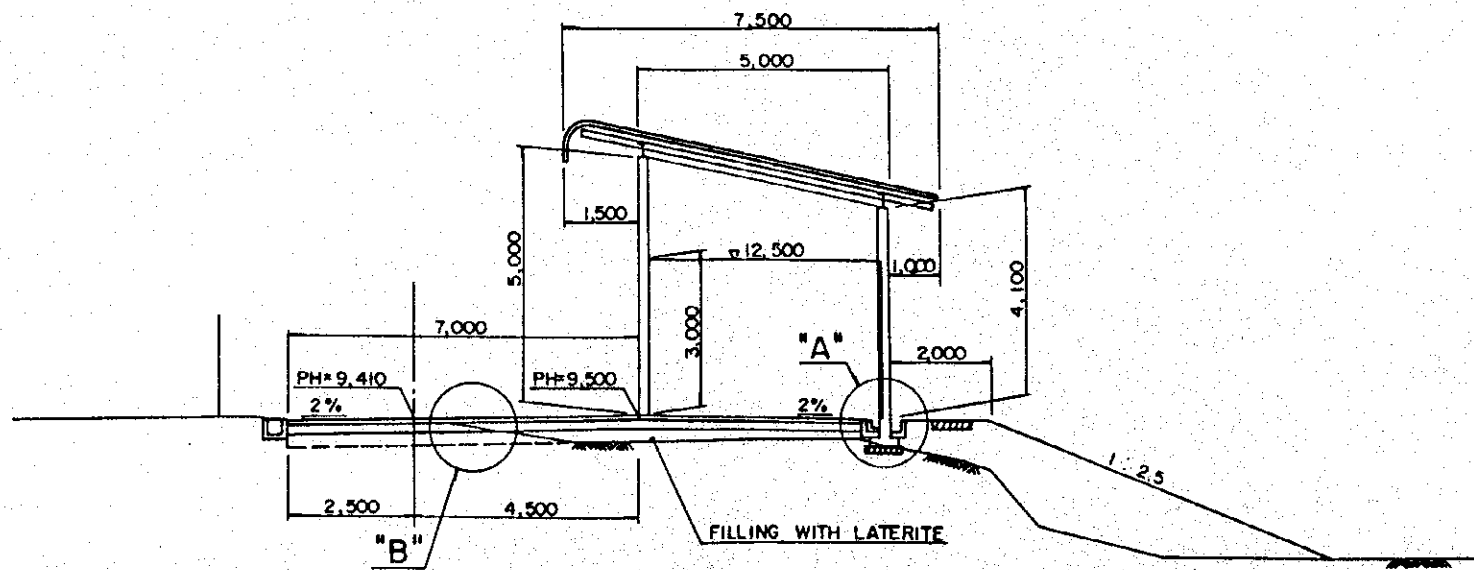
DETAILS SCALE 1:10



DETAIL OF "A"

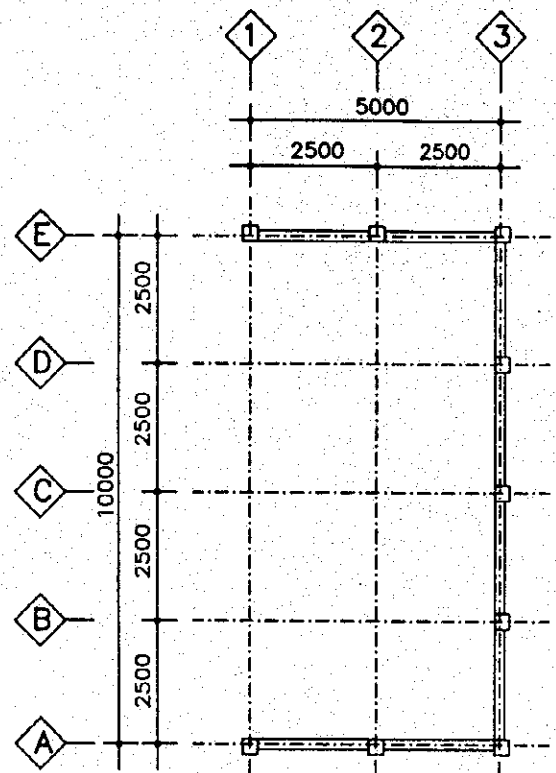
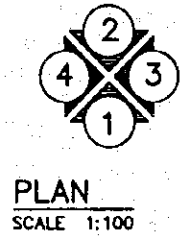


DETAIL OF "B"

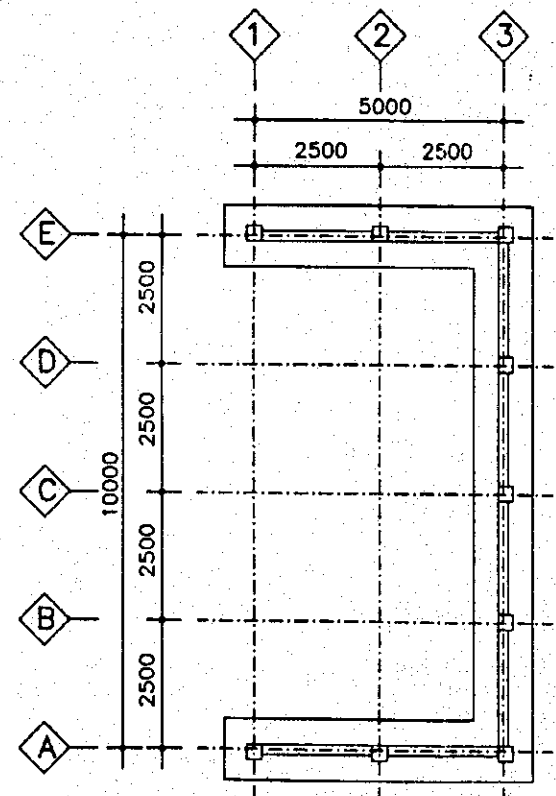


SECTION A-A SCALE 1:100

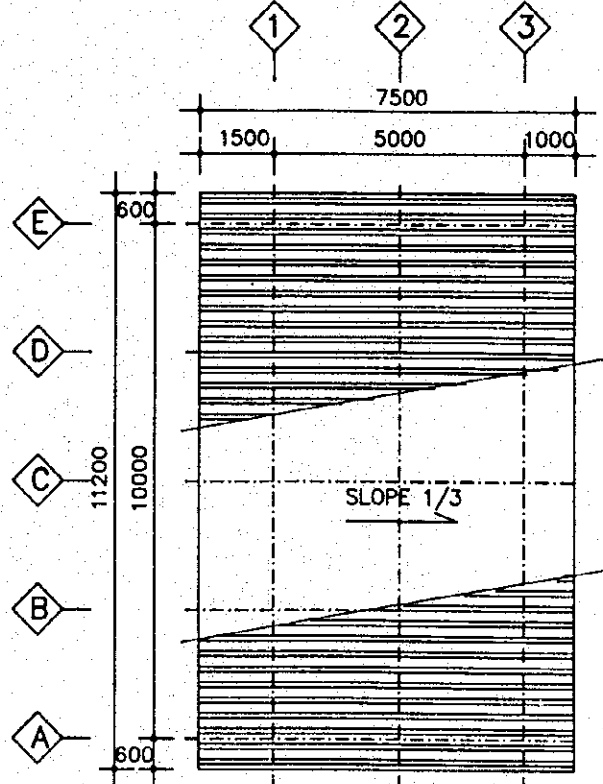
THE MODEL INFRASTRUCTURE WORKS FOR THE DAIRY FARMING DEVELOPMENT PROJECT IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND	
TITLE OF DRAWING : GENERAL VIEW OF MANURE DEPOSIT SHED PATHUM THANI AI CENTRE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DRAWING NO. : 6



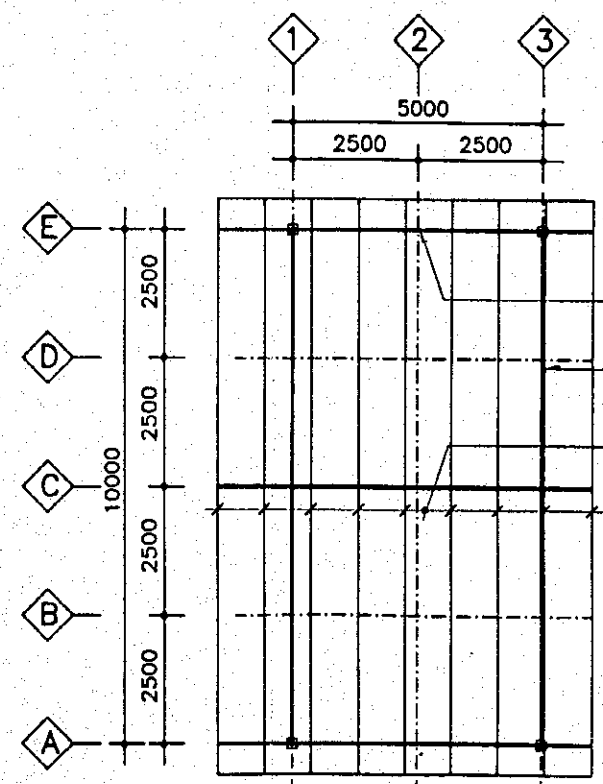
FOUNDATION PLAN
SCALE 1:100



ROOF FRAMING PLAN
SCALE 1:100

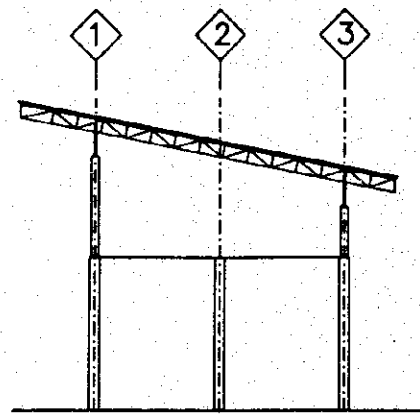


ROOF PLAN
SCALE 1:100

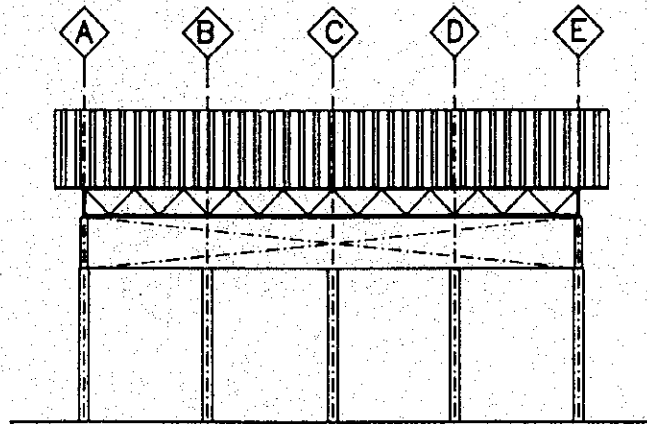


- SMALL TRUSS
L-50x50x6 LATTICE #13 T&B H=250
- STEEL TRUSS
L 65x65x5 LATTICE #16 T&B H=600
- PURLIN C-150x50x20x3.2THK. @1000
- 1000

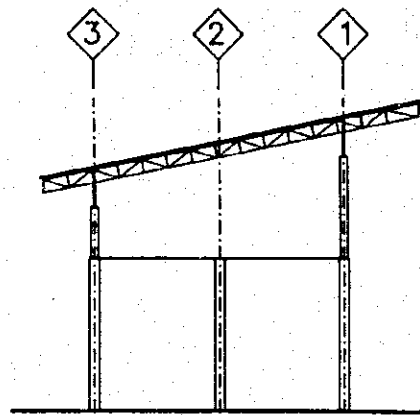
THE MODEL INFRASTRUCTURE WORKS FOR THE DAIRY FARMING DEVELOPMENT PROJECT IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND	
TITLE OF DRAWING : DETAILS OF MANURE DEPOSIT SHED (1/3) PATHUM THANI AI CENTRE	
JAPAN INTERNATIONAL COOPERATION AGENCY T O K Y O	DRAWING NO. : 7



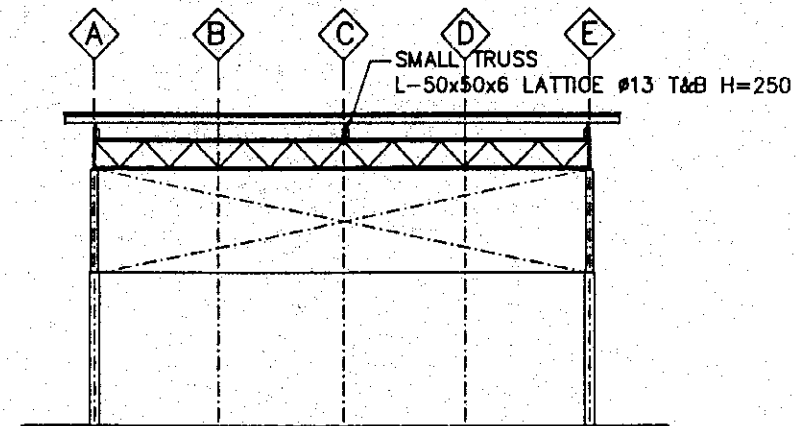
ELEVATION 1
SCALE 1:100



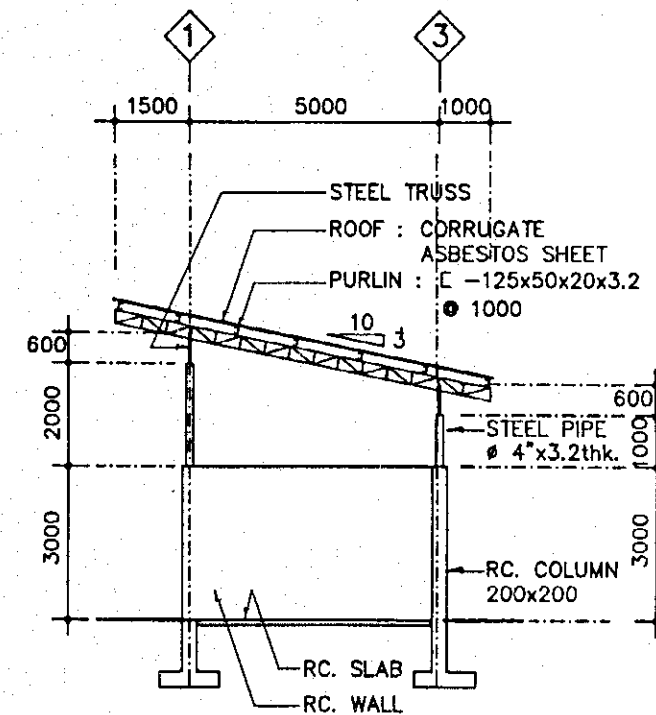
ELEVATION 3
SCALE 1:100



ELEVATION 2
SCALE 1:100

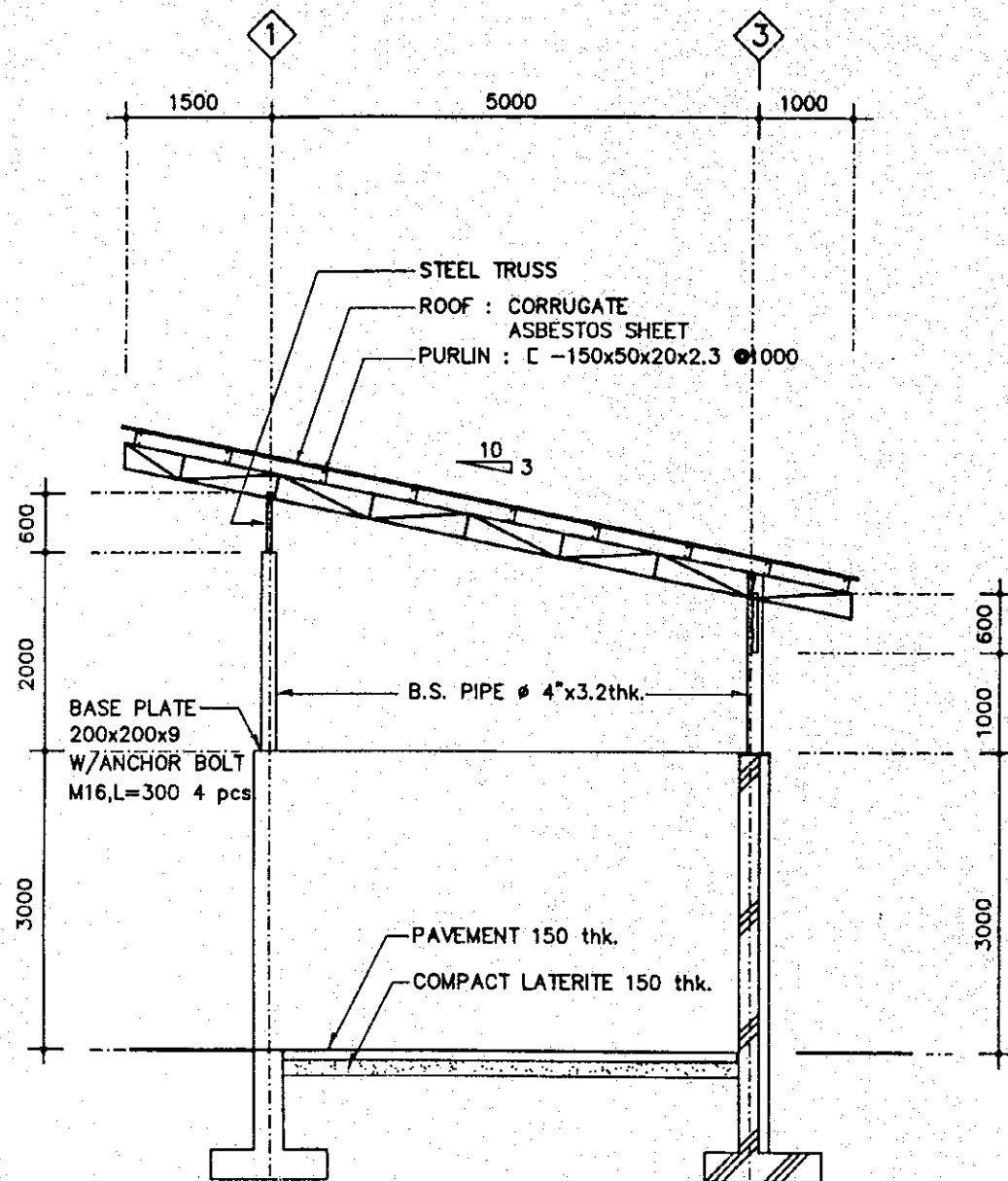


ELEVATION 4
SCALE 1:100

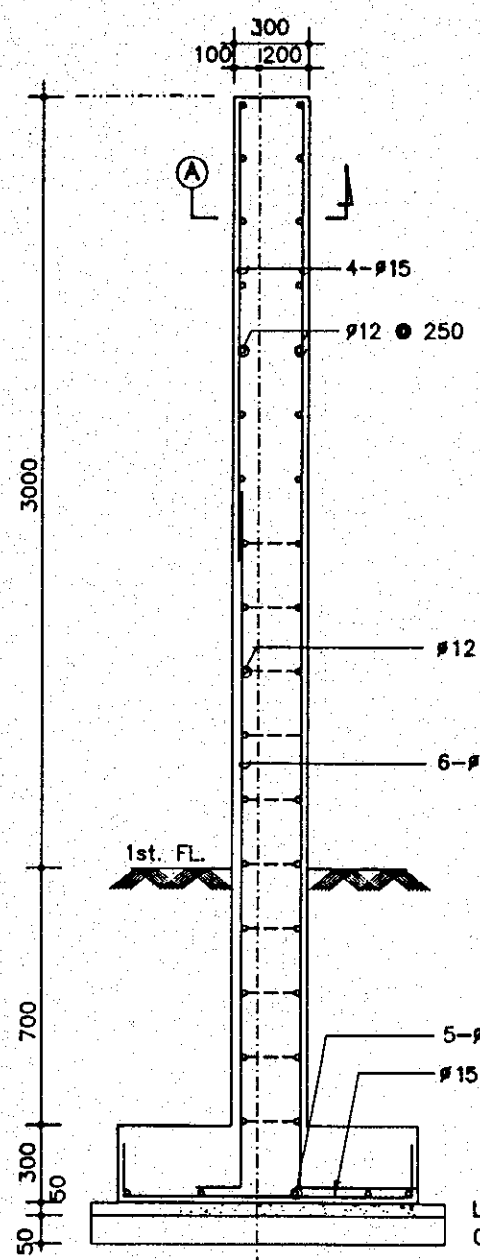


SECTION
SCALE 1:100

THE MODEL INFRASTRUCTURE WORKS FOR THE DAIRY FARMING DEVELOPMENT PROJECT IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND	
TITLE OF DRAWING : DETAILS OF MANURE DEPOSIT SHED (2/3) PATHUM THANI AI CENTRE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DRAWING NO. : 8

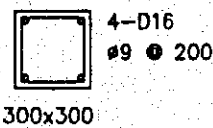


SECTION
SCALE 1:50

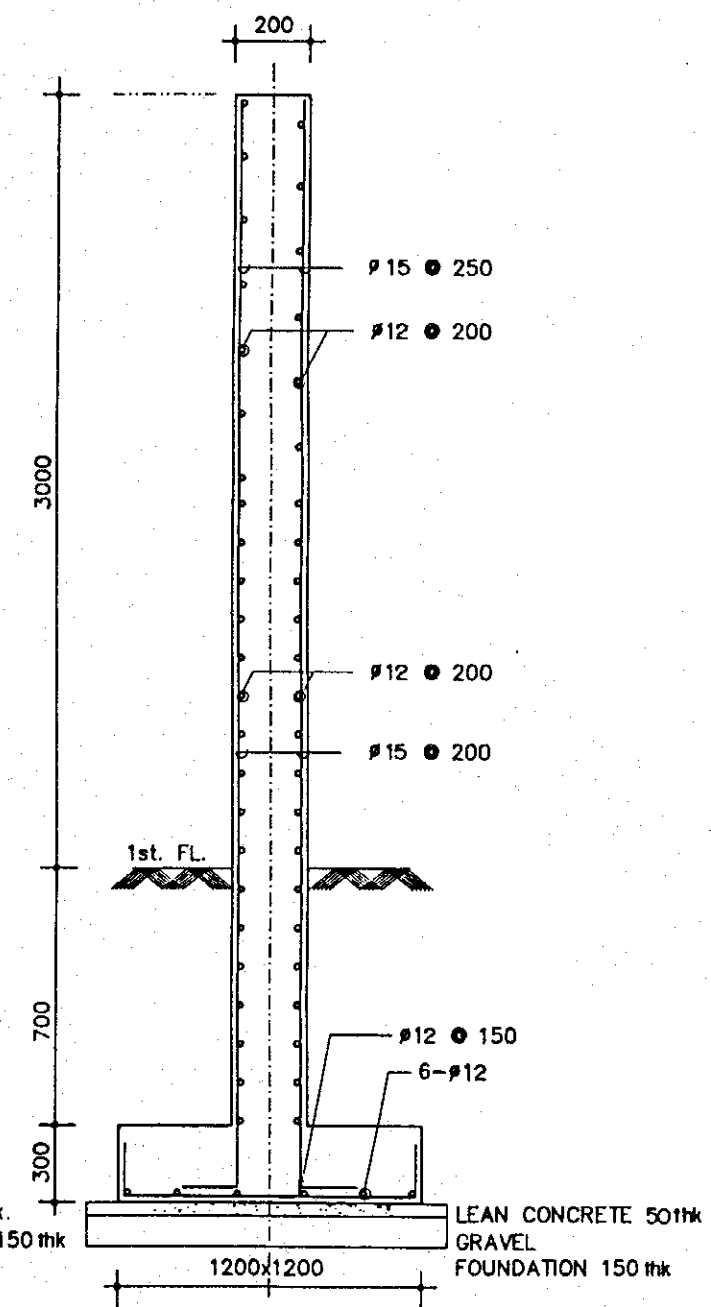


DETAIL FOOTING
SCALE 1:20

COLUMN



SECTION A
SCALE 1:20



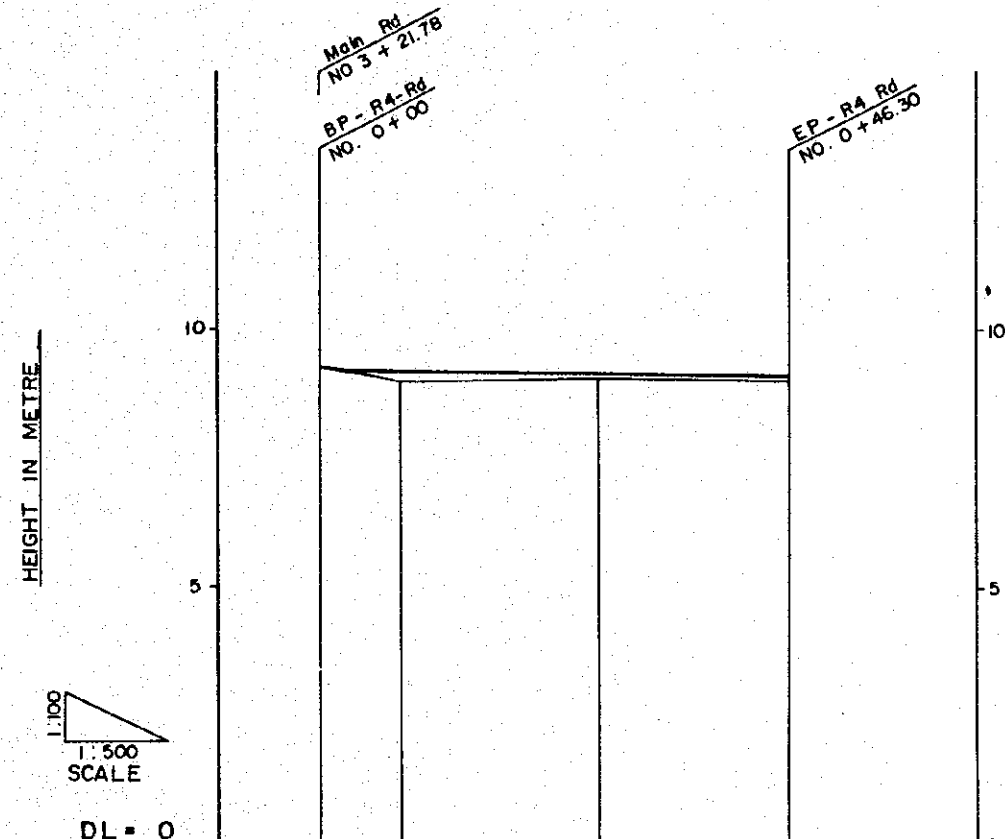
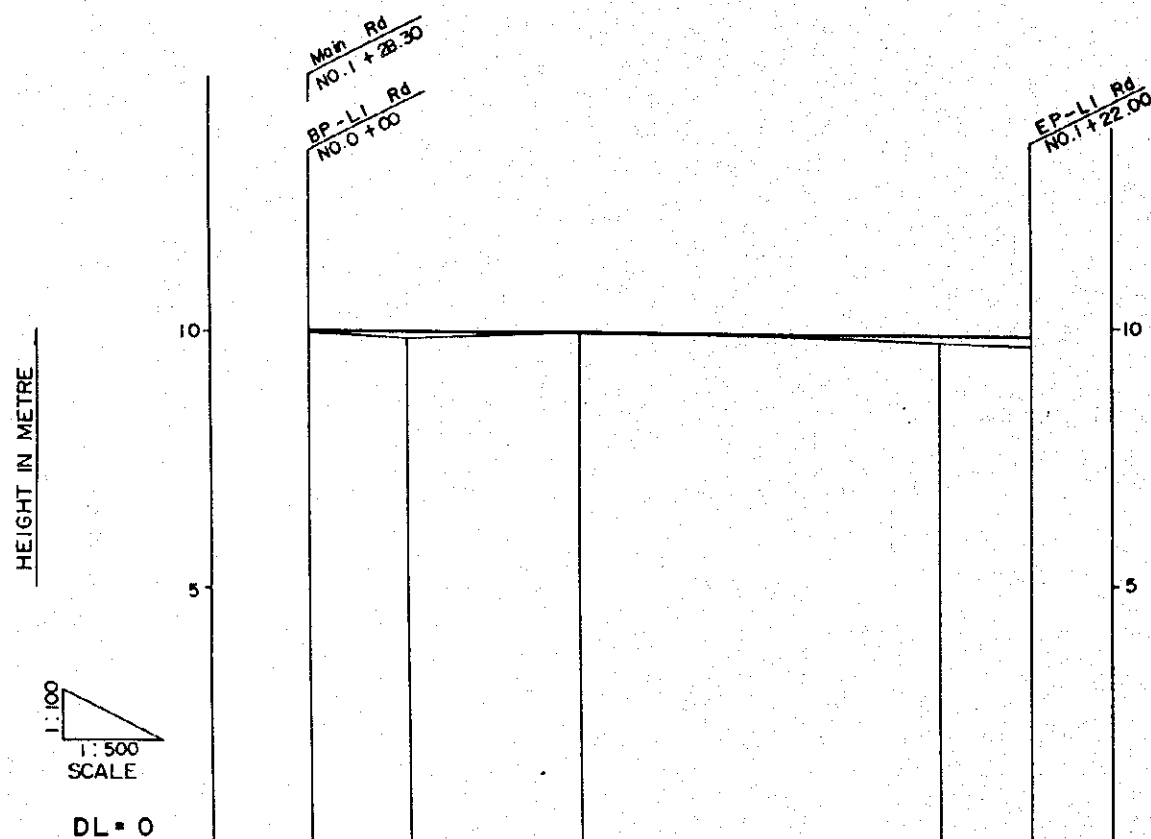
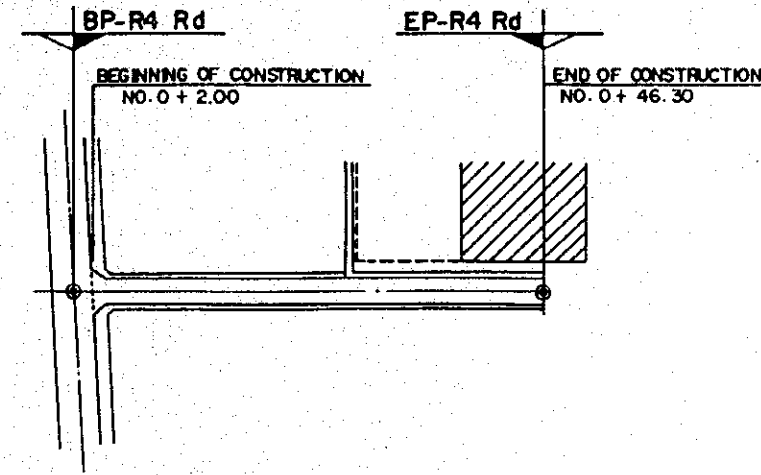
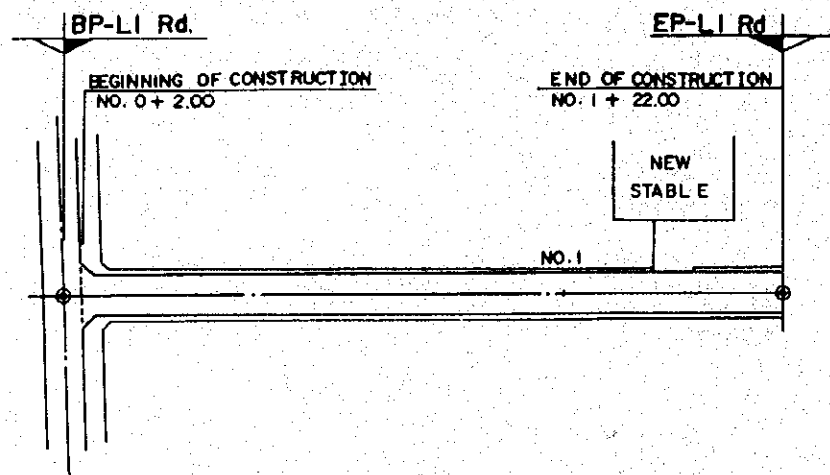
DETAIL FOOTING
SCALE 1:20

WALL

THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
DETAILS OF MANURE
DEPOSIT SHED (3/3)
PATHUM THANI AI CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO.:
TOKYO 9



DL = 0

PROPOSED HEIGHT (m)	8.96 8.92	8.91	8.88	8.85	8.83	8.82
EXISTING GROUND HEIGHT (m)	8.96	8.86	8.98		8.71	
ACCUMULATED DISTANCE (m)	0.00 2.00	10.00	27.00	50.00	63.20	72.00
DISTANCE (m)	0.00 2.00	8.00	17.00	23.00	13.20	8.80
STATION	BP NO. 0 + 2.00	+10.00	+27.00	NO. 1 + 23.00	+13.20	+22.00

DL = 0

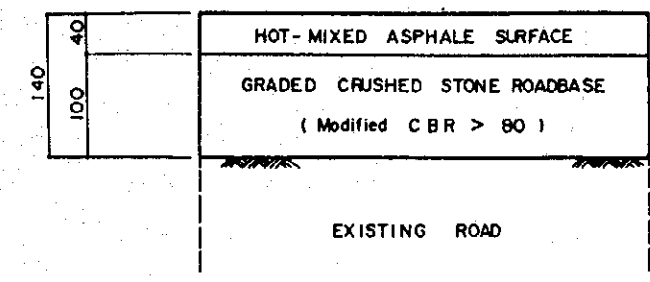
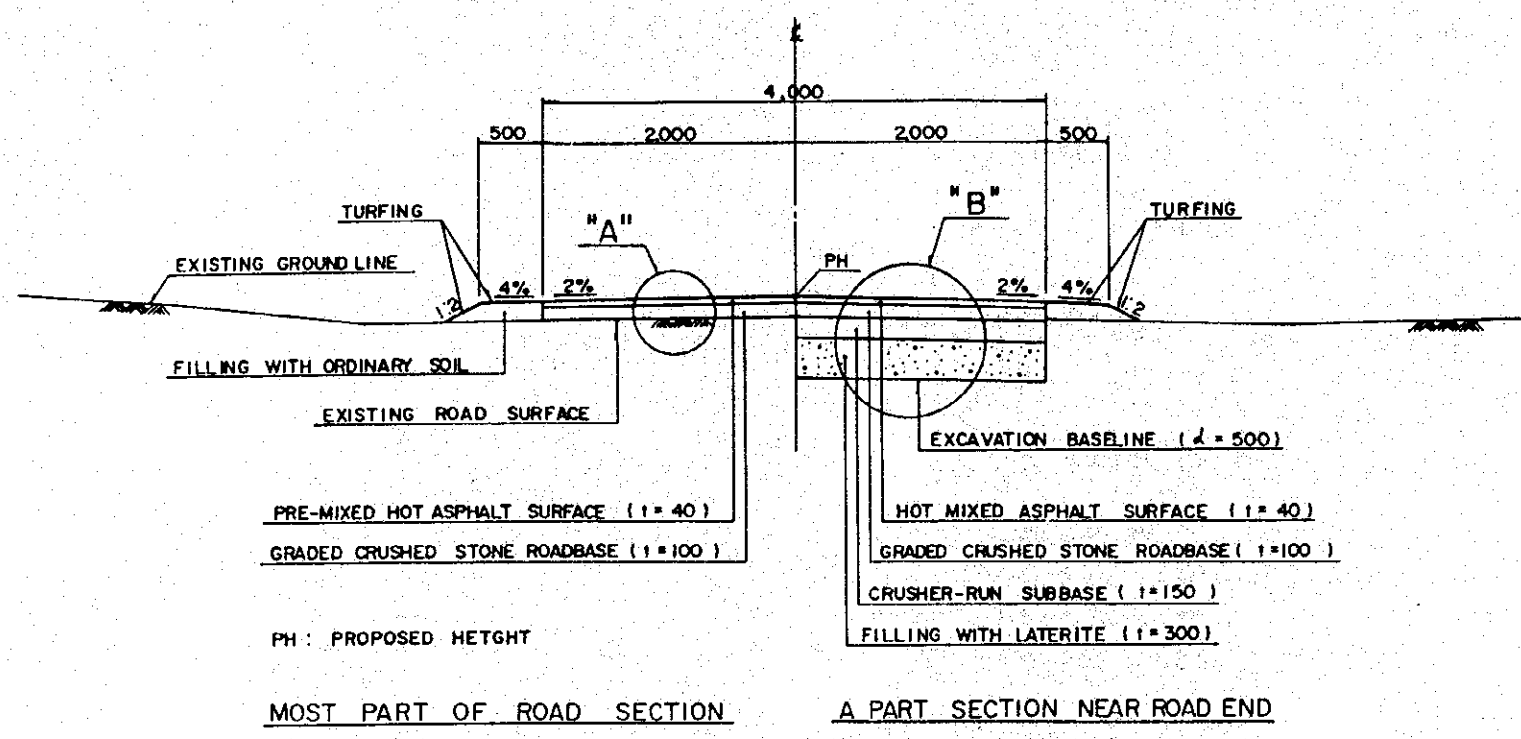
PROPOSED HEIGHT (m)	9.26 9.22	9.20	9.15	9.10
EXISTING GROUND HEIGHT (m)	9.26	8.98	9.04	9.00
ACCUMULATED DISTANCE (m)	0.00 2.00	8.20	27.60	46.30
DISTANCE (m)	0.00 2.00	6.20	19.40	18.70
STATION	BP NO. 0 + 2.00	+8.20	+27.60	EP +46.30

THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
PLAN AND PROFILE
OF L1 AND R4 ROADS
PATHUM THANI AI CENTRE

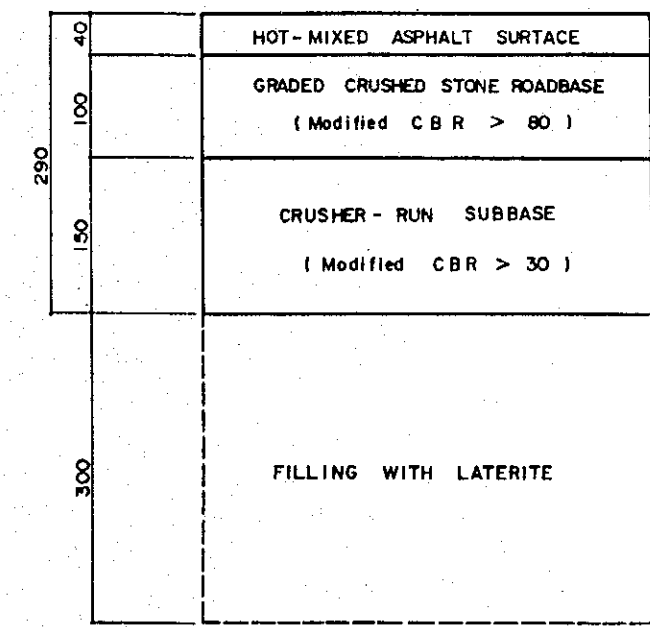
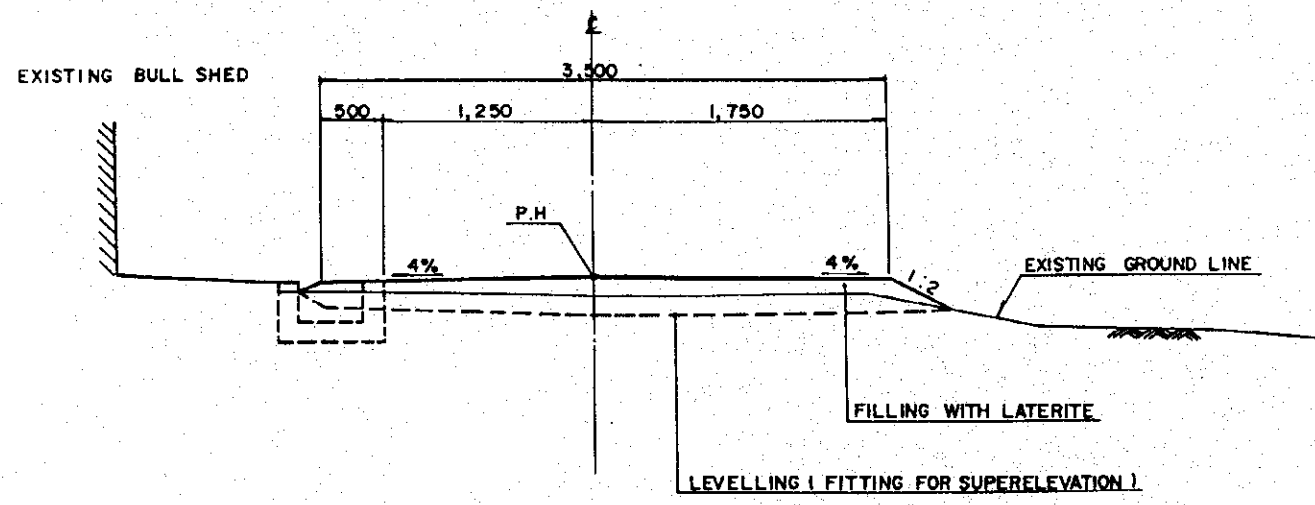
JAPAN INTERNATIONAL COOPERATION AGENCY | DRAWING NO. :
TOKYO | 10

TYPICAL CROSS SECTION OF ROADS TO BE PAVED
(ARTIFICIAL INSEMINATION CENTRE IN PATHUM THANI)



DETAILS OF "A" SCALE 1:5

TYPICAL CROSS SECTION OF L1 ROAD SCALE 1:40



DETAILS OF "B" SCALE 1:5

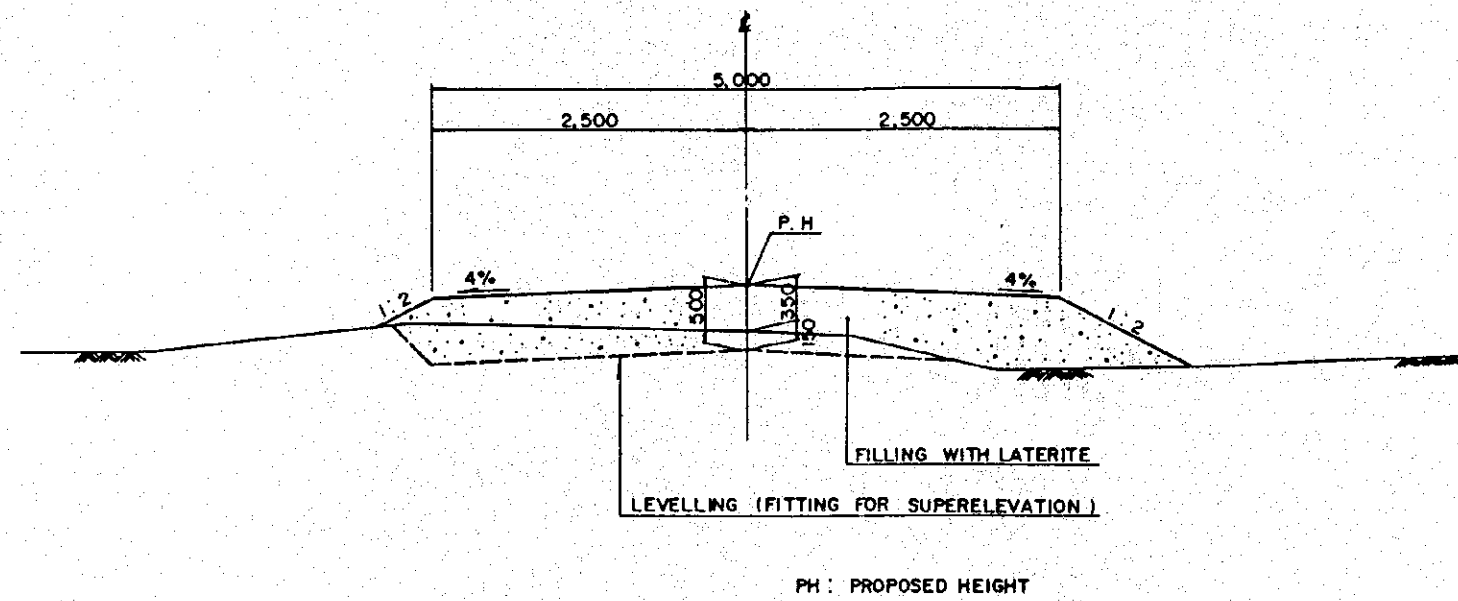
TYPICAL CROSS SECTION OF R4 ROAD SCALE 1:30

THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

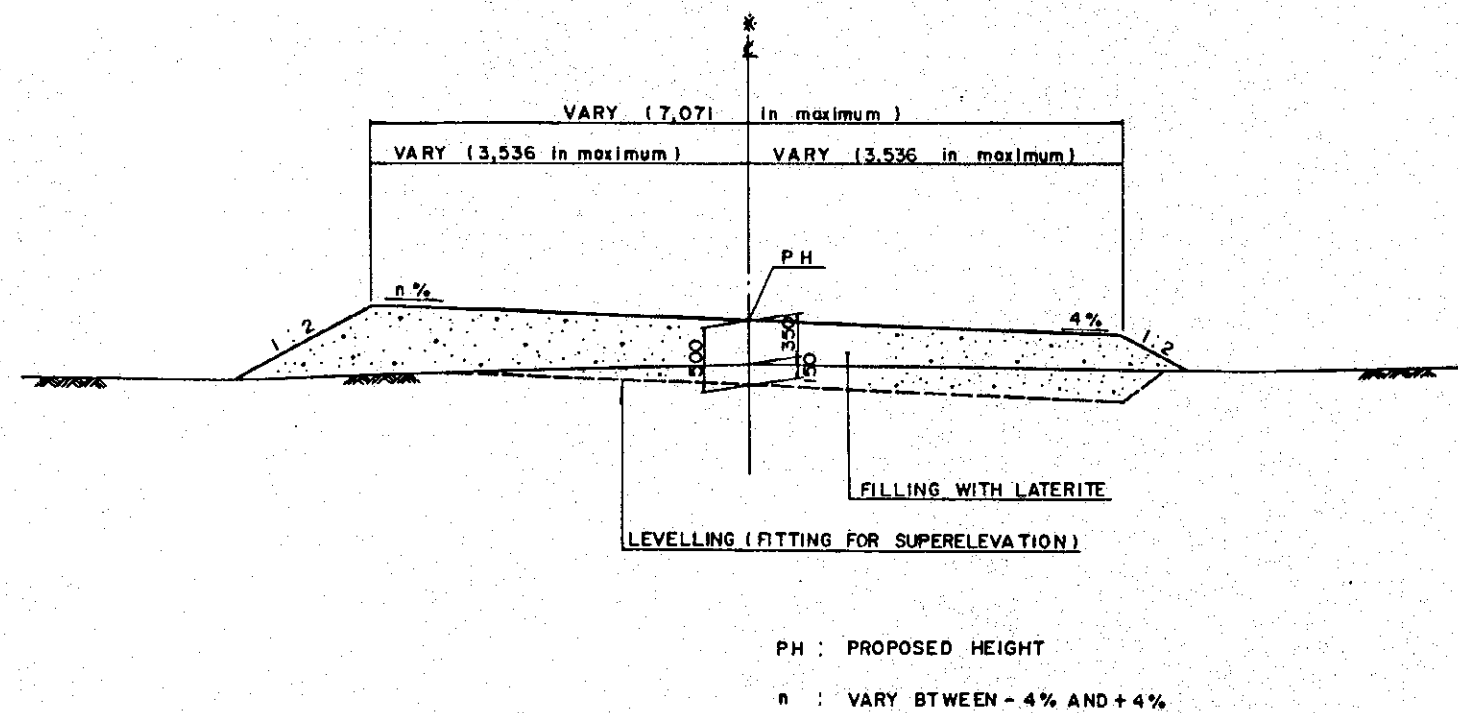
TITLE OF DRAWING :
TYPICAL CROSS SECTIONS
OF L1 AND R4 ROADS
PATHUM THANI AI CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
T O K Y O 1 2

TYPICAL CROSS SECTION OF LATERITE ROADS (R9, RIO & FARM ROAD)
(ARTIFICIAL INSEMINATION CENTRE IN PATHUM THANI)



TYPICAL CROSS SECTION OF R9 ROAD
SCALE 1:40

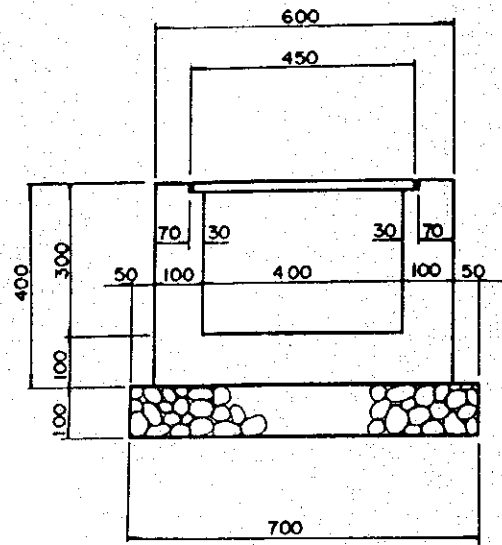


*Note : ABOVE CROSS SECTION WILL NOT BE APPLIED
IN THE MODEL INFRASTRUCTURE WORKS.

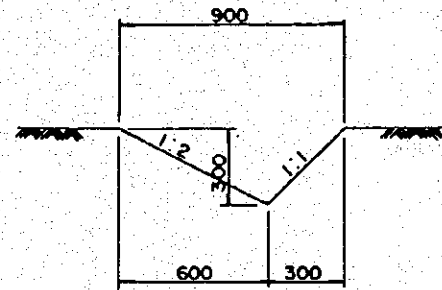
THE MODEL INFRASTRUCTURE WORKS FOR THE DAIRY FARMING DEVELOPMENT PROJECT IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND	
TITLE OF DRAWING : TYPICAL CROSS SECTIONS OF R9 ROAD PATHUM THANI AI CENTRE	
JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO	DRAWING NO. : 13

DETAILS OF DRAINAGE STRUCTURES

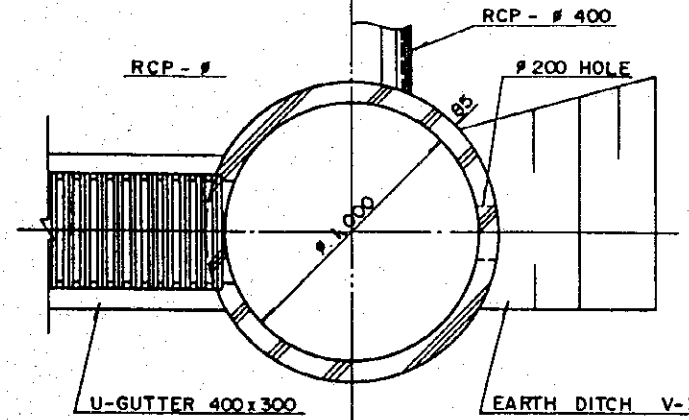
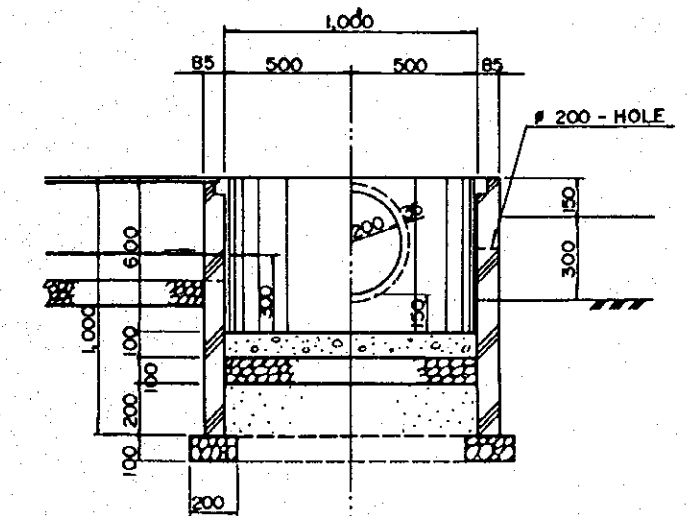
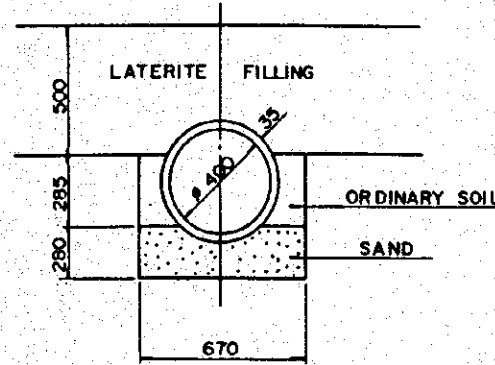
SCALE 1:10 / 1:20



U-GUTTER 400 x 300

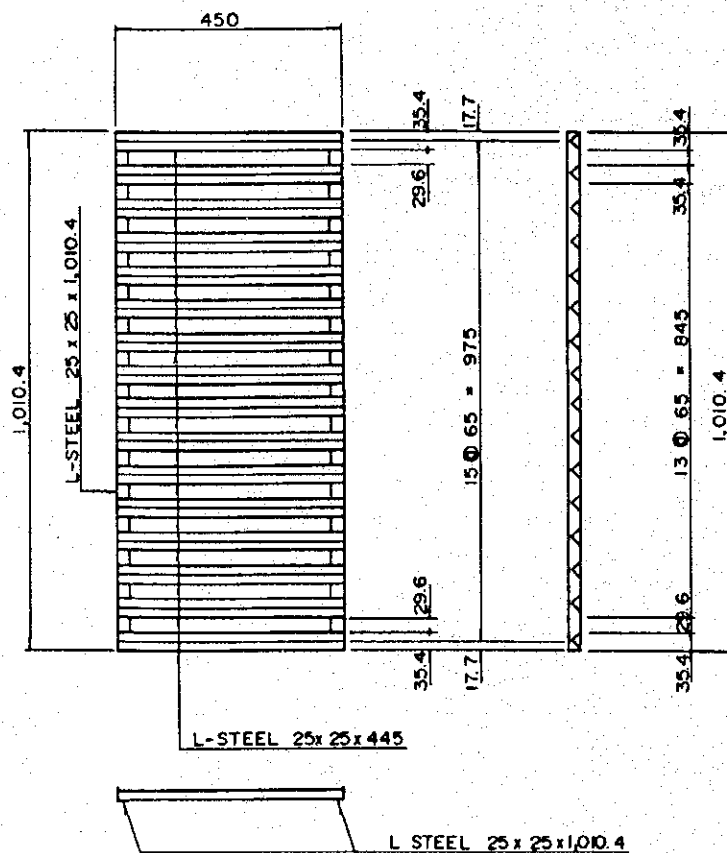


EARTH DITCH V-300

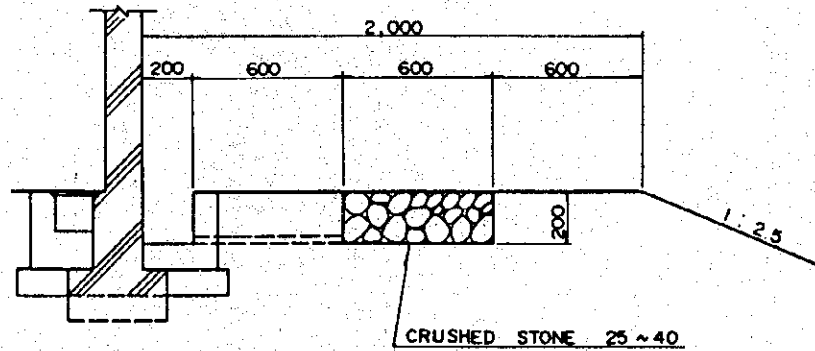


CATCH BASIN FOR PADDOCK

CATCH BASIN FOR ROAD



STONE DRAIN 600 x 200

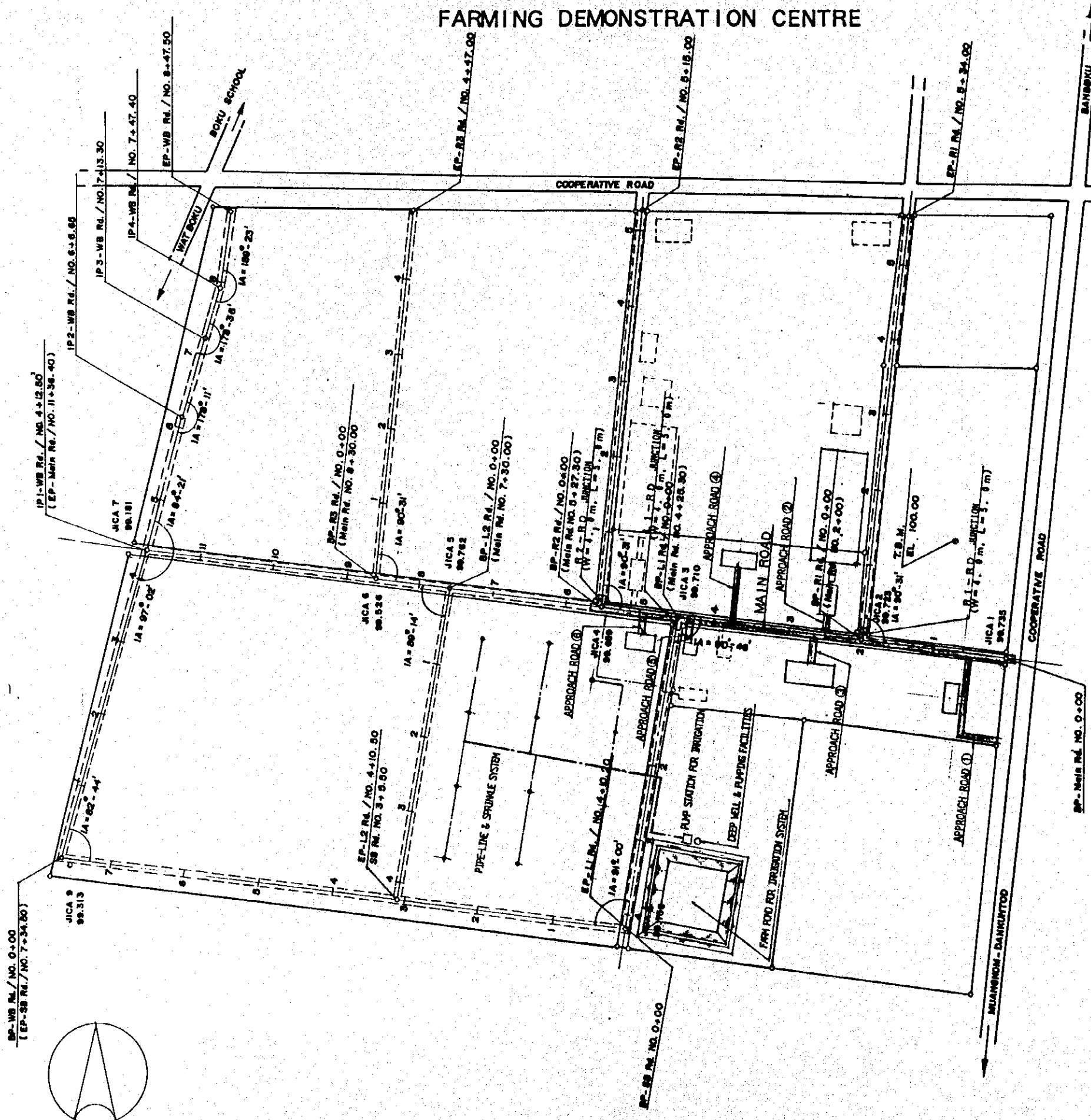


THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
DETAILS
OF DRAINAGE STRUCTURES
PATHUM THANI AI CENTRE

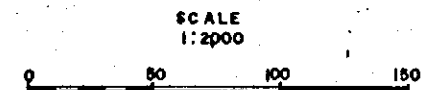
JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO.:
TOKYO 14

GENERAL PLAN OF CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE



ROAD WORK

NO.	NAME OF BUILDING	LENGTH OF ROAD	REMARKS
	MAIN ROAD	293.0	Asphalt pavement W=5.0m
	JUNCTION OF LATERAL ROAD	15.0	Asphalt pavement W=4.0m
1	OFFICE BUILDING	90.0	Asphalt pavement W=4.0m
2	MILKING COW SHED	11.0	"
3	TRAINING BUILDING	10.0	"
4	HAY STORAGE	30.0	"
5	HOUSES FOR OFFICERS	15.0	"
6	WARE HOUSE FOR FARM	12.0	"
	SUB TOTAL	100.0	
	TOTAL	488.0	



THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
**GENERAL PLAN
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE**

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 15

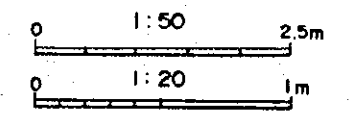
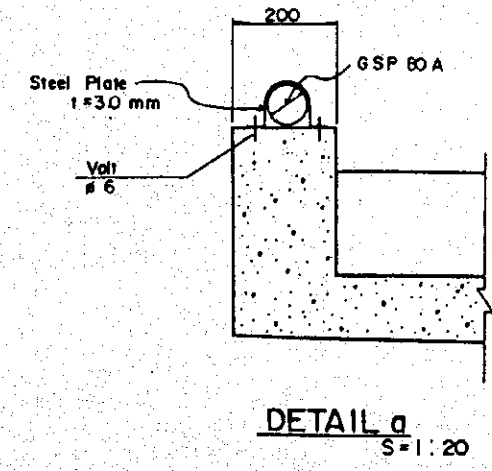
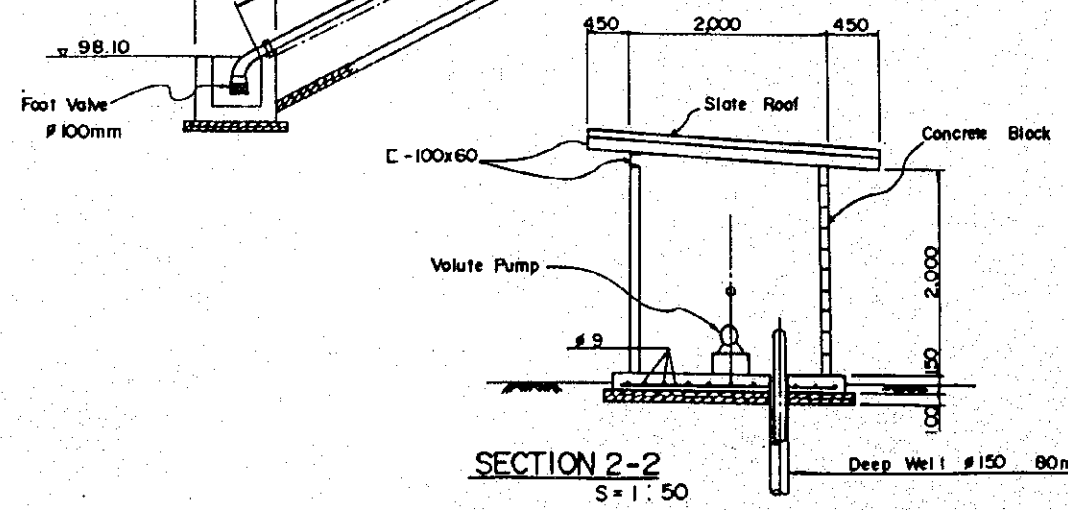
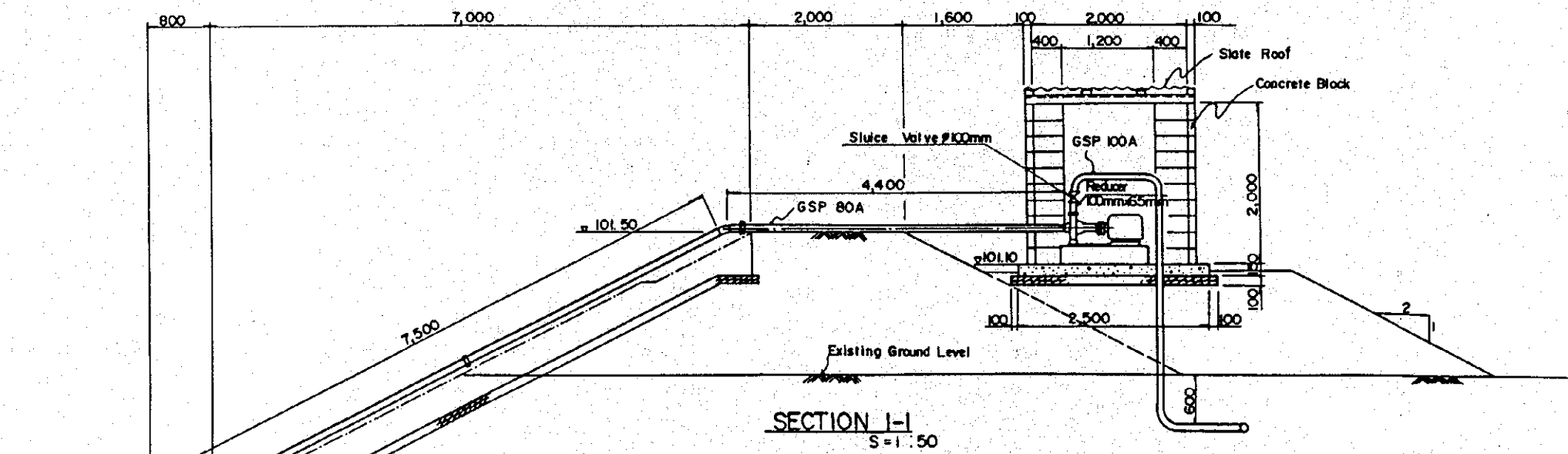
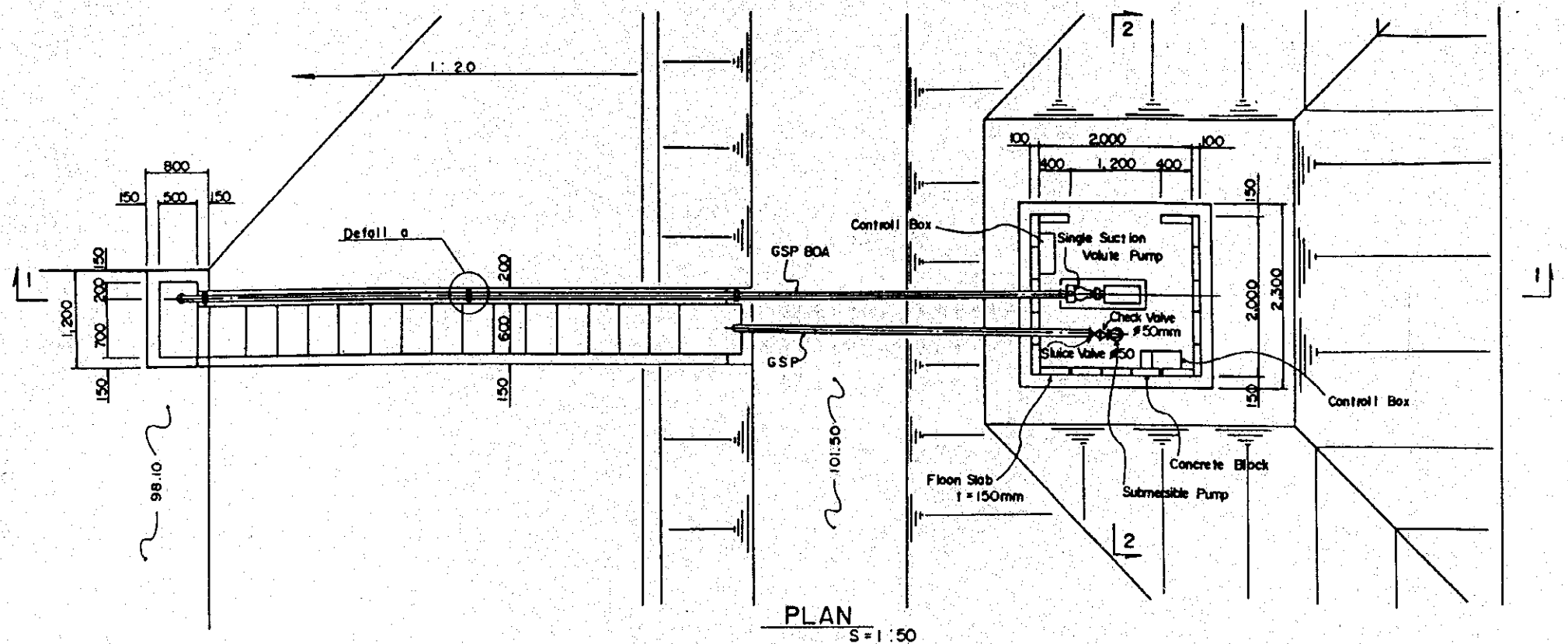
SPECIFICATION OF PUMP AND WELL

Irrigation Pump

Type	Volute
Capacity	750 l/min
Diameter	80 x 65
Total Pump Head	75 m
Out Put of Motor	22 kw

Deep Well Pump

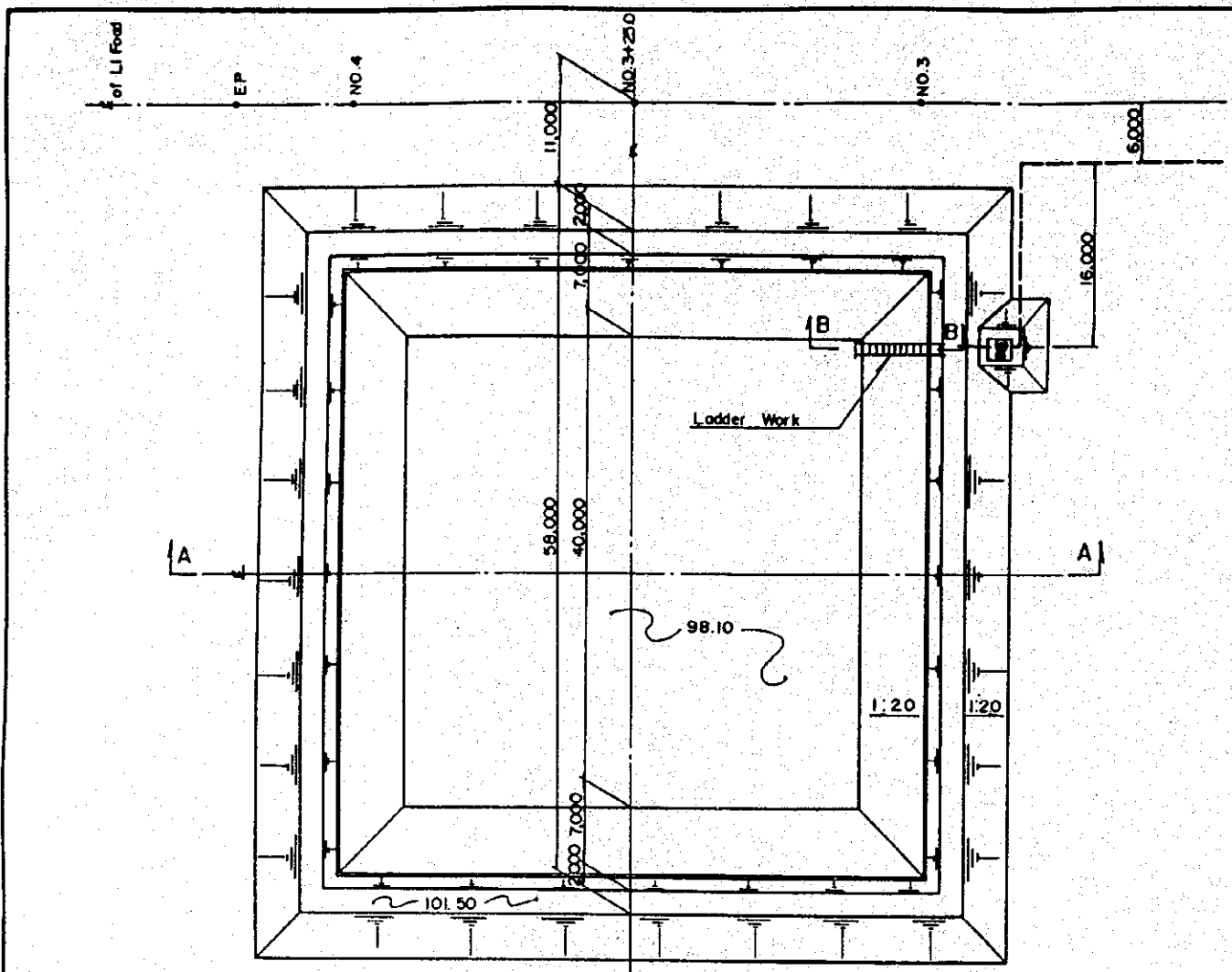
Type	Submersible motor
Capacity	250 l/min
Diameter	φ 50 mm
Output of Motor	2.2 kw
Diameter of Well	150 mm
Depth of Well	80 m
Discharge	250 l/min



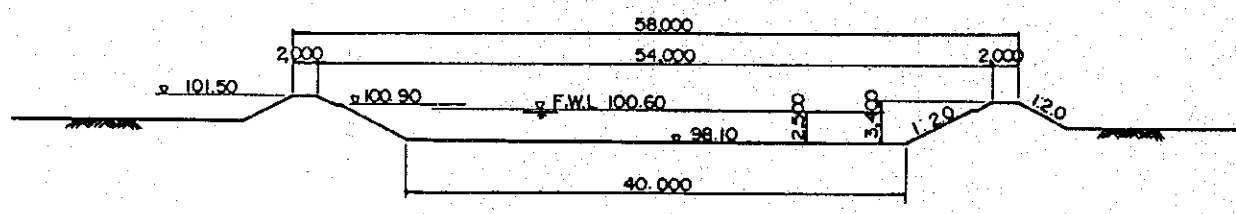
THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
PUMPING STATION
AND DEEP WELL
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

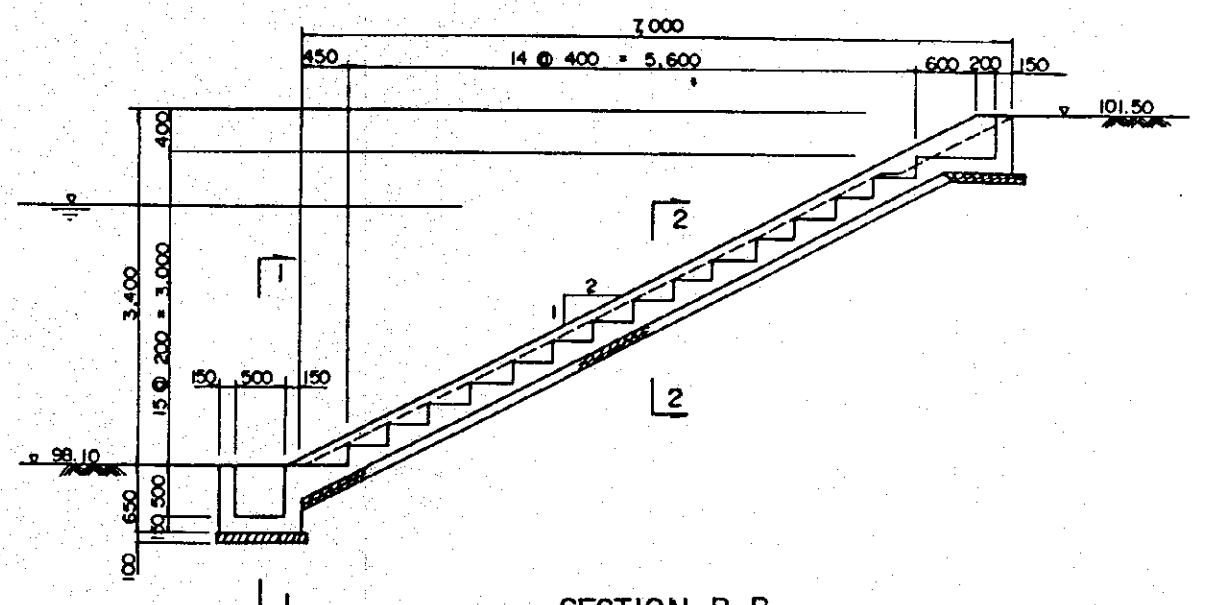
JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
T O K Y O 1 6



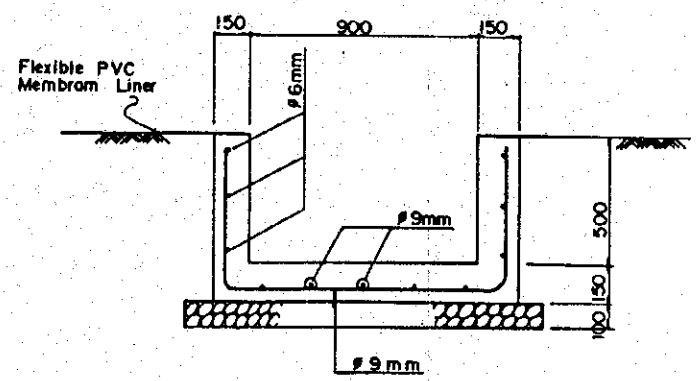
PLAN S=1:400



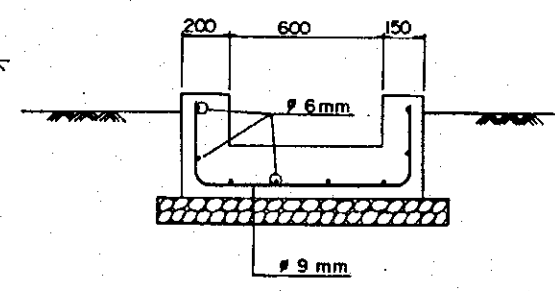
SECTION A-A S=1:400



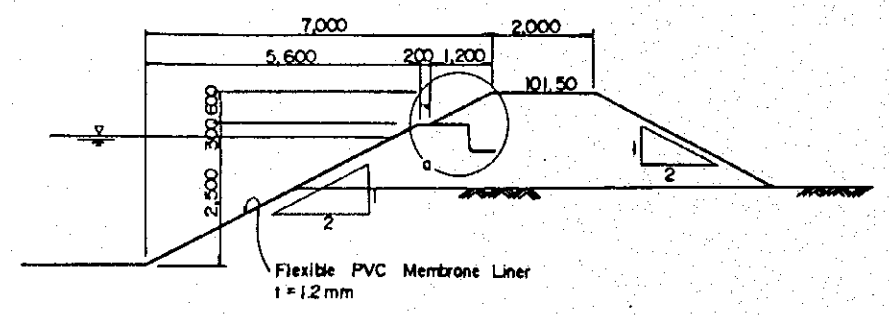
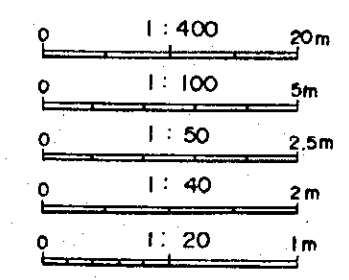
SECTION B-B S=1:50



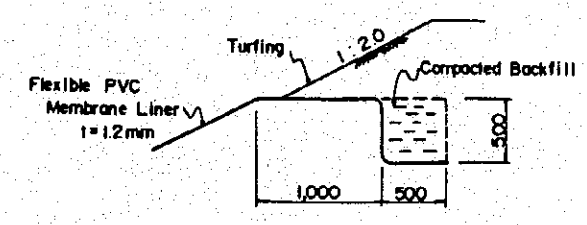
SECTION 1-1 S=1:20



SECTION 2-2 S=1:20



CROSS SECTION OF EMBANKMENT S=1:100

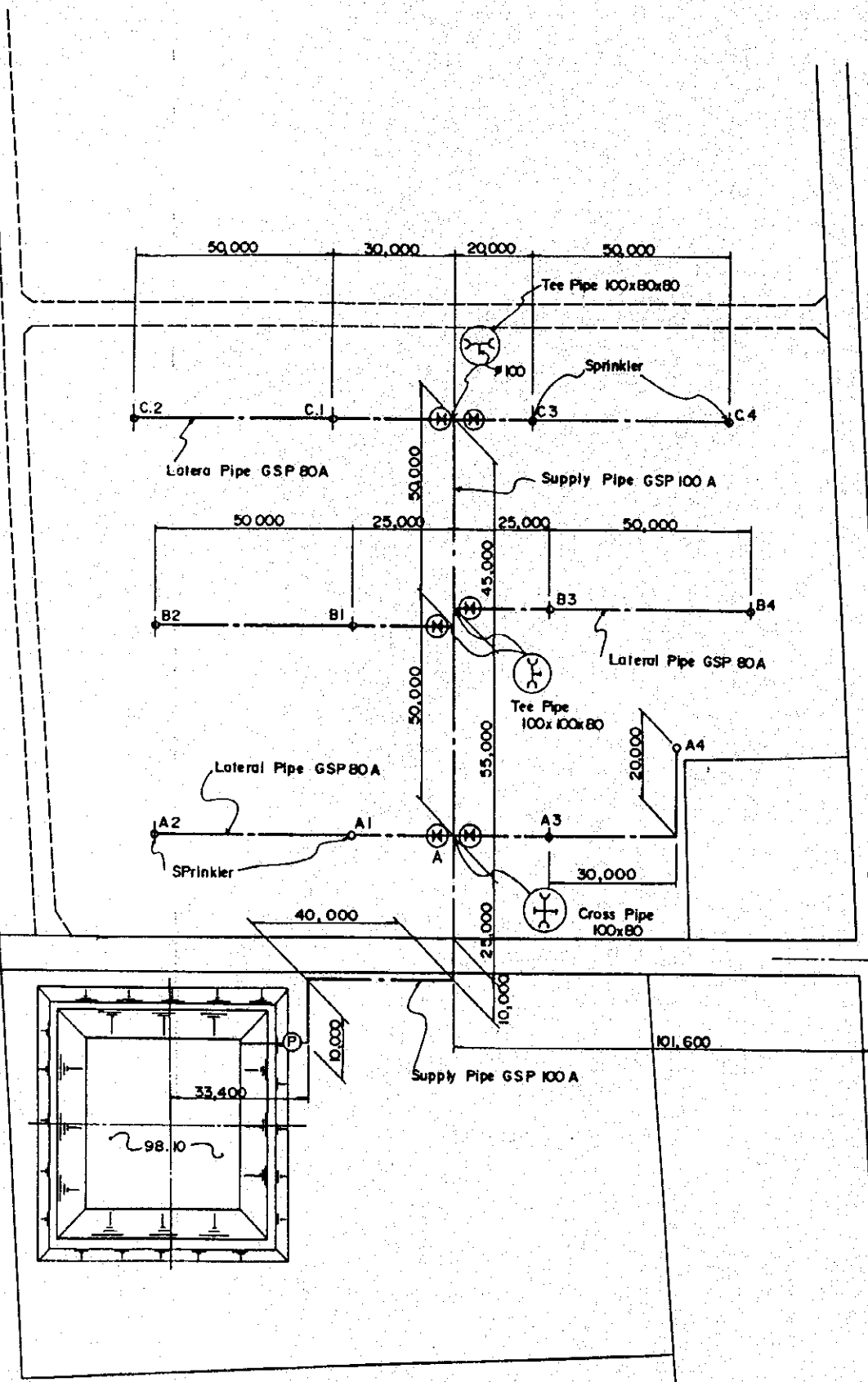


DETAIL OF "a" S=1:40

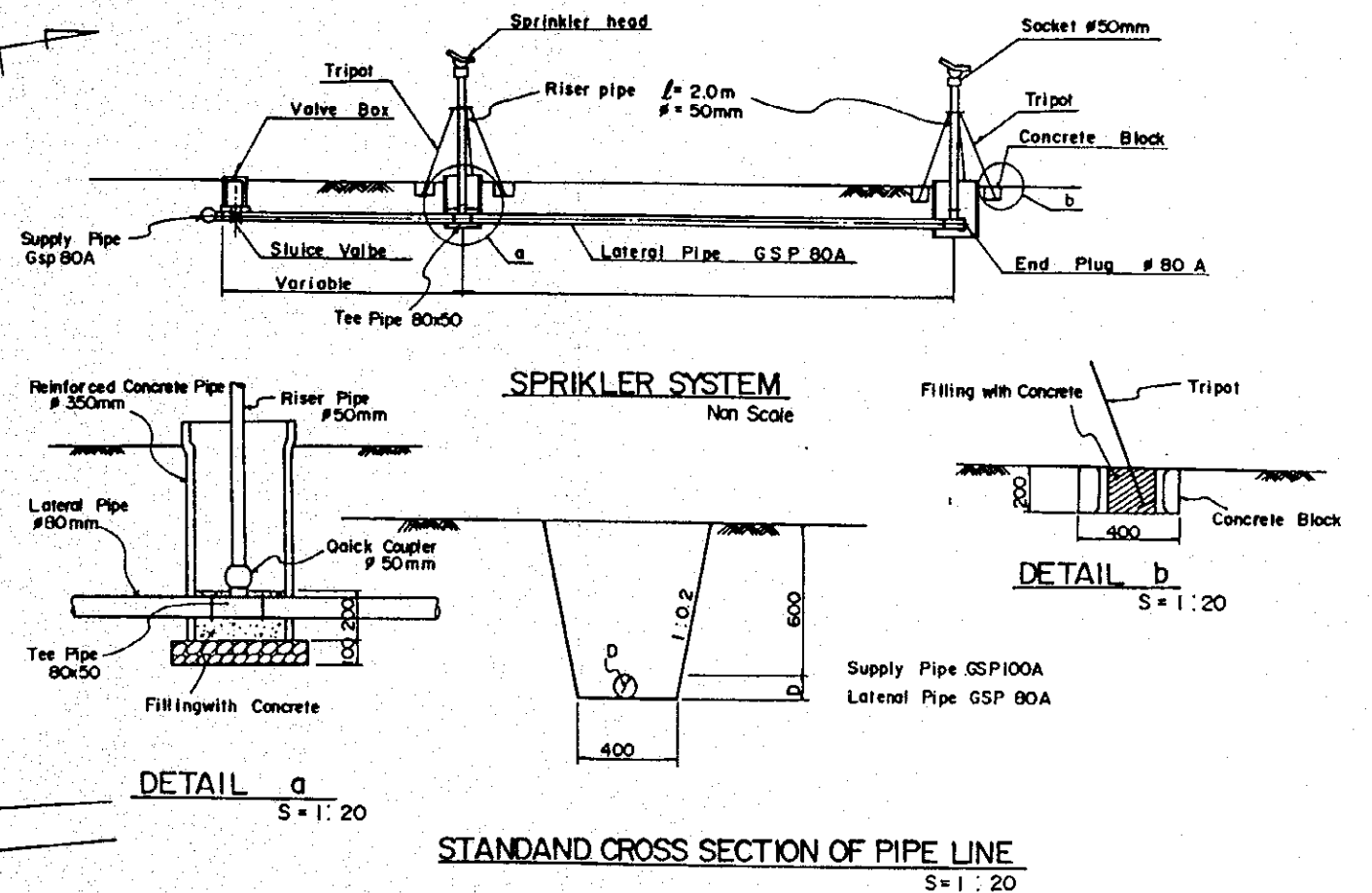
THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
PLAN SECTION AND DETAILS
OF FARM POND
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 17



PLAN
S=1:1000

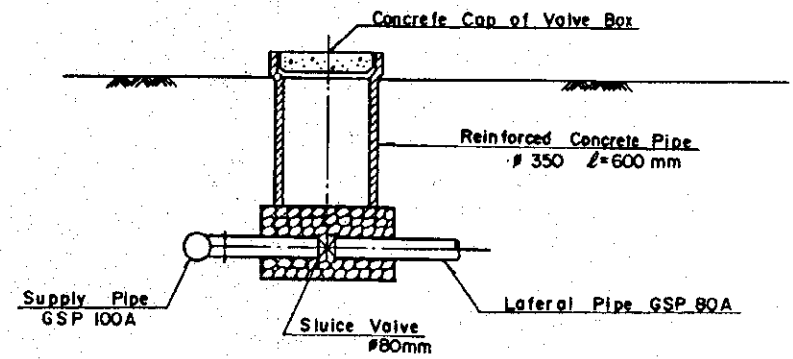


SPRIKLER SYSTEM
Non Scale

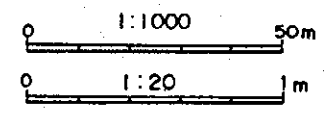
DETAIL a
S=1:20

DETAIL b
S=1:20

STANDARD CROSS SECTION OF PIPE LINE
S=1:20



VAIVE BOX
S=1:20



THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

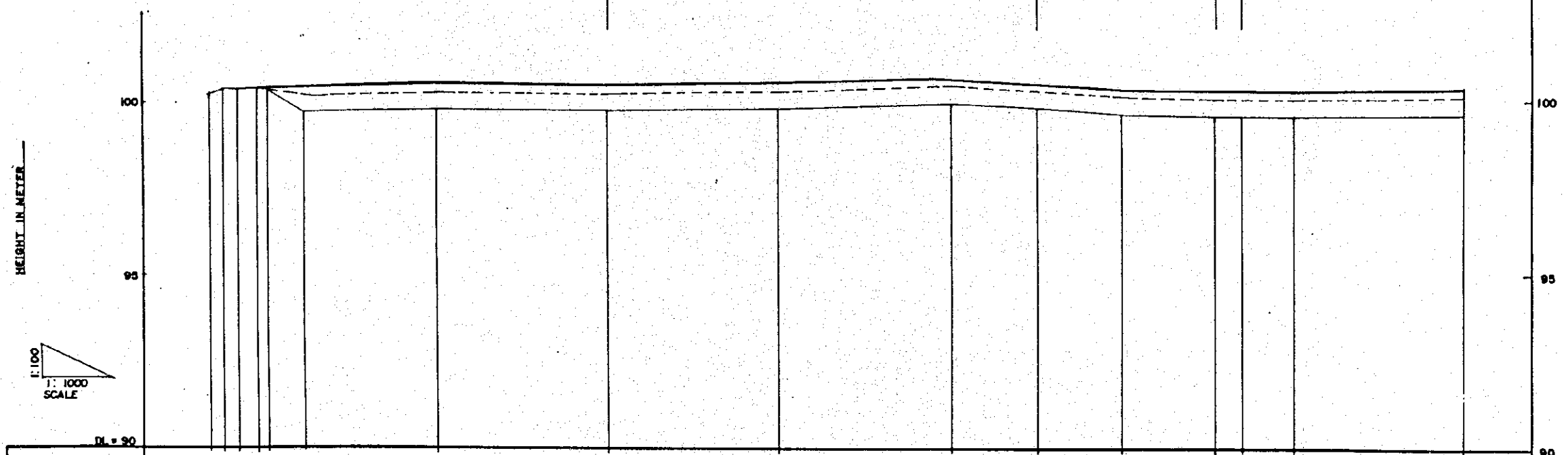
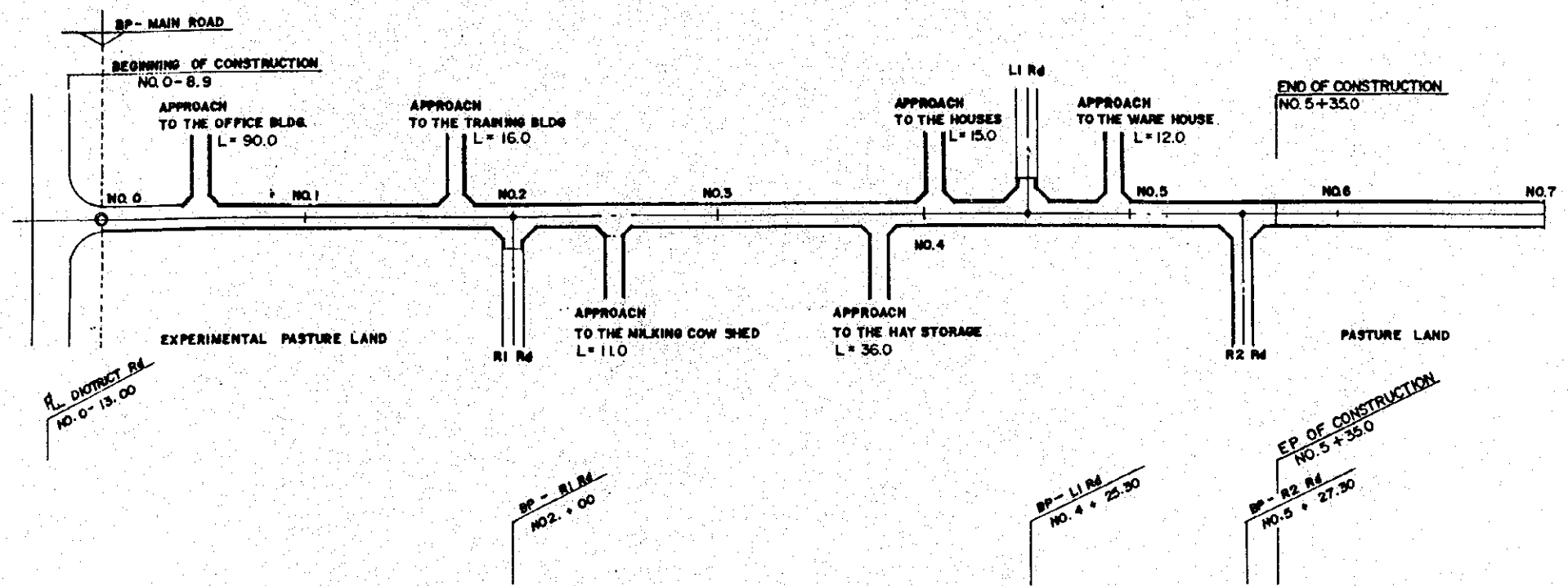
TITLE OF DRAWING :
PLAN AND DETAILS OF
IRRIGATION FACILITIES
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
T O K Y O 1 8

THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

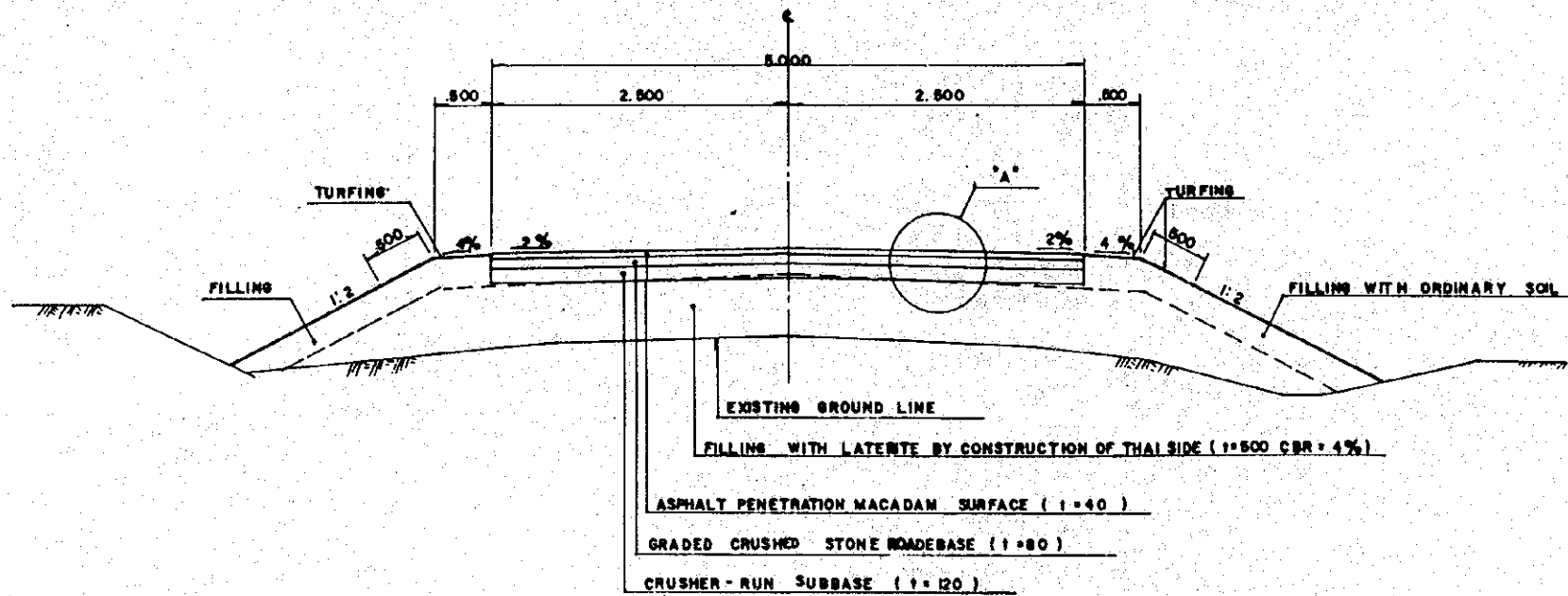
TITLE OF DRAWING :
PLAN AND PROFILE
OF MAIN ROAD
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 19

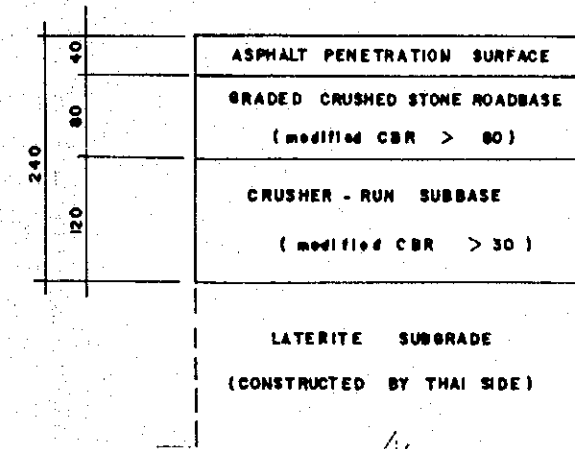


PROPOSED HEIGHT (m)		100.03	100.22	100.45	100.52	100.46	100.31	100.63	100.48	100.33	100.20	100.28	100.33				
EXISTING GROUND HEIGHT (m)		100.23	100.39	100.39	99.71	99.72	99.77	99.89	99.89	99.59	99.54	99.52	99.59				
ACCUMULATED DISTANCE (m)		-17.00	-13.00	-8.90	0.00	100.00	150.00	200.00	225.30	250.00	277.30	300.00	350.00				
DISTANCE (m)		-4.00	-7.10	-8.90	-3.00	0.00	11.00	39.00	50.00	50.00	75.30	24.70	25.30	22.70	50.00		
STATION		-17.00	-13.00	-8.90	-3.00	BP NO. 0	+11.00	NO. 1	NO. 2	NO. 3	NO. 4	+23.30	NO. 5	+27.30	+30.00	NO. 6	NO. 7

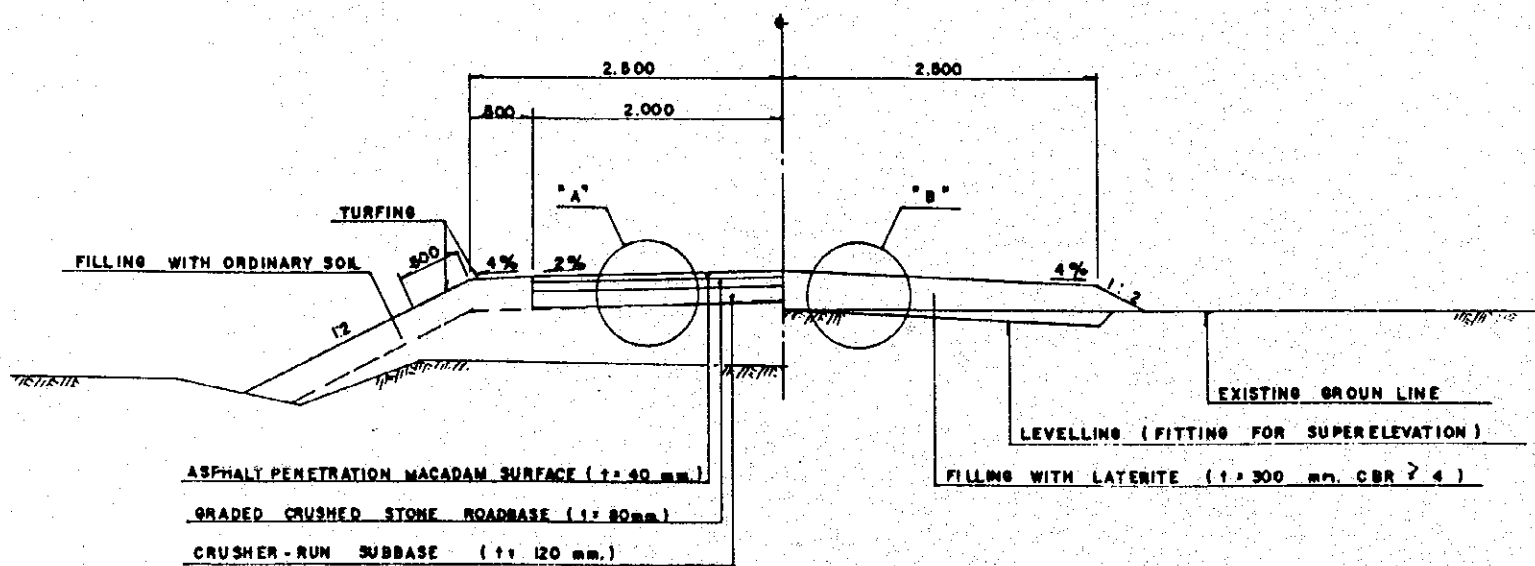
TYPICAL CROSS SECTION OF FARM ROADS
(DAIRY DEMONSTRATION CENTRE IN CHAI BADAN)



TYPICAL CROSS SECTION OF MAIN ROAD SCALE 1:40



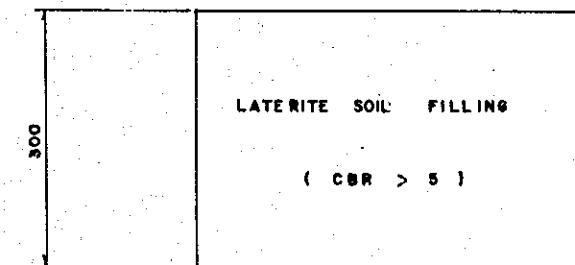
DETAIL OF "A" SCALE 1:5



FOR PAVING PARTS

FOR UN-PAVING PARTS

TYPICAL CROSS SECTION OF SUB FARM ROAD SCALE 1:40



DETAIL OF "B" SCALE 1:6

THE MODEL INFRASTRUCTURE WORKS
FOR THE DAIRY FARMING DEVELOPMENT PROJECT
IN THE CENTRAL REGION OF THE KINGDOM OF THAILAND

TITLE OF DRAWING :
TYPICAL CROSS SECTIONS
OF MAIN AND APPROACH ROADS
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

JAPAN INTERNATIONAL COOPERATION AGENCY DRAWING NO. :
TOKYO 20

APPENDIX

- APPENDIX - 1 : FIELD REPORT**
- APPENDIX - 2 : LIST OF SUPPLIES FOR THE IRRIGATION FACILITIES**
- APPENDIX - 3 : RAINFALL DATA**
- APPENDIX - 4 : DRAWINGS OF FACILITIES NOT TAKEN UP IN THE MODEL INFRASTRUCTURE WORKS**

APPENDIX - 1 FIELD REPORT

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

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

3rd: * Manure deposit shed and its 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 Sesaweech
 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**

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

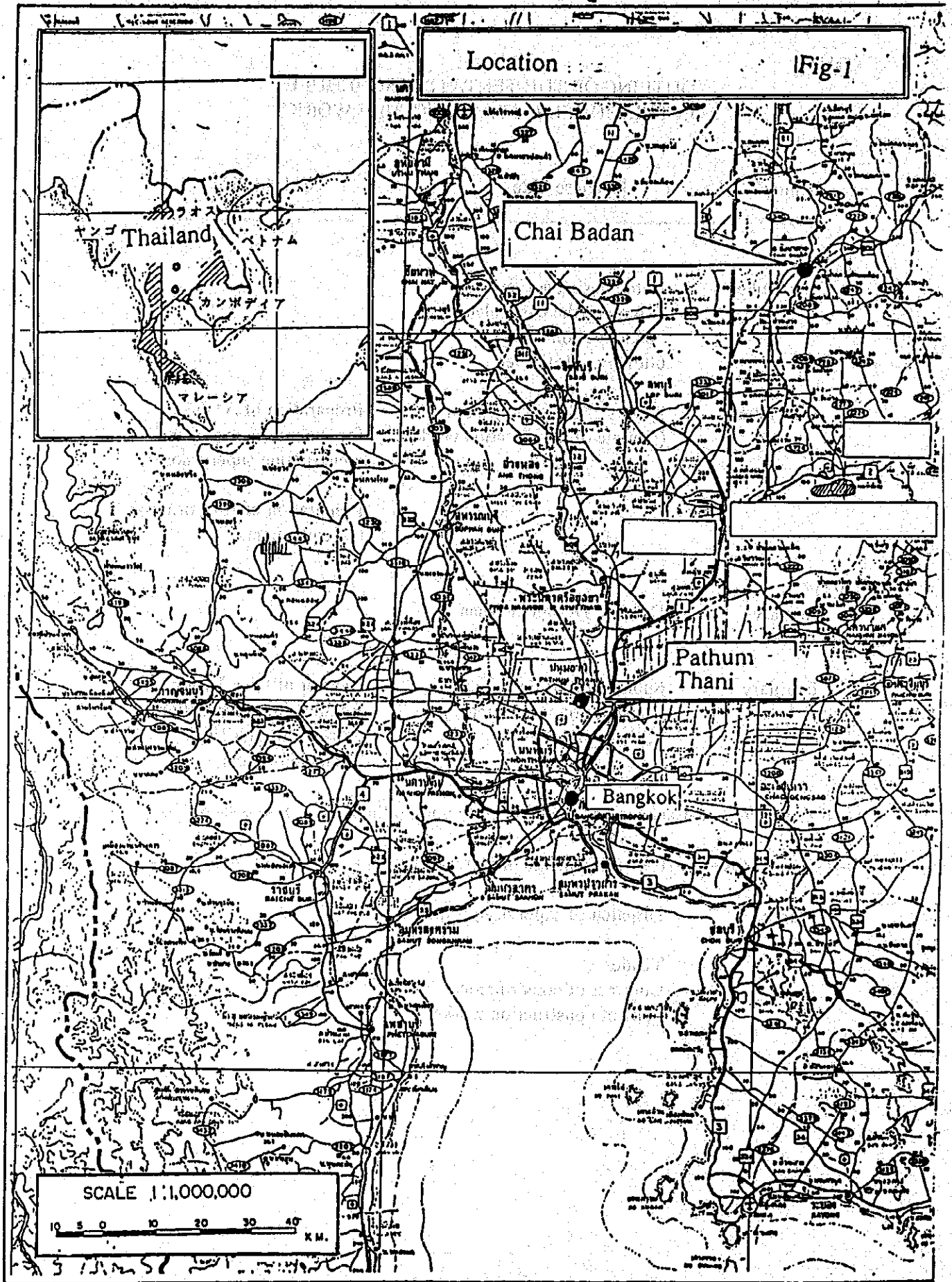


Fig-2 Pathum Tani A I Center Outline Map

パツンタニー人工受精(AI)センター

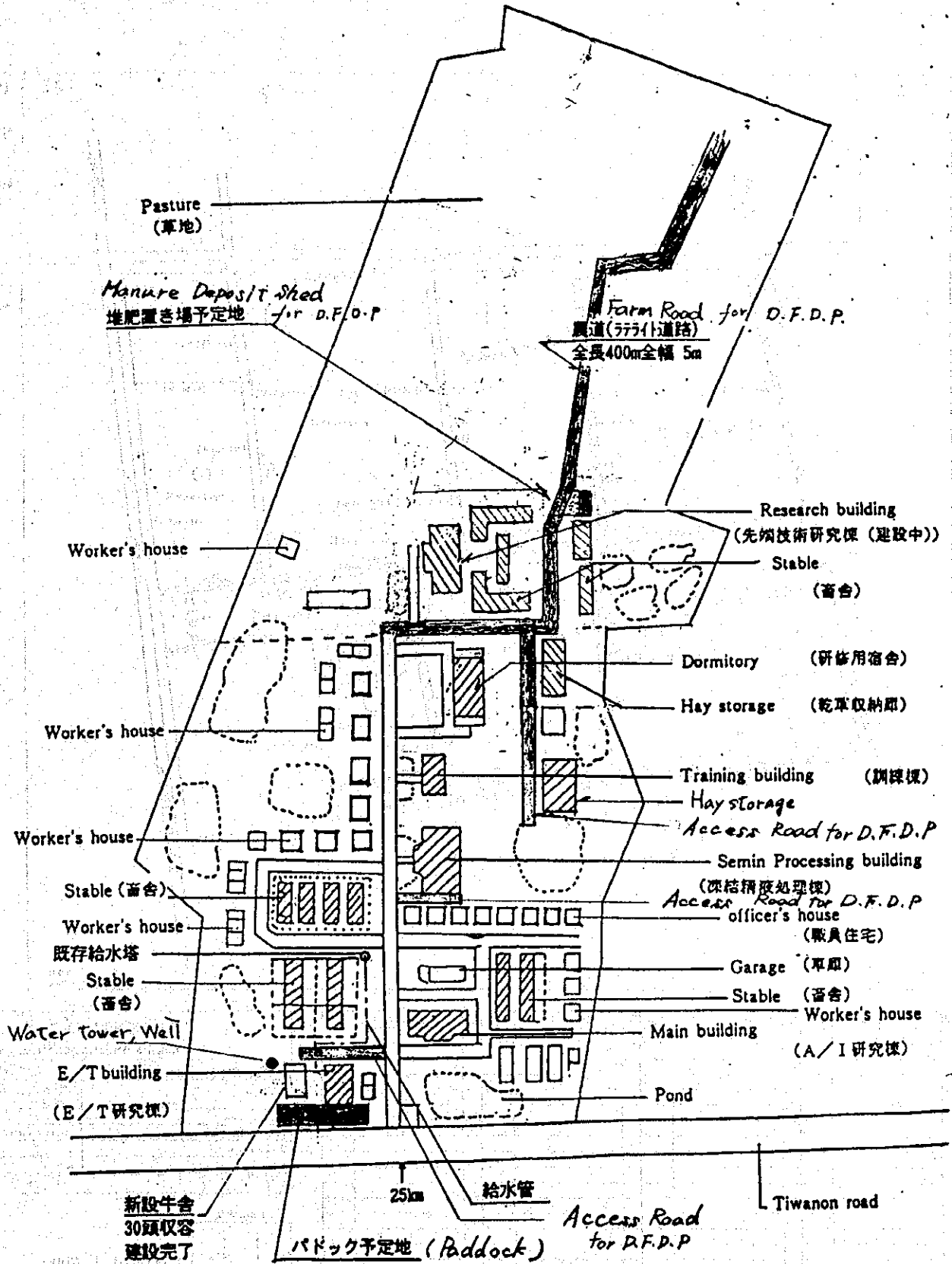


図 既存施設及び計画施設概略配置図

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

APPENDIX - 2 LIST OF SUPPLIES FOR THE IRRIGATION FACILITIES

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>
A. Supplies for Deep Well	
A1. Submersible pump for Deep Well	1 set
Capacity: 250 l/min	
Total head: 30 m	
Well dia: ϕ 150 mm	
Discharge size: ϕ 50 mm	
No. Of stagae: 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	
A2. Check Valve ϕ50 mm for the above pump with companion flange	1 set
A3. Sluice Valve ϕ50 mm for the above pump with companion flange	1 set
A4. Galvanized steel pipe 50ϕ mm with a short elbow 90° & a short elbow 30°	10 m
A5. Tee pipe 50 mm x 50 mm with flanges	1 no.
A6. Gate Valve (Brass) ϕ50 mm	1 no.
B. Supplies for Pumping Facilities	1 unit
B1. Volute Pump (Single type) with Motor	
Capacity: 750 l/min	
Total head: 70 m	
Suction size : ϕ 80 mm	
Discharge size : ϕ 65 mm	
Motor output : 22 KW(50HZ, 3x380V)	
(EBARA MODEL 80x65FS 2J522 or equivalent)	
with: Base and Control unit	
B2. Foot Valve for the above (100mm)	1 no.
B3. Reducer for suction 100mm x 80mm	1no.
B4. Reducer for discharge 100mm x 65mm	1 no.
B5. Galvanized steel pipe 80mm with flanges and a short elbo 90°	6 no.
B6. Gate Valve (steel) ϕ100mm with companion flange	1 set

- C. Supplies for Pipeline**
- C1. Galvanized steel pipe ϕ 100mm with couplings** 210 m
 - C2. Galvanized steel pipe ϕ 80mm with couplings** 480 m
 - C3. Short elbow 90° ϕ 100mm** 5 nos.
 - C4. Short elbow 90° ϕ 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. Expandible raiser pipe ϕ 50mm** 12 sets
 - Length : 1.5 m
 - with a quick raiser coupler and a tripod
 - C13. Quick socket ϕ 50mm** 12 nos.
 - C14. Protector (plate type, to be attached to raiser pipe)** 1 no.
 - C15. Raiser pipe 50mm** 12 nos.

APPENDIX - 3 RAINFALL DATA

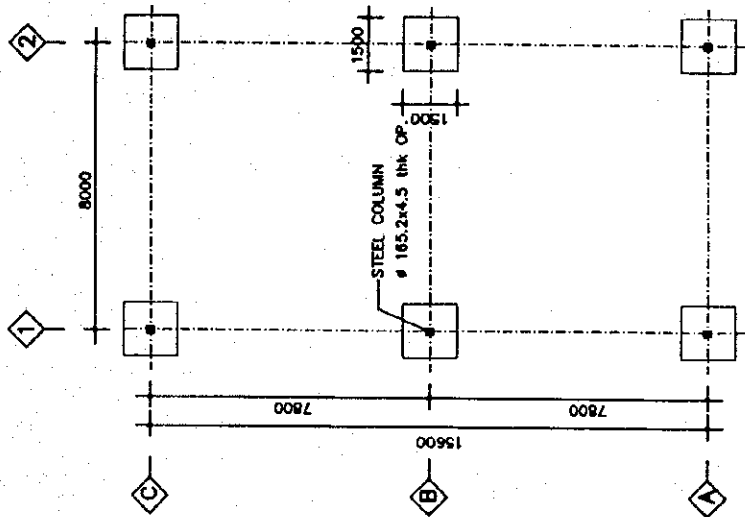
MEAN MONTHLY RAINFALL

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

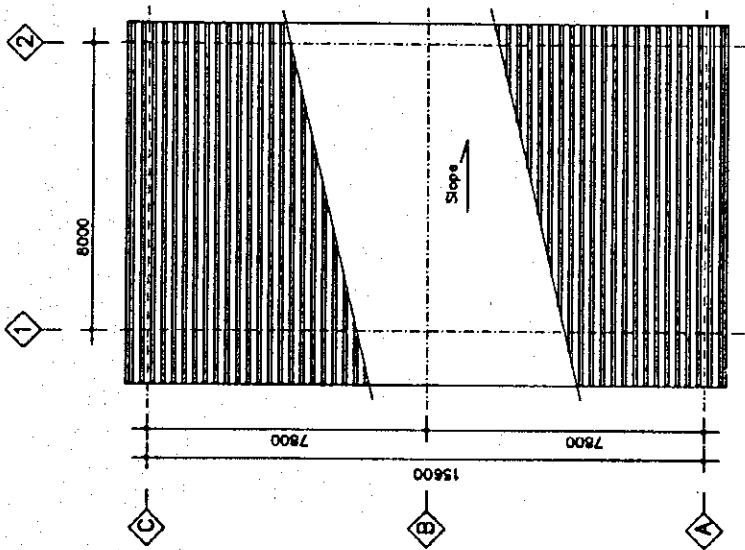
Station : Pathum Thani — Rice Research Center (1984 - 1993)
: Chai Badan (1985 - 1994)

APPENDIX - 4 DRAWINGS OF FACILITIES NOT TAKEN UP
IN THE MODEL INFRASTRUCTURE WORKS

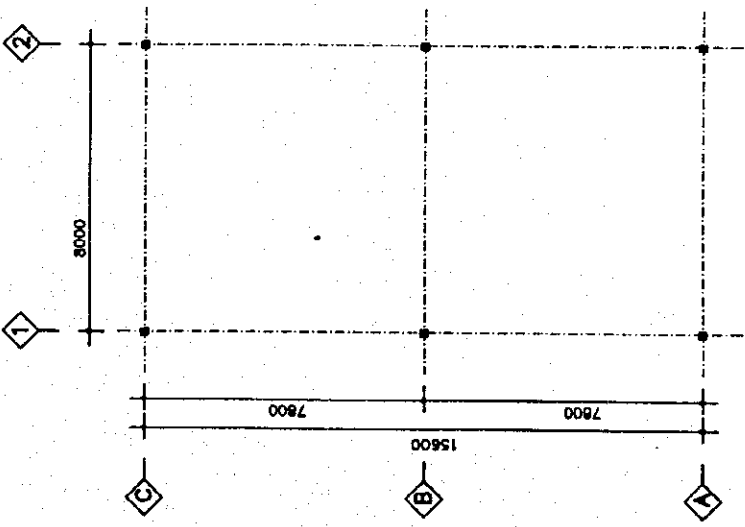
- 1) ROOFING FOR PADDOCK (1/2)
PATHUM THANI AI CENTRE
- 2) ROOFING FOR PADDOCK (2/2)
PATHUM THANI AI CENTRE
- 3) R9 ROAD (2/2) & R10 ROAD
PATHUM THANI AI CENTRE
- 4) MAIN ROAD (2/2)
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 5) R1 ROAD
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 6) L1 ROAD & 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
- 1 0) SB ROAD (1/2)
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 1 1) SB ROAD (2/2) & WB ROAD (1/2)
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE
- 1 2) WB ROAD (2/2)
CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE



FOUNDATION PLAN
SCALE 1:100



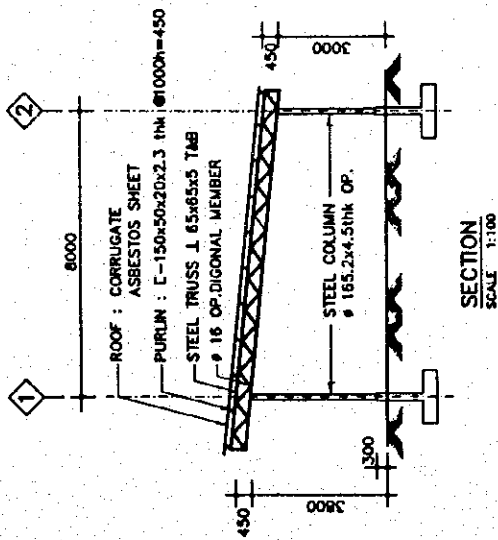
ROOF PLAN
SCALE 1:100



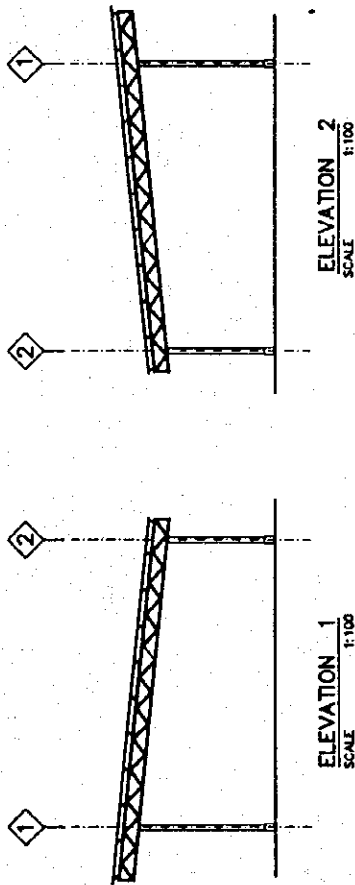
PLAN
SCALE 1:100



1) ROOFING FOR PADDOCK (1/2)
PATRUM TRAMI AI CENTRE



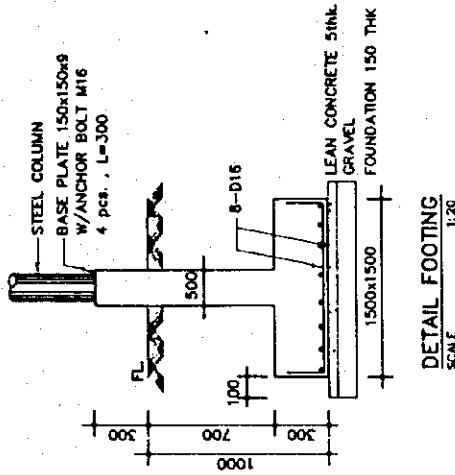
SECTION
SCALE 1:100



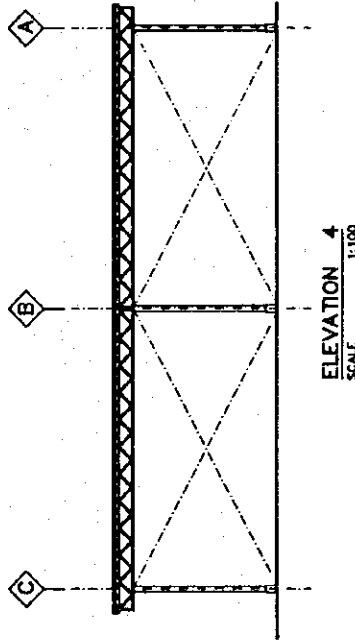
ELEVATION 2
SCALE 1:100

ELEVATION 1
SCALE 1:100

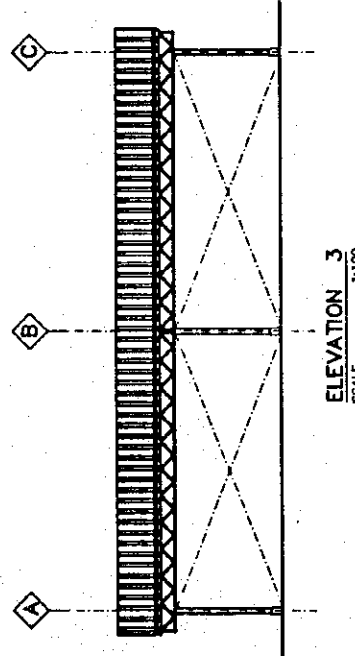
12D19
9 • 9 • 150
500x500



DETAIL FOOTING
SCALE 1:20

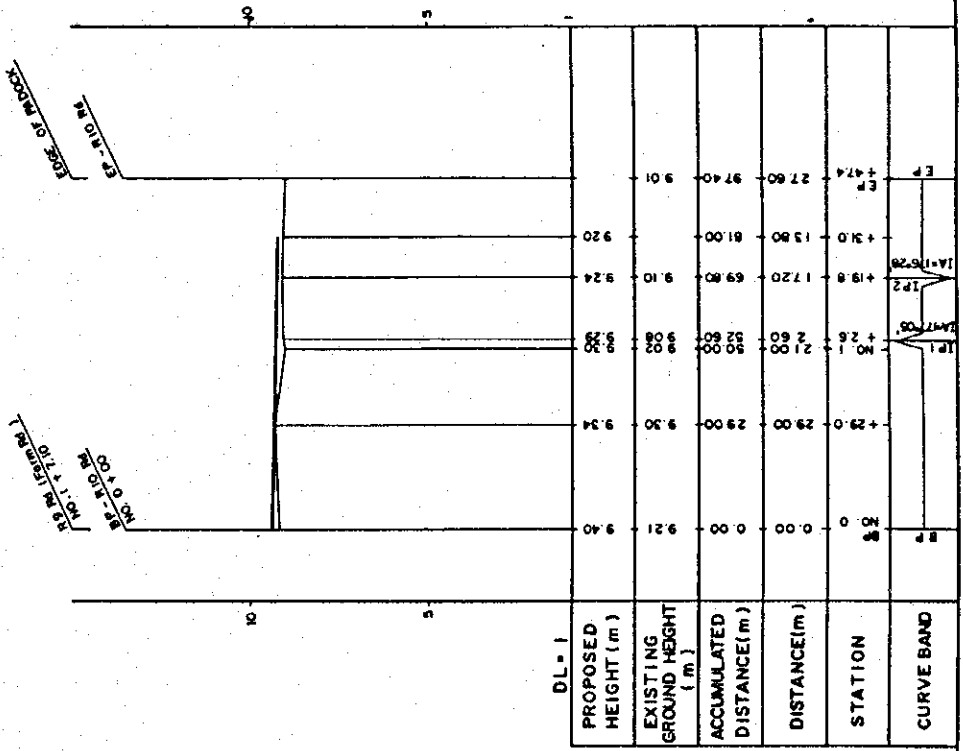
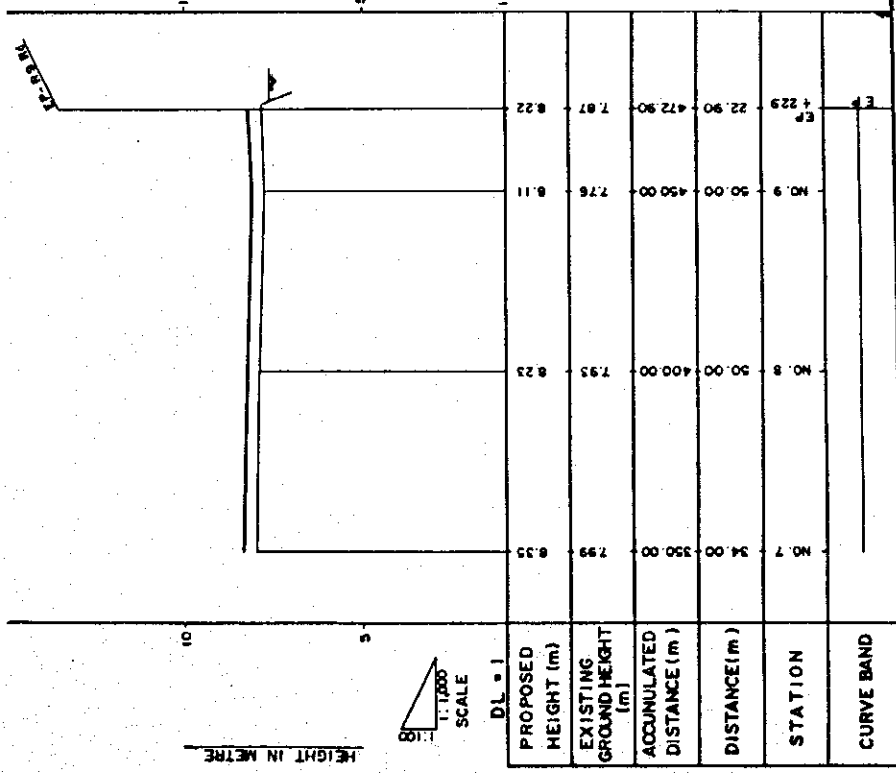
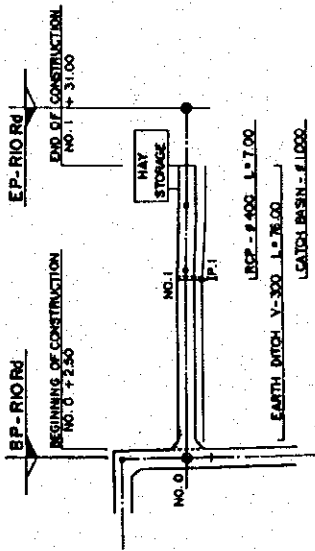
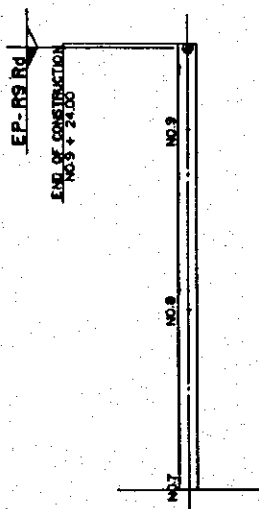


ELEVATION 4
SCALE 1:100



ELEVATION 3
SCALE 1:100

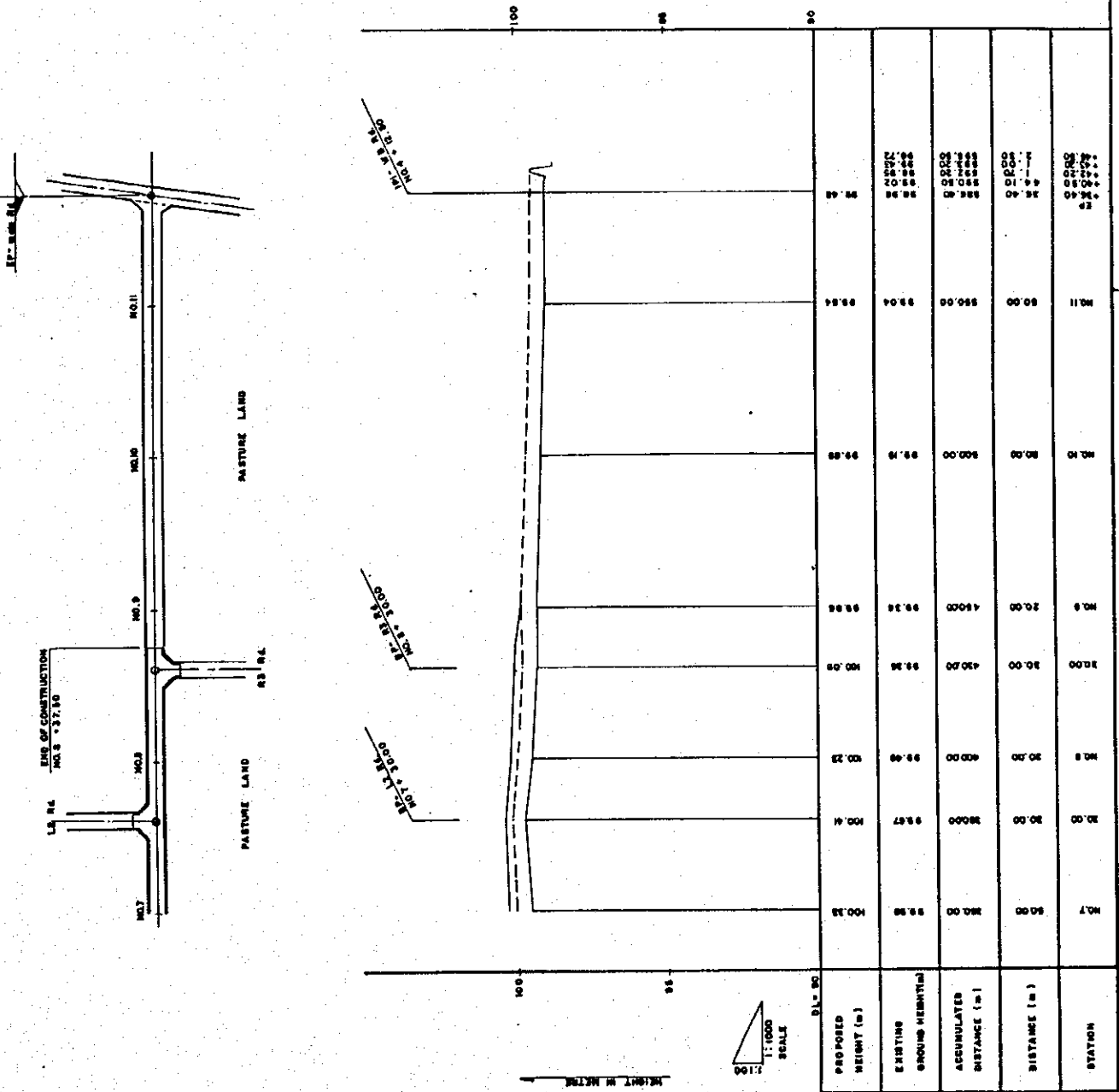
2) ROOFING FOR PADDOCK (2/2)
PATRUM THANI AI CENTRE



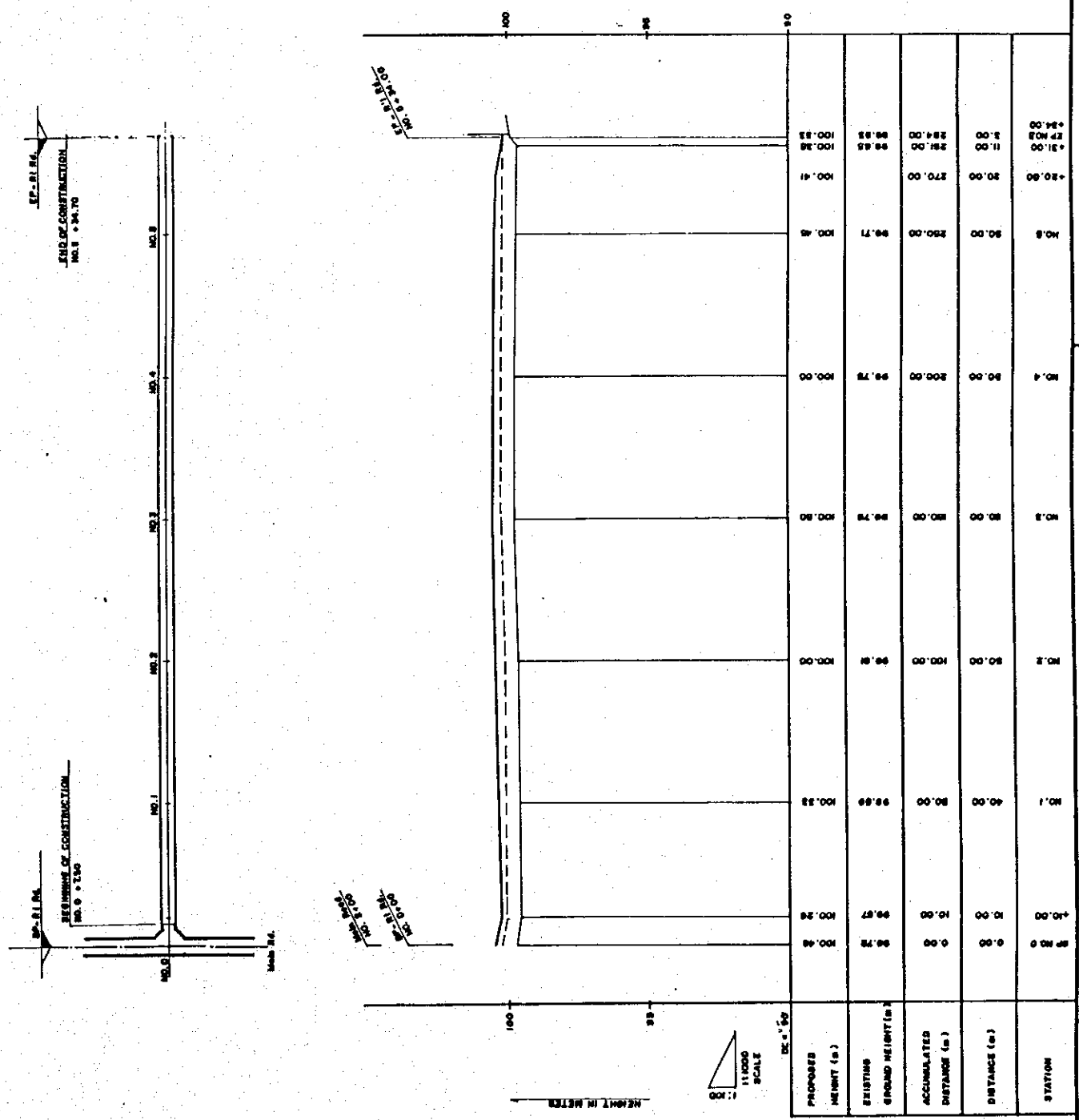
DL = 1

PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)	STATION	CURVE BAND
9.21	9.21	0.00	0.00	NO. 0	
9.30	9.30	29.00	29.00	NO. 1	
9.24	9.24	96.00	67.00	NO. 2	
9.01	9.01	97.40	27.60	EP	

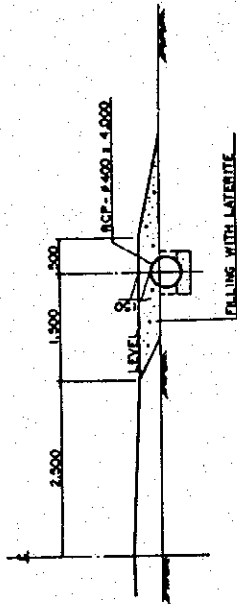
3) R9 ROAD (2/2)
 & R10 ROAD
 PATRUK TRANI AT CENTRE



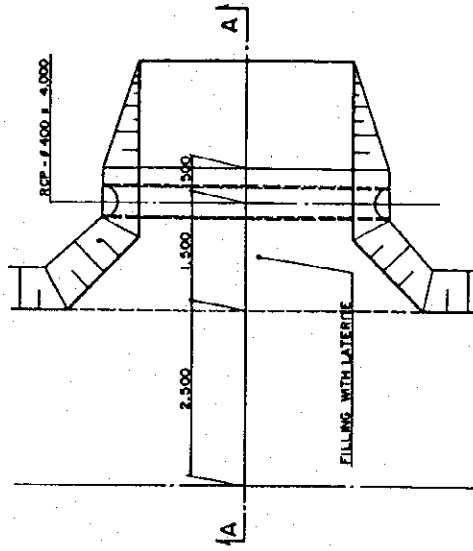
5) R1 ROAD
 CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE



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

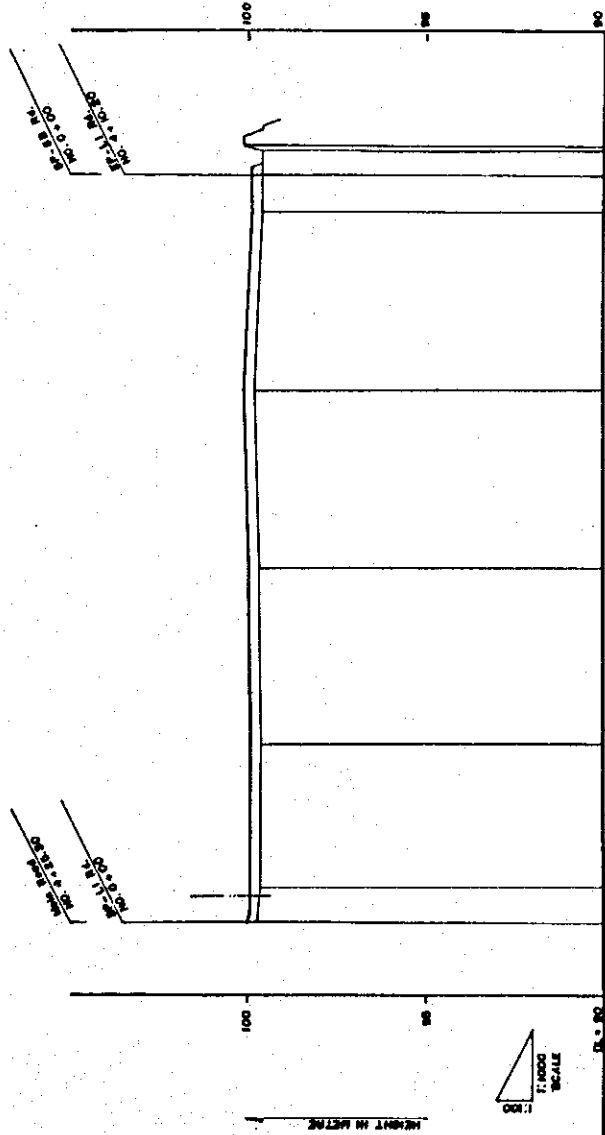
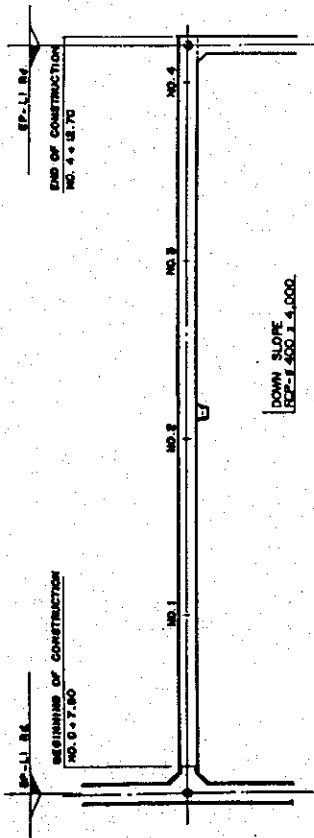


SECTION A-A

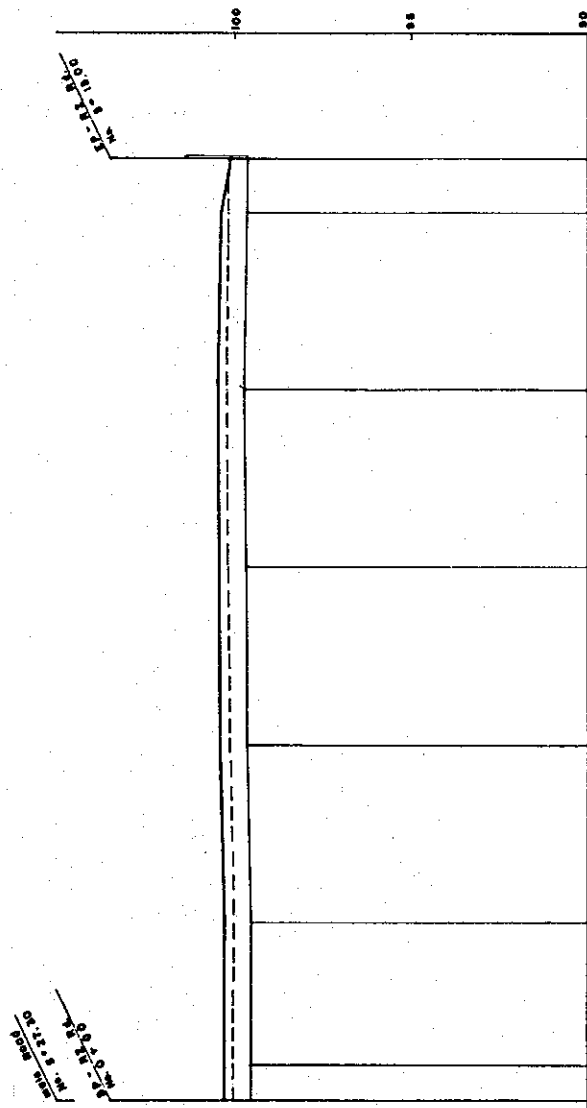
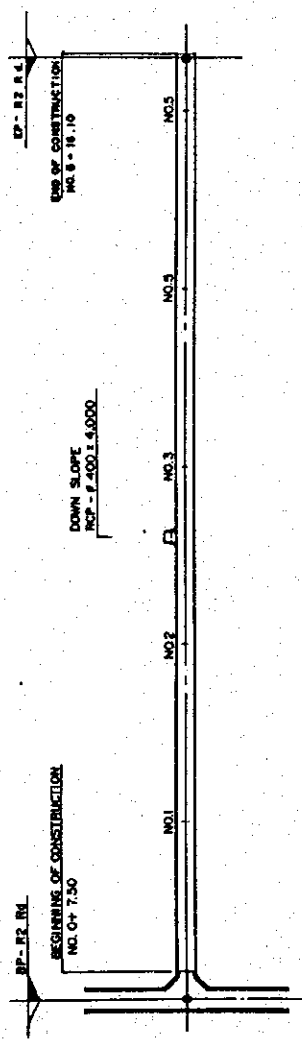


PLAN

8) L1 ROAD & DOWNSLOPE TO FIELD
CKAI BABAN DAIRY FARMING DEMONSTRATION CENTRE



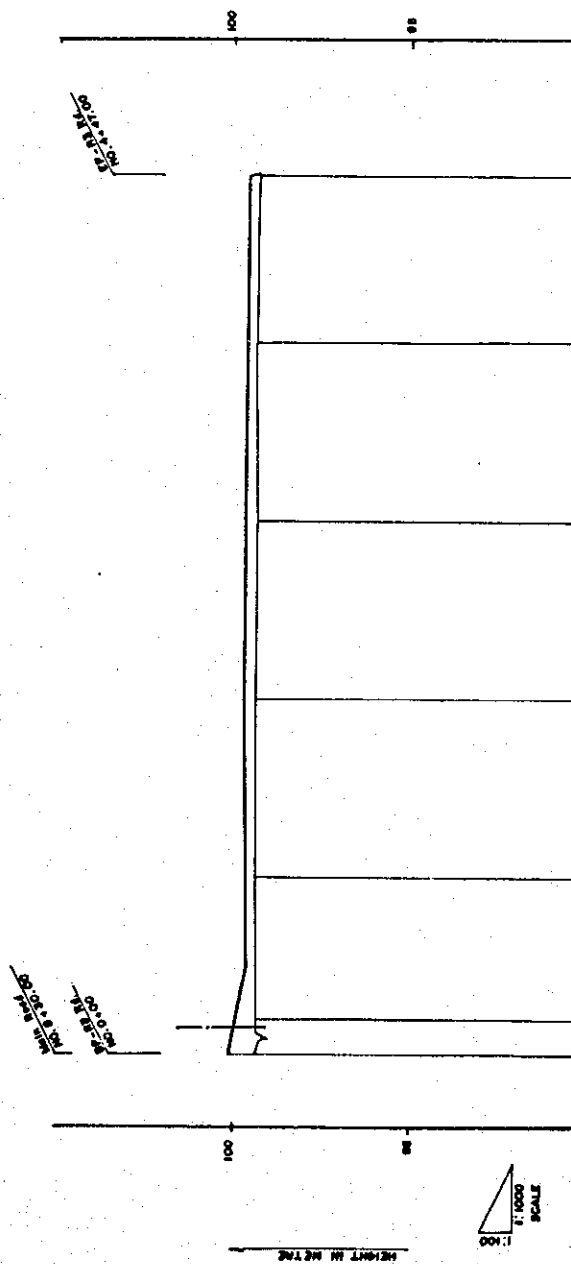
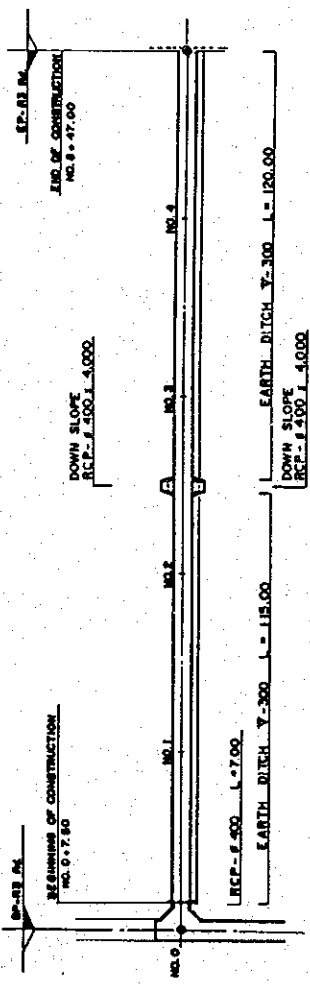
PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)	STATION
100.00	99.90	00.00	00.00	100.00
99.90	99.80	00.00	00.00	100.10
99.80	99.70	00.00	00.00	100.20
99.70	99.60	00.00	00.00	100.30
99.60	99.50	00.00	00.00	100.40
99.50	99.40	00.00	00.00	100.50
99.40	99.30	00.00	00.00	100.60
99.30	99.20	00.00	00.00	100.70
99.20	99.10	00.00	00.00	100.80
99.10	99.00	00.00	00.00	100.90
99.00	98.90	00.00	00.00	101.00
98.90	98.80	00.00	00.00	101.10
98.80	98.70	00.00	00.00	101.20
98.70	98.60	00.00	00.00	101.30
98.60	98.50	00.00	00.00	101.40
98.50	98.40	00.00	00.00	101.50
98.40	98.30	00.00	00.00	101.60
98.30	98.20	00.00	00.00	101.70
98.20	98.10	00.00	00.00	101.80
98.10	98.00	00.00	00.00	101.90
98.00	97.90	00.00	00.00	102.00
97.90	97.80	00.00	00.00	102.10
97.80	97.70	00.00	00.00	102.20
97.70	97.60	00.00	00.00	102.30
97.60	97.50	00.00	00.00	102.40
97.50	97.40	00.00	00.00	102.50
97.40	97.30	00.00	00.00	102.60
97.30	97.20	00.00	00.00	102.70
97.20	97.10	00.00	00.00	102.80
97.10	97.00	00.00	00.00	102.90
97.00	96.90	00.00	00.00	103.00



PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)	STATION
100.36	99.84	0.00	0.00	0+00
100.36	99.84	10.00	10.00	+ 100
100.36	99.84	20.00	20.00	NO. 2
100.36	99.84	30.00	30.00	NO. 3
100.36	99.84	40.00	40.00	NO. 4
100.36	99.84	50.00	50.00	NO. 5
100.36	99.84	60.00	60.00	NO. 6
100.36	99.84	70.00	70.00	NO. 7
100.36	99.84	80.00	80.00	NO. 8
100.36	99.84	90.00	90.00	NO. 9
100.36	99.84	100.00	100.00	NO. 10
100.36	99.84	110.00	110.00	NO. 11
100.36	99.84	120.00	120.00	NO. 12
100.36	99.84	130.00	130.00	NO. 13
100.36	99.84	140.00	140.00	NO. 14
100.36	99.84	150.00	150.00	NO. 15



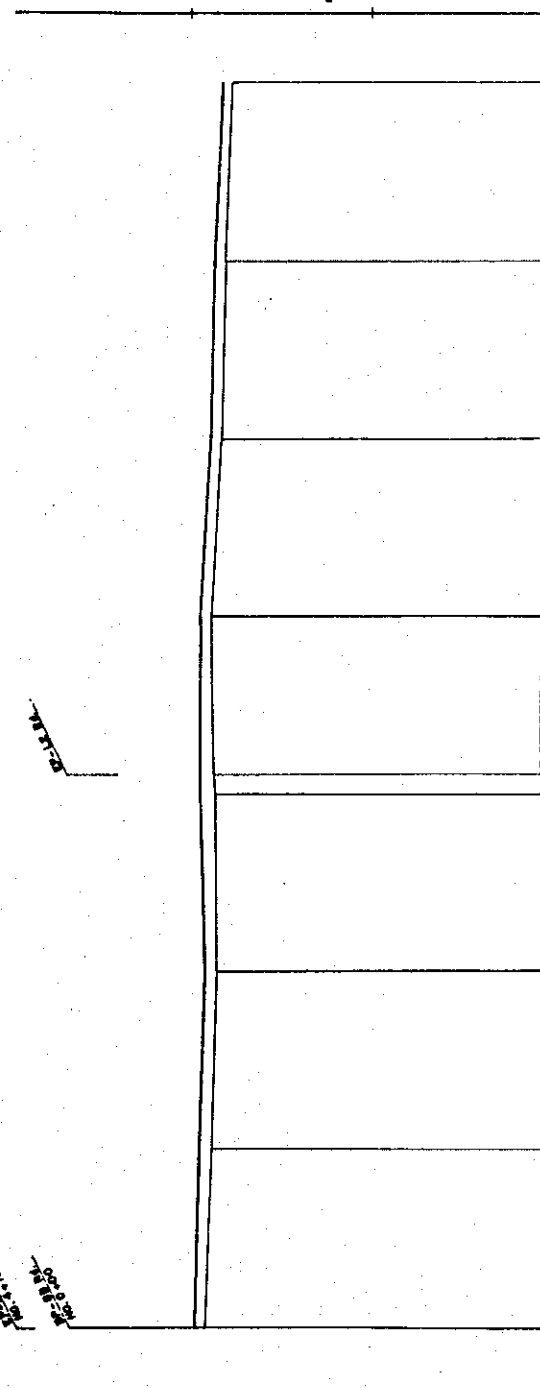
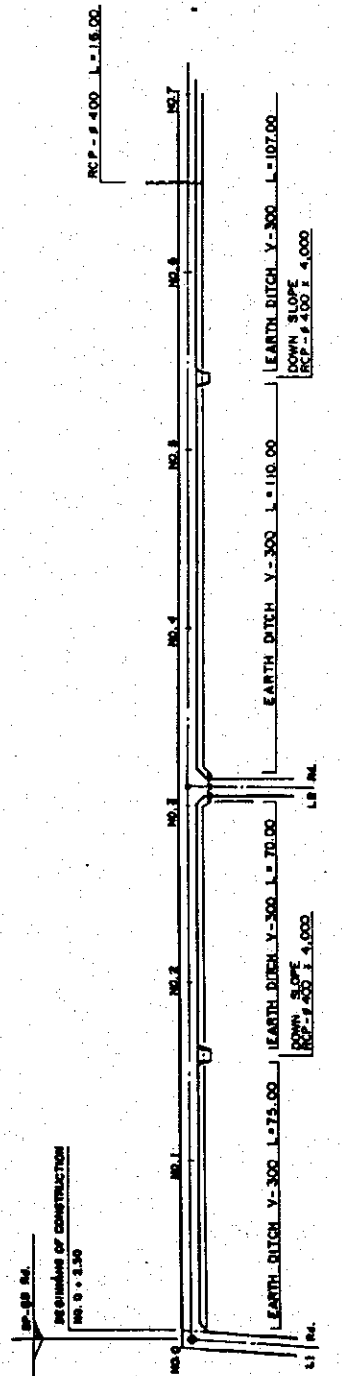
7) R2 ROAD
 CHAI BADAN DAIRY FERRING DEMONSTRATION CENTRE



STATION	PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)
0+00	10.00	98.30	0.00	0.00
0+10	10.00	98.30	10.00	10.00
0+20	10.00	98.30	20.00	10.00
0+30	10.00	98.30	30.00	10.00
0+40	10.00	98.30	40.00	10.00
0+50	10.00	98.30	50.00	10.00
0+60	10.00	98.30	60.00	10.00
0+70	10.00	98.30	70.00	10.00
0+80	10.00	98.30	80.00	10.00
1+00	10.00	98.30	90.00	10.00
1+20	10.00	98.30	100.00	10.00
1+40	10.00	98.30	110.00	10.00
1+60	10.00	98.30	120.00	10.00
1+80	10.00	98.30	130.00	10.00
2+00	10.00	98.30	140.00	10.00
2+20	10.00	98.30	150.00	10.00
2+40	10.00	98.30	160.00	10.00
2+60	10.00	98.30	170.00	10.00
2+80	10.00	98.30	180.00	10.00
3+00	10.00	98.30	190.00	10.00
3+20	10.00	98.30	200.00	10.00
3+40	10.00	98.30	210.00	10.00
3+60	10.00	98.30	220.00	10.00
3+80	10.00	98.30	230.00	10.00
4+00	10.00	98.30	240.00	10.00
4+20	10.00	98.30	250.00	10.00
4+40	10.00	98.30	260.00	10.00
4+60	10.00	98.30	270.00	10.00
4+80	10.00	98.30	280.00	10.00
5+00	10.00	98.30	290.00	10.00
5+20	10.00	98.30	300.00	10.00
5+40	10.00	98.30	310.00	10.00
5+60	10.00	98.30	320.00	10.00
5+80	10.00	98.30	330.00	10.00
6+00	10.00	98.30	340.00	10.00
6+20	10.00	98.30	350.00	10.00
6+40	10.00	98.30	360.00	10.00
6+60	10.00	98.30	370.00	10.00
6+80	10.00	98.30	380.00	10.00
7+00	10.00	98.30	390.00	10.00
7+20	10.00	98.30	400.00	10.00
7+40	10.00	98.30	410.00	10.00
7+60	10.00	98.30	420.00	10.00
7+80	10.00	98.30	430.00	10.00
8+00	10.00	98.30	440.00	10.00

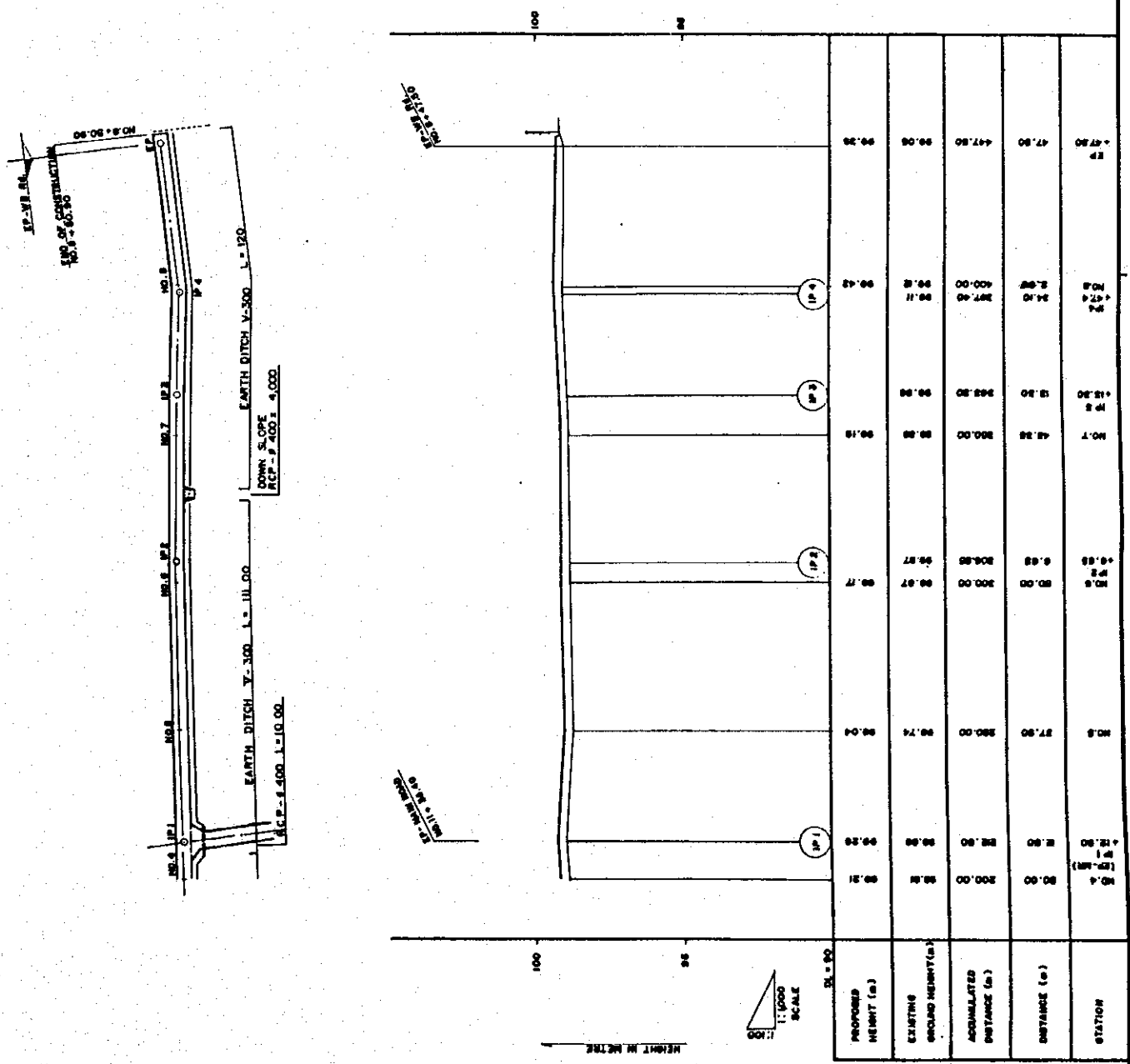
9) R3 ROAD
 CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE

10) SB ROAD (1/2)
 CRAI BADAN DAIRY FARMING
 DEMONSTRATION CENTER



STATION	PROPOSED HEIGHT (m)	EXISTING GROUND HEIGHT (m)	ACCUMULATED DISTANCE (m)	DISTANCE (m)
0+00	98.90	98.90	0.00	0.00
0+10	99.42	98.42	90.00	90.00
0+20	99.90	98.90	180.00	90.00
0+30	99.90	98.90	270.00	90.00
0+40	99.90	98.90	360.00	90.00
0+50	99.90	98.90	450.00	90.00
0+60	99.90	98.90	540.00	90.00
0+70	99.90	98.90	630.00	90.00
0+77	99.90	98.90	720.00	90.00

1.2) W.B. ROAD (2/2)
 CHAI BADAN DAIRY FERRING DEMONSTRATION CENTRE



JICA