Evolutionary Roadwork Lighting

Overview –

Roadwork lighting is a critical component of workplace safety. Poor lighting contributes to higher risk of accidents and poor workmanship. Major issues include:

- Excessive glare that can impair drivers' vision, leading to accidents
- Poor light dispersion that can adversely affect workers
- Low color rendition index makes color distinction difficult
- Extremely hot lamps can cause burn injuries
- Fragile bulbs require excessive and expensive maintenance
- Low energy efficiency – high operating costs
- Light pollution

Street-Bright™ roadwork lighting is an evolutionary solution to these problems that uses a proprietary integrated Bright-Tech® system based upon Nikola Tesla's magnetic induction lighting (MIL).

Introducing Street-Bright™ Roadwork Lighting –

Most roadwork lighting has been standardized around high intensity discharge (HID) technology like metal halide (MH), high pressure sodium (HPS) and halogen. Although significant efficiencies can be achieved by upgrading HID to light emitting diode (LED), all these technologies have serious drawbacks as outlined above in the Overview. In fact, upgrades to LED lamps actually increase risks of accidents from excessive intensity, glare, and high frequency flicker. Moreover, lengthy exposure to high intensity LED radiation

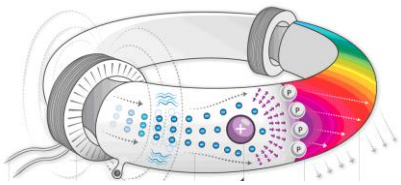
has implied health risks that can lead to sick days, health claims, and workman's compensation claims.

It is important to keep in mind that LEDs and HIDs are not specifically designed for roadwork illumination. No consideration is given for the specific application and work environment. To be sure, no safety director would choose to conduct work around 900 degree fixtures that can instantly cause third degree burns. By the same logic, no safety officer would decide to direct blinding LED light directly into the eyes of oncoming drivers. No environmental director would choose to burn 600% more fuel using HID fixtures. No maintenance officer would select bulbs with delicate filaments if there was an alternative.

Street-Bright™ roadwork lighting is the only comprehensive solution to existing problems. Using a holistic approach, Street-Bright™ fixtures incorporate the proprietary Bright-Tech® system of synergistic MIL bulbs, nano-particle reflectors, geometry, and lenses that address all roadwork illumination issues. When introduced by Nikola Tesla in 1891, MIL was named the "Forever Bulb" because there are no filaments, no pressurization and no vacuum. There is nothing to wear out, so bulbs last more than 100,000 hours.

Start With the Bulb –

Street-Bright™ roadwork lighting uses a large footprint tubular bulb. By distributing light output evenly around the circumference, intensity is lowered to a level that can be directly viewed without eye discomfort. This means oncoming drivers are not subject to overly powerful glare and potential blinding.



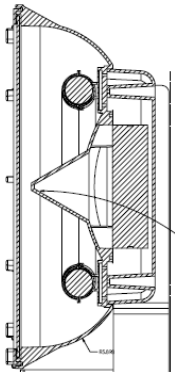
Workers can safely look at fixtures without residual retinal "afterimage" or prolonged visual recovery time. This addresses one of the most negative aspects of LEDs that can cause dots in vision when directly viewed. Although Street-Bright™ roadwork lighting appears less intense at the source, it generates more visually effective lumens (VEL) than LED and HID because spectral frequencies are concentrated within the most sensitive human vision range.

MIL uses a magnetic induction field to spin atoms around the bulb envelope. The energy is converted into visible light using specially formulated

phosphorous coatings tuned to particular spectral frequencies using proprietary LumenTec® technology. All workplaces are not the same. Asphalt is black, concrete is white, gravel is gray, and dirt can assume a variety of colors. All lighting engineers know different reflective surfaces should ideally be illuminated using different spectrums or light temperatures. Blacktop should have more intensity in the short wavelengths… a whiter light. Concrete surfaces can be more effectively illuminated with a lower temperature. Yet, conventional roadwork lighting uses generic bulbs without spectral considerations. Street-Bright™ roadwork lighting can be tuned to match the job site. This enhances visual acuity and safety.

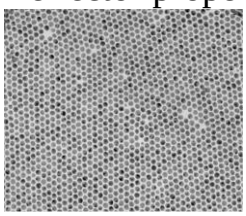
The Geometry –

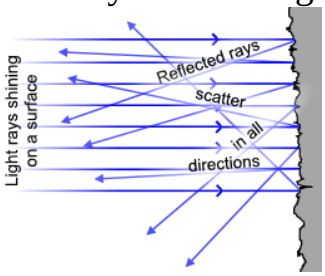
The correct reflector geometry is *critical* for accurate and effective light dispersion. Conventional roadwork lighting tends to act like large flashlights, focusing too much intensity on narrow areas, leaving peripheral spaces poorly lit. Street-Bright™ proprietary reflector design is specific to bulb geometry, maximizing output, minimizing glare, and increasing the effective lighting field. This provides even greater efficiencies because it can often take fewer units to achieve the same overall coverage compared with conventional units.



The Reflector –

Reflector properties are an integral part of the Bright-Tech® system. Using proprietary nano-particles, light can be diffused and dispersed like sunlight. Million of particles scatter light in all directions, but with uniform intensity. This practically eliminates shadowing and hot spots. This means less visual adjustment by the pupil, less eye strain, and higher worker performance.





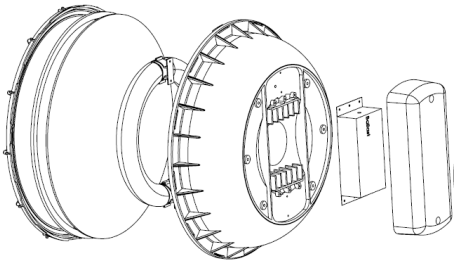
The Lens –

Since MIL bulbs operate at low temperatures, lens material can be polycarbonate which is shatterproof. HID lamps must use glass that can

frequently break in transit when units are being driven over rough roadways. Using specific grades of lens material, light is not impaired as it is when LEDs are shielded. Street-Bright™ roadwork lighting can use glass or plastic lenses, providing more versatility and flexibility.

The Housing –

Using the latest material science, Street-Bright™ roadwork fixtures are extrusion formed from environmentally hardened resins. The dent-proof and shatter resistant housing is ideal for transport over rough road surfaces. Reflector and bulb-mounting components are integral to the entire housing, creating a single integrated unit. Modular design means easy, fast, and low-cost maintenance. Total unit weight is under 15 pounds including ballast.



Electronics –

Since operating temperatures are low and units are just 300 watts, electronics are extremely efficient with a power factor (PF) of 0.98. Unlike HID lamps, Street-Bright™ roadwork lighting is instant on and off with no warm-up or cool-down required. Drivers accommodate 120V to 277V which can pair to high efficiency inverters.

The Bright-Tech® System –

Tesla Induction Lighting™ has developed application specific lighting for snow sports venues, horse farms, dairy farms, marinas/ports/waterways, tunnels, streets/highways, offices, and more. Roadwork applications have vital design considerations that address safety, efficiency, and economics. Street-Bright™ roadwork units can be retrofitted to most generator sets for major operating savings, reducing most applications from 1,000 watt units to 300 watts. Achieve all your objectives with the only application specific lighting design.

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