

PROJECT ELEMENTS

- Detailed Design of Temporary Support of Excavation, Traffic Deck, Utility Support/Hanging, Ground Improvement, Groundwater Control
- Evaluation and Assessment of Instrumentation Data
- Construction Impact Assessment on Existing Structures

ROLE

- SOE Design – Engineer of Record (EoR)

PERIOD OF SERVICE

- Sep 2013 – 2019

COST

- Est. Construction: \$1.3B

OWNER

- Los Angeles County Metropolitan Transportation Authority (LA Metro)

CLIENT

- Walsh/Shea Corridor Constructors (WSCC)

Crenshaw/LAX Transit Corridor

Los Angeles, CA



TBM Breakthrough at Crenshaw/Vernon Underground Station

The Crenshaw/LAX Transit Corridor Project consists of approximately 8.5 miles of metro rail from the Crenshaw Boulevard and Exposition Boulevard intersection (Metro Expo Line - Crenshaw/Expo Station) to the existing Metro Green Line Aviation/LAX Metro Station.

The Crenshaw/LAX Transit Corridor connects the Metro Green Line at Aviation/LAX Station with the Metro Expo Line at Crenshaw/Expo Station.

The project includes elevated, at grade, and underground tracks. The underground tracks include U-shaped and cut and cover (C&C) tunnel sections, and twin tube bored tunnels. The project included seven stations along the rail route including, one elevated station (Aviation/Century), three at grade stations (Florence/La Brea, Florence/West, and Crenshaw/Slauson), and three underground stations (Crenshaw/MLK, Crenshaw/Exposition, and Crenshaw/Vernon).

Subsurface & Tunnel Engineering llc (STE) provided detailed design for the support of excavation for the underground stations as well as C&C tunnels. The design included geotechnical evaluation, equilibrium analysis, numerical analysis, steel structural design, wood lagging design, cutter soil mix wall design, ground improvement, utility support, traffic deck design, groundwater control at Crenshaw/MLK and Crenshaw/EXPO underground station, evaluation of instrumentation readings, and construction impact assessment on existing structures.

SUMMARY OF DESIGN PACKAGES:

- SOE for three underground stations (EXPO, MLK, and Vernon) with excavation footprint up to 800-ft. long x 120-ft. wide and up to 85 ft. deep.
- SOE for C&C tunnel section with U-Section ramp leading to the C&C tunnel.
- Strutted soldier pile and lagging system design,
- Traffic deck design to maintain traffic during excavation and construction. The design was developed to meet LA Metro and Caltrans requirements.
- Utility support and hanging to maintain utility services during construction.
- Instrumentation evaluation and interpretation during construction.
- Performed construction impact assessment on existing structures and utilities, due to excavations and construction activities.
- Miscellaneous structural component design (ventilation system hanging, platforms, cable trays, at-grade foundations, other system components)