BART Agreement Number: 6M6137 **Approval Date: 12/20/23**

Work Plan No. A17 Operational Simulation Analysis in Support of BART K-Line Interlocking Replacement

Scope:

BART now needs consultant services to input the timetable implemented in September 2023, and to simulate the service mitigations required for the track closures that will enable the work. The consultant will use the updated BART baseline TrainOps network model developed by Hatch/LTK through another contract. The revised baseline conditions of the model will reflect:

- The existing BART network between Richmond, Pittsburg/Bay Point, Dublin/Pleasanton, Berryessa, San Francisco International Airport and Millbrae (prior to CBTC, BSV2, Irvington Station, and Hayward Yard East).
- Service delivered by a fleet of entirely 'D' and 'E' cars.
- Prior simulation of BART's September 2023 schedule in support of another project, with base headways of 20 minutes on all lines, and 10 minute headways on the Yellow line on weekdays, as per timetables provided to Hatch by BART.

The consultant will work with BART Operations Planning staff to define, simulate and evaluate operational strategies to maximize service continuity throughout the phases of the 'K' Line Interlocking Trackwork Replacement.

2.1 Task 1: 'K' Line Temporary Service Strategy

BART is interested in using simulation to determine the optimal operational approach to dealing with one specific K-Line track closure condition. In this scenario only platform Track 1 is available at MacArthur (K30). Dealing with this outage based on the new BART schedule requires conducting simulation of the north end of the network and the south end of the network separately. BART has proposed the operational plan outlined below. This will be simulated to determine its operational feasibility and based on those results will be adjusted as necessary to provide consistent weekend service during this closure.

North End:

A service serving the R-Line will use the R25 crossover and a single track section to access K30 platform Track 1. Opposing direction trips will pass at North Berkley. This service is expected to operate on a 30 minute headway; the capacity of this movement will be tested in simulation. The C-Line will be served by 20 minute headway service which reverses direction at Rockridge. This service cannot access K30, because the single track that would be necessary therefor cannot support bidirectional operation.

South End:

The Blue Line will operate on 20 minute headways through the Oakland Wye as normal. Another M-Line service will access 19th St,. Oakland (K20) by single tracking on the K-Line Track 3 (CX track). Another A-Line service will access K20 via either Track 1 or Track 2. K-Line Track 3 supports ATO in both directions

but turns on the other two tracks are not supported and ATO will not be available when reversing out of these locations. BART will provide Hatch with characteristics of this operation, such as initiation times and speed limits. The goal is for all three of these services to operate at 20 minute headways.

Simulation analysis will be conducted to determine if the headways and operating patterns proposed can be achieved. If simulation determines that they cannot, adjustments to the planned headways or travel patterns will be made through coordination with BART and simulation will be used to test the validity of the revised plans.

Prime: Fehr and Peers

Subconsultant	Amount	DBE (Y/N)	SBE (Y/N)
Hatch	$ 29,096	N	N

Total Work Plan Value: $ 31,620