

Health and Safety Plan

Implementation during the Design Phase of a Project

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Abstract – In the present work, it is performed an analysis of Occupational Safety and Health within the Construction sector and the elaboration of a Health and Safety Plan in the Design Phase. Construction, when compared to other sectors, has several distinct characteristics, namely in terms of management, planning and workplaces. Therefore, it is necessary a specific strategy for the implementation of Occupational Safety and Health, unlike most other sectors of activity. Thus, it was performed a study of the evolution and history of Occupational Safety and Health, as well as its contextualization in the Construction sector. Regarding the preparation of the Health and Safety Plan, it will be analysed its characteristics, particularities of applicability, implementation, adaptation and additions to it. Also, it will be presented the case study on which the Health and Safety Plan focuses - the *Centro de Interpretação da Natureza* within the *Parque de Monserrate* in Sintra. The characteristics of the construction site under analysis will be identified, namely the existing constraints, the most significant works to be carried out and the resulting risks.

Key-words: Occupational Safety and Health; Construction; Health and Safety Plan

1. Introduction

This paper intends to make an approach of the preparation of a Health and Safety Plan (HSP) as well as analyze the habits of Occupational Safety and Health within the Construction sector, security culture and its implementation within it. Since it is an industry with a wide range of specificities, it needs intervention by Health and Safety, which is distinct from most other sectors of activity. Also, it will be analysed the characteristics of a HSP, particularities of applicability as well as the stakeholders during most of the process (project life span). Finally, it will be presented the case study on which the HSP focuses - the *Centro de Interpretação da Natureza* within the *Parque de Monserrate* in Sintra. The main focus will be to explain the general characteristics of the Project characteristics of the construction site under analysis, namely the existing constraints, the most significant works to be carried out and the resulting risks.

2. History of Occupational Safety and Health - General framework and in Construction

Ever since prehistory, man in his daily life was constantly exposed to dangers that were part of his struggle for survival. Already at that time, work accidents were part of their daily lives.

Until the middle of the eighteenth century the Western notion of accident was associated with

divine manifestations, and until this period, great catastrophes were seen as the fruit of God's will. The notion of catastrophe in Portugal began to emerge after the Lisbon earthquake of 1755. With this event, the social view of accidents suffered a change. From this period on, accidents also began to be understood as a result of natural conditions rather than divine reasons. The reconstruction of the city of Lisbon, through the Pombaline Cage, proves that priority was given to reconstruction, based on seismic resistance, leaving aside divine punishment, which shows a change in the way of thinking (Areosa, 2009; Areosa, 2010).

The emergence of the Industrial Revolution (1760), despite the undeniable benefits to modern societies, led to the displacement of populations to cities in search of better living conditions. With the advent of steam engines, the dangers in the workplace intensified even more. The factories were set up in makeshift places, where working conditions were precarious: lack of hygiene, negligence in preventing accidents, work shifts that exceeded 16 hours a day, and so on. Moreover, the work was carried out in closed and humid environments, favoring the proliferation of infectious diseases.

With this, there is a marked increase in the number of work accidents and the appearance of work-related illnesses. Initially, employers rejected any responsibility, based on the assumption of the

inevitability of accidents (the so-called price to pay for development) or recklessness and their own culpability (Areosa, 2010). With the worsening of the number of workers who were sick, wounded and dying, due to the negligence and dereliction of the companies, the concern with working conditions was highlighted.

At the end of the eighteenth century, new forms of work emerged which exposed the worker to a series of dangerous and unsafe situations. Taking England as an example, around that time, the workforce consisted mainly of children and adolescents from orphanages. It was cheap labor, made up of people despised by society and whom businessmen had no interest in protecting. The poor physical conditions of these workers, caused by poor food and poor hygiene (in the sheds where they lived), caused an epidemic that spread through several industries throughout the country. Workplace accidents have increased in such a way that deaths and health problems related to the use of unprotected machines have become commonplace. This shook English society in such a way that the English Parliament was obliged to enact a law regulating the use of labor. Thus, in England in the year 1802, the Law of Factories was established, considered the first law on Safety and Health at Work (Graça, 2002).

It was only in the middle of the nineteenth century that the most serious effects of the retrocession evidenced during the eighteenth century were perceived. At the end of the 19th century and the beginning of the 20th century, with the so-called Taylorism, the first notions of Hygiene and Work Safety came into being, and the "bodies" of Labor Inspection were developed. Their control focused on health and safety conditions at work, more specifically in the most difficult work situations and greater repercussions on workers' lives (greater risks), such as working in mines, excessive working hours or child labor. In Portugal, in the year 1895, the first specific law on health and safety at work was promulgated in the Construction sector - the Decree of June 6 (Portuguese Royal Legislation) (Graça, 2002). It sought to protect workers in public or private jobs, construction and repair of roads, iron roads, aqueducts, earthworks, new buildings, demolition work, etc. In turn, the masters of work would be required to qualify through an examination of construction processes and conditions to analyze to ensure safety in the workplace. In this way, the responsibility in case of an accident rests with the person in charge of the

direction of the work. In the same year, through the Decree of December 29, it is stipulated as minimum age, for admission of minors in the Construction, the 12 years of age.

In 1919 the International Labor Organization (ILO) was created as part of the Treaty of Versailles, which ended the First World War. It is the only agency of the United Nations system with a tripartite structure composed of representatives of governments, employers 'and workers' organizations. The ILO is responsible for the formulation and application of international labor standards (conventions and recommendations).

In 1948, the Universal Declaration of Human Rights guarantees the worker his safety and freedom in the choice of employment and minimum conditions of work. It also ensures protection against unemployment, vacation entitlement and limit of working hours.

In the mid-twentieth century, the high rate of accidents at work and occupational diseases in the Construction sector became increasingly a concern. The progressive frequency of accidents and diseases of this nature could no longer be ignored by the Government. At that time, in several countries, when facing the problem of work accidents, was given the main emphasis on aspects of prevention in the field of Construction. Thus, in Portugal, according to Decree-Law (DL) No. 41821 of August 11, 1958, the Regulation on Safety in the Work of Construction appears, which was accompanied by the implementation of a national campaign for the prevention of occupational accidents in the sector. It was a very important legal document, due to its pioneering nature, keeping still active several concepts and principles of safety improvement in construction sites.

Although Portugal was a founding member of the ILO, the Republic failed to validate any of the conventions adopted on the protection of workers, which can be attributed to the great political instability of the 1920s. With the establishment of *Estado Novo* (1933-1974) and being an authoritarian, conservative, nationalist and corporatist regime, Portugal became increasingly isolated from the international community. Even in the 1960s, it was systematically condemned by the ILO for violating the rights of its working population. As a consequence, most conventions, adopted by the ILO, were ratified by the Portuguese State at intervals of several decades (after April 25th,

1974). The strong implementation of legal diplomas, especially in the 90s, transposing the Community Directives and seeking to meet the various professional areas, was remarkable at the level of OSH in Portugal.

In 1989, the adoption of Directive 89/391 / EEC (commonly referred to as the Framework Directive) on OSH marked an important step in improving OSH conditions. It set minimum health and safety thresholds across Europe, although Member States had the option of maintaining or laying down more stringent measures. It was a great milestone and turning point in recognizing the need for a new vision for occupational risks. Over time, there were some events that allowed the first general legal regime of OSH in Portugal to appear in 1991 (DL No. 441/91). This law established the general principles for the promotion of OSH (Directive 89/391 / EEC transposed into Portuguese law).

Following the publication of the Framework Directive, a number of more specific Directives have emerged, notably the eighth special directive on minimum safety and health requirements for temporary or mobile construction sites - Directive 92/57 / EEC of 24 June, better known as the Directive for Construction Sites. This directive was transposed into Portuguese domestic law by DL No. 155/95 of 1 July.

It was with this Directive that the Construction sector saw the appearance of new actors, new responsibilities and new documents, among them the Health and Safety Plan (HSP). Undoubtedly, with these diplomas, an innovative period began, not limited to minimum prevention and safety requirements, forming an organized system of security, with new instruments and new actors. Undoubtedly, the HSP is of particular relevance since it is the main instrument for the prevention of occupational risks within the construction site, with the main objective of identifying the foreseeable risks and establishing the respective prevention measures. Although in this document, the HSP concept and the entities responsible for its implementation are presented for the first time, its structure and development will only be developed later.

Following the Agreement on Working Conditions, Hygiene and Safety at Work and Combating Accident Prevention concluded on 9 February 2001 between the Portuguese Government and its social partners, which provided for the revision and

improvement of the specific construction sector, DL No. 273/2003, of 29 October, was born. The latter reviews the OSH regulations on temporary or mobile construction sites, contained in DL No. 155/95, maintaining the minimum occupational safety and health requirements established by Directive 92/57/EEC. The revision of the Directive for Construction Sites brought changes to the HSP, in its elaboration, as well as in many other aspects. In this diploma the organization and structure of the HSP in project and in work, its development, and its actors and their obligations were defined.

3. Occupational Safety and Health Framework in Construction

3.1. The Construction sector

The Construction sector presents a set of peculiarities that distinguish it from other productive activities. All projects are unique and the diversity of work teams and external variables that mobilize to execute a construction is great. Hence it is necessary to implement OSH strategies that adapt to the specificities of this sector. Among the particularities mentioned are:

The existence of four distinct phases in the production process: design, organization, execution and use;

- The existence of a decision-maker, who is always present during these phases – the Project Owner (PO), who is above the employer - the Contractor (or Executing Entity), whose intervention happens fundamentally in the execution phase of the building;

- In the design phase the options taken in the field of architecture, in the structural domain and even the materials, are relevant in the execution of the work on site. Often, preventive measures that make the project compatible with on-site execution and later maintenance are not equated. For example in the Industrial sector, the Director of Production of a given company, is aware of the security problems inherent to the manufacturing process of the company;

- From project to project, the physical characteristics of the project vary, as well as the social, cultural and environmental surroundings where it is implemented. This makes it impossible to have a standard safety behavior, since there is a need for adaptation to each work. The construction site own surroundings can condition the works, such as electric lines, water or gas pipes;

- Being a work in itself is a seasonal activity, limiting itself in space and time, it promotes that its

facilities are precarious. As a result, a low level of comfort is typically achieved, with the accommodation facilities being most impaired;

- Each work involves a number of stakeholders, namely Subcontractors from different companies. Typically each of these is specialists in a particular activity (demolition, electricity, painting, etc.), which creates the need to harmonize the work of the various teams on site. The plurality of actors results in a natural conflict;

- The construction process is dynamic as the work evolves, since each activity has its own construction method, leading to different prevention needs;

- The painfulness that is recognized for this activity, namely for the workers in the functions of manual handling of loads and exposed to aggressive climacteric factors. Below is a summary diagram of the various stakeholders in a construction project, during its different life phases.

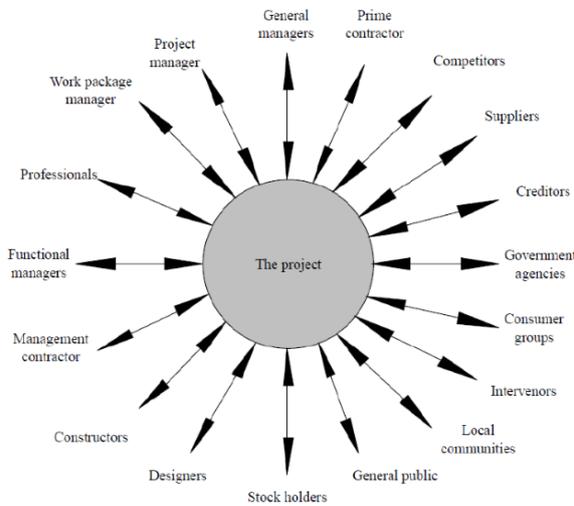


Figure 1 - The stakeholders in a construction project.

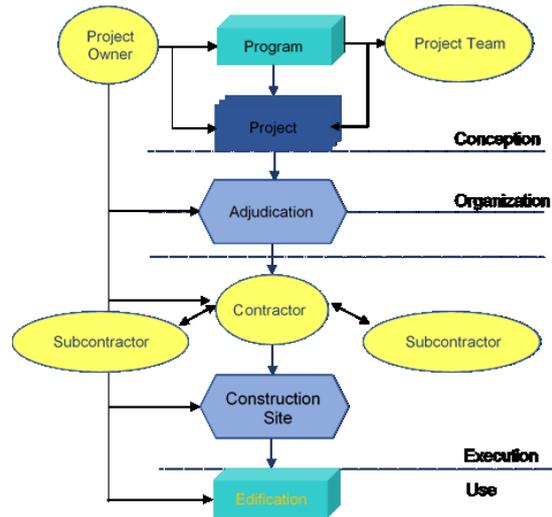


Figure 2 - Stages and interventions in the construction processes (Adapted from IGT, 2005)

3.2. The importance of security in construction and statistical analysis

The Construction sector is known, among all sectors of activity (along with Industry), to be the leader in the annual number of fatal accidents and serious accidents. The implementation of the Directive for Construction Sites (DL No. 273/2003) had a direct impact on the control of safety measures and prevention of construction works. This can be concluded by observing the annual accident record. According to INE data, the number of fatal accidents in this sector shows a significant decrease since the implementation of said diploma. It can be seen from the chart in Figure 2 that between 2000 and 2005, there were values above 100 deaths per year, and more recently between 2013 and 2015, there were around 40 deaths per year. This indicates an improvement over a period of 15 years between 50% and 60% of the annual number of deaths.

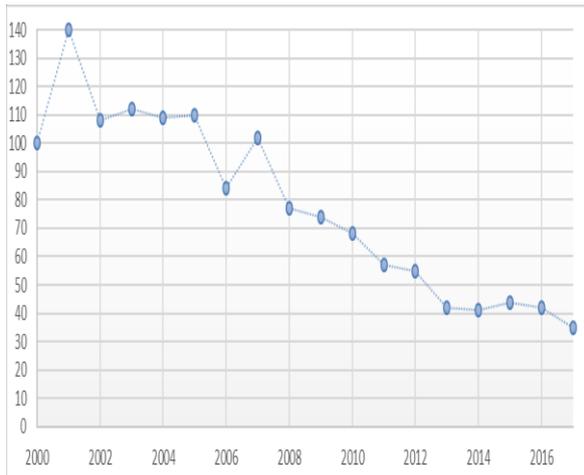


Figure 3 - Fatalities in the Construction sector between the year 2000 and 2017 (Adapted from PORDATA)

After analyzing these data, and taking into account the specificities of the Construction sector referred to on *Point 3.1*, it is possible to conclude that there is not only a single cause for work accidents in this activity, but a set of causes, such as :

- Design errors (architectural, materials and equipment);
- Organizational errors (due to incompatible activities);
- Execution errors in the yard and unsafe conditions / organization of the yard (Freitas, 2011);
- Non-use or improper use of safety and protection equipment;
- Non-compliance with safety standards;
- Non-verification of the stability and solidity of the building elements;
- Lack of training and information of workers and / or lack of knowledge of risks;
- Improper use of mechanical means;
- Use of improperly anchored scaffolding;
- Disorganized work;
- Intensive work rhythms;
- Lack of employee attention;
- Fall of materials and fall of level;
- Electrical shock;
- Lack of signaling;
- Adverse weather conditions.

Another very important factor is the workforce in Construction companies. It is an actor whose training and level of intervention in the works, in itself, constitutes a constraint to safety in this activity. Typically this workforce is characterized by the following main aspects:

- High weight of male labor, young, in some cases illegal, clandestine or without contract;
- Low level of qualification and training, with many workers having a nil or basic qualification (qualification both school and vocational);
- High precarious employment;
- Professional instability and high employee turnover among companies;
- Remuneration lower than the national average;
- High accident rate, motivated by poor working conditions;
- Greater use of temporary work (Baganha, 2001).

3.3. Safety and prevention culture - a preventive approach

The decisions of the PO on the economic plane and the options of the designers, in the architectural plane and of the technical choices, are of fundamental importance in the definition of the object to be built. In addition, the repercussions on the OSH level will be felt both in the works to be carried out on site and in future interventions to maintain the building. Therefore, the very definitions of the project of the building are closely related to the execution of determinant aspects that are the object of the general principles of prevention.

The DL No. 273/2003 establishes general planning, organization and coordination rules to promote safety, hygiene and health at work in construction sites. Prevention of design and safety and health planning in construction are fundamental principles of this law. Its legal discipline is based on two fundamental objectives:

- To take the philosophy enshrined in the general principles of prevention to the act of designing the building, namely regarding the architectural options and technical choices to materialize (prevention in design). It is during the execution of this act that the application of the general principles of prevention (Article 4 of DL No. 273/2003) allows for greater effectiveness in the configuration of OSH;
- Reinforcing the coordination between the different actors, from the design of the project to the realization of the work, to stimulate the articulation and succession of interventions, taking into account the different requirements for planning and organization of OSH in a constructive enterprise (Article 5 of the DL No. 273/2003) (IGT, 2005).

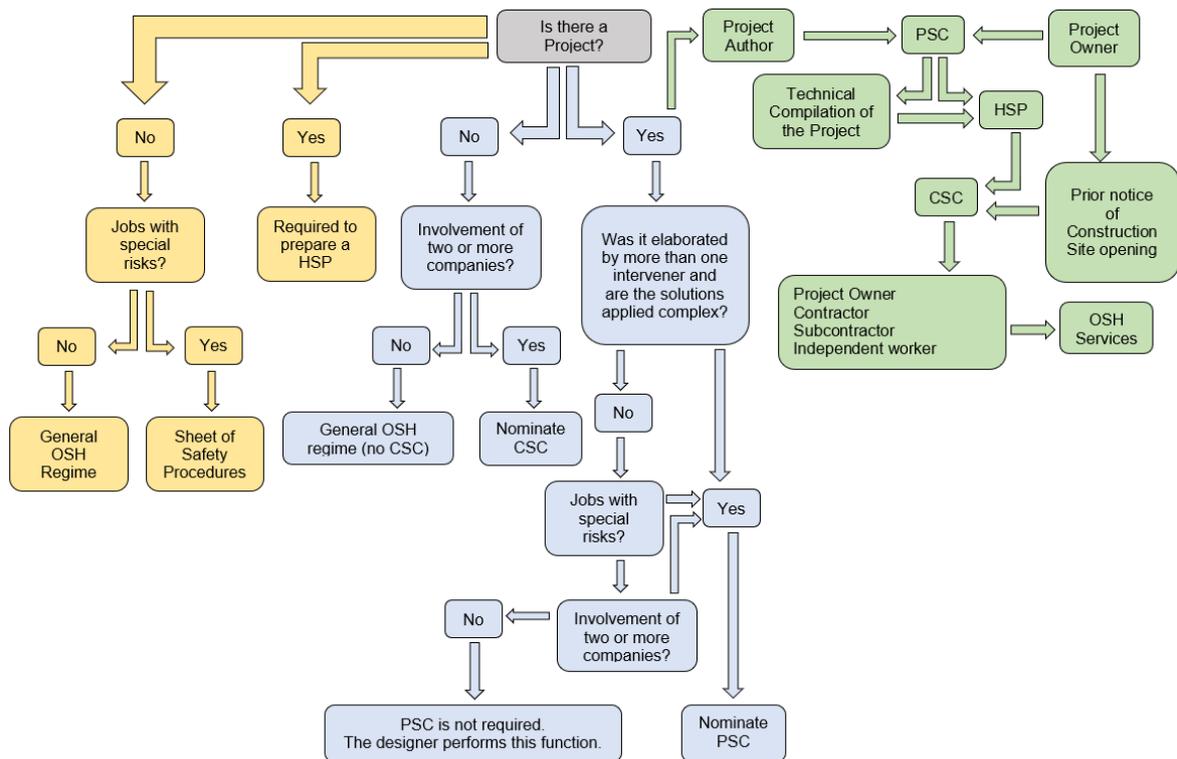


Figure 4 - Instruments, functions and domain of the stakeholders in a Project (adapted Freitas, 2011)

The implementation of a preventive approach is developed around the coordination activity, under the responsibility of the PO, through the appointment of the Project Safety Coordinator (PSC) and the Construction Safety Coordinator (CSC), as referred in Article 9 of DL No. 273 / 2003. It is concluded, therefore, that the valorization of the design, prevention and the implementation of the safety coordination are structuring principles of the prevention of professional risks in this branch. This preventive logic is based on the following fundamental aspects:

- The performance of the general principles of professional risk prevention;
- The need for greater coordination;
- The instruments of preventive action that materialize these principles;
- The specific roles of the various actors in the building process;
- A chain of responsibilities of the various stakeholders.

3.4. Stakeholders in a project

At **Figure 3** is a summary diagram of the various stakeholders in a Construction Project, their domain and tools that can be implemented, depending on the type of project and its characteristics.

4. Safety and Health Plan in Design Phase

The HSP (Articles 6 and 11 of DL No. 273/2003) is an essential tool in establishing a safety and prevention culture in the Construction sector. Its main objective is the organization of a set of technical standards and procedures for prevention, in addition to recording the risk assessment carried out in the fundamental stages of the process (avoiding and preventing what?) and clarifying the control and management measures applicable to avoid or minimize such hazards (prevent how, when and by whom?) in the safety of workers in construction sites. The HSP intends to achieve a high level of safety in the workplace, so as to avoid the risk of occupational accidents and illnesses for those who work in this area (Dias et al. , 2001, Faria, 2010). All actors involved in a work, directly or indirectly, become involved in the scope of the HSP, due to the different roles they play, different ways of intervening and influencing each of the phases of the construction process.

The HSP can be structured with the following chapters (Alves Dias, 2009):

- Introduction;
- Descriptive Memory;
- Characterization of the Project;
- Actions to prevent risks;
- Monitoring and follow-up.

It should also be noted that in the elements to be added to the HSP for the execution of the work (Annex III of DL No. 273/2003), of which the following stand out: contingency plans, signaling, Collective Protection Equipment, Personal Protective Equipment, accident and visitor registration, training, emergency, etc. (Dias et al., 2001).

The HSP is compulsory in all works that require Prior Notice of the Construction Site opening, or in activities that require an Execution Project and that have works with special risks, which should be included in the tender procedure for the contract (Article 7 of DL No. 273/2003); Dias et al., 2001). In cases where the works described above are not included and, therefore, there is no need to prepare a HSP. Instead, safety procedures sheets (SPS) should be elaborated (Article 14 of DL No. 273/2003), which is typical on works of small size and where no execution projects were elaborated. The degree of complexity of a work does not mean that there are no special risks. This instrument aims at the same objectives of the HSP, in a more simplified way, in view of the risk assessment in the execution phase of the work.

During the execution of the work, the Contractor is responsible for applying the specifications of the safety measures that have to be followed at the site. In addition, it should also propose, when necessary, supplementary measures. In both situations, and with a view to guaranteeing safety on site, the following points should be taken into account:

- In the course of the work, identify the simultaneous or incompatible activities;
- Identify the processes and constructive methods to be implemented, including those that require detailed planning of security measures;
- The necessary equipment, materials and products;
- Specific measures relating to special risks;
- The design of the construction site, including access, circulation, cargo handling, storage of materials, among others;
- Information and training of workers;

- The emergency system, including fire prevention, control and fire-fighting, rescue and evacuation measures.

Only after the validation of the Development of the HSP or the SPS, by the PO and CSC (if any), the Contractor may begin the installation of the site and the start of the work. In the execution phase of a contract, the Contractor may apply alternative solutions to the proposals in the HSP. These changes must be justified and can not represent a decrease in safety levels, also requiring CSC technical validation and PO approval. The HSP and its amendments should be located in an accessible location of the site to Subcontractors, self-employed workers and workers' representatives (segurançaonline.pt source).

4.1. Implementation, adaptation and additions to the HSP

The HSP, when elaborated in the Design Phase, intends to correspond to the obligation of the PO in this matter, according to Article 17 of DL No. 273/2003, on "General Rules of Planning Organization and Coordination to promote security and health at work in Construction sites".

When referring to outsourcing service providers, it is intended to refer to all Subcontractors, Subcontractors for the transfer of labor or equipment, self-employed persons, service providers and, where applicable, their successive subcontracting chains. Then, the document should be sent to the CSC for validation, and to the PO for later approval, as defined in paragraph 1 of Article 12 of DL No. 273/2003.

The HSP should be a dynamic and evolutionary document during the execution of the works, and should integrate the projects, plans and records of all the measures implemented in the scope of health and safety. Thus, all developments/complements will consider the inclusion/integration of the prepared elements within the established deadlines. The developments/complements will always be made taking into account the constructive processes and working methods used in the execution works by the Contractor, the existing constraints, the organization of the Construction site and the planning of the works.

For the integration of the elements that constitute the developments/complements resulting from the implementation of the HSP, the Contractor should constitute Annexes with complementary

information. It may also be necessary to add other documents which, during the execution of the contract, the Contractor, the Inspection or PO may deem necessary.

The development/complement of the HSP consists essentially in the preparation and integration of projects, plans and procedures referred on it. to in this document and in the accomplishment of records of the actions implemented, demonstrating them, which together will be included in the Annexes and will form an integral part of the whole document. Up-to-date maintenance of HSP documentation is a responsibility of the Contractor.

4.2. General characteristics of the Project

HSP elaborated refers to the rehabilitation project of the Centro de Interpretação da Natureza within the Parque de Monserrate. The building was a former Workshop of Mr. Cook, a founder of the Parque de Monserrate. The purpose of the intervention is to give a new functionality to that space.

The building in question has its walls executed in stone masonry. The interior walls are in brick masonry. The highlight of the building is the large open spans on its facade, currently covered with a very degraded metal railing. Inside, it was identified that both the floor slab, the roofing and the balcony that surrounds the building, have been executed in reinforced concrete with smooth irons (slab and beams). The building has about 6 meters of height, without any pillar in its interior and its cover is of the flat type. The cover is coated with a highly degraded screen type waterproofing. In the zone in front of the building (without any building) the ground is uneven, with rough roots of trees. It doesn't exist an access connecting the roof to the rest of the building.

4.2.1. Demolition/Construction Plants

The plants presented in this point of the paper are intended to highlight, within the existing structure, the elements to be demolished and constructed, these elements being respectively yellow and red. Among the elements to demolish (yellow) are the following: concrete slab, interior walls, façade elements, wall, elements removal from the roof, etc. Among the elements to be built (red) are the following: pergola for the garden, concrete slab, mezzanine, aquarium wall, etc.

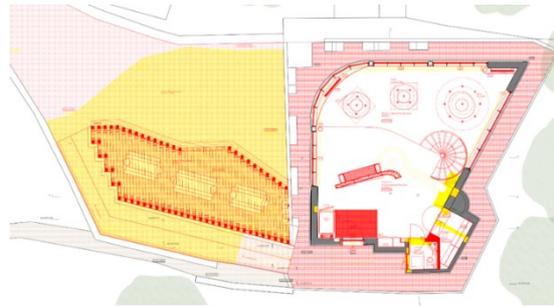


Figure 5 - Ground floor demolition/construction plant

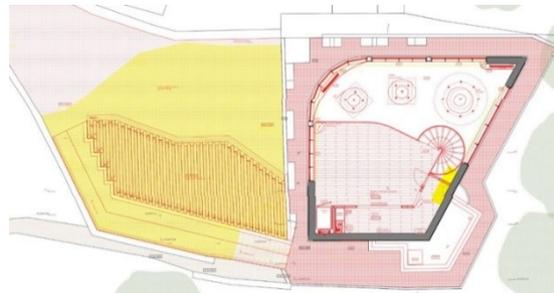


Figure 6 - Mezzanine demolition/construction plant

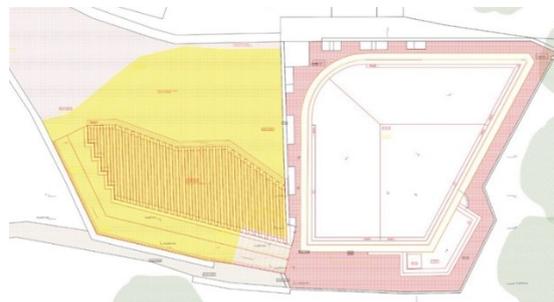


Figure 7 - Roof demolition/construction plant

4.2.2. Local constraints

4.2.2.1. Construction site surroundings

The assessment of local constraints that may influence the safety conditions at the construction site during the execution of the work must be done either at the Design Phase or, preferably, before the installation of the construction site and start of the activities (or during the execution of the work). The main constraints in the referred project are:

- All works will be carried out inside the Monserrate Park in Sintra, directly confronting the access roads to vehicles, visitors and adjacent green areas;
- The building to intervene is located in an area with great biodiversity in terms of its flora, namely through the presence of several centenarian cork oaks. Since all this flora is part of an area belonging to the Cultural Landscape of Sintra, classified as a World Heritage Site by UNESCO, the Contractor can not make any intervention on the said species without the authorization of the PO;
- All activities that could jeopardize the movement of people outside the construction site, in its outer perimeter, must be taken into account;

- Regarding the activities during the construction, it should be taken into account the noise levels, vibration, dust production and pollution in the work activities;
- The aspects related to public roads bordering the construction site, possibly generating some risk for third parties, as well as the planning of accesses to the vehicles and equipment of the construction site, should be contemplated in the Development of the HSP and in the Construction Site Plan;
- The Contractor should review the Code of Good Conduct, provided in the Book of Charges.

4.2.2.2. Infrastructures

The type of intervention to be carried out does not foresee interference with existing infrastructure in the surrounding buildings, however it is known that there are distribution networks in the vicinity - electrical, water, sewage and telecommunications.

The electrical and telecommunications network originates in the Casa de Guarda do Bordalo and the water and sewage networks can be accessed in the path that makes the pedestrian access, between the building to intervene and the rest of the Park . There is a register and mapping with the location of the infrastructures networks, executed after each intervention on the Park. Therefore, there is a more detailed knowledge of the layout of these networks, which allows to reduce the risk resulting from accidental contact, especially with electrical and telecommunications facilities. The construction site can only be considered open after the analysis of all the information about the buried / embedded infrastructures that may exist.

4.3. Special Risks

The activities to be executed and referred to in this HSP, include works with special risks for Occupational Safety and Health, in accordance with the provisions of Article 7 of DL No. 273/2003. The Contractor will define, taking into account the constructive processes and working methods, the adequate preventive and protective measures to guarantee the health and safety of the workers, integrating these measures in the respective matrices of evaluation and monitoring of risks

When performing activities with a special risk, Technical Safety Instructions should be developed, which will take into account the constructive process and the working methods that may be used. In the preparation of these instructions, the respective risk assessment will be attached to each

activity. These instructions will be submitted to the CSC for approval, prior to the start of their work and should be filed in an Annex to the HSP.

The type of works referred in this HSP – Building Remodeling/Recovery - implies varied work with sequences typical of a Construction work - and in which it is not often necessary to change some planned procedures. The Special Risks associated with the work planned under this contract will be as follows:

Burial - very low risk	Earthmoving works / Excavating / Landfill
Crush - medium risk	Construction site preparation and dismantling, Earthworks / Excavating / Landfill
	Fall of Materials, Fall of Structures, Demolitions
	Concreting works, mechanical handling of loads
	Moving and handling equipment
Height drop - medium risk	Masonry
	Plaster and plaster
	Paints / Coatings
	Locksmith
	Frames
	Installation of suspended ceilings
	Roof
	Installation of infrastructure networks
Electrocution - medium risk	Use of Electrical Energy Dependent Equipment
	Existing Technical Networks and Tension Works
Fire - low risk	Fire / Hot Work

Figure 8 – Special risk works

5. Conclusions

The Construction sector presents a greater risk of work accidents, due to its very specific characteristics, when compared with other sectors of activity. It is therefore urgent to counteract this trend, particularly by implementing a prevention and security culture within companies linked to this industry, involving all its stakeholders. All those involved have a relevant role to play in improving the safety and health conditions of construction sites. It is essential to raise the awareness of companies and how they should view OSH as an investment with return and not as an obligation.



Figure 9 – Building after rehabilitation

The training of workers, among other future improvements, takes a prominent place. It is also important to ensure that companies provide good working conditions for all their employees. However, even complying with the legislation in force, the training and information of the workers by the employer is often reduced or none at all. Training the workers will provide them with all the means necessary for them to carry out their duties safely. Only then, will it be possible to instill a prevention, safety and health culture. Also, through the formation of all social agents involved it can be expected that in return there will be a reduction in the risk of accidents at work, minimization of risks and increase of workers' productivity.

In Portugal there has been a decrease in accidents at work in Construction, namely the number of fatal accidents, having it started with the application of the “Safety Regulations in Construction Work” from 1958, until DL No. 273/2003. It should be noted that the implementation of the latter has brought improvements to safety criteria and there has been a drastic reduction in the number of accidents in the last decades. However, deaths still occur every year, so there is a need to strengthen inspection activities and punishment. Regarding the “Safety Regulations in Construction Work” from 1958, it is generally agreed that this document should be updated, since the means and techniques implemented in the sector have already undergone significant modifications.

With this paper it is possible to conclude that the implementation of a HSP, at the Design Phase of a project, analysis of the various Specialty Projects and specificities of a work, will always allow a more assertive forecast of the future risks in the activities to be performed.

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