

SECTION 26 32 13: STANDBY POWER SYSTEMS

1. GENERAL

- A. This section details general requirements for equipment used for emergency and Standby power systems, including engine generators, automatic transfer switches and related accessory equipment.
- B. Submit product literature detailing equipment ratings, dimensions, mounting and installation details, applicable wiring diagrams, enclosure type and accessories.
- C. Ensure that Standby power system electrical overcurrent and protective devices are properly calibrated and set, including settings for all transfer switch functions.
- D. Field test the complete sequence of Standby power system operation, including power failure, load shed (if applicable) and operation of all supervisory signals and controls. The Engineer of Record shall determine the particular field acceptance testing requirements for each project in coordination with FM Operations and Engineering staff.

2. EMERGENCY GENERATORS

- A. Where engine generators are installed for powering of Standby power loads, they're to be configured to power the following:
 - 1. All emergency/life safety loads
 - 2. Building Automation System (BAS) controls
 - 3. Building telecommunications rooms
 - 4. Identified Standby power loads (for example, local boiler and one hot water circulating pump set to reduce the chance of building freeze-up upon an extended power outage)
 - 5. Storm water sump pumps and sewage ejector pumps
 - 6. Identified user loads (e.g. computer systems, lab equipment)
- B. Exercise care in the configuration and sizing of Standby power loads to minimize generator size. Generators to be sized for the full load and starting needs of all connected emergency life safety and legally required Standby loads; provide generator capacity for lower-priority optional Standby loads only where the required legally required and optional Standby load exceeds the emergency capacity. For example, where there are optional Standby loads and an electric fire pump, provide load-shed controls to lock out the optional Standby loads when the fire pump is called to run on the generator; size the generator for only the fire pump load, assuming the fire pump load is larger than the Standby power load.
- C. Preference is for generators to be located indoors.
- D. Any noise issues will be closely coordinated with the University and all systems designed to comply with city noise ordinances.
 - 1. Generators shall have critical-grade silencers
 - 2. Exterior-mounted generator enclosures, if required, shall be premium sound attenuated rust resistant type
 - 3. Remote-mounted radiators shall be low-noise, sound attenuated where required
 - 4. Noise considerations to include generator air intake and exhaust louvers

- E. Provide life cycle cost analysis for generator fuel type where so directed, based on generator size and availability of natural gas supply. Natural gas is the preferred fuel source in locations where it is readily available at the required minimum gas pressure. Diesel fuel is generally more economical in larger (over 150 KW) sizes.
- F. Considerations for diesel fuel include locations for fuel storage capacity, required secondary spill containment and leak detection for storage tanks, piping and fuel filling systems.
- G. Where diesel generators are utilized, provide onsite fuel storage for a minimum of 36 hours run time at 75% load.
- H. Fuel Handling:
 - 1. Fuel filling station to have spill containment and be provided with spill absorption kit
 - 2. Fuel storage tanks and piping to be double wall construction; provide leak detection system for underground fuel storage tanks and piping systems; leak detection system to be connected to BAS for alarms.
 - 3. Remote located tanks (indoor or underground) to have local fuel tank level indicator and high level alarm monitor at the fuel filling location.
- I. Generators to be provided with electronic generator controls suitable for closed transition switching; provide MODBUS communications protocol and dedicated data connection point for integration of generator operating parameters (“run”/“pre-alarm”/“alarm” status points, “Volts”/“KW”/“KVA” load data and fuel tank level) into campus metering system.
- J. Provide signage at building service equipment detailing generator location and service disconnect locations.
- K. For remote radiators, preferred configuration is vertical discharge.
- L. Vibration Isolation:
 - 1. Provide on a generator mounting points
 - 2. Provide on all prepackaged generator enclosure connection points, where mounted on or within buildings
- M. Generators shall be 1,800 RPM continuous Standby rated.
- N. Field Testing:
 - 1. Include a full load test for a minimum 4-hour period with temporary resistive load banks and installation acceptance tests as required by NFPA 110, including cold start and load acceptance tests.
 - 2. Field test to ensure that generator room is within required tolerances for overheating, airflow, and that exhaust system is free of leaks and restrictions.
 - 3. Ensure that any generator automatic exerciser features, within transfer switches, generator control panels or fire pump control panels are disabled “off”.
- O. Manufacturers:
 - 1. Caterpillar
 - 2. Cummins/Onan

3. AUTOMATIC TRANSFER SWITCHES

- A. Provide separate transfer switches for emergency life safety, legally required Standby and optional Standby loads.
- B. Transfer switches to be closed-transition type.
- C. Transfer switches will have sufficient short circuit ratings for use on the proposed distribution system; note that many smaller switch sizes have reduced interrupting ratings.
- D. Provide transfer switches with integral power meter (volts/amps/Kw); with MODBUS communications protocol; connect meter outputs and transfer switch position contacts into campus metering system. Transfer switches used for critical loads, such as research facilities, should also have position contacts monitored by the BAS.
- E. Provide transfer switches with panel-mounted local "load/no-load" test switches; provide remote dry contact closure for remote transfer switch enable operation (start generator and transfer load to generator until contact is opened); connect contact to campus metering system interface.
- F. Manufacturers:
 - 1. ASCO 7000 series
 - 2. RussElectric RMTD series