

ACREDITACIÓ DE LA TERCERA LENGUA

TRADUCCIÓ EN ANGLÈS

2 PRACTICAL WORK IN THE AREA OF THE TERRITORY AND SUSTAINABILITY IN THE TOWN HALL OF MARTORELL

2.1 MARTORELL AS A VILLAGE

2.1.1 LOCATION AND GEOGRAPHICAL FEATURES

Martorell is a Baix Llobregat village province of Barcelona.

At the North of Martorell there is a town called Abrera and in its opposite side, there is Sant Andreu de la Barca. At West, San Esteve Sesrovires, and at the east, limited by the Llobregat river, we can find Castellbisbal (see Picture 2.1.1.)

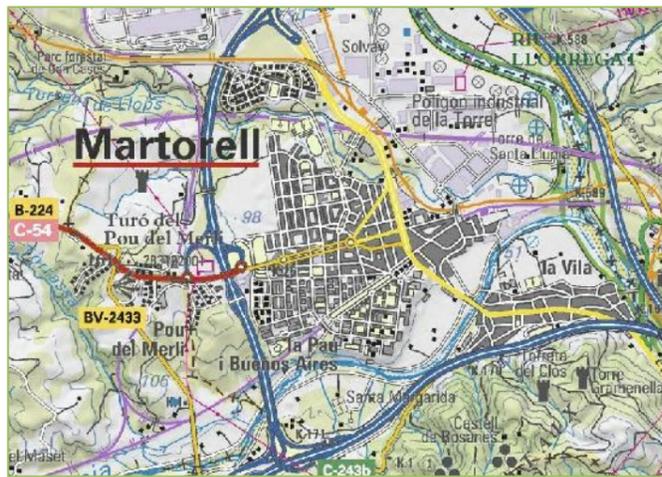
By the time, its population reach 28.108 inhabitants, with a total surface of 12,8 km² which population density is 2195.94 hab/km².

Martorell is an important communication town, with N-II from Barcelona to Madrid, A-2 highway and AP-7. We find RENFE, FGC and AVE. That communication situation has generate a lot of change of urbanization.

~ GEOGRAPHIC LOCATION:

Martorell is the place where Llobregat and Anoia's river mix each other. As a consequence of it, Martorell keep divided in three parts. At the north, there's the level located above the Anoia's river. In the second one, touch with Garraf-Ordal; The last one is located at the valley of Anoia.

(See Picture 1.2 and map 1 and 2)



We are at the junction of the prelitoral depression and the Llobregat Valley. Talking about geographical numbers it takes 56 msnm of altitude, length and latitude of 1.931731 degree and 41.474819 respectively

2.1.2. DEMOGRAPHY. INCREASE OF POPULATION

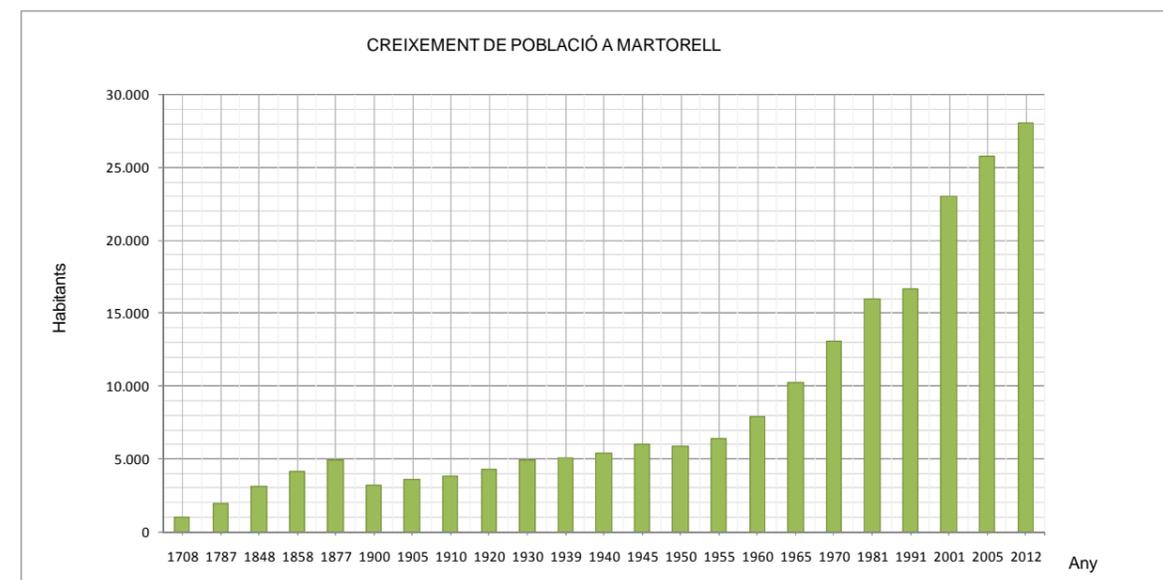
The demography of Martorell has been increasing across de time, conditioned by the social, political and human nature agents.

We start having demographic data since the middle of the 16th century when a strong immigration arrived from the south of France. At 1787 as the census of Floridablanca said, Martorell had 1987 inhabitants and 270 houses. At 1858 was born the factory colony of Can Bros, time of increase of population caused by the industrialization, there were 4136 inhabitants.

At the 20th century we find the crisis of the phylloxera where there were a population of 3221 inhabitants in 1900. Demography increased in a constant way until the civil war arrived at 1936 - 1939, after the war the population increased again. At 1940 the inhabitants number was 5437.

At 1955 there had a increase of population because of a lot of people around moved to Martorell. That made an increase of the birthrate. Like this, at 1960 there were 7926 inhabitants. After 5 years, that number grows until 10295 and at the 1970 it reached 16000 inhabitants. Since 2000 the population has been increasing until nowadays. It has 28.108 inhabitants.

In the graphic below (see picture 1.3) we can see that the population increase in a regular way until the year 1877. After that, it falls at year 1900 where it increase again until the '60s. It speed up and increase a lot until nowadays.



Picture 1.3.
Graphic of the increase of population in Martorell. Data of the 'Institut d'Estadística de Catalunya'

2.2 TOWN HALL OF MARTORELL

2.2.1. INSTITUTIONAL SHEET

- Organization: Ajuntament de Martorell
- Street: Carrer del mur nº 61
- Phone number: 93 775 00 50
- Mayor: Il·lm. Salvador Esteve i Figueras
- Political party: CIU (convergència i unió)

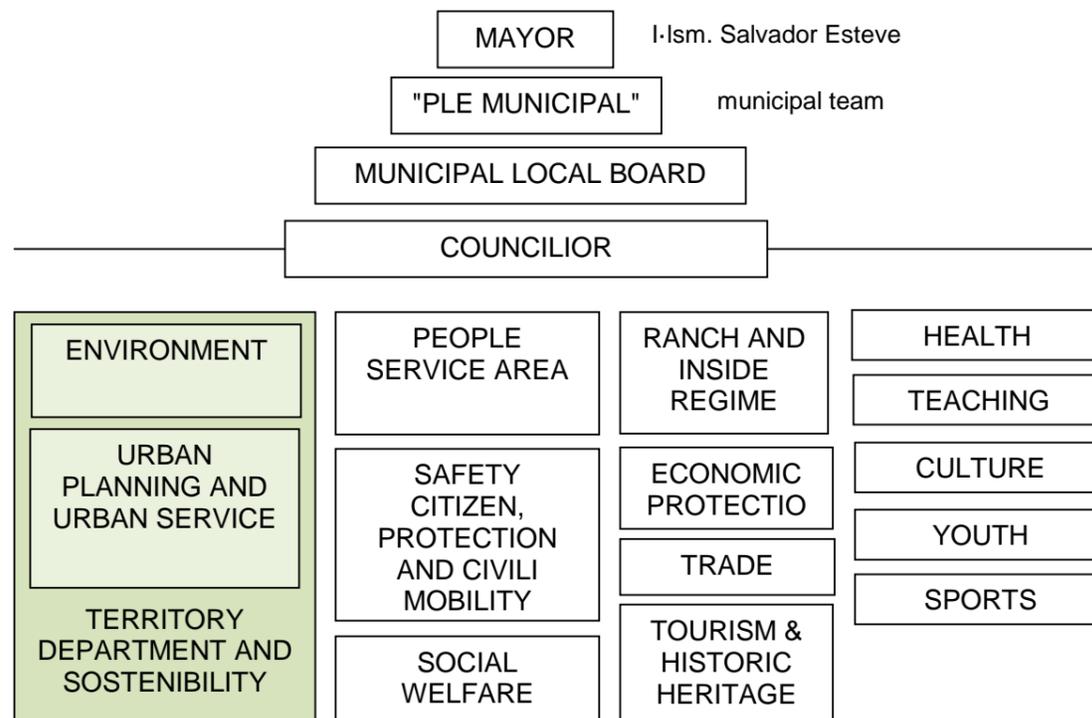


Picture 2.1
Wown hall of Martorell.

2.2.2 INSIDE ORGANIZATION OF THE TOWN HALL

Organization system and management of the town hall:

The town hall of Martorell has the following organization system:

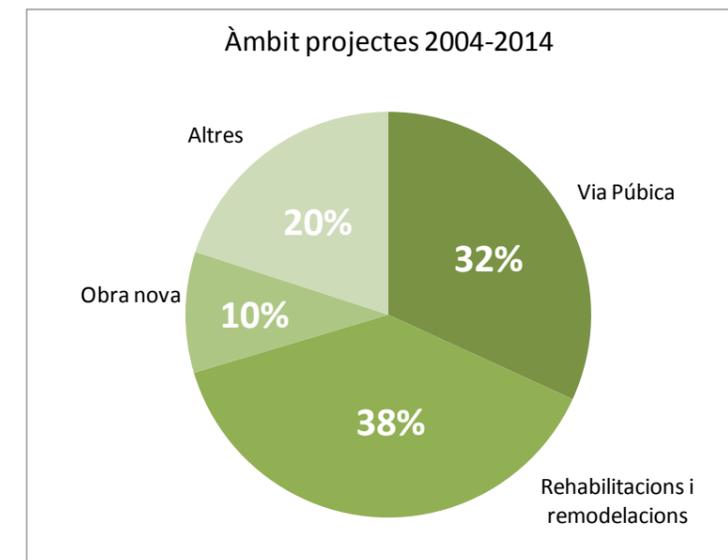


2.2.3. Activity at the last years

Martorell has been growing and developing using the new edification features.

At the graphic of below, we can see the percent of projects that has been performing at the department of territory and sustainability since 2004 until nowadays in the public area.

In the graphic below (see picture 2.2) we can see that the acting in the urban and edification area that has predominate above the others in the last 10 years has been the ones in relation with the rehabilitation and reshuffle of public edifications area. That graphic matches to a method of a constant improvement of the urban services that tries to keep the cultural heritage of the town. ,



Picture 2.2
Graphic of acting depending of the type of work.
Data exported from the sustainability and territory area.

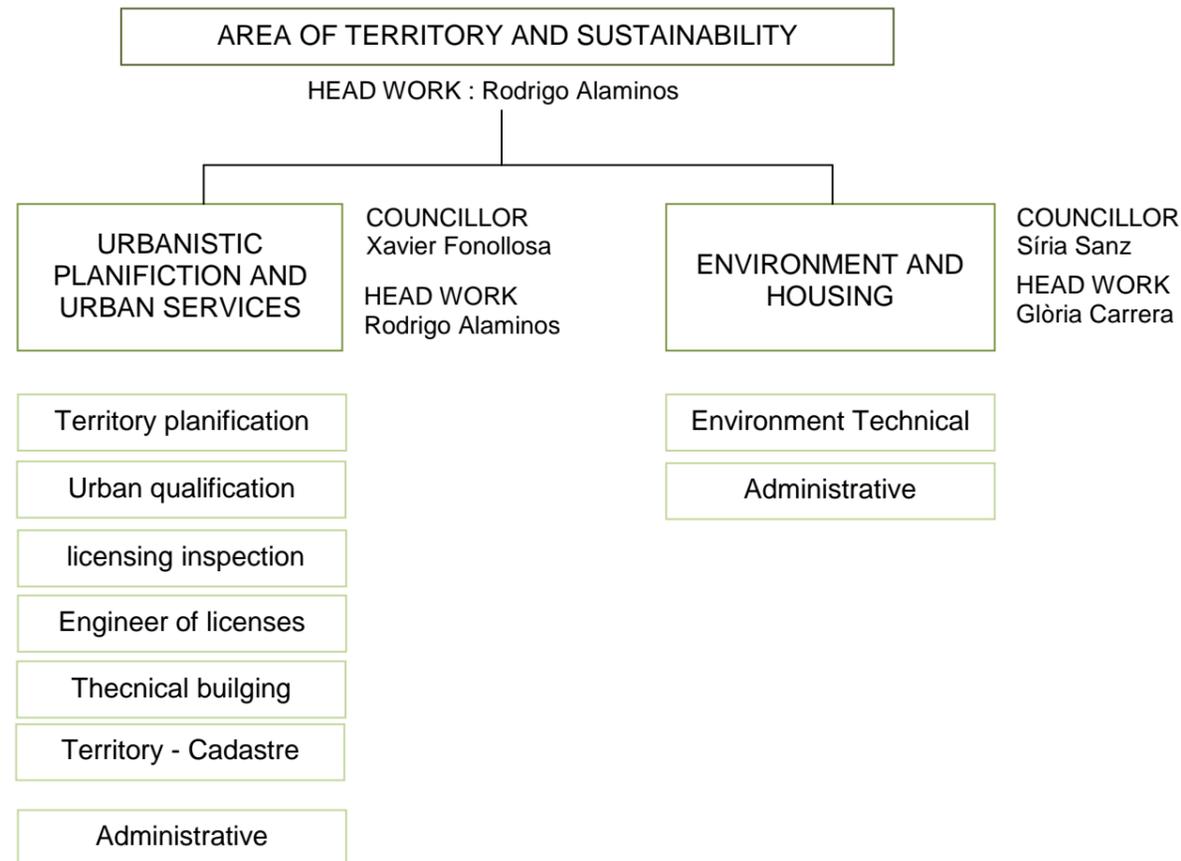
Even that, there is a high percent of acting in the public track that we have to consider. In those last years we have been improving the highways and roads of Martorell to the necessities of the people of our town.

As we could thought, the lower percent of works is the new works. This is because of the lot of time and the high cost that this kind of construction needs.

The "altres" percent include repairs and different kind of projects out of the municipal area.

2.3. AREA OF THE TERRITORY AND SUSTAINABILITY

2.3.1. ORGANIZATION OF THE ÀREA



2.3.2. HUMAN RESOURCES: functional program

Within the area of Territory and sustainability, we find the following professional:

- Head work:

Is responsible for coordinating the area of territory and sustainability with the government and to the council and direct workers. He gives the guidelines for projects and work performed.

It takes part of the technical team building and performs with the projects that are implemented, in project implementation and work. It is the municipal architect.

- Territory planification

It's the department responsible for planning the urban action in all its scope.

Deals with the general plan modifications, urban checks and reviews, etc..

Its staff consists of a draftsman, an architect and an technical architect.

They are currently working on the revision of the PGOU (general plan urbanistic organization).

- Urban qualification

Is the area of the town hall intended for public space.

Their job is to plan, organize, improve and make the necessary repairs of streets, roads, parks and public space within Martorell. They consist of two technical architects of urban qualification

- Licensing inspection:

Responsible for checking the relevant municipal licenses relating to the use of buildings. It consists of two technical architects.

- Engineer of licenses:

Treballa en la confecció de tot l'àmbit d'instal·lacions en la realització d'un projecte.

Consta d'un enginyer industrial d'instal·lacions.

Deals with the preparation, revision and modification of licenses related to the installations of buildings and public space. Work on making the whole Installations project.

It consists of an installation engineer.

- Technical building:

They work on the maintenance and repair of existing buildings and working on new projects to build or rehabilitate.

They consist of two architects and two technical architects and an administrative assistant for the preparation of the work.

- Territory cadastre:

This department consists of a draftsman responsible for giving help to workers in the area of sustainability in terms of territory and territorial boundaries, property boundaries and cadastre, etc.. Also responsible for supporting the planning department and region.

- Environment Technical:

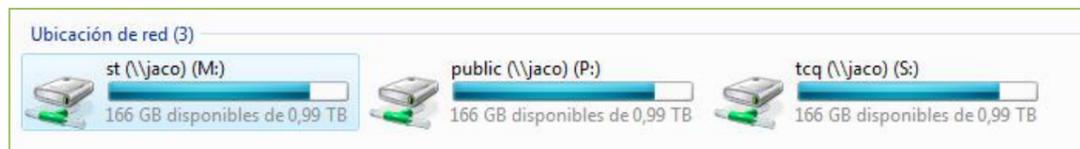
The technicians in charge of environment improve environmental quality, performing actions on the environment, managing the entire field of animal by awareness campaigns, education and monitoring of environmental quality.

2.3.3. COMPUTING RESOURCES

- Organization of the information

The technical service area of the town hall of Martorell has a lot of workers. All of them do a specific function inside of it: A building attendant, a leadership attendant, an execution attendant, an urban attendant, an installation attendant,...

The whole of computers inside of the town hall are organized using a different kind of networks where each department log in to his own network. In the technical services where I realize my practical work, we have access to three main servers. the "ST", which is the network of the technical services department where are saved the more actual archives. The "Public", that one is the network where are connected the hole of workers of the town hall and the "tcq" (see Picture 2.3.1)



Picture 2.3
Three networks of the town hall

The folder "ST" is organized by subfolders which are divided depending of the thematic aspects. For example, we find different folders like "projects and works", "urban management", "topographies", etc.

Following the same scheme of levels, we can reach to take access into the folder of the works that we are going to work, organized by year and title of project. For example, to take the memory of the projects of the Col·legi Montserrat we have to go to: -st \ Projectes i obres \ projectes \ 2014_Correa \ 01_Memòria \ memòria.txt.

Using that method of organization all the workers have access to the created and modified documents by a different person.

- Software

We use two different programs:

- Office: To generate text, calculation sheets and to check the email.
- AutoCad: To carry out with the graphic management .
- TCQ de l'Itec: To execute of budgets

PERSONAL OPINION:

The first thing I shock with when I came for the first time at the town hall was that the most of the workers worked with a limited resource of computer. That has been improving little by little by even that, I consider that there are no criterion on the decision that the computer attendant has take about it.

For example, to be able to work with the budget program TCQ, there is just one license to access to the praise bank, and we are five of us. Because of that we cannot take access to it sometimes that we need it. That make an important delay on our work.

In the other hand, they bought some licenses of the new AutoCad 2015, thing that I consider as a correct thing, but it doesn't matters if we do not have computers that can support it. I think it is more important to be able to use the necessary programs to work several people at the same time in good conditions than to get an unnecessary version of the new software that no all of us are able to use nowadays because of the quality of the computers and hardware.

Step by step I can see that some of the old computers had been changed for new ones. They have bought some software improvement and they bought also more licenses to work well.

- Opinion and proposal of the improvement of the TCQ program.

I have learned to use the TCQ program by taking practical work, in the time that I have been using it I have found it really helpful because of the fact of being in relationship with a database as the one that the Itec have and also because of the list that we can be able to generate. It is not a comfortable program, I consider that there are a lot of things on it that can be improved, but is really intuitive and basic and it let you to play with the prices and yields.

Talking about its use, I think it needs a better way to manage the budgets between companies. For example, we cannot import to the TCQ a budget executed by Excel. This is something that make that the budget of any company without this program make impossible to open it because of the incompatibility. That make lots of problems and such a big waste of time. Inside of the program there is an option to import it in Excel, but this options always bring technical problems.

2.4. MY WORK INS THE AREA OF THERRITORY ANS SUSTAINABILITY.

2.4.1. THERRITORY ANS SUSTAINABILITY DEPARTAMENT

Inside the Therritory and Sustainability in the town hall of Martorell, we can find different areas of work.

In my case, I'm working in the councilor of Planning and Urban Services, where the area of therritory and Sustainability is located.

My principal job inside this department has been support to the building technical, in a higher part, with the office's works and realizing projects.

2.4.1.1. With whom I've been working?

To do all my job, I've got the support of my tutor, Rafael Palao, who have been explaining and giving advising during my sojourn of my practical work. I've received also a lot of help from the technical architect M.T. With him I've been able to work in a lot of constructive topics, and with the project performances.

I've got the possibility, with the task I've been doing, to work with other partners, where every one of them, works doing a specific task respect the others.

Following, I'm going to expose my task that I've done in each area, that has been different in each case.

~ Technical Architect, Rafael Palao (my tutor):

He handles of the municipal buildings. Usually he is working at site-work, but he handles also the realization and the project supervision, working in aspects of health and safety at work, protections plans, and works relevant with structural computation, among other things.

In the beginning of this practice, I started to work with beside him. Initially I began teaching the methodology of work and the office organitzacion.

With him I've worked different aspects:

- Realizing projects:

We have worked on projects such as the "Farmàcia Bujons", "Casa Mestres", "Remodeling the offices of the headquarters of PMAPM", "Can Nicolau," the "Castle Rocafort" and "Tower of St. Lucia."

In accordance with the project, we started going to work for a sketch to get the measures to define the building, or simply commence from planes that we had in the office, which we had to review and verify, to square them with reality.

- Site visits:

Thanks for visiting, we tracked the work, trying to minimize the problems that arise everyday. If an anomaly or some aspect appeared to improve, it was the consistent communication to the existing workers as the Head of works, and get to the office performing a monitoring form to document the status and the anomaly that we have found.

We went to do some site visits, for example "Casa Mestres". In this we find problems in surface finishing, which had not been properly executed and installations, which we had to find a new way different from the project due to several unforeseen. In both cases we went to spoke with workers and managers to inform the changes that they have to made.

Related to public works, we made site visits to remodel the road NII. There we see that the work were going properly. Even so, we found that there was a security issue in the work, to see one person passing through the work. Immediately we notify the site manager, and proceeded to close the signal and work properly.

Other visits could be for example to the building Correa, where we were in the period of demolition. Making this visit we saw that one of the walls that we thought to be partition was actually a bearing wall,. Also appeared at his endpoint a pillar that support the weight of a metal beams that we had not contemplated in ou project.

- Field work:

The field work are those that we had to go to work to make surveys to supplement the data for the implementation of plans and budgets.

The fisrt work consisted on take all data to define buildings or parts of the buildings or areas of activity where we do a sketch of what we raise at the moment, or from a file or printed in in the office. We make the necessary changes to do thas this resemble reality.

The second part of the survey consisted of data acquisition. If it was a long and it had difficulties to reach, we worked two people, reading data and the other drawing and graphing the corresponding annotations.

In school building in Montserrat, we went sometimes to check establish topographic levels between floors of buildings, which we could complete the necessary sections for planes. In this task I could use the station for topographic work

- Computing:

One program that I normally use in my work has been the processing program of budget, time and quality, called TCQ of Itec ("Temps, Cost i Qualitat").

First steps I did with TCQ I made with him, that I was guiding and correcting my work day by day. I went ahead starting to budget more easily projects and gradually I have been learning the tools to work with.

Working with d'AutoCad, I've noticed that I have been able to be helpful for him as I've seen he not just dominate the program. Then, most of the work that he was sending to me has been related with work on representations in AutoCad, which between the two have been speeding up work.

~ Technical Architect, M.T.:

M.T. is the technical architect in charge of the municipal buildings in Martorell. Normally he is working on projects, repairs and any problems that arise in any municipal building, as well as he also does site visits.

I could cooperate with him in the Torrent Llops project, which were subdivided into four projects, which has lasted nearly two months of work.

In these projects I've worked with him largely on budget performance, which have been able to learn many aspects about him in the execution of construction works, as well as the whole budget issue involved.

Initially I started to work with the project to remodel the offices of the headquarters of PMAPM, and then I've been helping him with large and small tasks related on checks of the measurements, health and safety studies for some projects, the dawning plans and their layouts.

~ Enginyer, J.C.

I worked with the engineer while performing the installation drawings for buildings and for the installations. I asked him to know how they used to represent all the parts in the plane. He explained to me how the systems and components of an installation worked. Then we worked on preparing the necessary plans for the projects.

We have done together the necessary plans for the proposed "Torrent of Llops" and the "L'escola Montserrat."

~ Delineant, M.P:

My table partner during the practices. It is located in the department of planning and Territory and Cadastre. Workers usually come to him when they need to know specific names of owners, to know the boundaries between properties, topography, etc. ...

I've been working with him helping him with urbanistic planning and then when we needed support staff for lack of time to deliver some projects. He is currently working on a new POUM of Martorell.

~ Arquitecte adjunt, R.L.:

R.L is the architect who started working in the department of technical services in the fourth month of my stay in practice. He is helping the municipal architect of Martorell.

I have been working with him since his arrival in the project of remodeling the "Complex Esportiu Torrent de Llops" and then with the remodeling of the "Escola Montserrat" .

He has been designing the news projects. With his guidelines, we were making the appropriate changes to the projects.

~ Municipal architect and head of the area, R.A.:

He gave us the dosing and guidelines to perform the projects, and he does the reviewer before the delivery.

I could work with him in the project of "l'escola Montserrat", which worked with us in the preparation of regulatory documents, reports and reviews. He marks the modification of the plans that we do.

~ Workforce of Technical Services.

Within the area of Technical Services, there are many workers who support the technical team, as the qualifications urban technical inspectors, engineers, surveyors license, and other technical in urbanistic planning and administrative assistants.

I worked with them in small tasks, especially those related to urban planning.

~ Consultations with external company

In the projects that we have been doing, we had to ask for help and information companies to a Installation facilities, structure calculations, builders, etc.. to be able to finalize them.

These consultations have been in a constructive way nature and budget way.

For example, in the case of the "Casa Mestres", I had to contact several companies building for get some bids for the execution of a dividing phenolic resins for the new services.

In the case of other companies, for example, I got in touch to with structural engineering, and with a geologist, to find the necessary definition of the foundations of the building of the "CE Torrent de Llops".

2.4.1.2. Projects

The projects that we do in the office, came incentivized by the council of urbanistic planning and urban service, that the town communicate to the head work to realize these projects or interventions.

The head work (municipal architect) organize all the job for each one, organizing the works.

Our work consists in do the project. Usually it takes the following parts:

- Previous work
- Report
- Plans
- Budget
- Annex

During the project, the municipal architect controlled an check our work, acting in the changes that he see necessaries. He guide us with the final cost of the budget and the lifting that the project can reach.

When the project is done, we do a check of the project with the architect, who later will sign the actuation.

When it's signed, it is showed to the "Junta de govern", that is formed by differents councils of the town hall. If it is approved, depends of his dimension (as it says, "*Real Decreto 1095/2001, de 12 de octubre, per el que s'aprova el Reglament General de la Ley de Contratos de las Administraciones Públicas*", if it is not superior than 500.00.-€ is not necessary that the contracts have classification). It will go to a contest to be done by an external company, or if it is lower, the town hall could run that with our resources.

~ Previous work

The preparatory work for the implementation of a project begins with collecting necessary data to be able to start work on a project.

We can act in a lot of sectors to collect data:

- Research the plans and the documentary part of the building to act.: Wee have to search in our archive if there are any previous plans to start to work on tem.
- Checking geometric data: when we don't have the reliable data of the building, we proceed going tot take them. However, if we have, , let's check that these are correct (in Annex A part A.1. i show the sketch I made in the offices of the headquarters of PMAPM).

Usually we had to modify most of the old projects because they resemble a little to the reality. From what I have seen, this is one of the most important steps in developing a project in which we sometimes given enough importance. Because of this, we had some problems later while executing projects.

For example, in the project of the "Escola Montserrat", we didn't think to check the measurements of the building because it had been made recently renovated and we have the plans. With the architect we were doing plans, until we came to doubt the size of the woodwork that we have to had, I went to check them and I realized that our dimensions was not correct, and overall the rooms were smaller surface to which we had planned. This influenced us in the zoning of fire. The actual dimensions of the building, with the employment had not arrived at regulatory fire safety

- Rising graph: when we want to take the real data of a project, we do a rising graph where we annotate all the parameters that interests us.

The first that we do is a freehand sketch (if you have no datum), which will gradually noting distances (section A.2 in Appendix A shows a rising graph for the project of ca n'Oliveras and in section A.3., a sketch made on the balcony "Can Nicolau", where I defined a fissure).

For data acquisition we generally use a meter, the wheel, the laser and in some cases, if we take level elevations, the topographic station.

- External technical data: sometimes we need a topographic or geotechnical data to start the approach of the future works. In this case, it hires an outside company to perform that work.

PERSONAL OPINION:

The days 'iv ben working to the town hall, I've going to do in lots of cases to do tha part of the previous work. With this, I've learn working and doing freehand sketches seeing the actual state of the building. I've gone usually alone. Thought, we've gone two workers to make this, taking levels of the floor and external and large work. By the day, is very difficult to work with laser, because it's hard difficult to see.

In some cases that I've gone, I've returned to check some measurements that seems me strange at time to represent it to AutoCad. Even it's said that we have to take all data with one day we go to the building, we have the office near them, and the proximity makes us to take the necessary data t and if wee need more, we simply go again. if there is any problem.

I worked in the recording of data on headquarters offices PMAPM, in "Escola Montserrat", and in other works related with checks and sketches, also in the fissures finds in Can Nicolau.

~ REPORT

The report is the part of the project where we add all the information about it.

Usually we have a descriptive, constructive and executive report, depending of the project.

The descriptive report:

- Object of the project, where we describe the work and we show the principal data;
- The in intervenient agents.
- Background and departure and information of the environment, with a little description of the building and the existing elements;
- Qualify and urban area;
- Description of the project with the future features;
- Rules of application,
- Basic description of the elements that compose the project as soon as the structural system, development, compartment, finishes and installations. The value of the budgets and the term of execution.

The constructive report:

In this report we show all the constructive solutions with we are going to define the building. Telling the requirements of the building systems.

The more important aspects that we take into account while doing the constructive report are the followings:

- Previous works; usually the necessary demolition work.
- Affectations to the foundation; We have to explain if it affects to a existent foundations or we create a new one with the features and justification necessaries.
- The envelopment and compartmentalization systems and finishes: where we define the type of façade and the cover that the project will have. Also the partitions and the finishes of all building.
- Te installations: where appears justified all the systems the we'll create or modify. Herewe can introduce what are the standards to which we serve and the calculations we made to define them.

The executive report:

In projects that reach to a more level, we have realized in other part, the executive report to organize and plan in a temporal way the work that we have to do. In this, appears:

- The organizational and development study of works: they are defined by phases, each one with its temporal establishment.
- The period of execution: with the final date to deliver the work.
- The work plan: in a graphic way, all the activities appear ordered by the time.

The system that we use to represent this is called "Diagrama de Gantt", that represents in a graphic way the phases or modules in which we've divided the activities, having present its duration and the coordination that it has in relation of others.

~ Planes

Making plans is where I've been working more.

Is necessary for the project all the graphic documentation to be able to understand all the information that we know, and we have to represent, which has been reflected in the report.

The planes that we usually incorporate to our projects vary according to each one. Generally, we have the following ones:

- The site and position plan.
- The current status plan.
- Layout plan.
- Dimension and surfaces plan.
- Elevation and section plan.
- carpentry and locksmithing plan.
- Installation plan.
- Demolition - new construction plan (if it's necessary)
- Constructive details
- others

Together with the technical architect and the architect assistant (which is what makes the design of the building, with the back checking of head work), we can make these plans.

Everyone works with doing his part of the work, but using a base file that all we use, as an external reference. We do this to be able to work independently, seeing the changes in case to modify the base file.

Generally, the architect works over the design of the floor plan and elevation planes. In case of need the design and calculations for the installations, we count on the municipal engineer.

PERSONAL OPINION:

The planes of a project are the base of that. Without this, without the graphic representation we cannot define the project completely. What I've seen during my time in the town hall has been that we never go without time to define in a completely way the project. We never just let time to finish them, and this part "doesn't matter" from his approbation.

I can say that, because, the municipal board only checks by the time to approve the project, is the final price and the execution term. Not importance is given to see if the project is well defined or if it has all the graphic documents.

We have delivered project that by my judgment there were no complete. They had to have more planes to explain the actuation. For example, in Torrent de Llops we couldn't include a carpentry and locksmithing plan, either constructive details, cover finish, among others.

I have to say, in the other side, that all the actuation was included in the budget of the project, that in a future, it'll be exposed as a contest. We only interest the day of the project approbation.

~ Budget

The budget is also basic for the project. It's the document where we have to show all the budget items of the project, reflecting its cost and its justifications, as well as the measurement.

The software that we use in the town hall is the generator costs of TCQ of Itec, that works with a base of prices established by the same organization.

The structure of the budget is organized by chapters and subchapters, finalizing with a total price called execution material budget.

This price hasn't count with the value that we have to add of industrial benefice, expenditures and IVA.

The final cost, as we can see, is the result of all the parameters, that is called Contracted budget, that will be the real price that the project will cost.

A budget is divided by five chapters, that are basic to define it in a complete way.

- State of measurements; here is where are reflected all the measures (in units, meters, square meters, kilograms, etc...) of the items of a budget.

It's very important organize the TCQ items and make the correct description of all the measures, to be able in a future, to know where they come from this data. If in future (for a revision at work), they have to consult, has to be the more understandable as its possible.

At the office, we had in so occasions that were difficult for us to understand how this measures had been calculates, because there were no description.

This is one thing I've trying to improve by myself, doing budgets. Sometimes, I've found items that I've done, and I can be able to understand and remember what I've done to define the measures. With this, consequently, make lose time recalculating to assure my work.

(In annex A, A4.1, I expose the measures state of the project of the project of the offices for PMAPM).

- The budget: is the document where appears the final price of all the items, relevant with the measures done in the previous state (in our case, the base of the price come fixed by Itec, but we there are modifiable, we can generate more define prices according our necessities).
(in annex A, chapter A4.2. i expose a budget of the project of the offices for PMAPM).

- Budget summary: the difference between the budget and the budget summary is that in the budget appears prices of all items, with chapters and subchapters that it can have. The summary budget gives to us only the total price of the chapter. (in annex A, A4.3, I show one Budget summary of the project of the 1st building of Torrent de Llops).

I've found that very useful because we can see the total price of each part of the project in one paper, seeing this in a summary way. In the CE Torrent de Llops, for example, we saw that the budget was exceed to our price. Then, we print that and we could see that the installations items were expansive than we've contemplated. We proceed to act to the budget until it price takes the price we can afford.

- Price justification: here appears itemized all the unit prices of the item. The price justification includes the material, the labour and machinery, that shows justified with a yield and the price of materials included. We can modify the justification as we need to arrive at the exact definition of each item.

(in annex A, A4.4, I show one part of price justification of the 1st building of Torrent de Llops).

- Last Page: as the most important part of the budget, we have the last page. That indicates as a final price the contract budget (PEC). In this page, appears disaggregated the price of the material execution budget (PEM), the percentage of the general costs (13%), the percentage to a industrial benefit (6%), and IVA (21%).
(in annex A, chapter A4.5. I expose the last page for the execution of the project of the rehabilitation of Farmàcia Bujons).

PERSONAL OPINION:

With what I've been, execute the budget is the most larger and heavy part for a project, takes a lot of time for the project.

The budget has to be the last part of the time execution for the project. Every modification in the base project behaves to modify lots of items of the budget, so on measurements, as to the changes to items and his justification modification.

Actually, all the budgets that I've done in the practice, I've got to modify so much times the same items, as a consequence that we have to work on the same time, with the definition of the project as in the budget. Always ever because of we don't need enough time.

~ Health and Safety

In all projects we have to take into account the health and safety around a construction work.

We have done in each project a Study on Health and Safety, or a Basic Study of Health and Safety. The performing on do one or the other, depends to the following conditions:

We have to do a Health and Safety study if:

- the execution contract budget (PEC) is greater than 450.759,07€ ;
- if the execution of the works lasts 30 workable days and more than 20 workers simultaneously.
- if the volume of labor is higher than 500 days:
- In case to be an special work (tunnels, galleries and dams)

At te case that we don't comply each factors, we can do the Basic Health and Safety study.

Both studies contain:

- descriptive report: where we have to describe all the characteristics of the work and data, and make the interpretations and evaluation of workplace risks and the value of the budget;
- Healthy and safety Budget: to value all the items necessities to guaranty the safety.

- Annex applicable regulations and specifications.

PERSONAL OPINION:

I've done the report and the health and safety as the budget of its studies. For example, for the project of "replacement in CE Torrent de Llops" or the remodeling of the first building of the same project.

One thing that surprised me at the beginning was that at the university, we have been formed that we have to execute the study acting the characteristics of the work where we are planning. Actually, it isn't too much true.

Firstly I saw that to do the reports, they have prepared the base of them, as a template where you have all the information about occupational risks, that depending of the area of work and the applicable regulation, just have to adapt this to the reality.

By this method, they saved a lot of time without drawing up the document. Though, I consider that the work finally were not specific enough to have a defined actuations.

Other aspect I could see, was that the first day that I had to do the healthy study budget, I got to do it according to project data with the knowledge that we have worked on college, until technical architect stopped me and gave me the final price that has to be stipulate the budget.

I always thought that with our knowledge we carry out the safety study, and we respond to the adequate items to make it, with the result of the budget. The reality has been that they have fixed to me a price for the budget, with whom I've done all the items to make it. Sometimes, I have to include some material or protections that I thought that were unnecessary, and by the other side, in some case I had to reuse some items I thought to put.

~ Tender specifications

The tender specifications sets out the terms and conditions are accepted on a project.

In them, you specify how to get to work each material with its features, etc..

This is a document that generates the same Itec.

~ Quality control

It is the document which requires control of the work performed, specifying the technical tests to be performed to ensure quality patterned on the project.

Usually they are written in the report that the budget is based a percentage of the budget end of the work.

~ Tab residue

To regulate the production and management of waste that we generate a tab in which includes all areas of waste management. (in Appendix A, Section A5 sheet expose waste made by the project of "Escola Montserrat").

This tab is based in file based in "Excel" where we have prepared the council, which must enter the details based on our project:

- waste from demolition and vials, executed by items or types of heritage:

If we have all the items of equipment to demolition, we could value the demolition for items, since the result is more closest to reality.

In the case of having a small building in which we have not evaluated in detail in our estimate, we can introduce the m² building by type (as if a house of brick, concrete, if a warehouse or if roads).

Normally we have done the project budget and we have all data items of demolition, therefore, we can fulfill the information by item smoothly. However, when we have a small building that had not rated it, we did by type of building.

This will happen in the complex C.E. Torrent de Llops, where the development of our works in the football fields, we have to value a small building waste 8m². To work a little faster, we consider that as a little building with a typology of masonry. Introducing geometric values, the program automatically generated the types and proportions of different waste coming out of a building like this.

- waste from moving earth:

Here we separate the waste by the characteristics of the ground (compact or loose sand and gravel, clay, topsoil, rock fills, etc.).

- rehabilitation waste:

These do not correspond directly to the waste we generate for example a wall demolished factory in rehabilitation work. We generate it with the executing of rehabilitation in terms of performance or packaging.

We calculate that by the typology of rehabilitation (if is an integrated, if just affect to the structure part or not, or if it could be a little scope form reform) with a reduction coefficient of the actuation surface, to value the amount of waste generated by the works.

In our two cases, (Torrent de Llop project and Escola Montserrat) we use this coefficient as a 0.5, because we don't intervene to the structure of the building.

We also count the waste generated by the demolition for a punctual zone. We choose it at the project. For example, in case of the urbanization phase of Torrent de Llops (there weren't too much demolition), we put a lowest coefficient than the building 1 in the same sport complex, were we traced that with a 15% reduction.

- The waste to execute the back of the building or enlarge side:

This section contains the waste that that comes to executing works of expansion of the building, as a back extension or an enlargement.

In the case of expansion project of building 1 "CE Torrent de Llops" , we expanded back of the building, and we consider the entire surface to build on our building.

Using data that we bring to the program, and the weight and apparent volume of data that is associated with the program, we create a total volume of waste which then evaluate its management.

Finally, we generate the documents that contain:

- Evaluation and characteristics of the waste, which is based on the type of waste (material of the excavation, demolition, construction, etc..) And its apparent weight and volume;
- Inventory of hazardous waste, if any;
- Waste management and waste separation both in work and outside work, specifying the company to manage this waste;
- The type of installations that where waste stored at work;
- Budget, where will show the total volume of waste.