



Analysis of the Implementation of the Construction Safety Management System (SMKK) on the Cisempur-Budiwangi Road Reconstruction Activity, Cibalong District Tasikmalaya Regency

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Abstract. The construction service industry is an industrial sector with a high risk of work accidents. For this reason, implementing the Construction Safety Management System (SMKK) is expected to reduce the number of work accidents. Many Road Reconstruction construction projects are carried out without implementing the Construction Safety Management System (SMKK) following the rules referring to PUPR Minister Regulation Number 10 of 2021 concerning Construction Safety Management System Guidelines. This study aims to determine the implementation of the Construction Safety Management System (SMKK) on Cisempur – Budiwangi Road Reconstruction Activities, Cibalong District, Tasikmalaya Regency. The research was conducted in several places in the Budiwangi Road Reconstruction project, Cibalong District, Tasikmalaya Regency. This research is qualitative descriptive, with data obtained by observation, conducting interviews, and filling out checklists. The results of the study: 1). The level of implementation of the Construction Safety Management System (SMKK) with a percentage value of appropriate application of 67.44% and findings of nonconformity of 32.56% (Minor Category). 2). The factor causing the non-fulfillment of applications is the absence of processing documents and special formats for changes in the field that impact K3. 3) Response and improvement actions that can be taken are to create special procedures and formats related to changes that have implications for K3.

Keywords: Evaluation, Construction Safety Management System, Road Reconstruction

INTRODUCTION

Construction projects are work sectors that have a level of risk and work accidents, and this is due to low awareness of the importance of implementing a good Occupational Safety and Health Management System (SMK3) following applicable laws and regulations. Applying K3 to a construction project is often considered only as a cost burden rather than as an investment to prevent work accidents. However, it can provide a loss level from the construction project itself. Given the high urgency of K3 in the construction sector in Indonesia, the government has regulated the implementation of K3

in the Law and the obligations in its implementation in all sectors of the construction industry.

This is done so that the application of K3 becomes an absolute thing to protect and minimize the risk of work accidents, which aims to increase performance productivity and can guarantee the quality and safety of a job so that zero accidents can be achieved. The government has issued Government Regulation Number 14 of 2021 concerning amendments to PP Number 22 of 2020 concerning Implementing Regulations of Law Number 2 of 2017 concerning Construction Services and Regulation of the Minister of Public Works and Housing Rakyat Number 10 of 2021 concerning Guidelines for construction safety management systems (SMKK).

This is what becomes important in its application in construction companies. This Construction Safety Management System (SMKK) adopted ISO 45001 of 2018 with several adjustments, especially in the Indonesian construction services sector after the issuance of Law No. 2 of 2017 concerning Construction Services. Law No. 2 of 2017 concerning Construction Services mandates article 3. The purpose of providing construction services is to provide a direction for the growth and development of Construction Services to realize a strong, reliable, highly competitive business structure and quality Construction Services results (BPSDM PUPR, 2021).

Based on Government Regulation Number 14 of 2021, Every Service User and Service Provider in implementing Construction Services must apply SMKK. Furthermore, PUPR Minister Regulation No. 10 of 2021 states that construction safety is all engineering activities to support construction work in realizing the fulfillment of security, safety, health, and sustainability standards that ensure the safety of construction engineering, labor safety and health, public safety, and the environment. PUPR Regulation Number 10 of 2021, Stages in Implementing Construction Safety include assessment and planning, design, procurement, implementation, and supervision.

The implementation of the Occupational Safety and Health Management System (SMK3) can be a reference that regulates various activities in it and manages K3 systematically and comprehensively in a complete management system so that it is expected to minimize the risk of work accidents that will occur, ranging from the impact of work accidents at the highest level to the lowest level. Implementing K3 under procedures will foster trust and confidence in the assurance of safety and security from construction service users. Every year, from January 12 to February 12, it is

commemorated as the National Occupational Safety and Health (K3) month.

However, sadly, the number of work accident cases in Indonesia yearly is increasing. At least that is shown from the data on BPJS Employment work accidents that occurred in the last three years. Based on data from BPJS Ketenagakerjaan, in 2020, the number of work accidents reached 221,740 cases; that number increased in 2021 to 234,370 cases and continued to increase in 2022, where until November 2022 there had been 265,334 work accidents. The high number of work accidents in Indonesia, according to the Central Bureau of Statistics and BPJamsostek (BPJS-Ketenagakerjaan), is generally caused by natural disasters as much as 3%, inadequate and unqualified environment and equipment as much as 24% and 73% caused by unsafe behavior such as ignoring the use of Dir Protective Equipment (PPE), marker signs, K3 control procedures.

The Cisempur-Budiwangi Road Work Package of Cisempur Village, Cibalong District, is a construction project with a relatively high risk of work accidents. This is because many workers use sophisticated tools or machines that require unique methods, expertise, and supervision. It can cause various unwanted impacts, including occupational safety and health aspects. Neglect of the application of K3 in construction projects can cause the risk of work accidents.

Construction activities must be managed by considering the standards of regulations or legislation and applicable K3 provisions. This research analyzes whether the Road Reconstruction Project, Cisempur-Budiwangi Road Work package, Cisempur Village, Cibalong District, has implemented a Construction Safety Management System (SMKK) following applicable laws and regulations.

METHOD

This research method is a framework of mindset approach to compile and implement a process of research activities that aims to direct the process/pattern of thinking to answer the problems studied further. The research includes survey research, interviews, and literature/literature studies because, in this research activity, much information is obtained in the field, and literature/literature is obtained as a strength in data collection. *Data collection techniques* are methods used in research activities that aim to collect data in the form of research tools through surveys conducted in the study/research area. The techniques for collecting such data can be described as follows:

1. Literature Studies Literature studies are carried out by searching literature through national and international journals, previous research, the internet and books related to research and problems being studied;
2. The Data Collection Instrument used is an interview in the form of a Check List in the form of questions referring to the provisions of the Audit criteria elements based on PP No. 50 of 2012 concerning the Application of SMK3 and PP No. 14 of 2021 and PUPR Minister Regulation No. 10 of 2021 concerning SMKK, data taken from several respondents who are considered experts and have authority in the application of the Construction Safety Management System (SMKK) in the construction project to be studied. This study uses 2 (two) types of data, namely, primary data and secondary data, as follows:
 - a) Primary data, obtained through field surveys with techniques of conducting direct observation / observation, interviews and conducting internal audits based on assessment criteria for the application of the K3 system in the Cisempur-Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency.
 - b) Secondary Data, is a study of literature, books, papers, online media, and reports obtained from similar previous studies. Data to be reviewed on construction projects such as: the company's K3 structure and supporting documents for the implementation of SMK3 are reviewed to assess the implementation and improvement of the system that has been implemented.

DISCUSSION

The company's Construction Safety Management System (SMKK) is effectively run by leadership and commitment, with objectives that lead to corrective actions and continuous improvement. Continuous improvement can ensure that the system, the manuals, and other procedures and components that make up the system are improved and developed continuously to improve its efficiency and effectiveness. Here is the cycle in the system that shows. The relationship of each component/system carried out by the company, along with its primary duties and responsibilities, can be seen in the following figure:

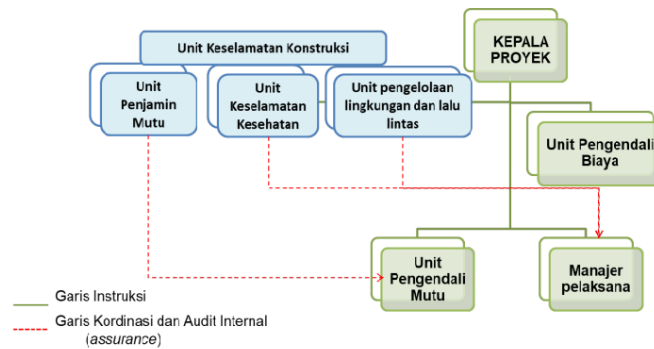


Figure 1. Service Provider Organizational Structure

The company's K3 policy, in this case, is to conduct an initial review and determination of K3 commitments and policies on the Cisempur – Budiwangi Road Reconstruction project, Cibalong District, Tasikmalaya Regency to be one of the periodic controls and evaluations in implementing SMK. Creating a safe and comfortable work culture for workers K3 is an important part that must be done to reduce the occurrence of work accidents. Commitment to implementing reasonable K3 procedures will make the vision and mission of the company in order to prevent work accidents and provide welfare for workers who can work safely and comfortably.

Here are 5 safety principles for construction workers in the implementation of the Cisempur–Budiwangi Road Reconstruction project, Cibalong District, Tasikmalaya Regency, including:

1. Every worker involved in the project is required to wear an ID Card, helmet, and shoes when entering the work area. All new workers / visitors are given the K3 Officer designation;
2. Discuss with all staff, workers to ensure that the work carried out is in accordance with procedures Everyone who is at the project site, both workers, staff, and visionors must wear PPE;
3. Make sure the equipment and work equipment used are appropriate and in accordance with the type of work and meet the criteria;
4. Everyone who has finished working with the moving equipment must personally assure that the power of the equipment has been turned off, install safety signs;
5. Care for the safety of yourself and fellow colleagues during work.

Internal Audit of Construction Safety Management System Implementation

Companies engaged in construction that have implemented a Construction Safety Management System (SMKK) are made according to needs based on conditions, company background, and priority clauses of their respective activities. The implementation of the Construction Safety Management System (SMKK) based on the standards of laws and regulations to be applied by the company and used as a reference in implementing, improving, and as a pattern of measurement/assessment of the system that is running and implemented, namely by conducting an internal audit system concerning PP No. 50 of 2012 concerning SMKK.

The existence of this guideline is expected to increase the application of SMKK in the Cisempur – Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency. The guidelines in conducting a Construction Safety Management System (SMKK) Audit consist of 5 Audit Criteria Elements which are used as a reference for assessing the implementation of the SMKK implemented, including:

1. Worker Leadership and Participation in Construction Safety
2. Construction Safety Planning
3. Construction Safety Support
4. Construction Safety Operations
5. Safety Performance Evaluation

Based on the provisions in PUPR Regulation Number 10 of 2021 article 34 paragraph (4), it is explained that, the application of SMKK in Construction projects is determined based on potential hazards, as referred to including:

1. Construction Work with its own estimated price value above Rp10,000,000,000.00 (ten billion rupiah) up to Rp100,000,000,000.00 (one hundred billion rupiah);
2. employing a construction workforce of 25 (twenty-five) people up to 100 (one hundred) people; and/or
3. Construction Work using intermediate technology

Referring to these provisions, it shows that the Cisempur - Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency is included in work that has medium risk, employing more than 100 workers every day, the level of SMKK audit

assessment is included in the Category (Advanced Level) which consists of 86 Sub Elements of Criteria that must be met in implementing SMKK in the Cisempur - Budiwangi Road Reconstruction Project, Cibalong District Tasikmalaya Regency, to fulfill the implementation of SMKK and work accident prevention.

Table 1. Implementation Compliance Assessment

Nilai	Keterangan
0	Tidak Tersedia dan Tidak Dilaksanakan (Major)
50	Tidak Tersedia, Dilaksanakan atau Tersedia, Tidak Dilaksanakan (Minor)
100	Tersedia dan Dilaksanakan

Calculation of the achievement value of application using the general formula as follows:

1. Compatibility Level

Deployment Milestone

$$= (\Sigma \text{Criteria} / \text{TotalCriteria}) \times 100\%$$

2. Level of Incompatibility (Minor and Major)

Level of Nonconformity

$$= (\Sigma \text{Criteria} / \text{Total Criteria}) \times 100\%$$

The results and analysis are obtained after conducting an Audit based on questions/assessments in the form of a checklist that refers to the provisions of fulfillment requirements with an assessment using a predetermined calculation formula; henceforth, the percentage value of the level of achievement of application in the Construction Safety Management System (SMKK) on the Cisempur - Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency. The following is a description of the assessment and percentage of fulfillment of requirements consisting of each of the 12 Audit Criteria Elements, namely with a total of 86 Sub Elements of Criteria, which can be seen in the Table and Graph:

Table 2. Assessment of the Application of SMKK Audit Criteria Elements

No	KRITERIA	Sub Kriteria	Terpenuhi/sesuai		Tidak Terpenuhi Tidak Sesuai		
			Jumlah	Presentase	Jumlah		Presentase
1	Kepemimpinan dan Partisipasi Pekerja dalam Keselamatan Konstruksi	12	9	10,47	3	-	3,49
2	Perencanaan Keselamatan Konstruksi	15	11	12,79	4	-	4,65
3	Dukungan Keselamatan Konstruksi	13	7	8,14	6	-	6,98
4	Operasi Keselamatan Konstruksi	39	29	33,72	10	-	11,63
5	Evaluasi Kinerja Keselamatan	7	2	2,33	5	-	5,81
		86	58	67,44	28		32,56

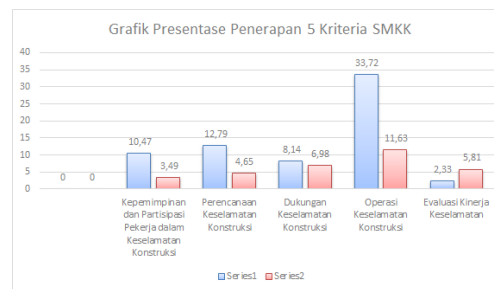


Figure 2. Percentage Graph of Application of 12 Elements of SMKK Audit Criteria

No	KRITERIA	Terpenuhi	Tidak Terpenuhi	
			Minor	Major
1	Kepemimpinan dan Partisipasi Pekerja dalam Keselamatan Konstruksi	A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.2.1, A.2.2, A.2.3, A.2.4	A.2.5, A.2.6, A.2.7	
2	Perencanaan Keselamatan Konstruksi	B.1.1, B.1.5, B.2.1, B.2.2, B.2.3, B.2.4, B.2.5, B.2.6, B.2.7, B.3.1, B.3.2	B.1.2, B.1.3, B.1.4, B.3.3	
3	Dukungan Keselamatan Konstruksi	C.1.2, C.1.3, C.2.1, C.2.2, C.2.3, C.2.4, C.2.5, C.3.1, C.3.2, C.5.1	C.1.1, C.4.1, C.4.2	
4	Operasi Keselamatan Konstruksi	D.1.1, D.1.2, D.1.3, D.1.4, D.2.1, D.2.4, D.2.6, D.2.7, D.2.8, D.2.9, D.2.10, D.2.11, D.2.12, D.2.13, D.2.14, D.2.18, D.2.19, D.2.20, D.2.21, D.2.22, D.2.26, D.2.27, D.2.29, D.2.30, D.2.31, D.2.32, D.2.33, D.2.34	D.2.2, D.2.3, D.2.5, D.2.15, D.2.16, D.2.17, D.2.23, D.2.24, D.2.25, D.2.28	
5	Evaluasi Kinerja Keselamatan	E.1.3, E.1.4	E.1.1, E.1.2, E.2.1, E.2.2, E.3.1	

The findings in Table 2 show that the number of application criteria consisting of 86 Sub Elements of Audit Criteria is 58 criteria with appropriate/fulfilled application and 28 criteria with inappropriate/unfulfilled application (Minor Category). There is some documentation of the Application of SMMK in the Cisempur–Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency, as follows:



Figure 1. PPE Wearing during Safety Talk



Figure 2. PPE Usage on the Work



Figure 3. Meeting Room and K3 equipment

Based on the results of the analysis and audit assessment carried out, it is known that the number of the fulfillment of the application of the 5 Criteria Elements consisting of 86 Sub Elements of Audit Criteria, there are 58 Criteria fulfilled / appropriate and 28 Criteria not met / not suitable (Minor Category), these results are then used to determine the percentage value of fulfillment of the level of achievement based on the provisions contained in PP Number 50 of 2012 concerning the Application of Safety Management Systems and Occupational Health (SMK3) using the following calculation formula:

1. Level Conformity

Deployment Milestone

$$= (\Sigma \text{Criteria} / \text{Total Criteria}) \times 100\%$$

$$= 58/86 \times 100 \% = 67.44 \%$$

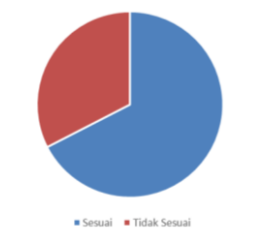
2. Level of Incompatibility (Minor and Major)

Level of Nonconformity

$$= (\Sigma \text{Criteria} / \text{Total Criteria}) \times 100\%$$

$$= 28/86 \times 100\% = 32.56\%$$

Tingkat Pencapaian Penerapan



Hasil dari perhitungan penilaian penerapan diatas dapat diuraikan sebagai berikut:

- Kriteria Audit : 86 Kriteria
- Total Terpenuhi : 56 Kriteria
- Total Tidak Terpenuhi/ Sesuai : 28 Kriteria
 - Ketidaksesuaian Minor : 28 Kriteria
 - Ketidaksesuaian Major : - Kriteria
- Tingkat Pencapaian Penerapan : 67,44%
- Tingkat Ketidaksesuaian : 32,56%
- Tingkat Penerapan : Memuaskan

CONCLUSION

Based on the results of the analysis and audit system carried out, the following conclusions can be drawn:

The level of implementation of the Construction Safety Management System (SMKK) in the Cisempur – Budiwangi Road Reconstruction Project, Cibalong District, Tasikmalaya Regency, is the achievement of application (Satisfactory) with a corresponding percentage value of application of 67.44% and findings of nonconformity of 32.56% (Minor Category).

The factor causing the non-fulfillment of application is the absence of processing documents and special formats for changes in the field whose impact on K3, including the lack of documentation and training for the workforce, where there is inconsistency in fulfilling requirements and other references and Service Providers do not conduct construction safety management reviews for continuous improvement.

Response and improvement actions that can be taken are to create special procedures and formats related to changes in changes that have implications for K3, document the implementation of procedures with new information systems, and conduct refresher training for workers to prevent work accidents and fulfill the implementation of SMKK following applicable laws and regulations.

BIBLIOGRAPHY

- Hakim, A. R. (2017). Implementasi Manajemen Risiko Sistem Kesehatan, Keselamatan Kerja dan Lingkungan (K3L) pada Pembangunan Flyover Pegangsaan 2 Kelapa Gading Jakarta Utara. *Media Komunikasi Teknik Sipil*, Vol 23, 113-123
- Putra Wudi, et al. (2023). Analisis Implementasi Sistem Manajemen Keselamatan Konstruksi (SMKK) (Studi Kasus Pembangunan Gedung Kantor Pengadilan Negeri Sungguminasa Kelas 1a). *Journal on Education*, Universitas Muslim Indonesia, Jl.Urip sumoharjo Km.5 Makassar
- Peraturan Pemerintah No. 14 Tahun 2021 Tentang Perubahan atas PP No.22 Tahun 2020 Tentang Peraturan Pelaksanaan UU No.2 Tahun 2017 Tentang Jasa Konstruksi
- Peraturan Menteri PUPR No.10 Tahun 2021 Tentang Sistem Manajemen Keselamatan Konstruksi