

3.0 Lighting Requirements

There are two different illumination levels for station yard lighting systems. NESC Section 11, Table 111-1 recommends a 2 foot-candle (fc) illumination level in stations for general service lighting. The IES Lighting Handbook, Fig. 2-1, recommends a 0.5 foot-candle horizontal illumination level for general security lighting.

In some cases local ordinances recommend or require all lighting sources to be directed and shielded so as not to interfere with the vision of person(s) on adjacent roadways or properties, in this case full cutoff lens may meet their requirements. The lighting fixture(s) with full cutoff lens are listed in the Lighting Fixture Schedule (refer to Section 12.0).

It is not necessary to illuminate the station gates, logo, address signs and the path to the control house. The first responder will use his vehicle lights and/or flashlight to locate the AC supply panel and turn on the service lights.

3.1 Security Lighting

Security lighting is intended to illuminate the areas inside the station yard that might attract vandalism or theft. Such areas would be equipment control cabinets, switching devices, transformers and other major equipment. Security lighting shall be switched by a photoelectric control installed on each fixture designated for Security Lighting. Security lighting shall typically use high-pressure sodium (HPS), open-bottom fixtures with either a 100 or 150 watt lamp. Because of the low wattage requirement for Security Lighting, the supply voltage of these circuits shall be 120 volts AC. The preferred mounting height is 20-30 feet above grade.

An alternative to using the open-bottom fixtures for security lighting is to use some of the floodlight fixtures as security lighting. The floodlight fixtures used for both security and service lighting must be on a separate circuit from the other service lights, and shall be switched by a photoelectric control installed on each of these fixtures.

In some areas, security lighting may attract vandalism rather than deter it. An example would be in a rural area where someone might shoot at station equipment at night with the lights on, but would be unable to pick out a target with the light(s) off. In these areas, local management may elect to turn the circuit off by manually tripping (turning off) the branch circuit breaker in the AC supply panel. Therefore, 120 volt AC convenience receptacles shall not be installed on the same circuit as the security lights.

3.2 Service Lighting

Service lighting is intended to provide additional lighting for unscheduled callouts to the station. An example would be someone who is sent to the station after dark to perform unscheduled switching operation or to inspect equipment after the Dispatch Center receives a trouble alarm. Service lighting shall illuminate all equipment that would need to be operated while performing a switching order. It must also illuminate equipment that might have to be inspected during abnormal conditions. Service lighting shall not be switched with a photoelectric control. The branch circuit breaker in the AC panel shall be used to switch the lights. Maintenance crews performing scheduled work must bring their own work lights with them to the stations.

Service lighting shall typically use high-pressure sodium (HPS) flood light type lamps and fixtures. The lamps shall be either 400 watt or 1000 watt. Because of the higher wattage lamps used for floodlight fixtures, the supply voltage for these circuits shall be 240 volts AC. Floodlight fixtures located on or near equipment structures will typically have an aiming angle of 45° from vertical. Floodlight fixtures located around the perimeter of the station will typically have an aiming angle of 60° from vertical. The open-type fixtures typically used for Security Lighting may provide enough light to achieve Service Lighting levels as well (typical for very small areas).