

Abstract

In the New York City area, urban congestion results in new buildings being built upon the land reclaimed from previous structures. In a market shifting toward sustainability and material minimization, the practice of reusing old foundations for new construction has become increasingly relevant to the construction and engineering industries to reduce construction costs, shorten construction schedules, preserve historical structures, reduce underground congestion, and to take advantage of overdesigned foundations built under historically conservative building codes. However, the main question of reusing foundation elements hinges on the uncertainty about the strength and conditions of the supports buried in the underlying soil. Therefore, a standardized procedure for assessing the in situ foundations must be established to determine their value in integrating them with the new building.

The foundation reuse design approach depends on the extensiveness of the in situ investigations, the availability of records, the amount of risk the design team is willing to take, and the expected performance of the building. As demonstrated through three case studies by Langan, the geotechnical engineer can examine existing structural/foundation drawings and construction documents, perform additional field investigations, and coordinate with multiple city agencies to successfully evaluate a site for foundation reuse.

Moreover, engineering firms can establish a Building Information System to compile pertinent records of building's lifespan to inform future foundation reuse. If the practice can be adopted into conventional usage, geotechnical engineers will have a wealth of information to implement the reuse of foundation procedures. This paper will examine the approach, challenges, and case studies of foundation reuse in the New York City area to recommend a standardized methodology and administrative code revisions for future developments.