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Construction Supervision Management in Maintaining Quality Project of RSUD Sumedang

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ABSTRACT

In rehabilitation or construction projects, construction supervision management becomes a crucial element to maintain project quality and ensure that each stage of development is in accordance with predetermined standards. Rehabilitation of health facilities aims to increase the service capacity and quality of hospital infrastructure, which in turn will have a positive impact on the community. However, in the implementation of construction projects, there are often obstacles such as time delays, budget discrepancies, and quality problems that can hinder the achievement of optimal results. This study aims to examine the role of construction supervision in maintaining the quality of the Sumedang Regional Hospital rehabilitation project with a qualitative descriptive approach. The methods used include field observation and analysis of documents and work with analysis variables including drawing realization, time conformity, budget and worker performance. This is by comparing the planning and documents that have been determined with the results of construction in the field. The implementation of the rehabilitation of Sumedang General Hospital was carried out from July 2024 to November 2024. The results showed that good supervision can contribute significantly to ensuring the achievement of project quality, although there were some challenges related to coordination with hospital operations that continued during the construction process. The recommendations obtained from this research are also important in strengthening the quality of the project.

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1. INTRODUCTION

Construction is a vital sector in infrastructure development, significantly contributing to economic growth and improving the quality of life for society (Awainah et al., 2024). In rehabilitation projects, such as the one at RSUD Sumedang, the role of construction supervision is crucial to ensure that each phase of development adheres to the quality standards and schedule that have been planned. The rehabilitation of healthcare facilities is expected to enhance service capacity and infrastructure quality, thereby positively impacting public health. Challenges in construction projects are often caused by factors such as delays, quality errors, and budget discrepancies, which can affect the final outcome of the project (Kurniawan et al., 2018). Therefore, construction supervision is an essential element in project management to ensure the success of implementation (Darmali et al., 2022).

The subject of this study is the rehabilitation program of the Regional General Hospital (RSUD) Sumedang. This rehabilitation aims to improve service capacity and inpatient facilities to meet the 12 criteria of the Standard Inpatient Class (KRIS) application. These criteria include components such as a solid building structure without porosity, ventilation, lighting, completeness of beds and nightstands, room temperature and humidity, room separation based on gender, age, and type of illness (infectious and non-infectious), and four beds per room. Other criteria include materials, the curtain distance between beds, toilets within rooms, and accessible oxygen outlets (Direktur Jenderal Pelayanan Kesehatan, 2022). Prior to the rehabilitation, each room at RSUD Sumedang accommodated up to 16 patient beds, which did not comply with KRIS standards.

Previous studies have examined construction supervision as a critical element in project management. Research by Rahman (2024) indicates that the implementation of an efficient supervision system can increase project efficiency by 30%, especially for projects with high levels of complexity. Additional research by Rahman and Susilowati (2020) points out that insufficient supervision is often a major factor contributing to project failures in Indonesia, including issues such as structural damage or delays in project completion. However, studies specifically assessing the effectiveness of construction supervision in the context of healthcare facility rehabilitation projects in Indonesia are still limited, including how supervision ensures quality compliance with rehabilitation standards.

The primary issue addressed in this study is to what extent construction supervision contributes to achieving the quality of the rehabilitation project at RSUD Sumedang, as planned. The hypothesis put forward in this research is that the effectiveness of construction supervision has a direct and significant relationship with the quality of the final project outcome.

The purpose of this article is to analyze the role and effectiveness of construction supervision in maintaining the quality of the RSUD Sumedang rehabilitation project and to provide practical recommendations for stakeholders to improve the quality of future healthcare facility rehabilitation projects.

This article evaluates how construction supervision plays a role in maintaining quality in the RSUD Sumedang rehabilitation project. This study will also demonstrate how the implementation of supervision strategies can address the challenges of healthcare facility rehabilitation projects, which require strict compliance with technical standards while considering the operational needs of the hospital during the construction process.

1.1 Role of Supervision in Construction Projects

The role of supervision in construction projects in Indonesia has become a major focus in recent years. According to the Ministry of Public Works and Public Housing (PUPR), effective

supervision ensures the achievement of orderly implementation and quality construction work results, both in physical and non-physical aspects (Ministry of PUPR, 2023).

Additionally, a study conducted by (Dwiretnani et al., 2023) highlights the importance of supervisory consultants in managing general administration regarding the implementation of construction work contracts, carrying out routine supervision, and issuing performance reports on construction project work.

Overall, effective supervision in construction projects in Indonesia involves close coordination between various parties, including supervisory consultants, contractors, and project owners, to ensure that projects are carried out according to plans, technical specifications, and established standards.(Yosefina et al., 2024).

1.2 Standards and Technical Guidelines

Standards and technical guidelines are essential references in the planning and implementation of construction, especially in the development of healthcare facilities such as hospitals. The Ministry of Public Works and Public Housing (PUPR) through the Indonesian National Standard (SNI) 03-2385-2003 on Hospital Construction Planning establishes comprehensive guidelines aimed at ensuring that every aspect of hospital construction meets safety, comfort, and functionality standards.

These standards are designed as a guide for planners, architects, and contractors in designing and constructing hospitals that not only meet healthcare service needs but are also adaptable to technological advancements and community demands. The implementation of these standards is expected to improve the efficiency and effectiveness of the construction process and produce high-quality facilities.

In the rehabilitation of KRIS, the standards used refer to the provisions established by the Directorate General of Health Services (2022). In the context of the rehabilitation of RSUD Sumedang, the application of these standards and technical guidelines is crucial to ensure that the rehabilitation process is in accordance with applicable regulations, covering both structural and non-structural quality aspects of the building, and supporting the overall optimization of hospital operations.

2. RESEARCH METHODOLOGY

This research uses a **qualitative descriptive** approach to analyze the effectiveness of construction supervision in the rehabilitation project of RSUD Sumedang. The methods used include field **observation and document analysis** to compare construction results with technical specifications and project quality standards. The research focus is directed at two main aspects:

- a) The conformity of construction results with design planning, including form, dimensions, and materials.
- b) The technical supervision process, including inspection, documentation, and evaluation of field implementation.

The design stage includes planning drawings, budget, schedule, and division of worker tasks. The construction stage involves implementation based on the design, purchasing materials according to the budget, and carrying out the rehabilitation. The supervision stage ensures that the work aligns with the drawings, schedule, budget, and worker performance (Figure 1). This overall flow is designed to produce rehabilitation quality that meets the established standards.

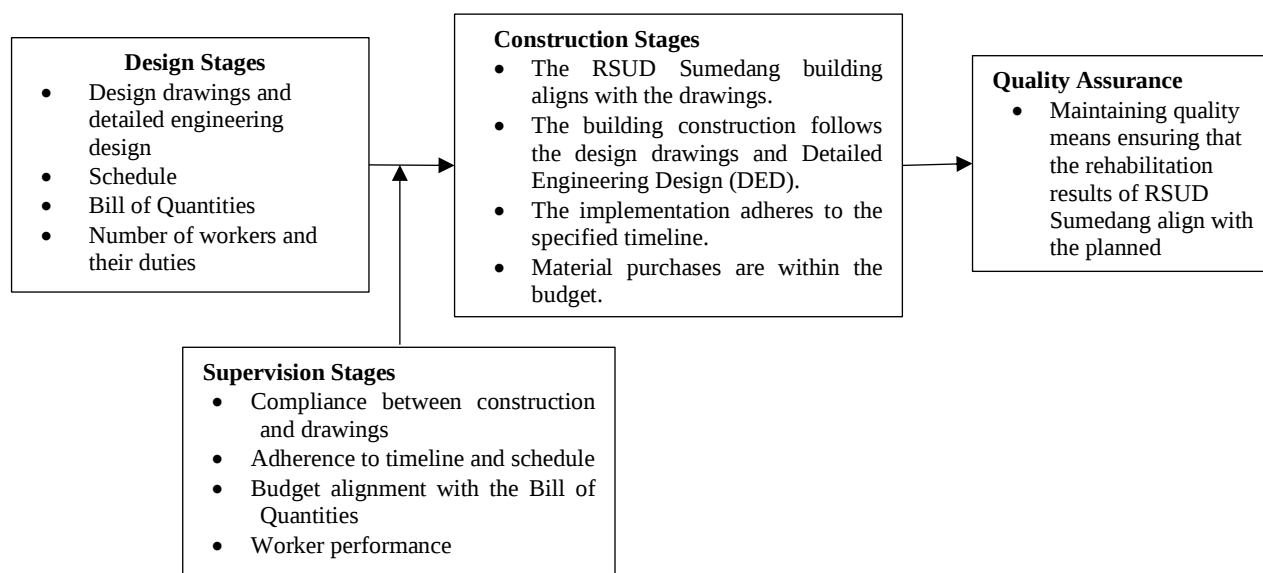


Figure 1. Rehabilitation Process Flow of RSUD Sumedang
Source: Author, 2024

The rehabilitation process of RSUD Sumedang consists of three stages: **a) Design Stage**, carried out by the planner, which includes the preparation of working drawings and technical planning. **b) Construction Stage**, conducted by the contractor, involving the implementation of construction according to the designed plans. **c) Supervision Stage**, where the supervisory consultant ensures that the construction is executed in accordance with the working drawings, budget, and predetermined schedule.

3. RESULTS AND DISCUSSION

This chapter covers the project description, an analysis of the alignment between the design and the actual fieldwork, and an evaluation of technical, functional, and aesthetic aspects. The discussion also identifies challenges encountered during implementation and provides recommendations for improving project quality in the future.

3.1 Project Description

RSUD Sumedang, located at Jl. Prabu Geusan Ulun No.41, Sumedang Selatan, West Java, serves as the primary referral hospital in the region. Before its inauguration, RSUD Sumedang lacked an air conditioning (AC) system. Additionally, the nurse call system was not yet implemented, and nurse calls were still conducted manually. The existing condition of RSUD can be seen in Figure 2.

This rehabilitation project aims to enhance the quality of healthcare services by upgrading medical facilities, accommodating the growing number of patients, and addressing service complexities. The improvements include infrastructure renovations, facility enhancements, and the integration of modern technology designed to support more efficient and optimal medical services.



Figure 2 Condition of the Existing RSUD Sumedang Before Rehabilitation
Source: Author, 2024

This project is scheduled to last for 120 calendar days (4 months), starting from July 29, 2024, to November 25, 2024. The rehabilitation work consists of three main work packages: a) **Package 1**, which includes the rehabilitation of the rooftop. b) **Package 2**, which covers the rehabilitation of the Standard Inpatient Class (KRIS). c) **Package 3**, which includes the rehabilitation of the nurse station, polyclinic, and inpatient facilities.

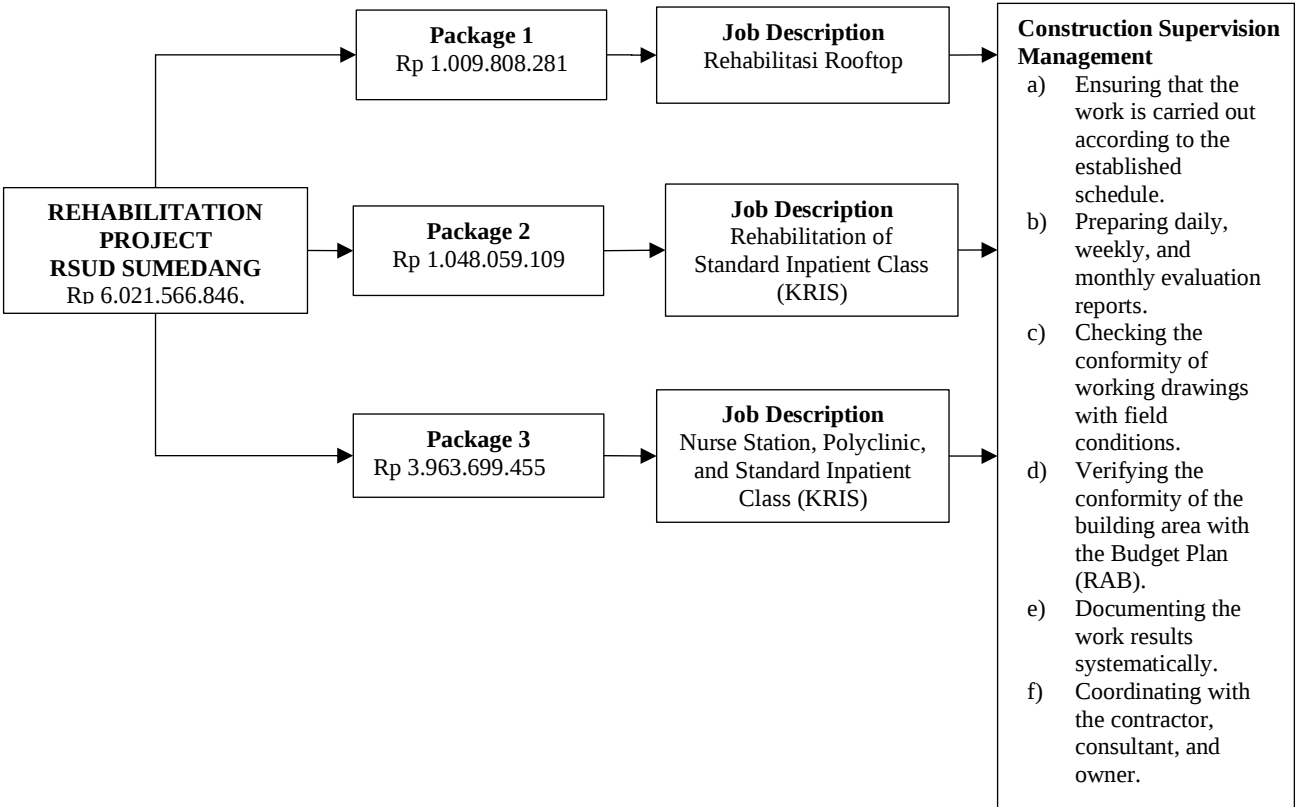


Figure 3 Work Package and Supervision of the Rehabilitation of Sumedang Regional General Hospital
Source: Author, 2024

Construction supervision management includes: a) Ensuring that construction is carried out according to the established schedule. b) Preparing periodic evaluation reports. c) Checking the alignment between working drawings and on-site conditions. d) Verifying that the building's dimensions comply with the initial planning. This supervision aims to maintain the quality of work in the RSUD rehabilitation project.

3.2 Indicators for Project Quality Assessment

Project quality assessment highlights the evaluation variables used to assess the implementation of construction projects. These include key aspects that influence the project's success, such as realization, time, budget, and workforce performance. Each of these variables is evaluated based on specific criteria to ensure that the work carried out aligns with the established plan.

- a) **Realization**: Measures the alignment between the planning drawings and the actual work on-site, reflecting the accuracy of design implementation.
- b) **Time**: Evaluates the alignment between the work outcomes and the schedule set in the planning phase.
- c) **Budget**: Compares the cost expenditure with the Budget Plan (RAB), assessing the efficiency and transparency of fund allocation.
- d) **Workforce**: Assesses the workforce's performance based on productivity, punctuality, and work quality.

These four variables serve as key indicators to assess the overall success of the project's implementation

3.3 Analysis of the Conformity between Design Planning and Field Work Results

Analyzing the alignment between the planning design and the construction results ensures that the implementation follows the technical specifications and working drawings. This evaluation also identifies deviations that impact the quality and efficiency of the project, serving as the basis for improvements and quality control.

The following are several rooms that are assessed to have sufficiently met the alignment with the planning drawings. This assessment is based on the level of achievement of technical, functional, and aesthetic aspects, in accordance with the initial specifications.

Table 1: Construction Results that Match the Design Plan

Room	Design Drawing	Field Realization	Evaluation Results
Nurse Station Polyclinic			Construction generally meets technical and functional aspects. Although there is a slight difference in the green color, it is not significant.

Room	Design Drawing	Field Realization	Evaluation Results
KRIS Polyclinic			The concept of architectural design and construction realization applied aligns with the set planning.
Nurse Station Aster			The architectural design concept and construction realization applied are in accordance with the established planning.
Waiting Room Aster			The architectural design concept and construction realization applied are in accordance with the established planning.
Corridor cempaka			The architectural design concept and construction realization applied are in accordance with the established planning.
Nurse station dahlia			The architectural design concept and construction realization applied are in accordance with the established planning.

Source: Author, 2024

In general, the construction results have met the technical and functional planning aspects. Rooms such as the Nurse Station Polyclinic, KRIS Polyclinic, Nurse Station Aster,

Ruang Tunggu Aster, Corridor Cempaka, and Nurse Station Dahlia align with the established architectural design.

Table 2 below lists several rooms that are assessed to have not fully met the alignment with the planning drawings. This evaluation identifies discrepancies in technical, functional, or aesthetic aspects that deviate from the initial specifications.

Table 2: Construction Results that Do Not Match the Design Plan

Room	Design Drawing	Field Realization	Evaluation Results
Corridor Polyclinic			No wood accents on the walls, the lower part of the wall should be white with horizontal line accents but was changed to green. The room signage does not display the room name.
Waiting Room Polyclinic			There is a difference in the choice of green color, no chairs for visitors, and no plant pots near the windows.
KRIS Aster			Desain plafon <i>drop ceiling</i> tidak terealisasi, tidak terdapat lampu dinding, serta <i>signage</i> nomor tempat tidur tidak dipasang.
Corridor Aster			The drop ceiling design was not realized, no wall lights, and the bed number signage was not installed.

Room	Design Drawing	Field Realization	Evaluation Results
KRIS Cempaka			The backdrop wall's planned HPL layer with LED strips was replaced with beige paint, and the curtain used was not as planned.

Source: Author, 2024

The differences in the construction results in the table above are due to additional work, such as the installation of a nurse call system, the addition of air conditioning (AC) work, the installation of WPC decking on the rooftop, and the installation of a canopy. These additions caused the budget allocation to be redirected to fund these additional tasks. As a result, there was a reduction in specifications or changes to the initial design concept to adjust to the available budget (value engineering). These changes were requested by RSUD Sumedang as the project owner. The additions were discussed and agreed upon through the variation order process and subsequently accommodated in the contract addendum.

3.4 Project Execution Time and Budget

This evaluation aims to measure the alignment of project implementation with the established plan and identify potential issues that may affect the quality and smoothness of the project. The project schedule runs from Monday to Saturday, from 07:00 AM to 04:00 PM, with a break from 12:00 PM to 01:00 PM. Sundays are designated as rest days. To ensure the project is completed on schedule, workers such as carpenters and laborers perform overtime. Overtime pay is Rp20,000 per hour for carpenters and Rp15,000 per hour for laborers, which is higher than the regular pay of Rp15,625 per hour for carpenters and Rp14,375 per hour for laborers.

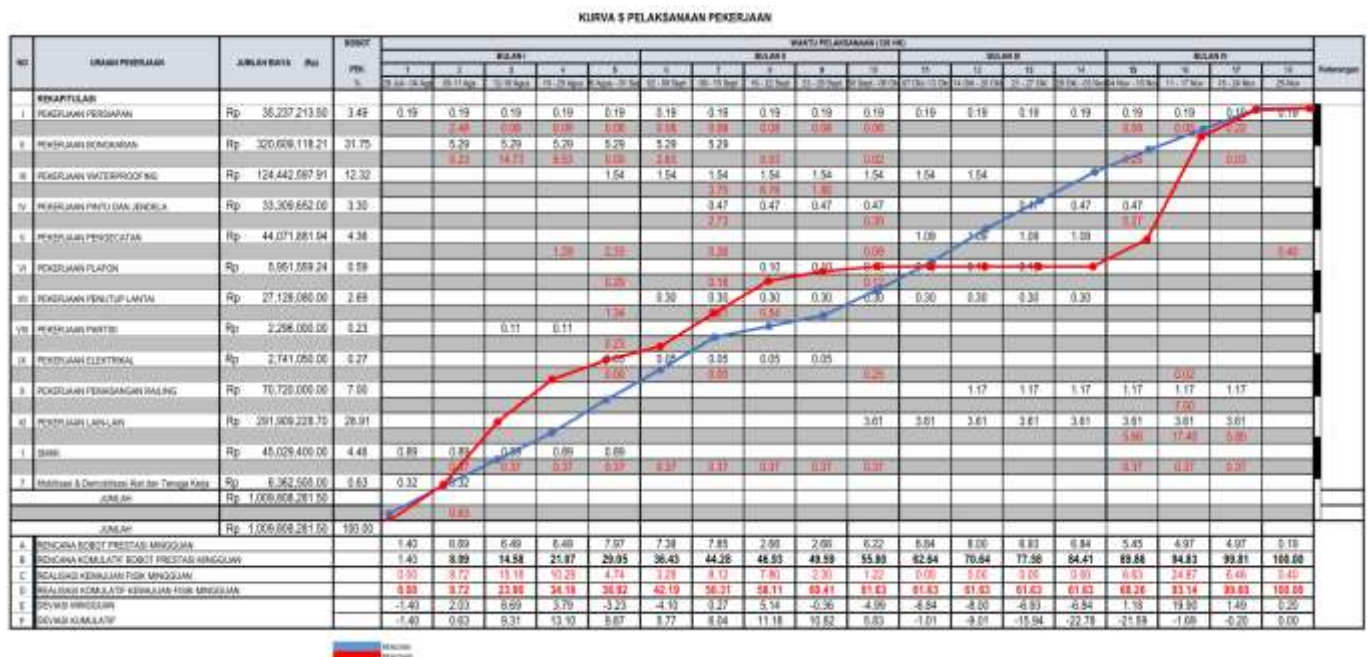
Overtime outside the regular schedule is intended to ensure smooth project implementation and is often done to adjust the work schedule to project needs, particularly when there are obstacles or when the work target needs to be expedited.

The efficiency of working hours and overtime implementation reflects the entire team's commitment to completing the project on time. This supports the project's success, as evidenced by the completion of the construction results within the 120 calendar days (4 months) from July 29, 2024, to November 25, 2024.

The total budget for the RSUD Sumedang Rehabilitation Project is Rp6,021,566,846, divided into three work packages. Package 1, the Rehabilitation of the Rooftop, is allocated Rp1,009,808,281; Package 2, the Rehabilitation of Inpatient Rooms (KRIS), is allocated Rp1,048,059,109; and Package 3, the Addition of Rooms, is allocated Rp3,963,699,455.

Budget management for the RSUD Sumedang rehabilitation project is designed by allocating funds proportionally for each work package. Each work package is allocated 30% of the budget for labor costs, including wages for workers, supervisors, head carpenters, carpenters, and laborers, as well as incentives to support their productivity. Another 30% is allocated for administration to support project operations, including tax payments, contract management, and quality control. The largest proportion of the budget, 40%, is allocated for the purchase of construction materials. This distribution aims to ensure efficient budget management without compromising the quality of the construction results.

The S-curve chart shows the progress of the work, costs, and time that have been completed in accordance with the established plan.



align the project schedule with operational needs. Work zoning was applied to ensure that the rehabilitation was carried out in phases without disturbing medical services. The use of eco-friendly materials and low-noise construction methods was also implemented to maintain patient and staff comfort during the process.

4. CONCLUSION

The rehabilitation project of RSUD Sumedang was successfully completed in accordance with the design plan, despite minor deviations in color and material accents that were not realized. These deviations were due to budget adjustments for additional work agreed upon through variation orders and contract addenda. The project was also completed on time, within the 120-day calendar period, with the effective use of overtime hours to overcome unforeseen obstacles.

Budget management was carried out with proportional allocation, using the S-curve to monitor budget realization and ensure cost efficiency. Worker performance assessments showed satisfactory results, with maintained productivity and adherence to the schedule. Despite challenges such as adjustments to hospital activities and material limitations, the project overcame these issues through good coordination and rescheduling of work that did not interfere with hospital operations.

The construction supervision management of the RSUD Sumedang rehabilitation project successfully maintained quality by ensuring alignment with construction outcomes, time management, budget, and worker performance in accordance with the contract, despite facing several challenges during execution.

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