



University of Mohammed Kheider- Biskra  
Faculty of architecture, urbanism, civil engineering and hydraulic  
Department of Architecture

# MASTER'S DISSERTATION

Domain: **Architecture, urbanism and city professions**

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Specialization: **Construction Project Management**

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## Theme Evaluation of schedule management strategies in housing projects

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# DEDICATION

To the ones the Prophet (peace and blessings be upon him)  
urged us to honor:

To my mother, the tree of my effort and the fruit of my labor  
—she who carried me in hardship and brought me forth with  
grace. Even if I spent my life counting her virtues, I could  
never encompass them all.

And to my father—words will never be enough.

To the one who planted life within me and strengthened it,  
and to the one who gifted me the light of my dreams...

To my mother who remained steadfast and walked  
alongside me on my path of learning, and to my father  
whose support, as much as he could offer, granted me  
protection, willpower, strength, and guidance.

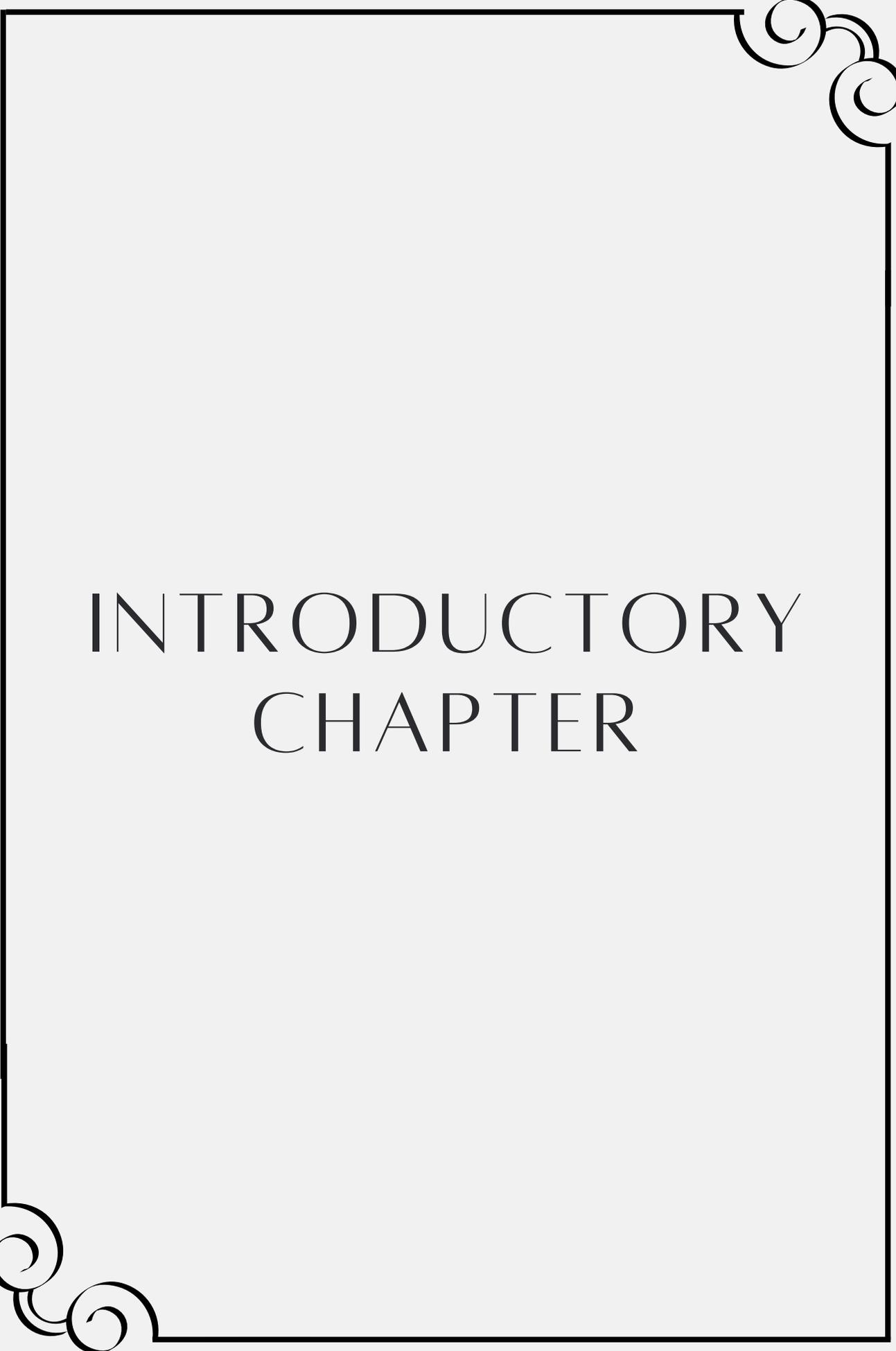
To all the teachers who contributed to the adoption and  
development of my idea, especially Professor Maâtallah  
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And to all those who believe in me, whether near or far.





INTRODUCTORY  
CHAPTER

## **1. Introduction**

The concept of housing, from the perspective of sustainable development, has gone beyond the basic idea of mere shelter with its planning and qualitative specifications. It now encompasses attention to human comfort and health, enabling individuals to engage in public and community activities, use facilities, consume services, enhance social cohesion, and protect the environment. This has made it a priority for governments and nations, especially given the widespread and rapid urban growth experienced by cities around the world due to demographic increases and significant migration toward them.

These cities possess attractive factors and dominate various projects and facilities, continuously driving migration flows toward them. These two processes have further complicated the housing problem, prompting developed countries, particularly in Europe, to adopt collective housing policies to address this phenomenon. These policies are supported by a set of laws that cover all aspects of housing, both built and unbuilt, and are successfully implemented due to compliance by residents and the authorities responsible for their enforcement.

Algeria serves as a clear example of the spread and presence of this phenomenon. In addition to significant rural migration toward cities, the country has experienced substantial demographic growth, which has led to an increased demand for housing and an inability to meet the needs of the vast population. This situation has driven the authorities to work tirelessly to eliminate the recorded housing deficit through various methods and means.

The focus has been directed toward quantity at the expense of quality, neglecting the comfort that housing should provide. Several policies have been implemented, proposing various housing programs to address the housing crisis, including social rental housing. This type of housing is governed by a set of laws designed to regulate and organize it. However, these laws often remain mere ink on paper and are subject to numerous violations, which has negatively affected this type of housing and prevented the achievement of quality standards.

Our research consists of four chapters: the introductory chapter, which includes the problem statement, research objectives, and the structure of the memorandum. This is followed by the first chapter, which focuses on the substantive and administrative aspects of the project, such as its definition, lifecycle, and management. The second chapter covers the analytical study, including the presentation of the case study, administrative context, and urban and architectural analysis. The

third chapter concentrates on the administrative study of the project, encompassing the presentation of the implementation organization, analysis of the work process, and a comparative study with a reference project. It also analyzes the challenges of implementation and aspects related to quality, costs, and timelines. The memorandum concludes with a general conclusion that includes findings and recommendations, while considering the flexibility of modifying the structure based on the project's specifics and the supervisor's guidance

## **2. Problematic:**

How is the balance achieved between the quality of project execution and adherence to deadlines in construction project management?

## **3. Objectives:**

- Improving communication and coordination processes among the various teams working on the project.
- Developing an effective system for tracking work progress.
- Identifying the main causes of delays in construction projects in Algeria.

## **4. Conclusion**

This introductory chapter provided an overview of the central research problem, which revolves around achieving a balance between the quality of project execution and adherence to deadlines in construction project management. It outlined the main objectives of the study, namely improving coordination among teams, developing effective tracking systems, and identifying the root causes of delays in construction projects in Algeria.

Furthermore, the chapter introduced the structure of the research, which aims to explore this issue through a combination of theoretical analysis and practical case study. By laying out the scope and framework of the study, this chapter sets the foundation for a comprehensive and methodical exploration of the topic, preparing the reader for the thematic, analytical, and administrative discussions in the following chapters.

# MIND MAP

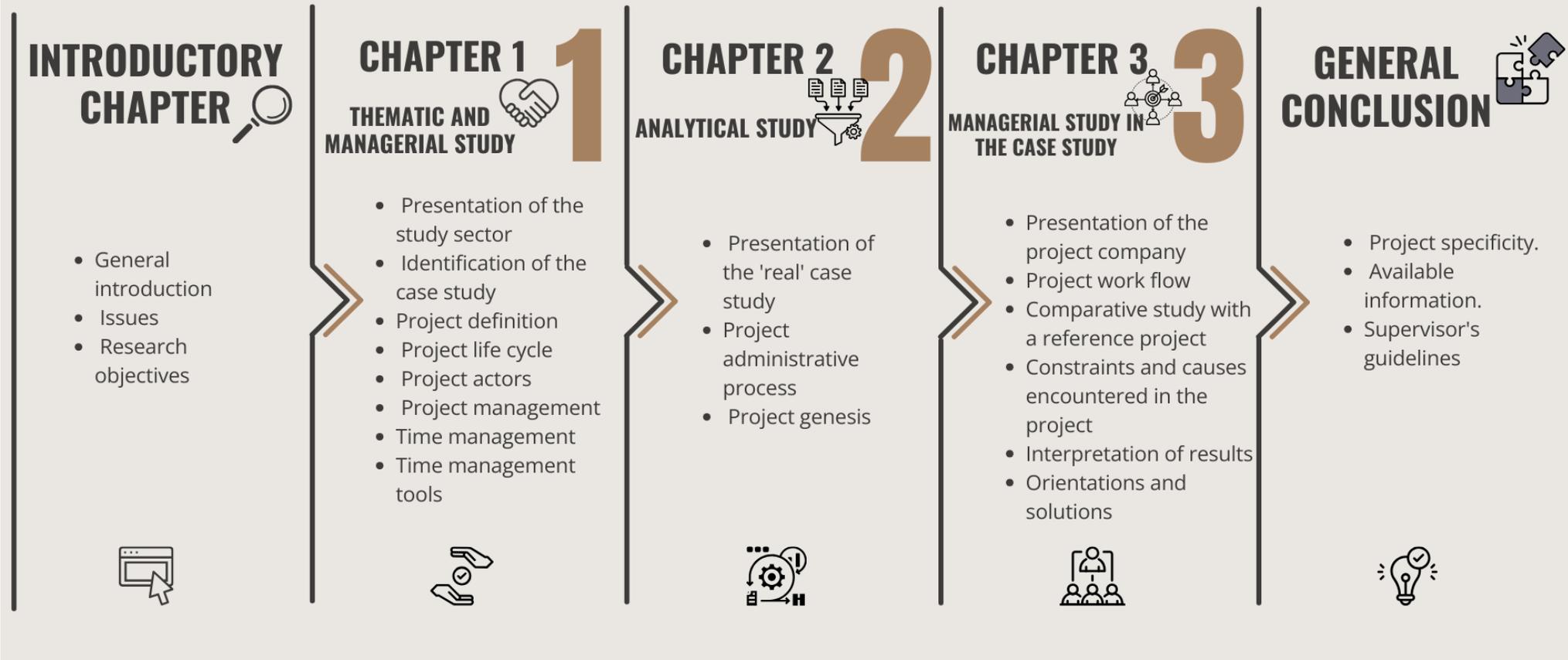
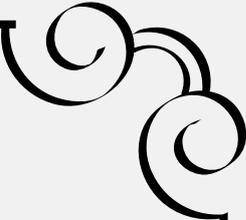
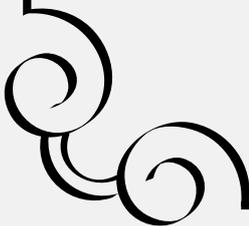


Figure 1 Represent mind map



CHAPTER ONE

THEMATIC AND  
MANAGERIAL  
STUDY



## Intoduction

Housing is considered a vital necessity for human life, having evolved alongside the changes in social life and the accumulation of knowledge and experiences. Scientific discoveries in various fields have contributed to the advancement of social life, moving from caves and shelters that protected humans from harsh natural conditions to becoming a fundamental social need. Housing is now linked to neighborhoods, and neighborhoods to cities, making housing the foundational unit of urban social life.

This shift has transformed housing from its simple concept, typically consisting of walls and a roof, into a spatial entity enriched by services and facilities provided by society to the individual. This transformation reflects humanity's pursuit of greater well-being in all aspects of life.

Over time, the demand for housing in cities has increased due to demographic growth and rural migration to urban areas around the world. This has necessitated public authorities to intervene to address the crisis through collective housing policies of various types, particularly social rental housing, which is governed by laws and regulations that organize and manage it effectively

Algeria has also implemented numerous decisions and measures in the housing sector. It has launched several housing projects in the hope of providing solutions and alleviating these issues and crises that have affected and distorted the city's image and its morphological structure<sup>1</sup>

### 1. Housing concept

The concept of housing, from the perspective of sustainable development, has gone beyond the mere idea of a physical shelter with its planning and qualitative specifications. It now extends to ensuring human comfort, health, and the ability to engage in public and communal activities, utilize facilities, consume services, foster social cohesion, and protect the environment, making it a focus of attention for governments and nations

The concept of housing that humans aspire to for comfort and stability is a spatial domain manifested through the supportive services and facilities provided by society to the individual, as a being striving to achieve greater well-being in all aspects of life.<sup>2</sup>

With the significant advancements in various aspects of life, the concept of housing has expanded. It is no longer limited to the four walls and the roof above but includes the supportive services and facilities offered by society, enabling individuals to live in such a building with comfort and stability

Housing is both a functional unit where the organization of space responds to the cultural norms of the society and the era, but the size, shape, internal organization and level of equipment of the dwelling is also linked to the structure at the economic and social level<sup>3</sup>. (Nasreddine, 2019)

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على الأسرة الجزائرية ص1س Lpa مذكرة مقدمة ضمن متطلبات نيل شهادة الماستر في علم الاجتماع الحضري ثر السكن الترقوي المدعم<sup>1</sup>

بمدينة مذكرة تخرج مكملة لنيل شهادة ماستر أكاديمي السكن الإجتماعي الإيجاري بين القانون والتطبيق دراسة حالة حي العمارات 380 مسكن<sup>2</sup>

المنصورة ص7

<sup>3</sup> Mémoire présenté pour l'obtention du diplôme MASTER 2 GUESSOUM NASREDDINE p2

## **1.1. Type of housing production in Algeria**

### **1.1.1. Public rental or social housing:**

Social housing is any dwelling financed entirely by funds from the public treasury or the state budget. It is intended for people living in very precarious conditions, whose resources do not allow them to pay a rent that is too high, let alone apply for one. Let alone apply for a home.

Project management for social housing projects is often entrusted to the O.P.G.I., which is free to choose the most competent design office to create the architectural design and the most efficient company to carry out the construction work.<sup>4</sup>(انواع السكن ، 2021)

### **1.1.2. Participatory social housing or housing assistance**

It is a dwelling built or acquired thanks to State aid known as assistance for home ownership in application of the interministerial order of 9 April 2002, amending and supplementing the order of 15 November 2000 defining the rules of intervention of the CNL in terms of financial support for households.

### **1.1.3. Promotional housing**

Subsidized promotional housing (LPA) is a new home built by a real estate developer in accordance with technical specifications and defined financial conditions. It is intended for applicants eligible for frontal aid from the State in accordance with the provisions of Executive Decree No. 10-235 of 5 October 2010, setting the levels of frontal aid granted by the State for the acquisition of ownership of collective housing or rural housing, the income levels of applicants for these housing units as well as the terms and conditions for granting this aid.

#### **1.1.3.1. Private promotional accommodation:**

The author of the initiative can be a private real estate development company or a real estate developer built for rental or sale, whether collective, semi-collective or individual.

#### **1.1.3.2. Public promotional housing**

The programme of which can be initiated by public real estate development organisations (OPGI), by local authorities, or by public companies and bodies (it is the CNEP that intervenes in practically all public development operations)<sup>5</sup> (Nasreddine, 2019)

### **1.1.4. Rural housing:**

Rural housing is part of the rural development policy and aims to develop rural areas and stabilize the local population. It consists of encouraging families to build decent housing in their rural surroundings within the framework of self-construction. In this case, the beneficiary's participation consists of providing a piece of land that belongs to him and his participation in the execution and completion of the works. In order to benefit from the state subsidy for the construction of rural housing, certain conditions must be met.<sup>6</sup> (انواع السكن , 2021)

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<sup>4</sup> وزارة السكن و العمران و المدينة

<sup>5</sup> Mémoire présenté pour l'obtention du diplôme MASTER II GUESSOUM NASREDDINE p7

<sup>6</sup> وزارة السكن و العمران و المدينة

**1.2. Urban housing formulas in Algeria:**

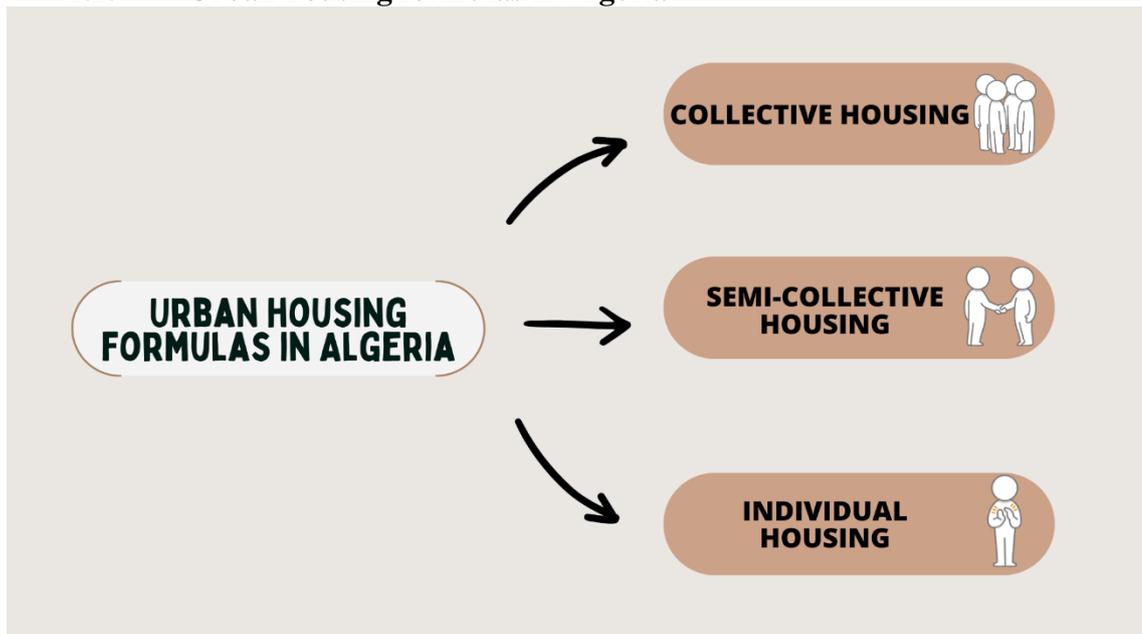


Figure 2 : Schema represent urban housing formulas in Algeria

source: Author treatment ,2025

**1.2.1. Collective housing:**

In urban areas, collective housing is considered the most densely populated as it is developing and continuously rising. A vertical building contains several residences like an apartment building. It has a shared entrance and common outdoor areas such as parking lots, green spaces, gardens, staircases, and elevators for all residents. Collective housing is considered economical and less expensive than individual housing and semi-collective housing.

**1.2.2. Semi-collective housing:**

It is a collective housing with the characteristics of individual housing, consisting of residential units that are interconnected through walls and ceilings. They share the structure and some external areas such as parking lots and public squares, but each has independent access. In other words, it can be considered an intermediate habitat that combines the advantages of the individual and the group

**1.2.3. Individual housing:**

It is completely independent from the neighboring residences, has a private entrance, and can be found in two types: open either on all its facades or with limited facades.

**2. Defining the study case:**

Real estate developers, whether private or public, pay the costs of housing construction from their own funds or by borrowing from a lending institution secured by the completed projects, with repayment to be made upon the sale of the property.

The public promotion is carried out through two intermediaries: E.P.L.F (Family Housing Corporation) and O.P.G.I (Real Estate Promotion and Management Office), which is in charge of the construction and management of planned housing programmes for sale or rent.

The study project involves the construction of 64 collective housing units in Biskra municipality (Daira Biskra WD Biskra).

-The project will be implemented in Biskra municipality.

-The proposed unit takes the form of F4 and F5 collective housing, with the following spatial program

**2.1. Identification of program related to the study case**

Table 1: table represent surface program

source : Real Estat promotion of biskra ,2016

Désignation	Type of housing BLOC C+4		Type of housing BLOC R+4
	F4	F5	F4
Reception room	22,19	21,75	22,21
Room 1	19,34	19,34	19,34
Room 2	14,28	15,35	14,28
Room 3	19,36	13,17	19,36
Room 4	/	19,23	/
Kitchen	15,62	15,56	15,97
W,C	2,32	2,16	2,32
Bathroom	5,90	5,93	5,92
storage	3,10	3,10	3,10
Hall	15,89	19,18	15,75
Total	134,7 7	117,96	118,25

The design of the cell takes into account the lifestyle of the Algerian family, with a well-lit, sunny living space.

**3. Definition of project:**

Before giving the definition of a project, it is useful to know that this term was used for the first time in the sixteenth century and comes from the Latin "projicere" which means "to throw forward" and whose main meaning is the essential existence of a starting point on which one relies in order to project oneself forward to achieve a goal.

There are several definitions of project:

In the professional world; According to the Project Management Institute (PMI), a project is any one-time activity with a defined beginning and end, aimed at creating a unique to create a unique product or service.

According to the standards: "A single process that consists of a set of coordinated with start and end dates, undertaken with the aim of achieving a goal in line with defined requirements, such as time, cost and resource constraints. cost and resource constraints.<sup>7</sup> (Management de la qualité — Lignes, 1997)

<sup>7</sup> Mondiale de Normalisation selon la norme ISO 10006 (version 1997).

Several definitions have been proposed, in the context of project management, it can be defined as: "a single process that consists of a set of coordinated and controlled activities with start and end dates, undertaken with the aim of achieving an objective in accordance with specific requirements, including time, cost and resource constraints"

A project is a single process that consists of a set of coordinated and controlled activities, with start and end dates, undertaken with the aim of achieving an objective that complies with specific requirements, including time, cost and resource constraints

### 3.1. Project characteristics:

The basic principles of project management are represented by the project triangle, a symbol made popular by Harold Kerzner



Figure 3 : Schema represent project management triangle

Source : Author treatment ,2025

#### **Quality (Technical): WHAT? HOW?**

Product management, Quality, features, components, operating mode.

#### **Deadlines: (WHEN?)**

Time management: Planning

#### **Cost: (HOW MUCH?)**

Financial management: Evaluation of charges with the same resource, wanting to improve one parameter has a negative influence on the others

A number of properties defines the project, typical characteristics of projects are:

- Clearly defined objectives and planned work
- A beginning and end defining a life cycle
- Uniqueness: the specific conditions, the initial situation and the objectives set are unique for each project, i.e. they have never existed in this precise configuration for other projects.
- Specialized or multidisciplinary teamwork supervised by a manager
- Resource and Capacity Mobilization
- Precise time, cost and performance requirements
- Complexity: the project may call for a variety of skills, and many interrelated factors must be taken into account at the same time
- Risks: projects always involve an element of risk (unfamiliar terrain, certain unforeseeable situations, etc.)

The following characteristics of the project can be cited: A project has three essential characteristics:

- **Temporary**; Every project has a definite beginning and end

- **Complexity**; that is, not technical complication, but the organization and motivation of the various resources and skills. Requires the organization and motivation of various resources and skills. Must be coordinated, if the objectives are to be achieved.
- **Uniqueness**; that is to say, unique. No two projects are the same. similarities, every project has its innovations

### 3.1.1. The place of projects in the company<sup>8</sup>:

Companies usually carry out projects. In addition, we see different situations of projects appear in relation to the company.

### 3.1.2. Project with several companies:

Projects that are carried out by several companies are projects that involve completely different fields and are therefore managed by several companies

The organization is project-centric, not business-centric. Example: this type of organization governs the construction industry where each of the companies brings a particular skill (electricity, roofing, masonry, etc.)

### 3.1.3. Company with internal projects and an association:

This form of organization concerns companies that have the capacity to carry out small projects on their own and that call on other companies for an association for larger projects , For reasons of availability of resources, technical mastery or risk management, these companies join forces with others to carry out major projects

## 4. Project lifecycle: (bilel, 2015)

The project life cycle is a set of phases whose name and number are determined by the needs of management and control and by the nature of the project itself and by its field of application.

The life-cycle structure of all projects, whether large or small, simple or complex, can be summarized in the following four phases:



Figure 4 : Schema represent project lifecycle

Source : Author treatment ,2025

**Opportunity:** What objective, project before the project

- determine the purpose of the project (WHY? this project)
- estimate resources, costs, and timelines
- choose the project manager
- risk assessment
- estimation of profitability

**Planning Phase:** Plan the implementation.

- global planning
- details of costs and deadlines
- definition of responsibilities

**Implementation phase (and control):** Carry out the planning

- Phase generating the most costs
- Setting up the organization
- Execution of the work: The tasks are effectively carried out

<sup>8</sup> Polycopié de cours -Gestion des Projets-MEFTAH p 70

- Cost-deadline-specification management: Control of compliance with deadlines and possible re-planning
- Problem solving
- Tests are carried out: Unit test, Integration test, Performance test
- Verification: Control of compliance with the specifications

**Termination Phase (Closure):** Prepare future planning...

- Archiving of experience
- Improving the flow of future projects
- Analysis of gaps between planned and actual
- Memory of past operations
- Project evaluation
- Reassignment of staff
- End of the project
- Possible preparation of a continuation or other projects with the same partners

#### **4.1. Project management process groups**

The PMBOK Guide describes the nature of project management processes in terms of integrating processes with each other, how they interact, and what goals they pursue. These processes are grouped into five categories called project management process groups, namely:

- **The group of start-up processes:** These processes allow you to define a new project, or a new phase of an existing project, by obtaining permission to start this new project or phase
- **The planning process group:** These processes make it possible to develop the content of the project, refine the objectives and define the sequence of actions necessary to achieve the objectives for which the project was undertaken
- **The Execution Process Group:** These processes allow the work defined in the project management plan to be carried out in order to meet the project specifications
- **The group of monitoring and control processes:** These processes are used to monitor, review and regulate the progress and performance of the project, to identify where changes to the plan are necessary, and to undertake
- **The closing process group:** These processes allow you to finalize all activities in all process groups in order to formally close or close the project or phase

### **5. Actors involved in the production of housing in Algeria:**

Current urban production reflects the degree of participation of the different actors in the city, the neighborhood or the territory in general, so urban production depends on the fundamental capacity of each actor participating in the construction of the city. In other words, the city is a product whose quality depends first and foremost on its producers

There are two types of producer actors:

- **Public actors:** AADL – CNEP – OPGI – EPLF – ENPI
- **Private actors:** legal person and natural person.

Other stakeholders include:

The Wali who represents the State at the level of the Wilaya, i.e. the government and each minister in his name

Specialized technical services such as urban planning and construction (DUC), public works (DTP), housing and public facilities (DLEP) & Local authorities (APC, APW).

#### **5.1. Public actors:**

##### **5.1.1. Housing Improvement and Development agency (AADI):**

Created by Decree No. 148-91 of May 12, 1991, it is a public institution of a commercial and industrial nature. Its primary mission is to promote housing programs financed by public funds, which include rent-to-own, participatory, incremental, and assisted housing

**5.1.2. National saving and provident fund (CNEP):**

Created on August 10, 1966, it is one of the oldest banking institutions in Algeria. It is a public establishment with a commercial character. It operates in the following areas:

- Granting loans, including those intended for housing financing.
- Responsible for conducting various types of operations, whether financial, industrial, commercial, movable, or real estate.

The CNEP can carry out the functions of a real estate development company, which was established by the CNEP in April 1992 and then changed its name in 1998 by decision of the general assembly to become CNEPIMMO

**5.1.3. The office of property promotion and management (OPGI):**

Created by executive decree n°149-91 on May 12, 1991, it is a company with industrial and commercial characteristics, and can therefore be considered as an independent legal entity from a financial standpoint. The main mission of this office is to promote housing, especially for social categories. It is responsible for the construction projects and can replace any actor in the monitoring of projects and the management of the real estate assets entrusted to it.

Furthermore, it has become the delegated project manager for the socio-participatory housing program initiated by the National Fund for Social Works Equalization (FNPOS).

**5.1.4. The family housing promotion company (EPLF):**

A public establishment aims to construct housing that meets different criteria from the rest of the social housing, particularly in terms of quality.

**5.1.5. Notional real estate development company (ENPI)**

The national real estate development company, a joint-stock company, was created on 06/05/2009 in accordance with resolution No. 05/92 of 22/01/2009 on the reorganization of the companies its family housing "E.P.L.F" in the head office. The implementation of the restructuring of public economic enterprises. EPLF created ENPI through a merger and takeover.

**5.2. Private actors:**

**5.2.1. Natural person:**

A natural person who becomes a real estate developer. After preparing a file and obtaining the plot of developable land, they approach housing applicants (either individually or collectively). They disseminate information through various means and proceed to select future buyers. Subscriptions are recorded in a special register and signed by the DLEP.

The developer is required to be transparent in their real estate offer to candidates for housing acquisition, whether regarding the sale price, location, and quality of the housing, timeline for completion, payment terms, guarantees offered, or the conditions for obtaining state assistance

**5.2.2. Legal person:**

A promoter who has been chosen by an institution, an association, or an organization on behalf of their constituents, agents, employees, or members. This promoter pre-selects the clients interested in their project and signs a mutual commitment with each of them. Then, they create a list of the definitively selected candidates and submit it to the Wali for approval before forwarding it to the CNL. The promoter initiates the work, and the progress is certified by the DLEP

**5.3. The stakeholders of a project:**

As the project is intended to meet the needs of the client, it will therefore be the subject of a contractual transaction during which the definition of the stakeholders will be fundamental, the term "stakeholders" refers to any person (natural or legal), group of persons or entities directly or indirectly linked to the project. The main stakeholders are:

**5.3.1. The project owner (MOA):**

This is the client who owns the final result or his or her representative: the client (particularly in the construction and civil engineering sector), who is responsible for the adequacy of the project result to the needs expressed by the users. He is responsible for defining the exact work, monitoring

the progress of the work and checking that the result meets expectations, as well as how the project has been executed in terms of costs and deadlines.

### **5.3.2. The project manager (MOE):**

Represents the company that executes the project, it is responsible for providing the infrastructure and the means necessary for the realization of the project, its missions are as follows:

- The definition and management of the works
- Establishing and controlling the schedule
- The definition of the quality system
- Communication within your team and to the project owner of the project's progress

The project owner must ensure the proper management of the budget he has received from the project owner, the smooth running of the project, compliance and the operational management of the project.

There are obviously other stakeholders in a project, we will mention

### **5.3.3. The Project Manager**

It includes the project manager, the project management team, and the technical staff in charge of the execution. This team can bring together people from within and outside the implementing company.

- Internal members of the organization that carry out the project (functional managers)
- Contractors (contractors)
- Suppliers and subcontractors
- Transporters
- Administrations
- Donors (e.g. a financial institution) and shareholders
- Control and insurance bodies
- The customer;
- Consumers
- Society (e.g. jurisdictional or regulatory bodies)

## **6. Project management:**

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the 47 logically grouped project management processes, which are categorized into five Process Groups. These five Process Groups are Initiation, Planning, Executing, Monitoring and controlling, closing.<sup>9</sup> (PMBOK, 2007)

Project deadline management consists of planning all project activities over time and managing them in such a way as to best meet the initial commitments. To do this, you need to plan your day-to-day activities and break down major strategic objectives into tangible, realistic results (deliverables) so that you can organize your time and track your priorities on a day-to-day basis. Project deadline management includes the processes for managing project completion in a timely manner. Provides an overview of project deadline management processes<sup>10</sup> (Alima, 2019)

. Project management is the single achievement, limited in time and involving a set of coherent tasks, using human, material and financial resources in order to achieve the objectives set out in the mandate, while respecting specific constraints. The process of developing a project must meet three main objectives and allow the development of the tools essential to its success Quality, cost, time<sup>11</sup> (Bonnet, 2005)

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<sup>9</sup> A Guide to the Project Management Body of Knowledge P 5

<sup>10</sup> Dissertation presented for the MASTER II degree Presented by: -Hamida Romaiassa -Zeroual Alima P19

<sup>11</sup> p 11-12 du livre : la conduite des projets architecturaux et urbains.

The management of architectural projects in Algeria is carried out according to standard methods that no longer meet the new requirements. To achieve overall control of deadlines in architectural projects, it is necessary to know the new techniques used; and to succeed in the mastery of deadline management.

### 6.1. Ten areas of project management competence

The PMBOK in its 5th edition, classifies project management techniques into ten knowledge areas and process groups

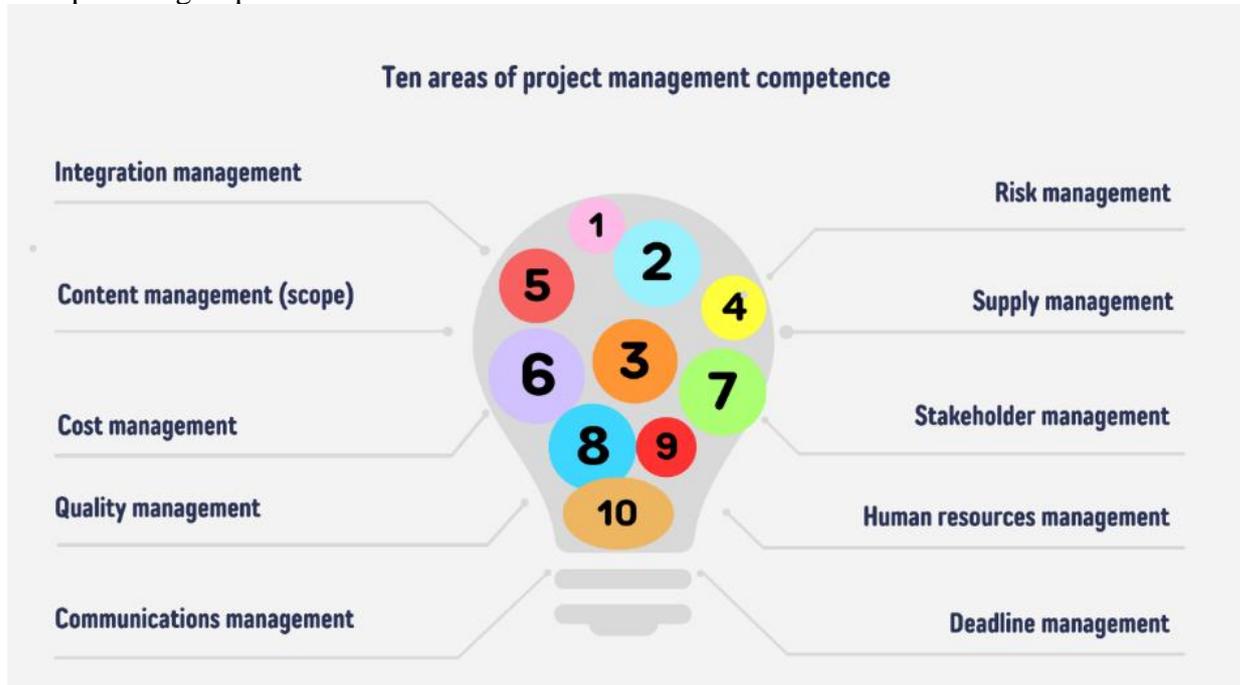


Figure 5 : Schema represent ten areas of project management competence

source : Author treatment ,2025

#### 6.1.1. Integration management:

Integration management covers the processes necessary to ensure the proper integration of all the elements of the project, from the development to the implementation of the project plan (monitoring of dashboards and overall control of changes).

- Establishment of planning and control systems for the selection of projects;
- Coordination of activities in the other eight sets of knowledge
- Working in collaboration with all those involved in the project

#### 6.1.2. Content management (scope):

The processes to ensure that all the work required by the project, and only the work required, is done to complete the project successfully, is essentially about defining and controlling what is included in the project and what is excluded.

#### 6.1.3. Cost management:

processes for cost planning, estimating, budgeting, financing, provisioning, management and cost containment to ensure that the project is completed within the approved budget

#### 6.1.4. Quality management:

the processes and activities of the implementing organization that determine the quality policy, objectives and responsibilities, so that the project meets the needs for which it was undertaken. The project requirements are met and validated

**6.1.5. Communications management:**

the processes that are required to ensure the appropriate and timely planning, collection, creation, distribution, storage, research, management, control, monitoring and final archiving of project information. Effective communication and building a bridge between the different stakeholders can have an impact or influence on the execution of the project or its outcome.

**6.1.6. Risk management:**

Risk management planning, identification, analysis, response planning, and risk management processes. The objectives of project risk management are to increase the likelihood and impact of positive events, and to reduce the likelihood and impact of negative events in the project.

**6.1.7. Supply management:**

the processes for purchasing or acquiring products, services or results that are necessary and external to the project team the contract management and change control processes required to develop and manage contracts or purchase orders issued by authorized members of the project team

**6.1.8. Stakeholder management:**

the processes necessary to identify the people, groups or organisations that may affect the project or be affected by it, to analyse the expectations of stakeholders and their impact on the project, and to involve them in its decisions and execution<sup>12</sup> (PMBOK, 2008)

**6.1.9. Human resources management:**

the organizational, management and leadership processes of the project team.

**6.1.10. Deadline management:**

Project schedule management consists of planning all project activities over time and managing them in such a way as to meet the initial commitments as closely as possible. To do this, you need to planning day-to-day activities and breaking down the major strategic objectives into tangible and realistic results (deliverables), to organize time and monitor priorities.

To do this, you need to draw up a schedule. Planning enables you to:<sup>13</sup> (Nasreddine, 2019)

- Define the work
- Set objectives,
- Coordinate actions,
- Manage resources,
- Reduce risks,
- Monitor ongoing actions,
- Report on project progress.
- These processes are as follows

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<sup>12</sup> Guide PMBOK®) Quatrième édition 2008, et cinquième édition 2013

<sup>13</sup> Mémoire présenté pour l'obtention du diplôme de MASTER II PAR GUESSOUM NASREDDINE P35

## 6.2. The four phases of project management:

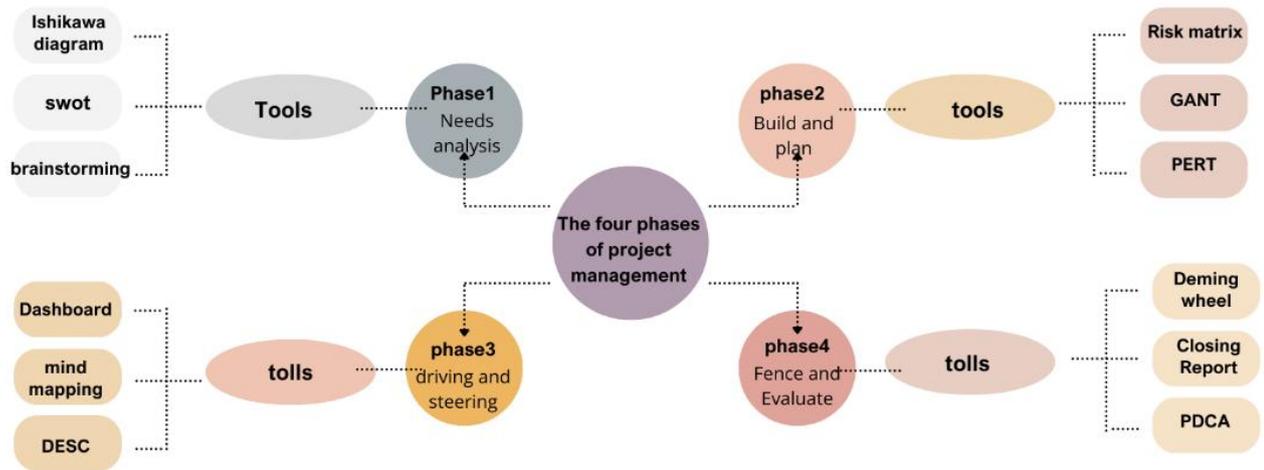


Figure 6 : Schema represent the 4 phases pf project management

source: Author treatment ,2025

## 7. Time management tools and methods<sup>14</sup> (Henri-Pierre Maders, 2011)

### 7.1. Time management tools:

Project management consists of organizing, managing and animating, which is why he must use tools that allow him to meet these three types of objectives:

#### 7.1.1. Tools to organize the project:

- The technical project organization chart: WBS (Works breakdown structure) or OT (work breakdown structure)
- The PERT method
- The Gantt schedule

#### 7.1.2. Tool to manage the project

- The contract: to know the objective
- The project master plan: to know the route
- The dashboard: to have a situation in the present moment
- The risk chart

#### 7.1.3. Tools to animate the project :

- Progress reports to the client or delegator
- Communication plan.

<sup>14</sup> Comment manager un projet –Henri, pierre MODERS- p : 33

## 8. Time management methods:

### 8.1. Microsoft Project<sup>15</sup> (Amal, 2012)

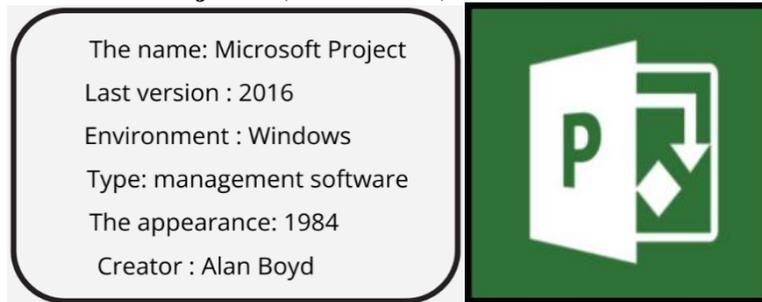


Figure 7 : Schema represent time management Microsoft Project

source : DERGHAL CHERIF et MOKHNACHE BOCHRA2019

#### Definition

It's project management software from Microsoft. It enables project managers and planners to plan and control projects, manage resources and budgets, as well as analyze and communicate project data.

#### ❖ Features

- ✓ Project planning and management.
- ✓ Resource management.
- ✓ Cost management.
- ✓ Time management.

### 8.2. Asta Power Project<sup>16</sup> (Asta Power, n.d.)

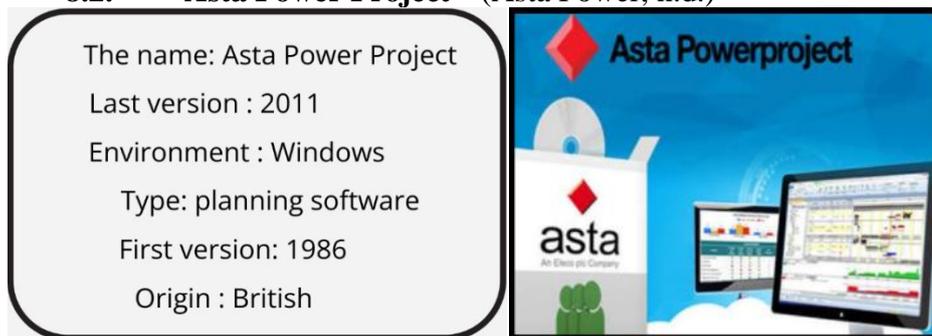


Figure8 : Schema represent time management Asta Power Project

source : DERGHAL CHERIF et MOKHNACHE BOCHRA2019

#### ❖ Definition

is a Gantt chart planning program used for project management, particularly in the particularly in the construction industry. By definition, the is represented by geometric shapes (or tasks) on the given schedule.

This diagram provides a graphic representation of the progress of the project in question project.

This software is available in several language versions (French, English, German, etc.).

Version No.11 is the latest release.

#### ❖ Features

- ✓ Project planning.
- ✓ Risk identification.

<sup>15</sup> Cour de MS Project présenté par Amal Bannani 2012

<sup>16</sup> <http://www.astapowerproject.com/>

- ✓ Data sharing.
- ✓ Cost tracking and management.
- ✓ The creation of a repository: the main aim of this approach is to preserve a trace of what was initially planned at the start of the project, in the event of change of direction in the development of the project

### 8.3. Gantt Project<sup>17</sup> (BOCHRA, 2019)



Figure9 : Schema represent time management Gantt Project

source : DERGHAL CHERIF et MOKHNACHE BOCHRA2019

#### ❖ Definition

Gantt Project is a free project management software written in Java, which allows it to be used on many OSes such as Windows, Linux, MacOS. This project was launched by a student from the University of Marne La Vallée in January 2003. The initial project manager is Alexandre Thomas, now taken over by Dmitry Barashev.

#### ❖ Features

- ✓ Description of the Work Breakdown Structure.
- ✓ Multiple previous links between tasks (predecessors/successors).
- ✓ Visualization of the critical path.
- ✓ Saving data in XML format (.gan files).
- ✓ Compatibility with Microsoft Project
- ✓ Management of holidays and holidays for resources.
- ✓ Export of the diagram as a PNG or JPEG image.
- ✓ Save project states and compare.
- ✓ Support for more than 20 languages

### 8.4. Primavera<sup>18</sup> (ORACLE, n.d.)



Figure10 : Schema represent time management Primavera

source DERGHAL CHERIF et MOKHNACHE BOCHRA2019

<sup>17</sup> Présenté en vue de l'obtention du diplôme de Master en Architecture-DERGHAL CHERIF et MOKHNACHE BOCHRA P66

<sup>18</sup> <https://www.oracle.com/applications/primavera/>

❖ **Definition**

Is a Group ware (workgroup software) published by Oracle Corporation. It is an organizational management tool operating in projet.il has had several versions: P3, P5, then P6. Today P6 R8 is broken down into two versions:

- ✓ P6 PPM for Professional Project Management, single-user version
- ✓ P6 EPPM for Enterprise Project Portfolio Management, network version.
- ✓ Areas of use of PRIMAVIRA
- ✓ Construction and landscaping
- ✓ Manufacturing industries ;
- ✓ Utilities;
- ✓ IT governance;
- ✓ Fossil fuel industries

**8.5. Pert network<sup>19</sup>** (BOCHRA, 2019)

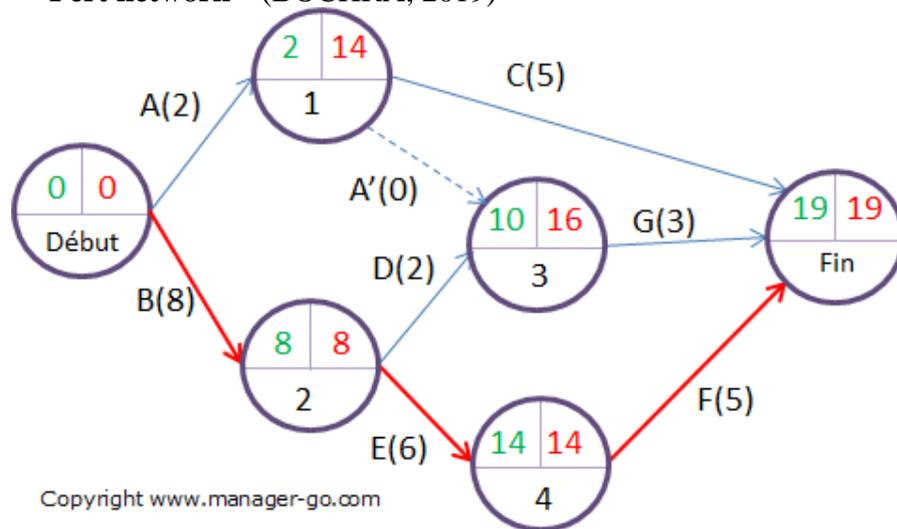


Figure 11: Schema represent PERT network

Source: www.bing.com

❖ **Definition**

Is a conventional method used in project management, planning developed in the United States by the Navy by the U.S. Navy in the 1950s

❖ **Objectives**

- ✓ Allowing you to concentrate on tasks which, if delayed, will delay the the whole project;
- ✓ Make arbitration decisions on deadlines, tasks and resources

**8.6. WBS**

The WBS Work Breakdown Structure, defined and supported by the PMI Project Management Institute, is a method for breaking down a project into elementary components. The tree is built up in levels of abstraction, starting with the result and working down to the granularity required to master each component.<sup>20</sup> (PILOTOR.ORG, n.d.)

<sup>19</sup> Présenté en vue de l'obtention du diplôme de Master en Architecture-DERGHAL CHERIF et MOKHNACHE BOCHRA P67

<sup>20</sup> <https://www.piloter.org/projet/methode/wbs.htm>

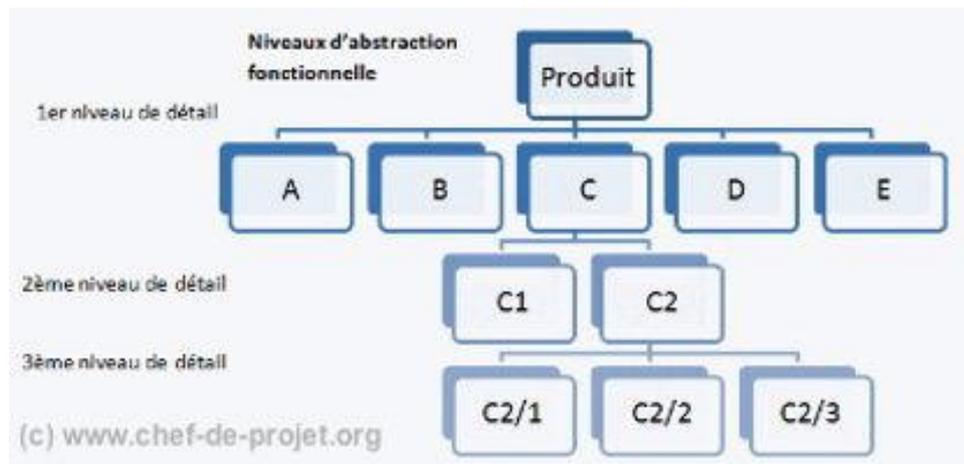


Figure 12: Schema represent WBS method

Source : www.slideserve.com

### ❖ Using WBS

The use of this tool is therefore recommended both for forecasting budgets and for preparing schedules, estimating, and reserving the necessary resources.

Of course, the breakdown is only valid if, and only if, no dead ends have been made and the subject under consideration has been dealt with in its entirety. Secondly, the elementary components must be unique and without overlap.

Each element has only one parent. If this is not the case, the breakdown method is incorrect.

#### ○ CriticalTools

WBS Chart Pro is a Windows product for creating and visualizing Work Breakdown Structure (WBS) diagram.

#### ○ Open WorkBench

Is a free project management product available from Source forge

### 8.7. Trello

Trello is one of the best-known collaborative project management tools. Learn how to use it with this step-by-step tutorial on how to create a free account and use its features. The complete Trello user guide

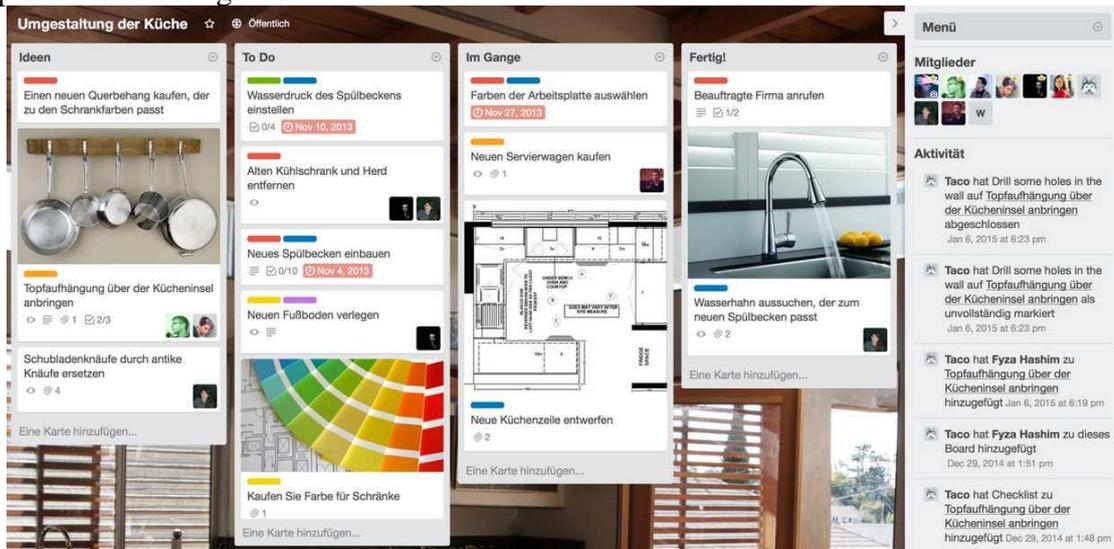


Figure 13: Schema represent trello

Source : Teamwork Planner

The success of a project depends to a large extent on good team coordination. Teamwork Planner lets you draw up a project implementation plan, assigning tasks and their duration.

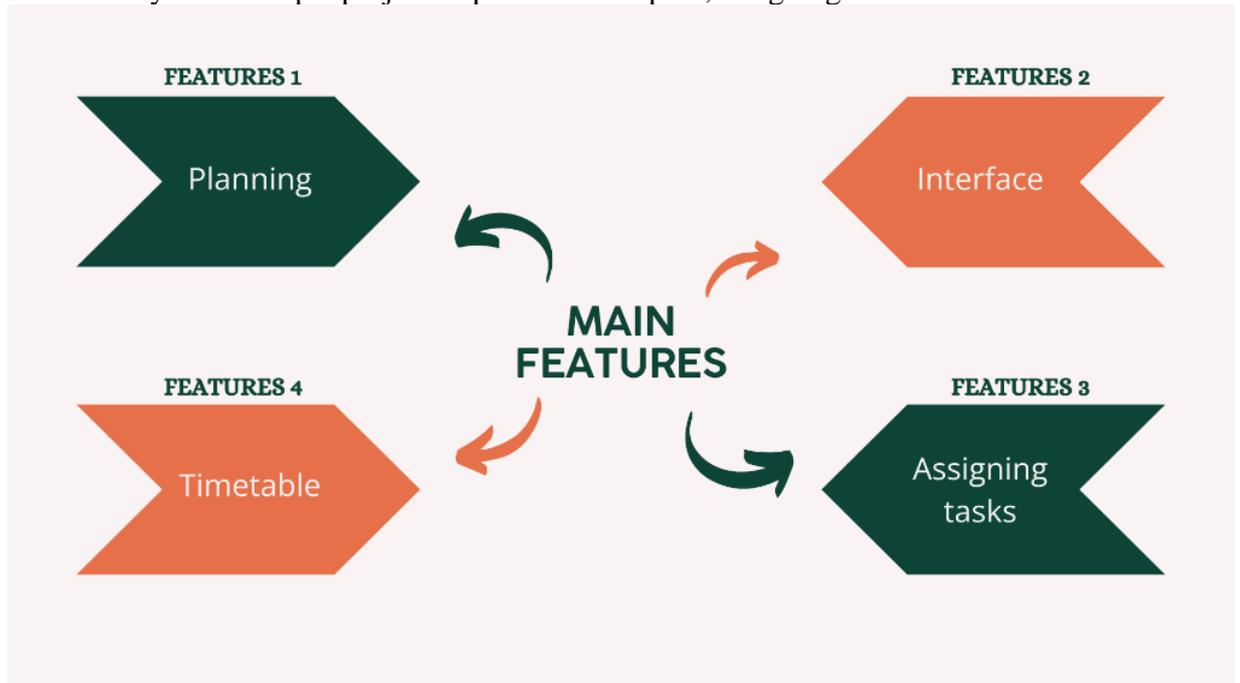


Figure 14: Diagram represent Teamwork planner

Source: Author treatment 2025

❖ Other Project Management Software<sup>21</sup> (CCM, n.d.)

- GANTTProject
- Bonita
- Enterprise Architect for UML
- Open Workbench
- Vehicle Fleet Manager
- WBS Chart Pro
- Project Planning
- Free Project Manager Software
- Project Planning and Management
- eHour
- RiskyProject
- Microsoft Office Project Standard
- Gestion d'Associations ou de Syndicats
- OpenProj
- RationalPlan Project Viewer
- MindManager Pro
- Business Plan eGuides
- project reader
- Simple Task Timer
- Multi-Project-Planner
- Project planing
- Ultimate Business Plan Starter

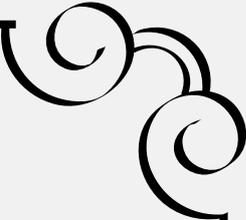
<sup>21</sup>[www.commentcamarche.net/telecharger/bureautique/21665-teamwork-planner/](http://www.commentcamarche.net/telecharger/bureautique/21665-teamwork-planner/)

**Conclusion:**

Through the exploration of various housing concepts and production types in Algeria, as well as the principles and processes of project management, this chapter has shown that social housing projects are complex endeavors that require efficient coordination among multiple stakeholders—both public and private.

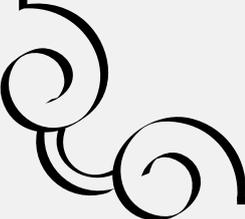
The chapter also highlighted the importance of modern project management practices, such as clear planning, role definition, deadline tracking, and quality control. Understanding the project life cycle and the roles of various actors provides essential insights into the challenges and dynamics of housing project implementation.

This thematic and managerial foundation paves the way for the next chapters, where deeper analysis of an actual case study and administrative evaluation will further clarify the obstacles and opportunities in improving project execution within the Algerian housing sector



CHAPTER TWO

ANALYTICAL  
STUDY



**Introduction:**

The project selected for this work is Study and follow-up of a project to build 64 housing units Collective + 18 shops in the eastern urban area of Biskra

This section is reserved for highlighting the different aspects of the project its planning, programming, architecture and others

**1. Presentation of the 'real' case study**

The program of the project consists in the realization of 64 promotional housing type collective to the commune of Biskra (Daira of Biskra W of Biskra.Le project will be realized on the place of the commune of Biskra.



Figure 15: Schema represent the project of 64 housing units

Source : Real estate promotion of Biskra ,2016

• **SITES:**

The project site - 64 housing units - is located in the eastern zone (El-Alia), Municipality of Biskra.

• **SURFACE**

The area of the site is 5348.00 m<sup>2</sup>.

**1.1. Project data sheet:**

<b>Name</b>	The Provincial Agency for Urban Real Estate Management and Organization of Biskra Province.
<b>Headquarters</b>	Hay Al-Amal (1000 housing units) opposite the Mosque of Repentance in Biskra
<b>Establishment Decision</b>	Joint ministerial decision dated 2004/07/24
<b>Legal Nature</b>	Public institution with an industrial and commercial character E.P.I.C.
<b>Activity</b>	Real estate promotion
<b>Commercial Register</b>	05 B 0242597
<b>Tax</b>	098607010032640

<b>Number</b>	
<b>Phone</b>	033 54 13 88 / 033 54 20 32 / 033 54 15 08
<b>Fax</b>	020 96 19 79 / 033 54 18 65
<b>Email</b>	info@awgrfubiskra.com
<b>Website</b>	<a href="http://www.awgrfubiskra.com">www.awgrfubiskra.com</a>

الوكالة الولائية للتسيير والتنظيم العقاري الحضري لولاية بسكرة .	<u>التسمية :</u>
حي الأمل (1000 مسكن ) مقابل مسجد التوبة بسكرة .	<u>المقر الاجتماعي :</u>
القرار الوزاري المشترك المؤرخ في 2004/07/24	<u>قرار الإنشاء :</u>
مؤسسة عمومية ذات طابع صناعي وتجاري E.P.I.C .	<u>الطبيعة القانونية :</u>
الترقية العقارية	<u>النشاط :</u>
0242597 B05	<u>السجل التجاري :</u>
098607010032640	<u>الرقم الجبائي :</u>
033 54 15 08 / 033 54 20 32 / 033 54 13 88	<u>الهاتف :</u>
020 96 19 79 / 033 54 18 65	<u>الفاكس :</u>
info@awgrfubiskra.com	<u>البريد الإلكتروني :</u>
www.awgrfubiskra.com	<u>الموقع الإلكتروني :</u>

Figure 16: data sheet of the project

Source : Real estate promotion of Biskra ,2016

## 1.2. Urban reading

### 1.2.1. Site plan:

The absorbed land for the project is located in the eastern metropolitan area - El Aaliya - Biskra - on an area of 5348.00 m2.

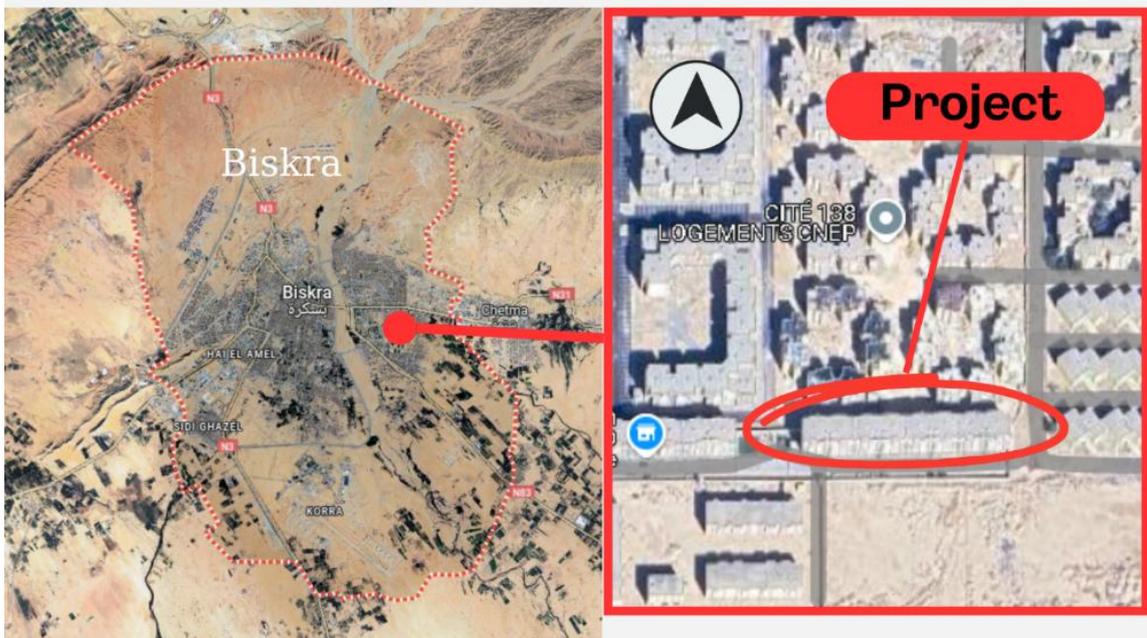


Figure 17: Schema represent Project situation

Source: Google map& author treatment ,2025

- ✓ **Floor area:** 11,615.60 m<sup>2</sup>
- ✓ **Ground coverage area:** 2,162.16 m<sup>2</sup>
- ✓ **Total area:** 5,348.00 m<sup>2</sup>

### 1.2.2. Project limits

- North: land owned by CNEP
- South: buildings under construction for the national gendarmerie
- East: residential area
- West: Street leading to Alia

And this proposed model: It contains 07 buildings and has two types of buildings:

- 1/- 04 buildings type R+4 = 40 dwellings type F4
- 2/- 03 buildings type C+4 = 24 dwellings type F4/F5

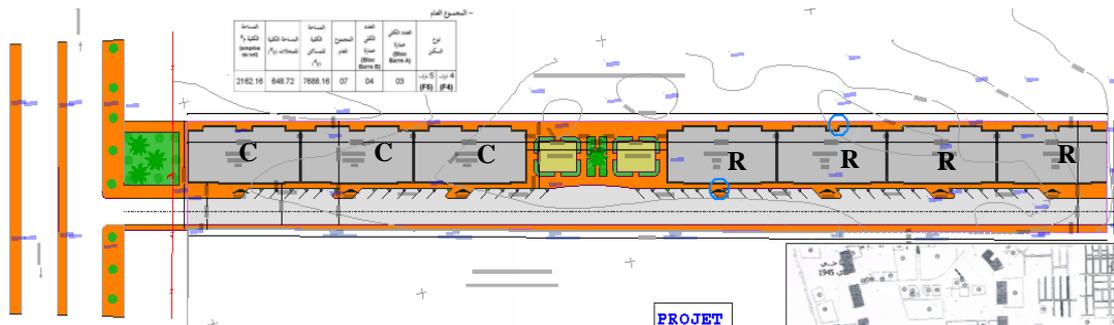


Figure18 ground plan

Source:Real estate promotion of Biskra 2016

1.2.3. Accessibility

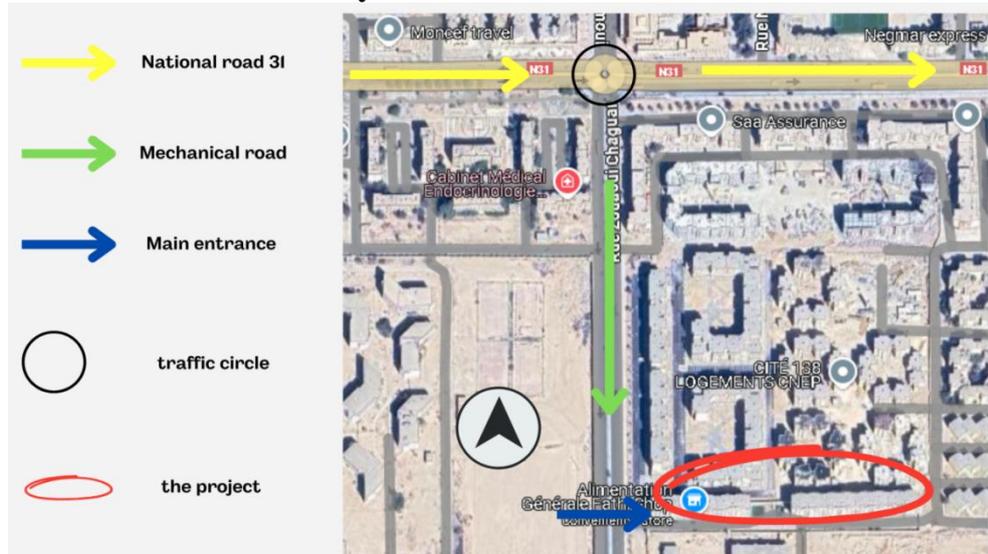


Figure 19: Schema represent accessibility to the project

Source : Google map & author treatment ,2025

Due to the location of the project, its connectivity includes:

- Mechanized axes that ensure easy access
- Proximity to collective buildings and residential communities that ensure flow
- Distance from most of the dangerous easements

1.2.4. Immediate surroundings

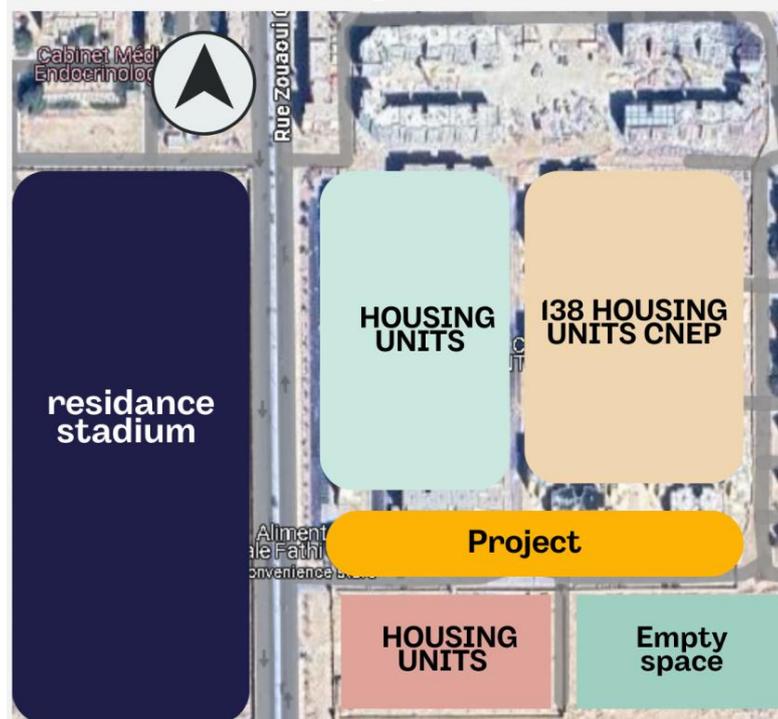


Figure 20 : Schema represent immediate surrounding the project

Source: Google map& Author treatment ,2025

### 1.2.5. Solarization and wind direction

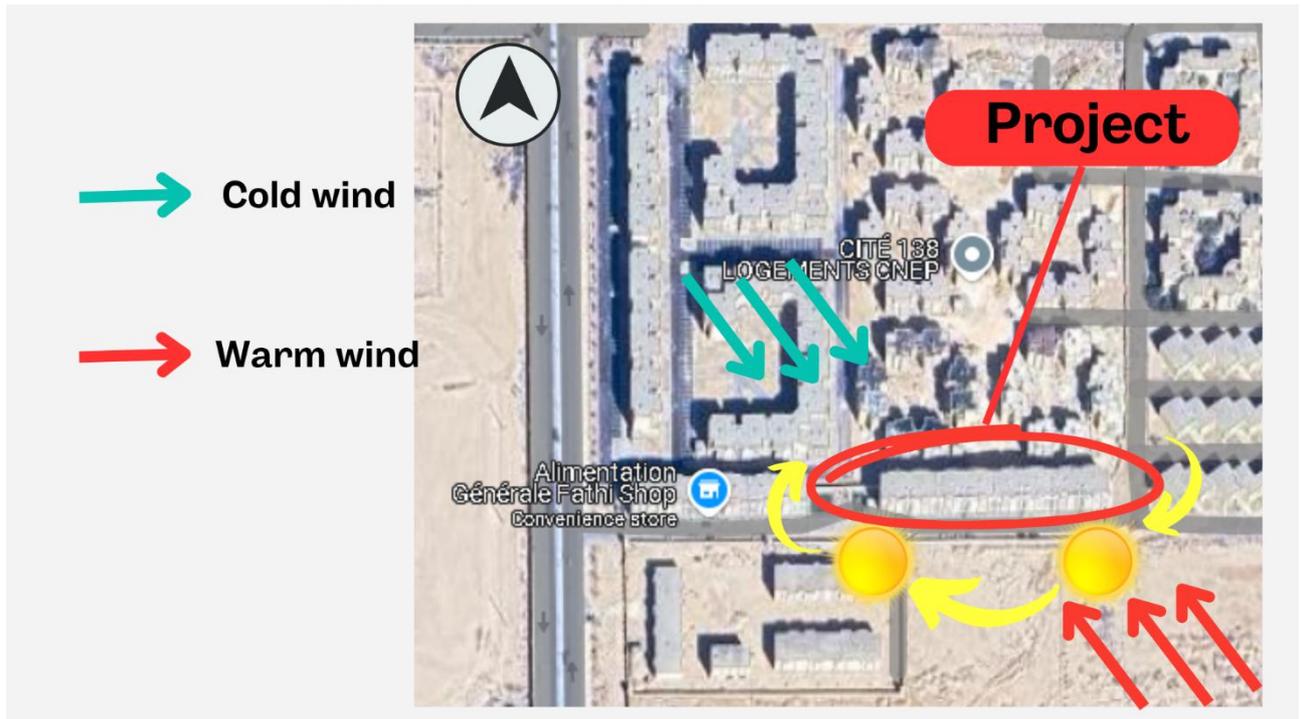


Figure 21: Schema represent( a: solarization of the project,b: wind direction)

Source:Google map & author treatment ,2025

Our study ground is well sunny, because of the absence of a natural or artificial obstacle, The floor is not affected by shadows because the neighboring perimeter is not elevated (lack of protective elements)

Due to the lack of various barriers (mountains, high buildings ....), the ground is highly exposed to wind

- Cold winds: Northeast direction
- Hot winds: Southwest direction

### 1.3. architectural analysis:

#### 1.3.1. Composition of the project

The project involves the construction of 64 collective promotional housing units in the commune of Biskra.

The project will be carried out in the commune of Biskra.

The cell's design takes into account the region's way of life, with well-lit, sunny spaces.

- Materials:

The materials proposed are of high quality, easy to use and available on the market.

Construction system:

Construction (R+4) and (C+4) is in reinforced concrete post and beam, filled with hollow brick masonry.

Cell 1: 40 Blocks(R+4)

Cell 2: 24 Blocks + 18 commercial premises (C+4);

1.3.2. Volumetry:

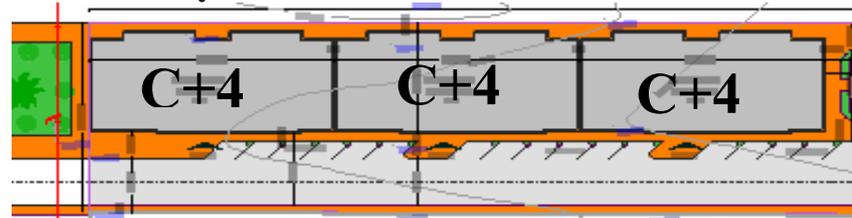


Figure 22: Schema represent volumetry of the project C+4

Source: Real estate promotion of Biskra ,2016

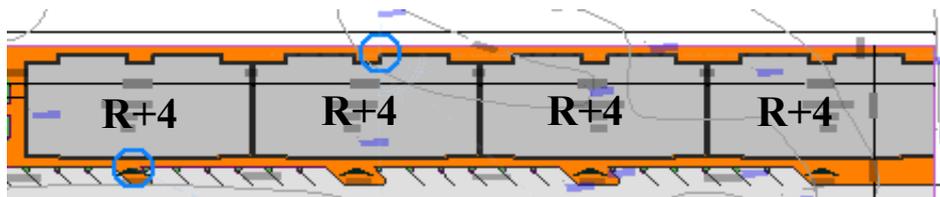


Figure 23: Schema represent volumetry of the project R+4

Source:Real estate promotion of Biskra ,2016

1.3.3. Spatial organization :

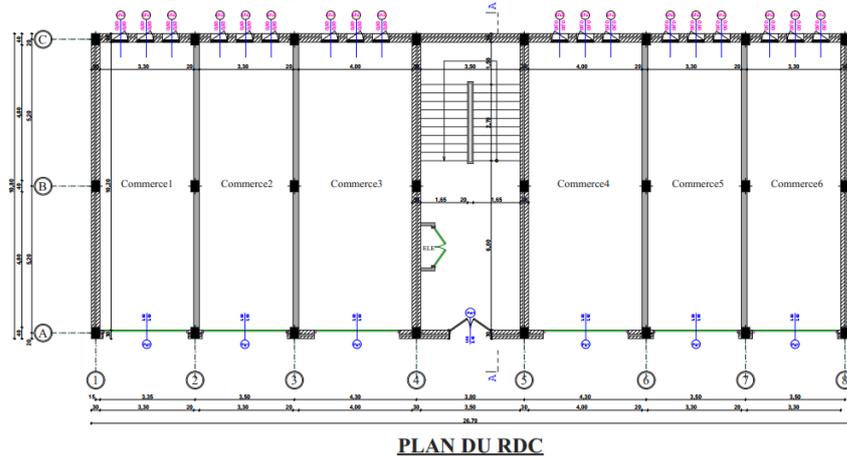


Figure 24: Schema represent Spatial organization of commercial premises

Source: Real estate promotion of Biskra ,2016

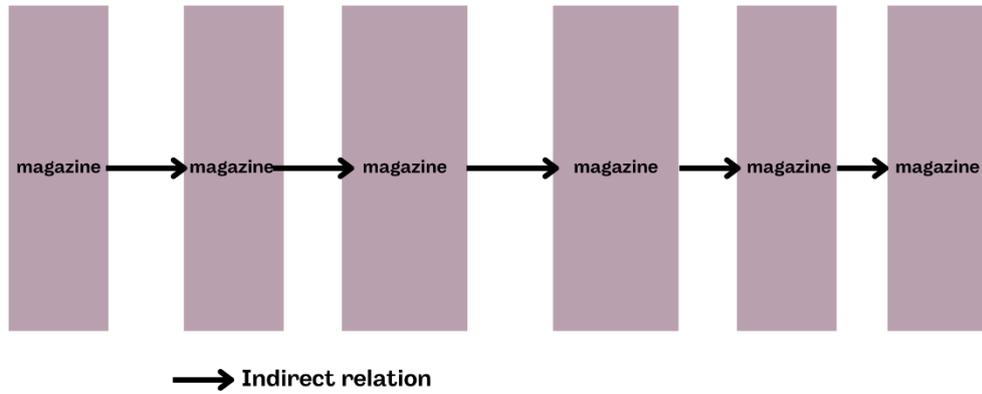


Figure 25 : Schema represent Spatial organization of commercial premises

Source: Author treatment ,2025

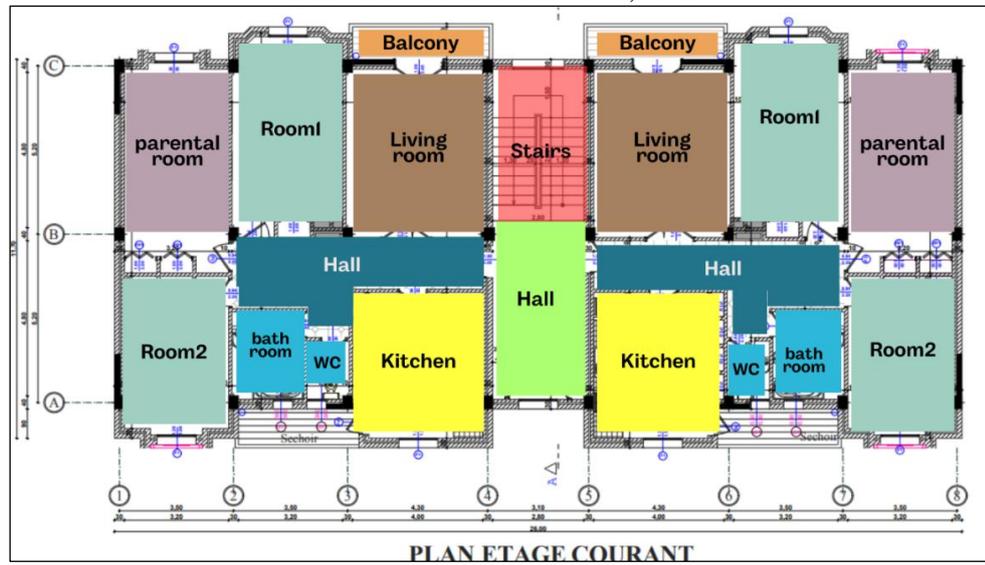


Figure 26: Schema represent Spatial organization of Current floor type F4/F4

Source: Real estate promotion of Biskra&author treatment ,2025

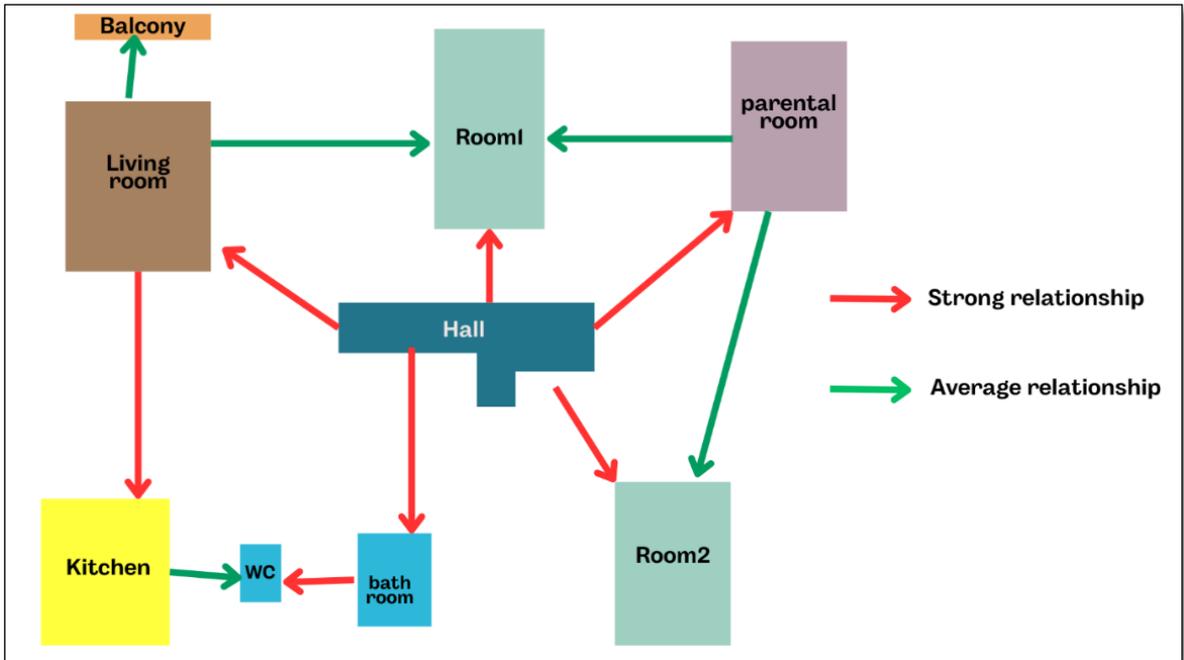


Figure 27: Schema represent Spatial organization of Current floor type F4

Source :Author treatment ,2025

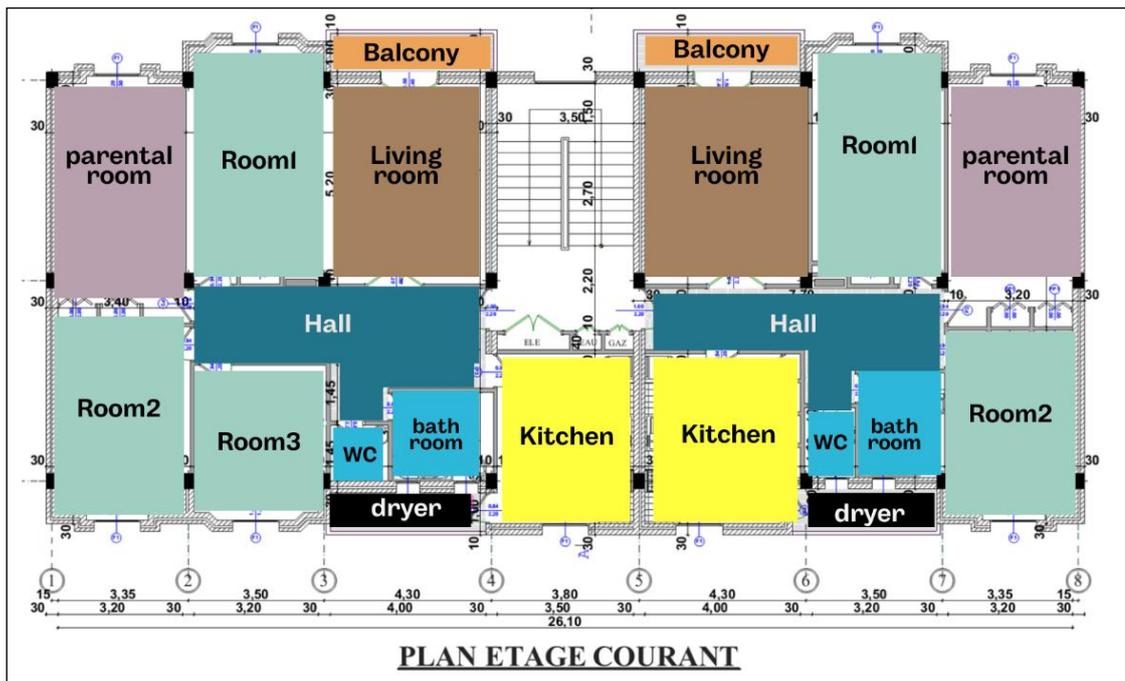


Figure 28: Schemarepresent Spatial organization of Current floor type F4/F5

Source:Real estate promotion of Biskra & author treatment ,2025

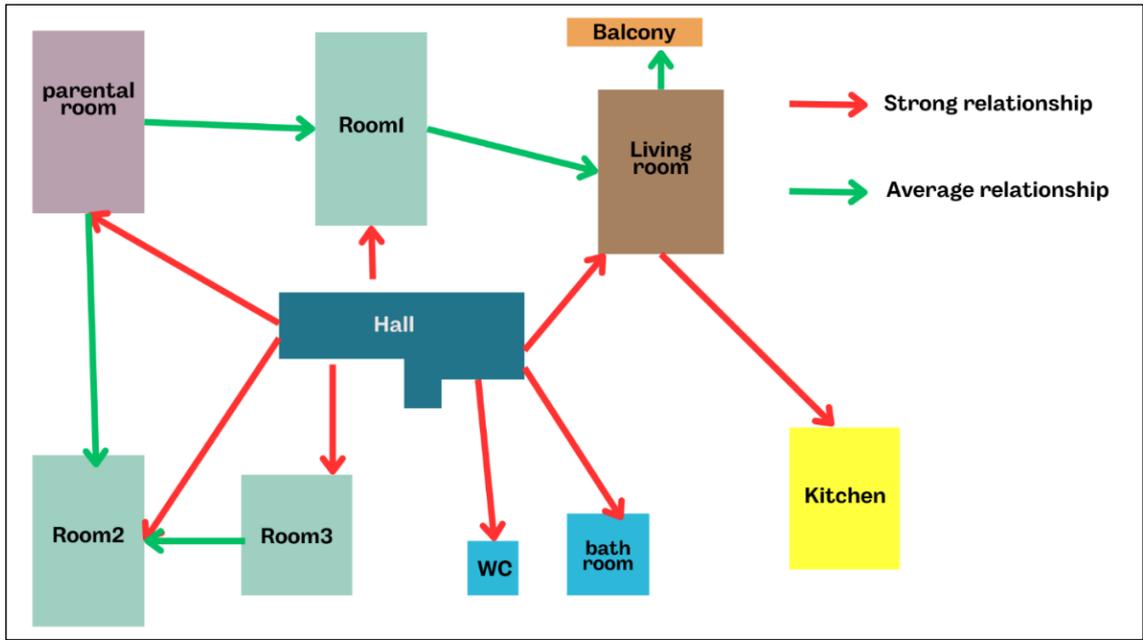


Figure 29: Schema represent Spatial organization of Current floor type F5

Source: Author treatment ,2025

The space table is referenced in the previous chapter on page 7

➤ **Fronts**

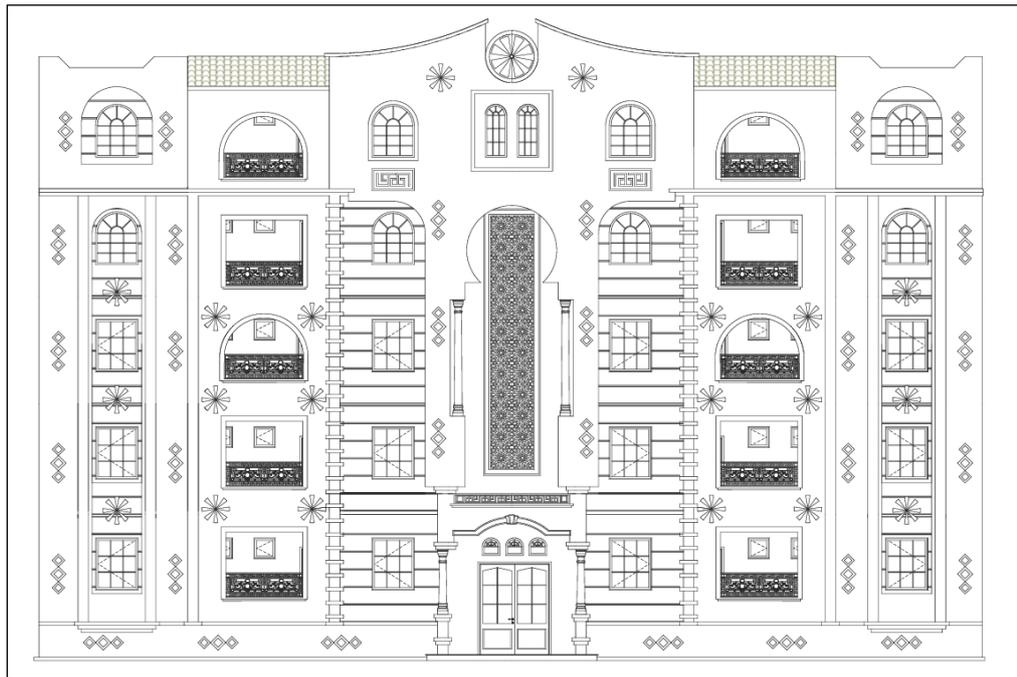




Figure 30: Schema represent fronts plan of both types

Source :Real estate promotion of Biskra ,2016

➤ Section



Figure 31: Schema represent section plan of both types

Source :Real estate promotion of Biskra ,2016

**1.3.4. technical analysis**

**Description:**

The purpose of this calculation note is to study the construction of a collective dwelling in BISKRA on behalf of AGRFUW de Biskra.

The structure is made up of several bar-type blocks separated by a seismic joint equal to 10cm. The blocks are made up of a ground + first floor (R+4), with identical heights of 3.40 m.

The floor is a hollow-core slab with a thickness of 16+ 4cm.

The framework consists of self-stabilizing porticos (post-and-beam) braced by sails.

ROBOT software was used to calculate the loads and determine the forces at the base.

The recommendations of the geotechnical report (according to the LABO) are as follows, and should be taken as the basis for calculation and design of the structure's infrastructure:

## Chapter Two : Managerial Study in The Case Study

Admissible soil stress equal to 1.60 bar (isolated footings).

Foundation anchorage equal to 1.50m depth.

The project will be carried out in W. Biskra, classified as Zone 1 (low seismicity) according to the regulations (RPA 99 / v2003).

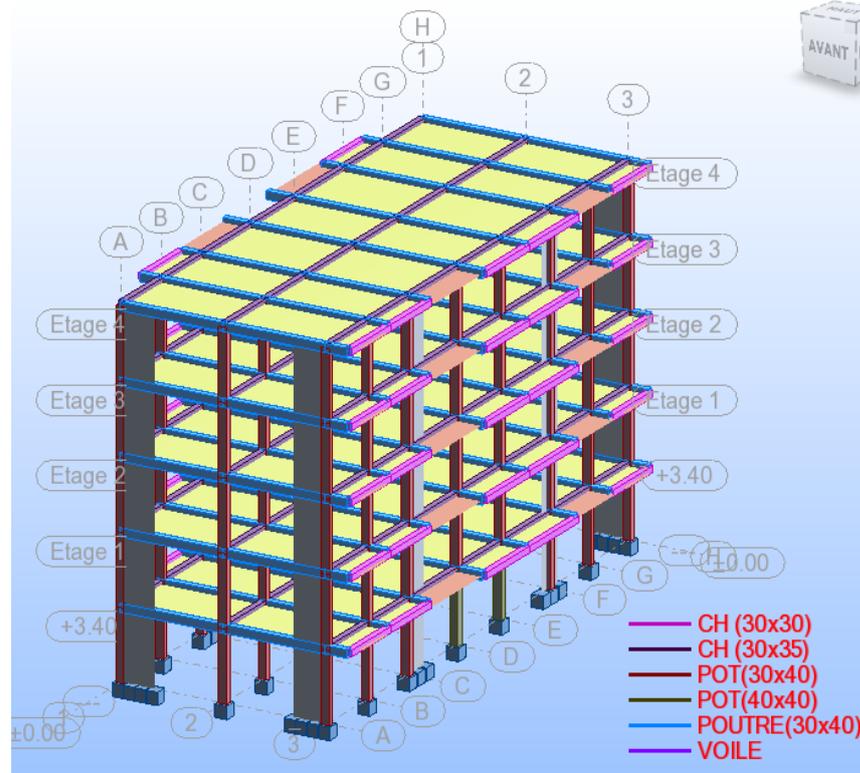


Figure 32: Schema represent structure plan

Source :Real estate promotion of Biskra ,2016

### Characteristics of the materials used:

#### Concrete :

a) Cement dosage :

Normal Cement dosage type CPJ : 350 Kg/m<sup>3</sup>

Steel/concrete equivalence coefficient:  $n = 15$

Concrete shrinkage coefficient:  $2 \times 10^{-4}$

b) Allowable stresses :

Controlled concrete  $f_{c28} = 25$ .

E L U :  $f_{bu} = 14.2$  MPA

E L S :  $\sigma_b = 15$  MPA

Controlled concrete strength  $F_{c28} = 22$  MPA (according to RPA99V2003).

Concrete tensile strength  $F_{t28} = 2.22$  MPA

Modulus of elasticity  $E_i = 3.21642 \times 10^5$  Mpa

Concrete density = 25 KN /m<sup>3</sup>

#### STEEL:

Type: Fe E 24 Natural high bond:  $f_e = 400$  MPA

Permissible stresses: 348 MPA

Low-damage cracking :

Durable and transient situation:  $\sigma_s = f_e / 1.15$  Mpa

Accidental situation:  $\sigma_s = f_e / 1$  Mpa

Harmful cracking:  $\sigma_s = \min (2/3 f_e, 150n)$ ; with  $n = 1.6$  and  $\sigma_s = 240$  MPA

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Grade: feE240fe = 235 MPA

Modulus of elasticity Ei = 2.10x106 MPA

Translated with DeepL.com (free version)

**Plan dimension of the structure**

-Maximum width.....10.40 m

-Maximum length.....25.70 m

-Total height.....+17.00 m

**1.3.4.1. Predimensioning of the elements used:**

Posts rectangular..... (30x40) cm<sup>2</sup>

Square posts..... (40x40) cm<sup>2</sup>

Load-bearing beams..... (30x40) cm<sup>2</sup>

Non-load bearing beams..... (30x35) cm<sup>2</sup>

Long sill(Longrines) ..... (30x40) cm<sup>2</sup>

Staircase (flight+ landing) ..... (Ep. =14) cm

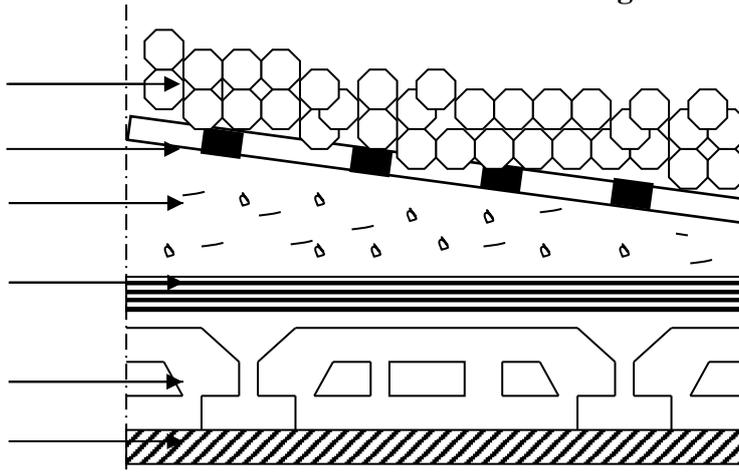
Bracing .....(ép. =17) cm

Table2 : represent details of the element used

Source:Real estate promotion of Biskra (civil engineering plan) ,2016

N	BX	BY	H	E	SPACE	AX
S2	240	170	55	30	15cm	11T14
S3	270	200	65	30	15cm	13T14
S4	290	220	70	50	15cm	14T14
S5	330	250	80	50	15cm	17T14
S6	310	240	70	50	15cm	16T14
S8	310	310	75	50	15cm	22T14
SV1	350	20	70	-	15cm	12T14
SV2	320	310	70	-	15cm	20T14
SJ1	400	320	70	-	15cm	21T14
SJ2	350	220	70	-	15cm	23T14

1.3.4.2. evaluation of charges and overcharges



Plancher à corps creux

Figure 33: Schema represent Hollow-core floor

Source :Real estate promotion of Biskra ,2016

Table 3: represent Inaccessible terrace

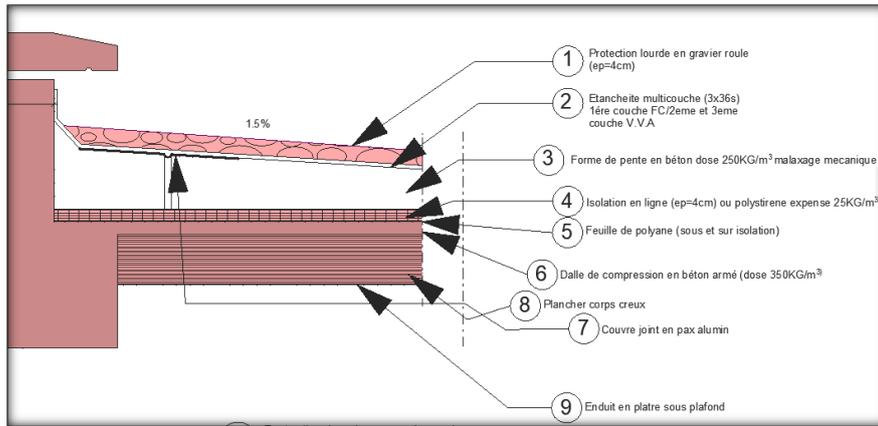
Source :Real estate promotion of Biskra ,2016

N°	Designation	e (m)	$\gamma$ (KN /m <sup>3</sup> )	Charge (KN/m <sup>2</sup> )
1	Protective chippings	0.04	20	0.80
2	Multi-layer waterproofing	0.02	-	0.12
3	Polystyrene thermal insulation	0.04	4	0.16
4	Concrete slope	1%	20	2.00
5	Hollow-core floor	16+4	/	2.85
6	Gypsum plastering	0.02	10	0.2
				<b>G<sub>T</sub> =6.13</b>

Chapter Two : Managerial Study in The Case Study

Figure 34: Schema represent Hollow-core floo

Source :Real estate promotion of Biskra ,2016



1	Heavy protection with rolled gravel (thickness = 4 cm)
2	Multilayer waterproofing (3x36s): 1st layer FC / 2nd and 3rd layer V.V.A
3	Slope layer in concrete dosed at 250 KG/m <sup>3</sup> , mechanical mixing
4	Thermal insulation (thickness = 4 cm) or expanded polystyrene 25 KG/m <sup>3</sup>
5	Polyane sheet (below and above insulation)
6	Compression slab in reinforced concrete (dose 350 KG/m <sup>3</sup> )
7	Joint cover in aluminum pax
8	Hollow-core slab
9	Plaster coating under the ceiling

## 2. Project administrative process

### 2.1. Summary

Table 4:represent summary table pf the project

	Les phases	Actor	Date	Observation
PHASE1 : INSCRIPTION	Decision to carry out the project	AGFU	2015	Part of the five-year program
	Project study registration	AGFU	2015	AGFU has decided to register the studies for Project
	Project budget allocation	AGFU	2015	AGUF has decided to earmark part of its budget for the production of
	Site selection	AGFU	2015	The land selection committee gives a favorable opinion
	Soil survey	Study control laboratory	2015	AGFU conducts soil surveys to determine the nature and resistance of the project site
	Declaration of futility	AGFU	/6/25 2015	/
	Tender procedure	AGFU	/5/18 2015	AGFU chooses the tender procedure
	Tender opening	AGFU	/7/20 2015	Tenders opened for AGFU evaluation
PHASE 2 : ETUDE	Technical appraisals	AGFU	/8/4 2015	/
	Financial appraisals	AGFU	/9/23 2015	/
	The designation of B.E.T	AGFU	/9 2015	Choose B.E.T NOUI FAISSAL
	Temporary grants	AGFU	/10/29 2015	/
	Record of agreement	AGFU	/10/29 2015	issued the order to start studies
	The designation of E.T.P	AGFU	/	/
	Contr	B.E.T	/	/

	act preparatio n by B.E.T			
PHASE 3 : REALISATION	Servi ce Order No. 1	ETP “FRERES BOUGADOUR A”	14/1/2 016	/
	Servi ce Order No. 2	BET “FAISSAL NOUI”	22/6/2 015	/

### 3. Project background (descriptive and graphic history)

The lifecycle of the 64 social housing units project followed a systematic and structured process, from initial planning and design to final execution. It began with the registration of the project in the five-year development program, followed by the allocation of the necessary budget and the selection of an appropriate site. Critical decisions were made during each phase, including conducting essential studies such as the soil study and technical evaluations. Once these studies were completed, AGFU proceeded with the evaluation and selection of contractors and engineering offices. Work orders were then issued to begin construction, ensuring that the project moved smoothly from one stage to the next. The entire process was carried out in an organized manner, adhering to technical specifications and standards, guaranteeing the successful and efficient completion of the project.

#### 3.1. Project Lifecycle of the Construction of 64 Social Housing Units

The lifecycle of the 64 social housing units project includes several key phases, from the initial registration phase through to the design and realization phases, until the final completion of the project. Below is a detailed breakdown of the phases the project went through:

##### ➤ Phase 1: Registration (Inscription)

In this phase, several important decisions were made regarding the project:

**AGFU's Decision to Implement the Project:** In 2015, AGFU (the responsible agency) decided to proceed with the project as part of the five-year program.

**Project Study Registration:** AGFU allocated part of the program's budget to fund the necessary project studies, defining the technical and financial aspects of the project.

**Site Selection:** The site for the project was chosen in 2015, with the selection committee reviewing and approving the proposed location.

**Soil Study:** In 2015, a geotechnical study was carried out to assess the soil's properties and its capacity to bear the required loads, including the soil's strength, which is crucial for foundation design.

**Announcement of Feasibility:** On 25/06/2015, the announcement of infeasibility for some previous options was made.

**Tender Process:** On 18/05/2015, the tendering process was initiated to select contractors. AGFU chose to proceed with the public bidding method.

##### ➤ Phase 2: Study

Once the registration phase was completed, the study phase began, which included various procedures for analysis and evaluation:

**Bid Opening:** On 20/07/2015, the received tenders were opened for evaluation by AGFU to assess the technical and financial proposals.

## Chapter Two : Managerial Study in The Case Study

**Technical Evaluation:** On 04/08/2015, the technical evaluation of the bids was carried out to select the most suitable one based on quality and capability to execute the project.

**Financial Evaluation:** On 23/09/2015, the financial evaluation of the bids was completed to determine which contractors fit within the allocated budget for the project.

**Selection of the Engineering Office (B.E.T):** In September 2015, the engineering office **NOUI FAISSAL** was selected to carry out the necessary engineering studies for the project.

**Temporary Grant:** On 29/10/2015, temporary approvals were granted to begin preparatory works for the project.

**Agreement Record:** On 29/10/2015, the agreement record was signed, setting the official start date for the project studies.

### ➤ Phase 3: Realization

In the realization phase, actual construction work began with the issuance of several work orders:

**Work Order No. 1:** On 22/06/2015, a work order was issued to the design office **BET “FAISSAL NOUI”**, which was responsible solely for the project study. The BET did not execute the construction works itself, but instead subcontracted a public works company (ETP) to carry out the realization of the project.

**Work Order No. 2:** On 14/01/2016, the first construction work order was issued to **ETP “FRERES BOUGADOURA”** to begin the execution of the construction works.

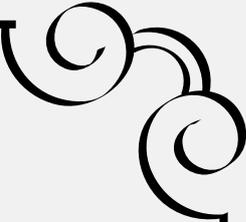
### **Conclusion:**

The analytical study of the project of 64 collective housing units and 18 shops in Biskra allowed us to have a comprehensive understanding of the various urban, architectural and technical aspects related to the project. By analyzing the site, the organization of space, the choice of materials, and the distribution of blocks, the project was carefully designed to take into account local specificities and the lifestyle of the Algerian family.

The study showed that the project has a strategic location with easy access, good exposure to sunlight, as well as natural ventilation thanks to wind directions, which contributes to environmental comfort. From a technical point of view, the reliance on a reinforced concrete structure system, the use of high-quality materials, and respect for seismic standards and geotechnical recommendations reflect a commitment to durability and safety.

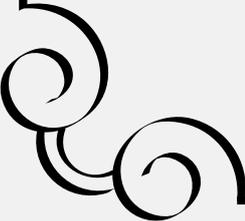
At the administrative level, the project went through organized phases, starting with registration and technical studies, through the selection of contractors and study offices, and ending with the issuance of work orders. This reflects a clear methodical approach necessary for the successful implementation of the project.

This analytical study constitutes an important basis for moving on to the next chapter, which will focus on the management aspects of the project implementation, in order to assess the effectiveness of performance and the quality of achievement within the urban context.



CHAPTER THREE

MANAGERIAL  
STUDY IN THE  
CASE STUDY



## Introduction

The success of a project is the result of the integration of several organizational and managerial elements, most notably the adoption of effective management tools that include the ten project management areas, which are considered a basic reference for controlling the various stages of completion. However, these technical aspects alone are not enough to ensure the proper functioning of the project, as its success depends on the real and effective involvement of the various stakeholders, each according to their specialization and within a clear mission. In this context, effective communication between these stakeholders is a pivotal element that contributes to coordinating efforts, overcoming difficulties and minimizing the margin of error. Controlling the duration of the project and the allocated costs remains one of the prerequisites for the success of the project, as the careful management of time and financial resources is a factor that enhances the chances of a smooth and effective implementation of the project. Accordingly, this chapter seeks to highlight the importance of time and cost assessment, and their role in the project process, while highlighting the impact of communication and coordination between stakeholders in enhancing performance and addressing the shortcomings recorded in the case study.

### 1. Presentation of the manufacturing company

The Real Estate Agency of Biskra was established by inter-ministerial decision dated 24/07/2004, based on the provisions of Executive Decree 405/90, dated 22/12/1990, amended and supplemented by Executive Decree 408/03, dated 05/11/2003, merging 14 local agencies into a single agency called in the body of the law the State Agency for Urban Real Estate Management and Organization of Biskra in the form of a public institution of a commercial and industrial nature



**The Agency's regional branches:**

<b>Number of Municipalities</b>	<b>Covered Municipalities</b>	<b>Branch Name</b>	<b>Branch No.</b>
03	Biskra – El Hadjeb – Chetma	Biskra	01
11	Tolga – Foughala – El Ghrous – Lichana – Bouchagroun – Ourlal – Mlili – Mekhadma – Ouled Aouche – Bordj Ben Azzouz – Lioua	Tolga	02
04	Sidi Okba – Ain Naga – El Houch – Mchounèche	Sidi Okba	03
05	El Oued – Branis – Jemoura – Ain Zaatout – El Kantara	El Oued	04
04	Zeribet El Oued – El Feidh – Khenget Sidi Naji – Mezaira	Zeribet El Oued	05
06	Ouled Djellal – Sidi Khaled – Doucen – Chaiba – Besbes – Rass El Miad	Ouled Djellal	06

**1.1. Real Estate Agency Tasks:**

The tasks of the real estate agency are defined by Articles 03 and 04 of the aforementioned executive decree.

Article 03 stipulates the mandatory tasks for which the agency was created, which are three:

1 - Acquisition of real estate or real estate rights destined for development, for the benefit of the local community.

2 - Transferring the ownership of the said real estate or real estate rights, according to the terms specified in a term sheet.

3 - Carrying out real estate organization operations in accordance with the regulations in force.

On the other hand, Article 4 provides for optional tasks, i.e. those that the agency can accomplish within the framework of its general mission and within the limits of its capabilities. They are also three in number:

4 - Assisting local community bodies in the preparation, preparation and implementation of urbanization and development tools.

5- Upgrading the separated lands and areas of different activities, in accordance with the established means of reconstruction and adaptation, or assigning someone to upgrade them.

6- Initiating processes of acquiring ownership of real estate and real estate rights for its own account and assigning them. The organization of the agency must take into account the realization of these tasks.

Total number of real estate agency employees: 159

<b>Senior Executives</b>	<b>Top Executives</b>	<b>Executives</b>	<b>Supervisory Staff</b>	<b>Operational Staff</b>	<b>Total</b>
01	24	84	19	49	177

**Organizational structure:**

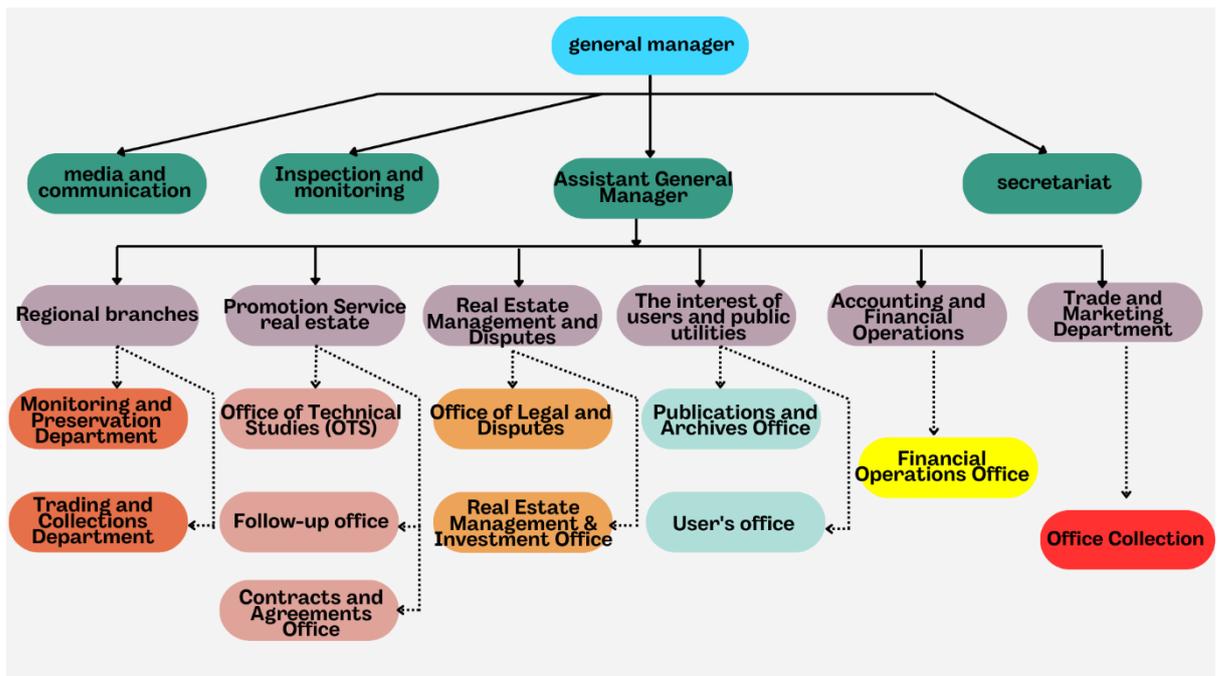


Figure 35: Schema represent Organizational structure of REP

Source :Real estate promotion of Biskra with author treatment2025

### 1.2. Organizational interests

The company's departments are distributed across three floors: the ground floor hosts reception, real estate management, and marketing services; the first floor includes property development, HR, and a meeting room; while the second floor houses the general manager's office, accounting, and administrative support services.

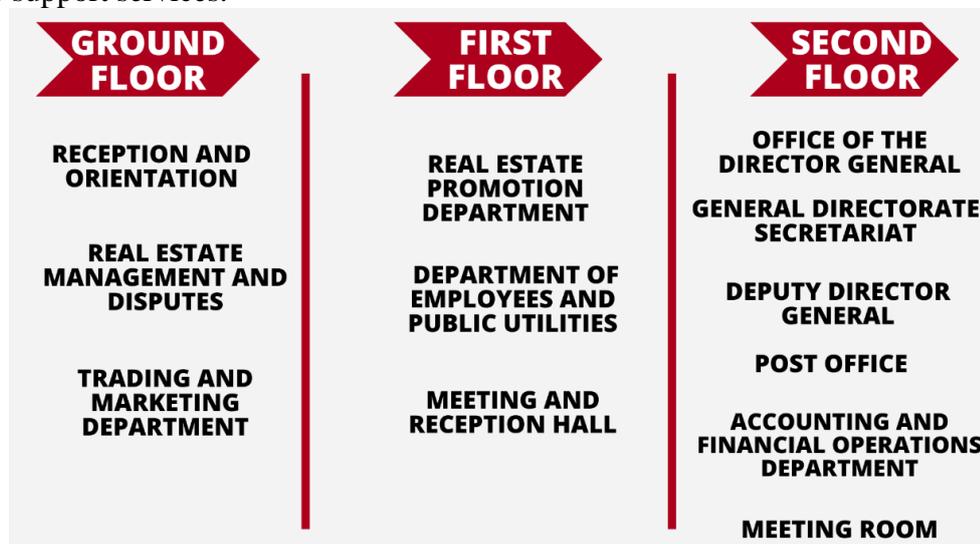


Figure 36: Schema represent Organizational structure of REP

Source :Real estate promotion of Biskra with author treatment ,2025

### 1.5. Human resources & material resources

<b>o.</b>	<b>Equipment Name</b>	<b>Quantity</b>
	Concrete Plant	1
	Concrete Mixer	2
	Dump Truck	1
	Loader	1
	Backhoe Loader	1
	Vibrating Plate Compactor	2
	Truck	1
	Mobile Crane	1

<b>Role/Description</b>	<b>Team Details / Notes</b>
Site Supervisor	1
2Roofing Teams	each teams had 4 workers
General Labor	4 workers
3Masonry Teams	each team: 2 masons + 1 laborer)
4 Ground Slab Teams	each team: 1 mason + 1 laborer)
Plumbing Workers	2 workers
Electrician	1 worker
Interior Painting Team	1 team leader + 10 workers
Exterior Painting Team	1 team leader + 4 workers
Welder (Metalwork/Forging)	1 worker
Security Agents	2 workers

## 2. Progress Workflow in a Construction Project

The progress workflow in a construction project refers to the organized and sequential process of executing all construction-related tasks from the initial stage to project completion. It tracks the advancement of different types of work (infrastructure, structural works, masonry, finishes, etc.) over time, according to a predefined technical and time schedule

### 2.1. Typical Stages in Construction Progress Workflow

#### Site Preparation

- Land clearing, fencing, and securing the construction site.

#### Infrastructure Works (Substructure)

- Excavation, foundation works, reinforced concrete in footings and slabs, underground utilities.

#### Superstructure Works

- Construction of columns, beams, slabs, stairs – everything above the ground level.

#### Masonry Works

- Building internal and external walls with bricks or blocks.

#### Siding & Front Works

## Chapter Three: Analytical Study

- External cladding, stone works, insulation, and facade finishing.

### **Technical Works**

- Plumbing, electrical systems, ventilation, HVAC, and low-current systems.

### **Carpentry & Interior Joinery**

- Installing doors, windows, cabinets, and wooden decorative elements.

### **Finishing Works**

- Painting, glazing, flooring, ceilings, tiling, and other interior finishes.

### **Miscellaneous Works**

- External landscaping, sidewalks, fencing, and final cleaning.

## **3. Comparative study case with a referential project**

### **3.1. Presentation of the referential project**

The project consists of the construction of 36/224 collective housing units of type F4, along with 30 commercial premises and 12 service units, located in the new urban center in the western area of Biskra Province.

### **3.2. work progress sheet**

**start of work 24/10/2021**

**End on:24/12/2025**

**infrastructure work in blocks 1,2 and 3**

**formwork and reinforcement for footings in progress**

**longrine reinforcement is in progress**

reinforced concrete in infrastructure completed

cast platform and sill completed

**reinforcement of footings in blocks 4/5/6 almost done**

reinforced concrete in superstructure start

Table5 :represent progress of the project October to December

Source:Real estate promotion of Biskra with author treatment ,2025

designation of work	rate of construction progress in November	rate of construction progress in December
landscaping	100%	100%
reinforced concrete in infrastructure	20%	50%
reinforced concrete in superstructure	00%	00%
Masonry	00%	00%
Siding	00%	00%
Electricity	00%	00%
Woodwork	00%	00%
Paint & glazing	00%	00%
various	00%	00%
<b>Total Progress</b>	<b>9%</b>	<b>14%</b>

On January 2022

Ground floor post pouring in progress

ground floor formwork in progress

sill work in block 5 completed

### Chapter Three: Analytical Study

Table6 :represent progress of the project in January

Source:Real estate promotion of Biskra with Author treatment ,2025

designation of work	rate of construction progress in January
reinforced concrete in infrastructure	80%
reinforced concrete in superstructure	09%
Masonry	00%
Siding	00%
Plumbing	00%
Electricity	00%
Woodwork	00%
Paint & glazing	00%
various	00%
Total Progress	23%

On February 2022

Ground floor post pouring completed

sanitation completed

pouring of floating floor slab underway

Table7 : represent progress of the project in February

Source:Real estate promotion of Biskra with author treatment ,2025

Designation of Works	rate of construction progress in February
Reinforced concrete in infrastructure	100%
Reinforced concrete in superstructure	15%
Masonry	00%
Siding	00%
Plumbing	00%
Electricity	00%
Woodwork	00%
Paint & glazing	00%
Various	00%
Total Progress	28%

From March to avril

column and wall casting

masonry work in progress

work stopped in blocks 4 and 5

### Chapter Three: Analytical Study

Table8 : represent progress of the project March to April

Source:Real estate prmotion of Biskra with Author treatment ,2025

designation of Works	rate of construction progress in March	rate of construction progress in April
reinforced concrete in infrastructure	100%	100%
reinforced concrete in superstructure	30%	40%
Masonry	05%	10%
Siding	00%	00%
Plumbing	00%	00%
Electricity	00%	00%
Woodwork	00%	00%
Paint & glazing	00%	00%
various	00%	00%
Total Progress	33%	37%

#### May and Jun

floors of the various block levels are completed

masonry work in progress

work on the columns and walls is underway

Table9 : represent progress of the project may& Jun

Source:Real estate prmotion of Biskra with Author treatment ,2025

designation of work	rate of construction progress in May	rate of construction progress in Jun
reinforced concrete in infrastructure	100%	100%
reinforced concrete in superstructure	50%	55%
Masonry	20%	25%
Siding	00%	00%
Plumbing	00%	00%
Electricity	00%	00%
Woodwork	00%	00%
Paint & glazing	00%	00%
various	00%	00%
Total Progress	41%	43%

#### July & August

floors of the various block levels are completed

masonry work in progress

work on the columns and walls is underway

Chapter Three: Analytical Study

Table10 : represent progress of the project July & August

Source:Real estate promotion of Biskra with Author treatment ,2025

September & October

designation of work	rate of construction progress in July	rate of construction progress in August
reinforced concrete in infrastructure	100%	100%
reinforced concrete in superstructure	60%	70%
Masonry	30%	40%
Siding	00%	00%
Plumbing	00%	00%
Electricity	00%	00%
Woodwork	00%	00%
Paint & glazing	00%	00%
various	00%	00%
Total Progress	41%	45%

plastering work underway in block 1

masonry work in progress

electrical work in progress

Table11 : represent progress of the project September & October

Source:Real estate promotion of Biskra with Author treatment ,2025

designation of work	rate of construction progress in September	rate of construction progress in October
reinforced concrete in infrastructure	100%	100%
reinforced concrete in superstructure	75%	80%
Masonry	45%	60%
Siding	10%	10%
Plumbing	00%	00%
Electricity	20%	40%
Woodwork	00%	00%
Paint & glazing	00%	00%
various	00%	00%
Total Progress	53%	58%

On November

work on columns and walls is underway on all floors

masonry work in progress

electrical work in progress

### Chapter Three: Analytical Study

Table12 : represent progress of the project in November

Source:Real estate promotion of Biskra with Author treatment ,2025

designation of work	rate of construction progress in November
reinforced concrete in infrastructure	100%
reinforced concrete in superstructure	80%
Masonry	60%
Siding	20%
Plumbing	00%
Electricity	50%
Woodwork	00%
Paint & glazing	00%
various	00%
Total Progress	59%

#### 4. Problems relating to lead times in the study case project:

Drilling works for the infrastructure started on **January 25, 2016** and stopped in March due to a technical issue (lost well in the ground during drilling).



Figure37 : represent Drilling works for the infrastructure

Source: Real estate promotion of Biskra,2016



Figure38 : represent a technical issue(fausse sceptique)

Source: Real estate promotion of Biskra, 2016

### Chapter Three: Analytical Study

**On April 17**, works resumed in both lots and started the foundation work, and then the works were stopped in lot 2 on April 24 due to mismanagement of the work.

**From May 2 to May 12**, work resumed due to a cement issue.

**From May 15 to May 18**, work on the two lots was halted due to lack of labor.

**From May 31 to July 14**, during this period, the infrastructure works were resumed and completed on July 14.

**From January to July**, according to the daily reports of the workshop, we find that there are delays in the infrastructure works and the delay lasted for 4 months.

**From July 17 to July 24**, the start of the concrete work for the cleanliness of the joists and the progress of the work was delayed for 3 months due to an issue with the wooden boards.

**From October 29 to December 4**, the construction of columns and beams (Voiles) started, as well as technical issues with the columns of buildings 4 and 5 and their reconstruction to stop the construction of building 7 from November 23 to December 4.

Table13 :Represent rate of construction progress in 2016

Source:Real estate promotion of Biskra with Author treatment ,2016

designation of work	rate of construction progress2016			overall rate of progress	
	1 Block	2Block	3 Block		
reinforced concrete in infrastructure	50%	50%	50%	50%	7,78%
reinforced concrete in superstructure	20%	15%	30%	20%	
Masonry	00%	00%	00%	00%	
Siding	00%	00%	00%	00%	
Plumbing	00%	00%	00%	00%	
Electricity	00%	00%	00%	00%	
Woodwork	00%	00%	00%	00%	
Paint & glazing	00%	00%	00%	00%	
various	00%	00%	00%	00%	

**From the progress report on September 1, 2017**, the progress of the works is as follows:

designation of work	rate of construction progress2016				overall rate of progress	
	4 Block	5 Block	6 Block	7 Block		
reinforced concrete in infrastructure	50%	50%	50%	50%	50%	7,78%
reinforced concrete in superstructure	20%	15%	15%	30%	20%	
Masonry	00%	00%	00%	00%	00%	
Siding	00%	00%	00%	00%	00%	
Plumbing	00%	00%	00%	00%	00%	
Electricity	00%	00%	00%	00%	00%	
Woodwork	00%	00%	00%	00%	00%	
Paint & glazing	00%	00%	00%	00%	00%	
various	00%	00%	00%	00%	00%	

In the first batch, the progress rate is estimated at 21.25%.

In the second batch, the progress rate is estimated at 18.88%



Figure 39: Represent construction progress in 2017

Table14 :Represent rate of construction progress in 2017

Source:Real estate prmotion of Biskra with Author treatment ,2017

designation of work	rate of construction progress2017				overall rate of progress
	4 Block	5 Block	6 Block	7 Block	
reinforced concrete in infrastructure	100%	100%	100%	100%	100%
reinforced concrete in superstructure	60%	70%	70%	80%	70%
Masonry	00%	00%	10%	00%	05%
Siding	00%	00%	00%	00%	00%
Plumbing	00%	00%	00%	00%	00%
Electricity	15%	15%	15%	20%	16.25%
Woodwork	00%	00%	00%	00%	00%
Paint & glazing	00%	00%	00%	00%	00%
various	00%	00%	00%	00%	00%

21.25%

**January 2, 2018 to January 30, 2018:**

designation of work	rate of construction progress2017			overall rate of progress
	1 Block	2Block	3 Block	
reinforced concrete in infrastructure	100%	100%	100%	100%
reinforced concrete in superstructure	50%	60%	60%	56.66%
Masonry	00%	00%	00%	00%
Siding	00%	00%	00%	00%
Plumbing	00%	00%	00%	00%
Electricity	10%	15%	15%	13.33%
Woodwork	00%	00%	00%	00%
Paint & glazing	00%	00%	00%	00%
various	00%	00%	00%	00%

18.88%

In the first batch, the columns were molded and the walls were built.

In the second batch, the plastering of the walls continues

**February 2 to February 28**

In the first and second batch: Reinforcing columns for floors and reinforcing joists.

### Chapter Three: Analytical Study

The construction of the walls continues.

**From March 1 to 29**, we find:

First batch: Continued reinforcing and molding of columns and wall construction on various floors.

In the second batch, the reinforcement of the joists on the 4th floor and the cladding of the interior walls in buildings 6 and 7.



Figure40 : Schema Represent construction progress in 2018

Source:Real estate promotion of Biskra,2018

**From April 1 to June 30**, we find:

Construction work continues, electrical wiring begins.

Interior cladding work continues

**From July 5**, we find:

100% completion of the slab for the 4th floor of Building 1

Continued cement plastering of Building 2

Electrical work continues in buildings 1, 3 and 6

Continued wall construction in buildings 3 and 4



Figure41 : Schema Represent construction progress in 2018

Source:Real estate promotion of Biskra ,2018

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Table15 : Represent rate of construction progress in 2018

Source:Real estate promotion of Biskra with Author treatment ,2025

designation of work	rate of construction progress2018			overall rate of progress
	1 Block	2Block	3 Block	
reinforced concrete in infrastructure	100%	100%	100%	100%
reinforced concrete in superstructure	100%	100%	100%	100%
Masonry	70%	60%	60%	63.33%
Siding	50%	35%	40%	40%
Plumbing	30%	30%	30%	30%
Electricity	30%	30%	30%	30%
Woodwork	20%	15%	15%	16.67%
Paint & glazing	10%	10%	10%	10%
various	00%	00%	00%	00%

43.33%

designation of work	rate of construction progress2018				overall rate of progress
	4 Block	5 Block	6 Block	7 Block	
reinforced concrete in infrastructure	100%	100%	100%	100%	100%
reinforced concrete in superstructure	100%	100%	100%	100%	100%
Masonry	70%	60%	60%	75%	66.25%
Siding	50%	35%	35%	40%	40%
Plumbing	40%	30%	30%	40%	35%
Electricity	40%	40%	40%	40%	40%
Woodwork	20%	15%	15%	20%	17%
Paint & glazing	10%	10%	10%	10%	10%
various	00%	00%	00%	00%	00%

35,36%

**From January 1 to May 30 2019, we find:**

Continued carpentry for Building 3

exterior cladding

Electrical work continues

Painting continues



Figure 42: Schema (1-2-3-4) represent construction progress in 2019

Source:Real estate promotion of Biskra ,2019

**From September 1 to September 30, we find:**

- Painting continues
- Plumbing work continues
- Cladding work continues

**From November 1 to 28, we find:**

- Painting is ongoing
- Cladding works are ongoing
- Aluminum carpentry work
- Suspended ceiling works



Figure43 : Schema Represent rate of construction progress in 2019

Source:Real estate prmotion of Biskra2019

Table16 : Represent rate of construction progress in 2019

Source:Real estate prmotion of Biskra&Author treatment,2025

designation of work	rate of construction progress2019			overall rate of progress	
	1 Block	2Block	3 Block		
reinforced concrete in infrastructure	100%	100%	100%	100%	63.51%
reinforced concrete in superstructure	100%	100%	100%	100%	
Masonry	80%	75%	75%	76.67%	
Siding	65%	65%	65%	65%	
Plumbing	55%	55%	55%	55%	
Electricity	55%	55%	55%	55%	
Woodwork	50%	50%	50%	50%	
Paint & glazing	40%	40%	40%	40%	
various	30%	30%	30%	30%	

designation of work	rate of construction progress2019				overall rate of progress	
	4 Block	5 Block	6 Block	7 Block		
reinforced concrete in infrastructure	100%	100%	100%	100%	100%	68,75%
reinforced concrete in superstructure	100%	100%	100%	100%	100%	
Masonry	90%	80%	80%	85%	83.75%	
Siding	70%	70%	70%	70%	70%	
Plumbing	65%	65%	65%	65%	65%	
Electricity	60%	60%	60%	60%	60%	
Woodwork	60%	60%	60%	60%	60%	
Paint & glazing	50%	50%	50%	50%	50%	
various	30%	30%	30%	30%	30%	

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Finally, the reasons for the delays include poor management of the work by the contracting organization, cement and wood panel issues, suspended ceiling issues, and poor results.



Figure44 : Schema represent construction progress in 2020

Source:Real estate pmotion of Biskra ,2020

Table17 : Represent rate of construction progress in 2020

Source:Real estate pmotion of Biskra with Author treatment ,2020

designation of work	rate of construction progress2020			overall rate of progress	
	1 Block	2Block	3 Block		
reinforced concrete in infrastructure	100%	100%	100%	100%	100%
reinforced concrete in superstructure	100%	100%	100%	100%	
Masonry	100%	100%	100%	100%	
Siding	100%	100%	100%	100%	
Plumbing	100%	100%	100%	100%	
Electricity	100%	100%	100%	100%	
Woodwork	100%	100%	100%	100%	
Paint & glazing	100%	100%	100%	100%	
various	100%	100%	100%	100%	

### Chapter Three: Analytical Study

designation of work	rate of construction progress2020				overall rate of progress
	4 Block	5 Block	6 Block	7 Block	
reinforced concrete in infrastructure	100%	100%	100%	100%	100%
reinforced concrete in superstructure	100%	100%	100%	100%	
Masonry	100%	100%	100%	100%	
Siding	100%	100%	100%	100%	
Plumbing	100%	100%	100%	100%	
Electricity	100%	100%	100%	100%	
Woodwork	100%	100%	100%	100%	
Paint & glazing	100%	100%	100%	100%	
various	100%	100%	100%	100%	

#### 4.1. Comparison of the two projects by the progress of the works according to site report

Table 18: Represent Comparison of the two projects

Source: Author treatment2025

##### ➤ Additional Justified Causes of Delay in project

**Lack of risk anticipation:** No effective contingency plan was in place to handle labor or supply shortages.

**Administrative delays:** Possibly due to long approval chains or delayed budget disbursement.

Criteria	Referencial project	Study case project
<b>Planned Duration</b>	2 years (2021)	3 years (2016)
<b>Actual Completion Time</b>	Completed within planned time	Delayed by 2 years – completed in 2020
<b>Schedule Adherence</b>	Full compliance with timeline	Significant deviations from timeline
<b>Workforce Availability</b>	Stable and well-organized teams (masonry, plumbing, painting, etc.)	Labor shortages and frequent interruptions
<b>Material Supply</b>	Continuous and well-coordinated supply of materials	Delays in cement and iron supply, aggravated by COVID-19 pandemic
<b>Technical Issues</b>	No major technical issues reported	Several technical problems (drilling errors, mismanagement of formwork, etc.)
<b>Climatic Conditions</b>	No notable weather-related impact	Weather delays impacted infrastructure and exterior works
<b>Construction Equipment</b>	Fully available (cranes, concrete mixers, trucks, etc.)	Delays due to limited or unavailable equipment at key phases
<b>Management &amp; Supervision</b>	Efficient project planning and daily monitoring	Weak planning, poor coordination, lack of contingency plans
<b>Stakeholder Communication</b>	Effective communication between contractor, site manager, and agency	Limited communication and conflict of roles among teams
<b>COVID-19 Impact</b>	None (post-pandemic project)	Direct impact on labor mobility and material imports
<b>Overall Project Quality</b>	High – completed with standard quality and finishes	Acceptable – but delayed and required correction of structural elements
<b>Total Progress Rate</b>	100% on schedule	100% after delay and multiple stoppages

**Low initial productivity:** Slow work pace in early stages (2016–2017) led to accumulated backlog.

**Frequent work stoppages:** Gaps of days or even weeks between critical tasks caused by miscoordination.

### 5. Interpretation of Results

The results of the analytical study of the two projects (the reference project and the case study) show a significant difference in performance, despite the similar objectives and construction activities. Comparing the progress of the works shows that the differences are not only related to time, but also to the management method, the availability of resources, and the interaction between the different project stakeholders.

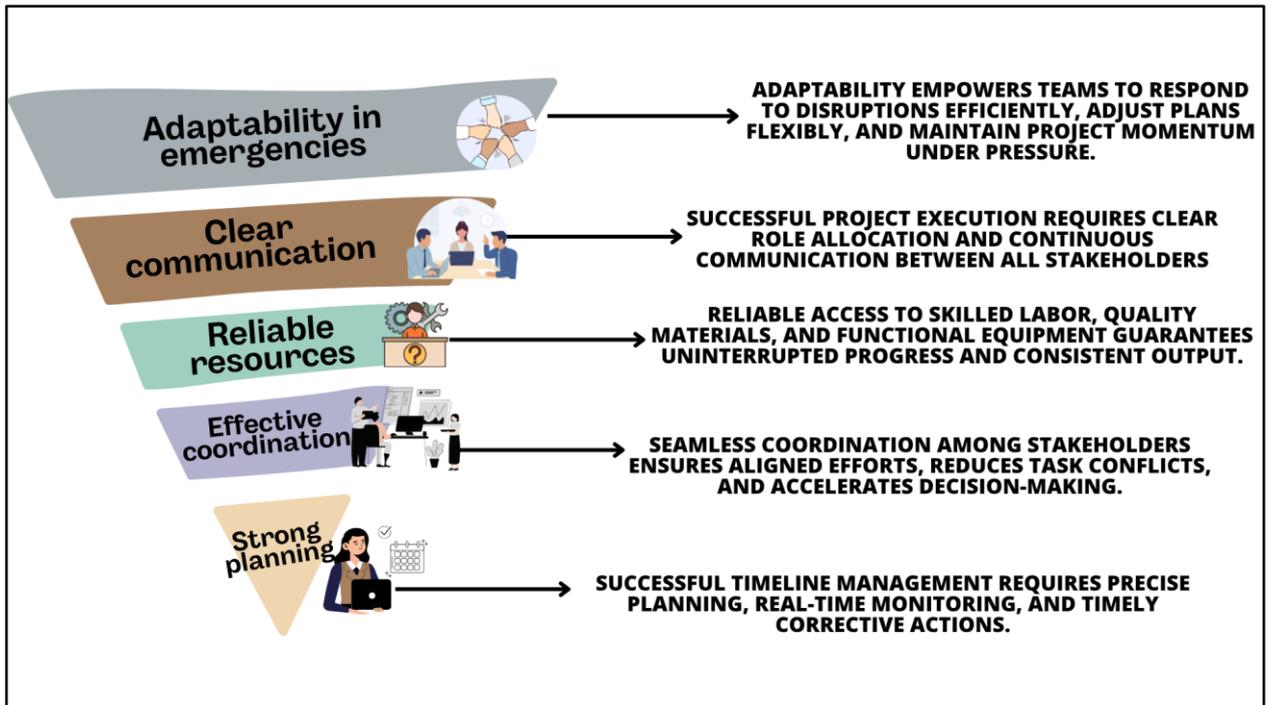


Figure 45: Schema represent interpretation of results

Source: Author treatment ,2025

## 6. Recommendations and suggestions to avoid delays:

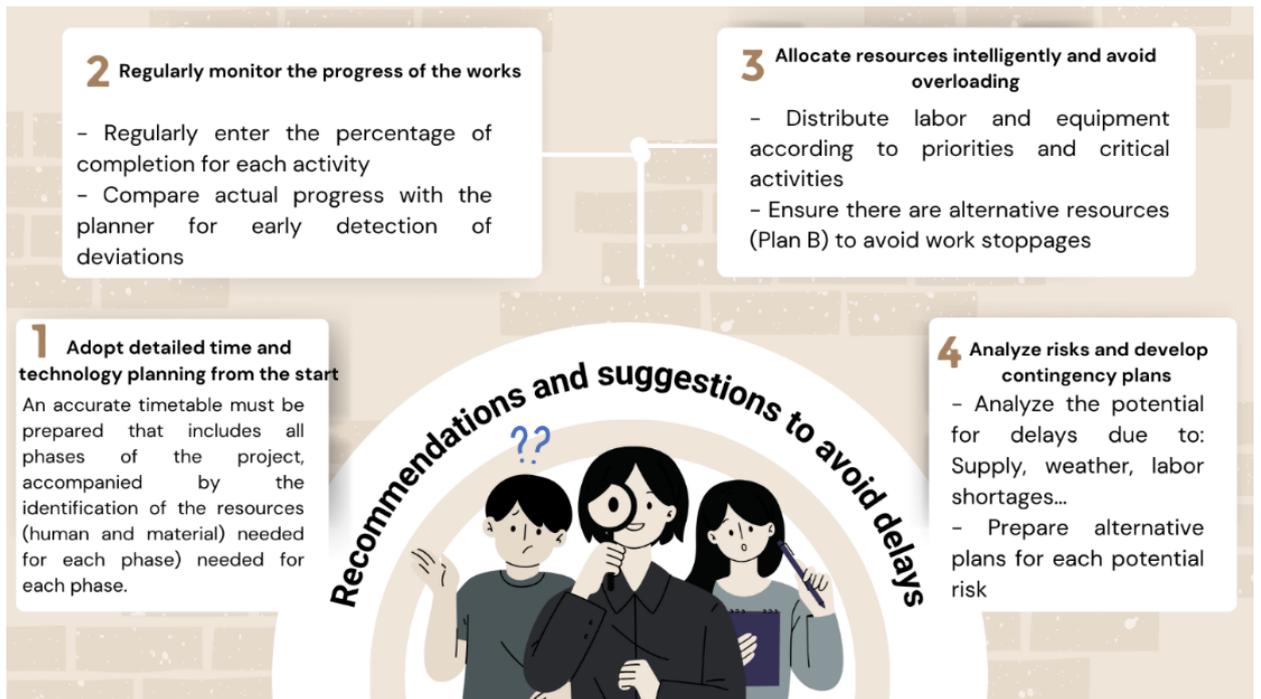


Figure 46: Schema recommendations and suggestions to avoid delays

Source: Author treatment, 2025

### ➤ Benefits of working with MS Project in this context

Table 19 : table represent Benefits of working with MS Project in this context

Source: Author treatment ,2025

Challenge Faced by the Project	How MS Project Helps
Unexpected delay	Identifies critical tasks that cannot tolerate delays
Poor coordination	Allows exporting the schedule and sharing it with all stakeholders
Changes in supply	Automatically reschedules tasks linked to materials
Resource overload	Detects overallocated tasks and helps balance resource distribution

Using MS Project intelligently, with regular and effective communication between parties, you can:

- Minimize errors and delays.

### Chapter Three: Analytical Study

- Improve workshop productivity
- and deliver projects on time and with high quality.
- Allows identification of each activity and associated resources, and alerts when delays occur
- Compares “Baseline” and “Actual progress”
- Generates automatic reports on delays and identifies causes
- Gives you a Resource Usage View to see which tasks are overloaded
- Allows you to automate resource reallocation (Leveling)
- Connects tasks to each other and incorporates flexible dates to adapt to any delay

➤ **Effective communication between stakeholders**

Table20 : table represent effective communication between stakeholders

Source: Author treatment ,2025

Point	Recommendation
 <b>Regular Meetings</b>	Organize a weekly site meeting between the contractor, project owner, and design office
 <b>Digital Communication Tools</b>	Use applications like MS Teams or an official WhatsApp group for the site
 <b>Standardized Follow-up Documents</b>	Use standardized weekly follow-up reports by all stakeholders
 <b>Project Document Sharing</b>	Share the MS Project schedule with everyone in PDF format or via Microsoft SharePoint

## Chapter Three: Analytical Study

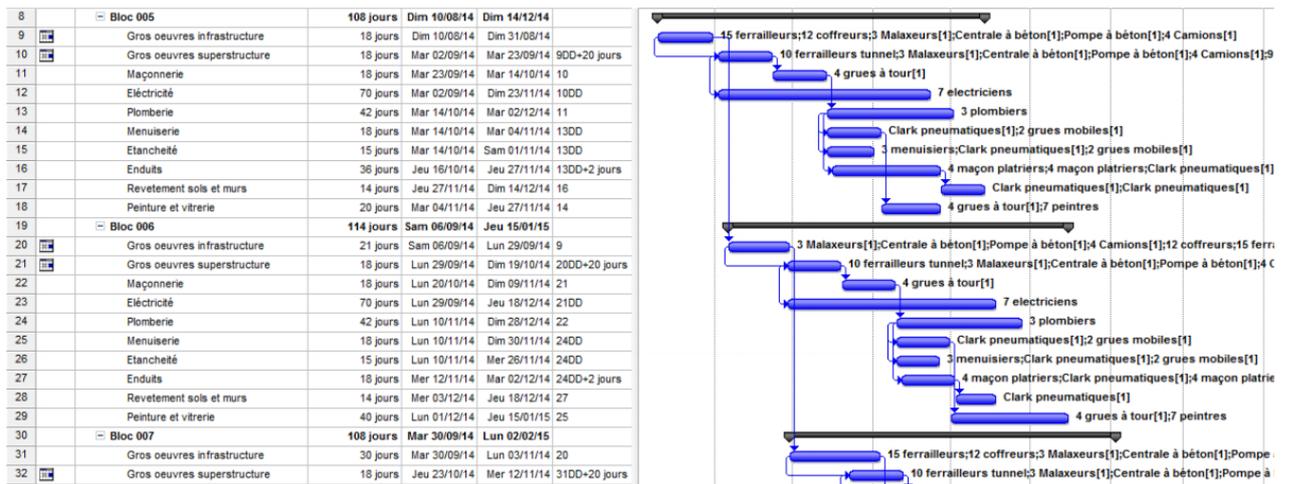
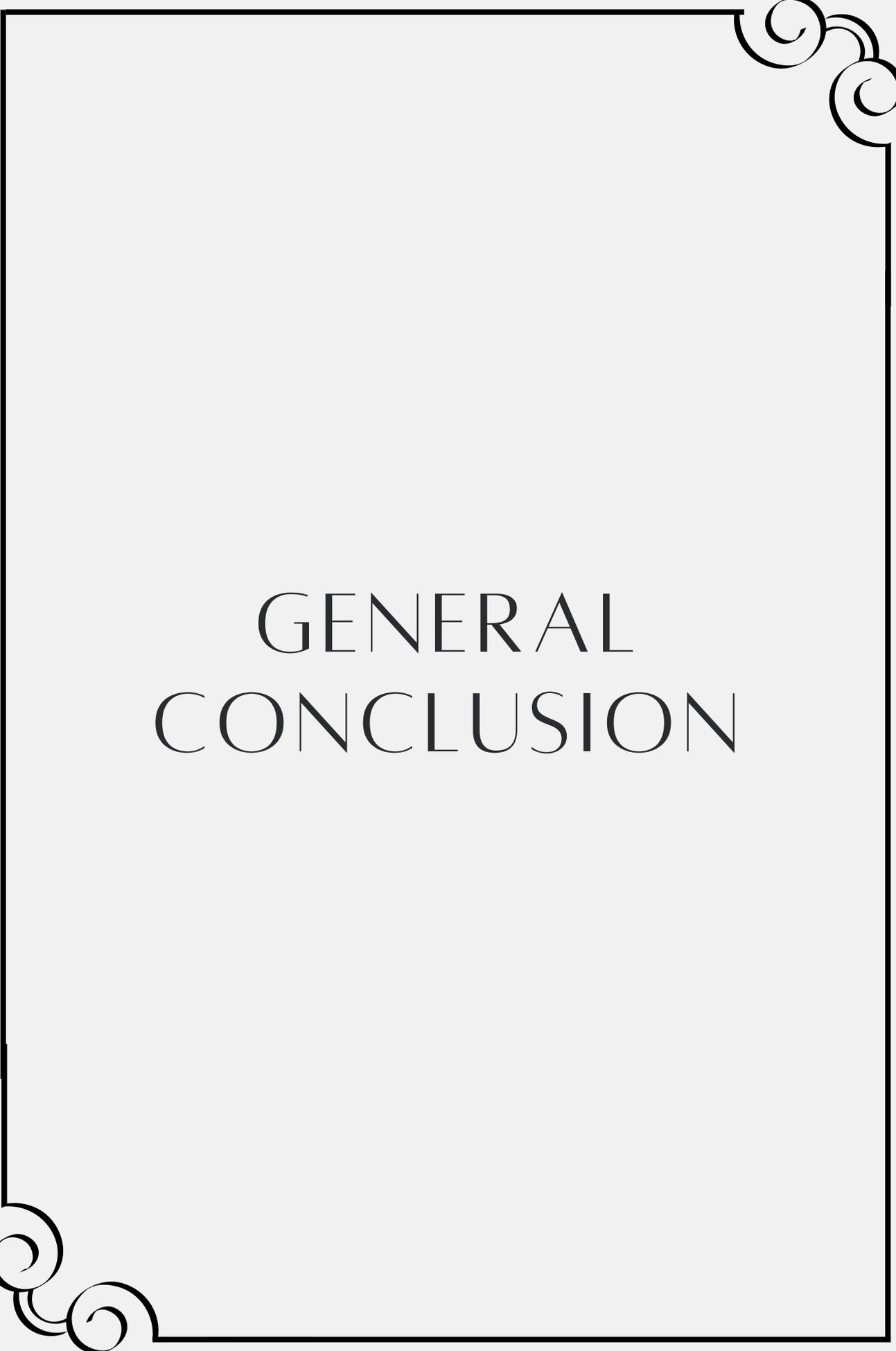


Figure 47 : Schema Represent planning of works

### Conclusion:

The analytical study discussed in Chapter 3 indicates that there is a clear disparity in how real estate projects are implemented in terms of time commitment, resource management, and the quality of field follow-up. By comparing two projects of similar nature and objectives, the reference project was completed on time, thanks to advance planning, the availability of human and material resources, and the adoption of an effective follow-up methodology. In contrast, the study project experienced significant delays due to poor organization, labor shortages, supply delays, technical and climatic issues, and a lack of coordination between the parties involved. The results of the analysis showed that the use of management tools such as MS Project can contribute to controlling the progress of the work, by planning tasks, distributing resources, and accurately tracking completion rates. The recommendations also emphasized the need to adopt effective communication methods between the different actors and provide contingency plans to face exceptional circumstances. The chapter concluded that the success of any project does not only depend on the available resources, but also requires a sound management system based on forecasting, follow-up, and rapid reaction to challenges.



GENERAL  
CONCLUSION

### **General conclusion**

The general study of the project indicates that the realization of social housing projects in Algeria is a multidimensional challenge that combines architectural standards, technical requirements, and administrative complexities, requiring effective coordination between public and private actors. A preliminary examination of housing concepts and types of housing production showed that these projects are not just construction processes, but integrated systems that require careful planning, clear delineation of roles, tight tracking of deadlines, and strict quality control mechanisms.

The study of the project to build 64 collective housing units and 18 shops in the city of Biskra highlighted a range of architectural and technical elements that reflect the consideration of the local environment and the Algerian way of life, especially in terms of mass orientation, space distribution, the use of appropriate building materials, and strict respect for seismic standards and geotechnical recommendations. The study also showed that the project was characterized by a strict administrative organization, from registration and technical studies, to the selection of the institutions in charge and field follow-up.

On the analytical side, the third chapter revealed a remarkable disparity in how real estate projects are implemented, through a comparison between a reference project that was completed on time, and a project under study that experienced significant delays. The success of the reference project was due to the availability of an accurate work plan, sufficient human and technical resources, and the adoption of effective management tools such as MS Project. In contrast, the delayed project suffered from poor organization, lack of coordination, logistical and technical issues, as well as the impact of external circumstances.

Based on the above, the study concluded that the success of projects is not only related to the availability of resources, but also depends on a sound management system that relies on proactive planning, periodic follow-up, rapid reaction to challenges, and effective communication channels between all stakeholders. This theoretical and analytical groundwork opens the way for more in-depth evaluation of administrative performance and management techniques in the coming chapters, allowing to propose realistic solutions to improve the effectiveness of the implementation of housing projects in Algeria.

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الوكالة الولائية للتسيير و التنظيم العقاري الحضري لولاية بسكرة  
موسسة صومية ذات طابع صناعي و تجاري  
مستند بوجوه القرار الوزاري المشترك المؤرخ في 2004/07/24

**محضر اتفاقية**

في اليوم التاسع و العشرون من شهر أكتوبر عام ألفين وخمسة عشر 2015/10/29. انعقد مقر الوكالة الولائية للتسيير و التنظيم العقاري الحضري لولاية بسكرة اجتماع تحت رئاسة السيد حير الله الطيب نائب المدير العام للوكالة وهذا بحضور كل من السادة:

- فوسم عبد الرحيم : رئيس مصلحة الترقية العقارية.  
- عبد الوهاب عبد الوفاق : رئيس قسم متابعة الأشغال والحفظ العقاري.  
- محمد حيدر : ممثل مكتب المتابعة للوكالة العقارية.  
- النوي فيصل : مكتب الدراسات  
- ش.د.م.م الإحوة بوقدورة : المكتب

افتتحت الجلسة من قبل رئيسها مرحبا بالمتحضرين ، بعدها ذكروهم بالمنح المؤقت بتاريخ 2015/10/29 وتعلق بالاستشارة الأولى رقم 2015/21 المؤرخة في 2015/07/01 قصد اخراج 64 سكن ترقوي جماعي المنطقة الشرقية (العالية) بسكرة ، والتي مرت بجميع المراحل والإجراءات القانونية المعمول بها وبعد الدراسة و المناقشة لما جاءه بنود الكشف الكمي و التقييمي تم الاتفاق على تخفيض مبلغ المنح (127.769.369,82) حيث تم تأكيدها من قبل المقاول بالمراسلة الواردة إلينا بتاريخ 2015/10/25 حيث المنح المدجج (بكمامل الرسوم) و جاءت الخلاصة كالتالي:

المصلحة	مبلغ المنح (HT) د	نسبة التخفيض	مبلغ العقد الجديد المنقل	مبلغ العقد القديم المنقل
الحصة رقم 64/24:01 سكن ترقوي جماعي بسكرة	119.410.626,00	%04	114.634.200,96	122.658.595,03
الحصة رقم 18 :01 محل تجاري	29.860.425,60	بدون تخفيض	29.860.425,60	34.936.697,95

وأغلق المحضر في اليوم والشهر والسنة المذكور أعلاه.

Chapter Three: Analytical Study  
Appendix2 Temporary Grant Announcement

مؤسسة صومالية ذات طابع استشاري و تجاري، منشأة بموجب القرار الوزاري المشترك المؤرخ في 2004/07/24  
رأس مال المؤسسة : 23.000.000,00 دج الرقم الجبسي : 099607010032640

**إعلان عن منح مؤقت**

يعين المدير العام للوكالة الولائية للتسيير و التنظيم العقاري الحضري لولاية بسكرة لكل المتعهدين المشاركين في الاستشارة الأولى رقم 2015/21 المؤرخة في 2015/07/01 المتعلقة بمشروع إنجاز 64 سكن ترقوي جماعي (R+4) و (C+4) المنطقة الشرقية (العالية) بسكرة مقسم إلى حصتين:

- الوحدة رقم 01: إنجاز 64/24 سكن ترقوي 03 عمارات رقم (03 و 02.01)، (12.44+12.42) نوع (C+4) إنجاز 18 محل تجاري بمشروع 64/24 سكن ترقوي 03 عمارات رقم (03 و 02.01)
- الوحدة رقم 02: إنجاز 64/40 سكن ترقوي 04 عمارات رقم (06.05.04 و 07)، (40.44) نوع (R+4)

و بعد التقييم التقني و المالي للعملية أسفر على النتائج التالية:

ملاحظات	صنف انهاء	رقم الوحدة	النوع	العدد	مبلغ العرض المصمم يتبادل الرسوم دج	مدة الاجاز	الرقم الجبسي	ملاحظة
ش ذ م م الاخوة بوقدورة	II	01	سكنات	24	127 769 369.82	30 شهرا	001305190022170	الرقم عرض
			محلات	18	34 936 697.95	16 شهرا		
ش ذ م م الاخوة بوقدورة	II	02	سكنات	40	221 055 233.32	36 شهرا	001305190022170	الرقم عرض

**ملاحظة**  
يمكن لكل متعهد أن يطلع على النتائج المفصلة لتقييم العروض التقنية و المالية في أجل أقصاه 03 أيام ابتداء من اليوم الأول للتعليق كما له الحق في الطعن على هذا الاختيار أمام لجنة العقود و الاتفاقيات للوكالة في أجل عشرة أيام من تاريخ أول تعليق.

المدير العام

رقم التسجيل...../2016	بيان العملية: دراسة ومتابعة مشروع انجاز 64 سكن ترقوي جماعي + 18 محل تجاري بالمنطقة الحضرية الشرقية بسكرة لمكتب دراسات : النوي فيصل
	<b>أمر بالخدمة رقم: 02</b>
	بدأ متابعة الأشغال
	السيد : النوي فيصل ، الحائز على عقد الإنجاز رقم: 2015/57 المؤرخ 2015/06/22 ، المتعلق بدراسة ومتابعة مشروع انجاز 64 سكن ترقوي جماعي + 18 محل تجاري بالمنطقة الحضرية الشرقية بسكرة ، مدعو للانطلاق في متابعة الأشغال إبتداءا من اليوم الموالي لتاريخ استلام هذا الأمر. هذا الأمر يبدأ متابعة الأشغال يكون ساري المفعول عند المصادقة. مسجلة تحت رقم:...../2016، إلى السيد النوي فيصل. من طرف السيد: المدير العام للوكالة الولائية للتسيير والتنظيم العقاري الحضري بسكرة. التأشير التقنية بسكرة في:..... <u>المدير العام</u>
رقم التسجيل...../2016	بيان العملية: دراسة ومتابعة مشروع انجاز 64 سكن ترقوي جماعي + 18 محل تجاري بالمنطقة الحضرية الشرقية بسكرة لمكتب دراسات : النوي فيصل
	أنا الممضي أسفله: السيد النوي فيصل ، أصرح بأنني قد استلمت من طرف السيد / مدير العام للوكالة الولائية للتسيير والتنظيم العقاري الحضري بسكرة ، الأمر يبدأ متابعة الأشغال المؤرخ في.....المسجل بالمسجل المفتوح لهذا الغرض تحت رقم...../2016. بسكرة في :..... مكتب الدراسات

رقم التسجيل...../2016 بيان العملية: مشروع انجاز 64 سكن ترقوي جماعي (R+4) و (C+4) بالمنطقة الشرقية العالية بسكرة مقسم إلى حصتين الحصة رقم 02 انجاز 64/40 سكن ترقوي جماعي 04 عمارات رقم (07-06-05-04) نوع (R+4) (40F4) لمقاولة: ش . ذ . م . م الإخوة بوقدورة

**أمر بالخدمة رقم: 01**

بدأ الأشغال

السيد : ش . ذ . م . م الإخوة بوقدورة ، الحائز على عقد الإنجاز رقم:09/2016 المؤرخ 14/01/2016 المتعلق بإنجاز 64سكن ترقوي جماعي (R+4) و (C+4) بالمنطقة الشرقية العالية بسكرة مقسم إلى حصتين الحصة رقم 02 انجاز 64/40 سكن ترقوي جماعي 04 عمارات رقم (07-06-05-04) نوع (R+4) (40F4) ، مدعو للانطلاق في الأشغال ابتداءا من اليوم الموالي لتاريخ استلام هذا الأمر .

هذا الأمر يبدأ الأشغال يكون ساري المفعول عند المصادقة.

مسجلة تحت رقم:...../2016، إلى السيد ش . ذ . م . م الإخوة بوقدورة.

من طرف السيد: المدير العام للوكالة الولائية للتسيير والتنظيم العقاري الحضري بسكرة.

بسكرة في:.....

التأشير التقنية

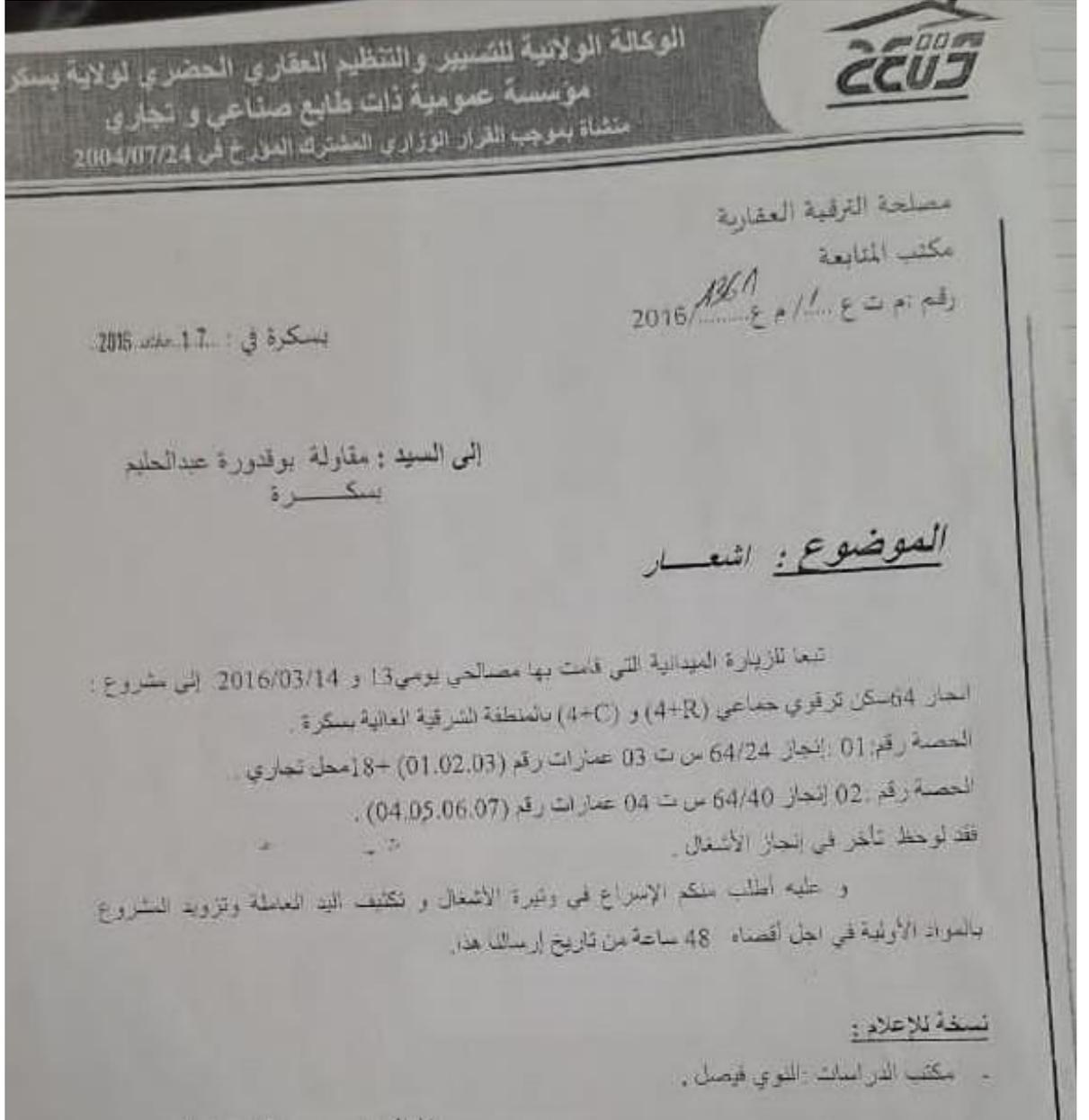
المدير العام

رقم التسجيل...../2016 بيان العملية: مشروع انجاز 64 سكن ترقوي جماعي (R+4) و (C+4) بالمنطقة الشرقية العالية بسكرة مقسم إلى حصتين الحصة رقم 02 انجاز 64/40 سكن ترقوي جماعي 04 عمارات رقم (07-06-05-04) نوع (R+4) (40F4) لمقاولة: ش . ذ . م . م الإخوة بوقدورة

أنا الممضي أسفله: السيد : ش . ذ . م . م الإخوة بوقدورة، أصرح بأنني قد استلمت من طرف السيد / المدير العام للوكالة الولائية للتسيير والتنظيم العقاري الحضري بسكرة ، الأمر يبدأ الأشغال المؤرخ في.....المسجل بالسجل المفتوح لهذا الغرض تحت رقم..... /2016.

بسكرة في:.....

المقاول



مصلحة الترقية العقارية  
مكتب المتابعة  
رقم: 348 م ت ع 34/11/2017 ع 2017

في 11 ديسمبر 2017  
بسكرة في : .....

إلى السيد : مقابلة / الإخوة بوقدورة .  
ب: حي 20 أوت عين جاسر - ولاية باتنة -

**الموضوع : إشعار ثاني**

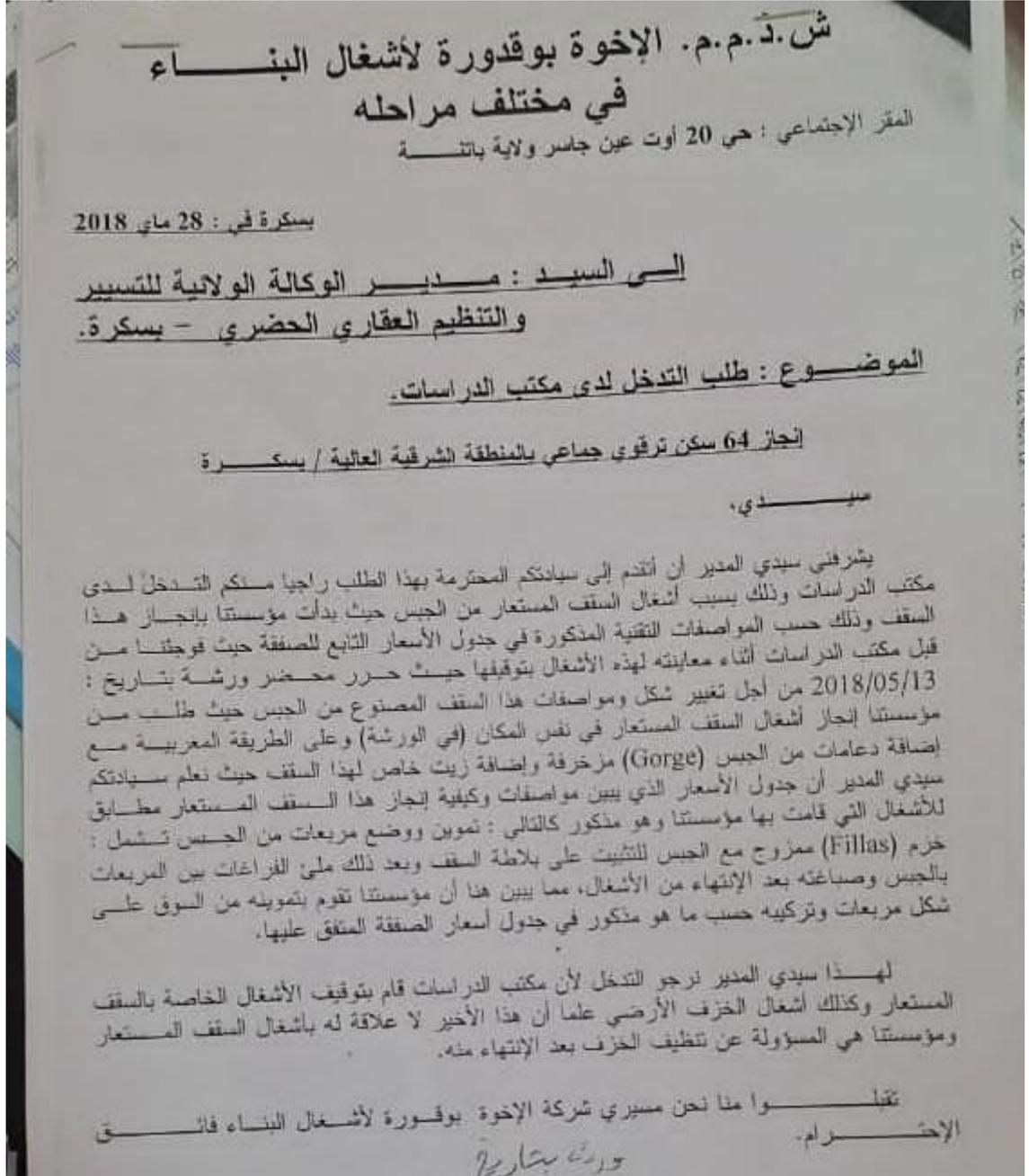
المشروع : انجاز 64 سكن ترقوي جماعي بالمنطقة الحضرية الشرقية العالية - بسكرة -  
تبعاً للإرسالية الواردة لنا بتاريخ 29 /11/ 2017 من مكتب الدراسات وذلك بخصوص تقديم الاشغال  
بالنسبة للمشروع المذكور أعلاه لوحظ مايلي :

- نقص المشروع من المواد الأولية واليد العاملة المؤهلة
- تاخر وتيرة الإشغال بالنسبة للبرنامج المتفق عليها

وعليه أطلب منكم فور استلام هذا الإشعار تزويد الورشة بالإمكانات المادية والبشرية اللازمة  
وذلك في أجل لا يتعدى 48 ساً من تاريخ استلام هذا الإشعار .  
خلاف ذلك ستلجأ إدارة الوكالة لاتخاذ الإجراءات المعمول بها في هذا الخصوص .

**المدير العام**





Chapter Three: Analytical Study

Appendix 8 column resistance problem

Client : SARL Frères BOUGUEDOURA  
 N° Essai : C58/2017  
 Date d'essai : 09/10/2017  
 Projet : 40/64 LOGEMENTS PROMOTIONNELS COLLECTIFS A ALIIA-BISKRA-  
 Age de béton : +28J  
 Dosage : 350kg/m³

**Objet : Poteaux-2eme etage**

		Lot N°: /		Bloc N°: 06		
Axe	FILLE	Epaisseur	Indice Scieraux	Lecture al 'auscultateur Valeur Temps En $\mu S$	Vitesse En MS	Resistance Donnee En Correlation Avec LS
B	1	31,00	34	75,2	4122	253
A	1	32,00	33	78,2	4092	242
A	2	31,00	33	78,9	3929	172
B	2	31,50	32	80,7	3903	162
C	2	31,00	31	75,3	4117	240
B	3	31,50	31	83,7	3763	103
A	3	31,30	33	75,2	4162	262
B	4	39,50	32	94,2	4193	264
C	4	39,50	31	106,3	3716	93
C	3	40,80	33	100,2	4072	234
A	4	31,00	34	75,9	4084	242
C	5	31,50	32	83,8	3759	100
B	5	41,20	33	100,2	4112	247
A	5	31,30	34	75,9	4124	253
A	6	30,00	34	72,5	4138	253
B	6	31,00	34	73,3	4229	280
C	6	40,50	33	106,3	3810	132

## Chapter Three: Analytical Study

### Appendix9 explanatory report

BATNA le : 07/02/2016

#### A MONSIEUR :

Le Directeur De L'agence De Gestion Et De  
Régulation Foncières Urbaines De La Wilaya De Biskra

**PROJET** : REALISATION DE 64 LOGEMENTS PROMOTIONNELS  
COLLECTIFS + 18 LOCAUX COMMERCES SIS DANS LA  
ZHUN EST - BISKRA -

#### **OBJET : RAPPORT EXPLICATIF**

J'ai l'honneur de vous donner des explications par le présent rapport justifiant le problème qui figurent dans ce projet.

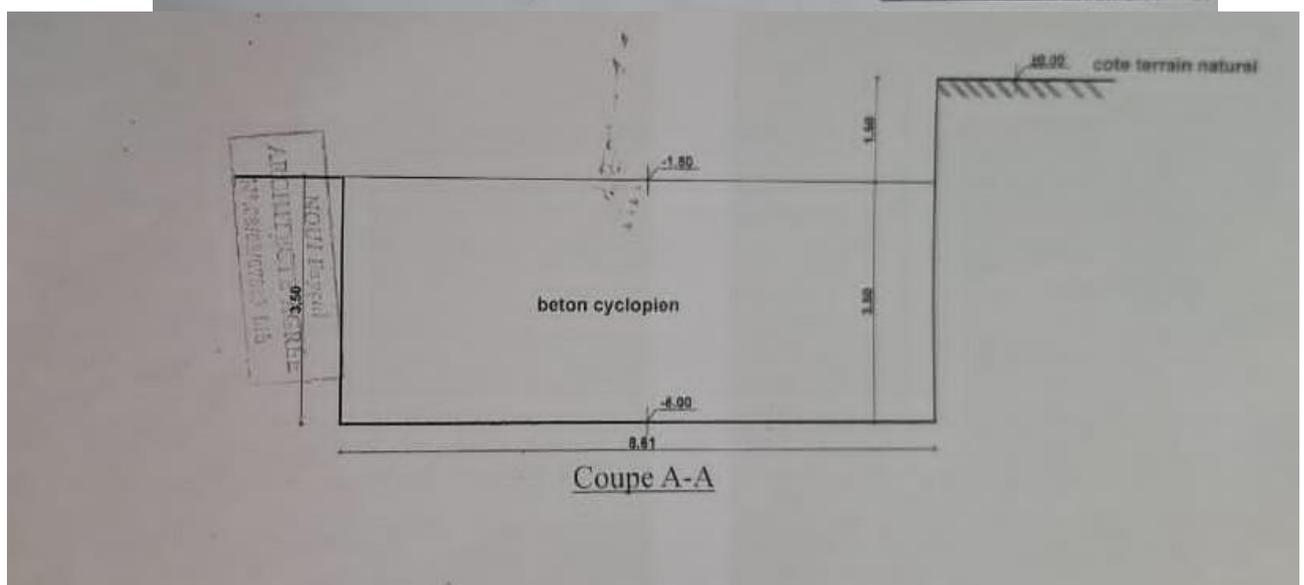
Suite a notre visite sur chantier du projet en question avec les services technique du C.T.C et le représentant de l'agence foncier en a constater la présence d'une fausse sceptique aux niveaux du bloc n°(A) 02 et précisément dans des fouille pour les 04 semelles (S2+S5+S6+S8) a cette effet en a ordonner l'entreprise de reprendre les travaux de nettoyage de la fausse et pour atteint le bonne sol en a obliger d'aller jusqu'a 3.5 m de profondeur (voir les photos). je vous informe monsieur le directeur que les dimension de la fausse 8.61 longueur x 7.25 largeur x 3.5 hauteur = 218.48 m<sup>3</sup> volume on a proposé avec les services du C.T.C une solution technique comme suite :

Un système de rattrapage de niveau par un béton cyclopien coule en plein fouilles

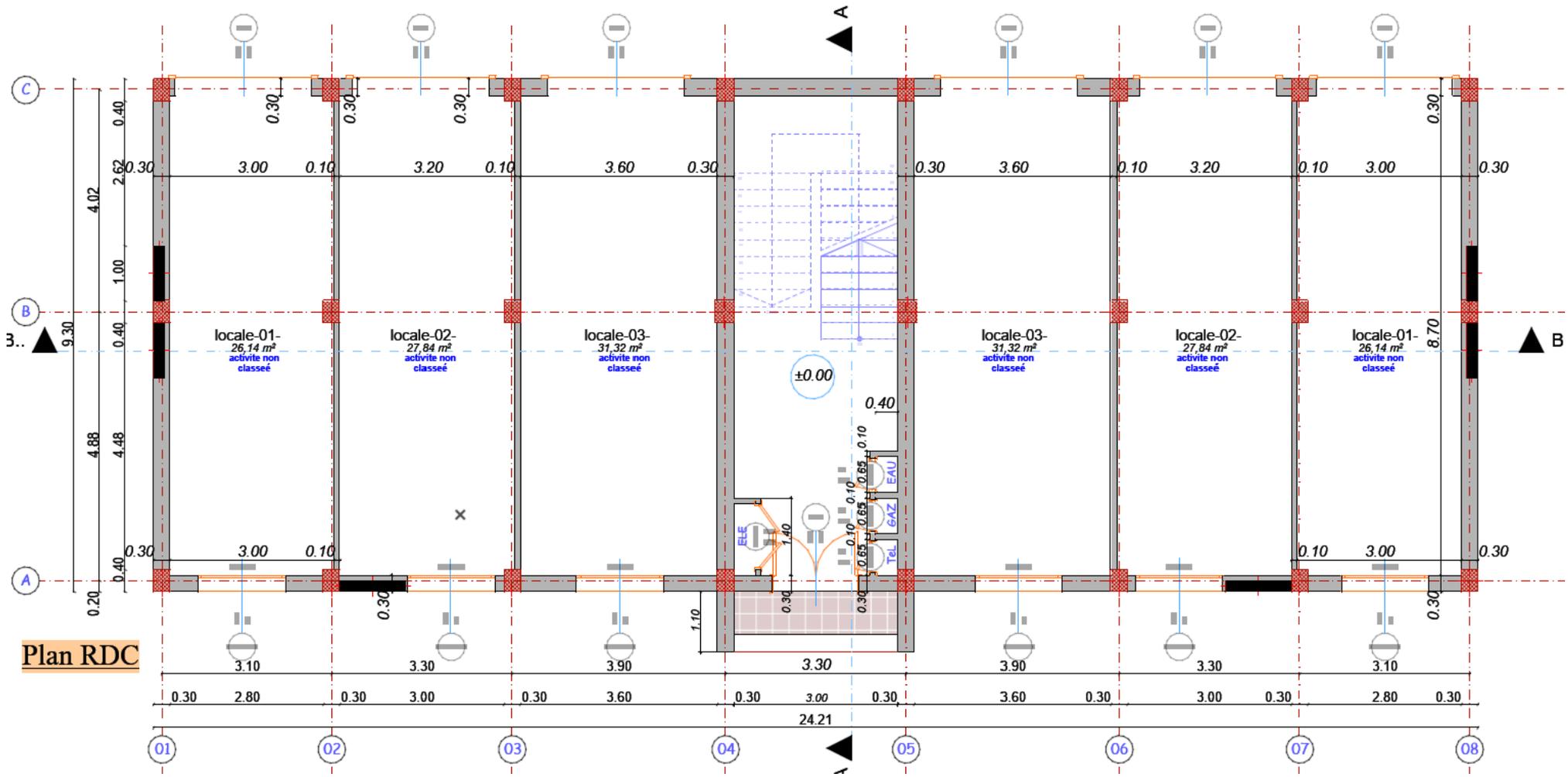
A cet effet on a demande de l'entreprise avec un PV de faire une proposition des prix pour les travaux hors marcher et contenue les travaux.

Veillez agréer monsieur le directeur nos salutations respectueuses.

**LE MAITRE DE L'ŒUVRE**

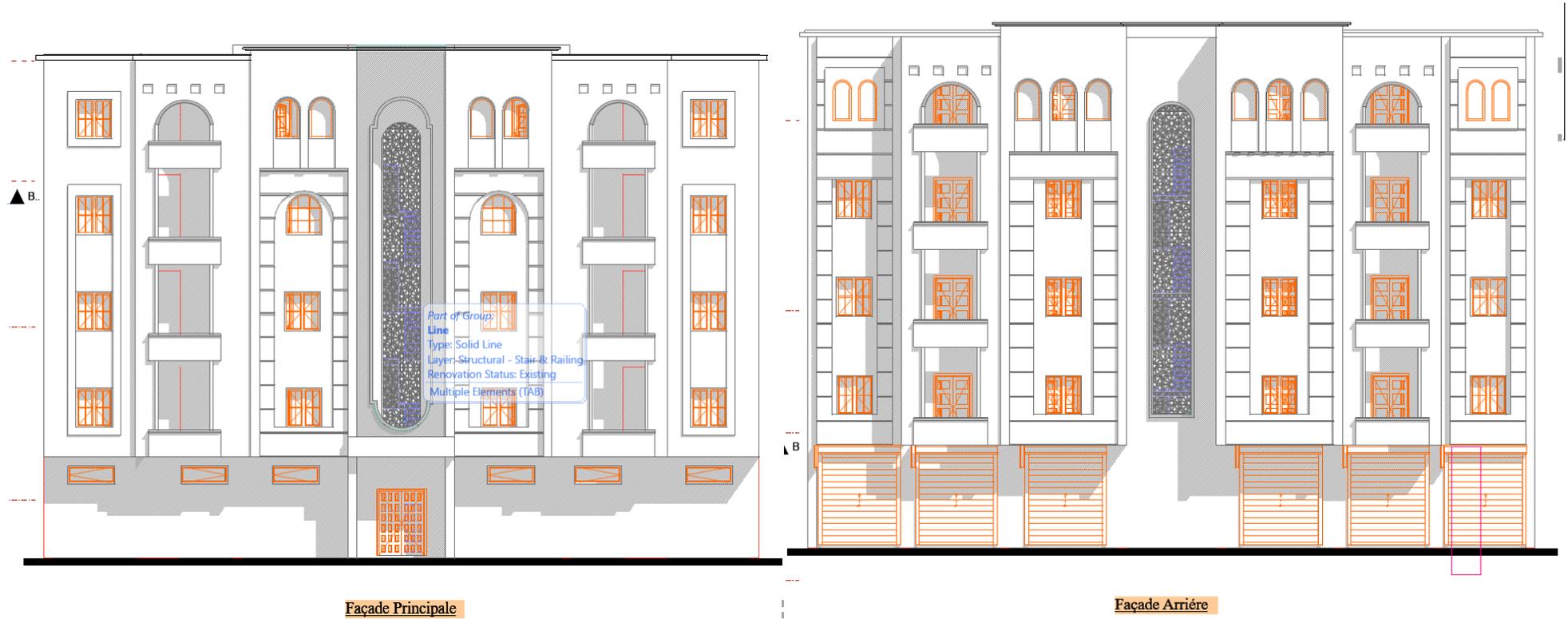


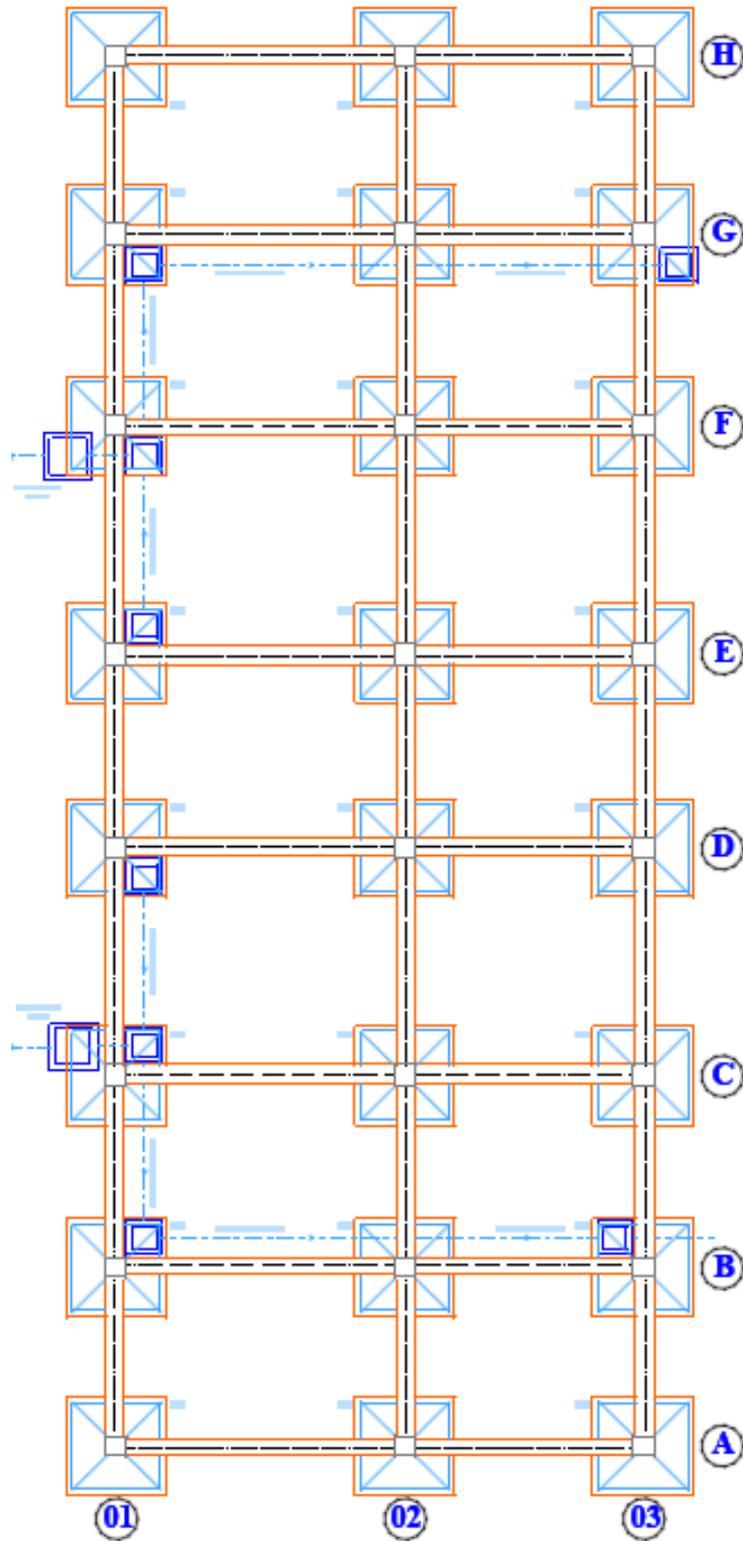
Appendix10 ground floor plan



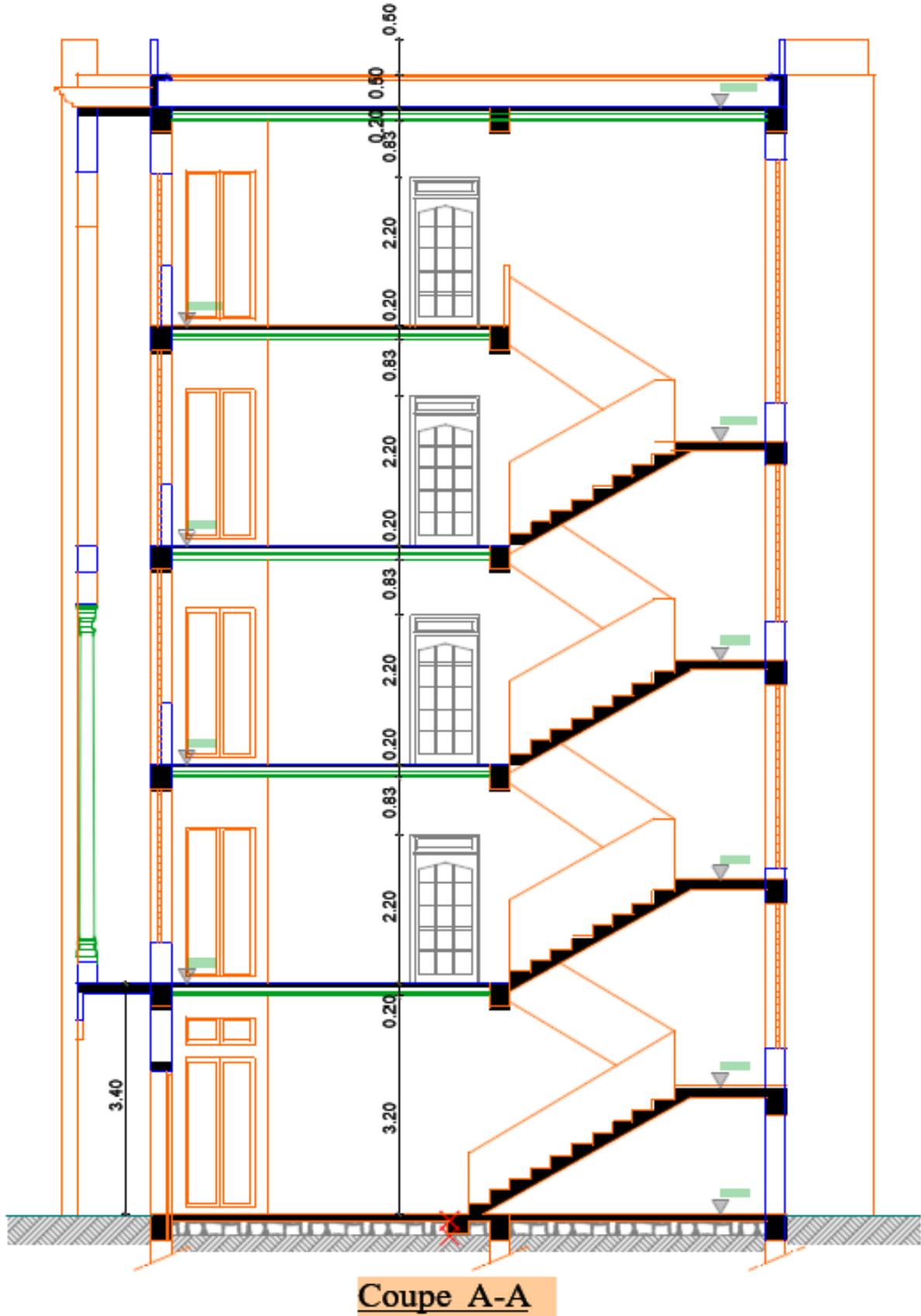


Appendix 12 facade plan ( front and rear)





**Plan des fondations**



A

## Résumé

Cette note s'inscrit dans le domaine de la gestion des projets de construction et se concentre sur l'analyse de la relation entre la qualité de l'exécution des projets et le respect des délais d'achèvement, à travers l'étude de cas d'un projet de construction de 64 logements sociaux subventionnés et de 18 commerces dans la commune de Biskra.

L'étude vise à diagnostiquer les causes des retards dans l'achèvement des projets de logement en Algérie, et à évaluer l'impact sur la qualité des travaux achevés. Elle cherche également à proposer des solutions pratiques en améliorant la coordination entre les différents acteurs, en développant des mécanismes de suivi de l'avancement des travaux et en réduisant l'écart entre le calendrier prévu et le calendrier réel.

Le mémorandum se compose de quatre chapitres principaux :

1. Le chapitre d'introduction : Il aborde la question, les objectifs de la recherche et la structure du mémorandum.
2. L'étude théorique et managériale : Elle passe en revue les types de logements en Algérie, le rôle des acteurs publics et privés, les outils et techniques de gestion de projet (par exemple Microsoft Project, Gantt, PERT).
3. L'étude analytique : Elle comprend une présentation détaillée du projet, une analyse architecturale, architecturale et technique, ainsi que le suivi du processus administratif du projet, de l'enregistrement à la mise en œuvre.
4. Étude administrative et comparative : Elle comprend la comparaison du projet étudié avec un projet de référence similaire, l'analyse des progrès réalisés, l'identification des déséquilibres et la formulation de recommandations pour améliorer les performances.

L'étude a montré qu'une mauvaise coordination et une mauvaise communication entre les parties prenantes, associées à un manque de planification préalable, étaient les principales causes des retards. Elle a également montré l'importance d'utiliser des outils numériques modernes, de former des équipes techniques et d'adopter un plan de suivi précis pour garantir la qualité de la réalisation et le respect du calendrier fixé

## ملخص

تندرج هذه المذكرة ضمن مجال إدارة مشاريع البناء، وترتكز على تحليل العلاقة بين جودة تنفيذ المشروع ومدى احترام آجال الإنجاز، وذلك من خلال دراسة حالة لمشروع إنجاز 64 مسكناً ترقوياً جماعياً مدعماً و18 محلاً تجارياً ببلدية بسكرة.

تهدف الدراسة إلى تشخيص أسباب التأخر في إنجاز المشاريع السكنية في الجزائر، وتقييم تأثير ذلك على جودة الأشغال المنجزة. كما تسعى إلى اقتراح حلول عملية من خلال تحسين التنسيق بين مختلف المتدخلين، وتطوير آليات تتبع تقدم الأشغال، والحد من الفجوة بين الجدول الزمني المخطط والفعلي. تتكون المذكرة من أربعة فصول رئيسية:

1. **الفصل التمهيدي:** يتناول الإشكالية، أهداف البحث، وهيكل المذكرة.
  2. **الدراسة النظرية والإدارية:** تستعرض أنواع السكن في الجزائر، دور الفاعلين العموميين والخواص، وأدوات وتقنيات إدارة المشاريع (مثل Microsoft Project ، Gantt ، PERT)
  3. **الدراسة التحليلية:** تشمل عرضاً مفصلاً للمشروع، وتحليلاً عمرانياً ومعماريًا وتقنيًا، بالإضافة إلى متابعة المسار الإداري للمشروع منذ تسجيله إلى غاية تنفيذه.
  4. **الدراسة الإدارية والمقارنة:** تتضمن مقارنة المشروع المدروس بمشروع مرجعي مماثل، وتحليل التقدم المحقق، وتحديد الاختلالات، وتقديم توصيات لتحسين الأداء.
- توصلت الدراسة إلى أن ضعف التنسيق وسوء التواصل بين المتدخلين، إلى جانب نقص في التخطيط المسبق، كانت من أهم أسباب التأخر. كما أظهرت أهمية استخدام أدوات رقمية حديثة، وتكوين الفرق التقنية، واعتماد خطة متابعة دقيقة لضمان جودة الإنجاز واحترام المدة الزمنية المحددة.

## Keywords:

- Project Management
- Social Housing
- Construction Delays
- Time Management
- Stakeholder Coordination
- Work Progress Monitoring
- Microsoft Project
- Construction Projects in Algeria
- Comparative Study
- Project Planning