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

**CONSTRUCTION OF STA. TERESA PORT,
MAGSAYSAY, OCCIDENTAL 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 ***Construction of Sta Teresa Port, Magsaysay, Occidental 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 (1) project billboard 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 billboard including its contents, make and dimensions. The dimension and/or area of each billboard shall, however, not be less than 1.22m x 2.44m (2.88 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*
Air Compressor (250cfm)	One Unit
Jack Hammer	One Unit
Crawler Crane (30T minimum)	One Unit
Clampshell, Bucket or Cable for Tying	One Unit
Dump Truck (8.00 Cu M)	One Unit

Vibratory Plate Compactor (5hp)	One Unit
One Bagger Concrete Mixer	One Unit
Concrete Vibrator, 3.5hp	One Unit
Water Truck (1000gal) with Pump	One Unit
Cargo Truck (5T)	One Unit
Payloader (1.06 cu.m., 80hp)	One Unit
Road Grader (125hp)	One Unit
Road Roller (12.05T/130hp vibratory)	One Unit
Concrete Screeder	One Unit
Concrete Cutter, 5hp	One Unit
Backhoe (0.52cu.m. 90hp)	One Unit
Welding Machine (500amp)	One Unit
Bar Cutter (Electric, 25mm Ø Min)	One Unit
Bar Bender (Electric, 25mm Ø Min)	One Unit
Oxy/Acetylene Cutting Outfit	One Unit

1.02 Rental of Temporary Site Office and residence for the Engineers and Staff.

1.03 Maintain Temporary Site Office and Residence for the Engineer and Staff.

1.04 Provision of Construction Safety and Health Program in the Execution of the Project.

These provisions include the furnishing of all labor, equipment and incidentals required to carry out the maintenance of temporary site office and the fabrication of signages and barricade protective equipment, medical and first aid system for safety and health program.

2.00 Paving of Back-up Area

2.01 Removal/Chipped off Existing RC Curb and Pavement

The work includes the furnishing of all labor and equipments required to carry out the removal/chipped off existing RC curb and pavement as shown on the Drawings 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 Excavation of Fill Materials for Pavements, Lateral Drainage, Duct Bank, Handhole and Pedestal Post

The work includes the furnishing of all labor and equipment required to carry out the excavation of fill materials for pavements, lateral drainage, duct bank, handhole and pedestal post as instructed by the PPA Engineer.

Excavation

All excavations shall be carried out to the lengths, width, and depths necessary to complete the work as shown on the drawings and as instructed by the PPA Engineer.

The Contractor shall as deemed necessary take all necessary precautions to ensure that excavated surfaces are kept clean and dry. The Contractor

shall keep the excavated areas or trenches free from ground water or water from any other sources.

The Contractor shall provide all temporary support or sheathing or any other measure necessary to prevent excavated earth surface from any movement or cave-in.

All surplus materials shall be disposed of at disposal areas designated by the PPA Engineer or at such disposal area approved for use by local authorities. Recoverable materials intended to be used for backfilling of trenches shall be stored/stockpiled at a location approved/directed by the PPA Engineer.

2.03 Drill 75mm Ø Drain Holes on Existing RC Curb

The work includes the furnishing of all labor and equipment required to carry out the drilling of 75mmØ drain holes on existing RC curb as instructed by the PPA Engineer.

2.04 Supply, Place and Compact Gravel Bedding for Lateral Drainage, Duct Bank, Handhole and Pedestal Post Foundation

The work includes the furnishing of all labor and equipment required to carry out the supply, place and compact gravel bedding for lateral drainage, duct bank, handhole and pedestal post foundation as instructed by the PPA Engineer.

Aggregate base course materials shall be natural gravel or crushed stone of maximum size of 19 mm. It shall be clean and free from vegetable matters lumps or balls of clay and other deleterious substances. The material shall be of such nature that it can be compacted readily to form a firm and stable base.

Required Test

Quality test for grading and plasticity for every 300 cubic meter of fraction thereof.

Quality test for grading, plasticity, abrasion and laboratory compaction test for every 1,500 cubic meter or fraction thereof.

Laboratory California Bearing Ratio (CBR) for every 2,500 cubic meter or fraction thereof.

Field density test for every layer of 150mm of compacted depth at least one group of three In-situ density test for every 500 sq.m. or fraction thereof.

The base course bedding shall be laid according to its prescribed thickness and width as indicated on the Drawings and/or as directed by the PPA Engineer.

Placing of concrete shall not be allowed unless compaction requirements have been complied with as directed by the PPA Engineer

2.05 Supply and Place 3,500 psi. Concrete for Lateral Drainage, Duct Bank, Handhole and Pedestal Post Foundation

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the supply and place 3,500 psi. concrete for lateral drainage, duct bank, handhole and pedestal post foundation.

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.

Early strength chemical 3150 psi concrete strength at 4 days shall be mixed.

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.

Concrete shall be handled from one bagger mixer, 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.

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.

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.

- Refer to Item 3.09 for specification for water proofing

2.06 Supply and Install Steel Reinforcement for Lateral Drainage, Duct Bank, Handhole and Pedestal Post Foundation

The work shall consist of the supply and installation of steel reinforcement for lateral drainage, duct bank, handhole and pedestal post foundation 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 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%.

Mill Certificate and quality test for chemical composition and mechanical properties for every 10,000 kilograms or fraction thereof.

2.07 Supply, Spread and Compact Aggregate Base Course (CBR > 80)

The work includes the furnishing of all labor and equipment required to carry out the supply, spreading and compaction of aggregate base course (CBR > 80) as instructed by the PPA Engineer.

Aggregate base course materials shall be natural gravel or crushed stone of maximum size of 19 mm. It shall be clean and free from vegetable matters lumps or balls of clay and other deleterious substances. The material shall be of such nature that it can be compacted readily to form a firm and stable base.

Required Test

Quality test for grading and plasticity for every 300 cubic meter of fraction thereof.

Quality test for grading, plasticity, abrasion and laboratory compaction test for every 1,500 cubic meter or fraction thereof.

Laboratory California Bearing Ratio (CBR) for every 2,500 cubic meter or fraction thereof.

Field density test for every layer of 150mm of compacted depth at least one group of three In-situ density test for every 500 sq.m. or fraction thereof.

The base course bedding shall be laid according to its prescribed thickness and width as indicated on the Drawings and/or as directed by the PPA Engineer.

Placing of concrete shall not be allowed unless compaction requirements have been complied with as directed by the PPA Engineer.

2.08 Construct Portland Cement Concrete Pavement (280mm thk.) including Asphalt Sealer and Dowel Bars for Construction Joint

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the construction of portland cement concrete pavement (280mm thk.) including asphalt sealer and dowel bars for construction joint.

- Refer to Item 2.05 for specification for concreting works

3.00 Construction of Passenger Terminal Building

3.01 Excavation of Fill Materials for Column Footing, Footing Tie-Beam, Septic Vault and Catch Basin and Backfilling Thereafter

The work includes the furnishing of all labor and equipment required to carry out the excavation of fill materials for pavements, lateral drainage, duct bank, handhole and pedestal post as instructed by the PPA Engineer.

- Refer to Item 2.02 for specification for excavation

3.02 Supply and Apply Soil Treatment

The work includes services of an approved or accredited pesticide company to furnish all labor, materials, equipment, tools, plant, and services to complete the soil treatment work as instructed by the PPA Engineer.

EXAMINATION OF SITE

Inspect the site of work and examine the premises to fully understand existing conditions with respect to the work involved. Prior to soil stripping, excavation or filling all termite mounds within the area should be demolished, removed and treated.

MATERIAL REQUIREMENTS

CHEMICALS AND EQUIPMENT

Use Termiticide Concentrate acceptable to the PPA and should have license from Fertilizer and Pesticide Authority.

The pest control Contractor shall submit the specified chemicals in their original manufacturer sealed containers to the Project Engineer of inspection, sampling and safekeeping. Containers with broken seal shall not be accepted.

Dilution ratings (for Termicide Concentrate):

1 part Termicide Concentrate IC to 50parts water

Pesticides - 1 : 100 concentration

Dilutions shall be done only at the jobsite in the presence of the Project Engineer. The strength of the mixture or solutions shall be made uniform by thorough stirring. All solutions prepared for termite proofing shall be used within 24 hours.

CONTRACTOR LICENSE AND CERTIFICATION REQUIREMENT

The pesticide company should have a valid license from Fertilizer and Pesticide Authority of the Department of Agriculture.

All pesticide shall be applied by or under the direct supervision of a certified pesticide applicator.

ENVIRONMENTAL AND SAFETY CONDITIONS

Formulation, treatment, storage and disposal of pesticide shall be in accordance with label directions. Water for formulation shall be drawn only form site(s) designated by the Project Inspector, and the filling hose shall be fitted with a backflow preventor meeting local plumbing codes/standards. The filling operation shall be under the direct and continuous observation of the Project Inspector to prevent overflow.

APPLICATION

Application of solution shall be done by means of power sprayers fitted with flow meters for accurate monitoring of actual quantity used. At the time of soil treatment application, the soil shall be preferably in a friable condition with low moisture content to allow uniform distribution of the treatment solution throughout the soil. Do not apply pesticide during or immediately following heavy rains, or when conditions will cause runoff and create an environmental hazard. Cover treated area with waterproof sheeting if concrete is not poured on the same day as the soil treatment. Take precautions to prevent disturbance of the pesticide barrier. Before the placement of structural components, re-treatment where soil or fill is disturbed after treatment. Apply pesticide prior to placement of gravel base, vapor barrier or waterproof membrane.

a. Slab on Grade Construction

Apply treatment solution with a low pressure coarse spray at the rate of four (4) liters solution per square meter. Apply at the rate of seven (7) liters solution per square meter if the fill is washed gravel or other course material. Establish a continuous chemical barrier in the voids of hollow block foundation or voids of masonry. Apply treatment at the rate of seven (7) liters per 3 linear meter. Make pesticide band at least 15 cm wide the pesticide evenly distributed throughout. Treat buildings constructed with basement slabs in the same manner.

b. Termite Mounds

Demolish and treat all termite mounds within the property found after the construction.

ENGINEERS

The Contractor shall submit to the Engineer for approval, a copy of the pest control company's proposal and chemical application, method/procedure including the description of the equipment to be used before start of work.

INSPECTION AND TEST

Sampling shall be done only in the presence of the Project Inspector.

Amount of sample to be taken: 50 cc each.

CONTRACTOR'S GUARANTEE

Upon completion of work, and on a condition for final acceptance, the Contractor shall submit to PPA a written guarantee from the pesticide company which shall provide that:

1. The soil poisoning treatment shall prevent subterranean termites from attacking the building on its contents for a period of not less than two (2) years.

2. The Contractor shall thereby warrant all works in termites control that all materials and workmanship applied under the contract are of good quality in every respect and will remain as such for not less than two (2) years.

3.03 Supply, Place and Compact Gravel Bedding

The work includes the furnishing of all labor and equipment required to carry out the supply, place and compact gravel bedding as instructed by the PPA Engineer.

- Refer to Item 2.04 for specification for gravel beddings

3.04 Supply and Place 4,000psi. Concrete for Column, Footing, Tie-beam, Wall Footing, Beam, Slab-on-Grade, Roof Slab and Parapet

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the supply and place 4,000psi concrete for column, footing, tie-beam, wall footing, beam, slab-on-grade, roof slab and parapet.

- Refer to Item 2.05 for specification for concreting works

3.05 Supply and Install Steel Reinforcement for Column Footing, Tie-beam, Wall Footing, Beam, Slab-on-Grade, Roof Slab and Parapet

The work shall consist of the supply and installation of steel reinforcement for column footing, tie-beam, wall footing, beam, slab-on-grade, roof slab and parapet in accordance with the sizes, number and shape of RSB indicated on the Drawings and in the approved bar cutting schedule.

- Refer to Item 2.06 for the specification for steel reinforcement

Masonry and Plastering Works:

3.06.01 Construct (150mm thk) CBH Wall and Partitions
3.06.02 Construct (100mm thk) CBH Wall and Partitions
3.07 Supply and Place 13mm Thick Cement Plaster Finish

The work includes the furnishing of all labor and equipment required to carry out the masonry and plastering works as shown on the Drawings and as directed by the PPA Engineer.

Concrete Hollow Blocks

CHB shall be ready made products of approved fabricator regularly engaged in the production of CHB for a period of five years or more.

6” and 4” CHB shall be of standard manufacture, machine vibrated, with fine and even texture and well-defined edges.

CHB upon delivery to the site shall be stacked under a shed or otherwise protected from exposure to the weather and from contact with soil. Care shall be exercised in handling the blocks to avoid chipping and breakage. Damaged blocks shall be rejected and removed from the site immediately.

Preparation of Surfaces for plastering works

All surfaces shall be cleaned and projections, dust, loose particles and other materials which would prevent good bond shall be removed.

All surfaces shall be thoroughly wetted before plastering.

3.08 Painting Works: Supply and Place Two (2) Coats of Acrylic Solvent Base Paint

The work includes the furnishing of all labor and equipment required to carry out the painting works as indicated on the Drawings and/or as directed by the PPA Engineer.

Materials to be used

1. Acrylic Solvent Base Paint

All painting works shall be done under conditions which shall not jeopardize the appearance or quality of the painting in any way. The Engineer shall have the right to reject all material such as high solid modified epoxy paint and polyurethane finish paint or work that is unsatisfactory and require the replacement of either or both at the expense of the Contractor.

The Contractor shall endeavor to protect the work of others during the time repainting 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 painted.

WORKMANSHIP

All painting work shall be first class and in accordance with the best standard and 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 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 hardware. Paint shall be sharply applied to require lines. Finish 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 satisfactorily to the 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.

PREPARATION OF PAINT

Paint containers shall be delivered to the job site in manufacturer's unopened containers and shall be opened only required for use. Paint shall be mixed only in the designated room or space in the presence of the 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 use 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.

PREPARATION OF SURFACES

All surfaces shall be free from dirt, dust, oil grease, efflorescence, 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 Engineer.

All holes, cracks and depression shall be neatly filled with patching plaster, mixed and applied to match existing plaster. Patches shall be sanded flush and smooth and properly sealed before applying prime coat.

For metal, dirt, weld splatter, rust, scale and other contaminants shall be removed by scraping, wire brushing and sanding as required. Oil and grease shall be removed with mineral spirits or appropriate solvent.

3.09 Supply and Apply Membrane Type Waterproofing

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the supply and application of membrane type waterproofing as indicated on the drawings and in accordance with the approved manufacturer's recommendations and as directed by the PPA Engineer.

Surface should be clean, free from oil, grease, dirt, any loose grit or mortar. Masonry surfaces should be wet first with water before applying mix to avoid abrupt drying and cracking of the applied modified cement, especially under hot and sunny conditions.

Apply 5 coats by brush.

The Contractor shall submit the procedure of waterproofing application for approval of the PPA Engineer

Waterproofing materials shall be applied only by an experienced applicator and shall be applied in accordance with the approved manufacturer's application procedures or methods, approved by the Engineer.

FLOODTESTING

Floodtest for a duration of 48 hours shall be undertaken upon completion of waterproofing installation to determine any leakage or defect on the materials and/or workmanship.

Finishing: Tile Works

3.10 Supply and Install 0.60m x 0.60m Unglazed Ceramic Floor Tiles
3.11 Supply and Install 0.60m x 0.60m Non-slip Ceramic Floor Tiles
3.12 Supply and Install 0.30m x 0.30m Tact Tile Floor Tiles
3.13 Supply and Install 50mm x 10mm Thk Stair Nosing (Rigid Type)
3.14 Supply and Install 0.30m x 0.60m Homogenous Ceramic Tiles

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the supply

and installation of tiles as indicated on the drawings and in accordance with the approved manufacturer's recommendations and as directed by the PPA Engineer.

Materials to be used shall conform to the following:

1) 0.60m x 0.60m Unglazed Ceramic Floor Tiles
2) 0.60m x 0.60m Non-slip Ceramic Floor Tiles
3) 0.30m x 0.30m Tact Tile Floor Tiles
4) 0.30m x 0.60m Homogenous Ceramic Tiles
5) 0.30m x 0.60m Homogenous Ceramic Tiles

Tiles shall be firmly laid on 1:2 cement mortar and the joint shall be filled with white cement paste. It shall be thoroughly soaked to water before using and shall be laid to the correct levels and grade upon installation and drying. It shall be carefully wiped and cleaned.

Finishing Works

3.15 Supply and Install Aluminum Clip-in Perforated Panel Including Accessories (1.20x0.60x0.70mm) (C1)

3.16 Supply and Install Aluminum Clip-in Perforated Panel Including Accessories (0.60x0.60x0.70mm) (C2)

3.17 Supply and Install 50mm Ø Tubular Stainless Steel Buff Finished Handrail

3.18 Supply and Install Fabricated 1.5mm thk Aluminum Framed Doors and Windows including Reflective Brown Glass and accessories

3.19 Supply, Fabricate and Install Flush Door including accessories

3.20 Supply, Fabricate and Install Phenolic Anti-bacterial Waterproof Toilet Partition 20mm thk, including Stainless Hinges, Lock Indicators, Bottom Support Doorknobs and Coat Hooks

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the finishing works as indicated on the drawings and in accordance with the approved manufacturer's recommendations and as directed by the PPA Engineer.

Materials to be used shall conform to the following:

1) Aluminum Clip-in Perforated Panel Including Accessories (1.20x0.60x0.70mm) (C1)
2) Aluminum Clip-in Perforated Panel Including Accessories (0.60x0.60x0.70mm) (C2)
3) 50mm and 32mm Ø Tubular Stainless Steel Buff Finished Handrail and post
4) 1.5mm thk Aluminum Framed Doors Powder Coated Finish with 9mm thk Reflective Tempered Glass and accessories
5) 1.5mm thk Aluminum Framed Windows Powder Coated Finish with 8mm thk Reflective Tempered Glass and accessories
6) Marine Plywood Flush Door including KD Solid Wood Jamb and accessories
7) Phenolic Anti-bacterial Water Proof Toilet Partition 20mm thk, including Stainless Hinges, Lock Indicators, Bottom Support Door Knobs and Coat Hooks

Shop drawings for all finishing works for the building shall be submitted in advance review and approval. Shop drawings shall indicate materials and details of finishing works. The Contractor shall be responsible for all errors

of detailing and fabrication, and for the correct finishing work items shown on the shop drawings.

The Contractor, before placing order for the finishing materials shall submit to the Engineer for approval representative samples of finishing materials. No placing of orders for material for finishing works shall be made without his approval.

Plumbing Works

3.21 Supply and Install Toilet Fixtures and Accessories

3.22 Supply and Install Pipes for Water Line including Accessories

3.23 Supply and Install Pipes for Sewer Line including Accessories

3.24 Supply and Install Pipes for Drainage Line including Accessories

The work shall include the furnishing of all labor, materials, equipment and other incidentals necessary to complete the plumbing works as indicated on the drawings and/or as directed by the PPA Engineer.

The contractor shall submit for approval of the PPA Engineer, brochures/manuals of plumbing materials, fixtures and its accessories 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 as deemed necessary should pass prior to their delivery at site.

The newly acquired Materials and Fixtures to be used shall be brand new and shall conform to the following requirements:

1. Water Closet Including Accessories (L760 x W410 x H760 mm)
2. Lavatory w/ Heavy Duty Faucet
3. Urinal
4. Tissue and Soap Holder
5. Soap Dispenser

Upon delivery at site but before installation, all plumbing fixtures and its accessories shall be inspected by the PPA Engineer to determine their physical conformance with PPA requirements as to dimensions, type, make, markings and acceptance tolerances. Fixtures not conforming to PPA requirements shall be rejected and replaced.

The Contractor shall guarantee fixtures and its accessories against any defects that are attributable to faulty design and manufacture and shall also guarantee their performance 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 fixtures and/or material shall be carried by the Contractor at his own expense.

All plumbing works shall be done and supervised by experienced plumber and in accordance to its requirements.

3.25 Supply, Deliver and Install Wires and Cable of Various Sizes

The work shall include furnishing of all labor, materials and equipment necessary to complete the Supply, Deliver and Install Wires and Cable of Various Sizes as shown on the drawings and/or as directed by the PPA Engineer.

The contractor shall submit for approval of the PPA Engineer, brochures/manuals of the following materials listed below 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 as deemed necessary which the proposed Electrical Fixtures should pass prior to their delivery at site.

Materials and Fixtures to be used shall be brand new and shall conform to the following requirements:

1. 2-36/24W Industrial Type Fluorescent Lamp
2. 2-18W Recessed MTD Fluorescent Lamp
3. 8W LED Bulb Surface Mounted
4. 8W LED Bulb Recessed Light

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

The Contractor shall guarantee all Electrical accessories against any defects that are attributable to faulty design and manufacture and shall also guarantee their performance 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 fixtures and/or material shall be carried by the Contractor at his own expense.

Testing and Commissioning

All feeder and branch circuit wiring shall be tested for circuit continuity and shall be tested to assure that the wiring system is free from short circuits, accidental grounding of other defects prior to energizing at normal system operating voltage.

After the contractor has assured himself that the wiring system are free of faults, the contractor shall then energize the system from their normal power source and confirm that all system is operational as required by the contract documents, prior to final inspection.

At a specific time which shall be determined by the Electrical Engineer, the contractor shall demonstrate that the entire electrical system is operational and will function as required prior to final project acceptance.

Guarantee and Certificates

Upon completion and before final acceptance of the work, the contractor shall furnish the Engineer a written guarantee stating that all works executed are free from defects on all materials, equipment, fixtures devices and workmanship for a period of one year from the date of written acceptance of the project. Any works of major materials that becomes defective during the period shall be replaced by the contractor at its own expense in manner satisfactory to the Engineer.

The work shall consist of testing and commissioning of electrical works.

3.26 Construct Septic Vault including Steel Reinforcement

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the Construct Septic Vault including Steel Reinforcement.

- Refer to Item 2.05 for specification for concreting works
- Refer to Item 2.06 for specification for steel reinforcement
- Refer to Item 3.06.01 for specification for CHB

3.27 Construct Catch Basin and Manhole Cover for Drainage System including Steel Reinforcement

The work shall include but not limited to the furnishing of all labor, materials, equipment and incidentals necessary to complete the Construct Catch Basin and Manhole Cover for Drainage System including Steel Reinforcement.

- Refer to Item 2.05 for specification for concreting works
- Refer to Item 2.06 for specification for steel reinforcement
- Refer to Item 3.06.01 for specification for CHB

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 works done/completed indicated in the Bill of Quantities (BOQ), plan and certified by the PPA Engineer.

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 four (4) sets of “As-built” Drawings including soft copy 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-Calapan.

Section VII.

Drawings

Section VIII.

Bill of Quantities