Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

April 12, 2025

SUBJECT FAI Route 94 (I-94/Bishop Ford Expwy)
Section (42-B-11-1) BR,BJR 24
Project NHPP-2B1H(072)
Cook County
Contract No. 62W87

Item No. 205, April 25th, 2025 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. The Schedule of Prices have been revised.
2. Revised pages i-vi of the Table of Contents of the Special Provisions.
3. Revised page 87-100, 194-195, 202-203, and 546 of the Special Provisions.
4. Added pages 583-598 of the Special Provision
5. Revised sheets 1, 3, 16-17, 21, 24-25, 398, 401-405, 408-409, 413-418, 422-424, 424A, 426, 427, 427A, 428, 428D-428H, 428J-428K, and 560 of the plans.
6. Added sheet 428I 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,

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

MTS

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The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap.

The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 0.125" thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

UNDERPASS LUMINAIRE, LED
Effective: April 1, 2024

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

The luminaire including the housing, driver and optical assembly shall be assembled in the US. 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. 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 US 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.
b. LM-79 report with NVLA) current at the time of testing in PDF format inclusive of the following: isofootcandle diagram with half candela contour and maximum candela point;

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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.
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 US.

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.

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~~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.~~

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~~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 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 to the luminaire. If the driver has a thermal shut down feature, it shall not turn off the LEDs when operated at 104 °F 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 no 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 SPD that is UL1449 compliant with indicator light. 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.~~

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~~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 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/m2). 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).~~

~~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 that the specified lumen range in the performance tables provided that the resulting calculations demonstrate that the performance requirements are being met.~~

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	16 (ft)
	Number of Lanes	1
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-30 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	40 (ft)
	Configuration	Single Sided
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	24	(ft)
	Number of Lanes	2	
	I.E.S. Surface Classification	R3	
	Q-Zero Value	.07	
MOUNTING DATA	Mounting Height	15	(ft)
	Tilt	0-30	(degrees)
	Orientation	Perpendicular to roadway	
	Set-Back from Edge Of Pavement	12	(ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500	
	Total Light Loss Factor	0.65	
LAYOUT DATA	Spacing	35	(ft)
	Configuration	Single Sided	
	Luminaire Overhang over EOP	-12	(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	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
LUMINANCE	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)

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	36 (ft)
	Number of Lanes	3
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-30 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	50 (ft)
	Configuration	Opposite
	Luminaire Overhang over EOP	-12 (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	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
LUMINANCE	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)

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IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 4
ROADWAY UNDERPASS LIGHTING
4 LANE

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	48	(ft)
	Number of Lanes	4	
	I.E.S. Surface Classification	R3	
	Q-Zero Value	.07	
MOUNTING DATA	Mounting Height	15	(ft)
	Tilt	0-15	(degrees)
	Orientation	Perpendicular to roadway	
	Set-Back from Edge Of Pavement	12	(ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500	
	Total Light Loss Factor	0.65	
LAYOUT DATA	Spacing	45	(ft)
	Configuration	Opposite	
	Luminaire Overhang over EOP	-12	(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	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
LUMINANCE	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)

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IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 5
ROADWAY UNDERPASS LIGHTING
5 LANE

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	60	(ft)
	Number of Lanes	5	
	I.E.S. Surface Classification	R3	
	Q-Zero Value	.07	
MOUNTING DATA	Mounting Height	15	(ft)
	Tilt	0-15	(degrees)
	Orientation	Perpendicular to roadway	
	Set-Back from Edge Of Pavement	12	(ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500	
	Total Light Loss Factor	0.65	
LAYOUT DATA	Spacing	40	(ft)
	Configuration	Opposite	
	Luminaire Overhang over EOP	-12	(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	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
LUMINANCE	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)

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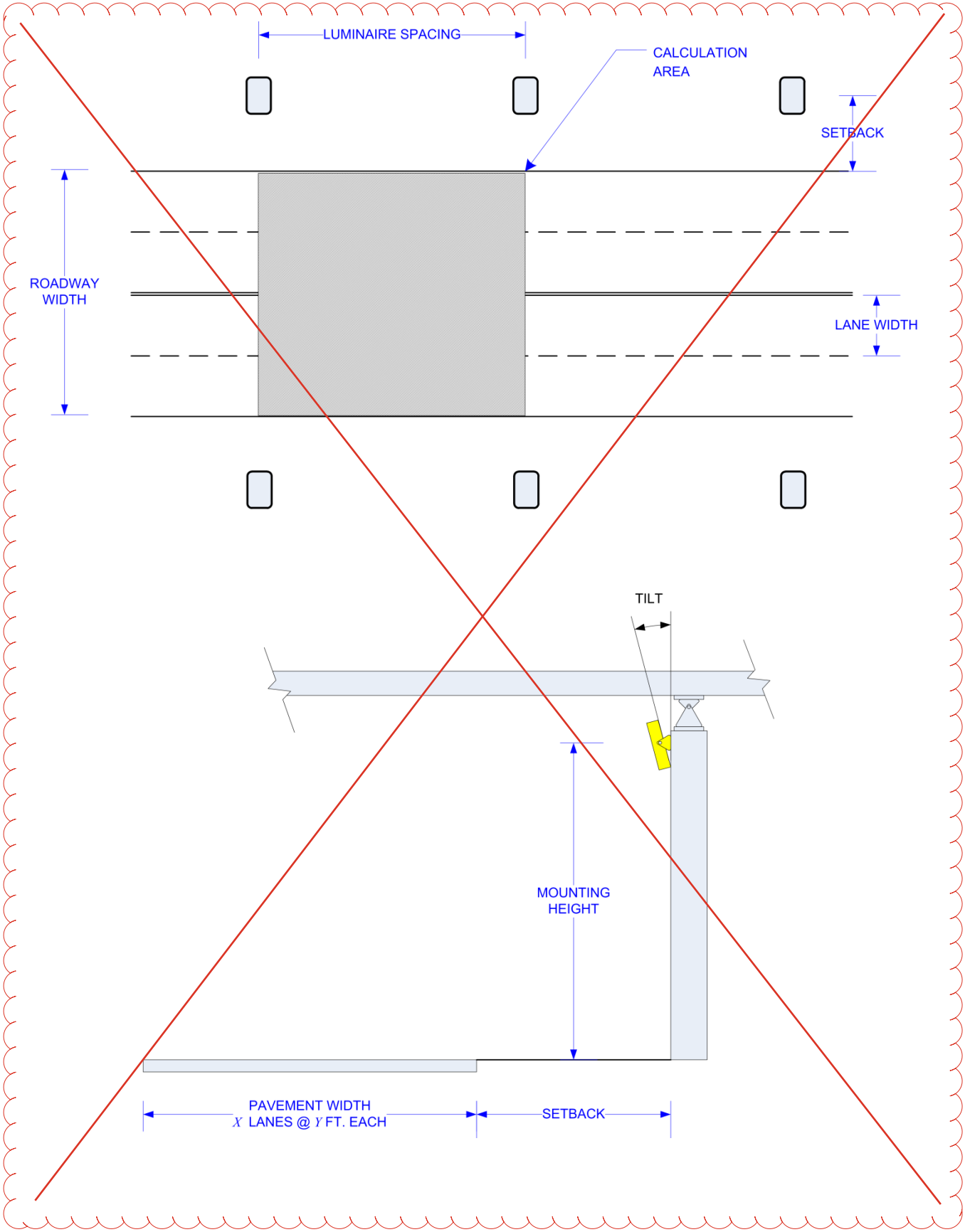

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Independent Testing. When a contract has 30 or more luminaires of the same type (distribution type and lumen output/wattage), that luminaire type shall be independently tested, unless otherwise noted. The quantity of luminaires to be tested shall be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

Contract Quantity	Luminaires to be Tested
1-49	0 (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 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

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~~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 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. 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~~

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conductors, stranded in conformance with ASTM B 8. Luminaire wire shall be insulated with 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 ten-year warranty. Failure is when one or more of the following occur:

1) Negligible light output from more than 10% 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 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 Type	**Minimum Initial Luminous Flux**	**Designation Type**	**Minimum Initial 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.

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REMOVE EXISTING TRAFFIC SURVEILLANCE EQUIPMENT

Description. This Work will consist of removing and salvaging or disposing of various traffic surveillance equipment, as specified herein and as shown in the Drawings.

General Requirements. No removal work will be permitted without approval from the Engineer. Removal shall not be allowed to start until after the temporary or new traffic surveillance system is integrated and placed into approved operation by the Department.

Traffic surveillance equipment shall be removed in accordance with the following requirements and/or articles of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

(a) Induction Loop Detector Site.

(1) Traffic Surveillance Cabinet (No Salvage). Traffic surveillance cabinet shall be removed from the site.

(2) Traffic Surveillance Cabinet Foundation. Traffic surveillance cabinet foundation removal will be paid for separately.

(3) Conduits. Existing underground conduits associated with the induction loop detector site as shown on the Drawings shall be abandoned in place.

(4) Induction Loop Detector Cables (No Salvage). Cables routing between the cabinet and induction loop detector handholes shall be disconnected and removed.

(5) Cables (No Salvage). Existing power and communication lateral cables between the cabinet and the nearest access point as shown on the Drawings (e.g., handhole, junction box, etc.) shall be removed in accordance with Article 895.05(d).

(6) Inductive loops. Inductive loops and associated wire shall be abandoned in place.

(7) Telephone Service. Existing telephone service will be disconnected and removed.

(8) Electrical Service. Existing electrical service removal will be paid for separately.

(9) Handholes. Existing handhole removal will be paid for separately.

(b) Dynamic Message Sign (DMS) Site.

(1) Traffic Surveillance Cabinet (No Salvage). Traffic surveillance cabinet shall be removed from the site.

(2) Traffic Surveillance Cabinet Foundation. Traffic surveillance cabinet foundation removal will be paid for separately.

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(3) Dynamic Message Sign Controller Cabinet (No Salvage). Contractor shall remove the DMS controller cabinet and all equipment contained within, except for the DMS controller. DMS controller will be relocated in accordance with the Special Provision RELOCATE EXISTING DYNAMIC MESSAGE SIGN CONTROL EQUIPMENT.

(4) DMS Controller Cabinet Foundation. DMS controller cabinet foundation removal will be paid for separately.

(5) Conduits. Existing underground conduits associated with the induction loop detector site as shown on the Drawings shall be abandoned in place.

(6) Induction Loop Detector Cables (No Salvage). Cables routing between the cabinet and induction loop detector handholes shall be disconnected and removed.

(7) Cables (No Salvage). Existing power and communication lateral cables between the cabinet and the nearest access point as shown on the Drawings (e.g., handhole, junction box, etc.) shall be removed in accordance with Article 895.05(d).

(8) Inductive loops. Inductive loops and associated wire shall be abandoned in place.

(9) Telephone Service. Existing telephone service will be disconnected and removed.

(10) Electrical Service. Existing electrical service removal will be paid for separately.

(11) Handholes. Existing handhole removal will be paid for separately.

Removal of Traffic Surveillance Equipment, No Salvage. When indicated, traffic surveillance equipment and associated hardware and appurtenances shall become the property of Contractor and shall be disposed of according to Article 202.03.

Method of Measurement. This Work will be measured on a lump sum basis.

Basis of Payment. This work will be paid for at the Contract unit price each per site for REMOVE EXISTING ITS EQUIPMENT.

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system shall be used while assisting motorists or as directed by the Department. The Contractor is expected to use the PA system in a professional manner.

In addition, each Service Patrol Vehicle shall have 2 Department supplied Star Com radios installed prior to initiating patrols. Each Service Patrol Vehicle shall be made available to the Department at a location in District 1 to have the radios installed. Each Service Patrol Vehicle shall be made available to the Department at a location in District 1 to have the radios inspected as necessary, and to have the radios removed at the conclusion of this project. The radios shall remain the property of the Department and shall be returned to the Department at the conclusion of this project.

Method of Measurement: Service Patrols shall be measured for payment in calendar days or fraction thereof.

Basis of Payment: This work will be paid for at the contract unit price per calendar day or fraction thereof for SERVICE PATROL. This price shall include two vehicles with one operator for each vehicle, and all materials, supplies, and equipment necessary to reduce traffic delays by providing assistance to motorists and by relocations of stalled and disabled vehicles in an expeditious manner.

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~~**TELEVISE EXISTING CONDUIT**~~

~~Description. This work shall consist of investigating the existing surveillance conduit located in the concrete barrier wall in the median of I-94 (Bishop Ford Expressway) at locations located in the plans for future use in running fiber optic cable in Contract 62K53.~~
~~Construction.~~

~~1. The existing junction boxes shall be opened so any existing cables located in the surveillance conduit can be identified. If any cables are discovered in the existing conduit, the Contractor shall coordinate with TSC and the Engineer to confirm the cables are abandoned. All existing surveillance cable(s) that have been abandoned shall be removed from the existing conduit.~~

~~2. The existing conduit shall be rodded and cleaned in accordance with the Special Provision ROD AND CLEAN EXISTING CONDUIT. Conduits with existing cables that are to remain shall not be rodded and cleaned. A record of the existing conduit size shall be maintained.~~

~~3. The existing conduit shall be televised with videotaped recordings. The video must include the following information:~~

~~a. Report No.~~
~~b. Date of TV Inspection~~
~~c. Upstream and Downstream Junction Box location~~
~~d. Current distance reach~~

~~The Contractor shall provide two copies of the video (DVD, SSD or other compatible format) to the Engineer.~~

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~~In addition to the videotape, the contractor shall notify the Engineer in writing of the existing surveillance conduit size and of any gaps/obstructions in the existing conduit that would prevent fiber from being installed. The location of the gap/obstruction should provide a general location and reference the distance reference from the video recording to provide an exact location of the gap/obstruction.~~

~~Method of Measurement~~

~~All work associated with televise existing conduit will be measured for payment on a lump sum basis which shall include all labor and equipment required for the work.~~

~~Basis of Payment~~

~~This work will be paid for at the contract lump sum price for TELEVISE EXISTING CONDUIT.~~

STRUCTURAL STEEL REMOVAL

Effective: October 3, 1997 Revised: January 1, 2007

Description. This work shall consist of the satisfactory removal and disposal of structural steel members as shown on the plans. This work shall be performed according to Section 501 of the Standard Specifications.

Burning of existing rivets or bolts will only be allowed near steel surfaces which are to be removed and discarded. Burning of existing rivets or bolts will not be allowed for members to remain in place and members that are to be removed and reinstalled at a later date. When burning of rivets or bolts is not allowed, the head of the rivet or bolt shall be sheared off, and the shank driven or drilled out. Extreme care shall be taken while removing the rivets or bolts so as not to damage the existing structural steel which is to remain. Unless noted otherwise on the plans, the cost of rivet and bolt removal shall be included in this item. All damage to existing members which are to remain shall be repaired or the member replaced to the satisfaction of the Engineer. Repair or replacement of damaged members shall be at the Contractor's expense and at no additional cost to the State.

Method of Measurement. Structural steel removal will not be measured for payment. Payment will be based upon the pounds of structural steel removal shown on the plans.

Basis of Payment. This work will be paid for at the contract unit price per POUND for STRUCTURAL STEEL REMOVAL.

STRUCTURAL STEEL REPAIR

Effective: December 15, 2000 Revised: January 1, 2007

Description. This work shall consist of furnishing all labor, equipment and materials necessary to furnish and install steel repair plates and members according to Section 505 and removal and disposal of structural steel members as necessary according to Section 501 of the Standard Specifications and as indicated on the plans and in this special provision.

Construction Requirements. Existing members noted in the plans to have structural steel repair, that are also noted to be straightened, shall be straightened prior to the connection of any new steel repair plates or members. If beam straightening is required, it shall not be included in this item and shall be paid for separately.

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STORMWATER POLLUTION PREVENTION PLAN

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

Route	Marked Route	Section Number
FAI 94	I-94 (Bishop Ford Expwy)	(42-B-11-1) BR, BJR 24
Project Number	**County**	**Contract Number**
NHPP-2B1H(072)	Cook	62W87

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issued by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Permittee Signature & Date

3/20/2025

SWPPP Notes

Preparing BDE 2342 (Storm Water Pollution Prevent Plan)

Guidance on preparing each section of BDE 2342 (Storm Water Pollution Prevention Plan) is found in Chapter 41 of the IDOT Bureau of Design and Environment (BDE) Manual, please consult this chapter during SWPPP preparation Please note that the Illinois Environmental Protection Agency (IEPA) has 30 days to review the Notice of Intent (NOI) prior to project approval and any deficiencies can result in construction delays.

The Notice of Intent contains the following documents:

- BDE 2342 (Storm Water Pollution Prevention Plan)
- BDE 2342 A (Contractor Certification Statement)
- Erosion and Sediment Control Plan (See Section 63-4.09 of the BDE Manual)

Non-applicable information
If any section of the SWPPP is not applicable put "N/A" in box rather than leaving blank.

National Pollutant Discharge Elimination System (NPDES) Compliance

Description of Work: This work shall consist of those efforts necessary for compliance with the requirements of the Clean Water Act, Section 402 (NPDES), and the Illinois Environment Protection Act. This provision also provides the background information needed to comply with ILR10 and ILR40 permits for this project.

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UNDERPASS LUMINAIRE, LED, REPLACEMENT

Effective: April 1, 2024

Description.

This work shall consist of furnishing and installing a replacement underpass LED luminaire as shown on the plans, as specified herein. The existing luminaires are LPS and are suspended typically with two threaded rods. The replacement luminaires shall include and adapted plate if needed and all other materials to install the proposed luminaries on the existing threaded rods. The existing raceways and cabling shall be re-used.

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.

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

11. 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

12. 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.

13. LED efficacy per luminaire expressed in lumens per watt (l/w).

14. Initial delivered lumens at the specified color temperature, drive current, and ambient temperature.

15. IES file associated with each submitted luminaire in the IES LM-63 format.

16. Computer photometric calculation reports as specified and in the luminaire performance table.

17. TM-15 BUG rating report.

18. Isofootcandle chart with max candela point and half candela trace indicated.

19. Documentation of manufacturers experience and verification that luminaires were assembled in the U.S.A. as specified.

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20. Written warranty.

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

n. 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).

o. 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.

p. 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.

q. AGi32 calculation file matching the submittal package.

r. In Situ Temperature Measurement Test (ISTMT) report for the specified luminaire or luminaire family in PDF format.

s. Vibration test report in accordance with ANSI C136.31 in PDF format.

t. ASTM B117/ASTM D1654 (neutral salt spray) test and sample evaluation report in PDF format.

u. ASTM G154 (ASTM D523) gloss test report in PDF format.

v. LED drive current, total luminaire input wattage, and current over the operating voltage range at an ambient temperature of 77 °F (25 °C).

w. 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.

x. Ingress protection (IP) test reports, conducted according to ANSI C136.25 requirements, for the driver and optical assembly in PDF format.

y. Installation, maintenance, and cleaning instructions in PDF format, including recommendations on periodic cleaning methods.

z. 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.

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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 33 years' experience manufacturing HID roadway luminaires and shall have a minimum of seven (7) years' experience manufacturing LED roadway luminaires. The manufacturer shall have a minimum of 25,000 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.

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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.

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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 with indicator light. 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.

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.

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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/m2). 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).

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 that the specified lumen range in the performance tables provided that the resulting calculations demonstrate that the performance requirements are being met.

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	16 (ft)
	Number of Lanes	1
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-30 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	40 (ft)
	Configuration	Single Sided
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	24 (ft)
	Number of Lanes	2
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-30 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	35 (ft)
	Configuration	Single Sided
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	36 (ft)
	Number of Lanes	3
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-30 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	6,300 – 10,000
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	50 (ft)
	Configuration	Opposite
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 4
ROADWAY UNDERPASS LIGHTING
4 LANE

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	48 (ft)
	Number of Lanes	4
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-15 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	9,500 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	45 (ft)
	Configuration	Opposite
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE 5
ROADWAY UNDERPASS LIGHTING
5 LANE

GIVEN CONDITIONS

ROADWAY DATA	Pavement Width	60 (ft)
	Number of Lanes	5
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
MOUNTING DATA	Mounting Height	15 (ft)
	Tilt	0-15 (degrees)
	Orientation	Perpendicular to roadway
	Set-Back from Edge Of Pavement	12 (ft)
LUMINAIRE DATA	Lumens	10,000 – 13,500
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	40 (ft)
	Configuration	Opposite
	Luminaire Overhang over EOP	-12 (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 LUMINANCE	Average Luminance, L_{AVE}	1.6	Cd/m^2 (Max)
		1.2	Cd/m^2 (Min)
	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)

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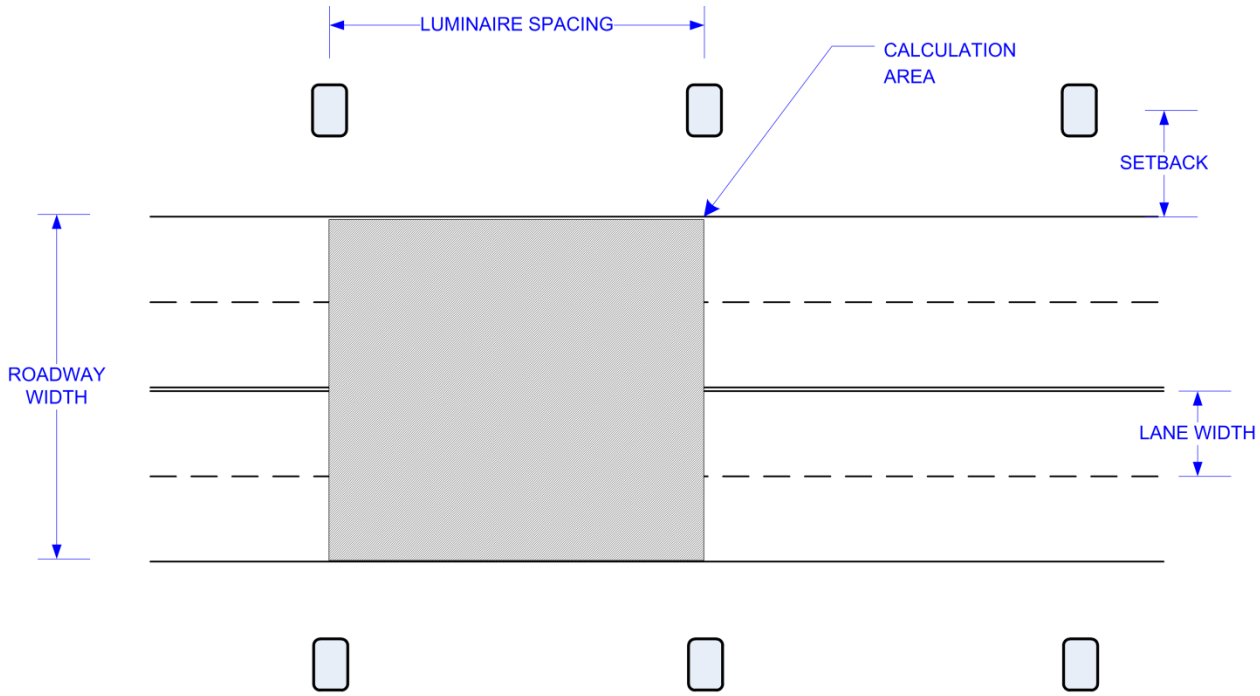

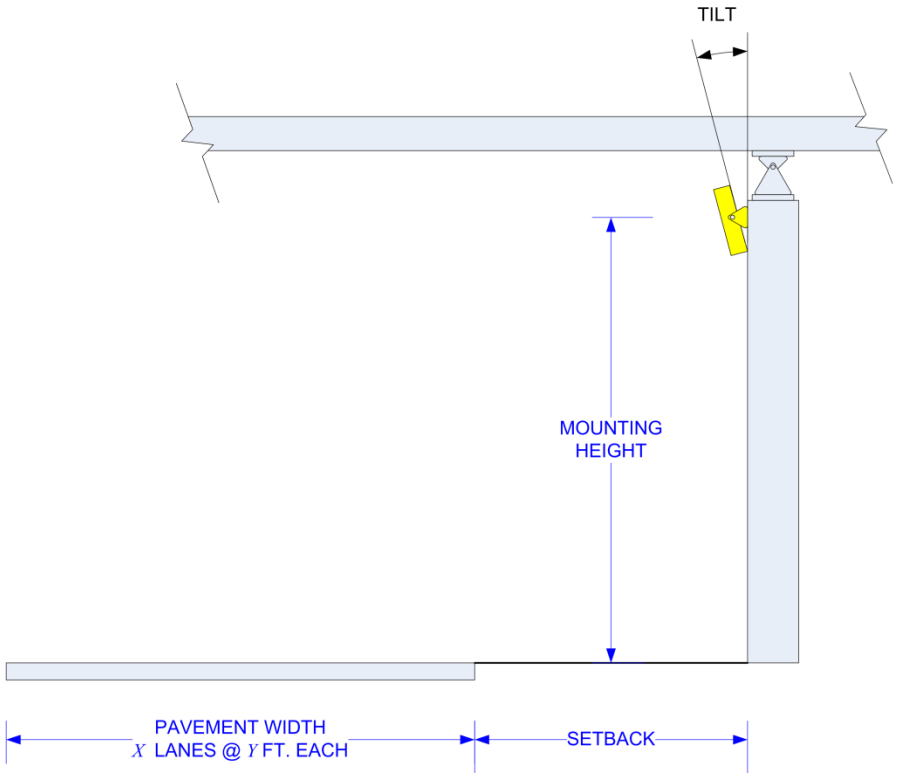

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Independent Testing

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.

Contract Quantity	Luminaires to be Tested
1-49	0 (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.

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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.

Two copies of the summary report and the test results including IES photometric files (including CDROM) shall be certified by the test laboratory and shall be sent by certified mail directly to the Engineer.

To: District Engineer
Attn: Bureau Chief of Traffic Operations
Illinois Department of transportation
201 West center Ct.
Schaumburg, IL 60196

The package shall state “luminaire test reports” and the contract number clearly.

A copy of this material shall be sent to the Contractor and the Resident Engineer at the same time.

Photometric performance shall meet or exceed that of the specified values. 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

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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 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.

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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
A	2,200
B	3,150
C	4,400
D	6,300
E	9,450
F	12,500
G	15,500
H	25,200
I	47,250

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, REPLACEMENT**, of the mount type and output designation specified.

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