



# Learning Guide 3

Unit of Competency : Prepare Cadastral Index Maps

Module-2 Title : Structuring and Constructing  
CIM Using Hand-drawn Process

## LO 2: Structure and construct CIM using hand-drawn process

Program:  
Cadastral Index Mapping

**Report B60**

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<b>Instruction Sheet</b>	<b>Learning Guide 3</b>
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### Introduction

This learning guide is developed to provide you the necessary information regarding the following topics –

- Understanding Hand-drawn Process
- Lay-outing Techniques and Procedures including Plotting and Tracing
- Cross – Index Matrix

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- lay out of CIM base form in accordance to CIM specification and cartographic rules and principles
- trace accurately and plot cadastral information in CIM sheet in accordance to standards
- prepare map/parcel in accordance to common reference system PRS 92
- label parcel and its physical features in accordance to standards

### Learning Activities

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheet”.
3. Accomplish the “Assignment Sheet” in page 5.
4. Submit your work to your trainer/facilitator for evaluation.
5. If you earned a satisfactory evaluation proceed to Learning Guide 4. However, if your rating is unsatisfactory, see your trainer/facilitator for further instructions or go back to Learning Activity #2.
6. Submit your accomplished Assignment Sheet. This will form part of your training portfolio.
7. Read the “Operation Sheets 1-2” and try to understand the procedures discussed.
8. Practice the steps or procedures. Go to your trainer/facilitator if you need clarification, you want answers to your questions or you need assistance in understanding a particular step or procedure.
9. Do the “LAP Test” in page 11 (if you are ready). Your output will be evaluated either satisfactory or unsatisfactory. If unsatisfactory, you shall be advised to do additional work. But if satisfactory you can proceed to Learning Guide 4.

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<b>Information Sheet</b>	<b>Understanding the Hand-drawn Process</b>
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There are three ways of preparing the Cadastral Index Map or CIM. These are the manual drafting, electronic or digital-based (GIS process) and by orthophoto process.

The hand-drawn process is considered the manual drafting of the CIM using the basic drafting equipment such as –

- technical pencil / pen
- eraser and eraser shield
- waterproof ink
- set of triangles
- triangular scale ruler
- scribe
- Leroy lettering set
- Plastic or metal drafting ruler

And involves the following process / activities –

Activity 1: Gathering data and information requirements



Activity 2: Store and organize data electronically

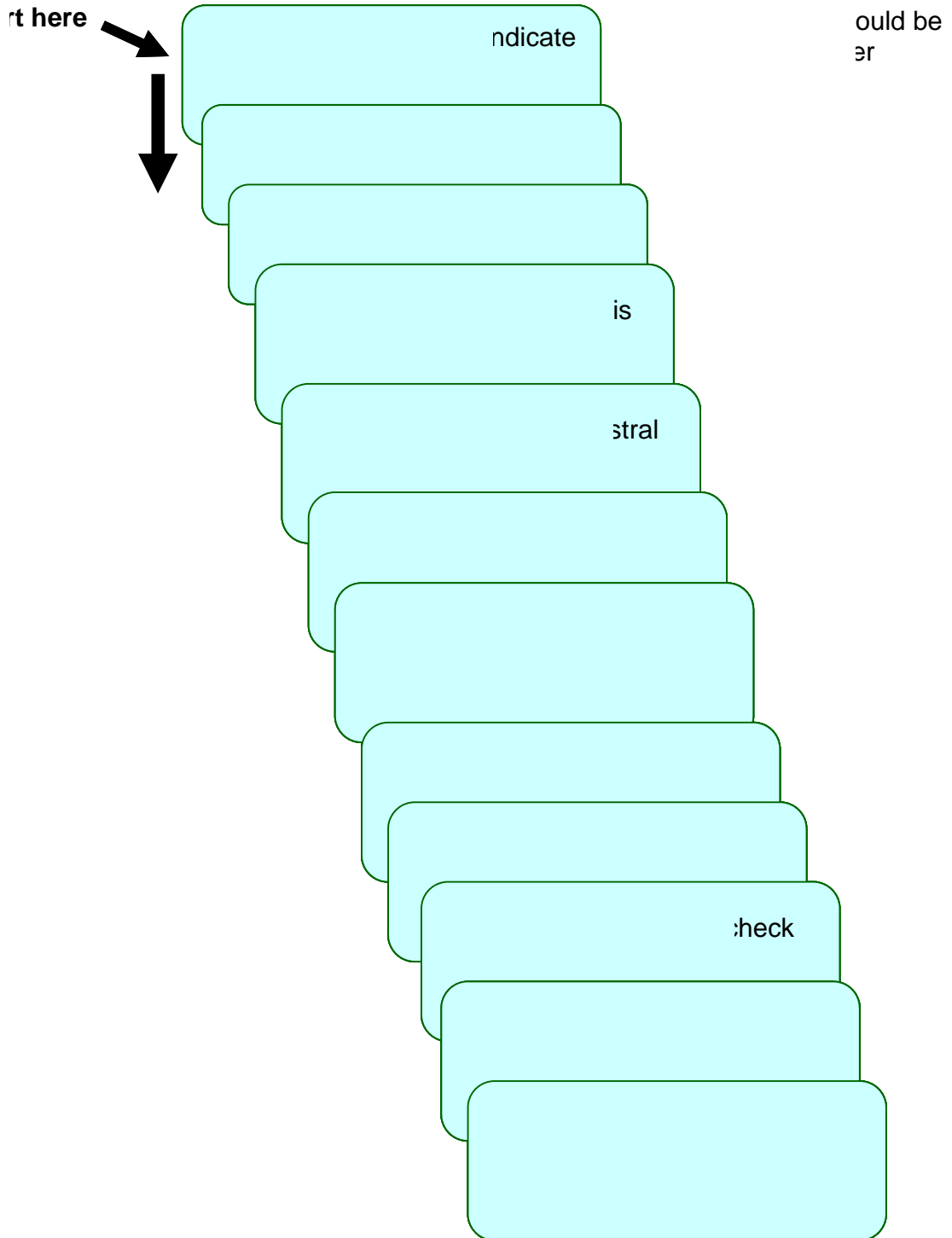


Activity 3: Preparing CIM base and sheet

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### Activity 4: Labeling the CIM CIM Development by Hand-drawn Process



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<b>Assignment Sheet</b>	<b>Written Test</b>
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**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Direction:** Discuss and illustrate the hand-drawn process of constructing a CIM.

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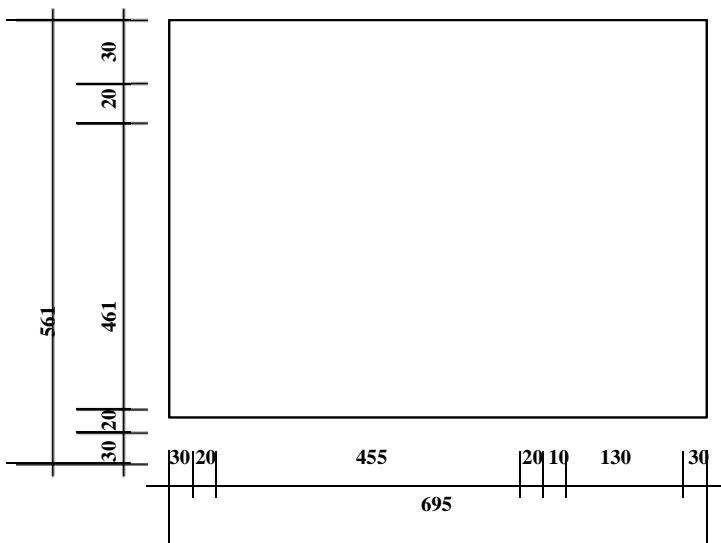
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<b>Operation Sheet</b>	<b>Lay-outing Techniques and Procedures including Plotting and Tracing</b>
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**Step 1- Prepare of CIM base layout in drafting film**

- ➔ Prepare base sheet in accordance to standard specifications. Draw graticule at scale.



- ➔ Check PTM coordinates and adjust PRS 92 if survey is still in local coordinates.

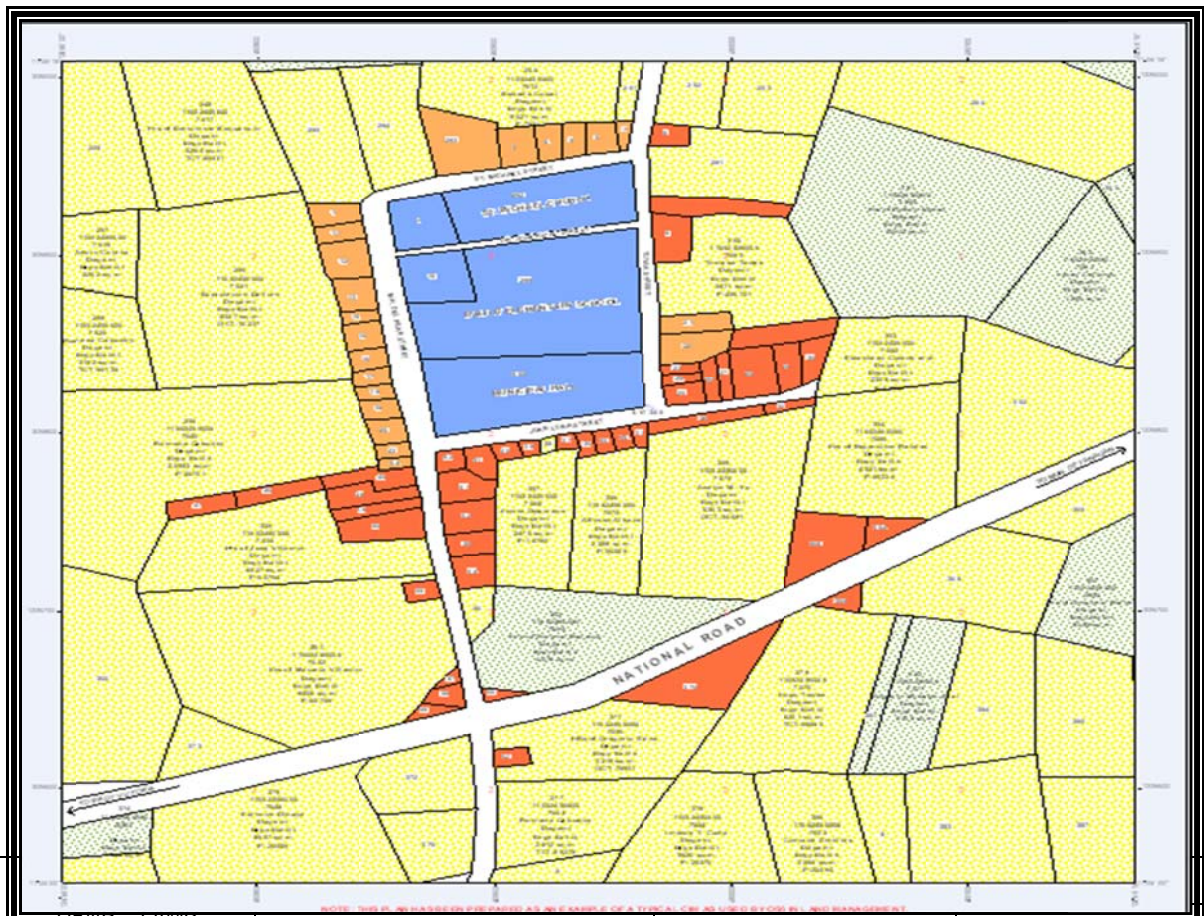
**Adjustment to PRS 92 Coordinates**

- Mark/Indicate the LYT control points equated to established BLLM, BBM and MBM to non-adjusted Cad maps.
- Plot LYT control points on the CIM using adjusted coordinate to common reference system PRS 92.
- Overlay the transparent CIM onto the unadjusted cadastral map to best fit all the controls.
- If control fits the commence tracing the parcel based on the adjusted CIM control points.

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## Step 2 - Trace parcels and allowable survey feature

- Plot or trace the parcel including all information of the cadastral map (i.e. parcel boundaries, watercourse boundaries, road network, ocean or sea boundaries including man-made canals/irrigation)
- Where cadastral maps are drawn to a scale of 1:4000 and coordinates are in PRS 92 – trace directly the parcels. If not, then values must be transformed
- Only registered easements and right of ways will be shown in the CIM. This includes all foreshore and river easements
- Parcel must be traced across the CIM to occupy the whole space regardless of the barangays' configurations and political boundaries
- After plotting in the cadastral index map all the parcels and other features, label all the figures with its corresponding identity
- Add lot and block numbers and assign UPI consecutively
- Update the cross – index database



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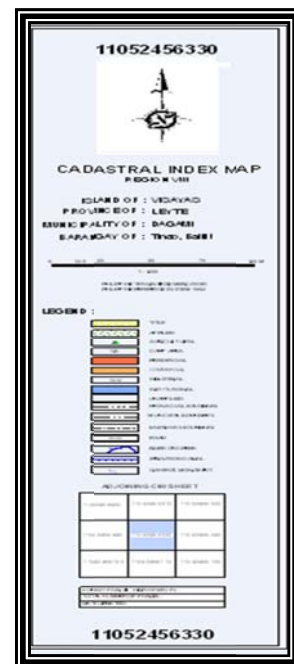
### Step 3 - Edge match with adjoining map

- The match is achieved using the graticule to align the CIM base and then tracing through in pencil the boundary of the adjoining lot extending beyond the sheet edge.
- Do not close the polygon as this may cause confusion in assigning PI 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.

### Step 4 - Put on the legend information

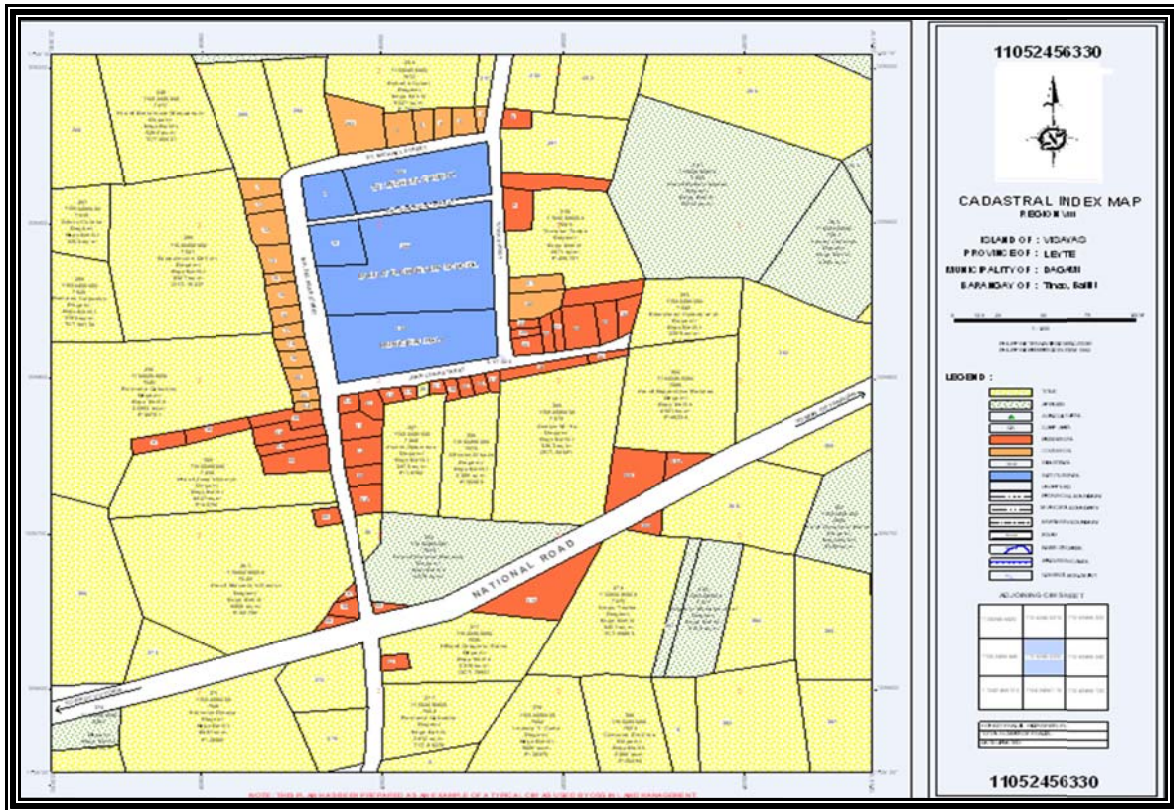
CIM Sheet Information should contain

- 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 boundary
- Regional boundaries
- Provincial boundaries

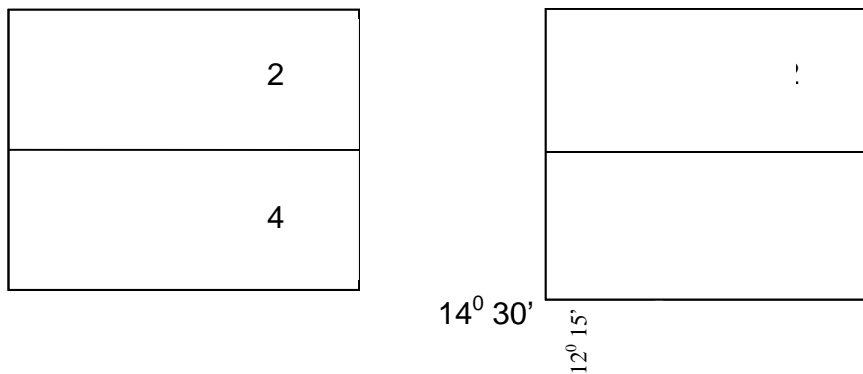


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**Step 5 - Indicate the grid coordinates and the geographic position**



In this example, the bottom left corner of the 1:4000 maps sheet is defined by Latitude  $14^{\circ} 30'$  and Longitude of  $121^{\circ} 15'$

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### Step 6 - Check for Quality Assurance

Checking should be done at every particular achievements have been reached during the production of CIM.

At the completion of the CIM production a blue/white print copy is required. Any information which is found in error will be highlighted in color. Every stage of CIM production is highlighted by different colors.

The items to be checked are –

- Completeness and accuracy of searching
- Grid, legend, graticule and CIM number are correct
- Control, reference plans and indexes used are correct
- All line works including tracing of the cadastral and other features
- Completeness and accuracy of lot numbering
- Quality of drawing and lettering
- Sheet edge joint match the adjacent CIM

### Step 7 - Index CIM and Cross Check

*In CIM Cross Index preparation the following should be observed*

- Prepare a CIM Index Form with the size equal to the CIM Sheet Form. Indicate on the top portion the parcel information ((i.e. PI, lot number, name of claimants, location of the lot, its area, status whether titled or not and remarks) within a CIM index sheet.
- Tabulate on the first column the PI numerically starting from the lowest number.
- Tabulate the corresponding information pertaining to that particular PI.
- Cross check with database for quality assurance

*The following should be employed to cross check against the database:*

- Use the survey plan or cadastral map and the lot number as reference to find the corresponding record in the cross index database.
- Any parcel that cannot be found in the cross-index database should be flagged for further investigation or field check.
- Check should be made in the database by running a report which states the findings on the duplication of records or missing data.

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### Step 8 - Adding the CIM Lot Number (PI) to the cross-index database

- Once the CIM lot numbers (PI) have been added to the CIM, they will need to be added to the cross index database so that all the records pertaining to that lot are cross referenced.
- Use the survey plan (cadastral map) and parcel number as the reference to find the corresponding records in the cross index database, add the CIM number and CIM lot number to the database
- Any parcel that cannot be found in the cross-index database should be flagged for further office investigation or field check.

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<b>LAP Test</b>	<b>Practical Demonstration</b>
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**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Time started:** \_\_\_\_\_ **Time finished:** \_\_\_\_\_

**Instructions:** Given a set of drafting materials, tools and land records and documents, you are required to perform the following tasks within 1 hour.

1. Structure and construct CIM
2. Plot or trace parcel on the CIM
3. Assign parcel identifier

Submit your output to your trainor/facilitator for evaluation and wait for further instructions.

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