

**ANALISIS PENGGUNAAN ALAT BERAT PADA
PEKERJAAN PROYEK JALAN
(STUDI KASUS: RUAS JALAN PASAR BARU – ALAHAN
PANJANG)**

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ABSTRAK

Penggunaan alat berat merupakan salah satu komponen penting dalam pelaksanaan proyek konstruksi jalan karena sangat berpengaruh terhadap biaya dan waktu. Pemilihan jenis, jumlah, dan pengoperasian alat berat yang tidak tepat dapat menyebabkan peningkatan biaya operasional dan ketidakefisienan pelaksanaan pekerjaan. Penelitian ini bertujuan untuk menganalisis biaya penggunaan alat berat pada pekerjaan proyek jalan, meliputi produktivitas alat, jumlah alat, durasi pekerjaan, biaya operasional, serta tingkat efisiensi penggunaan alat berat pada Proyek Preservasi Ruas Jalan Pasar Baru–Alahan Panjang. Penelitian menggunakan metode kuantitatif dengan data primer berupa hasil pengamatan lapangan, waktu siklus, jumlah alat, kondisi medan dan cuaca, serta data sekunder berupa dokumen proyek, volume pekerjaan, dan spesifikasi alat. Analisa dilakukan pada pekerjaan galian, timbunan, perkerasan berbutir, dan pekerjaan aspal. Hasil penelitian menunjukkan produktivitas excavator sebesar 174,096 m³/jam, *dump truck* 24,12 m³/jam, *motor grader* 454,78 m³/jam, *vibrator roller* 117,93 m³/jam, dan *water tank* 6,23 m³/jam. Hasil pada perhitungan biaya operasional menunjukkan total biaya berdasarkan analisis sebesar Rp 539.579.670,84, kondisi lapangan sebesar Rp2.582.645.559,2, dan perencanaan sebesar Rp2.326.931.276,60 Dilihat dari selisih biaya di atas , penggunaan alat berdasarkan hasil analisis lebih efisien dibandingkan kondisi lapangan dan perencanaan. Faktor yang memengaruhi produktivitas dan biaya antara lain kondisi cuaca, akses, medan, dan waktu siklus, serta pengelolaan operasional alat.

Kata kunci: Alat Berat, Biaya Operasional, Efisiensi, Produktivitas, Proyek Jalan.

**ANALYSIS OF HEAVY EQUIPMENT UTILIZATION IN ROAD
CONSTRUCTION PROJECTS
(Case Study: Pasar Baru–Alahan Panjang Road Preservation
Project)**

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ABSTRACT

The use of heavy equipment is an important component in road construction projects because it significantly affects project costs and duration. Improper selection, quantity, and operation of heavy equipment may result in increased operational costs and inefficiencies in project implementation. This study aims to analyze the use of heavy equipment in the Preservation Project of the Pasar Baru–Alahan Panjang Road Section, including equipment productivity, required number of equipment units, work duration, operational costs, and the efficiency of heavy equipment utilization. This study employed a quantitative method using primary data obtained from field observations, cycle time, number of equipment units, terrain and weather conditions, as well as secondary data consisting of project documents, work volumes, and equipment specifications. The analysis was conducted on excavation, embankment, granular pavement, and asphalt works. The results showed that the productivity of the excavator was 174.096 m³/hour, dump truck 24.12 m³/hour, motor grader 454.78 m³/hour, vibratory roller 117.93 m³/hour, and water tank 6.23 m³/hour. The operational cost analysis resulted in a total cost of IDR 539.579.670,84, based on the analytical calculation, while the cost based on actual field conditions was IDR Rp2.582.645.559,2, and planning total cost Rp2.326.931.276,60, the use of heavy equipment based on the analytical results was more efficient than the actual field conditions. Factors affecting productivity and equipment costs included weather conditions, site access and terrain, cycle time, and equipment operational management.

Keywords: Heavy Equipment, Operational Costs, Efficiency, Productivity, Road Project