BART Agreement Number: 6M8144 **Approval Date:** 1/08/2021

Work Plan: No. B.05-02 – TCCCP TPSS East Bay HMC ETTS interface design

Scope:

2.0 Scope of Services

General:

The HNTB+FMG JV team is proceeding with base design of all traction power facilities scoped in original Work Plan B.05-01. The project requires design to be progressed on multiple sites simultaneously and will integrate the new ETTS design specified herein during the current 95% design stage. The table below highlights the additional design scope in red.

TCCCP EB – ETTS Design Scope (Added Scope in Red Font):

	TPSS:	GBS:	Stations
KTF	KWS KTT	KXB KYG KXA	12th St (K10) 19th St (K20)
CMR		CXH CZD	Pleasant Hill (C50)
RPA	RRY RRI RCN	RZB	Richmond (R60)
AEY	ASH AAY	AYP AYR AYT AZD AZE AZF AZG	South Hayward (A70) Hayward Yard (A75) Union City (A80)

Design work to be performed includes the complete ETTS design for the added facilities and includes design for all equipment, wiring, and interfaces for a complete ETTS upgrade. In addition to the added facilities on K-Line and R-Line, the original A-Line ETTS system must be entirely replaced and cut over to a new system.

1. ETTS – Emergency Transfer Trip Scheme

   The emergency trip scheme shall trip DC feeder breakers at adjacent TPSS or GBS. The new substation shall be integrated into the existing schemes and shall not replace them.

   AYP

   a. Plan view of equipment locations within existing facility for ETTS towards ASH
   b. Breaker close and trip circuit modification for ETTS towards ASH
   c. Breaker trip logic
   d. ETTS control schematic for ETTS towards ASH
   e. DC distribution panel modification
   f. Raceway and conduit schedule
   g. Wire schedule additions and deletions

h. Interfacility interface block diagram for ETTS towards ASH (transferring from hard wired scheme to communications-based scheme)

ASH, AYR, AYT, AAY

a. Plan view of equipment locations within existing facilities including cable routes
b. Breaker close and trip circuit modification
c. Breaker trip logic
d. ETTS control Schematic
e. DC distribution panel modification
f. Raceway conduit schedule
g. Wire schedule additions and deletions
h. Interfacility interface block diagram (transferring from hard wired scheme to communications-based scheme)

AZD

a. Plan view of equipment locations within existing facility for ETTS towards AAY
b. Breaker close and trip circuit modification for ETTS towards AAY
c. Breaker trip logic
d. ETTS control schematic for ETTS towards AAY
e. DC distribution panel modification
f. Raceway and conduit schedule
g. Wire schedule additions and deletions
h. Interfacility interface block diagram for ETTS towards AAY (transferring from hard wired scheme to communications-based scheme)

AZE, AZF, AZG, AEY

a. Plan view of equipment locations within new facilities
b. Breaker trip logic
c. ETTS control schematic
d. Interfacility interface block diagram (transferring from hard wired scheme to communications-based scheme)

TCR A70, TCR A75

a. Plan view of equipment locations within the train control room including cable routes
b. ETP and ETSS control schematic
c. Raceway conduit schedules

RCN

a. Interfacility interface block diagram showing relationship to new TPSS RPA

RRI

a. Plan view of equipment locations within existing facility
b. Breaker trip logic
c. ETTS control schematics to interface with existing close & trip circuits and existing logic controller
d. Raceway and conduit schedule

RZB

a. Plan view of equipment locations within existing facility
b. Breaker trip logic
c. ETTS control schematics to interface with existing close & trip circuits and existing logic controller
d. Raceway and conduit schedule

KWS

a. Plan view of equipment locations within existing facilities including cable routes
b. Breaker close and trip circuit modification
c. Breaker trip logic
d. ETTS control schematic
e. DC distribution panel modification
f. Raceway and conduit schedule
g. Wire schedule additions and deletions

KXB

a. Plan view of equipment locations within existing facilities including cable routes
b. Breaker close and trip circuit modification
c. Breaker trip logic
d. ETTS control schematic
e. DC distribution panel modification
f. Raceway and conduit schedule
g. Wire schedule additions and deletions

KYG

a. Plan view of equipment locations within existing facilities including cable routes
b. Breaker close and trip circuit modification
c. Breaker trip logic
d. ETTS control schematic
e. DC distribution panel modification
f. Raceway and conduit schedule
g. Wire schedule additions and deletions

MacArthur station TCR K30

a. Field survey and documentation to ascertain new fiber route into the train control room

Task 1: Administration and Project Management:

The Program Management Team will perform the following activities in support of the project:

- Coordinate work plan activities.
- Work plan communications/meetings/record keeping.
- Work plan progress reporting.
- Subconsultant management.
- Monthly progress reports and agreement administration.
- Prepare and maintain a project design schedule (MS Project format)
- Document Control
- SSWP Development

Task 2: Field Survey and Documentation:

1. As-built Information: Locate, research, and verify existing drawings for all sites.
2. Obtain and review proposed ETTS designs from relevant BART TPSS design packages.
3. Survey TPSS sites including traction power, train control, and electrical room facilities adjacent to facilities to be installed. Visual inspections will be required initially with detailed survey as soon as possible after execution of the task order. The detailed survey will be used to provide backgrounds for all further site work.

Task 2A: BART Project Coordination:

1. Coordination with BART Hayward Maintenance Complex (HMC) Project
2. Coordination with other BART TPSS Projects

Task 3: 95% Design:

The 95% Design shall advance drawings, specifications, and include updates based on agreed upon responses from BART comments. Completion of additional plans and documents are indicated in the preliminary list of deliverables. See Section 4.0.

Task 4: 100% Design:

The 100% Design finalizes drawings, specifications, and include updates based on agreed upon responses from BART comments. 100% Design shall be signed and ready for compilation into a contract package. See Section 4.0 for preliminary list of deliverables.

Task 5: Contract Document Development:

During this stage of the project, the contract 'issue for bid' packages shall be finalized. The final signed design drawings, specifications and engineers estimate will be compiled and readied for bidding. Any required updates to the construction schedules and cost estimate shall be provided.

- Provide support during IFB Phase, including:

    - Respond to bidder questions
    - Prepare addendums
    - Participate in pre-bid meetings
    - Assists on bid evaluation
- Prepare and submit conformed design drawings and specifications.

Prime: HNTB-FMG, Joint Venture

Subconsultants: None – Form 60 states: “Sub Contingency”

Total Work Plan Value: $232,000