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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING

Judul Artikel : The Use of Gauss-Jordan Elimination Method in Determining the Proportion of Aggregate Gradation

Jumlah Penulis : 3 Orang (**Bagus Hario Setiadji***, Supriyono, Amelia Kusuma Indriastuti)

Status Pengusul : Penulis ke-1

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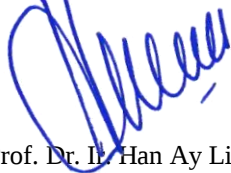
- a. Judul Prosiding : Lecture Notes in Civil Engineering Vol. 216 (2022) Proceedings of the Second International Conference of Construction, Infrastructure, and Materials (ICCIM 2021)
- b. ISBN/ISSN : 978-981-16-7948-3 (Print), 978-981-16-7949-0 (Online)
- c. Thn Terbit, Tempat Pelaks. : 2022, 26 July 2021, Jakarta, Indonesia
- d. Penerbit/Organiser : Springer / Civil Engineering Undergraduate Program of Universitas Tarumanagara
- e. Alamat Repository/Web : https://link.springer.com/chapter/10.1007/978-981-16-7949-0_38?noAccess=true
- Alamat Artikel : <https://doc-pak.undip.ac.id/12846/2/Fullpaper-The Use of Gauss-Jordan Elimination.pdf>
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Total = (100%)	28.50	29.00	28.75
Nilai Pengusul = 60% x 28.75 = 17.25			

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Semarang, Oktober 2022
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NIP. 195811071988031001
Unit Kerja: Departemen Teknik Lingkungan FT UNDIP

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2. Ruang lingkup dan kedalaman pembahasan:

Artikel ini membahas mengenai penentuan gradasi agregat terbaik menggunakan metode optimasi Gauss Jordan. Kedalaman pembahasan cukup baik, dimana optimasi untuk mendapatkan gradasi agregat terbaik dilakukan terhadap semua alternatif gradasi agregat yang mungkin dari suatu gradasi agregat.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

Metode Gauss Jordan dijelaskan cukup detil dalam artikel ini, sedangkan metodologi penelitian disampaikan secara ringkas namun jelas. Kemutakhiran data/informasi merupakan satu hal yang tidak terlalu mengikat pada penelitian ini. Daftar pustaka hanya berjumlah 9 pustaka, dengan tahun penerbitan artikel sebagian besar yang berada dalam rentang waktu 10 tahun.

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Semarang, 10 Oktober 2022

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	Internasional ☒ 30	Nasional ☐	
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b. Ruang lingkup dan kedalaman pembahasan (30%)	9.00		8.50
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2. Ruang lingkup dan kedalaman pembahasan:

Ruang lingkup artikel ini terkait penelitian untuk mencari gradasi agregat yang terbaik, menggunakan metode optimasi Gauss Jordan. Artikel ini mengevaluasi semua kemungkinan yang mungkin dari satu gradasi agregat. Namun gradasi agregat terbaik tetap tidak bisa diperoleh.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

Artikel ini meneliti penggunaan metode Gauss Jordan pada semua alternatif dari suatu gradasi agregat, hal ini menunjukkan bahwa data yang digunakan telah mencukupi. Penjelasan mengenai metode Gauss Jordan dan metodologi yang digunakan dalam artikel ini cukup jelas. Jumlah pustaka tidak cukup banyak, namun sebagian besar merupakan pustaka mutakhir.

4. Kelengkapan unsur dan kualitas terbitan:

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Semarang, 13 Oktober 2022
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26th July 2021
Universitas Tarumanagara
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Document type

Conference Paper

Source type

Book Series

ISSN

23662557

ISBN

978-981167948-3

DOI

10.1007/978-981-16-7949-0_38

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The determination of the proportion of combined aggregate gradation is an important step in the manufacture of asphalt mixtures, so this step needs to be performed carefully. Today, the determination of the proportion of combined aggregates is mainly done by trial and error or the graphical method, which often gives inaccurate results. In this study, the determination of the combined aggregate gradation proportion was carried out using the Gauss-Jordan elimination method to find the best solution by solving a set of linear equations formed from several aggregate grading groups. This study indicated that the Gauss-Jordan method provides good guidance in determining a single unique aggregate gradation proportion. The results of the iteration of this method can also show the trend of the characteristics of the combined gradation that can improve the understanding of the aggregate gradation used. © 2022, The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd.

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Source details

Lecture Notes in Civil Engineering

Scopus coverage years: 1975, from 2016 to 2023

Publisher: Springer Nature

ISSN: 2366-2557 E-ISSN: 2366-2565

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Proceedings of the Second International Conference of Construction, Infrastructure, and Materials

ICCIM 2021, 26 July 2021, Jakarta,
Indonesia

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Volume 216

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Artificial Aggregate Made from Expanded Polystyrene Beads Coated with Cement Kiln Dust—An Experimental Trial



A. P. Wibowo , M. Saidani, and M. Khorami

Abstract The use of waste materials from industrial products to support green building and environmentally friendly construction needs more attention and becomes a common thought. The use of waste materials such as Cement Kiln Dust (CKD) or often referred to as Bypass Dust (BPD), as a concrete substitution material, has been done a lot and not a few have given positive results. However, it is necessary to have other alternatives regarding using this waste material, one of which is to try to use it as a coating material for lightweight materials such as Expanded Polystyrene (EPS) to manufacture artificial aggregate. This coating technique uses a solvent/adhesive in the form of liquid (acetone–water and polyvinyl acetate–water). The resulting weights of coated EPS with BPD are 154–175 g/l. Artificial lightweight aggregate made from EPS grains coated with CKD powder with an adhesive solution of a mixture of Polyvinyl Acetate (PVA)–water gave more promising results than an acetone–water binder. The process of creating coated EPS shows the potential as artificial aggregates for a lightweight concrete. The coated EPS gives a better result in strength than pure EPS beads when replacing the coarse aggregate.

Keywords Expanded polystyrene (EPS) beads • Coating • Cement Kiln dust (CKD) • Acetone • Polyvinyl acetate

1 Introduction

Cement Kiln Dust (CKD) or often called Bypass Dust (BPD) [1], is the residual/waste material from the cement manufacturing process. The amount of CKD waste generated from the rotary kiln during the calcination process can reach 8–20% of

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Analysis of Asphalt Damping Ratio on Shear Test



Sunarjo Leman, Maria Kevinia Sutanto, Elizabeth Ivana Harsono, Vryscilia Marcella, Anugerah Tiffanyputri, and Yuskar Lase

Abstract Seismic resistance structure on high-rise buildings is considered vital to be applied in present days to reduce structural damage caused by the earthquake. Therefore, it requires technology to control the dynamic response of the structure due to lateral forces, including earthquake force. Passive structure control system altering mass or stiffness and incorporating damping material is one representative technology in which could be applied. This study focuses on damping material-Pertamina asphalt with 60/70 penetration as the additional substance for the damper. Asphalt addition in seismic force damping system is to increase damping ratio on building structure and therefore lateral force from earthquake influencing it, is reduced and diverted to damping system. The behavior of asphalt on the shear test conducted on contact fields 9.3333, 23.0667, and 34.7 cm² become the main objective of this research. The law of Hooke and force equilibrium dynamic equation is applied to analyze the damping ratio. Verdict on the investigation of this study has shown results to be supercritical ($\zeta > 1$).

Keywords Asphalt · Damping · Stiffness

1 Introduction

The gravitational and lateral force is a fundamental contributing factor in the design of structural systems due to the importance of earthquake force. Lateral force on high-rise buildings is considered to be more destructive, in particular, due to

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Analysis of Travel Behavior Under Flooding Condition Based on Probe Data in Ubon Ratchathani City, Thailand



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and Atsushi Fukuda

Abstract Recently, urban floods have frequently occurred and severely affected urban activities in developing cities. To minimize the impacts of transport from urban flooding, it is essential to implement adaptation measures in the transport field. Firstly, it is crucial to understand the impacts of travel behaviors and traffic states from urban flooding. Therefore, this study focused on the relationship between travel speed and inundation depth and evaluating adaptation measures in the transport field. The relationship between travel speed and inundation depth was analyzed based on the probe data. A traffic assignment model was developed to evaluate the raising arterial road measure as an adaptation measure in the transport field while reflecting the analysis results of relationships between travel speed and inundation depth. This found that the implementation in raising arterial road measure for the western bypass could be an effective adaptation measure by reducing Vehicle Kilometer Traveled (VKT) by 65% while decreasing the number of detoured by 5000 vehicles compared to the flooding situation without taking any adaptation measures.

Keywords Travel behavior · Urban flooding · Probe data · Adaptation measure

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Modeling of Conceptual Framework to Understand Stakeholders' Awareness in Construction Industry in Thailand Affected by the 3rd Wave of COVID-19 Pandemic



Nattasit Chaisaard and Grit Ngowtanasuwan

Abstract The latest 3rd wave of COVID-19 pandemic is occurring globally from 2020 to 2021 without any sign of significant diminishing. More variants of coronavirus 2019 mutation have been found in Thailand, together with a high mortality rate. While vaccination, an important national agenda, could not yet control the pandemic, the pandemic has caused difficult circumstances in labor-intensive industries, especially the construction industries. Consequently, the researchers became interested in studying the conceptual framework to understand stakeholders' awareness in the Thai construction industry affected by the 3rd wave of the COVID-19 pandemic, especially during April–May 2021. And hence did as follows. At first, the researchers studied literature reviews from various academic articles and online databases and gathered information through in-depth interviews via collaboration tools such as the Microsoft team and zoom applications in communicating with thirteen experienced construction practitioners. Secondly, the researchers validated the information and developed a conceptual framework model of stakeholders' awareness in the construction industry in Thailand. In the model, the researchers found that the pandemic changed the attitudes of Thai practitioners, both confident and satisfaction attitudes, affected working practices, and necessitated stakeholders to assess effects on construction projects and formulate future policies and practical measures at executive and operational levels.

Keywords Conceptual framework • Stakeholders' awareness • COVID-19 pandemic

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The Use of Gauss-Jordan Elimination Method in Determining the Proportion of Aggregate Gradation



Bagus Hario Setiadji, Supriyono, and Amelia Kusuma Indriastuti

Abstract The determination of the proportion of combined aggregate gradation is an important step in the manufacture of asphalt mixtures, so this step needs to be performed carefully. Today, the determination of the proportion of combined aggregates is mainly done by trial and error or the graphical method, which often gives inaccurate results. In this study, the determination of the combined aggregate gradation proportion was carried out using the Gauss-Jordan elimination method to find the best solution by solving a set of linear equations formed from several aggregate grading groups. This study indicated that the Gauss-Jordan method provides good guidance in determining a single unique aggregate gradation proportion. The results of the iteration of this method can also show the trend of the characteristics of the combined gradation that can improve the understanding of the aggregate gradation used.

Keywords Gauss-Jordan elimination • Aggregate gradation • Combined aggregate proportion

1 Introduction

In the manufacture of hot mix asphalt, the determination of the proportion of the combined aggregate gradation is an important process, which can determine the properties of the resulting asphalt mixture. Determination of this proportion is generally carried out analytically or graphically. Many studies have been carried out related to this method of determining proportions [1–6]. The methods used include: (i) the simplest methods, namely the trial-and-error method; (ii) mathematical methods by substitution and elimination; (iii) the use of optimization techniques

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