7.1 TRADUCCIÓ A LA TERCERA LLENGUA D’UN 30% DE LA MEMÒRIA

1. INTRODUCTION

This final degree project, done in a construction company, its possible when the professor of ‘DAC’ of rehabilitation Xavier Casanovas, DAC coordinator, offers to us the possibility of performing the final project in the ‘practicum’ modality, in enterprises of the rehabilitation industry.

With this modality we expect to gain a formation very useful in the rehabilitation sector, and expand the formation received in DAC.

In a short lapse of time, the company Axis Patrimoni, S.L, contacted with me to arrange an interview, and finally the company accepted my candidature to do the practicum, during a period of 6 months.

In that period of 6 months, which started in the day 3/3/2014 and finished in 30/9/2014, I have made multiple tasks in the company, principally in the company projects department, completing the formation with some visits to constructions in process.

In this report, I will expose every construction and every project I have worked in. In all of them I participated in the project phase, and in some of them I also participated in the construction phase. I couldn’t observe the evolution of some of them because the practicum was located in summer and a lot of constructions didn’t begin until fall because the possible affectation in the construction for the commercial activity in the locality in high season.

Despite of that, I have earned an important experience in the project phase of a rehabilitation work, from the beginning of the realization of drawings to the moment when I defined the different actuations to rehabilitate the building.

When defining the performed work I have distinguished between two clearly kind of works in constructions: Works of restoration of facades catalogued as patrimony, and works of integral rehabilitation.

During this project, I will group the different performed works according to their typology to present the performed work in the most organised way.
2. DESCRIPTION OF THE AXIS PATRIMONI, S.L COMPANY

2.1 COMPANY DESCRIPTION

Axis Patrimoni is a construction company mainly dedicated to the restoration of the architectonic patrimony in listed buildings in Barcelona, the integral restoration of properties to their use exchange and rehabilitation of common elements of community owners.

The headquarters of the company are situated in Vilanova i la Geltrú, ronda ibèrica street 169, and these are the contact details:

**Complete name:** Axis Patrimoni, S.L

**Registered office:** Ronda Ibèrica nº 169, local 4. C.P. 088000 Vilanova i la Geltrú

**Contact person:** David Serra Lázaro

**Telephone:** 93 105 42 40

**Web:** [www.axispatrimoni.com](http://www.axispatrimoni.com)

**e-mail:** info@axispatrimoni.com

Axis Patrimoni, S.L is a company with a familiar origin, active in the construction since 1991. It’s formed by a skilled workforce in the construction field, there are top architects, technicians and workers.

This company meets the standards of quality, security and service in the rehabilitation field, with a clear commitment in the quality of the works, and the protection of the environment and the worker safety.

During my experience in the company, Axis Patrimoni, changed the location of its technical office from Rosselló street 271 to Compte de Salvaterra street 5, a bigger office that provides an important improvement to the available facilities.
2.2 MAIN ACTIVITIES

- Restoration of facades
- Restoration of buildings listed as patrimony restoration
- Rehabilitation of roofs
- Integral rehabilitation of single-family and multifamily buildings
- Structural enforcement
- Rehabilitation of common elements: lobbies, stairs, courtyards, skylights, etc.
- Substitution of community and private installations: plumbing, gas, wiring, solar energy, etc.
- Webs, grids of protection, and visors of scaffoldings.
2.3 INTERNAL ESTRUCTURE OF THE COMPANY

As you can see in the staff tree, the company has its base from the management, mainly in the administration camp, however, everything referent to the technical office and works, is managed in technical management.

The drawings, the measurements and the technical documentation to the work realization are made in the production department. This is the department where I realized my practicum, department managed by Marta Cervelló, who at the same time has been the tutor of the practicum in the company.

The technical department is working in this way:

Firstly, the commercial department obtains offers of rehabilitation and restoration, then, the meetings begin and they start showing presentations of drawings and budgets to the customers, who decide which ones they will adjudge and which not. All this documentation is made in the technical department of the company, and the work monitoring too.

If in some point, it is necessary the realization of a basic or executive project, it will be made by an external architecture office, that usually collaborates with the company.

During the work process, the production management takes care of the work management, and the intercommunication with the facultative management and the operators of the staff of the company.
2.4 INTERNAL PERFORMANCE OF THE COMPANY

This is a chronological description about the several phases that indicate the internal performance of the company. In each one I will explain shortly the most important aspects.

2.4.1 Customers catchment

This is the most important phase of the process because it is the main way to get offers and potential customers. The enterprise is mainly dedicated to this process, this activity will determinate the number of offers that arrive to the technical department, where they develop them, despite a lot of them are not accepted by the customer, we can establish a direct connection between the number of incoming offers and the finally accepted offers, so, the more developed offers in the technical office, the more accepted offers.

The media promotions commonly used to the customer catchment are the next ones:

- Web page.
- Publicity e-mails to neighbourhood community.
- Publicity e-mails to properties owners or managers.
- Firms in the several scaffolds in constructions in process.
- Recommendations for previous works.
- Commercial agent dedicated to commercial catchment.

In all those points, the most important is the commercial catchment of the commercial agent, so, the company expend resources, in this case a person, to obtain new works and projects, this person has contacts with different architecture offices, properties managers and neighbourhood communities, actually, this person is dedicated to the acquisition of new projects and construction adjudications.
2.4.2 Preparation of the offers

After the new customer catchment the company proceeds to program a visit to the property to perform the valuation and, if it is needed, the project.

Steps before the visit

If before the visit, we have got some kind of documentation like the ITE (Technical building inspection), or if the community have some kind of project about the building we ask for it and make a copy.

In case of catalogued properties, we consult the contemporary files of Barcelona, to know if there are drawings of the building.

First visit

In every case, we perform, a previous architectonical uprising, with the information we dispose to have at least the day of visit, an emplacement and a façade fitting, if we also have to do the roof or the yard rehabilitation, we make sure we have the appropriate drawings already prepared.

If we don’t have enough information, we make an external visit around the building to take measures and fit the façade.

Second visit

In the visits, we try to go with this material at least:

- Fitting façade drawing, if required, roof and yard drawings.
- Digital camera.
- Laser distance meter, and measuring tape.
- Notebook and pens.
- Company cards.

During this visit we assess the actual condition of the building, if we see it’s deficient, we take benefit of the previous drawings and we mark with pen or pencil a pathological rising in the same drawing that we complete with a lot of pictures.

It is also the time, when the neighbourhood community or the owner if it’s a single-family building communicates their intentions in reference to the rehabilitation of the building, either if it is a façade restoration or if it also needs an integral rehabilitation inside.

The work that we plan to do depends on the kind of edification, just like the magnitude of affectation of pathological process, and the visits we do to the building depends on the neighbourhood or the owner availability, and we try to visit each apartment and room to get the most information possible.

2.4.3 Preparation of the project

Once the visit to the building is done, we make a project to show it to the customer, the magnitude of the project depends on the kind of work we have to do, therefore, we elaborate more or less drawings depending on the work, but in every case we make at least:
- Drawings of the actual condition of the facade, internal yards, and roofs with everything they have.
- Pathological drawings if required.
- Drawings with the colours of the facade, with the proposed intervention.
- Drawings of construction details with the actual condition and the actuation proposed to explain to the customer how we will perform them and share it also with the various providers to elaborate a budget.
- Drawings of distribution if it is an integral rehabilitation.
- Completed measures and approximated budgets to each proposal.
- Drawings of the scaffold with its proposed publicity.

We try to arrive to the date of delivery with the maximum work done to convince the customer that our chosen proposal is the most appropriate to the building and to differentiate us to the other enterprises by offering to the customer a lot of graphic elements.

With this kind of operation, we pretend to persuade the client in an easier way that with other proposals, because we offer a wide project with the most adjusted budget possible, and defined actions and prepared drawings.

Furthermore, it implies the realization of a lot of documentation in a short lapse of time, and without knowing if the work will be adjudicated to us or not, it could be possible, that we make a work that latter won’t be rewarded.

2.4.4 Preparation of the documentation of the work

If finally the work is adjudicated to us, we make the executive project and, if needed, the different administrative formalities to begin the construction:

- Construction license formalities.
- Government grants formalities, to rehabilitation, and energetic rehabilitation, etc
- Workplace opening formalities.
- Publicity contract if the building is in the commercial zone of Barcelona.

The company also prepares the next documentation:

- Security plan.
- Hiring book
- Incidents book

2.4.5 Planning of works

This is one of the most important phases of all the process, once the work is adjudicated, it will require the management from the preparation of the documentation, equip management, providers subcontracting if needed, to the work organization in the most organized way, without interferences between the different phases.

It will be agreed a beginning date and an end date of the work. We have to make sure the deadline is the widest possible to adapt us to the possible changes or the occasional delays.

It is a small company, but nowadays, it can develop up to two works at time, as long as they are not excessively wide. These work team will be assigned according to the kind of work, because the company disposes of specialized staff, like for example in restoration.
In the case of emergency works from important clients or recently finished works, they will be treated with priority.

2.4.6 External services

Frequently the company works in specialized constructions that need to be subcontracted, like metalwork, these will be adjudicated according to the different offers from the providers.

2.4.7 Execution of the work

In this phase is when the company obtains its prestige and reputation as a rehabilitation company and its management system becomes evident.

Previous steps:

Normally, due to the specialization of the company in restoration of facades, the construction begins with the scaffolding assembly. According to the kind of sidewalk and the availability of the space, it will be used a tubular scaffolding or a hanging scaffolding, but normally they choose tubular scaffoldings.

The assembly and the rent of the scaffolding is contracted to specialized companies, in this case, the collaboration with the ULMA Company is usual.

The review of the scaffolding once it’s assembled and the instruction of the workers are vital to distribute the weigh all over the scaffolding to evade overweight.

If the scaffolding disposes of publicity, the enterprise will install the publicity immediately after the scaffolding assembly. It is usual the use of this kind of publicity because it allows to reduce the cost of the construction, and so, the price given to the customer.

At the same time that the scaffolding assembly, and sometimes before it, they start the provisional installations to dispose of electricity and water when the work begins, and also, to have an appropriate place to us like a locker room, where they will have a first aid kit, the poster of the closer assistance centres in case of emergency and the permanently required documentation.

Beginning of the work:

Once the previous installation is done, the construction begins, the company disposes of a construction manager (Marta Cervellô) and normally they subcontract the rest of the facultative management (execution manager, security coordinator, quality control), that takes care of the construction control, and the compliment of the security and health rules, as well as the reception of materials control and common incidences.

If there are subcontracted works like metalwork, that provide their own materials, the company controls the reception, the commission work and the quality of the work done to make sure they meet the quality standards of the company.

The company plans the visit according to the construction, but generally they try to visit them at least twice weekly, and they try to have a meeting of the facultative management once a week to make a visit together.
2.4.8 End of construction

Once the construction is finished, the construction manager visits it to inspect all the intervention performed. If a problem occurs, it has to be urgently solved before removing the scaffolding until all the work is complete.

Finally they make a last visit, to everyone if it is a neighbour community, just to know their level of satisfaction, and to know if they miss something or disagree with something.

Once confirmed the good execution the construction is finished and delivered to the owner. Usually they plan a meeting where they firm the delivery record and later they charge the final certifications of the construction.

The company makes pictures of the finished construction, those that are relevant and comparable with the pictures made in the first visit are saved in the photographic files of the company.

2.4.9 Diagram of the operation flow of the company
2.5 CONSTRUCTIONS MADE BY THE COMPANY

In this map we can see the main places of Barcelona where the company Axis Patrimoni S.L has been operating during the last five years. We can observe how the main operating places are situated in Eixample, Hospitalet de Llobregat, and Paral·lel.

Each marked point refers to a concrete building, although this map doesn’t show every work the company has worked in during this practicum because most of them remain to be accepted, it only shows those works that have been accomplished.
Eixample district:
Sant Antoni district – Poble Sec:

Sants – Hospitalet:
2.6 STATISTICAL DETAILS

2.6.1 Main intervened places during the rehabilitation works

In this section we pretend to examine every performed intervention during the 6 months of my practicum in the company, classifying them in three big groups: Building enclosing, interior of the building, and installations. In each group it is described the kind of intervention performed, this way we can figure out about which places are more susceptible to be rehabilitated due to its defects.

The details are obtained from fourteen constructions:

**Performed works in enclosures:**

<table>
<thead>
<tr>
<th>Elements of the buildings</th>
<th>Required operations</th>
<th>Represented percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main facades</td>
<td>14</td>
<td>35%</td>
</tr>
<tr>
<td>Inner courtyards</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>Plane roofs</td>
<td>5</td>
<td>12.5%</td>
</tr>
<tr>
<td>Inclined roofs</td>
<td>1</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>26 de 40</td>
<td>65%</td>
</tr>
</tbody>
</table>

**Performed works in the interior:**

<table>
<thead>
<tr>
<th>Elements of the buildings</th>
<th>Required operations</th>
<th>Represented percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural enforcement</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>Internal distribution</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>5 de 40</td>
<td>12.5%</td>
</tr>
</tbody>
</table>

**Internal installations:**

<table>
<thead>
<tr>
<th>Elements of the buildings</th>
<th>Required operations</th>
<th>Represented percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>Wiring</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>Gas supply</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>9 de 40</td>
<td>22.5%</td>
</tr>
</tbody>
</table>
Assessment of the obtained results:

Clearly, the main operation the company does is the building enclosing, and mainly in the main facades of the building, and the company itself is specialized in facade restoration, so it is the most common works that the company does.

And generally, the facade is the most affected part of the building by external agents, because it practically wraps the building, so the affectation will always be bigger than on the inside.

A big part of those fourteen buildings are protected for patrimony with some grade of cataloguing, in these cases the company has to ask for a previous report to the patrimony service to obtain the required documentation to attach it to the project so the company can obtain the construction permission.
2.7 CERTIFICATIONS AND GUARANTEES OF THE COMPANY

The company Axis Patrimoni has the following certifications:

2.7.1 Builders guild

The Builders Guild is a non-profit organization at the service of the construction companies. Its main objective has been always to defend the interests of the builders, to respond to their needs and be their representative with the administrations, and the social institutions related to the construction.

This way, the guild supports the activity of the companies of the guild with a wide range of services that increases every day, adapting itself to changes in society and business, and in particular to the new sector management models.

2.7.2 RiMe

This way, the guild supports the activity of the companies of the guild with a wide range of services that increases every day, adapting itself to changes in society and business, and in particular to the new sector management models.

More than three hundred companies joined the commission RiMe, and four work teams started developing their functions.

Axis Patrimoni form part of the commission of rehabilitation and maintenance of buildings of Catalunya.

2.7.3 CONSTa

CONSTa is a company register powered by the builder’s guild and managed by Applus+, with the support of the department of environment of Catalunya. To the inscribed companies, CONSTa represents a quality seal.

Axis Patrimoni is inscribed and provided all the required documentation for the activities of: Covers, building preservation-topple, consolidation and rehabilitation of buildings, waterproofing, lift installations, masonry, rehabilitation, integral rehabilitation, façade restoration, vertical work team, and nets.
2.7.4 ANERR

Anerr is the national Association of enterprises of the rehabilitation and reformation sector, it represents the collective and defends their interests.

Axis Patrimoni is part of this association of companies of rehabilitation.

Reference: In the point 7.3 of the annex we can find all the documentation in reference to the company description.

2.8 SUMMARY OF THE TASKS PERFORMED IN THE COMPANY

The tasks I have done in the company are the following:

- Planimetry elaboration of actual condition, description of pathologies, coloured drawings and chromatic study of facades, construction details of proposal of rehabilitation of buildings from different visits performed in situ and diagnosis.
- Drawings of rethink of tubular scaffoldings, as a complement to the PMUD (plan of assembly, disassembly and use of the scaffolding ULMA, to elaborate for the construction company before the beginning of the construction in the required documentation demanded by the security and health coordinator).
- Definition of proposals with constructive details, typological sections, exploded view and fabrication.
- Measurements and proposal of constructive solutions.
- Internal reform of properties.
- Assistance to the construction manager in two constructions in progress.
- Elaboration from the beginning of an executive project of facade restoration and rehabilitation of community roofs, from the drawing uprising, intervention approach, measurements elaboration and a wide search to do the descriptive historical memory of the building and the historical memory of the property. This project have been bone, and the construction started in October 15th.
### 2.8.1 Summary chart of the intervened works

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>BUDGET (€)</th>
<th>ACTUAL CONDITION</th>
<th>Architectonic upraising</th>
<th>Diagnosis</th>
<th>Scaffold ing</th>
<th>Budget and measurements</th>
<th>Historical memory</th>
<th>Construction details</th>
<th>Construction visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rambla de Catalunya, facade rehabilitation</td>
<td>240,000</td>
<td>standby</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Muntaner street, facade rehabilitation</td>
<td>136,000</td>
<td>standby</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Passeig de Gràcia (1), facade rehabilitation</td>
<td>92,000</td>
<td>standby</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passeig de Gràcia (2), facade rehabilitation</td>
<td>92,000</td>
<td>standby</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passeig de Gràcia (3), rehabilitation of facades, roofs and inner courtyards</td>
<td>134,000</td>
<td>standby</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portal de l’Àngel, facade rehabilitation</td>
<td>72,000</td>
<td>standby</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enric Granados street, facade rehabilitation</td>
<td>130,000</td>
<td>standby</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travessera de les corts street (1), facade rehabilitation</td>
<td>750,000</td>
<td>standby</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dagueira street, structural enforcement and internal reform</td>
<td>118,000</td>
<td>standby</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Socrates street, internal reform</td>
<td>185,000</td>
<td>standby</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travessera de les corts street (2), facade rehabilitation</td>
<td>300,000</td>
<td>In course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>PROJECT</td>
<td>BUDGET (€)</td>
<td>ACTUAL CONDITION</td>
<td>Architectonic upraising</td>
<td>Diagnosis</td>
<td>Scaffold ing</td>
<td>Budget and measurements</td>
<td>Historical memory</td>
<td>Construction details</td>
<td>Construction visit</td>
</tr>
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<td>-------------------</td>
</tr>
<tr>
<td>Plaça Regomir, integral rehabilitation and structural consolidation</td>
<td>218.000</td>
<td>In course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Passeig de Gràcia (4), rehabilitation of facades and roofs</td>
<td>190.000</td>
<td>Beginning of works</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Torrent de l’Olla street, integral rehabilitation</td>
<td>?</td>
<td>Standby</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.8.2 Types of tasks performed

Therefore, we can clearly observe how the most part of the performed work is in the project phase, and practically all the practicum time has been done in a technical office.
Here we can observe the detailed kind of works performed, including the construction visit:

The most part of the performed work are the architectonical uprising drawings, scaffolding drawings, pathological drawings and constructive details of the different proposals, further I have also done measurements and a complete historical research of a concrete building.

The visits to constructions represent a 5% of the total, but I have also visited different properties in project phase to make the architectonical uprising and the pathological drawings in an accurate and realistic way.
3. TASKS PERFORMED IN THE COMPANY

3.1 ARCHITECTONICAL UPRAISING

3.1.1 Method of realization

A big part of the work during those six months has been the architectonical uprising drawings of every property the company has worked in, mainly in rehabilitation of facades.

We did a total of fourteen graphic uprisings, in every construction we worked in we did at least the main façade drawings.

Although we had drawings of some properties, provided by the neighbours or the contemporary archive of Barcelona, we made them again to have a digitalized archive of them, and to make other required drawings, as pathological drawings, coloured drawings or constructive details. In addition, those drawings will help when doing the measurements and budgets of the projects.

Generally, the process they follow in every property is the following:

The first important variable is if the property is catalogued or not, and if there are drawings in the contemporary archive of Barcelona or in the historical files of the district where the property is.

If there are drawings, the company plan a visit to the contemporary archive, in most cases they don’t know what information they have until the visit, an on-line consultation allows us to know if it exists any documentation or not:

Anyway, from the secretary of the technical office we arranged a visit in my name, and I went there to study the available documentation, if there are drawings, we ask for their reprography, especially of facades.
The main problem generated is that, to make an escalated reproduction, the waiting period is of at least two weeks, so, it is necessary to advance work in the office to the delivery before having the documentation, therefore, normally we made a photocopy of the drawing and we used it to the measurements with the scalimeter to correct it later at the office by digitalizing the information with the program AutoCad.

Then, we crossed the information with another databases, like the point of cartographic information of Barcelona, or with the land register, to obtain escalated drawings, and use them to obtain measurements of the facades, roofs, and inner courtyards.

From here, we can obtain drawings in urban plant that we can use to start the uprising, it also shows the amplitude of roadways and sidewalks.

Example of urban drawing extracted from the cartographic information point of Barcelona
Theses drawings are escalated and they allow taking general measurements to start the uprising.

The company always visits the buildings with that documentation and with a laser distance meter, they get general measurements of the buildings and the sidewalks, marking every present element, like trees, lamps, and other urban elements that can affect the development of the scaffolding.

Usually all that information is enough to make a general accordance of the same, and we take enough cure at the time of making it to add possible changes, because usually the measurements are right but the highs realized from photographic restitutions aren’t that reliable.

When performing the intensive visit to the building, we visited every floor and we had access to different parts of the building to make the definitive drawings of facades, sections, courtyards, etc.

All those drawings, once finished the intensive visit to the building, are made with an important grade of detail, and we can differentiate two kinds of buildings:

- **Catalogued and historical buildings**: they have an important load of ornamentation, corbels, cornices, engravings, and other sculptures, realized with a high grade of details, marking every kind of ornamentation, wood and elements to perform accurate measurements of them.

- **Contemporary rehabilitation buildings**: buildings that have repetitive facades and less ornamentation, usually buildings after the 1960, with a higher use of concrete, these buildings are also performed with a high grade of details, but the result is less impressive than the others.

In every case, those drawings are also useful to mark every actual element that we can detect, that are susceptible to be retired, like air conditioners, alarms, focus, and publicity posters.

### 3.1.2 Drawings of historical buildings in Barcelona

**Facade of Passeig de Gràcia project:**
Sections of Passeig de Gràcia project:

Reference: In the point 7.16 of the annex we can find all the drawings realized integrally for me in the Passeig de Gràcia (4) project
Facade and section of Rambla de Catalunya project:

Reference: In the point 7.15 of the annex we can find all the drawings realized integrally for me in the Rambla de Catalunya project

Facade of Passeig de Gracia project:

Reference: In the point 7.6 of the annex we can find all the drawings realized integrally for me in the Passeig de Gràcia (3) project
Facade and section of Passeig de Gràcia project:

Reference: *In the point 7.5 of the annex we can find all the drawings realized integrally for me in the Passeig de Gràcia (1) project*
Facade and section of Passeig de Gràcia project:

Reference: In the point 7.4 of the annex we can find all the drawings realized integrally for me in the Passeig de Gràcia (2) project
3.1.3 Drawings of contemporary buildings of Barcelona

Facades of the rehabilitation of Torrent de l’Olla project:

Reference: In the point 7.8 of the annex we can find all the drawings realized integrally for me in the Torrent de l’Olla project

Facades of the rehabilitation of Muntaner street project:

Reference: In the point 7.10 of the annex we can find all the drawings realized integrally for me in the Muntaner project