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Reply to the discussions by Huang, C.C. on "Comparison of bearing capacity of a strip footing on sand with geocell and with planar forms of geotextile reinforcement" [Geotextiles and Geomembranes 28(1), 2010, pp. 72–84]

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The authors appreciate Prof. Huang (the discusser) for his interest on our paper and for his extensive discussion. Some points are made by the discusser which the authors offer the following comments in response:

1) Prof. Huang has stated that Figs. 3 and 4 in the discussion (re-plotted by him from Figs. 12b and 13b in the paper) strongly suggest that reinforcement lengths with $b_p > 2.8B$ (or $b_g > 3.2B$) provide no additional benefit in terms of *IF* and *PRS* and the authors intentionally used inefficient length of $b_p = 4.1$ and 5.5, merely to obtain a reinforcement mass equivalent to that for a geocell-reinforced ground! The authors accept that, in practice, wide reinforcements are inefficient (indeed, the authors observed this as one of their conclusions and also other researchers found the same result (Yoon et al., 2004; Ghosh et al., 2005; Sitharam and Sireesh, 2005; Sitharam et al., 2007; Moghaddas Tafreshi and Khalaj, 2008)), but the authors cannot agree with the discusser's overall conclusion that these results don't demonstrate that a geocell reinforcement has a better performance, weight-for-weight, than the comparable planar reinforced installation and also the authors cannot accept using, intentionally inefficient lengths of $b_p > 2.8B$, merely to obtain a reinforcement mass equivalent to that for a geocell-reinforced ground.

Figs. 3 and 4 in the discussion, or Figs. 12b and 13b in the paper (also see Figs. 10 and 11 in the paper to prevent use of misleading values of *IF* and *PRS*), clearly show that for 4 layers of planar reinforcement the bearing pressure increases 52%, 86% and 100% ($IF_p = 1.52, 1.86$, and 2.0) for short, medium and long reinforcement width ($b_p = 2.8B$, 4.1B and 5.5B), respectively. Also for the geocell case with $H/B = 1.33$ the bearing pressure increases 80%, 179% and 196% ($IF_g = 1.80, 2.79$, and 2.96) for short, medium and long reinforcement width ($b_g = 2.1B$, 3.2B and 4.2B), respectively. These values show that the percent increase in bearing pressure for variation of b_g/B between short and medium reinforcement width is substantially greater than those for variation of b_g/B between medium and long reinforcement width. A similar pattern can be observed for the variation of *PRS* as reinforcement width increases in both geocell and planar arrangements. Overall, the authors believe that the discusser made a mistake to investigate Figs. 3 and 4 in the discussion (or Figs. 12b and 13b in the paper) and the authors suggest that the discusser consider Figs. 10 and 11 in the paper to investigate the effect of reinforcement width.

Furthermore, the authors cannot agree with the discusser when he states that "a majority of previous studies showed that a reinforcement length beyond $b_p \geq 3B$ generally provides insignificant bearing capacity increase and settlement reduction". For example, in the case of a planar reinforced bed, El Sawwaf (2007) observed that the increase in the bearing capacity of a footing with increasing geogrid layer length, *b*, is significant until a value of 5B ($b/B = 5$) beyond which further increase in layer length of geogrid does not show significant contribution in increasing the ultimate load capacity of the footing. Yoo (2001) showed that the bearing capacity of a reinforced sand bed remains constant once the length ratio is greater than 5.5. Yoon et al. (2004) indicated that the bearing capacity of a footing on tire reinforced sand increases and the footing settlement decreases, reaching a maximum value of bearing capacity and a minimum value of footing settlement at b/B value of approximately 5.0. Ghosh et al. (2005) in their study using

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