DESIGN DIRECTIVE

To: Distribution

From: Erik J. Stoothoff, P.E.
Chief Engineer

Date: 4/9/2020

RE: Emergency Backup Power Generators for Stations/Facilities

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This Design Directive is intended to consolidate, reiterate, supplement, and clarify the MBTA's approach, preferences, and requirements for Emergency Systems for Emergency Loads, including lighting and, if applicable, Legally Required Standby Systems required for the safe egress of the ridership and employees at MBTA Stations and Facilities. In the event that conditions warrant deviation from this directive, a design waiver signed by the Chief Engineer and department owning the scope of work will be required of the project.

MBTA Standards shall apply only where Code does not address a topic or the MBTA requires a standard above and beyond Code. The more stringent shall always apply.

OBJECTIVE

Define that all stations and facilities shall incorporate a diesel-fired generator to provide adequate emergency backup power. Selection and sizing of a diesel-fired generator shall follow all local, state and national codes and requirements:

1. Maximize safety to MBTA passengers, staff and pedestrians.
2. Maximize station egress emergency lighting to provide code-compliant lighting levels for the traveling public to egress from MBTA facilities to the public Right of Way
3. Minimize risk to MBTA assets.

Proactive planning towards potential losses of power and lighting is critical to the safety of our passengers and personnel as well as the functionality and longevity of the MBTA systems. This includes station platforms, parking areas, tracks, maintenance facilities, utilities and all other supporting infrastructure. As such, design shall prioritize safety, function and ease of maintenance over time. Emergency power generation and distribution equipment shall be a coordinated effort with MBTA departments as well as regulatory and representative agencies and municipalities. Lighting systems requiring battery/batteries as the only form of emergency power will not be used.

CODES AND STANDARDS

- NFPA 70
- NFPA 130
- Massachusetts Electric Code (527 CMR 12.00)
- Massachusetts Building Code (780 CMR)

DESIGN PRINCIPLES

MBTA Policy require:

1. MBTA Standard Emergency generators shall be supplied with diesel prime movers. Diesel fuel supply shall be designed with an incorporated belly, skid fuel tank or approved equal
2. Placement of generators shall be determined through coordinated efforts with Transit Police, Office of the Chief Engineer, Engineering & Maintenance or Commuter Rail Operations as applicable, System Wide Accessibility and the MBTA Project Manager.
3. All generators shall be sized with a future capacity of 30% over the base calculated values.
4. All generators shall be supplied with a full rated automatic transfer switch with an environment matching NEMA rated enclosure.
5. All generators fuel supply systems shall be sized to allow for a minimum run time of 24 hours under full load.
6. All generator breakers shall be fully rated.

ADDITIONAL DESIGN GUIDANCE

1. Submittal of complete manufacturer's product data to MBTA for approval is required. This shall consist of complete product description and specifications, catalog cuts, and other descriptive data required for complete product use and information.
2. Provide shop drawings, single line drawings and al associated maintenance manuals.
3. All required asset management information as directed by Reliability Engineering.