NOTE TO REVIEWER: The following language is ADDED to the version of the NJTA 2004 Standard Supplementary Specifications which existed prior to the issuance of this DCA.

SECTION 603 - SIGN LIGHTING

603.01 DESCRIPTION.

Replace this Subsection with the following:

The work shall consist of furnishing and installing sign lighting systems complete with luminaires, ballasts, driver, conduits, fittings, mounting hardware, metallic junction boxes, wires, power and control equipment, and other items and appurtenances required to provide complete operational sign lighting system for overhead sign structures, bridge mounted signs, and certain ground mounted signs, as indicated on the Plans. Dynamic message signs are not included in this Section.

603.02 MATERIALS.

Replace this Subsection with the following:

Materials shall conform to the following Subsections:

Enclosed Circuit Breakers 918.20
Lamps 918.13
Sign Lighting Luminaires 918.22
Power Distribution and Control Equipment 918.20
SOOW Multi Conductor power cable .....918.07(K)

SECTION 918 - ELECTRICAL MATERIAL

918.07 CABLE AND WIRE.

The following Paragraph is added:

(K) SOOW Multi Conductor Power Cable.

The SOOW multi-conductor portable cable shall be minimum of #10AWG cable, number as shown on the contract plans or as applicable, soft drawn or annealed, stranded copper individually insulated (color coded in accordance with ICEA Method 1), with oil and water resistant rubber jacket (EPDM), and overall black heavy duty CPE rubber jacket, rated 600V and with operating temperature range of -40°C to +90°C.

Cable and wire shall be manufactured in conformance with ICEA S-68-516, UL 62, CSA Flexible cords C22.2-49, MSHA, and UL listed for indoor and outdoor use.

The cable shall be General Cable Part No. 02727, or Custom Cable Corp. Catalog Number 9026, or approved equal.
Provide cord grip connectors at each cable entry/exit point of the luminaire,

model CGA771750/CGA771850 as manufactured by Bridgeport Fittings or approved equal.

918.22 SIGN LIGHTING LUMINAIRES.

Replace this Subsection with the following:

Sign lighting luminaires, as described in this section, shall be as manufactured by Cooper Lighting Industries, Marquis LED Luminaire Catalog No. MQSA1203LEDEUS or as manufactured by Holophane Co. an Acuity Brands Company, Sign-Vue LED luminaire Catalog No. SVLED-3-5K-3-AS-XXX, The contractor may submit an alternate luminaire for approval by submitting photometric calculations to the Engineer as a shop drawing process in accordance with Section 104.08.

The LED Luminaire shall meet the following specifications:

General Requirements

1. LED Sign lighting luminaire shall be rugged cast aluminum housing for corrosion resistance and long life. The die cast aluminum housing shall be designed to prevent the buildup of water on the top of the housing. Exposed heat sink fins shall be oriented so that water can freely run off the luminaire to carry dust and other accumulated debris away from the unit. Housing shall have two (2) cast in pipe entries, leveling steps and a two bolt mounting. The housing exterior shall be grey in color.
2. Each Luminaire shall consist of a housing, LED array, and electronic driver (power supply).
3. Each luminaire shall be rated for a minimum operational life of 50,000 hours at an average operating time of 11.5 hours per night at 40°C (104°F) while maintaining greater than 70% of its initial lumen output (L70).
4. The rated operating temperature range shall be -40°C (-22°F) to +40°C (104°F).
5. Photometry must be compliant with IESNA LM-79 and shall have been conducted at 25°C (75°F) ambient temperature.
6. Luminaire shall be constructed such that LED modules may be replaced or repaired without replacement of whole luminaire.
7. Housing and door frame shall be aluminum with a minimum 2.5 mil thick paint baked finish able to withstand a 3,000 hour salt spray test as specified in ASTM Designation: B117.
8. The optical assembly of the luminaire shall be protected against dust and moisture intrusion per the requirements of IP-66 (minimum) to protect all optical components.
9. The luminaire door shall open away from the sign face thus providing an easy and safe access to the electrical components.
10. There shall be no penetrations other than the conduit hubs. No photo control receptacle required.
11. Each refractor or lens shall be made from UV inhibited high impact optical grade acrylic or glass and be resistant to scratching and impact.

12. Each luminaire shall be listed with Underwriters Laboratory, Inc.

Photometric Requirements

13. Optical assemblies shall have a minimum efficiency of 85%. All LEDs shall provide the same optical pattern such that failures of individual LEDs will not constitute a loss in the distribution pattern.
14. Light Color/Quality: The luminaire shall have a correlated color temperature (CCT) shall be between 4,000K to 5,000K. The color rendition index (CRI) shall be 65 minimum.
15. Each fixture shall have a Lamp Lumen Depreciation (LLD) factor over its rated L70 lifespan duration of no less than 0.90.

Thermal Management Requirements

16. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
17. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.
18. The luminaire shall have a minimum heat sink surface such that LED manufacturer's maximum junction temperature is not exceeded at maximum rated ambient temperature.
19. The heat sink material shall be aluminum.

Electrical Requirements

20. Drive current to the LEDs shall not exceed 350mA.
21. Operation Voltage Regulation: The luminaire shall operate from a 60 HZ ±3 HZ AC line with a multi tap voltage ranging from 108 VAC to 305 VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.
22. Power Factor: The luminaire shall have a power factor of 0.90 or greater.
23. Surge Suppression: The luminaire onboard circuitry shall include surge protection devices (SPD) to withstand high repetition noise transients as a result of utility line switching, nearby lightning strikes, and other interference. The SPD shall protect the luminaire from damage and failure for common and differential mode transient peak currents up to 10 kA (minimum). SPD shall conform to UL 1449. The SPD shall fail in such a way as the Luminaire will no longer operate. The SPD shall be field replaceable.
24. The LED circuitry shall prevent visible flicker to the unaided eye over the voltage range specified above.
25. LED Drivers must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, Section 15 regulations concerning the emission of electronic noise.
26. Drivers shall be an IP66 rated UL class 2 power unit as per UL 1310 with a Class A sound rating and comply with FCC rules and regulations as per Title 47 CFR part 15.
27. All LED fixtures shall come standard with a 10kV module for transient line surge protection. The electronics/power supply enclosure shall meet the requirements for NEMA/UL wet location.