



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 18, 2026

SUBJECT FAP Route 346 (US 41/Skokie Hwy)  
Project NHPP-GX17(626)  
Section 2024-960-LT  
Lake County  
Contract No. 62W78  
Item No. 8, February 27, 2026, Letting  
Addendum A

## NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised the Schedule of Prices.
2. Revised the Table of Contents to the Special Provisions.
3. Revised pages 5, 7-9, & 45-75 of the Special Provisions
4. Added pages 140 & 143 to the Special Provisions.
5. Revised sheets 1, 2, & 7 of the Plans.
6. Added sheet 49A to the Plans.

Prime contractors must utilize the enclosed material when preparing their bid and must include any changes to the Schedule of Prices in their bid.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Jack A. Elston'.

Jack A. Elston, P.E.  
Bureau Chief, Design and Environment

MTS

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Please note, the marking of underground facilities does not absolve the contractor of their responsibility to repair or replace any facilities damaged during construction at their expense.

## **PUBLIC CONVENIENCE AND SAFETY (D1)**

Effective: May 1, 2012

Revised: July 15, 2012

Add the following to the end of the fourth paragraph of Article 107.09:

"If the holiday is on a Saturday or Sunday, and is legally observed on a Friday or Monday, the length of holiday period for Monday or Friday shall apply."

Add the following sentence after the Holiday Period table in the fourth paragraph of Article 107.09:

"The length of holiday period for Thanksgiving shall be from 5:00 AM the Wednesday prior to 11:59 PM the Sunday after"

Delete the fifth paragraph of Article 107.09 of the Standard Specifications:

"On weekends, excluding holidays, roadways with average daily traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

## **COMPLETION DATE PLUS WORKING DAYS (D-1)**

Effective: September 30, 1985

Revised: January 1, 2007

Revise Article 108.05 (b) of the Standard Specifications as follows:

"When a completion date plus working days is specified, the Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM on, April 30, 2027 except as specified herein.

The Contractor will be allowed to complete all clean-up work and punch list items within 5 working days after the completion date for opening the roadway to traffic. Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the working days allowed for clean up work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

Article 108.09 or the Special Provision for "Failure to Complete the Work on Time", if included in this contract, shall apply to both the completion date and the number of working days.

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of all daily lane, ramp and shoulder closures and 7 days in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One. This advance notification is calculated based on workweek of Monday through Friday and shall not include weekends or Holidays.

**LOCATION: Edens/US 41: Deerfield to Lake-Cook**

| WEEKNIGHT         | TYPE OF CLOSURE | ALLOWABLE LANE CLOSURE HOURS |    |                |
|-------------------|-----------------|------------------------------|----|----------------|
| Sunday – Thursday | 1-Lane          | 8:00 PM                      | to | 5:00 AM        |
| Friday            | 1-Lane          | 8:00 PM (Fri)                | to | 8:00 AM (Sat)  |
| Saturday          | 1-Lane          | 8:00 PM (Sat)                | to | 10:00 AM (Sun) |

**LOCATION: I-94 Edens: Lake-Cook to I-90 Kennedy Junction**

| WEEK NIGHT        | TYPE OF CLOSURE | ALLOWABLE LANE CLOSURE HOURS |    |                  |
|-------------------|-----------------|------------------------------|----|------------------|
| Sunday - Thursday | 1-Lane          | 9:00 P.M.                    | to | 5:00 A.M.        |
|                   | 2-Lane          | 11:00 P.M.                   | to | 5:00 A.M.        |
| Friday            | 1-Lane          | 10:00 P.M. (Fri)             | to | 8:00 A.M. (Sat)  |
|                   | 2-Lane          | 11:59 P.M. (Fri)             | to | 6:00 A.M. (Sat)  |
| Saturday          | 1-Lane          | 9:00 P.M. (Sat)              | to | 10:00 A.M. (Sun) |
|                   | 2-Lane          | 11:59 P.M. (Sat)             | to | 8:00 A.M. (Sun)  |

In addition to the hours noted above, temporary shoulder and non-system interchange partial ramp closures are allowed weekdays between 9:00 A.M. and 3:00 P.M. and between 7:00 P.M. and 5:00 A.M or as approved by the Expressway Traffic Operations Engineer.

Narrow Lanes and permanent shoulder closures will not be allowed between Dec. 1<sup>st</sup> and April 1<sup>st</sup>. Permanent shoulder closures per District Detail TC-17 will only be permitted if called for in the plans or as approved by the Expressway Traffic Operations Engineer.

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A Maintenance of Traffic Plan shall be submitted to the District One Expressway Traffic Control Supervisor 14 days in advance of any stages changes or full expressway closures. The Maintenance of Traffic Plan shall include, but not be limited to: lane and ramp closures, existing geometrics, and equipment and material location.

All daily lane closures shall be removed during adverse weather conditions such as rain, snow, and/or fog and as determined by the Engineer. Also, the contractor shall promptly remove their lane closures when Maintenance forces are out for snow and ice removal.

Additional lane closure hour restrictions may have to be imposed to facilitate the flow of traffic to and from major sporting events and/or other events.

All lane closure signs shall not be erected any earlier than one-half (1/2) hour before the starting hours listed above. Also, these signs should be taken down within one-half (1/2) hour after the closure is removed.

The Contractor will be required to cooperate with all other contractors when erecting lane closures on the expressway. All lane closures (includes the taper lengths) without a three (3) mile gap between each other, in one direction of the expressway, shall be on the same side of the pavement. Lane closures on the same side of the pavement with a one (1) mile or less gap between the end of one work zone and the start of taper of next work zone should be connected. The maximum length of any lane closure on the project and combined with any adjacent projects shall be three (3) miles. Gaps between successive permanent lane closures shall be no less than two (2) miles in length.

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at the locations approved by the Engineer.

Check barricades shall be placed every 1000' within a lane closure to prevent vehicles from driving through closed lanes.

Temporary ramp closures for service interchanges will only be permitted at night during the restricted hours listed for temporary one-lane closures within the project limits. However, no two (2) adjacent entrance and exit ramps in one direction of the expressway shall be closed at the same time.

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Should the Contractor fail to completely open, and keep open, the ramps to traffic in accordance with the above limitations, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Traffic Lanes to Traffic".

## **TRAFFIC CONTROL PLAN (D1)**

Effective: September 30, 1985

Revised: January 1, 2007

Traffic control shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and highway standards contained in the plans, and the special provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following highway standards, details, quality standard for work zone traffic control devices, Recurring Special Provisions and special provisions contained herein, relating to traffic control.

The Contractor shall contact the District 1 Bureau of Traffic at least 72 hours in advance of beginning work.

Standards: 701006, 701400, 701401, 701411, 701428, 701446, **701601, 701701**, 701901

Details: TC-08, TC-09, **TC-10, TC-14**, TC-17

### Special Provisions:

Keeping the Expressway Open to Traffic

Failure to Open Lanes to Traffic (D-1)

Public Convenience and Safety (D-1)

Traffic Control and Protection (Expressways)

Traffic Control and Protection (Arterials)

Traffic Control for Work Zone Area (D-1)

Vehicle and Equipment Warning Lights (BDE)

Work Zone Traffic Control Devices (BDE)

**Keeping Arterial Roadways Open To Traffic (Lane Closures Only)**

**Speed Display Trailer (BDE)**

Revised 2/18/2026

## ROADWAY LUMINAIRE, LED

Effective: November 1, 2025

### Description.

This work shall consist of furnishing and installing a roadway LED luminaire as shown on the plans, as specified herein.

### General.

The luminaire including the housing, driver and optical assembly shall be assembled in the U.S.A. The luminaire shall be assembled by and manufactured by the same manufacturer. The luminaire shall be mechanically strong and easy to maintain. The size, weight, and shape of the luminaire shall be designed so as not to incite detrimental vibrations in its respective pole and it shall be compatible with the pole and arm. All electrical and electronic components of the luminaire shall comply with the requirements of Restriction of Hazardous Materials (RoHS) regulations. The luminaire shall be listed for wet locations by an NRTL and shall meet the requirements of UL 1598 and UL 8750

### Submittal Requirements.

The Contractor shall also submit the following manufacturer's product data for each type of luminaire:

1. Descriptive literature and catalogue cuts for luminaire, LED driver, and surge protection device. Completed manufacturer's luminaire ordering form with the full catalog number provided
2. LED drive current, total luminaire input wattage and total luminaire current at the system operating voltage or voltage range and ambient temperature of 25 C.
3. LED efficacy per luminaire expressed in lumens per watt (l/w).
4. Initial delivered lumens at the specified color temperature, drive current, and ambient temperature.
5. IES file associated with each submitted luminaire in the IES LM-63 format.
6. Computer photometric calculation reports as specified and in the luminaire performance table.
7. TM-15 BUG rating report.
8. Isofootcandle chart with max candela point and half candela trace indicated.
9. Documentation of manufacturers experience and verification that luminaires were assembled in the U.S.A. as specified.
10. Written warranty.

**Upon request by the Engineer**, the submittals shall also include any or all the following:

- a. TM-21 calculator spreadsheet (XLSX or PDF format) and if available, TM-28 report for the specified luminaire or luminaire family. Both reports shall be for 50,000 hours at an ambient temperature of 77 °F (25 °C).

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- b. LM-79 report with National Voluntary Laboratory Accreditation Program (NVLAP) current at the time of testing in PDF format inclusive of the following: isofootcandle diagram with half candela contour and maximum candela point; polar plots through maximum plane and maximum cone; coefficient of utilization graph; candela table; and spectral distribution graph and chromaticity diagram.
- c. LM-80 report for the specified LED package in PDF format and if available, LM-84 report for the specified luminaire or luminaire family in PDF format. Both reports shall be conducted by a laboratory with NVLAP certification current at the time of testing.
- d. AGi32 calculation file matching the submittal package.
- e. In Situ Temperature Measurement Test (ISTMT) report for the specified luminaire or luminaire family in PDF format.
- f. Vibration test report in accordance with ANSI C136.31 in PDF format.
- g. ASTM B117/ASTM D1654 (neutral salt spray) test and sample evaluation report in PDF format.
- h. ASTM G154 (ASTM D523) gloss test report in PDF format.
- i. LED drive current, total luminaire input wattage, and current over the operating voltage range at an ambient temperature of 77 °F (25 °C).
- j. Power factor (pf) and total harmonic distortion (THD) at maximum and minimum supply and at nominal voltage for the dimmed states of 70%, 50%, and 30% full power.
- k. Ingress protection (IP) test reports, conducted according to ANSI C136.25 requirements, for the driver and optical assembly in PDF format.
- l. Installation, maintenance, and cleaning instructions in PDF format, including recommendations on periodic cleaning methods.
- m. Documentation in PDF format that the reporting laboratory is certified to perform the required tests.

A sample luminaire shall also be provided upon request of the Engineer. The sample shall be as proposed for the contract and shall be delivered by the Contractor to the District Headquarters. After review, the Contractor shall retrieve the luminaire.

#### Manufacturer Experience.

The luminaire shall be designed to be incorporated into a lighting system with an expected 20 year lifetime. The luminaire manufacturer shall have a minimum of 15 years' experience manufacturing LED roadway luminaires; parking lot, architectural, or residential luminaires are not applicable to this requirement. The manufacturer shall have a minimum of 100,000 total LED roadway luminaires installed on a minimum of 100 separate installations, all within the U.S.A.

#### Housing.

All external surfaces shall be cleaned in accordance with the manufacturer's recommendations and be constructed in such a way as to discourage the accumulation of water, ice, and debris.

Material. The luminaire shall be a single device not requiring on-site assembly for installation. The driver for the luminaire shall be integral to the unit.

Finish. The luminaire shall have a baked acrylic enamel finish. The color of the finish shall be gray, unless otherwise indicated.

The finish shall have a rating of six or greater according to ASTM D1654, Section 8.0 Procedure A – Evaluation of Rust Creepage for Scribed Samples after exposure to 1000 hours of testing according to ASTM B117 for painted or finished surfaces under environmental exposure.

The luminaire finish shall have less than or equal to 30% reduction of gloss according to ASTM D523 after exposure of 500 hours to ASTM G154 Cycle 6 QUV® accelerated weathering testing.

The luminaire shall slip-fit on a mounting arm with a 2" diameter tenon (2.375" outer diameter), and shall have a barrier to limit the amount of insertion. The slip fitter clamp shall utilize four (4) bolts to clamp to the tenon arm. The luminaire shall be provided with a leveling surface and shall be capable of being tilted  $\pm 5$  degrees from the axis of attachment in 2.5 degree increments and rotated to any degree with respect to the supporting arm.

All external surfaces shall be cleaned in accordance with the manufacturer's recommendations and be constructed in such a way as to discourage the accumulation of water, ice, and debris.

The effective projected area (EPA) of the luminaire shall not exceed 1.6 sq ft (0.149 sq m) and the weight, including accessories, shall not exceed 40 lb (18.14 kg). **If the weight of the luminaire is less than 20 lb (9.07 kg), weight shall be added to the mounting arm or a supplemental vibration damper installed as approved by the Engineer.**

A passive cooling method with no moving, rotating parts, or liquids shall be employed for heat management.

The luminaire shall include a fully prewired, 7-pin twist lock ANSI C136.41-compliant receptacle. Unused pins shall be connected as directed by the Manufacturer and as approved by the Engineer. A shorting cap shall be provided with the luminaire that is compliant with ANSI C136.10.

Vibration Testing. All luminaires shall be subjected to and pass vibration testing requirements at "3G" minimum zero to peak acceleration in accordance with ANSI C136.31 requirements using the same luminaire. To be accepted, the luminaire housing, hardware, and each individual component shall pass this test with no noticeable damage and the luminaire must remain fully operational after testing.

Labels. An internal label shall be provided indicating the luminaire is suitable for wet locations and indicating the luminaire is an NRTL listed product to UL1598 and UL8750. The internal label shall also comply with the requirements of ANSI C136.22.

An external label consisting of two black characters on a white background with the dimensions of the label and the characters as specified in ANSI C136.15 for HPS luminaires. The first character shall be the alphabetical character representing the initial lumen output as specified in Table 1 of Article 1067.06(c). The second character shall be the numerical character representing the transverse light distribution type as specified in IES RP-8 (i.e. Types 1, 2, 3, 4, or 5).

Hardware. All hardware shall be stainless steel or of other corrosion resistant material approved by the Engineer.

Luminaires shall be designed to be easily serviced, having fasteners such as quarter-turn clips of the heavy spring-loaded type with large, deep straight slot heads, complete with a receptacle and shall be according to military specification MIL-f-5591.

All hardware shall be captive and not susceptible to falling from the luminaire during maintenance operations. This shall include lens/lens frame fasteners as well hardware holding the removable driver and electronic components in place.

Provisions for any future house-side external or internal shielding should be indicated along with means of attachment.

Circuiting shall be designed to minimize the impact of individual LED failures on the operation of the other LED's.

Wiring. Wiring within the electrical enclosure shall be rated at 600v, 105°C or higher.

#### Driver.

The driver shall be integral to the luminaire shall be capable of receiving an indefinite open and short circuit output conditions without damage.

The driver shall incorporate the use of thermal foldback circuitry to reduce output current under abnormal driver case temperature conditions and shall be rated for a lifetime of 100,000 hours at an ambient temperature exposure of 77 °F (25 °C) to the luminaire. If the driver has a thermal shut down feature, it shall not turn off the LEDs when operated at 104 °F (40 °C) or less.

The driver shall have an input voltage range of 120 to 277 volts ( $\pm 10\%$ ) or 347 to 480 volts ( $\pm 10\%$ ) according to the contract documents. When the driver is operating within the rated input voltage range and in an un-dimmed state, the power factor measurement shall be not less than 0.9 and the THD measurement shall be no greater than 20%.

The driver shall meet the requirements of the FCC Rules and Regulations, Title 47, Part 15 for Class A devices with regard to electromagnetic compatibility. This shall be confirmed through the testing methods in accordance with ANSI C63.4 for electromagnetic interference.

The driver shall be dimmable using the protocol listed in the Luminaire Performance Table shown in the contract.

Surge Protection. The luminaire shall comply the requirements of ANSI C136.2 for electrical transient immunity at the "Extreme" level (20KV/10KA) and shall be equipped with a surge protective device (SPD) that is UL1449 compliant. An SPD failure shall open the circuit to protect the driver.

#### LED Optical Assembly

The optical assembly shall have an IP 65 or higher rating in accordance with ANSI C136.25. The circuiting of the LED array shall be designed to minimize the effect of individual LED failures on the operation of other LEDs. All optical components shall be made of glass or a UV stabilized, non-yellowing material.

The optical assembly shall utilize high brightness, long life, minimum 70 CRI, 4,000°K color temperature (+/-300°K) LEDs binned in accordance with ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass.

The actual measured luminous flux output shall be within +/- 10% of the published lumen value.

Lumen depreciation at 50,000 hours of operation shall not exceed 15% of initial lumen output at the specified LED drive current and an ambient temperature of 25° C.

The luminaire may or may not have a glass lens over the LED modules. If a glass lens is used, it must be a flat lens. Material other than glass will not be acceptable. If a glass lens is not used, the LED modules may not protrude lower than the luminaire housing.

The assembly shall have individual serial numbers or other means for manufacturer tracking.

#### Photometric Performance.

Luminaires shall be tested according to IESNA LM-79. This testing shall be performed by a test laboratory holding accreditation from the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for the IESNA LM-79 test procedure.

Data reports as a minimum shall yield an isofootcandle chart, with max candela point and half candela trace indicated, maximum plane and maximum cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, spectral distribution plots, chromaticity plots, and other standard report outputs of the above mentioned tests.

The luminaire shall have a BUG rating of Back Light B3 or less, Up Light rating of U0, and a Glare rating of G3 or less unless otherwise indicated in the luminaire performance table.

#### Photometric Calculations.

Calculations. Submitted report shall include a luminaire classification system graph with both the recorded lumen value and percent lumens by zone along with the BUG rating according to IESNA TM-15.

Complete point-by-point luminance and veiling luminance calculations as well as listings of all indicated averages and ratios as applicable shall be provided in accordance with IESNA RP-8 recommendations. Lighting calculations shall be performed using AGi32 software with all luminance calculations performed to one decimal place (i.e. x.x cd/m<sup>2</sup>). Uniformity ratios shall also be calculated to one decimal place (i.e. x.x:1). Calculation results shall demonstrate that the submitted luminaire meets the lighting metrics specified in the project Luminaire Performance Table(s). Values shall be rounded to the number of significant digits indicated in the luminaire performance table(s).

When the quantity of luminaires requires independent testing, the AGi32 calculation file used for performance verification shall also be submitted with the initial submittal.

All photometry must be **photopic**. Scotopic or mesopic factors will not be allowed. The AGi32 file shall be submitted at the request of the Engineer.

**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE  
ROADWAY LIGHTING (MEDIAN MOUNTED POLE, DUAL ARMS)**

**GIVEN CONDITIONS**

|                  |                                     |                               |     |
|------------------|-------------------------------------|-------------------------------|-----|
| Roadway Data     | Pavement Width                      | 36                            | Ft  |
|                  | Number of Lanes Left of Median      | 3                             |     |
|                  | Number of Lanes Right of Median     | 3                             |     |
|                  | Lane Width                          | 12                            | Ft  |
|                  | Median Width                        | 18                            | Ft  |
|                  | IES Surface Classification          | R3                            |     |
|                  | Q-Zero Value                        | 0.07                          |     |
| Mounting Data    | Mounting Height                     | 50                            | Ft  |
|                  | Mast Arm Length                     | Dual 6ft at 180 degrees apart | Ft  |
|                  | Pole Set-Back from Edge of Pavement | 9                             | Ft  |
| Luminaire Data   | Source                              | LED                           |     |
|                  | Color Temperature                   | 4000                          | °K  |
|                  | Lumens                              | 22,000                        | Min |
|                  | Pay Item Lumen Designation          | G                             |     |
|                  | BUG Rating                          | B3-U0-G3                      |     |
|                  | IES Vertical Distribution           | Medium                        |     |
|                  | IES Control of Distribution         | Cutoff                        |     |
|                  | IES Lateral Distribution            | Type II or III                |     |
|                  | Total Light Loss Factor             | 0.75                          |     |
| Pole Layout Data | Spacing                             | 190                           | Ft  |
|                  | Configuration                       | See diagram                   |     |
|                  | Luminaire Overhang over E.O.P.      | -3                            | Ft  |

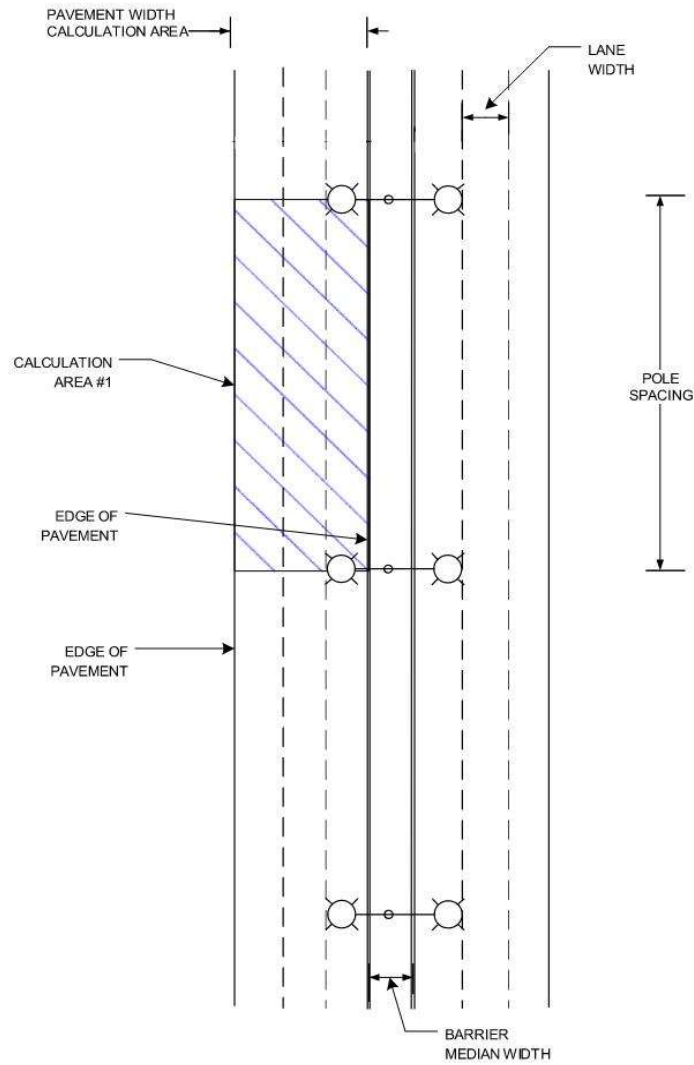
**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested, and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

**PERFORMANCE REQUIREMENTS**

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                      |                                        |     |                   |
|----------------------|----------------------------------------|-----|-------------------|
| Roadway<br>Luminance | Average Luminance, $L_{AVE}$ (Max)     | 1.2 | Cd/m <sup>2</sup> |
|                      | Average Luminance, $L_{AVE}$ (Min)     | 1.0 | Cd/m <sup>2</sup> |
|                      | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3.0 | Max               |
|                      | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5.0 | Max               |
|                      | Veiling Luminance Ratio, $L_v/L_{AVE}$ | 0.3 | Max               |

FAP ROUTE 346 (US 41/SKOKIE HWY)  
PROJECT NHPP-GX17(626)  
SECTION 2024-960-LT  
LAKE COUNTY  
CONTRACT NO. 62W78



**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE  
 ROADWAY LIGHTING (OPPOSITE LAYOUT)**

**GIVEN CONDITIONS**

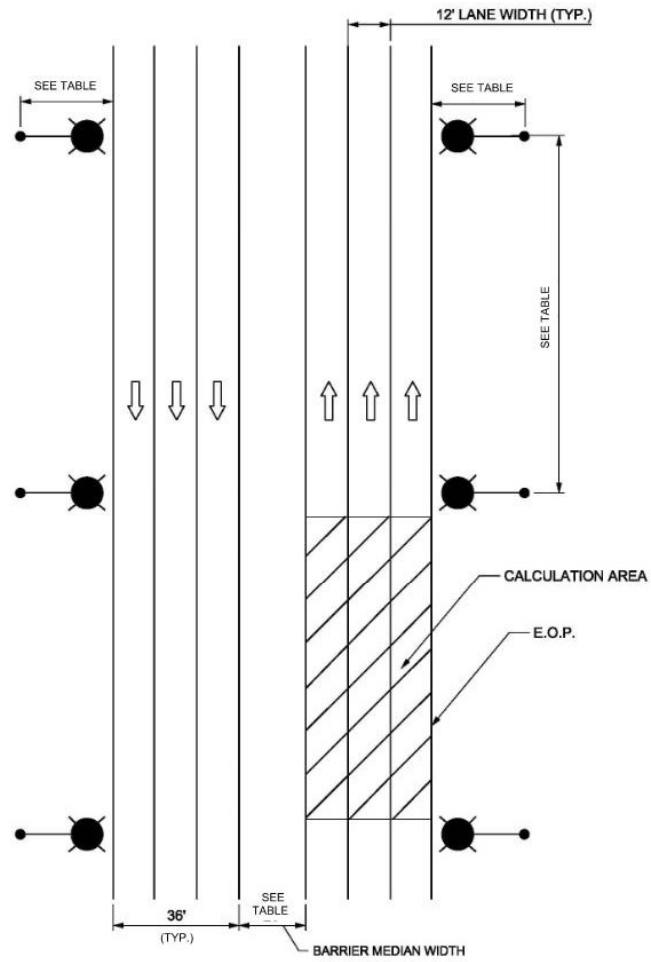
|                  |                                     |                |     |
|------------------|-------------------------------------|----------------|-----|
| Roadway Data     | Pavement Width                      | 36             | Ft  |
|                  | Number of Lanes Left of Median      | 3              |     |
|                  | Number of Lanes Right of Median     | 3              |     |
|                  | Lane Width                          | 12             | Ft  |
|                  | Median Width                        | 39             | Ft  |
|                  | IES Surface Classification          | R3             |     |
|                  | Q-Zero Value                        | 0.07           |     |
| Mounting Data    | Mounting Height                     | 47.5           | Ft  |
|                  | Mast Arm Length                     | 15             | Ft  |
|                  | Pole Set-Back from Edge of Pavement | 19             | Ft  |
| Luminaire Data   | Source                              | LED            |     |
|                  | Color Temperature                   | 4000           | °K  |
|                  | Lumens                              | 27,000         | Min |
|                  | Pay Item Lumen Designation          | H              |     |
|                  | BUG Rating                          | B3-U0-G3       |     |
|                  | IES Vertical Distribution           | Medium         |     |
|                  | IES Control of Distribution         | Cutoff         |     |
|                  | IES Lateral Distribution            | Type II or III |     |
|                  | Total Light Loss Factor             | 0.75           |     |
| Pole Layout Data | Spacing                             | 235            | Ft  |
|                  | Configuration                       | Opposite       |     |
|                  | Luminaire Overhang over E.O.P.      | -4             | Ft  |

**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested, and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

**PERFORMANCE REQUIREMENTS**

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                      |                                        |     |                   |
|----------------------|----------------------------------------|-----|-------------------|
| Roadway<br>Luminance | Average Luminance, $L_{AVE}$ (Max)     | 1.2 | Cd/m <sup>2</sup> |
|                      | Average Luminance, $L_{AVE}$ (Min)     | 1.0 | Cd/m <sup>2</sup> |
|                      | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3.0 | Max               |
|                      | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5.0 | Max               |
|                      | Veiling Luminance Ratio, $L_v/L_{AVE}$ | 0.3 | Max               |





**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE  
ROADWAY LIGHTING (OPPOSITE LAYOUT)**

**GIVEN CONDITIONS**

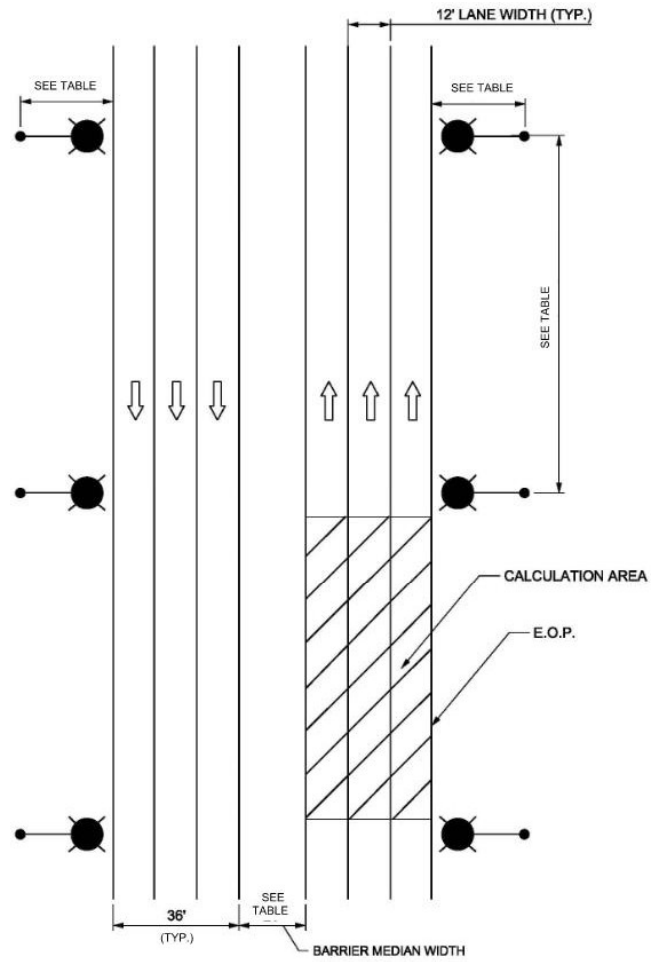
|                  |                                     |                |     |
|------------------|-------------------------------------|----------------|-----|
| Roadway Data     | Pavement Width                      | 36             | Ft  |
|                  | Number of Lanes Left of Median      | 3              |     |
|                  | Number of Lanes Right of Median     | 3              |     |
|                  | Lane Width                          | 12             | Ft  |
|                  | Median Width                        | 5.0            | Ft  |
|                  | IES Surface Classification          | R3             |     |
|                  | Q-Zero Value                        | 0.07           |     |
| Mounting Data    | Mounting Height                     | 35             | Ft  |
|                  | Mast Arm Length                     | 15             | Ft  |
|                  | Pole Set-Back from Edge of Pavement | 7              | Ft  |
| Luminaire Data   | Source                              | LED            |     |
|                  | Color Temperature                   | 4000           | °K  |
|                  | Lumens                              | 22,000         | Min |
|                  | Pay Item Lumen Designation          | G              |     |
|                  | BUG Rating                          | B3-U0-G3       |     |
|                  | IES Vertical Distribution           | Medium         |     |
|                  | IES Control of Distribution         | Cutoff         |     |
|                  | IES Lateral Distribution            | Type II or III |     |
|                  | Total Light Loss Factor             | 0.75           |     |
| Pole Layout Data | Spacing                             | 191            | Ft  |
|                  | Configuration                       | Opposite       |     |
|                  | Luminaire Overhang over E.O.P.      | -4             | Ft  |

**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested, and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

**PERFORMANCE REQUIREMENTS**

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                      |                                        |     |                   |
|----------------------|----------------------------------------|-----|-------------------|
| Roadway<br>Luminance | Average Luminance, $L_{AVE}$ (Max)     | 1.2 | Cd/m <sup>2</sup> |
|                      | Average Luminance, $L_{AVE}$ (Min)     | 0.9 | Cd/m <sup>2</sup> |
|                      | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3.0 | Max               |
|                      | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5.0 | Max               |
|                      | Veiling Luminance Ratio, $L_v/L_{AVE}$ | 0.3 | Max               |



### Independent Testing

When a contract has 50 or more luminaires of the same type (distribution type and lumen output/wattage), that luminaire type shall be independently tested, unless otherwise noted. The quantity of luminaires to be tested shall be as specified in the following table.

| <b>Contract Quantity</b> | <b>Luminaires to be Tested</b> |
|--------------------------|--------------------------------|
| 1-49                     | 0<br>(unless otherwise noted)  |
| 50-100                   | 2                              |
| 101-150                  | 3                              |
| 151-200                  | 4                              |
| 201-250                  | 5                              |
| 251-300                  | 6                              |
| 301-350                  | 7                              |

The Contractor shall coordinate the testing with the contract schedule considering submittal, manufacturing, testing, and installation lead-times and deadlines.

The Electrical Engineer shall select from all the project luminaires at the Contractor's or distributor's storage facility, within District 1, the luminaires for testing. In all cases, the selection of luminaires shall be a random selection from the entire completed lot of luminaires required for the contract. Selections from partial lots will not be allowed. An additional luminaire shall also be selected for physical inspection by the Engineer at the District Headquarters. This luminaire will be available for the Contractor to pick up at a later date to be installed under this contract. This luminaire is in addition to the luminaire required as a part of the submittal process specified elsewhere.

Alternative selection process. With the Engineer's prior approval, the Contractor shall provide a list of luminaire serial numbers for all the luminaires. The Engineer shall make a random selection of the required number of luminaires for testing from the serial numbers. That luminaire must then be photographed clearly showing the serial number prior to shipment to the selected and approved testing laboratory. The testing laboratory shall include a photograph of the luminaire along with the test results directly to the Engineer.

Luminaires shall be tested at a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory approved for each of the required tests. The testing facility shall not be associated in any way, subsidiary or otherwise, with the luminaire manufacturer. All costs associated with luminaire testing shall be included in the bid price of the luminaire.

The selection of the proposed independent laboratory shall be presented with the information submitted for review and approval.

The testing performed shall include photometric and electrical testing.

**All tests shall be conducted at the luminaire system operating voltage of 240 volts unless specified differently in the contract plans.**

Photometric testing shall be according to IES recommendations, performed with a goniophotometer and as a minimum, shall yield an isofootcandle chart, with max candela point and half candela trace indicated, an isocandela diagram, maximum planned and maximum cone plots of candela, a candlepower table (House and street side), a coefficient of utilization chart, a luminous flux distribution table, BUG rating report, and complete calculations based on specified requirements and test results.

Electrical testing shall conform to NEMA and ANSI standards and, as a minimum shall include a complete check of wiring connections and a table of characteristics showing input amperes, watts, power factor, total harmonic distortion and LED drive current.

The summary report and the test results including IES photometric files shall be sent directly to the Resident Engineer, the Electrical Engineer, and the Contractor via email or other mutually agreeable means.

Photometric performance shall meet or exceed that of the specified values. The color temperature shall be within +/- 300°K of the submitted factory values. The measured lumen output of the luminaire shall be within +/- 10% of the submitted factory value. If the luminaire does not meet the specified photometric values, the luminaire has failed regardless of whether the test results meet the submitted factory data.

Should any of the tested luminaires of a given type, and distribution fail to satisfy the specifications and perform according to approved submittal information, the luminaire type of that distribution type and wattage shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance.

In the case of corrections, the Contractor shall advise the Engineer of the proposed corrections and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated in its entirety.

The number of luminaires to be tested shall be the same quantity as originally tested as required in the above table.

Retesting, should it become necessary, shall not be grounds for additional compensation or extension of time.

Submittal information shall include a statement of intent to provide the testing as well as a request for approval of the chosen laboratory.

#### Installation.

Each luminaire shall be installed according to the luminaire manufacturer's recommendations.

Luminaires which are pole mounted shall be mounted on site such that poles and arms are not left unloaded. Pole mounted luminaires shall be leveled/adjusted after poles are set and vertically aligned before being energized. When mounted on a tenon, care shall be exercised to assure maximum insertion of the mounting tenon. Each luminaire shall be checked to assure compatibility

with the project power system. When the night-time check of the lighting system by the Engineer indicates that any luminaires are mis-aligned, the mis-aligned luminaires shall be corrected at no additional cost.

No luminaire shall be installed prior to approval. Where independent testing is required, full approval will not be given until complete test results, demonstrating compliance with the specifications, have been reviewed and accepted by the Engineer.

Pole wiring shall be provided with the luminaire. Pole wire shall run from handhole to luminaire. Pole wire shall be sized No. 10, rated 600 V, RHW/USE-2, and have copper conductors, stranded in conformance with ASTM B 8. Pole wire shall be insulated with cross-linked polyethylene (XLP) insulation. Pole wire shall include a phase, neutral, and green ground wire. Wire shall be trained within the pole or sign structure to avoid abrasion or damage to the insulation.

Pole wire shall be extended through the pole, pole grommet, luminaire ring, and any associated arm and tenon. The pole wire shall be terminated in a manner that avoids sharp kinks, pinching, pressure on the insulation, or any other arrangement prone to damaging insulation value and producing poor megger test results. Wires shall be trained away from heat sources within the luminaire. Wires shall be terminated so all strands are extended to the full depth of the terminal lug with the insulation removed far enough so it abuts against the shoulder of the lug, but is not compressed as the lug is tightened.

Included with the pole wiring shall be fusing located in the handhole. Fusing shall be according to Article 1065.01 with the exception that fuses shall be 6 amperes.

Each luminaire and optical assembly shall be free of all dirt, smudges, etc. Should the optical assembly require cleaning, a luminaire manufacturer approved cleaning procedure shall be used.

Horizontal mount luminaires shall be installed in a level, horizontal plane, with adjustments as needed to insure the optics are set perpendicular to the traveled roadway.

When the pole is bridge mounted, a minimum size stainless steel 1/4-20NC set screw shall be provided to secure the luminaire to the mast arm tenon. A hole shall be drilled and tapped through the tenon and luminaire mounting bracket and then fitted with the screw.

#### Warranty.

The entire luminaire and all of its component parts shall be covered by a 10-year warranty. Failure is when one or more of the following occur:

- 1) Negligible light output from more than 10 percent of the discrete LEDs.
- 2) Significant moisture that deteriorates performance of the luminaire.
- 3) Driver that continues to operate at a reduced output due to overheating.

**The warranty period shall begin on the date of luminaire delivery.** The Contractor shall verify that the Resident Engineer has noted the delivery date in the daily diary. Copy of the shipment and delivery documentation shall be submitted with the final documentation.

The replacement luminaire shall be of the same manufacturer, model, and photometric distribution as the original.

Method of Measurement.

The rated initial minimum luminous flux (lumen output) of the light source, as installed in the luminaire, shall be according to the following table for each specified output designation.

| Designation Type | Minimum Initial Luminous Flux | Designation Type | Minimum Initial Luminous Flux |
|------------------|-------------------------------|------------------|-------------------------------|
| A                | 2,200                         | F                | 12,500                        |
| B                | 3,150                         | G                | 15,500                        |
| C                | 4,400                         | H                | 25,200                        |
| D                | 6,300                         | I                | 33,000                        |
| E                | 9,450                         |                  |                               |

Where delivered lumens is defined as the minimum initial delivered lumens at the specified color temperature. Luminaires with an initial luminous flux less than the values listed in the above table will not be acceptable even if they meet the requirements given in the Luminaire Performance table shown in the contract.

Basis of Payment.

This work will be paid for at the contract unit price per each for **LUMINAIRE, LED, ROADWAY**, of the output designation specified.

**UNDERPASS LUMINAIRE, LED**

Effective: November 1, 2025

Description.

This work shall consist of furnishing and installing an underpass LED luminaire as shown on the plans, as specified herein.

General.

The luminaire including the housing, driver and optical assembly shall be assembled in the U.S.A. The luminaire shall be assembled by and manufactured by the same manufacturer. The luminaire shall be mechanically strong and easy to maintain. All electrical and electronic components of the luminaire shall comply with the requirements of Restriction of Hazardous Materials (RoHS) regulations. The luminaire shall be listed for wet locations by an NRTL and shall meet the requirements of UL 1598 and UL 8750

Submittal Requirements.

Revised 2/18/2026

The Contractor shall also the following manufacturer's product data for each type of luminaire:

1. Descriptive literature and catalogue cuts for luminaire, LED driver, and surge protection device. Completed manufacturer's luminaire ordering form with the full catalog number provided
2. LED drive current, total luminaire input wattage and total luminaire current at the system operating voltage or voltage range and ambient temperature of 25 C.
3. LED efficacy per luminaire expressed in lumens per watt (l/w).
4. Initial delivered lumens at the specified color temperature, drive current, and ambient temperature.
5. IES file associated with each submitted luminaire in the IES LM-63 format.
6. Computer photometric calculation reports as specified and in the luminaire performance table.
7. TM-15 BUG rating report.
8. Isofootcandle chart with max candela point and half candela trace indicated.
9. Documentation of manufacturers experience and verification that luminaires were assembled in the U.S.A. as specified.
10. Written warranty.

Upon request by the Engineer, submittals shall also include any or all the following:

- a. TM-21 calculator spreadsheet (XLSX or PDF format) and if available, TM-28 report for the specified luminaire or luminaire family. Both reports shall be for 50,000 hours at an ambient temperature of 77 °F (25 °C).
- b. LM-79 report with National Voluntary Laboratory Accreditation Program (NVLAP) current at the time of testing in PDF format inclusive of the following: isofootcandle diagram with half candela contour and maximum candela point; polar plots through maximum plane and maximum cone; coefficient of utilization graph; candela table; and spectral distribution graph and chromaticity diagram.
- c. LM-80 report for the specified LED package in PDF format and if available, LM-84 report for the specified luminaire or luminaire family in PDF format. Both reports shall be conducted by a laboratory with NVLAP certification current at the time of testing.
- d. AGI32 calculation file matching the submittal package.
- e. In Situ Temperature Measurement Test (ISTMT) report for the specified luminaire or luminaire family in PDF format.

- f. Vibration test report in accordance with ANSI C136.31 in PDF format.
- g. ASTM B117/ASTM D1654 (neutral salt spray) test and sample evaluation report in PDF format.
- h. ASTM G154 (ASTM D523) gloss test report in PDF format.
- i. LED drive current, total luminaire input wattage, and current over the operating voltage range at an ambient temperature of 77 °F (25 °C).
- j. Power factor (pf) and total harmonic distortion (THD) at maximum and minimum supply and at nominal voltage for the dimmed states of 70%, 50%, and 30% full power.
- k. Ingress protection (IP) test reports, conducted according to ANSI C136.25 requirements, for the driver and optical assembly in PDF format.
- l. Installation, maintenance, and cleaning instructions in PDF format, including recommendations on periodic cleaning methods.
- m. Documentation in PDF format that the reporting laboratory is certified to perform the required tests.

A sample luminaire shall also be provided upon request of the Engineer. The sample shall be as proposed for the contract and shall be delivered by the Contractor to the District Headquarters. After review, the Contractor shall retrieve the luminaire.

#### Manufacturer Experience.

The luminaire shall be designed to be incorporated into a lighting system with an expected 20 year lifetime. The luminaire manufacturer shall have a minimum of 15 years' experience manufacturing LED roadway luminaires; parking lot, architectural, or residential luminaires are not applicable to this requirement. The manufacturer shall have a minimum of 100,000 total LED roadway luminaires installed on a minimum of 100 separate installations, all within the U.S.A.

#### Housing.

Material. The luminaire shall be a single device not requiring on-site assembly for installation. The power supply for the luminaire shall be integral to the unit. The housing shall be either stainless-steel or cast aluminum.

#### Aluminum Housing.

The housing shall be extruded or cast aluminum; or a combination of both and shall have a copper content of less than 1.0%.



The housing shall be painted grey or silver unless specified otherwise. A epoxy base coat shall applied to the aluminum after the aluminum is properly treated with a conversion coating. The finish coat shall be polyester powder coat with a minimum thickness of 2.0 mil.

The luminaire surfaces exposed to the environment shall exceed a rating of six, according to ASTM D1654, after 1000 hours of ASTM B117 testing. The coating shall exhibit no greater than 30% reduction of gloss, according to ASTM D523, after 500 hours of ASTM G154 Cycle 6 QUV® accelerated weathering testing.

#### Stainless-Steel Housing.

The housing shall be constructed from 16-gauge minimum, 304 stainless steel.

The stainless-steel housing does not need to be painted. The manufacturer may paint the luminaire at no additional cost.

The luminaire shall be optically sealed, mechanically strong and easy to maintain. The luminaire shall be designed for wall mounting to a pier or abutment. It shall be provided with a suitable mounting bracket which allows for +90° adjustment from horizontal in 5° increments.

The luminaire shall be gasketed and sealed and shall be UL listed for wet locations. The luminaire optical assembly shall have a minimum IEC ingress penetration rating of IP66. When furnished with a lens and frame, the lens shall be made of crystal clear, impact and heat resistant flat glass. The lens and frame shall be securely attached to the main housing and be readily removable for servicing the LED optical assembly.

All external surfaces shall be cleaned in accordance with the manufacturer's recommendations and be constructed in such a way as to discourage the accumulation of water, ice, and debris.

The total weight including accessories, shall not exceed 75 lbs.

A passive cooling method with no moving, rotating parts, or liquids shall be employed for heat management.

Vibration Testing. All luminaires shall be subjected to and pass vibration testing requirements at "3G" minimum zero to peak acceleration in accordance with ANSI C136.31 requirements using the same luminaire. To be accepted, the luminaire housing, hardware, and each individual component shall pass this test with no noticeable damage and the luminaire must remain fully operational after testing.

Labels. An internal label shall be provided indicating the luminaire is suitable for wet locations and indicating the luminaire is an NRTL listed product to UL1598 and UL8750. The internal label shall also comply with the requirements of ANSI C136.22.

An external label consisting of two black characters on a white background with the dimensions of the label and the characters as specified in ANSI C136.15 for HPS luminaires. The first character shall be the alphabetical character representing the initial lumen output as specified in Table 1 of Article 1067.06(c). The second character shall be the numerical character representing the transverse light distribution type as specified in IES RP-8 (i.e. Types 1, 2, 3, 4, or 5).

Hardware. All hardware shall be stainless steel or of other corrosion resistant material approved by the Engineer.

Luminaires shall be designed to be easily serviced, having fasteners such as quarter-turn clips of the heavy spring-loaded type with large, deep straight slot heads, complete with a receptacle and shall be according to military specification MIL-f-5591.

All hardware shall be captive and not susceptible to falling from the luminaire during maintenance operations. This shall include lens/lens frame fasteners as well hardware holding the removable driver and electronic components in place.

Circuiting shall be designed to minimize the impact of individual LED failures on the operation of the other LED's.

Wiring. Wiring within the electrical enclosure shall be rated at 600v, 105°C or higher.

The power connection to the luminaire shall be via liquid tight metallic conduit or an armored flexible cable assembly. The power connection, including any external shielding, must be secured to the luminaire and connected source. The location of the opening shall be coordinated with the installation to minimize the length of flexible conduit required. The length of the cable or flexible conduit shall not exceed six (6) feet.

#### Mounting Brackets.

The brackets shall be properly sized to accommodate the weight of the luminaire with calculations or other suitable reference documentation submitted to support the material choice. The brackets shall be constructed of 304 stainless steel

The mounting brackets shall be fully coordinated with the luminaire mounting method indicated in plans.

#### Driver.

The driver shall be integral to the luminaire shall be capable of receiving an indefinite open and short circuit output conditions without damage.

The driver shall incorporate the use of thermal foldback circuitry to reduce output current under abnormal driver case temperature conditions and shall be rated for a lifetime of 100,000 hours at an ambient temperature exposure of 77 °F (25 °C) to the luminaire. If the driver has a thermal shut down feature, it shall not turn off the LEDs when operated at 104 °F (40 °C) or less.

The driver shall have an input voltage range of 120 to 277 volts (± 10%) or 347 to 480 volts (± 10%) according to the contract documents. When the driver is operating within the rated input voltage range and in an un-dimmed state, the power factor measurement shall be not less than 0.9 and the THD measurement shall be no greater than 20%.

The driver shall meet the requirements of the FCC Rules and Regulations, Title 47, Part 15 for Class A devices with regard to electromagnetic compatibility. This shall be confirmed through the testing methods in accordance with ANSI C63.4 for electromagnetic interference.

The driver shall be dimmable using the protocol listed in the Luminaire Performance Table shown in the contract.

Surge Protection. The luminaire shall comply the requirements of ANSI C136.2 for electrical transient immunity at the "Extreme" level (20KV/10KA) and shall be equipped with a surge protective device (SPD) that is UL1449 compliant. An SPD failure shall open the circuit to protect the driver.

#### LED Optical Assembly

The optical assembly shall have an IP66 or higher rating in accordance with ANSI C136.25. The circuiting of the LED array shall be designed to minimize the effect of individual LED failures on the operation of other LEDs. All optical components shall be made of glass or a UV stabilized, non-yellowing material.

The optical assembly shall utilize high brightness, long life, minimum 70 CRI, 4,000K color temperature (+/-300K) LEDs binned in accordance with ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass.

The actual measured luminous flux output shall be within +/- 10% of the published lumen value.

Lumen depreciation at 50,000 hours of operation shall not exceed 15% of initial lumen output at the specified LED drive current and an ambient temperature of 25° C.

The luminaire may or may not have a glass lens over the LED modules. If a glass lens is used, it must be a flat lens. Material other than glass will not be acceptable. If a glass lens is not used, the LED modules may not protrude lower than the luminaire housing.

The assembly shall have individual serial numbers or other means for manufacturer tracking.

Photometric Performance.

Luminaires shall be tested according to IESNA LM-79. This testing shall be performed by a test laboratory holding accreditation from the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for the IESNA LM-79 test procedure.

Data reports as a minimum shall yield an isofootcandle chart, with max candela point and half candela trace indicated, maximum plane and maximum cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, spectral distribution plots, chromaticity plots, and other standard report outputs of the above-mentioned tests.

The luminaire shall have a BUG rating of Back Light B3 or less, Up Light rating of U0, and a Glare rating of G3 or less unless otherwise indicated in the luminaire performance table.

Photometric Calculations.

Calculations. Submitted report shall include a luminaire classification system graph with both the recorded lumen value and percent lumens by zone along with the BUG rating according to IESNA TM-15.

Complete point-by-point luminance and veiling luminance calculations as well as listings of all indicated averages and ratios as applicable shall be provided in accordance with IESNA RP-8 recommendations. Lighting calculations shall be performed using AGi32 software with all luminance calculations performed to one decimal place (i.e. x.x cd/m<sup>2</sup>). Uniformity ratios shall also be calculated to one decimal place (i.e. x.x:1). Calculation results shall demonstrate that the submitted luminaire meets the lighting metrics specified in the project Luminaire Performance Table(s). Values shall be rounded to the number of significant digits indicated in the luminaire performance table(s).

When the quantity of luminaires requires independent testing, the AGi32 calculation file used for performance verification shall also be submitted with the initial submittal.

All photometry must be **photopic**. Scotopic or mesopic factors will not be allowed. The AGi32 file shall be submitted at the request of the Engineer.

The luminaire may have an initial lumen value lower than the specified lumen range in the performance tables provided that the resulting calculations demonstrate that the performance requirements are being met.

**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 1**  
**ROADWAY UNDERPASS LIGHTING**  
**1 LANE**

| <b>GIVEN CONDITIONS</b> |                                |                          |
|-------------------------|--------------------------------|--------------------------|
| <b>ROADWAY DATA</b>     | Pavement Width                 | 16 (ft)                  |
|                         | Number of Lanes                | 1                        |
|                         | I.E.S. Surface Classification  | R3                       |
|                         | Q-Zero Value                   | .07                      |
| <b>MOUNTING DATA</b>    | Mounting Height                | 15 (ft)                  |
|                         | Tilt                           | 0-30 (degrees)           |
|                         | Orientation                    | Perpendicular to roadway |
|                         | Set-Back from Edge Of Pavement | 7 (ft)                   |
| <b>LUMINAIRE DATA</b>   | Lumens                         | 5259 – 13,500            |
|                         | Total Light Loss Factor        | 0.65                     |
| <b>LAYOUT DATA</b>      | Spacing                        | 26 (ft)                  |
|                         | Configuration                  | Single Sided             |
|                         | Luminaire Overhang over EOP    | -7 (ft)                  |

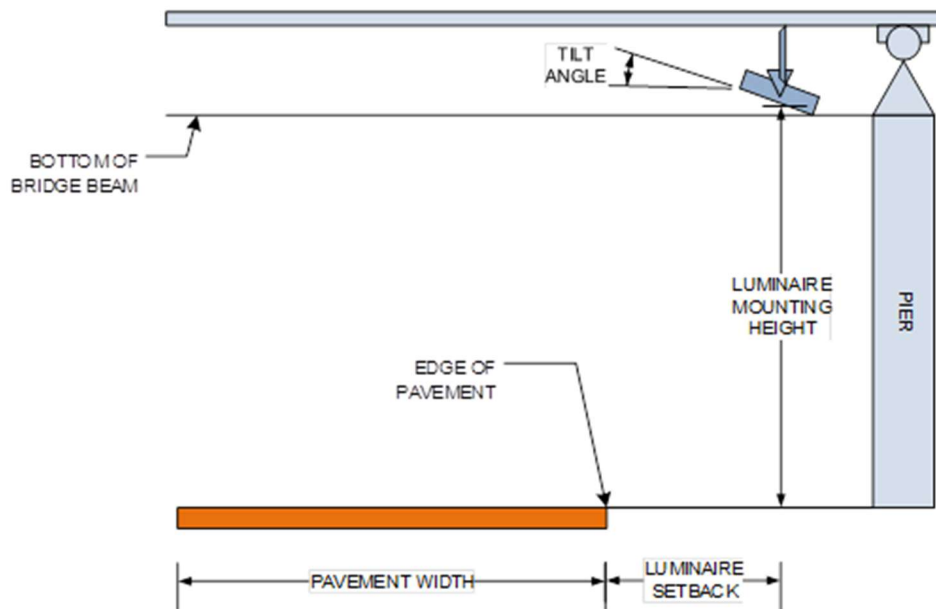
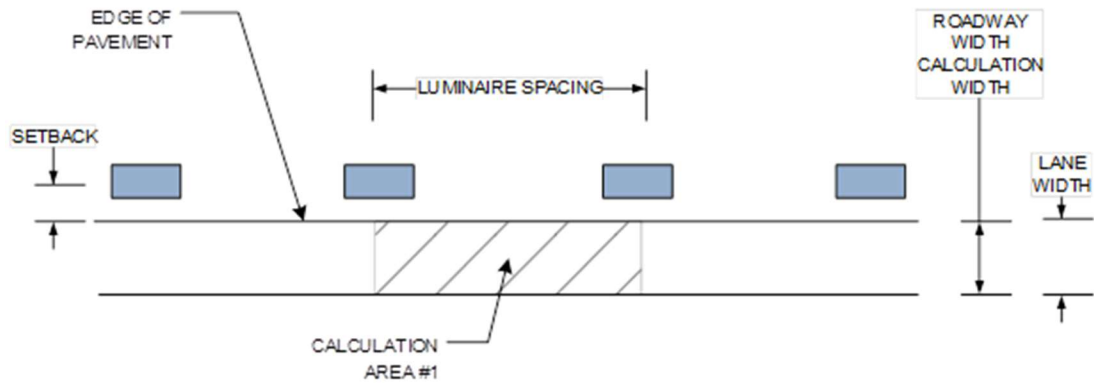
**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

| <b>PERFORMANCE REQUIREMENTS</b> |  |  |
|---------------------------------|--|--|
|---------------------------------|--|--|

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                  |                                        |                             |
|------------------|----------------------------------------|-----------------------------|
| <b>ROADWAY</b>   | Average Luminance, $L_{AVE}$           | 1.6 Cd/m <sup>2</sup> (Max) |
|                  |                                        | 1.2 Cd/m <sup>2</sup> (Min) |
| <b>LUMINANCE</b> | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3:1 (Max)                   |
|                  | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5:1 (Max)                   |
|                  | Veiling Luminance Ratio, $L_V/L_{AVE}$ | 0.30:1 (Max)                |

**Suspended Ceiling Mount  
1 lane, single sided layout**



**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 2**  
**ROADWAY UNDERPASS LIGHTING**  
**2 LANE**

| <b>GIVEN CONDITIONS</b> |                                |                             |           |
|-------------------------|--------------------------------|-----------------------------|-----------|
| <b>ROADWAY DATA</b>     | Pavement Width                 | 24                          | (ft)      |
|                         | Number of Lanes                | 2                           |           |
|                         | I.E.S. Surface Classification  | R3                          |           |
|                         | Q-Zero Value                   | .07                         |           |
| <b>MOUNTING DATA</b>    | Mounting Height                | 15                          | (ft)      |
|                         | Tilt                           | 0-30                        | (degrees) |
|                         | Orientation                    | Perpendicular<br>to roadway |           |
|                         | Set-Back from Edge Of Pavement | 20                          | (ft)      |
| <b>LUMINAIRE DATA</b>   | Lumens                         | 5259 – 13,500               |           |
|                         | Total Light Loss Factor        | 0.65                        |           |
| <b>LAYOUT DATA</b>      | Spacing                        | 26                          | (ft)      |
|                         | Configuration                  | Single Sided                |           |
|                         | Luminaire Overhang over EOP    | -20                         | (ft)      |

**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

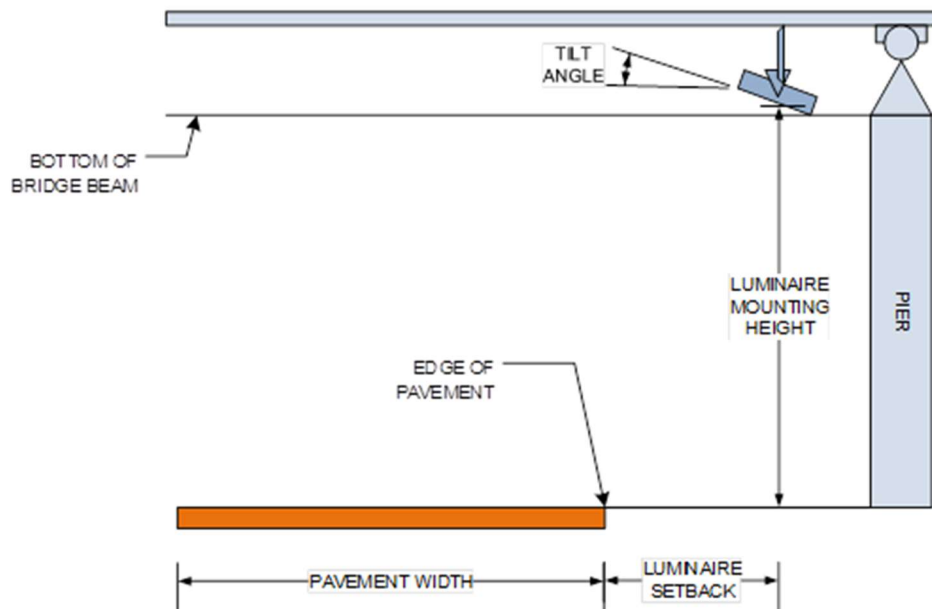
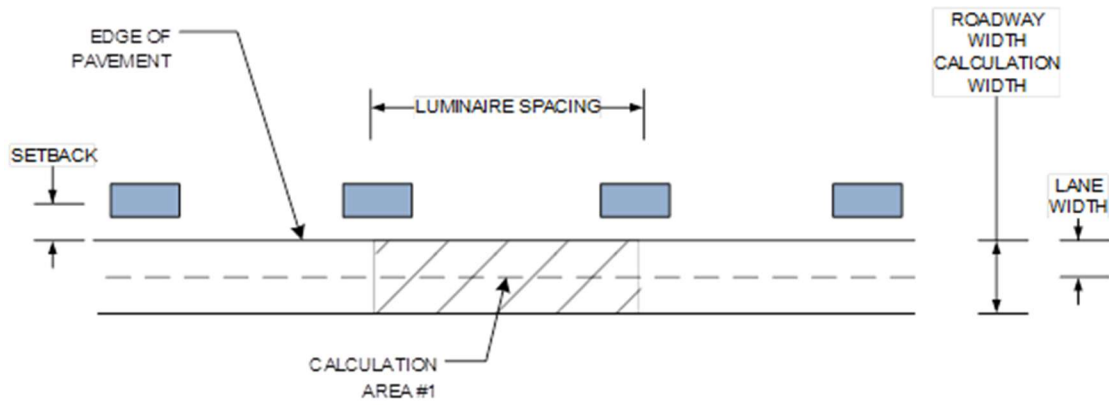
| <b>PERFORMANCE REQUIREMENTS</b> |  |  |  |
|---------------------------------|--|--|--|
|---------------------------------|--|--|--|

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                  |                                        |        |                         |
|------------------|----------------------------------------|--------|-------------------------|
| <b>ROADWAY</b>   | Average Luminance, $L_{AVE}$           | 1.6    | Cd/m <sup>2</sup> (Max) |
|                  |                                        | 1.2    | Cd/m <sup>2</sup> (Min) |
| <b>LUMINANCE</b> | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3:1    | (Max)                   |
|                  | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5:1    | (Max)                   |
|                  | Veiling Luminance Ratio, $L_v/L_{AVE}$ | 0.30:1 | (Max)                   |



**Suspended Ceiling Mount  
 2 lanes, single sided layout**



**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 3**  
**ROADWAY UNDERPASS LIGHTING**  
**3 LANE**

| GIVEN CONDITIONS      |                                |                             |           |
|-----------------------|--------------------------------|-----------------------------|-----------|
| <b>ROADWAY DATA</b>   | Pavement Width                 | 44                          | (ft)      |
|                       | Number of Lanes                | 3                           |           |
|                       | I.E.S. Surface Classification  | R3                          |           |
|                       | Q-Zero Value                   | .07                         |           |
| <b>MOUNTING DATA</b>  | Mounting Height                | 15                          | (ft)      |
|                       | Tilt                           | 0-30                        | (degrees) |
|                       | Orientation                    | Perpendicular<br>to roadway |           |
|                       | Set-Back from Edge Of Pavement | 5.8 and 18                  | (ft)      |
| <b>LUMINAIRE DATA</b> | Lumens                         | 5,259 – 13,500              |           |
|                       | Total Light Loss Factor        | 0.65                        |           |
| <b>LAYOUT DATA</b>    | Spacing                        | 26                          | (ft)      |
|                       | Configuration                  | Opposite                    |           |
|                       | Luminaire Overhang over EOP    | -5.5 and -<br>18            | (ft)      |

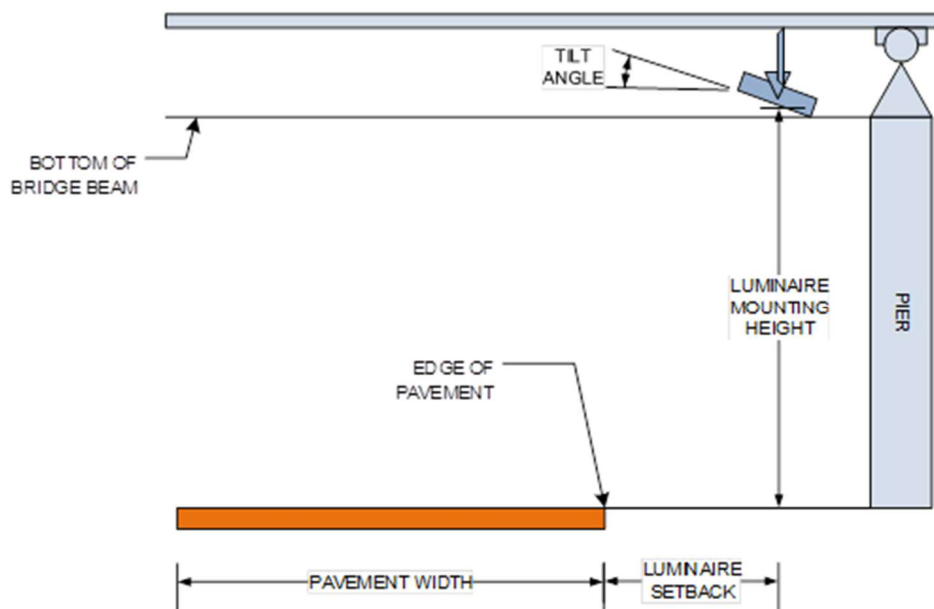
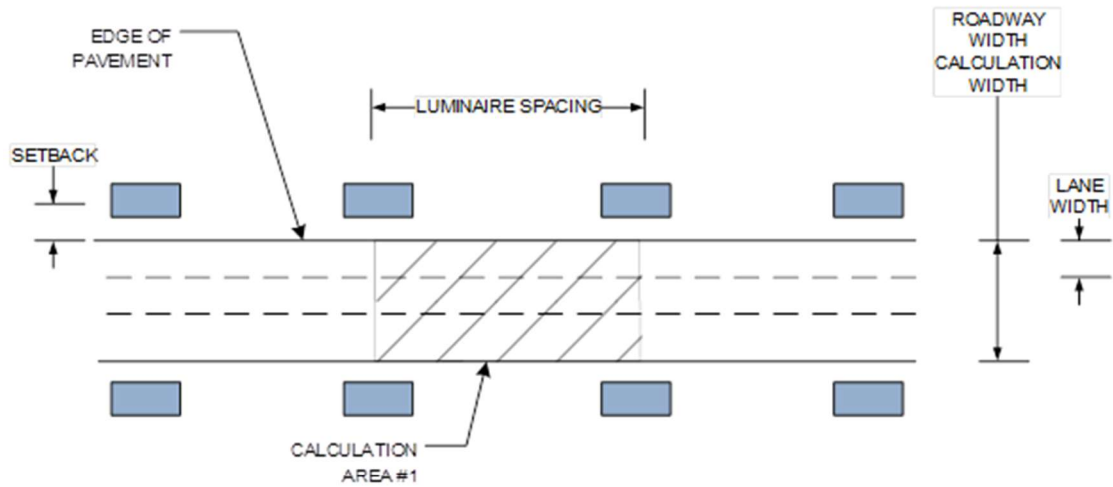
**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

| PERFORMANCE REQUIREMENTS |  |  |  |
|--------------------------|--|--|--|
|--------------------------|--|--|--|

**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

|                  |                                        |        |                         |
|------------------|----------------------------------------|--------|-------------------------|
| <b>ROADWAY</b>   | Average Luminance, $L_{AVE}$           | 1.6    | Cd/m <sup>2</sup> (Max) |
|                  |                                        | 1.2    | Cd/m <sup>2</sup> (Min) |
| <b>LUMINANCE</b> | Uniformity Ratio, $L_{AVE}/L_{MIN}$    | 3:1    | (Max)                   |
|                  | Uniformity Ratio, $L_{MAX}/L_{MIN}$    | 5:1    | (Max)                   |
|                  | Veiling Luminance Ratio, $L_V/L_{AVE}$ | 0.30:1 | (Max)                   |

**Suspended Ceiling Mount  
 3 lanes, opposite layout**



#### Independent Testing

When a contract has 30 or more luminaires of the same type (distribution type and lumen output/wattage), that luminaire type shall be independently tested, unless otherwise noted. The quantity of luminaires to be tested shall be as specified in the following table.

| <b>Contract Quantity</b> | <b>Luminaires to be Tested</b> |
|--------------------------|--------------------------------|
| 1-49                     | 0<br>(unless otherwise noted)  |
| 50-100                   | 2                              |
| 101-150                  | 3                              |
| 151-200                  | 4                              |
| 201-250                  | 5                              |
| 251-300                  | 6                              |
| 301-350                  | 7                              |

Testing is not required for temporary lighting luminaires.

The Contractor shall coordinate the testing with the contract schedule considering submittal, manufacturing, testing, and installation lead-times and deadlines.

The Electrical Engineer shall select from all the project luminaires at the Contractor's or distributor's storage facility, within District 1, the luminaires for testing. In all cases, the selection of luminaires shall be a random selection from the entire completed lot of luminaires required for the contract. Selections from partial lots will not be allowed. An additional luminaire shall also be selected for physical inspection by the Engineer at the District Headquarters. This luminaire will be available for the Contractor to pick up at a later date to be installed under this contract. This luminaire is in addition to the luminaire required as a part of the submittal process specified elsewhere.

Alternative selection process. With the Engineer's prior approval, the Contractor shall provide a list of luminaire serial numbers for all the luminaires. The Engineer shall make a random selection of the required number of luminaires for testing from the serial numbers. That luminaire must then be photographed clearly showing the serial number prior to shipment to the selected and approved testing laboratory. The testing laboratory shall include a photograph of the luminaire along with the test results directly to the Engineer.

Luminaires shall be tested at a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory approved for each of the required tests. The testing facility shall not be associated in any way, subsidiary or otherwise, with the luminaire manufacturer. All costs associated with luminaire testing shall be included in the bid price of the luminaire.

The selection of the proposed independent laboratory shall be presented with the information submitted for review and approval.

The testing performed shall include photometric and electrical testing.

**All tests shall be conducted at the luminaire system operating voltage of 240 volts unless specified differently in the contract plans.**

Photometric testing shall be according to IES recommendations, performed with a goniophotometer and as a minimum, shall yield an isofootcandle chart, with max candela point and half candela trace indicated, an isocandela diagram, maximum planned and maximum cone plots of candela, a candlepower table (House

and street side), a coefficient of utilization chart, a luminous flux distribution table, BUG rating report, and complete calculations based on specified requirements and test results.

Electrical testing shall conform to NEMA and ANSI standards and, as a minimum shall include a complete check of wiring connections and a table of characteristics showing input amperes, watts, power factor, total harmonic distortion and LED drive current.

The summary report and the test results including IES photometric files shall be sent directly to the Resident Engineer, the Electrical Engineer, and the Contractor via email or other mutually agreeable means.

Photometric performance shall meet or exceed that of the specified values. The color temperature shall be within +/- 300°K of the submitted factory values. The measured lumen output of the luminaire shall be within +/- 10% of the submitted factory value. If the luminaire does not meet the specified photometric values, the luminaire has failed regardless of whether the test results meet the submitted factory data.

Should any of the tested luminaires of a given type, and distribution fail to satisfy the specifications and perform according to approved submittal information, the luminaire type of that distribution type and wattage shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance.

In the case of corrections, the Contractor shall advise the Engineer of the proposed corrections and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated in its entirety.

The number of luminaires to be tested shall be the same quantity as originally tested as required in the above table.

Retesting, should it become necessary, shall not be grounds for additional compensation or extension of time.

Submittal information shall include a statement of intent to provide the testing as well as a request for approval of the chosen laboratory.

#### Installation.

Each luminaire shall be installed according to the luminaire manufacturer's recommendations.

Underpass luminaires shall be either attached to structures (such as piers, etc.) or suspended from structures (such as bridge decks) as indicated or implied by the configuration on the Plans. Mounting, including all hardware and appurtenant items, shall be included as part of this item. Luminaires shall be configured with the luminaire tilt as identified in the submitted documents.

Unless otherwise indicated, suspended underpass luminaires shall be installed one-inch above the lowest underpass beam and shall be mounted using vibration dampening assemblies. All mounting hardware shall be corrosion resistant and shall be stainless steel unless otherwise indicated.

No luminaire shall be installed prior to approval. Where independent testing is required, full approval will not be given until complete test results, demonstrating compliance with the specifications, have been reviewed and accepted by the Engineer.

Luminaire wiring shall be provided with the luminaire. The wiring shall run from the junction box to the luminaire.

Luminaire wire shall be sized No. 10, rated 600 V, RHW/USE-2, and have copper conductors, stranded in conformance with ASTM B 8. Luminaire wire shall be insulated with cross-linked polyethylene (XLP) insulation. The wire shall include a phase, neutral, and green ground wire. Wires shall be trained within any raceways so as to avoid abrasion or damage to the insulation.

Included with the luminaire wiring shall be fusing located in the handhole or primary junction box. Fusing shall be according to Article 1065.01 with the exception that fuses shall be 6 amperes.

Each luminaire and optical assembly shall be free of all dirt, smudges, etc. Should the optical assembly require cleaning, a luminaire manufacturer approved cleaning procedure shall be used.

#### Warranty.

The entire luminaire shall be covered by a 10-year warranty. Failure is when one or more of the following occur:

- 1) Negligible light output from more than 10 percent of the discrete LEDs.
- 2) Significant moisture that deteriorates performance of the luminaire.
- 3) Driver that continues to operate at a reduced output due to overheating.

**The warranty period shall begin on the date of luminaire delivery.** The Contractor shall verify that the Resident Engineer has noted the delivery date in the daily diary. Copy of the shipment and delivery documentation shall be submitted.

The replacement luminaire shall be of the same manufacturer, model, and photometric distribution as the original.

#### Method of Measurement.

The rated initial minimum luminous flux (lumen output) of the light source, as installed in the luminaire, shall be according to the following table for each specified output designation.

| Designation<br>Type | Minimum Initial<br>Luminous Flux | Designation<br>Type | Minimum Initial<br>Luminous Flux |
|---------------------|----------------------------------|---------------------|----------------------------------|
| A                   | 2,200                            | E                   | 9,450                            |
| B                   | 3,150                            | F                   | 12,500                           |
| C                   | 4,400                            | G                   | 15,500                           |
| D                   | 6,300                            | H                   | 25,200                           |

Where delivered lumens is defined as the minimum initial delivered lumens at the specified color temperature. luminaires with an initial luminous flux less than the values listed in the above table will not be acceptable even if they meet the requirements given in the Luminaire Performance table shown in the contract.

#### Basis of Payment.

This work will be paid for at the contract unit price per each for **LUMINAIRE, LED, UNDERPASS**, of the mount type and output designation specified.

## REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (PROJECT SPECIFIC)

**Description.** This work shall consist of the removal and disposal of regulated substances according to Section 669 of the Standard Specifications as revised below.

**Contract Specific Sites.** The excavated soil and groundwater within the areas listed below shall be managed as either “uncontaminated soil”, hazardous waste, special waste or non-special waste. For stationing, the lateral distance is measured from centerline and the farthest distance is the offset distance or construction limit, whichever is less.

**Soil Disposal Analysis.** When the waste material requires sampling for landfill disposal acceptance, the Contractor shall secure a written list of the specific analytical parameters and analytical methods required by the landfill. The Contractor shall collect and analyze the required number of samples for the parameters required by the landfill using the appropriate analytical procedures. A copy of the required parameters and analytical methods (from landfill email or on landfill letterhead) shall be provided as Attachment 4A of the BDE 2733 (Regulated Substances Final Construction Report). The price shall include all sampling materials and effort necessary for collection and management of the samples, including transportation of samples from the job site to the laboratory. The Contractor shall be responsible for determining the specific disposal facilities to be utilized; and collect and analyze any samples required for disposal facility acceptance using a NELAP certified analytical laboratory registered with the State of Illinois.

### Intersection of Clavet Road and US 41 (Skokie Highway), Highland Park, Lake County

- Station 810+00 to Station 813+50 (CL US 41), 0 to 125 LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 810+00 to Station 813+50 (CL US 41), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.

### Intersection of Park Avenue and US 41 (Skokie Highway), Highland Park, Lake County

- Station 918+80 to Station 928+50 (CL US 41), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 928+50 to Station 933+50 (CL US 41), 0 to 425 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 928+50 to Station 933+50 (CL US 41), 0 to 375 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(5). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 914+00 to Station 918+80 (CL US 41), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with

Added 2/18/2026

Article 669.05(a)(1). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.

- Station 933+50 to Station 944+10 (CL US 41), 0 to 100 feet RT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 916+40 to Station 928+50 (CL US 41), 0 to 100 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.
- Station 933+50 to Station 943+00 (CL US 41), 0 to 100 feet LT. The Engineer has determined this material meets the criteria of and shall be managed in accordance with Article 669.05(a)(1). Contaminants of concern sampling parameters: VOCs, SVOCs and Metals.

### **Work Zones**

Three distinct OSHA HAZWOPER work zones (exclusion, decontamination, and support) shall apply to projects adjacent to or within sites with documented leaking underground storage tank (LUST) incidents, or sites under management in accordance with the requirements of the Site Remediation Program (SRP), Resource Conservation and Recovery Act (RCRA), or Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or as deemed necessary. For this project, the work zones apply for the following ISGS PESA Sites:  
**None**

### **KEEPING ARTERIAL ROADWAYS OPEN TO TRAFFIC (LANE CLOSURES ONLY)**

Effective: January 22, 2003

Revised: August 10, 2017

The Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications, the State Standards, and the District Details.

Arterial lane closures shall be in accordance with the Standard Specifications, Highway Standards, District Details, and the direction of the Engineer. The Contractor shall request and gain approval from the Engineer seventy-two (72) hours in advance of all long-term (24 hrs. or longer) lane closures.

Arterial lane closures not shown in the staging plans will not be permitted during **peak traffic volume hours**.

Peak traffic volume hours are defined as weekdays (Monday through Friday) from 6:00 AM to 8:30 AM and 4:30 PM to 6:00 PM.

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at locations approved by the Engineer in accordance with Articles 701.08 and 701.11 of the Standard Specifications.

Added 2/18/2026



Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified above, the Contractor shall be liable to the Department for the amount of:

One lane or ramp blocked = \$ 1,000

Two lanes blocked = \$ 2,500

Not as a penalty but as liquidated and ascertained damages for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. Such damages may be deducted by the Department from any monies due the Contractor. These damages shall apply during the contract time and during any extensions of the contract time.

### **SPEED DISPLAY TRAILER (BDE)**

Effective: April 2, 2014

Revised: January 1, 2022

Revise the last paragraph of Article 701.11 of the Standard Specifications to read:

“When not being utilized to inform and direct traffic, sign trailers, speed display trailers, arrow boards, and portable changeable message boards shall be treated as nonoperating equipment.”

Add the following to Article 701.15 of the Standard Specifications:

“(m) Speed Display Trailer. A speed display trailer is used to enhance safety of the traveling public and workers in work zones by alerting drivers of their speed, thus deterring them from driving above the posted work zone speed limit.”

Add the following to Article 701.20 of the Standard Specifications:

“(k) When speed display trailers are shown on the Standard, this work will not be paid for separately but shall be considered as included in the cost of the Standard.

For all other speed display trailers, this work will be paid for at the contract unit price per calendar month or fraction thereof for each trailer as SPEED DISPLAY TRAILER.”

Add the following to Article 1106.02 of the Standard Specifications:

“(o) Speed Display Trailer. The speed display trailer shall consist of a LED speed indicator display with self-contained, one-direction radar mounted on an orange see-through trailer. The height of the display and radar shall be such that it will function and be visible when located behind concrete barrier.

The speed measurement shall be by radar and provide a minimum detection distance of 1000 ft (300 m). The radar shall have an accuracy of  $\pm 1$  mile per hour.

Added 2/18/2026

The speed indicator display shall face approaching traffic and shall have a sign legend of "YOUR SPEED" immediately above or below the speed display. The sign letters shall be between 5 and 8 in. (125 and 200 mm) in height. The digital speed display shall show two digits (00 to 99) in mph. The color of the changeable message legend shall be a yellow legend on a black background. The minimum height of the numerals shall be 18 in. (450 mm), and the nominal legibility distance shall be at least 750 ft (250 m).

The speed indicator display shall be equipped with a violation alert that flashes the displayed detected speed when the work zone posted speed limit is exceeded. The speed indicator shall have a maximum speed cutoff. On roadway facilities with a normal posted speed limit greater than or equal to 45 mph, the detected speeds of vehicles traveling more than 25 mph over the work zone speed limit shall not be displayed. On facilities with normal posted speed limit of less than 45 mph, the detected speeds of vehicles traveling more than 15 mph over the work zone speeds limit shall not be displayed. On any roadway facility if detected speeds are less than 25 mph, they shall not be displayed. The display shall include automatic dimming for nighttime operation.

The speed indicator measurement and display functions shall be equipped with the power supply capable of providing 24 hours of uninterrupted service."