

SECTION 26 08 00
ELECTRICAL & LIGHTING SYSTEMS COMMISSIONING

PART 1 – GENERAL

1.01 The Functional Performance Testing of the Lighting and Electrical Systems is essential to the operation and performance of the equipment and the completion of the project. Complete all inspections and tests prior to substantial completion of the Work.

PART 2 – PRODUCTS

2.01 TEST INSTRUMENTATION

- A.** The following are suggested testing instruments that could be used but similar types of instruments are acceptable. If the Designer determines that additional instruments are required, provide at no additional charge.
- B.** Recommended Instruments for Testing Purposes
 - 1.** Fluke 43B Single Phase Power Quality Analyzer: With Current Clamp and Voltage Probes
 - 2.** EXTECH Instruments: Foot Candle/Lux Light Meter 401025
 - 3.** Ideal 61-165 ARCFAULT 165
 - 4.** Fluke 1AC-II / 1LAC-II VoltAlert
 - 5.** Power Line Disturbance Monitor
 - 6.** Load Profiler

PART 3 – EXECUTION

3.01 The Functional Performance Testing Procedures approved by the Designer will be used to document the inspection and testing of the equipment and systems. Provide all necessary manpower and have the appropriate subcontractor and/or manufacturer's representative present during the testing and demonstrate, to the Designer's satisfaction, the full operation of all electrical and lighting systems. Coordinate the schedule of the testing so that the Designer and Owner can be present.

- A.** Prior to starting the final testing of the systems, ensure that all equipment and systems were initially started-up and initialized as prescribed by the manufacturer's instructions or by the manufacturer's representative and that the Contractor has performed a complete inspection and test of all electrical and lighting equipment and systems.
- B.** Review the Designer's inspection reports and correct all deficiencies.
- C.** Open and inspect all panels for cleanliness and neatness.
- D.** Check and record voltage and current readings on the Panel board Check Sheet (see Division 26 08).
- E.** Voltage and Amperage readings off by 5% between phases needs to be investigated and a variance of 10% indicated there is a problem.
- F.** Check the Ground for leakage current. Ground current of less than 1 amp is OK, 1

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to 3 amps needs to be checked and more than 3 amps is a problem.

- G.** Main breaker settings, Long Term, Short Term, Instantaneous and Ground Fault, need to be checked, recorded and have the Electrical Designer verify they are correct.
- H.** NOTE: VFD's will cause noise on neutral and ground and fluctuations on voltage as SCR's fire. They also induce motor bearing currents and shaft voltages that will cause pitting of the shaft and motor failure. If none of the following shaft voltage/current eliminators are utilized on the motors, the motors should be checked for excessive voltage/current to determine if a retrofit is required.
- I.** Test receptacle circuits for voltage drop, impedance on hot leg and GFI/ARC, at the last receptacle on the branch line. Circuits used for computers or voltage sensitive equipment, at design amperage, must not be less than 6% and for all other circuits less than 10% of design. At all times the load voltage should not drop below 111 volts. Record findings on the Power Circuit Check Sheet (see Division 26 08).
- J.** Demonstrate the Lighting Control System utilizing the Performance Testing Identification Form and Performance Testing Procedures Form (see Division 01 91) approved by the Designer.
- K.** Demonstrate lighting levels at desk level after dark to ensure that they are not affected by outside light and record readings on the Lighting Check Sheet (see Division 26 08).
- L.** Perform power outage test and/or emergency generator test, under load, and utilize the procedure and record findings on the Emergency Generator Testing Procedures (see Division 26 08).
- M.** Check fuses and overloads in all motor starters.
- N.** Upon completion of the performance testing procedures, the Installer, General Contractor and Designers representatives who observed the testing will sign the Functional Performance Test Certification form (see Division 01 91) and attach deficiency list.
 - 1.** Emergency Power/Generator System
 - 2.** Electrical Switchgear/Panel boards
 - 3.** Electrical Power Circuits
 - 4.** Electrical Lighting
- O.** Provide testing instruments, at no charge or the Designer may elect to provide their own instruments.

END OF SECTION

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