Philippine Ports Authority
PORT MANAGEMENT OFFICE – MINDORO
Engineering Services Division
San Antonio, Port Area, Calapan City
Oriental Mindoro

REPAIR OF RoRo RAMP NO. 4

PORT OF CALAPAN, ORIENTAL MINDORO

TECHNICAL SPECIFICATIONS

I. GENERAL CONDITION

The Work generally consist of furnishing of all labor, materials and equipment required to carry out and complete the ***Repair of RoRo Ramp No. 4, Port of Calapan, Oriental Mindoro*** in accordance with the contract drawings and in conformity with these specifications.

PLANS AND SPECIFICATIONS

All drawings, whether in small scale or detailed, are intended to correspond with specifications to form part thereof and the contract documents. Where figures are given, they are to be followed in preference to measurement by scale. Anything shown on the drawings but not indicated in the specifications or vice-versa or anything not expressly set forth in either, but which is reasonably implied, shall be furnish and installed as though specifically shown and mentioned in both, without extra cost to PPA.

II. PROJECT SIGNBOARD

The Contractor shall prior to start of physical activities, install one project billboards consisting of the Project Name and Location, Contractor, Contract Cost, Date Started, Contract Completion Date, Implementing Office, and Source of Fund. The Contractor shall coordinate with the PPA Project Engineer in fixing the location of said billboards including its contents, make and dimensions. The dimension and/or area of each billboard shall, however, not be less than 2.44m x 2.44m (5.95 sq.m.) or tarpaulin posted on 1/4 inch marine plywood.

III. SCOPE OF WORKS

1.00 General Expenses

1.01 Mobilization, Demobilization and Cleaning Up

The Contractor shall mobilize and put into work all personnel, plant, and equipment required to undertake the works. The minimum equipment required to be mobilized at site are the following:

	Equipment Description	*Quantity*
1	Electric Grinder	One (1) Unit
2	Oxy-Acetylene Cutting Outfit	One (1) Unit

3	Jackhammer w/ compressor, 350cfm	One (1) Unit
4	Chipping Gun	One (1) Unit
5	Boom Truck(5T)	One (1) Unit
6	Dump Truck(3.0 cu. yd)	One (1) Unit
7	Scaffoldings	One (1) Unit
8	Bar Bender (32mm bar dia. max)	One (1) Unit
9	Bar Cutter (32mm bar dia. max)	One (1) Unit
10	Welding Machine	Two (2) Units
11	Concrete Vibrator, 3.5hp	One (1) Unit
12	Concrete Transit Mixer(5.0 cu.m.)	One (1) Unit

2.0 RoRo Ramp 4

2.01 Demolish and Dispose Damaged RoRo Ramp including Turnover of Existing 25T Mooring Bollard and V-Type Rubber Dock Fender

The work includes the furnishing of all labor and equipment required to carry out the demolition/dismantling and turn-over of dismantled structures/facilities and as instructed by the PPA Engineer.

Waste materials shall be hauled and dumped in the area designated by the engineer/PPA representative while salvaged materials shall be turned over to the Authority.

2.02 Supply and Place Reinforcing Steel Bar for Beam, R.C Curb, Curtain Wall, Ramp Deck, Pilecap and Mooring Block

The work shall consist of the supply and installation of the reinforcing steel bars in accordance with the sizes, number and shape of RSB indicated on the Drawings and in the approved bar cutting schedule.

Steel reinforcement used shall have deformed surfaces and shall conform to ASTM as follows:

16 mm Ø and above – ASTM 305, Min. Yield Strength of 414 MPa

12 mm Ø and below – ASTM A615-74a, Min. Yield Strength of 275 Mpa

Reinforcement shall be free of loose or flaky rust and mill scale, or coating and any other substance that would reduce or destroy the bond with concrete. Wire brushing of the concrete may be required before fixing in order to achieve the required condition. Reinforcement shall not be bent or straightened in a manner injurious to the steel or concrete. The use of heat to bend or straighten reinforcement shall not be permitted. Bars with developed cracks or splits shall be rejected and replaced.

Splices and overlapping in reinforcement where applicable shall conform to current standards and accepted engineering practice. Lap lengths shall not be less than 40 times the reinforcing bar diameter or as shown

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on the drawings or otherwise directed by the PPA Engineer. All laps shall be staggered or made at points where steel stress has fallen to less than half the allowable stress. Where lap shall not be staggered or be made at points of reduced stress, lap length shall be increased by 30%.

2.03 Supply and Place 3500 psi Concrete for Beam, R.C Curb, Curtain Wall, Ramp Deck, Pilecap and Mooring Block

The work shall include but not limited to the furnishing of all labor, materials, equipment, and incidentals necessary to complete the supply and placing of 3500psi concrete for superstructures.

Concrete

The work shall include but not limited to the supply and placing of concrete inclusive of transport in accordance with these specifications and where shown on the Drawings.

Specifications of the materials comprising the concrete mixture shall conform to the following:

Cement – the cement to be used shall be ordinary Portland cement, ASTM Type 1 designation C150. Quality test for every 2,000 bags (40kg) or fraction thereof is required.

Fine Aggregate – for concrete and mortar shall be clean and complying with ASTM C33 specifications for concrete aggregates. The sand shall come from approved sources and sand which in the opinion of the PPA Engineer has become contaminated shall be rejected and removed from site. Quality test for grading, elutriation (wash), bulk specific gravity, absorption, mortar strength, soundness, organic impurities, unit weight, % clay lumps and shale for every 1,500 cubic meter or fraction thereof is required.

Coarse Aggregate – shall comply with ASTM C33 specification. It may either be natural gravel or stone crushed to the desired size and shall only be obtained from approved quarries. Quality test for grading, bulk specific gravity, absorption, and abrasion for every 1,500 cubic meter or fraction thereof is required.

Water – clean fresh potable water shall be used for the mixing of all concrete and mortar mixtures. Sea water shall not be used at any time. Certificate from the Engineer or quality test for density and chloride contest per source is required.

Concrete mixer shall be stationary mixer i.e. one bagger mixer. The mixer must be capable of combining the materials into a uniform mixture and of discharging this mixture without segregation.

Prior to placing of concrete, debris, dirt, and other foreign materials shall be removed from the interior of the forms and from inner surface of mixing equipment. Temperature steel reinforcing bars shall be secured in position and shall be inspected and approved by the PPA Engineer before placing the concrete.

Concrete shall be handled from the one bagger mixer and placed to final deposit in a continuous manner, as rapidly as practicable and without

segregation or loss of ingredients until the activity of placing concrete is completed.

Ideally, the temperature of concrete during the period of mixing, transport and placing should not be more than 32º C. Where cold joints tend to form or where surfaces set and dry too rapidly or plastic shrinkage cracks tend to appear, concrete shall be kept moist by fog sprays, or other approved means, applied shortly after placement and before finishing.

Where applicable, immediately after placing, each layer of concrete shall be compacted by internal concrete vibrators supplemented by hand spading, rodding, and tamping, as necessary.

Concrete shall be protected adequately from injurious action by sun, rain, flowing water and mechanical injury and shall not be allowed to dry out from the time it is placed until the expiration of the minimum curing periods specified herein. Curing shall be accomplished by moist curing or by application of liquid membrane forming compound.

As the work progresses, cylinder samples shall be taken and tested in accordance with standards for testing of concrete cylinder samples. One set consisting of three concrete cylinder samples shall be taken from each day's pouring and to represent not more than 75 cu.m. of concrete or fraction thereof. Tests will be made at 7 and 28 days from time of sampling. The average of the strengths of the three cylinders tested shall not be lower than the specified compressive strength of 3,500 psi.

Slump test for every mix of concrete is required.

Quality test for admixture and concrete curing materials per shipment is required.

2.04 Supply and Install 25T Mooring Bollard including Accessories

The work shall include furnishing of all labor, materials, equipment and other incidentals necessary to complete the reinstallation of 25T Mooring Bollard (T-Head type) including supply and installation of bolts and other accessories in accordance with the sizes, distances and design shown on the Drawings and as directed by the PPA Engineer.

Materials to be used shall be:

- Mooring Bollard
- High Tensile Anchor Bolts and nuts

The size of the bolts, nuts and washer shall be in accordance with the specification provided in the plan/drawings. The anchor plate shall be connected to the holding down bolt as shown in the drawings. All bolts, nuts, washers, etc. that are exposed shall be galvanized to the satisfaction of the Engineer.

Samples of the bolts, nuts, washes and anchor plates shall be submitted to the Engineer for approval before being used in the works.

Visual Inspection

All mooring delivered to site shall be inspected by the Engineer for any sign of flaws o defect inimical to usage.

Mill Test Certificates

Two (2) copies of mill test reports shall be submitted certifying that materials meet the specified standards.

Test Inspection

Inspection of all materials and methods of fabrication shall be carried out by the contractor. However, the Engineer reserves the right to inspect all facilities at any time during the manufacture to ensure that the materials and workmanship are in accordance with Specifications and the best of workmanship

2.05 Supply and Install 500mm x 1500mm V-Type Rubber Dock Fender including Accessories

The work shall include furnishing of all labor, materials, and equipment necessary to complete the supply and installation of Rubber Dock Fender, V-500mm H x 1500mm L including accessories in accordance with the approved manufacturer's recommendations and shop drawings and as directed by the PPA Engineer.

The contractor shall submit for approval of the PPA Engineer, brochures/manuals of the RDFs proposed to be installed which shall be reviewed by the PPA Engineer. If found satisfactory and in accordance with the standard requirements of PPA, approval shall be given, subject however, to the standard tests which the proposed RDF should pass prior to their delivery at site.

Upon delivery at site but before installation, the RDF's shall be inspected by the PPA Engineer to determine their physical conformance with PPA requirements as to dimensions, type, make, markings, and acceptance tolerances. RDFs not conforming to PPA requirements shall be rejected and replaced.

The Contractor shall guarantee the fenders against any defects that are attributable to faulty design and manufacture and shall also guarantee the performance of the fenders under normal working conditions. The guarantee shall be for a minimum period of 12 months from the date of the issuance of the Taking-Over Certificate of the Works. During the period of guarantee, repairs, and replacement of defective fender units and/or material shall be carried by the Contractor at his own expense.

Rubber Dock Fenders (RDF) shall have a Physical Test, Performance Test for Energy Absorption and Reaction Force for all units.

Washer and Fixing Bolt including Anchor Bolt shall have a Physical Test for all units. Also, Quality Test for Chemical Composition and Mechanical Properties, One (1) per fabrication.

2.06 Supply, Fabricate and Install W150 x 37.1 x 6m Ramp Protection

The work shall include the furnishing of all labor, materials, equipment, and other incidentals necessary to complete the fabrication & installation of steel I-beam & mild steel plate for top and corner ramp protection in accordance with the sizes, distances and design shown on the Drawings and as directed by the PPA Engineer.

Materials to be used shall be:

- Steel I-beam (W150X37.10), A36
- MS (Mild Steel) Plate, A36

All structural steel material as per ASTM A36.

All structural steel materials are required to have Mill Certificate and Physical Test (Dimensions) for all units. Quality Test for Chemical Composition and Mechanical Properties. Tests will be made for every 10,000 kg. or fraction thereof.

All welding works as per ANSI/AWS D1.1 (Structural Welding Code – Steel). Tests will be made by destructive and non-destructive testing for one (1) per lot.

All welding works shall be done by experienced/qualified welders. Welders must be a certified by TESDA. The welding machine to be used shall be capable of providing the required current to each welding point without appreciable fluctuations.

Surfaces to be welded shall be free from loose scale, slug, rust, grease, paint, and other foreign material except that mill scale which withstands vigorous wire brushing may remain. Joint surfaces shall be free from fins and tears. Preparation of edges by gas cutting shall, wherever practicable, be done by mechanically guided torch.

IV. MEASUREMENT FOR PAYMENT

In accordance with Section II Scope of Works of this Technical Specifications, the pertinent items of work described therein and to be executed by the contractor shall be measured and paid for according to the following terms:

- All scope of works, activities shall be paid in accordance with the unit price for said item of work done indicated in the Bill of Quantities (BOQ), plan and certified by the PPA Engineer after completion of all works.

V. As-Built Drawings and Photographs

1.00 Photographs taken before, during and after completion of the project shall be submitted as part of the documentary requirements for the progress billing.

2.00 At the completion of the Project, the Contractor shall prepare three (3) sets of “As-built” Drawings which shall be submitted to the PPA, PMO-Mindoro as part of the documentary requirements for the formers final billing. The as-built drawings shall indicate therein all the original items of work, changes, deviations and additional work items (if any), undertaken by the contractor to complete the project. The as-built drawings shall bear the title block prescribed by the PPA and shall be signed by the contractor’s authorized representative prior to submission to PPA, PMO-Mindoro.

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Section VII.
Drawings

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Section VIII.
Bill of Quantities

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