

第7章 技術仕様書及び工事数量明細書

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7-1 技術仕様書

技術仕様書は、次の3契約パッケージについて作成した。

- パッケージⅠ 土木及び建築工事
- パッケージⅡ 軌道工事
- パッケージⅢ 電気工事

パッケージⅠは、掘削（一般及び構造）、地ならし、埋土、伐開、盛土工事、路床準備などの土工事、橋りょう及び高架橋のコンクリート構造物（鉄筋コンクリート及びプレストレスト・コンクリート）、ボックス・カルバート、のり面防護、空港駅及びコタ・インタン駅で必要となるプラットフォーム及び隣接地域の舗装、造園及び関連工事などの各種建築工事から成る。

パッケージⅡは、R54レール、分岐器、懸目板、ボルト、ナット、ワッシャー、指定された型の車止め及び関連付属品などの軌道材料の供給、引き渡し及び軌道敷設工事から成る。

パッケージⅢは、変電、配電、電車線路、踏切警報装置、信号及び通信に必要な機器類の供給、引き渡し及び設置から成る。

技術仕様書の要求事項において、国の方針を考慮し、プロジェクトに対して最大限に骨材、土材料、セメントなどの現地産の材料、製品購入の必要性を強調した。

製品、材料の品質保証に関しては、ASTM, AASHTO, ACI, AWS, JIS, AREA, UICなどの国際的に認められた各種規格、もしくは、プロジェクトに使用される製品及び材料が保証される限りにおいて、同等の規格を組み入れることを意図した。

また、現地の規格も適用可能なものはすべて、同程度の製品の品質が保証される限り組み入れるよう配慮した。

土木及び電気工事のパッケージの技術仕様書の様式は、CSI（建設仕様書協会）の様式に従い、内容を3部に分けて作成した。第Ⅰ部は、要求される工事の記述、参照、提出物、製品の取り扱い、その他必要と思われる項目、第Ⅱ部は、製品、材料についての要求事項、第Ⅲ部は、製作、設置、試験（適用を受ける場合）を含む工事の施工についての記述である。他方、軌道工事のパッケージの技術仕様書は、インドネシア共和国で以前実施された類似プロジェクトの契約書類と同一の様式で作成した。

7-2 工事数量明細書

インドネシア共和国で以前実施された、主として、道路建設及び建築工事などの類似の工事を検討し、詳細設計図面に基づいて、入札評価ができるような概略の工事数量明細書を作成した。

工事数量明細書は、パッケージⅠ、Ⅱ、Ⅲの3パッケージについて、それぞれ作成した。

第8章 入札書類

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8-1 入札指示書

当プロジェクトに類似のプロジェクトでの入札に関する資料及び情報を収集し、十分検討のうえ、パッケージ1、I、IIについての入札指示書を作成した。その内容は以下のものを含む。

- (1) 工事の概要
- (2) 入札書類の構成
- (3) 一般条項
- (4) 入札の準備及び提出
- (5) 開札
- (6) 入札の評価
- (7) 入札の有効期間
- (8) 契約認可

付属書

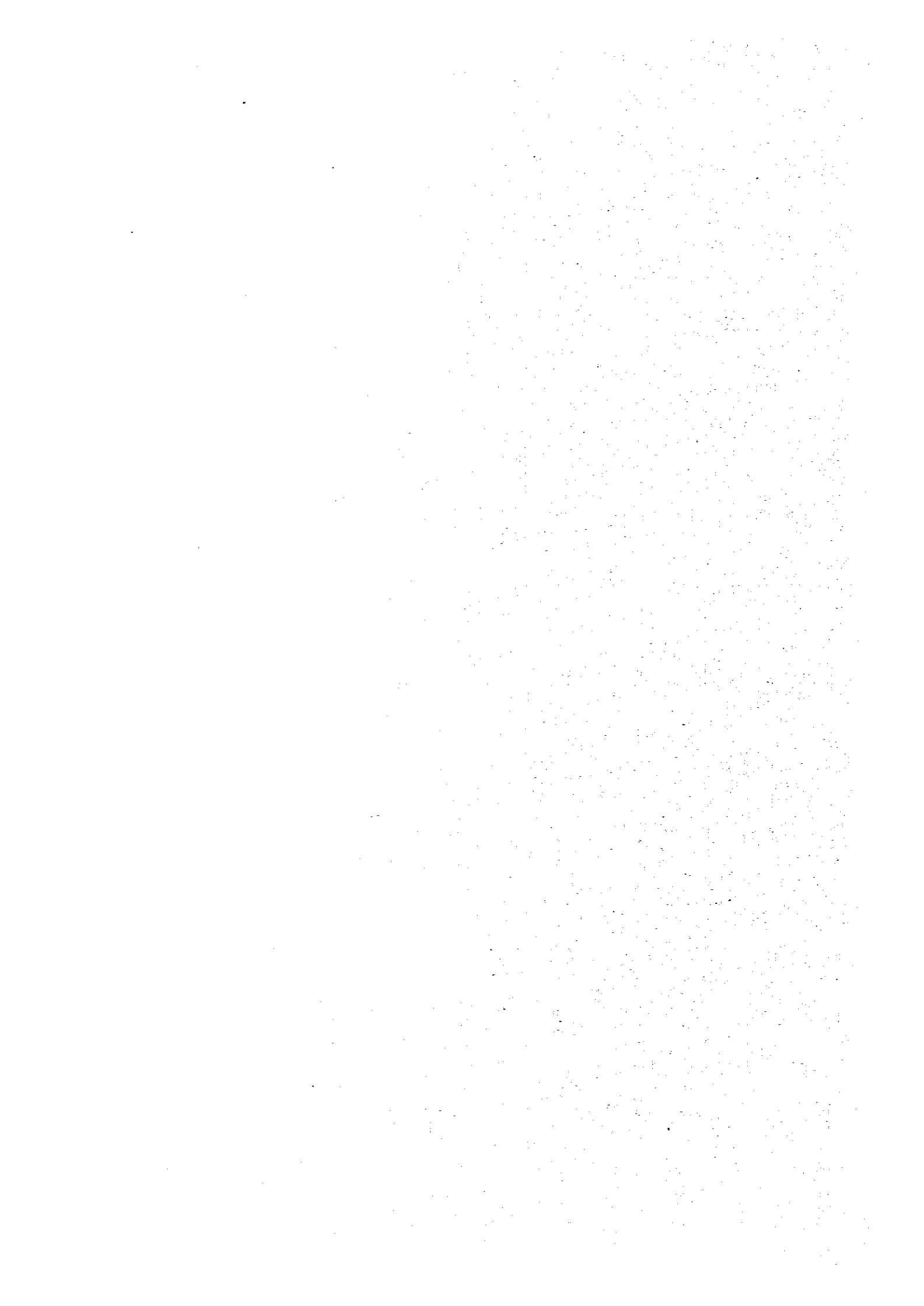
- 様式1 入札書式
- 様式2 建設プラント一覧表
- 様式3 工事用材料の価格表
- 様式4 労務賃金単価
- 様式5 詳細価格分析
- 様式6 詳細工程表
- 様式7 請負業者職員一覧表
- 様式8 請負業者上級職員の経歴書
- 様式9 入札保証書の様式

8-2 契約条件書

国際コンサルティング・エンジニア協会(FIDIC)発行の契約条件書(3版)及び類似プロジェクトの契約条件書に基づいて、パッケージ1、I、IIについての契約条件書を作成した。

契約合意書様式及び履行保証書様式も、付属書として準備した。

第9章 工事費及び工事工程



第9章 工事費及び工事工程

9-1 工事費積算の基本方針

工事費は、インドネシア国の経済状況、本工事の発注時期等により、相当の変動があると考えられるが、次のような基本方針により積算した。

- (1) 工事費は、1983年10月現在の法律・法令、労務賃金、材料価格、機械価格等を基準として積算した。
- (2) 工事費は、国際入札を前提とし、入札に付す工事は、土木・建築工事、軌道工事及び電気関係工事の3パッケージに分けて積算した。
- (3) 工事費は、次の条件に基づき、内貨及び外貨に分けて算出した。

内貨

- インドネシア国内で調達される資機材等
- インドネシア国人従事者の賃金
- 国内施工業者の経費及び利益
- 税金

外貨

- 輸入資機材等
- 外国人従事者の給料
- 外国施工業者の経費及び利益

- (4) 本工事に必要な外国から輸入する資機材等の関税、輸入税及び本工事に従事する外国人及び外国人従事者の所得税の課税は、免税処置を受けられるものとした。
- (5) 本工事に従事する作業員は、すべてインドネシア国人とし、その労務賃金は、1日労働7時間の基準賃金に社会保障費その他諸手当を加算して査定した。
- (6) 本工事に必要な材料は、可能な限りインドネシア国産品を調達するものとし、やむを得ない材料のみ外国産品を輸入する。

国内産の材料単価は、インドネシア国公共事業省発行の資料及びジャカルタの市場価格等に基づいて査定した。

- (7) 本工事に必要な建設用機械器具の価格は、インドネシア国内の市場価格（輸入品）と施工業者が外国から持込み、使用后持出す場合の価格を比較し、本工事においては、後者の価格を採用した。

- (8) 入札に付す3パッケージの工事費のほか、本工事に必要な下記項目についての予算を計上した。

1) 用地及び支障物補償費

本工事に必要な用地の取得及び用地内の建物、高圧送電鉄塔その他の地上物件及び地下埋設物等の支障物に対する移転補償は、発注者側が実施するものとし、土地代及び建物移転補償の単価については、空港アクセス道路の用地取得実績に関するDK Iの資料その他に基づいて査定した。

2) 空港アクセス道路移設費

空港線は、空港地域を出てから空港アクセス道路と交差することになるが、BINA MAROAと協議の結果、道路を移設して、鉄道を乗越すことに決定された。なお、この道路の移設に関する設計、施工は道路側で実施するものとし、これに要する費用は、本工事で負担する。

3) 試運転費

空港線の開業に際して、半年前にほぼ工事を完了させ、6か月間練習運転を行なうものとし、これに必要な運転士、車掌、駅員、施設保守要員等職員の人件費、電力費等を計上した。

4) 電力会社負担金、保証金

電力供給は、インドネシア電力公社(PLN)から受けることになるが、これに伴う電力公社への負担金及び保証金は、発注者側で支払うものとし、その費用を計上した。

5) 監理施設費

工事施工監理に必要な監理事務所新築(設備、調度品を含む)、自動車購入等の費用及び監理施設の保守管理費を計上した。

6) 施工監理費

工事施工監理に必要な監督者及び外国コンサルタントの人件費、旅費滞在費その他の経費等を計上した。

7) 予備費

設計変更等に対する予備費として、土木・建築工事及び電気関係工事については10%、軌道工事については5%を計上した。

また、物価騰貴に対する予備費として、内貨部分については年10%、外貨部分については年5%を計上した。

⑨ 外貨の交換レートは、 $RP980=US\$1.00 (=¥235)$ とした。

9-2 工事費

工事費積算の基本方針に基づいて積算した総工事費は、暫定地平取付の場合の工事費と、その後高架化する場合の工事費について算出した。

9-3 工事工程

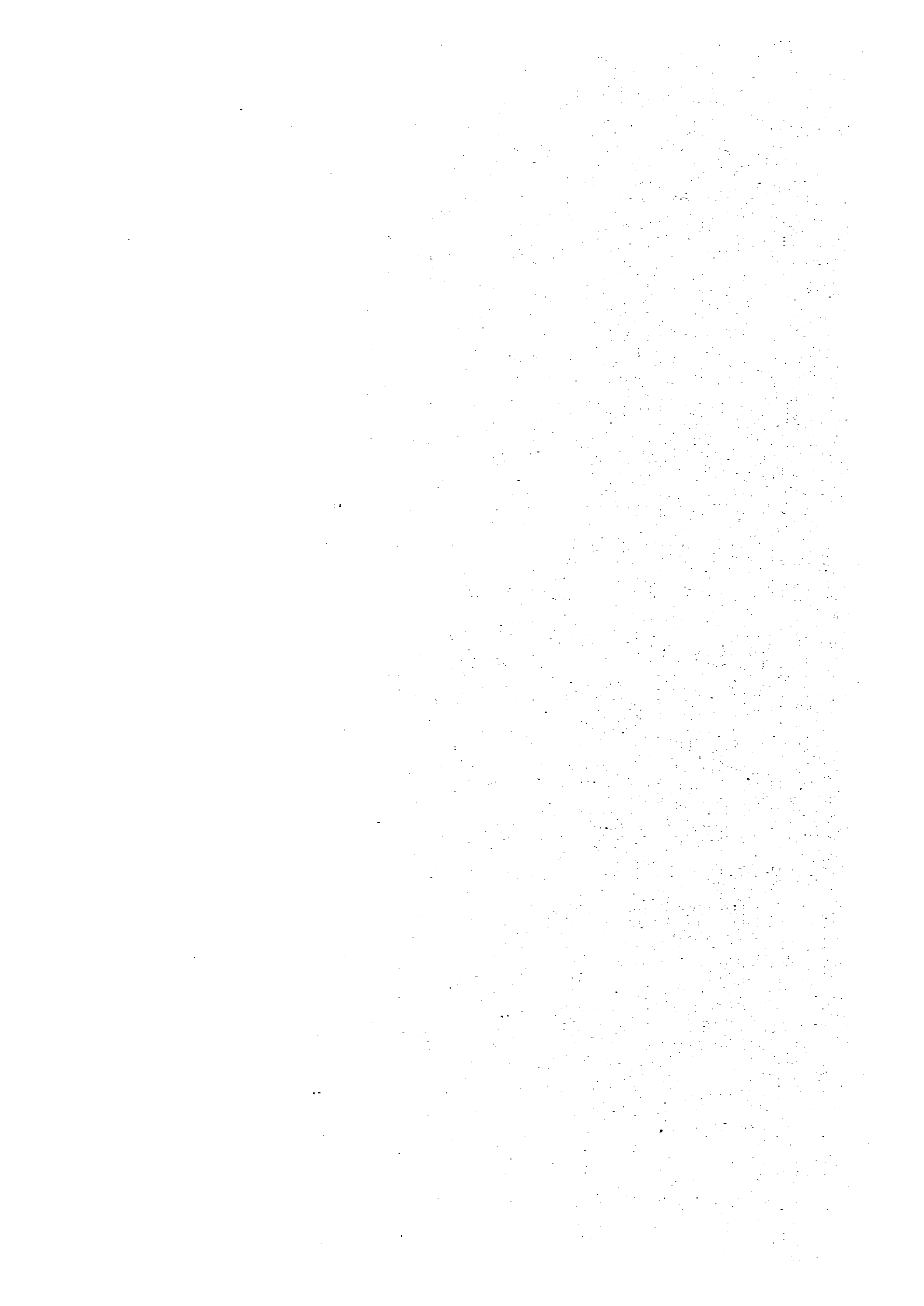
工事工程は、表9-3-1に示すように、土木・建築工事、軌道工事及び電気関係工事の着手から完成までに3年を要し、用地取得及び試運転等を含めた開業までの総工事期間は4年となる。

表9-3-1 工事工程表

Commencement of Operation

Construction Period Work Item		1st Year												2nd Year												3rd Year												4th Year													
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Surveying	Right-of-Way Stake																																																		
Geological Survey	Boring																																																		
Civil Work	Earthworks																																																		
	Bridges and Viaducts																																																		
	Road Construction Works																																																		
Track Work	Track Laying Work																																																		
	Track Shifting Work																																																		
Architectural Work	Airport Station																																																		
	Kota Intan Station																																																		
	Signal Station																																																		
	Crossing Watchman's Box																																																		
Electrical Work	Substations																																																		
	Overhead Contact System																																																		
	Power Distribution Lines																																																		
	Signalling System																																																		
	Telecommunication System																																																		
Land Acquisition and Removal of Obstacles																																																			
Shifting of Airport Access Road																																																			
Test Run																																																			
Construction Supervision Facilities																																																			

付 属 書



LIST OF DATA COLLECTED IN INDONESIA

The collected data and information from relevant sources are described below.

- (1) Directorate General of Air Communication
 - o Drawings for airport plan and bridge structures in airport area
 - o Drawings for various structures in airport area
 - o General arrangement of airport facilities
 - o Pavement detail of road in airport area
 - o Drawings and information on plantation in airport area
- (2) Directorate General of Highways
 - o Manual for design of road
 - o Feasibility study on Jakarta harbour road
 - o Standards and codes on road
 - o Drawings on airport access road
 - o Drawings for future plan of Jalan Jembatan Tiga
 - o Set of tender document for Jakarta - Intra urban tollway
 - o Jakarta - Merak highway project bid schedule
- (3) DKI Jakarta
 - o Materials for land acquisition of airport access road
 - o Drawings for river and water channels in proposed railway line area
 - o Land use map for Jakarta
 - o A set of drawings for Jalan Jayakarta
 - o Map of Jakarta (scale 1 : 5,000)
 - o Drawings and information on roads in Jakarta
 - o Drawings for various underground structures/facilities

(4) Indonesian State Railways

- o Yard operation diagram (Jakarta and Gudang Station)
- o Train diagram in JABOTABEK area
- o Materials for design of Railway structures
- o Materials for cost estimate
- o Profile of western line
- o Drawings for bridge structures located in western line
- o Materials for land acquisition of central line
- o Feeding network in JABOTABEK area
- o Signal line diagram in Gambir substation
- o Standard for buried cable under live line
- o Standard for materials of electric car line
- o Peta hubungan telekomunikasi PJKA
- o Standard for catenary
- o PJKA train dispatching system
- o Track design criteria
- o Material list for track
- o Comparison on fastenings
- o Class of railway
- o Roadway diagraph
- o Specification for PC sleeper
- o Drawing of Pandrol
- o Bid and contract documents
- o Tender document for track

(5) Other Relevant Sources

- o Meteorological data in Jakarta area (1973 - 1982)
- o Data on rainfall and rainy days (1961 - 1980)

- o Record of earthquakes
- o Unit cost of construction materials
- o Monthly statistical bulletin
- o Traffic volume of main road in Jakarta area
- o Tariff of power
- o Tariff of city water
- o Masterplan for drainage and flood control of Jakarta
- o Final report on Cengkareng drain system study
- o Data on rainfall in Jakarta area
- o Unit cost of architectural materials
- o Catalogue of various architectural materials
- o Laws for fire fighting
- o Standard specification for highway construction
- o Instalasi tegangan tinggi 6 kv, 20 kv
- o Price list of various cables
- o Price list of power supply from PLN
- o Location map for 20 kv cable in Jakarta area
- o Single line diagram of PLN switch house
- o General regulation for electrical installation
- o The regulation for earthquake resistant design of building in Indonesia
- o Contract documents & B/Q for Bumi Putera building

RECORD OF DISCUSSION
FOR
INCEPTION REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENCKARENG AIRPORT

The joint meetings for the above mentioned study were held on 19th and 20th of July 1983 at Directorate General of Land Transport and Inland Waterways (PHBD) Ministry of Transport.

Attendants from both sides were shown in this record as attached.

The Indonesian side was represented by Ir. Giri S. Hadiharjono MSE, chairman of Indonesian Steering Committee and the Japanese side was represented by Mr. H. Takachima, Chairman of Supervisory Committee for the Study Team.

JICA Study Team, headed by Mr. M. Koyama submitted thirty (30) copies of the Inception Report on the above mentioned study to PHBD and also made explanation on the Report.

The following is the Record of Discussions during the Joint meetings.

The Inception Report submitted by JICA Study Team was accepted with the following clarifications :

1. Problem Areas

(1) Interface between New Railway Line and Central Line.

It was suggested by Indonesian side to cope with a considerable and certain time gap between the project schedules for

"Cengkareng Airport Railway Line" and Elevated Track for the Central Line" that the most cautious study be made by JICA Study Team for the alternatives in connection with the future plans as mentioned by Indonesian side.

JICA Study Team stated that the study would be made to the possible extent in direction of incorporating the recommendation to the suggestion made by Indonesian side into the Report.

(2) Interface with Jakarta Harbour Road.

JICA Study Team presented schematic drawings showing the location where shifting of the Harbour Road by approximately 15 m towards north from the proposed alignment and to the extent of approximately 3 km required from the location adjacent to Jalan Jembatan.

Close coordinating through PHBD with BINAMARCA and other relevant authorities should be immediately made.

(3) Crossing with Airport Access Road at the Exit of Airport.

Due to the fact that the design of access road was completed by BINAMARCA, coordination through PHBD with BINAMARCA and other relevant authorities should be immediately made.

(4) Crossing with JEBATAN Road

In view of future vehicular traffic volume on the Jembatan Road, grade-separation will be essential, close coordination through PHBD with BINAMARCA and other relevant authorities should be immediately made with regard to determination of the type of grade-separation.

(5) Crossing with Airport Access Road.

This is an identical problem to the precedings, therefore close coordination through PHBD with all relevant authorities should be immediately made.

(6) Gradient.

Indonesian side stated that a grade of 35%, as used in Japan would not be practical in Indonesia as the existing rolling stock of PJKA cannot cope with the grade in question.

For example, existing diesel raicars' tractive power has been designed for a grade of 15%.

(7) Design Train Load.

Despite JICA Study Team proposed to adopt design train load lighter than KS-16, Indonesian side suggested an alternative of an axle load of 18 t for bridge structure and 15 t for track structure. Discrepancy was discovered in the meaning of a term "KS" between two parties.

Definition of the term "KS" was requested by Indonesian side for mutual understanding.

JICA Study Team would further study on the preceding matters for the selection of a most suitable grade and design train load as these problems are closely related to the consistency in the design criteria adopted for "JABOTABEK" Projects.

2. OTHER MATTERS

(1) Technical Transfer

As to a point raised by a BAPENAS representative regarding the effective use of Indonesian counterpart experts involved in the detailed design work, JICA Study Team stated that technical transfer of the detailed design work to the Indonesian counterpart experts can be accomplished until the end of October 1983 to such an extent as completing the design work for typical structures.

JICA stated that training of an Indonesian counterpart could be made in Japan for a period within this fiscal year.

(2) Use of Local Products.

Due consideration has already been made by JICA Study Team to use local products to the maximum extent provided that the local products will meet the requirements as stipulated in the technical specifications.

This was agreed by Indonesian side.

3. UNDERTAKING OF THE GOVERNMENT OF INDONESIA.

(1) Counterpart Experts.

Counterpart experts as requested by JICA Study Team in the Inception Report was agreed in principle by Indonesian side, yet detailed information such as name, title, assignment and responsibilities will be disclosed in the near future.

JICA Study Team specifically requested to clarify the extent of services and responsibilities.

Since surveying and geological survey would be essential jobs to enable the design team to carry out the detailed design effectively and successfully, JICA Study Team therefore emphasized to request Indonesian side to assign the experts or specialists who are capable of settling the possible trouble that might be claimed by local inhabitants residing in the neighbourhood of the project location.

JICA Study Team also requested Indonesian side for appropriate actions to enable their team members to carry out the work upon entering or trespassing on the privately owned lots.

Indonesian side guaranteed the security.

(2) Office and others.

(a) Office space of 150 m² with telephones and airconditioners against the request for 300 m² will be provided in the initial stage followed by increase in space at later stage.

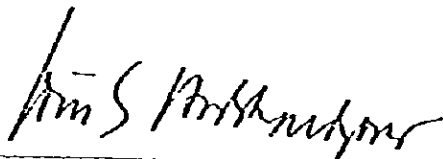
- | | |
|--------------------------|------------------|
| (b) Desks and Chairs | 40 sets - Agreed |
| (c) Drafting Tables | 4 sets - Agreed |
| (d) Electric Typewriters | 2 units - Agreed |
| (e) Book Shelves | 7 units - Agreed |

- | | |
|--|--|
| (f) Large White Board | 1 set - Agreed |
| (g) Photo Copy Machine | 1 unit common use with
JABOTABEK Project
Team - Agreed |
| (h) Kitchen Facilities | Agreed |
| (i) Two typists, three draftsmen and
one office boy | Agreed |
| (j) Vehicles with fuel and drivers | |
- Since JABOTABEK Project Team has 10 vehicles, a request for vehicles can be made available through the person in charge at any time. At present, 2 micro buses are available at anytime.

(3) Necessary Data and Pertinent Information.

Among all the relevant data and information necessary for the project as specified in the Inception Report, page 36, from the item 1 through 13, JICA Study Team requested for data related to roads and airport construction urgently. Indonesian side stated that JICA Study Team would be provided with necessary data and information through PH80 from the relevant sources, however, the request should be made in writing and submitted to PH80 for further action.

(4) The attendants Lists are as per attached.



Ir. GIRI. S. HADIHARDJONO MSE
Chairman of the Indonesian
Steering Committee
Government of Indonesia



Mr. HITOSHI TAKASHIMA
Chairman of Supervisory
Committee
Japan International Cooperation
Agency.

ATTENDANCE LIST OF MEETING INCEPTION
REPORT STUDY OF DETAILED DESIGN ON
CENKARENG NEW RAILWAY LINE.

DATE : JULY 19, 1983

INDONESIAN PARTY

1. Ir. GIRI S. HADIHARDJONO Directorate General of Land Transport
and Inland Waterways.
2. Drs, DARHAWAN National Planning and Development Board
3. Ir. BIDIHARDJO Region of Planning and Development of DKI
Jaya.
4. GATOT SOEDJANTOKO Directorate General of Land Transport
and Inland Waterways
5. Ir. IMAM SOEDRADJAD Departement of Communication
6. Ir. NUGROHO Jabotabek Railway Project
7. ABD. SAFARI West Exploitation of PJKA
8. AMIROEDIN Indonesian State Railways
9. WAHJUDI Indonesian State Railways
10. Ir. SOEPARTO Jabotabek Railway Project
11. SAMPOERNA RAIFOEDIN Indonesian State Railways
12. TOHIR KARTABRATA Jabotabek Railway Project
13. Ir. NICO DJAJASINGA Jabotabek Railway Project
14. Ir. DJAUHARI P. Directorate General of Land Transport
and Inland Waterways
15. T. MATSUMOTO Expert to DGLT
16. T. HATA Expert to DGLT
17. K. ASHINA Expert to DGLT
18. S. SHIBUYA Expert to DGLT

JAPANESE PARTY.

1. Ministry of Transport

H. TAKASHIMA

2. Japan Embassy

M. NAKAMOTO

3. Japanese National Railways

H. KUMAGAI

4. Japan International Cooperation Agency

S. KANAI

5. JICA Study Team

M. KOYAMA

T. NAKAJIMA

K. YAMADA

K. HURATA

T. YAMADA

S. INOUE

T. YAMADA

M. MASUDA

T. KURATA

H. NAGAI

T. KUBO

T. TERAKI

H. AKIHOTO

ATTENDANCE LIST OF MEETING INCEPTION
REPORT STUDY OF DETAILED DESIGN ON
CENKARENG NEW RAILWAY LINE

DATE : JULY 20, 1983

INDONESIAN PARTY

- | | |
|------------------------|---|
| 1. CATOT SOEDJANTOKO | Directorate General of Land Transport and
Inland Waterways |
| 2. Ir. SOEPARTO | Jabotabek Railway Project |
| 3. SAMPOERNA RAIFUDIN | Indonesian Railway Project |
| 4. TOHIR KARTABRATA | Jabotabek Railway Project |
| 5. SOETIKNO | Indement Consult |
| 6. ASKAN | Indement Consult |
| 7. SORJANTO | Jabotabek Railway Project |
| 8. Ir. NICO DJAJASINGA | Jabotabek Railway |
| 9. PUJOSUMARNO | Departement of Communication |
| 10. F. TANJUNG | Departement of Communication |
| 11. Ir. DJAUHARI P. | Directorate General of Land Transport and
Inland Waterways |
| 12. T. MATSUMOTO | Expert to DGLT |
| 13. T. HATA | Expert to DGLT |
| 14. K. ASHINA | Expert to DGLT |
| 15. S. SHIBUYA | Expert to DGLT |

JAPANESE PARTY

1. Ministry of Transport

H. TAKASHIMA

2. Japanese National Railways

N. KUMAGAI

3. Japan International Cooperation Agency

S. KANAI

4. JICA Study Team

M. KOYAMA

T. NAKAJIMA

K. YAMADA

K. MURATA

H. AKIYOTO

S. INOUE

T. YAMADA

T. TERAKI

MINUTE OF MEETING

BETWEEN

PJKA / JABOTABEK AND JICA / COUNTERPART

HELD IN PJKA HEAD OFFICE BANDUNG

SEPTEMBER 05, 1983, FROM 09^{00 AM} - 01^{30 PM}

(ATTACHED ATTENDANCE LIST)

SUMMARY RESULTS:

1. GRADIENT:

a). HAVE BEEN APPROVED BY PJKA (HR. SITUKOCAB) THAT MAXIMUM GRADIENT UP TO SEPT. 05, 1983 IS 15 ‰

b). FOR BIGGER FIGURE (MAY 20-25 ‰) AS REQUESTED BY JICA WILL BE ANSWERED / CONFIRMED LATER (WITHIN 10 DAYS LATER AFTER ^{PJKA} RECEIVE THE EXIST CHARACTERISTIC DATA FROM THE MANUFACTURER).

2. DESIGN CRITERIA

ALMOST ALL DESIGN CRITERIA SUBMITTED BY JICA HAVE BEEN APPROVED BY PJKA EXCEPT FOR:

a). WIDTH OF FORMATION LEVEL (FOR TRACK CENTER RESPECTIVELY), HAVE BEEN DECIDED BY PJKA 2,85 M, INSTEAD OF 2,70 M

b). PLATFORM LENGTH, BASICALLY APPROVED 190 M INSTEAD OF 270 M AS REQUESTED BY PJKA. PJKA STILL REQUIRE MORE DETAIL EXPLANATION FROM JICA ABOUT THE REAL EXISTING CONDITION IN AIRPORT CENGKARENG AND ALSO EXPLANATION ABOUT THE POSSIBILITIES TO INCREASE THE TRAIN FREQUENCIES BY ADDITIONAL SIGNALING SYSTEM FOR THE OPERATION BEYOND THE YEAR OF 2010.

c). FORMULA OF TRANSITION CURVE WILL BE GIVEN FROM PJKA TO TEN JICA.

d). VERTICAL CURVE: HAVE BEEN DECIDED BY PJKA THAT VERTICAL CURVE SHOULD BE 6000 INSTEAD OF 4000.

e). BALLAST THICKNESS OF TRACK HAVE BEEN DECIDED BY PJKA SHOULD BE 300 MM INSTEAD OF 250 MM. JICA WILL DISCUSS THIS MATTER NEXT MEETING.

f). STANDARD OF WEIGHT OF RAIL HAVE BEEN DECIDED BY PJKA SHOULD BE USED UIC 54 INSTEAD OF NS 54/1.

5). MAX. CANT HAVE BEEN DECIDED BY PjKA
SHOULD BE 110 MM INSTEAD OF 105MM
(ACCORDING EXISTING REGULATION).

3. HAVE BEEN INFORMED BY PjKA,
THAT ALL DISCUSSION WILL BE LEAD
BY MR. SOEPARTO (JABOTABEK) OR
PjKA EKSPLOITASI BARAT, EXCEPT FOR
PRINCIPAL MATTER (I.E FOR GRADIENT).

BANDUNG, SEPT-05, 1983

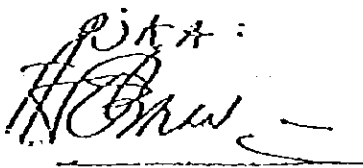
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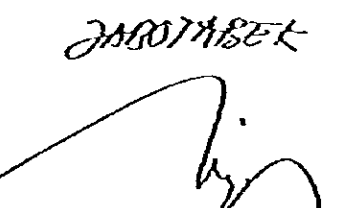


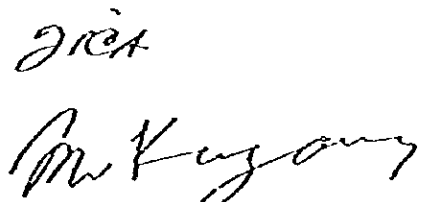
SUTOPO H

PROJ. OFFICER :

AGREED:

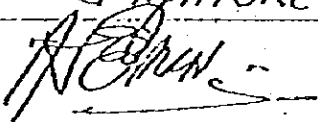
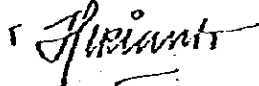
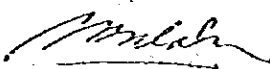


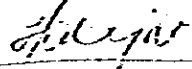
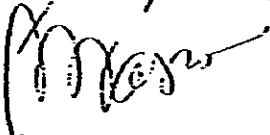
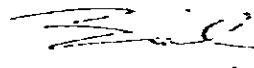
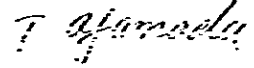
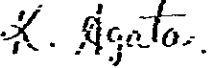

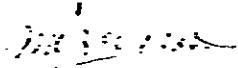
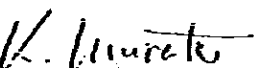


PjKA:

MR. SOEHARSO
DIRECTOR

JABOTABEK

MR. SOEPARTO
KEP. DIV. TEKNIK

PjKA

MR. M. LAYORIA
PROJ. R6A

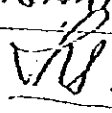
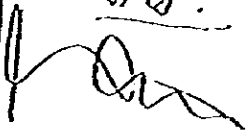
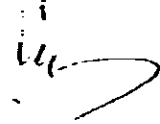
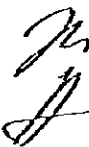
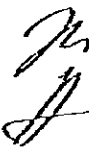
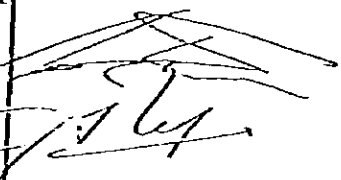
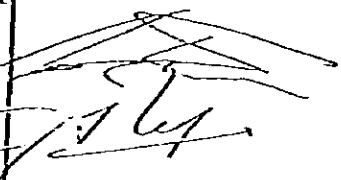
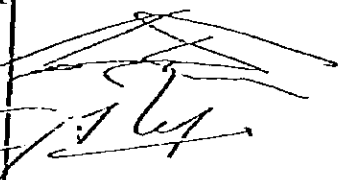
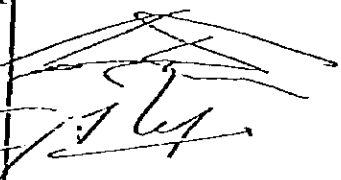
ATTENDANT LIST

DATE: SEPT 5/1983

NO	NAME	COMPANY	SIGNATURE
1	IR. Soeharso	DIR. INSTALASI TETAP PTKA	
2	IR. Soeparto	RADIU TEKNIK JABOTABEK RA	
3	IR. Sutoyo M	Counterpart Indonesia	
4	Pj. SOETRISNO	KASUBDIT SIGNAL & TELKOM	
5	ARIEF HERIYANTO	PROYEK JABOTABEK	
6	Berlin Silaen	Counterpart Indonesia	
7	SOERJANTO	PROYEK JABOTABEK	
8	Simon SILALAH	Counter part Indonesia	
9	M HIDAJAT	PROYEK JABOTABEK	
10	MANURIYANTO	PROYEK JABOTABEK	
11	EMIL A. RUSLI	DIR. SUB. DIR. JABOTABEK PROYEK JABOTABEK	
12	T. YAMADA	JICA	
13	Kairyu AGATA	"	
14	Masumi SEKINE	"	
15	Mitsune MIFUNE	"	
16	Kobai MURATA	"	
17	SHIBATA/S	"	
18	Masanao Koyama	"	
19			
20			
21			

ATTENDANT LIST

DATE : SEPT 5, 1983

No	NAME	COMPANY	SIGNATURE
1.	Ir. Soeharso	Dir Instalasi Tetap	
2.	Chaidir Nien Latief S.H.	PJKA	
3.	Ir. Soeparto	Dir Lalu Lintas & Pemiagaan PJKA	
4.	Ir. Sotoyo H	Kadiv Teknik Proyek SABOTABEK	
5.	Ir. J. T. Sumanang	Counterpart Indonesia	
6.	Djafek	Dir TRAKSI AMERIK	
7.	In. Koestomo	Kepala Seksi Operasional	
8.	K. N. N. G.	Kasubdit Penyelenggaraan Pekerjaan Pembangunan (Instalasi Tetap)	
9.	KENANG.	Kasi Telekomunikasi	

MINUTE OF MEETING

BETWEEN

PJKA/JABOTABEK AND JICA/COUNTERPART HELD IN PJKA HEAD OFFICE
BANDUNG, SEPTEMBER 05, 1983, FROM 09⁰⁰ AM-01³⁰ PM

(ATTACHED ATTENDANCE LIST)

- | | | |
|-------------------------------|------------------|---|
| 1. Mr. SUHARSO, Ir. | PJKA | Director |
| 2. Mr. SOEPARTO Ir | JABOTABEK | Kadiv. Teknik |
| 3. Mr. CH.N. LATIEF, SH | PJKA | Director |
| 4. Mr. ST. SITUMORANG, Ir | PJKA | Director |
| 5. Mr. SOETRISNO | PJKA | Kasubdit Signal
& Telkom. |
| 6. Mr. DJAFAR | PJKA | Kaseksi Operasi
Lok. |
| 7. Mr. KOESTOMO, Ir | PJKA | Kasubdit Pengola-
han data & Pembangunan |
| 8. Mr. KENANG | PJKA | Kasie Telekomunikasi |
| 9. Mr. T. YAMADA | JICA | - |
| 10. Mr. K. AGATA | JICA | - |
| 11. Mr. M. SEKINE | JICA | - |
| 12. Mr. I. MIZUNO | JICA | - |
| 13. Mr. K. MURATA | JICA | - |
| 14. Mr. S. SHIBATA | JICA | - |
| 15. Mr. M. KOYAMA | JICA | - |
| 16. Mr. SUTOYO M, Ir | COUNTERPART IND. | - |
| 17. Mr. BERLIN A.S. Ir | - | - |
| 18. Mr. S. SILALAH I Dipl Ing | - | - |
| 19. | | |

- | | | |
|-----------------------------|------------------|---|
| 19. Mr. SURYANTO, Ir | COUNTERPART IND. | - |
| 20. Mr. M. HIDAYAT, Ir | " | - |
| 21. Mr. MANURIYANTO, Ir | " | - |
| 22. Mr. ARIEF HADIYANTO, Ir | " | - |
| 23. Mr. EMIL A. RONI, Ir | " | - |

SUMMARY RESULTS :

1. GRADIENT :

- a) Have been Approved by PJKA (Mr. Situmorang) that maximum Gradient up to September 05, 1983 is 15⁰/oo.
- b) For Bigger figure (Say 20 - 25 ⁰/oo) as Requested By JICA will be answered/confirmed later (within 10 days later after PJKA receive the exact characteristic data from the manufacturer).

2. DESIGN CRITERIA

Almost all design criteria submitted by JICA have been Approved by PJKA Except for :

- a) ~~Width~~ of formation level (for track center respectively) have been decided by PJKA 2,85 M, instead of 2,70M
- b) PLATFORM LENGTH, BASICALLY APPROVED
190 M instead of 270 M as requested by PJKA. PJKA still require more detail explanation from JICA about the ~~real~~ existing condition in Airport Cengkareng and also explanation about the Possibilities to increase the train frequencies by additional signalling system for the operation beyond the year of 2010.
- c) Formula of transition curve will be given from PJKA to Team JICA.

d)

d) Vertical Curve :

Have been Decided by PJKA that vertical curve should be 6000 instead of 4000.

e) Ballast thickness of track have been decided by PJKA should be 300 mm instead of 250 mm, JICA will discuss this matter next meeting.

f) Standard of weight of Rail have been decided by PJKA should be used UIC 54 instead of N 50 kg/m equivalent.

g) Max Cant have been decided by PJKA should be 110 mm instead of 105 mm (According existing regulation).

3. Have been informed by PJKA, that all discussion will be lead by Mr Soeparto (JABOTABEK) or PJKA exploitasi Barat, Except for Principal Matter (i.e. for Gradient).

Bandung, September, 5 1983
Minuted by Ind. Counterpart

SUTOYO M.
Proj. OFFICER

AGREED :

PJKA

JABOTABEK

JICA

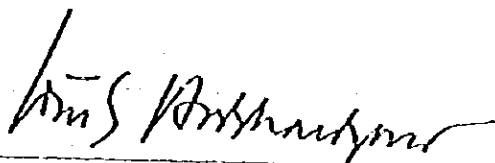
Mr. SOEHARSO
DIRECTOR

Mr. SOEPARTO
KEP.DIV. TEHNIK

Mr. M. KOYAMA
PROJ. MANAGER

RECORD OF DISCUSSION
FOR
PROGRESS REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENCKARENG AIRPORT

October 29, 1983



Mr. GIRI S. HADIHARDJONO MSE.
Chairman of the Indonesian
Steering Committee
Government of Indonesia



Mr. KAORU UNEMOTO
Member of Supervisory
Committee
Japan International Cooperation
Agency

RECORD OF DISCUSSION
FOR
PROGRESS REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENCKARENG AIRPORT

The joint meetings for the captioned study were held at Directorate General of Land Transport and Inland Waterways (PHBD) on the 25th of October and in Granadha Building of JABOTABEK on the 26th of October 1983.

The attendants from both sides are shown in this record as per attached sheets. On the first day, the Indonesian side was represented by Ir. Pantiarso, Project Manager of JABOTABEK Railway Project, supported by Mr. Gatot Soedjantoko, Head of Planning, Directorate General of Land Transport and Inland Waterways and the Japanese side was represented by Mr. Kaoru Umezoto, Member of Supervisory Committee for the JICA Study Team. On the second day, the Indonesian side was represented by Ir. Soeparto, Chief Engineer of Engineering Division, JABOTABEK and the Japanese side was represented by Mr. Kaoru Umezoto.

The Study Team, headed by Mr. Masanao Koyama, submitted thirty (30) copies of Progress Report with Drawings and explained them on the 25th. On the following day, discussion was made as for the Progress Report and its problem areas. The following is the Record of Discussion during the joint meetings.

The Progress Report submitted by JICA Study Team was accepted with the following clarifications and modifications:

1. Interface Problem Area

- (1) The formation level of the bridge crossing the discharge channel at PK 021 + 20 within the airport shall be raised by more than

32 cm so as to meet the required clearance for the discharge channel. The level crossing adjacent to the bridge will be raised accordingly.

- (2) The crossing of the New Railway Line with Access Road at the exit of the Airport which requires shifting of Access Road to the south will be solved by the Indonesian side.
- (3) The proposed right-of-way of the New Railway Line passing between Western Line and Harbour Road is imperative for constructing the New Railway Line.
- (4) The design of the bridge overpassing Jalan Jembatan Tiga will be decided by the Indonesian side and informed to the Study Team.
- (5) The design of overpass between Jakarta Ring Road and S-W Arc of Intra Urban Tollway will be carried out on the basis of the concept that roads will overpass the New Railway Line.

2. Signalling System

The signalling system proposed by the JICA Study Team will be adopted to the detailed design work. It has been confirmed that further study on the signal indication system is essential as this problem is closely related to overall planning of JABOTABEK Railway Project.

3. Overhead Clearance of Over-Road Bridge

The overhead clearance of over-road bridges shall be, in principle, in conformity with the regulation of the Indonesian Government. The Study Team submitted to BINA MARGA and DKI Jakarta a letter for approval of overhead clearance proposed by the Study Team on the 27th of October 1983.

4. Miscellaneous Items

- (1) Two Platforms shall be constructed at the same time in Cengkareng Airport Station.
- (2) The Study Team will study the introduction of safety siding with elastic buffer stopper in Jayakarta Station Yard.
- (3) The Study Team requested that the Indonesian side gives comments on the floor area program for the Airport Terminal Station within two (2) weeks.

5. Special Consideration

The Study Team strongly requested that the Indonesian side would provide answer to the interface problems not yet solved.

ATTENDANCE LIST OF MEETING
FOR
PROGRESS REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENCKARENG AIRPORT
DATE: OCTOBER 25, 1983

Presents:

1. Ir. Pantiarso (JABOTABEK)
2. Mr. Gatot Soedjantoko (Ditjen Perhubungan Darat)
3. Mr. Toyohiko, MATSUMOTO (Ditjen Perhubungan Darat)
4. Mr. Tomoyoshi, HATA (Ditjen Perhubungan Darat)
5. Mr. Susumu, SHIBUYA (Ditjen Perhubungan Darat)
6. Ir. Soeparto (JABOTABEK)
7. Mr. Hanuriyanto (JABOTABEK)
8. Mr. H. Hidayat (JABOTABEK)
9. Mr. Tahir Kartabrata (JABOTABEK)
10. Mr. Edison (Departemen Perhubungan)
11. Mr. Pudjo Sudarno (Departemen Perhubungan)
12. Mr. F. Tanjung (Departemen Perhubungan)
13. Mr. Y. Suprijo (PJKA Eksplotasi Barat)
14. Mr. Mahyudi (PJKA Pusat)
15. Mr. Soekiswo (PJKA Pusat)
16. Ir. Atiek Soeparyati (Bina Marga)
17. Mr. J. Muryanto (Ditjen Perhubungan Udara)
18. Mr. H. Nakamoto (Embassy of Japan)
19. Mr. K. Uemoto (JICA)
20. Mr. T. Kamiyama (JICA)
21. Mr. K. Fukushima (JICA)
22. Mr. M. Koyama (JICA)
23. Mr. K. Yamada (JICA)
24. Mr. K. Murata (JICA)
25. Mr. T. Nakajima (JICA)

- | | | |
|-----|-------------------|-------------------------|
| 26. | Mr. T. Yamada | (JICA) |
| 27. | Mr. Y. Ushiiishi | (JICA) |
| 28. | Mr. K. Isumi | (JICA) |
| 29. | Mr. T. Teraki | (JICA) |
| 30. | Mr. K. Agata | (JICA) |
| 31. | Mr. T. Ajimi | (JICA) |
| 32. | Mr. N. Terauchi | (JICA) |
| 33. | Mr. T. Okinaka | (JICA) |
| 34. | Mr. K. Denda | (JICA) |
| 35. | Mr. M. Sekine | (JICA) |
| 36. | Mr. S. Shibata | (JICA) |
| 37. | Mr. M. Yabuki | (JICA) |
| 38. | Mr. H. Akinoto | (JICA) |
| 39. | Mr. K. Sato | (JICA) |
| 40. | Mr. S. Kurinaru | (JICA) |
| 41. | Mr. T. Kumamaru | (JICA) |
| 42. | Ms. S. Handayani | (BAPPEDA DKI) |
| 43. | Mr. Hajadi | (JIAC) |
| 44. | Mr. Mr. Sutoyo. M | (Counterpart Indonesia) |
| 45. | Mr. Berlin Silaen | (Counterpart Indonesia) |
| 46. | Mr. Daryanto | (Cpunterpart Indonesia) |

ATTENDANCE LIST OF MEETING
FOR
PROGRESS REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENKARENG AIRPORT
DATE: OCTOBER 26, 1983

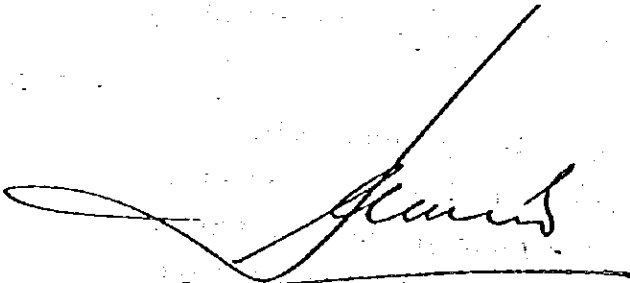
Presents:

1. Mr. Soeparto (JABOTABEK)
2. Mr. Manuriyanto (JABOTABEK)
3. Mr. Daniel Asril (JABOTABEK)
4. Mr. Hidayat (JABOTABEK)
5. Mr. Heru. S (JABOTABEK)
6. Mr. Nugroho (JABOTABEK)
7. Mr. Wirjohardjo (JABOTABEK)
8. Mr. Satriyo. K (JABOTABEK)
9. Mr. Soekiswo (PJKA Head Office)
10. Mr. Wahyudi (PJKA Head Office)
11. Mr. Soeparwo (PJKA Jakarta)
12. Mr. Hata (PHBD Adviser)
13. Mr. S. Shibuya (PHBD Adviser)
14. Mr. T. Matsumoto (PHBD Adviser)
15. Mr. K. Ashina (PHBD Adviser)
16. Ms. A. Soeparyati (BINA MARGA)
17. Mr. J. Wuryanto (PHB UDARA)
18. Mr. Hayadi (JIAC)
19. Mr. Soetikno (PT. Indement Consultant)
20. Mr. D. Burnasa (PT. Indement Consultant)
21. Mr. Indriono (PT. Indement Consultant)
22. Mr. Shindu. D (PT. Indement Consultant)
23. Mr. K. Umemoto (JICA)

24. Mr. T. Kamiyama (JICA)
25. Mr. N. Fukushima (JICA)
26. Mr. H. Koyama (JICA)
27. Mr. K. Yamada (JICA)
28. Mr. K. Murata (JICA)
29. Mr. T. Nakajima (JICA)
30. Mr. T. Yamada (JICA)
31. Mr. Y. Ushiishi (JICA)
32. Mr. K. Isumi (JICA)
33. Mr. T. Teraki (JICA)
34. Mr. K. Agata (JICA)
35. Mr. T. Ajimi (JICA)
36. Mr. N. Terauchi (JICA)
37. Mr. T. Okinaka (JICA)
38. Mr. K. Denda (JICA)
39. Mr. H. Sekine (JICA)
40. Mr. S. Shibata (JICA)
41. Mr. Sutoyo. M (Counterpart Indonesia)
42. Mr. Berlin. A (Counterpart Indonesia)
43. Mr. Ichwan (Counterpart Indonesia)
44. Mr. Silalahi. S (Counterpart Indonesia)
45. Mr. Budhi. S (Counterpart Indonesia)
46. Mr. A. Mulyanto (Counterpart Indonesia).

RECORD OF DISCUSSION
FOR
INTERIM REPORT
ON
DETAILED DESIGN
NEW RAILWAY LINE FOR CENGKARENG AIRPORT

March 1, 1984



MR. GATOT SOEDJANTOKO
Member of the Indonesian
Steering Committee
Government of Indonesia



Mr. HITOSHI TAKASHIMA
Chairman of Supervisory
Committee
Japan International
Cooperation Agency



RECORD OF DISCUSSION
FOR
INTERIM REPORT
ON
DETAILED DESIGN
OF
NEW RAILWAY LINE FOR CENGKARENG AIRPORT

The joint meetings for the discussion on the captioned report were held at JABOTABEK in Graha Purna Yudha Building on the 28th and 29th of February 1984.

The attendants from Indonesian and Japanese sides are shown in this record as per attached sheets. For the meetings, the Indonesian side was represented by Mr. Gatot Soedjantoko, Head of Planning, Directorate General of Land Transport and Inland Waterways, supported by Ir. Suparto, Chief Engineer of Engineering Division, JABOTABEK and the Japanese side was represented by Mr. Hitoshi Takashima, Chairman of Supervisory Committee for the JICA Study Team.

The Study Team, headed by Mr. Masanao KOYAMA, submitted Interim Reports with Tender Documents and made explanation on the contents of them. Discussion was made to various items raised by Indonesian side. The Record of Discussion is as follows :

The Interim Report submitted by JICA Study Team was accepted with the following clarifications and comments.

1. Construction Schedule

The Indonesian side requested the Study Team to study the possibility of shortening the proposed construction schedule to two and a half years. JICA Study Team emphasized that the proposed schedule is the minimized sche-

dule

dule taking account of all necessary factors for the smooth and economical construction of the proposed railway. However the Indonesian side repeatedly requested the Study Team to study alternative schedule and incorporate it into the Final Report.

2. Signalling System

The Indonesian side requested the Study Team to study a color light signalling system with speed indicating device as an alternative to the proposed signalling system.

The Study Team stated that it is not timewise possible to study such alternative unless JABOTABEK signalling system is decided far in advance of the submission of the Final Report.

3. Location of Bridge Pier at Jl. Jembatan Tiga

The Indonesian side pointed out that the location of bridge pier at Jalan Jembatan Tiga should be shifted from the proposed location so as to accomodate utilities conduit. The Indonesian side will provide JICA Study Team with necessary information.

4. Time Limit for Submission of Comments

JICA Study Team requested that Indonesian side will provide the Study Team with comments on the Interim Report at the earliest possible date. The Indonesian side promised that comments will be made available to the Study Team not later than the 26th of March 1984.

5. Special Consideration

JICA Study Team requested the Indonesian side to take necessary measures to expedite customs clearance of reports and documents for the study.

This request was made due to the considerable inconvenience to the discussion at the meetings caused by lack of materials.

ATTENDANCE LIST OF MEETING BETWEEN INDOONESIAN
SHEPHERDING COMMITTEE AND JICA TEAM OF DETAIL DE-
SIGN OF NEW RAILWAY LINE FOR CENKARENG AIRPORT.

D a t e : February, 28 1984.

Indonesian Side

- | | |
|---------------------------|--|
| 1. Gatot Soedjantoko | - Directorate General of Land Transport and
Inland Waterways. |
| 2. Ir. Soeparto | - Jabotabek Railway Project |
| 3. Ir. Imam Soedradjad | - Directorate of Traffic and Urban Transport |
| 4. Ir. Harbani | - Indonesian State Railways |
| 5. Ir. Wahyudi | - Indonesian State Railways |
| 6. Sampoerna Rafiuddin | - Indonesian State Railways |
| 7. Soekiswo | - Indonesian State Railways |
| 8. Nugroho | - Indonesian State Railways |
| 9. Soembadi | - Indonesian State Railways |
| 10. Kenang | - Indonesian State Railways |
| 11. Ir. Soekrisno R. | - Jabotabek Railway Project |
| 12. Ir. Daniel Asril | - Jabotabek Railway Project |
| 13. Ir. Syahriar Bachtiar | - Jabotabek Railway Project |
| 14. Ir. Soeryanto | - Jabotabek Railway Project |
| 15. Ir. M. Hidayat | - Jabotabek Railway Project |
| 16. Maryono | - Jabotabek Railway Project |
| 17. Wiryohardjo | - Jabotabek Railway Project |
| 18. R.N. Sinulingga | - Jabotabek Railway Project |
| 19. Ir. Saiful Said | - Jabotabek Railway Project |
| 20. Ir. Dhanna Setiabudi | - Jabotabek Railway Project |
| 21. Ir. Manuriyanto | - Jabotabek Railway Project |
| 22. Soedjilin | - West Exploitation of PJKA |
| 23. Ir. Djauhari P. | - Directorate General of Land Transport and
Inland Waterways. |
| 24. Ir. Mulyadi | - Directorate General of Land Transport and
Inland Waterways. |
| 25. Ir. Hasril Basri | - Directorate General of Highways |
| 26. Ir. Atiek Soeparyati | - Directorate General of Highways. |
| 27. Ir. Sarwo Handayani | - Planning and Development Board of DKI Jakarta |
| 28. Ir. Pudjo Sumarno | - Departement of Transport |
| 29. Ir. Sutoyo M. | - Jaya Consult. |

- 30. Ir. Amirul Zulkarnain - Jaya Consult
- 31. Ir. Silalahi Simon - Jaya Consult
- 32. H a j a d i - J I A C .
- 33. T. Matsumoto - Expert to DGLT
- 34. Yoshida - Expert to DGLT
- 35. Fukui - Expert to DGLT.



Japanese Side

- | | |
|-----------------|------------------------------|
| 1. H. Takashima | - JICA Supervisory Committee |
| 2. K. Nogami | - JICA Supervisory Committee |
| 3. M. Koyama | - JICA team leader |
| 4. Y. Mieda | - JICA |
| 5. K. Murata | - JICA member |
| 6. T. Nakajima | - JICA member |
| 7. M. Kagami | - JICA member |
| 8. I. Mizuno | - JICA member |
| 9. K. Agata | - JICA member |
| 10. N. Yamauchi | - JICA member |



ATTENDANCE LIST OF MEETING BETWEEN INDONESIAN
STEERING COMMITTEE AND JICA TEAM OF DETAIL DE-
SIGN OF NEW RAILWAY LINE FOR CENKAIKENG AIRPORT

Date : February, 29, 1984

Indonesian Side

- | | |
|---------------------------|--|
| 1. Gatot Soedjantoko | - Directorate General of Land Transport and
Inland Waterways. |
| 2. Ir. Soeparto | - Jabotabek Railway Project |
| 3. Eddy Soewardi | - Indonesian State Railways |
| 4. Sampoerna Rafioeddin | - Indonesian State Railways |
| 5. Kenang | - Indonesian State Railways |
| 6. Ir. Wahyudi | - Indonesian State Railways |
| 7. Koestoro | - Indonesian State Railways |
| 8. Soerjadi | - Indonesian State Railways |
| 9. Soekiswo | - Indonesian State Railways |
| 10. Muchsin Iskandar | - Indonesian State Railways |
| 11. Soebandha | - West Exploitation of PJKA |
| 12. Soedjilin | - West Exploitation of PJKA |
| 13. Nugroho | - Indonesian State Railways |
| 14. Ir. Djauhari P. | - Directorate General of Land Transport and
Inland Waterways. |
| 15. Ir. Amirul Zulkarnain | - Jaya Consult |
| 16. Ir. Silalahi Simon | - Jaya Consult |
| 17. Ir. Manuhardjo | - Jabotabek Railway Project |
| 18. Ir. Wiryohardjo | - Jabotabek Railway Project |
| 19. Ir. Dharma Setiabudi | - Jabotabek Railway Project |
| 20. Ir. Daniel Asril | - Jabotabek Railway Project |
| 21. Ir. Syahriar Bachtiar | - Jabotabek Railway Project |
| 22. H a j a d i | - J I A C |
| 23. T. Matsumoto | - Expert to IGLT |
| 24. Yoshida | - Expert to IGLT |
| 25. Fukui | - Expert to DGLT |

Japanese Side

- | | |
|-----------------|------------------------------|
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| 4. Y. Mieda | - JICA |
| 5. K. Murata | - JICA member |
| 6. T. Nakajima | - JICA member |
| 7. M. Kagami | - JICA member |
| 8. I. Mizuno | - JICA member |
| 9. K. Agata | - JICA member |
| 10. N. Yamuchi | - JICA member |

工事工程短縮の検討

本報告書で提案された工期4年を2年半に短縮の可能性について検討するよう、インドネシア側から強く要望された。

提案された工期は、円滑、かつ、経済的な工事の遂行に関して必要なすべての要素を考慮し、検討した結果の最小限度の工期であるが、次のような条件のもとに、再度、工期短縮についての検討を行なった。

工期短縮のために必要な主な前提条件

1. 用地取得及び支障物移転は、工事施工に支障しないよう処理され、最も遅れる箇所でも、工事着手後1年半までには完了するものとする。ただし、軟弱地盤における盛土区間については、できるだけ早期に完了し、特に、19Km438m～19Km514mの盛土区間は、工事着手後6カ月以内に完了するものとする。
2. 空港アクセス道路の移設は、工事施工の着手時期までに完成されるものとする。
3. 関係諸機関との設計協議は、工事施工に支障しないよう、早期に整うものとする。

検討した結果の工事工程は、表1に示すとおりで、土木・建築工事、軌道工事及び電気関係工事の着手から完成までに最低限2年半を要し、その後6カ月間試運転を行なうものとして、開業までの工期は3年となる。

なお、工期を短縮した場合の工事費は、概算で約5.3%増となる。

この短縮した工事工程は、非常にきびしい工程であるので、上記のような前提条件が完全に満たされなければ、予定どおりの工事遂行が不可能となり、種種の問題が発生するおそれがあると考えられる。

したがって、短縮した工事工程は推奨できない。

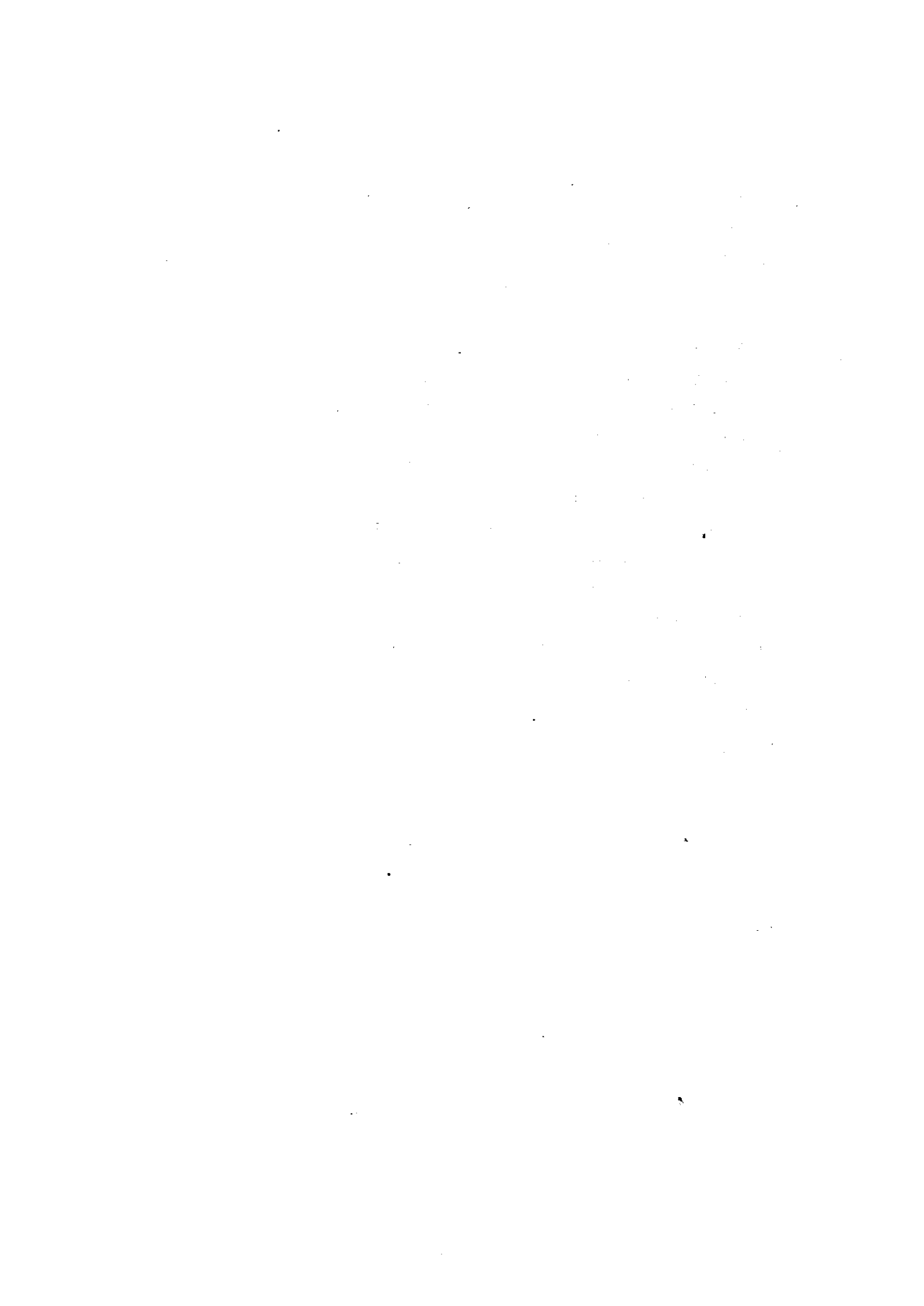


表1 工事工程表

Commencement of Operation

Alternative		1st Year												2nd Year												3rd Year												Commencement of Operation
Construction Period		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Surveying	Right-of-Way Stake																																					
Geological Survey	Boring																																					
Civil Work	Earthworks																																					
	Bridges and Viaducts																																					
	Road Construction Works																																					
Track Work	Track Laying Work																																					
	Track Shifting Work																																					
Architectural Work	Airport Station																																					
	Kota Intan Station																																					
	Signal Station																																					
	Crossing Watchman's Box																																					
Electrical Work	Substations																																					
	Overhead Contact System																																					
	Power Distribution Lines																																					
	Signalling System																																					
	Telecommunication System																																					
Land Acquisition and Removal of Obstacles																																						
Shifting of Airport Access Road																																						
Test Run																																						
Construction Supervision Facilities																																						

Note: Dotted line indicates the limit of completion of the work.

JICA