ABSTRAK

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PENGARUH VARIASI KADAR ABU BATU TERHADAP KUAT TEKAN BETON BERPORI (PERVIOUS CONCRETE) DENGAN AGREGAT KASAR 20 MM
Pembimbing : Imam Mustofa, ST., MT.

Pengelolaan limpasan air permukaan menjadi salah satu aspek yang perlu diperhatikan dalam pembangunan infrastruktur, terutama pada area yang mengalami peningkatan permukaan kedap air. Salah satu alternatif material yang dapat mendukung pengelolaan air permukaan adalah *pervious concrete*, yang memiliki struktur berpori sehingga air dapat melewati lapisan beton. Namun, karakteristik berpori tersebut dapat memengaruhi kemampuan material dalam menerima beban, sehingga diperlukan pengaturan komposisi campuran untuk memperoleh karakteristik yang sesuai. Penelitian ini bertujuan untuk menganalisis pengaruh variasi kadar abu batu sebesar 10%, 20%, dan 30% terhadap kuat tekan, porositas, dan permeabilitas *pervious concrete* serta mengetahui kecenderungan perubahan karakteristiknya. Penelitian dilakukan menggunakan metode eksperimen laboratorium dengan benda uji berbentuk silinder berukuran 10 cm × 20 cm sebanyak 9 buah, terdiri atas 3 benda uji pada setiap variasi. Agregat kasar berukuran 20 mm dan faktor air-semen sebesar 0,35 digunakan secara tetap. Pengujian kuat tekan mengacu pada ASTM C39/C39M, porositas mengacu pada ASTM C1754/C1754M, sedangkan permeabilitas menggunakan metode *falling head*. Hasil penelitian menunjukkan kuat tekan rata-rata sebesar 7,332 MPa, 8,439 MPa, dan 14,764 MPa, sedangkan porositas sebesar 22,474%, 8,930%, dan 6,987% pada kadar abu batu 10%, 20%, dan 30%. Permeabilitas rata-rata masing-masing sebesar 0,900 mm/s, 1,249 mm/s, dan 0,834 mm/s. Hasil tersebut menunjukkan kecenderungan peningkatan kuat tekan dan penurunan porositas seiring peningkatan kadar abu batu, sedangkan permeabilitas menunjukkan perubahan yang tidak linier.

Kata Kunci : *Beton Berpori, Abu Batu, Kuat Tekan, Porositas, Permeabilitas*

ABSTRACT

Satria Ferry Putra Sandria, 2026

THE EFFECT OF STONE DUST CONTENT VARIATION ON THE COMPRESSIVE STRENGTH OF PERVIOUS CONCRETE WITH 20 MM COARSE AGGREGATE

Pembimbing : Imam Mustofa, ST., MT.

Surface water runoff management is an important aspect that needs to be considered in infrastructure development, particularly in areas with increasing impervious surfaces. One alternative material that can support surface water management is pervious concrete*, which has a porous structure that allows water to pass through the concrete layer. However, its porous characteristics may affect the material's ability to withstand loads, requiring appropriate mixture composition to obtain suitable characteristics. This study aims to analyze the effect of stone dust contents of 10%, 20%, and 30% on the compressive strength, porosity, and permeability of* pervious concrete*, as well as to determine the trend of changes in its characteristics. The study employed a laboratory experimental method using cylindrical specimens measuring 10 cm × 20 cm. A total of 9 specimens were prepared, consisting of 3 specimens for each variation. Coarse aggregate with a size of 20 mm and a water-cement ratio of 0.35 were kept constant. Compressive strength testing was conducted in accordance with ASTM C39/C39M, porosity testing was based on ASTM C1754/C1754M, while permeability testing used the* falling head *method. The results showed average compressive strengths of 7.332 MPa, 8.439 MPa, and 14.764 MPa, while average porosity values were 22.474%, 8.930%, and 6.987% for stone dust contents of 10%, 20%, and 30%, respectively. The average permeability values were 0.900 mm/s, 1.249 mm/s, and 0.834 mm/s, respectively. The results indicate a trend of increasing compressive strength and decreasing porosity with increasing stone dust content, while permeability showed a non-linear pattern.*

Keywords : *Pervious Concrete, Stone Dust, Compressive Strength, Porosity, Permeability*