

**PART 1 GENERAL****1.1 RELATED DOCUMENTS**

- A. The requirements of the General Conditions, Supplementary Conditions and the following specification sections apply to all Work herein:
1. Section 28 31 10 - FDAC General Requirements
  2. Section 28 31 20 - FDAC Scope of Work
  3. Section 28 31 30 - FDAC System

**1.2 SUMMARY**

- A. Provide all Pre-functional Testing, Functional Testing and Integrated Systems Testing to demonstrate proper operation as required by these Specifications, the City of San Francisco, and the authorities having jurisdiction of the FDAC System, equipment and components as indicated on the Drawings and as specified herein. Tests shall include, but not be limited to the items specified in this section and in other Division 28 Specification sections.
- B. The Division 28 Subcontractor shall take the lead responsibility for inspecting, completing and documenting the Pre-Functional Testing for the FDAC Systems to ensure the systems are fully operational and ready for Functional Testing.
- C. The Division 28 Subcontractor shall take the lead responsibility for demonstrating the operations of the FDAC systems for the Functional Tests.
- D. Testing shall in no way relieve the Subcontractor of the warranty requirements.

**1.3 QUALITY ASSURANCE**

- A. Submit evidence to show that the personnel who will actually test the systems are qualified to perform the required Work.
- B. All test procedures shall be in accordance with the manufacturer's recommendations for the equipment being tested.

**1.4 SUBMITTAL DATA**

- A. The following submittal data shall be furnished according to the FDAC General Conditions and Section 28 31 10 and shall include, but not be limited to:
1. Test Procedures for all tests proposed.
  2. Recording Forms.
  3. Test Data and Results including the following:
    - a. Test performed.
    - b. Test procedure.
    - c. System and area tested.
    - d. Date(s) and time(s) of test.
    - e. Weather conditions.
    - f. Test criteria.
    - g. Test results.
    - h. Additional pertinent data.
  4. Instruments including documentation that such instruments were properly calibrated at the time of the testing.
  5. Personnel and Qualifications
- B. All items or equipment listed above with asterisks (\*) shall be certified by the manufacturer using Manufacturer Certification "MCA" as set forth in Section 28 31 10. See Section 28 31 10 for certification requirements.

**PART 2 PRODUCTS**

**2.1 TESTING MATERIALS**

- A. Provide all materials and test equipment required for testing of specified FDAC system components, including any retests required to obtain acceptable results.
- B. Testing materials that fail to provide acceptable test results shall be repaired or replaced with suitable materials as required to obtain acceptable test results.

**PART 3 EXECUTION**

**3.1 FACTORY TESTING**

- A. Refer to the various Division 28 FDAC Specification sections for requirements for factory testing of equipment and devices.

**3.2 FIELD TESTING OF ELECTRICAL SYSTEMS**

- A. During the progress of the Work and upon completion, tests shall be made as specified herein and as required by authorities having jurisdiction including inspectors, Owner, Owner's insurance agency, Architect or Engineer. Tests shall be witnessed by the FDAC Subcontractor as part of the Work of this Division and shall include the services of qualified personnel as well as all equipment, apparatus, and services required. Each wiring system with devices connected must test free from short circuits and from grounds and must have an insulation resistance between conductors and ground, based on maximum load, not less than the requirements of the latest edition of the National Electrical Code.
- B. In accordance with the Subcontractor Scheduling Procedures in Section 28 31 20 titled "FDAC Systems Scope of Work", the FDAC Subcontractor shall submit in writing proposed test procedures, recording forms, list of personnel and qualifications and test equipment for the Engineer's and Owner's review.
- C. The tests shall include but not be limited to the following:
  - 1. Demonstration and operating test of the entire Fire Detection, Alarm and Communication System as required by the Owner and the local authorities.
  - 2. Refer to Division 14 Elevator Specifications and Section 28 31 30 titled "Fire Detection, Alarm and Communication System" for additional testing requirements associated with the building elevators.
  - 3. Refer to Division 25 BMCS specifications for testing requirements related to the communications interfaces with the Division 28 FDAC systems and equipment.
- D. Submit six (6) copies of each complete test report specified herein to the Engineer for review and send two (2) copies of each report to the Owner. See Section 28 31 10 for requirements. The Contractor shall submit individual test reports for each individual system in accordance with the Subcontractor Scheduling Procedures in Section 28 31 20 titled "FDAC System Scope of Work".
- E. The foregoing shall in no way relieve the Contractor of any warranty requirements.

**END OF SECTION**