Headquarters of the council of the Occitanie order of architects

by François BOIS / 2023-05-22 11:33:16 / France / 668 / FR

Renovation

Primary energy need:
kWh/m².an
(Calculation method:)

<table>
<thead>
<tr>
<th>Energy Consumption</th>
<th>Building Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 50</td>
<td>A</td>
</tr>
<tr>
<td>51 à 90</td>
<td>B</td>
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<tr>
<td>91 à 150</td>
<td>C</td>
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<td>151 à 230</td>
<td>D</td>
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<td>231 à 330</td>
<td>E</td>
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<tr>
<td>331 à 450</td>
<td>F</td>
</tr>
<tr>
<td>&gt; 450</td>
<td>G</td>
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</tbody>
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Energy-intensive building

Building Type: Office building < 28m
Construction Year: 2022
Delivery year: 2023
Address 1 - street: 24 rue Croix Baragnon 31000 TOULOUSE, France
Climate zone: [Cfb] Marine Mild Winter, warm summer, no dry season.

Net Floor Area: 258 m² SU
Construction/refurbishment cost: 205 000 €
Number of Work station: 11 Work station
Cost/m²: 794.57 €/m²

General information

The CROA office development operation is part of the largest renovation project for the Cour Baragnon space led by Scalène architectes: the “Cour Baragnon” project. This is a private promotion operation led by the Carle Group, and in synergy with other players in architecture and urban planning in the region, and in particular:

- CAUE 31: Council for Architecture, Urbanism and Environment of Haute-Garonne
- MAOP: House of Architecture Occitanie
- Training Island: Training organization
- AMO OMP: Architecture and Owner Occitanie Midi-Pyrénées
- AIOC: Engineering Association of Occitanie
- FFP: French Landscape Federation
- FFB: French Building Federation
- APUMP Occitanie: Association of urban planning professionals of Midi-Pyrénées

This project consists of a restructuring of the building with recovery and solidification of the floors, replacement of the old passageway by a new suspended one, replacement of the old frame on the top floor, change of joinery at each level and opening of the ground floor in order to receive the public in the courtyard.

It carries the following guidelines:
The main obstacles to the reuse process on this project were:

- The very short construction deadlines;
- The constraints related to the technical opinions and responsibilities that everyone must bear on the works carried out.

The AMO reuse supported us during the studies and the construction site by providing proposals and technical solutions. It was she who, among other things, managed the supply.

For us, the reuse has had an impact on the aesthetic aspect of the project and on the preservation of the architectural heritage. We had a very tight budget to carry out this project and had to make many compromises. Finally, we decided and succeeded in preserving the reused furniture and it is thanks to these works that the project finds its full meaning.
Photo credit

Isthme bureau méridional
Tournesol

Stakeholders

Contractor

Name : Conseil régional de l’ordre des architectes Occitanie
Contact : oa.occitanie@architectes.org
https://www.architectes.org/

Construction Manager

Name : Isthme
Contact : isthme.bm@gmail.com
https://www.isthme-bm.com/

Stakeholders

Function : Environmental consultancy
Tournesol
francois@maisontournesol.fr
https://www.maisontournesol.fr/

Function : Environmental consultancy
Mona architecture
mylene.gouin.architecture@gmail.com
AMU

Contracting method

Other methods

Type of market

Not applicable

Allocation of works contracts

Separate batches

Energy

Costs

Construction and exploitation costs

Total cost of the building : 205 000 €

Circular Economy

Circular economy strategy
Phase in which reuse has been integrated: Programming

Type of circular economy strategy implemented:
- Maximization of the number of impacted batches
- Maximization of quantities on targeted products
- Maximization of the carbon gain
- Maximization of the mass of waste avoided

Quantified targets for reuse?: A target of 10% reuse of materials is set for the project.

Integration of reuse into the written contract documents: Creation of a specific circular economy batch

Validation protocol for reused materials: Yes

Tournesol (reuse batch) produces the product sheets for each element. In the same way as for new products, these sheets bring together all the characteristics (physical, technical, dimensional, regulatory, etc.) of the reused materials.

These sheets are approved by the Project management assistance reuse. This operation is completely internalized by the reuse batch on this operation.

Since the volume of the project does not make it possible to amortize the test and reuse pass investments, it is decided upstream to avoid materials and elements requiring a visa from the control office to remove the obstacles to their use.

The materials are validated by the project management and the Project management assistance.

Deposit validation form: Yes

Reuse: same function or different function

Batches concerned by reuse:
- Indoor joineries
- Plumbing
- others...

For each batch: Reused Materials / Products / Equipments:

Lot 1: partitions, ceilings, painting, cleaning:
- Total quantity of materials: 9300 kg
- Total quantity of reused materials: 0 kg

Lot 2: interior woodwork:
- Total quantity of materials: 1900 kg
- Total quantity of reused materials: 410 kg

Lot 3: interior joinery from reuse:
- Total quantity of materials: 1679 kg
- Total quantity of reused materials: 1679 kg

Lot 4: plumbing, heating, ventilation, air conditioning:
- Total quantity of materials: 365 kg
- Total quantity of reused materials: 15 kg

Lot 5: electricity, SSI:
- Total quantity of materials: 200 kg
- Total quantity of reused materials: 0 kg

Lot 6: floor covering
- Total quantity of materials: 920 kg
- Total quantity of reused materials: 0 kg

Batch 7: furniture:
- Total quantity of materials: 1450 kg
- Total quantity of reused materials: 1450 kg

TOTAL:
- Total quantity of materials: 15814 kg
- Total quantity of reused materials: 3554 kg (22%)
Reused materials rate:
The materials preparation work concerns only the interior joinery elements.
The elements intended for the plumbing batch come from dormant stock from the site or from an order error, they are still packaged in their original packaging and are just waiting to be installed.
The wooden beams and joists from the floors are in relatively good condition for their age >100 years. However, they require a lot of preparatory work before they can be used as raw materials:
- First step: unnailing all the nails used to hold the floor
- Step two: stripping
- Third step: cut to size
- Fourth step: sanding (superficial, it is decided to keep the rough aspect as much as possible)
- Last step: varnishing

The door panels are relatively recent as they date from a renovation to PMR standards. They only require some adjustment work to integrate the custom frames manufactured for the project:
- Cleaning
- Sanding
- Planing
- Replacement of hardware items

The elements are placed directly on the project by the companies responsible for the carpentry and plumbing/HVAC lots in the same way as new elements from the site. No difficulty or particular provision has been made to ensure this stage.

Logistics
Rehabilitation and reconditioning operations (if project concerned by a cleaning/demolition stage) : Yes
Storage of materials for reuse in situ (if project concerned by a cleaning/demolition stage) :
- On an external platform, in combination with reconditioning operations

Storage of materials from external supply :
- No storage on site, but financial contribution for storage by the material supplier on his site

Insurance
Consultation of the technical controller : No
Specific mission given to the technical controller :
Since the volume of the project does not make it possible to amortize the test and reuse pass investments, it is decided upstream to avoid materials and elements requiring a visa from the control office to remove the obstacles to their use.

Insurance broker on the project : No
Consultation of the broker : No
Consultation insurer : No

Environmental assessment
Impacts avoided : water, waste, CO2 :
With the Reuse Booster calculation tool, here are the avoided impacts:
CO2 emissions avoided: 10,254 kg eq CO2/m²
Water consumption avoided: 703 m3
Waste avoided: 12,198 kg
The reuse operation saved the equivalent of 82,033 kilometers traveled by a small car, i.e. 93 Paris-Nice journeys, 4,688 rectangular bathtubs filled with water and 24 years of household waste for a Frenchman
The calculations previously made by the project are as follows : For the various calculations, the data used are those from the various readings and measurements of the project as well as data made available on:
- INIES database.
- IMPACTS database, established by ADEME
In this project, the economic impact of reuse being relatively limited due to the low cost of the materials, the reuse rate weightings are based on the weight of the materials and not their cost.

The environmental impacts lot by lot:
- LOT.01 - PARTITIONS / CEILINGS / PAINTING / CLEANING:
  Total quantity of materials: 9300 kg
Total quantity of reused materials: 0 kg
Waste avoided: 0 kg avoided
Carbon impact of reuse: 0 kg of CO² avoided
Water consumption avoided: 0 kg avoided

+ LOT.02 - WOODEN INTERIOR JOINERY:
Total quantity of materials: 1900 kg
Total quantity of reused materials: 410 kg
Waste avoided: 410 kg avoided
Carbon impact of reuse: 638 kg of CO² avoided
Water consumption avoided: 3 kg avoided

+ LOT.03 - INTERIOR JOINERY FROM REUSE:
Total quantity of materials: 1679 kg
Total quantity of reused materials: 1679 kg
Waste avoided: 1679 kg avoided
Carbon impact of reuse: 650 kg of CO² avoided
Water consumption avoided: 15 kg avoided

+ LOT.04 - PLUMBING / HEATING / VENTILATION / AIR CONDITIONING:
Total quantity of materials: 365 kg
Total quantity of reused materials: 105 kg
Waste avoided: 105 kg avoided
Carbon impact of reuse: 100 kg of CO² avoided
Water consumption avoided: 1 kg avoided

+ LOT.05 - ELECTRICITY / SSI:
Total quantity of materials: 200 kg
Total quantity of reused materials: 0 kg
Waste avoided: 0 kg avoided
Carbon impact of reuse: 0 kg of CO² avoided
Water consumption avoided: 0 kg avoided

+ LOT.06 - FLOORING:
Total quantity of materials: 920 kg
Total quantity of reused materials: 0 kg
Waste avoided: 0 kg avoided
Carbon impact of reuse: 0 kg of CO² avoided
Water consumption avoided: 0 kg avoided

+ LOT.07 - FURNITURE:
Total quantity of materials: 1450 kg
Total quantity of materials reused: 1450 kg
Waste avoided: 1450 kg avoided
Carbon impact of reuse: 10,600 kg of CO² avoided
Water consumption avoided: 30 kg avoided

+ TOTALS:
Total quantity of materials: 15814 kg
Total quantity of reused materials: 3554 kg (22%)
Waste avoided: 3554 kg
Carbon impact of reuse: 11,988 kg of CO² avoided
Water consumption avoided: 49 kg avoided
Economic assessment

Total cost of reuse: €17,550
Reuse quantified in the companies’ offers? : Yes

Purchasing process for reused materials:
- Purchase by the contracting authority from a reuse platform
- Purchase by the contracting authority from another contracting authority

Fees of the contracting authority support: €3,300

More details on the economic balance:
Reused materials only appeared on lot 03 joinery from reused. For the other batches, the reuse elements were added as they were validated by the MOA and the harvest on the various external deposits.

The materials are centralized by the reuse batch which collects them by purchasing or by contract for the transfer of materials free of charge.

The collection of these materials is then invoiced to the Project management assistance.

The materials are made available to the companies that install them and withdraw the supply of these in their final invoice.

- Total envelope dedicated to reuse: €17,550
- AMO reuse: €3,300 excluding tax
- Reuse batch: €2,190 excl. tax
- Carpentry lot from reuse: €12,060

Savings related to the reuse of materials:

Carpentry lot:
- 6 doors at €40/unit for reuse versus €220/unit for new → €1,080 in savings
- 6 farms cost €1/unit for reuse versus €80/unit for new → €474 in savings
- 4 medium panels €5/unit for re-use versus €150/unit for new → €580 savings
- 2m3 of larch beam 200€/m3 in reuse against 1200€/m3 in new → 2 000 € savings
- 34m² of ALUCOBOND at €1/m² for reuse versus €40/m² for new → > €1,326 in savings

Plumbing kit:
- Stainless steel sink at €75/unit for reuse versus €250/unit for new → €175 in savings
- Stainless steel mixer €75/unit for reuse versus €150/unit for new → €75 savings

Over the entire project, there is a total saving of €5,710 in supplies thanks to the reuse of materials. A non-negligible impact because it represents approximately 5.5% of the project’s supply envelope.

In addition, the miscellaneous operations linked to reuse represent a total of €17,550, or almost 9% of the operation’s budget.

Communication

Communication on the process: Yes
Project visit: Yes

Circular design

Responsible consumption:
The CROA Occitanie office development project is part of the major “Cour Baragnon” renovation project of the Carle group led by the architecture firm Scalène, which aims to create a single center bringing together all the institutions of the architecture of the Occitanie region: CAUE, CROA, îlot formation and initially the house of architecture which withdrew along the way.

The ambition of the project is great, as the architect Jean Larnaudie describes it: “It will be a unique place in France, both a showcase for local architecture and an exhibition space for the general public which will be interested in other disciplines, free and open to Toulouse residents”.

Industrial and territorial economy:
The use of materials from industrial waste and not from construction is new compared to the state of the art, the implementation of these elements represents a risk taking, it is a step forward in the methods put in place for the circular economy at the local level.

Eco-design:
It is important to note that the first success of this project is the culmination of the reuse process which, thanks to the commitment of all the project's stakeholders: Project management assistance, contractor and companies, was able to be continued throughout the development phases. studies of the project up to the laying of the materials.

Some failures could not be avoided despite everything, the cleaning site of the Croix Baragnon area was already well underway at the start of the studies and the resource diagnosis. As a result, a large quantity of building reuse materials could not be identified and saved for the future project. We will also note that only three batches out of six were able to be supplied from reuse.

Sustainable supply:
We will note that the objective of 10% reuse set during the studies was largely exceeded with 22% of materials from the circular economy on the project. This was
made possible by integration from the sketch phase of the reuse, right through to the written parts of the market. The reused materials have followed a strict validation process set by the Project management assistance reused.

This has extended the life of reused materials, including old beams that are gone for another 100 years. A broader approach to the scope of sourcing has made it possible to integrate materials from industrial waste and not just from the construction sector.

Finally, we will note that the reuse allowed savings of approximately 5% of the project’s supply budget. This is an important point to note at a time of the explosion in the cost of raw materials. Reuse is becoming more and more competitive with the supply of new materials.

Recycling:

The focus was mainly on the furniture batch resulting from reuse. This batch of custom-made furniture where the following elements are reused in upcycling:

- Joists from the baragnon cross cleaning site
- Reinforcing steel from local industrial offcuts
- IPE200 profile elements from local industrial offcuts
- ALUCOBOND panel from local industrial offcuts

Additional information (PDF documents)

Contest

Reasons for participating in the competition(s)

The ambition of the project since its formulation has been to integrate as many elements as possible for reuse and to provide the means to do so. The methodology used on this operation is based on three axes:

- The “extending the lifespan of materials” component of the circular economy (selective deconstruction, reuse/reuse). The objective here is to limit the environmental impact as much as possible (water consumption, waste production, CO2 emissions).
- “Reproducibility”: it is important for Tournesol to implement a methodology that is clear and easy to implement on different types of project, we will see later that this is a slight adaptation of our methodology “kind”. The means and methods used are reproducible (on the scale of the territory, on a similar operation) or even generalizable (on the scale of all operations).
- Innovation: the use of materials from industrial waste and not from construction is new compared to the state of the art, the implementation of this element represents a risk taking, it is progress in the methods implemented for the circular economy at the local level.