

## **TERMS OF REFERENCE**

### **MPF-NCN-06-2026 MAINTENANCE OF COVERED PARKING SHED MEL LOPEZ BLVD., NORTH HARBOR, TONDO, MANILA**

#### **I. RATIONALE**

Philippine Ports Authority-Port Management Office-NCR North aims to ensure that its port facilities are properly maintained to properly cater and provide efficient services that will meet the demands of its port users.

Due to the continuous exposure to environmental elements and regular use, the architectural and structural components of the parking lot deteriorate. The maintenance of the parking area is necessary to preserve its structural integrity, ensure the safety and preservation of PPA vehicles.

#### **II. OBJECTIVE**

PPA PMO-NCR North intends to perform preventive maintenance to the port facilities to preserve the facility asset. The project shall provide a clean, secure, and weather-protected parking facility that ensures the safety and convenience of employees, visitors, and official vehicles while extending the service life of the facility and maintaining a professional appearance consistent with the Authority's standards.

The procurement of the project shall be made through Alternative Mode of Procurement particularly Small Value Procurement in accordance with Section 34, of the implementing rules and regulations of the Republic Act No. 12009 or New Government Procurement Act.

#### **III. SCOPE OF WORKS AND SERVICES**

##### **BILL NO. 1 GENERAL EXPENSES**

- 1.1 Mobilization / Demobilization
- 1.2 Provide construction safety and health program in the execution of project

##### **BILL NO. 2. MAINTENANCE OF PARKING SHED**

- 2.1 Clearing of the project area
- 2.2 Supply, deliver, fabricate and install GI Post with base plate bolted on concrete pavement
- 2.3 Supply, deliver and install Rafters, Framing and Purlins
- 2.4 Supply and apply 1-coat epoxy primer and 2-coats epoxy paint finish
- 2.5 Supply and apply 2-coats Traffic paint for parking lines
- 2.6 Supply, deliver and install Reflective Insulation, Roofing Sheet, Steel Flashing, Steel Gutter, Fascia board and Downspout

##### **BILL NO. 3. ELECTRICAL WORKS**

- 3.1 Supply, delivery, and installation of Electric al Wirings with Conduits
- 3.2 Supply, delivery, and installation of Electrical Fixtures and Safety Devices

#### **IV. ELIGIBILITY OF THE SERVICE PROVIDER**

The prospective contractor must submit the following equipment and documentary requirements:

##### **A. Equipment Required:**

| <b>Quantity</b> | <b>Description</b>               |
|-----------------|----------------------------------|
| 2-unit/s        | Welding Machine, Owned or Leased |
| 1-set           | Generator Set, Owned or Leased   |

##### **B. Prospective bidders shall submit Quotation together with the herein documents:**

1. PCAB License – At least Small “B” for Building
2. PhilGEPS Registration
3. BIR Certificate of Registration
4. Income/ Business Tax Return
5. Duly Notarized Omnibus Sworn Statement
6. Mayor's Permit/Business Permit

#### **V. APPROVED BUDGET CONTRACT**

The Approved Budget for the Contract (ABC) shall be the amount **Nine Hundred Forty-One Thousand Seven Hundred Sixty-Eight Pesos (Php 941,768.00)** inclusive of 12% VAT.

#### **VI. CONTRACT DURATION**

The target number of days to complete the project is fifty-five (55) days reckoned upon receipt of by the winning bidder of the Notice to Proceed (NTP).

#### **VII. TERMS OF PAYMENT**

The payment shall be paid in full to the contractor upon completion and acceptance of the project by PPA PMO-NCR North subject to accounting and auditing rules and regulations.

#### **VIII. PERFORMANCE SECURITY**

To guarantee the faithful performance by the winning bidder of its obligations under the contract in accordance with the Bidding Documents, it shall post a performance security prior to the signing of the contract. The winning bidder shall ensure that the performance security remains effective until the issuance of the Certificate of Final Acceptance.

The performance security shall be in the form chosen by the procuring entity and in the amount not less than the required percentage of the total contract price in accordance with the following schedule:

| <b>Form of Performance Security</b>                                                                                                                                                | <b>Amount of Performance Security<br/>(Not less than the required<br/>percentage of the Total<br/>Contract)</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| a) Cash or cashier's or<br>Manager's check issued<br>by a bank                                                                                                                     | Ten percent (10%)                                                                                               |
| b) Bank draft or guarantee or<br>irrevocable Letter or Credit<br>issued by a bank. If issued<br>by a foreign bank it shall<br>be confirmed or<br>authenticated by a local<br>bank. |                                                                                                                 |
| c) Surety Bond callable upon<br>demand issued by a surety<br>or insurance company<br>dully certified by the<br>Insurance Commission as<br>authorized to issue such<br>security     | Thirty percent (30%)                                                                                            |

#### **IX. LIQUIDATED DAMAGES**

In case the prospective Contractor fails to perform satisfactorily the maintenance activities within the agreed contract period, the Contractor shall be held liable for damages for the delay and shall pay the Procuring Entity liquidated damages, an amount equal to one-tenth (1/10) of one-percent (1%) of the cost of the delayed project scheduled for completion, for every day of delay until such project is finally accomplished and accepted by the procuring entity concerned.

#### **X. RESPONSIBILITY OF THE PROSPECTIVE CONTRACTOR**

- a. The Contractor shall at all times utilize the most cost effective and widely accepted standards and practices in accomplishing the maintenance activities provided for in the Terms of Reference.
- b. The Contractor shall keep the PPA fully informed and updated on all matters relating to the maintenance activities accomplished.

#### **XI. RESPONSIBILITY OF THE PHILIPPINE PORTS AUTHORITY**

- a. For and in consideration of full, satisfactory and full performance by the Contractor of all maintenance activities provided for in the Terms of Reference (TOR), PPA shall pay the full contract amount corresponding to the Lowest Calculated Responsive Bid among all the bid proposals submitted.
- b. PPA shall assign a qualified engineering personnel to monitor, supervise and oversee the work direction of the maintenance activities being implemented

by the Contractor to determine the actual progress and accomplishments of the project.

## **X. GENERAL REQUIREMENTS AND TECHNICAL SPECIFICATIONS OF PROJECT**

### **ITEM 01 : DEMOLITION AND REMOVAL WORKS**

#### **A. DESCRIPTION OF THE PROJECT ITEM**

- The work includes the furnishing of all labor, materials and equipment required to carry out the demolition and removal of old structures, port accessories and obstructions including demolition of miscellaneous concrete curbs etc., as required for the execution of the Contract.
- The Contractor shall submit the proposed methodology or procedure of demolition work with detailed drawings and calculations if necessary, to the PPA Engineer for approval, before the execution of the Works.
- The Contractor shall keep all pavements and landing areas to and from the site of the disposal area clean and free of mud, dirt and debris during and after the execution of disposal. Disposal of debris and materials shall be as directed by the PPA Engineer.

#### **B. GENERAL PROVISIONS**

- The Contractor shall be deemed to have satisfied itself as to the site conditions, and to have included in his unit prices provision for all risks that may arise during or in connection with the execution of the work.
- The demolition shall be carried out by approved methods and equipment such as concrete breakers, gas-cutters, hydraulic jacks, compressed air disintegrators, etc., however, no blasting shall be used unless approved in writing by the PPA Engineer and after obtaining the written permission of the concerned authorities.
- The Contractor shall provide suitable equipment, skilled labor and appropriate temporary works such as scaffoldings to ensure safety in his demolition works as well as in the adjacent area.
- Contractor shall demolish all the structural members above the level on which the subsequent and permanent works under this Contract will begin. To this end, the temporary construction works such as excavation shall be conducted by the Contractor.
- Materials coming from the demolition works, except general earth, shall remain the property of the Procuring Entity, the designated part of which shall be stored by the Contractor at places specified by the PPA Engineer/ Accepting authority. Receiving copy of Turn-Over Report shall be provided.

- In case of demolition of wharf deck and platform, the contractor shall ensure that no debris will be remained/deposited at seabed.

### **C. INTERFERENCE WITH PORT OPERATIONS**

- During the execution of the work, the Contractor shall not interfere with the shipping, navigation and other traffic in the port.
- The Contractor shall coordinate with the concerned office regarding the schedule of demolition and other related works to ensure port operations remain uninterrupted at all times.
- Prior to commencement of the demolition works, the Contractor shall inform/announce to port users the schedule of disconnection of utilities.

### **D. STORAGE AND DUMPING**

- Prior to the commencement of the demolition work, the PPA Engineer shall submit to the Contractor a list in which all the materials to be salvaged and overhauled, as property of PPA, and the description of the location of their storage. Materials embedded in concrete units shall not be salvaged.
- The Contractor shall separate materials to be salvaged from debris. Salvaged materials shall be loaded, transported and unloaded by the Contractor at the specified locations.
- The Contractor may dump debris or extracted rocks on land areas but out of the site, which areas shall be procured and prepared at his own expense. In this case, safety measures shall be undertaken in the transporting, unloading, covering and others as requested by the PPA Engineer.
- The approximate distance of the disposal site from the project site is about five (5) kms., as designated by the PMO thru the implementing office.

### **E. EXECUTION OF THE PROJECT ITEM**

- Prior to the commencement of demolition works, the alignment of new construction works to existing structure shall be checked.
- The width and alignment of portion of existing structure to be demolished shall be marked by paint.
- With these lines as guides, concrete shall be broken and reinforcing bars cut, such that panels or portions of the structure can be lifted out for disposal elsewhere outside of the operational work area.
- Rocks removed from existing slope protection shall be stored for re-use in new construction.

- Demolish pavements, curbs, fences, utilities, services, navigation aids and the likes as determined in the field for each project and as shown on the drawings or as directed by the PPA Engineer.
- Materials coming from the demolition works shall be properly disposed by the Contractor.

## **F. SAFETY**

- During the course of survey and clearing, any obstacles which are recognized and seemed to be explosive or hazardous to workers shall be removed from the site by the proper Authority.
- At the end of each day's work, the Contractor shall keep the workplace in safe condition and clean so that no part is in danger of falling or creating hazard to personnel or equipment.

## **ITEM 02 : PAINTING WORKS**

### **A. GENERAL REQUIREMENTS**

The work shall include all labor, materials, equipment, plant and other facilities and the satisfactory performance of all works necessary to complete all field painting and as specified herein. All paints and coatings shall be applied by painting subcontractors and workmen approved by the PPA Engineer.

### **B. SCOPE**

The following surfaces to be painted except where otherwise specified or shown:

1. Above ground piping and other metal surfaces.
2. All exposed concrete.
3. All structural and miscellaneous metal
4. All equipment furnished without factory finished surfaces.
5. All exposed steel mullions, tubular frames, door frames, steel sash, and metal windows.
6. All sheet metal and ferrous metal trim.
7. Interior and exterior surfaces of the building including all concrete block masonry.

The following surfaces are not to be painted:

1. Ferrous metal having approved plating or factory paint finishes.
2. Non-ferrous metals, unless otherwise noted or indicated; galvanized metal shall not be considered a non-ferrous metal.
3. Equipment with factory finished surfaces unless otherwise noted.

No concrete, wood, metal or any other surfaces requiring protection shall be left unpainted even though not specifically defined herein.

Loose paints and rust on spiral steel stair, handrails, railing, antenna mast, exhaust hoods, steel doors, window grills and G.I. pipe fence frames shall be removed and repainted.

### **C. RIGHT OF REJECTION**

Exterior painting or interior finishing shall be done under conditions which shall not jeopardize the appearance or quality of the painting or finishing in any way. The PPA Engineer shall have the right to reject all material or work that is unsatisfactory, and require the replacement of either or both at the expense of the Contractor.

### **D. PROTECTION OF THE WORK**

The Contractor shall endeavor to protect the work of others during the time painting work is in progress. The Contractor shall be responsible for any and all damage to any other work in the course of his painting job.

Protective coverings shall be used to protect floors, fixtures, and equipment while painting, care shall be exercised to prevent paint being spattered unto surfaces which are not to be painted.

### **E. WORKMANSHIP**

All painting work shall be first class and in accordance with the best standard practices of the trade.

The Contractor shall examine carefully all surfaces to be painted and before beginning any of his work shall make sure that the work of other trades has been installed in a workman like condition ready to receive paint. Metal surfaces shall be clean, dry and free from mill scale, rust, grease, oil or any other substance which could affect the quality of the painting.

Paint shall be applied at the proper consistency and each coat shall be brushed evenly free of brush marks, sags, and runs. Care shall be exercised to avoid lapping of paint on glass or hardwares. Paint shall be sharply applied to required lines. Finished paint surfaces shall be free from defects or blemishes. Surfaces from which such paint cannot be removed satisfactorily shall be painted or repainted, as required to produce a finish satisfactory to the PPA Engineer.

Succeeding paint coatings shall be applied only when the previous coat is hard and dry.

All painting materials shall be used in strict accordance with manufacturers directions, spread or flowed on smoothly with proper film thickness and without runs, sags, skips or other defects.

### **F. STORAGE OF MATERIALS**

All painting materials and equipment not for immediate use shall be stored in a room approved by the PPA Engineer for that purpose. The receiving, opening and mixing

of all paint shall be removed from the premises at the end of each day's work, or stored in metal containers with metal covers.

#### **G. PREPARATION OF PAINT**

Paint containers shall be delivered to the job site in manufacturer's unopened containers and shall be opened only when required for use. Paint shall be mixed only in the designated room or space in the presence of the PPA Engineer or his representative. Paint shall be thoroughly stirred or agitated to uniformly smooth consistency suitable for proper application. Unless otherwise specified or approved, no materials shall be reduced, changed, or used except in accordance with manufacturer's label or tag on container. In all cases, paint shall be prepared and handled in a manner to prevent deterioration and inclusion of foreign matter.

#### **H. CLEAN-UP**

Upon completion of his work, the Contractor shall remove all surplus materials. All paint spills shall be removed and the entire premises shall be cleaned of all rubbish, and debris, caused by his work. He shall present the work clean and free from blemishes so that it is acceptable in every way. All glass, fixtures and doors shall be cleaned of paint spots and polished, and the job made for occupancy by the owner.

#### **I. MATERIALS**

1. **Materials** – The Contractor may substitute other paint materials provided he first receives written approval from the PPA Engineer stating that said proposed substituted materials are equal to that specified and are approved for use. The painting material shall be delivered to job site in original containers properly labeled without evidence of tampering, substitution of contents, or of deterioration. A complete list of materials proposed for use shall be submitted for the PPA Engineer's approval.
2. **Colors and Samples** – All finish colors shall be as selected by the Owner. In multicoat work using color pigmented paints, each coat shall have sufficient variation of color to easily distinguish it from preceding coat.

Using specified or approved materials, 3 sample panels of each finish, including all coats thereof shall be prepared and submitted for the Owner's approval. Completion work shall match approved colors and samples.

#### **J. PREPARATION OF SURFACES**

1. **General Scope** – Except as otherwise specified, surfaces to be painted shall be clean, smooth and dry. The Contractor shall report to the PPA Engineer in writing any surface which cannot be properly prepared for painting. If work is commenced before defects have been reported and corrected, any resulting unsatisfactory finish shall be rectified at no cost to the PPA.
2. **Concrete and Masonry** – all concrete and masonry surfaces shall be cured thirty days prior to painting. Dirt, dust, oil, grease, efflorescences, loose cement, chalk and other deleterious matter shall be removed and surface roughened when necessary to insure good paint adhesion. the method of

surface preparation shall be left to the discretion of the contractor, but results obtained shall be satisfactory to the PPA Engineer. Before application of resin emulsion paint, surfaces shall be prepared in accordance with manufacturer's directions. Before application of oil base or latex paints, surfaces shall be tested for presence of alkali; if alkali is present, neutralized as recommended by the manufacturer of the paint materials to be applied.

3. Plaster – Dirt, dust, loose plaster and other deleterious matter which would prevent good paint adhesion shall be removed. All holes, cracks and depression shall be neatly filled with patching plaster, missed and applied to match existing plaster. Patches shall be sanded flush and smooth and properly sealed before applying prime coat. After priming surfaces, suction spots shall be touched up with additional prime coat material until surfaces evidence a uniform coating. Enamel undercoats on smooth plaster shall be sandpapered by hand (with No. 00 sandpaper) and dusted clean before applying succeeding coat.
4. Metal – Dirt, weld, splatter, rust, scale and other contaminants shall be removed by scrapping, wire brushing and sanding or sandblasting as required. Oil and grease shall be removed with mineral spirits or appropriate solvent. Before painting ferrous metal surfaces, including galvanized ferrous metal, surfaces shall be pretreated with approved phosphoric acid etching cleaner in accordance with manufacturer's directions to produce a chemically clean surface. Unless already performed in accordance with specifications of other sections, abrasions and bare spots in shop prime coatings shall be touched up with metal primer matching the shop coatings. Enamel undercoats shall be sandpapered by hand (with No. 00 sandpaper) and dusted clean before applying succeeding coat.
5. Woodwork – Unless already properly sanded, woodwork shall be sandpapered smooth by hand. Before priming surfaces, knots, pitch pockets and sap streaks shall be thoroughly cleaned of residue and touched up with shellac varnish coating. After priming surface, nail holes, cracks and depressions shall be neatly filled with putty or other approved filler, colored to match required finish. Enamel undercoats shall be sanded by hand (with No. 00 sandpaper) and dusted clean before applying succeeding coat.

#### **K. APPLICATION OF PAINT**

1. General Scope – All painting and finishing shall be performed by skilled craftsmen. Each coat of paint shall be applied with proper consistency, evenly, free of laps, sags and runs and cut sharply to required lines. Paint shall be applied only under dry and dust free conditions that will insure properly finished surfaces, free of defects and blemishes unless otherwise directed by the PPA Engineer. Paint shall not be applied when temperature is likely to be above 90°F. Sufficient time shall be allowed between application of coats to insure proper drying of the preceding coat. All primer and intermediate coats shall be unscarred and completely integral at time of application of each succeeding coat. The PPA Engineer shall be notified when each coat has been applied and is ready for inspection; until coat is inspected and approved by the PPA Engineer, no succeeding coats shall be applied. Whenever two coats of a dark colored paint are specified the first coat shall

contain sufficient powdered aluminum to act as an indicator for proper coverage when applying the second coat.

2. Method of Application – Paint should be applied by brush, spray, or other application method approved by the PPA Engineer.
3. Priming and Back Painting
  - a. Priming – Before installation, all surfaces of millwork which are to be painted shall be primed giving particular attention to sealing of cross-grained surfaces. In all cases, all work shall be primed as soon as possible after delivery to buildings, before or after installation, as required, or in case prefabricated items, at fabricator's shop or mill before shipment, if practicable. Except as otherwise specified, primings shall consists of first coat herein after specified under "Finishes".
  - b. Back-Painting – Woodwork, millwork and casework to be installed against concrete, masonry or plaster shall be back painted with one coat of exterior oil paint.

#### **L. PAINTING SCHEDULE**

Paint manufacturers shall be BOYSEN, DAVIES or an approved equivalent.

##### **INTERIOR WALLS / EXTERIOR WALLS**

1. Concrete Acrylic Concrete Primer and Sealer
2. Concrete Putty
3. Acrylic water based, odor less, semi-gloss latex paint

##### **STAIR AND HANDRAILS**

1. Epoxy Primer
2. Epoxy Enamel (2 coats)

##### **GENERATOR ROOM FLOORING**

1. Chlorinated Rubber Base Paint Finish

### **ITEM 03 : ROOFING AND CEILING**

#### **SCOPE OF WORK**

The work shall include all labor, materials and equipment necessary to install roofing/ceiling materials, complete as shown on the drawings and as specified herein.

#### **GENERAL REQUIREMENTS**

The work includes the installation of roofing sheets, steel ridge roll, gutter, flashing and all miscellaneous roofing items not specifically noted, but required for the proper execution of the work. Surfaces shall be thoroughly dry and clean, painted with protective coatings and free from any defect that might affect the metalwork.

All miscellaneous roofing items shall be fabricated and installed in accordance with the requirements as specified herein or as indicated in the drawings. The Contractor shall verify all measurements in the field, submit shop drawings to the PPA Engineer showing sizes, gauges, detailed of construction, method of assembly and installation. Fabrication of work shall not commence until all shop drawings are approved by the PPA Engineer.

Roofing/Ceiling materials and accessories shall be carefully handled and stored to prevent damage to the damage to the surface and edges.

## **MATERIALS**

Roofing shall be of MILANO type corrugated G.I. sheets or equivalent. Ridge rolls, fascia, gutters, capping, flashings, fastening devices and all similar items required to complete the roofing installations shall be color bonded G.I. sheets. Thickness shall be as indicated in the drawings.

## **INSTALLATION**

Installation of roofing materials including ridge rolls, roof gutters, flashing and other accessories shall be performed with precise method and a manner in accordance with the specifications, professional skilled experienced and that the roofing materials shall be installed to enable to withstand the wind and rain.

## **ITEM 04 : METAL WORKS**

### **A. SCOPE OF WORK**

The work includes the furnishing and installation of miscellaneous metal necessary to complete the work in accordance with this specifications unless required otherwise on the plans.

### **B. GENERAL PROVISIONS**

The AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, Association of Structural Engineers of the Philippines (ASEP) Handbook of Structural Steel Shapes and Sections shall govern the Work. Welding shall be in accordance with the AWS Code and as herein specified or any other welding standard, approved by the PPA Engineer.

Responsibility for Errors: The Contractor shall be responsible for all errors of detailing, fabrication and for the correct fitting of the structural members.

Storage of Materials: The materials shall be stored out of contact with the ground in such manner and location as will minimize contamination and deterioration.

### **C. MATERIALS**

Structural steel shall conform to ASTM A 36. All materials shall be of new stock, free from surface imperfections and shall conform to the applicable ASTM, API Specifications or other equivalent standards.

Steel Plates, Bars and Rods – Plates, bars and rods shall be local standard commercial steel of sizes as indicated on the plans and approve by the PPA Engineer.

Fastener and Anchor Bolts – Fasteners, anchor bolts necessary for the installation of the work shown on the plans shall be of a standard commercial grade approved by the PPA Engineer.

Bolts, Nuts and Washers – Bolts, nuts and washers shall be local standard commercial grade of size as indicated on the plans conforming to ASTM A 325 or AASHTO M164.

Welding – Employ only welding equipment electrodes welding wire and fluxes capable of producing satisfactory welds when used by a qualified welder or welding operator using qualified welding procedures. It shall conform to this AWS D1.1-183, E70XX Series.

#### **D. FABRICATION**

Fabricate structural steel in the shop to the greatest extent possible for transporting in accordance with the AISC Building Code and ASEP Handbook with the modification and additional specified in this section.

The Contractor shall verify all measurements in the field, submit shop drawings to the PPA Engineer showing sizes, gauges, detailed of construction, method of assembly and installation.

Fabrication of work shall not commence until all shop drawings are approved by the PPA Engineer.

Shop connections: As approved by the PPA Engineer.

- a. Provide for bolted or welded connections as shown on the Drawings or as approved by the PPA Engineer.
- b. Use high strength threaded fasteners for bolted connections, except where standard threaded fasteners are permitted.

High strength bolted construction assembly shall be tightened in accordance with Specification for Structural Joints, AISC.

#### **E. FIELD ASSEMBLY**

Assemble structural steel frames accurately to the line and elevations indicated within the specified tolerance.

Align and adjust accurately various members forming parts of a complete frame or structure before fastening.

Fasten splices of compression members after the abutting surfaces have been brought completely into contact.

Clean bearing surfaces and surfaces in permanent contact, of rust and scale before members are assembled.

Splices shall be permitted only where indicated.

Bolt and weld field connections as specified in "Fabrication".

Remove weld backing strips from welds designated for ultrasonic testing.

Remove run-off tabs and grind surfaces where requested by the PPA Engineer.

Clean weld splatter from surfaces contacted.

Field correction of fabrication by gas cutting not permitted on any major member in the structural framing without prior approval of the PPA Engineer.

Mark structural steel members of high strength steels to permit visual verification of the grade of steel used.

#### **F. PAINTING**

Shop Paintings – Except for galvanized surfaces and items to be encased in concrete, clean ferrous metal surfaces shall be given one coat of red lead or zinc chromate primer. Additional coat shall be applied to surface that will be concealed on inaccessible for finish painting.

#### **G. REPAIR OF DAMAGED COATING**

Coated metal damaged in the process of work shall be repaired in 2 manners approved by the PPA Engineer.

#### **H. LIGHT STEEL FRAMING SYSTEM**

Light steel framing system will be used for ceiling assemblies of gypsum ceiling board. Provide steel materials for metal support system galvanized coating, ASTM A525; aluminum coating, ASTM A463 on a 55% aluminum-zinc coating. Materials for attachment of gypsum board (suspended and furred ceiling systems) shall conform with ASTM C645. Installation shall conform with ASTM C754, except that framing members shall be 400mm o.c.b.w. unless otherwise indicated in the plans.

### **ITEM 05 : ELECTRICAL WORKS**

#### **A. SCOPE OF WORK**

The Contractor shall provide all materials and equipment and perform all the works necessary for the complete execution of all the electrical plans as shown on the Electrical Drawings, and as herein specified, or both, except as otherwise excluded

and which, without excluding the generality of the foregoing shall include but not limited to the following principal items of work:

- a. Supply and installation of complete electrical conduit and wiring for light and power.
- b. Supply and installation of lighting fixtures, outlets and wiring devices;
- c. Supply and installation of electrical panels;
- d. Complete testing and commissioning of all electrical and auxiliary works; and
- e. If anything has been omitted for any item of work or materials usually furnished which are necessary for the completion of the entire work as outlined herein before, then such items must be and hereon included in this division of work.

## **B. EXECUTION AND INSTALLATION OF WORKS**

The work under this contract shall be in accordance with the provisions of the latest edition of the Philippine Electrical Code and in compliance with the requirements of the local utility company.

## **C. GUARANTEE**

The Contractor shall guarantee that electrical system are free from all grounds and from all defective workmanship and materials and will remain so for a period of one year from the date of acceptance of the work. Any defects, appearing within the aforesaid period, shall be remedied by the Contractor at his own expense.

## **D. WORKMANSHIP**

The work thorough shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the Architect who will interpret the meaning of the Drawings and Specifications and shall have the power to reject any work and materials which in his judgment, are not in full accordance therewith.

## **E. STANDARD OF MATERIALS**

All materials shall be new and shall conform with the standards of Underwriter's Laboratories, Inc., IEEE, NEMA and Philippine Standard Agency (PSA) for every case where such a standard has been established for the particular type of materials in question.

All materials on all system shall comply with the specifications, unless specially excepted and all materials where not specified shall be of the best of their respective kind.

## **F. APPROVAL OF MATERIALS**

All electrical materials shall be new and shall meet the requirements and shall bear the inspection label wherever standards have been established. Before any

materials or equipment are ordered, the Contractor shall submit to the PPA Engineer for approval, a complete list of the materials, apparatus, and equipment, in triplicate, giving the manufacturer's name, address, descriptive data, trade name of item, rated capacities, certified analysis, catalogue numbers, etc., and when called upon to do so, complete specifications and cut or drawings of each item, of whole or portion of list, as required by the PPA Engineer which he proposed to use and install.

## **G. LIGHTING SYSTEM**

The Contractor shall provide labor and materials for the installation of lighting systems to be included but not limited to the following:

- a. A system of exterior and interior lighting including all feeders, branch circuits and connections to all lighting outlets and fixtures.
- b. All distribution and lighting panels completed.
- c. If anything has been omitted in any item of work or material usually furnished which are necessary for the completion of the lighting system work as outlined hereunder, then such items must be and hereby included in this section of the work.
- d. The Contractor shall provide and install all lighting fixtures of the size and type as indicated in the drawings.
- e. All fixtures shall be wired and installed completely including all lamps and/or tubes, transformers, ballasts, supports, brackets, canopies, globes, and other parts and devices necessary for the complete installation and operation.

## **H. WALL SWITCHES**

Wall switches shall be rated at 10 amperes, 250 volts, one-way or three-way as required. The type of switch shall be tumbler or snap on as required. National brand or equivalent. Where switches are installed surface mounted, they shall be installed in type FS conduit fittings and provided with surface mounting covers. Switches shall not be during switching operations. Wall switches shall be mounted 1400 mm. from finish floor.

## **I. OUTLET AND SWITCH BOXES**

At all outlets or whatever kind of all systems, there shall be provided suitable outlet boxes or other fittings specially designed to receive the type of devices to be mounted thereon.

All outlet boxes shall be pressed metal boxes with metal thickness not less than gauge 18.

All metal parts of outlet boxes shall be galvanized and shall have covers having thickness as the box with screws attached.

Boxes installed in damp or wet locations shall be specifically approved for the purpose and shall be so placed and constructed as to prevent moisture from entering or accumulating within the box.

In walls or ceiling constructed of wood, concrete or other similar materials, boxes and covers shall be flushed with finished surfaces. Number of wires and devices contained in the box shall be in accordance with the Code. Where necessary flush square outlet boxes shall be fitted with extension rings or raised coverlets.

Boxes shall be securely and rigidly fastened to surface upon which they are mounted, or embedded in concrete or masonry, and shall be supported from a structural member or building either directly or by using substantial and approved metal braces.

Outlet boxes installed exposed other than in wet location shall have thickness not less than gauge 16 while boxes concealed above closed ceiling and those embedded in masonry shall have a thickness of gauge 18, hot dipped galvanized.

Standard outlet boxes shall be of the octagonal, square or rectangular shapes and only deep types no less than 54 mm. depth shall be used for installation.

## **J. CONDUITS**

Unplasticized Polyvinyl Chloride (PVC) conduit shall be schedule 40, uniform thickness. It shall be compression and impact resistant, non corrosive, weatherproof as manufactured by Emerald or equivalent. The material shall not deteriorate when exposed to sunlight, rain and other elements.

Liquid-tight flexible materials metallic conduit shall be raintight suitable for wet and damp locations complete with special fittings and connectors approved for the purpose.

## **K. INSTALLATION OF CONDUIT SYSTEM**

Conduit shall be installed and supported in a rigid and satisfactory manner.

No conduit shall be used in any system smaller than 15 mm. (1/2 inch.) diameter trade size, nor shall have more than four quarter bends in any one run between outlets and/or fittings. When necessary, pullboxes shall be provided as directed by the PPA Engineer

All cut ends of conduit shall be reamed to remove rough edges. Where a conduit enters a box or fitting, bushing shall be provided to protect wire from abrasion, unless design of box or fittings is such as to afford equivalent protections.

Raceways shall be installed at right angles or parallel to building lines. Conduit shall be firmly fastened within 0.3m. of each outlet box fitting or cabinet by means of standard lumps and intermediately spaced not more than 1.0 meter. All clamps, bolts, straps, etc. shall be galvanized and painted metal.

Support and braces may be welded to structural steel after specific approval by the PPA Engineer. When running over concrete surfaces, the screws shall be held in place by expansion sleeves.

## **L. WIRES AND CABLES**

600 volt grade wire shall be copper, hard drawn and annealed and shall be 98% conductivity.

Wire or cable for lighting and power systems shall be plastic insulated type TW, THW or THHN as note on plans or as specified. All wires 3.5 sq.mm. and larger shall be stranded unless noted on plans.

No wire smaller than 3.5 sq.mm. shall be used except where otherwise specified. Control leads for motors shall be type THW, unless otherwise indicated.

All wires shall be color coded (Black, Red, Yellow, Green) wires and cables shall be as manufactured by Phelps Dodge, Philflex or equivalent.

Underground conductors shall have distinct insulation color from grounded and grounding wires. Grounding wires and cables shall be colored green or white or as

## **M. LIGHTING AND POWER PANELS**

Electrical panels and cabinets shall be dead front construction furnished with trim flush or surface mounting as required. Cabinet and panels shall be of code gauge steel with gutters at least 100 mm wide. Doors shall be swing type and shall have latches and locks.

All protective devices shall meet NEMA and Underwriter Laboratories Inc. specifications. In multiple circuit breaker, all poles shall be interrupted simultaneously during fault conditions.

All busbars and current carrying parts shall be high conductivity copper and shall have current density not more than 1.5 amperes per sq.mm. of cross-sectional area and shall be heavier where for mechanical strength. Supply with non-ferrous or galvanized bolts, nuts, washers and other required attachment devices.

Each and every panel shall be provided on the inside of the door, with directory frame protected by a transparent plastic window, containing typed card indicating the member and designation of the circuits.

All panels and switchboard shall have grounding bus or lugs with pressure type terminals of sufficient quantity and size and so located inside as to permit easy termination of cables.

Panels, switchboards and MCC's shall be painted with coat of antitrust primer and finish coat of baking enamel paint preferably colored gray.

## **N. CIRCUIT BREAKERS**

Circuit breakers shall consist of quick-make, quick break operating mechanism, thermal magnetic trip unit on each pole and enclosed in a molded phenolic case. The

thermal magnetic trip unit shall provide time delay overload and instantaneous trip short circuit in any one pole.

Rating of circuit breaker shall be suitable for each service application shall be specified as to rated voltage, current, type, frame, size and frequency as manufactured by Westinghouse or equivalent.

#### **O. INSPECTION TESTS**

Inspection and tests shall be conducted by the Contractor in the presence of the PPA Engineer or the Procuring Entity. These tests shall be for the normal operation of the entire electrical system of the project. The decision made by the PPA Engineer for correction on any item or work, alteration of incorrect installation, or replacement of defective materials, or any other defects as found by him shall be final and must be complied by the Contractor within forty-eight (48) hours after receipt of the official written communication before final acceptance can be made.

#### **P. TEMPORARY LIGHT AND POWER**

The Contractor shall provide, install and maintain adequate incoming service transformer, light feeders, branch circuits, outlets, lamps and fixtures, as required for performance of the work by all trades engaged in the construction of the building structures and installation.

### **ITEM 07 : PROJECT BILLBOARD**

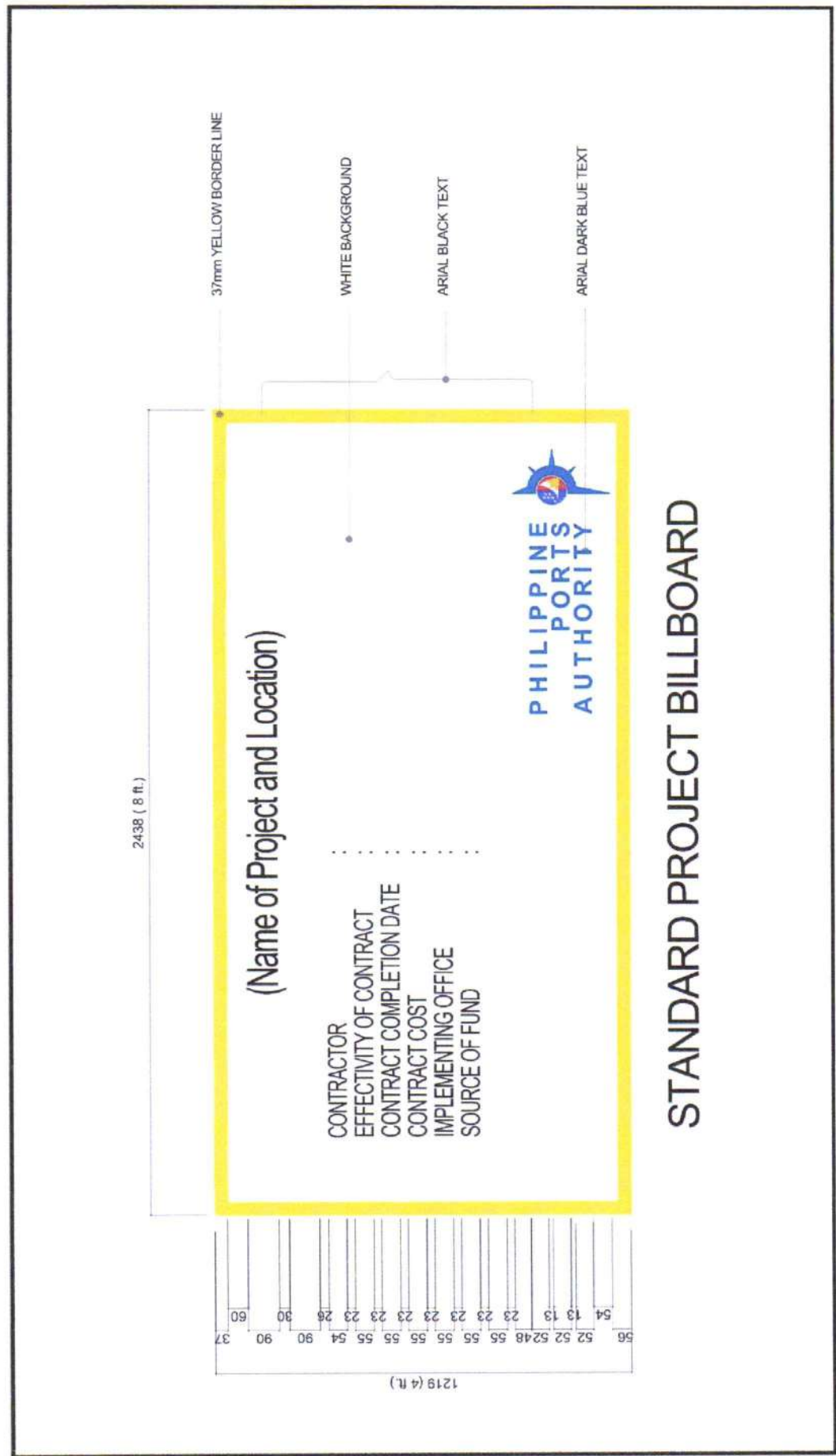
#### **A. SPECIFICATION**

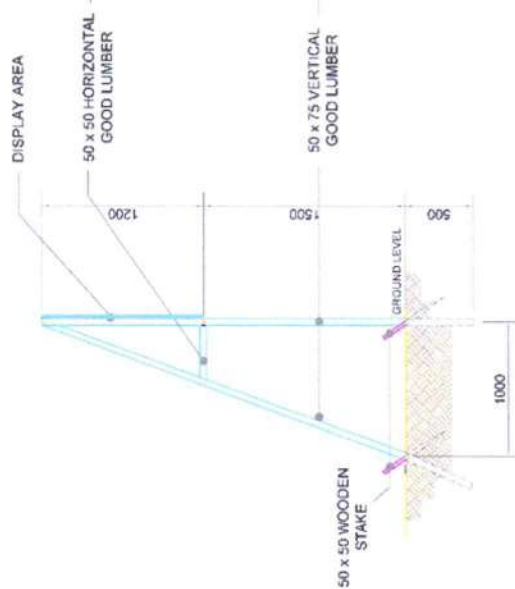
The Project Billboard shall be installed at location(s) designated by the PPA Engineer. (for reference, **Annex A** is attached herein)

The size and specifications of materials for the standard billboard shall be 4ft. x 8ft. (1,200mm x 2,400mm) using ½ inch (12mm) marine plywood or tarpaulin poster on 3/16 inch (5mm) marine plywood.

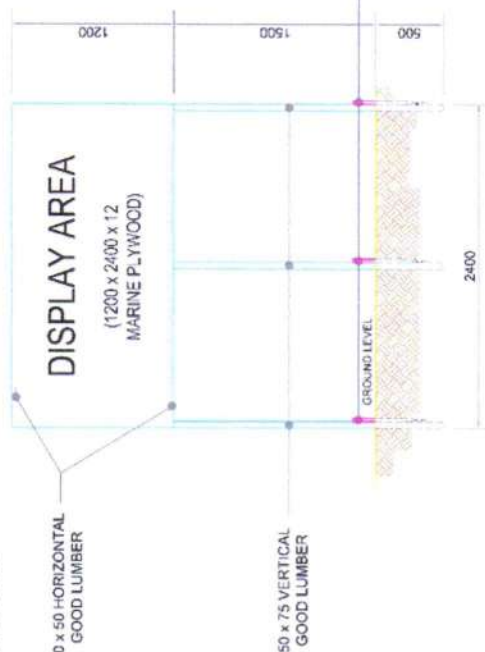
Project billboards shall not contain Name(s) and/or picture(s) of any personages.

ANNEX A

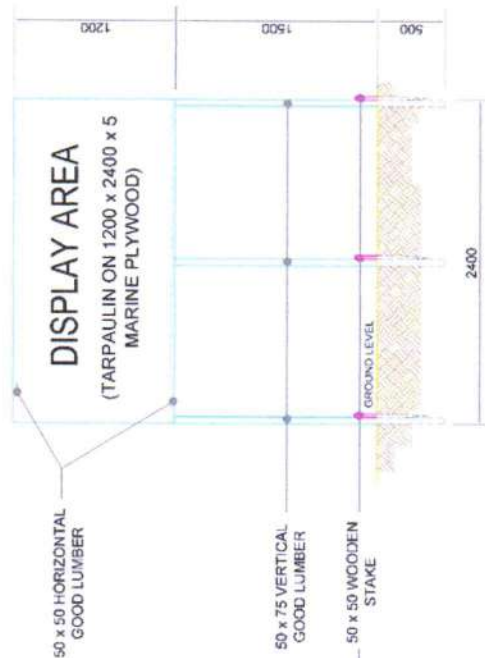




TYPICAL FRAME  
ELEVATION



FRONT ELEVATION  
(OPTION 1)



FRONT ELEVATION  
(OPTION 2)

## BILLBOARD FRAME

(NOT TO SCALE, ALL DIMENSIONS ARE IN MILLIMETERS)

**ITEM 08 : SAFETY SIGNAGES AND BARRICADES**

**A. DESCRIPTION**

This work includes the furnishing and installing of safety signages and barricades in accordance with the specifications and to the details shown below in the drawings, or as directed by the PPA Engineer.

**B. SPECIFICATION**

The Signage's and Barricades shall be installed at location(s) designated by the PPA Engineer.

The sizes of the standard signages shall be 2-2/3ft x 4ft (800mm X 1,200mm) for fixed type and 2ft x 2-2/3ft (600mm x 800mm) for mobile type. For barricade standard 2ft x 2-2/3ft (600mm x 800mm) shall be provided.

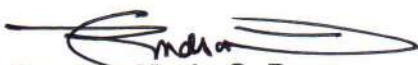
The materials to be used for signages and barricades are ½ inch (12mm) marine plywood or tarpaulin poster on 2" x 2" (50mm x 50mm) good lumber frame (see drawing below).

The printing or painting shall be the discretion of the PPA Engineer.

**X. RESERVATION CLAUSE**

The employees of the Contractor are not employees of the PPA, and thus, the latter shall not in any way be responsible for any liability resulting or arising from the conduct of activities of the former, in whatever kind or nature.

Prepared by:

  
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