

SECTION 26 08 00

APPARATUS INSPECTION AND TESTING

04/06

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

NETA ATS (2007) Acceptance Testing Specifications

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70E (2004) Electrical Safety in the Workplace

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

CAL-OSHA (2009) California Code of Regulations,
Industrial Relations Department

1.2 RELATED REQUIREMENTS

Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS applies to work specified in this section with additions and modifications specified herein. Section 26 28 01.00 10 COORDINATED POWER SYSTEM PROTECTION applies to work specified in this section.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Acceptance tests and inspections; G

SD-07 Certificates

Qualifications of organization, and lead engineering technician; G

Acceptance test and inspections procedure; G

1.4 QUALITY ASSURANCE

1.4.1 Qualifications

Contractor shall engage the services of an independent, third-party qualified testing organization to provide inspection, testing, calibration, and adjustment of the electrical distribution system and generation

equipment listed in paragraph entitled "Acceptance Tests and Inspections" herein. Organization shall be independent of the supplier, manufacturer, and installer of the equipment. The organization shall be a first tier subcontractor. No work required by this section of the specification shall be performed by a second tier subcontractor.

- a. Submit name and qualifications of organization. Organization shall have been regularly engaged in the testing of electrical materials, devices, installations, and systems for a minimum of 5 years. The organization shall have a calibration program, and test instruments used shall be calibrated in accordance with **NETA ATS**, and traceable to NIST.
- b. Submit name and qualifications of the lead engineering technician performing the required testing services. Include a list of three comparable jobs performed by the technician with specific names and telephone numbers for reference. Testing, inspection, calibration, and adjustments shall be performed by an engineering technician, certified by NETA or the National Institute for Certification in Engineering Technologies (NICET) with a minimum of 5 years' experience inspecting, testing, and calibrating electrical distribution and generation equipment, systems, and devices.
- c. Submit name of designated safety representative on the project. The safety standards shall include **CAL-OSHA** and **NFPA 70E**.

1.4.2 Acceptance Tests and Inspections Reports

Submit certified copies of inspection reports and test reports. Reports shall include certification of compliance with specified requirements, identify deficiencies, and recommend corrective action when appropriate. Type and neatly bind test reports to form a part of the final record. Submit test reports documenting the results of each test not more than 10 days after test is completed.

1.4.3 Acceptance Test and Inspections Procedure

Submit test procedure reports for each item of equipment to be field tested at least 45 days prior to planned testing date. Do not perform testing until after test procedure has been approved.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 ACCEPTANCE TESTS AND INSPECTIONS

Testing organization shall perform acceptance tests and inspections. Test methods, procedures, and test values shall be performed and evaluated in accordance with **NETA ATS**, as specified in Section 7. Equipment shall be placed in service only after completion of required tests and evaluation of the test results have been completed and approved. Contractor shall supply to the testing organization complete sets of shop drawings, settings of adjustable devices, and other information necessary for an accurate test and inspection of the system prior to the performance of any final testing. Contracting Officer shall be notified at least 14 days in advance

of when tests will be conducted by the testing organization. Perform acceptance tests and inspections on applicable equipment and systems specified in the following sections:

- a. Section 26 23 00 SWITCHBOARDS AND SWITCHGEAR
- b. Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM
- c. Section 26 29 23 VARIABLE FREQUENCY DRIVE SYSTEMS UNDER 600 VOLTS
- d. Section 26 60 13 LOW-VOLTAGE MOTORS
- e. Section 28 05 26.00 40 GROUNDING AND BONDING FOR ELECTRONIC SAFETY AND SECURITY

The Contractor shall supply an approved Protective Device Coordination Study, as required in Section 26 28 01.00 10, with protective device setting sheet, approved submittals for all electrical and utilization equipment to be tested, and a complete set of electrical Drawings and Specifications with any pertinent change orders to the Electrical Testing Company prior to commencement of related testing and adjustments. Set, test and calibrate equipment and devices in accordance with the values established in the study.

Perform tests with apparatus de-energized whenever feasible. Tests on energized apparatus shall only be initiated with all required safety precautions and never by a single individual. Notify the Contractor prior to any testing of energized apparatus requiring exposure of live parts.

Perform thermographic surveys of power distribution connections, conductors and devices for all items rated 100 amps and above as specified under Section 9 of NETA ATS. Include the "optional" photographs and/or thermograms of any deficient area in the required report. Perform survey when plant is operating with at least 30 percent of expected maximum load.

3.2 SYSTEM ACCEPTANCE

Final acceptance of the system is contingent upon satisfactory completion of acceptance tests and inspections.

Unless otherwise directed in writing by the Contracting Officer, any new item that fails a test and/or inspection shall be tested and/or inspected again after repair or replacement as many times as required to pass, at no additional cost.

3.3 PLACING EQUIPMENT IN SERVICE

A representative of the approved testing organization shall be present when equipment tested by the organization is initially energized and placed in service.

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