PROJECT DESCRIPTION REPORT
FOR SCOPING

PROPOSED CEMENT GRINDING PROJECT
Barangay Bay-ang, Ajuy, Iloilo

CEMPHIL INC.

86 Commission Civil St.
Jaro, Iloilo City,
Iloilo, Panay Island

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1.0 BASIC PROJECT INFORMATION

Name of Project:	**CemPhil Cement Grinding Project**
Nature of Project:	Non-metallic Mineral Processing
Name of Proponent:	**Cemphil, Inc.**
Project Location:	Barangay Bay-Ang, Ajuy, Iloilo, Panay Island
Address of Proponent	86 Commission Civil St. Jaro, Iloilo City, Iloilo, Panay Island
Project Size	Plant facility area 5.598 has Construction footprint 4 has. Production Volume **1,200,000 MT/year**, broken down to : Phase 1 : 600,000 MT/year Phase 2 : Additional 600,000 MT/year
Project Components	Perimeter wall Raw Material Sheds Material Transport Conveyors Cement Milling and Packing Equipment
Environmental Control Measures	**Fabric filters** 10,286 m3/hr capacity, 30mg/Ncm 39 **silt traps** 3.4 m3/unit; 5 **settling ponds** 19.2m3/unit 1 unit **oil and water** separator, 16 m3 **Perimeter green belt**, 3 rows trees staggered planting
Project Phasing	Phase 1 : Construction for 600,000 MTPD. Duration 15 months - Stage 1 Construction : Material Storage and Handling Facilities ▪ Perimeter wall, drainage & surface water management system for stage 1 area ▪ Material storage facilities : Stockpile areas for clinker, gypsum, pozzolan/tuff; ▪ Material handling facilities, conveyor system - Stage 2 Construction : Cement Processing Facilities ▪ Drainage & surface water management system for stage 2 area ▪ Grinding mill house, Grinding facilities (680 TPH) with particulate air filter ▪ Hot air furnace with exhaust particulates air filter ▪ Cement Silo 2 units 1,000 MT per unit ▪ Buffer silo for raw materials ▪ Pack house and packing equipment with cyclone air filter ▪ Cement bag truck loading station ▪ Administrative Office and laboratory ▪ Machine shop Phase 2 : Equipment erection & commissioning : 10 months Additional cement grinding equipment Additional 2 x 1,000 MT silo
Authority Over Land	Land Titles Certificate of No Objection from Municipal Government Unit
Responsible Officer and Contact Person	Stephen Pol Buenconsejo, President admin@cemphil.com

EIA Preparer	Teodora H. Salvador, EnP. Envitech Environmental Management Consultancy Services, Inc. 5 Joshua St. Filinvest Heights, Bagong Silangan, Quezon City 1119 (02) 961-6600; 0916 708-9835

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The CEMPhil cement grinding plant is located in titled property along the coastal area of Barangay Bay-ang, Municipality of Ajuy, Iloilo, bordered in the east, south and west by the Visayan sea; and in the north by the Municipal cemetery of Ajuy. The municipality of Ajuy is a second class municipality classified as an agricultural town with approximately 74.83 kilometers coastline . It is 88 kilometers from Iloilo City, capital of Panay Island and accessible through an hour and a half ride through the Iloilo East Coast -Capiz Road. Iloilo is accessible from Manila through an hour and fifteen minutes flight from the Ninoy Aquino International Airport (See location map, Figure 1-1). Figure 1.1a contain the reference locations of the following coordinates.

TABLE 1.1 COORDINATES BOUNDING THE PROJECT AREA

Points	X Coordinates	Y Coordinates	Points	X Coordinates	Y Coordinates
1	122.94013337473777	11.03195066604045	14	122.93678736835743	11.032727075258752
2	122.94041993289525	11.03185467534187	15	122.9370582160896	11.032473194785911
3	122.94062401131987	11.031478253551695	16	122.93750879108721	11.03247696528798
4	122.9409080558093	11.031260192848531	17	122.93832840397512	11.032627156953849
5	122.94100797411421	11.03122751516391	18	122.93905375431115	11.032733045220365
6	122.94077106090066	11.030674193984852	19	122.93915618628412	11.032313262656357
7	122.94025732999333	11.029953713880616	20	122.93843727722239	11.031116756665547
8	122.94015992535648	11.02986699233296	21	122.93706575709373	11.03176716827295
9	122.93948689073666	11.029902812102643	22	122.93634213490446	11.03214107639508
10	122.93887135627344	11.029558439580073	23	122.93678736835743	11.032727075258752
11	122.9393751896128	11.030337676674932			
12	122.93958193880974	11.030661939853115			
13	122.94013337473777	11.03195066604045			

Figure 1.1 Project Location Map

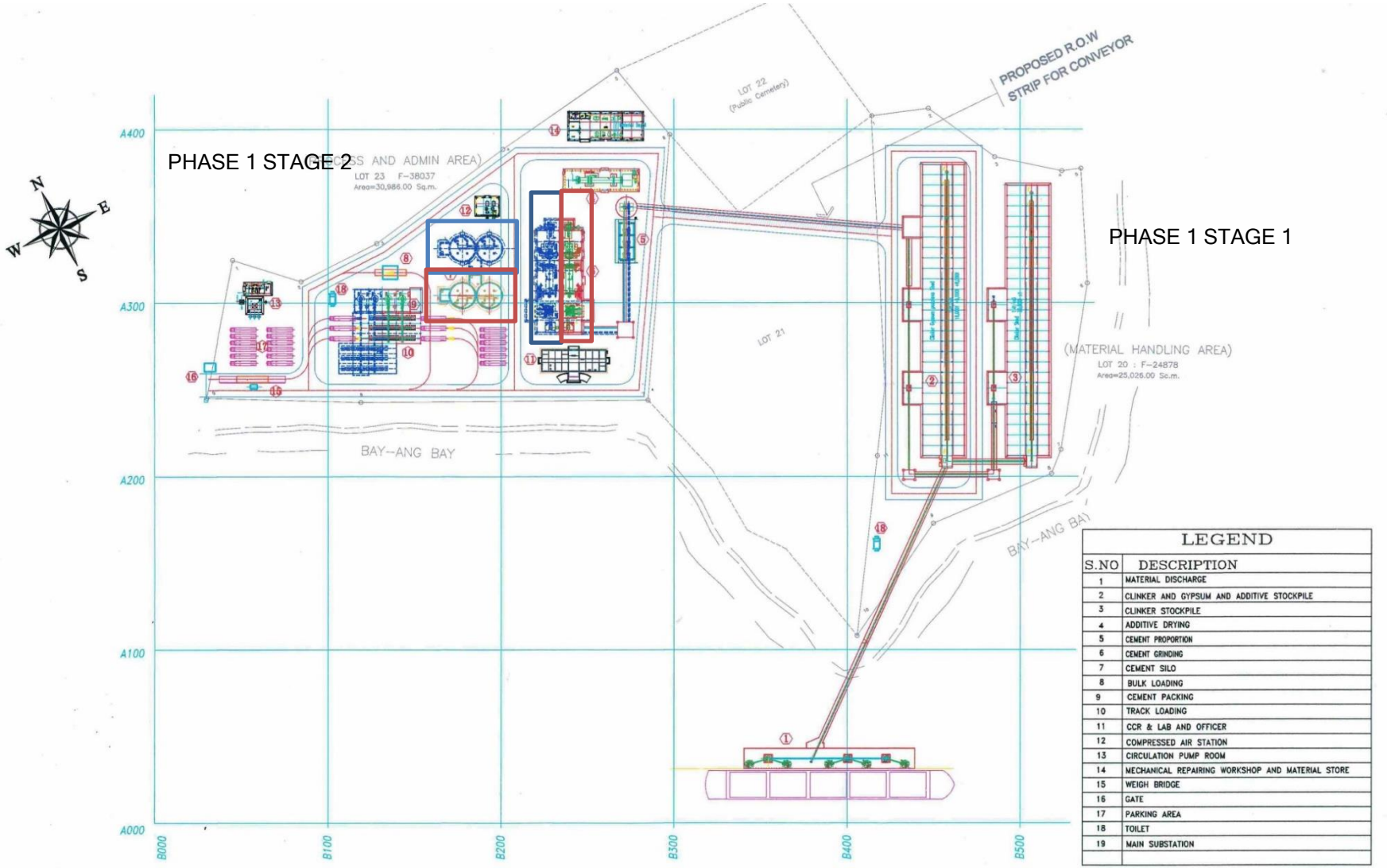


Figure 1.1a Overall Plan of Plant Facility

Phase 1 Key Equipment

Phase 2 Key Equipment

ONLY FACILITIES IN RED BOX WILL BE CONSTRUCTED UNDER PHASE 2

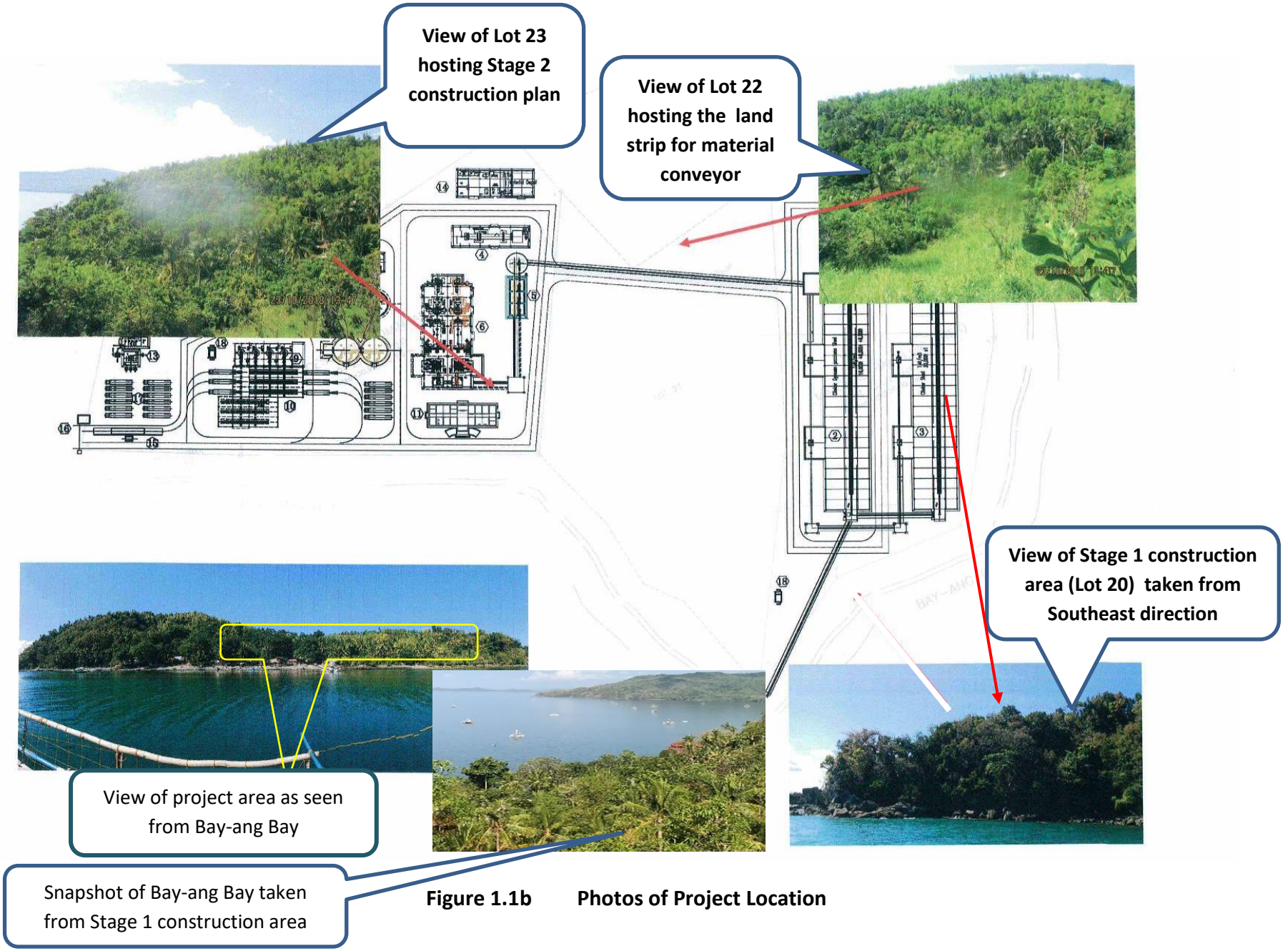
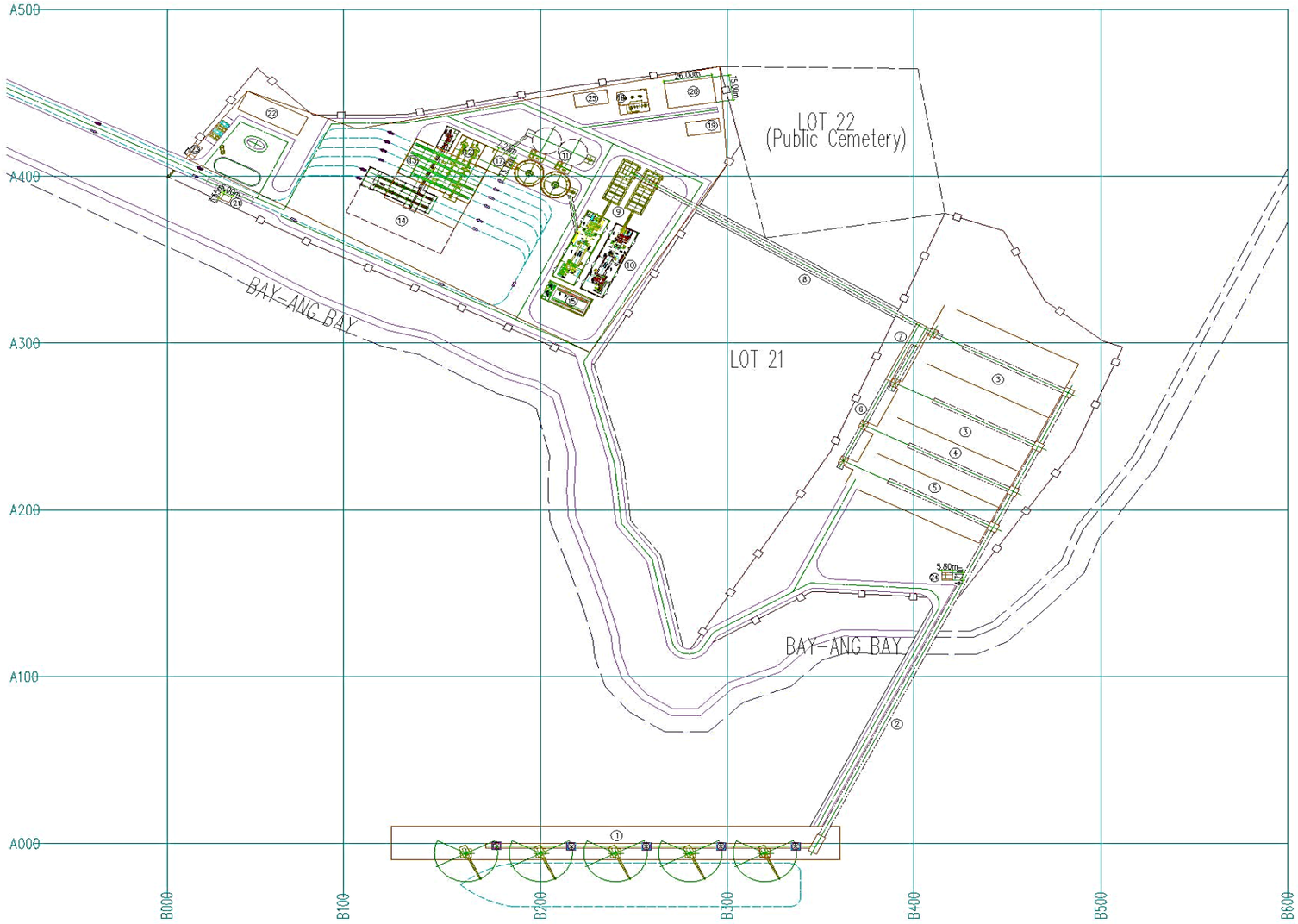
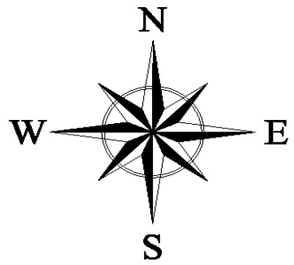


Figure 1.1b Photos of Project Location

Table Planned Location of Project Facilities

Components		X coordinates	Y coordinates
Material storage and handling facilities	Stockyard	122.939945	11.031298
		122.940575	11.031034
		122.940146	11.030039
		122.939516	11.030303
	Material Drying system		
	Bunker		
	Clinker Silo		
	Cement Silo Phase 1 - unit 1	122.938207	11.032044
	unit 2	122.938078	11.032108
	unit 3	122.937929	11.032175
	unit 4	122.937796	11.03224
	Additional Silo Phase 2		
Mill house	Grinding mill house	122.938482	11.032057
		122.938584	11.03201
		122.938413	11.031659
		122.938309	11.031709
	Pollution Control Facilities	Within the millhouse	
Auxiliary Support Facilities	Mill CCR and Laboratory	122.938312	11.031707
		122.93851	11.03161
		122.938474	11.031543
		122.938273	11.031636
	Office Building	122.936668	11.032416
		122.936964	11.032275
		122.936918	11.03218
		122.936625	11.032321
	Power Substation		
	Machine Shop	122.938273	11.031633
		122.938466	11.031535
		122.93844	11.031467
		122.938243	11.031561
Cement Packhouse/ MCC room of packing system		122.937482	11.032138
		122.937543	11.032112
		122.937492	11.033006
		122.937433	11.032034
Other Pollution Control Facilities	Silt trap /settling pond	Design on-going	
	Oil and Water Separation Facilities	Design on-going	
	Perimeter greenbelt/buffer zone	Design on-going	
	Sewage treatment facilities	Design on-going	
	Silt and Oil Boom	To be submitted with Jetty Port ECC application	





LEGEND	
S.NO	DESCRIPTION
①	JETTY WITH CONVEYOR
②	CONVEYOR TO THE STORAGE HALL
③	STOCK PILE FOR CLINKER
④	STOCK PILE FOR GYPSUM
⑤	STOCK PILE FOR POZZUOLANA
⑥	CONVEYOR FOR GYPSUM & POZZUOLANA
⑦	CONVEYOR FOR CLINKER
⑧	CONVEYOR FOR RAW MATERIALS
⑨	MATERIALS BUNKERS
⑩	MILL HOUSE
⑪	CEMENT SILO AND BULK LOADER
⑫	PACKING HOUSE
⑬	TRUCK LOADING AREA FOR BAG CEMENT
⑭	BAG CEMENT STORAGE AREA
⑮	MILL CCR AND LABORATORY
⑯	MATERIAL DRYING SYSTEM
⑰	CCR FOR PACKING HOUSE
⑱	CIRCULATION WASTE STATION
⑲	COMPRESSOR STATION
⑳	SUBSTATION
㉑	TRUCK SCALE
㉒	OFFICE BUILDING
㉓	MAIN GATE
㉔	CR FOR RAW MATERIALS
㉕	MACHINE SHOP

REV.	DESCRIPTION	DATE	REVISED	CHECKED	APPROVED

GEC
GOODFOUND ENGINEERING AND CONSTRUCTION CORPORATION

PROFESSIONAL ENGINEER: -
CIVIL ENGINEER
PRC NO. : | PTR NO. :
TIN: | DATE ISSUED:

SEAL

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PROJECT TITLE : PROPOSED 154 T/H CEMENT GRINDING STATION
ADDRESS: BARANGAY BAY-ANG, AJUY ILOILO CITY

APPROVED BY: OWNER
ADDRESS:

SHEET TITLE :STRUCTURE & EQUIPMENT
SHEET CONTENTS:
GENERAL LAYOUT
SITE DEVELOPMENT PLAN
DETAILED LAYOUT FOR STRUCTURE AND EQUIPMENT

DRAWN BY: GECC
DATE:
DRAWN BY: GECC
DATE:

SHEET NO:

Figure 2.2 Plant Lay Out

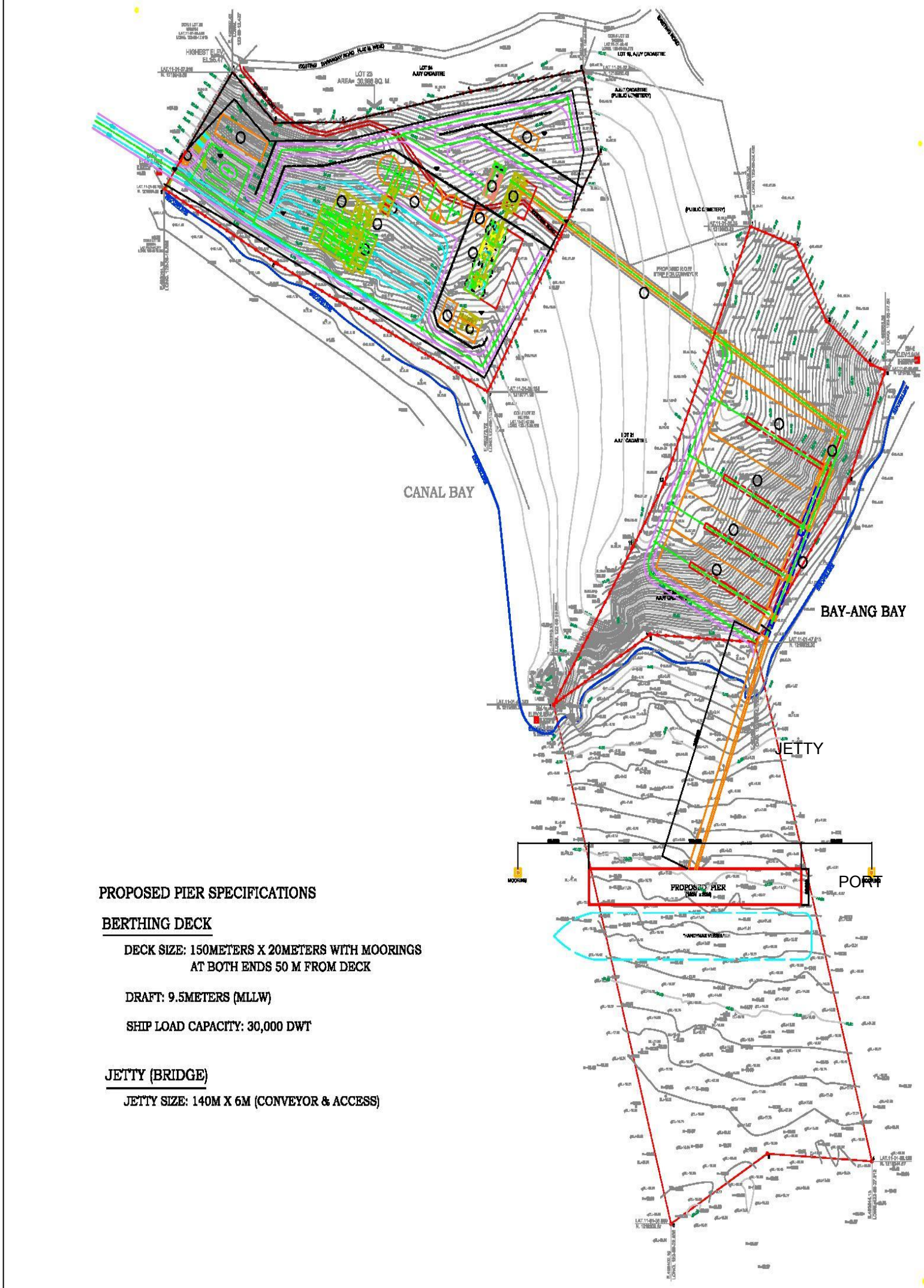
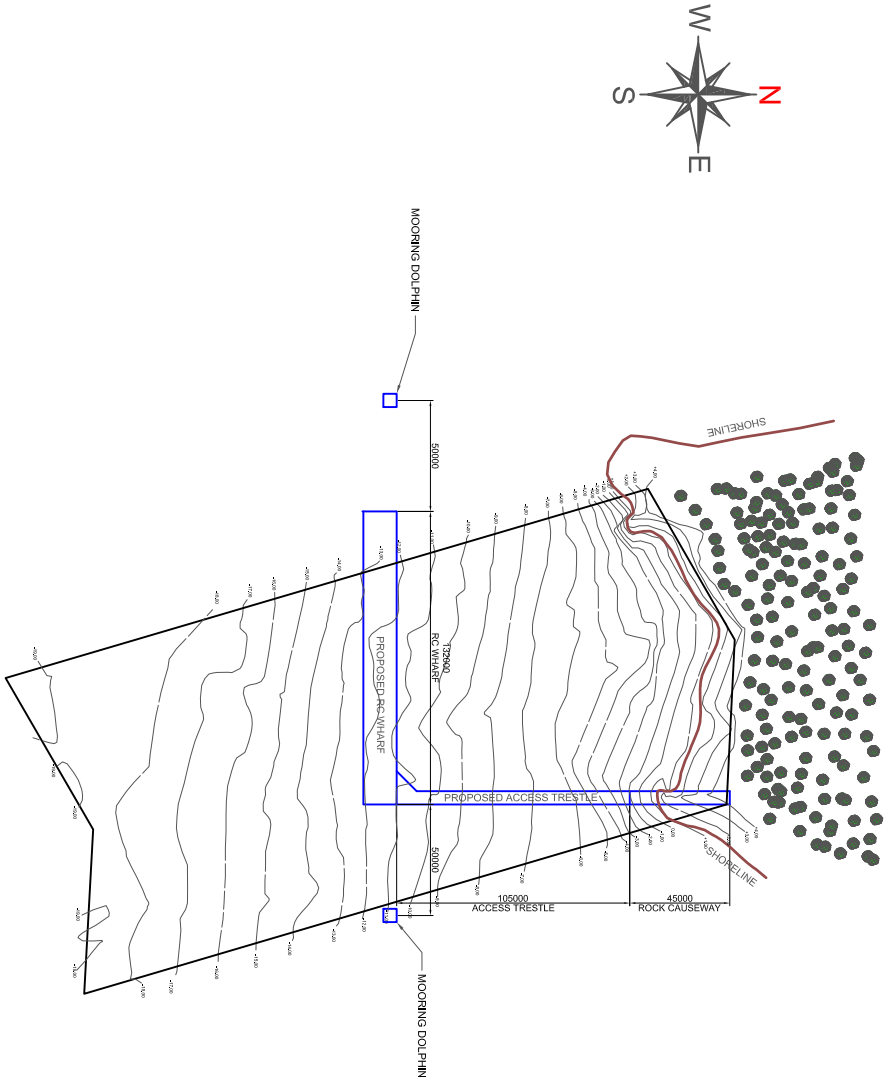
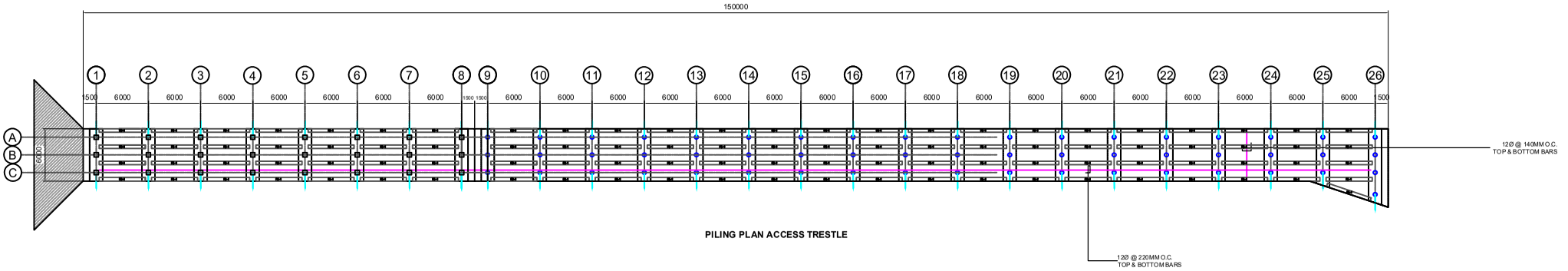


Figure 2.3 Wharf Key Plan and Profile

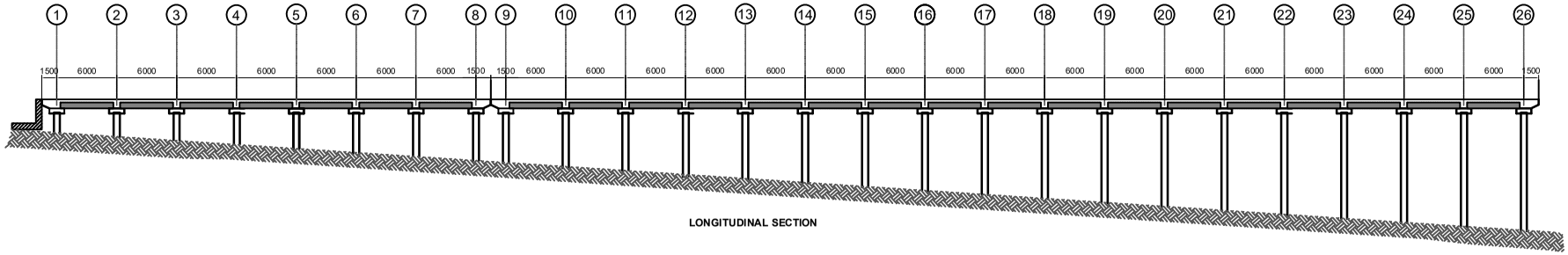
DEVELOPMENT PLAN



SUBMITTED BY: DESIGNED AND BUILT: MARRA BUILDERS, INC. JOSELITO R. RAMOS	PROJECT TITLE: **PROPOSED PORT DEVELOPMENT WORKS** BRGY. BAY-ANG, AJUY, ILOILO	PROJECT OWNER: **CEMPHIL PROPERTIES**	SHEET CONTENTS: DEVELOPMENT PLAN	SHEET NO: 01



PILING PLAN ACCESS TRESTLE

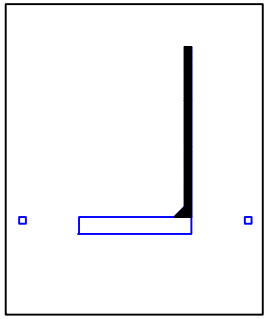


LONGITUDINAL SECTION

PILE SCHEDULE OF ACCESS TRESTLE

PILE	DESIGNATION		SIZE (mm)	PILE LENGTH	TOTAL LENGTH (mm)	REQ'D B.P. (M.T.)
	ROW	BENT				
VERTICAL	B (9-26)	-	500 mm DIA STEEL PIPE PILES	UPPER = 15000 ; 13mm THICK LOWER = 15000 ; 13mm THICK	30 000	
BATTER	A & C (9-26)	-	500 mm DIA	UPPER = 16000 ; 13mm THICK	31 000	

PILE	DESIGNATION		SIZE (mm)	PILE LENGTH	TOTAL LENGTH (mm)	REQ'D B.P. (M.T.)
	ROW	BENT				
VERTICAL	B (1-8)	-	450mm X 450mm PRE STRESS CONCRETE		24 000	
BATTER	A & C (1-8)	-	450mm X 450mm PRE STRESS CONCRETE		25 000	



SHEET NO: 06

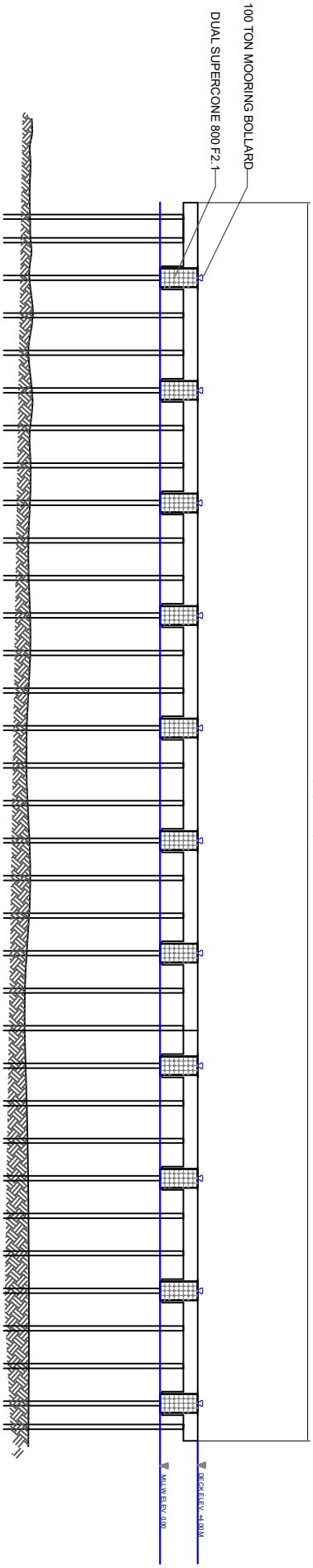
SHEET CONTENTS: PILING PLAN OF ACCESS TRESTLE

PROJECT OWNER: CEMPHIL PROPERTIES

PROJECT TITLE: PROPOSED PORT DEVELOPMENT WORKS
BRGY. BAY-ANG, AJUY, ILOILO

SUBMITTED BY:
DESIGNED AND BUILT:
MARRA BUILDERS, INC.
JOSELITO R. RAMOS
EDGARDO R. PEÑA

OFFSHORE ELEVATION



SUBMITTED BY:	PROJECT TITLE:	PROJECT OWNER:	SHEET CONTENTS:	SHEET NO:
DESIGNED AND BUILT: MARRA BUILDERS, INC.	PROPOSED PORT DEVELOPMENT WORKS BRGY. BAY-ANG, AJUY, ILOILO	CEMPHIL PROPERTIES	OFFSHORE ELEVATION	05
JOSELITO R. RAMOS	EDGARDO R. PEÑA			

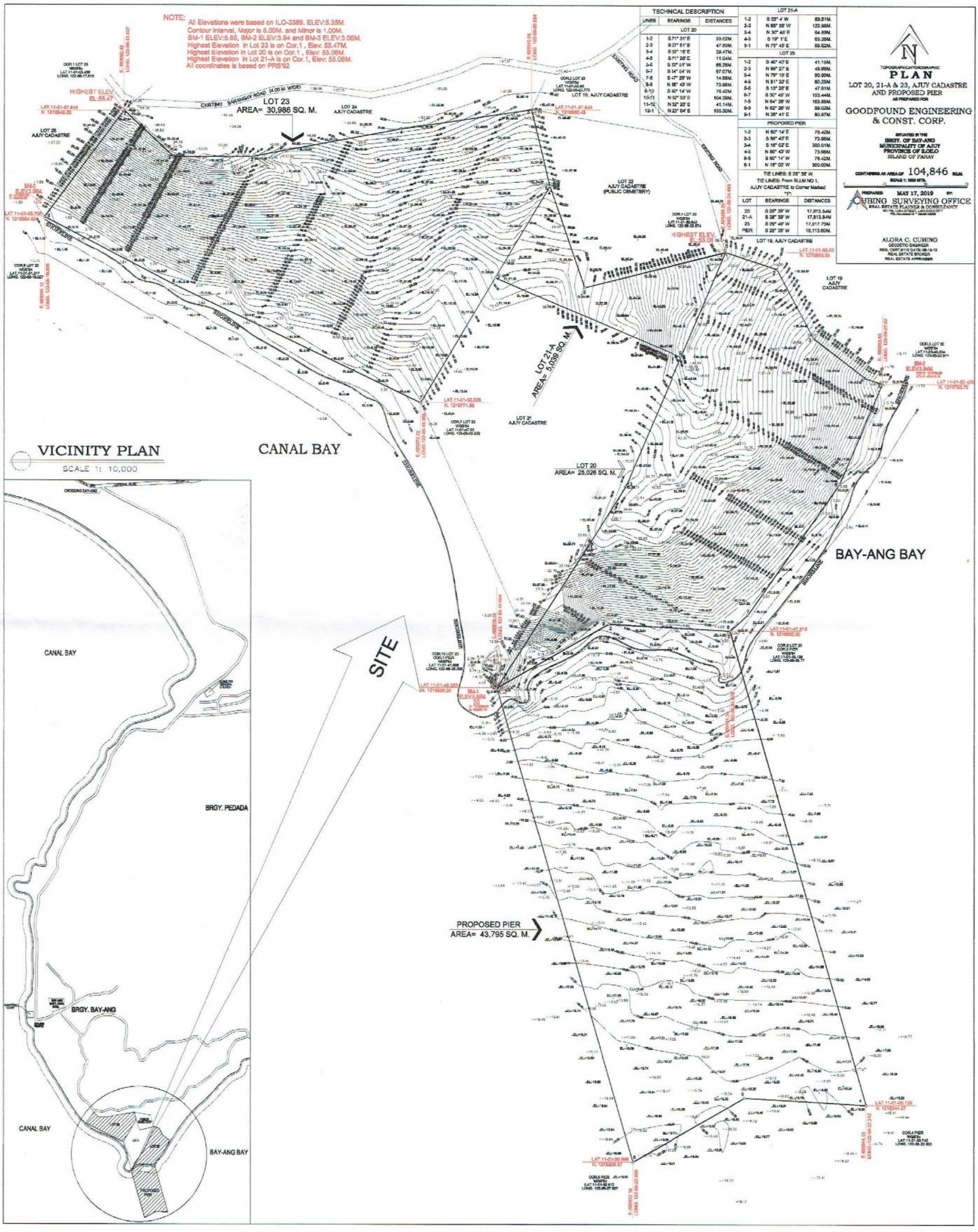


Figure 2.4 Topographic Contour Map of Project Area

2.2 PROJECT RATIONALE

The Philippines is currently importing massive volumes of cement to supply domestic demand, particularly to Administration's Build-Build-Build which seeks to develop necessary support infrastructures to provide better transportation and economic support facilities to make the Philippines a competitive investment and tourist destination, for employment generation and sustainable economic growth.

Data from the Department of Trade and Industry (DTI) shows that imports of cement rose by 64% year-on-year to 1.74Mt in the first quarter of 2019 despite the introduction of a 4% tariff in January 2019. Imports were 1.06Mt in the same period in 2018, according to the Philippines News Agency. As of 2016, even without the implementation of the Philippines' Build-Build-Build" program, the Philippines imported 6.8 million metric tons (Mmt) cement, and the volume grew to 8.6 Mmt in 2017. Since 2013, the Philippine cement industry has been lagging behind in the supply of domestic cement requirements. Recent market studies suggest that the total cement requirement of the construction industry will increase to more than 50,000,000 MTA by 2027.

The lengthening time where conditions that resort to cement importation to supply domestic Philippine demand persists, threatens the jobs of some 42,000 workers in the quarry and manufacturing subsectors and, because of the magnitude of the Philippine demand for cement, might impact on the Philippine currency foreign exchange rate.

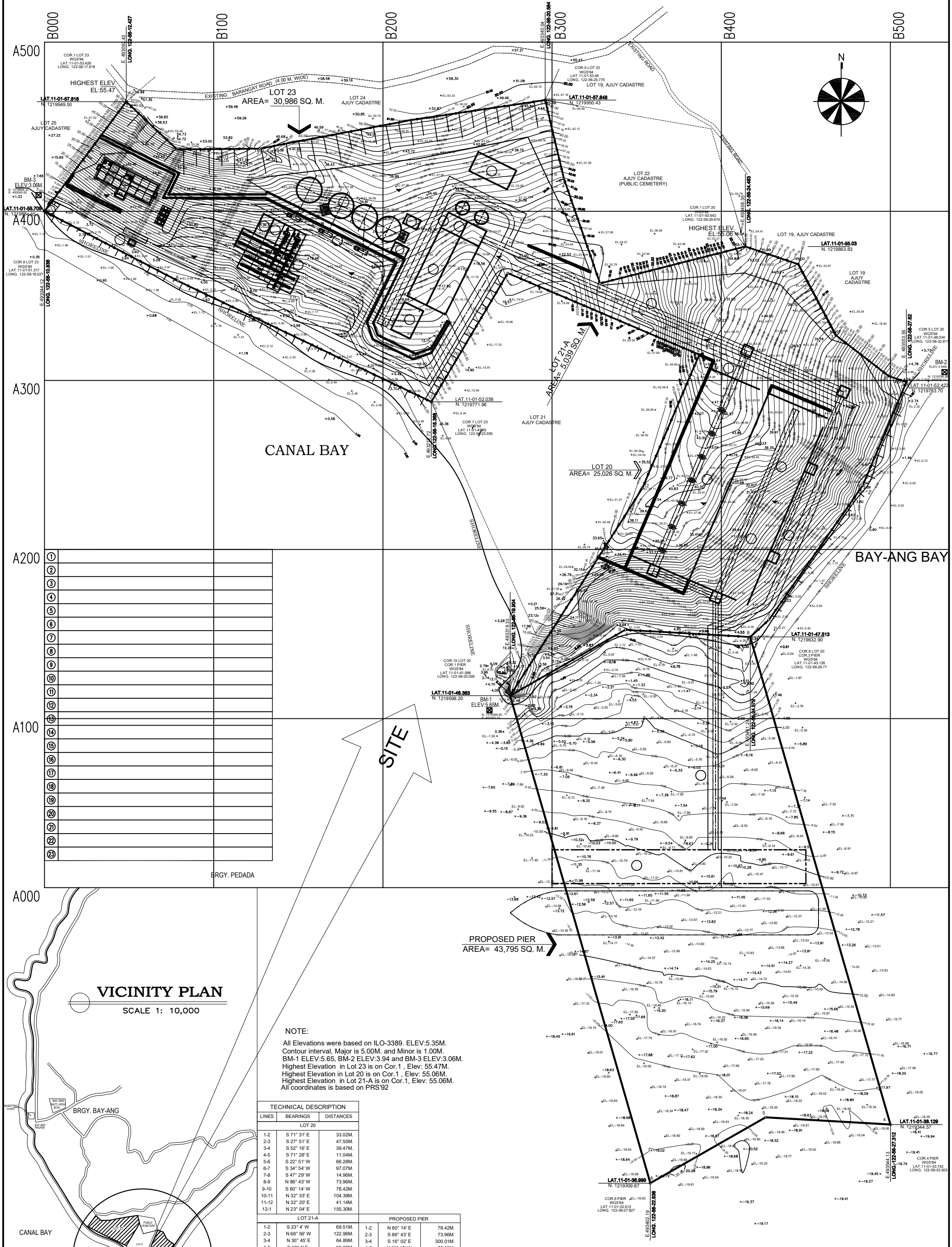
In a more local aspect, the municipality of Ajuy has expressed its desire for economic vitalization. Its population is currently mostly rural as 32 of the 34 barangays comprise the rural area of Ajuy. However, by instituting an industrial zone, the municipality will eventually lead to significant regional development.

To tackle these concerns, this Project intends to increase domestic cement production capacity which will increase Philippine government tax collection potential, reduce dependency on imported cement supply and reduce demand for foreign exchange. As the same time, it shall be the mainspring of the industrial zone of the municipality of Ajuy. It is expected to accumulate and increase the employment and stimulate balanced economic growth in the area as the Project brings more investments and consequently more commercial establishments.

2.3 PROJECT ALTERNATIVES

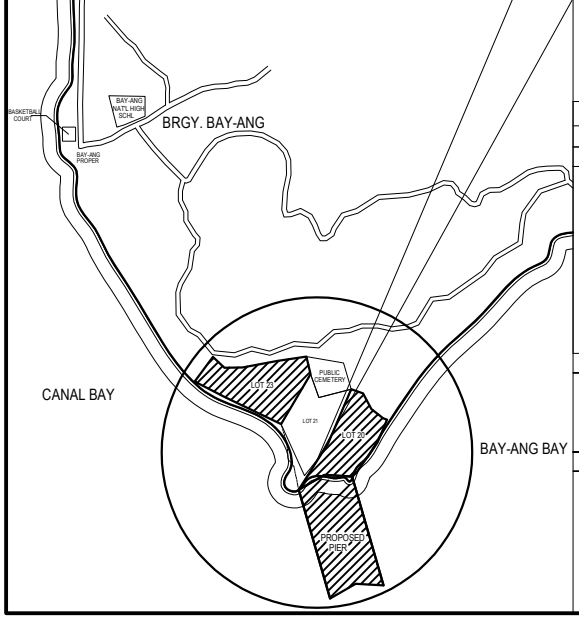
2.3.1 Jetty Port

A jetty port with total built-up structure of 4,440 m2 on board piles and rock fill structure with cross-tide culverts is proposed to be built at sea front on the Cemphil property in Bay-ang point (Lot 20). The jetty port components are a jetty bridge 140m x 6 m which will support the material conveyor system and the Pier deck (deck specks 180meters x 20meters with moorings 50 meters on both sides of pier). The port construction will not commence until the Miscellaneous Lease Agreement (MLA).



VICINITY PLAN

SCALE 1: 10,000



NOTE:

All Elevations were based on ILO-3389. ELEV:5.35M.
Contour interval, Major is 5.00M. and Minor is 1.00M.
BM-1 ELEV:5.65, BM-2 ELEV:3.94 and BM-3 ELEV:3.06M.
Highest Elevation in Lot 23 is on Cor.1 , Elev: 55.47M.
Highest Elevation in Lot 20 is on Cor.1 , Elev: 55.06M.
Highest Elevation in Lot 21-A is on Cor.1, Elev: 55.06M.
All coordinates is based on PRS'92

TECHNICAL DESCRIPTION		
LINES	BEARINGS	DISTANCES
LOT 20		
1-2	S 71° 31' E	33.02M.
2-3	S 27° 51' E	47.50M.
3-4	S 52° 16' E	39.47M.
4-5	S 71° 28' E	11.04M.
5-6	S 22° 51' W	66.28M.
6-7	S 34° 54' W	97.07M.
7-8	S 47° 29' W	14.96M.
8-9	N 86° 43' W	73.96M.
9-10	S 60° 14' W	78.42M.
10-11	N 32° 33' E	104.39M.
11-12	N 32° 20' E	41.14M.
12-1	N 23° 04' E	155.30M.
LOT 21-A		
1-2	S 23° 4' W	69.51M.
2-3	N 66° 56' W	122.96M.
3-4	N 30° 45' E	64.89M.
4-5	S 19° 1' E	65.38M.
5-1	N 75° 45' E	88.62M.
LOT 23		
1-2	S 46° 40' E	41.16M.
2-3	N 89° 27' E	48.98M.
3-4	N 79° 18' E	90.90M.
4-5	N 81° 30' E	80.25M.
5-6	S 13° 26' E	47.91M.
6-7	S 30° 45' W	153.44M.
7-8	N 64° 28' W	165.88M.
8-9	N 62° 26' W	89.02M.
9-1	N 36° 41' E	80.87M.

PROPOSED PIER		
1-2	N 60° 14' E	78.42M.
2-3	S 86° 43' E	73.96M.
3-4	S 16° 02' E	300.01M.
4-5	N 86° 43' W	73.98M.
5-6	S 60° 14' W	78.42M.
6-1	N 16° 02' W	300.00M.

TIE LINES: S 28° 38' W,
TIE LINES: From BLLM NO 1,
AJUY CADASTRE to Corner Marked
"1":

LOT	BEARINGS	DISTANCES
20	S 28° 39' W	17,813.84M
21-A	S 28° 39' W	17,813.84M
23	S 29° 49' W	17,917.73M.
PIER	S 28° 38' W	18,113.60M.

CNBM (HEFEI) POWDER TECHNOLOGY EQUIPMENT CO., LTD

PROOFREAD

2.3.2 Site Selection

Site is selected based on the availability of a sufficiently deep harbor for port operations with fair access to international sea lanes, and the assurance provided by Ajuy Mayor that he will provide as much support as possible to the Project within his capacity as Mayor, for the purpose of generating economic activities, employment in, and tax revenues for Ajuy.

2.3.3 Resources

Local material resources will not be exploited for project operation. The use of limestone from permitted resources in Albay eliminates the need to open new quarries in Iloilo .

2.3.4 Technology Selection

The option of cement grinding utilizing imported clinker is selected due to lesser pollution compared to producing the clinker locally.

2.4 PROJECT DEVELOPMENT PLAN

2.4.1 Basic Criteria in Process Design and Equipment Selection

1) Low energy consumption (thermal and electrical energy)
2) Low cost of operation and maintenance
6) Economical investment costs
7) Short duration of construction
3) Reliable and durable machinery
4) Smooth machinery and system operation
5) Simplicity of the plant layout for the purpose of minimizing the number of machines and equipment
8) High Safety standards for operating and working condition
9) Healthy environment for working personnel and local communities
10) Low dust emission

2.4.2 Cement Grinding Plant Components

- Perimeter Wall & Security Facilities
    - Belt Conveyor for Clinker to Mill
- Material storage and handling facilities
    - Material Stockpiles (Clinker,Gypsum, Tuff/Iron Sand)
    - Belt conveyor for clinker, stockpile to mill
    - Buffer Silo for raw materials
    - Cement Silo
- Auxiliary Support Facilities
    - Genset 540 kVa
    - Admin Building
    - Laboratory
    - Compressor air station
    - Machine shop
- Pollution Control Facilities
    - Silt trap /settling pond
    - Oil and Water Separation Facilities
    - Perimeter greenbelt
    - Sewage treatment facilities

- Mill house
    - Grinders / mill house

- Cement Packhouse

2.4.3 Facility Specifications

TABLE 2.3.1 LIST OF FACILITY COMPONENTS AND SPECIFICATIONS FOR ANNUAL PRODUCTION CAPACITY

Material Handling	Planned Specification
Stockyard	1,920 m^2 per material gypsum & pozzolanic ash= 80 meters length x 24m wide, at 8000 tons capacity each
Clinker Shed	42,403 m^3 capacity 2-unit, 80mL x 36mW x 8mH or 2 x 30000 tons
Cement Silo	4 sets, 15m dia. x 22.5mH of Lipo steel sht, concrete bottom and structure, 5000 tons each
Mill house	Double closed circuit extrusion combined grinding system of roller press & ball mill
Roller	Model HFCG160-140, 2 x 1,120KW
Grinders	Model Ø3.5x13m, 2000KW
Pollution Control Facilities	Air filter with capacity 10,286m^3/hr discharge particulates 30mg/Nm^3
Admin Building	432m^2 footprint area 36mL x 12mW x 2-story
Machine Shop	144m2 footprint area 18mL x 8mW
Cement Packhouse	6 units packing machine 25 bph / 40tons/hr.
Other Pollution Control Facilities	
Silt trap /settling pond	3.4m^3 per settling, no. of silt trap: 39, no. of settling pond: 5, dim: 8x8x0.3
Oil and Water Separation Facilities	1 unit 30 m3 capacity
Perimeter greenbelt	3 rows 1m x 1m staggered planting
Sewage treatment facilities	100 no. service individuals,, 75 m3 capacity or 75 m^3/day capacity
Silt and Oil Boom	Sections of 2 meter length joined together to form a continuous barrier with lace-up eyelets. A woven, polyethylene skirt height of 1000mm with float dia. Of 150mm, ballast chain of 8mm, fabric with 200 micron pore size, effectively trapping particles greater than 50 micron. Sections of 20 meter length joined together to form a continuous barrier with lace-up eyelets.

TABLE 2.3.2 LIST OF EQUIPMENT

Item no.	Location	Description	Qty	Unit	Specification	Capacity	Total Capacity	Unit
1	Wharf area	Loading & Unloading gantry cranes	5	set	max wheel load: 200kN, Power: 100KW or 134 HP, 3ph, capacity: 1000ton/hr; belt width: 1400mm, chute extend length: 19.5m	100	500	kw
2	Raw matl shed	Belt conveyor 1 - wharf to TT1 matl, 574ft L, Vert lift: 9m	175	m	Belt width: 42 in, Vertical lift: 30ft; belt capacity: 250TPH, Power: 12KW or 16 HP	12	12	kw
3	Raw matl shed	Belt conveyor 1 - wharf tp matl shed, 482ft L, Vert lift: 19m	147	m	Belt width: 42 in, Vertical lift: 62ft; belt capacity: 250TPH, Power: 18KW or 24 HP	18	18	kw
4	Raw matl shed	stacker-reclaimer at Clinker stock pile	2	set	capacity: stacker: 600TPH / Reclaimer: 450TPH, 7 bucket x0.22m^3, power: 80KW or 107 HP	80	160	kw
5	Raw matl shed	stacker-reclaimer at Gypsum stock pile	1	set	capacity: stacker: 600TPH / Reclaimer: 450TPH, 7 bucket x0.22m^3, power: 80KW or 107 HP	80	80	kw
6	Raw matl shed	stacker-reclaimer at Pozzolana stock pile	1	set	capacity: stacker: 600TPH / Reclaimer: 450TPH, 7 bucket x0.22m^3, power: 80KW or 107 HP	80	80	kw
7	Raw matl shed	Belt conveyor for gypsum and pozzolana - out, 413 ft L	126	m	Belt width: 42 in, Vertical lift: 30ft; belt capacity: 250TPH, Power: 12KW or 16 HP	12	12	kw
8	Raw matl shed	Belt conveyor for clinker out, 209 ft L	64	m	Belt width: 42 in, Vertical lift: 30ft; belt capacity: 250TPH, Power: 10KW or 13 HP	10	10	kw
9	Raw matl shed	Conveyor & Gallery for outgoing raw matl, 916 ft L	276	m	Belt width: 42 in, Vertical lift: 30ft; belt capacity: 250TPH, Power: 24KW or 32 HP	24	24	kw
10	Matl storage silo	air slide conveyor, Screw conveyor, air compressor, vibrio motors at loading bins & controls	1	set	ducting, magnetic vibrators, sensors, limits switches & load cells	15	15	kw
11	Grinding mill house	Roller press	1	set	Model: HFCG160-140, Roller Ø: 1600mm, Roller width: 1400mm, Motor rating: 2 x 1120KW or 2 x 1,500 HP, matl feed size: less than 70mm, output: 680TPH	2,240	2,240	kw

Item no.	Location	Description	Qty	Unit	Specification	Capacity	Total Capacity	Unit
12	Grinding mill house	High Efficiency separator	1	set	Model HFX-3500, air vol: 210,000 m^3/hr; capacity: 140 TPH Motor capacity: 132KW or 177 HP; rotating speed: 100 rpm	132	132	kw
13	Grinding mill house	ball mill with high efficiency filter	1	set	Type Ø3.2x13m, output of fine: 32TPH; motor capacity: 1600KW or 2,145 HP	1,600	1,600	kw
14	Grinding mill house	Accessory parts and pollution control components (bag filters etc)	1	set	Accessory parts and components includes grinding media, spare parts, dust control at grinding mill house	100	100	kw
15	Packing house	air slide conveyor, Screw conveyor, air compressor, vibrio motors at loading bins & controls, pollution control devices	2	set	ducting, magnetic vibrators, sensors, limits switches & load cells	10	20	kw
16	Packing house	roto packer, bag making system	2	set	three (3) mouth, capacity: 45 ton/hr., 40km/bag, power: 18.7KW or 25 HP, 220V / 380V	19	37	kw
17	Packing house	cement bag machine	1	set	capacity: 20 to 200 pcs/min, power: 9 KW or 12 HP, Weight: 6.5ton	9	9	kw
18	Grinding mill house	MCC and CRR, laboratory building of grinding system	1	set	ducting, magnetic vibrators, portable fume & dust collector	10	10	kw
19	Grinding mill house	Control system, monitor system (camera-etc), laboratory equipment (heater / dust-fume control/ small scale grinding system. Mixing system, air compressor. Portable pumps, small roller & press system)	1	set	ducting, magnetic vibrators, sensors, limits switches & load cells	10	10	kw
20	Compressor station	air compressor	1	set	air capacity: 157 m^3/min, pressure: 58.8 Kpa; rotating speed: 1310 rpm; driving method: belt & coupling drive, power: 220KW, includes oil and grease separators.	220	220	kw
21	Electrical sub-station	Generator set	12	set	Modular electric diesel Generator set 540KW, includes oil and grease separators.	540	6,480	kw
22	Machine shop	lathe machine	3	set	horizontal lathe machine. Dimension (L*W*H): 2420x1150x1700mm.	4	12	kw
23	Machine shop	punching and shearing machine	2	set	cutting punching and bending of flat, angle, round bar, dim: 1830mm810mmx1785	6	11	kw
24	Machine shop	welding machine (mig/tig/ord/ gas system)	5	set	Heavy duty welding machine	18	90	kw

TABLE 2.3.3 SPECIFICATIONS OF THE CONVEYOR BELT

Item	Description	Specification	Unit
1	**Location**	**Belt conveyor 1 - wharf area to TT1**	
2	Capacity	250	T/H
3	Medium	Clinker	other cement components
4	Bulk matl density	1	T/m³
5	Angle of repose	7 to 10	degrees
6	Est. vol. eff.	30	%
7	Belt Width	1,050	mm
8	Belt length	175,000	mm
9	Belt lift	9,000	mm
10	Belt Speed	100	m/min
11	Drive	12	KW
12	Drive pulley	1	lot, Ø900x12mmx1200mmL
13	Accessories	1	lot, PCS, BSS, BSP, ARD, plugged chute switch, limit switch
14	**Location**	**Belt conveyor 2 - TT1 to TT2 at Matl shed area**	
15	Capacity	250	T/H
16	Medium	Clinker	other cement components
17	Bulk matl density	1	T/m³
18	Angle of repose	7 to 10	degrees
19	Est. vol. eff.	30	%
20	Belt Width	1,050	mm
21	Belt length	147,000	mm
22	Belt lift	19,000	mm
23	Belt Speed	100	m/min
24	Drive	18	KW
25	Drive pulley	1	lot, Ø900x12mmx1200mmL
26	Accessories	1	lot, PCS, BSS, BSP, ARD, plugged chute switch, limit switch

TABLE 2.3.4 POLLUTION SOURCES AND CONTROL DEVICES

Item No.	Location	Devices	Pollutant Mitigated	Supplementary control measures
1	Unloading point , ship to plant	Control devices with filter bags	Dust	Supplier must secure devices with tarpaulin cover during transport. Transport from delivery ship to plant will be through conveyor system

Item No.	Location	Devices	Pollutant Mitigated	Supplementary control measures
2	Raw material shed	Control devices with filter bags	Dust	Stockpiles are covered in material shed
3	Material crushing & Grinding area	Control devices with filter bags	Dust	Enclosed area
4	Cement bagging area	Control devices with filter bags	Dust	Enclosed area
5	General area	Silt trap, settling pond & oil grease separator	Storm & waste run-off water	Prevention of discoloration of discharge water in event of heavy rainfall and prevent occurrence of flooding
6	Jetty Pier Area	Silt and Oil Boom	Occasional spilled raw materials and oil	Sections of 2 meter length joined together to form a continuous barrier with lace-up eyelets. A woven, polyethylene skirt height of 1000mm with float dia. of 150mm, ballast chain of 8mm, fabric with 200 micron pore size, effectively trapping particles greater than 50 micron. Sections of 20 meter length joined together to form a continuous barrier with lace-up eyelets.

2.5 DESCRIPTION OF PROJECT PHASES

2.5.1 Pre-Construction Phase

The initial phase in pre-construction and project preparation is the conduct of environmental impact assessment to determine needed environmental management measures and estimate necessary costs to be included in the project feasibility study. Matters considered include soil bearing capacity, land development design, storm surge and oceanic currents stress potential on the proposed pier structure.

When an initial project feasibility study generates viable economic and financial indices, the facilities are planned in detail, and project cost estimate and funding plan is firmed up.

Other pre-construction activities are :

1. Completion of project Feasibility Study (FS). The CEMPHIL undertook social preparation and consultation process among others to inquire on local public opinion of its environmental performance, and possible public concerns related to its proposed production expansion in

compliance with DENR DAO 2017-15, (new) “Guidelines on Public Participation in the EIA Process”

2. Completion of Foreshore Lease Agreement (FLA) application. The bathymetric survey for FLA has been completed and other requirements are being prepared for submission to CENRO Barotac Viejo.
3. Opening of Letter of Credit (LOC) for the necessary equipment purchases.
4. Selection of Contractor and negotiations.

2.5.2 Construction Phase

All construction works will be through contract. The Contract will specify sourcing of 100% of unskilled and semi-skilled labor from the Municipality of Ajuy.

1. Plant Construction

    a. Manpower selection and hiring.

    b. Clearing of vegetation. Only what are necessary for facility construction will be cleared. If possible tree cutting will be avoided through some minor location adjustment. Trees on area whose elevation will be modified will be preserved by keeping 2-3 meters of the earth/land surrounding the roots. The proponent will secure tree cutting permit from DENR for the purpose. Replacement tree planting will be made for the perimeter greenbelt.
    c. The materials cut and fill volumes are 50,000m3 and 45,000m3 respectively. Surplus earth materials will be allowed by CEMPHIL to be used by a coastal road project of the Ajuy LGU.
    d. Construction for Phase 1 Stage 2 which is in Lot 23 which is inhabited by informal settlers will only commence once the settlers have been relocated.
    e. Land grade improvement. The plant base elevation will be raised to 8.0 meters above sea level, higher than the storm surge during Typhoon Yolanda which was 4.5m above Mean Lower Low Water (MLLW) level. The landform will be appropriately modified through terracing to reduce soil erosion and create the flat land necessary for efficient operations. Slope protection measures will be provided.
    f. Facility construction will be phased. Phase 1 will cover production facilities to mill 600,000.00 metric tons of cement. After a few months of operation, additional grinders, crushers, silos and auxiliary equipment (genset, processed water supply tank) will be installed to increase production to 1,200,000 metric tons per year. The c simple and straightforward, following standard engineering design and procedures. The Facilities that will be constructed are listed in Table 2.3.1.
    g. Equipment installation and commissioning

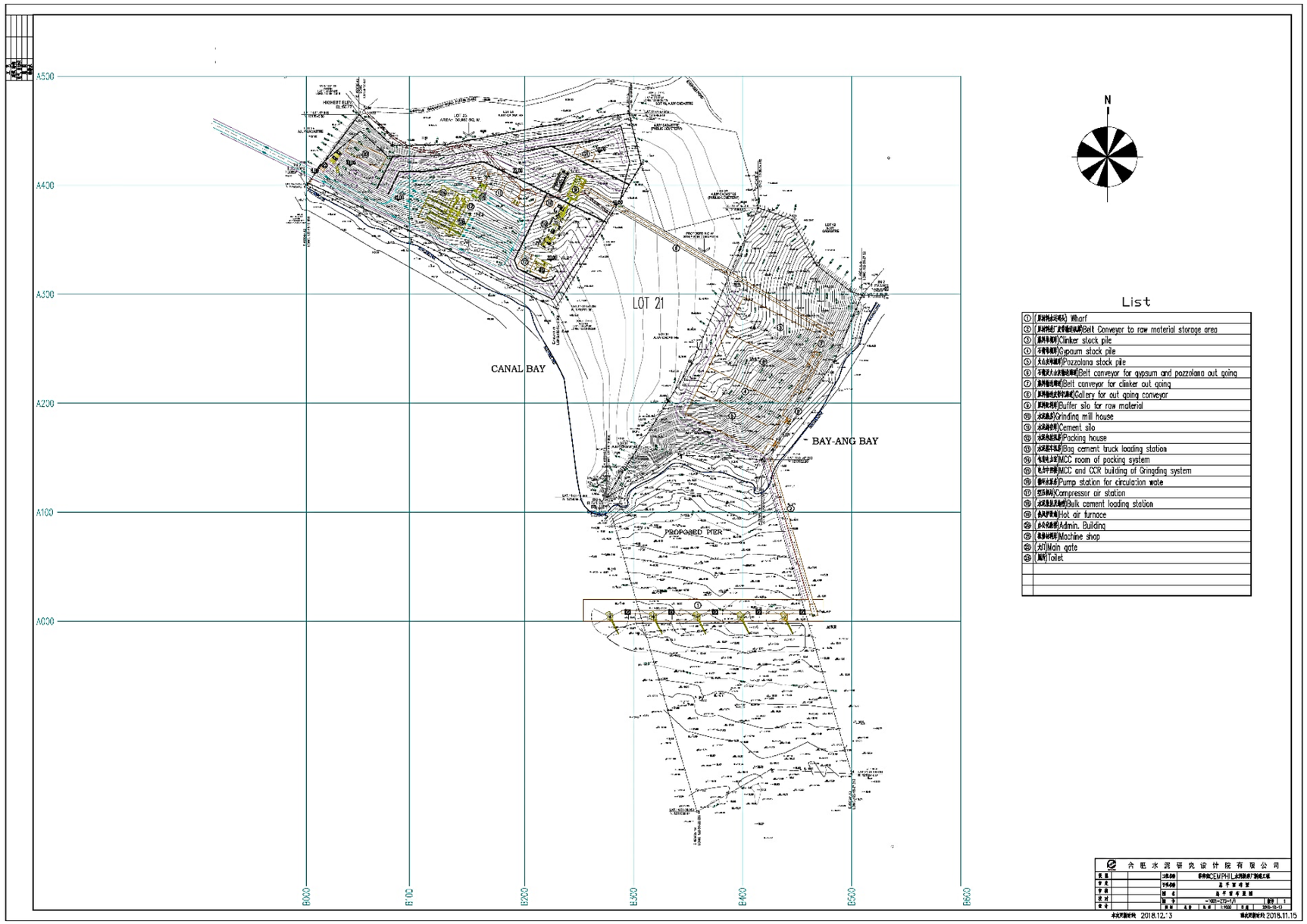
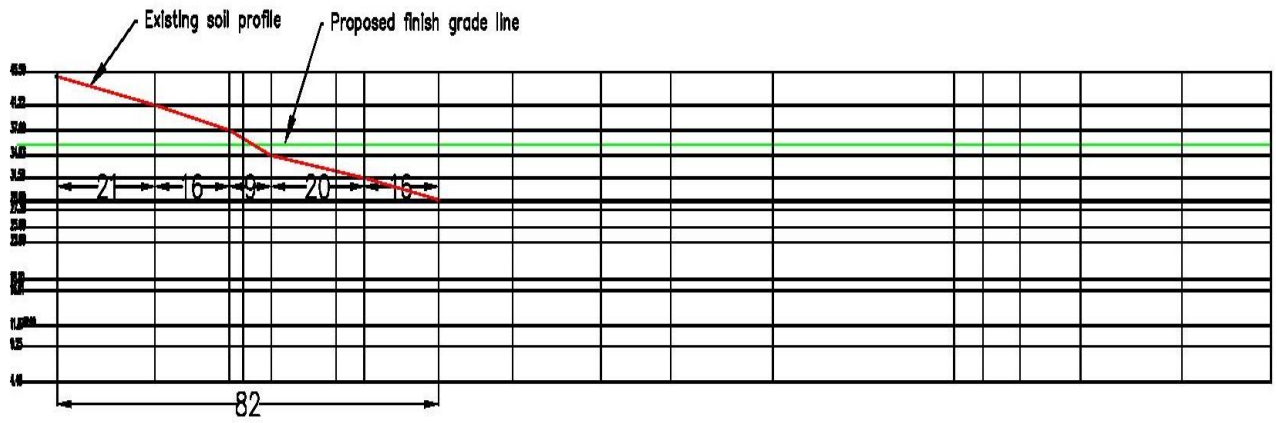


Figure 2.5 Site Development and Grading Plan

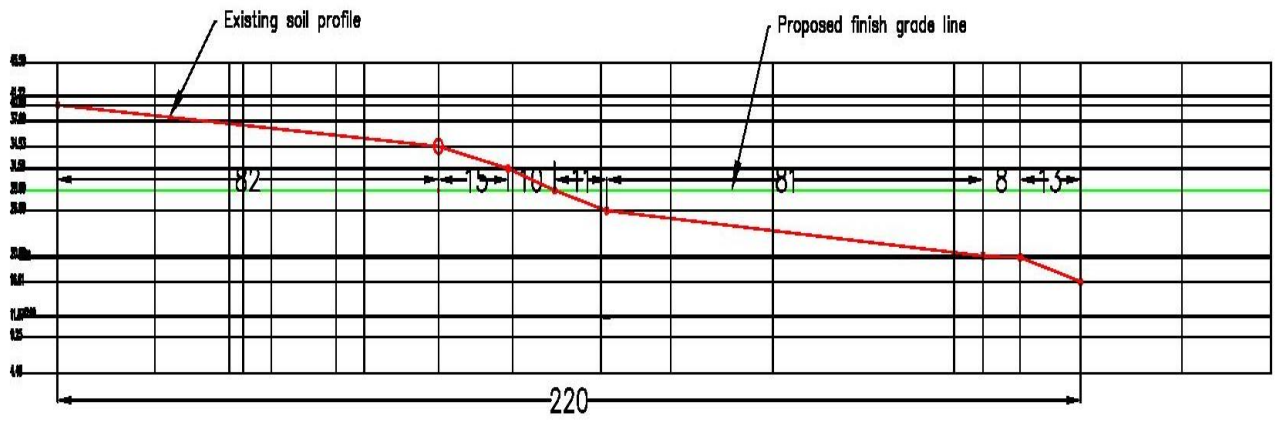
2.5.2.1 Slope Improvement Plan / Grading Plan

Construction Phase

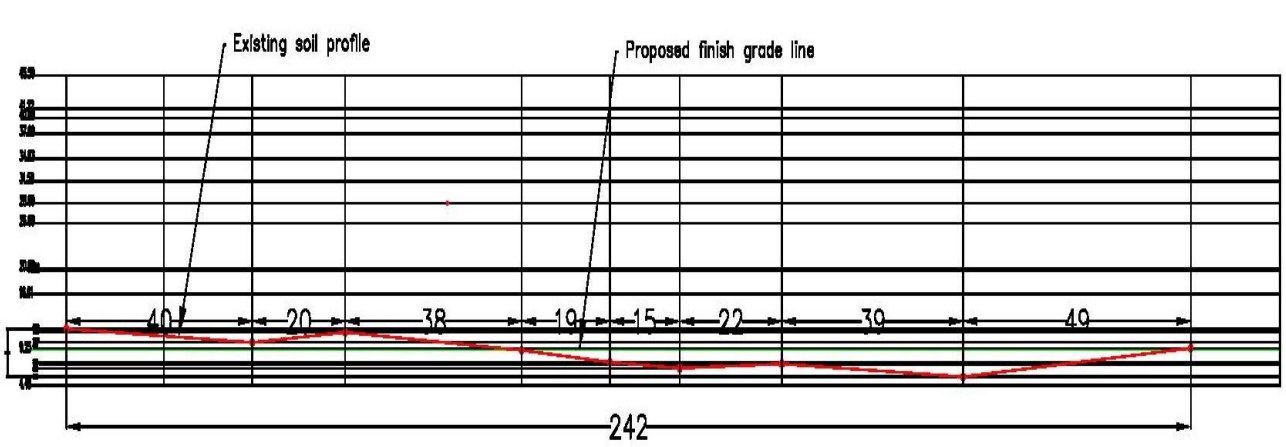
The sloping terrain will be modified to reduce land gradient to improve suitability for industrial use. In the process this will reduce the soil erosion potential of the project area. Expected environmental impact of the land development activity are increased sediment run-off which may possibly affect downstream marine ecosystem. Prior to the undertaking of land development / slope excavation works, a perimeter trench surrounding the area to be excavated will be dug-out to catch loose soil materials. The Proponent endeavors to complete the EIA process to be able to undertake earthworks during the dry season expected late November to April. Earthworks impacts will limited to the construction phase.



RIGHT SIDE SOIL PROFILE (GRID LINE A-435; A-401 / B-196 & B-265)



MID-SPAN SOIL PROFILE (GRID LINE A-440; A-345 / B-040 & B-240)



LEFT SIDE SOIL PROFILE (GRID LINE A-419; A-314 / B-012 & B-219)

Figure 2.5a Site Development and Grading Plan

Pollution Control Measures

The pollution control measures for operations phase that need to be undertaken during construction phase are the installation of the drainage trenches, settling ponds and oil and water separator facility.

During operation phase, potential impacts to the marine ecosystem from increased sedimentation of surface run-off originating from the Plant facilities will be controlled through a drainage trench canal system and series of settling ponds located near each material stockpile and high-traffic areas. Potential oil and grease contaminants will be controlled through the installation of an oil and water separator.

Drainage trench canal system. Run-off from plant ground surfaces will be collected in a drainage trench. This is currently being designed.

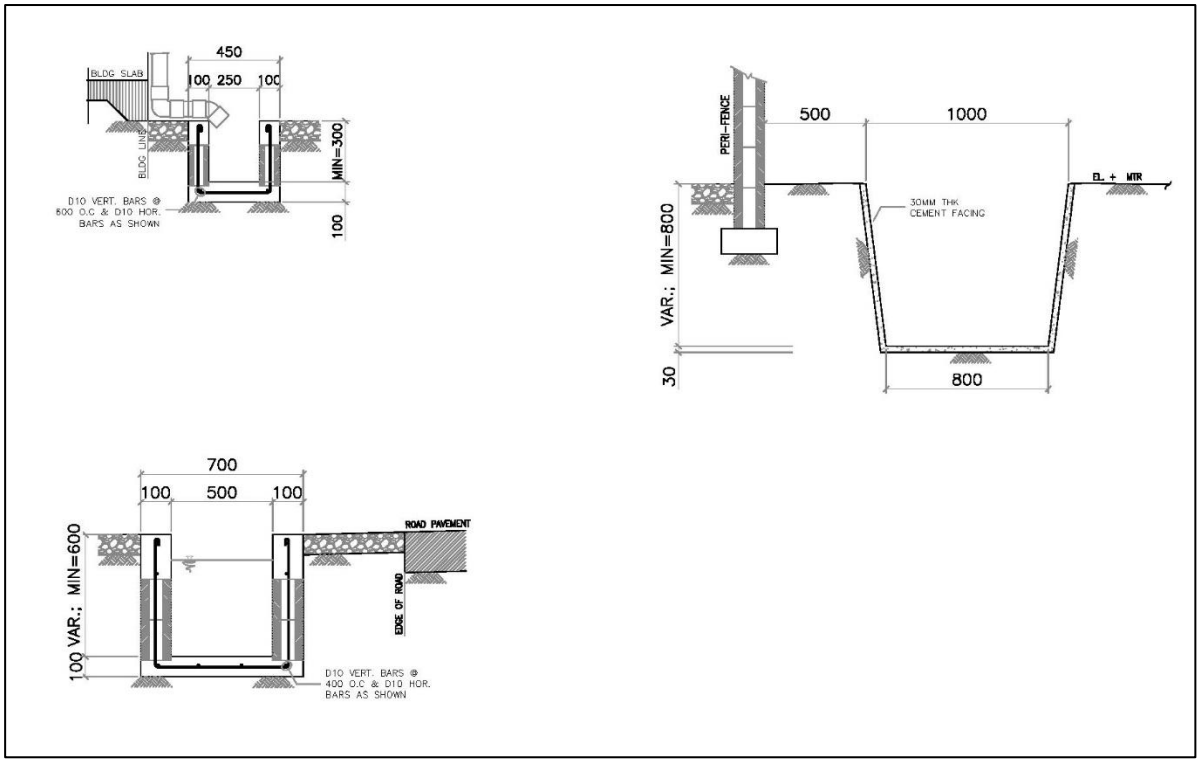


Figure 2.6 Drainage Trench Canal System

Settling pond. Settling pond / run-off collection pond for each material stockpile will be provided, to collect material eroded by rainfall. No provision for settling pond over flow to public domain. Settling pond overflow shall be toward the drainage trench, which shall also empty into a settling pond. The clarified collected water will be used for greenbelt watering. Collected water may also be used for dust suppression in plant processes. The settling ponds will be located strategically to capture material run-off from the stockpiles.

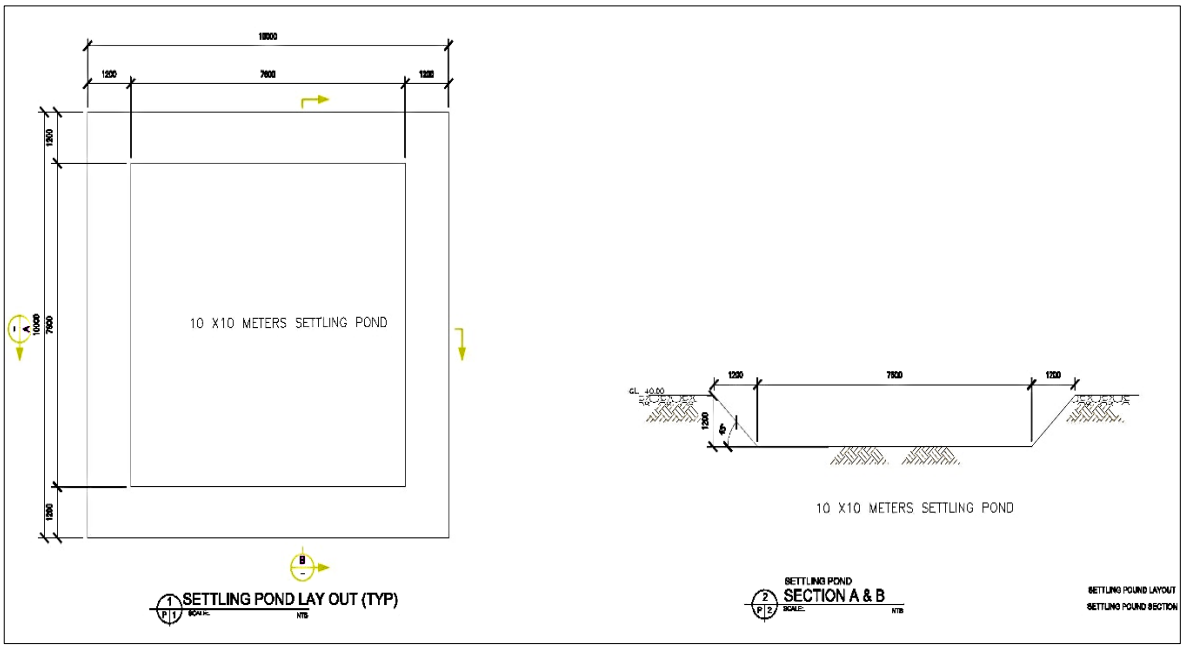


Figure 2.7 Lay Out of Main Settling Ponds

a. Oil and Water Separator. Heavy machinery require regular greasing, some heavy equipment and haul trucks will inevitably spill some minor oil and grease on plant flooring which may end-up in the sea transported by surface run-off. An oil and water separator unit will be provided in a strategic location along the drainage trench canal system to separate oil contamination before the run-off water is drained to the settling ponds for water re-use.

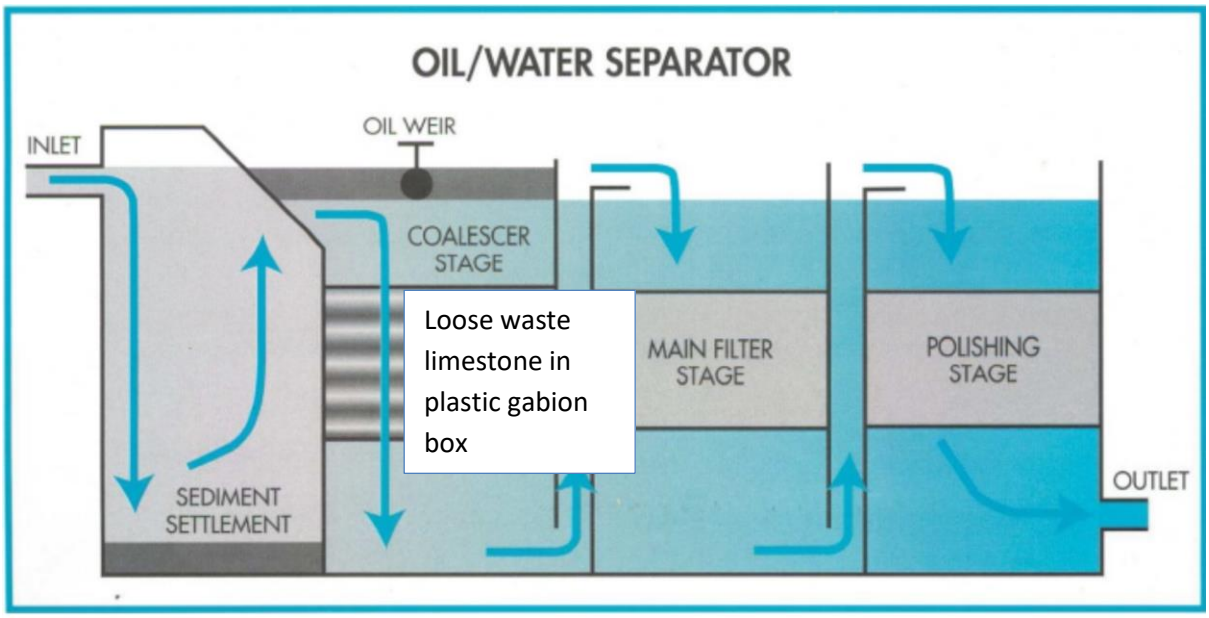


Figure 2.8 Schematic Diagram of Oil and Water Separator Unit / Facility

2.5.3 Operations Phase

2.5.3.1 Estimated Cement Production Types, and Material Sources

TABLE 2.5.1 RAW MEAL COMPOSITION & MATERIAL SOURCES

				Phase 1	Phase 1 &2
Annual Cement Production				600,000.00	1,200,000.00
Portland Cement Type 1 Projected Production				300,000.00	600,000.00
Portland Cement Type IP Projected Production				300,000.00	600,000.00
Production Materials					
	Particulars	**Percentage**	**Source**	**Annual Requirement (MT)**	
				Phase 1	Phase 1 &2
1.	Clinker	75	Vietnam, China	450,000	900,000
2.	Gypsum or bottom ash	4	Leyte	24,000	48,000
3.	Pozzolan material or fly ash	16	Albay	96,000	192,000
4.	Limestone	5	Albay	30,000	60,000
5.	Ferric Sand	To substitute portion of limestone for early strength concrete, on order basis.			

2.5.3.2 Production Process

The CemPhil, Inc. cement grinding plant in Barangay Bay-ang, Ajuy, Iloilo will bring in its production materials mostly through a port at Point Bay-ang (see **Figure 2.10**).

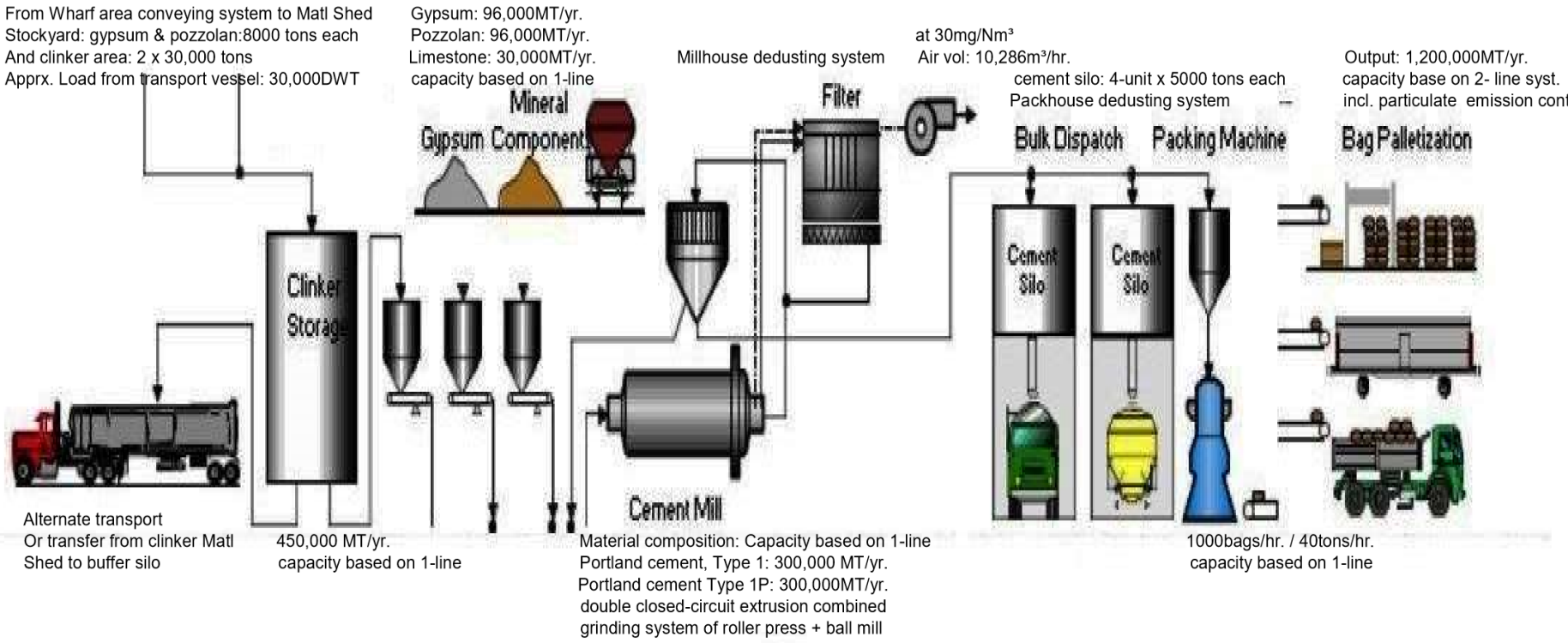


Figure 2.9 Production Process Flow

2.5.3.2.1 Transport from Wharf to Plant

Production materials will be brought from the cargo vessels into the cement grinding facilities through a closed conveyor system and deposited in respective material stockpile sheds (clinker, limestone, gypsum, iron sand).

2.5.3.2.2 Milling

The limestone and gypsum are delivered to the Project site in ground form, with diameter ranging from 3 to 25mm. From the stockpile area, each material and clinker will be proportioned by weigh feeder together with clinker for the designated product (Type 1 or Type 1P. The proportioned materials are loaded on to the conveyor and transported to the mill house into mill equipment. The materials pass through a high pressure roller press then proceed to finish milling where the materials are thoroughly blended with the aid of pressurized circulating heated air.

2.5.3.2.3 Temperature control

The cement grinding process require temperature control to manage the chemical reactions to ensure the desired cement quality. A closed system of circulating oil will be used in process temperature management.

A series of cyclone with bag filter dust collectors will be installed in the milling plant. Cyclone underflow will be fed back to the mill for finish grinding.

2.5.3.2.4 Cement Packing

Cement is withdrawn from cement silos through bucket elevators and air slides and routed to the pack house. Transported material is distributed to different packing bins prior to dispatching. Cement will be dispatched in 40 kilogram cement bags, in 1-ton bags and by bulk truck. Bagging of 40kg cement bags is done by semi-automatic packing machine. A reclaimer screw conveyor and a telescopic conveyor collect cement that miss the bags, collect these in bucket elevator and returned to the distributing bins. Transfer points are equipped with dedusting system that release exhaust through baghouses. Collected materials from baghouses are returned likewise to the bins.

2.5.3.2.5 Dispatch

Distribution of cement products will be through the Coastal Road and through the project wharf.

2.5.4 Abandonment Phase

The Cement Plant is an economic asset on titled property. In the event of abandonment, the Proponent will ensure that the manufacturing facility will not pose environmental or safety hazards to the public. The cement plant components will be dismantled and all hazardous materials (used oil, laboratory chemical reagents, spent batteries and light bulbs) are hauled to disposal site approved by Government.

2.5.4.1 Energy Consumption

The equipment in cement grinding process are electricity-driven. On the average, 40 kilowatt-hours is consumed in the milling process per metric ton cement produced. Energy requirement will be supplied from the Panay Electric Company. Total energy consumption including incidental requirements are shown in **Table 2.5.2** below.

TABLE 2.5.2 POWER REQUIREMENT

Item No.	Location	Description	Qty	Unit	Capacity	Total Capacity (kw)
1	Wharf area	Loading & Unloading gantry cranes	5	set	100	500
2	Raw matl shed	Belt conveyor 1 - wharf to TT1 matl, 574ft L, Vert lift: 9m	175	M	12	12
3	Raw matl shed	Belt conveyor 1 - wharf tp matl shed, 482ft L, Vert lift: 19m	147	M	18	18
4	Raw matl shed	stacker-reclaimer at Clinker stock pile	2	Set	80	160
5	Raw matl shed	stacker-reclaimer at Gypsum stock pile	1	Set	80	80
6	Raw matl shed	stacker-reclaimer at Pozzolana stock pile	1	Set	80	80
7	Raw matl shed	Belt conveyor for gypsum and pozzolana - out, 413 ft L	126	M	12	12
8	Raw matl shed	Belt conveyor for clinker out, 209 ft L	64	M	10	10
9	Raw matl shed	Conveyor & Gallery for outgoing raw matl, 916 ft L	276	M	24	24
10	Matl storage silo	air slide conveyor, Screw conveyor, air compressor, vibro motors at loading bins & conctrols	1	Set	15	15

Item No.	Location	Description	Qty	Unit	Capacity	Total Capacity (kw)
11	Grinding mill house	Roller press	1	Set	2,240	2,240
12	Grinding mill house	High Efficiency separator	1	Set	132	132
13	Grinding mill house	ball mill with high efficiency filter	1	Set	1,600	1,600
14	Grinding mill house	Accessory parts and pollution control components (bag filters etc)	1	Set	100	100
15	Packing house	air slide conveyor, Screw conveyor, air compressor, vibro motors at loading bins & conctrols, pollution control devices	2	Set	10	20
16	Packing house	roto packer, bag making system	2	Set	19	37
17	Packing house	cement bag machine	1	Set	9	9
18	Grinding mill house	MCC and CRR, laboratory building of grinding system	1	Set	10	10
19	Grinding mill house	Control sytem, monitor system (camera-etc), laboratory equipments (heater / dust-fume control/ small scale grinding system. Mixing system, air compressor. Portable pumps, small roller & press system)	1	Set	10	10
20	Compressor station	aircompressor	1	Set	220	220
21	Machine shop	lathe machine	3	Set	4	12
22	Machine shop	punching and shearing machine	2	Set	6	11
23	Machine shop	welding machine (mig/tig/ord/ gas system)	5	Set	18	90
24	Machine shop	Overhead & gantry cranes	2	set	3	6
Sub-Total- Power requirement						**5,408 kw**
Other power requirement, in house consumption						**752 kw**
Project Total Power requirement per day						**6,610 kw**

Item No.	Location	Description	Qty	Unit	Capacity	Total Capacity (kw)
					Say	**6.16 MW**

Note: Cement grinding capacity in Tons: 154 T/H

TABLE 2.5.3 POWER PROPOSED SOURCES

	Description	Qty	Unit	Capacity	Total Capacity (kw)
First Option	In house, power generator: 540KVA diesel engine generator, expected to supply average of 5% of demand on per day basis	12	sets	540	6,480
Second Option	Arrangement with ILECO III for tapping an additional power supply aside from existing SARA SS with a capacity of 10MW. Expected to supply 6% of demand, on per day basis	1	set	6,500	6,500

2.5.4.2 Water Consumption

An average of 6 liters is necessary in the production of one cubic meter cement, for process temperature management. Water requirements will be supplied from Deep well within the Plant site. All project roof systems will collect and conduit water to a pond for rain water harvesting. Permit from the NWRB will be secured for ground water utilization.

A total of 80m^3 of water shall be consumption per day : 55m^3 for the construction phase and 25m^3 for the operation of Phase 1 (Table 2.5.4). The proponent shall include a water tank with a capacity of 2.5 SF, I unit, to support water demand of 80m3/day (150 m3 at Dim: 12mLx8mWx1.6D). For Phase 2 an additional water supply tank shall be installed.

TABLE 2.5.4 WATER REQUIREMENT

Item No.	Description	Usage per person per day (liter)	Qty per day (m^3)	Waste water generated Daily	
				To recycling Pond	to septic tank
1	Construction phase 200 persons (personal consumption, shower, washing, etc) Construction usage (washing, etc)	 250 500	 50.0 5.0	50	3
2	Operation phase 100 person (personal consumption,	 250	 25.0	22.5	1.5

	shower, washing, etc) Operation usage (dust suppression, etc)	6	0.1		

Water pipes for wash water and gray water will be separate from septic tank (black water) plumbing. Gray water will be recycled for re-use.

TABLE 2.5.5 WATER PROPOSED SOURCE

Item No.	Available Source	Qty
1	Deepwell, for personnel use (potable source) say 1- location within the plant site	100 li. Per min
		60 m3/day at 10 hrs. pump operattion
2	Reserve water for other uses at settling pond, after sediment settlement and clarified, 3 location pond with liner with retain water at net of 50m3 each pond, other 2 location ponds without liner are intended to drain the water into natural soil.	150 m^3, Note: within 30 days retention period prior to water depletion due to evaporation and other water loss factor esp. in dry months

2.5.4.3 Emission Inventory

Particulate matter is the primary air pollutant from cement finish grinding. Based on USEPA AP42 Source Classification Codes 3270, 1771,3292, about 10.800 metric tons TSP with 5.400 metric tons PM_{10} uncontrolled dust emissions, from the annual production of 600,000 metric tons cement, or 49 kilos daily for each Phase or 5 kilos per hour for 1.2 million MT annually assuming 20 hours x 312 days operation per year. The project process intends to implement 99.99% dust emission control through fabric or bag filters, to recover the dust materials into cement production.

2.5.4.4 Fuel Requirements

TABLE 2.5.6 ESTIMATED ANNUAL FUEL REQUIREMENTS

Item No.	Description	No. of Units	Consumption per Day per unit, (liters)	Consumption per Day (liters)	Consumption per months (liters)	Consumption per year (liters)
Construction Phase only (for 1-1/2 year period)						
1	Excavator	4	100	400	10,000	124,800
2	Payloader	2	50	100	2600	31,200
3	Generator	2	150	300	7800	93,600
4	Dumptruck	5	100	500	13000	156,000
5	Roller compactor	2	20	40	1040	12,480
6	Bulldozer	1	20	20	520	6,240

Item No.	Description	No. of Units	Consumption per Day per unit, (liters)	Consumption per Day (liters)	Consumption per months (liters)	Consumption per year (liters)
7	Cranes	2	100	200	5200	62,400
8	Service vehicles	6	20	120	3120	37,440
Sub-Total						524,160
Operation Phase (after commissioning period)						
1	Payloaders	2	7	14	196	2,352
2	Forklifts	2	4	8	112	1,344
3	Sked loader	1	4	4	56	672
4	Generators (maintenance running only)	2	10	20	520	6,240
Sub-Total						10,608
Note:						
1	While no power supply from ILICO III, back up diesel engine electric Generator will provide all the power requirement	12	300	3,600	93600	1,123,200

2.6 Manpower Requirements

The exact manpower requirement is currently under study. The CEMPHIL will prioritize hiring from within Barangay Bay-ang and Ajuy Municipality as much as possible. CEMPHIL gives equal employment opportunity to women. The Project will post its manpower requirement prominently at the Municipal Hall of Ajuy. The initially-identified workforce requirement is indicated in Table .

TABLE 2.6.1 COMPOSITION OF KEY PERSONNEL FOR CONSTRUCTION PHASE

Item no.	Division	Description	No, of Personnel
1	Construction manager office	Construction manager	1
1	Construction manager office	Admin Manager	1
1	Construction manager office	HRD Manager	1
1	Construction manager office	Logistic Manager	1
1	Construction manager office		3
1	Construction manager office	Site Managers	1
1	Construction manager office	Warehouse Manager	1
2	Gen Affair Dept	Clerks- Others	1

Item no.	Division	Description	No, of Personnel
2	Gen Affair Dept	Drivers (heavy truck & service vehicle)	5
2	Gen Affair Dept	HRD clerks	2
2	Gen Affair Dept	Mechanics	2
2	Gen Affair Dept	Nurses(4-shift)	1
2	Gen Affair Dept	Operator (crame, backhoe, roller compactor, bulldozer, payloader)	5
2	Gen Affair Dept	Purchasers	2
2	Gen Affair Dept	Surveyor	2
3	Safety/Health Dept	Guards(job-out-12)	0
3	Safety/Health Dept	Inspectors for pollution, safety & sanitation)	2
3	Safety/Health Dept	PCO	2
3	Safety/Health Dept	Safety officer	1
3	Safety/Health Dept	Safety Aide	2
4	Warehouse & Cost Acct Dept.	Warehouse Supervisor	1
4	Warehouse & Cost Acct Dept.	Cost-account monitoring officer	2
4	Warehouse & Cost Acct Dept.	Warehouse operators	3
5	Civil Dept	Foreman	8
5	Civil Dept	Painter	9
5	Civil Dept	Finishing worker	14
5	Civil Dept	Carpenter	30
5	Civil Dept	Laborer	30
5	Civil Dept	Mason	30
6	Electric Dept	Foreman	1
6	Electric Dept	Electricians	4
6	Electric Dept	Technician (HVAC, pumps, machines)	4
7	Mechanical Dept	Foreman	1
7	Mechanical Dept	Mill weigher	2
7	Mechanical Dept	Pipe fitter	4
7	Mechanical Dept	Technicians	4
7	Mechanical Dept	Welder	4
7	Mechanical Dept	Fabricator	5
7	Mechanical Dept	Erector	8
		GRAND TOTAL	**200**

TABLE 2.6.2 MANPOWER COMPOSITION FOR OPERATION PHASE

Item no.	Division	Description	No, of Personnel
1	President office	President	1
1	President office	Secretaries	2
1	President office	Vice-President	2

Item no.	Division	Description	No, of Personnel
2	Financial Division	Accountants	2
2	Financial Division	Auditors	2
2	Financial Division	Cashiers	1
2	Financial Division	Supervisor	1
3	Sales division	Manager	1
3	Sales division	Salesmen	6
4	Gen. Affair division	Drivers	2
4	Gen. Affair division	Manager	1
4	Gen. Affair division	Purchasers	2
4	Gen. Affair division	Staffs	2
5	Plant manager office	Plant manager	1
5	Plant manager office	Shift Engr	3
6	Quality Control Dept	Chem. analysis Opr(4-shift)	3
6	Quality Control Dept	Engineers	2
6	Quality Control Dept	Foreman	1
6	Quality Control Dept	Physical analysis Opr.	2
6	Quality Control Dept	Secretary	1
6	Quality Control Dept	Supervisor	1
7	Finish mill section	Engineer	1
7	Finish mill section	Maintenance Tech	2
7	Finish mill section	Operators(4-shift)	6
7	Finish mill section	Shift foremen	3
8	Cement dispatch dept	Engineers	1
8	Cement dispatch dept	Operators(2-shift)	12
8	Cement dispatch dept	Shift foreman	3
8	Cement dispatch dept	Supervisor	1
8	Cement dispatch dept	Technicians	2
9	Warehouse & Cost Acct Dept.	Cashier	1
9	Warehouse & Cost Acct Dept.	Cost-accountant	2
9	Warehouse & Cost Acct Dept.	Supervisor	1
9	Warehouse & Cost Acct Dept.	Warehouse operators	3
10	Safety/Health Dept	Foreman	2
10	Safety/Health Dept	Guards(job-out-17)	0
10	Safety/Health Dept	Inspectors for pollution, safety & sanitation)	2
10	Safety/Health Dept	Manager	1
11	Mechanical Dept	Engineers	3
11	Mechanical Dept	Foreman	2
11	Mechanical Dept	Technicians	3
12	Electric Dept	Electricians	3
12	Electric Dept	Engineers	1
12	Electric Dept	Shift Electricians	3
12	Electric Dept	Shift Foreman	3
		GRAND TOTAL	**100**

2.7 PROJECT COST

TABLE 2.7.1 PROJECT COST

Item No.	Description	Import, Php	Local, Php	Total
1	CIVIL SCOPE INCLUDES SILT TRAP & SETTLING PONDS, Environmental Management Cost: Php 400,000.00		93,308,000	93,308,000
2	MACHINERY: (INCL LOCAL MFG, SPARE PARTS, CRANE, GRDNG MEDIA & DUST CONTROL –Php 1,100,000.00)		111,762,000	111,762,000
3	ELECTRIC (Gen set, transformer, sub-station)	2,500,000	69,234,811	71,734,811
4	HEAVY MACHINE (INCL CEMENT MILL, PACKING, DEL EQUIPT, INCLUDES OIL & GREASE SEPARATORS, POLLUTION CONTROL MACHINE – Php 250,000.00)	157,809,258		157,809,258
5	INSTALLATION & TEST RUN		4,323,110	4,323,110
6	WHARF FACILITIES		210,376,435	210,376,435
7	PRE-OPERATING PHASE: (incl gov't formalities, social dev and environmental management fund, Php 250,000.00)		19,344,197	19,344,197
8	OTHER COST: (INCLUDE LABORATORY, MACHINE SHOP, EQUIPMENT POLLUTION CONTROL DEVICES)		577,000	577,000
GRAND TOTAL				**669,234,811**

2.8 PROJECT SCHEDULE

The preparation and construction of the cement grinding plant is planned to be completed in thirty (30) months. Thereafter, the company looks forward to fifty (50) years of operation.

CEMphil Grinding Plant

ID	任务名称	Duration	Start	Finish
1	**Cemphil 144T/H Cement Grinding Mill Station**	**757 days**	**Wed 24/10/18**	**Thu 16/09/21**
2	**Prelimenaries**	**400 days**	**Wed 24/10/18**	**Tue 05/05/20**
3	LGU & Nat Permit/Lic/clearance (By Owner)	90 days	Wed 24/10/18	Tue 26/02/19
4	Land acquisition and conversion (by owner)	90 days	Wed 24/10/18	Tue 26/02/19
5	EIS for ECC	400 days	Wed 24/10/18	Tue 05/05/20
6	Survey works	60 days	Wed 24/10/18	Tue 15/01/19
7	Geotechnical Insvestigation	60 days	Wed 24/10/18	Tue 15/01/19
8	Construction permits	60 days	Tue 21/01/20	Mon 13/04/20
9	**Preconstruction phase**	**429 days**	**Wed 24/10/18**	**Mon 15/06/20**
10	ITB preparation	60 days	Wed 24/10/18	Tue 15/01/19
11	Evaluation & contracting stage	24 days	Wed 09/01/19	Mon 11/02/19
12	Basic & Detail Design	150 days	Tue 12/02/19	Mon 09/09/19
13	Equipment Procurement	95 days	Tue 27/08/19	Mon 06/01/20
14	Manufacturing of Equipment	200 days	Tue 10/09/19	Mon 15/06/20
15	**Construction Phase**	**260 days**	**Tue 16/06/20**	**Mon 14/06/21**
16	Equipment Delivery	105 days	Tue 16/06/20	Mon 09/11/20
17	Land preparation	80 days	Tue 16/06/20	Mon 05/10/20
18	Plant site civil work	260 days	Tue 16/06/20	Mon 14/06/21
19	Jetty civil work	260 days	Tue 16/06/20	Mon 14/06/21
20	Mechanical equipment erection	110 days	Tue 15/09/20	Mon 15/02/21
21	Electrical equipment erection	100 days	Tue 20/10/20	Mon 08/03/21
22	Equipment individual test	40 days	Tue 09/02/21	Mon 05/04/21
23	Grinding system test	10 days	Tue 30/03/21	Mon 12/04/21
24	Material preparation	10 days	Tue 13/04/21	Mon 26/04/21
25	**Training and commissioning**	118 days	Tue 06/04/21	Thu 16/09/21
26	System commissioning	40 days	Tue 06/04/21	Mon 31/05/21
27	Operational Adjustment & troubleshooting	40 days	Tue 01/06/21	Mon 26/07/21
28	Uninterrupted Trial Run	28 days	Tue 27/07/21	Thu 02/09/21
29	Performance Test	10 days	Fri 03/09/21	Thu 16/09/21

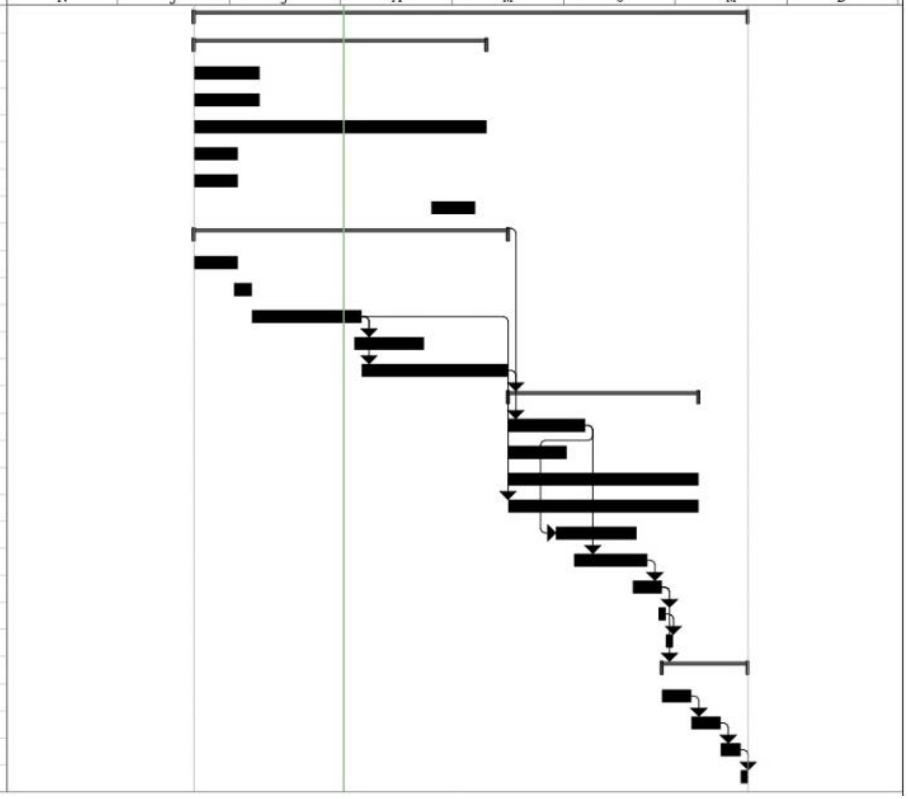


Figure 2.10 Project Schedule

The number of days of operation per year is demonstrated in **Table 2.8.1**. The whole plant will be operated continuously 24 hours per day. For the production sections, four shifts are provided. Three eight-hour shift for operation and one shift for bridging the free days of the other three shifts. The other service sections are only day shift.

TABLE 2.8.1 NO. OF DAYS OF OPERATION PER YEAR

Item no.	Division	Description	Days per Month	Days per Year
Construction Phase				
1	Construction manager office	1- Sfit, 8 hrs per shift per day	26	312
2	Gen Affair Dept	1- Sfit, 8 hrs per shift per day	26	312
3	Safety/Health Dept	1- Sfit, 8 hrs per shift per day	26	312
4	Warehouse & Cost Acct Dept.	1- Sfit, 8 hrs per shift per day	26	312
5	Civil Dept	1- Sfit, 8 hrs per shift per day	26	312
6	Electric Dept	1- Sfit, 8 hrs per shift per day	26	312
7	Mechanical Dept	1- Sfit, 8 hrs per shift per day	26	312
			Average no. of days	**312**
Operation Phase				
1	President office	1- Sfit, 8 hrs per shift per day	26	312
2	Financial Division	1- Sfit, 8 hrs per shift per day	26	312
3	Sales division	1- Sfit, 8 hrs per shift per day	26	312
4	Gen. Affair division	1- Sfit, 8 hrs per shift per day	26	312
5	Plant manager office	1- Sfit, 8 hrs per shift per day	26	312
6	Quality Control Dept	1- Sfit, 8 hrs per shift per day	26	312
7	Finish mill section	1- Sfit, 8 hrs per shift per day	26	312
8	Cement dispatch dept	1- Sfit, 8 hrs per shift per day	26	312
9	Warehouse & Cost Acct Dept.	1- Sfit, 8 hrs per shift per day	26	312
10	Safety/Health Dept	1- Sfit, 8 hrs per shift per day	26	312
11	Mechanical Dept	1- Sfit, 8 hrs per shift per day	26	312
12	Electric Dept	1- Sfit, 8 hrs per shift per day	26	312
			Average no. of days	**312**

3.0 OVERVIEW OF THE BASELINE ENVIRONMENT

TABLE 3.0 SUMMARY OF BASELINE CONDITION

Module	Baseline Condition
Geology, Topography and Slope	Ajuy is a coastal Municipality in the north-eastern coast of Panay Island (see Figure 1.1). The Project site in Barangay Bay-ang is located is on a small headland jutting out about seventy-four meters from the Ajuy mainland. It is underlain by Odiongan volcanic rocks, hornblend andesite, porphyritic andesite, dacite porphyry and tuff occurring as flows, plugs and dikes. Area is an **ophiolite,** a section of the Earth's oceanic crust and underlying upper mantle that has been uplifted and exposed above sea level[1]. Project area has a natural slope of roughly 12%, flattish near the coast and rising toward elevation 55.06masl, highest project elevation. 111 masl is the highest point closest to Project site.
Pedology	Project site is generally underlain by Barotac loam lowland phase, slightly reddish with presence of stones and gravel outcrops in the surface. Stone outcrops in the project site is abundant, with sizes ranging from 10, 20 to 50 cm.
Terrestrial Biology	Flora The area is covered with brushes and shrubs, dotted with sparse trees, and can be classified as "other wooded land" with open canopy. Tree cover is less than 10%. A total of 63 tree individuals and 17 tree species under 10 families exist in the project site, 5 understory species under 5 families were found. The dominant tree species is *Strebius asper* (14 individuals) followed by *Ficus pseudopalma* (12 individuals). Majority (88.89 %) of the trees in the project is study site are young, with the 0 to 20.32 cm DBH class. All observed species in the sampling plots, except for the following have not yet been assessed for the IUCN Red List, but are in the Catalogue of Life: *Artocarpus blancoi, Swietenia macrophylla, Vitex parviflora, Alstonia macrophylla, Alstonia scholaris, Cassia fistula, Saccharum spontaneum,* and *Mangifera indica*. M. indica has deficient data. The endemic *A. blancoi, S. macrophylla and V. parviflora* are categorized as Vulnerable. The remaining observed tree species are categorized as Least Concern, and they are either stable or unknown.
	Fauna From the established 2-kilometer transect, a total of 293 individuals belonging to 25 species of avifauna representing 19 families were observed. The most dominant family based on the number of species observed is family Columbidae or the

[1] Geology of the Philippines, 2nd Ed.

Module	Baseline Condition
	dove/pigeon group with three represented species. On species level, bird assessment revealed that the most dominant species in the site was White-breasted Woodswallow with 62 individuals. Co-dominant species were White-breasted Woodswallow (*Artamus leucorynchus, Linn*.), and Philippine Pied Fantail (*Rhipidura nigritorquis, Vigors*). Such degree of dominance could be attributed to the land-use and availability of forage materials because the area is generally open shrubland.
Hydrology and Hydrogeology	The Project site is within Ajuy which lies below and outside the ridge defining the Panay River Basin, and directly drain directly towards the sea. A drainage structure (creek) was observed within the Project site and local interviews indicate the creek drainage is intermittent, occurring only during and after strong rains. The area is underlain by tuff which is porous and allows relatively fast rainfall infiltration.
Water Quality	At the time of site reconnaissance, the natural drainage structure (creek) was dry thus no water sample was obtained for analysis. The surrounding land use is open shrubland with no significant human activity. The result of water quality sampling and analysis for project impact parameters Total Suspended Solids (TSS) and Oil and Grease (O&G) indicate the values for these parameters are within Class SB, suitable for fishery production.
Marine ecology	Bay-ang bay supports the production of appreciable fish and shellfish. Marine survey of the impact receptor coastal area identified coral communities 30m west of the jetty port area approximately 50 meters from the coast, and about 25 meters east of the port toward Barangay Pedada. No sea grass patches were found within 50 meters of the project area. The seabed at the proposed jetty port and proximate surroundings reveal the sea bed to be mostly sand.
Climatology, Air Quality and Noise	Climatology Climate in the area belong to Type III of the Modified Coronas classification, with no pronounced maximum rain period and dry season persisting from November to April. Air Quality There are no major sources of industrial air pollutants within Ajuy. Result of air quality sampling and analysis for Total Suspended Particulates, the Project impact parameter, indicate air quality that is within the National Ambient Air Quality Standard (NAAQS). The land use surrounding the project site is agricultural. Noise Normal ambient noise level in Barangay Bay-ang keeps within Class A applicable for residential area. There are no sources of industrial noise in the area.

Module	Baseline Condition
Socio-economic and Cultural Environment	Ajuy population as of 2015 PopCen was 52,268, growing at an average annual growth rate of 0.45% from 45,192 persons surveyed in 2010. Bay-ang population was 2,780 in 2015, accounting for 5% of the municipal population. Ajuy average household size is 4.26 persons, with an average of 4.28 persons residing in a housing unit. Males outnumber females. Barangay Bay-ang is fully energized. Area hydrogeology constrain ground water resource availability in Barangay Bay-ang. A spring box from elevated location provides community water supply. A total of twenty three families informally reside within the area where Stage 2 (cement milling facilities) will be constructed. The families are willing to be resettled. The Proponent is currently identifying a property within Barangay Bay-ang for the resettlement site. They will be given priority in employment and project Social Development Program activities such as training, education, livelihood development, health services. Fisheries provide the primary livelihood source in Barangay Bay-ang. The highest educational attainment of majority of the Barangay population are high school level, although a number of professional graduates are counted among the young adult population (aged 21 to 35). Dependency ratio is 52.89%.

4.0 ENVIRONMENTAL MANAGEMENT PLAN

TABLE 4. 1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Project Phase / Environmental Aspect / Project Activity	Environmental Component Likely to be Affected	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Responsible Entity	Cost (Pesos)	Guarantee / Financial Arrangements
CONSTRUCTION PHASE						
Wharf / Pier	Marine environment in Bay-ang Bay	Possible sedimentation of corals	Establishment of silt and oil boom cordoning-in the construction site.	Proponent	1 million per kilometer	
Grinding Plant						
Site clearing, earthworks, civil works	Terrestrial ecology	loss of vegetation / trees	Minimize vegetation clearing Secure tree cutting permit from DENR Replant trees, establish perimeter greenbelt			
		Wildlife species displacement	Refrain disturbance of vegetated areas outside of project site			
		Death of wildlife due to accidental strike with heavy equipment and other accidental encounter	Orient crew on avoidance of impact to wildlife and Wildlife Resources Conservation and Protect Act (RA 9147)			
		Contamination of soil with hydrocarbon residues from spilled oil and fuel, and spilled cement	Orient crew on proper handling of fuel, oils to prevent land and water pollution Provide training to personnel assigned to handle fuels and lubricants in construction site.			

Project Phase / Environmental Aspect / Project Activity	Environmental Component Likely to be Affected	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Responsible Entity	Cost (Pesos)	Guarantee / Financial Arrangements
-	Water quality	Increased run-off turbidity	Provide adequate settling ponds			Part of EMP
		Deterioration of water quality from improperly treated waste water from workers' barracks	Maximize hiring from within Ajuy. Workers barracks to have adequate septage management system			
	Air quality	Increased ambient dust	Sprinkle dusty areas with water for dust suppression Limit vehicle speed limit to 30kph			Instruction for
		Increased noise	Limit working hours to between 6am to 6pm			
	Social environment	Threat to workers' safety	Install safety and warning signages at construction site Provide workers' safety training Provide first aid facility, nurse and emergency vehicle at project site			
		Threat to public safety	Enclose construction site and allow only authorized persons			
		Social problem due to hiring of migrant workers; Employment and livelihood opportunities for local people and entrepreneurs;	Provision in Construction Contract : Source 100% of labor if possible from within Ajuy Require Contractor to require LGU clearance as an employment requirement	MPDO Municipal Assessors Office Municipal & Barangay LGU Municipal Social Work		ECC Condition

Project Phase / Environmental Aspect / Project Activity	Environmental Component Likely to be Affected	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Responsible Entity	Cost (Pesos)	Guarantee / Financial Arrangements
			CemPhil to continue post job openings in highly visible places in Ajuy,	and Development CemPhil CRO		
OPERATIONS PHASE						
	Land	Solid waste generation	Implement ecological waste management program	PCO	Part of regular operations	ECC Condition
	Air	Increase in PM emissions Increased noise pollution	Ensure adequate air pollution control installations Increase perimeter wall height to 10 meters to limit noise dispersion Maintain / densify perimeter greenbelt to serve as in-Plant noise sink	PCO	Part of regular operations	ECC Conditions
-	Water	Deterioration of water quality from run-off sedimentation and oil / lubricant spills from machines and heavy equipment	Regularly desilt silt catchment basins / settling ponds and oil and water separator tanks	PCO	Part of regular operations	ECC Conditions.
	People	Generation of opportunities for development and stabilization of livelihoods	Assist capacity building to develop sustainable livelihood s Assist the development of sustainable small and medium enterprises	Community Relations Officer		
IV. ABANDONMENT PHASE						

Project Phase / Environmental Aspect / Project Activity	Environmental Component Likely to be Affected	Potential Impact	Options for Prevention or Mitigation* or Enhancement	Responsible Entity	Cost (Pesos)	Guarantee / Financial Arrangements
Dismantling and haul out of structures	A. Physical	Collapse of structures Solid waste generated from demolition and dismantling of structures litter the area	Ensure project area is safe from physical and chemical hazards Environmental Guarantee Fund or facility insurance for removal of unsafe structures, chemicals and hazardous materials in the event of sudden, unexpected abandonment.	Plant Manager		ECC condition
	B. Biological	Return of the avifauna and increase in population of small animals due to restoration of habitat	Re-establish vegetative cover in the project area Avoidance of soil damage to enable project site to support plant life after project abandonment	Plant Manager		ECC Condition
	C. Socio-Economic	Loss of jobs, economic opportunities and supplementary funding of social development project	Information, Education and Communication to motivate self-determined entrepreneurial development among local organizations	Plant Manager	Part of SDP cost	ECC Condition