

ANALISIS KORELASI KUAT TEKAN BETON METODE DESTRUKTIF DAN *HAMMER TEST* PADA PERKERASAN JALAN RIGID BETON *FAST TRACK* AKSES BENDUNGAN CIJUREY PAKET II

Nama : Aulia Nazwa Maharani (231024)

Pembimbing : Pranu Arisanto, S.T, M.T.

ABSTRAK

Pengendalian mutu kuat tekan beton pada Perkerasan Jalan Rigid **Beton *Fast Track*** Akses Bendungan Cijurey Paket II menjadi hal yang sangat penting karena **beton *fast track*** yang dipakai mencapai kuat tekan tinggi pada umur 3 hari agar dapat segera dibebani lalu lintas. ***Hammer Test*** sebagai metode non-destruktif berpotensi digunakan sebagai alternatif kontrol mutu cepat di lapangan, namun memiliki tingkat korelasi dan akurasi terhadap **uji kuat tekan destruktif** pada **beton *fast track*** umur 3 hari belum banyak dikaji. Penelitian ini bertujuan untuk menganalisis korelasi antara kuat tekan beton hasil uji destruktif dan ***Hammer Test*** serta menilai kelayakan dan akurasi ***hammer test*** sebagai alat estimasi kontrol mutu di lapangan. Data terdiri dari **uji kuat tekan destruktif** dan ***Hammer Test*** pada setiap STA pengecoran. Analisis dilakukan menggunakan regresi linear sederhana seperti R^2 , RMSE, Standar Deviasi, dan MBE. Hasil penelitian menunjukkan persamaan regresi $f'c \text{ Destruktif} = 11.231 + 0.6469 \times f'c \text{ *Hammer Test*}$ dengan nilai R^2 60.61%. Nilai RMSE 0.81 MPa, SD Error 0.73 MPa, dan MBE 0.402 MPa yang mengindikasikan ***Hammer Test*** cenderung overestimate terhadap nilai kuat tekan destruktif. Secara keseluruhan, ***Hammer Test*** layak digunakan sebagai metode pemeriksaan awal atau evaluasi cepat mutu beton di lapangan, namun belum dapat dijadikan sebagai satu-satunya dasar dalam menentukan penerimaan mutu beton tanpa melalui **uji kuat tekan destruktif**.

Kata Kunci : *Beton Fast Track, Hammer Test, Uji Kuat Tekan Destruktif*

**CORRELATION ANALYSIS OF CONCRETE COMPRESSIVE
STRENGTH OF DESTRUCTIVE METHOD AND HAMMER TEST ON
FAST TRACK RIGID CONCRETE PAVEMENT OF ACCESS CIJUREY
DAM PACKAGE II**

Name : Aulia Nazwa Maharani (231024)

Advisor : Pranu Arisanto, S.T., M.T.

ABSTRACT

Quality control of concrete compressive strength on the Rigid Pavement of **Fast Track Concrete** for Access Road to Cijurey Dam Package II is critically important, as the **fast track concrete** used is designed to achieve high compressive strength at 3 days of age so that the pavement can be immediately loaded by construction traffic. The **Hammer Test**, as a non-destructive testing method, has the potential to be used as an alternative for rapid quality control in the field; however, its level of correlation and accuracy against **destructive compressive strength testing on fast track concrete** at 3 days of age has not been widely studied. This study aims to analyze the correlation between concrete compressive strength results from destructive testing and **Hammer Test**, as well as to assess the feasibility and accuracy of the **Hammer Test** as an estimating tool for compressive strength quality control in the field. Data consist of **destructive compressive strength test** results and **Hammer Test** readings at each casting station (STA). Analysis was conducted using simple linear regression along with statistical accuracy measures including R^2 , RMSE, SD Error, and MBE. The results show a linear regression equation of $f'_c \text{ Destructive} = 11.231 + 0.647 \times f'_c \text{ Hammer Test}$ with a coefficient of determination $R^2 = 60.61\%$. The RMSE value is 0.81 MPa, Standard Deviation is 0.73 MPa, and MBE is 0.402 MPa, indicating that the **Hammer Test** tends to overestimate the destructive compressive strength value. Overall, the **Hammer Test** is feasible to be used as a preliminary screening method or rapid evaluation of concrete quality in the field; however, it cannot yet be used as the sole basis for determining concrete quality acceptance without conducting **destructive compressive strength testing**.

Keywords : Fast Track Concrete, Hammer Test, Destructive Compressive Strength Test