Case Study on Work Safety Conditions in Carauari - Amazonas

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Abstract

The construction sector is the largest generator of occupational accidents, as it directly covers the worker. The implementation of preventive actions reduces the risks and provides a healthy environment, giving more security to the worker and daily activities. Based on these data, it is observed that the city of Carauari, in the interior of the Amazon, is still adapting the conditions of work safety, regarding the use of PPE and training that should be offered to work at height, which factors minimize accidents at the construction site.

Keywords: Construction. Safety at work; PPE; Work at height;

1. Introduction

The construction sector is deduced as the sphere that most employs workers and also stands out for its productivity, but as one of the prolific sectors become dangerous, thus causing accidents and deaths due to lack of verification, collaboration and guidance for compliance. current standards that meet basic

occupational health and safety requirements.

Due to the concern with the safety and health of construction workers, in recent years the issues related to occupational safety have been gaining ground today, so that the conditions offered for the execution of activities with workers are met in a timely manner. indispensable way.

Being the Work Safety a set of sciences and technologies governed by the NR 18 - Working Conditions and Environment in the Construction Industry, where it aims to contribute to the improvement of the number of accidents and possible diseases, aiming to protect the physical integrity of the workers. employees from the construction industry, it is essential to comply with all the parameters governed by the same so that such risks and problems can be reduced and avoided at the construction site, thus improving the safety conditions of the site.

Even with the increase in the number of protection against accidents and occupational diseases, the number of victims suffering from physical and moral accidents tends to increase due to the non-use of PPE according to the regulatory standard NR 6 - Personal Protective Equipment - PPE.

Given the above, the study was conducted by applying a questionnaire to 15 workers in a simple and compact way in the construction of the metallic cover of the sports and cultural events court in order to meet the minimum safety requirements established by NR 35 - Work at Height , located in the city of Carauari in the second semester of 2019, allowed us a quantitative survey about the safety conditions in the construction site. This questionnaire consisted of 12 closed and 03 open questions.

2. Theoretical Foundation

2.1 Health and Safety at Work in Construction

Occupational safety has become known for proposing measures and setting the necessary parameters for civil servants within the building industry, with a view to improving the performance of all their tasks and preventing possible occupational accidents by taking care of the utmost importance for your good development. Such activities and improvements are applied according to the programs, equipment and specifications that Safety and Health Engineering has [1].

Also in agreement [1] large companies are investing more and more in occupational safety management in order to minimize costs, since Brazil is the country with the highest incidence of expenses resulting from construction accidents. Civil. Expenses with work accidents in Brazil amount to millions of reais, which is used to meet the needs related to days of work delays and the amount paid as a pension and compensation to family members of victims [2].

Much of the accidents that occur at the construction site are due to lack of knowledge on the part of the workers and also the rush to complete the services according to the deadline requested by the customer, as stated by [1].

According to [3], one of the largest business sectors in Brazil is the construction industry, which is one of the largest economic powers, since the employability rate in this area is quite high, however, this segment is characterized by the lack of qualification of the company. thus compromising the physical integrity of the worker and the occurrence of many accidents.

2.2 NR - 6 - Personal Safety Equipment - PPE

As mentioned [4], personal safety equipment is equipment that should be worn by all workers for the purpose of establishing protection from risks that threaten their health and safety.

It is the full responsibility of the company to provide all necessary PPE for all its employees, thus enabling them to perform their tasks safely while avoiding possible occupational richness. It is essential that PPE is in perfect condition and can meet all possible circumstances as cited in [4].

It is noteworthy that, according to [5] after the delivery of the equipment to the companies' contractors, it is their responsibility to use them only for the activities they are intended for, having the servants aware of their need and importance for the company. preservation of their own health and physical integrity, as well as being responsible for preserving them and informing their superiors of any damage or alteration that may influence the correct use of the equipment, thus avoiding possible accidents as the equipment is unfit for use.

It is up to the supervisors and guardians to receive the instructions that must be given by the company's sector or security agency so that they can awaken, assist and raise awareness, showing the need for the use of individual equipment for each of the employees that make up the jobsite. works, as quoted by [6].

2.3 NR - 35 - Working at Height

According to [7] work in height is all that is performed with elevation greater than 2.00m (two meters) from the low, provided that there is a risk that the employee may fall.

According to [8] NR - 35 brings with it the importance that the worker has to have when the requirement is work at height, since it involves planning, organization, execution of safety and health of employees.

Also according to [7], work performed at a height can only be attributed to professionals who have training and authorization for such execution. In this case [9] they have their evaluation criteria ensuring employee safety, which is only possible due to the joint assignment of the worker and employer.

According to [9] the employer has an obligation to do constant training exercises as long as there is any of the points discussed here.

a) Change in work procedures, conditions or operations;

b) Event indicating the need for further training;

c) Return from work for more than ninety days;

d) Change of company.

2.4 NR - 18 - Working Conditions and Environment in the Construction Industry

In the construction sector in general there are high levels of employee health risks, according to MTE (Ministry of Labor and Employment), poor working conditions and non-compliance with the rules that employees must follow are the biggest influences for such accidents. become constant, thus, the solution found was the use of precast structure, aiming to reduce risks and seek improvements to the work environment since, with these construction systems it is possible to eliminate stages of the work and reduce the time period. that it would take to be realized. Second [10].

The approach taken by [11] is very complex where it establishes the necessary administrative and organizational parameters for the construction industry to prevent accidents and safety in the environment.

Also highlighted in the same standard, item 18.10 regarding the metallic structure emphasizes that, to avoid unforeseen circumstances, some necessary precautions must be taken, such as the prior fixing of all parts used during the service, the implementation of provisional floor without gaps so that thus prevent the equipment from falling and also meet the specifications regarding the weight and dimensions that transport equipment requires, aiming that the transport of these equipment are also a source of accidents, many of them being fatal, according to [12].

3. Methodology

This research is characterized as a case study, which according to [13] provides a schematic view of how data collection methods will be used to formulate a research hypothesis, ie an experimental survey, in which the objective is to analyze and present the correlated data to the field of study.

Regarding the type of research applied, an exploratory-descriptive research was used where [13] classifies as a research in which the researcher does not expect to get a definitive answer, however, uses the description of the characteristics of a group to provide broad description. of the problem.

The case study arose from the need to verify the use of Personal Protective Equipment - PPE, the Working Conditions and Environment and the minimum compliance with the safety conditions of the Works performed at Height at a site in Carauari, located inland. from the state of Amazonas. Thus, the data collected in the research are quantitative for the presentation of statistical graphs for projection of the obtained data.

For data collection a field research was carried out in order to collect data that would serve to the result of such approach. Thus [14], they classify the field research as a study that aims to obtain information and knowledge about a problem in which an answer is sought, or a hypothesis that it wants to prove.

The method used in the field was the application of a questionnaire, in which 15 workers participated. According to [14], they consider the questionnaire as a data collection method, composed by an ordered series of questions that allow a greater contact with the researched field and the clarification of the methodological procedures.

4. Case Study Application

For the development of statistical techniques, a questionnaire was applied for analysis and data recording. The questionnaire applied in this research has 15 (fifteen) questions, 14 (fourteen) multiple choice and 1 (one) essay. Fifteen (15) workers from a construction site in Carauari (AM) contributed to the research. However, for the application of the questionnaire was divided into two teams, so there is no interruption in activities.

As shown in figure 1, the court cover is being assembled with metal structures. Figure 2 shows the details to be completed for the completion of the work.

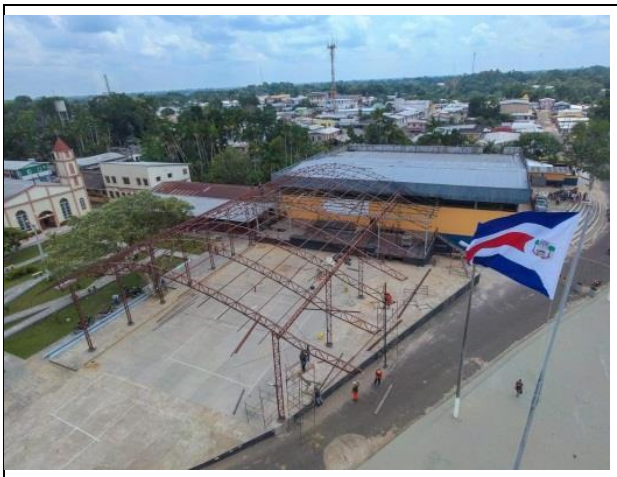

Figure 1 - Initial Metallic Structure
Fonte: Own Author

Figure 2 - Coverage Completion
Fonte: Own Author

Figure 3 shows a sample of the 15 question questionnaire, which was applied to employees.

Name: _____ Gender: Feminine ( ) Male ( ) Age: _____ Marital Status: Not married: ( ) Married: ( ) Divorced: ( ) Stable union: ( ) Widower: ( ) Degree of education: 1 incomplete degree: ( ) 1 complete degree: ( ) 2 incomplete degree: ( ) 2nd grade completed: ( ) 3 incomplete degree: ( ) 3 complete degree: ( ) What is your profession: Carpenter: ( ) Bricklayer: ( ) Servant: ( ) Helper: ( ) In charge: ( ) • Others. Which?	Work how many hours per day: Less than 7 hours per day: ( ) Between 7 and 8 hours daily: ( ) Between 8 and 9 hours daily: ( ) 9 to 10 hours daily: ( ) Between 10 and 11 daily: ( ) Between 11 and 12 hours daily: ( ) More than 12 hours daily: ( ) How long do you work at construction area? Less than 3 years: ( ) From 5 to 10 years old: ( ) 15 or more years: ( ) What equipment for personal safety (PPE) use daily? Protective gloves: ( ) Helmet safety: ( ) Protective goggles: ( ) Security Boot: ( ) Seat belt: ( ) Suitable clothing : ( ) None: ( ) Others. Which are?	Have you ever had an accident in workplace? Yes: ( ) Not: ( ) If so, how many: Only one: ( ) Two: ( ) Three: ( ) More than three: ( ) What type of accident: Fall in height: ( ) Cut / wound: ( ) Injury caused by PPE's: ( ) Other :_____ What are the reasons for the lack of using PPE's? The company does not available? ( ) Arrive late and don't give priorities to the equipments? ( ) Healthcare professionals security no inspect the conditions of impediment of I work daily? ( )	How do you rate your work environment in regarding care with collaborators? Good: ( ) Very good: ( ) Sufficient: ( ) Not enough: ( ) What are the possible improvements that you deem necessary so that you have a good execution of activities? _____

Figure 3 Questionnaire Applied
Fonte: Own Author

5. Results and Discussions

Based on data collection obtained through the application of a questionnaire to 15 workers, directly linked to the production on the construction site. It was highlighted that most of the employees are male, because it is the risk conditions of work at height.

Comparing the distribution of the age group, it is noted that the majority of the sample (80%) comprised employees aged 20 to 30 years, a young workforce. The other part of the sample (20%) belonged to the 40 to 50 year old group. Regarding marital status, (60%) entitled married and (40%) single.

All who contributed to the resolution of the questionnaire claim to have received adequate training on risk identification and the use of PPE for each activity developed. According to [6], the individual protection of the worker is mandatory and the employer's responsibility to avoid occupational accidents.

It can be seen in figure 1 that 55% of workers completed high school, while another portion of respondents, about 40% had completed or incomplete elementary school. And the 5% minority are non-literate people. And when it comes to occupational safety awareness, employees who have a higher level of education have differentiated knowledge and are aware of preventive issues. While those who are not literate neglect the visible risks resulting from the conditions for such knowledge.

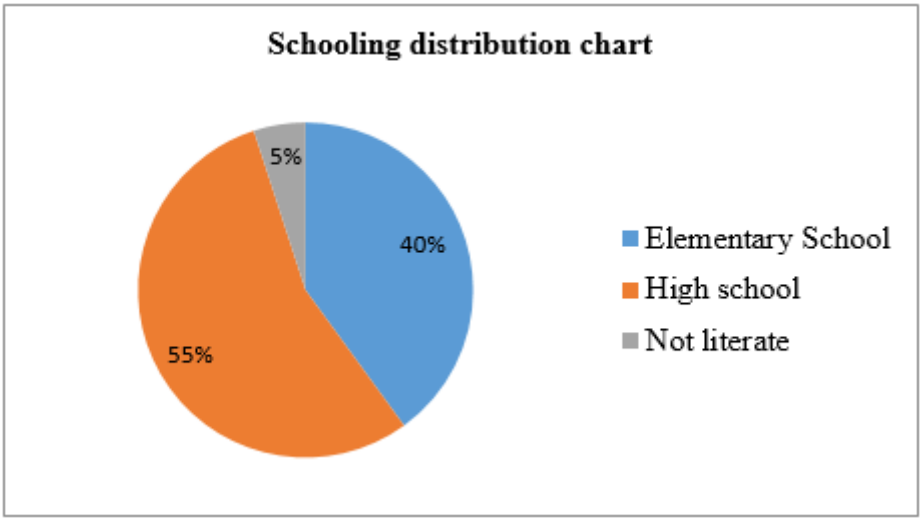

Figure 4: Graph of distribution of educational level.
Source: Own Author

The composition of the professionals and their respective roles at the construction site in Carauari-AM is shown in Figure 5.

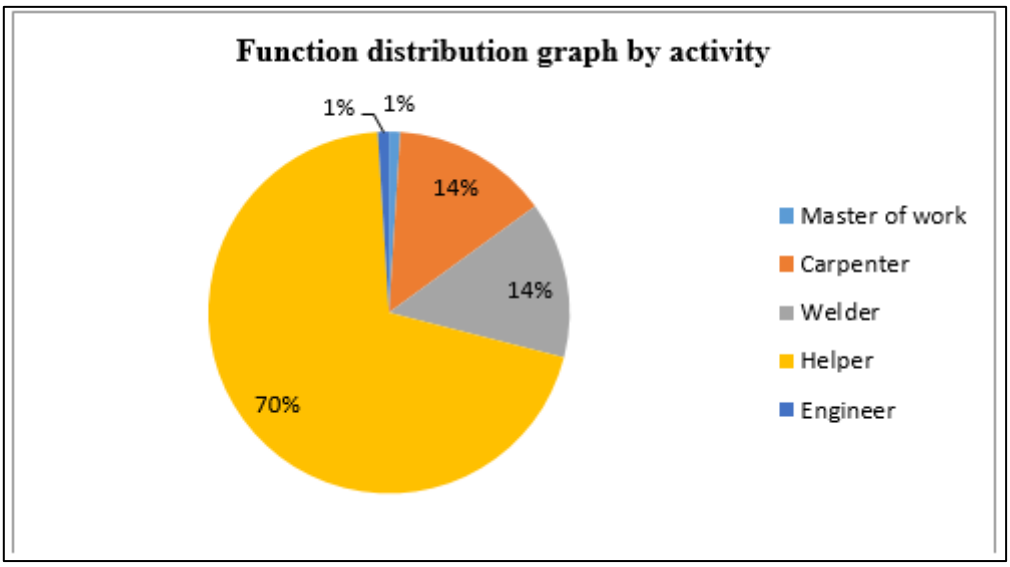

Figure 5: Graph of distribution of functions by activity
Source: Own Author

Despite all the ways sought to be safe on the construction site, every activity developed in the environment is subject to risk. From the point of view of [15] an incident at the construction site has consequences for everyone, both for the injured with human injury, who will be left with physical or psychological guidelines, and for the company, as it reduces work output and increases expenses. with overtime pay due to the lagoon that the injured employee left in addition to causing the rest of the employees a certain fear.

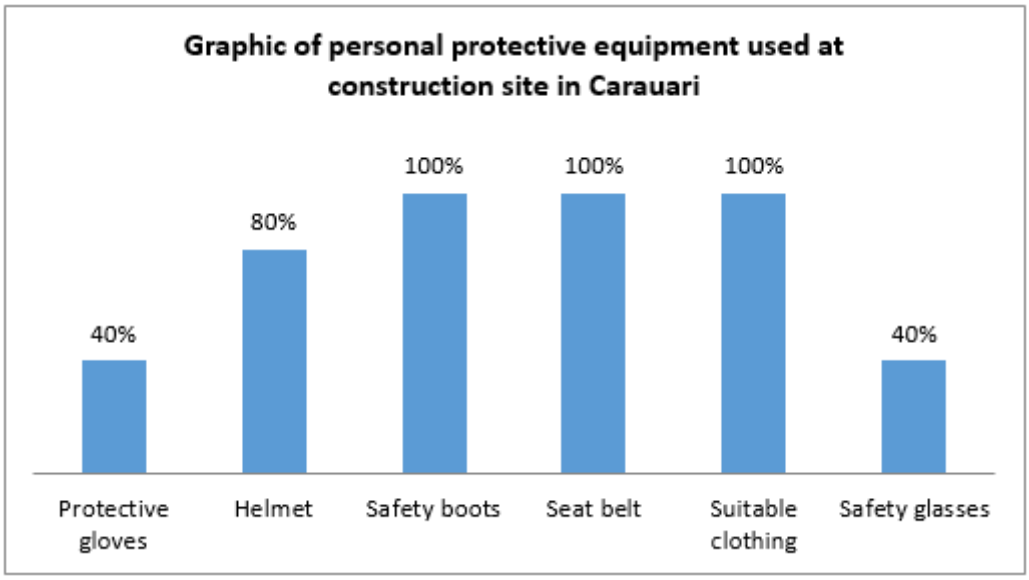

Figure 6: Graphic of personal protective equipment used at Carauari construction site
Source: Own Author

The data reported in figure 6 show that 100% of employees wear PPE such as: safety boots, seat belt and appropriate clothing. Those wearing gloves and goggles are 40% and safety helmet 80%. The lowest rate

reported for the use of personal protective equipment was protective gloves, as employees do not have the practice of using this equipment and think that it may not pose risks to the lack of use. Being that the company does its role of making available and raising awareness to all involved.

Occupational Safety has shown a large increase in occupational accident reduction rates, as the pursuit of operator safety results in the company's progress thus generating credibility in the labor market. In the view of [16], the demand for globalization preventive aspects help everyone involved directly and indirectly in the work.

6. Conclusion

Considering the presented aspects, we can observe according to the data collected through the applied questionnaire, the importance of the use of the PPE and the attention in the accomplishment of the activities, so that these factors can help to minimize the index of the errors and accidents that are made. frequent during the execution of the work through reminders, training and educational classes on the correct use of equipment, thus arousing the interest of employees related to their well-being so that everyone feels safe to perform their proper duties.

For [2] the use of training is given as one of the most important activities in terms of accident prevention, because according to the same if there is someone trained regarding the existing risks, there will hardly be accidents or even this server can help and assist other employees to anticipate accidents.

[5] mentions that even with the use and supply of individual and collective equipment and the low rate of occupational accidents, it is necessary to raise awareness of the company in providing a safe and peaceful environment for workers, as it is not only by performing the correct use of PPE or by complying with the requirements of all standards regarding such matters that the end of so many accidents at the construction site will occur.

Finally, companies are responsible for providing adequate equipment and environments, occupational safety technicians and a team that makes the necessary monitoring and inspection for a good joblessness, avoiding and correcting the occurrence of technical irregularities quickly. and practice.

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