

Study of Application of Safety and Health Work in the Implementation of Construction Project Work

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ABSTRACT: Occupational safety and health (OHS) need to be considered in the implementation of construction of bridges that involve labor. Work accidents often occur in construction projects due to lack of attention to OSH and the environment around the project, so an analysis is needed regarding the application of the OSH program to Personal Protective Equipment (APD) and the application of the OSH program to the work environment and strategies to increase the application of OSH to the construction project of the approaching bridge of Kalimantan island and Pulau Laut.

The method used in this research is descriptive statistical method using SPSS program. From the descriptive test results obtained the average value of all variables. From the results of the OHS program analysis on the APD aspect, it is found that the important measurement classification is the use of safety helmets, and safety vests. While the measurement classification is quite important, namely the use of safety masks, safety goggles, earplugs and life jackets. From the results of the analysis of the OHS program on aspects of the work environment, it is found that the measurement classification is provided. On the field survey the OHS program in the work environment is good but not yet fully implemented.

The strategy to increase the application of OHS by establishing a solid safety committee and the safety committee in implementing the OHS rules routinely conducts guidance in the form of safety talk every morning equipment inspection and completeness of workers. As well as giving sanctions both light and heavy for workers who have violated the rules set.

KEYWORDS: OHS, Descriptive Statistics, OHS improvement strategies

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I. INTRODUCTION

OHS is a field related to health, safety and human welfare working in an institution or project location. The purpose of OHS is to maintain the health and safety of the work environment. K3 also protects co-workers, work families, consumers, and others who may also be affected by work environment conditions.

In the Constitution of 1999 No.18 contained in Article 22 and Article 23, states that the safety and health of work and labor protection is the responsibility of the Service User and Service Provider should be a requirement between the two parties in the implementation of the services of construction. In the constitution of 1970 No.01 on work safety said that OSH expert who had existed in supervising the application of OSH on the work area. Whereas in the constitution 2003 No.13 explained that occupational health and safety are part of human rights that must be provided by the service user to his work.

Construction work is an important element in development which involves a variety of resources and methods, both from a technical or non-technical perspective. In carrying out this construction work requires experts, APD, OSH and pay attention to the work environment in implementing construction work.

Based on the description above, the authors would like to examine the application of OSH to the APD and the work environment as well as strategies to improve the application of OSH in the Development Project for the Approach Bridge of Kalimantan Island and Pulau Laut.

II. RESEARCH METHODS

The population in this study was the Manager, Safety Officer and all construction workers on the project of bridge construction on the Kalimantan Island - Pulau Laut. All populations are sampled using the Non Probability Sampling technique, which is by means of Quota Sampling. The numbers of samples in this study were 80 people.

The variables in the research of the Kalimantan Island - Pulau Laut Approach Bridge Construction Project were divided into 2 groups these variables can be seen in Table 1 and Table 2.

Table 1. APD Variable

VARIABLES		INDICATOR	
a.	Use of <i>Safety</i> Helmets	1.	Sondir's work
b.	Use of <i>Safety</i> Masks	2.	Pile Cap Work
c.	Use of <i>Safety</i> Shoes	3.	Pier's work
d.	Use of <i>Safety</i> Glasses	4.	Cerucuk Designing Work
e.	Use of <i>Safety</i> Vests	5.	Concrete Drill Pole Work
f.	Use of Cover Ear		
g.	Use of Seat Safety		
h.	Use of Life Vest		

every indicator variable is the same

Table 2. Work Environment Variables

VARIABLES		INDICATOR	
Work environment		1.	Door entrance and a door out project
		2.	Worker gathering room
		3.	Medical Room (First Aid)
		4.	Points garbage organic or non- organic
		5.	Equipment Fire Fire Lightweight (APAR)
		6.	Project cleaning tools
		7.	amenities MCK
		8.	K3 signs
		9.	Points of equipment work and material building
		10.	Lighting and supervision that enough in space work
		11.	Lighting when working at night today

Scale of Measurement

All variables were measured using a scale *Likert* the form of a statement of positive from the score 1 to 5, namely:

Table 3. Scale *Likert* research

Score	APD	Work environment
5	very important	very much provided
4	important	provided
3	quite important	enough is provided
2	less important	less provided
1	not important	not provided

Data Testing

In this study the validity and reliability of 30 respondents were tested, the validity test used the *product moment* correlation test with the criterion table value of r with degrees of freedom $dk = N-2$ is a significance level of 5% value of $r = 0.361$ while the reliability test used the *Alpha Cronbach* technique with the results of all measurements of this reliability test are above $\alpha > 0.361$.

III. RESULTS AND DISCUSSION

A. Analysis of the use of PPE

APD aspect consists of eight measurement indicators, the eight indicators of APD aspect measurement are separated based on work, namely sondir work, pile cap, pier, piling and concrete pile.

From the results of data analysis of the use of APD with the mean value for the use of safety helmets can be seen in Table 4

Table 4. Description of the average response of respondents to the use of safety helmets

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	4.81		
2	Pile Cap	4.76	4.78	Very important
3	Pier	4.74		

4	Stacking Cerucuk	4.79
5	Concrete Drill Pole	4.81

Table 5. Description of the average response of respondents to the use of safety masks

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	2.25	2.25	Quite important
2	Pile Cap	2.14		
3	Pier	2.53		
4	Stacking Cerucuk	1.76		
5	Concrete Drill Pole	2.56		

Table 6. Description of the average response of respondents to the use of safety shoes

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	4.78	4.74	Very important
2	Pile Cap	4.73		
3	Pier	4.70		
4	Stacking Cerucuk	4.73		
5	Concrete Drill Pole	4.76		

Table 7. Description of the average response of respondents to the use of safety glasses

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	2.14	2.35	Quite important
2	Pile Cap	2.08		
3	Pier	2.15		
4	Stacking Cerucuk	2.06		
5	Concrete Drill Pole	3.34		

Table 8. Description of the average response of respondents to the use of safety vests

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	4.59	4.54	Very important
2	Pile Cap	4.60		
3	Pier	4.51		
4	Stacking Cerucuk	4.36		
5	Concrete Drill Pole	4.64		

Table 9. Description of the average response of respondents to the use of earmuffs

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	1.88	2.09	Quite important
2	Pile Cap	1.89		
3	Pier	1.93		
4	Stacking Cerucuk	1.94		
5	Concrete Drill Pole	2.86		

Table 10. Description of the average response of respondents to the use of seat belts

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	1.75	1.93	Not too important
2	Pile Cap	1.78		
3	Pier	2.55		
4	Stacking Cerucuk	1.56		
5	Concrete Drill Pole	1.99		

Table 11. Description of the average response of respondents to the use of life jackets

No	Work	Average per job	Overall Average	Measurement Classification
1	Sondir	4.35	2.87	Quite important
2	Pile Cap	2.45		
3	Pier	3.00		
4	Stacking Cerucuk	1.58		
5	Concrete Drill Pole	2.99		

B. Work Environment Analysis

The work environment aspect consists of eleven measurement indicators.

Table 12. Description of the average response of respondents to the work environment

No	Work environment	Average	Overall Average	Measurement Classification
1	Project entrance and exit	4.28		
2	Worker gathering room	4.53		
3	Medical Room (First Aid)	3.74		
4	Organic and non-organic trash cans	3.31		
5	Fire Extinguisher (APAR)	3.28		
6	Project cleaning tools	3.66	3.92	Provided
7	MCK facilities	4.25		
8	K3 signs	4.28		
9	Work equipment and building material	3.68		
10	Enough lighting and manners in the workspace	3.96		
11	Lighting while working at night	4.21		

IV. DISCUSSION

A. Application of the OHS program in APD

From the eight APD, there are three APD based on data analysis with a very important measurement classification: safety helmets, safety shoes and safety vests. The implementation of APD is used comprehensively in all jobs, both construction workers and those in the project area. In addition, there are four APD based on data analysis with the average classification is quite important, namely: safety masks, safety goggles, earplugs and life jackets. The application of APD is used only in certain jobs, such as: APD concrete drill pole work used is a safety mask and safety goggles. In the earmuff project not implemented, this is different from the results of the respondents' answers. Whereas the PPE of a life jacket based on data analysis with an average classification is less important, in projects it is sometimes used only on certain jobs, namely pier work.

Table 13. Recapitulation of the results of data analysis on APD

No	APD	Overall Average	Measurement Classification	Observation
1	Safety Helmet	4.78	Very important	Applied
2	Safety Mask	2.25	Important enough	Applied to certain jobs, namely to the installation of concrete drill poles.
3	Safety Shoes	4.74	Very important	Applied
4	Safety Glasses	2.35	Important enough	Applied when welding in concrete pole installation work.
5	Safety Vest	4.54	Very important	Applied
6	cover Ear	2, 09	Important enough	Not applied
7	belt Safety	1.93	Not Important	Applied to certain jobs, namely pier jobs.
8	Life Jacket	2.87	Important enough	Applied only to work.

B. Implementation of the K3 program in the work environment

Based on the eleven work environment variables, data analysis with the average classification provided. In the field review the K3 program in the work environment was good but not yet fully implemented, such as: access to the entrance and exit was made in one lane, the medical room (P3K) did not have a special room in the form of a medicine container, cleaning equipment, only a broom and mop floor.

C. Strategy for improving OSH implementation

To provide safety and comfort for workers while working, the contractor is required to provide appropriate work equipment according to standards and implement work in accordance with SOP.

In the work of installing concrete piles the workers do not use ear plugs, identifying the dangers in this work which results in buzzing ears when pounding the pole using a mashing machine. In addition to the work of welding the connection of concrete pile casing connection workers only use glasses, the use of glasses is not appropriate at the time of welding work because it only covers the eyes and does not cover the whole face, should use a shield / face shield to avoid sparks to the face. From this, before starting work the management needs to give direction to the workers and determine the proper APD to be used when carrying out the work.

The work environment is very influential on the smooth and comfortable working. K3 signs need to be improved and clarified instructions such as: prohibition signs (prohibited from operating except officers), warning signs (danger of toxic substances) and appeal signs (evacuation direction signs) so that employees, workers and guests feel safe and comfortable in the project area. In addition to K3 signs, environmental signs are also very important in construction projects. As with the project waste disposal area, a waste label must be provided so that unauthorized persons are prohibited from entering the work area.

V. CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the eight APD, there are three APD based on data analysis with a very important measurement classification: *safety* helmets, *safety* shoes and *safety* vests. The implementation of APD is used comprehensively in all jobs, both construction workers and those in the project area. In addition, there are four APD based on data analysis with the average classification is quite important, namely: *safety* masks, *safety* goggles, earplugs and life jackets. The application of APD is used only in certain jobs, such as: APD concrete drill pole work used is a *safety* mask and *safety* goggles. In the project, earplugs are not applied this is different from the results of the respondents' answers.

Of the eleven work environment variables, based on data analysis with the average classification provided. In the field review the K3 program in the work environment was good but not yet fully implemented, such as: access to the entrance and exit was made in one lane, the medical room (P3K) did not have a special room in the form of a medicine container, cleaning equipment, only a broom and mop floor.

The management needs to give direction to the workers and determine the appropriate APD to be used when carrying out the work. In addition to K3 signs, environmental signs are also very important in construction projects. As with the project waste disposal area, a waste label must be provided so that unauthorized persons are prohibited from entering the area.

Suggestion

In carrying out the work, the contractor should pay attention to aspects of APD and the work environment that can affect work productivity at the time of the construction of the bridge so it is necessary to take the right steps to get maximum results, both from the management system and the application of OSH knowledge.

Research needs to be done by using other aspects (variables) on the application of the K3 program in a construction project.

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