

Facilities Planning

Newsletter 71 – January 2006

SED Requirements for Emergency Lighting for Educational (E) Occupancies

This article is also located on our Mechanical Articles web page.

Designing and inspecting emergency lighting systems for schools can often be a complicated task. There are various types of emergency power systems to choose from, numerous ways to design the systems. We are notified of many unsafe conditions with emergency lighting systems found during fire inspections. For designers the key is to select an emergency power system that is appropriate for the venue and to design the system such that it is code compliant. When inspecting recognize the emergency power system components and code compliance of them operating as a system.

Existing Construction:

Emergency power systems shall consist of storage batteries, unit equipment or an on-site generator and shall comply with Section 1012 of the current Fire Code of New York State as well as the New York State Uniform Fire Prevention and Building Code (NYSUFPBC) and/or the SED Manual of Planning Standards (MPS) in effect at the time of design.

Emergency power systems, installed after 1974, shall provide power for a duration of not less than 90 minutes. Emergency power systems, installed prior to 1975, shall provide power for a duration of not less than 60 minutes. Emergency lighting systems, installed after 1974, shall be arranged such that failure of a normal area lighting circuit shall cause the emergency lighting system to automatically energize, within 10 seconds, or maintain energized emergency lighting in the area. Emergency lighting systems shall be arranged such that a space will not be in total darkness upon failure of any individual lighting element, such as the failure of a light bulb. Note that, since 1987, where high-intensity discharge lighting is used as the sole source of normal illumination in an area, the emergency lighting system shall operate for the lesser of 90 minutes or until normal illumination has been restored.

Areas of assembly, with 100 or more occupants require emergency lighting. Areas of assembly, with 50 or more occupants, as well as other areas required by code, constructed after 1984, require emergency lighting. Areas of assembly include, but are not limited to, auditoriums, gymnasiums, cafeterias, swimming pools, large group instruction rooms, all purpose rooms, playrooms, and combined places of assembly.

Interior stairs, corridors, windowless areas with student occupancy, shops, and laboratories shall be equipped with emergency lighting on a retroactive basis. Note that SED considers program spaces with hot equipment, open flame, rotating equipment and/or use of potentially hazardous chemicals to be in the same category as shops.

Unit equipment (individual battery backup lights), installed after 1974, shall be connected, ahead of local switches, to the branch circuit serving the normal lighting in the area. Unit equipment, installed after 1987 and located in a separate and uninterrupted area supplied by a minimum of

three normal lighting circuits, may be connected to a separate branch circuit that originates from the same panelboard as that of the normal lighting circuits and is provided with a lock on feature.

Generator and storage battery emergency lighting systems shall be arranged such that areas requiring emergency lighting are equipped with both emergency lighting equipment, served by at least one emergency circuit, and normal lighting equipment, served by at least one normal lighting circuit. For example, stairway lighting shall not be served solely by an emergency circuit derived from an emergency power panel.

Existing emergency lighting circuiting is acceptable if installed in accordance with the code requirements at the time of design. If the existing emergency lighting circuiting is not in accordance with the code requirements at the time of design the circuiting will have to be retrofitted to be compliant with the requirements for New Construction.

School Districts should evaluate the emergency lighting systems in each building to determine the level of safety the emergency lighting systems provide for the building occupants. Investigate whether the emergency lighting systems operate as expected. Determine if the emergency lighting systems are arranged such that failure of a normal area lighting circuit causes the emergency lighting system to automatically energize, within 10 seconds, or maintain energized emergency lighting in the area. Investigate testing and maintenance performed on emergency lighting systems to determine if compliance with code required maintenance and testing is accomplished. Re-circuiting, installation of controls, and implementation of testing and maintenance procedures may be necessary to achieve the level of safety desired by the School District.

Evaluating Existing Emergency Lighting Systems:

Emergency lighting systems are evaluated as part of the Evaluation of Existing Building (Form FP-EEB) and the Building Condition Survey.

Educational occupancy school district buildings must be evaluated for emergency lighting coverage/operation in accordance with the Fire Code of New York State and the requirements listed for Existing Construction. Other occupied school district buildings must be evaluated for emergency lighting coverage/operation in accordance with the current Fire Code of New York State. Note that different occupancies have different, retroactive requirements under the Fire Code of New York State.

Non-conformances must be indicated on the "Evaluation of Existing Building" form for projects involving educational occupancies. Non-conformances must be identified for all occupied buildings as part of the Building Condition Survey.

Non-conformances will have a negative impact on the rating of the overall condition of the systems. It is expected that all deficient emergency lighting systems will be one of the first items identified for correction as part of the school district's Five Year Capital Plan.

Renovation:

In addition to the requirements listed for Existing Construction the following additional requirements shall be satisfied.

Comply with the requirements of the NYSFPBC.

Exterior exit discharge areas shall be equipped with emergency lighting, when replacing or adding exit discharge lighting, such that failure of the exit discharge normal lighting circuit shall cause the emergency power system to automatically energize or maintain energized exit discharge emergency lighting.

New Construction, Addition, Alteration, Reconstruction, and Change of Occupancy:

In addition to the requirements listed for Existing Construction and Renovation the following modified and additional requirements shall be satisfied.

Comply with the requirements of the SED Manual of Planning Standards.

New or modified emergency lighting circuits cannot be connected to existing generator and storage battery emergency power systems that do not comply with current code requirements. Generator and storage battery emergency power systems and emergency lighting circuiting shall be made to comply with current code requirements when new or modified emergency lighting circuit connections are installed. Current code requirements for generator and storage battery emergency power systems can be found in NFPA 70 (National Electrical Code), NFPA 110 (Emergency and Standby Power Systems), and NFPA 111 (Stored Electrical Energy Emergency and Standby Power Systems).

School district buildings that will be used as emergency shelter facilities must have appropriate emergency power systems. When a generator is installed to satisfy the lighting and power requirements of an occupied emergency shelter, consideration should be given to the potential for generator failure and fuel supply depletion or failure. If the generator was to fail or the fuel supply became unavailable, the occupied emergency shelter would immediately be left in darkness, resulting in a dangerous condition where the means of egress would be extremely difficult to navigate. Therefore, consideration must be given to designing systems such that code required emergency illumination is provided, for at least 90 minutes to allow for evacuation, in the event of generator failure or fuel supply unavailability.

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