

PENGARUH GRADASI TERHADAP PARAMETER KOMPAKSI MATERIAL *CRUSHED LIMESTONE*

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ABSTRAK

Limestone di kenal sebagai batu kapur atau batu gamping dapat digunakan sebagai material timbunan jalan raya, lapangan terbang, dinding penahan tanah, dan lain-lain. Pemadatan merupakan usaha untuk mempertinggi kerapatan tanah dengan pemakaian energi mekanis untuk menghasilkan pemampatan partikel. Untuk mendapatkan parameter kompaksi pada pekerjaan timbunan tersebut dilakukan uji kompaksi di laboratorium terlebih dahulu.

Tujuan penelitian adalah menganalisis pengaruh gradasi terhadap parameter kompaksi material *crushed limestone* gradasi *well graded* dan gradasi *poorly graded* yang telah diteliti oleh Fahlevi (2016). Material yang digunakan untuk sampel uji adalah *crushed limestone well graded* yang berasal dari daerah Sukabumi, Jawa Barat. Tata cara pengujian kompaksi di laboratorium mengacu pada ketentuan *standard proctor* dengan standar ASTM D-698.

Dari hasil penelitian diperoleh nilai koefisien gradasi (C_c) sebesar 1,44 berada pada koefisien $1 < C_c < 3$ dan nilai koefisien keseragaman (C_u) $8 > 6$, sehingga jenis gradasi material uji adalah gradasi *well graded*. Nilai kadar air optimum (w_{opt}) untuk uji I gradasi *well graded* yaitu 4,91%, dan untuk uji II nilai kadar air optimumnya (w_{opt}) 1,73%. Nilai berat kering maksimum ($\gamma_{dry\ max}$) untuk uji I gradasi *well graded* yaitu $1,802\text{t/m}^3$, dan berat kering maksimum ($\gamma_{dry\ max}$) untuk uji II yaitu $1,813\text{t/m}^3$. Persentase kenaikan w_{opt} dan $\gamma_{dry\ max}$ antara *well graded* terhadap *poorly graded* (2mm) uji I yaitu *well graded* 826,42% terhadap *poorly graded* 17,09% sedangkan uji II *well graded* 226,42% terhadap *poorly graded* 17,80%. Kenaikan w_{opt} dan $\gamma_{dry\ max}$ antara *well graded* terhadap *poorly graded* (3mm) uji I yaitu *well graded* 2484,21% terhadap *poorly graded* 16,21% sedangkan uji II *well graded* 810,53% terhadap *poorly graded* 16,91%. Kenaikan w_{opt} dan $\gamma_{dry\ max}$ antara *well graded* terhadap *poorly graded* (4mm) uji I yaitu *well graded* 667,19% terhadap *poorly graded* 14,91% sedangkan uji II *well graded* 170,31% terhadap *poorly graded* 15,61%.

Kata kunci: *limestone, crushed limestone, kompaksi, standard proctor test, C_u , C_c , kadar air optimum, berat kering maksimum.*

GRADATION EFFECT ON PARAMETERS COMPACTING MATERIAL CRUSHED LIMESTONE

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ABSTRACT

Limestone commonly known as limestone or limestone can be used as an embankment material highways, airfields, retaining wall, and others. Compaction is an effort to enhance the density of the soil with the use of mechanical energy to produce particle compression. To get the parameters of compaction on the heap of work performed in the laboratory compaction test beforehand.

The research objective is to analyze the influence of gradation on compaction parameters crushed limestone material gradation is well graded and poorly graded gradation which has been investigated by the brothers Fahlevi (2016). The material used for the test sample is well graded crushed limestone that comes from Sukabumi, West Java. The procedure for compaction testing at the laboratory refers to the provisions of standard proctor with ASTM D-698.

The results were obtained coefficient gradation (C_c) of 1.44 is the coefficient of $1 < C_c < 3$ and the value of coefficient uniformity (C_u) $8 > 6$, so that kind of gradation test material is well graded. Value optimum water content (w_{opt}) for the first test well graded gradation that is 4.91%, and for the second test of the optimum water content (w_{opt}) 1.73%. The value of the maximum dry weight ($\gamma_{dry\ max}$) for the first test well graded gradation is $1,802\text{t/m}^3$, and the maximum dry weight ($\gamma_{dry\ max}$) to test II is $1,813\text{t/m}^3$. Percentage increase w_{opt} and $\gamma_{dry\ max}$ between well graded to poorly graded (2mm) first test is well graded 826.42% to poorly graded 17.09%, while the second test well graded 226.42% to poorly graded 17.80%. The increase w_{opt} and $\gamma_{dry\ max}$ between well graded to poorly graded (3mm) first test is well graded 2484.21% to poorly graded 16.21% whereas the second test well graded 810.53% to poorly graded 16.91%. The increase w_{opt} and $\gamma_{dry\ max}$ between well graded to poorly graded (4mm) first test that is well graded 667.19% to poorly graded 14.91%, while the second test well graded 170.31% to poorly graded 15.61%.

Keywords: crushed limestone, compaction, C_u , C_c , optimum moisture content, maximum dry density.

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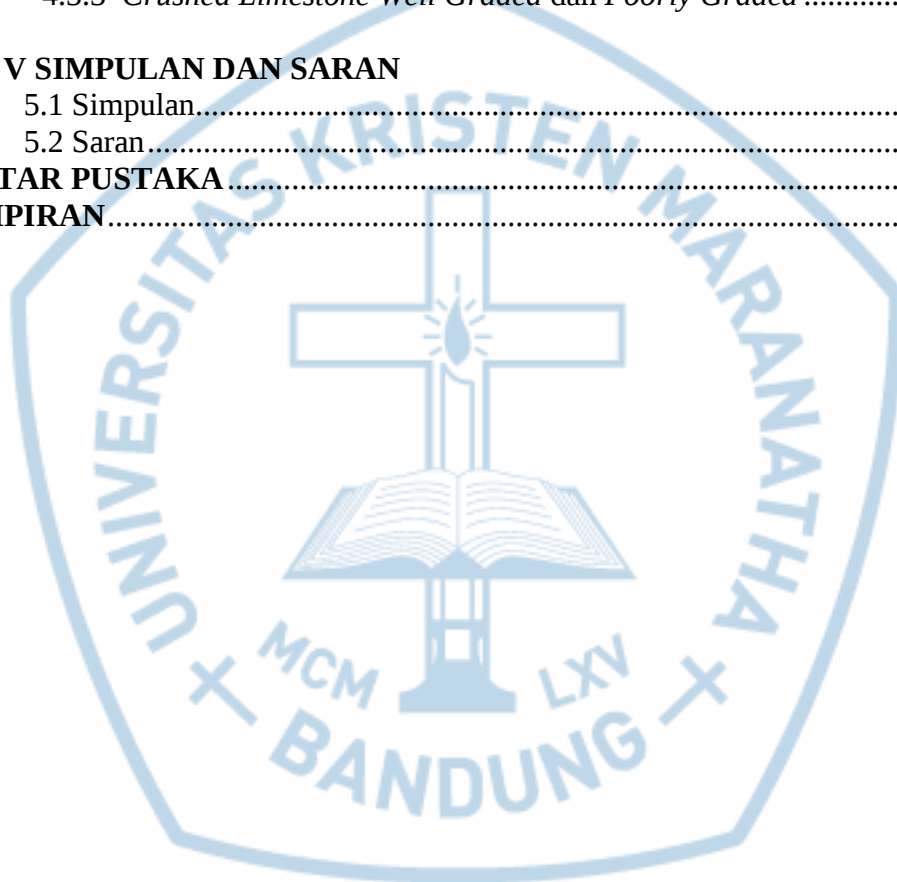
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DAFTAR NOTASI

C_c	Koefisien gradasi (<i>coefficient of gradation</i>)
C_u	Koefisien keseragaman (<i>coefficient of uniformity</i>)
D	Diameter ukuran butir tanah
E	Energi kompaksi (KN-m/m ³)
e	Angka pori
G_s	<i>Specific Gravity</i>
n_{layer}	Jumlah lapisan
n_{blow}	Jumlah tumbukan per lapis
V	Volume cetakan (cm ³)
W	Berat tanah yang dipadatkan (kg)
w	Kadar air (%)
w_{opt}	Kadar air optimum (%)
$\gamma_{dry\ max}$	Berat isi kering maksimum (ton/m ³)
γ_d	Berat volume kering (ton/m ³)
γ_{zav}	Berat volume pada kondisi <i>zero air void</i>
γ_w	Berat volume air

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