

Taking ground engineering to a deeper level



TECHNICAL REFERENCE



First Street Tunnel

Washington, D.C.



Slurry Wall

Owner:	DC WATER AND SEWER AUTHORITY
Construction Manager:	SKANSKA - JAY DEE Joint Venture
Design Builder:	SKANSKA - JAY DEE Joint Venture

2014-01

The project site is located on First Street NW across from McMillan Reservoir in Washington, D.C. The purpose of this project was to provide support of excavation to the Channing Street Mining Shaft, which is an entry point for a tunnel boring machine. **The work consisted of the construction of a reinforced concrete slurry wall shaft** that allowed a tunnel boring machine to be lowered 150ft into the excavation, in conjunction with a cement-bentonite cutoff wall to limit water infiltration at the head of the underground tunnel to begin the tunnel mining process. Once complete, the tunnel increased storm water discharge capacity for neighborhoods north of Capitol Hill.

The slurry wall was constructed using the tremie concrete method, with a thickness of 42" to provide adequate strength to retain soil during mass excavation. It used over 200 tons of both steel and GFRP (Glass Fiber Reinforced Plastic) bars, and 6000 cubic yards of concrete.

Due to the depth required for this project, maintaining verticality of excavation is the most important aspect for a quality product, as such multiple technologies were used to monitor the deviations of the panel.



Slurry Walls	
Total length:	375 ft.
Square footage:	65,000 sf
Average depth:	173 ft.
No. of panels:	29

The slurry wall was constructed with various “soft eyes” where the tunnel boring machine was bored through to begin the tunnel excavation. GFRP bars were used in place of traditional black steel at pre-determined locations to accommodate slurry wall opening requirements for the tunnel boring machine.