

Work Plan No. B.06-01 Acoustic Panel Connection Fastener Verification

Scope:

- Provide assistance to BART Engineering staff with investigation regarding the cause of the failure of the fasteners. This task includes removal of two samples of the cast-in-place anchorage assembly by core drilling from the exterior of the panel, followed by transport to the testing laboratory. In the Laboratory the sample will be first examined, and then have the concrete removed with care to not damage embedded steel items. When exposed, all steel items will be examined, and all non-conformance with Contract Documents utilized for its original construction will be identified. All steel components will be examined with non-destructive means for cracking.
- Provide written report of observations and conclusions from laboratory examination of extracted cast-in-place anchorage assemblies.
- Provide Professional Engineering services for design of devices to be capable as needed field installation to provide support at upper connection Acoustic Panel locations where torque testing may result in failure of excessive top connection bolts for one or both panels at a connection. The device is to be capable of being carried with crews during testing, ready for installation, specifically to prevent leaving panels in an unsupported condition.

This scope item includes complete design of this device, with complete drawings and calculations, sufficiently detailed to function as shop drawings for fabrication. AECOM will additionally assist BART or a fabricator selected by BART with fabrication and verification of the ability to install these devices in the field. The precise number to be fabricated is to be determined, to allow a sufficient amount of testing to occur, it will most likely be necessary to supply 5 to 10 devices.

- Provide services to establish the torque testing procedures for testing of fasteners at connections.
- AECOM and AME will jointly participate in meetings with BART representatives at a kick-off meeting for fastener testing. The kick-off meeting location is to be determined, and may occur in the Oakland Shops, other equivalent office type setting, or in the actual work zones.
- All torque testing will be performed by AME technicians, with the overall torque testing program managed by AECOM. AECOM will accompany AME technicians for the initiation of torque testing activities, including training for installation of devices for support of top connections in the event of bolt fracture, and detailed instructions of when to stop testing activities if excessive numbers of bolts exhibit fracture upon testing.
- Torque testing of Acoustic Panel fasteners at C Line.
- Torque testing of Acoustic Panel fasteners at R Line.
- Torque testing of Acoustic Panel fasteners at L Line.
- Provide written report of torque testing results.

Budgets provided are based upon an assumed progression of work for testing. It is recognized that dependent upon testing results, it may not be necessary to complete 100% of the torque testing.

For this reason, BART Engineering will be provided with updates for at intervals not exceeding 5 days of field torque testing work. This update interval may be adjusted based upon mutual agreement between AECOM and BART Engineering.

Prime: AECOM

Subconsultant	Amount	DBE (Y/N)	SBE (Y/N)
Applied Materials Engineering	\$207,277	Y	N

Total Work Plan Value: \$324,797