

付 録

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石塚 準二

事務所員

2. 収集資料リスト

番号	資料の名称	形態	判型
1	JAKARTA 1987 (市政概要) English	英文	10cm×12cm
2	A Thousand Faces of JAKARTA.1986 (市案内書)	英文	A 4
3	JAKARTA 2005 (長期計画概要書) (図表英文)	イ語	B 4
4	JAKARTA DALAM ANGLKA jakarta in figures 1987 (統計書)	イ語	15cm×24cm
5	KUMPULAN DATA PROYEK-PROYEK BANTUAN LUAR NEGERI SEKTOR AIR LIMBAH 1988 (CIPTA-KARIYAの外国援助プロジェクト概要-下水編)	イ語	33cm×21cm
6	NERACA KEPENDUDUKAN DAN LINGKUNGAN HIDUP DAERAH LAPORAN UTAMA (BUKU II) TAHUN 1987 (DKI Jakartaの人口と環境調査のメインレポート特に河川水質と健康について)	イ語	(HVS)A 4
7	NERACA KEPENDUDUKAN DAN LINGKUNGAN HIDUP DAERAH LAMPIRAN (BUKU III) TAHUN 1987 (同上の附属資料)	イ語	A 4
8	PROYEK PENINGKATAN SANITASI LINGKUNGAN SUB PROYEK KOORDINASI PENGENDALIAN DAS CILIFUNG DAS CIPINANG DAN DAS SUNTER FINAL REPORT (CILIWUNG地区と、CIPINANG地区とSUNTER地区の衛生環境)	イ語	A 4
9	Preparation of National Strategic Plan for the Human Waste and Waste Water Disposal Sub-Sector for Urban Area DRAFT FINAL REPORT SUMMARY October 1988	英文	A 4
10	同上 DRAFT FINAL REPORT Volume 1		

番号	資料の名称	形態	判型
	STRATEGY	英文	A 4
11	同上 DRAFT FINAL REPORT Volume 2		
	STRATEGY GUIDELINES AND DESIGN CRITERIA	英文	A 4
12	同上 DRAFT FINAL REPORT Volume 3		
	APPENDICES	英文	A 4
13	KEBIJAKSANAAN PEMBANGUNAN PERKOTAAN DI INDONESIA (POLICIES FOR URBAN DEVELOPMENT IN INDONESIA)	イ語	A 4
14	JAKARTA SEWERAGE AND SANITATION PROJECT REPUBLIC OF INDONESIA VOLUME II MASTER PLAN REPORT November 1977	英文	A 4
15	JAKARTA SEWERAGE AND SANITATION PROJECT REPUBLIC OF INDONESIA VOLUME V APPENDICES (FOR VOLUM II AND III) September 1977	英文	A 4
16	(説明地図及び標準図、河川水質図、代替案図、優先地域図、カンポン位置図) 1977	英文	A 1
17	JABOTABEK URBAN DEVELOPMENT PROJECT II (FUDP II) Special Summary Report (For IBRD REVIEW) Component 4 Sewerage Part I - ISSP Extention November 30, 1988		
	ALPINCONSULT	英文	A 4
18	同上 Final Report Revision One November 11, 1988 for COMPONENT 4-SEWERAGE Part I JSSP Extension JUDP II Consolidation		
	ALPINCONSULT	英文	A 4
19	同上 Final Report Revision One November 11, 1988 for COMPONENT 4-SEWERAGE Part II Master Plan Review and TOR For Future Sewerage JUDP II Consolidation		
	ALPINCONSULT	英文	A 4

番号	資料の名称	形態	判型
20	同上 APPENDICES COMPONENT 4-SEWERAGE Part II Master Planning Review and TOR For Sewerage Development TA JUDP II Consolidation September 15, 1988 ALPINCONSULT	英文	A 4
21	JAKARTA SEWERAGE AND SANITATION PROJECT MICRO DRAINAGE INVENTORY REPORT May 1988 ALPINCONSULT	英文	A 4
22	SEPTIC TANKS IN JAKARTA AND THEIR DESLUDGING(UNITED NATIONS DEVELOPMENT PROGRAMME URBAN SANITATION INVESTMENT SUPPORT April 1988) (セプティックタンクとスラッジ処理プランのガイドライン)	英文	A 4
23	Menciptakan : KEBERSIHAN IBUKOTA DIMURA (DARI LINGKUNGAN ANDA)(ゴミ処分とセプティック タンク、スラッジの処理場のパンフレット)	イ語	15cm×30cm
24	JAKARTA WATER SUPPLY DEVELOPMENT PROJECT VOLUME II MASTER PLAN REPORT March 1985 JICA	英文	A 4
25	PERDA No 9 1985 RETRIBUSI DKI (PERATURAN DAERAH DAERAH KHUSUS IBUKOTA JAKARTA NO MOR 9 TAHUN 1985 TENTANG RETRI BUSI DAERAH BIDANG PEMBNGUNAN DAERAH KHUSUS BOKOTA JAKARTA -DKI JAKARTA 地方政 府の価格規制-水質試験費、測量費等)	イ語	A 4
26	UNDANG-UNDANG REPUBLIK INDONESIA Nomor 4, 1982 Ketentuan-Ketentuan Pokok Pengelolaan Lingkungern Hidup dan PERATURANPEMERINTAN REPUBLIK INDONESIA Nomor 29, 1986 Analisis Mengenai Pampak Lingkungan(環境影響評価に関する規則)	イ語	18cm×12.5cm

番号	資料の名称	形態	判型
27	BAGAN SUSUNAN ORGANISASI DIREKTORAT JENDERAL CIPTA KARYA (政府及びCIPTA KARYAの組織図)	イ語	15cm×20cm
28	その他組織図資料(フォトコピー) - 質問書1(0 P. 2、3(2) P. 2、4(1)a P. 4、4(2) P. 4、の回答)	イ語	A 4
29	Preparation of National Strategic Plan Appendices の抜粋	英文	A 4
30	資格のある測量会社、水質試験機関、土質調査会社、水質試験料金の調査資料	英文	A 4
31	最近の水道水の試験項目(報告書資料) LABORATORIUM TEHNIK PENYEHATAN (英文項目対比表付)	イ語	A 4
32	JAKARTA SEWERAGE AND SANITATION PROJECT FIRST PHASE IMPLEMENTATION ALPINCONSULT (第一次管渠布設箇所施設平面図 - SETIABUDI 地区)	ブルプリント	A 4
33	WATER POLLUTION IN THE BAY OF JAKARTA EMDI (Environmental Management Developemt Indonesia) (ジャカルタ湾汚染状況資料)	英文	A 4
34	PROJECT PROPOSAL: Project: JAKARTA BAY AREA MANAGEMENT STUDY (HTA-58)	英文	A 4
35	Tarip Dasar Listrik 1986		
36	MENTERI PERTAMBANGAN DAN EVERGI PETA LOKASI GENANGAN YG MONGKIN TERJADI DI WILAYAH DKI JAKARTA (浸水地区図)	イ語	A 4
37	Review Penanganan Pencemaran (水質汚濁防止法 - 目標値)	イ語	A 4
38	MASTER PLAN OF JAKARTA DRAINAGE AND FLOOD CONTROL (REVICED) (Drinage について OHP で説明のあったものの原稿のコピー)	英文	A 4
39	調査団派遣中の洪水被害に関する新聞記事 ('88. 12. 19 ~ 12. 22)	イ語	A 4
40	JABOTABEK 地図 (DKI ジャカルタの行政区域と S/W 協議中に追加要望があった周辺地域)	イ語	A 2

番号	資料の名称	形態	判型
41	(Dec. 88 JICA teamのQuestionnaire に対する回答書)	英文	A 4
	Questionnaire 1(3) JSSPの実施工程表について	英文	A 4
	1(4) 1977のM/PとJSSPの関係について	英文	A 4
	1(2) Low Cost Sanitationのイメージについて	英文	A 4
	4(4) 下水道に関する組織について	英文	A 4
	4(7) 公衆衛生教育と市民参加の計画について	英文	A 4
	5(5) 既設パイプの布設平面図(8枚)	英文	A 3
	5(6) パイプ布設記録(年-延長)	英文	A 4

なお、地形図はCity Planning Directorate of DKI で購入できる。

水道関係のパイプラインの資料についてはJICAのレポートが参考になる。

灌漑については、ジャカルタ市に計画も、既存施設もない。

Non-Sewerage Sanitation については、法令はなく、ガイドラインのみがある。

3. 要請文書

3-1

1. Project Title : Preparation of Master Plan and Feasibility Study on Urban Drainage and Waste Water Disposal Project in the City of Jakarta
2. Location : Jakarta, Indonesia
3. Executive Agency : Directorate General of Human Settlements, Ministry of Public Works
4. Objectives —: - Carry out the study to improve the urban drainage network in order to avoid inundation and flooding.

Carry out the study to develop the sewerage system for certain location and serve the remainder by appropriate technology in order to prevent environmental pollution caused by human waste/waste water.

5. Project Description : To solve the problem in inundation and flooding in the city of Jakarta, in 1973 the Government of Indonesia under the Kingdom of Netherlands' accused Nedeco (a Netherlands Consultant) to prepare a Master Plan on Jakarta Drainage.

Based on the mentioned Master Plan, a number of project implementation has been constructed. and currently continued.

By means of city development, the study on Jakarta drainage is to be needed and formulate in a Master Plan and Feasibility Study.

While to solve the problems and to meet the basic environmental protection needs, the Directorate General of Human Settlements has been introduced and implemented a pilot project on sewerage systems under IBRD Loan.

Based on the Feasibility Study prepared by Nihon Gido Consultants Co. Ltd (NSC), the project area selected are Tebet, Manggarai and Setiabudi Districts. This project is known as the Jakarta Sewerage and Sanitation Project (JSSP).

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Moreover, the Study on wastewater is necessary to continue and formulate in a Master Plan and Feasibility Study. Objective is to serve the whole Jakarta people by properly wastewater facilities either sewerage or on site sanitation.

The TOR for Consulting services on Jakarta Drainage and Waste Water Disposal has already prepared under assistance of the International Engineering Consultants Association (Japan).

6. Implementation Time : 1 1/2 (one and half) years.

7. Project Cost Estimate: Engineering services ;

- Foreign Exchange = US \$ 1,245,420
- Local Cost = US \$ 306,000

Total Cost = US \$ 1,551,420

8. Amount Proposed for Commitment, estimated as

: US \$ 1,245,420 .

9. Related to Technical Assistance

: - Nedeco, Master Plan of Jakarta Drainage, 1973
- NSC, Jakarta Sewerage and Sanitation Project Master Plan and Feasibility Study, 1977
- JICA; Study on Solid Waste System Improvement, 1985

10. Stage of Project Preparation

NSC, Jakarta Sanitation and Sewerage Project Master Plan and Feasibility Study, 1977.

PEP/PD-JKT/EM/15x87/b.-

TERMS OF REFERENCE
FOR
CONSULTING SERVICES
FOR
JAKARTA AND SURROUNDING DRAINAGE AND
HUMAN WASTE/WASTEWATER DISPOSAL PROJECT

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1.0 INTRODUCTION

As part of the plan for the general environmental improvement of the Capital City of Jakarta, the Government of Indonesia (GOI) wishes to engage a consortium of foreign and Local Consultants to update the survey and documentation of present conditions, and to prepare a master plan and feasibility study for an integrated improvement and development programme for Urban Drainage, Human Waste Disposal and Waste Water Disposal within Jakarta and its surrounding areas including Bogor, Tangerang and Bekasi. This Study will also have as a major objective the enhancement of the capabilities of Local Consultants and Local Government staff in line with principle of the Integrated Urban Infrastructure Development Programme (IUIDP).

The Ministry of Public Works, Directorate General of Human Settlements (Cipta Karya) in Jakarta will assume responsibility for this study. According to the Government of Indonesia's policy expressed in the Decree of Minister of Public Works No. 239/KPTS/1987, Local Government is responsible for urban drainage, while the Ministry of Public Works, through the Directorate General of Human Settlements provides assistance to Local Government in planning, designing and implementing urban drainage projects.

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This study will require the active involvement and cooperation of several agencies and institutions of the Local Government of Daerah Khusus Ibukota (DKI) Jakarta, Kabupaten and Kotamadya Bogor, Tangerang, Bekasi and Badan Kerjasama Pembangunan Jabotabek (EKSPJ) to identify alternatives, select the most cost-effective solutions and define the most appropriate projects.

2.0 BACKGROUND INFORMATION

2.1 General

Approximately 10 - 15 million people live in Jabotabek area which 7.7 million of those people live in Jakarta City which covers a total of 64,500 ha urban area. During this century the area experienced a growth rate in population, commerce and industry, far outstripping the national average. Because of natural harbour and attractive setting in Jakarta, the area is expected to continue its growth, and the population is projected to reach almost 20 million by the year 2005. Location of the study area and Jakarta city map are shown in Figures 1 and 2, respectively.

2.2 Drainage

Within the built up urban area of Jabotabek, approximately 5,000 ha is served by existing drainage facilities, comprising open channels, closed conduits, reservoirs, and pumping stations. These facilities have been rehabilitated and improved by Government, keeping pace with the requirement of flood control. The drainage system may be classified into two main categories, namely the minor drainage system and the major drainage system.

The minor drainage system serves residential areas such as kampung areas, real estate or other types of development programme area, where as the major drainage system serves public area as well as collecting and conveying flows from the minor drainage system to the main river or directly to the sea.

2.2.1. Minor Drainage

In the kampung areas, lined open ditches are generally constructed along the footpaths and roads especially in DKI as part of the KIP Programme started in 1969. Areas other than kampungs or real estate development programme areas are those served by the existing systems constructed by the developer.

2.2.2. Major Drainage

The Jakarta Pusat (Central District) is served by both open channels and closed conduits. Although the drainage facilities are relatively well provided in this district, local inundation has been observed in many places due mainly to inadequate capacities of the major drainage systems. This local inundation is perceptibly damaging to many vital buildings situated in the district.

The Jakarta Timur (East District) is still in the developing stage and the minor drainage system is still inadequate. Open channels have been constructed for most of the builtup areas with closed conduits used only limited places. Since in some parts the district is rather hilly, the flow conditions in these drains are generally good. In some parts of the district, roadside

drains can not pick up road run off and run off from surrounding areas flows to them, which causes several main roads to be frequently flooded.

The Jakarta Barat (West District) is generally flat and low laying and frequent floods have been observed in many parts of the district. The Government has built Cengkareng floodway for diverting flows from some rivers and major drains. This floodway functions satisfactorily, however improvement of some rivers and major drains upstream of the floodway is still needed.

The Jakarta Selatan (South District) is served by lined and/or masonry open channels which generally function satisfactorily. Local inundations have been reported in some parts of the area, but the majority of the area is free from flooding. In Setia Budi and Tebet - Manggarai districts, construction and rehabilitation of the major drainage system is now underway in association with the sewerage construction.

During the last few years, extensive housing developments have occurred within the East and Western Districts. Both Eastern and Western Districts are designated as priority areas to be developed by the Local Government of DKI Jakarta in the near future.

The Jakarta Utara (North District) is generally flat and low laying and some parts of the area are suffer from flooding due to high tides. In Pluit area, a reservoir and

pump stations are provided, however some areas are still flooded. The main causes are improper maintenance of the drain and some bottlenecks exist due to the low level of some bridges crossing the drains.

Based on field inspection, the causes of inundation in Jakarta can be generally classified into four major categories, namely 1) improper maintenance of existing channels, 2) lack of drainage facilities and drainage network, 3) insufficient capacity of cross drain structures, and 4) other causes, one of them is land subsidence.

According to DKI's estimate, approximately 12 percent of all inundation could be attributable to insufficient maintenance work. This phenomena is closely related to the problems of solid waste disposal into waterways, which is now being reviewed by DKI to establish a comprehensive solid waste management system covering the whole City (Jakarta Solid Waste Management Study).

2.3 Human Waste/Wastewater Disposal

Wastewater discharge in the area, presently estimated to be about 600,000 m³ daily, is expected to increase at a rate exceeding the population growth rate and to reach a level of 2 million m³ per day by 2005. Most of the domestic and industrial wastewater is discharged directly into drains and other available waterways, or in the case of black water from houses, after passing through either a septic tank or a leaching-pit, leached into the ground when soil is permeable.

It is believed that approximately 160,000 houses out of the 700,000 within the Jakarta urban area are provided with a septic tank for excreta disposal. The remaining discharge their black water either by means of a leaching pit or directly into drains and rivers, which during low flows in the dry season, leads to pollution of the environment in general and in particular Jakarta bay. Thus, the waterways are becoming grossly polluted as they flow through the city of Jakarta.

In order to solve the problems and to meet the basic environmental protection needs in the area, the Directorate General Human Settlement (Direktorat Jenderal Cipta Karya) has implemented intensive programmes to improve the environmental conditions in Jakarta.

Jakarta Sewerage and Sanitation Project Master Plan and Feasibility Study, prepared with the assistance of World Health Organization (WHO) by Nihon Suido Consultants Co. Ltd. (NSC) in November 1977, identified serious sanitary problems in the area and proposed an immediate sanitation improvement and sewerage construction programme for the high priority districts in Jakarta.

Based on the recommendations of the Feasibility Study, the construction of sewerage and sanitation facilities for Tebet and Setia Budi districts is currently underway with a completion target of 1988. This project is known as the Jakarta Sewerage and Sanitation Project (JSSP) financed by an IBRD loan. Because of a number of technical and administrative matters this project is not able to complete its target as originally scheduled. This JSSP completion schedule will be extended by three years and is

about to enter its second phase. This second phase will be studied under the IBRD assisted JUDP-II project, following of the IUIDP approach.

The Consultant will be expected to liaise with this project and review the results, conclusions and recommendations arising from the JSSP Stage I.

3.0 OBJECTIVES

Cipta Karya intends to implement a suitable project in stages to meet the long term urban infrastructure need, which is to provide adequate city wide drainage and appropriate safe human waste and waste water disposal as well as environmental sanitation systems to serve the people of Jabotabek area.

The objectives of the study are to :

- (i) make master plan for Jabotabek (Jakarta, Bogor, Tangerang and Bekasi) urban drainage and human waste/waste water disposal and its phased integrated improvement of the systems up to the year 2010.
- (ii) prepare a feasibility study for the prioritized areas to improved the living environment by inundation prevention and human waste/waste water disposal.

4.0 STUDY AREA

The Study Area is to cover the entire area of the City of Jakarta and its surrounding areas. For the purposes of this study the area shall be defined as the JABOTABEK area. The area would therefore include considerations of drainage flows and wastewater discharges from the Bogor, Depok, Bekasi and Tangerang urban areas.

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The catchment area is essentially a triangle formed by the sea (Jakarta bay) at its northern boundary, by the Cisadane River at the western boundary and by the Bekasi River on the east. The population within this area is projected to be about 20 to 25 million in the year 2000. One of the key elements required from the study is an integrated approach to the management of drainage and human waste disposal within this large densely populated area.

The feasibility study areas shall be selected from high priority districts identified by the reviewed master plan, considering such elements as urgency of needs, benefits to be derived and an appropriate magnitude of scale for the initial stage project.

5.0 SCOPE OF STUDY

5.1 General

The Consultant is to review all previous reports and feasibility studies in relation to drainage and human waste/wastewater disposal in Jabotabek, and prepare a comprehensive master plan and feasibility study for a development programme up to the year 2010.

The study shall include field investigations and desk study comprising the preparation of necessary reports, drawings, cost estimates, economic and financial analysis and institutional studies.

The emphasis for the drainage works shall be on the major drainage systems but where necessary, including minor drainage systems as well.

The emphasis on the human waste and waste water disposal works shall be on provision of a sewerage type system rather than low cost field provisions. However a strategy is to be determined to define those areas to be sewered and those to be provided with appropriate solution other than sewerage provisions for either the short and long term system.

The study should investigate as complete a coverage of development as practicable and not be limited to Repelita V coverage.

The study should approach the drainage and human waste disposal problems within the study area with an integrated and coordinated management approach recognizing the long term planning horizon and that the proposals to be made are to be elements of the overall master development strategy for Jabotabek.

5.2. Training and Cooperative Study Effort

The Consultant shall establish a working relationship with staff from related central government and local government agencies involved in the urban drainage and human waste/waste water sector, providing on the job training to that staff in undertaking all stages of the study and advising on institutional developments required for improved performance of the local agencies in line with the IUIDP process.

The Consultant, shall also assist the Local Authorities in formulating the urban drainage and human waste/waste water components for future IUIDP development proposals.

The consultant will also work closely with the consultant working on the Jabotabek, IUIDP technical assistance project, for

Directorate General Bangda of the Ministry of Home Affairs. Proposals for first stage implementation will be agreed with the IUIDP technical assistance consultant and incorporated into the Jabotabek IUIDP multi-year investment programme.

The Consultant shall prepare urban drainage and human waste/waste water disposal masterplan up to year 2010 and feasibility study for first stage implementation till year 1995 in cooperation and coordination with the Central and Local Government staff.

These plans and studies should remain in line with the overall integrated development approach and should result in appraised packages to be offered to various lending agencies for financing, thus the Local Government staff will need to be exposed to appraisal procedures of the various lending agencies

6.0. SCOPE OF ACTIVITIES

6.1. Collect Data and Information

Up to date data and information relevant to the 1973 drainage report and the 1977 sanitation report and other reports as appropriate shall be collected and analysed, including physical, development, political, institutional, and financial information. Major reports available are listed in Annex 1.

In addition to currently available data and information qualities of surface waters as well as groundwater should be measured. Performance of existing on site sanitation systems should be also surveyed. Implementation program recommended in feasibility study

shall clarify how these water qualities will be improved.

The Consultants shall undertake a socio-economic survey as part of this study, collecting both primary and secondary data for use in assessing need for drainage improvement and human waste disposal systems. Additionally the willingness to pay and the ability to pay shall be surveyed. While this may be relatively straight forward in the case of a sewerage systems, questions in relation to taxes and other charges will be necessary for development of a financing plan for drainage improvements.

6.2. Review, Evaluate and Rearrange Data and Information Collected

Review and evaluate existing study reports and information together with drawings and maps to be gathered under the work described in 6.1. above.

The review of the existing information shall result in:

(i) Preparation of Existing Facilities Plans

A drawing shall be prepared, to a scale of 1 to 5000, detailing the existing primary, secondary and tertiary drainage and associated structures as well as any existing or proposed sewerage lines. It shall show :

- size of drains/lines
- position in plan
- location of drainage structures/sewerage system structures
- condition of drains/lines
- location and other details of any flood retention basins plus associated structures
- associated solid waste facilities.

(ii) Flooding Incidence Plan/Map

A flooding incidence map shall be prepared to a scale of 1 to 5000 and designed to be used as an overlay to the Existing Facilities Plan. It will show the following features :

- location and extent of all flooding area which have more than 1 year frequency.
- contours describing the various flooding frequencies i.e. 1, 2, 5, 10, 25 and greater than 25 year frequencies.

Annex II lists the areas, which were reported as flooded and inundated areas. The list is presented to help the Consultant in familiarization.

(iii) Land Use and Utility Planning Map

This map will be compiled from all relevant existing and planned land use and engineering services information. The scale shall be 1 to 5000.

It will show the following information :

- existing and future proposed major sewerage and major drainage
- existing and planned road and street layout
- existing and planned water supply services
- existing and planned gas, electricity and telephone services
- existing and planned solid waste facilities
- existing and planned development related to structure and physical works requiring drainage.

6.3. Visit Investigate and Evaluate Project Area and Existing Facilities

In order to identify the problems in relation to environmental and sanitary conditions in the Study Area and to properly evaluate the existing drainage and human waste disposal systems, the existing facilities and other relevant provisions in the Study Area shall be visited and investigated.

The performance of existing relevant facilities such as Pulo Cebang septage treatment plant, oxidation ponds and carousel activated sludge plant in Tangerang and its vicinity should be surveyed from the view points of initial and running costs and efficiencies. These facilities will continue to be operated for the considerable period of time and such facilities might be recommended in the feasibility study.

6.4. Topographic and Soil Surveys

Topographic maps mainly for DKI Jakarta at scales of 1 : 1,000, 5,000, 20,000 and 50,000 with contours at 1 m intervals are available from DKI. These may be used for master planning and preliminary engineering.

For preliminary engineering design of proposed works necessary supplemental topographic and soil surveys should be carried out at selected locations of such facilities.

6.5 Drainage

6.5.1. Establish Design Principles for Integration of the Minor Drainage System with the Major Drainage System

The design basis for major drainage system integration with other drainage systems shall be established. The design principle shall include necessary calculations; layout plan based on the results of the topographic surveys; hydraulic calculations of channels, with longitudinal profiles as needed; and drawings and diagrams to be accompanied with the preliminary proposals for the functional design of the major drainage system works.

6.5.2 Develop Design Criteria

Design criteria shall be developed for the master plan and feasibility study, and for the initial stage construction programme, and discussions on application of these criteria to the preliminary engineering and feasibility study analyses shall be presented, taking into account the conditions in the area. If necessary, adjustment of the design criteria shall be made for those developed in the previous master plan and feasibility study to fit the initial stage construction programme.

6.5.3 Consider Integration of the Project with Existing and Future Systems

It is to be explained how the various proposed physical components will be integrated into the existing drainage system. System development, planned to follow the project and the physical relationships between the project and future system facilities will be outlined. Also,

an action plan of how other projects will be prepared to meet future needs after the proposed project is operational is required.

6.5.4 Prepare Implementation Schedule

A detailed and realistic implementation schedule for all project components should be prepared. In order to identify high priority districts to be implemented during the initial construction stage, a study shall be made, taking into account the various important elements which will affect sanitary and environmental conditions in the area, based on a reasonable approach.

6.5.5 Prepare Preliminary Engineering Design of Facilities

Upon completion of the implementation schedule and staging of construction of the drainage facilities, the preliminary engineering design of the major drainage system for high priority districts shall be prepared. The design shall consider ultimate integration of the initial stage into the whole drainage system.

6.6 Human Waste /Wastewater Disposal

6.6.0. Evaluate Pilot Project of JSSP I

First stage implementation of JSSP is currently underway, there are some adaptations in implementation based on the problems met in field. The Consultant should evaluate this first stage implementation of JSSP and expressed it as part of the report.

6.6.1 Select Appropriate Sanitation System

In order to verify that a piped sewer system is the most desirable human waste disposal system for Jakarta, a study shall be carried out to select the most appropriate sanitation technology for the given conditions. The study shall include such alternative technologies as onsite treatment, small-bore sewerage, shallow depth sewerage, conventional sewerage, or combination of these, to select the technology best suited to effect initial improvements in sanitation for a particular area, reflecting the future need for improvements as the users' aspirations and socio-economic status rise. And with the overall long term objective of a water borne sewerage system while the emphasis of the study is to be on sewerage systems, low cost sanitation systems may be proposed for those areas where sewerage is not yet appropriate. Overall coverage should be as high as practicable and in some areas coverage of 100% of the residents should be a desirable goal.

Indices should be established that show the relation between each measure for water pollution abatement & sanitation improved and required cost for it.

In the context of this study human waste disposal shall include industrial and commercial wastewater if a water borne sewerage system is to be adopted. Otherwise human waste disposal shall refer to treatment of human and domestic wastes.

6.6.2 Select Wastewater Treatment Process

Beside the sea-outfall proposed in the 1977 Masterplan, it is also suggested that other possible disposal, or wastewater treatment method shall be studied as a possible alternative disposal solutions. A general layout plan for each alternative disposal shall be developed and compared to identify advantages and disadvantages with regard to :

- Land requirement
- Capital costs (oportunity cost)
- Operation and maintenance costs
- Operational characteristics
- Efficiencies of treatment
- Environmental impacts.

These alternatives will be evaluated by the consultant and a recommendation made.

A programme for regular testing and monitoring of water quality at various key locations to be identified as part of the study shall be developed.

The programme shall also determine which water quality parameters are to be examined.

Capital, operation and maintenance costs of the facilities shall be developed on the basis of the availability of materials and labour, and appropriate price level in the area. For the analysis of cost-effectiveness of alternative plans, annual costs shall be estimated, considering appropriate service life of structures, and salvage values at different discount rates. Each of the alternative treatment processes shall be evaluated in light of inherent operational characteristics such as

complexity of operation and maintenance, sludge production, organic removal efficiencies, environmental impact, etc.

6.6.3 Establish Design Principles for Sewerage and on site Sanitation Systems

The design basis for the various sewerage systems shall be established. The design principle shall include necessary calculations; layout plan of interceptors and trunk sewers based on the results of the topographic surveys; hydraulic calculations of pipelines, and sewage treatment plant facilities with longitudinal profiles; and drawings and diagrams to be accompanied with the preliminary proposals for the functional design of the interceptors, trunk sewers, pumping stations, and sewage treatment works.

It should be determined that the design basis for disposal systems other than sewerage are appropriate. It should be noted that considerable information already exists for on-site treatment of human and domestic wastes.

In case of uncomplete data, the survey of their performance and supplement any experiment is needed to supply with their appropriate design procedures.

6.6.4 Develop Design Criteria

Detailed design criteria shall be developed for use in the master plan and feasibility study relating to this programme. Application of these criteria to the preliminary engineering and feasibility analyses shall be presented, taking into account the conditions in the area.

If necessary, adjustment and improvement of the design criteria shall be made for those developed in the previous master plan and feasibility study and design to fit the most cost effective implementation programme.

6.6.5 Consider Integration of the Project with Existing and Future Systems

Explain how the various physical components will be integrated into the recently installed sewerage system. Discuss system development planned to follow the project and the physical relationships between the project and future system facilities. Also, explain how other projects will be prepared to meet future needs after the proposed project is operational.

6.6.6 Prepare Implementation Schedule

Prepare a detailed and realistic implementation schedule for all project components. In order to identify high priority districts to be implemented during the initial construction stage, a study shall be made, taking into account the various important elements which will affect sanitary and environmental conditions in the area, based on a reasonable approach.

6.6.7 Prepare Preliminary Engineering Design of Facilities

Upon completion of the implementation schedule and staging of construction of the sewerage facilities, the preliminary engineering design of the selected sewerage system shall be prepared. The design shall consider the ultimate integration of the initial stage into the whole sewerage system.

6.7 Cost Estimates and Capital Investment Programme

Cost estimating procedures shall be developed, by considering construction methods to cope with existing soil condition, depth and width of trench, design criteria, etc. Engineering constraints as well as traffic condition, social activities and other relevant constraints shall be accounted in making decision, whether open cutting (open trenching) heading, tunneling or pipe jacking method shall be considered for deep sewer installation. Cost estimates and investment programme for the recommended system shall be made on the basis of the considerations above.

An new extension of the JSSP-I stage drainage and sewerage construction programme shall be determined on the basis of the evaluation of the first stage programme and the priority of drainage and sewerage facilities construction. A realistic schedule for implementation of any future project shall be proposed, showing the construction timing of the project components and required annual construction cost, plus operation and maintenance costs throughout the construction stage and designed life of the facilities.

The programme is to be discussed with Jabotabek IUIDP technical assistance team for incorporation into the overall Jabotabek IUIDP investment plan.

6.8 Organization, Managerial and Legal Aspects

Describe operational and management aspects of existing and proposed organizations which will operate and maintain the existing and expanded drainage and sewerage facilities, including the following topics to be discussed :

- Legal basis and possible legal constraints
- Organization charts, existing and proposed
- The extent and location of facilities to be operated by the organizations and by communities
- The relationship between different functional groups (planning, design, construction, operations, finance, etc.) and between different regional offices. In particular solutions to the question of responsibility for drainage and or flood mitigation works should be presented.

6.9 Staffing and Training

The present situation in terms of management and personnel shall be assessed. The policies and practices of the lead agency in using either the private sector or public sector organizations to provide personnel assistance (Consultants or Contractors) shall be explained. The capability and staffing of the agency shall be evaluated. A comparison shall be made between future staff requirements and defined the existing situation and the potential shortfall if any. An institutional development action plan shall be prepared to address the need for institutional strengthening.

6.10 Financing Plan

Investigate and report on the existing financial situation of the organization which will operate and maintain project facilities and provide technical assistance. Discussions shall be made on the overall financial position of the organization, past and present, and explain the major expenditures and sources of operating income. Discuss any financial problems, including their impact on operations and performance and therefore on services to be provided under this programme.

Compare alternative financing methods, including evaluation of alternative financial measures, taking into consideration on the present situation, and the extent of the staged programme. In

development of a financing plan the more fundamental question of affordability and ability of residents to pay shall be addressed. Alternatively, the ability of Jabotabek Authorities to fund a drainage development programme is to be examined (Lialson with Jabotabek IUIDP Consultant).

Recommendations shall be made for financing methods, including charges for sewerage services, to enable the sewerage organization to meet the various additional expenses incurred from the initial stage programme. Recommendations shall be made as to means of taxing or raising revenues for the drainage construction programme.

Financial statements and forecasts shall be prepared for the duration of the initial stage project implementation and eight or ten years beyond, including the following topics :

- Cost of operation and maintenance
- Income and expenditure forecast ,
- Source of funds and application of funds, i.e., cash resources and cash requirements, or more commonly known as the cash flow statement (preparation of a finance development action programme).

6.11 Assess Environmental Impacts

Describe the various positive and negative environmental impacts which are expected to result from the project, including those on public health and or water, air and land resources. For each impact discuss proposals to reduce adverse impacts and increase positive impacts through project design and operation. Distinguish between temporary or short-term impacts associated

with project construction and long-term impacts of project operation.

A general analysis of change in public health expected to result from the project shall be provided. A list of diseases related to water supply and sanitation should be presented, including present morbidity and mortality rates and outline of the improvements expected to occur after the project becomes operational. Also, explain qualitatively the probable consequences of expected improvements in health.

Similarly examine possible water resources impacts likely to result from improved drainage and treatment of human domestic and other waste waters.

6.12 Conclusions and Recommendations

State whether the proposed project is feasible when judged from all perspectives and recommend actions to be taken for its implementation. Also, discuss issues and risks associated with project implementation.

If project benefits can be reasonably quantified and valued, compare them to project costs for each year in the future. Based on the estimated benefits, project costs and financial analysis, the relationships between benefits and costs should be analysed, justified and it will be determined whether or not the selected project is economically and environmentally suitable for implementation.

Identify all issues which may pose a risk to project implementation and operation. Define the gravity of each risk and suggest ways of minimizing such risks.

Examine the consequences of small and large changes in the major assumptions on which the report is based. Test the sensitivity of the project to changes in basic parameters such as :

- Delay in project implementation
- Reduction in benefits
- Delay in tariff increases
- Increase in costs.

List the key actions which need to be taken in order to approve, implement and operate the project successfully. Include any policy questions which need to be resolved. Indicate specific actions which the agency responsible for project implementation can commence so as to avoid delays while necessary agreements are reached on project approval and financing.

7.0 STUDY APPROACH

In executing the Study, the Consultant will be responsible to Directorate General of Human Settlements, Ministry of Public Works. The Steering and Technical Committee will be developed to give guidance and evaluate the study.

All improvements to be developed under this TOR will be in accordance with the guidelines set by the DKI Masterplan, District Masterplans and the associated detailed plans. Liason with the Jakarta Solid Waste Management Project and the Jakarta Sewerage Enterprise Development will be necessary. Reference will also be made to the Jabotabek Study.

For technology transfer and training the Consultant should encompass provision of in-service training and technology transfer programme to Central and Local Government counterpart staff during the project execution. This shall be conducted as a part of their involvement in the project as well as in the form of training seminars, in accordance with the needs of the project and the individual counterpart staff, and to the extent consistent with the orderly conduct of the work.

In addition to the training at the project site, an overseas special technology transfer programme to a limited number of selected provisional counterpart staff at the consultant's office or at other suitable overseas project sites. The consultant shall prepare actual schedule for both in-site and overseas training programmes in consultation with Cipta Karya after commencement of the consultancy services at the project site.

The project study team shall be based in Jakarta.

8.0 REPORTS AND DOCUMENTS

Reports, drawings and other documents shall be prepared, covering major work performed in the course of the study. Thirty (30) copies are required of each report in English language with summary in Bahasa Indonesia. Of the final reports fifty (50) copies are required. The reports and documents to be submitted to Cipta Karya and Local Government are as follows :

8.1 Inception Report

An inception report to indicate the actual work to be carried out including work and manning schedules for the project.

8.2 Draft Master Plan Reports

Based on the results of review on the previous studies and reports and studies of the present situations of the project area, a master plan for drainage and sewerage system shall be prepared and a draft master plan report submitted to Cipta Karya to confirm the basic concept of the drainage and sewerage plan covering the whole project area. Maps, drawings, diagrams and other necessary data shall be prepared in appropriate sizes and scales.

8.3 Draft Feasibility Study Report

The feasibility study report shall include preliminary engineering and feasibility analyses for the first stage programme to be implemented in the first five years of the project. The report shall comprise detailed field investigations, surveys and technical analyses of alternative plans and schemes for various elements, and pertinent legal,

managerial, economic and financial matters proposed for implementation of the first stage programme within the master plan. Necessary drawings, maps, diagrams and other data shall be attached in appropriate forms and sizes.

8.4 Final Master Plan and Feasibility Study Reports

Upon receipt of any comments and advice on the draft master plan and feasibility study reports from the agencies concerned and after the necessary corrections of adjustments are made, the reports shall be finalized.

8.5 Appraisal Report

An appraisal report shall be prepared summarising the results of findings of the present conditions of the drainage and sewerage systems in the project area, the need for the project, and a brief description of the indicated project and its alternatives and order of magnitude costs. Also, steps to complete the preparation of the project are to be defined. The report shall explain the project and its priority within the context of national and regional development plans for the sector.

8.6 Special Reports on Planning, Socio-Economic, Financial and Institutional Aspects

Interim reports in the form of working discussion shall be prepared and submitted to Cipta Karya from time to time during the course of the project. Those to be submitted are :

- (1) developments and planning of the project area and region which relate to the drainage and sewerage system development programme,

- (2) socio-economic aspects of the area including populations, living conditions, health situation, mortality and life expectancy, etc.,
- (3) financial and institutional aspects, including costs of operation and maintenance of the system, income and expenditures forecast, source of funds, etc., including tariff/fee structure to recover the project.
- (4) organizational managerial and legal aspects for the first stage programme, with analysis of the existing conditions.

These reports are not entities in themselves and they are to be incorporated in the final reports mentioned in 8.4.

8.7 Quarterly Progress Reports

Quarterly progress reports shall be submitted to Cipta Karya on general progress, and highlighting of any problems or additional considerations that have arisen. These shall be presented in a graphic and pictorial form, as appropriate.

9.0 SERVICE PERIOD AND WORK SCHEDULE

The consulting services shall be estimated to be completed within the period of eighteen (18) months after the receipt of the notice to proceed from Cipta Karya.

10.0 STAFF REQUIREMENTS OF CONSULTING SERVICES

The Consultancy services contain of International and Indonesia team with the following experts but not limited :

- a. Team Leader
- b. Hydrologist/Geologist
- c. Civil Engineer/Drainage Expert
- d. Sanitary Engineer/Waste Water Management and Treatment Plant Expert
- e. Sanitary Engineer/ Solid Waste Expert
- f. Institutional Expert
- g. Municipality Finance Expert
- h. Sociologist/Economist
- i. Environmental Expert
- j. Chemist
- k. Additional Expert
- l. Others.

11.0 UNDERTAKINGS OF GOVERNMENT

11.1 Access to Land

The Government warrants that the consultant shall have, free of charge, unimpeded access to all land in respect of which access is required for the performance of the consultant's services.

11.2 Taxation and Duties

The Government will exempt the consultant and the personnel including dependents from (or the Government shall bear the cost of) any taxes, duties, fees, levies and other impositions imposed under the laws; and ordinances in effect in Indonesia on the consultant and the personnel in respect of project

undertakings.

11.3 Other Privileges and Assistance

The Government warrants that the Government will :

- (1) Provide counterpart staff with their necessary facilities to cooperate and assist the consultant during the field work.
- (2) Provide the consultant and each of the personnel with work permits and such other documents as may be necessary to enable them to perform the services.
- (3) Arrange for the personnel to be provided promptly with all necessary entry and exit visas, residence permits, exchange permits, and travel documents required for their stay in Indonesia.

ANNEX - I

LIST OF MAJOR DOCUMENTS AND REPORTS FOR THE PROJECT

All tasks in this assignment are to be completed by the consultant. However, the client is aware that much necessary information is available within other ministries of the GOI. The Project Manager will assist the consultant to obtain existing information as outline by the Consultant in this proposal (see section). The consultant will retain sole responsibility for verifying the reliability of all information so obtained and for any interpretations.

The following documents contain relevant information and shall be reviewed by the Consultant at the outset of his assignment :

1. "Jakarta Sewerage and Sanitation Project", Volume I - VIII, Nihon Suido Consultants Co. Ltd, Tokyo, Japan, 1977.
2. "Master Plan for Drainage and Flood Control of Jakarta", Nedeco, 1973.
3. "Jakarta Drainage and Flood Control Project", Second Progress Report, October 15, 1972 - February 28, 1973, Nedeco 1973.
4. "Penyusunan Master Plan Drainage di Daerah Kuningan (Setia Budi), Jakarta Hexa Kuera, 1977.
5. "Statistical year Book of Jakarta, 1980", Jakarta Statistical Office, 1981.
6. "Jabotabek Metropolitan Development Plan", Jakarta executive Summary and Report T 12, T 14, T 17, T 22, T 23, T 24, T 28, T 30, June 1981.
7. "Solid Waste Improvement Program Jakarta - Surabaya". Monthly and Paper Progress Report, Pacific Architects and Engineers, Inc., Resources Management International, Inc., Consultants, Jakarta 1981.
8. PAM Jakarta, Information on Water Supply Conditions in Kecamatan Tebet and Setia Budi, October 1981.
9. "Master Plan for Jakarta Water Supply System", Nihon Suido Consultants, Ltd, Tokyo, Japan, September 1972.
10. Relevant section of the Jakarta Sewerage and Sanitation Project report prepared by Alpin Consult consisting of :
Volume 0 Summary Report
11. Preliminary Engineering Design prepared by Alpin Consult
Volume 1 Section A - Summary and Recommendations
Section B - Planning Criteria

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- Volume 2 Section C - Sewerage
Section Wastewater Treatment
 - Volume 3 Section E - Drainage and Flood Control
Section F - Sanitation Study
 - Volume 4 Drawings to Volume 1, 2 and 3
 - Volume 5 Addendum to Volume 1, 2 and 3
 - Volume 6 Section H - River Improvement Tebet-Manggarai
Section J - Sewerage Tebet-Manggarai
 - Volume 7 Drawing to Volume 6
 - Volume 8 Section K - Sanitation Study.
12. Detailed Engineering Design prepared by Alpin Consult
- Volume 11 Detailed Engineering Report for Sewerage Setia Budi
 - Volume 12 Drawings to Volume 11
 - Volume 13 Financial and Institutional Studies
 - Volume 14 Detailed Engineering Report for Tebet - Manggarai Sewerage and River Improvement
 - Volume 15 Drawing to Volume 14
 - Volume 16 Appendices to preliminary and Detailed Engineering Design
 - Volume 17 Setia Budi Sewerage First Stage Implementation - Drawings.
13. Map "DKI Jakarta", Scale 1 : 20,000, P.T. Pembina, 1978
14. Map "Jakarta", Scale 1 : 17,500, Falk - Verlag, Hamburg, 1978
15. "Engineering Geological Map of Jakarta - Bogor Area", Scale 1 : 50,000, Compiled by the Geological Survey of Indonesia, 1969, Published by the Ministry of Mines, 1970.
16. "Peta Pola aliran airtanah di daerah Jakarta dan Sekitarnya" Direktorat Geologi Tata Lingkungan, Seksi Konservasi air tanah, January 1980 - January 1981.
17. "Jakarta Water Supply Development Project", prepared by Nihon Suido Consultants Co., Ltd. for Japan International Cooperation Agency, March 1985.
18. All relevant studies conducted by Jakarta Drainage and Flood Control Project

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ANNEX II

LIST OF FLOODED AND INUNDATED AREA IN JAKARTA

I. EAST ADMINISTRATIVE DISTRICT

- | | |
|--------------------|--|
| 1. Kebon Nanas | 6. By Pass Road (Jl. D.I. Panjaitan -
Jl. Ahmad Yani) |
| 2. Jatinegara Kaum | 7. Kebon Pala |
| 3. Cipinang Jaya | 8. Makasar |
| 4. Cipinang | 9. Jl. Perintis Kemerdekaan |
| 5. Cipinang Besar | |

II. NORTH ADMINISTRATIVE DISTRICT

- | | |
|------------------|-----------------|
| 1. Penjaringan | 5. Rawa Badak |
| 2. Sunter | 6. Lagoa |
| 3. Tanjung Priok | 7. Kompleks AIP |
| 4. Pejagalan | |

III. WEST ADMINISTRATIVE DISTRICT

- | | |
|------------------|---|
| 1. Tomang | 6. Puri Kembangan |
| 2. Jembatan Lima | 7. Jl. Daan Mogot |
| 3. Pekojan | 8. Kampung Kamal |
| 4. Kemanggisan. | 9. Areas surround Sungai Sekretaris &
Grogol |
| 5. Rawa Buaya | 10. Cengkareng, West & East Pedongkelan |

IV. SOUTH ADMINISTRATIVE DISTRICT

- | | |
|------------------|------------------|
| 1. Setiabudi | 5. SD Tarakanita |
| 2. Pondok Karya. | 6. Blok M |
| 3. IKPN Bintaro | 7. Blok K |
| 4. Kemandoran | |

V. CENTRAL ADMINISTRATIVE DISTRICT

- | | |
|------------------------|---|
| 1. Jalan Sahang | 6. Bendungan Hilir |
| 2. Jalan Thamrin. | 7. Jalur lambat Jl. jend. Sudirman
Senayan Timur |
| 3. Kebon Kacang | 8. Area surround kali Krukut |
| 4. Bundaran Air Mancur | 9. Area surround National Monument |
| 5. Jl. Budi Kemuliaan | |

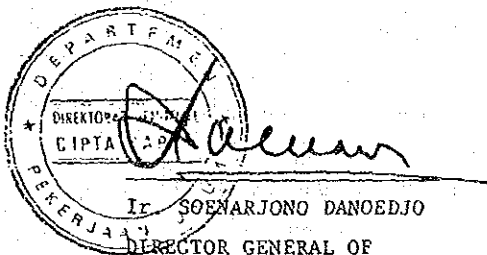
4. S/W. M/M

4-1 S/W

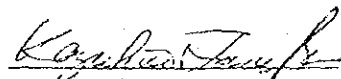
SCOPE OF WORK
FOR
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT
IN THE CITY OF JAKARTA
IN THE REPUBLIC OF INDONESIA

AGREED UPON BETWEEN
DIRECTORATE GENERAL OF HUMAN SETTLEMENTS
THE MINISTRY OF PUBLIC WORKS
THE REPUBLIC OF INDONESIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, DECEMBER 23 , 1988



Ir. SOENARJONO DANOEDJO
DIRECTOR GENERAL OF
HUMAN SETTLEMENTS
(Cipta Karya)
MINISTRY OF PUBLIC WORKS.



DR. KAZUHIRO TANAKA
LEADER OF
THE PRELIMINARY STUDY TEAM
JAPAN INTERNATIONAL
COOPERATION AGENCY.

I. INTRODUCTION

In response to the request of the Government of the Republic of Indonesia, the Government of Japan decided to implement a study on Urban Drainage and Waste Water Disposal Project in the City of Jakarta in the Republic of Indonesia (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study, in close cooperation with the authorities of the Republic of Indonesia.

The Directorate General of Human Settlements, Ministry of Public Works shall act as counterpart body to the Japanese study team and also as coordinating body in relation with other relevant organizations for smooth implementation of the Study.

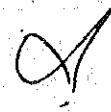
The present document sets forth the Scope of Work for the Study.

II. OBJECTIVE OF THE STUDY

The objectives of the Study is to prepare an appropriate plan from the view point of technical, economic and social feasibility to contribute to the improvement of the living environment in the City of Jakarta.

The plan consists of the following items :

1. To prepare a master plan up to the year 2010 to develop integrated systems for urban drainage and waste water disposal.
And to identify a first priority area as the first stage project up until 1995. (Phase I Study)

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2. To carry out a feasibility study for the first stage project identified in the master plan. (Phase II Study)

III. SCOPE OF THE STUDY

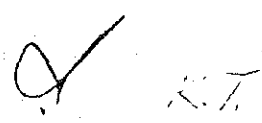
1. STUDY AREA

- 1) The Study area of the Phase I Study will cover the City of Jakarta. (The area under the Jurisdiction of DKI Jakarta.)
- 2) The Study area of the Phase II Study will be selected from the result of the Phase I Study.

2. CONTENTS OF THE STUDY

The Study will be composed of field investigation and data collection in Indonesia and of desk work both in Indonesia and in Japan.

- 1) Phase I Study ; Preparation of Master Plan
 - a. Data collection
 - b. Analysis of present conditions of urban drainage and waste water disposal
 - c. Review of existing previous studies
 - d. Identification of problems
 - e. Establishment of planning principles such as in target year (2010), definition of planning area and design criteria etc.
 - f. Preparation of a master plan
 - Comparative analysis of alternatives
 - required new facilities
 - rehabilitation of existing facilities



- rough estimation of costs for construction, operation and maintenance
- organization and institution
- g. Implementation plan
- h. Social and economic analysis
- i. Financial analysis
- j. Identification of the first priority area
 - implementation plan

2) Phase II Study ; Execution of Feasibility Study

- a. Identification of scope for proposed project
- b. Carrying out topographic survey for proposed facilities
- c. Facility planning
 - design criteria
 - examination of alternatives
 - layouts of the facilities
 - cost estimation
 - sewerage systems
 - urban drainage systems
- d. Institutional and organization planning
 - organization and management
 - user charge systems
- e. Project evaluation
 - environmental impact analysis
 - financial and economic evaluation
- f. Implementation schedule

IV. STUDY SCHEDULE

The whole study shall be conducted on accordance with the attached tentative schedule.

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V. REPORTS

JICA shall prepare and submit the following reports in English to the Government of the Republic Indonesia.

1. Inception Report

Thirty (30) copies at the beginning of the field survey in Indonesia.

2. Progress Report

Thirty (30) copies at the middle of the fourth month.

3. Interim Report

Thirty (30) copies at the end of Phase I Study.

4. Progress Report II

Thirty (30) copies at the middle of the thirteenth month.

5. Draft Final Report

Fifty (50) copies at the end of the Phase II Study.

The Government of the Republic of Indonesia will provide the Japanese study team with their comments within one (1) month after receipt of the Draft Final Report.

6. Final Report

Fifty (50) copies at the end of the eighteenth month.

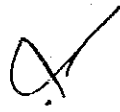
All comments given by the Government of the Republic of Indonesia will be compiled in the preparation of the Final Report.

VI. UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

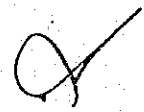
1. To facilitate smooth conduct of the Study, the Government of the Republic Indonesia shall take necessary measures ;

1) To secure the safety of the Japanese study team,

2) To permit the members of the Japanese study team to enter, leave, and sojourn in Indonesia for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees,

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- 3) To exempt the members of the Japanese study team from taxes, duties and any other charges on equipment, machinery and other materials brought into Indonesia for the conduct of the Study,
 - 4) To exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,
 - 5) To provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Indonesia from Japan in connection with the implementation of the Study,
 - 6) To secure permission for entry into private properties or restricted areas for the conduct of the Study,
 - 7) To secure permission for the Japanese study team to take all data and documents including photographs related to the Study out of Indonesia to Japan,
 - 8) To provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.
2. The Government of the Republic of Indonesia shall bear claims, if any arises against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.
3. The Directorate General of Human Settlements shall, at its own expense, provide the Japanese study team with the followings, in connection with other relevant organizations :
- (1) Available data and information related to the Study
 - (2) Counterpart personnel
 - (3) Suitable office with necessary equipment in Jakarta
 - (4) Credentials or identification cards.

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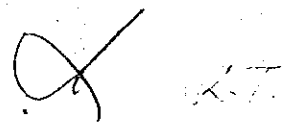
VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures ;

1. To dispatch, at its own expense, study team to Indonesia,
2. To pursue technology transfer to the Indonesian counterpart personnel in the course of the Study.

VIII. CONSULTATION

JICA and Directorate General of Human Settlements shall consult each other in respect of any matter which is not agreed in this document and may arise from or in connection with the Study.

A handwritten signature, possibly 'K. S. T.', is located in the lower right quadrant of the page. The signature is written in dark ink and consists of a stylized, cursive-like mark followed by the initials 'K. S. T.'.

A P E N D I X

T E N T A T I V E S C H E D U L E

MONTH DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WORK IN INDONESIA		▬	▬	▬			▬	▬			▬	▬				▬		
WORK IN JAPAN	▬			▬	▬	▬	▬							▬	▬		▬	
REPORT PRESENTATION	△	△	△	△				△					△			△		△
	IC/R	IC/R	P/R I	P/R I				IT/R					P/R II			DF/R		F/R

NOTE : IC/R : Inception Report DE/R : Draft Final Report

P/R : Progress Report F/R : Final Report

IT/R : Interim Report

[Handwritten signature] K.T.

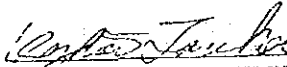
MINUTES OF MEETINGS
ON
SCOPE OF WORK
FOR
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT
IN THE CITY OF JAKARTA
IN
THE REPUBLIC OF INDONESIA

AGREED UPON BETWEEN
DIRECTORATE GENERAL OF HUMAN SETTLEMENTS
THE MINISTRY OF PUBLIC WORKS
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

JAKARTA, DECEMBER 23, 1988



Ir. Soedarjono Danoedjo
DIRECTOR GENERAL OF
HUMAN SETTLEMENTS
(CIPTA KARYA)
MINISTRY OF PUBLIC WORKS



Dr. Kazuhiro TANAKA
LEADER,
PRELIMINARY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), at the official request of the Government of the Republic of Indonesia dispatched a Preliminary Study Team (hereinafter referred to as "the Team") headed by Dr. Kazuhiro TANAKA from December 16 to 26, 1988 to discuss on the Scope of Work for the Study on Urban Drainage and Waste Water Disposal Project in the City of Jakarta (hereinafter referred to as the "Study").

The Team had a series of discussions with the authorities concerned of the Republic of Indonesia, and agreed on the Scope of Work for the Study.


This document sets forth the main items discussed.

1. Regarding Objective of the Study (II.1 of the Scope of Work), the Indonesian side requested that the Master Plan will be prepared in line with the Integrated Urban Infrastructure Development Programme (IUIDP) and the Master Plan of Infrastructure of DKI Jakarta (RUTR DKI Jakarta 2005). The Japanese side answered that the Master Plan will be prepared after sufficient investigation of the contents of IUIDP and RUTR DKI Jakarta 2005.
2. Regarding Study Area (III.1 of the Scope of Work), the Indonesian side strongly requested the Japanese side that in addition to the entire area of the City of Jakarta, the Study Area is to cover

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some surrounding areas. The Japanese side answered that the Japan/Indonesia 12th Annual Consultation held in July 1988 specified the Study Area to cover only the entire area of the City of Jakarta and suggested to the Indonesian side to propose its additional request to the Government of Japan following the formal procedure.

3. Regarding Contents of the Study (III.2.(1).f of the Scope of Work), the Indonesian side requested that comparative analysis of the alternatives should include rough financial analysis. The Japanese side took note of the request.
4. Regarding Contents of the Study (III.2 of the Scope of Work), the Indonesian side requested the Japanese side that low cost sanitation systems such as septic tanks, leaching pits and other onsite treatment systems, should be included in the Study. The Japanese side took note of the request.
5. Regarding the Study of Urban Drainage (III of the Scope of Work), both side agreed on the followings:
 - (1) Directorate General of Human Settlements shall be responsible for the coordination among relevant organizations such as Directorate General of Water Resources Development.
 - (2) The Urban Drainage Master Plan will be studied based on the Master Plan for Jakarta Drainage and Flood Control by NEDECO 1973, West Jakarta Flood Control System Project and East Jakarta Flood Control Project.
 - (3) The Urban Drainage Master Plan will be planned within the

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area specified as Settlement Area with each facilities in RUTR DKI Jakarta 2005, based on topographic data given by the Directorate General of Human Settlements.

6. For the smooth and efficient implementation of the Study, both sides reconfirmed that the Indonesian side will organize following committees.

(1) Steering Committee:

- to formulate the basic policy
- chaired by the Director General of Human Settlements
- consists of representatives of following organizations
 - Directorate of Environmental Sanitation, Cipta Karya
 - Directorate for Programme Development, Cipta Karya
 - Directorate of Water Supply, Cipta Karya
 - Directorate of Regional and City Planning, Cipta Karya
 - Directorate General of Water Resources Development
 - Local Government of DKI Jakarta
 - Others

(2) Technical Committee:

- to conduct practical matters
- chaired by Director of Environmental Sanitation
- consists of representatives of following organizations
 - Directorate of Environmental Sanitation, Cipta Karya
 - Directorate for Programme Development, Cipta Karya
 - Directorate of Water Supply, Cipta Karya

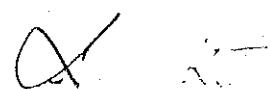


- Directorate of Regional and City Planning,
- Cipta Karya
- Directorate General of Water Resources Development
- Local Government of DKI Jakarta
- Others

7. Regarding counterparts of the Indonesian side, the Japanese side requested full time counterparts and part time counterparts from both of the Directorate General of Human Settlements and DKI Jakarta. The Indonesian side agreed to assign their personnels as counterparts to the Japanese team.

8. The Japanese side requested the Indonesian side to furnish an office with necessary equipments within the City of Jakarta to the Japanese study team. The Indonesian side agreed to the request.

9. The Indonesian side requested the Japanese side to give training to counterparts both in Indonesia and Japan. The Japanese side took note of the request.



Director General of Human Settlements :
Ir. Soenarjono Danoejo

DIRECTORATE OF ENVIRONMENTAL AND SANITATION

Director : Ir. Darmawan Saleh

O SUBDIT SEWERAGE

oo Ir. Krisno
oo Ir. Susmono
oo Ir. Hari

O SUBDIT DRAINAGE

oo Ir. M. Djihad
oo Ir. Arsono M. Eng

DIRECTORATE FOR PROGRAMME DEVELOPMENT :

O SUBDIT FOREIGN AID ADMINISTRATION

oo Ir. Sri Redzeki
oo Ir. Reifeldi

O SUBDIT PROJECT PRIPARATION AND EVALUATION

oo Ir. Risyana Sukarma Dipl. H
oo Ir. Hidayat Kaelani
oo Ir. Rina Agustin

O SUBDIT PROGRAMME PRIPARATION AND CONTROL

oo Ir. Agus Wijanarko, MIP
oo Ir. Saptorini

BUREAU FOREIGN COOPERATION

oo Drs. Soekrisno
oo Drs Darminto

LOCAL GOVERNMENT DKI JAKARTA

O LOCAL PLANNING AND DEVELOPMENT BOARD

oo Ir. M. Sidharta
oo Ir. Suharto

O PUBLIC WORKS INSPECTION

oo Ir. Ali Angkasa
oo Ir. Fodli Misbah

O BUREAU OF PUBLIC AND ENVIRONMENTAL

oo Ir. Kosasih Wirahadikusuma

O CLEANING SERVICES

oo Ir. M. Ali Rozi

O LOCAL DEVELOPMENT

oo Ir. Hadi Laksana
oo Ir. Bad Sinaga

O P4L

oo Ir. Yunani Kartawiria

- O INDUSTRIAL
oo Ir. Rucito
- O URBAN PLANNING OFFICE
oo Ir. Suryadi
- O LOCAL HEALTH OFFICES
oo Mutiara Napitupulu MPH

S. K.T.

JICA