Project

Haley & Aldrich team protects Boston landmarks while advancing high-rise construction

Summary

- A real estate development team led by Toll Brothers planned a 34-story residential tower with three below-grade parking levels in Boston's Fenway neighborhood.
- The tower site bordered the Huntington Theatre (a registered historic landmark), the New England Conservatory of Music, and a Massachusetts Bay Transportation Authority (MBTA) Green Line tunnel. These sensitive structures and operations had to be protected during excavation and construction.
- Highly variable and thick compressible soils required a deep foundation system socketed into bedrock. Haley & Aldrich evaluated alternatives to support our client's selection of a below-grade system that would meet criteria and reduce risk.
- We designed a stiff, watertight support of the excavation system to address the site's spatial constraints. This support also served as the permanent foundation wall for the below-grade parking garage. This system met the strict performance criteria for protecting adjacent structures while maximizing the parking footprint.
- While sequencing work to avoid delays, we successfully guided our client through the MBTA approval process. In addition, we provided support-of-excavation design to meet stringent performance criteria, implementing construction while protecting the surrounding buildings and other infrastructure.

HALEY ALDRICH

Client challenge

A real estate development team planned to build a 34-story residential tower with three levels of below-grade parking in Boston's Fenway neighborhood.

The small urban infill tower site with adjacent structures on the property line posed many challenges. In the busy commercial and residential area, the team had to limit vibration, noise, and other disruptions. The site bordered iconic arts buildings, including the Huntington Theatre — a registered historic landmark built in 1925 — and the New England Conservatory of Music. It also abutted the MBTA Green Line subway tunnel, a critical transportation route built more than 100 years ago.

The project team had to protect these sensitive structures throughout excavation and foundation construction. This would be particularly difficult given the requirements for the foundation. The tower required deep foundations supported in bedrock to provide reliable support and control settlement due to the thick layer of compressible, variable soil conditions.

Toll Brothers and its subcontractors engaged Haley & Aldrich to provide geotechnical engineering and environmental consulting services because of our decades of experience with deep foundations on urban infill sites. We knew how to address excavations and construction issues in this historic, dense city, and we also had built trusted relationships with the MBTA and other agencies that would facilitate smooth collaboration.

Our approach

Haley & Aldrich provided support-of-excavation design and construction phase monitoring of the slurry wall and load-bearing elements. We focused on managing risk through proactive identification of potential construction issues, coordination with the team, responsiveness, and site-specific design. This approach included engaging with the MBTA to confirm tunnel protection criteria were met, align technical assumptions, and support permitting/approvals.

An existing building on the project site limited early access for subsurface exploration. So, we coordinated with the contractor and design team to sequence demolition, accelerate environmental soil pre-characterization, and complete deep borings for final foundation design within a few weeks. With this approach, we avoided slowing down work between demolition and the start of foundation construction.

Haley & Aldrich also saved time through a soil and groundwater management program that supported direct excavation and loading. This program addressed minor groundwater impacts and unexpected subsurface conditions, including underground storage tanks discovered during excavation, while incorporating contingency plans related to environmental issues to reduce schedule risk and limit construction delays.

Value delivered

- Protected historic infrastructure through tailored protection and monitoring that maintained the schedule, addressed vibration and noise concerns at the New England Conservatory buildings, allowed for uninterrupted operations at an adjacent restaurant, and protected the historic Huntington Theatre
- Supported MBTA permitting and tunnel protection. Helped the client navigate agency review and obtain approvals through our highly specialized geotechnical consulting and agency track record.
- Enabled the client to choose a bedrock-supported deep foundation system that met performance criteria and limited risk by evaluating multiple alternatives and providing valued engineering input
- Proactively addressed environmentally impacted soil management and unknown conditions to avoid schedule delays
- Delivered fully integrated range of geotechnical, environmental, permitting, and construction phase services under one coordinated team of technical specialists and project management resources for improved communication and timely responses to project needs

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