

“ANALISIS CAMPURAN BETON BERPORI TERHADAP POROSITAS, PERMEABILITAS, DAN KUAT TEKAN “

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ABSTRAK

Semakin pesatnya penggunaan beton *konvensional* dalam pembangunan infrastruktur tentunya memberi pengaruh terhadap tata guna lahan, terutama terhadap daerah terbuka sebagai daerah resapan air hujan kedalam tanah. Beton berpori merupakan inovasi yang dilakukan terhadap beton, agar air dapat menembus beton, dan meresap kedalam tanah menjadi air tanah. Perbandingan campuran semen dan agregat kasar serta faktor air semen yang benar menjadi penentu bagi kualitas beton berpori baik terhadap porositas, permeabilitas dan kuat tekan beton berpori. Maka dilakukan penelitian di laboratorium, untuk menganalisa rasio campuran beton berpori. Pada rasio campuran 1:4, 1:5, 1:6, 1:7, 1:8. Diharapkan pada penelitian ini dapat dihasilkan rasio campuran yang ideal dalam pembuatan beton berpori, agar beton berpori dapat dimanfaatkan dan memberikan dampak positif terhadap lingkungan. Berat jenis beton berpori ialah $1767,289 \text{ kg/m}^3$, masuk ke dalam kategori beton ringan. Porositas maksimum sebesar 30,67 %, pada rasio campuran 1:8. Porositas minimum sebesar 10,57 %, pada rasio campuran 1:4. Permeabilitas maksimum sebesar 1,38 cm/detik, pada rasio campuran 1:8. Permeabilitas minimum sebesar 1,08 cm/detik, pada rasio campuran 1:4. Kuat tekan maksimum sebesar 6,94 MPa. Pada rasio campuran 1:4. Kuat tekan minimum Sebesar 2,91 MPa, pada rasio campuran 1:8. Porositas dan permeabilitas semakin meningkat, seiring meningkatnya rasio campuran beton berpori. Sedangkan kuat semakin menurun, seiring meningkatnya rasio campuran beton berpori. Komposisi ideal beton berpori pada rasio campuran 1;5 dengan nilai porositas 14,91% dan kuat tekan 6,10 MPa.

Kata kunci: Beton Konvensional, Beton berpori, Beton Ringan, Rasio Campuran, Porositas, Permeabilitas, Kuat Tekan, Komposisi Ideal.

“ANALYSIS OF POROS CONCRETE MIXES ON PORESITY, PERMEABILITY AND COMPRESSIVE STRENGTH “

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ABSTRACT

The rapid use of conventional concrete in infrastructure development is superior to land use, especially in open areas as catchment areas for rainwater to the ground. Porous concrete is an innovation made on concrete, so that air can penetrate concrete, and soak into the ground into ground water. The comparison of cement and coarse aggregate is also a factor of cement water which is really a determinant of the quality of porous concrete both for porosity, permeability and compressive strength of porous concrete. Then a study was conducted in the laboratory, to analyze the ratio of porous concrete mixtures. At a mixture ratio of 1: 4, 1: 5, 1: 6, 1: 7, 1: 8. It is expected that this research can produce an ideal mixture ratio in the manufacture of porous concrete, so that porous concrete can be utilized and has a positive effect on the environment. The density of porous concrete is 1767,289 kg / m³, included in the category of lightweight concrete. Maximum porosity of 30.67%, at a mixture ratio of 1: 8. Minimum porosity of 10.57%, at a mixture ratio of 1: 4. Maximum permeability of 1.38 cm / sec, at a mixture ratio of 1: 8. Minimum permeability of 1.08 cm / sec, at a 1: 4 mixture ratio, maximum compressive strength of 6.94 MPa. At a mixture ratio of 1: 4. The minimum compressive strength of 2.91 MPa, at a mixture ratio of 1: 8. Porosity and permeability are increasing, as the ratio of porous concrete increases. While the strength increases, it passes the ratio of porous concrete. Ideal composition of porous concrete at a mixture ratio of 1; 5 with a poresity value of 14.91% and a compressive strength of 6.10 MPa.

Keywords: Conventional Concrete, Porous Concrete, Lightweight Concrete, Mixed Ratio, Porosity, Permeability, Compressive Strength, Ideal Composition.