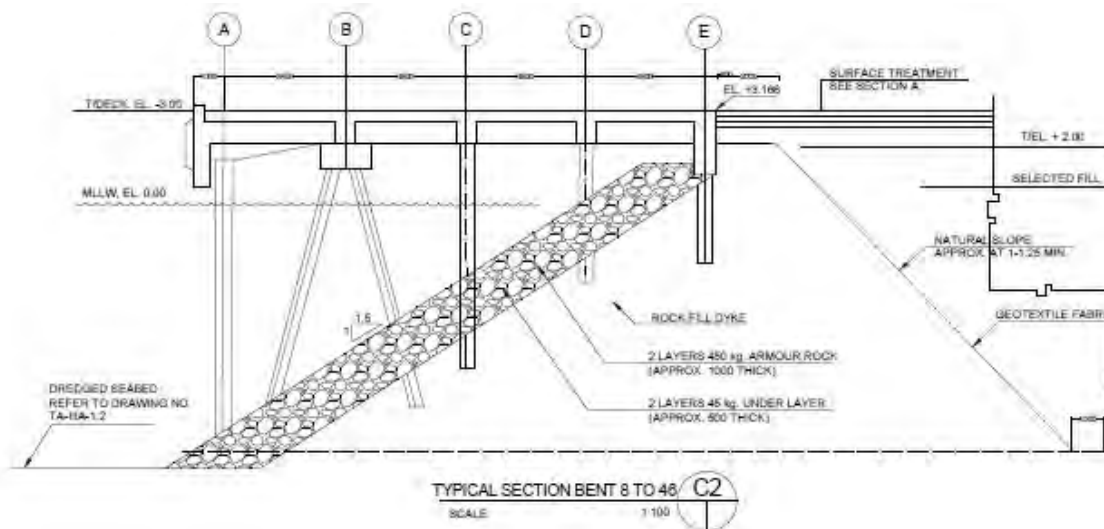
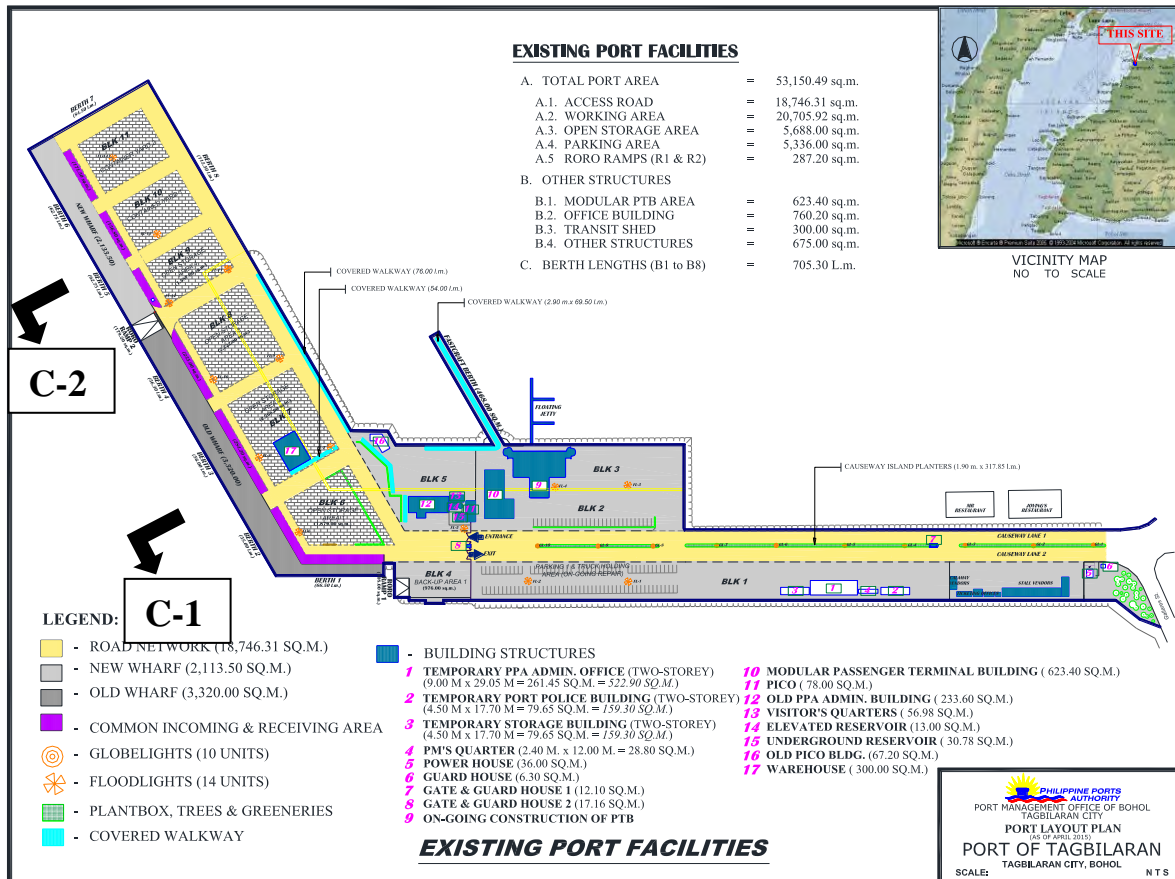
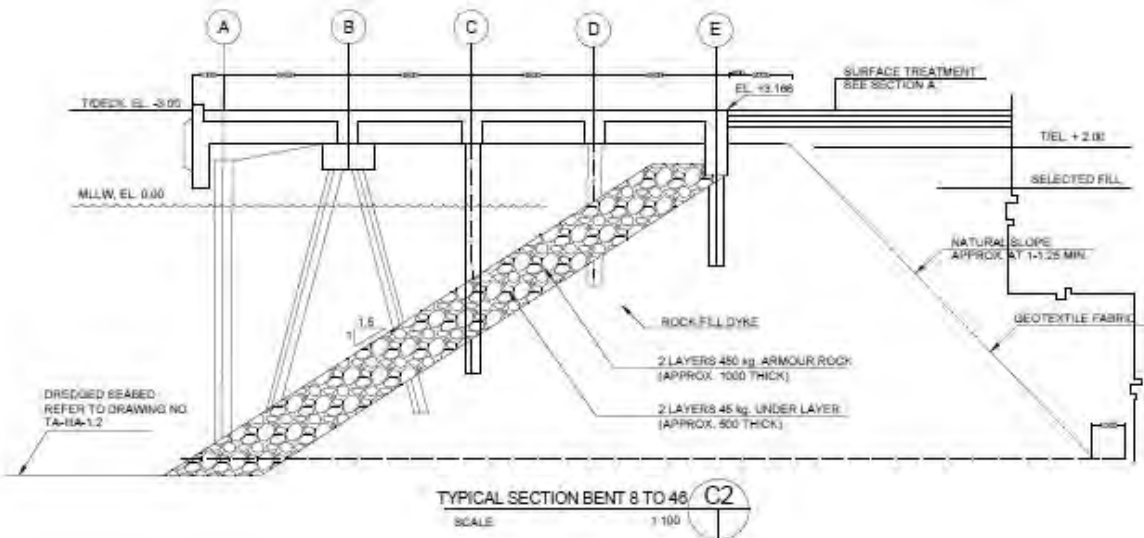


3.2. Bohol Province

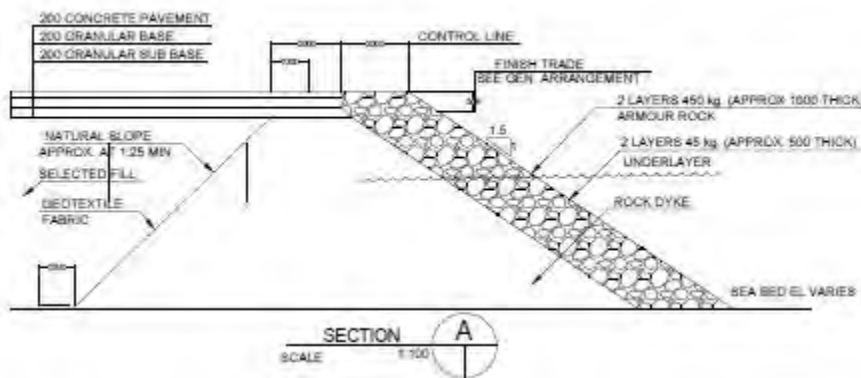
3.2.1. Tagbilaran



Section C-1 (Concrete pile)



Section C-2 (Steel pile ϕ 457.2, $t=12.7\text{mm}$)




Typical section of Revetment



Figure No.2
Concrete Pavement at Open storage area settled after the OCT 2013, 7.2 magnitude EQ.

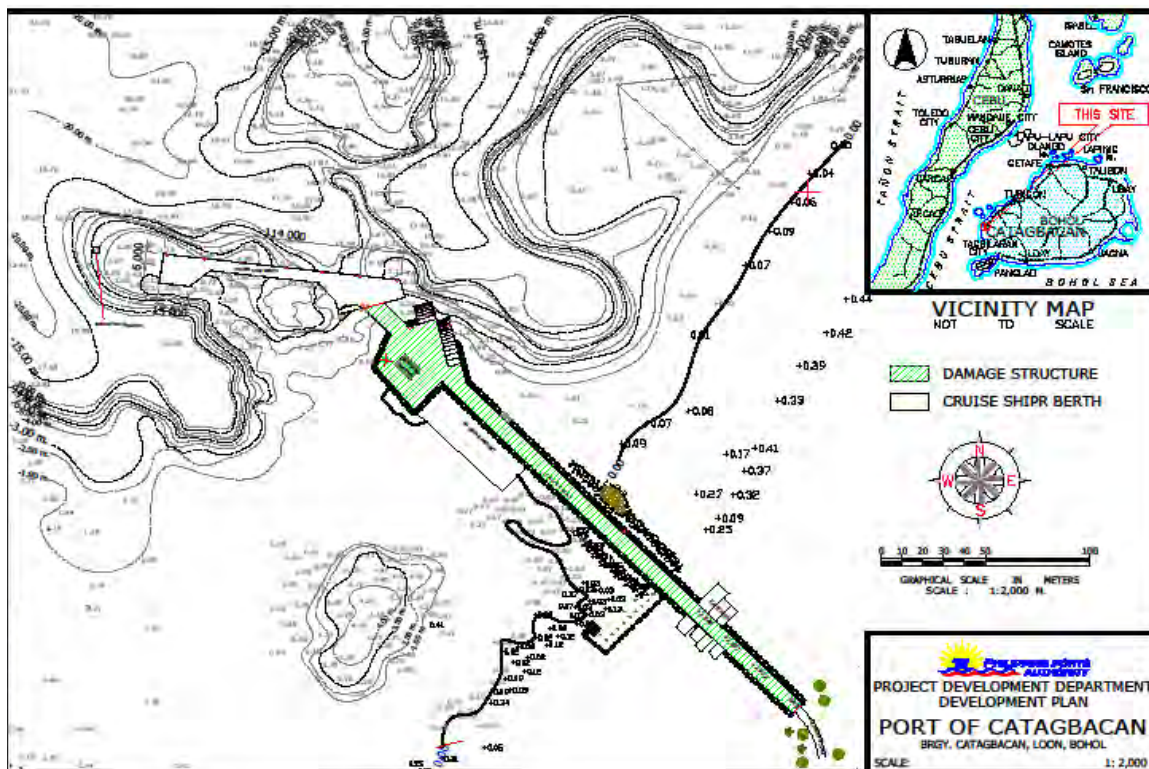


Figure No.3
Damaged after OCT 2013, 7.2 magnitude EQ.

 <p>A photograph of a concrete pier structure extending into the water. A yellow arrow points from a label 'RC Pier' to the pier's edge.</p>	 <p>A wide-angle photograph of a port area with several large, blue-roofed structures. Two yellow arrows point from labels 'Transit Shed' to these structures.</p>
<p>Figure No.4 Fastcraft Berth</p>	<p>Figure No.5 Figure Shows the Transit shed and the open storage area</p>
 <p>A photograph of a white ferry named 'LITE FERRIES' docked at a concrete wharf. A yellow arrow points from a label 'Existing Wharf' to the dock area.</p>	 <p>A photograph of a port area with several tall, white lighting towers. A yellow arrow points from a label 'Lighting Facility' to one of the towers.</p>
<p>Figure No.6 Wharf utilized as Roro berth.</p>	<p>Figure No.6 Existing Lighting Facilities.</p>
 <p>A photograph of an old, multi-story concrete building with significant structural damage. A yellow arrow points from a label 'Old PPA Admin Bldg.' to the building.</p>	 <p>A photograph of a new, modern passenger terminal building with a yellow facade. A yellow arrow points from a label 'New PTB' to the building. In the foreground, there is a newly paved concrete area labeled 'Newly paved PCCP'.</p>
<p>Figure No.2 Old PPA Admin building was abandoned due damages to its structural member caused by Oct. 2013, 7.2 magnitude EQ.</p>	<p>Figure No.3 New Passenger Terminal Building.</p>

 <p style="color: yellow; font-weight: bold;">Floor slab level inside the Transit Shed</p>	
<p style="text-align: center;">Figure No.4</p> <p>Figure Shows the difference in elevation inside and outside the transit shed.</p>	

3.2.2. Loon (Catagbacan)



Port Layout and Hydrographic Survey Plan

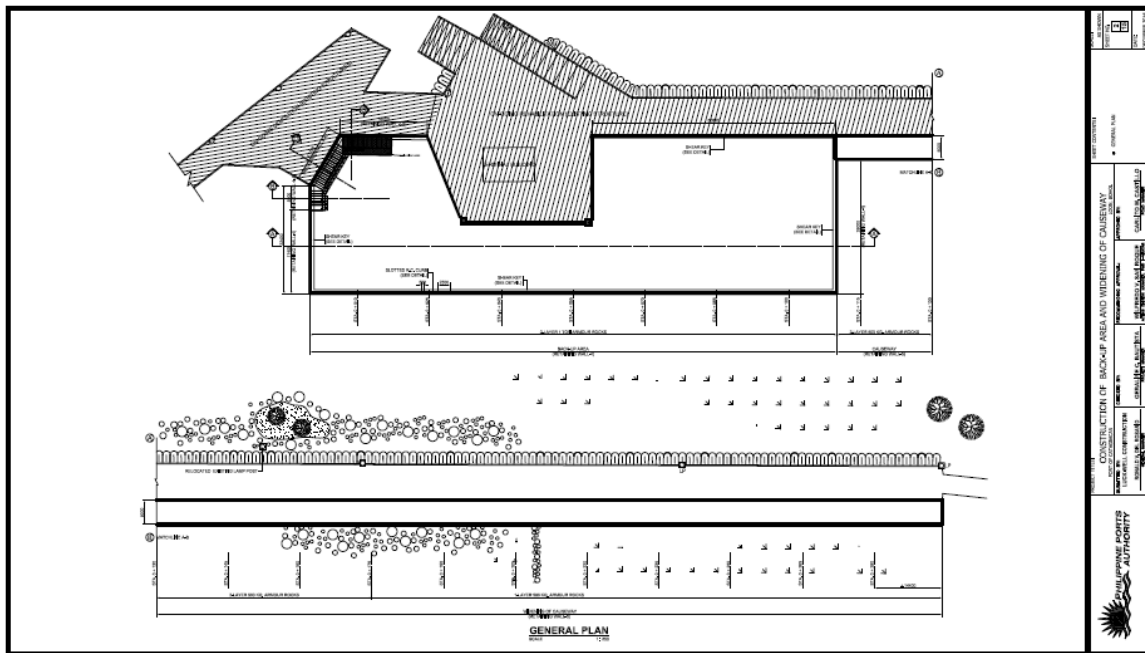


Figure No.1-b

General Plan

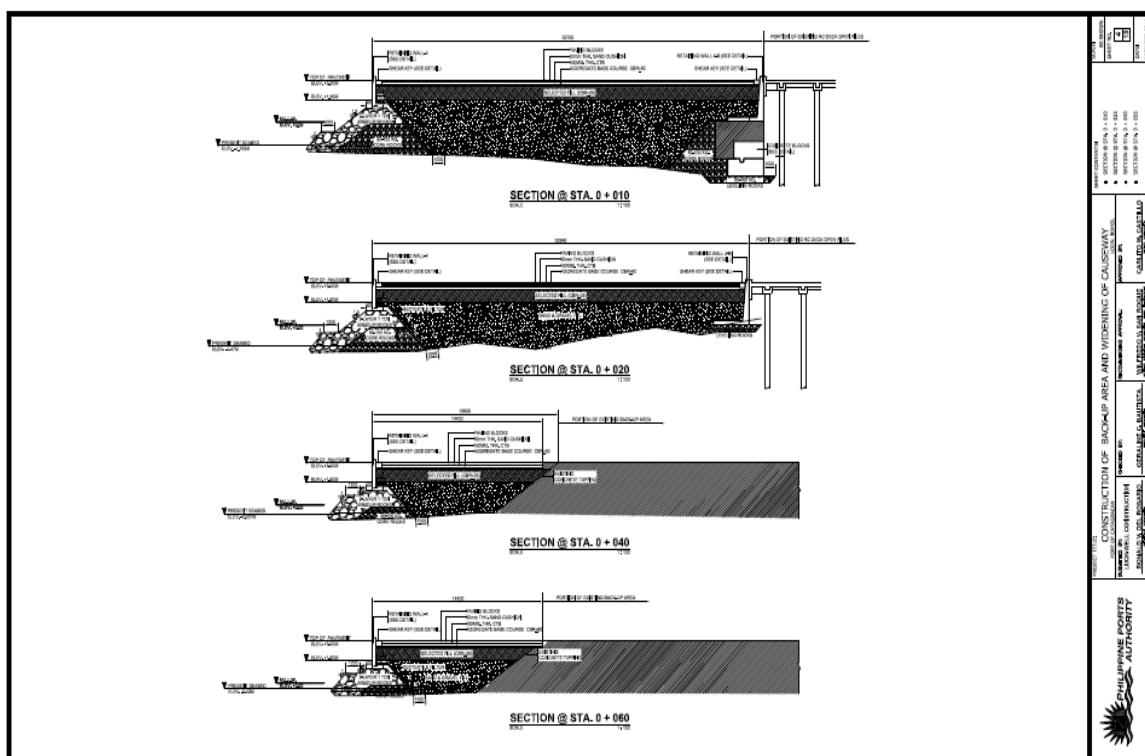


Figure No.1-c

Cross Section.

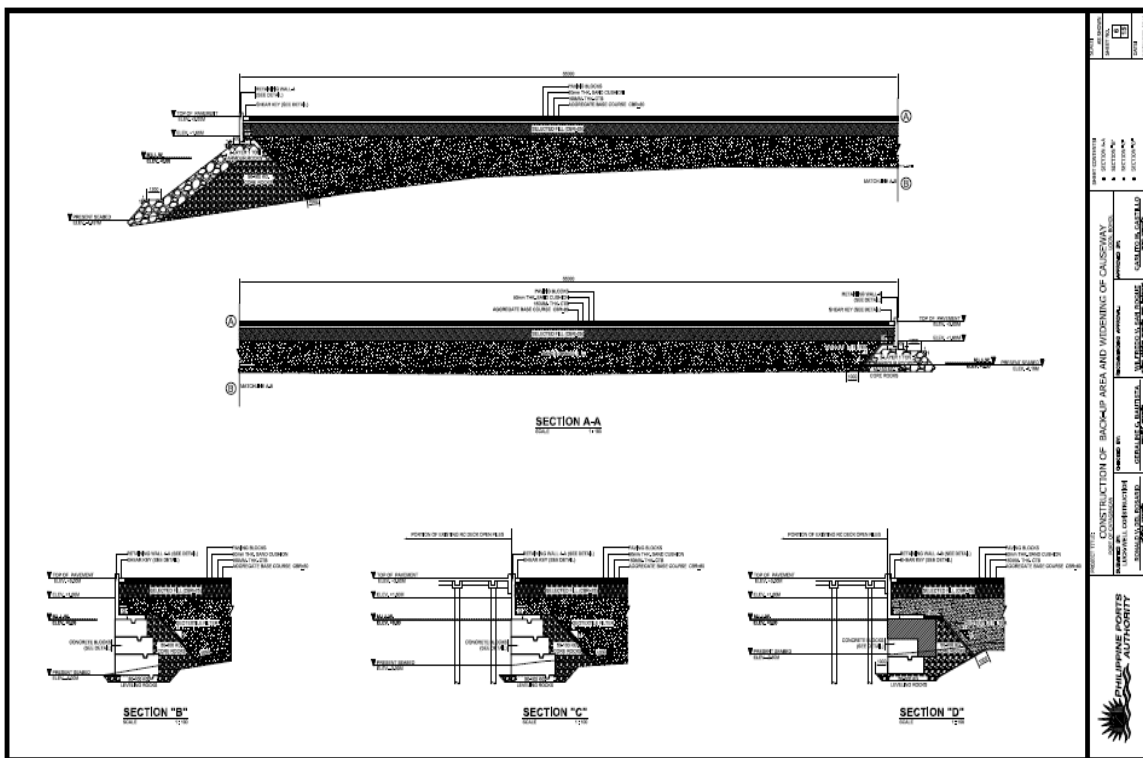


Figure No.1-d Longitudinal Section

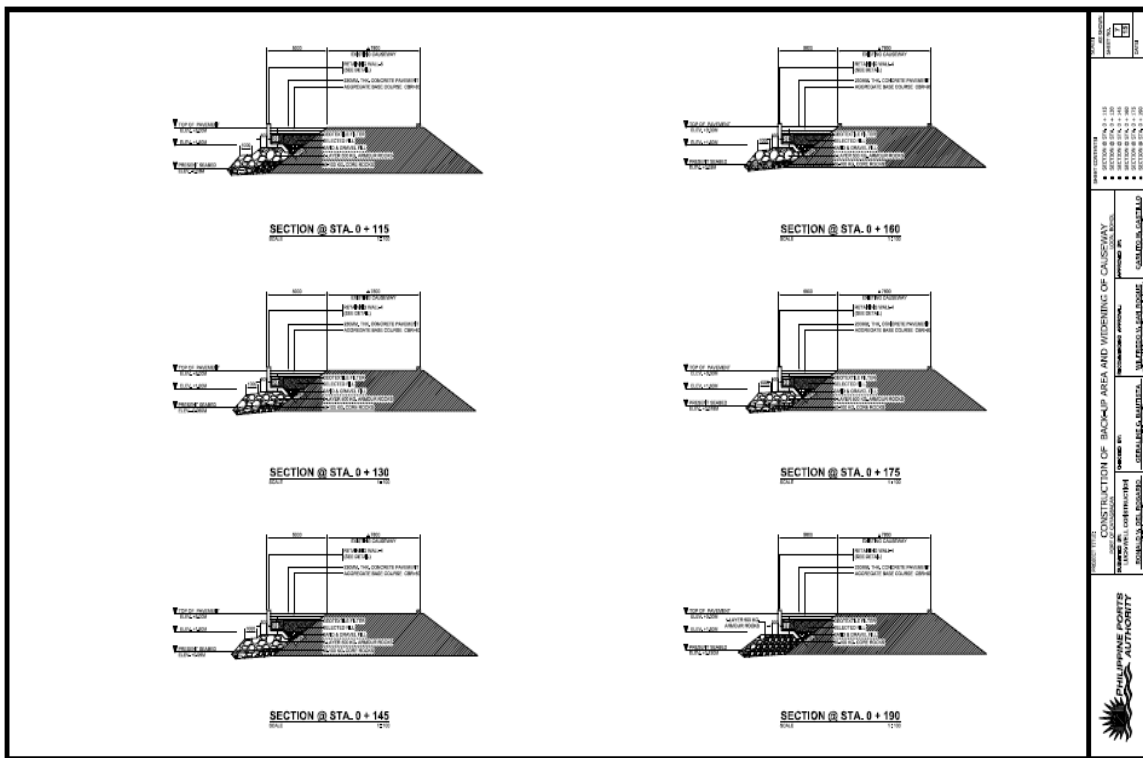


Figure No.1-e Causeway Cross Section

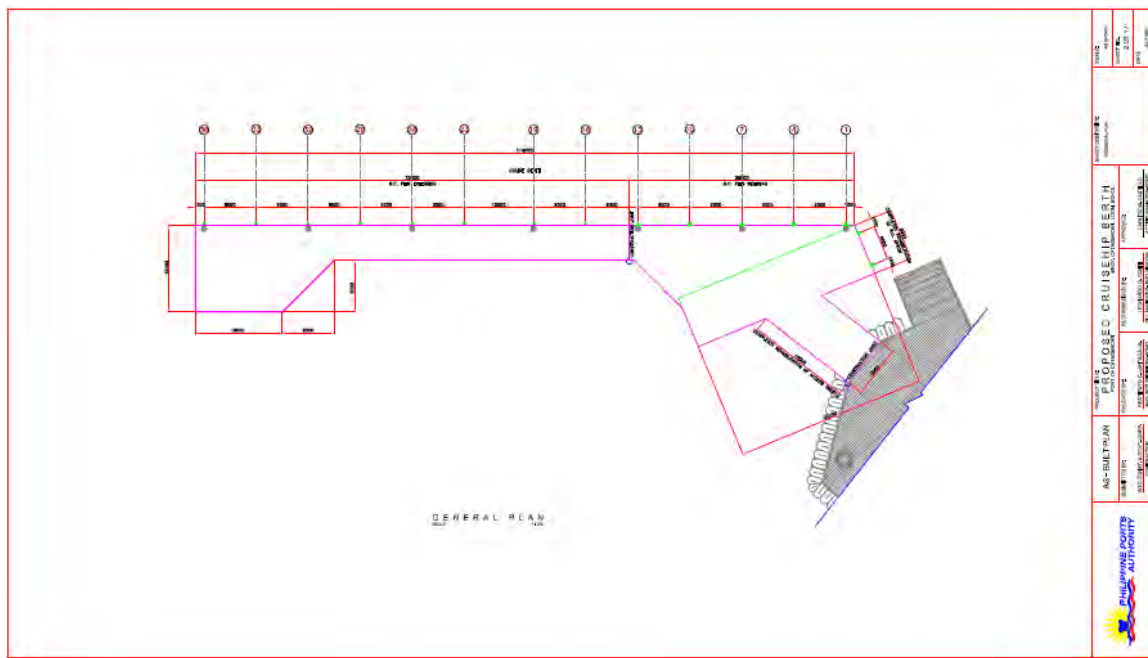


Figure No.2-a

General Plan of Cruise Ship Berth



Figure No.2-b

Part Plan of Cruise Ship Berth

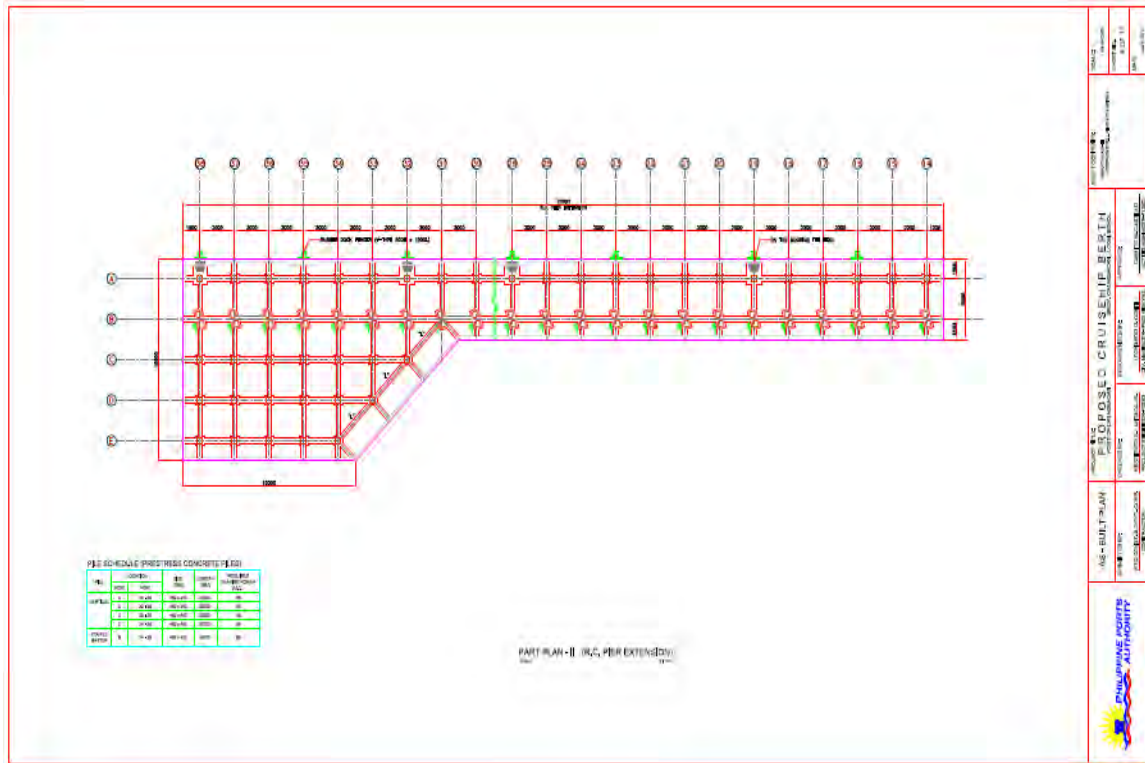


Figure No.2-c

Part Plan of Cruise Ship Berth-Pier Extension

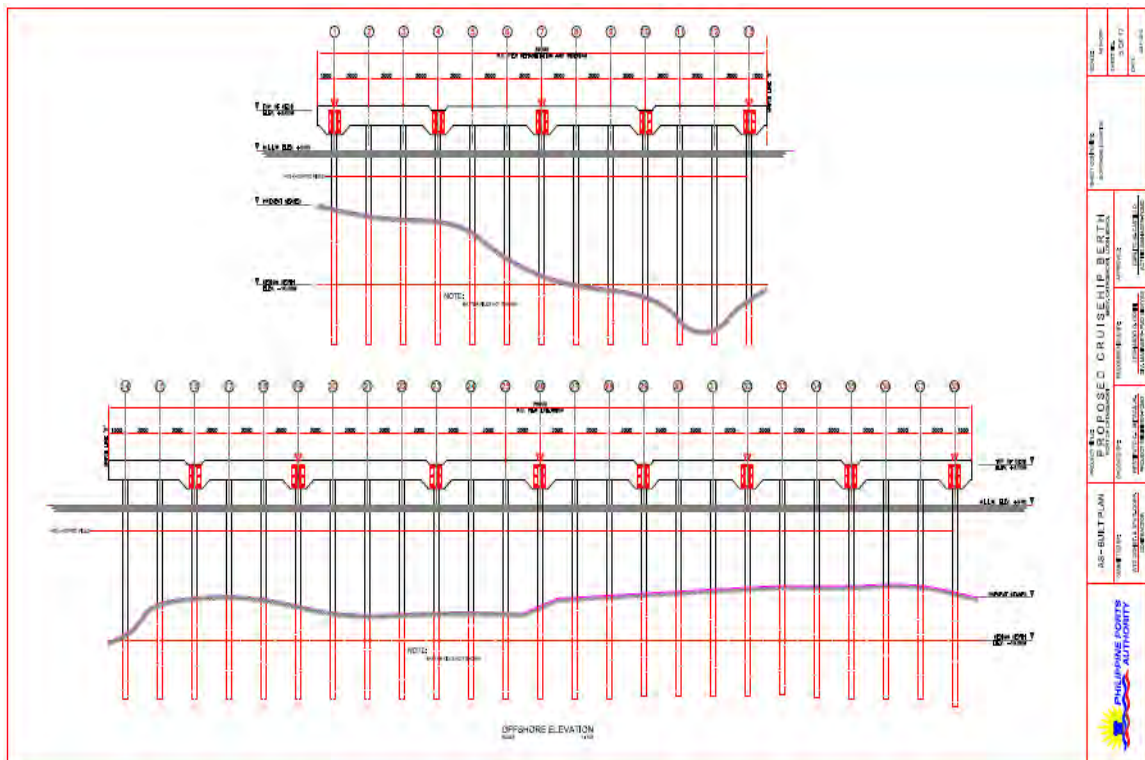


Figure No.2-d Offshore Elevation of Cruise Ship berth

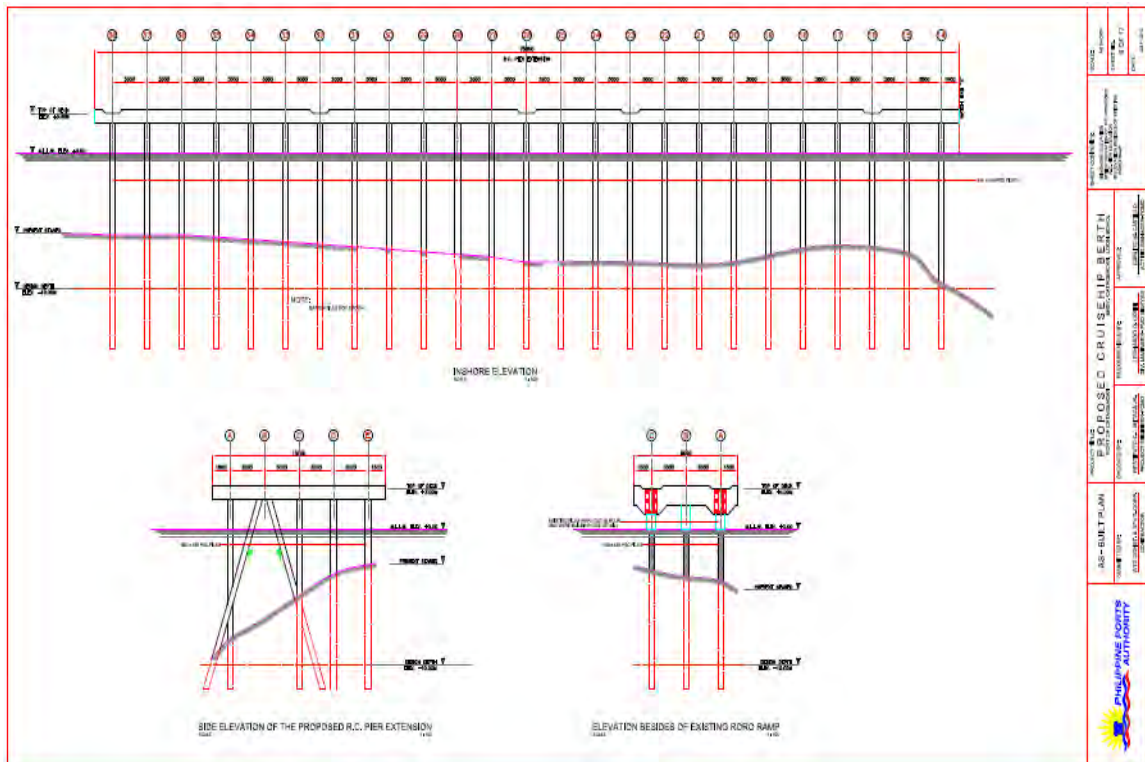


Figure No.2-e

On-shore and side elevation of Cruise Ship berth.

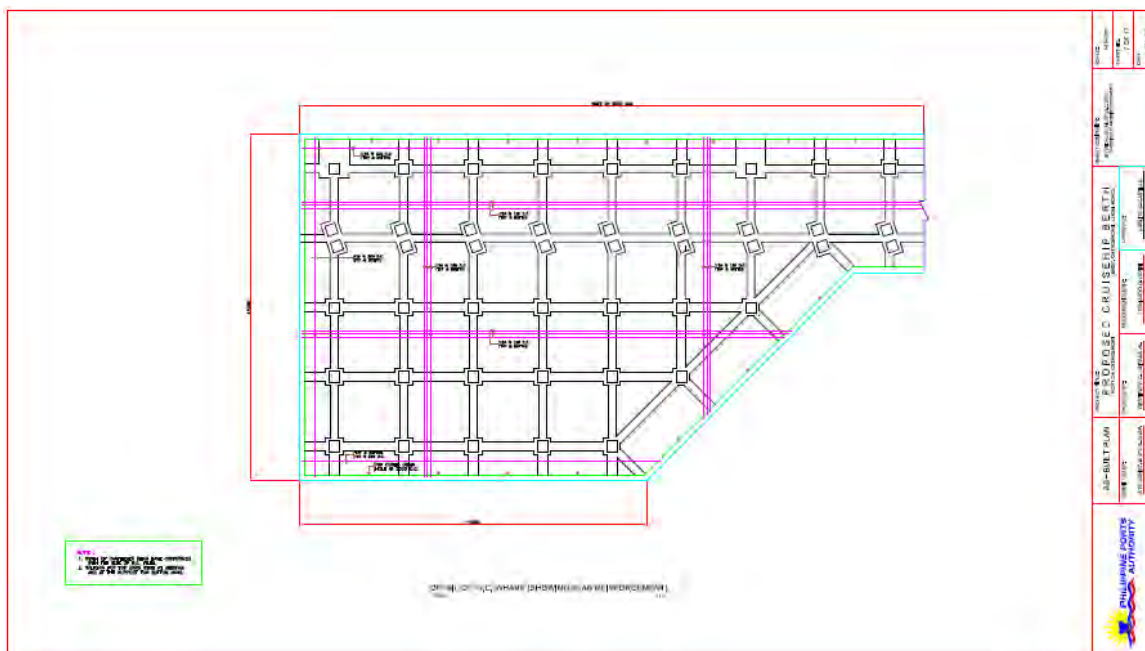


Figure No.2-f Detail of RC Wharf

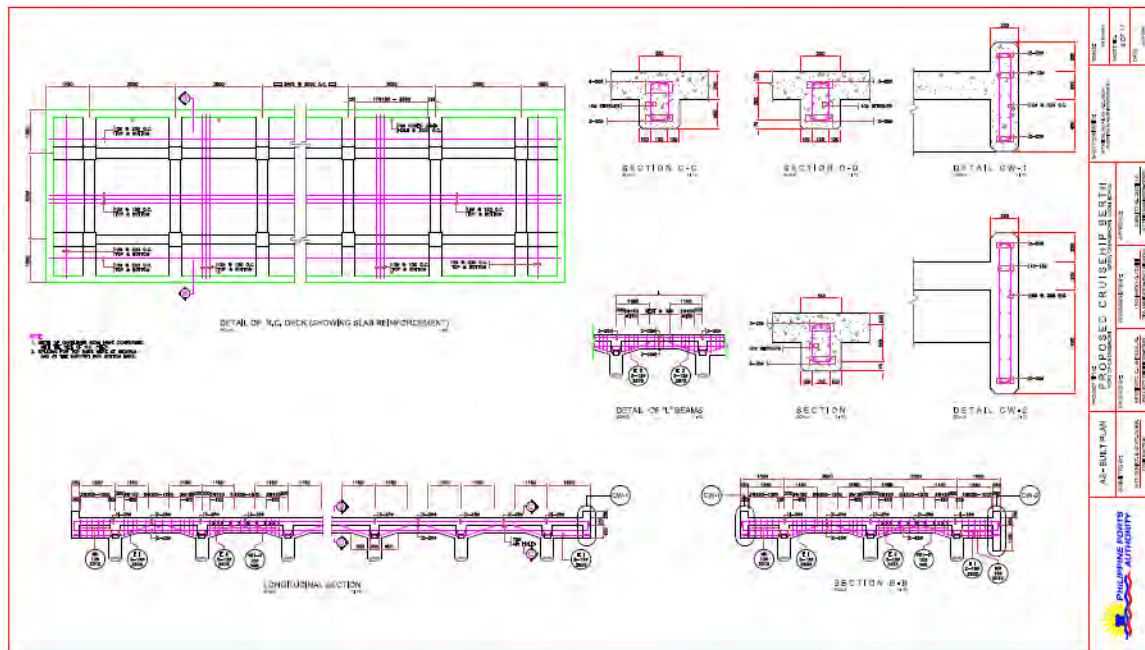


Figure No.2-g Detail of RC Wharf

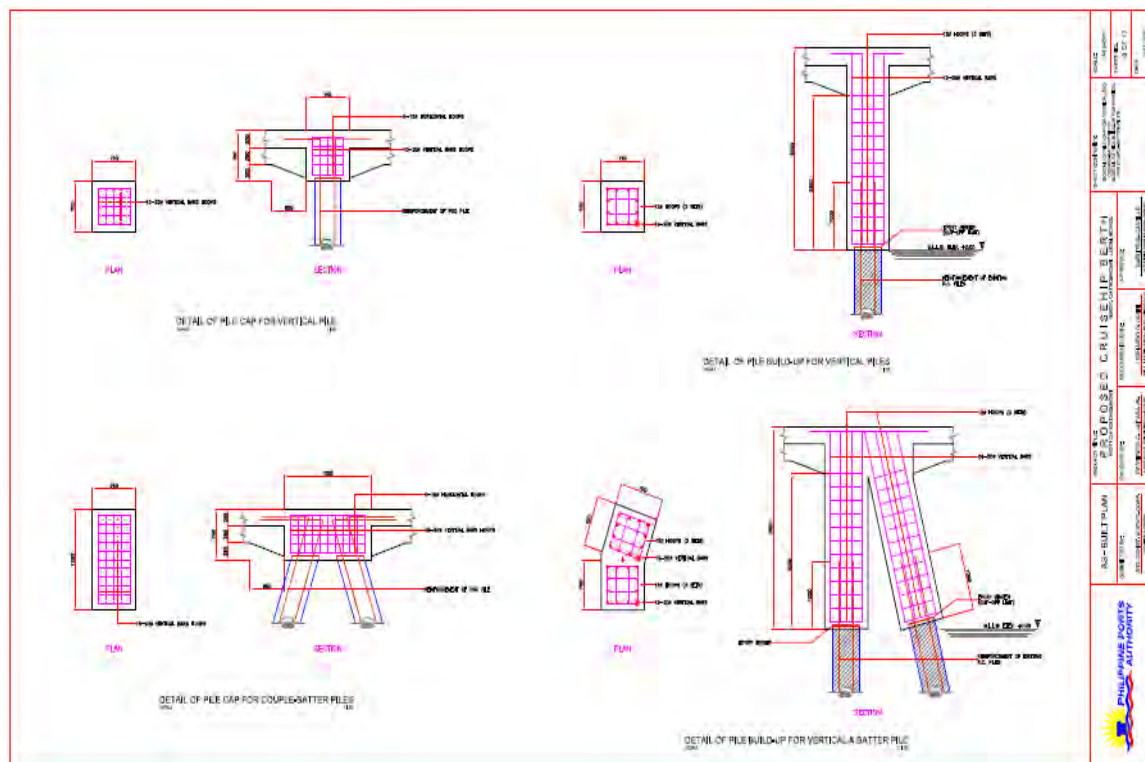


Figure No.2-h

Detail of Pile Cap

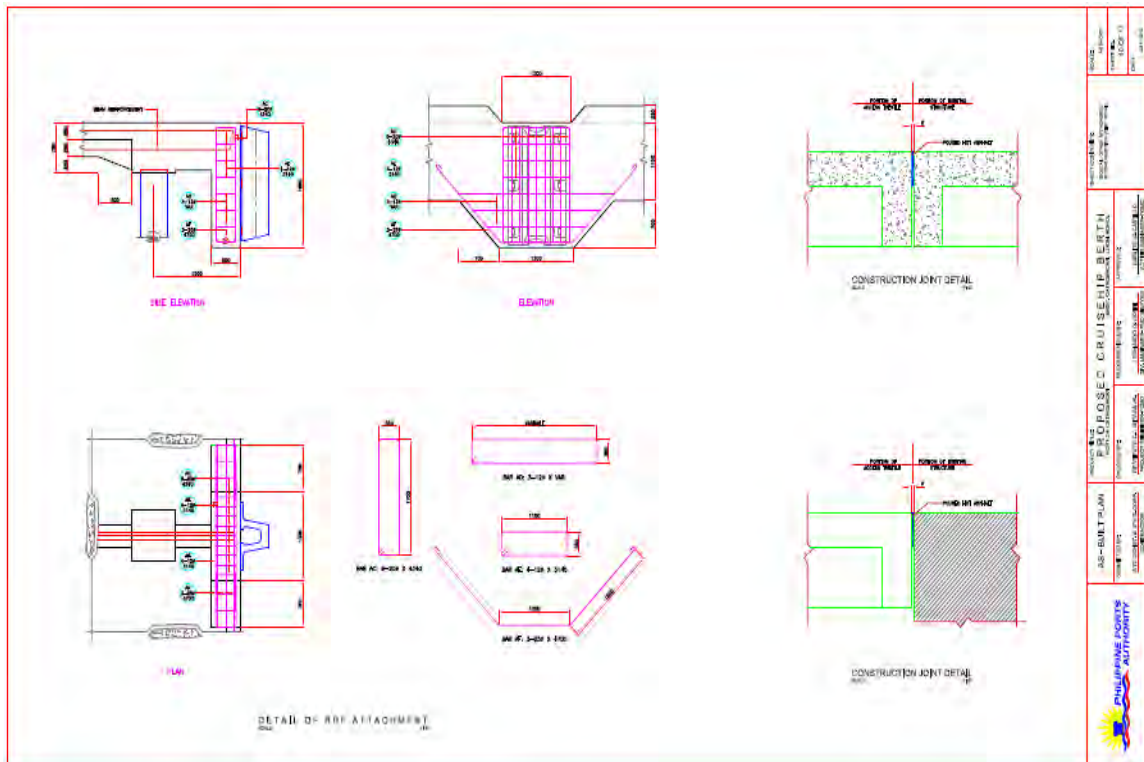


Figure No.2-i

Detail of Rubber Dock Fender Attachment (RDF)

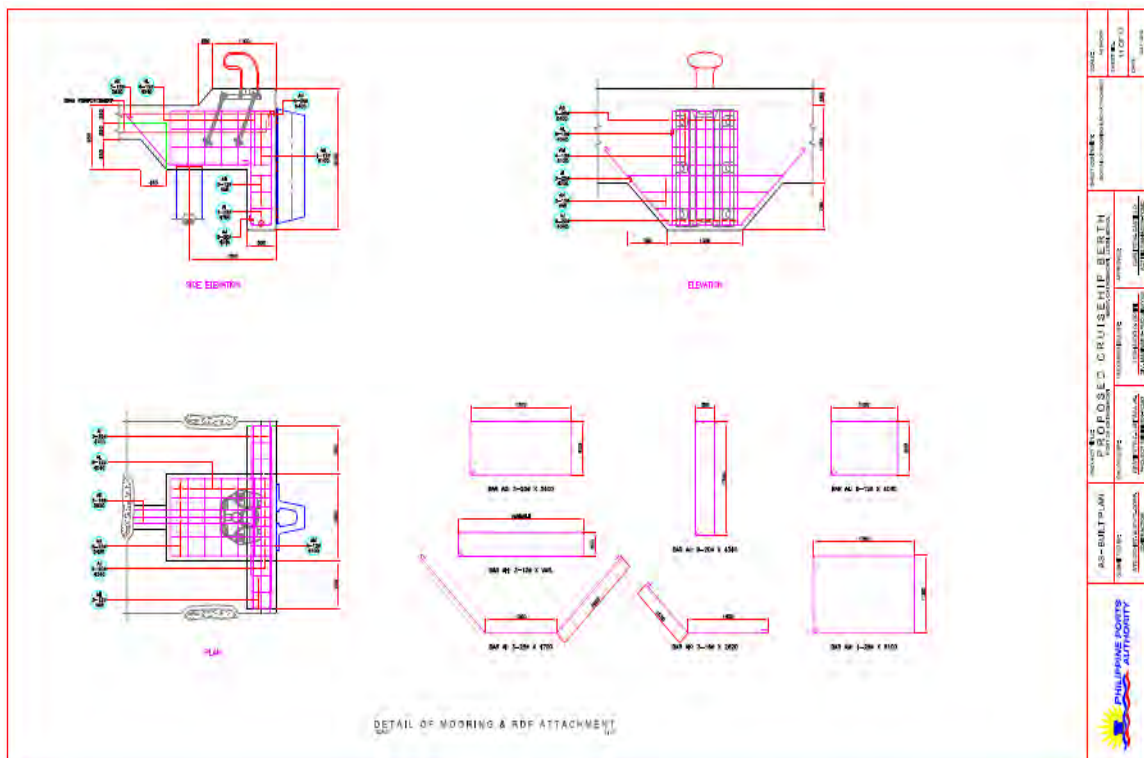


Figure No.2-j Detail of Mooring and RDF Attachment.

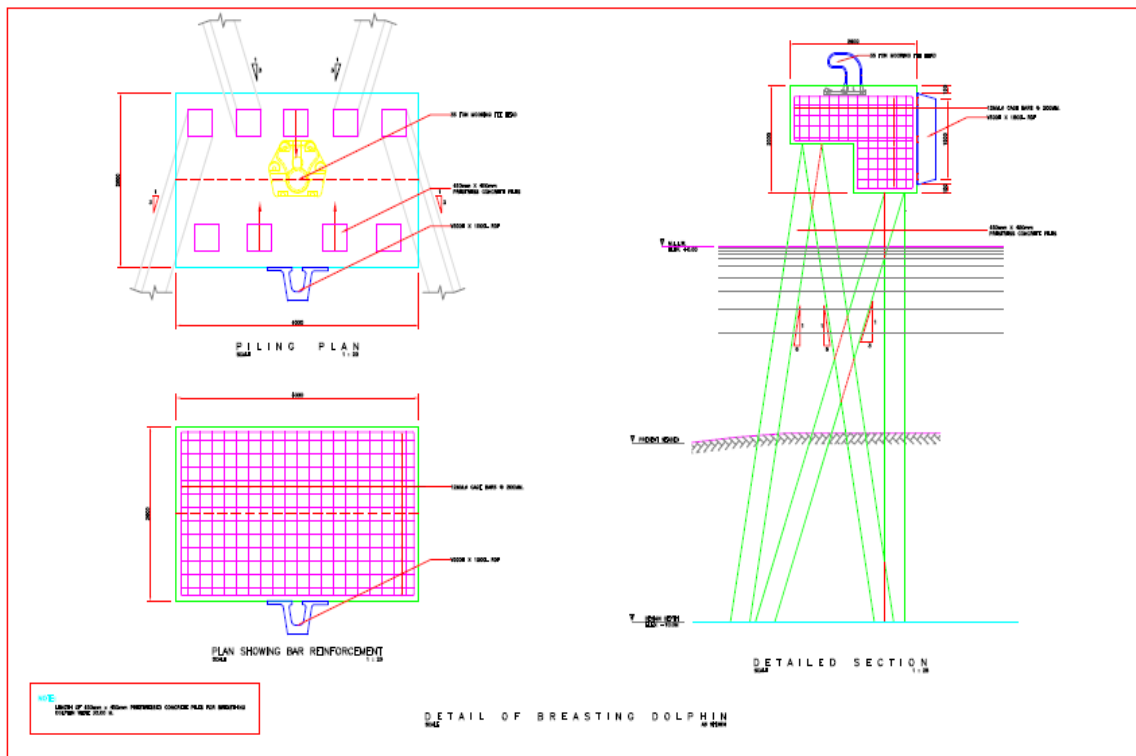


Figure No.2-k Detail of Breasting Dolphin

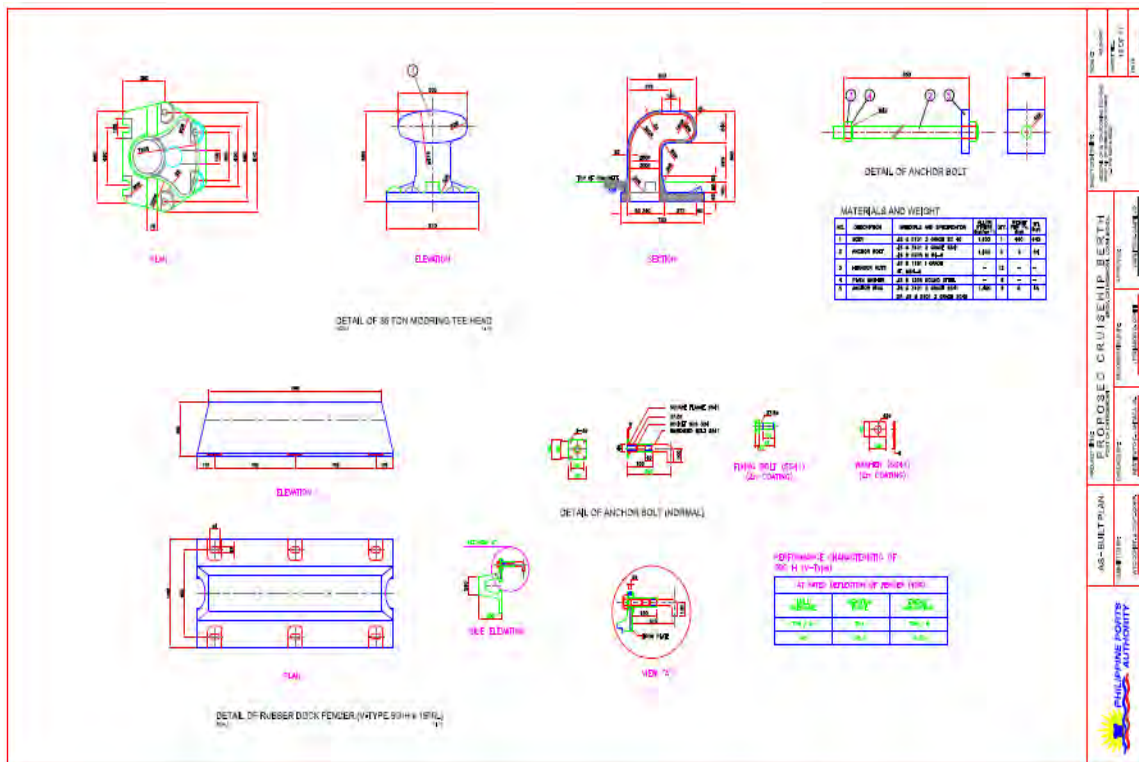


Figure No.1

Detail of Mooring and RDF

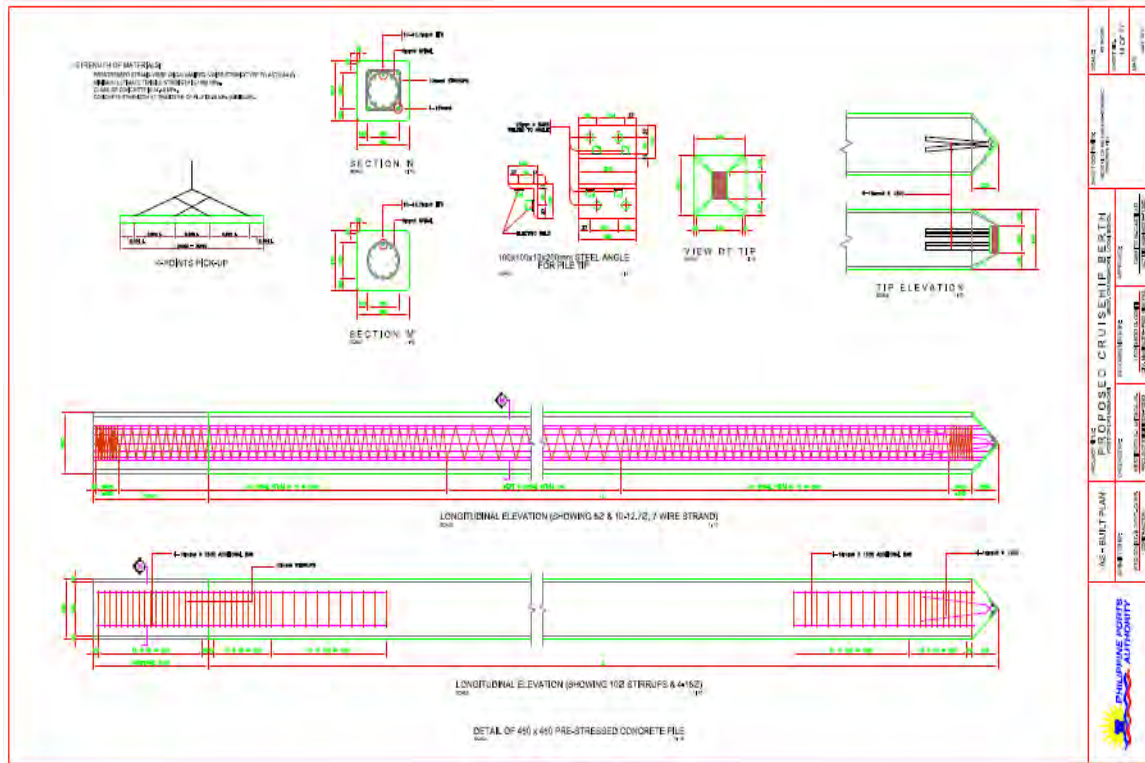


Figure No.2-m Detail of Pre-stressed Concrete pile

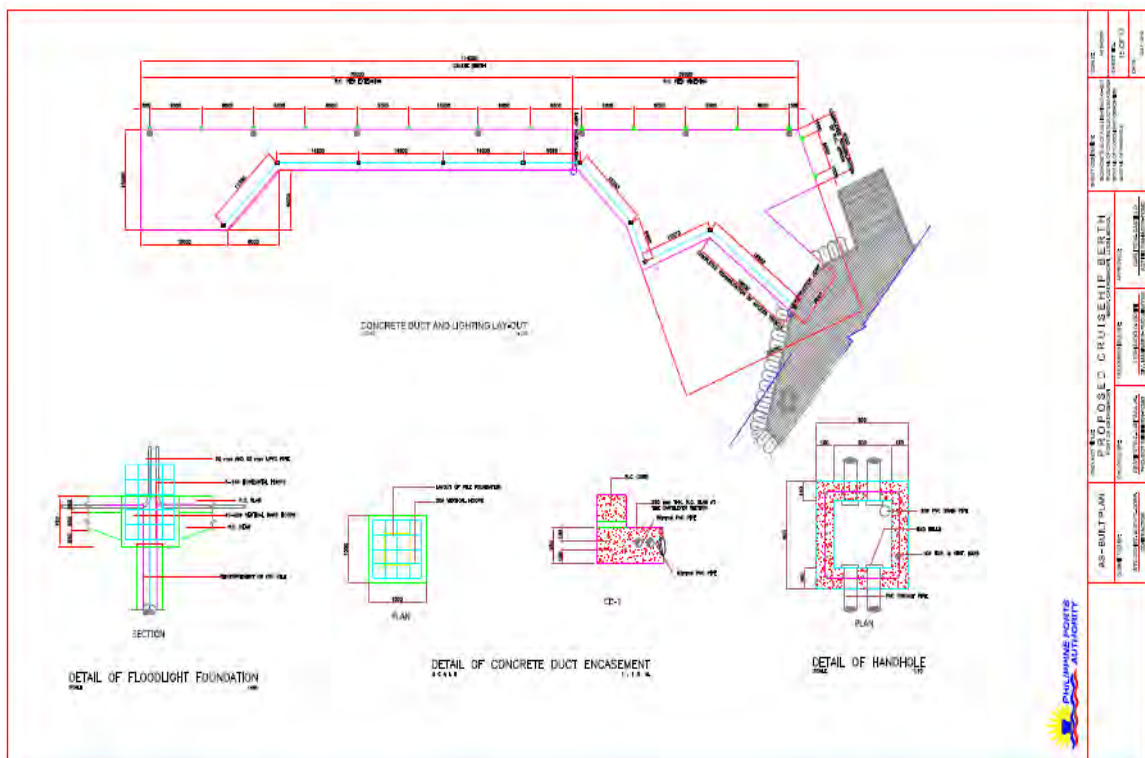


Figure No.2-n Lighting Layout and Duct bank detail.

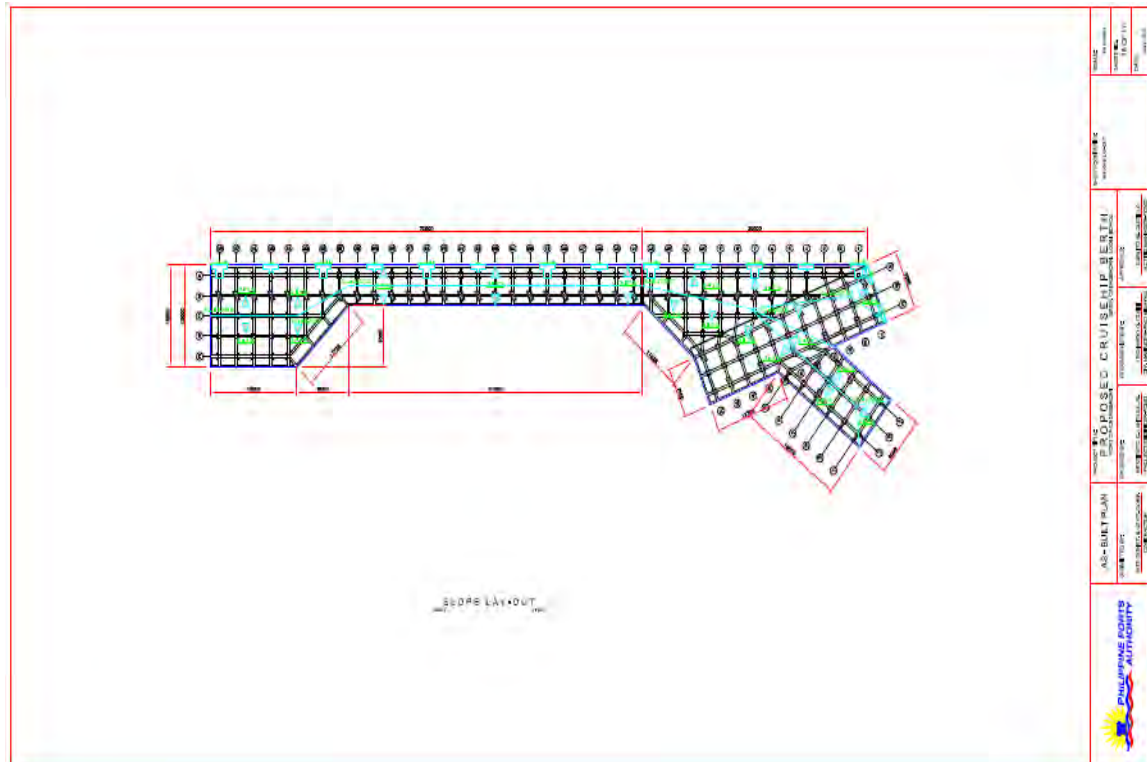


Figure No.2-o Slope layout of the Cruise Ship berth

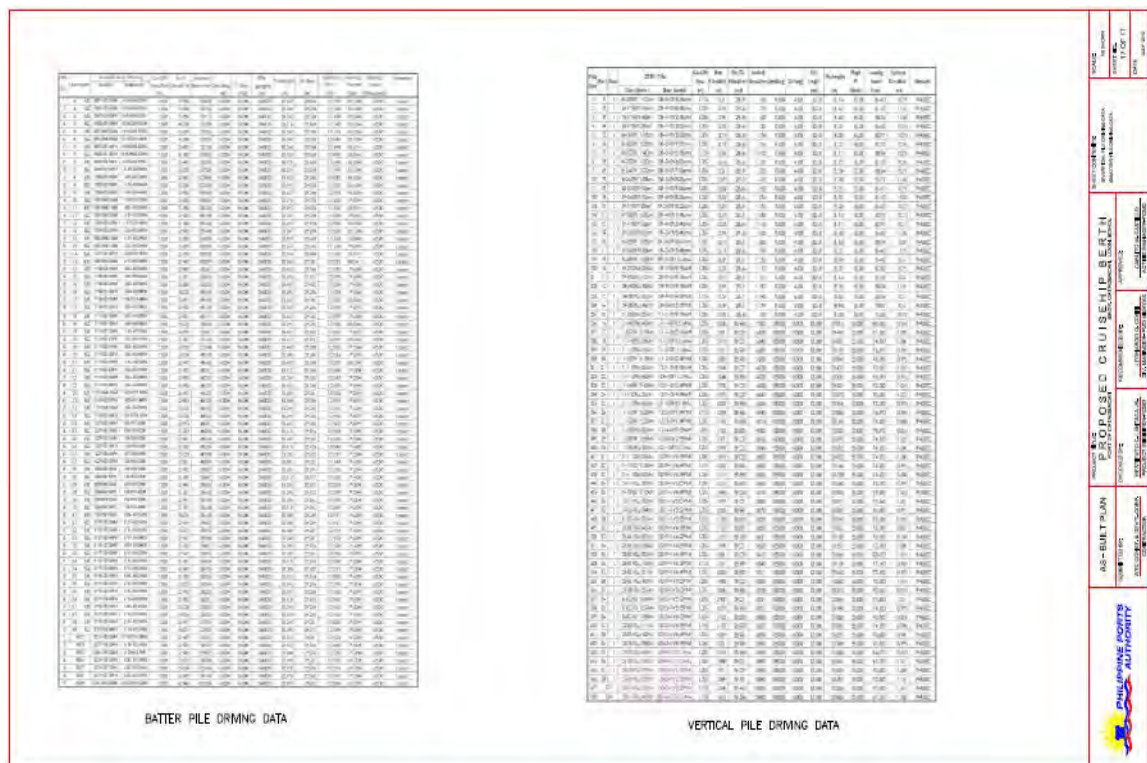








Figure No.2-p

Pile Driving Data

 <p>Causeway</p>	 <p>Tilted Light House</p> <p>Back up area</p>
<p>Figure No.3 Newly widened Causeway.</p>	<p>Figure No.4 The Port Back-up area.</p>
 <p>Interlocking Concrete Block (ICB)</p>	 <p>Roro ramp on piles</p>
<p>Figure No.5 Back-up area paved with ILB</p>	<p>Figure No.6 Figure shows the newly rehabilitated ro-ro ramp.</p>
 <p>RoRo Ramp on Fill</p>	 <p>RoRo Ramp on Piles</p> <p>RoRo Ramp on Fill</p>
<p>Figure No.7 Newly rehabilitated ro-ro ramp.</p>	<p>Figure No.8 Figure shows the two adjacent Roro ramps.</p>

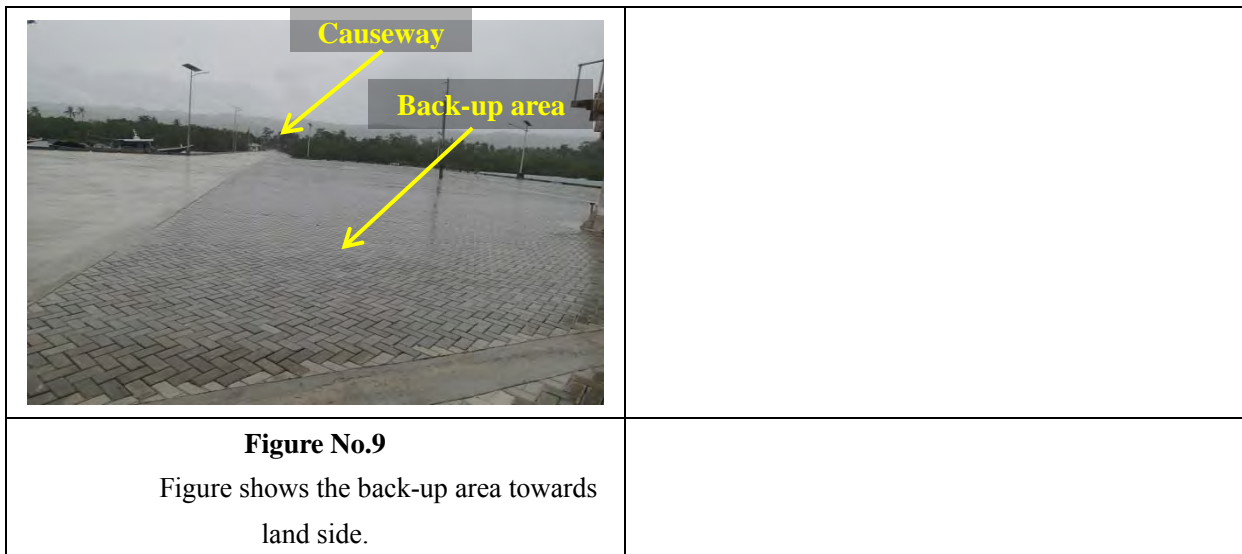


Figure No.9

Figure shows the back-up area towards land side.

3.2.3. Clarin Port

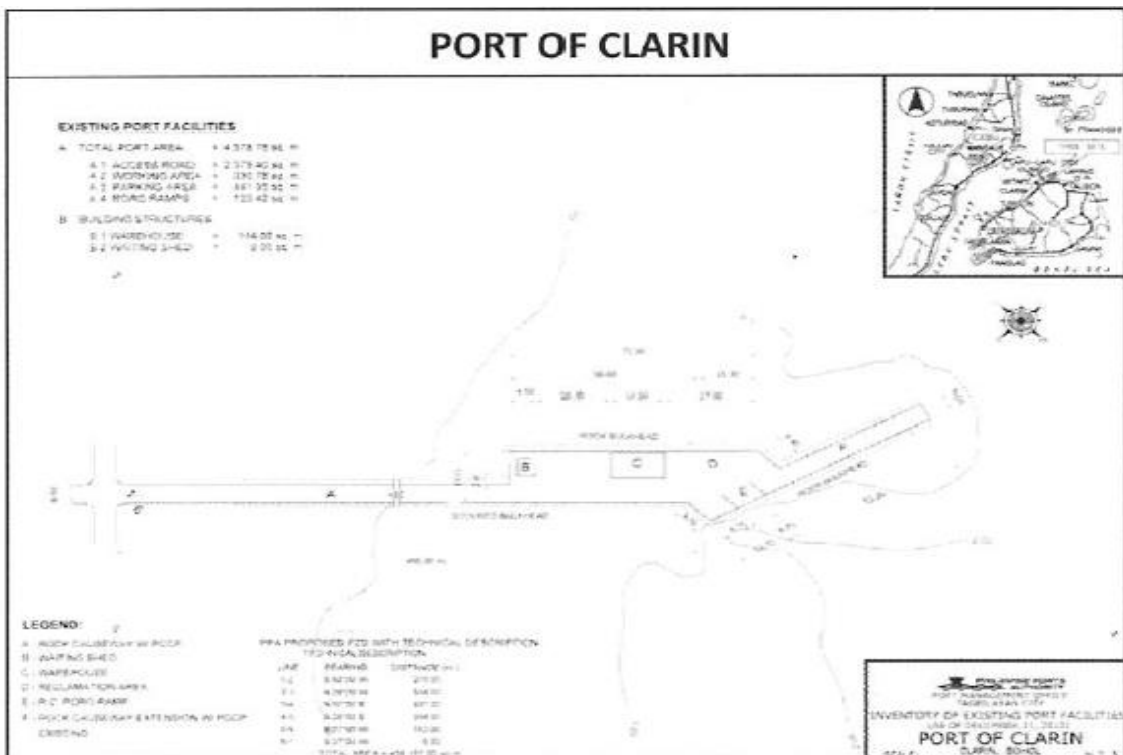



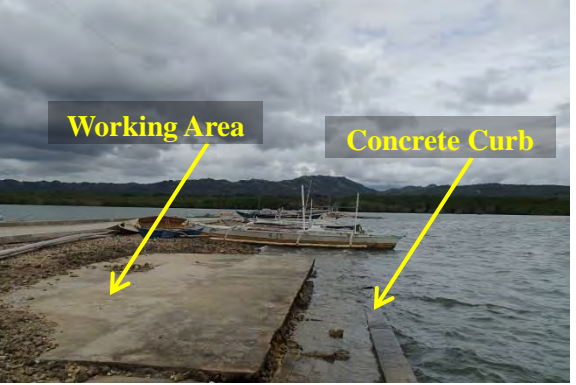
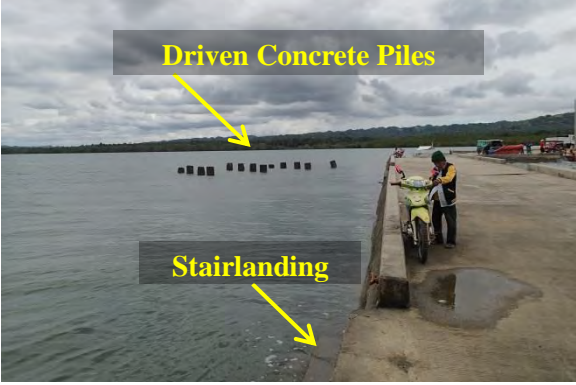



Figure No.1

Existing Port Layout

	
<p align="center">Figure No.2 Existing Causeway</p>	<p align="center">Figure No.3 Damaged pavement caused by October 2013 Earthquake. Causeway is submerged during high tide.</p>
	
<p align="center">Figure No.4 Collapsed working area.</p>	<p align="center">Figure No.5 Damaged concrete pavement due to earthquake in October 2013.</p>
	
<p align="center">Figure No.6 The causeway concrete pavement shown in the above Figure is under water during high tide.</p>	<p align="center">Figure No.7 Damaged by October 2013 Earthquake.</p>

	
<p align="center">Figure No.8 Damaged concrete pavement at the landing facility.</p>	<p align="center">Figure No.9 Damaged by October 2013 Earthquake.</p>
	
<p align="center">Figure No.10 Concrete pavement was displaced. The area is under water during high tide.</p>	<p align="center">Figure No.11 Concrete curb at working area is under water.</p>
	
<p align="center">Figure No.12 Figure shows driven piles. Viewed from the end of the berthing facility.</p>	<p align="center">Figure No.13 Driven piles at Roro berth area. (See layout.)</p>

3.2.4. Dimiao Port

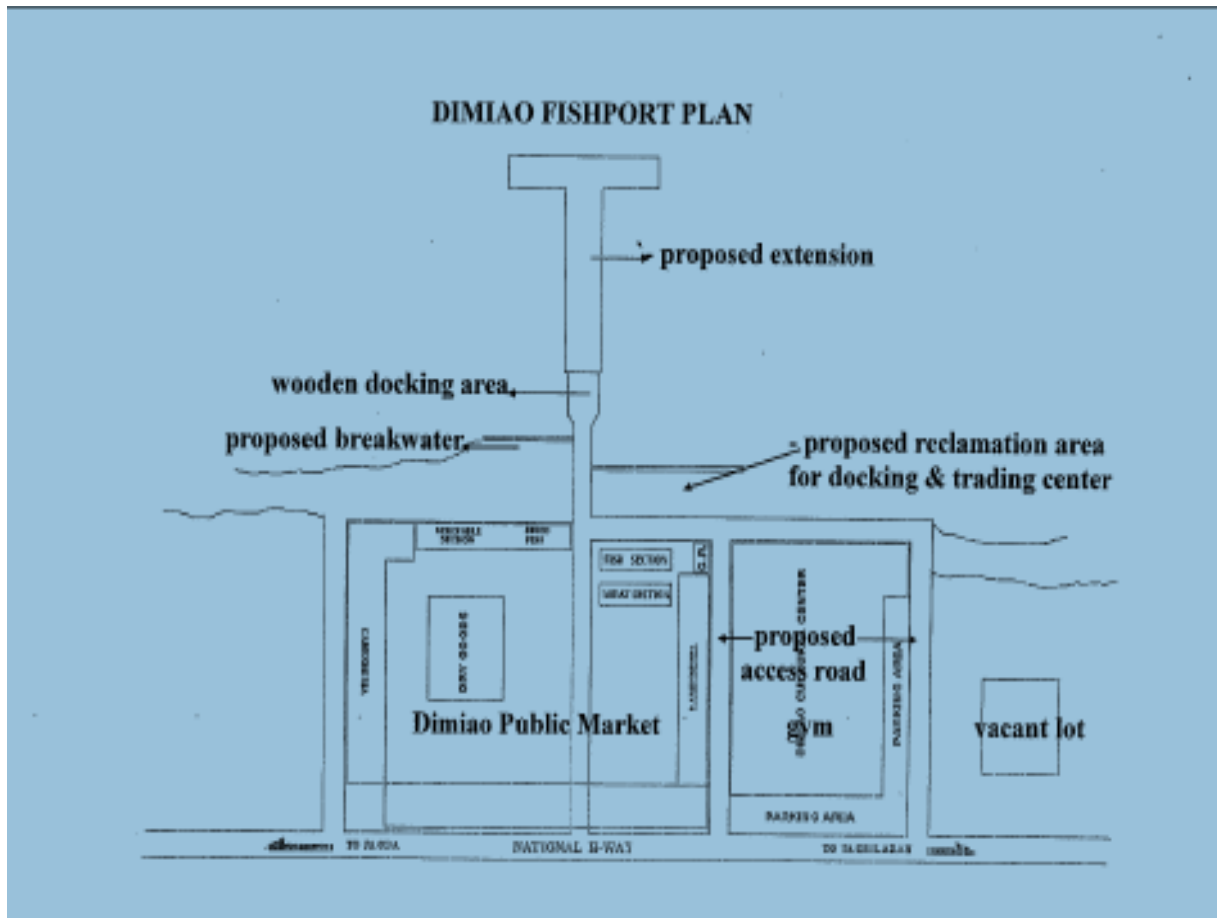








Figure No. 1 Existing Port Layout showing the proposed extension and reclamation area. Dimiao Port is adjacent to Dimiao Public Market.



Figure No.2
The existing port of Dimiao.



Figure No. 3
Existing Causeway with grouted riprap bulkhead.

	
<p align="center">Figure No.4 Damaged grouted riprap at the Right side of the causeway.</p>	<p align="center">Figure No. 5 Gap between concrete pavement and curb, due to lateral movement of the structure.</p>
	
<p align="center">Figure No.6 Damaged concrete pavement.</p>	<p align="center">Figure No. 7 The extension of rock causeway is not complete. The structure has no concrete pavement.</p>
	
<p align="center">Figure No.8 Banca/Stairlanding in front of Market/Auction Hall</p>	<p align="center">Figure No. 9 Existing Market/Auction Hall.</p>

3.2.5. Getafe Port

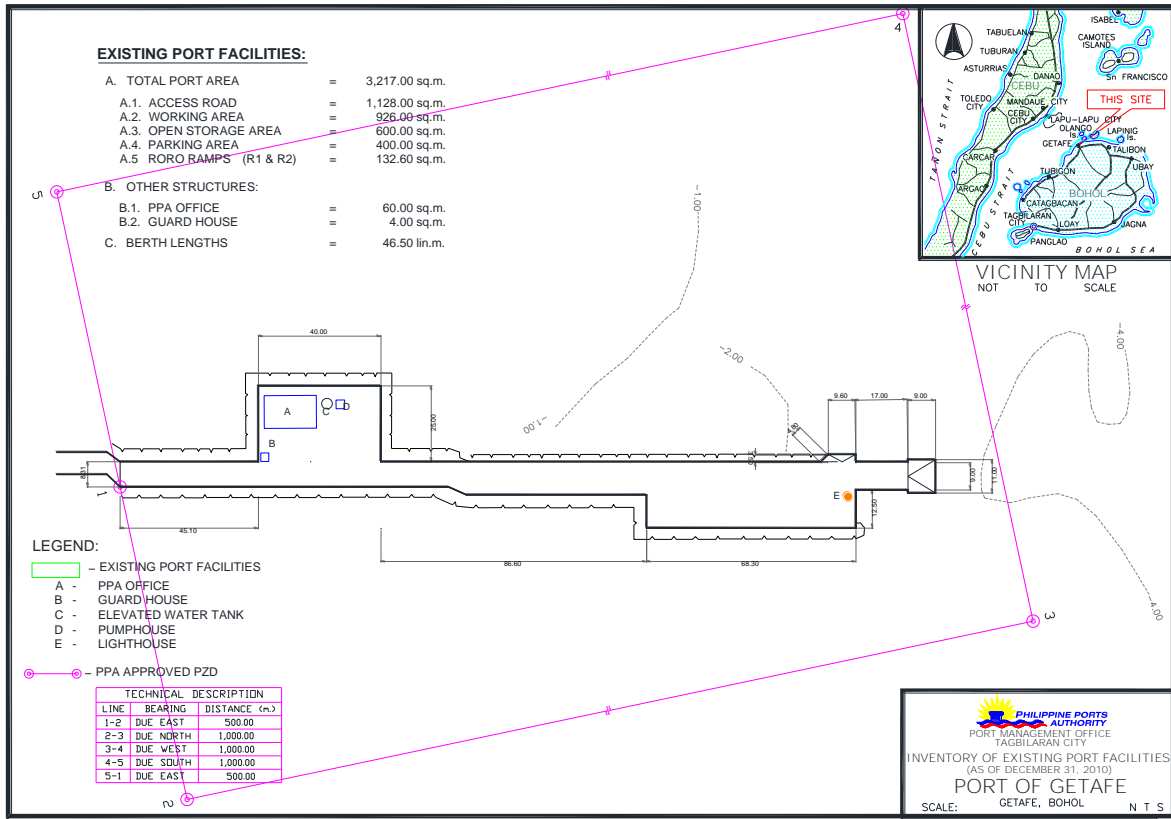


Figure No.1 Existing Port layout



Figure No.2
Existing Causeway



Figure No.3
Damaged causeway pavement caused by OCT 2013 EQ. Causeway is submerged during high tide.

<p align="center">Figure No.4 The causeway settled after the OCT 2013 EQ.</p>	<p align="center">Figure No.5 Damaged by OCT 2013 EQ</p>
<p align="center">Figure No.6 Informal settlers on the right side of the causeway.</p>	<p align="center">Figure No.7 Informal settlers on the right side of the causeway</p>
<p align="center">Figure No.8 Berthing Area at the left side of rock causeway.</p>	<p align="center">Figure No.9 PPA Admin office</p>

3.2.6. Guindulman Port

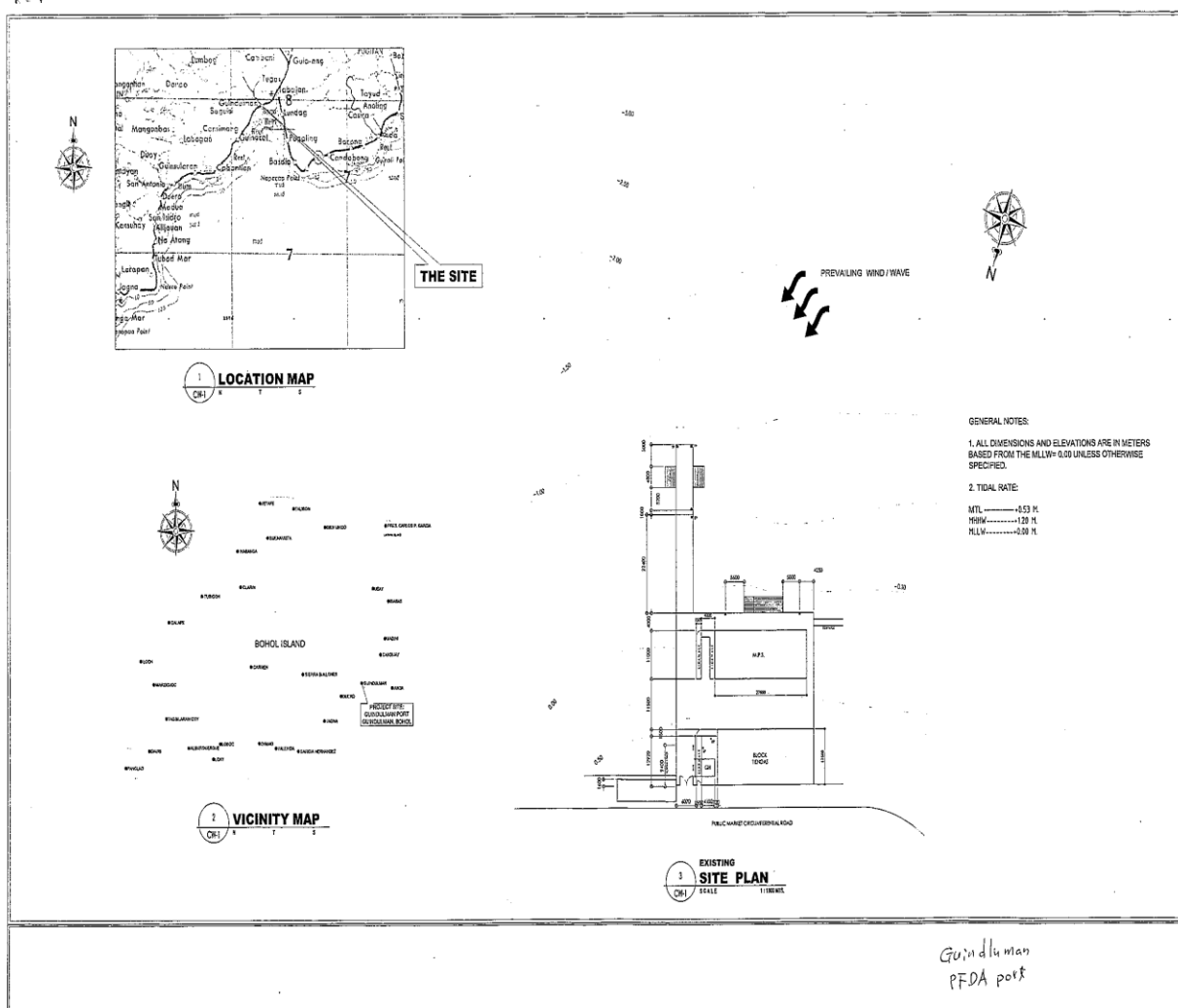


Figure No. 1 Existing Port Layout of Guindulman Port

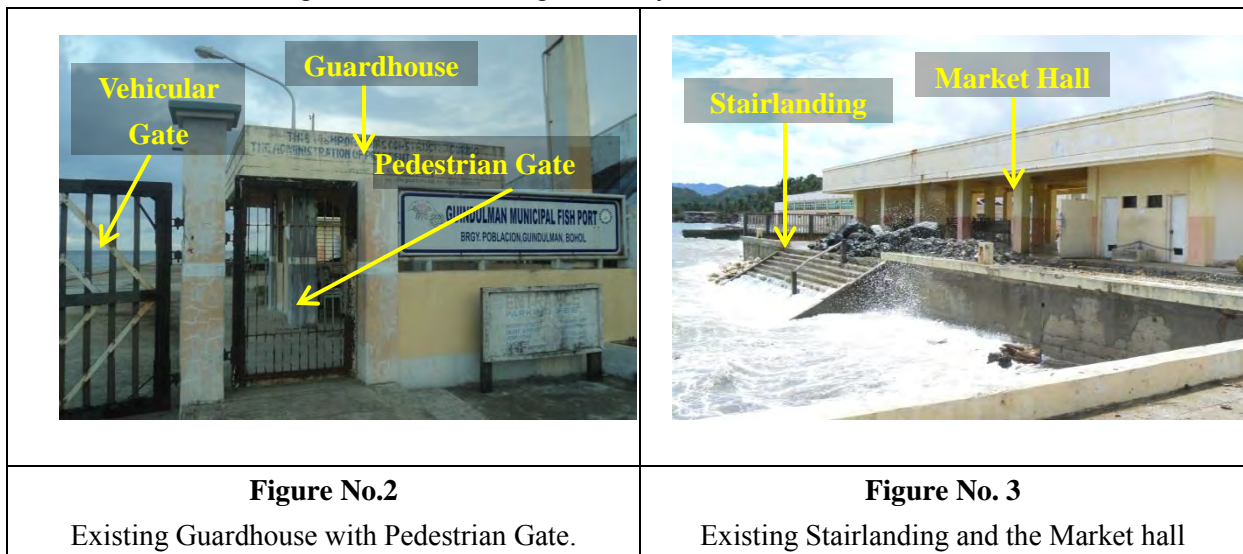




Figure No.4
Collapsed portion of the Causeway due wave action.



Figure No. 5
Exposed Pre-Cast Concrete block of the collapsed causeway.



Figure No.6
Entrance of the Port directly towards Guindulman Public Market



Figure No. 7
Wave Deflector wall.

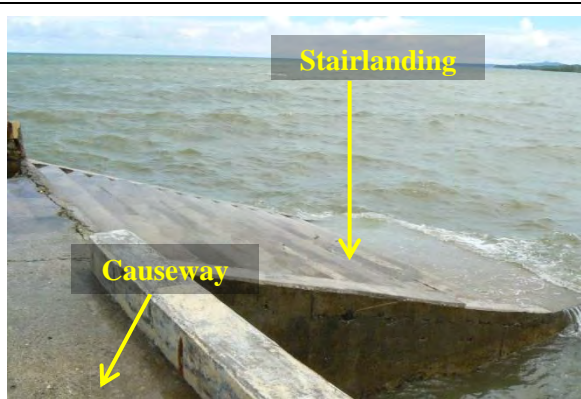


Figure No.8
Existing Stairlanding



Figure No. 9
Existing Causeway with Stairlanding

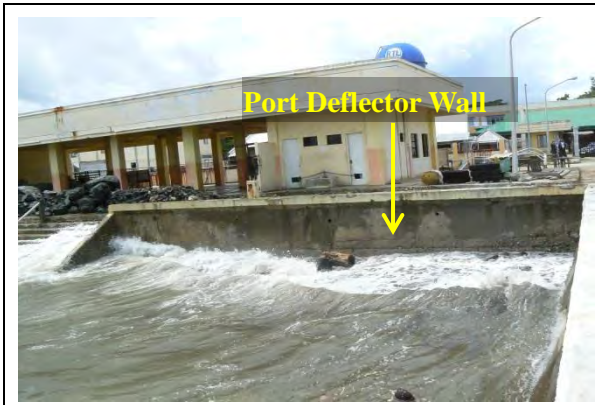


Figure No.10
Moonsoon Waves Deflected by RC wall.



Figure No. 11
Front Side of Existing Market Hall.

3.2.7. Popoo Port

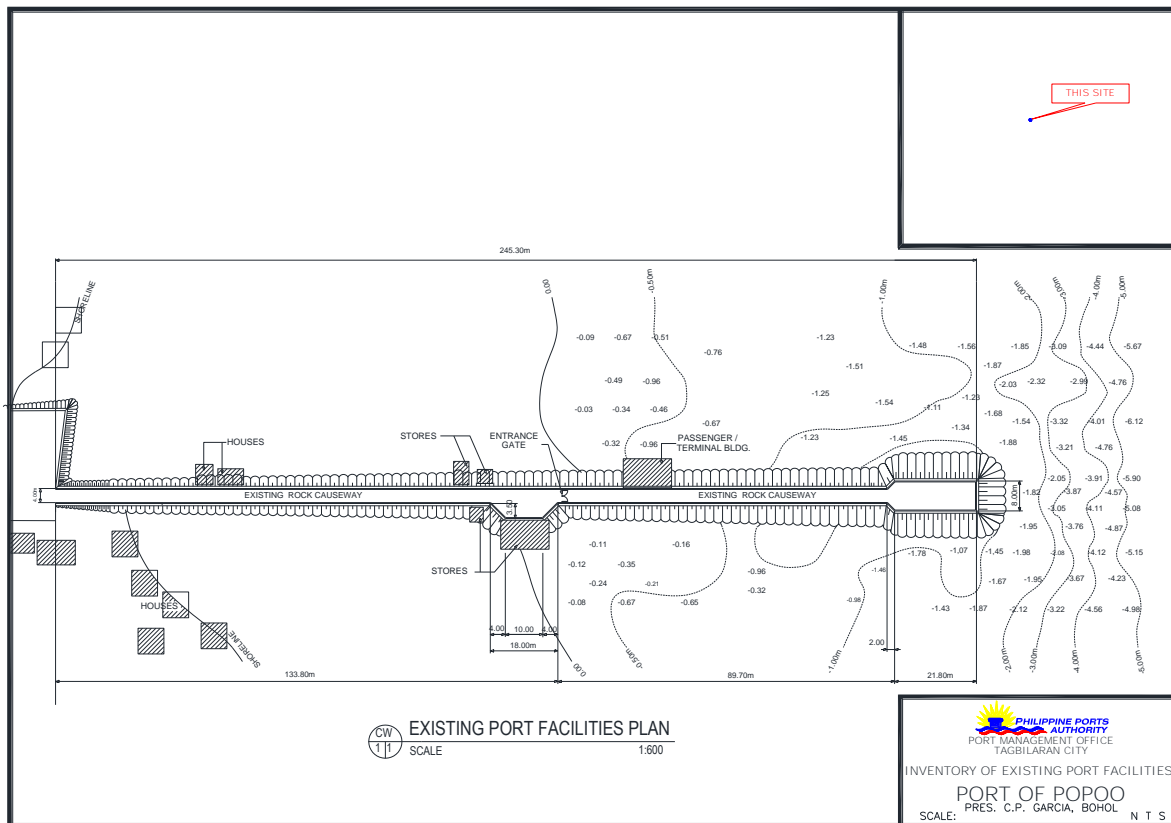


Figure No.1 The existing layout of the Popoo Port.

3.2.8. Talibon Port

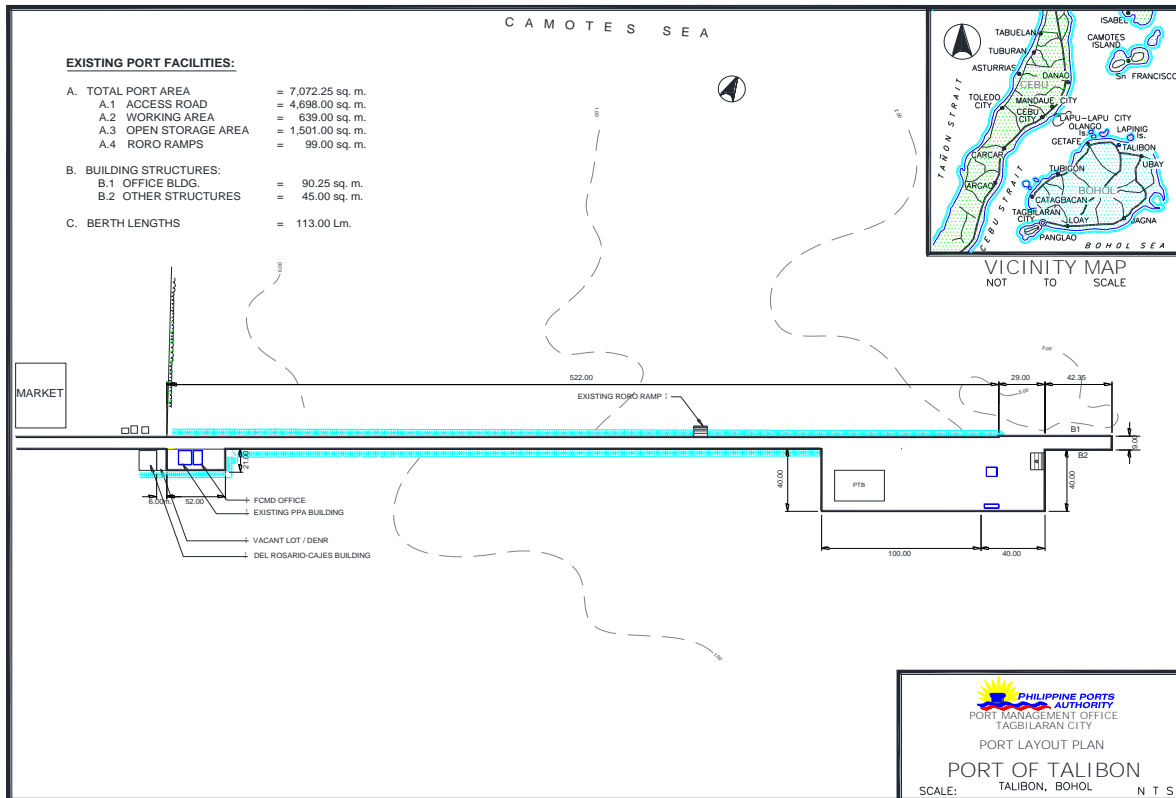


Figure No. 1
Port Layout Plan

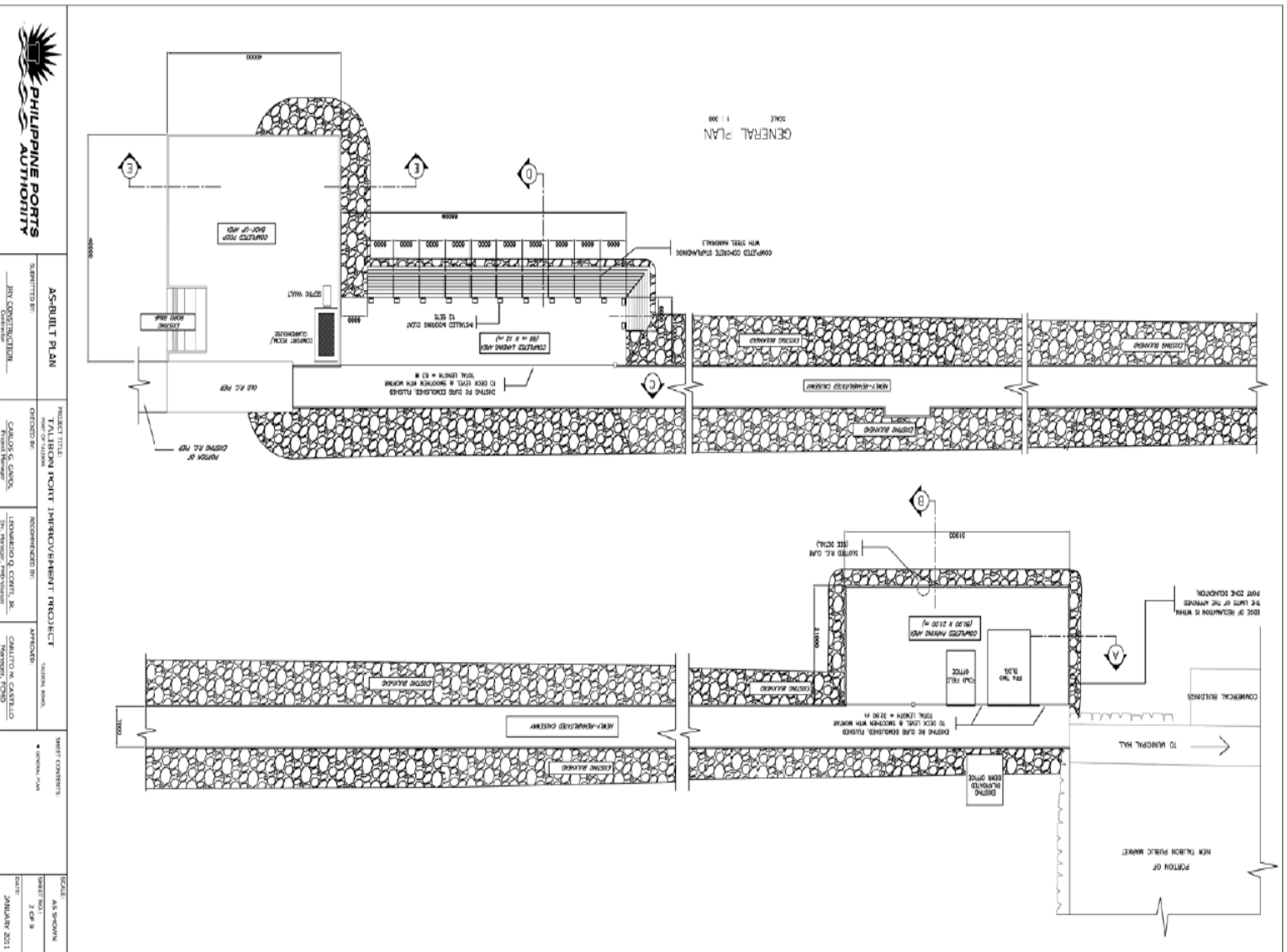


Figure No. 2
General Plan (As-Built)

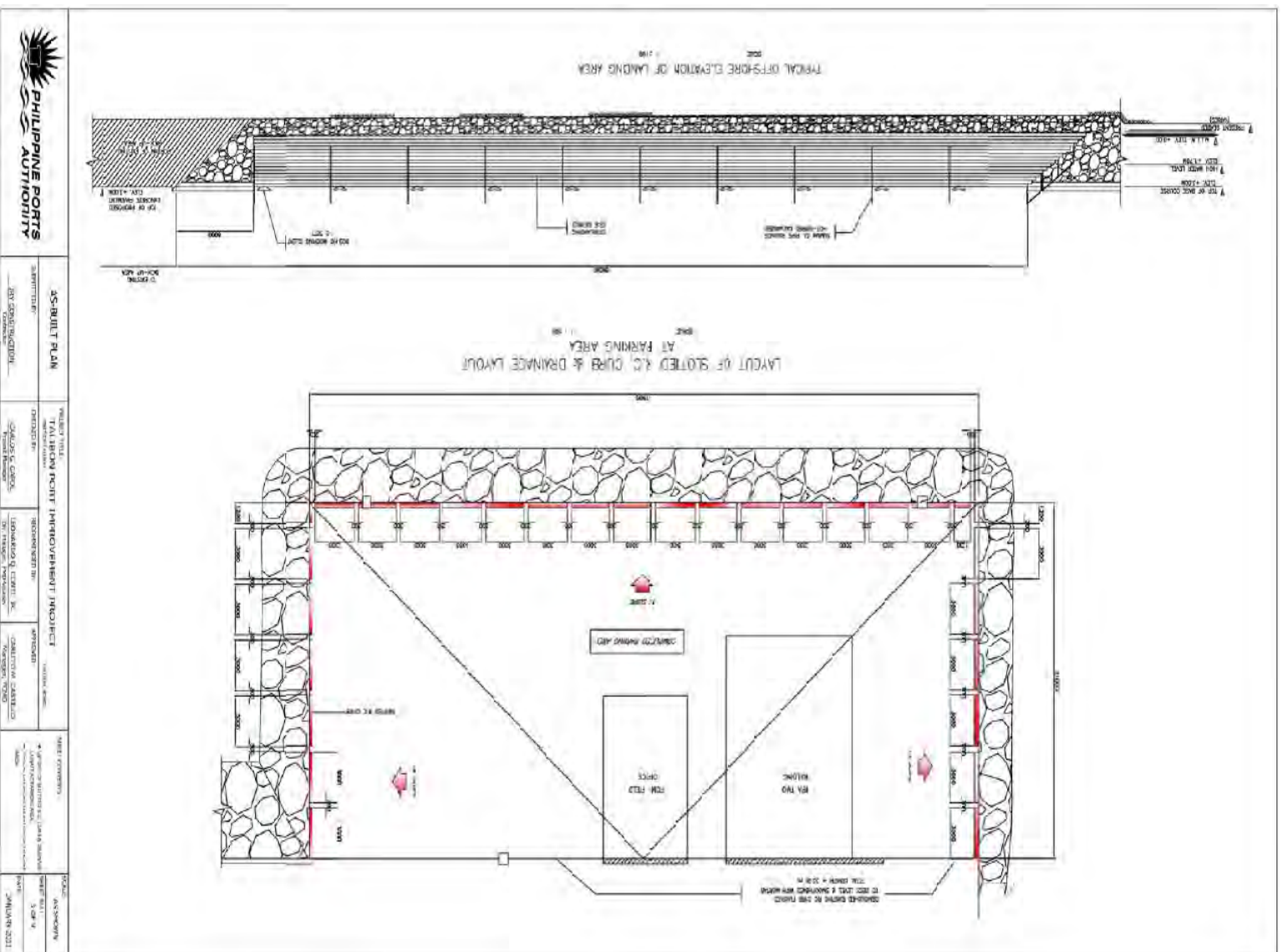


Figure No. 3

Drainage Layout at Parking Area

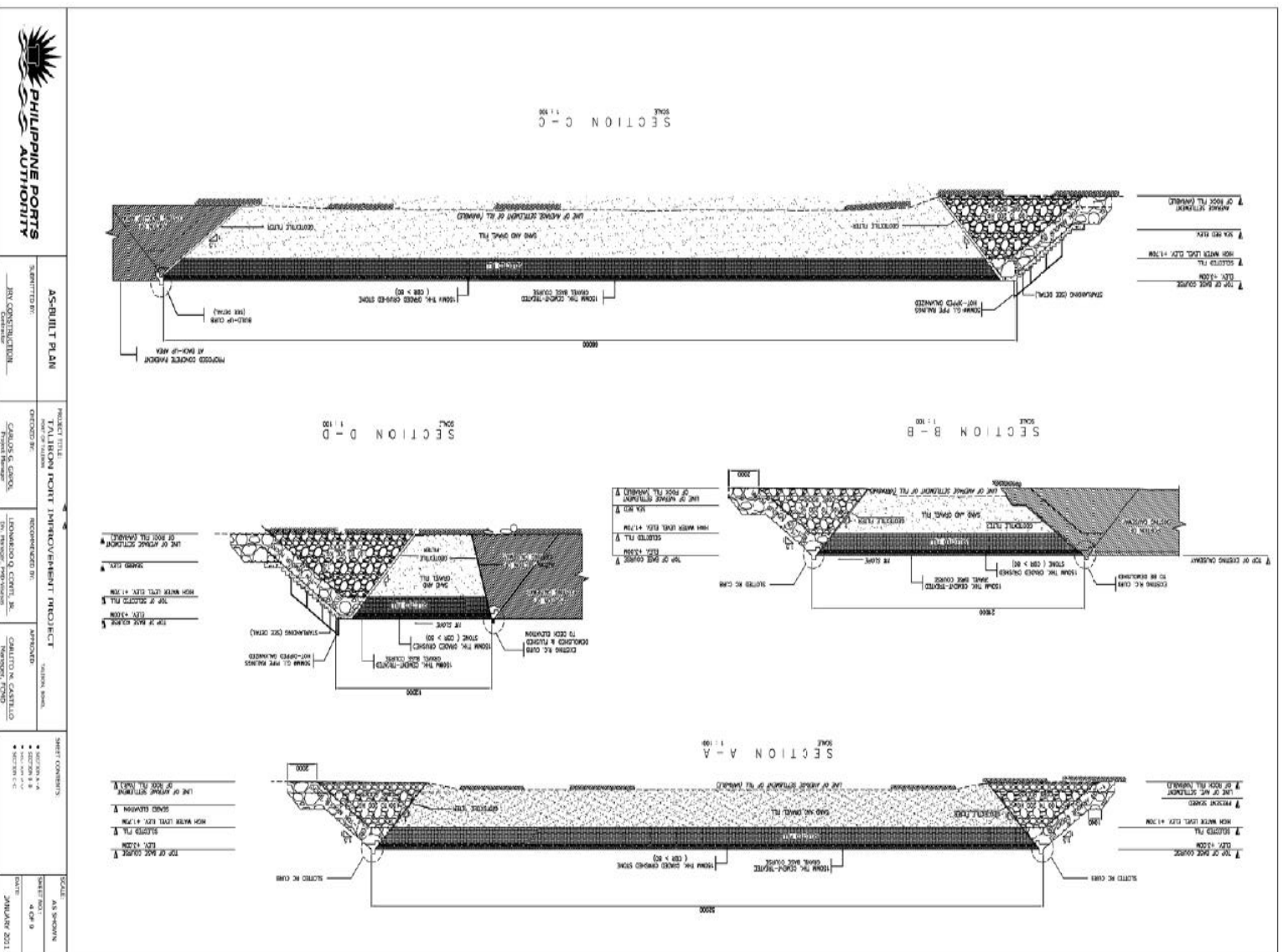


Figure No. 4
Sections

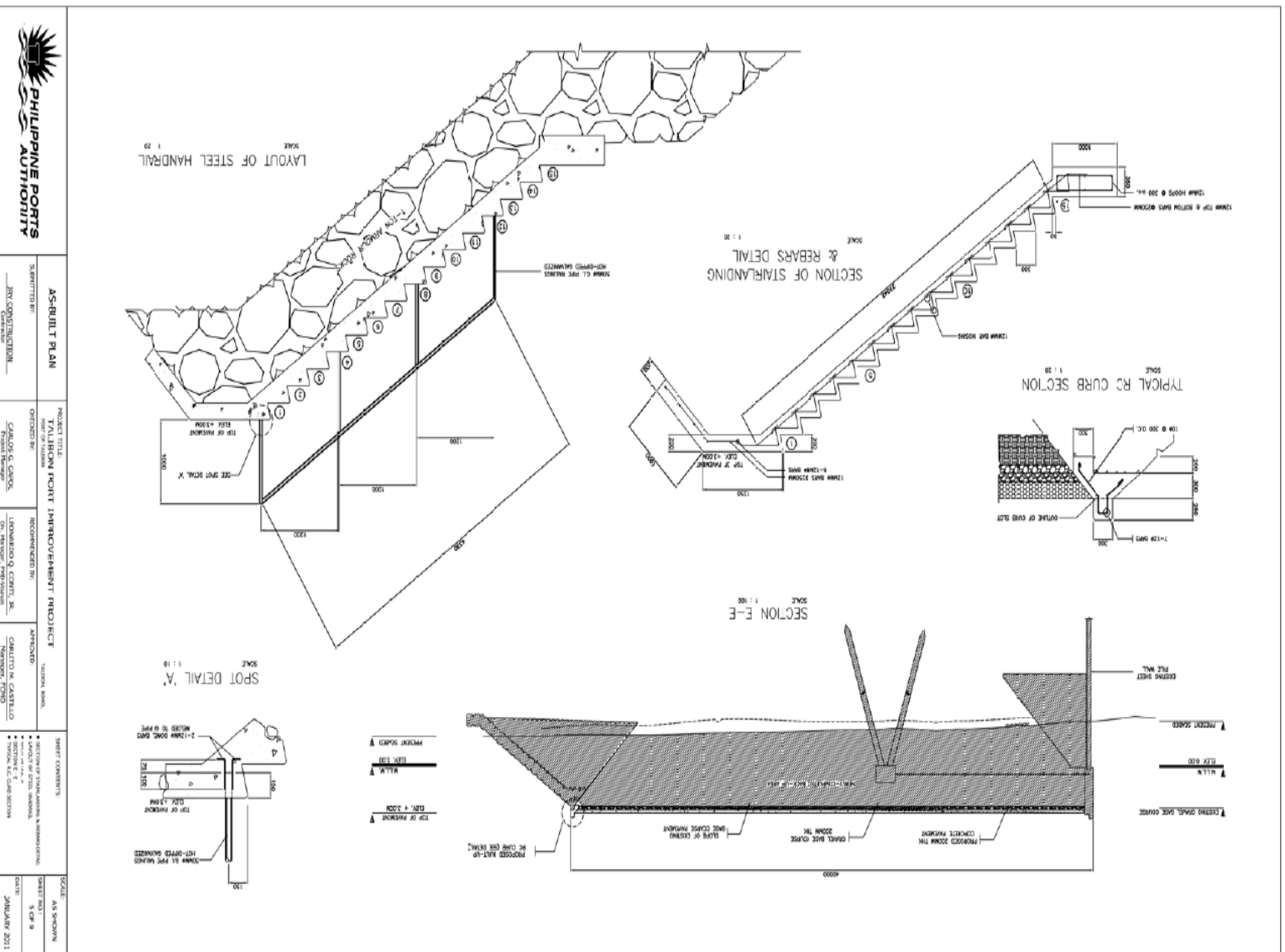


Figure No. 5
Section of Stairlanding and Rebars Detail

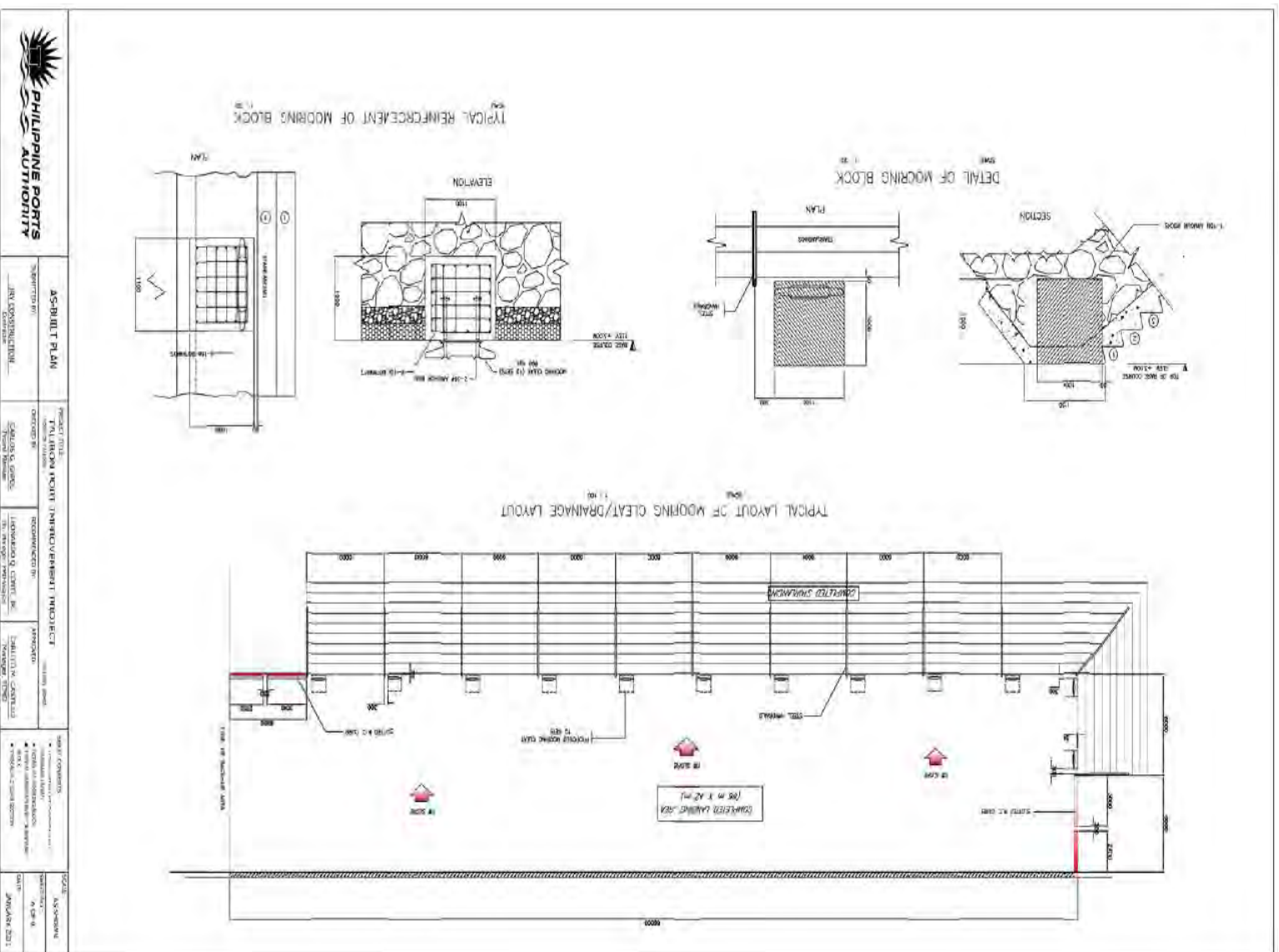


Figure No. 6
 Typical Reinforcements of Mooring Block

	PROJECT TITLE	TALIPOAN MOORING IMPROVEMENT PROJECT
	DESIGNED BY	PHILIPPINE PORTS AUTHORITY
	APPROVED BY	(Signature)
DATE	REVISIONS	
JANUARY 2017		

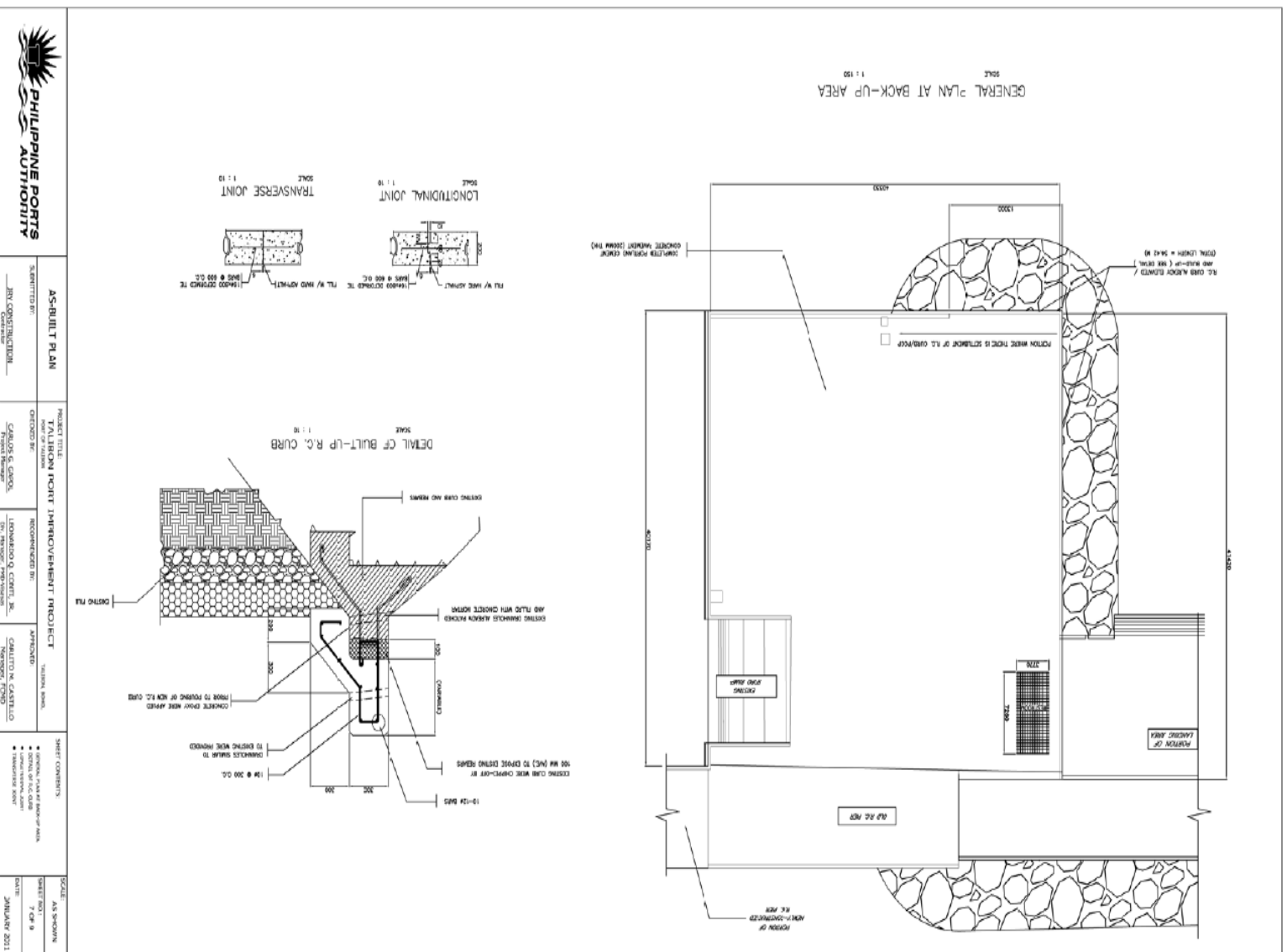


Figure No. 7
General Plan at Back-up Area.

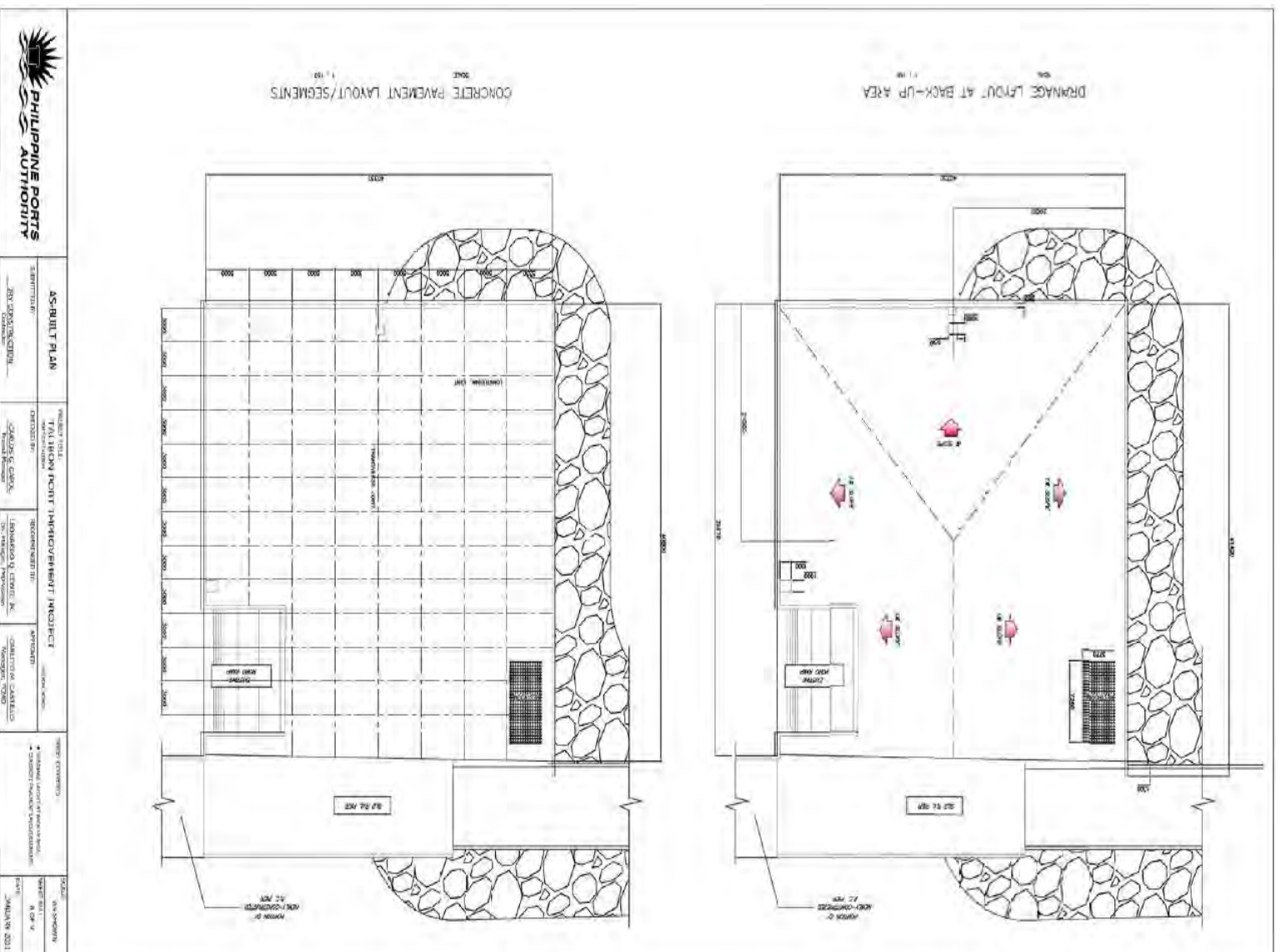


Figure No. 8

Concrete Pavement Layout/Segments

3.2.9. Tapal Port

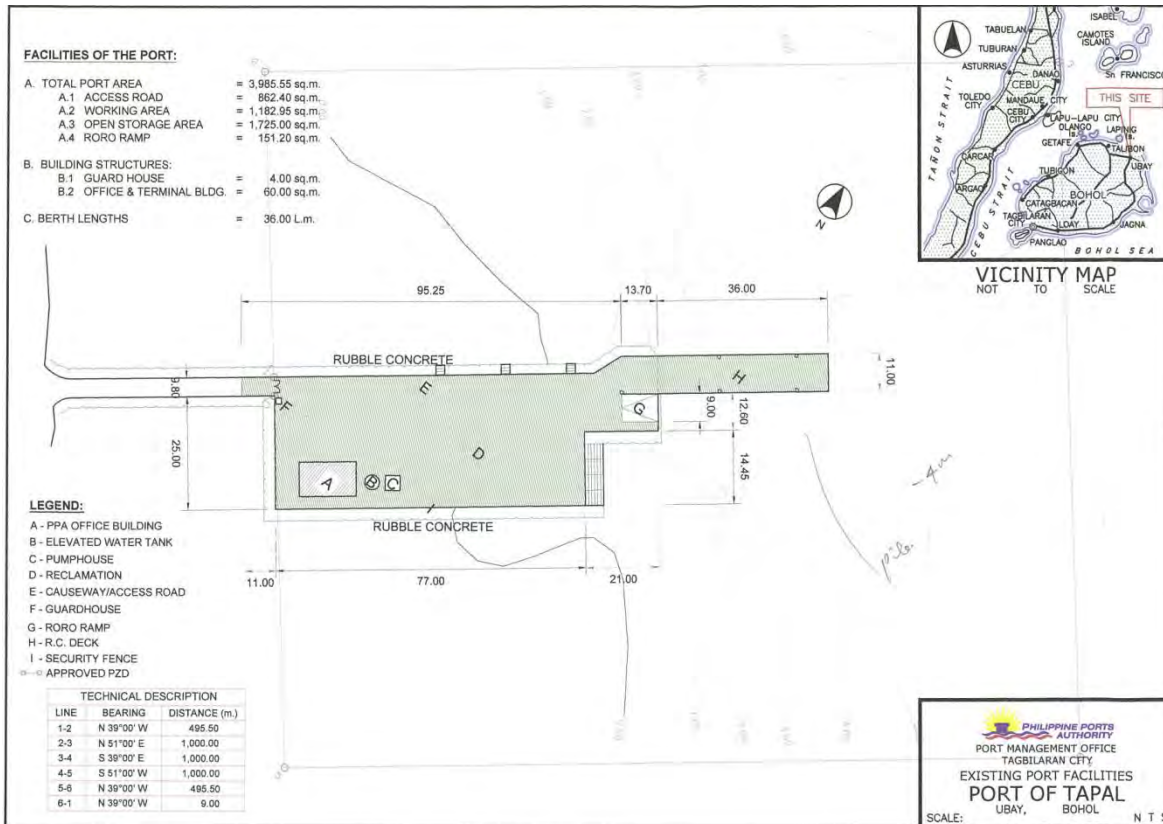


Figure No.1 Existing Port Layout



Figure No.2
Existing Causeway and the Port Entrance

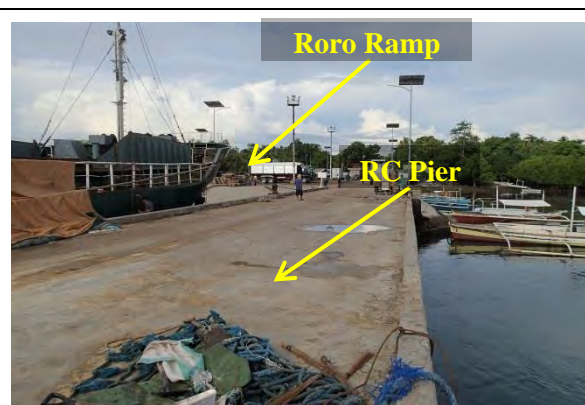



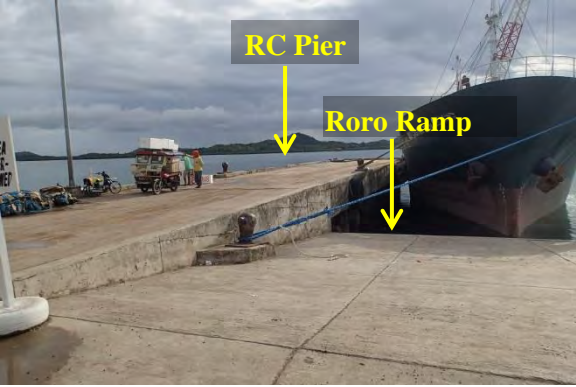









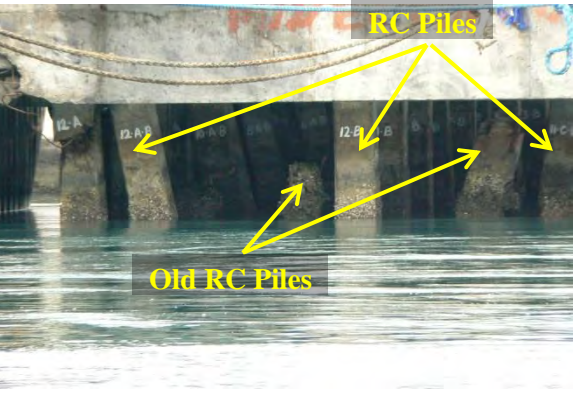

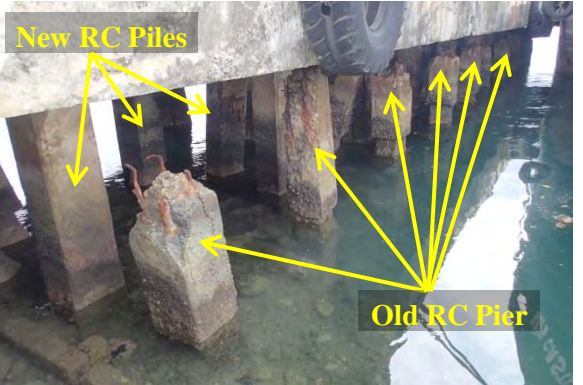
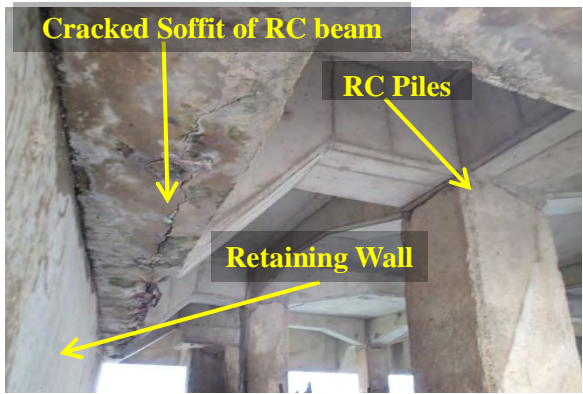
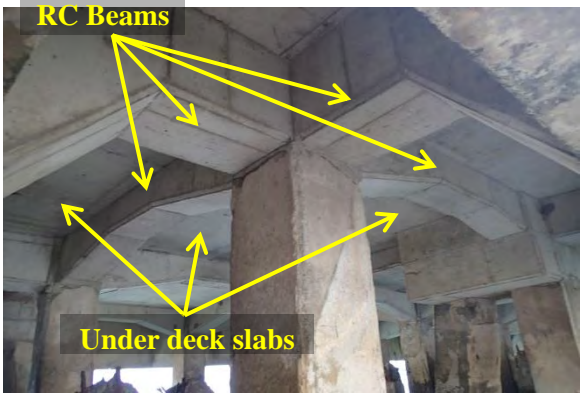


Figure No.3
Existing RC Pier and Roro ramp viewed towards on-shore.

	
<p style="text-align: center;">Figure No.4 Viewed towards off-shore.</p>	<p style="text-align: center;">Figure No.5 Left side of the RC Pier.</p>
	
<p style="text-align: center;">Figure No.4 Causeway connecting to RC Pier.</p>	<p style="text-align: center;">Figure No.5 Roro Ramp adjacent to RC Pier.</p>
	
<p style="text-align: center;">Figure No.6 Right side elevation of Roro ramp and RC pier.</p>	<p style="text-align: center;">Figure No.7 Front elevation of stairlanding and Roro ramp.</p>

	
<p align="center">Figure No.8 Perimeter fence at the southeast side of the port.</p>	<p align="center">Figure No.9 The Stairlanding and the side of the Roro ramp.</p>
	
<p align="center">Figure No.10 Tapal Port viewed from off-shore.</p>	<p align="center">Figure No.11 RC Pier viewed from off-shore with vessel docked and unloading cargos.</p>
	
<p align="center">Figure No.12 Tip of RC Pier.</p>	<p align="center">Figure No.13 Left side elevation and tip of RC Pier.</p>

	
<p>Figure No.14 Bulkhead of existing causeway.</p>	<p>Figure No.15 RC Piles at the tip of RC Pier</p>
	
<p>Figure No.16 Old RC Piles (Condemned RC Piles) along the right side of RC pier.</p>	<p>Figure No.17 New RC Piles and Condemned RC Piles.</p>
	
<p>Figure No.18 Underdeck beams and slabs.</p>	<p>Figure No.19 Underdeck beams and slabs are in good condition.</p>

<p align="center">Figure No.20 Unpaved back-up/truck holding area of the port.</p>	<p align="center">Figure No.21 Access Road connecting to port causeway.</p>
<p align="center">Figure No.22 Support Facilities @ Tapal Port</p>	<p align="center">Figure No.23 PPA Port Office and Port Arrastre Office</p>

3.2.10. Tubigon Port

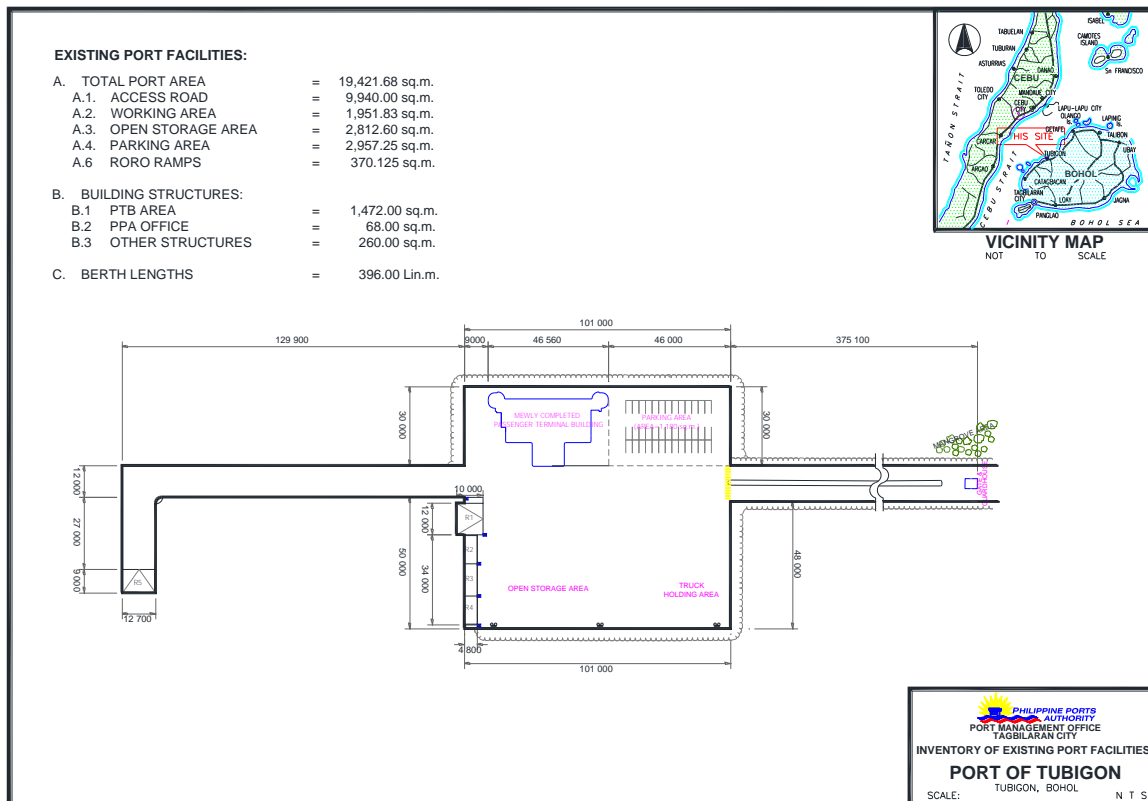


Figure No.1
Existing Port Layout

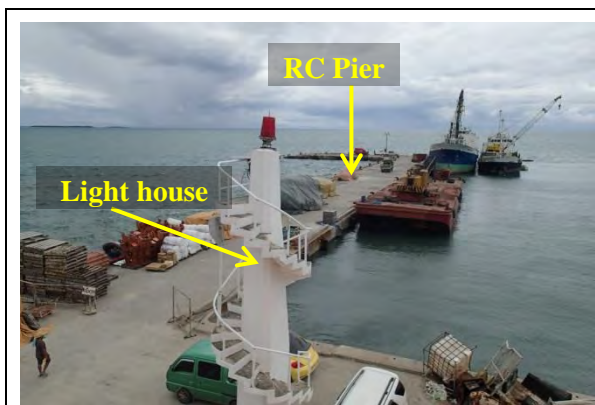


Figure No.2
Conventional berth



Figure No.3
Open Storage area and the new Roro ramp.



Truck Holding Area

Figure No.4
Backup area of the port.



Causeway

Old PPA Office

Figure No.5
Rock causeway and the old PPA office.



RC Pier

Figure No.6
Conventional berth (Right Side)



RC Pier

Figure No.7
Conventional berth (Left Side)



RC Pier

Roro Ramp

Figure No.8
Roro berth



Roro Ramp

Figure No.9
Roro Berth

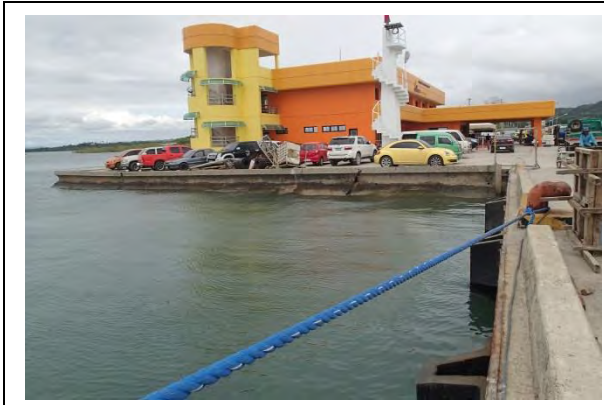


Figure No.10
Passenger Terminal Building

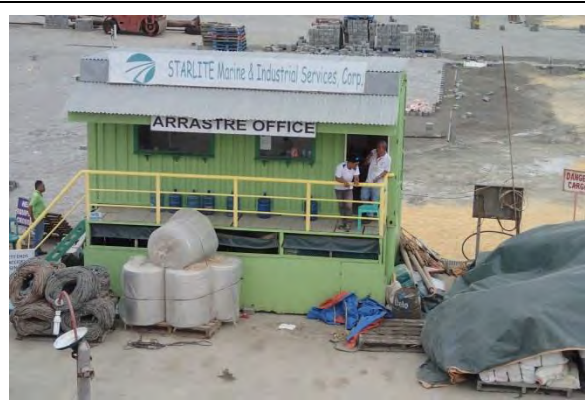


Figure No.11
Arrastre Office

3.2.11. Ubay Port

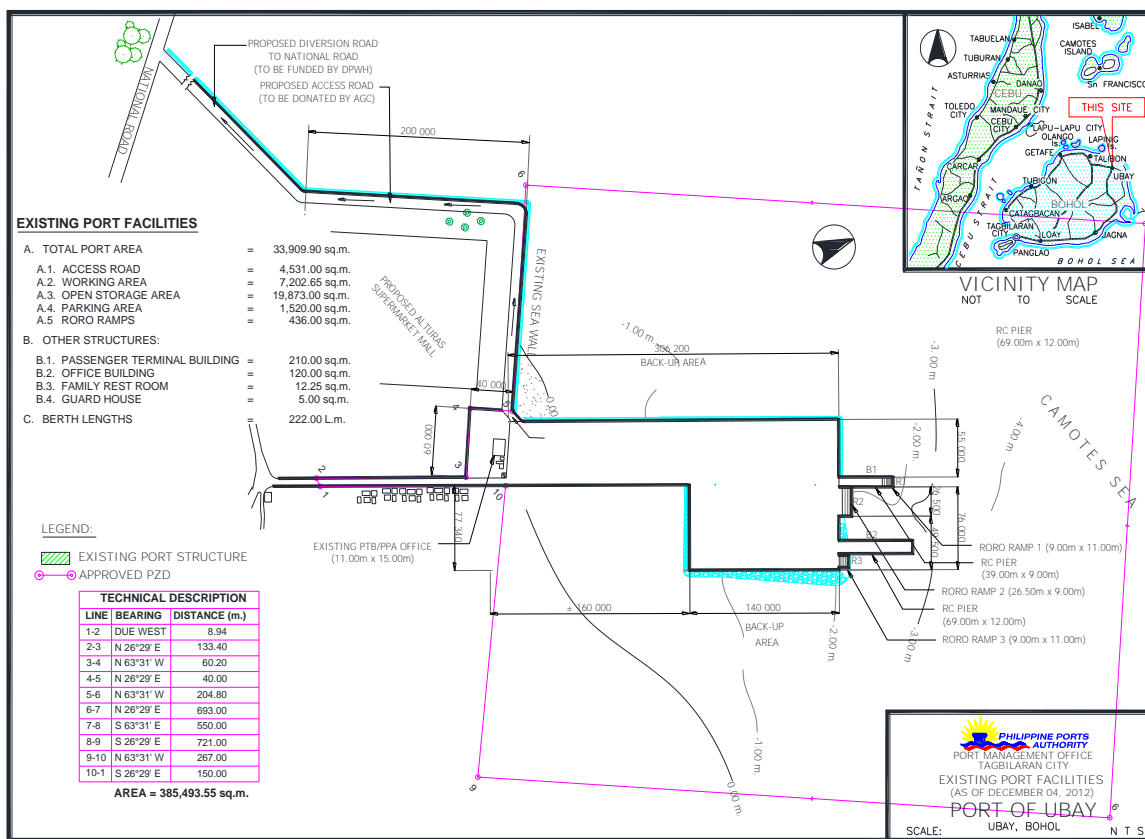


Figure No.1-a
Existing Port Layout

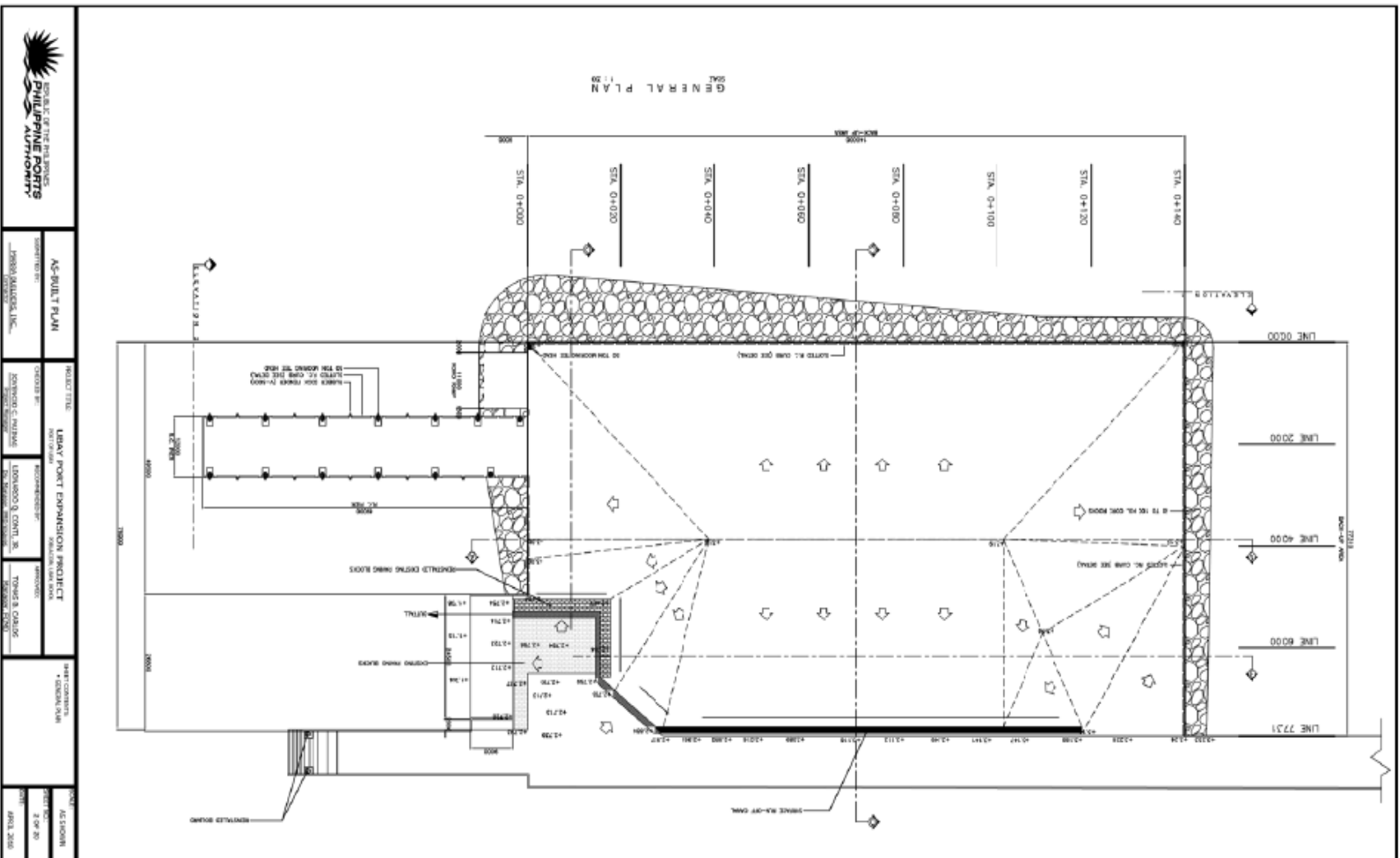


Figure No.1-b General Plan

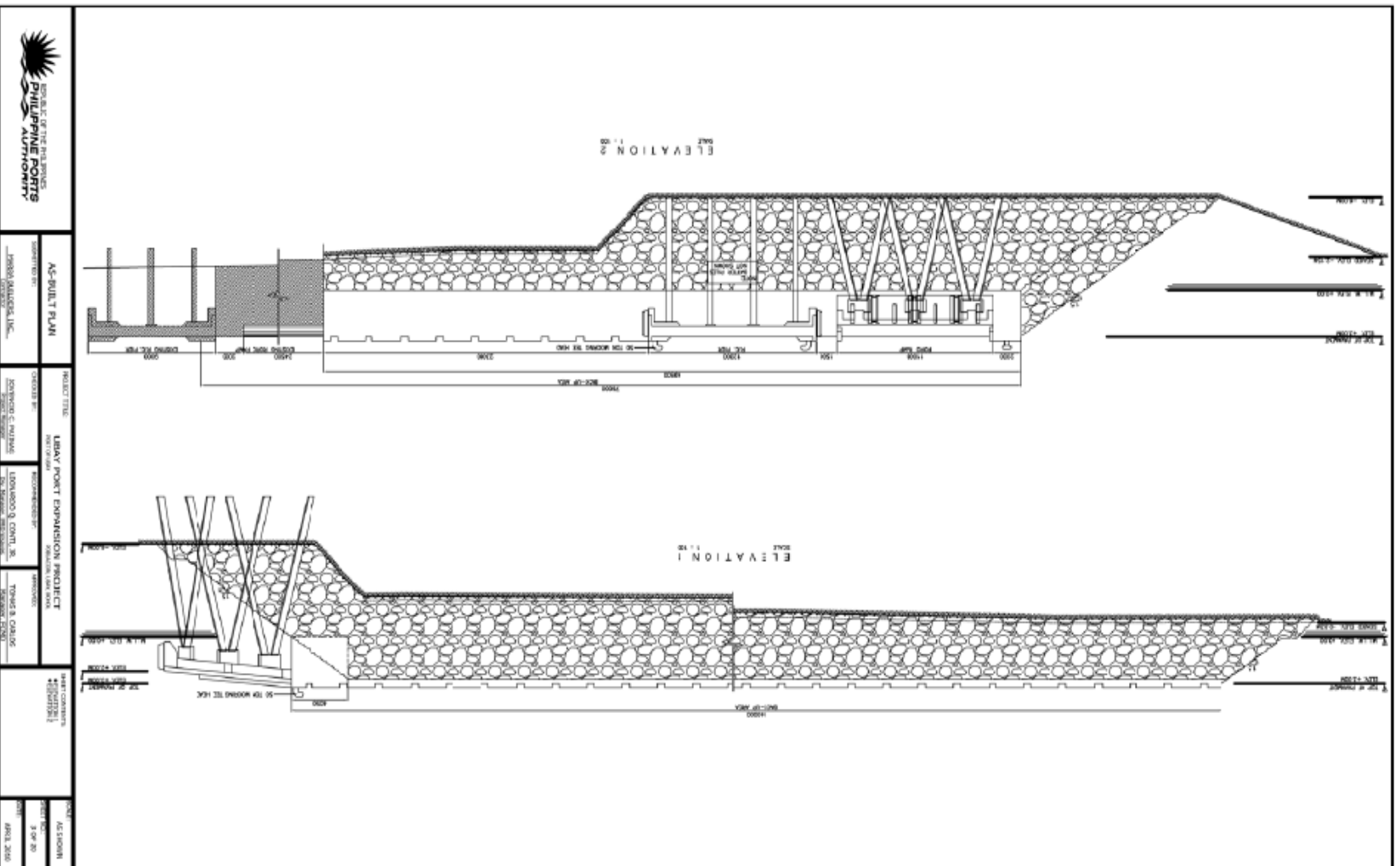


Figure No.1-c
Sections

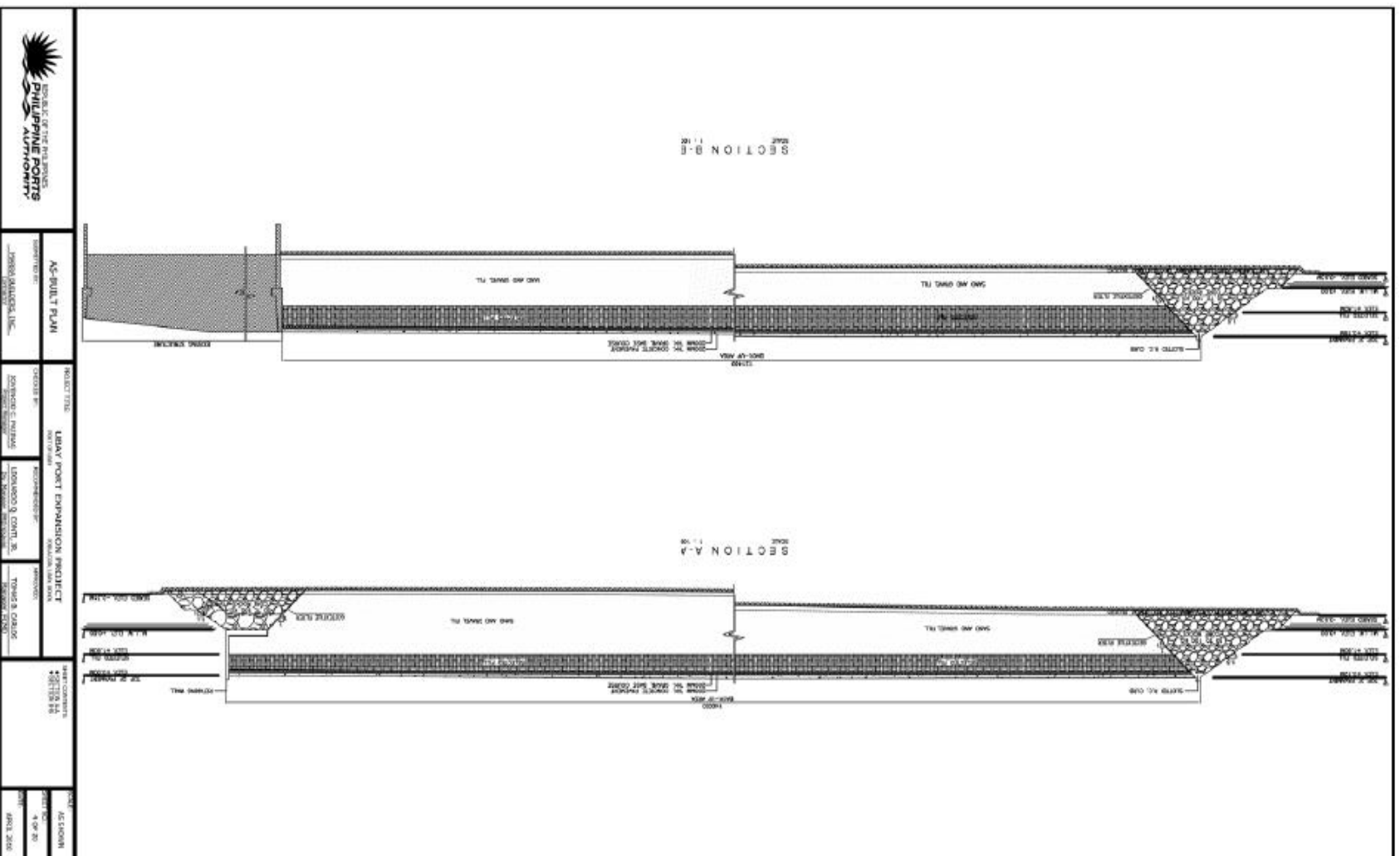


Figure No.1-d
Sections

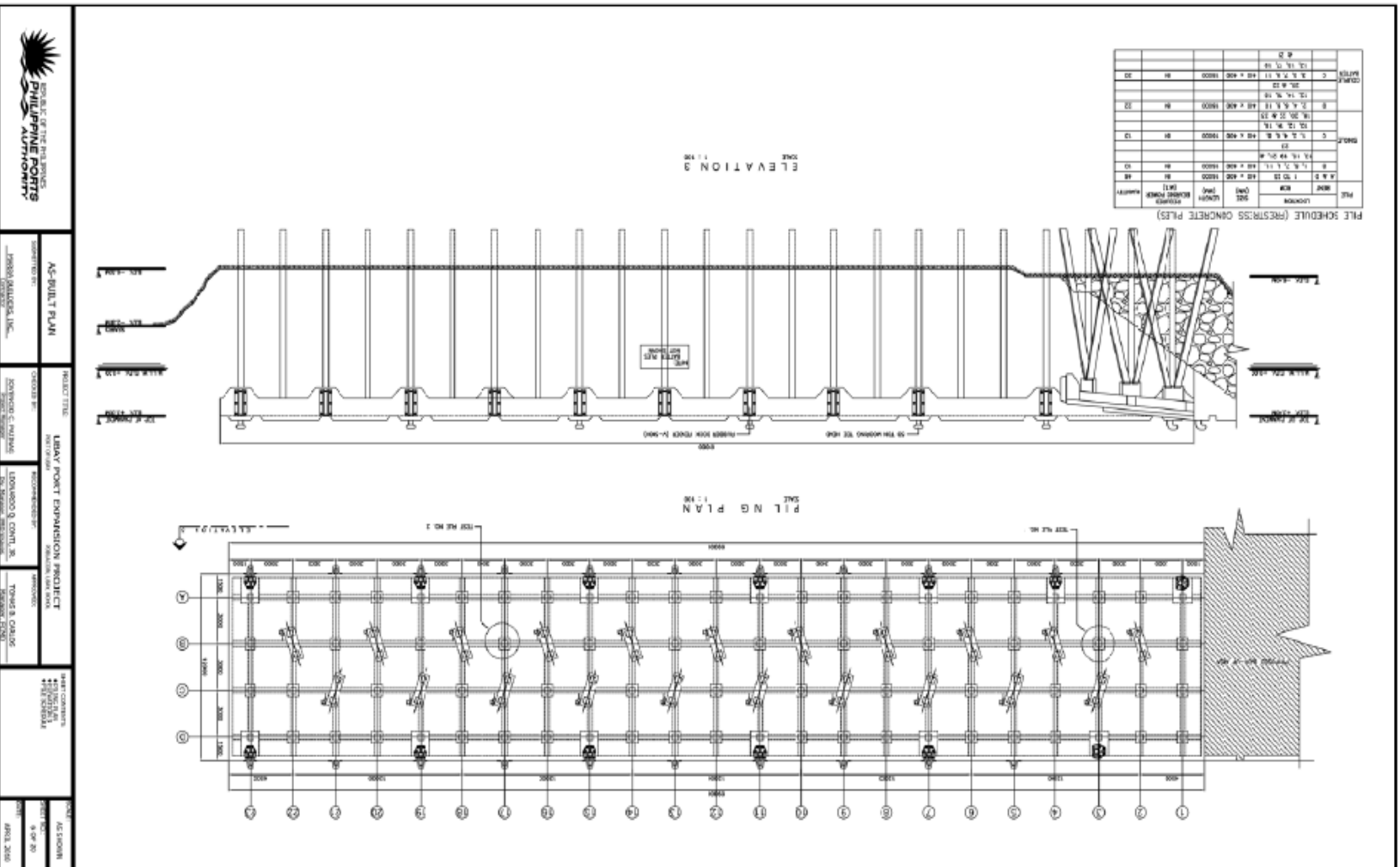


Figure No.1-d

Piling Plan and Pile Elevation


PHILIPPINE PORTS AUTHORITY
 LIBAY PORT EXPANSION PROJECT
 ARCHITECT: **AC-BUILT PLAN**
 CONSULTANT: **AC-BUILT PLAN**
 PROJECT TITLE: **LIBAY PORT EXPANSION PROJECT**
 CLIENT: **PHILIPPINE PORTS AUTHORITY**
 PROJECT NO.: **LIBAY-EP-001**
 DATE: **APRIL 2018**



Figure No.2
Left side of the old RC Pier



Figure No.3
Right Side of the old RC Pier



Figure No.4
Under deck slab and beam of the old RC Pier.



Figure No.5
Roro ramp adjacent to the old RC pier.



Figure No.6
Left side of the new RC Pier.



Figure No.7
Right side of the new RC Pier.



Figure No.8
New Roro ramp.



Figure No.9
Staging area/ Back –up area.



Figure No.10
Reclaimed Area



Figure No.11
Rock Bulkhead at reclaimed area

3.3. Leyte Province

3.3.1. Tacloban Port

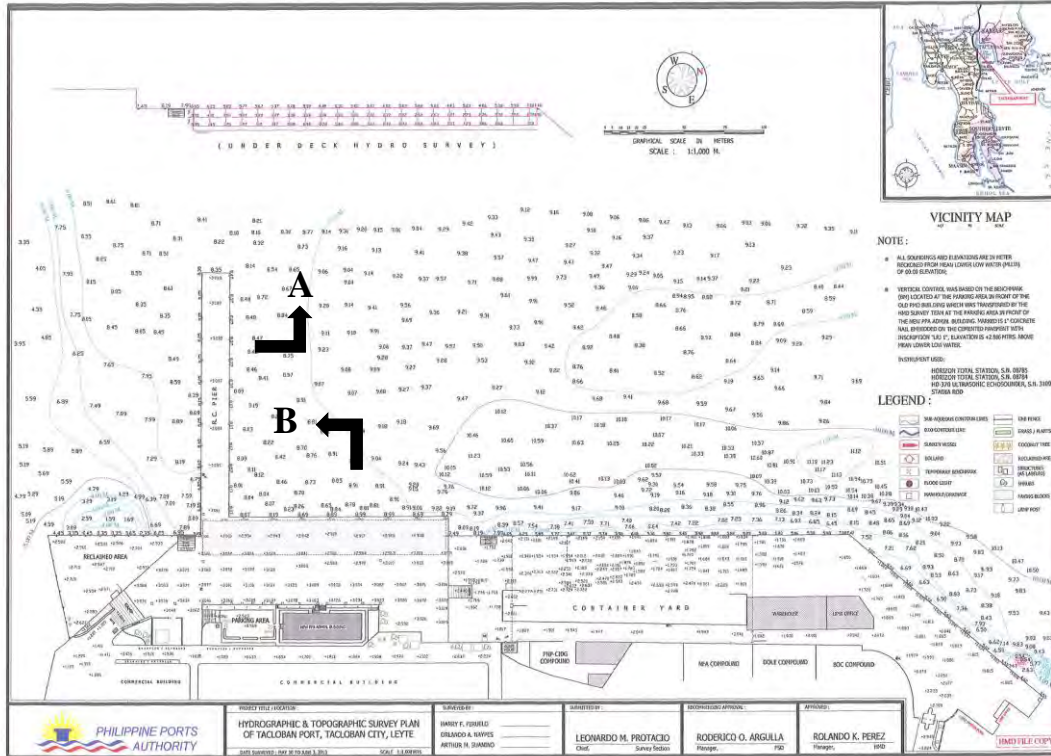


Figure No.1 General Plan of Tacloban Port

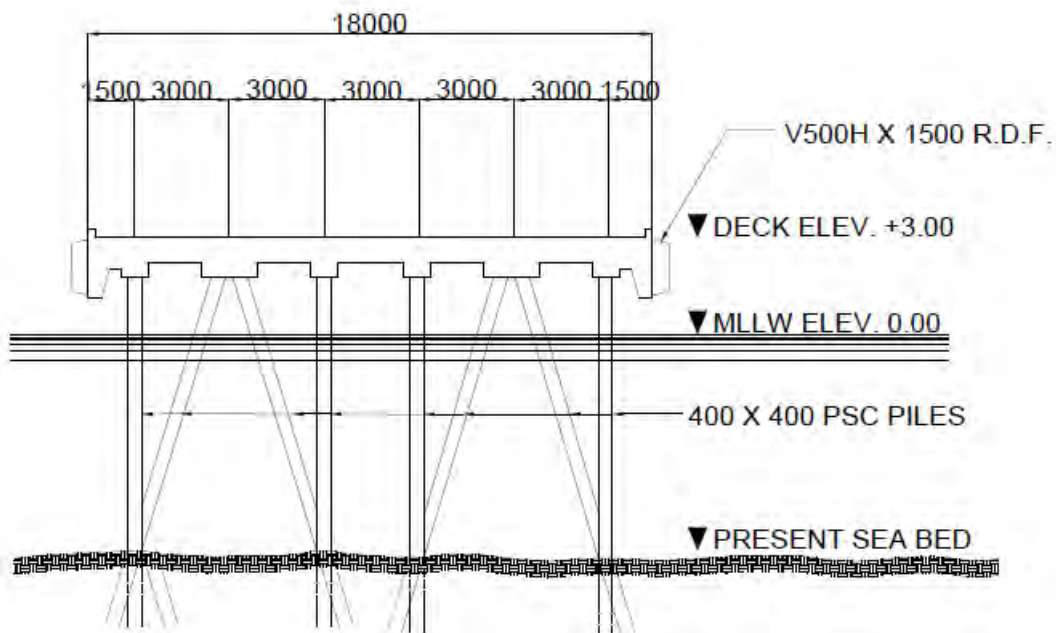


Figure No. 2 Section A of Pier

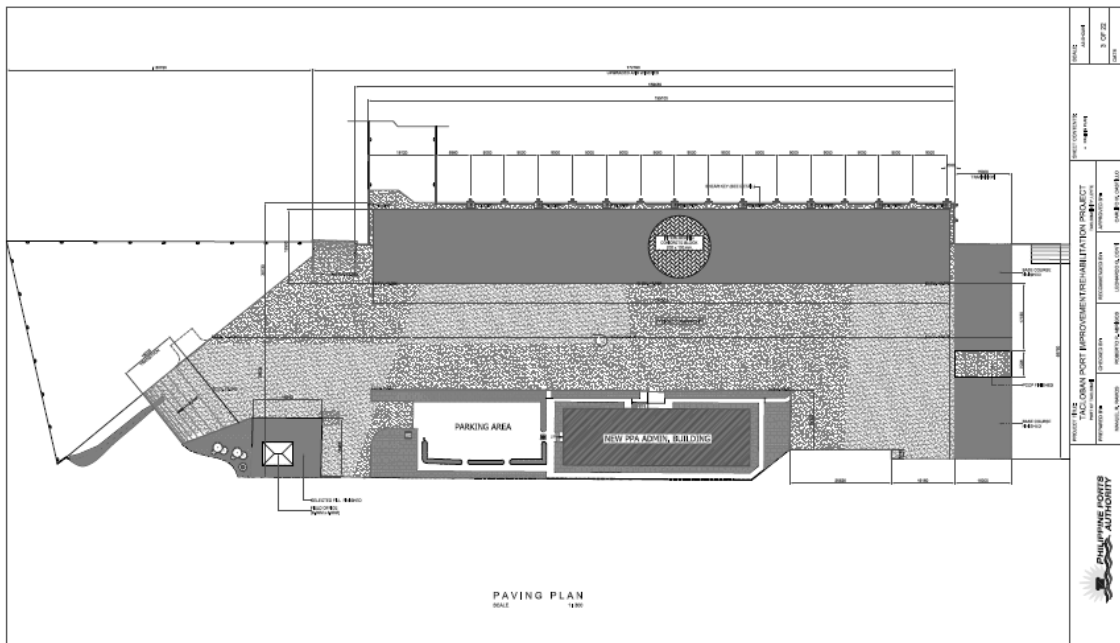


Figure No. 3
Paving Plan of Steel Pipe Sheet Pile Berth

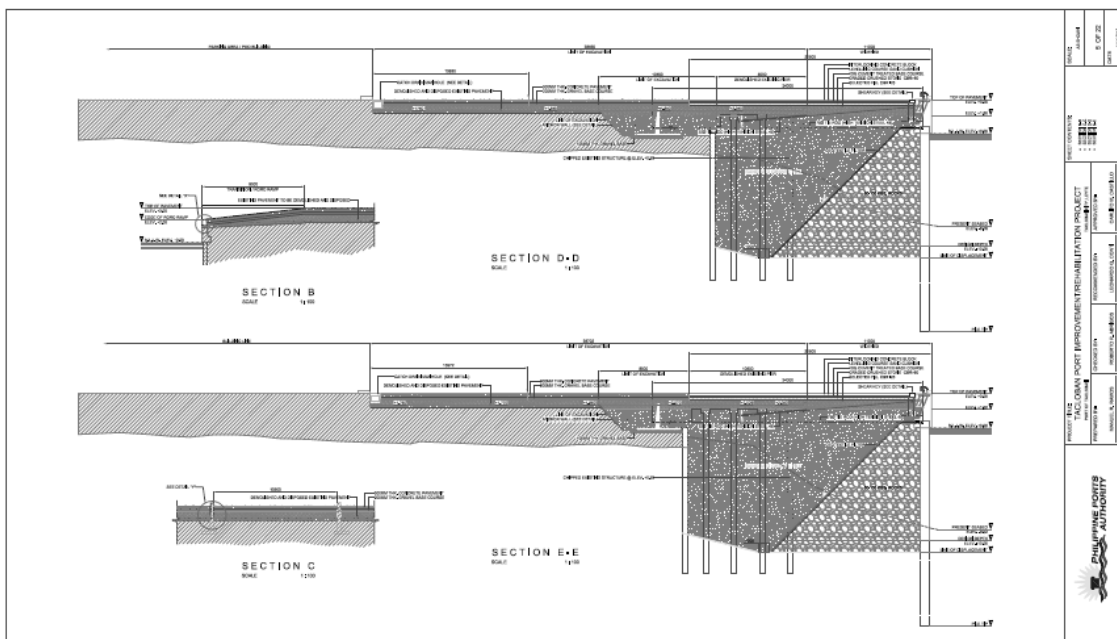


Figure No. 4
Section B-1 of Steel Pipe Sheet Pile Berth with Anchor Wall and Tie Rod

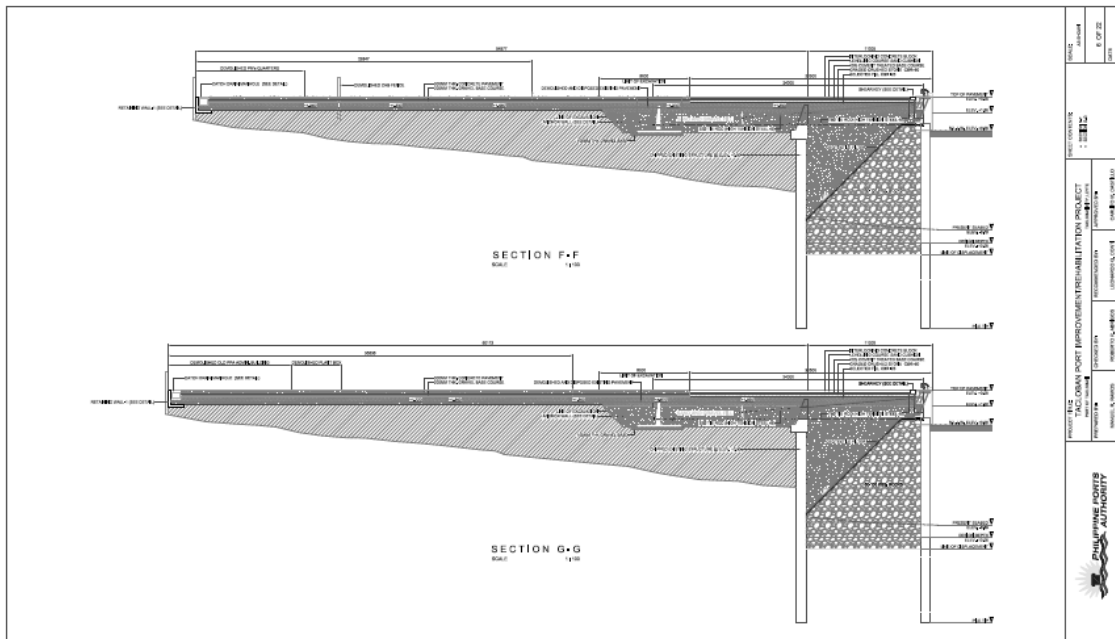


Figure No.5
Section B-2 of Steel Pipe Sheet Pile Berth with Anchor Wall and Tie Rod

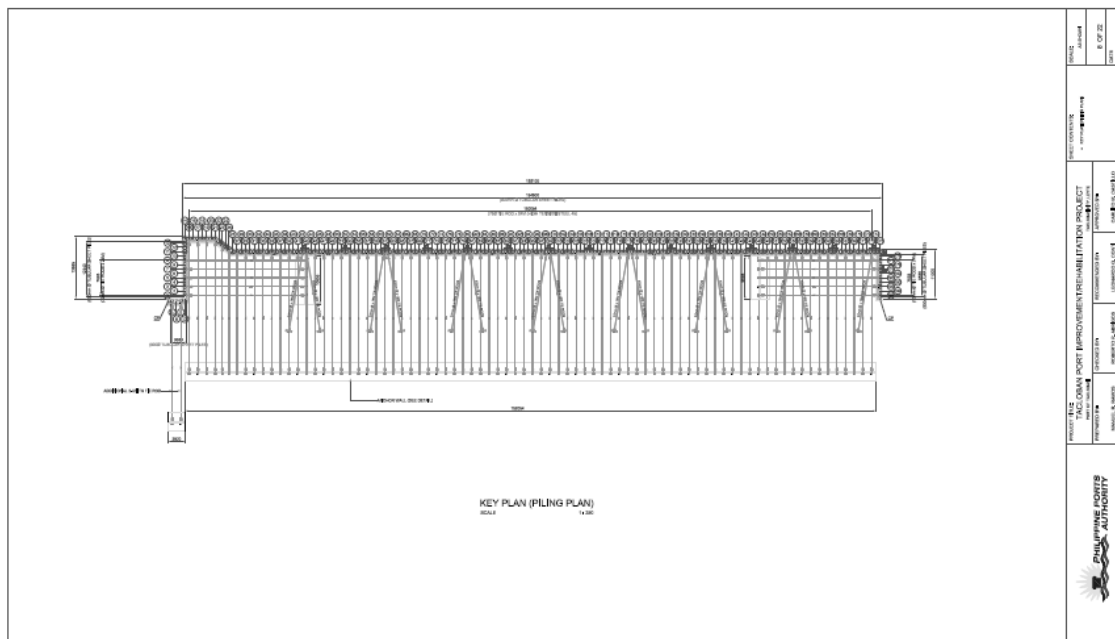


Figure No.6
Key Plan of Steel Pipe Sheet Pile with Anchor Wall and Tie Rod

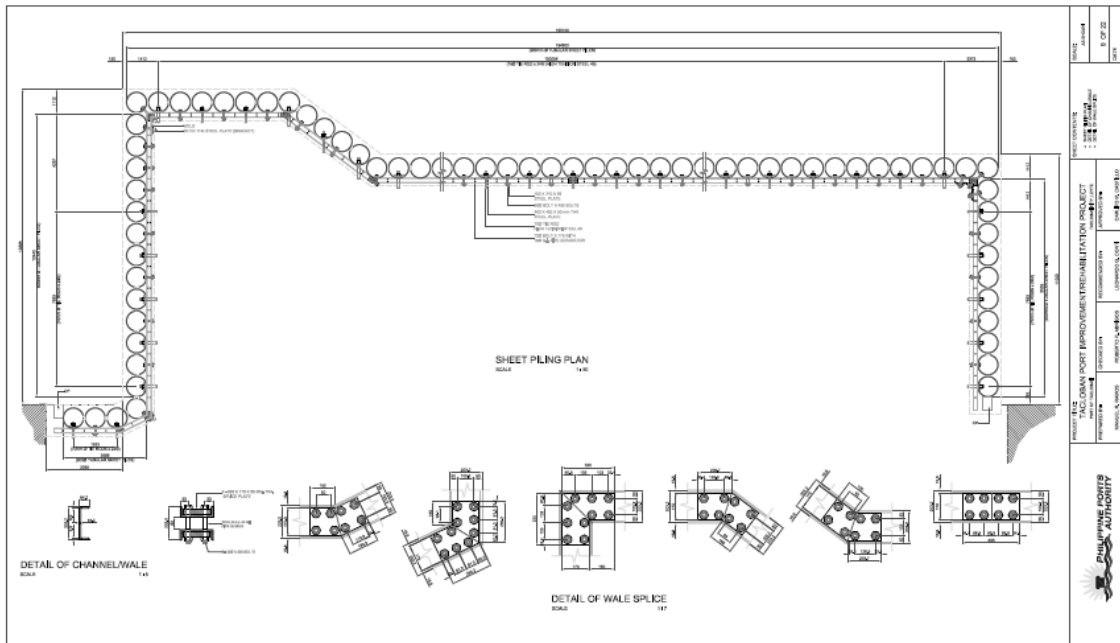


Figure No.7
Piling Plan of Steel Pipe Sheet Pile (SPSP)

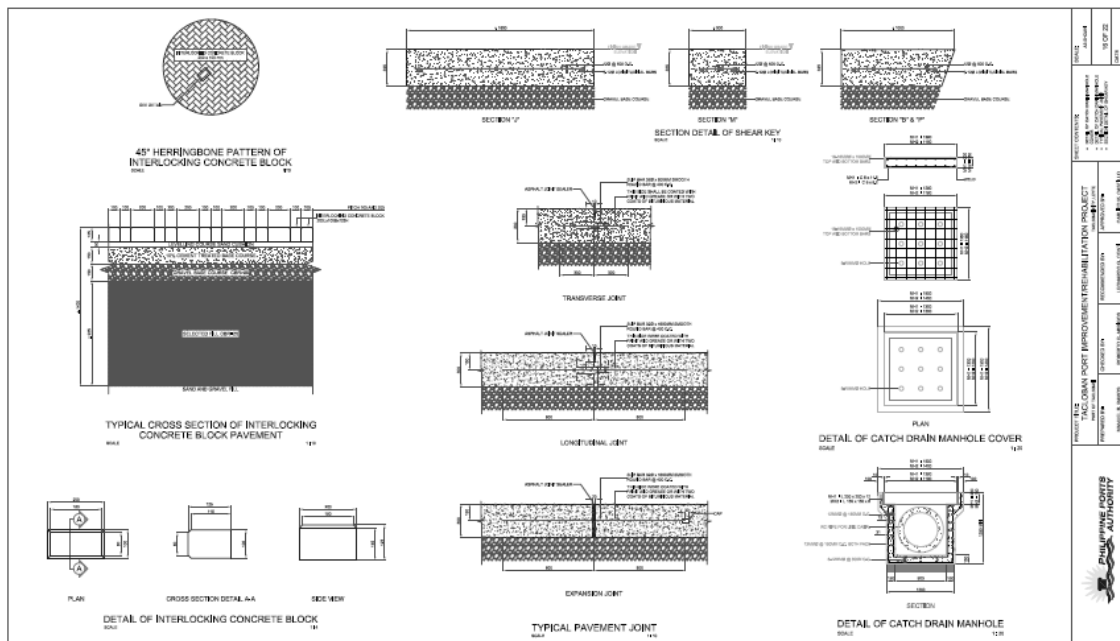


Figure No.8
Drainage and Pavement Details

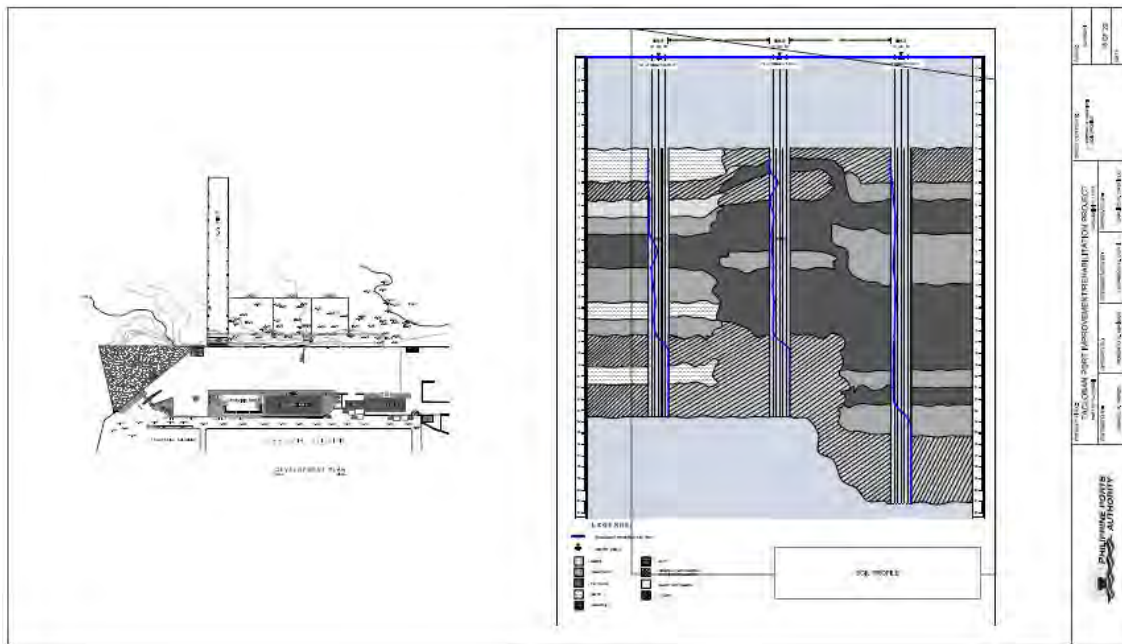


Figure No.9
Borehole Location and Soil Profile

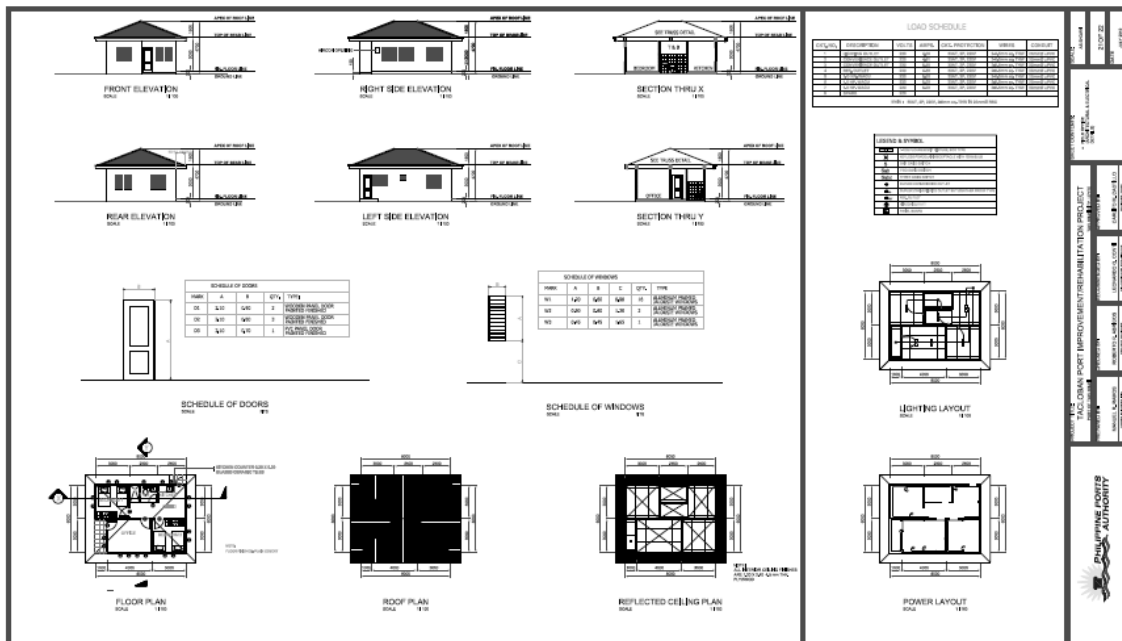

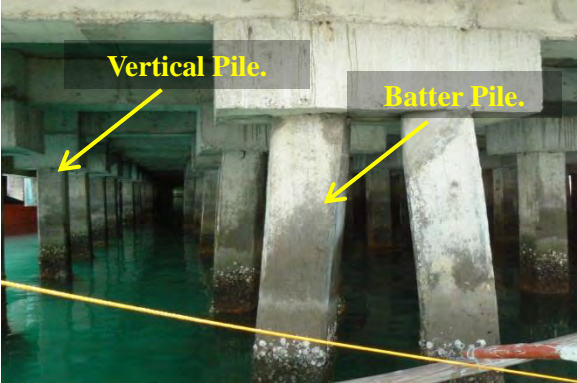






Figure No.10
Plan and Details of the PPA Field Office

 <p>A photograph showing a wide, flat concrete deck area at a port. In the background, there are several trucks, a crane, and a ship. A yellow arrow points from the text 'RC Pier Concrete Deck' to the deck surface.</p>	 <p>A photograph showing a concrete structure extending into the water. A yellow forklift is on a ramp labeled 'RORO Ramp'. A yellow arrow points to a concrete structure labeled 'RC Pier'.</p>
<p>Figure No.11 Photo shows the concrete deck of the existing RC Pier.</p>	<p>Figure No.12 Photo shows the RoRo ramp at the left side of the RC Pier.</p>
 <p>A photograph showing a wharf structure over the water. A yellow arrow points to a concrete structure labeled 'Existing RC Wharf Deck'. Another yellow arrow points to a vertical steel structure labeled 'SPSP 900mm dia.'.</p>	 <p>A photograph showing a concrete structure with rebar reinforcement. A yellow arrow points to the structure labeled 'Existing RC Wharf Deck'.</p>
<p>Figure No.13 Photo shows the newly driven Steel Pipe Sheet Pile (SPSP) and the existing RC wharf deck to be demolished.</p>	<p>Figure No.14 Photo shows the existing RC wharf deck to be demolished.</p>
 <p>A photograph showing the corner of a concrete pier structure. A yellow arrow points to the corner labeled 'Tip of Pier'.</p>	 <p>A photograph showing the front view of a pier structure over the water. A yellow arrow points to the top of the structure labeled 'Tip of Pier'.</p>
<p>Figure No.15 Photo shows the corner tip of the RC Pier.</p>	<p>Figure No.16 Photo shows the front elevation of the tip of the RC Pier.</p>

	
<p>Figure No.17 Checking the inclination of the Batter Piles foundation of RC Pier.</p>	<p>Figure No.18 Photo shows the Concrete Piles in good condition.</p>
	
<p>Figure No.19 Photo shows the Pile foundation of RC Wharf at NE side of the port.</p>	<p>Figure No.20 Checking the inclination of the Batter Pile foundation of RC Wharf at NE side of the port.</p>
	
<p>Figure No.21 PPA Office Building.</p>	<p>Figure No.22 Cargo Shed Building.</p>

3.3.2. Ormoc Port

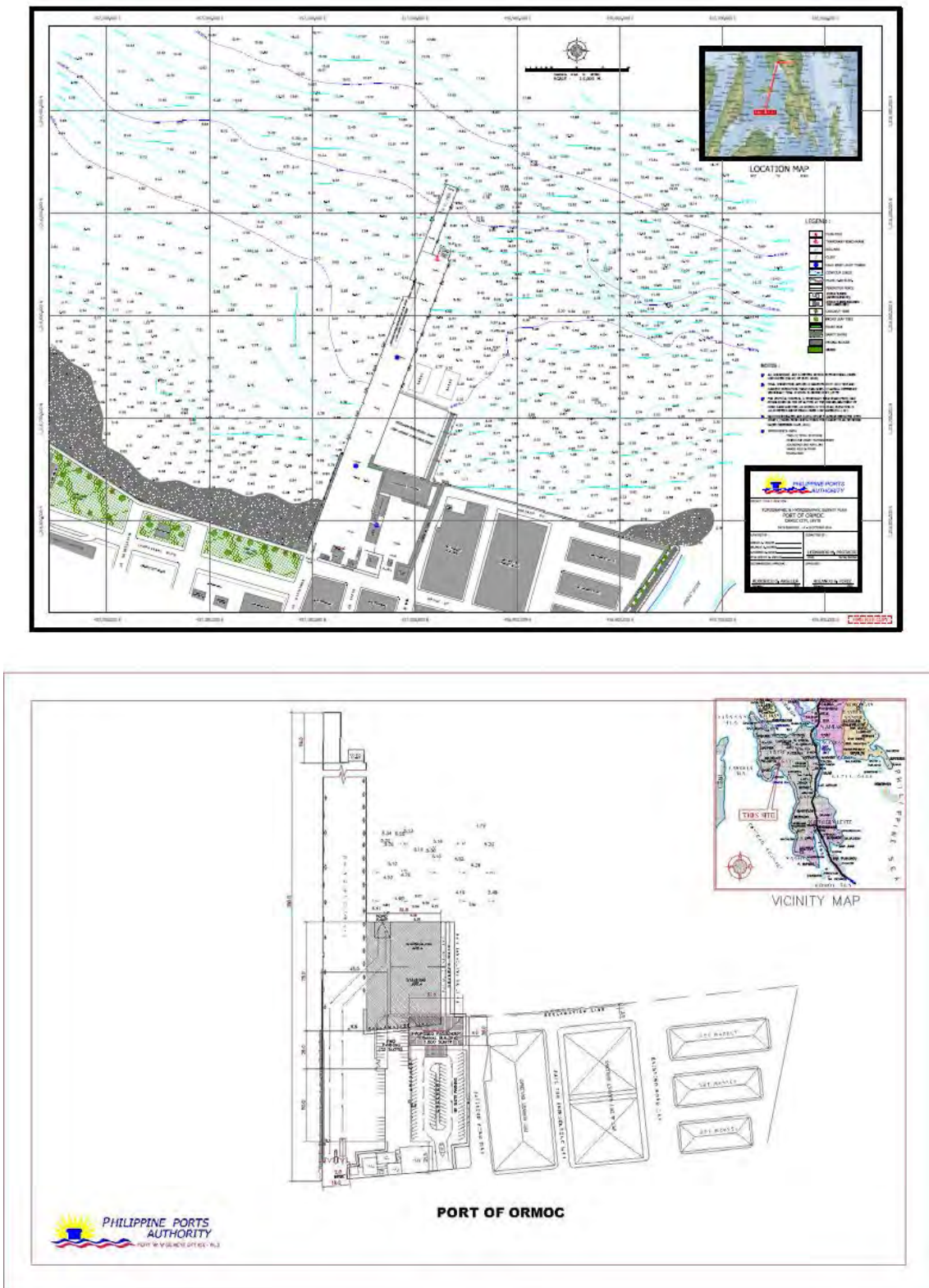


Figure No.1
Layout of the existing Ormoc Port.

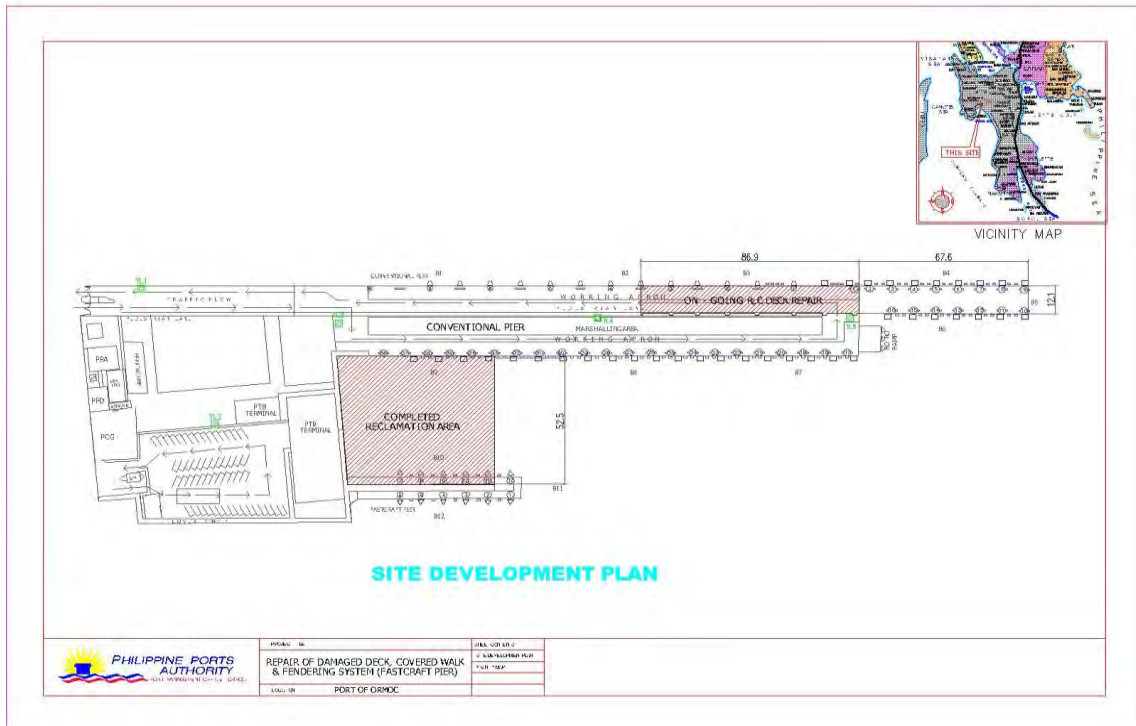


Figure No.2
Site Development Plan of the Port Ormoc.

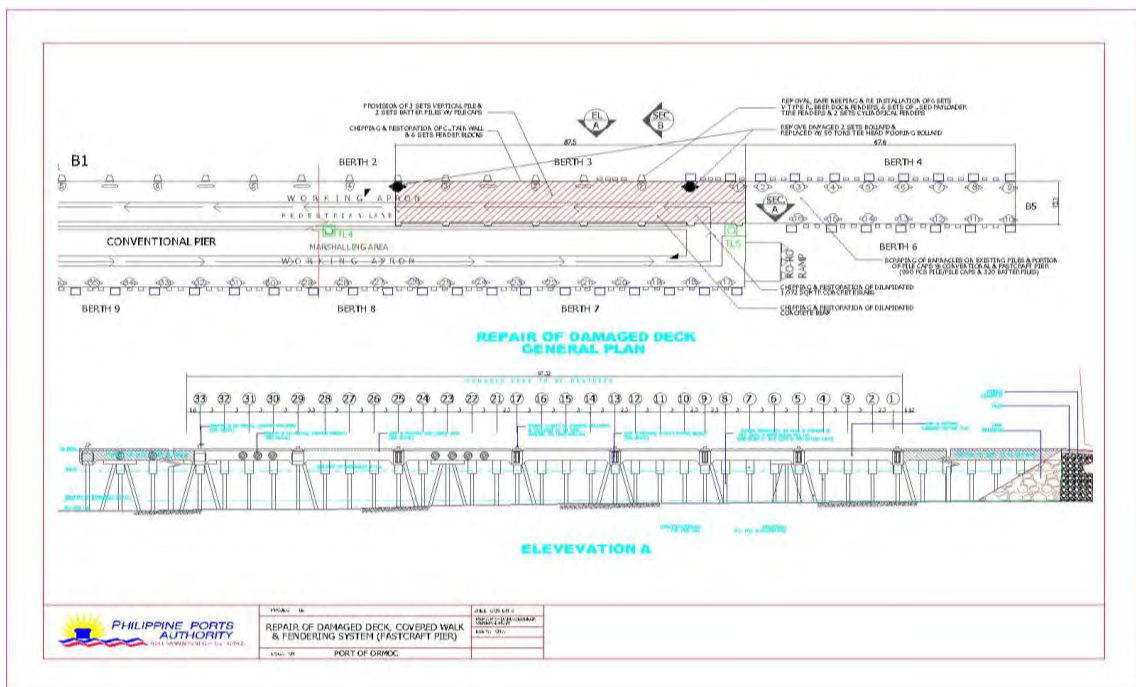


Figure No.3
The existing layout of the Ormoc Port.

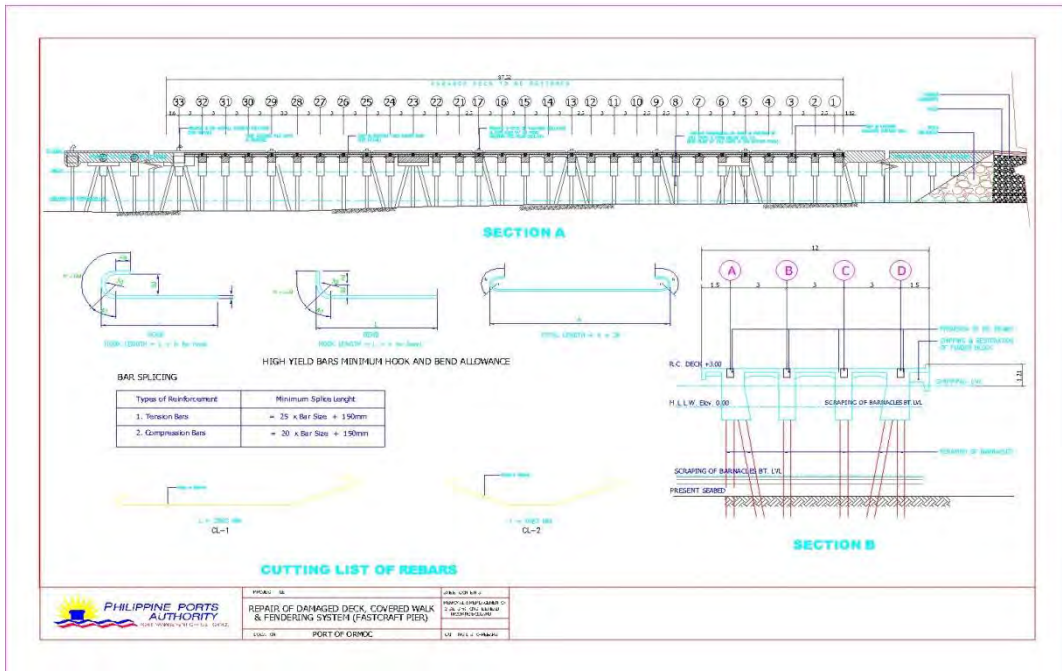


Figure No.4

The Photo shows the cutting list of reinforcement.

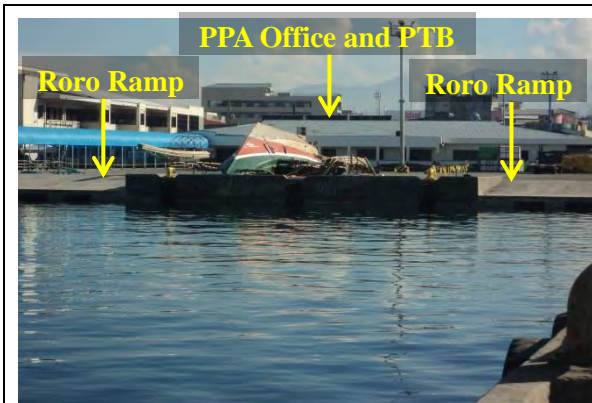


Figure No.5

Photo shows the PPA office and PTB.



Figure No.6

Photo shows the 2-units of RoRo ramp.

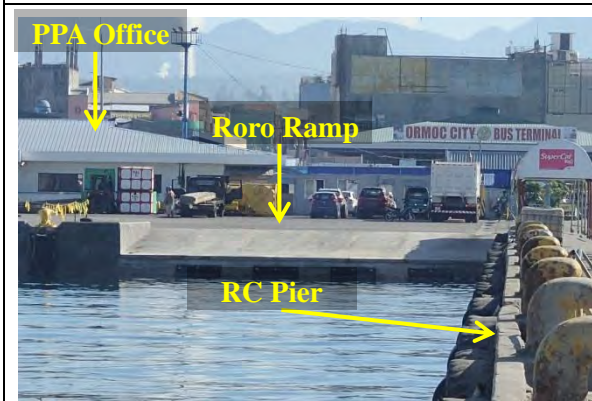




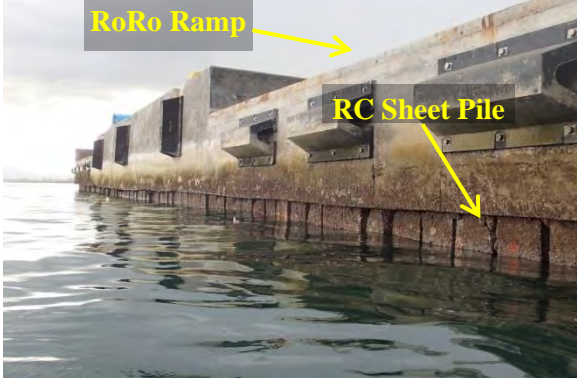



Figure No.7

Photo Shows the RoRo Ramp in good condition.



Figure No.8

Photo shows the existing RC Pier.

	
<p align="center">Figure No.9</p> <p>Photo shows the on-going repair of RC Pier.</p>	<p align="center">Figure No.10</p> <p>Photo shows Concrete Pile stored on top of RC Pier.</p>
	
<p align="center">Figure No.11</p> <p>Photo show RC sheet piles at RoRo Berth.</p>	<p align="center">Figure No.12</p> <p>Photo shows the existing Concrete Piles in good condition.</p>
	
<p align="center">Figure No.13</p> <p>Photo shows exposed reinforcements of the under deck beams and slab.</p>	<p align="center">Figure No.14</p> <p>Photo shows exposed rebar of the newly repaired RC pier.</p>

3.3.3. Babatngon Port

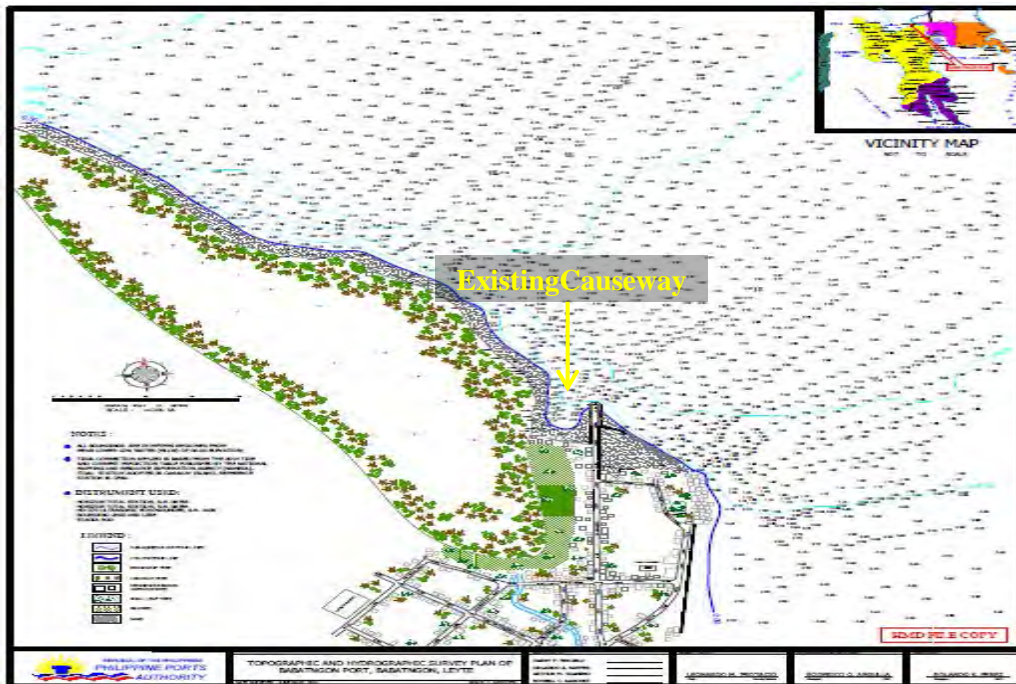


Figure No.1

Existing Causeway of Babatngon Port

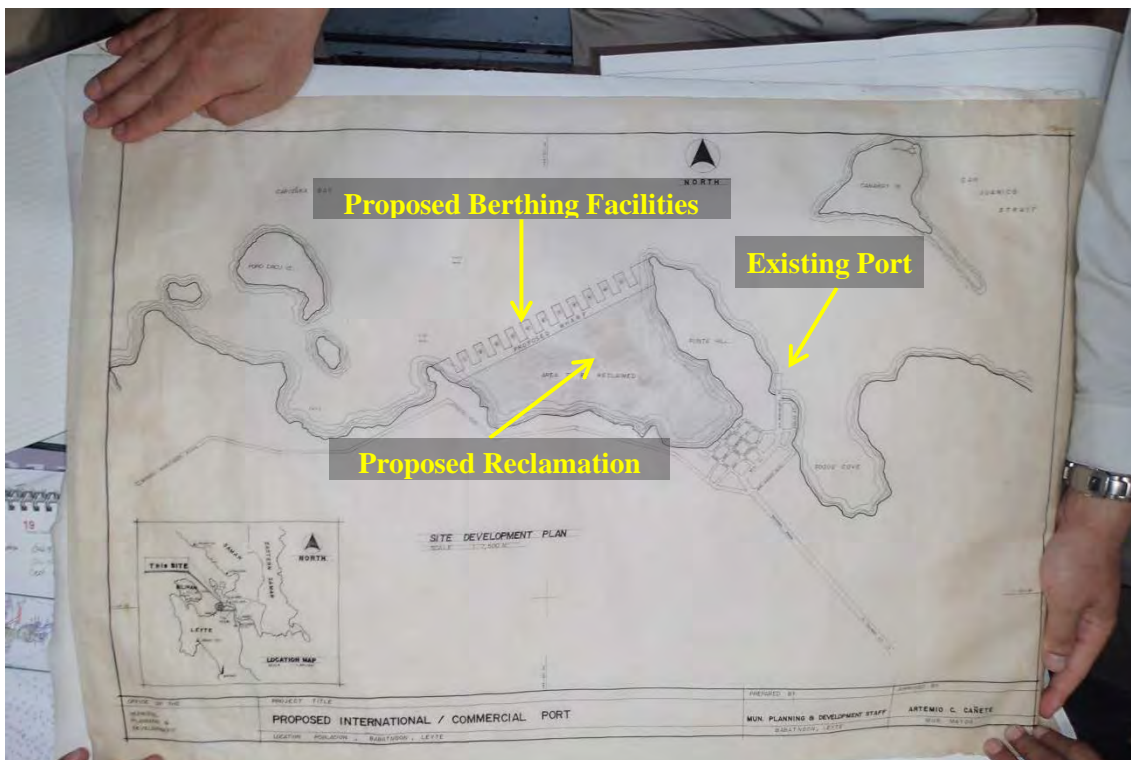
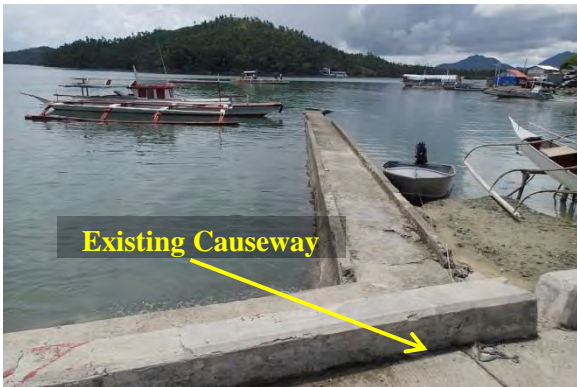






Figure No.2

Proposed New Site of Babatngon Port

 <p>Existing Causeway</p>	 <p>Stair landing</p> <p>Causeway</p>
<p>Figure No.3 Rock Causeway of the existing port.</p>	<p>Figure No.4 Stairlanding both side of the existing causeway.</p>
 <p>Rock Bulkhead</p>	 <p>Existing seawall</p>
<p>Figure No.5 Rock bulk head of the existing causeway.</p>	<p>Figure No.6 Existing seawall at the proposed new port site.</p>
 <p>Access road</p>	
<p>Figure No.7 Access road to the proposed new port site.</p>	

3.3.4. Bato Port

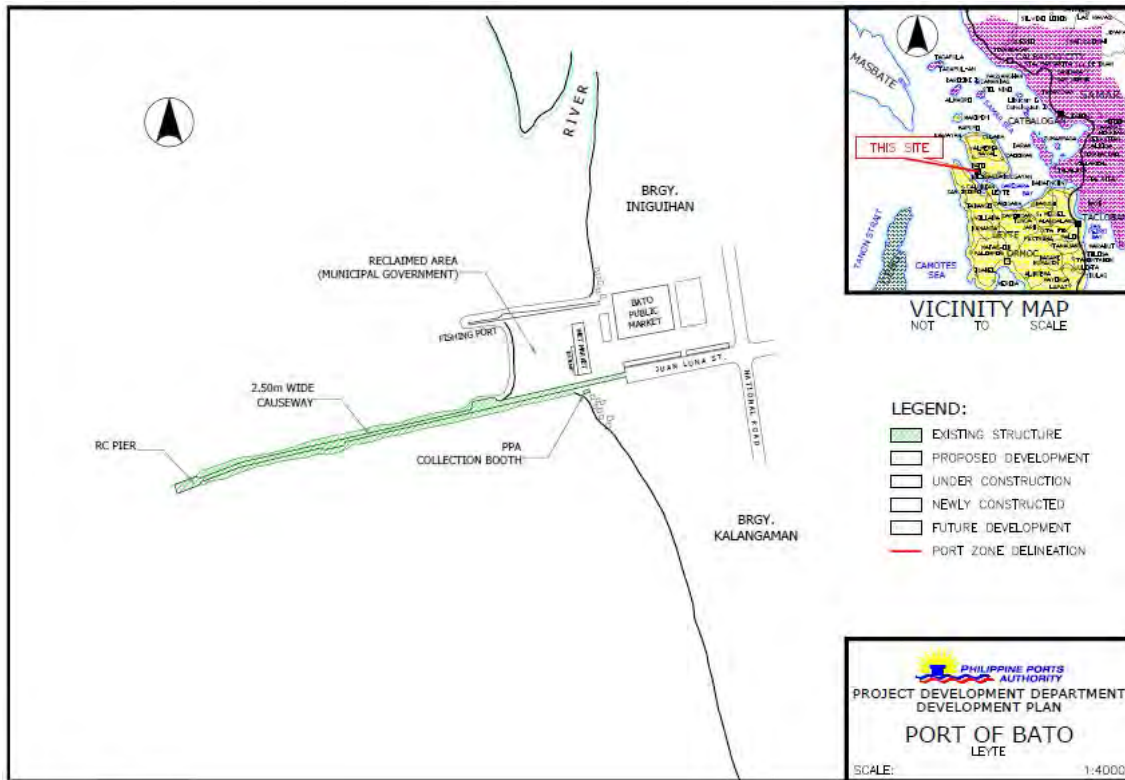


Figure No.1-a
 Port of Bato, Leyte

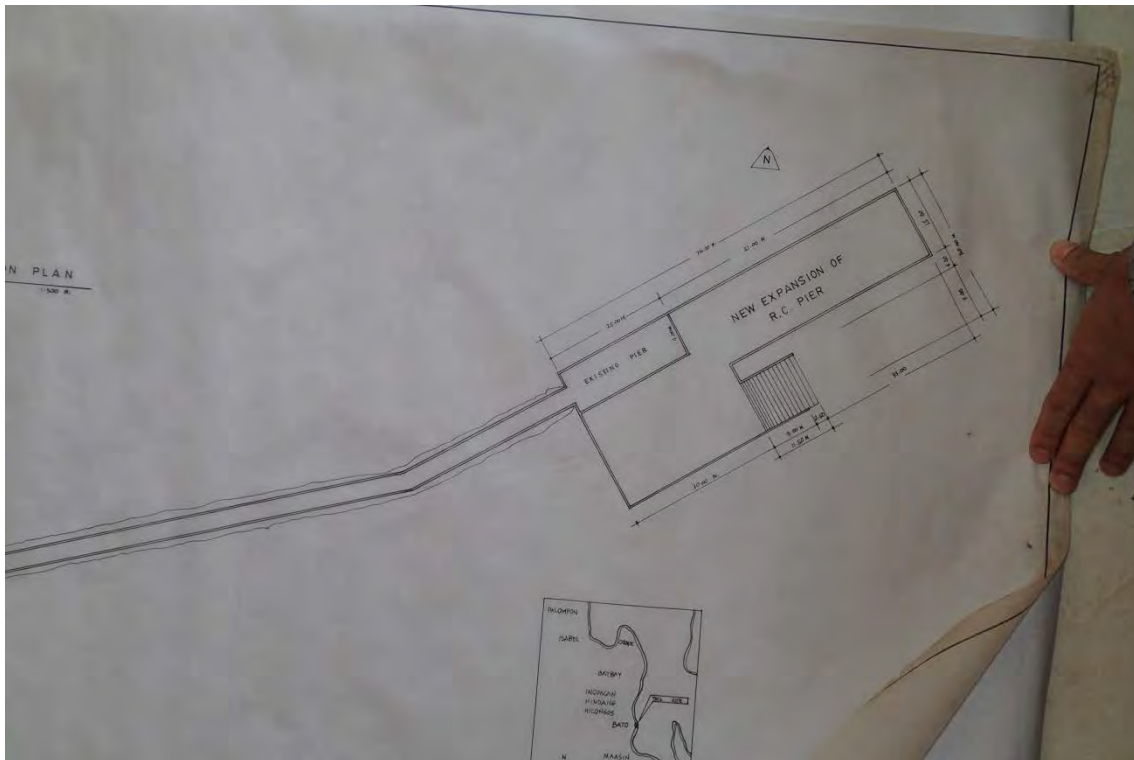


Figure No.1-a
Development Plan

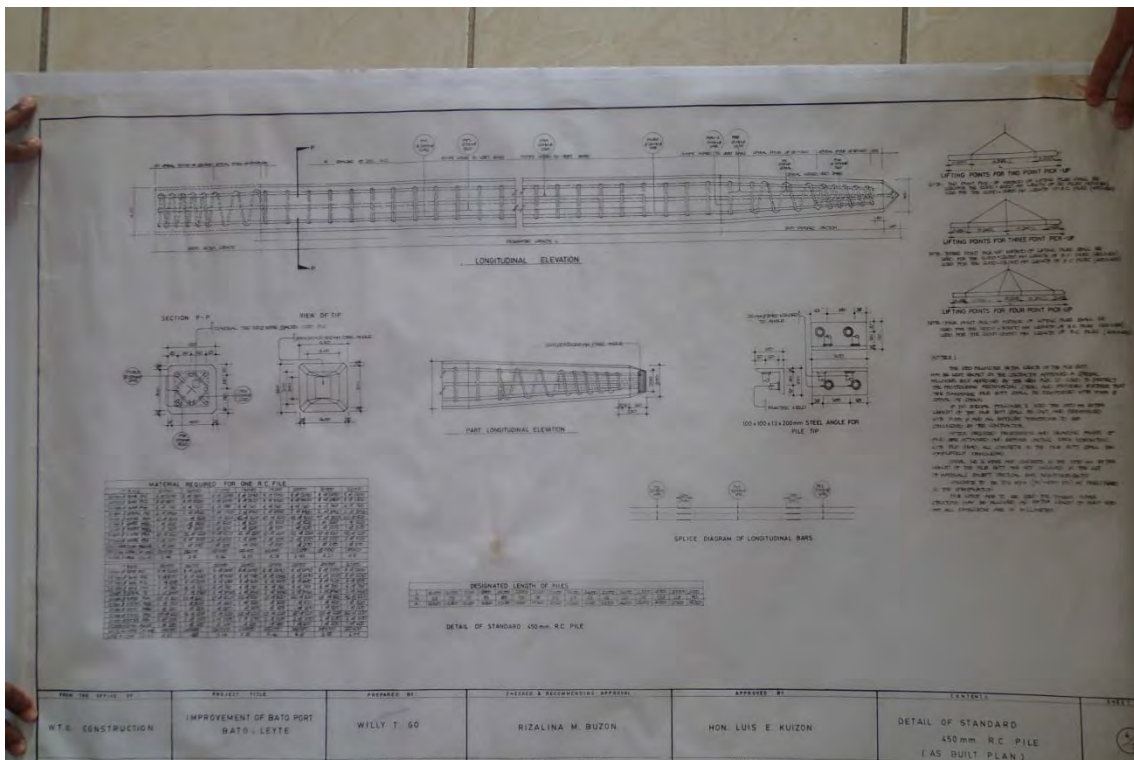


Figure No.1-a
Detail of RC Pile

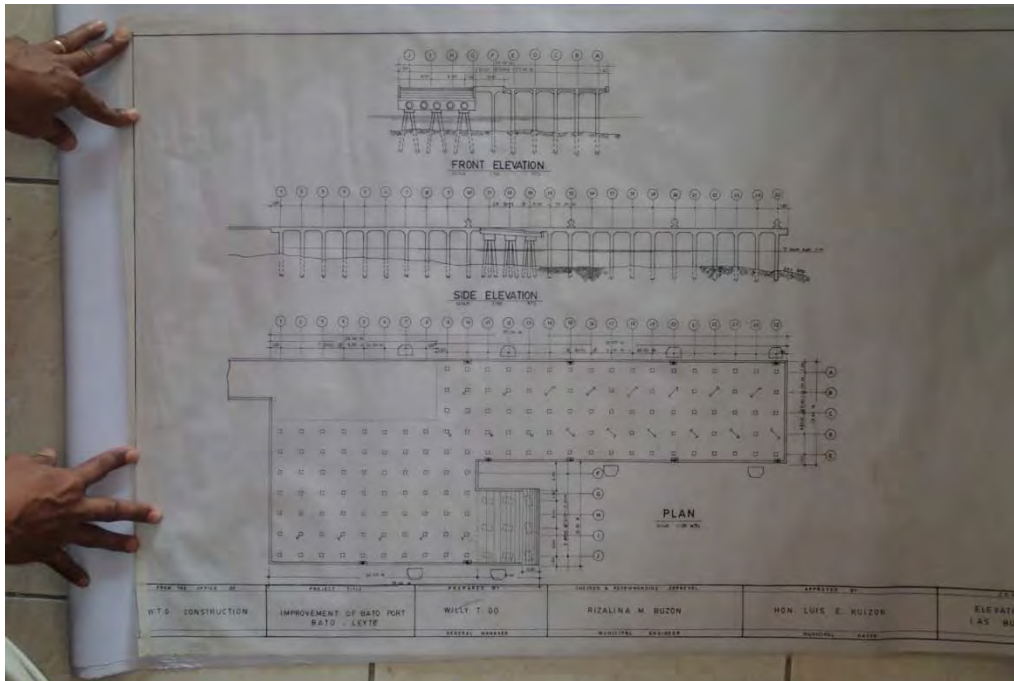


Figure No.1-a

Plan and Elevation of the Port facilities.



Figure No.3

Causeway

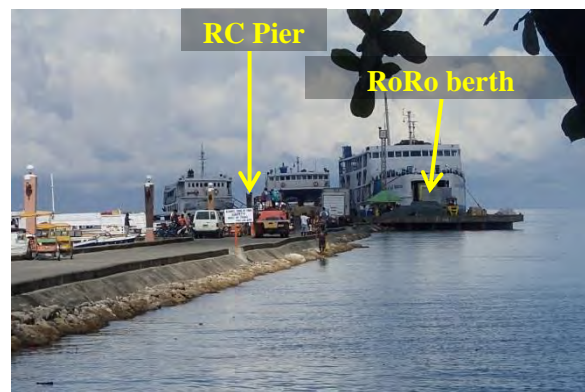


Figure No.4

The Port Roro berth and RC Pier



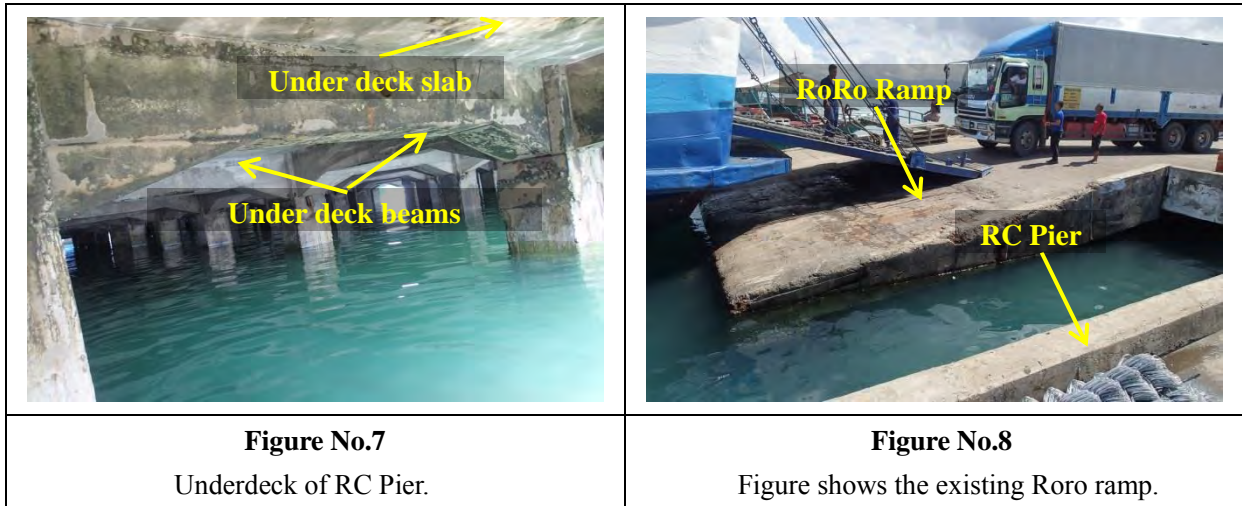
Figure No.5

Rock bulk head of the existing causeway.



Figure No.6

Underdeck of RC pier.



3.3.5. Baybay Port

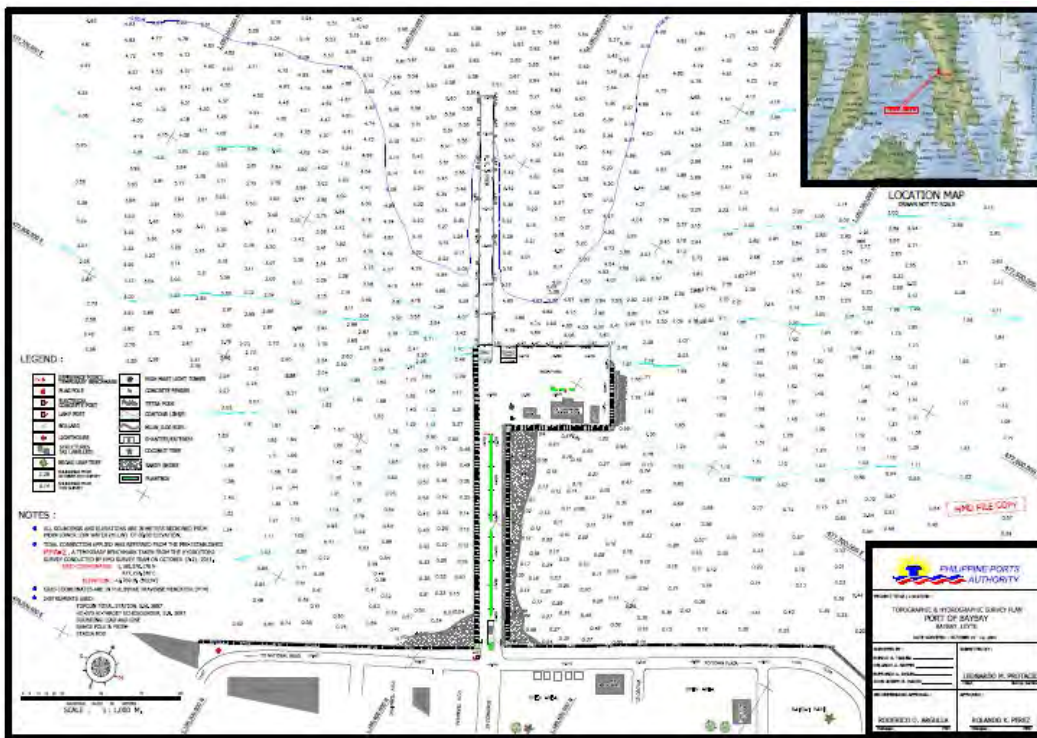


Figure No.1-a
Port Layout of the Existing Baybay Port.

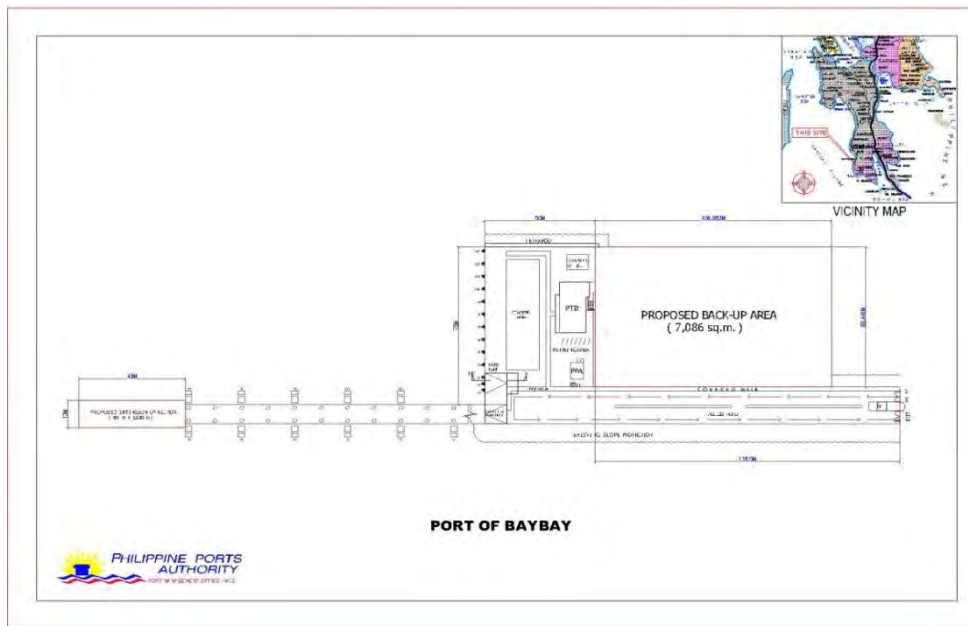


Figure No.1-b
Development Plan of Baybay Port.



Figure No.2
The figure shows the Northwest (NW)/ right side of RC Pier



Figure No.3
Right Side of the existing pier.



Figure No.4
The RoRo berth area.



Figure No.5
The concrete pile of RC pier near the RoRo ramp.

<p>Figure No.6 Concrete piles at the Southeast / left side of the pier.</p>	<p>Figure No.7 Damaged concrete at the left corner of the Pier.</p>
<p>Figure No.8 Figure shows cracked pile cap.</p>	<p>Figure No.9 Figure shows Breasting Dolphin and concrete piles and pile cap in good condition.</p>
<p>Figure No.10 Figure shows the condition of the under deck slab.</p>	<p>Figure No.11 Exposed rebar of the under deck slab.</p>



Figure No.12

Figure shows the under deck slab.



Figure No.13

Figure shows the under deck slab.



Figure No.14

Photo Shows the Rc Pier and RoRo Ramp.



Figure No.15

The RoRo Ramp.



Figure No.16

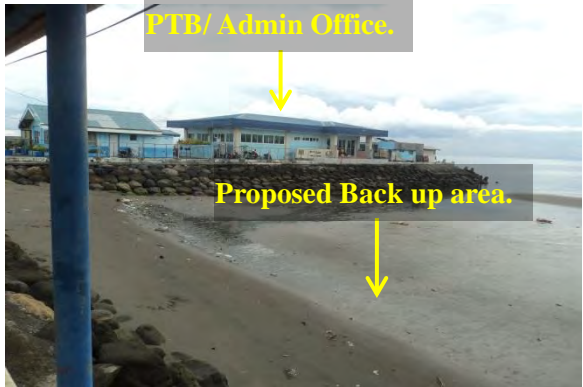


Revetment at the southwest side of the port.



Figure No.17

Revetment at the back of PTB..

<p>Figure No.18 Revetment at the southwest of the backup area.</p>	<p>Figure No.19 Revetment connecting the RC Pier.</p>
<p>Figure No.20 Figure shows PPA Admin Office and Passenger Terminal Building.</p>	<p>Figure No.21 Port Entrance Gate and Guardhouse.</p>
<p>Figure No.22 Figure shows PPA Building.</p>	<p>Figure No.23 Covered walkway viewed towards land side.</p>

	
<p align="center">Figure No.24</p> <p>Figure shows the Proposed back up area at the back of PPA Admin Office/Passenger Terminal Building.</p>	<p align="center">Figure No.25</p> <p>The Proposed back up area exposed during low tide.</p>
	
<p align="center">Figure No.26</p> <p>Figure shows the access causeway and the landside of the port.</p>	<p align="center">Figure No.27</p> <p>Port back up area.</p>
	
<p align="center">Figure No.28</p> <p>Figure shows Passenger Terminal Building / Admin Office.</p>	<p align="center">Figure No.29</p> <p>PPA Building</p>

3.3.6. Hilongos Port

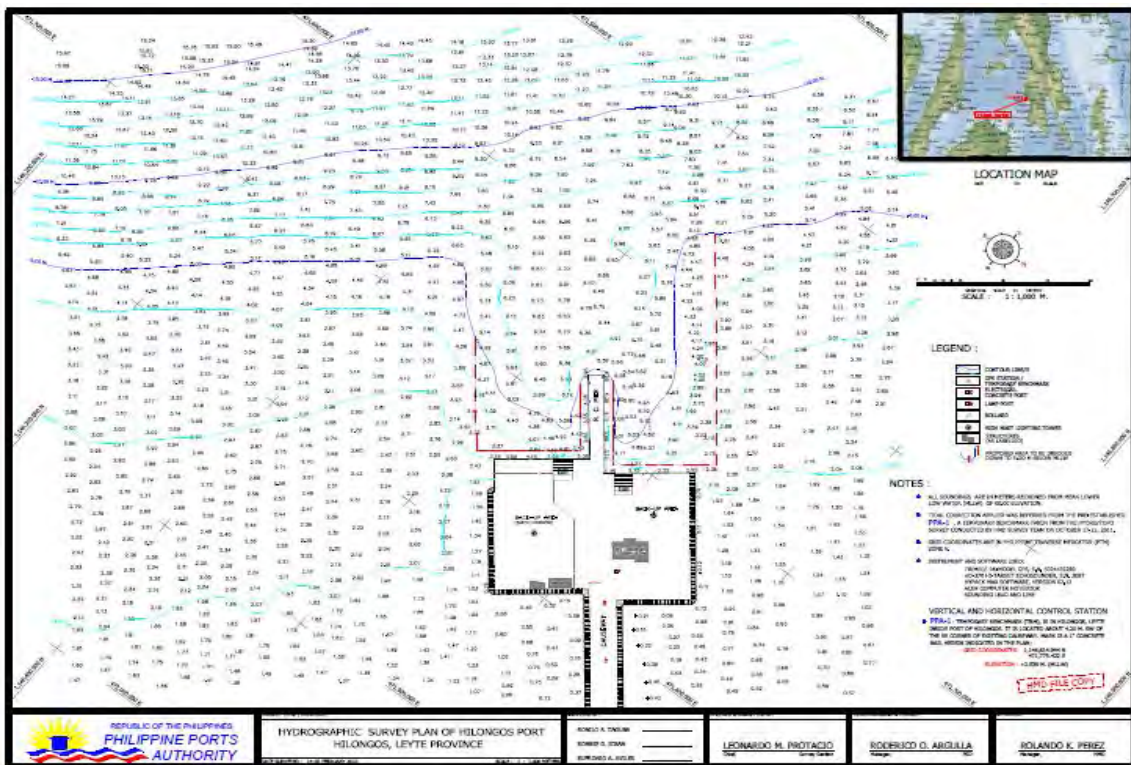


Figure No.1-a

Existing Port Layout with showing seabed elevation.

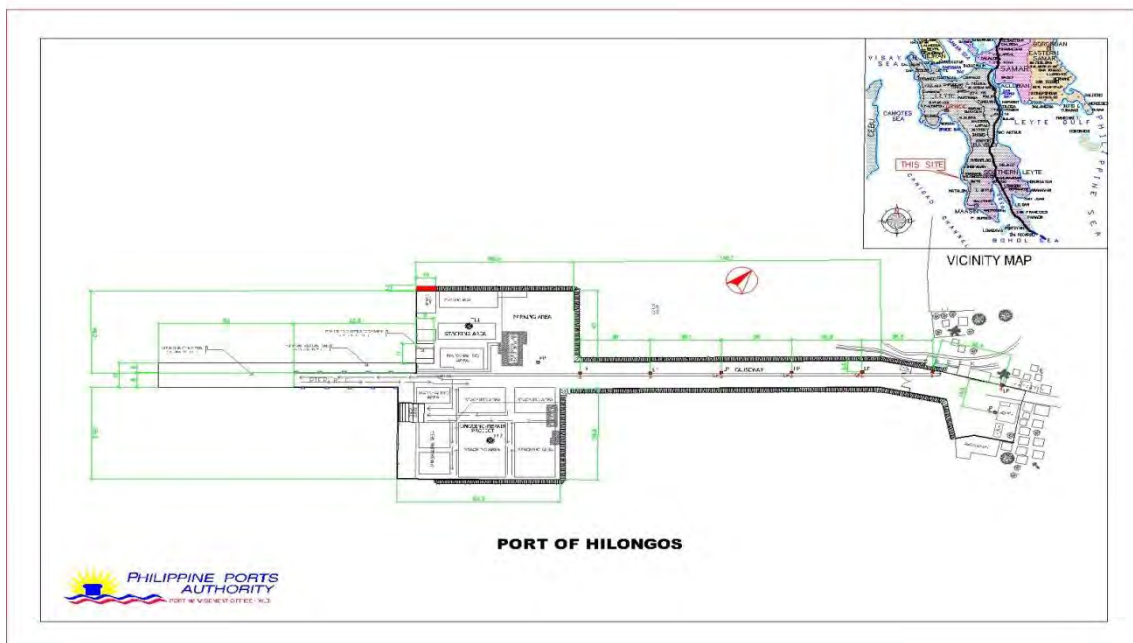


Figure No.1-b

Existing Port Layout



Figure No.2
Port back-up area at the NW side.



Figure No.3
Port Back-up area at the SE side.



Figure No.4
The RoRo ramp at the west side of the port during high tide.



Figure No.5
The RoRo ramp at the east side of the port during high tide.



Figure No.6
Existing Rock Causeway



Figure No.7
Existing RC Pier

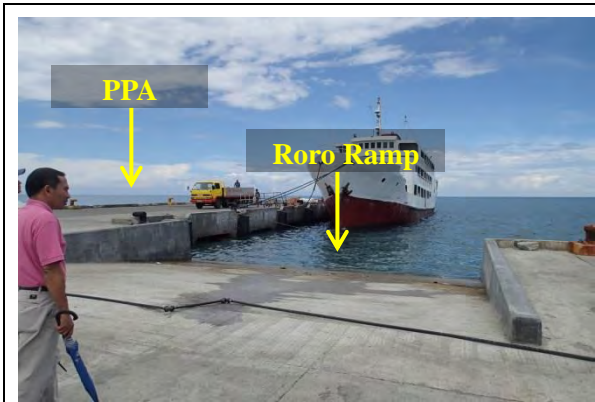


Figure No.8
Photo Shows the RoRo Ramp in good condition.



Figure No.9
The port viewed towards onshore.



Figure No.10
ILB Pavement used at open storage area.



Figure No.11
Open Storage area with ILB pavement.



Figure No.12
Photo shows PPA Admin Office and Passenger Terminal Building.



Figure No.13
Port Arrastre Office

3.3.7. Hindang Port

<p align="center">Figure No.2 The Reclamation Area</p>	<p align="center">Figure No.3 Reclamation located at the left side of the causeway facing offshore.</p>
<p align="center">Figure No.4 The newly constructed causeway.</p>	<p align="center">Figure No.5 Stairlanding on both sides of the causeway.</p>
<p align="center">Figure No.6 Right side of the Port site.</p>	

3.3.8. Isabel port

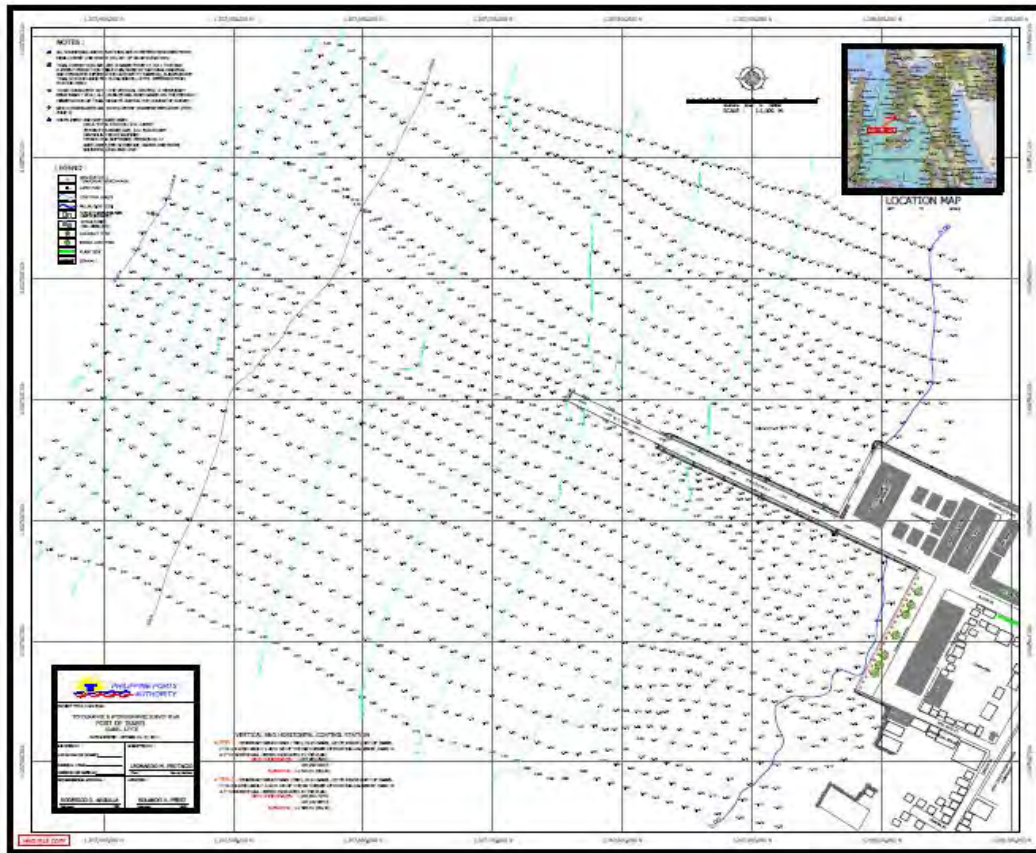


Figure No.1-b
Existing Port layout with hydrographic survey.

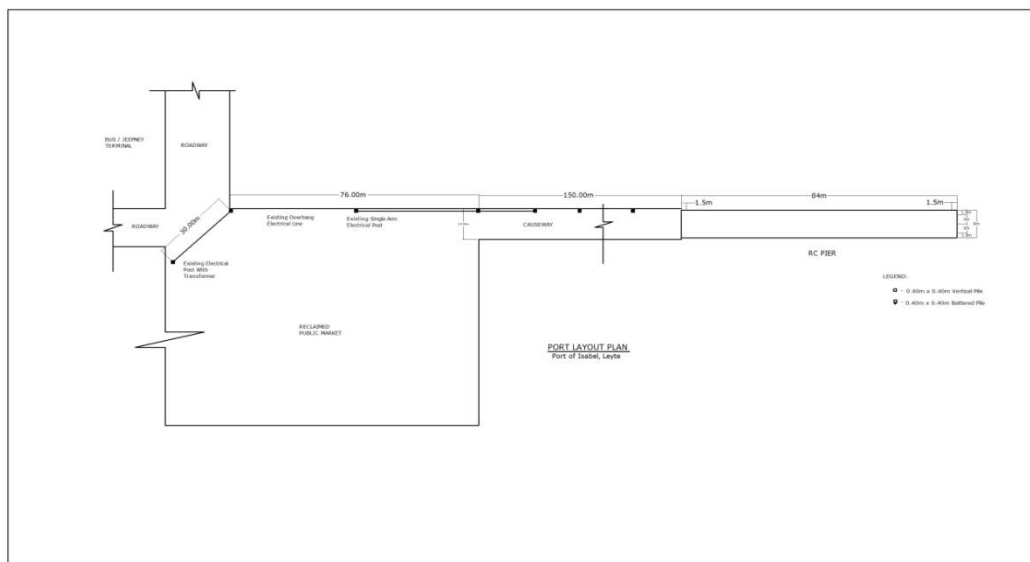








Figure No.1-b
Existing Port layout Plan.

	
<p>Figure No.2 Existing RC Pier</p>	<p>Figure No.3 Left side of the existing RC Pier.</p>
	
<p>Figure No.4 Photo shows the under deck slab, beams and the concrete pile foundation of the RC Pier.</p>	<p>Figure No.5 Damaged Concrete piles and curtain wall of the pier.</p>
	
<p>Figure No.6 Shown is the existing wave deflector wall protecting the Public Market.</p>	<p>Figure No.7 Shown is the Isabel Public market adjacent to the port access road.</p>

<p align="center">Figure No.8 Existing Causeway with Banca/Stairlanding on the side.</p>	<p align="center">Figure No.9 Right side elevation of the existing RC Pier of Isabel Port</p>
<p align="center">Figure No.10 Damaged curtain wall @ the right side of RC pier.</p>	<p align="center">Figure No.11 Damaged Curtain Wall and Concrete pile at the right corner tip of the RC pier.</p>
<p align="center">Figure No.12 Tip of the RC Pier showing damaged concrete deck, curtain wall and Concrete pile.</p>	

3.3.9. Palompon Port

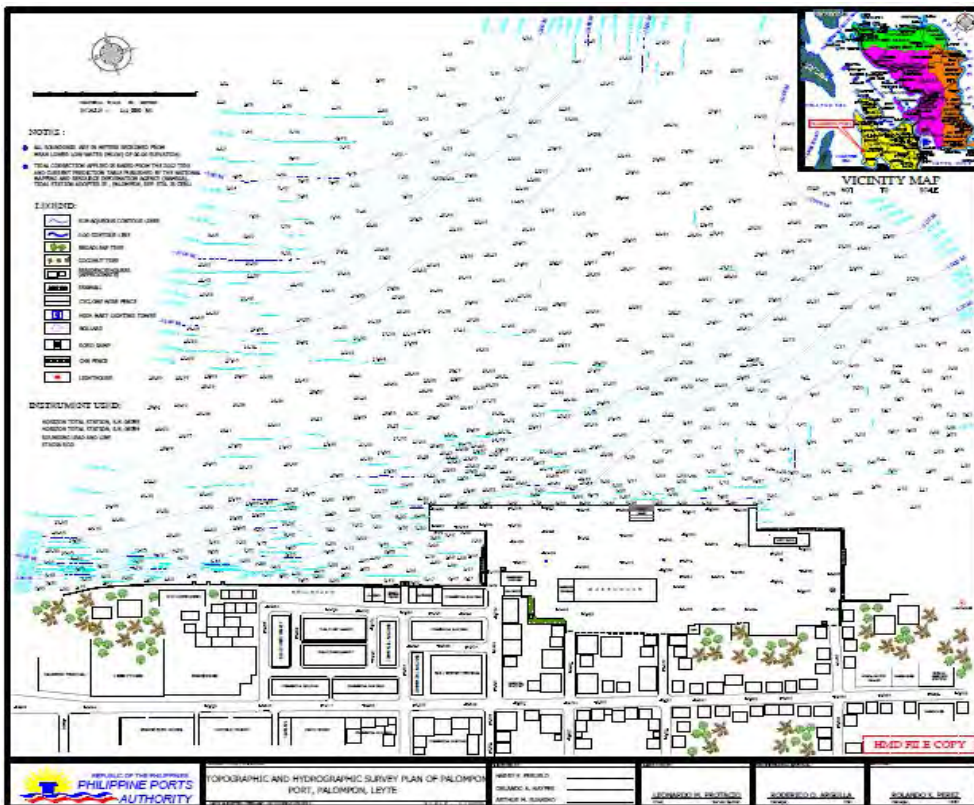


Figure No.1-a
Port layout and Hydrographic Survey Plan

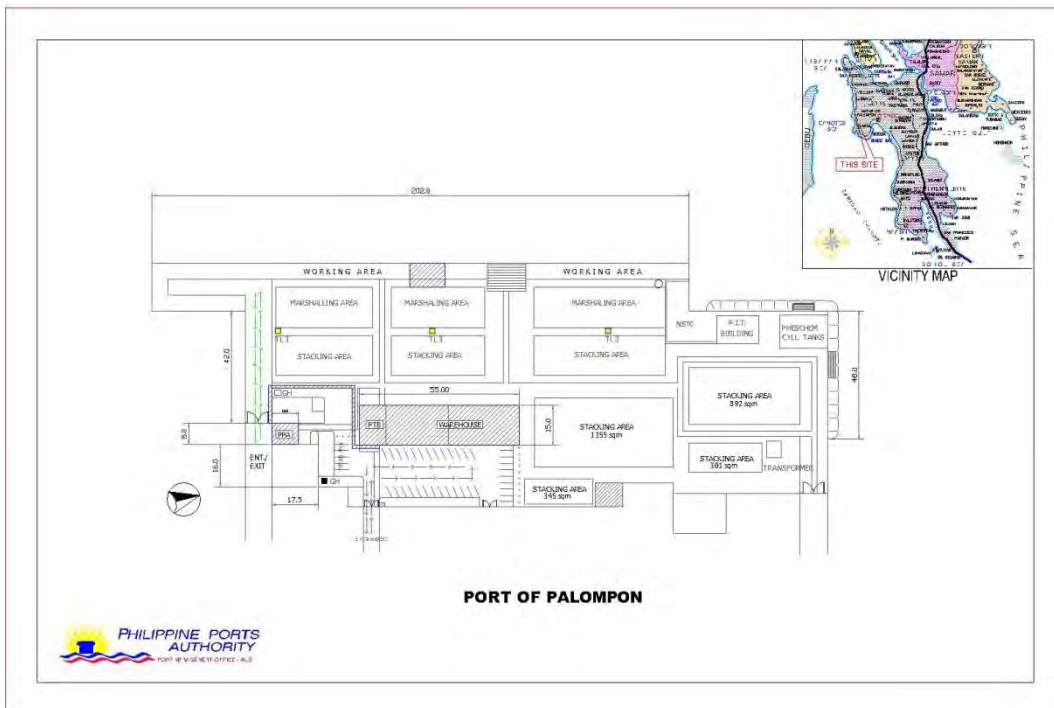








Figure No.1-b
Existing Port layout.

	
<p>Figure No.2 Existing RC Pier</p>	<p>Figure No.3 Left side of the existing RC Pier.</p>
	
<p>Figure No.4 Existing Concrete Pile.</p>	<p>Figure No.5 RoRo Ramp.</p>
	
<p>Figure No.6 On-going Rehabilitation of Existing Wharf and Pier. continuous</p>	<p>Figure No.7 On-going rehabilitation of existing wharf and pier.</p>

	
<p align="center">Figure No.8 Continuous Stairlanding for Motorized Banca.</p>	<p align="center">Figure No.9 Damaged Concrete piles and curtain wall of the pier.</p>
	
<p align="center">Figure No.10 The port PTB and Ware House.</p>	<p align="center">Figure No.11 Inside the Passenger Terminal Building</p>
	
<p align="center">Figure No.12 PPA Admin. Office</p>	<p align="center">Figure No.13 Inside the Warehouse.</p>

4. Rough Cost Estimate for Standard Design Model for Target Ports

4.1. Breakdown of Rough Cost Estimation

4.1-1 Summary of Rough Cost Estimate for Standard Design Model for Target Ports

Facilities		TACLOBAN	ORMOC	TAGBILARAN	TAPAL	ILOILO (ICPC)	ESTANCIA	Remarks
Berthing facilities		PHP 69,497,000	—	PHP 56,717,000	PHP 243,604,000	—	PHP 14,020,000	Earthquake resistance
		—	—	—	—	—	PHP 3,723,000	High wave resistance
Yard/Access road		PHP 20,250,000	PHP 15,750,000	PHP 54,000,000	PHP 12,375,000	PHP 42,750,000	PHP 9,000,000	Liquefaction resistance
Building	Administration / Office Building	PHP 59,126,000	PHP 13,341,000	—	PHP 2,220,000	PHP 48,285,000	PHP 21,420,000	Resistance to Strong wind /Earthquake /Liquefaction
	Warehouse	PHP 12,521,000	—	PHP 7,252,000	—	PHP 22,446,000	—	
	Passenger Terminal Building	—	PHP 60,391,000	PHP 26,532,000	—	—	—	
Other facilities	Emergency diesel generator	PHP 7,260,000	PHP 5,544,000	PHP 5,544,000	PHP 764,000	PHP 5,544,000	PHP 3,222,000	
	Emergency water pit	PHP 427,000	PHP 553,000	PHP 427,000	PHP 94,000	PHP 389,000	PHP 328,000	
Total (Pesos)		PHP 169,081,000	PHP 95,579,000	PHP 150,472,000	PHP 259,057,000	PHP 119,414,000	PHP 51,713,000	PHP 845,316,000

4.1.1. Iloilo Province

(1) Iloilo Port

4.1-2 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m2)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	380	5,700	PHP 42,750,000	Improved depth 3m

4.1-3 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Administration/ Office Building)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	1,740	m2	PHP 29,580,000	External frame method
Roof Strengthening	PHP 7,000	435	m2	PHP 3,045,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 5,000	1,827	m2	PHP 9,135,000	Window&Outerwall
Soil Improvement	PHP 15,000	435	m2	PHP 6,525,000	Permeable grouting ,depth 6m
Total	-	—		PHP 48,285,000	

4.1-4 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Warehouse)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Warehouse					
Seismic Strengthening	PHP 5,700	1,028	m2	PHP 5,859,600	External frame method
Roof Strengthening	PHP 7,000	1,028	m2	PHP 7,196,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 2,500	672	m2	PHP 1,680,000	Window&Outerwall
Soil Improvement	PHP 7,500	1,028	m2	PHP 7,710,000	Permeable grouting ,depth 3m
Total	-	-		PHP 22,446,000	

4.1-5 Emergency Diesel Generator & Emergency Water Reservoir

Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 4,620,000	PHP 924,000	PHP 5,544,000	PHP 351,000	PHP 38,000	PHP 389,000

(2) Estancia Port**4.1-6 Berth Strengthening for Earthquake**

Description	Specification	B/Q	Unit	U/R(PHP)	COST(PHP)	REMARKS
Scaffold	Hanging type	940	m3	PHP 5,000	PHP 4,700,000	Inner space 40m×13m×1.8m
Pile surface cleaning	□-450×450	460	m2	PHP 2,000	PHP 920,000	
Stud dowels	Materials & Construction	460	m2	PHP 7,000	PHP 3,220,000	Stud dowels Φ16
Concrete	Materials & Construction(Cocrete,Re-bar,Mold)	140	m3	PHP 37,000	PHP 5,180,000	
Total					PHP 14,020,000	

4.1-7 Berth Strengthening for High wave

Description	Specification	BQ	Unit	U/R(PHP)	COST(PHP)	REMARKS
Scaffold	15m×6.5m×1.8m	180	m3	PHP 5,000	PHP 900,000	
Pile surface cleaning	□-450×450×15place	50	m2	PHP 2,000	PHP 100,000	
Reinforced Concrete Beam	300×300×2500×15pc+300×300×2250×15pc	13	m3	PHP 44,000	PHP 572,000	Cast&Instalation
Pile head concrete	600×600×1200×15place	6.5	m3	PHP 37,000	PHP 241,000	
Concrete chipping	2500×2250×10place	30	m3	PHP 5,000	PHP 150,000	
Reinforced Concrete Slab	2.5m×2.25m×0.5m×10+5(Spare)	40	m3	PHP 44,000	PHP 1,760,000	Cast&Instalation
Total					PHP 3,723,000	

4.1-8 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m2)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	80	1,200	PHP 9,000,000	Improvسد depth 3m

4.1-9 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Administration Office & Passenger Terminal Room)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	480	m2	PHP 8,160,000	External frame method
Roof Strengthening	PHP 7,000	480	m2	PHP 3,360,000	Replacement of roof material
Outer wall Strengthening	PHP 5,000	1,260	m2	PHP 6,300,000	Window & Outer wall
Soil Improvement	PHP 15,000	240	m2	PHP 3,600,000	Permeable grouting, depth 6m
Total	—	—		PHP 21,420,000	

4.1-10 Emergency Diesel Generator & Emergency Water Reservoir

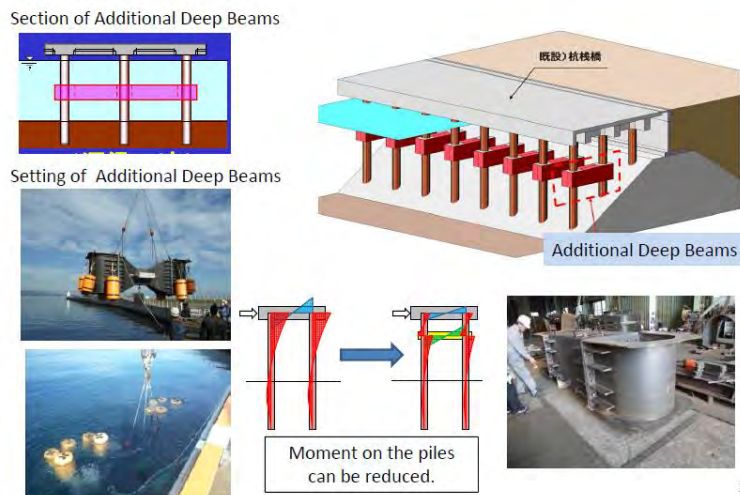
Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 2,762,000	PHP 460,000	PHP 3,222,000	PHP 252,000	PHP 76,000	PHP 328,000

4.1.2. Bohol Province

(1) Tagbilaran Port

4.1-11 Berth Strengthening for Earthquake

Name	Specification	B/Q	Unit	U/R(PHP)	COST(PHP)
Deep beam production cost	L=160m@3.8×2columns	84	set	PHP 349,000	PHP 29,316,000
Deep beam transportation cost		84	set	PHP 35,000	PHP 2,940,000
Cathodic protection		1008	m2	PHP 7,000	PHP 7,056,000
Deep beam installation cost	1 set per day	84	set	PHP 200,000	PHP 16,800,000
Mortar	Non shrink mortar	50	m3	PHP 12,000	PHP 605,000
Total					PHP 56,717,000



4.1-1 General Idea of Additional Deep Beams

4.1-12 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m2)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	480	7,200	PHP 54,000,000	Improved depth 3m

4.1-13 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Warehouse)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 5,700	300	m2	PHP 1,710,000	External frame method
Roof Strengthening	PHP 7,000	300	m2	PHP 2,100,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 2,500	477	m2	PHP 1,191,500	Window&Outerwall
Soil Improvement	PHP 7,500	300	m2	PHP 2,250,000	Permeable grouting ,depth 3m
Total	-	-		PHP 7,252,000	

4.1-14 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Passenger Terminal Building)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	794	m2	PHP 13,498,000	External frame method
Roof Strengthening	PHP 7,000	261	m2	PHP 1,830,150	Replacement of roofmaterial
Outer wall Strengthening	PHP 5,000	1,050	m2	PHP 5,249,000	Window&Outerwall
Soil Improvement	PHP 15,000	397	m2	PHP 5,955,000	Permeable grouting ,depth 6m
Total	-	-		PHP 26,532,000	

4.1-15 Emergency Diesel Generator & Emergency Water Reservoir

Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 4,620,000	PHP 924,000	PHP 5,544,000	PHP 351,000	PHP 76,000	PHP 427,000

(2) Tapal Port**4.1-16 Berth Strengthening for Earthquake**

Name	Specification	B/Q	Unit	U/R(PHP)	COST(PHP)
Existing pier (Deep beam method)	L=35m				
Deep beam production cost	L=35m@3.0×3columns	36	set	PHP 349,000	PHP 12,564,000
Deep beam transportation cost		36	set	PHP 35,000	PHP 1,260,000
Cathodic protection		360	m ²	PHP 7,000	PHP 2,520,000
Deep beam installation cost	1 set per day	36	set	PHP 200,000	PHP 7,200,000
Mortar	Non shrink mortar	20	m ³	PHP 12,000	PHP 240,000
Subtotal					PHP 23,784,000
New pier	L=150m				
Coping concrete	RC, 150m×18m×0.8m Materials & Construction(Cocrete,Re-bar,Mold)	2,160	m ³	PHP 37,000	PHP 79,920,000
PHC pile (material)	PHC□-400×400,@3.0m,L=20m ,6columns	300	pc	PHP 50,000	PHP 15,000,000
PHC pile (Construction)		6,000	m	PHP 10,000	PHP 60,000,000
Raked pile (material)	PHC□-400×400,L=20m Pier normal direction@6mRight angle direction @3m	125	pc	PHP 50,000	PHP 6,250,000
Raked pile (Construction)		2,500	m	PHP 15,000	PHP 37,500,000
Construction equipment	For Raked Pile	1	set	PHP 150,000	PHP 150,000
Subtotal					PHP 198,820,000
Dredging	Dredging+Soil disposal	5,250	m ³	PHP 4,000	PHP 21,000,000
Total					PHP 243,604,000

4.1-17 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m ²)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	110	1,650	PHP 12,375,000	Improvds depth 3m

4.1-18 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Administration/ Office Building)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	30	m2	PHP 510,000	External frame method
Roof Strengthening	PHP 7,000	30	m2	PHP 210,000	Replacement of roof material
Outer wall Strengthening	PHP 5,000	210	m2	PHP 1,050,000	Window & Outer wall
Soil Improvement	PHP 15,000	30	m2	PHP 450,000	Permeable grouting ,depth 6m
Total	-	-		PHP 2,220,000	

4.1-19 Emergency Diesel Generator & Emergency Water Reservoir

Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 637,000	PHP 127,000	PHP 764,000	PHP 56,000	PHP 38,000	PHP 94,000

4.1.3. Leyte Province

(1) Tacloban Port

4.1-20 Berth Strengthening for Earthquake

Description	Specification	B/Q	Unit	U/R(PHP)	COST(PHP)
Concrete chipping	3m×3m×0.8m×27	194	m3	PHP 5,000	PHP 972,000
Steel pile (material)	φ800×9(SKK400), @ 6.0m, L=26m	54	pc	PHP 548,000	PHP 29,592,000
Steel pile (Construction)	"	1,404	m	PHP 22,500	PHP 31,590,000
Construction equipment	For Raked Pile	1	Set	PHP 150,000	PHP 150,000
New Coping concrete	3m×3m×0.8m×27	194	m3	PHP 37,000	PHP 7,193,000
Total					PHP 69,497,000

4.1-21 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m2)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	180	2,700	PHP 20,250,000	Improved depth 3m

4.1-22 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Administration/ Office Building)

Description	U/R(PHP)	B/Q	COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	2,058 m2	PHP 34,986,000	External frame method
Roof Strengthening	PHP 7,000	800 m2	PHP 5,600,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 5,000	1,650 m2	PHP 8,250,000	Window&Outerwall
Soil Improvement	PHP 15,000	686 m2	PHP 10,290,000	Permeable grouting ,depth 6m
Total	-	—	PHP 59,126,000	

4.1-23 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Warehouse)

Description	U/R(PHP)	B/Q	COST(PHP)	REMARKS
Seismic Strengthening	PHP 5,700	540 m2	PHP 3,078,000	External frame method
Roof Strengthening	PHP 7,000	540 m2	PHP 3,780,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 2,500	645 m2	PHP 1,612,500	Window&Outerwall
Soil Improvement	PHP 7,500	540 m2	PHP 4,050,000	Permeable grouting ,depth 3m
Total	-	—	PHP 12,521,000	

4.1-24 Emergency Diesel Generator & Emergency Water Reservoir

Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 6,050,000	PHP 1,210,000	PHP 7,260,000	PHP 351,000	PHP 76,000	PHP 427,000

(2) Ormoc Port

4.1-25 Access Road Soil Improvement for Liquefaction

Description	U/R (PHP)	Width(m)	Length(m)	Area(m2)	COST (PHP)	REMARKS
Permeable grouting	PHP 7,500	15	140	2,100	PHP 15,750,000	Improvسد depth 3m

4.1-26 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Administration/ Office Building)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	281	m2	PHP 4,777,000	External frame method
Roof Strengthening	PHP 7,000	281	m2	PHP 1,967,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 5,000	476	m2	PHP 2,382,000	Window&Outerwall
Soil Improvement	PHP 15,000	281	m2	PHP 4,215,000	Permeable grouting ,depth 6m
Total	-	—		PHP 13,341,000	

4.1-27 Building Strengthening for Strong Wind, Earthquake & Liquefaction (Passenger Terminal Building)

Description	U/R(PHP)	B/Q		COST(PHP)	REMARKS
Seismic Strengthening	PHP 17,000	1,412	m2	PHP 24,004,000	External frame method
Roof Strengthening	PHP 7,000	1,412	m2	PHP 9,884,000	Replacement of roofmaterial
Outer wall Strengthening	PHP 5,000	1,065	m2	PHP 5,322,500	Window&Outerwall
Soil Improvement	PHP 15,000	1,412	m2	PHP 21,180,000	Permeable grouting ,depth 6m
Total	-	—		PHP 60,391,000	

4.1-28 Emergency Diesel Generator & Emergency Water Reservoir

Emergency Diesel Generator			Reservoir		
Emergency Diesel Generator	Transport & Installation	Subtotal	Reinforced concrete	Submerged Pump	Subtotal
PHP 4,620,000	PHP 924,000	PHP 5,544,000	PHP 477,000	PHP 76,000	PHP 553,000