post-war housing in brussels

Miramar building by Claude Laurens in Sint-Joost-ten-Node 1956-1957

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post-war building materials

in housing in brussels 1945-1975

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The project was carried out in 2012-2016 by Stephanie Van de Voorde in collaboration with Ine Wouters, Inge Bertels, Ann Verdonck and Filip Descamps, all members of the research lab for architectural engineering of the Vrije Universiteit Brussel (www.vub.ac.be/ARCH/ae-lab/).

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post-war building materials in housing in brussels 1945–1975

Within the framework of this research project, in 2015 a trilingual book and website on post-war building materials were published. They document eight particular building materials that were applied in houses in the Brussels Capital Region between 1945 and 1975: lightweight concrete, thermal and acoustic insulation, glass and glazing, prefab floor systems, window frames, cladding and sandwich panels, precast concrete façade panels and heavy prefab systems (www.postwarbuildingmaterials.be).

Following this research on post-war building materials, in 2016 the authors studied two buildings in which a number of these typical post-war building materials were applied. This current report deals with one of these buildings: the Miramar apartment building, designed by architect Claude Laurens, in Sint-Joost-ten-Node. A first report dealt with the student homes on the campus of the Vrije Universiteit Brussel in Elsene, designed by architect Willy Van Der Meeren.

post-war housing in brussels

Miramar building by Claude Laurens in Sint-Joost-ten-Node 1956-1957

The 'Miramar' was designed in 1956-1957 by architect Claude Laurens (1908-2003) as a hotel for the 1958 World's Fair in Brussels. In 1959, the rooms were put up for sale as separate apartments. The building was characterized by its curved façade, the patchwork of blue and light grey Glasal façade panels, the elegant pattern of the precast concrete cladding panels, and the V-shaped columns that support part of the first floor to create a clear area for a drive-in service station. Although it is located at the crossroads of different neighbourhoods, the building fits perfectly within the streetscape and thereby defines the urban scenery. Visible to commuters, tourists and Brussels residents from the train, just before it descends at the North-South Junction, the Miramar became one of the iconic buildings of post-war Brussels. Today, the building has lost much of its original shine, yet those who take a closer look will see that most of the brilliance of the design is still present, albeit beneath a layer of dirt and dust.

view of the service station (1959)


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view of the main façade of the Miramar (1959)

Claude Laurens, tropical modernism and urban elegance

[Johan Lagae & Stephanie Van de Voorde] [1]

Claude Laurens was born in Paris in 1908. His father was the sculptor Henri Laurens, and he grew up in the French avant-garde scene: famous artists like Pablo Picasso, Georges Braque, Henri Matisse and Fernand Léger were friends of his father, and Le Corbusier frequently visited the Laurens' house. In 1932, Claude Laurens decided to become an architect. He worked at various architectural offices, for instance with Paul Nelson, Pierre Forestier and William Vetter. It was from these architects, all of whom had trained with Auguste Perret, that Claude Laurens learned the *métier* of designing along rational lines, giving particular attention to sound construction and the use of durable materials. After producing some small projects, beginning in 1934, and a stay in neutral Switzerland during World War II, Laurens moved to Belgium and set up his architectural office in Brussels in 1946. During the next five years he designed mostly houses and apartment buildings in and around Brussels. From 1951 onwards, Laurens expanded his work field to include the Belgian colony. He still resided and worked in Brussels, but travelled to Congo several times a year to design and follow up on new projects, mainly commissioned by large companies based in Belgium.

Laurens' oeuvre is characterized by a great attention to detail, slim lines, elegant volumes, and a rich tectonics. He adopted modern construction techniques (e.g. reinforced concrete and Durisol lightweight concrete [2]) and what became a 'signature' element of 1950s architecture: flagstone or quarry stone, used in a select number of walls – inspired by the 1930s work of Le Corbusier, such as the Pavillon Suisse. The Miramar is exemplary for this approach. It is one of Laurens' last buildings in Brussels, yet it became one of the icons of the period. Cleverly integrated in the urban fabric via a volumetric solution that responds to the particularities of the corner plot, the building's design is both elegant and bold. Likewise the Congolese buildings show the same elegance and finesse that Laurens demonstrated in his Brussels oeuvre, yet they were always carefully designed with the constraints of the tropical climate in mind. *Brise-soleils* and claustras are used in an effective way, making Laurens' work stand out as a rational rather than a formalist strand of 'tropical modernism' in Congo.

In 1952, the sixth issue of the Belgian journal *Architecture* was devoted entirely to the oeuvre of Laurens. Although he had designed relatively few projects at that time, the editors recognized the quality of Laurens' work, which was in line with the new and functional architectural style, but expressed 'humaine and vivante' forms that they wanted to promote. In an editorial in the issue, Claude Gérard praised Laurens' work: "on sera frappé par le caractère de profonde humanité de tous les bâtiments de Claude Laurens: nous sommes loin de la 'machine-à-habiter', épouvantail des foules. Machines à habiter, oui, mais admirables machines, où les grands et les petits volumes s'équilibrent en une harmonie parfaite, où la poésie occupe une large place, où la couleur et les jeux de matériaux créent un climat de joie et de santé. Le sens plastique de Laurens est étonnant" [3]. His projects soon were featured in other Belgian architectural journals and were picked up immediately by the international architectural press as well: several of his buildings are found in the pages of *L'Architecture d'Aujourd'hui* [4].

Claude Laurens' projects and buildings testify to the talent of an architect who was keen on creating works of formal elegance, and who devoted considerable attention to issues of tectonics and materials. His work continues to have relevance today because his projects were always carefully integrated into their surroundings. This is particularly true for the Miramar. In all its elegance, it is much more than just a building on a plot. In fact, it is a special form of urban architecture that, without wanting to be a landmark, gives shape and meaning to what would otherwise be a rather mundane public space.

picture on the cover of the monograph about Claude Laurens, showing the Sabena buildings in Léopoldville in Congo (constructed 1952-1954)

hotel and service station

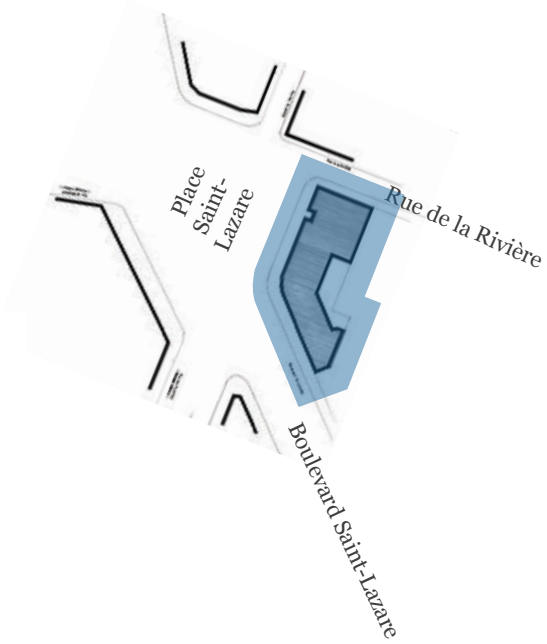
urban context

The building is located at an urban crossroads, near the Brussels North railway station. It forms a critical link at the juncture of a working-class residential district in Sint-Joost-ten-Node, the urban park and cultural hub 'Le Botanique', an office district between Brussels-North and the 'Cité Administrative de l'Etat'. Moreover, the network of railroad tracks, just before entering the North-South Junction, constitutes a true physical and acoustical barrier through this urban fabric. The plot was in fact obtained through a public auction in October 1956, organized by the 'Office National pour l'Achèvement de la Jonction Nord-Midi' [5].

The building is situated on a corner of two streets, Rue de la Rivière and Boulevard Saint-Lazare, alongside a small square, Place Saint-Lazare. The shape of the Miramar, merging two distinct volumes, directly corresponds to the building regulations and different scales of the immediate context. The main façade faces onto the Place and Boulevard Saint-Lazare: in these streets, the average building height was about 25 m and buildings with a maximum of five storeys were allowed by the Urban Planning Department and the North-South Railway Office. This façade is curved and follows the urban traffic flow. The façade facing the Rue de la Rivière is smaller and less wide: this part of the building ties in with the small-scale urban fabric consisting mainly of terraced houses. The average building height here is about 13 m and the regulations allow a maximum of four storeys.

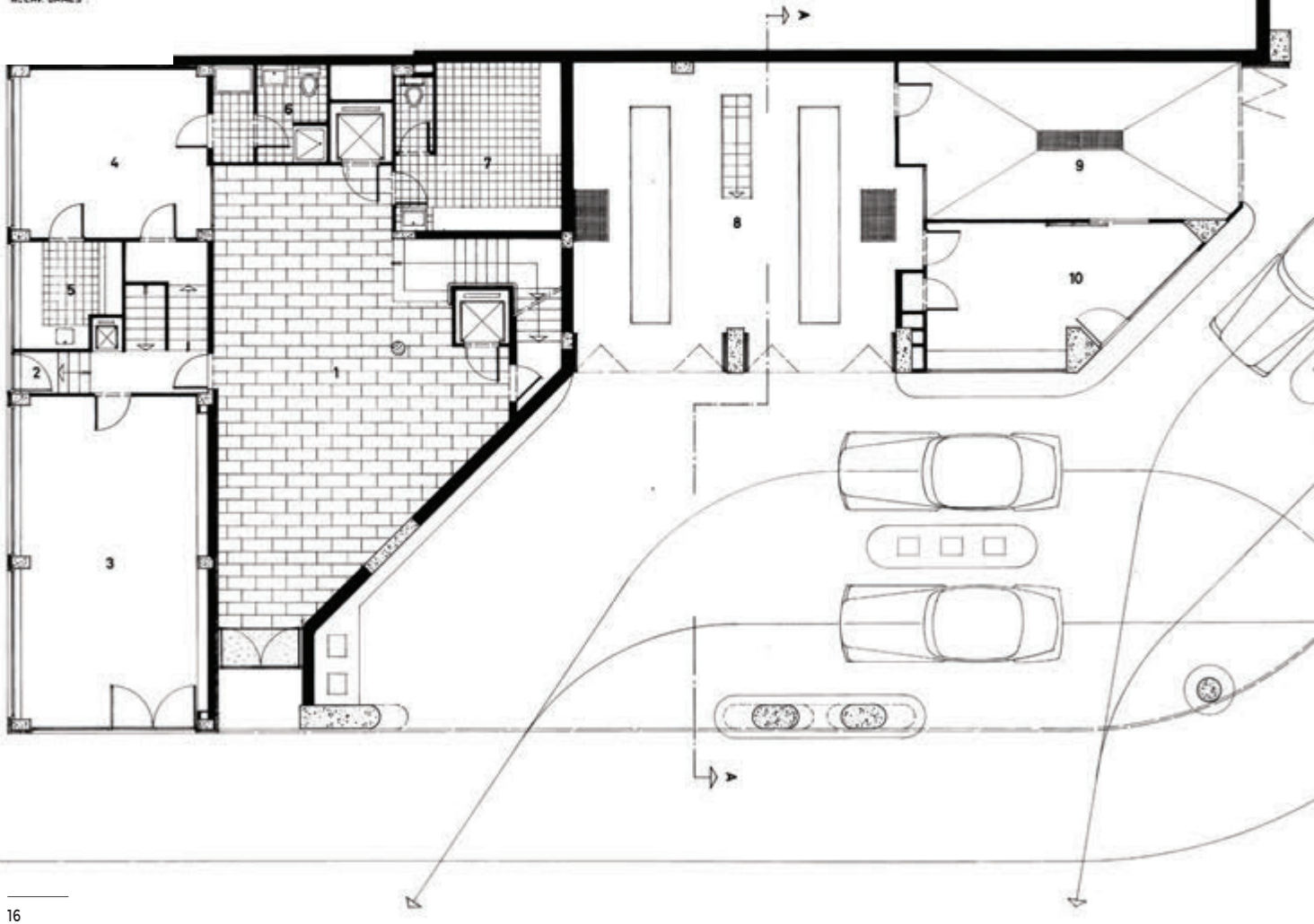
The main volume of the building, corresponding to the curved façade, was partially lifted on V-shaped columns: that way, the ground floor was cleared and traffic was drawn into a service station. The traffic pattern, together with the V-shaped columns and the curved façade, gave the architecture a dynamic character. Despite the restrictions in building heights and alignments (or rather, starting from these restrictions), Laurens developed a powerful building that responded to and invoked the particular features of, a heterogeneous urban context.

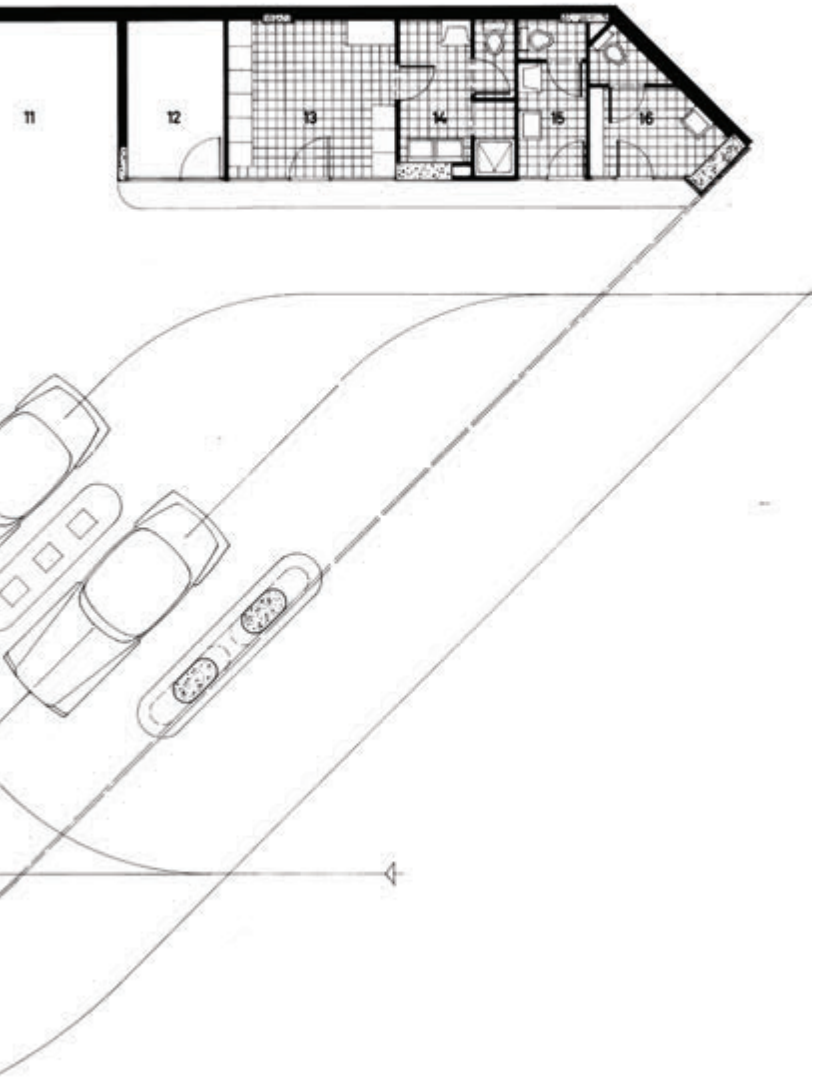
Place Saint-Lazare: the building across the street from the Miramar was also designed by Laurens (1956-1957, transformed in 1962, demolished in 2008)


Place
Saint-
Lazare
Rue de la Rivière
Boulevard Saint-Lazare

orientation of the Miramar (left) and three aerial pictures showing the area surrounding the site and the building (1953, 1971 and 2015)

1. HALL D'ENTREE.
2. ENTREE DE SERVICE.
3. SNACK-BAR.
4. LOGE CONCIERGE.
5. CUISINE.
6. TOILETTE.
7. VEST. PERSONNEL.
8. GRAISSAGE.
9. LAVAGE.
10. BUREAU.
11. PARKING.
12. BUREAU.
13. VEST. OUVRIERS.
14. LAV. OUVRIERS.
15. LAV. HOMMES.
16. LAV. DAMES.





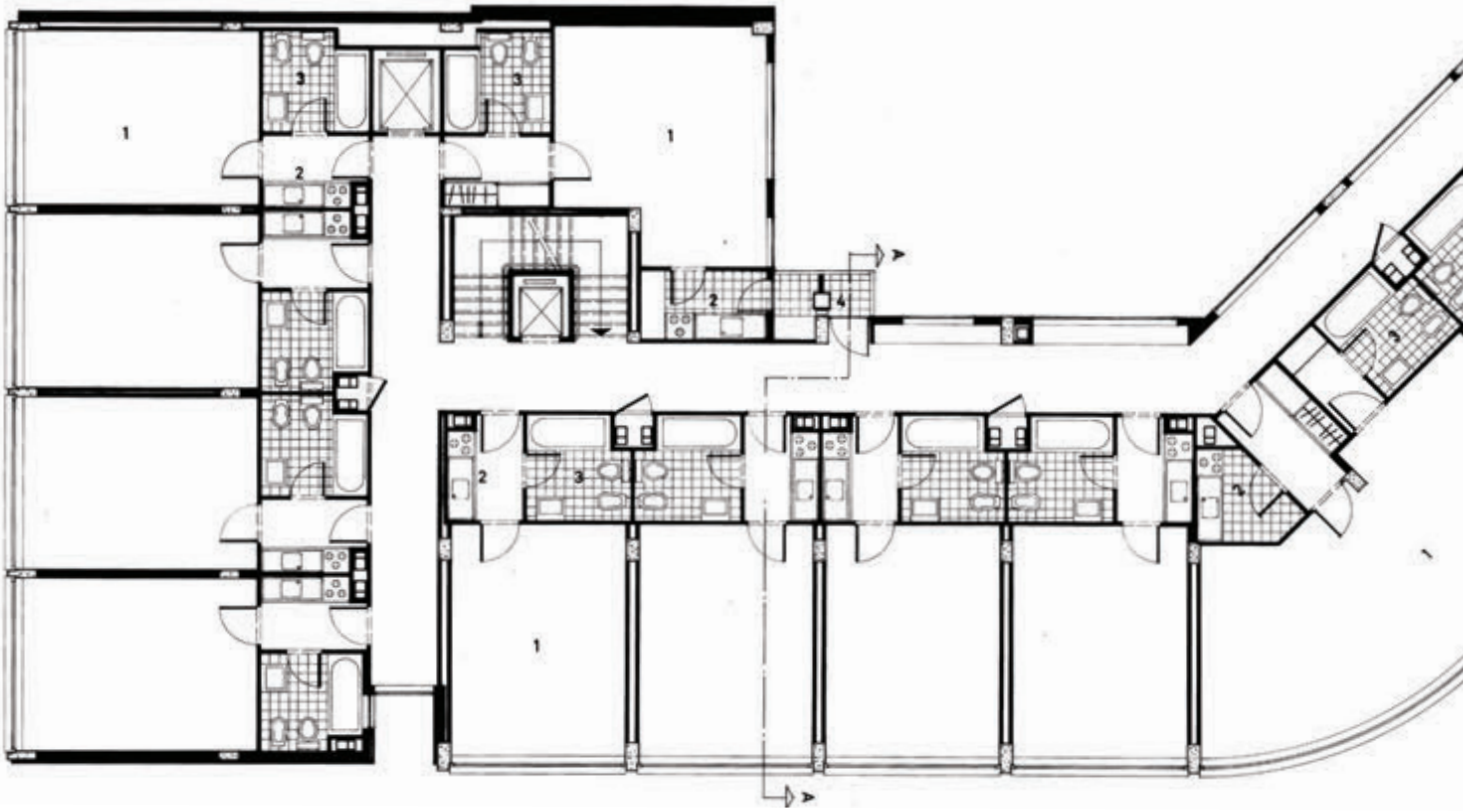
co-ownership

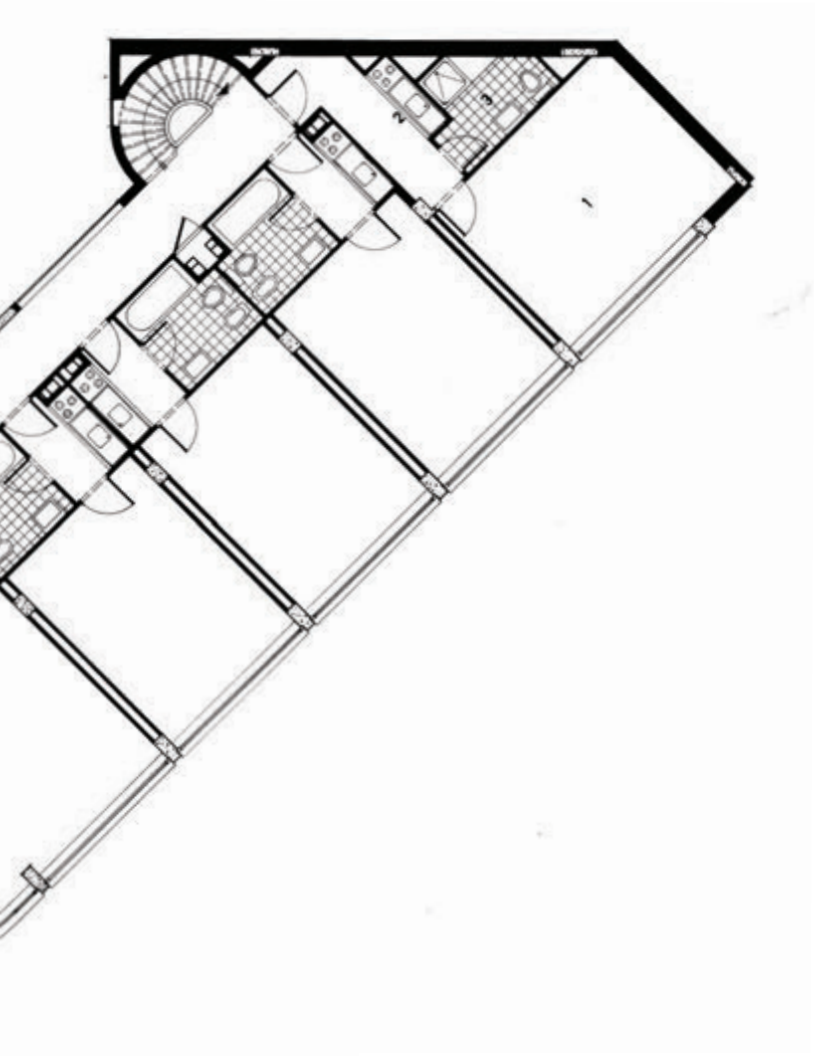
The 1958 World's Fair in Brussels and the great construction works that prepared the city for this international event were the backdrop for the construction of this building [6]. Many of the Fair's three million visitors needed accommodations: the Miramar was thus originally conceived as a hotel, but it was soon transformed into an apartment building [7]. Also, an expected increase in road traffic meant that additional infrastructure and services for cars was required in the city, not only for tourists, but also for the growing number of white-collar workers needed in the run-up to the establishment of the European capital and the birth of the welfare society [8].

The Miramar is the architectural embodiment of these contemporary requirements. By putting the main part of the building on *pilotis*, the distinction between the residential superstructure and the commercial substructure was visually emphasized. This distinction was also defined in the original 'acte de base', which was signed on March 28, 1957 and established the system of joint ownership. The building was subdivided in two parts: one, the service station and the corresponding façade and its basement, and the other, the hotel (including the entrance hall, the elevators and stairwells, the roof, etc.) and the remaining parts of the façades and its basement. Ownership of the common elements (i.e. the foundations, the loadbearing columns, the pipes and ducts that carry or service the two parts of the building) was divided proportionally between the two parts (15.8 % versus 84.2 %). The act further stipulated that the future owners were entitled to sell (parts of) their property, to put it under a supplementary regime of co-ownership (as was done by the owner of the hotel/apartment building) or to change the use, as long as this would not harm the general stability of the building. Furthermore, all changes to the façades and the exterior of the building needed to be approved by the building's architect, Claude Laurens, in order to preserve the architectural unity and harmony of the building as a whole.

ground floor plan (circa 1957)

1. STUDIO
2. KITCHENETTE
3. SALLE DE BAINS
4. VIDE-ORDURES.





typical floor plan (first floor to fourth floor, circa 1957)

plan and concept

The building takes up approximately half of the building block. At the ground floor, the largest part of the plot was reserved for the service station. The façade facing the Place Saint-Lazare was largely open, so cars could easily enter to refuel or for maintenance. Located in the back of the service station were a small work station and car washing facilities, and a central office. As the floors above are not as deep as the service station, a large skylight brought daylight into the work station. Along the eastern wall, adjacent to the neighbouring plot in the Boulevard Saint-Lazare, there was a parking space and some small rooms (an office, a changing room and washing room for employees, and toilets for visitors). The original drawings for the building permit (dated December 1, 1956) show that also the corner of the Place Saint-Lazare and the Rue de la Rivière was opened towards the streets to allow a passage for cars. Yet these plans were modified for the final building permit: the ground floor of the small volume orientated towards the Rue de la Rivière would be occupied by a snack bar and an apartment for the caretaker. In between this snack bar and the service station was the entrance hall, giving access to the residential spaces [9].

The floors above the ground level are entirely occupied with living spaces and circulation. The circulation pattern is defined by two elevators, two staircases and two corridors. The two corridors are perpendicular to each other, creating a T: the short corridor gives access to the apartments along the Rue de la Rivière, while the long leg of the T, following the slightly angled rear façade, provides access to the apartments looking out onto the Place and Boulevard Saint-Lazare. One elevator and one staircase are situated at the crossing of the two corridors, creating a focal point for the entire circulation pattern. On the outer end of the long corridor, Laurens designed a secondary staircase which extended from the first floor to the fifth floor: this staircase has a more plastic, semi-circular shape and receives daylight from openings in the rear façade. The

RIV 168

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ECHELLE 1/50

Le 1.12.1956

CLAUDE LAURENS ARCHITECTE 844.BR.A 275..136

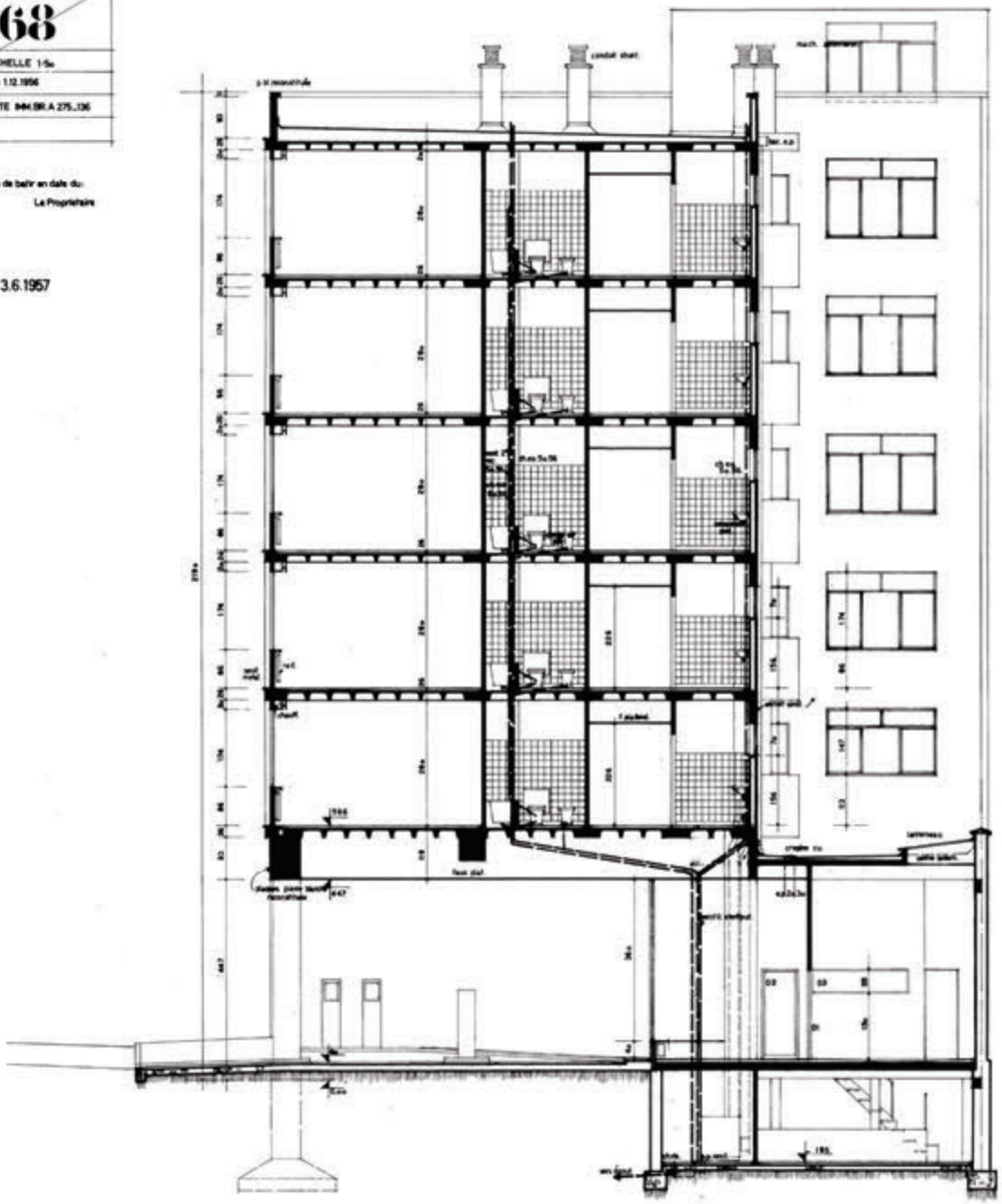
COUPE

Joint à notre demande d'autorisation de bâtir en date du :

L'Architecte

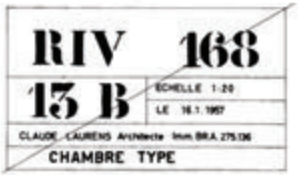
La Propriétaire

Voir plan 7B* du 3.6.1957

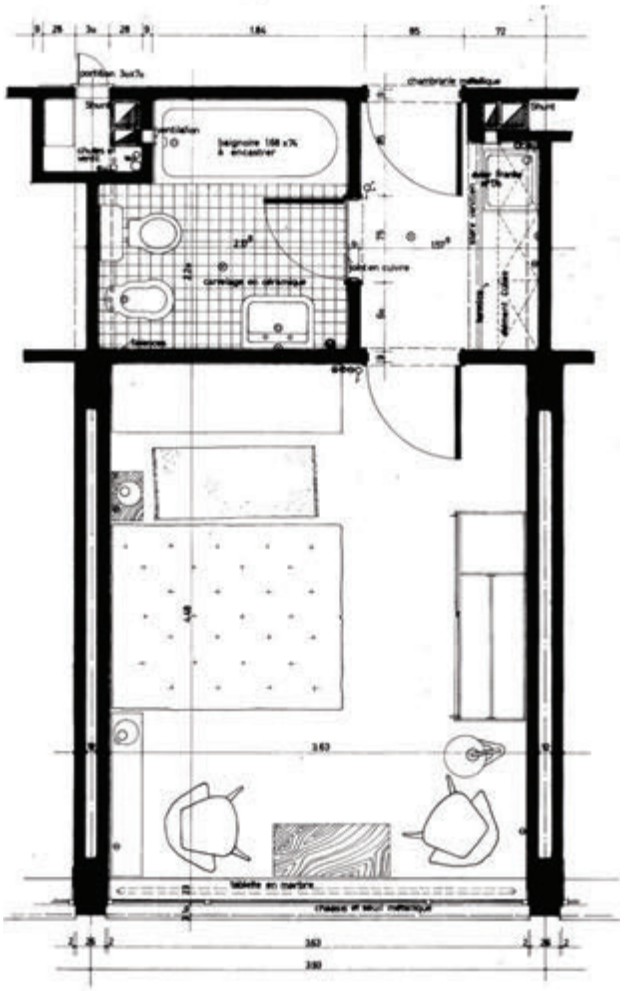


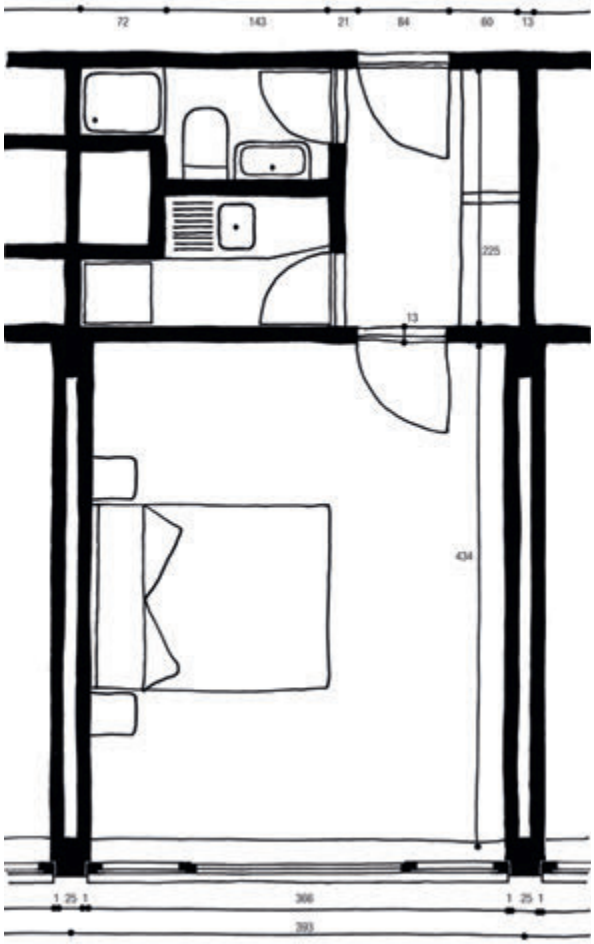
vertical section (1956)

view of the entrance hall (2016)



annulé





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layout of the individual apartments: original design of 1956-1957 (not executed, note "annulé") (left) and the actual layout (right)

short, perpendicular corridor ends in the second elevator at one end and windows at the other. These windows are not in the plane of the façade but are placed about 1 m inboard, to create a clear distinction between the two building volumes.
A typical floor plan thus has fourteen rooms: four along the Rue de la Rivière, one along the rear façade (between the two elevators) and nine along the main façade. The upper floor is slightly different: it contains only ten rooms, as the volume in the Rue de la Rivière is only five storeys.

The 66 apartments are very compact, single-room apartments. As built, the living units differ from Laurens' original design. Initially, Laurens designed an entry hallway flanked by a small kitchenette and a relative large bathroom, and a living room/bedroom extending the entire width of the apartment, with a large window. Instead of the kitchenette and large bathroom, there is a built-in cupboard in the hallway and a small, separate kitchen and bathroom. Still, the gross floor area is very small. The dividing walls correspond to the structural configuration; with bays less than 4 m wide and the total depth of the apartments just under 7 m, the gross floor area is less than 28 m². The apartments situated at the end of the long corridor, in the tight corner of the building along Boulevard Saint-Lazare, have a different configuration but are also very compact. The only exceptions are the apartments on the curve of the building, in the centre of the main façade: instead of one bay, these have four windows and a floor area just under 60 m². The floor-to-ceiling height is 2.80 m, and about 2.26 m high below the suspended ceiling in the bathroom.

Despite the fact that the Miramar consists of two distinct building volumes, the façade treatment is almost identical (except for the ground floor): indeed, the main façades of the upper floors are very similar, as most of the apartments have identical layouts.

rear façade of the building (2016)

interior views of the apartments (2016)

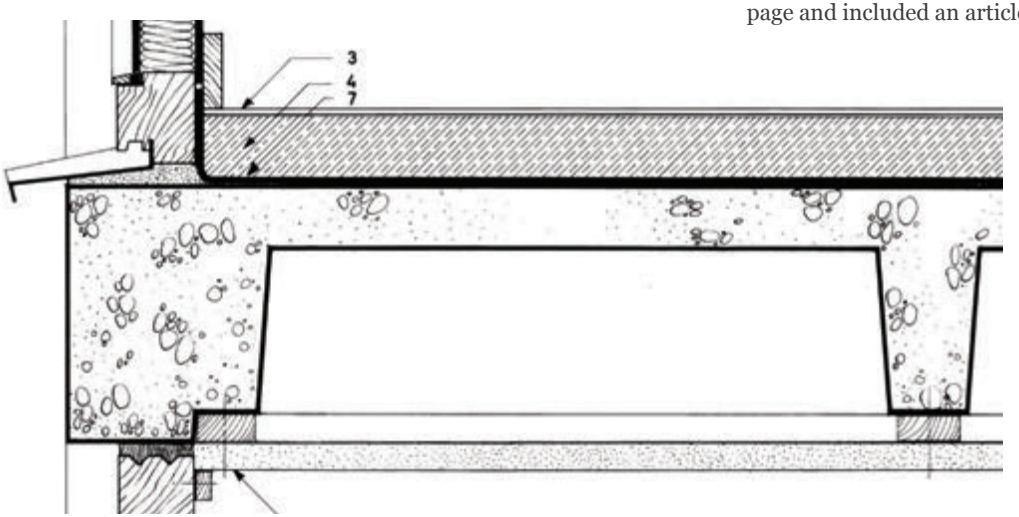
advertisement for Lechien, the building's contractor (1959)

construction and materials

[Stephanie Van de Voorde, Stéphanie Mangé, Arthur De Roover, Joni Staljanssens] [10]

Claude Laurens and the site's owner, André Greban de Saint-Germain, applied for a building permit in December 1956. Most of the drawings were stamped and signed by the local council in March 1957, yet one modified plan (changing the function and configuration of the ground floor corner) was submitted in June 1957 and approved on July 24, 1957.

According to the original 'acte de base' (March 28, 1957), the site was acquired on October 17, 1956. After being put under the regime of co-ownership, it was resold in March and September, 1957 [11]. One of the new owners was Fernand Lechien, head of the contracting company Les Entreprises Fernand Lechien S.A., located in Schaarbeek. The supplementary 'acte de base' designated him to be the contractor for the entire building, and he probably started construction soon after the purchase. According to an advertisement in *La Maison* in May 1959, Fernand Lechien specialized in 'constructions industrielles et buildings' and had built over 1,000 apartment units by that time. The same issue of *La Maison* showed the Miramar on the cover page and included an article about the building [12].



vertical section through the concrete ribbed floor (circa 1956-1957, not executed in this way)

reinforced concrete, cast in situ

The load-bearing structure of the building is a skeleton frame in reinforced concrete, cast in situ. This was the most common construction method for medium- and high-rise buildings in Belgium at that time, in contrast to neighbouring countries, where often heavy, load-bearing, precast concrete walls and slabs were used [13].

The portal frames are perpendicular to the façade, set approximately 4 m apart (corresponding to the width of one apartment). On the ground floor, the load of the relatively dense grid of portal frames is transferred to larger beams and columns, to free the ground floor as much as possible to accommodate the functions of the service station. For the main façade at this level, Laurens designed V-shaped columns: very 1950s, but also appropriate in this case [14]. From the first floor to the fifth floor, the columns of the portal frames become increasingly slimmer: in the main volume of the building, the width of the columns is 30 cm on all floors, but the depth decreases from 40 cm at the first floor to 20 cm at the fifth floor. The columns are perfectly in line with the walls and partitions and therefore invisible, except in the façades, where the beams (about 24 cm high) and columns (about 24 cm or 14 cm wide, depending on the façade) are visible. The concrete floors and frame merge seamlessly into the façade grid. Furthermore, it appears that the casting of the concrete was done with the greatest care: the successive pours of concrete are hardly visible. The outer surface was given a special treatment to expose the gravel aggregate, but the corners and edges have a smooth surface.

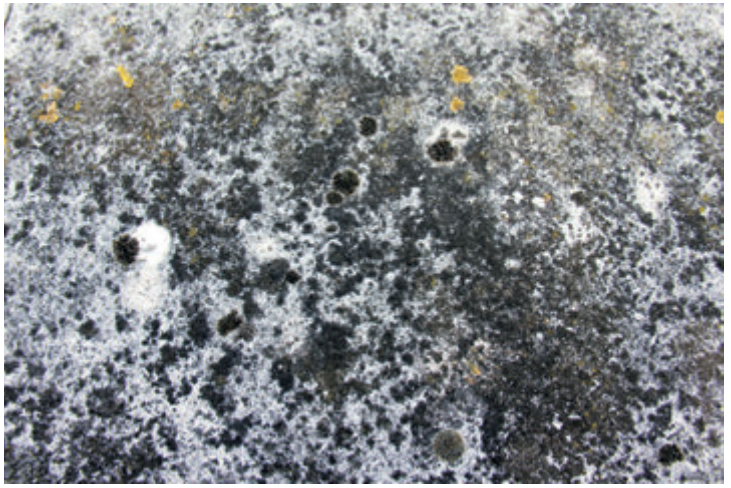
The floors between the portal frames were also cast in situ. They are 20 cm thick and were cast with reusable (metal) moulds to create ribbed floors; this was a clever way to save on materials and create lightweight floors. Near the front façade a solid reinforced concrete beam, about 50 cm wide, was built within the height of the floor. On-site investigations showed that in some places the reinforcement bars are visible and that the thinnest part of the concrete floors is sometimes only 2 cm thick. While in the 1950s a concrete cover of 1 or 2 cm was not uncommon, this is insufficient according to the current standards.

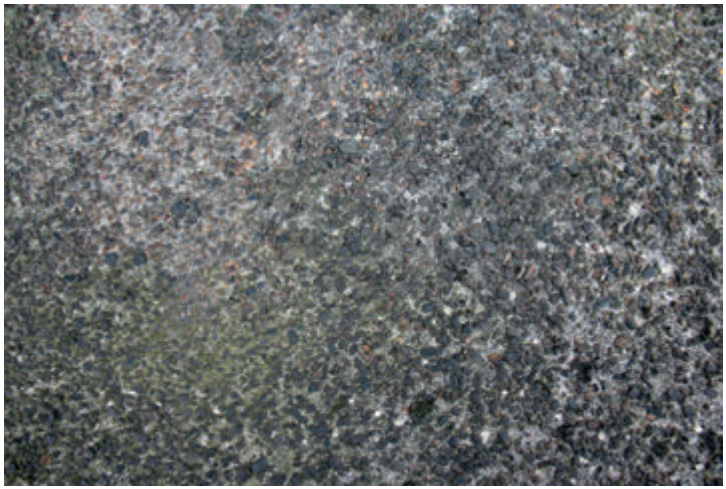
By casting the floors in situ, instead of using precast, hollow floor slabs, the contractor could more easily adapt the structure to the plan configuration, for instance, to follow the curve of the building [15]. Also, it allowed timber battens to be placed at the bottom of the ribs, to facilitate the construction of the ceilings. Locally damaged areas of the ceiling revealed its composition: a wood fibre cement board (about 2 cm thick), finished with a double layer of plaster.

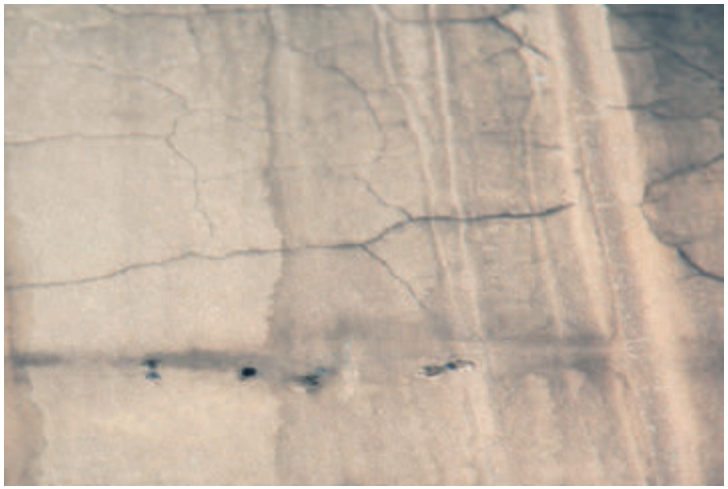
the concrete ribbed floor cast in situ, seen from below (2016)

wood fibre cement boards, used as ceiling panels (2016)


1







examples of materials: concrete, cement and flagstone (2016)

SANDWICH-PLATEN VOOR GEVELS

glasal

HET IS EEN PRODUKT VAN DE **Eternit** - GROEP

Gebouw : St-Lazarusplein
BRUSSEL

Bouwmeester :
Claude LAURENS

Wood fibre cement boards were a popular product in the post-war period: they were (claimed to be) rot-proof, form retaining, fire resistant, watertight, insulating, affordable, durable, and easy to process [16]. As a result, this type of board was often used as permanent formwork for concrete or - as in this case - as backboards for plasterwork. One popular brand of such boards was the German brand Heraklith; other brands were Dhenatherm, Fibralith, Hermes and Ardennite. It is unclear which brand was used in the Miramar as the panels are only visible in few damaged places, and these show no imprints of brand names. Most types of boards had similar properties: the density was between 350 and 530 kg/m³, and the thermal conductivity varied from 0.063 to 0.093 W/ mK.
On top of the concrete ribbed floors is a subfloor (a roughly 6 cm screed with a 2 cm thick 'rich' top layer) covered with linoleum tiles glued to the subfloor. Laurens' plans called for some kind of acoustic insulation between the ribbed floor and the subfloor, but whether this was installed could not be verified.

The walls between the concrete columns are constructed of masonry. The apartment-separating walls are double-leaf, made with solid yet lightweight concrete blocks (7 cm thick according to the plans) and an air cavity in between (12 cm), and finished with 2 cm of plaster. The walls below the windows are made of clay bricks and provide a solid structure behind the façade panels, to which the radiators were attached. These walls are 20 cm thick, except at a niche for the radiators, where they are reduced to 10 cm (a half-brick) thick. As for the rear façade, the columns there are enclosed within a brick masonry wall, with a half-brick wall in front of it. Initially, the rear façade was to be covered with a stone-imitating render ('enduit simili'), but this was not executed.

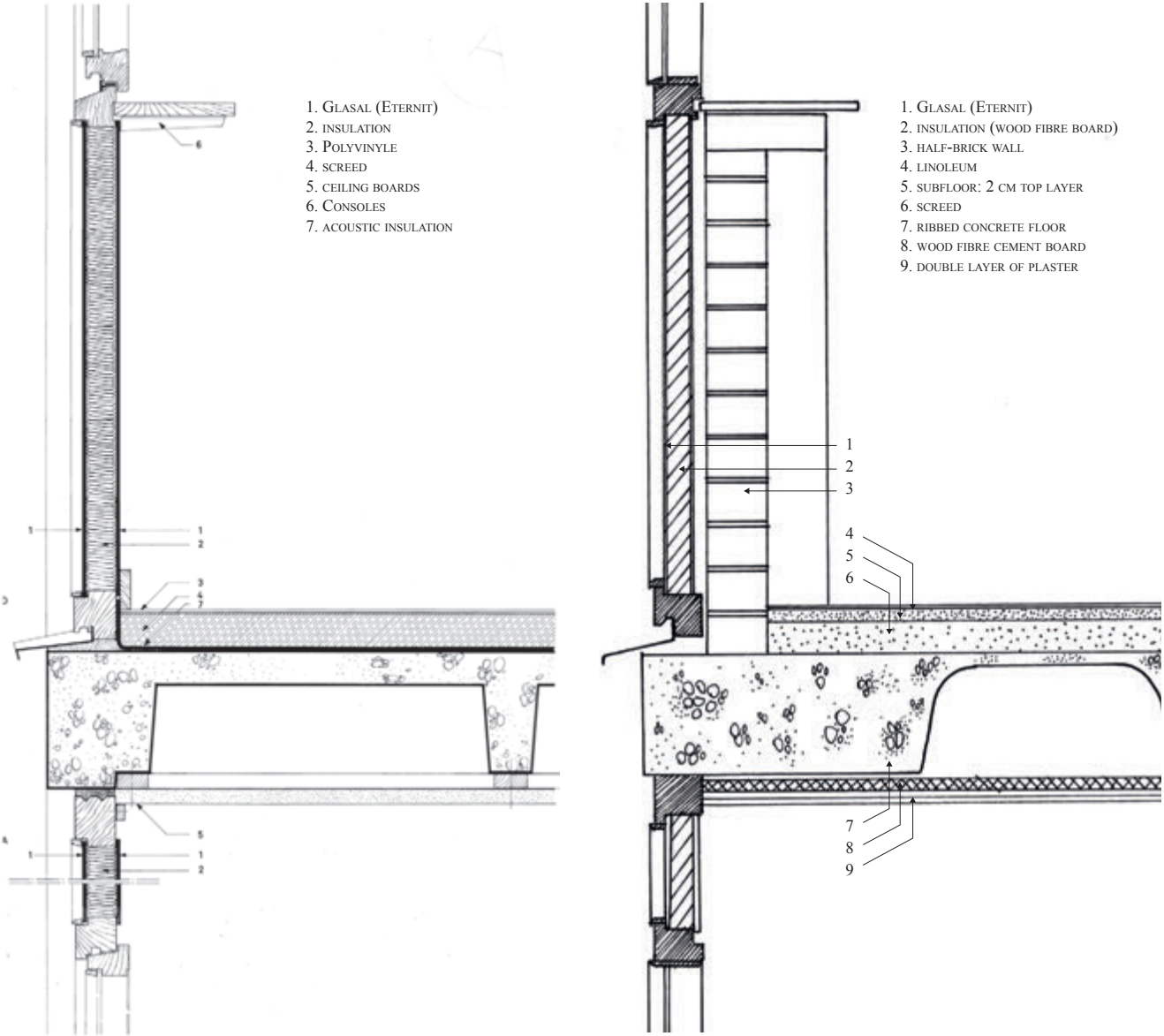
window frames and asbestos sandwich panels

The façades are characterised by the large window frames. These are positioned close to the front of the concrete frame, with only a slight recess of approximately 2 cm. The

schematic drawing of the window frames (circa 1957)

brick wall behind the sandwich panel (exposed during renovation, 2016)

left: a Glasal advertisement picturing the Miramar (1959)



vertical section through the window frame: original design of 1956-1957 (not executed) (left) and the implemented design (right)

frames are storey-high (about 2.80 m) and bay-wide (about 3.67 m). The joinery is made of wood, having a section of approximately 78 by 83 mm, and painted white. The large frames are divided in smaller frames, filled with either single glazing (for the fixed windows, casement windows, hopper windows and horizontally tilting windows) or with opaque Glasal sandwich panels in a blue and light grey tint [17]. At the bottom of these large frames, just above the concrete beams, is a metal window sill protruding about 3 cm from the façade. On the inside, there is a concrete sill covered with 2 cm of travertine, just below the window.

Glasal, an enamelled asbestos cement panel, is one of the materials closely linked to the colourful image of post-war architecture in Brussels. It was developed and put on the market by Eternit in 1957. The Miramar is thus one of the earliest applications and it was pictured in an advertisement for Glasal. Glasal quickly became a very popular product, especially for the opaque parts in large window frames or small-scale curtain walls. An analysis of post-war residential housing in Brussels shows that the increased use of cladding and sandwich panels between 1958 and 1966 can be linked almost directly to the development of Glasal.

Glasal consisted of a double compressed, autoclaved panel and was intended for both interior and exterior applications. The panels had a top layer of colourfast enamel, applied with a spray gun and vitrified in an oven. Glasal was watertight, dampproof, insulating (λ = 0.3 W/mK), smooth, easy to clean, rot-proof and resistant to scratches, shocks, acids, grease, solvents, frost and heat. The panels were used as such, or combined with other materials and boards to create sandwich panels. Such sandwich panels were composed of an outside layer of Glasal, an insulating core (consisting of wood fibres in the case of the Miramar building) and an inside surface of Glasal, Eflex, Pical or another Eternit panel for instance.

view of an original sandwich panel (during renovation work, 2016)


Night Shop
Lycamobile
Night shop
Lycamobile
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precast concrete façade panels

Most of the closed parts of the façades are covered with precast concrete panels: this includes the outer edges of the façade around the window frames and the blind façade facing the Place Saint-Lazare [18]. These panels or 'plaques (en) pierre blanche reconstituée' are made of reinforced concrete with a top layer of rich concrete and measure about 6 cm thick. The exterior surfaces of the panels have been acid-scoured to resemble natural stone. They presumably are secured by means of protruding reinforcing bar (called 'rebar') at the backs of the panels, without an air cavity or insulation in between: the rebars are tied into the mortar joints of the masonry or connected to the rebars of the concrete floors. This type of panel was frequently used by Laurens to cover blind walls, especially in Congo. Moreover, Laurens often used them in a particular configuration: three rows of high panels alternating with a row of small panels at the level of the floors. In the Miramar building, the high panels measure about 70 by 90 cm and the small panels are only 25 cm high.

Not all walls or blind façades are covered with precast concrete. At the ground floor, the closed parts of the façade and the walls near the entrance are covered with an irregular flagstone veneer and cement mortar joints between. The flagstones presumably are attached to the loadbearing structure behind with a cement mortar or glue. At the top of the building volume in the Rue de la Rivière, two different roof treatments are visible. Precast concrete panels are used on the blind wall of the higher volume. Other walls, including the walls around the elevator shaft, are covered with a stone-imitating render [19]. Although this resembles the precast concrete panels, the fake joints of the rendering stop abruptly at the corners, revealing the difference between the two. Also the Shunt shafts sticking out above the roofs, which ventilate the bathrooms, are covered with a cement render.

precast concrete façade panels: current condition (left) and original design (right). The 1956 sketch also shows the 'open' corner for cars.

36 four buildings in Léopoldville (Congo), showing the same pattern of façade panels: (left to right) Sabena building (1952-1954), Kredietbank building (1954-1955),

Mayumbe Residence (1954-1955), Difco complex (1955-1958).

stone imitating render (left, with fake joints) compared to precast concrete façade panels (right, with a new, white sealing compound in the joints between panels) (2016)

current condition

Since the end of the 1950s, some remodelling and renovations have been carried out in the building. For example, many apartment owners have renewed their window frames. The new windows are similar to the original ones, but differences in maintenance, slightly different subdivisions when wood frames were replaced with PVC frames, and the different shades of blue and grey of the new sandwich panels, create a heterogeneous façade. As for the ground floor, the service station was transformed into a garage in the 1970s and consequently the façade was largely enclosed [20]. At present, the ground floor is vacant, although there are plans to turn it into a restaurant or diner. The transformations of the ground floor, especially the closing of the façade, have had a major impact on the original image of the building.

Moreover, a lack of maintenance during the past 60 years has obviously affected the building. For instance, to see the damage and cracks in some of the precast concrete panels at the corners of the façade is disturbing, and not only for the building's appearance.

Yet, overall the building has held up well. Most of the concrete panels have stood the test of time very well: despite being subjected to various weather conditions over the last 60 years, they are in good condition. Also the fair-faced concrete, executed with the greatest care, has aged very well, although there are a few local occurrences of concrete spalling and rusty reinforcement. As for the window frames, both the frames and the sandwich panels would benefit from more frequent maintenance and a comprehensive renovation plan. The lack thereof has resulted in the building's somewhat dreary appearance, while also giving rise to technical issues, for instance, water infiltration caused by inadequate or missing sealing joints. Renovating the window frames, if part of a general renovation strategy, could help to restore the visual strength of the building and increase occupants' comfort.

façade renovations undertaken without a general plan or strategy for the building have resulted in a heterogeneous image (2016)

future of the building

Laurens designed the Miramar as a powerful, visually appealing and ultimately modern building that fit perfectly within its urban context. Despite the transformations of the building and lack of maintenance, the original design and characteristic qualities of the building still stand. These include the curved façade with the large window frames and colourful sandwich panels, the V-shaped columns, the volumetric massing and the relation of the building to the surrounding streetscape, the rich tectonics, the spacious entrance hall, the secondary staircase with a particular plastic design, the natural light in the corridor along the rear façade, etc. The historical pictures of the building published in *La Maison* in 1959 and in the 2001 monograph on Laurens still catch the eye. In photographs today, the building is far less visually appealing.

The Miramar is an exemplary building of its era. At the end of the 1950s, it was ultra-modern in the broadest sense: in its architecture, use of novel materials, mixed forms and functions, and urban setting [21]. It was designed according to the principles of the International Style. It was built with the latest construction techniques and materials, such as Glasal sandwich panels, which had been put on the market the same year construction of the Miramar began. Typologically, the building is a medium-rise apartment building and can be considered as a terraced or 'two-façade' building. This typology was becoming increasingly popular in the Brussels Capital Region in the post-war period, reflecting the high demand for housing and other development pressures on the urban fabric.

Today, the building is also exemplary, as many of its condition and preservation issues are found in many post-war apartment buildings. The Miramar has several owners, including both private persons and a social housing company. The complex governance structure, with a double system of co-ownership, together with a large number of tenants, has had a deleterious impact on maintenance and renovation. Even the vacancy of the commercial space at ground floor level can be attributed to this. The occupation and function of the ground floor are in fact crucial for the upgrade of the building. On the other hand, the complex governance structure has one main advantage: demolition of the Miramar is highly unlikely, as it would be difficult to convince the board of co-owners to take such a drastic action.

The building has to deal not only with internal issues, but with external ones too, namely the constantly changing and evolving surroundings. One of the great challenges will be the emergence in a few years of the 137 m high Silver Tower just in front of the Miramar. The tower, which will include 40,000 m² of office spaces, will heavily increase the development pressure on the neighbourhood and change the relationship between the Miramar and its immediate surroundings.

While demolition of the Miramar is unlikely, an upgrade of the building is necessary to preserve it. The principal reasons for the upgrade are to reduce energy use, and improve the comfort and safety of tenants. The focus, therefore, would be on the building's skin and finishing materials, e.g. the precast concrete façade panels, joinery, sandwich panels, plasterwork, and floor coverings. Not all of these materials have aged well, some are even hazardous. When improving the thermal and acoustical properties, materials will need to be restored, renovated or changed. Indeed, in some cases, repairs alone will not be adequate. For instance, the increase in nearby train traffic has caused enormous acoustical problems, which cannot be solved with simple joinery and double soundproof glazing.

When assessing a building of the post-war period, it is important to keep in mind both the original context as well as current and future demands. Buildings like the Miramar are not designed according to current standards, and should not be judged or measured by them. Rather, it is more reasonable to consider what an existing building does and can contribute. Such an approach would value a building's many inherent qualities, e.g. the architectural design, the relation between materials and tectonics, and

Close-up of the façade, showing Laurens' attention for detail and rich concrete tectonics. Yet the replaced window frames do not match. (2016)

contemporary function, etc., as well as the environmental benefits of reuse rather than new construction.
An interesting tool to assess historic buildings is the Nara Grid: this is an evaluation scheme designed to disentangle the different layers of our built heritage [22]. The Nara Grid helps to assess the artistic, historic, social and scientific value of our built heritage, and considers elements such as form and design, materials and substance, use and function, tradition, techniques, and workmanship, location and setting, and spirit and feeling. There are elements of the Miramar that fit in all of these categories. For instance, the gifted hand of a designer like Laurens clearly adds artistic value to the building. And, the combination of two functions (housing and auto-related) fits perfectly within the historic context of the 1958 World's Fair. Although less obvious, the joining of scientific workmanship and artisanal craftsmanship is reflected in the line of columns that slim down as they rise. And, with respect to its functional aspect, one might argue that the very compact rooms were a rational solution to the housing problem of the time, as the current concept of apart-hotels and micro-units are to urban housing problems today.

In addition to a sensible heritage assessment, it is also necessary to evaluate the building's performance against current standards. In 2016, the Miramar's board of co-owners commissioned a consulting architectural-engineering office, Gevelinzicht, to study the condition and needs of the Miramar. This study points to opportunities and risks, and will serve as a decision-making tool [23]. The focus is especially on the load-bearing structure, the building envelope and the collective building services. In collaboration with the structural engineering office De Roover Structureel Ontwerp, Gevelinzicht will evaluate the structural, technical, practical and financial feasibility of various renovation strategies for the façades and the roof, as well as assessing the building services and possible energy-saving measures. This study will be an important first step in extending the life of this architectural icon and still useful building.

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view of the Miramar and its surroundings (2016)

endnotes

[1] The biographical information on Claude Laurens is largely based on Lagae J., Laurens D., De Kooning M., *Claude Laurens: architecture: projets et réalisations de 1934 à 1971*, Ghent, 2001.

[2] Claude Laurens often used Durisol lightweight concrete in his work. An advertisement page for 'Durisol – isolation thermique, isolation phonique' in the themed issue of *Architecture* on Claude Laurens (1952, n. 6) mentioned six buildings by Laurens in which Durisol was used, including an apartment building in the Avenue Jeanne in Ixelles and a freestanding villa in Watermael-Boitsfort.

[3] Gérard C., 'Editorial', *Architecture*, 1952, n. 6, p. 189.

[4] The monograph on Laurens includes a full bibliography of texts about the architect's work. For his buildings in Brussels, see for instance 'Trois maisons en Belgique. Claude Laurens architecte', *L'Architecture d'Aujourd'hui*, 1950, n. 30, p. 14-17; 'Grande habitation à Fond-Roy. Architecte: Claude Laurens', *La Maison*, 1951, n. 3, p. 85-88; 'Immeuble à appartements, av. Jeanne à Bruxelles. Architecte: Claude Laurens', *La Maison*, 1951, n. 3, p. 89-92; 'Villa à Boitsfort. Architecte: Claude Laurens', *La Maison*, 1951, n. 7, p. 233; 'Immeuble à appartements, Bruxelles. Claude Laurens, architecte', *L'Architecture d'Aujourd'hui*, 1951, n. 38; *Architecture*, 1952, n. 6 (themed issue); 'Ensemble résidentiel à Bruxelles. Claude Laurens, architecte', *L'Architecture d'Aujourd'hui*, 1956, n. 66, p. 66; 'Unité résidentielle à Bruxelles. Claude Laurens, architecte', *La Maison*, 1957, n. 5, p. 139-142; 'Immeuble 'Riv' 168, à Bruxelles. Claude Laurens, architecte', *La Maison*, 1959, n. 5, p. 136-139; 'Maison d'architecte à Uccle. Architecte: Claude Laurens', *Architecture*, 1959, n. 26, p. 120-123.

[5] Gerard M., *Acte de Base. Immeuble Rue des Plantes, Angle Rue de la Rivière et Boulevard Saint-Lazare, Saint-Josse-ten-Noode*, March 28 1957, Brussels, p. 5.

[6] For the World's Fair in Brussels, see for instance Devos R., De Kooning M., Bekaert G., *Moderne architectuur op Expo 58: voor een humaner wereld*, Brussels, 2006.

[7] It is not clear when the building was transformed into an apartment building, after (if?) having served as a hotel. The original 'acte de base' (March 1957) mentions that a hotel was to be its original function. The small rooms, the two circulation plans and the attention to acoustics in the design (e.g. the two-leaf walls separating the rooms) also suggest this purpose. On the other hand, all the early pictures of the building show 'for sale' signs for individual apartments on the façades, and, if there had been a hotel lobby, it is not clear how this was designed (the plans do not show a hotel lobby). Furthermore, in the complementary 'acte de base' (dated October 1957, i.e. before construction of the building had started), the Miramar is no longer described as a hotel but as a 'residence': this document put the Miramar under a secondary regime of co-ownership, in which the individual properties are explicitly called 'apartments' [See *Acte de Base complémentaire, Annexe III: Règlement de copropriété particulier*, p. 1]. It is in fact not that uncommon that buildings planned for the World's Fair were not finished in time: the large residential district 'Cité Modèle' near the exposition site in Laken should have been ready when the Fair opened, yet only a scale model could be shown in April 1958.

[8] One example of the new infrastructure for cars in the city was Parking 58; see for instance De Neuville L., 'Le 'Parking 58' à Bruxelles', *La Technique des Travaux*, 1957, n. 11-12, p. 322-330.

[9] These plans are kept at the municipal archive in Sint-Joost-ten-Node.

[10] The descriptions of the original building materials are based on a study of archival material, on-site inspection, and the October 2016 report by Gevelinzicht.

[11] Gérard M., *Acte de Base complémentaire. 'Le Miramar'. Saint-Josse-ten-Noode, Rue des Plantes, angle Rue de la Rivière et Boulevard Saint-Lazare*, Brussels, October 30, 1957.

[12] 'Immeuble 'Riv' 168, à Bruxelles. Claude Laurens, architecte', *La Maison*, 1959, n. 5, p. 136-139 + cover + advertising pages.

[13] For a short discussion on the use of heavy prefab systems with load-bearing precast concrete walls and floor slabs in Belgium, see Van de Voorde S., Bertels I., Wouters I., *Post-war building materials in housing in Brussels 1945-1975*, Brussels, 2015, p. 410-437.

[14] Other examples of buildings with V-columns are the social housing complex 'Plaine de Droixhe' in Liège by EGAU (circa 1958) and a high-rise apartment building in Evere by Gaston Brunfaut (circa 1960).

[14] For typical post-war configurations of (precast) floor slabs and their loadbearing capacity, see Van de Voorde, *op. cit.*, p. 198-209.

[15] For more information on the properties and applications of wood fibre cement boards in post-war housing in Brussels, see Van de Voorde, *op. cit.*, p. 309-311.

[16] The properties and development of Glasal panels are described in Van de Voorde, *op. cit.*, p. 323-327, 363-365.

[17] For the properties and technical details of cladding panels in precast concrete, see Van de Voorde, *op. cit.*, p. 372-381.

[18] The application of render finishes on façades became popular in Belgium at the end of the 19th century. In order to create an appearance of sandstone, renders were made of cement mixed with ingredients such as lime, mica and crunched stone. To create a convincing imitation of sandstone masonry, simulated joints were drawn into the wet plaster. The result was a typical 'simili-pierre' or 'stone imitation'. For more information on stone-imitating rendering, see for instance Govaerts, Y., Verdonck, A., Meulebroeck, W. & de Bouw, M., 'The many faces of early 20th century stone imitations in Belgium', in: Van Balen, K. & Verstrynge, E. (eds.), *Proceedings of the 10th International Conference on Structural Analysis of Historical Constructions: Anamnesis, diagnosis, therapy, controls*, Leiden, 2016, p. 542-549.

[19] The building permit is kept at the municipal archive of Sint-Joost-ten-Node.

[20] In October 2016, the building was mentioned in a lecture by Sven Sterken titled 'The Many Faces of Brussels' Post-War Architectural Heritage', presented in connection with the second Brussels Biennale for Modern Architecture, organized by Korei. Sterken S., *The Many Faces of Brussels' Post-War Architectural Heritage*, Brussels, 2016.

[21] The Nara Grid was developed by Koenraad Van Balen of the Raymond Lemaire International Centre for Conservation (KU Leuven). Van Balen K., 'The Nara Grid: An Evaluation Scheme Based on the Nara Document on Authenticity', *APT Bulletin: Journal of Preservation Technology*, 2008, n. 2-3, p. 39-45.

[22] Mangé S., Staljanssens J., De Roover A., *Haalbaarheidsstudie renovatie residentieel complex 'Miramar'*, unpublished document (draft version, October 2016). Visual inspection and some destructive testing have shown that the actual construction deviates from Laurens' plans and drawings. The lack of (correct) detailed plans and reinforcement plans makes it difficult to evaluate the technical detailing and structural capacity of the building. The study was limited to preliminary research and local samples; for future renovation work, more thorough research will probably need to be done.

image credits

Cover, 4-5, 6-7, 8, 12←, 14-15, 16-17, 18, 20←, 24↓, 29↑, 30←, 33, 34←, 34→, 35←, 35→: Archive Claude Laurens, Paris.

10-11 : from a catalogue by Eternit: Lenfant H., *Technische gids voor de materialen van de vennootschappen van de Eternit Groep*, Kapelle-op-den-Bos, (circa 1960), p. 158.

12→, 13←, 13→: aerial pictures retrieved from 'Bruciel' (www.gis.irisnet.be/bruciel).

19, 21, 22, 23↖↗←→↙↘, 29↓, 31, 32, 42-43, 46-47: photographs by Tristan Boniver, 2016.

20→, 30→: drawing by Stephanie Van de Voorde, based on the report and graphical information by Gevelinzicht (2016) .

24↖: *La Maison*, 1959, n. 5.

25←, 25→, 40-41: photographs by Ine Wouters, 2016.

26↖↗←→↙↘, 27↖↗←→↙↘, 36, 37, 38: photographs by Stephanie Van de Voorde, 2016.

28: *Bouwen en Wonen*, 1959, n. 5.

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During the post-war period, house building boomed in the Brussels Capital Region, as it did elsewhere in Europe. Yet the once so modern buildings of that time are aging. How do you renovate or transform a post-war building properly, so as not to lose the elegance and liveliness of its original design?

This book sheds light on the construction of one particular post-war residential complex in Brussels, namely the Miramar apartment building in Sint-Joost-ten-Node, designed by architect Claude Laurens in 1956-1957. It discusses the materials that were used and their properties, as well as the current condition of the building and possible future actions. This report can thus serve as an inspiration for research on, and planning retrofitting projects for, similar buildings.

The information on the building's construction and the materials that were used in it is drawn from previous research on the characteristics of typical and innovative building materials produced in the post-war period, which is available online via www.postwarbuildingmaterials.be.