



ERSKINE PARK - WAREHOUSE DEVELOPMENT

Dynamic Compaction

AUSTRALIA



Owner

Loscam

Engineer

N/A

General contractor

Mainland Civil

Period of works

November 2016-April 2017

Main figures

Dynamic compaction

total area treated: 50,000m²



Project description

Erskine Park is an industrial area in west Sydney. The general area of the 50,000 m² site located at the end of Tyrone Place was previously used to stockpile approximately 1.5 million m³ of a mixture of various sizes of boulder in a fine soil matrix placed during quarrying operations. The site was chosen for the construction of a pallet factory and heavy duty crane yard.

Ground conditions

Preliminary studies indicated that the ground did not provide the required 150 kPa bearing capacity to support the factory building and was subject to large differential settlements that could have led to damages of the building and the ground slabs throughout the site. Levelling the stockpile resulted in 2 to 10 m of highly heterogeneous loose fill. The size of the site, the depth of loose and highly variable soil, and the urgency to proceed with construction works of the factory at the earliest demanded a foundation solution that was feasible, cost effective and that would require the least execution time.

Solution

Piling was soon ruled out as applicable due to the size of the site. Similarly, excavation and replacement was impractical, expensive and time consuming; hence, ground improvement was considered as an option of interest.

Menard Oceania was awarded the project based on a design and construct dynamic compaction solution. Whilst an 18 ton pounder was used throughout the deep compaction of the site, the wide range of treatment thickness and the random heterogeneity of the soil required multiple compaction patterns with close observation and scrutiny of the ground's behaviour to the pounder blows and adopting the necessary changes to the compaction patterns.

The works were verified by a combination of pressure meter, dynamic cone penetrometer, plate load and standard penetration tests.

