Accepted Manuscript

Finite element modelling of flexural behaviour of geosynthetic cementitious composite mat (GCCM)

Tidarut Jirawattanasomkul, Nuttapong Kongwang, Pitcha Jongvivatsakul, Suched Likitlersunag

PII: S1359-8368(18)32099-7

DOI: 10.1016/j.compositesb.2018.07.052

Reference: JCOMB 5819

To appear in: *Composites Part B*

Received Date: 11 July 2018

Accepted Date: 23 July 2018

Please cite this article as: Jirawattanasomkul T, Kongwang N, Jongvivatsakul P, Likitlersunag S, Finite element modelling of flexural behaviour of geosynthetic cementitious composite mat (GCCM), *Composites Part B* (2018), doi: 10.1016/j.compositesb.2018.07.052.

Finite Element Modelling of Flexural Behaviour of Geosynthetic Cementitious Composite Mat (GCCM)

Tidarut Jirawattanasomkul[1], Nuttapong Kongwang[2], Pitcha Jongvivatsakul[3,*] and Suched Likitlersunag[4]

1. Assistant Professor, Department of Civil Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand. Email: tidarut.j@ku.th

2. Master's Candidate, Department of Civil Engineering, Faculty of Engineering, Kasetsart University, Bangkok, Thailand. Email: npkwstreng@gmail.com

3. Assistant Professor, Innovative Construction Materials Research Unit, Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand. Email: pitcha.j@chula.ac.th (*Corresponding author)

4. Professor, Geotechnical Research Unit, Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand. Email: fceslk@eng.chula.ac.th

Abstract:

This paper presents a finite element modelling of a new geosynthetic cementitious composite material called GCCM. The framework adopted a concept of concrete externally bonded by fibre-reinforced polymer (FRP). The existing bond-slip model was used to predict a flexural behaviour of GCCM, considering the effect of needle-punch process during manufacturing. The finite element modelling was calibrated against the experimental data of bending tests. The parameter optimisation was employed to define a set of the bond-slip model parameters. The analytical load-displacement curves predicted by the bond-slip model could agree well with those obtained from the experiments.