

# Chapter IV

## Plans used in a building project

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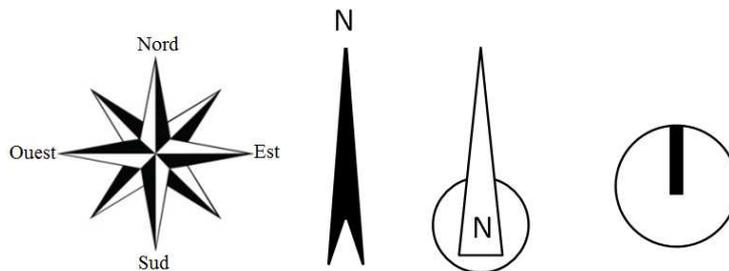
### IV.1. Definition

Plans are contractual graphic documents, produced by the project manager, and approved by the project owner and the control bodies, they are essential in a construction project, in order to allow the various stakeholders to correctly execute the different parts of the project, in accordance with the rules of the art.

### IV.2. Terminology and reading of building plans

#### IV.2.1. Geographic orientation

In building drawing, the plans have a geographical orientation, it allows the structure to be located in relation to the NORTH. It is represented using the compass rose or by an arrow similar to that of a compass.



**Figure IV.1-** Types of representation of orientations in a plane

The geographical orientation of a building and its openings or equipment (swimming pool, solar panels, etc.) has a strong influence on its thermal efficiency.

#### IV.2.2. Scales of representation

The scale gives the ratio between the dimensions of the plan and the real dimensions for example 1/50, 1/100, 1/500...etc.

$$\text{Scale} = \text{Plan dimension} / \text{Actual dimension}$$

Example :

In a ground plan of a scale of 1/200, we measure a length On the drawing (with a ruler of measurements in cm) which is equal to **10 cm** , this length is actually of the order of:  $10 / (1/200) = 10 \times 200 = \mathbf{2000\ cm}$  or **20 m**

#### IV.2.3. Facades and gables

The representation of exterior views of a building is represented using facades and gables.

- Facades: These are the main views that define the length and height of the building, the facades can be; Main (where the main access to the building is shown), rear (for the side opposite the main one), or lateral (for the other sides).
- Gables: These are the particular facades which end in a triangular point to define the width and height of the construction.

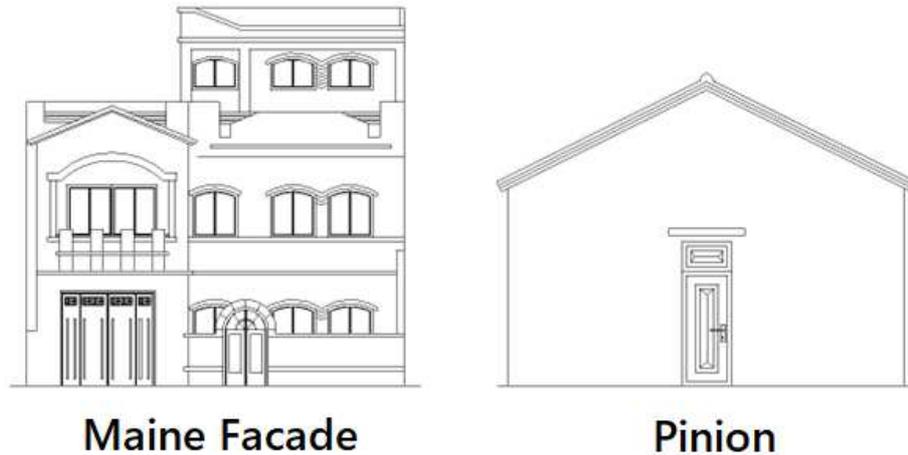


Figure IV.2- Facades and Gables

#### IV.2.4. The Cups

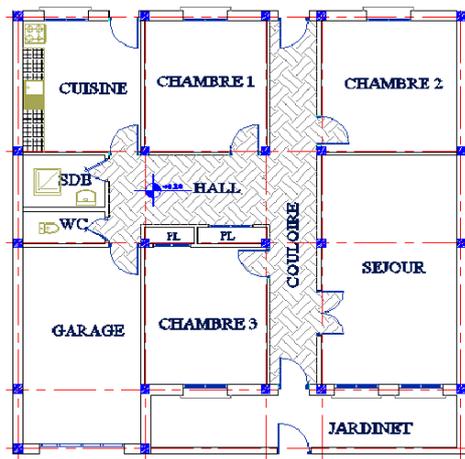
##### IV.2.4.1. Horizontal sections (Plan views)

A plan view is a horizontal section of the building, it is used to give the details of a building in plan, it is as if we are displaying an aerial view of the structure.

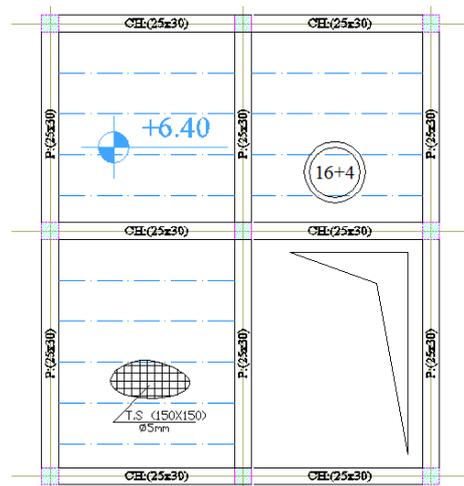
- For a ground floor, a basement, a first floor: The section plane is located 1 meter above the ground.

- For the attic: The section plane is located 1.30 meters above the floor of the upper floor.

Some examples of plan views: the architectural plan view, the plan view of the formwork and reinforcement of the floor, the plan view of the foundations, etc.



Vue en plan du niveau RDC



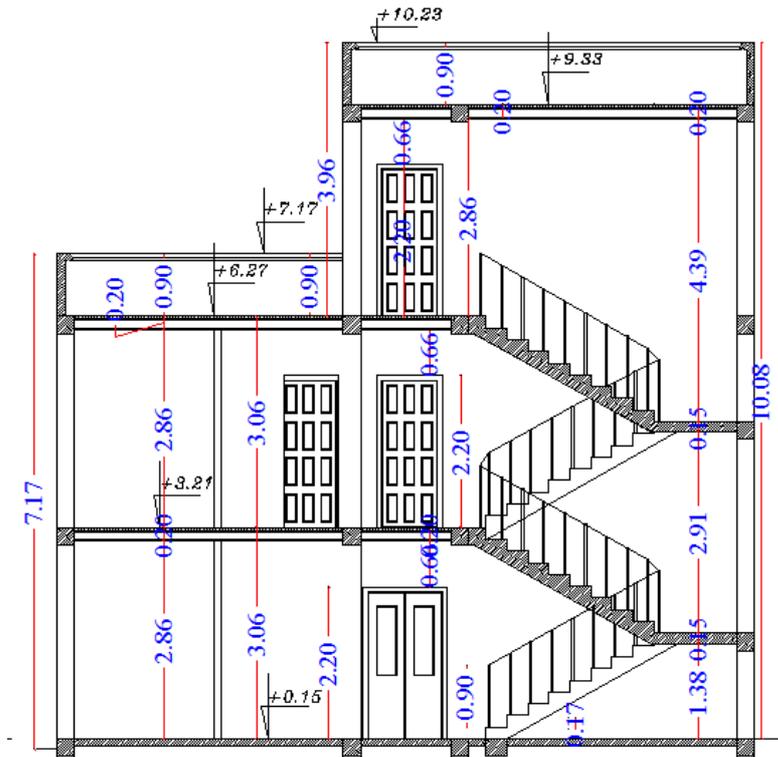
Vue en plan d'un plancher haut RDC

Figure IV.4- Examples of plan views

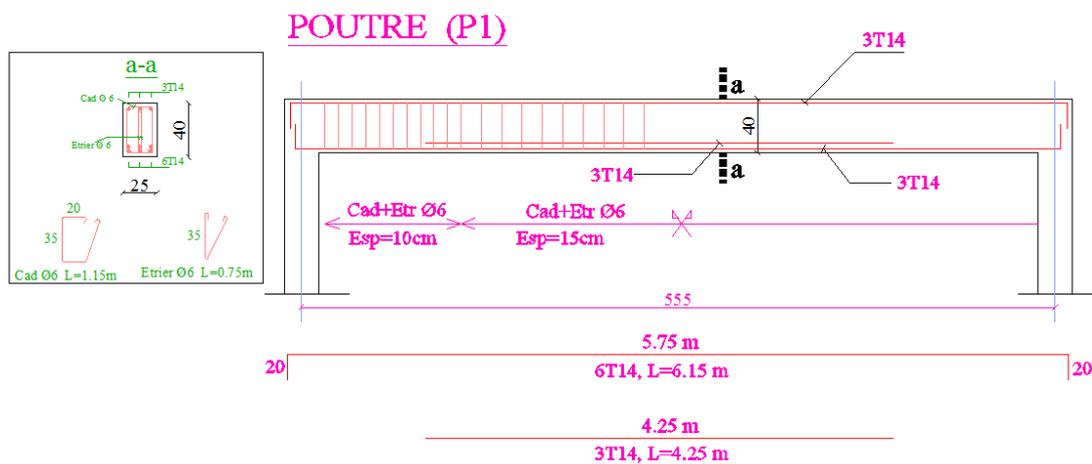
**IV. 2.4.2. Vertical sections**

A vertical section is used to give elevation details, i.e. heights, levels and thicknesses, as well as dimensions; of doors, windows, bays, stairs, floor sections, posts, beams, etc.

Vertical sections should be executed in such a way as to give the maximum information on the interior parts of a building, and to give details which cannot be included in plan views.



**Figure IV.5-** Examples of a vertical section of a construction



**Figure IV.6-** Examples of formwork and reinforcement details of a beam

### IV.2.5. Quotation of plans

Dimensions are the distances between different parts or levels in a building, they are generally in meters (m) for dimensions greater than 1 meter (with two digits after the decimal point), in centimeters (cm) for dimensions less than 1 meter.

#### IV.2.5.1. Linear dimensioning

It indicates linear measurements that represent the following distances:

- External rating: (a) Total rating,
- (b) Dimensions between axes,
- (c) Bare odds.
- Interior dimensions: (d) Interior dimensions of parts,
- (e) Dimensions of walls, posts, partitions and partitions,
- (f) Dimensions of widths of doors and openings.
- Formwork dimension : (g) Dimensions of the thicknesses of beams, posts, floors, etc.
- Dimensioning of details: (h) Dimensions of details of reinforcement, profiles, assemblies, etc.

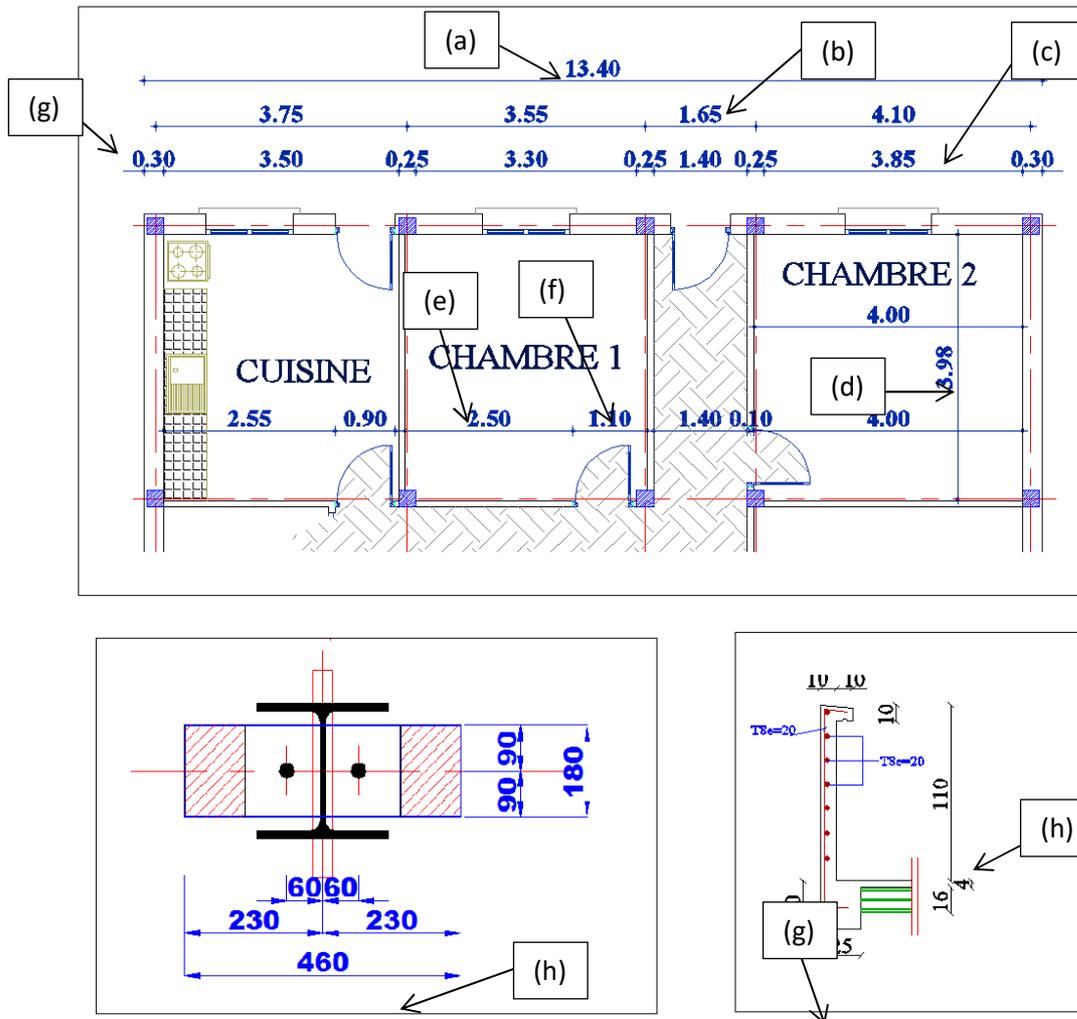


Figure IV.7- Types of linear dimensions

### IV.2.5.2. Rating of levels

This is a cumulative rating. They indicate the height of the floor, basement, attic, etc. in relation to a reference level which is generally the ground floor level ( $\pm 0.00$ ). All ratings above the origin are marked with a “+” sign, all those below are marked with a “-” sign.

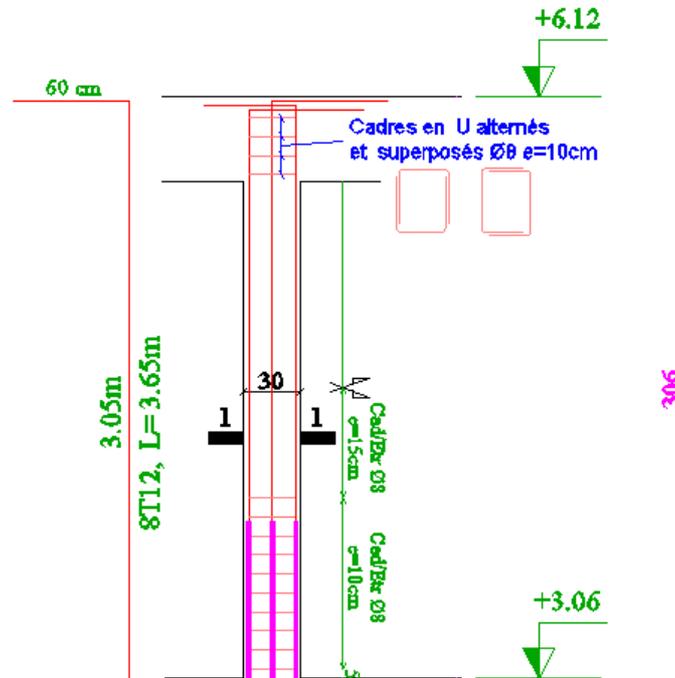


Figure IV.8- Examples of level ratings

### IV.3. The stages of developing plans

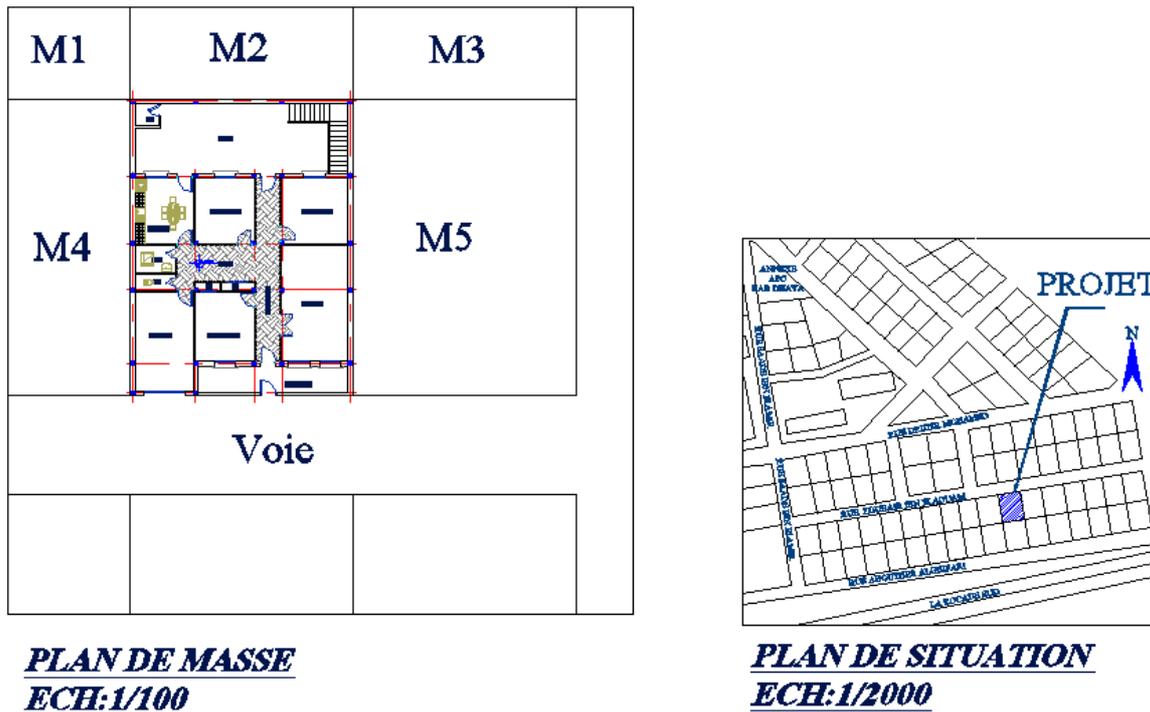
The plans, in a construction project, are carried out in four phases:

- The sketch,
- The preliminary draft,
- The execution project,
- The reassembly plans.

#### IV.3.1. The Sketch

The sketch is a schematic presentation of the proposed architectural part. It includes the indications relating to the location of the work, the different accesses, the spaces and the conditions of joint ownership. The plans of the sketch are provisional plans which may have changes subsequently, the plans provided in the sketch are:

- Schematic plan of the different levels at a scale of 1/100,
- A 3D view,
- Location plan (1/500 – 1/2000),
- Ground plan (1/100 or 1/500),
- The elevations of the main facades (1/100),
- Cross and longitudinal sections (1/100).



**Figure IV.9** - Example of a site plan and location plan

### IV.3.2. The Preliminary Draft

The preliminary project is the summary quantified study of an overall solution allowing the building to be built. This mission includes all the graphic parts at a scale of 1/100 allowing a better appreciation of the project, in this stage the architectural plans are finalized, it includes all the finalized plans of the sketch plus a global exterior development plan at a scale of 1/200.

As well as any information falling within the limits of this mission, and necessary for a better appreciation of the design and operation of the project.

### IV.3.3. Implementation project

The execution project includes all the graphic parts (detailed plans of the different trades). This stage includes the following plans:

- Location plan (1/500-1/2000),
- Topographic surveys of the land (1/100-1/500),
- Dimensioned earthwork plan with longitudinal and transverse profiles (1/500-1/1000),
- Implementation plan with precise indication of the different levels and projected foundation dimensions, the layout of the pipes and various connections, roads, surroundings and plantations (1/100-1/200),
- Site plan and exterior development, retaining walls, terraces, gardens, fences and others (1/100-1/200),

- Plan of each level at 1/50 with indication of the passage reserves for the various supply or evacuation pipes,
- Foundation plan at 1/50,
- Formwork and reinforcement plans (1/20 - 1/50),
- Terrace plan at 1/50th scale with indication of the direction of the flow slopes.
- Cross and longitudinal sections (1/50),
- Map of traffic and parking areas (1/200),
- Plans and profiles of rainwater and wastewater drainage with indication of pipes (1/100),
- Green space layout plans with indication of plant species.
- Plans of inspection chambers and connections (1/50),
- Secondary works plans CES (electricity, gas, telephone, fire protection network, plumbing, sanitation, etc.).

#### **IV.3.4 The reassembly plans**

This type of plan is drawn up after the building has been completed (after provisional acceptance). These are all the secondary building plans which show us the positions and circuits of the various installations and pipes actually carried out.