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Name of the Project : **REHABILITATION/RETROFITTING OF PHILIPPINE SPORTS COMPLEX OPEN BLEACHERS**

Location : **Philsports Complex, Meralco Ave., Pasig City**

Subject : **TECHNICAL SPECIFICATIONS**

I. OBJECTIVE

The basic objective of the project is to rehabilitate/retrofit the open bleachers located at Philsports Complex, Meralco Ave., Pasig City.

II. BASIC INFORMATION

Project Name : Rehabilitation/Retrofitting of Philippine Sports Complex Open Bleachers

Location : Philsports Complex, Meralco Ave., Pasig City


Amount : The project has an Approved Budget of the Contract (ABC) of Sixty Two Million Five Hundred Eighty Five Thousand Nine Hundred Nineteen and 52/100 Pesos (Php 62,585,919.52)

III. QUALIFICATION

- Contractors must have a valid PCAB license with principal classification Category B General Building.
- Contractor must have PCAB ARCC rating of Medium A for Building.
- Contractor must be ISO 9001 Certified.
- 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 at least contract value of 50% of the ABC.
- Contractors must have a licensed Civil Engineer, Electrical Engineer, Sanitary Engineer, Materials Engineer and Safety Officer.
- All engineers must have an experience in the rehabilitation/retrofitting of structures such as open bleachers and the likes.
- The company must have at least ten (10) years of experience in retrofitting works.

IV. GENERAL SPECIFICATIONS

The work shall include the supply of labor, materials, tools, equipment and services necessary to complete the subject project per approved Scope of Work, approved Construction Plans/Drawings and these Technical Specifications, which are parts of the Contract of Services, Governing Codes: Republic Act No. 9184 and its Implementing Rules and Regulations, National Building Code of the Philippines

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(P.D. 1096), Philippine Electrical Code, Philippine Plumbing and Sanitary Code, Philippine Mechanical Code, and all related applicable local ordinances and regulations.

Necessary building permits, clearances or licenses including occupancy permits shall be provided by the Contractor.

The Contractor shall submit, prior to the execution of the specified works, his schedule of work expressed in PERT/CPM Network Diagram, indicating the computation of the contract time, all activities, their duration and projected percentage accomplishments/cash flow, for monitoring purposes.

For all new constructions, the Contractor shall provide new materials, fabricated products, and necessary equipment and services for all works.

For all repair or replacement works, use brand new materials, brands/models, measurements, and finishes. Major materials, products or work items, large volume or quantity items, or other expensive items that are not particularly mentioned in these specifications, shall require submission of samples, product tests, mock-up models, and selection, or approval prior to their installation or application in the project.

Sub-contracting shall only be limited to specialty work items, which require provision of special materials, methods, techniques and equipment and are subject to the approval of the Philippine Sports Commission.

The contractor shall provide full-time supervision of the works.

All materials and equipment shall be delivered to the site at designated locations within the project premises.

The Philippine Sports Commission or its authorized representative reserves the right to reject any materials or workmanship that may be found defective or not in conformity with the approved Construction Plans/Drawings and these Technical Specifications. In case where conflicts between the Construction Plans/Drawings and the Technical Specifications arise, these should be immediately being brought to the attention of the Philippine Sports Commission or its authorized representative for appropriate action.


All billings shall be subject to submission of a Statement of Account by the Contractor, including his percentage accomplishment report and photographs for inspection/evaluation and acceptance by the Philippine Sports Commission. The Contractor shall provide access to the construction areas for the convenience of the inspection team during project inspection.

Change or additional works that are necessary but were not included in the scope of work shall be subject to variation order preparation upon request and notice by the Contractor.

V. GENERAL REQUIREMENTS

1.0 Regulatory Requirements

- 1.1 National Building Code of the Philippines
- 1.2 National Plumbing and Sanitary Code of the Philippines
- 1.3 Philippine Electrical Code
- 1.4 Philippine Mechanical Code

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2.0 Submittals

- 2.1 Construction Schedules
- 2.2 Shop Drawings, Product Data and Samples, Color Swatches
- 2.3 Construction Photographs
- 2.4 Permits (when necessary)

VI. OUTLINE TECHNICAL SPECIFICATIONS

1.0 Securing/Renewal of Building Permits:

Necessary building permits, clearances, or licenses including occupancy permit shall be provided by the Contractor. The Contractor shall pay all fees and other incidental expenses.

2.0 Dismantling of existing unwanted structures:


2.1 Demolition, Removal and Dismantling

1. Before commencing any demolition, removal, and/or dismantling work, all affected electrical lines and water supply lines shall be disconnected, or shut off except such as required for use in connection with the work on site.
2. Demolish selectively and remove or dismantle carefully all components of structures indicated in the drawings necessary to prepare for renovations. All reusable materials shall be coordinated with the agency architect/engineer for reuse.
3. Store reusable parts of the structures and materials within the area. All other materials retrieved from the site shall be turned over, supported with an inventory report on quantity and description of materials, to the Philippine Sports Commission, through the agency Property Officer. Only reusable materials shall stay in the construction area. On the other hand, all unused and destroyed materials shall be supported with a Report of Waste Materials.
4. Protect and maintain structures, materials, fixtures, and utilities that are to remain within the property.

3.0 Retrofitting Works

3.1 General Scope

- a. The Contractor shall furnish all labor, materials, tools, equipment and incidentals required to construct and install all items necessary for the proper execution and completion of all retrofitting works as shown on the drawings and as specified herein.
- b. All works shall comply with the requirements of the contract, including general and special conditions, along with the drawings and all other contract documents.
- c. Labor, materials, equipment, tools, supervision and services deemed necessary to complete the proposed retrofitting works as per industry practice, but NOT specifically shown and mentioned in the plans, details, specifications or in the other Bid and Contract documents, shall be supplied by the CONTRACTOR without cost to the AGENCY. Such materials, equipment and tools shall be of the highest quality available and such labor, and supervision and services shall be of the highest quality of workmanship.
- d. All materials to be delivered on site shall be new, tested, labeled and approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- e. All materials for the work of this section shall be delivered, stored, and handled so as to preclude damage of any nature. Manufactured materials, such as cement and silica sand, shall be delivered and stored in their original containers, plainly marked with

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identification of material and maker. Materials in broken containers, or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.

3.2 Materials & Execution

- a. For epoxy injection, use silica sand.
- b. Cement shall conform to ASTM C 150, Type I or PNS 07 of an approved brand. All cement in bags shall be fresh when delivered, stored, raised above ground on timber, kept free from moisture including rain and surface water and kept in a well-ventilated location. Cement from different deliveries shall be kept segregated and used in order of age, (old first used). Cement of age greater than 90 days shall not be used in the works. Cement shall not be stored outside.
- c. The water for the mixture shall be potable water, which is clean, free of oil and organic matters.
- d. For carbon fiber reinforced polymer (CFRP), use Tyfo SCH-41 Composite using Tyfo S Epoxy with Tensile Strength of 580,000 psi (4.0 Gpa).
- e. For any rusted metal surface, use rust converter and stripsol.

4.0 Waterproofing

4.1 General Scope

- a. This section shall include all labor, materials, equipment and the performance of all operations necessary for the completion of all waterproofing works as shown on drawings and this specification.
- b. Materials shall be delivered in original sealed containers clearly marked with supplier's name, brand name and type of materials. Handle products to avoid damage to container. Do not store for long periods in direct sunlight. Materials stored in the jobsite shall be protected from weather, moisture, and extreme temperature changes.

Concrete surfaces shall have an open capillary system to provide tooth and suction and shall be clean, free from scale, excess form oil, laitance, curing compounds and any other foreign matter. Smooth surfaces, caused by steel forms, etc., or surfaces covered by excess form oil or other contaminants shall be washed, lightly sandblasted, water blasted, or acid-etched with muriatic acid, as required to provide a clean absorbent surface. Horizontal surfaces shall not be troweled or power-troweled, and shall be left with a rough float finish or (preferably) a broom finish. If power-troweling is required it shall be kept to a minimum. Vertical surfaces may have a sacked finish.


4.2 Materials & Execution

- a. The required waterproofing material shall be "BOSTIK BOSCOSEAL PU-X Polyurethane-Based Liquid Applied Waterproofing Membrane" or its approved equivalent. Test waterproofed area by twenty-four (24) hours and check for any seepages.
- b. Areas not stated above but requiring waterproofing by Procuring Entity shall be included in the scope of work. Thickness should be as per Manufacturers Specifications and Installation depending on the Areas to be applied with.

5.0 Tile Works

5.1 General Scope

- a. The Contractor shall furnish all labor, materials, equipment and incidentals required to install ceramic wall and floor tiles as shown on the drawing and as specified herein.

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- b. All materials to be delivered on site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. All materials for the work of this section shall be delivered, stored, and handled so as to preclude damage of any nature. Manufactured materials, such as tile adhesive and tile grout, shall be delivered and stored in their original containers, plainly marked with identification of material and maker. Materials in broken containers, or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.
- d. Protect all finishes work until turnover to the Owner/Agency.

5.2 Materials & Execution

- a. Ceramic Floor Tiles: shall be glazed and anti-slip, 24” x 24” in dimensions or approved equivalent.
- b. Ceramic Wall Tiles: shall be 12” x 24” in dimensions or approved equivalent.
- c. Ceramic Stair Tiles: shall be glazed and anti-slip, 12” x 24” in dimensions or approved equivalent.
- d. All tiles shall be laid leveled and true to lines and built to the thickness and bond required with courses level and joints and bond uniform. Floor tiles shall be carried up in a uniform manner.
- e. Grouting for setting floor and wall tiles shall be done as per manufacturer’s specification.

6.0 Finish Hardware

6.1 General Scope

- a. Furnish materials, accessories and perform labor required to complete all works specified in this item. See drawings and details for location, and quantity of hardware accessory to be installed.
- b. All materials to be delivered on the site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. The Contractor shall place his order for all hardware early in order to avoid delay in the job. No request for extension of time shall be determined by Owner or the Architect/Engineer due to this delay. And no substitution of hardware shall be allowed due to negligence of the Contractor on this matter.


6.2 Materials & Execution

- a. Loose Pin Hinges for doors: heavy duty materials, 3” x 3” in size or approved equivalent.
- b. Door Locksets: heavy duty materials, “SCHLAGE” brand or approved equivalent.
- c. Loose pin hinges and door locksets shall be installed properly and as per manufacturer’s specifications.
- d. Install hardware to firm details as shown in the drawings and as per manufacturer’s specifications with screws to match the finish. Supply all necessary templates and instruction required.
- e. After hardware has been properly fitted, all exposed items such as knobs, plates, pulls, locks, etc. shall be removed until final coat of plaster’s finish has been applied, and then hardware installed.
- f. All locks and latch strikes shall be installed in door frames at the same height from the floor. Door knobs shall be located so that the center of the knobs is 38 inches from the finished floor, and/or directed by the Architect/Engineer.

7.0 Doors, Windows & Glasses

7.1 General Scope

- a. Furnish materials, accessories and equipment and perform labor conforming to manufacturer’s specification required to complete:

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- Glass Door
- Glass Partition
- Solid Engineered Door
- 2" x 5" Door Jamb
- Frameless Glass Mirror with Beveled Sides and Metal Backplate

See drawings and details for sizes, location extent and other requirements.


- b. All materials to be delivered on site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. Protect all finishes work until turnover to the Owner/Agency.

7.2 Materials & Execution


- a. Glass Doors: should be ½" thick (12mm) clear glass with aluminum frame complete with patch fittings and H-type stainless handle and patch lock.
- b. Glass Partition: should be ½" thick (12mm) clear glass with aluminum frame complete with accessories.
- c. Doors: 40mm in thickness PCW Vera Solid Engineered Door.
- d. Door Jamb: should be 2" x 5" in size PCW Door Jamb with 80cm x 210cm and 90cm x 210cm opening.
- e. Glass Mirror: should be ¼" thick frameless glass mirror with beveled sides and metal backplate, all in accordance with the detailed drawings.
- f. Submit sample corner sections of glass doors, glass partitions, wood doors and jambs, for approval of the Architect/Engineer.
- g. Protect doors and partitions adequately from scratches, and other stains with heavy building paper until final turnover to the Owner/Agency.
- h. Assemble joints indoors with water-resistant glue: keep doors under pressure until glue has thoroughly set.
- i. Sand smooth finished doors. Provide doors with joints and clean cut moldings.
- j. Keep faces free from defects or machine marks that will show through the finish.
- k. Provide doors with cross bonding and edgings. Make face veneer first quality selected plywood as directed in the drawings or as specified herein. Provide lock blocks or size required for hardware used.
- l. Label each glass panel and do not remove from glass panel until final cleaning and after inspection and approval.
- m. Protect all glass from damage, breakage, staining, etching, differential aging, abrasion, scratches, and impacts during construction and until final acceptance of the contract work. Replace unless satisfactory corrective measures can be made at the job without moving the damaged glass, as directed by the Architect/Engineer.
- n. Deliver only as required and store in a safe location as directed. Unpack only when ready for use.
- o. Prevent glass from all contact with metal or any hard or sharp materials to prevent edge clips, cracks and other defects by use of resilient shims placed at quarter points.
- p. All glass shall be of uniform quality and free from excessive distortions.
- q. Glass breakage cause in executing the work or by fault installation shall be replaced by the Contractor at his own expense.
- r. Lost and damaged materials shall be replaced by the Contractor at his own expense.

8.0 Painting Works

8.1 General Scope

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- a. Furnish materials and equipment and perform labor required to complete all painting works of areas covered under this contract. See drawings and details for location, quantity and extent of surfaces to receive paint.
- b. All materials to be delivered on site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. The work includes but is not limited to the following items:
 1. Touch-up painting of miscellaneous metal, hollows metal and frames and all other materials which may have been shop coated as may be required where the shop coats have been damaged by welding of abrasion during the handling and erection operations, also all rivets, bolts and welds which are unpainted after assembly and erection.
 2. Finish Painting: including all exposed surfaces of miscellaneous metal, hollow metal work and other paintable metal work, paintable wood work not shop finished; shop fabricated mechanical equipment apparatus housing, electric meters and covers for floor, exposed bars and insulation piping and finished area, electric panels, conduit boxes, and switched gear, all plastered surfaces, concrete and concrete block surfaces, flooring, except in areas to be excluded; primed hardware, and all items which generally require finish painting unless specifically excluded.
- d. Items not requiring protective painting or finishing:
 1. Aluminum, stainless steel and non-ferrous metal, glazed structural units, exposed aggregate wall panels, glass, resilient tiles, ceramic floor tiles, and plastic, laminate sprayed insulation and similar items which do not generally require painting.
 2. Shop Priming: unless otherwise noted or specified herein, the work shall not include priming or protective paint which is required to be performed at the factory or in the shop. In general, this includes the following items section of the specification; miscellaneous metal, shop fabrication or factory-built mechanical equipment, electrical equipment and accessories. Refer to their applicable sections of the specifications for information on these items.
 3. Factory Finished Work: unless otherwise noted or specified herein, the work shall not include finish painting of items having a factory applied finish as specified in other sections of the specifications. In general, this includes the following items; metal toilet enclosure, factory finished mechanical equipment and special equipment. Refer to other applicable section of the specifications for information on these items.
- e. All colors are to be selected or approved by the Architect or his authorized representative and actual color chips shall be supplied to the Contractor for matching. All undercoats shall be tinted to approximate the finish coat color.
- f. All material shall be delivered to the job site in clean, sealed, original containers with all labels and other markings intact. Materials will be stored in the area designated and all storage areas will be kept neat, clean and locked.
- g. A room or rooms in the premises shall be assigned for the storage of painting tools and materials. Protect the floor with drop cloths or building paper. Place cloth and cotton waste in covered metal containers, or destroy them at the end of each work day.
- h. Every precaution will be taken by the contractor to prevent fires at the end of each day's work, all oil rags, empty containers and combustible material will be removed from the premises.
- i. The Contractor will protect his own area as well as adjacent areas and materials, lawns, shrubbery and other areas not to be painted with suitable covering.
- j. Works specified elsewhere such as for metal, wood, concrete and masonry.

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- k. Use BOYSEN or DAVIES only for all painted works.

8.2 Materials & Execution

- a. Use materials of approved equal and shall be delivered on the site in the original containers with labels intact and seals unbroken.
- b. The use of other brand or equal or better quality will be subject to the Architect's approval. Use materials in accordance with the manufacturer's direction printed on the labels unless otherwise approved by the Architect.
- c. Use paint materials for wall and ceiling except in accent partition (narra ply). Apply varnish finish for accent partition.
- d. The use of ready mixed paint may be allowed in the project provided, that such paint is in accordance with the Standard Specifications No. 13 of the Philippine Government.
- e. Painting Schedule: as specified hereunder or as per manufacturer's direction.
 1. Metal Surface: subject to high temperature including breaching and stacks black iron ductworks (inside and outside) whether exposed or concealed.
 2. Insulated piping, ducts tanks and other mechanical equipment.
 3. Concrete surface of walls, drywalls and block walls.

1 st coat	-	flat latex paint
2 nd coat	-	semi-gloss latex paint
3 rd coat	-	semi-gloss latex paint

All concealed surfaces shall be primed coated with concrete primer.
Smooth over rough or damaged walls with a skim coat.
 4. Flooring


1 st coat	-	rubberized paint
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Repair flooring with self-leveling compound.
 5. Baseboard

1 st coat	-	quick dry enamel
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 6. Metal Gate


1 st coat	-	red oxide primer
2 nd coat	-	quick dry enamel
 7. Protective Covering Paint (FRP Only)

1 st coat	-	primer
2 nd coat	-	top coat
3 rd coat	-	top coat
- f. Before the start of the painting work, the painting Contractor shall prepare paint 4 feet by 4 feet area designated by the Architect or Engineer and same be used as standard workmanship for the entire work. Samples shall be made of surface preparation, primers, stains, fillers and finish coat applications.
- g. Remove all loose grit, mortar, dust, dirt, grease, oil and any other foreign matter. Treat new masonry surfaces with concrete neutralizer. Refer to manufacturer's specifications for mixing. Allow solution to dry overnight before rinsing with water to remove white residue. After surface is dried, apply concrete sealer.
- h. For masonry that is unpainted and exposed to the weather for 6 months or more efflorescence may appear. Remove efflorescence by any necessary methods.
- i. Metal must be free from oil, grease, dust and rust. The most ideal surface preparation for rust metal is White Metal Blasting. This involves the removal of all visible rust, mill scale, paint and contaminants, leaving the metal uniformly white or gray in appearance. This blast cleaning can be achieved by sandblasting or power grinding. This metal surface preparation should be used where maximum performance or protective coatings is necessary due to exceptionally severe conditions such as constant immersion in water or liquid chemicals. These films of rust may be removed by wire-brushing, sanding or

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scraping. Thicker layers of rust can be removed with the use of etching solution. Metal surfaces cleared of rust must be immediately primed with metal primers. Do not allow bright metal to be exposed to the elements for prolonged periods as rust will set in fast. Clean with paint thinner where solder flux has been used.

- j. Weathered surfaces showing thin films of rust shall be sanded or wire-brushed, cleaned; immediately thereafter, prime with red oxide primer. Rust films that cannot be removed by wire-brushing or sanding will disintegrate with the use of metal etching solution; thereafter, clean surface and immediately apply metal primers as indicated above. Do not allow surfaces removed of rust exposed to the weather as rust will set in fast.
- k. Wood should be clean and dry, sand to remove excessive roughness and then brush off dust. Countersunk nail heads (rust free) before applying primer. After primer is dried, putty small openings and minor surface defects.
- l. Sand to smooth surface and then dust off. Correct minor surface imperfections. Apply applicable putties after first coat is dried. Sand lightly between coats of flat and semi-gloss paints. Clean rooms of dust before applying top coats.
- m. Glossy Surfaces: sand and clean surfaces thoroughly. This method will provide a “tooth” for the following coats.
- n. Oil and Grease: remove oil and grease by paint thinner or wiping with rags. Change solvents and rags frequently.
- o. Dirt and Foreign Matter: remove loose dirt by bristly brushes, then blow clean with air pressure or steam cleaning.
- p. Employ only experienced, skilled craftsmen and apply as per manufacturer’s written instructions.
- q. Paint shall be applied by a brush, roller or spray in accordance with the manufacturer’s directions. All materials when brushed shall be evenly flowed on with brushed best suited for the type of materials being applied. When using roller, the covers shall be carpet velvet back of high pile sheep’s wool best suited for materials and texture specified by the Architect. Sprayed paint shall be uniformly applied with suitable equipment.
- r. Exposed surfaces shall mean all areas visible when all permanent or built-in fixtures, grilles, etc., are in place in all areas specified or scheduled to be painted. Painted surfaces in back of movable equipment and furniture. Paint interior surfaces of ducts where visible thru grilles, and all inside metal and plastered surfaces visible through the above specified equipment covers.
- s. Paint access panels, electrical panels, air diffusing outlets, supply and exhaust grilles, exposed conduits, primed outlet covers, primed wall and ceiling plates and other items in painted areas to match the areas in which they occur unless otherwise specified in Painting Schedule. Paint the backsides of access panels, removable or hinged covers and the like. Do not paint nameplates on equipment.
- t. Do not apply exterior paint in damp, rainy weather. Do not apply interior paint when in the Architect’s opinion, satisfactory results cannot be obtained due to high humidity and excessive temperature.
- u. Protect or remove all exposed finished hardware, lighting fixtures and accessories, glasses and the like so that these are not stayed during painting operations. Re-install them after completions of works. Tape and cover with craft paper or equal other surfaces which would be endangered by stains or paint marks. Repair any damage done. Refinish any work made necessary by defective workmanship for material or carelessness of other crafts.
- v. Mix paint with proper consistency in accordance with the manufacturer’s printed instructions. Apply paints evenly and smoothly without runs, sags or other defects and brush efficiently to minimize brush marks. Make edges of point adjoining other material or color sharp and clean without overlapping.


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- w. Do not apply final coats until other trades whose operations would be detrimental to finish painting have finished with their work in the areas to be painted and the areas have been approved for painting. Test concrete and plaster surfaces for moisture using moisture meter, reading above 15 shall not be painted.
- x. Do necessary puttying on nail holes, cracks, etc. after the prime coats has been applied. Bring putty flush with adjoining surface in a neat, workmanlike manner.
- y. Color pigments shall be used to produce the exact shades of paint, which shall conform to the approved color scheme of the building.
- z. Except as otherwise noted, color of priming coat shall be lighter than body coat and the color of the body coat lighter than finish coat. The first coat shall be white.
- aa. Protect the work and adjacent work and materials at all times by a suitable covering or by other methods. Upon completion of the work, remove paint spots from floors, glass finish hardware, etc. so as to leave the premises in perfect condition, acceptable to the Owner or the Architect/Engineer.
- bb. Finished surfaces shall be solid, even color and finished texture, free from drops, runs, lumps, brush marks, discoloration or other defects.
- cc. Before final inspection, any work which has become damage or discolored shall be touched up or refinished in satisfactory manner.

9.0 Electrical Works

9.1 General Scope

- a. The work shall be subject to the requirements of the General Condition, which shall be included as a part of these Specifications and which shall apply to all work performed under the Electrical Work.
- b. All materials to be delivered on site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. The work to be done under this Division of the Specifications consists of the fabrication, furnishing, delivery and installation. Complete in all details of the Electrical Work, at the subject premises, and all work and materials incidental to the proper completion of the installation, except those portions of the work which are expressly stated to be done by others. All work shall be done in accordance with the governing codes and regulations and which such codes which the latter shall govern. The requirements with regards to materials and workmanship specify the required standards for the furnishing of all labor, materials and appliances necessary for the complete installation of the work specified herein and indicated to provide a drawing. The specifications are intended to provide a broad outline of the required equipment, but are not intended to include all details of design and construction.
- d. Under this Division of the specifications, provide all materials and equipment and perform all the work necessary for the complete execution of all the Electrical Drawings and on the General Construction Drawings, as herein specified for both except as otherwise excluded and which, without excluding the generality of the foregoing, shall include but not be limited to the following principal items of work.
- e. Furnish and install a complete wiring system for lighting and power including feeders, branch circuits and taps.
- f. Furnish and install all lighting fixtures wiring devices and necessary wiring gutters and boxes.
- g. Complete testing of all electrical system.
- h. If anything has been omitted in any item of work or materials, usually furnished, which are necessary for the completion of the electrical works as outlined herein before, then such items must be and are hereby included in this Division of the Work.

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- i. The Contractor shall guarantee that the electrical system are free from all grounds and from all-defective workmanship and materials and will remain so far for a period of one year from date of acceptance of the work. The Contractor at his own expense shall remedy any defects appearing within the aforesaid period.
- j. The Contractor shall be held fully responsible for the work of any sub-contractor or manufacturer performing work or supplying materials and ascertain that the Electrical works, when finally delivered to the Owner/Agency, shall be ready in every respect for satisfactory and efficient operation.
- k. The work throughout shall be executed in the best and most thorough manner under the direction of and to the satisfaction of the Owner or the Architect/Engineer and the Construction officers, who will jointly interpret the meaning of the drawings and specifications and shall have the authority to reject any work and materials which in their judgment are not in fully accordance therewith.
- l. All materials shall be new and shall conform to the standards of the Underwriters Laboratory, Inc. ASA, USASI, NEMA, IP, CEA, PEC, ANSI, IEEE, and ASTM in every case where such standards have been established for the particular type of materials in question.
- m. All materials on all systems shall comply with the following specifications, unless specifically expected, and all materials where not specified shall be of the best of their respective kind and/or Engineer's approval sought.
- n. Samples of any materials shall be submitted for approval as required by the Engineers.


9.2 Materials & Execution

WIRES AND CABLES

- a. All wire conductors to be used shall be branded.
- b. Wires and cables shall be rated 600V minimum insulation rating.
- c. All wires shall be copper, soft-drawn and annealed shall be of 98% conductivity, shall be smooth and true and of a cylindrical form, and shall be within 1% of the actual size called for.
- d. Conductors shall be electrical grade, annealed copper, tinned if rubber insulated, and manufactured in accordance with ASTM and IPCEA standards. Minimum size number 2.0mmsq.
- e. All wires and cables shall comply with the requirements of the Underwriters Laboratory, the A.S.T.M. and the I.P.C.E.A. as they apply to the particular usage.
- f. Wires size larger than 2.0 sq. mm diameter should be stranded.
- g. Wires and cables for lighting and power systems shall be plastic insulated for 600 volts working pressure, type THHN or THWN unless otherwise noted on plans or specified below.

CONDUITS AND FITTINGS

- a. No conduit shall be used in any system smaller than 15 mm (½ inch) diameter electric trade size nor shall have more than four (4) 90-degree bends in any one run and where necessary, pull boxes shall be provided as directed.
- b. No wire shall be pulled into any conduit until the conduit system is completed in all details, in any case of concealed work until rough plastering or masonry has been completed and, in the case, exposed work until the conduit work has been completed in every detail.
- c. The ends of all conduits shall be tightly plugged to exclude plaster, dust and moisture while the building is in progress of construction. All conduits shall be reamed to remove all burns.

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OUTLETS, BOXES AND FITTINGS

- a. At all outlets of whatever kind, for all systems, there shall be provided a suitable fitting which shall be either a box or another device especially designed to receive the type of fitting to be mounted thereon.
- b. The Contractor shall consult the Engineers as to the nature of the various fittings to be used before installing the outlet, fittings, and shall conform strictly in the use of fittings, to the nature of the appliance to be mounted on them so that the work, when completed will be of finished design.
- c. At all outlets on concealed conduit work, provide galvanized pressed steel outlet boxes of Standard make. These boxes shall be in all cases standard.
- d. All utility boxes intended for outlet devices shall be especially designed to receive the particular type of device to be mounted and should be deep enough to accept and fit total number of conductors and device required as per drawing.

JUNCTION AND PULL BOXES


- a. Junction and pull boxes, of code gauge steel, galvanized shall be provided as indicated or as required for facilitating the pulling of wires and cables. Pull boxes in finished place shall be located and installed with the permission and to the satisfaction of the PSC representative.
- b. All junction and pull boxes on exposed circuit work shall be provided with hubs for threaded pipe entry and covers provided with neoprene gaskets.

WALL SWITCHES AND PLATES

- a. Wall switches shall be rated with ampere and voltage ratings as required. Switches shall be flush mounting type and of the quiet type, spring operated. The type of switches shall be tumbler operation and the color, plating and appearance of wall plates shall be as selected by the Architect. Appropriate samples shall be submitted prior to the purchase of wall switches and faceplates.
- b. All utility boxes intended for all the switches shall be especially designed to receive the particular type of switches to be mounted and should be deep enough to accept and fit total number of conductors and device required as per drawing.
- c. All switches and receptacle plates shall be of plastic finish B.L. plate or as directed by the Architect/Engineer.
- d. One gang switch with LED (1 WAY / 16A / 250V)
- e. Two gang switch with LED (1 WAY / 16A / 250V)
- f. Three gang switch with LED (1 WAY / 16A / 250V)
- g. One gang switch with LED (3 WAY / 10A / 250V)

RECEPTACLE OUTLETS AND PLATES

- a. Receptacle outlets in general shall be for flush mounting, duplex type rated at 16 amperes, 250 volts, 2-pole, 3-wire parallel slots, grounding type unless otherwise indicated on drawings. Type and color of receptacles outlets and plates shall be as selected by the Engineer or Architect. Appropriate samples of outlets and plates shall be submitted prior to purchase of devices. Receptacles shall be approved equal.
- b. All receptacle outlets and plates shall be of plastic finish B.L. plate or as directed by the Architect/Engineer.
- c. All utility boxes intended for receptacle outlet devices shall be especially designed to receive the particular type of receptacle outlet to be mounted and should be deep enough to accept and fit total number of conductors and device required as per drawing.

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- d. Receptacle with Ground Fault Circuit Interrupter (GFCI) Shall be rated 20A, 2P, 3wire grounding type, 250 V, Parallel slot with 15 milliampere current sensitivity.
- e. One gang universal convenience outlet (10A / 250 V)
- f. Duplex Universal Convenience Outlet w/ ground (16A / 250 V)

LIGHTING SYSTEM

- a. The Contractor shall submit samples of all type of lighting fixtures for the approval of the Architect and the Engineer.

1. **FLUORESCENT LIGHTING FIXTURE SURFACE TYPE WITH ALUMINUM REFLECTOR**

DIMENSION : 12 inches x 48 inches
OPERATING VOLTAGE : 220-240 volts
LAMP : 2 x 36 watts
LAMP COLOR : Daylight
LAMP FITTING : G13 (T8)

2. **FLUORESCENT LIGHTING FIXTURE SURFACE TYPE WITH ALUMINUM REFLECTOR**

DIMENSION : 24 inches x 48 inches
OPERATING VOLTAGE : 220-240 volts
LAMP : 3 x 36 watts
LAMP COLOR : Daylight
LAMP FITTING : G13 (T8)

3. **FLUORESCENT LIGHTING FIXTURE BOX TYPE**


OPERATING VOLTAGE : 220-240 volts
LAMP : 1x 36 watts
LAMP COLOR : Daylight
LAMP FITTING : G13 (T8)

4. **SURFACE TYPE VERTICAL DOWNLIGHT**

DIMENSION : 4 Inch Diameter
OPERATING VOLTAGE : 220-240 volts
LED LAMP : 1 x 12 w
LAMP COLOR : Daylight(6500K)
LAMP FITTING : 1 x E27

ELECTRICAL PANEL BOARDS

- a. Standard panel board as much as possible shall be used and properly assembled base on plans or load schedule. All panels shall be dead front construction, furnished with trims for flush or surface mounting as required.
- b. All panel boards shall be composed of only one brand of circuit breaker.
- c. Panel boards shall be IP55 as minimum for dry areas and IP66 for wet areas.
- d. Panel boards shall have LOTO hasp with at least 4 holes.
- e. Panel board main bus work shall be ampacity rated to equal or exceed overcurrent protective device immediately ahead of it. All buswork shall be properly secured to withstand available short circuit forces at the location.


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- f. Distribution panels shall be equipped with two or three poles circuit breakers of sizes, voltages ratings and interrupting capacity as called for on plans. All circuit breakers shall be molded case and plug-in type circuit breakers.
- g. Circuits Breaker shall be thermal magnetic type with quick make, quick break trip free operating mechanism with contacts. Circuit breaker shall be complying with IEC, or NEMA and UL standards.
 1. All individual circuit breakers to be used shall be branded.
 2. The thermal/magnetic trip unit shall provide time-delay for overload protection and instantaneous for short circuit protection.
 3. Multiple breakers shall operate on a common trip bar, which will open all poles in case of overload or short circuit in any one pole.
 4. All circuit breakers shall be bolt-on type and industrial type as the code requires for the purposes.
 5. Main circuit breaker for panel boards shall be 3 poles.
 6. Circuit Breaker shall have the provision for lock out tag out.


10.0 Sanitary / Plumbing Works

10.1 General Scope

- a. The work under this division shall be subject to the requirements of the General Condition, which shall be included as a part of these Specification and which shall apply to all work performed under the Sanitary/Plumbing Works Division.
- b. All materials to be delivered on site shall be approved first by the agency engineers and/or architects as well as for the materials that already have been delivered.
- c. The Plumbing and Sanitary work is a Specialty Trade which shall be performed by a Specialty Trade Contractor referred to in this specification as Plumbing contractor.
- d. The scope of work and responsibility of the Plumbing Contractor is stipulated in these specifications and is treated separately from the function of the General Contractor and other Specialty Trade Contractor for the sole purpose of bidding.
- e. However, after the winning Bidder of the Plumbing Work is determined and assigned to the General Contractor, the Plumbing Contractor becomes a Sub-Contractor of the General Contractor and all responsibilities and functions of the Plumbing Contractor stipulated in these specifications shall be assumed by the General Contractor.
- f. There shall be no contractual relation between the Owner/Agency and the Plumbing Specialty Trade Contractor.
- g. Furnish all materials and equipment and perform all labor necessary for the complete installation, testing and operation of the plumbing system in accordance with the applicable drawings and this division of the specifications consisting of, but not limited to the following:
 1. Sanitary
 2. Storm drainage system
 3. Soil, waste, and vent pipe systems within the building
 4. Water distribution and supply pipes and fitting
 5. Water service connection
 6. Plumbing fixtures, fittings, trims and accessories
 7. Any and all other work involved in providing the complete operation of the domestic water supply system, sanitary plumbing and storm drainage system for the above-named project.
- h. Items by Others:
 1. General cutting and patching of openings except for pipe hangers and inserts.

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2. All concrete foundations or bases required for plumbing equipment.
 3. Concrete sumps and puts.
 4. Water for construction and testing purposes will be supplied by the General Contractor.
- i. Refer to all electrical, structural, mechanical, and architectural plans and specifications and investigate all possible interference and conditions affecting the plumbing work. Proposed solutions to anticipated problems shall be submitted to the Architect/Engineer for approval at least one (1) week ahead of the construction schedule.
 - j. It is not intended that the drawing shall show every pipe fittings, valve and appliances. All such items, whether specifically mentioned or not, or indicated on the drawings shall be furnished and installed if necessary, to complete the system in accordance with the best practice of the plumbing trade and to the satisfaction of the Owner or the Architect/Engineer.
 - k. All dimensional locations of fixtures, equipment, floor and roof drains, riser and pipe phases shall be verified on the architectural drawings and manufacturer's catalogues.
 - l. Execute the work in full accordance with the requirements of all governmental agencies having jurisdiction thereof as well as with requirements and/or recommendations of the National Plumbing Code of the Philippines, the Philippine Rating Bureau, the Underwriters, all applicable laws of the Republic of the Philippines and all codes and ordinances of the Municipality or locality.
 - m. Obtain all necessary allowances, pay all royalties and the like in connection with the use of any patented devices or systems, and save the Owner/Agency from harm for any claim or lawsuit arising from such use.
 - n. After approval of the complete list of manufacturer's names of all materials he proposes to use, and before purchase of any material, the Plumbing Contractor shall submit to the Owner/Agency for approval six (6) complete sets of detailed information consisting of manufacturer's bulletins, shop drawings and part list of materials to be provided under this Contract. Submit names, sizes, catalogue number, shop drawing, and/or samples of the following equipment and materials for approval.
 1. Plumbing fixtures
 2. Toilet accessories
 - o. The Plumbing Contractor shall furnish to the Owner or the Architect/Engineer a written guarantee covering the satisfactory operation of the plumbing installation in all its parts for a period of 1 (one) year after date of final acceptance. During this period, the Plumbing Contractor shall repair or replace any defective work and pay for any repair or replacement costs. Included with this guarantee certificate shall be the guarantee certificates of every material supplier employed by this trade.
 - p. The Plumbing Contractor shall protect all his work and materials from loss, injury or defacement. Protection of fixtures and materials shall be provided by boards, papers, and/or cloth as required and any lost, damage, or defaced materials shall be replaced by the Plumbing Contractor at his own expenses.
 - q. Cover and protect all openings left in floor or wall for passage of pipes. Protect pipes with suitable covering as soon as set. Close all open ends of pipes with a plug or cap fitting to prevent obstruction and damage. Seal all set traps.
 - r. As soon as installed, cover all metal fixture trimmings with non-corrosive grease and maintain it until construction work is completed.
 - s. Use any material, device, fixture or appurtenance not specified in these specifications may allowed, provided that such alternate has been approved, in writing, by the Owner or the Architect/Engineer to substantiate the Contractor's claims, the cost shall be borne by the Contractor.

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- t. Tests shall be done by an agency, approved by the Owner or the Architect/Engineer and in accordance with generally accepted standards. In the absence of such standards, the Owner or the Architect/Engineer may specify the test procedures.
- u. In any substitution, all health and safety requirement shall be observed.

10.2 Materials & Execution


1. Floor Drain, Water Closet, Urinal, Lavatory, Faucet, Shower, Bidet, Tissue Holder & Soap Holder:
 - a. Material shall be of approved equivalent.
 - b. Floor Drains & Valves: shall be stainless steel and made of high grade-strong, tough and even grained metals. No floor drains and valves must be on the way of people who may step on them.
 - c. Water Closet: American Standard Neo Modern 2630 Dual Flush Push Button with Seat & Cover and Complete Accessories
 - d. Urinal: HCG Wall-Hung Urinal with Complete Accessories
 - e. Lavatory: Roca Dama Senso Countertop Washbasin
 - f. Lavatory Faucet: Cool Single Handle Basin Mixer
 - g. Shower: HCG Marsh Bath Mixing Faucet with 3-Function Hand Shower Set with Complete Accessories
 - h. Bidet: Stainless Steel Handheld Bidet
 - i. Tissue Holder: American Standard Stainless Steel Concept Square Paper Holder with Cover
 - j. Soap Holder: Moen Stainless Steel Wall-Mount Soap Holder
 - k. Use PVC pipes for sewer lines and PPR pipes for water lines.
2. Fixture & Equipment Supports and Fastening:
 - a. All fixtures and equipment shall be supported and fastened in a safe and satisfactory manner.
 - b. Insert shall be securely anchored and the anchors shall be properly flushed with mortar. Inserts shall be installed flush with the finished wall and shall be completely concealed when the fixtures are installed.
 - c. Where through bolts are used, they shall be provided with plates or washers at the back and set so that heads, nuts, and washer will be concealed by plaster. Exposed bolts, nuts, cap nut, and screw heads shall be provided with chromium-plated brass washers.
 - d. All exposed metal surface shall be rid of grease, dirt or other foreign materials. Chrome or nickel-plated piping, fittings and trimmings shall be polished upon completion. All equipment pipes, valves and fittings shall be cleaned of grease and sludge which may have accumulated.

Any stoppage or dis-colorization or other damages to part of the building, or its finish of furnishing due to the Contractor's failure to properly clean the piping system shall be repaired by the Contractor without additional cost to the Owner/Agency.

11.0 Architectural Works (Specialties)

11.1 General Scope

- a. This section includes all materials, labor, equipment and the performance of all operations necessary for the furnishing and installation of all toilet partitions complete with accessories and fasteners as indicated on drawings and specifications.
- b. Take field measurements prior to component fabrication to ensure proper fitting of work.

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- c. Furnish inserts and anchorage that must be built into other work for installation of toilet partitions and related items.

11.2 Materials & Execution

- a. Toilet Partitions & Urinal Dividers: Use 12mm thk Phenolic Board Toilet Partitions with Stainless Type Accessories as manufactured by Aurora (O.A.) Philippines, Inc. or approved equivalent. Component material shall be High Pressure Laminates (HPL). All exposed edges shall be PVC with color matching face. Color as approved by the Architect.
- b. Submit sample corner sections of phenolic board partition for approval of the Architect/Engineer.

Upon delivery to job site, inspect for damages and irregularities. When damage is considerable, reject product and remove from site. Replace with new items at no extra cost to the Owner/Agency.

12.0 Securing of Occupancy Permit

The Occupancy building permits, clearances or licenses (when necessary) shall be provided by the Contractor. The Contractor shall pay all fees and other incidental expenses. The Contractor shall provide as-built plans/drawings (if applicable), duly accomplished construction logbook, certifications and other necessary documents to secure the Occupancy Permit in favor of the Philippine Sports Commission.

13.0 Cleaning/Hauling of Wastes and Debris and Cleaning of Site

After final inspection of all the works undertaken, remove all paint stains, temporary structures, installation, unused/scrap materials, wastes and debris. Dispose of them properly.

VII. GENERAL NOTES

The contractor shall be responsible in securing the necessary permits/licenses (Building, Electrical and Sanitary/Plumbing) from the Local Government Units (LGU's) and other government agencies in connection with the Rehabilitation/Retrofitting of Philippine Sports Complex Open Bleachers.


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 major finishing materials (tiles, glass, paint, etc.) shall be a local or multi-national company with wholly owned Philippine subsidiary and shall have a similar local project of supply and installation of the above stated materials.

Sub-contractor of major finishing materials (ceramic tiles, etc.) shall be a *member of association of specialists on cleaning and restoration.*

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 is the designer's reference of quality standards. *These products can be replaced provided that the replacement is approved of the same or higher quality.*

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Restoration of floors, walls, ceiling affected by the Electrical works outside the area shall be the sole responsibility of the contractor.

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 and 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 of 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.) 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 operating condition/s at no additional cost to PSC authority.

VIII. PREVENTION OF ACCIDENT AND PUBLIC NUISANCE

General

The Contractor shall formulate adequate control measures 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; hand held power tools; percussion guns; air compressors and hoses; electrical equipment; fuels; 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 airfield 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

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The Contractor shall complete the work within one hundred fifty (150) calendar days upon receipt of the Notice to Proceed. The contractor must work two (2) shifts per day to finish the work on time.

X. WARRANTY PERIOD

The Contractor shall submit a surety bond for a warranty period of one (1) year on materials and workmanship.

Any item found to be defective within the aforementioned period, the contractor shall immediately replace the said item/s at their own expense and no cost to PSC.


Any damage to life and property caused by the contractor operation within the vicinity of the facility covered by the project shall be the sole responsibility of the contractor.

XI. CONTRACTORS RISK AND WARRANTY SECURITY

1. The Contractor shall assume full responsibility for the works from the time of construction 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 occasioned by force majeure. The Contractor shall be fully responsible for the safety, protection, security and convenience of his personnel, third parties and public at large, as well as the works, equipment, fabrication and installation and the like to be affected by his construction works 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.

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