

**BART Agreement Number: 6M8148**

**Approval Date: 03/22/24**

**Revised Date: 08/17/24**

**Work Plan No. A.19-01 MOCC- Systems Integration Design**

**Scope:**

**Phase 1 : MOCC Systems Scope**

**PH1- A)** Multiple workshops with BART stakeholders to further clarify and develop the Systems Scope for MOCC contract. Workshops will include but not limited to the following topics:

- Identification of key systems/ functions/subsystems as well as interfaces /handshakes
- Risk Analysis and operational impact- mitigations plan including integration and cutover strategy per function/sub-system
- CBTC Scope - for the MOCC Contractor / professional services
- SVBX Scope -for the MOCC Contractor / professional services
- Review ConOps Updates/functions

**PH1-B)** Prepare MOCC Systems Scope Report that defines the project scope, identifies key interfaces and interactions between the systems and construction contract(s).

**PH1-C)** Support BART to identify where outside resources or contracts maybe needed for a seamless and timely project delivery.

## **Phase 2- MOCC Systems Design**

### **PH2-A)** Project Management and Administration

- Manage project tasks;
- conduct QA/QC review of project submittals and deliverables;
- attend coordination meetings with BART
- Coordination of technical workshop (for Phase 1 and additional technical workshops during phase 2

### **PH2-B)** MOCC Systems Design

Developing performance specifications and drawings for an integrated MOCC that will install the existing systems and upgrade hardware / firmware, when possible.

#### **General Assumptions:**

- Application programming and configuration by BART when required.
- Drawings will provide block diagrams, layouts, locations, quantities, interfaces, network connections and power as needed for subsystems noted below.
- Layout drawings will utilize BART-provided Construction Package drawings for backgrounds
- Specifications - Work will be outlined in the Summary of Work and minor edits to BFS as required or as noted below.

Systems/Sub-systems/Interfaces include but not limited to the following:

1. ICS (console computers etc., ICS will take care of fire alarms and tunnel vent controls)

#### **Assumptions:**

- Contractor to purchase, install and integrate hardware and firmware only. All special software and interfaces are to be defined and provided by BART.

2. SCADA (SCADA also takes care of fire alarms and tunnel ventilation systems controls)

#### **Assumptions:**

- Contractor to purchase, install and integrate hardware and firmware only. All special software and interfaces are to be defined and provided by BART.

3. AFC

Assumptions:

- Contractor to purchase, install and integrate hardware and firmware only. All special software and interfaces are to be defined and provided by BART.

4. Overhead display media Image Processing and distribution for overhead display (software approach is preferred):

Assumption:

- Redundant servers and communications ports to communicate with comm servers and overhead display / Graphics and UI to be defined BART (existing graphics)

5. RATS (remote access terminals)

Assumption:

- Contractor to purchase, install and integrate hardware and firmware only. All special software and interfaces are to be defined and provided by BART.

6. RIDS (rail intrusion detection system)

Define interface: Existing system to be communicating with SCADA and other sub-systems

Assumption:

- Drawings - Interface will be shown in MOCC functional block diagram

7. Radio Console

Upgrade of consoles only, existing radio equipment and integration on new consoles.

8. Radio Coverage in the building

Design and spec for improved coverage within the MOCC bldg only, testing, coverage/ no new channels, etc.

Assumptions:

- Radio block diagram and MOCC layout to show location of the new equipment and interfaces
- New spec for the equipment including Bi-Directional Amplifier (BDA), to improve in-building coverage, and acceptance testing.

9. Admin Phone

Add New Admin Phones at MOCC- Tel system, admin phone same as existing system.

Assumptions:

- BART to provide and program phones.

10. Emergency Phone  
Requirements TBD

Assumptions:

- Contractor to install new Emergency Phones at MOCC if required - Tel system, emergency phones same as existing,
- BART to provide and program phones.

11. Mine Phone  
Requirements TBD

Assumptions:

- Contractor to install new Mine Phone at MOCC if required - same as existing
- BART to provide and program phones.

12. Voice recording interface with phones

Voice recording- Contractor to connect new phones to the existing Voice Recorder.

Assumptions:

- Block diagram to show new phones interface with existing voice recorder

13. Station PA consoles

PA Consoles only- system stays as is ( )

Assumptions:

- Existing central PA system will be utilized

14. DoTI network and Core Switches

DOTI Network - Contractor to provide, install and configure a new node at MOCC (in accordance with BART's overall system topology).

Core switches - Contractor to procure, install and configure redundant Core switches to handle MOCC data routing within MOCC.

Assumptions:

- Block diagram DoTI, Core Switches, Servers, Consoles
- Existing spec for BART standard DoTI node, new spec for Core Switches / including the acceptance test and integration test requirements

15. CCTV digitalization

Existing BART project. Contractor's scope limited to install new CCTV cameras and VMS, also connect/configure VMS to accommodate the new CCTVs.

TBD - Status of the current digitalization project, CCTV storage and monitoring.

Assumptions:

- Block diagram of the CCTV system
- CCTV cameras and VMS are defined under CCTV digitalization project.

16. TBT LIDS (intrusion detection system)  
TBT LIDS is existing, and SCADA/CCTV and other monitoring systems includes the interfaces.
17. CBTC  
Review design of existing TOCC workstations. Coordinate meeting with OCC and CBTC project to determine TOCC workstation requirements for ATS testing and commissioning. Develop recommendations on TOCC workstation updates needed to support ATS testing and commissioning.
18. ROCC (work with OCC hand in hand)  
Scope to be defined during the workshops.
19. Access Control (probably OCIO item)  
BART to identify and integrate. Contractor to install BART identified ACS hardware for the new OCC.
20. OCIO computers (not engineering PCs, but network connection and power should be ready for them).

**Other support systems and activities:**

21. Comm Equipment Back-up power /UPS  
Review of the OCC back up power for Comm and upgrade (add separate UPS for COMM/SCADA)  
Assumptions:
  - There are Comm UPS and/or other clean backup power available and sized for all comm equipment and servers.
  - No dwg or spec development required, only calculations will be performed to confirm.
22. Heat and HVAC:  
Review of the HVAC System  
Assumptions:
  - HVAC design included in Construction Package and sized for all comm equipment and servers.
  - No drawing or spec development required, only calculations will be performed to confirm sizing.
23. MEP / raceways /conduits  
Confirmation of raceways, false floor, and cable trays that are part of the are part of the MOCC Construction Package plans.

24. Interface with the MOCC/ BMS systems:

- Building Fire Alarm (Fire protection),
- Elevators,
- HVAC alarms/ controls,
- BLDG UPS,
- Battery room alarms,
- Main Power and other interfaces with architects at OCC
- Intrusion Detection for cabinets, doors
- SCADA Fire Alarms and exit doors

Assumptions

Interfaces are ready (dry contracts, ports, etc.) for the Systems Contractor to use without any additional work.

25. Remote Terminal Units (RTU) for interface with SCADA

It is assumed the MOCC Architectural contract or BART will provide, program the RTU for monitoring and control of the building alarms and functions listed above.

Assumption:

- Summary of work defines work that is limited to connections and interfaces listed above.

26. Coordination with End Users (UI)

It is assumed this is defined as it relates to all the consoles, graphics layout, Authorization levels, etc.

27. Spec standards updates and industry references.

BART standard specifications and boiler plates will be amended for the specs defined herein.

**Prime: TY LIN - TSE, JV**

<b>Subconsultant</b>	<b>Amount</b>	<b>DBE (Y/N)</b>	<b>SBE (Y/N)</b>
Colmena	\$ 60,432	Y	Y
YEI	\$ 46,626	Y	Y
Charistech	\$ 33,001	Y	Y
RSS	\$ 35,925	N	N

**Total Work Plan Value: \$ 402,696**