

Second Avenue Subway Project, New York – Reconstructing Existing Buildings for New Station Entrances

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Abstract

The Second Avenue Subway will be the first major expansion of New York's subway system in over 50 years. It will start from 125th Street in Harlem and will connect directly to the Financial District near Wall Street. For most of its length the alignment is directly under the roadway of Second Avenue.

Phase 1 is already under construction and consists of twin bored tunnels, 3 new stations at 96th Street, 86th Street and 72nd Street, and major modifications to an existing station at 63rd street. The new Station structures are either cut and cover construction or mined rock blasting depending on site conditions. The entrances and ancillary buildings will be formed within sidewalk and adjacent existing property areas.

The paper will focus on the issues associated with the design of these new entrances. Some of these will be located within existing high rise buildings and this will require new large open spaces at street level and below. This will involve the removal of existing high load columns, shear walls and diaphragm slab areas. Load transfer structures, underpinning and strengthening will be provided to ensure structural integrity is maintained.

Specific structural problems and solutions will be demonstrated and relevant New York City and New York State Building Code issues will be discussed. This will include some commentary on recent changes to both codes. The methods of analysis, design, verification and monitoring that are used will be explained. Finally, procedures involved with obtaining existing building information and the role of the New York City Department of Buildings will also be described.

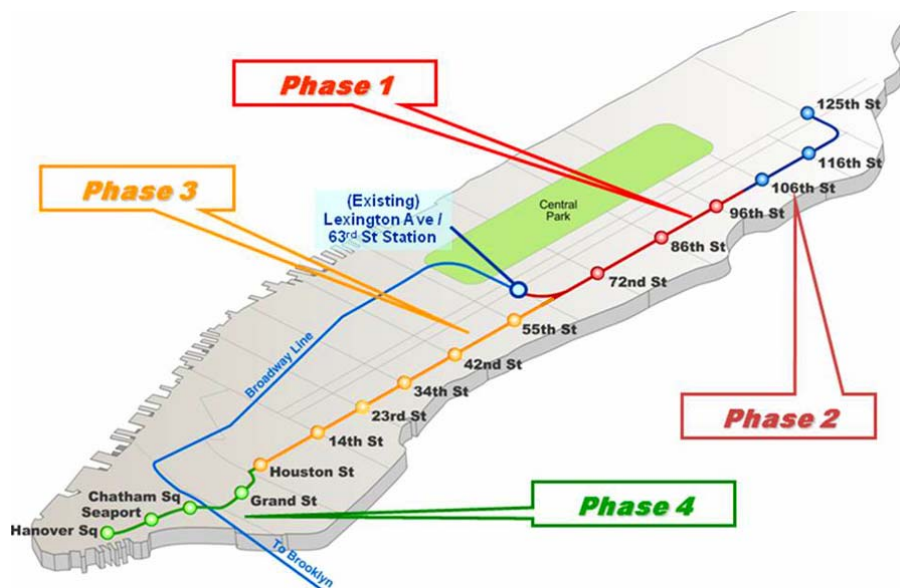


Fig 1