



Request for Proposals

Addendum No. 01

New LED Lighting System

for

RSU No. 22

March 20, 2018

To all Registered Bidders:

The following questions/clarifications, changes, additions, and/or deletions are hereby made a part of the Request for Proposals for the above noted project, fully and completed as if the same were fully contained therein. All other terms, conditions, and specifications of the original Request for Proposals remain unchanged.

1. *Question:* Will the existing wooden field lighting pole at the south end of the field need to be removed?

Answer: The existing wooden field lighting pole, lighting fixtures, and electrical cables and conduits related to the field lighting pole shall be removed.

2. *Question:* Will the Contractor be responsible for removing all existing field wooden lighting poles, lighting fixtures, and electrical cables and conduits related to the field lighting poles?

Answer: The Contractor shall remove all existing wooden lighting poles, lighting fixtures, and electrical cables and conduits related to the field lighting poles from the Owner's property.

3. *Question:* Can the Contractor cut the existing wooden field lighting poles just below grade, thereby leaving a portion of the pole base in the ground?

Answer: The Contractor shall remove the entire existing wooden field lighting pole to include the wooden field pole located below grade.

4. *Question:* Is the Contractor responsible for removing and reinstalling the existing public announcement speakers that are currently mounted on the existing wooden field lighting poles?

Answer: The Owner shall be responsible for removing and reinstalling the existing public announcement speakers.

5. *Question:* Is the Contractor responsible for determining the electrical power supply and conduit paths for the new LED lighting system?

Answer: This is a Design-Build RFP, and as such, the Contractor is responsible for determining the electrical power supply and conduit paths for the new LED lighting system. The Contractor shall be responsible for providing engineered drawings, stamped by a Maine registered Professional Engineer if required by the building and life safety codes and statues of the State of Maine for all work related to the electrical distribution system supporting the new LED lighting system.

6. *Question:* Will the Owner consider a Contractor that has not “installed at least a minimum 25 LED lighting systems for a minimum field size of 70,000 square feet...” as required by the RFP under section General Requirements, Quality Assurance, Item 2?

Answer: The Owner will accept a Contractor that has “installed at least a minimum of 10 LED lighting systems for a minimum field size of 70,000 square feet...” Please refer to the attached modified Request for Proposals excerpt for the inclusion of this language.

7. *Question:* Will the Owner consider modifying Attachment A, Performance Based Specification, Project Description 2.b. Light Poles, “Procure and install four (4) new galvanized steel light poles”

Answer: The Contractor may provide more than four (4) light poles if desired. Please refer to the attached modified Attachment A, Performance Based Specification for the inclusion of this language.

8. *Question:* Will RSU No. 22 consider modifying Attachment A, Performance Based Specification, Part 3 - Execution, 3.4 Warranty and Guarantee, Item 1, 25-Year Warranty, “...supply a signed warranty covering the entire system for 25 years from the date of shipment.”?

Answer: Equipment
The Contactor shall warrant the lighting system (excluding fuses and lamps) to be free from defects in materials and workmanship for a period of ten years starting from the date of shipment.

Two Years Labor

The Contractor shall provide labor and materials for a period of two years to replace defective parts or repair defects in workmanship or, at its election, to pay the reasonable cost of labor for such repairs. For the remainder of the warranty period, replacement materials shall be provided at no charge. Labor costs shall be the Owner’s expense.

Lamps

Lamps are warranted not to fail for two years from the date of shipment. Lamps which fail during the first year of the warranty period shall be replaced and installed at no cost to the Owner.

Lamps which fail during the second year of the warranty period shall be replaced by the manufacturer, but installation shall be the Owner's responsibility. Lamps damaged by physical trauma or electrical surges are not covered by this warranty.

Alignment

The Contractor warrants accurate alignment of the luminaires on the luminaire assembly for a period of ten years starting from the date of shipment.

Please refer to the attached modified Attachment A, Performance Based Specification for the inclusion of this language.

Other Changes to Request for Proposals

1. Attachment A, Performance Based Specification, Part 1 – General, 1.1 Summary, Item 4.a. Revise text to read “Therefore light levels are guaranteed to not drop below specified target values for the warranty period”.
2. Attachment A, Performance Based Specification, Part 1 – General, 1.1 Summary, Item 4.d. Delete the following text “Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid”.
3. Attachment A, Performance Based Specification, Part 1 – General, 1.4 Life-Cycle Costs. Delete Item 2 “Preventative and Spot Maintenance: Contractor shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage”.
4. Attachment A, Performance Based Specification, Part 2 – Product, 2.2 Electrical, Delete Item 2 “Energy Consumption: The kW consumption for the field lighting system shall be 66.7 kW”.
5. Attachment A, Performance Based Specification, Part 2 – Product, 2.4 Controls. Delete Item 3 “Remote Lighting Control System: System shall allow Owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Contractor shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs”.

6. Attachment A, Performance Based Specification, Part 2 – Product, 2.4 Controls. Delete Item 3 “Remote Lighting Control System: System shall allow Owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Contractor shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.
The Owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute “early off” commands by phone. Scheduling tool shall be capable of setting curfew limits.
Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage”.
7. Attachment A, Performance Based Specification, Part 2 – Product, 2.4 Controls. Delete Item 4 “Remote Monitoring System: System shall monitor lighting performance and notify Contractor if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed)”.
8. Attachment A, Performance Based Specification, Part 2 – Product, 2.4 Controls. Delete Item 5 “Management Tools: Contractor shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.
Hours of Usage: Contractor shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the Owner.
 - a. Cumulative hours: shall be tracked to show the total hours used by the facility
 - b. Report hours saved by using early off and push buttons by users.”
9. Attachment A, Performance Based Specification, Part 2 – Product, 2.4 Controls. Delete Item 6 “Communication Costs: Contractor shall include communication costs for operating the controls and monitoring system for a period of 25 years”.
10. Attachment A, Performance Based Specification, Part 3 – Execution, 3.3 Field Quality Control, 2. Field Light Level Accountability, Item a. Revise text to read “Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period”.
11. Attachment A, Performance Based Specification, Part 3 – Execution, 3.3 Field Quality Control, 2. Field Light Level Accountability, Item b. Revise text to read “The Contractor shall be responsible for an additional inspection one year from the date of commissioning of the lighting system and will utilize the Owner’s light meter in the presence of the Owner.

Please refer to the modified attached Attachment A, Performance Based Specification for incorporation of the above changes.

- End of Addendum No. 01 -

PROPOSAL EVALUATION PROCESS

RSU No. 22 reserves the right at its sole discretion to waive any informality or irregularity in any bid, to reject any and all bids, to award a bid wholly or in part, to call for re-bid, and to negotiate with any Contractor, if it is deemed to be in the best interest of RSU No. 22 to do so.

As part of the evaluation process, the Contractor may be required to attend one or more meetings with RSU No. 22 for the purpose of clarifying materials/products, services and pricing, and may be required to appear at a RSU No. 22 School Board meeting.

The selection process may include requests for additional information from individual Contractors regarding the proposed materials, products, scope of services, pricing and product specifications.

The selected Contractor will be required to enter into a standard School services agreement, Section 2-E, (included in Attachment D) that includes project specifications, including insurances, performance measures, hold harmless and other risk related matters identified by RSU No. 22.

GENERAL REQUIREMENTS

Any bids that propose a project that does not conform to the specifications may be rejected as nonresponsive.

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.

SCOPE OF WORK

Please refer to Attachment A for the Performed Based Specification for a comprehensive scope of work.

SUBMITTALS

Prior to order of materials, the Contractor shall submit the following:

1. Product warranty.
2. Details on construction, especially any details that may deviate from plans and specifications.

Prior to Final Acceptance, refer to Section on Other Equipment, Turnover Materials, and Training for additional Submittals required.

QUALITY ASSURANCE

Contractor's Experience

1. Experience in installing LED lighting systems in the United States for at least the past five (5) years for stadium caliber sports fields.
2. Must have installed at least ~~twenty five (25)~~ **ten (10)** LED lighting systems for a minimum field size of 70,000 square feet each, in the United States that meets the specifications as included in this RFP, that have been in play for a minimum of three years.



**Performance Based Specification
For the Removal of the Existing Field Lighting and the Purchase, Installation,
Warranty, and Maintenance of a New LED Lighting System for RSU No. 22
Hampden, Maine**

March 6, 2018

PROJECT DESCRIPTION

The Project consists of the removal of the existing field lighting and complete installation of a new LED lighting system at Hampden Academy for Regional Owner Unit No. 22 (“Owner”). Scope shall be inclusive of the following elements:

1. Remove existing athletic field lighting system. The existing system includes four (4) wood lighting poles and luminaires. The existing power cabling will be disconnected and capped appropriately for reuse.
2. Provide and install new engineered field lighting system. The new system consists of the following elements:
 - a. Substructure: Provide engineered drawings stamped by a professional engineer licensed in the State of Maine for new light pole foundation system. Procure and install foundations systems for new light poles.
 - b. Light Poles: Procure and install a minimum of four (4) new galvanized steel light poles.
 - c. Luminaires: Procure and install LED luminaires capable of providing an average horizontal illuminances level of 30 (base bid) / 50 (alternate) footcandles (minimum); coefficient of variation of 0.21 or less; uniformity ratio E_{max}/E_{min} of 1.5:1.0 or less; and a glare rating less than or equal to 50 for players on the field within the player’s primary view angle.

SPECIFICATIONS

PART 1 – GENERAL

1.1 SUMMARY

1. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
2. The purpose of these specifications is to define the lighting system performance and design standards for the Athletic Field using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.
3. The sports lighting will be for the following venues:
 - a. Football, field hockey, soccer, and softball.
4. The primary goals of this sports lighting project are:
 - a. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for ~~a period of 25 years~~ the warranty period.
 - b. Environmental Light Control: It is the primary goal of this project to minimize glare to the players, spectators and neighbors. The LED design should provide better control than a good HID design.

- c. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
- d. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, the Owner requires a remote on/off control system for the lighting system. ~~Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.~~

1.2 LIGHTING PERFORMANCE

- 1. The new LED lighting system design and layout shall be in conformance with the latest IES recommended procedures and ANSI/IES RP-6.
- 2. Confirm to the regulatory requirements of ANSI/NFPA 70.
- 3. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Appropriate light loss factors shall be applied and submitted for the basis of design. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Athletic Field	30 (base bid) / 50 (alternate) footcandles	1:5:1.0 (Max/Min)	117	30'x30'

A glare rating less than or equal to 50 for players on the field within the player’s primary view angle.

- 4. Hours of usage
Designs shall be based on the following hours of usage

Area of Lighting	Annual Usage Hours	10 year Usage Hours
Athletic Field	300	3,000

- 5. Color: The lighting system shall have a minimum color temperature of 5700K and a CRI of 65+.
- 6. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be 80 feet. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum is 10 degrees below horizontal.

1.3 ENVIRONMENTAL LIGHT CONTROL

- 1. Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. No symmetrical beam patterns are accepted.
- 2. Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be taken at 30-foot intervals along the boundary line of the field. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense

bank of lights. Illumination level shall be measured in accordance with the IESNA LM-5-04 after 1 hour warm up.

3. The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified independent testing laboratory with a minimum of five years' experience or by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.

1.4 LIFE-CYCLE COSTS

1. Contractor shall submit a 25-year life cycle cost calculation as outlined in the required submittal information.
2. ~~Preventative and Spot Maintenance: Contractor shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.~~

PART 2 – PRODUCT

2.1 SPORTS LIGHTING SYSTEM CONSTRUCTION

1. It is required that Structural Drawings for the new lighting system be provided to the Owner for review prior to procurement of material. The drawings shall include pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. The drawings shall be approved and stamped by a licensed Professional Engineer in the State of Maine.
2. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.
3. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.
4. System Description: Lighting system shall consist of the following:
 - a. Galvanized steel poles and cross-arm assembly.
 - b. Non-approved pole technology:
 - i. Square static cast concrete poles will not be accepted.
 - ii. Direct bury steel poles which utilize the extended portion of the steel shaft for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long term performance concerns.
 - c. Contractor will supply all drivers and supporting electrical equipment
 - i. Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure.

- ii. Alternate: Integral drivers mounted at the top of the pole will require a pole mounted enclosure approximately 10 feet above grade. The enclosure shall include a disconnect per circuit and surge protection.
- d. Contractor shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2_2002.
- e. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
- f. All luminaires, visors, and cross-arm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment.
- g. Control cabinet to provide remote on-off control and monitoring of the lighting system. See Section 2.4 for further details.
- h. Contractor shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
 - i. Integrated grounding via concrete encased electrode grounding system.
 - ii. If grounding is not integrated into the structure, the Contractor shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.
- i. Safety: All system components shall be UL listed for the appropriate application.

2.2 ELECTRICAL

1. Electric Power Requirements for the Sports Lighting Equipment:
 - a. Electric power: 480 Volt, 3 Phase
 - b. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.
2. Energy Consumption: ~~The kW consumption for the field lighting system shall be 66.7 kW.~~

2.3 STRUCTURAL PARAMETERS

1. Wind Loads: Wind loads shall be based on the 2009 International Building Code. Wind loads to be calculated using ASCE 7-05, a design wind speed of 90, exposure category C and wind importance factor of II.
2. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2009 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-5).
3. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report as prepared by Summit Geoengineering Services dated March 1, 2018 (included as Attachment C).
4. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

2.4 CONTROLS

1. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.
2. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.
3. ~~Remote Lighting Control System: System shall allow Owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Contractor shall provide and~~

maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The Owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute "early off" commands by phone. Scheduling tool shall be capable of setting curfew limits.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

4. ~~Remote Monitoring System: System shall monitor lighting performance and notify Contractor if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).~~
5. ~~Management Tools: Contractor shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.~~

~~Hours of Usage: Contractor shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the Owner.~~

- ~~a. Cumulative hours: shall be tracked to show the total hours used by the facility~~
- ~~b. Report hours saved by using early off and push buttons by users.~~

6. ~~Communication Costs: Contractor shall include communication costs for operating the controls and monitoring system for a period of 25 years.~~

PART 3 – EXECUTION

3.1 SOIL QUALITY CONTROL

1. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:
 - a. Providing engineered foundation embedment design by a registered engineer in the State of Maine for soils other than specified soil conditions;
 - b. Additional materials required to achieve alternate foundation;
 - c. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

3.2 DELIVERY TIMING

1. Delivery Timing Equipment On-Site: The equipment must be on-site 6 to 8 weeks from receipt of approved submittals and receipt of complete order information.

3.3 FIELD QUALITY CONTROL

1. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

2. Field Light Level Accountability
 - a. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period ~~of 25 Years.~~
 - b. The Contractor shall be responsible for an additional inspection one year from the date of commissioning of the lighting system and ~~will utilize the Owner's light meter~~ in the presence of the Owner.
 - c. The Contractor will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor will be held responsible for any damage to the fields during these repairs.
3. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Contractor shall be required to make adjustments to meet specifications and satisfy Owner.

3.4 WARRANTY AND GUARANTEE

1. Equipment: The Contractor shall warrant the lighting system (excluding fuses and lamps) to be free from defects in materials and workmanship for a period of ten years starting from the date of shipment.
2. Two Years Labor: The Contractor shall provide labor and materials for a period of two years to replace defective parts or repair defects in workmanship or, at its election, to pay the reasonable cost of labor for such repairs. For the remainder of the warranty period, replacement materials shall be provided at no charge. Labor costs shall be the Owner's expense.
3. Lamps: Lamps are warranted not to fail for two years from the date of shipment. Lamps which fail during the first year of the warranty period shall be replaced and installed at no cost to the Owner. Lamps which fail during the second year of the warranty period shall be replaced by the manufacturer, but installation shall be the Owner's responsibility. Lamps damaged by physical trauma or electrical surges are not covered by this warranty.
4. Alignment: The Contractor warrants accurate alignment of the luminaires on the luminaire assembly for a period of ten years starting from the date of shipment.
5. ~~25-Year Warranty: Each Contractor shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Contractor shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.~~
6. Maintenance: Contractor shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

3.5 FINAL CLEAN

1. Upon installation of the LED lighting system, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition, ready for immediate occupancy and use by the Owner.
2. Clean electrical parts to remove conductive and deleterious materials.
3. Remove dirt and debris from enclosures.
4. Clean finishes and touch up damage.
5. All usable remnants of new material shall become the property of the Owner.

3.6 TURNOVER MATERIALS

1. Contractor shall provide the following prior to final acceptance by the Owner:
 - a. The manufacturer's written warranty for the Project, per the minimum requirements identified in this specification section. The Contractor shall submit manufacturer's written warranty and ensure that forms have been completed in Owner's name and registered with manufacturer and insurance carrier. Evidence acceptable to Owner confirming that the third party insurance policy, non-cancelable and pre-paid, is in effect covering this installation, and underwritten by a Best "A" rated insurance carrier. Evidence acceptable to Owner that insurance carrier conforms to all insurance requirements set forth in this Performance Based Specification and that each policy is in full force and premiums paid.
 - b. Three (3) copies of maintenance manuals and a thumb-drive, which will include all necessary instructions for the proper care and preventive maintenance of the LED lighting system.
 - c. Project record documents.
 - d. Lighting Contractor shall provide a minimum two (2) hours training to the Owner on how to care for the LED lighting system.