


MANLIKA MOBKRATHOK : FINITE ELEMENT SIMULATION 2D AND 3D COMPARED
TO OBSERVED BEHAVIOR OF THE BEARING REINFORCEMENT EARTH (BRE) WALL:
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Bearing reinforcement earth (BRE) wall is composed of longitudinal member and transverse members connected to concrete panels. The longitudinal members are made of the deformed bar. The transverse members are a set of equal angles, which provide high pullout bearing resistance. In this research, a BRE wall (9.75 m high and 14.80 m wide) was constructed in front of the 48 degrees Mae Moh Mine slope, Lampang for the truck ramp operation. The behavior of the BRE wall was investigated by a finite element method using PLAXIS 2D and PLAXIS 3D softwares. The 2D and 3D finite element simulation results were compared with the observed field data under three conditions: at the end of the construction, after installation of the truck ramp, and during the service state. The field investigation included the measurement of vertical settlement, measurement of lateral movement, and measurement of the tension force in the reinforcement. It was found from this research that the measured settlement at pre-operational conditions had 56% and 45% difference from 2D and 3D analysis results, respectively. During operation (at 270 days after construction), the measured vertical settlement gradually increased with time, while the calculated vertical settlement was constant over time. The lateral movements at both lateral sides has moved away from the wall. The measured lateral displacement was slightly higher than the calculated result. The calculated tension forces in the reinforcements are in agreement with the measured ones and the maximum tension plane can be approximated by the method proposed by AASHTO (2002).

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Student's Signature 
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