Standard laboratory strength tests for the 7, 14 and 28 days periods shall be taken to all concrete samples in addition to routine field tests, at cost to the Contractor. Only design mixes represented by test proving the required strength for 7, 14 and 28 days tests shall be allowed.

The cost of sampling, handling and transporting samples from jobsite to the laboratory and the cost of subsequent tests made until the desired mix is attained shall be for the account of the Contractor.

Slump Test shall be made in conformance with ASTM C143, and unless otherwise specified by the Engineer, slump shall be within the following limits:

Structural Element	Slump for Vibrated Concrete	
	Minimum	Maximum
Pavement Concrete	25mm	50mm
Pre-cast Concrete	50mm	70mm
Lean Concrete	100mm	200mm
Sacked Concrete	25mm	50mm
All other Concrete	50mm	90mm

Sampling : Provide suitable facilities and labor for obtaining representative samples of concrete for the Contractor's quality control and the Engineer's quality assurance testing. All necessary platforms, tools and equipment for obtaining samples shall be furnished by the Contractor.

MIXING CONCRETE

1. GENERAL

a. Concrete shall be thoroughly mixed in a mixer of an approved size and type that will insure a uniform distribution of the materials throughout the mass.

b. All concrete shall be mixed in mechanically operated mixers. Mixing plant and equipment for transporting and placing concrete shall be arranged with an ample auxiliary installation to provide a minimum supply of concrete in case of breakdown of machinery or in case the normal supply of concrete is disrupted. The auxiliary supply of concrete shall be sufficient to complete the casting of a section up to a construction joint that will meet the approval of the Engineer.

c. Equipment having components made of aluminum or magnesium alloys, which would be in contact with plastic concrete during mixing, transporting or pumping of

Portland cement concrete, shall not be used.

d. Concrete mixers shall be equipped with adequate water storage and a device for accurately measuring and automatically controlling the amount of water used.

e. Materials shall be measured by weighing. The apparatus provided for weighing the aggregates and cement shall be suitably designed and constructed for this purpose. The accuracy of all weighing devices except that for water shall be such that successive quantities can be measured to within one percent of the desired amounts. The water measuring device shall be accurate to plus or minus 0.5 percent. All measuring devices shall be subject to the approval of the Engineer. Scales and measuring devices shall be tested at the expense of the Contractor as frequently as the Engineer may deem necessary to insure their accuracy.

f. Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the entire plant is running, the scale reading at cut-off shall not vary from the weight designated by the Engineer by more than one percent for cement, 1-½ percent for any size of aggregate, or one percent for the total aggregate in any batch.

g. Manual mixing of concrete shall not be permitted unless approved by the Engineer.

2. MIXING CONCRETE AT SITE

a. Concrete mixers may be of the revolving drum or the revolving blade type and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer.

The pick-up and throw-over blades of mixers shall be restored or replaced when any part or section is worn 20 mm or more below the original height of the manufacturer's design. Mixers and agitators which have an accumulation of hard concrete or mortar shall not be used.

b. When bulk cement is used and the volume of the batch is 0.5 m^3 or more, the scale and weigh hopper for Portland cement shall be separate and distinct from the aggregate hopper or hoppers.

The discharge mechanism of the bulk cement weigh hopper shall be interlocked against opening before the full amount of cement is in the hopper. The discharging mechanism shall be interlocked against opening when the amount of cement in the hopper is underweight by more than one percent or overweight by more than 3 percent of the amount specified.

c. When the aggregates contain more water than the quantity necessary to produce a saturated surface dry condition, representative samples shall be taken and the moisture content determined for each kind of aggregate.

d. The batch shall be so charged into the mixer that some water enter in advance of cement and aggregates. All water shall be in the drum by the end of the first quarter of the specified mixing time.

e. Cement shall be batched and charged into the mixer by such means that it will not result in loss of cement due to the effect of wind, or in accumulation of cement on surfaces of conveyors or hoppers, or in other conditions which reduce or vary the required quantity of cement in the concrete mixture.

f. Where required, synthetic fibrous reinforcement shall be added directly to the concrete mixer after placing the sufficient amount of mixing water, cement and aggregates.

g. The entire contents of a batch mixer shall be removed from the drum before materials for a succeeding batch are place therein. The materials composing a batch except water shall be deposited simultaneously into the mixer.

h. All concrete shall be mixed for a period of not less that 3 minutes after all materials, including water, are in the mixer. During the period of mixing, the mixer shall operate at the speed for which it has been designed.

i. Mixers shall be operated with an automatic timing device that can be locked by the Engineer. The time device and discharge mechanism shall be so interlocked that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

j. The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand, and water to coat the inside of the drum without reducing the required mortar content of the mix. When mixing is to cease for a period of one hour or more, the mixer shall be thoroughly cleaned.

k. In case of rubble concrete, proper mixture and placing of concrete and stones/rocks shall be in accordance to the approved plan. Methodology of work shall be approved by the Engineer.

3. MIXING CONCRETE IN TRUCKS

a. Truck mixers, unless otherwise authorized by the Engineer, shall be of the revolving drum type, watertight, and so constructed that the concrete can be mixed to insure a uniform distribution of materials throughout the mass. All solid materials for the concrete shall be accurately measured and charged into the drum at the proportioning plant. Except as subsequently provided, the truck mixer shall be equipped with a device by which the quantity of water added can be readily verified. The mixing water may be added directly to the batch, in which case a tank is not required. Truck mixers may be required to be provided with a means by which the mixing time can be readily verified by the Engineer.

b. The maximum size of batch in truck mixers shall not exceed the minimum rated capacity of the mixer as stated by the manufacture and stamped in metal on the mixer. Truck mixing shall, unless otherwise directed, be continued for not less than 100 revolutions after all ingredients, including water, are in the drum. The mixing speed shall not be less than 4 rpm, nor more than 6 rpm.

c. Mixing shall begin within 30 minutes after the cement has been added either to the water or aggregate, but when cement is charged into a mixer drum containing water or surface-wet aggregate and when the temperature is above 32 °C, this limit shall be reduced to 15 minutes. The limitation in time between the introduction of the cement to the aggregate and the beginning of the mixing may be waived when, in the judgment of the Engineer, the aggregate is sufficiently free from moisture, so that there will be no harmful effects on the cement.

d. When a truck mixer is used for transportation, the mixing time in stationary mixer may be reduced to 30 seconds and the mixing completed in a truck mixer. The mixing time in truck mixer shall be as specified for truck mixing.

JOINTS

1. No reinforcement, corner protection angles or other fixed metal items shall be run continuously through joints containing expansion-joint filler, through crack-control joints in slabs on grade and vertical surfaces.

2. Preformed Expansion Joint Filler

   a. Joints with Joint Sealant

      At expansion joints in concrete slabs to be exposed, and at other joints indicated to receive joint sealant, preformed expansion-joint filler strips shall be installed at the proper level below the elevation with a slightly tapered, dressed-and-oiled wood strip temporarily secured to the top thereof to form a groove. When surface dry, the groove shall be cleaned of foreign matter, loose particles, and concrete protrusions, then filled flush approximately with joint sealant so as to be slightly concave after drying.

   b. Finish of concrete at joints

      Edges of exposed concrete slabs along expansion joints shall be neatly finished with a slightly rounded edging tool.

   c. Construction Joints

      Unless otherwise specified herein, all construction joints shall be subject to approval of the Engineer. Concrete shall be placed continuously so that the unit will be monolithic in construction. Fresh concrete may be placed against adjoining units, provided the set concrete is sufficiently hard not to be injured thereby. Joints not indicated shall be made and located in a manner not to impair strength and appearance of the structure. Placement of concrete shall be at such rate that the surface of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon. Lifts shall terminate at such levels as are indicated or as to conform to structural requirements as directed. If horizontal construction joints are required, a strip of 25mm square-edged lumber, beveled to facilitate removal shall be tacked to the inside of the forms at the construction joint. Concrete shall be placed to a point 25mm above the underside of the strip. The strip shall be removed one hour after the concrete has been placed. Any irregularities in the joint line shall be leveled off with a wood float, and all laitance removed. Prior to placing additional concrete, horizontal construction joints shall be prepared.

      Construction Joint which is not indicated in the Drawings shall be located as to least affect the strength of the structure. Such locations will be pointed out by the Engineer.

PREPARATION FOR PLACING

Hardened concrete, debris and foreign materials shall be removed from the interior of forms and from inner surfaces of mixing and conveying equipment. Reinforcement shall be secured in position, and shall be inspected, and approved before placing concrete. Runways shall be provided for wheeled concrete-handling equipment. Such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement.

Notice of any concreting operations shall be served to the Engineer at least three (3) days ahead of

each schedule.

PLACING CONCRETE

1. Handling Concrete

Concrete shall be handled from mixers and transported to place for final deposit in a continuous manner, as rapidly as practicable, and without segregation or loss of ingredients until the approved unit of work is completed. Placing will not be permitted when the sun, heat, wind or limitations of facilities furnished by the Contractor prevent proper finishing and curing of the concrete. Concrete shall be placed in the forms, as close as possible in final position, in uniform approximately horizontal layers not over 40cm deep. Forms splashed with concrete and reinforcement splashed with concrete or form coating shall be cleaned in advance of placing subsequent lifts. Concrete shall not be allowed to drop freely more than 1.5m in unexposed work nor more than 1.0 m in exposed work; where greater drops are required, tremie or other approved means shall be employed.

2. Time Interval between Mixing and Placing

Concrete mixed in stationary mixers and transported by non-agitating equipment shall be placed in the forms within 30 minutes from the time ingredients are charged into the mixing drum. Concrete transported in truck mixers or truck agitators shall be delivered to the site of work, discharged in the forms within 45 minutes from the time ingredients are discharged into the mixing drum. Concrete shall be placed in the forms within 15 minutes after discharged from the mixer at the jobsite.

3. Hot Weather Requirements

The temperature of concrete during the period of mixing while in transport and/or during placing shall not be permitted to rise above 36 °C. Any batch of concrete which had reached a temperature greater than 36 °C at any time in the aforesaid period shall not be placed but shall be rejected, and shall not thereafter be used in any part of the permanent works.

a. Control Procedures

Provide water cooler facilities and procedures to control or reduce the temperature of cement, aggregates and mixing handling equipment to such temperature that, at all times during mixing, transporting, handling and placing, the temperature of the concrete shall not be greater than 36 °C.

b. Cold Joints and Shrinkage

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.

c. Supplementary Precautions

When the aforementioned precautions are not sufficient to satisfy the requirements herein above, they shall be supplemented by restricting work during evening or night. Procedure shall conform to American Concrete Institute Standard ACI 305.

4. Conveying Concrete by Chute, Conveyor or Pump

Concrete may be conveyed by chute, conveyor, or pump if approved in writing. In requesting approval, the Contractor shall submit his entire plan of operation from the time of discharge of concrete from the mixer to final placement in the forms, and the steps to be taken to prevent the formation of cold joints in case the transporting of concrete by chute, conveyor or pump is disrupted. Conveyors and pumps shall be capable of expeditiously placing concrete at the rate most advantageous to good workmanship. Approval will not be given for chutes or conveyors requiring changes in the concrete materials or design mix for efficient operation.

a. Chutes and Conveyors

Chutes shall be of steel or steel lined wood, rounded in cross section rigid in construction, and protected from overflow. Conveyors shall be designed and operated and chute sections shall be set, to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients, loss of mortar, or change in slump. The discharged portion of each chute or conveyor shall be provided with a device to prevent segregation. The chute and conveyor shall be thoroughly cleaned before and after each run. Waste material and flushing water shall be discharged outside the forms.

b. Pumps shall be operated and maintained so that a continuous stream of concrete is delivered into the forms without air pockets, segregation or changes in slump. When pumping is completed, concrete remaining in the pipeline shall be ejected and wasted without contamination of concrete already placed. After each operation, equipment shall be thoroughly cleaned and the flushing water shall be splashed outside the forms.

5. Wall and Abutments

No load shall be placed upon finished walls, foundations or abutments until authorized by the Engineer. Minimum time before loading shall be 7 days.

6. Concrete Placing on Wharf

When placing concrete on wharf decks, the Contractor shall:

Ensure that rate of placing is sufficient to complete proposed placing, finishing and curing operations within the scheduled time; that experienced finishing machine operators and concrete finishers are provided to finish the deck; that curing equipment and finishing tools and equipment are at the site of work and in satisfactory condition for use.
Immediately prior to placing, the Contractor shall place scaffolding and wedges and make necessary adjustments. Care shall be taken to ensure that settlement and deflection due to added weight of concrete will be minimal. The Contractor shall provide suitable means to readily permit measurement of settlement deflection as it occurs.

Should any event occur which, in opinion of the Engineer, would prevent the concrete conforming to specified requirements, the Contractor shall discontinue placing of concrete until corrective measures are provided satisfactory to the Engineer. If satisfactory measures are not provided prior to initial set of concrete in affected areas, the Contractor shall discontinue placing concrete and install a bulkhead at a location determined by the Engineer. Concrete in place beyond bulkheads shall be removed. The Contractor shall limit the size of casting to that which can be finished before beginning of initial set.

COMPACTION

1. Immediately after placing, each layer of concrete shall be completed by internal concrete vibrators supplemented by hand-spading, rodding, and tamping. Tapping or other external vibration of forms will not be permitted unless specifically approved by the Engineer. Vibrators shall not be used to transport concrete inside the forms. Internal vibrators submerged in concrete shall maintain a speed of not less than 7,000 impulses per minute. The vibrating equipment shall at all times be adequate in number of units and power to properly consolidate all concrete.

2. Spare units shall be on hand as necessary to insure such adequacy. The duration of vibrating equipment shall be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation. The vibrator shall not be inserted into the lower courses that have begun to set. Vibrator shall be applied vertically at uniformly spaced points not further apart than the visible effectiveness of the machine.

EPOXY BONDING COMPOUND

Before depositing new concrete on or against concrete that has set, the surfaces of the set concrete shall be thoroughly cleaned so as to expose the coarse aggregate and be free of laitance, coatings, foreign matter and loose particles. Forms shall be re-tightened. The cleaned surfaces shall be moistened, but shall be without free water when concrete is placed. ASTM C 881. Provide Type I for bonding hardened concrete to hardened concrete; Type II for bonding freshly mixed concrete to hardened concrete; and Type III as a binder in epoxy mortar or concrete, or for use in bonding skid-resistant materials to hardened concrete. Provide Class B if placement temperature is between 4 to 16 °C; or Class C if placement temperature is above 16°C.

FINISHES OF CONCRETE

Within 12 hours after the forms are removed, surface defects shall be remedied as specified herein. The Temperature of the concrete, ambient air and mortar during remedial work including curing shall be above 10 °C. Fine and loose material shall be removed. Honeycomb, aggregate pockets, voids over 13mm in diameter, and holes left by the rods or bolts shall be cut out to solid concrete, reamed, thoroughly wetted, brush-coated with neat cement grout, and filled with mortar. Mortar shall be a stiff mix of one part Portland cement to not more than 2 parts fine aggregate passing the No. 16 mesh sieve, with a minimum amount of water. The color of the mortar shall match the adjoining concrete color. Mortar shall be thoroughly compacted in place. Holes passing entirely through walls shall be completely filled from the inside face by forcing mortar through the outside face. Holes which do not pass entirely through wall shall be packed full. Patchwork shall be finished flush and in the same plane as adjacent surfaces. Exposed patchwork shall be finished to match adjoining surfaces in texture and color. Patchwork shall be damp-cured for 72 hours. Dusting of finish surfaces with dry material or adding water to concrete surfaces will not be permitted.

CONCRETE FINISHING DETAILS

1. Concrete Paving

   After concrete is placed and consolidated, slabs shall be screeded or struck off. No further finish is required.

2. Smooth Finish

   Required only where specified; screed concrete and float to required level with no course aggregate visible. After surface moisture has disappeared and laitance has been removed,

the surface shall be finished by float and steel trowel. Smooth finish shall consist of thoroughly wetting and then brush coating the surfaces with cement to not more than 2 parts fine aggregate passing the no. 30 mesh sieve and mixed with water to the consistency of thick paint.

3. Broom Finish

Required for paving; the concrete shall be screeded and floated to required finish level with no coarse aggregate visible. After the surface moisture has disappeared and laitance has been removed, surface shall be float-finished to an even, smooth finish. The floated surfaces shall be broomed with a fiber bristle brush in a direction transverse to the direction of the main traffic.

ITEM 09 : PORTLAND CEMENT CONCRETE PAVEMENT

SCOPE OF WORK

The works include the furnishing of all labor, materials and equipment required for the construction of gravel base course and concrete pavement. The works shall be in accordance with the lines and grades shown on the Drawings and in conformity with the Specifications.

MATERIAL REQUIREMENTS

Cement

Portland cement shall conform to the requirements of the Section "Reinforced Concrete".

Fine Aggregate

The fine aggregate shall be well-graded from coarse to fine and shall conform to the requirements of the Section "Reinforced Concrete".

Coarse Aggregate

Coarse aggregate shall conform to the requirements of the Section "Reinforced Concrete".

Water

Clean, fresh, potable water shall be used for the mixing of all concrete and mortar and shall be from a source approved by the Engineer. Sea water or brackish water shall not be used.

Admixture

Admixture shall only be used with the written permission of the Engineer. If air-entraining agents, water reducing agents, set retarders or strength accelerators are permitted to be used, they shall not be used in greater dosages than those recommended by the manufacturer, or as permitted by the Engineer. The cost shall be considered as already in the Contractor's unit cost bid for concrete.

TIE BARS AND SLIP BARS

Tie bars shall be deformed bars conforming to the requirements specified in AASHTO M 31 or M 42, except that rail steel shall not be used for tie bars that are to be bent and re-straightened during construction, sizes as indicated on the Drawings. The deformed bars shall be Grade 40 and shall be shipped in standard bundles, tagged and marked in accordance with the Code of Standard practice of the Concrete Reinforcement Steel Institute.

Slip bars shall be smooth round steel bars conforming to the requirements specified in AASHTO M 31 or plain M 42.

Joint Filler

Poured filler for joint shall conform to the requirements of AASHTO M173.

EXECUTION

Concrete Class

The concrete for pavement shall satisfy the following requirements:

Minimum 28-day comprehensive strength	:	24 MPa
Minimum Flexural Strength	:	3.8 MPa
Maximum Aggregate size	:	25 mm
Maximum water cement ratio	:	0.52

Proportioning, Consistency and Mixing of Concrete

The proportioning, consistency and mixing of concrete shall conform to the requirements of the Section "Reinforced Concrete".

Preparation

The base shall be watered and thoroughly moistened prior to placing of the concrete.

Formwork Construction

Formwork shall comply with the requirements of the Section "Reinforced Concrete". Forms shall be of steel, of an approved section and shall be straight and of a depth equal to thickness of the pavement at the edge. The base of the forms shall be of sufficient width to provide necessary stability in all directions. The flange braces must extend outward on the base not less than 2/3 the height of the form.

All forms shall be rigidly supported on a bed of thoroughly compacted material during the entire operation of placing and finishing the concrete. They shall be set with their faces vertical so as to produce a surface complying with the required tolerance.

Adjacent lanes may be used in lieu of forms for supporting finishing equipment provided that proper protection is afforded to the concrete of the adjacent lanes to prevent damage, and provided further that the surface of the concrete carrying the finishing equipment does not vary by more than 3mm in each meter length. Adjacent lanes in lieu of forms may not be used until the concrete is at least seven (7) days old. Flanged wheels of the finishing equipment shall not be operated on the concrete surface. The inside edge of supporting wheels of the finishing machine shall not operate closer than 100mm from the edge of the concrete lane.

Alternative to placing forms, slip-forming may be used. Slip-form paving equipment shall be equipped with the traveling side forms of sufficient dimensions, shape and strength to support the concrete laterally for a sufficient length of time during placement to produce pavement of the required cross section. No abrupt changes in longitudinal alignment of the pavement will be permitted. The horizontal deviation shall not exceed 20mm from the proper alignment established by the Engineer.

Joints

All joints, longitudinal, transverse, etc., shall be constructed as shown on the Drawings and shall be clean and free of all foreign material after completion of shoulder work prior to acceptance of the work and in accordance with the following provisions:

Longitudinal and Transverse Contact Joints:

Longitudinal contact joints are joints formed between lanes that are poured separately. Transverse contact joints are joints formed between segments of a lane that are poured separately. Transverse contact joints shall be formed perpendicular to pavement centerline at the end of each day of concrete placing, or where concreting has been stopped for 30 minutes or longer but not nearer than 1.5 meters from sawed contraction joints. All contact joints shall have faces perpendicular to the surface of the pavement. Tie bars of the size, length and spacing shown on the Drawings shall be placed across longitudinal and transverse contact joints.

Placing Concrete

The concrete shall be deposited and spread in order that segregation will not occur and place a uniform layer of concrete whose thickness is approximately 20 mm greater than that required for the finished pavement is placed. Rakes shall not be used for handling concrete.

In order to prevent the introduction into the concrete of earth and other foreign materials, the men whose duties require them to work in the concrete, shall in general, confine their movements to the area already covered with fresh concrete. Whenever it becomes necessary for these men to step out of the concrete, their footwear shall be washed or otherwise thoroughly cleaned before returning to the concrete. Repeated carelessness with regard to this detail will be deemed sufficient cause for removing and replacing such worker.

During the operation of striking off the concrete, a uniform ridge of concrete at least 70 mm in height shall be maintained ahead of the strike-off screed for its entire length. Except when making a construction joint, the finishing machine shall at no time be operated beyond that point where this surplus can be maintained in front of the strike-off screed.

After the first operation of the finishing machine, additional concrete shall be added to all low places and honeycombed spots and the concrete rescreeded. In any rescreeding, a uniform head of concrete shall be maintained ahead of the strike-off for its entire length. Honeycombed spots shall not be eliminated by tamping or grouting.

Workers on the job shall have mobile footbridges at their disposal so that they need not walk on the wet concrete.

In conjunction with the placing and spreading, the concrete shall be thoroughly spaded and vibrated along the forms, bulkhead, and joints.

The internal vibrators shall be of pneumatic, gas-driven, or electric type, and shall operate at a frequency of not less than 3,200 pulsations per minute.

Whenever the placing of the concrete is stopped or suspended for any reason, for a period of 30 minutes or longer, a suitable bulkhead shall be placed so as to produce a vertical

transverse joint. If an emergency stop occurs within 2.5 meters of the contraction or an expansion joint the concrete shall be removed back to the joint. When the placing of the concrete is resumed, the bulkhead shall be removed and a new concrete placed and vibrated evenly and solidly against the face of previously deposited concrete. Any concrete in excess of the amount needed to complete a given section or that has been deposited outside the forms shall not be used in the work.

The Contractor shall provide suitable equipment for protecting the fresh concrete in case of rain, such as screens which will cause the rain water to run off beyond the edges of the paving, rain proof tarpaulins or other methods approved by the Engineer. The equipment shall be sufficient to shelter from rain all areas equal to that paved in two hours of work.

Finishing Concrete

The concrete shall be compacted and finished by a mechanical, self-propelled finishing machine of approved type, having two independently operated screeds. If a machine possessing only one screed is approved, the screed will not be less than 450 mm wide and shall be equipped with compensating springs to minimize the effect of the momentum of the screed on the side forms. The number of driving wheels, the weight of the machine and the power of the motor shall be so coordinated as to prevent slippage. The top of the forms and the surface of the finishing machine wheels shall be kept free from concrete or dirt.

The machine shall at all times be in first-class mechanical condition and shall be capable of compacting and finishing the concrete are herein described. Any machine which causes displacement of the side forms from the line or grade to which they have been properly set, or causes undue delay due to mechanical difficulties, shall be removed from the work and replaced by a machine meeting the Specifications.

The finishing machine shall be operated over each section of pavement two or more times and at such intervals as will produce the desired results. Generally, two passes of the finishing machine are considered the maximum desirable.

The concrete shall be vibrated, compacted, and finished by a vibratory finishing machine. The vibratory machine shall meet the requirements for ordinary finishing, and shall be one of the following type:

1. The machine shall have two independently operated screeds; the front screed shall be equipped with vibratory units with a frequency of not less than 3,500 pulsations per minute. There shall be not less than one vibratory unit for each 2.5 meters length or portion thereof, of vibratory screed surface. The front screed shall not be less than 300mm wide and shall be equipped with a "bull nose" front edge built on a radius of not less than 50mm. This type of vibratory finishing machine shall be operated in such manner that each section of pavement will receive at least one vibratory pass, but not more than two passes, unless otherwise directed, or ;

2. The machine shall be equipped with an independently operated vibratory "pan" (or pans) and two (2) independently operated screeds, the "pan" shall be mounted in a manner that will permit it to come in contact with the forms and will permit vibration of the full width of lane simultaneously.

   There shall be not less than one vibratory unit for each 2 m. length or portion thereof, of vibrating pan surface. The vibratory units in any individual pan shall be synchronized and have a frequency of not less than 3,500 pulsations per minute. The front screed shall be capable of operating in a position that will strike off the concrete

at a sufficient height above the top of the forms to allow for proper compaction with the vibrating pan. This type of vibratory finishing machine shall be operated in such manner than each section of pavement will receive at least one vibratory pass but not more than two passes, unless otherwise directed.

After the final pass of the finishing machine and when the concrete has started to dry, the surface of the pavement shall be finished with an approved longitudinal float. The float may be operated either manually or by mechanical means. The float may be either of wood or metal shall be straight and smooth and light in weight so as not to displace or sink into the concrete surface.

To be effective, the float shall be at least 300mm wide and 3m long. When manually operated, the float shall be moved from edge to edge with a wiping motion and advance one (1) meter or more.

The succeeding trip shall overlap the previous trip. A light smoothing lute at least 3 meters long may be used provided approved by the Engineer.

The surface of the pavement shall be tested by the Contractor, before the final belting, with an approved standard straightedge 3 meter in length. Irregularities so detected shall be corrected immediately. Special attention shall be given to the concrete adjacent to transverse joints to insure that the edges thereof are not above the grade specified or the adjacent concrete below grade. All depressions or projections shall be corrected before any initial set has developed in the concrete.

After the concrete has been brought to the required grade, contour and smoothness, it shall be finished by passing over the concrete a drag of one or two burlap clothes, which give the surface the required roughness. The vehicles used to carry these cloths may be independent of the concrete-laying machine or may be incorporated with it and may be operated either by hand or mechanically.

Hand finishing will be permitted only on variable width sections of the pavement and other places where the use of the finishing machine would be impractical. Hand finishing shall be accomplished by means of the hand-operated strike-off template of either steel or steel-shod wood construction. The striking template shall be operated forward with a combined longitudinal and transverse motion and shall be so manipulated that neither end will be raised off the side forms. A similar tamper shall be used for tamping the concrete.

As soon as the concrete has attained its initial set, the edges of the pavement, the longitudinal joints, the construction dummy and expansion joints not sawn shall be carefully finished with an edging tool having radius of at least 5mm. The tools, the special accessories for cutting impressed joints and methods of workmanship shall be such as will produce a joint whose edges are of the same quality of concrete as the other portion of the pavement. Methods and workmanship which make use of excess mortar or grout in this area shall be eliminated. Unnecessary tool marks shall be eliminated during work, and the edges left smooth and true to line.

Striking Forms

Forms shall remain in place at least 12 hours after the concrete has been placed. When working conditions are such that the early strength gain of the concrete is delayed, the forms shall remain in place for a longer period, as directed by the Engineer. Bars or heavy load shall not be used against the concrete when still in the forms. Any damage to concrete

resulting from form removal shall be repaired promptly by the Contractor as directed by the Engineer without any additional payment to the Contractor.

Curing Concrete

Unless otherwise ordered by the Engineer, curing of concrete shall be done by any method specified in the Section "Reinforced Concrete".

Cleaning and Sealing Joints

After completion of the required curing and before opening of the pavement to traffic, all joints shall be thoroughly cleaned of all concrete aggregate fragments or other materials.

After removal of side forms, the ends at transverse expansion joints at the edges of the pavement shall be carefully cleaned of any concrete within the expansion spaces for the entire depth of slab, care being taken not to injure the ends of the joints. Expansion and contraction joints shall then be poured with a hot joint sealer to the depth as indicated on the Drawings. Joint sealer shall be poured using approved hand pouring pots, with liquid at a temperature not less than that recommended by the approved manufacturer.

Opening to Traffic

The pavement shall be closed to traffic, including the vehicles of the Contractor, for a period of 10 days after the concrete is placed or longer if in the opinion of the Engineer, the weather conditions make it necessary to extend this time. The Contractor shall furnish, place and maintain satisfactory barricades and lights as directed, to exclude all traffic from the pavement.

Any damage to the pavement due to traffic shall be repaired or replaced at the expense of the Contractor. Paving mixers, mechanical concrete spreaders and finishers and other heavy paving equipment shall not be operated on completed concrete lanes in order to construct alternate lanes until after the regular curing period is completed. Even then, planks shall be laid on the finished pavement or other precautions taken to prevent damage to the concrete pavement.

Pavement Smoothness, Thickness and Tolerance

Portland cement concrete pavement shall be constructed to the designed level and transverse slope shown on the Drawing. The allowable tolerance shall be as listed hereunder:

1.	Permitted variation from design thickness of layer	+ - 5mm
2.	Permitted variation from design level of surface	+ - 5mm

The thickness of the pavement will be determined by measurement of cores from the completed pavement in accordance with AASHTO T 148.

The completed pavement shall be accepted on a lot basis. A lot shall be considered as 2,500 sq.m of pavement. The last unit in each slab constitutes a lot in itself when its length is

at least ½ of the normal lot length. If the length of the last unit is shorter than ½ of the normal lot length, it shall be included in the previous lot.

Other areas such as intersections, entrances, crossovers, ramp, etc., will be grouped together to form a lot. Small irregular areas may be included with other unit areas to form a lot.

ITEM 10: FINISHES

GENERAL

General Requirements contain provisions and requirements essential to these Specifications; and apply to this section, whether or not referred to herein.

SCOPE OF WORK

The work covered by this section consists of furnishing all labor, materials, equipment, tools and incidentals necessary to undertake, complete all finishing works as indicated on the drawings and as specified herein.

Wall, floor, ceiling and other finishing works shall include but are not limited to the following:

MATERIAL REQUIREMENTS

WALLS

Exterior

a. Plain cement finished painted with acrylic latex paint.
Location as shown in the plans and elevations.

b. Wall cladding as shown in the plans and elevations.

Interior

a. Plain cement finished painted with elastomeric paint.
Location as shown in the plans and elevations.

b. Tiles

Location: T&B at Port Police Office and Quarters
Size: 300mm x 600mm Porcelain Tiles
Finish: White, glazed
Installation: Straight match
Specific Room/Area:
a. A.1 – T&B at Port Police Office
b. A.2 – T&B at Port Police Quarters

Location: T&B at Port Police Office
Size: 300mm x 600mm Ceramic Tiles
Finish: Mosaic pattern, glazed
Installation: Straight match

Specific Room/Area:

a. A.1 – T&B at Port Police Office

Location: Kitchenette at Port Police Office and Quarters

Size: 300mm x 600mm Ceramic Tiles

Finish: Chevron pattern, glazed

Installation: Straight match

Specific Room/Area:

a. A.1 – Backsplash of Kitchenette at Port Police Office and Quarters

PLAIN CEMENT FINISH

Surface Preparation

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

Plaster shall not be applied directly to concrete and masonry surfaces coated with bituminous compounds and surfaces previously painted or plastered.

All surfaces shall be thoroughly wetted before plastering.

Trial Mix

A trial mix of at least three (3) different water-cement ratios for a proposed mix shall be prepared under full scale conditions and adequate workability. The proportions by weight of cement to the weight of sand shall not be less than one part of Portland cement to two parts of sand.

The proportion of cement-sand and water necessary to produce the cement plaster of the required consistency shall be subject to the approval of the Engineer. Such approval may be withdrawn at any time and a change in proportions may be required. Based on the approved mix proportions, the Contractor shall prepare a list showing the number of kilograms of the various materials to be used in the cement plaster finish mix.

No cement plaster finish shall be started without an approved trial mix by the Engineer.

Cement Finish Application

A brown coat with sufficient pressure shall be applied to fill the gaps, and to secure a good bond. Moistened for 48 hours, each coat of cement plaster shall be kept after application and allow to dry.

A finish coat shall be applied after the brown coat has set. The brown coat shall be moistened before application of the finish coat. Finish coat shall be floated to plumb, even planes and surfaces.

Final plaster finishes shall be rubber sponged.

Tolerance

The Contractor shall finish plaster work plumb, level, square and true within tolerance of 3mm in 3 meters, without cracks and other imperfections.

Patching and Cleaning

Upon completion of the building, and when directed, all loose, cracked, damaged or defective plastering shall be cut out and re-plastered in a satisfactory and approved manner.

PAINTING WORKS

Surface Preparation

Allow new masonry to dry for 14 days (for exterior surfaces) to 28 days (for interior surfaces) under normal conditions before painting. Surface to be painted should be clean and dry, free from oil, grease, dirt, dust, contaminants, and all loose grit and mortar. For existing masonry, remove all loose, scaling, flaking and peeling off paint by wire brushing, scraping, or rough sanding.

Paint Application

New Concrete Walls:

1st Coat: Solvent-Based Acrylic Primer or Masonry Neutralizer
Then Putty for minor surface imperfections

2nd and 3rd Coat: Acrylic-Latex Paint

Concrete Walls for Repainting:

1st Coat: Prime bare substrate with Flat Latex Paint

Then Putty for minor surface imperfections

2nd and 3rd Coat: Acrylic-Latex Paint

Plywood:

1st Coat: Prime bare substrate with Flatwall Enamel
Then Putty for minor surface imperfections

2nd and 3rd Coat: Quick Drying Enamel

WALL TILES

a. Wall tiles shall be glazed porcelain or ceramic tiles as shown on plans and elevations. Design and finish as per Architect's approval.

b. Trimmers and moldings shall be lustrous, glazed with size and color corresponding to wall tiles.

c. Portland cement, sand, bonding compound, lime and water shall conform to the requirements.

FLOORS

Location: Port Police Building, Guard Outpost of Port Police, and Guard Outpost at Breakwater
Size: 600mm x 600mm Porcelain Tiles
Finish: White with marble veins pattern, glazed
Installation: Straight match
Specific Room/Area:

a. A.1 – Port Police Building General Areas except Entry/Exit Porches
b. A.2 – Guard Outpost of Port Police
c. A.3 – Guard Outpost at Breakwater

Location: Port Police Building and Guard Outpost of Port Police
Size: 600mm x 600mm Ceramic Tiles
Finish: Beige, Non-skid/Matte
Installation: Straight match

Specific Room/Area:

a. A.1 – Port Police Building Entry/Exit Porches
b. A.2 – Guard Outpost Entry Porch

Location: Port Police Building
Size: 600mm x 600mm Porcelain Tiles
Finish: Grey with concrete look, Non-skid/Matte
Installation: Straight match
Specific Room/Area:

a. A.1 – T&B at Port Police Office
b. A.2 – T&B at Port Police Quarters

Waterproof Finish for all Toilets

a. Floor tiles shall be color varies and as shown on the drawings or to be designated by the Architect.

b. Portland Cement, sand, water and adhesive shall conform with the requirements.

c. Floor tiles shall be delivered in the manufacturer's original unbroken packages or containers that are labeled plainly with the manufacturer's name and brand. Containers shall be grade scaled. Materials shall be stored in dry weathertight enclosures and shall be handled in a manner that will prevent the inclusion of foreign materials and damage by water or dampness.

EXECUTION

FLOOR TILES

a. Mortar Preparation

Mortar mix proportion and preparation shall be in accordance with the requirements.

b. Surface Preparation

Surfaces to receive the tiles shall be clean, free of dust, dirt, oil, grease, and other deleterious substances. Floor tile operations in spaces receiving wall tile shall not be started until wall tile installation has been completed. Before tile is

applied with a dry set mortar bed, the structural floor shall be tested for levelness or uniformity of slope by flooding it with water. Areas where the water ponds shall be filled and leveled with mortar and shall be retested before the setting bed is applied.

c. Placing of Setting Beds and Floor Tile

Mortar setting beds shall have a minimum thickness of 20mm for floors. The structural concrete slab shall be soaked thoroughly with clean fresh water on the day before the setting bed is to be applied. Immediately preceding the application of the setting bed, the structural slab shall again be wetted thoroughly, but no free water shall be permitted to remain on the surface.

A skim coat of neat Portland cement mortar shall then be applied not more than 4mm thick. The mortar shall be spread until its surface is true and even and thoroughly compacted, either level or sloped uniformly for drainage, as the case requires. A setting bed, as large as can be covered with tile before the mortar has reached its initial set, shall be placed on one operation; but in the event that more setting mortar has been placed than can be covered, the unfinished portion shall be removed and cut back to a clean beveled edge.

All mounted tiles shall be soaked in clean water a minimum of one hour before they are set. Absorptive mounted tile shall be dampened by placing sheets on a wet cloth in a shallow pan before setting. No free water shall remain on the tiles at the time of setting. Before the initial set has taken place in the setting bed, a skim coat of neat Portland cement mortar, 0.7mm to 1.6mm thick, shall be trowelled or brushed over the setting bed and/or the back of the tile, or a thin layer of Portland cement, 0.79mm to 2mm thick, may be hand-dusted uniformly over the setting bed and worked lightly with a trowel or brush until thoroughly damp.

The tiles shall then be pressed firmly upon the setting bed and beaten into the mortar until true and even with the plane of the finished floor line. Beating and leveling shall be completed within one hour after placing tiles or sheets. Borders and defined lines shall be laid before the field or body of the floor. Where floor drains are provided, the floors shall be sloped to drain properly to the drains. Intersections and returns shall be formed accurately.

Cutting of tile, where necessary, shall be done along the outer edges of the floor. As far as practicable, no tiles of less than half size shall be used. Cutting

and drilling of tiles shall be done neatly without marring the tile surfaces. The cut edges of tile against trim, bases, thresholds, pipes, built-in fixtures, and similar surfaces shall be ground and jointed carefully. Tile shall fit closely and neatly at all plumbing fixtures and around electrical outlets, pipes and fittings so that cover plates or escutcheons will overlap the tiles properly. Tiles shall be secured firmly in place and loose tiles or tiles sounding hollow shall be removed and replaced. All lines shall be kept straight, parallel, and true, and all finished surfaces brought to true and even planes. The inner edges of borders shall be kept straight and, where practicable, shall form right angles at all returns. The paper and glue shall be removed from the mounted tile, without using excess water, within one hour after installing the tiles.

Joints shall be parallel and uniform in width, plumb, level and in alignment. End joints in broken-joint work shall be made as far as practicable, on the center lines of adjoining tiles. Except in special arrangement and design, as indicated or specified, square tiles shall be set with straight joints, and oblong tiles shall be set with broken joints.

Joint widths shall be uniform and spaced to accommodate the tile in the given spaces with a minimum of cutting. Tiles shall be wetted, if they have become dry, before applying grout. Joints 3.2 mm or less in width shall be grouted with a neat Portland cement grout of the consistency of thick cream. Other joints shall be pointed with mortar consisting of one part Portland cement and two parts pointing sand.

The grout or mortar for joints on floors shall be white Portland cement or as specified by the Engineer. Grout painting mortar shall be forced into joints by using trowel, brush or finger application. Before the grout or mortar sets, the joints of cushion edge tile shall be struck or tooled to the depth of the cushion, filling all skips or gaps, and the joints of square edged tiles shall be filled completely flush with their surface. Dark cement shall not be seen through grouted white joints.

All surplus mortar or grout shall be removed before it has set or hardened.

d. Cleaning and Curing

Floors shall be covered with waterproofed paper with all joints lapped at least 96 mm and allowed to damp cure for at least 72 hours before foot traffic is permitted thereon.

All completed tile work shall be thoroughly sponged and washed diagonally across joints, and finally polished with clean, dry cloth. Acid cleaning of unglazed

tile, when necessary, shall not be done within ten days after setting the tile. All metal shall be covered with approved grease and the tile shall be wetted with clean water, before tile is cleaned with 10% muriatic acid solution. After acid cleaning, the tile shall be flushed with clean water, and the grease coating on metal shall be removed.

Finished tile floors shall be covered with clean building paper before foot traffic is permitted on them. Board walkways shall be placed on floors that are to be continuously used as passage ways by workmen. Thresholds shall be covered with boards. Tiles vertical outside corners (external angles) shall be protected with board corners strips in areas used as passage by workmen.

CEILING

INTERIOR

Location: Port Police Building, Guard Outpost of Port Police, Carport, and Guard Outpost at Breakwater

Specifications:

a. C.1 – 12mm thk. Gypsum Board painted and fastened on 0.40MM thk. galvazined steel ceiling suspension system at 0.40m O.C (furring), 0.60m O.C. (carrying channel) and 1.20m O.C. Bothways (suspension rod).

PAINTING WORKS

Surface Preparation

Allow new masonry to dry for 14 days (for exterior surfaces) to 28 days (for interior surfaces) under normal conditions before painting. Surface to be painted should be clean and dry, free from oil, grease, dirt, dust, contaminants, and all loose grit and mortar. For existing masonry, remove all loose, scaling, flaking and peeling off paint by wire brushing, scraping, or rough sanding.

Paint Application

1st Coat: Prime bare substrate with Flatwall Enamel
Then Putty for minor surface imperfections

2nd and 3rd Coat: Flat Acrylic Latex Paint

Submittal

a. Shop drawings for all finishing and painting works for the building shall be

submitted in advance to allow twenty-eight days for 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.

b. The Contractor, before placing an 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.

c. Samples of all wall finishes, measuring not less than 1000mm x 1000mm shall be submitted to the Engineer for approval as to its finish texture and workmanship.

COUNTERTOP TILES

Location: Kitchenette at Port Police Office and Quarters
Size: 20mm thk. Granite slab
Finish: Jet/ Mongolian Black, Polished
Profile: Eased edge
Specific Room/Area:
a. A.1 – Kitchenette at Port Police Office
b. A.2 – Kitchenette at Port Police Quarters

INSTALLATION OF DOORS

Surface Preparation

Ensure surfaces to receive panels are structurally sound, even, smooth, clean, dry, and free from defects detrimental to work.

DOORS

Location: Port Police Building

D – 1a: Removal and replacement of door handles. Use SUS 316 Left-handed Lever Door handles and hardware.

D – 1b: Removal and replacement of door handles. Use SUS 316 Right-handed Lever Door handles and hardware.

D – 2a: Solid Panel Door w/ 10mm groove and complete accessories (1.00m x 2.15m – including door jamb). Stainless steel keyed

entry left-handed lever-type door lockset.

D – 2b: Solid Panel Door w/ 10mm groove and complete accessories (1.00m x 2.15m – including door jamb). Stainless steel keyed entry right-handed lever-type door lockset.

D – 3a: Solid Panel Door w/ 10mm groove and complete accessories (0.90m x 2.15m – including door jamb). Stainless steel keyed entry right-handed lever-type door lockset.

D – 3b: Solid Panel Door w/ 10mm groove and complete accessories (0.90m x 2.15m – including door jamb). Stainless steel keyed entry left-handed lever-type door lockset.

D – 4: Plain white wood plastic composite door (WPC) with complete accessories (0.70m x 2.15m – including door jamb). Stainless steel keyed entry left-handed lever-type door lockset.

Location: Guard Outpost of Port Police

D – 1: Solid Panel Door w/ 10mm groove and complete accessories (1.00m x 2.15m – including door jamb). Stainless steel keyed entry right-handed lever-type door lockset.

Location: Guard Outpost at Breakwater

D – 1: Flush-type Door w/ 6mm marine plywood door face (0.90m x 2.15m – including door jamb). Stainless steel keyed entry right-handed lever-type door lockset.

Detailed door dimensions are shown in Door Schedule.

INSTALLATION OF WINDOWS

Surface Preparation

Ensure surfaces to receive panels are structurally sound, even, smooth, clean, dry, and free from defects detrimental to work.

WINDOWS

Location: Port Police Building

W – 1: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 1.60m), with sliding metal storm shutter as shown on schedule

W – 2a/b/c: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 1.00m), with sliding metal storm shutter as shown on schedule

W – 3: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 0.40m), with sliding metal storm shutter as shown on schedule

W – 4a/b: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 0.60m), with sliding metal storm shutter as shown on schedule

W – 5a/b: White uPVC Framed Awning-type Window with 8mm laminated glass (0.60m x 0.40m), with sliding metal storm shutter as shown on schedule

W – 6a/b: White uPVC Framed Awning-type Window with 8mm laminated glass (0.60m x 0.60m), with sliding metal storm shutter as shown on schedule

Location: Guard Outpost of Port Police

W – 1: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 1.00m), with sliding metal storm shutter as shown on schedule

W – 2: White uPVC Framed Awning-type Window with 8mm laminated glass (1.20m x 0.40m), with sliding metal storm shutter as shown on schedule

Location: Guard Outpost at Breakwater

W – 1: 1.5mm thk. powder-coated aluminum framed Awning-type Window with 8mm laminated glass (1.25m x 1.50m).

W – 2: 1.5mm thk. powder-coated aluminum framed Awning-type Window with 8mm laminated glass (1.25m x 0.50m).

Detailed window dimensions are shown in Window Schedule.

MIRROR GLASS

Mirror glass shall be of high-quality float glass free from imperfections and impurities, 6.3 mm (1/4 inch) thick. Silvering shall be performed by modern continuous operation under controlled conditions. The coating shall be of pure silver and of adequate thickness to provide reflectivity of 83% or more of incident light and shall be without pinholes or other defects visible to the naked eye.

Refer to plans for locations, dimensions and details.

ITEM 11 : PROJECT BILLBOARD

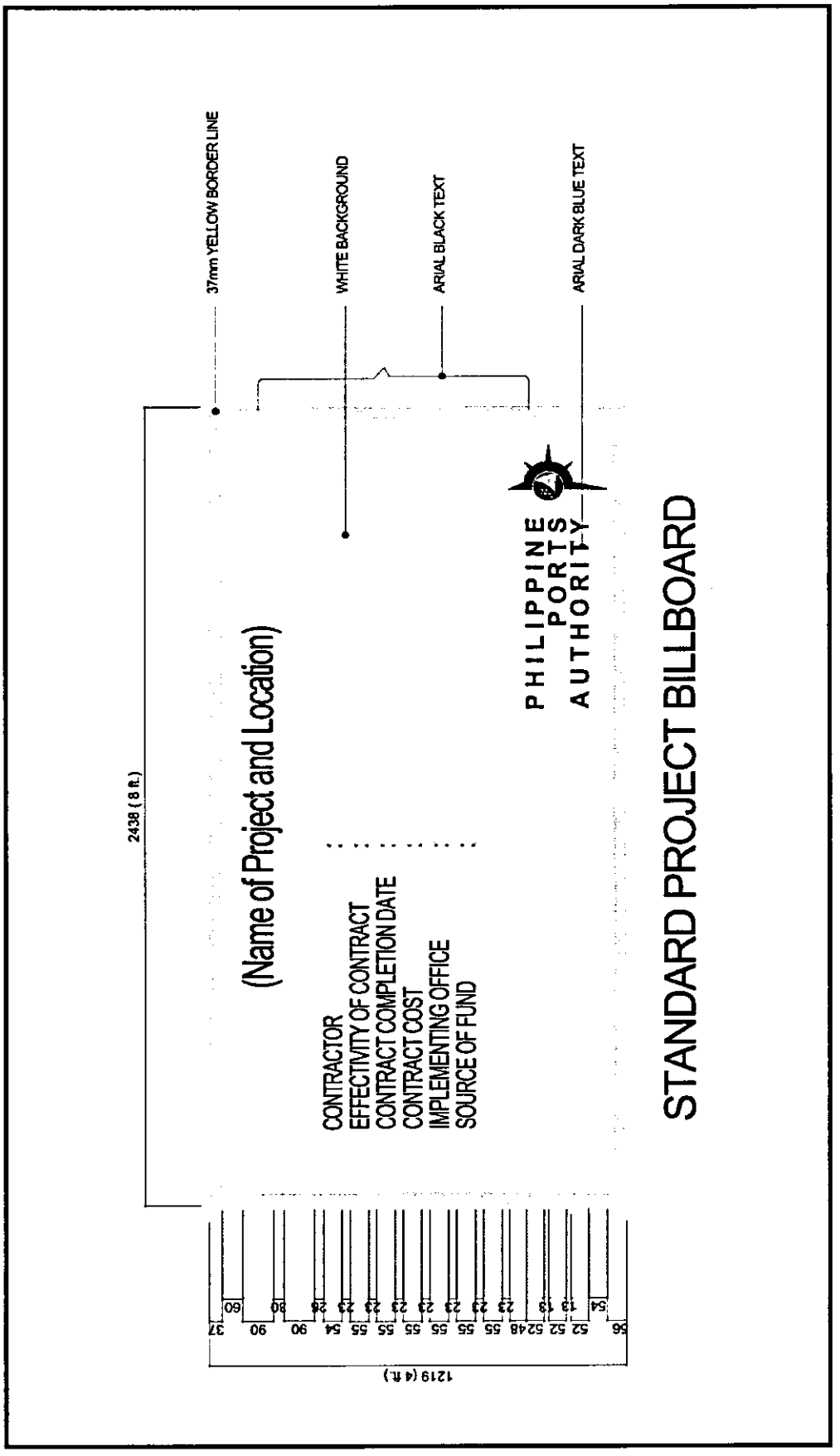
SPECIFICATION

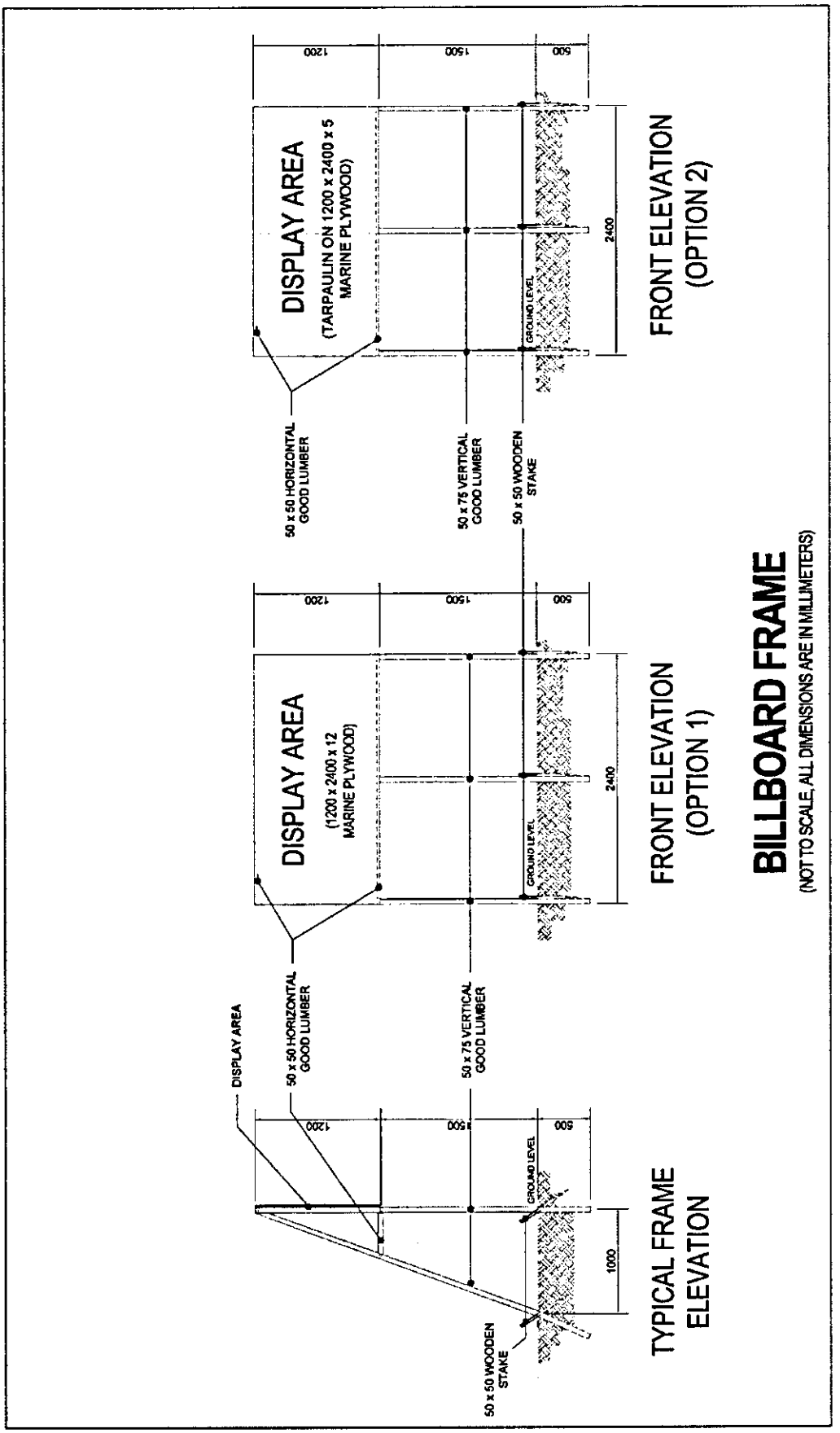
The Project Billboard shall be installed at location(s) designated by the Engineer.

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

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

See attached drawings for further details of the standard billboard.


37mm YELLOW BORDER LINE
WHITE BACKGROUND
ARIAL BLACK TEXT
ARIAL DARK BLUE TEXT
STANDARD PROJECT BILLBOARD
PHILIPPINE PORTS AUTHORITY
(Name of Project and Location)
CONTRACTOR
EFFECTIVITY OF CONTRACT
CONTRACT COMPLETION DATE
CONTRACT COST
IMPLEMENTING OFFICE
SOURCE OF FUND
2438 (8 ft.)
1219 (4 ft.)


BILLBOARD FRAME
(NOT TO SCALE, ALL DIMENSIONS ARE IN MILLIMETERS)
FRONT ELEVATION
(OPTION 2)
DISPLAY AREA
(TARPAULIN ON 1200 x 2400 x 5
MARINE PLYWOOD)
50 x 50 HORIZONTAL
GOOD LUMBER
50 x 75 VERTICAL
GOOD LUMBER
50 x 50 WOODEN
STAKE
GROUND LEVEL
2400
1200
1500
500
FRONT ELEVATION
(OPTION 1)
DISPLAY AREA
(1200 x 2400 x 12
MARINE PLYWOOD)
TYPICAL FRAME
ELEVATION
DISPLAY AREA
1000

ITEM 12 : SIGNAGES AND LOGO

SCOPE OF WORK

Furnish materials and perform labor to include miscellaneous works required for the installation of room identification for the toilets and port office.

SAMPLE AND SHOP DRAWINGS

The Contractor shall submit samples for approval by the Architect. Notify the Architect for any changes, clarifications and discrepancies.
For the room I.D. full size lettering layout and installation method shall be submitted to the Architect for approval before start of work.

MATERIAL REQUIREMENTS

1. PPA LOGO

    - SUS 316 Hot dipped built up stainless steel letters 1.2 mm thick screwed at the back.
    - SUS 316 Stainless steel built-up logo 1.2mm thick, 5cm siding Polyurethane painted screwed at the back.

EXECUTION

WORKMANSHIP

Workmanship shall be executed in high quality comparable with artworks.

MOUNTING

For all mounted assemblies, appropriate mounting hardware and connectors which are concealed shall be sufficiently used.

Assemblies shall be mounted plumb, straight, level, and at prescribed heights.

INSTALLATION

Installation shall be done in a secure and permanent manner at prescribed heights and/or layout. The backwall shall not be mutilated. After the dowels are positioned, fill with expanding grout, or other approved fillers, and retouch, flashed to the backwall surface.

ITEM 13 : SAFETY SIGNAGES AND BARRICADES

DESCRIPTION

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

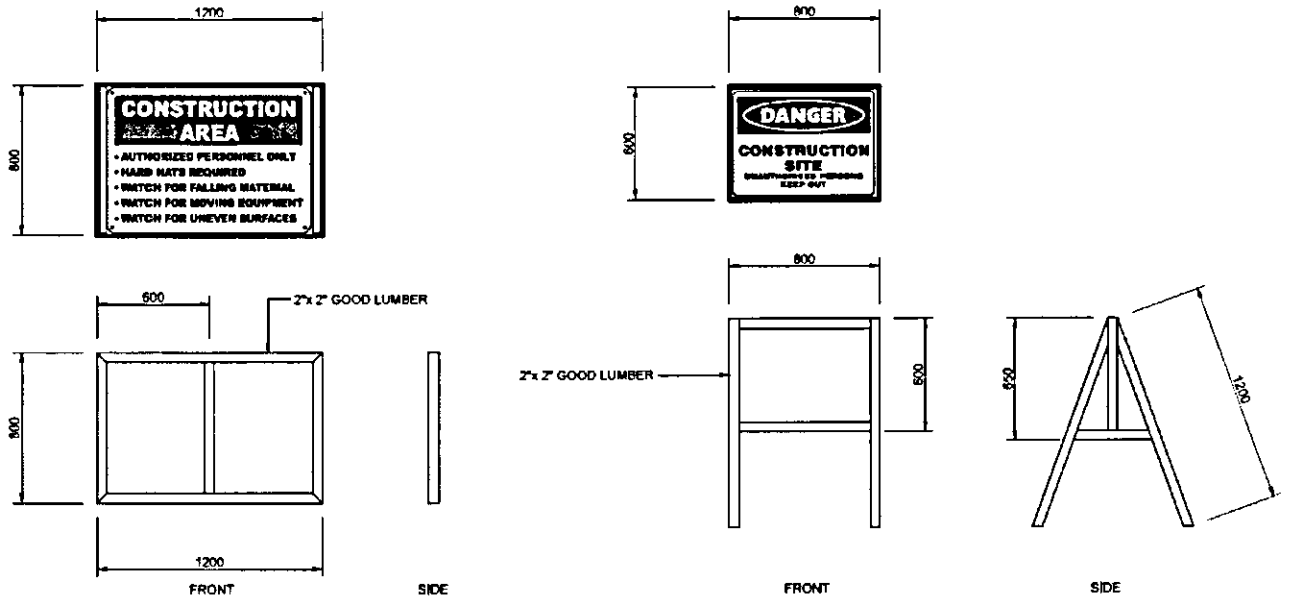
SPECIFICATION

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

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

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

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



STANDARD PLAN FOR SIGNAGES AND BARRICADES

ITEM 14 : MOORING AND FENDERING SYSTEM

SCOPE OF WORK

1. The work includes furnishing of all labor, materials and equipment to complete the installation of mooring bollards and fenders in piers/wharves.

2. The work shall indude the supply, transport, handling, storage and installation of fenders systems in the newly constructed piers.

3. The Contractor shall furnish and install the necessary fittings as shown on the drawings and/or specified.

Supplementary parts necessary to complete and install each Item of wor1<s shall be included whether or not shown or specified. The Contractor shall furnish to relevant trades all anchors, fastenings, inserts, fittings, fixtures or the like to be installed on or required for securing the works.

The Contractor shall submit shop drawings of all fitting works prior to placing orders and commencement of any fabrication.

MATERIAL REQUIREMENTS

MOORING SYSTEM

Designated load capacity of mooring bollards shall be as shown in the drawings, and shall be referred to as the maximum load capacity. The mooring bollards shall be at rupture stage upon reaching the maximum load capacity.

Mooring bollards shall be of the dimensions, weights, capacities and designs as shown in the drawings and shall be fabricated by approved manufacturer with cast steel conforming to the requirements indicated in the plan/drawings, or approved equivalent.

The size of the bolts, nuts and washers shall be in accordance with the specifications provided in the plans/drawings. The anchor plate shall be connected to the holding down bolt as shown in the plans/drawings. All bolts, nuts, washers etc., that are exposed shall be hot-dip galvanized.

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

The upper part of bollards and base plates which are not embedded in concrete shall be painted. The surface of bollards shall be cleaned thoroughly by wire brush or other means prior to painting to remove rust or any other contamination which may interfere with bond of paint to metal.

The exposed surface shall be coated with rust proof paint and finishing paint, which shall be coal-tar epoxy of 120m micron thickness in accordance with JIS K5623 or the approved standard.

Base Steel:

Chemical composition and mechanical properties of base metal to be used for fabrication of mooring bollard and Its accessories shall comply with ASTM A36 and other required standard stated therein.

Concrete Foundation:

Concrete foundation for mooring bollards shall conform to the requirements of the Section concerning "Reinforced Concrete·.

Visual Inspection:

All mooring bollards delivered to Site shall be inspected by the Engineer for any signs of flaws or 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.

FENDER SYSTEM

The rubber fenders should comply with the performance requirements specified in the table provided on the plan/drawings of Rubber Dock Fenders (RDF).

PHYSICAL PROPERTIES OF MATERIALS

The rubber for the fenders shall be of high quality natural rubber, synthetic rubber or mixed rubber blended with carbon black used in the rubber industry and shall have sufficient resilience and anti-ageing, weathering, abrasion, wear and oil resistant properties. The rubber dock fenders shall be free from bubbles, cracks and other harmful defects.

The physical properties of the rubber compound used for the fenders shall comply with the following requirements:

Physical Properties and Test Method

Test Item			Properties	Test Method	
Physical Test	Before Aging	Tensile Strength	160kg/sq.m minimum	Test piece: Dumbell No. 3	ASTMD412
		Elongation	350% minimum		ASTM D1456
		Hardness	76Hs maximum	Spring Type hardness test (Type A)	ASTM 02240
	After Aging	Tensile Strength	Not less than 80% of original value	Aging by air heating: 70±1•c x 96 hours.	ASTMD412
		Elongation			ASTM D1456
		Hardness	Not more than original value+8°		ASTM D2240
	Compression Test		30%maximum	Heat treatment 70±1°C x 22 hours.	ASTM D395

Note: Equivalent Standards are acceptable.

FITTINGS AND ANCHORAGE

Anchor bolts and connecting hardware shall be fabricated using type of steel specified and lo the required shapes and sizes shown on the approved plan/drawings.

TESTING, SAMPLING, INSPECTION, ACCEPTANCE, MARKING AND PACKAGING

Testing

Alt rubber dock fenders shall be tested for performance. It shall pass the required energy absorption and reaction force at a certain deflection as indicated in the plan.

The Contractor shall be required to submit test certificates showing compliance to the above requirements. The test certificates shall be certified by an independent testing institute / organization recognized by the Authority

The standard performance testing methodology shall be Method B, to wit:

1. Fender temperature shall be stabilized at 23 degrees plus or minus 5 degrees centigrade for at least 24 hours before compression testing.

2. Break-in of lender by deflecting 3 times to rated deflection.

3. Removed load from the RDF and allow recovering for a minimum of 1 hour.

4. Deflect RDF at speed of 2-8 cm/min once to rated deflection.

The testing apparatus shall be calibrated and certified within plus or minus 1% in accordance with ISO or equivalent JIS or ASTM requirements. Calibration shall be traceable to a national/international standard and shall be performed annually by an accredited third party organization. The RDF performance testing center shall be subjected to accreditation by PPA and notation and /or certification by DPWH-BRS prior to acceptance.

Inspection

All lenders of each type shall be inspected for compliance to specified dimensions and all fenders shall be inspected by the Engineer for any sign of flaw or defect inimica1 to its use.

All anchor bolts and fillings shall be inspected. The material used for the fabrication of bolts and fillings shall be covered by the manufacture s certified mill certificate and shall be verified by the Authority.

All RDF items/units shall be clearly numbered and marked indicated the following:

Acceptance Tolerance

The acceptance tolerance shall be based on the following:

1. Fender Dimension

Length	:	-2% to +4%
Width	:	-2% to +4%
Height	:	-2% to +4%
Thickness	:	-2% to +8%

2. Anchor Bolt Holes in Fender

Diameter of the Hole	:	+2.0mm
Pitch of the Hole	:	+4.0mm

3. Acceptance tolerance for all fenders supplied shall be as follows:

E = Energy absorption, E ≥ Specified E but not less than 10% of the specified E

R = Reaction force, R ≤ Specified R but not more than 10% of the specified R

Marking

All fender units shall be clearly numbered and marked. Each fender shall have the following markings.

1. Fender type and manufacturer's name or trade mark

2. Production serial number

3. Date of manufacture or ns abbreviation

4. Main dimensions

5. Project identification as follows:

Name of Port/Project: _____

Year supplied _____

Packaging

The fenders shall be packaged on wooden crate or wrapped individually with Polypropylene sheets except when shipped containerized. The bolts and fittings should be placed in crates and suitably treated for protection when transported by sea and stored in port areas.

EXECUTION

MOORING/ FENDERING SYSTEM

All units shall be installed at the locations shown on the drawings and as directed by the Engineer.

SECTION VII

DRAWINGS
(APPROVED PLANS)

SECTION VII

DRAWINGS AND APPROVED PLANS

(SEE ISSUED APPROVED PLANS)

LIST OF DRAWINGS:

1A of 68 - General Plan, Vicinity Map

1B of 68 - General Plan, Scope of Work of Baseport

2 of 68 - General Plan of Breakwater no. 2

3 of 68 - Plan of PCCP, Fence and Gate of Breakwater No. 2

4 of 68 - Section of Proposed Structure (Station 0+00 and 0+60) of Breakwater No. 2

5 of 68 - Section of Proposed Structure (Station 0+103.60 and 0+123.60) of Breakwater No. 2

6 of 68 - Section of Proposed Structure (Station 0+143.60 and 0+158.60) of Breakwater No. 2

7 of 68 - Section of Proposed Structure (Station 0+169.70 and 0+180.40) of Breakwater No. 2

8 of 68 - Section of Proposed Structure (Station 0+200), Section of Concrete Overlay, and Detailed Sections of Breakwater No. 2

9 of 68 - Detailed Sections of Deflector Wall, Concrete Toe, Pavement Joint, R.C. Curb, Drainage Canal, and Manhole Cover

10 of 68 - Elevation of Perimeter Fence, Column/Footing and Wall Footing Details

11 of 68 - Fence and Gate Plan, Detailed Elevation of Gate, Column/Footing and Wall Footing Details

12 of 68 - General Plan of Guard Outpost at Breakwater No. 2

13 of 68 - Floor Plan, Reflected Ceiling Plan, and Roof Plan of Guard Outpost at Breakwater No. 2

14 of 68 - Front Elevation, Right Side Elevation, Left Side Elevation, Rear Elevation, and

Schedule of Doors and Windows of Guard Outpost at Breakwater No. 2

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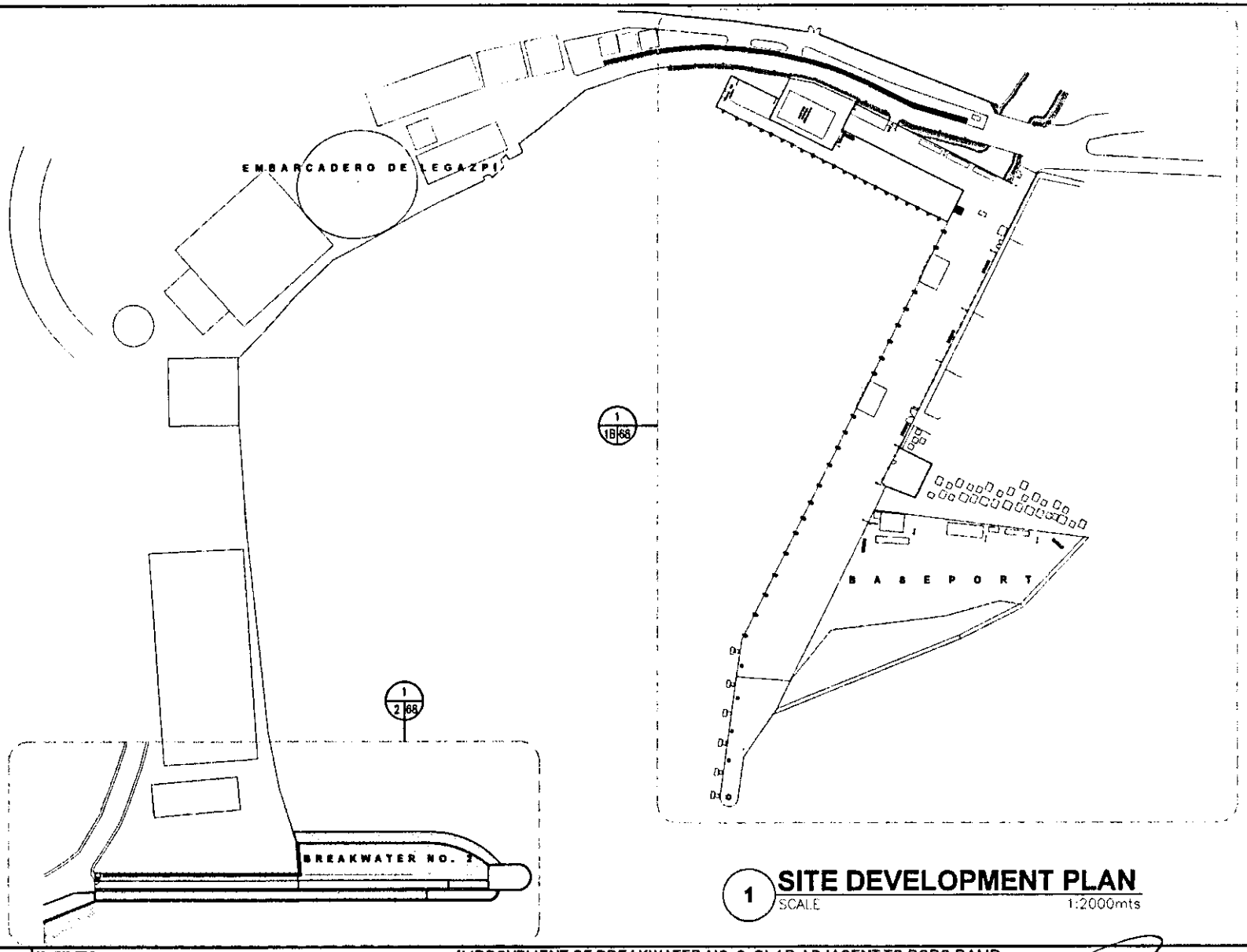
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1 SITE DEVELOPMENT PLAN

SCALE 1:2000mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

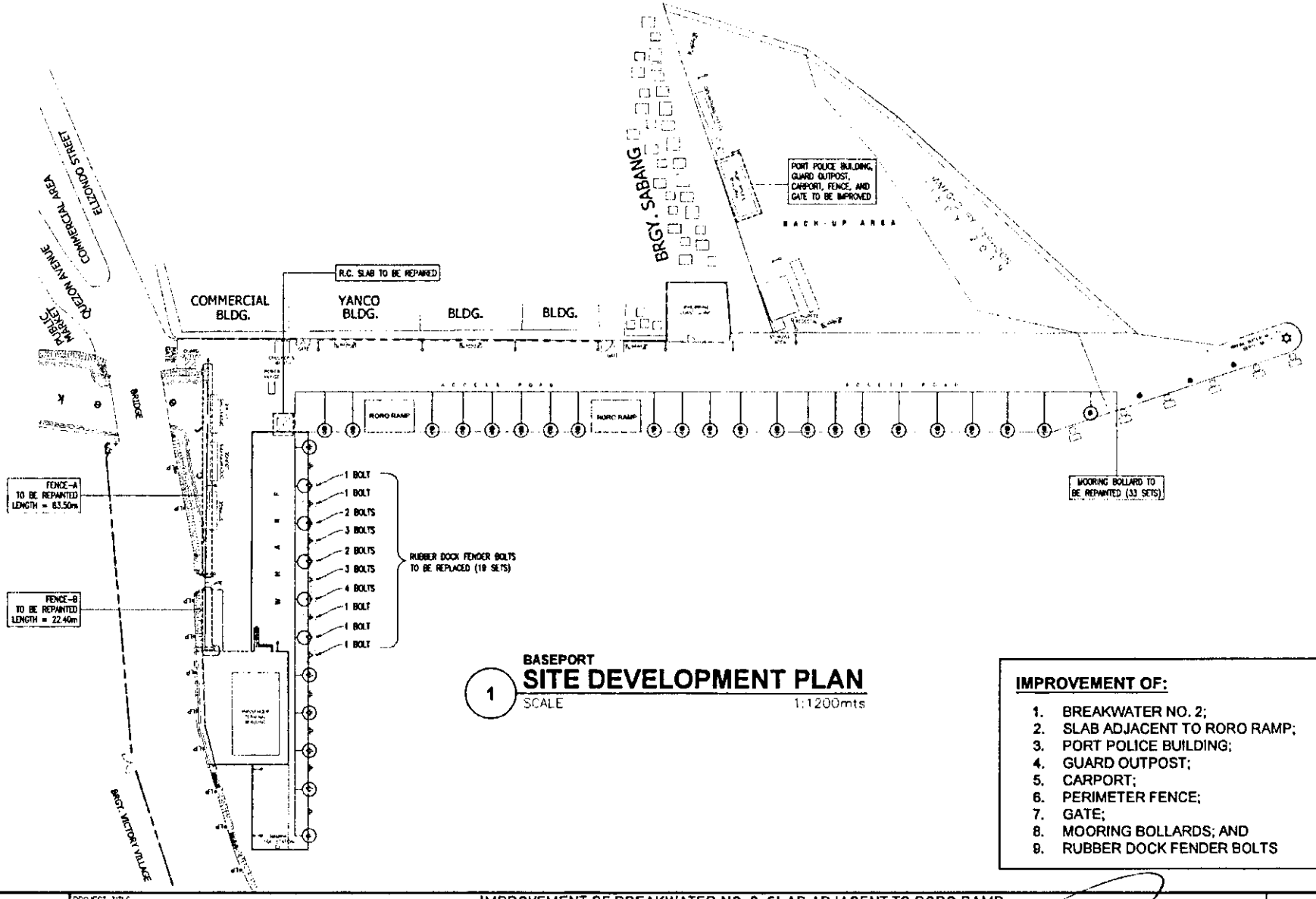
PROJECT TITLE

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 1A / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING
				SEPT. 27, 2024



1 BASEPORT
SITE DEVELOPMENT PLAN
SCALE 1:1200mts

IMPROVEMENT OF:

1. BREAKWATER NO. 2;
2. SLAB ADJACENT TO RORO RAMP;
3. PORT POLICE BUILDING;
4. GUARD OUTPOST;
5. CARPORT;
6. PERIMETER FENCE;
7. GATE;
8. MOORING BOLLARDS; AND
9. RUBBER DOCK FENDER BOLTS

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

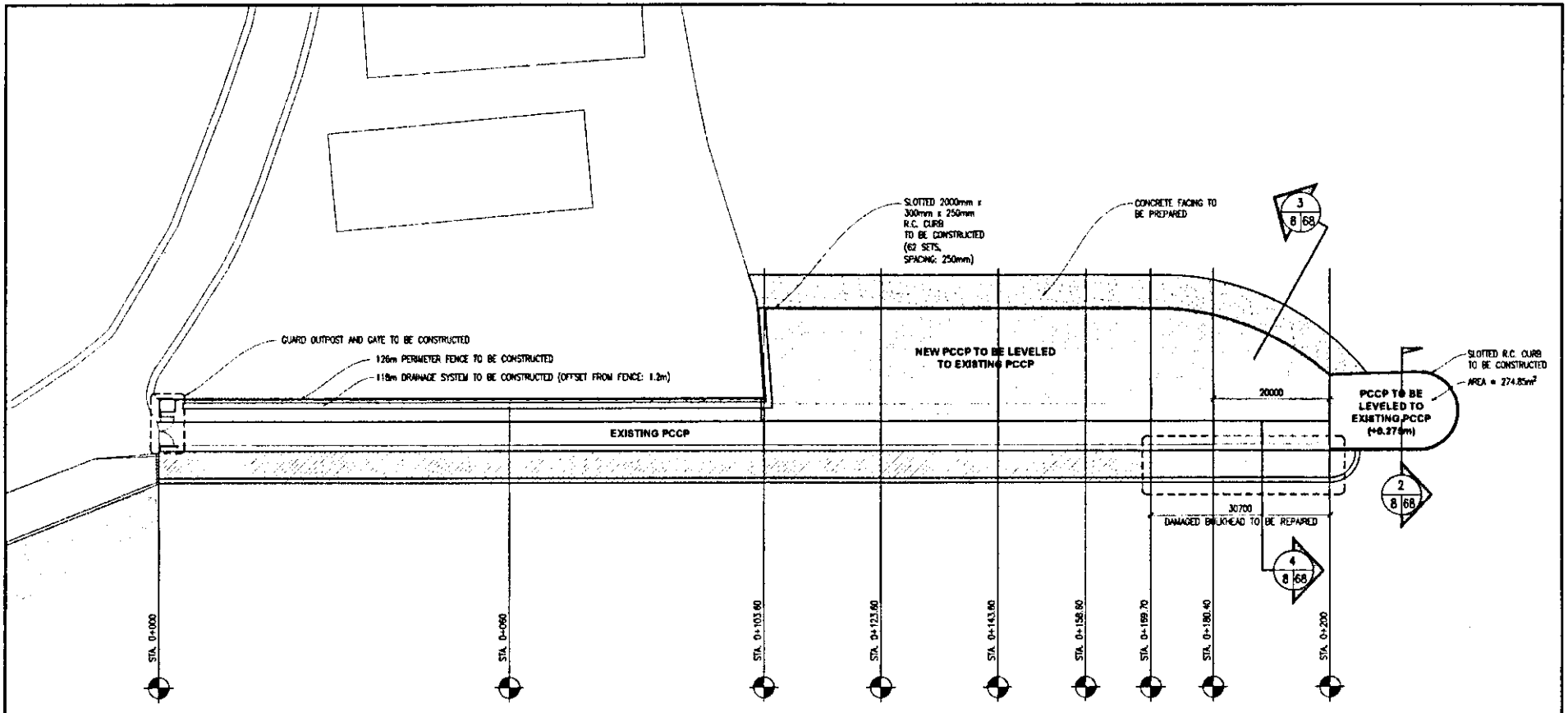
PROJECT TITLE
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 1B / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO L. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



BREAKWATER NO. 2, LEGAZPI CITY

1 **SITE DEVELOPMENT PLAN**

SCALE 1:700mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

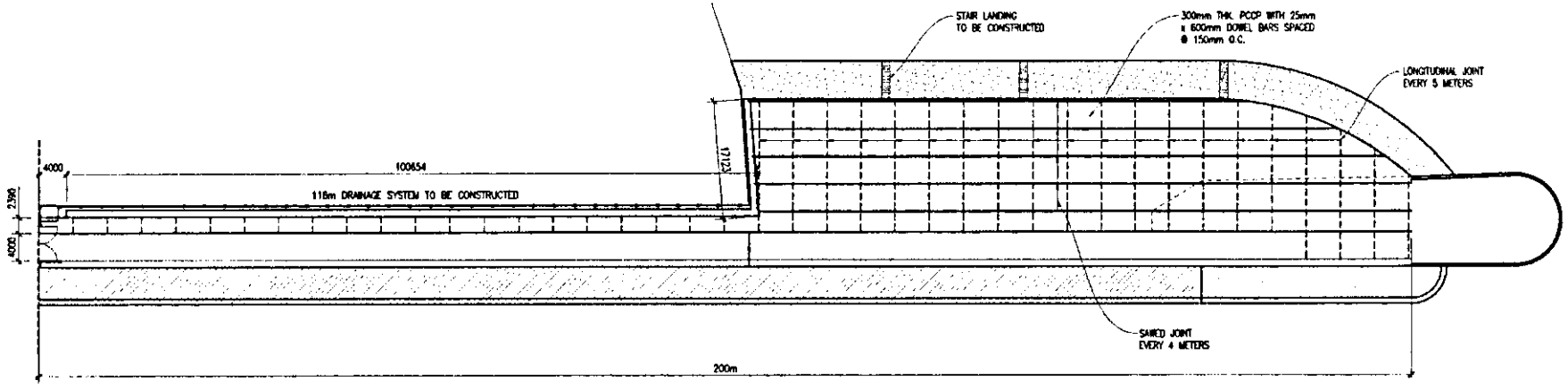
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 2 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REVEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

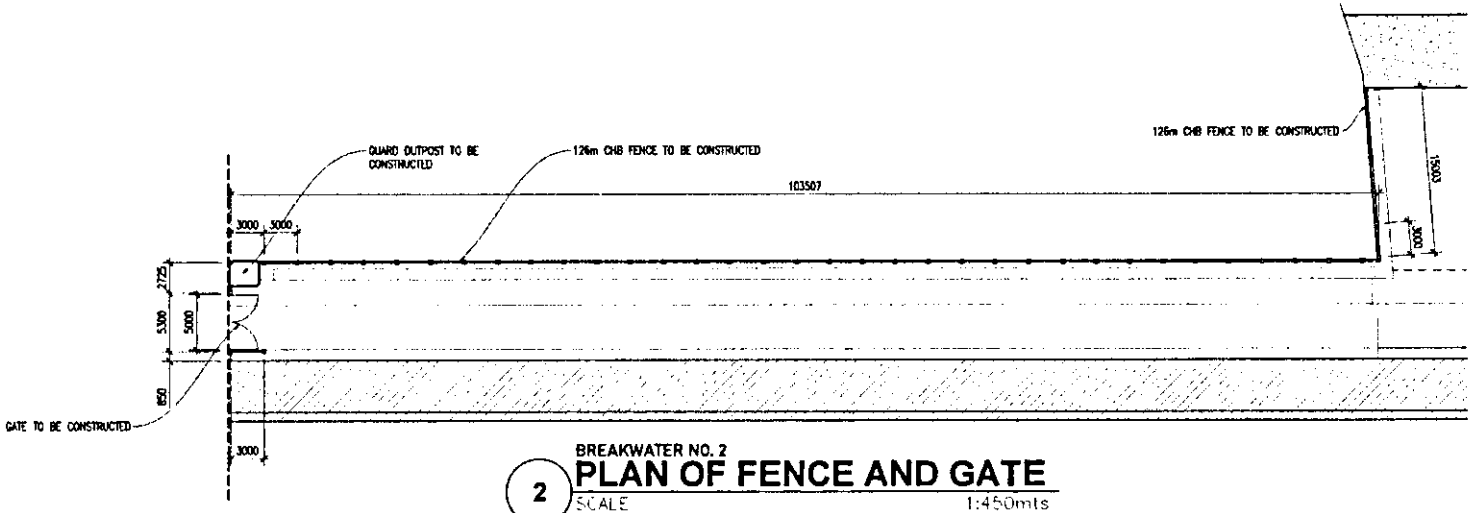
SEPT. 27, 2024



BREAKWATER NO. 2

1 PLAN OF PCCP

SCALE 1:650mts



BREAKWATER NO. 2

2 PLAN OF FENCE AND GATE

SCALE 1:450mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

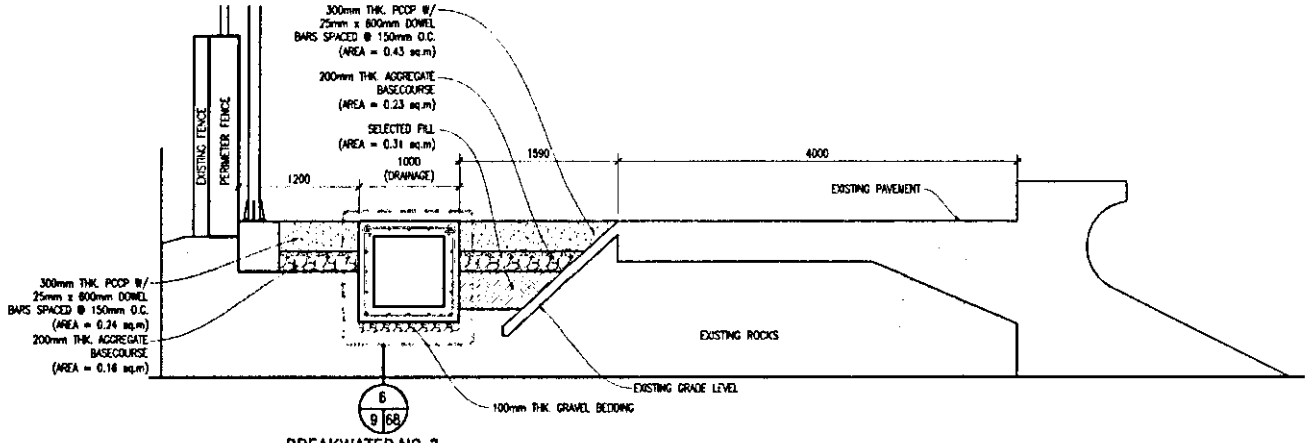
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 3 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. CANTALAO
ENGINEER II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

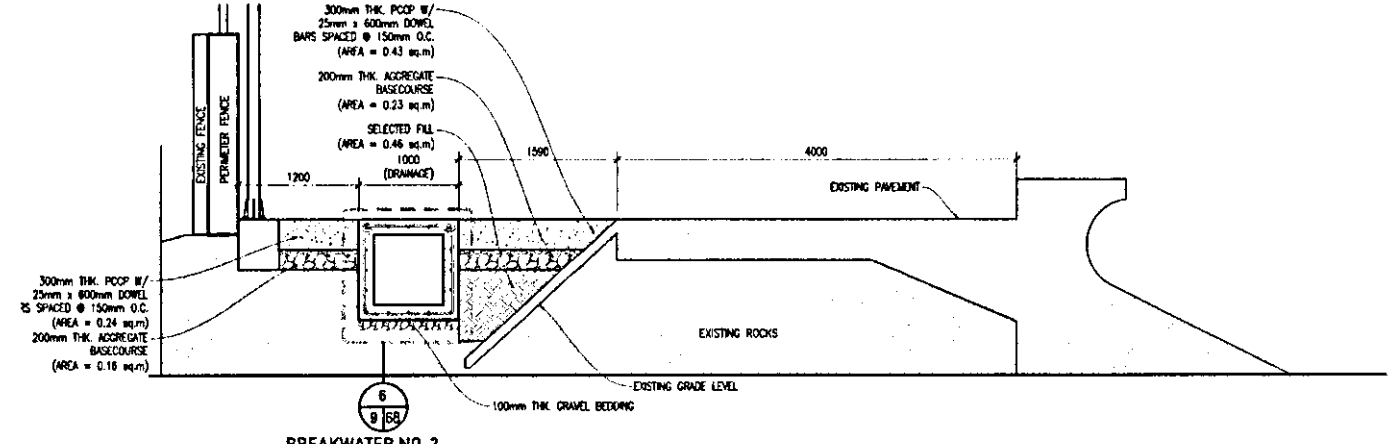
SEPT. 27, 2024



BREAKWATER NO. 2

1 SECTION OF PROPOSED STRUCTURE (STA 0+000)

SCALE 1:50mts



BREAKWATER NO. 2

2 SECTION OF PROPOSED STRUCTURE (STA 0+060)

SCALE 1:50mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

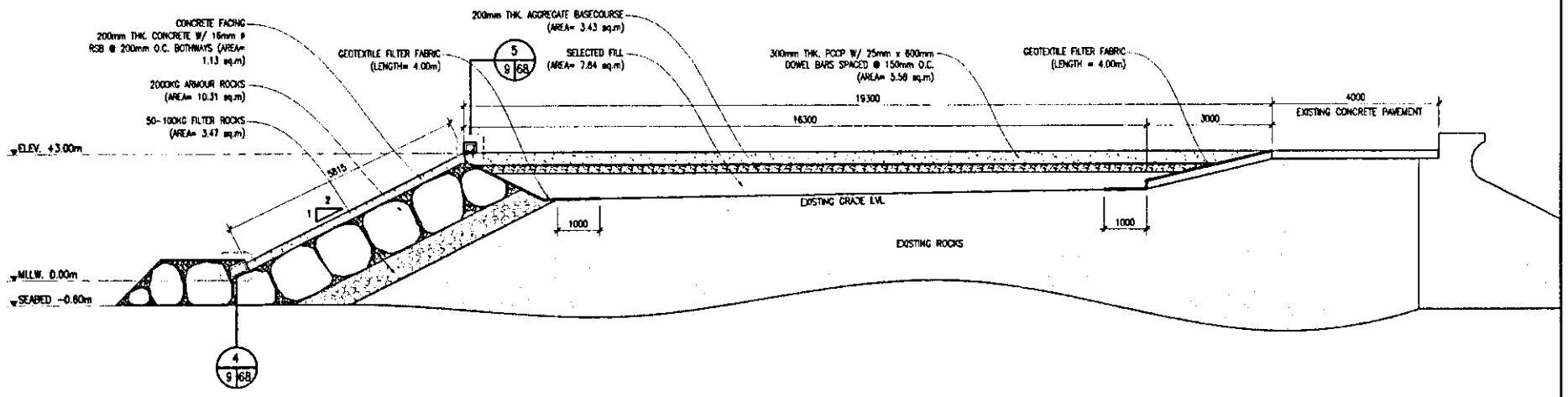
LOCATION: BASPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 4 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD L. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

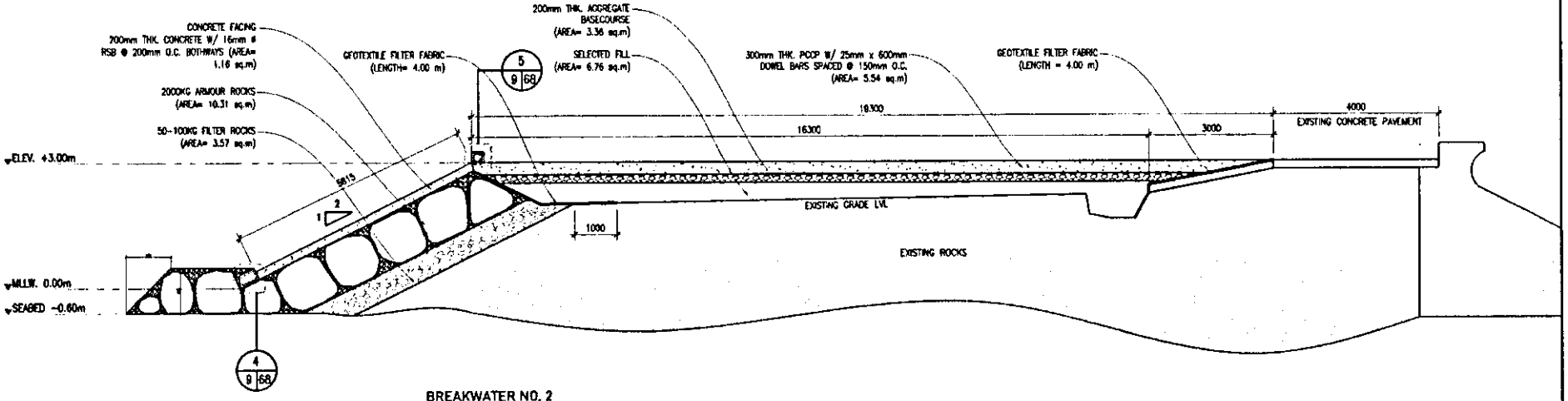
SEPT. 27, 2024



BREAKWATER NO. 2

1 SECTION OF PROPOSED STRUCTURE (STA 0+103.60)

SCALE 1:100mts

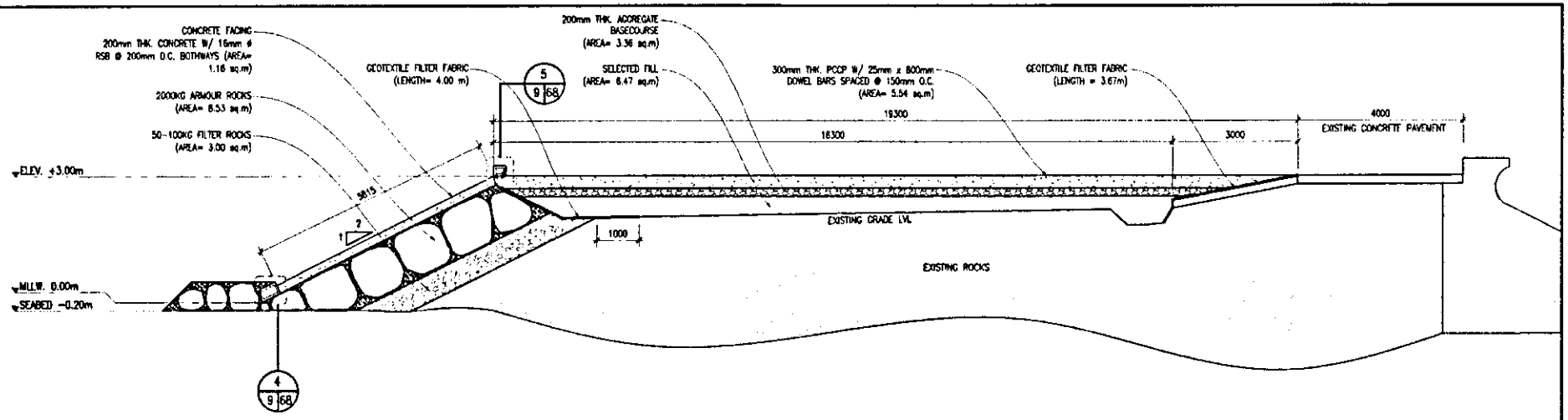


BREAKWATER NO. 2

2 SECTION OF PROPOSED STRUCTURE (STA 0+123.60)

SCALE 1:100mts

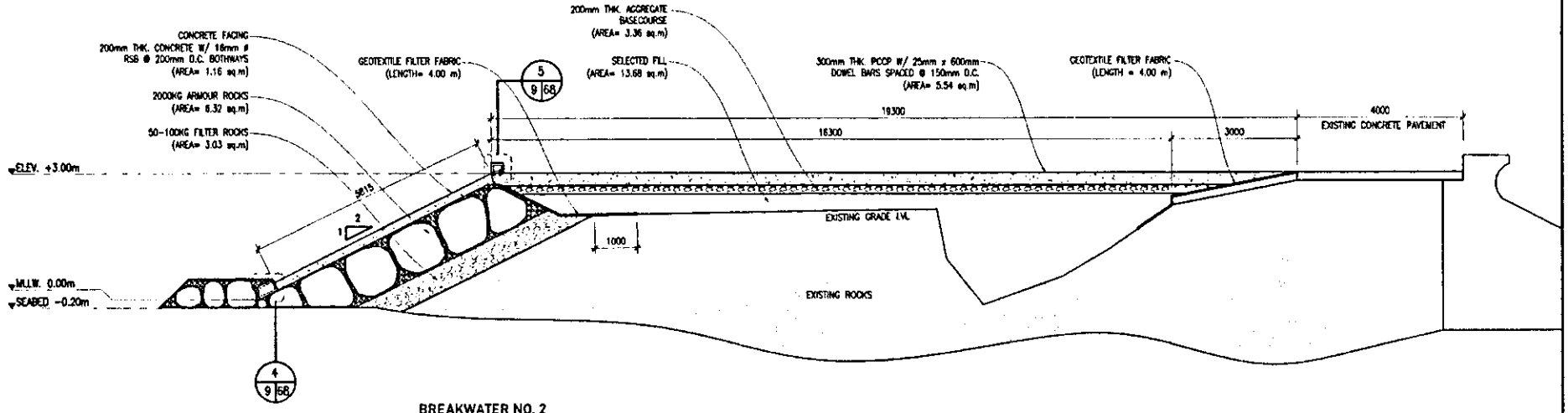
PHILIPPINE PORTS AUTHORITY PORT MANAGEMENT OFFICE OF BICOL REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500	PROJECT TITLE IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE LOCATION: BASEPORT, LEGAZPI CITY				SHEET NO. 5 68
PREPARED BY AGAPITO LOYD V. TALAY, uap ARCHITECT III	CHECKED/REVIEWED BY JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	SUBMITTED BY MA. MAGNOLIA SINSON-REQUEJO PORT MANAGER	RECOMMENDING APPROVAL REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	APPROVED JAMES J. GANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING	SEPT. 27, 2024



BREAKWATER NO. 2

1 SECTION OF PROPOSED STRUCTURE (STA 0+143.60)

SCALE 1:100mts



BREAKWATER NO. 2

2 SECTION OF PROPOSED STRUCTURE (STA 0+158.60)

SCALE 1:100mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

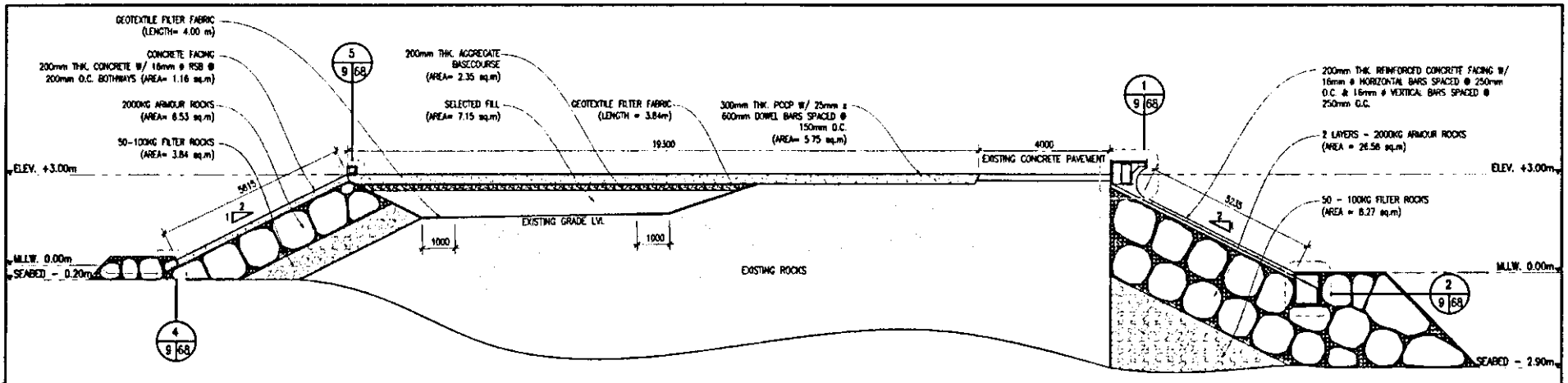
PROJECT TITLE
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 6 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO CLOYD O. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESO	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

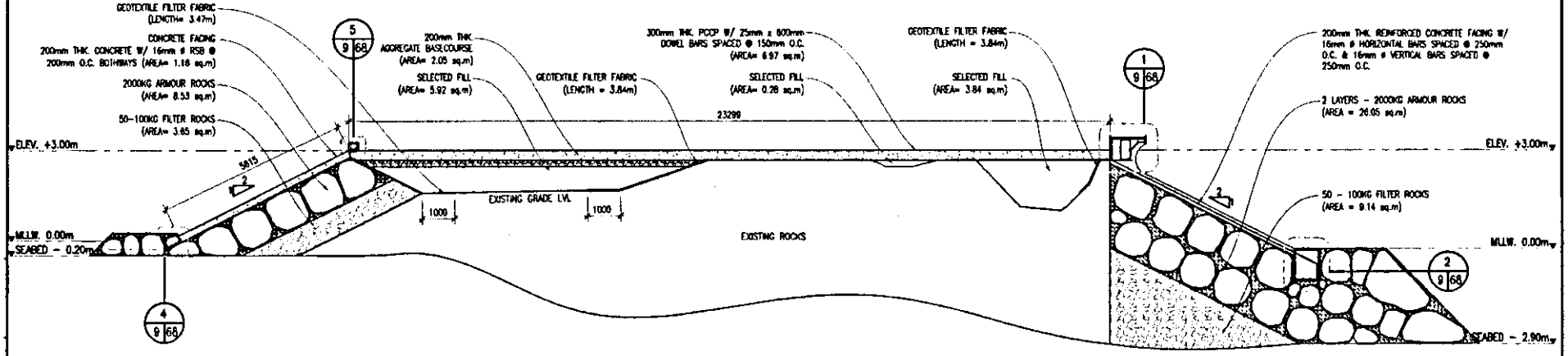
SEPT. 27, 2024



BREAKWATER NO. 2

1 SECTION OF PROPOSED STRUCTURE (STA 0+169.70)

SCALE 1:125mts



BREAKWATER NO. 2

2 SECTION OF PROPOSED STRUCTURE (STA 0+180.40)

SCALE 1:125mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

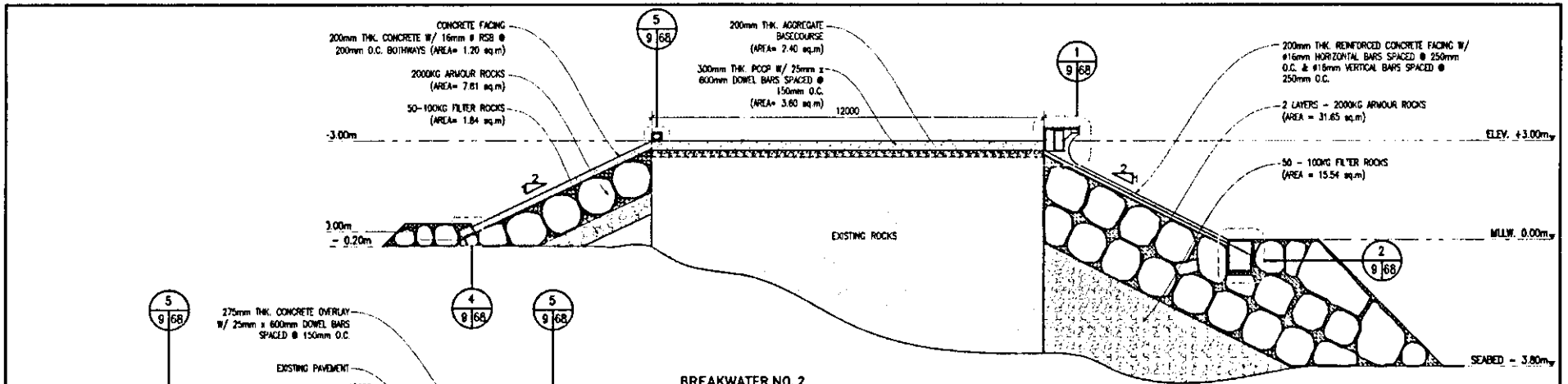
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 7 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO L. LOYOLA, JR. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REDEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

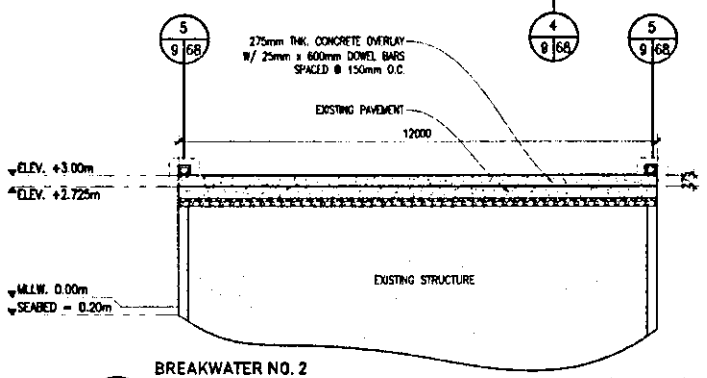
SEPT. 27, 2024



BREAKWATER NO. 2

1 SECTION OF PROPOSED STRUCTURE (STA 0+200)

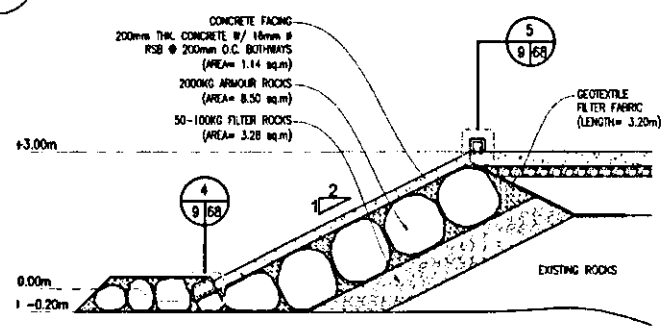
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BREAKWATER NO. 2

2 SECTION OF CONCRETE OVERLAY

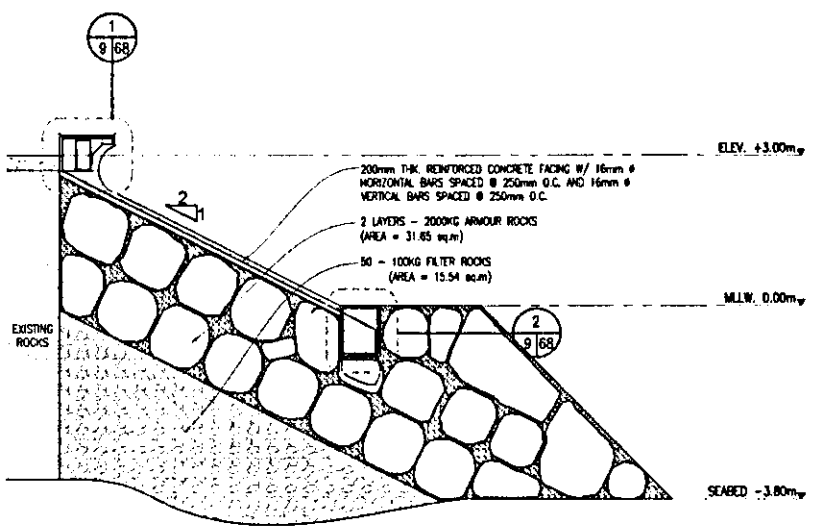
SCALE 1:125mts



BREAKWATER NO. 2

3 DETAILED SECTION

SCALE 1:100mts



BREAKWATER NO. 2

4 DETAILED SECTION

SCALE 1:100mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

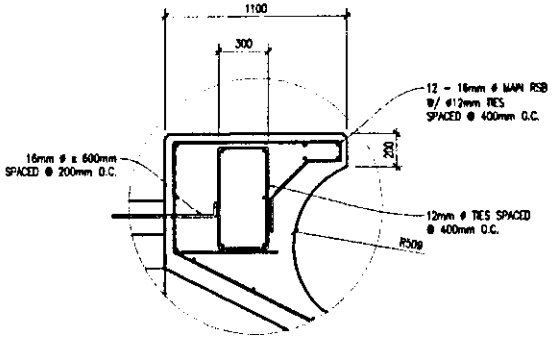
PROJECT TITLE: IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

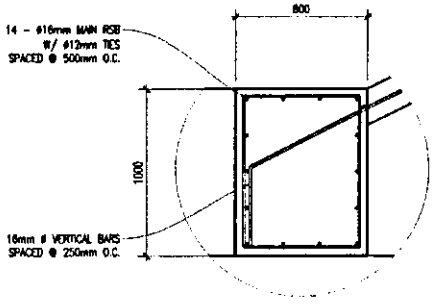
SHEET NO. 8 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD A. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ENGINEER II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

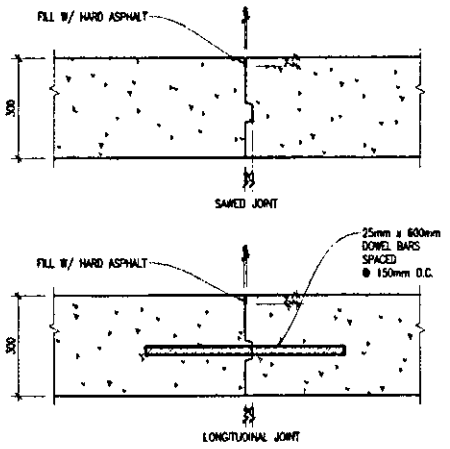
SEPT. 27, 2024



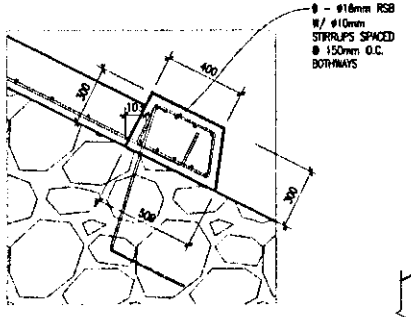
TYPICAL DETAIL
1 DEFLECTOR WALL
SCALE 1:30mts



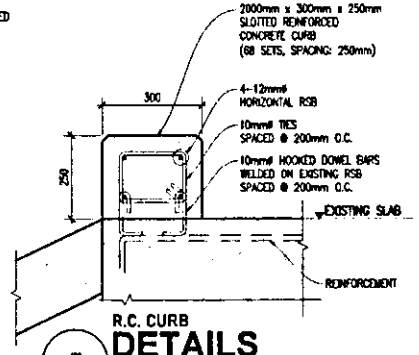
TYPICAL DETAIL
2 CONCRETE TOE
SCALE 1:30mts



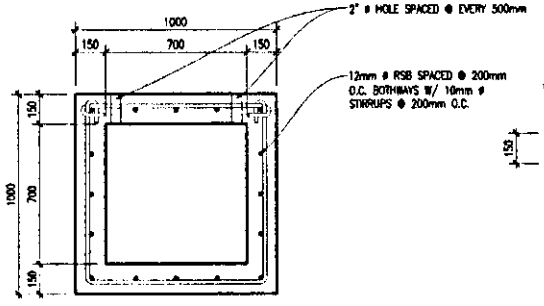
TYPICAL DETAIL
3 PAVEMENT JOINT
SCALE 1:15mts



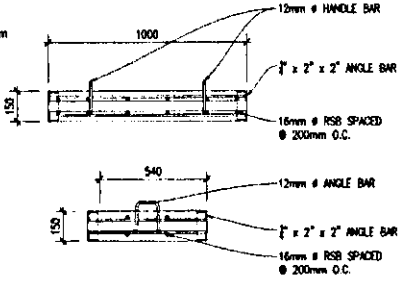
TYPICAL DETAILS
4 SECTION
SCALE 1:25mts



R.C. CURB
5 DETAILS
SCALE 1:15mts



TYPICAL DETAILS
6 DRAINAGE CANAL
SCALE 1:25mts



TYPICAL DETAILS
7 MANHOLE COVER
SCALE 1:25mts

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

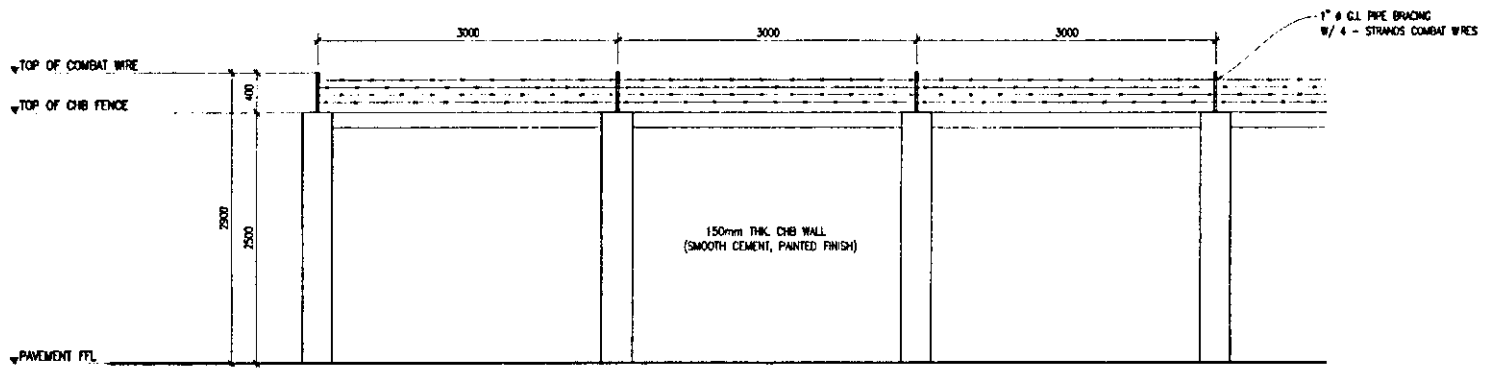
PROJECT TITLE
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 9 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD J. TALAY, uap ARCHITECT II	JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	MA. MAGNOLIA SINSON-REQUEJO PORT MANAGER	REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	JAMES J. SANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING

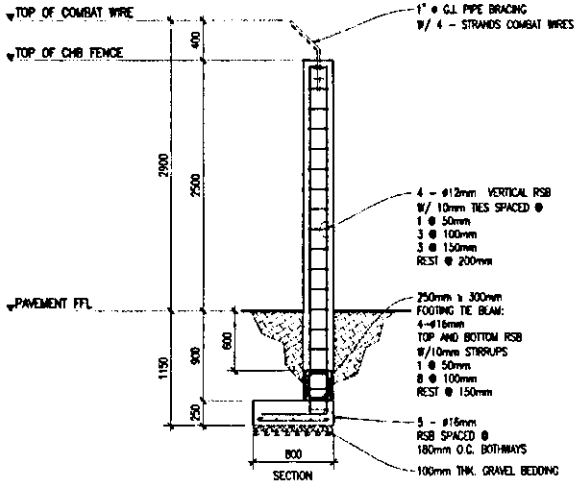
SEPT. 27, 2024

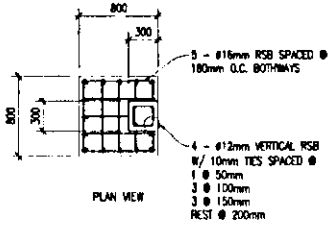


BREAKWATER NO. 2

1 ELEVATION OF PERIMETER FENCE (TYPICAL)

SCALE 1:50mts

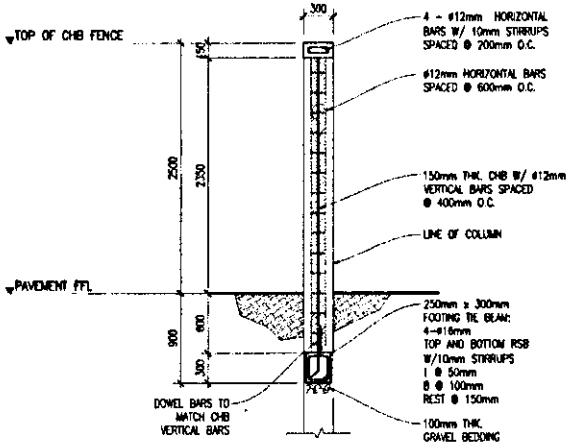




BREAKWATER NO. 2

2 COLUMN/FOOTING DETAIL

SCALE 1:50mts

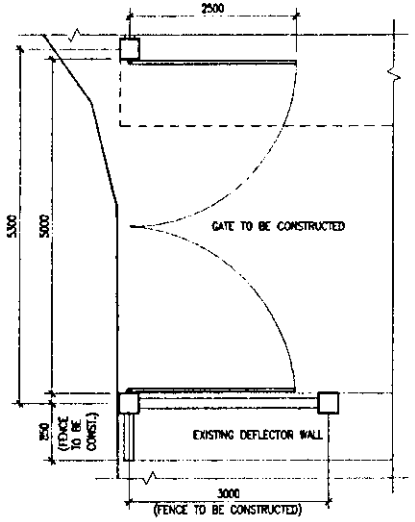


BREAKWATER NO. 2

3 WALL FOOTING DETAIL

SCALE 1:50mts

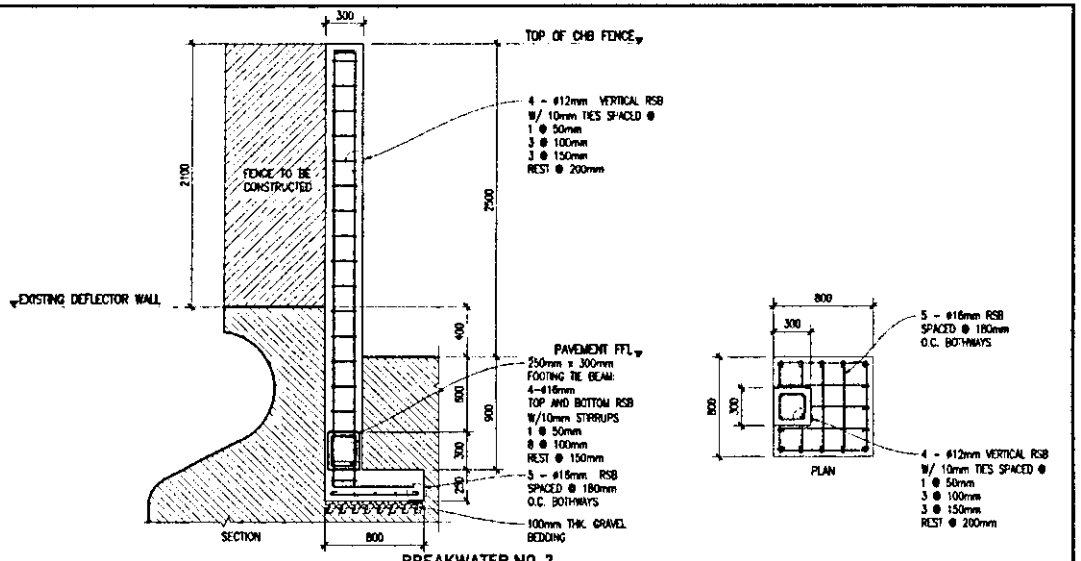
PHILIPPINE PORTS AUTHORITY PORT MANAGEMENT OFFICE OF BICOL REGIONAL GOVERNMENT CENTER, RAWIS LEGAZPI CITY 4500	PROJECT TITLE LOCATION: BASEPORT, LEGAZPI CITY IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE				SHEET NO. 10 68
PREPARED BY AGAPITO LLOYD V. TALAY, uap ARCHITECT II	CHECKED/REVIEWED BY JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, FSD	SUBMITTED BY MA. MAGNOLIA SINSON-REQUEJO PORT MANAGER	RECOMMENDING APPROVAL REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	APPROVED JAMES J. SANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING	SEPT. 27, 2024



BREAKWATER NO. 2/BLOW-UP PLAN

1 FENCE AND GATE

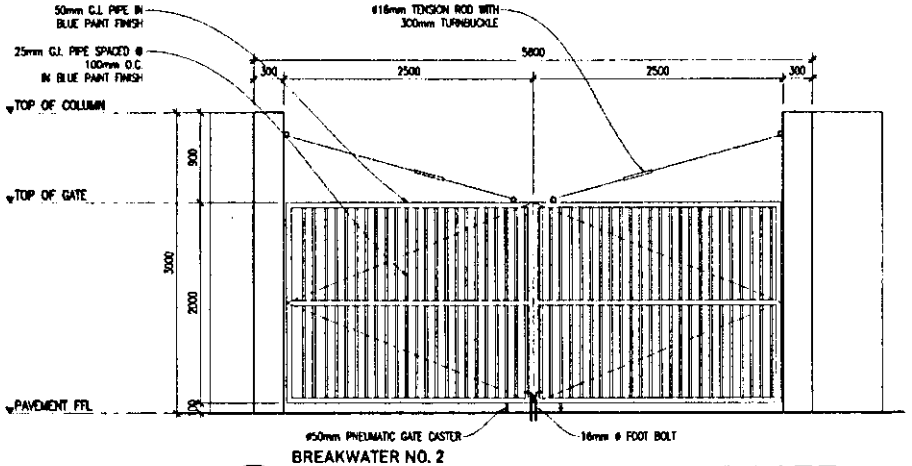
SCALE 1:75mts



BREAKWATER NO. 2

3 COLUMN/FOOTING DETAILS

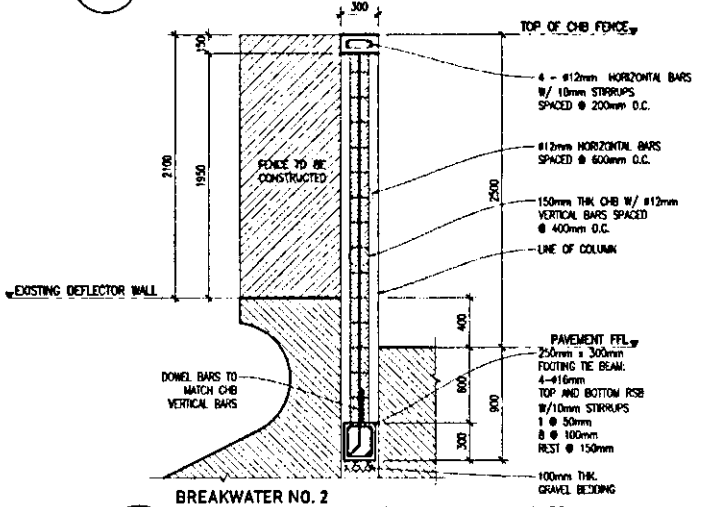
SCALE 1:40mts



BREAKWATER NO. 2

2 DETAILED ELEVATION OF GATE

SCALE 1:50mts



BREAKWATER NO. 2

4 WALL FOOTING DETAIL

SCALE 1:40mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

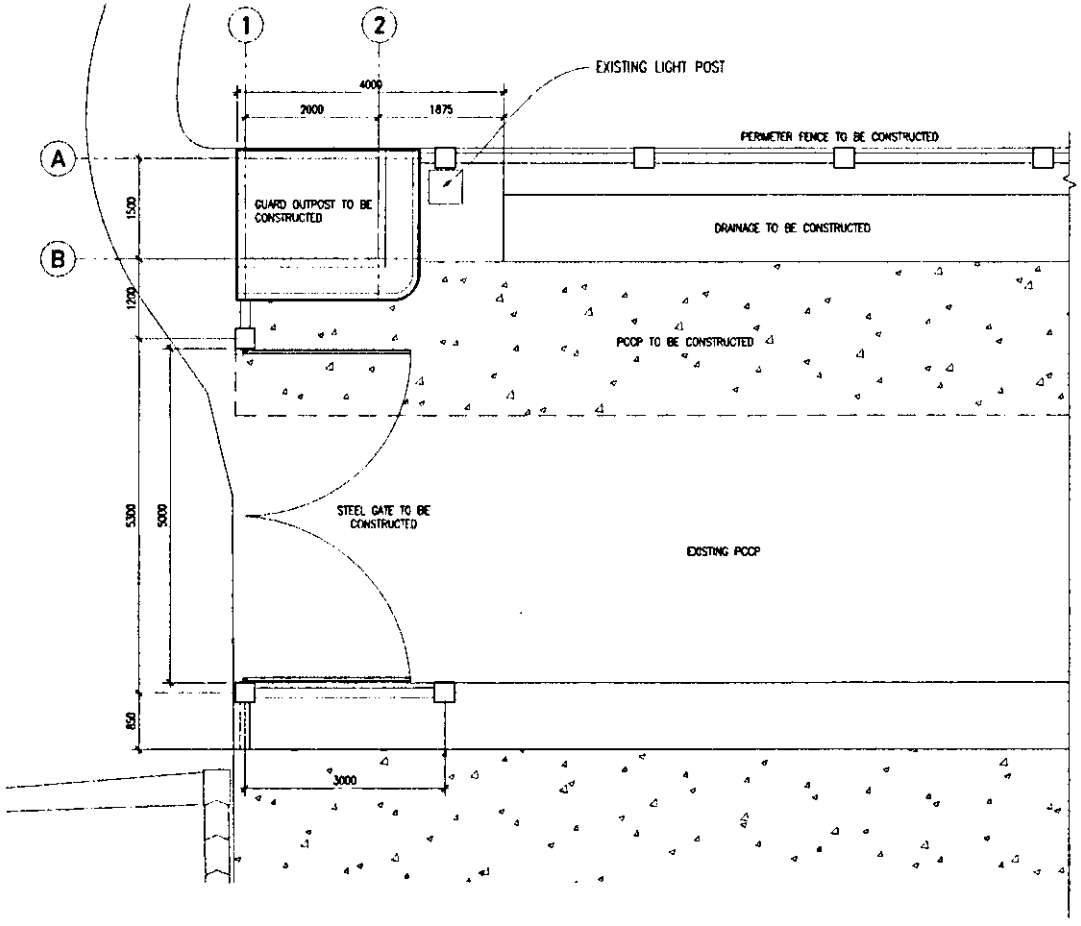
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 11 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD V. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-RAQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



GUARD OUTPOST AT BREAKWATER NO. 2

1 SITE DEVELOPMENT PLAN

SCALE 1:75mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

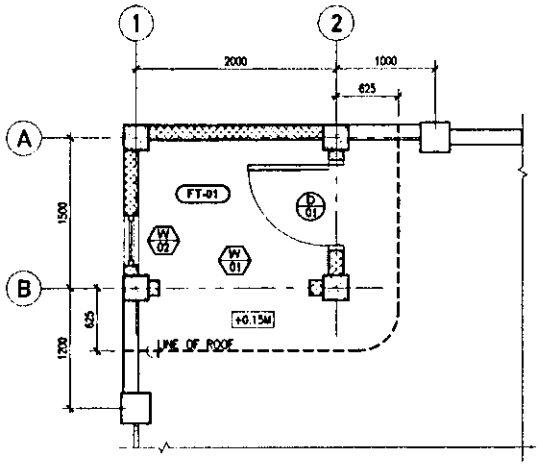
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 12 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD S. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

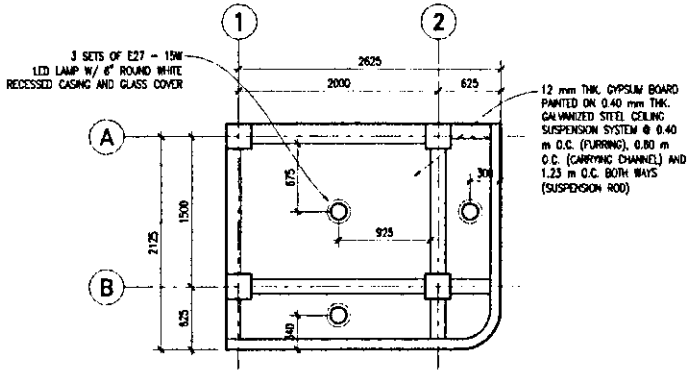
SEPT. 27, 2024



GUARD OUTPOST AT BREAKWATER NO. 2

1 FLOOR PLAN

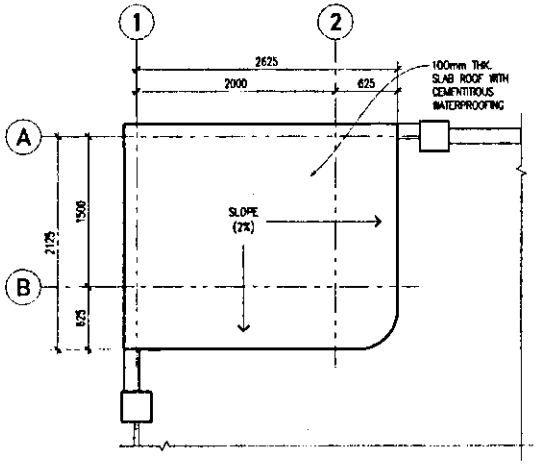
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

2 REFLECTED CEILING PLAN

SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

3 ROOF PLAN

SCALE 1:50mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

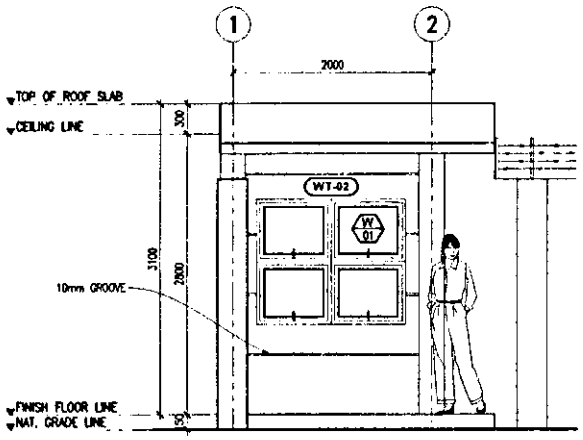
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 13 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD C. TALAY, uap ARCHITECT II	JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	MA. MAGNOLIA SINSON-REQUEJO PORT MANAGER	REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	JAMES J. GANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING

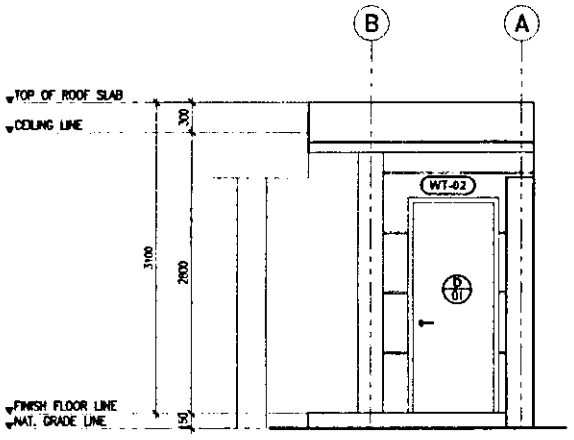
SEPT. 27, 2024



GUARD OUTPOST AT BREAKWATER NO. 2

1 FRONT ELEVATION

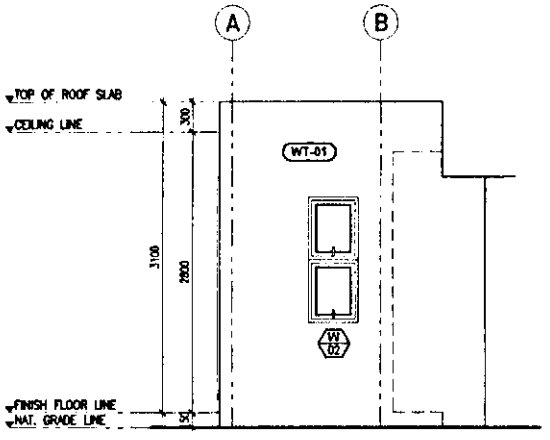
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

2 RIGHT SIDE ELEVATION

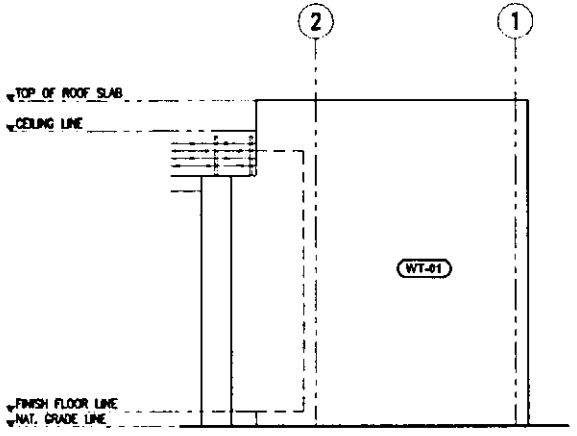
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

3 LEFT SIDE ELEVATION

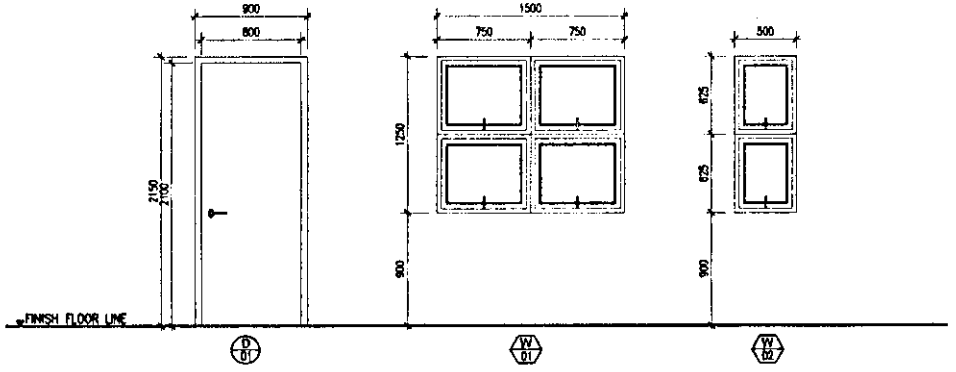
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

4 REAR ELEVATION

SCALE 1:50mts



TYPE:	FLUSHED TYPE DOOR W/ 6mm THK. MARINE PLYWOOD ON 50mm x 75mm WOODEN FRAME	ALUMINUM FRAMED AWNING WINDOW	ALUMINUM FRAMED AWNING WINDOW
LOCATION:	RIGHT SIDE ELEVATION	FRONT ELEVATION	LEFT SIDE ELEVATION
SETS:	ONE (1) SET	ONE (1) SET	ONE (1) SET

GUARD OUTPOST AT BREAKWATER NO. 2

5 SCHEDULE OF DOOR AND WINDOWS

SCALE 1:40mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

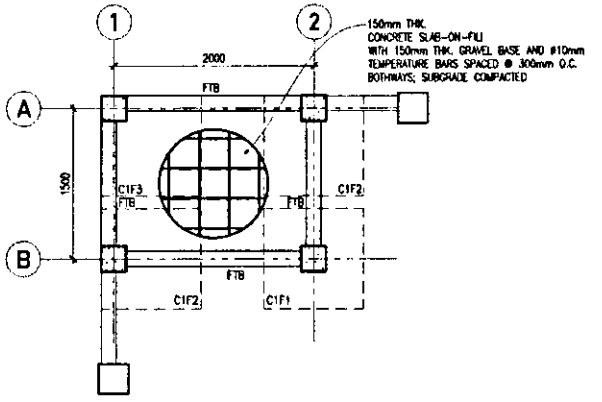
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 14 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD C. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

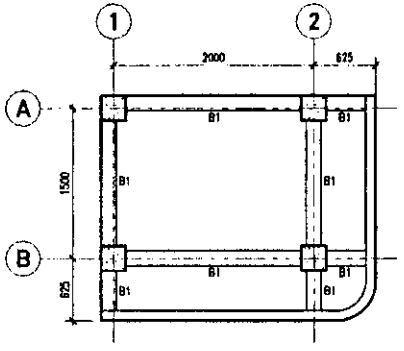
SEPT. 27, 2024



GUARD OUTPOST AT BREAKWATER NO. 2

1 FOUNDATION PLAN

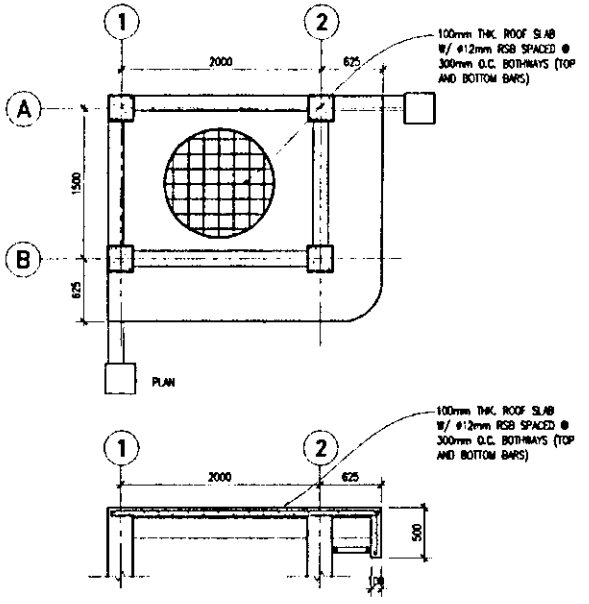
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

2 ROOF BEAM FRAMING PLAN

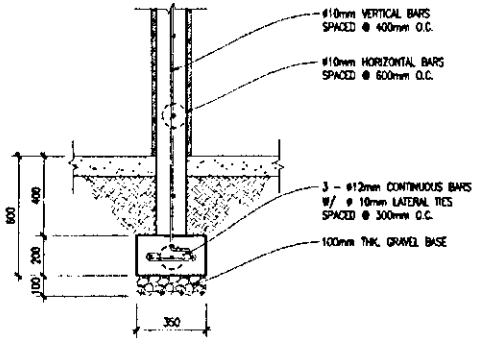
SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

3 ROOF SLAB DETAILS

SCALE 1:50mts



GUARD OUTPOST AT BREAKWATER NO. 2

4 WALL FOOTING DETAILS

SCALE 1:25mts

MARK	DIMENSION (mm)	END/SUPPORT	MIDSPAN	REINFORCEMENT
B1	250mm X 300mm	2 - ø16mm TOP BARS 3 - ø16mm BOTTOM BARS	3 - ø16mm TOP BARS 2 - ø16mm BOTTOM BARS	5 - ø16mm RSB W/ ø10mm STIRRUPS SPACED @ 2 @ 50mm, 3 @ 100mm, 4 @ 150mm, REST @ 200mm O.C.
C1	250mm X 300mm			4 - ø16mm RSB W/ ø10mm LATERAL TIES SPACED @ 1 @ 50mm, 3 @ 100mm, 3 @ 150mm, REST @ 200mm O.C.
FTB	200mm X 300mm	2 - ø16mm TOP BARS 3 - ø16mm BOTTOM BARS	3 - ø16mm TOP BARS 2 - ø16mm BOTTOM BARS	5 - ø16mm RSB W/ ø10mm STIRRUPS SPACED @ 2 @ 50mm, 3 @ 100mm, 4 @ 150mm, REST @ 200mm O.C.

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

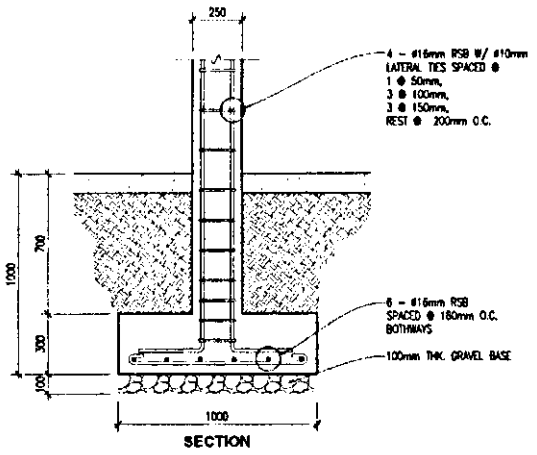
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

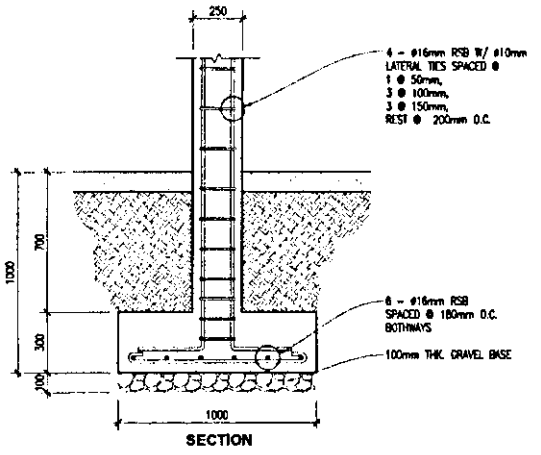
SHEET NO. 15 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap ARCHITECT II	JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	MA. MAGNOLIA SINSON-NAVAJO PORT MANAGER	REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	JAMES J. GANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING

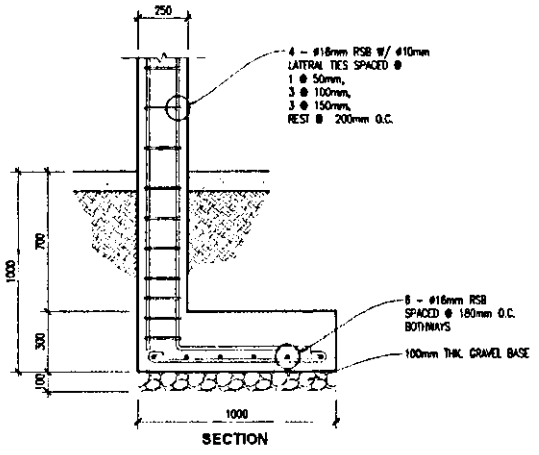
SEPT. 27, 2024



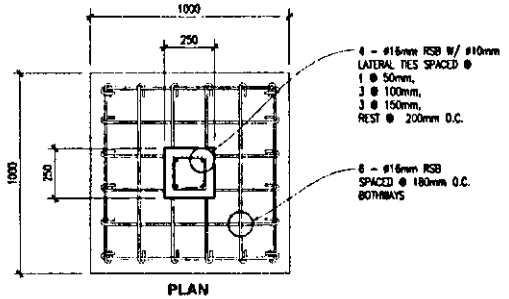
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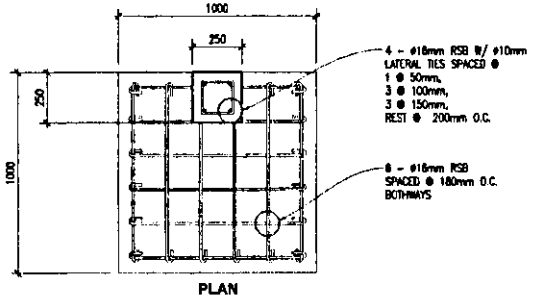
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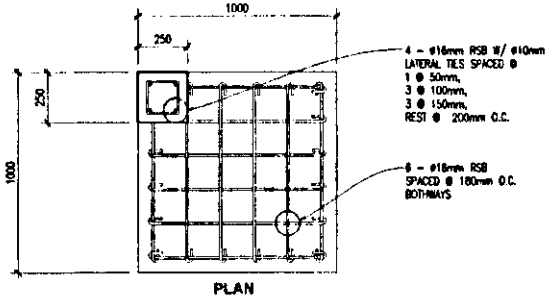
SECTION



PLAN



PLAN



PLAN

1 COLUMN AND FOOTING DETAILS
C1F1
SCALE 1:25mts

2 COLUMN AND FOOTING DETAILS
C1F2
SCALE 1:25mts

3 COLUMN AND FOOTING DETAILS
C1F3
SCALE 1:25mts

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 16 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD A. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-NEQUEJO	REYNAND C. PARAFINA	JAMES J. SANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024

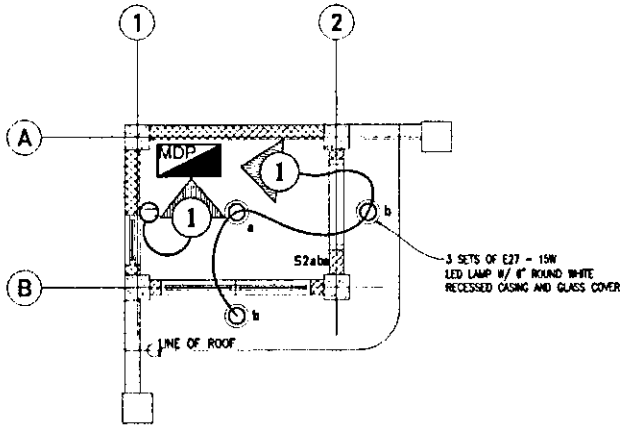
LOAD SCHEDULE AND COMPUTATION

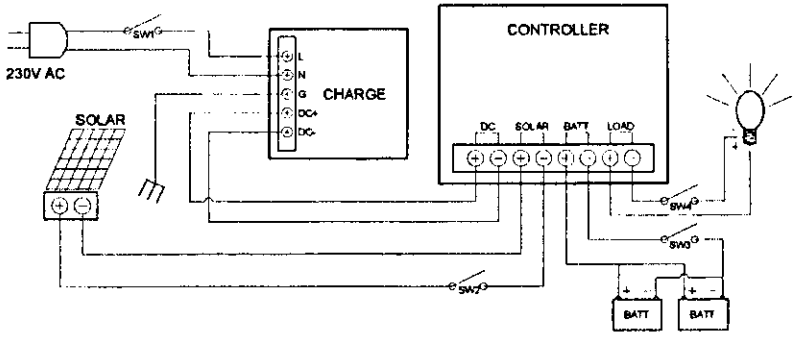
CKT. NO.	L.O.	C.O.	NO. OF SWITCHES S	S_1	S_2	LOAD DESCRIPTION	WATTS	AMPS	VOLTS	CKT PROTECTION	NO. OF POLE	SIZE OF WIRE	CONDUIT SIZE
1	3			1		LIGHTING OUTLET AT 15W	45	0.20	230V	15 AT	2	2 – 3.5mm THWN	20mm ø PVC PIPE
2		1				CONVENIENCE OUTLET AT 230W	230	1.00	230V	20 AT	2	2 – 3.5mm THWN	20mm ø PVC PIPE
TOTAL							275W	1.20A					

COMPUTATION:
TOTAL WATTAGE: 1.5(275W x 8 HRS) = 3300Wh
INVERTER SIZE: 275W x 1.2 = 330w
SOLAR PANEL WATTAGE: 3300Wh/6 HRS (AVE. SUNSHINE) = 550W
BATTERY BANK CAPACITY: 3300Wh x 2 = 6600Wh
6600Wh x 2 (DAYS OF AUTONOMY) = 13200Wh
13200Wh/24V = 550Ah
550Ah x 1.2 (TOLERANCE) = 660Ah
CHARGE CONTROLLER: 660W/24V + 20% = 33A, USE 40A

USE: 550W SOLAR PANEL, 330W MPPT SOLAR INVERTER, 660Ah BATTERY 24V

LEGEND (NOT DRAWN TO SCALE)	
MDP	DISTRIBUTION PANEL
	DUPLEX CONVENIENCE OUTLET
1	CIRCUIT HOMERUN
S_2	TWO GANG SWITCH
	E27 – 15W LED LAMP W/ 6" ROUND WHITE RECESSED CASING AND GLASS COVER





SCHEMATIC DESIGN

GUARD OUTPOST AT BREAKWATER NO. 2

1 LIGHTING AND POWER LAYOUT PLAN

SCALE 1:50mts

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

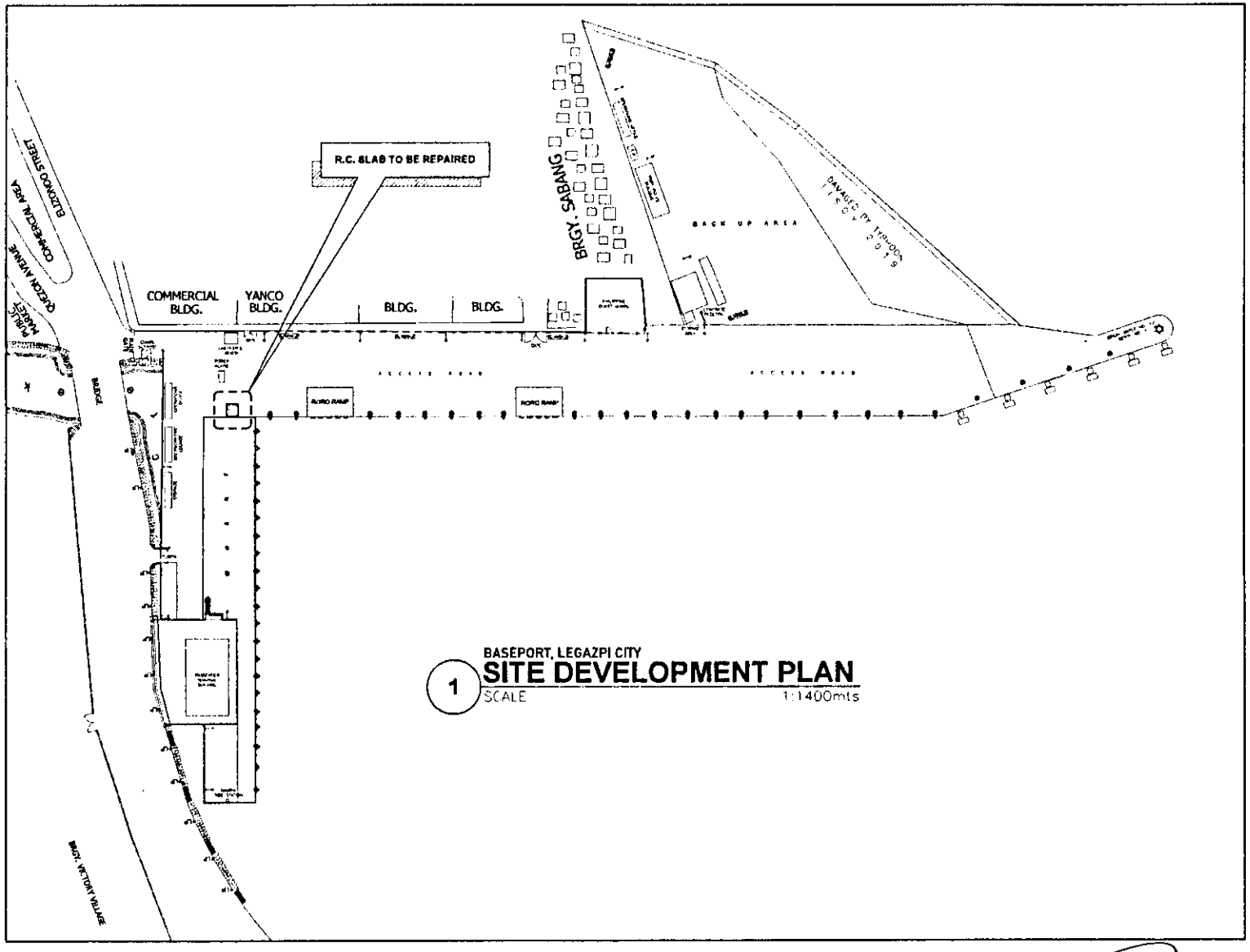
PROJECT TITLE
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 17 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-RIQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



BASEPORT, LEGAZPI CITY

1 **SITE DEVELOPMENT PLAN**

SCALE 1:1400mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

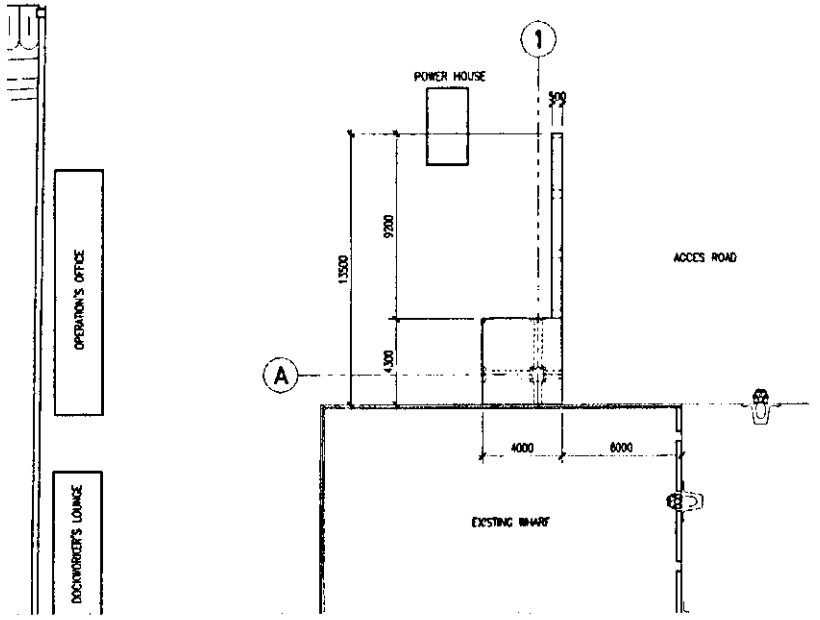
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

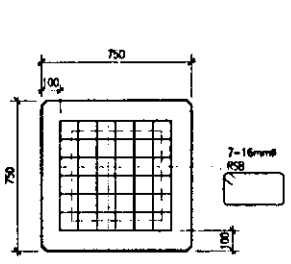
SHEET NO. 18 / 68

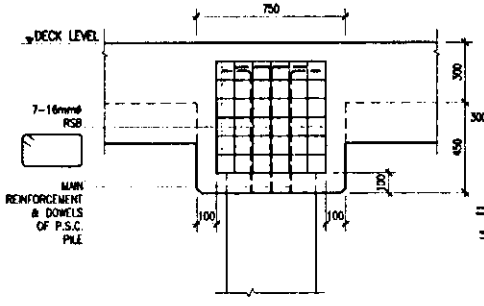
PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD D. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024

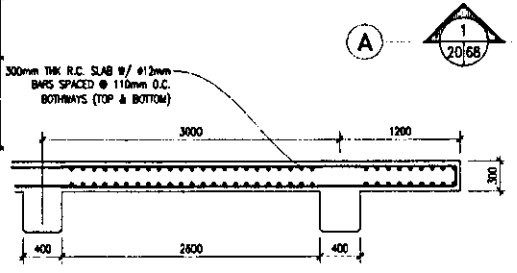


R.C. SLAB
1 LOCATION PLAN
SCALE 1:250mts

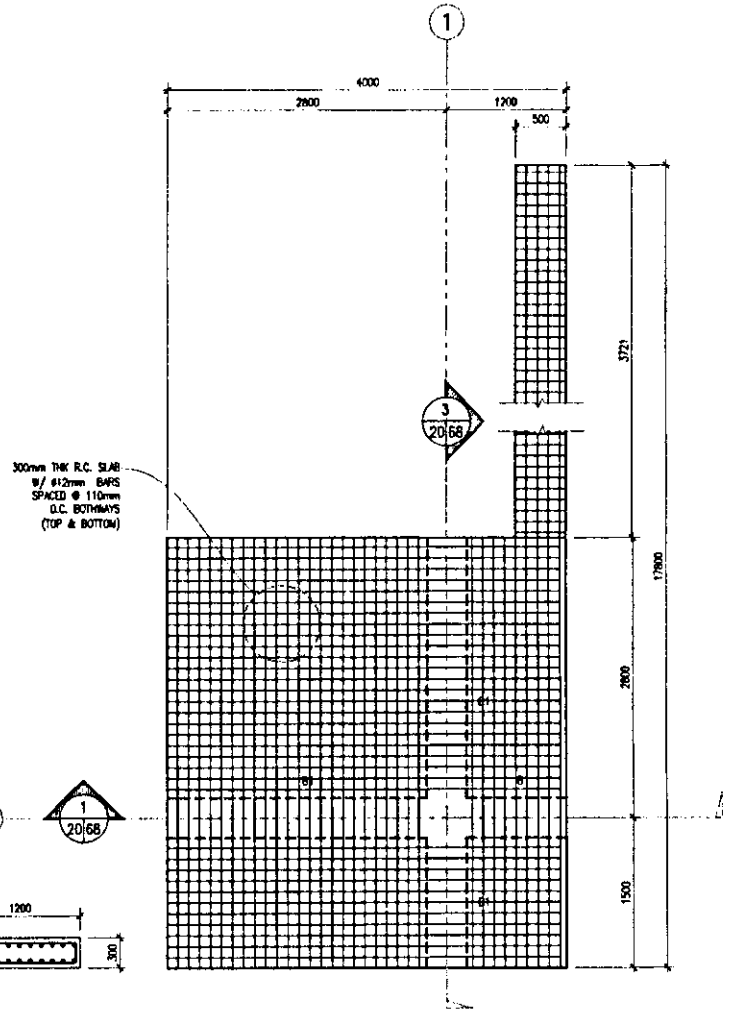




2 DETAIL OF PILE CAP
SCALE 1:25mts



TYPICAL DETAIL
3 R.C. DECK SLAB
SCALE 1:50mts



BLOW-UP PLAN
4 R.C. DECK SLAB
SCALE 1:50mts

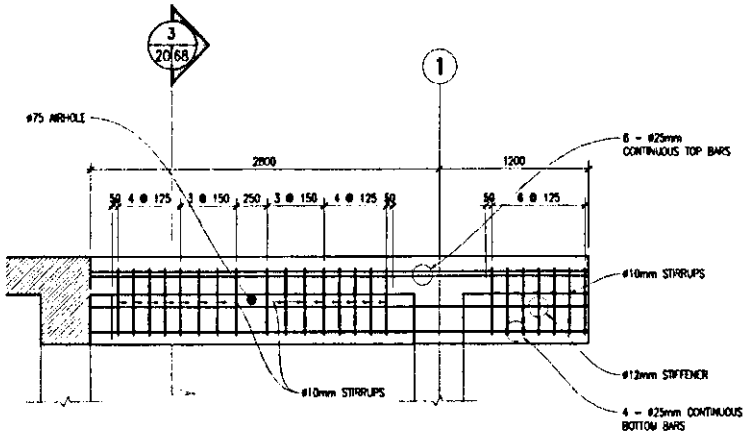
PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

PROJECT TITLE
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 19/68

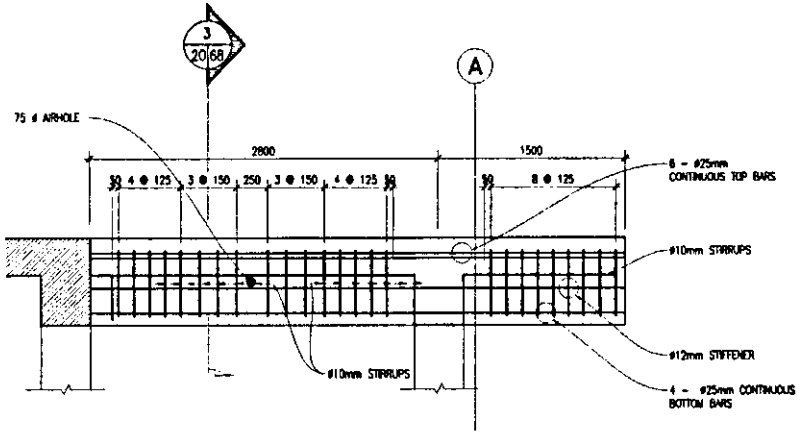
PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD L. TALAY, uap ARCHITECT II	JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	MA. MAGNOLIA SINSON-REQUEJO PORT MANAGER	REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	JAMES J. GANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING
				SEPT. 27, 2024



TYPICAL DETAIL OF RC BEAM (B1)

1 SECTION 1

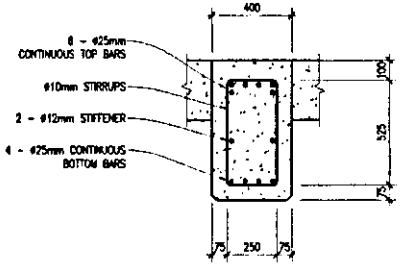
SCALE 1:40mts



TYPICAL DETAIL OF RC BEAM (B1)

2 SECTION 2

SCALE 1:40mts



DETAIL OF RC BEAM (B1)

3 SECTION

SCALE 1:25mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

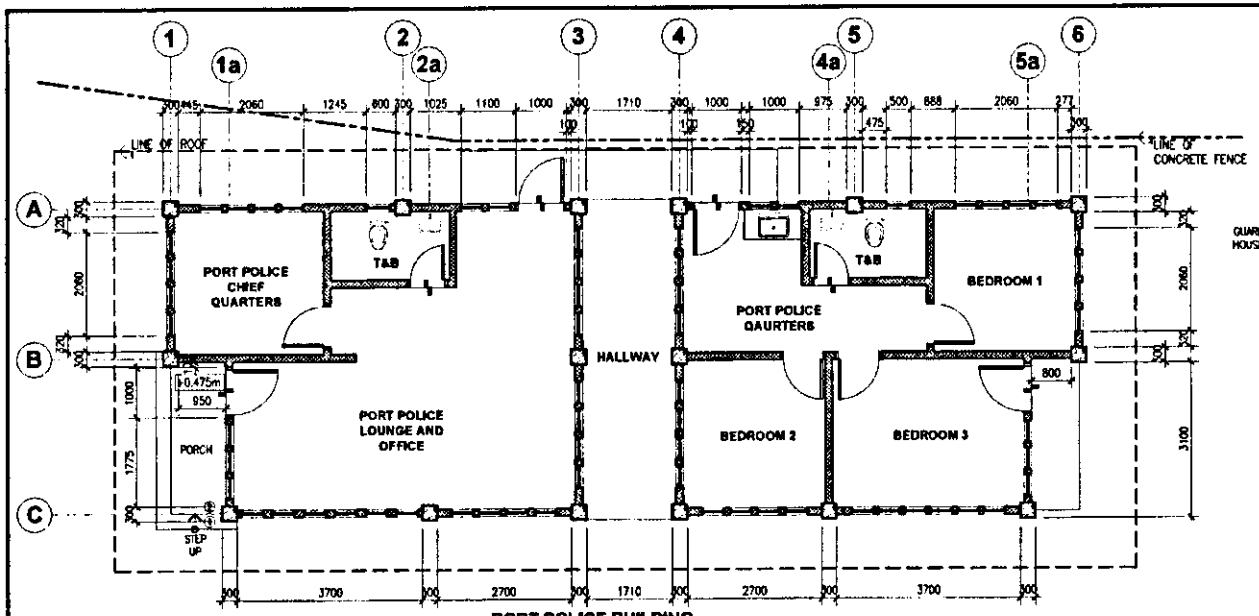
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 20/68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD O. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-[illegible]UEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024

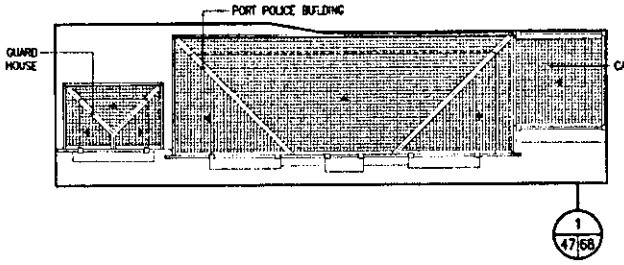


PORT POLICE BUILDING

1 EXISTING PLAN

SCALE 1:100mts

SCOPE OF WORK	
PLOT FILLING OF LOT	V = 176.29m³

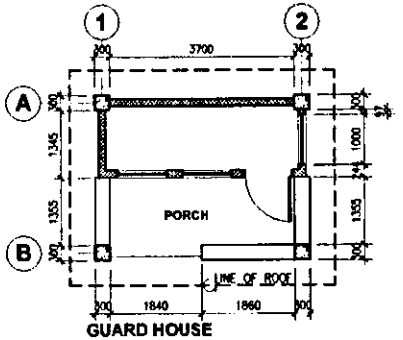


4 SITE DEVELOPMENT PLAN

SCALE 1:300mts

SCOPE OF WORK: PORT POLICE BUILDING

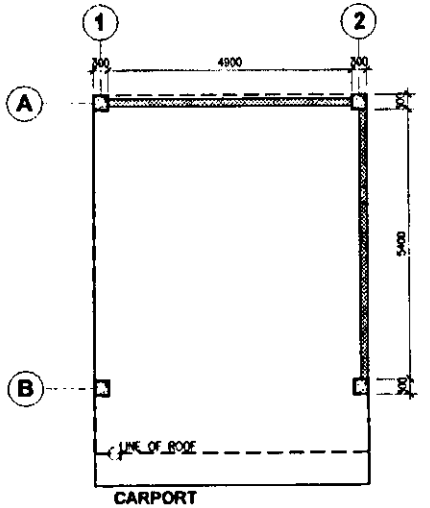
ASSESSMENT	UNIT/QUANTITY	ASSESSMENT	UNIT/QUANTITY
RAISE FINISH FLOOR LEVEL	±450mm FROM FIN. PAVEMENT	INSTALLATION OF 10mm THK. POLYETHYLENE FOAM DOUBLE FOIL ROOF INSULATION	SEE DETAILS
EXTENSION OF EXISTING COLUMNS	SEE DETAILS	INSTALLATION OF PLUMBING PIPE LINES AND CONSTRUCTION OF SEPTIC VAULT	SEE DETAILS
EXTENSION OF EXISTING WALLS	SEE DETAILS	CONSTRUCTION OF CATCH BASINS	6 SETS (DEPTH VARIES)
CONSTRUCTION OF NEW CONCRETE COLUMNS	2 SETS – 150mm x 350mm 2 SETS – 300mm X 300mm	REPLACEMENT OF SELECTED DOORS	SEE DETAILS
CONSTRUCTION OF NEW CHB WALL PARTITION AND PARAPET	SEE DETAILS	REPLACEMENT OF ALL DOOR HARDWARE	SEE DETAILS
CONSTRUCTION OF CONCRETE CANOPIES	SEE DETAILS	REPLACEMENT OF WINDOWS	SEE DETAILS
DEMOLITION AND CONSTRUCTION OF NEW REINFORCED CONCRETE BEAMS	SEE DETAILS	PROVISION FOR SLIDING METAL STORM SHUTTERS AND TEMPORARY LOCKSETS	SEE DETAILS
CONSTRUCTION OF PLANTBOX	SEE DETAILS	INSTALLATION OF RESTROOM FIXTURES AND ACCESSORIES:	
REPLACEMENT OF FLOOR TILES	FT-01: 86.00m² FT-02: 21.75m² FT-03: 7.50m²	WATER CLOSET	2 UNITS
REPLACEMENT OF WALL TILES	WT-01: 41.50m² WT-02: 2.60m² WT-03: 3.50m²	BIDET SPRAY	2 UNITS
		WALL-MOUNTED LAVATORY	2 UNITS
		SHOWER/ INTEGRATED FAUCET	2 UNITS
		WALL-MOUNTED PORCELAIN SOAP DISH	2 UNITS
INSTALLATION OF WALL CLADDING	WC-01: 14.25m²	INSTALLATION OF KITCHEN SINK	2 UNITS
INSTALLATION OF GRANITE COUNTERTOP	SS-01: 3.00m²	REPAINTING OF EXTERIOR AND INTERIOR WALLS AND SURFACES	SEE PAINT SCHEDULE FOR FINISHES
REPLACEMENT OF ROOF	A=142.00m²	REWIRING AND INSTALLATION OF LIGHTING FIXTURES, POWER OUTLETS, AND ELECTRICAL DEVICES	SEE DETAILS
INSTALLATION OF FICEM FASCIA BOARD	TOTAL LENGTH = 35.00m		
INSTALLATION OF SPANISH GUTTER	TOTAL LENGTH = 35.00m		
REPLACEMENT OF CEILING	A=132.00m²		
INSTALLATION OF CORNICE	1" x 1": 73.50m 3" x 3": 135.50m		



GUARD HOUSE

2 EXISTING PLAN

SCALE 1:100mts



CARPORT

3 EXISTING PLAN

SCALE 1:100mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

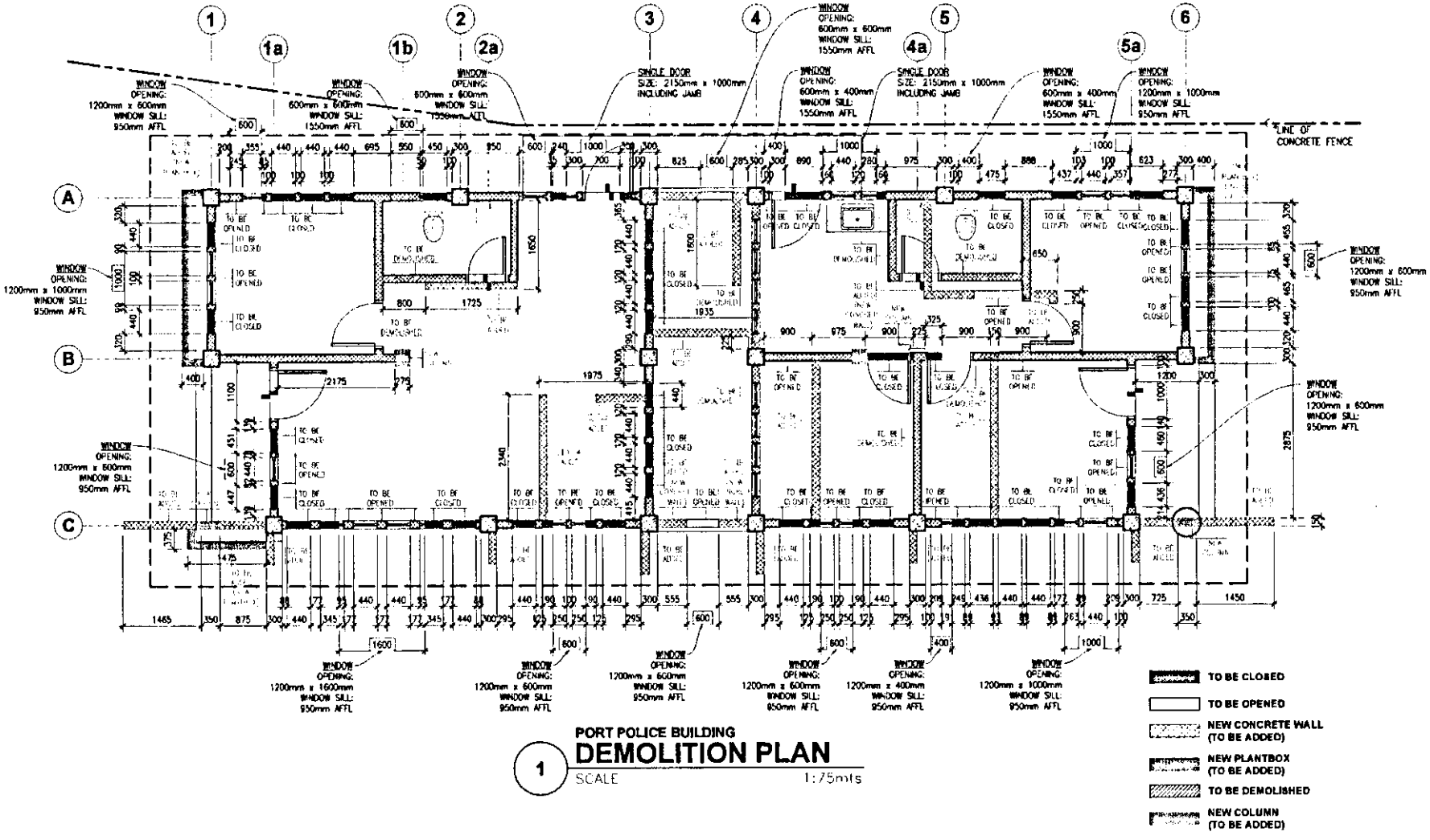
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASCPORT, LEGAZPI CITY

SHEET NO. 21/68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD M. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



PORT POLICE BUILDING

1 DEMOLITION PLAN

SCALE 1:75mts

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

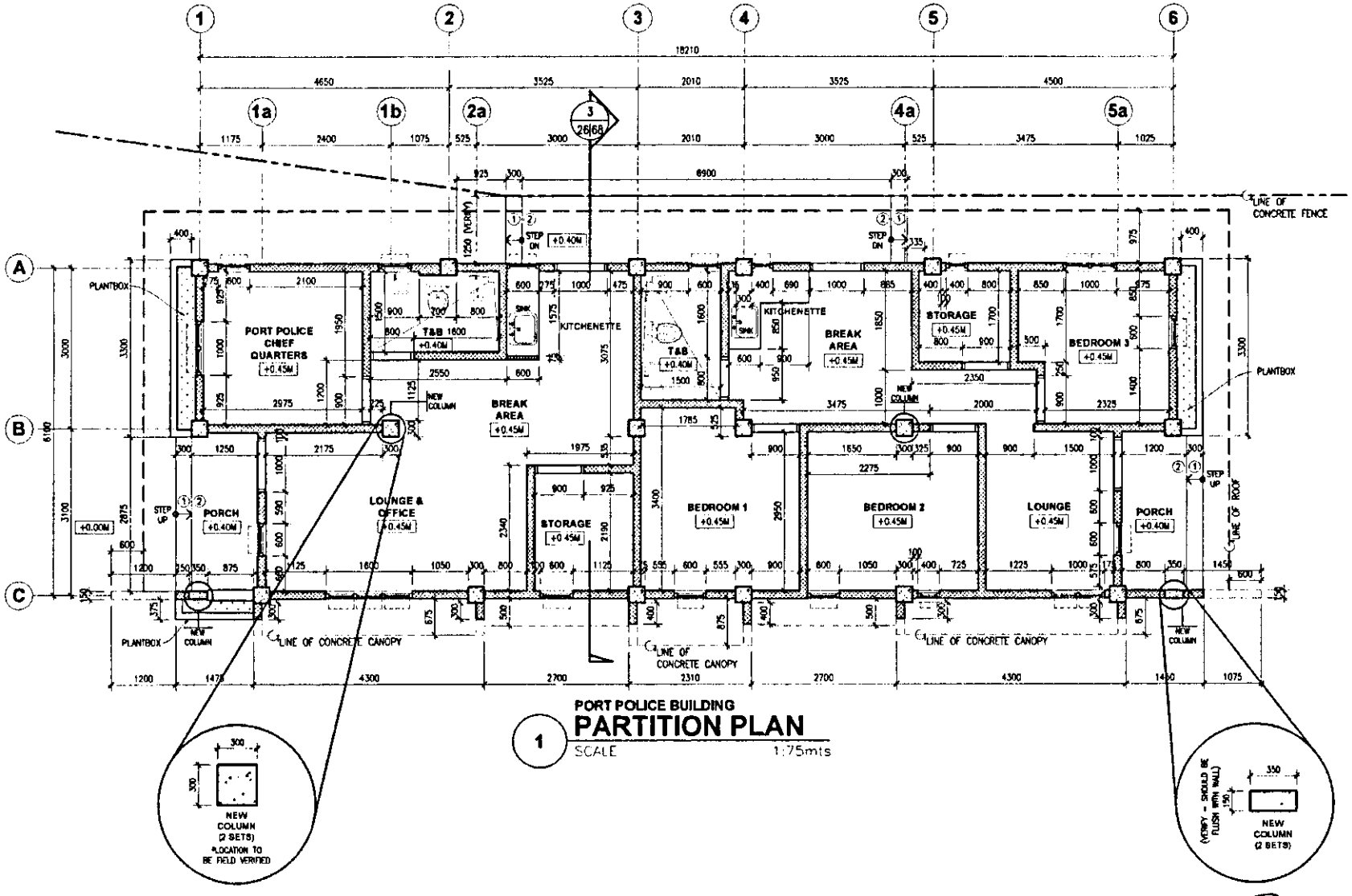
PROJECT TITLE: IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 22 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD L. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



PORT POLICE BUILDING

1 PARTITION PLAN

SCALE 1:75mts

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

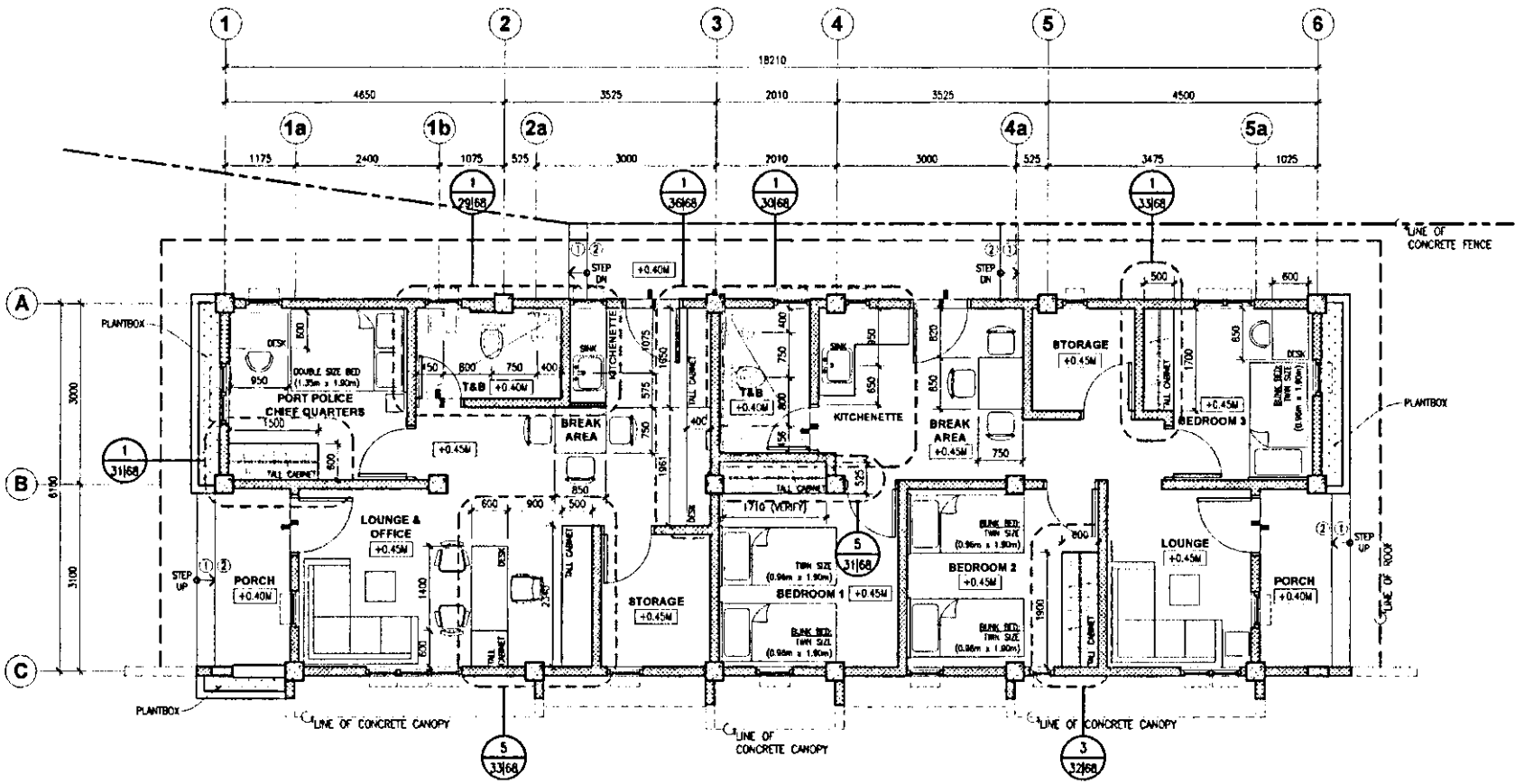
PROJECT TITLE
LOCATION: BASEPORT, LEGAZPI CITY

IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

SHEET NO. 23 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD A. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-REQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024

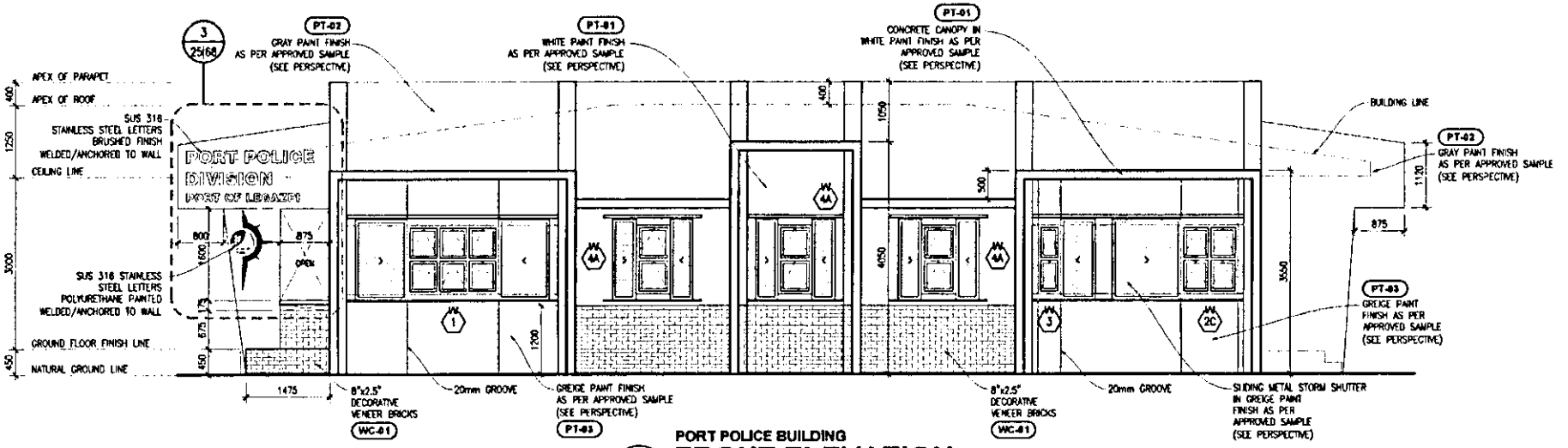


PORT POLICE BUILDING

1 FURNITURE PLAN

SCALE 1:75mts

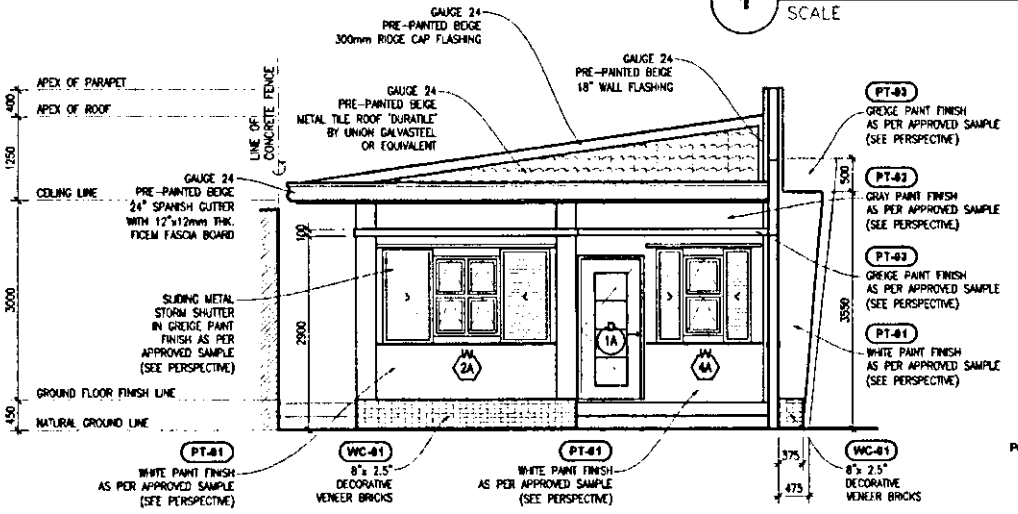
PHILIPPINE PORTS AUTHORITY PORT MANAGEMENT OFFICE OF BICOL REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500	PROJECT TITLE IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE LOCATION: BASEPORT, LEGAZPI CITY				SHEET NO. 24 68
PREPARED BY AGAPITO LLOYD V. TALAY, uap ARCHITECT II	CHECKED/REVIEWED BY JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	SUBMITTED BY MA. MAGNOLIA SINSON-NOQUEJO PORT MANAGER	RECOMMENDING APPROVAL REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	APPROVED JAMES J. GANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING	SEPT. 27, 2024



PORT POLICE BUILDING

1 FRONT ELEVATION

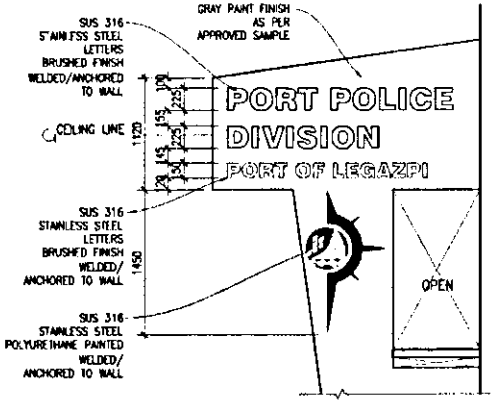
SCALE 1:75mts



PORT POLICE BUILDING

2 LEFT SIDE ELEVATION

SCALE 1:75mts



STAINLESS STEEL LETTERS

3 ELEVATION

SCALE 1:50mts

FINISH SCHEDULE

WALL PAINT

PT-01	COLOR: WHITE SHEEN: SEMI-GLOSS
PT-02	COLOR: GRAY SHEEN: SEMI-GLOSS
PT-03	COLOR: GREIGE SHEEN: SEMI-GLOSS

WALL CLADDING

WC-01	SIZE PER PIECE: 8" x 2.5" COLOR: VENETIAN RED INSTALLATION: STAGGERED 50%

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

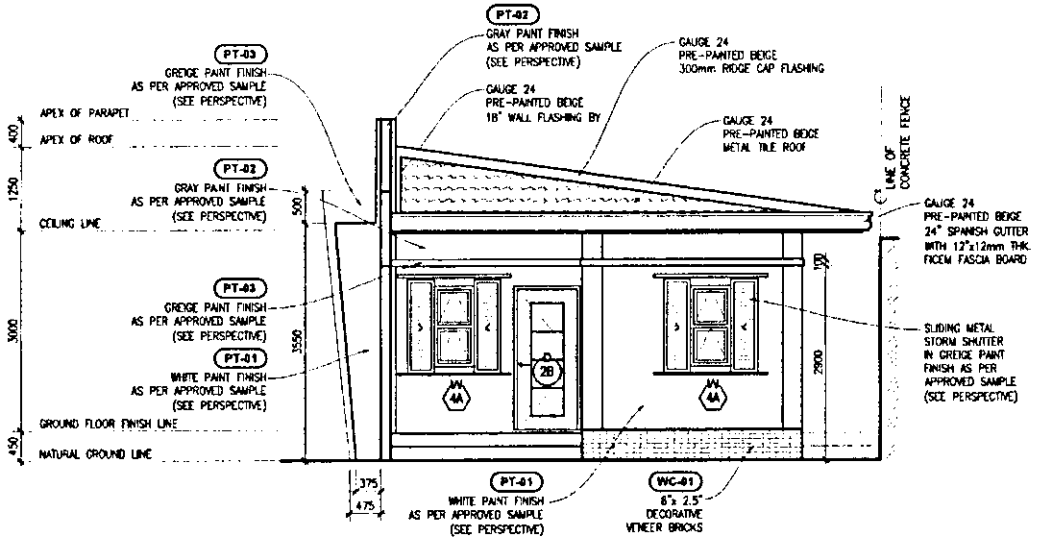
PROJECT TITLE: IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 25/68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD J. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-ESQUEJO	REYNAND C. PARAFINA	JAMES J. SANTALAO
ARCHITECT II	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

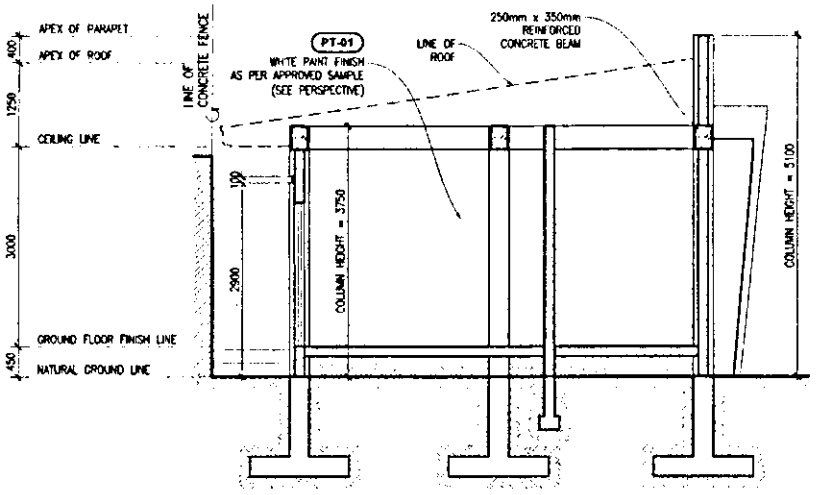
SEPT. 27, 2024



PORT POLICE BUILDING

1 RIGHT SIDE ELEVATION

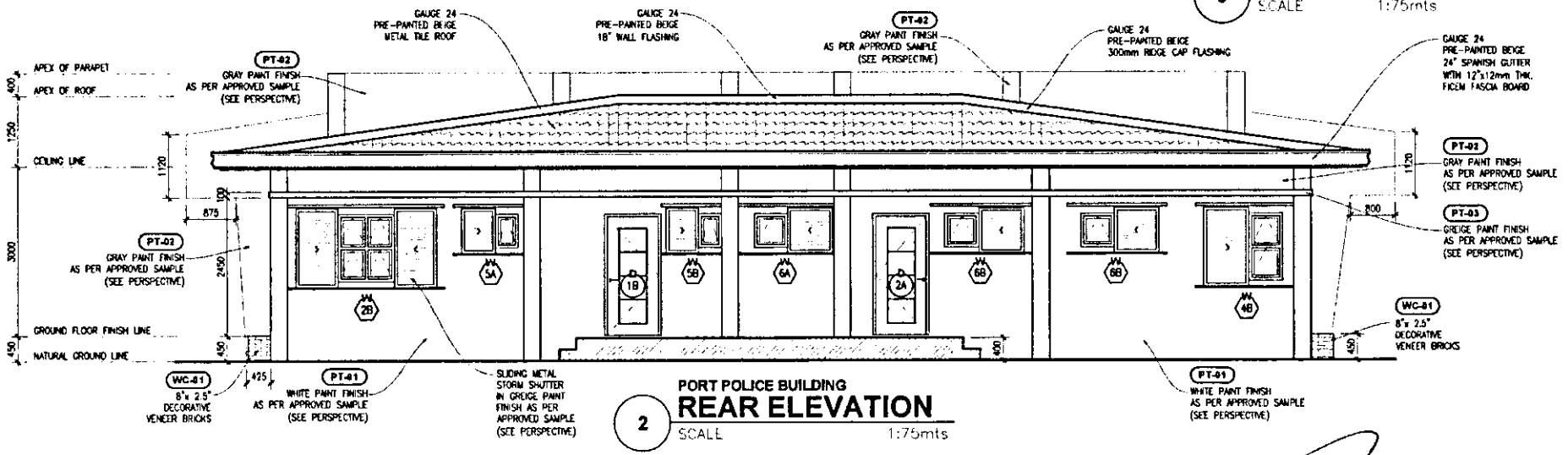
SCALE 1:75mts



PORT POLICE BUILDING

3 SECTION

SCALE 1:75mts



PORT POLICE BUILDING

2 REAR ELEVATION

SCALE 1:75mts

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL COMPLIMENT CENTER,
RAWIS, LEGAZPI CITY 4500

PROJECT TITLE

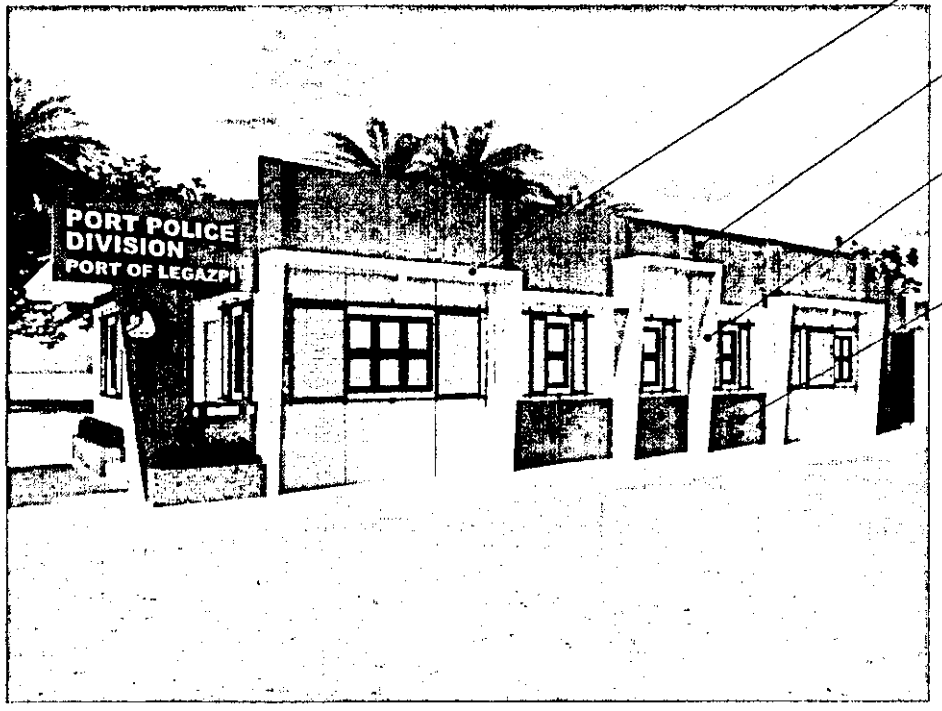
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 26 / 68

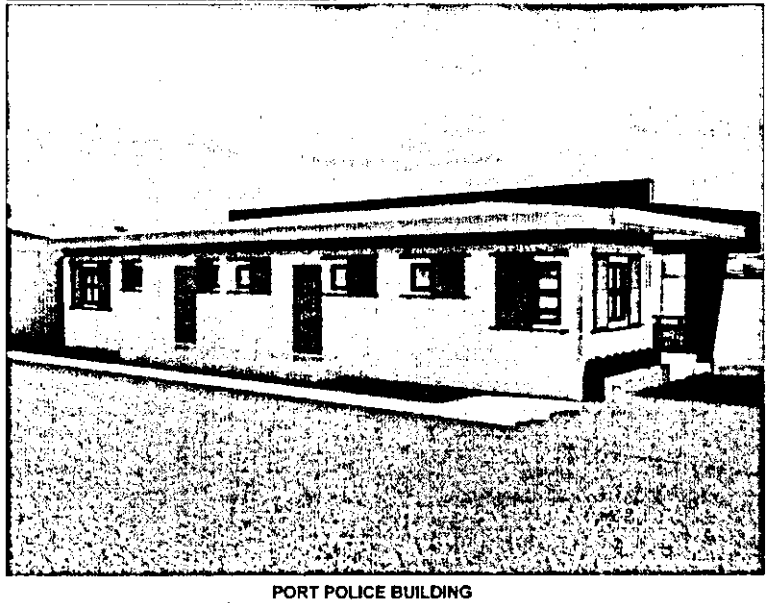
PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD C. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-ROQUEJO	REYNAND C. PARAFINA	JAMES J. BANTALAO
	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



1 PORT POLICE BUILDING
PERSPECTIVE
SCALE 1:75mts

FINISH SCHEDULE	
WALL PAINT	
	PT-01 COLOR: WHITE SHEEN: SEMI-GLOSS
	PT-02 COLOR: GRAY SHEEN: SEMI-GLOSS
	PT-03 COLOR: GREIGE SHEEN: SEMI-GLOSS
WALL CLADDING	
	WC-01 SIZE PER PIECE: 8" x 2.5" COLOR: VENETIAN RED INSTALLATION: STAGGERED 50%



2 PORT POLICE BUILDING
PERSPECTIVE
SCALE 1:75mts

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER,
RAWIS, LEGAZPI CITY 4500

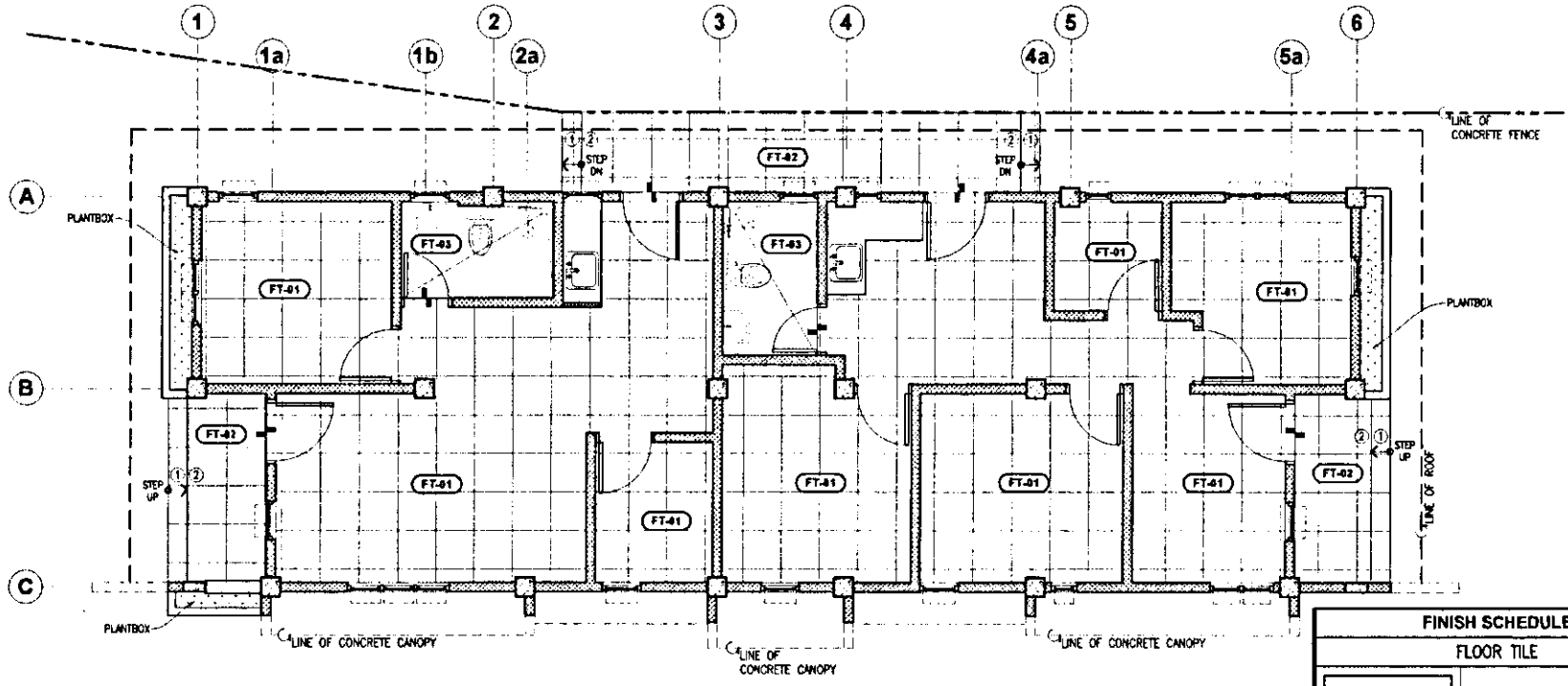
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LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 27 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD J. TALAY, uap ARCHITECT III	JOHN S. DE LOS SANTOS ACTING DIVISION MANAGER A, ESD	MA. MAGNOLIA SINSON-ESQUEJO PORT MANAGER	REYNAND C. PARAFINA MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	JAMES J. BANTALAO ASSISTANT GENERAL MANAGER FOR ENGINEERING

SEPT. 27, 2024



PORT POLICE BUILDING

1 FLOOR FINISH PLAN

SCALE 1:75mts

FINISH SCHEDULE	
FLOOR TILE	
	FT-01 AREA: 86.00m² SPECIFICATIONS: 60cm x 60cm GLAZED PORCELAIN FLOOR TILES INSTALLATION: STRAIGHT MATCH
	FT-02 AREA: 21.75m² SPECIFICATIONS: 60cm X 60cm CERAMIC ANTI-SLIP FLOOR TILE INSTALLATION: STRAIGHT MATCH
	FT-03 AREA: 7.50m² SPECIFICATIONS: 60cm x 60cm PORCELAIN FLOOR TILE, MATTE/ NON-SKID FINISH INSTALLATION: STRAIGHT MATCH

PHILIPPINE PORTS AUTHORITY
PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

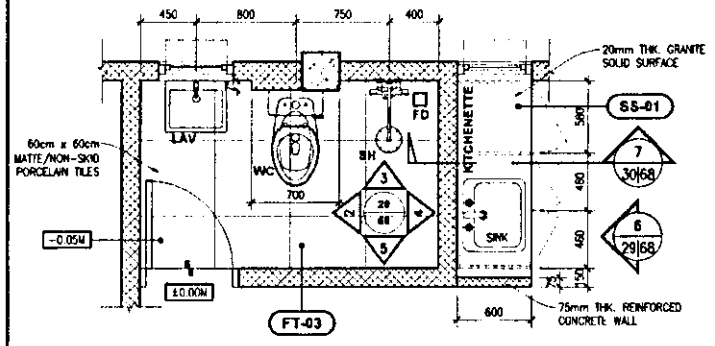
PROJECT TITLE
IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 28 / 68

PREPARED BY	CHECKED/REVIEWED BY	SUBMITTED BY	RECOMMENDING APPROVAL	APPROVED
AGAPITO LLOYD L. TALAY, uap	JOHN S. DE LOS SANTOS	MA. MAGNOLIA SINSON-NEQUEJO	REYNAND C. PARAFINA	JAMES J. GANTALAO
ARCHITECT	ACTING DIVISION MANAGER A, ESD	PORT MANAGER	MANAGER, PORT PLANNING AND DESIGN DEPARTMENT	ASSISTANT GENERAL MANAGER FOR ENGINEERING

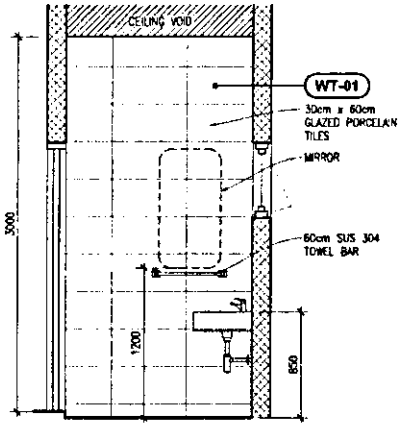
SEPT. 27, 2024



T&B AND KITCHENETTE @ PORT POLICE OFFICE

1 PLAN VIEW

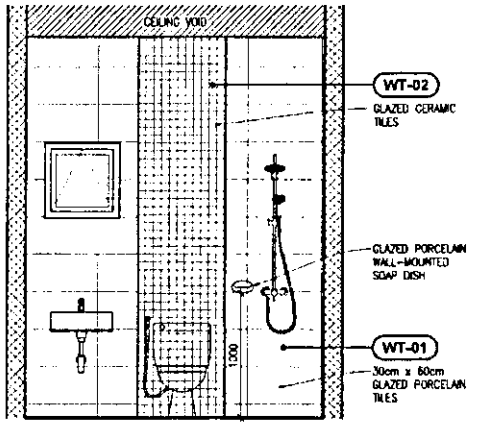
SCALE 1:40mts



T&B @ PORT POLICE OFFICE

2 ELEVATION

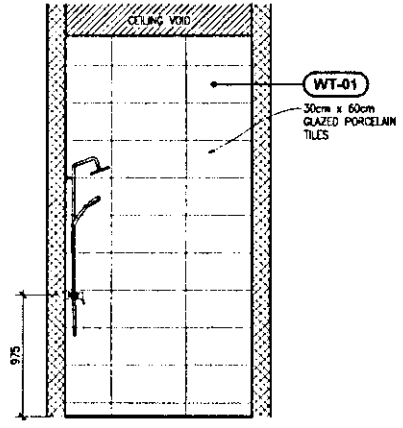
SCALE 1:40mts



T&B @ PORT POLICE OFFICE

3 ELEVATION

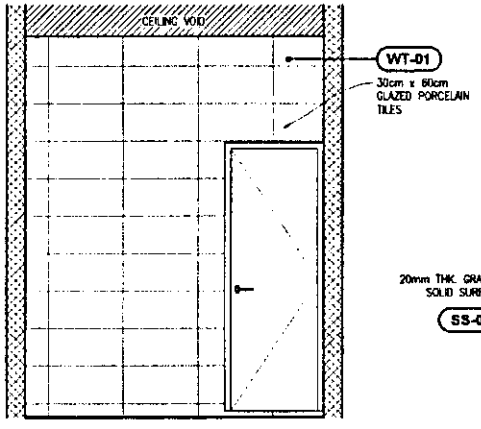
SCALE 1:40mts



T&B @ PORT POLICE OFFICE

4 ELEVATION

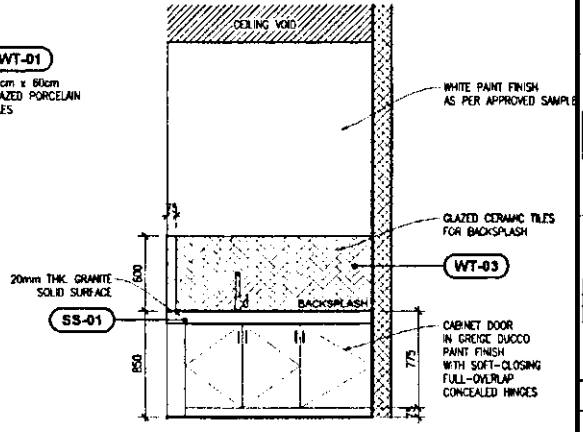
SCALE 1:40mts



T&B @ PORT POLICE OFFICE

5 ELEVATION

SCALE 1:40mts



KITCHENETTE @ PORT POLICE OFFICE

6 ELEVATION

SCALE 1:40mts

FINISH SCHEDULE

WALL TILE	
	WT-01 AREA: 41.50m² SPECIFICATIONS: 30cm x 60cm PORCELAIN WALL TILE, GLOSSY FINISH INSTALLATION: STRAIGHT MATCH
	WT-02 AREA: 2.60m² SPECIFICATIONS: 30cm x 60cm GLOSSY CERAMIC WALL TILE INSTALLATION: STRAIGHT MATCH
	WT-03 AREA: 3.50m² SPECIFICATIONS: 30cm x 60cm GLOSSY CERAMIC WALL TILE INSTALLATION: STRAIGHT MATCH
SOLID SURFACE	
	SS-01 AREA: 3.00m² THICKNESS: 20mm TYPE: GRANITE COLOR: JET/MONGOLIAN BLACK FINISH: POLISHED PROFILE: EASED EDGE

PHILIPPINE PORTS AUTHORITY

PORT MANAGEMENT OFFICE OF BICOL
REGIONAL GOVERNMENT CENTER, RAWIS, LEGAZPI CITY 4500

PROJECT TITLE: IMPROVEMENT OF BREAKWATER NO. 2, SLAB ADJACENT TO RORO RAMP, FENDER AND MOORING SYSTEM, PORT POLICE BUILDING, GUARD OUTPOST, CARPORT, FENCE, AND GATE

LOCATION: BASEPORT, LEGAZPI CITY

SHEET NO. 29/68

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SEPT. 27, 2024