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TECHNICAL REFERENCE



# Newark - Elizabeth Rail Link



Newark, NJ

**Secant Pile Wall**

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Owner: NEW JERSEY TRANSIT CORPORATION

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General Contractor: E. E. CRUZ COMPANY, INC.

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Structural Engineer: *DMJM Harris*

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2003-04



**The Newark Elizabeth Rail Link Contract No. 02-024, GC #1 – Tunnel is a 1-mile extension to the existing 4-mile Newark City Subway.**

The contract consists of the construction of an underground reinforced concrete box tunnel structure connecting two light rail transit tracks. Constructed using the cut and cover method, the new tunnel is approximately 812 feet long. **The underground reinforced concrete structure is constructed under Mulberry Street from the existing subway connection at Raymond Boulevard, passing between Saint John’s Church and the Episcopal House and ending at a portal about 300 feet south of Center Street.**

The general contractor was required to design and install the temporary support of excavation for the cut and cover tunnel. A temporary support of excavation comprising soldier piles and lagging, in addition to secant pile wall along the existing Episcopal House and the existing parking garage, was selected.

alignment, guide for the drilling tool at the surface and support the upper portion of soil immediately adjacent to the excavation.

After the completion of the secant pile walls, an additional 7 individual piles were installed using similar procedures at the existing electrical transformer vault area to support the vault during the tunnel construction. The 7 individual piles were backfilled with 4,000 psi concrete and reinforced with HP14 x 132 soldier piles.

**Diaphragm Wall (Secant Piles)**

<i>Number of Piles:</i>	<b>94</b>
<i>On Center Spacing:</i>	<b>3’</b>
<i>Spacing:</i>	<b>2’</b>
<i>Total Length:</i>	<b>4,235’</b>



The secant pile walls were designed by Mueser Rutledge Consulting Engineers. Soldier piles, W24 x 117, were installed in all secondary piles immediately after concreting.

Prior to the secant pile wall construction, TREVIICOS installed concrete guidewalls. The purpose of the guidewalls is to provide permanent

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