

# On The Right Track

Those traveling by water can revel in the lighting at the West Midtown Ferry Terminal. A few blocks south and east, those traveling by rail can bask in the new lighting at Penn Station. Completed in 1910, the station stretches five levels below the streets of Manhattan, encompasses approximately one million sq ft and serves more than four million travelers a year.

Today, Penn Station, which sits below Madison Square Garden, is served by a number of passenger rail services including Amtrak (the station's owner), Long Island Rail Road, New Jersey Transit and the New York



With increased visibility and fewer dark spots, passenger safety and satisfaction has been improved in Penn Station.

City subway. For the past 15 years, Amtrak has initiated several renovation projects to improve the appearance of the station and help reduce operating costs. New paint, updated audio/visual information and security systems have improved the atmosphere, but the illumination still lagged, failing to provide adequate light levels or meet current energy standards.

The lighting system (installed more than 40 years ago) was a combination of metal halide, high-pressure sodium and incandescent lamps and fixtures; more than 3000 fixtures and 5000 lamps were used across all areas of Penn Station. The lamps had varying lifespans in each area of use, and more frequently than not, a large number needed to be replaced due to burnout, color depreciation or color shift.

After a tour of Penn Station, Amtrak consultant Quality Conservation Services, Inc. determined that the age of the existing light fixtures would pose a problem. "They were just too old or too antiquated to house the new technology being considered. We determined that most of the installations would have to be modified and then retrofitted to make the energy efficient lighting system work," says James Maitilasso.

QCS recommended relamping with compact fluorescent lamps (CFLs) for more than 75 percent of the total project. TCP's 289 series of commercial CFLs was specified based on their long lamp life (10,000 hours) and low failure rate (less than 0.5 percent).

During the eight-week relamping project, the station was split into six areas: the rotunda/common, service plant, baggage pass, vendor areas, maintenance and tracks. The CFLs were used in all six areas and installed in various fixtures including festoons, wall packs and sockets. In the rotunda, vendor, maintenance and track areas, 2-W LEDs were used for exit signs. Recessed cans in the common and vendor areas employed other types of CFL technologies, such as spirals, PARs and higher wattage products to illuminate larger areas, such as escalators and outside entranceways. Conversely, 3-W cold cathode lamps, which last an estimated 25,000 hours, were installed in specialty fixtures within the vendor and restaurant areas.

Where current CFL technology wasn't a fit, QCS worked with an OEM retrofit machining outfitter to develop retrofit components to house the new technology. Across more than half the site, retrofit was required for proper installation. In just the tunnels, Amtrak's personnel replaced more than 1700 fixtures with 2600 fixtures.

The trouble seems worth it: Amtrak and QCS estimate the new lighting system will save an estimated 2.1 million kilowatts of energy and more than \$270,000 in energy costs per year.