



# Seismic Response of Large Pile Groups

UBC-Tongji Symposium

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WD Liam Finn

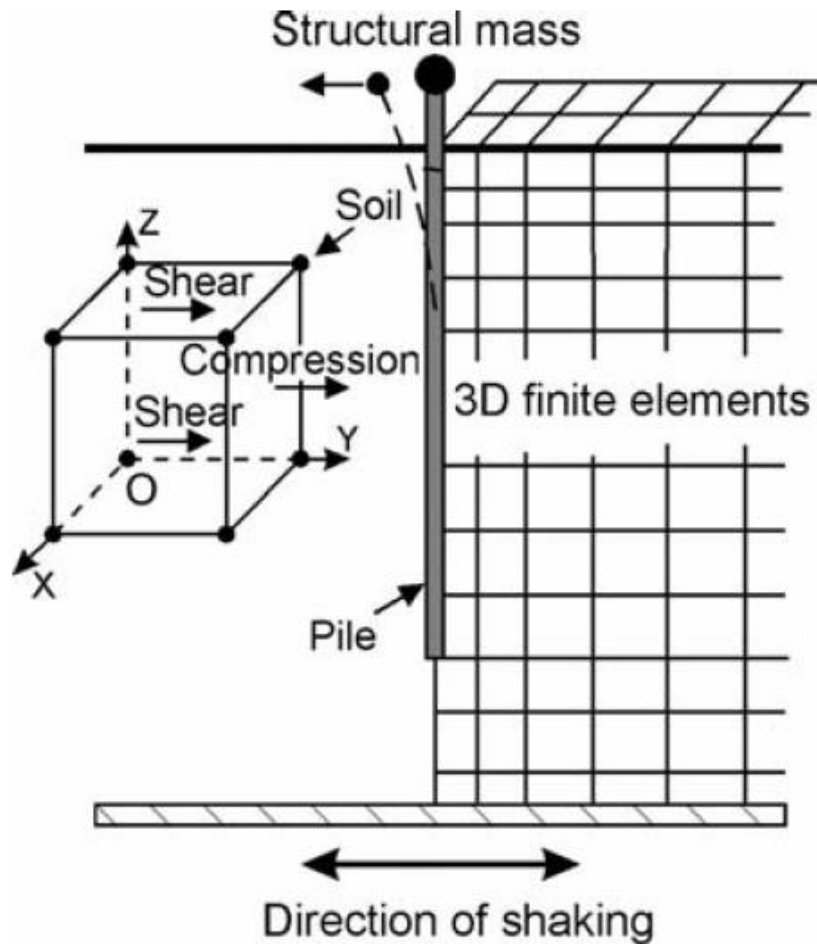
Jason Dowling



## Outline

1. Model Description
2. Model Calibration & Validation
3. Shear Ratios from the Literature
4. 15x2 Pile Group
5. 8x8 Group

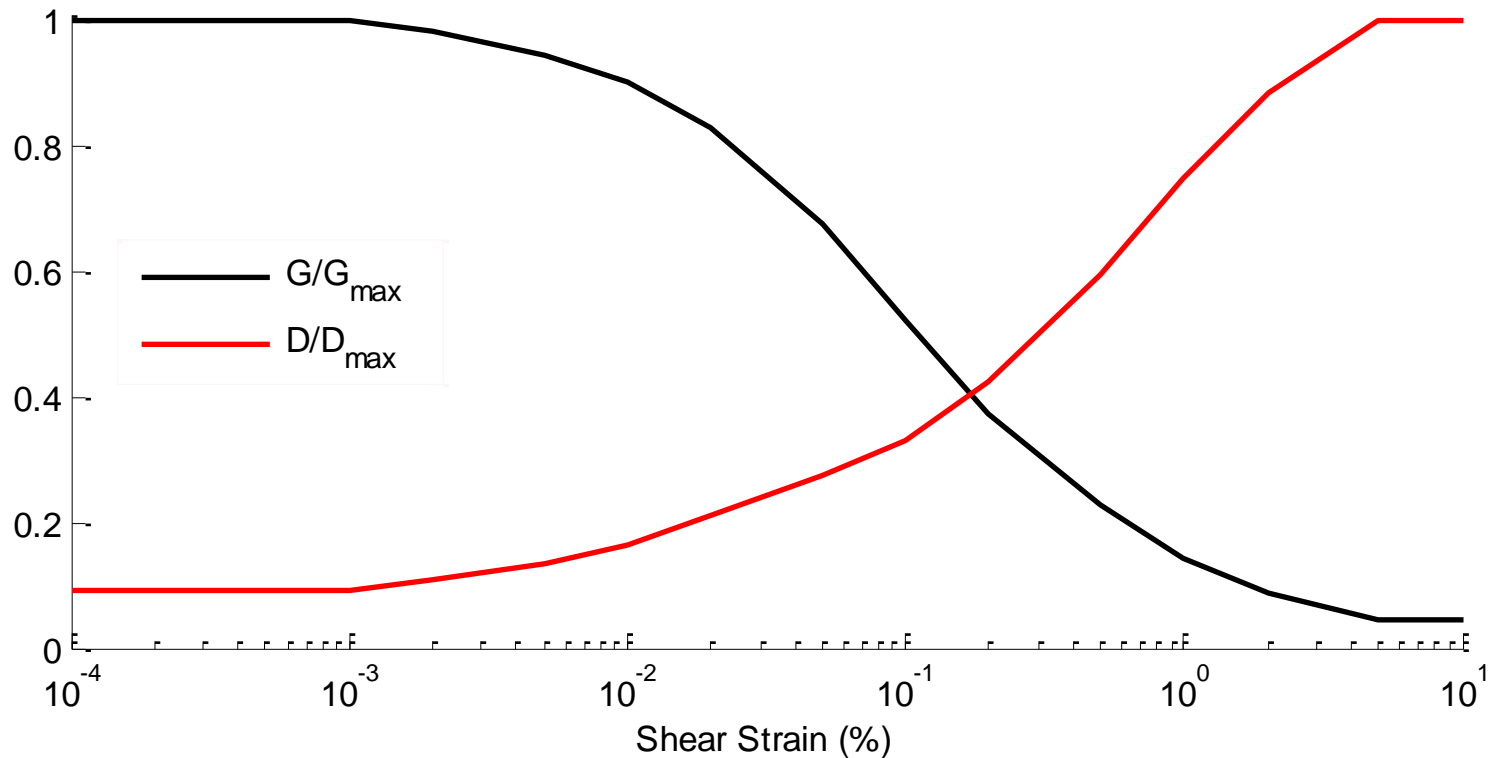
# 1. Model Description - Versat



- Shear in XOY plane
- Shear in YOZ plane
- Compression in shaking direction



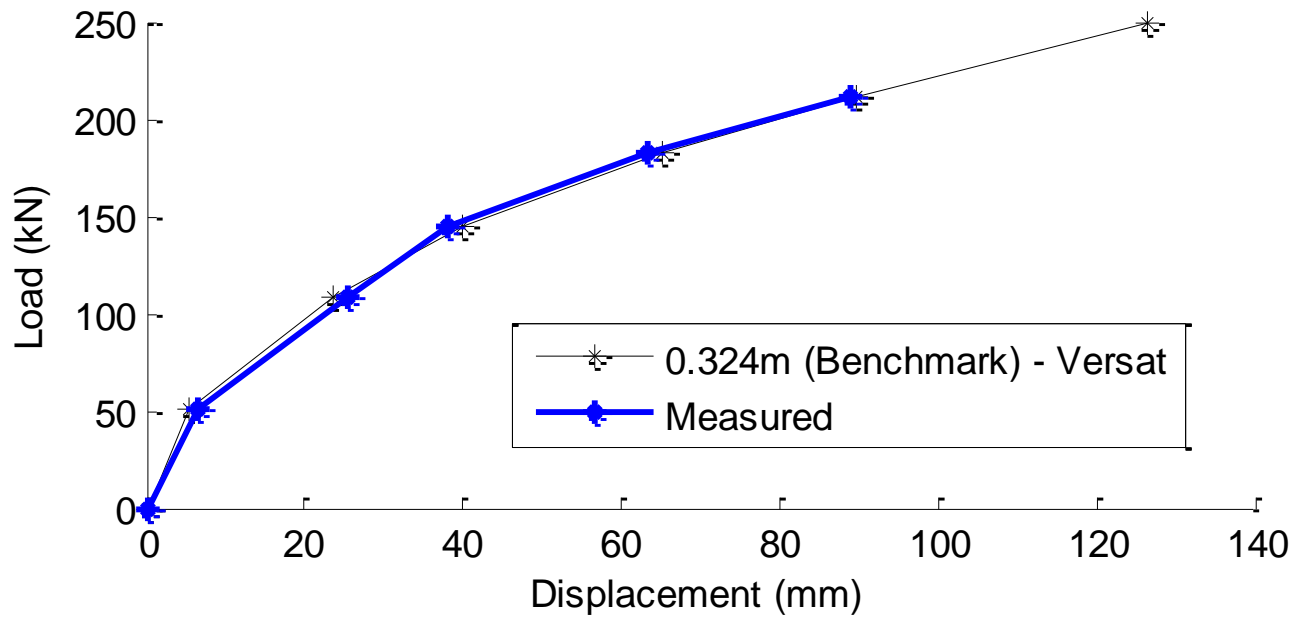
# 1. Model Description - Equivalent Linear Analysis



Seed & Idriss (1986), sand (average).

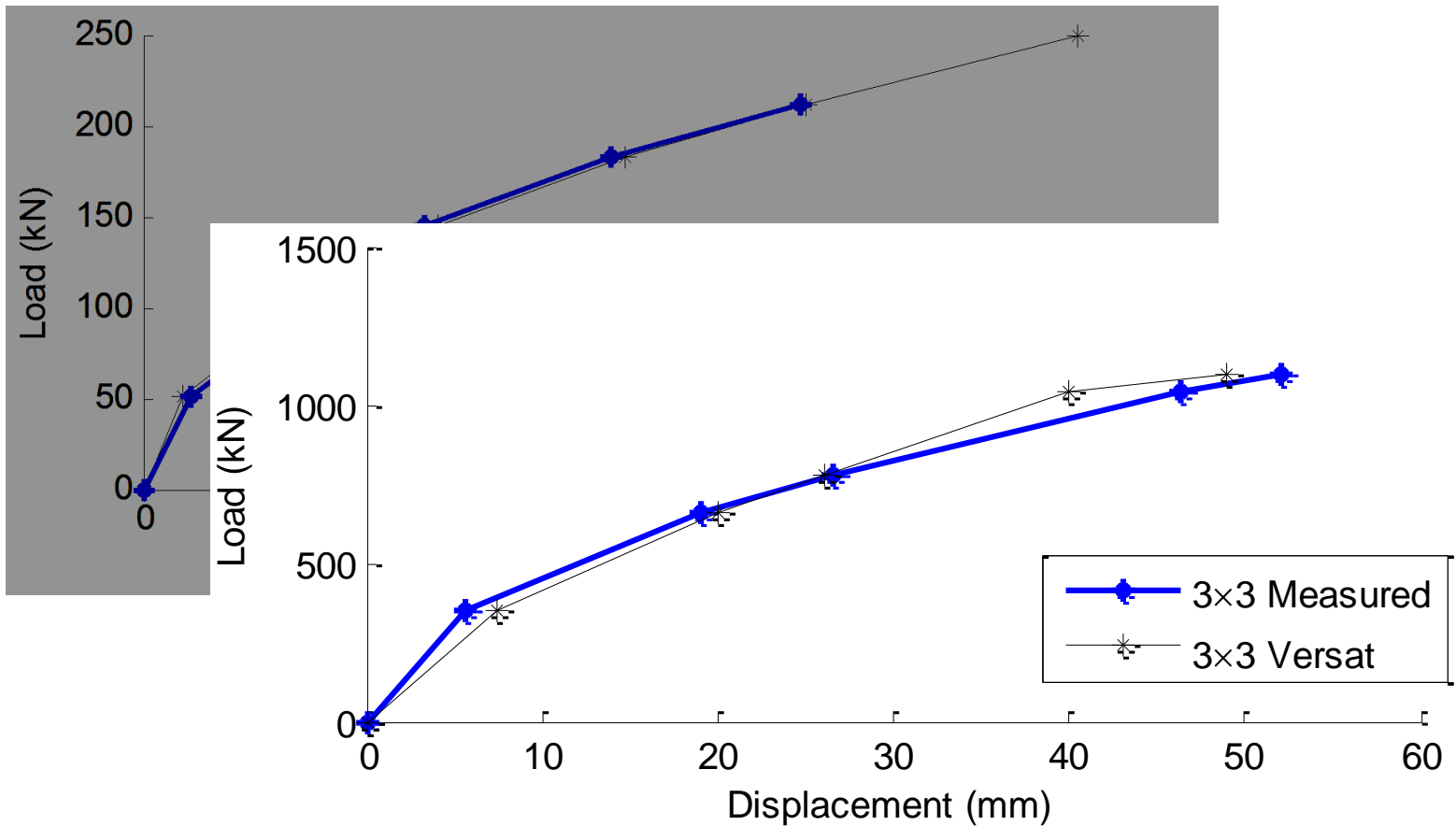


## 2. Model Calibration



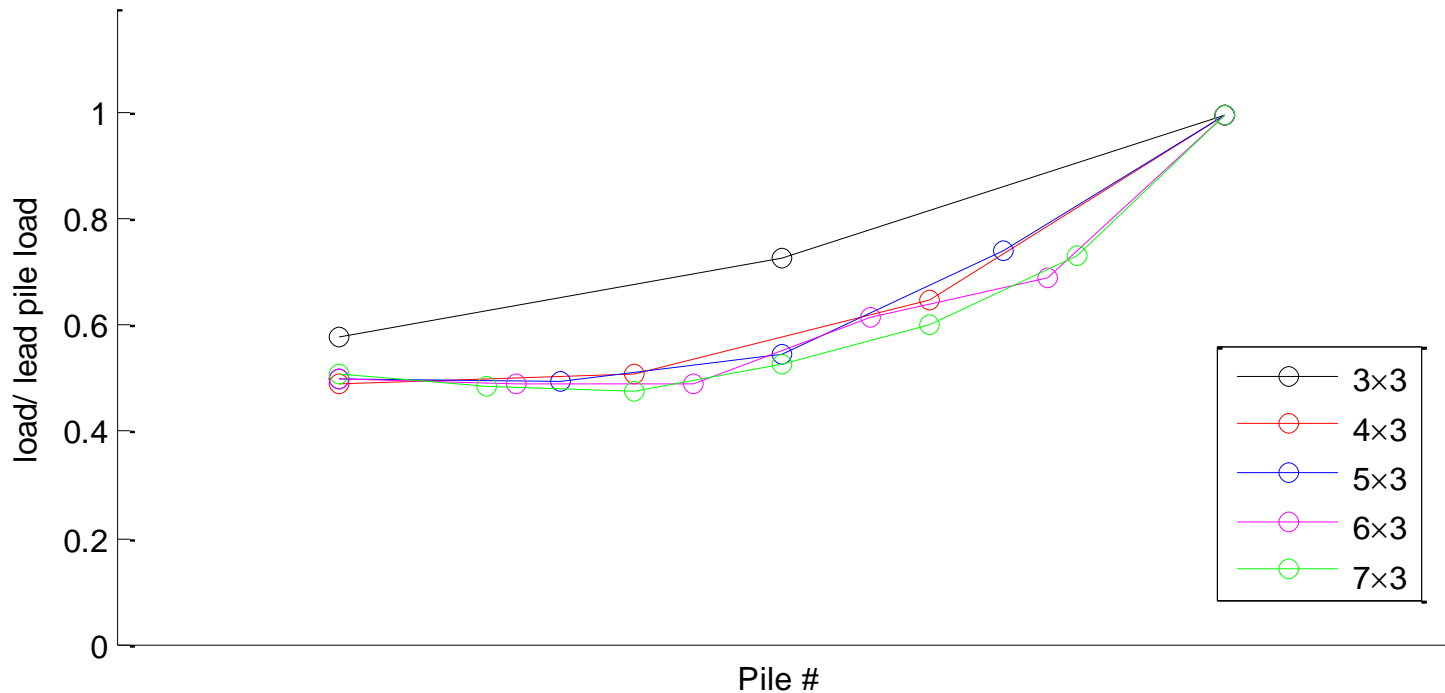


## 2. Model Calibration & Validation





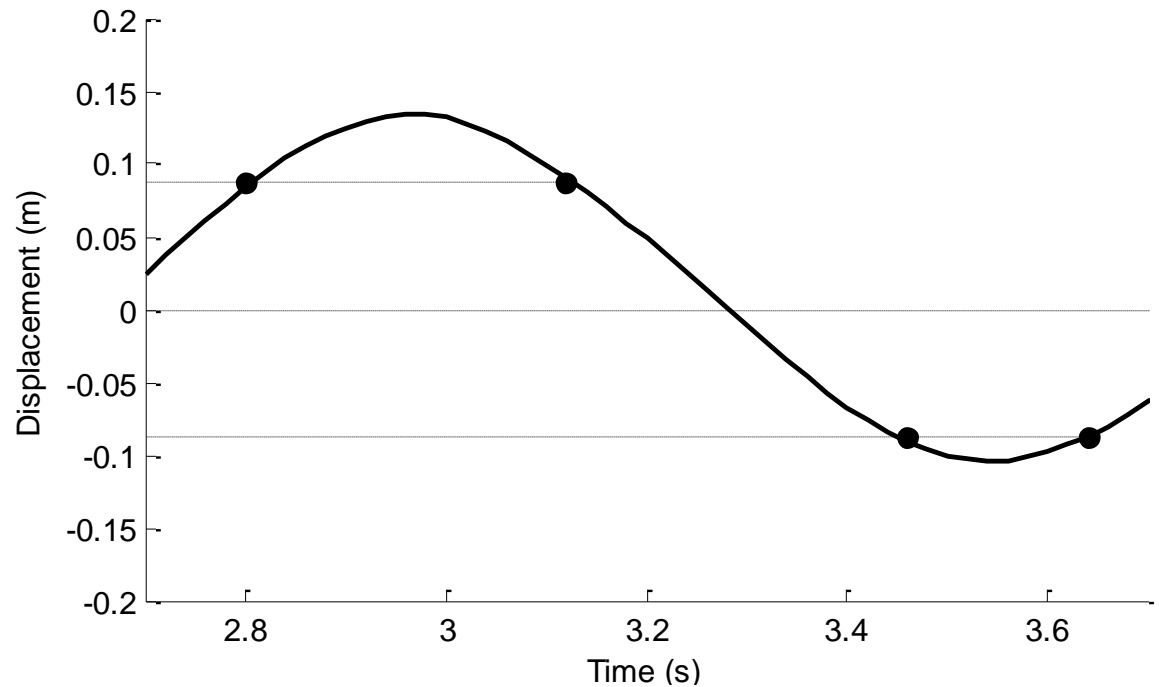
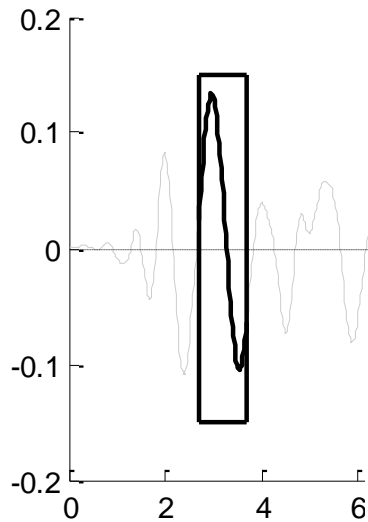
### 3. Shear Ratios from the Literature



Results of 3x3 - 7x3 on a single plot



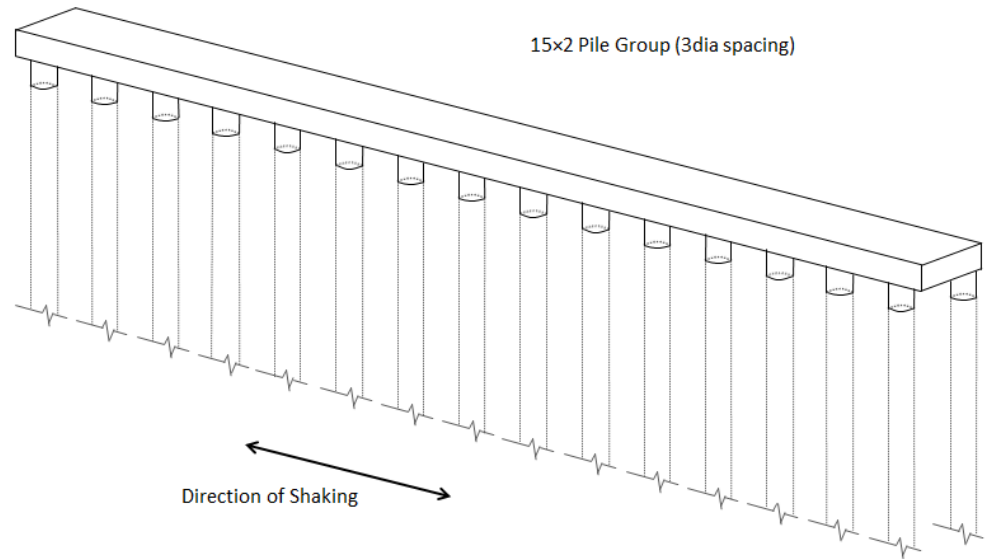
## 4. How we define Shear Ratio for the Dynamic Case



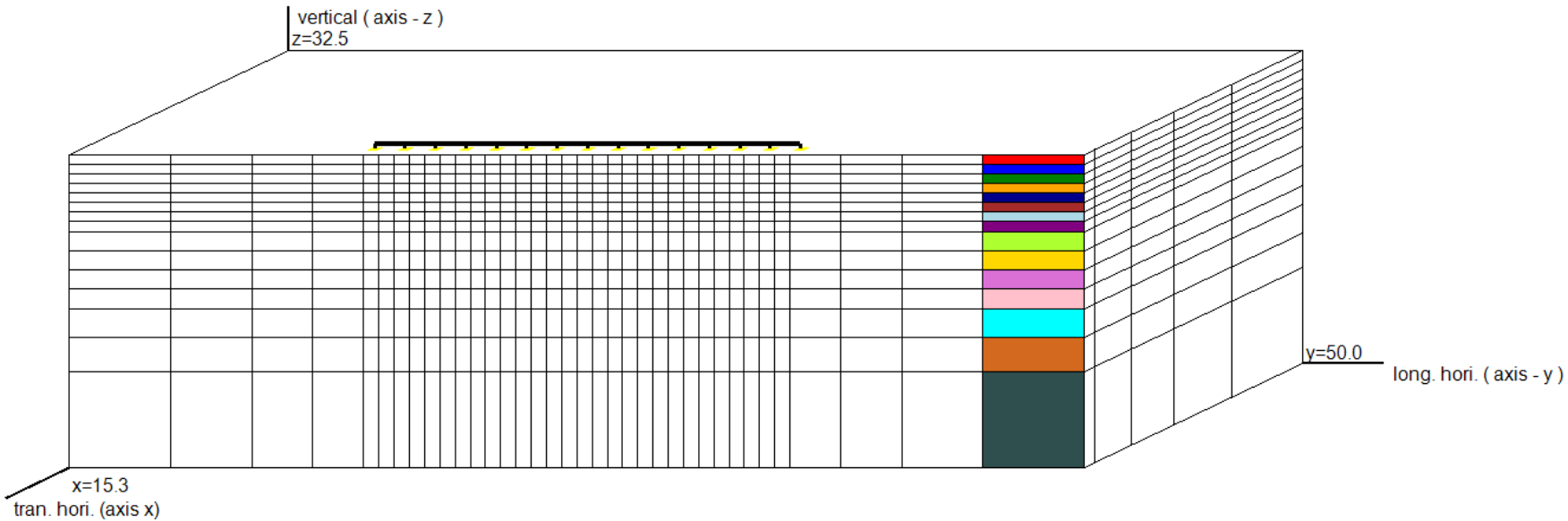




# 4. 15x2 Pile Group



Model:

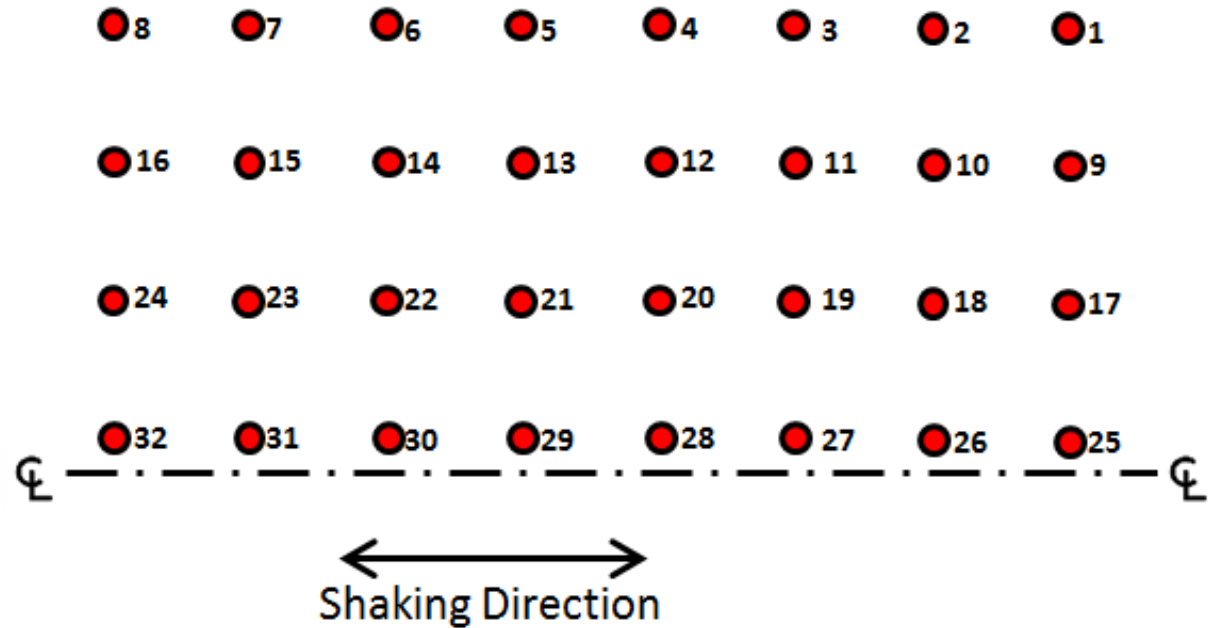






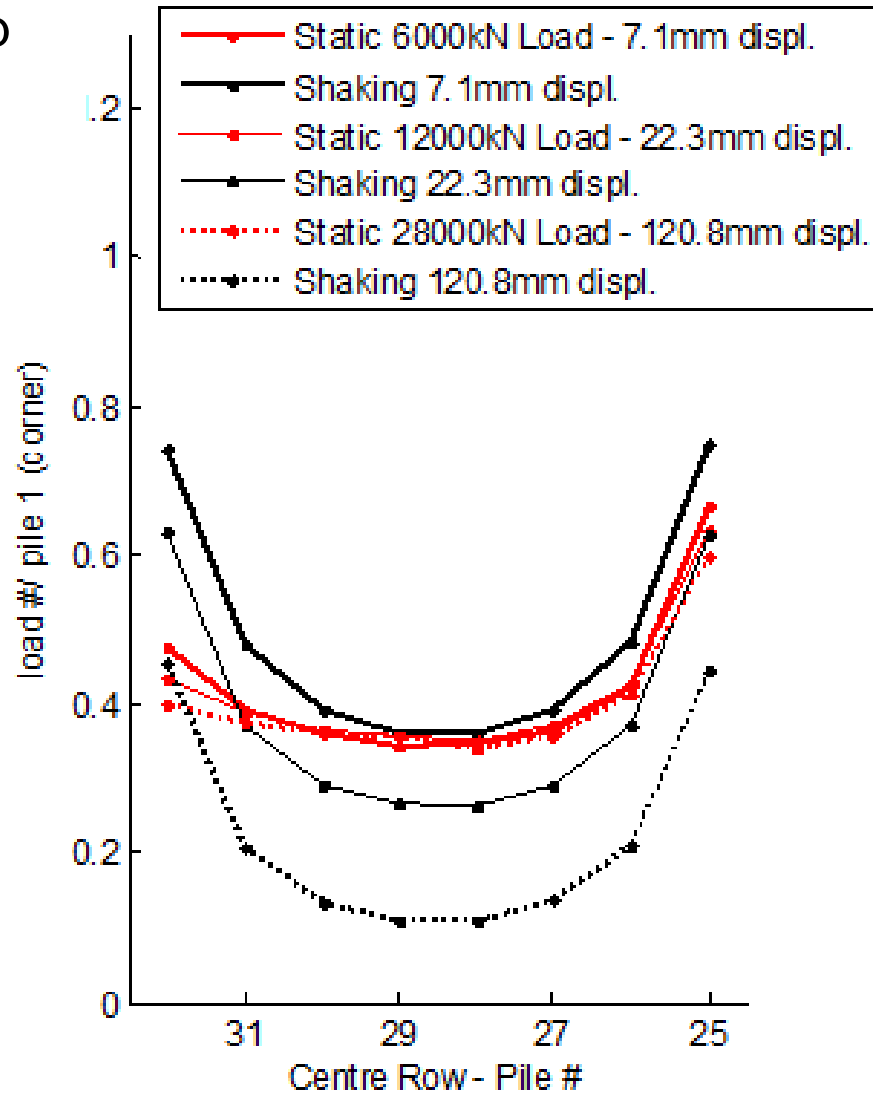
## 5. 8x8 Group

→  
Loading Direction  
(for Pushover  
Simulations)



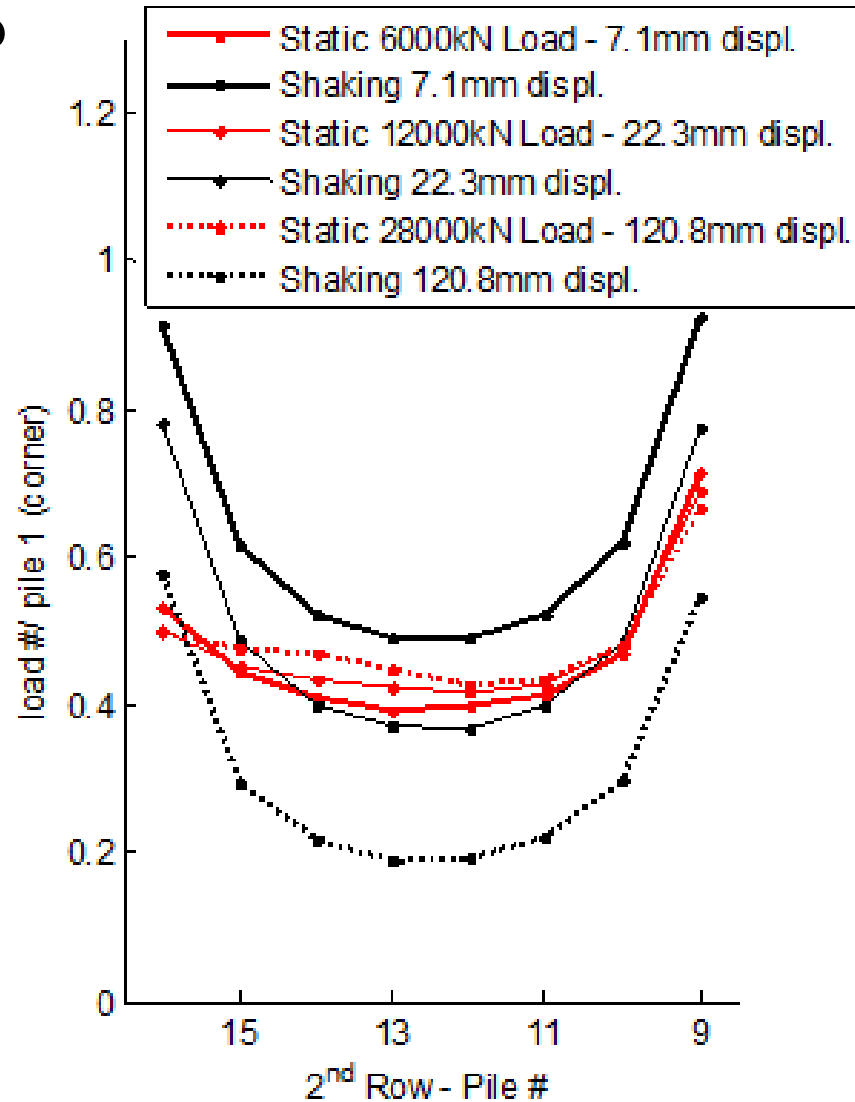


### 5. 8x8 Group



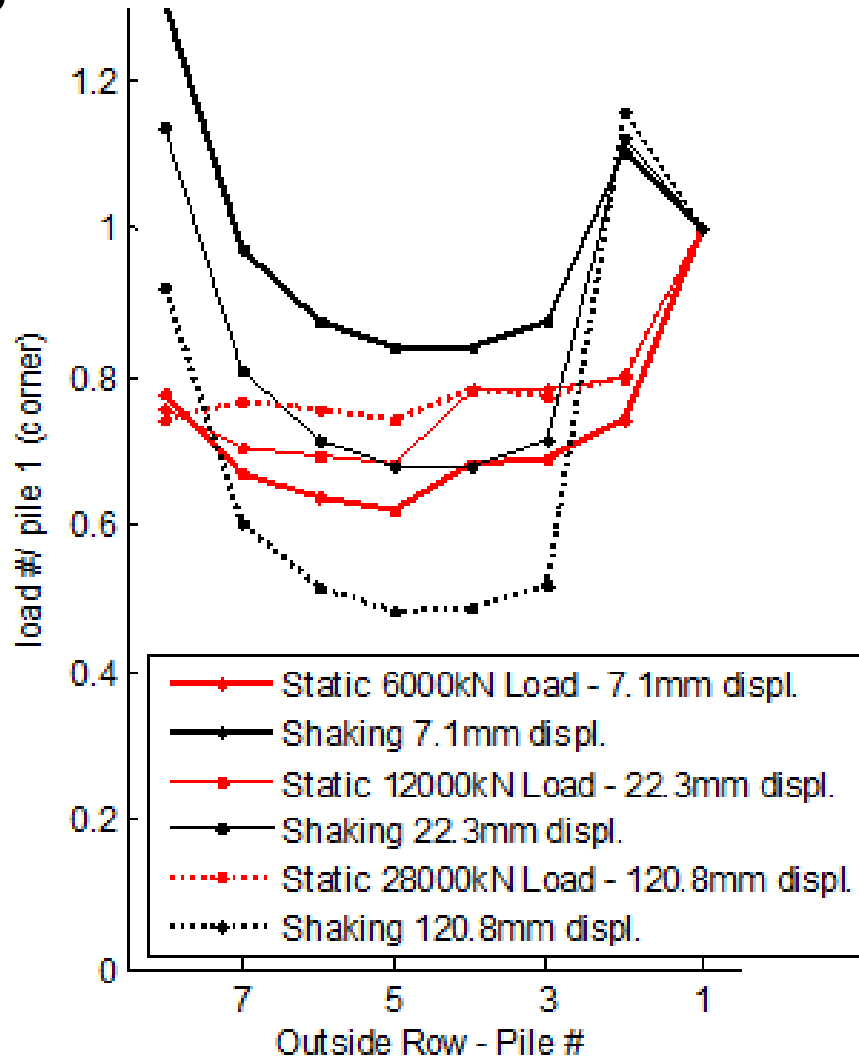


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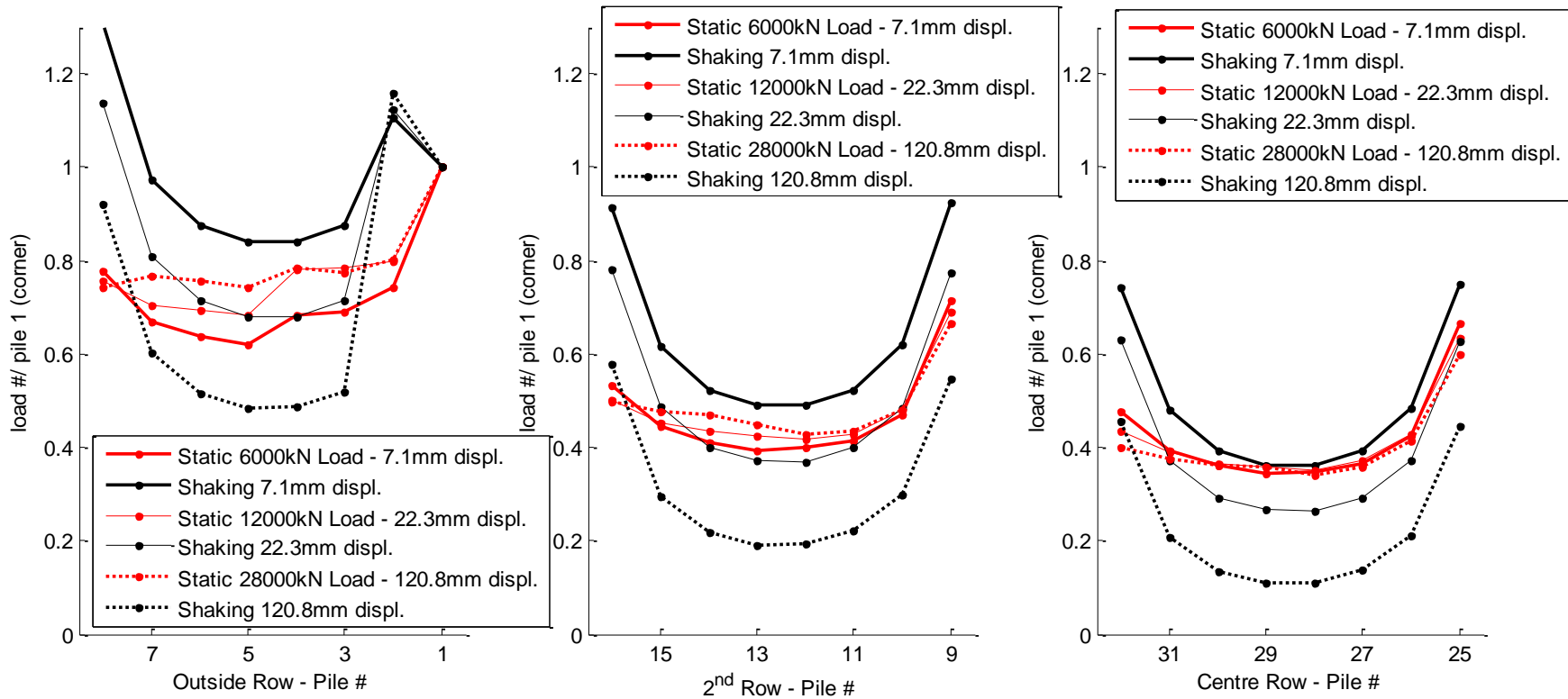


### 5. 8x8 Group





# 5. 8x8 Group





## In Summary

These preliminary results show that using static load distribution factors for dynamic analysis needs to be reconsidered.

The effect of stronger levels of shaking is to widen the gap between the loads carried by the interior piles and the loads carried by exterior piles.