



Rail Car Assembly Facility

Springfield, Massachusetts

Keller's efficient and effective completion of the ground improvement work allowed for new foundation construction earlier than anticipated.



The project

CRRC Corporation was awarded a contract by the Massachusetts Bay Transit Authority (MBTA) to construct a manufacturing facility that would provide 284 subway cars for the Boston subway system. The main structure is approximately 220,000 SF in an area with an exterior 2200-ft-long dynamic railroad test track.

The challenge

Soil borings had encountered 10 to 15 ft of very loose to medium dense undocumented granular fill underlain by medium dense to dense natural granular soils. Existing buildings at the site were razed in 2011, with some buried foundations left in place. Excavation and replacement of the fill material and the buried foundations over such a large area would be time-consuming and costly.

The solution

The geotechnical engineer recommended rapid impact compaction (RIC) as the most economical method of improving the soils underlying the building footprint and the railroad test track. Keller performed primary and secondary RIC passes within a zone extending approximately 10 ft beyond the proposed building footprint, and 8 ft perpendicular to the centerline of the dynamic test track to achieve an allowable bearing pressure of 6,000 psf and limit post-construction settlements to less than 1 in. Approximately 4,500 RIC points were required to complete the work. Undocumented relic foundations identified during the RIC process were subsequently excavated and replaced with compacted structural fill by the owner.

Project facts

Owner(s)

CRRC MA Corporation

Keller business unit(s)

Keller

Main contractor(s)

Plaza Construction

Engineer(s)

O'Reilly, Talbot & Okun Engineering Associates

Solutions

Ground improvement

Markets

Infrastructure

Railway

Techniques

Rapid impact compaction (RIC)

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