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

September 15, 2022

SUBJECT FAI Route 94 (I-94)
Project HSIP-B3QI(749)
Section 2020-235-L
Cook County
Contract No. 62N04
Item No. 31, September 23, 2022 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 pages 4-9 & 64-79 of the Special Provisions.
3. Revised sheets 4-8, 30-42, 51, 61, 67, 92, 98, 119 & 121 of 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

UTILITIES TO BE WATCHED AND PROTECTED

The areas of concern noted below have been identified as utilities that may require protection and or coordination. The information provided is not a comprehensive list of all remaining utilities, but those which during coordination were identified as ones which might require the Contractor to take into consideration when making the determination of the means and methods that would be required to construct the proposed improvement. In some instances, the Contractor will be responsible to notify the owner in advance of the work to take place so necessary staffing on the owner's part can be secured.

Location/Stage	Type	Description	Name & Address of Utility	Action
I-94 Sta. 57+70 96' LT	Electric	No anticipated conflicts with the transverse crossing of the lighting duct	ComEd One Lincoln Centre Oakbrook Terrace IL 60181	"Watch and Protect"
I-94 Sta. 71+49 67' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 72+83 112' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 74+33 68' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 100+60 76' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 117+20 82' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 118+28 83' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 118+60 71' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 121+38 95' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 124+69 143' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 125+56 107' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 125+95 205' RT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Chicago Dept. of Water Management 333 S. State St Chicago IL 60604	"Watch and Protect"

Location/Stage	Type	Description	Name & Address of Utility	Action
I-94 Sta. 127+75 597' LT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Chicago Dept. of Water Management 333 S. State St Chicago IL 60604	"Watch and Protect"
I-94 Sta. 128+06 272' LT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Chicago Dept. of Water Management 333 S. State St Chicago IL 60604	"Watch and Protect"
I-94 Sta. 129+61 83' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation.	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 131+41 295' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation.	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 132+08 86' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation.	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 132+74 170' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 135+10 87' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 187+15 79' RT	Gas	No anticipated conflicts with the transverse crossing of the lighting duct	Nicor 1844 Ferry Road Naperville, IL 60563	"Watch and Protect"
I-94 Sta. 187+94 83' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 188+31 84' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 189+60 93' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 190+59 97' RT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 192+13 109' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 193+72 125' RT	Gas	No anticipated conflicts with the transverse crossing of the lighting duct	Nicor 1844 Ferry Road Naperville, IL 60563	"Watch and Protect"
I-94 Sta. 196+53 147' RT	Sanitary Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"

Location/Stage	Type	Description	Name & Address of Utility	Action
I-94 Sta. 196+57 148' RT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 201+86 93' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 204+04 93' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 204+06 185' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 204+48 80' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 204+90 123' LT	Sanitary Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 205+79 496' RT	Sanitary Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 208+86 458' RT	Sanitary Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 209+43 372' RT	Sanitary Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Lincolnwood 7001 N Lawndale Ave Lincolnwood, IL 60712	"Watch and Protect"
I-94 Sta. 211+77 468' LT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Skokie 7001 N Lawndale Ave Lincolnwood, IL 60077	"Watch and Protect"
I-94 Sta. 213+04 110' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 218+97 81' LT	Water	No anticipated conflicts with the transverse crossing of the lighting duct	Village of Skokie 7001 N Lawndale Ave Lincolnwood, IL 60077	"Watch and Protect"
I-94 Sta. 220+08 85' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 256+89 83' LT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"
I-94 Sta. 256+92 85' RT	Storm Sewer	No anticipated conflicts with the transverse crossing of the lighting duct and pole foundation	IDOT Hydraulics 201 West Center Ct. Schaumburg IL 60139	"Watch and Protect"

The following contract information is what was used during the preparation of the Plans as provided by the owner of the facility.

Agency/Company Responsible to Resolve Conflict	Name of Contact	Address	Phone	E-mail Address
ComEd (Relocation Representative and MH Frame & Cover Program), (MH Frame & Cover Program)	Vincent Mazzaferro, Jen Maberto Michael Mikaitis	One Lincoln Centre Oakbrook Terrace, IL 60181	(779) 231-1027 & (872) 395 1872	Vincent.MazzaferroPE@ComEd.com, Plansubmittalsandmaprequests@exeloncorp.com, jennifer.maberto@comed.com, M.Mikaitis@Cotterconsulting.com
Peoples Gas	Eric Stall, Aaron Meyer, William Charvat, & Michael Brocksmith	200 E. Randolph St. 21st Fl, Chicago IL 60601	(312) 240-7394 & (312) 240-4016	erstall@integrysgroup.com, aaron.meyer@peoplesgasdelivery.com, william.charvat@peoplesgasdelivery.com, & michael.brocksmith@peoplesgasdelivery.com
NiCor #N11472	Bruce Koppang	1844 Ferry Road Naperville, IL 60563	630-388-3046	bkoppan@southernco.com
AT&T – T (Transmission/Core/ Legacy/Long Distance/Long Lines)	Vanessa Ross (New Plans), Edward Tilton, Rich Meyers, & Ken Caudill	AT&T–T (Long Lines) IL-IN-WI Sr. Tech Project Mgmt 555 E. Cook St., Springfield IL, 62703 JMC Engineers & Associates, Inc. (for AT&T Long Distance) AT&T 8372 E Broad Street Reynoldsburg, OH 43062	(630) 215-7567	vf2021@att.com, rcm5@sbcglobal.net, Edward.Tilton@kci.com, & Ken.Caudill@kci.com
AT&T-D	Janet Ahern (New Plans), Stan Plodzien, Jamie Gwin, Jamel McGinnis, Todd Andrews, & Aaron Baader	1000 Commerce Drive Flr 1 Oak Brook, IL 60523	(630) 573-6414, (630) 408-7267, (630) 573-5453, (630) 573-5423, & (630) 573-6496	g05256@att.com, sp3264@att.com, jg8128@att.com, db1324@att.com, sterenberg@cgroupmail.com, Kc1298@att.com, jm548w@att.com, ta3141@att.com ja1763@att.com & ab7893@att.com

Agency/Company Responsible to Resolve Conflict	Name of Contact	Address	Phone	E-mail Address
Telecom/MCI/Verizon	Charles Schero, Sandra B. Cisneros, Joe Chaney, & John Buher	400 International Parkway Richardson, TX 75081	(312) 617-2131	CSchero@asginc.us, scisneros@telecom-eng.com, investigations@verizon.com, & john.buher@verizon.com
Comcast Cable	Ted Wyman	688 Industrial Drive Elmhurst, IL 60126	(224) 229-5850	Ted_Wyman@comcast.com
Lumen (formerly CenturyLink/ Level 3)	Kimberly Singleton, Ben Pacocha, & Ryan Burgeson	Attn: OSP Construction Department 1305 E. Algonquin Road Arlington Heights, IL 60005	(847) 954-8212	Kimberly.Singleton@centurylink.com, ben.pacocha@lumen.com, ryan.burgeson@centurylink.com, NationalRelo@centurylink.com, relocations@centurylink.com
Crown Castle (Sunesys, Lightower, & Sidera)	Mike Kyriazakos & John Pyka	350 N Orleans Street Suite 620 Chicago, IL 60654	(847) 370-7617 & (312) 415-8184	Michael.Kyriazakos@crowncastle.com, John.Pyka@crowncastle.com, & Fiber.dig@crowncastle.com
IDOT Hydraulics	Perry Masouridis	201 W. Center Court Schaumburg, IL 60139	(847) 705-4474	Eleftherios.Masouridis @illinois.gov
North Shore Water Reclamation Dist.	Nicholas Wolf	PO Box 750 14770 W. Wm Koepsel Dr. Gurnee, IL 60031	(847) 623-6060	niwolf@northshorewrd.org
City of Chicago Department of Water Management – Water Section	Sme Xhaferllari, Jason McCubbin, John Hart, Albert Wtorkowski, Vito Montana, Rolando Villalon, & Angela Krueger	1000 East Ohio Street +51, Room 306 Chicago, IL 60611	(312) 217-7928, (312) 742-3619 & (312) 744-5070 Jason McCubbin can be contacted directly by telephone at (312) 217-7928.	IDOT Construction or the IDOT Contractor should send an e-mail to the CDWM - Water CTR general email FACM@ctrwater.net and carbon copy Jason McCubbin at Jason.McCubbin@ctrwater.net at least a couple of days prior to needing a CDWM-Water inspector on site. Sme Xhaferllari, angela.krueger@cityofchicago.org, Albert.Wtorkowski@cityofchicago.org, Darren.Ujano@ctrwater.net, Jason.McCubbin@ctrwater.net, & Rolando.villalon@cityofchicago.org
Village of Lincolnwood	James Amelio	7001 N Lawndale Ave Lincolnwood IL 60712	847-745-4862	jamelio@lwd.org

Agency/Company Responsible to Resolve Conflict	Name of Contact	Address	Phone	E-mail Address
Village of Skokie	Samantha Maximilian	Village of Skokie 5127 Oakton Street Skokie, IL 60077	(847) 933-8232	Samantha.Maximilian@skokie.org
Metropolitan Water Reclamation District of Greater Chicago	Paul Sobanski, Cedric Robertson, Margarita Johnson, Joseph Schuessler, Hanif Munshi, or Catherine O'Connor	100 East Erie Street Chicago, IL 60611	(708) 588-4080, (708) 588-3896, (847) 568-8380	JohnsonM1@mwrd.org SchuesslerJ@mwrd.org MunshiM@mwrd.org OconnerC@mwrd.org & PatinoM@mwrd.org No access hatches and manhole covers on MWRD structures and manholes within the project area to be buried or covered. No debris to enter MWRD structures, sewers, or facilities. MWRD personnel to have 24 hour-a-day unrestricted access to all MWRD facilities. For questions regarding access or field location, contact Paul Sobanski at (708)588-4080. For authorization to locate, protect and/or adjust to grade MWRD manholes, contact Cedric Robertson, Managing Engineer, at (708) 588-3896.

The above represents the best information available to the Department and is included for the convenience of the bidder. The days required for conflict resolution should be considered in the bid as this information has also been factored into the timeline identified for the project when setting the completion date. The applicable portions of the Standard Specifications for Road and Bridge Construction shall apply.

Estimated duration of time provided above for the first conflicts identified will begin on the date of the executed contract regardless of the status of the utility relocations. The responsible agencies will be working toward resolving subsequent conflicts in conjunction with contractor activities in the number of days noted.

The estimated relocation duration must be part of the progress schedule submitted by the contractor. A utility kickoff meeting will be scheduled between the Department, the Department's contractor and the utility companies when necessary. The Department's contractor is responsible for contacting J.U.L.I.E. prior to all excavation work.

Add the following to Article 1066.03(b) of the Standard Specifications:

"Cable sized No. 2 AWG and smaller shall be U.L. listed Type RHH/RHW and may be Type RHH/RHW/USE. Cable sized larger than No. 2 AWG shall be U.L. listed Type RHH/RHW/USE."

Revise Article 1066.04 to read:

"Aerial Cable Assembly. The aerial cable shall be an assembly of insulated aluminum conductors according to Section 1066.02 and 1066.03. Unless otherwise indicated, the cable assembly shall be composed of three insulated conductors and a steel reinforced bare aluminum conductor (ACSR) to be used as the ground conductor. Unless otherwise indicated, the code word designation of this cable assembly is "Palomino". The steel reinforced aluminum conductor shall conform to ASTM B-232. The cable shall be assembled according to ANSI/ICEA S-76-474."

Revise the second paragraph of Article 1066.05 to read:

"The tape shall have reinforced metallic detection capabilities consisting of a woven reinforced polyethylene tape with a metallic core or backing."

ROADWAY LUMINAIRE, LED (D-1)
Effective: July 1, 2021

Description.
This work shall consist of furnishing and installing a roadway LED luminaire as shown on the plans, as specified herein.
A
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 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 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 onsite 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 to1000 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 ±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 of the luminaire shall not exceed 1.6 sq. ft.

The total 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℃ 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 ℉ (25 ℃) to the luminaire. If the driver has a thermal shut down feature, it shall not turn off the LEDs when operated at 104 ℉ (40 ℃) 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.

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.

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE
I-94 NB/SB LIGHTING – CONTROLLER "A-C" (MEDIAN MOUNT)

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	12 & 24	Ft
	IES Surface Classification	R3	
	Q-Zero Value	0.07	
Mounting Data	Mounting Height	50.2	Ft
	Mast Arm Length	(2) 6	Ft
	Pole Set-Back from Edge of Pavement	6	Ft
Luminaire Data	Source	LED	
	Color Temperature	4000	°K
	Lumens	18,000	Min
	Pay Item Lumen Designation	G	
	BUG Rating	B3-U0-g3	
	IES Vertical Distribution		
	IES Control of Distribution		
	IES Lateral Distribution	Type II	
	Total Light Loss Factor	0.70	
Pole Layout Data	Spacing	215	Ft
	Configuration- median mount	See diagram	
	Luminaire Overhang over E.O.P.	0	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} (Max)	1.2	Cd/m^2
	Average Luminance, L_{AVE} (Min)	0.8	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.5	Max
	Uniformity Ratio, L_{MAX}/L_{MIN}	6.0	Max
	Veiling Luminance Ratio, L_V/L_{AVE}	0.3	Max

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE
I-94 NB/SB LIGHTING – CONTROLLER "A-G" (NON-MEDIAN MOUNTED, 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	24	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	18	Ft
Luminaire Data	Source	LED	
	Color Temperature	4000	°K
	Lumens	28,000	Min
	Pay Item Lumen Designation	G	
	BUG Rating	3-0-4 (max)	
	IES Vertical Distribution		
	IES Control of Distribution		
	IES Lateral Distribution	II	
	Total Light Loss Factor	0.70	
Pole Layout Data	Spacing	250	Ft
	Configuration	Opposite	
	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 Luminance	Average Luminance, L_{AVE} (Max)	1.2	Cd/m^2
	Average Luminance, L_{AVE} (Min)	0.8	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.5	Max
	Uniformity Ratio, L_{MAX}/L_{MIN}	6.0	Max
	Veiling Luminance Ratio, L_V/L_{AVE}	0.3	Max

Revised 9/15/2022

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE
I-94 NB/SB LIGHTING – CONTROLLER (NON-MEDIAN MOUNTED, OPPOSITE LAYOUT)

GIVEN CONDITIONS

Roadway Data	Pavement Width	48	Ft
	Number of Lanes Left of Median	4	
	Number of Lanes Right of Median	4	
	Lane Width	12	Ft
	Median Width	24	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	18	Ft
Luminaire Data	Source	LED	
	Color Temperature	4000	°K
	Lumens	28,000	Min
	Pay Item Lumen Designation	G	
	BUG Rating	3-0-4 (max)	
	IES Vertical Distribution		
	IES Control of Distribution		
	IES Lateral Distribution	II	
	Total Light Loss Factor	0.70	
Pole Layout Data	Spacing	250	Ft
	Configuration	Opposite	
	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.

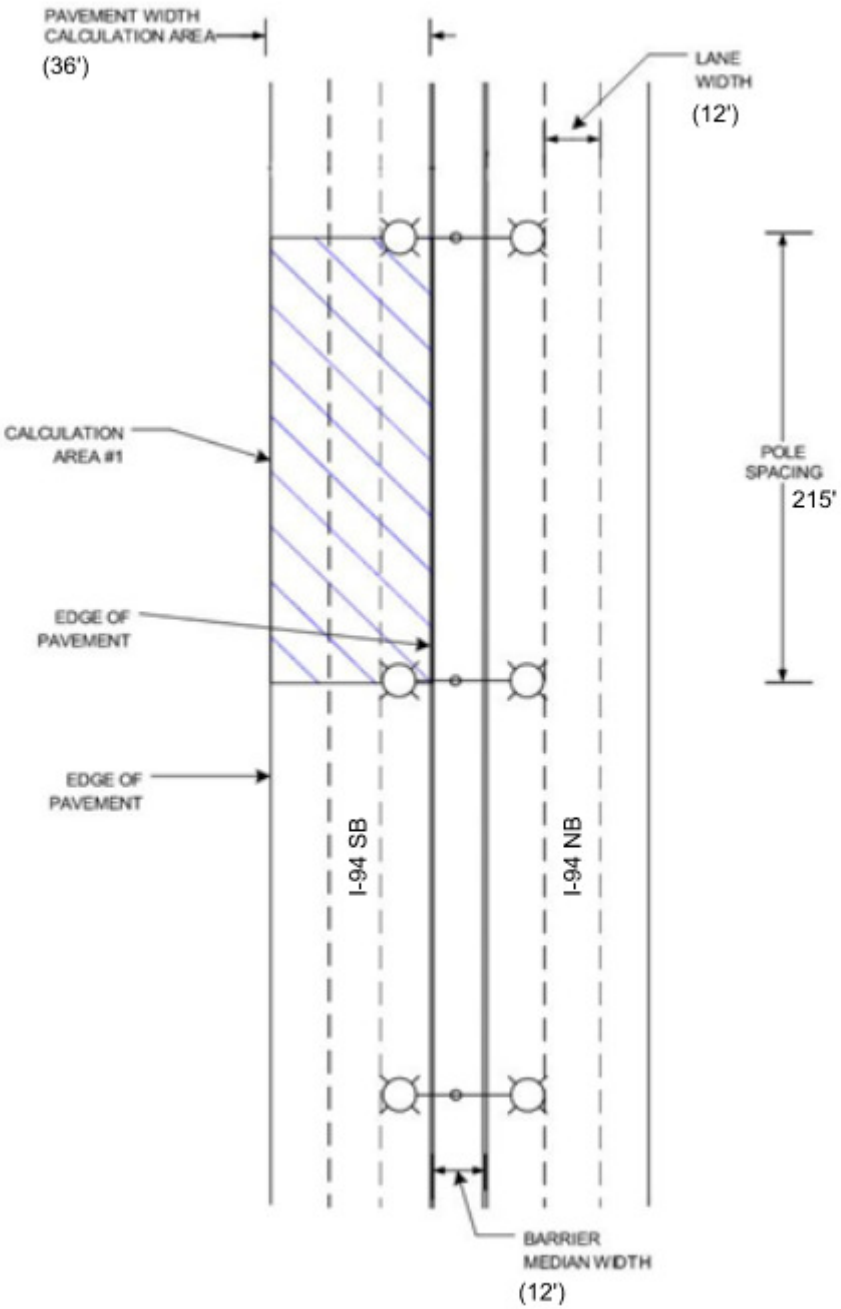
PERFORMANCE REQUIREMENTS

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

Roadway Luminance	Average Luminance, L_{AVE} (Max)	1.2	Cd/m^2
	Average Luminance, L_{AVE} (Min)	0.8	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.5	Max
	Uniformity Ratio, L_{MAX}/L_{MIN}	6.0	Max
	Veiling Luminance Ratio, L_V/L_{AVE}	0.3	Max

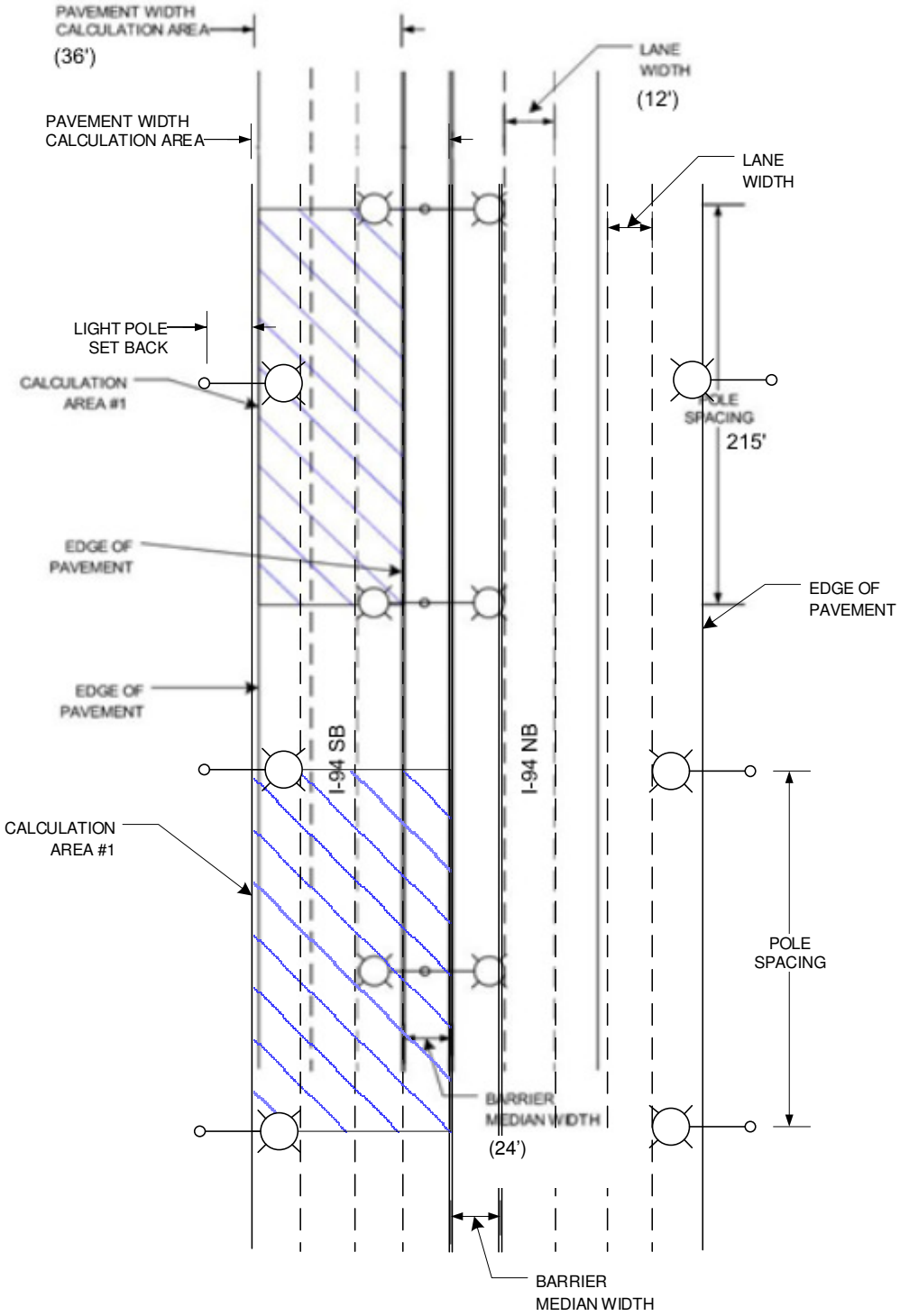
Revised 9/15/2022

I-94 NB/SB Median Mount Lighting Diagram (Median Mounted) – South of Devon
12 FT Median



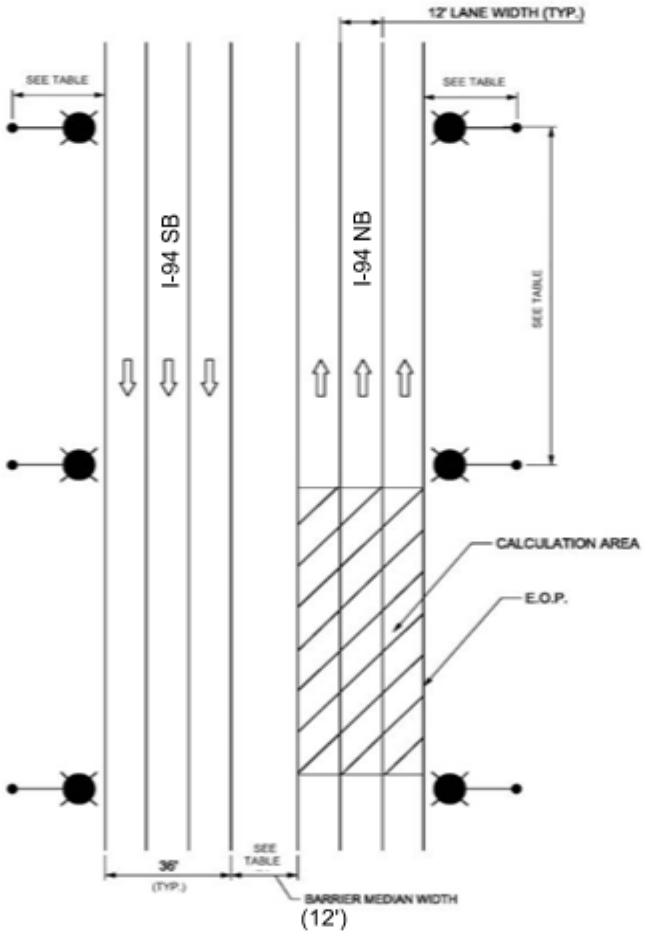
I-94 NB/SB Median Mount Lighting Diagram (Median Mounted) – North of Devon
24 FT Median

Roadway Layout: 4 lanes in each direction, opposite layout



Revised 9/15/2022

3 LANES IN EACH DIRECTION, OPPOSITE LAYOUT.
I-94 NB/SB Outside Mount Lighting Diagram (Non-Median Mounted)



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.

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.

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 CD-ROM) 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.

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 so as 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.

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	G	15,500
B	3,150	H	25,200
C	4,400	I	47,250
D	6,300	J	63,300
E	9,450	K	80,000+
F	12,500		

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, or **TEMPORARY LUMINAIRE, LED**, **ROADWAY**, of the output designation specified.