Lighting

Lighting offers not only aesthetic appeal to a building but also safety. These two categories are a crucial element in the design of a building. Fixture types are selected by the owners and the engineer. The style of the fixture is chosen according to the location, appeal, cost, output of light, and NEC regulations. The engineer is in charge of the location, circuiting, and control of the fixtures.

Fixtures

There are many different fixture types that can be found within a building. Fixtures are selected based on their projected use, such as; the fixture type, the illumination level, the mounting height, and the quarter-point rule. Various styles of fixtures give off different color and quality of light. Fluorescent lighting emits a whiter light than that of an incandescent, which emits a more yellow light. Fluorescent lights are generally used inside due to their low costs and high output. Metal halide lights produce high output for their size; they are very compact and a powerful light source. These fixtures are typically used in structures such as parking garages, warehouses, and athletic facilities. When fixtures are positioned, they are generally placed using the quarter-point rule. This rule helps utilize the light output from each light more efficiently. This rule states that the distance between the walls to the center of the fixture should be half the distance between the two fixture's centers. For example, if the distance between two fixtures center to center is 10 feet, then the distance from the center of one fixture to the wall is 5 feet.

Emergency Lighting

By reason of public safety, it is a necessity that all buildings must have emergency lighting in the occurrence that power is lost. In the occasion that the power does fail, all lighting in paths must be fed from something other than "normal" power. There are a couple ways to operate under emergency lighting. The most involved method consists of an emergency generator and an automatic transfer switch. When the loss of power happens, the transfer switch indicates to the generator that the power is lost and signals it to turn on. When this takes place it allows the action of emergency lights and panels by switching the emergency power from the generator. Also, an EBU (emergency batter unit) may be used. This device can be attached to an exit sign or a light and can be wired into normal circuit power. Metal halide fixtures take more than a minute to charge, this can cause countless problem as a result of not having enough light at the time of a power failure. Therefore, Quartz Restrike may be added to the light fixture, which provides immediate light, but is also an added costs.

3-Way Switching

Multiple switches are necessary for a room with multiple entries. This is made possible by a 3-way or 4-way switch. Two switches that control the same lights are called 3-way switch.

The figure below shows a three way switch. A hot wire from the power source is attached to the switch. Two wires called travelers are connected between the switches. A switched hot wire is fed from the last switch to the lights. Therefore, numerous switches can control the same lights.