SMART REHABILITATION 3.0

Co-funded by the Erasmus+ Programme of the European Union

Avoiding demolition by improving building performance.

Rehabilitation of 530 housing units in the Grand Parc de Bordeaux neighborhood, Bordeaux, France.

Type of intervention

[ ] *Restoration* [X] *Rehabilitation / Renovation*

Concerned elements on the intervention project

- [ ] *1. Foundations and underground structures*
- [X] *2. Vertical structures*
- [X] *3. Horizontal structures and vertical connections*
- [ ] *4. Roof and terraces*
- [X] *5. Façade and building envelope*
- [X] *6. Finishes and completion elements*
- [X] *7. Integrate services*
- [X] *8. General strategies for building recovery*

Site	Buildings G, H, and I of the Gran Parc de Bordeaux Neighborhood, Bordeaux, France
Objectives	Rehabilitation of 530 social dwellings to improve their energy performance, expand their useful area and improve accessibility.
Property	Aquitanis O.P.H. de la Communauté Urbaine de Bordeaux (CUB)
Designer	Architects Anne Lacaton and Jean-Philippe Vassal with Fréderic Druot and Christophe Hutin architects. Engineers: BATSCOP, SECOTRAP ingénierie, CESMA , CARDONNEL ingénierie, Vincent-Pourtau. Landscape architect: Cyrille Marlin
Date	Project development: 2016 Works: 2019

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Background to the intervention

In the heart of the Grand Parc, three poorly maintained buildings containing 530 homes were slated for demolition. But two factors have the project to evolve:

- The Local Urban Plan prohibits building at such heights today;
- Bordeaux, including the Gran Parc, is a UNESCO World Heritage Site, which excludes any intervention on its structural organization.

It was then a question of imagining how to carry out a transformation intended to offer a second life to these these dwellings, which were considered to be of poor quality and perceived and negatively perceived, even though they enjoy an enviable location and beautiful unobstructed views.

By not making a clean sweep of the past, the property made the choice that was more in line with the urbanity that gave rise to the Grand Parc housing estate and reexamined the judgments made about large housing estates.

The essential point was already made: to take advantage of the potential for transformation of the buildings to offer beautiful, comfortable and energy-efficient housing with increased surface areas.

The historic building has the usual historic factory typology: Façades made of brick, acting as loading walls; Steel beams; Sloped roof and High windows. All of them creating an open-plan and great volume space.

Fig.1: Building G before the renovation. © *Philippe Ruault.*

Fig.2: Building G after the renovation. © *Philippe Ruault.*

Description of the building

As part of a large-scale urban renewal program in Bordeaux, the main social housing development was the complex known as the “Gran Parc”, made up of more than 4,000 houses and built in the early 1960s.

It is a conventional construction from the era of tall buildings with a concrete structure and simple enclosures with plastered façade finishes. Among the various buildings in the Grand-Parc, the object of the intervention was the buildings G, H, and I, the first with ten floors and the other two with fifteen floors, representing a total of 530 dwellings.

Fig.3: Site Plan of the G, H, and I. © *Philippe Ruault.*

The diagnosis of the building (values and state)

Buildings G, H, and I were destined for demolition, given their condition and the lack of comfort they offered.

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Rehabilitation works

The project consists in the rehabilitation of 3 modernist social housing's buildings, fully occupied, to expand its dimensions and improve the thermal behavior of the buildings as a whole, by creating a new envelope in the form of a multifunctional gallery added to the original dwellings. It is part of the renovation program of the 'Cité du Grand Parc' in Bordeaux.

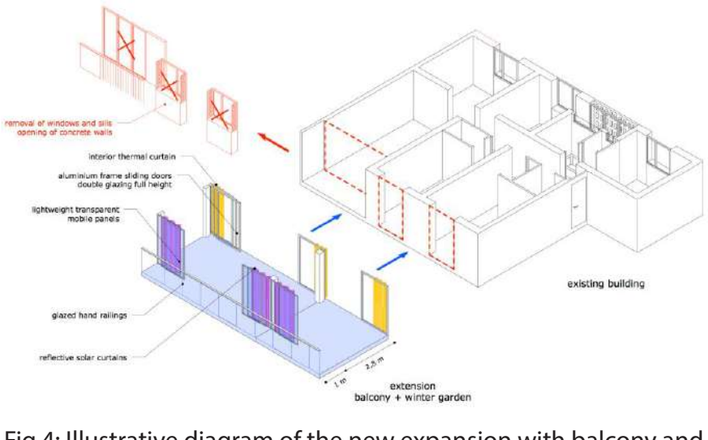

Fig.4: Illustrative diagram of the new expansion with balcony and winter garden. © *Philippe Ruault.*

Built from the early '60s, this modernist district counts more than 4000 dwellings. The 3 buildings G, H and I, 10 to 15 floors high, gather 530 dwellings and needed a renovation after the question of their demolition has been ruled out. By their location and their layout, these buildings give a capacity of transforming into beautiful dwellings with qualities and comfort.

The transformation starts from the interior of the dwellings, to give new qualities to the dwellings, by investing with precision and care the existing qualities, that should be preserved, and what is missing that must be supplemented. The addition of winter gardens and balconies in the extension of the existing give the opportunity, for each apartment, to enjoy more space, more natural light, more mobility of use and more views.

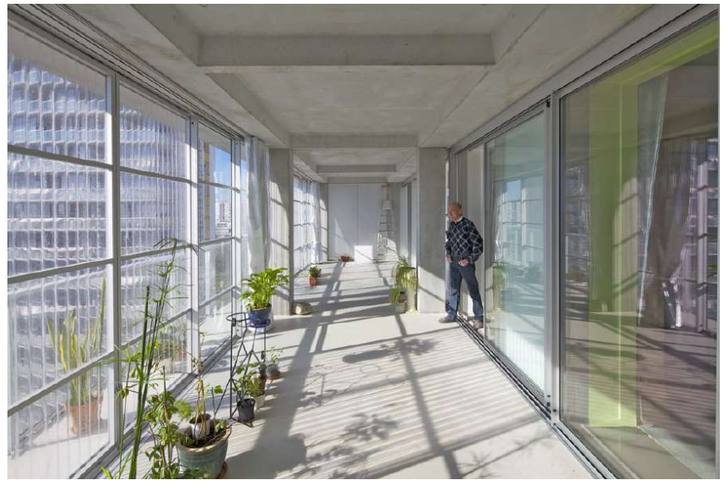

Fig.5: View of the balcony and winter garden. © *Philippe Ruault.*

From the inside, the view on the city of Bordeaux is panoramic and unique, due to the height and to the low topography of the city. It is an extraordinary living situation. While the high-rise buildings for high-class residences are now defined as examples of a responsible housing for the future, the G, H and I buildings offer the opportunity to reach these qualities immediately, in a generous, economic and sustainable way. The general economy of the project is based on the choice of transforming the existing building without doing important interventions on the existing: the structure, the stairs, or the floors and of proceeding by additions and extensions. This approach on the economy makes possible to concentrate the resources on generous extensions that are, for us, the key point to improve in a significant and sustainable way the quality and the dimension of the dwellings.

Fig.6-7: Views of the city of Bordeaux from the inside of the dwellings and balconies. © *Philippe Ruault.*

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These extensions widen the space of use and the mobility inside the dwelling, by providing each unit with approximately 25 to 30 m2 of new space, and give the opportunity, as in a house, to have a private outdoor space. The apartments open on to large winter gardens and balconies, and offer pleasant outdoor spaces, large enough to be fully used : 3,80m deep on the South facades for the buildings H and I buildings and the 2 façades of the building G, only composed by the mono-orientated dwellings. The existing windows are replaced by large, glassed sliding doors, which connect every room of the dwelling to the winter garden.

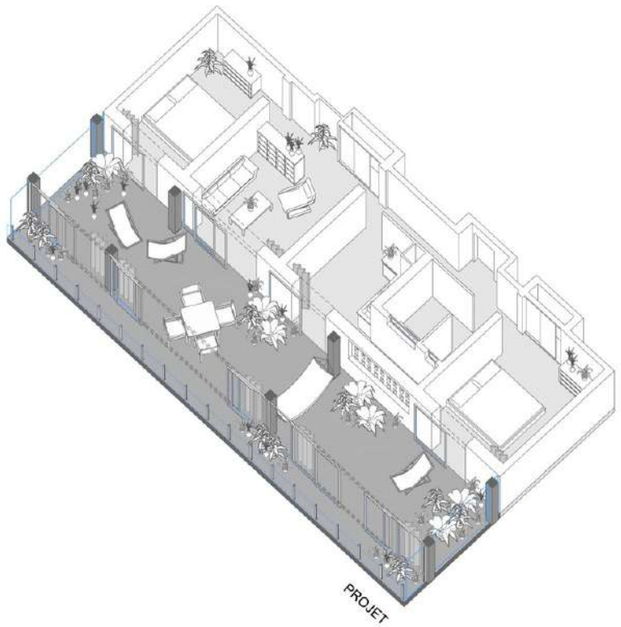

Fig.8: Axonometric view of the proposed rehabilitation with the addition of balconies and winter gardens. © *Lacaton&Vassal.*

And in a nod to the history of the Grand Parc, the construction site uses the crane track designed to assemble in industrial logic these prefabricated external structures. On the scale of the apartment, this technique allows the work to be completed in only a few days.

Fig.9: Construction process; installation of pre-fabricated structure. © *Aquitanis.*

Interior works are also planned in every dwelling as well as the renovation of the bathrooms and new electrical installation. The 2 former elevators serving every staircase of 45 dwellings are replaced by a new bigger one and supplemented by a new elevator built to improve the vertical circulation. On ground floor, new access halls are done, more opened and transparent, and the gardens in front of the buildings are improved. The global performance of the building envelope is also improved by the addition of the gardens and by the insulation of the North facade.

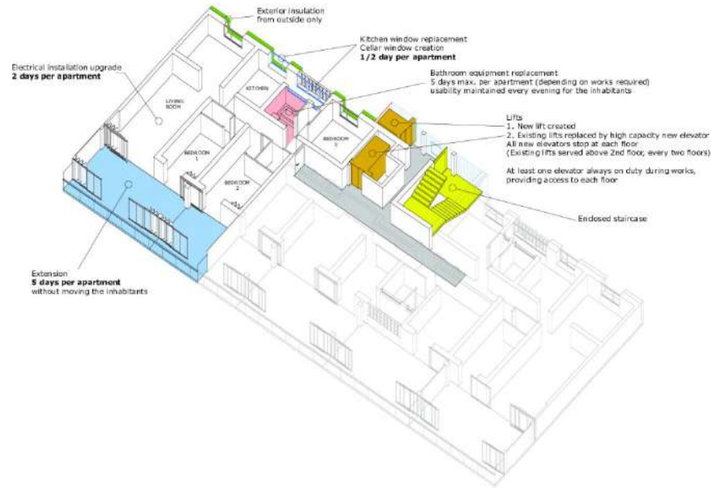

Fig.10: Work process in dwellings, extensions, exterior façades, and vertical circulation. © *Lacaton&Vassal.*

One of the challenges of this metamorphosis was that it was being carried out on an occupied site with tenants staying in their homes during the work and then enjoying the and will then benefit from reinvented housing at the same rent as before.

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Assessment of the results

The main innovation of this project is to show how social housing can be improved and offer its users generous, pleasant, and comfortable homes, responding to the demands of the 21st century.

Through this project, the social housing, often criticized heritage, set an example of a relevant and economic transformation that produces - from an existing judged lacking in qualities and seen in a negative way - generous , pleasant and performing dwellings, which renew and reformulate the typologies and the conditions of living, of comfort and of pleasure, and improve the image and attractivity of urban housing.

This rehabilitation project has been awarded the 2019 European Union Prize for Contemporary Architecture – Mies van der Rohe Award. The innovative renovation of three large blocks of social housing in Bordeaux was praised for *“radically improving the space and quality of life of its occupants”* and for optimizing their economic and environmental cost of living.

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https://www.lacatonvassal.com/index.php?idp=80#

https://www.archdaily.com/

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Photos and drawings

Fig.11-12: Existing conditions, G, H & I buildings before the transformation. © *Philippe Ruault*.

Fig.13: Diagram of the proposed expansion and final project for the H & I buildings. © *Lacaton&Vassal.*

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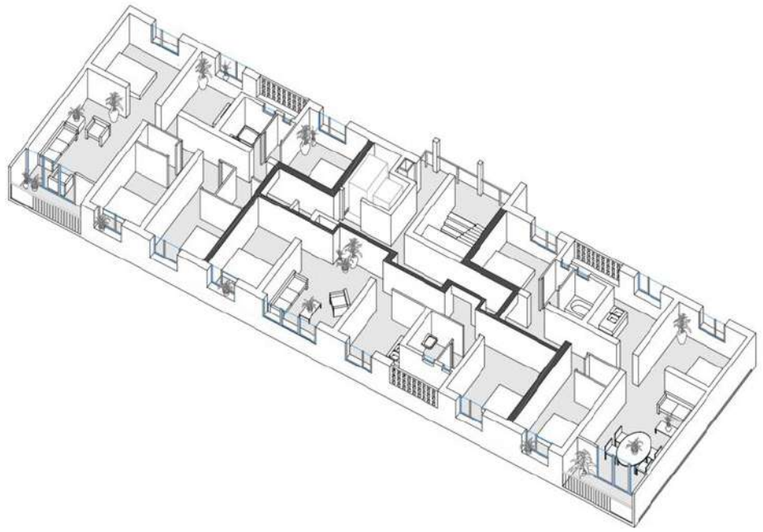

Fig.14: Existing Conditions, buildings H & I typical Floor Plan. © *Lacaton&Vassal.*

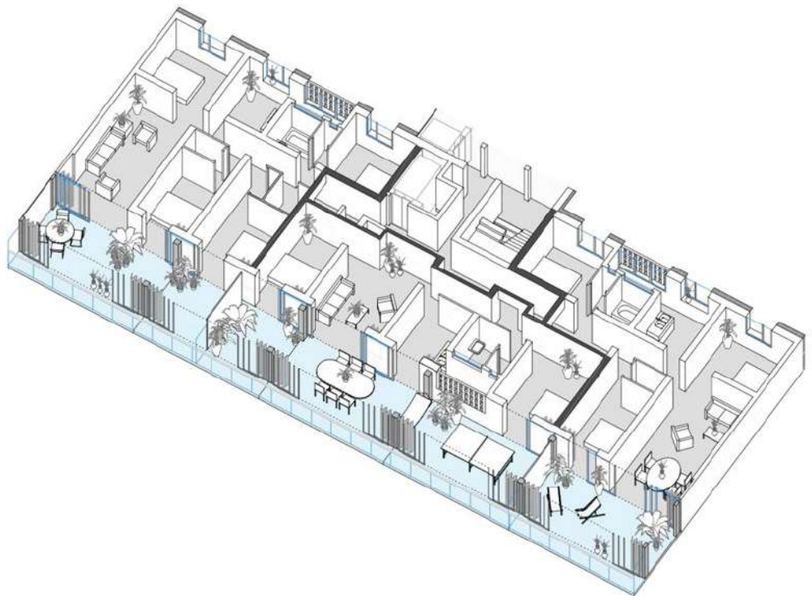

Fig.15: Transformation Project, buildings H & I new Floor Plan. © *Lacaton&Vassal.*

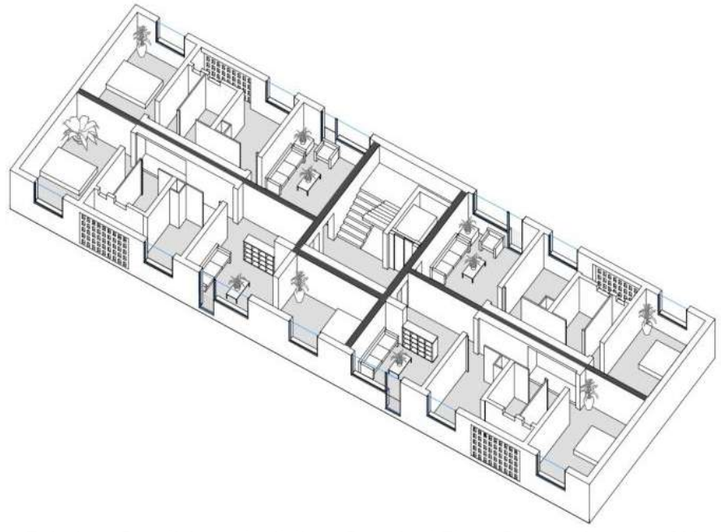

Fig.16: Existing Conditions, building G typical Floor Plan. © *Lacaton&Vassal.*

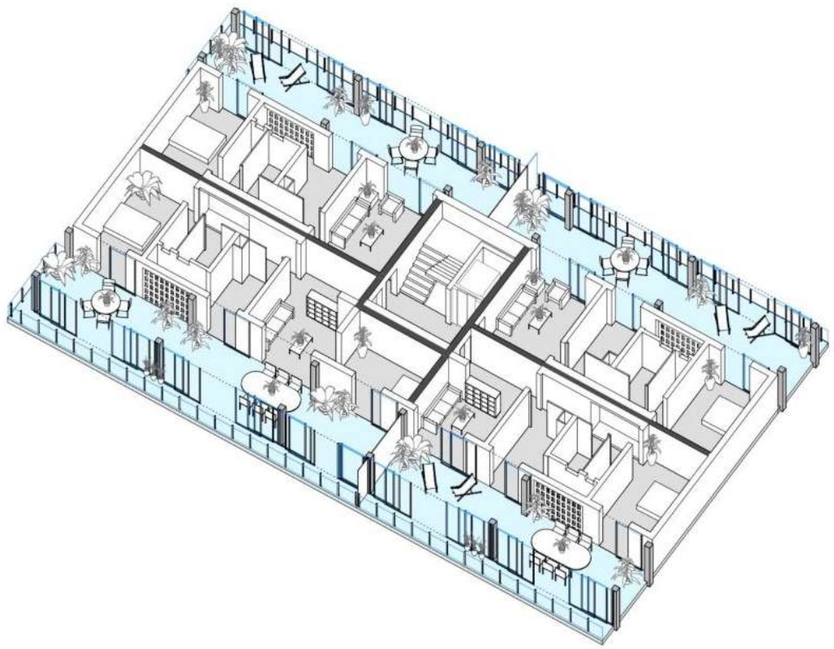

Fig.16: Transformation Project, building G new Floor Plan. © *Lacaton&Vassal.*

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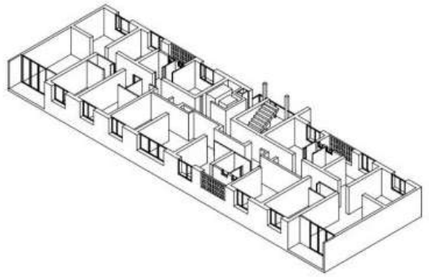
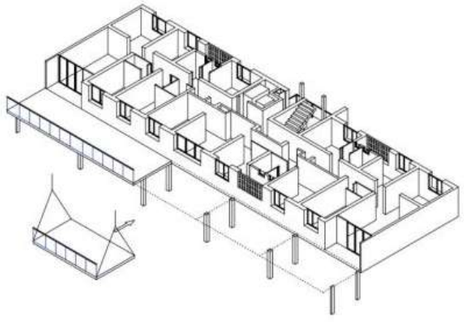


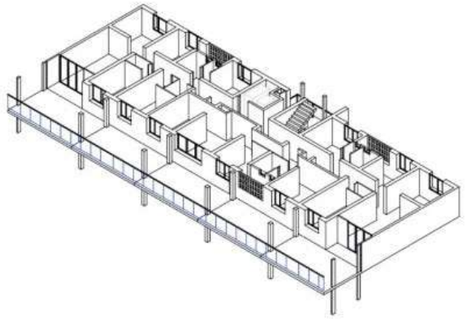
1

EXISTANT



2

POSE DES MODULES D'EXTENSION



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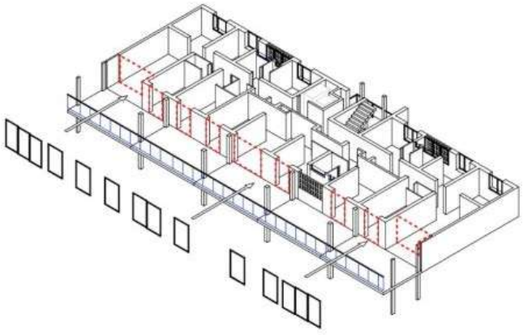
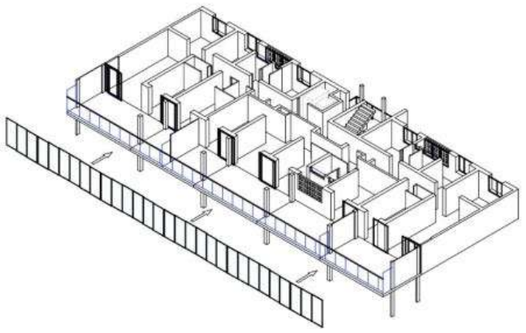
POSE DES POTEAUX



4

OUVERTURE DES ALLÈGES
ET POSE DES BAIES VITRÉES



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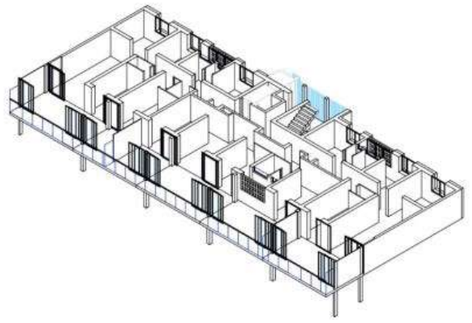
POSE DES FERMETURES
DES JARDIN D'HIVER



6

EXTENSIONS ETAT FINAL

Fig.17: Expansion Methodology: (1) Existing conditions, (2) Installation of extension modules, (3) Installation of columns, (4) Opening of window sills and installation of picture windows/doors, (5) Installation of winter garden closures, (6) Extensions final state. © *Lacaton&Vassal.*

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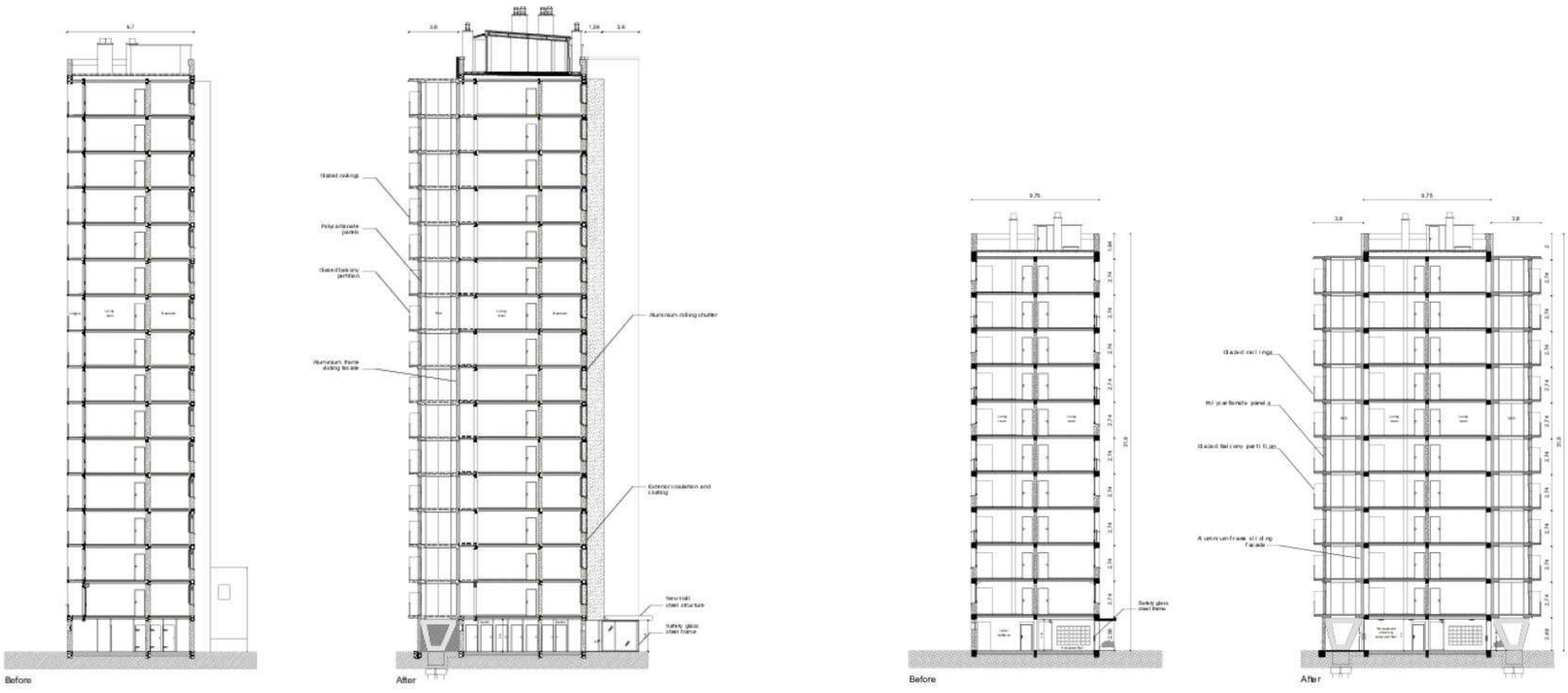

Fig.18: Before and after Section Plans of Buildings H & I (15 stories high), and building G (10 stories high). © *Lacaton&Vassal.*

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Fig.19-20: Construction process, installation of pre-fabricated elements over the existing buildings.. © *Philippe Ruault*.

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Fig.21: Exterior view of the completed intervention on buildings G, H & I. © *Philippe Ruault.*

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Fig.22: View of the buildings exterior from one of the roof terraces. © *Philippe Ruault*.

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Fig.23: Detailed view of the extension's base structure.

Fig.24: View of transformed façade and renovated exterior landscape.

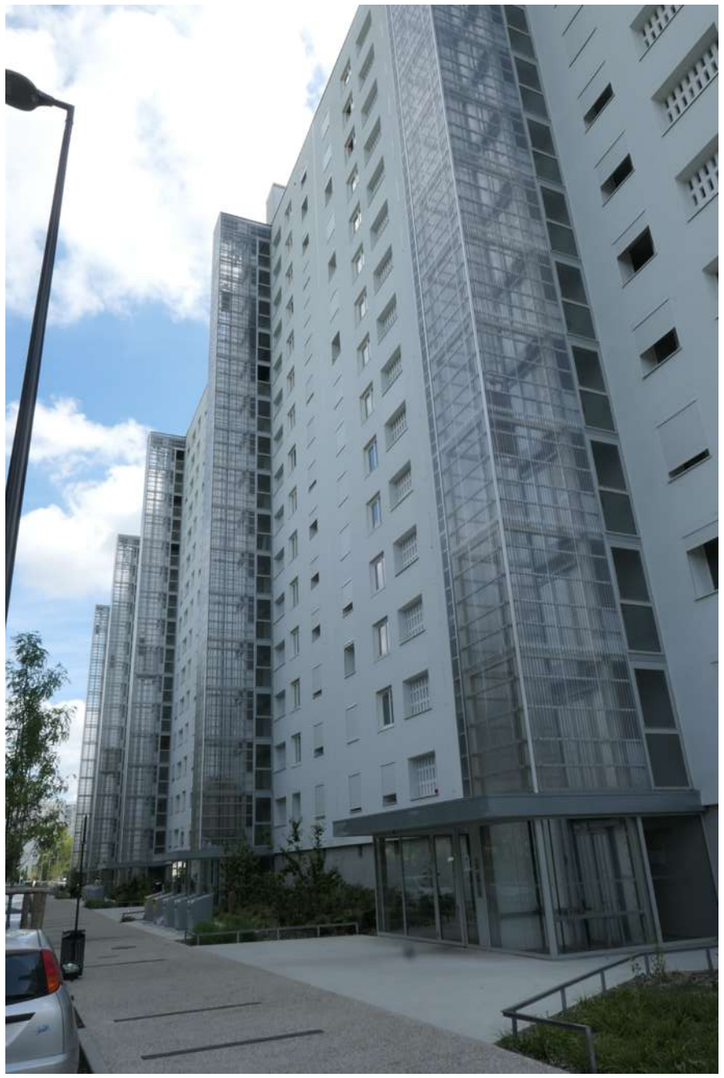

Fig.25: View of the Backside façade of the buildings H & I, with the new rehabilitated staircases and entrances.

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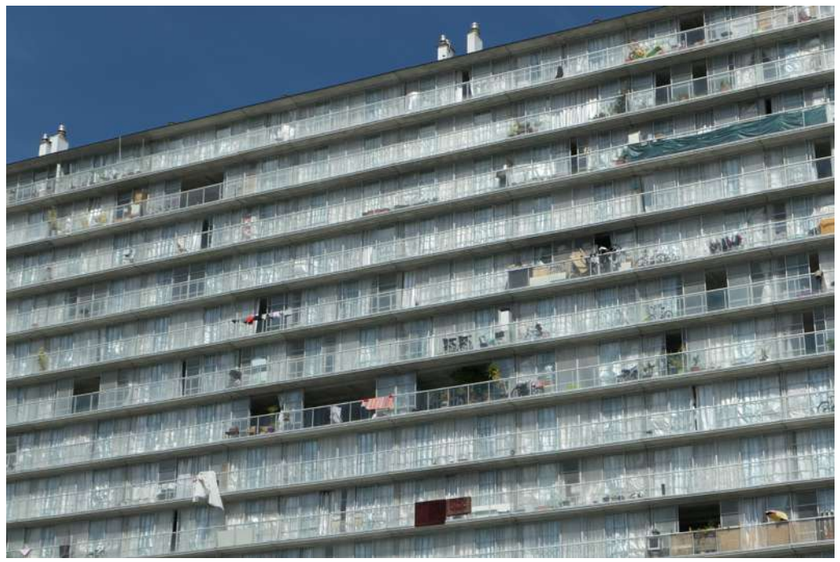

Fig.26-29: Close views of the corners of the extensions, the ground floor structure, the new façades and balconies.

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Fig.30-33: Views of the new balconies and winter gardens, and views of the city from inside the renovated dwellings. © *Philippe Ruault*.