

STATEMENT OF WORK

Metro B&D line PLC/EMP MIGRATION

BACKGROUND/INTRODUCTION

The existing Fire and Emergency Management Programmable Logic Controller (F&EM PLC) and Emergency Management Panel (EMP) systems at Metro B&D lines are obsolete and have been phased out by the manufacturer. Affected stations are on D line and B line from Wilshire/Vermont to North Hollywood, including two (2) satellite locations (Solar Drive and Hortense Street). Spare parts are only available as refurbished, and the manufacturer (Schneider) has recommended that this equipment be migrated to the current generation of PLC equipment. The F&EM PLC is a mission critical system and is required by Fire Life Safety (Regulation 4) to be working properly.

SCOPE OF WORK

Metro requires that the existing F&EM PLC equipment be migrated from Quantum PLC and Modicon 800 series chassis-based Input/Output (I/O) to the current generation of PLC equipment. The contractor shall provide all engineering, personnel, labor, material, startup, and Turnkey Engineered Solution services required to accomplish this effort which includes, but is not limited to, the following items:

- Convert existing Quantum ladder logic program; order all hardware related items that require migration.
- Migrate existing Quantum controllers to current generation Quantum controllers. Metro acceptance is required after a 72-hour burn-in period to ensure that the equipment is functioning properly.
- Migrate Fire Control Panel (FCP) communications over. This currently go through a specialty communications interface module (CM1000).
- Install Quantum chassis based I/O on existing 19" sub-panels one chassis at a time. There are up to a total of 5 Remote I/O drops that are in different rooms at the station. Metro final acceptance is required after all chassis for all the drops have been migrated over and tested.

This is an extremely complex project that has a variety of known and unknown risks that need to be identified, managed, and mitigated. The technical features of the existing and obsolete technology platform as well as the replacement platform must be well understood by practitioners that have substantive experience with the old and new Schneider product lines, and experience gained from prior Schneider modernization projects. AVEVA InTouch software experience must also be sought given the 33 instances of InTouch installed across the 13 sites.

To minimize risk, a 1 to 1 migration of existing equipment to modern equipment is required. Metro is seeking a minimum standard of training, competency, and experience to maximize project success and to manage the risks inherent in migrating a mission-critical, high availability, application such as this.

A. CONTRACTOR REQUIREMENTS

a. Manufacturer Credentials - Company Level Certifications and Endorsements

The selected company must be recognized and certified by Schneider and AVEVA at the following levels:

- Schneider Alliance Master Partner
- Schneider PLC Modernization Certified
- AVEVA Endorsed Operations or Certified Operations

b. Individual Staff Certifications

The selected company must employ staff trained and recognized with the following manufacturer certifications (the minimum quantities recommended reflect the large scale and scope of this project):

- EcoStruxure Plant Certified – PLC Modernization
- EcoStruxure Plant Certified – Control System

Individual certifications must have been awarded within the past three years to remain valid.

c. State Certifications

Relevant California state licenses are recommended, such as:

- Licensed CA Professional Engineer (Electrical)
- Licensed CA Professional Engineer (Control System)

d. Prior Project Experience

The selected company must have prior modernization experience, with particular emphasis on:

- Migrating Quantum PLCs to the M340 / M580 platforms
- Migrating Modbus+ networks to Ethernet based networks
- Migrating S908 I/O networks to Ethernet based networks
- Experience with redundant Schneider PLC and networking applications
- Experience with AVEVA InTouch and System Platform
- Experience with IT level network design (switch, routing, copper, fiber, cybersecurity, etc.)

B. CONTRACTOR RESPONSIBILITIES

To complete the project phases, the contractor shall perform the following services:

- a. Attend Metro Rail Safety Training as required. Rail Safety Training must be renewed every 2 years.
- b. Provide, install and configure all required migration hardware.
- c. Provide, install and configure all required migration software. Includes AVEVA InTouch at all stations.
- d. Perform all the services required as described in the Statement of Work.
- e. Produce a test plan and test procedures for final acceptance, and submit to Metro for approval
- f. Perform Hardware Test
 - 1) Provide on-site support during cutover
 - 2) Provide a fallback solution with the least impact to operations in the event the cutover is not successful. Obtain Metro approval of the fallback solution before cutover.

- 3) Provide a verification plan for FLS (fire, life, safety) devices that will be included in the testing. This will allow for FLS and Regulation 4 testers to be included in the review and acceptance of the systems.
- 4) Documentation
 - a. The following documents shall be provided to Metro:
 - i. IO lists
 - ii. All applicable drawings
 - iii. Hardware Design
 - iv. Network Block Diagram
 - v. Test Plan and Test Procedures
 - vi. Test Results
 - vii. Cutover Plan
- 5) Warranty
 - a. All hardware provided by the contractor shall come with 5 years' warranty support
 - b. Contractor shall provide one year of warranty for labor support

C. SAFETY REQUIREMENTS

The contractor is responsible for ensuring that all Metro safety requirements are met. This includes the following: Metro Electrical Safety Policies, Regulation 4 requirements, Safety training, Safety verification, and any/all FLS mission critical items, CSFM (California State Fire Marshal) components, OSHA (Occupational Safety and Health administration), etc.

D. OPTIONAL ITEMS

- a. Contractor to provide separate pricing to replace existing Remote Terminal Unit (RTU) that are using Opto22.

E. METRO RESPONSIBILITIES

Derek Jurykovsky, Project Manager, will provide direction for this project and will be the point of contact.

- a. Provide all necessary field support and coordinate track allocation scheduling. This will include obtaining and coordinating Signals, Rail Communications and Traction Power support.
- b. Metro acceptance will be provided in writing via e-mail within 24 hours after completion.

F. FINAL ACCEPTANCE

- a. Metro will provide the final acceptance of the work once the contractor has successfully met the requirements of this SOW. This includes delivery of all documents, materials, equipment, and test results.
- b. Prior to final acceptance of the work by Metro, Metro and Contractor shall jointly verify the functionality and operation of all newly installed equipment, including all software components.