

**CONSTRUCTION OF NEW LIGHTING TOWER AND
LIGHTING SYSTEM AT ULTRA TRACK AND FIELD RE-BID**

TECHNICAL SPECIFICATION

I. OBJECTIVE

The basic object of the project is to construct, supply and install new lighting tower and lighting system at Ultra track oval located at Philsports Complex, Meralco Avenue, Pasig City

II. BASIC INFORMATION

Project Name : CONSTRUCTION OF NEW LIGHTING TOWER AND
LIGHTING SYSTEM AT ULTRA TRACK AND FIELD

Location : Philsports Complex, Meralco Avenue, Pasig City

III. APPROVED BUDGET FOR THE CONTRACT

**SEVENTY ONE MILLION, THREE HUNDRED TWENTY NINE THOUSAND, TWO
HUNDRED SIX AND 46/100 (₱71,329,206.46)**

IV. QUALIFICATION

- Contractors must have a valid PCAB licensed with principal classification of AAA and Category General Building /General building.
- Contractors must have PCAB ARCC rating Medium B for Building.
- Contractor must be in sound financial standing with annual turnover/gross billings of at least 50% of the ABC.
- Contractor must have complete construction of a structure with lighting at least 50% of the ABC.
- Contractors must have a licensed Civil Engineer, Professional Electrical Engineer and Structural Engineer.
- All engineers must have an experience in the construction of lighting tower and installation of track oval lighting.
- The company must have at least 1 project reference in the last five (5) years in the field of construction of a structure with lighting.
- All engineers must have at least five (5) years of experience in construction of a structure with lighting.

V. QUALIFICATION

1.0 Lighting Performance

AREA OF LIGHTING	AVE. HOR. LUX LEVEL	MIN/MAX RATIO	MIN/AVE RATIO	GRID POINTS	GRID SPACING
Soccer field 100x60m	1200 Lux	0.5 to 0.7	0.3 to 0.5	At least 60	+/- 60

Color : The lighting system shall have a minimum color temperature of <5700 or Other color Temp, F11>K and CRI of <65+ Other CRI, F11>.

- a. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be as described below. Higher mounting heights may be required based on the photometric report and ability to ensure the top of the field angle is a minimum of 10 degrees below horizontal.

NUMBER OF POLES	POLE DESTINATION	POLE HEIGHT
3	Pole 1,2,4	30.5 meters
1	Pole 3	33.5 meters

2.0 Environmental Light Control

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.

3.0 Life-Cycle Costs

Preventive and Spot Maintenance: Manufacturer shall provide all preventive and spot maintenance, including parts and labor for **10 years** from the date 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.

4.0 SPORTS LIGHTING SYSTEM CONSTRUCTION

1. 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.
2. 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.

3. System Description: Lighting system shall consist of the following:
 1. Galvanized steel poles and cross-arm assembly.
 2. Non-approved pole technology:
 - a. 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.
 - b. Square static cast concrete poles will not be accepted.
 3. Lighting system shall use anchor bolt foundations.
 4. Manufacturer will supply all drivers and supporting electrical equipment.
 - a. 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. Disconnected per circuit for each pole structure will be located in the enclosure.
 5. Manufacturer 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.
 6. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
 7. All luminaires, visors, and cross-arm assemblies shall withstand 300 kph winds and maintain luminaire aiming alignment.
 8. Control cabinet to provide remote on-off control and monitoring of the lighting system. See Section 2.4 for further details.
 9. Manufacturer shall provide lighting grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
 - a. Integrated grounding via concrete encased electrode grounding system.
 - b. If grounding is not integrated into the structure, the manufacturer 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.

4. Safety: All system components shall be UL listed for the appropriate application.

5.0 ELECTRICAL WORKS

a. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power :Volt, Phase to be specified by end user
2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage

b. Energy Consumption: The Kw consumption for the field lighting system shall depend on the specified design.

6.0 STRUCTURAL PARAMETERS

Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required.

7.0 CONTROL

- a. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.
- b. 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.

8.0 SOIL QUALITY CONTROL

- a. 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 cost associated with:
 1. Providing engineered foundation embedment design by a registered engineer in the Philippines for soils other than specified soil conditions;
 2. Additional materials required to achieve alternate foundation

3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

9.0 FIELD QUALITY CONTROL

- a. 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 measurement shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.
- b. Field Light Level Accountability
 1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 10 Years.
 2. The contractor/manufacturer 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. Light meter must be calibrated.
 3. The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.

VI. SCOPE OF WORKS

1. Mobilization of manpower and equipment.
2. Supply and installation of lighting fixtures, wire harness and electrical enclosure box (ECE). 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. (As described above)
3. Supply and installation of galvanized steel poles and anchor bolt foundations. (As described above)
4. Supply and installation of complete and brand-new electrical system including wiring, cables, conduits, boards, circuit breakers, panels, gutters, contactors, from the lighting fixture to the electrical enclosure box (ECE) and to power supply.
5. Pullout and dismantling of existing feeder line
6. Supply and installation of wires / cables feeders that will supply the power of 4 poles.
7. Testing and commissioning
8. Submittal of construction plans and as built plans
9. Any chipping works, trenching or excavation works shall be restored
10. Delivery from port to site
11. Customs handling, brokerage and forwarding fee shall be shouldered by the Contractor/supplier.
12. All work shall be in accordance with Electrical Building codes as well as exposed electrical wirings.

13. Clearing and hauling of Contractor's/Supplier's excess construction materials and other related construction debris shall be with the consent of the Procuring entity representative/s.
14. Coordinate with the Procuring Entity's Representative/s for all works/related activities to avoid delay of the completion of the supply, delivery, fabrication and installation of the electrical lightings and its components.
15. The Supplier/Contractor shall provide a manual installation, kind of lightings or brochures.
16. The Supplier/Contractor shall provide a certification from the manufacturer guaranteeing Exclusivity for this project.
17. The Supplier/Contractor shall provide certification from the manufacturer guaranteeing 10 years warranty for this project.
18. The Supplier/Contractor shall provide certification from the manufacturer guaranteeing constant lighting technology.

VII. GENERAL NOTES

The contractor shall be responsible in securing the necessary permits/licenses from the Local Government Unit's (LGU) and other government agencies in connection with the implementation of the Proposed Construction of New Lighting Tower and Lighting System at ULTRA Track and Field.

Other materials and workmanship not included on the above list but found necessary to complete the work shall be for the account of the contractor.

Sub-contractor/suppliers of the major finishing materials shall be a local or multi-national company with the wholly owned Philippine subsidiary and shall have a similar local project of the supply and installation of the above stated materials.

Sub-contractor the major finishing materials shall be a member of association of specialist on construction, supply and installation of lighting tower and lighting system.

The contractor shall be responsible for the safety measures during the implementation of the project and must submit methodologies in every finishing materials required in the project.

Branded materials stated in the plans and specifications are the designer's reference of quality standards.

These products can be replaced provided that the replacement are approved of the same or higher quantity.

The contractor shall coordinate with PSC Project Architects, Engineers and Coordinators in connection with the implementation of the project so as not to hamper with PSC operations. The contractor is required to have the necessary and appropriate tools, instruments and equipment for the proper implementation of the project.

The contractor shall submit the as built plans to PSC after the completion of the project. It is assumed that the bidder shall have full knowledge of the work site condition, shall have reviewed the plans and specifications and bid documents, and thus warrants the availability of the work and materials upon submission of his bid proposal.

The Contractor shall coordinate all aspects of the works in order to ensure a harmonious progress without interruptions, delays or modifications to work already completed. The prospective bidder/contractor shall possess and submit with the eligibility documents a valid track record in undertaking related works.

All electrical (lighting systems, etc.) structural (lighting tower, etc.) and other related facilities/equipment not included in the program of works that will be affected during the implementation of the project should be restored to their original operation condition/s at no additional cost to PSC authority.

VIII. PREVENTION OF ACCIDENT AND PUBLIC NUISANCE

GENERAL

The Contractor shall formulate adequate control measurements in accordance with the relevant local laws and regulations regarding prevention of accidents, fires, and public nuisances during the execution of the work.

The Contractor shall ensure that his workmen are aware, and shall so instruct the Workmen, of good and safe working practices.

The Contractor's safety plan shall take into account, among other items, working in Restricted Areas, Contractor's Equipment; use of dust masks, ear protectors, safety helmets and safety lines.

PREVENTION OF ACCIDENTS

The Contractor shall formulate a safety plan for work at the site to provide proper protection, especially at such places in the field restricted areas.

POLLUTION CONTROL

The Contractor shall take all necessary steps to minimize noise, vibration, dust, soot, and other pollution resulting from the execution of the work.

IX. PERIOD OF WORK

The Contractor shall complete the work within one hundred twenty (120) calendar days upon the receipt of the Notice of Proceed. The Contractor shall work two (2) shifts per day to finish the work on time.

X. WARRANTY PERIOD

10-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 10 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer 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.

Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 10 years from the date of equipment shipment. Parts and labor shall be covered such that the individual luminaire outages will be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of luminaire outage.

The signed and chopped guarantee must come from the manufacturer only. No letters or guarantees from agents or other resellers are allowed.

XI. CONTRACTORS RISK AND WARRANTY SECURITY

1. The contractor/supplier shall assume full responsibility for the works/deliver from the time supply, delivery, fabrication installation commenced up to final acceptance by the Procuring Entity's Representative/s and shall be held responsible for any damage or destruction of the works except those occasion by force majeure. The contractor/supplier shall be fully responsible for the safety, protection, security and convenience of his personnel, third parties and the public at large, as well as the works, equipment, installation and the like to be affected by his construction work and deliveries
2. The defects liability period shall be one (1) year from the contract completion. The certificate of acceptance shall be issued by PSC after all defects have been corrected.

XII. ACCEPTANCE OF THE PROJECT

Certificate of Acceptance will be issued upon approval of the END USER and the Head of the Procuring Entity.