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Revenue House - architectural typology to be valorised

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Abstract

This research was carried out on the state of degradation of the historic core of Annaba city, Algeria. This degradation is caused by multiple factors, the most important of which is the absence of shared responsibility of public actors. The number of collapses multiplied which became a source for the creation of large office buildings with modernist tendencies, but without any architectural identity. The real estate park in downtown Annaba brings together urban entities according to various principles and logics of composition, structuring the urban image of the city of Annaba. The objective of this study is to build a complete catalogue summarizing the structures and fundamental characteristics of old buildings. Initially, this study defines all the notions linked to urban morphology and the typologies of housing. Secondly, an architectural study will be carried out on the "income house", which represents the basic unit for the development of this historic nucleus. The typological analysis was applied to 44 buildings from the 19th and early 20th centuries located on the boulevard named "Revolution Square" in order to identify a set of common and specific criteria for the classification of "house income".

Key words: revenue house, historical, urban fabric, typological analysis, architectural type

1 Introduction

The construction of buildings during the 19th and 20th centuries made a major contribution to the structuring of spaces and the enrichment of architectural typologies, distinguished by their forms, styles, and the organization of their window networks and by the architectural elements and decorations that dressed their façades. Just as much as the medina, the colonial (19^{th} and 20^{th} centuries) city constitutes one of the characteristics of the historic town centres of Algerian cities. The juxtaposition of the Arab-Muslim entity and the colonial entity makes the Algerian or Maghreb city certainly a dual city but rich in the field of architecture.

However, the colonial legacy, and more precisely that of colonial constructions, remains undervalued because it refers to the memory of the balance of power that the dominant European class maintained with the local population. Indeed, the collective memory has difficulty in recognizing the legacy of a civilization considered hostile and foreign. Therefore,

since independence, neglect, overexploitation, anarchic transformations, and a succession of natural disasters have seriously altered or partially destroyed this heritage [1]. Even more devastating was the lack of clearly expressed interest by the actors in charge of this heritage, which is still awaiting recognition and status.

Like other Algerian cities, the city of Annaba inherited from the colonial period a rich and varied but relatively degraded housing stock. The deterioration is the result of a combination of factors: its reappropriation by a population unable to maintain the buildings, its over-densification, the lack of interest shown by those in charge, and status of co-ownership of the buildings for which management mechanisms have not been put in place [2]. The advanced state of degradation has led to multiple collapses creating empty pockets within this core, coveted by private developers whose objective is the creation of large office buildings with curtain walls with so-called modernist tendencies but without any architectural identity. This study aims to provide a comprehensive catalogue based on the typological analysis of colonial buildings. It highlights the main structures and characteristics of these ancient buildings in the city of Annaba. By revealing the architectural and architectural richness of the colonial buildings, this catalogue could serve as a reference tool for architects and contractors to consult before deciding on any rehabilitation project; it would orient the pre-operative perspectives for the treatment of certain types of housing. To this end, the analysis focuses on the historical colonial core of Annaba in general and on a sample of buildings from the Revolution Square (formerly known as Cours Bertagna) for their historical, and architectural values.

The historical study represents a kind of prelude, a stage aimed at understanding the urban place before approaching its analysis with a view to better knowing, understanding, and transforming it. The historical approach contributes to deciphering the modalities of its workforce productivity and transformation, to unveil and understand the strategies implemented for the manufacture of this space.

2 Elaboration of the architectural typology of the colonial urban building of Annaba, Algeria

2.1 Spatial criterion

The analysis focuses on the historical centre of Annaba and is carried out on the scale of the built-up area, a level of analysis that makes it possible to grasp initially the relationship of the building with the segment of the urban territory which includes it. Consequently, the building constitutes the basic unit of the building under study. It is therefore agreed that the building is made up of all the built volumes, superimposed and served by the same doorway-stairway sequence; this whole being coherent in terms of the constructive structure and the land division [3]. The buildings are part of the urban fabric of Islet 1 of *Revolution Square* in the figures (Figure 1). To determine their structure and typology, the built-up areas are divided into plots made up of strips perpendicular to the street axis. The boundaries of the building coincided with three of the boundaries of the plot: in contact with the street and contact with the plots, the building participates in a continuous row of buildings, a row which directly

constitutes the space of the street, the urban collective space [4]. However, it is a question of going beyond a simple cadastral interpretation, of examining the thickness of the building and determining how the colonial urban fabric is constituted.

Figure 1: Location of the colonial city centre

2.2 Historical criterion

The historical criterion is important because each historical period is marked by a specific architectural style and urban forms that reveal the society in place at a given historical period. Indeed, the period of construction of the buildings studied corresponds to the neo-classical period in France, a style reproduced in colonised countries such as Algeria in the figures (Figure 2).

Figure 2: Example of a neoclassical building « Palais Calvin »

2.3 Morphological and architectural criteria

Since every typology is the result of classification, the definition of the corpus, the division and the level of interpretation become relevant questions. The present study aims at the elaboration of an architectural typology of the colonial urban buildings of Annaba, using

geographical, historical, morphological, and architectural criteria. For each building named as a study sample, surveys (plans and façades) are carried out, and descriptive technical data sheets are drawn up, each of which includes a presentation of the block, specifying its position in the town centre, but also explains each sample, i.e., the building, its occupation of the plot, its survey (plans and façades) and its location in the figures (Figure 3). The typology first required an inventory resulting from careful observation of the objects, and then by a description of the properties that distinguish them and allow criteria of differentiation or similarity to be established. Next, the type had to be defined by bringing together the common properties of the objects of the same family. Hence, we were able to identify the association with common organisational structures. There is a constant link related to the shape of the land, the way it is occupied, the way the flats are distributed, superimposed, illuminated, and used, and the principle of the organisation of the façades. These constants contribute to the elaboration of a canonical model within which the variants and languages specific to each singular building, such as ornamentation and materials, develop. The passage between the building typological categories was then carried out based on the essentially morphological criteria: a type historically based on its appearance as a typological category is characterised in this second stage by its relationship to the urban training in which it is involved, but also by its programme, several flats, surface areas [5]. The physical characteristics of the type are then described by noting distributive, functional, dimensional, and stylistic indices which are always interpreted [6].

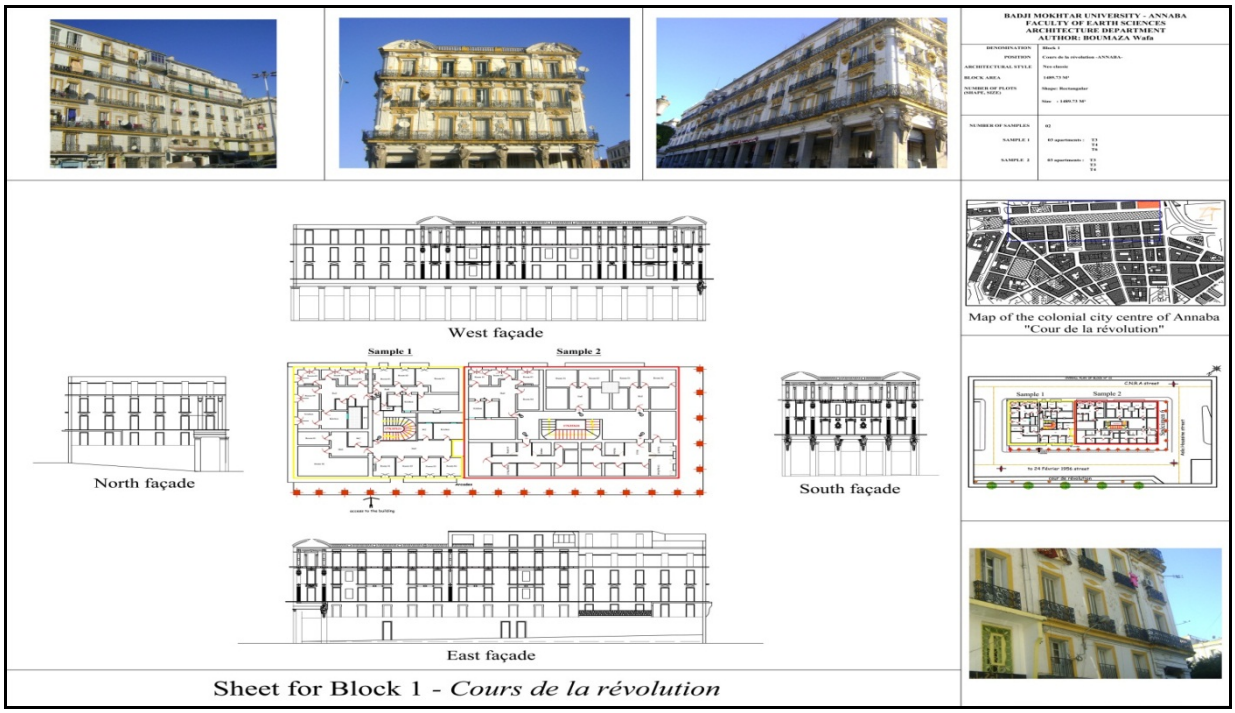

Figure 3: Example of a data sheet for Block 1 on the *Revolution Square* in Annaba

3 Results and discussion

3.1 Delimitation of the sector of study and choice of the corpus of investigation

The study area corresponds to a small fraction of the city centre of Annaba, a city in the extreme north-east of Algeria known for its rich historical heritage. The city's historical designations Hippone, Hippo-Regius, Bouna, Bône and finally Annaba bear witness to the historical depth of this city [2]. This sector of colonial creation (between 1865 and 1905) located near the medina differs radically from the typo-morphological points of view and the logic of urban manufacture. This sector of Annaba town centre is delimited to the east by the medina, to the south by the port, to the north-west by the Rondon Column and the GasometerCity, and to the south-west by the *Champ de Mar*s (formerly known as *Champ de Manœuvre*) in the figures (Figure 4).

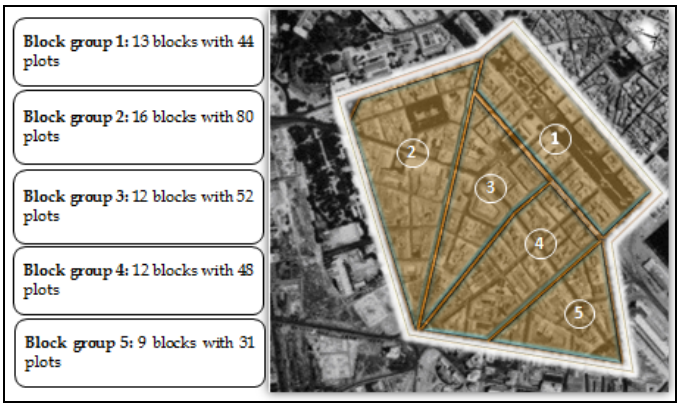

Figure 4: Overview of the boundary of the study site.

The historical colonial centre of Annaba (4th Algerian city) is characterised by a real homogeneity in terms of building typology and is delimited by the first French wall in Bône built between 1850-1888 [2]. It groups buildings built since the 19th century on a plot of land in a characteristic form: a façade on a narrow street, a deep building with adjoining walls with contiguous buildings which are sufficiently homogeneous for the present case study.

A representative analysis based on a sample of 44 buildings [7] was carried out on either side of the *Revolution Square* and is considered to be fairly representative of colonial urban architecture. Thus, the knowledge of the city of Annaba and the more general "urban phenomena" helped to give consistency to the study specimens. The buildings were chosen for their representativeness (quantitative and typological) and the possibilities of access inside the buildings [8], initially with the modes of distribution of the common spaces (courtyards and staircases) and the possibilities of access to the flats in a second stage (agreement of the owners and tenants).

3.2 Morphological and architectural characteristics of the corpus of study

3.2.1 Typological classification of buildings according to the general shape of the building

Among the permutations that could be identified, the delineated level structures are the most attested in the corpus in the figures (Figure 5). This phase of the analysis highlights the shape of the buildings, which may contain from one to four samples or flats. As a result, the most dominant shape in our corpus of flat buildings is the rectangular shape with a percentage of 41%, 23% square, 19% form L and 12% form U. This explains why the organisation of the plots is geometrically regular and aligned with the street.

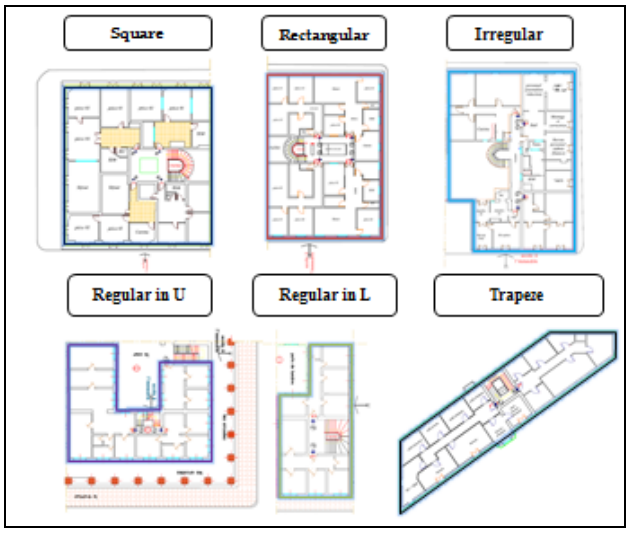

Figure 5: Summary of the building forms used in our corpus

3.2.2 Typology of buildings by number of stories

The buildings included in the corpus of the study have a ground floor containing a 4.5 m high mezzanine floor, which differentiates it from the standard 2.40 m high floors of the building. They differ from each other in terms of their respective heights and number of floors. Four-storey buildings are the most dominant form, accounting for 50% of the corpus. This result could justify the choice of the typology of the revenue house which, a priori, consists of housing the most allochthonous population during the colonial settlement in Annaba.

3.2.3 Typology according to the distribution of the interior spaces of the building

The main distribution space of the building is the staircase that gives access to the different floors. The flats can be served either directly, with the entrance door of the flat leading to a storey in the stairwell, or indirectly, via a corridor allowing the distribution of flats far from the staircase. The corridor, deprived of natural light, is not necessarily repeated on each floor. Its presence depends on the distribution level by level. It can also be served indirectly, via a corridor. The passageway appears to link two buildings separated by an inner courtyard on

which it emerges. The different positions occupied by the staircase constitute a determining characteristic of the morphology of the building. It can be located at the back of the building, opposite the street, and be in daylight on a courtyard or passageway, and/or in a median position (central staircase) it can then be in daylight on an inner courtyard or be totally in darkness.

- **Physical and spatial characteristics of the stairs and stairwell**

The staircase can be characterised by its structure, construction material and dimensions. The common feature of all these staircases is that they are built into a shaft made up of walls that can be either slit or specific shaft walls. The steps are recessed in the wall for the stairs, for the wooden stairs, the false stringers and the storey beams are recessed. Four types of staircases can be distinguished: core wall staircase, or with daylight, and spiral or has a straight flight (single, double, or triple flight staircase) [9].This distinction is based on technical and spatial requirements. The most commonly used materials are stone and wood. The stones used in the realization of the staircase are intended to reinforce the load-bearing elements of the stairs. Regarding wood, it was used in the realization of the stairs but with caution because the study site is in a very humid area. The typologies according to stairwells are summarised in the table (Table 1).

Table 1: Typology of stairwells accessible to in situ surveys

Type of staircase	Samples
Hollow stone core	10 samples
Hollow wood core	6 samples
Solid stone core	15 samples
Solid wood core	7 samples

It emerges that the most frequent type of stairwell in our study of buildings remains the stairwell with a solid stone core, followed by stairwells with hollow stone cores and with a central position; this could mean that wooden stairwells would be the rarest prototype in the Annabi colonial city centre. The different positions occupied by the staircase are a determining feature of the building's morphology. It can be located at the back of the building, opposite the street, and can emerge from a courtyard or passageway. Or, it can be in a median position (central staircase), it can then take daylight on an inner courtyard or be in complete darkness. Both cases can even be found in the same building. Table 2 presented the Stairwells also differ in their positioning.

Table 2: Differentiated positioning of stairwells

Stairwell position	Samples
Central	38 samples
Lateral	6 samples
Central and lateral	8 samples

- **Inner courtyards**

The courtyard is an empty, uncovered space inside the building. It produces an exterior that provides lighting, ventilation, and the relationship to the atmospheric conditions of the rooms opening onto it. Situated in the middle of the building, it creates a partition between living

areas, divided into both sides, which make up two of its façades (courtyard façades). The other façades are made up of a blind partition wall and a stairwell (or a corridor system). The surfaces of the inner courtyards vary greatly but can be grouped into three main classes in the tables (Table 3).

The small courtyard category (less than 50 m²) predominates; but the other categories of inner courtyards are certainly less important in quantitative terms, but they provide more favourable conditions of comfort, particularly those of lighting in the absence of sunshine. The threshold $L = H / 2$ (L = length of the courtyard, H = height of the building) can be used as a reference point. The corpus of the study presents a prospect that varies from 0.5 to 3.10, which explains why this typology of buildings perfectly meets the standards of hygiene and comfort.

Table 3: Classification of the courtyards of the buildings according to the surface area

Size of courtyards	**Samples**	
	No. of samples	**%**
Small size (0 to 50 m^2)	19	43%
Medium size (50 to 100 m^2)	12	27%
Large size (100 to 200 m^2)	09	21%
With very large size (< 200 m^2)	04	9%

3.2.4 Typology according to the morphology of living spaces

The study of the morphology of the building's living spaces takes into consideration two types of characteristics: dimensional characteristics (lengths, widths, areas, and proportions) and their arrangement in relation to each other. The aim here is to characterise the model of room distribution based on the opposition between representation rooms (living room, main bedrooms) on the street and service rooms on the courtyard on either side of an antechamber. The reference floor chosen for the analysis will be the first floor, which generally presents the most regular morphology. For all the flats in the buildings in the sector studied, we have established a grid of the basic surface areas of the standards of the flat blocks (Figure 5) and compared them with the one built in Paris during the same period. This is a way of comparing the morphological characteristics of the flats built in Annaba with those in Paris, for which the minimum surface areas in the rental sector were at least: *T1* = 16 m^2 to 28 m^2, *T2* = 46 m^2; *T3* = 60 m^2, *T4* = 73 m^2). Out of a total of 65 flats distributed in 44 of the corpus of the study, the F4 flats are the most represented in the tables (Table 6) with surfaces ranging from 52.36 m^2 to 207.24 m².

The comparison between the surface areas of the flats surveyed in the Annabi colonial core and the surface areas of the buildings built in Paris during the same period shows a huge difference in dimensions. This result proves that the construction logic of this type of building spatially speaking is very different from the buildings built in Paris during the same period because even if it is the same period, it is not the same context. These buildings were intended for a Maltese and Spanish population, the logic of the colonist to give Algeria an image of a French continent.

3.2.5 Typology according to the organization of the façades

The architectural language of the façades is described in terms of the division into horizontal registers and vertical spans, the composition, and the rhythm of the openings. These clues are related to the constructive aspects which are revealed through the composition of the façade and the visible materials. The decorative clues, stylistic references, richness, or absence of decoration and the relationship between it and the construction systems are indicative of the status of the building. The fenestrated network presents general discontinuities which organise its elements into a distinct sub-set. These are the obvious discontinuities that allow the analysed entity to be divided down into parts, and thus to build a structural model. As a result, we observe that the organization of our façade corpus is regulated in levels and spans; two storeys constitute the segmentations of our windowed network. This segmentation consists of "selecting segments deemed significant among all the discernible segments" [10]. This includes sections or well-delimited parts. The façades are generally organized according to a fenestrated network characterized by a regulated distribution of bays forming a reticular structure; they are grouped into sub-assemblies by various discontinuity processes known as lyses. The results of the application of morphological analysis led to four underlying typologies of the corpus, which themselves present subtypes that constitute only a basic model for the organization of colonial neo-classical façade systems, as they can vary according to decorations [7]. These models reflect a very particular positioning logic on the blocks located on either side of the study site: Type 1 and Type 2 present a horizontal organization according to a simple or double level of composition and a vertical organization obeying a central symmetry. These two types represent 30% of the main façades of the *Revolution Square* in the figures (Figure 6). Types 3 and 4 are structured with a single or double level of composition and a regular vertical organisation with the same type of decoration on the entire façade; 35% of them are located on the rear façades of the blocks overlooking the tertiary roads in the figures (Figure 6).

(1) **(2)** **(3)** **(4)**

Figure 6: Type 1, 2, 3 and 4 of the selected façades

3.3 Typology according to the combination of morphological and architectural characteristics

This phase is the most important step in the typological analysis. Therefore, first, all the criteria explained above have been reported in a general summary table including the 44 samples proposed for analysis. Through a general interpretation of the whole corpus and according to the composition of each sample, we will extract the typologies according to each criterion to demonstrate the relevance of the latter.
A combination of these typologies will be carried out to identify the types of rental buildings that characterised the *Annabi* town centre and which, a priori, remains the main result of our investigation.

The results of this analysis carried out on the scale of the building composition, provide information on the intrinsic qualities of the *Annabi* colonial urban fabric, both from the point of view of urban morphology and the characteristics of the built elements. It emerges that two typologies characterise the revenue house according to the combination of the different typologies retained by the classification criteria in the figures (Figure 7). The typologies of the revenue house in the 44 samples are listed in Tables (Table 4).

Table 4: Summary of architectural characteristics of Type 1 and Type 2

Architectural feature	Type 1	Type 2
Shape of the building	Rectangular shape with street alignment	A square shape with street alignment
Stairwell (Type-Position)	A stone solid core stairwell with a central position that serves all the flats on the storey.	A stone hollow-core stairwell with a central position that serves all the flats on the storey and another lateral stairwell.
Courtyard and passageway	A courtyard in the middle of the building with average dimensions that vary between (0 to 50 $m^{2)}$; it establishes a partition between habitable premises, distributed on either side and which make up two of its façades (courtyard façades).	A courtyard in the middle of the building with average dimensions that vary between (50 to 100 $m^{2)}$; it establishes a partition between habitable premises, distributed on either side, and which constitute two of its façades (courtyard façades).
Number of flats per storey	A common floor with two flats per floor, type F4 with surfaces ranging from 52.36 m^2 to 207.24 m^2.	A common floor with three flats per floor, type F3 with surfaces ranging from 51.36 m^2-129.2 $m^{2.}$
Spatial configuration	A basic distribution scheme with a room layout based on the opposition between representation rooms (living room, master bedrooms) on the street and service rooms on the courtyard on either side of an antechamber.	
Organisation of the façade	A horizontal organisation is according to a simple level of composition and a vertical organisation obeying a central symmetry and a rear façade obeying a regular structuring with a simple level of composition and with a regular vertical organisation according to the same type of decoration on the whole façade.	A horizontal organisation with a double level of composition and a vertical organisation is obeying a central symmetry and a rear façade obeying a regular structuring with a double level of composition and with a regular vertical organisation following the same type of decoration on the whole façade.

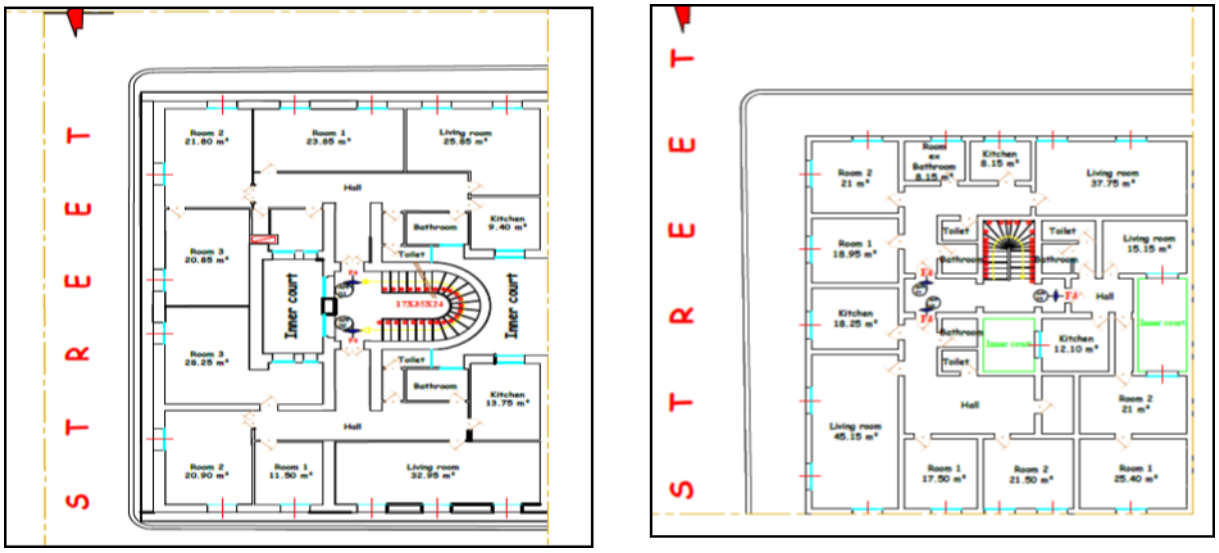

Figure 7: Diagram of type 1 and type 2 of investment buildings selected

4 Conclusion

This study was carried out following a report about colonial buildings from the 19th and early 20th centuries in the historic centre of the city of Annaba. The effect of time, the unconsciousness of society and the negligence of the State have contributed to the degradation of this heritage. However, the colonial city, just like Medina, is an architectural and urban entity that deserves the recognition of its rich heritage by society and support by the State insofar as it represents a part of Algerian urban history, is endowed with an architectural identity and is the bearer of a specific culture. It is in this wake that this study was undertaken to demonstrate some of its specific characteristics and to support the idea that we should work for its preservation and therefore its sustainability.

Furthermore, this paper did not aim to provide an exhaustive document that would reflect the diversity of old housing and more specifically the "revenue house", but rather a comprehensive catalogue that highlights the basic structures and characteristics of old buildings and defines the typical structures of the different categories of buildings. The richness of the colonial-built heritage was highlighted by the identification, in situ, of the architectural and architectural typologies of the historic colonial core of Annaba.

The definition of the type of building in this research was considered a relevant approach to reveal the diversity and richness of this built heritage. It has made it possible to classify the multiform objects that constitute it; to identify categories that make it possible to order the confused mass of reality by identifying the formal and structural regularities that establish typical correspondences between homologous elements. The typological category classification of 19th and early 20th century flat blocks, to which this research has led, has shown the different architectural and architectural characteristics of each typological category in continuity of filiation through a "canonical" distribution of the flats in the building. The catalogue produced could serve as a reference and guidance tool for architects and contractors

who would be involved in urban planning operations such as refurbishment, rehabilitation, and restoration.

More generally, it is important to point out that the type of building is determined by the type of construction. This construction by rational abstraction can be done in two stages. First, in each given family, we will explain the properties of the objects that compose it, then we will gather the common properties of the objects of a family to define the type; the set of non-common properties marks the different variations on the type.

The typology leads to an understanding of architecture in a fabric. Built types appear to be doubly determined by culture and by a location, but this determination is not deterministic: in each place for a given time, several solutions are possible; the history of the project is part of this openness. In this kind of exercise, the historical study is a kind of prelude, a stage aimed at understanding the urban place before approaching its analysis to transform it.

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