

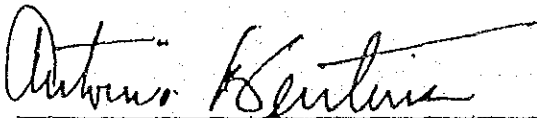
2-2 Implementing Arrangement

IMPLEMENTING ARRANGEMENT ON THE TECHNICAL COOPERATION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY
FOR THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
OF THE NATIONAL CAPITAL REGION IN THE REPUBLIC OF THE PHILIPPINES

AGREED BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY

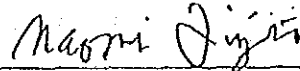
Dated: March 26, 1985
In Manila, Philippines

FOR THE BUREAU OF COAST AND
GEODETIC SURVEY



Commo. Antonio P. VENTURA
Director of BCGS (Ret.)

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY



Dr. Naomi FUJITA
Leader of Japanese Prelimi-
nary Study Mission.

INPLEMENTING ARRANGEMENT ON THE TECHNICAL COOPERATION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST & GEODETIC SURVEY
FOR THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
OF THE NATIONAL CAPITAL REGION IN THE REPUBLIC OF THE PHILIPPINES

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Establishment of Graphic Information Base Project of the National Capital Region (hereinafter referred to as "the Study") and exchanged the Notes Verbales with GOP concerning the implementation of the Study.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"); the official agency responsible for the implementation of technical cooperation programmes of GOJ, will undertake the Study, in accordance with the relevant laws and regulations in force in Japan.

On the part of GOP, the Bureau of Coast & Geodetic Survey (hereinafter referred to as "BCGS") shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangements between JICA and BCGS under the above-mentioned Notes Verbales exchanged between the two governments.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are as follows:

- (1) To prepare Contoured Map (1/10,000), and Planimetric Map (1/10,000) covering an area of approximately 1,500 km²; (see APPENDIX I-1)
- (2) To prepare Land Use plan (1/10,000) covering an area of approximately 823 km². (see Appendix I-2).

- (3) To prepare Land Condition Plan (1/10,000) covering an area of approximately 484 km² (see Appendix I-3).

Maps mentioned above are produced by using aerial photographs (1/32,000) possessed by GOP.

III. SCOPE OF THE STUDY

In order to achieve the above mentioned objectives, the Study will cover the following items. (The technical details are as shown in APPENDIX V.)

1. Ground Control Point Survey

1.1 Triangulation and Traversing

Minor horizontal control points, necessary for aerial triangulation and mapping work, shall be established by triangulation or traverse.

1.2 Leveling

Leveling shall be carried out to obtain vertical controls necessary for aerial triangulation and mapping work.

Monumentation of new control points shall be done if necessary

2. Pricking

Pricking of control points on the aerial photographs shall be done in the field for aerial triangulation.

3. Field Identification

The topographic information related to land use, vegetations, etc. shall be verified in the field using the aerial photographs. Geographical names to be expressed on the maps shall also be identified in the field and the gazetteer.

The Land Use Plan is envisioned to present the existing zoning districts (like residential, commercial and industrial), vegetations, institutional facilities (like hospital, churches and government building), roads and others.

The Land Condition Plan is to portray the landform classification.

Main topographic information not appearing on the existing photos due to changes after aerial photography will be considered during the field identification work.

4. Aerial Triangulation
Aerial triangulation shall be carried out by analytical method. Adjustment shall be carried out by block adjustment method.
5. Stereo Plotting
Stereo plotting shall be carried out using stereo plotting instruments at scale of 1/10,000.
6. Field Completion
Topographic features, vegetation, etc. which cannot be properly identified or stereo plotted shall be verified in the field and plotted on the compilation sheet. Administrative boundaries and geographical names shall be verified and indicated on the paper copy of the compilation sheet by BCGS.
7. Drafting
Based on the compiled sheet, scribing shall be carried out on the stable polyester base for each of the six colour separation plates. Map style and symbols shall be those adopted by BCGS.
8. Printing
Plate making shall be carried out using 1/10,000 scribed negatives, and printing shall be carried out by the off-set method.

IV. STUDY SCHEDULE

The whole work will be conducted in accordance with the time schedule (see Appendix II).

V. REPORTS AND FINAL RESULTS

A report shall be presented to GOP by JICA every fiscal year (from April to March).

The materials mentioned in Appendix III will be submitted to the GOP by GOJ after having completed the whole work, and

they shall belong to GOP.

All maps produced under this project shall bear at the lower margin the following:

This map was produced under a cooperative undertaking between the Government of the Republic of the Philippines and the Government of Japan.

VI. UNDERTAKING OF GOP

In accordance with the Note Verbale exchanged between GOJ and GOP, GOP shall accord privileges, immunities and other benefits to the Japanese Study Team and, through the authorities concerned take necessary measures to facilitate smooth conduct of the Study.

1. GOP shall be responsible for dealing with claims which may be brought by third parties against members of the Japanese Study Team and shall hold them harmless in respect of claims or liabilities arising in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from gross negligence or willful misconduct of the above-mentioned members.
2. The BCGS shall, at its own expense, provide the Japanese Study Team with the following in cooperation with other agencies concerned.
 - (1) Available data and information related to the Study
 - (2) Counterpart personnel
 - (3) Administrative and technical support
 - (4) Suitable office space with necessary office equipment, furniture, and telephones in Manila
 - (5) Credentials or identifications cards to the members of the Study Team
 - (6) Appropriate number of vehicles with drivers
 - (7) Monuments for the new control points, if necessary
 - (8) Levelling survey in the whole area of the project, necessary for photo-control
 - (9) Triangulation survey in the southern part of the project, necessary for aerial triangulation
 - (10) Necessary facilities for processing the aerial photographs
 - (11) Information of the necessary administrative boundary and geographical names on the maps, at its full responsibility

3. The BCGS shall make necessary arrangements with the government and non-governmental organizations for the following:

- (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 the Philippines for the duration of their assignment therein;
- (3) To exempt the members of the Japanese Study Team from taxes, duties, fees and other charges on equipment, machinery, and other materials brought into the Philippines 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 emolument 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 from remittance as well as utilization of the funds introduced into the Philippines 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 to take all data and documents related to the Study out of the Philippines to Japan by the Study Team. When aerial photographs are needed, BCGS trainees will bring them to Japan.
- (8) To provide medical services as needed and its expenses will be chargeable on members of the Japanese Study Team.

VII. UNDERTAKING OF GOJ

In accordance with the Note Verbale exchanged between GOJ & GOP, GOJ through JICA, will take the following measures for the implementation of the Study.

1. To dispatch, at its own expense, Study team to the Philippines.

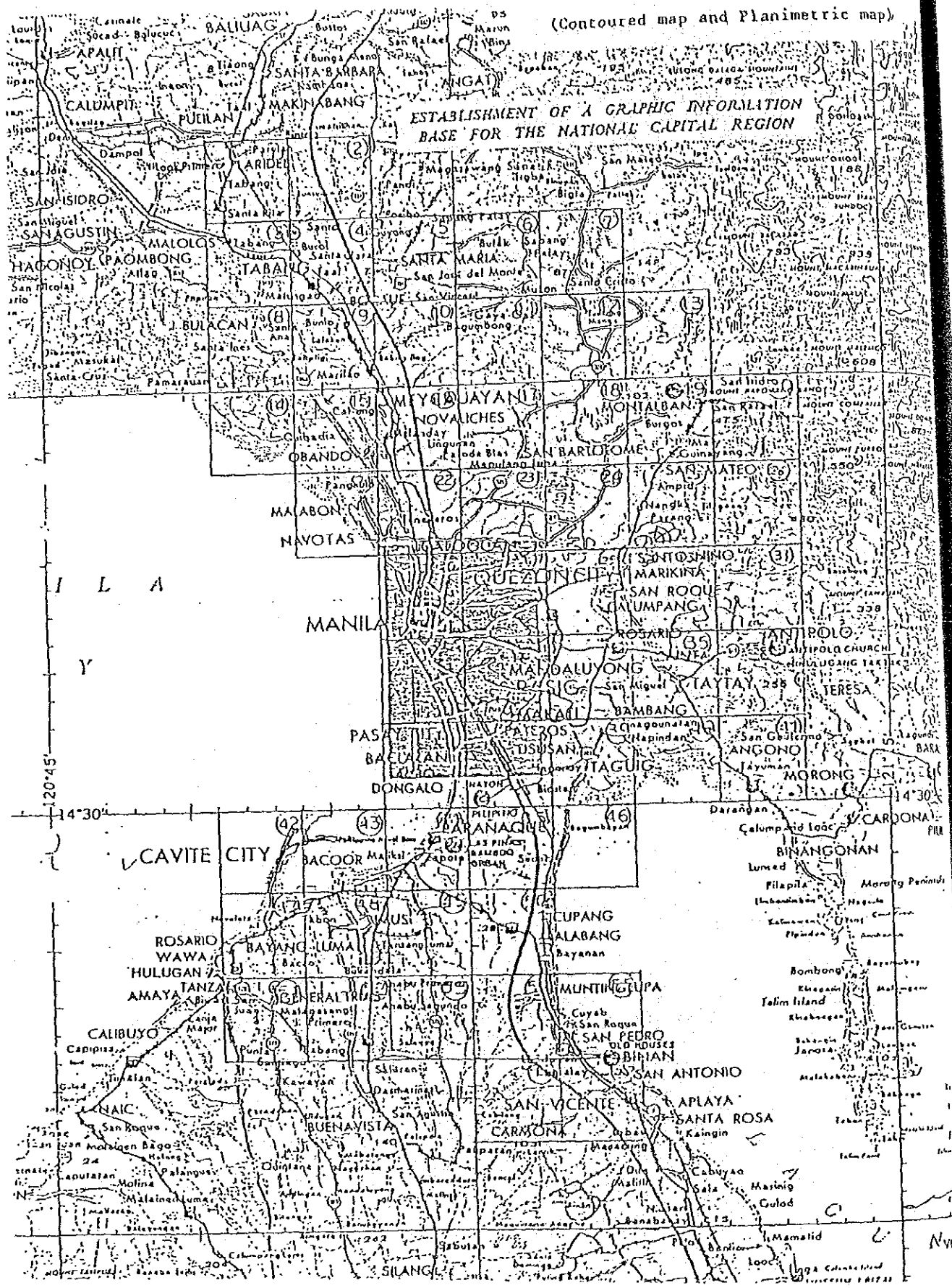
2. To pursue technology transfer to the Philippine counterpart personnel in the course of the Study.
3. To provide the following equipment and machinery for the implementation of the Study as listed in APPENDIX IV, which will remain in the property of JICA unless otherwise agreed.

V. CONSULTATION

JICA and BCGS consult with each other in respect of any matter that may arise from or in connection with the Study.

(Contoured map and Planimetric map)

ESTABLISHMENT OF A GRAPHIC INFORMATION
BASE FOR THE NATIONAL CAPITAL REGION

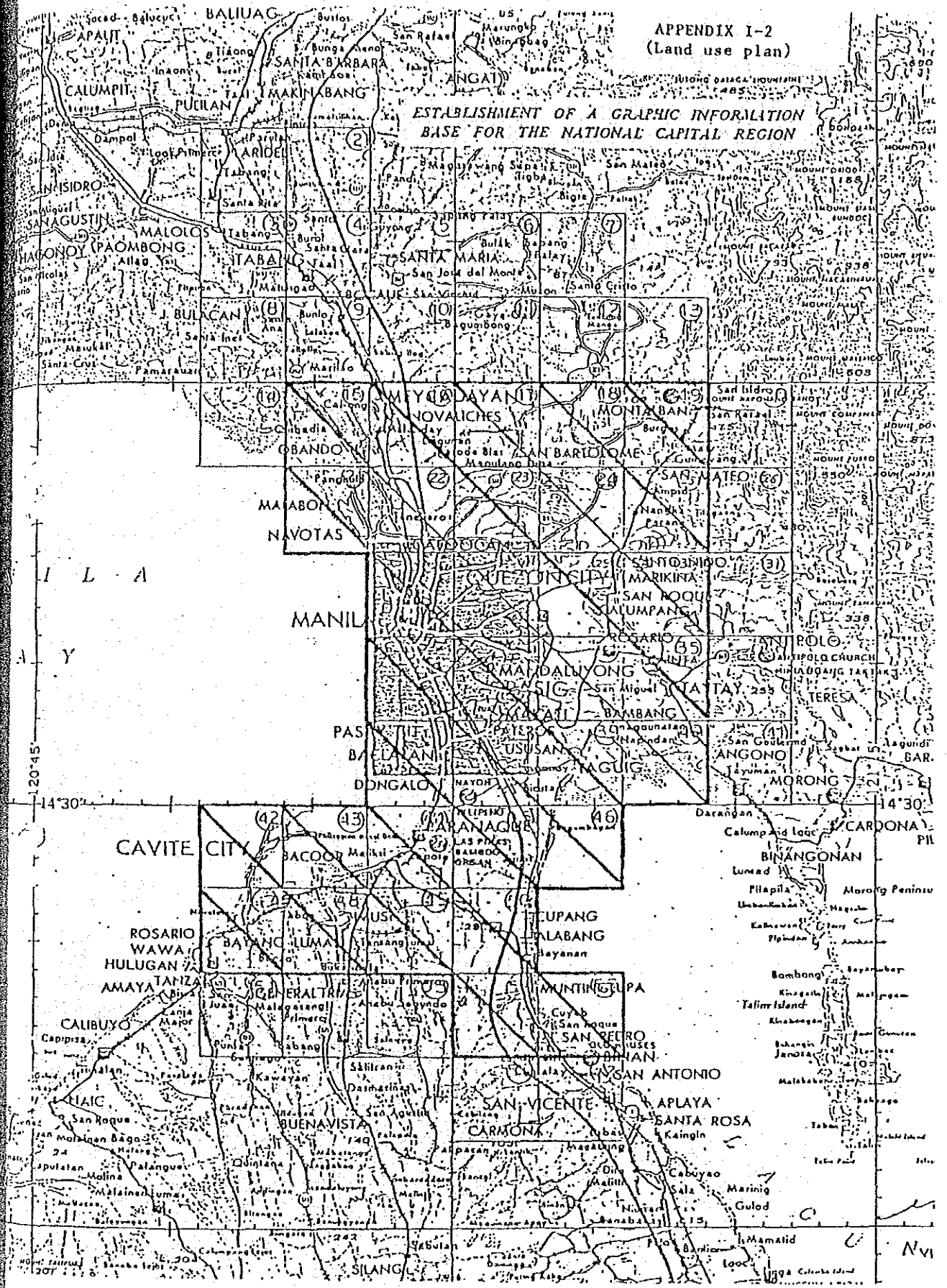


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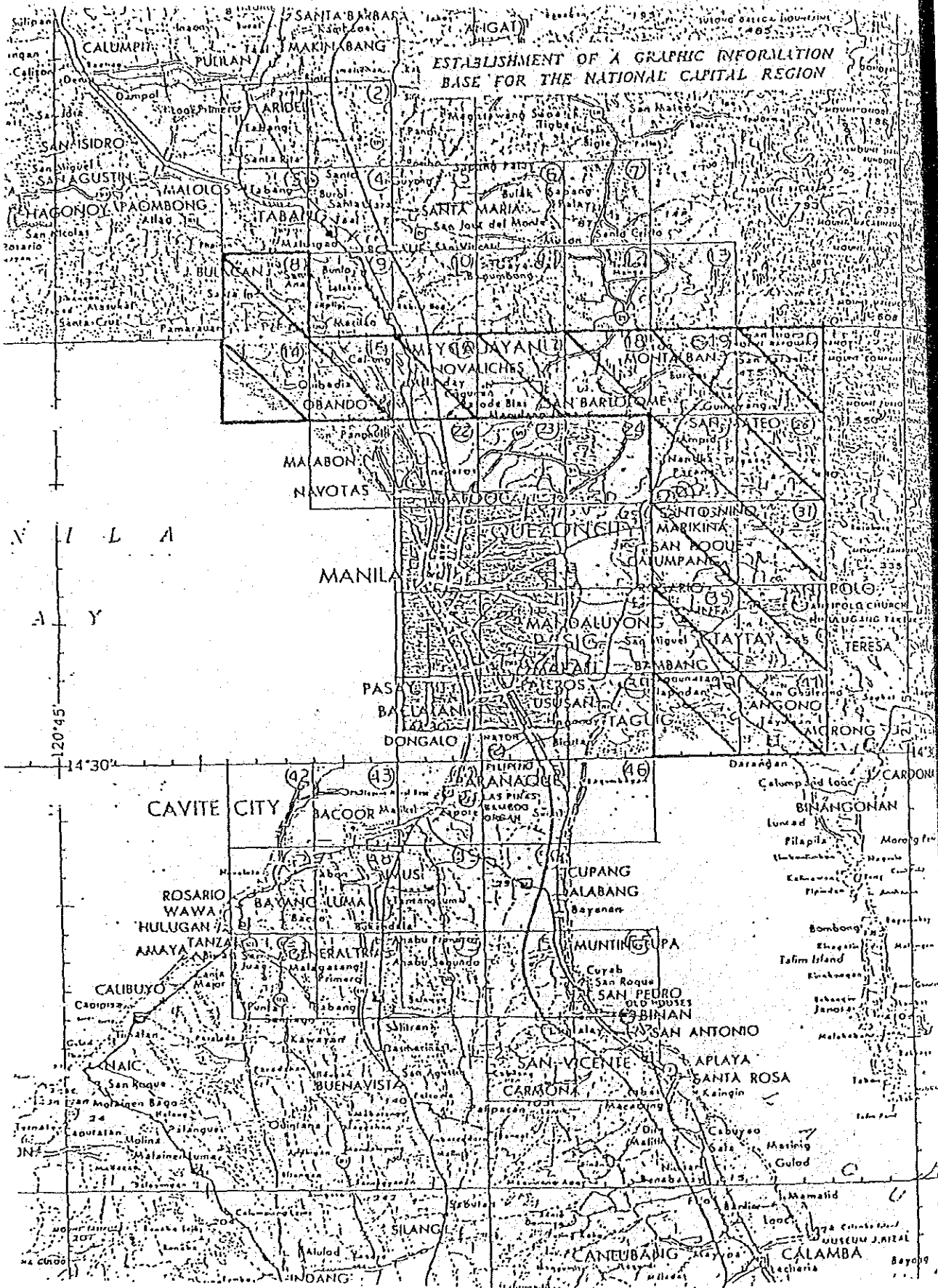
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APPENDIX I-2
(Land use plan)

ESTABLISHMENT OF A GRAPHIC INFORMATION
BASE FOR THE NATIONAL CAPITAL REGION



ESTABLISHMENT OF A GRAPHIC INFORMATION
BASE FOR THE NATIONAL CAPITAL REGION



APPENDIX II

TENTATIVE SCHEDULE

I T E M	1st Year Apr. 1985 - Mar. 1986	2nd Year Apr. 1986 - Mar. 1987	3rd Year Apr. 1987 - Mar. 1988	4th Year Apr. 1988 - Mar. 1989
	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 1 2 3
GROUND CONTROL POINT SURVEY	=====			
PRICKING	=====			
FIELD IDENTIFICATION	=====			
- DITTO - (LAND CONDITION)		=====		
AERIAL TRIANGULATION	=====			
STEREO PLOTTING (and EDITING)	=====			
- DITTO - (LAND USE & CONDITION)		=====	=====	
FIELD COMPLETION				
- DITTO - (LAND USE & CONDITION)			=====	
DRAFTING • PRINTING				
- DITTO - (LAND USE & CONDITION)				=====

NOTE:  : Work in the Philippines
 : Work in Japan

APPENDIX III

FINAL RESULTS

- I. Ground Control Point Survey
 1. Horizontal control results
 2. Vertical control results
 3. Computation sheets
 4. Field Notes
 5. Description of points

- II. Contoured Mapping
 1. Aerial triangulation results
 2. Colour separation scribed sheets
 3. 1/10,000 Contoured maps (1,000 copies)
 4. Pricked photos
 5. Original manuscripts
 6. 1/10,000 Planimetric maps w/ 30" grid (1,000 copies)

- III. Land Use Plan
 1. Colour separation scribed sheets
 2. 1/10,000 Land use plans (1,000 copies)
 3. Original manuscripts

- IV. Land Condition Plan
 1. Colour separation scribed sheets
 2. 1/10,000 Land condition plans (1,000 copies)
 3. Original manuscripts

APPENDIX IV

LIST OF EQUIPMENTS TO BE USED FOR FIELD SURVEY
BY THE JAPANESE SURVEY TEAM

1. Theodolites
2. Electro magnetic distance measuring equipments
3. Short waves transmitter receivers
4. Transceivers
5. Levels with staves
6. Electronic calculators
7. Camping materials including food staff
8. Generators
9. Small instruments, office equipments and consumables

Note: Above mentioned equipments are subject to alteration.

APPENDIX V

TECHNICAL DETAILS

I. SPECIFICATIONS

Major specifications of this Project are:

1. Ground Control Point Survey
Specifications for 3rd order control point survey in the Technical Manual of Overseas Surveying of JICA (hereinafter referred to as TM of JICA).
2. Leveling survey for minor height control point.
Specifications for 4th order leveling survey in TM of JICA.
3. Monument
Subject to the specification of BCGS.
4. Mapping
B class mapping specifications for planimetry in TM of JICA
A class mapping specifications for height in TM of JICA.
5. Reference Ellipsoid: Clarke Spheroid of 1866
6. Vertical Datum: Mean Sea Level (Manila Tidal Station)
7. Projection:
Universal Transverse Mercator Projection
8. Contour Lines:
2 meter contour intervals for flat area, and 4 meter contour intervals for others.
9. Format: 3' x 3' for Contoured Map,
Planimetric Map, Land Use Plan, and Land Condition Plan

II. ACCURACY (Standard deviation)

Accuracy of above-mentioned surveys shall be:

- 1) Horizontal control survey

$$\frac{\sqrt{\Delta X^2 + \Delta Y^2}}{S} = \frac{1}{25,000}$$

- 2). Vertical control survey

20 mm \sqrt{S} S: distance in Km.

- 3). Mapping

Planimetry \pm 1 mm on the map

Spot Height $\frac{\Delta h}{3}$ Δh : main contour interval

Contour $\frac{\Delta h}{2}$

3. Minutes of Discussions

3-1 Preliminary Survey

MINUTES OF DISCUSSIONS

ON

"THE ESTABLISHMENT OF A GRAPHIC INFORMATION BASE
FOR THE NATIONAL CAPITAL REGION"

BETWEEN

THE JAPAN INTERNATIONAL COOPERATION AGENCY

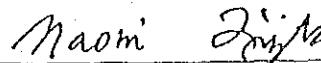
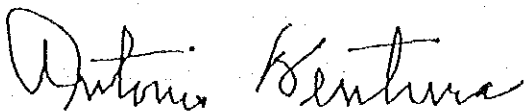
AND

THE BUREAU OF COAST AND GEODETIC SURVEY

Dated: 28th March 1985
in Manila, Philippines

FOR THE BUREAU OF COAST AND
GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY



Commodore Antonio P. VENTURA
Director of BCGS

Dr. Naomi FUJITA
Leader of Japanese Preliminary
Study Team

The Japanese Preliminary Study Team organized by JICA and headed by Dr. Fujita, visited the Republic of the Philippines from 21st to 29th March, 1985 to exchange views and opinions with representatives of BCGS for formulating an Implementing Arrangement on the captioned Study.

After a series of joint meetings, the BCGS and the study team agreed on the following items:

- 1) The symbols of contoured map and the categories of land use and land condition plan are in principle as shown in Appendix I
- 2) In items 2. (8) and (9) of paragraph III in I/A BCGS shall provide the result of survey in the area before start of pricking work.
- 3) BCGS shall be responsible for drawing of bathymetric lines, rock awash, wrecks and sewerage outfalls on manuscript sheets.
- 4) BCGS shall provide information concerning the location and classification of theatre and cinema, schools, health centers, hotels and vertical clearances of overpasses.
- 5) Only identified benchmarks on aerial photographs shall be drawn on the map.
- 6) BCGS shall provide counterpart personnel to each Japanese field survey group in the course of the field survey.
- 7) Japanese side shall provide the technical guidance for proper use and efficient production of 1/10,000 contoured

map, land use plan and land condition plan.

- 8) Any amendment, addition or deletion that may come up later during the implementation of the Project shall be by mutual agreement of both parties.
- 9) Other matters
 - a. The BCGS and JICA Teams conducted reconnaissance survey in various parts of Metro Manila to make an appraisal of the bench marks previously established by the BCGS.
 - b. BCGS made arrangement and accompanied the Japanese team for visits to various surveying and mapping agencies of the government and the private sectors.

LIST OF ATTENDANTS

BUREAU OF COAST & GEODETIC SURVEY	JICA STUDY TEAM
1. Commodore Antonio P. Ventura Director	1. Dr. Naomi Fujita Leader
2. Capt. Ananias A. Batilaran, Jr. Chief Operations Division	2. Mr. Toshio Hida Member
3. Commander Renato B. Feir Chief Planning Division	3. Mr. Mitsuo Iwase Member
4. Mr. Ponciano C. Ciceron Chief Coastal & Mapping & Special Projects Division	
5. Mr. Gavino C. Angeles, Jr. Chief Chart & Map Production Division	
6. Mr. Conrado Santos Chief Physical Science Division	

GRAPHIC INFORMATION BASE FOR NATIONAL CAPITAL REGION
(LAND USE & LAND COVER)

Category I	Category II	Category III
Urban & Inhabited Area	Residential District	Multistory Housing Residential Temporal Housing Inhabited
	Commercial Business District	Business Commercial Mixed Commercial Residential
	Industrial District	Large Scale Industry Small Scale Industry Mixed Industry-Residential
	Public & Official District	Governmental Business Education-Culture Health & Welfare Park & Recreational Religious/Cemetery
	Facilities	Transportation Utility Sport & Athletic Military

forest & Farm Area	Agricultural & Land Area	Rice Field Crop Land Plantation Salt Bed Agro-Industrial
	Forest	Forest Grass Land Bare land.
Others	Water Sphere	Sea, Lake, River Fish Pond
	Under- Construction	Open Space

GRAPHIC INFORMATION BASE FOR NATIONAL CAPITAL REGION
LAND FORM CLASIFICATION)

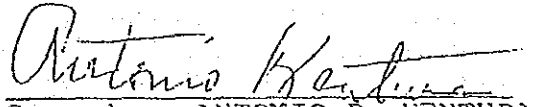
Category I	Category II	
Mountain Slope	Gentle Steep Very Steep	
Volcano Slope	Gentle Steep Very Steep	
Unstable Slope	Cliff Collapse Baldness & bare rock Land slide	
Terrace & Table land	High Low	
Piedmont aggraded	Debris avalanche	
Lowland, relatively higher & well drained	Alluvial fan Natural levee Sand dune Sand bank	
Lowland, general surface	Valley plain Coastal plain or Delta Former river bed	

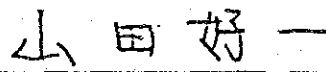
----- ble land sur- ----	High water bed Low water bed Tidal flat	
----- sphere	River & shore line	
----- cially deformed	Cut & rolled surface Cutting Banked up Filled up Drainage Reclaimed land	
----- ographical line	Ridge line Valley line	
----- dary line	Under construction Indistinct boundary Landform line	

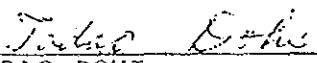
SUMMARY OF DISCUSSION

ON ADMINISTRATIVE ISSUES ON THE ESTABLISHMENT
OF GRAPHIC INFORMATION BASE PROJECT OF THE NATIONAL
CAPITAL REGION IN THE REPUBLIC OF THE PHILIPPINES.

July 26, 1985


Commodore ANTONIO P. VENTURA
Director
B C G S


Mr. YOSHIKAZU YAMADA
Japan International
Cooperation Agency


TADA0 DOHI
Member
Advisory Committee for
Mapping Project

Change of site of land condition map.

Philippine side made a strong request that the land condition maps covering sheet no. 20, 26, 31, 36 and 41 be changed to map sheets no. 21, 22, 24, 29 & 34.

JICA Survey Team is not in a position to reply on that. Therefore, Mr. Yamada, a staff of JICA, will take it back to Japan and convey it to the authorities concerned for further consideration.

The reason for the new request made by the Philippine side are as follows:

The original coverage of the land condition map was selected on a mountainous area, thinking that erosion and cause of flooding emanates from these places. It was not realized until lately that the need for land condition map is more on low lying areas which are prone or susceptible to natural calamities like floods, earthquakes, etc. The calamities have drained so much on the economy of the country not to mention the lost of lives and property. As per advise of the Preliminary Survey Team, the budget of the land condition map is very limited and would be impossible to cover the entire project area, the new request for change of site which will give maximum benefit would place first priority to the areas which are on low land and where flood is a common occurrence. Moreover, during the months of June and July of this year, the low lying areas, covered by the proposed new map sheets, have been hit by one of the worst flood that have occurred in the country, prompting all government agencies such as the Ministry of Public Works and Highways, the Metro Manila Commission, etc. to concentrate more in the redevelopment of these places. In line with this priority a request for changing the site for the proposed land condition map is also made a necessity.

11. BCGS Counterpart Schedule

In regards to the BCGS Counterpart to be sent for the indoor work of the first year survey of this project to be carried out in Japan, BCGS proposed the following schedule of the remaining 3 counterparts:

Course

Tentative Schedule

Aerial Triangulation	October 15 - December 22, 1985
Stereoplotting	November 23, 1985 - Feb. 28, 1986
Stereoplotting	January 10, 1985 - March 23, 1986

Mr. Yamada will also take the above proposed schedule to Japan and convey it to proper department in JICA.

LIST OF ATTENDANTS

BUREAU OF COAST AND GEODETIC SURVEY

1. Commodore Antonio P. Ventura
Director
2. Commander Renato B. Feir
Chief
Planning Division
3. Commander Jose Galo P. Isada, Jr.
Chief
Operations Division
4. Mr. Ponciano C. Ciceron
Chief
Coastal Mapping and Special
5. Mr. Gavino C. Angeles, Jr.
Chief
Chart and Map Production Division
6. Mr. Conrado Santos
Chief
Physical Science Division

JICA ADVISORY COMMITTEE

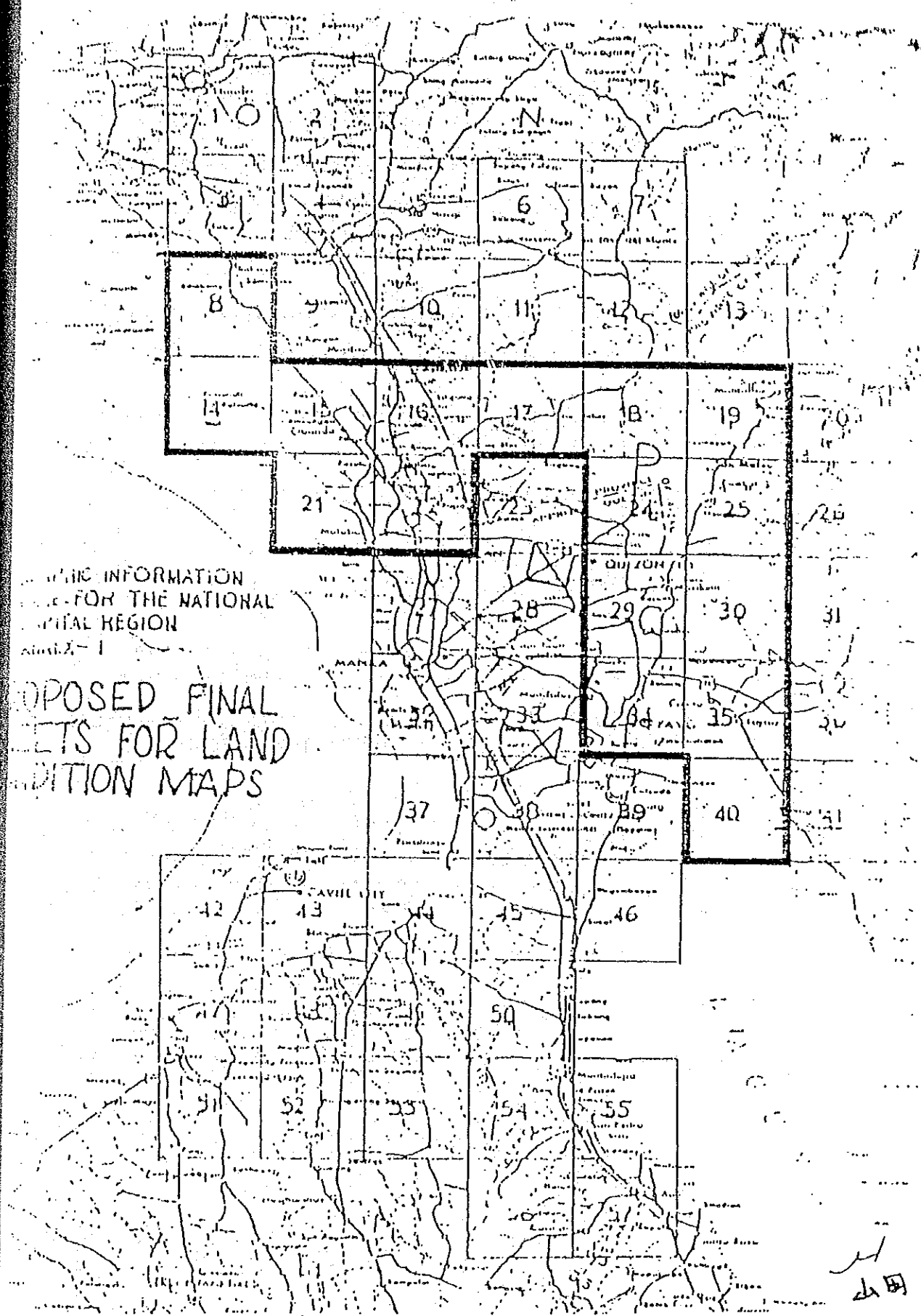
1. Mr. Tadao Dohi
Technical Advisor
2. Mr. Yoshikazu Yamada
Advisor

JICA MANILA OFFICE

1. Mr. Yuji Okazaki

JICA SURVEY TEAM

1. Mr. Masayoshi Takasaki
Leader
2. Mr. Kenzo Motojima
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator



PUBLIC INFORMATION
 FOR THE NATIONAL
 CAPITAL REGION
 Sheet 1

PROPOSED FINAL
 SHEETS FOR LAND
 CONDITION MAPS

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(2)

MINUTES OF DISCUSSIONS

ON

THE ESTABLISHMENT OF A GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION

BETWEEN

THE JAPAN INTERNATIONAL COOPERATION AGENCY

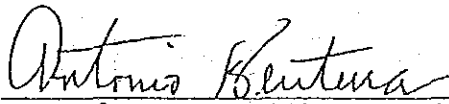
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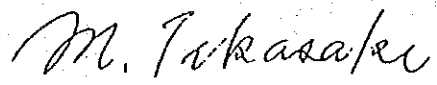
THE BUREAU OF COAST AND GEODETIC SURVEY

Dated: 26th July 1985
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY


Commodore ANTONIO P. VENTURA
Director of BCGS


Mr. MASAYOSHI TAKASAKI
Leader of JICA Survey
Team

The Japanese Survey Team organized by JICA and headed by Mr. MASAYOSHI TAKASAKI visited the Republic of the Philippines on 18th July 1985 to carry out the first year survey work for the establishment of a graphic information base project for the National Capital Region (Metro Manila).

prior to the commencement of the first year survey work, a series of joint meetings had been held from 19th to 26th July and the following items were discussed and agreed by the BCGS and the survey team.

1. The Plan of Operation for the project as proposed by the Japanese survey team and agreed by the BCGS is attached as Appendix 1.
2. Regarding the first survey work, BCGS promised to complete their assigned task and provide the necessary data as follows:

Name of Work	Quantity	To be Submitted
Results of Newly Established Ground Control Points	2 points in Southern area	Middle of August 1985
Results of Existing Leveling Points		Middle of August 1985
Results of New leveling survey		(Eastern Area) Middle of August 1985 (Southern Area) End of August 1985

3. Concerning the new request letter for the change of 1/A (Appendix 2) addressed to Mr. Masayoshi Takasaki, JICA Survey Team Leader, informed BCGS that the team is not in a position to reply on the request for the transfer of the pro-

posed area for land condition maps.

4. In relation to the delineation of barangay and their annotation, JICA team informed BCGS that it is quite impossible to accept the request due to the enormous number of these political subdivision, the presentation on the map will become too congested and complicated, and BCGS agreed.

M. J.

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 2. Mr. Yoshikazu Yamada
Advisor

JICA MANILA OFFICE

-
1. Mr. Yuji Okasaki

JICA SURVEY TEAM

-
1. Mr. Masayoshi Takasaki
Leader
 2. Mr. Kenzo Motojima
Deputy Leader
 3. Mr. Hiroshi Kimura
Coordinator
 4. Mr. Isao Furukawa
Chief Surveyor
 5. Mr. Atsushi Okuizumi
Surveyor

(3)

SUMMARY OF DISCUSSION
ON ADMINISTRATIVE ISSUES ON THE
ESTABLISHMENT OF GRAPHIC INFORMATION
BASE PROJECT OF THE NATIONAL CAPITAL
REGION IN THE REPUBLIC OF THE PHILIPPINES

October 11, 1985

Antonio Ventura

Commodore ANTONIO P. VENTURA
Director
BCGS

山田好一

Mr. YOSHIKAZU YAMADA
Japan International
Cooperation Agency

Tadao Dohi

Mr. TADAO DOHI
Member
Advisory Committee for
Mapping Project

In response to the request made by the Philippine side on July 26, 1985 that the land condition maps covering sheets No. 20, 26, 31, 36 and 41 be changed to map sheets No. 21, 22, 24, 29, and 34. Mr. Yoshikazu Yamada on behalf of JICA recognized the request as acceptable in the survey result and hereby gave the approval about the change of site of land condition map to the Philippine side.

LIST OF ATTENDANTS

BUREAU OF COAST & GEODETIC SURVEY

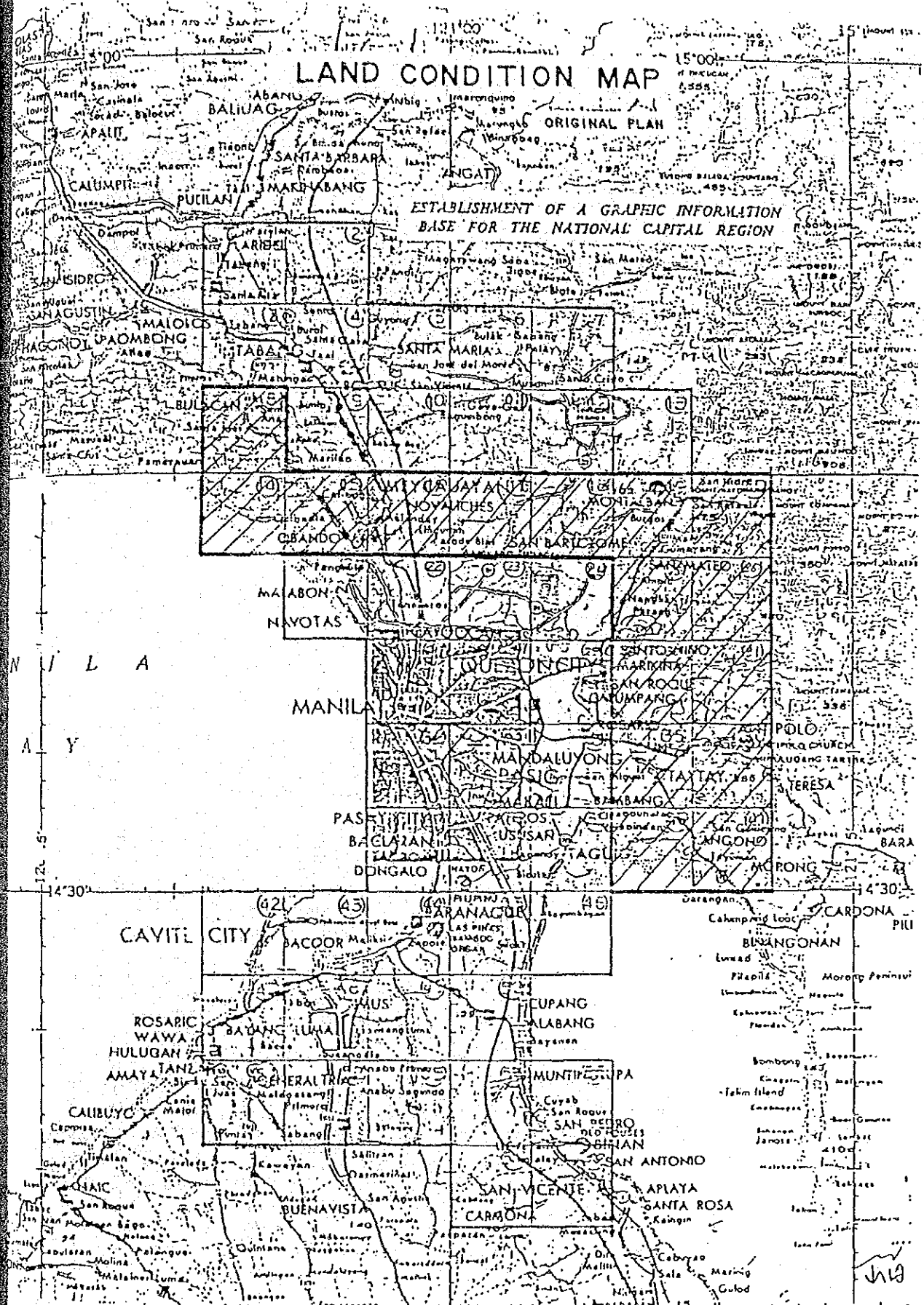
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3. Mr. Hiroshi Kimura
Coordinator



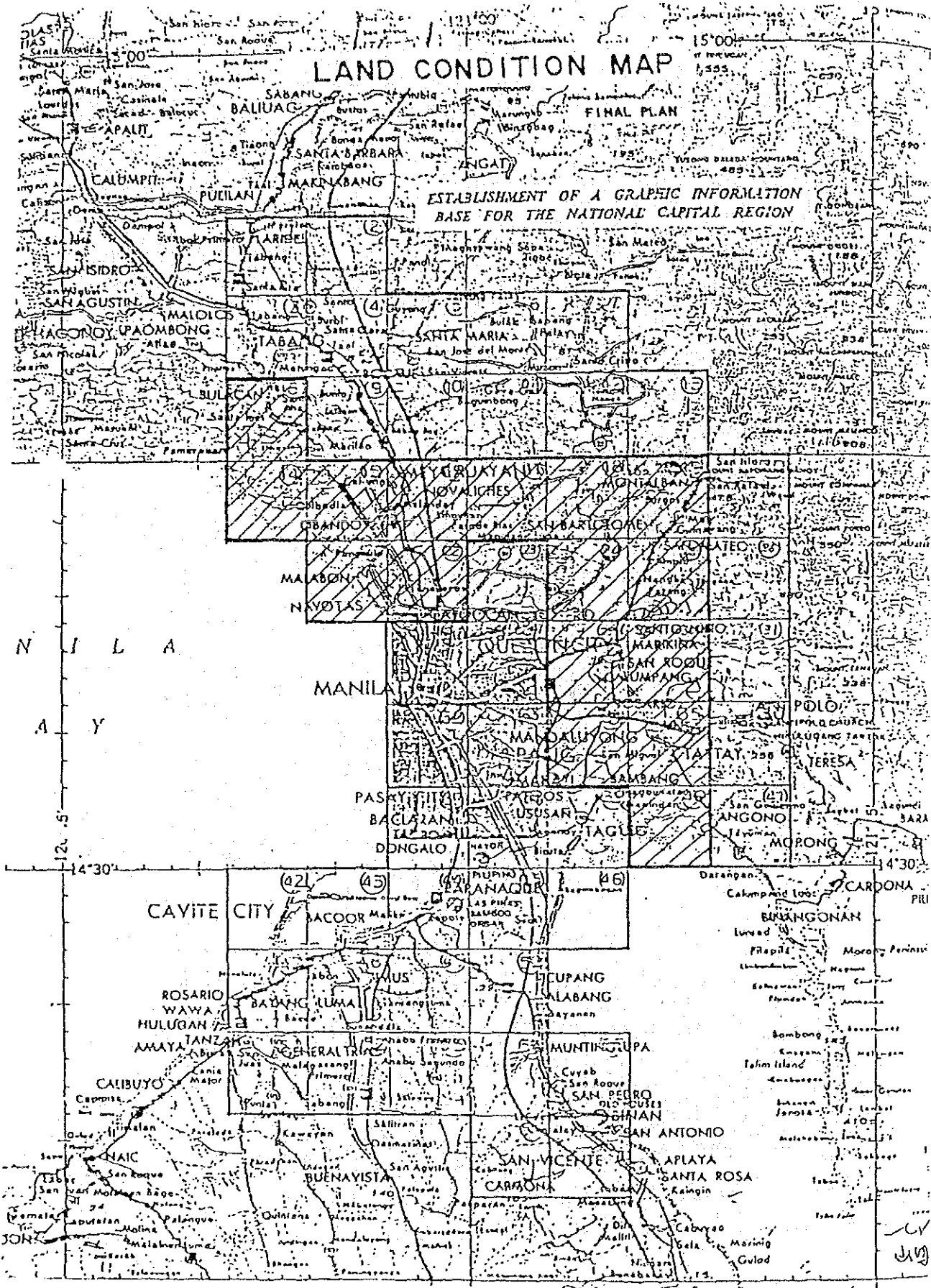
LAND CONDITION MAP

ORIGINAL PLAN
 ESTABLISHMENT OF A GRAPHIC INFORMATION
 BASE FOR THE NATIONAL CAPITAL REGION

14°30'
 121°5'

LAND CONDITION MAP

ESTABLISHMENT OF A GRAPHIC INFORMATION
BASE FOR THE NATIONAL CAPITAL REGION



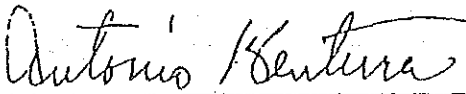
(4)

MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF A GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST & GEODETIC SURVEY


Dated: October 11th 1985
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY



Commodore ANTONIO P. VENTURA
Director of BCGS



Mr. MASAYOSHI TAKASAKI
Leader of JICA Survey Team

Upon completion of the 1st Year Field Survey, which has been carried out in close cooperation of BCGS for about 3 months since July 19, 1985, Mr. Masayoshi Takasaki, JICA Team Leader, reported progress of the survey work and expressed gratitude to BCGS for its cooperation.

Both sides discussed and agreed on the following items:

I. Outline & results of the 1st Year Field Work

1. Organization of the Survey Team

	JICA Team	BCGS Counterparts
Headquarters	2	
Field Identification	13 (6 parties)	6
Ground Control Point Survey	7 (3 parties)	3

2. Survey Period

Headquarters	July 19-Oct.18/85
Field Identification	July 25-Oct. 11/85
Ground Control Point Survey	August 14-Oct.11/85

3. Survey Results (see Appendix 1)

By JICA Team

3-1 Field Identification:	57 sheets.... 1,500 Sq. Km. (Contoured Map)
	33 sheets.... 823 Sq.Km. (Land Use Map)
	BM Pricking - 122 points
3-2 Ground Control Point Survey:	Establishment of new ground control points 10 points
	Picture points 3 points
	Checking of ground control points 2 points

Pricking of ground control
points 25 points

By BCGS Team

- 1) Establishment of new ground control points 2 points
- 2) Monumentation of ground control points 12 points
- 3) Leveling (re-survey) approx. 200 Km.
- 4) Field Identification (contoured map) 27 features
57 sheets
- 5) Sheet Name & Number Index (See Appendix 2) 1,500 Sq.Km.

BCGS expressed its cooperation, at initial stage of the 1st year field survey, to participate in the field identification work which has been carried out in joint work of BCGS & JICA teams with the following list showing responsibility of BCGS.

Features for Field Identification
Carried Out by BCGS

- 1) Health Centers
- 2) Hotels/Motels
- 3) Antiquity
- 4) Windpump
- 5) Forts
- 6) Well
- 7) Main Changes
- 8) Underpasses/Overpasses of pedestrian (CL measured)
- 9) Street Names
- 10) Gasoline Stations
- 11) Railway Stations
- 12) Permanent Buildings
- 13) Government Buildings
- 14) Power Plants/Sub-stations
- 15) Waterfalls
- 16) Names of Waterways
- 17) Theaters
- 18) MWSS
- 19) Prominent Banks
- 20) Temporary Housing Areas/
Congested (Slum) Areas
- 21) Bridges (Names)
- 22) Subdivisions/Villages (Names)
- 23) Light Houses
- 24) Ferry/Ford
- 25) Rock Awash
- 26) Wreck
- 27) Reef/Coral

II Outline of succeeding work in the 1st year survey

A. BY JICA

1. Adjustment of the ground control point network
2. Aerial triangulation - approx. 120 models
3. Stereo-plotting (57 sheets, 1,500 Sq. Km.)

B. By BCGS

1. Aerial photos used by BCGS & JICA teams for the field identification shall be delivered by the BCGS counterparts to Japan for the stereo-plotting work. (See Appendix 3)
2. Following data shall be prepared by BCGS by May 1986:
 - 2-1 Following overhead clearances shall be filled by BCGS on plotting sheets *(positive), as indicated by JICA team with mark:
 - Clearance between elevated railway & road.
 - Clearance between pedestrian, overpass & road.
 - Clearance between bridge & water surface.
 - Clearance between railway/road & bridge.
 - 2-2 Administrative names & boundaries shall be delineated on plotting sheets (positive)
 - 2-3 Names of roads, railways, stations, rivers and bridges shall be annotated on plotting sheets (positive)
 - 2-4 Data on wreck, sewerage outfall, reef, lighthouse, etc. shall be delineated on plotting sheets (Positive)
 - 2-5 Depth curve shall be delineated on plotting sheets (positive) based on the existing data.
 - 2-6 If names, symbols, annotations, abbreviations, function symbols, etc. intermingle on the contoured maps (on positives of plotting & annotation sheets), BCGS shall edit these information.

* sheet derived after editing.
27 sheets will be brought to BCGS on Feb. 28, 1986
30 sheets will be brought to BCGS on March 23, 1986

- 2-7 All defense facilities shall be included in stereo-plotting by JICA. BCGS shall edit these areas for selection of information to be included in the editing sheets.

III Technical Discussions

1. Ground Control Point Survey

In respect to the ground control point survey, the observations were done by closed traversing method to form the geodetic control net composed of 5 loops. Free-net solution was applied to net adjustment. In case any existing coordinates are proven to have discrepancy more than allowable error, it was agreed by both sides that those shall be replaced with the newly computed results.

2. Contoured Map

2-1 Application of the contoured map symbols was discussed and agreed as shown on Appendix 4.

2-2 Road Classification

BCGS requested that road surface shall be categorized as concrete, asphalt and earth/gravel. They shall be differentiated by the thickness of road edge lines, furthermore roads with 8 meters and more in width shall be distinguished by changing the color density of the road surface due to the following reasons:

1. International Cartographic Standards classify road according to surface conditions.
2. Development planners must have information on road surface conditions to be able to have priority program for maintenance and development.
3. Motorist and bulk carriers must know road condition to have a good orientation as to accessibility and capacity of these roads.

JICA team replied that the request would be considered in Japan provided that BCGS conducts survey on the road surface conditions at its own expenses until the middle of August 1986.

2-3 Plantation

BCGS requested that major plantations should be symbolized according to the following reason:

The Philippines is a tropical country, that there are varied crops. For crop assessment/inventory and taxation purposes vital for the government there is a necessity to symbolize major plantations. Five major kinds of plantations were identified and shall be symbolized individually. Other types of plantation shall be grouped as the sixth symbol. Boundaries for these plantations shall be grouped as the sixth symbol.

JICA team replied that the request should be considered, provided that BCGS conduct survey on the classification of plantations at its own expense until the middle of August 1986

2-4 Map Color

BCGS request to change the proposed colors and adopt the colours specified in 1:10,000 topo-map of TOKYO area according to the following reason:

This project can be considered as the first cartographically prepared map at the scale of 1:10,000 that will be prepared for a fully urbanized area. The color scheme originally proposed was patterned after the 1:25,000 topographic map of the Cagayan Valley made under the RP-Japan Technical Cooperation Scheme.

Therefore, new map color scheme is considered necessary to conform with such urbanized area as the Metro Manila region. Sample maps were secured from different countries including Japan. It was found out that the Geographical Survey Institute (GSI) of Japan had already made researches and came out with what was considered the best color scheme for this particular scale.

It is then requested to change the proposed colors and adopt the GSI color specifications, in order for these resulting maps to be shown and accepted internationally.

JICA team replied that further consideration for the above request would be made in Japan.

2-5 Following items were discussed and agreed by both parties

- 5-1 Multi-tenants public building shall be symbolized according to the offices found in the building.
- 5-2 Multi-tenants building shall be annotated with name of the building. Names of the tenants (bank, cinema, etc.) shall not be shown.
- 5-3 Features found to extend outside of neatline shall be expressed. Their expression shall be discussed by BCGS and JICA, after preparation of plotting sheet.

el

5-4 Coastline/shoreline shall be stereo-plotted based on what appears on the aerial photographs.

5-5 Expression of administrative boundary and name shall be made according to the following:

	Boundary		Name	
	Diagram	Inside of Neatline	Diagram	Inside of Neatline
Region	drawn	drawn	annotate	no
Province	drawn	drawn	annotate	no
City	no	drawn	no	annotate
Municipality	no	drawn	no	annotate

5-6 All "Road" and "Street" more than 15 m in width and 300m in length shall be annotated.

3. Land Use Map

Definition, application and applicable landmarks for land use map were discussed by the both sides.

Results of the discussion is attached as Appendix 5. This draft will be discussed in August 1986 for finalization.

IV. Tentative 2nd year work schedule (April 1986 - March 1987)

- May 1986 - Oct. 1987 - Compilation of the contoured map including the field completion and editing.
- Nov. 1986 - Jan. 1987 - Drafting, color proofing & checking of contoured map and planimetric map.
- Jan. 1987 - March 1987 - Printing of the contoured map & planimetric map.
- Jan. 1987 - Feb. 1987 - Field identification of the land condition map.

LIST OF ATTENDANTS

BUREAU OF COAST & GEODETIC SURVEY

1. Commodore Antonio P. Ventura
Director
2. Captain Renato B. Feir
Chief
Operations Division
3. Mr. Ponciano Ciceron
Chief
Coastal Mapping and Special
Projects Division
4. Mr. Gavino C. Angeles, Jr.
Chief
Chart & Map Production Division
5. Mr. Conrado Santos
Chief
Physical Science Division

JICA ADVISORY COMMITTEE

1. Mr. Tadao Dohi
Technical Advisor
2. Mr. Yoshikazu Yamada
Advisor

JICA SURVEY TEAM

1. Mr. Masayoshi Takasaki
Leader
2. Mr. Kenzo Motojima
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator
4. Mr. Isao Furukawa
Chief Surveyor
5. Mr. Masaji Koyama
Chief Surveyor
6. Mr. Atsushi Okuizumi
Surveyor

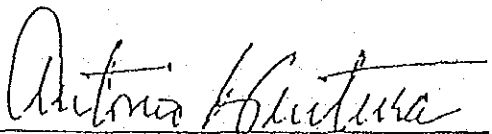
3-3 The Second Year (1)


MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY.

Dated June 23rd 1986
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY


Commodore ANTONIO P. VENTURA
Director of BCGS


Mr. MASAYOSHI TAKASAKI
Leader of JICA Survey Team

For smooth and effective implementation of the 2nd year work, the meeting was held from June 17 to 24'86 at BCGS, both sides discussed and agreed on the following items:

I. Outline and results of the 1st year work

Carried out by both sides after the completion of the field survey in October 1985.

By JICA Team

- 1) Aerial Triangulation - 123 models
- 2) Stereo Plotting - 1,500 km², 57 sheets
- 3) Sample Maps - contoured map
- Planimetric map

By BCGS

Field Identification work for the following itmes:

1. Administrative boundary
2. Administrative name
3. Geographical name
4. Name of subdivision
5. Name of road
6. Name of street
7. Road No.
8. Name of railway
9. Name of railway station
10. Name of river

11. Name of bridge
12. CL of pedestrian overpass
 - CL of LRT
 - CL of overpass
13. Rock awash, reef
14. Wreck
15. Lighthouse
16. Sewerage outfall
17. Depth curve

II. Outline of the 2nd year work (Tentative)

JICA Team explained the outline of the 2nd year work. (See Appendix-1)

Compilation	- 1,500 km ²	- 57 sheets	- June - August '86
Field Completion	- 1,500 km ²	- 57 sheets	- Aug. - Oct '86
Preparation of			
Original manuscript	- 1,500 km ²	- 57 sheets	- Oct. - Nov. '86
Drafting (scribe)	- 1,500 km ²	- 57 sheets	- Oct. '86 - Jan '87
Printing:			
Contoured map		- 57 sheets	- Jan - March '87
Planimetric map		- 57 sheets	- Jan. - March '87
Field Identification (for Land Condition Map)	- 430 km ²	- 16 sheets	- Jan. - March '87
Leveling	- 150 km		- Jan - March '87

III. Technical Discussion.

1. All the results of the field implementation made by BCGS except data of plantation classification were received by JICA Team.
2. Changes to be incorporated on the maps shall be limited to major changes.
3. Map specifications were confirmed on the sample sheets.

IV. Others

1. BCGS requested to express the surface classification of main roads on the planimetric maps. JICA team promised to make further studies within the limits of using 2 colors only.
2. BCGS promised to acquire one set of new aerial photography (1986) by early August '86.
3. BCGS will try to provide the following data by mid-September '86.
 - 3-1 Results of the plantation classification. In case data can not be made available, plantation shall be classified by stereo interpretation.
 - 3-2 Magnetic, true and grid north values for every map sheet.
 - 3-3 New road numbers

4. BCGS promised to provide necessary counterparts for the field survey work as follows: *c/p*

For Field Completion - 10 persons mid-August-early Oct.'86

For Field Identification - 6 persons mid-Jan.-early March'87

Schedule of the 2nd Year Work
for
Establishment of Graphic Information Base Project

F. Y. 1986												
Survey Items	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Compilation (Contoured Map)												
Field Completion (Contoured Map)		6/16	6/25		8/18							
Drafting (Contoured Map)												
Printing (Contoured Map & Planimetric Map)												
Field Identification (Land Contour Map)										1/11		3/14

* : Technical discussion on the 2nd Year work
 : Field Work
 : In-door Work

LIST OF ATTENDANTS

BUREAU OF COAST AND GEODETIC SURVEY

1. Commodore Antonio P. Ventura
Director
2. Captain Renato B. Feir
Chief, Operations Division
3. Mr. Ponciano Ciceron
Chief, Coastal Mapping and Special
Projects Division
4. Ms. Feliza M. Nepomuceno
Acting Chief, Chart and Map
Production Division

JICA SURVEY COMMITTEE

1. Mr. Tadao Dohi
Technical Advisor
2. Mr. Yoshikazu Yamada
Advisor

JICA SURVEY TEAM

1. Mr. Masayoshi Takasaki
Leader
2. Mr. Kenzo Motojima
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator
4. Mr. Isao Furukawa
Chief Surveyor

(2)

MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY

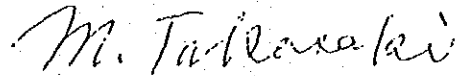
Dated: October 3rd 1986
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY



Commo. ANANIAS A. BATILARAN, Jr.
Director of BCGS



Mr. MASAYOSHI TAKASAKI
Team Leader of JICA Survey
Team

Upon completion of the 2nd year field completion work, which has been carried out in joint work of Survey Teams of JICA and BCGS since mid-August 1986, Mr. Masayoshi Takasaki, JICA Team Leader, reported results of survey work and expressed his sincere gratitude to BCGS for its close cooperation.

Both sides discussed about results of the field completion and the succeeding work to be conducted in the 2nd year, and agreed as follows:

I. Results of the Field Completion

The following work has been completed by both sides:

By JICA Team

1. All the items (features) to be expressed on the contoured map have been checked and confirmed within the whole project area.
2. Expression of major changes have been supplemented and incorporated based on the new aerial photos and supplementary survey using transit and plain table.
3. Specifications of the contoured, planimetric and land use maps have been discussed and finalized.

By BCGS

1. Check, selection and confirmation of the following data have been completed:
 - (1) Annotation data sheets for the contoured and planimetric map
 - (2) Annotation data sheets of road and railway destination
2. Magnetic north, true north, grid north values for every sheet have been computed.
3. Classification data for plantation (6 items) have been completed.
4. Administrative boundaries have been supplemented and confirmed.
5. Acquisition of new aerial photographs (1986) has been done.

II. Technical Discussions

Following specifications and other items have been discussed in detail and agreed by both side:

1. Specifications (1986 Edition) of the contoured map symbols and their application (see Appendix -1).
2. Specifications of planimetric map (see Appendix -2).
3. Definition and application of specifications (except colour scheme) for the land use map (see Appendix -3).
4. Draft specifications of marginal information including letter size and style. (see Appendix 6 & 7)
5. Route number shall be expressed with the existing number.
6. Road surface classification shall be expressed for all roads of 4m or more in width on the contoured and planimetric map.
7. Destination of railway or expressway shall be shown with the name of next station or interchange respectively.
8. Name of map sheet No. 31 "Antipolo" shall be replaced with "Cogeo Village".
9. Printing of the contoured map shall be made in five (5) colours (black, blue, brown, green and blackish blue) as specified in the above specifications of the contoured map symbols and their application.
10. Printing of the planimetric map shall be made in two (2) basic colours (blue and black) as specified in the above specifications of the planimetric map.

III. Succeeding Work of the 2nd Year (see Appendix 4)

By JICA Team

1. The contoured map and planimetric map shall be completed after drafting (scribing) and printing work as follows:
Contoured map: 57 sheets x 1,000 copies (5 colours)
Planimetric map: 57 sheets x 1,000 copies (2 colours)

2. For land condition map, following work shall be conducted:

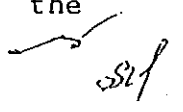
- (1) Preliminary photo-interpretation (429 km², 16 sheets)
- (2) Field identification (429 km², 16 sheets) and minor order leveling (4th order, about 150 km) in the flat area of Metro Manila.

By BCGS

1. BCGS shall provide data necessary for the land condition survey by mid-January '87 which is the commencement of the field identification work. (see Appendix -5)

IV Others

1. On land condition mapping, the preliminary discussions on categorization and definition of the landform and field reconnaissance have been conducted. This shall be for the succeeding preliminary photo-interpretation. (see Appendix 8)
2. BCGS and JICA officials seals shall be shown at the margin.



List of Attendants

BUREAU OF COAST AND
GEODETIC SURVEY

1. Captain Renato B. Feir
Chief Counterpart, BCGS-
JICA NCR Project/Staff
Officer for Planning/Chief
Operations Division
2. Captain Manuel M. Calibo
Staff Officer for Chart & Map
Production Division/Chief
Operations Division
3. Mr. Ponciano C. Ciceron
Chief, Coastal Mapping and
Special Projects Division
4. Mr. Gavino C. Angeles, Jr.
Chief, Chart & Map Production
Division
5. Engr. Felisa M. Nepomuceno
Chief, Planning Division

JICA SURVEY COMMITTEE

1. Mr. Tadao Dohi
Technical Adviser
2. Yoshikazu Yamada
Adviser

JICA SURVEY TEAM

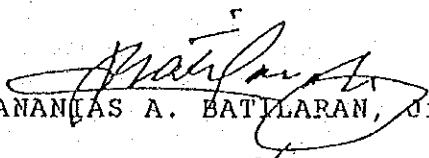
1. Mr. Masayoshi Takasaki
Leader
2. Mr. Kenzo Motojima
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator
4. Mr. Isao Furukawa
Chief Surveyor

(3)


MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY

Dated: March 13th 1987
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY


Commo. ANANIAS A. BATLLARAN, Jr.
Director of BCGS

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY


Mr. MASAYOSHI TAKASAKI
Leader of JICA Survey Team

At the end of the 2nd year, JICA survey team had completed the scheduled work including field identification and minor order leveling. Discussions on categorization, definition and application for landform classification on the survey area were made from mid-January to mid-March 1987 between JICA and BCGS.

Likewise, BCGS had on February 28 '87 completed checking all proof prints of the contoured and planimetric maps. Approval for the printing in Japan was given by BCGS.

Both JICA and BCGS teams have confirmed results of the 2nd year work, and have outlined the tentative 3rd year work as follows:

I Field Identification

1. Preparatory work

Prior to the implementation of field identification work, photo-interpretation and analysis for preliminary landform classification were conducted in Japan.

2. Field Work

The following field work had been completed in cooperation with BCGS:

By JICA team

- (1) Field identification 429 km², 16 sheets
- (2) Minor order leveling 150 km
- (3) Outcrop survey and sampling with soil auger
- (4) Collection of existing technical data
- (5) Data analysis for land condition maps
- (6) Preparation of draft specifications for land condition mapping

By BCGS

- (1) Assignment of 6 field counterparts
- (2) Assisted in data collection

(see Appendix-1: Plan of Operation &
Appendix-5: List of Data)

II Technical Discussions

General features of landform on the survey area (north-west and east of Manila) were firstly explained by JICA team using source maps (1/25,000). Preliminary classification was shown on the above source maps based on results of the photo-interpretation and analysis made in Japan.

Then, detailed discussions have been made mainly on the specifications for landform classification of land condition map of the survey area and both sides have agreed as follows: (Appendix-2: Specifications(Draft))

1. Succeeding work (compilation) to be carried out in Japan before field completion of the 3rd year, shall be made based upon the specifications (Draft).

However, some more details related to definition & application of landform classification, color scheme and other items including ground elevation for land condition maps, shall be further studied. These shall be finalized at the time of field completion of the 3rd year. Sample maps will be prepared and presented by the Japanese side to depict land condition and land use information.

2. For future consideration, location of organization and public facilities related to disaster prevention and land development shall be plotted on the maps provided. BCGS shall give needed data at the beginning of field completion work. (see Appendix-6: Organization, Public Facilities, etc.)

3. BCGS proposed that the landform data of shallow sea area should be shown because of its valuable information. JTICA team accepted it on the condition that the related data would be provided by BCGS.

III Outline of the 3rd Year Work (Tentative)

Both sides have agreed that the 3rd year work shall be carried out according to the following schedule. BCGS has also agreed to assign counterparts and to provide data and other information necessary for the work:

Tentative 3rd Year Work Schedule

	1987										1988		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Compilation of land use map (823km ² , 33 sheets)			—————							—————			
Compilation of land condition map (429km ² , 16 sheets)			—————							—————			
Field completion							—————						

: Work in Japan
 : Field work

IV Others

1. JICA and BCGS have further agreed on some matters regarding contoured and planimetric maps.
(see Appendix-3: Memorandum)

2. With regard to the printing of contoured and planimetric maps, BCGS has completely checked all the proof prints and approved the printing in Japan of the following map sheets:

Contoured map 57 sheets x 1,000 copies

Planimetric map 57 sheets x 1,000 copies

Printing is expected to be completed at the end of March 1987 in Japan.
(see Appendix-4: Letter of Approval)

3. Training in Japan

With regard to the BCGS counterparts for the 3rd year in-door work to be carried out in Japan, BCGS in accordance with I/A has strongly proposed the following training schedule of 4 counterparts for attaining the most effective technological transfer:

<u>Training course</u>	<u>No. of counterpart</u>	<u>Tentative schedule</u>
Land use map (Compilation)	1	end of May - end of September '87
Land condition map (Compilation)	1	" "
Land use map (Classification/Symbolization)	1	mid-November '87 - mid-March '88
Land condition map (Classification/Symbolization)	1	" "

JICA team, in response to BCGS's proposal, agreed to convey the above requirements and schedule to JICA, Tokyo.

List of Attendants

BUREAU OF COAST AND
GEODETIC SURVEY

1. Captain Renato B. Feir
Chief Counterpart, BCGS-
JICA NCR Project/Staff
Officer for Planning
2. Mr. Ponciano C. Ciceron
Chief, Coastal Mapping and
Special Projects Division
3. Mr. Gavino C. Angeles, Jr.
Chief, Chart & Map Production
Division
4. Engr. Felisa M. Nepomuceno
Chief, Planning Division

JICA SURVEY COMMITTEE

1. Mr. Masatoshi Nagaoka
Technical Adviser
2. Mr. Yoshikazu Yamada
Adviser

JICA SURVEY TEAM


1. Mr. Masayoshi Takasaki
Leader
2. Mr. Kenzo Motojima
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator
4. Mr. Keikichi Yoshida
Chief Surveyor
5. Mr. Tomotaka Kamakura
Surveyor


MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE BUREAU OF COAST AND GEODETIC SURVEY

Date: December 3rd 1987
in Manila, Philippines

FOR THE BUREAU OF COAST
AND GEODETIC SURVEY

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY


Commodore ANANIAS A. BATILARAN, Jr.
Director of BCGS


Mr. MASAYOSHI TAKASAKI
Leader of JICA Survey Team

The field completion for land use and land condition mapping of the 3rd year work has been successfully carried out jointly by the survey teams of JICA and BCGS since early October 1987 for about 2 months in Metro Manila area.

Upon completion of the field work, Mr. Masayoshi Takasaki, JICA survey team leader, mentioned that this was the final field work for the whole period of this mapping project and expressed his sincere gratitude to BCGS for its close cooperation given to JICA survey team.

In a series of meetings held between JICA and BCGS, both sides discussed about the results of field completion, the symbols and specifications as well as the color scheme presented on the sample maps. Discussions were further made on the drafting, printing of land use and land condition maps and other related work to be implemented in the succeeding 4th year, and were confirmed by both sides as follows:

I. Outline of Field Completion

1-1 Compilation

Prior to the field completion, the compilation work was carried out in Japan based on the results of field identification obtained in the 1st and 2nd year work. The coverage of compilation work was as follows:

Land use map: 823 km² (33 sheets)
Land condition map: 429 km² (16 sheets)

Based on the results of the compilation, colored sample maps of the land use and land condition were prepared.

1-2 Field Completion

The following field work was completed in cooperation with BCGS: (see Appendix-1)

By JICA Survey Team

(1) Field completion covering:

Land use map: 823 km² (33 sheets)
Land condition map: 429 km² (16 sheets)

(2) Collection of existing data for land condition map

(3) Verification for land use classification

(4) Confirmation of items related to drafting and printing in relation with the sample map

By BCGS

(1) Field confirmation of organizations and facilities to be presented on the land condition map (429 km², 16 sheets)

(2) Assisted in data collection and verification

II. Technical Discussions

A. Specifications and other items related to the land use and land condition maps were discussed and agreed as follows:

- 2-1 For symbols and specifications of land use map (1:10,000) and land condition map (1:10,000), both sides discussed and agreed on some changes, and finalized as attached in the Appendices. (see Appendix-2, -3 and -4)
- 2-2 As to color scheme and marginal information, JICA survey team and BCGS discussed and agreed what was presented on the sample maps.

B. To attain better and effective usage of the land use and land condition maps, BCGS requested JICA survey team the following considerations:

- 2-3 Information and usage of the land use and land condition maps were drafted by both sides as attached in the Appendices. (see Appendix-5 and -6)

As to the above information and usage, BCGS requested JICA survey team to print the text on the back of each map sheet for the convenience of map user.

- 2-4 Regarding land condition survey, BCGS requested JICA survey team to analyze survey results and data collected during the survey period (see Appendix-7), and to incorporate such study results in a final report to be prepared in the 4th year (F.Y.1988) preferably with the following contents:

- (1) Outline of survey
- (2) Results of survey (topography, surface geology, landform, etc.)
- (3) Analysis of the collected data (flood, earthquake, etc.)
- (4) Comments for land development and conservation, disaster prevention, etc.

This request was made with the end in view that such comments would be very effective for setting up guidelines that are urgently needed for land development and conservation as well as disaster prevention and control in Metro Manila area.

- 2-5 For the above items 2-3 and 2-4, JICA survey team agreed to convey the requests to JICA, Tokyo for its consideration.

III. Outline of the 4th Year Work (Tentative)

Both sides agreed that drafting and printing of the 4th year work shall be carried out according to the following schedule:

Tentative Schedule

Item of Work	1988												1989			
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar				
Drafting(Scribing)																
Proof Printing																
Printing																

At the end of the 4th year, printing of the land use map and land condition map shall be completed as follows:

Land use map: 33 sheets x 1,000 copies each

Land condition map: 16 sheets x 1,000 copies each

IV. BCGS Training in Japan

With regard to the BCGS counterparts for the 4th year work to be carried out in Japan, BCGS proposed the following training schedule of 4 counterparts for attaining the most effective technological transfer:

<u>Training Course</u>	<u>No. of Counterpart</u>	<u>Tentative Schedule</u>
Land use map (Drafting)	1	mid-May - end of August '88
Land condition map (Drafting)	1	- do -
Land use map (Printing)	1	early October - end of December '88
Land condition map (Printing)	1	- do -

BCGS further proposed that one of the BCGS counterparts for each training course should be a personnel responsible for verification and review by BCGS.

JICA survey team, in response to the BCGS proposals, agreed to convey the above requirements and schedule to JICA, Tokyo.

List of Attendants

BUREAU OF COAST AND
GEODETIC SURVEY

1. Captain Renato B. Feir
Staff Officer for Planning/
Staff Officer for External
Affairs
2. Mr. Ponciano C. Ciceron
Chief, Coastal Mapping and
Special Projects Division
3. Mr. Gavino C. Angeles, Jr.
Chief, Chart and Map
Production Division
4. Lcdr. Rodolfo A. Agaton
Assistant Chief, Survey
Support Division
5. Mr. Pastor A. Estrada
Supervising Cartographic
Engineer

JICA SURVEY COMMITTEE

1. Mr. Masatoshi Nagaoka
Technical Advisor
2. Mr. Koji Mori
Advisor

JICA PHILIPPINE OFFICE

1. Mr. Tsutomu Moriya
Staff

JICA SURVEY TEAM

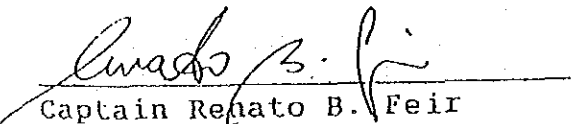
1. Mr. Masayoshi Takasaki
Leader
2. Mr. Tokihiko Kaminishi
Deputy Leader
3. Mr. Hiroshi Kimura
Coordinator
4. Mr. Keikichi Yoshida
Chief Surveyor
5. Mr. Tomotaka Kamakura
Surveyor
6. Mr. Toshiyuki Harada
Surveyor

3-5 The Fourth Year

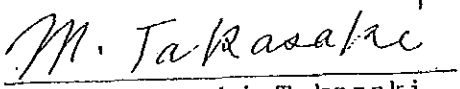
MINUTES OF DISCUSSIONS
ON
THE ESTABLISHMENT OF GRAPHIC INFORMATION BASE PROJECT
FOR THE NATIONAL CAPITAL REGION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY

January 13, 1989
Tokyo, Japan

FOR THE NATIONAL MAPPING AND
RESOURCE INFORMATION AUTHORITY


Captain Renato B. Feir
Director of Surveys Department
NAMRIA

FOR THE JAPAN INTERNATIONAL
COOPERATION AGENCY


Mr. Masayoshi Takasaki
Leader of JICA Survey Team

Captain Renato B. Feir, Director of Surveys Department of the National Mapping and Resource Information Authority (NAMRIA), the Department of Environment and Natural Resources of the Republic of the Philippines visited Japan on January 12, 1989 bearing the letter of authorization of Mr. Jose G. Solis, the Administrator of NAMRIA in connection with the Establishment of Graphic Information Base Project for the National Capital Region.

Director Renato B. Feir discussed the said project with Mr. Masayoshi Takasaki, Leader of JICA survey team, and both sides agreed in the following:

1. As for the marginal information of the land use and land condition maps, the following were agreed by both sides:

(1) The seal of NAMRIA shall be printed as well as the JICA and BCGS seals.

(2) The foot notes at the lower left corner of the map sheets shall be printed as follows:

(For Land Use Map)

This map was produced under a cooperative undertaking between the Government of the Republic of the Philippines and the Government of Japan.

Base Map: Contoured map 1987 (BCGS - JICA)

Aerial Photography: 1982 & 1986

Field classification by BCGS & JICA 1985

Field completion by BCGS & JICA 1987

Distributed by National Mapping and Resource Information Authority (NAMRIA)

Fort Andres Bonifacio, Makati, Metro Manila

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(For Land Condition Map)

This map was produced under a cooperative undertaking between the Government of the Republic of the Philippines and the Government of Japan.

Base Map: Contoured map 1987 (BCGS - JICA)

Aerial Photography: 1966-1968, 1982 & 1986

Field surveys by BCGS & JICA 1987

Other sources of information: MGSB, BSWM,

DPWH, OCD, NPCC, MWSS, PHIVOLCS,

NWRB & IGS OF UP

Distributed by National Mapping and Resource Information Authority (NAMRIA)

Fort Andres Bonifacio, Makati, Metro Manila

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2. As for the information and usage to be printed on the back of the land use and land condition maps, both sides agreed that the printing shall be made according to the final draft sheets which were separately prepared and approved by both sides.

Director Renato B. Feir thoroughly checked 33 proof prints of the land use maps and 16 proof prints of the land condition maps in detail and confirmed that these maps closely followed the agreed set of specifications and were prepared with remarkable accuracy and excellent finish. Director Renato B. Feir then agreed that the final printing of the land use and land condition maps shall commence immediately.

Director Renato B. Feir informed that NAMRIA requested through official channel to have in Manila a technical explanation on land use and land condition maps by Japanese experts for technological transfer to the government agencies concerned in the Philippines. The Leader of JICA survey team Masayoshi Takasaki expressed his willingness to convey the idea to the JICA Headquarters as soon as possible.

4 SYMBOLS AND SPECIFICATIONS

CONTENTS

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SYMBOLS AND SPECIFICATIONS FOR METRO MANILA CONTOURED MAP (1:10,000)

NO.	NAME	SYMBOL	COLOR	APPLICATION
CONTROL POINT				
1	Horizontal Control Station	$\Delta 123.4$	Symbol-Black Annotation-Black E04-24-8Q	Second order or higher grade triangulation points and newly established control points monumented in this survey shall be symbolized except points confirmed lost.
2	Vertical Control Station (Identifiable)	$\odot 567.89$	Symbol-Black Annotation-Black E04-24-8Q	Second order or higher grade leveling points pricked in this survey shall be symbolized.
3	Spot Height	.456	Symbol-Black Annotation-Black E08-25-8Q	Elevation points measured by stereoplotter shall be symbolized.
4	Direct Leveling Point	.917.45	Symbol-Black Annotation-Black E29-24-8Q	Elevation of points measured by third or lower order leveling survey shall be symbolized.
BOUNDARY				
5	Regional Boundary		Black	Regional boundaries shall be shown within the neat lines without annotation. Annotation shall be indicated below the boundary diagram.
6	Provincial Boundary		Black	Provincial boundaries shall be shown within the neat line without annotation. Annotation shall be indicated below the boundary diagram. Where the provincial boundaries coincide with regional boundaries, symbols shall be those of the latter.
7	City or Municipal Boundary		Black	City or municipal boundaries shall be shown with the neat lines without annotation.
ROAD				
8	Divided Highway/Expressway		Line-Blackish Blue Background-Blackish Blue D133/75*-40x	(1) Highways or expressways shall represent those with separate zones. Separate zones of 3 m or more in width shall be drawn to scale. If width is less than 3 m, the separate zones shall be shown as a single line. (2) Destination of the divided highways/expressways shall be represented with the name of next interchange.
9	National/Provincial Road		Line-Blackish Blue Background-Blackish Blue D133/75*-40x	(1) National highways/provincial roads shall be shown with the route number. (2) Roads of 4 m or more in width shall be drawn to scale.
10			Line-Blackish Blue Background-Blackish Blue D133/75*-10x	(3) Roads whose widths are between 2-4 m shall be shown in 0.4 mm double line. (4) Roads whose widths are between 1-2 m shall be shown in 0.25 mm single line.
11			Blackish Blue	(5) Representation of roads whose lengths are less than 50 m can be deleted. (6) Double line roads shall be shown with the road surface classification specified for concrete, asphalt and gravel.
12	City/Municipal Road		Line-Blackish Blue Background-Blackish Blue D133/75*-40x	(7) Roads which are more than 300 m in length and 15 m in width shall be annotated. (8) Road destination shall be shown on the following roads: 1) Expressways, 2) National highways, 3) Provincial roads, and 4) Other important roads.
13			Line-Blackish Blue Background-Blackish Blue D133/75*-10x	
14			Blackish Blue	
15	Trail/Alley		Blackish Blue	Trails/alleys whose widths are less than 1 m and which cross residential areas and fields shall be shown on the maps if photo-identifiable and of importance. Alleys shall be shown in 0.4 mm double line, while trails shall be shown in 0.25 mm broken line.
16	Road Under Construction		Blackish Blue	Roads under construction whose widths are more than 4 m and shapes are already clear shall be shown as completed.
17	Sidewalk		Blackish Blue	Sidewalks for pedestrians or bicycles whose widths are 3 m or more shall be shown. Sidewalks located under overhang of buildings shall be symbolized.
18	Grade Separation		Blackish Blue	Roads with grade separation shall be differentiated from the level roads. Roads, canals, etc. under overheads shall not be shown.
19	Crossing		Blackish Blue	The symbol specifications at the left portion show overpass and those at the right show level crossing.
20	Pedestrian Overpass		Blackish Blue	Overpasses through which pedestrians, bicycles, etc. cross roads or railways shall be shown to scale. In case the width is less than 3 m, the overpasses shall be symbolized with 3 mm width on the maps. Clearances shall be indicated.

NO.	NAME	SYMBOL	COLOR	APPLICATION
21	Pedestrian Underpass		Blackish Blue	Underpasses used by pedestrians shall be shown. Sections which are underground shall not be shown.
22	Toll Gate		Blackish Blue	Gates collecting toll shall be symbolized.
23	Route Marker National/Provincial		Blue	If National highways/provincial roads cross the map neat lines, the route numbers shall be shown close to the neat lines, and the road lines must not be cut to accommodate the route markers.

RAILWAY FEATURES

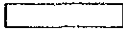
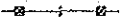
24	National Railway		Black	(1) Government-owned railways shall be symbolized. The left side of the symbols shows a single track and the right shows double tracks. Abandoned railways shall be annotated. (2) Railway destination shall be expressed with the name of next station.
25	Private Railway		Black	Railways owned by private enterprise shall be symbolized.
26	Under Construction		Black	Railways under construction shall be shown. Railways nearing completion shall be symbolized as completed railways.
27	Level Crossing		Black	Crossings where railway passes level road or another railway shall be shown.
28	Overpass		Black	Crossings where railway passes over a road shall be shown.
29	Underpass		Black	Crossings where railway passes under a road (underground) shall be shown.
30	Railway Station		Black	Railway stations for passengers and freight cars including platforms, overbridges, etc. shall be shown.
31	Light Rail Transit Crossing		Black	Elevated railways of the Light Rail Transit shall be shown together with the stations. Railway clearances above main road intersections shall be shown.
32	Turnplate		Black	Revolving circular platforms used for turning locomotive, etc. around shall be symbolized.

BUILDING

33	Prominent Building		Brown	Important and/or at least 4-story buildings, shall be shown.
34	Independent Building and House		Brown	Isolated buildings whose short sides are more than 1.0 mm on the maps (including warehouses) are to be shown.
35	Congested Housing Area		Line-Brown Background-Brown D133-45°-20%	Congested housing area surrounded by streets whose actual coverage of building is more than 70% of the area shall be shown. If there is any prominent building in the area, this shall be symbolized accordingly. Congested area not surrounded by streets shall be shown with actual outline.
36	Ruins		Brown	Dilapidated buildings, ruins of historical buildings, houses, etc. whose short side is more than 2 mm on the maps shall be shown.
37	Temporary Housing Area		Line-Brown LT20-Brown 42.5 lines 45°	Congested areas with temporary houses of mostly one story, including those on water and canal shall be shown.
38	Building Minimum		Brown	Building where its short side is less than 5 m shall be shown with the size of 0.5 mm x 0.5 mm on the maps.

PUBLIC BUILDING (Symbol)

39	Government Building		Blue Annotation-Black	Photo and field identifiable main offices, branch offices of national/city/municipal administrative organizations shall in principle be shown with annotation or abbreviation.
40	Police Station		Blue	Photo and field identifiable main and branch offices shall be shown and annotated if space permits.
41	Fire Station		Blue	Photo and field identifiable fire stations shall be shown. Annotation shall be made if space permits.

NO.	NAME	SYMBOL	COLOR	APPLICATION
42	Post Office	Ⓔ	Blue	Photo and field identifiable main and branch offices shall be shown and annotated if space permits.
43	Water Supply and Sewerage	·MWSS	Blue	Water treatment plants and pumping stations shall be shown with annotation.
44	School	Ⓕ	Blue Annotation-Black	Universities, colleges/institutions, vocational/trade, high schools, elementary and preparatory schools shall be shown with symbols. Universities, down to the high schools shall be shown with annotation or abbreviation depending on the space.
45	Hospital	Ⓖ	Blue Annotation-Black	Hospitals, large clinics and medical centers shall be shown.
46	Church/Mission	Ⓖ	Blue Annotation-Black	Churches, missions and chapels shall be shown. Annotation shall be made if necessary.
47	Mosque	Ⓖ	Blue	Mosques shall be shown and annotated if space permits.
48	Embassy	·Name	Blue Annotation-Blue	Embassies/legations/consulates shall be shown and annotated at the indicated points.
49	Health Center	Ⓖ	Blue Annotation-Black	Health centers shall be shown with annotation, if space permits.
50	Temple	Ⓖ	Blue	Photo and field identifiable temples shall be shown.
51	Power Plant and Sub-Station	Ⓖ	Blue Annotation-Black	Power plants and sub-stations shall be shown. Annotation shall be made if space permits.
52	Bank	Ⓖ	Blue Annotation-Black	Large banks and credit unions that have their own separate buildings shall be shown and annotated.
53	Hotel/Motel	Ⓖ	Blue Annotation-Black	Hotels classified as three(3) or more stars shall be shown with annotation. Hotels/motels classified as two(2) stars or less with ground area of 1 cm x 1 cm on the maps shall be shown with "H" if space permits.
54	Market and Prominent Store	Ⓖ	Blue Annotation-Black	Public markets with building, large supermarkets and department stores shall be shown and annotated if space permits.
55	Factory	Ⓖ	Blue Annotation-Black	Factories and small scale industries shall be shown with annotation if space permits.
56	Helipad	Ⓖ	Blue	Helipads which are photo and field identifiable and are permanent shall be shown.
57	Theater and Cinema (Prominent)	Ⓖ	Blue Annotation-Black	Large and prominent theaters, cinemas and amusement/recreational places shall be shown with annotation if space permits.
58	Airport/Airfield		Line-Blackish Blue Annotation-Black	All airports and airfields shall be drawn to scale and annotated. Airport facilities shall be drawn as isolated buildings.
59	Sports Center	Ⓖ	Blue Annotation-Black	Centers like gymnasiums, stadiums, etc. shall be annotated if space permits.
MISCELLANEOUS LANDMARK FEATURES				
60	Storage Tank	○Oil	Blue	Oil tanks that can not be drawn to scale shall be symbolized and annotated. In case dimension of more than 1 mm on the maps they will be drawn to scale and annotated.
61	Tower, Radio Tower, TV, Stack/Flagpole, Telephone	○Radio	Blue Annotation-Blue	Towers, radio/TV towers, stacks/chimneys, flagpoles, etc. shall be shown and annotated if these can be used as landmarks. Abbreviations can be adopted if necessary.
62	Power Transmission Line		Blackish Blue	Power transmission lines with high towers shall be shown. Those that have base dimensions of more than 1 mm on the maps shall be shown to scale. Those with less than 1 mm on the maps shall be symbolized. The part of the lines crossing roads and railways shall be cut 0.2 mm from the features.
63	Lighthouse	Ⓖ	Brown	The symbol shall be applied for fixed lighthouses.

NO.	NAME	SYMBOL	COLOR	APPLICATION
64	Cave		Blue	The symbol shall be applied for caves formed naturally.
65	Mine		Blue	The symbol shall be applied for mines. The sites and kinds of mine shall be annotated.
66	Water Tank/Stand Pipe		Blue	The symbol shall be applied for water tanks and standpipes which are large and prominent. Large water tanks more than 1 mm on the maps shall be drawn to scale.
67	Monument		Blue	Monuments which are big and used as landmarks shall be shown.
68	Wall/Fence		Blackish Blue	The symbol shall be applied for walls which are photo and field identifiable and made of stones, bricks, concrete or steel mesh.
69	Antiquity		Line-Black Annotation-Black	The coverages shall be delineated and annotated.
70	Park		Line & Annotation-Black Background-Green D133/45°-20%	The coverages shall be delineated and annotated.
71	Windpump		Blue	The symbol shall be applied for facilities which pump up ground water by means of wind force.
72	Gas Station		Blue	Prominent gasoline stations used as transport terminal, specially those situated at crossings shall be symbolized.
73	Bus Terminal		Blue	Terminals of buses connecting cities and provinces (including large motor pool) shall be symbolized and annotated if space permits.
74	Aero Beacon		Blue	Beacons that send out signals for the guidance of aircrafts shall be symbolized.
75	Slipway		Black	Inclined platforms with rails leading down to water, on which ships are built or repaired shall be symbolized.
76	Memorial Park/ Cemetery		Line & Annotation-Black Background-Green	Limits of memorial parks shall be delineated and annotated. Cemeteries shall be symbolized if photo and field identifiable.
77	Fort		Black	Famous historic spots, noted places, etc. shall be annotated if space permits. Line widths shall be 0.4 and 0.2 mm on the maps for the inside and outside lines respectively.
78	Rope Way		Black	Facilities for transporting aggregates from quarries by overhead wire ropes shall be symbolized.
79	Military		Line-Blackish Blue Annotation-Black Background-Green D133/45°-20%	Areas where facilities of the Armed Forces of the Philippines exist. Roads, spot heights and contour lines shall be shown.

WATER AND ASSOCIATED FEATURES

80	Pier/Jetty		Black	Piers or jetties made of iron, concrete, wood, including floating bridge shall be shown to scale or symbolized.
81	Breakwater		Black	Breakwaters, groins, etc. shall be drawn to scale.
82	Wharf, Revetment		Black	Photo and field identifiable wharfs which have mooring facilities shall be symbolized. Revetments which are made of concrete or piled up solid stones that have a height of more than 2 m and length of 100 m shall be symbolized.
83	River/Stream (Single Line)		Blue	Streams which are more than 100 m in length and less than 4 m in width shall be shown in single line.
84	(Double Line)		Line & Annotation-Blue Background-Blue D133/40°-20%	Rivers which are more than 100 m in length and more than 4 m in width shall be shown in double line. Shorelines of rivers/creeks/canals in congested areas shall be shown as much as possible.
85	(Intermittent)		Blue	Rivers in which no water flow at the time of an ordinary water level for other rivers shall be symbolized.

NO.	NAME	SYMBOL	COLOR	APPLICATION
86	(Indefinite)		Blue	Waterways whose banks or courses cannot exactly be determined because of forest cover or other obstruction shall be symbolized.
87	Flow Arrow		Blue	The symbol shall be applied where the flow is certain and for wide and double line rivers.
88	Falls (Double Line)		Blue	Waterfalls with height of more than 3 m shall be symbolized.
89	(Single Line)		Blue	Waterfalls with height of less than 3 m shall be symbolized.
90	Well		Blue	Wells which are large and prominent shall be symbolized.
91	Spring/Hot Spring		Blue Annotation-Blue	Springs or hot springs shall be symbolized and annotated if space permits.
92	Channel, Couseway		Blue	Channels or canals (esteros), which are more than 10 m in width and 100 m in length shall be shown.
93	Flood Gate		Black	Artificial structures for control of water volume for the prevention of adverse flow shall be symbolized, and annotated if space permits.
94	Dam		Black	Dams which are photo and field identifiable shall be drawn to scale, and annotated if space permits.
95	Weir		Black	Artificial structures to control water flow shall be symbolized. Those with length of more than 10 m shall be drawn to scale.
96	Lake, Pond Shoreline		Line & Annotation-Blue Background-Blue D13345*-204	Lakes or ponds whose approximate dimensions are more than 20 m x 20 m shall be shown and annotated if space permits. Shorelines at the time of aerial photography shall be shown.
97	Ditch		Blue	Ditches whose dimensions are more than 10 m in width and 100 m in length shall be shown. Those with smaller dimensions shall also be shown if necessary and space permits.
98	Swamp/Marsh		Green P16 Background-Blue D133475*-204	Marshy areas which are always wet and store water during rainy season with area of more than 50 m x 50 m shall be symbolized.
99	Tidal Flat		Blue L788 Background-Blue D133475*-204	Water areas where sand or earth is exposed at low water and covered at high water with area of more than 50 m x 50 m shall be symbolized.
100	Reef/Coral		Blue P4 Background-Blue D133475*-204	Coral reefs with area of 50 m x 50 m or more shall be symbolized.
101	Mud		Blue L7934 Background-Blue D133475*-204	Tidal flats covered by muddy soil, whose dimensions are more than 50 m x 50 m on the map shall be symbolized.
102	Pipeline/Water Pipeline		Black Annotation-Black	Pipelines used for transporting water oil, gas, etc. which are photo and field identifiable shall be symbolized. Underground sections shall not be shown.
103	Siphon		Blue Annotation-Black	Siphons which are photo and field identifiable shall be symbolized and annotated "Siphon".
104	Rock Awash		Black	Rock awashes which are dangerous to surface navigation shall be symbolized.
105	Wreck		Black	Wrecks showing any portion of hull or always partially submerged shall be symbolized.
106	Sewerage Outfall		Blue Annotation-Black	Sewerage outfalls shall be symbolized and annotated in italic.
107	Marine Pond		Line-Black Annotation-Blue Background-Blue D13345*-204	Photo and field identifiable pond for raising marine species shall be drawn to scale and annotated if space permits.
108	Fishpen		Blue	Fixed nets which are located at sea, lake or river shall be drawn to scale if photo and field identifiable.

NO.	NAME	SYMBOL	COLOR	APPLICATION
109	Salt Bed		Line & Annotation-Blue Background-Blue D133f45°-20%	Salt beds shall be drawn to scale.
110	Ferry/Ford		Blackish Blue Annotation-Black E16-25-8Q	In case of a regular service, ferries shall be annotated as "Ferry" in italic and symbolized. The landing places on both banks of the river shall be linked with broken line. In case of fording, it shall be annotated as "Ford" in italic.
		VEGETATION	Screen D120 45° 10%	
111	Broadleaf		Green P5 Background-Green D133f45°-10%	Areas where broadleaf trees grow more than 3 m high and with more than 5 mm x 5 mm on the maps shall be symbolized.
112	Bushes/Scrub		Green P7 Background-Green D133f45°-10%	Areas where trees of less than 3 m high and with less than 5 mm x 5 mm on the maps shall be symbolized.
113	Mixed Scrub and Broadleaf		Green P8 Background-Green D133f45°-10%	Areas of mixed scrub and broadleaf trees shall be symbolized.
114	Rice Field		Green P14 Background-Blue D133f45°-10%	Areas for rice cultivation whose dimensions are more than 50 m x 50 m shall be symbolized.
115	Crop Land Agricultural Land		Green P13 Background-Green D133f45°-10%	Cultivated areas for upland rice or vegetables, whose dimensions are more than 50 m x 50 m shall be symbolized.
116	Mangrove		Green Background-Blue D133f45°-10%	Mangroves which grow densely along river banks/mounths and coastal areas and whose dimensions are more than 50 m x 50 m shall be symbolized.
117	Nipa		Green P10 Background-Blue D133f45°-10%	Nipa which grows in water edge and whose dimensions are more than 50 m x 50 m shall be symbolized.
118	Tropical Grass		Green P11 Background-Green D133f45°-10%	Areas with dense tropical grass and whose dimensions are more than 50 m x 50 m shall be symbolized.
119	Tree Lined Road		Green	Roads where trees are planted in a row and are prominent landmarks shall be symbolized.
120	Bamboo		Green Background-Green D133f45°-10%	Areas where bamboo tree grows densely of not less than 50 m x 50 m shall be symbolized.
121	Sugar cane		Green Background-Green D133f45°-10%	Plantations for sugar cane shall be symbolized.
122	Pineapple		Green Background-Green D133f45°-10%	Plantations for pineapple shall be symbolized.
123	Banana		Green Background-Green D133f45°-10%	Plantations for banana shall be symbolized.
124	Coconut		Green Background-Green D133f45°-10%	Plantations for coconut trees shall be symbolized.
125	Mango		Green Background-Green D133f45°-10%	Plantations for mango trees shall be symbolized.
126	Other Plantation		Green Background-Green D133f45°-10%	Plantations for other fruit trees shall be symbolized.

NO.	NAME	SYMBOL	COLOR	APPLICATION
RELIEF AND ASSOCIATED FEATURES				
127	Cutting		Black	Man-made cuttings whose dimensions are more than 2 m in height and 100 m in length and if photo and field identifiable shall be symbolized.
128	Embankment		Black	Man-made embankments whose dimensions are more than 2 m in height and 100 m in length which are photo and field identifiable shall be symbolized.
129	Slope		Black	Slopes caused by landslide whose dimensions are more than 2 m in height and 30 m in length which are photo and field identifiable shall be symbolized.
130	Quarry		Black	Quarries for construction materials which are extensive shall be drawn to scale. Small ones shall be symbolized.
131	Depression		Black	Areas where the ground is depressed partly shall be symbolized.
132	Cliff		Black	Steep hilly areas where rock surface is exposed and whose dimensions are more than 2 m in height and 50 m in length shall be symbolized.
133	Rock Outcrop Area		Black LT935	Areas whose surface is rocky, or areas where huge rocks are scattered and which are photo and field identifiable shall be symbolized.
134	Sand/Sand Dunes		Black LT88	Natural sand areas with little or no vegetation, which are photo and field identifiable, shall be symbolized.
CONTOUR				
135	Index Contour		Black E08-25-8Q	Index contour intervals shall be 20 m.
136	Intermediate Contour		Black	Contour intervals shall be 4 m.
137	Supplementary Contour		Black	Two(2) meter contour lines shall be drawn on flat areas. On mountainous areas, they shall be shown if possible to depict land condition.
138	Contour Value	20	Black E08-25-8Q	Contour values shall be shown if necessary.
DEPTH CURVE				
139	Depth Curve		Blue Blue E08-25-8Q	Depth curves for 1, 5, 10, 20, 50 and 100 m depths shall be shown.

Items	Application	Letter Style	Letter Size (mm)							Color	Remarks	
			3.5	3.0	2.5	2.0	1.8	1.5	1.2			
Administrative Areas	Town & City/Municipal District	E08-24 C	o								Black	
	Barangay & Village/Subdivision	E08-24 C			o						"	
Buildings & Bridges	Public buildings, schools, hospitals, churches, factories bridges, etc.	E08-24 C/L					o				"	
Landmark Features	Tower, monument, cave	E08-24 C/L								o	"	
Airfield, Military Area & Open Space	Large	E05-14 C/L				o					"	more than 8x8 cm on the map
	Medium	E05-14 C/L							o		"	
	Small	E04-14 C/L								o	"	less than 3x3 cm on the map
Roads, Railway	National highways, provincial roads, streets	E08-25 C								o	"	
	Railways, railway stations, passes	E08-25 C								o	"	
Destination	Expressway, national highways provincial roads, railways and other important roads	E16-25 C									"	
Agricultural Land	Large farm land	E05-14 C/L					o				"	
Mountainous Area	Mountains	E16-25 C								o	"	
	Hills	E16-25 C								o	"	

Items	Application	Letter Style	Letter Size (mm)							Color	Remarks
			3.5	3.0	2.5	2.0	1.8	1.5	1.2		
River	Large	E01-25 C		o						Blue	more than 8 mm width on the map
	Medium	E01-25 C			o					"	
	Small	E01-25 C	Stream, canal, channel						o	"	less than 4 mm width on the map
Bay, Lake, Pond	Large	E15-25 C	Lake, marine ponds, salt bed		o					"	more than 10x10 cm on the map
	Medium	E15-25 C				o				"	
	Small	E15-25 C					o			"	less than 4x4 cm on the map
Shoreline Features	Points	E01-25 C	Bay		o					"	
	Sand & Rocky Beach	E16-24 C				o				Black	
	Islands	E19-24 C						o		"	

SYMBOLS AND SPECIFICATIONS FOR METRO MANILA PLANIMETRIC MAP (1:10,000)

NO.	NAME	SYMBOL	COLOR	APPLICATION
CONTROL POINT		CONTROL POINT		
1	Horizontal Control Station	△123.4	Symbol-Blue Annotation-Blue E04-24-8Q	Second order or higher grade triangulation points and newly established control points monumented in this survey shall be symbolized except points confirmed lost.
2	Vertical Control Station (Identifiable)	⊙567.89	Symbol-Blue Annotation-Blue E04-24-8Q	Second order or higher grade leveling points pricked in this survey shall be symbolized.
BOUNDARY		BOUNDARY		
3	Regional Boundary		Gray	Regional boundaries shall be shown within the neat line without annotation. Annotation shall be indicated below the boundary diagram.
4	Provincial Boundary		Gray	Provincial boundaries shall be shown within the neat line without annotation. Annotation shall be indicated below the boundary diagram. Where the provincial boundaries coincide with regional boundaries, symbols shall be those of the latter.
5	City or Municipal Boundary		Gray	City or municipal boundaries shall be shown with the neat lines without annotation.
ROAD		ROAD		
6	Divided Highway/Expressway		Line-Gray Background-Gray D133/75°-40x	(1) Highways or expressways shall represent those with separate zones. Separate zones of 3 m or more in width shall be drawn to scale. If width is less than 3 m, the separate zones shall be shown as a single line. (2) Destination of the divided highways/expressways shall be represented with the name of next interchange.
7	National/Provincial Road		Line-Gray Background-Gray D133/75°-40x	(1) National highways/provincial roads shall be shown with the route number. (2) Roads of 4 m or more in width shall be drawn to scale.
8			Line-Gray Background-Gray D133/75°-10x	(3) Roads whose widths are between 2-4 m shall be shown in 0.4 mm double line. (4) Roads whose widths are between 1-2 m shall be shown in 0.25 mm single line.
9			Gray	(5) Representation of roads whose lengths are less than 50 m can be deleted. (6) Double line roads shall be shown with the road surface classification specified for concrete, asphalt and gravel.
10	City/Municipal Road		Line-Gray Background-Gray D133/75°-40x	(7) Roads which are more than 300 m in length and 15 m in width shall be annotated. (8) Road destination shall be shown on the following roads: 1) Expressways, 2) National highways, 3) Provincial roads, and 4) Other important roads.
11			Line-Gray Background-Gray D133/75°-10x	
12			Gray	
13	Trail/Alley		Gray	Trails/alleys whose widths are less than 1 m and which cross residential areas and fields shall be shown on the maps if photo-identifiable and of importance. Alleys shall be shown in 0.4 mm double line, while trails shall be shown in 0.25 mm broken line.
14	Road Under Construction		Gray	Roads under construction whose widths are more than 4 m and shapes are already clear shall be shown as completed.
15	Sidewalk		Gray	Sidewalks for pedestrians or bicycles whose widths are 3 m or more shall be shown. Sidewalks located under overhang of buildings shall be symbolized.
16	Grade Separation		Gray	Roads with grade separation shall be differentiated from the level roads. Roads, canals, etc. under overheads shall not be shown.
17	Crossing		Gray	The symbol specifications at the left portion show overpass and those at the right show level crossing.
18	Pedestrian Overpass		Gray	Overpasses through which pedestrians, bicycles, etc. cross roads or railways shall be shown to scale. In case the width is less than 3 m, the overpasses shall be symbolized with 3 mm width on the maps. Clearances shall be indicated.
19	Pedestrian Underpass		Gray	Underpasses used by pedestrians shall be shown. Sections which are underground shall not be shown.
20	Toll Gate		Gray	Gates collecting toll shall be symbolized.

NO.	NAME	SYMBOL	COLOR	APPLICATION
21	Route Marker National/ Provincial		Blue	If National highways/provincial roads cross the map neat lines, the route numbers shall be shown close to the neat lines, and the road lines must not be cut to accommodate the route markers.

RAILWAY FEATURES

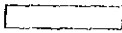
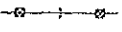
22	National Railway		Gray	(1) Government-owned railways shall be symbolized. The left side of the symbols shows a single track and the right shows double tracks. Abandoned railways shall be annotated. (2) Railway destination shall be expressed with the name of next station.
23	Private Railway		Gray	Railways owned by private enterprise shall be symbolized.
24	Under Construction		Gray	Railways under construction shall be shown. Railways nearing completion shall be symbolized as completed railways.
25	Level Crossing		Gray	Crossings where railway passes level road or another railway shall be shown.
26	Overpass		Gray	Crossings where railway passes over a road shall be shown.
27	Underpass		Gray	Crossings where railway passes under a road (underground) shall be shown.
28	Railway Station		Gray	Railway stations for passengers and freight cars including platforms, overbridges, etc. shall be shown.
29	Light Rail Crossing Transit		Gray	Elevated railways of the Light Rail Transit shall be shown together with the stations. Railway clearances above main road intersections shall be shown.
30	Turnplate		Gray	Revolving circular platforms used for turning locomotive, etc. around shall be symbolized.

BUILDING

31	Prominent Building		Gray	Important and/or at least 4-story buildings, shall be shown.
32	Independent Building and House		Gray	Isolated buildings whose short sides are more than 1.0 mm on the maps (including warehouses) are to be shown.
33	Congested Housing Area		Gray	Congested housing area surrounded by streets whose actual coverage of building is more than 70% of the area shall be shown. If there is any prominent building in the area, this shall be symbolized accordingly. Congested area not surrounded by streets shall be shown with actual outline.
34	Ruins		Gray	Dilapidated buildings, ruins of historical buildings, houses, etc. whose short side is more than 2 mm on the maps shall be shown.
35	Temporary Housing Area		Gray LT20-Gray 42.5 lines 45°	Congested areas with temporary houses of mostly one story, including those on water and canal shall be shown.
36	Building Minimum		Gray	Building where its short side is less than 5 m shall be shown with the size of 0.5 mm x 0.5 mm on the maps.

PUBLIC BUILDING (Symbol)

37	Government Building		Blue Annotation-Blue	Photo and field identifiable main offices, branch offices of national/city/municipal administrative organizations shall in principle be shown with annotation or abbreviation.
38	Police Station		Blue	Photo and field identifiable main and branch offices shall be shown and annotated if space permits.
39	Fire Station		Blue	Photo and field identifiable fire stations shall be shown. Annotation shall be made if space permits.
40	Post Office		Blue	Photo and field identifiable main and branch offices shall be shown and annotated if space permits.
41	Water Supply and Sewerage		Blue	Water treatment plants and pumping stations shall be shown with annotation.

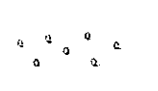
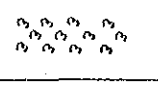
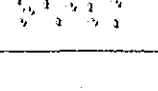
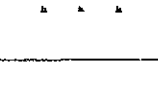
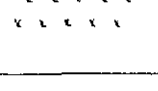
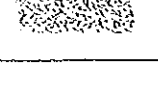
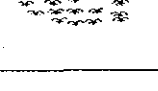
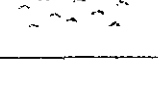
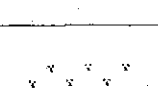
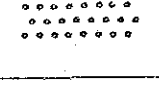
NO.	NAME	SYMBOL	COLOR	APPLICATION
42	School	①	Blue Annotation-Blue	Universities, colleges/institutions, vocational/trade, high schools, elementary and preparatory schools shall be shown with symbols. Universities, down to the high schools shall be shown with annotation or abbreviation depending on the space.
43	Hospital	⊕	Blue Annotation-Blue	Hospitals, large clinics and medical centers shall be shown.
44	Church/Mission	⊕	Blue Annotation-Blue	Churches, missions and chapels shall be shown. Annotation shall be made if necessary.
45	Mosque	⊕	Blue	Mosques shall be shown and annotated if space permits.
46	Embassy	Name	Blue Annotation-Blue	Embassies/legations/consulates shall be shown and annotated at the indicated points.
47	Health Center	⊕	Blue Annotation-Blue	Health centers shall be shown with annotation, if space permits.
48	Temple	⊕	Blue	Photo and field identifiable temples shall be shown.
49	Power Plant and Sub-Station	⊕	Blue Annotation-Blue	Power plants and sub-stations shall be shown. Annotation shall be made if space permits.
50	Bank	⊕	Blue Annotation-Blue	Large banks and credit unions that have their own separate buildings shall be shown and annotated.
51	Hotel/Motel	⊕	Blue Annotation-Blue	Hotels classified as three(3) or more stars shall be shown with annotation. Hotels/motels classified as two(2) stars or less with ground area of 1 cm x 1 cm on the maps shall be shown with "H" if space permits.
52	Market and Prominent Store	⊕	Blue Annotation-Blue	Public markets with building, large supermarkets and department stores shall be shown and annotated if space permits.
53	Factory	⊕	Blue Annotation-Blue	Factories and small scale industries shall be shown with annotation if space permits.
54	Helipad	⊕	Blue	Helipads which are photo and field identifiable and are permanent shall be shown.
55	Theater and Cinema (Prominent)	⊕	Blue Annotation-Blue	Large and prominent theaters, cinemas and amusement/recreational places shall be shown with annotation if space permits.
56	Airport/Airfield		Line-Gray Annotation-Blue	All airports and airfields shall be drawn to scale and annotated. Airport facilities shall be drawn as isolated buildings.
57	Sports Center	⊕	Blue Annotation-Blue	Centers like gymnasiums, stadiums, etc. shall be annotated if space permits.
MISCELLANEOUS LANDMARK FEATURES				
58	Storage Tank	○ Oil	Blue	Oil tanks that can not be drawn to scale shall be symbolized and annotated. In case dimension of more than 1 mm on the maps they will be drawn to scale and annotated.
59	Tower, Radio Tower, TV, Stack/Flagpole, Telephone	○ Radio	Blue Annotation-Blue	Towers, radio/TV towers, stacks/chimneys, flagpoles, etc. shall be shown and annotated if these can be used as landmarks. Abbreviations can be adopted if necessary.
60	Power Transmission Line		Gray	Power transmission lines with high towers shall be shown. Those that have base dimensions of more than 1 mm on the maps shall be shown to scale. Those with less than 1 mm on the maps shall be symbolized. The part of the lines crossing roads and railways shall be cut 0.2 mm from the features.
61	Lighthouse	⊕	Gray	The symbol shall be applied for fixed lighthouses.
62	Cave	-C	Blue	The symbol shall be applied for caves formed naturally.
63	Mine	⊕	Blue	The symbol shall be applied for mine. The sites and kinds of mine shall be annotated.

NO.	NAME	SYMBOL	COLOR	APPLICATION
64	Water Tank/Stand Pipe	○ WT ○ SP	Blue	The symbol shall be applied for water tanks and standpipes which are large and prominent. Large water tanks more than 1 mm on the maps shall be drawn to scale.
65	Monument	□	Blue	Monuments which are big and used as landmarks shall be shown.
66	Wall/Fence		Gray	The symbol shall be applied for walls which are photo and field identifiable and made of stones, bricks, concrete or steel mesh.
67	Antiquity		Line-Gray Annotation-Blue	The coverages shall be delineated and annotated.
68	Park		Line-Gray Annotation-Blue	The coverages shall be delineated and annotated.
69	Windpump	⊗	Blue	The symbol shall be applied for facilities which pump up ground water by means of wind force.
70	Gas Station	⊕	Blue	Prominent gasoline stations used as transport terminal, specially those situated at crossings shall be symbolized.
71	Bus Terminal		Blue	Terminals of buses connecting cities and provinces (including large motor pool) shall be symbolized and annotated if space permits.
72	Aero Beacon	⊙	Blue	Beacons that send out signals for the guidance of aircrafts shall be symbolized.
73	Slipway		Gray	Inclined platforms with rails leading down to water, on which ships are built or repaired shall be symbolized.
74	Memorial Park/ Cemetery		Line-Gray Annotation-Blue	Limits of memorial parks shall be delineated and annotated. Cemeteries shall be symbolized if photo and field identifiable.
75	Fort		Gray	Famous historic spots, noted places, etc. shall be annotated if space permits. Line widths shall be 0.4 and 0.2 mm on the maps for the inside and outside lines respectively.
76	Rope Way		Gray	Facilities for transporting aggregates from quarries by overhead wire ropes shall be symbolized.
77	Military		Line-Gray Annotation-Blue	Areas where facilities of the Armed Forces of the Philippines exist. Roads, spot heights and contour lines shall be shown.

WATER AND ASSOCIATED FEATURES














78	Pier/Jetty		Gray	Piers or jetties made of iron, concrete, wood, including floating bridge shall be shown to scale or symbolized.
79	Breakwater		Gray	Breakwaters, groins, etc. shall be drawn to scale.
80	Wharf, Revetment		Gray	Photo and field identifiable wharfs which have mooring facilities shall be symbolized. Revetments which are made of concrete or field-up solid stones that have a height of more than 2 m and length of 100 m shall be symbolized.
81	River/Stream (Single Line)		Blue	Streams which are more than 100 m in length and less than 4 m in width shall be shown in single line.
82	(Double Line)		Blue	Rivers which are more than 100 m in length and more than 4 m in width shall be shown in double line. Shorelines of rivers/creeks/canals in congested areas shall be shown as much as possible.
83	(Intermittent)		Blue	Rivers in which no water flow at the time of an ordinary water level for other rivers shall be symbolized.
84	(Indefinite)		Blue	Waterways whose banks or courses cannot exactly be determined because of forest cover or other obstruction shall be symbolized.
85	Flow Arrow		Blue	The symbol shall be applied where the flow is certain and for wide and double line rivers.








NO.	NAME	SYMBOL	COLOR	APPLICATION
86	Falls (Double Line)		Blue	Waterfalls with height of more than 3 m shall be symbolized.
87	(Single Line)		Blue	Waterfalls with height of less than 3 m shall be symbolized.
88	Well	• Well	Blue	Wells which are large and prominent shall be symbolized.
89	Spring/Hot Spring		Blue	Springs or hot springs shall be symbolized and annotated if space permits.
90	Channel, Couseway		Blue	Channels or canals (esteros), which are more than 10 m in width and 100 m in length shall be shown.
91	Flood Gate		Gray	Artificial structures for control of water volume for the prevention of adverse flow shall be symbolized, and annotated if space permits.
92	Dam		Gray	Dams which are photo and field identifiable shall be drawn to scale, and annotated if space permits.
93	Weir		Gray	Artificial structures to control water flow shall be symbolized. Those with length of more than 10 m shall be drawn to scale.
94	Lake, Pond Shoreline		Blue	Lakes or ponds whose approximate dimensions are more than 20 m x 20 m shall be shown and annotated if space permits. Shorelines at the time of aerial photography shall be shown.
95	Ditch		Blue	Ditches whose dimensions are more than 10 m in width and 100 m in length shall be shown. Those with smaller dimensions shall also be shown if necessary and space permits.
96	Swamp/Marsh		Gray P16	Marshy areas which are always wet and store water during rainy season with area of more than 50 m x 50 m shall be symbolized.
97	Tidal Flat		Blue LT88	Water areas where sand or earth is exposed at low water and covered at high water with area of more than 50 m x 50 m shall be symbolized.
98	Reef/Coral		Blue P4	Coral reefs with area of 50 m x 50 m or more shall be symbolized.
99	Mud		Blue LT934	Tidal flats covered by muddy soil, whose dimensions are more than 50 m x 50 m on the map shall be symbolized.
100	Pipeline/Water Pipeline	Pipeline	Gray Annotation-Blue	Pipelines used for transporting water, oil, gas, etc. which are photo and field identifiable shall be symbolized. Underground sections shall not be shown.
101	Siphon		Blue Annotation-Blue	Siphons which are photo and field identifiable shall be symbolized and annotated "Siphon".
102	Rock Awash	*	Gray	Rock awashes which are dangerous to surface navigation shall be symbolized.
103	Wreck		Gray	Wrecks showing any portion of hull or always partially submerged shall be symbolized.
104	Sewerage Outfall	<u>Sewerage Outfall</u>	Blue Annotation-Blue	Sewerage outfalls shall be symbolized and annotated in italic.
105	Marine Pond		Line-Gray Annotation-Blue	Photo and field identifiable pond for raising marine species shall be drawn to scale and annotated if space permits.
106	Fishpen		Blue	Fixed nets which are located at sea, lake or river shall be drawn to scale if photo and field identifiable.
107	Salt Bed		Blue	Salt beds shall be drawn to scale.
108	Ferry/Ford		Gray Annotation-Blue	In case of a regular service, ferries shall be annotated as "Ferry" in italic and symbolized. The landing places on both banks of the river shall be linked with broken line. In case of fording, it shall be annotated as "Ford" in italic.

NO.	NAME	SYMBOL	COLOR	APPLICATION
VEGETATION Screen D120 45° 10%				
109	Broadleaf		Gray P5	Areas where broadleaf trees grow more than 3 m high and with more than 5 mm x 5 mm on the maps shall be symbolized.
110	Bushes/Scrub		Gray P7	Areas where trees of less than 3 m high and with less than 5 mm x 5 mm on the maps shall be symbolized.
111	Mixed Scrub and Broadleaf		Gray P8	Areas of mixed scrub and broadleaf trees shall be symbolized.
112	Rice Field		Gray P14	Areas for rice cultivation whose dimensions are more than 50 m x 50 m shall be symbolized.
113	Crop Land Agricultural Land		Gray P13	Cultivated areas for upland rice or vegetables, whose dimensions are more than 50 m x 50 m shall be symbolized.
114	Mangrove		Gray	Mangroves which grow densely along river banks/mounths and coastal areas and whose dimensions are more than 50 m x 50 m shall be symbolized.
115	Nipa		Gray P10	Nipa which grows in water edge and whose dimensions are more than 50 m x 50 m shall be symbolized.
116	Tropical Grass		Gray P11	Areas with dense tropical grass and whose dimensions are more than 50 m x 50 m shall be symbolized.
117	Tree Lined Road	Gray	Roads where trees are planted in a row and are prominent landmarks shall be symbolized.
118	Bamboo		Gray	Areas where bamboo tree grows densely of not less than 50 m x 50 m shall be symbolized.
119	Sugar cane	Su	Gray	Plantations for sugar cane shall be symbolized.
120	Pineapple	Pi	Gray	Plantations for pineapple shall be symbolized.
121	Banana	Ba	Gray	Plantations for banana shall be symbolized.
122	Coconut	Co	Gray	Plantations for coconut trees shall be symbolized.
123	Mango	Man	Gray	Plantations for mango trees shall be symbolized.
124	Other Plantation		Gray	Plantations for other fruit trees shall be symbolized.










SYMBOLS AND SPECIFICATIONS FOR METRO MANILA LAND USE MAP (1:10,000)




















Remarks: The figures in parentheses show the exceptional minimum areas for better cartographic representation.

CLASSIFICATION	SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM AREA ON THE MAP			
BUILT-UP AREA								
1		D1332-45° 60% Red	Four (4) or more story housing areas.	Condominiums, etc.	mm 3x3			
2			D1332-45° 10% Red	One (1) to three (3) story housing areas.	Residential areas including rest houses for groups of various organizations, lodging for public servants, subdivisions and villages in suburbs that have existing road systems but have sparse houses.	3x3 (2x2)		
3				D1332-45° 10% Red LT 20% 42.5 lines 45° Black	Congested areas where mainly one (1) story temporary housing exist.	Temporary housing in slum or squatter areas on water or along creeks and rivers.	3x3	
4		100% Orange	Areas where enterprises conduct their trade and office work.	Offices of private companies, banks, hotels, etc.	3x3			
5			50%-0° +90° 50% Orange	Areas which are considered to be general shopping districts.	Retail stores, restaurants, wholesale stores, department stores, markets, auto sales and repair shops, etc.	3x3 (1.5x1.5)		
6				D1332-45° 10% Red 75°-90° 25% Red	Three (3) or more story buildings which have mixed commercial and residential functions.	Stores and residential, markets and residential, etc.	3x3 (1.5x1.5)	
7					D1332-45° 30% Orange 50%-0° 25% Red	Three (3) or more story buildings which have mixed business and commercial functions.	Banks and retail stores, offices and restaurants, etc.	3x3 (1.5x1.5)
8						D1332-45° 10% Red 50%-90° 25% Orange	Three (3) or more story buildings which have mixed business and residential functions.	Banks and residential, offices and residential, etc.
9		D1332-45° 40% Red 50%-0° 50% Blue	Areas where mainly large-scale industries exist.	Such industries occupy areas of at least 5 mm x 5 mm on the map. These areas include their own offices, parking lots, sports grounds, etc. Manufacturing industries such as textile industries, chemical industries, shipyards, bottling companies, quarries with classifying facilities, etc.	5x5			
10			D1332-45° 40% Red D1332-75° 40% Blue	Areas where mainly small-factories exist.	Such industries occupy areas of less than 5 mm x 5 mm on the maps. Furniture factories, auto repair shops, cinema studios, etc. (Factories related to agriculture are included in "Agro-industrial".)	3x3		
11				D1332-45° 20% Red 50%-0° 25% Blue	Three (3) or more story buildings which have mixed industrial and residential usage.	Various small-scale factories and residential.	3x3 (1.5x1.5)	
12		D1332-45° 70% Brown	Areas where mainly buildings of national, regional or local government organizations or corporations, etc. exist.	National or public buildings, police stations, fire stations, embassies or legations, consulates, trade and cooperative union buildings, quasi-public buildings, prisons, etc.	3x3			
13			D1332-0° 20% Orange D1332-45° 40% Yellow	Areas where mainly educational, research and cultural facilities exist.	Schools, public halls, libraries, exhibition halls, museums, research institutes, astronomical observatories, historical buildings, etc.	3x3		

CLASSIFICATION	SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM AREA ON THE MAP		
14	Public and Government	Health and Welfare		75% - 0° 25% Green	Areas where mainly health and welfare facilities exist.	Hospitals, sanitariums, medical health centers, large clinics, rehabilitation centers, etc.	mm 3x3
15		Park and Recreational		D1332-15° 20% Yellow 120% - 90° 30% Green	Areas where mainly public and recreational facilities exist.	Parks, gardens, zoological and botanical gardens, picnic grounds, theaters, cinemas, cockpits, casinos, horse racing tracks, resorts and beaches, etc.	3x3
16		Religious and Cemetery		D1332-45° 70% Green	Areas where religious facilities and cemeteries exist.	Churches, temples, mosques, memorial parks, cemeteries, seminaries, monasteries, grottos, etc.	3x3
17	Facilities	Transportation		120% - 0° 25% Brown	Areas where transportation and bulk fuel facilities exist.	Railway stations and terminals including car sheds and marshaling yards. Airports, bus terminals, parking lots, piers, port facilities, fuel oil terminals, and cargo sheds of the above facilities, etc.	3x3
18		Service		D1332-45° 20% Orange D1332-0° 20% Brown	Areas where supply, treatment and communication facilities exist.	Power stations and substations, water treatment and filtering plants, sewerage, LPG terminals, TV/radio/telephone stations, newspaper establishments, crematoriums, dumping areas, slaughterhouses, etc.	3x3
19		Sports and Athletics		D1332-45° 20% Yellow D1332-0° 20% Brown	Areas where sports facilities exist.	Sports plazas, stadiums, shooting ranges, gymnasiums, golf courses, tennis and basketball courts, bowling halls, billiard halls, etc.	3x3
20		Military		D1332-45° 10% Orange D1332-0° 20% Blue	Areas where military facilities exist.	Military camps, depots and establishments.	5x5

















AGRICULTURAL LAND AND FOREST

21	Agricultural Land	Rice Field		D1332-45° 20% Yellow	Areas where irrigated paddies exist.	Rice paddies.	5x5	
22		Cropland		D1332-45° 10% Brown D1332-45° 20% Yellow	Areas where crops are cultivated.	Corn, upland rice, vegetables, etc.	5x5	
23		Plantation and Farmland		D1332-45° 10% Orange	Areas where plantation and farmland exist.	Bananas, coconuts, mangoes, sugar cane, pineapples, calamansi and other fruit bearing trees.	5x5	
		Mango						
		Banana						
		Sugar Cane						
		Pineapple						
	Coconut							
	Others							
24		Agro-industrial		D1332-45° 20% Yellow 50% - 0° 25% Red	Areas where agriculture-related industrial facilities exist.	Rice mills, warehouses for agricultural products, tractor sheds, food processing factories, stock houses, etc.	5x5	

CLASSIFICATION		SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM AREA ON THE MAP
25	Forest		D1332-45° 20% Yellow D1332-0° 20% Blue	Areas covered by trees.	Broadleaf, bushes or scrub, mixed scrub and broadleaf, bamboo, etc.	mm 5x5
	Broadleaf					
	Bushes/Scrub					
	Mixed Scrub and Broadleaf					
	Bamboo					
26	Grassland		D1332-45° 40% Yellow D1332-0° 20% Green	Areas covered by grass.	Pasture, ranch and other areas where tropical grass grows densely.	5x5
27	Bare Land		D1332-45° 10% Brown	Areas with little or no vegetation.	Rock-outcrops, barren areas and steep slopes such as cliffs, etc. Sandy, gravelly or coastal areas.	5x5
	Sand, Sand Dunes					
OTHERS						
28	Water Surface		D1332-45° 20% Blue	Areas covered by water.	Sea, lakes, rivers, creeks or streams, bays, tidal flats, reservoirs, etc.	5x5 (2x2)
	Lake					
	Tidal Flat Mud					
	Tidal Flat Sand					
	Reef/Coral					
29	Marine Pond		D1332-45° 10% Blue	Artificial facilities for fish and shellfish culture, etc.	Fish ponds, culture ponds or shelves for raising crabs, oysters, shellfish, etc.	5x5
30	Salt Bed		D1332-45° 10% Blue 302-0° Blue (Broken line)	Areas where salt are collected.		5x5
31	Water-related Vegetation		D1332-45° 20% Blue Vegetation Blue	Vegetation that grows on spongy ground or in shallow water.	Mangrove, nipa, marsh or swamp, etc.	5x5
	Nipa					
	Mangrove					
	Swamp/Marsh					
32	Open Space		D1332-45° 10% Black	Area where land is not utilized.		2x2
	Under Construction					
33	Land Use Boundary		Red	Boundary lines for land use classification.	Land use boundaries shall be shown by solid lines. Indistinct land use boundaries shall be shown by broken lines.	

SYMBOLS AND SPECIFICATIONS FOR METRO MANILA LAND CONDITION MAP (1:10,000)

CLASSIFICATION	SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM SIZE ON THE MAP	
LANDFORM CLASSIFICATION						
1 Mountain	Top Flat and Ridge Flat		D133 $\frac{1}{2}$ -45° 30% Brown	Relatively flat surfaces at the tops or ridges of mountains.	Flat surfaces on the tops and ridges of mountains having gradients of less than 20°.	mm 1x4
	Gentle and Moderate Slope		D133 $\frac{1}{2}$ -45° 60% Brown	Relatively gentle slopes at mountain-sides.	Gradients of less than 20°.	1x4
	Steep Slope		D133 $\frac{1}{2}$ -45° 30% Brown 75 $\frac{1}{2}$ -0° 25% Violet	Relatively steep slopes at mountain-sides.	Gradients of more than 20°.	1x4
	Knick Line		Green	Lines passing points on slopes of mountain-sides, which divide upper gentle slopes and lower steep slopes.	Delineation shall be made by photo-interpretation and by analysis of contour lines.	5
5 Piedmont Landform	Talus		100% Yellow 20 $\frac{1}{2}$ 20% Orange	Relatively steep depositional surfaces formed at lower parts of mountain-slopes by rain wash or landslide and consisting of larger grains of debris.	Gradients of more than 10°.	2x5
	Colluvial Slope		100% Yellow 20 $\frac{1}{2}$ 20% Green	Depositional landforms with relatively gentle slopes, formed by debris and weathered material transported and sedimented by effects of rain wash and soil creep.	Gradients of less than 10°.	2x5
	Small Alluvial Fan		100% Yellow 20 $\frac{1}{2}$ 20% Brown	Small depositional landforms with relatively gentle slopes, starting at the end of valleys and fanning into lowlands where the river transportation force diminishes.	Gradients of less than 10° around the end of valleys.	2x5
8 Hill and Plateau	Top Flat		D133 $\frac{1}{2}$ -45° 30% Orange	Relatively flat surfaces at the top of slightly undulated hills and plateaus.	Gradients of less than 5°.	2x5
	Gentle Slope		D133 $\frac{1}{2}$ -45° 60% Orange	Relatively gentle surfaces at slopes of small undulated hills and plateaus.	Gradients of less than 5°.	2x5
	Moderate Slope		D133 $\frac{1}{2}$ -45° 30% Orange 25 $\frac{1}{2}$ -45° 20% Brown	General slopes not classified as top flat or gentle slope.	Gradients of between 5° and 20°C.	2x5
	Steep Slope		D133 $\frac{1}{2}$ -45° 30% Orange 25 $\frac{1}{2}$ -0° 90° 20% Brown	Relatively steep slopes of hills and plateaus.	Gradients of more than 20°.	2x5
12	Valley Flat		D133 $\frac{1}{2}$ -45° 10% Orange 50 $\frac{1}{2}$ -0° 25% Green	Flat surfaces located along river tributaries, where bed rock is partially covered by shallow fluvial deposits.		1x10
13 Terrace	Low Terrace		25 $\frac{1}{2}$ -0° 30% Orange	A group of terraces lying along rivers but at relatively higher elevations and existing from mountain to lowland.		2x5
	Lower Terrace		50 $\frac{1}{2}$ -90° 25% Orange	A group of terraces lying lower than the above.		2x5
	Dent and Shallow Valley		50 $\frac{1}{2}$ -90° 25% Green	Shallow depressions on the surface of terraces.	Elevations of about 0.5 m to 1.0 m lower than the general surface.	1x10
16 Alluvial Fan	General Surface of Alluvial Fan		20 $\frac{1}{2}$ -45° 5% Brown 120 $\frac{1}{2}$ -0° 40% Yellow	Relatively gentle and flat surfaces covering wide area at the end of valleys and fanning into lowlands where the river transportation force diminishes. (including natural levees)	Gradients of less than 10° at the end of valleys.	2x5
	Former River Bed		95 $\frac{1}{2}$ -0° 25% Blue	Former stream and river channels located in the alluvial fan.	Surface is about 0.5 m to 1.0 m below the general surface.	1x10

CLASSIFICATION		SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM SIZE ON THE MAP	
18-23	Flood Plain and Valley Plain	General Surface of Flood Plain and Valley Plain		D133 $\frac{1}{2}$ -45° 20% Yellow-Green	Widely extended general surface of flood plains formed by alluviation of rivers. Valley plains resulting from mountain, hill and plateau dissection.		mm 2x5
		Former River Bed		95 $\frac{1}{2}$ -0° 25% Blue	Former stream and river channels located in the flood plain.	Surface is about 0.5 m to 1.0 m below the general surface.	mm 1x10
		Natural Levee		D133 $\frac{1}{2}$ -45° 30% Yellow	Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.		1x10
		Backmarsh		50 $\frac{1}{2}$ -0°+90° 20% Green	Lowland relatively free from alluviation of rivers and poorly drained because of location behind natural levees and others.		2x5
		Swamp and Marsh		30 $\frac{1}{2}$ -0° 10% Blue (Broken line) D133 $\frac{1}{2}$ -45° 10% Green	Spongy ground which is always wet and stores water during rainy season.		2x5
23	Dry River Bed		LT 780 Brown	River beds which are located closed to water channels and inundated only during rainy season.	No vegetation and composed of outcropped rock, sand and gravel.	2x5	
24-29	Coastal Plain and Delta	General Surface of Coastal Plain and Delta		D133 $\frac{1}{2}$ -45° 10% Blue 30 $\frac{1}{2}$ -0° 10% Green	Former depositional surfaces in shallow water where present flat plains were formed after regression of sea water. General surfaces of flat land formed in mouths of rivers and consisting of unconsolidated silt and clay transported by the river (including marine ponds and salt beds).		2x5
		Former River Bed		95 $\frac{1}{2}$ -0° 25% Blue	Former stream and river channels located in coastal plains and deltas.	Surface is about 0.5 m to 1.0 m below the general surface.	1x10
		Natural Levee		D133 $\frac{1}{2}$ -45° 30% Yellow	Strip microrelief located along or around rivers which is composed of sand and silt deposits made during floods.		1x10
		Upper Sand Bar		D133 $\frac{1}{2}$ -45° 30% Yellow Brown	Microrelief located along the former and present coast, composed of sand and gravel, and formed by sedimentation and action of ocean waves and coastal currents.		2x5
		Lower Sand Bar		D133 $\frac{1}{2}$ -45° 30% Yellow Brown	Microrelief slightly lower than the above.		2x5
29	Backmarsh		50 $\frac{1}{2}$ -0° +90° 20% Green	Low land slightly affected by alluviation of rivers and poorly drained because of location behind natural levees and others.		2x5	
30-31	Unstable Slope	Cliff		Violet	Slopes with vertical or very steep gradient.	More than 2 m in height.	5
		Landslide Scar		Red	Vestiges of radical sliding of large masses of earth down slopes or cliffs.	Areas shall be shown from photo-interpretation as shown on the contoured maps.	2
32-33	Artificially Deformed Land	Cut and Rolled Surface		15 $\frac{1}{2}$ -90° 10% Red	Land cut and rolled from slopes.	Cut and rolled areas of more than 2 m in height.	2x2
		Banked Up Surface		15 $\frac{1}{2}$ -0° 10% Red	Areas built up at level or higher than surrounding areas.	Areas where the elevation increases more than 1 m including reclaimed areas.	2x2

CLASSIFICATION		SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM SIZE ON THE MAP	
34-38	Artificially Deformed Land	Cut Slope		Violet	Artificially deformed steep slopes mainly in mountains, hills, terraces, etc.	Deformed slopes of more than 2 m in height.	mm 1x2
		Banked Up Slope		Brown	Artificially built up slopes of banked up surfaces.	Slopes built up more than 2 m in height.	1x2
		Filled Up Surface		D133 \bar{L} -45° 20% Yellow-Green 30 \bar{L} -0° 10% Red (Broken line)	Artificial land formed by filling marshes, lakes or river beds to the level of the surrounding surfaces.	Areas shall be delineated by photo-interpretation as compared to old photographs.	2x2
		Under Construction Area		Violet	Areas where land development is in progress.	Areas shall be delineated by photo-interpretation and field surveys.	2x2
39-42	Others	Main Watershed		Red	Main ridges of mountains and hills including those of several drainage basins which collect to a common basin.	Watershed lines of more than approx. 5 cm in length on the maps.	50
		Drainage		Blue	Stream line on the surface of slope of mountain, hill and plateau, formed by rain water.	Drainage lines with lengths of more than 2 cm on the maps.	20
		Water Surface		D133 \bar{L} -45° 20% Sky Blue Blue	Rivers, lakes, seas, ponds, etc.	Water surface shown on the 1:10,000 Contoured Maps shall be applied.	2x2
		Landform Boundary		Violet	Boundaries of landform classification.		2x2
42	Indistinct Landform Boundary		Violet	Boundaries which are not clear on landform classification.	Landform classification boundaries which are not clearly made by photo-interpretation and analysis of the 1:10,000 Contoured Maps.	2x2	
43-45	Marine Area	Bar		LT 88 Silver-Gray D133 \bar{L} -45° 20% Blue	Depositional ridges of sand and mud, distributed along coastal areas.	Areas which are indicated as "Sand" or "Dune" on the 1:10,000 Contoured Maps.	2x2
		Tidal Flat		LT 934 Silver-Gray D133 \bar{L} -45° 20% Blue	Muddy shallow water areas beds which are exposed at low tide.	Areas which are indicated as "Mud" on the 1:10,000 Contoured Maps.	2x2
		Bathymetric Line		Blue E29-24 BQ	Lines connecting points at equal depth in the sea area.	Based on RCGS data. Lines shall be drawn at 1 m intervals.	
GROUND ELEVATION							
46-49	Ground Elevation Point	Bench Mark		Black E29-24 BQ	Second order or higher grade leveling points identified in this survey.	Based on the 1:10,000 Contoured Maps.	
		Ground Elevation Point		Black E29-24 BQ	Minor order leveling points in lowland areas established in this survey. Spot heights measured by photogrammetry.	Values to be shown to the first decimal place.	
	Microrelief Contour Line	Microrelief Line		Brown E29-24 BQ	Lines depicting detailed landform elevation in lowland.	Based on the result of minor order leveling, lines shall be drawn by photogrammetry at 1 m intervals.	
		Contour Line				Based on the 1:10,000 Contoured Maps.	
ORGANIZATION AND PUBLIC FACILITIES							
50-54	Administrative Boundary	Regional Boundary		Black		Based on the 1:10,000 Contoured Maps.	
		Provincial Boundary		Black		Based on the 1:10,000 Contoured Maps.	
		City and Municipal Boundary		Black		Based on the 1:10,000 Contoured Map.	
	Transportation	Main Road		Black	Expressways, national and provincial roads shall be shown. Main roads which are important for disaster prevention, relief, rehabilitation and land development shall also be shown.	Based on the 1:10,000 Contoured Maps and field surveys. Main roads of more than 1 km in length shall be shown.	
Railway			Black		All railways including LRT as shown on the 1:10,000 Contoured Maps.		

CLASSIFICATION		SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM SIZE ON THE MAP
55	Bus Terminal		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
56	Government Building		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
57	Police Station		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
58	Fire Station		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
59	Hospital		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
60	Health Center		Black	Small medical establishment with limited facilities.	Based on the 1:10,000 Contoured Maps and BCGS data.	
61	Church		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
62	School		Black		Based on the 1:10,000 Contoured Maps and BCGS data.	
63	Rescue Center		Black	Facilities to be used as rescue center at the time of disaster.	Based on BCGS data.	
64	Manufacturing, Storage and Handling Facilities of Dangerous Materials		Black	Factories and facilities producing or handling dangerous materials (explosives, petroleum, gas and chemicals).	Based on BCGS data and field surveys.	
65	Storage Tank		Black	Oil and gas tanks.	Based on the 1:10,000 Contoured Maps.	
		oOil oGas	Annotation Black E08-24 9Q C/L			
66	Tidal Station		Black	Observation stations for measuring sea water level and tidal movements.	Based on BCGS data and field surveys.	
67	Water Level Gauge Station		Black	Observation stations for measuring river and reservoir levels.	Based on BCGS data and field surveys.	
68	Rain Gauge Station		Black	Observation stations for measuring rainfall.	Based on BCGS data and field surveys.	
69	Earthquake Observatory		Black	Observation stations for earthquake activities.	Based on BCGS data and field surveys.	
70	Power Plant and Sub-station		Black	Power generation and sub-station facilities.	Based on the 1:10,000 Contoured Maps.	
71	Water Treatment Plant		Black	Water treatment and supply facilities, excluding water tanks.	Based on BCGS data and field surveys.	
72	River Pumping Station		Black	Fixed pumping stations utilizing river water.	Based on BCGS data and field surveys.	
73	Well	• Well	Black Annotation Black E08-24 9Q C/L	Large deep wells for commercial and industrial use.	Based on BCGS data and field surveys.	
74	Embankment		Brown	Structures constructed for preventing damage from floods and unusual high tides, etc.	Based on the 1:10,000 Contoured Maps. Embankments which are more than 50 m in length and constructed along rivers of more than 4 m in width shall be shown. Those with more than 1.5 m in height shall also be shown.	

CLASSIFICATION	SYMBOL	COLOR	DEFINITION	APPLICATION	MINIMUM SIZE ON THE MAP	
75	River and Coastal Structure	Dam		Red	Structures constructed for impounding water for water supply or flood control.	Based on the 1:10,000 Contoured Maps and field surveys. Dams constructed across rivers of more than 4 m in width shall be shown.
76		Weir		Red	Structures constructed on rivers for irrigation.	Based on the 1:10,000 Contoured Maps and field surveys. Weirs constructed across rivers of more than 4 m in width shall be shown.
77		Revetment		Red	Structures constructed for preventing erosion by river flow, tidal waves, etc.	Based on the 1:10,000 Contoured Maps and field surveys. Revetments with more than 50 m in length shall be shown.
78		Bridge		Red Annotation Black		Bridges constructed across rivers of 4 m in width shall be shown. The clearances are shown based on the 1:10,000 Contoured Maps and field surveys.
79		Breakwater, Jetty and Causeway		Red	Structures constructed out into the water for protecting port, harbor and coastal areas and for approaching offshore facilities.	Based on the 1:10,000 Contoured Maps.
80		Flood Gate		Red	Structures constructed on rivers for controlling water levels at the time of floods and high tides.	Based on the 1:10,000 Contoured Maps and field surveys.
81		Drainage Station		Black	Fixed pumping stations to drain inland-water.	Based on field surveys.
82		Wharf and Pier		Red	Ship berthing structures constructed along river banks and harbors.	Based on the 1:10,000 Contoured Maps and field surveys.
83		Lighthouse		Black		Based on the 1:10,000 Contoured Maps and field surveys.
84	Facilities and Other Feature in Coastal Area	Port and Harbor		Black		Based on BCGS data. Symbol size varies according to scale.
85		Fishery Port		Black		Based on BCGS data. Symbol size varies according to scale.
86		Pipe Line and Cable on Sea Bottom		Black	Pipe lines for water and oil or cables for communication laid down on sea bottom.	Based on BCGS data.
87		Fishpen		Blue	Fixed nets or bamboo pens used for catching fish at seas, lakes or rivers.	Based on the 1:10,000 Contoured Maps.
88		Rock Awash or Reef		Black	Rocks lying at or near the surface of the water at low tide.	Based on the 1:10,000 Contoured Maps.
89		Stranded Wreck		Black	Structures fully or partially submerged at high tide.	Based on the 1:10,000 Contoured Maps.
90		Marine Pond and Salt Bed		Blue Annotation	Enclosed areas for raising marine species or salt making.	Based on the 1:10,000 Contoured Maps.
91		Restricted Area		Red	Areas covered under zoning law and regulation, restricted for urban development including military camp.	Based on BCGS data.
92		Dumping Area		Brown		Based on BCGS data.

JICA