

BART Agreement Number: 6M8210

Approval Date: 02/08/2024

Work Plan No. A.03-01 Technical Support for BART Projects: G-Spur Survey, Noise Measurement, Environmental Permit Support and Modernized OCC

Scope:

Scope of work for G-Spur Survey, Alignment and Utility Support includes:

- Review of site plans to identify existing conditions vs planned.
- Perform pre-rail survey for alignment utilizing geolocational equipment.
- Perform post-rail center survey for alignment utilizing geolocational equipment.
- Located and identify utility as-built validation, both in and around work location.
- Update date re-line drawing with identified deviations as directed.
- Prepare written documents.
 - correspondence,
 - proposals,
 - reports,
 - Site Specific Work Plans,
 - and other construction documents).
- Provide field support and assessment as needed.
- Provide engineering support as needed.
- Provide construction support as needed.
- Work site visits for inspections and reviews.

The proposed scope of work for includes the following tasks.

Task 1: Perform Noise and Vibration Measurements. Continue the onboard noise and vibration measurements at six-month intervals. Conduct supplemental wayside measurements at establish locations at six-month intervals. The estimated level of effort each time that onboard or wayside measurements are performed is 80 hours, which includes the time for obtaining track time, mobilization, performing the measurements, analyzing the measurement data, and preparing a memorandum summarizing the measurement results. The onboard measurements are conducted by CSA and require two to three days for an CSA staff member onboard BART trains. When performing the onboard noise measurements, the CSA staff member is always accompanied by a BART staff member.

Task 2: Provide Ongoing Support of OnTrack. The Jacobs/CSA/SPP team will load data collected in Task 1 into OnTrack and provide ongoing support for the software. The software vendor will respond to support requests made either through the software or email within one business day. The software vendor will be responsible for hosting the system and addressing any software bugs identified by BART that impede BART's use of the system.

Task 3: Add Support for Viewing Vibration Data in OnTrack. Currently vibration data is collected during the onboard measurements, but this data has not been processed or incorporated in OnTrack. However, another transit agency (Sound Transit) has developed an approach for summarizing vibration data into an overall

measure of ride quality, and enhanced OnTrack to view this data. For this task the team will enhance OnTrack to add display of vibration data using the basic approach previously implemented for Sound Transit. This will entail adding graphs of weighted vertical, lateral and overall acceleration levels to the OnTrack data display. These data will be processed for new measurements along with noise data, but will not be processed for historic measurements.

Task 4: Add Support for Viewing Public Complaints in OnTrack. The team will enhance OnTrack to include locations at which residents or passengers previously complained about excessive noise or vibration levels. This will allow BART staff to correlate measurement results with customer and public feedback, and better assess maintenance needs. Further, the system will include functionality for importing complaint data from a comma-delimited or spreadsheet file.

Task 5: Analyze Correlation Between Track Geometry and Noise Data. For this task the team will extend the analysis performed previously that used machine learning techniques together with rail roughness and noise data to predict a corrugation score. Specifically, the team will analyze the roughness data now being collected by BART using its track geometry car, and use this data to develop an improved model for predicting a corrugation score from the noise data.

Task 6. Additional measurements and analysis support. Upon requested by BART, CSA will conduct special noise and vibration studies to address BART requirements. These additional tasks may involve noise and/or vibration measurements, detailed data analysis or supplemental analysis of OnTrack datasets. As part of the task, CSA expects to continue the conformal frog noise measurements that were started in 2022.

Task 7. Supplemental Meetings and Support. The project team will meet with BART and provide additional support as directed. For this task we have assumed that BART team meetings will occur on a monthly basis, which means approximately 16 meetings in 2024. At each monthly meeting, CSA will present a summary of our work to date, and discuss any important observations or conclusions. Supplemental meetings are budgeted to discuss additional tasks, or to brief BART staff that were not present for the monthly meetings.

Specific duties and responsibilities shall include the following:

- Provide Environmental service to complete HMC2 environmental permitting process
- Participate in environmental permit application preparation
- Support the team to update the mitigation proposal, as needed.
- Participate in meetings and provide support to RWQCB, DF&W and USACE
- Participate in field visits as needed
- Review project documents as needed
- Assist in activities required to get the project environmentally cleared
- Manage and track environmental related activities

Specific duties and responsibilities shall include the following:

- a) Reissue package with new contract # and date
- b) Update construction schedule to a 12-month duration and modify SOW accordingly
- c) Update Cost estimate with an NTP of 11/1/24 and reflect the updated schedule duration
- d) Meetings and reviews of RFIs from potential contractors
- e) Provide bid support through NTP
- f) Provide as-needed Project Management Support (reporting, coordination, other PM support tasks as requested by BART PM). Assume part time at 400 hours over 6 months or approximately 16 hours/week average.

Prime: Parsons JACOBS

Subconsultant	Amount	DBE (Y/N)	SBE (Y/N)
Mona Tamari & Associates	\$ 9,340	Y	Y
RSE Corporation	\$ 179,980	Y	Y
Cross-Spectrum Acoustics, Inc.	\$ 292,164	Y	Y
M Lee Corporation	\$ 71,596	Y	Y

Total Work Plan Value: \$ 783,256