

6-8 点検測量

点検測量は 1:4,000 11面、1:10,000 13面について、平面位置および高さについて行った。

平面位置については、明瞭な2点を選定し点間をトータルステーションSET-Ⅲおよび布巻尺を用いて、現地測定し、図上距離との精度の点検を行った。

高さについては、水準儀を用い、図化素図上の標高点並びに等高線特に0m等高線について精度点検を行った。

点検測量の精度は、下表のとおりである。

	縮 尺	個所数	標準偏差	摘 要
平面位置	1: 4,000	10ヶ所	図上0.25mm	作業規程制限
	1:10,000	13ヶ所	図上0.16mm	図上0.5 mm以内
高 さ	1: 4,000	91ヶ所	0.30m	作業規程制限
	1:10,000	77ヶ所	0.23m	0.67m以内

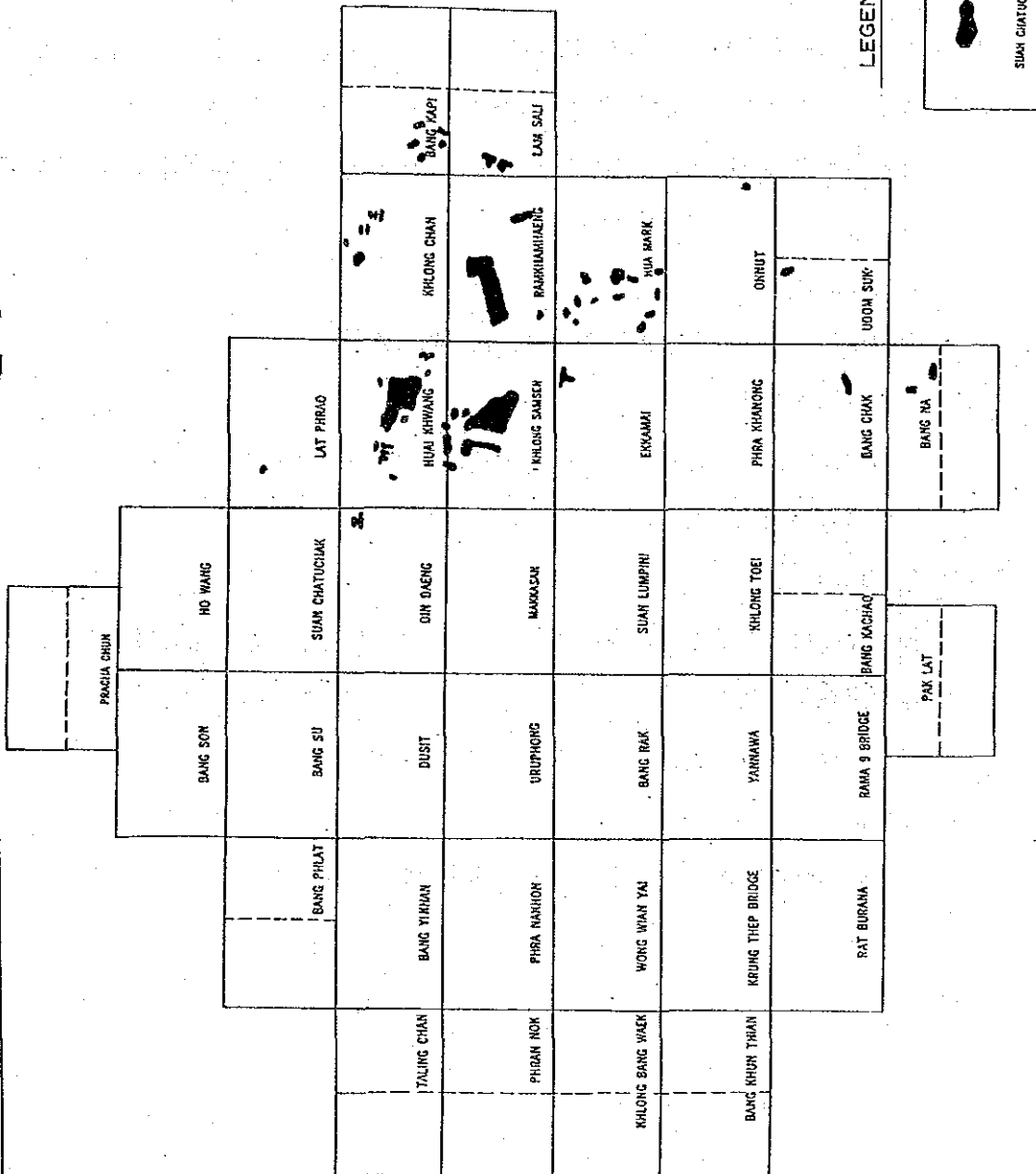
点検測量の結果0 mの判明した地区は下記のとおりである。

該当図葉番号	該 当 図 葉 名	個 所 数	面 積
11-1-B	LAT PHRAO	1ヶ所	0.003 km ²
11-1-C	DIN DAENG	3	0.009
11-1-D	HUAI KHWANG	15	1.145
11-2-C	KHLONG CHAN	8	0.084
11-2-D	BANG KAPI	6	0.116
11-3-B	KHLONG SAMSEN	4	0.978
11-3-D	EKKAMAI	1	0.030
11-4-A	RAMKHANHAENG	4	0.408
11-4-B	LAM SALI	2	0.035
11-4-C	HUA MARK	18	0.402
15-1-D	BANG CHAK	1	0.017
15-2-A	ONNUT	1	0.009
15-2-C	UDOM SUK	1	0.033
15-3-B	BANG NA	5	0.051
総 計		70ヶ所	3.320 km ²

なお、0 m地区の個所は図-4のとおりである。

ZERO METER AREA MAP

図-4 ゼロメートル地区図



6-9 タイ国側の協力

1) カウンターパートの配属

現地補測には作業に精通したBMA、RTSDからのカウンターパートの配属がなされ、現地の案内、地元住民との折衝および地名等の確認のための協力を得た。

2) タイ語注記版の作成

タイ語の注記版 1:4,000 40面および 1:10,000 61面 計101面については、写真植字法によりRTSDが作成した。

3) 行政名および行政界の確認

行政名および行政界については、全図葉(101面)についてBMAが藍焼上で確認を行った。

4) 図名の決定

全図葉(101面)の図名の決定をBMAが行った。

5) 注記一覧表の確認

英語およびタイ語を併記した注記一覧表(全図葉 101面)について、BMAおよびRTSDが確認を行った。

6) 技術協議

技術協議には熱心かつ活発な意見を出し合い、地図各仕様作成に協力した。

7) 本部事務所の供与

BMAはBMA庁舎内に作業本部事務所を供与した。

8) その他

作業に必要な各種資料および情報の提供を行った。

6-10 国内整理

現地補測成果による編集素図の修正は、現地においては外業を優先して実施したため、整理の一部について、帰国後に継続して整理を行い完成した。

- (1) 編集素図に現地補測の結果を盛り込み、地形図原図を作成した。
- (2) 基準点資料図、注記資料図等の校正を行い、製図作業の資料を作成した。
- (3) 最終点検は下記のとおり実施した。
 - (a) 補測の結果の各図葉間の接合の良否を点検した。
 - (b) 補測した事項相互間、又は他の資料との矛盾の有無を点検調査した。
 - (c) 編集素図上への表示の脱落の有無を点検整理した。

7. 製 図

7-1 作業の概要

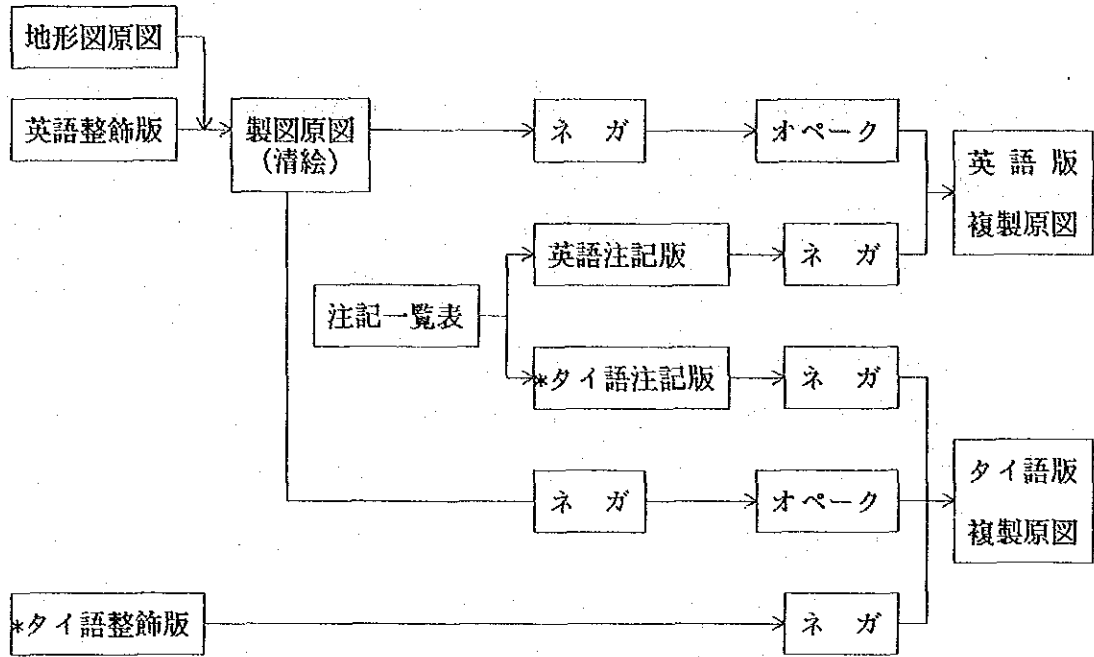
製図は、地形図原図に基づき1:4,000地形図日・タイ双方合意図式に従い、清絵方式により実施した。

7-2 仕 様

縮 尺	1 : 4,000
面 数	英語版40面、タイ語版40面
面 積	300 km ²
図 郭	2.5 × 3.75km (図上62.5×93.75 cm)
製図方式	清絵
使用材料	1 : 4,000 地形図製図原図 ポリエステルベース (500#)
	注 記 版 ポリエステルベース (300#)
	1 : 4,000 地形図複製原図 ポリエステルベース (500#)

7-3 製 図

(1) 製図工程は下記のとおりである。



*印 タイ国側実施

(2) 製図上の細部事項

- 1) 地形地物および小対象物の描画については、平面位置のズレのないように注意するとともに、画線のカスレがないように行った。
- 2) 着墨する場合の画線の濃度は一定とした。
- 3) 各名称等の注記位置の決定については、周囲の地物およびグリットを避けないように配慮した。

7-4 点 検

製図作業終了後、英語版複製原図およびタイ語複製原図の監焼図上で、表示内容の誤記、脱落等について点検を行い、誤りは訂正した。

さらに点検後精度管理表を作成した。

8. 第2次作業の所感

タイ国バンコク首都圏地形図作成事業第2年次作業を実施しての所感は概ね次のとおりである。

1. 空中三角測量において調整計算の結果調整から除いた基準点もなく、かつ精度が作業規程の約2倍の高精度を得た。

この背景には、作業地域の平坦地という視通等の悪条件下、第1年次基準点測量の実施では高測標建設等の手法を使ったため、バランスのとれた配点が出来たことによるものと思われる。

2. 図化においては、1:4,000 地域でのビルの林立と家屋の極度の密集にもかかわらず、独立家屋として一軒一軒描画し、精密で詳細な地形図を作成することが出来た。
3. 1:4,000 地域から1:10,000への縮小編集については、注記および標高点の取捨選択に基準を設定して行ったため、効率的に作業が実施でき、また統一がとれた。
4. 現地補測については、BMA、RTSDのカウンターパートの積極的な協力が得られ、図化編集時での不明部分の補測が効率よく出来た。また英語、タイ語の注記について現地において再確認が出来た。

なお、第1年次現地調査後の大規模な経年変化として、ラマ9世大橋の完成などがあるが、トータルステーション（測距・測角儀）SET-Ⅲを使用して修正が出来たことは、作業効率上非常に効果的であった。

5. 製図については、地形版と注記版を別版とし作業を実施した。注記版は英語とタイ語に分けられたが、字の長さ、大きさが異なるためマスク版をさらに作成して重ね焼きによる手法をとった。注記による地形の消える部分が最少限でおさえられ良い結果となった。
6. BMA、RTSDとの技術協議においては整飾、GLOSSARY、図名、行政界、行政名、注記の確認、タイ語の注記の作成等多量の作業量となったがカウンターパート部局の積極的な協力を得て、スケジュール通りに行うことができた。

さらに、現地作業を通して日本側調査団の実施した測量計画、経年変化の補備測量、地名、境界等の確認調査、成果の整理等でカウンターパートに各作業要所において工程管理および精度管理等を含めて適切かつ詳細な技術移転ができた。

9. 第3次作業への所見

第3年次作業では、国内作業として1:10,000地形図の製図（スクライプ）作業とこれに引き続いて、タイ国側で印刷作業が予定されている。

第2年次作業の実績と関係資料等の解析の結果、第3年次作業実施にあたっての所見は次のとおりである。

1. 印刷図の色調および各版の合版状況の校正のため全図案について校正刷を行い、さらにタイ国側への印刷見本として提示する必要がある。
2. 印刷実施手順および方法等の要領をとりまとめ最終成果の均一性、高品質を保つ必要から印刷仕様書を用意する必要がある。
3. タイ国側の印刷作業は、議事録により1988年12月上旬より1989年2月下旬の間に予定されている。

このため、おそくとも1988年9月下旬までに印刷に必要な諸材料がタイ国に届く必要がある。15トン近い重量と多量の容積となることから海上輸送となるが、これらの輸送に要する期間を充分調査し対処する必要がある。

4. タイ国側は、印刷作業の着手に際し、版の組合せと色合いの指導のため短期専門家の派遣を要請している。

このため日本側は、この要請に対応すべく準備することが望ましいと考える。

付 録

1. 現地作業の日程

2. 議 事 録

2-1 現地作業着手時、議事録（昭和62年12月）

2-2 現地作業終了時、議事録（昭和63年1月）

1. 現地作業の日程

自昭和62年12月1日～至昭和63年1月29日

月日	曜日	行 動 概 況
12/ 1	火	金窪団長、調査団本部以下4名バンコク到着
2	水	BMA表敬訪問
3	木	BMAと技術協議
4	金	RTSD表敬訪問、三村作業監理要員および調査団員10名バンコク到着
5	土	国民祝日（国王誕生日）
6	日	資料整理
7	月	JICA、日本大使館挨拶、 測量器材点検
8	火	BMA、RTSDと技術協議、 現地踏査
9	水	議事録調印、 現地踏査
10	木	国民祝日（憲法記念日） 三村作業監理要員および金窪団長帰国
11	金	BMAと技術打合せ、 現地補測
12	土	現地補測
13	日	資料整理
14	月	BMA、RTSDと技術打合せ、 現地補測、 点検測量
15	火	BMAと技術打合せ、 現地補測、 点検測量
16	水	BMAと技術打合せ、 現地補測、 点検測量
17	木	BMA、RTSDと技術打合せ、 現地補測、 点検測量
18	金	現地補測、 点検測量
19	土	現地補測、 点検測量
20	日	資料整理
21	月	BMAと技術打合せ、 現地補測、 点検測量
22	火	現地補測、 点検測量
23	水	現地補測、 点検測量
24	木	BMAと技術打合せ、 現地補測、 点検測量

12/25	金	現地補測、 点検測量
26	土	現地補測、 点検測量
27	日	資料整理
28	月	BMAと技術打合せ、 現地補測、 点検測量
29	火	BMAと技術打合せ、 現地補測、 点検測量
30	水	BMAと技術打合せ、 現地補測、 点検測量
31	木	国民祝日(年末)
1/ 1	金	国民祝日(元日)
2	土	資料整理
3	日	資料整理
4	月	現地補測、 点検測量
5	火	現地補測、 点検測量
6	水	RTSDと技術打合せ、 現地補測、 点検測量
7	木	BMAと技術打合せ、 現地補測、 点検測量
8	金	BMAと技術打合せ、 現地補測、 点検測量
9	土	現地補測、 点検測量
10	日	資料整理
11	月	BMA、RTSDと技術打合せ、 現地補測
12	火	BMAと技術打合せ、 現地補測
13	水	BMAと技術打合せ、 現地補測
14	木	現地補測
15	金	現地補測
16	土	現地補測
17	日	資料整理
18	月	BMAと技術打合せ 現地補測
19	火	JICA中野課長代理バンコク到着、 現地補測
20	水	金窪団長バンコク到着、 現地補測
21	木	BMAと技術協議、 現地補測

1/22	金	BMA, RTSDと技術協議、 現地補測
23	土	三村作業監理要員バンコク到着、 現地補測
24	日	資料整理
25	月	BMAと技術協議
26	火	BMA, RTSDと技術協議、議事録調印、器材梱包
27	水	JICA中野課長代理および調査団員10名帰国
28	木	JICA, 日本大使館挨拶
29	金	三村作業監理要員および金窪団長、調査団本部帰国

2. 議 事 録

2-1 現地作業着手時議事録

MINUTES OF DISCUSSION
ON
TOPOGRAPHIC MAPPING PROJECT OF BANGKOK METROPOLITAN AREA
BETWEEN
THE BANGKOK METROPOLITAN ADMINISTRATION
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY SURVEY TEAM
ON
DECEMBER 9, 1987
BANGKOK THAILAND

Wicha Jiwalai

DR. WICHA JIWALAI
DEPUTY GOVERNOR
BANGKOK METROPOLITAN ADMINISTRATION

Tositomo Kanakubo

MR. TOSITOMO KANAKUBO
LEADER
JICA SURVEY TEAM

The Japanese Survey Team organized by JICA and headed by Mr. Tositomo KANAKUBO visited the Kingdom of Thailand on 1st of December, 1987 to carry out the second year survey work for the Topographic Mapping of Bangkok Metropolitan Area.

Prior to the commencement of the work, a joint meeting was held on 7th of December, 1987, and the following items were discussed and mutually agreed by and between the Bangkok Metropolitan Administration (hereinafter referred to as BMA) and JICA Survey Team.

1. Second Year Plan of Operation

The Plan of Operation for the second year survey work was proposed and explained by the JICA Survey Team and agreed by BMA.

2. Sheet names

BMA shall determine names of each sheet both 1/4,000 and 1/10,000 scale of maps and supply to the JICA Survey Team the name list in English by 20th of January, 1988.

3. Topographic Maps with Thai annotation and their marginal information including sheet name.

Both side confirmed that the maps with Thai annotation and their marginal information hereunder mentioned would be prepared by Thai side. JICA Survey Team requests that completion of this work should be by 20th January, 1988. BMA expresses intention to meet the requirement as possible as the Thai side can.

- (1) 40 sheets of 1/4,000 topographic map
- (2) 1 sheet of marginal information for 1/4,000 topographic map
- (3) 61 sheets of 1/10,000 topographic map
- (4) 1 sheet of marginal information for 1/10,000 topographic map

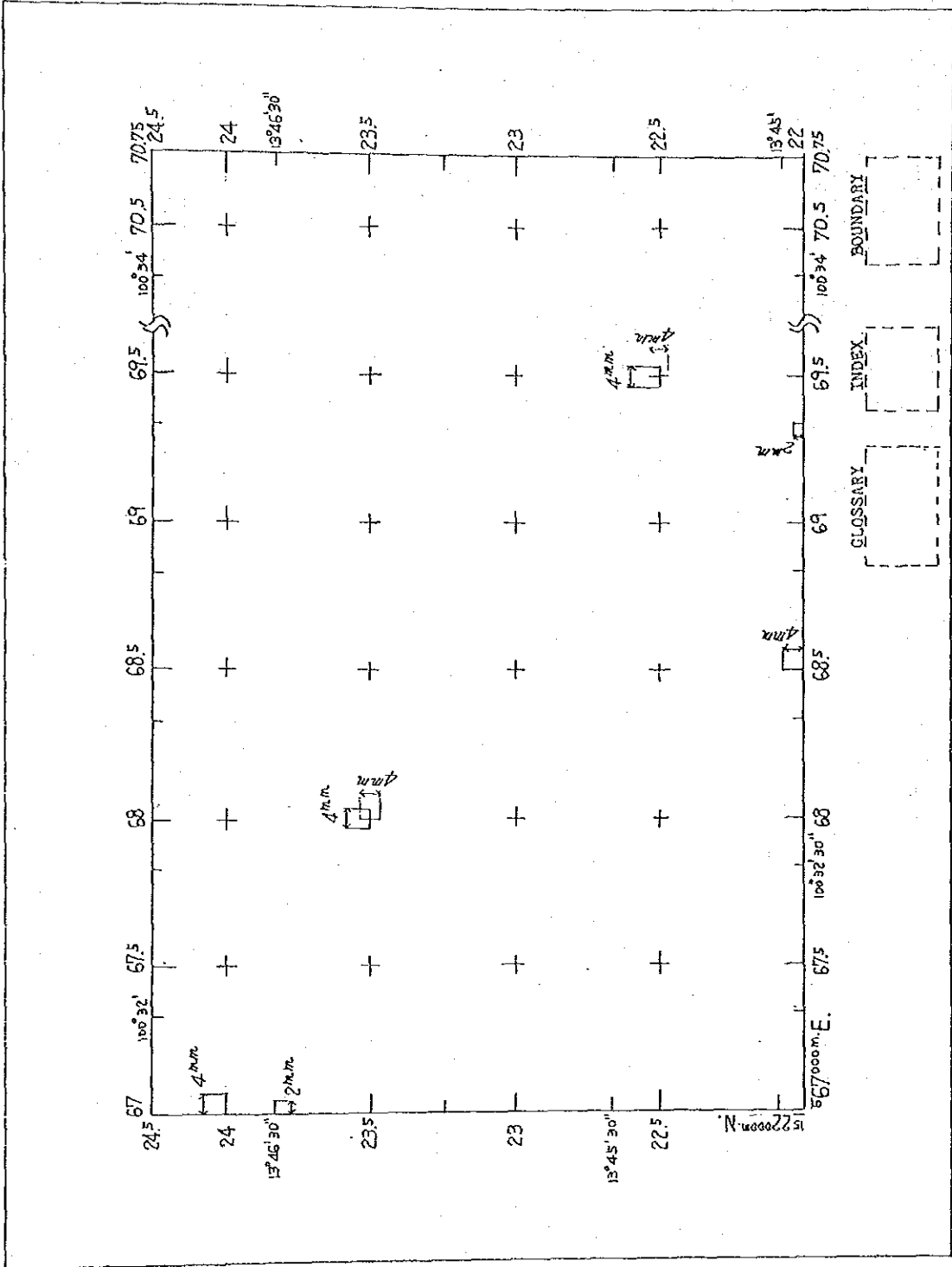
4. Checking of administrative boundaries and names

Checking of administrative boundaries and names noted on compilation manuscripts will be done by Thai side.

5. In case that an area to be mapped is too small in a sheet, the area shall be mapped on extended part from neatline of adjacent sheet.
6. Contents of map was confirmed by both side as follows;
 - (1) Cross mark for grid and coordinates shown on Appendix 1 and 2 shall be delineated on the final results.
 - (2) Magnetic north shall not be mentioned because of unavailability of the data.
 - (3) Remark on road and railway for place name connected to destination shall not be mentioned.
 - (4) Some symbols shown on appendix 3 shall be added and some others shall be changed.
7. Color tone (Hue, Value and Chroma) for printing of 1/10,000 Topographic map was suggested by JICA Survey Team as follows and Thai side agreed.

Red	2.5	R	4/12
Brown	7.5	YR	7/10
Green	5	GY	7/10
Blue	10	B	6/10
Grey	7.5	P	5/3
Black			2/N

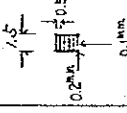
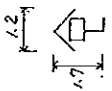
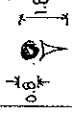
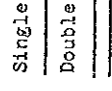






APPENDIX 1 GRID AND COORDIANTES FOR 1:4,000



Wicha

T. K.

APPENDIX 3 AMENDMENT OF SYMBOLS FOR 1:4,000 AND 1/10,000

CLASSIFICATION	NO	NAME OF SYMBOL	SYMBOL	LINE SIZE (mm)	COLOR	FIELD IDENTIFICATION	COMPILATION	SPECIFICATION	S/H
Ra	1	Stone Step		0.10 0.20	Black	Same as Symbol Red	Same as Symbol Black	Applied to a case of 2.5 mm in length or more on map. Smaller one may be expressed when considered necessary.	Newly added
M	2	Shrine of the Household God		0.15	Black	- do -	- do -	Applied to an area of 3m x 3m or more at site or to be principal landmark.	-do-
M	3	Golf Course		0.15	Black	- do -	- do -	The symbol set up besides the club house.	-do-
Rw	4	Railway		0.3	Black	Single Double	- do -		Changed
Bs	5	School		0.5	Black			In case of symbol and specification (Draft) of 1/4,000, symbol  was changed to 	-do-
W	6	Salt Pan	1/4,000		Black	Salt	Salt	Name of symbol was changed salt pan from salt bed.	-do-
			1/10,000		Blue				

Wicha

7. K.

PLAN OF OPERATION
FOR
TOPOGRAPHIC MAPPING
OF
BANGKOK METROPOLITAN AREA

(Second Year Work)

DECEMBER 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

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Plan of Operation
of the 2nd Year Work for Topographic
Mapping of Bangkok Metropolitan Area

1. Background

Topographic Mapping of Bangkok Metropolitan Area was set forth in the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand signed on March 19, 1986 for the three year work. The first year work which consisted of aerial photography, ground control point survey and field identification was completed on July 30, 1987. The second year work which consists of aerial triangulation, stereo plotting, compilation, field completion, drafting(1/4,000) was started from August 11, 1987.

2. Outline of the Second Year Work

As the 2nd Year Work, following works will be completed:

a) Aerial triangulation	425 Models
b) Stereo plotting	
1/4,000	300 sq. kms
1/10,000	1,700 sq. kms
c) Map compilation	
1/4,000	300 sq. kms (40 sheets)
1/10,000	2,000 sq. kms (61 sheets)
d) Field completion	2,000 sp. kms
e) Drafting	
1/4,000	300 sq. kms (40 sheets)

Among the above works, the work of a) through c) (Domestic Work) have completed and the copies of the compilation manuscript have been brought into Thailand for the map compilation work to be carried out in Thailand from early December, 1987 through the end of January, 1988.

3. Field Completion Work

3-1 Work Contents

In order to supplement the geographical information, topographic features and contour lines drawn by the stereo-plotter, following field completion work shall be conducted:

- a) Uncertain items during the course of the stereo-plotting and/or compilation work, shall be checked and confirmed.
- b) Major changes after the aerial photography done in the first year shall be corrected. If necessary, supplementary survey will be conducted using total station, plain table and level.
- c) Survey data to be provided by BMA shall be incorporated in the compilation manuscripts.

3-2 Formation of JICA Survey Team and Schedule

Name	Assignment	1987 December	1988 January
(Head quarters) Tositomo Kanakubo	Leader	1 10	20 29
Isao Ikeshima	Deputy leader	1	29
Chozo Obara	Mapping planner	1	29
(Field completion) Yoshikazu Ibusuki	Chief surveyor	1	29
Kazuo Furukata	Surveyor	4	27
Mitsuo Sunaoshi	"	4	27
Kazuo Tabuchi	"	4	27
Yasuo Hongo	"	4	27
Mitsuyoshi Takahashi	"	4	27
Kazuhiro Ishizuka	"	4	27
Hiroshi Saitoh	"	4	27
Yasuki Kondo	"	4	27
Akimasa Takahashi	"	4	27
Masashi Kita	"	4	27

3-3 Party Formation Plan

Work	Number of chief surveyor	Field parties		
		Number of party	Break-down of a party	Total number of surveyor
Field completion	1	5	2 Japanese surveyors 1 BMA counterpart	10 Japanese surveyors 5 BMA counterparts

3-4 Office Space to be Provided by BMA

Number of room	Space	Period
1	10m x 5m	2 months

- 1) The rooms shall be equipped with ordinally facilities such as telephone, air condition, lock, proper lightings, etc.
- 2) Data, survey materials and instruments shall be stored in the rooms.

4. Data and Specifications to be Discussed and Confirmed During the Field Work

4-1 Data Prepared by JICA Survey Team

- a) Second copy of compilation manuscript 101 x 2 sheets
- b) Delumina copy of compilation manuscript 101 x 1 sheets
- c) Copy of English annotation sheet 101 x 2 sheets
- d) Copy of English marginal information sheets
(1/4,000, 1/10,000) 2 sheets
- e) Sample of drafting sheet (1/4,000, 1/10,000) 1 sheet
- f) Sample of color proof for printing (1/10,000) 1 sheet
- g) Polyester sheet for Thai annotation 101 sheets
- h) Others data
(Mapping sheet index : refer appendix 1)

4-2 Data Prepared by BMA

- a) Confirmation data of administive names and boundaries
- b) Thai annotation sheet (1/4,000) 40 sheets
" (1/10,000) 61 sheets
- c) Thai marginal information sheet (1/4,000) 40 sheets
" (1/10,000) 61 sheets

4-3 Specification to be Finalized by the Field Completion

- a) Specification of amendatory and additional symbols (Refer appendix 2)
- b) Specification of marginal information sheet
- c) Specification of photo-composition style (Refer appendix 3)
- d) Specification of printing map

5. Succeeding Work to be Conducted in Japan

Original manuscript of the field completion shall be made using the scribed sheets (1/10,000) and the polyester sheets (1/4,000).

6. Specification of Thai Annotation Sheet

- a) Period of preparation

From Dec.7, 1987 to Jan. 22, 1988

- b) Number of map sheets

Topographic map (1/4,000) 40 sheets

Topographic map (1/10,000) 61 sheets

- c) Annotation method

Photo composition and stick or lettering

- d) Character size and style

Size and style of Thai annotation should be same as English one

- e) Position of stick

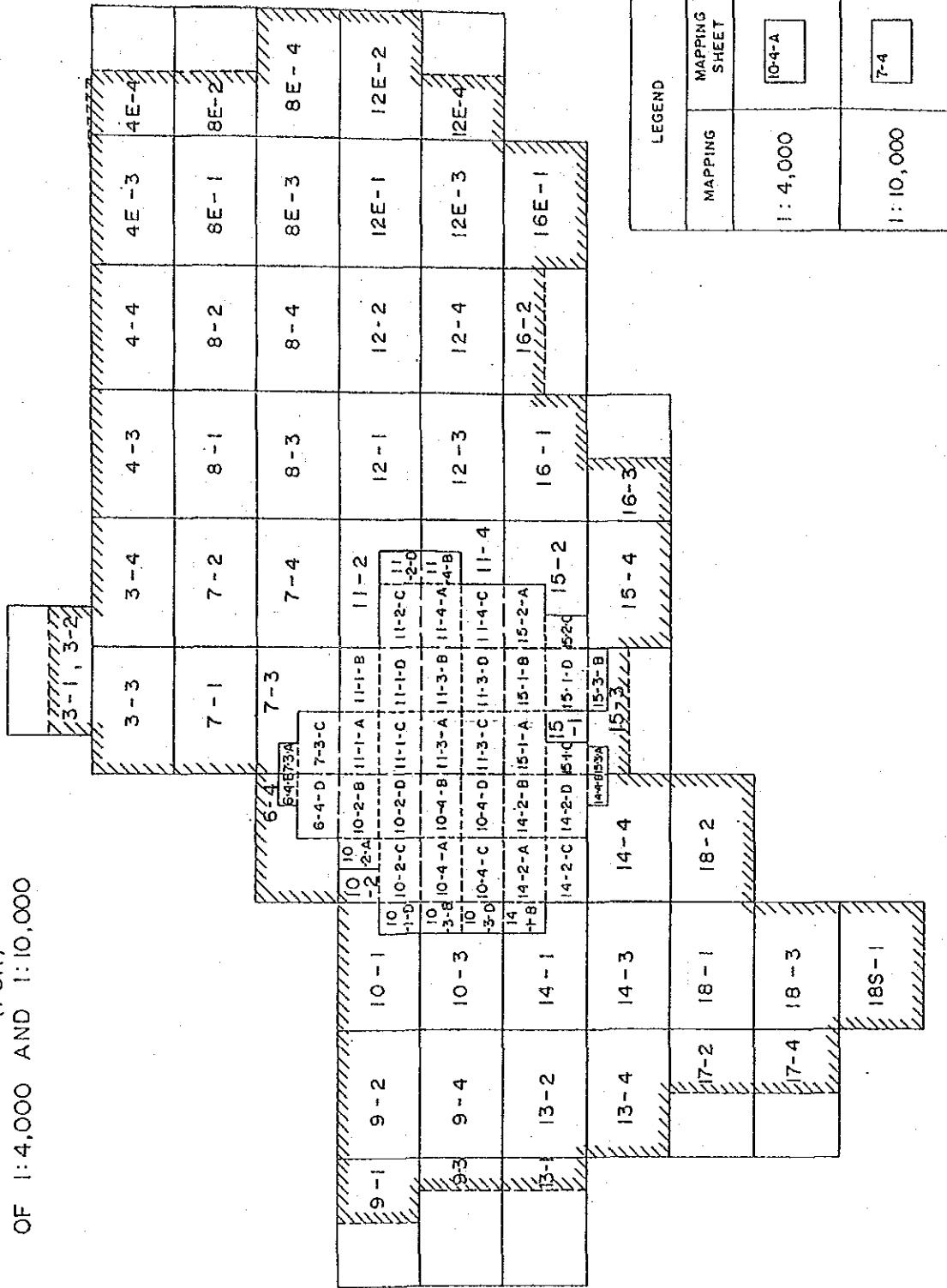
Same position as in the English annotation sheets

TOPOGRAPHIC MAPPING SHEET INDEX

(FOR)

OF 1:4,000 AND 1:10,000


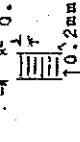

Appendix 1



AMENDATORY AND ADDITIONAL SYMBOLS (Draft)

Appendix 2

FOR 1:4,000 AND 1:10,000

Class- sifi- cation	No.	Name of Symbol	Symbol	Line Size (mm)	Color	Field Identification	Compilation	Specifications	S/W
	1	Spot Height	432.1	Dot: 0.3	Black			Elevation point described by Plotter; one point per 5cm square Unit of expression; 0.1m unit (Unit: 1m → 0.1m)	Change
M	2	Way Side Statue	 2.0	0.15	Black	Same as Symbol Red	Same as Symbol Black	Applied to an area of 3m x 3m or more at site or to be principal target.	NEW
Ra	3	Stone Step	 1.0 0.5 0.5	0.10 0.20	Black	Same as Symbol Red	Same as Symbol Black	Applied to a case of 2.5mm in length or more on map. Smaller one may be expressed when considered necessary.	NEW
Rv	4	Railway	 single double	0.30	Black	single double Red	Same as Symbol Black	Indicate national railway. Distinguish between single track line and double.	Change

Topographic Mapping of Bangkok Metropolitan Area
Photo-composition Style of English (Draft)

Classification		Style	Rank	mm	Color	Size 1/10,000	Name	Remark
Boundary	Metropolis	E08-42- 5	20	4.5			Bangkok Metropolis	
	Province	E08-24-C	16	3.5			SAMUT PRAKAN PROVINCE	
	District	//	//	//			BANG KAPI DISTRICT	
	Town	//	14	3.0				
	Village	E08-24- 5	14	3.0			Ban Khlong Bang Bon	
New Residence	Development Area	//	12	2.5			Mu Ban Sala Daeng	
Building	School	//	10	2.2			Wat Nong School	
	Post Office	//	//	//			KNong Sip Post Office	
	Temple	//	//	//			Sala Daeng Temple	
Miscellaneous Landmark Feature	Monument	E08-24- 5	8	1.8			Dumreay Monument	
	Park	E05-14- 5	10	2.2			Rumpri Park	
	Air Port	E05-14-C	//	//			DON MUANG AIR PORT	
Road	National Highway	E08-25-C	//	//			THANONN PAHOLYITHIN	
	Express Way	//	//	//			DIN DAENG PORT EXPRESSWAY	
	Provincial Road	//	//	//			THANONN SUKUMVIT	
	Another Road	//	//	//			SOI IWANITI	
Rail Way	Rail Way	//	//	//			NORTHERN RAIL WAY LINE	
	Station	//	//	//			HUA LAMPONG ST.	
	Road Under Construction	E08-25- 5	8	1.8			Road Construction	
Plantation		E05-14- 5	//	//				
River	Large	E01-25-C	18	4.0			CHAO PHRAYA RIVER	
	Middle	//	14	3.0			KHLONG MAHANAK	
	Small	//	10	2.2			SARILA DITCH	
Sea	Gulf	//	18	4.0			GULF OF THAILAND	
	Beach	E01-24- 5	10	2.2			Pataya Beach	

MINUTES OF DISCUSSION
ON
TOPOGRAPHIC MAPPING PROJECT OF BANGKOK METROPOLITAN AREA
BETWEEN
THE BANGKOK METROPOLITAN ADMINISTRATION
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY
ON
JANUARY 26, 1988
BANGKOK THAILAND

Wicha Jiwalai

DR. WICHA JIWALAI
DEPUTY GOVERNOR

BANGKOK METROPOLITAN ADMINISTRATION

J. Kanakubo

MR. TOSITOMO KANAKUBO
LEADER

JICA SURVEY TEAM

Minutes of Discussion
on
Topographic Mapping Project of Bangkok Metropolitan Area

The Japanese Survey Team organized by JICA and headed by Mr. Tositomo KANAKUBO stayed at the Kingdom of Thailand from 1st of December 1987 till 26th of January 1988 to carry out the second year survey work for the Topographic Mapping of Bangkok Metropolitan Area.

Upon the completion of field completion work in the second year survey work, a joint meeting was held during the period of 21st to 26th of January 1988, and the following items were discussed and mutually agreed upon between the Bangkok Metropolitan Administration (hereinafter referred to as BMA) and JICA Survey Team.

List of attendants is shown in Annex A.

I. SECOND YEAR WORK

I-1 Progress of the 2nd Year Work

<u>Items of Work</u>	<u>Coverage</u>	<u>Progress at Present</u>
Aerial Triangulation	425 models	100%
Stereo-plotting 1: 4,000	300 Km ² 40 Sheets	100%
1:10,000	1,700 Km ² 57 Sheets	100%
Compilation 1: 4,000	300 Km ² 40 Sheets	100%
1:10,000	2,000 Km ² 61 Sheets	100%
Field Completion	2,000 Km ²	100%
Drafting 1: 4,000	300 Km ² 40 Sheets	*

*Expected to be completed by the end of
March 1988.

I-2 Field Completion

1) Style and Size of Annotation

Style and size of annotation in Thai and English shall be in Appendix 1-1 and 1-2.

T. K.
Wichu

2) Marginal Information

- (1) Glossary as shown in Appendix 1-3 shall be mentioned on the map of English annotation.
- (2) One part of explanation of marginal information shall be changed as shown in Appendix 2-1, 2-2, 2-3 and 2-4.

3) Spot Height

Spot height on map of 1:4,000 and 1:10,000 shall be shown in meter with one decimal point.

4) Data and Map List

The data and map which JICA Survey Team received from Thai side are as follows:

(1) Map for Administrative Name and Boundary

1:4,000 40 sheets

1:10,000 61 sheets

(2) List of Annotation in Thai and English

1:4,000 40 sheets

1:10,000 61 sheets

(3) List of Sheet Name

as shown in Appendix 2-5, 2-6.

(4) Annotation Sheet

1:4,000 40 sheets

As for 1:10,000 the map for 61 sheets shall be sent to Japan side by February 29, 1988.

I-3. Delivery of the ground control point survey results

The Japanese side handed over to the Thai side the survey results of ground control points as shown in Appendix 3-1.

II. THIRD YEAR WORK

In the 3rd year (Final year), the following work is expected to be carried out:

Drafting (1:10,000)	2,000 Km ²	61 sheets
Printing (1:10,000)	2,000 Km ²	61 sheets

As to the 3rd year work the both sides confirmed that the drafting shall be conducted by the Japanese side in Japan and the printing shall be carried out by the Thai side in the reproduction facilities of Royal Thai Survey Department (hereinafter referred to as RTSD) using the materials to be provided by the Japanese side. Both sides also confirmed to make close cooperation for smooth implementation of the Work.

III. PROCESS OF THE FINAL PRODUCT PREPARATION

The process of the final product preparation to be carried out by both sides is as follows:

III-1. Drafting

1:4,000 topographic map:

The Japanese side shall send one set of the final draft sheets to the Thai side by the middle of April 1988.

1:10,000 topographic map:

Checking on the surprints shall be made by the Thai counterpart in Japan. The Japanese side shall send the surprints checked by the counterpart to Thailand by the middle of July 1988 for the final confirmation by the Thai side. The Thai side shall make final check and return them to Japan by the middle of August 1988.

III-2. Proof printing

The Japanese side shall complete the proof printing of 1:10,000 Topographic map by the end of September 1988.

III-3. Modification of the specifications of topographic map

The Japanese side shall make slight symbol modifications and map color adjustment for better map representation of the final products.

III-4. Provision of the reference and consumable materials for printing

The Japanese side shall provide to the Thai side with the reference and consumable materials for printing by the end of September 1988. The Thai side shall be in charge of custom clearance, transportation to warehouse and storage under proper temperature and humidity at its expenses.

1) Reference materials

Specification for printing	1 set
Composite films (Negative)	1 set
Proof (sample map)	61 sheets (1 set)

2) Consumable materials

PS aluminum plate (74.1 x 92.5 cm)	450 sheets
Printing paper (75 x 95 cm)	100,000 sheets
Printing ink (2 Kg/can)	200 cans (for the above)
Blanket Rubber (113.5 x 130 cm)	4 sheets
Gum Airobic	15 gallon
Others	1 set

Thai side strongly requested, considering usefulness of the map, to increase the account of consumable materials which would be enough for printing 1,500 sets of 1:10,000 topographic Map in Thai version instead of 500 sets originally agreed in the Scope of Work (The number of printing paper shall be 171,000 sheets for 2,000 sets). Japanese side stated to convey this request to the JICA Headquarters for its consideration.

III-5. Dispatch of the Japanese expert group for printing

The Thai side requested the Japanese side to dispatch the expert group for guidance of plate composition and color scheme.

The Japanese side shall take necessary measures for dispatching the expert group for initiation of the printing work as well as for confirmation of the completion of the printing process.

III-6. Completion of the project

- (1) The work of topographic map of 1:4,000 shall be completed upon the consignment of the original manuscripts from Japan to Thailand by the end of September 1988. The Thai side shall obtain the approval from the authorities concerned to send at least one set of the blue print copies in order for Japanese side to confirm the completion of the work of producing 1:4,000 topographic map. Japanese side shall keep above map confidentially and send back them to Thai side after the confirmation.
- (2) The work for topographic map 1:10,000 shall be completed upon the completion of the Printing work in RTSD printing facilities by the end of Feb. 1989. Thai side shall obtain the approval from the authorities concerned to send at least one set (1 set : 122 sheets) of each of English and Thai editions with security stamp to JICA by the end of March 1989 in order for Japanese side to confirm the completion of the work of producing 1:10,000 topographic map. Japanese side shall keep above map confidentially and send back them to Thai side after the confirmation.
- (3) Japanese side shall submit BMA 50 copies of final report in English version by the end of March, 1989.
- (4) The technical cooperation program for this project shall be finalized by the completion of the above works.

IV. SEMINAR

Thai side requested Japanese side to cooperate in the occasion of holding seminar for technology transfer of topographic mapping and utilization of the topographic map in March 1989.

Japanese side stated to convey this request to JICA Headquarters for its consideration.

SAMPLE OF PHOTO LETTERING
1/4,000

ITEM	ENGLISH		THAI	
	STYLE	SIZE	TYPE	SIZE
ADMINISTRATION	E08-24-C	16	A	20
PROVINCE	E08-24-C	16	A	20
DISTRICT	E08-24-C/L	14	A	18
VILLAGE	E08-24-C/L	12	A	16
NEW RESIDENCE	E08-24-C/L	9	A	12
BUILDING	E08-24-C/L	9	A	12
SCHOOL	E08-24-C/L	9	A	12
POST OFFICE	E08-24-C/L	9	A	12
TEMPLE	E08-24-C/L	9	A	12
MONUMENT	E08-24-C/L	8	A	10
PARK	E05-14-C/L	10	A	12
AIRPORT	E05-14-C	10	A	12
ROAD	E08-25-C	10	A	12
NATIONAL ROAD	E08-25-C	10	A	12
HIGHWAY	E08-25-C	10	A	12
PROVINCIAL ROAD	E08-25-C	10	A	12
LANE/STREET	E08-25-C	10	A	10
RAILWAY	E08-25-C	10	A	12
STATION	E08-25-C	9	A	10
CONSTRUCTION	E08-25-C/L	8	A	10
RIVER (LARGE)	E01-25-C	18	B	24
(MEDIUM)	E01-25-C	14	B	18
(SMALL)	E01-25-C	10	B	12
SEA	E01-25-C	18	B	24
BEACH	E01-24-C/L	10	B	12

NOTE : A TYPE IS UP RIGHT LETTER
B TYPE IS SLANT LETTER

Remarks: Above sample is for type of letter only

Wichai T.K.

SAMPLE OF PHOTO LETERING
1/10,000

ITEM	ENGLISH		THAI	
	STYLE	SIZE	TYPE	SIZE
ADMINISTRATION	E08-24-C	3-5	จังหวัดสมุทรปราการ	A 16
PROVINCE	E08-24-C	3-5	จังหวัดสมุทรปราการ	A 16
DISTRICT	E08-24-C/L	3-0	เขตบางกะปิ	A 14
VILLAGE	E08-24-C/L	2-2	บ้านคลองบางมด	A 10
NEW RESIDENCE	E08-24-C/L	1-8	หมู่บ้านบางมด	
BUILDING	E08-24-C/L	1-8	โรงเรียนบางมด	A 8
SCHOOL	E08-24-C/L	1-8	โรงเรียนบางมด	A 8
POST OFFICE	E08-24-C/L	1-8	สำนักงานไปรษณีย์บางมด	A 8
TEMPLE	E08-24-C/L	1-8	วัดบางมด	A 8
MONUMENT	E08-24-C/L	1-8	อนุสาวรีย์ประชาธิปไตย	A 8
PARK	E05-14-C/L	1-8	สวนลุมพินี	A 8
AIRPORT	E05-14-C	1-8	ท่าอากาศยานนานาชาติ	A 8
ROAD	E08-25-C	2-2	ถนนพหลโยธิน	A 10
NATIONAL ROAD	E08-25-C	2-2	ทางด่วนเฉลิมเกล้า	A 10
HIGHWAY	E08-25-C	1-8	ถนนสุขุมวิท	A 8
PROVINCIAL ROAD	E08-25-C	1-8	ซอยสุขุมวิท	A 8
LANE/STREET	E08-25-C	1-8		
RAILWAY	E08-25-C	2-2	ทางรถไฟสายเหนือ	A 10
STATION	E08-25-C	1-8	สถานีรถไฟกรุงเทพ	A 8
CONSTRUCTION	E08-25-C/L	1-8	ท่าอากาศยาน	A 8
RIVER	E01-25-C	3-5	แม่น้ำเจ้าพระยา	B 16
(LARGE)	E01-25-C	2-6	คลองบางมด	B 12
(MEDIUM)	E01-25-C	1-8	ลำน้ำเจ้าพระยา	B 8
(SMALL)	E01-25-C	1-8	อ่าวไทย	B 8
SEA	E01-25-C	3-5	อ่าวไทย	B 16
GULF	E01-24-C/L	1-8	อ่าวไทย	B 8
BEACH				

Remarks: Above sample is for type of letter only.

NOTE : A TYPE IS UP RIGHT LETTER
B TYPE IS SLANT LETTER

Wichu J.K.

GLOSSARY

AMPHOE	.....SECONDARY ADMINISTRATIVE DIVISION, DISTRICT
BAN	.....VILLAGE
BUNG	.....POND
CHANGWAT	.....PRIMARY ADMINISTRATIVE DIVISION, PROVINCE
KHET	.....SECONDARY ADMINISTRATIVE DIVISION, DISTRICT
KHLONG	.....CANAL
LAM	.....DITCH
MAE NAM	.....RIVER
MU BAN	.....HOUSING ESTATE
SOI	.....LANE, STREET
SUAN	.....PUBLIC PARK
THANON	.....ROAD
WAT	.....TEMPLE

MARGINAL INFORMATION
FOR
1:4,000

BANGKOK 1: 4,000

MAP NAME

CODE NO.

LEGEND

BANGKOK METROPOLIS MAP
SCALE 1:4,000

GLOSSARY

INDEX BOUNDARY

1:4,000
CODE NO.
MAP NAME

1

2

SYMBOL MARKS OF
AGENCIES CONCERNED

Wicha T.K.

NOTE OF ① AND ② (IN CASE OF 1:4,000)

① This map was produced under cooperation between the Royal Thai Government and the Government of Japan. The Bangkok Metropolitan Administration served as implementing agency in closed coordination with the Royal Thai Survey Department.

Aerial Photography : March 1987
 Field Survey Work : Japan International Cooperation Agency (JICA)
 March to June 1987
 Plotting, Compilation and Drafting : July 1987 to March 1988
 Printing : Royal Thai Survey Department 1988
 Distributor : Bangkok Metropolitan Administration (BMA)
 Dinso Road, Bangkok, Thailand.

① This map was produced under cooperation between the Royal Thai Government and the Government of Japan. Department of Public Works, Bangkok Metropolitan Administration (BMA) served as implementing agency in closed coordination with the Royal Thai Survey Department, Supreme Command Headquarters.

Aerial Photography : March 1987 by JICA
 Field Survey Work : March to June 1987 by JICA
 Field Completion : December 1987 to January 1988 by JICA
 Plotting, Compilation and Drafting : July 1987 to March 1988 by JICA
 Distributor : Department of Public Works, BMA.

② Users are urged to refer corrections and comment for increasing the usefulness of this map to the Department of Public Works, Bangkok Metropolitan Administration, Mit Maitri Road, Khet Huai Khwang, Bangkok 10400.

MARGINAL INFORMATION
OF
1:10,000

BANGKOK 1:10,000 MAP NAME CODE NO.

BANGKOK METROPOLIS MAP
SCALE 1:10,000

GLOSSARY

INDEX BOUNDARY

LEGEND

1:10,000
CODE NO.
MAP NAME

SYMBOL MARKS OF
AGENCIES CONCERNED

Wicha

T.K

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March to June 1987

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LIST OF SHEET NAME

(1)

1:4,000

SHEET NO.	THAI	ENGLISH
6-4-B, 7-3-A	ประชาชื่น	PRACHA CHUN
6-4-D	บางซ่อน	BANG SON
7-3-C	หวัง	HO WANG
10-1-D	ตลิ่งชัน	TALING CHAN
10-2-A	บางพลัด	BANG PHLAT
10-2-B	บางซื่อ	BANG SU
10-2-C	บางยี่ขัน	BANG YIKHAN
10-2-D	คูสิต	DUSIT
10-3-B	พรวนบก	PHRAN NOK
10-3-D	คลองบางนา	KHLONG BANG WAEK
10-4-A	พระนคร	PHRA NAKHON
10-4-B	อุรุพงษ์	URUPHONG
10-4-C	วงเวียนใหญ่	WONG WIAN YAI
10-4-D	บางรัก	BANG RAK
11-1-A	สวนจตุจักร	SUAN CHATUCHAK
11-1-B	ลาดพร้าว	LAT PHRAO
11-1-C	ดินแดง	DIN DAENG
11-1-D	ห้วยขวาง	HUAI KHUANG
11-2-C	คลองจั่น	KHLONG CHAN
11-2-D	บางกะปิ	BANG KAPI
11-3-A	มักกะสัน	MAKKASAN
11-3-B	คลองสามเสน	KHLONG SAMSEN
11-3-C	สวนลุมพินี	SUAN LUMPINI
11-3-D	เอกมัย	EKKAMAI
11-4-A	รามคำแหง	RAMKHAMHAENG
11-4-B	ลำสาลี	LAM SALI
11-4-C	หัวหมาก	HUA MARK
14-1-B	บางขุนเทียน	BANG KHUN THIAN
14-2-A	สะพานกรุงเทพ	KRUNG THEP BRIDGE

LIST OF SHEET NAME

(1)

1:10,000

SHEET NO.	THAI	ENGLISH
3-1, 3 -2	ลำลูกกา	LAM LUK KA
3 -3	บ้านตลาดใหม่ดอนเมือง	BAN TALAT MAI DON MUANG
3 -4	บ้านตลาดวัดเกาะ	BAN TALAT WAT KO
4 -3	บ้านคลองสามวา	BAN KHLONG SAM WA
4 -4	บ้านคลองแปด	BAN KHLONG PAET
4E-3	บ้านคลองสิบสอง	BAN KHLONG-SIP SONG
4E-4	บ้านคลองสิบสี่	BAN KHLONG SIP SI
6 -4	บางซ้อ	BANG SON
7 -1	บางเขน	BANG KHEN
7 -2	บ้านบัว	BAN BUA MON
7 -3	เกษตรศาสตร์	KASETSART
7 -4	บ้านเกาะดอน	BAN KO DON
8 -1	บ้านคลองตะวันตก	BAN KHLONG TAWAN TOK
8 -2	บ้านแบงชะโด	BAN BAEN CHADO
8 -3	มีนบุรี	MIN BURI
8 -4	บ้านเกาะ	BAN KO
8E-1	หนองจอก	NONG CHOK
8E-2	บางน้ำเปรี้ยว	BANG NAM PRIEO
8E-3	บ้านคลองยุคใหม่	BAN KHLONG YUK MAI
8E-4	บ้านบึงทองหลาง	BAN BUNG THONGLANG
9 -1	พุทธมณฑล	PHUTTHA MONTHON
9 -2	บ้านคลองบางขุนศรี	BAN KHLONG BANG KHUNSI
9 -3	กระทุ่มแบน	KRATHUM BAEN
9 -4	บ้านคลองบางไผ่	BAN KHLONG BANG PHAI
10 -1	ตลิ่งชัน	TALING CHAN
10 -2	คูสิต	DUSIT
10 -3	คลองบางแวก	KHLONG BANG WAEK
10 -4	พระนคร	PHRA NAKHON
11 -1	หัวขวง	HUAI KWANG

LIST OF SHEET NAME

(2)

1:10,000

SHEET NO.	THAI	ENGLISH
11 -2	บางกะปิ	BANG KAPI
11 -3	มักกะสัน	MAKKASAN
11 -4	หัวหมาก	HUA MAK
12 -1	บ้านคลองหลอแหล	BAN KHLONG LO LAE
12 -2	บ้านบึงบัว	BAN BUNG BUA
12 -3	บ้านคลองหนึ่ง	BAN KHLONG NUNG
12 -4	ลาดกระบัง	LAT KRABANG
12E-1	บ้านลำแขก	BAN LAM KHAEK
12E-2	บ้านบึงลำไศล	BAN BUNG LAM KHLO
12E-3	บ้านอ้ายแบน	BAN AI BAEN
12E-4	บ้านลำต้อยติ่ง	BAN LAM TOITING
13 -1	บ้านสะแกงาม	BAN SAKAE NGAM
13 -2	หนองแขม	NONG KHAEM
13 -4	บ้านคลองบางบอน	BAN KHLONG BANG BON
14 -1	ภาษีเจริญ	PHASI CHAROEN
14 -2	ราษฎร์บูรณะ	RAT BURANA
14 -3	บางขุนเทียน	BANG KHUN THIAN
14 -4	บ้านคลองนางมด	BAN KHLONG BANG MOT
15 -1	พระโขนง	PHRA KHANONG
15 -2	บ้านหนองบอน	BAN NONG BON
15 -3	พระประแดง	PHRA PRADAENG
15 -4	บ้านคลองหนามแดง	BAN KHLONG NAM DAENG
16 -1	บ้านมะขามเทศ	BAN MAKHAM THET
16 -2	บางพลี	BANG PHLI
16 -3	บ้านคลองบางแก้วใหญ่	BAN KHLONG BANG KAE0 YAI
16E-1	บ้านทับยาว	BAN THAP YAO
17 -2	บ้านระหาญ	BAN RAHAN
17 -4	บ้านเกาะโพธิ์	BAN KO PHO
18 -1	บ้านหัวกระบือ	BAN HUA KRABU

List of the Final Results of
the Ground Control Point Survey

1. Horizontal control
 - (1) Observation and calculation sheet for control point
2. Vertical control survey
 - (1) Observation and calculation sheet for determination of control point height
 - (2) Levelling note and result (3rd order levelling)
 - (3) Levelling note and result (supplemental levelling)
3. Computation sheets
 - (1) Original draft result
 - (2) Calculation sheet
4. Field notes
 - (1) Distance observation sheet (3rd order control point survey)
 - (2) Horizontal angle observation sheet
 - (3) Vertical angle observation sheet
5. Description of Points
 - (1) Control point description
 - (2) Final result and description
 - (3) Bench mark description No.1
 - (4) -ditto- No.2
 - (5) -ditto- No.3
 - (6) -ditto- No.4
 - (7) -ditto- No.5
 - (8) -ditto- No.6

Total 17 Files

Wishwa T.K.

JICA