THE UNIVERSITY OF KANSAS
University Fire Marshal Authority
Office of the Provost
Design and Construction Management

Emergency Lighting Inspection & Testing

Certificate of Completion *New and or renovated systems*

BUILDING: _____ **PROJECT #**_____ **A-**_____

INSPECTING PARTIES:

1 _____ (Designer) 4 _____ ( )
2 _____ (AHJ) 5 _____ ( )
3 _____ (Owner) 6 _____ ( )

IDENTIFY TYPE OF SYSTEM AND CHARACTORISTICS:

- ❑ **Generator. Size:** _____KVA **Type:** Natural Gas_____ Diesel _____Other:_____
- ❑ **Battery Inverter(s). Size Unit A:** 120v_____KVA **Size Unit B:** 277v _____KVA
- ❑ **Individual Battery Packs** (self diagnostic type only)
- ❑ **Night Light System**
- ❑ **Normally off lights used. Locations: 1.** _____ **2.** _____

DESIGN AND TESTING PROTOCOL:

A. All areas in the egress path shall be a minimum of 1 foot-candle. Test by meter or test card, (attached)
B. Night light systems shall not be over illuminated due to energy efficiency.
C. Ratio of light and dark areas along the path shall not exceed 40 to 1 (Maximum 40 foot-candles below fixture)
D. **Emergency lighting** should be labeled for identification so that emergency light locations can be inspected on an annual basis by the Kansas State Fire Marshal's Office. Typically, a permanent red dot of 3/4" diameter applied to the fixture is acceptable.

AREAS REQUIRED TO HAVE EMERGENCY LIGHTING: Check off when testing is complete and approved.

- ❑ **Egress paths** (corridors, hallways)
- ❑ **Stairwells**
- ❑ **Elevators**
- ❑ **Restrooms without windows,**
- ❑ **Maintenance areas,**
- ❑ **Exterior egress paths.**
- ❑ **Assembly rooms over 49 occupants**
- ❑ **Other:**_____

CERTIFICATION OF PROJECT COMPLETION AND COMPLIANCE TO CODE:

- ❑ *DATE:*_____/_____/_____ **PASSED: Devices in place per contract.** (are identification labels installed– red dots)
- ❑ *DATE:*_____/_____/_____ **PASSED: Minimum foot-candles achieved** (Identify deficient areas)
- ❑ *DATE:*_____/_____/_____ **PASSED: Inverter Systems: 1.** Duration of test: _____Minutes Run for 90 minutes minimum, 120 if possible to verify safety margin. **2.** Power remaining at end of test:_____%
- ❑ *DATE:*_____/_____/_____ **PASSED: Generator: 90 minute test-** AHJ witnessed per NFPA 110- section 5
- ❑ *DATE:*_____/_____/_____ **ACCEPTED: Generator:** 4 Items per sect. 110, 5-13.3 (see NFPA excerpt)

GENERATOR CHECKLIST AND TEST RESULTS:

				After: 30min	60 min	90 min
❑ Cold start OK		❑ Time- lights transferred:	sec	❑ Oil pressure:			
❑ Start Delay:	sec	❑ Time- lights steady:	sec	❑ Water temp:			
❑ Cranking time:	sec	❑ Voltage:	V	❑ Normal power restored successively			
❑ Time- to operation speed:	sec	❑ Frequency:		❑ Cool down delay- minimum 5 min.			
		❑ Amperage:	A	❑ Comments- next page of report			

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COMMENTS: (Punch list deficiencies and items to be added to comply with code)

NFPA 110- (1999 Edition) Standard for Emergency and Standby Power Systems

Section 5- Excerpt from full section

5-13 Installation Acceptance.

5-13.1

Upon completion of the installation of the EPSS, the EPS shall be tested to ensure conformity to the requirements of the standard with respect to both power output and function. The authority having jurisdiction shall be given advance notification of the time at which the final test is to be performed so that the authority can witness the test.

5-13.2

An on-site acceptance test shall be conducted as a final approval test for all EPSSs. For new Level 1 installations, the EPSS shall not be considered as meeting this standard until the acceptance tests have been conducted and test requirements met.

5-13.2.1

The test shall be conducted after completion of the installation with all EPSS accessory and support equipment in place and operating.

5-13.2.2 Test Results.

The EPSS shall perform within the limits specified in this standard.

5-13.2.3*

The on-site installation test shall be conducted in the following manner:

(a) With the prime mover in a "cold start" condition and the emergency load at standard operating level, a primary power failure shall be initiated by opening all switches or breakers supplying the primary power to the building or facility. The test load shall be that load that is served by the EPSS.
(b) The time delay on start shall be observed and recorded.
(c) The cranking time until the prime mover starts and runs shall be observed and recorded.
(d) The time required to reach operating speed shall be observed and recorded.
(e) The voltage and frequency overshoot shall be recorded.
(f) The time required to achieve a steady-state condition with all switches transferred to the emergency position shall be observed and recorded.
(g) The voltage, frequency, and amperes shall be recorded.
(h) The prime mover oil pressure and water temperature shall be recorded, where applicable, and the battery charge rate shall be recorded at 5-minute intervals for the first 15 minutes, and at 15-minute intervals thereafter.
(i) The load test with building load, or other loads that simulate the intended load as specified in 3-4.1, shall be continued for the minimum time required by Table 2-2.3 for the class, or 2 hours maximum, observing and recording load changes and the resultant effect on voltage and frequency. ***(KSFM & DOAS- the system is required to operate for 90 minutes per other sections therefore the class can be interpreted as 1.5 hrs. and the duration therefore should be 90 min.)***
(j) Primary power shall be returned to the building or facility, and the time delay on retransfer to primary for each switch (minimum setting: 5 minutes), and the time delay on the prime mover cool-down period and shutdown shall be recorded.

5-13.2.4

After completion of the test performed in 5-13.2.3, the prime mover shall be allowed to cool for 5 minutes.

5-13.2.5 Full Load Test.

A load shall be applied for a 2-hour, full load test. The building load can serve as part or all of the load, supplemented by a load bank of sufficient size to provide a load equal to 100 percent of the nameplate kW rating of the EPS, less applicable derating factors for site conditions. A unity power factor shall be acceptable for on-site testing, provided that rated load tests at the rated power factor have been performed by the manufacturer of the EPS prior to shipment.

Exception: Where the EPS is a paralleled multi-unit EPS, each unit shall be permitted to be tested individually at its rating.

5-13.2.6

A full load test shall be initiated immediately after the cooling time specified in 5-13.2.4 by any method that starts the prime mover and, immediately upon reaching rated rpm, picks up 100 percent of the nameplate kW rating on one step, less applicable derating factors for site conditions.

Exception: Where the EPS is a paralleled multi-unit EPS, each unit shall be permitted to be tested individually at its rating.

5-13.2.7

The data specified in 5-13.2.3(c), (d), (e), (f), (g), and (h) shall be recorded at first load acceptance and every 15 minutes thereafter until the completion of the 2-hour test period.

5-13.2.8 Cycle Crank Test.

Any method recommended by the manufacturer shall be utilized to prevent the prime mover from running. The control switch shall be set at "run" to cause the prime mover to crank. The complete crank/rest cycle specified in 3-5.4.2 and Table 3-5.4.2 shall be observed.

5-13.2.9

All safeties specified in 3-5.5 and 3-5.6 shall be tested as recommended by the manufacturer.

5-13.3

The following shall be made available to the authority having jurisdiction at the time of the acceptance test:

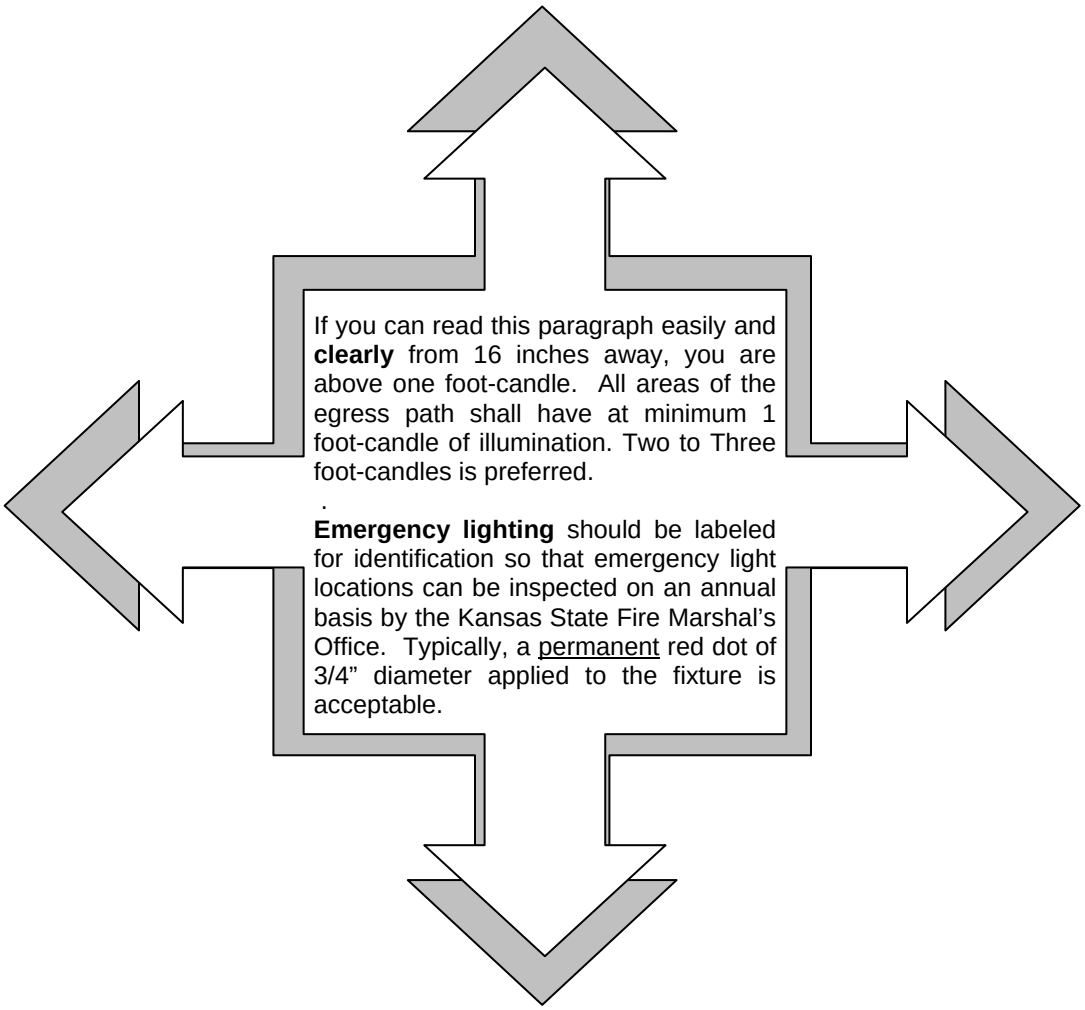
(a) Evidence of the prototype test as specified in 3-2.1 (for Level 1 systems). *(Certifies compatibility & reliability of all the components as a unit.*
(b) A certified analysis as specified in 3-5.10.2 *(verifies torsional vibration compatibility of the rotating elements)*
(c) A letter of compliance as specified in 3-5.10.5 *(energy converter supplier compliance certification)*
(d) A manufacturer's certification of a rated load test at rated power factor with the ambient temperature, altitude, and fuel grade recorded. ***(load test per 5-13.2.5)***

University Fire Marshal Authority

Emergency Lighting Inspection & Testing
Foot Candle level test

Directions:

Place this sheet on floor of facility at the lowest lit area of the egress path:



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