Taking ground engineering to a deeper level

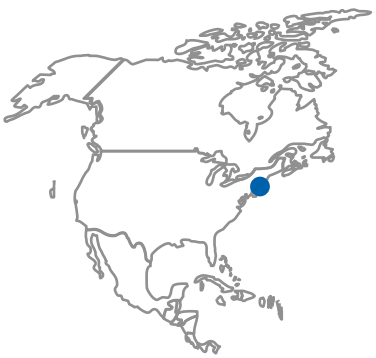
TREVIICOS

TECHNICAL REFERENCE

Boston Conventional Center Hotel

Boston, MA

Drilled Shafts



Owner:	THE FALLON COMPANY, STARWOOD HOTELS, INC. & NEW ENGLAND DEVELOPERS
General Contractor:	SUFFOLK CONSTRUCTION
Structural Engineer:	*McNamara/Salvia Inc.*

2004-09

The Boston Convention Center Hotel occupies a 4.2 acre site adjacent to the Boston Convention Center. The building is a steel-framed high-rise structure occupying 27,500 sq.ft. and is 18 stories high. There is a podium structure containing one below grade level and three above grade levels housing parking space, a ballroom, banquet rooms and restaurants. **The foundation is supported on a combination of driven pipe piles and drilled shafts. TREVIICOS installed 6,600 VLF of reinforced concrete drilled shafts.**

The large horizontal load transferred to the caissons at the bottom of the tower structure, and the center core required 20 of the caissons to be designed with enlarged diameters at the top. The cage was fabricated to fit the smaller diameter excavation and centered within the excavation. In some cases, the length of the smaller diameter excavation required the reinforcing cage to be fabricated in two sections. These cages were spliced over the hole. The cage was suspended from the casing by using bars that are threaded through the horizontal reinforcement and span through the diameter of the casing. Once the lower cage is set and secure, the larger diameter cage was lowered over the smaller diameter cage and spliced to the lower section using a combination of Z-bars, lap splices and clips. The spliced cage was then lowered to the design elevation and set on the casing or frame. The cage was suspended on angle iron or channels, which are tack welded to the casing or frame to prevent uplift during concrete pouring.

Dowel bars connecting the caissons to the overlying slabs, grade beams, etc., were installed. The hooks were placed radially and directed towards the center of the cage. To accommodate the tremie pipe in the smaller diameter shafts, the hooks of the dowels had be adjusted.

TREVIICOS was faced with a challenging change in ground conditions. In the central core area, on the north side of the site, existing caissons interfered with the installation of the 9' diameter caissons. The earthwork contractor excavated approximately 35' below grade to remove the existing caissons. The area was excavated and backfilled in sections. TREVIICOS used a longer casing to penetrate the backfilled area and affect a water seal in the underlying undisturbed clay.

Slurry Walls	
Number of Shafts:	**54**
Shaft Diameters:	**3' to 9'**
Maximum Depth:	**146'**
Drilling Fluid:	**Polymer**

TREVIICOS
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