

その他添付資料

調査団の構成

| 氏名    | 担当業務          | 派遣期間                 | 所属先                             |
|-------|---------------|----------------------|---------------------------------|
| 岩井孝道  | 総括            | 61.12.18<br>~12.27   | (財)日本農業土木総合研究所<br>調査研究第2部 主任研究員 |
| 梅崎路子  | 業務調整          | //                   | 国際協力事業団農業開発協力部<br>農業技術協力課       |
| 井関善民  | 圃場設計          | 61.12.18<br>~63.1.26 | (株)日本農業土木コンサルタンツ                |
| 久保田親典 | かんがい・<br>排水設計 | //                   | (株)日本農業土木コンサルタンツ                |

Member of Detailed Survey Team

The team consists of the following Japanese Experts and Indonesian Counterpart personnel for the Detailed Design Survey.

Japanese Team :

1. Team Leader                    Mr. Takamichi IWAI  
Chief Researcher, The Japanese  
Institute of Irrigation and  
Drainage (JIID)
  
2. Coordination                    MS. Michiko UMEZAKI  
Technical Cooperation Division,  
Agricultural                    Development  
Cooperation Department, (JICA)
  
3. Design of                        Mr. Yoshitami ISEKI  
Farmland                        Senior Engineer of Overseas  
Engineering Department, Japan  
Irrigation and Reclamation  
Consultants Co.,Ltd. (JIRCO)
  
4. Design of Irriga-                Mr. Chikanori KUBOTA  
tion and drainage                Overseas Engineering Department,  
Japan Irrigation and Reclamation  
Consultants Co.,Ltd. (JIRCO)

Indonesian Counterpart Personnel :

1. Coordination (Jakarta)        Mr. Yusumin M.Sc., Section of  
Invertebrate, Directorate of  
Food Crop Protection, (DFCP)

2. Coordination (Jatisari) Ir. Erma Budiyanto,  
Coordinator of Jatisari Pests  
Forecasting Center
  
3. Coordination (Celuk) Ir. I. Gusti N. Astika,  
Coordinator of Celuk Field  
Laboratory

現地調査の日程

| 月 日    | 曜 日 | 調 査 内 容  |
|--------|-----|--|
| 12月18日 | (金) | 東京 → ジャカルタ JL721   |
| 19日    | (土) | JICA事務所打合せ, 食用作物生産総局長及び<br>作物保護局長表敬訪問及び打合せ<br>奈須, 鈴木専門家と打合せ<br>ジャカルタ → デンバサルへ移動        |
| 20日    | (日) | 第7作物保護センター及びチュルク発生予察実験所現地踏査  |
| 21日    | (月) | 第7作物保護センターにて打合せ, 資料収集<br>チュルクF・L 現地踏査, 深井戸ポンプ流量観測                                      |
| 22日    | (火) | デンバサル・公共事業省かんがい事業所にて資料収集<br>第7作物保護センターにて鈴木専門家, カウンターパート等<br>打合せ<br>デンバサル → ジャカルタへ移動    |
| 23日    | (水) | ジャチサリ予察センター現地踏査, 既設かんがい用ポンプ<br>流量観測, 地耐力調査, ジャティフル分水工及びチバガイ<br>ギ農場等現地踏査<br>チーム内部ミーティング |
| 24日    | (木) | JICA事務所打合せ<br>基本方針作成<br>測量器材借用   |
| 25日    | (金) | 資料整理, 基本方針添付図作成  |
| 26日    | (土) | 食用作物生産総局長及び作物保護局長に調査結果の報告<br>モデルインフラ整備事業実施に係る手続き説明<br>カウンターパート打合せ<br>JICA事務所報告         |
| 27日    | (日) | 団長及び業務調整はジャカルタ出発 GA872<br>団長及び業務調整は東京着 GA872<br>団員2名は資料整理, 資機材購入                       |

| 月 日    | 曜 日 | 調 査 内 容  |
|--------|-----|--|
| 12月28日 | (月) | 食用作物生産総局にて専門家と打合せ<br>ジャカルタ統計局にて資料収集<br>ジャカルタ → ジャチサリへ移動                |
| 29日    | (火) | 水準測量, 基準杭設置<br>カラワン地方農業普及所長及びジャティフル・ジャチサリ<br>管理事務所長聞き取り調査              |
| 30日    | (水) | 水準測量, 基準杭設置<br>ジャチサリかんがい事務所にて資料収集                                      |
| 31日    | (木) | 水準測量, トラバース測量<br>パングラウタラ村長聞き取り<br>ジャチサリ予察センター所長打合せ<br>ジャチサリ → ジャカルタへ移動 |
| 1月 1日  | (金) | 資料整理   |
| 2日     | (土) | 塗料整理, 資機材購入<br>ジャカルタ → ジャチサリへ移動  |
| 3日     | (日) | 三次水路踏査及び水準測量, 場内トラバース測量<br>エルマー所長打合せ                                   |
| 4日     | (月) | 地区周辺踏査, 場内トラバース<br>ジャティフル管理事務所(ジャチサリ)所長打合せ<br>三次水路変更ルート検討              |
| 5日     | (火) | 第三次水路変更ルート路線測量, 場内平板測量   |
| 6日     | (水) | テストピット掘削, 平板測量<br>エルマー所長打合せ, ジャティフル管理事務所長打合せ<br>スカマンディ種子農場視察           |
| 7日     | (木) | 作物保護局にて資料収集, ポンプメーカー資料収集<br>平板測量                                       |
| 8日     | (金) | 平板測量, ポンプ揚水試験  |

| 月 日   | 曜 日 | 調 査 内 容   |
|-------|-----|---|
| 1月 9日 | (土) | 平板測量, チバガイギ試験農場にてラット・フェンス調査<br>旧井戸地下水調査, 網室基礎, 地耐力調査<br>ジャティフル・ダム見学   |
| 10日   | (日) | ジャチサリ → デンパサールへ移動 GA668<br>鈴木専門家, カウンターパート等と打合せ                       |
| 11日   | (月) | 境界杭及び基準点埋設, BM調査<br>仮BM水準測量<br>クドゥタワン頭首工管理事務所聞き取り調査                   |
| 12日   | (火) | 境界杭及び基準点測量<br>日雨量データ等資料収集   |
| 13日   | (水) | 圃場内水準測量及びトラバース測量, PHテスト   |
| 14日   | (木) | 〃<br>構造物調査  |
| 15日   | (金) | 平板測量<br>スバ Pejajahチーフ代理・聞き取り調査<br>分水工 BLG10現地踏査, 三次水路下流踏査<br>資材単価市場調査 |
| 16日   | (土) | 平板測量<br>ポンプ揚水量測定, ネットフェンス及び圃場区画の検討                                    |
| 17日   | (日) | 資料整理  |
| 18日   | (月) | 平板測量, 地耐力調査 バリかんがい事業所にて資料収集<br>資機材整理                                  |
| 19日   | (火) | 第7保護センターにて鈴木専門家及びカウンターパートと<br>打合せ<br>デンパサール → ジャカルタへ移動 GA663          |
| 20日   | (水) | 作物保護局にて奈須リーダーへ現地調査結果報告<br>打合せ   |

| 月 日   | 曜 日 | 調 査 内 容  |
|-------|-----|--|
| 1月21日 | (木) | ジャチサリ予察センター整備計画検討  |
| 22日   | (金) | チュルク実験所整備計画検討  |
| 23日   | (土) | 概算工事費積算, フィールド・レポート作成  |
| 24日   | (日) | フィールド・レポート作成   |
| 25日   | (月) | 作物保護局次長その他へ調査結果報告<br>フィールド・レポート提出<br>ネット・フェンス製作会社と打合せ<br>JICA事務所帰国報告 |
| 26日   | (火) | 団員2名 ジャカルタ出発 JL722<br>東京着  |



調査関係者

農業省食用作物生産総局

Dr. Ir. A. MUIN PABINRU

Director General of Food Crop  
Agriculture, Ministry of Agriculture

農業省食用作物生産総局作物保護局

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Ir. CANDRA KIRANA

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Chief of Sub Directorate of Weed and  
Disease

Mr. YUSMIN MSC

Counterpart in Jakarta ;

Chief of Invertebrate Section,  
Sub Directorate of Observation  
and Forecast

Mr. MEMET

Staff of Food Crop Protection

Mr. SUGANDA

- ditto -

ジャチサリ予察センター

Ir. Erma Budiyanto

Counterpart in Jatisari ;

Coordinator of Pest

Forecasting Center, Jatisari

Mr. JOKO PRIYONO

Coordinator of Vertebrate

Laboratory, Jatisari

Mr. NYOMAN RAGA

Coordinator of Plant Pathology, Jatisari

Mr. KADAR SURATIYO

Chief of Administration, Jatisari

Pest Forecasting Center

バリ州第7作物保護センター

Ir. FIRMAN BUTAR

Chief of the 7th Crop Protection Center,  
Denpasar

|                             |  |
|-----------------------------|--|
| Ir. ARYA                    | Chief of Administration, the 7th Crop<br>Protection Center, Denpasar     |
| Mr. WAGA                    | Staff of the 7th Crop Protection Center,<br>Denpasar                     |
| バリ州チュルク発生予察実験所              |  |
| Ir. I. GUSTI NGURAH ASTIKA  | Counterpart in Celuk ;<br>Coordinator of Celuk Field Laboratory          |
| Ir. I. NENGAH SUWELA        | Staff of Celuk Field Laboratory  |
| Ir. I. GST NGURAH ARYAWAN   | - ditto -  |
| Ir. I. NYM. SUTA ASTIKA     | - ditto -  |
| バリ州農業省地方事務所                 |  |
| Mr. OKA                     | Representative of Regionnal<br>Agricultural office, Denpasar             |
| ジャティルフル・ジャチサリ管理事務所          |  |
| Mr. SUEB SUYADI S.T.M       | Chief of Tarum Timur Main Canal<br>O & M office, Jatisari                |
| カラワン農業普及所                   |  |
| Mr. ADE. AH. ZUL KARNAEN    | Chief of Rural Extention<br>Center Jatisari, Karawan                     |
| パングラ・ウタラ村                   |  |
| Mr. WADI N. SUNARDI         | Chief of Pangulah Utara<br>Village, Jatisari                             |
| 公共事業省バリ州かんがい事業所             |  |
| Ir. J. HERU MARSUDI DIP. HE | Deputy Project Manager of<br>Bari Irrigation Sector<br>Project, Denpasar |

Basic Plan

ATTACHMENT

DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE  
MINISTRY OF AGRICULTURE  
THE REPUBLIC OF INDONESIA

BASIC PLAN ON THE INFRASTRUCTURE IMPROVEMENT WORK

FOR

THE FOOD CROP PROTECTION PROJECT

(THE SECOND PHASE OF ATA-162)

December 26, 1987

THE DETAILED DESIGN SURVEY TEAM  
JAPAN INTERNATIONAL COOPERATION AGENCY

## CONTENT

- I. Introduction
- II. Jatisari Pests Forecasting Center
  - 1. Irrigation facilities
  - 2. Others
- III. Celuk Field Laboratory
  - 1. Irrigation facilities
  - 2. Others

### Table & Figures :

- Fig-1 Location Map of Project Site
- Fig-2 Plan of Jatisari Pests Forecasting Center
- Fig-3 Plan of Celuk Field Laboratory
  
- Table-1 Outline of the Schedule on Project for Infrastructure Improvement Work
- Table-2 Members List of the Team
- Table-3 Tentative Itinerary of the Team

## I. INTRODUCTION

The Detailed Design Survey Team has decided the basic plan as follows based on field reconnaissance survey.

However, some of the items below may be changed after detailed survey.

## II. JATISARI PESTS FORECASTING CENTER (EXPERIMENTAL FARM FOR RODENT)

### 1. Irrigation facilities

(1) An intake from existing irrigation canal will be located at the nearest point from the new experimental farm. Surplus water will be conveyed to the adjacent existing experimental farm and surrounding paddy fields.

(2) As irrigation water above mentioned might be unstable, a new well will be dug to supply approximately 200 liters per minute. Suitable scale of a farm pond will also be installed.

### 2. Others

(1) Total area of the new experimental farm is 2 hectares (200m x 100m) and the area is surrounded by the rat fence.

(2) The farm road in the experimental farm has enough scale for the vehicle to carry such experimental equipment as a telemeter.

- (3) Outline of approximate arrangement of farm road and canals is shown in the figure-2.

### III. CELUK FIELD LABORATORY (EXPERIMENTAL FARM FOR GREEN LEAF HOPPER & TUNGRO DISEASE)

#### 1. Irrigation facilities

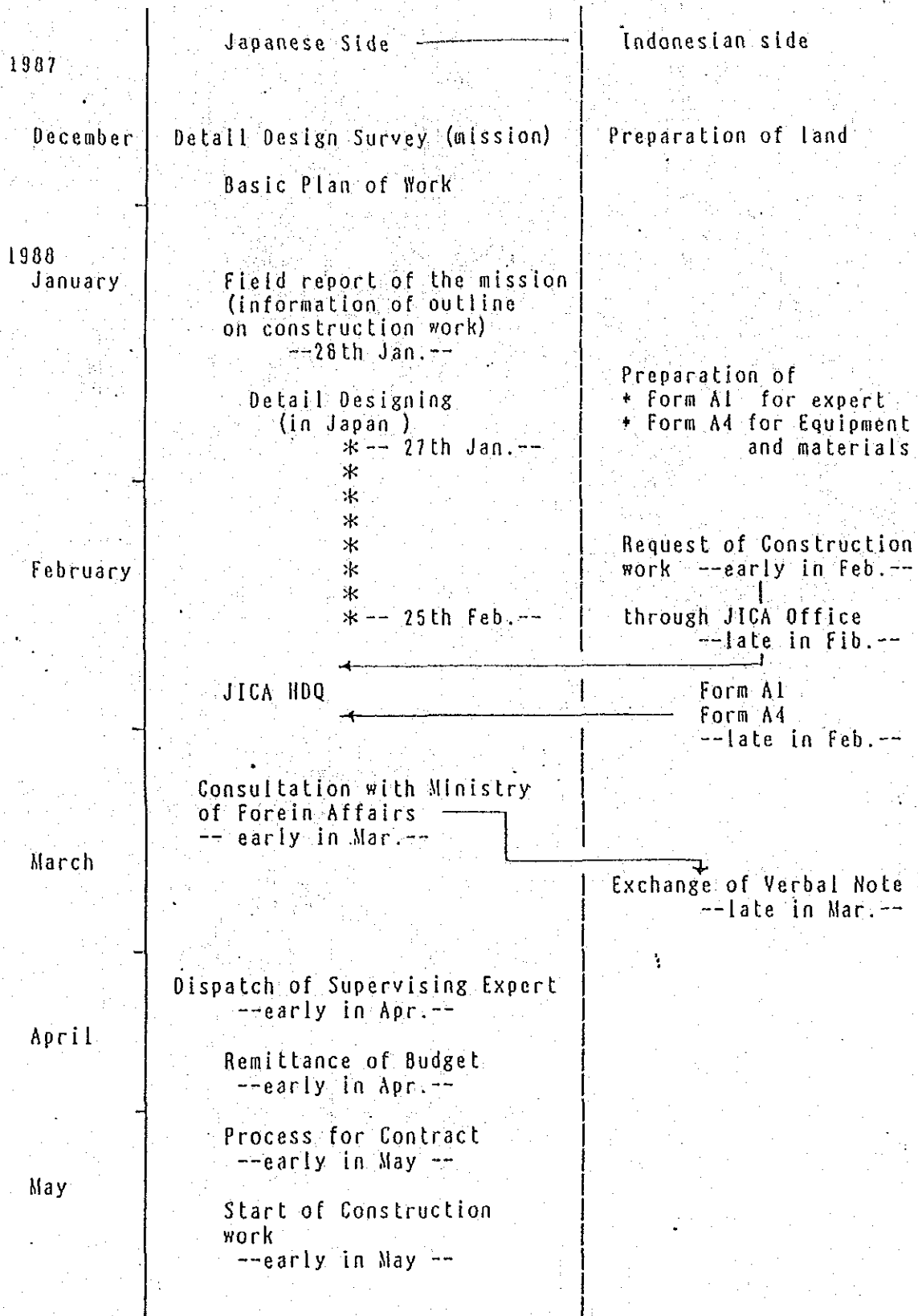
An intake in the existing irrigation canal will be improved. A new farm pond (approximately 80 cubic meters) will be also installed to utilize the capacity of the existing deep well pump.

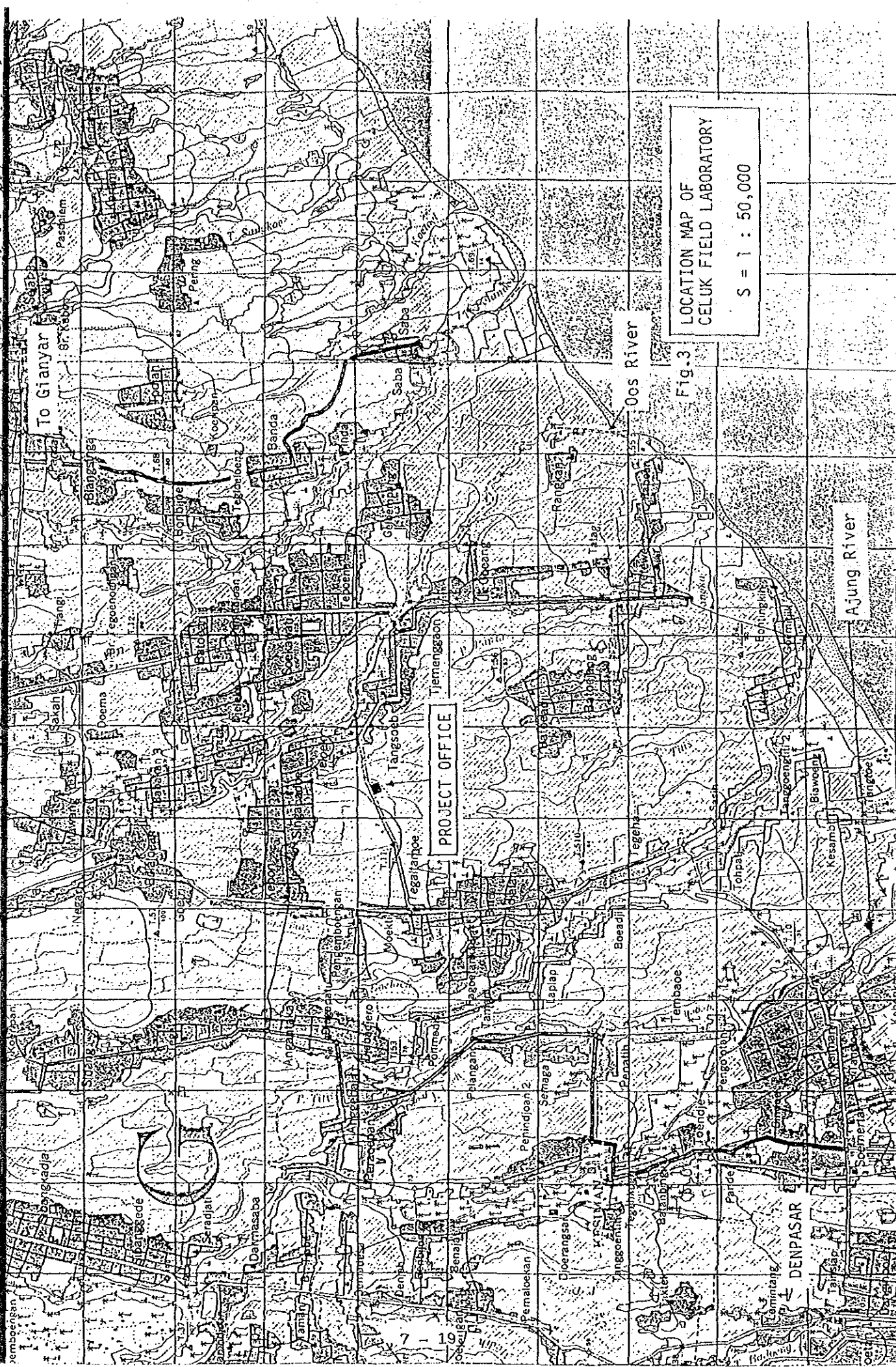
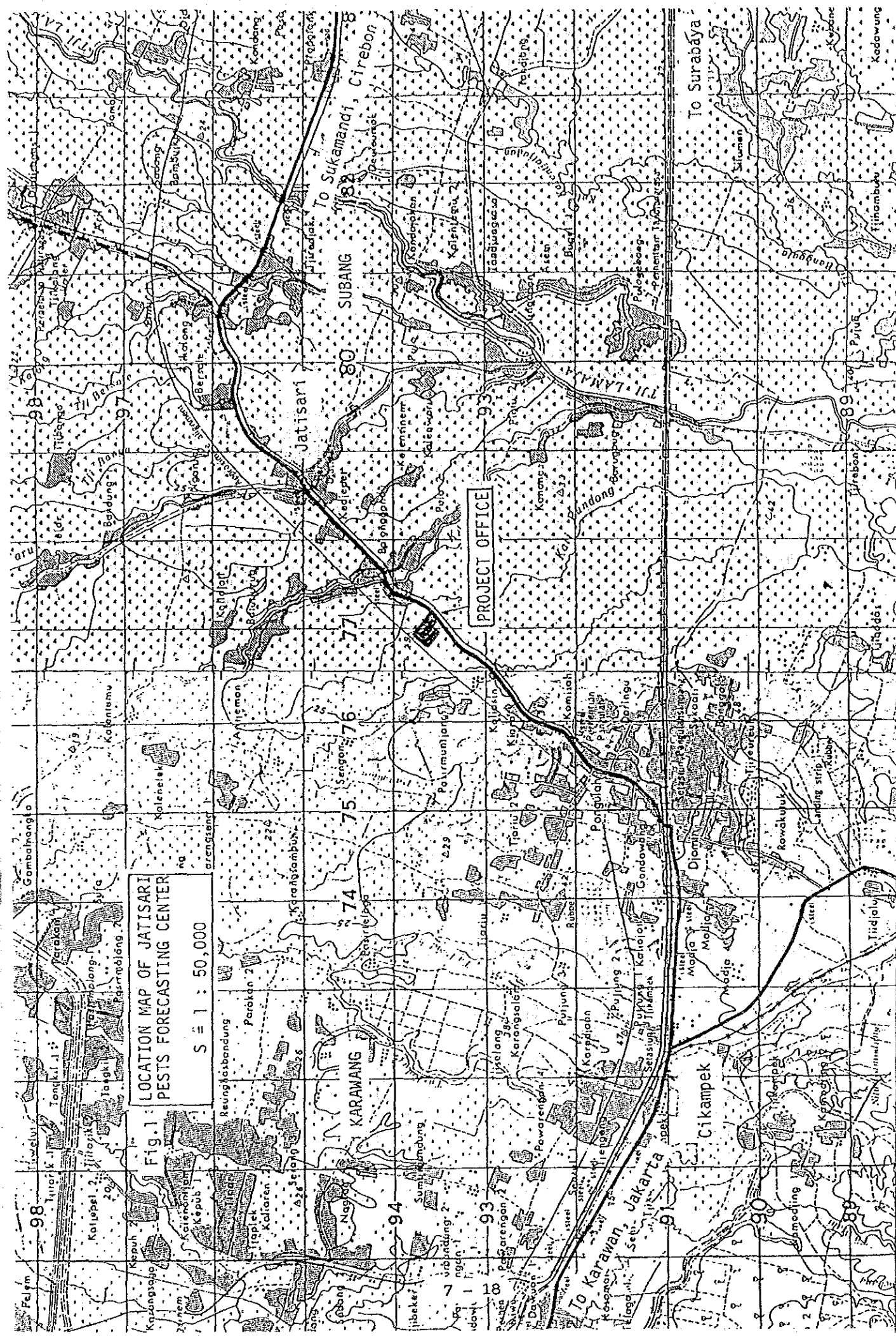
#### 2. Others

- (1) Total area is about 0.4 hectares, where the nine plots (20m x 20m) are made.
- (2) The access road is designed for a tractor to enter the experimental farm. But, the farm roads along the plots can be lessened up to the one-wheel-car scale.
- (3) The material and shape of the surrounding fence will be decided considering both rats proof and climatical conditions.
- (4) Outline of approximate arrangement of farm road and canals is shown in the figure-3.

Table-1

OUTLINE OF THE SCHEDULE ON PROJECT  
INFRASTRUCTURE IMPROVEMENT WORK







## List of Collected Data

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### Maps

|      |  |          |
|------|--|----------|
| MJ-1 | Topographic map around Jatsiari (Copy)<br>S = 1:50,000, HIND | 3 sheets |
| MJ-2 | - ditto - (Copy)<br>S = 1:50,000, US ARMY MAP SERVICE        | 4 sheets |
| MJ-3 | Topographic map of West Java<br>S = 1:500,000                | 1 sheet  |
| MC-1 | Topographic map around Celuk (Copy)<br>S = 1:50,000, HIND    | 2 sheets |
| MC-2 | Map of Bali & Denpasar                                       | 1 sheet  |
| MC-3 | Topographic map of Bali<br>S = 1:500,000                     | 1 sheet  |
| MC-4 | Topographic map of Keduwatan (Copy)<br>S = 1:50,000          | 1 sheet  |
| MC-5 | Administration map of Bali (Copy)<br>S = 1:200,000           | 1 sheet  |
| MC-6 | Land use map of Bali (Copy)<br>S = 1:200,000                 | 1 sheet  |

### Hydrology and Meteorology

|      |  |  |
|------|--|--|
| HJ-1 | Monthly rainfall data at Jatisari<br>1960 - 1986                         |  |
| HJ-2 | Climeteorological data at Jatisari (daily)<br>1982 - 1986                |  |
| HC-1 | Monthly rainfall data at Gianyar<br>1956 - 1978                          |  |
| HC-2 | Monthly rainfall data at Celuk<br>1971 - 1987                            |  |
| HC-3 | Climeteorological data at Denpasar (monthly)<br>1983 - 1985              |  |
| HC-4 | Reconnaissance Hydrogeological Map, Bali<br>S = 1:250,000, S = 1:200,000 |  |
| HC-5 | Isohyetal Map, Bali (Copy)<br>S = 1:200,000                              |  |

### Soil and Water Quality

- SO-1 Quaternary Geologic Map of the Bekasi  
S = 1:50,000
- SO-2 Geological Map of Bali (Copy)  
S = 1:200,000
- SO-3 Soil Map of Bali (Copy)  
S = 1:200,000
- SO-4 Report of Soil Investigation for the Pest and  
Disease Forecasting and Control Project  
(ATA 389), 1985
- SO-5 Drilling Profile at Celuk F.L.
- W-1 Water Quality Test Result at Celuk F.L.  
1987, Apr. 3

### Irrigation and Others

- IJ-1 Administration Map of Desa Pangulah Utara  
S = 1:2,500
- IJ-2 Unit Irrigation Water of Jatiluhur Project
- IJ-3 Structural Design Map of BTt18', Jatisari
- IJ-4 Irrigation System of Pundong Weir,  
S = 1:50,000
- IC-1 Schematic Map of Keduwatan Irrigation Project, Bali
- IC-2 Brief Report of Cengcengan Irrigation Project, Bali
- IC-3 Calculation of Unit Irrigation Water for Dukun  
Sub-Project, Bali
- O-1 Statistical Year Book 1985, 1986

### Center's Facilities

- CJ-1 Construction Drawings of Jatisari Center, 22 sheets
- CC-1 Specification of Pump Facilities of Celuk F.L.
- CC-2 Construction Drawings of Celuk F.L.

Cost, Material and Contractor's List

- CO-1 List of Construction Material Price and Wage  
at Jatisar Irrigation Office, 1987, Dec.
- CO-2 List of Construction Material Price and Wage  
at Denpasar, D.P.U, 1987, June
- CO-3 Example of Cost Estimation for Deep Well and  
Installation of Deep Well pump, Denpasar, 1986, Dec.
- CO-4 Contractor's List for Food Crop Protection Project

SURAT PERJANJIAN PEMINJAMAN TANAH  
SAWAH DALAM BENTUK KERJASAMA

Pada hari ini Sabtu tanggal dua puluh dua bulan Agustus Tahun seribu sembilan ratus delapan puluh tujuh, Kami yang bertanda tangan di bawah ini :

- Pihak KESATU : Kepala Dinas Pertanian Tanaman Pangan Propinsi Daerah Tingkat I Jawa Barat Cabang Dinas IV Purwakarta.
- Pihak KEDUA : Penanggung Jawab Sentra Peramalan Hama & Penyakit Tanaman Pangan Jatisari.

Telah sepakat mengadakan perjanjian peminjaman tanah sawah dalam bentuk kerjasama tanpa adanya tekanan baik psyhis maupun fisik dengan ketentuan-ketentuan sebagai berikut :

P A S A L. I

U M U M

Pihak KESATU akan meminjamkan sebidang tanah sawah tersebut seluas 2 (dua) Ha kepada pihak KEDUA dalam rangka kerjasama dan pihak KEDUA menerima tanah sawah untuk dijadikan lokasi Studi dinamika populasi tikus serta berjanji akan mengembalikan tanah sawah tersebut kepada pihak KESATU apabila telah selesai batas waktu pinjaman yang telah ditentukan.

P A S A L. 2

Hak dan Kewajiban

1. Pihak KEDUA mempunyai hak untuk menggunakan tanah sawah tersebut untuk keperluan Studi dinamika populasi tikus.
2. Pihak KEDUA berkewajiban memberikan jasa atas pinjaman tanah sawah tersebut sebesar Rp 900.000,- (Sembilan ratus ribu rupiah) setiap tahun kepada pihak KESATU, yang akan dibayarkan setiap awal tahun pemakaian (bulan Oktober - Desember).
3. Pihak KEDUA mempunyai hak untuk mengubah/mengatur keadaan lapangan sesuai dengan kebutuhan teknis percobaan.
4. Pihak KESATU tidak dapat mengalihkan hak dan penggunaan atas tanah tersebut kepada pihak lain selama masa perjanjian kerjasama belum selesai (5 tahun).
5. Pihak KEDUA berkewajiban memberikan informasi yang bermanfaat dari hasil temuan-temuan Studi dinamika populasi tikus tersebut kepada pihak KESATU.

P A S A L. 3  
P E M B A T A L A N

Pembatalan Surat perjanjian ini dapat dilakukan oleh pihak

KESATU :

1. Apabila ternyata pihak KEDUA tidak dapat mentaati ketentuan yang ada dalam perjanjian ini.
2. Apabila pihak KEDUA mengundurkan diri dari perjanjian ini secara sukarela sebelum habis masa pinjaman dan uang yang telah masuk pada pihak KESATU tidak dapat ditarik kembali.
3. Apabila habis masa pinjaman.

P A S A L. 4  
L A I N - L A I N

1. Surat perjanjian ini berlaku selama 5 tahun terhitung mulai tanggal 1 September 1987 sampai dengan 1 September 1992 dan sampai dengan adanya pembatalan.
2. Surat perjanjian ini dibuat dalam rangkap 5 (lima) yang 2 (dua) lembar dihubuhi meterai sebesar Rp 1.000,-(seribu rupiah), asli surat perjanjian ini untuk Kepala Dinas Pertanian Tanaman Pangan Propinsi Dati I Jawa Barat Cabang Dinas IV Purwakarta, lembar kedua untuk Penanggung Jawab Sentra Peramalan Hama & Penyakit Tanaman Pangan Jatisari sedangkan yang lainnya untuk pihak yang berkepentingan.
3. Hal-hal yang belum diatur dalam perjanjian ini akan diatur kemudian.

Purwakarta, 22 Agustus 1987.

Pihak KEDUA,

Pihak KESATU,

Penanggung Jawab Sentra Peramalan  
Hama dan Penyakit Tanaman Pangan  
Jatisari Karawang,



*Erna Budiyo*  
Ir. Erna Budiyo  
Nip: 080053626.

Kepala Dinas Pertanian Tanaman  
Pangan Propinsi Daerah Dati I  
Cabang Dinas IV Purwakarta



*M. Karvadhara F.Sc.*  
M. Karvadhara F.Sc.  
Nip: 480027893.

PEMERINTAH PROPINSI DAERAH TERTANGGAL I BALI  
DINAS PERTANIAN TANAMAN PANGAN  
JALAN RAYA MR. SUPRATMAN NO. 51 TELEFON 23716  
D E N P A S A R

Nomor : 521.51/1379/TU.

Denpasar, 3 Agustus 1987.

Lampiran : - 4211 農生学寮実験田圃場小作

Prinsipal : Penyediaan Lahan Sawah  
di Lokasi Laboratorium  
Pengamatan dan Peramalan  
Hama dan Penyakit Tanaman  
Pangan.

kepada  
Yth : Saudara Direktur Perlindungan  
Tanaman Pangan  
Jalan Ragunan Pasarenggu  
Jakarta - Selatan  
di -

J A K A R T A  
( 種子生産圃(公有地)の水田 0.4 畝 ± 4211 農生学寮実験田圃場小作に  
使用することを承認す。 )

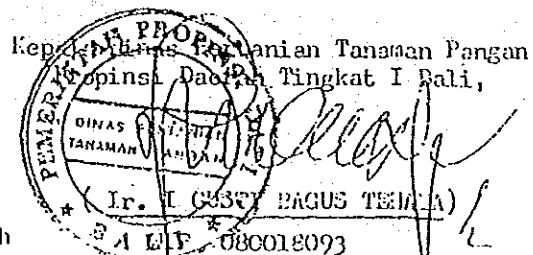
Menunjuk surat saudara tertanggal 20 Juli 1987 Nomor : VI.PT.020.317.  
87.Dir, perihal tersebut diatas maka bersama surat ini dengan hormat, kami  
sampaikan bahwa pada dasarnya kami menyetujui untuk dapat menggunakan lahan  
Sawah Dinas di lokasi Laboratorium Celuk Kecamatan Sukawati Kabupaten Gianyar  
dalam rangka kegiatan studi tungro ± seluas 40 are mengingat terbatasnya  
lahan Balai Benih bersangkutan.

Sehubungan dengan hal tersebut diatas perlu pula kami jelaskan disini  
bahwa penggunaan tanah tersebut adalah selaku meminjam.

Demikianlah agar saudara maklum adanya.

Tebususan disampaikan kepada Yth :

1. Bapak Gubernur Kepala Daerah Propinsi Daerah  
Tingkat I Bali di Denpasar.
2. Bapak Direktur Jenderal Pertanian Tanaman  
Pangan di Jakarta.
3. Kepala Sub Dinas Bina Produksi Tanaman Pangan  
Dinas Pertanian Tanaman Pangan Propinsi Daerah  
Tingkat I Bali di Denpasar.
4. Kepala Cabang Dinas Pertanian Tanaman Pangan  
Kabupaten Daerah Tingkat II Gianyar di Gianyar.
5. Kepala BPTP Wilayah VII Bali di Denpasar.
6. P e r t a n i a n



184 H. H.

Administration Map of Desa Pangulah Utara

Dec.31, 198

S= 1:2,500

PETA BAGAN DESA

Ds. PANGULAH BARU  
TARUM TIMUR

Ds. Pangulah Utara

S.38

S.22

S.39

d.40<sup>b</sup>

S.40

Ds. BALONGGANDU

Hotel

River

d.40<sup>b</sup>



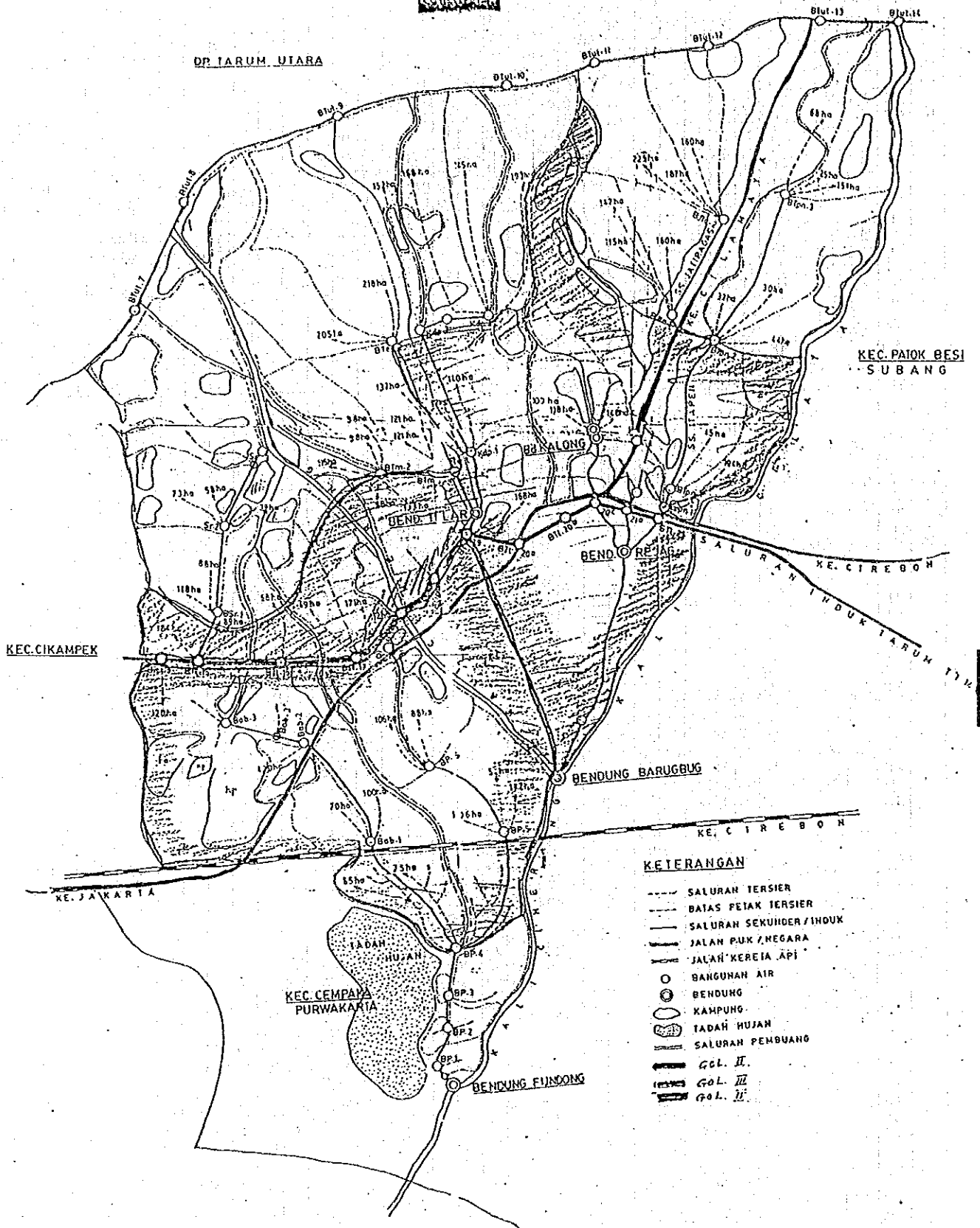
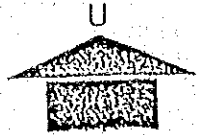




# INVENTARISASI AREAL KEPENGAMATAN EXPLOITASI JATISARI

SKALA 1 : 25000

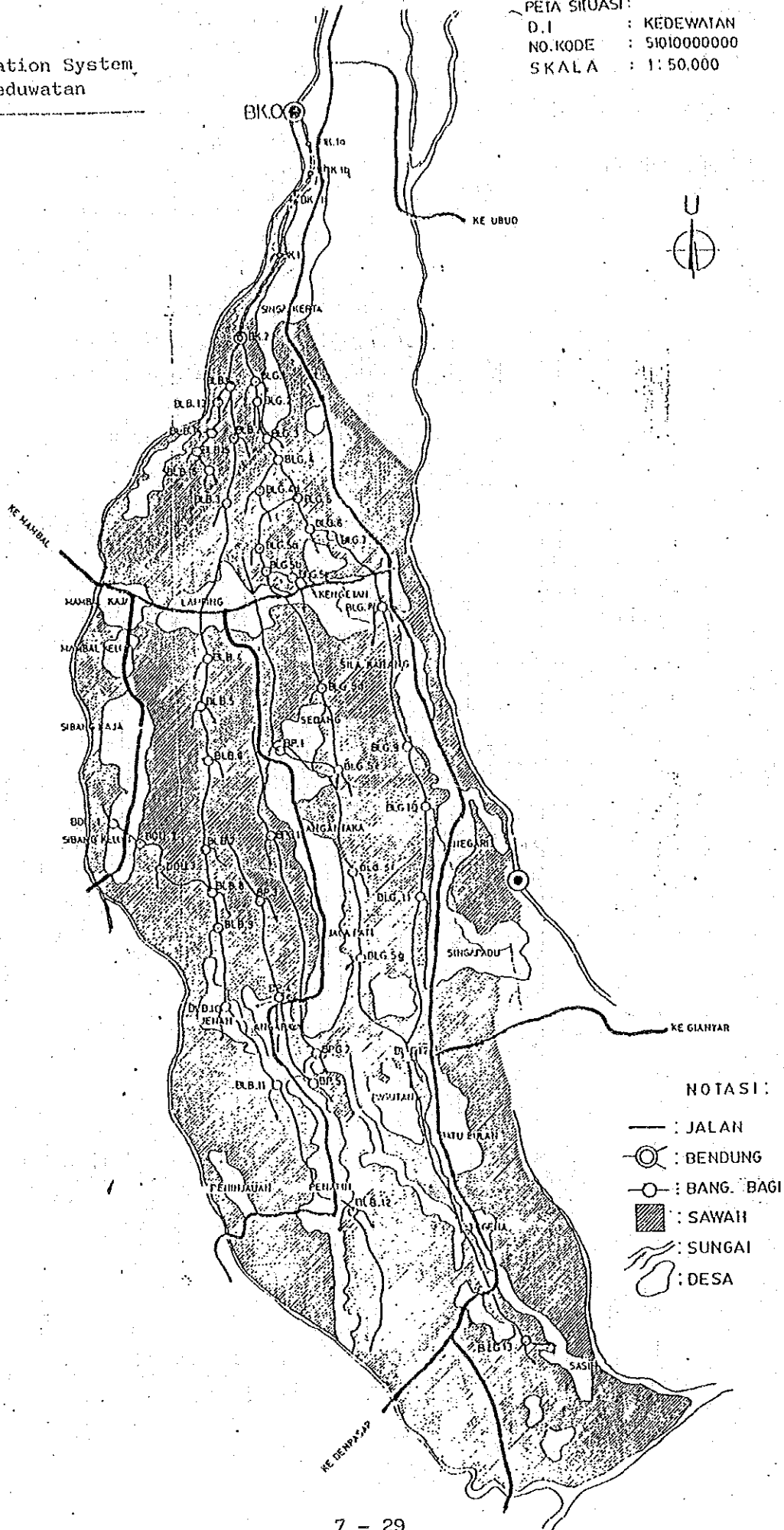
Irrigation System  
around Jatisari



- KETERANGAN**
- SALURAN TERSIER
  - - - BATAS PEJAK TERSIER
  - SALURAN SEKUNDER / INDUK
  - JALAN PUK. MEGARA
  - JALAN KEREJA API
  - BANGUNAN AIR
  - ⊙ BENDUNG
  - ⊕ KAMPUNG
  - ⊖ TADAH HUJAN
  - SALURAN PEMBUANG
  - GOL. II
  - GOL. III
  - GOL. II'

Irrigation System  
for Keduwatan

PETA SITUASI:  
D.I : KEDEWATAN  
NO.KODE : 5101000000  
SKALA : 1: 50.000



Shematic Diagram for Keduwatan

PROPINSI BALI

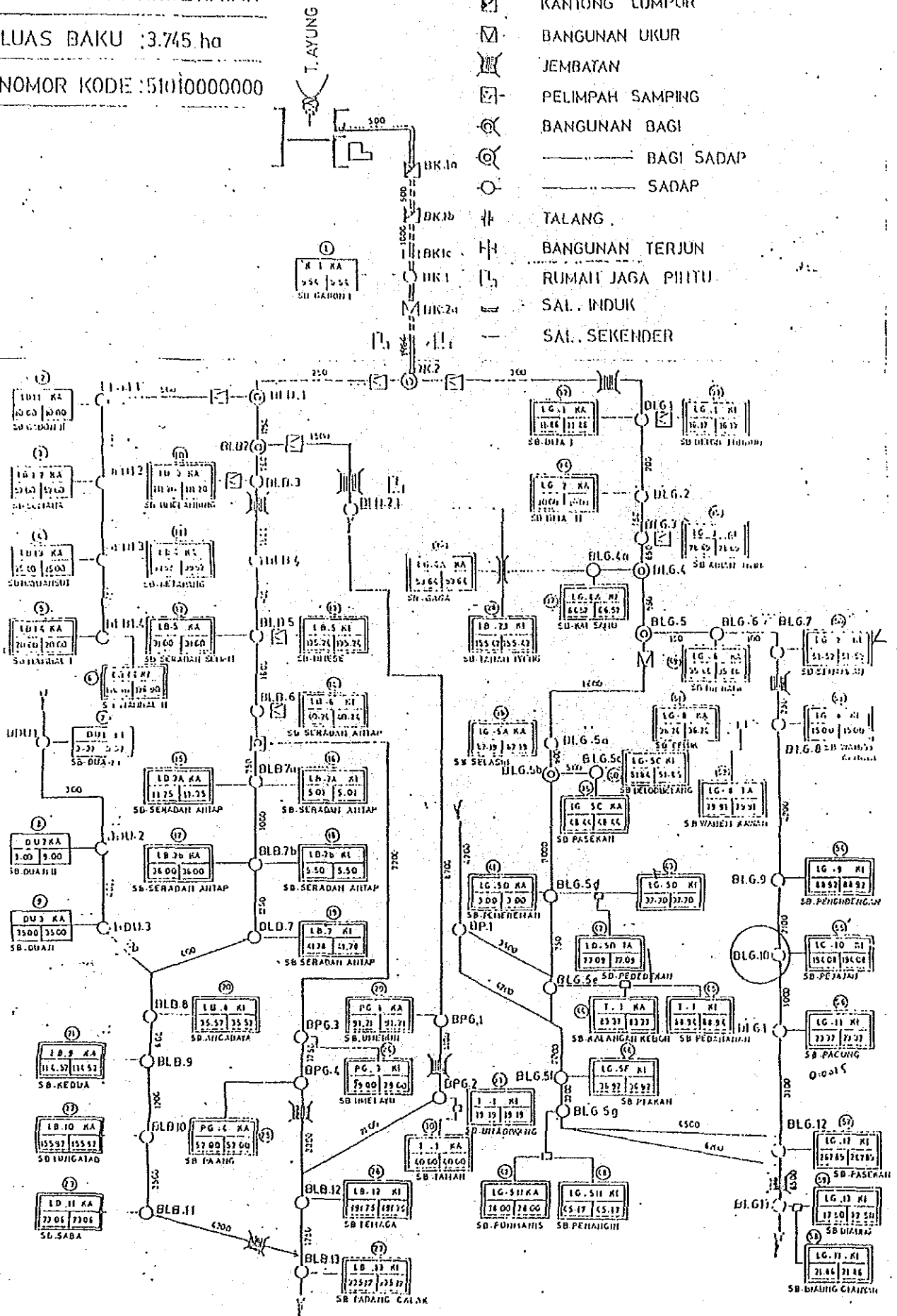
SKHEMA D.I. KEDEWATAN

LUAS BAKU : 3.745 ha

NOMOR KODE : 5101000000

NOTASI

- ⊞ BENDUNG
- ⊞ KANTONG LUMPUR
- ⊞ BANGUNAN UKUR
- ⊞ JEMBATAN
- ⊞ PELIMPAH SAMPIING
- ⊞ BANGUNAN BAGI
- ⊞ BAGI SADAP
- ⊞ SADAP
- ⊞ TALANG
- ⊞ BANGUNAN TERJUN
- ⊞ RUMAH JAGA PIHTU
- ⊞ SAL. INDUK
- ⊞ SAL. SEKENDER



Monthly Rainfall Data at Celuk

DATA CURAH HUJAN 10 TAHUN

SUMBER DATA: BALAI BENIH CELUK

| No. Urut | Bulan     | 1978 |    | 1979 |    | 1980 |    | 1981 |    | 1982 |    | 1983 |    | 1984 |    | 1985 |    | 1986 |    | 1987 |    | AVE.  |     |  |
|----------|-----------|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|-------|-----|--|
|          |           | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm   | hh | mm    | hh  |  |
| 1        | Januari   | 349  | 17 | 265  | 10 | 622  | 20 | *    | *  | 342  | 10 | 157  | 11 | 286  | 10 | 98   | 11 | 423  | 26 | 546  | 14 | 342   |     |  |
| 2        | Pebruari  | 397  | 15 | 118  | 8  | 147  | 10 | *    | *  | 193  | 7  | 36   | 8  | 206  | 20 | 139  | 14 | 339  | 15 | 160  | 9  | 1928  |     |  |
| 3        | Maret     | 238  | 7  | 205  | 11 | 81   | 5  | *    | *  | 21   | 1  | 147  | 17 | 303  | 16 | 269  | 11 | 78   | 10 | -    | -  | 149.1 |     |  |
| 4        | April     | 262  | 10 | 15   | 1  | 33   | 4  | *    | *  | 20   | 3  | 114  | 12 | 121  | 11 | 55   | 6  | 194  | 9  | -    | -  | 90.4  |     |  |
| 5        | Mei       | 304  | 10 | 169  | 4  | 5    | 2  | *    | *  | 19   | 1  | 198  | 17 | 138  | 9  | 33   | 3  | 19   | 2  | 177  | 4  | 118.0 | 58  |  |
| 6        | Juni      | 562  | 12 | 29   | 7  | -    | -  | *    | *  | 3    | 1  | 37   | 8  | 54   | 5  | 179  | 11 | 193  | 15 | 45   | 3  | 1224  | 6.9 |  |
| 7        | Juli      | 209  | 6  | 11   | 7  | 48   | 1  | *    | *  | -    | -  | 122  | 4  | 48   | 6  | 26   | 7  | 44   | 4  | 60   | 4  | 63.1  | 4.3 |  |
| 8        | Agustus   | 84   | 5  | 77   | 1  | -    | -  | *    | *  | 13   | 2  | 16   | 4  | 33   | 5  | 26   | 5  | 34   | 4  | -    | -  | 31.4  |     |  |
| 9        | September | 165  | 6  | -    | -  | -    | -  | *    | *  | -    | -  | 3    | 1  | 373  | 14 | 15   | 4  | -    | -  | 8    | 1  | 62.7  |     |  |
| 10       | Oktober   | 232  | 4  | 2    | 1  | -    | -  | *    | *  | -    | -  | 246  | 13 | 15   | 3  | 26   | 6  | 27   | 3  | 27   | 2  | 63.9  |     |  |
| 11       | November  | 289  | 13 | 132  | 3  | -    | -  | 421  | 15 | 65   | 1  | 213  | 11 | 39   | 6  | *    | *  | 191  | 9  | 159  | 12 | 1748  |     |  |
| 12       | Desember  | 263  | 6  | 190  | 13 | -    | -  | 323  | 12 | 53   | 7  | 128  | 9  | 363  | 25 | 319  | 16 | 161  | 5  | 371  | 21 | 27.1  |     |  |

KETERANGAN: - Tidak ada hujan.

\* Alat rusak.

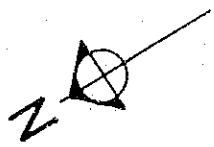
Total 3354 1213 936 - 729 1417 1919 1185 1703 1553 1601583

Note; Data from D/D report Nov., 1982.

| Location<br>Specification | Jatisari<br>Laboratory | Ciba<br>Geigy          | Hotel<br>(Located near<br>Jatisari Laboratory) |
|---------------------------|------------------------|------------------------|--|
| Form                      | SHALLOW WELL           | SHALLOW DEEP           | ELECTRIC SHALLOW<br>DEEP WELL PUMP             |
| Capacity(Suction head)    | 33 $\ell$ /min(8m)     | 20 $\ell$ /min(6m)     | 45 $\ell$ /min( 6 m)                           |
| "                         | —                      | 15.5 $\ell$ /min(12 m) | 34 $\ell$ /min(12 m)                           |
| "                         | —                      | —                      | 22 $\ell$ /min(18 m)                           |
| "                         | —                      | —                      | 15 $\ell$ /min(24 m)                           |
| "                         | —                      | —                      | 9 $\ell$ /min(30 m)                            |
| Discharge head            | 12m                    | —                      | 12m  |
| Suction pipe              | 1" (25 mm)             | 3/4 " (19 mm)          | 30mm   |
| Pressure pipe             | —                      | 25mm                   | 25~30mm  |
| Discharge pipe            | 1" (25 mm)             | —                      | 30mm   |
| Pressure switch           | 1.4~ 2.4kg/ $cm^2$     | —                      | 1.4~ 2.4kg/ $cm^2$                             |
| Out put                   | 250W                   | 300W                   | 400W   |
| Power source              | 110/220V               | 110/220V               | 110/220V                                       |
| Frequency                 | 50Hz                   | 50Hz                   | 50Hz   |
| [NOTE]                    |                        |                        |  |
| • Well depth              | • 20m                  | • 45m                  | • 36m  |
| • Pump maker              | • SANYO                | • HITACHI              | • SANYO  |

# JATISARI PEST FORECASTING CTR.

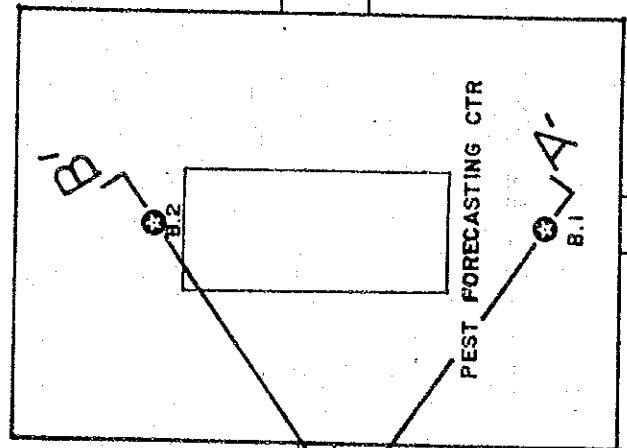
Drilling Data at Jatisari



RURAL EXT. SERVICE

to CIREBON

to JAKARTA

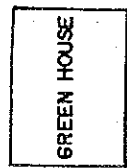
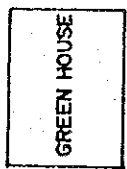
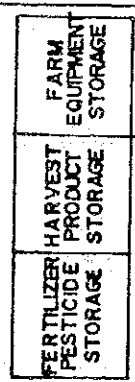
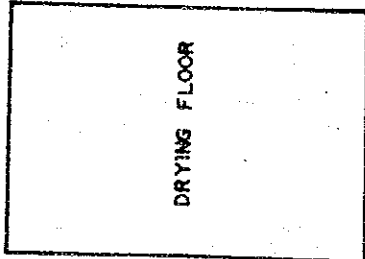




B.2

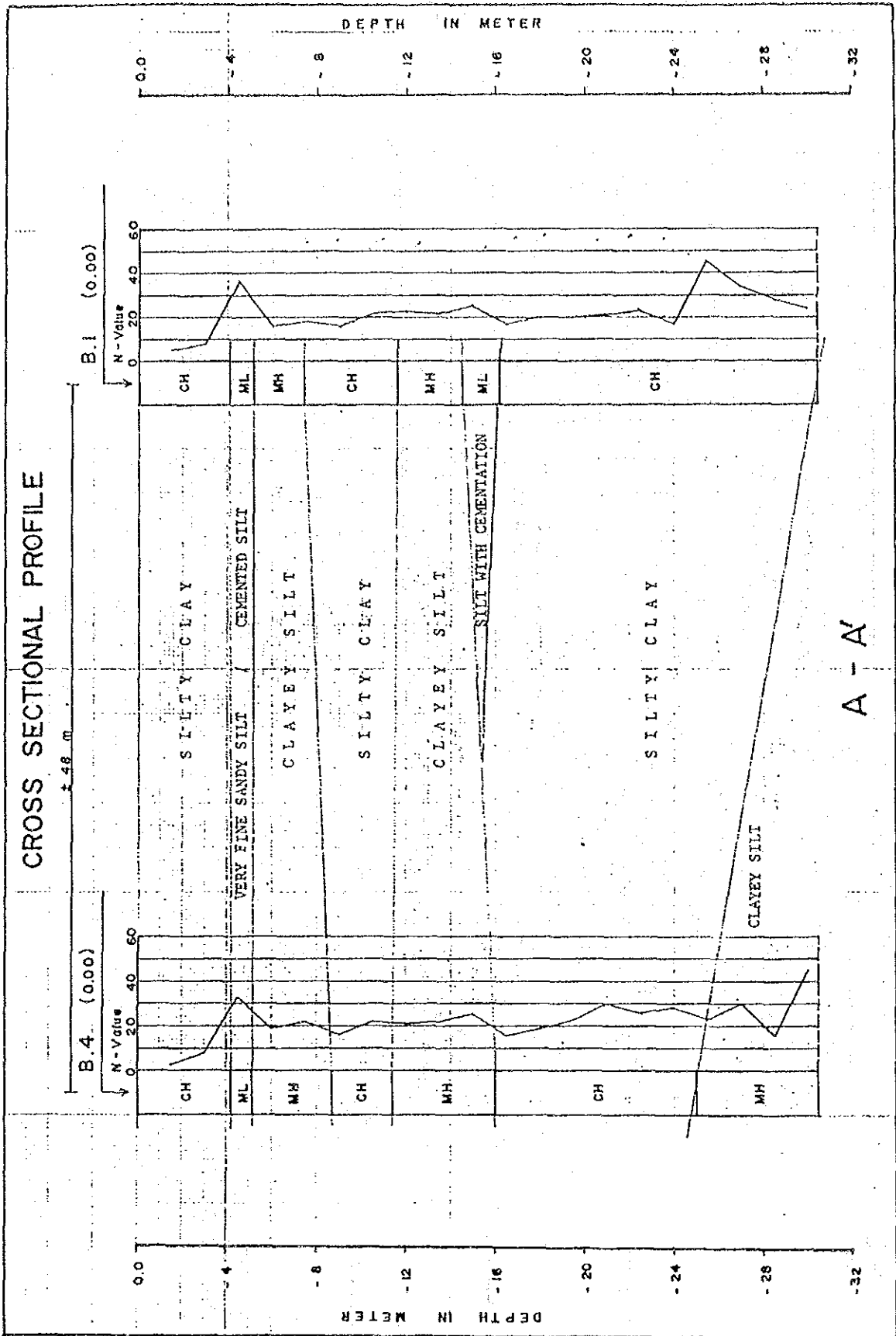
B.1

B.4

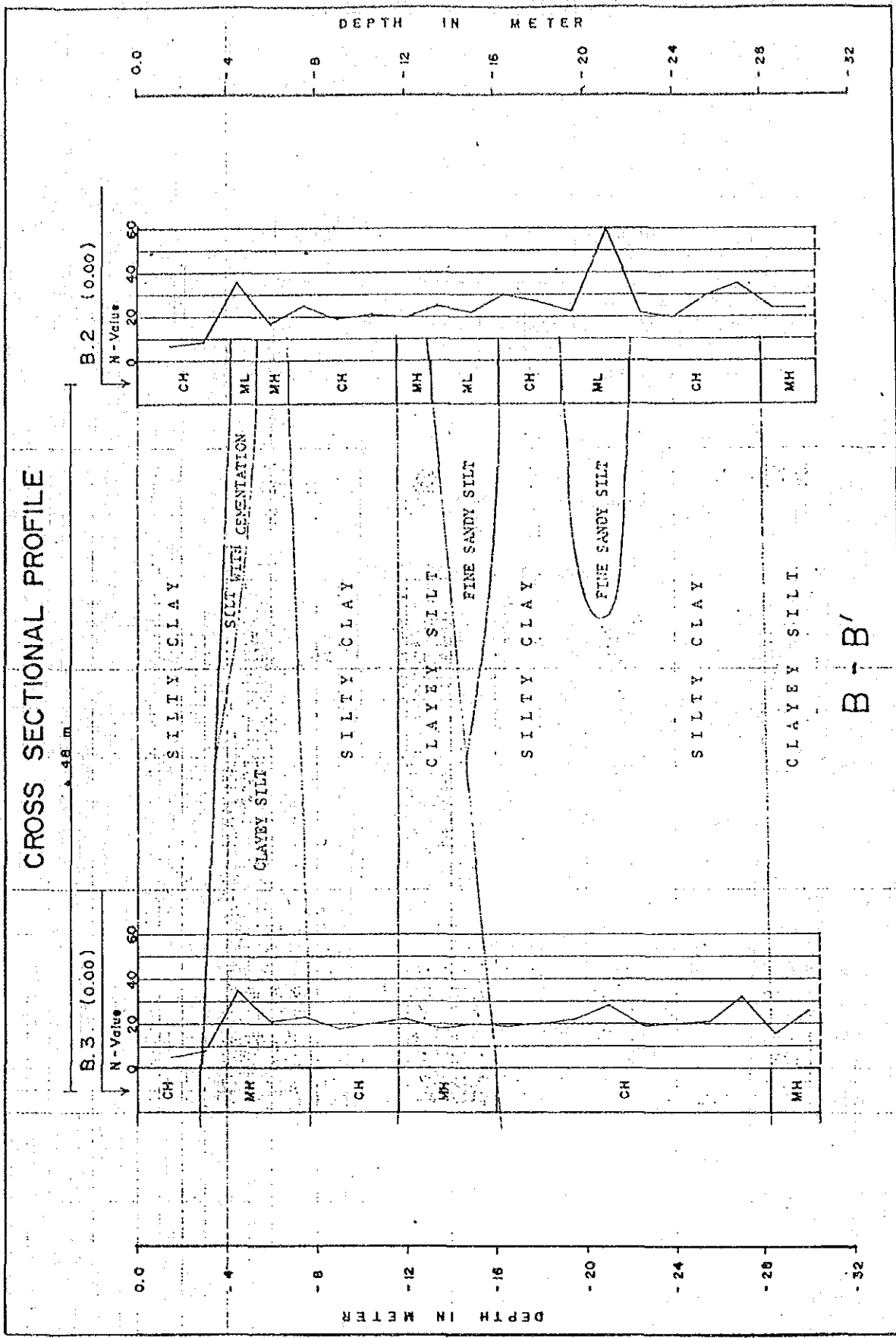
B.3



LEGEND:  
 BORING  
 EXISTING HOUSE  
 SCALE 1:500



A - A





# BORING PROFILE

PROJECT : PEST AND DISEASE FORECASTING AND CONTROL PROJECT  
 LOCATION : (ATA - 389), JATISARI, KARAWANG - WEST JAVA  
 BORING NO. : BH.1  
 ELEVATION :  
 GROUND WATER LEVEL : - 1.20 M

| SCALE (M) | DIAGRAM | SYMBOL      | SOIL DESCRIPTION   | SAMPLING DEPTH | STANDARD PENETRATION TEST |    |                   |
|-----------|---------|-------------|--|----------------|---------------------------|----|-------------------|
|           |         |             |  |                | DEPTH                     | N  | CURVE<br>10 30 50 |
| 0         |         | 0.00        |  |                |                           |    |                   |
|           |         | CH          | Medium stiff, dark brown silty clay.<br>Idem, colouring greyish brown.                 |                | 1.50<br>1.95              | 5  |                   |
|           |         |             | Idem.  |                | 3.00<br>3.45              | 8  |                   |
|           |         | 4.10<br>ML  | Hard, brownish grey cemented silt.   |                | 4.50<br>4.95              | 36 |                   |
| 5         |         | 5.20<br>MH  | Stiff, greyish brown clayey silt.  |                | 6.00<br>6.45              | 16 |                   |
|           |         | 7.40<br>CH  | Very stiff, light grey silty clay.<br>Colouring yellowish brown and light grey, stiff. |                | 7.50<br>7.95              | 18 |                   |
| 10        |         |             | Colouring yellowish brown, very stiff.   |                | 9.00<br>9.45              | 16 |                   |
|           |         | 11.60<br>MH | Very stiff, greyish brown clayey silt.   |                | 10.50<br>10.95            | 22 |                   |
|           |         |             | Idem.  |                | 12.00<br>12.45            | 23 |                   |
|           |         | 14.50<br>ML | Very stiff, yellowish brown silt with cementation.                                     |                | 13.50<br>13.95            | 22 |                   |
| 15        |         | 16.20<br>CH | Very stiff, yellowish brown and light grey silty clay.                                 |                | 15.00<br>15.45            | 25 |                   |
|           |         |             | Idem.  |                | 16.50<br>16.95            | 17 |                   |
|           |         |             | Idem.  |                | 18.00<br>18.45            | 20 |                   |
| 20        |         |             | Idem.  |                | 19.50<br>19.95            | 20 |                   |
|           |         |             | Idem.  |                | 21.00<br>21.45            | 21 |                   |
|           |         |             | Idem.  |                | 22.50<br>22.95            | 23 |                   |
| 25        |         |             | Idem, colouring greyish brown.   |                | 24.00<br>24.45            | 17 |                   |

| SCALE<br>(M) | DIA GRAM | SYMBOL<br>&<br>DEPTH | SOIL DESCRIPTION  | SAMPLING<br>DEPTH | STANDARD PENETRATION TEST |   |                   |
|--------------|----------|----------------------|---|-------------------|---------------------------|---|-------------------|
|              |          |                      |   |                   | DEPTH                     | N | CURVE<br>10 30 60 |
| 25           |          | 25.00                | Hard, reddish brown and light grey silty clay.<br><br>Idem, very stiff. |                   |                           |   |                   |
|              |          |                      |   | 25.50<br>25.95    | 45                        |   |                   |
|              |          |                      |   | 27.00<br>27.45    | 34                        |   |                   |
|              |          |                      |   | 28.50<br>28.95    | 28                        |   |                   |
| 30           | 30.45    | 30.00<br>30.45       | 24  |                   |                           |   |                   |
|              |          |                      | Boring terminated at a depth of 30.45 M,<br>on October 1, 1985.         |                   |                           |   |                   |
| 35           |          |                      |   |                   |                           |   |                   |
| 40           |          |                      |   |                   |                           |   |                   |
| 45           |          |                      |   |                   |                           |   |                   |
| 50           |          |                      |   |                   |                           |   |                   |
| 55           |          |                      |   |                   |                           |   |                   |

# BORING PROFILE

PROJECT : PEST AND DISEASE FORECASTING AND CONTROL PROJECT  
 LOCATION : (ATA - 389), JATISARI, KARAWANG - WEST JAVA  
 BORING NO. : BH.2  
 ELEVATION :  
 GROUND WATER LEVEL : - 1.10 M

| SCALE (M) | DIAGRAM | SYMBOL      | SOIL DESCRIPTION  | SAMPLING DEPTH | STANDARD PENETRATION TEST |          |                   |
|-----------|---------|-------------|---|----------------|---------------------------|----------|-------------------|
|           |         |             |   |                | DEPTH                     | N        | CURVE<br>10 30 50 |
| 0         |         | 0.00        |   |                |                           |          |                   |
|           |         | CH          | Medium stiff, greyish brown silty clay.                           |                | 1.50<br>1.95              | 7        |                   |
|           |         |             | Idem.   |                | 3.00<br>3.45              | 9        |                   |
| 5         |         | 4.20<br>ML  | Hard, dark brown silt with cementation.                           |                | 4.50<br>4.95              | 36       |                   |
|           |         | 5.40<br>MH  | Stiff, greyish brown clayey silt.                                 |                | 6.00<br>6.45              | 17       |                   |
|           |         | 6.80<br>CH  | Very stiff, yellowish brown and light grey silty clay.            |                | 7.50<br>7.95              | 25       |                   |
|           |         |             | Idem.   |                | 9.00<br>9.45              | 19       |                   |
| 10        |         |             | Colouring yellowish brown.  |                | 10.50<br>10.95            | 21       |                   |
|           |         | 11.60<br>MH | Very stiff, greyish brown clayey silt.                            |                | 12.00<br>12.45            | 20       |                   |
|           |         | 13.20<br>ML | Very stiff, dark brown fine sandy silt with trace of cementation. |                | 13.50<br>13.95            | 25       |                   |
| 15        |         |             | Idem.   |                | 15.00<br>15.45            | 22       |                   |
|           |         | 16.20<br>CH | Very stiff, greyish brown silty clay.                             |                | 16.50<br>16.95            | 30       |                   |
|           |         |             | Idem.   |                | 18.00<br>18.45            | 27       |                   |
| 20        |         | 19.00<br>ML | Very stiff, dark grey fine sandy silt.                            |                | 19.50<br>19.95            | 23       |                   |
|           |         |             | Idem, with trace of cementation hard.                             |                | 21.00<br>21.39            | 50<br>24 |                   |
|           |         | 22.00<br>CH | Very stiff, yellowish brown and light grey silty clay.            |                | 22.50<br>22.95            | 22       |                   |
| 25        |         |             | Idem.   |                | 24.00<br>24.45            | 20       |                   |

| SCALE<br>(M) | DIA GRAM | SYMBOL<br>&<br>DEPTH | SOIL DESCRIPTION  | SAMPLING<br>DEPTH | STANDARD PENETRATION TEST |   |           |    |    |
|--------------|----------|----------------------|---|-------------------|---------------------------|---|-----------|----|----|
|              |          |                      |   |                   | DEPTH                     | N | C U R V E |    |    |
|              |          |                      |   |                   |                           |   | 10        | 30 | 50 |
| 25           |          | 25.00                | Very stiff, yellowish brown and light grey silty clay.<br><br>Colouring reddish brown and light grey. |                   |                           |   |           |    |    |
|              |          | CI                   |   | 25.50<br>25.95    | 30                        |   |           |    |    |
|              |          | 28.00                | Very stiff, reddish brown and light grey clayey silt.   | 27.00<br>27.45    | 35                        |   |           |    |    |
|              |          | MI                   |   | 28.50<br>28.95    | 24                        |   |           |    |    |
| 30           |          | 30.45                | Idem.   | 30.00<br>30.45    | 24                        |   |           |    |    |
|              |          |                      | Boring terminated at a depth of 30.45 M, on October 5, 1985.  |                   |                           |   |           |    |    |
| 35           |          |                      |   |                   |                           |   |           |    |    |
| 40           |          |                      |   |                   |                           |   |           |    |    |
| 45           |          |                      |   |                   |                           |   |           |    |    |
| 50           |          |                      |   |                   |                           |   |           |    |    |
| 55           |          |                      |   |                   |                           |   |           |    |    |

# BORING PROFILE

PROJECT : PEST AND DISEASE FORECASTING AND CONTROL PROJECT  
 LOCATION : (ATA - 389), JATISARI, KARAWANG - WEST JAVA  
 BORING NO. : BH.3  
 ELEVATION :  
 GROUND WATER LEVEL : - 0.65 M

| SCALE (M) | DIAGRAM | SYMBOL | SOIL DESCRIPTION  | SAMPLING DEPTH  | STANDARD PENETRATION TEST |    |                   |
|-----------|---------|--------|---|---|---------------------------|----|-------------------|
|           |         |        |   |   | DEPTH                     | N  | CURVE<br>10 30 50 |
| 0         |         | 0.00   |   |   |                           |    |                   |
|           |         | CH     | Medium stiff, greyish brown silty clay.                         |   |                           |    |                   |
|           |         |        | Idem.   |   | 1.50<br>1.95              | 5  |                   |
|           |         | 2.80   |   |   | 3.00<br>3.45              | 8  |                   |
|           |         | MH     | Medium stiff, yellowish brown clayey silt with some fine sands. |   |                           |    |                   |
|           |         |        | Idem, colouring brown with trace of cementation very stiff.     |   | 4.50<br>4.95              | 35 |                   |
| 5         |         |        |   | Colouring brownish light grey, some fine sands and trace of cementation grades out. | 6.00<br>6.45              | 21 |                   |
|           |         | 7.70   |   |   | 7.50<br>7.95              | 23 |                   |
|           |         | CH     | Very stiff, yellowish brown and light grey silty clay.          |   |                           |    |                   |
|           |         |        | Idem, colouring brown.  |   | 9.00<br>9.45              | 18 |                   |
| 10        |         |        |   |   | 10.50<br>10.95            | 20 |                   |
|           |         | 11.60  |   |   | 12.00<br>12.45            | 22 |                   |
|           |         | MH     | Very stiff, greyish brown clayey silt.                          |   |                           |    |                   |
|           |         |        | Idem.   |   | 13.50<br>13.95            | 18 |                   |
| 15        |         |        |   | Idem.   | 15.00<br>15.45            | 20 |                   |
|           |         | 16.00  |   |   | 16.50<br>16.95            | 19 |                   |
|           |         | CH     | Very stiff, dark brown silty clay.                              |   |                           |    |                   |
|           |         |        | Idem.   |   | 18.00<br>18.45            | 20 |                   |
| 20        |         |        |   | Colouring brownish light grey.  | 19.50<br>19.95            | 22 |                   |
|           |         |        |   | Colouring yellowish brown and light grey  | 21.00<br>21.45            | 28 |                   |
|           |         |        | Colouring yellowish brown and light grey                        | 22.50<br>22.95  | 19                        |    |                   |
|           |         |        | Colouring reddish brown and light grey.                         | 24.00<br>24.45  | 20                        |    |                   |
| 25        |         | 25.00  |   |   |                           |    |                   |

SOILTEST & FOUNDATIONS

| SCALE<br>(M) | DIA GRAF | SYMBOL<br>&<br>DEPTH                             | SOIL DESCRIPTION  | SAMPLING<br>DEPTH | STANDARD PENETRATION TEST |    |                   |
|--------------|----------|--|---|-------------------|---------------------------|----|-------------------|
|              |          |  |   |                   | DEPTH                     | N  | CURVE<br>10 30 50 |
| 25           |          | 25.00  | Very stiff, brown and grey silty clay.                        |                   | 25.50                     | 21 |                   |
|              |          | 25.95  |   |                   |                           |    |                   |
|              |          | 27.00  | Idem, colouring reddish brown and light grey.                 |                   | 27.45                     | 32 |                   |
|              |          | 28.30  |   |                   |                           |    |                   |
|              | MH       | Stiff, reddish brown and light grey clayey silt. |   | 28.50             | 16                        |    |                   |
|              |          |  |   | 28.95             |                           |    |                   |
| 30           |          | 30.45  | Idem, very stiff.   |                   | 30.00                     | 26 |                   |
|              |          |  | Boring terminated at a depth of 30.45 M, on October 14, 1985. |                   | 30.45                     |    |                   |
| 35           |          |  |   |                   |                           |    |                   |
| 40           |          |  |   |                   |                           |    |                   |
| 45           |          |  |   |                   |                           |    |                   |
| 50           |          |  |   |                   |                           |    |                   |
| 55           |          |  |   |                   |                           |    |                   |

# BORING PROFILE

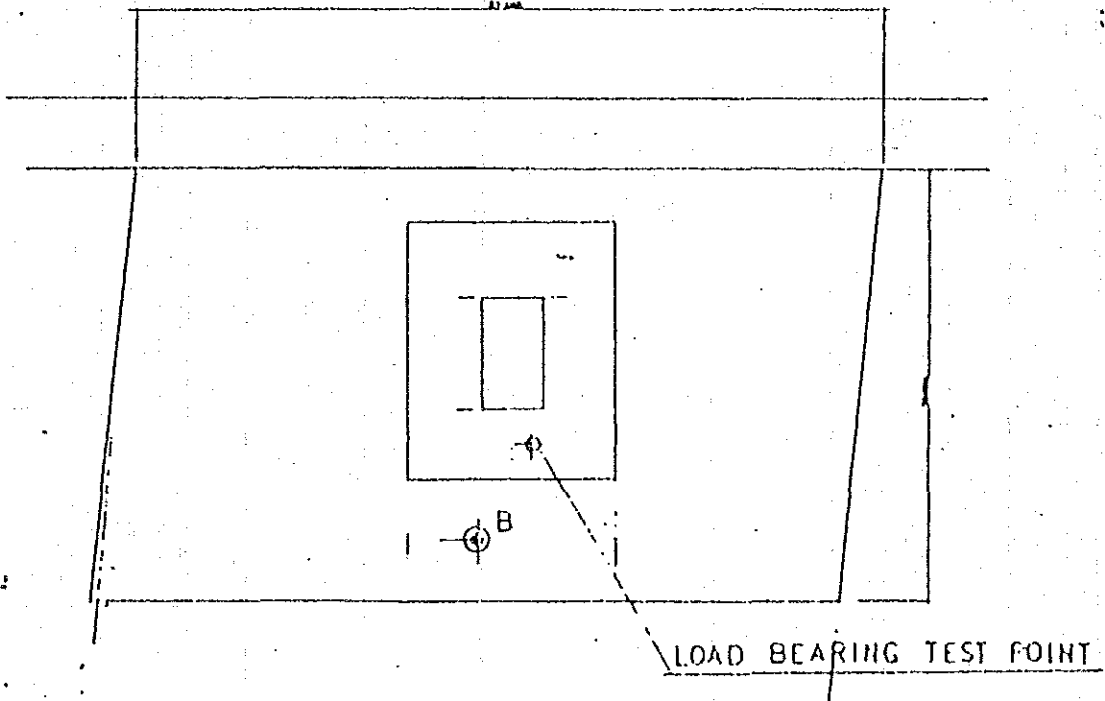
PROJECT : PEST AND DISEASE FORECASTING AND CONTROL PROJECT  
 LOCATION : (ATA - 389), JATISARI, KARAWANG - WEST JAVA  
 BORING NO. : BH.4  
 ELEVATION :  
 GROUND WATER LEVEL :  $\pm 0.00$  M

| SCALE (M) | DIAGRAM | SYMBOL      | SOIL DESCRIPTION  | SAMPLING DEPTH | STANDARD PENETRATION TEST |    |                   |
|-----------|---------|-------------|---|----------------|---------------------------|----|-------------------|
|           |         |             |   |                | DEPTH                     | N  | CURVE<br>10 30 50 |
| 0         |         | 0.00        |   |                |                           |    |                   |
|           |         | CH          | Very soft, dark grey silty clay with roots of grass.<br>Colouring greyish brown, roots of grass grades out, soft. |                | $\frac{1.50}{1.95}$       | 3  |                   |
|           |         |             | Idem, medium stiff.   |                | $\frac{3.00}{3.45}$       | 8  |                   |
|           |         | 4.20<br>ML  | Very stiff, greyish brown very fine sandy silt.   |                | $\frac{4.50}{4.95}$       | 33 |                   |
| 5         |         | 5.15<br>MH  | Very stiff, greyish light brown clayey silt.<br>Colouring brown and light grey.                                   |                | $\frac{6.00}{6.45}$       | 19 |                   |
|           |         |             |   |                | $\frac{7.50}{7.95}$       | 22 |                   |
|           |         | 8.70<br>CH  | Stiff, light grey and brown silty clay.   |                | $\frac{9.00}{9.45}$       | 16 |                   |
| 10        |         |             | Idem, very stiff.   |                | $\frac{10.50}{10.95}$     | 22 |                   |
|           |         | 11.40<br>MH | Very stiff, light grey and brown clayey silt.   |                | $\frac{12.00}{12.45}$     | 21 |                   |
|           |         |             | Idem.   |                | $\frac{13.50}{13.95}$     | 22 |                   |
| 15        |         |             | Idem.   |                | $\frac{15.00}{15.45}$     | 25 |                   |
|           |         | 16.00<br>CH | Stiff, dark grey silty clay.  |                | $\frac{16.50}{16.95}$     | 16 |                   |
|           |         |             | Idem, very stiff.   |                | $\frac{18.00}{18.45}$     | 19 |                   |
| 20        |         |             | Colouring brown and light grey.   |                | $\frac{19.50}{19.95}$     | 23 |                   |
|           |         |             | Colouring dark brown and dark grey.   |                | $\frac{21.00}{21.45}$     | 30 |                   |
|           |         |             | Colouring yellowish brown and grey.   |                | $\frac{22.50}{22.95}$     | 26 |                   |
| 25        |         | 25.00       | Colouring reddish brown and light grey.   |                | $\frac{24.00}{24.45}$     | 28 |                   |

| SCALE<br>(M) | DIA GRAM | SYMBOL<br>&<br>DEPTH | SOIL DESCRIPTION   | SAMPLING<br>DEPTH | STANDARD PENETRATION TEST |   |           |    |    |
|--------------|----------|----------------------|--|-------------------|---------------------------|---|-----------|----|----|
|              |          |                      |  |                   | DEPTH                     | N | C U R V E |    |    |
|              |          |                      |  |                   |                           |   | 10        | 30 | 50 |
| 25           |          | 25.00                | Very stiff, yellowish brown and light grey clayey silt.<br><br>Idem, colouring light grey and yellowish brown.<br><br>Idem.<br><br>Idem, hard. |                   |                           |   |           |    |    |
|              |          |                      |  | 25.50<br>25.95    | 23                        |   |           |    |    |
|              |          |                      |  | 27.00<br>27.45    | 30                        |   |           |    |    |
|              |          |                      |  | 28.50<br>28.95    | 16                        |   |           |    |    |
| 30           |          | 30.45                |  |                   |                           |   |           |    |    |
|              |          |                      | Boring terminated at a depth of 30.45M,<br>on October 10, 1985.  |                   |                           |   |           |    |    |
| 35           |          |                      |  |                   |                           |   |           |    |    |
| 40           |          |                      |  |                   |                           |   |           |    |    |
| 45           |          |                      |  |                   |                           |   |           |    |    |
| 50           |          |                      |  |                   |                           |   |           |    |    |
| 55           |          |                      |  |                   |                           |   |           |    |    |

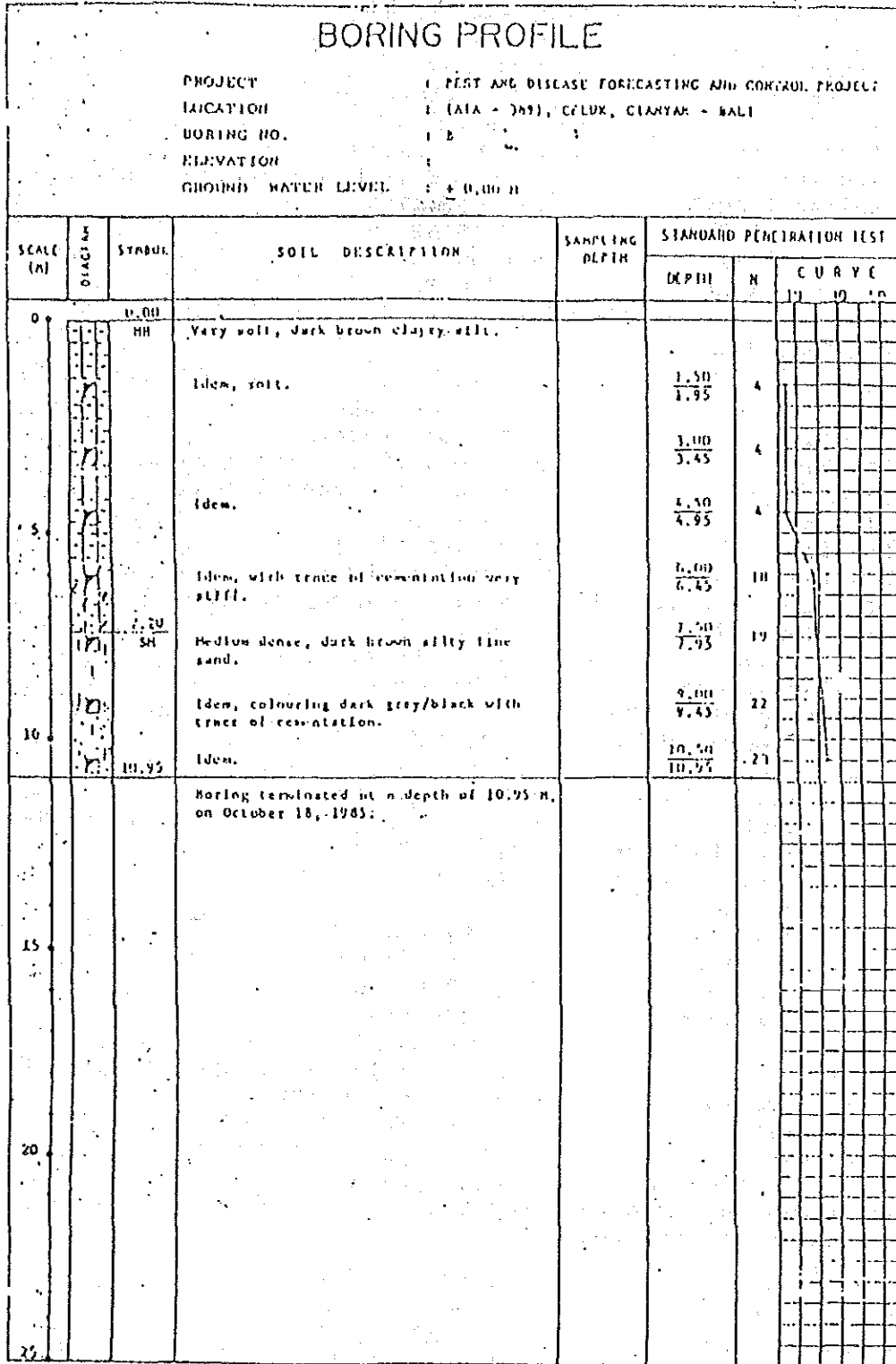


Drilling Data at Celuk



SOIL INVESTIGATIONS

SITE : GIANYAR



BEARING CAPACITY : 6.0  $\frac{1}{m^2}$   
 SOIL STABILIZATION BY LIME SHALL BE EXECUTED.

SPICIFICATION OF NISSAN-TAIYO DIESEL GENERATING SET.

|                         |   |
|-------------------------|---|
| 1). Type                | : Weather proof bonnet, stationary      |
| Capacity prime          | : 13,8 KVA                              |
| standby                 | : 15 KVA                                |
| No of phase, wire, pole | : 3 $\phi$ , 4, 4                       |
| Voltage                 | : 380/220 V                             |
| Frequency               | : 50 Hz                                 |
| Power factor            | : 0,8 (lagging)                         |
| Speed                   | : 1500 rpm                              |
| Starting system         | : Auto start & stop                     |
| Coupled method          | : direct with SAE adaptor flexible disc |
| Dimensions length       | : 1550 mm.                              |
| width                   | : 850 mm                                |
| height                  | : 1100 mm                               |
| weight                  | : 800 kg                                |

Diesel engine :

|  |  |
|--|--|
| Type                                     | : 4 stroke, water cooled, generator use constant speed |
| Brand                                    | : Nissan diesel  |
| Manufacturer                             | : Nissan diesel motor corp. ltd.                       |
| Governor type                            | : Mechanical centrifugal                               |
| Model                                    | : SD-1605.   |
| Aspiration                               | : Natural  |
| Combustion system                        | : Swirl combustion                                     |
| No of cyl & arrangement                  | : 3 cyl vertical in line                               |
| Compression ratio                        | : 20,8 : 1   |
| Bore x stroke                            | : 83 x 100 mm  |
| Total displacement                       | : 1.623 cc.  |
| Rating prime DIN 6270A                   | : 17,5 HP  |
| Rating standby DIN 6270B                 | : 19,2 HP  |
| Piston speed                             | : 5 M/second   |
| Engine speed                             | : 1500 rpm   |
| Speed distortion                         |  |
| permanent change                         | : +/- 5%   |
| temporary change                         | : +/- 10%  |
| Fuel consumption                         |  |
| at 25% load                              | : 1,10 L/hour  |
| 50% load                                 | : 2,15 L/hour  |
| 75% load                                 | : 3,20 L/hour  |
| 100% load                                | : 4,20 L/hour  |
| Fuel oil                                 | : ASTM No.2D   |
| Lub oil                                  | : API service grade SAE 30 class CD                    |
| Starting system                          | : Electric DC-12V                                      |
| Cooling system                           | : Water by radiator                                    |
| Heat rejection                           | : 85 million jule/hour                                 |
| Exhaust gas flow                         | : 8,5 M <sup>3</sup> /hour                             |
| Exhaust gas temperature                  | : 520 C  |
| Torsional vibration characteristic       |  |
| cyl No.1 (GD 2)                          | : 0,0711 kg/M <sup>2</sup>                             |
| cyl No.2 (GD 2)                          | : 0,0421 kg/M <sup>2</sup>                             |
| cyl No.3 (GD 2)                          | : 0,0713 kg/M <sup>2</sup>                             |
| flywheel (GD 2)                          | : 1,5210 kg/M <sup>2</sup>                             |
| Noise level 1 M from left side of engine | : 76 db  |

Generator :

Type : Drip proof, screen protection, self ventilating, single bearing construction tropically insulated c/w winding damper

Brand : Taiyo

Manufacturer : Taiyo Electric Mfg Ltd

Model : T7-357B1

Output : 15,6 KVA

Efficiency : 83,9 %

Voltage : 380/220V

Frequency : 50 Hz

No of phase, wire, pole : 3, 4, 4

Power factor : 0,8-(lagging)-

Rating : Continuous duty, standby duty

Degree of protection : IP-21

Revolution : 1500 rpm

Excitation : Brushless, self exciter

Insulation class : F

Ambient temperature : 40 C

Rule : NEMA, BS

Altitude above sea level : 1000 M

Voltage regulation (no load to balance full load) : +/- 1,5%

Wave form distortion factor (no load phase - phase) : 3%

Telephon influence factor (no load phase - phase) : Less than 50

Telephon harmonic factor (no load phase - phase) : 2%

Radio interference suppression : Well under commercial standard

Voltage stability : +/- 0,25%

Under speed protection : Volts per hertz protection circuit built in automatic voltage regulator

Over speed : 25%

Over load capacity : 10% at 1 hour/ 12 hours periode operation

Voltage adjustment limit : +/- 5%

Unbalance load : 15% at continuous operation 20% for 15 minutes only

Scope of supply :

- Diesel engine
- Generator
- Exhaust silencer, flexible pipe & flanges
- Autoshtutdown device for low oil pressure & high water cooling temperature
- Radiator kit
- Air cleaner kit
- Starting battery
- Engine tools kit
- Operation manual

- Auto stater unit & control panel : 1 pc hour counter
- 1 pc tachometer
- 1 pc lub oil pressure indicator lamp
- 1 pc water temperature
- 1 pc starting switch
- 1 pc MCCB 3 Ø for over load trip & over current trip
- 1 pc AVR
- 1 source lamp
- 1 set fuse for control circuit
- 1 pc hand trimer voltage adjusting
- 1 set auto battery charger
- 1 set out put load terminal
- 1 set off - man - auto selector switch
- 1 set start - stop push button switch
- 1 set fuel daily tank 40 L.
- 1 set weather proof type bonnet

## Data for Deep Well Pumps

### APPLICATIONS

Waterworks  
Factories  
Fountains

Agriculture  
Buildings

### FEATURES

1. Higher operating efficiency over a wider range of capacities, lowers operational cost.
2. Trouble-free operation, ease of maintenance.
3. No pump house required, silent operation.
4. Enclosed motor filled with fresh water enables pump to handle water containing some sediment.
5. Safe, continuous operation.

### SPECIFICATIONS

|                           | STANDARD   | OPTIONAL  |
|---------------------------|--|---|
| Well dia:                 | 75 mm (3in) to 300 mm (12in)   |   |
| Capacity:                 | 50Hz: To 6.5m <sup>3</sup> /min<br>(To 1717 USGPM or 1430 ImpGPM)<br>60Hz: To 8m <sup>3</sup> /min<br>(To 2114 USGPM or 1760 ImpGPM) |   |
| Head range:               | 50Hz: To 360m (1180 ft)<br>60Hz: To 360m (1180 ft)   |   |
| Synchronous speed:        | 50Hz: 3000 min <sup>-1</sup><br>60Hz: 3600 min <sup>-1</sup>   |   |
| Rotation:                 | C.C.W. when viewed from motor  |   |
| Liquid handled:           | Well water   |   |
| Temperature limit:        | 0 to 40°C (32 to 104°F)  |   |
| PH limit:                 | 6.5 to 8.0   |   |
| Contained sand limit:     | To 50 p.p.m  | Larger duties available   |
| Sand size limit:          | To 0.25 mm   | Larger duties available   |
| Contained chlorine limit: | To 500 p.p.m   | Larger duties available   |
| Material:                 |  |   |
| Bowl                      | Cast iron  | Stainless steel/Bronze/Cast steel   |
| Impeller                  | Stainless steel for 100 mm (4in) Well<br>Bronze-for 150 mm (6in) to 300 mm (12in) Well   | Stainless steel/Bronze  |
| Shaft                     | Stainless steel  |   |
| Motor:                    |  |   |
| Casing material           | Steel  | Stainless steel   |
| Start system:             |  |   |
| Line start                | 0.75 to 132 kW (1 to 175 HP)   | Start systems for larger capacity motors  |
| Star delta start          | 5.5 kW to 132 kW (7.5 to 175 HP)   | Reactor start/Kondorfer start   |
| Others                    |  | Closed-circuit transition type star-delta start   |
| Accessories               | Submersible cable....5m  | Automatic air vent valve<br>Main riser pipe<br>Cable clips<br>Companion flange<br>Well cover with discharge elbow<br>Anchor bolts for well cover<br>Compound gauge<br>Check valve<br>Gate valve<br>Control panel<br>Electrode for well level control device |

## ACCESSORIES

### 1. Riser pipes:

Riser pipes, which convey pump discharge to ground level, also support the pump. Generally made of steel, they are connected by flanges made to JIS B 8324 standards. Flanges are notched to accommodate power cable and low water level electrode. BHS pumps used for "4" wells use threaded pipe connections.

### 2. Discharge elbow

Used to connect the riser pipe to valves and system piping, the discharge elbow provides mountings for a compound gauge and automatic air vent. Flange on suction piping side conforms to JIS B 8324 standards and flange on check valve side is JIS 10 kg/cm<sup>2</sup> thin type.

### 3. Check valve

This one-way check valve prevents reverse water flow. Malfunction of this valve can cause reverse pump rotation and damage to pump and motor.

### 4. Sluice valve

Controls pump output.

### 5. Automatic air vent valve

Automatically vents suction piping during start-up and permits air entry after pump is stopped.

### 6. Compound gauge

Indicates discharge pressure of the pump, which is the sum of the measured value, operational water level and friction loss.

### 7. Well cover

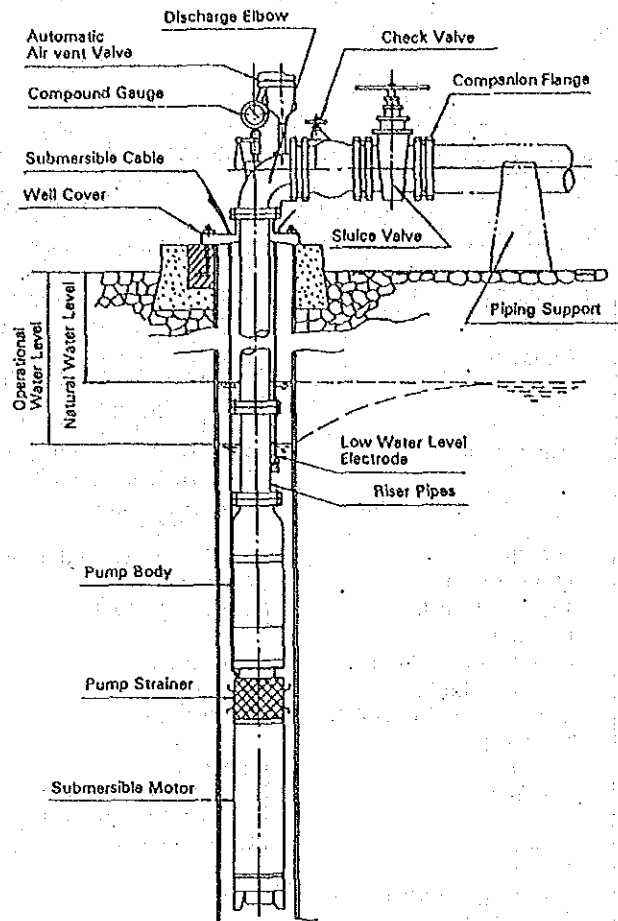
The well cover, split to facilitate pump installation, supports weight of pump and riser pipes and has openings for necessary cabling.

### 8. Submersible cable

The flat vinyl power cable is easily installed and will not swell or deteriorate.

### 9. Low water level electrode

Provides for automatic pump operation and prevents dry operation.



# DIMENSIONS

■ Min. Well dia 150mm (6 in.)

| 50Hz              |              |                 |          |             |                  |        |
|-------------------|--------------|-----------------|----------|-------------|------------------|--------|
| Model             | Impeller No. | Dimensions (mm) |          |             | Weight (Mass) kg | Figure |
|                   |              | Disch. Size D   | Length L | Max. Dia. D |                  |        |
| 40BHS 5-1.5       | 6A           | 440             | 1197     | 140         | 80               | B      |
| 40BHS 7-2.2       |              |                 | 1418     | 140         | 81               |        |
| 40BHS 12-3.7      |              |                 | 1648     | 140         | 102              |        |
| 40BHS 15-5.5      |              |                 | 1837     | 142         | 116              |        |
| 40BHS 18-5.5      |              |                 | 1981     | 142         | 126              |        |
| 40BHS 20-7.5      |              |                 | 2142     | 142         | 139              |        |
| 40BHS 24-7.5LHT   | 1 1/2 B      | 440             | 2631     | 142         | 168              | C      |
| 40BHS 29-11       |              |                 | 2899     | 142         | 196              |        |
| 40BHS 35-11LHT    |              |                 | 3278     | 142         | 220              |        |
| 50BHS 3-1.5       | 6B           | 450             | 1101     | 140         | 33               | B      |
| 50BHS 5-2.2       |              |                 | 1320     | 140         | 44               |        |
| 50BHS 8-3.7       |              |                 | 1456     | 140         | 77               |        |
| 50BHS 12-5.5      |              |                 | 1693     | 142         | 95               |        |
| 50BHS 15-7.5      |              |                 | 1902     | 142         | 112              |        |
| 50BHS 18-7.5      |              |                 | 2046     | 142         | 122              |        |
| 50BHS 22-11       | 2B           | 450             | 2563     | 142         | 158              | C      |
| 50BHS 27-11       |              |                 | 2803     | 142         | 179              |        |
| 50BHS 30-15LHT    |              |                 | 3180     | 142         | 206              |        |
| 50BHS 33-15LHT    | 6D           | 465             | 3374     | 142         | 218              | B      |
| 55BHS 4-2.2       |              |                 | 1320     | 140         | 45               |        |
| 55BHS 6-3.7       |              |                 | 1452     | 140         | 74               |        |
| 55BHS 9-5.5       |              |                 | 1657     | 142         | 87               |        |
| 55BHS 12-7.5      |              |                 | 1902     | 142         | 102              |        |
| 55BHS 15-11       |              |                 | 2287     | 142         | 127              |        |
| 55BHS 18-11       | 2 1/2 B      | 465             | 2447     | 142         | 136              | C      |
| 55BHS 20-15       |              |                 | 2707     | 142         | 157              |        |
| 55BHS 24-15LHT    |              |                 | 3180     | 142         | 174              |        |
| 55BHS 27-18.5SLHT |              |                 | 3460     | 144         | 213              |        |
| 55BHS 30-18.5SLHT |              |                 | 3779     | 144         | 237              |        |
| 55BHS 4-3.7       |              |                 | 6E       | 3B          | 1423             |        |
| 55BHS 6-5.5       | 1688         | 143             |          |             | 102              |        |
| 55BHS 8-7.5       | 1973         | 143             |          |             | 122              |        |
| 55BHS 9-11        | 2268         | 143             |          |             | 145              |        |
| 55BHS 11-11       | 2489         | 143             |          |             | 159              |        |
| 55BHS 13-15       | 2848         | 143             |          |             | 188              |        |
| 55BHS 15-15       | 6G           | 3B              | 3068     | 143         | 202              | D      |
| 55BHS 18-18.5SLHT |              |                 | 3611     | 145         | 253              |        |
| 55BHS 20-22SLHT   |              |                 | 3950     | 145         | 282              |        |
| 55BHS 4-5.5       |              |                 | 1528     | 143         | 92               |        |
| 55BHS 5-7.5       |              |                 | 1718     | 143         | 106              |        |
| 55BHS 7-11        |              |                 | 2153     | 143         | 138              |        |
| 55BHS 10-15       | 6G           | 3B              | 2668     | 143         | 171              | D      |
| 55BHS 12-18.5SLHT |              |                 | 3131     | 145         | 223              |        |
| 55BHS 14-22SLHT   |              |                 | 3500     | 145         | 254              |        |

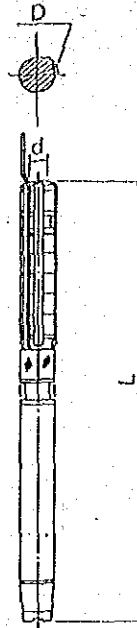


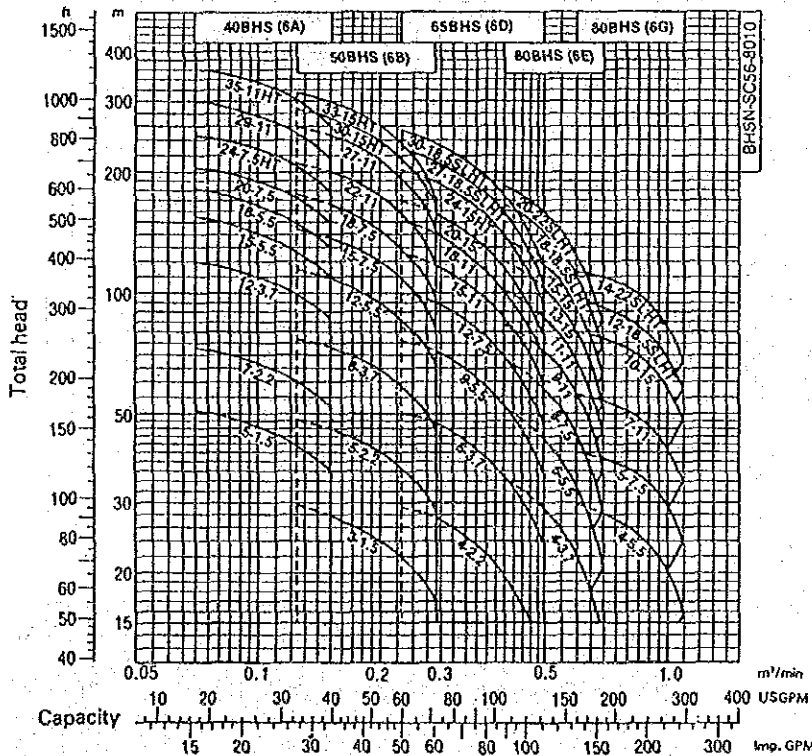
Figure: A



Figure: C

■ Min. Well diameter 150mm (6 in.)

The 80 BHS is for 200mm (6 in.) if flange type.



### Symbols

- 32 BHS (4A) 11-5.75
- Motor output: kW
- S: Single phase
- No mark: Three phase
- Frequency 5: 50Hz
- No. of stages.
- Impeller No.
- Model
- Discharge size: mm



# DENYO DCA A&LB SERIES

## SPECIFICATIONS

| Model                    |  |  | DCA-14AM   | DCA-14LBM | DCA-17AM        | DCA-17LBM | DCA-20AM       | DCA-20LBM |
|--------------------------|--|--|--|-----------|-----------------|-----------|----------------|-----------|
| Alternator               | Model  |  | DH-14AM  |           | DH-17AM         |           | DH-20AM        |           |
|                          | Output Rating (kVA)                          | 50 Hz                                  | Prime  | 10        |                 | 12.5      |                | 16        |
|                          |  |  | Standby  | 11        |                 | 13        |                | 17.5      |
|                          |  | 60 Hz                                  | Prime  | 14        |                 | 17.5      |                | 20        |
|                          |  |  | Standby  | 15        |                 | 19        |                | 22        |
|                          | No. of Phases                                |  | 3-Phase, 4-Wire System   |           |                 |           |                |           |
|                          | Rated Voltage (Line-to-Line/Line-to-neutral) |  | Single Voltage System: 440/254, 415/240, 400/230, 380/220 230/133, 220/127, or 200/115 volts |           |                 |           |                |           |
|                          | Rated Frequency/Rated Speed                  |  | 50Hz/1500rpm or 60Hz/1800rpm   |           |                 |           |                |           |
|                          | Power Factor                                 |  | 0.8 (Lagging)  |           |                 |           |                |           |
|                          | Voltage Regulation                           |  | Within $\pm 2.5\%$   |           |                 |           |                |           |
| Excitation               |  | Brushless, Rotating Exciter (with AVR) |  |           |                 |           |                |           |
| Insulation               |  | Class F                                |  |           |                 |           |                |           |
| Engine                   | Make & Model                                 |  | Mitsubishi S2E   |           | Mitsubishi S2E2 |           | Mitsubishi S3E |           |
|                          | Output Rating (PS)                           | 50 Hz                                  | Prime  | 14        |                 | 16.5      |                | 21        |
|                          |  |  | Standby  | 15        |                 | 17.5      |                | 23        |
|                          |  | 60 Hz                                  | Prime  | 18        |                 | 20.5      |                | 26        |
|                          |  |  | Standby  | 19        |                 | 21.5      |                | 28        |
|                          | Rated Speed                                  |  | 1500/1800rpm   |           |                 |           |                |           |
|                          | Bore (mm) X Stroke (mm)                      |  | 94 X 94  |           | 98 X 98         |           | 94 X 94        |           |
|                          | Piston Displacement (cc)                     |  | 1300   |           | 1480            |           | 1960           |           |
|                          | No. of Cylinders                             |  | 2  |           | 2               |           | 3              |           |
|                          | Fuel   |  | JIS No. 2 or ASTM No. 2 Diesel Fuel, or Equivalent   |           |                 |           |                |           |
|                          | Fuel Consumption (50/60 Hz, l/hr)            |  | 3.5/4.5  |           | 4.2/5.2         |           | 5.3/6.5        |           |
|                          | Lube Oil Sump Capacity (l)                   |  | 4.5  |           | 4.5             |           | 6.5            |           |
|                          | Governor                                     |  | Mechanical All Speed Governor  |           |                 |           |                |           |
|                          | Starting Motor (V-kW)                        |  | 12 - 2   |           |                 |           |                |           |
| Charging Generator (V-A) |  | 12 - 35                                |  |           |                 |           |                |           |
| Air Cleaner Type         |  | Dry                                    |  |           |                 |           |                |           |
| Coolant Capacity (l)     |  | 4.5                                    |  | 6         |                 | 7         |                |           |
| Battery Capacity (Ah)    |  | 50 X 1                                 |  |           |                 |           |                |           |
| Fuel Tank Capacity (l)   |  | Unit-Mounted                           |  | 40        |                 |           |                |           |
| Dimensions & Weights     | Length (mm)                                  |  | 1360   | 1300      | 1360            | 1300      | 1500           | 1500      |
|                          | Width (mm)                                   |  | 720  | 700       | 720             | 700       | 720            | 700       |
|                          | Height (mm)                                  |  | 1170   | 1330      | 1170            | 1330      | 1170           | 1350      |
|                          | Weight (kg)                                  |  | 510  | 480       | 520             | 500       | 600            | 550       |

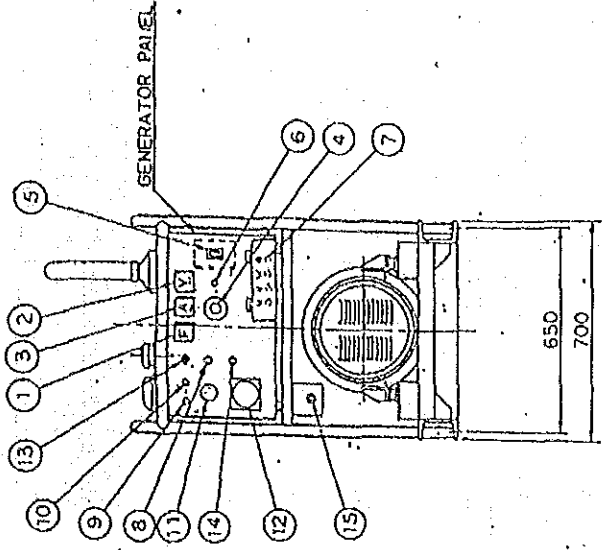
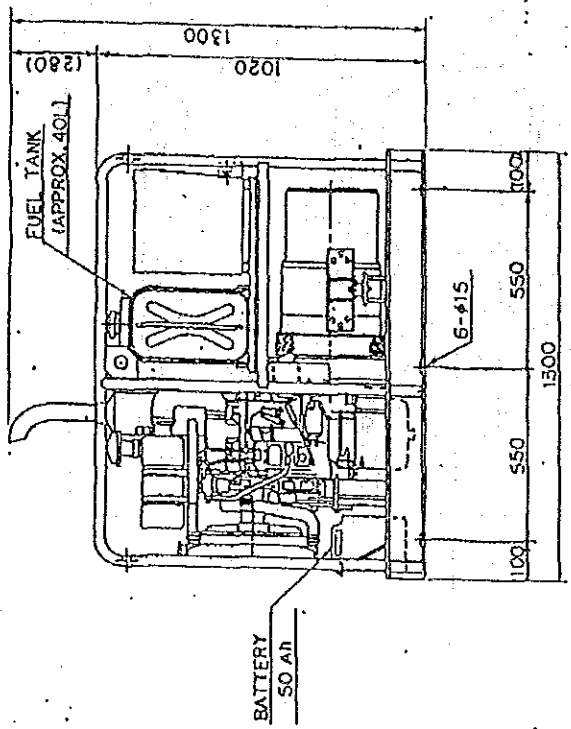
Specifications are subject to change without notice for further improvement.

Direct inquiries to the nearest Denyo distributor or to Denyo Co., Ltd.

Power Source Professionals  
**Denyo Co., Ltd.**

HEAD OFFICE  
 4-2-2 Kamikida, Nakano-ku, Tokyo 164, Japan  
 Phone: TOKYO 2281-1111 FAX: 198-1855  
 Cable: DENWELTYO JKYO  
 Telex: 232-2938 DENYO J

Printed in Japan



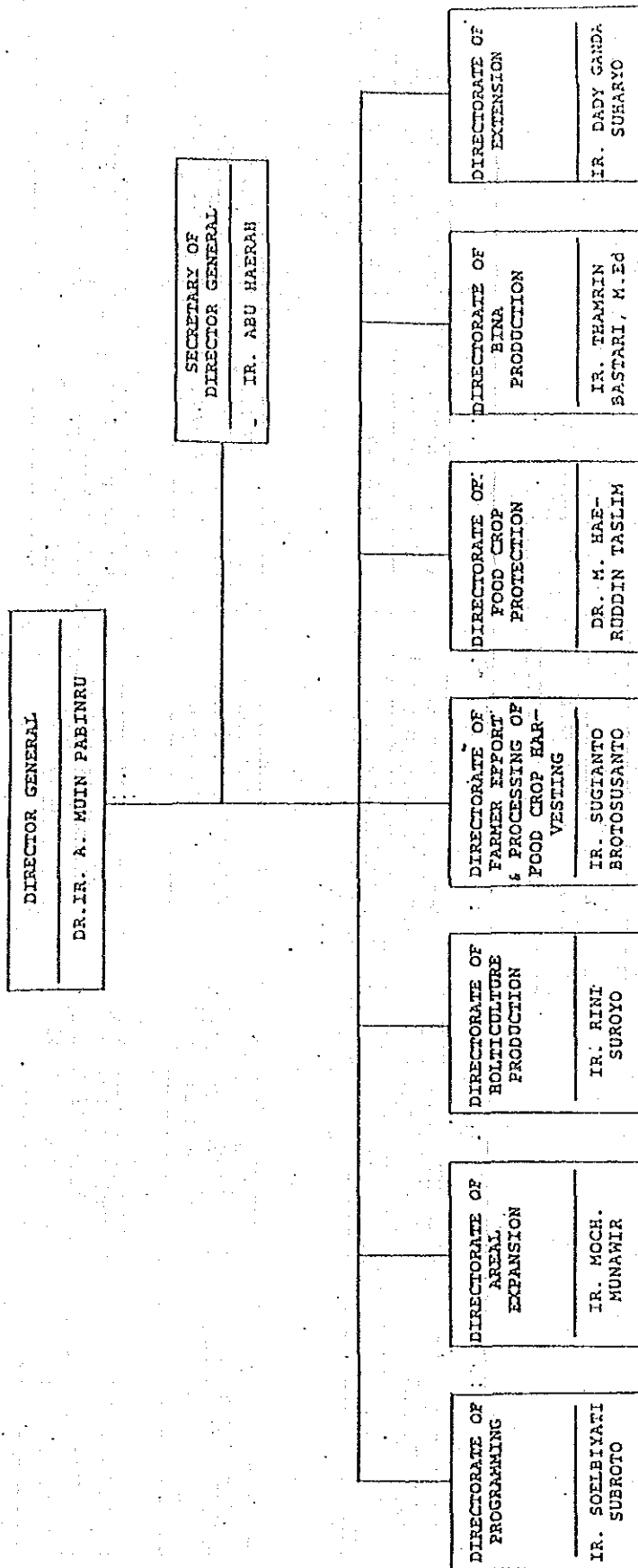
| GENERATOR PANEL |                         |                            |
|-----------------|-------------------------|----------------------------|
| No.             | PARTS NAME              | No. PARTS NAME             |
| 1               | FREQUENCY METER         | 11 WATER TEMPERATURE GAUGE |
| 2               | AC VOLT METER           | 12 TACHOMETER              |
| 3               | AC AMMETER              | 13 STOP BUTTON             |
| 4               | VOLTAGE REGULATOR       | 14 STARTING SWITCH         |
| 5               | CIRCUIT BREAKER         | 15 THROTTLE HANDLE         |
| 6               | PILOT LAMP              |                            |
| 7               | OUTPUT TERMINAL         |                            |
| 8               | PREHEATING LAMP         |                            |
| 9               | CHARGING ALARM LAMP     |                            |
| 10              | OIL PRESSURE ALARM LAMP |                            |

ENGINE MITSUBISHI S2E  
 GENERATOR DH-14A-M  
 DRY WEIGHT APPROX. 480 K.G.

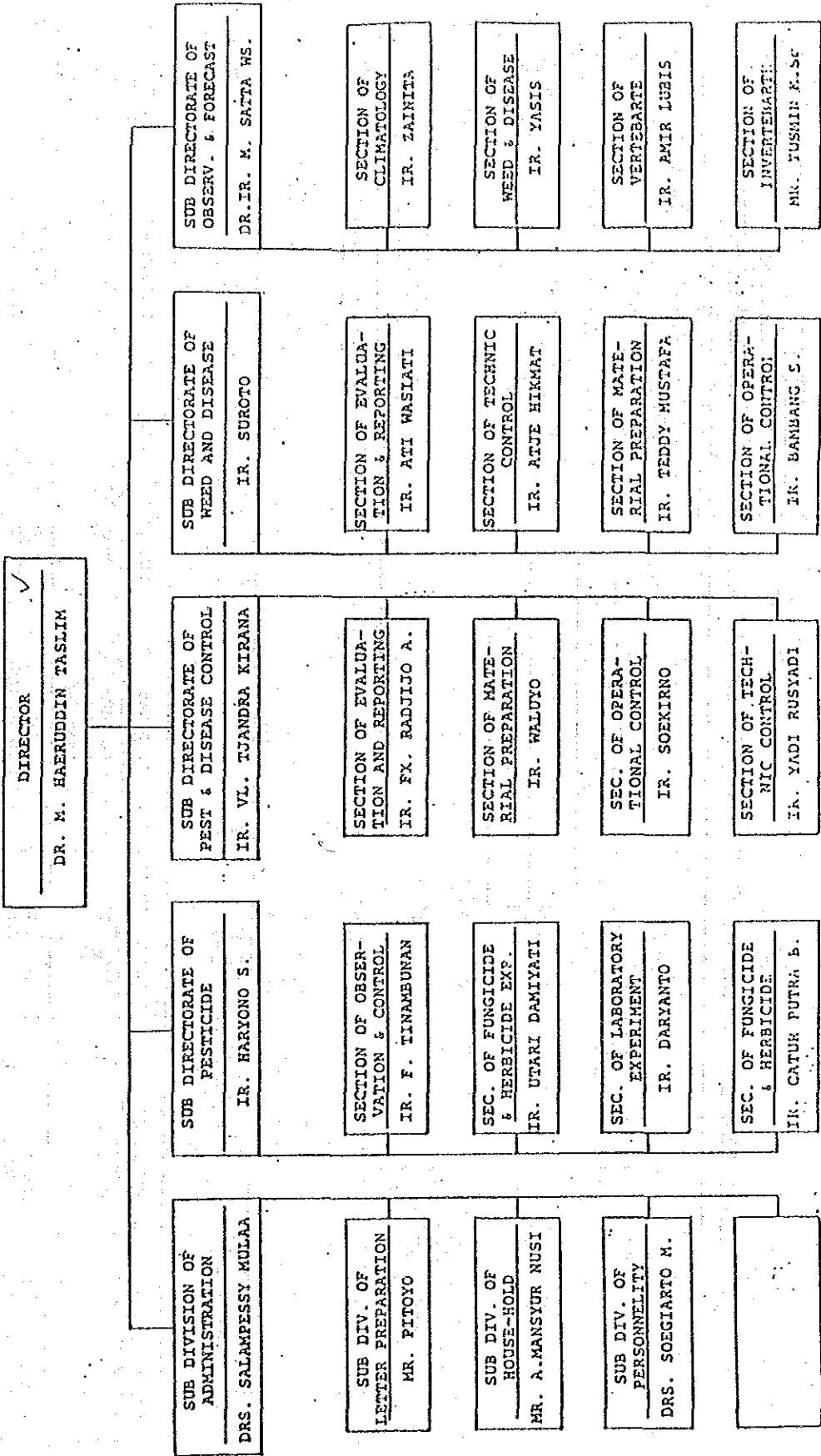
|                            |                           |              |                       |                     |                     |
|----------------------------|---------------------------|--------------|-----------------------|---------------------|---------------------|
| DESIGNED BY<br>T. S. S. S. | CHECKED BY<br>T. S. S. S. | DATE<br>1/10 | SCALE<br>1/10         | DRIVING<br>DCA-14LE | ENGINE GEN<br>TATOR |
| ENGINE GEN TATOR           |                           |              | DRIVING<br>DCA-14LE   | SCALE<br>1/10       | DATE<br>1/10        |
| MITSUBISHI                 |                           |              | Denyo Co. Ltd. 739010 |                     |                     |
| OUTLINE D.                 |                           |              | DRAWING NO. 302       |                     |                     |



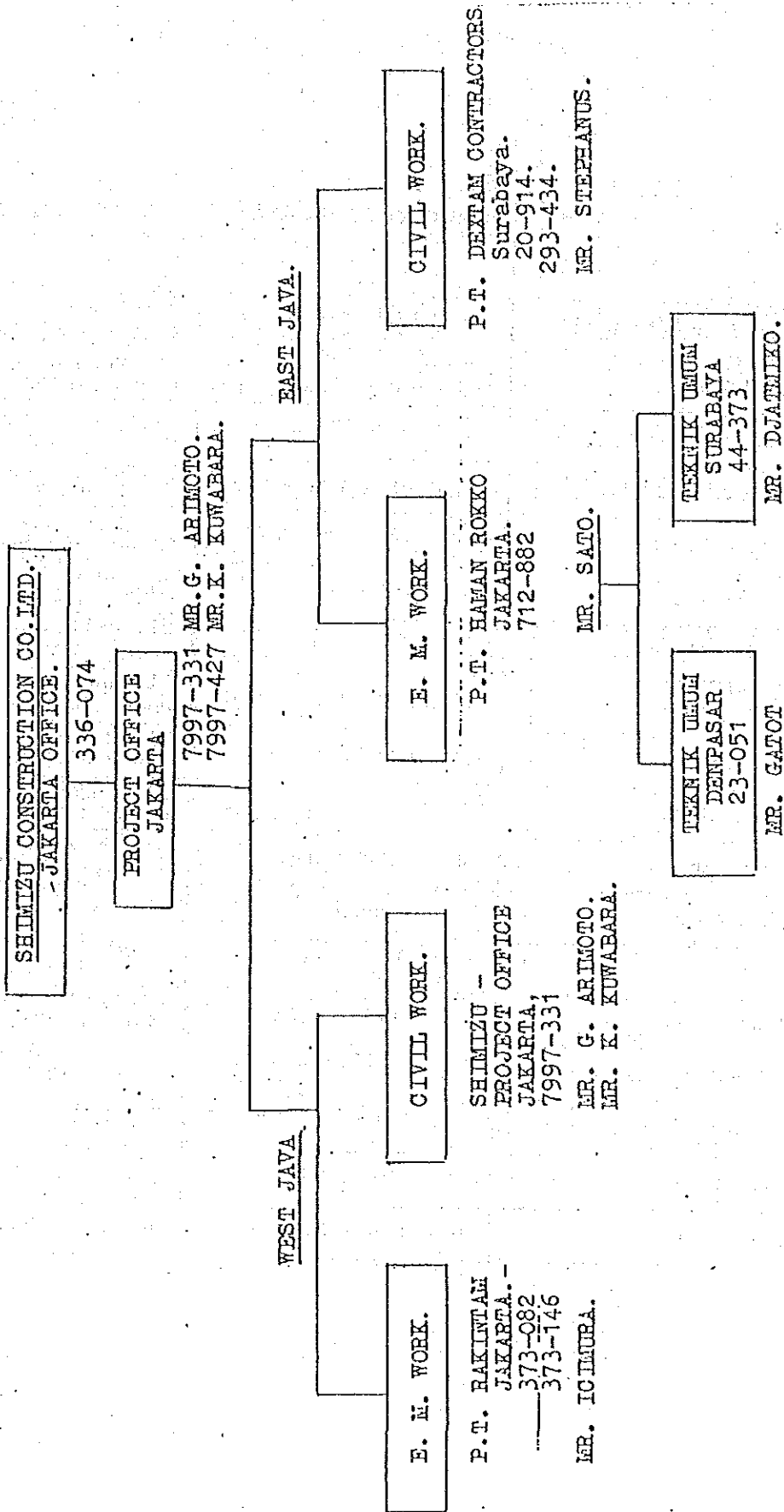
ORGANIZATION CHART OF DIRECTORATE GENERAL OF FOOD CROP AGRICULTURE



ORGANIZATION CHART OF DIRECTORATE OF FOOD CROP PROTECTION



MAINTENANCE CHART FOR  
THE IMPROVEMENT OF PEST AND DISEASE FORECASTING CONTROL PROJECT  
 ( PHASE I. )



SUB- CONTRACTOR & MATERIAL SUPPLYER LIST

FL.A. GIANYAR.

CIVIL WORKS

| KIND OF WORKS                | SUB-CONTRACTOR NAME               | ADDRESS & TELEPHONE NO.                                 |
|------------------------------|-----------------------------------|---|
| Pile Work                    | -                                 | -   |
| Reinforced Concrete Work     | PT. HANIL JAYA METAL WORK.        | Janti Waru, Phone 813094<br>PO.Box 355, Surabaya.--     |
| Carpentry Work               | YURIKO.<br>Industrial & Trade Co. | Jl. Kedung Cowek No. 68,<br>Phone 310488, 310094 Sby.   |
| Structural Steel Work        | P.T. MULCINDO.                    | Jl. Rungkut Industri II/6<br>Phone 818165, Surabaya.--  |
| Concrete Roof Tile Work      | PT. MONIER INDONESIA              | Jl. Melawai Raya 165 Blok<br>C-5 Phone 715508, Jakarta. |
| Wood Shingle Work            | CV. NUSA INDAH JAYA.              | Jl. Kalianak Timur 229<br>Phone 270745, Surabaya.       |
| Masonry Work                 | PT. BETA JAYA.                    | Jl. Johar No. 59 Phone<br>46924, Surabaya.              |
| Ceramic Tile Work            | K. I. A.                          | Jl. Beliwerti 68/11,<br>Phone 42810, Surabaya.          |
| Metal Work                   | P.T. KARYA TEJEBESASH.            | Jl. Kapuk Pulo Indah No.2<br>Phone 6292100, Jakarta.    |
| Steel Door Work              | P.T. MULCINDO.                    | Jl. Rungkut Industri II/6<br>Phone 818165, Surabaya.    |
| Wooden Door Work             | YURIKO.<br>Industrial & Trade Co  | Jl. Kedung Cowek No. 68,<br>Phone 310488, 310094 Sby.   |
| Glass & Glazing Work         | Toko SINAR RASA.                  | Jl. Beliwerti 70. Phone<br>45440, 470700, Surabaya.     |
| Plastering Work              | Mandor ABBAS.                     | Gianyar, Bali.  |
| Painting Work                | MAHKOTA SAKTI.<br>(S.K.K)         | Jl. BDN. 1/25 Cilandak<br>Phone 760403, Jak. Sel.       |
| Green House Work             | P.T. KARYA TEJEBESASH             | Jl. Kapuk Pulo Indah No.2<br>Phone 6292100, Jakarta.    |
| Asphalt Pavement Work        | CV. TOMO TIGA UTAMA.              | Jl. KH. A Khotib 7 G.<br>Phone 81803, Sarang.           |
| Concrete Block Pavement Work | P.T. MONIER INDONESIA             | Jl. Melawai Raya 165 Blok<br>C-5 Phone 715508, Jakarta. |
| Floor Tile Work              | CV. UBIN INDAH.                   | Jl. Embong Malang 73.5<br>Phone 471613, Surabaya.       |
| EPA- Finish Work             | Mandor ABBAS.                     | Gianyar, Bali.  |

## ELECTRICAL / PLUMBING WORKS

| KIND OF WORKS                           | SUB- CONTRACTOR NAME  | ADDRESS & TELEPHONE NO.                                      |
|---|-----------------------|--|
| I. ELECTRICAL WORK                      |                       |  |
| - LIGHTING FIXTURE                      | ARTOLITE              | GAJAH MADA 3-5, JAKARTA<br>TEL.: 021 346154                  |
|   | PT. METALINDO         | DAAN MOGOT NO. 200, JKT<br>TEL.: 021 592623                  |
| - ELECTRIC PANEL                        | PT. FIRST PURA JAYA   | DAAN MOGOT NO. 69, JKT<br>TEL.: 021 597204                   |
|   |                       |  |
| - GENERATOR                             | PT. LESTARI MACHINERY | JL. MANGGA BESAR RAYA<br>183/46, JAKARTA<br>TEL.; 021 637970 |
|   |                       |  |
| II. MECHANICAL                          |                       |  |
| - ELEVATED WATER TANK                   | MARINFIG UTAMA PT.    | JL. KEBON KACANG NO. 20<br>JAKARTA, TEL; 021 326086          |
| - CHEMICAL FEEDER<br>STERILIZER         | PT. BETA PRAMESTI     | JL. MATRAMAN RAYA 169,<br>JKT. TEL.: 021 883447              |
| - DEEP WELL PUMP<br>(SHALLOW WELL PUMP) | PT. LESTARI MACHINERY | JL. MANGGA BESAR RAYA<br>JKT, TEL: 021 637970                |
|   |                       |  |
| - EFFLUENT PUMP                         | NASA JAYA             | JL. HAYAM WURUK 76, JKT<br>TEL.: 021 6296973                 |



## ELECTRICAL / PLUMBING WORKS

| KIND OF WORKS                         | SUB- CONTRACTOR NAME            | ADDRESS & TELEPHONE NO.   |
|---------------------------------------|---------------------------------|---|
| - SANITARY FIXTURE                    | PT. SURYA PERTIWI               | JL. PINANGSIA I NO. 16/<br>GG-HH, JAKARTA.<br>TEL: 021 679475                         |
| - PRESSURE PROPELLA<br>FAN (DUCT FAN) | PT. SEKAWAN ABADI JAYA          | Jl. HAYAM WURUK NO. 1<br>JAKARTA, TEL.: 021 365164                                    |
| III. SUB CONTRACTOR                   |                                 |   |
| - EAST JAVA                           | PT. RAKINTAM                    | JL. MAJAPAHIT 28/IV, JKT<br>TEL.: 021 373082  |
|                                       | PT. HAMAN ROKKO Enter-<br>prise | JL. BARITO II/56-A<br>BARITO PLAZA 2nd Fl,<br>ROOM 209, JKT<br>TEL; 021 712882-712891 |
|                                       | PT. TEKNIK UMUM                 | JL. RAYA SESETAN 162<br>BALI, DENPASAR.<br>TEL. 0361 23051                            |
| - WEST JAVA                           | PT. RAKINTAM                    | Jl. MAJAPAHIT 28/IV;<br>JKT. TEL.: 021 373082   |

Contractor's List

DICI BIDANG PEMBORONGAN

K a b u p a t e n : Gianyar.  
 Bidang Pekerjaan : Sipil.  
 Sub Bidang Pekerjaan : Pengairan.  
 Kualifikasi : C<sub>1</sub>

| No. | Kode Reklaman | Nama Perusahaan | A l a m a t                              |
|-----|---------------|-----------------|--|
| 1.  | 1404100030    | Pa. Margi Ayu   | Jalan Ciung Wenara No.9.                 |
| 2.  | 1404100006    | CV. Tirta Mas   | Tegehe - Sukawati.                       |
| 3.  | 1404100072    | CV. Lungsur     | Jalan Raya Gianyar No. 1 A<br>Batubulan. |

K a b u p a t e n : Gianyar.  
 Bidang Pekerjaan : Sipil.  
 Sub Bidang Pekerjaan : Jalan, Jembatan  
 dan Landasan.  
 Kualifikasi : C<sub>1</sub>

| No. | Kode Reklaman | Nama Perusahaan       | A l a m a t                  |
|-----|---------------|-----------------------|------------------------------|
| 1.  | 1404100018    | CV. Widya Karya Niaga | Br. Tengah Kangin, Peliatan. |
| 2.  | 1404100026    | CV. Sura Dharma       | Br. Kedewatan.               |
| 3.  | 1404100002    | CV. Rama Karya        | Br. Tegaltaru - Batubulan.   |
| 4.  | 1404100030    | Pa. Margi Ayu         | Jalan Ciung Wenara No.9.     |
| 5.  | 1404100051    | CV. Wira Karya        | Br. Tegehe - Batubulan.      |
| 6.  | 1404100006    | CV. Tirta Mas         | Tegehe - Sukawati.           |
| 7.  | 1404100023    | CV. CV. Astha Soni    | Dusun Komenuh.               |
| 8.  | 1404100027    | Pa. Eka Sapta         | Sorongga - Lebih.            |

DRM BIDANG PEMBORONGAN

K a b u p a t e n : Gianyar.  
 Bidang Pekerjaan : S i p i l.  
 Sub Bidang Pekerjaan : Pengairan.  
 Kualifikasi : C<sub>2</sub>

| No. | Kode Reksanan | Nama Perusahaan   | A l a m a t                |
|-----|---------------|-------------------|----------------------------|
| 1.  | 1404100026    | CV. Sura Dhanza   | Desa Kodowatan - Ubud.     |
| 2.  | 1404100009    | CV. Shuar Karya   | Jalan Gambir No. 15 A.     |
| 3.  | 1404100011    | CV. Lungsur Utama | Jalan Raya Batubulan No. 2 |
| 4.  | 1404100008    | CV. Bali Perdana  | Jalan Ciung Wenara 15A.    |
| 5.  | 1404100033    | CV. Kerti Karya   | Dr. Tatiapi-Pejong.        |
| 6.  | 1404100023    | CV. Astha Seni    | Dusun Kemenuh, Sukawati.   |

K a b u p a t e n : Gianyar.  
 Bidang Pekerjaan : S i p i l.  
 Sub Bidang Pekerjaan : Jalan, Jembatan  
 dan Landasan.  
 Kualifikasi : C<sub>2</sub>

| No. | Kode Reksanan | Nama Perusahaan           | A l a m a t                          |
|-----|---------------|---------------------------|--------------------------------------|
| 1.  | 1404100031    | Pb. Korak                 | Jalan Gianyar.                       |
| 2.  | 1404100004    | CV. Pugig                 | Jalan Pudak.                         |
| 3.  | 1404100019    | CV. Sari Muncul           | Kodowatan.                           |
| 4.  | 1404100010    | CV. Karya Agung           | Jalan Gambir.                        |
| 5.  | 1404100035    | Pb. Rahayu                | Elahbatuh.                           |
| 6.  | 1404100022    | PT. Kahardika Karya Utama | Dr. Pomijian, Batuan, Suka-<br>wati. |
| 7.  | 1404100013    | CV. Jati Karya            | Dr. Pateluan - Sidan.                |
| 8.  | 1404100009    | CV. Shuar Karya           | Jalan Gambir No. 15 A.               |
| 9.  | 1404100020    | CV. Jaya Korthi           | Desa Sanding, Tampaksiring           |
| 10. | 1404100011    | CV. Lungsur Utama         | Jalan Raya Batubulan No. 2           |
| 11. | 1404100072    | CV. Lungsur               | Jalan Raya Gianyar No. 1             |







JICA