

University of Houston Master Specification

<Insert Project Name>

<Insert U of H Proj #>

<Insert Issue Name>

<Insert Issue Date>

SECTION 26 0125 - ELECTRICAL TESTING

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Engineer." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
 - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

1.2 DESCRIPTION OF WORK

- A. General: Provide testing of electrical work installed under Divisions 26, 27 and 28, as specified herein and in other Division 26, 27 and 28 sections. Feeders and equipment shall not be placed in service until they have been checked out and tested, as applicable.

1.3 QUALITY ASSURANCE

- A. Personnel: Submit evidence to show that the personnel who will actually test the systems are qualified and state certified.
- B. The Engineer and Owner reserve the right to require that the originally approved personnel be replaced with other qualified personnel if, in either's opinion, the original personnel are not qualified or are not properly conducting the system testing.

1.4 SUBMITTALS

- A. Testing Procedures: Submit four copies of all proposed testing procedures to the Engineer for review at least 30 days prior to conducting any testing.

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- B. Reporting Forms: Submit four copies of proposed forms to be used in recording testing data and results to the Engineer for review at least 30 days prior to conducting any testing on the project.
- C. Test Data and Results: Submit four copies of complete data and certified test results for each test performed, including, but not limited to:
 - 1. Test performed.
 - 2. Test procedure.
 - 3. System and area tested.
 - 4. Date(s) and time(s) of test.
 - 5. Weather conditions.
 - 6. Test criteria.
 - 7. Test results.
 - 8. Additional pertinent information.
- D. Operational Certification: Submit four certified copies of an operational certification which documents that all equipment and systems have been fully tested to verify proper operation in accordance with the design shown in the Construction Documents and manufacturer's recommendations.
- E. Certification: Certifications stating that submitted test data and results are true and correct shall be provided for all submittals under this Section. Certification shall be executed by an authorized officer if the Contractor is a corporation, by a partner if the Contractor is a partnership, by the Owner if the Contractor is a sole proprietorship or by the authorized representative if the Contractor is a joint venture.
- F. Calibration List: Submit four copies of a listing of testing devices to be used for the project to the Engineer for approval. Listing shall include documentation that devices are properly and currently calibrated.
- G. Test Log: The Contractor shall maintain a test log at the site to document the results of all successful and unsuccessful testing and balancing as it is performed. This log shall be available for review by the Engineer and a copy of the log shall be submitted to the Engineer and Owner's Representative prior to the Substantial Completion inspection. A space shall be provided on the test log for signoff by the Owner's Representative.

1.5 NOTICE

- A. General: Notify the Engineer and the Owner's Representative in writing two weeks prior to all scheduled testing to allow time for scheduling witness of testing, where elected by the Engineer and Owner's Representative.

PART 2 - PRODUCTS

2.1 TESTING MATERIALS

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- A. General: Provide all materials and test equipment required for testing of specified electrical systems, including retesting until acceptable test results are obtained.
- B. Products: Tested products which fail to provide acceptable test results shall be repaired or replaced with suitable materials as required to obtain acceptable test results. Engineer shall be notified of the proposed plan/method prior to repair or replacement.

PART 3 - EXECUTION

3.1 TESTING

- A. General: Tests shall be made during the course of construction as specified and as required by authorities having jurisdiction. Tests shall be performed by an approved independent third party testing company. Such tests shall be conducted by this Division as a part of the Work and shall include all personnel, material, and equipment required to perform tests until satisfactory results are obtained. Any defects detected during testing shall be satisfactorily repaired or the equipment involved shall be replaced and the tests re-executed. Any resultant delay as a result of such necessary retest, does not relieve the Contractor of his responsibility under this contract.
- B. Final Testing – Perform Commissioning and function testing to verify that every electrical system including all sub-components functions as designed prior to final acceptance/equipment energization. Refer to Section 26 0001 “Electrical General Provisions.”
- C. Tests: Testing shall include but not be limited to all items listed in other sections of this Division and the following:

[EDIT TO SUIT PROJECT]

- 1. Thermographic Testing: Conduct a thermographic test of the main switchboards/switchgear, **[unit substations]** distribution panels, panelboards, automatic transfer switches, **[busway joints]**, **[motor control centers]** and other electrical distribution apparatus and connections using an infrared temperature scanning unit. The test shall be performed by an approved independent 3rd party testing company. Connections that are not indicating higher temperature levels acceptable shall be tightened, lugs replaced and/or OCPD replaced as required to eliminate the condition. Conduct test, using test reporting forms, between **[6 and 8]** months after beneficial occupancy, but in no case beyond the one year warranty period. Correct unacceptable conditions prior to end of the warranty period.
- 2. Insulated Conductors, Cable, Wires and Terminations Testing Refer to Section 26 0519.
- 3. Electrical Grounding and Bonding for Electrical Testing Refer to Section 26 0526.
- 4. Lighting Control Systems Devices Testing Refer to Section 26 0923.
- 5. Low-Voltage Lighting Controls Testing Refer to Section 26 0926.
- 6. Secondary Unit Substation Testing Refer to Section 26 1116.
- 7. Medium Voltage Pad-Mounted Transformer Testing Refer to Section 26 1219.
- 8. Medium Voltage Switchgear Testing Refer to Section 26 1313.
- 9. Medium Voltage Load Interrupter Switches Testing Refer to Section 26 1316.
- 10. Low Voltage Transformer Testing Refer to Section 26 2200.

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| 11. Low Voltage Switchgear Testing | Refer to Section 26 2312. |
| 12. Low Voltage Switchboard Testing | Refer to Section 26 2413. |
| 13. Panelboards Testing | Refer to Section 26 2416. |
| 14. Low Voltage Motor Control Center Testing | Refer to Section 26 2419. |
| 15. Wiring Device Testing | Refer to Section 26 2726. |
| 16. Engine Generator Testing | Refer to Section 26 3213. |
| 17. Battery Emergency Power Supply Testing | Refer to Section 26 3305. |
| 18. Static Uninterruptible Power Supply Testing | Refer to Section 26 3353. |
| 19. Automatic Transfer Switch Testing | Refer to Section 26 3623. |
| 20. Low-Rise Fire Alarm System Testing | Refer to Section 28 3101. |
| 21. High-Rise Fire Alarm System Testing | Refer to Section 28 3102. |
| 22. Addressable Device Fire Alarm System Testing | Refer to Section 28 3103. |
| 23. High-Rise Addressable Device Fire Alarm System Testing | Refer to Section 28 3104. |

END OF SECTION 26 0125