



Photos taken in October 2003 show the excavation support and underpinning structures during the construction of the one mile extension of the Newark subway. At left: The temporary excavation support consists of a soldier pile and lagging wall and secant pile walls. Above: Because the tunnel passes under the PSE&G electrical vaults on Mulberry Street, these structures required underpinning protection during construction.

Newark-Elizabeth Rail Link (NERL)

Newark, NJ

The New Jersey Transit Corporation (NJ Transit) is constructing a one-mile, 5-station Minimum Operable Segment (MOS-1) as part of an 8.8-mile, 16-station light rail transit system that will eventually link Newark and Elizabeth, NJ. The MOS-1 will function as an extension of the 4.3-mile Newark City Subway light rail line, connecting the Broad Street Station to the Newark Penn Station. MOS-1 opened during the summer of 2006.

Mueser Rutledge Consulting Engineers (MRCE) provided design services for temporary excavation support and underpinning for construction of this one-mile extension to the existing Newark City Subway. The extension connects to the subway mainline grade-separated wye located under the intersection of Raymond Boulevard and Mulberry Street in downtown Newark. The new tunnel consists of an underground reinforced concrete box structure for two light rail transit tracks, to be constructed by the cut and cover method. Typical excavation depths varied from 25 to 45 feet. The new tunnel alignment is in close proximity to two multi-story buildings: the Seton Hall parking garage and the Episcopal House, and it is also partially under the PSE&G Electrical Vaults on Mulberry Street. Therefore, these structures required underpinning protection during construction.

MRCE's temporary excavation support design consists of a soldier pile and lagging wall, typically with two or three levels of internal bracing. In addition, secant pile walls reinforced with steel wide flange beams were provided at the building locations in order to minimize excavation related settlements. During construction, the PSE&G vaults holding nine transformers will remain in operation and temporarily hung from a steel frame installed at street level. They will also be supported on 36-inch-diameter caissons.