

**PHILIPPINES-AUSTRALIA LAND
ADMINISTRATION AND MANAGEMENT
PROJECT**

PROCEDURE MANUAL

for

URBAN and RURAL

CADASTRAL INDEX MAP PRODUCTION

Version 5

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DOCUMENT APPROVAL**

TITLE: Procedure Manual for Urban and Rural CIM Production and Office Validation

GENERAL DESCRIPTION: Procedure Manual to support the CIM production for validation and management of land records for PA-LAMP for the Philippines Land Administration and Management Project (LAM Project).

REFERENCED DOCUMENTS: DENR Manual on Settlement of Land Disputes (also prepared under the Italian funded project GOP/PH/040/ITA).
 PA-LAMP Project Preparation Report, February 2000.
 PA-LAMP Project Implementation Plan (maintained by the PMO).
 PA-LAMP Financial Management Manual
 PA-LAMP Framework Monitoring and Evaluation
 World Bank Procurement Guidelines
 PA-LAMP PIO 1 & 2 One-Stop-Shop Manual (not yet prepared)
 PA-LAMP PIO 1 & 2 CRS Manual (not yet prepared)
 Social Assessment Phase 1 for LAM Project (Prototype 2 IAW)
 Technical Specifications for Orthophotography

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Philippines-Australia Land Administration & Management Project

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Procedure Manual for Urban and Rural CIM Production

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1 Introduction

The purpose of this work instruction is to give guidance to the cartographers and Managers in producing the Cadastral Index Map (CIM) according to the needs of the Land Administration Management Project (PA-LAMP).

1.1 Manual Revision and Use

This manual is intended to be used by all PA-LAMP office personnel that are involved with the production of CIM. The intention of this manual is to support staff training and to provide procedural guidance to the cartographers during the preparation of any CIM.

A Procedure Manual should be distributed to all participating CIM staff. Periodical modifications to this manual will be made, which will require the approval of the Managers, who are responsible for circulating the modified manuals, and these will be forwarded to all registered holders. Any modification will be noted in the Document Verification/Document Approval section of the manual.

1.2 PA-LAMP Objectives

The objectives of the PA-LAMP are to test alternative approaches to improve the protection of rights to land, eliminate fake titles, introduce an equitable system of land registration and valuation, formulate and propose policy and regulatory changes, and formulate the institutional arrangements needed to support implementation of the subsequent phase of the Program. The production of CIM is an important step in the PA-LAMP.

1.3 Cadastral Index Maps (CIM)

The CIM is a map series that covers all cadastral related information. The CIM shows the cadastral information as spatial (graphical) index only, ie a working map. The CIM is not a legal identifier of land and does not replace the land records such as Certificate of Title and survey plans. It is used to manage and control the lands records process by providing a means of identifying individual land parcels and the associated land records ie titles and survey plans etc.

1.3.1 CIM Scale and Numbering

All CIM will have a unique number, in this manner a CIM location and scale can be identified by the CIM number.

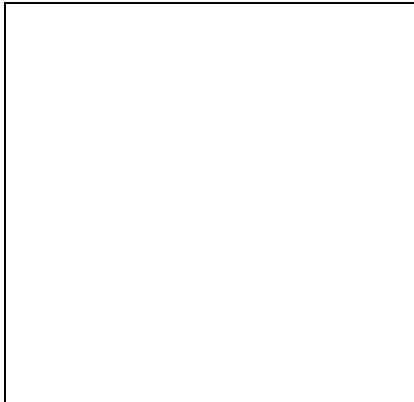
The base cadastral map within the Philippines is 1:4000 and depending on the location, ie Rural or Urban, the scale can be either one of the following:

- 1:4000;
- 1:2000;
- 1:1000;
- 1:500.

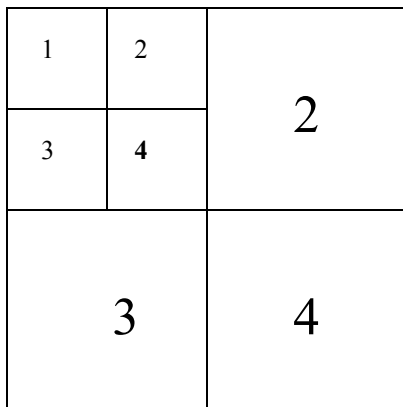
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Basically the CIM will be numbered by the geographical coordinates of the bottom left corner of the base 1:4000 map sheet and then broken down into 1:2000, 1:1000 and 1:500 sheet numbers.

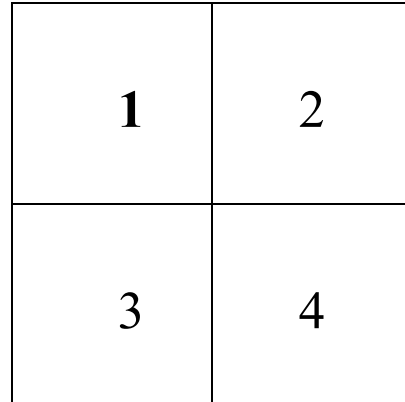
Below is a schematic drawing of a standard 1:4000 map



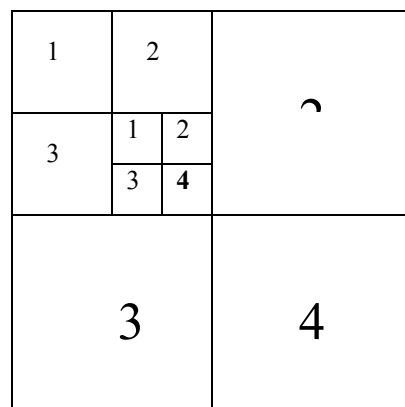
This can be broken down into 4 by 1:1000 map sheets



This can be broken down into 4 by 1:2000 map sheets



This can be broken down into 4 by 1:500 map sheets



14°30'

121°15'

The bottom left corner of the 1:4000 map sheet is defined by Latitude eg 14°30' and Longitude of 121°15'.

The CIM numbering can now be the degrees and minutes of that sheet corner. Considering that the Philippines longitude extends for only 5° the digit for 100 degrees longitude can be eliminated, leaving 4 significant numbers that can define the corner of the 1:4000 CIM, ie 14302115.

To enable the 1:2000 sheet numbering ie sheet 1 in this case an extra digit is required, 143021151 indicates this sheet. To enable the 1:1000 map sheet to be shown and extra digit is added ie 1430211514. To enable the 1:500 map sheet to be shown an extra digit is shown ie 14302115144.

Using the example shown above, if only the 1:4000 sheet is referred to then the CIM number would be 14302115000, if the 1:2000 sheet is referred to the CIM number would be 14302115100. If the 1:1000 sheet were referred to the CIM number would be 14302115140. If the 1:500 sheet were referred to the CIM number would be 14302115144.

This then becomes a unique CIM numbering system and by this number any sheet can be located geographically with ease.

Each CIM will be a specified size, ie the area shown within the CIM will depend on the scale of the CIM, being:

- 1:4000, the map sheet will be 1' (one minute) of arc of latitude and longitude.
- 1:2000, the map sheet will be 30" (thirty seconds) of arc of latitude and longitude.
- 1:1000, the map sheet will be 15" (fifteen seconds) of arc of latitude and longitude.
- 1:500, the map sheet will be 7.5" (seven and a half seconds) of arc of latitude and longitude.

1.3.2 CIM Parcel (Lot) Numbering

Every parcel of land that has a title, with approved survey (or under sporadic, isolated surveys) or is undergoing registration will be shown on the CIM and given a Unique Parcel Identifier (UPI) ie a unique number that is not repeated within the CIM where that parcel occurs. A Cross Index Database (CrossIndex) will maintain an up to date reference of each parcel of land on any CIM, with respect to all the relevant information held by other participating agencies dealing with that parcel.

2 Agency Records Search

2.1 Background

An objective of the PA-LAMP is the rejuvenation of the land records system to include all information pertaining to all land parcels from the various agencies. This will allow cross checking of information to ensure the parcel hasn't been issued duplicate or fraudulent titles. It will also allow for the access of information and the updating of existing information in the one location by the various agencies when a transaction occurs on a parcel of land, ie in the One Stop Shop (OSS).

The CIM will provide the mechanism through the CrossIndex database for the validation and maintenance of vital land records.

The process will:

- Ensure all land parcels are accounted for;
- Ensure that all existing records from all agencies are included in the process;
- Aid reconstitution of damaged or missing records;
- Identify conflicts or anomalies for future investigation;
- Provide a mechanism for maintenance of the records system.

2.1.1 Urban data Sources

The records of ROD, LRA, DENR, LMB, BIR, and the Assessor’s Office (LGU) will need to be searched.

DATA SOURCES – Urban

Listed below are the major items that are required, a more detailed list can be seen in **Appendix 3** which deals with the database construction and fields.

Data Sources	Survey Plan Copy	Survey Plan No.	TCT Copy	TCT No.	Provisional Title	Owner’s Name	Lot Area	Decree No.	Tax Declaration No./PVPIN	Tax Identification No.
LRA	X	X					X	X		
DENR	X	X					X			
LMB	X	X					X			
ASSESSOR		X		X		X	X		X	
ROD		X	X	X	X	X	X			
OWNER’S COPY		X	X	X	X	X	X		X	
BIR				X		X				X

2.1.2 Rural data Sources

The records of ROD, LRA, DENR, CENRO, DAR and the Assessor’s Office (LGU) will need to be searched.

DATA SOURCES – Rural

Listed below are the major items that are required, a more detailed list can be seen in **Appendix 3** which deals with the database construction and fields.

Data Sources	Survey Plan Copy	Survey Plan No.	TCT Copy	TCT No.	Provisional Title	Owner’s Name	Lot Area
LRA	X	X					X
DENR	X	X					X
ASSESSOR		X					X
ROD		X	X	X	X	X	X
DAR	X	X					
CENRO	X	X		X		X	X
Applicant		X	X	X	X	X	X

2.2 Transaction File Notification to ROD, DENR, LRA BIR, and LGU

Prior to commencement of the records search, all agencies, from where records will be required will be provided with an explanation of the PA-LAMP CIM requirements.

The PA-LAMP Project Manager will provide each agency with a letter and diagram setting out the barangay to be searched.

From the beginning of the records search, each agency will need to maintain a file of all transactions occurring during the search period, so that any changes that occur can be identified and included in the final CIM. This file should be maintained and any further actions on the parcel should be noted so that the CIM and the CrossIndex can be updated within the OSS.

The Project CIM Manager/Supervisor will be required to regularly check that the transaction file is being maintained by all agencies, and to include all new transactions in the CIM work process.

2.3 Records Search Process and CrossIndex Database

PA-LAMP has designed a database that will be suitable for the use in both urban and rural situations. There will be fields in the database that are not required by either location and these fields need not be filled in. Where possible all data from the various agencies needs to be collected, for this database will also be given to the agency concerned for their own use and maintenance of their records, where the agency concerned is still using a paper based system to maintain their records.

See **Appendix 3** for the layout of the CrossIndex Database or the various fields available.

It is essential that the data that is being collated from all the various agency records and entered into the database is verified, ie once all the data is entered for a particular day, or period of time, that data should be printed so that the hard copy can be checked to ensure that the integrity of the data within the database is maintained. Remember that incorrect data will produce incorrect results when reports are made for the various field or office activities. Also incorrect data can make identification of duplicate or fraudulent title difficult, which is one of the main areas that PA-LAMP is looking into in urban areas.

2.3.1 Assessor's Office Tax Map Records

The Tax Maps are to be ordered from the Assessor's Office. After the maps have been retrieved, the CIM Manager/Supervisors' file should be amended to indicate which maps have been retrieved. All maps should then be stored correctly for future use.

2.3.2 Search DENR, LRA Records and CENRO

The search should be on a barangay basis, these should be either scanned or a white print made. The following information should be obtained:

- Subdivision survey plans with Technical Descriptions (azimuth and distance annotation) either as a textual table or on an annotated plan drawing;
- Subdivision survey plans without Technical Descriptions, which may have individual lot description, either as textual table or annotated plan drawing;
- Consolidated plans of complex subdivision;
- Old survey plans from Land Management Bureau (LMB) that are not available from DENR;
- Plans of original surveys of old areas, which may have no other survey (eg Payatas and Piedad estates);
- Application No., Patent No., Contested/uncontested, (CENRO);
- Decree No. (LRA);
- All approved survey plans.

2.3.3 Search of ROD Records

The search of ROD for the Certificate of Title (TCT) can be accessed as follows:

- Tax Maps show the TCT number of the original lot before subdivision;
- TCT's are stored in ROD by the book number and page within the book (not by barangay or district) this is found on the top right-hand corner of the TCT;
- The TCT contains reference to the TCT that it was created from. Where a TCT has been cancelled it will have the number of the TCT it creates endorsed on the back of the TCT;
- Provisional Titles over land with incomplete reconstituted titles;
- TCT show, survey plan number, lot number, owner, area and textual technical description;
- All the above should be available from the BOO records database (urban situations).

Note: See Procedures Manual for Office Validation

2.3.4 Survey Plan Collation (Urban)

It is imperative that all plans that have been retrieved from the various agencies be used where they cancel an older survey. It is suggested that each survey plan be placed and attached to the plan that it superseded.

If this is adhered to then there should be no plans that are missed out when compiling the CIM.

3 Storage of Plans and Records

Copies of survey plans and titles obtained from LRA, DENR, CENRO, LMB, Assessor's Office and ROD need to be stored by barangay in the appropriate storage cabinet and numbered folders.

A separate folder should be maintained for each type of plan or record, and separated for each CIM and barangay being worked on.

Safe and adequate storage should be provided for all records to ensure the records are not lost or damaged.

It is suggested that all plans and maps be stored either vertically or horizontally in plan storage cabinets and not folded or rolled. All survey records and lot data computation sheets collected in the rural situation should be kept in a safe storage unit.

4 Orthophoto Map

An orthophoto map is compiled of rectified aerial photography, ie in displacement, distortion, scale and with this project on the PRS92 reference grid, thus producing a true-scaled image of the ground. Each orthophoto map has the same coverage as a CIM and also numbered as per the CIM numbering system.

The orthophoto maps therefore provide a means to locate the planimetric information on the CIM. The procedure to use the orthophoto maps is explained in the Compilation Procedures section of this manual.

5 Satellite Imagery

6 CIM Survey Control

Survey control may be available in many forms, ie existing traverses connected to PRS92, GPS established stations, or rectified orthophoto maps. All these may be used for control in the constraint and construction of CIM production.

Procedures for survey control use are explained in the **CIM Compilation Procedures Section 7**.

7 CIM Compilation Procedures

7.1 Compilation of a CIM

The CIM is ready to be compiled when the records of the DENR, LRA, LMB, ROD, CENRO, DAR, National Irrigation Authority (NIA), Public Works and Highways (DPWH) and Tax Maps have been searched and copies of plans available. Note not all of these agencies maybe involved, it is dependent on whether the CIM is rural or urban.

Check if the orthophoto map has been completed and available. If available use the orthophoto as the base map for cadastral control.

In the early stages it is unlikely that orthophotos maps will be available. In this case compilation of lot data will depend upon LRA, DENR and LMB subdivision plans, National Irrigation Authority (NIA), Department of Public Works and Highways (DPWH) plans, and any identified cadastral surveys.

Note that all NIA plans for canals ie man made constructed waterways and DPWH plans should be collected for these may also depict changes in the cadastre that are not indicated on the original survey plans. These should be plotted and investigated where they overlap the cadastre that has already been captured.

The CIM Supervisor should direct the cartographer to begin the CIM compilation. The Supervisor will note CIM number, start date and cartographer name in Supervisor's CIM Production Control Register.

It is preferable that only one cartographer work on one CIM.

7.2 CIM Base Preparation.

The CIM map graticule and grid can be produced using AutoCAD or MapInfo if these methods are available.

The map specifications are as follows:

- Coordinates: Philippines Transverse Mercator (PRS 92 reference system);
- See **Appendix 1** for the CIM sheet layout.

7.2.1 Drafting Specification Standard

Production of the CIM under the PA-LAMP will be according to the drafting specification standard set out below:

7.2.2 Drafting Film

The drafting film to be used for the CIM sheet shall be made of durable material being quality drafting film of a type and standard as below:

- type: single matt;
- thickness: 0.03mm.

7.2.3 Minimum Drafting Equipment

The drafting equipment mentioned in the list below is the standard equipment to be used for construction of a CIM. The equipment listed below or of the same quality shall be used.






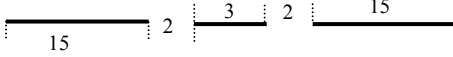
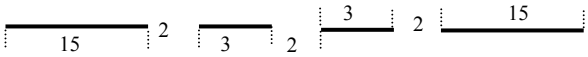
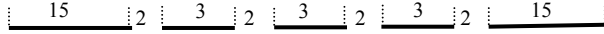
No	Basic Equipment Needed
1.	Technical pencil 0.5 (2H)
2.	Eraser (ink and pencil)
3.	Technical pen 0.2, 0.3 & 0.5
4.	Waterproof ink
5.	Set square 45° & 60°/30°
6.	Scale ruler (1:500, 1:1000, 1:2000 & 1:4000)
7.	Scriber
8.	Leroy lettering set (CL 290, 240, 175, 140, 100, 80 & 60)
9.	Plastic or metal drafting ruler 1 metre
10.	Minimum of 2 Weights (lead encased in leather either pellet or solid)

7.2.4 Standard of Detail

All detail on CIM must be in waterproof ink of a type recommended by the manufacturer of the drafting material. All detail lines, numbers, letters, symbols and decimal points must be legible and not defaced. Erasures must be made by a method that does not damage the surface of the drafting material.

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The following table shows the standard of detail to be assigned for the cadastral maps:

Items	Symbol	Pen Number			Stencil Size
		0.2	0.3	0.5	
Outer Edge of Cadastral Index Map Frame				✓	
Inner Edge of Cadastral Index Map Frame		✓			
Grid Line		✓			
Coordinates Values	1 622 000, 399 000, 14°	✓			
Boundary Line		✓			
Preliminary Land Parcel Number		✓			CL80
Final Land Parcel Number	1		✓		
Name of adjacent Road, River or Lake	Emerald Ave	✓			
Barangay Boundary (mm)				✓	
Municipality/District Boundary (mm)				✓	
Province Boundary (mm)				✓	

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The following table shows the standard of detail to be assigned for the CIM:

The preliminary and final cadastral index maps will also show the information as shown in the following table:

Item	Preliminary Cadastral Index Map	Final Cadastral Index Map
1. Boundary Line	Yes	Yes
2. Original Parcel Number (Survey Plan)	Yes	No
3. Preliminary Land Parcel Number	Yes	No
4. Final Land Parcel Number	Yes	Yes
5. Name of adjacent road, river or lake	Yes	Yes
6. Barangay Boundary	Yes	Yes
7. Municipality/District Boundary	Yes	Yes
8. Province Boundary	Yes	Yes
9. Region Boundary	Yes	Yes
10. Titled	Yes	No
11. Not Titled	Yes	No
12. Land Classification	Yes	No
13. Land Use	Yes	No

Note:

- The preliminary and final CIM, when using a orthophoto map will consist of the orthophoto map and the overlay sheet.

By the use of the software “PA-LAMP CIM Sheet Corners” (see **Appendix 4**) the CIM sheet corners in both Geographic and Grid, plus the CIM sheet number and size will automatically be produced.

A sheet template can be modified in either MapInfo or AutoCAD. A grid in PTM can then be produced. The sheet corner coordinates in both systems, and the CIM sheet number can be added, along with the legend information.

The legend on a Final CIM will contain:

- CIM Map Sheet Number at both top and bottom of the legend box;
- Map Scale;
- Scale Bar;
- North Point;
- Projection;
- Datum;

- Index to Adjoining CIM diagram;
- Barangay boundaries;
- Municipality/District boundaries;
- Regional boundaries;
- Provincial boundaries;
- Certification ie Officers, Signatures and Dates;
- Administrative Areas Diagram (optional).

The Legend for a Preliminary CIM will contain:

- All the above as in the Final CIM and;
- Land Use codes;
- Land Classification codes;
- Preliminary CIM lot numbers (UPI).

Note: These processes may need to be performed using manual drafting if the AutoCAD and/or MapInfo process has not been developed.

The CIM supervisor should carry out Quality Assurance checks on the completed CIM base.

7.2.5 Urban:

In urban areas the base scale used is 1:1000 and 1:500 is used where the area is too densely populated to allow the base scale to depict the lots and their annotations clearly.

- Scale: 1: 1000;
 - Coverage: 15 seconds of arc by 15 seconds of arc.
- or
- Scale: 1: 500;
 - Coverage: 7.5 seconds of arc by 7.5 seconds of arc.

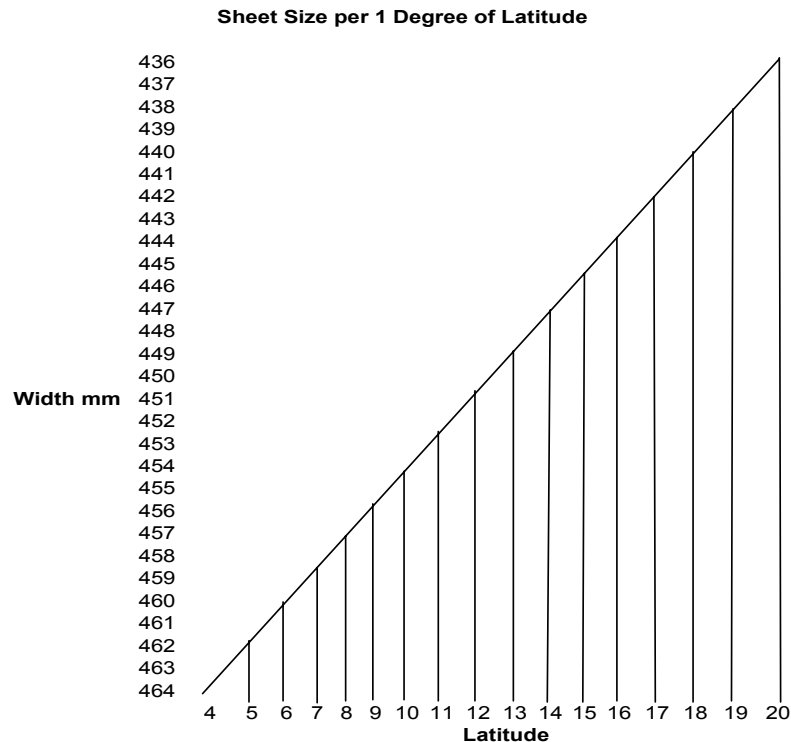
7.2.6 Rural:

In rural areas the base scale used is 1:4000 and the other scales are used only where the area is too densely populated to allow the base scale to depict the lots and their annotations clearly.

- Scale: 1: 4000;
 - Coverage: 1 minute of arc by 1 minute of arc.
- or
- Scale: 1: 2000;
 - Coverage: 30 seconds of arc by x 30 seconds of arc.
- or
- Scale: 1: 1000;
 - Coverage: 15 seconds of arc by 15 seconds of arc in heavily populated areas.

7.2.7 Shape and Size of CIM Sheet.

The CIM sheet including preliminary and final map sheets will be between 676 and 704 mm wide (depending on geographical location) and 581 mm high. The CIM will be divided into grid intervals and this will be dependent on the scale of the CIM. The table below gives a representative idea of latitude verses graticule width. Also see the “PA-LAMP CIM SHEET CORNERS” software which will give correct graticule sizes. The sheet layout can be seen in **Appendix 1**.



- 1:4000 CIM will have a grid interval of 500 metres, ie 12.5 cm at map scale;
- 1:2000 CIM will have a grid interval of 200 metres ie 10cm at map scale;
- 1:1000 CIM will have a grid interval of 100 metres ie 10cm at map scale;
- 1:500 CIM will have a grid interval of 50 metres ie 10cm at map scale;
- The grid starting position will be determined by PTM coordinates of the bottom left corner of the graticule. For instance if the coordinates of the graticule are North 1622133.713 and East 399465.524 then at the various scale the first grid in both North and East are:
 - 1:4000, 366.287m towards the top of the CIM for North and 34.476m to the right for East;
 - 1:2000, 66.287m towards the top of the CIM for North and 134.476m to the right for East;
 - 1:1000, 66.287m towards the top of the CIM for North and 34.476m to the right for East;

- 1:500, 16.287m towards the top of the CIM for North and 34.476m to the right for East;

The Latitude and Longitude will only appear on the graticule. Grid coordinates will not appear on the graticule.

7.3 Survey Control

Control is the most important requirement in the production of CIM. Without good control it is impossible to place the CIM on its absolute position upon the earth.

Control is required to establish position of all data that is held within any CIM, this can be done by a number of methods and is crucial in all aspects of CIM production from manual methods to the various automated methods.

7.3.1 Existing Surveys

Where existing surveys traverses appear on PRS92, these should be plotted in the CIM and any connections made to cadastral corners also plotted.

From these connections the survey plans can then be oriented and scaled to fit the control as plotted. See **Appendix 2 Section XXX**

7.3.2 GPS Surveys

In certain instances GPS maybe used to obtain control for the CIM orientation and population. In these circumstances identified cadastral corners are selected and position captured by GPS. These will be used to orientate and scale individual subdivisions. See **Appendix 2 Section xxxx**.

7.4 CIM Population

There are many ways in which a CIM can be populated. The most expedient way would be by Orthophoto map (if available) or by automation. For automation, this would be done either in MapInfo or AutoCAD which needs to be available. The process of population also varies between urban and rural situations, these will be addressed separately, and also the various means of automated population in the various Appendices.

No matter what method is chosen, the results will not be excellent if there is no control available and this has been the case in the initial stages of urban studies such as Quezon City.

7.4.1 Manual Drafting

Hand or manual drafting is the most basic way of the producing a CIM. In most instances this is how the first CIM will be produced, and unless some form of automation is introduced or orthophoto maps, then the manual method will be the

main process of CIM production. **Appendix 2** shows the procedural steps in producing CIM by this method.

7.4.2 Digitising

If there is control, AutoCAD and a digitising table available, or MapInfo, then a quick method of CIM production is available.

Note that AutoCAD uses a plane grid system while MapInfo can either use a plane or spherical system. A requirement is that all CIM be on the PRS92 ie PTM and if a seamless map is required then it is better to use a spherical method than a plane method. This has other advantages and that is it can be used as the base for a simple GIS.

The steps that need following are:

- Plot the external boundaries of the first major subdivisions using the technical descriptions found on the plans, (usually LRA) into AutoCAD or MapInfo using the control supplied. If BLLM connections are used, use only one connection and then plot the other boundaries from their common points. This will alleviate any overlaps or gaps that are produced by the calculated connections;
- Digitise the minor subdivisions or surveyed parcels using the external plotted boundaries from above as control, ie AutoCAD only, this is done by using the calibration method;
- **Methodology to be included later for calibration;**
- If there are scanned copies of the plans then “heads up” digitising (ie digitising within the computer environment using raster images) within MapInfo can be done, once again using the plotted surround boundary as control;
- If orthophoto maps are available, the digital image can be set as an additional layer in MapInfo and heads up digitising can be done.

7.4.3 Scanning, Vectorisation and Rubber Sheeting ie (transformation)

If the scanned image and the software for vectorisation are available, then the raster or vector image can be rubber sheeted by least square adjustment to the control available. Note if the raster is used, then it will need to be vectorised prior to adding it to the MapInfo or AutoCAD file.

7.5 Edge Matching with Adjoining Map

An edge match is required with adjoining sheets. The match is achieved using the graticule to align the CIM base and then tracing through in pencil the boundary of the adjoining lots extending beyond the sheet edge. Do not close the polygon as this may cause confusion in assigning UPI to the CIM.

A quality control check on the edge matching should be carried out prior to inking of the CIM.

If the adjoining map is being compiled simultaneously, work in cooperation with the other person to achieve acceptable edge matching.

Note: If the data is being collated within a computer environment the above is not required due to the software enabling a seamless map to be made.

8 CIM Parcel Numbering

8.1 Adding the CIM Lot Number to the Map

Due to requests from both prototypes to maintain UPI within existing surveys and blocks, the following two sections have been added so that some uniformity will still appear within the CIM.

Note: the last or highest UPI can be obtained from the database by using a simple query, but if required the last number used could be indicated by pencil in the bottom right hand corner of the CIM.

8.1.1 Urban

Lots will be numbered starting from 1 consecutively from the top left of the CIM to the right and then in the reverse direction (ie a Z pattern). Lot numbering will not be duplicated within any one CIM. See **Appendix 5**

8.1.2 Rural

Lots will be numbered starting from 1 consecutively from the top left of the CIM to the right and then in the reverse direction (ie a Z pattern) where:

- Lots are within an existing survey plans;
- Lots are within a new survey plan.

See **Appendix 5**

8.1.3 Rules for assigning Unique Parcel Identifiers (UPI) within a CIM

- Each lot is annotated only once;
- Each CIM starts with a new CIM Lot Number 1;
- Each lot is not numbered on more than one CIM, ie if a lot crosses the graticule into more than one CIM sheets place the UPI on the larger portion of the lot in only ONE of the CIM sheets;
- Parcels are numbered across the entire CIM. Do not stop at barangay or other administrative boundaries;
- During CIM updating, any lot that is altered by either subdivision or consolidation will have the originally assigned UPI retired, (not deleted) and new UPI assigned following on from last UPI assigned on that CIM. The previous last number assigned to the CIM can be determined from the CrossIndex. The original UPI should not be

removed from the database but will remain for historical purposes for a search for previous transactions.

8.2 Adding the CIM Lot Number (UPI) to the CrossIndex Database

Once the CIM lot numbers (UPI) have been added to the CIM, they will need to be added to the CrossIndex database so that all the records pertaining to that lot are cross referenced.

In urban situations, use the survey plan, block and lot number as the reference to find the corresponding record in the CrossIndex database, add the CIM number and CIM lot number ie UPI to the database.

In rural situations, use the survey plan (cadastral map) and parcel number as the reference to find the corresponding record in the CrossIndex database, add the CIM number and CIM lot number ie UPI to the database.

Any parcels that cannot be found in the CrossIndex database should be flagged for further office investigation or field checks. This is done by the software by adding to a table for checking ie one that indicates what is required to be followed up to ensure that the database and all records are referenced and verified.

A check should be made in the database by running the report “Duplicate Titles” (this should be automated and done in the background on every piece of data entered). A search will be done in the CrossIndex database for any lots that have more than one title; or more than one owner, these should be flagged for further investigation.

Any parcels that occur in the CrossIndex more than once such as repeated TCT’s and survey plan lot numbers should be marked for further office investigation or field checks. This may be due to duplicate entries or incorrect data having been entered.

See **Appendix 5 – CIM Numbering**.

9 Transactions Occurring During CIM Compilation

At the commencement of the searching process, copies of the barangay boundaries should have been given to the DENR, LRA ROD, NIA and DPWH, with a request that copies of all new survey plans and titles that are approved flagged and copies forwarded. This will enable the CIM to be updated, and include all new transactions before handing the CIM over to the OSS.

10 Quality Assurance of CIM

Checks should be undertaken to ensure the completeness, reliability and quality of the CIM. These checks should be on a regular daily, weekly and monthly basis by a supervising or experienced operator. Checks could include:

- Checks of control used, reference plans and indexes used;
- Plot checks for accuracy over parts of the CIM;
- Completeness and accuracy of lot numbering;

- Quality of drawing and lettering;
- Completion of edge joins, legends and CIM numbering;
- Completeness and accuracy of searching;
- Use of AutoCAD files and digital outputs.

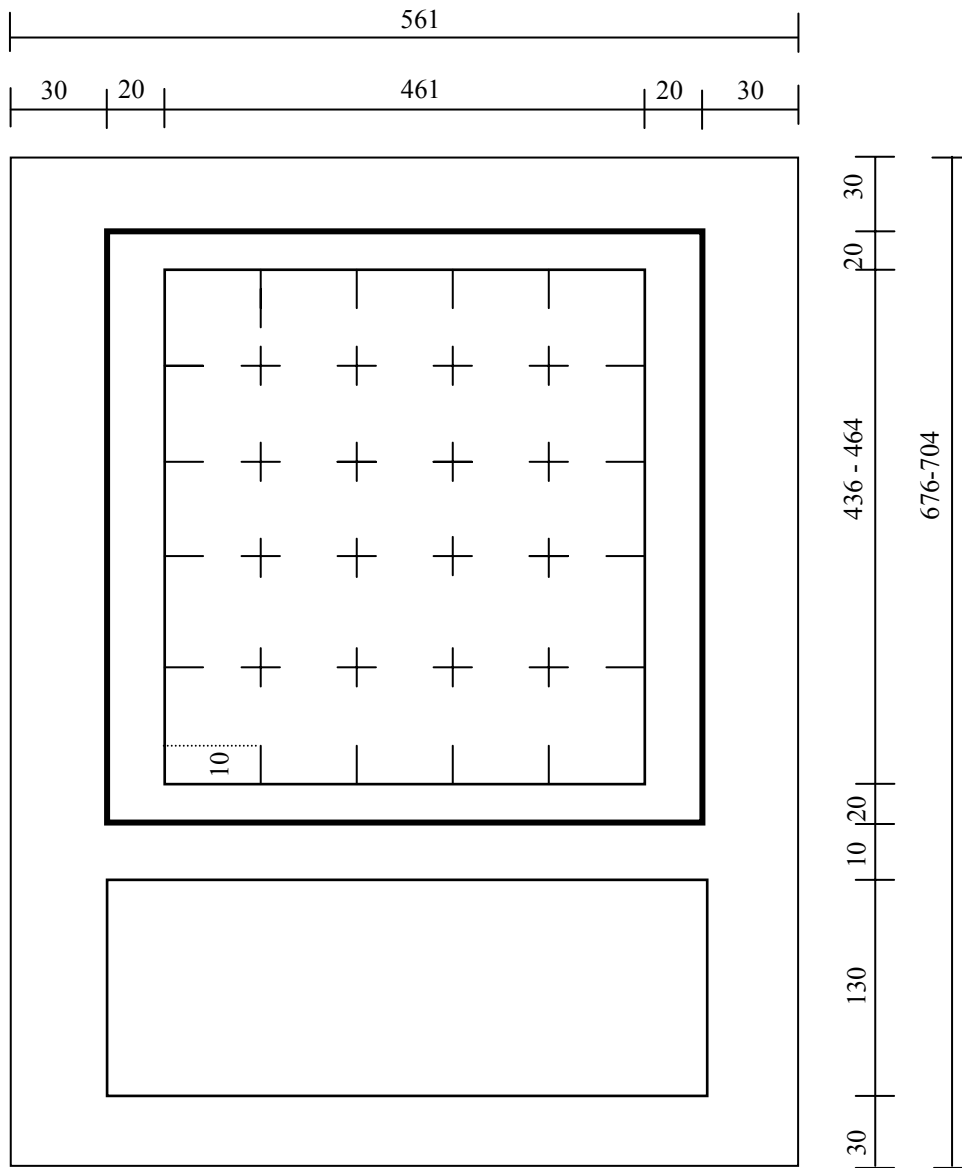
11 CIM Production Control

The Manager and Supervising Cartographer will be responsible for managing the production flow process. This will include:

- Planning the CIM workflow programs consistent with resources, budgets and required output plans;
- Planning, reviewing and requesting additional control;
- Ordering, logging receipt and storage of orthophoto maps;
- Assigning staff to record searching in a timely manner;
- Monitoring records collection rates and quality assurance;
- Assigning staff to CIM compilation so that the CIM can be completed in a timely manner;
- Monitoring compilation rates and assuring quality;
- Planning, coordinating and implementing the hand over of the CIM into the OSS and or the office and field validation (urban).

Appendix 1 Dimensions of Cadastral Index Map Sheet

Dimensions are in millimetres



Appendix 2 Procedure Manual for Urban and Rural CIM Production (Manual Drafting)

Appendix 3 Database Procedures Manual

Appendix 4 PA-LAMP CIM Sheet Corners

Sheet Corner Calculations

Sheet Corner Data

Latitude Degrees: 12 Longitude Degrees: 124
Latitude Minutes: 01 Longitude Minutes: 40

1:2000 1:1000 1:500
1 1 0

Enter Data

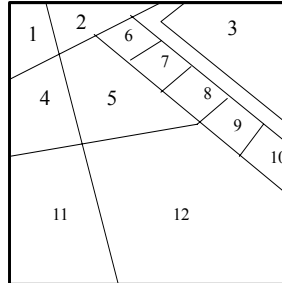
Sheet Layout

E 699496.357 899950.901 E
1333290.171 N 12 02 00.0 N 1333296.248
462 mm 124 40 00.0 CIM No 12012440110 124 40 15.0
1332828.425 N 12 01 45.0 N 1332834.500
E 899502.525 455 mm E 899957.077 E

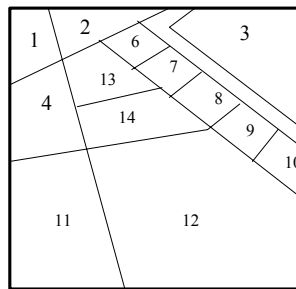
Exit

Appendix 5 CIM Numbering

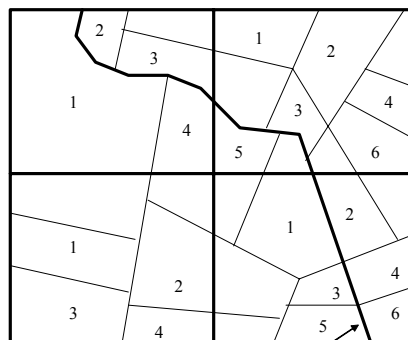
CIM Lot Numbering Convention



CIM Lot Numbering Convention after Subdivision



CIM Numbering Convention across CIM edges



Barangay or Municipal
Boundary