

### **3.3 Implementation Plan**

#### **3.3.1 Selection of Work Items to be implemented in the Model Infrastructure Works**

Construction cost of each work item, which estimated based upon the results of detailed design is arranged in order of the priority decided as shown in Table 3.3.1.

As was previously mentioned, facilities to be constructed in the Works should be selected because the total construction cost exceeds the limited budget for the Works.

The work items of up to third priority in the Pathum Thani Work and up to second priority in the Chai Badan work has been selected through discussion with the Project experts, subject to that roofing in the paddock works and fencing in the farm pond works shall be excepted and the approach to the bull shed of semen processing building shall be laterite road instead of asphalt pavement.

Incidentally the equipment and materials for the irrigation facilities to be provided in the Chai Badan Dairy Farming Demonstration Center, such as a submergible pump for the deep well, a distribution pump, pipes, sprinklers and their accessories, etc. will be separately procured by the Project.

The work items selected for the construction in the Model Infrastructure Works are shown as below:

#### **A. Pathum Thani AI Center**

- 1. Water supply facilities works**
  - 1) Deep well**
  - 2) Elevated water tank**
  - 3) Water supply pipe**
- 2. Paddock works (without roofing works)**
- 3. Manure deposit shed works**

#### 4. Road works

- 1) Approach to milking cow shed
- 2) Approach to bull shed of semen processing building  
(laterite road instead of asphalt pavement)
- 3) Approach to manure deposit shed

#### B. Chai Badan Dairy Farming Demonstration Center

##### 1. Irrigation facilities works

- 1) Deep well
- 2) Farm pond ( without fencing works)
- 3) Distribution facilities

##### 2. Road works

- 1) Approaches to project buildings
- 2) Main road
- 3) Lateral road junctions

where, ( ) means modified contents from the detailed design.

Table 3.3.1 List of Direct Cost for Each Work Item (1/2)

Work Item	Priority NO.1	Priority NO.2	Priority NO.3	Priority NO.4	Priority NO.5	Priority NO.6	Priority NO.7	Total	Remarks
	Amount	Amount	Amount	Amount	Amount	Amount	Amount		
Chai Badan Dairy Farming Demonstration Centre									
1. Irrigation Facilities Works									
1) Deep well works	5 2 3							5 2 3	without pumps & pipes
2) Farm pond works	1, 4 7 5							1, 4 7 5	for fencing: 169
3) Distribution facilities works	2 7 6							2 7 6	
2. Road Works									
1) Approach road works									
1) Approaches to project building		1 8 1						1 8 1	
2) Main road works									
1) Section between BP & R2 Rd.		3 3 3						3 3 3	
2) Lateral junction (R1, R2, L1)		1 5						1 5	
3) Section between R2 Rd. & R3 Rd.					1 7 3			1 7 3	
4) Lateral junction (L2, R3)					9			9	
3) Lateral road works									
1) L1 Rd.			7 4					7 4	
2) L2 Rd.				8 4				8 4	
3) R3 Rd.				9 7				9 7	
4) SB Rd.						1 4 9		1 4 9	
5) WB Rd.						1 6 7		1 6 7	
6) R1 Rd.							3 2 0	3 2 0	
7) R2 Rd.							2 9 8	2 9 8	
Sub-total	2, 2 7 4	5 2 9	7 4	1 8 1	1 8 2	3 1 6	6 1 8	4, 1 7 4	

Table 3.3.1 List of Direct Cost for Each Work Item (2/2)

Work Item	Priority NO.1	Priority NO.2	Priority NO.3	Priority NO.4	Priority NO.5	Priority NO.6	Priority NO.7	Total	Remarks
	Amount	Amount	Amount	Amount	Amount	Amount	Amount		
<b>Pabum Thani AI Centre</b>									
<b>1. Water Supply Facilities Works</b>									
1) Deep well works	9 0 4							9 0 4	
2) Elevated water tank works	1 9 5							1 9 5	
3) Water supply pipe works	2 2							2 2	
<b>2. Paddock Works</b>									
3. Manure Deposit Shed Works	7 2 0							7 2 0	for roofing: 177
<b>3. Manure Deposit Shed Works</b>									
4. Road Works			3 4 5					3 4 5	
<b>1) Approach road works</b>									
① Approach to milking cow shed	7 4							7 4	
② Approach to bull shed in semen processing building		4 2						4 2	in case of laterite road: 18
③ Approach to manure deposit shed			1 1 8					1 1 8	
④ Approach to hay storage				6 7				6 7	
<b>2) Farm Road Works</b>									
© Farm road					2 0 8			2 0 8	
<b>Sub-total</b>	1, 9 1 5	4 2	4 6 3	6 7	2 0 8	0	0	2, 6 9 5	
<b>Total</b>	4, 1 8 9	5 7 1	5 3 7	2 4 8	3 9 0	3 1 6	6 1 8	6, 8 6 9	
<b>Accumulative Sum</b>	4, 1 8 9	4, 7 6 0	5, 2 9 7	5, 5 4 5	5, 9 3 5	6, 2 5 1	6, 8 6 9	—	

Unit in thousand Baht

### 3.3.2 Works Plan

#### (1) Pathum Thani AI Center

The Model Infrastructure Works at the Center consist of construction of the water supply facilities, paddock, roads and manure deposit shed. Work on the water supply facilities can be further divided into drilling of a deep well (including installation of a pump), construction of a elevated water tank and laying of water supply. All works shall be carried out by a contractor under the supervision of the engineer appointed by JICA.

Regarding work on the deep well, a decision on the aquifer to be tapped and the position of the screen will be made based upon results of geological checking and electric logging performed after the drilling. Moreover, upon completion of well development, a pumping test will be carried out in order to determine optimum yield

In the road works, because good quality filling material cannot be found within the AI Center site, this will need to be procured from outside. Road paving shall be executed manually using hot mixed asphalt.

#### (2) Chai Badan Dairy Farming Demonstration Center

The model infrastructure works at the Dairy Farming Demonstration Center consist of construction and improvement work on the irrigation facilities and the roads. Irrigation facility works are further divided into deep well drilling (including pump installation), farm pond works and water distribution works.

The works here will also be carried out under the supervision of JICA engineer by a contractor, however for the irrigation facilities works, a submersible pump, a distribution pump, their accessories, pipeline piping materials and sprinklers will be procured separately under the Project.

Drilling site of the deep well shall be decided upon after conducting an electric perspective survey. The aquifer to be tapped and screen position shall be determined based upon the results of drilling and electric logging. Moreover, after well development has been completed, a pumping test will be conducted to determine the optimum yield.

Concerning the road paving work, because there is no asphalt plant capable of making hot mixed asphalt near the site, paving shall be manually executed using asphalt penetration macadam method.

In the construction work of the farm pond, the excavated earth shall be used to build an embankment. If there is shortage of filling material due to limestone boulder appeared more shallow than the expected depth, the shortage shall be covered by imported soil. If boulders should appear, all boulders as far as the specified depth shall be removed and the resulting hole shall be filled with earth and then compacted and smoothed satisfactorily to the lining.

### 3.3.2 Works Schedule

The first factor that needs to be considered when determining the works schedule is that Thailand has a dry season and a rainy season, and that efficiency levels of earth works during the rainy season drop dramatically.

The dry season lasts from around the middle of October until April. In May, there are 10 days of rainfall in Pathum Thani and 15 days of rain in Chai Badan (mean figures for the last 10 years) that signal the coming of the rainy season, then real rainy season starts from early in June.

The Detailed Design is scheduled for completion towards the end of February and assuming a month is taken for the procurement of contractor, only one month of the 1994/95 dry season will be left in which to execute the works unhindered. As was mentioned previously of course, it is already roughly one and a half years since the Project was commenced, and the Model Infrastructure Works need to be executed as quickly as possible in

order to get the Project activities really moving. This is particularly the case at the Pathum Thani AI Center where the 30 new milking cows are scheduled to arrive soon. Bearing in mind the above mentioned climatic conditions, the degree of urgency of the works and the amount of time needed for works execution, the Model Infrastructure Works are to be carried out over two periods before and after the rainy season. This rather exceptional, but necessary works schedules illustrated in Fig. 3.3.1.

Fig. 3.3.1 CONSTRUCTION SCHEDULE

YEAR/MONTH	1995						1996					
	Mar.	Apr.	May	Jun.	Jul. - Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
<PATHUM THANI AI CENTRE>	▽ CONTRACT											
1. Mo-demobilization												
2. Water Supply Facilities Works												
1) Deep Well Works												
2) Water Tank & Supply Pipe Works												
3. Paddock Works												
4. Road Works												
5. Manure Deposit Shed												
<CHAI BADAN DAIRY FARMING DEMONSTRATION CENTRE>												
1. Mo-demobilization												
2. Irrigation Facilities Works												
1) Deep Well Works												
2) Farm Pond Works												
3) Distribution Facilities Works												
3. Road Works												



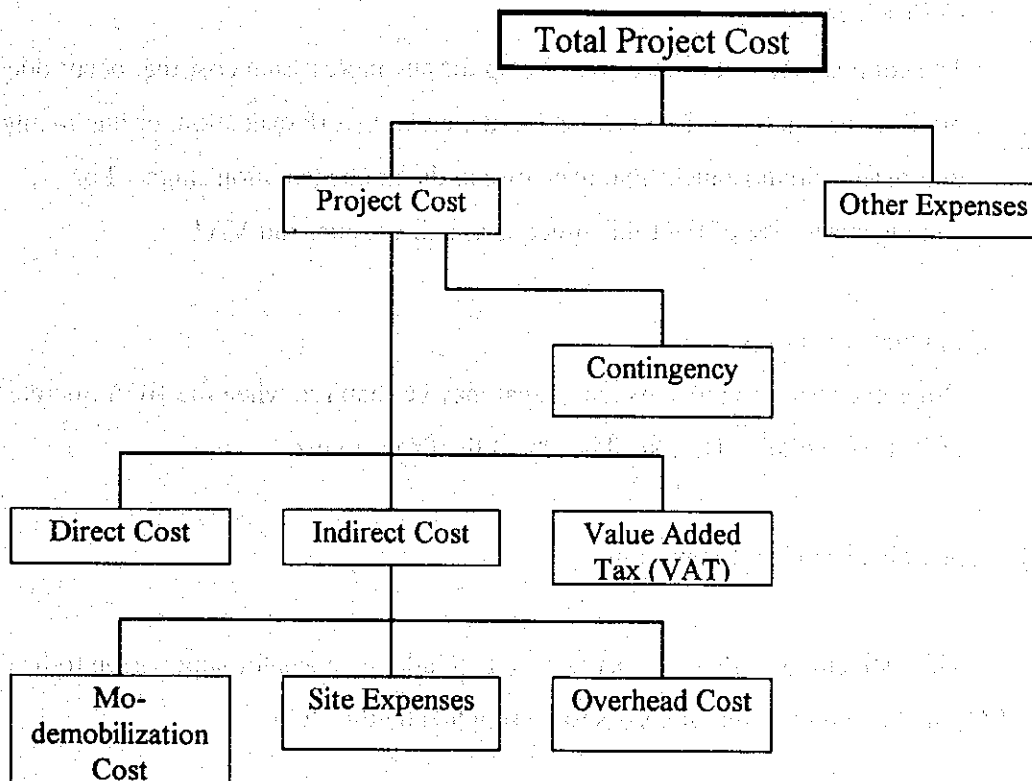


## CHAPTER 4 COST ESTIMATE

### 4.1 Conditions for Cost Estimation

#### (1) Composition of Project Cost

The composition of the Project costs is as indicated below:



#### 1) Direct Cost

This is the direct cost for the works stated in Section (4) below.

#### 2) Indirect Cost

Indirect cost consists of mo-demobilization cost & site expenses, and overhead cost for work contracted to private contractor. Indirect cost amounts to 20% of the direct cost. Mobilization and demobilization costs include temporary cost, hauling cost, preparation cost, building and repair expenses and indirect labor cost etc. Site

expenses include personnel management expenses, office supply expenses, communications and traffic expenses, social expenses, compensation cost, taxation and insurance premiums etc. Overhead cost consist of head and branch offices expenses and profit margin etc.

### 3) Value Added Tax (VAT)

7% of the total direct and indirect costs is accounted for as VAT.

### 4) Contingency

The contingency is designed to make up for any increases in cost that occur due to price escalation that arise between estimation and work execution, or due to any unforeseen circumstances that may arise in the implementation stage. For contingencies, 5% of the total direct cost, indirect cost and VAT.

### 5) Other Expenses

Other expenses are those expenses that may be required when the JICA Secretary orders the works. They shall be 5% of the Project cost.

## (2) Scope of Project Cost Estimation

This estimation of Project cost does not include the costs for supervision to be done by the JICA and equipment and materials to be supplied by the JICA.

## (3) Unit Rates in the Cost Estimation

Unit rates are added up based upon materials prices, wage rates and construction machinery prices surveyed and confirmed locally, or added up based upon reference to estimate prices sent from local contractors. Unit rates from the Model Infrastructure Works for the Land and Water Conservation Project in the East of Thailand were also used for reference purposes.

#### **(4) Scope of the Works**

The scope of the Model Infrastructure Works is as described in the following sections.

##### **1) Pathum Thani AI Center**

###### **a) Mo-demobilization**

- Preparation for works, clearing up and surveying.

###### **b) Water Supply Facilities Works**

- Deep well works : drilling, electric logging, development, pumping test, pump installation, piping, electric work.
- Elevated water tank works : foundation works, tank installation.
- Water supply pipe works.

###### **c) Paddock Works**

- Earth work, concrete paving, drainage work, management facility works (fence, gate, manger, water vessel, tree planting).

###### **d) Road Works**

- Approach roads : earth work asphalt paving, drainage work.

###### **e) Manure Deposit Shed Works**

- Earth work, concrete paving, drainage work.
- Manure deposit shed supper structure work: RC columns, beams, walls, roof.

##### **2) Chai Badan Dairy Farming Demonstration Center**

(Pump equipment and its accessories, pipeline pipe materials, valves and sprinklers are supplied articles. Furnishing all other equipment and materials are as part of the works).

###### **a) Mo-demobilization**

- Preparation for works, clearing up and surveying.

## b) Irrigation Facilities Works

- Deep well works : electric prospective survey, drilling, electric logging, development, pumping test, pump installation, piping, electric work.
- Farm pond works : earth work, stairs work, lining work.
- Distribution facilities works : earth work, pump installation, pump room, pipeline laying, trial operation.

## c) Road Works

- Approach roads : earth work, asphalt paving.
- Main road : earth work, asphalt paving.
- Lateral junctions : earth work, asphalt paving.

## 4.2 Total Project Cost

The total Project cost estimated is shown as follows:

<u>Total Project Cost</u>		
<u>Description</u>	<u>Quantity</u>	<u>Amount</u>
<b>I. Direct Cost</b>		
1. Construction Works in the Pathum Thani AI Centre		
1.1 Water Supply Facilities Works (Construction of a deep well, an elevated water tank and water supply pipelines)	1 L.S	1,121,000 Baht
1.2 Paddock Works	700 m2	543,000 Baht
1.3 Manure Deposit Shed Works	50 m2	345,000 Baht
1.4 Road Works	262 m	210,000 Baht
Sub-total		2,219,000 Baht
2. Construction Works in the Chai Badan Dairy Farming Demonstration Centre		
2.1 Irrigation Facilities Works (Construction of a deep well, a farm pond and water distribution facilities)	1 L.S.	2,105,000 Baht
2.2 Road Works	489 m	529,000 Baht
Sub-total		2,634,000 Baht
Total (I)		4,853,000 Baht
<b>II. In-direct Cost</b>		
1. Mo-demobilization & Site Expenses	(I) x 10%	485,000 Baht
2. Overhead Cost	(I) x 10%	485,000 Baht
Total (II)		970,000 Baht
<b>III. VAT</b>	(I+II) x 7%	407,000 Baht
Total (I+II+III)		6,230,000 Baht
<b>IV. Contingencies</b>	(I+II+III) x 5%	311,000 Baht
Construction Cost		6,541,000 Baht
<b>V. Other Expenses</b>	(I+II+III) x 5%	311,000 Baht
<b>Total Project Cost</b>		<b>6,852,000 Baht</b>



**CHAPTER 5 BID DOCUMENTS**

**5.1 Bid Documents (Draft)**

**BID DOCUMENTS  
(DRAFT)**

**FOR**

**THE MODEL INFRASTRUCTURE WORKS**

**FOR**

**THE DAIRY FARMING DEVELOPMENT PROJECT  
IN  
THE CENTRAL REGION OF THE KINGDOM OF THAILAND**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

**THAILAND OFFICE**



## CONTENTS

- \* Invitation for Bids
- \* Instruction to Bidders
- \* Proposal
- \* Terms and Conditions of the Contract
- \* Pledge Agreement
- \* Contract
- \* Technical Specifications
- \* Drawings
- \* Bill of Quantities

(LETTER HEAD OF JICA THAILAND OFFICE)

INVITATION FOR BIDS

DATED \_\_\_\_\_, 1995.

To: \_\_\_\_\_

DEAR Sir,

I have the pleasure to inform you that the Japan International Cooperation Agency, Thailand Office (hereinafter referred to as "the JICA") invites you to participate in the bids for The Model Infrastructure Works for the Dairy Farming Development Project in the Central Region of the Kingdom of Thailand (hereinafter referred to as "the Project"). The Project has two work sites in Pathum Thailand Province and in Lopburi Province.

You are kindly requested to join the pre-bidding meeting which will be held on \_\_\_\_\_, 1995 at \_\_\_\_\_ o'clock p.m. / a.m., at the JICA Thailand office.

Following documents will be provided to the bidders in the pre-bidding meeting:

1. Instruction to Bidders
2. Form of Proposal
3. Terms and Conditions of the Contract
4. Form of Pledge Agreement
5. Contract (draft)
6. Technical Specifications
7. Drawings
8. Bill of Quantities

Thanking you,

---

Resident Representative of JICA  
Thailand Office

## INSTRUCTION TO BIDDERS

### IB-01 SCOPE OF WORK

The Contractor shall carry out the Model Infrastructure Works for the Dairy Farming Development Project in the central Region of the Kingdom of Thailand (hereinafter referred to as "the Works" consisting of construction of water supply facilities, paddock, manure deposit shed and approach roads in Pathum Thani Province, and irrigation facilities and roads in the Chai Badan Dairy Demonstration Centre located in Lopburi Province.

### IB-02 PREPARATION OF BIDS

Bid shall be sealed and address to \_\_\_\_\_, Resident Representative, Japan International Cooperation Agency Thailand Office (hereinafter referred to as "the JICA", 1674/1, New Petchburi Road, Bangkok 10310, Thailand, and marked Sealed proposal, DFD PROJECT.

All bids shall be directly submitted to the JICA in an original and three (3) copies on or before the hour and date set for the opening of bids, and shall conform to the following requirements;

- a) One copy of proposal shall be marked "original". The original and copies of bids shall be submitted in its entirety with all banks in the proposal properly filled in.
- b) Bids prices shall be written in words as well as in figures. In case of discrepancy between the words and figures, the price in words shall prevail.
- c) The proposal must be signed by the Bidder with his usual signature and shall show his full business address.

### IB-03 BASIS ON WHICH BIDS ARE REQUESTED

The form of the Contract to be awarded is on fixed unit price basis of payment to the Contractor, as specifically set forth in these Contract Documents. Bids are requested on the above basis and a proposal which is on any other basis will not be considered.

Bids prices shall be made in Thai Baht and the Contractor shall be paid in Thai Baht.

### IB-04 BID SECURITY

The original, but not the copies of each bid, shall be accompanied by a proposal bond in an amount equivalent to ten (10)% of the total bid price in the form of cash or certified check, as a guarantee that the successful bidder will, within ten (10) days from receipt of the notice of award, enter into Contract with the JICA, and complete faithful performance of the work specified in these Contract documents. In case the successful bidder fails for any reason to execute such contract within the stipulated time, the bid security shall be forfeited to the JICA as liquidated damages.

The bid securities will be returned without interest after the successful bidder has signed the Contract.

### IB-05 WITHDRAWAL OF BIDS

A bidder will be allowed to withdraw his bid prior to the time set for the opening of bids if he communicates his purpose in writing to the JICA, Thailand Office, and his bid shall be returned to him unopened. No bid can be withdrawn for any reason whatsoever after the opening of bids has been made.

#### IB-06 BIDDER'S RESPONSIBILITY

The bidders shall be responsible for having taken steps to carefully examine all of the Contract Documents and also to have fully informed themselves as to all conditions, locality and otherwise, affecting the carrying out of the Contract Works. Failure to do so will be at the Bidder's risk.

#### IB-07 DATA TO BE SUBMITTED WITH PROPOSAL

All proposal shall contain the following documents:

- a) A construction schedule showing the detailed proposal plan of operation and construction of each main item in the Bill of Quantities from start to completion of the Contract work. The schedule shall be in a bar chart form with weeks shown as the least unit of time and each main item on a separate horizontal line. The schedule shall also show expected monthly accomplishment and financial requirements based on the Bill of Quantities.
- b) A list of equipment proposed to be used for the performance of the Contract Work. This list shall specifically enumerate the number, type and capacity.

#### IB-08 INTERPRETATION OF CONTRACT DOCUMENTS

If the prospective Bidder is in doubt as to the true meaning of any part of the Contract Document, the Bidder may submit to the JICA Thailand office, a written request for interpretation allowing sufficient time for a reply to reach him before submission of his bid. Any interpretation of the proposed documents will be made only by a supplemental notice duly issued.

### IB-09 OPENING OF BIDS

The opening of Bids will be schedule at \_\_\_\_\_ o'clock p.m. / a.m. Thailand standard Time on \_\_\_\_\_, 1995 at the JICA Thailand office. Attendance for Bidders is desirable.

### IB-10 COMPARISON OF BIDS

In making its selection, the JICA will not be bound to award a Contract to the bidder submitting the Bid with lowest indicated cost, but will take into consideration the bid prices, unbalanced bid, guaranteed completion time and other relevant consideration.

### IB-11 AWARD OF CONTRACT

Promptly after the opening of the bids the JICA will undertake a detailed study and appraisal of the proposal submitted. The Contract will be awarded to the Bidder whose proposal is considered to be the most advantageous to the JICA. The JICA reserves the right to reject any and all bids received.

### IB-12 BID DOCUMENTS

Bid documents shall include the following;

- a) Invitation for Bids
- b) Instruction to Bidders
- c) Proposal
- d) Terms and conditions of the contract
- e) Pledge Agreement
- f) Contract
- g) Technical Specifications
- h) Drawings
- i) Bill of Quantities

**PROPOSAL**

To: \_\_\_\_\_

The Resident Representative  
Japan International Cooperation Agency, Thailand Office  
1674/1, New Petchburi Road, Bangkok 10310

**P-01 BILL OF QUANTITIES AND BID PRICES**

The undersigned Bidder having carefully examined in their entirety the Contract Documents for The Model Infrastructure Works for the Dairy Farming Development Project in the Central Region of The Kingdom of Thailand, hereby offers and proposes to perform all of the construction and services, to furnish all equipments, materials supplies, labor and other items described in the Contract Documents, all for the unit and lump sum prices stated in words and figures in the following quantities:

Bid Price: \_\_\_\_\_ Baht

(in words)

( \_\_\_\_\_ Baht )

(in figures)

- Bill of Quantities to be attached herein.

**P-02 GUARANTEE OF COMPLETION**

The undersigned Bidder guarantees to effect the commencement, prosecution and completion of the Contract Works.

**P-03 BID SECURITY**

The undersigned Bidder hereby certifies that all statements herein are made or behalf of \_\_\_\_\_

Dated this \_\_\_\_\_ day of \_\_\_\_\_

\_\_\_\_\_  
Name \_\_\_\_\_  
Title \_\_\_\_\_  
Firm's Name \_\_\_\_\_  
Firm's Address \_\_\_\_\_

**Witness**



## TERMS AND CONDITIONS OF THE CONTRACT

### Section 1 General Information

#### 1.1 Objective

According to the Record of Discussion signed, technical cooperation concerning the Dairy Farming Development Project in the Central Region of the Kingdom of Thailand (hereinafter referred to as "the Project") is being carried out.

The objectives of the Model Infrastructure Works are to provide the demonstration farm facilities which are the essentials for the implementation of the Project.

#### 1.2 Location of the site

The project has two work sites as follows;

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

#### 1.3 Major Work to be done in the Model Infrastructure Works

<u>Item</u>	<u>Quantity</u>	<u>Specification</u>
< Pathumu Thani AI Centre >		
1. Water Supply Facilities		
1) Deep Well	1 No.	Drilling dia: 200 mm Well dia: 100 mm Depth: 300 m Design yield: 31 l/min
Pump for well	1 unit	Submergible pump 32 mm x 2.2 kw
2) Elevated Water Tank	1 set	V 5 cu.m x H 18 m
3) Water Supply Pipe	56 m	PVC 20 mm
	60 m	GSP 40 mm

- |  |       |                                |
|--|-------|--------------------------------|
| 2. Paddock                               | 1 No. | 700 sq.m (pavement: 400 sq.m)  |
| 3. Manure Deposit Shed                   | 1 No. | 5 m x 10 m                     |
| 4. Road                                  |       |                                |
| 1) Approach to Milking Cow Shed          | 70 m  | Asphalt pavement of 4.0 m wide |
| 2) Approach to Semen Collecting Building | 44 m  | Laterite, 3.5 m wide           |
| 3) Approach to Manure Deposit Shed       | 148 m | Laterite, 5.0 m wide           |

< Chai Badan Dairy Demonstration Centre >

1. Irrigation Facilities

- |   |                |  |
|---|----------------|--|
| 1) Deep Well                            | 1 No.          | Drilling dia: 300 mm<br>Well dia: 150 mm<br>Depth: 80 m<br>Design Yield: 250 l/min                               |
| Pump for well                           | 1 unit         | (Supplied by JICA)<br>Submergible pump, 50 mm x 2.2 kw   |
| 2) Farm Pond                            | 1 No.          | V=4,500 cu.m (area of full water level = 50 m sq. = 2,500 sq.m), lined by flexible PVC membrane liner (t=1.2 mm) |
| 3) Water Distribution Facilities        |                |  |
| Pump for Irrigation                     | 1 unit         | (Supplied by JICA)<br>Volute pump, 80/65 mm x 22 kw  |
| Pipe line (sprinkler irrigation system) | 210 m<br>480 m | (Supplied by JICA) GSP 100 mm<br>(Supplied by JICA) GSP 80 mm  |

2. Road

- |   |       |                                |
|---|-------|--------------------------------|
| 1) Approaches to major buildings(6 nos.)  | 180 m | Asphalt pavement of 4.0 m wide |
| 2) Main road                              | 294 m | Asphalt pavement of 5.0 m wide |
| 3) Junctions of lateral roads R1, R2 & L1 | 15 m  | Asphalt pavement of 4.0 m wide |

1.4 Collaboration

The JICA assists the DLD's and the CPD's activities through the project type technical cooperation scheme according to the Record of Discussion. Prior to or during the course of the Works, the Contractor shall make the good relation within the related Organizations\*) for the satisfactory implementation of the Works as to secure full collaboration.

\*) DLD : Department of Livestock Development, Ministry of Agriculture and Cooperatives

**Section 2 Submission of Notices**

**2.1 Work schedule.**

The Contractor shall submit the Work Schedule in following items before the commencement of the Works at the work site. If the Contractor intends to change the Work schedule, the approval from the Engineer to be appointed by the JICA (hereinafter called "the Engineer") shall be obtained prior to the modification of the schedule.

**Pathum Thani AI Center**

1. Mobilization & demobilization
2. Water supply facilities
  - 1) Deep well
  - 2) Elevated water tank & water supply pipe
3. Paddock
4. Roads
5. Manure deposit shed

**Chai Badan Dairy Demonstration Centre**

1. Mobilization & demobilization
2. Irrigation facilities
  - 1) Deep Well
  - 2) Farm pond
  - 3) Water distribution facilities
3. Roads

Also the Contractor shall submit the machineries scheme including the numbers, kind of machineries and using period of them.

## 2.2 Notices

The JICA and the Contractor shall submit the notices to each other as necessary, in accordance with Article 19 of the Contract within reasonable time except that special articles are provided in Terms and Conditions of the Contract.

### Section 3 Field Test and Inspection

The field tests in accordance with the Technical Specification and the demands from the Engineer shall be the responsibility for the Contractor. The charges for such field test shall be included in the total amount of the construction cost, and the Contractor is not entitled to claim any amount of the field test charges.

### Section 4 Modification of Plan

In case the JICA estimate the cost for the modification in accordance with Article 14 of the Contract, and if there are two portions, one for the increase and the other for the decrease of the construction cost resulting from such modification, the JICA shall have the right to offset them in the payment and pay of claim the difference between the increase and decrease of the construction cost as the case may be.

### Section 5 Release from the Works

After the final acceptance of the Works by the JICA, the Contractor shall remove its own temporary facilities, warehouses, construction roads, electric wiring, surplus material debris and so forth which were provided by the Contractor within ten (10) days. Upon approval of the Engineer for the removal of the abovementioned facilities etc. the Contractor will be released from its responsibility of the Works but remains responsible under one (1) year guarantee of the Works as specified in Article 11 of the Contract.

## Section 6 General Obligations of the Contractor

### **6.1 Temporary office and residence**

In case the Contractor intends to build the temporary office, residence and so forth, the Contractor shall submit the plan to the Engineer for approval at least seven(7) days in advance of the commencement of the Works.

The Contractor is required to always keep the buildings and facilities in good condition and to make proper drainage and sanitary system. Should the Contractor build them outside of the site, the Contractor shall arrange with the owner of the such land and at its own expense.

### **6.2 Fuel storage**

In area of temporary office and residence, the fuel tank capacity shall not exceed 1,000 liters and shall be far away from the housing area.

Fuel storage and transportation shall be done with care and shall have a good system of fire prevention, if storage license is required, the Contractor shall arrange for obtaining it.

### **6.3 Other facilities**

All necessary facilities for the Works and the Contractor's convenience shall be provided and maintained in good condition by the Contractor.

## Section 7 General Text

The Contractor shall implement the Works in accordance with the Contract Documents in broad sense such as the Contract in narrow sense, Terms and Conditions of the Contract, Technical Specifications. Should the evens occur that the both parties can not reach agreement on the interpretation of the above-mentioned Contract Documents in broad sense, both parties shall negotiate with sincerity and good faith for settlement of any disagreement, failing with decision of the JICA shall prevail.

**PLEDGE AGREEMENT**

To the Japan International Cooperation Agency, Thailand Office

Date \_\_\_\_\_

We \_\_\_\_\_, the Contractor hereby agree that all equipment, materials and supplies brought to the job sites under the Contract made with the security for our execution of the Works, and shall not be removed at any time without prior approval of the Japan International Cooperation Agency, Thailand Office (called "the JICA") in writing.

We further agree that should there be any loss or damage to pledged equipment, materials and supplies kept at the job sites, the JICA shall bear no responsibility whatsoever for such loss or damage.

\_\_\_\_\_  
Name \_\_\_\_\_  
Title \_\_\_\_\_  
Firm's Name \_\_\_\_\_  
Firm's Address \_\_\_\_\_

5.2 Contract (Draft)

**CONTRACT  
(DRAFT)**

FOR

**THE MODEL INFRASTRUCTURE WORKS**

FOR

**THE DAIRY FARMING DEVELOPMENT  
IN  
THE CENTRAL REGION OF THE KINGDOM OF THAILAND**

**JAPAN INTERNATIONAL COOPERATION AGENCY  
THAILAND OFFICE**

**CONTRACT**

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

This Contract is executed on the \_\_\_\_\_ day of \_\_\_\_\_ at the Japan International Cooperation Agency, Thailand Office between the Japan International Cooperation Agency, Thailand Office, by \_\_\_\_\_, Resident Representative as its authorized representative of the JICA Thailand office, hereinafter referred to as "the JICA" of the one part, and \_\_\_\_\_ whose office is situated at \_\_\_\_\_ Tel. \_\_\_\_\_ Represented by \_\_\_\_\_ Nationality \_\_\_\_\_ Title \_\_\_\_\_ hereinafter referred to as "the Contractor", of the other part.

Both parties mutually agree under the terms of this Contract as follows:-

**Article 1 Purpose of Agreement and Contract Price**

The JICA agrees to employ the Contractor and the Contractor agrees to perform the Works for the Model Infrastructure Works for the Dairy Farming Development Project in the Central Region of The Kingdom of Thailand for the total amount of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht), hereinafter referred to as "the Contract Price".



The following documents shall form integral part of this Contract:-

1. Terms and Conditions of the Contract
2. Pledge agreement
3. Technical specifications
4. Drawings
5. Bill of Quantities

Article 2 Performance Bond

As a security for the faithful performance of the Works under this Contract, the Contractor has on the execution of this Contract deposited a preformation bond with the JICA in cash or in lieu thereof a Bank Guarantee issued by The Bank of \_\_\_\_\_ bearing the number \_\_\_\_\_ and dated on \_\_\_\_\_ in the amount of \_\_\_\_\_ Baht( \_\_\_\_\_ Bath) which represents five (5) percent of the Contract Price, the name of the issuing bank and the form of the bank guarantee are to be approved by the JICA.

The JICA will return the Performance Bond in cash or the Bank Guarantee to the Contractor after final acceptance of the Works by the JICA as stipulated in Article 15 of this Contract, provided that the completed Works shall not show any defect or damage caused through the fault of the Contractor, or through the fault of any new Contractor in the case of termination of Contract by the JICA under Article 4.

Should the Contractor be in default, the JICA shall have the right to demand payment from all or any or any part of the Performance Bond. In addition, the Contractor shall remain liable for the full loss sustained by the JICA.

Article 3 Payment

The JICA agrees to effect payments for the Works to the Contractor in the following manner:-

- a. Advance Payment, to be effected upon the bringing of part of equipment and materials required for the Works and having stored at the job site by the contractor, and upon the verification of those facts by the Engineer to be appointed by the JICA (hereinafter referred to as "the Engineer"). The amount of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) which corresponds to Thirty (30) percent of the Contract Price, shall be paid upon signing of this Contract at the request of the Contractor.
- b. Interim Payment, to be effected according to the progress of the Works satisfactorily executed by the Contractor and accepted by the Engineer. The amount of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) which corresponds to Forty (40) percent of the Contract Price, shall be requested for the payment once during the course of construction at the request of the Contractor.
- c. Final payment, to be effected upon the satisfactory completion of the Works by the Contractor and accepted by the Engineer. The remainder of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) which corresponds to Thirty (30) percent of the Contract Price, shall be paid after the Final Certificate to be issued by the JICA for payment to the Contractor.

Payment under (b) and (c) shall be effected within ten (10) days after the respective acceptance of the Works by the Engineer.

Taxes payable by the Contractor, if any, shall be deducted at source by the JICA on each payment.

It is expressly understood that payments by the JICA do not mean acceptance responsibilities under this Contract.

Article 4 Completion Time

The Contractor agrees to commence the Works at the site within ten (10) days from the date of signing of this Contract (commencement date) and the Contractor agrees to satisfactorily complete the Works within \_\_\_\_\_ days (completion time) from the date hereof which will become due on \_\_\_\_\_, 1996 (completion date).

If the Contractor fails to commence the Works by the above commencement date, or should in the course of the construction may event occur which may reasonably cause the JICA to believe that the Contractor will not be able to complete the Works on the completion date, or should the Contractor fail to complete the Works by the completion date, or should the Contractor fail to meet any of the Contract requirement, the JICA shall have the right to terminate this Contract by giving written notice to the Contractor.

However, in case that the Contractor fails to complete the Works by the completion date, or to meet any of the Contract requirement, if the Engineer thinks that the Contractor has the ability for completion of the Works within reasonably extended period, the Contractor may be permitted by the JICA to continue the Works beyond the completion date but within the extended time.

Article 5 Penalty

In case that the Contractor is in default as mentioned in Article 4 the Contractor agrees to be responsible to the JICA as follow:-

5.1 In case of the termination by the default of commencement for the Works, the Contractor shall pay a penalty of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) per day counting from the commencement date until the new Contract is completely executed with a new Contractor for this Works, the period of which is included the time spent for finding the new Contractor and executing the new Contract etc.

5.2 In case the JICA thinks that the Contractor will not be able to complete the Works within the completion time and thereby terminates this Contract, the Contractor shall pay a penalty of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) per day counting the number of days in the same manner as prescribed in 5.1 above. However, the JICA may reduce such number of days according to the ratio between the completed Works and the total Works as may be decided by the Engineer.

5.3 In case the Contractor fails to complete the Works by the completion date or to meet any Contract requirement, the Contractor shall pay a penalty of \_\_\_\_\_ Baht ( \_\_\_\_\_ Baht) per day counting from the date following the completion date until the Works satisfactorily completed and accepted by the Engineer.

Article 6 Compensation

If the JICA sustains any losses as direct or indirect damages caused by the Contractor's failure, the Contractor shall compensate the JICA for such losses. The parties agree that time is essential for the completion of the Works.

Article 7 The JICA's right for default

The JICA has the sole and absolute right to decide whether to terminate the Contract, to impose only the penalty on the Contractor or to claim the compensation for the damage as stated in Article 5 or Article 6. The money due to the JICA exercising its right under this article shall be retained and deducted from any money due to the Contractor but yet unpaid including from the performance bond. If the total amount of the loss is larger than the money above-mentioned, the Contractor agrees that the JICA has the right to retain the construction equipment, materials and supplies etc. and demand payment of the balance from such equipment etc. or proceeds of sale thereof.

Article 8 Contractor's responsibility on termination of this Contract

After the contract has been terminated in accordance with the foregoing Article 4, the JICA shall have the right to employ another Contractor (hereinafter referred to as "the New Contractor") to carry on the remaining parts of the Works, and the payment for the Contractor that fail to complete the work shall be made out of the necessary Contract price for the remaining Works. Should the remaining amount after payment of the advance and interim payment from the Contract price, be insufficient to effect payment to the New Contractor, the difference between such remaining amount and actual cost estimated by the JICA for the satisfactory completion Works carried out by the New Contractor, shall be deemed as direct loss sustained by the JICA, and the Contractor shall pay such difference to the JICA within ten (10) days from the date of request by the JICA, failing which interest at the rate of eighteen (18) percent per annum shall be charged thereon.

Article 9 The Engineer

The Engineer, authorized to act on behalf of the JICA will be appointed by the JICA and the Engineer is entitled to do all things that the JICA may do so. The Engineer shall control and supervise the Works all the times whether it is in the preparation of implementation of the Works and the Contractor shall promptly furnish all necessary facilities for proper inspections of the Works in accordance with the Engineer's direction. At any moment the Engineer can direct the Contractor to stop the Works, if necessary and the Contractor shall have no claim on the JICA for extension of the completion time due to such suspension of the Works under this Article.

The inspection will not be deemed as the acceptance of the Works, and the Contractor shall not be relieved from his responsibility to meet the Contract requirements by the fact that the Engineer exercises their duties. Should it be found that the Works have not been satisfactorily performed in the faithful manner, the Contractor shall correct any part of the Works indicated by the Engineer within the period specified by the Engineer.

Article 10 Prohibition for the equipment removal

Should the Contractor fail to complete the Works during the completion time or the Engineer thinks that the Contractor will not be able to satisfactorily complete the Works, any equipment and materials brought to the site for use on the Works shall not be removed without the prior approval of the Engineer in writing.

**Article 11 Rectification of the defective construction**

For a further period of One (1) year after satisfactory completion and final acceptance of the Works by the JICA, whether completed by the Contractor or by the New Contractor in case of termination of Contract under Article 4, any damage to the Works which is caused by the Contractor's fault, either because of defective workmanship or the use of inferior materials or any other cause, shall be made good as necessary by the Contractor to the satisfaction of the JICA at no extra cost.

In case of the termination of the Contract, the JICA may decide which part of the Works should come under the Contractor's responsibility, and requests the Contractor to make good of the damaged Works. Should the Contractor fail to do so within period specified after receipt of written request to do so from the JICA, the JICA shall have the right to employ another Contractor to carry out such work and the Contractor agrees to bear all expenses incurred.

**Article 12 Discrepancies among the Contract Documents**

If, prior to or during the course of the Works, any discrepancies are found in the drawings and/or the Technical Specifications etc. attached to this Contract, the Contractor shall follow the ruling given by the Engineer at no additional cost to the JICA.

**Article 13 Construction Method and Temporary Works**

The construction method including implementation schedule and plan of the temporary works such as installation of temporary facilities, offices, ware houses, construction road, electric wiring, etc. shall be submitted by the Contractor and approved by the Engineer at least seven (7) days in advance of the commencement of the Works.

Should the cost of the above temporary works be estimated in the Bill of Quantities in this Contract, the Contractor is not entitled to claim any amount of charges for the temporary works.

#### Article 14 Modification of Plant

If the Engineer finds it necessary to make modification of construction design and/or materials and so forth during the course of construction, the JICA has the right to order the modification of the Works to the Contractor, and such order shall be made in writing from the Engineer to the Contractor.

The JICA agrees to adjust upwards or downwards the necessary expense for such modification to the Contractor, which will be estimated by unit price in the Bill of Quantities of this Contract in case of modification of quantities of construction works. In the case of additional works which are not quoted by unit price in the Bill of Quantities of this Contract, the Engineer will make estimation thereof and the JICA will pay to the Contractor for such additional works accordingly. But if the Contractor does not agree to such estimation, the Contractor is then entitled to negotiate with the JICA. Also the extension of the completion time due to the modification shall be given by the JICA who shall have the sole right to decide the number of days of such extension.

#### Article 15 Acceptance of the Works

When the entire Works have been completed, the Contractor shall submit the invoice in written form indicating the Works actually completed to the Engineer. If there are compliance with drawings or Technical Specifications, the JICA shall accept the Works as the final acceptance of satisfactory completion Works within ten (10) days after the receipt of the written form and it shall be deemed that the final acceptance has been made on such date of the receipt of the written form.



On the other hand, should non-compliance with drawings or Technical Specifications or defects be found in the Works executed by the Contractor, the Engineer will have the right not to accept the Works and to order the rectification of the Works. If the required period for the rectification of the Works is beyond the completion date, the Contractor shall not be relieved from its responsibility to pay the penalty as stipulated under Clause 5.3, and after the completion of rectification of the Works, then the final acceptance will be made in the same manner as described in the first paragraph of this Article.

During the course of construction, whether in the completion time or of extended time specified in the last paragraph of Article 4, the JICA has the right to accept a part of the Works already completed in the written form which each other for the maintenance and usage of the accepted part of the Works, and the Contractor is not entitled to request the extension of the completion time due to any interruption caused by the use of such accepted Works by the JICA, or any delay in repairing such accepted Works.

#### Article 16 Construction Engineer

The Contractor shall appoint a construction engineer at his own expense for the supervision of the Works performance, who shall be authorized to act on behalf of the Contractor, and the instructions given to him shall be deemed as given to the Contractor. The construction engineer shall stay at the job site all the time and shall not leave without obtaining the prior approval of the Engineer. If the Contractor replaces the construction engineer, the Contractor shall obtain the prior approval from the Engineer in writing.

Article 17 Replacement of Labor, Engineer and Foreman

The Engineer may request the Contractor to remove any of the Contractor's labors, foremen or engineers if it appears to the Engineer that such labor, foreman or engineer is incompetent for his job or is not suitable or is not capable of handling his workmen or staff, and the Contractor shall promptly replace any such labor, foreman or engineer. No extra cost or claim for extension of time will be allowed because of such replacement.

Article 18 Sub-Contractor

The Contractor shall not sub-contract or assign any portion of the Works under this Contract without obtaining the prior approval of the JICA who has the sole right to decide which portion of the Works may be sub-contracted or assigned to the sub-contractor. However, the Contractor shall be fully responsible for the Works done by the sub-contractor.

Article 19 Notice

All notices required by this Contract shall be effective only at the time of receipt thereof, and only when received by the parties concerned at following address:-

The JICA: Japan International Cooperation Agency, Thailand Office  
1674/1, New Petchburi Road, Bangkok 10310, Thailand

The Contractor: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

All Notices required by the terms of this Contract shall be made in writing in English Language, and delivered by registered mail or hand delivery.

**Article 20 Dispute**

In the event of any dispute arising from the interpretation and performance of the terms of this Contract, both parties agree to make the best attempt with sincerity and in good faith to negotiate and amicably settle such dispute, failing which the parties agree to refer such dispute to arbitration under Thai Commercial Arbitration Rules and Regulation, Bangkok, by 2 arbitrators, each of which is to be appointed by each party. If either party fails to appoint its arbitrator within seven (7) days or should the arbitrators fail, within fifteen (15) days after their appointment, to agree upon the decision of the dispute or not decision is reached on the appointment of an umpire, then the dispute shall be brought before the Court of Thailand for decision under the laws and procedures of the Kingdom of Thailand.

This Contract is executed in duplicate of the same tenor, one of the original copy to be kept by the JICA and the other original copy to be kept by the Contractor. Both the JICA and the Contractor have set their signatures and affixed the seals thereto in the presence of the witnesses.

JICA

Mr.

Resident Representative,  
Japan International Cooperation Agency, Thailand Office.

Contractor

Witness

Witness