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Appendix 5-1. Cost Estimation Borne by the Government of Cambodia

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Appendix 1. Member List of the Study Team

1. Basic Design Study

Mr. Shin IMAI	Leader Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry & Fisheries
Mr. Takanobu KURODA	Grant Aid Advisor, Ministry of Foreign Affairs
Mr. Michio GOTO	Project Manager, Operation & Maintenance Planner, Sanyu Consultants Inc.
Mr. Takanori TAKATUKA	Equipment Planner(1), Sanyu Consultants Inc.
Mr. Masatoshi ARAI	Equipment Planner(2), Sanyu Consultants Inc.
Mr. Toshinori Kudo	Estimation and Purchase Planner, Sanyu Consultants Inc.

2. Explanation on the Draft Basic Design

Mr. Shin IMAI	Leader Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry & Fisheries
Mr. Katsumi YAMANOME	Coordinator, Grant Aid Project Study Department, JICA
Mr. Michio GOTO	Project Manager, Operation & Maintenance Planner, Sanyu Consultants Inc.
Mr. Takanori TAKATUKA	Equipment Planner(1), Sanyu Consultants Inc.

Appendix 2. Survey Schedule

1. Basic Design Study

No.	Month/Date	Itinerary
1	25 Wed.	Dep. Narita
2	26 Thu.	Arr. Phnom Penh, Courteous call of EOJ & JICA
3	27 Fri.	Courteous Call of MAFF, GDIMH, MPWT & MRC Preparation of Topo Survey and Boring Investigation
4	3 28 Sat.	Data Adjustment
5	29 Sun.	Internal Meeting
6	30 Mon.	Site Investigation
7	31 Tue.	Discussion with the GDIMH
8	1 Wed.	Selection of the Contractor of Topo and Boring Survey
9	2 Thu.	Signing of the Minutes of Meeting Reporting to the EOJ & JICA, Contract of Topo and Boring Survey
10	3 Fri.	Data Adjustment
11	4 Sat.	Site Meeting with the Contractor of Topo and Boring Survey
12	5 Sun.	Internal Meeting
13	4 6 Mon.	Site Investigation in Luck Dek District
14	7 Tue.	Site Investigation in Kean Svay District & DWM
15	8 Wed.	Site Investigation in Kean Svay District & Construction Office
16	9 Thu.	Site Investigation in Kean Svay District & Kandal GDIMH Meeting with District Office in Kean Svay
17	10 Fri.	Collection and adjustment of Data
18	11 Sat.	Data Adjustment
19	12 Sun.	Internal Meeting
20	13 Mon.	Site Investigation at Kampong Thour
21	14 Tue.	Internal Meeting
22	15 Wed.	Preparation of Report
23	16 Thu.	Preparation of Report
24	17 Fri.	Discussion with the GDIMH
25	18 Sat.	Data Adjustment
26	19 Sun.	Internal Meeting
27	20 Mon.	Discussion and Confirmation with the GDIMH Checking of the Results of Topo & Boring survey
28	21 Tue.	Reporting to the EOJ & JICA
29	22 Wed.	Dep. Phnom Penh
30	23 Thu.	Arr. Narita

2. Explanation on the Draft Basic Design

No.	Month/Date	Itinerary
1	2 Tue.	Dep. Narita
2	3 Wed.	Arr. Phnom Penh Courteous call to EOJ & JICA
3	4 Thu.	Courteous call to GDIMH, MPWT and MRC
4	5 Fri.	Discussion with the GDIMH
5	6 6 Sat.	Internal Meeting
6	7 Sun.	Internal Meeting
7	8 Mon.	Signing of Minutes of Meeting and reporting to EOJ & JICA
8	9 Tue.	Dep. Phnom Penh
9	10 Wed.	Arr. Narita

Appendix 3. List of the Attendance of Meeting

- (1) **Ministry of Agriculture Forestry and Fisheries(MAFF)**
H.E. Chan Tong Yves Under secretary
Mr. Sau Vauty Chief of Planning Office
Mr. Hiroshi Kudo Advisor, JICA Expert, Depart. of Planning
, Statistic & International Cooperation
Mr. Tea Leang Hoth Direction MAFF Kandal Province
- (2) **General Directorate of Irrigation Meteorology and Hydrology(GDIMH)**
H.E. Lim Kean Hor Under Secretary, General Director of GDIMH
Mr. Veng Sakon Deputy Director General
Mr. Bun Heam Director of Engineering Department
Mr. Nei Lorn Director of Water Management Department
Mr. Teauv Kim Deputy Director of Water Management Department
Mr. Se Samouth Chief of Construction Office
Mr. Sau Vauty Chief of Planning Office
Mr. Peng Long Chief of GDIMH Kandal Province
Mr. Hiroshi Okudaira JICA Expert
- (3) **Ministry of Public Works & Transport(MPWT)**
Dr. Yit Bunna Director
Mr. Phy Sophort Head of Road Office
Mr. Meas Movika Chief of Administration Office
Mr. Samrangdy Namu Head of Planning & Data
Mr. Kazuo Murakami JICA Expert(Civil Engineer)
Mr. Akira Kaneko JICA Expert(Civil Engineer)
- (4) **M r s. Michiko Umezak** Council for Development of Cambo JICA Expert
- (5) **Cambodia National Mekong Committee**
H.E. Khy Tainglim Vice-Chairman
- (6) **Kean Svay District**
Mr. Van Chhay Chief of Agricultural Office
- (7) **Leuk Dek District**
Mr. Hun Son Chief of Distric
Mr. Ly Sokha Chief of Agricultural Office
- (8) **JICA Cambodia Office**
Mr. Hiroyuki Arai Resident Representative
Mr. Masatoshi Teramot Assistant Resident Representative
Mr. Hiroshi Enomoto Assistant Resident Representative
- (9) **Embassy of Japan**
Mr. Masaki Saito Ambassador of Japan
Mr. Keiji Yamamoto Minister
Mr. Tsuyoshi Ishimoto Second Secretary
Mr. Youich Kakita Second Secretary
Mr. Kazuyuki Myose Second Secretary

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON THE PROJECT
FOR
THE IMPROVEMENT OF THE FACILITIES OF THE COLMATAGE
SYSTEMS
IN
KANDAL PROVINCE ALONG THE MEKONG RIVER
IN
KINGDOM OF CAMBODIA

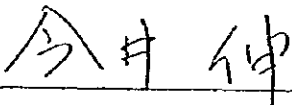
In response to the request from the Royal Government of Cambodia, the Government of Japan decided to conduct a Basic Design Study on the Project for the Improvement of the Facilities of the Colmatage Systems (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Kingdom of Cambodia a Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Shin IMAI, Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries, and is scheduled to stay in the country from March 26 to April 3, 1998.

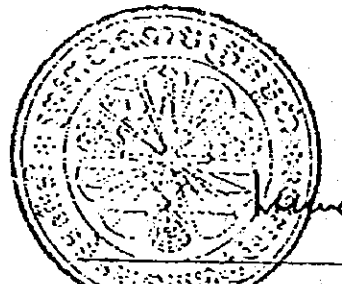
The Team held discussions with the officials concerned of the Royal Government of Cambodia and conducted field surveys at the study area.

In the course of the discussions and field surveys, both parties have confirmed the main items described on the attached sheets. The team will proceed to further work and prepare the Basic Design Study report.

Phnom Penh, April 2,1998



Mr. Shin IMAI
Leader
Basic Design Study Team
JICA



H.E. LIM KEAN HOR
Under Secretary of State for MAFF
General Directorate of Irrigation
Meteorology and Hydrology, MAFF
Kingdom of Cambodia

ATTACHMENT

1. Objective

The objective of the Project is to spread out irrigational area by the improvement of the facilities of the Colmatage Systems and to increase and stabilize agricultural production , upgrade the rural life and encourage the rural economy.

2. Proposed Project Areas

The project sites are Kien Svay District and Leuk Dek District in Kandal Province (See Figure-1).

3. Responsible and Executing Agency

Responsible agency and Executing agency is the General Directorate of Irrigation Meteorology and Hydrology(GDIMH) , the Ministry of Agriculture Forestry and Fisheries(MAFF).

4. Items requested by the Royal Government of Cambodia

The items shown in Table-I were requested by the Royal Government of Cambodia.

5. Japan's Grant Aid System

(1) The Royal Government of Cambodia has understood the system of Japan's Grant Aid on ANNEX-I as explained by the Team.

(2) The Royal Government of Cambodia will take the necessary measures described in ANNEX-II for the smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Major Points of Discussion

(1) The Team insisted that a colmatage system of Samrong Thom should be out of requested objective sites of the Project due to the result of field surveys but, the colmatage system should be rehabilitated in the future taking into consideration of the potentiality for the agricultural development. Cambodian side agreed with it.

(2) The Team emphasized that it is necessary to establish an operation and maintenance (O&M) organization by beneficial farmers for smooth and successful implementation of the Project. Cambodian side confirmed to prepare necessary measures from the Basic Design stage in order to improve and strengthen the organization of O&M.

(3) Cambodian side promised that they will acquire the land needed for the construction of the Project.

(4) Cambodian side promised that compensation to farmers for crops and houses caused by the construction should be paid by Cambodian side.

(5) Both sides confirmed if the improvement of the watergate part with the road bridge of Route No.1 by Japanese Grant Aid should be implemented, the border line and the adjustment of process of construction between the improvement of the watergate part with the road bridge of Route No.1 by Japanese Grant Aid and the improvement of Rout No.1 by ADB is very important thing and should be discussed and adjusted and determined.

(6) Cambodian side promised that necessary budget preparation and procedure for the Project should be taken by Cambodian side .



(7) Both sides confirmed the request items are changeable due to the result of the study.  

Figure - 1. Location Map

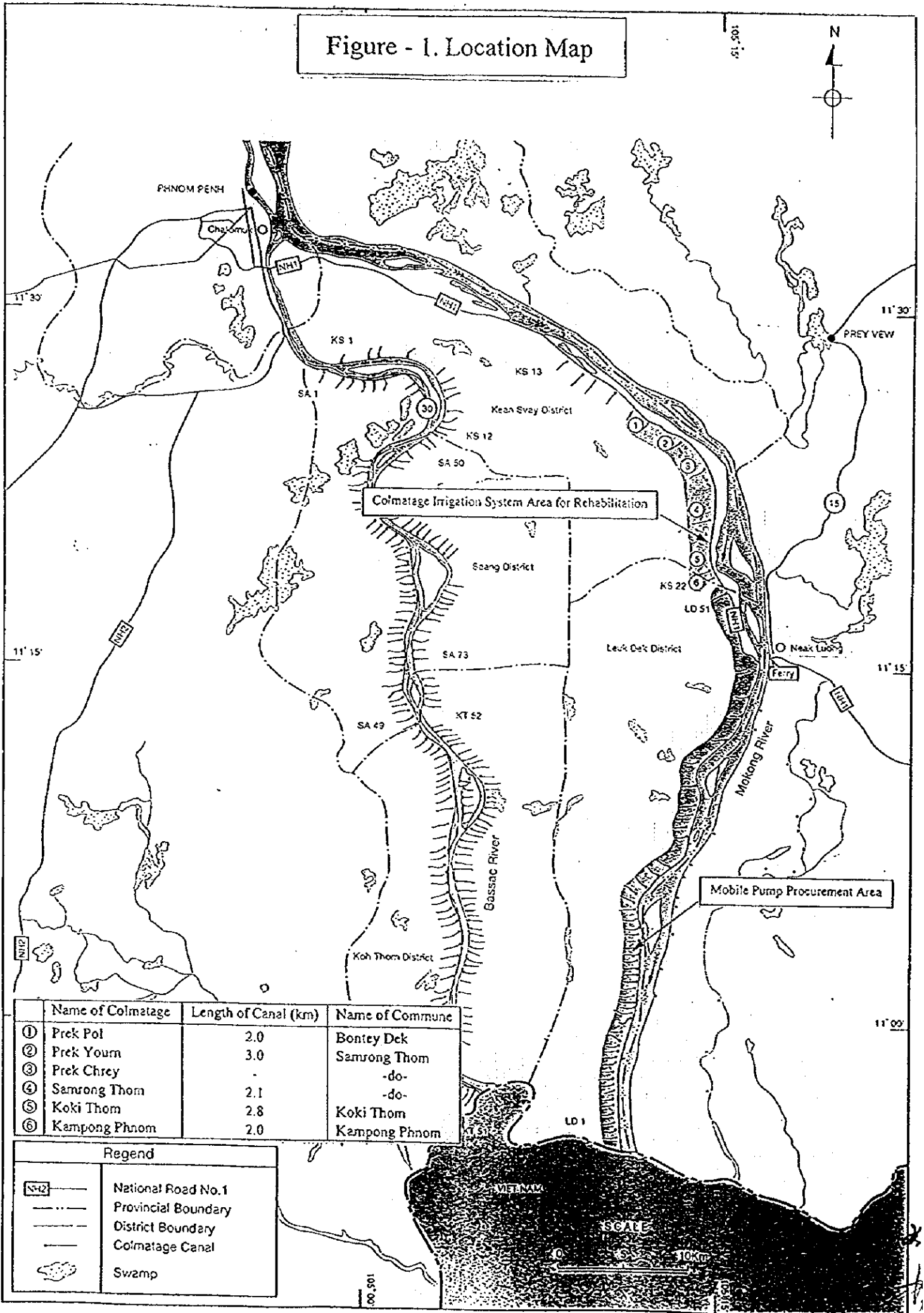


Table - 1

Outline of the Project requested by Cambodia

Item No.	Request by Cambodia		
	Description	Specifications	Quantity.
1	Rehabilitation of Colmatage Canal Kean Svay District 1 Prek Pol 2 Prek Youn (Prek Takeo) 3 Prek Chrouy Chrey 4 Samrong Thom 5 Koki Thom (Prek Thnei) Leuk Dek District 6 Prek Kampong Phom	incl., extension, branches	6 colmatage
2	Rehabilitation of Intake Structure	incl. gate with light gate and hand operation Auxiliary concrete work reinforcement	6 colmatage
3	Provision of low protection dikes	Part of dikes will be connected to RNI	some places
4	Provision of Pump Facilities 1 Sanda colmatage	newly or replace movile pumps	30 pump stations
5	Provision of Motor Pool	Motor pool including equipment Maintenance equipment(incl. excavator) Small-scale farming machineries Transportation vehicles, etc.	6 colmatage

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ON JAPAN'S GRANT AID PROGRAM

1. Japan's Grant Aid Procedures

- (1) The Japan's Grant Aid Program is executed by the following procedures.
- Application (request made by a recipient country)
 - Study (Preliminary Study / Basic Design Study conducted by JICA)
 - Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
 - Determination of Implementation (Exchange of Notes between both Governments)
 - Implementation (Implementation of the Project)
- (2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preliminary Study is conducted prior to a Basic Design Study.

Thirdly, the Government of Japan appraises to see whether or not the Project is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA and the results are then submitted for approval by the Cabinet.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (preliminary Study / Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:



- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation.
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid possible undue delay in implementation caused if a new selection process is repeated.

(3) Status of a Preliminary Study in the Grant Aid Program

A Preliminary Study is conducted during the second step of a project formulation & preparation as mentioned above.

A result of the study will be utilized in Japan to decide if the Project is to be suitable for a Basic Design Study.

Based on the result of the Basic Design Study, the Government would proceed to the stage of decision making process (appraisal and approval).

It is important to notice that at the stage of Preliminary Study, no commitment is made by the Japanese side concerning the realization of the Project in the scheme of Grant Aid Program.



3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude into contracts in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all expenses and prompt execution for unloading, customs clearance at the port disembarkation and internal transportation of the products purchased under the Grant Aid,



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- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the contracts verified.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay issued by the Government of the recipient country or its designated authority.

NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF CAMBODIA IN CASE JAPAN'S GRANT AID IS EXTENDED.

1. To provide data and information necessary for the Project.
2. To secure the site for the Project.
3. To bear two kinds of commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely,
 - the advising commission of the "Authorization to Pay (A/P)" and
 - the payment commission.
4. To ensure prompt unloading, tax exemption, and customs clearance at the port of disembarkation in Cambodia and prompt internal transportation therein of the materials and equipment for the project purchased under the Grant Aid.
5. To exempt Japanese nationals or a staff from a third country engaged in the project from customs duties, internal taxes and other fiscal levies which may be imposed in Cambodia with respect to the supply of the products and services under the verified contracts.
6. To accord Japanese nationals or a staff from a third country whose services may be required in connection with supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into Cambodia and stay therein for the performance of their work.
7. To provide necessary permissions, licenses, and other authorization for implementing the Project, if necessary.
8. To assign appropriate budget and staff members for proper and effective operation and maintenance of the facilities constructed under the Project.
9. To maintain and use properly and effectively the facilities constructed and equipment provided under the Project;
10. To bear all the expenses other than those to be borne by the Grant Aid within the scope of the Project.



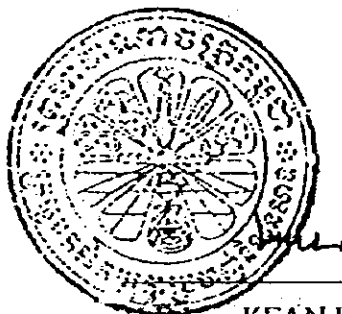
MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY ON THE PROJECT
FOR
THE IMPROVEMENT OF THE FACILITIES OF THE COLMATAGE SYSTEMS
IN
KANDAL PROVINCE ALONG THE MEKONG RIVER
IN
KINGDOM OF CAMBODIA
(EXPLANATION ON THE DRAFT BASIC DESIGN)

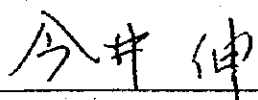
In March 1998, the Japan International Cooperation Agency (JICA) dispatched the Basic Design Study Team on the Project for the improvement of the facilities of the colmatage systems in Kandal Province along the Mekong River (hereinafter referred to as "the Project") to the Kingdom of Cambodia. After the assessment of the data and information obtained through the study, JICA has prepared the Draft Basic Design on the Project.


In order to explain and consult with the officials concerned of the Royal Government of Cambodia on the components of the Draft Basic Design, JICA sent to the Kingdom of Cambodia a Study Team (hereinafter referred to as "the Team") headed by Mr. Shin IMAI, Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Construction Department, Agricultural Structure Improvement Bureau, Ministry of Agriculture, Forestry and Fisheries, which is scheduled to stay in the country from June 3 to June 9, 1998.

As a result of the discussions held between the Team and the officials concerned of the Royal Government of Cambodia, both parties have confirmed the main items described on the attached sheets.

Phnom Penh, June 8, 1998




Mr. Shin IMAI
Leader
Basic Design Study Team
JICA


H.E. Lim KEAN HOR
Under Secretary of State for MAFF
General Directorate of Irrigation
Meteorology and Hydrology, MAFF
Kingdom of Cambodia

1. Components of the Draft Basic Design

The Royal Government of Cambodia (hereinafter referred to as "RGC") has realized in principle on the components of the Draft Basic Design proposed by the Team.

2. Japan's Grant Aid System

(1) RGC has understood the system of Japan's Grant Aid on Annex-I as explained by the Team.

(2) RGC will take the necessary measures described in Annex-II for the smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

3. Schedule of the Study

JICA will complete the final report and send it to RGC by the end of August 1998.

4. Other Relevant Issues

(1) Cambodian side assured that it will be finally responsible for the General Directorate of Irrigation Meteorology and Hydrology, Ministry of Agriculture, Forestry and Fisheries (hereinafter referred to as "GDIMH") to maintain the rehabilitated major irrigation facilities and equipments, and will be also responsible for the Farmer Water Users' Associations (hereinafter referred to as "FWUA") which would be established related to the Project to be in charge of the daily maintenance of the rehabilitated irrigation facilities and equipment. However, Cambodian side assured that the road bridges of Route No. 1 with watergates belonging to GDIMH will be maintained in cooperation with the Ministry of Public Works and Transport.

(2) The Team stressed to the Cambodian side that it is very important and essential to establish FWUA to undertake the integrated operation and maintenance of the overall water distribution system, including such as maintenance of irrigation facilities, water fee collection, etc.

The Cambodian side realized and assured that it would establish FWUA under the leader, named Mae Prek (Master of Colmatage) in each colmatage, and would sufficiently support FWUA.

(3) The Team confirmed the priority related to the improvement of the Colmatage System to the Cambodian side and they mentioned the priority that is Prek Yourn, Koki Thom, Prek Pol, Prek Chrey, Kampong Phnom and Provision of Equipment. The Cambodian side strongly requested that it is necessary for the provision of heavy machines, even though the priority is the lowest, especially to maintain the Colmatage System. The Team promised to convey the strong request by the Cambodian side to the Government of Japan.

(4) The Cambodian side confirmed they are responsible for provision of the budget, organization and staff required for the smooth implementation of the Project and the maintenance of the rehabilitated facilities.

(5) Pursuant to an explanation by the team, the Cambodian side confirmed to the following responsibility of the Cambodian side caused by the construction which is the land acquisition needed for the Colmatage improvement works including provision of land for the temporary road and spoiled area for demolished concrete and steel materials.

(6) Both sides confirmed that the improvement of the watergates with the road bridges of route No. 1 should be implemented by the Japanese Grant Aid independently of the ADB improvement works.

ON JAPAN'S GRANT AID PROGRAM

1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by the following procedures.

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- Study (Preliminary Study / Basic Design Study conducted by JICA)
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- Determination of Implementation (Exchange of Notes between both Governments)
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(2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preliminary Study is conducted prior to a Basic design Study.

Thirdly, the Government of Japan appraises to see whether or not the Project is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA and the results are then submitted for approval by the Cabinet.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (preliminary Study / Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for

appraisal of the project by the Japanese Government. The contents of the Study are as follows:

- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation.
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid possible undue delay in implementation caused if a new selection process is repeated.

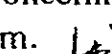
(3) Status of a Preliminary Study in the Grant Aid Program

A Preliminary Study is conducted during the second step of a project formulation & preparation as mentioned above.

A result of the study will be utilized in Japan to decide if the Project is to be suitable for a Basic Design Study.

Based on the result of the Basic Design Study, the Government would proceed to the stage of decision making process (appraisal and approval).

It is important to notice that at the stage of Preliminary Study, no commitment is made by the Japanese side concerning the realization of the Project in the scheme of Grant Aid Program.



3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude into contracts in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

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- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all expenses and prompt execution for unloading, customs clearance at the port disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

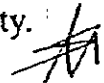
(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the contracts verified.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay issued by the Government of the recipient country or its designated authority.



NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF CAMBODIA IN CASE JAPAN'S GRANT AID IS EXTENDED.

- 1.To provide data and information necessary for the Project.
- 2.To secure the site for the Project.
- 3.To bear two kinds of commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely,
 - the advising commission of the "Authorization to Pay (A/P)" and
 - the payment commission.
- 4.To ensure prompt unloading, tax exemption, and customs clearance at the port of disembarkation in Cambodia and prompt internal transportation therein of the materials and equipment for the project purchased under the Grant Aid.
- 5.To exempt Japanese nationals or a staff from a third country engaged in the project from customs duties, internal taxes and other fiscal levies which may be imposed in Cambodia with respect to the supply of the products and services under the verified contracts.
- 6.To accord Japanese nationals or a staff from a third country whose services may be required in connection with supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into Cambodia and stay therein for the performance of their work.
- 7.To provide necessary permissions,licenses, and other authorization for implementing the Project, if necessary. x
- 8.To assign appropriate budget and staff members for proper and effective operation and maintenance of the facilities constructed under the Project.
- 9.To maintain and use properly and effectively the facilities constructed and equipment provided under the Project;
- 10.To bear all the expenses other than those to be borne by the Grant Aid within the scope of the Project.



Appendix 5-1 Cost Estimation Borne by the Government of Cambodia

1 Land Acquisition and House Evacuation		(1) Acquisition of land			for Road for Office for Stock			(2) Hiring of land			(3) Evacuation of house				Sub-total	Total						
		Qty	Unit	Amount	(m ²)	(m ²)	(m ²)	Total	Duration	Unit/M	Amount	Qty	Duration	Person	Unit/M	Amount	(1)+(2)+(3)	(US\$)				
		(m ²)	(\$/m ²)	(US\$)				(m ²)	(M)	(\$/m ²)	(US\$)	(Nr.)	(M)	(P/M)	(\$/P)	(US\$)	(US\$)	(*000)				
1) Prek Pot		7,500	2	15,000	1,469	3,000	4,469	12	0.1	5,383	3	12	5	15	2,700	23,063						
2) Prek Youm		15,100	2	30,200	1,504	3,000	4,504	12	0.1	5,405	2	12	5	15	1,800	43,405						
3) Prek Chrouy Chrey		7,200	2	14,400	2,006	3,000	5,006	12	0.1	6,007	1	12	5	15	900	21,307						
4) Koki Thom		8,100	2	16,200	1,215	3,000	4,215	12	0.1	5,058	3	12	5	15	2,700	23,958						
Total (1):		37,900	8	75,800	6,194			48	0.4	27,833	9	48	20	60	8,100	111,733	111,733	14,645				
2 Banking Commission																						
			Unit	Amount																		
1) Opening of account			1	6,000																		
2) Amendment			1	4,000																		
3) Payment commission			#####	0.0010	1,200,000																	
Total (2):				1,210,000														(US\$)	9,232			
																		(*000)	1,210			
3 Customs Clearance and Inland Transportation																						
			M ³ /m ²	Unit	Amount																	
1) Customs Clearance (M/M US\$600/B/L)			465.78	4.00	1,863.12																	
2) Inland transportation			465.78	200.00	23,212.00																	
Total (3):					25,075.12																	
																		(US\$)	25,075			
																		(*000)	3,287			
Grand Total (1+2+3):																		(US\$)	146,040			
																		(*000)	19,141			

(Details of land hiring for road)
 1) Prek Pot W(10.3+1.0)x130 = 1469 m²
 2) Prek Youm W(8.4+1.0)x160 = 1504 m²
 3) Prek Chrouy Chrey W(10.8+1.0)x170 = 1504 m²
 4) Koki Thom W(8.0+1.0)x135 = 1215 m²

(Details of Inland Transportation)

Item	Qty	M ³ /m ²	Unit	Amount (US\$)
(1)	2	66.24	3,500 /unit	7,000 (Bulldozer)
(2)	2	309.00	3,800 /unit	7,600 (Backhoe)
(3)	2	29.98	2,000 /unit	4,000 (Pick-up Truck)
(4)	10	10.56	200 /FT	2,112 (Motorcycle)
(5)	1	10.00	2,500 /unit	2,500 (Tools)
Total:				23,212

Appendix 5-2 Estimated Yearly Cost of O&M by Cambodia

Item	Operator				Cost of Fuel Consumption				O&M		Total (US\$)				
	Q'ty (Nr.)	Person (P)	Duration (M)	Salary (\$/P/M)	Amount (US\$)	Q'ty (Nr.)	Power (HP) (kW)	Consumption (lit/HP/hr) (\$/kWh)	Unit Price (US\$/lit)	Operat. hour (8hr/ day)		Duration (6M-1y) (24day/M) (day)	Amount (US\$)	Cost/unit (\$/unit)	Amount (US\$)
1. Equipment of Irrigation Pump															
1) Pump	5	2	6	225	13,500	5	75	0.242	0.33	7.2	144	31,050	570	2,850	47,400
2. Operation and Maintenance Equipment															
1) Bulldozer (9 ton)	2	1	12	225	5,400	2	90	0.138	0.33	6.3	100	5,164	2,079	4,157	14,721
2) Back Hoe (long, 0.4m ³)	2	1	12	225	5,400	2	208	0.138	0.33	5.6	180	19,134	7,445	14,890	39,424
3) Pick-up Truck (double)	2	1	12	225	5,400	2	124	0.038	0.40	5.6	160	3,393	442	884	9,677
4) Motor Cycle (125 cc)	6	1	12	225	16,200	6	12	0.038	0.40	5.6	160	985	38	227	17,412
5) Tools (incl. air compressors)	1	0	12	225	0	1	8	0.700	0.25	6.0	100	809	201	201	1,009
Sub-total:					32,400							28,676		20,158	81,234
Total:					45,900							59,725		23,008	128,634
														(X'000)	16,860

Remarks: (1) Unit Price: 0.33 = Light oil (diesel), 0.40 = Gasoline, 0.25 = Electricity
(2) Fuel Consumption & Operation Hour: Standards of Ministry of Construction, Japan

Appendix 6. Other Relevant Data

Appendix 6-1 Geological Condition around Intake Gates along the National Road No.1

LOG OF BORING

SITE: PREK YOURN
 BOREHOLE: No. 1
 ELEVATION 6.36m

DATE: 11/04/1998
 Depth to Water Inflow: 8.00m, on 06/04/1998
 Depth to Water Level: 2.50m, on 11/04/1998

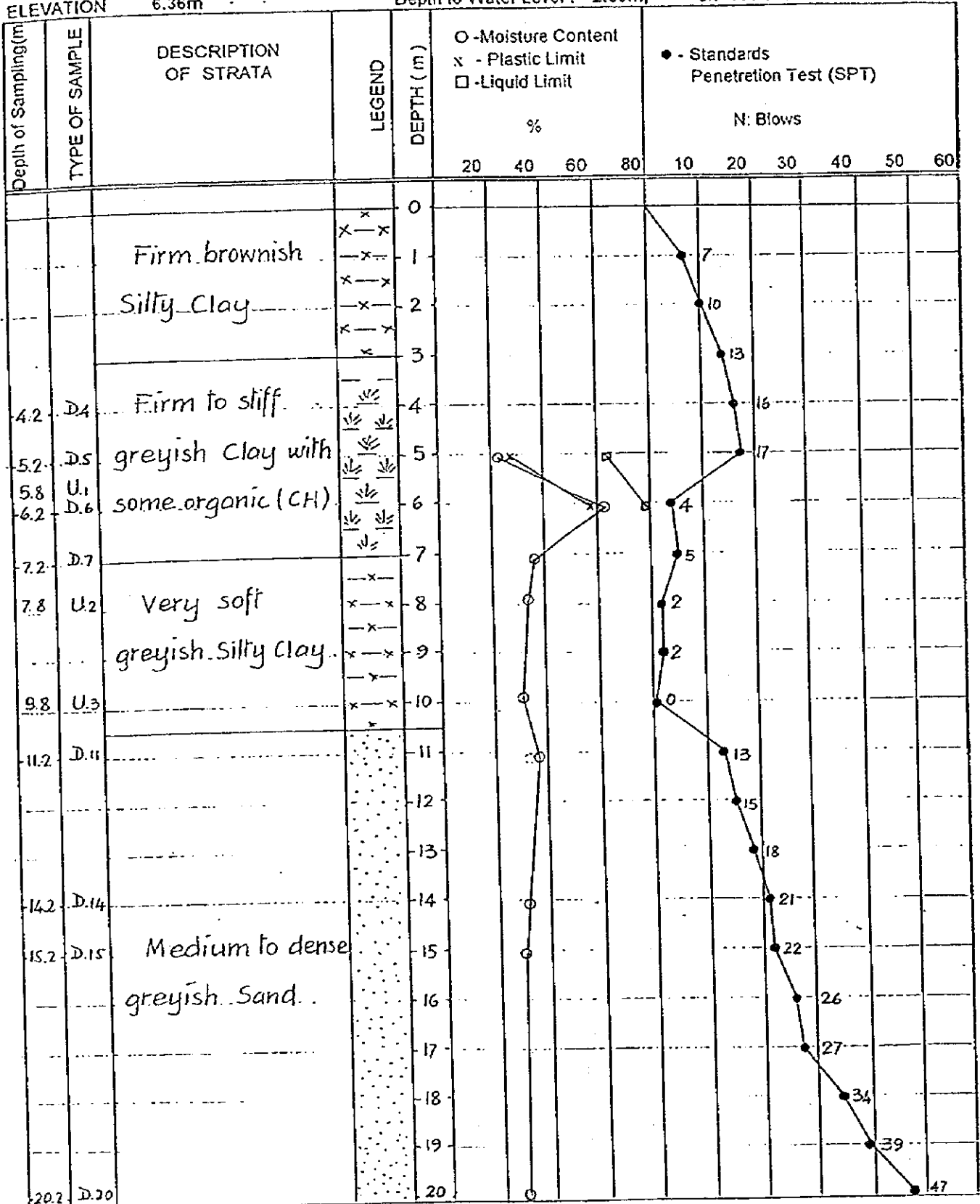


Figure No. 3

LOG OF BORING

SITE : PREK YOURN
 BOREHOLE : No. 1
 ELEVATION : 6.36m

DATE : 11/04/1998
 Depth to Water Inflow : 8.00m, on 06/04/1998
 Depth to Water Level : 2.50m, on 11/04/1998

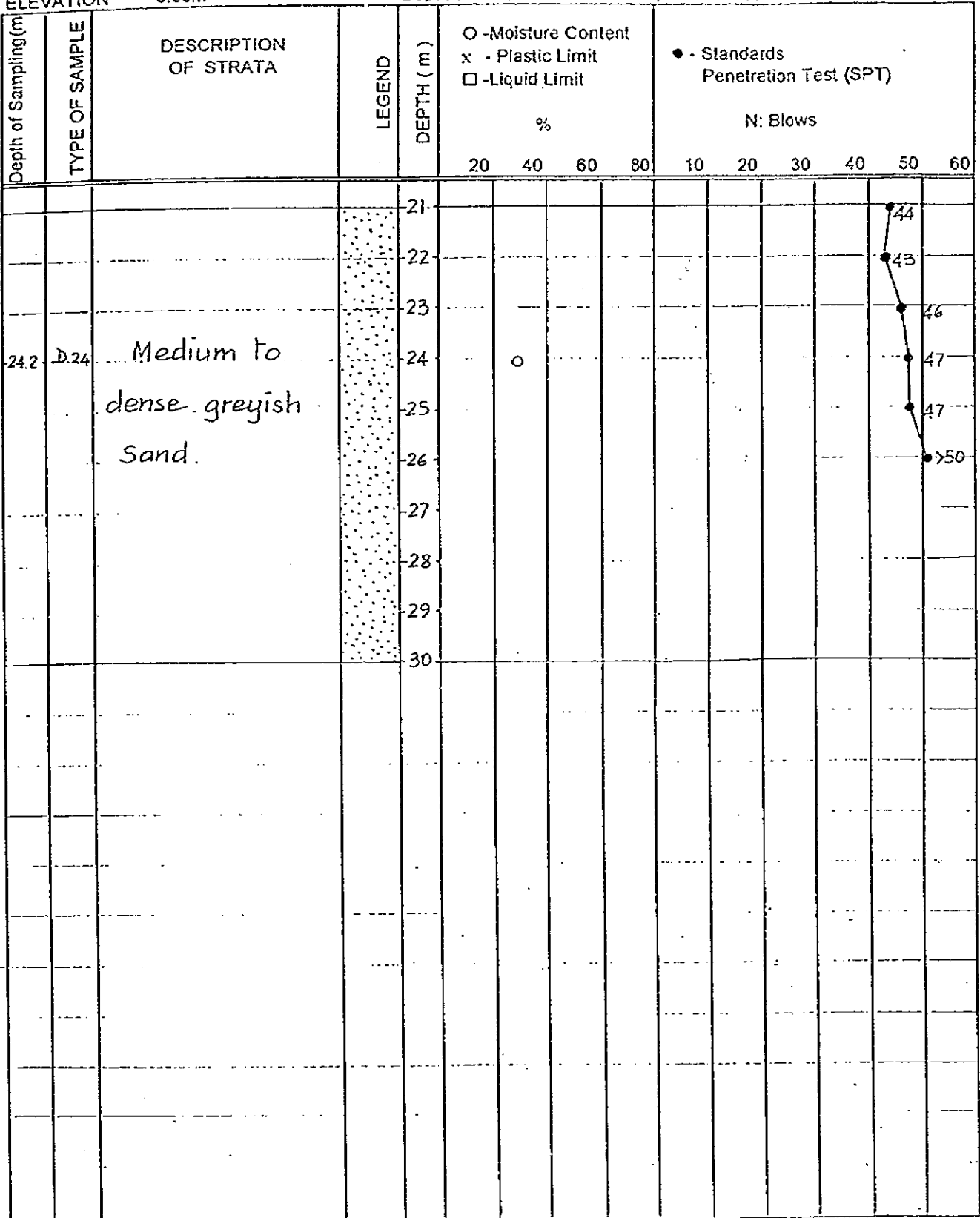


Figure No. 4

LOG OF BORING

SITE : Prek Kampong Phnom
 BOREHOLE : No.1
 ELEVATION : 6.87m

DATE : 11/04/1998
 Depth to Water Inflow : 4.50m, on 07/04/1998
 Depth to Water Level : 1.80m, on 11/04/1998

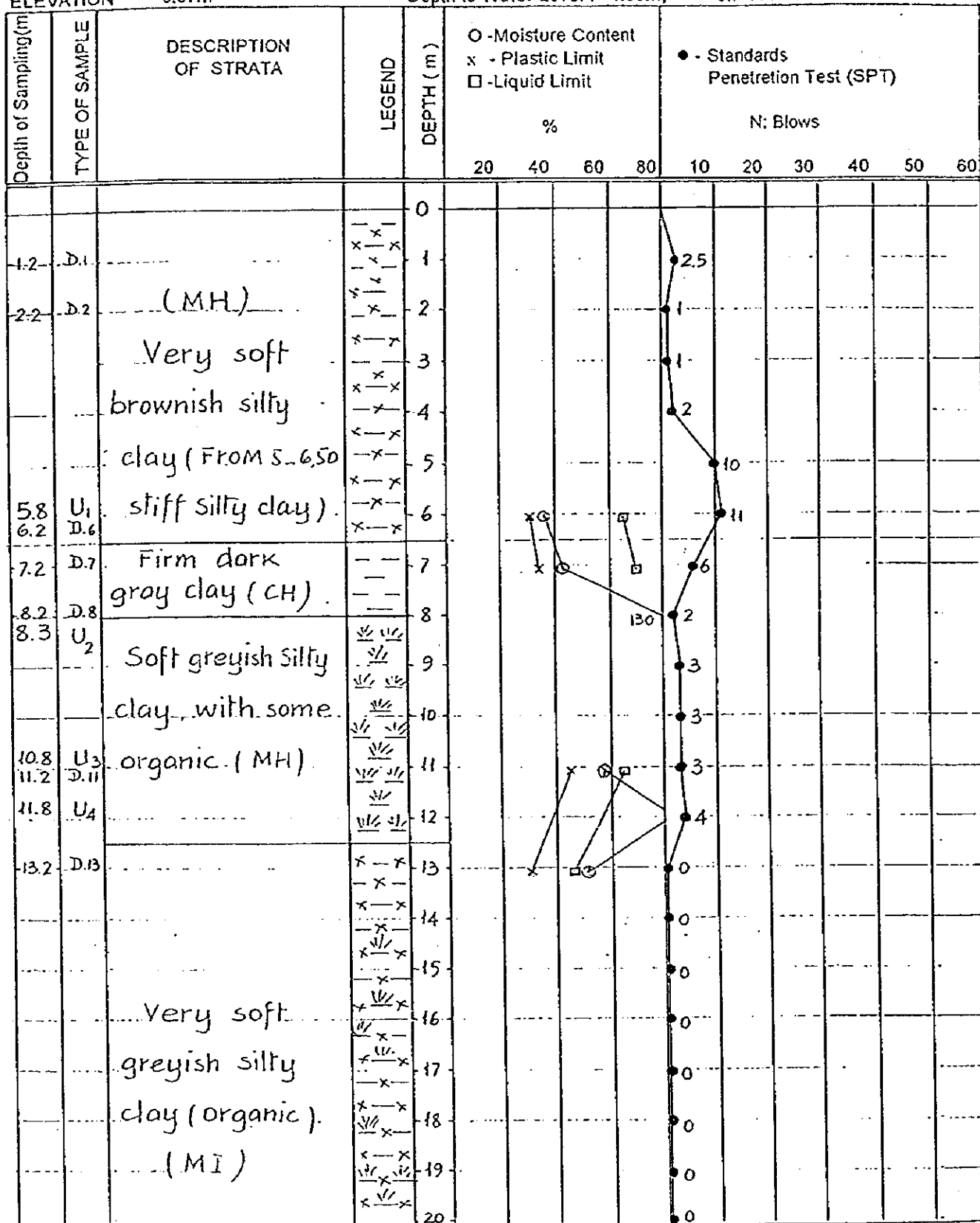


Figure No. 5

LOG OF BORING

SITE: Prek Kampong Phnom
 BOREHOLE: No. 1
 ELEVATION 6.87m

DATE: 11/04/1998
 Depth to Water Inflow: 4.50m, on 07/04/1998
 Depth to Water Level: 1.80m, on 11/04/1998

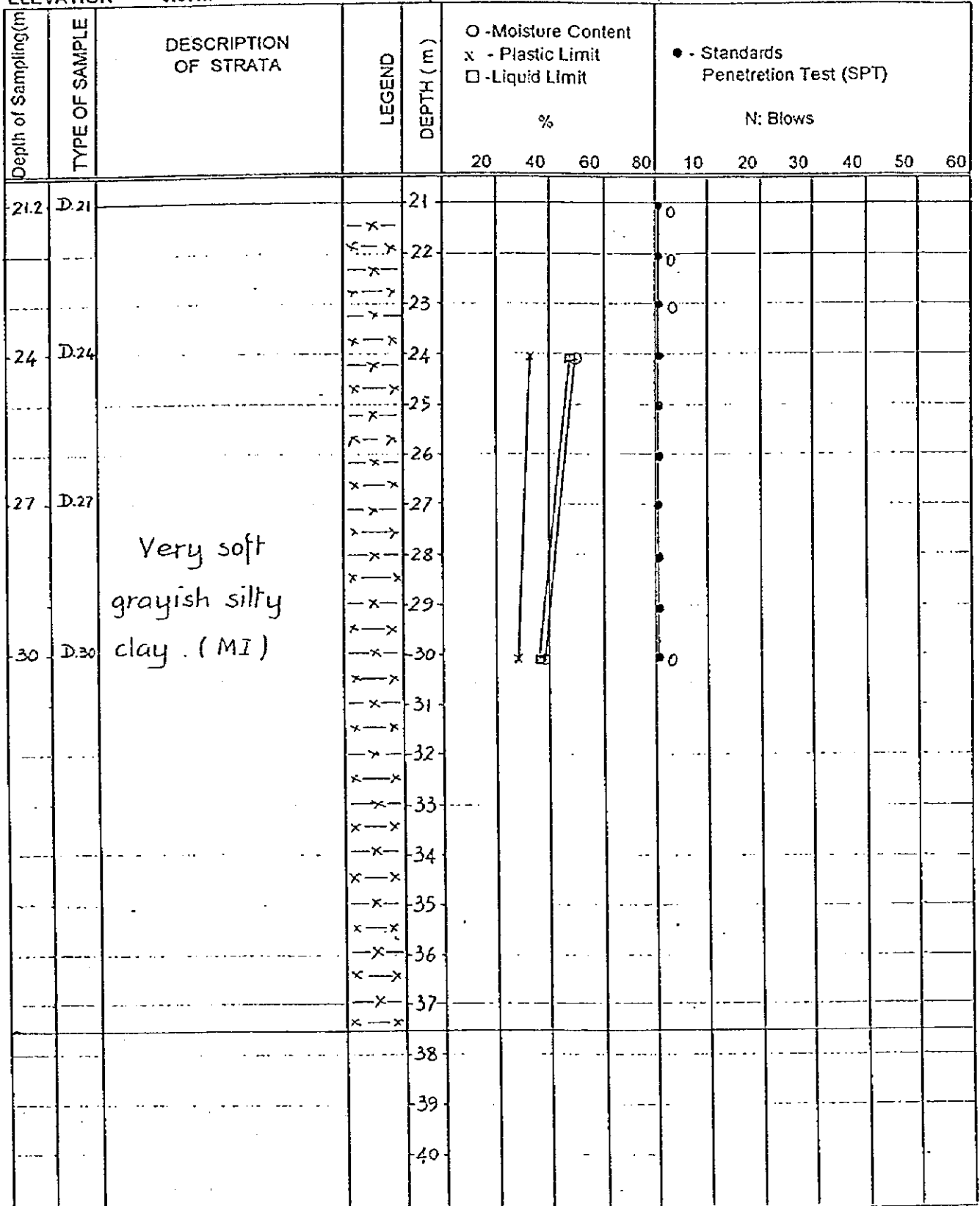


Figure No. 6

SONDAGE

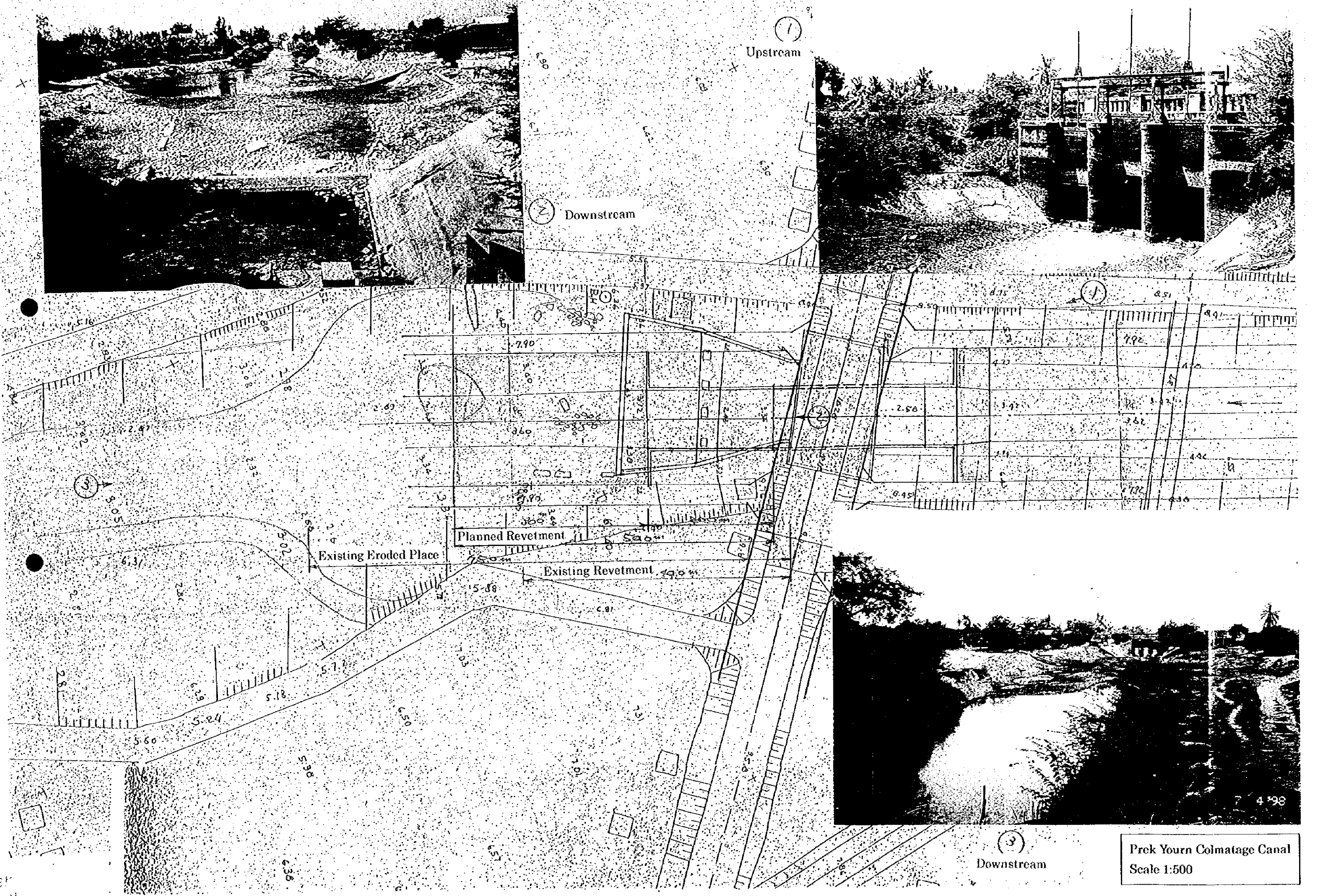
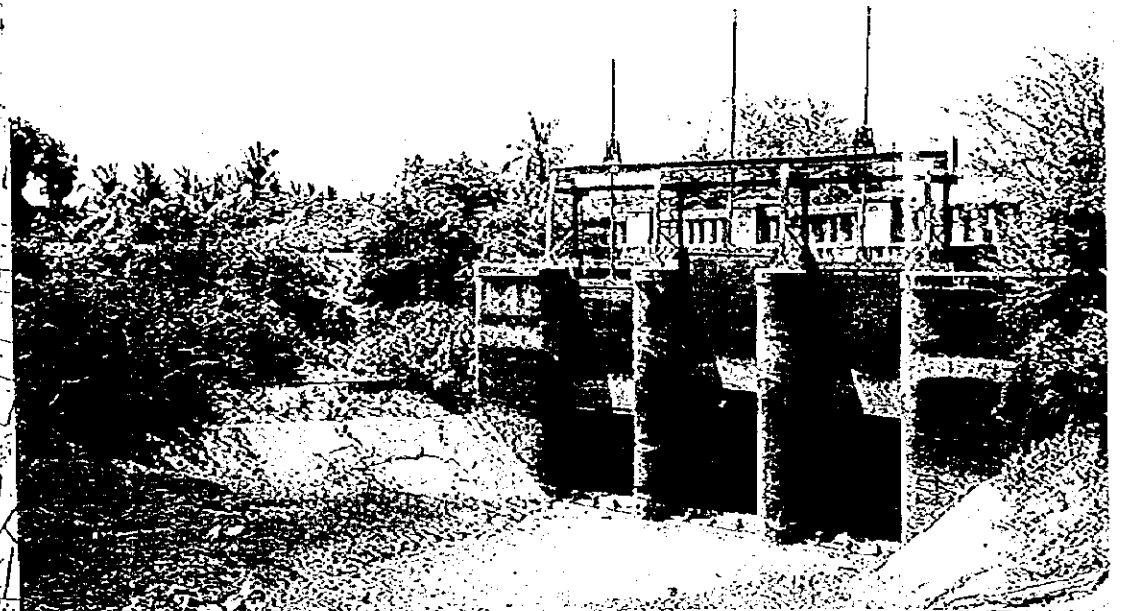
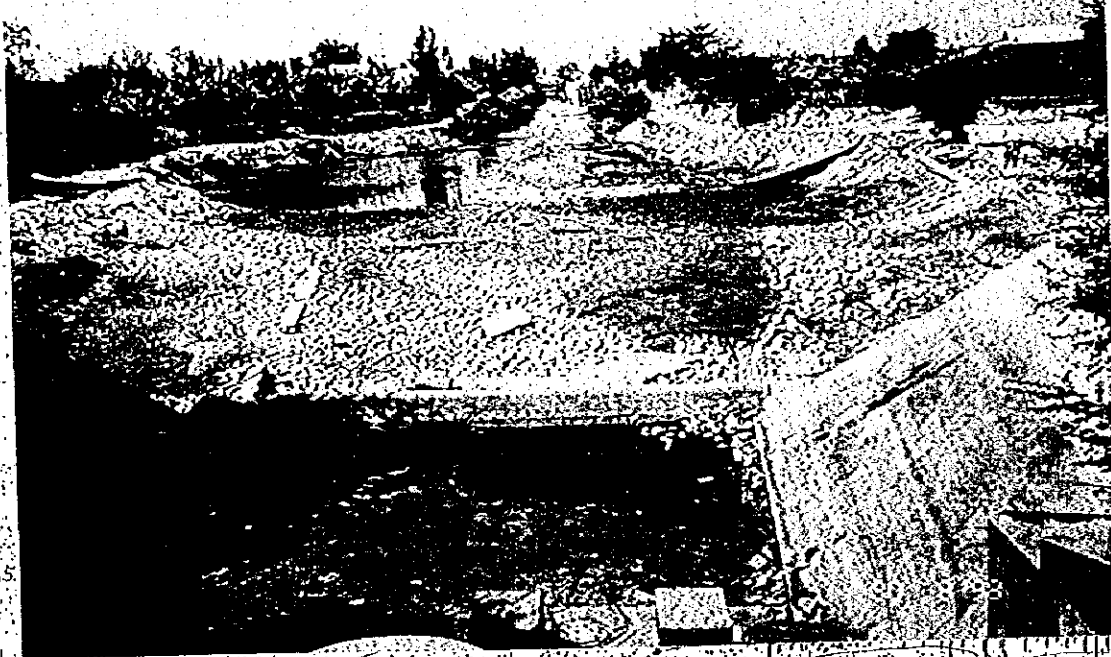
ADB Data, PREK POL

CHANTIER : B.C.E.O.M.:RN1 .PREK POL BRIDGE
 SONDAGE N° :FN1.....

DOSSIER :
 DATE : 9/11/07/1996.

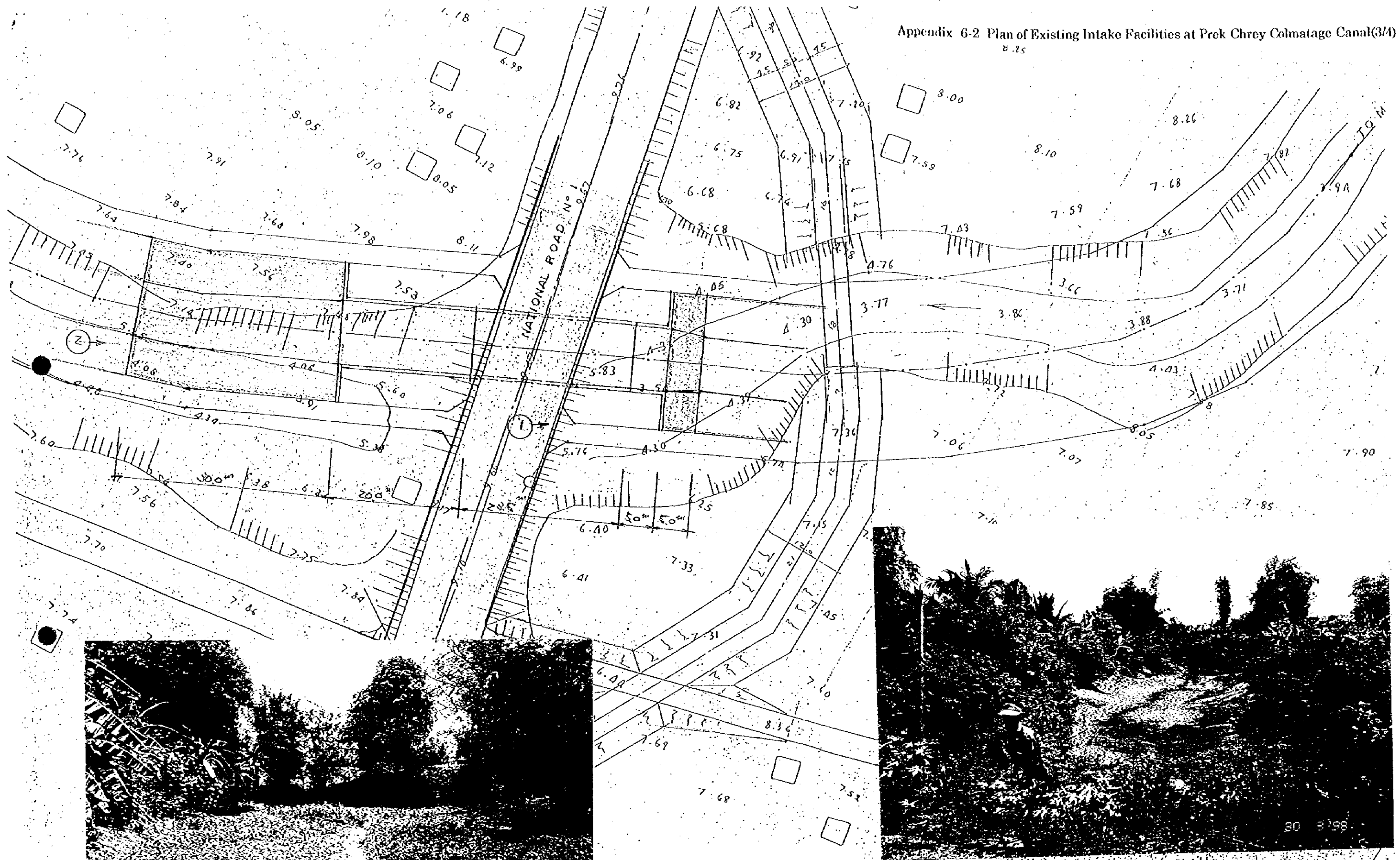
EL 550	PROFONDUR	COUPE	NATURE DU TERRAIN	S.P.T.			w%	Pos. 80M	LIMITES		DA γ	SG γ _s	N Value	10 20 30 40 50
				1	2	3			LL	IP				
0.0														
1.0			BROWNISH SILTY CLAY				23.4	80	32	14				
2.0			W.L.	2	3	3						6		
3.0							28.3	95	52	26		EL 3.0		
4.0			YELLOWISH CLAY	2	2	1	28.0 21.8	97 93	57 45	32 24	171	2A2	3	
5.0			EL 2.50	4	5	7						12		
6.0			GREYISH CLAY WITH ORGANIC MATTER	2	2	2						4		
7.0							70	77	408	32				
8.0				1	1	1						2		
9.0			GREYISH SILTY CLAY	1	0	1						1		
10.0							38.8	88	35	14				
11.0				4	5	5						10		
12.0														
13.0			GREYISH FINE SAND SATURATED	12	13	14	29.5	28	SE	43	212	262	27	
14.0				16	13	19							38	
15.0														
16.0				12	15	19	31.7	17	SE	29			34	
17.0			BROWNISH SILTY CLAY	41	7	7	33.8	75	26	9			14	
18.0														
19.0			GREYISH FINE SAND	10	17	20	37.1	14	SE	24			37	
20.0				9	9	9							18	
21.0														
22.0			GREYISH SILTY CLAY	9	10	11	22.8	86	30	15	2.10	255	24	
23.0				6	7	7							14	
24.0														
25.0			GREYISH GREEN FINE SAND	4	6	12	32.0	24	SE	29			18	
26.0			END OF BORING REFUSAL AT 26.00M.											

10 20 30 40 50
 VERY SOFT
 MEDIUM DENSE
 VERY DENSE
 DENSE



Prek Yourn Colmatage Canal
Scale 1:500

Appendix 6-2 Plan of Existing Intake Facilities at Prek Chrey Colmatage Canal(3/4)
 B.25

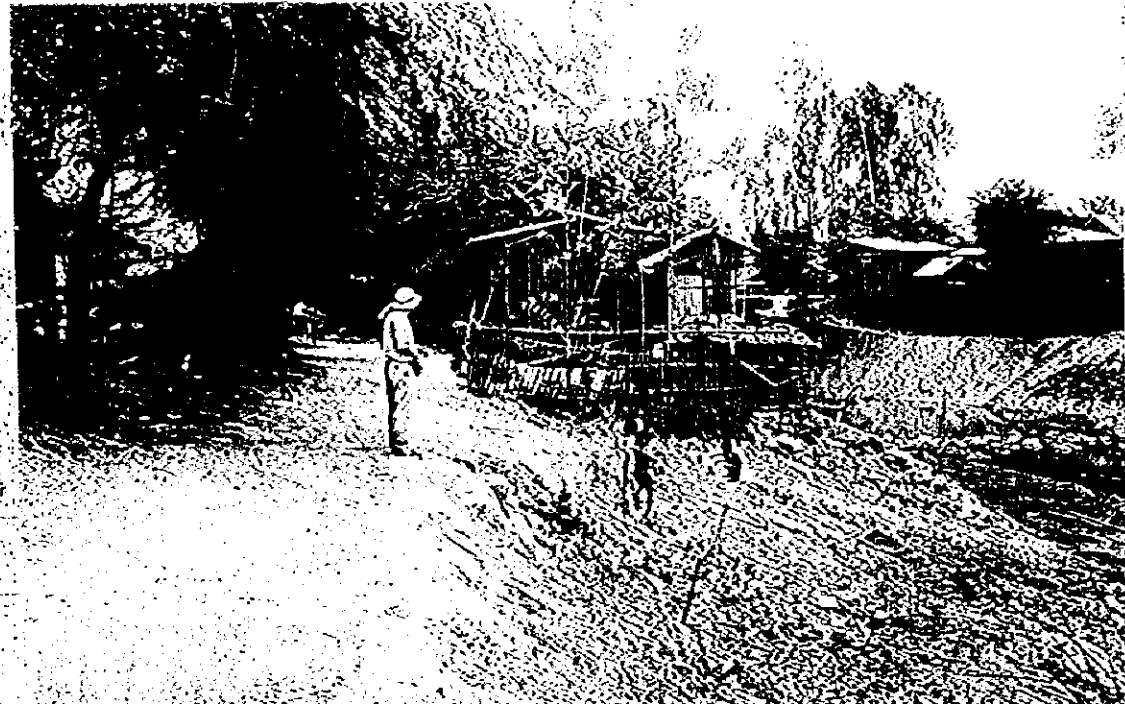


Note: There are no existing structures

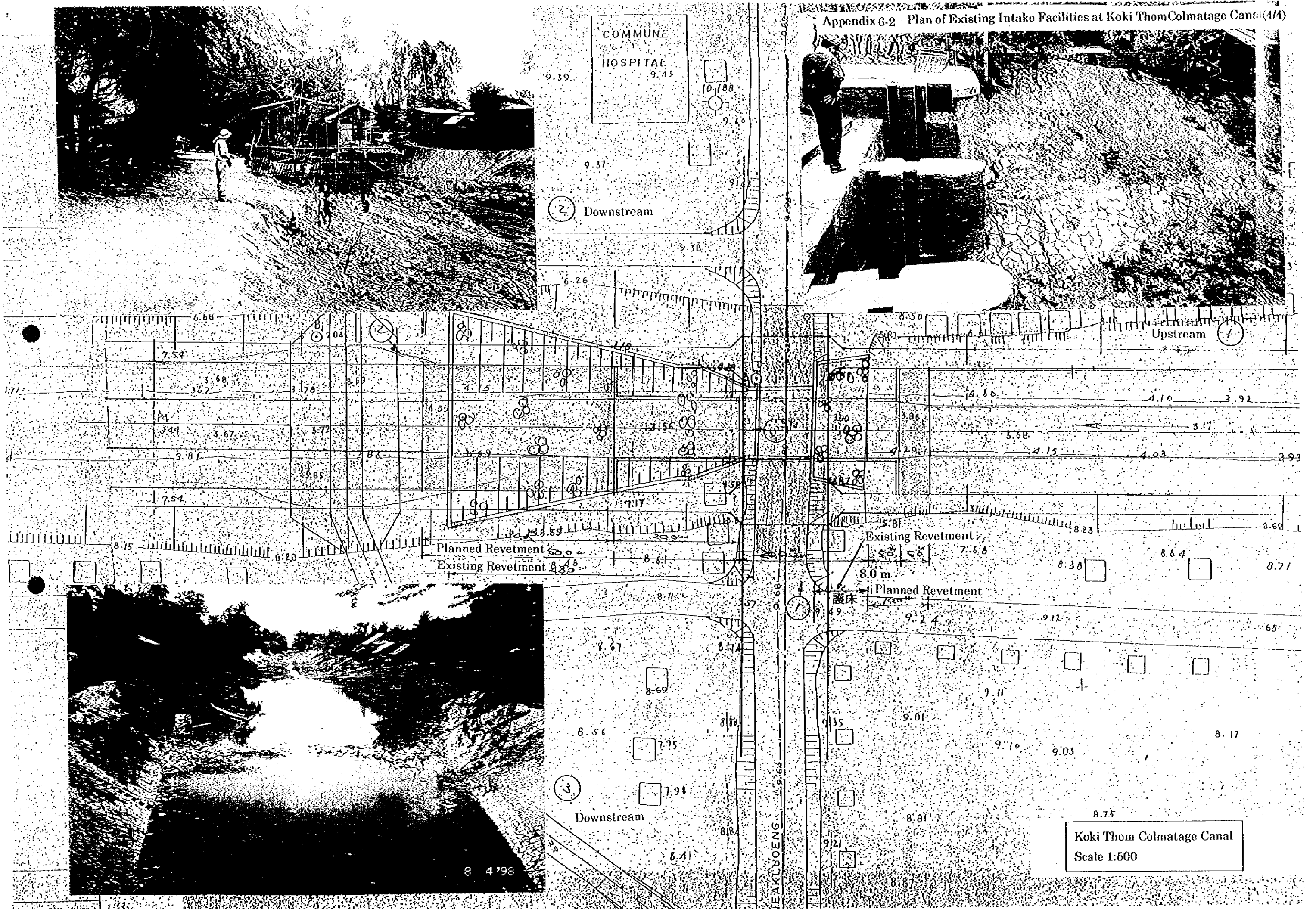
② Downstream

① Upstream

Prek Chrey Colmatage Canal
 Scale 1:500



Appendix 6-2 Plan of Existing Intake Facilities at Koki Thom Colmatage Canal (1/4)



Koki Thom Colmatage Canal
Scale 1:500

Appendix 6.3 Calculation of the discharge of canal

Based on the Manning Formula, discharges of the each canal is estimated.

Where;

$$Q=A \cdot V$$

$$V=n/1 \cdot R^{2/3} \cdot I^{1/2}$$

ここに Q: Discharge(m³/sec)

A: Area of flow (m²)

V: Velocity(m/sec)

n: Coefficient of roughness

R: Hydraulic mean depth(=A/P)

P: Wetted perimeter (m)

I: Gradient

Note 1 n value is adopted by 0.03 due to earth canal.

Note2 $V \leq 1.0$ m/sec, because of earth canal.流速は水路が土

Calculation of Discharge for Existing Canals

Colmatage Canals Name	A (m ²)	P (m)	I (1/l)	V (m/sec)	Q (m ³ /sec)
Prek Pol	21.17	17.01	1/1,300	1.07	22.7
Prek Yourn	61.40	22.16	1/5,000	0.93	57.1
Prek Chrey	—	—	—	—	—
Koki Thom	26.46	16.89	1/5,000	0.635	16.8

Prek Chrey canal was buried at the time of rehabilitation works of national road No.1 in 1994.

Calculation of Design Discharge for Planed Canals

Colmatage Canals Name	A (m ²)	P (m)	I (1/l)	V (m/sec)	Q (m ³ /sec)
Prek Pol	56.0	22.42	1/5,000	0.87	48.7
Prek Yourn	58.02	22.78	1/5,000	0.88	51.1
Prek Chrey	54.02	22.06	1/5,000	0.86	46.5
Koki Thom	54.02	22.06	1/7,000	0.73	39.4

Appendix 6-4 Comparison Table of Gate Type

Gate Type	Name of Colmatage Canals	Dimension(m)		Design Depth	Weight(kg)		Weight of Operation(kg)		Open & Close(O&C) Time		Price Index	
		Width	Height		Head	Gate	Others	C→O	O→C	O&C Speed		O&C Time
Width 2.5m 3series	Prek Pol	2.50	2.80	4.71	2.80	1,450	2,100	3,800	20	75	5.8	100
	Prek Yourn	2.50	3.00	4.92	3.00	1,650	2,200	4,200	40	75	6.1	108
	Prek Chrey	2.50	2.80	4.71	2.80	1,450	2,100	3,800	20	75	5.8	100
	Koki Thom	2.50	2.70	4.54	2.70	1,400	2,050	3,800	20	75	5.7	100
Width 4.0m 2series	Prek Pol	4.00	2.80	4.71	2.80	2,400	2,600	5,800	950	120	9.4	126
	Prek Yourn	4.00	3.00	4.92	3.00	2,700	2,700	6,100	1,000	120	9.8	133
	Prek Chrey	4.00	2.80	4.71	2.80	2,400	2,600	5,800	950	120	9.4	126
	Koki Thom	4.00	2.70	4.54	2.70	2,300	2,500	5,600	900	120	9.1	122

注) 1. Gate Type is Roller Gate, Spindle type.

2. Operation is manual and operation valve is 10kff, handle is at 30revolution/minute.

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JICA