

# FIELD TESTING AND NUMERICAL MODELLING OF BATTERED MINIPILE SYSTEMS

## PROJECT AIM

Understanding the behaviour of group minipiles in cohesive soil as well as correlating driving data with its ultimate bearing capacity

## METHODOLOGY

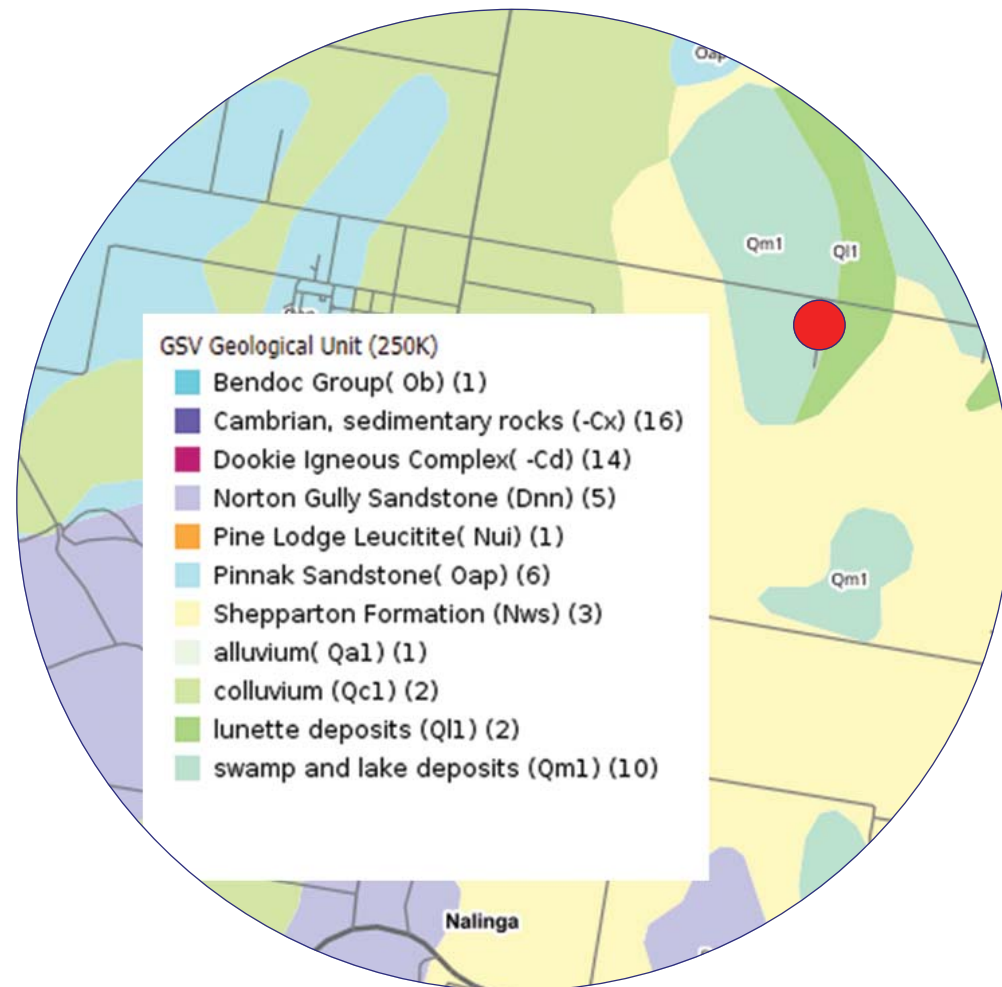
### SITE SELECTION



DOOKIE CAMPUS  
THE UNIVERSITY OF MELBOURNE



### GEOTECHNICAL INVESTIGATIONS



GEOLOGY -  
COLLUVIUM AND LAKE DEPOSITS



VANE SHEAR



DYNAMIC CONE  
PENETROMETER TEST

## OBJECTIVES

Correlating the minipile capacity under tensile loadings with its capacity under compressive loadings

Linking the individual minipile capacity to the group minipile performance under vertical loading

Understanding the behaviour of a minipile group under various loading conditions.

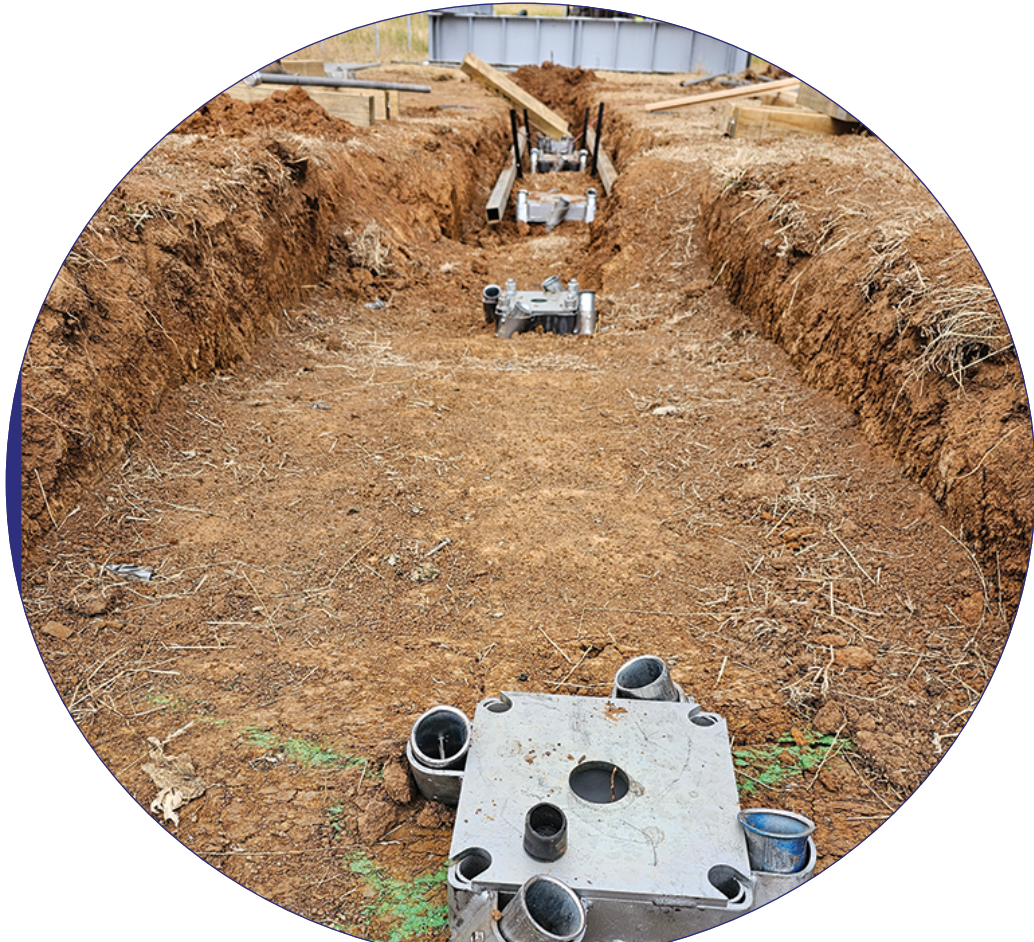
Developing a correlation between the minipile capacity under tensile loadings with its driving data

## TEST PROCEDURE

- Compression test of footings as per ASTM D1143, for both General and H6 footings
- Tension test of footings as per ASTM 3689 for both General and H6 footings



CALIBRATED LOAD CELL



MULTIPLE FOOTINGS TESTED



TENSION TEST

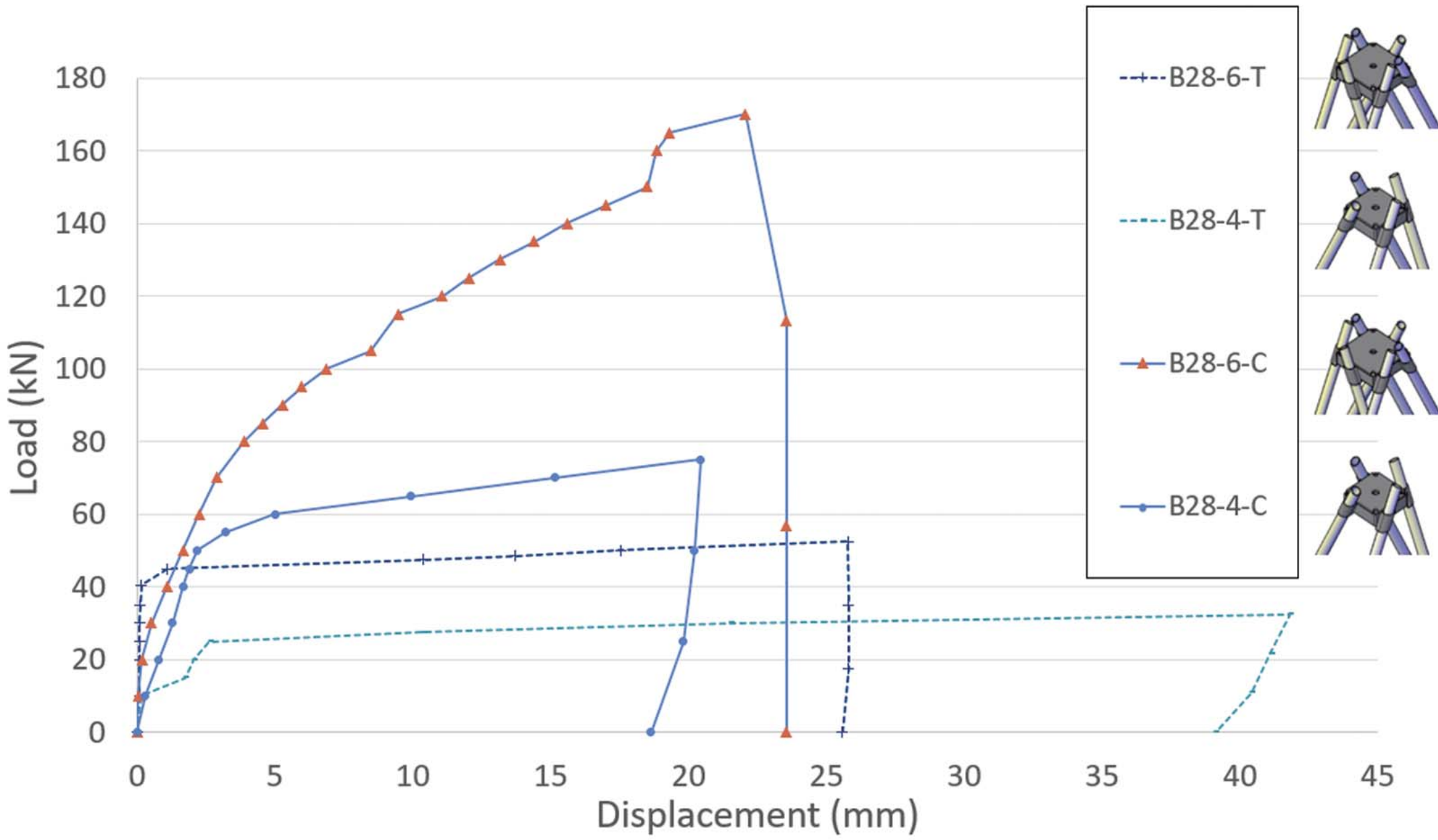


COMPRESSION TEST



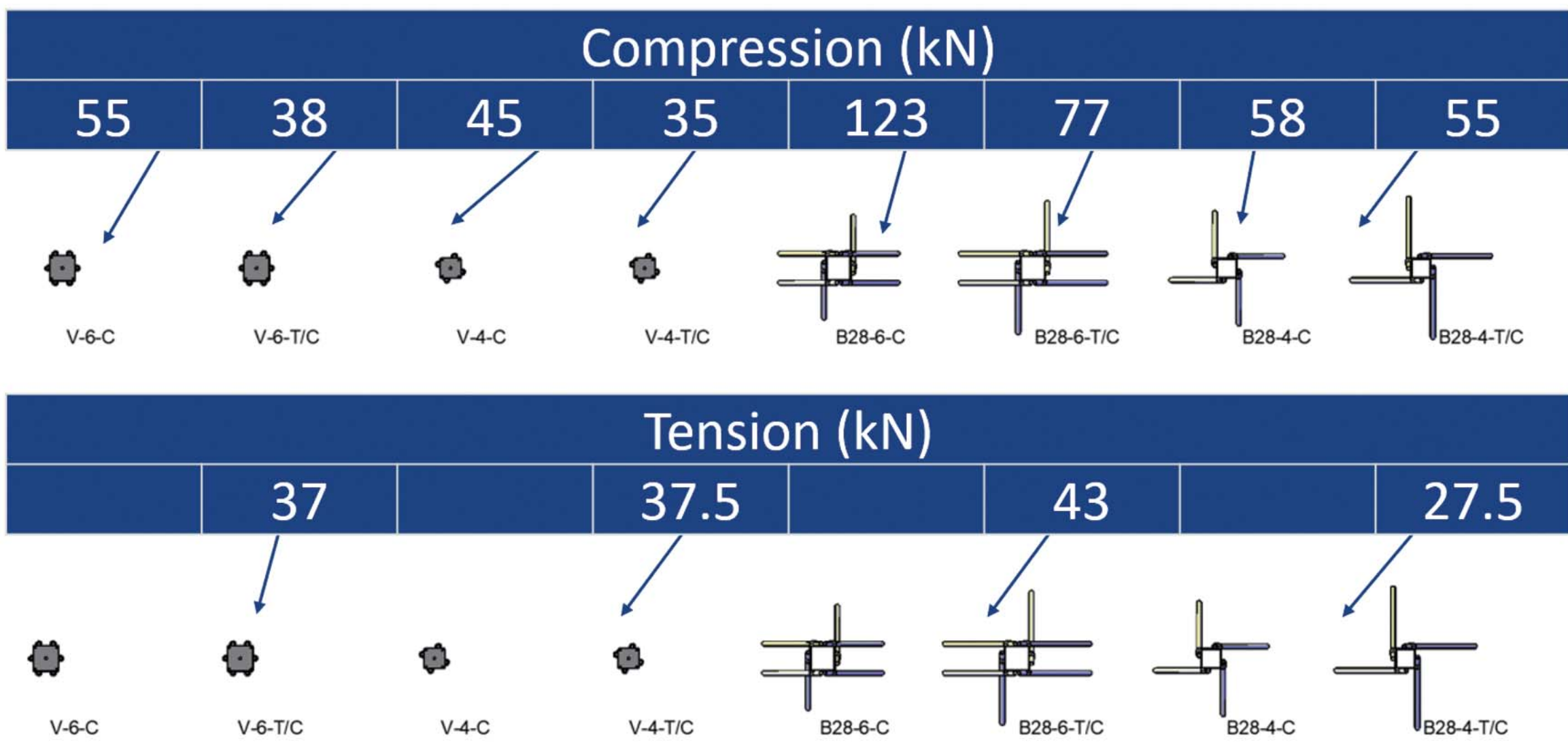
ENGINEERED FRAME

## RESULTS



LOAD-DISPLACEMENT CURVES

Analysis of failure loads and analytical method to predict future capacities based on geotechnical parameters



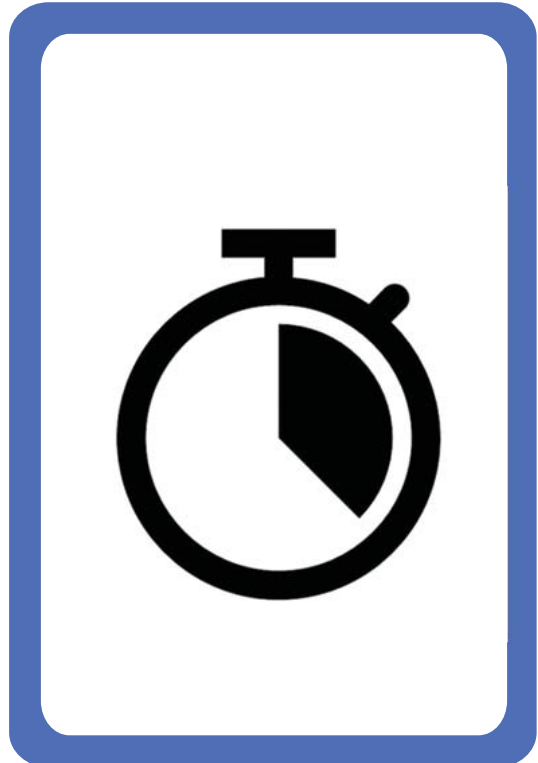
ESTIMATION OF FAILURE LOADS

## CONCLUSIONS

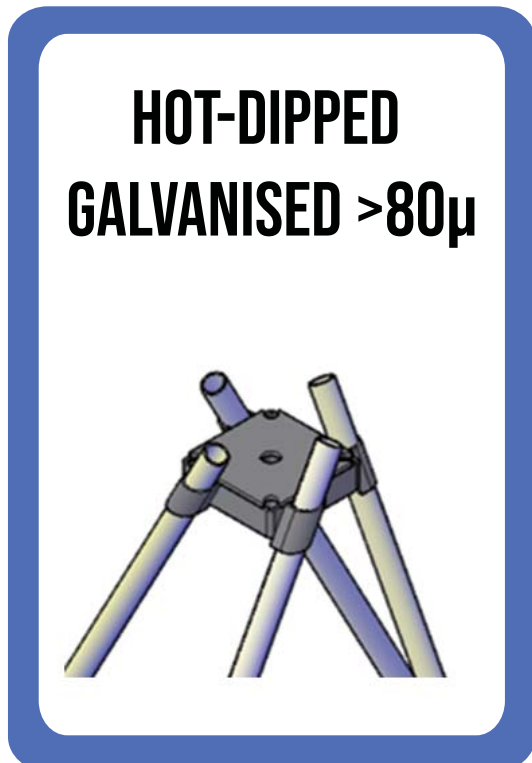
- Battered minipile groups do not show full mobilisation of friction during tension loading
- The efficiency of battered minipile groups is larger than the efficiency of vertical minipile groups in compression.

## ADVANTAGES

### QUICK INSTALLATION



### DURABLE



### STRONG



### EASY TO INSTALL



### VERSATILE



Melbourne Granular Geomaterial Laboratory  
<https://infrastructure.eng.unimelb.edu.au/melbourne-granular-geomaterial-laboratory>



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