



At Right: Completed building is shown with rendering of how the structure “rides” the subway.
Top left: Artist’s rendering of the completed building. Below left is a site plan showing the diagonal direction of the subway through the site.

Avalon Chrystie Place

New York, NY

Avalon Chrystie Place is a 14-story mixed use retail/residential complex with one basement level, built on an extremely difficult site in a redevelopment area in the Houston Street / Bowery area in Manhattan. The Owner, Developer, public agencies and the Design Team all worked together, realizing that construction of this project would stimulate revitalization and development in the area. Mueser Rutledge Consulting Engineers (MRCE) provided geotechnical and foundation engineering for the project. Services included preparation of the subsurface investigation and geotechnical report, the analysis of subway tunnel and obtaining NYCT approval, design of excavation support and underpinning, and construction support services.

A New York City Transit (NYCT) subway tunnel structure crosses diagonally beneath the site, complicating the foundation design and construction of the building. The presence of the operating subway made this project difficult but interesting and led the design team to turn to a mixed foundation system consisting of a mat foundation “riding” on the subway, spread footings outside the influence line of the subway, and rock socketed minipiles within the influence line of the subway. This was the first time, according to NYCT, that a building of this size was designed to bear directly on a subway tunnel. The Design Team dealt with numerous analysis, design, and construction issues and put forth a foundation design never before attempted in New York City. Prior to securing NYCT approval of the project, an extensive review process concerning the superstructure and foundation design was required.

Although the site was extremely difficult to build on, all parties—public and private—realized that construction of this project was critical to jump-starting development in the area. During the topping out ceremony, the Owner and Mayor Bloomberg thanked all those who made this project possible, including the engineers who worked behind the scene to design the new structure to accommodate the subway below the site. The general excavation started in November 2003 and the foundations were substantially completed by August 2004. The building was topped off in November 2004 and opened for occupancy in May 2005.

This project won the 2006 ACEC-NY Engineering Excellence Award for Structural Engineering.