EFFECT OF GROUND GRANULATED BLAST FURNACE SLAG (GGBFS) UTILIZATION AS PARTIAL REPLACEMENT OF FINE AGGREGATE ON SUBBASE COURSE CBR VALUE

Final Project Report

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INTERNATIONAL CIVIL ENGINEERING PROGRAM

FACULTY OF ENGINEERING

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APPROVAL

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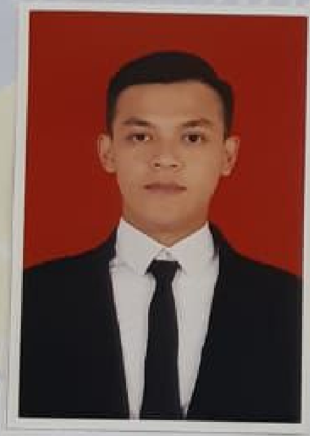

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ABSTRACT

EFFECT OF GROUND GRANULATED BLAST FURNACE SLAG (GGBFS) UTILIZATION AS PARTIAL REPLACEMENT OF FINE AGGREGATE ON SUBBASE COURSE CBR VALUE, Deonisius Pradipta Aprisa, Student ID Number 15 13 15963, year of 2019, Transportation Engineering, International Civil Engineering Program, Department of Civil Engineering, Universitas Atma Jaya Yogyakarta.

The construction of road infrastructure is one of the priority of the current government. The construction will need high quality material that may be scarce and not available in the construction site. At the same time, the manufacturing of iron in Indonesia results in production of ground granulated blast furnace slag (GGBFS) in big amount that needs to be utilized. Thus, the objective of this research is to know about the effect from the utilization of GGBFS as partial replacement of fine aggregate on subbase course value with the variation of fine aggregate replacement with GGBFS on the subbase CBR value on unsoaked condition. The GGBFS was used to replace 0%, 15%, 30% and 45% of the fine aggregate weight. The result of the CBR test shows that every variant fulfil the required CBR value of 35%. Moreover, the replacement of fine aggregate with GGBFS increases the CBR value on unsoaked condition, with 30% replacement of fine aggregate with GGBFS being the optimum condition. On 45% replacement of fine aggregate with GGBFS, the CBR value starts to decrease. Another effect from the replacement of fine aggregate with GGBFS on subbase course is that the optimum moisture content (OMC) and the maximum dry density (MDD) will change. With more GGBFS content in the mixture, the optimum dry density (OMC) will decrease. On the other hand, as the content of GGBFS in the mixture increase, the Maximum Dry Density (MDD) of the mixture will also increase accordingly. With the increase in CBR value, the subbase layer structural coefficient will also increase. Further study needs to be done to investigate the effect of fine aggregate replacement with GGBFS on subbase CBR soaked condition. Then, the effect of curing time on the subbase mixture with fine aggregate replacement with GGBFS should also be evaluated.

Key Words : California Bearing Ratio, Ground Granulated Blast Furnace Slag, Subbase Course, Maximum Dry Density, Optimum Moisture Content, Structural Coefficient.