UNIVERSITAS
GADJAH MADA
**Alternatif Pengendalian Mutu Beton Ready Mix Proyek Eka Hospital Puri (Jakarta Barat) Menggunakan
Matriks Indeks Ganda Prediksi Kuat Tekan Dan Percent Within Limit**
Salsabila Maharani, Dr. Eng. Iman Haryanto, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Pembangunan gedung bertingkat memerlukan pengendalian mutu beton yang tepat dan efektif. Pada proyek Eka Hospital Puri, Jakarta Barat, terdapat kebutuhan sistem evaluasi mutu beton ready mix yang mampu memberikan informasi lebih dini sebelum hasil uji kuat tekan umur 28 hari tersedia. Penelitian ini bertujuan menyusun model regresi linear sederhana untuk memprediksi kuat tekan beton umur 28 hari dan mengevaluasi mutu beton menggunakan metode *Percent Within Limits* (PWL). Penelitian ini mengkaji penerapan matriks indeks ganda sebagai alternatif sistem pengendalian mutu beton ready mix pada proyek konstruksi bangunan gedung.Data yang digunakan meliputi data sekunder kuat tekan beton mutu 35 MPa umur 7, 14, dan 28 hari dari periode Desember 2025 - Februari 2026, serta data primer periode Maret - April 2026 dari empat supplier beton. Dua model regresi dibangun, yaitu prediksi kuat tekan 28 hari berbasis kuat tekan 7 hari dan 14 hari. Kinerja model dievaluasi menggunakan P-Value, F hitung, R^2, RMSE, dan MAE, kemudian divalidasi dengan uji T berpasangan. Nilai kuat tekan hasil prediksi dan aktual dievaluasi berdasarkan SNI 2847:2019. Evaluasi mutu statistik dilakukan dengan menghitung nilai PWL per lot per supplier. Hasil penelitian menunjukkan bahwa seluruh model prediksi yang dibangun untuk keempat supplier valid secara statistik. Evaluasi mutu beton aktual dan hasil prediksi seluruhnya memenuhi kedua kriteria penerimaan SNI 2847:2019. Nilai PWL seluruh lot pengecoran dari keempat supplier mencapai lebih dari 97%, yang menandakan konsistensi mutu sangat baik. Penerapan matriks indeks ganda menempatkan seluruh lot dalam kategori *QC Excellent*, membuktikan bahwa kombinasi prediksi regresi dan PWL efektif sebagai sistem pengendalian mutu beton ready mix pada proyek gedung bertingkat.

Kata kunci : beton *ready mix*, kuat tekan beton, regresi linear sederhana, prediksi kuat tekan, *Percent Within Limits*, matriks indeks ganda, pengendalian mutu beton.

UNIVERSITAS
GADJAH MADA
**Alternatif Pengendalian Mutu Beton Ready Mix Proyek Eka Hospital Puri (Jakarta Barat) Menggunakan
Matriks Indeks Ganda Prediksi Kuat Tekan Dan Percent Within Limit**
Salsabila Maharani, Dr. Eng. Iman Haryanto, S.T., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRACT

High-rise building construction requires accurate and effective concrete quality control. At the Eka Hospital Puri project in West Jakarta, there was a need for a ready-mix concrete quality evaluation system capable of providing early information before 28-day compressive strength test results become available. This study aims to develop simple linear regression models to predict 28-day concrete compressive strength and evaluate concrete quality using the Percent Within Limits (PWL) method. This study also examines the application of a dual-index matrix as an alternative quality control system for ready-mix concrete in building construction projects. The data used include secondary compressive strength data for 35 MPa concrete at ages 7, 14, and 28 days from the period of December 2025 to February 2026, as well as primary data from March to April 2026 obtained from four concrete suppliers. Two regression models were developed, namely the prediction of 28-day compressive strength based on 7-day and 14-day compressive strength. Model performance was evaluated using P-Value, F-statistic, R^2, RMSE, and MAE, then validated using a paired T-test. The predicted and actual compressive strength values were evaluated against the acceptance criteria of SNI 2847:2019. Statistical quality evaluation was conducted by calculating PWL values per lot per supplier. The results indicate that all predictive models developed for the four suppliers were statistically valid. Quality evaluations of both actual and predicted concrete strength fully satisfied the two acceptance criteria of SNI 2847:2019. PWL values for all casting lots from all four suppliers exceeded 97%, indicating consistently excellent concrete quality. Application of the dual-index matrix placed all lots in the *QC Excellent* category, demonstrating that the combination of regression prediction and PWL is effective as a ready-mix concrete quality control system in high-rise building construction projects.

Keywords : ready-mix concrete, compressive strength, simple linear regression, compressive strength prediction, Percent Within Limits, dual-index matrix, concrete quality control.