Prácticum en la Oficina Técnica de la Cámara de la Propiedad Urbana de Barcelona

Projectista: Alba Bastardo Márquez
Directora: Kàtia Gaspar Fàbregas
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TECHNICAL ARCHITECTURE AND BUILDING
FINAL DEGREE WORK

PRACTICUM IN THE OFFICE OF LA CAMARA DE LA
PROPIEDAD URBANA DE BARCELONA

Author: Alba Bastardo Márquez
Director: Kàtia Gaspar Fàbregas
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SUMMARY

In this final work, as a main objective I intend to explain and teach what I learned during my internship in an external company, since I started from the base of having a lot of theory learned from all these years along the career, but it had to be put into practice all that knowledge and try to learn everything possible in various professional fields and to develop yourself.

In order to obtain new knowledge and skills, I have been performing different tasks, which responsibility has been growing as my seniority in the company continued. I have always been accompanied by my colleagues, who have been in charge of helping me and showing me at all times the different tasks that a technical architect can perform in the Technical Office which I am part of.

During my stay, it is planned to carry out several reform and rehabilitation projects, technical inspections in buildings, which indirectly provides a lot of learning about pathologies in the construction, development of energy certificates, budgets and measurements.

In conclusion, I can say that a large part of the initial objectives has been fulfilled, I have been able to apply what I have learned, but above all I have learned much more to solve problems and unforeseen problems in our work environment sector. These facts give me a lot of information and knowledge to apply them in my professional future and continue to grow as a technical architect.
INDEX

1 INTRODUCTION .......................................................................................................................... 4
2 COMPANY’S PRESENTATION ....................................................................................................... 5
   2.1 HISTORY OF THE COMPANY ............................................................................................... 5
   2.2 COMPOSITION OF THE COMPANY ....................................................................................... 5
   2.3 SERVICES AND CLIENTS OF THE COMPANY ........................................................................ 6
   2.4 WORKSPACE ....................................................................................................................... 7
3 TASKS CARRIED OUT AT THE COMPANY ................................................................................. 8
   3.1 ENERGY CERTIFICATES ....................................................................................................... 8
   3.2 HABITABILITY CERTIFICATES ............................................................................................ 10
   3.3 TECHNICAL PROJECTS ....................................................................................................... 11
   3.4 TECHNICAL INSPECTIONS OF BUILDINGS ......................................................................... 12
4 FOLLOW-UP OF WORKS ............................................................................................................ 14
   4.1 WORK 1: REFORM IN ROGER DE FLOR Nº 166 ................................................................. 14
      4.1.1 General information of the project .................................................................................. 14
      4.1.2 People involved in the project ....................................................................................... 14
      4.1.3 General description of the house .................................................................................. 14
      4.1.4 Description of the activities that will be carried out ....................................................... 18
      4.1.5 Follow-up of the reform ............................................................................................... 21
      4.1.6 Site visits ...................................................................................................................... 23
      4.1.7 Personal opinion ........................................................................................................... 25
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2</td>
<td>WORK 2: REFORM IN CAMBRA DE LA PROPIEDAD URBANA IN LES CORTS</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>4.2.1 General information of the project</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>4.2.2 People involved in the project</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>4.2.3 General description of the office</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>4.2.4 Description of the activities that will be carried out</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>4.2.5 Follow-up of the reform</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>4.2.6 Site visits</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>4.2.7 Personal opinion</td>
<td>31</td>
</tr>
<tr>
<td>4.3</td>
<td>ANOTHER WORKS: REHABILITATIONS OF HALLS</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>4.3.1 Rehabilitation 1</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>4.3.2 Personal opinion</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>CONCLUSIONS</td>
<td>34</td>
</tr>
<tr>
<td>6</td>
<td>BIBLIOGRAPHY</td>
<td>35</td>
</tr>
<tr>
<td>7</td>
<td>GRATEFULNESS</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>ANNEXES</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>8.1 Related documentation of Work 1</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>8.2 Related documentation of Work 2</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>8.3 Related documentation of Another Works</td>
<td>53</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

In this compilation in which I show my experience in a company in the construction sector, I will show the role of it where I have done the internship and the different tasks I have done, whose main objective was to learn the functions performed by a Technical Architect once qualified.

Focusing on learning to put into practice everything studied during the career, and being able to face any situation in the workplace. And, to be able to learn to be a good technique with all the clear knowledge and to be able to solve any problem that clients raise to guarantee a correct solution.

In this internship, we managed to improve our ability to face the world of work, to improve our communication with different kinds of people, namely to work as a team in the workplace, and certainly the most important, to grow as a person since one it is seeing the progress, it develops in knowing how to deal better with labour problems.
2. COMPANY’S PRESENTATION

2.1 HISTORY OF THE COMPANY

The Chamber of Urban Property of Barcelona founded in 1901, is an associativa entity that currently:

- Act as a consultation and collaboration body of the Generalitat and other Public Administrations in the exercise of tasks related to urban property
- Represents the corporate economic interests of its associates while providing them with services related to the management of their real estate

The Chambers of Urban property are subject to the administrative tutelage of the Department of Territorial Policy and Public Works of the Generalitat of Catalunya through the General Director of Architecture and Habitat, they are regulated by the provisions of Decrees 240/1990 and 330 / 1990 of the Generalitat of Catalonia.

2.2 COMPOSITION OF THE COMPANY

The Chamber, being an associativa entity, has an office in several towns in Catalonia, in which it is managed in the same way as in the Central Chamber of Barcelona, all issues related to real estate in those towns and surrounding areas, therefore a first filter is created in these offices, and later, sometimes, when it comes to more important issues or that needs the involvement of other external people, that issue comes directly to the Central Chamber and we work together. The cameras that exist in other cities are the following:

- Chamber of the Urban Property of Badalona
- Chamber of the Urban Property of Girona
- Chamber of the Urban Property of l'Hospitalet de Llobregat
- Chamber of the Urban Property of Manresa anb el Bages
- Chamber of the Urban Property of Mataró and el Maresme
- Chamber of the Urban Property of Reus
- Chamber of the Urban Property of Sabadell
- Chamber of the Urban Property of Tarragona
- Chamber of the Urban Property of Terrassa
2.3 SERVICES AND CLIENTS OF THE COMPANY

The Chambers have their own legal personality and full capacity to act for the fulfilment of their purposes. Its structure and functioning must be democratic.

In accordance with the provisions of the Rules of the Internal Regime of the Chamber of Urban Property of Barcelona and to give adequate attention to its members, the services offered by the Chamber are:

- Legal advice mainly on property, lease, tax, labour, registration and urban planning.
- Technical advice, especially regarding the use, conservation and rehabilitation of real estate.
- Farm management: rent and communities of owners.
- Real Estate Stock Exchange: commercialization of real estate in purchase-sale or rental.
- Insurance, especially in the field of property risk and the collection of rental income.
- Assessment of urban farms.

Regarding it is function as a collaborating body with the Administration, the main functions of the Chamber are:

- Carry out the registration, deposit and collection management of the leases of urban land leases and the registration of lease agreements.
- Inform the courts, with an expert nature, of the matters that are required in relation to their task.
- Resolve the questions raised by the Administration and inform it of all matters of general interest for urban property.
- Promote and carry out technical, economic and market studies related to urban property, rental and real estate activity.
2.4 WORKSPACE

As I explained before, the Chamber offers several Services, including Technical Advice. The Technical Office works with the partners that need the Service and with external people who use our Services.

The technical office is made up of 5 people, Angel Luis Martinez, whose function is to supervise all the projects carried out in the Office, maintain good relations with the partners of the Chamber, be present at all site visits and be responsible for the Firm in Projects. On the other hand, there are Ana Gosalbez and Berta Cabezas, colleagues from the workplace. And finally, there is Anna Homs, who is responsible for distributing all the work that goes into the Technical Office.
3 TASKS CARRIED OUT AT THE COMPANY

3.1 ENERGY CERTIFICATES

The functions performed during my internship could be divided into two parts. First, I started doing simple tasks, which technical knowledge did not have much responsibility, so I made visits for doing Energy Certificates. The process was simple; I contacted with the client who had requested our Services, and specifying a day to make the visit of the house. In this visit I do a sketch of the house and all the holes in the house are measured, also noting what kind of enclosures (aluminium, wood, double glass, single glass) are in each hole. Once in the office, we carried out the sketch in AutoCAD, to obtain the useful surface, and the distance of each facade, and we entered the data in a program called CE3X, which, based on some parameters, giving to us the qualification. To take into account, that, during the realization of the energy certificate, we must perform the shadow pattern, which will vary depending on the orientation of our property and the adjoining buildings. How do we look for the shadow pattern? On the cadastre page, we localize our property and then we measure the distance to the building in front of us that is the biggest shadow, to get the second distance we rotate and measure from that same point (which was the end of the previous one measurement) and we measure up to where our building arrives and likewise we repeat the action measuring towards the other side, it is measured forming a T.

Once we have the defined shadow pattern, we continue to complete the program, we dimension each facade, dividing, if there is or is not covered or is in contact with the land, we include the enclosures in each corresponding facade and we detail them, we define if there is heating, what type of ACS they have, if there is a refrigerating machine or not and with all these parameters, the CE3X program facilitates a qualification, that later we will make some measures of improvement, that the client can condition, if he wants his house to obtain a to better rating.

Once the program is completed, fill out the form provided by the Generalitat to send it and the Instituido Catalan de Energia sent us the corresponding label. This would be a little summary of the task performed by me, when I make Energy Certificates.

Next, I attach an example of a label, the result of making the energy certificate.
Picture 1. Label, obtained from the completion of the Energy Certificate with the CE3X program.
3.2 HABITABILITY CERTIFICATES

When people come to make a certificate, firstly, we make sure we have at our provision an old hability certificate or in the case that these document does not exist we need it the deeds of the house or a cadastral certificate. Since sometimes, Habitatge can claim us the justification of the year of construction and it is the only way we can justify it.

Once all the documents have been collected, we specify the visit with the client. In the house, we will make sure to take with us the Habitability Decree that corresponds to the building based on the year of construction, therefore we will do a sketch of the house and checking that everything that the Decree requires exists in the property. In case of not fulfilling any requirement, the owner of this house has to make the necessary modifications. Later, when these modifications complies with the Decree, we have make another visit to verify everything.

![Example of Habitability Certificate.](Picture 2)
3.3 TECHNICAL PROJECTS

As time progressed and my stay in the company, the responsibility of my tasks was increasing. Little by little I was doing site visits, first to carry out plans in homes to make a possible change of use, in others to make a reform, and after that we went to do surveys in offices, in lobbies, I went forward as soon as to the dimension of the project. When I had made several surveys, they proposed me to collaborate on projects of integral reforms in several houses in Barcelona and the collaboration in projects of changes of use. The methodology of both projects consists: first of all making a visit to the property which the project is going to be carried out and starting from this visit, to be able to start working in the office. If it is a reform, carry out the study, make a comparison between the current state and the reformed state, hold meetings with the owner to agree on the idea of the reformed state and once everything has been agreed, carry out the measurements with different industrialists and thus being able to offer the client several budget comparisons of which this, can choose the option that interests him most. Parallel to this process of talking with industrialists and getting different comparisons of these, the project is made to obtain licenses and work permits, on the one hand we have the memory where we capture all the actions that are going to be carried out in the work and on the other hand the graphic part, which are all the plans that must be delivered to the town hall electronically of the current state, reformed state, location and reformed state justifying the Decree. We must also adapt this project to the ordinances required by the city of Barcelona. When you have chosen the industrial, approved one of the budget offered, and got permission to work awarded by the city, we can begin the reform, although sometimes they are redefined and some activity on the work before obtaining the license to buy time. The monitoring of these projects is done weekly making visits.

As for changes in use, we would also make a first visit to be able to carry out a survey of the plant of the premises that we want to change, in order to find out first if the change of use could be made based on the Decree. Once we have validated that we can make the change of use, thanks to the consultation with an architect, we must go to consult the City Council to advise the last approved, if the answer is positive we would begin with the works to convert it into a dwelling, if in that If the answer is negative, everything is paralyzed and the change of use is not carried out.
3.4 TECHNICAL INSPECTIONS OF BUILDINGS

Lastly, they also commissioned me to carry out Technical Inspections of the Building, who’s proceeding also consists of making a visit to the building, reviewing each dwelling that it composes and visiting All about parts (roof, elevator, vestibule, quarter of counters) and Photograph all injuries that we can observe. When we arrived at the office, we made the report describing the whole building, and assessing the deficiencies that we observed (cracks and fissures, disadherences, appearance of microorganisms, or humidity, etc).

Relatively recently, we have obtained a program that speeds up the work to make the Report, this program is called Other E3, we introduce Fear first order the descriptions of each enclosure, later we explain how is the foundation, the facilities, which Elements have the building, etc. Once all this information has been entered, we will explain the different deficiencies that exist in the property, and we will qualify them. To finalize the report, we propose some Improvements to be able to correct the deficiencies. Once the report was finished in this program, we went up to the generator portal of the Housing Agency, closed the File and then uploaded it to the website of the Association of Quantity Surveyors and we received it. Once it is approved, it can be given to the client and we would wait until the Certificate of Aptitude arrives.

![Diagram](https://via.placeholder.com/150)

Picture 3. In these picture, we can see a scheme of the result of the Certificate of Aptitude. Source: Article on Decree 67/2015 published on the information of the CAATEEB, September 2015.
Picture 4. In these picture, we can see a scheme of the structure of the process of the ITE. Source: Article on Decree 67/2015 published on the information of the CAATEEB, September 2015.
4 FOLLOW-UP OF WORKS

4.1 WORK 1: REFORM IN ROGER DE FLOR Nº 166, 5º-5ª

4.1.1 General information of the Project

The follow-up of work 1, that I have done, is about the integral reform in the apartment of the property located in Roger de Flor Street 166. The client made the purchase of this house, in order to be reformed in its entirety. Creating a new image of the house, which later act as the first residence of the owner. In the integral reform of the house will be made the modification of partitions, renovation of facilities, changes of carpentry in some window, since the openings in the main facade can not be changed in order not to alter the aesthetics of the facade, all this in Together, the distribution of the home will be affected by an improvement.

4.1.2 People involved in the Project

The client, owner of the house, partner of the Chamber, contact us, because she knew our work methodology, since before making the purchase of this house, she was as a candidate in several purchases of different properties that were made in the Camera. Angel, the head of department, and myself, we made the measurements and we contacted different industrialists to be able to offer the client three different budgets to choose industrial by the owner. Therefore, people who are involved in this reform are: first the customer, who would act as promoter of the work. Secondly, the construction management, the Project Management, Direction of Execution, Project manager, controls of quality and controls of reception of materials, would be commissioned by the Technical Office of the Chamber (we), and the subcontracted company for the realization of all the activities that are carried out, would be carried out by Serveis Reina, a collaborating company with us for the realization of other tasks and that now we hire to face the reform of this house.

4.1.3 General description of the house

The building object of the project consists of a ground floor, intended for commercial premises, mezzanine floor, 6 floors and an attic floor for housing. The building has a single stair core, with six houses per floor. The year of construction of the building is 1972. It is located on the chamfer between Roger de Flor Street and Consell de Cent Street and is mediating on the right
with number 445-449 of Consell de Cent Street and on the left with the number 172-176 of Roger de Flor Street.

The building has a main facade in chamfer, which is where the main access to the building is made.

The object of the works is to adapt the internal distribution, since with the passage of time it has become obsolete. The interior facilities of the house will be completely renovated.

It is a house of 92.26 m² built, consisting of four rooms, a living room, two bathrooms and a kitchen.

As for the new distribution, it consists of a living room, three bedrooms, a kitchen and two bathrooms.

In the following photographs, we can see the current state of the house:

![Picture 5. Salon- Dining room current state.](image)

Picture 7. Salon-Dining room, distributors view, current state.

4.1.4 Description of the activities that will be carried out

My involvement in this reform has been the following, together with Angel Luis Martinez, write the report of the project, explaining the general data in the house where we will act, the agents of the project, writing the descriptive memory, based on the LOE (Law of Ordination of the Building) and fulfilling all the necessary requirements for the functionality of the building. Explaining the auxiliary means that we will use to carry out the internal reform without affecting the structure of the building. Subsequently, me made all the graphic documentation of support to apply for the license to the City Council, that is, drawing with AutoCad the plans for the location of the property, the current state of the bounded housing, with its corresponding elevation, the refurbished bounded state, the plan where It reflected the demolition of the partitions that were going to be carried out and the construction of the new ones. Another plan with the new installations that are going to be installed in the house and finally, a final plan justifying the Norm of the Habitability Decree, complying with minimum ventilation and surfaces.

We can structure the activities that are carried out in different sections:

**STRUCTURE**
The works do not modify the existing structure.

**INVIOLVENT**
Regarding the envelope is the existing one, given that it does not act on the facades.

**COMPARTIMENTATION**
The action of demolition of partitions and application of rooms is assumed in walls of internal compartmentation of 7 cm formed by partitions of ceramic brick of double hollow finished to each face with plaster or tiled according to the face. The new distribution walls will be made with laminated plasterboard. All the unions of new parts of work with existing work will be locked properly to avoid subsequent cracks.

**COATINGS**
The kitchen walls and washbasins will be covered and tiled up to the ceiling using porcelain or natural-finish porcelain stoneware. The rest of the walls will be plastered like the existing ones. In the joints between new and existing work, “Mallatex” or
equivalent will be placed on each side. The walls will be caulked and polished before applying a layer of preparation and two of plastic paint, color to be determined.

**PAVEMENTS**

The bathroom and the toilet will be paved with pieces of porcelain stoneware, placed with adhesive mortar over a layer of mortar screed. The rest of the house will be paved with 10 mm thick Floating Wood Floor.

**INTERIOR JOINERY**

Sliding doors will be placed as indicated in the graphic documentation. These will be placed with a "Crona" type framework. The sheet will be of melanin color to be determined by the property. The covers will be standard 7cm. The sheet will be solid. The rest of the doors according to the graphic documentation will be folded, the sheet will be color to be determined by the property. The covers will be standard 7cm. The sheet will be solid and the price increase for solid sheet will be indicated.

**EQUIPMENT AND COMPLEMENTS**

The kitchen will be equipped with high and low furniture as indicated in the plans. The countertop and the front will be artificial marble type neolith mid-range model to choose. Gas cooking equipment, integrated pyrolytic electric oven, integrated microwave oven, integrated dishwasher, sink under two sinks and decorative stainless-steel hood will be installed.

**FACILITIES**

**SANITATION**

The sanitation collection will be carried out with PVC pipes until it is connected to the existing sanitation network.

**ELECTRICITY**

The electrical installation of the whole house will be renewed. All the electrical installation will adapt to what is established by the REBT "Electrotechnical Regulation of Low Voltage" and its complementary instructions, guaranteeing the safety of people and goods, as well as the normal operation of other facilities and services. All the wiring, push buttons, plugs and other mechanisms will be replaced according to the graphic documentation SIMÓN 28 brand.
PLUMBING AND SANITARY APPLIANCES

The installation of plumbing will be done with 1 mm thick copper pipes and capillary welding. The sanitary hot water installation will be individual by means of a mixed boiler for hot water and heating. Each unit will have a key for the independent closing and each appliance the corresponding ball valve.

The sanitary appliances will be of the brand Roca series The Gap. In the bathroom there will be placed a cabinet with double sinks of resin and mirror and in the toilet a sink of resin of small measures and mirror. The taps will be ROCA single-lever mixer SINGLES. In the bathroom will be installed a shower tray of mineral charge of colour to choose from measures 1800 x 800 mm, thermostatic hydro massage column ROCA ESSENTIAL and glass screen.

HOT WATER

The house will have a Baxi NEODENS PLUS ECO 24KW mixed condensing boiler for the production of domestic hot water.

AIR CONDITIONING

For air conditioning of the whole house will be installed a heat pump with indoor unit and distribution of air by conduit. In addition to ROCA modular astral aluminium radiators.

TELECOMMUNICATIONS

The installation of telephony in rooms and in the living room and television in rooms, living room and kitchen will be carried out according to graphic documentation. The fibber optic connection box and fibber optic pre-installation next to the telephone sockets will also be installed.

PAINTING

In the humid areas satin acrylic paint will be applied. In the rest of the rooms, plastic paint will be applied to choose the property.
4.1.5 Follow-up of the reform

FIRST VISITS: DAYS 26-03-2018 / 12-04-2018

In the first works visits that were carried out, we safely reconsidered the walls to be demolished by the pallets, marking them with a cross, to later create the new distribution with new partitions of laminated plasterboard. We agreed on the order of carrying out activities, that is, making clear the planning to finish the work in mid-July. We differentiate the areas where the free height of the false ceiling will be different, since currently there is no area with a false ceiling. Explain to the operators that there are two different heights, one lower in the Main Room and in the Living-Dining-Kitchen, the free height of the False Ceiling would be greater.

We prepare a place in the interior of the house, as a collection of materials and notify the doorman of the property of the activities that were to be carried out in the 5th-5th house.

NEXT VISITS:

• DAY 17-05-2018

In the following visits, we verified that the reception of materials and that their implementation was chosen by the owner, as agreed in the project. We observed that the partitions that had been demolished and that now had built new ones with laminated gypsum boards were adequate and that the way to execute them was the right one, making sure that the areas of new construction and existing work is well locked, placing the insulation inside the laminated gypsum boards, with their corresponding holes in the appropriate place for the passage of the installations, that the route of these was well defined and being held in the metal uprights of the plates. We also control the level of the false ceiling, since the placement of the guides of this must be completely straight.

One of the inconveniences that we could observe of the visit, was that they kept the fume extractor pipe of the hood, whose material was plastic, which they had to remove and place an aluminium tube, since this way we would protect the possibility of burning. As for facilities, we verified that the route of these had been made by the false ceiling and run through the walls, to be able to have a better record in case of breakdowns, except heating that all the pipes run through the floor, inside a circuit monotube. There was no problem in the realization of these, all the pipes were marked indicating to which installation they belonged, in the case of ACS, they were marked with an F (cold
water) and C (hot water) to facilitate their identification, in other electrical installations, it is deduced by the material of the pipes and colours. to facilitate its identification.

Regarding Air Conditioning, the only modification that is made is the change of location of the external machine. Now it was placed in the balcony on some metallic supports, but it has been decided to place in one of the patios suspended with metallic supports. Currently the work is waiting to receive finishing materials, pieces of porcelain stoneware flooring for bathroom and kitchen, and floating parquet that will be placed in the rest of the house, to collect them and make the layers of screed mortar pavement finish to lock the walls of new and existing work, since it is necessary to make a layer of “rasilla” and sanding to level all the joints in the laminated gypsum boards before painting.

• DAY 01-06-2018

On June 1, 2018, the work had not progressed much, all the plasterboard partitions had been finished, the installation cables had been left ready to place the plugs and pushbuttons chosen according to the client’s criteria. It had been given the layer of rasilla to level all the new partitions and thus be able to later paint.

The baths were already prepared to be able to cover them with mortar and to place the tiling, that is to say pieces of porcelain stoneware and the material of the pavement already they were receiving it. All the materials are stored in one of the rooms, since you only had to modify the facilities in it.

DAY 08-06-2018

On June 8, 2018, the screed was raised with mortar in the kitchen and in the bathroom to later place the pieces of porcelain stoneware adhered with mortar. The partitions are ready to be painted, in the absence of placing the trim of the plugs and switches.

The furniture of the kitchen, will be the last to be placed, since they are the ones that will arrive later, information that has been communicated to us by the supplier of the brand.

Therefore, it is necessary to finish the screed, paint the walls and ceiling, and then place the finish of the flooring, place the beauties of the switches and plugs and once the furniture arrives.

Without forgetting, something important is to change the windows, which must be done before painting walls.
4.1.6 Site visits

Photographs first week of refurbishment: refurbishment of the installations, grounding of the floor to place the heating pipes and placement of the guides for the installation of the False Ceiling.

Picture 10. Bathroom 1 in reforms, we can see how they have reduced the window, they have pulled a partition and enlarged the bathroom, and observe the new water pipes.

Picture 11. Room 1 in reforms, we can see how they have pulled the previous partitions, and have made new partitions. You can see the place destined to the dressing room, the bathroom in the back, even when the brick factory is seen, and on the floor the pealing to place the heating pipes.
Picture 12. Room 1 in reforms, we can see how they have thrown the previous partitions, and have made new partitions. We can observe how the facilities run, between the guides of the Carton-Plaster, and later the insulation will be placed.

Picture 13. We observed the dining room together with the kitchen, as the partitions that separated them were demolished.
4.1.7 Personal opinion

As a conclusion of the follow-up on the implementation of this reform, I have observed that as we had agreed before starting the work, some requirements or aspects such as qualities or marks to be placed on elements in the housing have not been carried out in the reform. It is intended to be used by the subcontracted company to carry out the tasks, that for the same budget, use cheaper materials and thus obtain a benefit. The initial planning, is not carried out, in fact the facultative address is not heard before warnings about the delivery of the work, only heard and questioned before placing facilities, remove or make new partitions. That is, in situations where there are mistakes, only the outsourced company is economically disadvantaged, since they know that despite of delaying the delivery they will be paid in the same way, and will not have any economic penalty, which should be done to encourage to the operators to comply with the initial planning.

Picture 14. We observed the dining room with the kitchen as the partitions that separated them were demolished, we see the guidelines for the installation of False Ceiling and for this the passage of facilities.
4.2 WORK 2: REFORM IN CAMBRA DE LA PROPIEDAD URBANA IN LES CORTS

4.2.1 General information of the Project

In this second follow-up work that I will explain, it is about the redistribution of the second office of the Chamber that we have in Travessera de les Corts. The demolition of partitions and the creation of new ones will be carried out to create new spaces, we will add furniture to give more services, and some windows will be placed to be used as partitions. There will be a screed of the floor to get in a part of the local level that comes from the street and by creating a ramp, down to the next level, which will help differentiate two areas. The first for the reception of clients, and the second for meetings and consultations.

The installation of air conditioning will also be renewed, more points of light will be placed, the office will be painted, but we will keep all the initial carpentry.

4.2.2 People involved in the Project

In this case, being a reform of an office of the company, the promoter could be considered The Property Exchange. And in this case, the constructor, the facultative management and those in charge of the realization of the project would also be the Chamber, even though we would settle in the Technical Office. The company responsible for carrying out the works, in this case would be another different from the previous one, is a subcontracted company called Reformas Lort S.L.

4.2.3 General description of the office

The office consists of two heights, since it has a ground floor where there are 3 tables that are the current jobs, a bathroom, and an office. And there is a second floor, which has a meeting room. The reform is intended for ground floor.

Next, we will see some photographs, of the current state of the office:
Picture 15. Facade-location office.

Picture 16. Interior distribution from the principal door.

Picture 17. Interior distribution from the right side.
Picture 18. Interior distribution from first floor.

Picture 19. Interior distribution from the stairs.
4.2.4 Description of the activities that will be carried out

My function in this reform has been the next, with Angel Luis Martinez, we made visits to be able to carry out the survey and be able to start drawing proposals for distribution changes. Once approved the distribution changes by the manager of the Chamber, write the necessary measurements to be sent to 3 external companies that are responsible for making each of them a budget and to present the offer to the manager, whose function is to choose the budget what else interests you
Once we have approved a budget, we contact the chosen industrialist and we finalize a planning to begin the works of the new distribution.
When belonging to a work of redistribution of an office of La Cambra, we have not processed permit of licenses to the municipality, since all changes will be internal and the collection of materials will be made inside the office.
The activities that will be carried out to make a new distribution of the office are the following:

1.) We will carry out the demolition of the tiling and base layers of the office, the demolition of the stoneware pavement, of continuous false ceilings of hurdle in the office, and the demolition of the existing simple hollow brick partitions. We will disassemble the metal door of the entrance, without deteriorating the constructive elements to later reuse the hole for the new enclosure.
We will disassemble the electrical installations to modify and finally we will extract the laminate synthetic parquet flooring currently placed in the office.

2.) We will build new simple partitions with laminated gypsum plates, we will make the ramp formation with hollow tongue-and-groove ceramic panels. We will make the new facilities and their course for its proper functioning.

3.) We will place the large porcelain floor covering that arrives at the work, placing it with adhesive for ceramic tile. We will tile with glazed porcelain stoneware the toilets of the office, received with cement glue. We will replace the laminate parquet on the pavement, recovering the raised area. We will review the vertical walls with plastic paint with fine texture and matt finish.
4.) Installations: as for these, a temporary light installation will be provided during the execution of the work, and later the supply and installation of the necessary power supply and switches will be carried out. The new installation of water and drainage for the new distribution of the office and the toilet will be carried out.

5.) Joinery: for the realization of the dividing screens, tempered glass partitions are placed moon colourless of 4mm of thickness. We will relocate the metal door.

6.) Finally, the necessary furniture will be supplied and placed for the different departments, in this case the toilet, the office and the office area.
4.2.5 Follow-up of the reform

We can not explain a follow-up work, since the beginning of this reform, is intended for July 2.

4.2.6 Site visits

We can see the photos of the current state of the office. Together with the plans attached to the annexes, we can see how the office would look after the reform.

4.2.7 Personal opinion

My personal assessment, during the creation of the project to reform an office of La Cambra, has been very satisfactory, since I have been able to make the distribution that I thought was appropriate, despite having made several proposals. The subcontracted company, has made the job much easier because, when making several proposals, they had to modify the budgets several times adapting the materials that were going to be used. Although this redistribution of the new office has not yet begun, it is expected that the initial planning will be fulfilled since incentives have been applied to the subcontracted company with economic benefit if they finish the work before August 15, and What is more, being the promoter La Cambra, the external company does not want to give a bad image to the client who always counts on them to carry out other works.
4.3 ANOTHER WORKS:

4.3.1 Rehabilitation of a Hall in AMPLE 29, Barcelona

It is a rehabilitation and refurbishment based on the Accessibility Document of a hall on Ample Street number 29. This building is protected by the City Council, since it is part of Barcelona’s heritage, therefore all the necessary changes will be made condition not to lose the original structure.

First, we made a visit to the lobby, to be able to carry out a survey of plans, and to be able to propose a solution to improve the accessibility of the lobby.

The order of the activities that will be carried out in the rehabilitation of the lobby can be listed as follows:

1.) DEMOLITIONS: we will extract the pavement from the vestibule and its grip material. We will demolish the hearth to later create the ramp. Demolition of the staircase, demolition of partitions internal partition of coated factory, formed by simple hollow brick 5mm thick. We will demolish the wall of the elevator shaft, formed by perforated brick, and excavate the new well for the elevator shaft to an optimum level.

2.) MASONRY: We will form the ramp, not exceeding the 10% inclination, with hollow ceramic boards tongue and groove, we will perform the mortar screed to receive the pavement. We will form the concrete slab on the pavement of the landing. We will execute the elevator pit (lower slab and walls) with interior measurements of 1.80 x 1.14 x 1.13.

3.) COATINGS: We will place the material of the pavements that arrives to the construction site, polished marble tiles Blanco Macael, received with cement adhesive. On the ramps made, white Macael marble tiles with a bush hammered finish will be placed. The linings of the steps will be the following: the Macael white marble print, polished finish and white marble Macael polished finish. The rungs will have a non-slip treatment.

We will restore the existing false ceiling, with laminated plasterboard. And we will form a layer of plastic paint on horizontal surfaces.

4.) We will modify the entrance door, we will create a new one with a practicable leaf and a lateral fixation, that if, taking advantage of the existing structure.
5.) INSTALLATIONS: We will adapt the electrical installation, inside the lobby and the elevator.

6.) We will place the necessary furniture for the lobby (mirror, etc).

7.) Finally, we will remove the existing lift structure, to be able to assemble the new elevator structure, with 5 stops and for 5 people.

The promoter of this work was the community of owners of Ample 29, and the facultative direction and in charge of the follow-up of work was going to be us, the Technical Office of the Chamber. But these works, for lack of community money we had to stop it.

In the section Annexes, we will see some plans, in plan and section of the current state and of the offer that we proposed to the community, to eliminate the architectural walls and comply with the Basic Document of Accessibility.

4.3.2 Personal opinion

After realizing the project of the adaptation of a vestibule with the accessibility document, I discover that there are buildings whose adaptation becomes very complex, that the way of building formerly in Barcelona was very bad, that is, they created great walls to keep the interior of the homes with comfort temperature since thermal inertia is achieved, but in terms of distribution of spaces, all were very small, did not take into account places prepared for people with difficulties (wheelchair, etc). Neither did they think about the comfort of the people, since stairs were built with great heights, which was not very practical and also made it difficult for people to increase the purchase or children.

Although I must emphasize that they used materials or forms of construction with a longer lifespan than materials that are currently used.
5 CONCLUSIONS

As a final conclusion of my Practicum, I highlight the great difference of idea that we students have in the professional career with the working world.

We believe that when we leave the world of work, everyone is based on the project drafted for the realization of the work, and that everything is followed at face value, or at least that is the idealized vision, but then you realize, that there are many setbacks, many times they do not look at the whole project and ignore the recommendations made in it, but they are based on the own experience of the person in charge of the realization or the person in charge of supervision of the task at that time.

I emphasize the great learning that is acquired in the working world, on the foot of the work, performing follow-up controls, you learn how to build in real life, out of books, as many elements are improved and can be used or place in different constructive ways. First of all, because you learn to face situations without the help of anyone, that is the way for applying the bases learned during the degree, even though you have a team to consult the doubts, to help you in any situations that you find lost with clients, but you learn to know how to give an answer, either with something clear and accurate or by offering a wait for it, to be sure of what needs to be said. Another aspect to emphasize, is to learn to relate with industrialists, learn to know how to handle the situation and lead in a way that helps the team, making the necessary modifications at every moment, listening and providing opinions from both sides.

I recommend that in the world of work, we all get rid of people who know more than we do, who are always in continuous learning and no matter where they come from, first of all absorb everything they can teach us.
6 BIBLIOGRAPHY


7 GRATEFULNESS

First, to thank the entire team of the Technical Office of La Cambra of the Urban Property of Barcelona, for letting me learn and teach me all the peculiarities of our profession. For making me see that this profession is even more beautiful than I imagined, the good atmosphere that can be achieved with a good team cooperation, and above all, to thank them for all that they have helped me and facilitated all the time I have been in the office, welcoming me as one more and letting me participate in all the projects to be able to face this world from the very beginning.

Moreover, thanks to all my teachers during my stay at the University, since they have been part of an important stage in my life, the bases of my knowledge to be able to exercise in my future of the profession that I want to dedicate.

To my friends and family, for supporting me and giving me encouragement in the moments when I needed it the most.

And last, but not least, to my parents, without them this could not have come true, without their help, without their messages of encouragement when I was afraid of failing in an exam, for always trusting in me and being the greatest support during these years.

Thanks to Katia, for her advice, her positivity every time I received a message from her encouraging me, for the help she has given me every time I have needed it, it has been a short but very pleasant period.
8 ANNEXES

8.4 Related documentation of Work 1

Next, attached the plans of the project of the realization of the integral reform in the house of Roger de Flor Street,
Plano de emplazamiento
Plano de situación
Estado reformado acotado
Estado reformado
8.5 Related documentation of Work 2

I attached the plans of the current state and the reformed state that has been foreseen as a result of the new distribution of the second office of the Chamber in Les Corts and the measurement status.
estado actual
estado reformado superficies
estado reformado instalaciones
## CAPÍTULO 1: DERRIBOS

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<td>Demolición de alicatados y capa base, por medios manuales, incluso limpieza y retirada de escombros a pie de carga, sin transporte a vertedero y con p.p. de medios auxiliares.</td>
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<td>m2 Derrubo tabiquería de obra</td>
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<td>Demolición de tabiques de ladrillo hueco sencillo, por medios manuales, incluso limpieza y retirada de escombros a pie de carga, sin transporte al vertedero y con p.p. de medios auxiliares.</td>
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<td>Desmontaje de puerta metálica de entrada, con medios manuales, sin deteriorar los elementos constructivos para a sin poder reutilizar todo lo que se pueda para nuevo cerramiento de entrada, según plano. El resto no utilizable se retirara a vertedero, sin trasporte a vertedero y con p.p de medios auxiliares.</td>
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<td>Extracción de placas de aluminio l de 60x60, con medios manuales, incluso retirada de instalaciones y cableado; sin deteriorar los elementos constructivos contiguos. Incluso p/p de demolición de tirantes, perfilarias soporte y estructuras de suspensión, falsas vigas, tabicas, molduras, cornisas y remates, limpieza, acopio, retirada y carga manual de escombros sobre camión o contenedor. Superficie medida según documentación gráfica de Proyecto.</td>
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<td>1.7</td>
<td>pa Desmontaje de instalaciones eléctricas, datos, agua y desagües</td>
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<td>Desmontaje de las instalaciones eléctricas a modificar, anular las instalaciones del office, por medios manuales, incluso limpieza y retirada de escombros a pie de carga, sin transporte al vertedero y con p.p. de medios auxiliares.</td>
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<td>Extracción de pavimento de parquet sintético laminado, sin deteriorar los elementos constructivos para a sin poder reutilizar todo, con medios manuales, incluso limpieza y retirada de escombros a pie de carga, sin transporte al vertedero y con p.p. de medios auxiliares</td>
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<td>Transporte de residuos a vertedero autorizado, con camión y tiempo de espera para la carga con medios mecánicos</td>
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## CAPÍTULO 2: ALBAÑILERÍA

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<tr>
<td>2.1</td>
<td>m2 Tabique sencillo de placas de yeso laminado</td>
<td></td>
<td>43,00</td>
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</table>
Tabique sencillo\((15 + 48 + 15)/400 = 48\) realizado con una placa de yeso laminado A / UNE-EN 520 - 1200 / 3000 / 15 / borde afinado, BA 15 en ambas caras, atornilladas directamente a una estructura simple auto portante de perfiles metálicos de acero galvanizado formada por canales R 48 y montantes M 48", con una separación entre montantes de 400 mm y una disposición normal "N", banda autoadhesiva, Banda 45, en los canales y montantes de arranque; 78 mm de espesor total.

2.2 m\(^2\) Recrecido de obra
Formación de recrecido de obra con tablero cerámico hueco machihembrado de 80\(\times\)30\(\times\)4 cm apoyado sobre pared de ladrillo macizo, tipo tochina, con 60 cm de altura media, incluso tendido, capa de compresión de 4 cm de espesor compuesta por hormigón HA-25/B/12/IIa elaborado en obra y mallazo de acero corrugado y malla electrosoldada ME 15x15 Ø 5-5 B 500 T 6x2,20 UNE-EN 10080, acabado regleado.

2.3 m\(^2\) Formacion rampa
Formación de rampa con tablero cerámico hueco machihembrado de 10\(\times\)30\(\times\)4 cm apoyado sobre tabiques de ladrillo macizo y con 30 cm de altura media, incluso tendido, capa de compresión de 4 cm de espesor compuesta por hormigón HA-25/B/12/IIa elaborado en obra y mallazo de acero corrugado y malla electrosoldada ME 15x15 Ø 5-5 B 500 T 6x2,20 UNE-EN 10080, acabado regleado.

2.4 pa Ayudas a industriales
Ayudas de albañilería a industriales ( instalaciones eléctricas, datos, agua, desagües y carpintería etc.)

TOTAL PALETTERIA
- €

### CAPITULO 3: REVESTIMIENTOS Y PAVIMENTOS

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<td></td>
<td>Suministro e instalación de pavimento gran formato porcelánico marca de 60x120mm, colocadas con adhesivo para baldosa cerámica C1 E (UNE-EN 12004) y unirse con lechada CG2 (UNE-EN 13888). Suministro y distribución de los tableros según plan.</td>
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<td>3.2 m(^2)</td>
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<td>Suministro y colocación de marchapél para acceso entrada principal y pavimento rampa, formado por piezas a medida y de 2 cm de espesor de piedra natural San Vicente apomazado recibido con adhesivo cementoso flexible clase C2-S1-TE colocado sobre recrecido de mortero MS. Incluso reajuntado con mortero de juntas cementoso CG2-W para junta mínima (entre 1,5 y 3 mm) con la misma tonalidad de las piezas.</td>
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<td>Alicatado con azulejo de gres porcelánico esmaltado, recibido con cemento cola, no incluir el enfoscado de mortero, j/reajuntado con mortero tapajuntas CG2 s/nEN-13888 Texjunt color, l/p.p. de cortes, ingletes, piezas especiales, limpieza, s/NTE-RPA-3, medido deduciendo huecos superiores a 1 m(^2). Precio compra baldosas 15 euros</td>
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<td>3.4 M2</td>
<td>Pavimento recuperado de parquet</td>
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<td>Recolocacion de pavimento de parquet laminado recuperado de la zona recrecida, incluso tapajuntas con otros pavimento, incluso suministro y colocación, lámina separadora, cortes y entregas. Totalmente terminado.</td>
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<td>3.5 m(^2)</td>
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<td>Zócalo de madera de 7 cm de altura y 1,3 cm de espesor, colocado con adhesivo de poliuretano y clavado en un acabado blanco.</td>
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<td>3.6 pa</td>
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<td>Suministro y colocación de remates de aluminio, para el remates entre pavimentos, fijado mediante cemento adhesivo. Incluso p/p de replanteo, cortes, resolución de esquinas, uniones y encuentros.</td>
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TOTAL REVESTIMIENTOS Y PAVIMENTOS
- €

### CAPITULO 4: PINTURA
### CAPÍTULO 5: INSTALACIONES

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<td><strong>5.9 m²</strong></td>
<td>Línea eléctrica aire acondicionado 3x4 mm² - 1</td>
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<td><strong>5.10 ml</strong></td>
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<td><strong>5.11 ud</strong></td>
<td>Interruptor sencillo Simón 27 Play</td>
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Suministro e instalación de interruptor sencillo de la marca Simón, modelo 27 Play, de color blanco, incluso marco y accesorios de instalación, totalmente montado, conectado y funcionando.

| 5.12 ud | Toma de corriente Simón 27 Play | 15,00 | € |

Suministro e instalación de toma de corriente de la marca Simón, modelo 27 Play, de color blanco, incluso marco y accesorios de instalación totalmente montado, conectado y funcionando.

| 5.13 PA | Modificar la acometida corriente RAC | 1,00 | € |

Modificar el cableado de alimentación del RAC, desde el cuadro a la nueva ubicación de este.

| 5.14 PA | Instalación agua y desagüe para el aseo y office. | 1,00 | € |

Instalación de agua y desagüe para la nueva distribución del nuevo office y aseo, según plano gráficos del proyecto.

**TOTAL INSTALACIONES** 0,00 €

### CAPITULO 6: CARPINTERIA

<table>
<thead>
<tr>
<th>Ud</th>
<th>Concepto</th>
<th>Cantidad</th>
<th>€ unitario</th>
<th>€ total</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 m2</td>
<td>Mampara divisoria de aluminio, cristal y puertas de cristal</td>
<td>87,40</td>
<td>-</td>
<td>€</td>
</tr>
</tbody>
</table>

Suministro y colocación de tabique de vidrio templado luna incolora de espesor 4 mm templada clase 1 (C) según UNE-EN 12600, para nuevos despachos, según plano gráfico, colocado sobre junquillos de aluminio amorizado, con puerta de vidrio espesor 10 mm templada clase 1 con herrajes metálicos.

| 6.2 pa | Puerta metalica entrada recuperada | 1,00 | - | € |

Recolocar la puerta metalica recuperada en la nueva ubicación, según plano gráfico, incluido elementos nuevos para su instalacion y correcto funcionamiento.

| 6.3 pa | Pasamano de acero inox | 1,00 | - | € |

Suministro y colocación de pasamanos de 1x50 mm en macizo de acero inox, con soportes del mismo material fijados al parapeto mediante anclaje mecánico con tacos de nylon y tornillos de acero. Incluso p/p de replanteo de los soportes, fijación de los soportes al parapeto y fijación del pasamanos a los soportes. Elaborado en taller y montado en obra, según plano.

| 6.4 pa | Puerta armario RAC | 1,00 | - | € |

Suministro y colocación de armarios de instalaciones para el RAC de de medidas totales 3,00x2,5 m, compuestos por marcos de madera, tapetas y hojas batientes en DM para pintar incluso instalación de rejas de ventilación herrajes y cerradura montado en taller y colocado en obra.

**TOTAL CARPINTERIA** 0,00 €

### CAPITULO 7: VARIOS

<table>
<thead>
<tr>
<th>Ut</th>
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</tr>
</thead>
<tbody>
<tr>
<td>7.1 PA</td>
<td>Inodoro</td>
<td>1,00</td>
<td>-</td>
<td>€</td>
</tr>
</tbody>
</table>

Suministro e instalación de taza de inodoro de tanque bajo, de porcelana sanitaria, modelo DE GAP "ROCA", color Blanco, de 370x645x790 mm, con cisterna de inodoro, de doble descarga, de 360x140x355 mm, asiento y tapa de inodoro, de caída amortiguada. Incluso llave de regulación, enlace de alimentación flexible, conexión a la red de agua fría y a la red de evacuación existente, fijación del aparato y sellado con silicona. Totalmente instalado, conexionado, probado y en funcionamiento.

| 7.2 m2 | Lavamanos | 1,00 | - | € |

Suministro e instalación de lavabo de porcelana sanitaria, mural, modelo Diverta "ROCA", color Blanco, de 470x440 mm, equipado con grifería monomando de repisa para lavabo, con cartucho cerámico y limitador de caudal a 6 l/min, acabado cromado, modelo Thesis, y desagüe, acabado cromado con sifón curvo. Incluso conexión a las redes de agua fría y caliente y a la red de evacuación existente, fijación del aparato y sellado con silicona. Totalmente instalado, conexionado, probado y en funcionamiento.
<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>7.3</td>
<td>m²</td>
<td>oficce</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suministro y colocación de mobiliario completo para oficce compuesto por 2 m de muebles bajos con zócalo inferior y 2 m de muebles altos, realizado con frentes de cocina con recubrimiento melamínico acabado mate con papel decorativo de color negro o similar, impregnado con resina melámica, núcleo de tablero de partículas tipo P₃ no estructural, para utilización en ambiente húmedo, de 19 mm de espesor y cantos termoplásticos de ABS; montados sobre los cuerpos de los muebles constituidos por núcleo de tablero de partículas tipo P₂ de interior, para utilización en ambiente seco, de 16 mm de espesor, chapa trasera de 6 mm de espesor, con recubrimiento melamínico acabado mate con papel decorativo de color negro o similar, impregnado con resina melámica y cantos termoplásticos de ABS. Incluso montaje de cajones y baldas del mismo material que el cuerpo, bisagras, patas regulables para muebles bajos guías de cajones y otros herrajes de calidad básica, instalados en los cuerpos de los muebles y tiradores, pomos, sistemas de apertura automática, y otros herrajes de la serie básica, fijados en los frentes de cocina. Totalmente montado, incluido encimera de posformato, fregadera y grifo.</td>
</tr>
</tbody>
</table>

| 7.4 |    | Limpieza final de obra |

| TOTAL VARIOS |    | - € |
8.6 Related documentation of Another Works

Attached the current status of the Hall, and a map of the state conditioned by the Accessibility Document.
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ESTADO REFORMADO