SECTION VI

TECHNICAL SPECIFICATIONS

S P E C I F I C A T I O N S

I. SCOPE OF WORK:

1. The work consists of furnishing labor, materials, and tools/equipment and other items necessary for the completion of "**VARIOUS MAINTENANCE OF PORT PHYSICAL FACILITIES (PHASE I), PORT OF PUERTO PRINCESA, PALAWAN**." All materials and services not expressly called for in the specifications and not shown in the drawings which are necessary for the completion of the repair shall be performed, furnished, and installed.
2. *The plans, detailed drawings, and these Specifications* shall be considered as complementing each other so that what mentioned or shown in one, although not mentioned or shown in the other, shall be considered as appearing on both. In case of conflict between the two, the same should be referred to the PPA Project Manager/Engineer for resolution.
3. All materials and works shall conform to the provisions of the latest edition of American Standards for Testing and Materials (ASTM), Philippine National Standards (PNS), National Building Code of the Philippines, and other applicable standards, both local and international.

II. JOB CONDITIONS:

1. The contractor shall clear the site of all obstruction.
2. Demolition, removal, and chipping-off the parts of the structures shall be appropriately executed. All salvaged materials shall be turn-over and or stored as directed by the Authority. Barricade and signboards shall be provided and installed as safety measures and for information of the port users for its convenience.
3. Workers shall wear protective gear or equipment at all times for the safety of life purposes.
4. In the event of damage of adjacent room and or port facilities, immediately make all necessary repairs and replacement to the approval of and at no cost to PPA.

III. GENERAL PROVISIONS

3.1 DISMANTLING / CHIPPING-OFF / DEMOLITION/ REMOVAL AND EXCAVATION WORKS:

1. All dismantling/removal and chipping-off/demolition or excavation activities involved in the projects shall be appropriately coordinated with the Project Engineer to avoid damage to other port facilities.
2. The demolition and dismantling work shall be carried out by approved methods and equipment.
3. The contractor shall provide suitable equipment, skilled labor, and appropriate temporary works such as scaffoldings to ensure safety in the demolition and dismantling works as well as of the adjacent area.
4. Dismantled/ demolished/ excavated materials should be removed from the site as soon as possible and should be stored in a designated area.
5. 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 contractors at places specified by the Engineers authorized

representative.

6. Items of works that involves dismantling/demolition, chipping/removal, and excavation are the following.

6.1 For Provision of Hazardous Materials Facility:

1. Excavation of Earth Materials;

2. Excavation works should be assured that it will not cause a delay in the operations of the ports and not to disturb its neighboring offices.

6.2 For Maintenance of Concrete side walk along Port Road leading to exit gate (Fronting PTB & Warehouse Building No. 1):

1. Chipping, demolition & removal of damaged concrete side walk.
2. Chipping & removal of tiles shall be made carefully to avoid damage to the other facilities near it.

6.3 For Maintenance of drainage system along sidewalk of Parking Area (Fronting Administrative Building); Repair of drainage canal at the back of PICO Building; Maintenance of Septic Tank at PASS Building; Maintenance of Septic Tank at PICO Building; Maintenance of Septic Tank at Administrative Building ; Maintenance of Septic Tank at PTB Building; Repair of reinforced concrete deck/slab along R.C Wharf; and Repair of concrete pavement at Southwing, Back-up area:

1. Cutting and chipping-off works should be done correctly and as per approved plans/drawings.

2. Excavated / chipped-off materials should be removed from the area as soon as possible.

3.2 <u>CONCRETE MATERIALS AND WORKS:</u>

3.2.1 MATERIALS

1. Cement shall conform to Portland Cement ASTM C150.

   Cement shall be ordinary Portland (Type 1) or equivalent. Concrete shall be placed, compacted, and mixed to avoid cold joints, honeycombing, and to minimize segregation, excessive blemishes, or another defect in the hardened concrete.

2. Concrete aggregates shall conform to ASTM C33 except the aggregates failing to meet these specifications but which have produced concrete of adequate strength and durability may be used to the approval of the Structural Engineer.

   Coarse aggregates shall be per the quality requirements of AASHTO M 79, and it retained with 4.75mm (No. 4) sieve, shall be crushed stone/rock, crushed slag, and unless otherwise stipulated. It shall conform to the applicable requirements of section 703.5.1, Coarse Aggregates of item 703.

3. Fine aggregates shall consist of natural sand, stone, or slag or a combination, therefore, and shall conform to the quality requirements of AASHTO M 29 (ASTM D 1073). It shall conform to the applicable requirements of section 703.5.2, fine aggregates of item 703. It shall pass the No. 4 sieve (4.75 mm).

4. Water used in mixing concrete shall be clean and free from injurious amounts of oil, acids, alkalis, salts, organic material or other substances deleterious to concrete or steel.

3.2.2 MIXING OF CONCRETE

All concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged.

3.2.3 STRENGHT OF CONCRETE

Concrete strength shall be 3,500psi/24Mpa, and concrete shall be thoroughly mixed to a uniform consistency. Unless otherwise indicated in the drawings, the minimum 28-day cylinder compressive strength shall be as follows:

fc' = 3500 psi : PAVEMENT

3.2.4 ADMIXTURES

Admixtures to be used in concrete shall be subject to prior approval by the Supervising Engineer.

3.2.5 CONVEYING OF CONCRETE

Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent the separation or loss of materials.

3.2.6 DEPOSITING OF CONCRETE

Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to re handling or flowing.

3.2.7 CURING

Concrete shall be maintained in a moist condition for at least 7 days after placing. Wet burlap may be laid over the slab constantly applied with water.

3.3 CONCRETE HOLLOW BLOCKS

1. Concrete hollow blocks shall have a minimum compressive strength of 5.50MPa.
2. Refer to the approved plan for the diameter and spacing of vertical and horizontal reinforcement.
3. Lap splices shall be 300 mm long (minimum).

3.4 MASONRY WORKS:

1. Tile adhesive (heavy duty) shall be used in the installation of ceramic floor and lavatory tiles. Tile grout shall be provided for sufficiently filling all sections that require grout.

2. Items of works that involve the installation of ceramic tiles are the following:

3.4.2.1 For Maintenance of Port Manager's living Quarter/ Maintenance of PICO Building/ Rehabilitation of existing detention cell:

1. MATERIALS

a) Ceramic Floor Tiles - PNS 154:2005, ICS 91.100.25

Size : 40 cm X 40 cm / see approved plans/drawings;
Thickness : 8.35 - 8.65 mm

b) Mortar - All mortar setting bed for use on floors shall ABC tile adhesive or its approved equivalent.

c) Tile Grouting shall be selected by the Engineer's from the manufacturers.

d) COLOR: Color shall be selected by the ESD Manager from the range currently available from the manufacturer.

e) ACCESSORIES: Ceramic floor tiles shall have the sizes indicated on the plans and all accessory tiles shall be in matching sizes; all accessory tiles shall be as required for conventional mortar installation.

f) PATTERN: Pattern and design shall be as indicated in the drawings.

g) OTHER MATERIALS: All other materials not specifically described but required for a complete and proper tile installation, shall be as selected by the Contractor subject to the approval of the Supervising Engineer.

3.5 <u>DEFORMED BAR REINFORCEMENTS</u>

1. Deformed bar reinforcements shall conform to PNS 49 or ASTM 615, or approved quality to be used for the subject.

2. Bars shall be free from any flaking rust, mill scale, grease, or coatings of any type that would tend to rescue or destroy the bond.

3.6 <u>WELDING WORKS:</u>

1. All materials to be use shall be of standard sizes.
2. Fluxes on welded parts shall be properly removed by sanding. Alignment shall be properly checked.
3. Items of works that involve Welding's are:

3.6.1 MAINTENANCE OF WAREHOUSE BUILDING NO. 1:

1. Replacement of corroded flat bars of steel doors.
2. All welding works shall conform to the approved drawings/plans.

3.6.2 PROVISION OF HAZARDOUS MATERIALS FACILITY:

1. All welding works shall conform to the approved drawings/plans.

3.6.3 MAINTENANCE OF PLANT BOXES

1. Replacement of damaged steel protective grills.
2. All welding works shall conform to the approved drawings/plans.

3.7 PAINTING WORKS

Items of works that involve Paintings are:

3.7.1 For **Maintenance of Warehouse Building No. 1**:

1. Remove/scrape existing paint.
2. All surfaces must be clean and free of dirt, rust oil, or any substances that may reduce adhesion of paint.
3. Chalking or flaking surfaces shall be applied by putty.
4. All existing ceiling boards shall be re-painted with acrylic semi-gloss latex paint.
5. Newly installed marine plywood shall be prime with flat latex, before applying three (3) coats for finishing surface.
6. Newly installed roofing materials, and for re-painting of steel doors, red oxide primer shall be applied before applying three (3) enamel coats, delf blue color.

3.7.2 For **Provision of Hazardous Materials Facility:**

1. All newly installed steel materials shall be prime with (1) coat red oxide paint, and of enamel silver paint of three (3) paints.
2. Additional installed chb plain cement finished shall be applied with neutralizer, before applying flat latex paint. It shall be applied with acrylic (semi-gloss) three (3) coats.
3. All roofing materials shall be applied with three (3) coats enamel paint. The brand and color of the paints to be used shall be at the choice of PPA.

3.7.3 For **Maintenance of Plant boxes:**

1. Remove/scrape existing paint. All surfaces must be clean and free of dirt, rust oil, or any substances that may reduce adhesion of paint.
2. Affected concrete surface shall be applied by acrylic paint (gloss), two (2) coats.
3. Newly replaced bars shall be prime with red oxide.
4. All corroded members must be applied with a turko converter for the removal of rust. Apply three (3) coats of enamel paints.

3.7.4 For **Maintenance of Concrete side walk along Port Road leading to exit gate (Fronting PTB & Warehouse Building No. 1 :**

1. Latex paint shall be applied in one (1) coat prior to apply a reflectorized traffic paint of Yellow and black color, three (3) coats.

3.7.5 For **Maintenance of Gate at Back-up area, Northwings :**

1. Newly installed materials shall be applied with red oxide paint, One (1) coat.
2. Enamel paint shall be applied (gloss) in three (3) coats.

3.7.6 For **Maintenance of inner control gates (entrance & exit):**

1. Corroded members shall be applied by converter for rust removal.

2. Newly installed bars shall be applied by red oxide in one (1) coat.

3. Enamel paint shall be applied for three (3) coats.

3.7.7 For **Maintenance of drainage system along sidewalk of parking area (fronting administrative building) :**

1. All newly installed steel cover shall be applied by red oxide primer paint enamel

2. Three (3) coats of enamel paint, black shall be applied.

3.7.8 For **Maintenance of R.C curbs along R.C Wharfs :**

1. Newly repair concrete shall be neutralizing before applying latex paint.

2. Acrylic paint shall be applied in three (3) coats.

3.7.9 For **Maintenance of steel matting fence at back-up area (Southwings) :**

1. Newly installed steel materials shall be applied with red oxide primer paint, one (1) coat.

2. Enamel paint shall be applied in two (2) coats.

3.7.10 For **Maintenance of steel matting fence & gates of parking area:**

1. Newly installed steel materials shall be applied with red oxide primer paint, one (1) coat.

2. Enamel paint (gloss) shall be applied in two (2) coats.

3.8 <u>OTHER SPECIFIC REQUIREMENTS</u>:

3.8.1 **MAINTENANCE OF WAREHOUSE BUILDING NO. 1**

1. Uneven concrete slab shall be repair; damaged eave ceiling shall be replaced; eave ceiling shall be re-painted; damaged roofing materials and dilapidated steel sheet parapet shall be replaced, and shall be painted; and
2. Corroded flat bars of steel doors shall be replaced, and all shall conform to approved plans & drawings.
3. Existing dilapidated accordions at the top of entrances shall be removed.

3.8.2 **PROVISION OF HAZARDOUS MATERIALS FACILITY**

1. Sahara cement shall be provided in the mixture of cement for the plastering of installed CHB, to avoid leaking of stored aggressive chemicals.

3.8.3 **MAINTENANCE OF PLANT BOXES**

1. All materials to be replaced and re-painting works shall conform to the approved plans/ drawings.

3.8.4 **MAINTENANCE OF DRAINAGE SYSTEM ALONG SIDEWALK OF PARKING AREA (FRONTING ADMINISTRATIVE BUILDING)**

1. All work to be undertaken including excavation, concrete pouring of line canal, construction of canal concrete cover, installation of concrete pipe culvert, fabrication & installation of steel grating cover of canal, and painting works shall conform to the approved plans / drawings.

3.8.5 REPAIR OF DRAINAGE CANAL AT THE BACK OF PICO BUILDING

1. All work to be undertaken including declogging of perimeter canal, demolition of existing tilted wall of canal, and reinforcing concrete works shall conform to the approved plans / drawings.

3.8.6 MAINTENANCE OF R.C CURBS ALONG R.C WHARFS

1. All work to be undertaken including repair of damaged reinforced concrete curbs, and painting works shall conform to the approved plans / drawings.

3.8.7 MAINTENANCE OF PORT LIGHTING SYSTEM

1. All work to be undertaken including replacement of service lamp into LED lamp shall conform to the approved plans / drawings.

2. Existing service lamp shall be replaced by LED streetlight, 112 W, 220V in Aluminum alloy housing & tempered glass, 9000l.m, IP65, Product code QS-A100J-RX, KIND.LED light.

IV. ENVIRONMENTAL PROTECTION

a) Fires

1. Fires and burning of rubbish on the site are not permitted except when authorized by the Engineer. Where fires or burning is permitted, the Contractor shall prevent the structures, materials or vegetation which is to be preserved from staining and/or smoke damage. When so happen, the Contractor shall restore, clean and return stained or damaged work to fresh conditions.

b) Disposal of Waste

1. The Contractor shall not bury rubbish and solid waste materials on the Site unless approved by the Engineer. The Contractor shall not dispose of dredging spoils, waste or volatile materials, such as mineral spirits, oil or paint thinner into the sea, waterways, storm water drainage or sanitary sewers.

V. Clearing / Cleaning WORKS

1. The contractor shall clear the project site from all waste and excess materials upon completion of the project.
2. All salvage materials shall be turned over to PPA.