Larbi Ben M' hidi University – Oum El Bouaghi-
Department of Urban Technics Management
Module: WORKSHOP I
1st year license

LESSON 02:

TECHNICAL DRAWING

PROFESSOR: MELOUAH. L

II. Technical drawing: is **the common language of those working in technology**; engineers, architects, designers, technicians and specialized workers use it to communicate with each other.

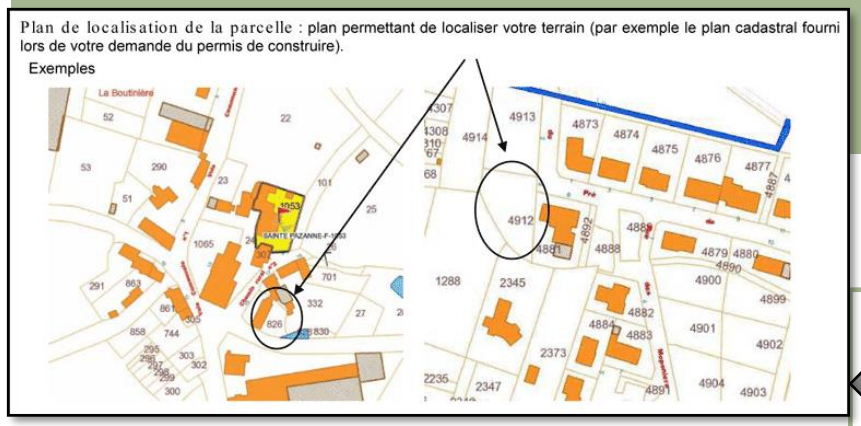
In a technical drawing:

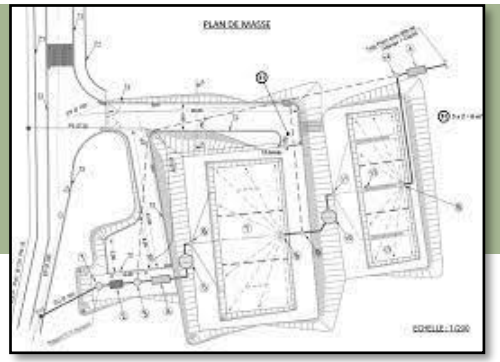
- Any layout must be simple, complete, clear and precise.
- Easy to interpret, contains maximum information with minimum signs
- Respects standards and symbols and quality of lines.

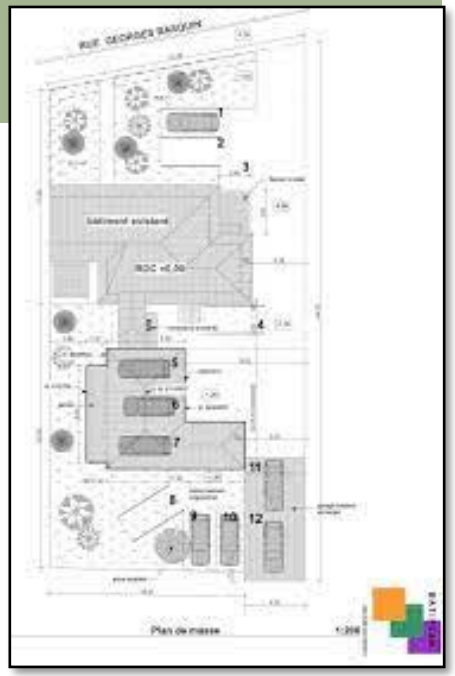
There are different types of technical drawings:

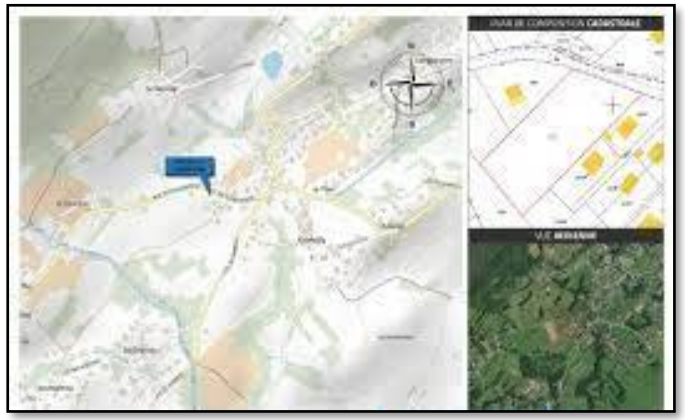
- Site plan (plan de situation-مخطط الموقع) : the land & its environment
- Master plan(plan de masse-مخطط الكتلة : represent the project as a whole. View from above integrating the boundaries of the land, the different access points and possibly neighboring buildings
- Level plan(s) (plan(s) des niveau(x)-مخططات الطوابق أو المستويات) : top view which represents the different spaces and limits of a floor.
- Elevation or facade plan (façade- الواجهة) : representation of a facade, the exterior appearance of a house, building, etc.
- Section plan (les coupes-المقطع) : vertical plane that cuts the building for interior details.
- Perspective drawing (la perspective-المنظور) , 3-dimensional drawing.

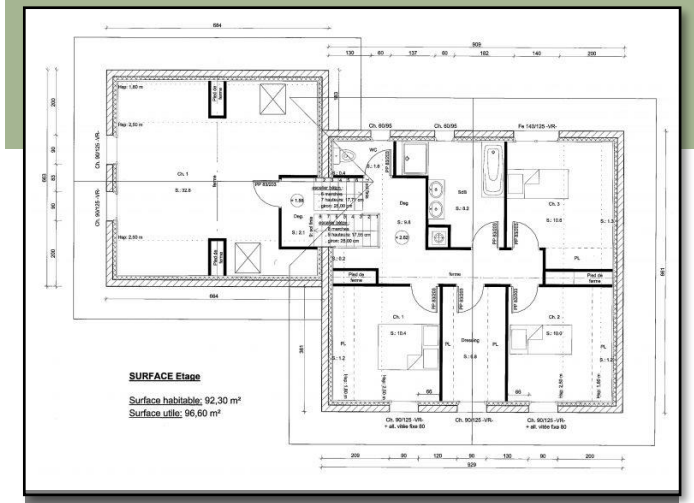
SITE PLAN VS MASTER PLAN



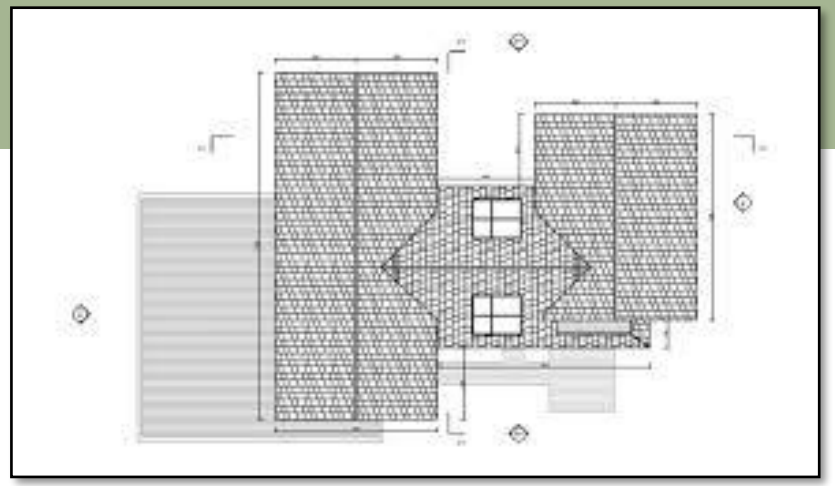






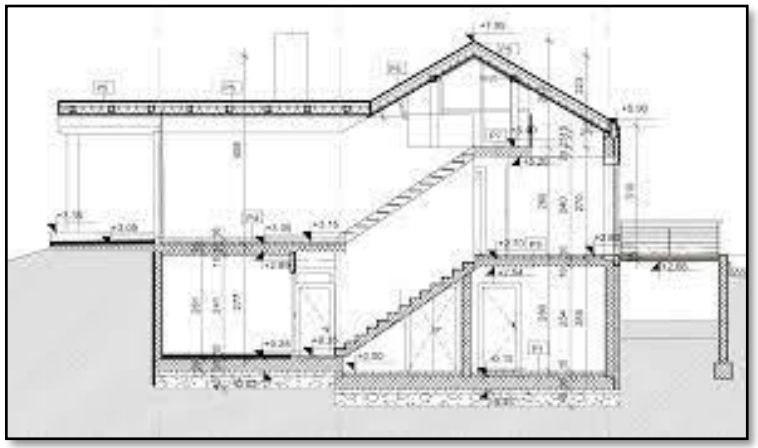


a- example of a level plan (floor plan)



a- example of a level plan (roof plan)

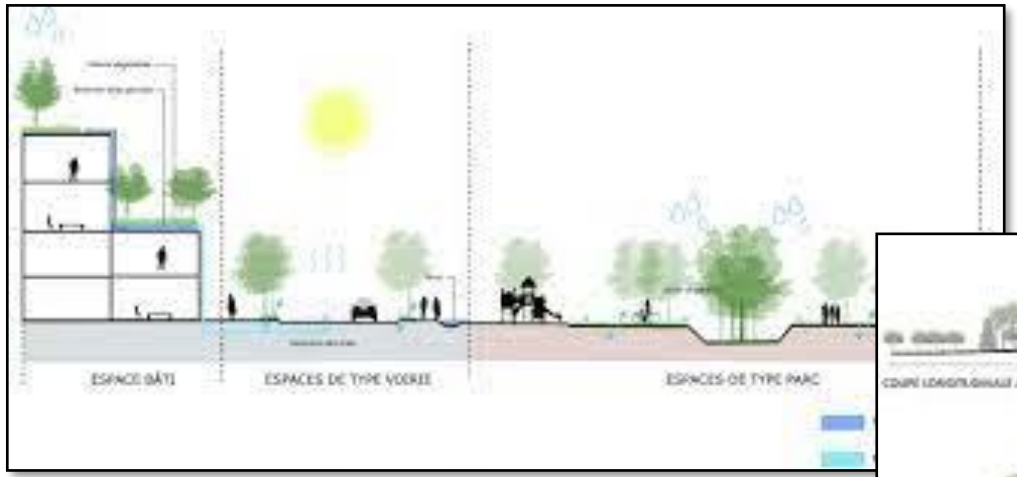
b- example of a facade/elevation



c- example of a section plan

d- example of a 3D representation

e- example of a urban facade/elevation



f- example of a urban section plan

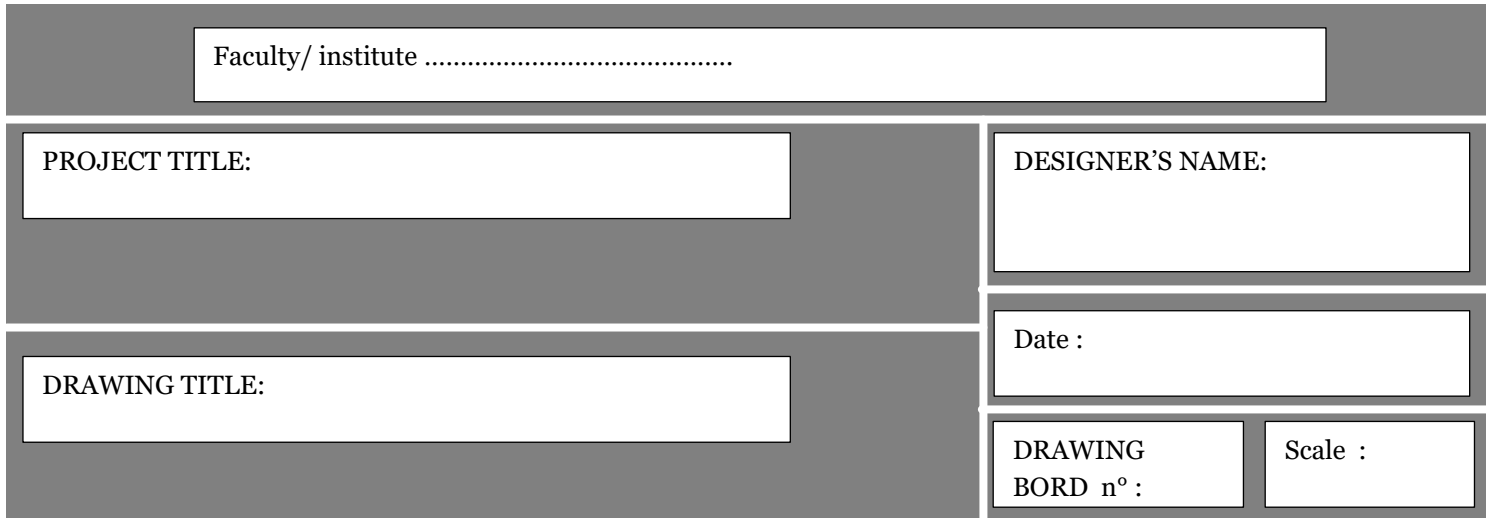
g- Examples of a Urban planning

- "STANDARDIZATION OF TECHNICAL DRAWING: Technical drawing is standardized, enabling anyone with technical knowledge to be able to read the drawing. In the following, we will explore the fundamental rules of technical drawing:

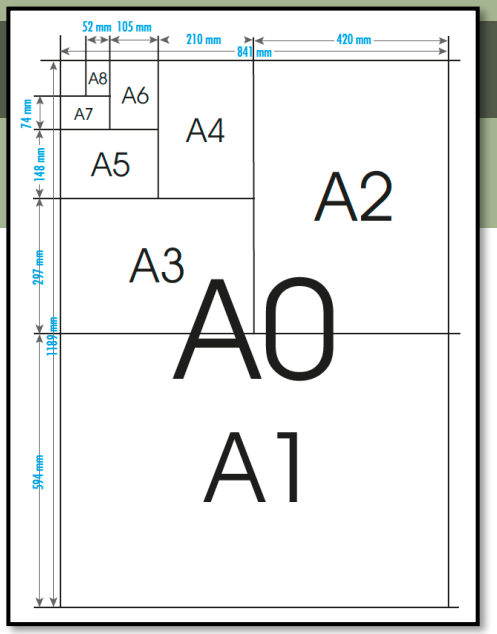
1. Title Block (le cartouche- البلوك العنواني)
2. Paper sizes and Folding (Dimensions du papier et le pliage- أبعاد الورق وكيفية الطي)
3. Lines (les traits- الخطوط)
4. Scale (l'échelle-المقياس)
5. standardized writing (écriture normalisée- الكتابة المقننة
6. Views (les vues-النظرات)
7. Drawing Layout (la mise en plage- تخطبط الرسم)
8. Nomenclature (nomenclature- التسمية)

I- THE TITLE BLOCK

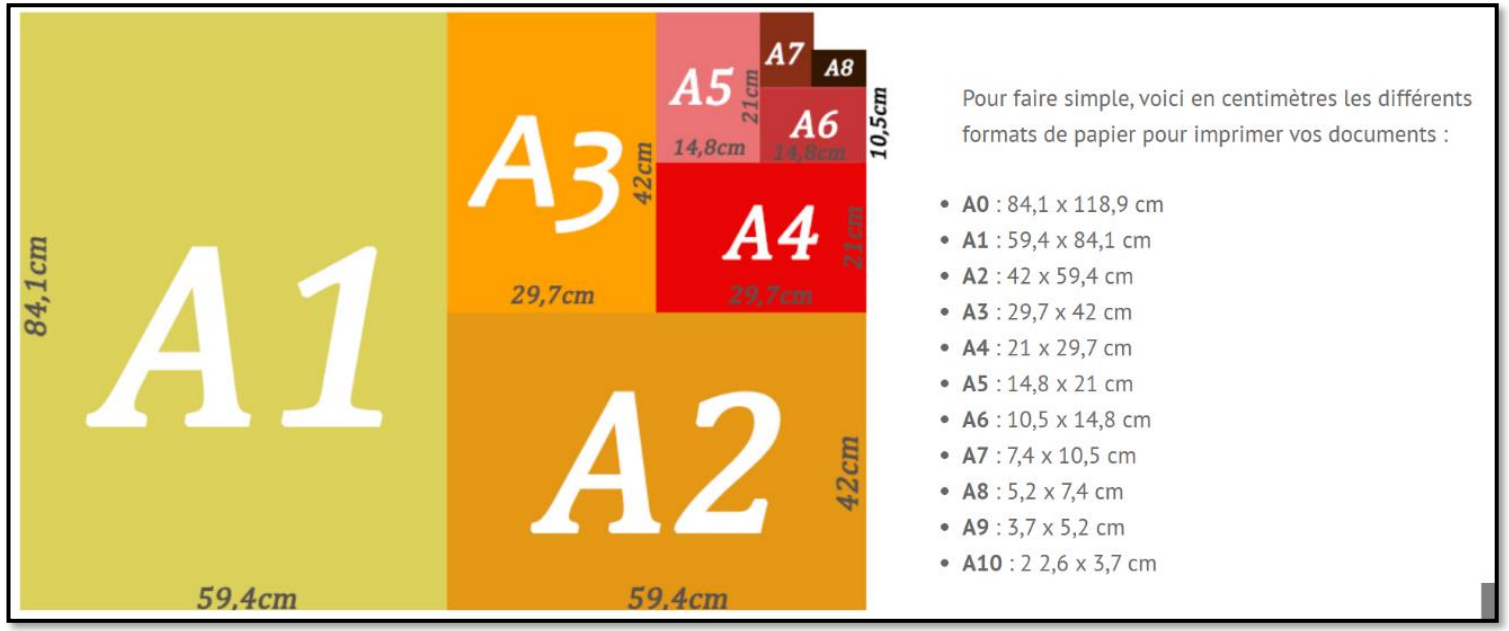
"THE TITLE BLOCK:
It is considered the drawing's identification card. The title block contains all the necessary information: the main scale, drawing title, identification elements (document reference, drafter's name, date, modification date, etc.).
The dimensions of the title block vary depending on the paper size.
Example of a title block for A4 format."



II-PAPER SIZE AND FOLDING

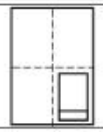


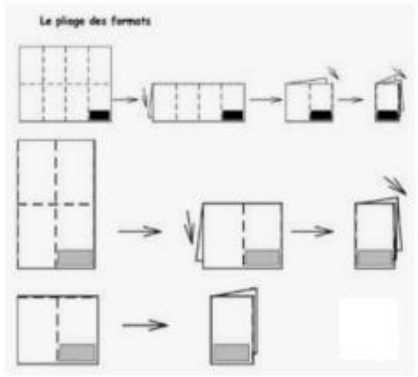
- **The quality of the paper:** which depends on the grammage (weight expressed in g/m2) between 80g/m2-200g/m2. The choice of weight depends on the drawing technique used.
- **The type of paper:** transparent (tracing, etc.), opaque (satin, smooth, granulated, etc.)
- **The format:** when choosing the format of the paper, you must take into account not only the proportions of the object to be drawn but also the handling of the paper must be easy



II-PAPER SIZE AND FOLDING

PLIAGE DES FORMATS

Formats	Repères de pliage	1er temps	2ème temps	3ème temps
A0 1189 x 841				
A1 841 x 594				
A2 594 x 420				
A3 420 x 297				



III- LINES

In technical drawing, there are several types of lines to enhance the understanding and readability of the drawing:

- Types of Lines:

a. **Based on line thickness:**

+ THIK (Fort): between 0.6-0.8 mm

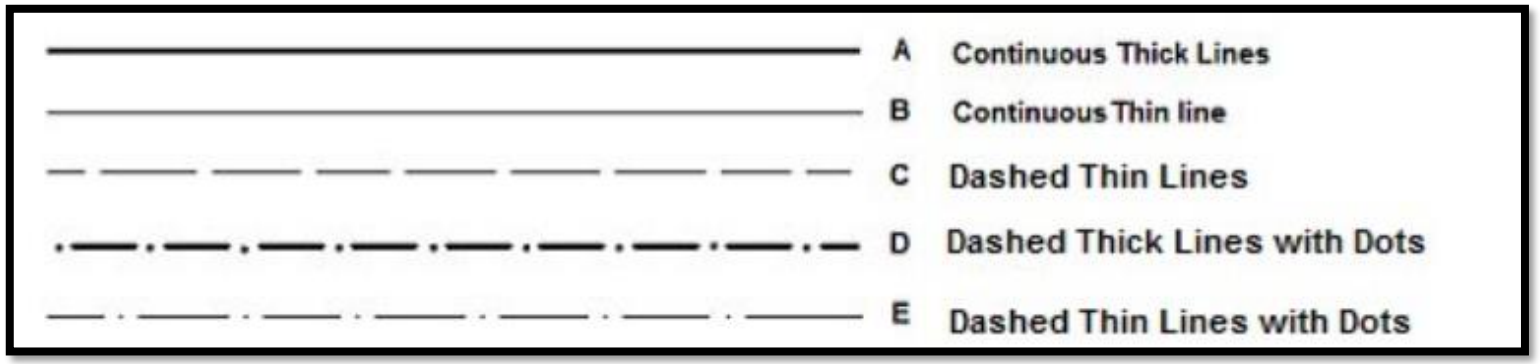
+ MEDIUM: (Moyen): from 0.3 to 0.4 mm

+ THIN (Fin) : from 0.1 to 0.2 mm

III- LINES

b. Based on line style:

- Solid Line (trait continu) :
- Dashed Line (trait discontinu) :
- Mixed Line or dash-dot line (trait mixte) :



III- LINES

Line	*Description*	*General Applications*
A ———	Continuous thick	A1 Visible outlines
B ———	Continuous thin (straight or curved)	B1 Imaginary lines of intersection B2 Dimension lines B3 Projection lines B4 Leader lines B5 Hatching lines B6 Outlines of revolved sections in place B7 Short centre lines
E — — — — — — —	Dashed thick	E1 Hidden outlines
G ——— — ——— — ———	Chain thin	G1 Centre lines G2 Lines of symmetry G3 Trajectories

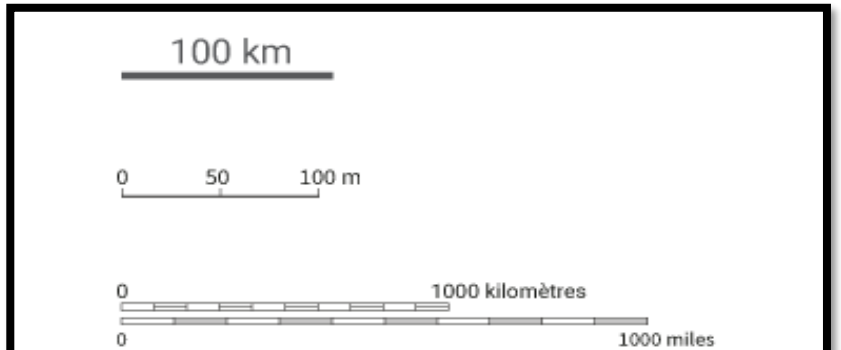
The use of lines

IV- THE SCALE

THE SCALE:

Architectural drawing cannot represent the reality or virtuality of a construction in its real dimensions. It requires making appropriate reductions to express an architecture, a space, as faithfully as possible.

Scale is the relationship that exists between the real dimensions (on the ground) and the dimensions of the drawing (on paper).



forms of representation of a scale

- numerical scale
  - A numerical scale, is a scale represented as a simple **ratio or fraction**. It's expressed as a series of numbers, such as 1:10,000, which means that 1 unit on the map or drawing represents 10,000 units in the real world.
- graphic scale" or "scale bar."
  - is a visual representation of the scale on a map or drawing. It is a line or bar divided into segments or labeled with distances.

1:25 000

1/50 000

1/1 000 000

IV- THE SCALE

- Scale = (drawn dimensions)/(real dimensions)
- Reduction Scales (X : 1): 1:2, 1:5, 1:10
- True Size Scale (1:1)
- Enlargement Scales (1:X): 2:1, 5:1, 10:1

- Applications:
- 1. How long will a 3m wall measure in a plan at a scale of 1/50?
- 300 cm / 50 = 6 cm

- 2. I measure 5 cm on a plan with a scale of 1/20. How much should I draw on my plan at a scale of 1/50?
- (5 cm * 50) / 20 = 12.5 cm

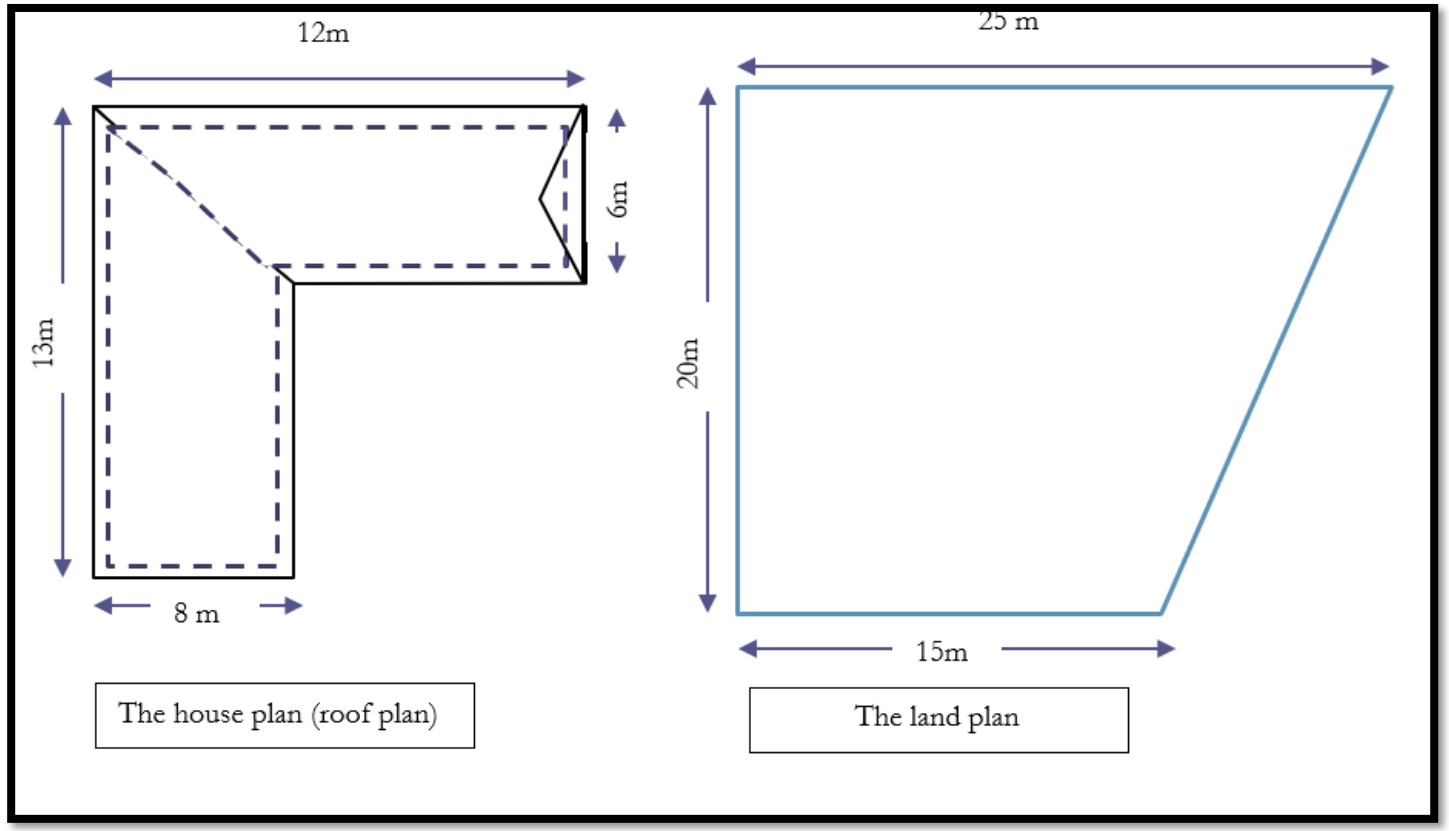
IV- THE SCALE

3. On an A4 sheet in portrait orientation (vertical), you are asked to:

- Place the house plan (attached) on the land plan (attached) at a scale of 1/500.

- Draw the land and the house on it at a scale of 1/200.

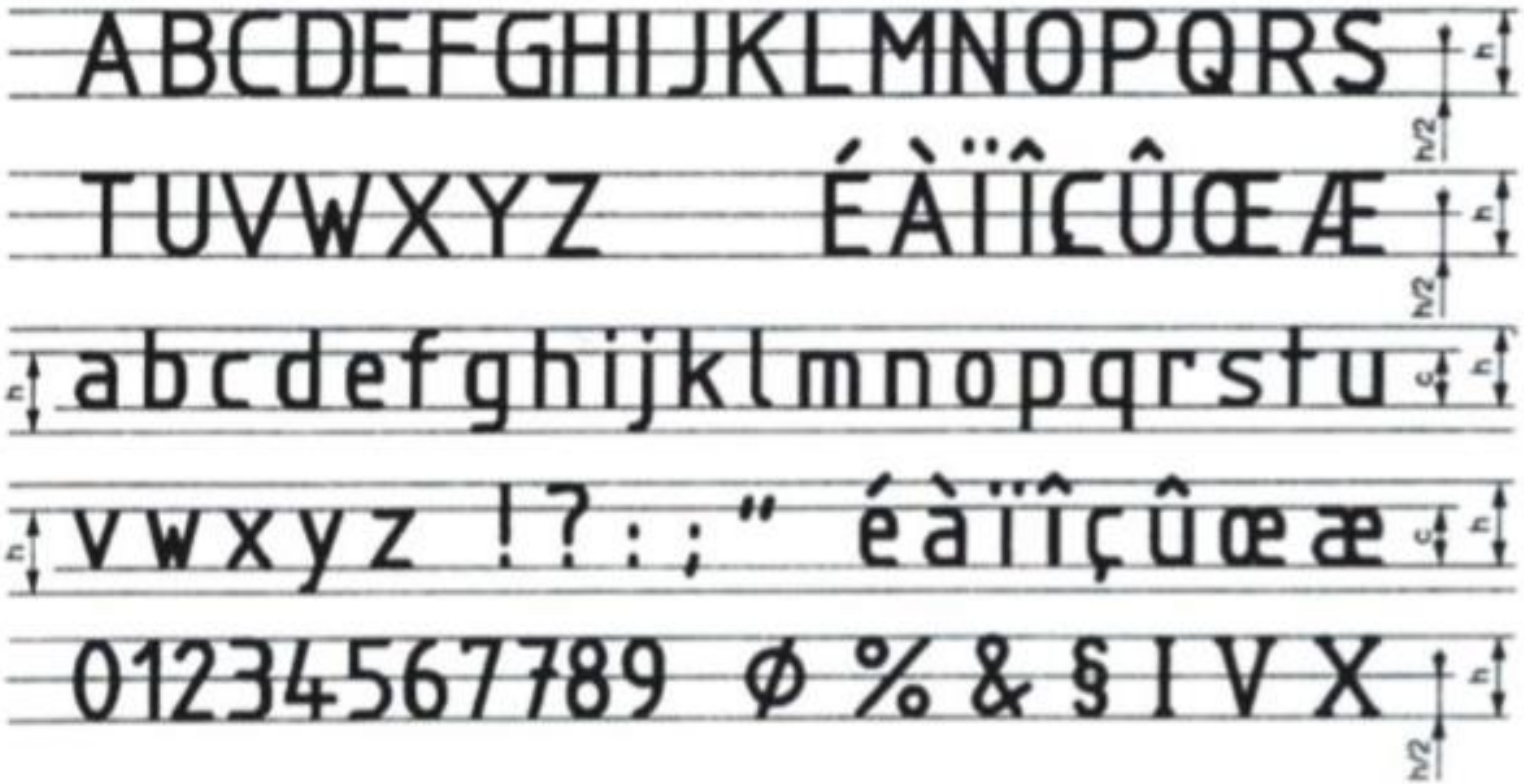
- Draw the footprint of the house at a scale of 1/100.



The objective of this exercise is to:
o Raise students' awareness of the concept of scale
o Use of appropriate traits according to the scales
o Use of a harmonious format and layout.

V. Standardized writing type B, right:

The titles and writings appearing on the plans must be composed in simple and regular letters, without fantasies.



- The nominal writing height is the height (h) of the capital letters.
- The height (c) of lowercase letters without a stem is equal to (0.7h).
- The height of the lower case with stem is equal to the height (h).

V. Standardized writing type B, right:

The nominal height of capital letters	h (mm)	2.5	3.5	5	7	10	14	20
The height of the lowercase letters	C= 0.7h	/	2.5	3.5	5	7	10	14
Line widths	d= 0.1h	0.25	0.35	0.5	0.7	1	1.4	2
Spacing between letters	a= 2d	0.5	0.7	1	1.4	2	2.8	4
Spacing between words	a= h	2.5	3.5	5	7	10	14	20
Line spacing	b= 1.4h	3.5	5	7	10	14	20	28

☐ When the nominal height (h) is 2.5, it is recommended not to use lowercase letters.

☐ The numbers are the same height (h) as the uppercase characters.

IV- THE SCALE

Application :

On an A4 format sheet with interior frame and title block

- Please fill in the title block with the necessary information using standard writing B, straight h=3.5.

- Write the following sentence in the middle of the sheet: Management of urban techniques h=14