

## NORTH SHORE CONNECTOR

Pittsburgh, PA



- **Owner:**  
Port Authority of Allegheny County, Pittsburgh, PA
- **General Contractor**  
North Shore Constructors JV (Obayashi/Trumbull),  
Pittsburgh, PA
- **Technique(s) Utilized:**  
Jet Grouting, Diaphragm Walls, Cutter Soil Mixing,  
Cement-Bentonite Cutoff Walls, Anchors

**T**he North Shore Connector Project will extend Port Authority's Light Rail system 1.2 miles from Gateway Station, beneath Stanwix Street and under the Allegheny River. The twin bored tunnels will extend the subway to the North Shore of the Allegheny River.

Nicholson provided temporary support of excavation for the tunnel boring machine launching and receiving pits using cutter soil mixing methods (CSM). A total of 110,000 square feet of cutter soil mixed walls were constructed. The CSM technique mixes in-situ soils with grout to make a soil mix wall. The soil mix is reinforced with soldier beams. The CSM wall was typically 60-feet deep and constructed through alluvium, dense fluvial glacial and extended 3 feet into bedrock.

Beneath existing highway overpasses Nicholson constructed soldier beam reinforced cement bentonite walls using low headroom diaphragm wall equipment. A 37,000 square foot concrete diaphragm wall was constructed as support of excavation during temporary stages and also to form the structural walls for the new North Shore Station.

Jet grouting was used to provide break-out and break-in block sections at the tunnel boring machine (TBM) launching and receiving pits. Jet grouting treatment was also used adjacent to buildings with shallow foundations and below retaining walls along the tunnel alignment. Cyljet, a new method for measuring jet column diameter based on electrical resistivity, was employed on the project. A total of 32,700 cubic yards of jet grouting was performed.